



Effective Supervision as a Tool Against the Excessive Use of Natural Resources

Policy paper on the supervision over mineral
resources, forests, soil and water management







Clear it up!

The public policy document will serve as a tool in the advocacy and lobbying campaign „Clear it up“, which will aim to influence the decision making process and shall call the target audience to action in the area of natural resources management. The document includes data and insights into the current natural resources management problems that require immediate attention and offer alternative solutions and specific problem solving recommendations. The document is based on research and interviews with experts in the relevant area.

Publisher:
Institute for Communication Studies
“Jurij Gagarin” Street 17-1-1, Skopje
www.iks.edu.mk

For the publisher:
Associate Prof. Zhaneta Trajkoska Ph.D.

Edition:
ResPublica

Authors:
Kristina Najdovska-Ilievski MA
Elica Paunovska, bachelor in law
Prof Nikola Popovski Ph.D

Editors:
Prof. Dragan Gocevski Ph.D.
Dejan Andonov MA

Translator:
Gordan Tanaskov

Graphic design:
Igor Delov Studio



British Embassy
Skopje



ukaid
from the British people

This product is prepared within the programme “Connecting the Dots: Improved Policies through Civic Participation”, funded by the UK Government with the support of the British Embassy Skopje. The content of this publication does not necessarily reflect the position or the opinions of the UK Government.

Effective Supervision as a Tool Against the Excessive Use of Natural Resources

Policy paper on the supervision over mineral
resources, forests, soil and water management

Skopje
September 2020

Content



Executive Summary	4
Introduction	6
1. Managing the Natural Resources	9
1.1 Managing the mineral resources	9
1.1.1 Pollutions of environment caused by the exploitation of the mineral resources	12
1.2 Forest management	14
1.2.1 Devastation of the Macedonian forests	16
1.3 Soil management	17
1.3.1 Soil pollution and usurpation of arable land	19
1.4 Groundwater management	20
2. Problems in Achieving Effective Supervision over the Natural Resources Management	23
2.1 Supervision over the mineral resource management	23
2.1.1 Problems in the supervision over the mineral resource management Small number of inspectors and fines imposed by the State Inspectorate for Technical Inspection Low level of coordination between the state inspectorates for technical inspection and the inspectorate for environment	24
2.2 Supervision of the forest management	27
2.2.1 Problems in the supervision over the forest management	29
2.3 Supervision over the management of arable agricultural land	32

2.3.1 Problems in the supervision over the management of the arable agricultural land	33
2.4 Supervision over water management facilities	35
3. Alternative Solutions for Improving the Supervision over the Natural Resources Management	37
3.1 Alternative solutions for improvement of supervision over the mineral resource management	37
3.2 Alternative solutions for improvement of supervision over the forest management	41
3.3 Alternative solutions for improvement of supervision over the soil management	43
3.4 Alternative solutions for improvement of supervision over the water management	45
4. Fiscal Implications of the Alternative Solutions for Improvement of Supervision over the Natural Resources Management	47
4.1 Fiscal implications of the alternative solutions for improvement of inspection supervision over the mineral resources management	47
4.2 Fiscal implications of the alternative solutions for improvement of inspection supervision over the forest management	50
5. Conclusion	58
References	60

Executive Summary

This document on the „Effective supervision as a tool against the excessive use of natural resources“ is expert study that addresses public policies in the area of environment. It focuses on natural resource management and inspection supervision over four categories of natural resources: mineral resources, forests, soil and water.

Throughout its content, the document elaborates the problems arising from the existing legislation that regulates the mentioned areas, refers to the relevant bodies and institutions that are required, in accordance with the laws and bylaws, to act in the given areas, and also covers the inspection supervision, as one of the most important segments which enables direct supervision over the implementation of the legal provisions that regulate the matter. In order to follow up with other activities of the publisher of this document – the Institute for Communication Studies – less attention is paid to the area of water, as it is covered in a separate public policy document. In terms of issues related to the inspection supervision, alternative solutions are offered in order to resolve those issues, including analysis of their fiscal implications. The conclusions sections includes remarks regarding challenges specific to the protection of the management of mineral resources, forests, soil and water, with emphasis on the inspection supervision in these areas.

The continuous pollution of the environment is caused by the low awareness of the citizens, but it is also happening due to the failure of the state bodies and institutions to act. The frequent amendments to the legal provisions in the respective area lead to additional difficulties in their practical application. The lack of harmonization of the legal framework complicates the efficient work of not only the competent bodies and institutions, but also of all those entities required to adhere to, and apply, the specific laws and bylaws. The amendments to the Law on Mineral Resources did not include the issue of the existing mines, which continue to operate using cyanide and sulfur. The insufficient communication between the institutions leads to a series of omissions and irregularities, which makes easier the obligations the concessionaires have towards the Government. The most recent amendments to the Law on Forests were made in 2016 and they do not correspond to the new legal solutions in this area adopted in the recent years. Measures are required for raising the public awareness on the importance and significance of the forests as an invaluable natural resource. The absence of a Law on Soils is preventing the existence of comprehensive regulation and protection, thus leaving room for that regulation and protection to be left to the (lack of) conscience of all stakeholders in society, without institutional and without any other control over their pollution and destruction. A crucial resource that is necessary for survival and well-being of the humanity, as well as for social and economic development, is water. Regular groundwater controls

would provide information about the impact the temperature changes have on the land and soil, and will also yield initial information on the various impacts on the water resources.

The low level of punishment (impunity) of violators of the laws, in addition to the reduction of the amount of fines, does not go in favor of preservation of the environment. In terms of inspection supervision, which is an extremely important segment in the environment actions, it is necessary to hire the human resources required in each inspectorate and inspection service, provide them with all the technical and material conditions necessary for work, including means and equipment. There is also a need for establishment of modern electronic databases and enabling of free flow of the public character information. The citizens have the right to know how the budget funds are spent, while the competent authorities and institutions have a responsibility towards the citizens in terms of efficient and effective execution of their responsibilities in accordance with the law. The strengthening of trust between the citizens and the state bodies and institutions is about consistent observance and application of the legislation, integrity of the bodies and institutions, effective exercise of powers and competencies, but also inviolable punishment of all violators of the laws.

This policy document was prepared as part of the Connect the Dots: Improved Policies through Civic Participation project of the Institute for Communication Studies, supported by the British Embassy in Skopje.

An aerial photograph of a river winding through a landscape. The left bank is a dense forest with trees showing autumn colors of yellow and orange. The right bank is a vast, green grassy field. The river is a dark blue line separating the two areas.

1.

Introduction



Without natural resources life itself is impossible. From birth to death, natural resources, transformed for human use, feed, clothe, shelter, and transport us. Upon them we depend for every material necessity, comfort, convenience, and protection in our lives. Without abundant resources prosperity is out of reach.

-
Gifford Pinchot

The interaction between humans and nature is obvious, visible in itself and requires no elaboration. People live in communities, build dwellings and meet their existential needs by using materials available in the environment in which they are. The wood, stone and minerals located below the earth's surface are an irreplaceable source of timber for houses, buildings, roads, bridges, dams, heating energy, electricity generation, transport fuel... Pastures are a source of food for livestock and the fertile soil is a resource for agriculture. The population growth, followed by the technological development, has increased the needs of the society today, but also perfected the way of using the nature to meet the needs of the everyday life and the economy. It was like that in the past, it is like that today, and we believe that it will continue to be so in the future. The human life depends on the nature, and that is something that is indisputable.

What can and should be discussed is the manner and extent of the use of nature in order to meet the social and economic needs that are sometimes rational and sometimes not. Treating the nature as a „resource“ is necessary for the modern understanding of the economy, industry, but also contributes to deterioration of the condition of the environment in a way that cannot be remedied quickly, and sometimes cannot be remedied at all. Some resources are renewable over time, and if a balance is struck between the dynamics of exploitation and the ability of the nature to regenerate on its own (and sometimes with human help), forests, water, and fish stocks can be a source of economy and prosperity. The excessive or uncontrolled use of these resources disturbs this balance to the detriment of the forest fund, the quantity of drinking water, the cleanliness of lakes, rivers, sea... The afforestation of barren lands is a long, slow and uncertain process that sometimes

lasts for decades. On the other hand, the mistakes in the use of some natural resources can never be eliminated. Once an area has been urbanized, it is almost impossible to reuse it for agriculture, and once a hill has been dug out, it is simply gone. Unfortunately, the nature cannot protect itself from over-exploitation, and the hope that only the awareness will self-limit the people from their own ambitions is utopian phrase. A higher arbitrator is required, who will be able to rationally establish rules or norms on how much natural resources will be used and in what manner. It should be an arbitrator with capacity to impose those norms and to have mechanisms to control whether the citizens and businesses adhere to them.

In the times of today, the Government is the one that has that role. It is the sole bearer of sovereignty, which translates norms into laws (the constitution, laws and bylaws). In countries where government institutions are established through fair and democratic elections, at least in principle laws are passed that ensure the welfare of their own population through a process that can be long, burdened with technical requirements but also with internal political negotiations. Hence, it is necessary to pay attention to the quality or adequacy of each law, in order to be able to appropriately regulate the „rules of the game“ for each area of social conflict – something that is also applicable in establishment of a legal regime on when, how and how much can the natural resources be managed, a regime that will establish adequate penalties for anyone who fails to comply with the rules and will provide legal protection for the damaged parties. At the same time it should also provide a mechanism of prevention or control whether the rules are followed before their violation occurs. The most powerful mechanism the Government has at its disposal for monitoring of legality of the operation and actions of the citizens and businesses (but also of the public institutions) are the inspectorates and the inspection services within the administrative bodies and local self-government units. There are prerequisite for the inspection services in terms of capacity, equipment, education, but also freedom from external pressures on inspections, in order to be able to do their job in effective manner, and that job can be preventive, educational, and whenever necessary, repressive as well.

This public policy document shows the shortcomings in the legislation and with the relevant authorities, mainly referring to the state inspectorates, and offers solutions and recommendations for improving the legal provisions regulating this area and the inspection supervision exercised over their implementation.

A qualitative research was carried out for the purpose of preparation of this document, by obtaining data from printed and electronic sources, as well as through interviews and semi-structured questionnaires. In this research, the authors consulted 59 sources, which include laws, bylaws, stra-

tegic documents, programs and other sources, and intentional sample was used consisted of relevant and concerned institutions in order to consult experts and officials working in the areas that were subject of the research.

This document will assist the reader to get acquainted with the legal regime, the institutional network and the system of inspection supervision over four categories of natural resources: mineral resources, forests, soil and water. An overview and comments are provided for each of these areas regarding their respective situation, as it was at the time of writing of this publication (July - October 2020), pointing out the problematic areas and providing recommendations and fiscal implications assessment in order to resolve them.

An aerial photograph of a dense forest. The trees are covered in autumn foliage, with a mix of vibrant orange, yellow, and red leaves interspersed with some remaining green. The lighting creates a dappled effect across the canopy. A large, bold, orange number '2' is superimposed on the left side of the image, with a small orange dot positioned to its right, resembling a period. The number and dot are solid and have a slight shadow against the forest background.

2.

Managing the Natural Resources



The environmental resources and services that planet Earth can renew in a year are being depleted prematurely, and the global population uses resources equivalent to 1.6 planets (Global Footprint Network, 2020). International scientific and expert organizations indicate that currently 27 thousand species of animals and plants are in danger of extinction. They highlight the danger of losing 40 percent of the bees, which can lead to severe shortages of food and other ecosystem services provided by nature (The Conscious Challenge, 2020). In order to prevent these processes, it is necessary to manage the resources in a sustainable way. The natural resources management in Macedonia is not sustainable because of the following:

- Belief that the resources will always be unlimited, regardless of their non-sustainable use;
- Consumer society and the linear economy, that is, over-exploitation of minerals, water, forests and soil, which leads to pollution and excessive waste generation;
- Insufficient presence of available technologies for emission reduction, prevention and utilization of waste;
- Non-compliance, legal gaps and difficult enforcement of the laws that are continuously approximated with the European Union (EU) Acquis;
- Inadequate control over the extensive exploitation of the resource and pollution

1.1 Managing the mineral resources

The mineral resources are organic and inorganic minerals that are in solid, liquid or gaseous state. They are goods of general interest and are owned by the country, regardless of the ownership of the land on which they are located.

