

Report on the Green Infrastructure and Spatial Planning in the Republic of North Macedonia

Project:
**“Improving connectivity
on the Balkan Green Belt”**

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CONTENTS

List of figures	5
Acronyms	6
Abstract	7
Abstrakt	7
Апстракт	7
Summary	9
Introduction	11
Green Infrastructure and Ecological Connectivity	14
Green Infrastructure and Spatial Planning	16
Analysis of the Relevant National Legislation Regarding Spatial Planning	18
Law on Nature Protection	18
Law on Environment	19
Law on Agricultural Land	22
Law on Agriculture and Rural Development	22
Law on Urban Greenery	22
Law on Urban Planning	23
Law on Public Roads	23
Law on Railway System	23
Law on Forests	24
Law on Hunting	24
Law on Waters	24
Strategic Planning Documents for Spatial Planning	25
Spatial Plan of the Republic of North Macedonia	25
Other Relevant Documents/Initiatives/Strategic Documents Related to Spatial Planning	27
National Strategy for Protection of the Environment (2017 – 2027)	27
National Biodiversity Strategy with Action Plan (NBSWAP) for the period of 2018-2023	27
National Transport Strategy (2018-2030)	27
National Strategy for Sustainable Development in North Macedonia (2009 -2030)	28

Strategy for Regional Development of Republic of North Macedonia (2021-2031)	28
Development of the “Emerald” Network in North Macedonia	29
Natura 2000	29
National Ecological Network in the Republic of North Macedonia (MAK-NEN)	30
Important Bird and Biodiversity Areas (IBA)	32
Balkan Green Belt	32
Study for the Development of Green Infrastructure and the Status of Ecological Connectivity in Albania, Bosnia and Hercegovina, Montenegro, Serbia, and North Macedonia	33
UNESCO	33
Ramsar Areas	34
Implementation of the Relevant National Legislation by Competent Institutions in the RNM	35
Comparison of National and European Legislation	37
Planning and Implementation of Infrastructure Projects in the Republic of North Macedonia	39
Good Practices Applied During Road Construction in the Republic of North Macedonia	41
Conclusions and Recommendations	42
General recommendations:	42
Recommendations for activities on a national, regional, and local level:	42
Promotion of Networking, Monitoring, and Researching:	42
Bibliography	44

LIST OF FIGURES

Figure 1. Protected areas are important parts of the Green Infrastructure – Mavrovo National Park, North Macedonia (source: MES)	9
Figure 2. Green Infrastructure and its elements (source: European Commission, 2013:8)	11
Figure 3. Green passage for wild animals (source: MES)	15
Figure 4. Diagram of the existing types of planning documents in RNM	25
Figure 5. Area of Lower Bregalnica – potential future Natura2000 site (source: Bogoljub Sterijovski).....	29
Figure 6. Map of the National Ecological Network (MAK-NEN; source: MES)	31
Figure 7. View on the Balkan Green Belt	32
Figure 8. Ramsar Areas in North Macedonia, a. Ohrid Lake (source: Aleksandar Stojanov), b. Prespa Lake (source: Aleksandar Stojanov), c. Dojran Lake (source: MES)	34

ACRONYMS

AAP	German Federal Environment Ministry’s Advisory Assistance Program
AL	Albania
BfN	Federal Agency for Nature Conservation
BGB	Balkan Green Belt
CBD	Convention on Biological Diversity
EBRD	European Bank for Reconstruction and Development
ECNC	European Center for Nature Conservation
CMS	Convention on the Conservation of Migratory Species of Wild Animals
EEA	European Environmental Agency
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EU	European Union
GI	Green Infrastructure
IBA	Important Bird Area
IUCN	International Union for Conservation of Nature
KfW	Credit Institute for Reconstruction
LEAP	Local Environmental Action Plan
MAK-NEN	Macedonian Ecological Network
MES	Macedonian Ecological Society
MK	North Macedonia
MoEPP	Ministry of Environment and Physical Planning
NGO	Non-governmental Organization
NTS	National Transport Strategy
PE	Public Enterprise
PEEN	Pan-European Ecological Network
PTE	Public Transport Enterprise
RNM	Republic of North Macedonia
SEA	Strategic Environmental Assessment
UBA	German Environment Agency
UN	United Nations
WWF	World Wide Fund

ABSTRACT

To achieve a developed Balkan Green Belt (BGB) in Albania and North Macedonia with a secure connectivity as part of the Green Infrastructure (GI), both within and outside of protected areas, it is necessary to improve legislation and implementation of land use planning. However, the concept of GI is largely unknown among decision-makers responsible for landscape planning decisions in North Macedonia and not yet reflected in national legal frameworks and related processes. The current report compiles the analyses of relevant laws and practices in North Macedonia regarding GI and spatial planning. It aims to identify legal and institutional deficiencies and needs and draft recommendations for improvement, in accordance with the current requirements of relevant EU strategies and legislation. The inclusion of the concept of GI and connectivity in legislation will improve the approach to planning, projecting, and implementing infrastructure projects, initiatives, and activities with the aim of sustainable development and sustainable use of biodiversity.

ABSTRAKT

Um ein entwickeltes Grünes Band Balkan (BGB) in Albanien und Nordmazedonien mit einer gesicherten ökologischen Konnektivität als Teil der Grünen Infrastruktur (GI) sowohl innerhalb als auch außerhalb von Schutzgebieten zu erreichen, ist es notwendig, die Gesetzgebung und die Umsetzung der Landnutzungsplanung zu verbessern. Das Konzept der GI ist unter den für Landschaftsplanungsentscheidungen verantwortlichen Entscheidungsträgern in der Region jedoch bisher weitestgehend unbekannt und spiegelt sich noch nicht in den jeweiligen nationalen Rechtsrahmen und damit verbundenen Prozessen wider. Der vorliegende Bericht fasst eine Analyse der relevanten Gesetze und Praktiken in Nordmazedonien in Bezug auf GI und Raumplanung zusammen. Er zielt darauf ab, rechtliche und institutionelle Defizite und Bedarfe zu identifizieren und Empfehlungen für Verbesserungen in Übereinstimmung mit den aktuellen Anforderungen der relevanten EU-Strategien und -Gesetzgebung zu entwickeln. Die Aufnahme des Konzepts von GI und ökologischer Konnektivität in die Gesetzgebung wird den Ansatz zur Planung, Projektierung und Umsetzung von Infrastrukturprojekten, Initiativen und Aktivitäten mit dem Ziel der nachhaltigen Entwicklung und Nutzung der biologischen Vielfalt verbessern.

АПСТРАКТ

За да се постигне развиен Балкански зелен појас (БЗП) во Албанија и Северна Македонија со осигурана поврзаност како дел од Зелена инфраструктура (ЗИ) во и надвор од границите на заштитени подрачја, неопходно е да се подобри законодавството и спроведување на планирањето на користење на земјиштето. Сепак, концептот на ЗИ е во голема мера непознат меѓу носителите на одлуки одговорни за планирање на просторот во Северна Македонија и сè уште не се рефлектира во националните правни рамки и

поврзаните процеси. Извештајот ги собира анализите на релевантните закони и практики во Северна Македонија во однос на ЗИ и просторно планирање. Во рамки на извештајот се идентификуваат легалните и институционални недостатоци и потреби и ќе се предложат нацрт препораки за подобрување, во согласност со тековните барања на релевантните стратегии и законодавство на ЕУ. Вклучувањето на концептот на ЗИ и поврзаноста во законодавството ќе го подобри пристапот кон планирање, проектирање и спроведување инфраструктурни проекти, иницијативи и активности, со цел да се постигне одржлив развој и одржливо користење на биолошката разновидност.

SUMMARY

The problems and challenges with the management and use of natural resources in recent decades have contributed significantly to raising awareness for sustainable use and preservation of biodiversity and ecosystems. It is becoming increasingly clear that ecosystem goods and services that nature provides to people are essential for maintaining individual and social wellbeing. Recognizing this link between healthy and functional ecosystems, ecosystem services, and human well-being entails taking responsibility for their protection, sustainable management, and planning.

The Green Infrastructure (GI) approach offers a way of combining and analysing this connection. Green Infrastructure is a network of natural and semi-natural areas, including land and water areas and other ecosystems, designed to deliver a wide range of ecosystem services. In addition to environmental functions, Green Infrastructure, as a planning tool, contributes to an increase in social and economic benefits, and through that it contributes to the sustainable and inclusive

integration of natural resources in the mosaic of an anthropogenically modified environment.

The lack of consensus among researchers and implementers of plans and policies on the concept and implementation approaches for GI often makes it difficult for urban and spatial planners and other professionals in the field to develop strong GI. To overcome the challenges in the practical implementation of GI, a comprehensive literature review was conducted to identify and prioritize Green Infrastructure planning principles that should be recognized/considered in spatial planning practices.

In the Republic of North Macedonia, the term and concept of GI has not yet been implemented in the existing legislation. Therefore, it can be stated that it is not practically applicable in the implementation of infrastructure projects, initiatives, and ideas. It is a new terminology and definition that needs to be developed, placed in the relevant strategic documents, laws, and plans so that it can further be applied appropriately.

Certain relevant documents can serve as a basis for the development of the concept



Figure 1. Protected areas are important parts of the Green Infrastructure – Mavrovo National Park, North Macedonia (source: MES).

of GI in RNM, such as the MAK-NEN national ecological network which is already identified/ set up and regulated in the Law on Nature Protection, but not in other hierarchically arranged documents (strategies, laws, plans). The existing Spatial Plan that is currently in effect was adopted in 2004 when the concept of GI did not exist. At the time of preparing this report, a new Spatial Plan is being worked on, which will take the concept of GI into account.

In this report a comprehensive literature review was conducted to produce expert knowledge and allow for the elaboration of recommendations and improvement of current national planning regulations and other important planning materials, such as initiatives and plans. First, eleven national laws are assessed: (Law on) Nature Protection, Environment, Agricultural Land, Agriculture and Rural Development, Urban Greenery, Urban Planning, Public Roads, Railway System, Forests, Hunting and Waters. Second,

the national Spatial Plan was analysed, and an overview of the development and the improvement of the newer version are presented. The new version of the Spatial Plan will take the concept of GI into account and it is currently under work at the time of this report. Third, this report analysed the use of GI in other relevant documents and initiatives, namely: National Strategy for Protection of the Environment, National Biodiversity Strategy, National Transport Strategy, National Strategy for Regional Development, Strategy for Regional Development, Development of the “Emerald” Network, Natura 2000, National Ecological Network, Important Bird and Biodiversity Areas, Balkan Green Belt, among other. Finally, this report gives recommendations and suggestions on good practices for the conceptualization, planning and implementation of GI in the context of North Macedonia but also more generally for other regions.

INTRODUCTION

The term “infrastructure” is defined in the Concise Oxford English Dictionary, 11th edition (Oxford University Press 2006) as “the basic physical and organizational structures and facilities needed for the operation of a society”. Amending the term “infrastructure” with the term “green” indicates the importance of green areas in the process of planning and implementation of infrastructure projects.

“Green Infrastructure” (GI) is a term that is used to describe the network of natural spaces and corridors in a certain area. Green infrastructure includes open spaces such as parks and gardens, forests, fields, land habitats, riparian and aquatic habitats, coastal habitats, walking and cycling paths, etc. Water ecosystems, also known as “blue infrastructure”, are also included in the all-encompassing term “Green Infrastructure”. In contrast to the most common “grey”

(man-made) infrastructure, GI promotes multifunctionality, which means that one land area can serve several functions and offer multiple benefits if its ecosystems are healthy (European Commission 2013; John et al. 2013).

