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ZBORNIK RADOVA

**ENVIRONMENTAL
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AND THE EUROPEAN
GREEN DEAL '22**

**VODICE, CROATIA
September 14th - 17th, 2022**

**OKOLIŠNE
PROCJENE
I EUROPSKI
ZELENI PLAN '22**

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14.- 17. rujna 2022.**

ENVIRONMENTAL ASSESSMENTS AND THE
EUROPEAN GREEN DEAL '22
OKOLIŠNE PROCJENE I EUROPSKI ZELENİ PLAN '22

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SECTION A / SEKCIJA A

**ENVIRONMENTAL IMPACT ASSESSMENT (EIA) /
PROCJENA UTJECAJA NA OKOLIŠ (PUO)**

Environmental impact assessment case study of the construction of a main gas pipeline, section Sveti Nikole-Veles

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Abstract

The Republic of North Macedonia undertakes intensive activities aimed at replacing fuels - fossil fuels with renewable energy sources and natural gas, to monitor the modern trends of exit from the energy crisis and environmental protection. Under the efforts of the National Gasification System in the country, i.e. the development of the existing gas infrastructure, the project for construction of the gas pipeline section Sveti Nikole – Veles was developed. The route of the gas pipeline starts east of the city of Sveti Nikole and ends south of the city of Veles with characteristics: DN 200, Ø 8” and length of 27.67 km.

The Environmental Impact Assessment process is intended to serve as a primary input for the decision-making process by Macedonian authorities and the IFI in charge (EBRD in this case), which have to approve the Project before its implementation. The decision-making process includes the preparation of all documentation in accordance with the EBRD’s Performance Requirement (PR), The National Legislation, and Good International Practice (GIP).

This EIA study identifies the potential negative impacts on the media in the environment from the relevant stages of the project i.e. pre-construction, construction, operations, and decommissioning and reinstatement, and proposes measures for their reduction or mitigation, i.e. improvement of the environment in the Environmental and Social Management Plan.

Keywords: Environmental Impact Assessment (EIA), gas infrastructure, potential negative impacts, mitigation measures, decision-making process

1. INTRODUCTION

This Study has been prepared in accordance with national Environmental Impact Assessment (EIA) procedures and environmental standards, EU Environmental Impact Assessment (EIA) procedures and environmental standards, and in accordance with the EBRD Performance Requirements (PRs).

In the event that international funding is required for a particular project, the screening phase should be used to categorize the project so as to guide the subsequent EIA process. As this Project involves the funding of isolated sections of the pipeline, which are a greenfield facility, the EBRD has preliminarily assigned it a Category A, and has commissioned an Environmental and Social (E&S) Assessment of the Project. The ESIA process is based on environmental baseline data at an appropriate level of detail. An EIA

should be seen as a process that starts at the Conceptual Design Stage of the Project and continues throughout project construction, operation, and decommissioning. It covers all relevant known direct and indirect environmental impacts and risks and foresees appropriate mitigation measures in relevant stages within the Project.

2. OBJECTIVE

An Environmental Impact Assessment (EIA) should be seen as a process that starts at the Conceptual Design Stage of the Project and continues throughout project construction, operation, and decommissioning.

During this process, several deliverables were prepared to guide the activities of the specific stage. During the scoping process potential environmental and social impacts were identified and possible alternatives to the project were evaluated. All reasonable alternatives were assessed according to their impact on the physical, biological and social environment, as well as existing cultural heritage. During the scoping phase, the content and scope of work in this EIA Study and the specialist studies, such as the Biodiversity Impact Assessment Study and Heritage Impact Assessment Study, for the selected final route of the gas pipeline section were determined. The stakeholders were informed about the planning of a Detailed Design and the development of the EIA, and they were also involved within the decision-making process. At the end of the scoping process, as a result of baseline data gathering, the Baseline Report was prepared which is part of the EIA Study. After the scoping process, the possible positive and negative impacts on the environment and society were analyzed and estimated, and the significant impacts from the project implementation were identified. At the end of the EIA process, mitigation measures were proposed that aim to remedy or compensate for the predicted adverse impacts of this Project.

All mitigation measures are towards fulfilling the recommendations of The European Green Deal which responds to these challenges. It is a new growth strategy that aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient, and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use.

3. METHODOLOGY

Applied approach and methodology for EIA Study preparation was as follows:

1. Baseline data gathering. It includes the Screening phase (desktop survey, field survey, and reporting stage) and Scoping phase. The Baseline Report considers the findings of the screening and scoping phases.
2. EIA process
3. Mitigation measures

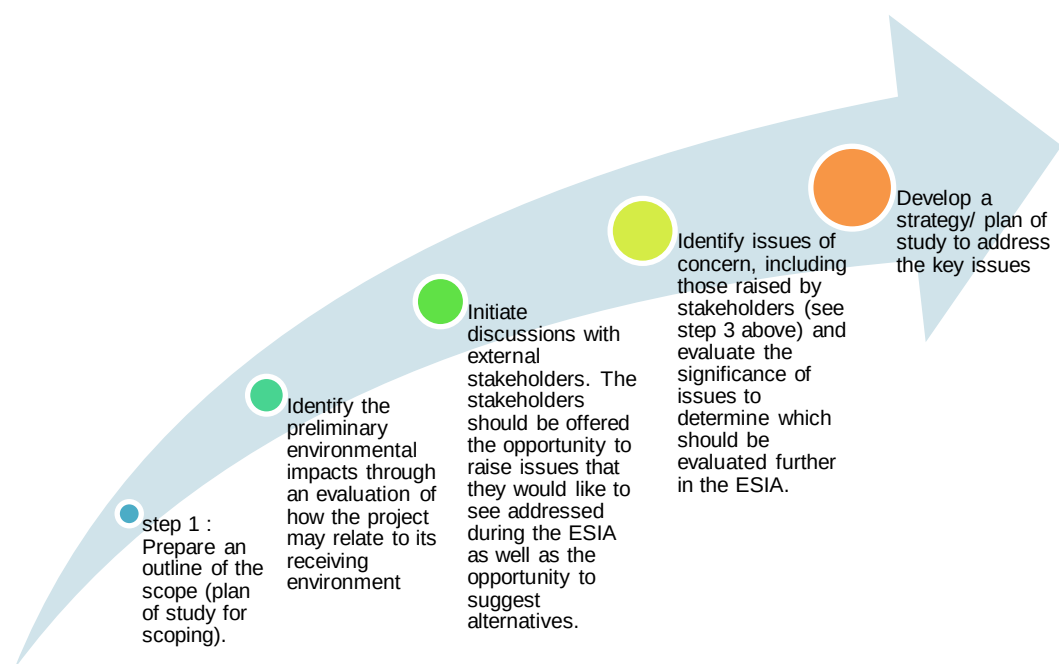


Figure 1. Steps in the scoping phase

The analysis of the environmental impacts and the impacts of the social environment takes into account potential changes in the bio-physical and socio-economic environment (given in the basic data, such as environmental media, demographic characteristics, the data relating to the health aspects of the population that lives and works in the project area, educational facilities, infrastructure, etc.), which may result from the proposed project activities. The level of change determines the significance of the change, which is assessed in terms of type of impact, reversibility, geographic extent, time when the impact occurs, duration, likelihood of occurrence, and intensity or magnitude. The overall rating refers mainly to the changes that are considered significant.

4. TECHNICAL DESCRIPTION

The route of the pipeline begins east of Sveti Nikole and north of the village Erdzelija as attachment after BS2 of the existing pipeline LOT 1 Klechovce Kavadarci continued the south-east of the region of Veles, where ends with Block Station, receptions cleaner station and MMRS Veles.

At the beginning, the Block Station (BS2) was selected at the location of the existing valve block on the gas pipeline DN500 LOT 1 Klechovce - Negotino, which Block Station was constructed specifically for the main gas pipeline in question. Besides the Block Station, at the beginning of the gas pipeline there is an Initial Cleaning Station Sveti Nikole, also at the end of the gas pipeline and in front of MMRS Veles, a Receiving Cleaning Station Veles is planned.

The project will include the following design facilities:

- Main gas pipeline DN 200, Ø 8" with a length of 27.67 km;
- Initial Cleaning Station Sveti Nikole at the beginning of the gas pipeline (km 0);
- Receiving Cleaning Station Veles at the end of the gas pipeline (km 27.5);

- From the gas pipeline, connections are predicted towards Sveti Nikole - DN 80 with a length of 387 m (km 6.39);
- The linear Block Station DN200 is predicted at km 27.5 (BS Veles);
- Block Station DN80 is predicted at the connection to Sveti Nikole;
- Cathodic protection system;
- Main measuring-regulation stations: MMRS Veles (25.000 – m³/h), MMRS Sveti Nikole (8.000 – m³/h).

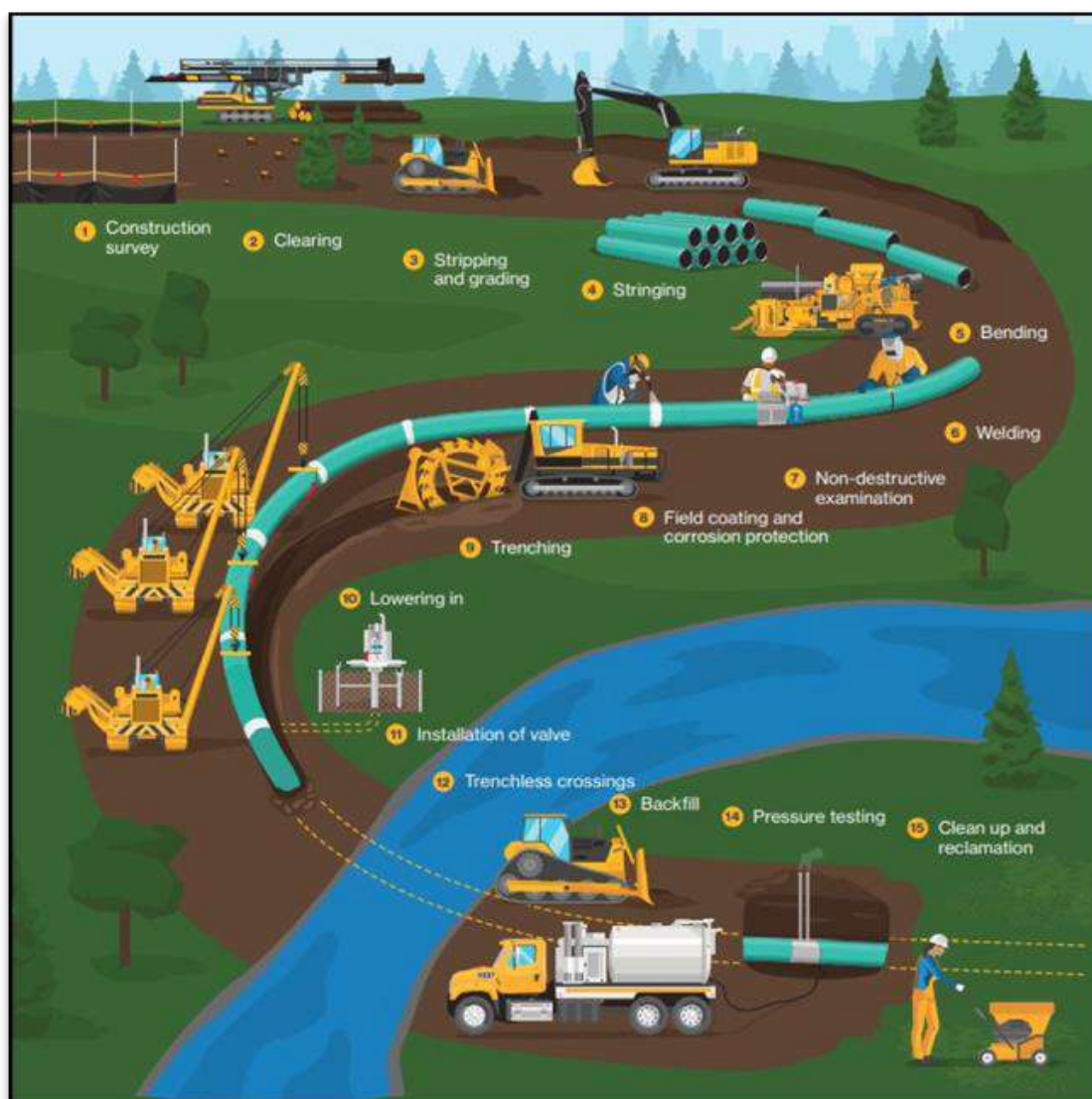


Figure 2. Gas pipeline construction phases



Figure 3. Map of the wider area of the main gas pipeline, Section Sveti Nikole-Veles

5. ENVIRONMENTAL IMPACTS ASSESSMENT AND MITIGATION MEASURES

5.1. Methodology and criteria for impact assessment and proposing mitigation measures

The structure of this chapter is focusing on the potential impacts for each project phase for the following components:

- Soil,
- Surface and groundwater,
- Air,
- Climate change,
- Waste generation,
- Noise and vibration,
- Biodiversity,
- Cultural heritage, and
- Cumulative impacts.

The impact analysis is done for two phases of the project activities:

- The construction phase of the gas pipeline section (which includes the preparatory and constructive phase), and
- The operational phase of the gas pipeline section (or operational phase).

The analysis of the environmental impacts and the impacts of the social environment takes into account potential changes in the bio-physical and socio-economic environment (given in the basic data, such as environmental media, demographic characteristics, the

data relating to the health aspects of the population that lives and works in the project area, educational facilities, infrastructure, etc.), which may result from the proposed project activities. The level of change determines the significance of the change, which is assessed in terms of type of impact, reversibility, geographic extent, time when the impact occurs, duration, likelihood of occurrence, and intensity or magnitude. The overall rating refers mainly to the changes that are considered significant.

All identified impacts from the project during the designing and construction phase were taken into consideration in compliance with current standards and using best practice techniques, thus reducing the potential impacts in the construction and operational phase.

Mitigation measures aim to remedy or compensate for the predicted adverse impacts of the Project, and are in response to legal requirements. Mitigation is both a very important principle and practice. It means that the Investor (NER) will do its best to reduce, neutralize and repair the impact of its activities on people and the natural environment. All mitigation efforts should, however, focus first on how to avoid environmental impacts in the initial stages of planning. This has much greater beneficial effect than remedial action later.

5.2. Assessed potential impacts on soil and proposed mitigation measures

Table 1. Soil - Construction phase

<i>Assessed potential impacts</i>
<i>The potential impacts on soil during the gas pipeline construction phase are as follows:</i> - <i>Change in the soil quality as a result of the introduction (emission) of pollutants that could impair the soil quality;</i> - <i>Possible contamination of soil can result in a pollution of ground and surface water through infiltration of pollutants or through their washing from the soil surface by atmospheric water;</i> - <i>During the preparation of the terrain, a thorough clearing of the route will be performed, which includes mechanical treatment / excavation of the soil;</i> - <i>Destruction of surface fertile soil.</i> <i>The significance of the impacts on the soils as a result of possible emissions that could impair the soil quality and destruction of surface fertile soil caused during the construction phase is low to moderate.</i>
<i>Proposed mitigation measures</i>
<i>In the construction phase, in order to reduce the impacts caused by changes in soil quality as a result of pollution, to take the following measures:</i> - <i>Careful planning of construction works in order to reduce the negative effects and ensure the prevention of soil pollution;</i> - <i>The excavated material, if possible, to be reused in the construction, or to be used as a layer for covering the trenches intended for the pipeline pipes. Excess material to be disposed of at a designated location / landfill designated by the Competent Authority;</i> - <i>To make the maximum possible reduction of the size of the construction sites, in order to minimize the land that suffers a negative impact, in order to reduce the destruction of the surface fertile soil;</i> - <i>Safe storage of building materials;</i> - <i>Vehicles and construction machinery are maintained in good condition to prevent unwanted leaks of fuels, oils and other pollutants;</i> - <i>Prohibits servicing of vehicles and machinery along the route of the pipeline. In case of emergency spills of fuels, oils and other harmful substances is mandatory prompt action, remediation of polluted areas and reinstatement in order to protect the soil;</i> - <i>In case of leakage of fuels, oils and other pollutants, the contaminated soil layer should be covered with absorbents, collected and disposed of and treated as hazardous waste. The Contractor to conclude a contract with a company authorized for handling hazardous waste that will take it from the site and will act further with it;</i>

- Refueling should be done in specially designated places away from watercourses. If this is not possible, provide portable tankers for refueling;
- In case of a breakdown of machinery and transport vehicles, fuels, oils and other pollutants not directly discharged to the ground, but it needs to adequately collect in appropriate containers and removed from the construction site;
- Placing mobile toilets in certain places on the site and concluding a contract with a licensed company that will install and clean;
- Construction debris should be regularly removed from the construction site and disposed of at an appropriate landfill.;
- Proper waste management, as provided in the appropriate subchapter (measures to improve waste management);
- Thorough cleaning of the construction site and its rehabilitation after the construction works are completed.

The Measures for prevention of erosion and landslides, as well as the protection of the embankments on watercourses, are given in the technical description, in the separate chapter - A set of erosion protection measures, as follows:

I. Measures to prevent erosion and landslides

- For securing the inner side of incisions from drained wastewater and prevention from water concentrated in them, it is required to construct drainage canals and the soil trenches need to have a cross section of not less than 0.02. Drainage canals intersected by the gas pipeline must be reinforced with crushed stone, as well as stone-filled drainage sites;
- The protection of the inclined plane obtained by making the incision needs to be protected as soon as possible, which would prevent possible erosion caused by surface water;
- The passages of the gas pipeline through ravines and ditches should be filled with mineral soil with appropriate consolidation, the leveled surface should be reinforced by sowing a permanent layer of plant soil. Within the boundaries of parts of active erosion of gorges and ravines should be performed protection of the incline surface by sowing grass. Within the boundaries of certain parts, appropriate partitions are constructed that prevent the occurrence of undermining of the ground, i.e. the occurrence of erosion;

II. Protection of embankments on watercourses

- When overcoming water obstacles, it is necessary to protect embankments as follows:
 - at the bottom of the riverbed:
 - Laying gabions
 - Filled with stone. The choice of size and weight of the stone should depend on the speed of the water
 - protection on the outside of embankments and slopes above the level protected by stone filling must be carried out with soil and plant it to grasslands;

Riverbeds of permanent and occasional water flows, streams, canals and ditches with water velocities greater than 0.6-0.7 m/s need to be renewed and strengthened after the construction works.

Table 2. Soil - Operational phase

Assessed potential impacts
In normal operation of the pipeline is not expected to have impacts on soil. If defects occur in the underground part of the pipeline, the reconstruction activities will be the same as the construction activities in the construction phase. In such a case, during the intervention of fault repair of underground facilities can lead to unwanted spillage of oils, fats and fuels from construction machinery and transport vehicles to be used on soils. In this case, a quick reaction is needed, which would collect all the toxic substances, which would not allow them to enter the soil, and thus the groundwater. The significance of the impacts on soils as a result of possible soil emissions caused during the exploitation phase is low.

Proposed mitigation measures
<i>In case of leakage or damage to the underground part of the pipeline, reconstruction works will be performed to repair or replace the damaged part of the pipeline. These reconstruction works are the same as construction works in the construction phase and accordingly, such impacts on the soil will be created. It is necessary to take appropriate measures as in the construction phase.</i>

5.3. Assessed potential impacts on surface and groundwater and proposed mitigation measures

Table 3. Surface and groundwater - Construction phase

Assessed potential impacts
<i>The potential impact on water (surface water and groundwater) during the gas pipeline construction phase is change in the surface and groundwater water quality as a result of pollution with pollutants. The significance of the impacts on water due to emissions in surface water or soil and indirectly in groundwater, caused in the construction phase is low to moderate.</i>
Proposed mitigation measures
<i>For the purposes of reducing the impact on the quality of the surface and groundwater as a result of the pollution caused by various pollutants, it is necessary to undertake the following measures:</i> - To set up mobile toilets in certain places on the site and to conclude a contract with a licensed company that will install and clean them; - To stop construction activities in case of unwanted spills of oils, fats and fuels on the soils, sprinkle with sand and remove of the contaminated soil layer, in order not to infiltrate the contaminants in the soil and reach the groundwater. Contaminated soil layer to be treated as hazardous waste; - To use the technical water for the sprayers for dust reduction with appropriate quality and sufficient quantity; - Washing of construction machinery should be done at a suitable location, outside the construction site; - Refueling in trucks and construction machinery, oil replacement and other things related to truck maintenance and machinery is prohibited in an area of 50 m on both sides of watercourses to which the route of the pipeline is approached or bridged; - Implementing measures to improve waste management; - The Contractor to provide water quality measurements, before and during the construction phase; - Crossing under rivers will be done by digging the bed of the watercourse, taking into account the results of geological investigations. The project elevation of the upper edge of the pipeline is more than 1.50 m below the river bottom; - If during the construction of the gas pipeline under the rivers is necessary to temporarily divert the rivers of Svetinikolska River and Sariderska River to carry out dry excavation, in order to prevent soaking and cleaning of the pipes, there will be a change in the hydrological regime, the erosive processes and turbidity of rivers, and the migration of river fauna (fish of other freshwater species) will be disrupted; - To prevent turbidity of the surface watercourses under which the route will pass, it will be necessary to install straw bales that will serve as a filter for purification of wastewater from digging; - When overcoming water obstacles, it is necessary to protect embankments as follows: • at the bottom of the riverbed: - Laying gabions - Filled with stone. The choice of size and weight of the stone should depend on the speed of the water

- *protection on the outside of embankments and slopes above the level protected by stone filling must be carried out with soil and plant it to grasslands;*
- *Riverbeds of permanent and occasional water flows, streams, canals and ditches with water velocities greater than 0.6-0.7 m/s need to be renewed and strengthened after the construction works;*
- *If the flow of the riverbed is diverted, it can be done with the help of dams or with the use of pumps. In both cases it is necessary:*
 - *Works to be performed in the summer and on dry days*
 - *Previously to get approval from authorities*
 - *The duration of deviations should be limited to the shortest possible time so as not to disturb the aquatic ecosystem and the migration of species across the river;*
- *Riverbeds of permanent and occasional water flows, streams, canals and ditches with water velocities greater than 0.6-0.7 m/s need to be renewed and strengthened after the construction works;*
- *In situations where the pipeline section crosses the small water channels the Constructor should install concrete pipe culverts for smooth water permeability during the construction and for movement of construction machinery. After the completion of the construction works these concrete pipe culverts should be removed from the site;*
- *To perform the hydro test, the Contractor must:*
 - *Provide water of adequate quality (in accordance with current standards). Potable water is widely accepted as hydro test water for steel pipes, provided the water is not recycled for other hydrotest and limited time of residence water within pipeline and vessel under test;*
 - *If the Contractor cannot provide sufficient amount of potable water for the hydro test, then the water that will be used for hydro test must be chemically treated to ensure its adequate quality. It is recommended to use as cleanest water as possible - demineralized, steam condensate, or potable treated;*
 - *In order to minimize the water intake, it is necessary the Contractor to use appropriate amount of water (the required quantities to be calculated and defined within the Procedures for Construction);*
 - *The Contractor is required to conduct a wastewater quality examination and, depending on the result, primarily to ensure its reuse for the same purpose, or, if necessary, to treat it first to ensure adequate water quality for conducting a hydro test, and then to ensure its reuse. The Contractor should provide wastewater quality examination, and if it is necessary to treat the wastewater its treatment as well, by an accredited laboratory.*

Table 4. Surface and groundwater - Operational phase

<i>Assessed potential impacts</i>
<i>During the operational phase of the gas pipeline system, impacts on surface and groundwater are not expected, except in case of accident / pipeline failure. In such a case, during the intervention to eliminate the defect of the underground facilities, there may be an unwanted spill of oils, fats and fuels from the construction machinery and transport vehicles that will be used, on the soils and indirectly in the groundwater. In this case, a quick reaction is needed, which would include collection of all the toxic substances, in order not to enter the soil, and thus in the groundwater as well.</i> <i>The significance of impacts on water as a result of possible emissions into soil and indirectly underground water caused in the exploitation phase is low to moderate.</i>
<i>Proposed mitigation measures</i>

During the regular operation of the gas pipeline system, no impacts on surface and groundwater are expected. If during an accident/defect of the pipeline, there is an unwanted leakage of oils, fats and fuels from the construction machinery and transport vehicles that will be used, then in order to protect the soil and groundwater from potential contamination, the following measure should be applied:

To stop construction activities in case of unwanted spills of oils, fats and fuels on the soils, sprinkle with sand and remove of the contaminated soil layer, in order not to infiltrate the contaminants in the soil and reach the groundwater. Contaminated soil layer to be treated as hazardous waste.

5.4. Assessed potential impacts on air and proposed mitigation measures

Table 5. Air - Construction phase

Assessed potential impacts
The potential impacts on the air during the gas pipeline section construction phase are as follows: - Occurrence of fugitive dust emissions from clearing the terrain and cleaning of greenery (trees and shrubs), loading and transport of waste; - Occurrence of fugitive dust emission during loading and unloading of construction materials, soil waste; - Exhaust emissions from construction machinery and transport vehicles. The significance of the effect - air pollution due to emission of pollutants caused by construction activity is low to moderate.
Proposed mitigation measures
The following measures, proposed for the purposes of mitigating the environmental impact, can reduce the air pollution during the construction phase of the gas pipeline: <u>Measures for exhaust gas reduction:</u> - Use of proper construction machinery and transport vehicles with the declared emission of exhaust gases determined during their homologation; - Use of standardized fuels for mechanization and shutdown of mechanization engines when not in use. <u>Dust reduction measures:</u> - During dry periods to carry out spraying locations susceptible to emissions of fugitive dust with technical water. For this purpose, use sprayers that do not contain chemicals, and are water-based; - Limiting the speed of vehicles on the construction site; - Vehicles that will transport aggregate material and excavated soil to be permanently covered; - Route planning, loading and unloading factors are of great importance in reducing fuel consumption and exhaust emissions and fugitive dust emissions.

Table 6. Air - Operational phase

Assessed potential impacts
All the possible emissions and impacts that may occur during the operational phase of the gas pipeline section are in case of malfunctions and accidents of pipeline component as follows: - Operational emission: air emissions from normal or planned operating activities where small volumes of natural gas is possible to be released to the atmosphere from the gas network components; - Fugitive emissions: 1. Fugitive emissions from permeation of pipelines; 2. Fugitive emissions due to connections (flanges, pipe equipment, valves, joints, seals, etc.).

- Vented emissions which are usually identified during commissioning, decommissioning, renewal and maintenance of pipeline systems, regular emissions of technical devices and emissions from start-stop operations;

- Regular emissions of technical devices i.e., from combustion of gas in boilers located in the Main measuring - regulation station (MMRS).

The significance of the impact on air due to emission of pollutants caused in the phase of construction is **low to moderate**.

Proposed mitigation measures

In the phase of normal operation of the pipeline does not expect negative impacts on air. Only in case of leakage or damage to the underground part of the pipeline, reconstruction works will be performed to repair or replace the damaged part of the pipeline, which are the same as the construction works in the constructive phase.

Measures that should be taken into account to reduce fugitive emissions along the pipeline in operational phase refer to:

- The selected equipment and design of the compressor station and metering stations to be in compliant with Best Available Techniques (BAT);
- Make sure that valves and flanges are installed correctly;
- Establish and follow a valve and flanges preventive maintenance program;
- Replace old, outdated valves and flanges;
- Install low emissions valve packing;
- Install monitoring system for leaks;
- Replace high-bleed pneumatic devices with low-bleed ones;
- Implement a directed inspection and maintenance (DI&M) program at compressor stations.

5.5. Assessed potential impacts on climate change and proposed mitigation measures

Table 7. Climate change - Construction phase

Assessed potential impacts
The potential impacts on the climate change during the construction phase of the gas pipeline section are as follows: - Impact on the local microclimate; - Greenhouse gas emission from the operation of the construction machinery, equipment and transport vehicles; - Greenhouse gases from waste biomass. The significance of the impacts on climate change during the construction phase of the gas pipeline section is insignificant to low.
Proposed mitigation measures
During the construction phase, for the purposes of reducing the greenhouse gas emission from the work related to the construction machinery, equipment and transport vehicles, it is necessary to undertake the following measures: - Application of good construction practices for a more efficient performance of the construction works, thereby reducing the fuel consumption and the greenhouse gas emission; - Using proper construction machinery, equipment and transport vehicles for the purposes of avoiding any increase in the fuel consumption, thereby also preventing any increase in the greenhouse gas emission.

Table 8. Climate change - Operational phase

Assessed potential impacts
The potential impacts on the climate change during the operational phase of the gas pipeline are fugitive emissions which are as a result of leaks through the safety and exhaust valves, as

well as a result of gas leakage situations due to the violation of the impermeability of the pipeline.

The significance of the impacts on climate change during the operational phase is **low**.

Proposed mitigation measures

During the operational phase, it will be required to conduct a regular control of the safety devices for overpressure relief, whereby natural gas discharge will be reduced. Furthermore, it is necessary to conduct regular control of the impermeability of the gas pipeline in order to minimize any undesired natural gas discharge into the atmosphere.

5.6. Assessed potential impacts from waste generation and proposed mitigation measures

Table 9. Waste generation - Construction phase

Assessed potential impacts
The potential impacts by waste generation during the construction phase of the gas pipeline section is from the following types of waste: - Municipal waste; - Excess of excavated soil and sand; - Biodegradable waste; - Packaging waste; - Construction and demolition waste; - Remains of steel pipes; - Insignificant amounts of certain fractions of hazardous waste. The significance of the impacts from the generated waste on all media, caused in the construction phase is moderate.
Proposed mitigation measures
In order to improve the manner of waste management during the construction phase, in accordance with the legislation in the field of waste management, the following measures are recommended: - Prepare a Waste Management Plan (WMP); - It is recommended that the inert waste will be stored at a landfill for such waste, the location of which will be determined in advance (as a possibility for the existing landfill for this type of waste to occur, or if it exists at all) manages a company for handling this type of waste, with which the Contractor of the construction activities will conclude a Contract; - The humus that will be removed in the thickness indicated in the project should be stored in a temporary landfill for usable material, from where it will be used in the finishing works to arrange the space of the location. The excavation of the humus should be done in favorable weather conditions, when it is not raining. It is necessary for the Operator, i.e. the Contractor of the construction activities to take care that the humus is left in a special place and to be secured from disintegration and contamination so that it can be used in the final arrangement of the space; - The packaging of the materials that will be used in this phase should be properly selected depending on their composition (cardboard, paper, plastic, metal, biodegradable waste, etc.) and the selection to be made at certain locations along the route, fenced, protected from external influences and adapted for storage of this type of waste. Authorized company, with which the Contractor of the construction activities will conclude a Contract, should perform their regular raising and removal; - As for the plastic packaging of motor oils, which is hazardous waste, it is recommended that it will be temporarily stored in a specially designated place for this type of waste and that the Contractor conclude a contract with a company authorized to handle hazardous waste to take over the site and will deal with it further. This company will have to take over and continue to deal with possibly removed contaminated soil layer with oils, fats and fuels, in case of their spill into the soil;

- When changing the engine oil, as hazardous liquid waste, it is necessary to store the used oil in separate cans and store it until it is purchased by authorized companies, which would perform their further recycling;
- Metal waste to be sold to purchasing companies;
- The felled trees and biodegradable waste to be offered to the local population for heating, construction activities or as a basis for composting.

Table 10. Waste generation - Operational phase

Assessed potential impacts
The potential impacts by waste generation during the operational phase of the gas pipeline section is from the following types of waste: - Biodegradable waste from the maintenance of the route; - Waste spare parts linings and paints for maintenance of above-ground and underground facilities; - Waste generated in the event of failure of underground pipeline. The significance of the impacts by waste generation during the operational phase is low.
Proposed mitigation measures
In order to improve the manner of waste management during the operational phase, the following measures are recommended: - The vegetation waste should be treated in the same way as during the clearing of the vegetation during the construction phase; - The waste that will be created from the intervention of the overhead parts of the gas pipeline (waste spare parts from the Block Stations, etc.) to be disposed of at the municipal landfill; - In case of leakage or damage to the underground part of the pipeline, construction works will be performed to repair or replace the damaged part of the pipeline and the generated waste should be treated the same as in the construction phase; - Do not dispose waste near watercourses such as rivers Svetinikolska River and Sariderska River.

5.7. Assessed potential impacts from generation of noise and vibration and proposed mitigation measures

Table 11. Noise and vibration - Construction phase

Assessed potential impacts
The potential impacts from noise during the gas pipeline construction phase will occur as a result of the work of construction machinery, transport vehicles that will be engaged, as well as the equipment used on construction sites. The significance of the impact - increased noise, vibration and non-ionizing radiation in the construction phase is low to moderate.
Proposed mitigation measures
The mitigation measures for the impacts caused by noise and vibration during the construction phase comprise the following: - Careful planning of construction activities (to take place only during the day from 7am to 5pm and with a certain time dynamics) and application of the principles of good construction practice which practically means efficient operation and shortening the duration of construction activities, accompanied by increased noise, as little as possible, so that these negative impacts are as short as possible; - Control of construction methods, used mechanization and regular maintenance of equipment in order to minimize possible noise levels (avoid equipment that emits noise above 90 dB) and use sophisticated equipment; - Use of modern "quiet" work equipment that meets the requirements of Directive 2000/14/EC of the European Union on the emission of noise from the use of work equipment in outdoor conditions;

- Proper maintenance of compressors, ventilation fans with their lubrication and installation of parts for sound deadening;
- Turn off the construction machinery when not in use;
- Avoiding the use of loud beeps and restricting the speed of vehicles carrying some building materials and equipment;
- Activities such as demolition, excavation and operations affecting the terrain to plan not occur in the same time period. Unlike noise produced total level of vibration can be significantly less when every source of vibration is separate;
- Monitoring vibrations during the performance of critical business processes. In case of damage to nearby buildings as a result of vibrations created by construction works, the damaged buildings should be repaired or compensation should be paid.;
- The surrounding population should be informed about the activities that will generate noise, in order to reduce the anxiety of the people;
- Workers who operate equipment that generates noise levels greater than 80 dBA permanently within 8 hours or more should use earmuffs.

Table 12. Noise and vibration - Operational phase

Assessed potential impacts
The potential impacts by noise and vibrations during the operational phase of the gas pipeline are not expected to occur in normal operation. In case of leakage or damage to the underground part of the pipeline, construction works will be performed to repair or replace the damaged part of the pipeline. In that case, the construction activities are the same as the activities in the construction phase. The significance of the impact - increased noise, vibrations and non-ionizing radiation in the operational phase is low .
Proposed mitigation measures
In case of leakage or damage to the underground part of the pipeline, construction works will be performed to repair or replace the damaged part of the pipeline. These construction works are the same as in the construction phase and accordingly, they will create such noise and vibration. It is necessary to take appropriate measures as in the construction phase.

5.8. Assessed potential impacts on biodiversity and proposed mitigation measures

Table 13. Biodiversity - Construction and Operational phase

Assessed potential impacts
The potential impacts on biodiversity are as follows: IMPACTS ON THE HABITATS Construction phase: - habitat loss (direct destruction) – low to moderate significance Operational phase: - habitat fragmentation – low significance IMPACTS ON FLORA AND FAUNA Construction phase: - Disruption of the nesting cycle (birds) – moderate significance - Alteration, impairment or destruction of the habitat of amphibians and reptiles – low significance Operational phase: - Access to natural resources – insignificant IMPACTS ON PROTECTED AND DESIGNATED AREAS Construction phase: - Impact on habitat fragmentation and bird disturbance – low to moderate significance

Operational phase:

- Impact on habitat fragmentation and bird disturbance – **insignificant**

IMPACTS ON BIOCORRIDORS

The gas pipeline route does not intersect with any of the core areas, but it does cross the steppe like corridor Ivankovci-Karatmanovo.

IMPACTS ON CRITICAL HABITATS

Construction impacts to CH (pseudo-steppe) may impact 1.63 ha, which represents $\approx 0.006\%$ of the habitat's EAAA (25,225 ha). This impact is not considered likely to compromise the habitat's integrity across the EAAA given the relatively small area.

There are no global estimates for 6220* available, but the habitat occurs mainly in Europe. European estimate (EU only) of 6220* – 706,122 ha. Mediterranean estimate (EU only) – 693,747 ha (98% of EU total), there is no National estimate of 6220*. Habitat of pseudo-steppe vegetation in AoI is approximately 1.63 ha, which is 0.2% of the European estimate. This impact is not considered likely to compromise the habitat's integrity. The impact magnitude is therefore considered to be low.

Considering the very high sensitivity attributed to the pseudo-steppe EAAAs and the low impact magnitude expected, the overall significance to this habitat will be **moderate**.

IMPACTS ON PRIORITY BIODIVERSITY FEATURES

Construction impacts to hill pastures and riparian belt (PBF) are expected to result in a loss of 18.5 ha, which represents $\approx 0.4\%$ of the habitat's EAAA. This impact is not considered likely to compromise the integrity of habitat across the EAAA given these low losses. The impact magnitude to this PBF is therefore considered to be low.

Considering the high sensitivity attributed to the hill pastures EAAAs and the low impact magnitude expected, the overall significance to this habitat will be low.

Construction impacts to riparian willow belts (PBF) are expected to have impact of 1.65 ha, which represents $\approx 0.1\%$ of the habitat's EAAA. This impact is not considered likely to compromise the integrity of habitat across the EAAA given these relatively low losses. The impact magnitude to this PBF is therefore considered to be low.

Considering the high sensitivity attributed to the riparian belt EAAAs and the low impact magnitude expected, the overall significance to this habitat will be **low**.

9 species were assessed as being Priority Biodiversity features in line with PR6. Impacts identified include direct mortality from the construction works, from fragmentation of habitats, visual and noise disturbance and impacts from pollution.

Proposed mitigation measures**I. Pre-construction phase**

Before the start of the construction activities the route must be fully surveyed for the up-to-date baseline condition and to identify the presence / potential presence of notable species.

SPECIFIC MITIGATION FOR PBF/CH HABITATS

- Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea Grasslands & Hill Pastures with Sparse Shrubs

Pre-construction surveys in Spring to Autumn will determine/confirm the extent of these habitats. Because it is habitat with grass (steppe vegetation), after construction it is best to be left on the natural regeneration - local species of steppe plants to settle instead to be planted by the man.

- Riparian Willow - Poplar belts

There would be re-planting of scrub in some areas or vegetation would be allowed to colonize naturally as appropriate. All riparian works and river crossing should follow the prescriptions of the water chapter of the ESIA.

SPECIFIC MITIGATION FOR PBF ANIMAL SPECIES

- Agile Frog (*Rana dalmatina*)

If the ponds are to be destroyed, drainage should be conducted via pumping with a suitable pump filter (to prevent animals and debris being drawn into the pump).

Translocation of amphibians away from works area. All animals present within the pond should be moved to appropriate habitats away from the works. If possible, pond drainage should be avoided April-September. The translocation of specimens identified in work zone into favorable habitat areas identified adjacent to the works. Checks to be conducted by Biodiversity

Specialists ahead of the excavation. Routes will be maintained properly in order to avoid creation of puddles capable of attracting amphibians; Conduct standard measures to limit water pollution and soil.

- Yellow-Bellied Toad (*Bombina variegata*)

Identification and mapping of areas occupied by this species prior to the commencement of clearance. River drainage to be avoided April-September where possible. Checks to be conducted by Biodiversity Specialist ahead of excavation. the active working corridors will be maintained properly in order to avoid creation of puddles capable of attracting amphibians; Conduct standard measures to limit water pollution.

Prohibition of access to Nezirlik Ardi of all workers.

- European Pond Turtle (*Emys orbicularis*)

The working areas should be carefully searched by the Biodiversity Specialist prior to the commencement of the work; any individuals found to be carefully transported outside risk areas in habitats matching their ecological requirements; any individuals found on site to be relocated to favorable habitats.

- Common tortoise (*Testudo graeca*) and Hermann's Tortoise (*Testudo hermanni*)

A morning trench check should be performed, if trapped tortoises are found, a ramp should be installed within open trenches to allow these species to escape.

- Imperial eagle (*Aquila helica*) and Egyptian vulture (*Neophron perconopterus*)

Given that the pipeline is envisaged to traverse the feeding habitats of all three bird species and that it is in close proximity to a handful of established nests of Eastern Imperial Eagles, it is imperative to monitor the impact of disturbance and potential changes to feeding areas for the priority species during the breeding season (from March till September for the Lesser Kestrel and the Egyptian Vulture), and throughout the year for the Eastern Imperial Eagles (juveniles and immature birds tend to stay close to their nests all over the year before undertaking any migration route). This monitoring ought to be implemented in the entire area of Ovche Pole IBA, and it should survey nesting territories (occupancy, breeding success) and feeding range (especially if there are any changes).

Felling of trees should be undertaken between September and February inclusive, felling of trees during the breeding bird season (March to August inclusive is to be avoided). Noisy work (i.e. hammering is not permitted in these areas from March to August inclusive). Dead wood should be retained on site. RoW to be permitted to be colonized naturally.

Check for nest must be done prior to construction work.

II. Construction phase

- Prohibition of access to Nezirlik Ardi (near km 21+500.00)

- Plan to avoid disturbing pseudo-steppe habitat EUNIS Code E1.3, N2000 code 6220* at Kanda Geoglyph (near km 8+000.00)

As a general rule, traditional extensive management systems aimed at maintaining a mosaic-like landscape pattern are suitable for most plant and animal species linked to the 6220* habitat type (González & San Miguel 2004, Pardini et al. 2004, Alrababah et al. 2007).

During operational phase NER have a responsibility to ensure it doesn't cause further harm to the environment. Leaks, emissions, and other damage from pipelines can destroy vegetation, harm local wildlife, and add to local water and air pollution levels. Operators can help avoid these issues by strict inspection and maintenance routines.

- River protection measures for all stream crossings

In order to preserve the riverine and aquatic habitats, and maintain water quality in the river as far as possible, the following provisions should be included in the construction contract documentation:

- No access or works in any river channel or dry watercourse unless absolutely necessary to construct the works;
- No parking or storage of any equipment within 100 m of river channels or dry watercourses;
- Stabilize construction entrance to prevent the transport of sediment from the work site;
- Preparation of the Revegetation and Rehabilitation Plan of riverine habitat;
- Revegetation to be conducted with willow and poplar trees which are an effective ecological restoration, in both structure and function to stop erosion processes of the riverbed slopes;

- River flow must be maintained at all times. If access is required to the flow channel, measures should be taken to divert the flow in order to bypass the works;
- No storage or discharge of any wastewater, effluent, excavation soil or any other material may be made to the river channels or watercourses;
- All measurements given in the Detailed Design, in order to prevent any kind of possible pollution of the riverbeds and contact with groundwater, should be fully respected and implemented during construction;
- Contractor should be prepared for unlike events like fires; and
- Any incident pollution event in the watercourses that could be made by the Contractor, will be supervised by PIU/Supervising Engineer and MoEPP.

The Contractor should be required to prepare a detailed method statement for working in all watercourses, for approval by the PIU/Supervising Engineer.

In addition, a Biodiversity Specialist should be engaged to monitor the vegetation clearance/excavation works. The Biodiversity Specialist should supervise a pre-construction clearance of any mobile animals (e.g. tortoises) which should occur immediately before the beginning of the construction activities in the area.

The success of these measures will be captured through ongoing water quality monitoring.

- Protection measures at IBA

As noted, the IBA is important for trigger species. In order to minimize damage to nesting birds at the IBA, the Contractor should follow these activities along this stretch:

- Engaging experienced ornithologist to monitor;
- Construction work to be done from September till May (to avoid breeding period);
- Prohibition of removal of vegetation during the breeding period of Imperial Eagle in the spring, from the end of May to the middle of June;
- No entering of any forested areas except those strictly necessary for construction of the permanent works;
- No clearing any forest vegetation except within the working corridor;
- No excavating any material for fill or aggregate, or any other purpose except within the corridor of the permanent works; and
- Not allowing construction workers to enter the forested areas for any purpose, or to search for nests or eggs.

III. Operational phase

- Rehabilitation and restoration measures

Rehabilitation and restoration actions are taken to assist in the recovery of a feature that has been degraded, damaged, or destroyed.

- Rehabilitation at river crossings, especially Svetinikolska River crossing

Once the construction works in the river channels are complete, the areas should be rehabilitated by the placement of soil, willow/poplar trees to allow regrowth of natural vegetation. The assistance of Botanical Specialists and a Forestry Expert should be sought to guide the rehabilitation works.

The area should be monitored quarterly following site handover, to establish whether regrowth of vegetation is occurring. If not, additional measures: seeding, transplanting of saplings, import of additional topsoil, etc. should be taken to encourage regrowth of riverine vegetation. Afforestation activities to be performed in line with the No net loss principle, i.e. preparation of LALRP. Riparian vegetation along the Svetinikolska River to be restored, in order to achieve No Net Loss.

Re-planting of the PBF riparian habitats will take place within and around the EAAAs (cannot be re-planted directly on top of the pipeline for safety reasons). The materials required for replanting will be included in the Bill of Quantities. The land required for replanting will be secured by NER, and will be maintained as the specified habitat type in the long-term (i.e. for the lifetime of the Project), through commitments secured from the landowners by NER. The Detailed Design will include sufficient land for revegetation at a minimum of 2:1 revegetation ratio. This includes Priority Biodiversity Feature species.

- Rehabilitation at other areas

The Contractor should consult Public Enterprise 'Nacionalni Shumi' for the trees from field-protective belts in the vicinity of Sveti Nikole that will be removed. Due to their ecosystem services, these belts need to be rehabilitated.

All other areas where vegetation was cleared, should be soiled and rehabilitated by planting with appropriate native vegetation or left for natural regrowth (especially at certain locations as mentioned above). Area should be monitored quarterly for following site handover, to establish whether regrowth of vegetation is occurring. If not, additional measures: seeding, transplanting of saplings, import of additional topsoil, etc. should be taken to encourage regrowth of vegetation.

A Biodiversity Specialist should oversee this.

- Plan to control invasive species

Within the expropriation area, all individual trees and saplings of Robinia pseudoacacia will be located and cut, with the stumps killed. Fallen trunks and branches will not be removed, to provide micro-habitats to specialized species. This work will be overseen by a Biodiversity Specialist. When cutting trees, the best season to do so is in August which gave the lowest volume of sprouts.

The tree of heaven (Ailanthus altissima) and the indigo bush (Amorpha fruticosa) were also observed along the pipeline corridor.

Invasive Ailanthus altissima trees (including saplings) should be eliminated (uprooting all individuals) when clearing vegetation prior to construction works. Indigo bush (Amorpha fruticosa) can be controlled by repeated defoliation and digging and severing the root 3 to 4 inches below the crown.

Monitoring post-construction by NER will ensure that newly restored areas are not inundated with non-native species from adjacent areas.

5.9. Assessed potential impacts on archaeological and cultural-historical heritage and proposed mitigation measures

Table 14. Cultural heritage - Construction phase

Assessed potential impacts
<i>The potential impacts on cultural heritage during the gas pipeline section construction phase are as follows:</i> IMPACTS ON CHANCE FINDS AND KNOWN ARCHAEOLOGICAL SITES - Potential Loss or Partial Damage to Chance finds and Undiscovered Below-Ground Heritage Assets as a result of the construction activities – moderate significance - Potential Loss and Partial Damage to known archaeological sites as a result of the construction activities – moderate significance - Access to the archaeological sites – insignificant IMPACTS ON BUILDINGS AND COMPLEXES WITH CULTURAL HERITAGE VALUE - Potential Loss or Partial Damage to the Buildings and cultural heritage Complexes in the AoI of the projected gas pipeline – insignificant - Access to the cultural buildings and complexes – insignificant IMPACTS ON CULTURAL LANDSCAPES - Partial Defragmentation of the integrity of the visual effects, of the cultural landscapes- Change in the elements, characteristics, character, and qualities of the landscape as a result of development – moderate significance - Deteriorated panoramic views of the cultural heritage monuments – low significance IMPACTS ON INTANGIBLE CULTURAL HERITAGE AND ASSOCIATIONS - Potential Loss or Partial Loss to the intangible cultural heritage and associations (religious rites, tradition, living cultural heritage) in the AoI of the projected gas pipeline – insignificant - Access to the churches and church complexes for religious rites and traditions – insignificant
Proposed mitigation measures

In the pre-construction and constructive phase, in order to reduce the impacts caused by potential loss or partial damage to chance finds and known archaeological sites, the following measures will be implemented:

- *Before the construction of the gas pipeline section, qualified Cultural Heritage Expert team from authorized institution to make survey of the planned route of the gas pipeline section (as stated in the Report No. 08-73/3 from 25th March 2021 from the National Conservation Center of Cultural Heritage-Skopje, North Macedonia);*
- *Qualified Cultural Heritage Expert from authorized institution to be present during the construction activities, especially during the activities near the archeological site Kula (km 24+000.00) which is placed on the route of the planned gas pipeline (according to Report No. 08-73/3 from 25th March 2021 from the National Conservation Center of Cultural Heritage-Skopje, North Macedonia);*
- *Careful planning of construction works in order to reduce the negative effects and ensure the prevention of damage of the chance finds and known archaeological sites;*
- *To make the maximum possible reduction of the size of the construction sites, so the negative impact will be minimized, in order to reduce the loss or partial damage to chance finds and known archaeological sites;*
- *To make demarcation of known archaeological sites as required, to avoid indirect disturbance;*
- *To develop a Plan for Protection of Cultural Heritage;*
- *To make the maximum possible reduction of vehicle and machinery activities, as limited to the areas that have been subject to heritage clearance or previous disturbance;*
- *To make the maximum possible reduction of earthworks in the AoI, as limited to the areas that have been subject to clearance or previous disturbance;*
- *Workers should undergo basic training on the procedure for the cultural value of the AoI and the region, in order to identify the chance finds and archeological sites assets during the construction works;*
- *Implementation of the Law on Protection of Cultural Heritage ("Official Gazette of the Republic of Macedonia" No. 20/04, 71/04, 115/07, 18/11, 148/11, 23/13, 137/13, 164/13, 38/14, 44/14, 199/14, 104/15, 154/15, 192/15, 39/16, and 11/18), Article 49-a, related to management of monumental units and cultural landscapes (in accordance with the Macedonian legislation and EBRD PR8 requirements).*

In order to reduce the impacts caused by potential loss or partial damage to buildings and complexes in the AoI of the projected gas pipeline section to take the following measures:

- *Careful planning of construction works in order to reduce the negative effects and ensure the prevention of damage of the buildings and complexes;*
- *To make the maximum possible reduction of the size of the construction sites, so the negative impact of the cultural heritage assets that suffers will be minimized, in order to reduce the loss or partial damage to buildings and complexes with cultural value;*
- *To make demarcation of cultural heritage sites as required, to avoid indirect disturbance;*
- *Qualified Cultural Heritage Expert from authorized institution to be present during the construction phase;*
- *To make the maximum possible reduction of vehicle and machinery activities, as limited to the areas that have been subject to heritage clearance or previous disturbance;*
- *To make maximum possible reduction of generation of dust and vibration by operation of heavy machinery, to make ongoing monitoring of dust and vibration levels and inspection of heritage places in proximity;*
- *Implementation of the Law on Protection of Cultural Heritage ("Official Gazette of the Republic of Macedonia" No. 20/04, 71/04, 115/07, 18/11, 148/11, 23/13, 137/13, 164/13, 38/14, 44/14, 199/14, 104/15, 154/15, 192/15, 39/16, and 11/18), Article 49-a, related to management of monumental units and cultural landscapes (in accordance with the Macedonian legislation and EBRD PR8 requirements);*
- *Workers should undergo basic training on the procedure for the cultural value of the AoI and the region, in order to identify the cultural heritage assets during the construction works.*

For prevention and reduction of negative effects with the appearance of the gas pipeline section in the line of the view and to reduce the impacts caused on cultural landscapes in the AoI of the projected gas pipeline section the following measures will be implemented:

- *Low-profile constructions, use of environmental coloration or advanced camouflage techniques to limit visual effects, screening, proper sighting and location to maximize the use of topography and vegetation;*
- *The alternative route is analyzed as to make less impact on the cultural landscape;*
- *Careful planning of construction works in order to reduce the negative effects and ensure the prevention of the loss and defragmentation of the visual effects on the cultural landscapes;*
- *Workers should undergo basic training on the procedure for the cultural value near the AoI and the region, in order to identify the cultural heritage assets and landscapes during the construction works;*
- *After the construction, to carry out the activities for rehabilitation of the site, excavations, sand loans and access roads, by planting grass and trees or other appropriate measures;*
- *Implementation of the Macedonian legislation and EBRD PR8 requirements.*

During the pre-construction and constructive phase, the responsible persons should take care to give clear instructions to the involved workers, on how to behave towards tradition, religious rites and living cultural heritage in the region. For that purpose, before preparation of the field starts, it is necessary to observe the given measures. In the construction phase, in order to reduce the impacts caused by potential loss to intangible cultural heritage (traditions, religious rites, living cultural heritage) in the AoI of the projected gas pipeline section the following measures will be implemented:

- *Restrict the timing of construction and demolition activities, so as not to disturb the use of religious cultural heritage sites (churches). Stop work at certain times when sites are in use, such as during significant events (weddings, funerals and religious festivals);*
- *The workers will avoid disturbance of the religious rites and tradition;*
- *The access in the churches and church complexes for religious rites and traditions will not be affected during the construction activities of the gas pipeline section;*
- *Implementation of the Macedonian legislation and EBRD PR8 requirements;*
- *The workers who come from other places of residence will get acquainted with the culture, customs, habits, and everyday life of the local population. It is especially important to consider the preservation of the living cultural heritage, as part of the customary and ritual practices of the project AoI;*
- *It is also necessary to prepare a Plan for project activities for a certain time interval, and to distribute (disseminate) it. The emphasis in this Plan should be on the project activities that create more noise and dust emissions. The increased noise level of the project activities, as well as the higher emission of dust, may prevent the performance of certain religious practices, which in turn will cause certain tension among the population in the affected settlements. The implementation of the Plan for project activities will avoid possible tensions among the local population.*

Table 15. Cultural heritage - Operational phase

Assessed potential impacts
<i>In normal operation of the gas pipeline section is not expected to have negative impacts on the cultural heritage assets. However, some potential impacts on cultural heritage during the gas pipeline operational phase are as follows:</i> IMPACTS ON THE ARCHAEOLOGICAL SITES - <i>Potential Loss or Partial Damage to Chance finds and Undiscovered Below-Ground Heritage Assets as a result of the operational activities or hazards – low significance</i> - <i>Partial Damage to known archaeological sites as a result of the operational activities or hazards – low significance</i> - <i>Access to the archaeological sites – insignificant</i> IMPACTS ON THE BUILDINGS AND COMPLEXES

- Potential Loss or Partial Damage to the Buildings and cultural heritage Complexes in the AoI of the projected gas pipeline – **insignificant**
- Access to the cultural buildings and complexes – **insignificant**

IMPACTS ON CULTURAL LANDSCAPES

- Partial Defragmentation of the integrity of the visual effects, of the cultural landscapes- Change in the elements, characteristics, character, and qualities of the landscape as a result of development – **moderate significance**
- Deteriorated panoramic views of the cultural heritage monuments – **low significance**

IMPACTS ON INTANGIBLE CULTURAL HERITAGE AND ASSOCIATIONS

- Potential Loss or Partial Loss to the intangible cultural heritage and associations (religious rites, tradition, living cultural heritage) in the AoI of the projected gas pipeline – **insignificant**
- Access to the churches and church complexes for religious rites and traditions – **insignificant**

Proposed mitigation measures

In the operational phase, in order to avoid unnecessary potential or partial loss of the archaeological assets, it is proposed:

- Qualified Cultural Heritage Expert from authorized institution to be present during some reconstruction or activities connected with hazards that might occur during the regular operation of the gas pipeline section;
- Careful planning of operational works in order to reduce the negative effects and ensure the prevention of damage of the chance finds and known archaeological sites;
- To make the maximum possible reduction of vehicle and machinery activities, as limited to the areas that have been subject to heritage clearance or previous disturbance;
- Workers should undergo basic training on the procedure for the cultural value of the AoI and the region, in order to identify the chance finds and known archaeological sites during the operational works;
- To be implemented Chance Find Procedure (the same as in the construction phase).

In the operational phase, in order to reduce the impacts caused by potential loss or partial damage to buildings and complexes with cultural heritage value near the AoI of the projected gas pipeline section the following measures will be implemented:

- Careful planning of operational works in order to reduce the negative effects and ensure the prevention of damage of the buildings and complexes;
- To make the maximum possible reduction of the size of the reconstruction sites, so the negative impact of the cultural heritage assets that suffers will be minimized, in order to reduce the loss or partial damage to buildings and complexes with cultural value;
- To make the maximum possible reduction of vehicle and machinery activities, as limited to the areas that have been subject to previous disturbance;
- To make maximum possible reduction of generation of dust and vibration by operation of heavy machinery, to make ongoing monitoring of dust and vibration levels and inspection of heritage places in proximity;
- To make demarcation of cultural heritage sites as required, to avoid indirect disturbance;
- Qualified Cultural Heritage Expert from authorized institution to be present during some reconstruction or activities connected with hazards that might occur during the regular operation of the gas pipeline section;
- Implementation on the Macedonian legislation and EBRD PR8 requirements.

In the operational phase, for prevention and reduction of the aesthetic negative effects which mean changed panoramic image and defragmentation with the appearance of the gas pipeline section near the AoI, to take the following measures:

- Careful planning of reconstruction works in hazard events in order to reduce the negative effects and ensure the prevention of the loss and defragmentation of the visual effects on the cultural landscapes;
- Workers should undergo basic training on the procedure for the cultural value of the AoI and the region, in order to identify the cultural heritage assets and landscapes during the reconstruction works;

- After the reconstruction, to carry out the activities for rehabilitation of the site, excavations, sand loans and access roads, by planting grass and trees or other appropriate measures;
 - Implementation of the Macedonian legislation and EBRD PR8 requirements.
- During the operational phase, the responsible persons should take care to give clear instructions to the involved workers, on how to behave towards tradition, religious rites and living cultural heritage in the region. In the operational phase, in order to reduce the impacts caused by potential loss to intangible cultural heritage (traditions, religious rites, living cultural heritage) near the AoI of the projected gas pipeline section the following measures will be implemented:
- Restrict the timing of activities, so as not to disturb the use of religious cultural heritage sites (churches). Stop work at certain times when sites are in use, such as during significant events (weddings, funerals and religious festivals);
 - The workers will avoid disturbance of the religious rites and tradition;
 - The access in the churches and church complexes for religious rites and traditions will not be affected during the activities connected with hazard events of the gas pipeline section;
 - Implementation of the Macedonian legislation and EBRD PR8 requirements;
 - The workers who come from other places of residence will get acquainted with the culture, customs, habits, and everyday life of the local population. It is especially important to consider the preservation of the living cultural heritage, as part of the customary and ritual practices of the project AoI;
 - It is also necessary to prepare a Plan for project activities for a certain time interval, and to distribute (disseminate) it.