According to Article 4, the mineral resources can be:

- energy mineral resources: all types of fossil fuels, solid, liquid and gaseous carbon, radioactive elements (uranium and thorium), all types of bituminous and oil shales and other gases found in the earth;
- metallic mineral resources: iron, manganese, nickel, chromium, lead, zinc, copper, tungsten, tin, platinum, molybdenum, antimony, thallium, arsenic, mercury, silver, gold and other metals that may show up during exploitation;
- man-made mineral resources: mineral resources generated in processing of energy or metallic mineral resources, including tailings waste generated during the exploitation and processing of architectural-decorative stone;
- non-metallic mineral resources: limestone-calcite, limestone-dolomite, quartz, quartzite, quartz sand, diabase, feldspar, mica, disten, diatomaceous earth, talc, opal breccia, basalt, graphite, perlite, tuff, gypsum, marl, sulfur, barite, magnesite, fluorite, andesite, gneiss, asbestos, all types of clays and others;
- architectural-decorative stone: marble, granite, gabbro, travertine, onyx, basalt, cyanite, breccia and others;
- mineral, thermo-mineral, thermal waters and mineral waters and CO₂ gas;
- sand and gravel not found on the beds and banks of the surface water bodies (watercourses, lakes and reservoirs) and the collecting quartz. (Article 4)

The minerals are resources vital for many core industries and they are a major resource for development, but they are non-renewable and limited. Therefore, the management of mineral resources is closely integrated with the overall development strategy, and the exploitation of the mineral

resources should be guided by the long-term national goals and perspectives. The Macedonian law regulates two forms of management of mineral resources:

- Concession is granting of the right to use goods that are considered to be of general interest to the country; construction of public interest structure or performing public services, by requiring from the concessionaire to build and/or manage, to use and maintain the concession object, with payment or without payment, by the relevant authority (Law on Concessions and Public Private Partnership, Article 3, Paragraph 1). For example, the right to exploit mineral resources is acquired by obtaining a concession, which is granted on the basis of a public call or on the basis of a request. The decision to grant a concession is made by the Government, upon proposal of the Ministry of Economy, and it is published in the „Official Gazette of the Republic of North Macedonia“ (RSM). Based on the decision, a concession agreement is concluded, which is signed within 15 days from the entry into force of the decision by the Minister of Economy on behalf of the Government. Such an agreement has the status of an enforceable document;
- Exploitation of mineral resources is an activity of obtaining or releasing of mineral resources from their natural state, including preparatory, auxiliary and follow-up activities related to obtaining mineral resources (Law on Mineral Resources, Article 3, Paragraph 1, item 8). The exploitation of mineral resources is carried out in a particular area, defined by the main or the additional mining project for exploitation of mineral resources.

The exploitation procedures can cause significant environmental pollution and loss of other resources, such as land and biodiversity. It is therefore necessary that the exploitation of mineral resources is sustainable.

The Law on Mineral Resources („Official Gazette of the Republic of Macedonia“ No. 136/12, 25/13, 93/13, 44/14, 160/14, 129/15, 192/15, 39/16, 53/16, 120/16, 189/16 and 7/19) includes provisions that can ensure sustainability of the mineral resources management. It defines the measures and the manner in which the harmful impact on the environment and human health is prevented or reduced, which may occur as a consequence of the waste management from surveying, exploitation and processing of mineral resources. In other words, it is envisaged that the management of the natural resources shall be carried out in accordance with the Law on Environment. It also defines the events in the mine during the management of tailings from mineral resources. These events can result in a serious danger to human health

and/or the environment on the site or elsewhere, identifies the hazardous substances used in the mineral resource management processes, the properties of which pollute the environment and are dangerous to human life and health, and have proven acute, chronic, toxic and other harmful effects. The Law on Mineral Resources prohibits awarding of concession for exploitation of mineral resources if the exploitation procedures involve leaching or flotation of metallic mineral resources with cyanides or with sulfuric acid in open pit mines. Exception from these are concessions for exploitation of metallic mineral resources on already existing mines. The Law provides for remediation, which is a process of restoring the soil, the initial status of the natural habitats, water resources and the landscape.

In order to obtain a concession or permit for surveying or exploitation of mineral resources, opinion of the Ministry of Environment and Physical Planning (MoEPP) is required regarding the possible impacts that these activities could have on nature and water. In case of a negative opinion from the Ministry, the Government may decide to refuse the awarding of concession or permit for surveying or exploitation of mineral resources. Before obtaining an exploitation permit, the environmental impact assessment study of the concessionaire must be approved and he must apply for an A or B integrated environmental permit.

The concessionaire that exploits mineral resources must prepare a mineral waste management plan; a program for prevention of significant hazards; as well as an internal emergency plan, specifying the measures to be taken in case of accident. The concessionaire must implement environmental protection measures at its own expense and, if the appropriate measures are not implemented, the authority granting the concession may decide to terminate the concession unilaterally. Furthermore, the concessionaire is required to restore (recultivate) the land on which detailed geological surveys or exploitation of mineral resources has been carried out. The Annual Program for reclamation (recultivation) of degraded areas is adopted by the Government on the proposal of the Minister of Economy, and both the State Inspectorate for Technical Inspection (DITI) and the State Inspectorate for Environment (SEI) ensure that the concessionaire is implementing the necessary measures or maintains the necessary standards and environmental objectives.

The concessionaires pay fees for conducting detailed geological surveys or exploitation of mineral resources, 22 percent of which is considered revenue of the national Budget and 78 percent is transferred to the budget of the municipality on which territory the concession activity is carried out. In terms of national Budget revenues, 4 percent of them are to be used for reclamation and restoration of the degraded areas back to their original condition. Before the exploitation permit is issued, the conces-

sionaire submits a financial guarantee that would be sufficient to cover the costs for eliminating the harmful effects on the environment caused by the exploitation, as well as the effects from possible accidents that might occur after the closure of the installation.

1.1.1 Pollutions of environment caused by the exploitation of the mineral resources

The mining activities cause environmental pollution and landscape degradation. The pollution type depends on the materials that are subject to extraction and their further processing. The mines for coal and metallic resources cause chemical pollution of water and soil and can seriously affect the health of the population living in the vicinity. Noise and vibrations occur and the landscape is destroyed. The harmful effects continue for a long time after the working activities have stopped due to the drainage of groundwater contaminated with acidic waters and heavy metals from the mines. The exploitation of stone, gravel and sand which are used for construction purposes has an impact on the hydrological regime and the landscape, and it also emits dust, noise and vibration. In addition to pollution and adverse health effects, the opening of mines for exploitation of mineral resources is associated with land conversion, its permanent devastation and loss of biodiversity. The National Strategy for Nature Protection for the period 2017-2027 determines that one of the priority threats to biodiversity is the mining activity. The surface mines lead to permanent habitat loss. For example, the concession field of the Sasa mine lies on an important habitat – peat bog and the Government cannot protect them due to the obligations undertaken with the concession agreement. These peatlands are located on Osogovo, which is a protected area across the border in Bulgaria, but due to the future exploitation of ore, the proposed borders of the Osogovo Mountains have been withdrawn, which makes it impossible Osogovo to be a cross-border protected area in the future.

Despite the legal obligation to recultivate (restore) the land concerned by the exploitation of mineral resources, the concessionaires do not implement measures to return the exploitation field back to its original state, as is the case with some hills along the Gostivar – Kichevo road, which are completely dug out and the vegetation is removed. The pollution and the destroyed landscape indicates the complete negligence of the competent authorities and of the concessionaires regarding consequences from the exploitation of the mineral resources.

The sites of the potential mineral deposits have been determined by the Spatial Plan of the Ministry of Environment and Physical Planning, based on data from previous surveys. No strategic environmental impact assessment has been conducted for the current Spatial Plan, that is, the cumulative impacts from awarding of concessions for the planned sites have not been taken into account. The Ministry of Economy announces tenders for conducting detailed geological surveys according to private initiatives that have been submitted and through a procedure provided by the Law on Mineral Resources and the Law on Concessions and Public-Private Partnership. There is a high intensity in issuing concessions for exploitation of mineral resources. For example, 358 concessions were issued in 2019 and 362 concessions in 2020 (Register of Concession Agreements, 2020). The feasibility studies for the concession projects are prepared by the investors for the individual sites. Strategic environmental assessment is not carried out for all locations that are subject to the tender documentation, which does not allow to see in parallel the environmental impacts and the social aspects of the planned concessions, that is, to determine the environmental capacity of the area. If a strategic environmental assessment were to be carried out, a comparison would be made between the benefits for the local population from exploitation of mineral resources and other uses of land. In contrast, when awarding concessions, only the criteria for availability of geological reserves and profitability are applied.

There were cases when, during the procedures, concessions were also granted for areas proposed for protection, that is, the locations proposed for exploitation of mineral resources to be within the boundaries of areas for which the procedure for declaring them as protected areas was not completed, despite the evident natural values that could to be disturbed (Petrovska, 2020). So far, there was no case when some environmental impact assessment study for a mine would be rejected. The environmental impact assessment study from the Kazandol copper mine was approved; a report on suitability of the study was prepared for the environmental impact assessment study from the Ilovica-Shtuka gold mine, despite the assessments for possible chemical pollution, hazards for local agricultural production and threats to the population health. Therefore, when conducting environmental impact assessment from the mines in the future, it is necessary to enable public participation in the entire procedure, and not just to provide insight into the study for a period of 30 days and to organize only one public debate.

1.2 Forest management

The forests are goods of general interest and natural wealth, which is why they have a special treatment and enjoy special protection. The Constitution of the Republic of North Macedonia (Article 56) states that „all natural resources of the country, the flora and fauna,... are goods of general interest to the country and enjoy special protection.“ The total area under forests (land use) is 949,329 hectares, which is 37 percent of the territory of Macedonia. The state owned forests cover almost 89 percent of the total area under forests, and the rest are small privately owned plots (PE „National Forests“, 2020).

The Law on Forests was last amended in 2016 and is not in line with other relevant laws that have changed in recent years. The Law stipulates that sustainable forest management, planning and preservation should be ensured, in order to maintain and improve the production capacity, biodiversity, as well as the economic, ecological and social functions of the forest, without disturbing the ecosystem. Hence, the Law stipulates the common beneficial functions of forests, including oxygen generation and cleaning of the atmosphere, development of rural local communities, tourism and hunting, creation of favorable conditions for health treatment, vacation, sports and recreation, improvement of land fertility and reduction of erosion processes, biodiversity preservation and the positive impact on the climate and climate change. In terms of biodiversity maintenance, the Law provides for establishment of a National Council as well as forest and hunting reserves. However, the fact that the Ministry of Environment has not developed a Cadaster of Protected Areas and a Natural Heritage Register complicates the cooperation of this Ministry with the forest management authorities, that is, integration of the biodiversity protection objectives into the forest exploitation plans. A Regional Forest Improvement Plan has been developed for the Maleshevo region only, which sets out the future direction for sustainable management of forests and forest landscapes in the region based on their social and economic values and biodiversity (nature conservation).

The Law on Forests also sets the prohibitions for deforestation and digging of forests and for permanent conversion of the forest land. It prohibits illegal logging and any logging in that matter that is not approved in the planning documents as a regular forest restoration measure, as well as logging of rare and protected tree species. The population living in the surrounding villages is allowed to use wood in order to meet their own needs, but the amount of wood mass that is cut in a state owned forest must not exceed more than 10 cubic meters per calendar year. Purchase, processing and sale of wood and wood assortments that are not stamped and supplied with delivery notes are prohibited. Furthermore, the Law prohibits the disposal

of waste, toxic substances and other types of materials in the forests, arson in forests and forest fires as well as activities that intensify the processes of erosion and land degradation. A fee is paid for damages caused in the forest according to the price list for forest damage. The forest owners and users are required to take measures for forest protection and afforestation of areas destroyed by forest fires, of areas where natural regeneration and afforestation has failed, as well as areas where other type of devastation has taken place - illegal logging, digging or illegal logging of rare tree species, which must be carried out in less than two years from the date of deforestation. If it is necessary to build public interest facilities, in that case the forest land is permanently converted into construction land, for which a fee is paid equal to the amount required for afforestation and equal to the total surface of the area where construction of the facility is envisaged, as well as for the value of the wood mass, the lost growth and the common/ useful functions.

Four years after the adoption of the Law on Forests, there is still no State Forest Cadaster in place, although it is envisaged by the Law. No inventory of forest resources has been made either, and the Law requires a mandatory inventory (census) to be carried out every year and the data to be submitted to the Ministry of Agriculture, Forestry and Water Economy (MAFWE). At the beginning of 2018, the Food and Agriculture Organization of the United Nations (FAO) provided financial and technical assistance to support the MAFWE in development of methodology for conducting a National Forest Inventory. The Government is also supposed to adopt a national plan for managing landscape fires for a period of ten years and to establish a national committee for that purpose.

The PE „National Forests“ determines the value of the state forests on the basis of the Rulebook on the Content of Special Plans for Forest Management, special plans for cultivation and protection of forests and annual performance plans. However, the Section on Appraisal of the Forest Plantation of this Rulebook is not harmonized with the International Accounting Standard 41.18 - Agriculture (Official Gazette 159/2009) and the Law on Appraisal (Official Gazette 115/2010). PE „National Forests“ has started the process of forest certification through a pilot project for implementation of the largest global certification scheme PEFC (Program for Endorsement of Forest Certification) which certified over 300 million hectares of forest worldwide.

The forests are also partially regulated with the Law on Pastures, which has not been amended or changed since 1999. There is an obvious need for harmonization of this Law.

1.2.1 Devastation of the Macedonian forests

As goods of general interest, the forests and the forest land should be maintained, rehabilitated and used in a way that preserves their value and ensures cost-efficient and purposefully management.

