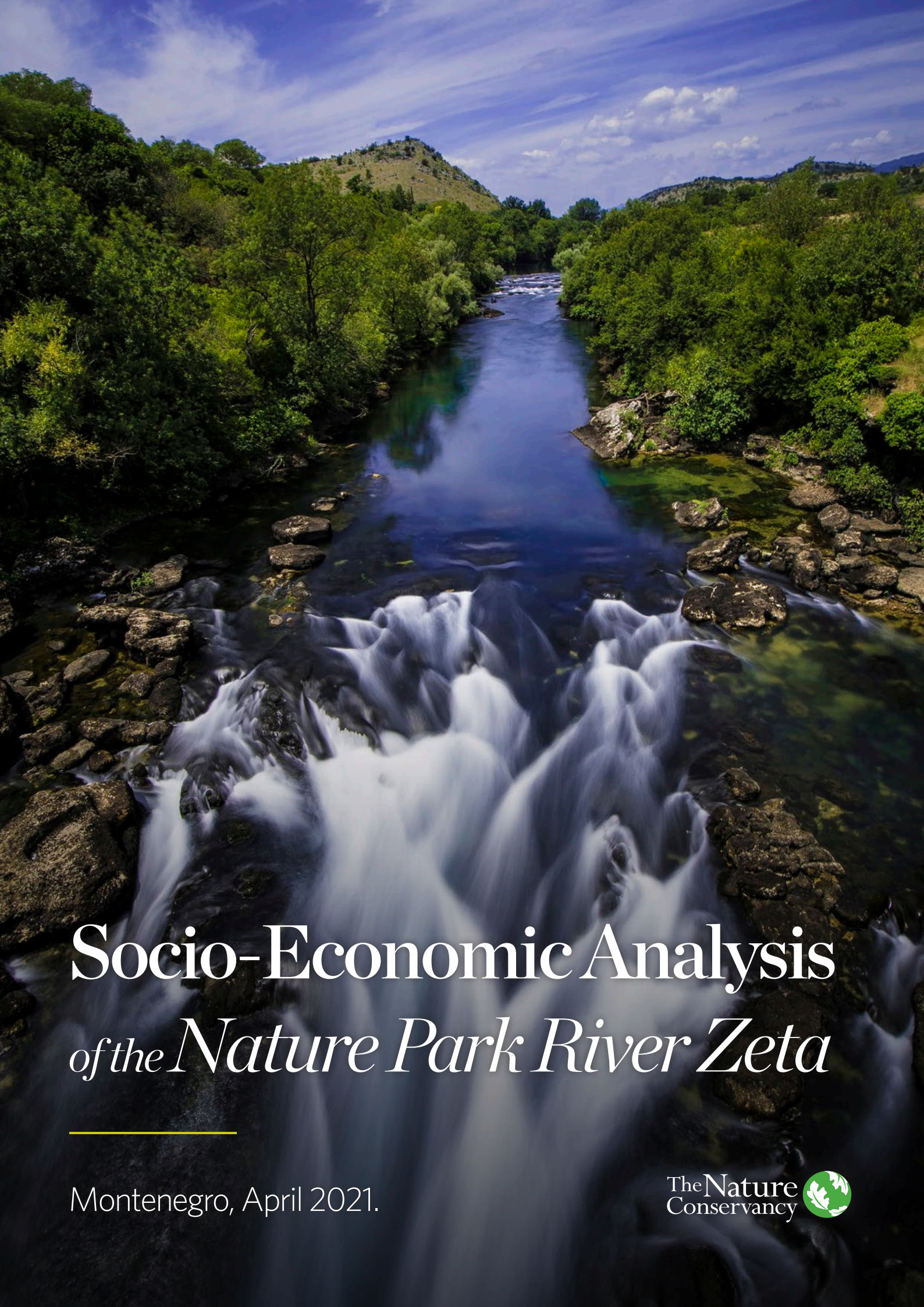

Socio-Economic Analysis *of the Nature Park River Zeta*

Montenegro, April 2021.

The Nature Conservancy

For client:

The Nature Conservancy

The Analysis is provided for the:

Municipality of Danilovgrad

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Acknowledgments

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The expert team involved in this study thanks both the international organization The Nature Conservancy and the Municipality of Danilovgrad for their trust and for an opportunity to conduct this Analysis, as well as to all the people involved in the research process.

The Nature Conservancy

Contents

Executive Summary

Purpose of this Report

This report was commissioned by The Nature Conservancy with funding provided by Enterprise Rent A Car Foundation. The report was prepared by a group of experts led by Marija Vugdelić, Ph.D. (co-authors: Aleksandra Martinović Ph.D., Ines Pajović, M.Sc, Jovana Drobnjak, M.Sc, and Jelena Milić) who developed this ***Socio-economic Analysis of the River Zeta Nature Park*** (hereinafter "the Analysis") to support the work of the Municipality of Danilovgrad (Montenegro) in implementing its plans for best practice recommendations for the future management of the River Zeta Nature Park (the Park) which was established in December 2019 after a successful, locally led initiative focused on its protection. This achievement is a major milestone in aquatic conservation in Montenegro and can serve as a model and inspiration for similar collaborative efforts throughout the Western Balkan Region.

The Analysis includes sources of current and future socio-economic activities within the park, approaches for genuine cooperation with key stakeholders to inform the park's management, financing mechanisms to sustainably fund the Park, and strategies for raising public awareness about the social and economic values of the Park. In conducting the work for the Analysis, the researchers evaluated the known natural values within the newly designated nature park; examined the current socio-economic context of the Park; conducted direct interviews with key government, industrial and community stakeholders (including non-governmental organizations); and prepared an assessment and evaluation of ecosystem services, a novel approach in Montenegro's protected area (PA) designation and management processes. The Analysis concludes with some specific recommendations to the Park Management for 'next steps' to be taken to help successfully establish the Zeta River Nature Park.

Background- Freshwater Ecosystems

Freshwater ecosystems and the biodiversity they support are the most threatened and least protected on Earth. Almost one in three freshwater species are threatened with extinction – and, in the last fifty years, populations of monitored freshwater species have declined by more than 80%. In Southeast Europe alone, there are hundreds of species that are under threat, due to unsustainable water management practices. Further, the current approach to conservation planning for protected area networks is heavily biased toward terrestrial flora and fauna and as a result, confer little benefit to freshwater biodiversity. In places where terrestrial areas do currently provide some benefit to freshwater biodiversity, this protection often lacks durability, as evidenced by the globally widespread development of dams inside of protected areas.

Implementing best management practices for freshwater in the management of PAs is necessary not only for the protection of biodiversity values, but also for the preservation of the ecosystem services from which local communities' benefit. Therefore, the role of the PA and its management body should be to ensure high quality of life for people and nature in the PA, while creating opportunities for local economic development through nature protection and sustainable use of natural resources. A PA's success, particularly for freshwater, requires support and active participation come from local stakeholders who depend on the health of the ecosystem and its resources (Figure 1).

Methodology and Results

The results of the Analysis show that the main natural values of the Park include presence of an endemic soft-mouthed trout (*Salmo obtusirostris*), diversity of habitat types, plentiful water resource and arable land, and remarkable landscapes.

Often invisible, these natural values support and provide socio-economic benefits to both people and nature within the NP.

These benefits include food and feed; climate, erosion and floods control; pollination; regulation of species reproduction; opportunities for recreation and tourism; science, and research. In addition to these socio-economic benefits, the Analysis suggests the benefit with the highest potential for economic development in Park is sustainable agriculture and ecotourism.

FIGURE 1

Schematic representation of the relationship between nature, the local community, and the PA's management body. Preserved biodiversity provides ecosystem functions and processes (green) that are the basis for ecosystem services from which people benefit (orange). The resulting benefits for people and biodiversity, are the basis for defining successful management of the PA. Good management practices (blue) will enable the sustainability of this system, that is, ensuring nature protection, good quality of life and economic development for local communities.

Current and Potential Future Pressures on the Park and its Values

The natural, social, and economic values of the park can be jeopardized by current and future pressures if not avoided and managed. The main pressures to the Park are soil and water pollution, unplanned urbanization, poaching, deforestation, changes in the hydrological regime of river, overgrowing of meadow habitats, the introduction of non-native species, and climate change.

The drivers of these pressures are unsustainable economic development, demographic trends, low public awareness of the importance of nature, lack of data for informed decision-making, low political priority of environmental issues, poor governance and lack of cooperation and communication between key stakeholders.

Proposals for priority activities for the Park's management body

Together, the preservation of values and mitigation of pressures indicates a need for a bold management body and plan, consisting of well-trained staff, clearly defined and measurable objectives, and a steady stream of funding sources. What's more, it is clear than the successful management of the park requires the commitment and collective action of all key stakeholders, including local government, local businesses, non-government organizations, farmers and farmland owners, and community organizations.

To aid in accomplishing all of the above, the Analysis proposes **5 priority activity "packages"** for the future Park's management body that should be conducted in the **first year** of its operation.

1. Establishing a management structure and hiring adequate staff

The management body's structure should reflect the focus of the goals of the Park, national requirements, good management practices and enable adequate public participation in decision-making and the work of the Park management. Therefore, it is recommended that the Park management creates an advisory forum and several thematic working groups (see bullet 5.) that enable public participation.

At the time of this publication, the Municipality of Danilovgrad appointed a director and expert associate to support the park's management. In the first year, at least three more supervisors should be hired to work in the field, followed soon after by hired staff who either already possess or are trained in PA management, including knowledge and skills in the field of ecology, nature protection, legislation, project management, public relations, and financial management.

In the first year of operation, the management body should recruit security and enforcement services on the premises of the Park, acquire basic equipment (computers, uniforms, vehicles, field surveillance equipment etc.), as well as to adopt basic internal operating procedures and protocols, such as the *Rulebook on Internal Order and Internal operating procedures*.

2. Communication with the public and development of the management plan

As soon as possible, the Park management should inform and educate the public about the concept of PAs; the category of the Park; its boundaries, zones of protection and the limitations they offer; as well as provide clear instructions to landowners on permitted actions and restrictions. The management body should engage the local community in the earliest stages by inviting them to offer their opinions and perspectives in the management of the Park. This engagement will inform the development of the management plan. Further, the management body should identify key stakeholders who will serve on the steering committee, advisory forum and working groups.

The Analysis encourages the management body to use the existing communication channels, such as the local news portals, social networks, local community news boards, to establish a regular system of informing local stakeholders. Other effective forms of communications that the management body should pursue to communicate with the community are mailing lists, e-newsletters, reports on park management violations, etc.).

It is prescribed by Montenegrin Law on Nature Protection, that the content of the management plan be adopted for a period of five years. Planning should be a participatory process, that is, to actively involve key stakeholders from the onset. Based on the five-year management plan, a one-year action plan should be defined. From day one, the management body should develop a set of indicators to monitor and evaluate the management of the park towards its committed goals. The use of Management *Effectiveness Tracking Tool* (METT) to monitor management performance is recommended.

3. Development of the financial plan for the Park

The local government will offer the initial funding for the Park management to ensure basic operation costs, as well as procurement of basic equipment. After these funds have been secured, the Park management should invest its resources into doing a detailed analysis of potential

financing mechanisms (fees for the usage of PA, private donations, branding, projects, crowdfunding, etc.) and initiate their implementation for the purposes of financing the operations of the Park management. By the end of the management body's first year, the analysis recommends that at least one financing mechanism is implemented and a financing plan for the future management of the Park is completed.

4. Establishment of thematic advisory working groups

The Analysis recommends that in the first year, the management body should establish thematic advisory working groups which focus on evaluating and offering recommendations to mitigate the pressures on the Park. It is recommended that thematic working groups should be established for: 1)park law enforcement, 2) water management, 3) fish stock protection, 4) spatial protecion; 5)agriculture and 6) promoting recreation and tourism related to the protection of the Zeta River. Working groups would enable communication, cooperation and joint action between the Park management and relevant stakeholders on given issues, and mobilization of resources to solve key problems within the PA.

5. Initiating research and monitoring of key species and habitats

In the first year of operation, the Park management should initiate data collection to make a baseline assessment of key species and habitats within the Park. The results of this analysis should inform a monitoring program based on established methodology which should be, at least in part, implemented by the local population (e.g. citizen science). In collaboration with relevant experts, the Park management should work on the preparation of a systematic research plan and initiate formal monitoring protocols. The necessary support already exists through a project that local NGO, EnvPro and TNC are implementing in the Park, which will identify key biomonitoring species and prepare monitoring protocols in cooperation with local stakeholders.

Conclusion

The creation of the Zeta River park represents an important milestone not only for Montenegro but for the rest of the Balkan region as well. The people of the Municipality of Danilovgrad should be proud of the creation of the Park and hopefully will derive many benefits from its existence. At the outset of the work to implement and establish the Park, the managers should take a strategic and planned approach to identifying and implementing those projects that reflect the needs and priorities identified in the management plan. Moreover, it will be critical to put the Park on sound financial footing and so the Park management should focus on securing sustainable funding to support the Parkas soon as possible. Ideally, by the end of the first year, the Park will have secured at least one project funding grant for some of the topics that are the focus of the Park management's work. Ideally such a grant could be sought to focus on sustainable financing of biodiversity protection. Equally as important, since engagement with the local population and securing their appreciation and support for the Park is so critical, the Analysis recommends that another one of the very first projects that should be undertaken by the Park should focus on promoting cooperation and engagement with the local population (including education and awareness raising.)

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1. Introduction

 Montenegro, April 2021.

1.1. The Context of Socio-Economic Analysis

Increasing anthropogenic pressure on nature in the last few decades has led to habitat loss, extinction of populations and species, and disturbances in ecosystems' functioning. This entails the loss of goods and services that people received from nature, directly or indirectly impacting their well-being. Therefore, many efforts are directed towards nature protection, and protected areas are considered a promising approach in this regard because, in addition to providing *in situ* protection of populations, species, and ecological processes, they also provide a number of direct and indirect benefits to humans. Therefore, nature protection policies, both global and national, recommend the establishment and sustainable management of protected areas as the most efficient way to preserve biodiversity, but also the ecosystem services that biodiversity provides to man.

The establishment of protected areas has been on the rise in recent decades, and nature protection policies envisage the continuation of such a trend. The so-called Aichi Objective 11 of the *Convention on Biological Diversity* (to which Montenegro is a signatory) envisaged establishing at least some form of protection on a minimum of 17% of land and 10% of sea territory by 2020. The newly adopted *EU Biodiversity Strategy* by 2030 envisages that as much as 30% of land and 30% of the sea in the European Union receives the status of a protected area, which represents a drastic change in the way space is used and managed.

Due to this trend, protected areas are increasingly gaining new roles. Although still primarily established to preserve biodiversity, protected areas are becoming increasingly important in the context of conserving natural benefits for both local communities and national economies. Thus, management approaches are changing from strict protection to local development by encouraging activities based on natural resources' sustainable use.

Such a change of approach to protected areas puts a lot of pressure and expectations. In addition to achieving biodiversity protection goals, protected areas are expected to contribute to local communities' development, poverty reduction, as well as to increase standards and well-being through the continued provision of ecosystem services even beyond their borders, thereby attracting investment and combating climate change. Although this puts additional pressure on protected area managers, it is also an argument for establishing and maintaining protected areas, i.e., a way to provide the necessary public support for nature protection.

This is especially important because protected areas represent a significant investment - the costs of protected areas are multiple. They include operating costs (staff salaries, maintenance), protection costs, damages, opportunity costs for disabling land use for various commercial purposes and many others. There is often an opinion that nature protection is a luxury and the establishment of protected areas is an obstacle to development. Protected areas worldwide face a lack of finances, adequate staff, public support, and they are often clashing with other sectors, activities, and forms of land use.

Due to all these reasons, it is of great importance for the success of the protected area that, besides the natural values that are the subject of protection, the socio-economic context is also being considered (namely, activities and needs of people within and around the protected area), so that the need for protection can be harmonized with the needs of society and its development.

That is precisely the purpose of this document. Natural values and goals of biodiversity protection were presented through the *Study of protection and establishment of the protected natural asset River Zeta*, as well as through the *Local Action Plan for Biodiversity of the Municipality of Danilovgrad* and the *Biodiversity Action Plan of the Capital Podgorica*. This document analyzes the socio-economic context of the Nature Park River Zeta as a complement to existing information. The conclusions of this analysis should, on the one hand, be a recommendation to future protected area managers on how to direct their efforts and finances, and on the other hand, contribute to raising awareness of various stakeholders about the benefits of the Park. In other words, the goal is to use socio-economic arguments for nature protection.

1.2. Objectives of the Analysis

As Montenegro follows global and regional nature protection policies, the national nature protection policy also envisages an increase in the area under protection due to the conservation of biodiversity and ecosystem services. In recent years, the area under protection in Montenegro has constantly been increasing (currently 13.4%, according to the official census of the Agency for Nature and Environmental Protection), and the existing plans anticipate that such a trend will persist. Achieving the obligations of European integration, i.e., the establishment of the *Natura 2000* network, contributes to this process, through which it is expected that over 20% of the territory will be under some form of protection. Managing such a large area in virtue of being considered a protected area will put extraordinary pressure on Montenegro, the nature protection sector and protected area managers to achieve sustainability.

Zeta Nature Park was established in this context in December 2019, and at the time of writing, there is still no fully established management body or management plan. The purpose of this document is to contribute to these processes in the following ways:

1. Defining the management plan of the Nature Park

A management plan is the main tool to ensure that protection objectives in a protected area are achieved. Without a management plan, the protected area is the so-called "Paper park", i.e., park only on paper, which creates a risk of losing the natural and other values for which it was declared.

However, for a management plan to be relevant, applicable, and effective, it should be based on information on both the biophysical and socio-economic aspects of the protected area. In other words, it should take a holistic view of the protected area, look at both nature and people living around and from it, and address the social and economic demands of the area in which the protected area is located.

At the time of drafting this document, the River Zeta Nature Park is in the phase of establishing a management structure. The primary purpose of this document is to analyze the various socio-economic aspects of this area and to provide information relevant to the development of the first management plan of the Park. The idea is to identify through this analysis priority activities, forms of management and use of space that can contribute to sustainable and equitable use of benefits while achieving nature protection goals, which can be translated into goals, measures, and activities of the management plan.

2. Establishment of mechanisms for cooperation with actors

Protected areas are one form of land use that inevitably affects different stakeholders and can lead to conflicts, so stakeholder involvement is key to any protected area's success. Therefore, it is necessary to identify the relevant actors, their attitude towards the Park, and the Park's effects on their activities and well-being.

In this respect, the purpose of this study is twofold. On the one hand, it will provide information on different users of space, their interests, activities, current forms of use of space and future plans, values, and attitudes towards the Park. This information will be translated into recommendations for establishing mechanisms for cooperation and participation of actors in the work of the Park. On the other hand, the consultative process that accompanies the study contributes to the involvement of various actors in the Park's work, their empowerment, creating the attitude that the Park is an advantage and value of the local community and the feeling that this initiative belongs to them.

3. Support for Park funding

As mentioned above, the management of protected areas entails high costs, and achieving sustainable funding is one of the biggest challenges that managers face. One of the elements of sustainable funding is the diversification of financial mechanisms available to managers. In this regard, the purpose of the Analysis is to identify potential financial mechanisms or sources of funding that future managers of Nature Park may take into account in financial planning.