5.10. Assessed cumulative impacts and proposed mitigation measures

Table 16. Cumulative impacts - Construction phase

Assessed potential impacts
I. Cumulative impacts with existing installations or objects It is important to see the crossings of the gas pipeline section under the following existing roads: - Motorway A4 "Miladinovci – Shtip" - Regional Road R1204 "Sveti Nikole – Kadrifakovo" - Local Asphalted Road "Milino – Lozovo" - Regional Road R1312 "Milino – Karatmanovo" - Regional (Expressway) Road R1312 "Veles – Kadrifakovo" - Motorway A1 "Skopje – Gevgeija" At the crossings of the gas pipeline section under those roads, is expected to occur the following cumulative impacts: - exhaust gases; - dust (PM10); - noise and vibrations. II. Cumulative impacts with planned installations or objects There are possible cumulative impacts of the gas pipeline section project activities and other planned project activities in the surrounding area if the construction phases overlap. The planned projects near the gas pipeline section Project area are: Future solar power plant, Wind Park Bogoslovac and Regional landfill Mechakuevci. The possible cumulative impacts of the gas pipeline section and those planned projects are the following: - generation of fugitive emissions of dust and exhaust gases; - alteration of surface and groundwater quality due to input of pollutants and pre-existing contamination or as a result of leakage or spills; - noise emissions from construction vehicles and machinery; - pressure on local and regional waste infrastructure and facilities, due to the generated waste from all project activities;

- another potential source of additional waste from excavated materials (from planned projects), if not adequately managed;
- increased demand for communal services, such as drinking water and wastewater disposal, and increased traffic on local roads;
- increased habitat fragmentation and vegetation removal;
- increased biodiversity disturbance due to all construction activities;
- landscape and visual changes will be caused;
- increased opportunities for businesses to increase sales revenue and overall viability through the supply of goods and services;
- existing businesses may expand, and new businesses are likely to move to the region at least temporarily to provide services to projects under construction;
- the employment rate in the area is anticipated to increase.

The cumulative impacts during construction are expected to be of **insignificant to low** significance.

Proposed mitigation measures

I. Mitigation measures for cumulative impacts with existing installations or objects

With implementation of all proposed mitigation measures to reduce the air pollution and mitigation measures for the impacts caused by noise and vibration in construction phase, the cumulative impacts that are expected to occur at the crossings of the gas pipeline section under the existing roads will be minimized, and will occur only in limited time.

II. Mitigation measures for cumulative impacts with planned installations or objects

If the construction phases of the gas pipeline section and other planned projects overlap, than the following mitigation measures should be implemented:

- The Contractor for the pipeline Project will be required to communicate with the Contractors of the other planned Projects that are identified for cumulative impacts, and together ensure that mitigation for their respective projects minimizes the potential for cumulative effects;
- The potential impacts that will occur in the construction phase, will be managed and mitigated through implementation of the ESMPs for these Projects;
- All identified ongoing projects should be designed and constructed in compliance with current standards and using best practice techniques, thus reducing the potential for cumulative impacts in construction phase.

Table 17. Cumulative impacts - operational phase

Assessed potential impacts
It is assumed that the cumulative impacts in operational phase will be insignificant if all projects are designed and constructed in compliance with national standards and using best practice techniques. It is likely that a beneficial effect will occur as a result of the operation of the ongoing projects and the gas pipeline Project itself.

<i>Proposed mitigation measures</i>
<i>I. Mitigation measures for cumulative impacts with existing installations or objects</i> With implementation of all proposed mitigation measures to reduce the air pollution and mitigation measures for the impacts caused by noise and vibration in operational phase, the cumulative impacts that may occur at the crossings of the gas pipeline section under the existing roads will be minimized, and will occur only in limited time. <i>II. Mitigation measures for cumulative impacts with planned installations or objects</i> All identified ongoing projects should be designed and constructed in compliance with current standards and using best practice techniques, thus reducing the potential for cumulative impacts in operational phase.

6. CONCLUSION

In general, the construction of the main gas pipeline, Section Sveti Nikole-Veles, is not expected to have significant negative impacts on the quality of the environment. The potential impacts that will occur in the construction phase, will be managed and mitigated through the implementation of the ESMP's for these Project.

The Contractor is required to implement all precautionary measures as outlined in this EIA Study and the Environmental and Social Management Plan, to consistently apply them in practice, in order to eliminate possible disturbances in the quality of the environment.

Funding information: The Project involves the funding of a greenfield gas pipeline section and is a part of the larger A-category regional gas project considered by the EBRD for funding Authors should clearly state funding information.

Conflict of interest: There is no conflict of interest.

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Provedba postupka procjene utjecaja zahvata na okoliš u uvjetima krizne situacije – primjer pandemije koronavirusne bolesti (COVID - 19)

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Sažetak

Krajem 2019. godine u svijetu se pojavio novi soj virusa koji do tada nije bio otkriven u ljudskom organizmu. U prosincu iste godine u Kini je i službeno potvrđena zaraza čovjeka novim koronavirusom SARS-CoV-2, a 25. veljače 2020. godine isti je potvrđen na teritoriju Republike Hrvatske. 11. ožujka 2020. godine službeno je proglašena pandemija COVID-19. Kako bi spriječila širenje zaraze, Republika Hrvatska je ograničila slobodu kretanja i zatvorila brojne javne ustanove, izuzev bolnica i drugih objekata nužnih za održavanje života, a zaposlenici javnih i privatnih poduzeća suočili su se s novim izazovima rada od kuće. S obzirom na to da se pandemija koronavirusne bolesti nije mogla riješiti poznatim načinima, ona se djelomično može poistovjetiti s kriznom situacijom.

Postupak procjene utjecaja zahvata na okoliš je kompleksan proces u koji su uključena javna tijela, ovlaštenici, nositelji zahvata i zainteresirana javnost, a u dijelu postupka provodi se i javna rasprava s obveznim javnim izlaganjem namijenjenim zainteresiranoj javnosti. Ovim radom nastoji se prikazati nove izazove i probleme koji su nastali u provedbi postupka, a kao posljedica krizne situacije uslijed pandemije COVID – 19. Ispitivanjem javnih tijela i ovlaštenika nastoje se prikazati novi problemi i izazovi provedbe cjelovitog postupka procjene utjecaja zahvata na okoliš.

Ključne riječi: legislativa u zaštiti okoliša, javna tijela, ovlaštenici, javna rasprava, javno izlaganje

Environmental impact assessment procedure in a crisis situation - an example of a coronavirus disease (COVID - 19) Abstract

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Abstract

At the end of 2019, a virus strain appeared, which had not been detected in the human body before. In December of the same year, the human infection with the new coronavirus SARS-CoV-2 was officially confirmed in China, and on February 25, 2020, it was confirmed on the territory of the Republic of Croatia. On March 11, 2020, the COVID-19 pandemic was officially declared. In order to prevent the spread of the disease, the Republic of Croatia has restricted freedom of movement and closed many public institutions, except for hospitals and other facilities necessary for life support, and employees of public and private companies have faced new challenges stemming from work from home. Given that the coronavirus pandemic could not be solved by known means, it can be partially identified as a crisis situation.

The environmental impact assessment procedure of a project is a complex process involving public bodies, certified companies, project holders and the interested public, and part of the procedure is a public hearing with mandatory public presentation intended for the interested public. This paper seeks to present new challenges and problems that have arisen in the implementation of the environmental impact assessment procedure, and as a consequence of the crisis situation due to the COVID - 19 pandemic. This survey of public bodies and certified companies seeks to present new problems and challenges in the implementation of a comprehensive procedure of environmental impact assessment.

Keywords: environmental protection legislation, public bodies, certified companies, public hearing, public presentation

1. UVOD

Od trenutka izbijanja pandemije bolesti COVID – 19 svijet se našao u stanju „novog normalnog“. Kako bi se spriječilo širenje zaraze koronavirusom, države su uvodile različite vrste mjera. U početku su mjere bile vrlo stroge što je na koncu rezultiralo i „zatvaranjem“ društva. Mjere koje su se provodile imale su negativne posljedice na gospodarstvo država koje su ih primjenjivale.

Republika Hrvatska je kroz svoj zakonodavni okvir odredila da je za određene zahvate u prostoru potrebno provesti postupak procjene utjecaja na okoliš. Postupak je vrlo specifičan i kroz svoje faze uključuje razne sudionike. Do početka pandemije u pojedinim fazama održavali su se svojevrsni sastanci s obilascima lokacije budućeg zahvata i prezentiranja samog zahvata lokalnoj zajednici i zainteresiranoj javnosti.

1.1. Kratka povijest koronavirusne bolesti u Republici Hrvatskoj

Krajem 2019. godine u Kini su se pojavile grupe oboljelih od bolesti sa simptomima sličnim upali pluća. Početkom 2020. godine kineske su vlasti službeno objavile da se radi o novom koronavirusu. Prvi slučaj koronavirusne bolesti u Hrvatskoj zabilježen je 25. veljače 2020. godine. Globalnu pandemiju bolesti COVID – 19 proglasila je svjetska

zdravstvena organizacija (WHO) 11. ožujka 2020. i od tada se svijet nalazi u izvanrednom stanju ili tzv. „novom normalno“ (Kunji, Ž., Stojanović, S.; 2021.). Na prijedlog Hrvatskog zavoda za javno zdravstvo ministar zdravstva 11. ožujka 2020. godine donosi Odluku o proglašenju epidemije bolesti COVID – 19 uzrokovanu virusom SARS-CoV-2 na području čitave Republike Hrvatske (Ministarstvo zdravstva, 2020.). 16. ožujka iste godine zatvorile su se odgojno – obrazovne ustanove, a 19. ožujka zatvorile su se i preostale ustanove i javni objekti izuzev bolnica i trgovina nužnih za održavanje života.

Hrvatska je krajem ožujka 2020. godine bila među državama s najstrožim restrikcijama i mjerama za smanjenje zaraze novim koronavirusom. Tijekom ljeta 2020. godine bio je mali broj novozaraženih te su se mjere popuštale. Međutim krajem ljeta brojke novozaraženih ponovno počinju rasti i započinje novi val epidemije. Početkom 2021. godine započinje cijepljenje državljana s boravkom u Republici Hrvatskoj, a nakon početka cijepljenja mjere za sprječavanje širenja virusa se polako ukidaju.

1.2. Postupak procjene utjecaja zahvata na okoliš

Postupci procjene utjecaja zahvata na okoliš propisani su Zakonom o zaštiti okoliša (Narodne novine 80/13, 153/13, 78/15, 12/18, 118/18) i Uredbom o procjeni utjecaja zahvata na okoliša (Narodne novine 61/14 i 3/17). Prema Zakonu o zaštiti okoliša (NN 80/13, 153/13, 78/15, 12/18, 118/18) procjena utjecaja zahvata na okoliš je procjena značajnih utjecaja na okoliš temeljem njihove prirode, veličine ili lokacije. Procjenom utjecaja na okoliš utvrđuju se potencijalni izravni i/ili neizravni utjecaj pojedinačnog zahvata na sve sastavnice okoliša.

Stručne poslove zaštite okoliša i prirode obavlja ovlaštena pravna osoba (u daljnjem tekstu ovlaštenik) pod uvjetima propisanim Zakonom o zaštiti okoliša (Narodne novine 80/13, 153/13, 78/15, 12/18, 118/18).

Zahvati za koje se obvezno provodi postupak procjene utjecaja zahvata na okoliš propisani su Uredbom o procjeni utjecaja zahvata na okoliša (Narodne novine 61/14 i 3/17). Nositelj zahvata putem ovlaštenika izrađuje Stručnu podlogu koja se naziva Studija o utjecaju na okoliš. Prema Zakonu o zaštiti okoliša (Narodne novine 80/13, 153/13, 78/15, 12/18, 118/18) Studija o utjecaju zahvata na okoliš je stručna podloga na temelju koje se provodi postupak procjene utjecaja zahvata na okoliš.

Sukladno Uredbi o procjeni utjecaja zahvata na okoliša (Narodne novine 61/14 i 3/17) postupak procjene utjecaja zahvata na okoliš provodi se na sljedeći način:

1. nositelj zahvata predaje zahtjev za pokretanjem postupka nadležnom tijelu (u trenutku pisanja nadležno tijelo je Ministarstvo gospodarstva i održivog razvoja),
2. nakon što utvrdi cjelovitost i urednost podnesenog zahtjeva, nadležno tijelo imenuje savjetodavno stručno povjerenstvo u postupku,
3. predsjednik savjetodavno stručnog povjerenstva saziva prvu sjednicu u postupku na kojoj se provodi analiza zahvata, potencijalni utjecaj istog na sastavnice okoliša te se iznose mišljenja i komentari vezani uz studiju o utjecaju zahvata na okoliš,
4. nakon što utvrdi da zahtjev (studija) sadrži sve propisane podatke, savjetodavno stručno povjerenstvo upućuje studiju na javnu raspravu u trajanju od 30 dana,
5. tijekom perioda javne rasprave, provodi se javno izlaganje na kojem ovlaštenik i nositelj zahvata predstavljaju studiju i zahvat zainteresiranoj javnosti,
6. nakon razmotrenih mišljenja, primjedbi i prijedloga s javne rasprave te eventualnih korekcija studije o utjecaju na okoliš, predsjednik savjetodavno stručnog

povjerenstva saziva sjednicu povjerenstva radi donošenja mišljenja o prihvatljivosti zahvata,

7. na temelju mišljenja o prihvatljivosti zahvata za okoliš, nadležno tijelo donosi rješenje o prihvatljivosti zahvata za okoliš.

Rokovi predviđeni za provedu postupka procjene utjecaja zahvata na okoliš su određeni Zakonom o zaštiti okoliša (Narodne novine 80/13, 153/13, 78/15, 12/18, 118/18) i iznosi četiri mjeseca od dana primitka urednog zahtjeva nositelja zahvata. Ovaj rok se može iznimno i produžiti i to najviše za dva mjeseca. Međutim, u istraživanju trajanja postupka procjene utjecaja na okoliš od 2018. do 2021. godine (Vučković, D., 2022.) vidljivo je da je trajanje postupka u navedenom periodu puno duže od onog zakonom predviđenog. Također je vidljivo da je u 2020. godini broj dana trajanja postupka nešto viši u odnosu na ostale godine, odnosno u prosjeku je postupak trajao cca 250 dana.

1.3. Cilj rada

Mjere zaštite koje su bile propisane u svrhu sprječavanja širenja koronavirusne bolesti u Republici Hrvatskoj djelomično su onemogućile održavanje sjednica i javnih izlaganja uživo na lokaciji zahvata, što je dodatno zakompliciralo i produljilo trajanje postupka procjene utjecaja zahvata na okoliš. Iz tog razloga je izrađena anketa koja je otpremana na adrese sudionika u postupku procjene utjecaja zahvata na okoliš kako bi se mogao analizirati i procijeniti utjecaj pandemije na kvalitetu i tijek postupka procjene utjecaja zahvata na okoliš.

2. METODOLOGIJA ANKETIRANJA JAVNOPRAVNIH TIJELA I OVLAŠTENIKA

Kako bismo procijenili je li Republika Hrvatska spremna na provedbu postupka procjene utjecaja zahvata na okoliš u slučaju krizne situacije te postoje li konkretni problemi vezani uz provedbu navedenog postupka tijekom pandemije koronavirusne bolesti (COVID – 19), ostvarili smo komunikaciju s javnopravnim tijelima i ovlaštenicima koji su sudjelovali u barem jednom postupku procjene utjecaja zahvata na okoliš od dana proglašenja pandemije do danas.

Kako bi se ostvarila komunikacija provedeno je istraživanje (u daljnjem tekstu anketa) u kojem su sudjelovali ovlaštenici i javnopravna tijela. Anketiranje je provedeno od lipnja do kolovoza 2022. godine. Radi lakšeg načina sakupljanja i obrade podataka anketa je bila elektroničkog tipa. Za metodu prikupljanja podataka odabran je medij interneta i Google obrasci za izradu i provođenje ankete. Pitanja navedena u anketi prikazana su u Tablici 1.

Tablica 1. Popis pitanja navedenih u anketama za javnopravna tijela i za ovlaštenike

ANKETA NAMIJENJENA JAVNOPRAVNIM TIJELIMA	ANKETA NAMIJENJENA OVLAŠTENICIMA
Spol:	Spol:
Dob: a) 20-30 b) 30-40 c) 40-50 d) 50-60 e) 60-65	Dob: a) 20-30 b) 30-40 c) 40-50 d) 50-60 e) 60-65

Mjesto prebivališta:	Mjesto prebivališta:
Mjesto boravišta:	Mjesto boravišta:
Stručna sprema:	Stručna sprema:
Koliko dugo radite na poslovima zaštite okoliša? a) 0-5 godina b) 5-10 godina c) 10-15 godina d) 15-20 godina e) 20 i više godina	Koliko dugo radite na poslovima zaštite okoliša? a) 0-5 godina b) 5-10 godina c) 10-15 godina d) 15-20 godina e) 20 i više godina
Koliko predmeta vezanih uz postupak ocjene o potrebi procjene utjecaja zahvata na okoliš u prosjeku obradite mjesečno?	Na koliko predmeta vezanih uz postupak ocjene o potrebi procjene utjecaja zahvata na okoliš u prosjeku sudjelujete tijekom godine?
Koliko predmeta vezanih uz postupak procjene utjecaja zahvata na okoliš u prosjeku obradite mjesečno?	Na koliko predmeta vezanih uz postupak procjene utjecaja zahvata na okoliš u prosjeku sudjelujete tijekom godine?
Naziv javno-pravnog tijela (uključujući i upravu/odjel/sektor):	Naziv pravne osobe (ovlaštenika)
Jeste li u periodu od 11. ožujka 2020. godine (dan proglašenja pandemije COVID-19) do danas sudjelovali u postupku procjene utjecaja na okoliš?	Posjeduje li pravna osoba suglasnost nadležnog Ministarstva za izradu studija o utjecaju zahvata na okoliš, uključujući i dokumentaciju za provedbu postupka ocjene o potrebi procjene utjecaja zahvata na okoliš te dokumentacije za određivanje sadržaja studije o utjecaju na okoliš i dokumentaciju o usklađenosti glavnog projekta s mjerama zaštite okoliša i programom praćenja stanja okoliša?
Ako DA, na koje ste sve načine sudjelovali u postupku procjene utjecaja na okoliš? a) Član savjetodavnog stručnog povjerenstva b) Predsjednik savjetodavnog stručnog povjerenstva c) Vanjski suradnik/savjetnik d) Davatelj mišljenja e) Sudjelovanje tijekom javne rasprave f) Ostalo (navesti)	Jeste li u periodu od 11. ožujka 2020. godine (dan proglašenja pandemije COVID-19) do danas sudjelovali u postupku procjene utjecaja na okoliš?
Jeste li u periodu od 11. ožujka 2020. godine (dan proglašenja pandemije COVID-19) do danas imali minimalno jedan dan "rada od kuće"?	Ako DA, na koje ste sve načine sudjelovali u postupku procjene utjecaja na okoliš? a) Voditelj Studije b) Stručni suradnik na izradi Studije c) Vanjski suradnik na izradi Studije d) Sudjelovanje tijekom javne rasprave e) Ostalo (navesti)

Koliko dana ste od dana proglašenja pandemije COVID-19 proveli "radeći od kuće"? Napomena: pokušati dati što precizniju procjenu.	Jeste li u periodu od 11. ožujka 2020. godine (dan proglašenja pandemije COVID-19) do danas imali minimalno jedan dan "rada od kuće"?
Je li vam "rad od kuće" stvarao probleme prilikom izrade dokumentacije za provedbu postupka procjene utjecaja na okoliš?	Koliko ste dana od 11. ožujka 2020. godine (dan proglašenja pandemije COVID-19) do danas proveli "radeći od kuće"? Napomena: pokušati dati što precizniju procjenu.
Ako ste odgovorili na prethodno pitanje sa DA, molimo Vas da obrazložite.	Je li vam "rad od kuće" stvarao probleme prilikom izrade dokumentacije za provedbu postupka procjene utjecaja na okoliš?
Jeste li se tijekom "rada od kuće" susreli sa problemima u komunikaciji sa ovlaštenicima?	Ako ste odgovorili na prethodno pitanje sa DA, molimo Vas da obrazložite.
Ako ste odgovorili na prethodno pitanje sa DA, molimo Vas da obrazložite.	Je li vam "rad od kuće" stvarao probleme prilikom izrade dokumentacije za provedbu postupka procjene utjecaja na okoliš?
Je li vam tijekom "rada od kuće" bila dostupna sva oprema i svi dokumenti/podaci potrebni za pripremu dokumentacije u postupku procjene utjecaja zahvata na okoliš?	Je li Vam tijekom "rada od kuće" bila dostupna sva oprema i svi dokumenti/podaci potrebni za pripremu dokumentacije u postupku procjene utjecaja zahvata na okoliš?
Ako ste odgovorili na prethodno pitanje sa NE, navesti što je nedostajalo ili što nije bilo dobro organizirano.	Ako ste odgovorili na prethodno pitanje sa NE, navesti što je nedostajalo ili što nije bilo dobro organizirano.
Za vrijeme „rada od kuće“ komunicirao/la sam: a) Isključivo službenim mailom b) Dao sam na raspolaganje svoj privatni broj mobitela klijentima c) Službenim mobitelom d) Isključivo privatnim mailom e) Kombinacija svega navedenog	Jeste li se tijekom "rada od kuće" susreli sa problemima u komunikaciji sa investitorima?
U vrijeme pandemije/ „rada od kuće“ sudjelovao/la sam u radu povjerenstva putem videopoziva: a) 0 puta b) 1-4 puta c) 5 ili više puta	Ako ste na prethodno pitanje odgovorili sa DA, o kakvom problemu je bilo riječ?
Sjednice održane putem videopoziva uglavnom su bile: a) Izrazito loše kvalitete b) Loše kvalitete c) Prihvatljive kvalitete d) Zadovoljavajuće kvalitete e) Izrazito zadovoljavajuće kvalitete	Jeste li se tijekom "rada od kuće" susreli sa problemima u komunikaciji sa javno-pravnim tijelima?

U vrijeme pandemije/ „rada od kuće“ sudjelovao/la sam u javnom izlaganju Studije putem videopoziva: a) 0 puta b) 1-4 puta c) 5 ili više puta	Ako ste na prethodno pitanje odgovorili sa DA, o kakvom problemu je bilo riječ?
Koliko se od 1 (u potpunosti se ne slažem) do 10 (u potpunosti se slažem) slažete sa sljedećim tvrdnjama: a) Zadovoljan/zadovoljna sam svojim radnim mjestom b) Volim posao koji radim c) Postupak procjene utjecaja na okoliš u RH je kvalitetno konstruiran proces d) Tijekom "rada od kuće" sam bolje komunicirao sa suradnicima i klijentima nego u normalnim uvjetima rada e) Smatram da investitori i ovlaštenici vrše pritisak na radnike javno-pravnih tijela f) Brzina rješavanja predmeta procjene utjecaja na okoliš tijekom pandemije COVID-19 je izrazito zadovoljavajuća	Jeste li se u periodu od 11. ožujka 2020. godine (dan proglašenja pandemije COVID-19) do danas susreli sa bilo kakvim problemom tijekom provedbe postupka procjene utjecaja na okoliš, a koji je nastao kao posljedica COVID-19 pandemije?
Na koji način bi se, prema Vašem mišljenju, mogao poboljšati postupak procjene utjecaja zahvata na okoliš?	Ako ste na prethodno pitanje odgovorili sa DA, o kakvom problemu je bilo riječ?
Koju poruku biste uputili ovlaštenicima, a vezano je za postupak procjene utjecaja zahvata na okoliš?	Je li prilagodba rada tijekom pandemije COVID-19 donijela pozitivne promjene u provedbi postupka procjene utjecaja na okoliš?
Jeste li se u periodu od 11. ožujka 2020. godine (dan proglašenja pandemije COVID-19) do danas susreli sa bilo kakvim problemom tijekom provedbe postupka procjene utjecaja na okoliš, a koji je nastao kao posljedica COVID-19 pandemije?	Ako ste na prethodno pitanje odgovorili sa DA, o kakvoj pozitivnoj promjeni je bilo riječ?
Ako DA, o kakvom problemu je bilo riječ?	Za vrijeme „rada od kuće“ komunicirao/la sam: a) Isključivo službenim mailom b) Dao sam na raspolaganje svoj privatni broj mobitela klijentima c) Službenim mobitelom d) Isključivo privatnim mailom e) Kombinacija svega navedenog

Je li prilagodba rada tijekom pandemije COVID-19 donijela pozitivne promjene u provedbi postupka procjene utjecaja na okoliš?	U vrijeme pandemije/ „rada od kuće“ sudjelovao/la sam u radu povjerenstva putem videopoziva: a) 0 puta b) 1-4 puta c) 5 ili više puta
Ako DA, o kakvoj pozitivnoj promjeni je bilo riječ?	Sjednice održane putem videopoziva uglavnom su bile: a) Izrazito loše kvalitete b) Loše kvalitete c) Prihvatljive kvalitete d) Zadovoljavajuće kvalitete e) Izrazito zadovoljavajuće kvalitete
	U vrijeme pandemije/ „rada od kuće“ sudjelovao/la sam u javnom izlaganju Studije putem videopoziva: a) 0 puta b) 1-4 puta c) 5 ili više puta
	Koliko se od 1 (u potpunosti se ne slažem) do 10 (u potpunosti se slažem) slažete sa sljedećim tvrdnjama: a) Zadovoljan/zadovoljna sam svojim radnim mjestom b) Volim posao koji radim c) Postupak procjene utjecaja na okoliš u RH je kvalitetno konstruiran proces d) Tijekom "rada od kuće" sam bolje komunicirao sa suradnicima i klijentima nego u normalnim uvjetima rada e) Smatram da javnopravna tijela rade dobar, brz i kvalitetan posao f) Brzina rješavanja predmeta procjene utjecaja na okoliš tijekom pandemije COVID-19 je izrazito zadovoljavajuća.
	Na koji način bi se, prema Vašem mišljenju, mogao poboljšati postupak procjene utjecaja zahvata na okoliš?
	Koju poruku biste uputili javno-pravnim tijelima, a vezano je za postupak procjene utjecaja zahvata na okoliš?

Za izradu učinkovite ankete građana potrebni su koraci koje je potrebno poduzeti prema sljedećem kronološkom redu (Wekselberg, V., 2004.):

- odrediti jasnu svrhu,

- odlučiti o frekvenciji istraživanja,
- zadužiti uvježbano osoblje odgovorno za anketiranje,
- odrediti populaciju za istraživanje,
- identificirati uzorak istraživanja (sistemski slučajni uzorak, klasterirani i višestapni uzorak, uzorak slučajnog kretanja),
- odrediti metodu prikupljanja podataka (četiri su osnovna načina administriranja ispitivanja: osobni intervju, putem pošte, putem interneta i telefonski intervju),
- identificirati područja prikupljanja podataka,
- izraditi niz standardnih pitanja,
- razviti metode maksimalnog povećanja postotka sudionika koji ispunjavaju upitnik,
- pretestirati, analizirati i unijeti promjene u anketu,
- statistički analizirati i izvesti zaključke,
- objasniti rezultate analize,
- dokumentirati postupke praćene tijekom istraživanja, obraditi podatke, analizirati i prezentirati rezultate,
- predati rezultate,
- objaviti rezultate građanima, nevladinim organizacijama, medijima i poslovnoj zajednici.

Popis ovlaštenika i stručnjaka u javno pravnim tijelima je preuzet sa stranica Ministarstva gospodarstva i održivog razvoja. Anketa je poslana na oko 50 adresa ovlaštenika te na oko 700 adresa javnopravnih tijela. Rezultati ankete su pokazali vrlo slabu zainteresiranost za ispunjavanjem ovakvih anketa. Na anketu javnopravnih tijela zabilježeno je 34 odgovora, a na anketu ovlaštenika 8 odgovora.

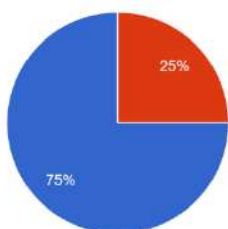
3. REZULTATI

3.1. Analiza ankete - javnopravna tijela i ovlaštenici u postupku procjene utjecaja zahvata na okoliš

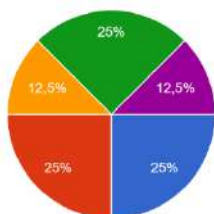
Anketa namijenjena ovlaštenicima sastojala se od 34 pitanja, a anketa namijenjena javnopravnim tijelima 30 pitanja. Anketa se može, prema vrsti pitanja, podijeliti u dva dijela. Prvi dio ankete jednak je za ovlaštenike i javnopravna tijela te se sastojao od pet pitanja koja su se odnosila na opće podatke kao što su spol, dob, mjesto prebivališta, mjesto boravišta i stručnu spremu. Cilj prvog dijela ankete je bio vidjeti radni staž i obrazovanje ispitanika koji su sudjelovali u anketi.

Drugi dio ankete neznatno se razlikovao za ovlaštenike i javnopravna tijela. Ovaj dio ankete sadržavao je dvadeset i devet pitanja namijenjenih ovlaštenicima i dvadeset i pet pitanja namijenjenih javnopravnim tijelima, a pitanja su se odnosila na problematiku provedbe postupka procjene utjecaja zahvata na okoliš u periodu od dana proglašenja pandemije do dana ispunjavanja ankete.

Spol:
8 odgovora

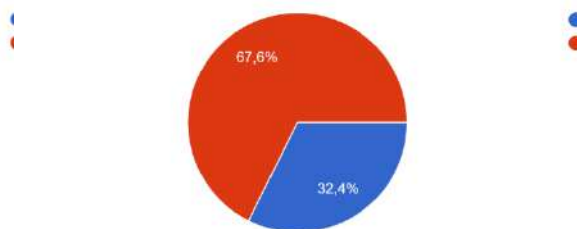


Dob:
8 odgovora

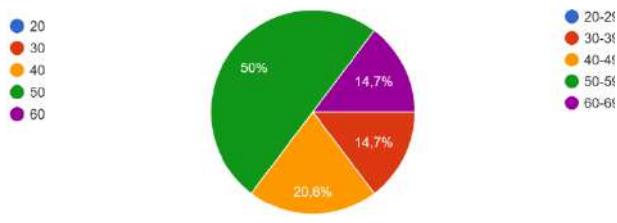


Slika 1. Spol i dob anketiranih zaposlenika ovlaštenika

Spol:
34 odgovora

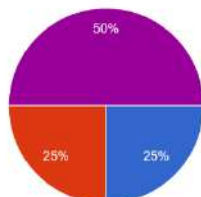


Dob:
34 odgovora



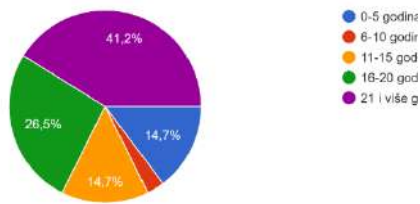
Slika 2. Spol i dob anketiranih zaposlenika javnopravnih tijela

Koliko dugo radite na poslovima zaštite okoliša?
8 odgovora



Slika 3. Radno iskustvo u poslovima zaštite okoliša anketiranih zaposlenika ovlaštenika

Koliko dugo radite na poslovima zaštite okoliša?
34 odgovora



Slika 4. Radno iskustvo u poslovima zaštite okoliša anketiranih zaposlenika javnopravnih tijela

Kao što je vidljivo na Slici 1., zaposlenici ovlaštenika koji su pristupili anketi većinom su muškog spola (75%) u dobi od 40 - 69 godina (50%) s radnim iskustvom u poslovima zaštite okoliša više od 21 godina (50%) dok su zaposlenici javnopravnih tijela koji su pristupili anketi većinom ženskog spola (67,6%) u dobi od 50 - 69 godina (64,7%) s radnim iskustvom u poslovima zaštite okoliša više od 16 godina (67,7%), što je vidljivo na Slici 2. Iz ovoga proizlazi da veći dio ispitanika ima značajno iskustvo u poslovima zaštite okoliša.

Većina ispitanika javnopravnih tijela (82,4%) je sudjelovala u postupku procjene utjecaja zahvata na okoliš u periodu od 11. ožujka do dana ispunjavanja ankete, a 41,3% ispitanika sudjelovalo je u svojstvu člana savjetodavnog stručnog povjerenstva.

Većina anketiranih ovlaštenika je muškog spola (75%) u dobi od 40 - 69 godina (50%) s radnim stažem u poslovima zaštite okoliša više od 21 godinu (50%). Svi ispitanici su sudjelovali u minimalno jednom postupku procjene utjecaja zahvata na okoliš u period od 11. ožujka 2020. do dana ispunjavanja ankete. Kao stručni suradnik na izradi studije je sudjelovalo 57,1% sudionika, dok je 42,9% sudjelovalo u postupku u svojstvu voditelja izrade Studije.

3.2. Utjecaj pandemije koronavirusne bolesti (COVID – 19) na provedbu postupka procjene utjecaja zahvata na okoliš

Kao odgovor na pandemiju koronavirusne bolesti (COVID – 19), zemlje diljem svijeta, uključujući i Republiku Hrvatsku, uvele su brojne javnozdravstvene i socijalne mjere: fizičko distanciranje, ograničenje kretanja, karantenu u ovisnosti o zemljopisnom području, ograničen broj osoba na javnim i privatnim okupljanjima, te već spomenuto zatvaranje škola i poduzeća. Navedenim mjerama je gotovo u potpunosti obustavljen privatni život građana Republike Hrvatske. Jedna od značajnijih mjera zaštite u pandemiji bila je zabrana okupljanja, kako na javnim tako i na privatnim događajima. Okupljanja se definiraju kao događaji koje karakterizira koncentracija ljudi na određenoj lokaciji za određenu svrhu tijekom određenog vremenskog razdoblja. U kontekstu pandemije koronavirusne bolesti (COVID-19), okupljanja predstavljaju događaje koji mogu značajno pojačati prijenos koronavirusne bolesti (COVID-19) i dodatno opteretiti zdravstveni sustav zemlje.

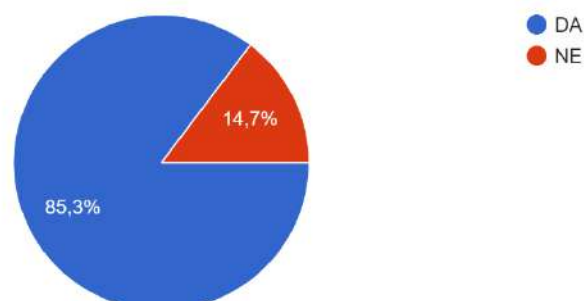
Međutim, unatoč strogim mjerama, bilo je nužno očuvati poslovnu strukturu i gospodarski napredak. U trenutku kada je svijet djelomično zastao u nastojanjima da se očuva od nove nepoznate bolesti, bilo je potrebno pronaći način na koji će Republika Hrvatska održati kontinuiranost postupaka ishoda potrebnih dokumentacije za provedbu pojedinih zahvata i mogućnost njihove provedbe.

Jedna od glavnih aktivnosti u postupku ishoda potrebnih dozvola za veće gospodarske projekte je upravo procjena utjecaja zahvata na okoliš. Navedeni postupak u Republici Hrvatskoj nema valjanu alternativu te je nužno čak i u vremenima kriznih situacija postupak prilagoditi tako da je isti moguće provesti bez značajnih problema i prepreka.

U drugom dijelu ankete upućene javnopravnim tijelima i ovlaštenicima naglasak je bio na problematici uvjeta poslovanja u uvjetima pandemije koronavirusne bolesti (COVID – 19). Prema rezultatima ankete svi zaposlenici ovlaštenika koji su pristupili anketi imali su u periodu od 11. ožujka 2020. godine do rujna 2022. godine minimalno jedan dan rada od kuće. Većina zaposlenika javnopravnih tijela koji su pristupili anketi (85,3%) izjasnila su se da su minimalno jedna dan proveli radeći od kuće (Slika 5).

Jeste li u periodu od 11. ožujka 2020. godine (dan proglašenja pandemije COVID-19) do danas imali minimalno jedan dan "rada od kuće"?

34 odgovora



Slika 5. Prikaz radnih dana provedenih na „radu od kuće“ kod ispitanika javnopravnih tijela

Svi ispitanici su zamoljeni da samostalno procjene koliko su ukupno dana od proglašenja pandemije proveli „radeći od kuće“. Procijenjeni dani „rada od kuće“ kod zaposlenika ovlaštenika i javnopravnih tijela kreću se od 0 dana do 550 dana.

Ovlaštenici su se izjasnili kako im „rad od kuće“ nije stvarao probleme prilikom izrade dokumentacije za provedbu postupka procjene utjecaja zahvata na okoliš (87,5%), a isto tako su se izjasnili i zaposlenici javnopravnih tijela (88,2%). Ispitanici koji su naišli na probleme prilikom izrade dokumentacije za provedbu postupka procjene utjecaja zahvata na okoliš su zamoljeni da navedu probleme na koje su naišli. Najčešće navedeni problemi su sljedeći:

- otežana komunikacija među izrađivačima tijekom rada od kuće (ovlaštenici)
- nemogućnost uvida u slične dokumente (javnopravna tijela)
- lošija mogućnost analize prostornih planova (javnopravna tijela)
- otežan rad iako postoji informatički sustav koji omogućava korištenje svih digitalnih dokumenata, kao i odobravanje i digitalno potpisivanje izrađenih dokumenata (javnopravna tijela)

Ovlaštenici su se na kraju većinski izjasnili (62,5%) kako su se u periodu od početka pandemije da kolovoza 2022. godine susreli s nekim problemom u provedbi postupka procjene utjecaja zahvata na okoliš, a koji je bio izravna posljedica pandemije. Navedeni problemi su:

- usporena komunikacija radi samoizolacija osoba zaraženih koronavirusom,
- održavanjem video konferencija umanjena je kvaliteta komunikacije,
- problemi u organizaciji terenskih uzorkovanja ili uvida,
- dugotrajnost postupka,
- otežano spajanje na platforme kao što su Zoom i Microsoft Teams,
- nezainteresiranost ili neznanje javnosti za postupke PUO.

Ispitanici javnopravnih tijela većinski (79,4%) su se izjasnili kako im je tijekom „rada od kuće“ bila dostupna sva oprema i svi dokumenti/podaci za pripremu dokumentacije u postupku procjene utjecaja zahvata na okoliš. Dio koji se izjasnio kako je nešto nedostajalo ukazao je na sljedeće probleme:

- nedostatak opreme i dokumenata,
- otežano spajanje na platforme kao što su Zoom i Microsoft eams,
- problem organizacije i realizacije kod on-line javnih izlaganja jer je potrebno uključiti i dodatne usluge kolega informatičara,
- nemogućnost uvida u slične dokumente,
- nedostupnost informacija za koje ne postoje javno dostupne baze podataka ili su upitne kvalitete (nepotpuni, zastarjeli podaci),
- nemogućnost pristupa dokumentaciji koja se nalazi na serverima na radnom mjestu,
- nedostatak informatičke opreme,
- prostorni planovi u analognom obliku.

Za vrijeme rada od kuće ispitanici javnopravnih tijela (58,8%) i ovlaštenika (62,5%) komunicirali su kombinacijom službenog e-maila, službenog mobitela te davanjem na raspolaganje svog privatnog mobitela i privatnog e-maila.

Ovlaštenici su se većinom izjasnili kako nisu tijekom „rada od kuće“ imali problema u komunikaciji s investitorima (87,5%), a slično su naveli i zaposlenici javnopravnih tijela (97,1%).

Iz navedenog se može zaključiti kako su ispitanici imali pristup informatičkoj opremi različite kvalitete te su pritom nastajali manji problemi u radu.

Kod javnopravnih tijela 50% ispitanika sudjelovalo je u radu savjetodavnog stručnog povjerenstva putem videopoziva najmanje jedanput i pritom ih se 97% izjasnilo kako su ovakve sjednice bile prihvatljive i zadovoljavajuće kvalitete. Ispitani ovlaštenici (75%) u radu savjetodavnog stručnog povjerenstva putem videopoziva najmanje jedanput i svi su se izjasnili kako su ovakve sjednice bile zadovoljavajuće i prihvatljive kvalitete.

U zadnja dva pitanja ankete dana je mogućnost ispitanicima da sami prema svojem mišljenju daju prijedloge kojima bi se mogao poboljšati postupak procjene utjecaja zahvata na okoliš i koje poruke biste uputili ovlaštenicima/javnopravnim tijelima.

Komentari ovlaštenika na mogućnost poboljšanja postupka procjene utjecaja zahvata na okoliš većinom su se odnosili na duljinu trajanja postupaka, a kao najvažniji izdvojeni su sljedeći komentari:

- potrebna je prilagodba nadležnih propisa kojima bi se točno i precizno na nedvosmislen način propisalo rokove sudjelovanja tj. očitovanja dionika u postupcima,
- poboljšanje brzine rada u javnopravnim tijelima,
- poboljšanje stručnosti nadležnih javnopravnih tijela i voljnost donošenja odluka,
- bolje iskorištavanje znanstveno-stručnog potencijala javnih sveučilišta i javnih instituta,
- javnopravna tijela trebala bi biti brža u donošenju rješenja,
- kriteriji ocjene utjecaja zahvata na okoliš bi trebali biti ujednačeni,
- potreban je veći broj zaposlenih u nadležnim tijelima kako bi se brže rješavali predmeti,
- ulaganje u jačanje kapaciteta svih dionika u postupku
- aktivnije stručno povjerenstvo što posredno dovodi do bržeg rješavanja postupaka od strane nadležnog tijela.

Komentari javnopravnih tijela na mogućnost poboljšanja postupka procjene utjecaja zahvata na okoliš su bili raznovrsni, a kao najvažniji izdvojeni su sljedeći komentari u svrhu poboljšanja postupka:

- potrebno je brže provođenje postupaka.
- postupak bi trebalo pojednostavniti te obavezno odrediti rok dostave mišljenja, posebice od javnopravnih tijela zaduženih za zaštitu okoliša,
- veći udio stručnog osoblja povjerenstva koje je vezano za zahvat u procjeni utjecaja na okoliš,
- javna izlaganja obavezno trebaju biti u popodnevnim satima i dostupna svima (javna mjesta),
- nužna je bolja kapacitiranost tijela koja vode postupak,

- Studije bi trebale biti kvalitetnije izrađene
- potrebno je konkretno usmjeravanje (donošenje tematskih smjernica)
- nužna je bolja suradnja svih sudionika u postupku,
- svi članovi povjerenstva bi trebali sudjelovati u javnom izlaganju i izravno komunicirati s javnosti odgovaranjem na pitanja iz svoje nadležnosti,
- poštivati zadane zakonske rokove,
- ukloniti politiku iz provedbe postupka procjene,
- kvalitetno odraditi terenske obilaske lokacije,
- potrebno je više komunikacije između sektora što posljedično daje kvalitetniji/cjeloviti dokument za ocjenu zahvata i ubrzava postupak
- više se posvetiti informiranju javnosti vezano za sudjelovanje u Javnoj raspravi
- zatražiti izmjenu propisa kojim je definiran postupak procjene utjecaja na okoliš
- obratiti pažnju na postojeću prostorno plansku dokumentaciju.

Od poruka ovlaštenicima /javnopravnim tijelima neki od najzanimljivijih su:

- probleme s prostornom planskom dokumentacijom moraju rješavati javnopravna tijela, a ne izrađivači studija,
- postupci trebaju biti stručno utemeljeniji, uz iskorištavanje cjelokupnog stručnog potencijala javnog sustava znanosti i visokog obrazovanja,
- angažman privatnih tvrtki mora biti temeljen na jasnim stručnim kompetencijama, ne isključivo formalnim certifikatima,
- potrebna je bolja suradnja s lokalnom zajednicom, uz identifikaciju stručnjaka na lokalnoj razini čija bi kompetencija bar dijelom odgovarala stručnom poslu vezanom uz zaštitu okoliša (nužna kontinuirana edukacija odgovornih osoba na lokalnoj razini),
- ujednačeni kriteriji za sve postupke,
- bolja komunikacija,
- potrebno je inicirati edukaciju javnopravnih tijela,
- inzistirati na više komunikacije (telefonske i osobne) s nadležnim tijelima,
- kvalitetnije izrađivati Studije o utjecaju zahvata na okoliš,
- nametnuti načelo "manje je više" kako bi se izbjeglo atomiziranje, tj. da analitička strana i programska strana budu fokusirane na manji broj ključnih elemenata, a rješenja integrativnog karaktera,
- potrebno je profesionalno i stručno procijeniti mogući utjecaj planiranih zahvata na sve sastavnice okoliša,
- uputiti investitore o samom tijeku postupka i propisanim rokovima,
- studije o utjecaju zahvata na okoliš ne trebaju biti rađene generički, nego biti prilagođene pojedinom zahvatu,

- težiti urednijoj i potpunijoj dokumentaciji iz koje se mogu iščitati svi krucijalni podaci za provedbu postupka,
- potrebna je kvalitetnija prethodna priprema projekta koja potom rezultira bržim postupkom,
- kvalitetno pripremljena Studija utjecaja zahvata na okoliš direktno utječe na dužinu trajanja postupka procjene,
- staviti interes budućih generacija i okoliša i prirode ispred trenutnih interesa politike,
- isključiva je obveza poštivanja važećih propisa, a ne interesa pojedinih klijenata,
- primjenjivati opće sugestije i preporuke iz prethodnih postupaka,
- obrada varijantnih rješenja treba biti realnija,
- predložene mjere zaštite okoliša bi se manje trebale prepisivati iz prethodnih postupaka, a više prilagoditi danoj situaciji,
- za pitanja kulturne baštine angažirati stručne i kvalitetne suradnike,
- ubrzati proces donošenja odluka i rješenja,
- poraditi na dostupnosti podataka (ulaznih) za ocjenu zahvata i na samoj kvaliteti podataka,
- poraditi na osobnom pristupu članovima stručnih povjerenstava vezno za primjedbe na Studiju o utjecaju zahvata na okoliš.

Kao pozitivne promjene u provedbi postupka procjene utjecaja zahvata na okoliš nije bilo puno navedenih komentara. Većina ispitanika ovlaštenika (62,5%) i javnopravnih tijela (79,4%) dojma je da nije bilo pozitivnih promjena. Pozitivne promjene koje je manjina navela su da online sjednice mogu nekada ubrzati i pojednostaviti postupak na način unaprjeđenja komunikacije, konzultacija, sastanaka i sl. te se omogućava uključenje i onih koji možda ne bi mogli prisustvovati kada bi se održavalo uživo. Možemo istaknuti da se ovo ponajviše odnosi na zadnju sjednicu u postupku na kojoj savjetodavno-stručno povjerenstvo donosi Mišljenje o prihvatljivosti zahvata za okoliš.

4. ZAKLJUČAK

Analizirajući podatke prikupljene u anketi može se zaključiti kako se ovlaštenici i javnopravna tijela slažu oko bitnijih problema vezanih za postupke procjene utjecaja zahvata na okoliš. Problem duljine trajanja postupka procjene utjecaja zahvata na okoliš postoji već dugi niz godina i nije vezan isključivo uz pandemiju, ali u razdoblju pandemije se produbio.

Prilikom trajanja pandemije, prva sjednica savjetodavnog stručnog povjerenstva se održavala online što se kasnije pokazalo kao problem zato što je ovo jedina situacija u kojoj se članovi savjetodavnog stručnog povjerenstva upoznaju sa specifičnostima mikrolokacije na kojoj se predviđa budući zahvat. Informacije o mikrolokaciji zahvata koje su dostupne preko javnih servisa često su zastarjele i nepotpune. Uz ovo proizašao je i problem održavanja javnih izlaganja u sklopu javne rasprave na lokaciji zahvata pri čemu je zbog online održavanja javnog izlaganja bio slab odaziv zainteresirane javnosti. Zainteresirana javnost na lokacijama često nema kvalitetnu informatičku opremu, a među starijom populacijom nedostaje i osnovna informatička pismenost za sudjelovanje na ovakvom tipu izlaganja. Bitno je napomenuti da je javna rasprava jedini dio postupka u

kojem zainteresirana javnost može direktno izraziti svoje mišljenje i prijedloge vezane za zahvat.

Sukladno provedenoj analizi prikupljenih mišljenja zaposlenika ovlaštenika i javnopravnih tijela, predlažu se sljedeće smjernice u svrhu poboljšanja i ubrzanja postupka procjene utjecaja zahvata na okoliš:

1. Omogućiti javno dostupan pregled svih postojećih podataka o mikrolokaciji zahvata.
2. Redovito ažurirati informacije o mikrolokaciji zahvata na javno dostupnim serverima.
3. Identificirati stručnjake na lokalnoj razini čija bi kompetencija bar dijelom odgovarala stručnom poslu vezanom uz zaštitu okoliša (nužna kontinuirana edukacija odgovornih osoba na lokalnoj razini).
4. Zaposliti veći broj stručnjaka u javnopravnim tijelima koja sudjeluju u postupku procjene utjecaja zahvata na okoliš.
5. Uvesti digitalizaciju postupka procjene utjecaja zahvata na okoliš.
6. Izraditi Program prilagodbe postupka procjene utjecaja zahvata na okoliš u slučaju krizne situacije, a kojim će se dati smjernice provedbe sjednica, javne rasprave i javnog izlaganja u slučaju strožih mjera zaštite ljudi i ograničene slobode kretanja.

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SECTION B / SEKCIJA B

**STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) /
STRATEŠKA PROCJENA UTJECAJA NA OKOLIŠ (SPUO)**

Making strategic environmental assessment work for biodiversity in Croatia

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Abstract

Strategic Environmental Assessment is a tool used in the EU for mainstreaming biodiversity and environmental issues into other sectors of socio-economic development. SEA offers a high level of environmental protection and can shape plans, programs, and strategies towards a more sustainable solution. Based on the EU Commission SEA report (2019) and interviews conducted with practitioners in national SEA processes, the possibility of shaping plans towards more sustainable solutions has rarely been fully achieved. What are the obstacles to effective SEA national implementation and how to overcome them was the focus of this paper. The research was conducted with three main groups of stakeholders: consultants, the Ministry of Economy and Sustainable Development, and environmental Civil Society Organisations. As a result, opportunities and specific intervention points were identified. The main opportunities consist of raising the level of SEA inclusiveness, educating stakeholders in the SEA process and improving the initiation timing of the SEA process. Further, opportunities were developed into specific interventions and ranked based on five criteria: Impact, Probability of success, Cultural fit, Added value, and Resource intensity. This paper suggests that stimulating the application of existing guidelines and educating the SEA committee have the highest potential impact and added value to SEA process improvement, but educating the SEA committee is a more complex task due to high cultural challenges. Improving a SEA non-technical summary and standardising the public hearing forms are interventions with a high probability of success, culturally fit, and not resource intensive but with low impact on the overall SEA process. Importantly, 10 out of 15 identified specific interventions are unique for this project, indicating this work's novelty. Finally, this paper suggests that for long-term improvement of the national SEA process, establishing the SEA Technical Working Group is highly beneficial.

Keywords: SEA Directive, SEA Technical Working Group, EU legislation, Conservation Standards, Conceptual model, Contributing Factors.

1. INTRODUCTION

Strategic Environmental Assessment (SEA) is a cross-cutting tool of EU horizontal environmental legislation. Its objective is to provide for a high level of environmental protection and promote sustainable development by ensuring that environmental considerations are integrated into plans and programmes (PP) before their adoption. The SEA is the main tool designed by the EU to mainstream biodiversity and environmental issues in other sectors of socio-economic development (European Commission 2019, Milieu and Collingwood Environmental Planning 2019, Milieu and Collingwood Environmental Planning 2016).

Except for the high-level biodiversity integration, SEA as a tool can shape spatial plans and, therefore, modify and, in some cases, even remove questionable projects relatively early in the development process (European Commission 2019). These traits make SEA a unique tool in the EU toolkit for fostering sustainable development (European Commission 2019, Scottish Government 2013).

Croatia transposed the SEA Directive (2001/42/EC) into the Regulation on strategic environmental assessment of plans and programmes in 2008. (OG 64/08), and the Regulation was once amended in 2017 (OG 03/17). The first SEA in Croatia was finished in 2012 (Dvokut Ecro 2012), and several issues emerged during its development. Two years later, Croatia published national guidelines (Ministry of Environment and Nature Protection 2014) to clarify and solve some of the noticed procedural issues. Unfortunately, as this study showed, the SEA community did not widely adopt the document. Altogether, issues with SEA implementation are still present in Croatia, which mirrors the conclusion from many EU Member States (European Commission 2019).

Most of the interviewees stated similar problems (Figure 2) referred to in this document as contributing factors based on the methodology described in Open Standards for the Practice of Conservation (The Conservation Measures Partnership, 2020).

The work presented in this paper was conducted through several stages. The first step included an in-depth analysis of the body of literature on the SEA and focused on finding all known contributing factors from other EU countries. Secondly, the mapping of national stakeholders was conducted. Thirdly, the list of contributing factors was expanded with specific national ones gathered through workshops and interviews with three stakeholder groups:

- **Ministry of Economy and Sustainable Development** – is the policy maker for all environmental laws and regulations, including SEA regulations, controls that the SEA procedures are in accordance with EU and national legislation.
- **Consultants in environment and nature protection** – companies authorised by the Ministry of Economy and Sustainable Development to conduct SEA processes
- **Environmental CSOs** – represent the public in the SEA process.

Building on the interviews and workshop, a list of opportunities and specific intervention points was developed. Finally, the SEA Technical Working Group was proposed to improve national SEA practice.

2. METHODS

2.1. Desktop study of the current SEA application in Croatia and the EU

During the first stage of the project implementation, an analysis of available publications on SEA has been conducted. The analysis served to find contributing factors that hinder SEA implementation in EU member states and find similarities with the Croatian system.

2.2. National Stakeholder Analysis

The second part of the analysis consisted of mapping stakeholder groups in Croatia that are associated with the SEA process. The list of stakeholders presented here with their power-interest diagram (Figure 1) encompasses the SEA Community as a whole.

1. National authority: Ministry of Economy and Sustainable Development (ME&SD)
 - a. Department for Environmental Impact Assessment and Sustainable Waste Management (Dep. for EIA)

- b. Department for Nature Protection (Dep. for NP)
 - c. Institute for Environmental and Nature Protection (Institute for E&NP)
2. Public Authorities in charge of development and planning
 - a. National level: Ministries in charge of their sectoral developments and planning (16 bodies)
 - b. Regional level: County-level offices in charge of Planning (21 bodies)
 - c. Local level: Local governments in charge of planning (555 bodies)
3. SEA Committee
4. Consultants accredited for carrying out SEA
 - a. HUSZPO - The Croatian Association of Nature and Environmental Experts
 - b. Association for Environmental Protection Affairs as part of the Croatian Chamber of Economy
5. Civil society organisations
 - a. Zeleni Forum (Green Forum – Croatian network of CSOs in environmental protection)
6. Independent experts
7. Planners – experts developing different programs, plans and strategies

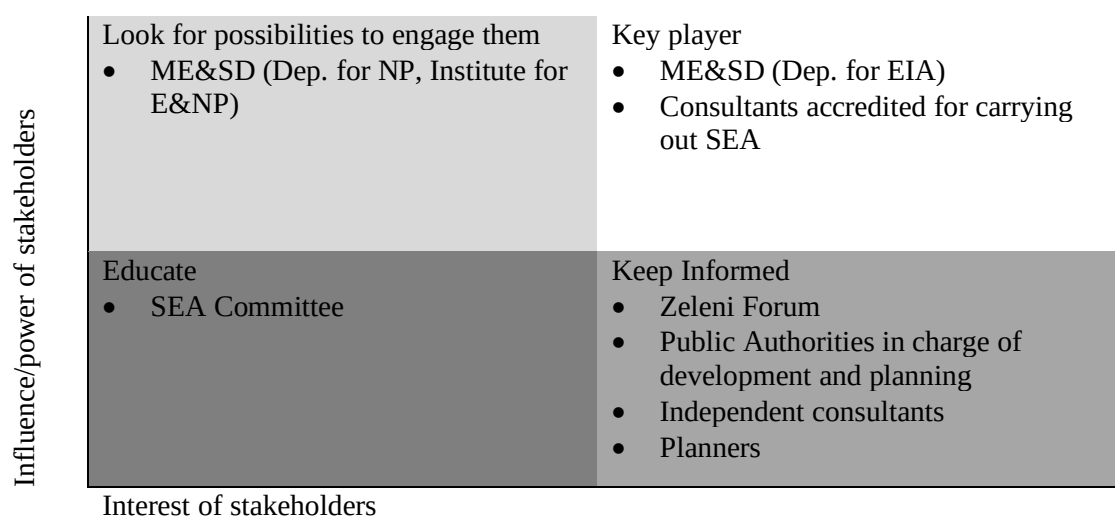


Figure 1. Power-interest diagram

2.3. Interviews and Workshops

In May 2021, three Ministry of Economy and Sustainable Development departments were interviewed. The departments were selected based on their role in the SEA process. The interviews were carried out over the Zoom platform. The list of interviewees is presented in Table 1.

Table 1. List of institutions with a role in the SEA process participating in the interviews

Institution	Role in the SEA process
Office for Ecological Network and Sustainable Use of Natural Resources as part of the Institute for Nature Protection	Giving official opinion on impacts on Natura 2000 network as part of SEA
Department for the Appropriate Assessment (for Natura 2000 network)	
Office for Assessing the Acceptability of plans and programs as part of the Department for Nature protection	Giving official opinion on impacts on the rest of biodiversity as part of SEA
Service for Strategic Assessment of the Impact of Strategy, Plan and Program on the Environment as part of the Department for EIA	Tailor the SEA legal framework including the framework regarding the SEA committee

The workshop with the CSO association was held on October 6th 2021. The workshop consisted of two parts: an info-sharing and an info-processing part, which led to the collection of CSO-specific issues in the SEA process.