In contrast, the illegal logging is a serious and long-term problem, which calls into question the sustainable forest management, as well as the value of the forests in a broader sense. Estimates are that the volume of wood that is illegally in Macedonia ranges from 25 to 30 percent of the total wood cut in a given year. In terms of prevalence of illegal logging, it exists throughout Macedonia and, according to Forest Police data, it is mostly done in the cities of Skopje, Kichevo, Struga, Demir Hisar, Prilep, Bitola, Berovo, Strumica and Shtip. According to some experts, at least 10 million euros are lost from illegal logging annually. From January to September 2019, a total of 107 criminal charges were pressed by the Forest Police to the basic Public Prosecutor's Offices in the country, the basic courts adopted 484 verdicts that imposed fines in the amount of around 374 thousand euros, and 1,800 cubic meters of wood were confiscated during the forest actions, including 39 trucks, 153 cars and 12 tractors (Macedonian Media Service, 2020). The devastation of the forest is partly because of the unfavorable economic situation of the citizens. The perpetrators use the illegally cut wood for own heating, as cheapest and easily accessible resource, but the motive for doing illegal logging is also to obtain obtaining illegal gain, that is, the wood that has been illegally cut is resold on the black market at a cheaper price (Malish Sazdovska, 2002).

The public enterprise (PE) „National Forests“ is the authority that plans the use of forests and also prepares annual plans for that purpose. However, the activity of this PE is only to mark (label) the trees for logging, while the actual logging, supply and transport are carried out by private companies on a tender basis. „According to the Law on Public Procurements, tenders are won at the lowest price, even lower than the market price - for example, logging applications are submitted at a price of 250 denars per cubic meter, although according to the documentation of the PE „National Forests“, the price is 360 denars per cubic meter, so the difference is compensated afterwards with additional quantities of firewood. There is no public data on this, and it is therefore necessary to strengthen the control, especially in the field. It can be improved by introducing GPS systems in the trucks. These are just some of the problems this large (oversized) company with about 2,500 employees is facing, or in other words it is a thread in the chain that does not function properly and allows corrupt activities (illegal logging), which is often reported by the media. It is necessary to reorganize the PE „National Forests“. Currently it is a public enterprise which is not

financed from the budget (although it is public enterprise) but from own funds. Such reorganization could be in a form of a joint stock company, as it is in Slovenia, Montenegro and Slovakia.” (Stojanovska, 2020).

In addition, the public institutions established by the Government to care for national parks do not have sufficient financial resources to implement protective measures and they usually generate their revenue from logging activities.

The devastation of forests is considered a crime under the Criminal Code (Article 226). If the crime was committed in a protected forest, national park or other special purpose forest, the perpetrator will be punished with imprisonment of three months to three years. The misdemeanor provisions in the Law on Forests (Chapter XII) set the fines for legal entities in fixed amounts of 30,000 euros, 20,000 euros and 15,000 euros, depending on the actual misdemeanor, while the fines for individuals range from 1,500 - 2,000 euros (these are the lowest amounts) and up to 3,500 - 4000 Euros (as maximum amounts). If the misdemeanors were perpetrated with aim to acquire material benefits or their perpetration caused greater damage to property, a fine is imposed that is double in amount in relation to the envisaged fines (and the responsible person in the legal entity will be prohibited from performing the activity for up to 30 days) and all items used for perpetration of the misdemeanor shall be confiscated, including the illegally acquired items/ proceeds that have occurred with that misdemeanor. However, there is a risk of corruption and if it does occur, legal regulations and the detailed operating procedures do not apply. The police officers integrity is a key factor whether corruption will occur or not. The police corruption is often considered as „petty“, meaning it does not involve high amounts of bribery, but is about gifts that are worth less than the prescribed fines. However, the outcome of this is the high cumulative effect of loss of revenue from imposed fines in the central Budget. The policy of mild penalties, on the other hand, does not suppress crime, and the acts are repeated (Mojsovska, 2019).

Another problem are the forest fires, which in the last ten years have affected more than 100 thousand hectares and have destroyed a large amount of wood. It is an economic problem, but it also leads to greater erosion of the scorched areas, disturbance of the water regime, loss of vegetation and desertification. The climate changes, through the process of forest drying and damage caused by insects and diseases, also add to the main threats and problems in the forest management.

1.3 Soil management

The soil management should ensure appropriate quality, properties and characteristics of the soil that should meet the needs of the people and the ecosystem. One of the important characteristics of the soil that needs to be maintained in order to provide food is fertility, which is the ability of the soil to supply plants with nutrients, water, air and other necessary requirements. The soil is limited and finite resource, which means that its loss and degradation cannot be restored during a person's lifetime. Therefore, understanding the potential and capacity of the soil plays important role when land management decisions are made. Nevertheless, there are no development policies and there is no special law on soil, nor monitoring of its condition and quality, including monitoring of the condition of the contaminated sites in Macedonia (Ministry of Environment and Physical Planning – MoEPP 2019: 48).

The draft Law on Soil Protection has been prepared, but it has not been adopted yet. The adoption of this Law is necessary in order to limit the harmful emissions into the soil, to identify the contaminated sites (historical industrial hotspots) and to determine the concentrations of hazardous substances present in the soil. This Law should establish and implement soil monitoring through collection, processing, analysis and validation of soil data and information, including data on the hazardous substances and soil degradation.

In the absence of a separate Law on Soil, the soil management is regulated by other laws. The Law on Environment envisages adoption of a Cadaster of Soil Pollutants and stipulates that the Government and the municipalities shall adopt a National or Local Action Plan for Environmental Protection, in which they shall address the issues related to pollution or soil protection. This Law stipulates that, when preparing strategic environmental assessment for investment projects, a description of the sources and ways of soil pollution should be provided, including measures for reduction of the impacts on soil quality. The Law on Nature Protection prohibits the use of nature in a manner that degrades the soil and results in loss of its fertility, and requires, along with the assessment of the impact on nature, to provide measures for prevention of the soil degradation and prescribe the guardian services in the national parks that will monitor whether the soil has been contaminated because of improper waste management or other activities. The Law on Agricultural Land requires from the owners and users of agricultural land to use the land in accordance with its purpose, to maintain and increase the fertility and to prevent its pollution or other degradation caused by direct introduction of harmful substances into the soil or through the

water and air, primarily for the purpose of production of healthy food and for protection of human health and of the flora and fauna. The Minister of Agriculture, in agreement with the Minister managing the national authority responsible for environmental affairs, prescribes the substances considered harmful for the agricultural land, their maximum permissible concentration in the soil and measures that are undertaken at agricultural land that contains concentrations of harmful substances in quantities that are higher than those allowed. The agricultural land can be converted into construction land through a procedure implemented by the Ministry of Agriculture, Forestry and Water Economy, and the decision for conversion is adopted by the Government. This is conditioned upon previous consent by the relevant ministries, including the Ministry of Environment and Physical Planning (MoEPP). If the scope of an urban plan covers a protected area, the Sector for Nature Protection in the MoEPP should give negative opinion and the conversion procedure should be stopped. A fee is paid for permanent conversion of agricultural land into construction land. Agricultural land can also be converted for a purpose of exploitation of mineral resources.

1.3.1 Soil pollution and usurpation of arable land

The soil quality deteriorates because of destruction of its water and air characteristics due to construction of buildings and expansion (sprawl) of settlements; because of construction and operation of transport corridors; exploitation of mineral resources; discharge of pollutants into the soil from industrial facilities (tailings dumps, slag and other materials that contain hazardous substances); as well as the excessive use of fertilizers and pesticides in agriculture. The intensive conversion of agricultural land into construction land or conversion for the purpose of exploitation of mineral resources result in loss of the soil as an important resource. The arable lands are also abandoned due to migration or lack of financial interest for agricultural production, which leads to soil degradation.

When we talk about agricultural land and its use, the issues with conversion of quality agricultural land into land areas for other purposes have always been relevant. In other words, soils that have a certain quality and feature optimal conditions for quality agricultural production are converted into construction land or economic free zones, or into areas for separation and sand extraction, etc. This permanently occupies the land area for some particular activity that will not be able to contribute to agricultural production. This results in loss of quality arable land that could, in the future, result in reduction of crop yields and reduction of their quality, and all of this affects the cost-efficiency of the production. „Macedonia has a soil map (also

in electronic form) where several soil types are identified, each with different quality and for different purposes – for agricultural production, pastures, forest, etc. About 8-10 percent of the total area of agricultural land (which is 500-600 thousand hectares) is considered first and second class, which is the highest quality for agricultural production. The Law determines the category or class of the soil and sets which classes can be used as construction land, and which classes can be used as agricultural land. However, bylaws should regulate that agricultural land areas should be intended strictly for agricultural production and that they cannot be converted for other purposes, except in case of national interest (construction of an airport, highway, etc.)“ (Professor of agriculture science, 2020).

There are also separations of sand carried out on high quality agricultural areas, usually along rivers. „Sand is dug on alluvial soils, or sediments along rivers, which is fine sand and is used mainly for construction activities (sand for making mortar, etc.). The Ministry of Economy is the authority granting the concessions, but although the excavations can be carried out on lands that have less quality, for the concessionaires it still means higher costs for finishing the coarse sand” (Professor of agricultural sciences, 2020).

In the past, there were quite common examples in the field and in practice where the areas given under concession were not cultivated or were used for a short period, that is, until the subsidy is received. „For example, walnut trees are planted that have the longest planting distance in between (10x10m, 100 trees = 1 hectare), you will stick a rod in the earth and you will receive subsidies‘ and they were abandoned after a while“ (Professor of agricultural sciences, 2020). Big problem in this context is that the producers who use land under concession, especially the large producers as well as those for whom agricultural production is additional activity, are not required to employ agronomists, which reduces the quality of production, the manner in which the land areas are used and the application of agro-technical measures.

Some past studies have identified 16 hotspots: the lindane landfills in the OHIS yard; the slag dumps from the Veles Smelter Facility and the Skopje Ironworks; the Feni ferronickel plant landfill; the Jugohrom chrome mud dump; the landfills from the thermal power plants in Bitola and Oslomej; the tailings of „Toranica“, „Sasa“ and „Zletovo“; „Buchim“ and the landfill of the arsenic and antimony mine „Lojane“; and the phosphogypsum landfill from the former factory for fertilizers in Veles. It has been determined that the soil near these contaminated sites is not safe for food production (Porta 3, 2018). The priority hot spots for rehabilitation and reclamation are the lindane landfills in OHIS and the chrome mud landfill in Jugohrom. For the first phase of cleaning the lindane, 3.5 million euros have been provided and a company has been hired. About 11 million euros are needed for complete cleaning of the small lindane landfill, and about 50 million euros for the large one.

1.4 Groundwater management

The water is a limited but renewable resource, but only if it is properly managed. According to the Law on Waters (Article 4, items 1, 2 and 3), waters refers to all surface waters (flowing and non-flowing waters on the surface of the earth), including permanent watercourses or watercourses with temporarily waterflows, lakes, reservoirs, springs and groundwaters (waters located below the earth's surface in the saturation zone and are in direct contact with the surface or the substrates). The waters, as goods of general interest, are owned by the state and they are not subject to the right of ownership of natural or legal persons, regardless of the ownership of the land on which they are located.

The groundwaters, as a natural resource, are important for groundwater dependent ecosystems as well as for drinking water supply. The information on the groundwater level is of great importance for agriculture, energy and construction. For each building, especially in areas endangered by groundwater, it is necessary to know how the groundwaters move, since in some situation they could have an impact on the foundations or the protective walls of the sub-terrain facilities. The regular control of groundwaters will provide information about the impact of the temperature changes on land and soil, as well as initial information on various impacts on the water resources. The water temperature, on the other hand, provides direct information on the possible variations of the climate in the region or climate change. The Directive 2006/118/EC of the European Parliament and the Council of 12 December 2006 on protection of groundwaters against pollution and deterioration constitutes a framework for prevention and control of the groundwater pollution. It also includes procedures for assessing the chemical status of groundwaters and measures for reduction of the pollutants level (MoEPP 2012).

„The Ministry of Environment and Physical Planning only plays a coordinating role, as an authority in water management, because according to the current regulations, there are no appropriate instruments and mechanisms nor rules and procedures established for water protection and they are decentralized, that is, segmented in several laws and a number of relevant institutions. In Slovenia, for example, there is one water agency that manages all the waters. It would be ideal to transpose European principles into our laws so that water can be easily managed.” (Krstevska, 2020)

1.4.1 Abuse of the irrigation water

Another problem in the use of natural resources in the agriculture is the rational use of the irrigation water. A very common example in our country is digging wells for irrigation of agricultural land and not reporting them. The Joint Stock Company for waters has its offices throughout the country, within which hydromelioration systems (HMS) have been established at river basin level. However, majority of these hydromelioration systems are neglected and ruined, forcing the producers to dig wells which they often do not report in order to avoid the payment of fees for the hydromelioration systems. For example, there is no accurate data in Macedonia on how many wells are out there and what network they belong to. Additionally, „the daily use of water from a well is limited to 10 cubic meters, but this is not respected in reality. The country is making efforts to subsidize the irrigation by supporting one part of the cost of digging wells, as well as the use of a drip system, which will in turn make it possible to report the source of water used for irrigation. However, the number of unreported wells remains huge and the use of water as a natural resource is out of control. The wells, the irrigation water supply equipment and the drip systems should be fully subsidized, thus reducing the amount of water used for this purpose. Despite the use of modern irrigation systems, water is charged per crop and land area, not per consumption, which results in its irrational and inefficient use. It is necessary to make a calculation of water needs per crop and for each region, and create conditions for the water to be charged per consumption, which will reduce its irrational. The water constables (officers) that will control the irrigation and the water abuse within the HMS should be reintroduced. The HMS should be modernized and equipped with the machinery required for timely elimination of the technical problems in the field.