4. Informing and raising awareness

The purpose of the Analysis is to show the socio-economic significance of the Nature Park River Zeta and to use it as an argument for gaining the support of stakeholders for the protection of the Park. The findings of the Analysis can therefore be used to inform decision-makers and the general public and raise their awareness of the values and importance of the Park.

1.3. Scope of Analysis

This Analysis refers to the Zeta Nature Park area within the limits within which it was officially declared. The Proclamation Decision defines the boundaries, and such boundaries have been used in all maps and graphs within this document. The analysis also covered the surrounding area, where this was justified from an ecological perspective (e.g., connection with the surrounding protected areas, ecosystems whose services are used in the park area, etc.). The analysis focused on those activities that directly depend on the use of natural resources in this area, as well as on the most relevant actors present here.

1.4. Methodological Approach

he analyses presented in this document were performed using analytical, comparative, historical and statistical methods. The sources of data and information for the analyzes were as follows:

- Official statistics of *MONSTAT* as well as relevant services from the municipal and national level. Data are listed and referenced where suitable.
- Official strategic and planning documents from the municipal and national level (strategies, spatial planning documentation, development programs, etc.). The list of used documents is given in the list of references (Annex 5).
- Scientific and professional books, studies, and articles published in relevant journals in the country and abroad. The list of consulted academic literature is given in the list of references (Annex 5).
- Interviews with various actors (representatives of interest groups) related to the Park area. The interviews were semi-structured, with open-ended questions, and conducted one-on-one. The questions were formulated in order to: obtain relevant data, assess attitudes, needs, stakeholder interest in the Park, and assess ecosystem services. A detailed description of the research methodology through interviews is provided in Annex 1.

A part of the study related to the assessment of ecosystem services followed the methodology of *Assessment and Evaluation of Ecosystem Services* developed by the German organization *GiZ*. A detailed description of the methodology can be found in Annex 2.

The findings and conclusions of the draft study were verified through consultations with the interviewed actors, whose inputs were used to prepare the final version of the document.

2. Contextual Analysis

 Montenegro, April 2021.

2.1. Ecological Aspects of the Park

2.1.1. Biodiversity Review

Ecosystem diversity

Nature Park River Zeta is currently the only protected area in Montenegro that covers the plain river's ecosystem. It, therefore, contributes to the representativeness of the ecosystem within the overall system of protected areas in Montenegro.

Within the park, the following ecosystems are represented (Map 1):

Freshwater – Flowing waters of the river Zeta, its tributaries Sušica and the river Matica (Sitnice), wet (wetland) habitats along these streams, as well as the wetlands Moromiš (with the river Brestica which connects it with Zeta) and on Mareza.

Forest – Consists of floodplain forests in which the dominant species are poplar (*Populus*) – white and black (*Populus alba and P. nigra*) and willow – white and fragile (*Salix alba and S. fragilis*). They are followed by a belt of thermophilic deciduous forests and shrubs with oaks: *Quercus cerris, sessile oak (Q. petraea) and malt (Q. frainetto)*, and other deciduous oaks. These forests are fragments of once widespread oak forests that have been cleared for arable land.

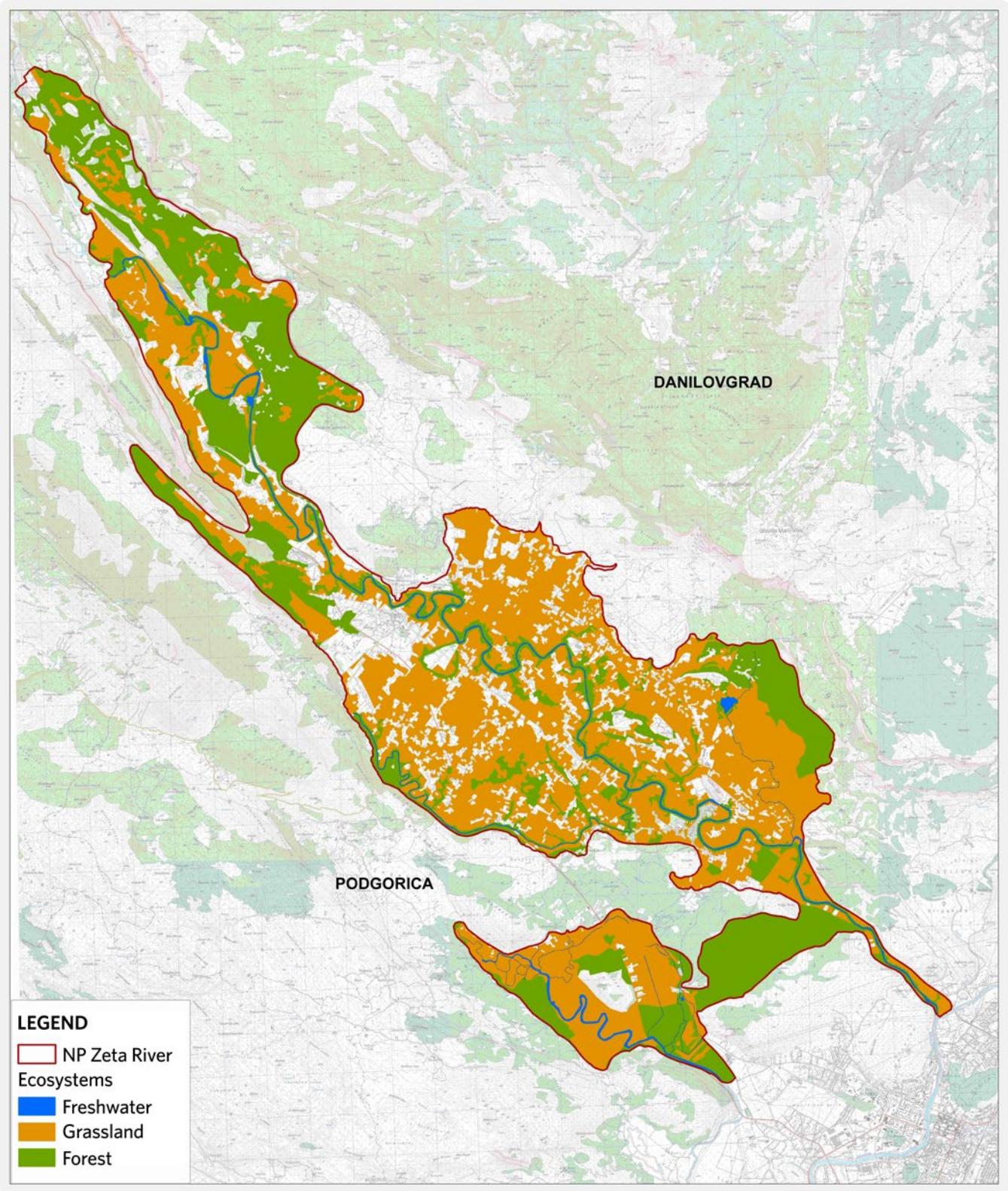
Grassland – is the most common ecosystem in this area. These are primarily meadows and pastures.

To date, *Natura 2000* habitats shown in Table 1 have been detected in the Park:

TABLE 1 - *Natura 2000 habitats within the Park detected so far (Source: Study for the protection and establishment of the protected natural asset Zeta River Valley 2019)*

Natura 2000 code	Habitat	Familiar sites so far
3150	Natural eutrophic waters with vegetation *Magnopotamion and Hydrocharition*	Cemetery Šab's circle, the confluence of Sušica and Zeta, a stretch between Spuž and Danilovgrada
62A0	Eastern sub-Mediterranean dry grasslands (*Scorzoneretalia villosae*)	Cemetery Šab's circle
6220*	Mediterranean xerophilous grasslands	
6540	Sub-Mediterranean grasslands *Molinio Hordeion secalinii*	Along the entire course of Zeta
91E0*	Alluvial forests of black alder and mountain ash (Alno-padion, *Alnion incanaea, Salicion albae*)	
91M0	Pannonian-Balkan cera and sessile forests	Moromiš, Cemetery Šab's circle
92A0	Galleries of white willow and poplar	Along the entire course of Zeta

The research conducted so far has not covered the entire area of the Park. However, there are indications that these habitats are situated in other locations and that in addition to the above, within the boundaries of the Park, there are other Natura 2000 habitats (specifically: 91E0* Alluvial forests of black alder and mountain ash and 6420 Mediterranean high hydrophilic meadows (*Molinio-Holoschoenion*).



MAP 1

Map indicating the distribution of major ecosystem types (data sources can be consulted in Annex 5)

Species diversity

The Park area is also a habitat for many keystone species. From the point of view of national protection, the following are important:

- Skadar oak (*Quercus robur scutariensis* Cernj) - an endemic subspecies of oak whose individual trees can still be found in this area.
- Zeta *soft-mouth* trout (*Salmothymus obtusirostris zetensis*), an endemic species, still present in the upper reaches of the river Zeta, from Danilovgrad to Glava Zeta;

Besides the above mentioned, one can find a sundry of rare and endangered species, a large number of Balkan endemics, as well as species that have commercial significance, such as medicinal plants, salmonid fish species, fungi, etc.

As in the case of habitats, data on the presence of species in this area were obtained primarily through the preparation of the Protection Study. Given the fact that conducted research in this context was severely limited in terms of time and money, it is likely that some species inhabiting this area were not detected, including those of international importance. Data on the overall state and dynamics of keystone species' populations are also missing

Genetic diversity

When it comes to the genetic diversity in this area, this is mirrored in the diversity of taxa (a significant number of species, genera, families...), the presence of subspecies, and endemic species. Special emphasis should be put on the presence of Zeta soft-mouth trout, whose populations could be found only in the Neretva river basin besides Zeta, as well as the Skadar oak, which is endemic to the Skadar Lake basin.

The autochthonous breeds of domestic animals also reside in this area, namely bush cows, *Pramenka* (Zackel) sheep, Zeta *Žuje*, Balkan goats, and Balkan donkeys, which preserve their unique genotypes. Domestic varieties of corn, wheat, potatoes, tomatoes, peppers, beans, green beans, fruits and vines were grown in this area, but these indigenous genotypes' presence is currently questionable. If there is preserved seed material (by the Biotechnical Faculty or in households), it can form the basis for indigenous production, which would be in line with the goals of the Park.

2.1.2. The Most Important Conservation Values

In the previously conducted Protection Study, it was feasible to identify the following values as the most important ones from the point of view of biodiversity:

- Trout population in the upper reaches of the Zeta River,
- Potential *IBA* area,
- The characteristics of the areas that can nominate it for the status of Areas of Special Conservation Importance (*ASCI*) which make up the *EMERALD* network,
- Typical wet ecosystems of the lower course of the river Zeta (zones of Kosovo Lug, Martinić, Ždrebaonik, and others); the Moromiš wetland with the river Brestica which connects it with Zeta.

2.1.3. Protection Category

The Zeta River has been proclaimed protected in the category of a nature park. Following the definition in Montenegrin Law on Nature Protection (Article 24), a nature park is "a vast natural or partially cultivated area of land or sea, which is characterized by a high level of biological diversity or geological values with the significant landscape, cultural and historical values and ecological features of national and international importance". Thus defined, it corresponds to the *fifth category* of protected areas according to *IUCN*, namely protected landscape. This refers to areas where specific ecological, cultural, and landscape values have been formed through the interaction of man and nature via traditional forms of land use.

Hence, this category does seem adequate since Zeta River valley is an area where a longstanding interaction between man and nature has created specific values deserving protection. Furthermore, such categorization would offer excellent prospects for biodiversity protection in this intensively populated area.

In sum, the category of nature park does not refer to areas of untouched nature characterized by the absence or minimal presence of men, such as nature reserves and national parks. In protected areas of the category mentioned above, human presence is indeed expected, and human activities are not limited to scientific research, monitoring, and education. On the contrary, activities related to nature parks also involve active interventions and sustainable uses (e.g., agriculture, recreation and tourism, hunting, fishing, forestry, etc.). By combining biodiversity protection with sustainable use, this category of protection also aims to provide ecosystem services, provide a framework for local actors' participation in nature protection, encourage them in this and be a sustainable development model.

However, not only that biodiversity protection is vital for the concept of the nature park category, but social and economic aspects, as well as defined measures, activities, and indicators for monitoring success.

2.1.4. Protection zones

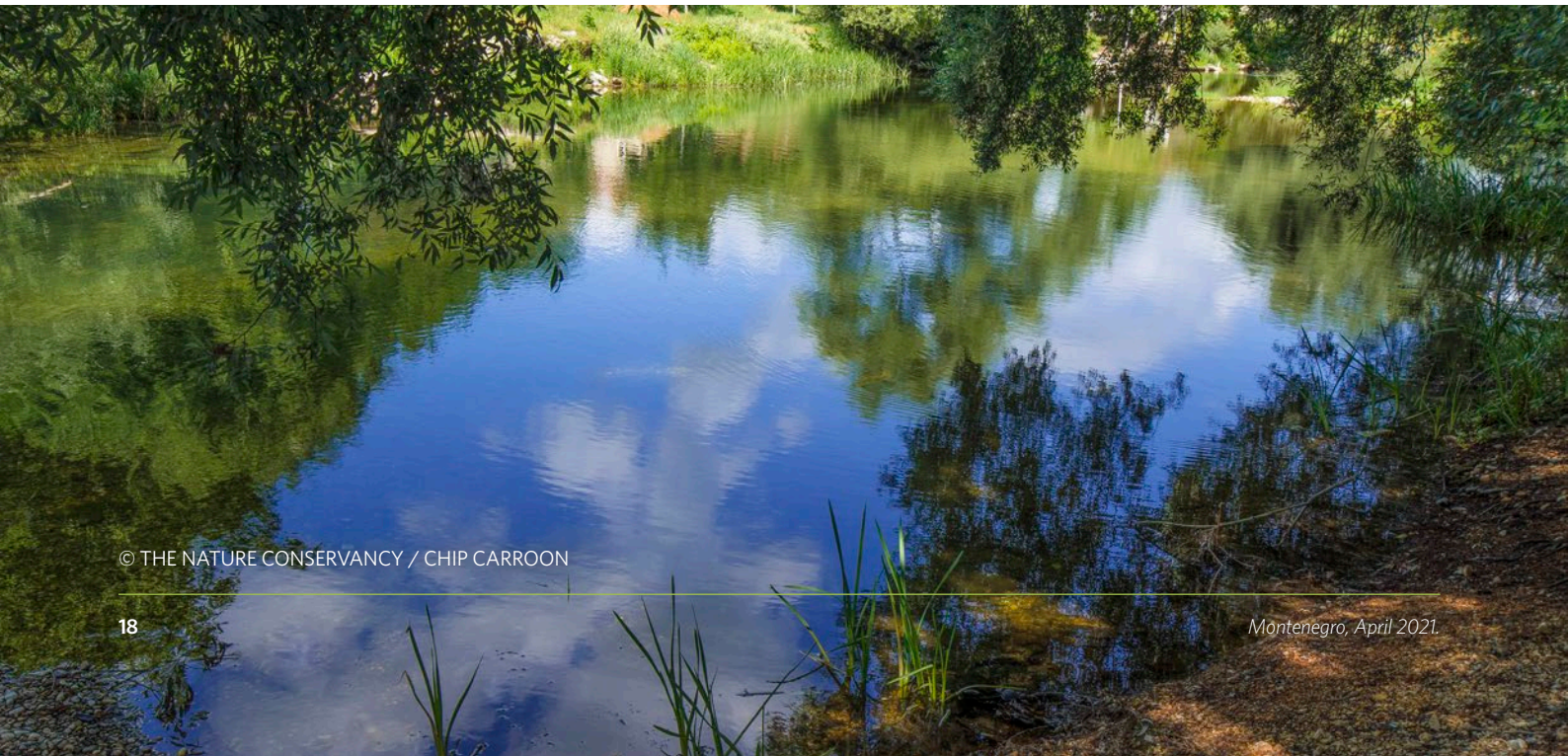
Zoning has been carried out within the Park's territory in order to protect the conservation values described above. Accordingly, the following zones are marked (shown on Map 2):

Zone I – Zone of strict protection regime – covers an area of 15.1 ha (0.1% of the Park) which encompasses the Moromiš wetland, a slightly modified habitat of exceptional ecological importance. All types of resource exploitation are prohibited in this zone. The allowed activities are scientific research and monitoring to an appropriate extent, education, and, finally, necessary interventions in the case of natural hazards.

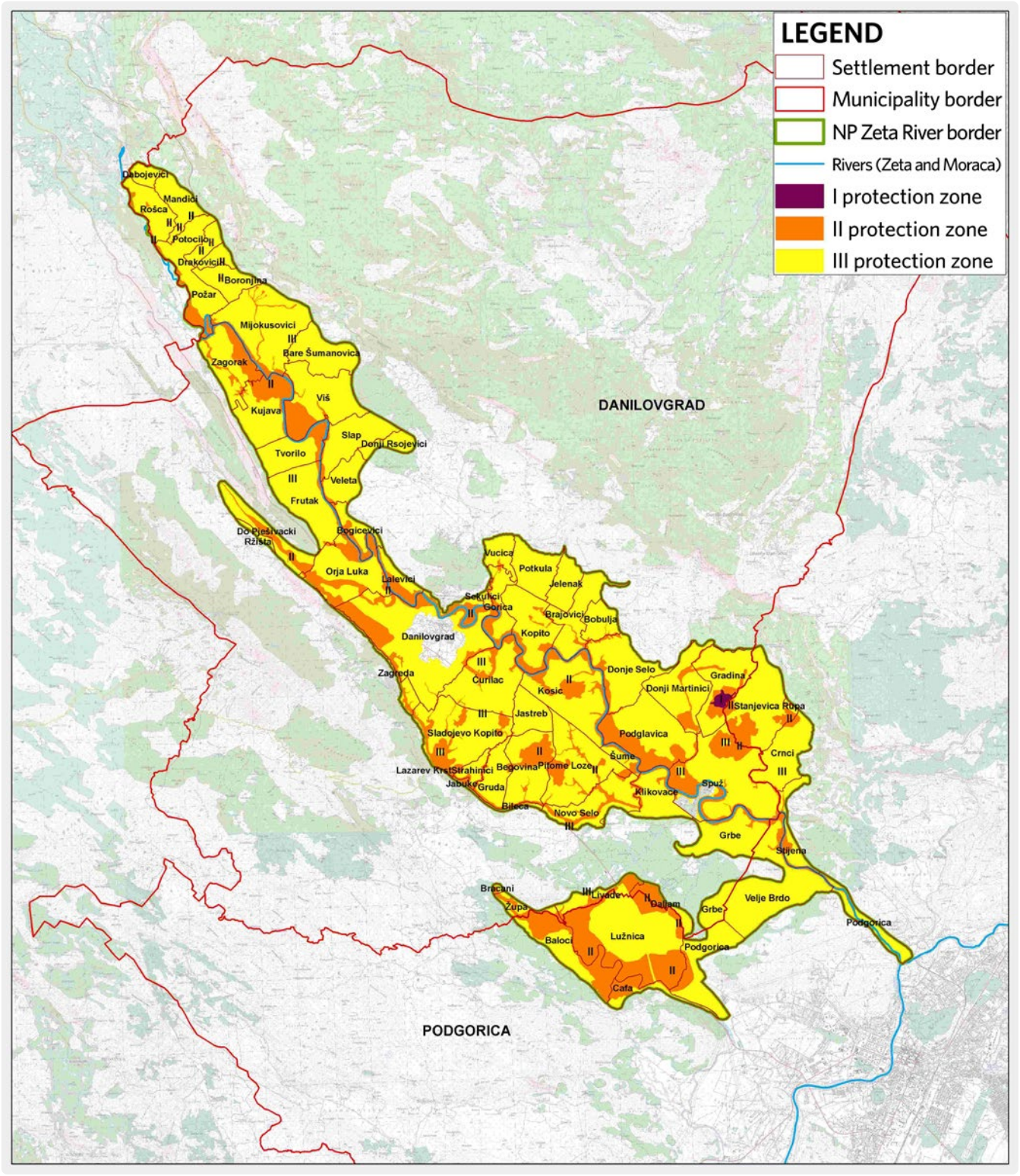
Zone II – Zone of active protection regime – covers an area of 2754.1 ha (23% of the Park territory). In this zone, controlled use of resources is allowed, which does not violate their ecological integrity, as well as habitat restoration, active management of habitats and species.