The workshop was held in a virtual environment over the Zoom platform. The list of attendees is presented below (Table 2):

Table 2. List of affiliations participating on the workshop with Civil Societies

Affiliation
WWF Adria
Friends of the Earth Croatia

The workshop with the Consultants in Environmental and Nature Protection was held online on 13th October 2021. The workshop was designed with several polls going through every contributing factor at the time. Every poll question was closed, followed by a short discussion and info-sharing. The list of participants is listed below (Table 3).

Table 3. List of affiliations participating on the workshop with consultants

Affiliation
Eko Invest Ltd
Ekonerg Ltd
Elektroprojekt Inc, Zagreb
Fidon
Geonatura Ltd
Institut IGH Inc
Interkonzalting.hr
Ires Ekologija Ltd
Oikon Ltd
Urbanistički institut Hrvatske
Vita projekt Ltd

3. RESULTS

3.1. SEA Directive framework and scope

Defined in Articles 2(a) and 3(2) of the SEA Directive, plans and programmes which meet the following four criteria fall under the SEA framework:

- I. The plan and programme should be subject to preparation and/or adoption by a national, regional or local authority;
- II. legislative, regulatory or administrative provisions require it;
- III. It is prepared by any of the sectors listed in Article 3(2)(a) of the SEA Directive;
- IV. it sets the framework for future development consent of projects listed in Annexes I and II to the Environmental Impact Assessment (EIA) Directive.

In the sense of the Directive, the term “plan and programs” also extends to other documents that meet the above-mentioned criteria and can include any act, including laws, policies, strategies, and amendments. That was made clear by several judgments of the Court of Justice of the European Union, whose interpretation of the SEA Directive is binding (C-290/15, C-671/16, C-160/17, C-321/18, C-43/18, C-305/18).

As mentioned above, plans and programmes should be interpreted as broad as possible. The SEA REFIT showed that among EU member states, laws and high-level political decisions practically never go through a SEA procedure (European Commission 2019). The exception is Scotland, with its SEA assessment practice. Scottish transposition of the SEA Directive goes beyond the requirements of the Directive as it applies to a wider range of authorities and applies to plans, programmes, and strategies, including policies and legislation (Scottish Government 2013).

In Croatia, the SEA procedure for laws and policies has never been conducted, which could be considered a long-term threat to biodiversity. This issue arose in 2018 when the first flood risk management plan was adopted as a law act evading the SEA procedure (OG 118/08). On the contrary, EU practice is that flood management plans go through in-depth strategic analysis, looking for alternative and nature-based flood management solutions. (European Commission 2019). In the 2018 case in Croatia, the management plan consisted mostly of building embankments in Natura 2000 sites, which by many experts was considered to have a high impact on biodiversity.

Finally, clarifying the scope of the SEA Directive is an issue stressed in the recent Justice & Environment, WWF and EEB SEA position paper (Justice and Environment at all. 2020).

3.2. The SEA Screening

The SEA screening is the first step of the SEA procedure. In Croatia, the screening of the SEA is carried out by a public authority following the procedure set out in the national SEA Regulation. Although part of the whole SEA process, in Croatia screenings are skipped, and SEAs are directly initiated. This is because SEA is mandatory for all strategies, plans and programs, which are the only scope of the screenings. For instance, screenings in countries such as Scotland and Ireland are used to assess if SEA is needed for laws or policies (Scottish Government 2013, EPA 2012). As mentioned earlier, SEA regulation in Croatia doesn't apply to laws and policies; therefore, SEA screening is considered redundant.

3.3. The timing of the SEA

A common issue among EU member states is the timing of the SEA procedure in relation to the development of the plan or programme (Milieu and Collingwood Environmental Planning 2016). Research has shown that the best value for money is when the SEA starts simultaneously with the plan or program (European Commission 2019). Early start offers

a more strategic and inclusive approach and the possibility to explore a wide range of plan alternatives.

The Directive and the Croatian national law are not specific about the timing of the SEA. They both state that the SEA has to start before the plan or program is finished. Good practice emphasises that the SEA should start as early as possible in the planning or programming process, with the two procedures ideally carried out simultaneously.

In the EU practice, the SEA procedure (the screening) is initiated when the first draft of the plan or program is made. By then, all the fundamental decisions of the plan have already been taken, leaving little room for the SEA to improve on the plan's content.

In Croatia, SEA practice for spatial plans and their amendments has improved over the past years regarding the start of the SEA procedure, while for other plans, an improvement is not visible. Reasons for that could be found in the long national spatial planning tradition with authorities experienced in the inclusive process, contrary to exclusive sectoral planning practices.

Some evidence from the EU suggests that SEA for spatial plans is deemed effective (European Commission 2019). Those who oppose this statement argue that the SEA for spatial plans is in many ways like the EIA process (a big EIA), which is not the purpose of the SEA (European Commission 2019). The same opinion division was visible during the interview process, where some fractions of the Ministry highly valued the SEA spatial plan process, while the Consultant argued that it is an overly complex EIA.

3.4. Consultation in the SEA process

Consultation practices are important, as they foster communication among actors at different governance levels, enable public participation, increase transparency of the SEA process, and support the positive perception of 'plan ownership' by different stakeholders. However, in Croatia, the consultation practice is kept at a formal minimum.

3.4.1. Public consultation

The transparency and the opportunity for public engagement in plans and programmes are considered one of the major benefits of the SEA (European Commission 2019). The Directive says that the public has to be informed before the completion of the plan. A good practice is to include the public as early as the scoping is initiated, but this is rarely done. In Croatia, the public is first introduced to the plan when the plan and the SEA are completed, leading to nominal inclusiveness only. The interviewed civil society sector highly supported this statement.

Late public engagement is recognised as an issue that affects the effectiveness of the SEA at the EU level (European Commission 2019, Justice and Environment et al. 2020).

In Croatia, public awareness and knowledge of the EU environmental legislation constantly evolves. In 2015, the first public protests occurred against one SEA process (Ires Ecology 2015), and from that point, more and more CSOs became interested in engaging in the SEA consultation. Due to the current practice, their suggestions, comments, and amendments (no matter how elaborate) have been ignored or answered superficially, leaving the public no other choice but to protest, as the interviewee explained.

3.4.2. Communication among actors at different governance levels

The level of communication among different actors (excluding the public) varies between EU member states, with the overall conclusion that it should be improved (European Commission 2019). In Croatia, communication among different stakeholders is addressed at the scoping step of the SEA and during the SEA committee audits. The different sectors

are asked for input on the environmental report's scope in the scoping phase. SEA committees are formed in that stage, including members from different sectors with more leverage over the SEA development process. Both processes are characterised by formality and strictly bureaucratic communication that hinders the flexibility of the SEA, leading to extensive and difficult-to-follow environmental reports.

3.5. The flexibility of the SEA

SEA should be flexible in its interpretation to assess the wide range of plans and programs. The SEA Directive leaves flexibility to each member state in the application. The Directive sets the rules for which plans should undergo the SEA process and defines the general step-by-step approach. The flexibility of the SEA process depends on the traditions of specific EU member states and the transposition into their national laws.

Scoping is the following step once the screening concludes that the plan is subject to a SEA. As mentioned above, scoping defines the scope and level of detail of the information to be covered in the environmental report. Member states have wide discretion in organising the scoping phase of a SEA, limited by the sole obligation to consult the authorities with specific environmental responsibilities.

In Croatia, public authorities responsible for the SEA carry out the scoping phase. In this process, opinions of sectoral public bodies listed in the SEA Regulation are collected. The scoping phase does not involve stakeholder analysis and consultation (except for the mandatory opinions) nor engage the public in any way. The general result of the scoping is that every component of the environment is considered equally important, no matter the plan's topics and outcomes. Leading to the production of overly detailed SEA environmental reports.

3.6. Environmental monitoring

Environmental monitoring among EU member states appears to be poorly implemented, as the SEA process stopped after the plan's adoption (European Commission 2019). Nationally, none of the interviewees have had any experience implementing the SEA monitoring program, leading to the same issue.

3.7. Conceptual model of contributing factors in Croatia

Finally, contributing factors have been conceptualised using Miradi Software (CMP 2013-2016) in a conceptual model (Figure 2).

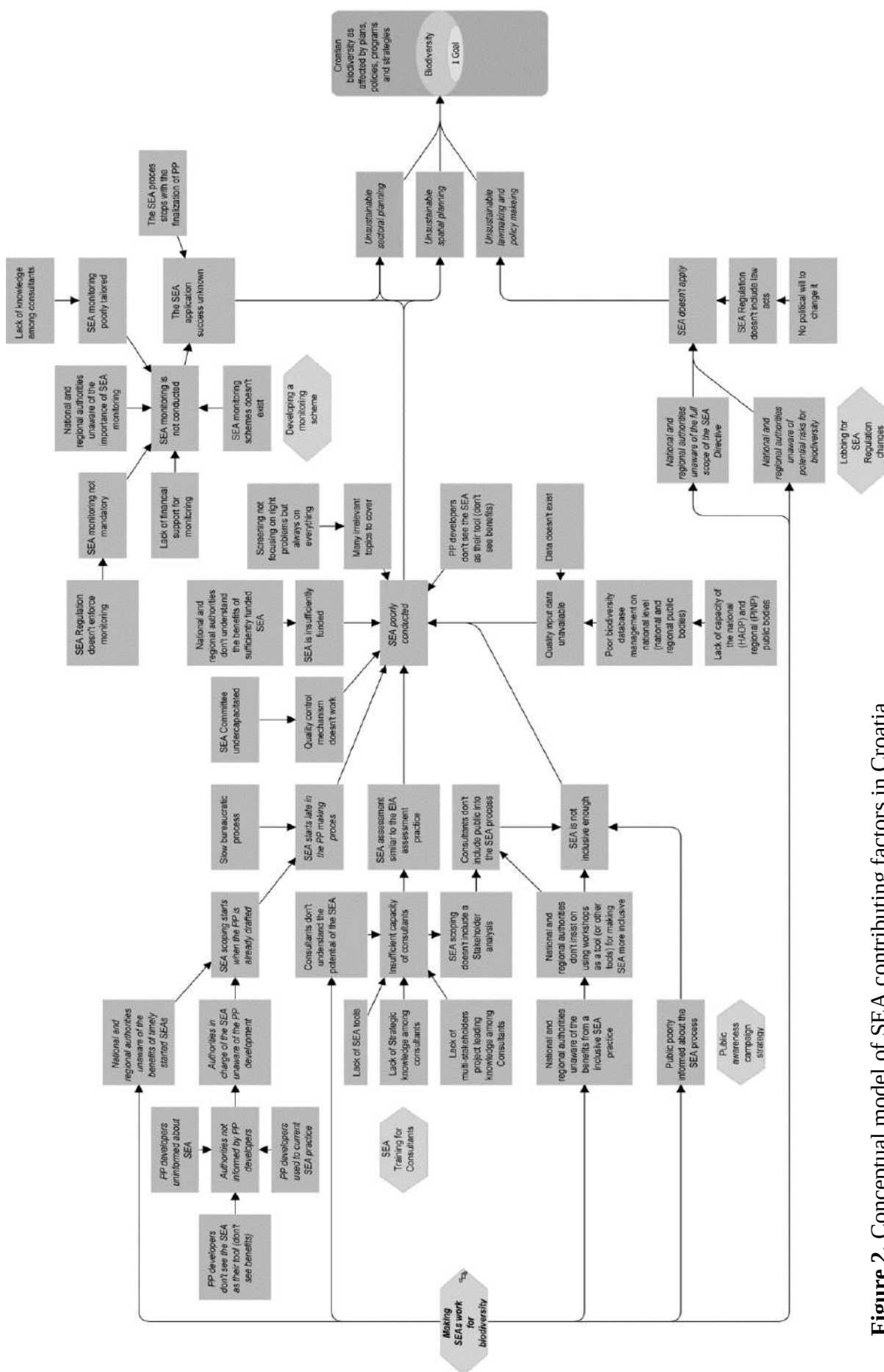


Figure 2. Conceptual model of SEA contributing factors in Croatia

3.8. Assessment of opportunities for improvement of the SEA practice in Croatia

Based on interviews and stakeholder workshops, an assessment of Croatian-specific opportunities and possible interventions has been created. Every opportunity and intervention have then been valued against several criteria (impact, probability of success, cultural fit, added value, and resource intensity, Table 4) to identify the most feasible opportunities to focus the activities of the SEA Technical Working Group.

Table 4 presents a full list of opportunities and interventions with all the ratings. The final score represents the average of the scores given for every criterion based on the interview and workshop inputs.

Results of the opportunity ranking suggest that the main opportunities consist of Raising the level of SEA inclusiveness, Educating stakeholders in the SEA process, and Improving the initiation of the SEA process. On the other hand, while looking at the list of specific interventions, four interventions stand out:

1. Stimulate the application of existing SEA guidelines
2. Make a non-technical summary of SEAs useful for the general public
3. Standardize the Q&A forms as part of the public hearings in a way that is transparent and easy to follow
4. Education of the SEA committee

This assessment suggests that stimulating the application of existing guidelines and educating the SEA committee have the highest potential impact and added value, but educating the SEA committee is a more complex task due to fairly high cultural challenges. Working on a non-technical summary and standardising the public hearings forms are interventions with a high probability of success, culturally fit, and not resource intensive. Conversely, those interventions have a fairly low impact on the overall SEA process.

Another important thing is that 10 out of 15 identified specific interventions are unique for this project (have a maximal added value), indicating this work's novelty.

Table 4. Opportunities and specific intervention assessment criteria

Category	Criteria	Value			
Impact	To what degree (if successful) does this work contribute to the goals and main objectives?	1- Poor	2- Fair	3- Good	4- Very Good
Probability of success	What is the probability that we have an impact?	1- Poor	2- Fair	3- Good	4- Very Good
Cultural Fit	To what degree does this work fit with our history and culture?	1- Poor	2- Fair	3- Good	4- Very Good
Added value	To what degree is the intervention unique in this work?	1- Poor	2- Fair	3- Good	4- Very Good
Resource intensity	To what degree is this intervention demanding on our resources (time, budget)? Note: scoring is reversed	1- Very high	2- High	3- Average	4 - Limited

Table 5. Assessment of opportunities and specific interventions

#	Opportunity	#	Specific intervention	Impact	Probability of success	Cultural fit	Added value	Resource intensity	Weighted Sum	Weighted Average
1	Raise the level of SEA inclusiveness	1.1	Stimulate the application of existing SEA guidelines	4	3	3	4	3	17.0	3.4
		1.2	Make a non-technical summary of SEAs useful for the general public	2	4	4	3	4	17.0	3.4
		1.3	Include the interested public in several stages of the SEA process (public hearings, workshops)	3	2	1	3	2	11.0	2.2
		1.4	Standardize the Q&A forms as part of the public hearings in a way that are transparent and easy to follow	2	4	4	3	4	17.0	3.4
2	Education of stakeholders in the SEA process	2.1	Develop guidelines for SEA in Spatial Development for consultants	3	2	3	4	1	13.0	2.6
		2.2	Develop guidelines for SEA in other strategic documents for consultants	3	2	3	4	1	13.0	2.6
		2.3	Education of local, regional and national authorities	3	1	2	4	1	11.0	2.2
		2.4	Education of Civil Society Organisations	2	2	2	4	2	12.0	2.4
		2.5	Education of the SEA committee	4	3	2	4	2	15.0	3.0
3	Improve the initiation of the SEA process	3.1	Improve the workflow with local and regional authorities	4	2	2	4	1	13.0	2.6
		3.2	Stimulate the application of existing SEA guidelines	4	3	3	4	3	17.0	3.4
4	Develop approaches for PP monitoring			2	1	1	4	2	10.0	2.0
5	Increase SEA findings			4	1	2	2	3	12.0	2.4
6	Increase the cooperation between planners and consultants			3	3	2	4	2	14.0	2.8
7	Make SEA content tailored for specific projects			3	2	2	3	2	12.0	2.4
TOTAL				46	35	36	54	34		

3.9. Considerations towards SEA Technical Working Group

The SEA Technical Working Group, as a solution for long-term improvement of the SEA practice in Croatia, was presented to every stakeholder involved in the study. Their input on how the group should work was acknowledged and collected.

One of the questions that has been asked is how much work time every stakeholder spends working with SEA. This question is relevant to the working group foundation. The logic behind this is that the stakeholder group working the most with the SEA have more incentive to host and use a working group than stakeholders that are marginally involved in the SEA process (even if they have greater power). The result shows that consultants who work with SEA spend more working time working on SEA than other stakeholders (Figure 3). The level of interest for SEA was visible during workshops where the consultants were the most numerous (18 participants from 11 companies).

An important question for the function of the working group is also: Who is most interested in high-quality SEA procedures? To answer this question, we should consider why stakeholders could be interested. Direct environmental improvements from a better SEA process should be of interest to the country in fulfilling ambitious multinational agreements such as the Paris Agreement and the post-2020 global biodiversity framework. Thus, the Ministry, by extension, should share an interest in high-quality SEA procedures.

The consultants could be interested in high-quality SEAs if the quality improvement improves the financial aspect of their work. Independent experts could also benefit from higher-quality procedures in a similar manner as consultants. Finally, the public should be interested as more participatory SEAs would allow them to shape policies that affect them.

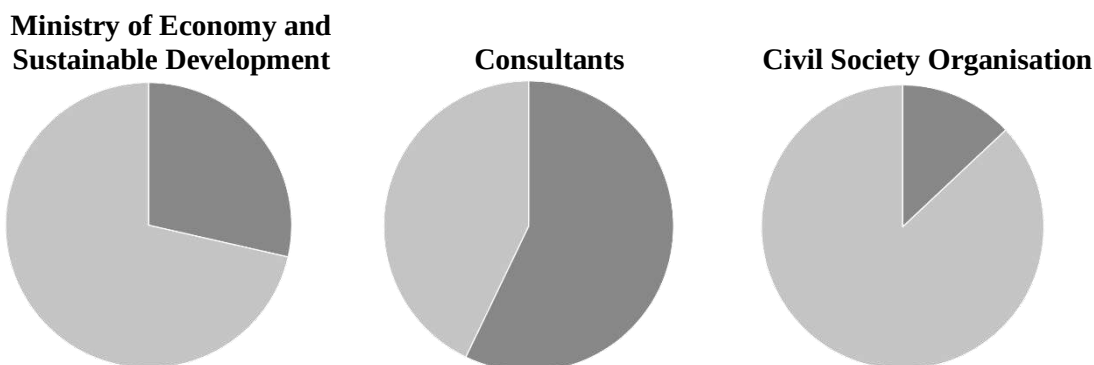


Figure 3. Percentage of working time spent on SEA-related works among different stakeholders (dark grey - SEA, light grey - other).

Finally, The SEA Technical Working Group should be an independent network and forum for all those active in the SEA field hosted by one of the two associations of consultants accredited for carrying out SEA (Croatian Association of Nature and Environmental Experts (HUSZPO) or Association for Environmental Protection Affairs as part of Croatian Chamber of Economy). The Group aims are defined:

- to offer a network and forum for good experiences and existing challenges.
- to be a focal point for sharing advice on better SEA implementation (including, among other things, producing guideline documents and organising dedicated workshops and meetings)

- to be inclusive and participative, finding solutions with all stakeholders involved in the process.
- to bring together the experience, competence and creativity of all SEA actors and thus expand the “SEA horizon” and contribute to the quality assurance of SEA tool overall.

Ideally, the group meets every quarter to six months, and their members must be professionals and experts in the SEA field.

4. CONCLUSION

This study can be seen as a first step towards national SEA practice improvement, contributing by highlighting current SEA constraints and limitations. SEA is poorly understood: various projects, different in geographical scale and thematic scope, share the SEA name. Approaching all of them at once doesn't offer the level of detail needed for a change. A topic- and scale-specific approach through the SEA Technical Working Group seems to be the best approach to overcome this issue.

Through the project, a national overview of challenges and opportunities in implementing SEA has been performed, with common problems being identified and shared among stakeholders.

On the other hand, agreement between stakeholders on the vision of good SEA practice was not achievable. Contention over specific definitions still exists; for instance, the word “participative” is perceived differently among different stakeholders. The Ministry considers the process participative based on the legal obligation to have a public hearing. CSOs see it as not participative at all, saying that the public hearings are proforma. Based on those two opposite opinions, there is a need to find the right participation balance, which could be addressed by the SEA Working Group.

Finally, this project focused on the SEA practitioners at the ministry level and identified that future work should include local and county-level officials as well as plan developers.

5. ACKNOWLEDGEMENTS

This project was developed as part of The Klaus Toepfer Fellowship Program implemented by the German Federal Agency for Nature Conservation (BfN). I would like to thank the KTF team and all the fellows for their support. I would like to thank my partner, Dunja Delić, for helping me facilitate and prepare workshops and interviews. I would also like to thank my mentor, Huria Ogbamichael, who was always cheerful, giving me much-needed advice on how to work with people and opening my eyes to a group and power dynamics. Finally, I would also like to thank my mentor, Gesa Geißler, for sharing her knowledge of the SEA and EIA process with me.

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Provedba SPUO Razvojne strategije Grada Zagreba za razdoblje do 2020. godine

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Sažetak

U programskom razdoblju 2014.-2020. za županijske razvojne strategije prvi put je propisana potreba izrade strateške procjene utjecaja na okoliš. U Gradu Zagrebu izradu Razvojne strategije Grada Zagreba za razdoblje do 2020. godine vodio je tadašnji Gradski ured za strategijsko planiranje i razvoj Grada, nositelj izrade, koordinator i izrađivač, a ujedno i nadležno tijelo u procesu strateške procjene utjecaja na okoliš.

U radu su opisani svi provedeni koraci te je dan pregled prednosti i nedostataka s pozicije izrađivača Razvojne strategije. Proces provedbe strateške procjene utjecaja na okoliš s obzirom na svoju kompleksnost zahtijevao je značajne ljudske i financijske kapacitete, ali je pozitivno utjecao na kvalitetu samog strateškog dokumenta i pridonio dodatnom uključivanju stručne i šire javnosti u izradu Razvojne strategije.

Za novi akt strateškog planiranja, Plan razvoja Grada Zagreba za razdoblje 2021.-2027., također je pokrenut postupak strateške procjene utjecaja na okoliš. Iskustvo provedbe procesa za prethodnu razvojnu strategiju koristit će u izradi dokumenta za ovo sedmogodišnje razdoblje. Kroz stratešku procjenu dodatno će se obraditi klimatska i okolišna pitanja koja predstavljaju ključni izazov ne samo za naredno programsko razdoblje, već su i temelj budućeg ravnomjernog i održivog razvoja koji nema alternativu.

Ključne riječi: razvojna strategija, strateška procjena utjecaja na okoliš

Implementation of the SEA for the Development Strategy of the City of Zagreb for the period up to 2020

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Abstract

In the programming period 2014-2020 for county development strategies, the need for a strategic environmental assessment was prescribed for the first time. In the City of Zagreb, the Development Strategy of the City of Zagreb for the period until 2020 was led by the former City Office for Strategic Planning and Development of the City, being responsible for preparation, development and coordination of the document, and being the competent body in the process of strategic environmental assessment.

The paper describes the process and provides an overview of the advantages and disadvantages from the position of the responsible developer of the Strategy. Due to the complexity of the Strategic environmental assessment, the process required significant human and financial capacity, but had a positive impact on the quality of the strategic document and contributed to the additional involvement of experts and the general public in preparing the Strategy.

For the new act of strategic planning, the Development Plan of the City of Zagreb for the period 2021-2027, the procedure of strategic environmental impact assessment has also been initiated. The previous experience of implementing the process will be useful in drafting of document for this seven-year period. The strategic assessment will further address climate and environmental issues, which are a key challenge not only for the next programming period, but are also the basis for future balanced and sustainable development that has no alternative.

Key words: development strategy, strategic environmental impact assessment

1. UVOD

U programskom razdoblju 2014. - 2020. godine za postupak izrade županijske razvojne strategije u Republici Hrvatskoj prvi put je propisana i potreba provedbe strateške procjene utjecaja na okoliš (SPUO). U Gradu Zagrebu izradu Razvojne strategije Grada Zagreba za razdoblje do 2020. godine vodio je tadašnji Gradski ured za stratejsko planiranje i razvoj Grada, nositelj izrade, akreditirani regionalni koordinator i izrađivač, a ujedno i nadležno tijelo u procesu strateške procjene utjecaja na okoliš.

Tema rada prvenstveno je utemeljena na višegodišnjem sudjelovanju u procesima izrade strateških razvojnih dokumenata Grada Zagreba, uključujući prvu županijsku razvojnu strategiju ZagrebPlan, Strateška razvojna usmjerenja do kraja 2013. godine, te iskustvima koordiniranja i izrade Razvojne strategije Grada Zagreba za razdoblje do 2020. godine i Strategije razvoja Urbane aglomeracije Zagreb za razdoblje do 2020. godine. Nastavno na izradu strategija, sudjelovanje u praćenju njihove provedbe ukazalo je na određene izazove, koji su se odnosili na uspostavljene procedure i pravila na nacionalnoj razini, ali i na svojevrzne operativne rizike na gradskoj razini.

Uz izazove praćenja i implementiranja zakonske regulative iz područja regionalnog razvoja, provedba procesa strateške procjene utjecaja na okoliš zahtijevala je balansiranje zahtjeva i pravila iz područja zaštite okoliša u odnosu na dominantni zakonodavni okvir.

Zakon o sustavu strateškog planiranja i upravljanja razvojem i izmjene Zakona o regionalnom razvoju doneseni su sa ciljem uređivanja područja strateškog planiranja. Uspostava ustroja regionalnog koordinatora u Gradu Zagrebu u formi javne ustanove koja u okviru svojih nadležnosti izrađuje Plan razvoja Grada Zagreba i provodi proces SPUO, prilika su da se sistematiziraju i vrednuju spoznaje o dosad izrađenim dokumentima, procesima i uvjetima u kojima su oni nastajali. Analizom dosadašnjih iskustava formirani su zaključci koji mogu unaprijediti procese vezane za izradu Plana razvoja Grada Zagreba, procese provedbe SPUO, ali i potaknuti daljnje sinergijsko djelovanje uključenih dionika koje će omogućiti da se dosadašnja iskustva u provedbi iskoriste za multipliciranje primjene i na druge strategije, planove i programe.

Održivi razvoj kao jedna od osnovnih postavki regionalnog razvoja upravo će se postići kao rezultat uravnoteženja gospodarske, društvene i prostorno – okolišne komponente, pri čemu je upravo strateška procjena utjecaja na okoliš prilika za čvršće ugrađivanje ovog koncepta u strateški dokument, a posljedično i u njegovu provedbu.

2. ZAKONODAVNI OKVIR ZA PROVEDBU SPUO I POLITIKE REGIONALNOG RAZVOJA

Regionalna i okolišna politika su u nadležnosti Europske Unije te su propisi koji pokrivaju ta dva sektora rezultat implementacije obveza iz europskih i međunarodnih sporazuma u hrvatsko zakonodavstvo. Zakonodavni okvir predstavljaju propisi za provedbu SPUO iz područja zaštite okoliša i propisi za izradu županijske razvojne strategije iz područja regionalnoga razvoja.

Zakonom o Gradu Zagrebu (Narodne novine br. 62/01, 125/08, 36/09, 119/14, 98/19, 144/20), čl. 1., uređuje se položaj, djelokrug i ustrojstvo Grada Zagreba, glavnog grada Republike Hrvatske, te je propisano da se, na sva pitanja koja nisu uređena ovim Zakonom, a odnose se na Grad Zagreb kao jedinicu lokalne samouprave koja ujedno ima položaj jedinice područne (regionalne) samouprave, primjenjuju odredbe Zakona o lokalnoj i područnoj (regionalnoj) samoupravi. Sukladno čl. 2. istog Zakona Grad Zagreb ima položaj županije.

2.1. Zakonodavni okvir za provedbu SPUO

Temeljni propis za provedbu SPUO, Zakon o zaštiti okoliša donesen 2013. godine, uređuje, između ostalog, načela zaštite okoliša i njegovih sastavnica, dionike u procesima, kao i dokumente i alate zaštite okoliša.

Na području informiranja potrebno je istaknuti Konvenciju o pristupu informacijama, sudjelovanju javnosti u odlučivanju i pristupu pravosuđu u pitanjima okoliša (tzv. Aarhuška konvencija) koja je usvojena 25. lipnja 1998. u danskom gradu Aarhusu. Konvencija je stupila na snagu 30. listopada 2001. te predstavlja međunarodni pravni okvir u području zaštite okoliša. Republika Hrvatska je postala stranka Aarhuške konvencije 2007. godine¹. U zakonodavni okvir implementirane su sve odredbe bitne za provedbu Konvencije, pa tako između ostalog u Zakon o zaštiti okoliša (NN 80/13, 153/13, 78/15, 12/18, 118/18) i Zakon o pravu na pristup informacijama (NN 25/13, 85/15).

¹ Hrvatski Sabor na sjednici 8. prosinca 2006. godine donio je Zakon o potvrđivanju Konvencije o pristupu informacijama, sudjelovanju javnosti u odlučivanju i pristupu pravosuđu u pitanjima okoliša

Uredba o informiranju i sudjelovanju javnosti i zainteresirane javnosti u pitanjima zaštite okoliša (NN 64/08) propisuje način informiranja javnosti o postupku izrade strateške studije, sudjelovanje javnosti u postupku strateške procjene, uključujući i način provođenja javne rasprave u okviru koje se organizira javni uvid i javno izlaganje.

Također je i u Zakonu o pravu na pristup informacijama ugrađena obveza konzultacija s javnosti u fazi izrade propisa prije formuliranja konačnog nacrtu koji se upućuje u procedure donošenja.

Zakonom o zaštiti okoliša, čl 63. propisano je kako se postupak strateške procjene utjecaja na okoliš (SPUO) provodi, između, ostalog, za planove, programe i strategije koji se donose na područnoj (regionalnoj) razini iz područja regionalnog razvoja. Detaljnije je način provedbe SPUO propisan podzakonskim propisima, osobito Uredbom o strateškoj procjeni utjecaja strategije, plana i programa na okoliš (NN 3/17).

2.2. Zakonodavni okvir za izradu županijske razvojne strategije

Proces strateškog planiranja kompleksan je i izazovan te zahtijeva multisektorski pristup, što između ostalog uključuje različitu razinu doprinosa relevantnih dionika, ovisno o opsegu i sadržaju strateškog dokumenta koji se izrađuje. Strateško planiranje također je proces usuglašavanja strateških prioriteta kroz konsenzus za koji je nužna kvalitetna komunikacija i sudjelovanje što šireg kruga dionika.

Temelji strateškog planiranja regionalnog razvoja u Republici Hrvatskoj uspostavljeni su 2009. godine donošenjem Zakona o regionalnom razvoju Republike Hrvatske (NN 153/09), a prve županijske razvojne strategije donesene su za razdoblje do 2013. godine, pa tako i Razvojna strategija Grada Zagreba, ZagrebPlan, Strateška razvojna usmjerenja do kraja 2013. godine koja je donesena u travnju 2012. godine². Nastavno na ulazak Republike Hrvatske u Europsku uniju 2013. godine, izrađen je i usvojen novi zakonodavni okvir.

Zakon o regionalnom razvoju Republike Hrvatske (NN 147/14, 123/17, 118/18) definira ciljeve i načela politike regionalnog razvoja. Osim nacionalne razvojne strategije, ovim je Zakonom propisana obveza izrade strateških dokumenata i za razinu županija (NUTS 3 razina). Županijska razvojna strategija određuje ciljeve i prioritete razvoja za područje županije i donosi se za sedmogodišnje razdoblje u skladu s višegodišnjim financijskim okvirom kohezijske politike EU. Razvojna strategija definirana je kao dokument koji daje opći okvir za društveno – gospodarski održivi razvoj županije, odnosno Grada Zagreba, uvažavajući prostorni aspekt i specifičnosti područja za koje se izrađuje. Govoreći o regionalnom razvoju potrebno je naglasiti značaj prostorno – okolišnog aspekta, jer su se europske razvojne politike prvotno usmjeravale na jačanje gospodarske i socijalne razvojne komponente, međutim u razdoblju 2014. - 2020. godine prepoznata je potreba osiguranja održivijeg i uravnoteženijeg razvoja određene prostorne cjeline, odnosno administrativnih jedinica i drugih cjelina za koje se strateški dokumenti izrađuju. U skladu s navedenim, zakonski je propisana obveza usklađivanja strategija s prostornim planovima odgovarajuće razine. Tako je, između ostalog, u čl. 11. Zakona o regionalnom razvoju navedeno kako su polazišta za izradu razvojnih strategija nacionalni razvojni dokumenti i prostorni planovi.

² Trajanje ZagrebPlana produženo je do kraja 2014. i 2015. s obzirom na to da su izrada novoga zakonodavnog okvira i proces izrade nove nacionalne strategije za razdoblje 2014.-2020. su premašili planirane termine. Nastavno je dopisom nadležnog MRRFEU potvrđeno trajanje svih postojećih županijskih razvojnih strategija do razdoblja usvajanja novih dokumenata

Zakon o regionalnom razvoju stupio je na snagu u siječnju 2015. te je započela izrada Strategije regionalnog razvoja Republike Hrvatske za razdoblje do kraja 2020. godine koja je usvojena u srpnju 2017. godine.

3. RAZVOJNA STRATEGIJA GRADA ZAGREBA

Izrada Razvojne strategije Grada Zagreba za razdoblje do 2020. godine (u daljnjem tekstu: Razvojna strategija) započela je 2014. godine, prije formalnog usvajanja novog zakonodavnog okvira regionalnog razvoja i tekla je paralelno s njegovom izradom.

Razvojna strategija izrađena je u skladu sa spomenutim propisima s područja regionalnog razvoja i pravilima izrade definiranim prvenstveno Smjernicama za izradu županijskih razvojnih strategija, praćenje i vrednovanje njihove provedbe (Ministarstvo regionalnog razvoja i fondova Europske Unije, 2015). Razvojna strategija rezultat je aktivnog sudjelovanja i doprinosa svih gradskih upravnih tijela prema pripadajućem djelokrugu odnosno nadležnosti, drugih dionika razvoja s područja Grada u skladu s područjem i temama kojima se bave, javnosti i Partnerskog vijeća (NN 103/15), savjetodavnog stručnog tijela koje sudjeluje u svim fazama izrade i provedbe strateškog dokumenta.

Paralelno s izradom nacrtu prijedloga Razvojne strategije provodio se postupak strateške procjene utjecaja na okoliš (SPUO) (Grad Zagreb, 2017).

Radnu skupinu za izradu Razvojne strategije osnovao je gradonačelnik Grada Zagreba radi sudjelovanja u pripremi i izradi strateškog dokumenta, kao i radi kvalitetne provedbe aktivnosti, programa i projekata definiranih strategijom. Slijedeći korake propisane Smjernicama za izradu, u procesu izrade strateškog dokumenta formirane su i praćene baze podataka, opsežno su analizirani makrosektori društva, gospodarstva, prostora i okoliša, te su formulirani razvojni problemi i potrebe. Definirana je vizija - općeniti cilj koji se dugoročno nastoji postići, kao i strateški okvir koji se sastoji od ciljeva, prioriteta i mjera. Na Slici 1. dan je Prikaz dionika u izradi Razvojne strategije.



Slika 1. Prikaz dionika u izradi Razvojne strategije

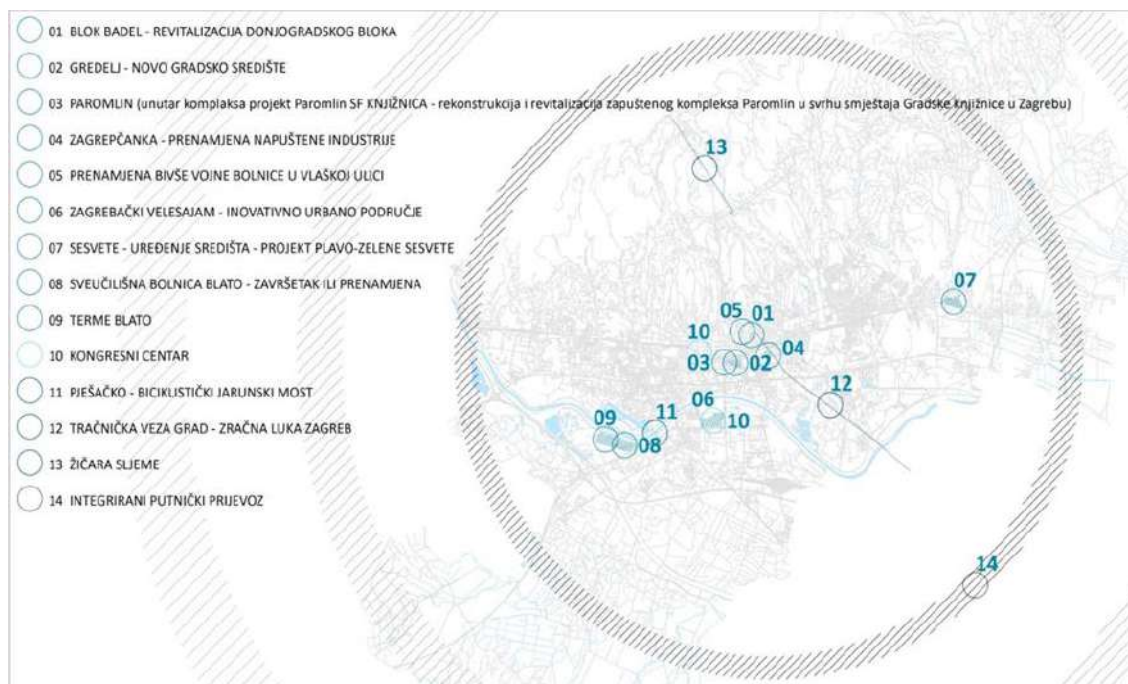
U Razvojnoj strategiji definirana je razvojna vizija Grada Zagreba kao urbanog inkubatora održivih koncepata, poduzetništva i novih vrijednosti koja se teži ostvariti kroz

6 strateških ciljeva: C1 - Konkurentno gospodarstvo, C2 - Razvoj ljudskih potencijala, C3 - Zaštita okoliša i održivo gospodarenje prirodnim resursima i energijom, C4 - Unapređivanje prostornih kvaliteta i funkcija Grada, C5 - Unapređivanje kvalitete življenja i C6 - Unapređivanje sustava upravljanja razvojem. Ostvarenje navedenih ciljeva predviđeno je kroz 21 razvojni prioritet i 89 mjera, odnosno kroz aktivnosti, programe i projekte planirane za vrijeme trajanja strateškog dokumenta.

Identifikacija strateških projekata važan je dio procesa izrade strategije i usklađena je s identificiranim razvojnim prioritetima i mjerama. Dio dokumenta čini popis strateških projekata, te je u smjernicama za izradu naveden orijentir da strateške projekte predstavlja oko 5-10 najvažnijih projekata koji se planiraju provesti u razdoblju provedbe Razvojne strategije. Za potrebe definiranja ključnih, strateških projekata za razvoj Grada Zagreba u obzir su uzeti i neki od sljedećih kriterija:

- ključni projekti urbane obnove i razvoja i stvaranja novih vrijednosti za Grad
- cjelovitost sustava strateških projekata – kako bi lista bila manja, ali artikuliranija od liste gradskih projekata
- definirana lokacija ili potpuno definiran nedostajući “strateški” sadržaj za koji se onda ispituje lokacija – utvrđeno kroz analiziranje razvojnih prednosti, ali i izazova Grada Zagreba
- vlasništvo Grada / sređeni vlasnički odnosi – s obzirom na to da je problematika imovinsko-pravnih odnosa složena, kao kriterij je uzeta u obzir i riješenost statusa zemljišta / lokacije
- jasne procedure provedbe i jasan cilj - za većinu projekata definirane su kroz važeću prostorno-plansku dokumentaciju, a za određene projekte u početnoj fazi definirani su koraci koji slijede
- ekonomski provedivi programi, planirani vremenski i organizacijski okvir – nositelji projekta unutar svojih nadležnosti definirali su (ovisno o fazi izrade) financijski, organizacijski i vremenski okvir
- neovisnost o političkim promjenama i pritiscima – uzeta je u obzir nužna utemeljenost liste projekata na načelima transparentnosti i participativnosti, prednost su imali projekti koji su prepoznati u stručnoj i široj javnosti.

Grafički prikaz lokacija strateških projekata Grada Zagreba odabranih sukladno postavljenim kriterijima dan je na Slici 2. Strateški projekti Grada Zagreba navedeni u Razvojnoj strategiji Grada Zagreba – radni prijedlog, listopad 2016.



Slika 2. Strateški projekti Grada Zagreba u Razvojnoj strategiji Grada Zagreba – radni prijedlog, listopad 2016.

S obzirom na to da Grad Zagreb ima značajnu ekonomsku snagu i kapacitete, Partnersko vijeće je tadašnji prijedlog sa 14 potencijalnih strateških projekata zadržalo u cijelosti. Uvrštavanjem Kampusa Borongaj na listu projekata konačan broj strateških projekata za razdoblje do 2020. godine time je zaključen na 15 projekata.

Nakon izrađenog konačnog prijedloga strateškog dokumenta, dobivenog pozitivnog mišljenja Partnerskog vijeća, provedenih postupaka vrednovanja i strateške procjene utjecaja na okoliš, uključujući provedeno savjetovanje s javnošću, Gradska skupština Grada Zagreba na sjednici održanoj 28. rujna 2017. godine donijela je Razvojnu strategiju. Zajedno sa strategijom, doneseni su i zasebni provedbeni dokumenti – Akcijski plan i Komunikacijska strategija te je započeo proces provedbe o kojem se jednom godišnje izrađuje izvješće koje sadrži financijske podatke kao i podatke o ostvarenju definiranih pokazatelja za praćenje uspješnosti provedbe dokumenta.

4. STRATEŠKA PROCJENA UTJECAJA NA OKOLIŠ – KORACI U POSTUPKU

Slijedeći odredbe Zakona o zaštiti okoliša, za Razvojnu strategiju Grada Zagreba provedena je strateška procjena utjecaja na okoliš (SPUO) u suradnji s Ministarstvom nadležnim za zaštitu okoliša. SPUO je provedena temeljem izdanog mišljenja nadležnog Ministarstva o potrebi provedbe postupka. Također, temeljem dobivenog mišljenja nadležnog Ministarstva da je Razvojna strategija prihvatljiva za ekološku mrežu, postupak Glavne ocjene prihvatljivosti za ekološku mrežu nije se provodio u okviru strateške procjene utjecaja na okoliš.

Govoreći o provedbi SPUO koja je zakonski propisana za dokumente iz područja regionalnog razvoja, potrebno je osvrnuti se na neujednačen pristup pri očitovanju o potrebi izrade SPUO za strateške razvojne dokumente pojedinih županija. U razdoblju 2014.-2020. dio županija dobio je mišljenje kako za razvojne strategije ne trebaju provoditi SPUO. Regionalni koordinatori na sastancima s Ministarstvom nadležnim za zaštitu okoliša predlagali su zauzimanje jedinstvenog stava prema strateškim

dokumentima jedinica regionalne (područne) samouprave, međutim takav stav nije bio usuglašen. Dio argumenata za eventualno izuzimanje iz potrebe provedbe SPUO objašnjavao se potrebom uvažavanja članka 69. Zakona o zaštiti okoliša koji govori o izbjegavanju umnožavanja strateške procjene. Pojedine županije pozivale su se i na izradu / izmjenu i dopunu prostornih planova županija koji se izrađuju na razini regionalne samouprave, a čija se procedura odvijala u vremenskom preklapanju s izradom razvojnih strategija. Sumirajući preporuke, županije koje su odgovarajuće elaborirale svoje zahtjeve za izuzimanje od provedbe SPUO nisu provodile postupak.

Druga nedosljednost u pristupu vezanom za izradu razvojnih strategija i provedbu SPUO odnosila se na fazu izrade u kojoj je zatraženo mišljenje nadležnog Ministarstva. Radi kašnjenja u donošenju izmjena propisa iz područja regionalnog razvoja, te različitih unutarnjih dinamika izrade, županije su pristupile pripremi razvojnih strategija u različitim vremenskim okvirima, a također i traženju mišljenja u različitim stupnjevima gotovosti dokumenta.

Pristup u Gradu Zagrebu vodio se načelom da je za očitovanje nadležnog Ministarstva potrebno dostaviti određene okvire strateškog dokumenta, te je mišljenje zatraženo u ranoj fazi izrade, ali kad su se već odredili načelni smjerovi razvoja temeljem kojeg se mogao utvrditi opseg i karakter dokumenta.

Strateška procjena utjecaja na okoliš započela je donošenjem Zaključka gradonačelnika Grada Zagreba o provođenju postupka³ u srpnju 2016. godine.

Prva radnja poduzeta u okviru postupka bila je određivanje sadržaja strateške studije u okviru koje je zatraženo mišljenje od relevantnih tijela u postupku, održana je javna rasprava, konzultacije s javnopravnim tijelima i zainteresiranom javnošću i temeljem pristiglih mišljenja u suradnji s odabranim ovlaštenikom definiran je sadržaj Strateške studije utjecaja na okoliš. O svemu je u skladu s propisima informirana i javnost. Nakon definiranja sadržaja Strateške studije, pristupilo se osnivanju savjetodavnog stručnog povjerenstva za stratešku procjenu (u daljnjem tekstu Povjerenstvo)(NN 70/08).

U ovoj fazi postupka došlo je do manjih vremenskih odstupanja zbog nerazumijevanja tematike od strane pojedinih institucija koje su trebale imenovati svoje predstavnike u Povjerenstvo. Nakon komunikacije i upućivanja na važnost ažuriranja popisa stručnih osoba⁴, također je, sukladno izmijenjenim okolnostima tijekom rada Povjerenstva izvršena izmjena sastava (imenovanje nove tajnice Povjerenstva).

Ovlaštenik je izradio Stratešku studiju te je o nacrtu Razvojne strategije i Strateške studije utjecaja na okoliš Povjerenstvo raspravljalo na dvije sjednice koje su održane u studenom i prosincu 2016. godine. Na drugoj sjednici Povjerenstvo je donijelo mišljenje da je Strateška studija cjelovita i stručno utemeljena čime je završio rad Povjerenstva.

Nakon završetka rada Povjerenstva, nacrt prijedloga Razvojne strategije i Strateška studija upućene su u javno savjetovanje te su nakon provedene javne rasprave, obrade primjedbi / prijedloga i izrade tablica sa komentarima i objašnjenjem o prihvatanju / neprihvatanju primjedbi i prijedloga, Razvojna strategija i Strateška studija dorađene sukladno prihvaćenim primjedbama / prijedlozima. Sva dokumentacija poslana je nadležnom Ministarstvu na davanje mišljenja. Bitno je napomenuti kako su u procesu zaprimanja primjedbi / prijedloga u javnom savjetovanju uzeta u obzir i sva mišljenja pristigla izvan roka, jer je ocijenjeno da su značajna za završetak izrade dokumenata.

³ Zaključak KLASA: 960-03/16-12/11, URBROJ: 251-03-02-16-2 od 28. srpnja 2016. godine

⁴ Popis stručnih osoba koje mogu biti imenovane u povjerenstva za SPUO i PUO, a koji vodi nadležno Ministarstvo

Krajem veljače 2017. godine Gradski ured za strategijsko planiranje i razvoj Grada zaprimio je mišljenje nadležnog Ministarstva kako je postupak SPUO proveden u skladu sa propisima iz područja zaštite okoliša.

Postupak strateške procjene utjecaja Razvojne strategije na okoliš završio je izradom Izvješća o provedenoj strateškoj procjeni nakon donošenja Razvojne strategije i njegovom objavom na web stranici Grada Zagreba.

4.1. Strateška procjena utjecaja na okoliš – Strateška studija utjecaja na okoliš

U Strateškoj studiji identificirane su aktivnosti u okviru mjera i ciljeva Razvojne strategije koje mogu imati značajan utjecaj na okoliš te su utvrđene sastavnice okoliša odnosno opterećenja na okoliš, povezana s mogućim utjecajima. Zatim je dan pregled ciljeva relevantnih strategija, planova i programa Republike Hrvatske, te odnos ciljeva Razvojne strategije prema njima, a također je dan pregled ciljeva zaštite okoliša prema međunarodnim konvencijama i usklađenost ciljeva Razvojne strategije prema ovim ciljevima. Vrednovanje je izvršeno putem osnovnih sastavnica: kvaliteta zraka, klimatske promjene, tlo, voda, šume, krajobraz, bioraznolikost, kulturna baština, stanovništvo i zdravlje i okoliš, te otpad. Identifikacijom aktivnosti unutar mjera i ciljeva Razvojne strategije čijom provedbom se mogu očekivati utjecaji na okoliš ustanovljen je za svaki cilj pozitivni ili negativni utjecaj koji se može očekivati za pojedinu sastavnicu.

Razvojnom strategijom nisu predložena varijantna rješenja planiranih mjera i aktivnosti te kao takva nisu razmatrana Strateškom studijom. Kao varijantno rješenje uzeta je alternativna opcija – bez provođenja Razvojne strategije Grada Zagreba, odnosno mogući razvoj okoliša bez provedbe Razvojne strategije. Iz analize ova dva varijantna rješenja, zaključak je da se provedbom Razvojne strategije predviđaju veći pozitivni učinci na okoliš.

Tijekom identifikacije aktivnosti unutar mjera Razvojne strategije, došlo se do zaključka da velik dio predviđenih aktivnosti ima pozitivan utjecaj na stanovništvo i kvalitetu života preko unapređenja aktivnosti unutar sektora gospodarstva i pružanja usluga. Također je procjenom utvrđeno da je dio predviđenih aktivnosti namijenjen sektoru zaštite okoliša i prirode te da će se njihovom provedbom ostvariti pozitivan utjecaj na sastavnice okoliša (zrak, voda, tlo, biološka i krajobrazna raznolikost).

Također, procjenom je utvrđeno da je dio predviđenih aktivnosti namijenjen sektoru zaštite okoliša i održivog gospodarenja prirodnim resursima i energijom te da će se provedbom aktivnosti ostvariti pozitivan utjecaj na sve sastavnice okoliša. Analizom mogućih utjecaja aktivnosti unutar mjera i ciljeva Razvojne strategije ustanovljeno je sljedeće:

- Aktivnosti mogu imati pozitivan ili negativan utjecaj na neku od sastavnica okoliša, većeg ili manjeg značaja ovisno o vrsti aktivnosti,
- Aktivnosti imaju pozitivan utjecaj na stanovništvo i kvalitetu življenja,
- Provedbom aktivnosti unutar Cilja 1. Konkurentno gospodarstvo, mogu se očekivati uglavnom pozitivni utjecaji, a manjim dijelom negativni utjecaji na okoliš i stanovništvo,
- Provedbom aktivnosti unutar Cilja 2. Razvoj ljudskih potencijala, mogu se očekivati pozitivni utjecaji na stanovništvo,
- Provedbom aktivnosti unutar Cilja 3. Zaštita okoliša i održivo gospodarenje prirodnim resursima i energijom, mogu se očekivati uglavnom pozitivni utjecaji, a manjim dijelom negativni utjecaji na okoliš i stanovništvo,

- Provedbom aktivnosti unutar Cilja 4. Unapređivanje prostornih kvaliteta i funkcija grada, mogu se očekivati uglavnom pozitivni utjecaji, a manjim dijelom negativni utjecaji na okoliš i stanovništvo,
- Provedbom aktivnosti unutar Cilja 5. Unapređivanje kvalitete življenja, mogu se očekivati pozitivni utjecaji na okoliš i stanovništvo,
- Provedbom aktivnosti unutar Cilja 6. Unapređivanje sustava upravljanja razvojem, mogu se očekivati pozitivni utjecaji na okoliš i stanovništvo.

Mjere zaštite okoliša koncipirane su na način da predstavljaju mjere sprječavanja, smanjenja i ublažavanja negativnih utjecaja, u svrhu poboljšanja provedbe projekata koji proizlaze iz okvira Razvojne strategije, kako bi se osigurala zaštita pojedinih sastavnica okoliša na koje se očekuje negativni utjecaj provedbom aktivnosti. Mjere zaštite okoliša prikazane su u Tablici 1. Prikaz mjera zaštite okoliša – izvadak iz netehničkog sažetka.

Tablica 1. Prikaz mjera zaštite okoliša – izvadak iz netehničkog sažetka

Okoliš		Mjera zaštite okoliša	Mjera RSGZ
1.	Klimatske promjene, zrak	Uzeti u obzir osjetljivost projekata (zahvata) na klimatske promjene ovisno o lokaciji i utjecaju zahvata na klimatske promjene, a planske aktivnosti prilagoditi utvrđenoj osjetljivosti. Projekte razvijati sukladno dokumentu <i>Smjernice za voditelje projekata: Kako povećati otpornost ranjivih ulaganja na klimatske promjene, EK</i> (eng: Non-paper Guidelines for Project Managers: Making vulnerable investments climate resilient, European Commission). Prilikom uspostave i razvoja sustava gradskih projekata, dati prednost onim projektima koji imaju uključene mjere prilagodbe klimatskim promjenama.	1.1.2. Jačanje poduzetničke infrastrukture 3.1.4. Vrednovanje, zaštita i održivo upravljanje Savom 3.1.9. Zaštita i poboljšanje kakvoće površinskih i podzemnih voda 3.1.11. Unapređivanje sustava cjelovitog gospodarenja otpadom 3.2.1 .Poticanje korištenja obnovljivih izvora energije, kogeneracije, i ekološki prihvatljivih goriva 3.2.2. Povećanje energetske učinkovitosti u proizvodnji energije, sektorima industrije, zgradarstva, prometa i javne rasvjete 4.1.2. Modernizacija sustava zelene infrastrukture Grada 4.2.1. Očuvanje, obnova i održivo korištenje kulturne baštine 4.4.2. Integracija i poboljšanje ulične i cestovne mreže 4.4.4 .Poboljšanje prometa u mirovanju 6.2.1.Unapređivanje sustava strateškog planiranja i provedbe razvojnih projekata

	Okoliš	Mjera zaštite okoliša	Mjera RSGZ
2.	Vode	U svaku edukaciju poljoprivrednika uključiti Načela dobre poljoprivredne prakse. Prilikom planiranja i izgradnje nerazvrstanih cesta na području zona sanitarne zaštite izvorišta izgraditi sustav odvodnje oborinskih voda s pročišćavanjem prije ispuštanja u tlo/recipient. Prilikom planiranja rekonstrukcije mreže javne odvodnje, prednost dati dijelovima sustava koji su smješteni u zonama sanitarne zaštite izvorišta za piće.	1.3.2.Razvoj poduzetničkih vještina i edukacija poljoprivrednih proizvođača i šumoposjednika 4.4.3.Integracija i poboljšanje ulične i cestovne mreže 4.5.1.Poboljšanje komunalne opremljenosti gradskog područja – vodoopskrba i odvodnja
3.	Tlo	Prilikom odabira lokacija za provedbu razvojnih projekata a u cilju smanjenja zauzimanja novih (<i>greenfield</i>) prostora i/ili eventualne prenamjene poljoprivrednog zemljišta u nepoljoprivredne svrhe, prioritet dati uređenju i korištenju <i>brownfield</i> lokacija.	6.2.1.Unapređivanje sustava strateškog planiranja i provedbe razvojnih projekata
4.	Bioraznolikost, zaštićena područja, ekološka mreža	Razvoj turizma uskladiti s dokumentima upravljanja zaštićenim područjima, akcijskim planovima i ostalim dokumentima zaštite i očuvanja vrsta i staništa. Poboljšanjima cestovne infrastrukture osigurati da se izbjegne izgradnja na područjima gdje je moguće ugrožavanje rijetkih i ugroženih šumskih ili livadnih staništa. Mjerama ublažavanja posljedica elementarnih nepogoda (potres) u najvećoj mogućoj mjeri obuhvatiti i zaštićena područja prirode.	1.2.3.Unapređivanje turističke ponude 4.4.2.Integracija i poboljšanje ulične i cestovne mreže 5.2.2.Unapređenje sustava zaštite i spašavanja stanovništva, zaštite od požara i elementarnih nepogoda

	Okoliš	Mjera zaštite okoliša	Mjera RSGZ
5.	Krajobraz	Kroz uspostavljanje zelene infrastrukture, omogućiti uređenje zapuštenih prostora, izvedbu krovnih vrtova na velikim objektima (npr. garaže) te uspostavu zelenih zidova i krovnih vrtova na dijelovima grada gdje nedostaju zelene površine. U sklopu uspostave gradske baze razvojnih projekata predlaže se uvrstiti i sljedeće dokumente, kao osnovu za razvoj prostora, cjelovitu Krajobraznu osnovu Grada Zagreba s nižim razinama karakterizacije: - Studije za pojedina vrijedna ili posebno osjetljiva krajobrazna područja određena Krajobraznom osnovom Grada Zagreba, - Studiju vizualnog karaktera-analiza slike grada, - Strategiju zelenog sustava Grada Zagreba, - Izradu smjernica za krajobrazno oblikovanje i projektiranje u krajobraznim područjima visokih vrijednosti te u osjetljivim područjima s ciljem zadržavanja vrednovanih obilježja i prirodnih vrijednosti, - Izradu povijesne krajobrazne karakterizacije.	6.2.1. Unapređivanje sustava strateškog planiranja i provedbe razvojnih projekata

Mjere zaštite okoliša propisuju se u skladu s prepoznatim utjecajima za razinu svakog pojedinačnog projekta koji proizlazi iz Razvojne strategije, u okviru postupka procjene utjecaja zahvata na okoliš. Također, u okviru izrađenih strateških procjena utjecaja na okoliš za pojedine višesektorske ili sektorske dokumente na državnoj ili županijskoj razini, čije su aktivnosti povezane s provedbom Razvojne strategije, predložene su mjere zaštite, sprečavanja odnosno ublažavanja značajnih utjecaja.

Za praćenje stanja okoliša određeno je da će se provoditi kroz indikatore praćenja uspješnosti provedbe Razvojne strategije i predviđenih aktivnosti te kroz indikatore praćenja i mjere praćenja definirane Strateškom studijom, prikazane u Tablici 2. Mjere praćenja stanja okoliša.