Finally, additional problem along with improper and irrational watering is the impact of fertilizers and means used for protection. These can return, through the groundwaters, to the wells, lakes or water sources that can be also used for another purpose” (Professor of agricultural sciences, 2020).



3.

Problems in Achieving Effective Supervision over the Natural Resources Management



2.1 Supervision over the mineral resource management

A number of different bodies and institutions are in charge of supervision over implementation of the provisions from the Law on Mineral Resource (Article 100).

The Ministry of Economy supervises the implementation of the provisions of the Law, and the Public Revenue Office (PRO) supervises and controls the payment of the fees required for detailed geological survey and of the concessions for exploitation of mineral resources. The PRO is required to report on the concession fees paid every three months, for each individual concession.

The inspection supervision is carried out by the State Inspectorate for Technical Inspection through the state inspectors for geology, mining and electricity in mining. The Inspectorate is required to report to the Ministry of Economy every month on the inspections that have been carried out. The inspection supervision in terms of Law on Mineral Resources (section on environment) is carried out by the State Inspectorate of Environment. The Ministry of Interior (MOI) does supervision during geological surveys and exploitation of mineral resources without concession and permit. In general, as in other areas of environment, “the communication and coordination between the authorized environmental inspectors from the local self-government units and the State Environmental Inspectorate is unsatisfactory. The SEI, in cooperation with the Ministry of Interior, the Customs Administration, the judicial bodies (courts and prosecutors’ offices) and with experts in the area is required to establish a platform at national level for mandatory, continuous and coordinated cooperation, in accordance with specific standard operating procedures and protocols. The municipal inspectorates do not have the required level of experience and information as the State Environmental Inspectorate, there is still no single database (on both central and local level) of legal entities that are potential environmental polluters, and the SEI is not connected through a certain platform with the local inspectors” (Blinkov, 2020).

The inspection supervision can be regular (announced), extraordinary (unannounced) and control supervision. The inspection services prepare annual and periodic plans for conducting inspection supervisions based on the risk assessment. In case of high level of risk, at least one inspection supervision is carried out per year over a specific entity; in a case of medium level of risk, at least one inspection supervision is carried out in two years; and in case of low level of risk, at least one inspection supervision is carried out in three years. According to the Law on Mineral Resources, the mining inspectors must control the concessionaires at least three times a year. However, the Law does not provide for liability and sanctions for inspectors who will fail to act in accordance with this legal obligation. If the inspector finds irregularities that pose a threat to the safety of people and property, he/she should order the deficiencies to be remedied within 30 days. If the irregularities are not remedied within that period, the inspector should prohibit the detailed geological survey, the mining works and the exploitation of mineral resources, in part or in the whole mine (Article 108). The inspector should stop further works whenever he/she determines that they are carried out without the necessary concession, permit or resolution, in cases when works are not performed according to design or technical documentation and according to conditions prescribed by the Law on Mineral Resources (Article 112). In such a case, the Ministry of Interior should temporarily confiscate the assets used for excavation and transport, as well as the excavated mineral resources. If, during the inspection supervision, it is determined that a misdemeanor or a criminal act has been perpetrated, the inspector must immediately submit a request for pressing misdemeanor or criminal charges at a competent court (Article 114). If the inspectors find irregularities and do not take appropriate measures, they will be deemed to have committed a serious violation of their official duty (Article 107).

However, in general, the inspectors or the Ministry of Interior officers do not have sufficient knowledge to deal with environmental crime cases and to prepare documentation for the prosecutors (these are official crimes for which the procedure starts on ex-officio basis). The Prosecutor's Office does not go out on the field to investigate the case, but takes the documentation from the Ministry of Interior, and builds the case accordingly.

2.1.1 Problems in the supervision over the mineral resource management

Small number of inspectors and fines imposed by the State Inspectorate for Technical Inspection

The fact that the State Inspectorate for Technical Inspection directly supervises the implementation of the Law on Mineral Resources, which, in turn, are defined as goods of general interest, makes it one of the most important inspectorates in the country. However, the efficiency of the inspection services depends on the number of inspectors, well-trained staff, modern technical conditions and equipment and operational means.

In terms of number of employees, the Strategic Document of the DITI 2020-2022 states that DITI employs a total of 21 civil servants (and, therefore, it is one of the smallest inspection bodies in the country), one of which is the head of sector, two are heads of units, nine are state inspectors and nine are professional-administrative officers. The rulebooks for job systematization stipulate that the number of civil servants should be 46, that is, more than double (State Inspectorate for Technical Inspection, 2020).

The efficiency of the Inspectorate can be also seen from the number of inspection supervisions planned and realized (quarterly data).

Table 1 Inspection supervisions planned and realized, and measures imposed, DITI, 2019									
Supervision (inspections) 2019	Regular		Extraord.		Control		Total		Measures
	Planned	Realized	Planned	Realized	Planned	Realized	Planned	Realized	Imposed
I quarter	209	250	0	22	0	2	209	274	8
II quarter	187	237	0	17	0	13	187	267	15
III quarter	175	230	7	68	7	14	189	312	40
IV quarter	/	172	/	26	/	18	/	216	17
Total	571	889	7	133	7	47	585	1069	80

Source: Summary data from the IC reports, 2019

During 2019, a total of 889 regular inspections, 133 extraordinary inspections and 47 control inspections were carried out (a total of 1,069 inspections). A total of 80 irregularities were identified. According to the table, in the third quarter of 2019, DITI had the highest number of extraordinary inspections conducted, unlike in other quarters (68 in total), when most of the inspection measures were actually imposed. According to the reports of the Inspection Council, the imposed measures vs. inspections performed ratio is not related to the staffing of the Inspectorate, but directly depends on the issue supervised by the inspection service and is an important indicator of the measures and policies undertaken for improvement of the inspection system, for more efficient control of the subjects of supervision, as well as greater protection of the public interest (Inspection Council, 2020). The share of the inspection measures imposed in relation to supervisions carried out in 2019 is 7.5 percent, which indicates a very small number of measures imposed in relation to the number of inspections.

Low accountability of the State Inspectorate for Technical Inspection

The DITI website does not include the Operational Report of this organization, and there is no data available about the inspections carried out in the first six months of 2020, although the Law on Inspections requires it. Namely, according to Article 99 of this Law, a fine of 450 Euros is envisaged for the Director or the head of the inspection service if he/she fails to publish, on the website of the inspection service, the operational report for the previous six months, no later than 15 July, for the period January - June of the current year; or no later than 15 January, for the period July - December of the previous year; and if it does not submit the report to the Inspection Council in electronic and paper form within that period. The fine for misdemeanors should be imposed by the State Administrative Inspectorate. This prevents the exercising of the right to access public information that the Inspectorate is required to publish and update on regular basis.

Low level of coordination between the State Inspectorate for Technical Inspection (DITI) and the State Inspectorate for Environment (SEI)

When supervising the exploitation of mineral resources, the State Environmental Inspectorate determines whether the installation has an exploitation permit and whether the concessionaires have submitted an annual report to the relevant government body, inspects the records for hazardous waste from the installations holding integrated B or A environmental permit and controls whether the disposal of the waste meets the conditions prescribed by the exploitation permit, including the emission limit values for air, water and soil.

However, DITI and SEI rarely do coordinated inspections during construction of facilities and installations for exploitation of mineral resources. That is necessary in order to monitor, in an integrated manner, whether measures for technical correctness of the facilities and equipment are applied in certain phases of construction and in order to control the emissions of pollutants. During the exploitation phase, the SEI, when doing the supervision, should provide independent measurement of emissions and of the measurements carried out by the facilities themselves in accordance with the Law on Environment. Regular and extraordinary measurements of a number of parameters for air, water and soil pollution must be carried out, and the penalties for environmental violations and accidents must be much higher, without the possibility of settlement if such penalties are paid earlier, as well as closure of facilities in cases where the research will show that they are source of permanent pollution of the environment due to old or inadequate technology, which in the EU should not even be used due to strict environmental norms (Popovska, 2020). The independent measurements should be carried out by a state accredited laboratory, which is expected to start operating in early 2021. In addition to an independent accredited laboratory, efficient implementation of the inspection supervision can be achieved with procurement of appropriate work equipment. For example, it is necessary to procure equipment for indicative measurement of the air emissions, which would determine the need for hiring accredited laboratory which should measure specific parameters, depending on the finding of the initial indicative measurement. The low level of coordination and communication between the institutions leads to a series of omissions and irregularities, including lack of monitoring of the payment of fees by the concessionaires (Petrovska, 2020).

Issuing warnings in case of high level of risk

The Law on Inspection Supervision and the Law on Misdemeanors provide for a warning as a main preventive measure. Thus, when some irregularity has been perpetrated for the first time, the inspector should draft a report in which he/she will define that irregularity, will also indicate that it should be remedied within eight days and at the same time should serve an invitation for education to the person or entity where that irregularity was identified during the supervision. If, during the control supervision, the inspector determines that the identified irregularities have not been remedied, he/she shall submit a request for initiating a misdemeanor procedure before the competent court. However, the exploitation of mineral resources, which are limited and non-renewable resources, and the procedures for ore processing that use hazardous chemicals, cause material damage or have adverse conse-

quences for the environment and human health and safety. There is always a high degree of risk in such cases, so repressive measures and punishment would yield better results in preventing serious consequences. According to the misdemeanor provisions of the Law on Mineral Resources (Chapter X), the fines, depending on the gravity and type of misdemeanor, range between 2,500 euros to 250,000 euros.

Lack of harmonization between the Law on Inspection Supervision and the Law on Mineral Resources

The Law on Inspection Supervision also covers the State Inspectorate for Technical Inspection. It is therefore necessary to harmonize the Law on Mineral Resources with this Law. The Inspection Council has already prepared a positive opinion on the Law on Mineral Resources, but this Law has not yet been harmonized with the new Law on Inspection Supervision. It is expected that it will be harmonized in the near future (Inspection Council, 2020).

2.2 Supervision over the forest management

According to the Law on Forests, the inspection supervision over the forest management is carried out by the State Inspectorate for Forestry and Hunting (DISL), and the forests are protected by the Forest Police and the Forest Guard Service – these are bodies operating within the Ministry of Agriculture, Forestry and Water Economy. The supervision and control of the sale of wood, according to the same Law, is carried out by the State Market Inspectorate.

The State Inspectorate for Forestry should control the cultivation, protection and use of forests, as well as all the locations where the wood is cut, taken out of the forest, transferred, transported, placed, processed or put into circulation, including the means by which the wood is transported or transferred. The inspectors should control the implementation of the forest management plans by requesting data on the reproduction, use, cultivation and protection of forests, as well as inspect the work and documentation of the legal entities that hold a license for logging and timber supply. They can temporarily prevent damage in emergency situations (forest logging, digging or livestock grazing) which would cause damage to the public interest, until the final decision of the competent authority. If they find irregularities and are not authorized to act directly, the inspectors should inform the compe-

tent authorities and the public enterprise „National Forests“ and request their intervention.

The rights and obligations of all entities subject to inspection supervision are regulated in Article 63 of the Law on Inspection Supervision, which stipulates that the entity subject to supervision must provide the inspector with access to the premises, products, electronic databases or any other means that are subject to inspection, as well as insight into the entire documentation and information necessary to determine the factual situation. If the supervised entity does not act in accordance with its obligations, it must pay a fine in the amount of 750 euros as a legal entity, a fine of 250 euros for the responsible person in the legal entity or a fine of 150 euros for the individual who is the perpetrator of such misdemeanor.

According to the Law on Inspection Supervision, if the forestry inspector finds an irregularity, he/she is required to order the entity to undertake specific measures, within eight days, to eliminate such irregularity. If, during the control supervision, the inspector determines that the identified irregularity has not been remedied, he/she submits a request for initiating a misdemeanor procedure before the competent body. This measure highlights the preventive function of the inspection and the principle of proportionality, provided that such irregularities and deficiencies do not pose an immediate danger to human life and health, danger to the environment or danger to the public interest.

2.2.1 Problems in the supervision over the forest management

Small number of inspectors and fines imposed by the State Inspectorate for Forestry and Hunting

The State Inspectorate for Forestry and Hunting should do inspection supervision over 1,002,809 hectares of state-owned and privately owned forests and forest land, regulated in 176 special forest management plans, as well as over 249 hunting grounds given under concession for use, cultivation and protection of game (MAFWE 2020). However, DISL does not have sufficient human resources – the number of employees is slightly more than half of the staff required (in 2019 there were 20 inspectors and the systematization foresees 34 inspectors), which results in reduced effectiveness of the Inspectorate.