More precisely, through the integrated conservation of areas under natural ecosystems during the planning and implementation processes of infrastructure projects, GI aims to maintain or enhance the capacity of ecosystems to provide ecosystem goods and services, a wide range of environmental and social benefits, facilitation of climate change adaptation and biodiversity protection (John et al. 2013, Ferreira et al. 2021).

Green Infrastructure offers attractive solutions to environmental, social, and economic issues, and as such should be fully integrated into various aspects of politics.

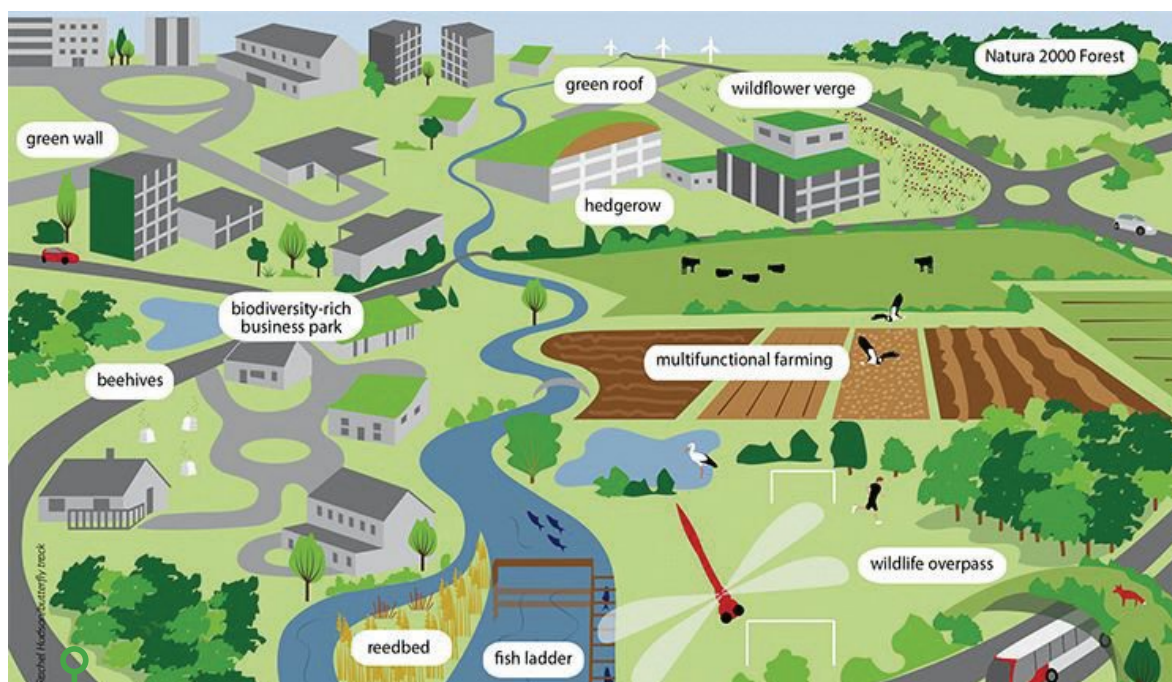


Figure 2. Green Infrastructure and its elements (source: European Commission, 2013:8)

GI consists of a wide variety of connected ecological elements that form an ecological network. A particularly important feature of ecological elements is functionality. They have to be more than simply “green space”. The form and spatial distribution of ecological elements can differ, from small linear features to fully functioning ecosystems, whose mutual connectivity ensures the unimpeded development of ecosystem functions and processes in urban, semi-urban, and rural areas, both inside and outside of protected areas. It should be emphasized that GI is designed to sustain and strengthen the potential for ecosystems to ensure benefits for human society (in the form of food, materials, clean water, clean air, climate regulation, flood prevention, pollination, recreation, etc.). GI also improves the urban population's access to the benefits of nature, i.e. ecosystem services, as they otherwise reside in areas with limited space for natural ecosystems, and the provision of ecosystem services primarily happens indirectly.

The concept of multifunctionality is also comprehensively described by the European Commission (European Commission, 2012). Their report is the first to describe the functions of GI in terms of 4 broad roles, namely:

- (1) protection of the state of ecosystems and biodiversity;
- (2) improvement of ecosystem functionality and promotion of ecosystem services;
- (3) promotion of social welfare and health; and
- (4) support for the development of a green economy, sustainable management of land and water ecosystems.

After this, Green Infrastructure features which support these roles are identified – for example:

- (1) ecological corridors, green roads, ecological cores, buffer areas;
- (2) sustainable management of agricul-

tural land which contributes to the protection of ecosystems and biodiversity;

- (3) revitalization of terrestrial, aquatic, wet and riparian habitats in order to improve the functioning of ecosystems and promote ecosystem services and
- (4) public parks, urban vegetation and lakes that positively impact societal wellbeing and health.

Based on the above, potential benefits provided by Green Infrastructure are as follows:

Ecological Benefits:

- (1) provision of clean water;
- (2) removal of pollutants from air and water;
- (3) improvement of pollination;
- (4) protection of the soil from erosion;
- (5) retention of rainwater;
- (6) increase of pest control;
- (7) improvement of land quality.

Social Benefits:

- (1) improved health;
- (2) creation of jobs;
- (3) improvement of the local economy;
- (4) more attractive, greener cities;
- (5) better quality of life and higher valuation of residencies;
- (6) more integrated transport and energy solutions and
- (7) strengthened possibilities for development of tourism and recreation.

Adaptation to climate change and benefits from mitigation measures:

- (1) mitigation of floods;
- (2) increased ecosystem resilience;
- (3) carbon storage (the increase of green areas contributes to increased

absorption of carbon dioxide (CO₂) in the process of photosynthesis and the consequent reduction of the amount of free carbon dioxide (CO₂); particularly important in the efforts to tackle global warming and to mitigate the effects of climate change);

- (4) decreasing the effects of the urban heat island and
- (5) disaster prevention (e.g. storms, forest fires, landslides).

Biodiversity Benefits:

- (1) improved wildlife habitats;

- (2) ecological corridors and
- (3) landscape permeability.

Rouse and Bunster-Ossa (2013) note the importance of GI for the three pillars of sustainability – the environment, economy, and balance.

Similarly, Civic and Sjuta (2014) state: “Nature-based green infrastructure solutions provide ecological, economic and social benefits, thus addressing the three crucial aspects of sustainable development”. Thus, the creation and maintenance of Green Infrastructure can be seen as critical to sustainability.

GREEN INFRASTRUCTURE AND ECOLOGICAL CONNECTIVITY

“Connectivity” is the degree to which a landscape facilitates or impedes the movements (of species) between habitats (Taylor et al., 1993).

The degree of connectivity between different ecosystems in a landscape, in terms of their components, spatial distribution and ecological functions affects the movement of species, the flow of matter and energy through different ecosystems in the landscape (CMS, 2020).

Ecological connectivity can be structural and/or functional (Hilty et al. 2020). Structural connectivity describes the physical presence, location, shape, and dimensions of the dwelling. Structural connectivity allows for an interpretation of the spatial relationships between habitats and ecosystems, such as physical distance between habitats of the same type. Functional connectivity refers to the ability of individuals or populations of a given species to move between habitats of the same type, which means it depends on the type and ability of organisms to move between the patches of a landscape, which in turn means it depends on the nature of the distance (how unfavourable the environment is between suitable habitats), the species (its ability to move/disperse), and ecological processes of interest.

Landscapes are a mosaic of anthropogenic and natural ecosystems shaped as a result of the long-term interaction between humans and nature. Intensive industrial and technological development and urbanization continuously contribute to the fragmentation of natural ecosystems and affect their capacity to support biodiversity and provide environmental services. In order to reduce the negative impacts of natural habitat fragmentation, conservationists working

in the field of environmental protection recommend increasing connectivity between habitats.

Preserving connectivity between habitats is essential for maintaining biological resilience, and for ensuring and maintaining continuity in the supply of a range of ecosystem services that are critical to sustaining human well-being.

Wildlife does not recognize the borders of protected areas such as national parks or other categories of protected areas in its search for what it needs to survive. Instead, it travels outside of the borders of the park and into nearby natural areas. But roads and railways make it difficult for animals to travel from one area to another. Dams can stop the flow of streams and rivers. Logging, mining, and urban development can hinder the movements of many animals, regardless of whether they travel long distances (birds, bears, wolves), or just to the local lake (turtles and frogs).

When wild creatures can move freely, populations can mix, which is essential for maintaining populations. Infrastructural barriers that impede free movement pose a serious challenge to attempts to conserve and maintain populations of wild species.

Ecological connectivity actually enables:

- (1) maintenance of the “unimpeded movement of species and the flow of matter and energy which are crucial for sustaining life on earth” (according to the Convention for the Conservation of Migratory Species);
- (2) protection of habitats;
- (3) reduction of the effects of the fragmentation of habitats which hinders the movement and interaction of species over wide areas and

- (4) creation of links that contribute to the preservation of ecological integrity of ecosystems and the recovery of populations of endangered species.

Connectivity in the Green Infrastructure approach is the interconnection of green areas – not just physically, but also functionally. Green crossings are an example of Green Infrastructure elements which ensure connectivity. Green crossings increase the benefits for biodiversity through their function as ecological corridors which facilitate the movement of wildlife through an altered and fragmented environment. In urban settings, connected green elements provide not only environmental benefits, but also social ones.

Habitat networks enable the long-term protection of animal and plant species, as well as their ecological interrelationships (von Haaren et al. 2008). The purpose of habitat networks is the protection of nature; they are designed to resist fragmentation by creating corridors (von Haaren & Reich, 2006). Natura 2000 areas should be integrated into the national network of habitats.

Habitat networks should be integrated at different levels (planning, designing,

implementation, as well as local, national, and regional levels), such as Natura 2000 species and habitats, in order to enable the connectivity of ecosystems and species important for conservation. However, in practice, habitat networks are primarily considered at local and regional levels (von Haaren & Reich, 2006).

Some categories of approaches to habitat networks are:

- (1) species-oriented habitat networks: they aim to protect the selected species by enabling the connection of core areas and corridors;
- (2) multifunctional habitat networks: this is a wider multifunctional approach which does not focus on specific species. Multifunctional habitat networks integrate the same elements as species-oriented habitat networks, but aim to reconnect habitats with areas of greater conservational importance and
- (3) barrier reduction measures: individual green elements that reduce the impacts caused by human-made "barriers" (e.g. wooden bridges, culverts, crossings, etc.).



Figure 3. Green passage for wild animals (source: MES)

GREEN INFRASTRUCTURE AND SPATIAL PLANNING

Awareness of the planning and implementation of GI has been continuously increasing since the end of the last century. There is growing interest in the planning of GI, as well as awareness of the benefits from the multifunctional nature of GI and its many social and ecological benefits for urban and rural areas. However, there is still no consensus regarding the concept, the planning principles, and/or the implementation of Green Infrastructure among researchers and implementers of plans and policies. Existing legislation should be upgraded and used for the promotion of Green Infrastructure.

The role of spatial planning should be emphasized in the facilitation of the development and implementation of Green Infrastructure, together with other mechanisms such as national legislation (Law on Nature Protection, Law on Environment, Law on Spatial Planning – which is in the process of being made, etc.), management plans (in protected areas, action plans for species and habitats, etc.), national ecological networks, significant biodiversity areas (e.g. Emerald and Natura 2000 areas, Important Areas for birds, plants, butterflies, etc.).