Tablica 2. Mjere praćenja stanja okoliša

Sastavnice okoliša	Indikatori praćenja	Mjere praćenja	Nositelji
Klimatske promjene, zrak	Ukupna godišnja potrošnja energije prema oblicima energije	Izvješća o provedbi projekata korištenja energije iz obnovljivih izvora i prijave pravnih subjekata o emisijama i potrošnji energije, Izvješće o provedenim mjerama odnosno Energetska bilanca GZ	Gradski ured za energetiku, zaštitu okoliša i održivi razvoj
Krajobraz, prostor	Područja zelene infrastrukture	Broj razvojnih projekata s uključenim mjerama zelene infrastrukture	Gradski ured za stratejsko planiranje i razvoj Grada, Gradski zavod za zaštitu spomenika kulture i prirode

4.2. STRATEŠKA PROCJENA UTJECAJA NA OKOLIŠ – SUDJELOVANJE STRUČNE I OSTALE ZAJNTERESIRANE JAVNOSTI

Partnerstvo i participacija neizostavni su i iznimno važni za postizanje kvalitete dokumenata koji su rezultat procesa strateškog planiranja.

U okviru provedbe SPUO prvi formalni korak uključivanja javnosti bio je određivanje sadržaja Strateške studije, u okviru kojeg je u sklopu konzultacija održano javno izlaganje i provedena javna rasprava. U taj korak izrade uključili su se predstavnici dijela gradskih upravnih tijela i drugih institucija svojim komentarima i primjedbama. Na javnoj raspravi u svrhu usuglašavanja sadržaja Strateške studije većina komentara odnosila se na očekivani obuhvat dokumenta i na potrebu dodatnih pojašnjenja koraka u postupku. Pristigle primjedbe djelomično su uvažene. Neke se nisu ni mogle ugraditi u konačni sadržaj Strateške studije, budući da je u tom trenutku cijeli postupak strateške procjene za razvojne strategije bio relativno nova procedura i dionici nisu imali iskustvo sa sadržajem i karakterom studija utjecaja na okoliš koje se izrađuju za ovaj tip dokumenta.

U procesu izrade Strateške studije stručna javnost bila je uključena kroz davanje informacija i dostavu specifičnih podataka koje je ovlaštenik trebao za izradu studije, a nastavno je nakon izrade Strateške studije kroz Povjerenstvo za SPUO analiziran izrađeni materijal te dopunjen sukladno stručnim prijedlozima pojedinih članova. Također je razmatran odnos Razvojne strategije i Strateške studije te je intervenirano i u sam razvojni dokument u skladu s utvrđenim potrebama za pojedine (pretežno okolišne i infrastrukturne) teme.

Na nacrt prijedloga Razvojne strategije i Strateške studije koji su upućeni u javno savjetovanje pri kraju postupka izrade, pristigle su primjedbe i komentari 20 tijela / institucija, a sve pristigle primjedbe su u potpunosti ili djelomično prihvaćene. Razmatrajući sadržaj i opseg pristiglih primjedbi, utvrđeno je kako se nešto više od polovice odnosilo na intervencije u tekst Osnovne analize, odnosno ažuriranje podataka za koje su institucije uglavnom dostavile konkretne dopune za uvrštavanje. Ostale primjedbe su se, gotovo u jednakom dijelu, odnosile na mjere Razvojne strategije (pretežito korekcije stručnih termina i dopune pokazatelja) te na Stratešku studiju

(ažuriranje podataka sukladno određenim godišnjim izvješćima i programima koji su tada bili na snazi, te manja izmjena mjera zaštite okoliša). Savjetovanje je doprinijelo ažuriranju ključnih podataka Razvojne strategije i Strateške studije koje je, s obzirom na to da je izrada Razvojne strategije kompleksan i dugotrajan proces, bilo neizvedivo kontinuirano aktivno mijenjati.

4.3. Strateška procjena utjecaja na okoliš – rad Povjerenstva

Ključnu ulogu u pregledu, dopuni i konačnom odobravanju Strateške studije imalo je Povjerenstvo u koje su imenovani predstavnici odgovarajućih gradskih upravnih tijela, predstavnici gradskih ustanova, državnih institucija te predstavnici Ministarstva nadležnog za zaštitu okoliša. Na sjednicama (dvije održane sjednice Povjerenstva) su članovi Povjerenstva dali značajan kvalitativni doprinos jer su u okviru svojih kompetencija upozorili na potrebu dopune pojedinih poglavlja dokumenta Strateške studije, a isto tako i na izmjene i dopune pojedinih podataka u samoj Razvojnoj strategiji. Također, razina znanja dionika u Povjerenstvu značajno je rasla jer su se neki prvi puta našli u takvoj ulozi, ali su kroz praktični uvid i komunikaciju sa ostalim članovima stekli iskustvo sudjelovanja u ovom postupku. Zajedničkim komentiranjem koraka u postupku te nakon stručne diskusije oko pojedinih tema postignut je konsenzus oko konačnog sadržaja radnih materijala nacрта prijedloga Razvojne strategije i Strateške studije. Multidisciplinarnost povjerenstva značajno je utjecala na kvalitetu samih sjednica jer se većina sudionika temeljito pripremila za sastanke te izlagala sadržajno i koncizno. Cijeli proces rada Povjerenstva rezultirao je davanjem mišljenja da je Strateška studija cjelovita i stručno utemeljena čime je omogućena daljnja provedba postupka izrade i donošenja Razvojne strategije i Strateške studije.

Poseban izazov u radu Povjerenstva predstavljala je situacija koju se nije moglo unaprijed predvidjeti, odnosi se na izostanak bilo kakve komunikacije i sudjelovanja u radu jednog člana Povjerenstva, a tadašnjim propisima nije bilo regulirano rješavanje takve situacije. Radom ostalih članova Povjerenstva takva situacija uspješno je prevladana, a kasnijom izmjenom Uredbe o SPUO⁵ omogućena je zamjena članova Povjerenstva koji ne daju odgovarajući doprinos.

5. NAUČENE LEKCIJE ZA NOVO PLANERSKO RAZDOBLJE

Za Razvojnu strategiju za razdoblje 2014.-2020. godine prvi je put proveden postupak SPUO primjenom propisane kompleksne metodologije, što je bilo izazovno uskladiti sa izmjenama regulatornog okvira u području regionalnog razvoja. Koordinacija različitih razina dionika (nacionalna, regionalna / županijska i interna razina unutar sustava gradske uprave, vanjski dionici) pokazala se kao izazov sama po sebi. Iskustva provedbe SPUO postupka zahvaljujući temeljitoj pripremi pojedinih faza postupka općenito su pozitivna za sve dionike. Jačanje partnerstva i suradnje s posebnim fokusom na okolišne teme pridonijelo je kvaliteti same Razvojne strategije.

Izazov je u cijelom procesu povremeno predstavljala i nemogućnost pribavljanja svih detaljnih, cjelovitih informacija o projektima i drugih materijala nužnih za pripremu i izradu Razvojne strategije i Strateške studije. Općenito, nepostojanje institucionaliziranih mehanizama koji bi učinili obaveznim prikupljanje i dostavu podataka (posebno s tijelima državne razine) trajni je izazov koji se pokušava rješavati uspostavom organizacijskog okvira (nadležnosti, prava i obaveze pojedinih gradskih upravnih tijela i drugih dionika). Razina znanja pojedinih dionika u procesu kao i njihova angažiranost značajno je varirala,

⁵ Nova Uredba stupila je na snagu 19. siječnja 2017. godine, kad je već završeno savjetovanje s javnošću oko nacрта prijedloga Razvojne strategije i Strateške studije

te se kao i u drugim multidisciplinarnim procesima, ključnom pokazuje razina institucionalne i političke podrške.

Sam karakter SPUO pridonio je usklađivanju razvojnih smjerova postavljenih u Razvojnoj strategiji sa zaštitom prirodne i kulturne baštine, jer su mjere zaštite koncipirane tako da se toleriraju i pokušavaju ublažiti utjecaji koji nisu u sukobu sa ciljevima zaštite, a nije zauzet rigidan stav. Taj pristup odgovarao je karakteru dokumenta za koji se Strateške studija utjecaja na okoliš izradila. SPUO je integrirala sektorske spoznaje i prijedloge u Razvojnu strategiju te se time unaprijedio dokument.

6. GLAVNE PREDNOSTI PROVEDBE SPUO

Razvojne strategije, odnosno planovi razvoja županija predstavljaju podlogu za sufinanciranje županijskih projekata sredstvima iz europskih strukturnih i kohezijskih fondova, stoga je značenje tih dokumenata veliko. Samim time, mogućnosti SPUO koji se provode za spomenute strategije također su velike. Temeljem opisanih i provedenih koraka za SPUO Razvojne strategije Grada Zagreba za razdoblje do 2020. godine može se zaključiti sljedeće:

- Provedba SPUO zahtijevala je zajedničko promišljanje i djelovanje svih dionika te je doprinijela multidisciplinarnosti samog pristupa budući da su detaljnije obrađene okolišne teme
- Provedba SPUO je ojačala prostorno-okolišni aspekt strateškog dokumenta koji je pretežno po svom karakteru koncentriran na gospodarski i socijalni razvoj
- Provedba SPUO dala je dodatnu sigurnost za provedbu projekata Razvojne strategije s obzirom na to da uz pridržavanje propisanih mjera ne samo da neće biti štetnog djelovanja na okoliš već provedba pridonosi zaštiti okoliša
- Provedba SPUO omogućila je planiranje u svrhu osiguravanja održivog razvitka već u najranijoj fazi strateškog planiranja
- Provedba SPUO poboljšala je transparentnost odlučivanja u izradi strateškog dokumenta i uključila javnost u cijeli proces
- Prvom provedbom SPUO ojačani su institucionalni i administrativni kapaciteti za provedbu za sljedeće strateške dokumente.

S obzirom na to da je u samoj regulativi regionalnog razvoja propisano usklađivanje sa prostornim planovima, koji čine polazište za izradu strateških dokumenata (čl.11. Zakona o regionalnom razvoju RH) potrebno je i dalje raditi na usklađivanju okvira za strateško planiranje, prostorno planiranje i zaštitu okoliša, s ciljem izbjegavanja prostornih i međusektorskih konflikata.

7. ZAVRŠNA RAZMATRANJA I PREPORUKE

Posebno se ukazuje na poželjno reguliranje jedinstvenog pristupa o provedbi SPUO za planove razvoja jedinica područne / regionalne samouprave i reguliranje samog opsega SPUO sukladno karakteru takvih dokumenata u svrhu što operativnijeg procesa provedbe.

Okvir za izradu planova razvoja je jedinstven na način da su oni nužno usklađeni s nacionalnom razvojnom strategijom, sektorskim strategijama više razine, prostornim planovima jedinica područne / regionalne razine, propisan je načelni sadržaj, temeljem čega svi planovi razvoja sadrže propisane osnovne elemente, te bi SPUO trebao obraditi jednake elemente, naravno u specifičnom opsegu uzimajući u obzir karakter pojedine županije odnosno plana razvoja za koji se izrađuje.

U trenutnom sedmogodišnjem razdoblju (2021.-2027.) ponovno smo svjedoci situacija u kojima pojedine županije nisu trebale provoditi SPUO za izradu plana razvoja. Bez obzira na općeniti karakter dokumenta, može se konstatirati da će pojedine mjere usmjerene društveno – gospodarskom razvoju, čak ne uzimajući u obzir one sa prostornom komponentom (npr. inzistiranje na osnaženju prometne povezanosti kao preduvjeta za svaki oblik razvoja) ipak utjecati na promjene u prostoru koje je potrebno analizirati u odnosu na okoliš i procijeniti njihov utjecaj na održivi razvoj.

Još jedan argument za provođenje procesa SPUO je jačanje multidisciplinarnosti, jer u procesu strateškog planiranja nije propisano tko i na koji način sudjeluje, te obrađuje i analizira pojedine teme. Stoga treba paziti kako bi se kod izrade svih strateških planova uključilo relevantne struke, a osobito one koje imaju planiranje u svojoj domeni, poput arhitekata, urbanista, geografa, i sl., te upravo razumijevajući važnost održivosti i očuvanja okoliša, nužno je osigurati da stručnjaci za okolišne teme sudjeluju u izradi razvojnih planova. Također, izrađivači strateških studija (ovlaštenici) posjeduju iskustvo kroz izradu nekoliko generacija strateških studija za razvojne dokumente te su sposobni procijeniti potrebni obuhvat strateške studije i razinu obrade pojedine teme, kako se razvojni plan ne bi pretvorio u nešto što u svojoj osnovi ne treba biti. Bitno je da se njeguje pristup koji pokušava ublažiti negativne utjecaje i pritiske na okoliš, a ne ih rigidno provoditi kroz zabranu pojedinih aktivnosti, projekata i programa.

Reguliranjem jedinstvenog pristupa provedbi SPUO za sve razvojne planove jedinica područne / regionalne samouprave povećala bi se operativnost i funkcionalnost samog procesa, osigurala bi se razina provedbe SPUO sukladna razini dokumenta za koji se provodi, na jednostavan način bi se osigurala multidisciplinarnost u izradi dokumenta posebno vezano na teme zaštite okoliša i održivosti, a ujedno bi se ubrzao i olakšao postupak provedbe SPUO za postupak izrade i donošenja razvojnog plana koji je i sam po sebi dugotrajan i vrlo zahtjevan.

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SECTION C / **SEKCIJA C**

NATURA 2000 /

NATURA 2000

A strategic evaluation framework to measure and guide efforts to protect biodiversity: Effectiveness of the Natura2000 policy in France

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Abstract

Through the Natura 2000 policy, EU member states are committed to maintaining or restoring the favourable conservation status of a list of habitats and species throughout their territory. We show here that evaluating the effectiveness of this policy with regard to its assigned objectives requires translating these objectives into normative reference and then describing the constraints on habitats and species that the policy seeks to conserve. We propose a strategic evaluation framework based on this principle, applied at the level of the Metropolitan French territory, by relying on the exploitation of several data sets, whose are generally not mobilised by the standard evaluation procedure. The results are broken down by natural ecosystems and biogeographical regions, providing a dashboard for the policy that is the basis for a comprehensive strategic evaluation.

Keywords: Strategic Evaluation, Environmental Management, Policy Evaluation, Spatial Planning, Natura 2000.

1. INTRODUCTION

To avoid biodiversity erosion, the European Union has adopted a wildlife conservation policy, focused on a selection of species and habitats, whose lists are provided in the annexes of the ‘Birds Directive’ which came into force 40 years ago, and the ‘Habitats Directive’ which came into force 25 years ago. Under these ‘Nature Directives’, member states designate a functional network of sites and appropriate management measures that ensure the restoration or maintenance of natural habitats and species of community interest at a favourable conservation status (EEC Council 1992). This Natura 2000 (N2000) network is one of the largest coordinated protected area networks in the world with more than 27,500 sites covering 18% of the EU’s land area (European Commission 2018, Orlikowska et al. 2016) and is presented as the EU's major tool for protecting biodiversity.

If the N2000 policy consists of creating sites and implementing management measures, the desired effect must be evaluated Europe-wide and divided into large sectors: biogeographical regions. It is on this scale that states commit to improving biodiversity conservation status. Thus, every six years, they must provide the European Commission with a comprehensive diagnosis, for each biogeographical region, of the status of the target species and habitats, whether they are within the network of sites or not. This evaluation, called ‘reporting’, consists of assigning a conservation status score to each habitat and species on the lists set by the Directives. This evaluation is based on parameters defined at European level.

So far, these summaries have painted an overall negative picture, with only 15% of habitats and 27% of species in a favourable condition (EEA 2020). In terms of evaluation, this monitoring system provides essential information in terms of results. But, as reporting does not differentiate between results from inside or outside the network, and does not tie into the management measures implemented, it does not allow appraisal of how the action of the N2000 network influences species and habitats conservation status. The problem of assessing the effectiveness of the N2000 policy is, however, a major issue.

Given the wide diversity of approaches to environmental policy evaluation (Crabbe and Leroy 2008), three underlying rationales of public policy evaluation are generally distinguished : a juridical or judicial rationale (focused on the rule of law and the principle of good governance), an economic rationale (sometimes referred to as a business/managerial rationale), which focuses primarily on the policy goal attainment, effectiveness and efficiency, and a political rationale (with reference to democratic principles, representativeness, transparency, participation, etc.). Together, they are known as the JEP Triangle (Arts and Goverde 2006). However, most existing evaluations that deal N2000 policy, carried out on the initiative of European Union (McKenna et al. 2014; Milieu et al. 2016; European Court of Auditors 2017; European Commission 2015), or from scientific literature (Beunen and De Vries 2011; Lordkipanidze et al. 2018; Winkel et al. 2014; Watzold 2010; Pellegrino et al. 2017) have focused on the types of contracts, actors' logics and the strengths and shortcomings of the rules of implementation. Whilst the value of such evaluations can only be emphasised, on the other hand it is regrettable that there are not focused on the evaluation of the ecological performance of the policy (Busca and Salles 2005; Leroy et al. 2006; Leroy and Mermet 2014).

However, several studies have gone further by questioning the effect of the N2000 policy on other policies, whether through its capacity to influence the environmental policies of other member states (Bouwma et al. 2017) or its integration through other sectoral policies (Blicharska et al. 2011, Christensen and Kornov 2011, Sarvasova et al. 2013). These studies are very relevant in that they do not consider the N2000 scheme to be an isolated policy but look at its interactions with other policies, both in terms of the multiplication of its effects and external factors that counterbalance its effectiveness. Nevertheless, they all have in common that they do not focus on the policy's conservation objectives, at the risk of not being able to truly measure its impact.

This focus on the issues at stake is better integrated into studies based on measurements of the conservation status of certain species or habitats, on reduced scales, especially that of sites (Bretagnolle et al. 2011; Zehetmair et al. 2014a, 2014b; Brodier et al. 2013, Santana et al. 2014). While these works carried out on site, or even on the scale of individual plots, makes it easier to conclude on the specific effect of the management measures implemented by the N2000 policy, it does not give any indication of their effects on the biogeographical territories level, whereas it is on this level that states are committed to Europe. Some authors are looking for effects on a larger scale, by comparing temporal trends in conservation status indicators inside and outside the site network, either on a continental (Donald et al. 2007, Gamero et al. 2017) or country level, either using range parameters (Kubacka and Smaga 2019, Rodriguez-Rodriguez et al. 2019, Chetan and Dornik 2021) or population dynamics parameters (Silva et al. 2018, Princé et al. 2018, Rada et al. 2019). However, they are still too rare and only focus on a portion of the targeted biodiversity (often birds such as Gamero et al. 2017 or Princé et al. 2021).

Finally, a significant part of the evaluations focused on the relevance of the policy, i.e. the way the conservation issues are considered within the different policy tools. They mainly on established site networks, in order to evaluate their coherence, and in particular their 'representativeness' namely their adequate coverage of the range of species and habitats to be protected. These studies are based on the principles of systematic conservation planning (Margules and Pressey 2000) and deals with the European scale (Jantke et al. 2011; Albuquerque et al. 2012; Gruber et al. 2012; Trochet and Schmeller 2013; Maiorano et al. 2015; Zisenis 2017; Times et al. 2018), or on certain states (Verovnik et al. 2011; Rosso et al. 2018; Times et al. 2017). These studies, which often conclude by a relatively imperfect representation, do not, however, provide any information on the effectiveness of the N2000 policy, i.e. the effects of the network on the conservation status of species and habitats.

Despite their diversity, these studies therefore produce relatively disjointed evaluations that do not allow us to conclude on the adequacy or not of the N2000 policy to its mission of curbing the erosion of biodiversity in Europe. Rather than evaluating the environmental policy's effectiveness, they focus either on the ecological relevance of the management arrangements implemented (based mainly on the representativeness of the sites), or on the organisational relevance regarding the forms of coordination that these arrangements promote, or the coalitions that are deployed within them, which generally promise an outcome that should find itself improved, without this result being directly measured.

Faced with these shortcomings, the objective of this article is to provide a strategic framework for analysis and measurement that will improve the evaluation of the effectiveness of the N2000 policy. It is based on the principle that this effectiveness, and therefore the efforts made by the functional network of sites, can only be measured in relation to all the practices impacting the species and habitats they aim to preserve. As certain studies on public policy evaluation have shown, particularly those involving strategic environmental management analysis (Mermet et al. 2010 ; Billé 2007; Leroy, 2006), the evolution of the state of ecological systems, in this case the species and habitats covered by the Nature Directives, does not depend unequivocally on the protection actions being implemented, in this case the N2000 policy, but on all the actions and policies that affect, either positively or negatively, the state of these ecosystems. Because, without the ability to compare, on the one hand, the specific efforts undertaken in favour of the environmental policy objectives and, on the other hand, the resistance that sectoral development policies put up against these efforts, it is not possible to assess the extent to which an environmental policy is effective or not (Mermet et al. 2005).

In concrete terms, the aim is to carry out a rigorous diagnosis of the ecological situation in relation to conservation issues in the identified territories by specifying (i) the choice of the prescriptive referential on which the evaluation is based: What are the ecological objectives targeted? (ii) the current ecological situation, assessed on the scale expected from the policy objectives: What is the gap, between these objectives and the current state that can be observed, that would have to be bridged to achieve them? (iii) the accountability system analysis: What are the factors that need to be addressed to explain this discrepancy? This implementation of a relative strategic evaluation, an "on-board" framework evaluation approach (Leroy and Mermet 2012), makes it possible to prevent blurring of environmental bottom-line and identify the levers to improve the situation.

We applied this methodological framework to the French N2000 network. It is one of the largest in Europe, with an important diversity of ecosystems and socio-economic contexts, partly due to the presence of four biogeographical regions. Its size and complexity make it a appropriate case study for assessing the policy.

In the first part, we will therefore present the analytical and methodological framework, and the data from various sources that we have triangulated in order to establish a robust diagnosis. Then we will present the results obtained for France through the proposed strategic evaluation framework. These results will be presented on the scale of ecosystems and biogeographical regions, according to a threefold breakdown: the translation of the prescriptive referential into issues in the field, the analysis of the conservation status and the deviation from the objectives, and the analysis of pressures on these same scales and therefore the factors to be acted upon. We will conclude on the perspectives opened up by such a strategic evaluation framework.

2. ANALYTICAL FRAMEWORK

Application of the Strategic Environmental Management Analysis framework to the N2000 policy

The framework for strategic environmental management analysis (SEMA, Mermet et al. 2005; Mermet 2011) that we have decided to apply to the evaluation of the N2000 policy is an evaluation process following four work stages (Mermet et al. 2010; Leroy and Mermet 2012). In this article, we have focused on the first two stages that provide the basis for strategic evaluation: (stage 1) understanding the issues for the territory under consideration using the prescriptive referential and (stage 2) the dynamics of effective management that make it possible to identify the gap between policy objectives and the current observable state, as well as the factors that may explain this discrepancy. We will not develop the other two stages, namely (stage 3) intentional management, i.e. the full description of the action implemented by the N2000 policy (regulatory mechanisms and management measures, the statistical effect of site creation on conservation status) as well as other environmental policies that might play a role in achieving the objectives set by the 'Nature Directives', nor (stage 4) the identification of room for manoeuvre to redirect N2000 from this strategic diagnosis of the system of responsibilities (Rouveyrol and Leroy 2020).

These first two stages are as follows:

Defining the issues of the N2000 policy in the territory concerned: this involves translating the prescriptive referential set by the Nature Directives, i.e. the species and habitats of Community interest, into concrete issues for the territory concerned.

To this end, on the one hand we have identified the ecosystems (grassland, coastal, forest, etc.) with which the species and habitats targeted by the Nature Directives are associated, and on the other hand, their distribution by biogeographical regions. The approach by ecosystem rather than individual species and habitats permits to synthesize data while at the same time taking into account the pressures and management measures that remain largely specific to these different ecosystems. Their distributions by biogeographical regions (Figure 1) allow us to reduce our data to the scale at which member states are committed to achieving results. This dual entry ecosystem /biogeography allows us to mobilise georeferenced datasets on the state of these ecosystems that go beyond the information produced by the N2000 policy alone.

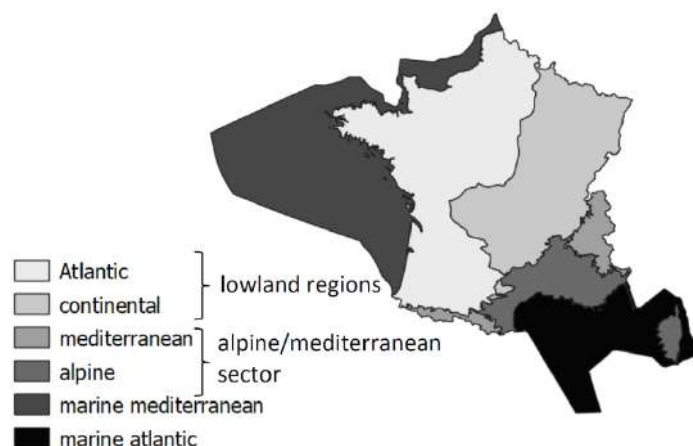


Figure 1. Biogeographical regions in France (Source MNHN 2011-EEA 2007): Regions with homogeneous ecological conditions on a European level. The Habitats Directive defines eleven terrestrial biogeographical regions and seven marine biogeographical regions.

Describing ‘effective management’ is based on an inventory of all practices, whether voluntary or not, of any actor and, more generally, of the sectoral policies that impact the conservation objective set, and assesses their effects. It allows identification of objective responsibilities in "de facto management."

For N2000, it will result in, on the one hand, work on the conservation status of habitats and species, making it possible to ascertain the distance to the target of the policy, which is their restoration or maintenance at a favourable conservation status. On the other, we will study the nature, intensity and location of the pressures exerted on them, which are the factors that explain this distance.

Let us now give details of the data mobilised to deploy such an analysis.

3. CONCEPTION AND CALCULATION OF THE INDICATORS

3.1. Data used

As previously mentioned, member states account for achievement of the objectives of the Nature Directives by means of reporting. For the Habitats Directive, it consists of providing an evaluation of the conservation status of each species and habitat of community interest on the level of each biogeographical region in which they are present. For the Birds Directive, the evaluation focuses on numbers and trends. The evaluations are made by experts (more than 400 experts mobilised for the Habitat Report in 2019), based on the best available knowledge (Bensetitti and Gazay 2019).

These data present two limitations in answering the questions being considered:

- They constitute an evaluation list by species or habitat, which are of little operational value for a global diagnosis. We have therefore broken them down into indicators, grouped thematically by ecosystem, and spatially according to biogeographical regions.
- They are open to criticism due to the excessive importance they give to expert opinions (Jeanmougin et al. 2017, Moser et al. 2016). In response, we have chosen to cross-reference them with several other sources of data relevant to the questions asked.

The information contained in the "Standard Data Forms" ("SDF database" in the article) is derived from biological field inventories describing each N2000 site. Their updating is the responsibility of the state services under the scientific responsibility of the MNHM. In 2017-18, a large amount of work was carried out to update this database on a national level (Rouveyrol et al. 2018). This SDF database is transmitted twice a year to the European Commission. We used here the version transmitted in December 2019.

Table 1 presents all the data used to establish our diagnosis and the treatments they have been subjected to. On the one hand, we have benefited from important updates of N2000 data conducted by the French National Museum of Natural History (MNHN), and on the other hand, we produced data specific to this analysis, covering the mapping of the ranges of species and habitats and the major types of ecosystems, detailed in supplementary materials, Annex 1. As mentioned in table 1, Some data were used to define the issues the policy has to deal with and other to assess its effectiveness.

Table 1. Data used for the diagnostic

Data / Source	Nature	Scale	Constructed indicator	Goal	Data processing
Reporting Fauna-Flora Habitats Directive MNHN 2019	Expert opinion (national)	Bioregion	Conservation status of habitats and species Major pressures cited for each ecosystem	Policy effect	1- Conversion of evaluations to scores (unfavourable-bad=1, unfavourable-inadequate=2, favourable=3) 2- calculation of average scores according to ecosystem and biogeographical region
Reporting Birds Directive MNHN 2013	Expert opinion (national)	National	Short term population trends by species	Policy effect	1- Conversion of trends to scores (reduction = 1, stable/fluctuating = 2, increase = 3) 2- calculation of average scores by ecosystem
Redlists IUCN/MNH N 2009-2019	Expert opinion (national)	National	Evaluation of risks of species extinction	Policy effect	1- Conversion of evaluations to scores (CR=1, EN=2, VU=4, NT=5, LC=5) 2- calculation of average scores according to environment and biogeographical region
'SDF' Base MNHN 2019	Expert opinion (from sites)	Bioregion	Occurrences of species and habitats* Total surface area of habitats * State of conservation of habitats and species*	Issues Policy effect	1- Conversion of conservation notes to scores A=4, B=3, C=2, D=1) 2- calculation of average scores according to ecosystem and biogeographical region/ total area and species reported.

Data / Source	Nature	Scale	Constructed indicator	Goal	Data processing
Layer Main types of ecosystem MNHN 2019 (synthesis)	Layer crossover	Bioregion	Surface area of different types of ecosystem	Issues	Cf. supplementary materials, annex 2 1- construction of layers. Main types of ecosystem 2- Crossover with biogeographical regions and calculation of total surface area by ecosystem and biogeographical region
Species distribution area MNHN 2018	Model-ling/ Kriging method or occurrence data	Bioregion	Surface area of species distribution area	Issues	Cf. supplementary materials, annex 1 1- Assignment of each species to a type of environment 2- Calculation of total surface area by ecosystem and biogeographical region

* only within the Natura 2000 network

3.2. A double declination of data by ecosystems and biogeographical regions

• Declination by ecosystem

The analysis by large types of natural ecosystems was based on the European typology Corine Biotope (Bissardon et al. 1997). Six types of ecosystem have been defined: grassland (code Corine biotope 3), coastal (1), continental waters (2), forests (4), rocky (rocks, screes and sand) (6), wetlands (5).

In order to establish the links between the species covered by the Nature Directives and these major types of ecosystem, a table was drawn up beforehand linking each species to its biotope. We excluded generalist species in order to select only species representative of these biotopes. These biotopes were then reduced to the level of the six types of ecosystem. The species-ecosystem and habitat-ecosystem link was made using the HabRef Knowledge Base (Gaudillat et al. 2017).

The category "Agricultural land and artificial landscapes" has been excluded from our typology: analysis of species-habitats links has shown that only 4% of the links were related to this ecosystem. For the habitats covered by the Directive, none relate to agricultural or urban areas.

• Declination by biogeographical region

The data from each N2000 site in the SDF database was linked to the biogeographical region that covered it in the majority. For the other spatialised data, the connection to the biogeographical regions was done by cross-referencing with the biogeographical region layer.

3.3. Methodology for defining issues: construction and analysis of species and habitat distribution indicators

For the distribution of species and habitats, we evaluated, through several sub-indicators, the proportion of habitats and species present, for the ecosystem under consideration, in each of the biogeographical regions. The indicators were constructed calculating proportion of surface area for habitats, of distribution ranges or total occurrences for species and using at last average values. The results for each sub-indicator were reduced

to three indicators: one species-specific (presence of species), one habitat-specific (habitat surface area) and one global indicator associated with both habitats and species (ecosystem coverage) (Table 2). The average of these three indicators is the final distribution indicator used for each ecosystem.

Table 2. Construction of distribution indicators

Indicator	Sub-indicators used	Metrics
Ecosystem coverage	Surface area by major ecosystem type	Total surface area
Species populations	Species occurrences within the N2000 network (base SDF) a. Habitats Directive b. Birds Directive	Number of occurrences (=one mention by site)
	Terrestrial species: Distribution ranges on the biogeographical region scale a. Flora b. Terrestrial fauna c. Birds	Total surface area
	Marine species: Encounter rates within the SAMM programme network a. Marine mammals b. Birds	Levels
Habitat surface area	Accumulation of surface area of habitats within the N2000 network (base SDF)	Total surface area
	Distribution ranges on the biogeographical region scale	Total surface area

3.4. Effective management data: construction of indicators of conservation status and pressure

• Conservation status indicators

We considered that conservation status could be evaluated using three sources. First, we used the 'Reporting' data which are clearly aiming this evaluation. We added the 'SDF' database which provides a field named 'Conservation' for each species and habitats within each Natura 2000 site. At last, we integrated the 'Red Lists' categories as the parameters used are quite similar (Puissauve et al. 2016). Each data has been translated into numerical scores.

To get reliable indicators for each ecosystem and bioregions, the effect of biogeographical regions and ecosystems variables on the value of the scores of status conservation was then tested by statistical analyses. It was measured by fitting mixed linear models and Tukey's post-hoc tests with the lmer function of the lme4 package (Kuznetsova et al, 2017).

For SDF and Reporting scores, biogeographic regions and/or ecosystems and taxonomic groups are used as explanatory variables and site codes as random variables (Y) in the form:

$$\text{SDFi_SCORE} = \alpha + \beta_1 \text{biogeographic}_i + \beta_2 \text{Taxonomic group}_i + \varepsilon_i$$

$$\text{SDFi_SCORE} = \alpha + \beta_1 \text{Ecosystem}_i + \beta_2 \text{Taxonomic group}_i + \varepsilon_i$$

For red list scores, ecosystems are used as explanatory variables and taxonomic groups as random variables (Y) in the form of:

$$\text{SDFi_SCORE} = \alpha + \beta_1 \text{Ecosystem}_i + \varepsilon_i$$

• Pressure indicators from SDF and reporting database

Pressures are entered into SDF and reporting databases. We excluded pressures with a positive impact or with insufficient information. 61% of the 19,663 pressure data on the SDF database and all 6,106 pressure data from the Reporting database were included in the analyses. As the typologies used for these two data bases were different, an initial reconciliation of the two typologies had to be carried out beforehand, resulting in a classification comprising of 17 categories and 50 sub-categories.

Each mention of a pressure is associated with a site in the SDF database and with a species or habitat in a given biogeographical region in the Reporting database. We linked these pressures with biogeographical regions and ecosystems using the species or habitats / ecosystems and sites / biogeographical regions links we had already established (see 3.2). In both databases, the threat level is provided by the Reporting in three classes: low, medium and high. We have translated it into a score from 2 to 4 for each increasing level, and a score of 1 assigned to unknown pressure levels. These scores allowed averages to be established on the different scales under consideration.

• Pressure indicators from Corine Land Cover change of land use data

At national level, only Corine Land Cover data and Teruti-Lucas survey (Eurostat 2016) are available on this topic with sufficient temporal hindsight: We used Corine Land Cover data because of their more precise typology.

Six categories of change of land use have been defined:

Table 3. Categories of change of land use

Land use 2006	Land use 2012	Category of change
Grasslands	Scrubland ou wooded areas	Agricultural decline
Scrubland or wooded areas	Pastures and grasslands	Creation of pastures and grasslands
All ecosystems	Urban areas	Urbanisation
Grassland or natural areas	Crops	Agricultural intensification
Urban areas/crops	All areas except urban	Renaturation
Other land use changes		Other

4. Results

4.1. Conservation issues: what ecosystems and territorial distribution?

The distribution of species and habitats listed in the Nature Directives has been shown by indicators of relative presence, showing the distribution of species and habitats in different biogeographical regions, and in 'density', relating this distribution to the surface area of these biogeographical regions (see 3.3).

The Atlantic and continental regions, which cover much larger areas than the others, are logically home to most of these targeted species and habitats (Figure 2: 'relative presence indicators'). This is the case for all ecosystems, with the exception of rocky ecosystems, which are mostly located in alpine and coastal regions. However, in terms of 'density', i.e considering the amount of species and habitats for the same surface area (Figure 2: 'density indicators'), the distribution is reversed: the Alpine region is the richest in rocky, grassland and forested ecosystems. The Mediterranean region is in second position for grassland and forest regions, whilst continental waters and wetlands are more evenly distributed. Variations in 'density' between the Atlantic and continental regions are smaller. However, the continental region is better supplied with regard to forest ecosystems.

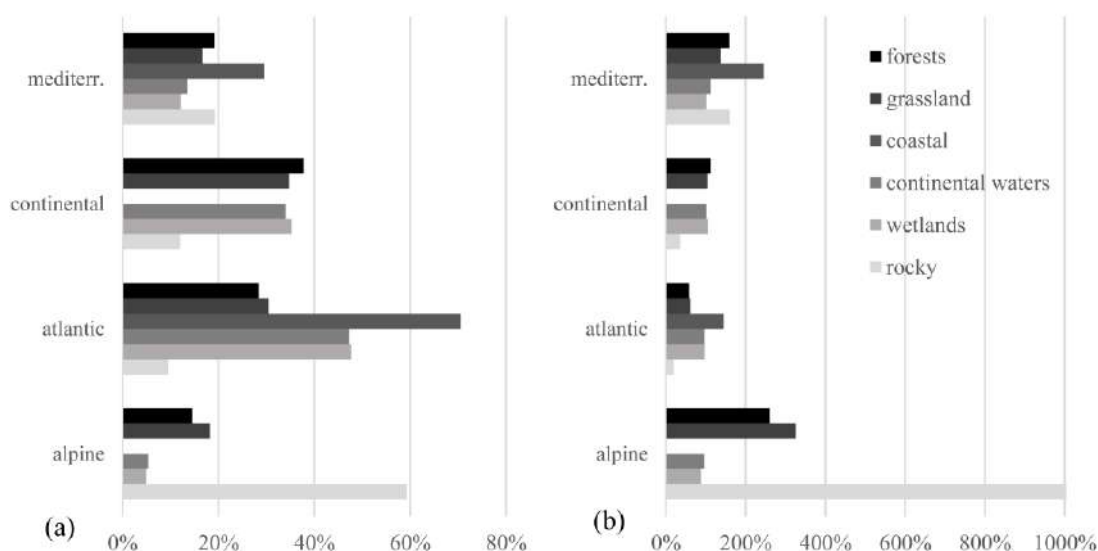


Figure 2. Distribution of habitats and species of community interest by ecosystem and biogeographical region for land: (a) relative presence indicator (b) density indicators

4.2. Effective management: how far wide of the target and what factors of degradation?

The evaluation of conservation status by ecosystem and biogeographical region is useful to prioritize the conservation needs, with regard to the gaps to be filled in relation to the objectives set for favourable conservation status.

• Conservation status by biogeographical region

Comparisons between biogeographical regions is only possible with conservation status data from the SDF and Reporting databases. According to the SDF data, conservation status in Continental and Atlantic regions is significantly lower than in Mediterranean and Atlantic marine regions. According to the Reporting data, only the Alpine region stands out: its conservation status is significantly better than in the Mediterranean, Continental and Atlantic regions.

• Conservation status by ecosystem

In order to compile results from the three data sources (SDF, Red Lists or Reporting) analyses (see 3.4), the mean conservation status for each ecosystem was compared in pairs. All significant differences go in the same direction regardless of the data used: therefore the results do not contain any contradiction between the three sets of data.

In order to prioritise the conservation status of the ecosystems relative to one another, we counted, for each ecosystem, the number of comparisons with other ecosystems for which its conservation status is significantly lower or higher (Figure 3).

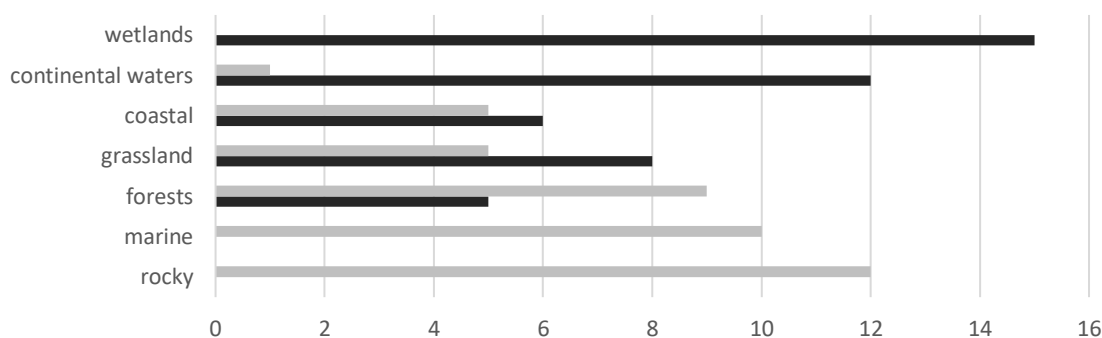


Figure 3. Number of comparisons in pair between ecosystems for which the average conservation status of the ecosystems is significantly higher (in grey) or lower (in black) than that of the ecosystem with which it is compared

The conservation status of wetlands is much lower than that of all other ecosystems, as all comparisons implying this ecosystem and another showed wetland conservation status was the lowest. Continental waters are also almost systematically more degraded. Conversely, marine and rocky ecosystems are in better condition than any other ecosystem. Between the two, coastal and grassland ecosystems are comparatively in a state of significant degradation, whilst forest ecosystems score higher than most other ecosystems.

- **Comparison between conservation statuses by ecosystem and biogeographical region**

We have grouped the Atlantic and Continental regions under the category 'lowland regions' as distinguished from the Alpine/Mediterranean sector. The scores are significantly higher in the Alpine/Mediterranean sector, so their conservation status is much better than in 'lowland' for all ecosystems according to SDF data and for grassland ecosystems according to Reporting data. Overall, lowland regions are significantly more degraded.

- **Summary of habitats and species distribution and their conservation status**

Due to their large surface areas, the Atlantic and Continental regions therefore contain the majority of the issues covered by the Nature Directives even though the Alpine region has the highest "density" of biodiversity. These lowland regions also show the worst conservation statuses. In terms of ecosystems, wetlands and continental waters and, particularly for lowland areas, grassland regions are the most degraded. Marine and rocky ecosystems, and, to a lesser extent, forest ecosystems are in a more favourable condition.

In order to continue the evaluation and identify the levers for action, it is now necessary to consider the causes of these differences in conservation status. This is the second stage in the analysis of effective management, that of identifying responsibilities, which involves identifying the pressures that affect conservation targets.

- **Common transversal pressures, and a clear hierarchy of pressures, linked to ecosystems and biogeographical regions**

Of the 17 pressure types defined, 8 account for between 76% and 78% of the total number of mentions, depending on whether the "Reporting" or "SDF" databases are considered. These are, in descending order, agricultural intensification, forestry, urbanisation, human disturbance, changes in hydraulic conditions, transport networks, natural processes and agricultural decline.

In the data used, the impacts of agricultural intensification correspond mainly to the conversion from grassland to crops, agricultural pollution and the impacts of irrigation, catchment and drainage. Forestry is mainly cited due to the impacts of logging. With regard to urbanisation, by cross-referencing with the works of Fontes-Rousseau and Jean (2015), it is mainly attributable, over this period and on this scale, to individual habitat.

Both data sources are consistent on these trends. However, some discrepancies add nuance to this conclusion: two of the most impacting pressures, forestry and urbanisation, are less cited on the N2000 sites (SDF database), which may be a sign either that the policy is restrictive on these activities or that the sites have been placed in localities already spared from these pressures. On the other hand, attendance is a much more cited pressure on the sites (SDF database) than on the whole of the territory (Reporting). The attractiveness of N2000 sites to the public may be the reason for this, but it is nevertheless necessary to ensure that there is not a bias related to data producers (who include more managers for the SDF database), or on an observational level (greater ease in identifying this pressure on a site level than on a wider spatial level).

Table 4 classifies these results by biogeographical region, combining SDF and Reporting data. The first line gives the average number of strong negative pressures mentioned for each site: the Atlantic and Continental regions are the ones for which the most pressures are mentioned. The details of the categories on a national level, in the following lines, reflect both constants: the strongest pressures (agricultural intensification, urbanisation and even human disturbance) are found throughout the territory, but also geographical specificities: agricultural intensification is more pronounced in the Atlantic and Continental regions, whilst urbanisation particularly affects the Mediterranean region, and the problems related to disturbance are highest in the Alpine region. The most marked distinction is between land and marine ecosystems, with very specific issues for the latter: pollution, frequentation and fishing.

Table 4. Distribution of the 8 most cited pressures in the Reporting (Rep.) and SDF data by categories and biogeographical regions. The occurrences of the pressures are weighted by their level of intensity.

	ALP		ATL		CON		MED		MATL		MMED	
	Rep.	SDF	Rep.	SDF	Rep.	SDF	Rep.	SDF	Rep.	SDF	Rep.	SDF
Average number of intense pressures cited per site (SDF data)	2,4		3,4		3,1		2,6		2,6		2,7	
Agricultural intensification	19%	24%	20%	27%	27%	28%	18%	18%	7%	8%	0%	3%
Urbanisation	11%	7%	12%	8%	10%	8%	20%	12%	7%	7%	11%	7%
Forestry	15%	5%	10%	9%	12%	12%	10%	4%	1%	2%	0%	2%
Human frequentation and public safety measures	7%	29%	7%	12%	6%	12%	8%	21%	5%	24%	12%	26%
Mixed source pollution	5%	3%	9%	6%	7%	5%	5%	5%	17%	8%	24%	8%
Development and use of transport networks	7%	6%	5%	6%	6%	9%	7%	9%	5%	9%	4%	8%

Human-induced changes to hydrological systems from multiple or unknown causes	5%	8%	7%	10%	8%	10%	5%	6%	3%	9%	1%	4%
Agricultural decline	6%	4%	6%	6%	5%	2%	4%	3%	1%	6%	4%	5%

To clarify these findings, we analysed national land use change rates using Corine Land Cover data. They allow for triangulation of information provided by the 'SDF' and 'Reporting' data for the three most frequently cited pressures, which are correlated with an identifiable change of land use: urbanisation, agricultural intensification and agricultural decline. Two reverse trends, renaturation for urbanisation and the creation of grassland for agricultural decline, were also represented.

However, these analyses are not relevant to pressures that do not result in changes in land use, such as pollution and impacts related to agricultural intensification, disturbance, overgrazing, etc.

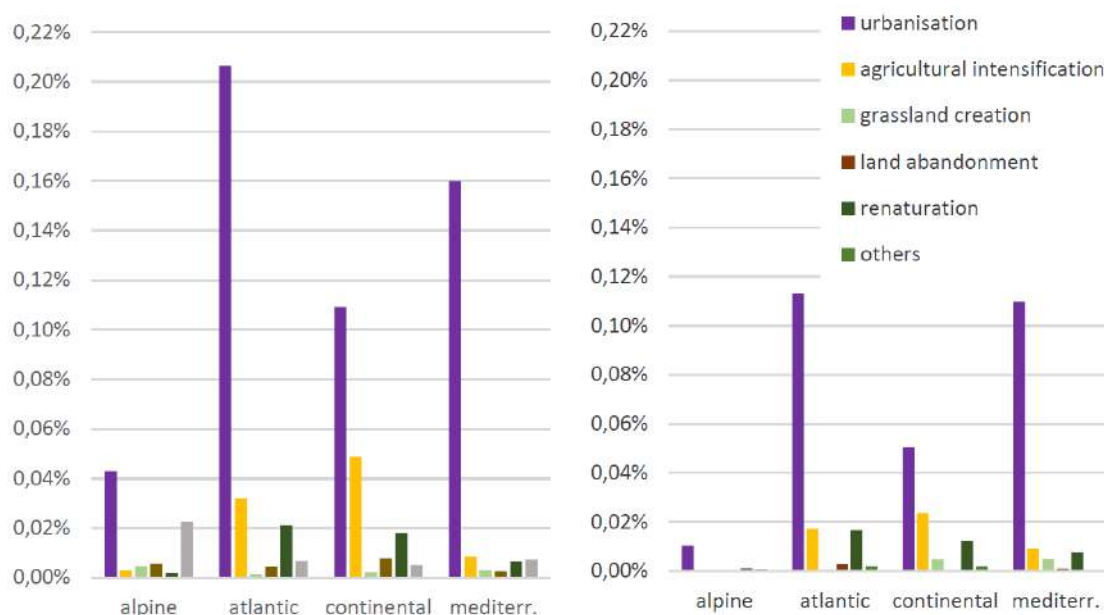


Figure 4. Proportion of territory affected by different types of land use change between 2006 and 2012 (left) and between 2012 and 2018 (right) - Corine Land Cover data

The results confirm the importance of urbanisation, the main cause of land use change for the entire territory. None of the other changes in land use considered reach comparable levels. Part of the phenomenon of agricultural intensification, that related to the planting of crops, mainly grassland reversals, is also visible. It mainly affects the Atlantic and Continental regions, confirming the results obtained by the SDF and Reporting data. Other land use changes are insignificant in comparison.

The comparison between the periods 2006-2012 and 2012-18 shows a significant decrease in the levels of land use change, covering all the major trends observed in the previous period. This possible sign of decrease in pressure levels has nevertheless been reversed by more recent data (Bocquet 2019).

Grassland ecosystems are most affected by the various pressures of land use changes. This is the case for agricultural activities: cultivation linked to agricultural intensification

(land clearing), as conversely the phenomena of fallowing and reversion to shrub and forest. This is also the case for urbanisation: 13.1% of artificialized areas between 2006 and 2012 were previously occupied by pastures (January et al. 2015), making it the ecosystem the second most impacted by urbanisation after agricultural land.

The Reporting data allow to add ecosystems data to the pressure/biogeographical regions data (Table 5). Pressures are thus specific to certain ecosystems: silviculture for forests, changes in hydraulic conditions for wetlands and aquatic ecosystems, agricultural intensification and urbanisation for grassland ecosystems and human frequentation for rocky ecosystems.

Table 5. List of the three most frequently cited pressures in the Reporting results by ecosystem and biogeographical region.

	Alpine	Atlantic	Continental	Mediterranean
Grasslands	la, Ur, Sy	la, Ur, Sy	la, Ur, Sy	la, Ur, Da
Wetlands	la, Mh, Ur	la, Mh, Sy	la, Cc, Mh	la, Ur, Sy
Continental waters	la, Mh, Ee	la, Mh, Ur	la, Mh, Pn	la, Ur, Mh
Forest	Sy, la, Rt	Sy, la, Ur	Sy, la, Rt	Sy, la, Ur
Rocky	Cc, Fh, Ur	la, Fh, Rt	la, Fh, Ur	Ur, Fh, la
Coastal		Ur, Pn, la		Ur, la, Rt
Marine		Pe, Cc, Ur		Ur, Pe, Po

	Agricultural intensification		Invasive species
	Urbanisation		Mixed source pollution
	Silviculture		Human disturbance/security measures
	Agricultural decline		Transport networks
	Hydraulic modifications		Natural processes
	Climate change		Fishing

5. DISCUSSION

Our results made it possible to construct an operational territorial diagnosis of the issues surrounding the N2000 policy in France. We showed that focusing the analysis on ecosystems and biogeographical regions allows identification of significant differences in conservation statuses, as well as the distribution of pressures on a national level. These differences also make it possible more solid hypotheses about the mechanisms at the origin of the degradations, in particular the impact of sectoral economic development policies, that will be developed in the later stages of the strategic analysis. It validates the methodological framework chosen for the evaluation.

Our results show the value of cross-referencing data from a variety of sources in order to put clearly into perspective the strategic challenges facing the N2000 policy, namely to meet its objectives in the face of existing degradation dynamics. These data, some of which are only very rarely analysed, have points of convergence largely in the majority

on the analytical grid used. While some authors have worked on occurrence data taken from the SDF database (Zub et al. 2018) or on conservation statuses taken from Reporting (Sanderson et al. 2016; Zisenis 2017), none of this work focused on a national diagnosis comparing the states of conservation with the levels of pressure, and therefore confronting the policy with the challenges that it really has to take up; and thus, making it possible to analyse whether the means implemented are up to the challenges. This is where the work presented in this article is innovative, by providing a strategic evaluation framework to measure and guide efforts to protect biodiversity in the face of clearly identified degradation dynamics at work on domestic territory.

For conservation statuses, the absence of contradiction between the different data used provides an additional guarantee of the reliability of the results. It supports the results of Puissauve et al. (2016) on the coherence of the Red List and Reporting data on a national level, whereas this coherence is much weaker on a European level (Moser et al. 2016). The pressure data from the Reporting and SDF databases had never, to our knowledge, been used in a comparable study in France. Ciapala et al (2014) and Tsiafouli et al (2013) analysed them in other territories but without linking them to other indicators: our work, by showing that land use change data can be correlated with the pressures identified in the SDF and Reporting databases, underlines the value of fully exploiting these types of sources in order to triangulate the data.

Our results place urbanisation and agricultural intensification at the top of the list of pressures and are therefore in line with the IPBES (2019) report, which identifies habitat loss as the primary cause of biodiversity extinction on a global scale and links this habitat loss primarily to these two pressures. Conversely, the N2000 data give little importance to invasive species and climate change, which are nevertheless cited among the five major pressures in France in 2017 (ONB 2017) and worldwide (IPBES 2019). Further work is needed on these two points to test the possible hypotheses explaining this discrepancy: scale-dependent perception, difficulty in apprehending future threats, etc. The extent of the impact of species disturbance in the SDF database, a pressure not reported by neither IPBES nor the French National Biodiversity Observatory, is also notable, as already highlighted by Ciapala (2014)'s work in the Alpine regions of Slovakia. It seems that the impact of leisure activities on biodiversity needs to be re-evaluated in the light of our data.

The difference between lowland regions and Alpine and Mediterranean areas is well documented, the first ones being, for example, known to be the most degraded of aquatic environments (Blard-Zakard and Michon 2018) or in terms of ecosystem fragmentation (ONB 2019). On the other hand, our findings add nuance to the great patrimonial responsibility usually placed on the Alpine and Mediterranean regions (Médail and Quezel 1997), showing that whilst these sectors are indeed richer, their small surface area and their relatively low level of exposure to degradation means that the majority of the issues are found elsewhere. Also, although many rare species and habitats are more present in Alpine and Mediterranean areas and indeed deserve to be well protected, it is important to remember that the Nature Directives aim for conservation of biodiversity in the broader sense, including "ordinary nature" (Mougenot 2003), which is still very present, although degraded, in the Atlantic and Continental regions.

6. CONCLUSION

The strategic evaluation methodology implemented in these first two stages has therefore made it possible to outline a genuine national scoreboard for the N2000 policy, fulfilling several conditions:

- objectivity, based on data from a wide range of sources,
- operationality, by providing information on (1) the location of needs: how are the ecosystems targeted by the Nature Directives and where intervention is needed spatially distributed ? (2) the nature of the interventions to be carried out: in a given biogeographical region, which ecosystems require action and to counteract the effect of what pressure?
- legibility, by providing synthetic results, making it possible to compare the different situations (location, ecosystems, pressures) in order to identify priorities, segment the diagnosis and thus be able to compare it with other data.

This strategic evaluation framework for the N2000 policy provides at this stage a strategic diagnosis: it is intended to be one of the building blocks of a mechanism that makes it possible to compare the problems that need to be solved in order to achieve the objectives set out in the Nature Directives, on the one hand, with regard to the measures implemented within the framework of this policy, but also with other environmental programmes (intentional management), and on the other hand in the face of sectoral policies or external factors that have an impact on the results achieved (effective management).

Without downplaying the value of environmental policy evaluations that focus more on the logics of governance, representativeness, transparency and public participation, the current context of biodiversity degradation requires us to cross-reference these evaluations with strategic evaluations focused on the environmental effectiveness of public policies. Our work shows that starting from a clearly defined strategic analytical framework, which encourages the mobilisation of previously untriangulated data, we can effectively provide a scoreboard to measure the environmental effectiveness of a policy focused on biodiversity protection, the N2000 policy. The first, unavoidable, step is the analysis of the issues at stake. The work we have presented here provides a diagnosis of these issues on the scale where the results are expected: biogeographical regions over their entire surface area, and broken down by natural ecosystem, as close as possible to the realities of management. It is only the first stage of the evaluation, but this basis is essential for this evaluation to produce results that are useful for steering the policy, in order to improve its impact on biodiversity conservation throughout the territory.

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Annex I. Method for the construction of species and habitat distribution areas

1. DISTRIBUTION AREAS OF BIRDS AND HABITATS

For habitats and birds, the distribution areas used correspond to the presence grids taken from the 2013-2019 reporting under the Habitats Directive (Bensettiti and Gazay 2019) and under the Birds Directive (INPN 2020). For birds, only data for nesting birds have been included.

2. TAXA DISTRIBUTION AREAS OF THE DIRECTIVE

For species of the Habitats Directive, the areas were constructed from the INPN datasets and then modelled in order to complete the information.

2.1. Data

The raw data are taken from the INPN grid index extracted on 18/01/2019. Only data published on the INPN in Metropolitan France on the date of extraction for continental

taxa with observation dates after December 1989 have been retained. Data for taxa endemic to Corsica have been limited to Corsican squares only.

2.2. Selection of area definition method

For species of the Habitats Directive, the modelling of the distribution area on the scale of the 10x10 km grid is carried out by kriging or by modelling according to the level of species knowledge. Species with less than 3 squares are automatically kriged. For other species, the level of knowledge is estimated according to two criteria:

- The density of the presence grids in the distribution envelope (*convex hull* plotted around the data):

$$Density = \frac{Nb \text{ presence squares}}{Nb \text{ squares in the distribution envelope}} \times 100$$

- Grid neighbourhood rate (for each presence square, the number of occupied neighbouring squares is counted and compared to the number of possible neighbouring squares, then averaged out for all the squares of the species):

$$neighbourhood \text{ rate} = \frac{1}{Nb \text{ presence squares}} \times \sum \frac{Nb \text{ adjacent presence square}}{Nb \text{ adjacent squares}} \times 100$$

If the density of the data in the distribution envelope and the neighbourhood rate are in the last quartile of values (the species' distribution areas are densely filled and the presence squares are adjacent to each other), the distribution area are considered to be sufficiently well known and a simple kriging is applied. Otherwise, the distribution area is modelled.

This first sorting leads to kriging 125 species and applying the modelling method to 53 species.

2.3. Distribution areas by modelling

The models are constructed from bioclim data (Hijmans et al. 2005) and Corine Land Cover (European Union – SOeS, 2018). The bioclim data are aggregated to fit the French 10 x 10 km grid and the surface areas of the different land uses are calculated for each 10 x 10 km of the French grid (Lambert 93) and then rasterised. The collinearity of the variables is then measured and the most significant variables of each collinear block are integrated into the model (Leroy et al. 2014, Dormann et al. 2007).

For each species, five niche models are combined (Generalised Linear Model, Generalised Additive Model, Random Forest, Generalised Boosted Regression Trees, Maximum Entropy) as part of the overall modelling approach to the biomod2 package in R (Thuiller et al. 2009).

Pseudo-absences are used to allow the use of models requiring presence data and to improve the overall quality of the data. Three pseudo-absence draws are made with as many pseudo-absences as there are occurrences for the species or 1,000 pseudo-absences if the number of occurrences for the species is less than 1,000.

For each species, the importance of each of the explanatory variables is measured by testing each variable against randomised models (Thuiller et al. 2009). Only the most important variables (whose weight on the final result is significant for 50% of the modelling methods) are retained.