Zone III – Zone of sustainable use - covers 9216.7 ha (76.9% of the territory). In this zone, controlled construction and resource exploitation are allowed, which do not violate the principal ecological values and encourage traditional space usage forms.

Although a specific regime is prescribed to each zone, the precise objectives of protection within the zones have not been defined yet. In this document, it is recommended to define them within a separate act.



MAP 2 - *Map of protected area (data sources in Annex 5)*

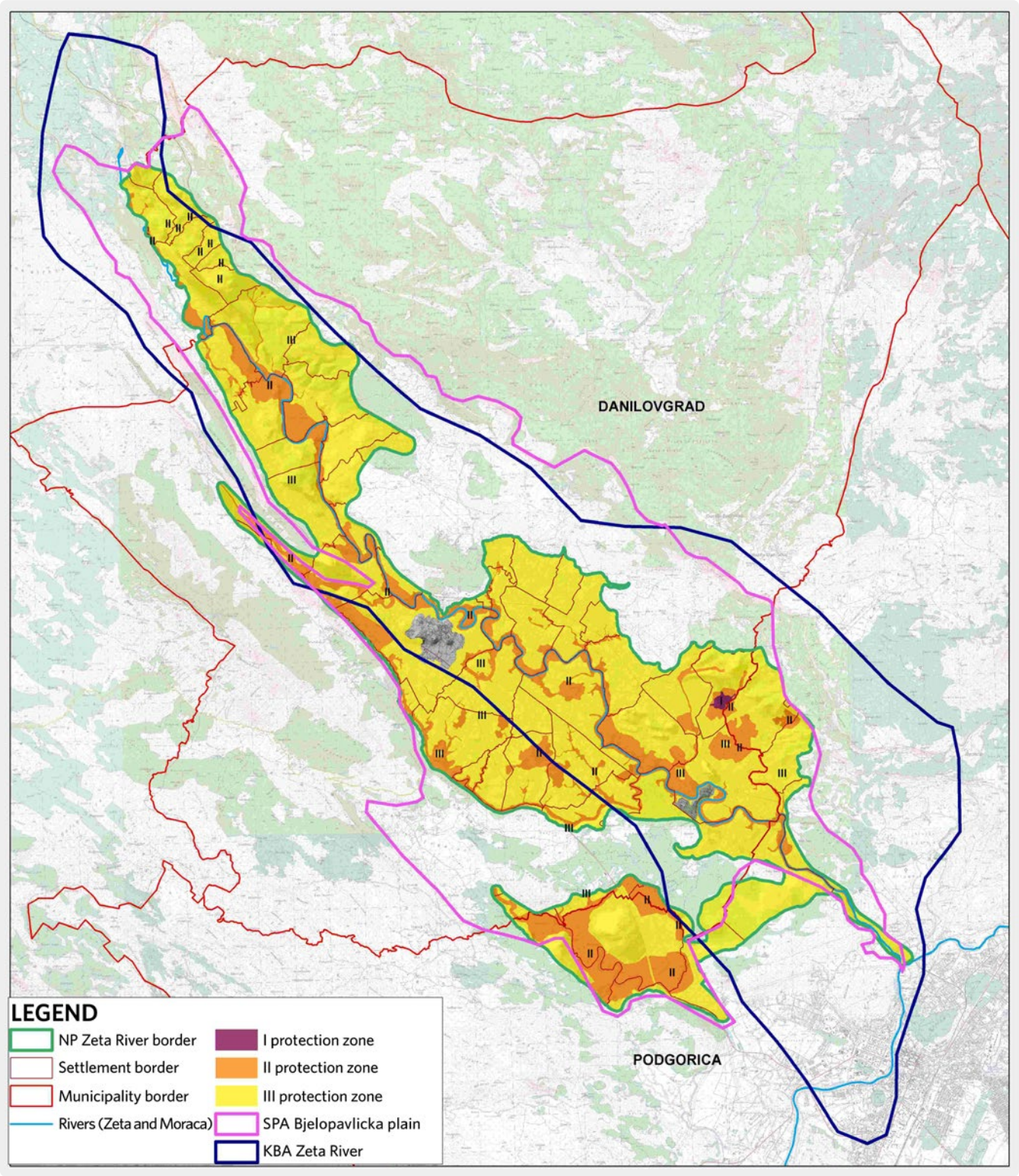


2.1.5. International Conservation Significance

Freshwater ecosystems occupy an exceedingly small percentage on the planet's surface, but at the same time, they are severely endangered and under the most extraordinary anthropogenic pressure. In particular, the protection of rivers is very complex. This is because they are linear systems that flow through different administrative units (municipalities, states). Consequently, they are affected by a significant number of processes in the entire drainage basin, especially because the rivers are commonly used for a plethora of activities (water supply, irrigation, energy production, tourism etc.). Due to that, river ecosystems have a small representation in the overall system of protected areas on a global level.

Therefore, the very fact that Zeta is protected as a river gives this Park international significance since an instance of the rarest and most endangered ecosystems is thus protected.

Furthermore, in addition to the listed habitats of importance for the European Union (Natura 2000), there are other habitats and species of international importance in this area. The 2000 ha area in the Zeta River Valley has the status of the Key Biodiversity Area (KBA, http://www.keybiodiversityareas.org/), while the 20,575 ha area also meets the standards of the Special Protected Areas (SPA) based on the EU Birds Directive (Rubinic et al. 2019). Part of the Park is also included in the Important Areas for Pond (IAP, cf. The Local Biodiversity Action Plan of the Municipality of Danilovgrad 2020-2024).



MAP 3 - *Map of the Park with the boundaries of the SPA and KBA area (data sources can be consulted in Annex 5)*

The Zeta River has also been recognized as a potential candidate for *EMERALD* and *IFA* (abbreviation for the Important Fungus Area, cf. Protection Study and Establishment of a Protected Natural Property River Zeta 2019) area. Particular emphasis should be placed on the importance of candidature for the *IBA* (Important Bird Area, cf. Saveljić et al. 2007), which is set as one of the objectives of protection, as well as a marker of central values.

It is worth noting that Zeta is also a part of the Drina Basin – the third-largest basin in the Mediterranean in terms of water volume (after the Rhone in France and the Po in Italy), and one of the global centers of biodiversity (Vlachogianni 2015).

2.1.6. Connection with Other Protected Areas in Montenegro

This Park has a geographical and ecological connection with the following existing protected areas in Montenegro:

- The natural monument *Gornjepoljski vir* – refers to the largest estuary in the Dinarides, located in the river Zeta's upper reaches. It is linked to the river Sušica, which forms the Zeta together with the Rastovačka river and thus affects the hydrology of the Zeta itself. The Secretariat for Spatial Planning and Environmental Protection of the Municipality of Nikšić has been declared the Monument's manager. However, the management plan has not been adopted, and no specific activities have been carried out yet.
- The natural monument *Pećina Megara* – is located along the border of the Park, in Velje Brdo that belongs to Podgorica. The cave contains jewelry and pools with water, but it is not easily passable and, consequently, it has not been sufficiently explored. So far, there have been several attempts to valorize this cave, but they have not borne fruit. Formally, the manager is the Agency for Management of Protected Areas of Podgorica, but there is no management plan and specific activities for protection. The valorization of this cave could be complementary to the tourist, recreational and educational valorization of the Park, and the same manager could deal with both areas.
- Skadar Lake National Park – the Park area partly falls within the drainage basin of Skadar Lake, and the river Zeta provides a significant amount of water to this aquatic system. Therefore, any impact on the river Zeta – such as changes in the hydrological regime, sedimentation, pollution, extinction of populations and species – may, in turn, affect the ecosystem of Skadar Lake since these two constitute an ecological continuum. Park management and protection activities form a natural synergy with similar activities within the Skadar Lake National Park. Permanent, active cooperation and coordination with the Public Enterprise for National Parks, which is in charge of the Skadar Lake National Park, should be encouraged in order to obtain the best possible protection effects, establish ecological networks and corridors, and increase capital.

It should also be noted that the area of the Park is located on the main migratory road for birds that connects Skadar Lake with the Nikšić reservoirs. Thus, the Park represents an important corridor between the south and north of Montenegro and is also part of the international Adriatic Flyway.

2.2. Landscape Values

According to the administrative regionalization of Montenegro (*RZUP* 2015), the area of the Zeta river valley is situated within the region of the Skadar Basin. The park is geographically located in the Bjelopavlićka plain, a tectonic depression with a karst field character, which separates western Montenegro's karst plateaus from the high mountains of the central part. The plain is slightly undulating, and limestone hills and heads covered with sparse xerothermic vegetation rise from it. The predominant altitude varies from 35m in the Mareza valley to 60m at Glava Zeta. The highest point within the park is the top of Veliki Šanac on Velje Brdo, 283m above sea level.

The river Zeta flows from Glava Zeta in the middle of the valley, where Oboštica and Perućica meet.

The average width of the riverbed is 45-50m, and the maximum is 90m. Smaller watercourses and springs flow into it, and in some places, it creates meanders and swamps. Mixed floodplain forests – mainly composed of willow, poplar, or alder – are linear, follow the river flow, and are often fragmented. They also represent the border with settlements and agricultural land. They are followed by forests, with the most extensive meadows of different types of oaks, followed by fields – meadows, arable land, and orchards – the area's dominant landscape element.

This is a cultivated landscape with predominantly rural structures, representing a mosaic of backyards, small arable lands, orchards, and pastures, bounded by hedges with shrubs and trees. The settlements are structured and polycentric.

2.3. Cultural Values

Thanks to its geographical and ecological characteristics, this area has always been favorable for people's lives who have inhabited it since prehistoric times. This is evidenced by many archaeological sites indicating that some sites have been continuously inhabited from prehistory to the present day. The very name of the river – Zeta – according to the widely accepted interpretation originates from the Old Slavic word meaning wheat/harvest, which indicates the benefits of this area for human survival.

Various communities and civilizations that populated this area left behind material traces, hence one can find archeological sites from prehistory, the remains of the Roman Empire (the largest site being the town of Duklja at the confluence of the Zeta in Morača), as well as those of Illyrians, Slavs, and medieval architecture in the form of fortresses, bridges, churches, etc. Finally, monuments erected to the victims of the wars of the 20th century are also among the historical and artistic curiosities. Interestingly enough, even though the Zeta Valley is one of the most historically important areas in Montenegro, this area is also among the least researched in this respect.

In the whole area, there is a significant number of sites that have cultural and historical significance. These include archeological sites, forts, fortresses, sacral buildings, memorial plaques and monuments (Map 4). Twelve sites in this are recognized as a cultural asset of public interest, but their protection and valorization have yet to follow.

Special mention should be made of folk architecture examples – representative garden houses, old mills, bridges, and the so-called *guvna* (outdoor or indoor threshing floors). These facilities are clear examples of construction that is in harmony with nature. As such, the facilities should serve as a paragon for the impending space urbanization and defining the construction rules in the Park.

By connecting them on foot and bicycle paths, the tourist and recreational offer of the Park would also be enriched.

The condition of material cultural goods is far from privileged. Many goods are, in fact, degraded because they are left to either natural processes or anthropogenic influences. At the same time, targeted conservation measures either lack or are being implemented on a modest scale.

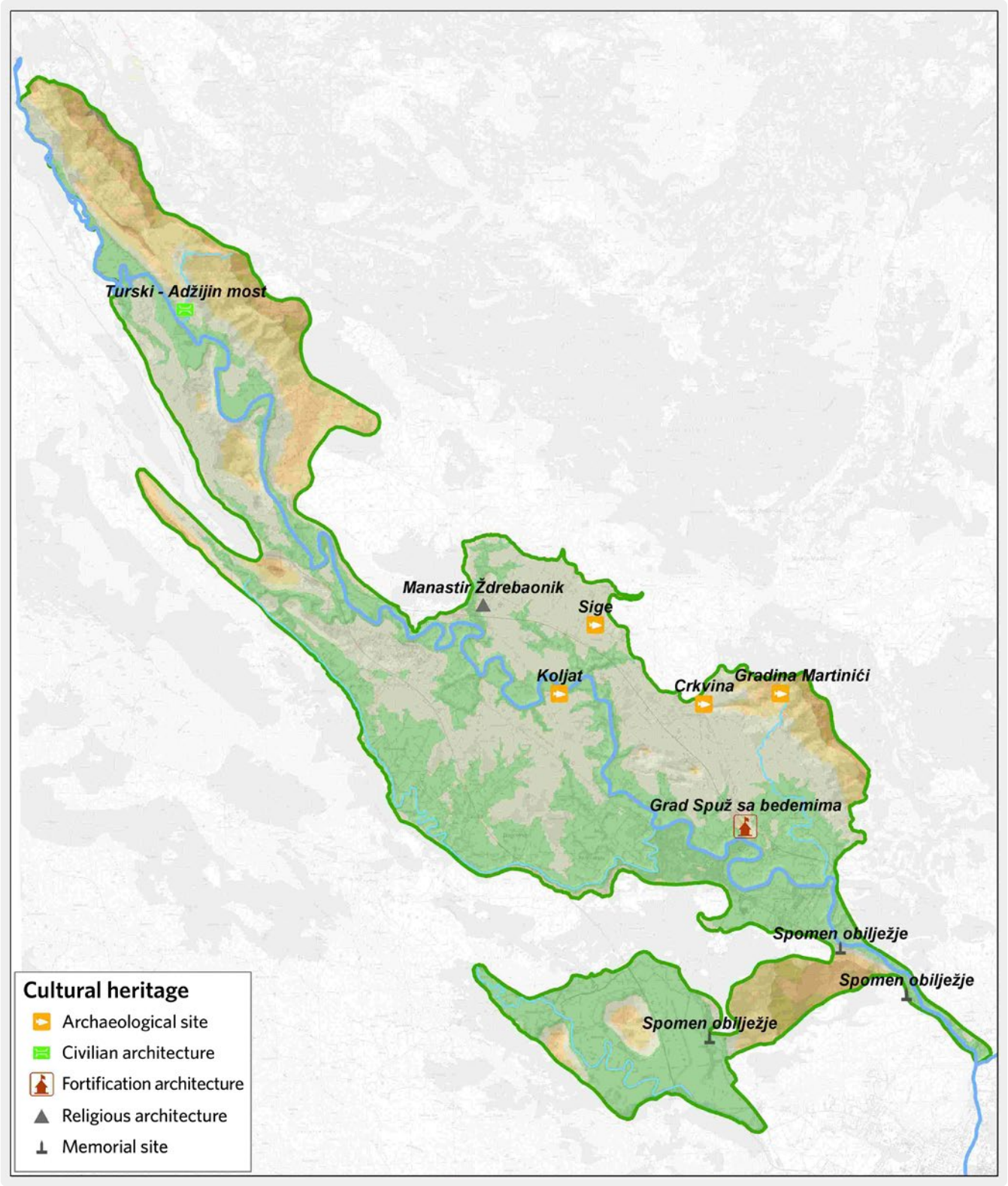
This area's historical heritage is preserved and valorized through the Homeland Museum's work in Danilovgrad (which contains seven subject collections and 2400 exhibits) and the Museum of the City of Podgorica. In Danilovgrad, there is also the city library "Mihailo-Miho Vuković", a legacy from 1987, which has 100 books over a century old. These books are recorded as museum exhibits and subject to regulations of the Institute for the Protection of Cultural Monuments of Montenegro.

Most of this area's cultural activities are associated with the Danilovgrad Cultural Center (to which the city museum belongs organizationally). This Center organizes literary events, festivals, book promotions, literary evenings, forums and lectures, documentary evenings, theater performances for children and adults, concerts and entertainment programs.

A unique cultural institution is the Danilovgrad Art Colony, which since 1972 has brought together sculptors from all over the world who perform sculptures for free space. Some of these spatial format sculptures are on display in the city center and represent an outstanding attraction.

Within the municipality of Danilovgrad, several traditional events are held; the most famous among them are *Rijeka Zeta, Spuško ljeto, and Days of the Wild Rosehip*.

Physical culture is also quite developed in this area. Its bearers are the Danilovgrad Center for Culture, sports clubs, and many active sports and recreational associations. From the infrastructure, there are several sports halls and stadiums, sports and recreation centers, school halls, sports polygons, as well as sports and recreation centers within the barracks "Milovan Šaranovic" and the Police Academy in Danilovgrad.



MAP 4

Map of the most important historical sites (data sources in Annex 5)

2.4. Use of Space

2.4.1. Area Purposes

The Bjelopavlići plain area, including part of the Nature Park area, is one of the most important agricultural areas in Montenegro. Therefore, almost half of the Park area (47.5%) is agricultural land (Table 2), involving arable land, orchards, and pastures. Of the other land uses, the most important are forests (gallery forests along rivers, smaller meadows, have a 32% share in the total area) and settlements (14.3% of the Park area).