Table 2: Inspection supervisions planned and realized, and measures imposed, DISL, 2019

Supervision (inspections) 2019	Regular		Extraord.		Control		Total		Measures
	Planned	Realized	Planned	Realized	Planned	Realized	Planned	Realized	Planned
I quarter	636	726	20	145	28	99	684	970	97
II quarter	716	533	2	206	20	53	738	792	98
III quarter	652	541	5	208	12	53	669	802	135
IV quarter	/	665	/	172	/	100	/	937	104
Total	2004	2465	24	731	60	305	2088	3501	434

Source: Inspection Council, 2019

The data for the first three quarters of 2019 show that 2,564 inspection supervisions were carried out and 330 measures were imposed. The share of the inspection measures imposed in relation to inspection supervisions performed indicates a low degree of punishment of the entities subject to supervision – 13 percent. In the same time, a large number of violations are evident in the field. In the first three quarters of 2019, DISL pressed only one criminal charge and 12 misdemeanor charges. By the end of 2019, a total of 3,501 inspection supervisions were carried out and 434 inspection measures were imposed. In order to improve the effectiveness of the Inspectorate, it is equally necessary to increase the level of mutual cooperation and coordination with the Forest Police, Border Police, Center for Crisis Management (CUK), the Protection and Rescue Directorate (DSZ) as well as with judicial authorities who should be processing the fines imposed as soon as possible.

Overlapping of competencies of the forest police and the forest guard service

The Law on Forests stipulates that the protection of forests in state and in private ownership should be carried out in two stages – with patrolling/ control and on district basis (Article 81). The patrolling/ control is carried out by the forest police within the MAFWE, which is organized as a central organizational unit based in Skopje and has 30 forest police stations throughout the country. Four hundred and thirty nine jobs are foreseen in the Forest Police Department, 82 percent of which are manned (375). On the other hand,

eight job positions are foreseen in the Sector for Internal Control but none of them is manned. The district-base guarding is carried out by the forest guard service within the Public Enterprise for State Forest Management „National Forests“ and entities that manage the protected areas, regardless of their purpose. The members of the forest police and the forest guard service are authorized and required to protect the forest from forest thefts and fires, to ID the persons found in the forest, to do temporary seizure of means and items, to initiate requests for pressing misdemeanor and criminal charges and similar.

In view of the above it seems that the competencies of the members of the forest police and the forest guard services overlap to a great extent, so it is necessary to differentiate them, but also to strengthen the mutual cooperation and their reorganization – for example, they can be merged into one single service in which they would operate as two separate units – because the practice shows that when two entities (bodies, services, institutions ...) have identical powers, the legal provisions and the duty to act are easily circumvented, without bearing any responsibility.

Attacks on forest police officers by illegal loggers

The work of the members of the forest police is very difficult due to the violent behavior of the perpetrators of the forest devastation (which is a criminal act). Usually, when the forest police arrives at the scene of the crime, the perpetrators overturn the vehicles and trailers in order to prevent the forest police officers from seizing them and then flee the scene. Some perpetrators also have dogs warning them of the approaching danger, and they may attack and injure the forest police officers with stones or chainsaws when caught on the spot, resulting even in deaths. Therefore, the forest police often requests assistance from the police (Ministry of Interior) for carrying out specific actions in the field. However, the small number of police officers and the lack of material equipment seem to hamper the effective fight against illegal logging. Some of the crimes are committed by organized criminal groups (Macedonian Media Service, 2020).

The State Inspectorate for Forestry and Hunting does not have its own public medium

The State Inspectorate for Forestry and Hunting, despite the legal obligation to have a public medium, does not have its own website. The public has no insight into the work of this Inspectorate, nor quick access to the annual programs, reports and other relevant data that should be made public and available to all. This violates the principle of publicity and transparency, and the civil society organizations, journalists and other citizens have limited access to public character information.

Lack of harmonization of the legal provisions

It is necessary to adopt a new law which will regulate the competencies and organizational structure of the State Inspectorate for Forestry and Hunting, as well as all other issues related to the inspection supervision over forests, which will be in accordance with other laws in the area and, in particular, the Law on Inspection Supervision. The new law, for the sake of unification of definitions, terms and names, should be named Law on State Inspectorate for Forestry and Hunting.

Furthermore, the provisions of the Law on Forestry and Hunting Inspection and the Law on Forests are not harmonized with the Law on Inspection Supervision. There are provisions in the Law on Inspection Supervision and in the other two laws, which unnecessarily burden their content. For example, Article 100, Paragraph 5 of the Law on Forests is also present in the Law on Inspection Supervision, and reads: "The entities that manage the forests and the entities that implement the plans for cultivation and protection of forests in protected areas, other legal entities and the citizens, whose work is subject to the supervision by the state inspectors for forestry and hunting, are required to allow the implementation of the supervision and to provide the necessary data". Such is the provision in Article 7 of the Law on Forestry and Hunting Inspection, which refers to the principle of proportionality regulated by Article 13 of the Law on Inspection Supervision, according to which the inspector undertakes inspection measures in accordance with law, which are necessary for remedying of the irregularities and shortcomings identified and are considered to be the most favorable for the subject of the inspection supervision. In this regard, care should be taken not to hinder the efficient functioning of the subject of the inspection supervision.

These repetitive provisions unnecessarily burden the legal text itself, because the stated matter is already regulated by same provisions in the Law on Inspection.

2.3 Supervision over the management of arable agricultural land

The supervision over the implementation of the procedures for lease of state-owned agricultural land is carried out by the Ministry of Agriculture, Forestry and Water Economy. In case of leasing of state-owned agricultural land for areas up to 3 hectares, the Minister of Agriculture announces a public competition, with prior consent from the Government. The procedure is implemented by a Commission consisted of seven members. It is established by the Government on the proposal of the Minister and consists of the following members: two representatives from MAFWE; one representative from the associations in the area of agriculture; one representative from the Association of Local Self-Government Units (ZELS) where the land in question is located; one representative nominated by the Office of the Prime Minister; one representative nominated by the Deputy Prime Minister in charge of Economic Affairs; and one representative nominated by the Ministry of Finance. The procedure for public announcement for a land area bigger than 3 hectares is carried out through electronic public bidding. The manner of publishing and the content of the announcement for land areas up to and over 3 hectares, as well as the necessary documentation, are regulated in the Law on Agricultural Land (Chapter 3, Articles 21-28).

Inspection supervision is carried out by several inspectorates – the State Inspectorate for Agriculture (DIZ) controls the implementation of the provisions of the Law on Agricultural Land and its respective regulations; the State Administrative Inspectorate supervises the legality of the special administrative procedures; and the construction inspectors of the City of Skopje and of the municipalities supervise the buildings on the agricultural land, in accordance with the Law on Construction. There is no coordination between the Inspectorate for Agriculture and the Inspectorate for Construction. This was very obvious when illegal construction was happening on the coast near Struga – a UNESCO World Heritage Site – and none of the competent inspectorates did anything, ping-ponging each other's responsibilities.

The supervision of the State Inspectorate for Agriculture is aimed at protection of the agricultural land from pollution with harmful substances, implementation of the lease agreements, implementation of provisions for conversion of agricultural land, implementation of fire protection measures, and other matters (Law on Agricultural Land, Article 57). In order to eliminate the irregularities identified, the inspector may point out those irregularities to the specific entity and order him to take appropriate measures and activities for their removal. The inspector can also temporarily prohibit him from performing the activity and confiscate the assets by which the crime or

the misdemeanor were perpetrated, as well as to submit a request for initiation of misdemeanor procedure or to press criminal charges (Article 15-a). If the irregularities are committed for the first time, the inspector should instruct the entity to remove them within 8 days and serve him an invitation for education in cases when it is determined that the specific entity is not using the agricultural land in accordance with its purpose or has failed to inform the MAFWE that the land is no more agricultural land due to permanent conversion (Article 58). The amount of the fines depends on the gravity of the misdemeanor and whether it is a small, medium or large company, and they are in accordance with the Law on Misdemeanors. They range from 1,000 to 2,000 euros for a small company; and from 3,000 to 6,000 euros for a medium and large company (Article 59). Before initiating a misdemeanor procedure, the Ministry of Agriculture does a settlement procedure by issuing a misdemeanor payment order in accordance with the Law on Misdemeanors. The perpetrator who will pay the fine within 8 days will pay half of the total amount of the imposed fine.

2.3.1 Problems in supervision over the management of arable agricultural land

Small number of fines imposed and insufficient number of inspectors in the State Inspectorate for Agriculture

The State Inspectorate for Agriculture, in terms of total number of inspectors and in terms of laws that vest this institution with specific competencies, is one of the largest inspection services in the country. This inspectorate needs to be modernized in terms of work equipment, the number of inspectors needs to be increased and be more efficient with regards to planning and implementation of the inspection supervisions. Regarding the number of inspectors, a total of 114 inspectors worked in this institution in 2019, out of the 157 inspection positions planned (positions are manned at 73 percent). In addition, the age structure of the inspectors is unfavorable and it is necessary to hire and train new inspectors. It was established in 2019 that a total of 21.3 percent of the DIZ inspectors are over the age of 60 (Inspection Council, 2020).

During 2019, a total of 47,980 inspection supervisions were carried out, of which: 2,726 regular inspections, 44,444 extraordinary inspections and 810 control inspections, where a total of 1,262 irregularities were identified. The disproportion between the inspections that were actually carried out and the measures imposed is large, so the share of the measures imposed is only 3 percent in relation to the total number of inspection supervisions.

If we compare the data on the number of inspections and measures from 2019 and 2018, the number of inspection supervisions carried out in 2019 was higher by 3,080, but despite this difference in the number of inspections, the number of measures imposed does not differ significantly.

Table 3: Inspection supervisions planned and realized, and measures imposed, DIZ, 2019

Supervision (inspections) 2019	Regular		Extraord.		Control		Total		Measures
	Planned	Realized	Planned	Realized	Planned	Realized	Planned	Realized	Planned
I quarter	723	683	8030	10310	61	196	8814	11189	275
II quarter	732	690	8918	10773	86	232	9736	11695	269
III quarter	718	660	8479	10455	101	156	9298	11271	254
IV quarter	/	693	/	12906	/	226	/	13825	464
Total	2173	2726	25427	44444	248	810	27848	47980	1262

Source: Inspection Council, 2019

Large number of extraordinary inspection supervisions

Another fact that arises from the report data is the far higher number of extraordinary supervisions carried out in comparison to regular supervisions - 44,444 extraordinary supervisions versus 2,726 regular supervisions. The reports of the Inspection Council regularly point out that the high share of regular inspections in the total number of inspections by individual institutions is an indicator that the resources are efficiently directed and used, while the high share of extraordinary inspections per inspection services indicates the need to adequately increase the human and material resources in these institutions, in order for them to be able to operate normally in case of unexpected increase of activities. Approximate planning of the extraordinary inspections can be achieved by analyzing the number of these inspections carried out in the previous quarters, whereby the average number of the inspections carried out in the previous quarters will be taken as a benchmark for planning the extraordinary inspections for the upcoming quarter, but there must be no deviation with the regular inspections, as they are planned on the basis of an annual work program of the inspection services, which is then used as a basis for preparation of quarterly and monthly plans.

The State Inspectorate for Agriculture fails to update its website on regular basis

The State Inspectorate for Agriculture does not respect the principle of publicity and transparency. There are no reports, programs and other relevant documents that the Inspectorate is required to publish on regular basis and to update them on the website, thus making them available to the wider public, which has the right of access them.

Non-harmonized legal provisions

The latest amendments to the Law on Agricultural Land from 2019 are aimed at harmonization with the Law on Misdemeanors, but the Report of the State Inspectorate for Agriculture for the period January – June 2020 notes the need for harmonization of the substantive laws in the area of agriculture with the provisions of the Law on Misdemeanors and the Law on Inspection Supervision. Especially in the area of inspection supervision, it is necessary to harmonize both the Law on Agricultural Land and the Law on State Inspectorate for Agriculture with the provisions of the Law on Inspection Supervision.

2.4 Supervision over water management facilities

The supervision over water management facilities is carried out by a water management inspector within the State Environmental Inspectorate, in accordance with the Law on Waters. The Sector for Water Management Inspection within the SEI has only two water management inspectors, and they not sufficient to carry out all the necessary inspection supervisions (regular and extraordinary).

The water management inspector has a wide mandate and supervises the legal entity „Vodostopanstvo AD“ in terms of maintenance of the water management facilities intended for irrigation: dams and reservoirs, canals and irrigation connections. The condition of the dams is assessed by the operator of the irrigation system (Vodostopanstvo AD) and they prepare reports accordingly. Opinion on the elaborations is given by the Commission for dams, which is established by the Ministry of Environment and Physical Planning.

The water management inspector supervises the dams on the reservoirs used for water supply and controls the maintenance of the hydropower plants, that is, the biological minimum that should be provided downstream of the dams. The public enterprises that maintain the dams are required to assess the condition of the dams, to prepare appropriate elaborates and to submit them to the MoEPP. The Commission for dams provides opinion on these elaborates.

Additionally, the inspector supervises the tailings dams of the mines. For example, during the accident at the Sasa mine tailings dam in September 2020, the water inspector prepared a report, determined the cause of the accident, weighed the penalty for the legal entity and the responsible person in a reconciliation procedure and instructed them to clean and repair the riverbed and the surrounding terrain from the material that was spilled from the tailings. After the accident, the Commission for dams determined that the overflow of the material from the tailings occurred due to illegal filtration, and not due to a mistake in the construction and maintenance of the dam.