The five modelling methods are then evaluated with the explanatory variables selected for each species. The evaluation is carried out by calibrating each model with 80% of the data and testing them on the remaining 20%. This test is run three times for each model,

then the quality of fit of the predictions and test data is measured using the True Statistical Statistics (TSS) indicator (Allouche et al. 2006) which varies between -1 and 1, with 1 indicating a perfect match and -1 a total divergence and values close to 0 indicating a random match.

Only those species for which at least three modelling methods obtained a TSS score greater than 0.6 and for which the overall average TSS was greater than 0.5 were retained in the modelling process. Species that did not reach this level of requirement were transferred to the kriging procedure to complete their areas. Thus, 18 species were transferred back to the kriging method.

The five models of the species that passed this quality test were then aggregated into an overall model by calculating the averages of the predictions of the 5 models (Marmion et al. 2009). The overall models are then binarized into presence/absence maps (Jiménez-Valverde and Lobo 2007) to maximise the TSS.

2.4. Distribution areas by kriging

Species considered to be sufficiently well known, with less than 3 occurrences, or which have not passed the model quality test are kriged using the "interp" function of R's akima package (Akima and Gebhardt 2016).

2.5. Correction of distribution areas with the Atlas of departmental biodiversity and marine sectors (ABDSM)

The ABDSM indicates for each species the departments (French administrative counties) in which it is present. When this ABDSM is available, it is intersected with the distribution layers produced by modelling or kriging in order to remove the predicted presence squares in the departments where the species is not known to be present.

2.6. Construction of the final distribution areas by intersection with the ecosystems.

For all HD species and habitats, the layers of distribution areas in the 10 x 10km grid are intersected with those of the main types of ecosystems, in order to limit the potential areas of presence to only those ecosystems where the habitat can develop or that the species is likely to frequent.

For species, 6 main ecosystems are used (see Appendix 2). If a species frequents several ecosystems, the intersection is carried out including all of these ecosystems.

For habitats, the 6 main types of ecosystems have been broken down more precisely into 11 main types of ecosystems (see Appendix 2). In the case of habitats corresponding to several ecosystems, the intersection is carried including the overlapping regions of the corresponding ecosystems.

2.7. Intersection with the Natura 2000 network

The distribution areas are finally intersected with the Natura 2000 network (May 2019 version).

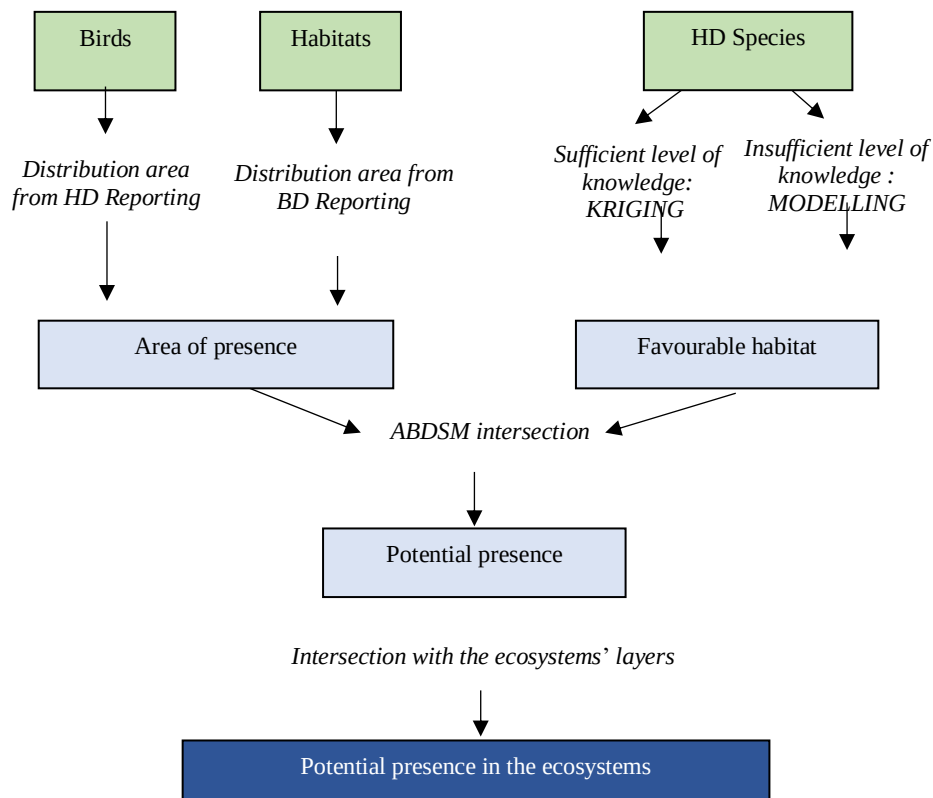


Figure 1. Construction of distribution areas, flow diagram

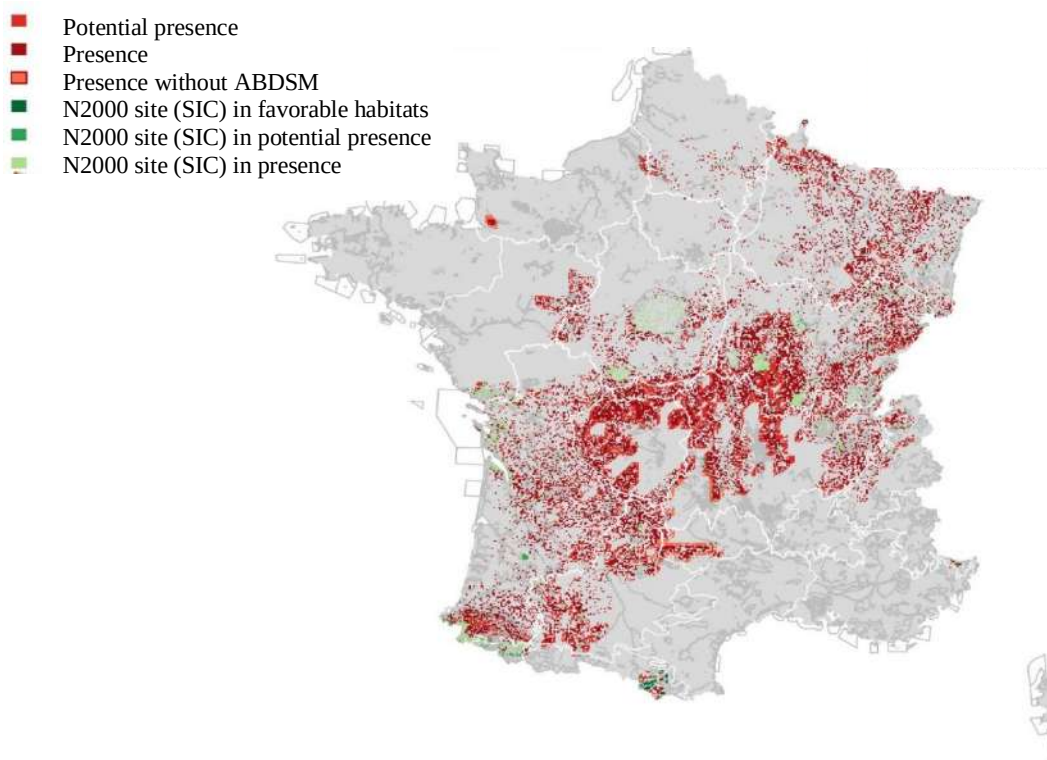


Figure 2. Example of a map of a species' distribution area intersected with the network of Natura 2000 sites designated under the Habitats Directive: Large Copper (*Lycaena dispar*)

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Annex 1. Method of construction of the maps of the six major terrestrial ecosystems

Ecosystems	Definition	Layers used	Selected categories
Forests	Ecosystems dominated by trees with more than 20% canopy cover.	Corine Land Cover (CLC) CLC High resolution (CLCHR) of level of canopy cover	311, 312, 313, 323, 324 The raster resolution is reduced to 100x100m pixels. The average value of the original pixels is assigned to the final 100x100m pixel. Only pixels with a coverage greater than 20% are retained and added to the CLC breakdown. The CLC and high resolution CLC layers are merged
Broadleaf forests	Forest ecosystems with more than 20% broadleaf tree cover	CLC CLCHR of the level of tree cover CLCHR of the type of tree cover	311, 313, 323 The raster resolution is reduced to 100x100m pixels. The average value of the original pixels is assigned to the final pixel. Only pixels with a coverage of more than 20% are retained and merged with the CLC breakdown. The raster resolution is reduced to 100x100m pixels. Only pixels with a value = 1 (broadleaf forests) are retained. This layer is used to exclude the leafless regions from the CLC layer.
Coniferous forest	Forest ecosystems with more than 20% coniferous tree cover	CLC CLCHR of the level of tree cover CLCHR of the type of tree cover	312, 313, 323 The raster resolution is reduced to 100x100m pixels. The average value of the original pixels is assigned to the final 100x100m pixel. Only pixels with a coverage greater than 20% are retained and merged to the CLC breakdown. The raster resolution is reduced to 100x100m pixels. Only pixels with a value = 2 (coniferous forests) are retained. This layer is used to exclude non-coniferous regions from the CLC layer
Riparian forests	Broadleaf forests located on the edge of watercourses	CLC CLCHR of the level of tree cover CLCHR of the type of tree cover Aquatic ecosystems layer	311, 313, 323, 324 The raster resolution is reduced to 100x100m pixels. The average value of the original pixels is assigned to the final 100x100m pixel. Only pixels with a coverage of more than 20% are retained and merged with the CLC breakdown The raster resolution is reduced to 100x100m pixels. Only pixels with a value = 1 (deciduous forests) are retained. This layer is used to exclude leafless regions from the CLC layer. This layer is used by intersection in order to keep only those ecosystems situated above aquatic ecosystems.

Ecosystems	Definition	Layers used	Selected categories
Grassland	Herbaceous stratum dominated ecosystems	CLC	231, 241, 242, 243, 244, 323, 321, 322, 333
Humid and mesophic grassland	Meadows and mesophile Ppastures	CLC	231, 242, 243
Dry grasslands, heath and scrub	Dry grasslands, heath and scrub	CLC	243, 244, 321, 322, 323, 333
Non-marine waters	Permanent water ecosystems	CLC CLCHR permanent water areas Carthage HYDROGRAPHY_SURFACIAL_H YDROGRAPHY Carthage WATER_CURRENT x potential wetlands	511, 512 The raster resolution is reduced to 100x100m pixels. The maximum value of the original pixels is assigned to the final pixel. Added to complete the mapping of permanent water areas. The intersection of these layers makes it possible to identify the water areas of the smallest watercourses. All the layers are merged to create the final layer.
Wetlands	Ecosystems with the water table at or above ground level for at least half of the year, excluding aquatic ecosystems.	CLC CLCHR wetland regions Aquatic ecosystem layer	411, 412, 213 Layer aggregated by a factor of 5 by applying the maximum value of the aggregated grids and added to the CLC breakdown. The fusion layer of the CLC and CLCHD layers in wetlands is broken down in order to exclude aquatic ecosystems.
Rocky	Ecosystems with little or no vegetation	CLC	332, 335

Ecosystems	Definition	Layers used	Selected categories
Coastal	Marine-influenced ecosystems situated in coastal areas	CLC	Buffer of 5 km along the coastline added to CLC codes 123, 421, 422, 423, 521, 522, 523, 331 (coastal and littoral ecosystems) located beyond 5 km. This layer is then restricted to natural regions only by removing agricultural and artificial ecosystems (codes 111 to 223).

Data sources used:

European Union – SOeS, 2018 Corine Land Cover France : <https://www.statistiques.developpement-durable.gouv.fr/corine-land-cover-0>
 SANDRE 2014, Réseau hydrographique (cours d'eau) BD CARTHAGE version 2014, <https://www.data.gouv.fr/fr/datasets/reseau-hydrographique-metropole/>
 UMR 1069 SAS INRA - Agrocampus Ouest / US 1106 InfoSol INRA 2014, Enveloppes des milieux potentiellement humides de la France métropolitaine.
<http://geowww.agrocampus-ouest.fr/web/?p=1538>

SECTION D / SEKCIJA D

**CLIMATE PROOFING /
KLIMATSKO POTVRĐIVANJE**

Climate Change, Disaster Risk Reduction and Resilience

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Abstract

Climate change increases the risks of instability in all its forms, and significantly affects the frequency and intensity of natural threats. In the last two decades, 90 percent of the world's major disasters were caused by events such as heat waves, floods and weather-related droughts. The 2019 Disaster Risk Assessment for the Republic of Croatia for 10 out of 15 simple risks determined that climate change affected their occurrence. Climate change also affects complex risks, especially in urban areas. Therefore, when assessing the impact of climate change on the environment, it is necessary to take into account the impact they have on disaster risks. Disaster risk reduction and climate change adaptation have a common area of interest, partly overlapping, and activities to strengthen resilience and to prepare a response system require joint efforts and cooperation.

Keywords: disaster risk reduction, climate change, risks, resilience, disaster

1. INTRODUCTION

From 1995 to 2015, 90 percent of recorded major disasters in the world (floods, storms, heatwaves and droughts) were linked to climate change. Climate change affected the frequency, intensity and duration of threats depending on weather conditions. According to the National Risk Assessment from 2019, climate change affects the occurrence of 10 out of 15 simple risks in Croatia. They affect: plant diseases, animal diseases, extreme temperatures, epidemics and pandemics, floods, open fires, snow and ice, droughts, land salinization and landslides (“Disaster Risk Reduction Portal,” 2019).

The response to the increased number of disasters in the world is the Sendai Framework for Disaster Risk Reduction, which links risk management, as well as reduction of risks to sustainable development. The goal is to prevent the emergence of new risks, reduce existing risks from disasters and manage the remaining risk, which will contribute to strengthening resilience (Sess: 2014-2015). This holistic approach is not limited to disaster management, but implies continuous risk reduction.

Disaster risk reduction and climate change adaptation have a common area of interest. There are differences between these areas, but also convergence. Bringing together these areas, and striving to achieve the same goal is most evident in focusing on increased climate-related dangers, climatic extremes such as floods, storms, landslides, droughts and others. Disaster risk reduction clearly emphasized the effects of climate on the increase of the risk of certain threats. There is a joint and multidisciplinary approach in searching for solutions and the development of horizontal and vertical cooperation with stakeholders. Climate-related disasters are impossible to analyze and discuss without taking into consideration climate change. However, it is not enough to focus only on activities after the disaster during the recovery and reconstruction phase. It is also important to act in the field of prevention, preparedness and mitigation which is the strongest link between disaster risk reduction and adaptation to climate change.

2. VISION AND STRATEGY

2.1. What is resilience

Measures and activities undertaken in the area of disaster risk reduction are linked to strategies aimed at strengthening resilience, a concept that has become key to sustainable development. Resilience at national and all other levels aims to ensure that shocks, stresses and dangerous events do not lead to a long-term gap in development, economic growth and progress. The concept of resilience has integrated various fields and is referred to in all recent international agreements related to disaster risk reduction as well as climate change adaptation. In Croatia as well, the Strategy for Adaptation to Climate Change in the Republic of Croatia for the period to 2040 with a view to 2070 (hereinafter: Strategy for Adaptation to Climate Change) has a development vision of "the Republic of Croatia resistant to climate change". The goal, i.e. resilience, is planned to be achieved by reducing the vulnerability of natural systems and society to the negative impacts of climate change and by strengthening the ability to recover from these impacts ("Adaptation Strategy", 2020). The adoption of the Disaster Risk Management Strategy until 2030 with the vision of "Croatia more resilient to disasters" is also in the process.

The concept of resilience has its drawbacks. One of the biggest objections is the difficulty of measuring results. Critics emphasize the insufficient concreteness of the concept of resilience and the existence of multiple concepts and definitions (I. Sudmeier-Rieux, 2014). The United Nations defined the term for the field of civil protection. Resilience means the ability of a system, community or society exposed to hazards to timely and effectively resist, absorb, adapt and recover from the effects of hazards, including the preservation and restoration of essential basic structures and functions. The community's ability to recover in relation to any hazard or event is determined by the degree to which it is equipped with resources and the ability to organize before and during the need (United Nations, 2016). Resilience means functioning without compromising long-term prospects for sustainable development, peace and security, human rights and well-being for all. The focus is on the capacity, that is, the capabilities of the community, and not so much on vulnerability, as was the case before. Terminology agreed at United Nations level defines capacity as the combination of all strengths, attributes and resources available in a community, society or organization to manage and reduce risk and strengthen resilience. Capacity thus defined may include infrastructure, institutions, know-how, and collective attributes such as social relations, leadership and management.

Capacity building is one way to reduce short-term and long-term disaster risks. In addition to the capacity for disaster response, it is important to strengthen the capacity for ecosystem management, the capacity for a higher level of self-organization, as well as the capacity for all areas that lead to disaster risk reduction and strengthening resilience. By strengthening capacity, we can reduce vulnerability, the increased sensitivity of an individual, community, property or system to the effects of threats (United Nations, 2016). Vulnerability can be determined by physical, social, economic and environmental factors or processes.

2.2. European strategies and visions

The European strategic long-term vision for a prosperous, modern, competitive and climate-neutral economy presented by the European Commission at the end of 2018 places Croatia in three regions with regard to climate exposure. These are: Mediterranean, mountain and continental regions (European Commission, 2018). This complex situation can increase the spectrum and number of risks in our area.



Figure 1. Consequences of climate change in Europe
(Source: European Commission, 2018)

The European Green Deal offers solutions to save the endangered environment and eliminate increased threats from natural disasters. Unlike the new EU climate change adaptation strategy, adaptation or disaster resilience are mentioned less. However, this does not reduce its impact on changes, and the Deal itself is called a growth strategy that will transform the European economy into a resource-efficient and competitive one by 2050 at the latest. It envisages the complete elimination of net greenhouse gas emissions because economic growth will no longer be linked to the use of resources that have led to climate change (European Commission, 2019). Conservation and restoration of ecosystems and biodiversity mitigate natural threats. That is why the European Green Deal aims to strengthen the foundations for sustainable investments, and better integrate climate and environmental risks into the financial system, which will thus help increase resilience.

Creating a climate-resilient Europe – the EU's new Climate adaptation strategy aims to improve adaptive capacity and reduce vulnerability to climate impacts. It emphasizes the importance of knowledge about climate impacts and resilience, and the need for more and better data on climate-related risks and losses, which are important for making informed decisions. Data on climate-related risks and losses must include public and private losses due to climate change impacts such as loss of life, damage to infrastructure or commercial activities, as well as crisis response and recovery costs ("Creating a Resilient Europe", 2021). The concept of resilience is mentioned more than 60 times in this strategy.

2.3. Croatian strategies for adaptation to climate change and disaster risk management

The strategy of adaptation to climate change in the Republic of Croatia for the period to 2040 with a view to 2070, as part of the assessment of the impact of climate change and vulnerability, also addresses the area of disaster risk reduction. It was pointed out that climate change can increase the probability of a disaster and increase its intensity. The main expected impacts with high or medium vulnerability are: landslides, floods, extreme temperatures, open fires, droughts, epidemics / pandemics and complex risks, especially in urban areas ("Adaptation Strategy", 2020). The presentation of the impact and challenges of adaptation from this strategy in the area of disaster risk reduction has been supplemented and partially amended in the *Disaster Risk Management Strategy until 2030*.

The impacts and challenges of adaptation for the area of disaster risk reduction include "the exposure of the built environment and the probability of damage or loss due to a certain level of threat", and "increase in the frequency and intensity of floods and droughts" was also added. Issues related to construction and exposure of the built environment play a major role in disaster risk reduction. In addition, corrections were made to possible responses to reduce high vulnerability (Table 1).

Table 1. Adapted presentation of the impacts and challenges of adaptation to climate change in the field of disaster risk management. *Source: Climate Change Adaptation Strategy in the Republic of Croatia for the period to 2040 with a view to 2070 (adapted)*

Impacts and challenges causing high vulnerability	Possible responses to reduce high vulnerability
■ open space fires due to extended periods of high solar radiation and extended periods of high air temperature and longer dry periods ■ exposure of the built environment and the likelihood of damage or loss due to a given level of threat ■ increase in the frequency and intensity of floods and droughts ■ epidemics and pandemics, due to the way the disease is transmitted or the characteristics of the pathogen of the disease ■ increase in the extent of the health and socio-economic burden of the community due to the impact of risks caused by climate change	■ strengthening the competencies of key stakeholders in risk management related to climate change ■ strengthening the capacity to respond to major accidents and disasters ■ determination of multisectoral guidelines for actions related to climate change ■ expansion of the risk monitoring and assessment system using tools for monitoring risk indicators related to climate change ■ effective recovery from the consequences of major accidents and disasters ■ reducing community burdens after exposure to climate change-related threats

The management dealt with by the Disaster Risk Management Strategy is a complex process including national, regional and local levels of government and organizations operating at a horizontal level (civil society associations, companies, etc.). Disaster risk management means the application of policies and strategies that can be aimed at preventing emerging risks, reducing existing ones and managing residual risks. It also implies a contribution to strengthening resilience and reducing losses from disasters (United Nations, 2016).

Climate change has influenced the greater acceptance of prospective and corrective risk management. Prospective risk management deals with activities and efforts to avoid the development of new or increased disaster risks and focuses on addressing risks that could develop if risk reduction policies are not put in place. On the other hand, corrective risk management deals with activities and efforts to remove or reduce existing risks. Although we start from how risks can be influenced and effectively reduced, in the case of climate change, the process is long-term. Therefore, in addition to the aforementioned, compensatory risk management including activities to strengthen both the social and economic resilience of individuals and societies is necessary due to facing a risk that cannot be effectively reduced. It applies to residual risk and includes preparedness, response and recovery activities and combines different financing instruments.

3. STRENGTHENING FINANCIAL RESISTANCE TO DISASTERS

3.1. Financial damages

Due to weather and climate extremes, damages in the 27 EU member states exceeded 487 billion euros in the last 40 years. This is significantly more than what the EU spends over two years on all its policies and programs. Germany, Italy and France had the highest costs caused by damages and Denmark, Austria and Luxemburg the biggest loss per capita.

From 2005 to 2014, Croatia was among the leading countries in the European Economic Area in terms of damages from natural disasters in relation to gross domestic product. According to the estimates of the NatCatService database, Croatia, Bulgaria, Romania and Latvia lead the way in terms of damages from natural disasters in relation to their GDP in the European Union (Figure 2). These are the data that European institutions rely on, which in general are not satisfied with the collection and availability of data on disasters.

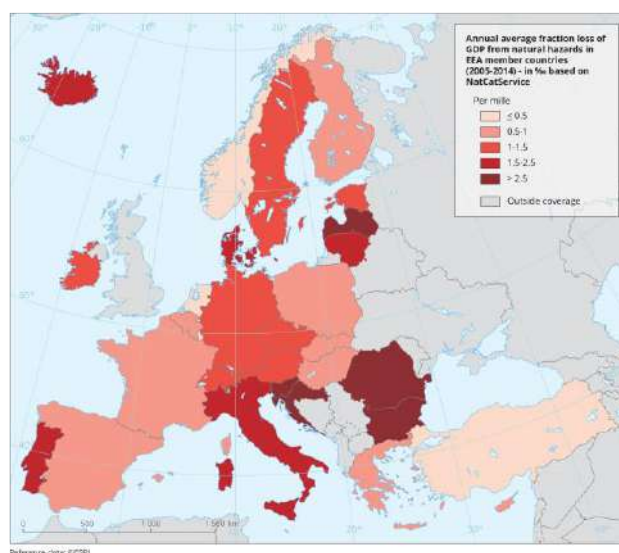


Figure 2. Average annual losses from natural threats for the countries of the European Economic Area from 2005 to 2014. (Source: <https://www.eea.europa.eu>)

The Register of reported damages from 2010 to 2018 maintained by the Ministry of Finance of the Republic of Croatia shows that the total amount of damages due to natural disasters in Croatia exceeded HRK 21 billion (EUR 2.8 billion). More than half of the amount was damage caused by droughts, floods and precipitation, and fires (Figure 3).

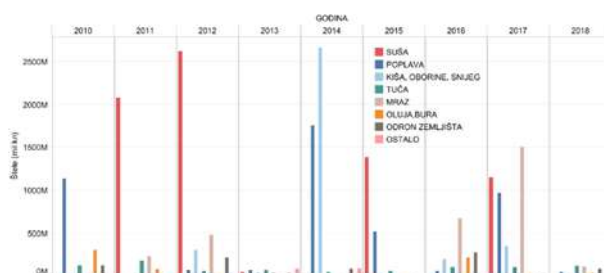


Figure 3. Damages due to natural disasters from 2010 to 2018. (Source: Register of reported damages of the Ministry of Finance of the Republic of Croatia)

The most damage due to natural disasters from 2010 to 2018 was reported by Primorje-Gorski Kotar County, Osijek-Baranja County, Virovitica-Podravina County and Vukovar-Srijem County (Figure 4.).

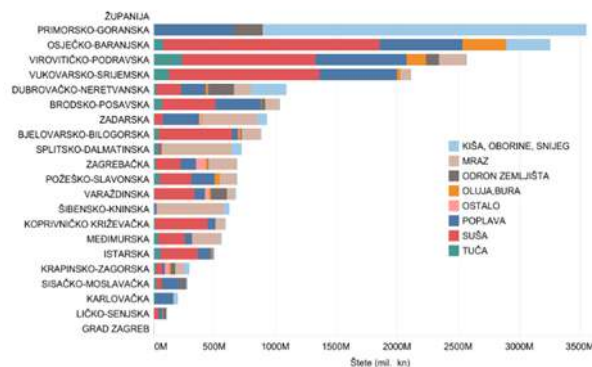


Figure 4. Damage from natural disasters by county from 2010 to 2018. (Source: Register of reported damages of the Ministry of Finance of the Republic of Croatia)

According to the data of the Register of reported damages, in 2011, Croatia had over two billion kuna damages (around EUR 265 million) due to droughts, and in 2012 as much as 2.6 billion kuna (around EUR 347 million). In relation to the number of inhabitants and GDP, the damage had more severe consequences than the catastrophic droughts in some developed European countries a few years later. Osijek-Baranja County, Vukovar-Srijem County and Virovitica-Podravina County suffered the most, i.e. the counties of the continental part of the country with developed agriculture.

Damage monitoring is important for correcting disaster and climate change policies, and also useful for both disaster risk assessment and strengthening financial resilience.

3.2. Strengthening resilience

Forecasts of climate indicators for the Mediterranean are worse than forecasts at the global level for most values. Climate experts for the Mediterranean region predict during the 21st century the following: increase in temperature, decrease in summer precipitation, increase in drought periods, both greater frequency and intensity of extreme events, increase in sea level and coastal flooding, as well as sea acidification due to increased amounts of carbon dioxide (Galeotti, 2020). Without mitigation of climate change, i.e. with expected warming of 3°C by the end of the century, forest fires and pest epidemics would be more frequent and severe. Due to the increased loss of biomass, the amount of carbon in the atmosphere would increase. The increase in warming would be accompanied by the reduced availability of water resources, which could reach 40% in the southern regions of Europe, and the lack of water and drought would affect agriculture, energy production and water supply. Mortality due to extreme heat would increase as much as 30 times (90,000 people per year compared to the current 3,000). Crop yields would fall by more than 10% in southern Europe, losses from river floods would increase sixfold. The increase in the risk of fire is greater in the lower latitudes of Europe. The PESETA IV study, which was carried out to better understand the consequences of climate change for the European Union, pointed out significant differences in risks between the north and south of Europe. Increasing global warming will bring more suffering to southern Europe due to high temperatures and water availability. Without mitigating climate change, human exposure to heat waves will

increase 40 to 50 times in southern Europe, and about 30 times in other parts of the continent (Feyen, Ciscar, Gosling, Ibarreta, & Soria, 2020).

Therefore, strengthening resilience for Croatia as a country in the south of the European continent is more challenging. Models for four European regions – Mediterranean, Atlantic, Continental and Boreal show that the south of Europe can expect the most severe consequences due to droughts. The estimate of annual damages in euros at an average temperature increase of 1.5°C, 2°C and 3°C compared to the base year 2015 is shown in Figure 5. Vertical lines indicate climate uncertainty.

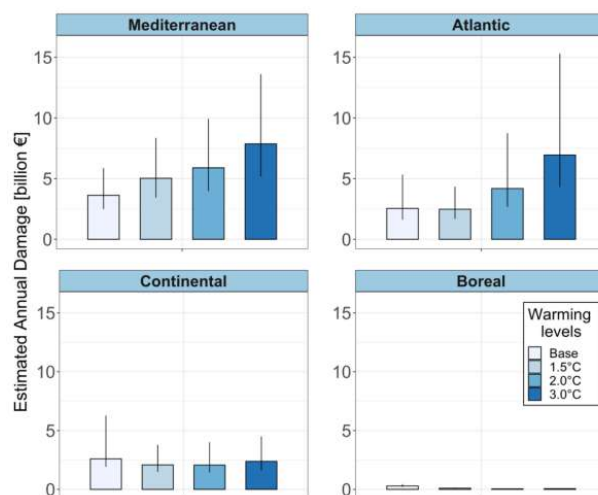


Figure 5. Annual damage due to droughts in billions of euros
(Source: JRC, Global warming and drought impacts in the EU)

As a country that belongs to both the Mediterranean and Continental region, Croatia can also expect: increase in extreme heat, decrease in summer precipitation, increase in the risk of river floods, increase in the risk of forest fires, decrease in the economic value of forests and increase in energy needs for cooling (European Commission, 2018).

Due to the floods in 2014, according to data from the Ministry of Finance, Croatia suffered more than HRK 1.7 billion in damages (more than EUR 232 million). The PESETA IV study developed four adaptation strategies to reduce damages from river floods. These are: strengthening of the embankment system, construction of retention areas for flood water storage, measures to reduce damage to buildings and relocation to areas safe from floods (Table 2). For Croatia, as well as for most European countries, the most expensive thing is to do nothing in adapting to climate change.

Table 2. PESETA IV analysis results of four adaptation strategies to reduce damage from river floods at the EU level. *Source: Climate Change Impacts and Adaptation in Europe, JRC PESETA IV final report (EUR 30180EN)*

Savings / Adaptation strategies	Return of investment (per 1 EUR)	Reduction of economic damage (%)	Reduction of damage to the population (%)
Strengthening of the embankment system	2 – 2,9	41 - 68	41 - 65
Construction of retention areas	2,9 – 3,5	64 - 82	63 - 81
Measures to reduce damage to buildings	5,2	50	0
Relocation to areas safe from floods	1,2	17	16

Forest fires cost the European Union about 2 billion euros annually, and damage is beginning to be recorded in northern and central Europe as well. Since 1980, fires in Europe have burned more than 190,000 square kilometers of forest, which is the size of two Portugals. The record year in terms of damage in Europe was 2018, and in Croatia 2017. At that time, 67,343 hectares of forests were destroyed in 104 fires in our country. The acquisition of a new monitoring and notification system enabled a faster response, and the result is visible from the data for 2019 (Figure 6), when, despite the greater number of fires, the size of the burned area is significantly smaller, and thus the damage.

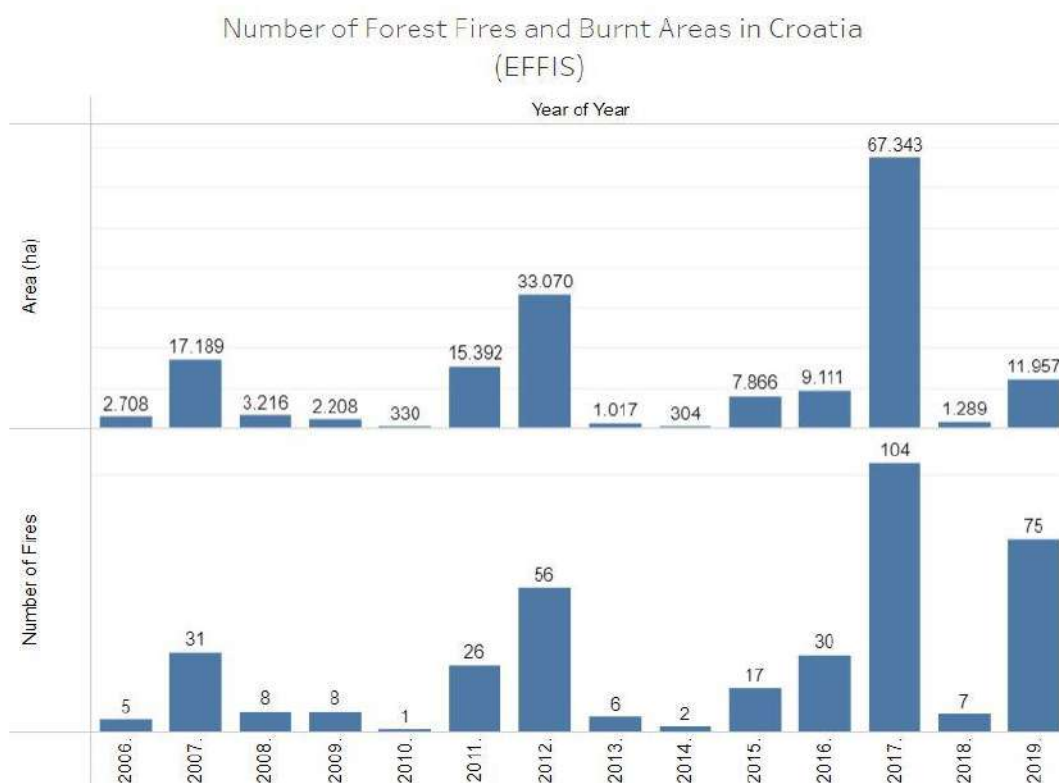


Figure 6. Number of fires and burnt areas

Disaster risk reduction and climate change adaptation are two practices that address increased disaster risk. Disaster risk reduction seeks to reduce the risk of natural and man-made disasters by reducing the exposure and vulnerability of people and property and increasing preparedness for such events, while climate change adaptation seeks to make adjustments to reduce the potential negative effects of climate change on society in terms of climate extremes and gradual climate change. Despite their similarities, disaster risk reduction and climate change adaptation are strictly separated by institutional and administrative boundaries, although this does not exclude cooperation and information exchange.

Activities related to disasters and their consequences in Croatia are mainly EU-funded, and the country itself has very small reserves, mostly insufficient to repair damages caused by very high exposure to disasters (International Bank for Reconstruction and Development / The World Bank, 2021). As stated in the new EU strategy for adapting to climate change, resilience to the risks of climate change and natural disasters must be included in national fiscal frameworks. In addition to increasing the rate of household catastrophe insurance or public property insurance, this could significantly improve the management of insufficient finances in the face of future global warming.

Climate change adaptation measures do not make sufficient use of synergies with the field of disaster risk reduction. Better coordination at the national level could achieve better alignment of practices, norms, guidelines, goals, resources and knowledge. Increased and improved communication and collaboration between those involved in climate change adaptation and disaster risk reduction enhances the learning process. Currently, climate change adaptation and disaster risk reduction use and apply the same terms, but still their meaning can be different, which confuses laymen and representatives of other professions. Linking knowledge enables better understanding, easier recognition and research of overlapping areas, and would certainly have positive financial effects.

4. CONCLUSION

In the past decade, Croatia was faced with natural threats that caused enormous material damage. Risk assessments have established that, under the influence of climate change, threats have become more frequent and more intense. Building resilience is therefore an imperative for action highlighted in key development strategies. The forecasts of climate indicators for the Mediterranean, according to several experts, are worse for most of the observed values, and it is necessary to act intensively to mitigate climate change and reduce the risk of disasters. Our goal is common – to reduce the suffering of people, threats to their health, and to preserve both public and private property, preserve cultural assets and protect critical infrastructure. The path to that goal leads through environmental preservation, changes in the economy, but also through changing awareness of how the world around us is very vulnerable.

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Klimatske promjene, smanjenje rizika od katastrofa i jačanje otpornosti

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Sažetak

Klimatske promjene povećavaju rizike od nestabilnosti u svim oblicima i značajno utječu na učestalost i intenzitet prirodnih prijetnji. U posljednja dva desetljeća 90 posto velikih katastrofa u svijetu uzrokovano je događajima poput toplinskih valova, poplava i suša koji su uvjetovani vremenskim prilikama. Procjenom rizika od katastrofa za Republiku Hrvatsku iz 2019. godine za 10 od 15 jednostavnih rizika utvrđeno je kako klimatske promjene utječu na njihovu pojavnost. Naravno, klimatske promjene utječu i na složene rizike, osobito u urbanim područjima. Zbog toga je pri procjenjivanju utjecaja koje klimatske promjene imaju na okoliš nužno uzeti u obzir i utjecaj koji imaju na rizike od katastrofa. Smanjenje rizika od katastrofa i prilagodba klimatskim promjenama imaju zajedničko područje interesa, dijelom se preklapaju pa i aktivnosti na jačanju otpornosti te pripremi sustava za odgovor zahtijevaju zajedničke napore i suradnju.

Ključne riječi: smanjenje rizika od katastrofa, klimatske promjene, rizici, otpornost, katastrofa

1. UVOD

Od 1995. do 2015. godine 90 posto zabilježenih velikih katastrofa u svijetu (poplave, oluje, toplinski valovi i suše) povezano je s klimatskim promjenama. Klimatske promjene utjecale su na učestalost, intenzitet i dugotrajnost prijetnji koje ovise o vremenskim uvjetima. U Hrvatskoj prema nacionalnoj procjeni rizika iz 2019. godine klimatske promjene utječu na pojavljivanje 10 od 15 jednostavnih rizika. Utječu na: bolesti bilja, bolesti životinja, ekstremne temperature, epidemije i pandemije, poplave, požari otvorenog tipa, snijeg i led, suše, zasljanjivanje kopna i klizišta (“Portal smanjenja rizika od katastrofa,” 2019).

Odgovor na povećani broj katastrofa u svijetu je Sendai okvir za smanjenje rizika od katastrofa koji je upravljanje rizicima kao i njihovo smanjenje povezao s održivim razvojem. Cilj je spriječiti pojavu novih rizika, smanjiti postojeće rizike od katastrofa te upravljati preostalim rizikom što će pridonijeti jačanju otpornosti (Sess.: 2014-2015). Ovaj holistički pristup nije ograničen na upravljanje katastrofom, već podrazumijeva kontinuirano smanjenje rizika.

Smanjenje rizika od katastrofa (SROK) i prilagodba klimatskim promjenama (PKP) imaju zajedničko područje interesa. Postoje razlike između ovih područja, ali i konvergencija. Međusobno približavanje i težnja za ostvarenjem istog cilja najočiglednija je u fokusiranju na povećane opasnosti u vezi s klimom, klimatske ekstreme poput poplava, oluja, klizišta, suša i drugih. Smanjenje rizika od katastrofa jasno je označilo utjecaje klime na povećanje rizika od pojedinih prijetnji. Zajednički je i multidisciplinarni pristup u traženju rješenja te razvoj horizontalne i vertikalne suradnje s dionicima.

Katastrofe povezane s klimom nemoguće je analizirati i raspravljati o njima bez uvažavanja klimatskih promjena pri čemu nije dovoljno usmjeriti pozornost samo na aktivnosti nakon katastrofe, tijekom oporavka i obnove, već je važno djelovati u području prevencije, pripremljenosti i ublažavanja. Upravo tu je i najsnažnija povezanost smanjenja rizika od katastrofa i prilagodbe klimatskim promjenama.

2. VIZIJE I STRATEGIJE

2.1. Što je otpornost

Mjere i aktivnosti koje se poduzimaju u području smanjenja rizika od katastrofa vezane su uz strategije kojima je cilj jačanje otpornosti, pojam koji je postao ključan za održivi razvoj. Otpornost na nacionalnoj i svim drugim razinama nastoji se osigurati da šokovi, stresovi i opasni događaji ne dovedu do dugoročnog zaostajanja u razvoju, gospodarskom rastu i napredovanju. Pojam otpornosti integrirao je različita područja i na njega se pozivaju svi nedavni međunarodni sporazumi koji se odnose na smanjenje rizika od katastrofa, kao i na prilagodbu klimatskim promjenama. I u našoj zemlji *Strategija prilagodbe klimatskim promjenama u Republici Hrvatskoj za razdoblje do 2040. godine s pogledom na 2070. godinu* (u nastavku: *Strategija prilagodbe klimatskim promjenama*) ima razvojnu viziju „Republika Hrvatska otporna na klimatske promjene“. Postizanje cilja tj. otpornosti planira se ostvariti smanjenjem ranjivosti prirodnih sustava i društva na negativne utjecaje klimatskih promjena te jačanjem sposobnosti oporavka od tih utjecaja („Strategija prilagodbe“, 2020). U proceduri je i donošenje *Strategije upravljanja rizicima od katastrofa do 2030.* s vizijom „Hrvatska otpornija na katastrofe“.

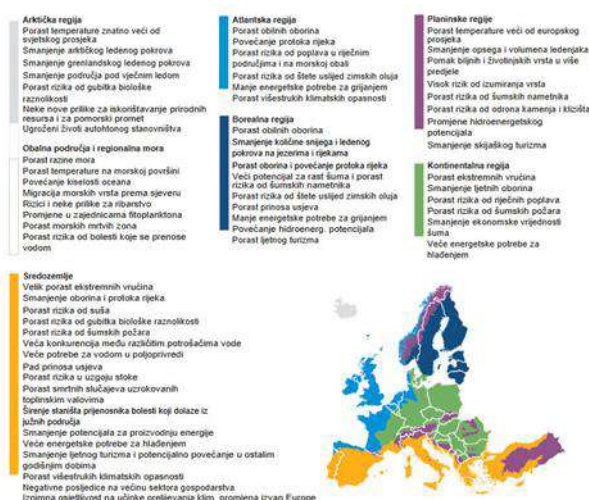
Pojam otpornosti ima i nedostatke, a jedna od većih zamjerki je otežano mjerenje rezultata. Kritičari ističu nedovoljnu konkretnost pojma otpornosti i postojanje više koncepata i definicija (I. Sudmeier-Rieux, 2014). Za civilnu zaštitu pojam je definiran na razini Ujedinjenih naroda i pod otpornošću se podrazumijeva sposobnost sustava, zajednice ili društva izloženih opasnostima da se pravovremeno i djelotvorno odupru, apsorbiraju, prilagode i oporave od učinaka opasnosti, uključujući očuvanje i obnavljanje bitnih osnovnih struktura i funkcija. Sposobnost oporavka zajednice u odnosu na bilo koju opasnost ili događaj određena je stupnjem opremljenosti resursima te sposobnošću organiziranja prije i tijekom potrebe (United Nations, 2016). Otpornost podrazumijeva funkcioniranje bez ugrožavanja dugoročnih izgleda za održivi razvoj, mir i sigurnost, ljudska prava i dobrobit za sve. U fokusu je kapacitet, odnosno sposobnosti zajednice, a ne toliko ranjivosti, kao što je prije bio slučaj. Terminologija dogovorena na razini Ujedinjenih naroda kapacitet definira kao kombinaciju svih snaga, svojstava i resursa dostupnih u zajednici, društvu ili organizaciji za upravljanje i smanjenje rizika i jačanje otpornosti. Tako definiran kapacitet može uključivati infrastrukturu, institucije, ljudsko znanje i vještine te kolektivne attribute poput društvenih odnosa, vodstva i upravljanja.

Jačanje kapaciteta je jedan od načina za smanjenje kratkoročnih i dugoročnih rizika od katastrofa. Uz kapacitet za odgovor na katastrofu, važno je jačati i kapacitet za upravljanje ekosustavom, kapacitet za višu razinu samoorganizacije kao i kapacitete za sva područja koja vode smanjenju rizika od katastrofa i jačanju otpornosti. Jačanjem kapaciteta možemo smanjiti ranjivost, povećanu osjetljivost pojedinca, zajednice, imovine ili sustava na utjecaje prijetnji (United Nations, 2016). Ranjivost može biti određena fizičkim, društvenim, ekonomskim i okolišnim čimbenicima ili procesima.

2.2. Europske strategije i vizije

Europska strateška dugoročna vizija za prosperitetno, moderno, konkurentno i klimatski neutralno gospodarstvo koju je Europska komisija predstavila potkraj 2018. godine

Hrvatsku smješta u tri regije s obzirom na izloženost klimi. To su: sredozemna, planinska i kontinentalna regija (European Commission, 2018). Ovakva služena situacija može povećati spektar i broj rizika na našem području.



Slika 1. Posljedice klimatskih promjena u Europi (Izvor: Europska komisija)

Europski zeleni plan nudi rješenja za spašavanje ugroženog okoliša i uklanjanje povećanih prijetnji od prirodnih nepogoda. Za razliku od nove strategije EU-a za prilagodbu klimatskim promjenama u njemu se manje spominje prilagodba ili otpornost na katastrofe. Međutim, to ne umanjuje njegov utjecaj na promjene, a sam plan nazvan je strategijom rasta koja će europsko gospodarstvo preobraziti u resursno učinkovito i konkurentno najkasnije do 2050. godine. Predviđa potpuno uklanjanje neto emisija stakleničkih plinova jer se gospodarski rast više neće vezati uz korištenje resursa koji su doveli do klimatskih promjena (European Commission, 2019). Očuvanje i obnova ekosustava i biološke raznolikosti ublažavaju prirodne prijetnje. Zato se Europskim zelenim planom žele ojačati temelji za održiva ulaganja, a rizici za klimu i okoliš bolje integrirati u financijski sustav koji će tako pomoći u povećanju otpornosti.

Stvaranje Europe otporne na klimatske promjene – nova strategija EU-a za prilagodbu klimatskim promjenama ima cilj poboljšati sposobnost prilagodbe i smanjiti osjetljivost na klimatske utjecaje. Ističe važnost znanja o klimatskim utjecajima i otpornosti te potrebu za brojnim i kvalitetnijim podacima o rizicima i gubicima koji su povezani s klimom, a važni su za donošenje utemeljenih odluka. Podaci o rizicima i gubicima koji su povezani s klimom moraju uključivati javne i privatne gubitke zbog utjecaja klimatskih promjena kao što su na primjer gubitak života, oštećenje infrastrukture ili komercijalne aktivnosti, zatim troškove odgovora na krizne situacije i troškove oporavka („Stvaranje Europe otporne“, 2021). Pojam otpornosti u ovoj strategiji spominje se više od 60 puta.

2.3. Hrvatske strategije prilagodbe klimatskim promjenama i upravljanja rizicima od katastrofa

Strategija prilagodbe klimatskim promjenama u Republici Hrvatskoj za razdoblje do 2040. godine s pogledom na 2070. kao dio procjene utjecaja klimatskih promjena i ranjivosti obrađuje i područje smanjenja rizika od katastrofa. Istaknuto je kako klimatske promjene mogu povećati vjerojatnost katastrofe i pojačati njezin intenzitet. Kao glavni očekivani utjecaji s visokom ili srednjom ranjivošću navedena su: klizišta, poplave, ekstremne temperature, požari otvorenog tipa, suše, epidemije / pandemije te složeni rizici, posebno u urbanim područjima („Strategija prilagodbe“, 2020). Prikaz utjecaja i

izazova prilagodbe iz ove strategije u području smanjenja rizika od katastrofa dopunjen je i dijelom izmijenjen u *Strategiji upravljanja rizicima od katastrofa do 2030. godine*.

U utjecaje i izazove prilagodbe za područje smanjenja rizika od katastrofa uvrštena je „izloženost izgrađenog okoliša i vjerojatnost oštećenja ili gubitaka uslijed određene razine prijetnje“ te je također dodano „povećanje učestalosti i intenziteta poplava i suša“. Pitanja u vezi s gradnjom i izloženosti izgrađenog okoliša imaju veliku ulogu u smanjenju rizika od katastrofa. Osim toga, napravljene su i korekcije mogućih odgovora za smanjenje visoke ranjivosti (Tablica 1.).

Tablica 1. Prilagođeni prikaz utjecaja i izazova prilagodbe klimatskim promjenama u području upravljanja rizicima od katastrofa. *Izvor: Strategija prilagodbe klimatskim promjenama u Republici Hrvatskoj za razdoblje do 2040. godine s pogledom na 2070. godinu (prilagođeno)*

Utjecaji i izazovi koji uzrokuju visoku ranjivost	Mogući odgovori na smanjenje visoke ranjivosti
■ požari otvorenog tipa zbog produženih razdoblja visokog sunčevog zračenja i produženih razdoblja visoke temperature zraka te duljih sušnih razdoblja ■ izloženost izgrađenog okoliša i vjerojatnost oštećenja ili gubitaka uslijed određene razine prijetnje ■ povećanje učestalosti i intenziteta poplava i suša ■ epidemije i pandemije, zbog načina prijenosa bolesti ili značajke uzročnika bolesti ■ povećanje učestalosti i intenziteta poplava i suša ■ povećanje opsega zdravstvenog i socio-ekonomskog opterećenja zajednice zbog utjecaja rizika uzrokovanih klimatskim promjenama	■ jačanje kompetencija ključnih dionika u upravljanjima rizicima povezanih s klimatskim promjenama ■ jačanje kapaciteta za odgovor na velike nesreće i katastrofe ■ utvrđivanje multisektorskih smjernica za postupanja povezanih s klimatskim promjenama ■ proširenje sustava za praćenje i procjenu rizika korištenjem alata za praćenje indikatora rizika povezanih s klimatskim promjenama ■ učinkovit oporavak od posljedica velikih nesreća i katastrofa ■ smanjenje opterećenja zajednice nakon izloženosti prijetnjama povezanim s klimatskim promjenama

Upravljanje kojim se bavi Strategija upravljanja rizicima od katastrofa složen je proces koji uključuje nacionalnu, regionalnu i lokalnu razinu vlasti te organizacije koje djeluju na horizontalnoj razini (udruge civilnog društva, tvrtke i dr.). Upravljanje rizicima od katastrofa znači primjenu politika i strategija koje mogu biti usmjerene na sprječavanje novih rizika, smanjenje postojećeg i upravljanje preostalim rizikom. Ono također podrazumijeva doprinos jačanju otpornosti i smanjenju gubitaka od katastrofa (United Nations, 2016).

Klimatske promjene utjecale su na veću prihvaćenost prospektivnog i korektivnog upravljanja rizikom. Prospektivno upravljanje rizikom bavi se aktivnostima i nastojanjima za izbjegavanje razvoja novih ili povećanih rizika od katastrofa te se usredotočuje na rješavanje rizika koji bi se mogli razviti, ako se ne uspostave politike smanjenja rizika, dok se korektivno upravljanje rizikom bavi aktivnostima i nastojanjima da se uklone ili smanje postojeći rizici. Iako polazimo od toga kako se na rizike može utjecati, i učinkovito ih smanjivati, kod klimatskih promjena proces je dugotrajan. Stoga je, uz spomenute, nužno i kompenzacijsko upravljanje rizikom koje obuhvaća aktivnosti jačanja društvene i ekonomske otpornosti pojedinaca i društava zbog suočavanja s rizikom koji se ne može učinkovito smanjiti. Primjenjuje se na preostali rizik i uključuje

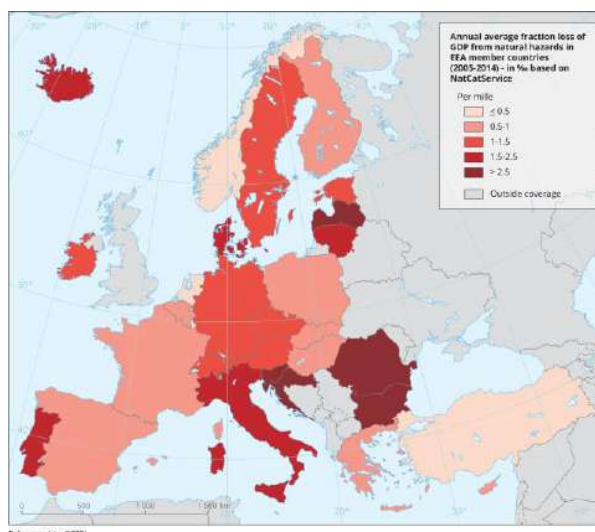
aktivnosti pripravnosti, odgovora i oporavka te kombinira različite instrumente financiranja.

3. JAČANJE FINACIJSKE OTPORNOST NA KATASTROFE

3.1. Financijske štete

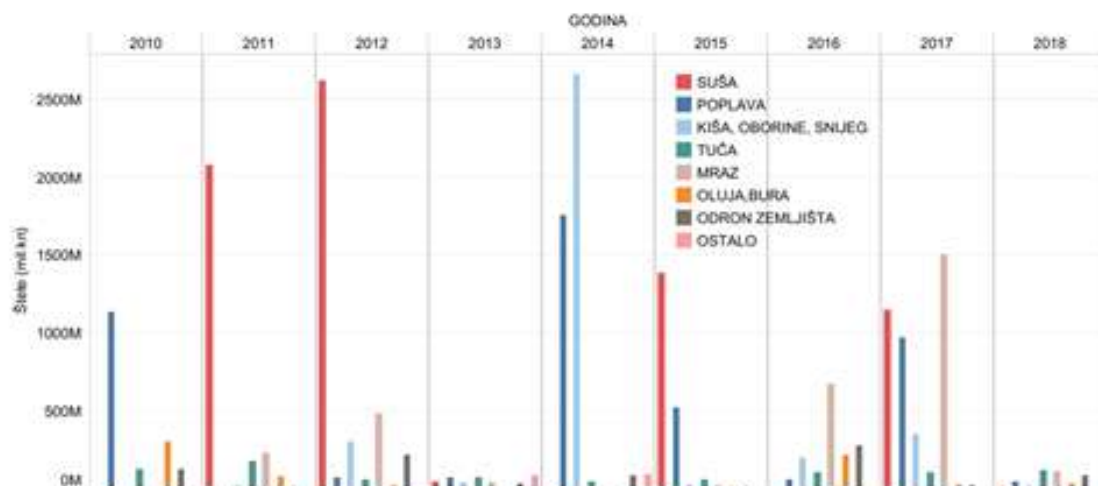
Zbog vremenskih nepogoda i klimatskih ekstrema štete u 27 država članica EU-a u posljednjih 40 godina premašile su 487 milijardi eura. To je znatno više od onoga što EU troši tijekom dvije godine na sve svoje politike i programe. Ukupni trošak zbog šteta bio je najviši za Njemačku, Italiju i Francusku, dok su po glavi stanovnika najveće gubitke imali: Danska, Austrija i Luxemburg.

Od 2005. godine do 2014. godine po štetama od prirodnih nepogoda u odnosu na bruto domaći proizvod Hrvatska je bila među vodećim zemljama Europskog gospodarskog prostora. Prema procjenama NatCatService baze, osiguravateljske kuće Munich Re po štetama od prirodnih nepogoda u odnosu na svoj BDP u Europskoj uniji prednjače Hrvatska, Bugarska, Rumunjska i Latvija, (Slika 2.). To su podaci na koje se oslanjaju europske institucije, u pravilu nezadovoljene prikupljanjem i dostupnošću podataka o katastrofama.



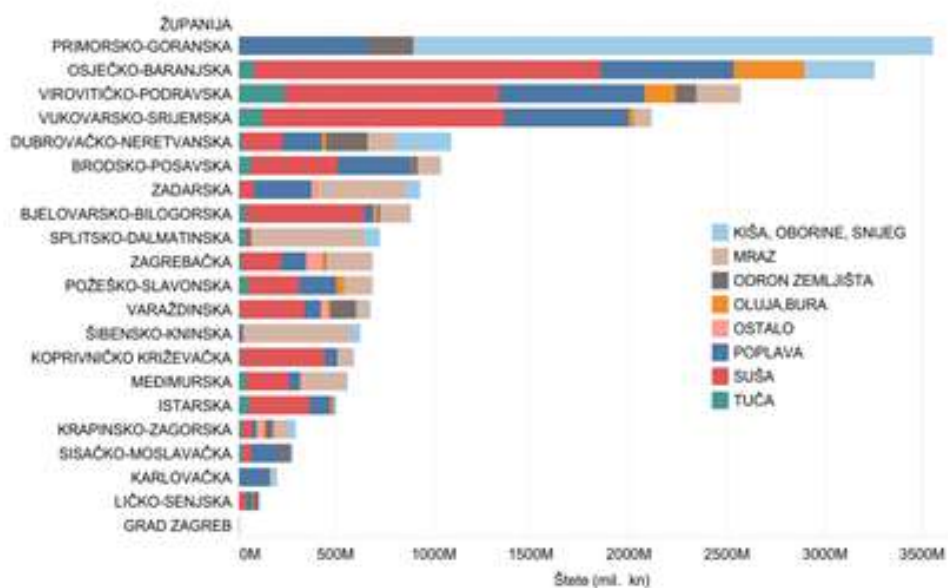
Slika 2. Prosječni godišnji gubici od prirodnih prijetnji za zemlje Europskog gospodarskog prostora od 2005 do 2014. (Izvor: <https://www.eea.europa.eu>)

Registar prijavljenih šteta koji vodi Ministarstvo financija Republike Hrvatske od 2010 do 2018. godine pokazuje kako je ukupni iznos šteta zbog prirodnih nepogoda u Hrvatskoj premašio je 21 milijardu kuna (2,8 milijardi EUR). Više od polovice iznosa bile su štete uzrokovane sušama, poplavama i oborinama te požarima (Slika 3.).



Slika 3. Štete zbog prirodnih nepogoda od 2010. do 2018. (Izvor: Registar prijavljenih šteta Ministarstva financija RH)

Najviše šteta zbog prirodnih nepogoda od 2010 do 2018. godine prijavile su Primorsko-goranska županija, Osječko-baranjska, Virovitičko-podravska i Vukovarsko-srijemska županija (Slika 4.).