TABLE 2 - *Purposes of areas within the Nature Park (data source: Spatial urban plan of the municipality of Danilovgrad, Spatial urban plan of the Municipality of Podgorica)*

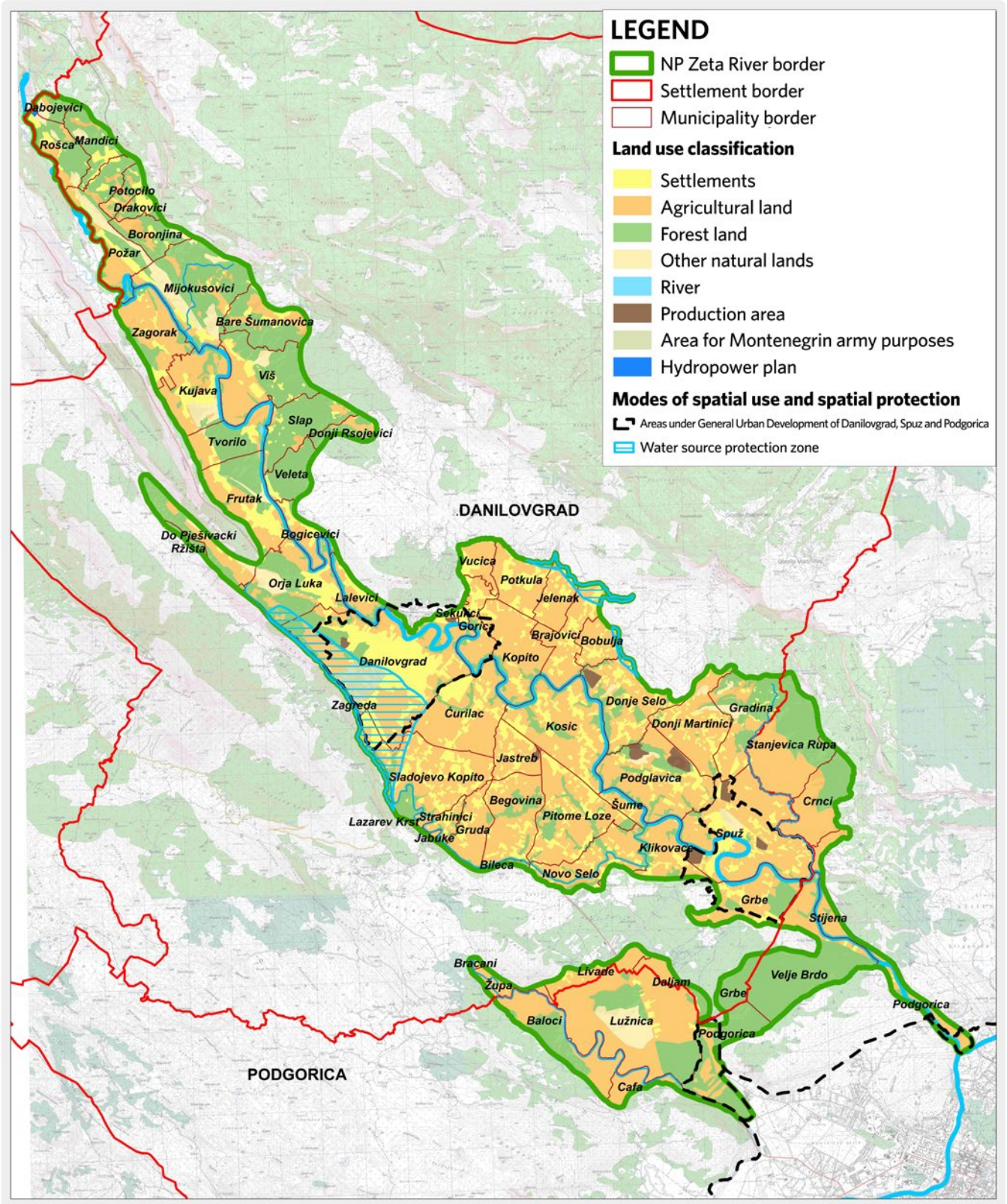
Purpose	Area in ha	% of area
Settlement areas	1741,3	14,3
Arable land	5.790,3	47,5
Forest areas	3.890,6	32,0
Other natural surfaces	417,9	3,4
Water surfaces	174,7	1,4
Production areas	80,2	0,7
Areas for the needs of the Army of Montenegro	75,3	0,6
Hydroelectric power plant	2,7	0,02
In total	**12.173,6**	**100,0**

Historically, in this area, agricultural and forest land occupied much larger areas. There are many toponyms in the entire area that indicate the former presence of forests (Kosovi Lug, Vukov Lug, Lješkopoljski Lug, Zorski Lug, etc.), which were cleared for agriculture until the second half of the 20th century. They were converted partly into arable land and orchards, partly into pastures and hayfields.

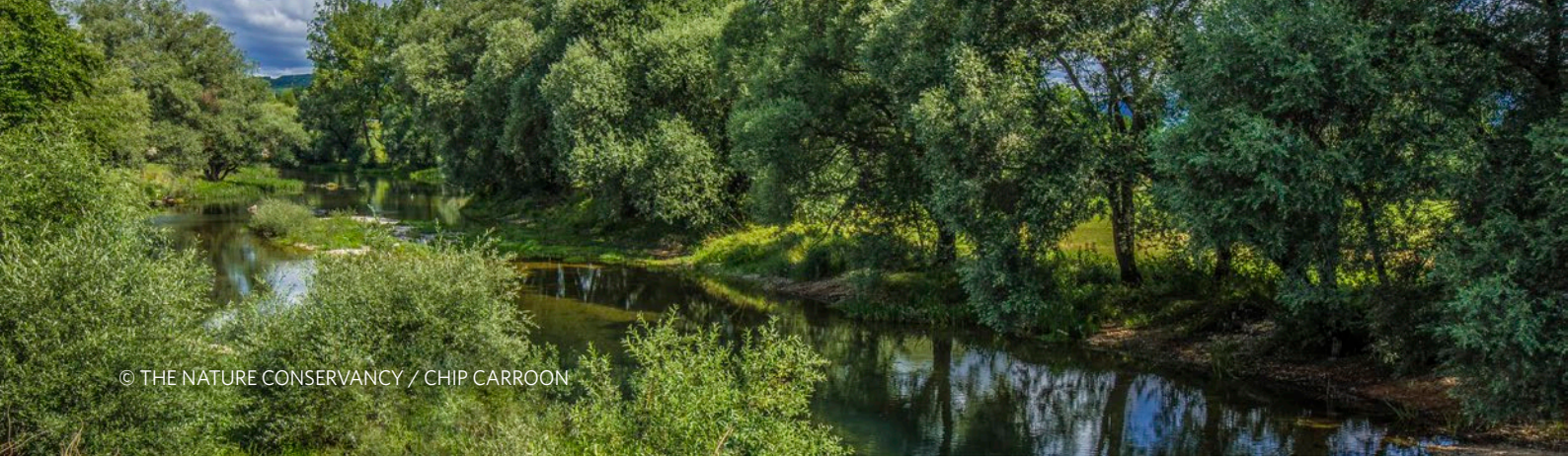
In the last few decades, the volume of agricultural production has been declining. Agricultural land is abandoned and left to succession processes or converted into construction. With the increase of the population in the municipalities of Danilovgrad and Podgorica, the settlements and the accompanying infrastructure are expanding. The construction of housing and accompanying infrastructure usually does not abide by urban planning guidelines and regulations – if they are set at all. This, in turn, has consequences for natural habitats, ecosystem services, environmental quality and aesthetic and landscape values.

Other forms of use include production areas, where facilities and plants for various industrial needs are established (e.g., food processing factories), storage, and distribution of industrial products. Therefore, the trend of land use for agricultural and forest land is negative, whereas for settlements or other forms of use is positive.

Besides changes in the purpose itself, in recent years, there have been changes in the way space is managed. This is especially true of agricultural land. Traditional forms of agriculture –characterized by crop rotation, diversity, dependence on ecosystem services for productivity and pest regulation, manual tillage – are replaced by intensive production. Such production is manifested in the enlargement of arable land, increasing areas under monocultures, intensive use of pesticides and artificial fertilizers and the use of machinery (for tillage and mowing). This type of production also requires more intensive irrigation, achieved through pumps that draw water directly from Zeta or underground wells. Animal production is also moving in the direction of intensification - the number of farms growing imported or hybrid breeds is growing, with a decrease in grazing in natural habitats and an increase in industrial fodder diet.



MAP 5 - *Map of area purposes (Data sources in Annex 5)*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2.4.2. Infrastructure

Road infrastructure

This region's road infrastructure is developed and consists of roads of different categories that are not regularly maintained. It is especially important to mention the network of about 100 km of local roads that are suitable for the development of cycling and other recreational activities as well as rural tourism. The Podgorica-Nikšić railway also passes through the park, on which railway transport regularly takes place.

Water supply

In this area there are a large number of springs used for public water supply in the municipalities of Danilovgrad and Podgorica: Mareza, Oraška jama, Tunjevo, Žarića jama, Brajanova jama, Slatina, Viško vrelo, Vučji studenac, Košćelova-Martinići, Smokovnik, Vrela, Dabovići , Brankov izvor, Drovik Vrela, Grab-Bare Šumanovića, Banjica-Šobajići, Kopito and Studenac-Podvraće. In Danilovgrad, 80% of the population is supplied from the water supply network (Spatial urban plan of the Municipality of Danilovgrad). In Danilovgrad, no water source has prescribed protection measures (Water Management Strategy of Montenegro).

Given the above problems with pollution and uncontrolled urbanization, the protection of natural ecosystems that act as a filter of drinking water is imposed as an additional Park's additional obligation. As for Podgorica, cca 60% of the population is supplied from Mareza, which has a sanitary protection zone, but around which urbanization has been intensified without adequate communal infrastructure.

Wastewater infrastructure

About 40% of the inhabitants of Danilovgrad use the existing sewerage network, which flows directly into the Zeta River without treatment at three locations (Iskra Stadium, Landža, and Pažići). The rest of the population discharges wastewater into septic tanks. Atmospheric sewage is connected to fecal in the same sewage system and also flows directly into the river, as well as wastewater from industrial plants and farms.

The lack of wastewater collection and treatment is precisely one of the leading environmental problems of the Zeta River. Currently, the construction of the city collector in Danilovgrad is in progress. However, the choice of location is questionable because it can lead to a loss of value of the Park and ecosystem services in this area.

Hydromelioration infrastructure

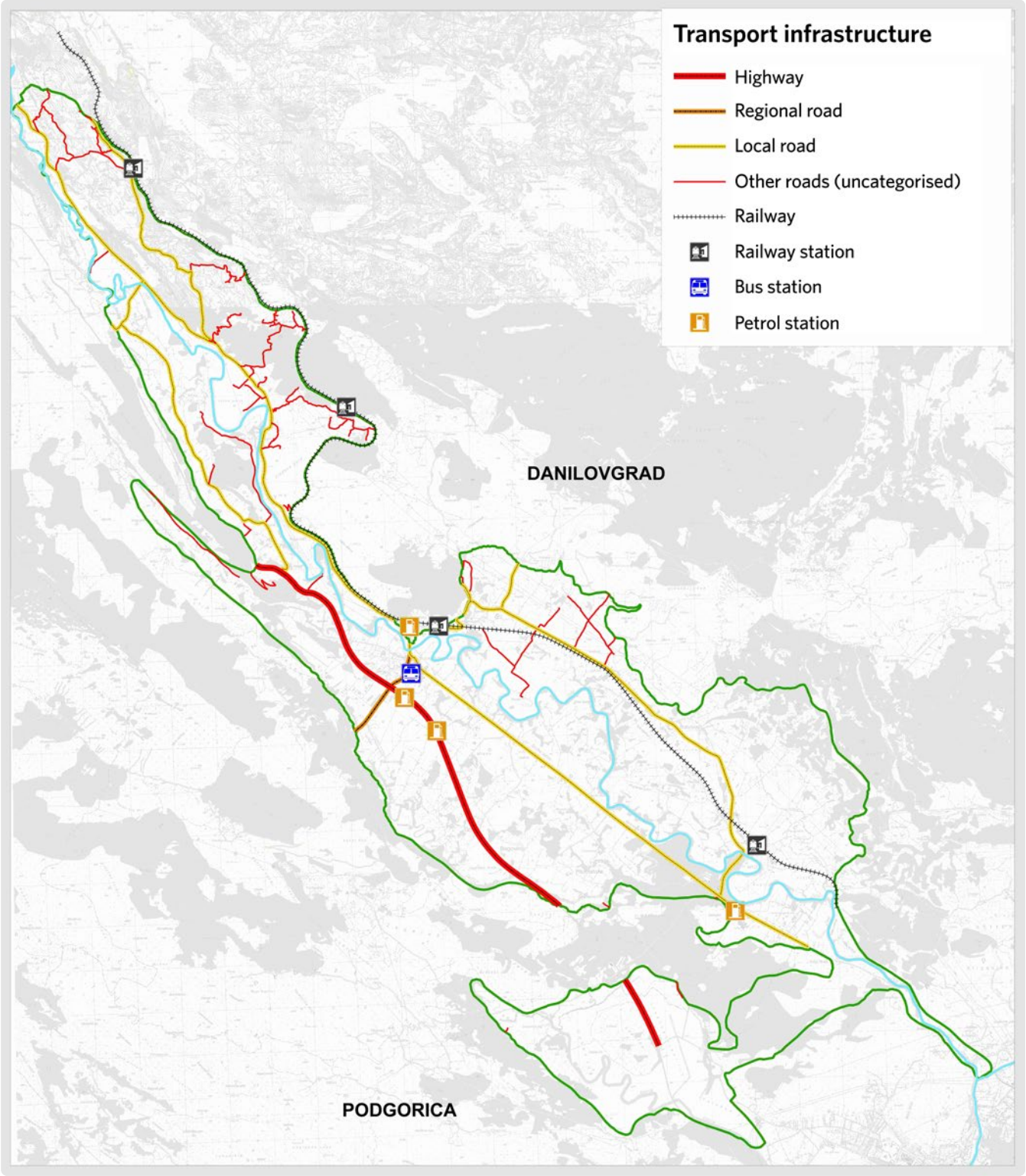
In the second half of the 20th century, concrete canals were built on a couple of locations all along the Zeta to irrigate agricultural areas. This system never came to life, and even today it is not adequate for agricultural development needs.

Although the river occasionally floods in some locations, there is no artificial infrastructure for flood protection. This is a problem that could be solved and maintained through natural solutions, i.e., regular cleaning of the riverbed, as well as preservation and reconstruction of gallery and wetland vegetation along the watercourse, because it provides an ecosystem service of flood protection.

Energy infrastructure

Two flow-through hydropower plants of the derivation type were built on Donja Zeta: Glava Zeta, with an installed capacity of 5.24 MW, which annually produces about 3.5 GWH, and Slap Zeta, with an installed capacity of 1.47 MW, which produces an average of about 9 GWh per year. The accompanying infrastructure covers the network of pipelines and substations.

MAP 6 - *Traffic infrastructure map (data sources in Annex 5)*

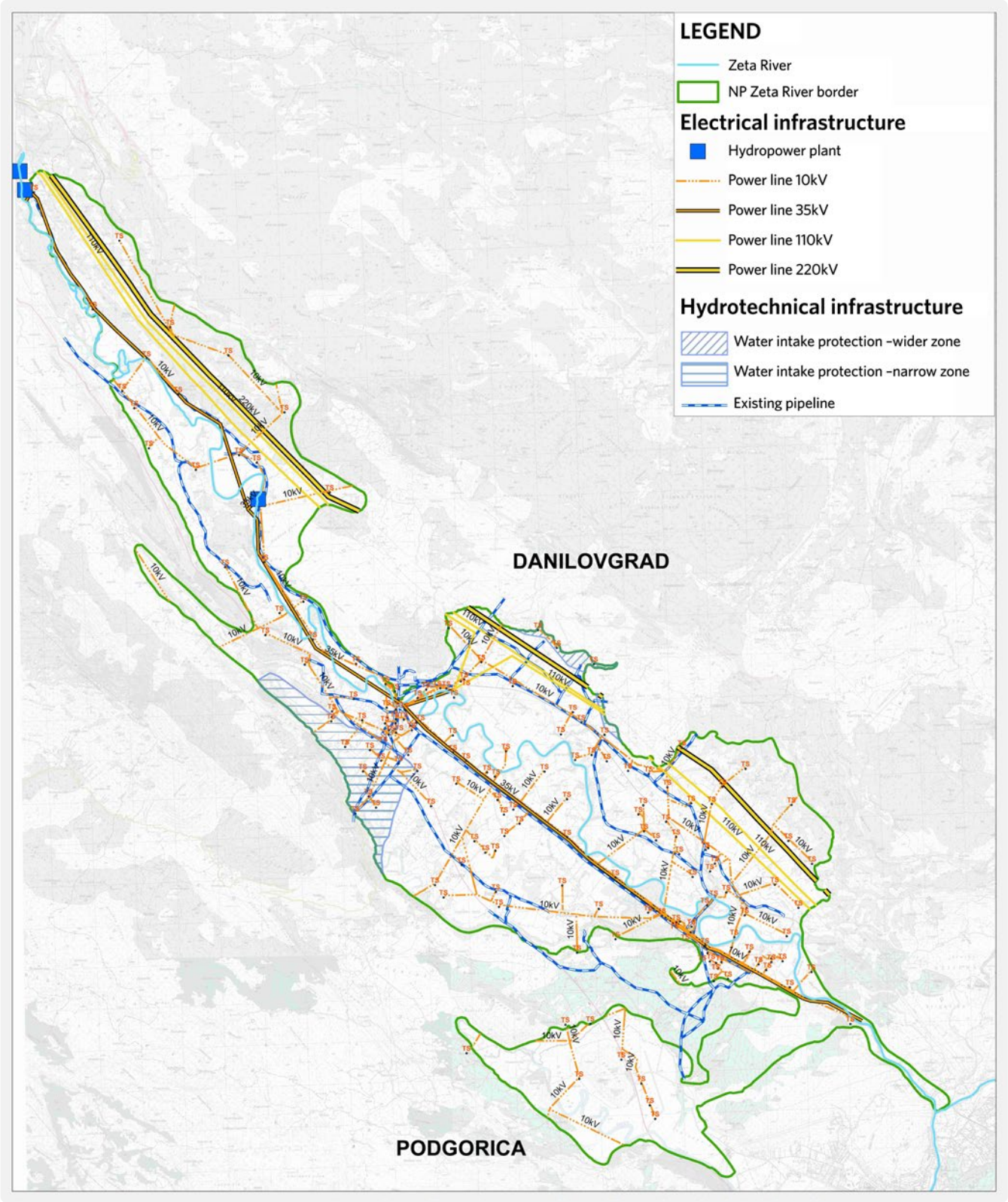


Waste disposal infrastructure

Waste from this area is collected and disposed of at the Livade sanitary landfill in Podgorica. Waste is collected by utility companies from urban areas on a daily basis, in suburban areas a couple of times a week. As for rural areas, waste is collected from villages located along three main roads, while residents of other villages take waste to containers that vary from 500m to a few kilometers away from households. The lack of this service in part of the Park, especially collecting specific types of waste such as construction and waste from animal farms, leads to many illegal landfills and waste disposal in watercourses and other natural habitats (portal Volim Danilovgrad).