Integrating and using the concept of GI in the process of the creation and implementation of national, regional, and/or local plans for management and spatial planning, particularly through the stages of planning, development, and construction of “Gray Infrastructure”, significantly contributes to efforts to preserve species and ecosystems and to ensure the unimpeded supply of ecosystem services.

The EEA report suggests that Green Infrastructure (GI) functions as:

- a) a strategically planned and delivered network of high-quality green surfaces and other ecological characteristics;

- b) a delivery of multifunctional benefits and
- (c) a delivery of “smart” protection.

It is also suggested that the benefits of GI be represented through the concept of ecosystem services, as it provides a relatively consistent and effective way to communicate the benefits of nature conservation to policy makers and key stakeholders.

Still, GI includes a spatially explicit delivery of ecosystem services – this is the difference and the added value in comparison to the broader and less precise description of ecosystem services. Hence, GI can be used in order to showcase the benefits on a local, regional, and national level, and is therefore closely connected to planning, decision making, and policymaking on all levels.

Spatial and urban planning represent not only the process, but also the continuous balance between land use and environmental protection, as well as realistic needs: industrialization, urbanization, economic development, and the construction of infrastructure projects in an integrated way.

The complexity of the factors that have to be taken into account demand the creation of policies, mechanisms, and the involvement of institutions that will regulate and implement the frameworks of spatial and urbanistic planning in an efficient and systematic way. Spatial and urban planning should be based on clear rules which will enable rational spatial organization and use, living and working conditions for citizens, promotion and protection of the environment, protection of cultural and natural heritage, and transparency for the participation of citizens in the procedures of planning/adopting of plans with equal access to participation for all citizens.

In fact, urban and spatial planning are continuous processes that need to be multi-coordinated in complementary ways. They also need to be coordinated with a large number of priorities arising from different fields and levels of competence, such as economic and social development and protection of the environment.

Today, sustainable development becomes not only a priority, but also a real need. GI integrates principles of sustainable development and thus contributes to the provision of a clean and healthy environment, recreation, etc.

The Agency for Spatial Planning conducts the policies of arranging and planning

the country's space, and is the competent institution for the preparation of Spatial Plans. Generally, local governance issues building permits and other documents such as invoices from detailed urban plans and building conditions. Hence, municipal and public servants need to be highly educated, experienced, skilled, and to possess technical equipment that can respond to needs.

Integrating the concept of GI into the Spatial Planning Law (in the process of drafting) is necessary in order to ensure that all stakeholders apply and respect the principles of Green Infrastructure consistently.

ANALYSIS OF THE RÉLEVANT NATIONAL LÉGISLATION RÉGARDING SPATIAL PLANNING

Spatial and urban planning is very important for the functioning and organization of space and land while maintaining natural resources in order to develop and improve quality of life. In order to achieve these goals, spatial and urban planning should be coordinated by different groups with different spheres of interest. Urban plans for land use and organization should stem from general and spatial plans. Spatial and urban planning is a long-term process that requires preparation, creation, acceptance, and implementation of plans, and finally control and monitoring. The function of the plans is regulation and development.

The concept and term of GI has not yet been embedded in domestic legislation, neither theoretically nor practically. That terminology is relatively unknown, insufficiently researched by experts in the country, and is unestablished legally. The Law on Spatial and Urban Planning dates back to 2014. The application and importance of this Law made it necessary to separate the two areas.

The Law on Urban Planning was adopted in 2020, while the Law on Spatial Planning is in the drafting and adoption phase. The concept of GI will be incorporated in both laws.

In order to achieve the concept of GI and sustainable development, it is necessary to upgrade all relevant laws with principles that, if applied, will achieve the goal of balanced economic, ecological, and social development and protection.

The national legal regulation in the Republic of North Macedonia, which refers to the planning, implementation, and monitoring of nature and the environment during the implementation of infrastructure projects that directly impact biodiversity and habitat fragmentation, are as follows:

Law on Nature Protection

(“Official Gazette of RM” no. 67/04, 14/06, 84/07, 35/10, 47/11, 148/11, 59/12, 13/13, 163/13, 41/14, 146/15, 39/16, 63/16, 113/18 and 151/21)

The Law on Nature Protection of the Republic of North Macedonia has transposed most of the EU legislation with all the directives and regulations, as well as obligations that stem from the relevant ratified international agreements. The law regulates the protection of nature through the protection of biological and regional diversity and the protection of natural heritage both in and outside of protected areas.

The Law envisages the establishment of coherent ecological networks (Article 53) for the purpose of preservation, maintenance or restoration of ecologically significant areas to a favourable state. The ecological network includes ecologically significant areas that contribute to the protection and preservation of biodiversity in the Republic of North Macedonia, the system of ecological corridors, and internationally ecologically significant areas.

Furthermore, paragraph 4 of the same article stipulates that when preparing planning documentation for the organization, arrangement, and use of space in the Republic of North Macedonia, it is obligatory to take into account the ecological network. The law elaborates in detail the system of protected areas, articles 47-54 (in accordance with the categorization of the IUCN – International Union for Conservation of Nature) which is established for the protection of

biodiversity within the frame of natural habitats, natural processes, as well as regional diversity. The system of protected areas is a part of the ecological network.

The Law on Nature Protection, in accordance with article 154, prescribes the organization of the monitoring of the state of nature which is necessary for establishing the concept of GI. The methodology of monitoring should be prescribed by a by-law. Monitoring of the state of nature is done by: measuring, tracking, evaluation and control of the state of species, their habitats, the types of habitats, ecologically significant areas, ecosystems, landscape types, monitoring and evaluation of geological values and monitoring of the state of natural heritage.

According to information from the Ministry of Environment and Physical Planning, a draft version of a new Law on Nature Protection has been prepared in accordance with the requirements of EU legislation, but it has not yet been put through the adoption procedure. It is recommended that this law is upgraded with specific articles that will regulate ecological networks, identified bio-corridors, as well as the concept and purpose of GI, in order to better achieve strategic goals in the protection of nature, biodiversity, and the decrease of fragmented areas.

Law on Environment

(“Official Gazette of RM” no. 53/05, 81/05, 24/07, 159/08, 83/09, 48/10, 124/10, 51/11, 123/12, 93/13, 187/13, 42/14, 44/15, 129/15, 192/15 39/16 u 99/18 and 89/22)

The Law on the Environment is a basic law that regulates the rights and duties of legal and natural persons to ensure conditions for the protection and improvement of the environment, which is a basic constitutional right of citizens. One of the objectives of the Law (Article 4) is “alignment of economic and other interests with requirements for protection and improvement of the environment” as well as “establishment of a system of planning for the protection, improvement and management of the environment”.

The Law prescribes two tools/mechanisms that allow for the incorporation of issues of protection and sustainable use of biodiversity in various planning documents and various sectoral plans and programs, namely:

- (1) The strategic environmental assessment (SEA) developed through several by-laws¹ which is implemented in planning documents that are prepared in the fields of agriculture, forestry, fisheries, energy, industry, mining, transport, regional development, telecommunications, waste management, water management, tourism, spatial and urban planning and land use and which create a basis for the execution of projects for which an environmental impact assessment is carried out, or all planning documents that regulate the management of protected areas declared in accordance with the law, or they can affect those areas. The procedure of conducting a strategic assessment is carried out only when the authority that prepares the planning document/program/

¹ SEA acts

- Decree on public participation during the drafting of regulations and other acts, as well as plans and programs in the environmental field (“Official Gazette of the RM” no. 147/08 from 26.11.2008)

- Decree on strategies, plans, and programs, including the changes to those strategies, plans, and programs, with a mandatory procedure for the evaluation of their impact on the environment and on people's life and health (“Official Gazette of the RM” no. 153/07 from 20.12.2007)

- Decree on the content of the report for strategic evaluation of the environment (“Official Gazette of the RM” no. 153/07 from 20.12.2007)

- Decree on the criteria for decision making on whether certain documents could have a significant effect on the environment and on people's health (“Official Gazette of the RM” no. 144/07 30.11.2007)

strategy determines that the planned activities will have a significant impact on the environment and on people's health, thereby making a Decision on the implementation of the SEIA procedure and, in accordance with a sufficiently large section of the competent authority, Ministry of Environment and Physical Planning, a strategic document is drawn up. The draft strategic document should contain all significant guidelines for further detailed elaboration in the interest of promoting sustainable development, environmental protection, and protection of human health. A public presentation and consultation are held for the draft, which invite the public and other stakeholders to contribute to decision making, and to the improvement and closing of the strategic document. The quality of the level of preparation of the strategic document, as well as the involvement of stakeholders, NGOs, civil associations, and individuals in general, should be improved during the implementation of the SEIA procedure in the interest of taking into account all legal obligations and recommendations from stakeholders to achieve the goal of sustainable development and protection. It is necessary to improve the involvement of the public by providing timely information about the availability of the document, the presence of a public presentation and consultation, and taking into account the recommendations given by the public by incorporating them into the final strategic document. In order to ensure the effectiveness of the SEIA process, it is essential to consider several alternative options for achieving the established goals, transparent preparation of the document, involvement of experts in the field of environmental protection, and implementation of the procedure with active involvement of the public. With this, the quality of the strategic documents and the overall SEA procedure can be improved, and the SEA decision-makers will be able to consider the possibility of more environmental decisions.

- (2) Environmental Impact Assessment (EIA), whose implementation is specified in several by-laws², is implemented in projects that could have a significant impact on the

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- Manual on the form, content, objectives, manner of production, type, and sources of data used for the preparation of the report, as well as the method of evaluation of the report (“Official Gazette of the RM” no. 98/2017 from 01.08.2017)
- Manual on the types and amount of costs for the implementation of the evaluation procedure for the impact of the project on the environment, which is reimbursed by the investor (“Official Gazette of the RM” no. 116/09 from 22.09.2009)
- Decree on the amending and supplementing of the decree on the determination of projects and the criteria for determining the need to implement the evaluation procedure for the impact on the environment (“Official Gazette of the RM” no. 109/09 from 02.09.2009)
- Manual on the information that should be contained in the notification of the intention to implement a project, and the procedure for determining the need for evaluating the impact on the environment (“Official Gazette of the RM” no. 33/06 from 20.03.2006)
- Manual on the content of the requirements that the study needs to fulfil for the evaluation of the impact of the project on the environment (“Official Gazette of the RM” no. 33/06 from 20.03.2006)
- Manual on the form, content, procedure, and manner of production of the report on the suitability of the study for the evaluation of the impact of the project on the environment, as well as the procedure for authorization of people from the list of experts for the evaluation of the impact on the environment who will conduct the report (“Official Gazette of the RM” no. 33/06 from 20.03.2006)
- Manual on the content of the announcement of the notification of the intention to implement a project, the decision for the need for evaluation of the impact of the project on the environment, the study for the evaluation of the impact of the project on the environment, the report for the suitability of the study to the evaluation of the impact of the project on the environment, and the decision by which consent is or is not given for the implementation of the project, as well as the manner of consulting the public (“Official Gazette of the RM” no. 33/06 from 20.03.2006)
- Decree on the determination of projects and the criteria on the basis of which the need for implementation of the evaluation procedure for the impact on the environment is determined (“Official Gazette of the RM” no. 74/05 from 05.09.2005).

environment; in this process, the criteria according to which the need to conduct a procedure for evaluation on the impact on the environment in the event of changes to existing objects or the construction of new ones is determined. On the basis of a prepared Notice of Intent to Implement a Project, the competent authority of the Ministry of Environment and Physical Planning issues an opinion on the scope of an environmental impact assessment study and the preparation of the same begins. The public disclosure of the draft environmental impact assessment study is for the stakeholders and the public to be informed about the planned activities and to actively participate in the improvement and completion of the study and the EIA procedure. When preparing an EIA Study, especially for infrastructure projects, it is necessary to elaborate on the potential impacts of the proposed alternatives, to include experts and specialists in the field of environmental protection, to give more space and time to conservators for additional research of the existing flora and fauna, even, if necessary, to research the four seasons (spring, summer, autumn, winter) in order to be able to foresee appropriate mitigation measures and monitoring measures to protect biodiversity during the implementation - construction phase. The protection of the environment, biodiversity, cultural heritage, as well as people's health during the building of constructions and during the implementation of the EIA procedure play a significant role and are closely related. Hence, we state that if we have a better prepared EIA Study, implemented procedure, if we have included experts, stakeholders and an interested public, the impact on the environment and people's health from the implementation of the planned activities will be lesser.