Slika 4. Štete od prirodnih nepogoda po županijama od 2010. do 2018. (Izvor: Registar prijavljenih šteta Ministarstva financija RH)

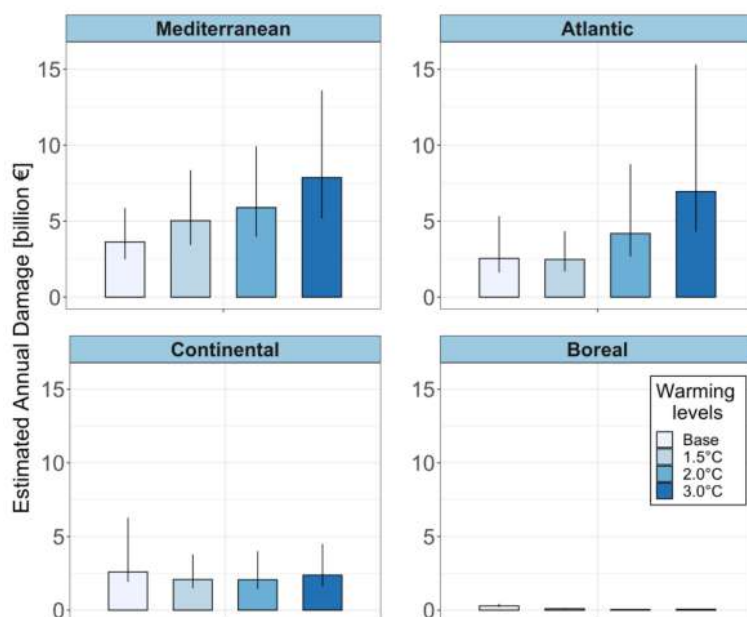
Prema podacima registra prijavljenih šteta Hrvatska je 2011. godine imala zbog suša štete preko dvije milijarde kuna (oko 265 milijuna EUR), a 2012. čak 2,6 milijardi kuna (oko 347 milijuna EUR). U odnosu na broj stanovnika i bruto domaći proizvod štete su imale teže posljedice nego katastrofalne suše u pojedinim razvijenim europskim zemljama nekoliko godina kasnije. Najviše su stradale Osječko-baranjska županija, Vukovarsko-srijemska i Virovitičko-podravska, odnosno županije kontinentalnog dijela zemlje s razvijenim ratarstvom.

Praćenje šteta važno je za korigiranje politika prema katastrofama i klimatskim promjenama. Korisno je i za procjenjivanje rizika od katastrofa i jačanje financijske otpornosti.

3.2. Jačanje otpornosti

Prognoze klimatskih pokazatelja za Sredozemlje lošije su od prognoza na globalnoj razini za većinu vrijednosti. Klimatski stručnjaci za područje Sredozemlja predviđaju tijekom 21. stoljeća porast temperature, smanjenje ljetnih oborina, povećanje razdoblja suše, veću učestalost i intenzitet ekstremnih događaja, povećanje razine mora i obalne poplave, kao i zakiseljavanje mora zbog povećane količine ugljičnog dioksida (Galeotti, 2020). Bez ublažavanja klimatskih promjena, odnosno uz očekivano zagrijavanje za 3°C do kraja stoljeća, šumski požari i epidemije štetočina bile bi sve učestalije i teže. Zbog povećanog gubitka biomase povećala bi se količina ugljika u atmosferi. Porast zagrijavanja pratila bi i smanjena dostupnost vodnih resursa koja bi u južnim regijama Europe mogla dosegnuti i 40%, a nedostatak vode i suša utjecali bi na poljoprivredu, proizvodnju energije i vodoopskrbu. Smrtnost zbog velikih vrućina porasla bi čak 30 puta (90.000 ljudi godišnje u odnosu na sadašnjih 3.000). Prinosi usjeva pali bi za više od 10% u južnoj Europi, gubici od riječnih poplava povećali bi se šest puta. Porast opasnosti od požara veća je na nižim geografskim širinama Europe. Studija PESETA IV koja je napravljena kako bi se bolje razumjele posljedice klimatskih promjena za Europsku uniju ukazala je na značajne razlike u rizicima između sjevera i juga Europe. Povećanje globalnog zatopljenja jugu Europe donijet će više patnje zbog visokih temperatura i dostupnosti vode. Bez ublažavanja klimatskih promjena izloženost ljudi toplinskim valovima povećat će se na jugu Europe 40 do 50 puta, a u ostalim dijelovima kontinenta oko 30 puta (Feyen, Ciscar, Gosling, Ibarreta, & Soria, 2020).

Jačanje otpornosti za Hrvatsku kao zemlju na jugu europskog kontinenta time je izazovnije. Modeli za četiri europske regije - mediteransku, atlantsku, kontinentalnu i borealnu pokazuju kako jug Europe može očekivati najteže posljedice zbog suša. Procjena godišnjih šteta u eurima pri prosječnom porastu temperature za 1.5°C, 2°C i 3°C u odnosu na baznu 2015. prikazana je na Slici 5. Okomite linije označavaju klimatsku neizvjesnost.



Slika 5. Godišnje štete zbog suša u milijardama eura
(Izvor: JRC, Global warming and drought impacts in the EU)

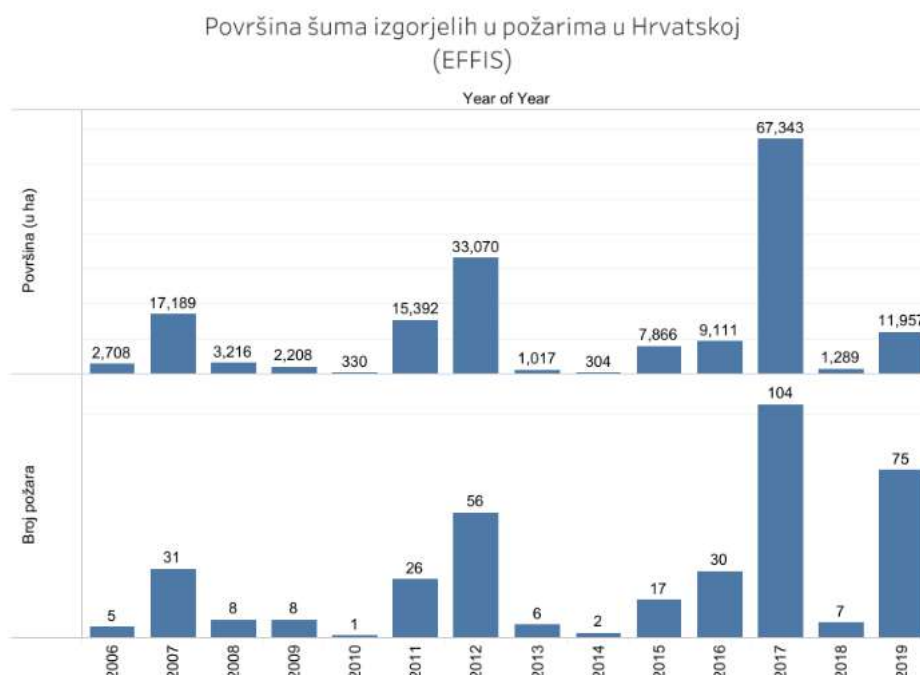
Kao zemlja koja pripada Sredozemlju, ali također i kontinentalnoj regiji Hrvatska može očekivati također: porast ekstremnih vrućina, smanjenje ljetnih oborina, porast rizika od riječnih poplava, porast rizika od šumskih požara, smanjenje ekonomske vrijednosti šuma i povećanje energetske potreba za hlađenjem (European Commission 2018).

Zbog poplava 2014. godine, prema podacima Ministarstva financija, Hrvatska je pretrpjela štete veće od 1,7 milijardi kuna (više od 232 milijuna EUR). Studija PESETA IV razradila je četiri strategije prilagodbe smanjenja šteta od riječnih poplava. To su: jačanje sustava nasipa, izgradnja retencijskih područja za skladištenje poplavnih voda, mjere smanjenja štete na zgradama i preseljenje u područja sigurna od poplava (Tablica 2.). Za Hrvatsku, kao i za većinu europskih zemalja, najskuplje je ne činiti ništa u prilagodbi klimatskim promjenama.

Tablica 2. PESETA IV rezultati analize četiri strategije prilagodbe za smanjenje šteta od riječnih poplava na razini EU. Izvor: *Climate Change Impacts and Adaptation in Europe, JRC PESETA IV final report(EUR 30180EN)*

Uštede / Strategije prilagodbe	Povrat uloženog (na 1 EUR)	Smanjenje ekonomske štete (%)	Smanjenje štete po populaciju (%)
Jačanje sustava nasipa	2 – 2,9	41 - 68	41 - 65
Izgradnja retencijskih područja	2,9 – 3,5	64 - 82	63 - 81
Mjere smanjenja štete na zgradama	5,2	50	0
Premještanje u područja sigurna od poplava	1,2	17	16

Šumski požari Europsku uniju godišnje stoje oko 2 milijarde eura, a štete počinju bilježiti i sjeverna i središnja Europa. Od 1980. u požarima u Europi izgorjelo je više od 190.000 četvornih kilometara šuma, što je veličina dva Portugala. Rekordna godina s obzirom na štete u Europi je bila 2018, a u Hrvatskoj 2017. Tada je u 104 požara u našoj zemlji nestalo je 67.343 hektara šuma. Nabavom novog sustava motrenja i dojavljivanja omogućeno je brže reagiranje, a rezultat je vidljiv iz podataka za 2019. godinu (Slika 6.) kada je usprkos većem broju požara veličina opožarene površine značajno manja, a time i štete.



Slika 6. Broj požara i opožarenih površina

Smanjenje rizika od katastrofa (SROK) i prilagodba klimatskim promjenama (PKP) dvije su prakse koje se bave rješavanjem povećanog rizika od katastrofa. SROK nastoji smanjiti rizik od prirodnih katastrofa i katastrofa uzrokovanih ljudskim djelovanjem smanjenjem izloženosti i ranjivosti ljudi i imovine te povećanjem pripravnosti za takve događaje, dok PKP nastoji napraviti prilagodbe kako bi se smanjili potencijalni negativni učinci klimatskih promjena na društvo u pogledu klimatskih ekstrema i postupnih promjena klime. Unatoč sličnostima, SROK i PKP su strogo odvojeni institucionalnim i administrativnim granicama iako to ne isključuje suradnju i razmjenu informacija.

Aktivnosti vezane uz katastrofe i njihove posljedice u Hrvatskoj se financiraju uglavnom europskim novcem, a sama država ima vrlo male rezerve, uglavnom nedovoljne za saniranje šteta nastalih zbog veoma velike izloženosti katastrofama (International Bank for Reconstruction and Development / The World Bank, 2021). Kako je navedeno u novoj EU strategiji za prilagodbu klimatskim promjenama otpornost na rizike od klimatskih promjena i prirodnih katastrofa mora biti uključena u nacionalne fiskalne okvire. Uz povećanje stope osiguranja od katastrofe za kućanstava ili osiguranja javne imovine to bi moglo značajno unaprijediti upravljanje nedostatnim financijama u budućim suočavanjima s globalnim porastom temperature.

Mjere prilagodbe klimatskim promjenama ne koriste dovoljno sinergiju s područjem smanjenja rizika od katastrofa. Boljom koordinacijom na nacionalnoj razini mogla bi se postići bolja usklađenost praksi, normi, smjernica, ciljeva, resursa i znanja. Povećanom i poboljšanom komunikacijom i suradnjom između onih koji se bave prilagodbom klimatskim promjenama (PKP) i smanjenjem rizika od katastrofa (SROK) unapređuje se proces učenja. Trenutno, PKP i SROK koriste i primjenjuju iste izraze, ali još uvijek njihovo značenje može biti različito što zbunjuje laike i predstavnike drugih struka. Povezivanje znanja omogućuje bolje razumijevanje, lakše prepoznavanje i istraživanje područja koja se preklapaju, a zasigurno bi imalo i pozitivne financijske učinke.

4. ZAKLJUČAK

Hrvatska je u proteklom desetljeću bila suočena s prirodnim prijetnjama koje su joj nanijele ogromne materijalne štete. Procjenama rizika utvrđeno je kako su pod utjecajem klimatskih promjena prijetnje postale učestalije i jačeg intenziteta. Jačanje otpornosti stoga je imperativ za djelovanje istaknut u ključnim strategijama razvoja. Prognoze klimatskih pokazatelja za Sredozemlje, prema mišljenju više stručnjaka, lošije su za većinu promatranih vrijednosti te je neophodno intenzivno djelovati na ublažavanju klimatskih promjena i smanjenju rizika od katastrofa. Naš je cilj zajednički – smanjiti stradanja ljudi, ugrožavanja njihovog zdravlja te sačuvati imovinu kako javnu tako i privatnu, očuvati kulturna dobra i zaštititi kritične infrastrukture. Put do toga cilja vodi kroz očuvanje okoliša, promjene u gospodarstvu, ali i kroz mijenjanje svijesti o tome kako je svijet koji nas okružuje vrlo ranjiv.

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SECTION E / SEKCIJA E

SUSTAINABLE DEVELOPMENT AND FINANCIAL FRAME / ODRŽIVI RAZVOJ I FINANCIJSKI OKVIR

Uloga jedinica lokalne samouprave u zaštiti i očuvanju prirode i okoliša

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Sažetak

Među temeljne vrijednosti u javnoj upravi ubrajaju se ekološke vrijednosti. Stoga je prijerka potreba za analizom ovih, u novije vrijeme, veoma značajnih vrijednosti, nagnala autore članka da se, u okviru zaštite prirode te očuvanja okoliša bave analizom pravne regulacije zaštite okoliša na lokalnoj razini, vodeći se prvenstveno pitanjem u kojoj mjeri jedinice lokalne samouprave ispunjavaju zakonske obveze proizašle iz Zakona o gospodarenju otpadom, Zakona o zaštiti okoliša, Zakona o lokalnoj i područnoj (regionalnoj) samoupravi. Neka od istraživačkih pitanja postavljena u tekstu rada odnose se na postojanje reciklažnih dvorišta, ukupan broj korisnika, količinu zaprimljenog otpada, financiranje gradnje reciklažnog dvorišta, postojanje dodatnih realiziranih projekata koji se tiču zaštite prirode i okoliša na lokalnoj razini (ispitivanje projekata koji su do sada realizirani). Temeljna hipoteza rada glasi: jedinice lokalne samouprave na području Osječko-baranjske županije osiguravaju zaštitu i očuvanje prirode i okoliša sukladno zakonskim odredbama izgradnjom reciklažnih dvorišta. Ta se hipoteza provjerava nad podacima prikupljenim anketnim upitnikom, koji su obrađeni deskriptivnom statistikom. Tekst rada trebao bi poslužiti razvoju nauke o upravi iz smjera oblikovanja teorijske podloge zaštite prirode i okoliša, analize pravne regulacije zaštite prirode i okoliša, analize ekoloških vrijednosti u javnoj upravi, prikaza rezultata empirijskog istraživanja te donošenja zaključnih misli vezanih uz kvalitetno osiguravanje zaštite prirode i okoliša na lokalnoj razini.

Ključne riječi: jedinice lokalne samouprave, zaštita prirode i okoliša, reciklažna dvorišta, Zakon o gospodarenju otpadom, Zakon o zaštiti okoliša

The Role of Local Self-Government Units in the Protection and Preservation of Nature and the Environment

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Abstract

Environmental values are among the fundamental values in public administration. Therefore, the urgent need to analyze these, in recent times, very significant values, has prompted the authors of the article to, within the framework of nature protection and environmental preservation, undertake the analysis of the legal regulation of environmental protection at the local level, guided primarily by the question of the extent to which local self-government units fulfil their obligations stemming from Act on Waste Management, Act on Nature Protection, Act on Local and Regional Self-Government.. Some of the research topics refer to the existence of recycling yards, number of users, amount of collected waste, financing recycling yard construction, existence of additional realised nature protection projects (examination of the projects that have been realized so far). The main hypothesis is: local self-government units in Osijek-Baranja County ensure the protection and conservation of nature and environment by establishing recycling yards, according to legal acts. This hypothesis is tested on the data collected by a survey questionnaire, which were processed with descriptive statistics. The contribution of the paper to administrative science is in shaping theoretical background to nature and environment protection, analysis of nature and environment protection legal documents, analysis of ecological values in public administration, presentation of the findings of the empirical study, and concluding remarks concerning ensuring the quality of nature and environment protection at the local level.

Keywords: local self-government units, nature and environment protection, recycling yards, Act on Waste Management, Act on Nature Protection

1. UVOD⁶

Ekološke vrijednosti u javnoj upravi u novije vrijeme zauzimaju strateško mjesto u pozicioniranju povezujućih, motivacijskih i organizacijskih vrijednosti, napose kada je riječ o lokalnoj i područnoj (regionalnoj) samoupravi. Cilj je rada ispitati u kojoj mjeri jedinice lokalne samouprave u Osječko-baranjskoj županiji ispunjavaju svoju obvezu proizašlu iz Zakona o gospodarenju otpadom te drugim relevantnim propisima, a sa svrhom očuvanja i zaštite prirode i okoliša. Analiza teorijske podloge donosi prikaz različitih propisa te dokumenata kojima se nastoji promovirati ovo veoma značajno područje. Isto tako, provedba empirijskog istraživanja donosi rezultate koji su usmjereni k afirmaciji ekoloških vrijednosti u javnoj upravi.

Temeljna hipoteza rada glasi: jedinice lokalne samouprave na području Osječko-baranjske županije osiguravaju zaštitu i očuvanje prirode i okoliša sukladno zakonskim

⁶ Ovaj je rad financirao Pravni fakultet Osijek Sveučilišta Josipa Jurja Strossmayera u Osijeku internim projektom br. IP-PRAVOS-16 „Novi trendovi u razvoju javnih službi na lokalnoj i regionalnoj razini“

odredbama izgradnjom reciklažnih dvorišta (Slika 1, 2). Rad je podijeljen u nekoliko glavnih poglavlja. Prvi dio rada oslanja se na analizu ekoloških vrijednosti u javnoj upravi te na analizu odabranih pravnih propisa u domeni zaštite okoliša. Središnji dio rada posvećen je prikazu rezultata dobivenih provedbom empirijskog istraživanja u Osječko-baranjskoj županiji. Završni dio rada vezan je uz iznošenje prijedloga za poboljšanje modela gospodarenja otpadom kao i iznošenjem ključnih misli autora. Prilikom pisanja teksta rada korištene su znanstvene metode analize, sinteze i opisivanja.

2. EKOLOŠKE VRIJEDNOSTI U JAVNOJ UPRAVI

Same vrijednosti u javnoj upravi imaju različite uloge, s jedne strane riječ je, kao i što je istaknuto u uvodnom dijelu rada, o povezujućoj ulozi s obzirom da se ključni akteri javnog upravljanja slažu kako su one zaista važne i nužne za takvu vrstu djelovanja, s druge strane riječ je o tzv. motivacijskoj ulozi s obzirom da pokreću djelovanje aktera u političko-upravnom sustavu, dok s treće strane imaju orijentacijsku ulogu, jer akteri zauzimaju stajalište kako se iste treba poštovati. S obzirom na činjenicu kako se neprestano pojavljuje novi set vrijednosti u javnoj upravi, te s obzirom na poželjnost da se te iste vrijednosti kombiniraju, valja istaknuti nekoliko grupa vrijednosti kojima je obilježena javna uprava: demokratske vrijednosti u koje ubrajamo legitimitet uprave, političku decentralizaciju, javnost uprave, transparentnost, otvorenost uprave i sl., pravne vrijednosti u koje ubrajamo vladavinu prava, zakonitost, pravnu sigurnost, nepristranost i sl., socijalne vrijednosti u koje ubrajamo društvenu pravednost, solidarnost, socijalnu osjetljivost, skrb i sl. te ekološke vrijednosti u koje ubrajamo zaštitu prirodnog okoliša, zaštitu prirodne raznovrsnosti, pažnju u upravljanju prirodnim resursima itd. Upravo su ove potonje vrijednosti u fokusu ovoga rada. Stoga je potreba da se u novije doba u što većoj mjeri proklamiraju ekološke vrijednosti u javnoj upravi, kako bi, s jedne strane ključni akteri javnog upravljanja kao i sami građani postali svjesni značaja i važnosti njihovog razvoja (Koprić, Musa, Lalić Novak, 2012, 121-124).



Slika 1. Zeleni otok – grad Osijek (Jug II). (SiB.hr, 2022.)



Slika 2. Mobilno reciklažno dvorište u Osijeku (Techno Win Machine, 2022.)

Tablica 1. Količine odvojeno sakupljenog komunalnog otpada u sklopu javne usluge po JLS u 2021. godini (Ministarstvo gospodarstva i održivog razvoja, 2022.)

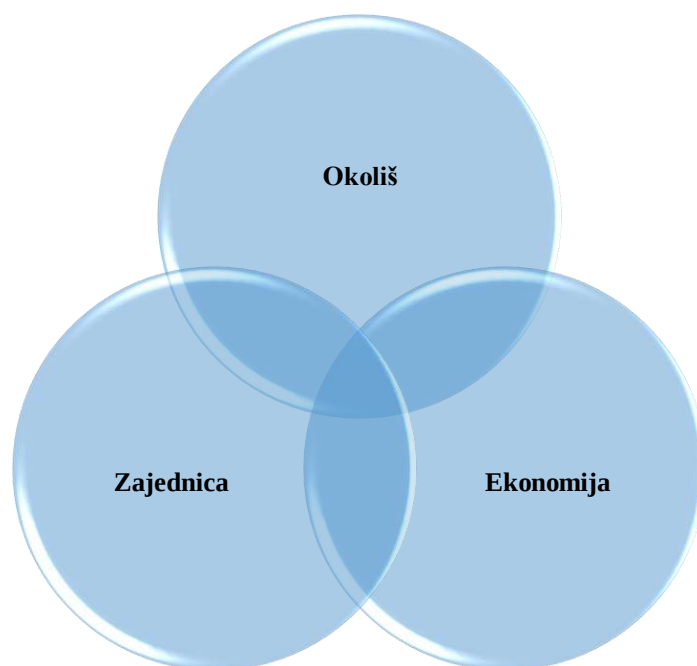
JLS (grad/općina)	Papir (t)	Plastika (t)	Staklo (t)
Antunovac	56,25	15,53	0,01
Beli Manastir	95,64	74,68	7,26
Belišće	158,12	87,02	10,34
Bilje	67,97	56,83	11,12
Bizovac	37,20	38,86	13,00
Čeminac	25,46	22,17	1,46
Čepin	212,09	72,56	0,01
Darda	68,49	59,26	6,74
Donja Motičina	23,70	13,31	0,00
Donji Miholjac	48,02	25,34	12,86
Draž	20,08	17,49	1,15
Drenje	13,03	26,38	4,65
Đakovo	581,65	231,79	23,78
Đurđenovac	17,68	31,76	9,00
Erdut	48,55	30,88	3,04
Ernestinovo	41,71	13,43	0,01
Feričanci	4,85	10,28	12,00
Gorjani	11,08	12,22	0,00
Jagodnjak	15,30	13,32	0,88
Kneževi Vinogradi	35,72	32,22	3,74
Koška	11,27	22,82	4,55
Levanjska Varoš	4,11	5,02	0,20
Magadenovac	12,64	23,09	2,75
Marijanci	11,31	20,18	5,32
Našice	156,00	80,52	18,98
Osijek	2.557,60	1.066,55	236,88
Petlovac	19,17	16,71	1,10
Petrijevci	38,84	29,34	8,67
Podgorač	25,42	13,57	0,00
Podravska Moslavina	4,44	8,51	1,61
Popovac	14,90	12,98	0,85
Punitovci	14,28	27,62	0,00
Satnica Đakovačka	22,02	19,32	0,00
Semeljci	50,00	53,00	8,29
Strizivojna	9,30	12,76	2,37
Šodolovci	2,96	2,47	0,88
Tmava	11,26	11,66	0,00
Valpovo	158,66	80,04	21,68
Viljevo	6,78	12,51	0,78
Viškovci	17,40	14,14	0,00
Vladislavci	13,91	42,30	5,49
Vuka	22,33	9,97	0,01

Herceg u knjizi pod nazivom „Okoliš i održivi razvoj“ ističe nekoliko ključnih teorija vezanih uz samu zaštitu okoliša: antropocentrična teorija koja polazi od toga da je čovjek centar svijeta te da mu sve što ga okružuje stoji na raspolaganju, ekocentrična teorija koja doživljava prirodu kao vrijednost za sebe te prema kojoj priroda ima svoje vlastito stanje odnosno pravo egzistencije, resursno-ekonomska teorija koja razmatra zaštitu okoliša sa

stajališta gospodarske koristi (Herceg, 2013, 343 – 344). Od velikog je značaja za istaknuti samu definiciju upravljanja okolišem. Prema Hercegu, upravljanje okolišem podrazumijeva „sustavni pristup smanjenju šteta koje stvaraju organizacije u okruženju u kojem djeluju“ (Herceg, 2013, 542).

O zaštiti okoliša možemo svakodnevno čitati na internetskim portalima, društvenim mrežama, dnevnom tisku, slušati o zaštiti okoliša možemo putem radijskih i televizijskih programa, radio emisija i sl. Svake godine, 22. travnja obilježava se Dan planeta Zemlje, službeno od Konferencije Ujedinjenih naroda o okolišu i razvoju koja je održana u Rio de Janeiru 1992. godine. Ideja o njegovu obilježavanju pojavila se krajem šezdesetih godina prošlog stoljeća. Bez zaštite okoliša nije moguć niti održivi razvoj pod kojim podrazumijevamo razvoj koji bi trebao zadovoljiti potrebe današnjih generacija, a da pritom ne ugrozi mogućnost budućim generacijama da zadovolje svoje potrebe (Tišma i dr., 2017, 13).

Što označava pojam zaštite okoliša? Taj pojam označava „izdvojene sadržaje, sredstva i mehanizme ophođenja s okolinom s ciljem njezina održavanja u naslijeđenom, odnosno prvotnom, ili pak neznatno promijenjenom stanju. Cilj je zaštite održavanje okoline u takvu stanju koje ne ugrožava čovjekov opstanak na nekom prostoru i u vremenu“ (Cifrić, 1992, 514 prema Lončarić i dr., 2003, 29). Konceptcija održivog razvoja obuhvaća tri područja, a to su: okoliš, ekonomija i zajednica (v. Skicu 1.).



Skica 1. Konceptcija održivog razvoja (prilagođeno prema: Lončarić i dr., 2003, 31.)

Održivi razvoj ne smije uništiti temeljne potrebe nužne za ljudski život, čisti zrak i vodu, oni bi trebali zauvijek ostati dostupni. Slažemo se kako bi neobnovljive resurse trebalo izuzeti od iskorištavanja barem u mjeri koja će osigurati da se ne iscrpe prije no što se tehnologija i industrija ne preusmjere na druge resurse, dok bi s obnovljivim resursima trebalo postupati tako da ih se sustavno ne iscrpljuje i ne uništava (Lončarić i dr., 2003, 31).

3. ANALIZA ODABRANIH PRAVNIH PROPISA I DOKUMENATA U DOMENI ZAŠTITE OKOLIŠA

Ustav Republike Hrvatske (NN 56/90, 135/97, 08/98, 113/00, 124/00, 28/01, 41/01, 55/01, 76/10, 85/10, 05/14) (u daljnjem tekstu: Ustav RH) propisuje da su najviše vrednote ustavnog poretka Republike Hrvatske te temelj za tumačenje Ustava, između ostaloga, i očuvanje prirode i čovjekova okoliša (Ustav RH, čl. 3.). Nadalje, ustavna odredba, konkretno, članak 70., propisuje da svatko ima pravo na zdrav život, da država osigurava uvjete za zdrav okoliš te da je svatko dužan, u sklopu svojih ovlasti i djelatnosti, osobitu skrb posvećivati zaštiti zdravlja ljudi, prirode i ljudskog okoliša. Članak 50. Ustava propisuje da se poduzetnička sloboda i vlasnička prava mogu iznimno ograničiti zakonom radi zaštite interesa i sigurnosti Republike Hrvatske, prirode, ljudskog okoliša i zdravlja ljudi. Člankom 52. propisuje se da more, morska obala i otoci, vode, zračni prostor, rudno blago i druga prirodna bogatstva, ali i zemljište, šume, biljni i životinjski svijet, drugi dijelovi prirode, nekretnine i stvari od osobitog kulturnoga, povijesnoga, gospodarskog i ekološkog značenja, za koje je zakonom određeno da su od interesa za Republiku Hrvatsku, imaju njezinu osobitu zaštitu.

Zakonom o zaštiti okoliša (NN 80/13, 153/13, 78/15, 12/18, 118/18), čl. 1. uređuju se načela zaštite okoliša i održivog razvitka, zaštita sastavnica okoliša i zaštita okoliša od utjecaja opterećenja, subjekti zaštite okoliša, dokumenti održivog razvitka i zaštite okoliša, instrumenti zaštite okoliša, praćenje stanja u okolišu, informacijski sustav, osiguranje pristupa informacijama o okolišu, sudjelovanje javnosti u pitanjima okoliša, osiguranje prava na pristup pravosuđu, odgovornost za štetu, financiranje i instrumenti opće politike zaštite okoliša, upravni i inspeksijski nadzor.

Zakonom o gospodarenju otpadom (NN 84/21), čl. 1., stavak 1.-3. propisuju se mjere u svrhu zaštite okoliša i ljudskoga zdravlja sprječavanjem ili smanjenjem nastanka otpada, smanjenjem negativnih učinaka nastanka otpada te gospodarenja otpadom, smanjenjem ukupnih učinaka uporabe sirovina i poboljšanjem učinkovitosti uporabe sirovina te povećanjem recikliranja i ponovnog korištenja reciklata, što je nužno za prelazak na kružno gospodarstvo i osiguranje dugoročne konkurentnosti Republike Hrvatske i Europske unije. Istim propisom uređuje se sami sustav gospodarenja otpadom, kako je propisano nadalje, uključujući i red prvenstva gospodarenja otpadom. Njime su utvrđena i načela, ciljevi kao i način gospodarenja otpadom, itd. Istaknutim propisom utvrđuju se i mjere, posebice uvjeti za rad odlagališta i zahtjevi za otpad koje je dopušteno odlagati kako bi se spriječili ili što više smanjili štetni učinci na okoliš, posebice onečišćenje površinskih voda, podzemnih voda, tla i zraka, uključujući i efekt staklenika, kao i sve opasnosti za zdravlje ljudi zbog odlaganja otpada tijekom cijelog životnog vijeka odlagališta, s ciljem uspostave kružnog gospodarstva te osiguranja primjene reda prvenstva gospodarenja otpadom, zbrinjavanja otpada koji nije oporabljjen na način kojim se ne ugrožava zdravlje ljudi i ne šteti okolišu, te osiguranja postupnog smanjenja odlaganja otpada, posebice otpada koji je pogodan za obradu recikliranjem ili drugim postupkom uporabe. Kada je riječ o nadležnostima za gospodarenje otpadom, valja istaknuti da su gospodarenje otpadom i građenje građevina za gospodarenje otpadom od interesa za Republiku Hrvatsku. Samo gospodarenje otpadom i učinkovitost gospodarenja otpadom, kako je propisano, osiguravaju Vlada Republike Hrvatske i ministarstvo nadležno za zaštitu okoliša propisivanjem mjera gospodarenja otpadom. Provedbeno tijelo na državnoj razini je Fond za zaštitu okoliša i energetske učinkovitost. Izvršno tijelo jedinice lokalne samouprave i izvršno tijelo jedinice područne (regionalne) samouprave odnosno Grada Zagreba dužno je na svom području osigurati uvjete i provedbu propisanih

mjera gospodarenja otpadom, dok više jedinica lokalne i područne (regionalne) samouprave mogu sporazumno osigurati zajedničku provedbu propisanih mjera gospodarenja otpadom (čl. 10.). Kada je riječ o obavljanju djelatnosti gospodarenja otpadom, pravna i fizička osoba – obrtnik ovlaštena je preuzeti pošiljku otpada u posjed ako: 1. posjeduje dozvolu za gospodarenje otpadom, 2. upravlja reciklažnim dvorištem, 3. je upisana u Očevidnik osoba koje obavljaju djelatnost gospodarenja otpadom kao sakupljač otpada ili uporabitelj bez dozvole ili kao trgovac otpadom koji može preuzeti otpad u posjed, 4. je preuzimanje određenog otpada u posjed dopušteno propisom kojim se uređuju posebne kategorije otpada, 5. je korisnik otpadnog mulja u poljoprivredi čime je ovlašten preuzeti pošiljku otpadnog mulja sukladno pravilniku kojim se uređuje korištenje mulja u poljoprivredi ili 6. upravlja grobljem ili krematorijem čime je ovlašten preuzeti pošiljku patološkog otpada sukladno pravilniku kojim se uređuje gospodarenje medicinskim otpadom (čl. 27.) (Tablica 1).

Zakonom o lokalnoj i područnoj (regionalnoj) samoupravi (NN 33/01, 60/01, 129/05, 109/07, 125/08, 36/09, 36/09, 150/11, 144/12, 19/13, 137/15, 123/17, 98/19, 144/20) propisano je da jedinice lokalne samouprave u svom samoupravnom djelokrugu obavljaju poslove lokalnog značaja kojima se neposredno ostvaruju potrebe građana, a koji nisu Ustavom ili zakonom dodijeljeni državnim tijelima i to osobito poslove koji se odnose na: uređenje naselja i stanovanje, prostorno i urbanističko planiranje, komunalne djelatnosti, brigu o djeci, socijalnu skrb, primarnu zdravstvenu zaštitu, odgoj i osnovno obrazovanje, kulturu, tjelesnu kulturu i šport, zaštitu potrošača, zaštitu i unapređenje prirodnog okoliša, protupožarnu i civilnu zaštitu (čl. 19.).

Uredba o gospodarenju komunalnim otpadom (NN 50/17), čl. 2., st. 2. propisuje da je svrha sustava sakupljanja komunalnog otpada osiguranje mogućnosti korištenja javne usluge prikupljanja miješanog komunalnog otpada i biorazgradivog komunalnog otpada te poticanje proizvođača otpada i posjednika otpada da odvojeno predaju otpad, kako bi se smanjila količina miješanog komunalnog otpada koji nastaje, smanjio udio biorazgradivog komunalnog otpada u nastalom miješanom komunalnom otpadu, povećale količine i ispunila obveza Republike Hrvatske da osigura odvojeno sakupljanje i recikliranje otpadnog papira, otpadnog metala, otpadne plastike i otpadnog stakla, uključivo i otpad koji se svrstava u posebne kategorije otpada čije gospodarenje je uređeno posebnim propisima te time smanjila količina otpada koji se zbrinjava odlaganjem. Uredbom se definira i javna usluga u smislu usluge „prikupljanja miješanog komunalnog otpada i biorazgradivog komunalnog otpada“ (čl. 3., st. 1.).

Odlukom o donošenju Plana gospodarenja otpadom Republike Hrvatske za razdoblje 2017.-2022. (NN 3/2017) godine propisano je da se zakonodavno-regulatornim okvirom vezanim uz gospodarenje otpadom u Republici Hrvatskoj nastoji uspostaviti kvalitetniji sustav gospodarenja otpadom temeljen na sprječavanju nastanka otpada i uspostavi učinkovitog sustava odvojenog sakupljanja otpada koji se odgovarajuće upotrebljuje. Istom Odlukom propisano je da sprječavanje nastanka otpada pridonosi ostvarenju sljedećih općih ciljeva gospodarenja otpadom: odvajanju gospodarskog rasta od porasta količina nastalog otpada, očuvanju prirodnih resursa, smanjenju ukupne mase otpada koja se odlaže na odlagališta, smanjenju emisija onečišćujućih tvari u okoliš, smanjenju opasnosti za zdravlje ljudi i okoliš.

Pravilnikom o gospodarenju otpadom (NN 81/2020), čl. 1. propisuju se uvjeti za gospodarenje otpadom, poslovi osobe odgovorne za gospodarenje otpadom, način rada reciklažnog dvorišta.

Strategija i akcijski plan zaštite prirode Republike Hrvatske za razdoblje od 2017. do 2025. godine (NN 72/2017) ističe pet strateških ciljeva: povećanje učinkovitosti osnovnih mehanizama zaštite prirode, poticanje korištenja prirodnih dobara, jačanje kapaciteta sustava zaštite prirode, povećanje znanja i dostupnosti podataka o prirodi te podizanje razine znanja, razumijevanja i podrške javnosti za zaštitu prirode. Ona je izrađena, kako se naglašava, konzultativnim procesom s brojnim zainteresiranim dionicima, a provedba će zahtijevati, s čime se autori apsolutno slažu, aktivnu uključenost više središnjih tijela državne uprave, upravnih tijela jedinica područne (regionalne) samouprave i/ili Grada Zagreba te jedinica lokalne samouprave, javnih ustanova i drugih institucija.

4. METODOLOGIJA EMPIRIJSKOG ISTRAŽIVANJA

4.1. CILJ ISTRAŽIVANJA I TEMELJNA HIPOTEZA

Cilj je rada ispitati u kojoj mjeri jedinice lokalne samouprave u Osječko-baranjskoj županiji (sedam gradova te trideset i pet općina) ispunjavaju svoju obvezu proizašlu iz Zakona o gospodarenju otpadom te drugim relevantnim propisima, a sa svrhom očuvanja i zaštite prirode i okoliša (gradovi: Beli Manastir, Belišće, Donji Miholjac, Đakovo, Našice, Osijek, Valpovo te općine: Antunovac, Bilje, Bizovac, Čeminac, Čepin, Darda, Draž, Donja Motičina, Drenje, Đurđenovac, Erdut, Ernestinovo, Feričanci, Gorjani, Jagodnjak, Kneževi Vinogradi, Koška, Levanjska Varoš, Magadenovac, Marijanci, Podravska Moslavina, Petlovac, Petrijevci, Podgorač, Punitovci, Popovac, Satnica Đakovačka, Semeljci, Strizivojna, Šodolovci, Tmava, Viljevo, Viškovci, Vladislavci, Vuka).

Temeljna hipoteza rada glasi: jedinice lokalne samouprave na području Osječko-baranjske županije osiguravaju zaštitu i očuvanje prirode i okoliša sukladno zakonskim odredbama izgradnjom reciklažnih dvorišta.

5. REZULTATI ISTRAŽIVANJA

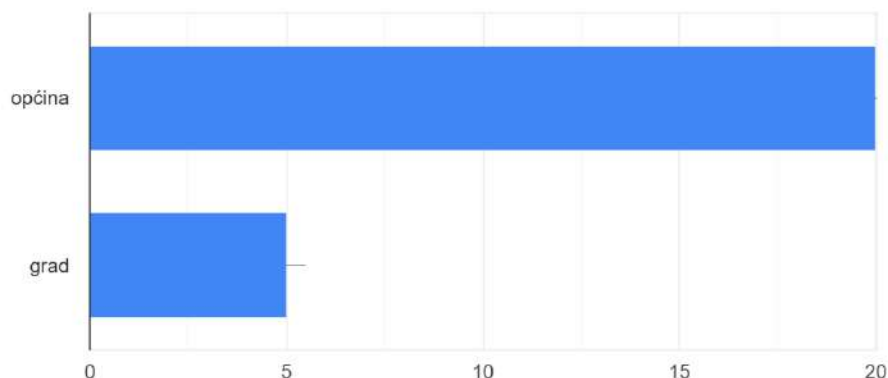
Nastavak rada donosi rezultate empirijskog istraživanja. Rezultati istraživanja prikazani su putem sedam grafičkih prikaza, te su ispitanici imali mogućnost odgovoriti na jedno, tzv. otvoreno pitanje. Odgovori dobiveni putem otvorenog pitanja prikazani su u nastavku teksta rada.

Istraživanje je provedeno anketnim upitnikom kreiranim putem Google Forms obrasca. Isti je odatan svim jedinicama lokalne samouprave na području Osječko-baranjske županije putem mailova prikupljenih na službenim web stranicama JLS. Prvi mail odatan je krajem mjeseca travnja 2022. godine, isti je ponovljen tijekom mjeseca svibnja. Ukupan uzorak čini 25 JLS (broj JLS koji je odgovorio na anketni upitnik - od ukupno 42 JLS).

Prvu fazu istraživanja činilo je kreiranje anketnog upitnika. Druga faza istraživanja predstavlja distribuciju anketnih upitnika na odgovarajuće elektroničke adrese. Treću fazu istraživanja predstavlja statistička obrada podataka prikupljenih tijekom istraživanja. Podatci su obrađeni deskriptivnom statistikom. Nastavak teksta rada donosi prikaz rezultata istraživanja.

1. Označite kojoj vrsti jedinice lokalne samouprave pripadate:

25 odgovora

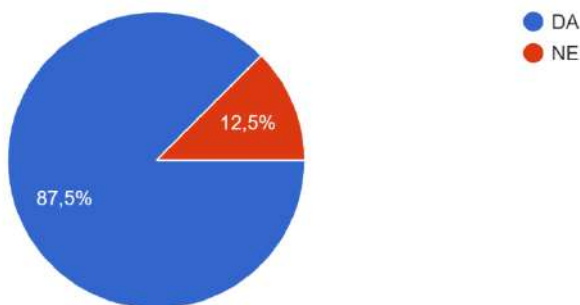


Grafikon 1. Vrsta jedinice lokalne samouprave

Kao što je vidljivo iz Grafikona 1., anketnom upitniku pristupilo je ukupno 25 općina (80%), dok je istom upitniku pristupilo 5 gradova (20%). Iznimno velik broj onih jedinica koje su pristupile ispunjavanju anketnog upitnika, prema mišljenju autora, rezultat je napora ključnih aktera JLS koji velike napore ulažu u osvještavanje građana o važnosti razvrstavanja otpada.

2. Ima li Vaša općina/grad izgrađeno reciklažno dvorište – fiksno ili mobilnu jedinicu?

24 odgovora

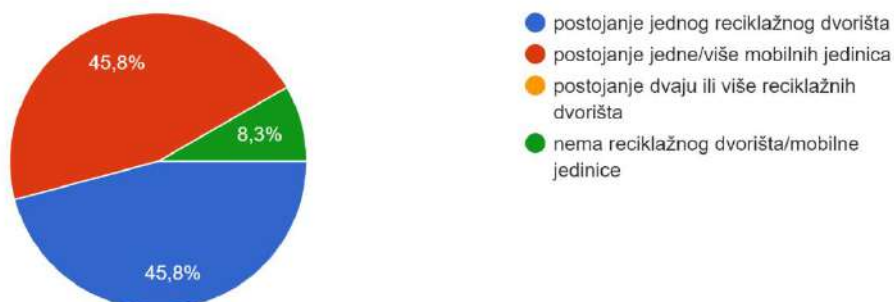


Grafikon 2. Postojanje reciklažnog dvorišta – fiksnog ili mobilne jedinice

Iz Grafikona 2., razvidno je da 87,5% općina/gradova ima izgrađeno reciklažno dvorište, fiksno ili mobilnu jedinicu, dok njih 12,5% nema izgrađeno isto.

3. Navedite broj reciklažnih dvorišta (fiksna+mobilne jedinice) u Vašem gradu/općini:

24 odgovora

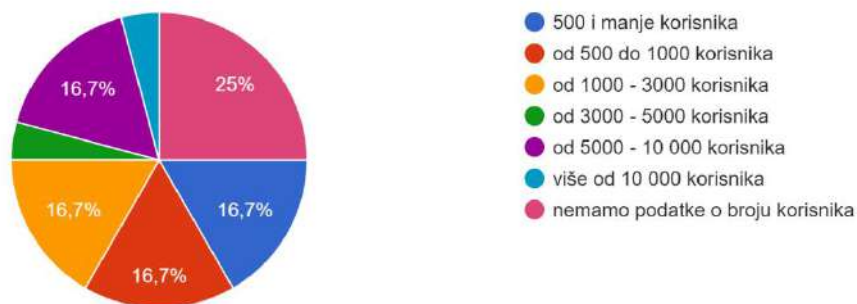


Grafikon 3. Postojanje reciklažnih dvorišta u odnosu na općinu/grad

Podatci iz Grafikona 3. ukazuju na sljedeće: jedno reciklažno dvorište ima 45,8% gradova/općina, njih 45,8% ima jedno ili više mobilnih jedinica. Općina/gradova koji nemaju reciklažnih dvorišta/mobilnih jedinica je ukupno 8,3%. Važno je ovdje i za istaknuti kako grad Osijek trenutno ima četiri reciklažna dvorišta i jednu mobilnu jedinicu što je zaista od velikog značaja za svo građanstvo (riječ je o reciklažnim dvorištima smještenima u gradskim četvrtima Gornji grad, Donji grad, Retfala i Jug II).

4. Navedite broj korisnika reciklažnog/ih dvorišta ili mobilnih jedinica u 2021. godini:

24 odgovora

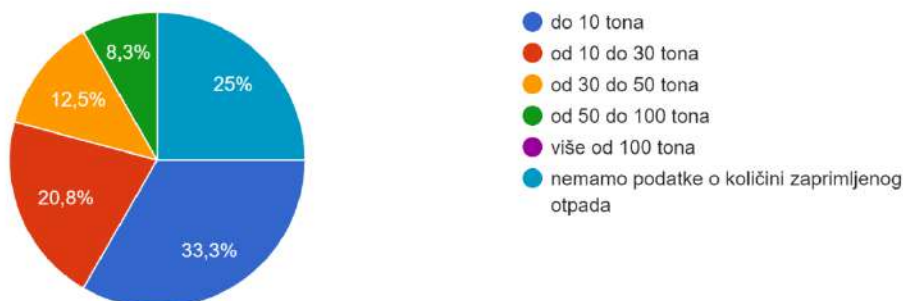


Grafikon 4. Broj korisnika reciklažnog/ih dvorišta ili mobilnih jedinica u 2021. godini

Više od 10 000 korisnika, prema Grafikonu 4., ima 16,7% općina/gradova, od 5000 – 10 000 korisnika ima 16,7% jedinica lokalne samouprave, od 1000 – 3000 korisnika ima njih 16,7%, od 500 do 1000 korisnika ima njih 16,7%, 500 i manje korisnika ima njih 16,7%. Općine/gradovi koji nemaju podatke o broju korisnika reciklažnog/ih dvorišta ili mobilnih jedinica u 2021. godini je ukupno 25%.

5. Navedite količinu zaprimljenog otpada u reciklažno dvorište/a - mobilnu jedinicu u razdoblju u 2021. godini:

24 odgovora

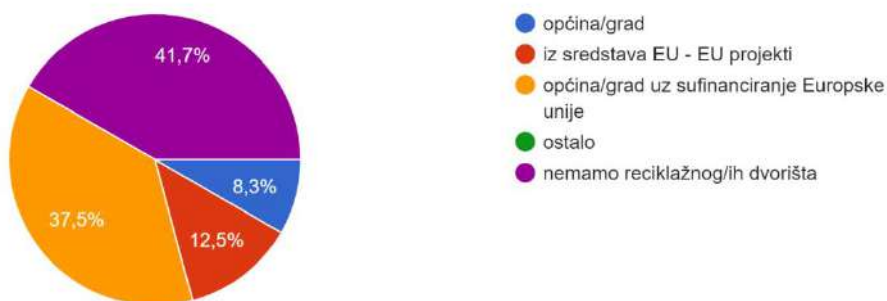


Grafikon 5. Količina zaprimljenog otpada u reciklažnodvorište/a – mobilnu jedinicu u 2021. godini

Razvidno je iz Grafikona 5. kako 25% općina/gradova nema podatke o količini zaprimljenog otpada. Od 50 do 100 tona ima njih 8,3%, od 30 do 50 tona ima njih 12,5%, od 10 do 30 tona ima njih 20,8%, do 10 tona ima njih 33,3%.

6. Tko je financirao izgradnju reciklažnog/ih dvorišta u Vašem gradu/općini?

24 odgovora

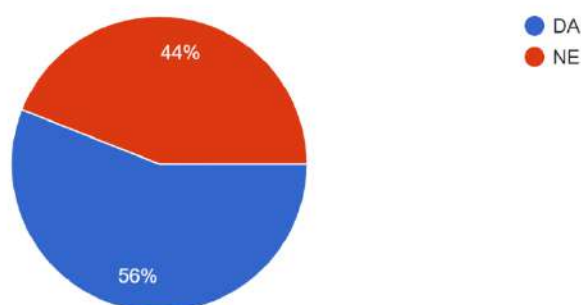


Grafikon 6. Financiranje izgradnje reciklažnog/ih dvorišta u općini/gradu

Da nema reciklažnih dvorišta izjasnilo se ukupno 41,7% JLS (velika većina JLS koje nemaju izgrađeno reciklažno dvorište ima mobilnu jedinicu), njih 12,5% odgovorilo je da se izgradnja reciklažnog/ih dvorišta financirala iz sredstava EU, EU projekata, njih 37,5% odgovorilo je da su izgradnju reciklažnog/ih dvorišta financirala općina/grad uz sufinanciranje Europske unije, 8,3% općina/gradova odgovorilo je da su sami financirali izgradnju istog.

7. Jeste li u razdoblju od 2018. do danas provodili projekte financirane iz sredstava EU u području zaštite i očuvanje prirode i okoliša?

25 odgovora



Grafikon 7. Provedba projekata financiranih iz sredstava EU u području zaštite i očuvanja prirode i okoliša (razdoblje 2008. – do danas)

U razdoblju od 2008. godine do danas, 56% općina/gradova je provodilo projekte financirane iz sredstava EU u području zaštite i očuvanja prirode i okoliša, dok njih 44% to nije činilo. Neki od značajnih projekata bili su:

- “Briga o okolišu za bolje sutra”,
- provedba projekta “Imam plan za otpad” – izobrazno-informativne aktivnosti,
- nabava spremnika za odvojeno prikupljeni otpad – Fond za zaštitu okoliša i energetska učinkovitost,
- nabava spremnika za odvojeno prikupljanje papira i kartona kod korisnika komunalne naknade – plave kante i kontejneri,
- nabava kućnih kompostera za bio razgradivi otpad za domaćinstva,
- nabava spremnika za odvojeno prikupljanje otpada – žute kante,
- projekt “Jasno i čisto” - izobrazno-edukativni projekt o održivom gospodarenju otpadom u suradnji s Gradom Belišćem,
- sanacija divljih odlagališta,
- nabavka stroja za usitnjavanje otpada,
- nadogradnja opreme na komunalno vozilo za odvoz prikupljenog otpada,
- prevencija i edukacija o važnosti gospodarenja otpadom,
- nabavka kamiona za odvoz glomaznog otpada,
- edukacijske radionice s vrtićarcima i školskom djecom.

6. DISKUSIJA I ZAKLJUČAK

S obzirom da je rad nastao kao rezultat provedbe empirijskog istraživanja u Osječko-baranjskoj županiji obuhvaćajući 25 JLS koje su pristupile ispunjavanju anketnog upitnika, što predstavlja značajan uzorak, mišljenja smo kako su dobiveni rezultati pokazatelj da Osječko-baranjska županija ulaže velike napore u podizanje svijesti svog građanstva u očuvanju prirode te zaštite okoliša. Tome u prilog ide, u radu istaknuti podatak, da grad Osijek raspolaže s četiri reciklažna dvorišta te jednom mobilnom jedinicom. Ostale JLS, one koje su pristupile ispunjavanju upitnika ispunjavaju zakonsku obvezu, s obzirom da nešto manje od 90% JLS imaju izgrađeno reciklažno dvorište

odnosno mobinu jedinicu. Postojanje jednog reciklažnog dvorišta odnosno jedne mobilne jedinice ima nešto manje od 50% JLS. Sve su to izvrsni pokazatelji kako ekološke vrijednosti u javnoj upravi zauzimaju u novije vrijeme važno mjesto u motiviranju aktera javnog upravljanja.

Autori teksta rada smatraju kako uloga jedinica lokalne samouprave može postati značajnija ukoliko se poduzmu neki od sljedećih koraka:

1. jedinice lokalne samouprave trebaju postati svjesne važnosti razvoja ekoloških vrijednosti u javnoj upravi,
2. akteri javnog upravljanja trebaju svoje snage usmjeriti na edukaciju građana u domeni očuvanja prirode i zaštite okoliša,
3. jedinice lokalne samouprave trebaju razviti posebne programe namijenjene osvještavanju mladih, vrtićkih te školskih skupina,
4. jedinice lokalne samouprave skupno s akterima na području visokoobrazovnog sustava trebaju razvijati studentske programe te programe cjeloživotnog učenja u domeni očuvanja prirode i zaštite okoliša,
5. jedinice lokalne samouprave trebaju povlačiti veća sredstva iz Europske unije kako bi na taj način svoju JLS učinile razvijenijom odnosno privlačnijom za življenje,
6. jedinice lokalne samouprave trebaju uključivati mlade u različite udruge te ih poticati na međunarodno povezivanje u pogledu očuvanja prirode te zaštite okoliša.

Navedeni koraci trebaju predstavljati temelj za dobro upravljanje jedinicama lokalne samouprave, općinama i gradovima. Jedini pravi put je put prema razvoju jedinica lokalne samouprave, prema modelu uključivanja mladih u donošenje ključnih odluka na lokalnoj razini, razvijanju ekoloških vrijednosti u javnoj upravi, primjeni načela supsidijarnosti u što većoj mjeri koje služi, kako ističu Koprić i dr. kao “temelj interpretacije odnosno prosudbe u naporima da se razdioba javnih poslova provede dosljedno u korist najnižeg stupnja na kojem su lokalne jedinice sposobne obavljati određene funkcije” (Koprić i dr. 2021, 273), uključivanja svih ključnih aktera u području javnog te privatnog sektora kako bi se osnažile lokalne jedinice. Područje lokalne samouprave kao jedan od najvažnijih dijelova javne uprave može i mora postati uzor drugim dijelovima javne uprave kako na najbolji način implementirati adekvatne vrijednosti u javnoj upravi te na taj način doprinijeti učinkovitijoj javnoj upravi.

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Easement of forests and forest land for the growing of perennial crops - the analysis of (non)functionality regarding the ecological network and ecosystem functions

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Abstract

By the Government's decisions from the period 2004 to 2013, a significant amount of state forests and forest land was eased for the growing of perennial crops (vineyards and olive yards) on a total surface of 24,310.24 ha throughout the state. Although greatly opposed by forestry professionals, since a vast amount of private agricultural land in the state is not utilized due to unresolved proprietary issues, these surfaces have become agricultural land by coming into force from the Forest Act of 2014. In case these dedicated surfaces are not put into function, the amount of non-utilized agricultural land is increasing and so is the danger from forest fires, and loss of biological and landscape diversity. On the other hand, if all these surfaces were utilized, a significant adverse impact on the ecological network would occur because on many ecological network sites more than 1% of the dedicated area consists of target habitat types (mostly maquis). The purpose of this paper is, to use GIS tools and analysis of the so-far signed easement contracts, to determine what amount of dedicated surfaces were utilized and point out the failure and environmental dangers that may arise from these decisions which can still be revoked, and the affected area can be brought back into the forest area of the Republic of Croatia, i. e. sustainable forest management can still be reinstated and forest functions restored.

Keywords: government's decisions, easement, perennial crops, national ecological network

1. INTRODUCTION

This paper is the continuation of the work published in 2017 which dealt with the same issue but only as a case study of Dubrovnik-Neretva County (Kiš, 2017). Some of the crucial data were not available at the time (the most important, vector data of cadastral lots at the state level), but also the list of signed contracts and the surfaces (cadastral lots) to which they apply. Since these data are now available, it was possible to analyze the whole country and, most important of all, to determine which areas were used for the designated purpose. The core baseline is the same - in the period from 2004 to 2013, the Croatian Government issued 10 Decisions upon which a substantial amount of state-owned forests and forest land was designated for the easement to third parties for the raising of perennial crops, namely vineyards and olive yards. These Decisions were greatly criticized and challenged by forestry scholars, but to no avail - the Decisions were implemented and the whole designated area (altogether, 24,310.24 hectares) has become agricultural land since the amendments to the Forest Act from 2014 were enacted.

There is no real scientific or economic justification for this decision because substantial amount of land that is recorded as agricultural in the cadastral records is not being used

for agricultural purposes, but due to unresolved proprietary rights and cadastral issues cannot be traded on the market and therefore the alleged rural development, predominantly in the Mediterranean, had to be triggered by designating a certain amount of state-owned forest land for this purpose. Although these lots mostly comprised degraded forest types such as shrubbery, maquis, and barren land, a significant amount of these areas were also target habitats of the newly designated NATURA 2000 sites, which no one was aware of at that moment.

Although in the work from 2017 which preceded this paper a greater emphasis was put on the impact on the ecological network sites (i. e. target habitat types), in this case, it shall be omitted from the analysis because of several reasons:

- the exact surface of specific target habitat types within an ecological network area is not determined, old habitat types map from 2004 is rather inaccurate (scale 1:100,000) and minimal mapping unit 9 hectares)
- the new habitat types map from 2016 does not include forest areas
- it is not legally determined what a "significant negative impact on the integrity of an ecological network site" would be - the only paper that briefly mentions what a significant negative impact on the ecological network site would be (in terms of target habitat type surface loss) is a non-binding Manual for Ecological Network Impact Assessment .

Due to the reasons stated above, it was impossible to perform a satisfyingly accurate analysis of the impact of the easement on the target habitat types of the ecological network sites, but the estimate is that it did not occur due to a very low rate of utilization of the areas dedicated for the easement. However, the basic intention of this article is to determine the approximate amount, i. e. percentage of the dedicated area that was used for the designated purpose, in other words on which vineyards and olive yards were planted and prove the zero hypothesis that the whole idea was not feasible and a general failure.

2. METHODOLOGICAL FRAMEWORK

The analysis of the overall situation at the state level mostly comprised extensive desktop GIS work which lasted several months, due to a very large number of cadastral lots involved and the poor type and shape of the major input data - the Government's Decisions on the designation of forests and forest land for the easement were delivered as scanned .pdf files, often blurred and incomplete, so it took a lot of time to figure out what was written, i. e. printed. Three major sources of data were used in the analysis: the ten Decisions, vector data on cadastral lots (WFS of the State Geodetic Administration), and the list of signed contracts for easement acquired from the Ministry of Agriculture.

The first step was to digitalize all the lots into an Excel spreadsheet, thus making it possible for merging with the cadastral spatial data (shapefile) of the designated areas. Since cadastral data were provided as a WFS, it took a lot of time to download and organize the data by cadastral municipalities (i. e. group the lots by cadastral municipalities) because loading a whole WFS caused tremendous difficulties in data processing and, quite often, "freezing" of the computer. Another major problem was the presentation of the data - sometimes surfaces of several cadastral lots were merged as one, sometimes cadastral lots from two or more municipalities were merged, etc. which took a lot of "manual" work to determine a lot's spatial position and its dedicated surface. Having in mind that almost twenty years have passed since the initial Decision was

published in 2004, lots of cadastral lots changed their numeration, were split or merged, or, in a very large number of cases, simply disappeared. This is the reason why it was impossible to generate the same surface as stated in the ten Decisions (altogether 24,310.24 ha) after compiling the shapefile of cadastral lots at the state level - the overall surface acquired in the shapefile amounts to 22,096.39 ha. Another major issue in the analysis was that cadastral lots of state-owned forests are usually very large - sometimes their surface amounts to more than 100 hectares, whilst the area dedicated for the easement is usually much smaller (approximately around 10 hectares of a lot, or less). Therefore, it is impossible to determine the exact position of a designated lot - what is known is only that it is positioned within a (large) cadastral lot of state-owned forests, but its exact location is to be determined by the forestry officials who are introducing the user with the area dedicated for an easement. Therefore, the final surface of the areas dedicated for an easement is much smaller than that presented in Figure 1, and their exact surface is stated in the ten Decisions.