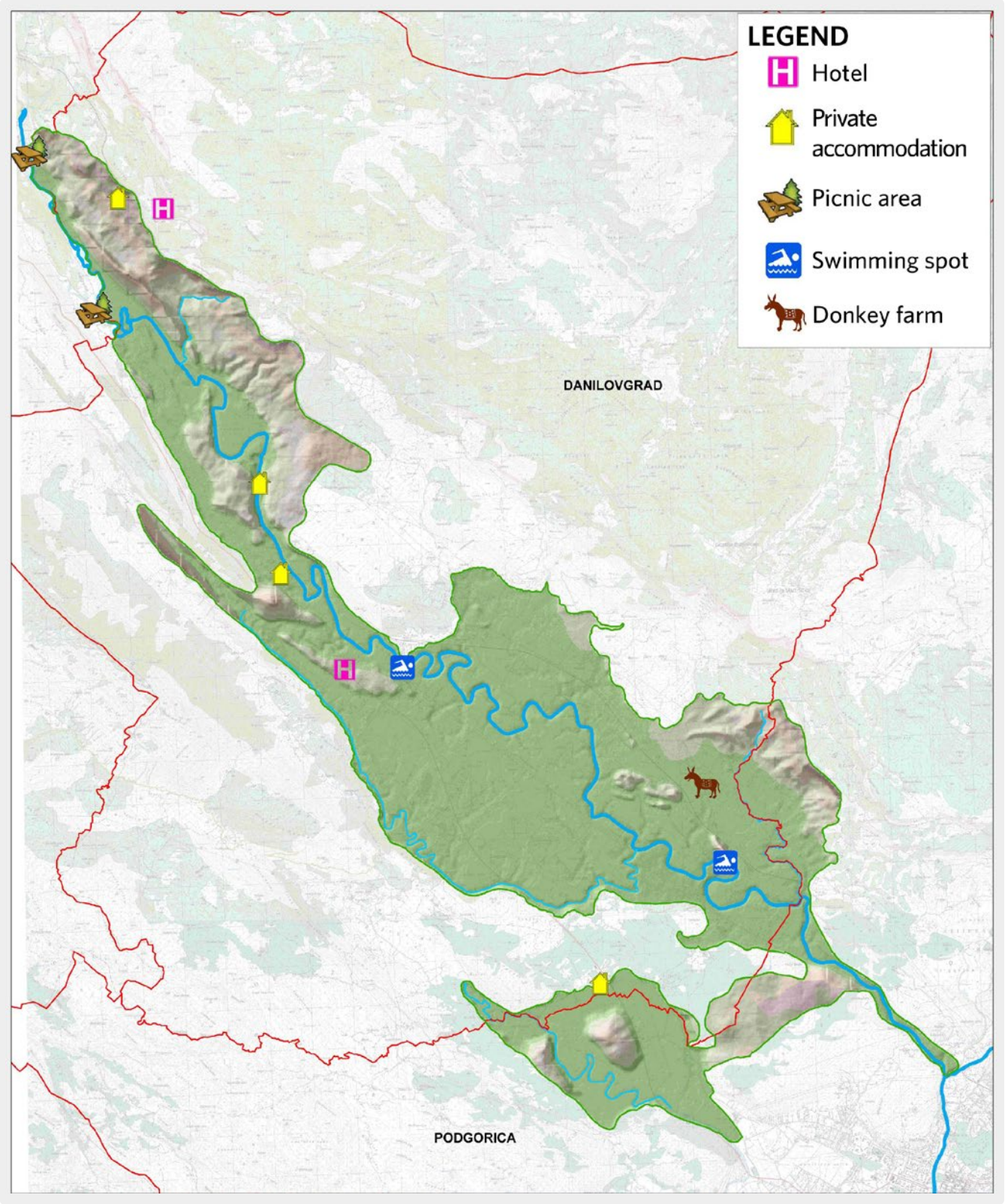
Tourist infrastructure

According to official statistical data, two small four-star hotels with 55 beds, two camps with 25 camping pitches, and many tourist and catering facilities have been registered in the municipality of Danilovgrad. In recent years, private accommodation has been registered through sites such as Booking and Airbnb.



MAP 7 - *Map of electrical and hydrotechnical infrastructure (data sources in Annex 5)*

Under the bridge in Spuž, one can find exceptionally arranged spaces suitable for various events (e.g., Spuško ljeto manifestation) and concerts. There are several picnic areas and beaches alongside the Zeta river, the most important of which are Glava Zeta, Tunjevo, the beach under the bridge in Danilovgrad, and the beach in Spuž. These picnic areas do not have adequate infrastructure, and their valorization should include its construction (approaches, service facilities, piers, plateaus for sports and entertainment, waste disposal infrastructure).



MAP 8 - *Map of beaches and tourist infrastructure (data sources in Annex 5)*

2.5. State of the Environment

2.5.1. Biodiversity Problems

The aquatic ecosystem, as the central ecological value of this Park, faces the problem of pollution. The primary source is the infusion of untreated wastewater from urban units, farms and industrial plants, as well as the leaching of substances from agricultural land. According to the *Strategy of Sustainable Development of Montenegro* until 2030, the river Zeta's lower course is one of the six most polluted river flows in Montenegro. Additionally, the problem surrounding the Zeta River represents a disruption of the hydrological regime due to the operation of the hydropower plant. Due to that, the upper course is flooded, the migration routes for aquatic fauna are interrupted, and sedimentation also contributes.

Meadow ecosystems in the Park area are disappearing through the succession that is taking place due to the abandonment of traditional forms of use (grazing and mowing), as well as due to the transformation into construction land.

As for the forests in the Park area, they are primarily degraded due to fire and urbanization. The local population practices logging for the purpose of heating (especially in the area of Veli Brdo) or for the purpose of clearing the property (especially along the Zeta).

Species populations, and thus genetic diversity, are disappearing due to direct exploitation (poaching, over-collection, logging), as well as disappearances, degradation and fragmentation of habitats (due to pollution, conversion and disturbance). The loss of agrobiodiversity is also prominent given the fact that the cultivation of autochthonous varieties and breeds gives ground to the cultivation of imported ones, which increase income.

2.5.2. Direct causes of endangerment

The biodiversity problems described above have the following direct causes:

Soil and water pollution – There are several types of pollution in this area. The most considerable effect is the pollution that comes from untreated wastewater. This includes municipal water from households, then wastewater from economic entities, as well as untreated atmospheric water that is washed away by traffic areas. This pollution mainly enters the system through point sources - effluents from the sewerage networks of Nikšić, Danilovgrad, Spuž, as well as through direct discharges of several economic entities and institutions. The city sewage networks in the mentioned settlements currently do not have collectors and treatment systems. This type of pollution is reflected in the presence of phosphates and nitrates along the entire course of the Zeta.

At the time of writing this Analysis, a collector construction project for Danilovgrad is underway, which should process 100% of the wastewater collected through the sewerage network. One should bear in mind that even after finishing such a collector, the problem of untreated municipal wastewater will not be completely solved. This is because there are a large number of septic tanks and sinking wells in this area, where locals dispose of household wastewater, as well as a large number of individual households. These households are not connected to the sewerage network and discharge wastewater directly into Zeta or do not maintain treatment systems even when they have them (e.g., the Directorate for the Execution of Criminal Sanctions). Some households discharge their wastewater directly into the atmospheric sewage system. The solution to this sort of problem lies in constructing an adequate communal infrastructure that will cover the entire population of this area.

Large agricultural areas represent a diffuse source of significant amounts of pollution. The recent rise of agricultural production in the region has consequently led to increased use of fertilizers, pesticides and biostimulators. Besides being washed away from agricultural land and ending up in Zeta waters, farmers dispose of surplus funds directly in natural habitats due to lack of awareness. Most often, the funds end up in the nearest ravines or canals, where their concentration increases and contributes to their impact on biota and water quality. Waste and excrement from animal farms are not adequately treated or recycled, and they represent a particular source of nitrogen and phosphorus. Cases of drying of trees and other vegetation have been noticed, where organic waste is often disposed of, contributing

to the processes of eutrophication of the aquatic environment. A potential solution to the problem is the adoption and implementation of the principles of good agricultural practice.

Of the other forms of pollution, the most significant are inert particles of stone dust released in Zeta due to improper treatment of waste in the factories for processing decorative stone "Mermer" and "Šišković". They cause sedimentation at the local level and directly affect the benthos, and thus indirectly the organisms that feed on it.

In the context of pollution, inadequate disposal of solid waste should also be mentioned. There are many illegal landfills on the entire territory, primarily rubble and bulky waste, but also dead animals, which the local population does not dispose of at designated locations.

Urbanization – Intensive expansion of urban areas in recent years with the construction of supporting infrastructure has led to the disappearance and fragmentation of all habitat types. Grass habitats and agricultural land are particularly endangered. Uncontrolled construction permanently loses natural and semi-natural habitats important for the maintenance of biodiversity and agriculture. Thus, the long-term benefits that these habitats provide to the local population.

Poaching - Appears predominantly in the form of illegal fishing. Poaching mainly affects salmonid species including the endemic Zeta soft-mouth trout which is recognized as one of the central conservation values of the Nature Park. Poaching takes place along the entire course of the river and is manifested in the usage of illicit means – fish baits, underwater rifles, and nets. The problem has intensified in recent years due to advances in technology, low risk and significant economic benefits. Apart from illegal fishing, poaching of bird species is also present in this area. It is reflected in the use of illicit means (lures) and hunting outside the prescribed hunting days, and the most affected population is quail in the area of the Podgorica part of the Park (Mareza with its surroundings).

Deforestation – The forests in the Park area are not forests of commercial species. These are mostly floodplain forests of willow and poplar, as well as oak groves, but since they provide ecosystem services such as protection against erosion and floods, microclimate regulation, filtration of pollutants, etc. All things considered, any form of their disturbance can have consequences. The local population cuts this forest sporadically due to the supply of firewood, buds for domestic animals, preparation of cakes or deforestation and construction of facilities. In the past, fires frequently broke out, and they were mainly the product of deliberate arson for the purpose of cleaning the property. In places where gallery forests have been damaged, the occurrence of riverbank erosion is evident.

Overgrowing of meadow habitats – Due to abandonment of traditional ways of land use – namely, grazing and mowing – meadow habitats are subject to succession and overgrowing. In that way, the populations of meadow plant species are lost, as well as the mosaic of habitats that is necessary for the life cycle of some species of insects and amphibians.

Changes in the hydrological characteristics of Zeta – They are represented by the following phenomena: local variation in water level, altered flooding regime, and increased sedimentation in certain parts of the river flow. The causes lie in a combination of several factors: variation in water level due to the operation of hydropower systems (Perućica, Glava Zete and Slap), increased sedimentation due to various changes in the catchment area (soil erosion, construction, inadequate waste disposal...) and non-maintenance riverbeds (fallen trees and branches that slow down the river flow and contribute to local sedimentation). The consequences are related to changes in the physical characteristics of Zeta (speed and width of flow, temperature...) which affects the distribution of aquatic organisms (interruption of migratory routes, creating locations with ecological conditions for unfavorable survival of organisms, especially salmonids).

Introduced species – The presence of several introduced species with invasive potential has been recorded in the park. These include ragweed and varnish trees that spread along roads, urbanized land, and burnt areas. Of particular importance is the boxwood moth's presence (*Cydalama perspectalis*) that attacks the legally protected boxwood species (*Buxus sempervirens*). It is currently undetermined to what extent the introduced species affect native species.

Climate change – In this region, climate change is reflected in prolonged droughts, rising mean temperatures, shifting precipitation patterns, and increased frequency of extreme weather events such as heavy rains, hail (*Montenegro's Third National Climate Change Report 2020*). Anthropogenic influences such as spring capture, deforestation in the catchment area, canalization and backfilling of small tributaries, as well as the operation of hydropower facilities, amplify the effects of climate change, contributing to changes in the hydrological regime in the direction of dehydration. Climate change should therefore be addressed through specific adaptation measures.

2.5.3. Causes of Pressure

The above pressures have their roots in socio-economic developments and trends that are characteristic of Montenegro in general. These include:

Economic status – The regional crisis caused by the political events of the 1990s, as well as the global economic crisis of 2008, resulted in the closure of many production facilities in Montenegro. This, in turn, entailed the loss of jobs and markets for certain products, and a decline in overall living standards followed. People were forced to seek alternative sources of income, often at the expense of nature. Thus, poaching, illegal construction, excessive exploitation, excessive use of protective equipment in agriculture, starting a business without implementing environmental protection measures are activities motivated by achieving economic benefits, which have a negative impact on the nature of this area. The conduct of these activities in an environmentally unacceptable manner is made possible by the lack of human and financial capacity of the institutions that should regulate them, as well as the presence of corruption and selective application of regulations.

Migrations to urban areas and expansion of settlements – The change in economic status and development policies has conditioned demographic trends, shown in rural areas' abandonment and migration to cities. In rural areas, as a result, traditional forms of land use are being abandoned, meadow habitats are being overgrown, and agricultural production is being intensified on arable land and animal farms. On the other hand, urban units record an increase in population density, conversion of land into construction, construction of various infrastructure forms, with the disappearance, degradation, and fragmentation of natural habitats.

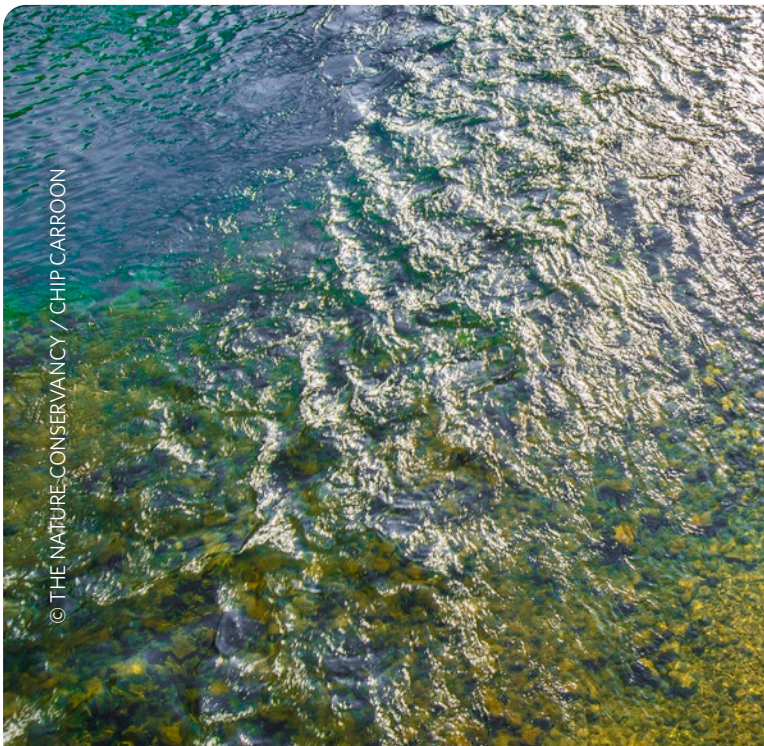
Low awareness of the population and negative attitude towards nature – Nature and environmental issues have only recently begun to be included in curricula. In Montenegro, the generations that have gained awareness of these issues through their education have not yet become engaged, coequal citizens. The abandonment of life in rural areas, which were in direct contact with nature, has contributed to the loss of traditional knowledge about the sustainable use of natural resources and respect for nature and what it provides to man.

Lack of data for informed decision-making – As explained in the next section, decisions on development plans and space use are not made on the basis of complete, timely, and adequate data, as such generally do not exist. Research, especially biodiversity, is sporadic, dependent on project donations and individual affinities of researchers. Official databases are not yet available and cannot be used for informed decision-making.

Low political priority of environmental issues – Despite the declarative commitment of Montenegro to become an ecological state, and the fact that development directions rely on natural resources' sustainable use, environmental issues are not addressed adequately in political decisions. Priority development projects are not based on an adequate environmental impact assessment, public participation is an administrative formality, and nature protection is generally treated as a barrier to development.

Lack of cooperation and communication – Occurs between different but equally competent institutions (at the level of the municipality and the state), as well as between the users of space and the local population. There is no established system of joint action and regular information on environmental and spatial issues.

The overall conclusion of this section is that potential solutions should be sought in providing alternative means to local people for revenue generation, raising awareness along with educating both the public and decision-makers, connecting actors, and, finally, mainstreaming biodiversity into sectoral policies based on adequate information provided through science and research.



2.5.4. The Status of Data

In general, exceedingly limited professional and official information on the nature of the Zeta River is available. In Montenegro, regular monitoring programs are conducted on various aspects of the environment, through which there are data on water, soil, and air quality. In recent years, these monitoring programs have been coordinated with indicators and protocols of the European Union and other global regulations and guidelines, and the data are publicly available through annual reports on the official websites of relevant institutions and can be used for planning and program activities. However, the monitoring program's shortcomings are numerous, and to name just a few – a small number of measuring points, insufficient sampling frequency, lack of time series, etc. All this complicates any trend analysis and assessments of the state of the environment, i.e., the effects of implemented measures and protection activities.

Knowledge about the biodiversity of this area is very limited. The number of published professional papers is modest. These papers, overwhelmingly written in English, can be found only in researchers' databases or personal libraries, which means that they are not easily accessible to the general and lay public. Recent research has been initiated only within the framework of the establishment of the Nature Park and the establishment of the *Natura 2000* network in Montenegro. However, their temporal, geographical and taxonomic coverage is minimal. Research is mainly reduced to identifying specific taxa and habitats in the studied localities. Nevertheless, data on the distribution, condition of populations and habitats and their dynamics and trends are missing. For example, although salmonid species, especially endemic soft-mouth trout, are among central conservation values, the number, demographic structure, and other aspects necessary to develop protection programs do not exist. There is currently no biodiversity monitoring program in this area, and it should be established in a future management plan.

Some information of importance for protection can be obtained from the local population that uses the Zeta river valley area. Sport fishers and gamekeepers have long-term experience related to the state and distribution of particular fish species. Local land users have experience with many ecological aspects of this area (e.g., changes in habitats, hydrological regime, etc.), while the NGO sector is familiar with various devastation forms. Nevertheless, in each of these cases, the experience has not been valorized in any way or used for protection purposes. It is recommended in this document that such experience must be put to use by the future management of the Park through the involvement of local actors in the planning and implementation of activities or through working groups and an advisory body (Section 5.3.3).

Regarding data on socio-economic aspects, the statistics is being kept at both municipal and state level (e.g., statistics on employment, agricultural production, land use, fishing, etc.). MONSTAT and various ministries and agencies keep statistics within their competencies. However, in some sectors, there is a gap in the sense that different methodological approaches are applied at the national and municipal level, or data are not exchanged between sectors. Thus, the situation and trends cannot be clearly understood. Data from the municipal, ministry, and agency levels are often not easily accessible to users because they are not stored in public databases.

The existence of adequate data is necessary to adopt effective measures and activities to protect and monitor the success of their implementation. The park should use data from existing monitoring and research programs to determine zero status. However, in order to assess the effectiveness of the environmental protection measures that the Park will implement, specific indicators and monitoring protocols, as well as priority research directions, should be set. The Park Manager should also, especially in the first period, use local knowledge that can be the basis for defining research and monitoring programs to obtain scientifically verified data, which can be achieved by forming thematic working groups with local actors (Section 5.3.3).

2.6. Demographic Structure

The area of the Donja Zeta Nature Park is 21.7 km² which amounts to cca 0.88% of Montenegro's territory. The area where the Park is situated is one of the most populated areas in Montenegro given the fact that the largest city in Montenegro – where about a quarter of the total population lives – is near the Park.

The Park includes a total of 64 settlements with approximately 19652 inhabitants (only a part of the settlements of Podgorica, MZ Tološi 1, and Rogami are covered by the Park), which is 3.2% of the population of Montenegro. They are located in the Bjelopavlićka plain and, consequently, they belong to the lowland type of settlement. The majority of settlements are rural (61), while three settlements are of urban character (Podgorica, Danilovgrad, Spuž). Settlements of urban character are mostly formed according to plan (Danilovgrad, Podgorica). All rural settlements, except for Novo Selo, arose spontaneously and can be differentiated with respect to two main forms, namely dispersed and nucleated settlements. Along the main route Podgorica-Nikšić, the formation of a service and production zone is noticeable with increased gravitational influence of the Capital with mutually developed traffic communication, so there is a tendency towards the formation of urban agglomerations of Danilovgrad and Podgorica.

Administratively, the settlements are divided into two municipalities, Danilovgrad and Podgorica.

The municipality of Danilovgrad has a total of 98.8 km² of the Park area, which represents 19.7% of the territory of the municipality of Danilovgrad. In that area, there are 56 out of 89 settlements in the Municipality of Danilovgrad. They have about 17881 inhabitants, which is 2.8% of the population of Montenegro or 96.8% of the population of the municipality. In other words, almost the entire population of Danilovgrad lives in the Park. The settlement of Danilovgrad performs the function of the municipal center, while Spuž can be considered an important local center, while Ćurilac and Sladojevo kopito, Orja Luka and Donje Selo, Gorica, Livade, Slap have the function of local centers.