The water management inspector also supervises the permits for use and discharge of water by the public utility companies, legal entities and individuals. This supervision includes checking the quantities of water involved and the manner of maintenance of the water intake - well/s, surface water intake, captured spring, etc. An elaborate should be prepared for the water intake for determining the protection zones for the water supply source. A fee is paid for water use and the inspector checks whether that appropriate fee has been paid. The utility companies that have a water use license rarely pay a fee. This creates a budget deficit and does not raise enough funds that are required for the Annual Program for Waters implemented by MoEPP.

The inspector also supervises the permits for regulation of a riverbed granted to municipalities (when the location is within in a construction area) or “Vodostopanstvo” AD (when the location is outside a construction area). The riverbed regulation permits are issued by the MoEPP. In the past, some permits have been issued without taking into account the distance between two locations on the same river and thus some riverbeds have been completely devastated. Serious omissions are made in the regulation of the riverbed, that is, the regulation is used as a cover for „legal“ exploitation of sand and gravel. In this way, the procedure for issuing a concession for exploitation of sand and gravel is circumvented.

The water inspector also controls the management of the Gjavato hydro system, which was built to fill in the Dojran Lake. The hydro system used to be operated by a public enterprise and is currently operated by the MoEPP. The inspector has the right to instruct the MoEPP to submit information to the Government in order to decide to hand over the hydrosystem to an entity that can maintain it properly and can charge irrigation fees, because the system has many illegal connections used for irrigation purposes. The water management inspector has the right to require from the operator, in this case from the MoEPP, to enable the collection of fees in accordance with the law.

As the inspection supervision is carried out on both central and local level, exceptionally good cooperation is required between the central and local authorities and institutions.



4.

Alternative Solutions for Improving the Supervision over the Natural Resources Management



This section focuses on possible options for improvement of the public policies related to betterment of supervision over the natural resource management: mineral resources, forests, arable agricultural land and groundwater. The feasibility of each option for solving the given problem is explained and the fiscal implications of their implementation are also calculated.

3.1

Alternative solutions for improvement of supervision over the mineral resource management

#	Issue	Solutions	Relevant authority	Deadline
1	The open pit mines continue to operate using cyanide and sulfur. The integrated environmental permit defines the emission limit values. The existing permits do not comply with the new Industrial Emissions Directive 2010/75/EU which provides for stricter measures. It is necessary to revise the permits in order to comply with this Directive.	Amendments to the Law on Mineral Resources by which the concessionaires that use procedures involving leaching or flotation of metallic mineral resources in presence of cyanide or sulfuric acid in open pit mines will be required to apply comprehensive measures to protect the environment and reduce the chemical pollution, and during inspection supervision it is mandatory to measure the emissions from these installations – this is to be done by an independent accredited laboratory.	ME	2021
2	Unregulated unilateral termination of the exploitation concession agreement by the granting authority in cases when the concessionaire fails to comply with the decisions and measures defined by the environmental regulations.	Amendments to the Law on Mineral Resources which will determine exactly in which cases and in what way it will be established that there is a danger or that there has been a threat to the human health and safety and the environment.	ME MoEPP	2021
3	Making decisions for merging concessions, without the mandatory verification in the field. There is no single environmental impact assessment study in a case of merger of concessions.	Amendments to the Law on Mineral Resources, which will require preparation of a new environmental impact assessment study for the merged concessions, if the studies have been prepared for each individual concession.	ME	2021
4	Due to non-renewal of the bank guarantee, the government cannot collect it in case no reclamation has been carried out.	Amendments to the Law on Mineral Resources, which will provide for annual renewal of the bank guarantee submitted by the concessionaires upon awarding of concession, in order to provide funds for reclamation during the exploitation and after the completion of the exploitation.	ME	2021
5	Unspecified obligation for the mining inspectors to control the content of metallic and man-made mineral resources in the concentrates from which they are produced at least three times a year.	Amendments to the Law on Mineral Resources which will provide for liability and sanctions in cases mining inspectors fail to comply with the legal obligation in terms of control, at least three times a year, of the content of metallic and man-made mineral resources in the concentrates from which they are produced.	ME	2021

6	The State Inspectorate operates with around half of the total number of inspectors required.	Recruitment of 12 inspectors in order to reach the total of 26 inspectors foreseen with the systematization act.	DITI MF ME	2021-2022
7	There is no regular publishing of the findings from the inspection supervisions, of the operational programs and other relevant information on the DITI website.	Regular updating, working and maintenance of the DITI website.	DITI	2021
8	The ratio between inspection measures imposed and inspection supervisions carried out by DITI is very low.	<p>Increase the number of regular inspection supervisions in order to achieve better prevention.</p> <p>Detailed and analytical approach towards planning and implementation of the regular inspection supervisions over the facilities and installations for exploitations of mineral resources holding A and B environmental permits.</p> <p>Better insight in the field work of the inspectors.</p>	DITI DIZS	2021
9	Insufficient supervision over the implementation of the mining waste management plans by DITI and DIZS.	Carry out inspection supervision over the implementation of the mining waste management plans.	DITI DIZS	2021
10	The DITI and DIZS inspectors fail to act.	The inspectors should impose sanctions when no rehabilitation and recultivation of the land affected by detailed geological surveys or exploitation of mineral resources is taking place, which is contrary to the Law on Mineral Resources.	DITI DIZS	2021
11	Issuing warnings in a case of high level of risk.	Amendments to the Law on Inspection Supervision which will abolish the legal instrument of warning during inspection supervision in all areas of environment.	MIOA	2021

12	<p>Insufficient coordination and communication between the institutions that leads to lack of monitoring of the payment of the concession fees, which is obligation of the concessionaires.</p> <p>Difficult and non-user friendly electronic system of the Ministry of Finance for monitoring of the collection of fees. The relevant institutions adopting laws that define the amount of the fees should assign a person that will monitor the collection, but this is not happening.</p>	<p>Modernization of the database and introduction of a system for easier insight and monitoring of the payments.</p> <p>Better coordination of the Ministry of Economy and the Public Revenue Office, which are institutions responsible for the established system of control over the collection of the concession fees, and are important and pertain to control over the timely payment of the concession fees for particular area and exploitation of mineral resources by the concessionaires.</p> <p>Full monitoring, that is, keeping digital records (file) for each concession granted, for the purpose of efficient monitoring of the situation and timely detection of irregularities at the concessionaires.</p> <p>Continuous and regular submission of copies of the concession agreements and of the annexes thereof, to the relevant bodies and institutions, as well as to the local authorities.</p>	MF PRO DITI ME	2021-2022
13	<p>The DITI, SEI and MOI rarely do coordinated inspections during the construction of the installations for exploitation of mineral resources.</p>	<p>Strengthen the cooperation between DITI and DIZS with the Ministry of Interior – apply the provision of the Law on Inspection Supervision which says that the inspector can request police assistance.</p>	DITI DIZS MOI	2021

3.2

Alternative solutions for improvement of supervision over the forest management

#	Issue	Solution	Relevant authority	Deadline
1	Absence of Law on State Inspectorate for Forestry and Hunting.	Adoption of a new law which will regulate the competencies and organizational structure of the State Inspectorate for Forestry and Hunting, as well as all other issues related to inspection supervision of forests, which will be in accordance with other laws in the area and especially with the Law on Inspection Supervision.	MAFWE	2021
2	Lack of harmonization between the legal provisions.	The provisions of the Law on Forestry and Hunting Inspection and the Law on Forests should be harmonized with the Law on Inspection Supervision.	MAFWE	2021
3	The competencies of the forest police and the forest guard services overlap to a large extent.	Establishment of an umbrella service within the MAFWE, which will include the forest police and the forest guard service as separate units within.	MAFWE	2021-2022
4	DISL does not have sufficient human resources –the number of inspectors is just over half of the required staff, which leads to reduced effectiveness of the Inspectorate.	Recruitment of 14 inspectors in DISL in order to reach the number of inspectors required according to the systematization act (34).	MAFWE MF DISL	2021-2022
5	The State Inspectorate for Forestry and Hunting does not have its own website.	Development and regular updating and maintenance of the official DISL website.	DISL	2021
6	The share of inspection measures imposed in relation to supervision carried out by DISHL indicates a low degree of punishment of the entities subject to supervision, which does not correspond to the actual situation in the field.	Better analysis in the planning and implementation of regular inspection supervisions.	DISL	2021
7	Insufficient cooperation of the forest inspectors with all relevant bodies and institutions, especially with the Ministry of Interior, in order to timely and efficient detect the perpetrators of crimes and their apprehension. Attacks on the forest police by illegal loggers.	When performing inspection supervision, it is necessary to coordinate and raise the mutual cooperation of all inspection bodies at the highest level, but greater cooperation is also needed between CUK, MOI and other competent bodies and institutions.	MAFWE MOI CUK PRD	2021-2022

3.3

Alternative solutions for improvement of supervision over the soil management

#	Issue	Solution	Relevant authority	Deadline
1	No separate law on soils in place.	Adoption of separate law on soils.	MAFWE	2021
2	Legal provisions that are not harmonized.	Harmonization of the Law on State Inspectorate for Agriculture and the Law on Agricultural Land with the Law on Inspection Supervision adopted in 2019.	MAFWE	2021
3	Harmonization of the Law on State Inspectorate for Agriculture and the Law on Agricultural Land with the Law on Inspection Supervision adopted in 2019.	Recruitment of 43 inspectors in order to reach the number provided by the systematization act - 157 inspection positions.	MAFWE MF DIZ	2021-2022
4	The age structure of the inspectors in the DIZ is unfavorable and it is necessary to train new inspectors.	Holding regular specialized trainings in parallel with the recruitment of new inspectors.	MAFWE DIZ	2021-2022
5	<p>Lack of modern and appropriate equipment in DIZ for efficient implementation of the inspection supervision.</p> <p>Lack of main database for identifying deficiencies before going out in the field:</p> <ul style="list-style-type: none"> - data from the registers of MAFWE and other relevant institutions (work permits issued in the area in which the inspector is competent), whether there was an inspection measure at that entity or misdemeanor/ criminal procedure, as well as whether there was another inspector deployed initially and what has he/ she determined, so the next one can act in relation to another provision in the law in order to include the entity in the legal system - introduction of a single database system with current information, which will not impose additional obligation on the Inspectorate to submit reports and plans. 	<p>Improvement of the existing technical and material conditions for work and equipment.</p> <p>Creating a master file database.</p>	MAFWE MF DIZ	2021-2022

6	The DIZ website features no reports, programs or other relevant documents.	Regular and timely updating and maintenance of the DIZ website.	DIZ	2021
7	The share of the inspection measures imposed in relation to DIZ inspections conducted is very low.	Increase in the number of regular inspections in order to timely detect all irregularities at the entities subject to supervision, which would reduce the extraordinary inspections and at the same time would meet the objectives of the inspection supervision.	DIZ	2021

3.4

Alternative solutions for improvement of supervision over the water management

#	Issue	Solution	Relevant authority	Deadline
1	The Water Management Inspection Sector in the SEI has only two water management inspectors.	Increase the number of professional water inspectors.	MoEPP MF DIZS	2021-2022
2	The DIZS inspectors lack sufficient professional training for supervision of water management facilities.	Holding regular specialized trainings in parallel with hiring new inspectors.	DIZS	2021-2022
3	Lack of modern and appropriate equipment in DIZS required for efficient implementation of inspection supervision over the water management facilities.	Provide the relevant technical and technological conditions for work of the Sector for Water Management Inspection in DIZS.	MoEPP MF DIZS	2021-2022
4	Riverbed regulation is used as a cover for «legal» sand and gravel exploitation. In this way, the procedure for issuing a concession for exploitation of sand and gravel is circumvented.	<p>The water management inspector should cooperate with the Ministry of Interior for appropriate sanctioning of the entities that do not adhere to the project documentation during the works for riverbed regulation;</p> <p>After the completion of the works for regulation of the riverbed, the contractor should submit to the MoEPP and to the water management inspector a situation explaining the realized works and comparison with the project documentation on the basis of which the permit has been granted.</p>	MoEPP DIZS MOI	2021-2022
5	Weak cooperation between central and local inspection bodies.	Improve the coordination and cooperation between the state water management inspector and the authorized environmental inspectors in the municipalities.	DIZS Local inspectors	2021-2022

5.