- (3) An environmental protection report with the following Manuals³ is prepared in order to determine the potential negative impacts of the project activities on the media and areas in the environment and to propose measures for their reduction and/or mitigation, i.e. improvement of the environment. The protection and promotion of the environment is a system of measures and activities (societal, social, economic, technical, educational, and others) that ensure the creation of conditions and protection from pollution, degradation and impact on the media and individual areas of the environment. The competent organs for reviewing and approving, i.e. issuing a Decision on the Elaboration for environmental protection, are the MoEPP, the City of Skopje, and the Units of Local Self-Government – Municipalities. This document is not subject to a procedure of public presentation and consultation, but it is important that it be improved by the author-expert for environmental impact assessment in the area of detecting potential risks from the planned project activities and proposing appropriate measures to reduce and/or mitigate in a way that is specific to the project and to the planned activities.

3

- Manual on the of the elaboration for the protection of the environment, in accordance with the types of activities the elaborate is made for, as well as in accordance with those performing the activities and the scope of the activities performed by legal and natural persons, the procedure for their approval, as well as the manner of keeping the register of approved elaborations ("Official Gazette of the RM" no. 44/2013 from 22.03.2013)
- Manual on the form and content of the request for failure to pass a decision that approves or disapproves of the elaboration ("Official Gazette of the RM" no. 130/11 from 26.09.2011)
- Decree on the activities for which an elaboration is necessary, with the responsibility for approval of this elaboration that lies with the competent legal authority for the performing of professional work in the field of the environment ("Official Gazette of the RM" no. 80/09 from 26.06.2009)
- Decree on the activities for which an elaboration is mandatory, and responsibility for its approval lies with the competent mayor of the municipality, the mayor of the city of Skopje, and the mayor of the municipalities in the city of Skopje ("Official Gazette of the RM" no. 80/09 from 26.06.2009).

In the abovementioned documents, the concept of Green Infrastructure is neither elaborated nor represented. GI, as a concept with goals and activities, as well as already determined ecological networks and bio-corridors, should be incorporated into the procedures for SEIA and EIA, as well as in the National Ecological Action Plan and the Local Ecological Action Plan in the in the Environmental Law and other relevant by-laws taken into account in the earliest phase of planning, research, and testing from the aspect of the protection, mitigation measures, and compensation and monitoring analyses.

Law on Agricultural Land

(“Official Gazette of RM” no. 135/2007, 17/2008, 18/2011, 42/2011, 148/2011, 95/2012, 79/2013, 87/2013, 106/2013, 164/2013, 39/2014, 130/2014, 166/2014, 72/2015, 98/2015, 154/2015, 215/2015, 7/2016, 39/2016, 161/2019)

The Law on Agricultural Land sets goals for the rational use of agricultural land, its protection and conversion, as well as the provision of legal certainty to the owners and users of agricultural land.

As is the case with other laws, this law also has to fully integrate the goals, activities, and concept of GI with concrete management guidelines/measures.

Law on Agriculture and Rural Development

(“Official Gazette of RM” no. 49/2010, 53/2011, 126/2012, 15/2013, 69/2013, 106/2013, 177/2014, 25/2015, 73/2015, 83/2015, 154/2015, 11/2016, 53/2016, 120/2016 and 163/2016)

This law regulates the planning of agricultural and rural development, the goals of national agricultural politics, planning, monitoring, and evaluation of the national agricultural politics, partnerships with social and economic partners from the agricultural field, measures for the regulation and support of agricultural markets, direct payments and rural development, national aid in agricultural and rural development, forms or organization and unionization in agriculture, and control of the implementation of measures and the monitoring of the implementation. Amendments to this law, with directions for maintaining the elements of ecological networks, bio-corridors, and the concept of Green Infrastructure, are necessary from the aspect of sustainable rural development and agriculture with high natural values.

Law on Urban Greenery

(“Official Gazette of RM” no. 11/2018 from 18.01.2018, and the Law on naming and amending the Law on Urban Greenery from 16.02.2020)

This law regulates the planning, projection, construction, maintenance, protection, and reconstruction of urban greenery, its financing and management, as well as the supervision of the application of the provisions of this law. As such, the current Law on Urban Greenery does not suit the concept of Green Infrastructure which follows contemporary Green Infrastructure trends. Once GI is defined with goals and activities, it should be accepted and applied in this law on urban greenery.

Law on Urban Planning

(“Official Gazette of RNM” no. 32 from 10.2.2020)

This law regulates the systematic and hierarchical organization of urban planning in the system of spatial and urban planning, the goals and principles of urban planning, and the organization of space, types and content of urban plans, the conditions for working in the field of urban planning, the procedures for making and implementing urban plans, the monitoring of the implementation of the principles of this law, as well as other matters from the field of urban planning.

The concept of Green Infrastructure is not taken into account at all in the goals and principles of the Law on Urban Planning. By establishing the basic concepts of GI, the same can then be reflected in the development of urban plans and projects.

Law on Public Roads

(“Official Gazette of RM” no. 84/2008, 52/2009, 114/2009, 124/10, 23/11, 53/11, 44/12, 168/12, 163/13, 187/13, 39/14, 42/14, 166/14, 44/15, 116/15, 150/15, 31/16 and 71/16)

This law regulates the conditions and methods of management, planning, construction, reconstruction, rehabilitation, maintenance, protection, financing, and supervision of public roads.

Given how the development of state road infrastructure in the Republic of North Macedonia has seen an expansion in the last 15 years, and that large investment capital projects for the development and completion of the state road network, particularly along Corridor 8, are being announced for the coming years, it is recommended that the concept of GI is elaborated particularly well in this law and that it is tasked with the full treatment of the goals of ecological networks and measures for conserving bio-corridors because it is precisely the regular infrastructure projects that are the biggest enemy of the maintenance and survival of biodiversity and the protection of the environment. They are some of the main causes of the increase in fragmented areas, and if not well planned they represent a threat to biological diversity.

Law on Railway System

(“Official Gazette of RM” no. 91 from 28.06.2013)

This law regulates the development of railway traffic and railway infrastructure, the organization of the railway system, the manner and conditions of conducting railway transportation, the types of transportation, management, organization, protection of railway infrastructure and access to railway infrastructure, the charging for access to the use of railway infrastructure, the allocation of infrastructure capacities, the announcement of the network, the foundation of an independent and autonomous regulatory body, the allocation and types of licences, the financing of railway infrastructure and services of public interest in railway passenger transportation.

Although railway traffic is not well developed, efforts are being made to improve the railway network both within the county, as well as in neighbouring countries. It is crucial that this law is supplemented with all the goals, activities, and obligations towards the fulfilment of GI and the treatment of ecological networks and bio-corridors throughout the planning, projection, construction, and operative use of the railway system.

Law on Forests

(“Official Gazette of RM” no. 64/09 from 22.05.2009)

This law regulates the planning, management, cultivation, protection, use, and preservation of forests and forest lands as a natural treasure, the realization of the multipurpose uses of forests, the laws and obligations for the use of forests, the financing, as well as other questions of importance to forests and forest land according to the principle of biological, economic, social, and ecological acceptability.

The regulations of this law apply to all forests and forest land regardless of ownership and purpose. The law on forests is poor in terms of the application of modern concepts of ecological networks, bio-corridors and GI. It is crucial that it is consolidated with contemporary trends that lead to economic, ecological, and social development and progress. A new Law on Forests has been drafted, which contains the concept of “forestry close to nature” and is expected to be put into the review/adoption procedure soon.

Law on Hunting

(“Official Gazette of RM” no. 87/08, 6/09, 161/09, 83/10, 51/11, 44/12, 23/13, 163/13, 180/14, 146/15, 52/16 and 151/21)

This law regulates the cultivation, protection, hunting, and use of game and its parts. This law is closely connected to the preservation of fauna, especially rare species which are under strong risk of extinction by the construction of different infrastructure projects in protected areas. Hence, it is essential to immediately introduce the concept of GI and establish ecological networks and bio-corridors in the legal framework, as well as to introduce it to all the stakeholders who need to respect this law.

A new draft version of the Law on Hunting has been prepared, which is expected to be put into the review/adoption procedure soon.

Law on Waters

(“Official Gazette of RM” no. 26 from 24.02.2009, with the Law amendments and supplements in 2011, 2013, 2015 and 2018)

The Law on Water regulates issues related to surface waters, including permanent watercourses or watercourses in which water occasionally flows, lakes, reservoirs and springs, groundwater (hereinafter: waters), coastal land and aquatic habitats and their management including water distribution, water protection and conservation, as well as protection from the harmful effects of water; water facilities and services; the organizational set-up and financing of water management, as well as the conditions, manner and procedures under which water can be used or released.

STRATEGIC PLANNING DOCUMENTS FOR SPATIAL PLANNING

Spatial Plan of the Republic of North Macedonia

As a planning document of the highest national importance, the Spatial Plan represents a strategic, long-term, integral, and developmental document that ensures the organization, protection, and management of the country's space as a particularly valuable and limited national treasure.

The concept of long-term spatial development of the country until 2020 laid down in the Spatial Plan of the Republic of Macedonia (2004-2020), is largely based on the adopted sectoral strategies in certain segments of development, all documents of a national nature, and completely methodologically relies on the doctrine of sustainable development, which gives it its full right to receive the epithet and weight of a strategy for spatial development of the country.

The development of a new Spatial Plan for the RNM is underway, which will enable long-term and sustainable socio-economic development, prevention, and control of harmful effects on the environment, and will establish a balance between available space, economic and demographic development, and natural and cultural resources. The new methodology also foresees mechanisms for dealing with climate change as well as

harmonizing sectoral policies and finding the most appropriate solutions.

The spatial plan is based on a special methodology, oriented towards the application of new scientific and practical knowledge and experience in this area, based on creativity and innovation, and it promotes an approach that is adaptable to the rapid and frequent changes and needs of modern humanity in the use and management of space. The institutions responsible for the creation of the RNM Spatial Plan are the Ministry of Environment and Spatial Planning - Spatial Planning Sector and the Spatial Planning Agency. Spatial planning is carried out for at least fifteen years in a Spatial Plan, and is valid until the adoption of a new Spatial Plan.