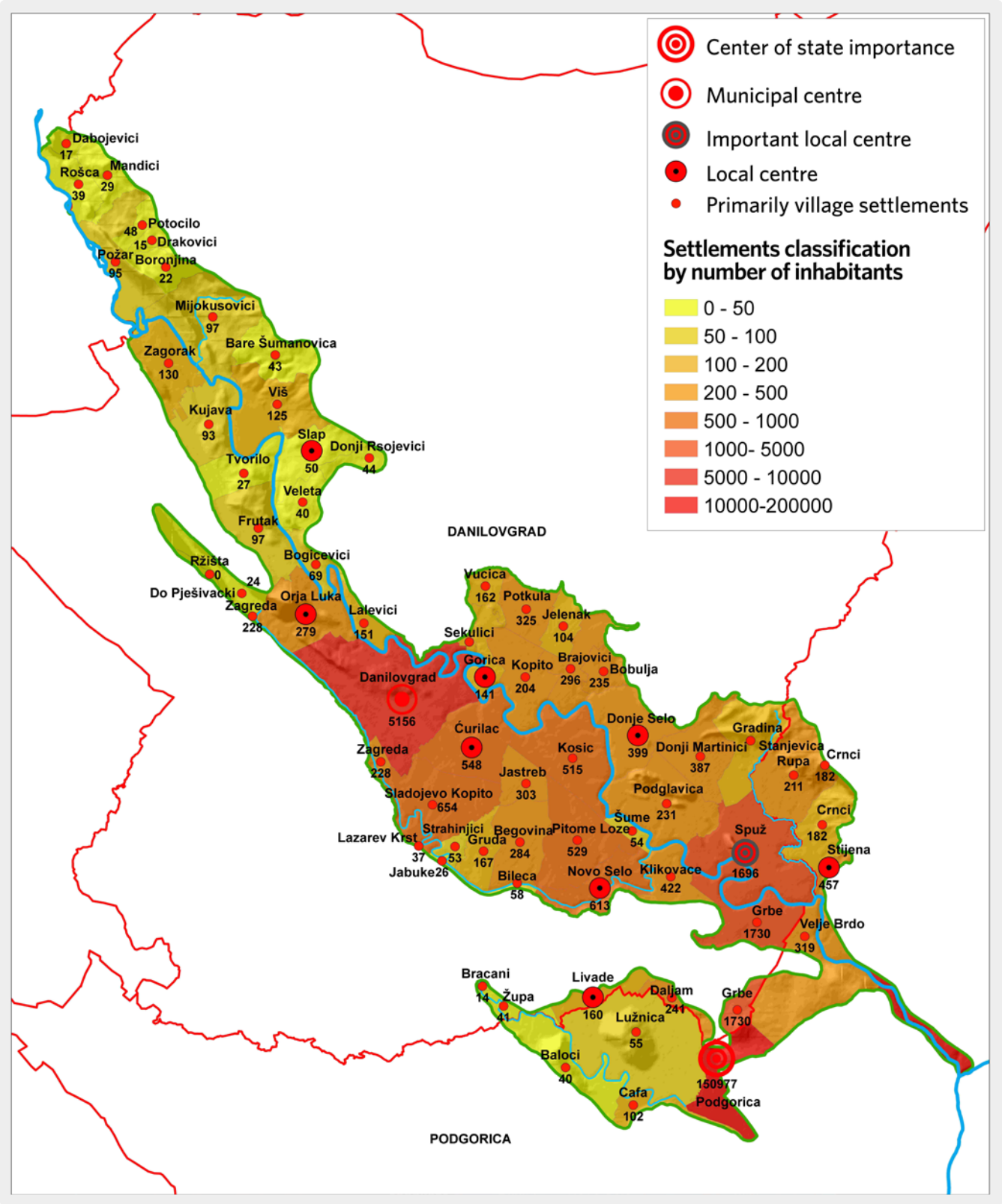
The municipality of Podgorica owns 22.98 km² of the Park, which amounts to 1.6% of the municipality's territory. There are eight settlements out of a total of 108 in the municipality of Podgorica. One thousand seven

One thousand seven hundred seventy-one inhabitants live in that area, which is 0.28% of the population of Montenegro and 0.95% of the population of the municipality of Podgorica. However, as Podgorica is an immediate surrounding of the Park, then its 150,977 inhabitants, which constitute 24.34% of the population of Montenegro, live next to the Park and directly or indirectly affect it. The settlement of Podgorica has the function of the Center of National Importance, and the settlement of Stijena has the function of a local center (data source: PUP Danilovgrad and PUP Podgorica).

The largest settlement in terms of population within the Nature Park scope is Danilovgrad with 5156 inhabitants. The group of settlements between 1000 and 5000 inhabitants comprises two settlements (Spuž and Grbe). The group of settlements between 500-1000 consists of five settlements (Kosić, Pitome Loze, Ćurilac, Novo Selo, Sladojevo Kopito). The group of settlements with 200-500 inhabitants includes 16 settlements (Kopito, Stanjevica Rupa, Podglavica, Zagreda, Bobulja, Daljam, Orja Luka, Begovina, Brajovići, Jastreb, Velje Brdo, Potkula, Donji Martinići, Donje Selo, Klikovače, Stijena). The group of 100-200 inhabitants contains twelve settlements (Ćafa, Jelenak, Viš, Zagorak, Gorica, Sekulići, Lalevići, Livade, Vučica, Gruda, Crnci, Gradina). Within the group of settlements with 50-100 inhabitants, there are ten settlements (Slap, Strahinići, Šume, Lužnica, Bileća, Bogicevići, Kujava, Požar, Frutak, Mijokusovići). The group of settlements with 0-50 inhabitants contains seventeen settlements (Ržišta, Bracani, Drakovići, Dabojevići, Boronjina, Do Pješivački, Jabuke, Tvorilo, Mandići, Lazarev Krst, Rožica, Baloći, Bare Šumanovića, Donji Rsojevići, Potočilo, Veleta, Župa).

The population dynamics in the area of Danilovgrad have oscillated in recent decades. In the second half of the 20th century, the number of inhabitants in this area decreased, while the number of inhabitants in Podgorica was constantly growing (Table 3 and Graph 1). Migrations of the population from the mountain villages in the vicinity of Danilovgrad to urban centers (Danilovgrad and Spuž) characterized this period, as well as the abandonment of traditional agriculture, transition to work in industry, administration, and services. Since the 90s of the last century, the area around Zeta has become popular again. The number of inhabitants in this region is rising again, due to the increase in nature and immigration.

This time, however, the immigration is led by people from other parts of Montenegro (mainly in the north), who are motivated by employment opportunities in the developing economy. Nonetheless, people from urban areas are coming to this area as well, seeking peace, aesthetics, and quality of life in the rural Bjelopavlićka plain.

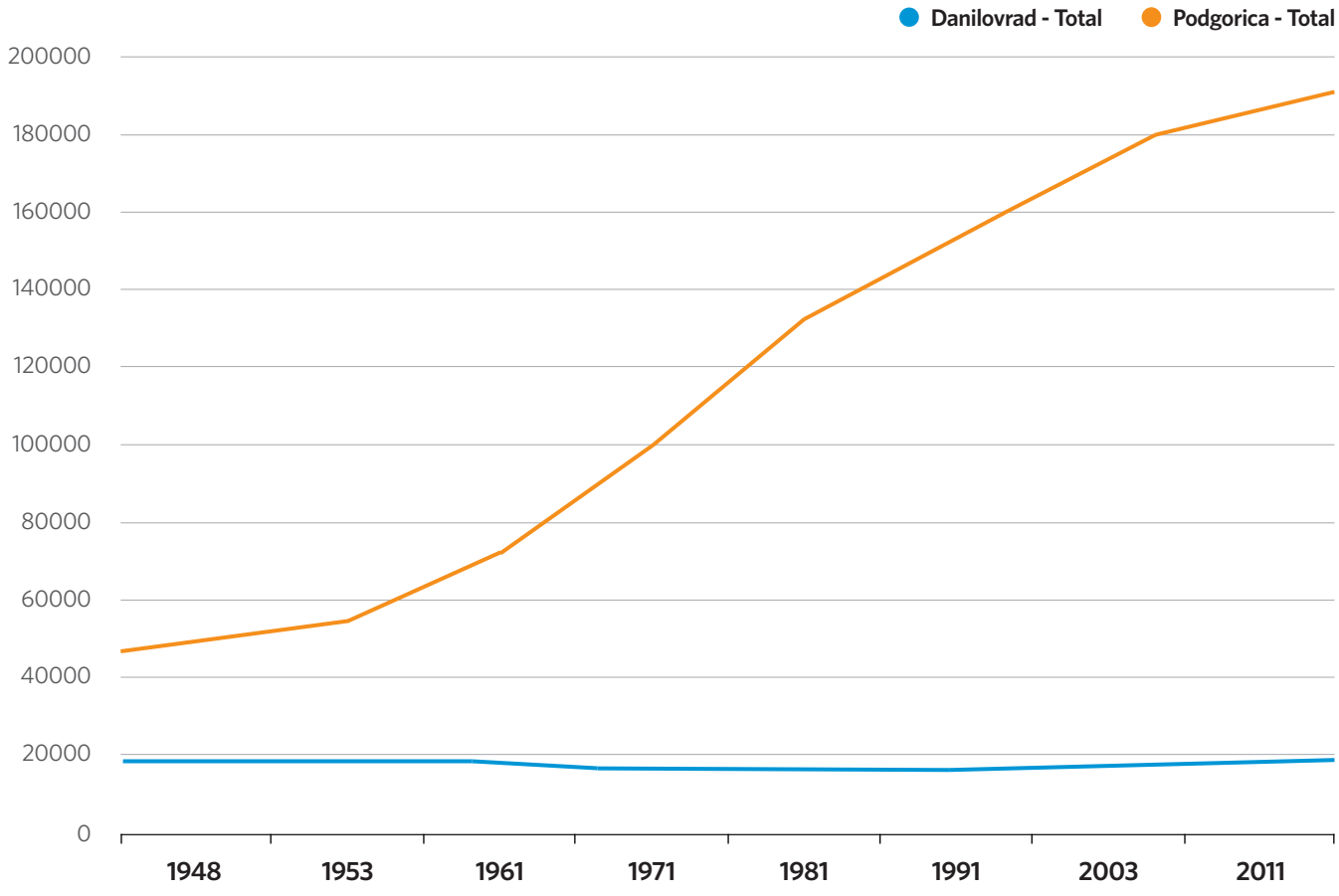


MAP 9

Population and settlements map (sources data in Annex 5)

TABLE 3 - *Population changes according to censuses (Data source MONSTAT)*

Population (census years)	1948	1953	1961	1971	1981	1991	2003	2011
Danilovgrad	16.800	17.394	17.378	15.073	14.769	14.718	16.523	18.472
Podgorica	48.417	48.417	72.219	98.796	132.290	152.025	169.131	185.937
% of total Montenegro population (census years)								
Danilovgrad	4,5	4,1	3,7	2,8	2,5	2,4	2,7	3
Podgorica	12,8	13,3	15,3	18,6	22,7	24,7	27,3	30
Number of households (census years)								
Danilovgrad	4.137	4.240	4.320	3.961	4.191	4.379	4.963	5.477
Podgorica	11.039	12.618	17.280	24.077	32.581	39.653	48.416	56.847



GRAPH 1 - *Trend of population changes in the territory of Podgorica and Danilovgrad since 1948 (Data source: MONSTAT)*

The increase in population also entails an increase in population density – thus, for the Bjelopavlićka plain, it increased by 33.7% in the last 20 years, i.e., from 94 inhabitants/km² in 1991 to 125.7 inhabitants/km² in 2011 (cf. Spatial urban plan Danilovgrad 2011-2020). This area also recorded an increase in the number of households and housing facilities. Data on the use of apartments indicate that some are used as a holiday facility (conversion of existing, old apartments and houses or construction of new ones).

These demographic changes entail an increase in pressure on the environment and natural resources in the Zeta Valley. The conversion of habitats and agricultural land into construction sites has augmented, as well as the need for water and energy supply. Consequently, larger amounts of waste and wastewater are generated, thereby aggravating the extent of pollution, noise, and disturbance of nature. All this enforces further engagement for introducing strictly controlled use of space and nature protection.

2.7. Economic Activities

The analysis of employment statistics by activities indicates that the largest percentage of the population of Danilovgrad is employed in manufacturing (20.88%), trade (19.2%), construction (15.25%) and education (10.06%). Other sectors individually employ less than 10% of the population. As for Podgorica, the largest number of employees is in the sectors of trade (21.93%) and state administration (15.82%), while other sectors individually employ less than 10% of the population. Percentage employment by sector follows similar trends in both municipalities as at the state level (Graph 2).

Based on the available data, the location quotient was calculated. This indicator measures the percentage of employment per sector in a given location (in this case, the municipality) to the national percentage in that sector. A quotient greater than 1 reveals that the number of employees in a given sector at a given location is higher than the national average. In other words, such activities, i.e., sectors at the local level, employ proportionally more people than the rest of the country.

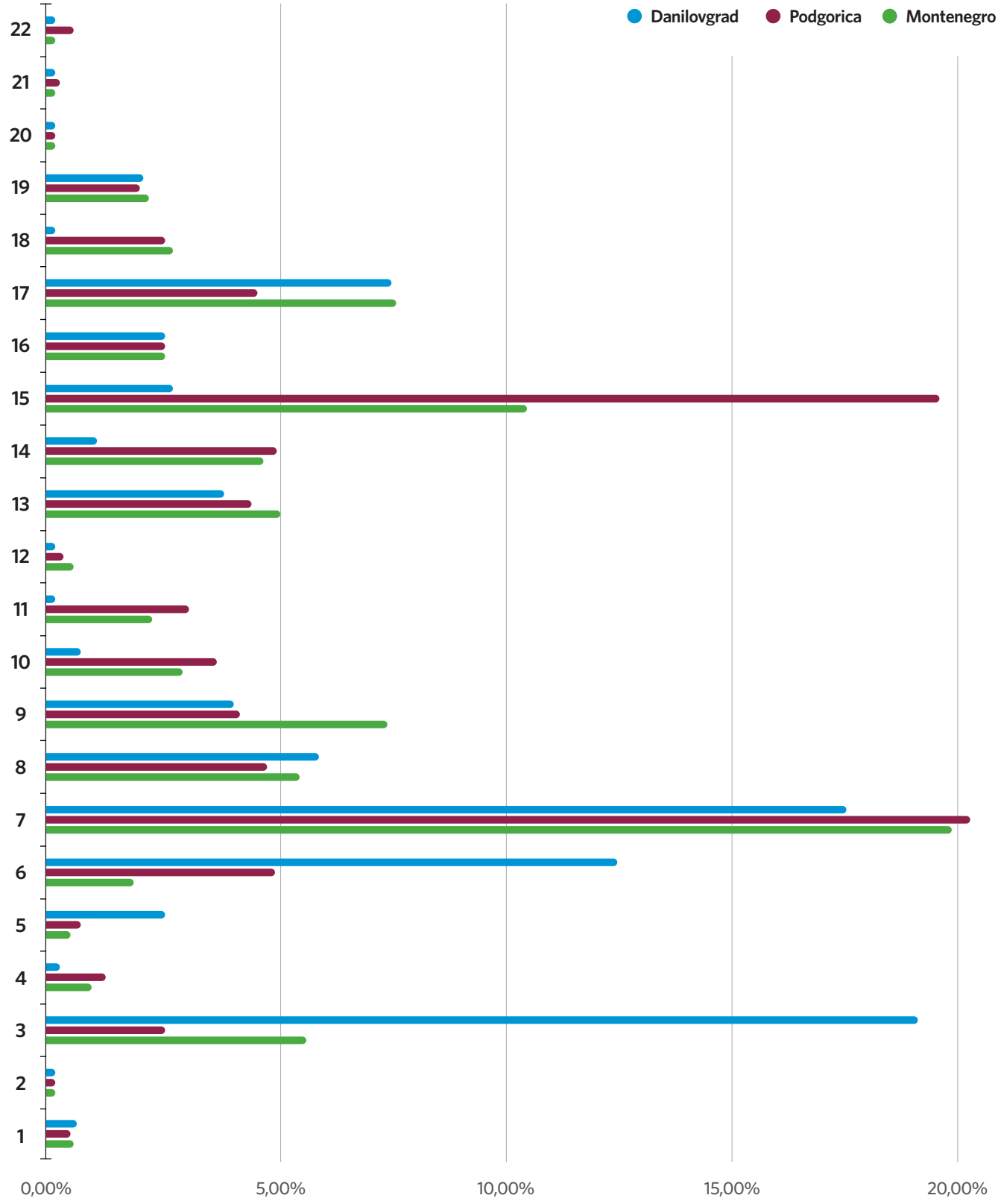
For Danilovgrad, the sectors whose quotient exceeds 1 are manufacturing (3.31), construction (2.4), water supply, wastewater management, waste disposal (1.45), agriculture, forestry, and fishing (1.22). For Podgorica, these are financial and insurance activities (1.89), information and communication (1.56), administrative and support service activities (1.42), state administration and defense and compulsory social insurance (1.36), electricity supply (1,17), wholesale and retail trade (1,11).

Therefore, the highest values of quotients indicate that in the municipality of Danilovgrad, there is a concentration of processing industry and construction significantly higher than the national average.

The rest of the Analysis will be focused on economic activities based on the use of natural resources and/or are recognized as key activities in this region. This includes agriculture (which includes fish production and food processing), then tourism, energy and construction.

Hunting, fishing, and forestry are not recognized as commercial activities in this area. Other activities that are not related to the use of natural resources (trade, administration, education, etc.) have not been analyzed in detail for the purposes of this document.

GRAFIK 2 - *Percentage of employment by activities at the level of the municipalities of Danilovgrad, Podgorica and Montenegro.*



Legend: 1 - Agriculture and forestry, 2 - Mining and quarrying; 3 - Manufacturing industry; 4 - Electricity supply; 5 - Water supply, wastewater management, waste disposal; 6 - Construction; 7 - Retail and wholesale trade, repair of motor vehicles and motorcycles; 8 - Traffic and storage; 9 - Accommodation and food services; 10 - Information and communication; 11 - Financial and insurance activities 12 - Real estate activities; 13 - Professional, scientific and technical activities; 14 - Administrative and support service activities; 15 - State administration and defense, compulsory social insurance; 16 - Education; 17 - Health and social care; 18 - Arts, entertainment and recreation activities; 19 - Other service activities; 20 - Household activities as an employer; 21 - Activities of extraterritorial organizations and bodies; 22 - Other (Data source: MONSTAT, Tax Administration)

2.7.1. Agriculture

The valley of the river Zeta (The Bjelopavlićka plain), thanks to its natural resources, climatic conditions, and pedological characteristics, is one of the very suitable areas for most agricultural activities. That is why agricultural production is the most important economic branch in this region and represents a strong pillar and socio-economic driver for this region's population.

Agricultural activity in the Zeta river valley mainly refers to activities within individual households, while organized and industrialized production of larger capacities is represented to a lesser extent. All agricultural production branches are represented, and livestock is the essential activity of this region's population.

Agriculture in this region used to be practiced by a more significant percentage of the population. It had the role of producing household food, i.e., the basic means of supporting the family. As such, it was mainly extensive, with mixed plant and animal production. In the last twenty years, there has been a transition from production for own needs and communal cultivation of land and keeping cattle to professionalization and commercialization of agricultural production. The number of households professionally engaged in agriculture is decreasing, but farms and farms are being enlarged and the volume of production on an individual farm is increasing. Farmers are gradually introducing modern agrotechnical measures and mechanization to increase yields. They are also striving to become grantees of support programs and projects implemented by the Ministry of Agriculture, Forestry, and Water Management. Also, the processing activity volume is increasing – both in the household itself and through economic entities specialized in processing.