After all the lots were placed on the map, i. e. included in the shapefile, the next step was to determine which areas were brought to purpose, i. e. which areas were planted with olive yards and vineyards. For this purpose, data on contracts signed with third parties were acquired from the Ministry of Agriculture. Those data were comprised into an Excel spreadsheet, containing the date of signature, and dedicated surface (list of cadastral lots and cadastral municipalities). Using the spreadsheet, another shapefile was generated containing the data on the designated surface for which contracts were signed. This shapefile was compared against the recent orthophoto map of the State Geodetic Administration from 2019 to determine which areas were brought to purpose, i.e. which contracts were implemented (since the last contract was signed in 2018, orthophoto WMS from 2019 was recognized as a reliable and relevant source of information). This was also the final step of the data preparation, followed by the calculation of surfaces and the analysis of the data acquired.

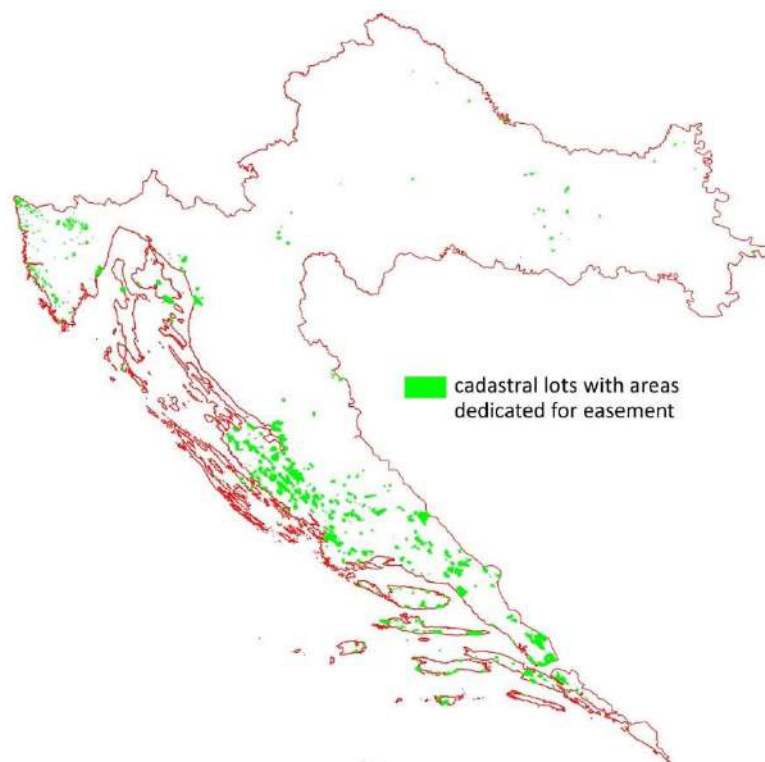


Figure 1. Cadastral lots containing areas dedicated for an easement by the ten Decisions

3. ANALYSIS OF RESULTS

The major step of the analysis of results was to determine the surfaces that were brought to function, i. e. surfaces of which contracts were fulfilled, against the total area of the designated surfaces (Figure 2). As expected, this area is much, much smaller than the whole dedicated area - the area for which contracts were signed amounts to 5,422.79 hectares, which is only 22.31% of the whole dedicated area. After comparing this area (for which contracts were signed) with the orthophoto imagery from 2019, a conclusion was reached that only 62.52% of the area for which contracts were signed (3,390.3 ha) was brought to purpose, i. e. vineyards or olive yards were really planted. Altogether, it appears that eventually only 13,95% of the dedicated land was utilized for the purpose it was supposed to serve.

When analyzing the dedicated area by Forest Administrations, the majority of surfaces were dedicated in the Forest Administration Split (Figure 3), which encompasses four counties (Zadarska, Šibensko-kninska, Splitsko-dalmatinska, and Dubrovačko-neretvanska). This is logical since this forest administration encircles almost whole Mediterranean area of Croatia, and it has the most appropriate climate and soil conditions for this purpose. Forest Administration Split is followed by two other coastal forest administrations (Senj and Buzet), while in the continental part very small areas or no areas at all were dedicated for an easement, which is natural since olives cannot succeed on the continent, therefore this area is only fit for certain sorts of the vine.

When analyzing the dedicated area by counties, most of the lots (in absolute figures) were dedicated in the Zadarska county, followed by the Splitsko-dalmatinska, Šibensko-kninska, and Dubrovačko-neretvanska counties, which is expected because these four counties are all encompassed into the Forest Administration Split (Figure 4).

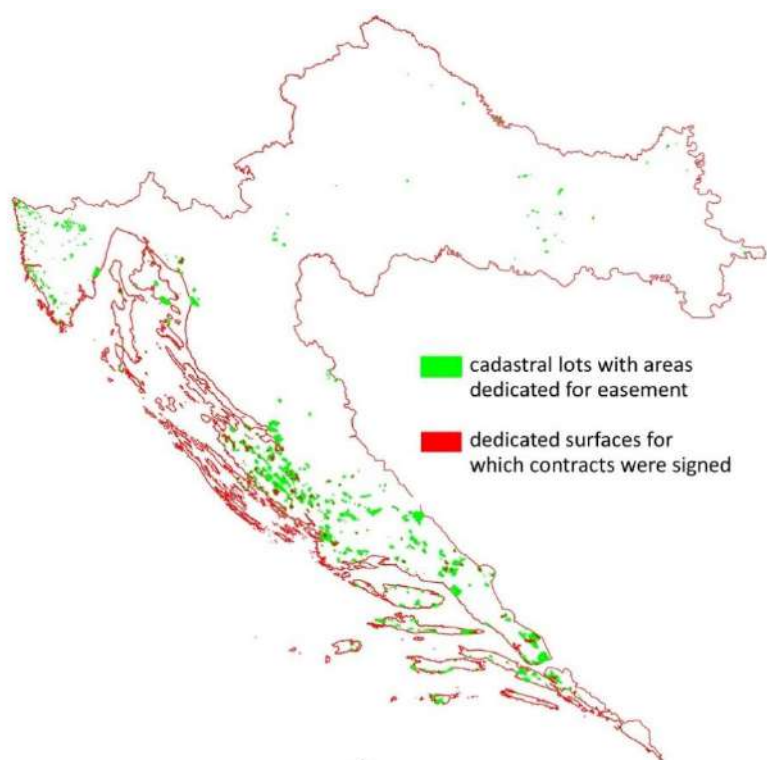


Figure 2. Dedicated surfaces for which contracts were signed compared against the whole dedicated area

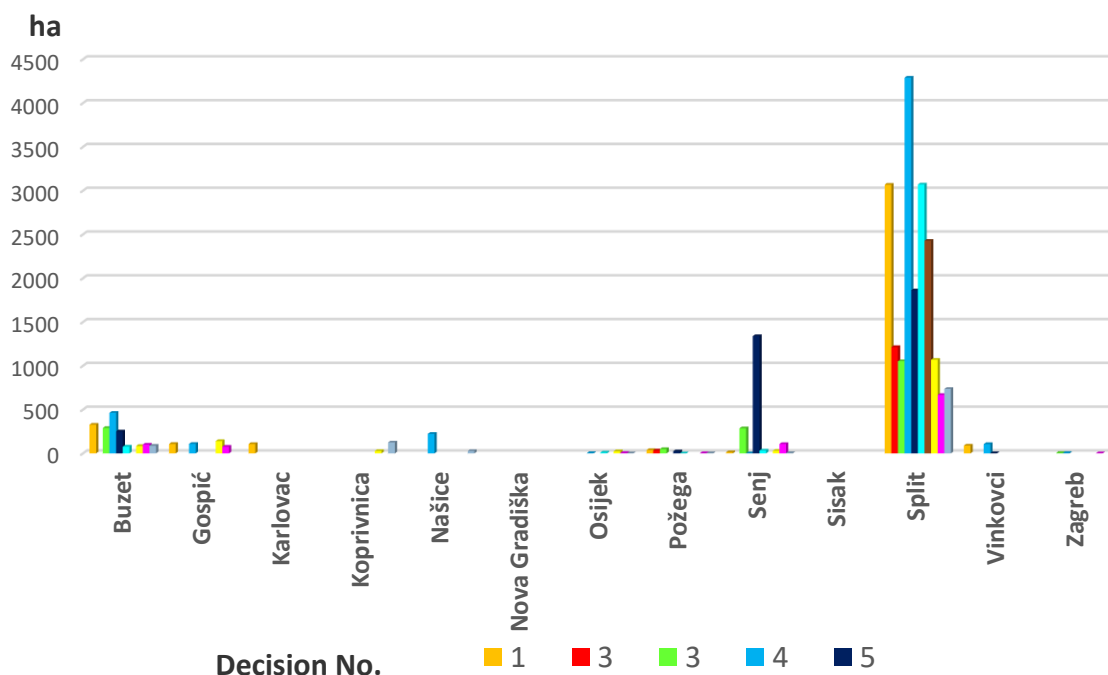


Figure 3. Dedicated areas by Decisions and forest administrations

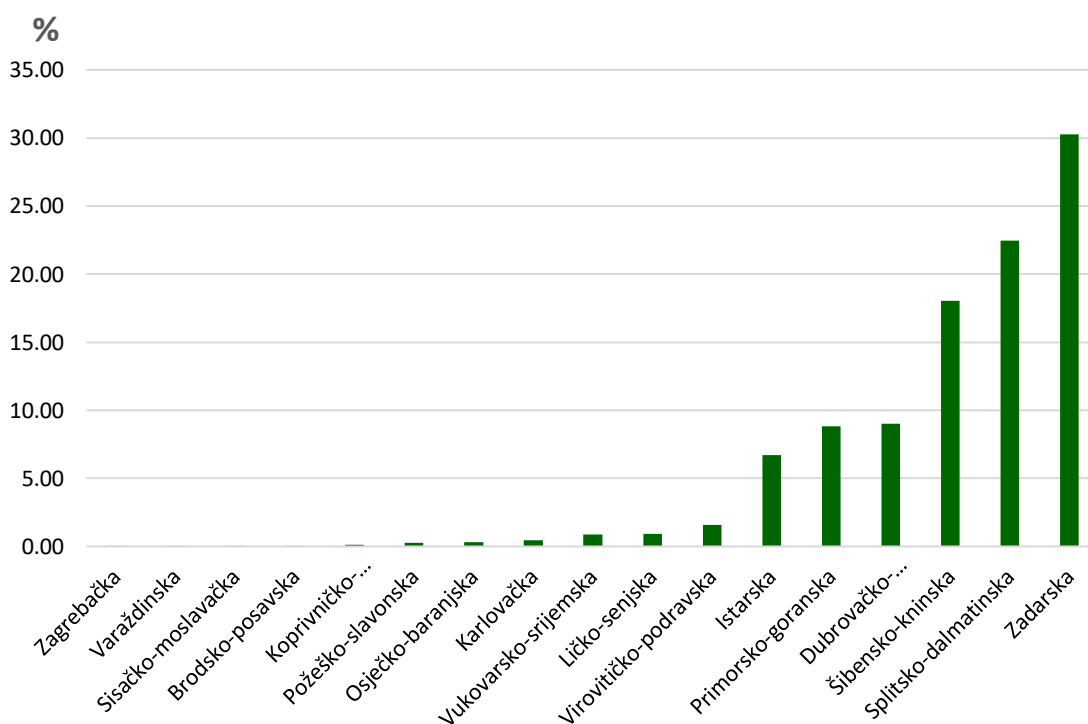


Figure 4. Dedicated areas by counties

4. CONCLUSIONS AND DEBATE

Although it was impossible, due to all the stated reasons, to determine the exact surface and positions of all areas dedicated for the easement, generated figures nevertheless clearly witness the state of the art of this endeavor which was, judging from the obtained figures, an ultimate failure. The ultimate question, raised by many eminent forestry

professionals (Prpić, 2004), was why a substantial part of state-owned forest land was dedicated for this purpose when vast agricultural areas in the country are not being used. Possible answer lies in the fact that non-utilized agricultural land is mostly privately owned, which means that proprietary and cadastral issues are in most cases unresolved, which makes such land impossible to enter the market. Many forestry professionals wondered whether this was a mere political decision intended to satisfy the interests of a small group of people and that the entire concept was just a facade to cover this fact, but this question is nowadays of zero importance - the damage has been done and the only thing that remains is to ponder on the options to resolve it.

The basic problem regarding this issue is that the whole dedicated area, after the issuance of the tenth decision, was by the amendments to the Forest Act from 2014 declared as agricultural land. In other words, land use had changed, but the land cover (mostly) remained the same - now instead of forests or forest land, we are dealing with approximately 20,000 additional hectares of non-utilized agricultural land. Concretely, this means the following problems: loss of forest fire prevention capacities (since the major task of foresters in the Mediterranean and Sub-Mediterranean region is the prevention of forest fires), loss of biodiversity and landscape diversity due to the lack of silvicultural works, a greater possibility of spreading of invasive species (since the area is not managed anymore in any way) and the loss of ecological and social functions.

Since the last contract was signed in 2018, the whole story has most probably ended and no new contracts are expected. Even if it were so, no one can show the new easement user where exactly the area for which the contract was signed is situated - because this is now agricultural land, "Croatian Forests" Ltd. does not consider itself eligible to perform any professional duties on these areas. Another fun fact arising from such a situation is that the Republic of Croatia is violating its law - according to Article 4 of the Agricultural Land Act, "...agricultural land has to be maintained to serve its purpose", which means that woody perennials should be clear-cut from such surfaces.

Eventually, the conclusion can be made that the zero hypothesis set in the beginning proved to be right, since only 13,95% of the dedicated area had been used, and the rest is now agricultural land overgrown with perennial crops. According to forest officials from the Split Forest Administration, some attempts have been made to reinstate some of these lots back into the forest management area of the Republic of Croatia, but it appeared to be a much more difficult process than taking them out - allegedly it takes a lot of financial, time and expert efforts to reverse the situation. It is, however, unclear why one simple signature sufficed to single out more than 24,000 hectares from the forest management area, and reversing this process is much more difficult. Instead of mobilizing unused agricultural land through solving proprietary and cadastre issues, the wrong path was chosen which showed to be utterly wrong neither feasibility nor any other study was made before the execution of the Decisions, which altogether points to the fact that this was a politically induced process.

Since no apparent political or any other prevailing reasons exist to support the current situation, the only right way is to reinstate the state-owned forest-covered areas into the forest management area of the Republic of Croatia, by all means necessary.

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Waste ashes from burned sunflower hulls as new fertilising materials

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Abstract

Closing the loop – An EU action plan for the circular economy identified the Fertilisers Regulation revision as a key legislative proposal to boost the market for secondary raw materials. The European Commission has adopted recently EU Fertilising Products Regulation EU 2019/1009 expanding its scope to secondary-raw-material-based products (from biogenic wastes and other secondary raw materials). During the industrial processing of sunflowers, sunflower husks used as alternative fuels result in the generation of waste ash. Sunflower ash is a known material as a good and cheap source of potassium. In present study the tested samples of ashes are characterized as a starting raw material for producing fertilizers in an accredited and authorized Laboratory for fertilisers quality. The tested samples are not loaded with heavy metals and the risk of recycling contaminants has not been assessed. According to the content of available (water-soluble) elements, the content of soluble phosphorus and micronutrients is very low, while potassium is completely water-soluble (40 to 50% K₂O m/m), therefore, the tested ashes can be regarded as a good raw material as a source of potassium component in the final product. The pH reaction of the samples is extremely alkaline, therefore it is necessary to neutralize pH reaction in the industrial processing of this raw material, or to restrict the final product for use on acid reaction soils.

Keywords: Circular economy, Sunflower oil industry, Biogenic industry waste, Sunflower hulls ash, Fertilizers

1. INTRODUCTION

Closing the loop – An EU action plan for the circular economy, as adopted by the European Commission, identified the Fertilisers Regulation revision as a key legislative proposal to boost the market for secondary raw materials, and the revised Waste Framework Directive establishes ambitious targets for recycling.

The European Commission has adopted recently EU Fertilising Products Regulation EU 2019/1009 (2019) expanding its scope to secondary-raw-material-based products (from biogenic wastes and other secondary raw materials). The new Regulation defines equal conditions for all products (fertilizers) in the EU and additionally promotes the use of secondary – recycled raw materials.

In the same year was created Report (Huygens et al. 2019) which explores a possible legal framework for the manufacturing and placing on the market of specific safe and effective fertilising products derived from biogenic wastes and other secondary raw materials. The report contains technical proposals on eligible input materials, process conditions, quality

requirements as well as quality management system requirements. Additionally, the report assesses the possible impacts in order to shed a light on the added value that these fertilising materials could provide for food security, food safety, environmental protection, and the European fertilising and agricultural sector.

Numerous research studies have been carried out analysing the pyrolysis and firing processes of natural organic wastes as a renewable and environmentally friendly energy source (Quaranta et al. 2011).

Fertilizer quality is regulated within the Republic of Serbia by the Law on plant nutrition products and soil conditioners OGS 41/2009 (2009) and OGS 17/2019 (2019), and the by-laws adopted for its implementation, such as Regulation OGS 30/2017 (2017) and OGS 31/2018 (2018). This Regulation of the Republic of Serbia is harmonized with Regulation EU 2003/2003 (2003) (Technical requirements for mineral fertilizers and inorganic soil conditioners) in the area of classification and labelling of final products - fertilizers.

During the industrial processing of sunflowers, sunflower husk is primarily used as animal feed (Quaranta et al. 2011), and it can also be used as an energy source as alternative fuels (May et al. 2017) resulting in the generation of waste ash. Ash has long been recognized as a soil improver and plant growth enhancer. In the 18th century, the ash obtained by burning wood was used to obtain potassium carbonate. Back in 1790, the first industrial process to be patented in the US was making fertilizer from ashes. As cheaper sources of lime and potash for fertilizer were later discovered, the ash market died down. Sunflower husks ash is a known material as a safe, good and cheap source of potassium (Paleckienė et al. 2010).

The aim of this study was characterization of sample of ashes from burned sunflower hulls as a starting raw material for the industrial process of producing fertilizers according to the current legislation.

2. MATERIAL AND METHODS

In present study the samples of ashes were tested from two oil mill factory (Dijamant Zrenjanina and Bimal Brčko distrikt). The material was obtained after collecting the ash from special incineration plant with the electrostatic filter (Figure 1). The ash is collected in a receiving container, and can be further collected in jumbo bags and transported by trucks to future processing into fertilizer.



Figure 1. Facility and electrostatic filter where ash is collected, Dijamant Zrenjanin

All laboratory analyses were performed at the Laboratory for Soil and Agroecology of the Institute of Field and Vegetable Crops, Novi Sad, Serbia, accredited according to the standard ISO/IEC 17025 (2017) and authorized institution for fertilisers quality and registration.

The following standards and analytical methods were applied, according to Regulation OGS 30/2017 (2017), 31/2018 (2018), and Regulation OGS 84/2017 (2017):

- Moisture content: gravimetric method;
- pH value (in H₂O and 1M KCl): potentiometric method;
- Nitrogen (total): CNS elemental analysis by Elementar analyser VARIO El III;
- Phosphorus (water soluble): spectrophotometrically;
- Phosphorus (total): ICP method, ICP-OES Vista Pro Varian, after MW digestion by Milestone ETHOS;
- Potassium (water soluble and total): flame photometry;
- Trace elements and secondary elements Ca, Na, Mg, Fe, Mn, Cu, Zn, (water soluble and total): ICP method, ICP-OES Vista Pro Varian;
- Heavy metals (total) As, Cd, Cr, Ni, Pb (total): ICP method, ICP-OES Vista Pro Varian, after MW digestion by Milestone ETHOS;
- Hg (total): by DMA 80 Direct Mercury analyzer, Milestone.

3. RESULTS AND DISCUSSION

Since R. Serbia lacks a legislative framework for the quality of input raw materials for fertilizer manufacturing, sunflower husk ash is characterized according to the criteria for

finished fertilizer products. These criteria are prescribed in two extensive regulations with annexes (OGS 30/2017 and 31/2018, and OGS 84/2017). These regulations prescribe the keys to the classification of fertilizers with a series of restrictions, in order for the end product to be primarily safe for use and the agroecosystem, and on the other hand, to contain a sufficient amount of nutrients in terms of consumer protection and a real effect on plant growth.

Based on the obtained results, the tested material has a favorable moisture content of only up to 2% moisture (Table 1). When using other types of biowaste materials as potential fertilizers, the high moisture present is most often a limiting factor and such materials need to be additionally dried.

The pH reaction, both active (in H₂O) and substitution reaction (in 1 M KCl), is extremely alkaline and ranges from 11 to 12.64 pH units (Table 1). Potassium, calcium, and magnesium carbonate or oxides are present in comparatively large quantities giving the ashes a strongly alkaline reaction. The obtained high pH reaction is a limiting factor for the application of fertilizers on all types of soil and must be limited to application only on soils with a significantly acidic reaction (up to pH=6).

3.1. Major nutrients NPK

In terms of total nitrogen content, it is at a negligible level and this material cannot therefore be considered a nitrogen-containing fertilizer (Table 1).

According to the total content of primary macronutrients (NPK), the tested sample showed a high content of phosphorus and potassium as nutrients. According to the content of available (water-soluble) phosphorus and potassium, the content of soluble phosphorus is very low, while potassium is almost completely water-soluble (Table 1). The criterion for fertilizer quality is the bio-accessible nutrient content, so that they can be taken up by the root system. Based on this part of the research, the tested sample can be regarded as a good raw material as a source of potassium component in the final product – plant nutrition product - fertilizer.

Table 1. Moisture, pH and NPK content of tested ashes samples

PARAMETER	DIJAMANT	BIMAL
Moisture content, %	0.400	1.630
pH (H ₂ O)	12.64	11.07
pH (KCl)	12.46	11.00
Total N, %	0.16	0.18
Total P ₂ O ₅ , %	10.42	4.90
Total K ₂ O, %	42.85	55.30
Water-soluble P ₂ O ₅ , %	0.02	0.23
Water-soluble K ₂ O, %	38.75	52.70

3.2. Microelements

Similar to major nutrients, the total content of micro elements is high, while their accessible content (water soluble content) is very low (Figure 2 and Figure 3).

The content of Ca and Na (and partially Mg) is considered here as a limiting factor because they can lead to soil degradation, alkalization and salinization in case of high concentrations and excessive application. Lack of these elements is very rare in soils.

Essential microelements Cu, Fe, Mn and Zn, are desirable in fertilizer and have a favorable effect on the growth and development of plants. However, based on this part of the research, their accessible (water-soluble) content is too low to consider the tested material suitable for fertilizers with the addition of microelements (Figure 3).

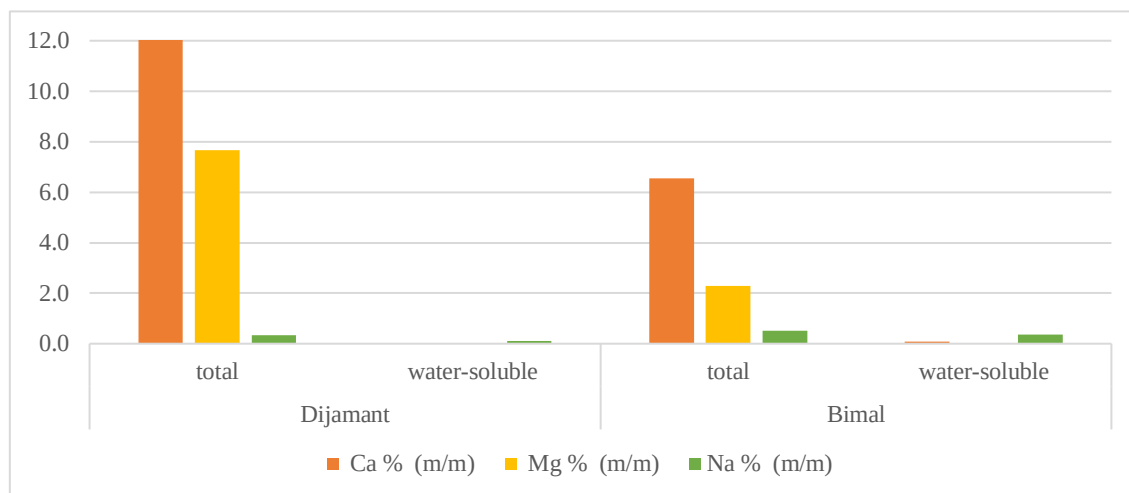


Figure 2. Total and water-soluble content of Ca, Mg and Na of tested ashes samples

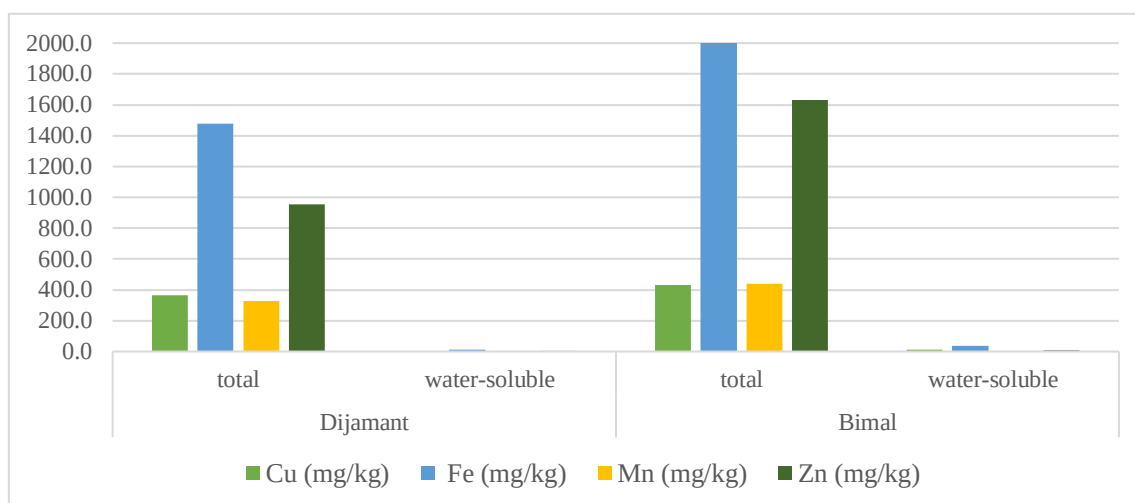


Figure 3. Total and water-soluble content of Cu, Fe, Mn and Zn of tested ashes samples

3.3. Heavy metals

In order for a material to be safe for use as a fertilizer, it must not contain dangerous and harmful substances. This is the first analysis that is tested in the laboratory for fertilizer characterization. According to the methodology, it tests the total content of heavy metals, because even these insoluble fractions can pollute the soil over time.

Table 2. Total heavy metals content of tested ashes samples

HEAVY METAL	DIJAMANT	BIMAL	MAC
As, mg/kg	< MDL (2.0)	< MDL (2.0)	/
Cd, mg/kg	< MDL (1.5)	< MDL (1.5)	3.0
Cr, mg/kg	4.9	68.0	100.0
Ni, mg/kg	40.3	27.9	100.0
Pb, mg/kg	< MDL (2.0)	< MDL (2.0)	100.0
Hg, mg/kg	< MDL (0.001)	< MDL (0.001)	1.0

MDL - Method detection limit

MAC - Maximum Allowed Concentration

Based on this part of the research, all samples meet the criterion of being below the prescribed limit of the maximum allowed concentration (Table 2). The contents of As, Cd, Ni, Pb and Hg, as plant xenobiotics, were very low, below detection limits. Certain amounts of Ni and Cr were determined, because these are biogenic elements that are an integral part of the sunflower plant and husk. The content of these elements must be continuously monitored, so that they do not exceed the set limits and thus potentially pollute the soil.

4. CONCLUSION

The tested sample of ashes from burned sunflower hulls is not loaded with dangerous and harmful substances and meets the requirements as a starting material for the industrial process of fertilizer production as a good source of potassium component, with the optimization or specification of the pH reaction of the final product in the technological process.

pH reaction of the tested samples is extremely alkaline, as well as the content of total calcium and magnesium, therefore it is necessary to neutralize pH reaction in the industrial processing of this raw material, or to specify the final product (instructions for use) for use on acid reaction soils as a special product for the improvement (calcification) of acid soils.

5. FUTURE STEPS

For recycling biogenic waste, networking is needed made up of scientific institutions, technological experts and industry factories, especially in the food industry sector. It is necessary to assemble a multidisciplinary team of agrochemists, material technologists and process industry experts. Research on the topic of using industrial waste as a raw material for fertilizers is very current and suitable for project financing.

The limitations are numerous, from the lack of infrastructure for material manipulation, the high heterogeneity of waste material, material granularity (Paleckienė et al. 2010) to the placement of the final product. However, due to the topicality and importance of biogenic waste recycling, in this green transition process should start as soon as possible.

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The impact of climate policy and climate change on PM_{2.5} emission from residential wood combustion

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Abstract

Residential wood combustion is the dominant source of particulate matter PM_{2.5} in the Republic of Croatia. Although the wood biomass is considered a green, sustainable energy source, at the same time the inhalation of PM_{2.5} particles from residential wood combustion, is associated with harmful effects on human health. The paper analyzes the variability of PM_{2.5} emission regarding three factors, which are closely related to climate policy and climate change. The first factor is related to the introduction of new, more environmentally friendly wood biomass combustion technologies. The second factor relates to the consumption of wood biomass depending on climate variability. The third factor refers to the implementation of measures for energy renovation of family houses. The aim of this paper is to distinguish the contribution of individual factors, both on the historical PM_{2.5} emissions from residential wood combustion, and on the emission projections up to the year 2050.

Keywords: PM_{2.5} emission variability, residential wood combustion, climate policy, climate change

1. INTRODUCTION

Energy and climate policies and strategies increasing the use and boosted of renewable energy sources. The bioenergy from wood combustion is considered green and sustainable but has an impact on environment (UNFCCC, 2015; WBA, 2016; European Council, 2019). Particularly, the inhalation of PM_{2.5} particles from residential wood combustion, is associated with harmful effects on human health (Air Quality Expert Group, 2017; WHO, 2015; WHO, 2021). In the Republic of Croatia, the residential wood combustion is the key source of many air pollutant emissions (Ministry of Economy and Sustainable Development, 2021; EMEP CEIP, 2022) with the impact on the local air quality considering PM_{2.5}, PM₁₀ and benzo(a)pyrene (BaP) (Ministry of Economy and Sustainable Development, 2020; UN ECE, 2019). This paper starts with an overview on the policies concerning the use of the bioenergy from biomass, scope of the fuelwood combustion in households, resulting air pollution, specifically PM_{2.5} emission and emission projection and impact of it on human health. The paper analyses the impact of selected three factors on PM_{2.5} emission from household heating appliances on wood biomass as following: the introduction of new, more environmentally friendly wood biomass combustion technologies replacing the old, inefficient technologies with high particulates emission, the consumption of wood biomass depending on climate variability, and the implementation of measures for energy renovation of family houses. Finally, the conclusion discusses the results are presented.

2. POLICIES, WOOD BIOMASS AND PM_{2.5} EMISSION

Energy and climate policies and strategies envisage increasing the use of renewable energy sources (RES), including wood biomass, as an important means for the energy sector to achieve environmental, economic, and social goals of sustainable development (Andersen, Allen and Domingo, 2021; UNFCCC, 2015; WBA, 2016). The application of RES is a key component of mitigating climate change and for achieving the international obligations of the European Union and member states under the Paris Agreement (UNFCCC, 2015). Biomass fuels were also included in the European Commission's strategy to achieve its climate and energy goals by 2020 (20% reduction in greenhouse gas emissions, 20% final energy consumption from RES and a 20% increase in energy efficiency) (WHO, 2015). For example, in the year 2018 the share of solid biomass in total Final Energy Consumption in the Residential sector was 16.3 % in the EU, and the Republic of Croatia achieved a share of 44.9 % (Eurostat a (n.d.)). By implementing RES, Europe has replaced part of its energy production from non-renewable sources (especially from fossil fuels) and managed to reduce greenhouse gas (GHG) emissions. The further goal of the EU's goal is to achieve climate neutrality by 2050 delivering on its commitments under the international Paris Agreement (European Council, 2019). The EU's strategy for reaching its 2050 climate goal is The European Green Deal. This requires current greenhouse gas emission levels to decrease substantially in the next decades. As an intermediate step towards climate neutrality, the EU has raised its 2030 climate ambition, committing to cutting emissions by at least 55% (compared to 1990) by 2030. The 'Fit for 55' legislative package will turn the EU's ambition into reality and strengthen the EU's position as a global climate leader.

'Fit for 55' package will additionally boost the development of renewable energy sources in the EU, especially through the implementation of the revised Renewable Energy Directive (RED). However, not all sources of renewable energy have the same environmental impacts. Energy from wood biomass combustion, in particular causes air pollution and impacts health (Air Quality Expert Group, 2017). Increased usage of energy from wood biomass can pose a challenge for EU Member States in meeting EU air quality standards, defined by current framework used to control ambient concentrations of air pollution in the EU - Ambient Air Quality Directive & daughter Directive 2004/107/EC, and their emission reduction commitments for air pollutants set out under the National Emission reduction Commitment Directive (NEC Directive) along with the parties of the United Nations Economic Commission for Europe (UNECE) Convention on Long Range Transboundary Air Pollution (Convention LRTAP) and belonging the 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol) (Environmental Protection UK, n.d.).

The Republic of Croatia, as EU Member State and the party of UNECE Convention LRTAP, is required to regularly compile and report official estimates of their emissions and projected (future) emissions for GHGs and air pollutants. The mandatory reporting of projections plays an important part in the policy process: it is designed to provide MS, the European Commission, and other stakeholders with a reliable early indication of the expected trend of future emissions, and thus with information on whether implementation of national and EU-wide policies and measures is helping countries meet their emission commitments. The set of projections scenarios that MS have been required to report fall into the two categories: 1) projections scenario 'with measures' (WM) - means projections of anthropogenic GHG or air pollutant emissions by sources that encompass the effects of currently implemented or adopted policies and measures, and 2) projections scenario

'with additional measures' (WAM) - means projections of anthropogenic GHG or air pollutant emissions by sources that encompass the effects of policies and measures which have been adopted and implemented, as well as planned policies that are judged to have a realistic chance to be adopted and implemented in the future. The officially reported emission estimations (EMEP CEIP, 2022) and project emission estimation for two scenarios (WM and WAM) (EMEP CEIP, 2021) for pollutant PM_{2.5} are used in this paper for analysis and results presentation.

The burning of wood biomass in household heating appliances is responsible for the majority of particulate matter emissions in Europe (EIONET, 2021; WHO, 2015; Environmental Action Germany, 2015; Carrington D, 2021). Ambient (outdoor) air pollution in cities and rural areas is estimated to cause 4.2 million premature deaths worldwide in 2016 and is the result of exposure to PM_{2.5} particles, which cause cardiovascular and respiratory diseases and cancer (WHO, 2021). At EU27+UK level in 2016 as stated in ETC/ATNI Report 6/2020 (EIONET, 2021), it is estimated that the interrelationship between the increase in emissions due to biomass use and the reduction in emissions due to all other RES growth is responsible for around 9,200 premature deaths and 97,000 years of life lost. As such, the increase in solid biomass heating alone (particularly due to high particulate emissions from domestic stoves) is estimated to be responsible for an increase of around 10,700 premature deaths and 113,000 years of life lost in 2016.

Official reported data (Ministry of Economy and Sustainable Development, 2021) show that in the Republic of Croatia, wood biomass burning in households is a key source of emissions of many pollutants, and PM_{2.5} is one of them (Figure 1). In 2020, wood biomass in Croatia accounted for 63.3% of the total consumption of all energy sources in household heating appliances, and it dominates throughout the entire historical trend since 1990 (EMEP CEIP, 2022). The increase in the use of wood biomass in household heating appliances is associated with an increase in the concentration of PM_{2.5}, especially during the winter heating season (EIONET, 2021; Air Quality Expert Group, 2017; WHO, 2015).



Figure 1. Residential wood combustion as a key source of many air pollutants emissions

According to Croatian strategic and planning documents (OG 25, 2020; OG 63, 2021; Ministry of Economy and Sustainable Development, 2020; OG 46, 2020; OG 140, 2020) it is expected that the consumption of wood biomass will increase until 2030, and then decrease due to boost of energy home renovation. Compared to 2018, the consumption of energy from biomass in households is expected to increase by 6% in WM and 4% in WAM scenario until 2030. Due to boost of energy home renovation, it is expected that consumption of wood biomass will decrease by 46% in WM and 53% in WAM scenarios until 2050. WM scenario assumes energy renovation rate of 0.75 % per year, and 20 % of total old wood heating appliances replacement by 2030. WAM scenario assumes energy renovation rate of 1.3 % per year, and 41.7 % of total old wood heating appliances replacement by 2030. There is no change in technology share after 2030 in both scenarios (Ministry of Economy and Sustainable Development, 2021; CEIP EMEP, 2021).

3. OBJECTIVE OF THE WORK AND METHODOLOGY

Objective of the work is distinguishing the impact of influencing factors on PM_{2.5} emission and emission projections from household wood biomass burning. Factors that affect the amount of PM_{2.5} emission from wood biomass combustion in residential heating appliances and, consequently, the level of PM_{2.5} concentration in the air are following:

- amount (and type) of fuelwood - number of households that use it as an energy source
- climate conditions
- combustion technology
- operational settings maintenance of heating appliance and its age

- fuel quality (depending on storing practice, waste co-firing)
- implementation of energy efficiency measures
- Among previously mentioned influencing factors, three of them, closely related to climate policy and climate change, were selected:
- Factor #1: Introduction of new, more environmentally friendly wood biomass combustion technologies,
- Factor #2: Wood biomass consumption variability depending on interannual climate variability, and
- Factor #3: Decreasing wood consumption due to improving the energy efficiency of family houses.

By analysing the variability of the emission of PM_{2.5} regarding three selected influencing factors, it will be determined which of them has the greatest influence on PM_{2.5} emission, that is, which of them contribute the most to its reduction.

The impact of each factor was analysed separately. The reference year for the analyses is 2018, the most recent year in the officially submitted emissions projections. The observed timeframe included the base year 2018 and regard this the historical period (1990 – 2020), and the projection period (after 2020 up to 2050). All results are expressed as a difference from baseline year 2018. The input data were biomass energy consumption in households and share of biomass combustion technologies for two scenarios WM and WAM, all presented in Figure 2.

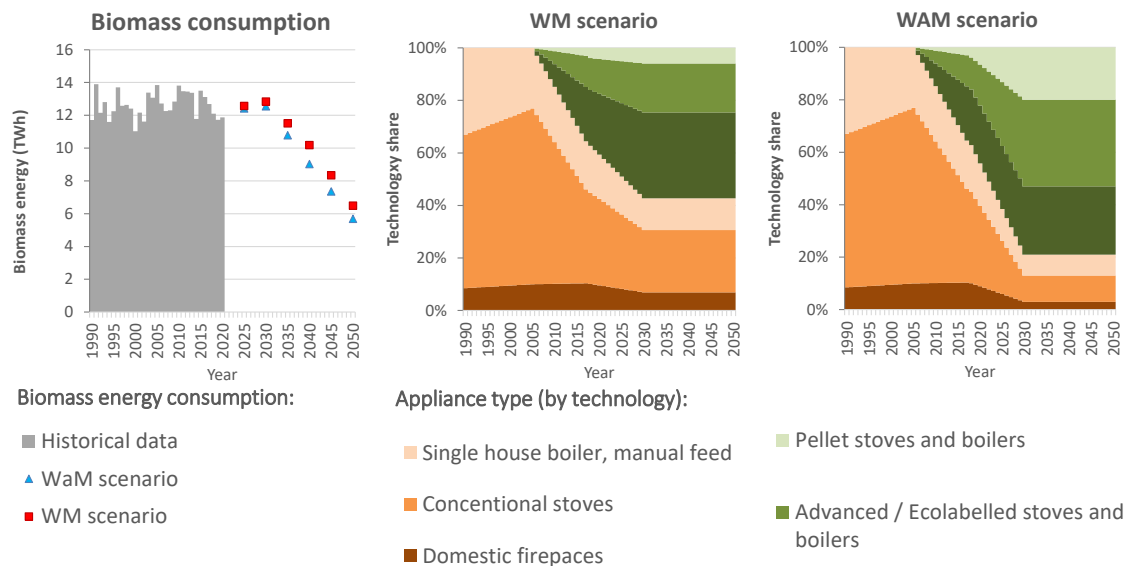


Figure 2. Biomass energy consumption in households and share of biomass combustion technologies for historic period (1990 - 2020) and projection period (after 2020) for the WM and WAM scenarios

Emission factors showed in Figure 3 present the range of PM_{2.5} emission from various type of biomass burning appliances used in households. It can be seen that pellet stoves and boilers have approximately ten times lower PM_{2.5} emission than conventional alliances (conventional stoves and single house boilers).

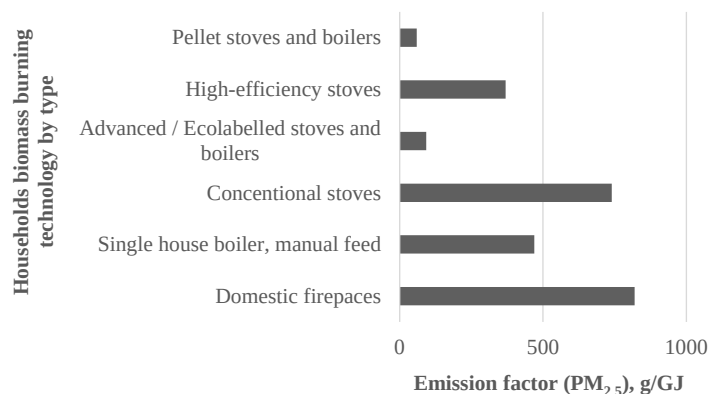


Figure 3. $PM_{2.5}$ emission factors for different wood biomass appliances used in households

4. RESULTS AND DISCUSSION

The impact of wood biomass combustion technology (Factor #1) and climate variability (Factor #2) on $PM_{2.5}$ emission and emission projections from household biomass heating appliances are presented on Figure 4.

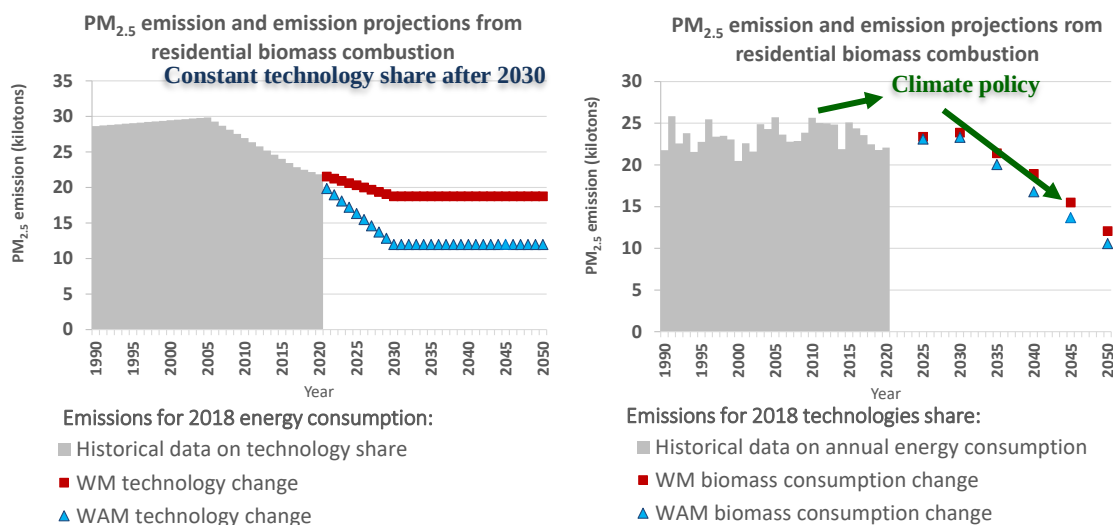


Figure 4. Impact of wood biomass combustion technology (left) and climate variability (right) on $PM_{2.5}$ emission and emission projections from household fireplaces on wood biomass for the historical period and scenarios WM and WAM

The implementation of the climate policies, which is expected increased use of firewood in households by 2030, will consequently result in higher $PM_{2.5}$ emission. The results of the sensitivity analysis regarding Factor #1, show that within the historical period, due to a greater share of old combustion technologies, $PM_{2.5}$ emission could be up to 25% higher than in 2018 (Figure 4 (left)). Regarding Factor #2, the sensitivity analysis shows that $PM_{2.5}$ emission difference may go between -10 % to +13 % due to variability of the biomass energy consumption (Figure 4 (right)).

Figure 5 (left) compares the historic trends variability of heating-degree days (HDD) (EUROSTAT b, n.d.) and biomass energy consumption in households. HDD variability goes between -12 % and +35 %, while the biomass consumption variability goes between -9 % and +15 %. The discrepancy between variability of HDD and biomass consumption

indicates an increase in biomass consumption in households, which is in line with climate policies. According to climate projections for 2030 and 2040, HDD is expected to decrease by 2.3% and 4.7%, respectively, compared to 2018 (Ministry of Economy and Sustainable Development, 2021).

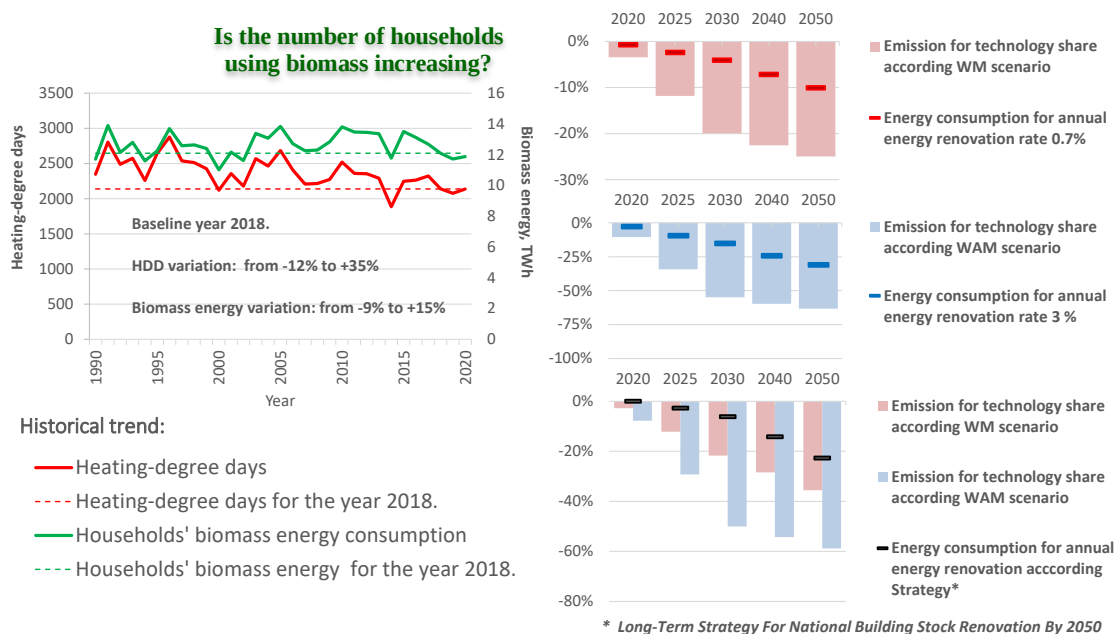


Figure 5. Heating-degree days and biomass energy consumption for the historic period (left) and the impact of energy renovation and technology improvement on PM_{2.5} emission decrease (4 scenarios) (right)

The impact of improving the energy efficiency of family houses (Factor #3) is analysed for three different renovation rates: 1) constant energy renovation rate of 0.7 % per year, 2) constant energy renovation rate of 3 % per year, and 3) linear change of energy renovation rate from 1 % in 2020 to 3 % in 2030). For the sensitivity analysis of Factor #3 following scenarios were used: conservative, optimistic, moderate conservative and moderate optimistic one and results are presented in Figure 5 (right).

The conservative scenario (Figure 5 (right), upper graph), which includes WM biomass technology change scenario and energy renovation rate of 0.7 % per year, may result with -22 % reduction of PM_{2.5} emission in 2030 when comparing to base year 2018. The optimistic scenario (Figure 5 (right), middle graph), which includes WAM biomass technology change scenario and energy renovation rate of 3 % per year, may result with -56 % reduction of PM_{2.5} emission in 2030 when comparing to 2018. The moderate conservative scenario (Figure 5 (right), lower graph, red), which includes WM biomass technology change scenario and linear change energy renovation rate from 1 % to 3 % per year, may result with -24 % reduction of PM_{2.5} emission in 2030 when comparing to 2018, while conservative optimistic scenario (Figure 5 (right), lower graph, blue) with the same linear change energy renovation rate, and with WAM biomass technology change may bring -51 % reduction. The year 2030 is chose to indicate how energy and climate policies may have impact on PM_{2.5} emission in this decade.

5. CONCLUSIONS

This paper analyses the impact of three influencing factors on PM_{2.5} emission from household heating appliances using wood biomass which are closely related to climate policy and climate change. The first factor refers to introduction of new, more

environmentally friendly wood biomass combustion technologies replacing the old. The second factor is related to the climate variability which effects consumption of wood biomass. The third factor refers to the implementation of energy renovation of family houses.

With energy renovation rates of family houses according to the Long-term strategy [22], and widespread use of eco-friendly biomass appliances, a reduction in PM_{2.5} emissions between 24 % (WM scenario) and 51% (WAM scenario) could be expected up to 2030.

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SECTION E / **SEKCIJA E**

POSTER SECTION /
SEKCIJA POSTERA

Usporedna analiza učinka korištenja instituta sudjelovanja javnosti i pristupa pravosuđu u pitanjima okoliša u Hrvatskoj i državama članicama EU-a

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Sažetak

Temeljni pravni instrumenti zaštite okoliša propisani Konvencijom o pristupu informacijama, sudjelovanju javnosti u odlučivanju i pristupu pravosuđu u pitanjima okoliša (Aarhuška konvencija) u hrvatski zakonodavni sustav implementirani su njezinim potpisivanjem - 2007. Ipak, demokratizacija okolišnih prava u praksi nailazi na brojne prepreke. Ovaj rad usmjeren je na istraživanje konkretne primjene dvaju stupova Aarhuške konvencije u RH – sudjelovanja javnosti i pristupa pravosuđu od 2018. do 2022. s fokusom na nevladine organizacije (NVO) usmjerene na zaštitu okoliša. Na temelju ankete i intervju s predstavnicima NVO-a, te analize dokumenata i dostupnih podataka Ministarstva gospodarstva i održivog razvoja i upravnih sudova RH, istraživanjem je utvrđeno da je sudjelovanje NVO-ova u postupcima procjene utjecaja zahvata na okoliš otežano nizom činitelja, a prihvaćenost primjedbi u konačnim odlukama unutar upravnih postupaka te upravnih sporova s predmetom zaštite okoliša je iznimno niska. Identificirane mane, kao i primjeri pozitivne prakse, uspoređeni su s relevantnim podacima o predmetnoj tematici u odnosu na NVO-ove drugih država članica EU-a u cilju oblikovanja smjernica za poboljšanje instituta sudjelovanja javnosti u postupcima donošenja odluka i pristupa pravosuđu u pitanjima okoliša u Hrvatskoj.

Ključne riječi: sudjelovanje javnosti, pristup pravosuđu, procjena utjecaja na okoliš, Aarhuška konvencija, ekološki NVO

Comparative Analysis of the Effect of Using the Institute of Public Participation and Access to Justice in Environmental Matters in Croatia and EU Member States

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Abstract:

The basic legal instruments of environmental protection prescribed by the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention) were implemented in the Croatian legislative system with its signing in 2007. However, the democratization of environmental rights in practice encounters many obstacles. This paper focuses on analysing specific application of two pillars of the Aarhus Convention in Croatia - public participation and access to justice, from 2018 to 2022 with a focus on non-governmental organizations (NGOs) dealing with environmental protection. Based on surveys and interviews with NGO representatives as well as available documents and data from the Ministry of Economy and Sustainable Development and the administrative courts of the Republic of Croatia, the analysis has shown that participation of NGOs in environmental impact assessment is burdened with a number of obstacles, while the acceptance of objections in final decisions within the administrative procedures and administrative disputes with the subject of environmental protection is at an extremely low level. The identified shortcomings as well as examples of positive practices were compared with relevant data of subject matter regarding the NGOs in other EU member states in order to formulate guidelines for improving the institutes for public participation in decision-making and access to justice in environmental matters in Croatia.

Keywords: public participation, access to justice, environmental impact assessment, Aarhus Convention, environmental NGO

1. UVOD

UNECE-ova Konvencija o pristupu informacijama, sudjelovanju javnosti u odlučivanju i pristupu pravosuđu o pitanjima okoliša (NN 01/07; dalje: Aarhuška konvencija) osnovni je pravni instrument na kojem se temelje procesna prava na čist okoliš. Svojevremeno ju je glavni tajnik UN-a Kofi Annan opisao kao „najambiciozniji pothvat na području 'okolišne demokracije' dosad poduzet pod okriljem Ujedinjenih naroda“ (Onida, 2004). Europski zeleni plan (Europska komisija, 2019 a), koji predstavlja okosnicu razvoja klimatskih i okolišnih politika, u pogledu korelacije zelene tranzicije i aktivnog sudjelovanja javnosti, navodi sljedeće:

„Budući da će doći do znatnih promjena, aktivno sudjelovanje javnosti i povjerenje u tranziciju od presudne su važnosti kako bi politike bile uspješne i prihvaćene.“

Sudjelovanje javnosti tako osigurava odlukama legitimitet i pojednostavljenu i uspješnu primjenu. Procesna prava (*locus standi*) u zaštiti okoliša uživaju status visokog značaja, ali sporna je djelotvornost njihove provedbe.

Hrvatska je ratificirala Aarhušku konvenciju 2007. godine kada je donesen Zakon o potvrđivanju Konvencije o pristupu informacijama, sudjelovanju javnosti u odlučivanju i pristupu pravosuđu u pitanjima okoliša (NN 01/07). Odredbe o sudjelovanju javnosti i pristupu pravosuđu prenesene su u hrvatsko zakonodavstvo različitim propisima: Zakon o zaštiti okoliša (NN 80/13, 153/13, 78/15, 12/18, 118/18; dalje: ZOZO), Zakon o zaštiti prirode (80/13, 15/18, 14/19, 127/19) Zakon o pravu na pristup informacijama (NN 25/13, 85/15, 69/22), Zakon o općem upravnom postupku (NN 47/09, 110/21; dalje: ZUP), Zakon o upravnim sporovima (NN 20/10, 143/12, 152/14, 94/16, 29/17, 110/21; dalje: ZUS), Uredba o procjeni utjecaja zahvata na okoliš (NN 61/14, 3/17; dalje: Uredba), Uredba o informiranju i sudjelovanju javnosti i zainteresirane javnosti u pitanjima zaštite okoliša (NN 64/08) i dr.

Ipak, primjena se ne odvija bez prepreka, što u svom izvješću naglašava i Europska komisija (Europska komisija 2019; dalje: Komisija). U dokumentu se ističe da hrvatski građani nemaju na raspolaganju jasne i pristupačne informacije o načinu pokretanja pravnih postupaka u predmetima koji se odnose na okoliš te da je restriktivan pristup pravosuđu koji se temelji na povredi prava u okolišnim pitanjima ograničen. Komisija smatra da se pravo pristupa pravosuđu u hrvatskom zakonodavstvu treba osigurati za osporavanje svih dozvola relevantnih za okoliš, uključujući građevinske i lokacijske dozvole.

Kako bi se pružili što obuhvatniji, a opet sustavni uvidi o iskustvima primjene Aarhuške konvencije, ovaj rad usmjerava se na prakse korištenja dvaju stupova Aarhuške konvencije u RH – sudjelovanja javnosti i pristupa pravosuđu od 2018. do 2022. s fokusom na nevladine organizacije (NVO) usmjerene na zaštitu okoliša. Analizirajući širok spektar dostupnih izvora, intervjuje te anketu s predstavnicima NVO-ova, rad istražuje stanje u Hrvatskoj, s usporednim prikazom stanja u drugim zemljama EU-a, od 2018. do 2022. Usmjerenost na ulogu i iskustva NVO-ova posvećenih zaštiti okoliša vezana je za njihovu značajnu ulogu u razvoju ekspertize i prakse ovih prava što potvrđuje i istražena praksa sudova RH. U Hrvatskoj su više od polovice upravnih sporova s predmetom procjene utjecaja na okoliš pred Visokim upravnim sudom RH (dalje: VUSRH) pokrenuli ekološki NVO-ovi.

Nakon opisa korištene metodologije, rad prikazuje iskustva djelovanja NVO-ova s obzirom na dvije skupine tema, od kojih se prva odnosi na sudjelovanje u postupcima procjene utjecaja na okoliš (procjena utjecaja na okoliš, dalje: PUO; ocjena o potrebi procjene utjecaja zahvata na okoliš, dalje: OPUO; ocjena prihvatljivosti zahvata za ekološku mrežu dalje: OPEM), a druga na sudske sporove iz zaštite okoliša. U zaključku istraživanja sistematiziraju se smjernice za unaprjeđenje provedbe istraživanih instituta.

2. METODOLOGIJA

Analiza praksi korištenja instituta sudjelovanja javnosti i pristupa pravosuđu u RH provodila se od studenog 2021. do travnja 2022. godine kombinacijom različitih izvora i metoda prikupljanja podataka. Pri tom su korištene ankete i intervjui s predstavnicima NVO-ova kao temeljne metode prikupljanja podataka. Sudjelovalo je osam organizacija, od kojih njih pet ima relevantno iskustvo sudjelovanja u upravnim postupcima/sporovima. Anketno istraživanje provedeno je prije polustrukturiranih intervjuova u cilju prikupljanja općenitih informacija o udrugama poput informacija o zapošljavanju pravnika i sl. Zatim je provedeno pet intervjuova s predstavnicima organizacija koje imaju znanje i iskustvo sudjelovanja u OPUO/PUO postupcima i/ili pokretanju sporova. Intervjui su propitivali činitelje djelotvornosti sudjelovanja u postupcima procjene utjecaja na okoliš i pokrenutim sudskim sporovima.