Until 2020, spatial planning was regulated in accordance with the Law on Spatial and Urban Planning (Official Gazette of the RM, no. 199/2014) and the Law on Implementation of the Spatial Plan of the RM (Official Gazette of the RM, no. 39/2004), and the implementation of these laws is under the competence of the Ministry of Environment and Spatial Planning – the Department of Spatial Planning. In 2020, a new Law on Urban Planning was adopted (Official Gazette of the RM, no. 32/2020), with which the Law on Spatial and Urban Planning ceased to apply.



Figure 4. Diagram of the existing types of planning documents in RNM

Because of the continuous monitoring of the conditions of space and the implementation of the Spatial Plan, the state administration bodies, local self-government units, public services, organizations, enterprises, establishments, institutions, and other legal entities (reporting units) are obliged to prepare annual reports on the conditions and the changes in the space in their area and to submit them to the ministry in charge of matters of spatial planning.

The spatial plan is implemented through the preparation and adoption of a spatial plan of a region, a spatial plan of a municipality, of the municipalities in Skopje and the city of Skopje, and a spatial plan for an area of special interest to the Republic. The spatial plan of the RNM, spatial plans of regions, spatial plans of municipalities, and spatial plans for areas of special interest are adopted by the Assembly of the Republic of North Macedonia.

In the period after 1991, the following regional spatial plans were adopted:

- (1) “Spatial plan for the Kozjak reservoir” (“Official Gazette of the RM” number 49/99), adopted in 1999, with a planning period from 1998-2020;
- (2) “Spatial plan for the protected zones of the spring Rasche” (“Official Gazette of the RM” number 98/02), adopted in 2002, with a planning period from 2000-2020;
- (3) “Spatial plan for the region of the course of river Treska” (“Official Gazette of the RM” number 25/07), adopted in 2007 with a planning period from 2005-2020 and
- (4) “Spatial plan for the Ohrid-Prespa region” (“Official Gazette of the RM” number 22/10), adopted in 2010, with a planning period from 2005-2020.

Regional spatial plans for which a draft plan has been confirmed:

- (1) “Spatial Plan for the Skopje region”, with a planning period from 2005-2020, which is in the drafting phase, was confirmed on 23.02.2011;

- (2) “Spatial Plan for the East Planning Region”, with a planning period from 2013-2030, for which a draft plan was prepared in 2016, and was adopted by the Parliament of the Republic of Macedonia on 25.12.2017;

- (3) “Spatial Plan for National Park Pelister”, with a planning period from 2016-2030, for which a draft plan was prepared in 2019, and was adopted by the Parliament of the Republic of Macedonia on 16.09.2019.

Regional spatial plans in the process of development are:

- (1) “Spatial Plan for National Park Galicica”; currently under development;
- (2) “Spatial Plan for National Park Mavrovo”; currently under development;
- (3) “Spatial Plan for the basin of the river Crna Reka”; preparatory work completed.

The setting up, development, implementation, and monitoring of the concept of Green Infrastructure should begin with the Spatial Plan, and then be mirrored hierarchically in other plans/strategies/laws/by-laws/regulations/guidelines and other practical and current documents in the interest of promotion, implementation and monitoring of GI, ecological networks, and bio-corridors with the sole purpose of protecting nature, biodiversity, and sustainable development.

It is positive that that representatives of sectors responsible for the development and promotion of the Spatial Plan in regards to Green Infrastructure, in cooperation with the non-governmental sector and the active presence of European commissions and working groups, actively participate and inform themselves on the possibility of establishing GI in spatial planning, and once awareness of the need to establish and implement GI is already present, we can expect an activation of other stakeholders and interested parties, and their active involvement in the development and implementation of GI.



[Spatial plan of the Republic of Macedonia \(2004-2020\) – Agency for Spatial Planning \(app.gov.mk\)](http://www.app.gov.mk)

OTHER RELEVANT DOCUMENTS/INITIATIVES/STRATEGIC DOCUMENTS RELATED TO SPATIAL PLANNING

National Strategy for Protection of the Environment (2017 – 2027)

The first National Strategy for the Protection of the Environment brought in 2018 for the ten year period from 2017 to 2027, addresses the time period from 2017 to 2027, and is an obligation from the Nature Protection Law in order to respond with appropriate measures and actions to potential threats to nature. It clearly lays out the needs, goals, and measures for establishing and preserving the elements of the ecological network, as well as the monitoring that needs to be conducted by the competent institutions, stakeholders, and other parties that work in the field of environmental protection. Through this document and the activities it promotes, the Republic of North Macedonia approaches European legislation, although the term “Green Infrastructure” itself is never mentioned in the document itself. Of course, it is most important to practically apply these measures/activities in order to achieve the expected results and goals.



[National-Strategy-for-Nature-Protection-2017-2027.pdf](#)

National Biodiversity Strategy with Action Plan (NBSWAP) for the period of 2018-2023

The Republic of North Macedonia is a signatory country to a large number of multilateral environmental agreements, including the Convention on Biological Diversity (CBD), ratified in 1997, which establishes specific guidelines for the establishment of national legislation for the protection of biodiversity. The revised NBSWAP is aligned with the objectives of CBD, as well as the objectives of the EU Biodiversity

Strategy. Thus, national goal 11 is not only about increasing the amount of protected areas in the country, but also about ensuring their connection in the form of a geological network. Special acts are expected in national goal 2, to ensure the functionality of the national ecological network MAK-NEN by integrating the measures for the management of ecological corridors in the various economic sectors.



[NBSWAP 2018-2023 .pdf](#)

National Transport Strategy (2018-2030)

This strategy takes into account new conditions such as those that relate to safety and security, protection of the environment, and international obligations of the country connected to the process of nearing the European Union. Still, in the newest NTS there is no mention at all of Green Infrastructure, nor the respect and application of bio-corridors and ecological networks.

The transport sector is one of the most influential sectors which negatively impacts biodiversity, increases fragmentation, and contributes to negative consequences for the protection of the environment and to rare species through its goals and planned project activities. As such, it is crucial that it is fully amended with the concept of GI.



[NTS 2018-2030.pdf \(mtc.gov.mk\)](#)

National Strategy for Sustainable Development in North Macedonia (2009-2030)

The National Strategy for Sustainable Development in the RNM is based on the principles of sustainable development accepted on a global level and defined at the UN Conference on Environment and Development (Rio de Janeiro, 1992) with the purpose of putting Agenda 21 in function; further, on the Declaration and Implementation Plan from Johannesburg 2002 adopted at the World Summit on Sustainable Development; on the principles of the UN Millenium Declaration which are found in the Millenium Development Goals and Principles developed in the EU's Renewed Strategy for Sustainable Development, adopted by the European Council in 2006. The National Strategy for Sustainable Development is a significant element among the priorities set up in the European Partnership, as well as for the fulfilment of the obligations specified in the “RNM Strategy for EU Integration”.

The strategy should ensure widespread acceptance and be firmly rooted in all spheres of life in the Republic of North Macedonia. Despite this, this document does not contain any recommendation for the inclusion of ecological networks and/or Green Infrastructure as a concept that is closely connected to sustainable development, especially with the protection of the environment and the conservation of biodiversity. A complete revision of the Strategy for Sustainable Development is therefore needed once the foundations for GI have been laid out, complete with concrete goals, activities, and directions.



[NSSD-1-EN \(www.moepp.gov.mk\)](http://www.moepp.gov.mk)

[NSSD-2-EN \(www.moepp.gov.mk\)](http://www.moepp.gov.mk)

Strategy for Regional Development of Republic of North Macedonia (2021-2031)

In the RNM there is a Regional Development Bureau which is an authority within the frame of the Ministry for Local Development with the singular purpose of balanced and sustainable

development over the whole territory of RNM through the increase of innovations and optimal use of natural treasure and human and economic capital. The Development Bureau has its own Regional Development Strategy for the period of 2021-2031 in which the concept and definition of GI is not represented.



[st 76 2021.pdf \(brr.gov.mk\)](http://brr.gov.mk)

The Development Bureau includes eight planning regions with a total of 80 municipalities and the city of Skopje. Each planning region has its own strategic documents, action plans, development program according to which they plan and implement development initiatives, ideas and projects. With the introduction of GI in the above-mentioned Strategy for Regional Development, as well as in the rest of the legislation, other documents will be obliged to introduce and treat the concept of GI, which will achieve the goal of sustainable development of GI.

The units of local self-government – Municipalities at the local level, in accordance with the legal obligation, prepare multi-year Local Environmental Action Plans (LEAP) which represent the highest local strategic document for protection, planning and management of the environment. LEAP, as a strategic document of crucial importance, detects the current conditions in the area of the environment and adopts short-term and long-term measures for solving identified problems. The concept of GI and ecological networks must be taken into account during the preparation of LEAP for each municipality after it has been hierarchically placed in the existing legislation and other strategic and planning documents. The responsible authorities for LEAP are the local self-government units, that is, the municipalities themselves.

Development of the “Emerald” Network in North Macedonia

The activities for the development of the “Emerald” network in the Republic of North Macedonia, as a member country of the Bern Convention, were conducted in the period from 2002-2008 through several projects supported by the Secretariat of the Bern Convention at the Council of Europe and the European Agency for the Environment. In accordance with the criteria prescribed by the Bern Convention, habitats and species of European significance that are present in the Republic of North Macedonia were identified, namely 32 habitat types, 7 species of invertebrates, 13 species of fish, 3 species of amphibians, 7 species of reptiles, 17 species of mammals, 115 species of birds and 5 species of plants. A total of 35 areas were identified and processed for their inclusion in the “Emerald” Network, including the smallest wetland near Negorski Banji with a size of only 625 ha, and the largest area Jakupica with a surface of 76.740 ha. The proposed areas cover a total area of about 752,223 ha, or 29% of the territory of the Republic of North Macedonia.

In North Macedonia, the National Ecological Network has not been audited (such a process was initiated during 2021/22). Still, the 35 identified areas from the National “Emerald” Network will be used as a basis for the identification of “Natura 2000” Network

areas, in accordance with the EU Directives on wild birds and habitats.



[01_Brajanoska_Razvoj_na_EMERALD_mreza.pdf \(mes.org.mk\)](#)

Natura 2000

The “Natura 2000” network consists of special protected areas that are assigned in accordance with the Bird Directive (Council Directive 2009/147/EEC) and special areas for conservation which are assigned in accordance with the Habitat Directive (Council Directive 92/43/EEC). There are several steps to fulfilling the needs of the “Natura 2000” Network. The first phase of implementation focuses on having member states propose and assign areas for species and habitats that are of European importance. The next step seeks to establish a functional character for the network in order to ensure that species and habitats that are of interest to the Community in the declared areas will remain in a favourable condition for preservation. The member states should prepare measures and plans for protection that take into account the economic, social, and cultural needs, as well as regional and local characteristics of the area, in order to sustain the dynamic in rural areas. “Natura 2000” is an example of a wide European

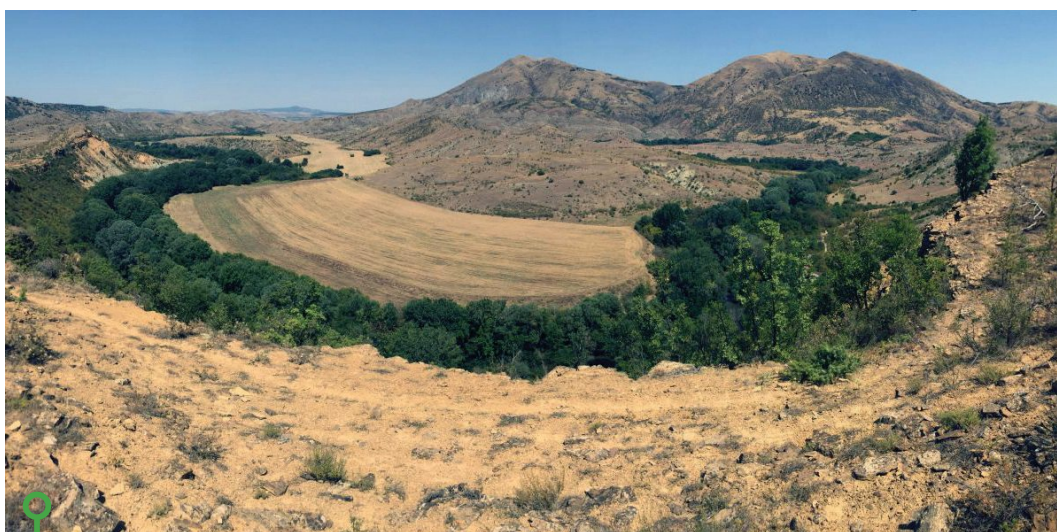


Figure 5. Area of Lower Bregalnica – potential future Natura2000 site (source: Bogoljub Sterijovski)

process of construction of ecological networks in EU member states. Through the inclusion of all relevant stakeholders in all sectors, this network aims to ensure the protection of biodiversity in and outside of national borders.