Production of food of animal origin

Cattle breeding - Registered agricultural farms (about 140 registered in the premium system) engaged in cattle breeding resort to dual production – milk and meat production. In the Municipality of Danilovgrad, during 2019, a total of 1226 herds were registered for the system of premiums. These farms use an extensive or semi-intensive production method, and the number of herds is small – on average, this amounts to 1-5 herds per farm, and in most cases, they are crossbreeds. The diet of these cattle is based on silage, haylage and natural grazing, while in the winter months, the supplement of concentrate prevails. Most often, breeding is done to produce milk for own needs, while the surplus is processed into dairy products sold on the local market (sour milk, cream, white cheese, Prljo cheese). Because the breeding is dual, older herds are used for meat production. The number of farms breeding more than five herds was cca 70 in 2019.

Besides households, cattle breeding is also performed on farms, which have a more significant number of herds (more than ten), as a rule of highly productive breeds. On farms, farming is done by an intensive, stable production system, using concentrated nutrients to increase yields. Ten farms raise more than 20 herds (78, 42, and 26 herds – farms in Novo Selo, 40 herds – Sušica settlement, 21, 23 herds Kujava settlement, 74 herds Sige settlement, 33 herds Gorica settlement, 21 herds settlement Ćurilac).

Semi-extensive and extensive farming methods characterize ***sheep farming***. Mainly domestic breeds of sheep with a triple direction of production – milk-meat-wool are bred. The sheep sector is characterized principally by the production of lamb; a smaller percentage is the production of milk (30-35%), while wool production has no greater economic significance. Sheep breeding is primarily carried out on family farms. The total number of registered herds in 2019 was 5945. The total number of registered farms engaged in sheep breeding in the Municipality of Danilovgrad is 50. Households with the most significant number of sheep are in settlement of Jelenak – 341 registered heads and Kujavi – 345 registered sheep herds. Five more farms raise more than 200 sheep (in the settlements of Frutak, Gornji Rsojevići, Gradina and Grbe), while the average number of sheep per family farm is about 37.

When it comes to ***goat breeding***, an extensive or semi-extensive housing system prevails. Goats are bred primarily for milk production. In 2019, 1693 herds were registered on 20 farms in the premium system. The average milk yield per head is 140 kg, while the average meat yield per head is 15 kg. The breed of domestic Balkan goat dominates the goat population, and there are also crossbreeds with the Alpine and Sana breed. There are no specialized breeds for meat production. About half of the population falls on heads that are kept individually and have significantly higher milk production and the number of kids per goat. A total of 6 farms raise more than 100 herds in Glavica, Grbe, Mosori, Šobaići, Frutak and Bandići.

Pig farming - Compared to the production of ruminant meat, which is mainly achieved by using the available resources of natural meadows and pastures, pork production is less important, primarily due to the lack of concentrated food. Pig breeding is mostly done on private, family farms that keep from a few to 300 fattening pigs. 18 farms engaged in pig breeding were registered, along with two companies (*Niksen Čavor DOO* from Spuž with 640 heads and *RTI Projekt DOO* from Ždrebaonik with 52 heads). Niksen Čavor pig farm is the only one of its kind in Montenegro. The production is of intensive type, with modern equipment (plant for taking seeds for artificial insemination, bukarište, modern cages for sows and piglets, facilities for pre-fattening and fattening). Besides the intensive fattening of pigs, this farm also raises breeding sows. Most of the meat is produced on family farms, where pigs are fattened for their own needs. On an annual level, many piglets are bought, mostly from Serbia, and are fattened until they reach the desired weight. The processing of pork is mostly done in traditional products of the Njeguški type.

Poultry and egg production has shown a positive trend in recent years, and significant changes characterize this sub-sector. Production increased both in the egg production segment and in the broiler production segment. Poultry farming in the Zeta river valley is developed. The largest poultry farm in Montenegro is *Agromont* in Jelenak, with a capacity of 150000 laying hens and 50000 inbreeding, with a daily quantity of 135,000 eggs. In Donji Martinići there is a farm Vasiljević with a current capacity of 2000 laying hens. Apart from these farms, almost every household keeps a smaller number of chickens mainly for their own needs.

The most significant obstacle to the development of the poultry sector is the lack of food concentrates. Therefore, there is a strong dependence on foreign markets. Stimulation of domestic production of poultry feed would undoubtedly contribute to the development of this sub-sector. There is still no strong link between producers and registered poultry slaughterhouses. It is also necessary to stimulate closer links between producers and catering establishments, especially during the tourist season. There was a lack of professional support to producers in terms of education on breeding methods.

In the domain of organic production, only one producer is registered with an organic certificate in livestock production - poultry - egg production in Frutak. In the domain of organic production, only one producer is registered with an organic certificate in livestock production - poultry - egg production in Frutak.

Beekeeping in this area shows a tendency to grow in recent years. This type of production contributes to the promotion and protection of the Zeta River Valley as a nature park as well as to preserving biodiversity. The product range directly correlates with the diversity of honey plants in this area, so more flower honey, propolis and other honey-based products are produced. Beekeepers are organized within the *Association of Beekeepers*, constituted by 80 members, who have cca 3000 beehives that produce 30000 kg of honey on average. *The Honey House* gave the impetus for the development of beekeeping in Grbe, since this enterprise contributes to selling bee products and educating producers.

Fish production on the Zeta River is exemplified in aquaculture on Slap (one pond) and Vis (two ponds). These three ponds contain California trout on about 2000 m^2, and they produce cca 60 tons of fish.

The most significant problem related to livestock breeding is the lack of domestic production of animal feed. The Animal Feed Factory is situated in Spuž, and it is the only factory of this sort in Montenegro. The factory's production capacities are cca 18 thousand tons of food per year or cca 6 tons per hour. However, these quantities are not sufficient, and there is a strong dependence of domestic producers on imports. Stimulation of domestic food production, especially for pig and poultry nutrition, would undoubtedly contribute to these subsectors' development. In ruminant farming, since these are mostly semi-extensive farming systems, as well as service raising on pastures during the summer months, self-sufficiency in animal feed production is currently satisfactory since top-dressing is done during the winter months. Also, if we analyze the trend in plant production, we can see an increasing number of plantations of plants used for animal feed production, which contribute to the networking of producers and the sustainability of production.

The problem is also that there is still no strong link between smaller producers and registered slaughterhouses. It is also necessary to stimulate closer links between producers and catering establishments, especially during the tourist season. There was a lack of professional support to producers in terms of education on breeding methods.

Production of food of plant origin

In the Municipality of Danilovgrad, there are currently about 100 registered entities engaged in the primary production of food of plant origin. The outdoor plantation area varies (maximum 80000 m², minimum 2500 m²), while indoor cultivation is performed in seven households and two registered companies engaged in the production of mushrooms (*DOO Champignons* and *LLC Good Food*). What represents the distinctive feature is the production of vegetables in the protected area, the largest in Montenegro, on an area of over 80,000 m².

Plant production is based on the production of cereals - primarily corn (indigenous variety Kujavian corn but also hybrid varieties for human and livestock consumption), wheat, barley, then vegetables, fruits, and animal feed: clover mixtures, triticale, etc. Of particular importance is the cultivation of medicinal and aromatic plants, making this area's specific potential.

The localities where the production of field and vegetable crops is carried out in the open are Dobro Polje, Viš, Miokosovići, Orja Luka, Kujava-Trnovice, Frutak Donji, and Gornji Jelenak. The most common vegetable crops are potatoes, cabbage, onions, beans, tomatoes, peppers and watermelons. Production in greenhouses is mostly cucumbers, green beans, lettuce.

Conditions in this area affect the cultivation of fruits, and various types are grown – apples, pears, quinces, cherries, sour cherries, plums, apricots, peaches, walnuts, olives, figs, pomegranates, strawberries, and grapes. In the municipality of Danilovgrad, 265 ha are under orchards and 115 ha under vines. In Spuž, DOO TMDM owns 456 hazelnut trees.

However, what burdens and negatively affects the development of field and vegetable production in this area is that in some localities, such as Dobro polje, Trnovice, Viš, Moromiš, there is a constant risk of floods due to higher rainfall during autumn and spring. This results in flooding of agricultural land, and often there is a loss of production and very often total damage.

The certificate for organic production in the plant production sector was also awarded for the cultivation of medicinal plants in the village of Pitome Loze (lavender plantation Sunčana dolina). Three producers (two for the field of fruit growing in Martinići and Poglavice and one for the cultivation of medicinal plants in Zagorak) are currently in the process of obtaining a certificate for organic production of fruits and vegetables.

In some localities, production is mainly for own needs with little use of plant protection products. In these localities, there is a possibility of increasing the area under crops, representing an additional potential for organic production.

Food processing

As already mentioned, cattle breeding is mostly based on milk production. In this region, there are registered semi-industrial and industrial processing facilities that purchase milk from farms and households.

The most important facilities for milk processing are *Mljekara Lazine DOO, Katunjanka DOO,* and *Monte Bianca.*

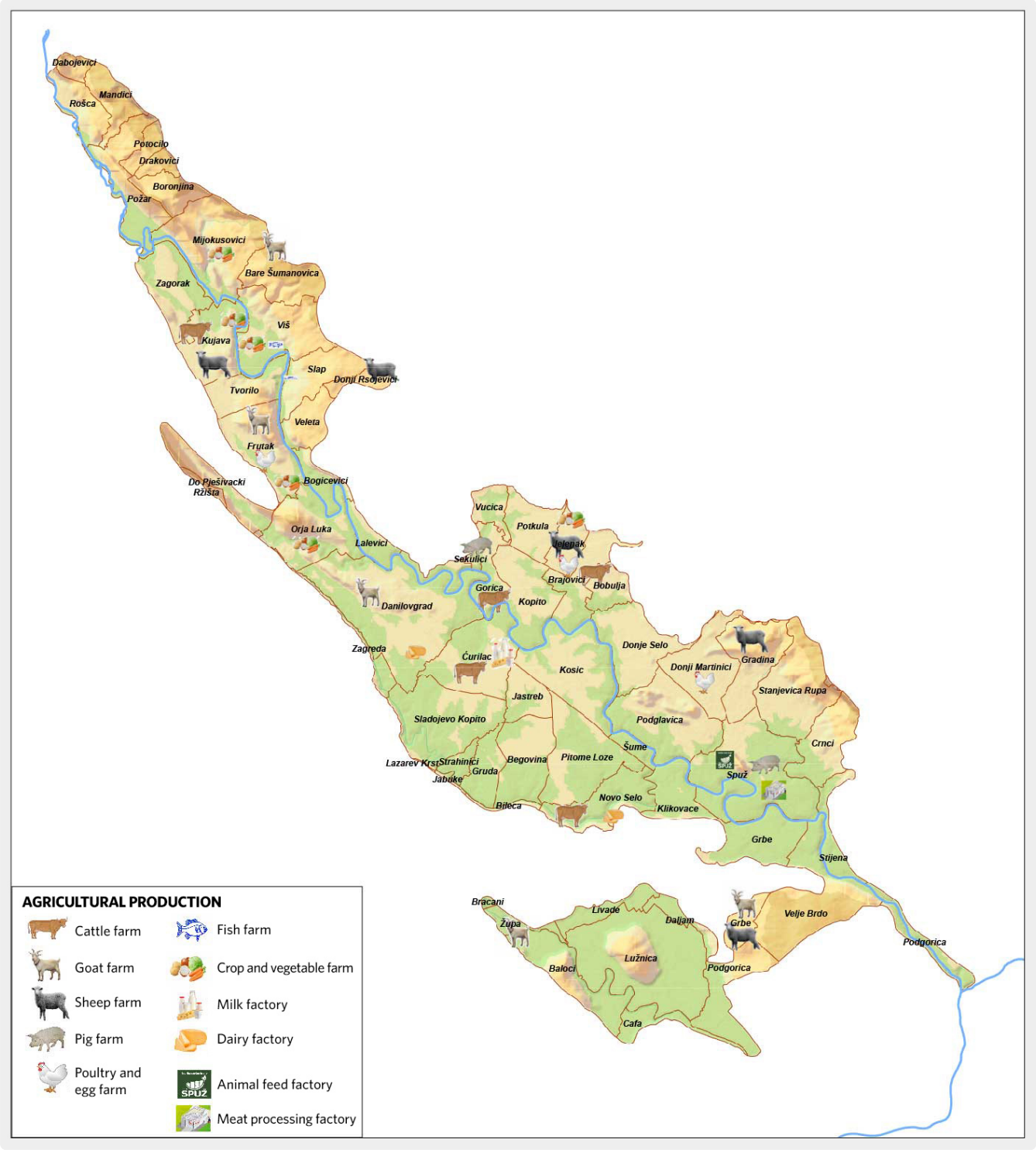
Mljekara Lazine DOO has the largest production volume and gathers 425 subcontractors from all over the country, about 150 being from the Park. The total amount of milk purchased during 2018 was over 7.2 million liters, while the number of subcontractors from the area of Danilovgrad was 50, with a total amount of 1.7 million liters of milk. The product range is limited to fermented beverages (yogurt, sour milk), sour cream, cream, and white brined cheese, while the plant does not have a line for the production of UHT milk. Lazine dairy has a current capacity of about 15000 liters of milk/day, and the largest volume of production is during the summer months. The daily water consumption is about 50 m3, and the dairy also has its own well (*Study of protection and establishment of the protected natural asset River Zeta*).

Katunjanka DOO processes raw milk. The daily processing capacity is on average 3000 L from 50 subcontractors from the Bjelopavlićka plain, and the milk is processed into different types of traditional cheeses. *Katunjanka doo* is one of the facilities with a smaller capacity since only ten workers are employed there, but it applies all prescribed quality and safety standards.

Monte bianco DOO is also a small-capacity dairy industry with twelve employees and eighteen subcontractors, and in its range has semi-hard cheeses in the type of traditional (semi-hard Montenegrin cheese *Mountain* with the addition of herbs, peppers, walnuts), mozzarella cheeses produced according to Italian recipes and goat cheeses. *Monte bianco* applies modern technologies and has modern equipment while respecting all standards of quality and food safety.

The meat processing facility, slaughterhouse ***Primato P DOO*** Herceg Novi, is registered for slaughter and meat processing, with an average capacity of 30 heads per day. The average water consumption is 1400 m3, and wastewater is collected in the pool, after which it is directed to the treatment plant, with prior mechanical removal of coarse impurities. The purification capacity is 50 m3 /day.

The fodder factory in Spuž is the only factory of this type in Montenegro. The factory's production capacities are about 18 thousand tons of food per year or cca 6 tons per hour. It imports raw materials for production from the region and sells its products to larger local consumers – primarily to the pig farm of ***Niksen-Čavor*** and poultry farm of ***Agromont***.



MAP 10 - *Map of the largest agricultural activities and facilities (data sources in Annex 5)*

Discussion

If we take into account the orographic, climatic, hydrological and pedological characteristics of this area, with the evident dominant orientation of the population towards agricultural activities, it is concluded that agricultural activity in the Park is one of the key segments of future sustainable development. Livestock is an activity that shows a tendency to grow and results in the production of high-quality primary products (milk, meat, eggs, honey) and should be given special attention. One of this sector's fundamental problems is the parceling of agricultural land and its conversion into construction, which reduces the available areas. Therefore, it is especially important to connect the plant production sector with the livestock sector in animal feed production. It is evident that the sectors are interdependent and that the growth of livestock production controls the animal feed production growth. In this part, the *Animal Feed Factory* plays a unique role since it can expand its capacity to use local resources, which would reduce the import of raw materials to produce animal feed and ensure a continuous supply of the market. The processing industry's role, especially the dairy industry, is an additional stimulus for animal husbandry development.

As agriculture is recognized as a development direction of Montenegro in general, the policy of this sector is such that it offers many benefits, privileges and incentives for producers. However, some of them are not necessarily positive for the environment and biodiversity. Support measures mainly aim to increase production volumes and yields and target larger producers (for each measure, there is a minimum head or area that the producer must own). The consequences of direct payments are such that producers are compensated per animal, the quantity of product or area under plantations. They are given no special incentives for production forms that take into account environmental aspects (e.g., diversity, ecosystem services, leaving part of the land to preserve the life cycle of species, etc.). For example, an increase in the number of highly productive cattle on farms is encouraged, contributing to the loss of indigenous genotypes of lower productivity.

Such a policy directs the development of agriculture towards intensive production and homogenization while neglecting the ecological, as well as social and cultural aspects of agriculture (e.g., preservation of tradition, the character of the landscape, etc.). However, positive measures for the environment are being introduced in this sector thanks to the consolidation of regulations and policies with European and global standards. The following can be singled out:

- Adoption of the *Law on Plant Protection Products* (Official Gazette of Montenegro 51/08 and 18/14) and the *National Plan for Sustainable Use of Plant Protection Products* (Official Gazette of Montenegro 57/16), the implementation of which includes regular education of users
- Carrying out monitoring of the impact of pesticide use on the environment in line with the *Ordinance on permitted quantities of hazardous and harmful substances in soil and methods for their testing* (Official Gazette of Montenegro 18/97), as well as regulations governing water protection
- Promotion and development of organic agriculture
- Support seeds for the cultivation of indigenous species
- Introduction of incentive measures for sustainable management of natural resources, which include support for the construction or reconstruction of a system for proper disposal of organic waste and wastewater from farms
- Introduction of several different quality schemes (labels: origin, geographical, traditional specialties, higher quality, mountain product, and "from my farm"), for which special subsidies are offered
- Introduction of the principles of good agricultural practice, which minimize the harmful effects of agricultural activities on the environment.

Despite the development of primary production, there are bottlenecks in the value chain and local agricultural products supply. The degree of finalization of primary agricultural raw materials is exceptionally low. This is especially true of plant products, which are processed to a small extent, even then mainly in the household and on a modest scale. Therefore, fruits and vegetables grown in this area cannot get added value by processing food products. An additional bottleneck is the small quantities produced per producer, which further complicates market penetration, which is a problem due to the very low level of promotion and marketing of local products and non-alignment with various markets, especially tourism. Therefore, this area's food production could be significantly improved by adding value through processing, improved product aggregation, and joint marketing and market influence.