Uvidi u iskustva NVO-ova u sudjelovanju i pristupu pravosuđu nadogradili su se kvalitativnom i kvantitativnom analizom sadržaja mrežne stranice Ministarstva gospodarstva i održivog razvoja (dalje: MINGOR ili Ministarstvo) te dostupnih rješenja Ministarstva u postupcima procjene utjecaja na okoliš pokrenutih u razdoblju od 2018. do 2021. Pregledane su primjedbe javnosti unutar rješenja i kvantitativno su obrađeni podaci o prihvaćenosti razmatranih primjedbi. U svrhu analize učinka pokrenutih upravnih sporova, analizirane su presude donesene u sporovima koji su se vodili radi ocjene zakonitosti rješenja iz OPUO/PUO postupaka pred upravnim sudovima RH i Visokim upravnim sudom RH od 2018. do 2022. Analizirano je ukupno 80 presuda upravnog suda u Splitu, Rijeci, Zagrebu i Osijeku te VUSRH-a. Presude su analizirane na način da su se utvrdile stranke u sporu, trajanje spora, sjedište suda, tužbeni razlozi, izreka i obrazloženje izreke presude.

Dodatan uvid u praksu primjene Aarhuške konvencije u Hrvatskoj, kao i uvidi u praksu korištenja istih instituta u državama članicama EU-a, stekao se analizom UNECE Izvješća o provedbi Aarhuške konvencije (UNECE, 2021; dalje: UNECE Izvješće) i Petog izvješća Republike Hrvatske o provedbi Aarhuške konvencije (MINGOR 2021; dalje: Izvješće RH). Sukladno članku 10. Aarhuške konvencije (NN 01/07), stranke kontinuirano nadziru provedbu Konvencije na temelju redovitog izvješćivanja o provedbi na nacionalnoj razini, a Tajništvo izrađuje zajedničko izvješće (*synthesis report*) koje se predstavlja na sjednicama stranaka te objavljuje na službenim mrežnim stranicama. Analizirani su i podaci neformalnog izvješća The European Environmental Bureaua o sudjelovanju javnosti (EEB, 2021; dalje: EEB Izvješće) koje daje poseban osvrt na praksu NVO-ova u sudjelovanju javnosti u zaštiti okoliša u državama članicama EU-a.

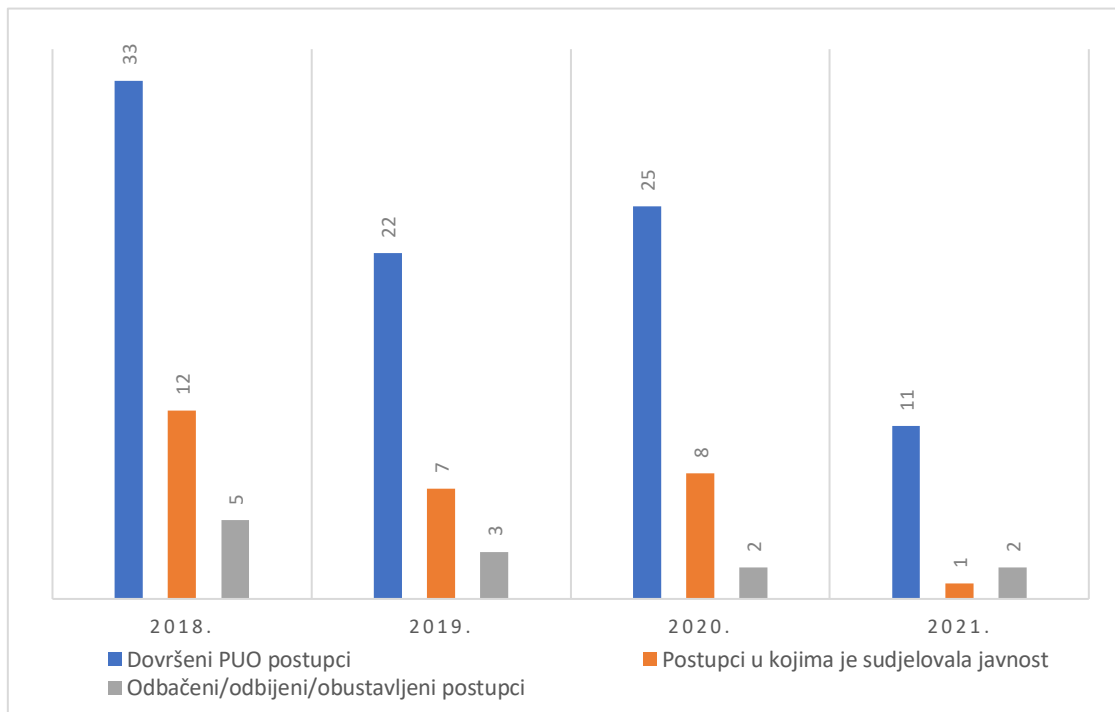
Ukrštavanjem i objedinjavanjem nalaza analize ovih triju skupina izvora podataka, dobiveni su obuhvatni uvidi u prakse i izazove korištenja instituta sudjelovanja javnosti i pristupa pravosuđu usporednim pogledom na prakse u zemljama EU-a. Nalazi se u nastavku prikazuju u dvije cjeline, jednoj posvećenoj institutu sudjelovanja javnosti, drugoj posvećenoj institutu pristupa pravosuđu. Uz pregled sastavnica oba instituta i sumarnih podataka o praksi korištenja, svaka cjelina opisuje ključne činitelje uspješnosti i neuspješnosti njihove provedbe.

3. ANALIZA KORIŠTENJA INSTITUTA SUDJELOVANJA JAVNOSTI

Sukladno članku 6. Aarhuške konvencije (NN 01/07) i člancima 162. i 166. Zakona o zaštiti okoliša (NN 80/13, 153/13, 78/15, 12/18, 118/18), javnost ima pravo iznijeti mišljenje, prijedloge i primjedbe u postupcima odlučivanja u pitanjima okoliša. Dodatkom I. Konvencije propisane su djelatnosti za koje je obvezno sudjelovanje javnosti te koje su prenesene i u Uredbu (UNECE, 2021). Vrste navedenih djelatnosti usklađene su s onima za koje je relevantnim zakonskim propisima EU-a propisano provođenje procjene utjecaja na okoliš. Postupci procjene utjecaja na okoliš provode se kako bi se procijenili mogući značajni utjecaji nekog zahvata na okoliš ovisno o kapacitetu, veličini i lokaciji zahvata. Uredba, osim postupka PUO-a, propisuje i zahvate za koje je potrebno provesti OPUO postupak kojim se, na temelju pojedinačnih ispitivanja (sukladno mjerilima kao što su kapacitet, snaga, površina i dr.) i drugih propisanih kriterija, utvrđuje može li zahvat značajnije utjecati na okoliš te odlučuje o potrebi provođenja PUO-a. U okviru navedenih postupaka može se provoditi i OPEM, odnosno Glavna ocjena prihvatljivosti za ekološku mrežu sukladno propisima o zaštiti prirode.

Pregled dostupnih rješenja MINGOR-a (Slika 1.) pokazao je kako je u okviru 91 dovršenog PUO postupka od 2018. do 2022., javnost sudjelovala u njih 28. Ukupno je

odbačeno/odbijeno/obustavljeno 12 postupaka. Rezultati pokazuju da javnost sudjeluje u otprilike 30 % postupaka, no ne može se zaključiti o trendu opadanja ili rasta sudjelovanja javnosti s obzirom na to da je velik broj postupaka iz 2020. i 2021. još uvijek u tijeku.

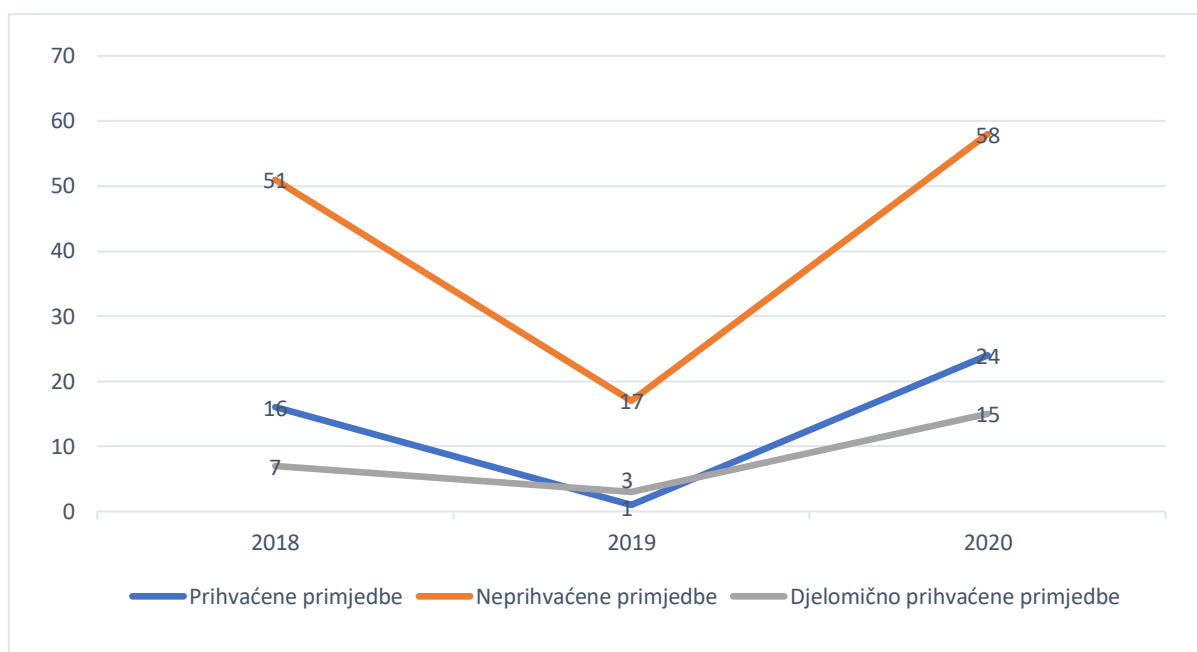


Slika 1. Dijagram s dovršenim PUO postupcima

3.1. Učinci sudjelovanja javnosti

Analiza sadržaja rješenja s razmatranim primjedbama javnosti pokazala je kako primjedbe u najvećoj mjeri rezultiraju izmjenama studije utjecaja na okoliš ili uvrštenjem mjera zaštite okoliša/programa praćenja stanja okoliša, a ni u jednom slučaju u razmatranom razdoblju nisu utjecale na sprječavanje provedbe zahvata u okolišu. Zahtjevi za PUO postupcima u najvećoj mjeri obustavljeni su zbog odustanka podnositelja zahtjeva od zahtjeva, a rjeđe odbačeni ili odbijeni zbog nepotpunih zahtjeva ili isteka roka za nadopunu studije. Rješenja iz 2021. i 2022. nisu uvrštena u obradu sadržaja primjedbi s obzirom na to da je u razdoblju kada se istraživanje vršilo bio okončan samo jedan postupak u 2021. u kojem je sudjelovala javnost.

Od ukupno 192 razmatrane primjedbe, u razmatranim razdobljima najveći je broj neprihvaćenih primjedbi – ukupno 126 (Slika 2.). U odnosu na ukupan broj razmatranih primjedbi, u 2018. gotovo 70 % primjedbi nije prihvaćeno, dok je 2019. postotak neprihvaćenih primjedbi i znatniji – 80 %. No, u 2019. primjetan je opći pad iznošenja primjedbi. Uočljiv je porast zaprimljenih primjedbi u postupcima koji su se vodili 2020., no i dalje je najveći broj neprihvaćenih primjedbi.



Slika 2. Linijski dijagram prihvaćenosti primjedbi unutar PUO postupaka

U analizu rješenja, pri tom, nisu uključena nepregledna rješenja za koja nije postojala mogućnost utvrđivanja samog sadržaja primjedbe pa tako ni njezine prihvaćenosti. Primjerice, pojedina rješenja objašnjavaju razloge neprihvatanja primjedbi, dok prihvaćene primjedbe nisu ni navedene. Utemeljenost koja se očekuje za primjedbe treba biti jednako primijenjena na obrazloženje neprihvatanja, kao i prihvaćanja primjedbe s obzirom na to da prihvaćene primjedbe mogu služiti za daljnju edukaciju sudionika postupka, odnosno javnosti. Ipak, nakon 2020. uočljiv je trend preglednijih rješenja s jasnim prikazom primjedbe i iscrpnog obrazloženja imenovanog savjetodavnog stručnog povjerenstva (dalje: povjerenstvo) koje ocjenjuje utjecaj zahvata na okoliš.

U pogledu neprimjerene obrazloženosti prihvaćanja, odnosno neprihvatanja primjedbi unutar rješenja ministarstva iz PUO postupka, osobito je zanimljiva u tom smislu presedanska presuda Upravnog suda u Splitu, posl. br. UsI-62/17-18 od 2. ožujka 2018. (Upravni sud u Splitu, 2018) sa sljedećim pravnim stajalištem suda:

„U izloženom, a uzimajući u obzir citirane odredbe Zakona i sadržaj obrazloženja, te okolnost da tuženik nije odgovorio na sve prijedloge, primjedbe i mišljenja zainteresirane javnosti, odnosno u dijelu nije dao određene i konkretne razloge neprihvatanja prijedloga, primjedbi i mišljenja zainteresirane javnosti, izvan općenito i paušalno, po ocjeni ovog suda, osporeno rješenje ne sadrži određene, jasne i obrazložene razloge rješavanja konkretne upravne stvari, te se, kao takvo (nerazumljivo), ne može niti ispitati, slijedom čega je postupku koji je prethodio ovom sporu povrijeđena odredba članka 98. stavka 5. ZUP-a.“

U obrazloženju navedene presude povezuje se nedostatna obrazloženost primjedbi unutar PUO postupka s razlozima rješavanja konkretne upravne stvari sukladno članku 98., stavku 5. ZUP-a. (NN 47/09, 110/21). Dakle, neprimjereno obrazložene primjedbe mogu rezultirati nerazumljivim rješenjima konkretnog upravnog postupka što je protivno spomenutoj odredbi ZUP-a (NN 47/09, 110/21).

U pogledu prihvaćenosti primjedbi supstancijalne prirode, za ispitane organizacije percepcija prihvaćenosti ključnih supstancijalnih primjedbi na razini je od 10 – 30 % za

većinu organizacija. Jedna organizacija koja prihvaćenost vlastitih supstancijskih primjedbi vidi na relativno visokoj razini u usporedbi s drugima (50 %) objašnjava kako su se njihove primjedbe temeljile na podacima iz terenskih izvida. Navedeno upućuje na djelotvornost znanstveno-utemeljenih primjedbi.

Važno je napomenuti da za zahvate, odnosno djelatnosti za koje nije potrebno provođenje postupaka PUO/OPUO, nije predviđena procedura sudjelovanja javnosti. Jedina mogućnost sudjelovanja predviđena je u postupcima izdavanja lokacijske i građevinske dozvole, ali samo za usko definirane stranke u postupku, a to su nositelji stvarnih prava na nekretninama koje graniče s nekretninom za koju se izdaje dozvola sukladno članku 114. Zakona o gradnji (NN 153/13, 20/17, 39/19, 125/19), odnosno članku 141. Zakona o prostornom uređenju (NN 153/13, 65/17, 114/18, 39/19, 98/19). S obzirom na to da javnost vrlo često za zahvate sazna tek po izdavanju predmetnih dozvola ili pri izvođenju samog zahvata, preporučljivo je za zahvate koji imaju utjecaj na okoliš osigurati mogućnost sudjelovanja i u navedenim postupcima.

UNECE u svom izvješću (UNECE, 2021) ukazuje na nisku stopu sudjelovanja javnosti u svim državama potpisnicama Konvencije, poteškoće u njezinoj provedbi te lokalne vlasti koje nemaju poticajan pristup u promicanju sudjelovanja javnosti. Ipak, nastavlja se proces širenja opsega odluka i faze donošenja odluka u kojima je omogućeno sudjelovanje javnosti. Primjerice, navodi se da mnoge države EU-a ulažu napore u proširenje postupka sudjelovanja javnosti i na druge postupke (npr. građevinske dozvole i odobrenja).

3.2. Resursi za sudjelovanje NVO-ova

Kao važan činitelj uspješnosti sudjelovanja u PUO postupcima ekološki NVO-ovi naglašavaju dostupnost financija kojima bi osigurali vrijeme i sredstva za istraživanje pojedinog predmeta te potrebu sudjelovanja suradnika pravne struke, odnosno pravnog stručnjaka. Neki od potencijalnih izvora financiranja pravnih aktivnosti udrugama omogućeni su projektima Life, Interreg Europe, Fond za aktivno građanstvo u okviru Financijskog mehanizma Europskog gospodarskog prostora (EGP) i Norveške i dr. Prema uvidima udruga, europski i međunarodni fondovi omogućuju više prilika za financiranje zagovaranja pravnim alatima, nego nacionalni fondovi.

Udruge aktivnosti sudjelovanja u postupcima vezanima za okoliš i pokretanje sudskih sporova uglavnom financiraju vlastitim sredstvima te nešto rjeđe sredstvima ostvarenim iz aktivnih projekata. Intervjui s predstavnicima NVO-ova pokazali su kako organizacije većinom nemaju zaposlene pravnike ili stručnjake iz pojedinog područja, no dokazalo se djelotvornim njihovo angažiranje u obliku vanjskog stručnjaka ili volontera, posebice u aktivnostima pokretanja sudskih sporova. Predlažu veću suradnju udruga koje zapošljavaju pravnike s udrugama koje ih ne zapošljavaju.

3.3. Informiranje o mogućnostima i ishodu sudjelovanja

Premda pristup informacijama nije izravna tema ovog rada, on je temelj za ostvarivanje drugih prava Aarhuške konvencije, stoga je posebnu pozornost potrebno usmjeriti osiguravanju jednostavnosti pristupa informacijama o postupcima u kojima je omogućeno sudjelovanje javnosti. Hrvatska, kao i druge države članice, ima relativno uobičajen pristup informacijama o postupcima PUO i OPUO putem službene mrežne stranice MINGOR-a ili drugog nadležnog tijela koje provodi postupak (MINGOR, 2021; UNECE 2021). U postupcima PUO javnost može tijekom informiranja i sudjelovanja pisano komentirati, a na javnoj raspravi i usmeno. Informacije o ovim postupcima objavljuju se na mrežnim stranicama nadležnog tijela i u dnevnom tisku. U postupcima

OPUO informacije su omogućene na službenim mrežnim stranicama tijela nadležnog za provođenje postupka (regionalna samouprava, Ministarstvo).

U Hrvatskoj, kao i u ostatku EU-a, zamjetan je razvoj korištenja elektroničkih medija za sudjelovanje javnosti što je svakako poželjna modernizacija (MINGOR, 2021; UNECE 2021). Međutim, praksa je u Hrvatskoj takva da tijela koja provode postupke najčešće informaciju ne daju drugim načinima informiranja, koji su u velikom broju slučajeva primjereniji s obzirom na lokalnu zajednicu ili građanina pojedinca, a to je osobito primjetno u OPUO postupcima. Stoga se često dogodi da informacija o pojedinom zahvatu u nekoj općini u kojoj većina stanovništva nije informatički pismena (ponajviše u ruralnim naseljima u kojima obitava starije stanovništvo) bude objavljena isključivo na službenim mrežnim stranicama nadležnog tijela. K tome, objava često bude oblikovana tako da ju nije jednostavno pronaći prosječno pismenim osobama, iako Zakon o zaštiti okoliša (NN 80/13, 153/13, 78/15, 12/18, 118/18) nalaže da se informacija objavi na „prikladan način“.

U pojedinim se slučajevima u okviru digitalnog sudjelovanja informacija o određenim zahvatima i njoj priloženi dokumenti ne objave na mrežnim stranicama općine ili grada na čijem se području zahvat planira. Samim time smanjuje se potencijalni broj sudionika, odnosno zainteresirane javnosti. Pri svakom pojedinačnom postupanju, ovisno o lokaciji i značaju zahvata te stanovništvu na koje on utječe, potrebno je na najprikladniji način učiniti dostupnim relevantne informacije (npr. oglašavanjem u tisku, različitim elektroničkim medijima, na odgovarajućim oglasnim pločama, službenim stranicama gradova i županija te izdavanjem pisanih materijala) i time omogućiti korištenje prava na sudjelovanje javnosti u skladu s ciljevima Aarhuške konvencije.

Problematičnost dostupnosti i preglednosti informacija uviđa većina intervjuiranih predstavnika NVO-ova te smatraju kako informacije o postupcima trebaju biti jednostavnije. Predstavnik/ica jedne od udruga, s istaknutim djelovanjem na području promicanja sudjelovanja javnosti, iznosi sljedeće:

“Čak i nama koji se time bavimo teško je – podatke na stranici županije teško je pretraživati. Dosta je stručno pisano – kako bi ljudi prosječnog obrazovanja mogli razumjeti postupak i sadržaj zahvata? Potrebno je pojednostaviti, održavati javne rasprave.“

U Izvješću Hrvatske (MINGOR, 2021) navodi se da je u pogledu članka 6., stavka 7. Konvencije omogućeno digitalno sudjelovanje u okviru nacionalnog portala e-Savjetovanje nakon čega se u roku od mjesec dana objavljuje izvješće o savjetovanju. Međutim, ovakva vrsta savjetovanja nije osigurana za PUO i OPUO postupke, već za sudjelovanje u donošenju propisa, iako bi takav portal bio preporučljiv i za postupke procjene utjecaja na okoliš.

S druge strane, pojedine države, poput Portugala, stvorile su jedinstvenu mrežnu stranicu s dostupnim informacijama o postupcima koji uključuju sudjelovanje javnosti uz mogućnost digitalnog sudjelovanja (vidi: <https://participa.pt>). U Francuskoj su pristupi informacijama o zahvatima u okolišu i mogućnost sudjelovanja raspršeni na više mrežnih stranica. Uvidom u francusku mrežnu stranicu s podacima o aktualnim i dovršenim postupcima procjene utjecaja na okoliš (vidi: <https://www.projets-environnement.gouv.fr/pages/home/>) primijećena je jednostavnost pri filtriranju i pronalaženju zahvata uz pomoć interaktivne mape cijele države. Zahvati se mogu filtrirati na otvorene/zatvorene te na različita tematska područja: okoliš, urbanizam, energija, industrija i dr.

Autori ovog rada smatraju kako je ovakav pristup progresivniji negoli aktualna mrežna stranica MINGOR-a. Kombinacija interaktivne mape s pojednostavljenim izbornikom uz pružanje mogućnosti sudjelovanja na istoj mrežnoj stranici zajamčila bi jednostavnost i djelotvornost sudjelovanja javnosti, kao i pristupa informacijama o svim pokrenutim postupcima i planiranim zahvatima u državi.

UNECE Izvješće (UNECE, 2021) navodi određene primjere diseminacije informacija o postupcima: u Austriji, Agencija za okoliš prikuplja glavne informacije o postupcima procjene utjecaja na okoliš i postavlja ih na internet; u Irskoj i Slovačkoj postoji izravna prezentacija konačne odluke sudionicima; u Rumunjskoj vlasnik projekta mora objaviti odluku u lokalnim i nacionalnim časopisima, a tijela za zaštitu okoliša moraju je objaviti na svojoj mrežnoj stranici.

U Hrvatskoj (MINGOR, 2021), u odnosu na članak 6. stavak 5. Konvencije (NN 01/07), ne navode se mjere poticanja mogućih podnositelja zahtjeva na određivanje zainteresirane javnosti, odnosno na otpočinjanje razgovora i na pružanje pravovremenih informacija o postupcima. Latvija u tom pogledu spominje stvaranje popisa potencijalno zainteresiranih nevladinih organizacija, što im omogućuje zaprimanje pojedinačnih obavijesti o novim prijedlozima u sferi njihovog interesa, a slične postupke uvodi i Češka (UNECE, 2021). Slovensko zakonodavstvo uvodi pojmove *šira javnost* i *zainteresirana javnost*. Potonji uključuje stranke sa statusom *pomoćnih sudionika* u donošenju odluka koje su o postupku obaviještene izravno, dok se šira javnost obavještava javnim obavijestima.

Svaka stranka dužna je pobrinuti se da konačna odluka uzima u obzir ishod sudjelovanja javnosti u skladu s člankom 6., stavkom 8. Konvencije. Manje od polovice stranaka izvjestile su o obvezi tijela koje donosi odluke da uzme u obzir rezultate javnog savjetovanja (UNECE, 2021). Među onima koje jesu, Latvija izvještava kako njihovo zakonodavstvo zahtijeva da javna tijela u procesima donošenja odluka ocjenjuju javno mnijenje i protumjere individualnih prava i interesa u odnosu na javne dobitke i gubitke, imajući na umu načela održivog razvoja, nakon čega vlast može obvezati predlagatelja da izmijeni predložene aktivnosti s obzirom na javno mnijenje (UNECE, 2021). Nastavno na navedeno, u svrhu postizanja većeg konsenzusa oko konačne odluke, uputno je provoditi javne statistike o sudjelovanju javnosti u pojedinim postupcima, izrađivati detaljizirana izvješća o sudjelovanju te osigurati ocjenjivanje različitih sfera interesa.

3.4. Kvaliteta analitičke podloge za sudjelovanje

Predstavnici ekoloških NVO-ova u intervjuima ističu zastarjele ili netočne podatke unutar elaborata / studija utjecaja na okoliš (dalje: SUO) i neprocjenjivanje kumulativnog učinka predmetnog projekta s već postojećim i planiranim projektima na lokalitetu provedbe kao ponavljajuće nedostatke brojnih postupaka. Intervjuirani predstavnici organizacija smatraju kako je izazov u provedbi postupaka procjene utjecaja na okoliš nepostojanje ulazne baze podataka o sastavnicama okoliša koja je aktualna i iskoristiva, već se pri izradi elaborata i SUO-ova učestalo koriste zastarjeli podatci, a rijetko utvrđuju nulta stanja.

Hrvatska je osigurala dodatno sudjelovanje javnosti u fazi nacрта odluke o procjeni utjecaja na okoliš prije njenog donošenja, što je progresivan korak u odnosu na druge države. U pogledu objave dokumenata iz postupka, razvidno je da se na mrežnim stranicama tijela koje objavljuje dokumentaciju vezanu za okolišne postupke, ne objavljuju i izmjene/dopune dokumenata iz postupka. SUO često bude mijenjan ovisno o uputama povjerenstva i/ili traženjima stručnih tijela, odnosno na temelju primjedbi građana. Međutim, izmijenjene verzije dokumenata ne objavljuju se uvijek pojedinačno na mrežnim stranicama što javnosti onemogućuje jednostavan pristup svim

informacijama važnima za odluku o sudjelovanju i pokretanju spora u konkretnom predmetu. Isto se odnosi i na potrebu objave obavijesti, mišljenja stručnjaka, priopćenja o utjecaju na okoliš, potvrda i drugih dokumenata koje izdaju o stručna tijela u postupku. Pristup takvim dokumentima unutar postupaka utjecao bi na povećanje povjerenja javnosti u opravdanost krajnje odluke što mnoge države već prakticiraju (UNECE, 2021).

Također, važan činitelj kvalitete korištenih analitičkih podloga za sudjelovanje u PUO postupcima vrijeme je trajanja javne rasprave. Prosječno vrijeme za sudjelovanje javnosti u EU-u je 30 dana, kao i u Hrvatskoj. No, rok od 30 dana za složene zahvate, koji uključuju provođenje procjene utjecaja zahvata na okoliš, učestalo ne ostavlja dovoljno vremena za pripremu analitičkih podloga i djelotvorno sudjelovanje u skladu s člankom 6., stavkom 3. Aarhuške konvencije (NN 01/07). Naime, većina okolišnih organizacija unutar provedenog istraživanja navela je da vrlo često angažiraju vanjske stručnjake kada ekspertiza udruge nije dovoljna te kako je za takve oblike sudjelovanja potrebno izvjesno vrijeme za proučavanje problema i pribavljanje podataka.

3.5. Manipulacija procedurom PUO/OPUO postupaka

Na kraju, važna skupina činitelja (ne)uspješnosti integritet je same procedure kojom se u praksi odvija PUO/OPUO postupak. Prema iskustvima intervjuiranih predstavnika NVO-ova, ali i izvješću EEB-a (EEB, 2019), u ovu skupinu činitelja spada fragmentiranje zahvata na manje projekte kako bi se izbjegle znatnije implikacije na okoliš (*salami slicing*) i naknadno provođenje postupaka procjene utjecaja na okoliš, odnosno neprovođenje postupaka prije izvođenja zahvata, već nakon djelomično ili u potpunosti izvedenog zahvata.

Neprovođenje ili naknadno provođenje PUO/OPUO postupaka omogućeno je odredbom članka 240. ZOZO-a (NN 80/13, 153/13, 78/15, 12/18, 118/18) koja daje ovlast inspektorima zaštite okoliša da nareda naknadno izrađivanje elaborata ili studije. Ovo se osobito primjećuje kod ilegalnih zahvata nasipavanja obale, u kojima se, zahvaljujući rješenju inspektora, zahvat proglasi prihvatljivim za okoliš nakon što je već izveden, bez obzira na to što se u takvom slučaju ne može ispitati referentno stanje okoliša, pa tako ni procijeniti mogući utjecaj zahvata na okoliš. Navedeno ovlaštenje inspektora u suprotnosti je s načelom predostrožnosti zaštite okoliša propisanog člankom 10. ZOZO-a (NN 80/13, 153/13, 78/15, 12/18, 118/18) i EU zakonodavstvom.

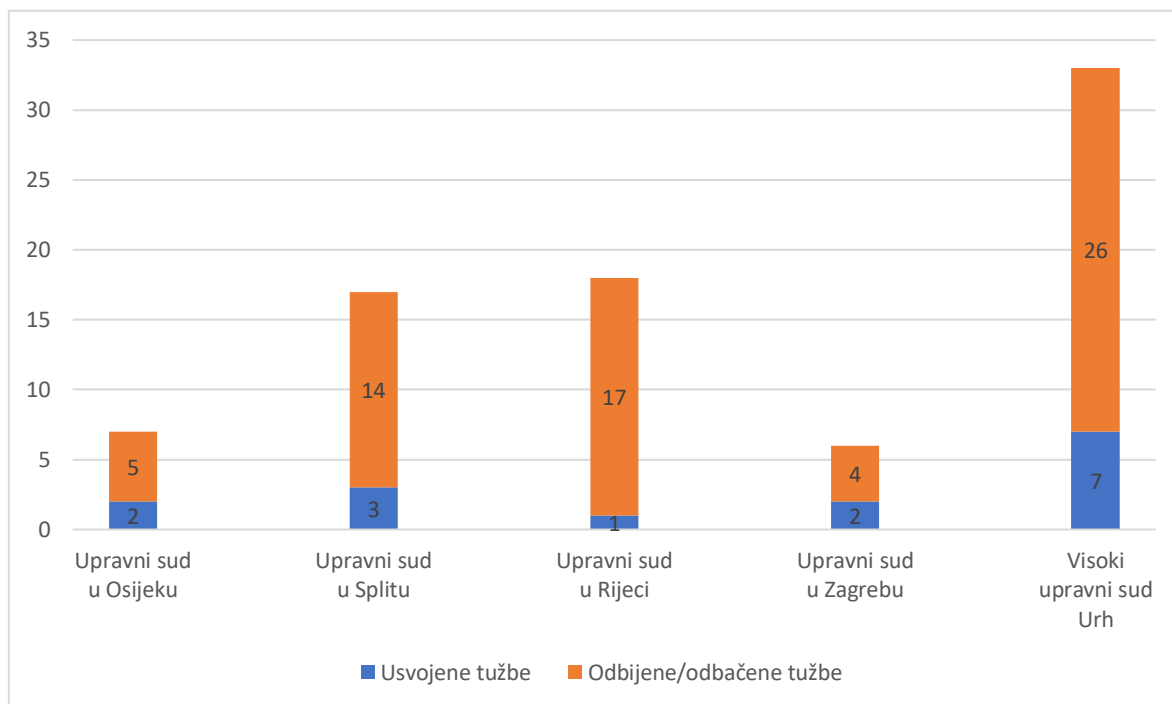
4. ANALIZA KORIŠTENJA INSTITUTA PRISTUPA PRAVOSUDU

Aarhuška konvencija (NN 01/07) člankom 9. propisuje pravo zainteresirane javnosti na ocjenu pred sudom i osporavanje odluke javne vlasti radi dokazivanja povrede prava vezanih za propise iz okoliša i druge propise. Time se osigurava primjena prvih dvaju stupova Aarhuške konvencije. Pristup pravosuđu u okolišnim pitanjima transponiran je člancima 167. – 172. ZOZO-a (NN 80/13, 153/13, 78/15, 12/18, 118/18) koji za aktivnu legitimaciju nalažu dovoljan interes i povredu prava. Za nevladine udruge pravni interes presumira se uz uvjete određene člankom 167., stavkom 2. ZOZO-a (NN 80/13, 153/13, 78/15, 12/18, 118/18).

4.1. Statistika okolišnih sporova od 2018. do 2022.

Pregled presuda upravnih sudova RH i Visokog upravnog suda RH donesenih od 2018. do 2021. pokazuje kako je u tom razdoblju ukupno dovršeno 80 sporova od kojih je 15, odnosno 18 %, okončano usvajanjem tužbenog zahtjeva. U odnosu na omjer usvojenih i odbijenih/odbačenih tužbi ističe se Upravni sud u Rijeci s 94 % sporova dovršenih

odbijajućom presudom ili odbacujućim rješenjem. Najmanje je upravnih sporova vođeno pred Upravnim sudom u Osijeku i Upravnim sudom u Zagrebu.



Slika 3. Dijagram s prikazom dovršenih upravnih sporova od 2018. do 2021. pred upravnim sudovima RH

U pogledu stranaka spora, 61 spor (76 %) pokrenule su udruge, građani i/ili jedinice lokalne i regionalne samouprave (dalje: JL(R)PS), a 19 (23 %) investitori, odnosno trgovačka društva. Pred VUSRH-om u razmatranom razdoblju pokrenuta su 33 spora od kojih su 27 pokrenule udruge, građani, JL(R)PS-ovi, a šest investitori, odnosno trgovačka društva. Pri tome, svih sedam usvojenih tužbi pred VUSRH-om podnijele su udruge, građani i/ili JL(R)PS što ukazuje na veću sklonost navedenih za korištenjem žalbenih lijekova pred VUSRH-om i veću sklonost prihvatanju tužbi navedenih tužitelja.

Iz presuda upravnih sudova u Zagrebu i Osijeku može se uočiti da su u svim usvojenim tužbama tužitelji bili investitori. Pred Upravnim sudom u Splitu od 2018. do 2020. nije bilo sporova koje su pokretali investitori, a taj se trend počinje mijenjati nakon 2020. kada su, od devet ukupno dovršenih sporova, šest sporova pokrenula trgovačka društva.

Razmatrajući dostupne podatke o dovršenim sporovima do 2018. godine, razvidno je da je broj sporova u porastu nakon 2018. Ipak, podaci ovog istraživanja prikazuju isključivo dovršene predmete. Sudovi nisu pružili evidenciju o okolišnim sporovima trenutno u tijeku (a to su oni pretežito pokrenuti kroz 2021. i 2022.) stoga se ne može utvrditi je li aktualni trend pokretanja sporova zaista u padu, kako to tvrde ispitane udruge, a što će biti moguće procijeniti tek u nadolazećim godinama. VUSRH, međutim, navodi kako su od 1. siječnja do 25. travnja 2022. zaprimljena 24 predmeta radi zaštite okoliša, što upućuje na rastući trend.

4.2. Odgodni učinak tužbe

U pogledu procesnog instituta odgodnog učinka tužbe iz članka 26., stavka 2. ZUS-a (NN 20/10, 143/12, 152/14, 94/16, 29/17, 110/21), pregled presuda upravnih sudova RH i Visokog upravnog suda RH pokazao je kako se on gotovo nikad ne dosuđuje u okolišnim predmetima, što je u suprotnosti s propisanim načelom predostrožnosti. Suci običavaju

odlučiti o prijedlogu za odgovornim učinkom u odluci o glavnoj stvari, odnosno u trenutku kada donose konačnu odluku o usvajanju ili odbijanju tužbe. Odgađanje odlučivanja o prijedlogu za odgovornim učinkom dovodi do situacije u kojoj je o njemu bespredmetno raspravljati u kasnijoj fazi – fazi donošenja odluke o glavnoj stvari.

Rješenja donesena u PUO postupcima izvršna su, odnosno na temelju njih dalje se mogu ishoditi dozvole za gradnju unatoč postojanju upravnog spora. Ovo u praksi znači da je vrlo često moguće da nositelj zahvata ishoduje dozvole za gradnju prije nego što je nadležni upravni sud odlučio o zahtjevu za poništenjem rješenja donesenog u PUO/OPUO postupku. Ako upravni sud u takvoj situaciji konačno odluči da se rješenje poništava i predmet vraća na ponovni postupak, to ne predstavlja automatski poništavanje lokacijske/građevinske dozvole za čije je izdavanje potrebno priložiti važeće rješenje doneseno u okolišnom postupku (PUO/OPUO). To također ne znači ni da se s izgradnjom zahvata u naravi zastaje. Takvim pravnim propustom kompromitira se pravna sigurnost i povjerenje građana u pristup pravosuđu u okolišnim pitanjima.

4.3. Činitelji uspješnosti NVO-ova u sudskim sporovima u Hrvatskoj

Procjena vlastite uspješnosti NVO-ova indicira izuzetno nisku učinkovitost djelovanja NVO-ova u sudskim sporovima od 2018. Najveći dio sugovornika istaknuo je kako udruge uopće nisu pristupale pokretanju sporova zbog nepovjerenja u pozitivan ishod. Sugovornici iz udruga koje su pokretale sporove ističu kako su oni bili gotovo u potpunosti neuspješni. S druge strane, NVO-ovi ističu uporabu pravnih alata Europske unije kao što je prigovor Europskoj komisiji:

„Complaint Europskoj komisiji – rezultat zamora besmislom pokretanja upravnog spora. Sud ne ulazi u meritum, niti u korištenje dokaza, kamoli izvođenje dokaza vještačenjem. Poklanja se povjerenje stručnim izrađivačima studije i povjerenstvu ministarstva. Skoro svi pokrenuti sporovi u osnovi su korišteni za zagovaranje, s obzirom na to da smo bili uvjereni da ćemo izgubiti sporove.“

Udruge pretežito ističu da problematičnost sporova leži u neprihvatanju dokaza i saslušanja svjedoka, odnosno u poklanjanju povjerenja izrađivačima studije bez ispitivanja ovlaštenika studije. Sudovi ne vode sporove kao sporove pune jurisdikcije, tj. ne utvrđuju činjenično stanje. Udruge smatraju kako sudska praksa nije ujednačena u RH te da se pravo EU-a dovoljno ne primjenjuje. Primjerice, sudovi veoma rijetko upućuju predmete na postupak prethodnog odlučivanja pred Sudom EU-a. U osnovi, udruge su stava kako su najprihvaćenije primjedbe koje se odnose na procesne nedostatke.

Dvije udruge ističu da je izmjena ZUS-a (NN 20/10, 143/12, 152/14, 94/16, 29/17, 110/21) o troškovima financiranja sudjelovanja u sporovima iz 2017. smanjila broj pokrenutih upravnih sporova. Izmjena članka 79. ZUS-a (NN 20/10, 143/12, 152/14, 94/16, 29/17, 110/21) uvela je novinu prema kojoj stranka koja izgubi spor u cijelosti snosi sve troškove spora. Prije ove novine svaka stranka u upravnom sporu snosila je svoj trošak, bez obzira na uspjeh koji je postigla u sporu. Međutim, u sporove se gotovo uvijek uključuju zainteresirane osobe, investitori zahvata koji angažiraju vlastite odvjetnike. Tako za neuspješne tužitelje mogu proizaći troškovi od preko 20 tisuća kuna zbog čega NVO-ovi moraju odvagati rizike gubitka spora i korisnost njegovog pokretanja, premda članak 9., stavak 4. Aarhuške konvencije (NN 01/07) nalaže da sporovi trebaju biti pravični, jednakopravni, pravodobni i ne toliko skupi da bi se time sprječavalo njihovo provođenje.

Pri tome, sporovi su vrlo često dugotrajni, osobito pred VUSRH-om koji do 2020. traju prosječno deset mjeseci, dok se, ocjenjujući odluke od 2020. do 2022., trajanje spora dodatno produžuje na prosjek od 16 mjeseci. Određeni sporovi vodili su se preko dvije ili tri godine (Vidi: Presuda VUSRH posl. broj Usž-859-2019 od 14. listopada 2021. (VUSRH, 2021), Presuda VUSRH, posl. br. Usž-1199-2020 od 25. veljače 2022. (VUSRH, 2022)). Kumulativno s drugim izazovima, navedeno utječe na opće stajalište udruga o nedjelotvornosti pristupa pravosuđu u okolišnim pitanjima u RH. Navodi udruga indiciraju mogućnost smanjenog broja upravnih sporova koje pokreću NVO-ovi u budućnosti.

Za prepreke, odnosno otegotne okolnosti unutarnje naravi, uglavnom je istaknut nedostatak financijskih sredstava. Razlog zbog kojih organizacije civilnog društva moraju odvagnuti mogu li riskirati ovakve troškove činjenica je da redovnim financiranjem, koje u osnovi počiva na povlačenju novca iz EU fondova kojima upravljaju nacionalna provedbena tijela, često nije dozvoljeno pravdati troškove sudskih postupaka (sudskih pristojbi i troškova odvjetničkih usluga). Rijetke organizacije imaju dovoljno drugih izvora financiranja da bi mogle sigurno inicirati sve sporove koje smatraju svrsishodnim za razvoj prava okoliša i veću učinkovitost primjene okolišnog zakonodavstva.

Sugovornici smatraju kako je za djelotvoran pristup pravosuđu potrebno angažirati vanjske stručnjake iz određenog područja, uključujući pravnike i odvjetnike koji su iskusni u okolišnim predmetima. Bez takvog oblika podrške gotovo je nemoguće izazivati odluku ministarstva. Jedna od udruga predlaže intenzivniju suradnju udruga koje zapošljavaju pravnike s udrugama koje nemaju zaposlenog pravnika te strateško i skupno pokretanje sporova.

4.4. Osvrt na činitelje uspješnosti u europskoj praksi

Glavni fokus stranaka potpisnica Aarhuške konvencije u izvješćima o provedbi Aarhuške konvencije jest položaj NVO-ova u pogledu pristupa pravosuđu te postojanje financijskih prepreka i primjeni alata za njihovo ublažavanje (UNECE, 2021). U nekim državama postoji načelo *gubitnik plaća* kao i u Hrvatskoj, ali u Grčkoj je, primjerice, ono ograničeno, a u Poljskoj funkcionira samo ako je pobjednik strana koja je osporila odluku. U pogledu odgodnog učinka, postoji primjer Švicarske u kojoj samo pokretanje spora pred upravnim sudom ima odgodni učinak.

Austrija se u svom izvještaju osvrće na mehanizme dobrovoljnog i strukturiranog posredovanja u postupcima odlučivanja o okolišu (UNECE, 2021). Javne vlasti imaju pravo prekinuti postupke odobravanja na zahtjev prijavitelja projekta kako bi se omogućio postupak posredovanja u svrhu rješavanja spornih pitanja i došlo do zajedničkog rješenja. Takav je institut sličan medijaciji (mirenju) koja postoji u hrvatskom zakonodavstvu i po uzoru je na austrijski model uputno omogućiti češću primjenu ovakvog modela rješavanja sporova. Medijacija bi osigurala prijemчивost na stajališta javnosti i mirnije, ugodnije rješenje upravnih sporova s predmetom zaštite okoliša čije stranke teže istim ciljevima – zaštitu javnog interesa te postizanju ravnoteže između ekonomskog i ekološkog aspekta.

U Hrvatskoj ZOZO (NN 80/13, 153/13, 78/15, 12/18, 118/18) određuje postojanje interesa za stjecanje aktivne legitimacije u okolišnim pitanjima, no aktivna legitimacija se okolišnim udrugama priznaje šire u odnosu na uređenje istog instituta u drugim državama. Za priznavanje statusa stranke, tako, dostatna je i sumnja da joj je pojedinačnom odlukom povrijeđeno pravo ili pravni interes sukladno člancima 168. i 169. ZOZO-a (NN 80/13, 153/13, 78/15, 12/18, 118/18) i ekstenzivno je tumače i sudovi (vidi: Presuda VUSRH-a posl. br. UsI-1680/13-45 od 6. srpnja 2015. (VUSRH, 2015)). S druge

strane, u Sloveniji i Portugalu sustav funkcionira po principu *actio popularis*, što znači da se status automatski priznaje svima.

Iako države pokušavaju poboljšati provedbu, još uvijek postoje mnoga pitanja koja traže unaprjeđenja u svim državama EU-a (UNECE, 2021): dosljedna sudska praksa o zaštiti okoliša i pristupu pravosuđu, predugo trajanje sporova, troškovi pristupa pravosuđu (visoki troškovi vještaka, naknada troškova suprotne strane, sudske pristojbe), nedostatak jasnih pravila o aktivnoj legitimaciji i razina educiranosti sudaca i pravnih stručnjaka o zaštiti okoliša i okolišnom pravu.

5. ZAKLJUČAK

Analiza primjene instituta sudjelovanja javnosti i pristupa pravosuđu u okolišnim pitanjima u RH, te usporedna analiza korištenja oba instituta u drugim državama članicama EU-a, upućuje na to da su navedeni pravni alati još uvijek u razvoju u Hrvatskoj, jednako kao i u drugim državama potpisnicama Konvencije. Hrvatska značajno ne ograničava aktivnu legitimaciju okolišnih udruga te analiza pokazuje da sudjelovanje javnosti do 2020. u kvantitativnom pogledu nije u opadanju. Također, u odnosu na razdoblje prije 2018., i broj pokrenutih sporova je u porastu. No, s druge strane, učinak sudjelovanja javnosti i pristupa pravosuđu još nije na visokoj razini. NVO-ovi s iskustvom djelovanja u zaštiti okoliša izražavaju sumnju u djelotvornost korištenja ovih alata i indiciraju smanjeno korištenje ovih instituta u sadašnjosti i budućnosti.

Demokracija u zaštiti okoliša ključni je dio svake kvalitetne odluke i osiguravatelj njezine primjenjivosti na terenu. *Rationale* sudjelovanja javnosti u procesnom smislu leži u pravu građana na oblikovanje okoliša u sredini u kojoj žive, a djelotvorno provedeno sudjelovanje može doprinijeti kvaliteti sadržaja odluke. Sažimajući bitne stavke analize, u nastavku se sistematiziraju smjernice za poboljšanje provedbe članka 6. i članka 9. Aarhuške konvencije i u cilju postizanja veće inkluzivnosti, a time i legitimiteta odluke:

1. objavljivati detaljizirana izvješća o sudjelovanju javnosti u postupcima procjene utjecaja na okoliš (PUO/OPUO) iz kojih će biti jasan adresat primjedbi, primjedba i obrazloženje prihvatanja/neprihvatanja primjedbe;
2. osigurati djelotvoran model sudjelovanja zainteresirane javnosti putem objava o postupcima PUO/OPUO u dnevnom listu, oglasnim pločama, mrežnim stranicama ili izravnom elektroničkom komunikacijom s ekološkim NVO-ovima;
3. produljiti rok za sudjelovanje javnosti u postupcima procjene utjecaja na okoliš na 60 dana;
4. omogućiti pravovremen pristup svim dokumentima unutar PUO/OPUO postupaka (izmijenjene verzije studija i elaborata, mišljenja i potvrde stručnih tijela, zapisnici sjednica povjerenstva i dr.);
5. kreirati jedinstveno mrežno mjesto u obliku interaktivne mape s dostupnim informacijama o svim OPUO/PUO postupcima i putem kojeg će biti omogućeno jednostavno digitalno sudjelovanje;
6. omogućiti aktivnu legitimaciju zainteresiranoj javnosti u postupcima izdavanja lokacijskih/građevinskih dozvola za zahvate za koje je obavezan OPUO/PUO postupak;
7. kontinuirano provoditi evidenciju i detaljnu statistiku o sudjelovanju javnosti i pristupu pravosuđu u okolišnim pitanjima koja će biti javno dostupna;

8. utvrditi prepreke pri provedbi instituta sudjelovanja javnosti i pristupa pravosuđu i načine njihovog rješavanja pri izradi izvješća o provedbi Aarhuške konvencije;
9. javno objavljivati presude u predmetima radi zaštite okoliša;
10. promicati načelo jednake pozicije stranaka u predlaganju i izvođenju dokaza u upravnim sporovima radi zaštite okoliša;
11. pravovremeno u prvom stupnju upravnog spora odlučiti o prijedlogu za odgovornim učinkom tužbe;
12. prioritizirati načelo hitnosti u okolišnim predmetima;
13. usmjeravati stranke prema medijaciji i mirnom rješenju spora;
14. anulirati zakonske odredbe o ovlaštenju inspektora da naredi naknadno provođenje OPUO/PUO postupka;
15. poticati i provoditi istraživačke aktivnosti te povećati bazu znanstvenih podataka o okolišu i prirodi te osigurati njezinu dostupnost;
16. u natjecajima za financijska sredstva namijenjena ekološkim NVO-ovima omogućiti pravdanje troškova sudskih postupaka kao troškova provedbe projekata;
17. provoditi strateško i organizirano sudjelovanje ekoloških NVO-ova u postupcima i sudskim sporovima radi zaštite okoliša.

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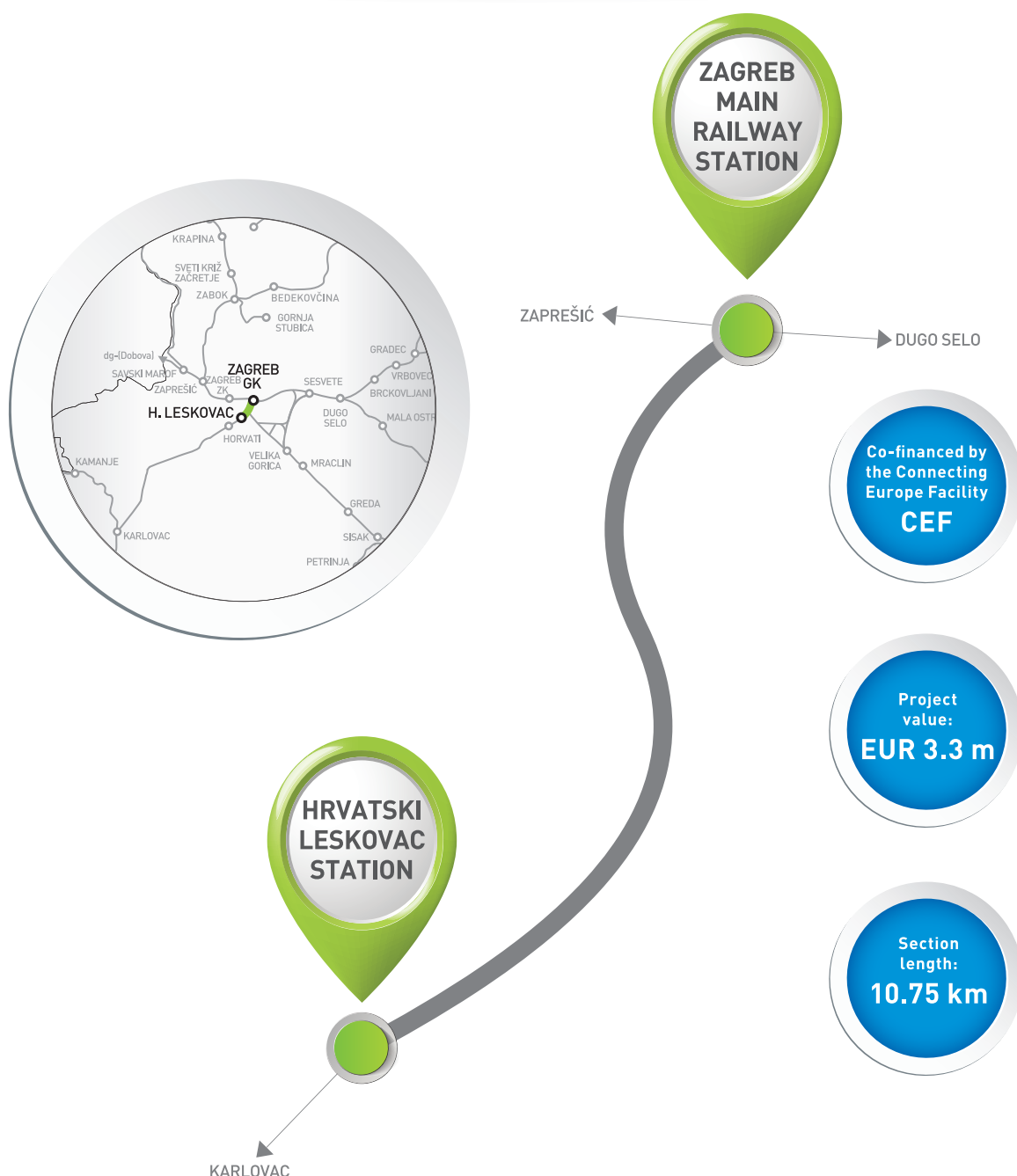
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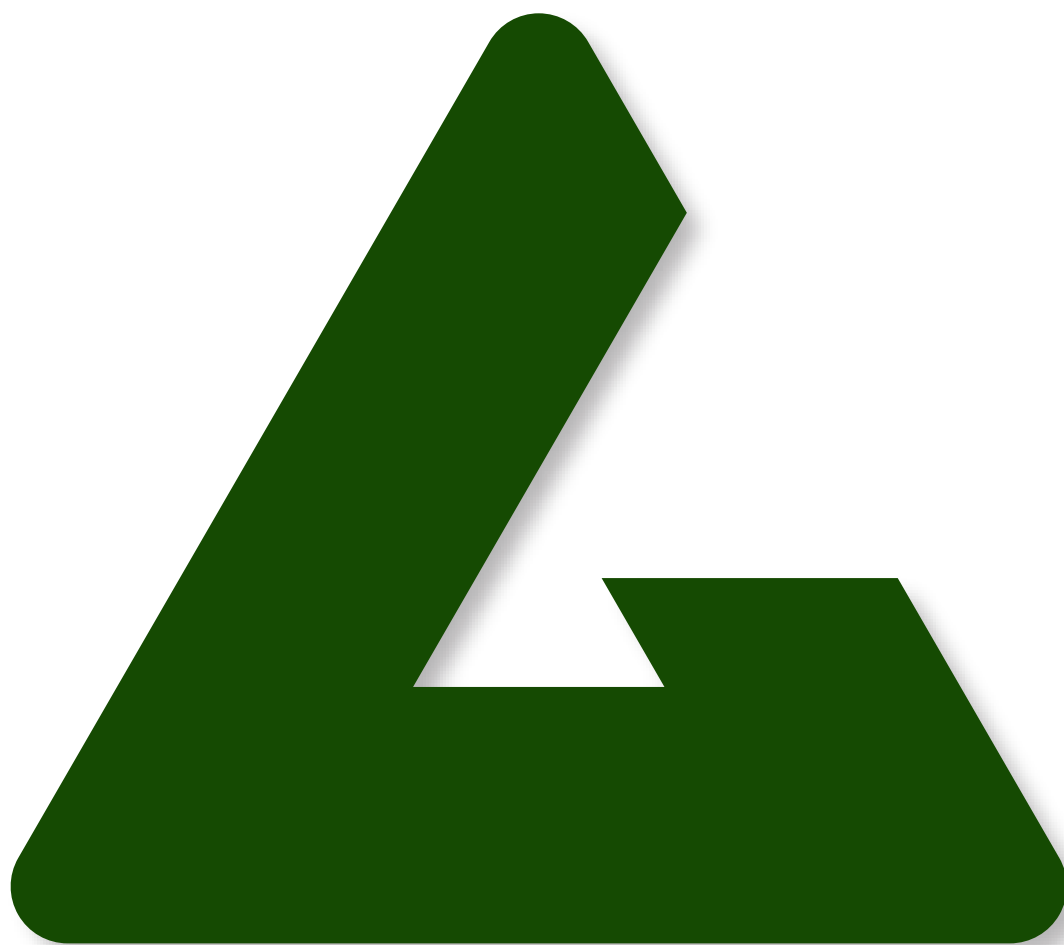


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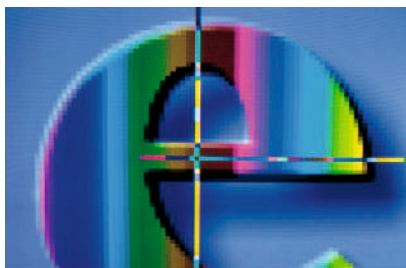
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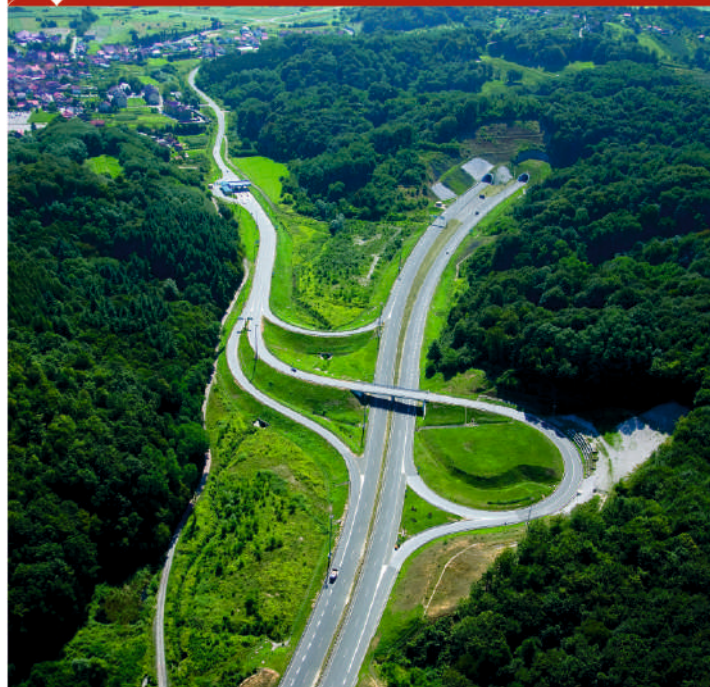
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