In 1996, the process of establishing the “Emerald” Network of areas of special interest for the improvement of legislation began. The Republic of North Macedonia needs to harmonize many laws before joining the EU, especially Natura 2000. The existence of good legislation that is clear, transparent, practical, and close to all stakeholders, which, in addition to the non-governmental sector and the state and public administration organs also includes the local population and landowners, means better coordination, communication, implementation, and results. It is therefore important to actively work on improving the implementation of all measures, activities, and goals outlined by the Natura 2000 concept in order to showcase better results and an increase of protected areas, and to thereby secure financial means for future developmental projects and initiatives more easily.

Up till now, the activities for Natura 2000 in North Macedonia carried out by the MOEPP and non-governmental organizations through the realization of several projects from 2016 onwards, were primarily aimed at transposing directives into national legislation, strengthening institutional capacities, and assessing and identifying potential areas for the Natura 2000 network. In accordance with the requirements of the Habitats and Birds Directives in the period 2016-2020, twelve areas were identified as potential future Natura 2000 areas in the country, with a total area of 1756.45 km², or about 6.8 % of the country's territory.



<http://www.natura2000.mk>

National Ecological Network in the Republic of North Macedonia (MAK-NEN)

The development of a national ecological network in the Republic of North Macedonia as a part of the Pan-European Ecological

Network (PEEN) is an obligation for the Republic of North Macedonia – a signatory country of the Pan-European Biological and Landscape Diversity Strategy (PEBLDS, 1996). The goal of this strategy and of PEEN is to enable the efficient implementation of the Convention on Biodiversity of the United Nations on a European level, that is, ensuring a favourable status of preservation of ecosystems, habitats, species, and landscapes of European significance. The project for the development of a national ecological network in the Republic of North Macedonia realized by the Macedonian Ecological Society (MES) and the European Center for Nature Conservation – ECNC, in cooperation with the Ministry of Environment and Spatial Planning (MESP) in the period from 2008-2011, produced::

- (1) A map of the National Ecological Network (MAK-NEN) which identifies ecological corridors for large animals and areas for revitalization which connect the existing core areas of national significance and
- (2) A plan for the management of ecological corridors for the brown bear as a means to better understand the ecological functions of core areas and corridors, habitat connectivity, and the overall concept of ecological networks.

The national ecological network in the Republic of North Macedonia, like all ecological networks, is characterized by a specific spatial architecture with the following elements: key (core) areas, corridors, protected belts and areas for revitalization. In North Macedonia, 13 core areas where vital populations of bear and many other large mammals exist have been identified, as well as 12 linear corridors, 3 corridors with crossings and 11 regional corridors.

Corridors are a significant part of the ecological network because they preserve the vital ecological relations/interactions through maintaining connectivity between key areas, and as such they are the bearers of the function of ecological networks.

Protected belts are established in order to separate core areas where the key

purpose biodiversity preservation from potentially harmful outside influences caused by intensive human activities, that is, inappropriate forms of land use. They enable the sustainable use of natural resources in coordination with management objectives in the core areas. Areas for revitalization are areas where degraded landscape functions can be renewed, especially in cases where habitat fragmentation prevents the normal flow of matter and energy in the landscape, thereby threatening the populations of local species. These areas are significant, as they can improve the ecological connectivity and functionality of the system within the frame of MAK-NEN. In the Republic of North Macedonia, 23 potential “bottlenecks” have been identified, primarily in connection to the development of traffic and energy infrastructure. In the future, these bottlenecks could grow into insurmountable barriers for the movement of large animals. It is therefore important to instil predictive measures that will mitigate the fragmenting

effects of these developmental programs. MAK-NEK isn't just a map, but also a vision and a map of opportunities, and a concept for environmental conservation; as such, it should be inserted into every pore of Macedonian society. Its implementation requires will and desire on the part of various institutions and organizations, as it should be used in the preparation of different analyses, studies, evaluation procedures on the impact on projects on the environment, etc. It is recommended that MAK-NEN, with its details for detecting bio-corridors on the territory of the country, be made official and a part of legislation, whereby with the planning, projection, and implementation of future infrastructure projects, these areas will be treated adequately in the earliest phase of planning, that is, the drafting of the Project Program.



[Развој на национална еколошка мрежа во Република Македонија \(МАК-НЕН\)](http://mes.org.mk)
(mes.org.mk)

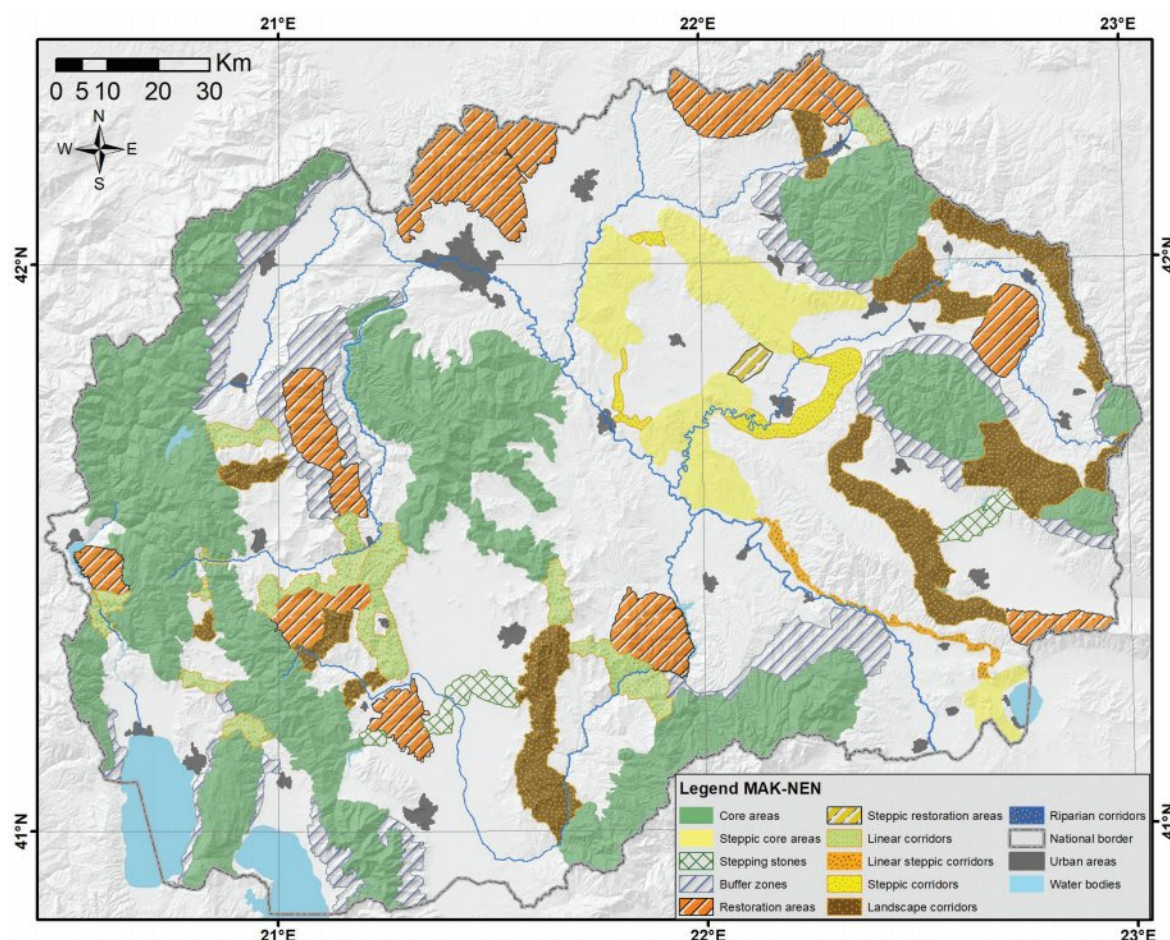


Figure 6. Map of the National Ecological Network (MAK-NEN; source: MES)

Important Bird and Biodiversity Areas (IBA)

Important Bird Areas (IBA) are places that are globally important for the preservation of bird species. These are areas that are necessary for the survival of the populations of most bird species on Earth. The IBA network also contains a large and representative part of the remaining biodiversity. IBA areas are a part of the Key Biodiversity Areas (KBAs).

The set of global criteria established by BirdLife International for the identification of IBA areas is based on the presence of key bird species that are vulnerable to global extinction, or whose populations are irreplaceable. Additionally, the criteria are based on the existing international legal instruments, such as the Bird Directive of the European Commission and the Ramsar Convention.

The first list of IBAs for the territory of Europe was published in 1989, where ten locations with a total area of 2709 km² (about 10% of the territory of the RM) were identified in Macedonia (as part of SFRY). The last revision of the Important Bird Areas in Macedonia done during 2010 resulted in the identification of 24 IBAs covering an area of 6709 km² or 26.9% of the country's territory (Velevski et al. 2010). 26 species that are regularly present in

the nesting season were used for the selection of the areas of European importance, for which it is considered that the approach to the protection of localities is appropriate for Macedonia.

Twenty-two localities meet the criteria for globally significant areas - three localities (Ohrid, Prespa, and Dojran Lake) meet criterion A4 - congregation (over 1% of the world's waterbird population or over 20,000 waterbirds), eight areas support significant populations of species characteristic of the Mediterranean biome, and other three areas with significant populations of species characteristic of the European highland biome.



<http://datazone.birdlife.org/site/ibacriteria/mes.org.mk>

Balkan Green Belt

The European Green Belt Initiative was established in 2003 in order to create the basis of an ecological network that will serve as a global symbol for cross-border cooperation for nature protection and sustainable development. Its vision is to preserve and restore the common natural heritage along



Figure 7. View on the Balkan Green Belt

the former Iron Curtain as an ecological network connecting great natural values and cultural landscapes, taking into account the economic, social and cultural needs of local communities. The green belt passes through 24 European countries (with a length of 12,500 km), starting from the Barents Sea and reaching the Black Sea. It is divided into three parts: Fennoscandinavian, Central European, and Balkan Green Belt.