Fiscal Implications of the Alternative Solutions for Improvement of Supervision over the Natural Resources Management



4.1 Fiscal implications of the alternative solutions for improvement of inspection supervision over the mineral resources management

3.1 Alternative solutions for improvement of supervision over the mineral resources management	887,598 espa
Activities 3.1.1; 3.1.2; 3.1.3; 3.1.4 and 3.1.5: Amendments to the Law on Mineral Resources	
Amendments to the Law on Mineral Resources by which the concessionaires using procedures that involve leaching or flotation of metallic mineral resources in presence of cyanide or sulfuric acid in open pit mines will be required to apply comprehensive measures in order to protect the environment and reduce the chemical pollution, and during actual inspection it will be mandatory to measure the emissions from these installations, which should be done by independent accredited laboratory.	90 days
The Law on Mineral Resources envisages unilateral termination of the concession agreement for exploitation by the authority awarding the concession, in cases when the concessionaire does not adhere to the solutions and measures determined by the environmental regulations. It is necessary to clearly and precisely determine in which cases it shall be deemed that there is a threat to the human health and safety and the environment.	45 days
Amendments to the Law on Mineral Resources which will require preparation of a new environmental impact assessment study in case of merged concessions, if the initial studies have been prepared for each concession individually.	5 days
Amendments to the Law on Mineral Resources, which will provide for annual renewal of the bank guarantee submitted by the concessionaires in order to provide funds for reclamation during the exploitation period and after the completion of the exploitation.	5 days
Amendments to the Law on Mineral Resources which will provide for liability and sanctions in cases of non-compliance with the legal obligation according to which the mining inspectors should control the content of metallic and man-made mineral resources in the concentrates from which they are produced at least three times a year.	5 days

	# of consultants	working days*	Average per diem (in euros)	Estimation for total funds needed (in euros)
Local consultant	4	90	120	43,200
International consultant	2	90	350	63,000
Local consultant	1	60	120	7,200
International consultant	1	60	350	21,000
Public debate on the proposed solution				15,000
Total				149,400

Additional explanation of the estimation:

- Detailed analysis of the current situation in these mines;
- Comparative analysis from other countries how similar mines operate;
- Draft recommendations and alternatives;
- The local and international expert would support the employees in the institutions, in terms of comparative analysis of this issue in other countries and harmonization with the existing related legislation in RN Macedonia;
- * time-bound engagement;
- The salaries of the employees for amendments of the legislation are already an existing cost in the budget;
- Public debate about the proposed solution;
- Preparation of the draft text of the law.

Activity 3.1.6: Capacity building of DITI

In order to ensure continuity and efficiency in the operation of DITI, it is necessary to hire a sufficient number of inspectors. The professional preparation and the regular specialized trainings of the inspectors, as well as the availability of modern and appropriate equipment for work are the necessary preconditions for efficient implementation of the inspection supervision.

	#	Average monthly gross salary	Total monthly amount required (in euros)	Estimate of annual funds needed (in euros)
New recruitments	12	943	11,317	135,805
Equipment for new recruitments and vehicles				39,512
Material costs for new recruitments				48,780
Continuous training of inspectors				13,000
				237,098

Activity 3.1.7: Strengthening the DITI transparency

Regular and timely updating of public interest data, which will be prominently displayed and will be easily accessible on the DITI website, for the purpose of transparent and accountable operation and insight into the work of DITI by the public concerned.

				Estimate of funds needed (in euros)
Upgrade and continuous updating of the DITI website				1,000
				1,000

Additional explanation of the estimation:

- the estimation of funds needed is on annual level

Activity 3.1.11: Amendment to the Law on Inspection Supervision

Amendments to the Law on Inspection Supervision, which will abolish the legal instrument of warning during inspection supervision for all areas of the environment.

	# of consultants	Engagement in days*	Average per diem (in euros)	Total estimate of funds needed (in euros)
Local expert	1	5	120	600
International expert	1	5	350	1,750
				2,350

Additional explanation of the estimation:

- The local and international expert would support the employees in the institutions, in terms of comparative analysis of this issue in other countries and harmonization with the existing related legislation in RN Macedonia;
- * time-bound engagement;
- The salaries of the employees for amendments of the legislation are already an existing cost in the budget.

Activity 3.1.12: Development of software solution for concessions

The insufficient communication between the institutions leads to a number of omissions and irregularities, including lack of monitoring of the payment of fees, which is an obligation for the concessionaires.

	#	*Work engagement in days	Average per diem (in euros)	Total estimate of funds needed (in euros)
**International and local consultants for analysis of the current situation and design of software application				50,000
Local company for development of concession software	1	90		350,000
Adaptation of software solutions at other related institutions				50,000
Training of staff on the use of the software solution	15	10		3,000
Software maintenance				35,000
Promotion of the software solution				3,000
Local expert	1	45	150	6,750
				497,750

Additional explanation of the estimation:

- *time-bound engagement of the companies and the expert;
- **According to our knowledge, the Ministry of Economy is currently doing analysis of the current situation in terms of information available on concessions issued and draft-design for software solution. These activities are taking place in cooperation with the World Bank;
- The company should develop the software application for concessions and enable the links with other software solutions from the relevant institutions for the purpose of data sharing (for example: Public Revenue Office, Ministry of Finance, Ministry of Agriculture and Forestry, the Central Registry, etc., for the purpose of automatic data sharing);

- The maintenance costs are annual costs and they are reoccurring cost of the institution;
- Public presentation of the software application and of the benefits from the concessions database;
- One local consultant should develop the business processes in a form of procedures; define who is required to feed the concession software with data, in what format, privileges and access to software, etc.;
- We do not calculate the salaries of the employees in the institutions as additional cost since they are already secured in the Budget..

4.2 Fiscal implications of the alternative solutions for improvement of inspection supervision over the forest management

3.2 Alternative solutions for improvement of supervision over the forest management	290,109 euros
---	---------------

Activity 3.2.1: Harmonization of the legislation

Adoption of a new law, which will regulate the competencies and organizational structure of the State Inspectorate for Forestry and Hunting, as well as all other issues related to inspection supervision of forests, which will be in accordance with other laws in that area and, in particular, with the Law on Inspection Supervision.

	#	Engagement in days*	Average per diem (in euros)	Total estimate of funds needed (in euros)
Local expert	1	30	120	3,600
International expert	1	30	350	10,500
				14,100

Additional explanation of the estimation:

- The local and international expert would support the employees in the institutions, in terms of comparative analysis of this issue in other countries and harmonization with the existing related legislation in RN Macedonia;
- * time-bound engagement;
- The salaries of the employees for amendments of the legislation are already an existing cost in the budget.

Activity 3.2.2: Harmonization of the legislation

The provisions of the Law on Forestry and Hunting Inspection and the provisions of Law on Forests need to be harmonized with the Law on Inspection Supervision.

	#	Engagement in days*	Average per diem (in euros)	Total estimate of funds needed (in euros)
Local expert	1	5	120	600
International expert	1	5	350	1,750
				2,350

Additional explanation of the estimation:

- The local and international expert would support the employees in the institutions, in terms of comparative analysis of this issue in other countries and harmonization with the existing related legislation in RN Macedonia;
- * time-bound engagement;
- The salaries of the employees for amendments of the legislation are already an existing cost in the budget.

Activity 3.2.4: Capacity building of the State Inspectorate for Forestry and Hunting

In order to strengthen the efficiency in the operation of the State Inspectorate for Forestry and Hunting, it is necessary to hire a sufficient number of inspectors. The professional preparation and the regular specialized trainings of the inspectors, as well as the availability of modern and appropriate equipment for work are the necessary preconditions for efficient implementation of the inspection supervision.

	#	Average monthly gross salary	Total monthly funds required	Estimate of annual funds needed (in euros)
New recruitments	14	943	13,203	158,439
Equipment for new recruitments and vehicles				42,439
Material costs for new recruitments				48,780
Continuous training of inspectors				18,000
				267,659

Activity 3.2.5: Strengthening the transparency of the State Inspectorate for Forestry and Hunting

Development of a website of the State Inspectorate for Forestry and Hunting. Regular and timely updating of the public interest data, which will be prominently displayed and will be easily accessible on this website, for the purpose of transparent and accountable operation and insight into the work of this institution by the public concerned

				Estimate of funds needed (in euros)
Development of website				5,000
Regular update of the website				1,000
				6,000

Additional explanation of the estimation:

- The estimation of funds needed is on annual level

4.3 Fiscal implications of the alternative solutions for improvement of inspection supervision over the soil management

3.3 Alternative solutions for improvement of supervision over the soil management	743,472 euros
---	---------------

3.3.1 Activity – Adoption of Law on Protection of Soils in RN Macedonia

The lack of Law on Soils prevents their regulation and protection.

	#	Engagement in days*	Average per diem (in euros)	Total estimate of funds needed (in euros)
Local expert	2	150	120	18,000
International expert	1	150	350	52,500
				70,500

Additional explanation of the estimation:

- The local and the international expert would be supporting the employees in the institutions, in terms of comparative analysis of this issue in other countries and harmonization with the existing relevant legislation in RN Macedonia;
- * time-bound engagement;
- The salaries of the employees for amendments of the legislation are already an existing cost in the budget.

Activity 3.3.2: Harmonization of the legislation

Harmonization of the Law on State Inspectorate for Agriculture and the Law on Agricultural Land with the Law on Inspection Supervision adopted in 2019.

	#	Engagement in days*	Average per diem (in euros)	Total estimate of funds needed (in euros)
Local expert	1	5	120	600
International expert	1	5	350	1,750
				2,350

Additional explanation of the estimation:

- The local and international expert would support the employees in the institutions, in terms of comparative analysis of this issue in other countries and harmonization with the existing related legislation in RN Macedonia;
- * time-bound engagement;
- The salaries of the employees for amendments of the legislation are already an existing cost in the budget.

Activity 3.3.3; 3.3.4 and 3.3.5: Capacity building of the State Inspectorate for Agriculture

In order to strengthen the efficiency in the operation of the State Inspectorate for Agriculture, it is necessary to hire a sufficient number of inspectors. The professional preparation and the regular specialized trainings of the inspectors, as well as the availability of modern and appropriate equipment for work are the necessary preconditions for efficient implementation of the inspection supervision.

	#	Average monthly gross salary (in euros)	Total monthly funds needed (in euros)	Estimated annual funds needed (in euros)
New recruitments	43	943	40,553	486,634
Equipment for new recruitments and vehicles				62,927
Material costs for new recruitments				97,561
Continuous training of inspectors				22,500
				669,622

Activity 3.3.6 – Strengthening the transparency of the State Inspectorate for Agriculture

Regular and timely updating of the public interest data, which will be prominently displayed and will be easily accessible on this website, for the purpose of transparent and accountable operation and insight into the work of this institution by the public concerned

				Estimate of funds needed (in euros)
Regular updating of the website				1,000
				1,000

Additional explanation of the estimation:

- the estimation of funds needed is on annual level

4.4 Fiscal implications of the alternative solutions for improvement of inspection supervision over the water management

3.4 Alternative solutions for improvement of supervision over the water management	186,008 euros
--	---------------

Activity 3.4.1; 3.4.2 and 3.4.3: Capacity building for inspection supervision in the water protection area

In order to strengthen the efficiency in the operation of the inspection services in the area of water protection, it is necessary to hire a sufficient number of inspectors. The professional preparation and the regular specialized trainings of the inspectors, as well as the availability of modern and appropriate equipment for work are the necessary preconditions for efficient implementation of the inspection supervision.

	#	Average monthly gross salary	Total monthly funds needed	Estimate of annual funds needed (in euros)
New recruitments in the State Inspectorate for Environment Protection	6	943	5,659	67,902
New recruitments in the State Sanitary Inspectorate	2	943	1,886	22,634
New recruitments in the State Inspectorate for Agriculture	2	943	1,886	22,634
Equipment for new recruitments and vehicles				37,317
Material costs for new recruitments				32,520
Continuous training of inspectors				3,000
Recruitment of municipal inspectors which will be effectuated within the municipal budgets				
				186,008

A total of 2,107,187 euros are needed for implementation of the recommendations included in the document. Here is their break down per areas and purposes:

Total financial implications per areas:	
1. Total financial implications for mineral resources:	887,598 euros
2. Total financial implications for forests:	290,109 euros
3. Total financial implications for soils:	743,472 euros
4. Total financial implications for waters:	186,008 euros
Total:	2,107,187 euros

Total financial implications according to the funds purpose:	
1. Expert work:	232,800 euros
2. New recruitments:	893,951 euros
3. Staff training:	59,500 euros
4. Engagement of company/ ies for development and maintenance of software:	485,000 euros
5. Procurement of equipment and material costs:	409.936 euros
6. Promotion of strategies, public debates and public awareness campaigns:	18,000 euros
7. Website costs:	8,000 euros
Total:	2,107,187 euros

Gender sensitive fiscal implications

The funds under No.1, 2 and 3 are gender sensitive funds, in terms of their intended purpose. Assuming that the hiring of local and international experts and in the recruitment and training of staff in the public institutions attention will be paid for at least 40 percent representation of each of the genders, in that case the gender sensitive fiscal implications are in the amount of 1,186,251 euros, at least 40 percent of which (474,500 euros) should be costs for each of the genders.

Conclusion

The reform of protection of the environment in the areas of exploitation of mineral resources, forest management and soils should be based on three pillars:

- Modernization and harmonization of the legal framework,
- Strengthening of existing capacities for regulation and control, as well as creating new relevant capacities; and
- Ensuring effective inspection supervision.

Some the specific challenges in the protection of management of mineral resources are the necessity to update the legal framework in order to eliminate the legal gaps and ensure effective application of the current legislation, as well as to ensure effective control over the way the resources are exploited. There is also a need to invest in technologies for emissions reduction, prevention and use of waste and public awareness raising about the limitation of the natural resource, the pollution and waste generation, and about the effects on the population and biodiversity.

In terms of forest management, specific areas that need to be addressed are the outdated and inadequate legal framework, the poor or non-existent records of the entire forest fund and insufficient efforts and inadequate mechanisms for prevention of the forests devastation.