The Republic of North Macedonia is part of the Balkan Green Belt, together with Romania, Serbia, Montenegro, Bulgaria, Greece, Albania, and Turkey, which, although not directly affected by the cold war, were also kept under strict control, so that the borders became isolated areas with natural preserved habitats without human activities. The Green Belt in North Macedonia stretches along the three state borders to Bulgaria, Greece, and Albania, with different widths, and covers an area of 5125 km² (about 20% of the country's territory). It includes 11 protected areas (the three national parks, the three natural lakes, and other lower categories of protected areas) and several proposed areas for protection. Within the framework of this initiative, several project activities related to the valorization and preparation of a proposal for the protection of several areas included in the Balkan Green Belt were realized in the past years. In 2013, the Joint Declaration of Intent for the European Green Belt was signed by the MOEPP.



[Our projects on the European Green Belt - EuroNatur](http://www.euronatur.org)

Study for the Development of Green Infrastructure and the Status of Ecological Connectivity in Albania, Bosnia and Hercegovina, Montenegro, Serbia, and North Macedonia

The study was prepared in accordance with the EU accession program for partnership in the environment in the Western Balkans and Turkey (Environment Partnership Programme for Accession in Western Balkans and Turkey).

The study identifies transboundary areas important for the conservation of large carnivores (brown bear, wolf, and lynx) and the level of existing regional connectivity between them, and provides recommendations for the development of Green Infrastructure and ecological connectivity in the region. As a part of the study, green corridors and core areas that should be protected and sustainably managed in order to preserve the natural values in the region have been proposed.

A total of 11 priority areas have been identified at a cross-border and national level where it is necessary to implement protection and conservation measures, of which the following are significant for North Macedonia: Mavrovo (MK) – Korab-Koritnik (AL) – Munela (AL), Nidze – Kozuf – Jakupica (MK) and Ohrid – Prespa – Pelister (MK and AL).



<https://op.europa.eu>

UNESCO

In international frameworks, the Ohrid region has been placed in the UNESCO list of world natural and cultural heritage since 1979, while the natural monuments Markovi Kuli and the Slatinski Izvor Cave have been included in the temporary UNESCO list since 2004.

The competent authority on the coordination of activities for the integral protection of the UNESCO status of the Ohrid region at a national level is the Ministry of Environment and Spatial Planning, and at a regional level the Department for the Protection of Lake Ohrid and the JNU Hydrobiological Institute – Ohrid (monitoring and research). Separately, the Ministry of Culture and the Regional Institute for the Protection of Cultural Monuments and Museum Ohrid are responsible for activities related to cultural heritage.

Ramsar Areas

From the Republic of North Macedonia, Prespa Lake (1995), Dojran Lake (2008), and Ohrid Lake (2021) were added to the Ramsar list of aquatic habitats of international importance. The competent authorities for the coordination of activities for the protection of natural heritage and preservation of biological diversity are the Ministry of Education and Culture and the National Ramsar Committee,

which does not function. A national program/plan for the preservation of aquatic habitats with measures for protection, sustainable use, and revitalization (which is an obligation for the countries that are members of the Ramsar Convention) has not been prepared; measures for their protection are only partially included in some management plans for protected areas.

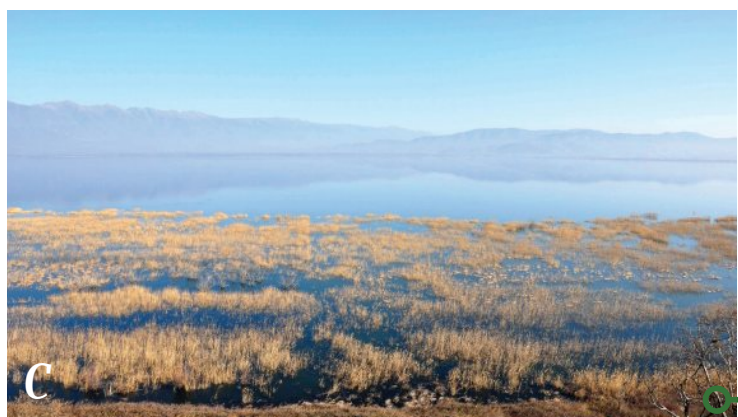
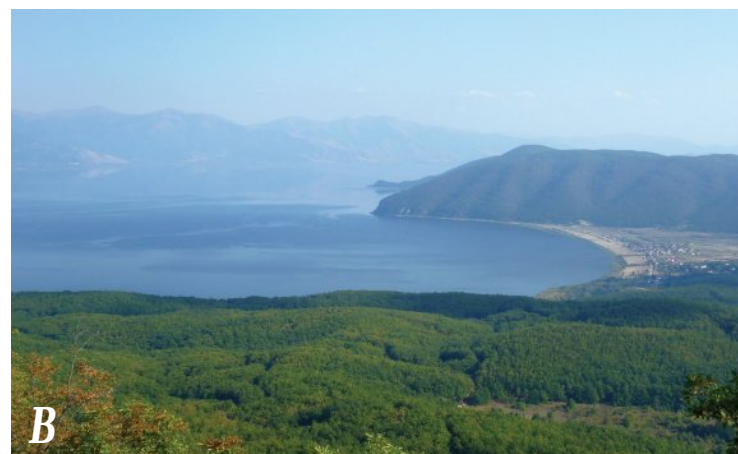
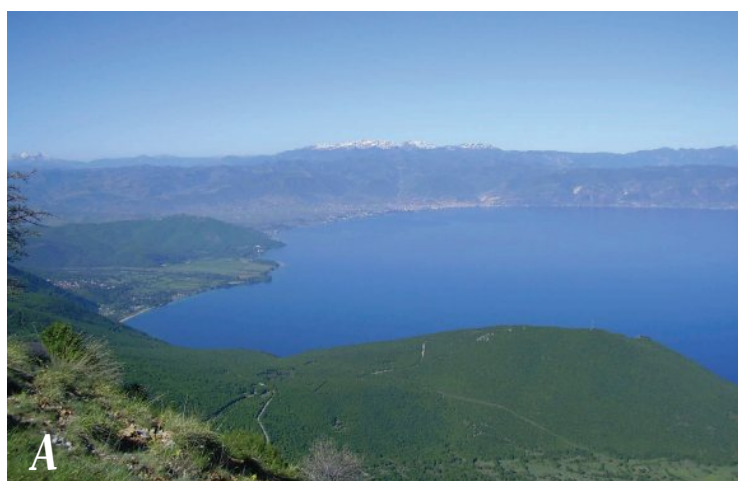


Figure 8. Ramsar Areas in North Macedonia, a. Ohrid Lake (source: Aleksandar Stojanov), b. Prespa Lake (source: Aleksandar Stojanov), c. Dojran Lake (source: MES)

IMPLEMENTATION OF THE RELEVANT NATIONAL LEGISLATION BY COMPETENT INSTITUTIONS IN THE RNM

The process of creation, development, implementation, and monitoring of GI should involve stakeholders, spatial planners, urban planners, decision-makers, political representatives, representatives of state and public administration, NGOs and other civil organizations, associations that work for the protection of the environment, social aspects, economic development, local government units, fishing societies, foresters, farmers, hunting societies, public enterprises that are planners and implementers of infrastructure projects (roads, railways, transmission lines, etc.) and citizens.

Of course, an important link in this chain are project managers and companies that directly work on the projection of new routes for various infrastructure projects, which in turn are a direct threat to the fragmentation of land and habitats. Institutions/associations/organizations that should actively engage and give their input on the establishment of GI within the framework of legislation and the application through the realization of various projects in the areas of transport, agriculture, forestry, health, biodiversity, nature protection, etc. are:

- Ministry of Environment and Physical Planning;
- Ministry of Transport and Communications;
- Ministry of Forestry, Agriculture, Water Management;
- Ministry of Justice;
- Agency for Spatial Planning;
- PE for state roads;
- PE Macedonian Railways Infrastructure;
- PTE Skopje;
- PE National Forests;
- Local self-government units with their local communities;
- NGOs and other associations of

citizens working on environmental protection;

- Individuals working on nature protection;
- House designers and planners;
- Urban planners and architects;
- Fishing companies;
- Hunting societies;
- Agricultural associations;
- Center for Crisis Management;
- Center for Climate Change;
- National parks and other protected areas;
- Universities and research centers.

The state authorities of the Government of the Republic of North Macedonia are responsible for improving the overall legislation, starting from the strategic documents, as the initial documents from which the guidelines and goals of the concept of promoting and implementing GI, biocorridors and ecological networks are derived, through the full implementation of the Spatial Plan, including its modification/upgrade/improvement.

After gathering practical and theoretical experiences from different target groups, stakeholders and actors, the activities and recommendations that should be implemented in the current legislation are finalized. The Department for Physical Planning, through the Ministry of Environment and Physical Planning, submits the proposals to the Assembly of the Republic of North Macedonia, where they are considered, voted on and adopted, so that they come into force after publication in the Official Gazette. With that, the rest of the above-mentioned stakeholders have the obligation to respect and apply it in practice, and its systematic establishment in the overall legislation can lead to positive results in the protection and conservation of biodiversity,

the protection of nature and all its resources, as well as the implementation of GI as a trend that should be continuously improved with the theoretical and practical realization of numerous projects and initiatives.

It is necessary to form multiple working and target groups that will give their theoretical and practical contribution to the creation of the pillars of GI as a concept which, together with ecological networks and bio-corridors, can then be proposed to go through a legal procedure through the government bodies and parliament of the Republic of North Macedonia with the aim of legalization, application and implementation, followed by monitoring in order to track the results we want to achieve.

There are numerous risks and challenges that can contribute to slowing down this entire process, including:

1. insufficient knowledge of the problem and low awareness of its development;
2. the political situation;
3. financial resources for financing working groups, educational events, creating publications and holding workshops;
4. a lack of will to implement the procedures through the system's institutions;
5. a lack of interest from important stakeholders and other subjects to participate in the process;
6. difficult coordination and communication with representatives of the country's bodies and public administration and
7. coordination of activities on a local and national level.

Despite everything that was mentioned as a potential problem for the start, organization, and creation of GI politics in the country, as a candidate country for EU membership we are obliged to follow the trends that develop and are implemented on the level of the union, especially when it comes to a concept that offers sustainable development of a social, economic, and ecological aspect, with a particular focus on the conservation and maintenance of biodiversity and protection of natural rarities and endemic species. It is the responsibility of RNM to protect the entire natural and cultural treasure that is a part of the Balkan, European, and World wealth and heritage.

Considering that the concept of GI with its definitions and goals is not set in legal, strategic documents and plans at all, the professional staff that works on this issue should start by defining, establishing, accepting, and implementing GI, keeping in mind the already detected ecological networks that can be a basis for the establishment of GI.

The spatial plan of the RNM, as a priority and significant element of the planning of space in the RNM, is in the initial stages of development, in which the concept of GI will be taken into account because it represents a significant starting point for following and implementing the set goals that are requirements for GI and for further development of the rest of the legal and strategic plans and documents.

Hence, it is necessary to start as soon as possible with the activities and actions that aim to establish the concept of GI, to raise awareness of the same among all involved parties, and to fully implement it in a legal framework, i.e. to respect and apply it in concrete developmental project activities and initiatives.

COMPARISON OF NATIONAL AND EUROPEAN LEGISLATION

The EU describes Green Infrastructure (GI) as a successful tool for the safeguarding of ecological, economic, and social gains through natural solutions. The EU commission adopted an EU Strategy on Green Infrastructure strategy (European Commission 2013) to “promote the deployment of EU green infrastructure in urban and rural areas”. This GI strategy is a step towards the implementation of the EU Biodiversity Strategy until 2022, specifically goal 23, which requires that ecosystems and their functions are “maintained and strengthened by establishing Green Infrastructure and returning at least 15% of destroyed ecosystems”. The new EU Biodiversity Strategy until 2030 also calls for 30 percent of the EU's land and water to be protected areas. The Biodiversity Strategy aims to put Europe's biodiversity on the road to recovery by 2030 for the benefit of people, the climate, and the planet.

The strategy aims to build the resilience of our societies to future threats such as:

- (a) the impacts of climate change;
- (b) forest fires;
- (c) insecurity in providing food and
- (d) disease outbreaks – including by protecting wildlife and combating illegal wildlife trade.

The overall goal of the EU's policy ambitions regarding GI is to have an EU network of Green Infrastructure in an optimal condition to deliver ecosystem services throughout Europe. Still, in practice priorities have to be identified. In order to promote sustainability, recovery, and maximum efficiency, there needs to be a coherent and coordinated approach through different spatial levels (local, regional, national, EU) for mapping and evaluating the condition of ecosystems and identifying the priorities for interventions/investments for GI.

At a EU level, this will include the promotion of strategic investments in the EU Green Infrastructure network motivated by:

- (1) the need to protect, restore, and strengthen the overall quality of the network and to retain certain minimal levels of quality to safeguard the continuous delivery of ecosystem services;
- (2) the need to protect, restore, and strengthen the delivery of natural ecosystem services on the identified geographical locations in a scale that surpasses administrative borders, especially taking into account transboundary impacts and
- (3) social and/or cultural considerations that transcend administrative boundaries.

Except for Germany which developed a Concept for National Green Infrastructure in 2017, none of the other member states have developed national strategies for GI.

Based on the investments made so far to develop, establish, implement, and follow GI, from what has been done so far in the EU member states, it can be concluded that they face many challenges and obstacles to show greater progress.

There are several reasons for that, namely:

- (a) a lack of financial resources in the member states;
- (b) a lack of understanding and awareness of the potential benefits of GI;
- (c) limited technical possibilities and capacities for knowledge;
- (d) inconsistencies between spatial planning and the politics of other areas and the politics of urbanism.

Green Infrastructure still needs to fit within the wider EU politics and legislation. Nevertheless, the EU Commission's working group prepared a Guidance on a strategic framework for further supporting the deployment of EU-level green and blue infrastructure (European Commission 2019) which can be a good guide for the development of the concept of GI in the country.

In general, the understanding, implementation and application of GI is specific to each EU member state. The process works differently at different levels, and the EU is working to ensure that the final GI strategy includes a common vision and strategic goals that will be acceptable and applicable to all member states.

Bearing this in mind, we can agree that the development and setting up of GI in the

Republic of North Macedonia will develop in parallel to the activities undertaken at an EU level. Considering that GI is not included in the national legislation, it is necessary to insert the concept in the preparation of national GI, and for the legislation itself to contain the EU Strategy for GI in order to harmonize with it, which will contribute to the following of trends and using of funds and opportunities for financial gain for the development of GI as a candidate country for the admission to the EU.



[Green Infrastructure - Environment - European Commission \(europa.eu\)](http://www.europa.eu)



[SWD 2019 193 F1 STAFF WORKING PAPER EN V4 P1 1024680.PDF \(europa.eu\)](#)

PLANNING AND IMPLEMENTATION OF INFRASTRUCTURE PROJECTS IN THE REPUBLIC OF NORTH MACEDONIA

The national legal regulation, through the appropriate system institutions and the rest of the entities dealing with engineering, construction, and ecology, experts and professionals who work on the topic of environmental protection, nature protection, ecology, as well as the existence of professional literature, are key stakeholders in the process of protecting and conserving habitats and sustaining their connectivity, as well as conserving biodiversity.

The negative effects of the construction of infrastructure projects (roads, railways, gas pipelines, etc.) are most pronounced in the animal world. Nevertheless, after its near three decades of existence as an independent country, the Republic of North Macedonia still does not have enough detailed information about the impact of transportation and energy infrastructure on the population of affected species. Although there is a Red List for mammals, reptiles, and amphibians, and the protection of rare species is additionally regulated by the Law on Nature and other national documents, as well as international conventions ratified by the Republic of North Macedonia, so far there is no official data on the number of animal deaths on state roads, nor species that die from direct or indirect impacts from vehicles on roads. The existing legislation and practice still does not contain the concept of Green Infrastructure.

Practice confirms that in efforts to preserve biodiversity, reduce fragmentation, establish ecological networks and corridors, it is necessary to have an integrated and strategic approach based on adopted legal acts, plans and programs. Raising awareness of setting up Green Infrastructure as a strategic goal and legal obligation contributes to the preservation of species and ecosystems, and brings numerous benefits to the community, wildlife, and economic progress of the country.

Towards that goal, a systematic approach to raising awareness of the promotion and implementation of Green Infrastructure among all key stakeholders, at a local, regional, and national level, is necessary. Hence, it is necessary to integrate the conclusions and recommendations given within the framework of the Project: “Development of a National Ecological Network in the Republic of Macedonia (MAK-NEN)” into the Spatial Plan (in the process of preparation) in order to take them into account at the earliest phase of designing infrastructure line facilities. It is necessary to adopt regulations, ordinances, and standards at a national level that will be respected and applied in the design, construction, and use/exploitation phase of natural ecosystems.

It is necessary to have scientifically based information for the seasonal movements of large mammals and other affected species of fauna from which concrete recommendations for protection and for softening the negative impacts of transportation and energy infrastructure. In addition, to reduce the mortality of the affected wild species from the implementation of infrastructure projects, as well as from the flow of traffic, practical implementation of the guidelines and recommendations given by professionals and experts in the area is needed, as well as continuous monitoring of the affected species in order to evaluate the effectiveness of the applied protection measures and activities.

Institutions that work directly on the construction and maintenance of the country's road network need to raise awareness of this issue, especially the institution responsible for the construction of state roads. Provision of appropriate trainings will enable wildlife and construction engineers to take into account and practically implement the principles of GI when projecting wildlife crossings, measures

for reducing, mitigating, and compensating biodiversity for the realization of projects and the application of plans and measurements in the operational phase of roads.

Perhaps we are among the rare countries in the Balkans that have not yet implemented and built a green bridge as an object fully intended for fauna, despite the fact that the last decade saw an expansion of the realization of projects in the road sector.

One of the significant impacts on the environment is the segmentation of connected or undivided areas, which is of importance for animals that require a large area, such as deer, lynx, wild cats, bears, but also for species that are active in small areas, such as amphibians and the reptiles. Building functional crossings

during the construction and operation of roads is of great importance for animals that require a lot of space (e.g. large carnivores), but also for species that are active in small spaces (e.g. amphibians and reptiles).

Wild species have different movement habits. It is important to identify target species early in the design process and to understand the movement habits that need to be taken into account. An animal's home range is a place where they carry out their daily needs including foraging and daily movements. The size of the area of operation depends on the size of the species, which in turn will have an impact on the design of the space and on measures to reduce animal crossings on the roads.

GOOD PRACTICES APPLIED DURING ROAD CONSTRUCTION IN THE REPUBLIC OF NORTH MACEDONIA

In the last 15 years, the Republic of North Macedonia has been working intensively on improving the country's road network through the construction of new highway sections and new express roads with the goal of better economic and social development, connection with the region and with Europe, and of course, better transport of people, goods, and services.

The planning and design of new routes, as well as the preparation of the overall legal technical documentation, including documentation connected with the protection of the environment and social aspects, is being prepared in accordance with domestic legislation. But if the financier of the development projects is an International Financial Institution (World Bank, EBRD, KfW, EIB, etc.), additional documents must be prepared in accordance with the operating policies in the area of environment and social aspects of the respective lending institution.

The experience so far has shown that despite everything, none of the many realized projects fully inserted any bio-corridor, nor considered the opportunity to build a green bridge for fauna protection. The construction sector believes that the construction of tunnels and viaducts of the state road network is quite sufficient for species to move smoothly and safely and perform their needs and functions. In general, when the term green bridge is mentioned, it is immediately associated with an object that is unnecessary and economically unprofitable.

Of all the projects realized so far, only for the needs of the construction of the

Kriva Palanka-Rankovce expressway with a total length of 25 km, financed with funds from the World Bank, was there a request for an environment Specialist to prepare a Management Plan for Biodiversity that will predict measures for monitoring and mitigating the effects of the construction work on the bio-corridor Osogovo-German which extends in the immediate vicinity of the planned route, while simultaneously in accordance with the projected technical documentation its territory is envisioned as a permanent landfill for the excess dug out earth material. The Contractor hired a Biodiversity Expert who drew up a Biodiversity Management Plan for the Osogovo-German bio-corridor and actively followed the implementation within the frame of the bio-corridor. This is one of the rare positive examples of action undertaken to protect a bio-corridor from construction activities, but it is still not sufficient to show maturity and dedication to the protection of biodiversity and appropriate treatment of detected bio-corridors in the country through planning and realization of infrastructure objects.

Hence, it is necessary to improve and strengthen legislation, to raise awareness especially among decision makers, planners, designers, consultants, and of course investors of capital infrastructure projects.

By setting up the concept of GI, all stakeholders will be increasingly obliged to act in accordance with legal regulations, which will increase the protection of biodiversity, nature, and the environment in its entirety.

CONCLUSIONS AND RECOMMENDATIONS

General recommendations:

1. to ensure effective promotion of GI on all levels;
2. to provide and maintain capacity building, trainings, education on the importance and the benefits from GI;
3. to improve the mechanism for exchange of information and collaboration;
4. to improve the standards and opportunities for innovation;
5. to improve opportunities for financing GI;
6. to get involved in European working groups and organizations representing various parties in order to be up to date with all the new GI practices that are applied in the EU.
6. researching the available financing resources and encouraging a wider involvement of all stakeholders in the application of GI;
7. establishing green partnerships;
8. actively involving individuals from local communities in the development of GI;
9. capacity building in the state and public administration with a special focus on the development and implementation of GI and
10. incorporating GI in local plans.

Recommendations for activities on a national, regional, and local level:

1. development of a National Strategy for GI;
2. establishing goals for maintaining and creating Green Infrastructure;
3. adjusting/supplementing the regulation on spatial and urban planning and the overall legal regulation with the concept and goals of GI;
4. integrating GI in the Strategic Assessment of the impact on the environment, Evaluation of the impact on the environment, and Elaboration on the protection of the environment;
5. focusing on long-term GI goals;

Promotion of Networking, Monitoring, and Researching:

1. support for the creation of national green networks that will develop, implement and monitor GI;
2. exchange of best practices and experiences in the country/region and beyond;
3. mapping existing GI characteristics on a national level and
4. conducting screening of projects/initiatives that fall under the Green Infrastructure umbrella.

It is vital to have the participation of citizens and other involved parties and stakeholders from the very beginning of the planning processes. Interested individuals, groups, and organizations should be allowed to participate in the prioritization, adaptation, modification and addition of plans, both in the planning process and during the implementation.

In addition to mandatory public opinion polls regarding plans, municipal councils should implement programs for the adoption of urban plans in two stages after public discussion. It is useful to enable participants to be present and participate in municipal council meetings where plans are adopted. All interested parties should be notified

on time about these meetings and events. Interested individuals, groups and institutions should be guaranteed the right to appeal to bodies and to administrative or other types of courts of jurisdiction in order to exercise their constitutional rights regarding the implementation of spatial and urban plans.

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