Some challenges in soil management which require intervention are the disruption of water and air characteristics of the soils caused by the urban, industrial and transport infrastructure as well as the excessive use of fertilizers and pesticides in the agricultural production. The soils are still not regulated with a special law.

The ground waters contribute with around 80 percent to the total water supply in the country. Much greater attention should be paid on their rational use and their protection from pollution.

A general remark regarding the inspection is the weak capacities of the relevant state inspectorates which makes them act reactively, that is, after someone has reported the case, instead of being proactive and preemptively detect the illegal operation of the entities subject to supervision before the damage to environment occurs. In that regard, it is necessary to increase the number of inspectors in accordance with the volume of work and provide databases, technical means and other equipment so that the inspectors can effectively perform their duty. Trainings and workshops are important tools, among other things, to increase the efficiency and professionalism in the implementation of inspection supervision. The promotion of cooperation with other relevant bodies and institutions at both central and local level

is necessary for the purpose of expediency and greater efficiency of the actions. However, it is also necessary to ensure consistent application of all anticorruption mechanisms in order to prevent corruption practices in the work of the inspectors.

The implementation of the alternative solutions included in this document requires funds estimated at 2,107,187 euros, smaller part of which (around 700,800 euros or about 1/3 of the total amount) are one-off amounts; and the majority (1,406,387 euros or about 2/3) are permanent on annual basis and will be reoccurring every fiscal year.

Some of the costs (hiring of experts, new recruitments and staff training) are gender sensitive, assuming attention is paid that there will be at least 40% representation of each gender; in that case, the gender-sensitive financial implications are 1,186,251 euros, at least 40 percent of which (474,500 euros) should be the costs for each gender.

The funds required for investment in system for protection of natural resources shown in this publication should not be seen just as a „sum of money“, but on the contrary, as a pragmatic expression of something that would allow to resolve the weaknesses identified. The questions of whether the funds are „big“ or not, whether the measures will eliminate „all possible“ identified and unseen problems, should be approached from another point of view: what will happen and what will be the costs for the society and nature if we fail to act or fail to invest in protection of environmental and in the limited natural resources if we lose them.

References

- Blinkov, D. (2020), Interview with Darko Blinkov, State Inspectorate for Environment, interviewed on 24.06.2020
- State Inspectorate for Environment (2019). Annual Program for Work of the State Inspectorate for Environment for 2020. Skopje: State Inspectorate for Environment.
- State Inspectorate for Technical Inspection (2020). Strategic Plan of the State Inspectorate for Technical Inspection 2020–2022. Skopje: State Inspectorate for Technical Inspection
- Gjorgjeva, S., Nikolovska, K. (2019). Indicative Environmental Report for 2018 (p. 48). Skopje: Ministry of Environment and Physical Planning.
- Law on Food Safety ("Official Gazette" No. 157/10, 53/11, 1/12, 164/13, 187/13, 43/14, 72/15, 84/15, 129/15, 213/15, 39/16 and 64/18)
- Law on Water Economy ("Official Gazette" No. 51/15, 193/15 and 189/16)
- Law on State Inspectorate for Agriculture, ("Official Gazette of the Republic of Macedonia" No. 20/09, 53/11, 164/13, 43/14, 33/15, 88/15, 149/15, 39/16, 172/16 and 83/18)
- Law on Environment ("Official Gazette" No. 53/05, 81/05, 24/07, 159/08, 83/09, 48/10, 124/10, 51/11, 123/12, 93/13, 187/13, 42/14, 44/15, 129/15, 192/15, 39/16 and 99/18)
- Law on Environmental Protection ("Official Gazette" No. 67/04, 14/06, 84/07, 35/10, 47/11, 148/11, 59/12, 13/13, 163/13, 41/14, 146/15, 39/16, 63/16 and 113/18)
- Law on Agricultural Land ("Official Gazette" No. 135/07, 17/08, 18/11, 42/11, 148/11, 95/12, 79/13, 87/13, 106/13, 164/13, 39/14, 130/14, 166/14, 72/15, 98/15, 154/15, 215/15, 7/16, 39/16 and "Official Gazette" No. 161/19)
- Law on Concessions and Public Private Partnership ("Official Gazette" No. 6/12, 144/14, 33/15, 104/15 and 215/15 and "Official Gazette" No. 153/19 and 261/19)
- Law on Mineral Resources ("Official Gazette" No. 136/12, 25/13, 93/13, 44/14, 160/14, 129/15, 192/15, 39/16, 53/16, 120/16, 189/16 and 7/19)
- Law on General Administrative Procedure ("Official Gazette" No. 124/2015). Decision of the Constitutional Court of the Republic of Macedonia U. No. 94/2017 from 28 March 2018, published in the "Official Gazette" No. 65/2018
- Law on Misdemeanors ("Official Gazette" No. 96/2019 from 17.05.2019)
- Law on Drinking Water Supply and Drainage of Urban Waste Waters ("Official Gazette" No. 68/04, 28/06, 103/08, 17/11, 54/11, 163/13, 10/15, 147/15 and 31/16)
- Law on Setting the Water Service Prices ("Official Gazette" No. 07/16)
- Law on Forestry and Hunting Inspection ("Official Gazette" No. 88/08, 6/10, 36/11, 74/12, 164/13, 43/14, 33/15, 149/15, 53/16 and 83/18)
- Law on Forests ("Official Gazette" No. 64/09, 24/11, 53/11, 25/13, 79/13, 147/13, 43/14, 160/14, 33/15, 44/15, 147/15, 7/16 and 39/16)
- Law on Waters ("Official Gazette" No. 87/08, 6/09, 161/09, 83/10, 51/11, 44/12, 23/13, 163/13, 180/14, 146/15 and 52/16) [accessed on 15.08.2020]

- Law on Local Self-government ("Official Gazette of the Republic of Macedonia" No.5/02)
- Law on Administrative Inspection ("Official Gazette" No. 69/2004, 22/2007, 115/2007, 51/2011, 164/2013, 41/2014 and 33/2015)
- Law on Urban Planning ("Official Gazette" No. 32/2020)
- Inspection Council (2019). Annual Report on the work of the Inspection Services for 2019, Skopje: Inspection Council
- Inspection Council (2019). Report on the work of the Inspection Council and information on the work of the inspection services – first quarter of 2019. Skopje: Inspection Council.
- Inspection Council (2019). Report on the work of the Inspection Council and information on the work of the inspection services – second quarter of 2019. Skopje: Inspection Council.
- Inspection Council (2019). Report on the work of the Inspection Council and information on the work of the inspection services – third quarter of 2019. Skopje: Inspection Council.
- Inspection Council (2020). Written statement to the Inspection Council, given on 04.09.2020.
- Inspection Council (2020). Annual Report on the work of the Inspection Services for 2019. Skopje: Inspection Council.
- PE "National Forests". About the forests, website of the PE "National Forests". Available at <http://mkdsumi.com.mk/index.php> [28.10.2020]
- Criminal Code ("Official Gazette" No. 37/96, 80/99, 4/02, 43/03, 19/04, 81/05, 60/06, 73/06, 7/08, 139/08, 114/09, 51/11, 135/11, 185/11, 142/12, 166/12, 55/13, 82/13, 14/14, 27/14, 28/14, 41/14, 115/14, 132/14, 160/14, 199/14, 196/15, 226/15, 97/17 and 248/18)
- Krstveska, E. (2020), Interview with Evgenija Krstevska, water expert, interviewed on 25.06.2020
- Macedonian Media Service (2020). "Illegal logging of the forests, corruptive deals for personal gain", MMS.mk. Available at <https://mms.mk/137905/%D0%B4-%D0%B8%D0%B2%D0%B0%D1%82%D0%B0-%D1%81%D0%B5%D1%87%D0%B0-%D0%BD%D0%B0-%D1%88%D1%83%D0%BC%D0%B8%D1%82%D0%B5-%D0%BA%D0%BE%D1%80%D1%83%D0%BF%D1%82%D0%B8%D0%B2%D0%B-D%D0%B8-%D0%B7%D0%B4%D0%B5%D0%BB/> [28.10.2020]
- Ministry of Economy (2020). Registry of contracts for exploitation concessions – 10.01.2020. Available at <http://www.economy.gov.mk/Upload/Documents/Registar%20na%20Dogovori%20za%20koncesija%20za%20eksploatacija%2010.01.2020.pdf> [28.10.2020]
- Ministry of Environment and Physical Planning (2004). Spatial Plan of the Republic of Macedonia (2004-2020). Skopje: Ministry of Environment and Physical Planning.
- Ministry of Environment and Physical Planning (2005). Study on the Contaminated Areas. Skopje: Ministry of Environment and Physical Planning.

- Ministry of Environment and Physical Planning (2012). National Strategy on Waters 2012-2042. Available at http://www.moepp.gov.mk/?page_id=3197 [28.10.2020]
- Ministry of Environment and Physical Planning (2018). National Strategy for Protection of Nature 2017-2027. Skopje: Ministry of Environment and Physical Planning.
- Ministry of Agriculture, Forestry and Water Economy (2019). Annual Agricultural Report for 2018. Skopje: Ministry of Agriculture, Forestry and Water Economy.
- Ministry of Agriculture, Forestry and Water Economy, DIZ Report for the period January-June 2020, available at <http://data.gov.mk/dataset/162dd1e9-1696-4585-b52f-699f507fb6b0/resource/bb03eafe-615d-42f7-b84b-38025f64501c/download/02-116-3-10-07-2020-2020-.pdf> [30.10.2020]
- Ministry of Agriculture, Forestry and Water Economy. State Inspectorate for Forestry and Hunting, веб страница на MAFWE. Available at <http://arhiva.mzsv.gov.mk/node/22> [28.10.2020]
- Mirchovski, V. (2008). Protection of the Groundwaters in the Republic of Macedonia. Shtip: Faculty of Mining, Geology and Polytechnic.
- Mladenovska D., "The most polluted regions are those where there was mining and metallurgy", Porta 3. Available at <https://www.porta3.mk/najzagadeni-regioni-se-tie-kade-shto-imalo-rudarstvo-i-metalurgija/> [28.10.2020]
- Mojsovska, D. (2019). Corruption risk assessment for the needs of the strategic planning of the fight against corruption and conflict of interests in the Republic of North Macedonia. Skopje: State Commission for Prevention of Corruption
- Food and Agriculture Organization of the United Nations (FAO), "FAO supports the country's efforts to implement the National Forest Inventory", www.sf.ukim.edu.mk. Available at http://www.sf.ukim.edu.mk/vesti/FAO_rabotilnica_inventarizacija_14_II_2018.pdf [28.10.2020]
- Pandi, D. (2019). "The Balkan is waiting for a U-turn in the energy", dw.com. Available at <https://p.dw.com/p/3Gwzr> [28.10.2020]
- Petreska, E. (2019). "Ana Cholovic Leshoska, winner of Goldman: Small hydro power plants are still being planned in Mavrovo", Radio MOF. Available at <https://www.radiomof.mk/ana-cholovikj-leshoska-dobitnichka-na-goldman-vo-mavrovo-se-ush-te-se-planiraat-mali-hidrocentrali/> [28.10.2020]
- Petreska, A. (2020). Interview with Ana Petrovska, former State Secretary in the Ministry of Environment and Physical Planning, interviewed in September 2020
- Popovska, L. (2020). Written statement by Liljana Popovska, Green Institute, given in September 2020
- Rulebook on implementing the activities of the forest guard service and the format and content of the official Ledger on illegal actions and on determining of factual situation in the forest guard area ("Official Gazette", No. 112 from 03.07.2015)
- Rulebook on the rules for work of the forest police, ("Official Gazette" No. 112 from 03.07.2015),

- The Rulebook on the elements for risk assessment, as well as frequency of implementation of inspection supervision on the basis of the risk assessment ("Official Gazette" No. 247 from 2.12.2019)
- Draft Law on Protection of Soil. Available at https://ener.gov.mk/default.aspx?item=pub_regulation&subitem=view_reg_detail&itemid=17150 [28.10.2020]
- Professor in agricultural sciences (2020). Interview with a professor in agricultural sciences on 30.06.2020
- Sazdovska M., M. (2002). The role of the criminal police in protecting and promoting the environment. Skopje: Faculty of Security.
- Stojanovska, M. (2020). Interview with Prof. Makedonka Stojanovska Ph.D. Faculty of Forestry, Landscape Architecture and Ecoengineering "Hans M", interviewed on 01.07.2020
- Strategic document of DITI 2020-2022, available at <http://diti.gov.mk/> [30.10.2020]
- Constitution of the Republic of Macedonia adopted on 17.11.1991 and published in the "Official Gazette of the Republic of Macedonia" No. 52 from 22 November 1991
- Global Footprint Network. Ecological Footprint, www.footprintnetwork.org Available at <https://www.footprintnetwork.org/our-work/ecological-footprint/> [28.10.2020]
- The Conscious Challenge. Extinction & Animals, www.theconsciouschallenge.org Available at <https://www.theconsciouschallenge.org/ecologicalfootprintbibleoverview/extinction-animals> [28.10.2020]



address: St. Jurij Gagarin 17-1-1, 1000 Skopje
e-mail: info@iks.edu.mk
web: iks.edu.mk
phone: +389 2 3090 004