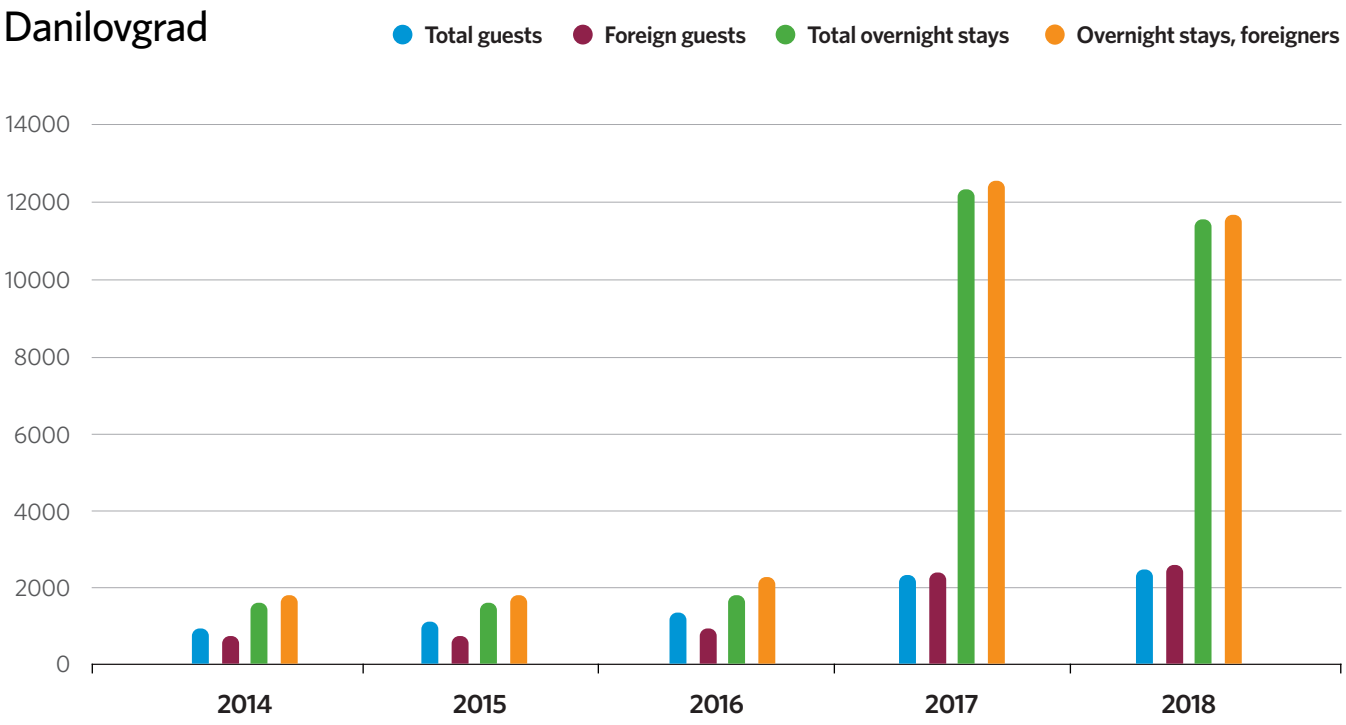
Given the scope and importance of agriculture in the Zeta River Valley, it is safe to conclude that all activities of this sector will impact the functioning of the Park and its management. Therefore, the Park would have to play a proactive role in developing agriculture, which would be manifested in enabling its development with minimal impact on the environment.

2.7.2. Tourism

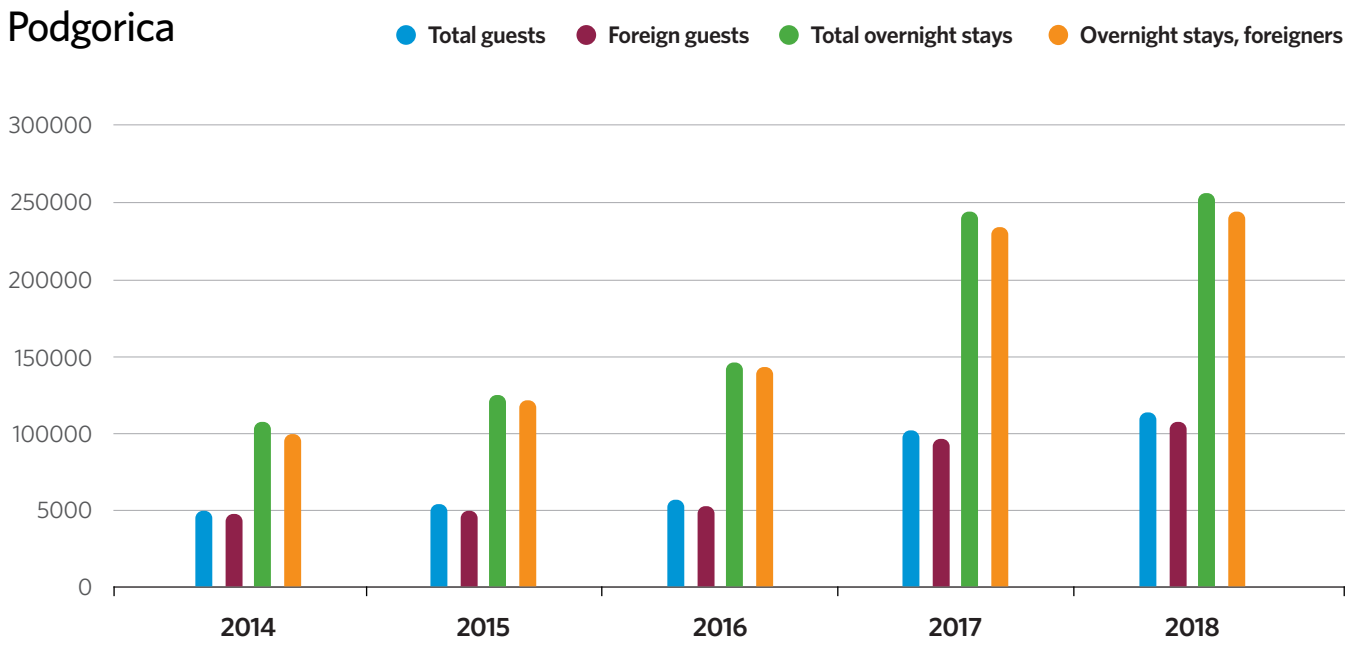
Tourism is recognized at both the national and local levels as one of the strategic directions of development. However, so far, not enough attention has been paid to tourism in this area. The largest percentage of visits to this area is of the one-day type. These include organized excursions to monasteries, visits to cultural events and going to the beaches and other recreational facilities. The statistics of overnight stays are scarce (Graph 3). It shows that tourist, cultural, and recreational contents are too loosely connected. The tourist infrastructure is basically nonexistent, but if it were more developed than it is currently the case, this would enable a more extended stay of visitors and more significant economic and social effects. At the moment, tourism is not a significant source of income in this area. Nevertheless, the trend of tourist visits has constantly been increasing in recent years, which indicates the tourist potential of this area.

The principal value in the context of tourism is the aesthetics of the area, the potential of rural tourism as well as opportunities for various recreational facilities related to water, especially sport fishing. Road infrastructure also provides excellent opportunities for the development of cycling and various forms of camping (classic camps, glamping, landscaped parks for campers). Therefore, it is necessary to approach planning at the municipal level in cooperation with relevant institutions at the national level and relevant tourism entities (agencies, tour operators). In that direction, the Municipality has adopted the *Tourism Development Strategy in the Municipality of Danilovgrad until 2020*. Support for this sector's development can also be provided by non-governmental organizations, especially sports and recreational societies active in this area.

As for the national policy of the tourism sector, it emphasizes the development of forms of tourism that are related to nature. Montenegro also has a specific strategy related to the development of rural tourism. In recent years, various forms of certification have been introduced for tourist and catering facilities with a small environmental footprint (low emissions, introduction of measures to reduce water and energy consumption). However, in the tourism sector, there are no guidelines, standards or requirements related to *Load Capacity Assessments*, biodiversity impact reduction, and the like.



GRAPH 3 - *Tourism statistics in the municipalities of Danilovgrad and Podgorica for the period 2014-2018. (Source: MONSTAT)*



The potential for tourism development in this area – such as sport-recreational fishing, cruising and kayaking on the river, swimming – directly depend on the protection of the principal values of the Park, i.e., on the Zeta river itself (in terms of its quality), the condition of the indigenous fish stock and the aesthetics of the area. Therefore, the continued endangerment of these values through pollution, poaching and illegal construction not only has consequences for the health of residents and environmental processes but directly prevents the development of tourism as an industry, and thus improving the economic status of this area. This also eliminates one of the vital funding channels for the Park. Tourism, recreation, and visiting are embedded in the very concept of protected areas. Therefore, the Park must play a role in encouraging tourism in this area. Specific recommendations are offered in Section 5.2.4.

2.7.3. Energy

Zeta is a watercourse that has the greatest energy potential in Montenegro after the Tara River and as such is primarily intended for electricity production.

In the mid-fifties of the last century, the idea of regulating the Nikšić valley, dating from the time before the Second World War, was activated. The Nikšić valley was flooded every year, and so, in 1930s, the works on reducing the flooding time and obtain as much arable land as possible began. Surveys were made, data was collected and facilities such as drainage canals, dams and the like were built. A certain cleaning and arrangement of the Zeta sinkhole was done, with the goal of evacuating large waters as quickly as possible.

After the Second World War, the Committee for Water Management of the Federal People's Republic of Yugoslavia drafted the "Water Management Basis of the Upper Zeta Basin", the later elaboration of which provided a water management solution for the Upper Zeta Basin. The aim of this documentation was to consider the possibility of water supply to industry (Ironworks in Niksic), as well as energy use of watercourses. At that time, the Krupac Dam (1957-1962), the Slano Dam (1960-1965) and the Vrtac Dam (1960-1962) were built in the Nikšić valley, and accumulation lakes were created for the needs of HPP Perućica.

With the construction of the HPP Perućica system, there was a change in the runoff regime in Donja Zeta. The mode of use of reservoirs from the time of construction until today has been variable depending on the installed capacity. The power plant currently has a total installed capacity of 307 MW and 7 hidrogenerators but was designed for a total of 8. It was built in three phases. The first included two hidrogenerators of 38 MW each, with a flow of 8.5 m3/s and was completed in 1960; the second, which included three hidrogenerators of the same power and flow, was completed in 1962, and the third,

which included two units of 58.5 MW each with a flow of 12.75 m3/s, was completed in 1977. In addition to the previously performed construction works in the machine building, the flow for the installation of the 8th unit has been provided. Therefore, the planned fourth phase of construction consists of one hidorgenerator, the eighth, of 58.5 MW with a flow of 12.75 m3/s, for which the required preparatory construction works has been completed in the previous three phases.

At the moment, a system of three hydroelectric power plants is located on the Zeta River. One of the power plants, *HPP Perućica*, managed by *EPCG*, depends on water from the upper course of the Zeta, where a system of artificial reservoirs was erected. This hydroelectric power plant regulates the flow and prevents peaks in the flood waves downstream. The other power plant, *HPP Glava Zeta* takes water from the source of Glava Zeta, as well as water from the occasional stream Perućica. Finally, the third one, namely *HPP Slap* receives water both from *HPP Perućica* (cca 30% of the total incentive of Zeta) and natural watercourses and then balances out the water in situ. The management of *HPP Glava Zeta* and *Slap* is entrusted to the company *Zeta Energy*, majority-owned by *EPCG*.

The Zeta River Water Administration has not adopted a maintenance plan yet, and due to previously described hydropower facilities, as well as other anthropogenic factors in the Zeta basin, there are changes in the hydrological regime due to changes in flow and increased sedimentation. Upstream of the Waterfall, there are frequent floods when damage occurs to agricultural land and facilities. The mentioned changes also affect the migratory routes of fish and local environmental factors on which aquatic fauna depends. Because of these problems, the Park must establish permanent cooperation with EPCG, as well as the institutions in charge of water management (*Water Administration, Ministry of Agriculture, Forestry, and Water Management - Directorate of Water Management*), in order to control, regulate and maintain the riverbed.

2.7.4. Construction

According to data provided by the *Central Register of Business Entities* in Danilovgrad, in 2020, 26 construction companies were registered, of which 21 are active. In Danilovgrad and Spuž, there are also architectural and construction stone fields (companies *Šišković* and *Mermer AD*), which supply 96% of the Montenegrin market with this material (*Strategy for the Development of Construction in Montenegro until 2020*).

In general, the number of productions, storage, and other commercial facilities in the subject area has increased in recent years. The incentive for that is granted through municipal benefits such as communal taxes. The construction of these facilities along the highway Podgorica - Danilovgrad is especially pronounced. The Municipality of Podgorica's plans envisages the development of the industrial zone on Mareza, in the 3rd zone of the Park. As for housing, their number has also been growing in recent years. Due to immigration, the demand for construction land in the subject area has increased. Houses are being built for housing, but also for holidays (cottages) that are not permanently inhabited. The increase in demand has led to the parceling of agricultural land and its conversion into construction, which directly conflicts with natural resource protection.

Unplanned use of space is one of the critical problems in this space. One of the reasons behind such a situation lies in the inconsistency of urbanistic plans with nature protection. For instance, construction is not allowed in the 2nd zone of the Park, but that zone partially overlaps with the settlement zone envisaged by the urban plan. The trend of immigration from other parts of Montenegro is also a consequence of uneven regional development and the absence of a land-use policy. Given the importance of space as a non-renewable resource, the need to protect natural habitats and agricultural land, the Park should actively address spatial protection and define specific measures in this regard, and recommendations are presented in Section 5.2.3.

2.7.5. Relationship Between Major Activities

These activities with nature protection can have synergies but also conflicts. Table 4 summarizes the identified relationships between the analyzed sectors.

TABLE 4 - *Recognized synergies (top right, green color) and conflicts (bottom left, red color) between different activities relevant to the Nature Park River Zeta*

SECTOR	Nature protection	Agriculture	Toursim	Energetics	Construction
Nature protection		Encouraging organic agriculture; Introduction of regulations on the use of plant protection products; Producer education programs; Maintenance of ecosystem services on agricultural land (pollination, habitat for wild species, animal feed ...)	Promotion of forms of tourism-related to nature; Introduction of eco-certificates for tourist facilities, products, and services	Interest in establishing a Zeta water maintenance and management plan	Defining guidelines for construction in accordance with nature
Agriculture	Incentive measures that promote intensive agriculture and homogenization; Loss of indigenous varieties and breeds and their genotypes due to the use of imported highly productive		Branding of their agricultural products and placement through tourism; Gastrotourism that emphasizes indigenous products; Encouraging the development of rural areas; Preservation of traditional forms of land use	–	–
Toursim	Promotion of eco-tourism without assessment of carrying capacity and impact on nature	Pollution from agriculture directly impedes the development of tourism		–	–
Energetics	Influence on the hydrological regime of Zeta	Frequent flooding of agricultural land in a part of the Valley	–		–
Construction	Habitat loss, fragmentation, and degradation due to construction activities and disturbance	Loss and fragmentation of agricultural land	Loss of aesthetic values of space	–	

2.8. Legal and Institutional Framework for the Operation of the Park

2.8.1. Legal Framework

Given the heterogeneity of the Park's management activities, there is a need to implement a plethora of legal acts. These include international legal acts, as well as national laws and bylaws governing relevant areas. The following table provides an overview of the most important ones.

TABLE 5 - *Overview of the most important legal acts by sectors in Montenegro*

Sector	International legislative acts	National legislative acts
Nature protection	UN Convention on Biological Diversity; Ramsar Convention on Wetlands of International Importance; Convention on Migratory Species; Paris Convention for the Protection of the World Cultural and Natural Heritage.	Law on Nature Protection (Official Gazette of Montenegro 54/16); Decision on placing individual plant and animal species under protection (Official Gazette of Montenegro 76/06).
Environmental protection	UN Framework Convention on Climate Change; Aarhus Convention on Access to Information, Public Participation in Decision-Making, and Access to Justice in Environmental Matters.	Law on Environment (Official Gazette of Montenegro 52/16); Decree on the National List of Environmental Indicators (Official Gazette of Montenegro 19/13); Law on Integrated Prevention and Control of Environmental Pollution (Official Gazette of Montenegro 55/18); Decree on the exact amount of fees, methods of calculation, and payment of fees due to environmental pollution Official Gazette of Montenegro 26/97 and 9/00, Official Gazette of Montenegro 33/08); Law on Liability for Environmental Damage (Official Gazette of Montenegro 27/14); Law on Environmental Impact Assessment (Official Gazette of Montenegro 80/05); Law on Strategic Environmental Assessment (Official Gazette of Montenegro 80/05); Ordinance on the content of the study on environmental impact assessment (Official Gazette of Montenegro 14/07); Law on Air Quality (Official Gazette of Montenegro 48/07); Law on Waste Management (Official Gazette of Montenegro 80/05); Ordinance on the detailed content and manner of compiling the waste management plan of waste producers (Official Gazette of Montenegro 5/13); Ordinance on waste classification and waste catalog (Official Gazette of Montenegro 59/13); Law on Municipal Wastewater Management (Official Gazette of Montenegro 2/17);
Cultural heritage protection	European Convention for the Protection of the Archaeological Heritage; Convention for the Protection of the Architectural Heritage of Europe; Council of Europe Convention on the Value of Cultural Heritage for Society; European City Charter; European Landscape Convention.	Law on the Protection of Cultural Monuments (Official Gazette of Montenegro 47/91); Law on Ratification of the European Convention for the Protection of the Archaeological Heritage (Official Gazette of Montenegro 14/11); Law on Amendments to the Law on Protection of Cultural / Heritage (Official Gazette of Montenegro 44/17, 18/19).

Agriculture	International Plant Protection Convention	Law on Agricultural Land (Official Gazette of Montenegro 15/92 and 59/92); Law on Agriculture and Rural Development (Official Gazette of Montenegro 30/2017); Law on Organic Production (Official Gazette of Montenegro, No. 56/13); Law on Food Safety (Official Gazette of Montenegro 57/15); Law on Organization of the Market of Agricultural Products (Official Gazette of Montenegro 51/17); Law on Quality Schemes for Agricultural and Food Products (Official Gazette of Montenegro 22/17); Wine Act (Official Gazette of Montenegro 41/16); The Law on the identification and registration of animals (Official Gazette of Montenegro 48 /15); Law on Cooperatives (Official Gazette of Montenegro 43/15); Livestock Act (Official Gazette of Montenegro 48/15); Law on Protection of Animal Welfare (Official Gazette of Montenegro 47/15); Veterinary Law (Official Gazette of Montenegro 43/185); Plant Protection Act (Official Gazette of Montenegro 18/14); Law on Plant Nutrients (Official Gazette of Montenegro 43/18); Law on Planting Material (Official Gazette of Montenegro 48/15); Law on Seed Material of Agricultural Plants (Official Gazette of Montenegro 48/15); Law on Genetically Modified Organisms (Official Gazette of Montenegro 40/11).
Fishing, hunting, forestry		Law on Forests (Official Gazette of Montenegro 55/00); Law on Game and Hunting (Official Gazette of Montenegro 52/08); Law on Freshwater Fisheries and Aquaculture (Official Gazette of Montenegro 11/07); Law on Freshwater Fisheries and Aquaculture (Official Gazette of Montenegro 17/18).
Water protection and protection against the harmful effects of water		Law on Waters (Official Gazette of Montenegro 27/07); Law on Financing of Water Management (Official Gazette of Montenegro 40/11); Decree on classification and categorization of surface and groundwater (Official Gazette of Montenegro 2/07); Decree on the manner of categorization and categories of water bodies and their provision for management and maintenance (Official Gazette of Montenegro 15/08); Decree on the content and manner of preparation of the water management plan in the river basin district or in its part (Official Gazette of Montenegro 39/09); Rulebook on quality and sanitary-technical conditions for wastewater discharge into the recipient and public sewerage, manner and procedure of wastewater quality testing, minimum number of tests, and content of the report on determining wastewater quality (Official Gazette of Montenegro 59/13);
Spatial protection		Law on Spatial Planning and Construction of Facilities (Official Gazette of Montenegro 082/20)
Tourism		Law on Tourism and Catering (Official Gazette 76/20); Rulebook on classification, minimal conditions, and categorization of catering facilities (Official Gazette of Montenegro 33/07).
Energetics	Agreement on the Establishment of the Energy Community	Law on Energy (Official Gazette of Montenegro 39/03)
Other		Law on Protection of Persons and Property (Official Gazette of Montenegro 43/18)

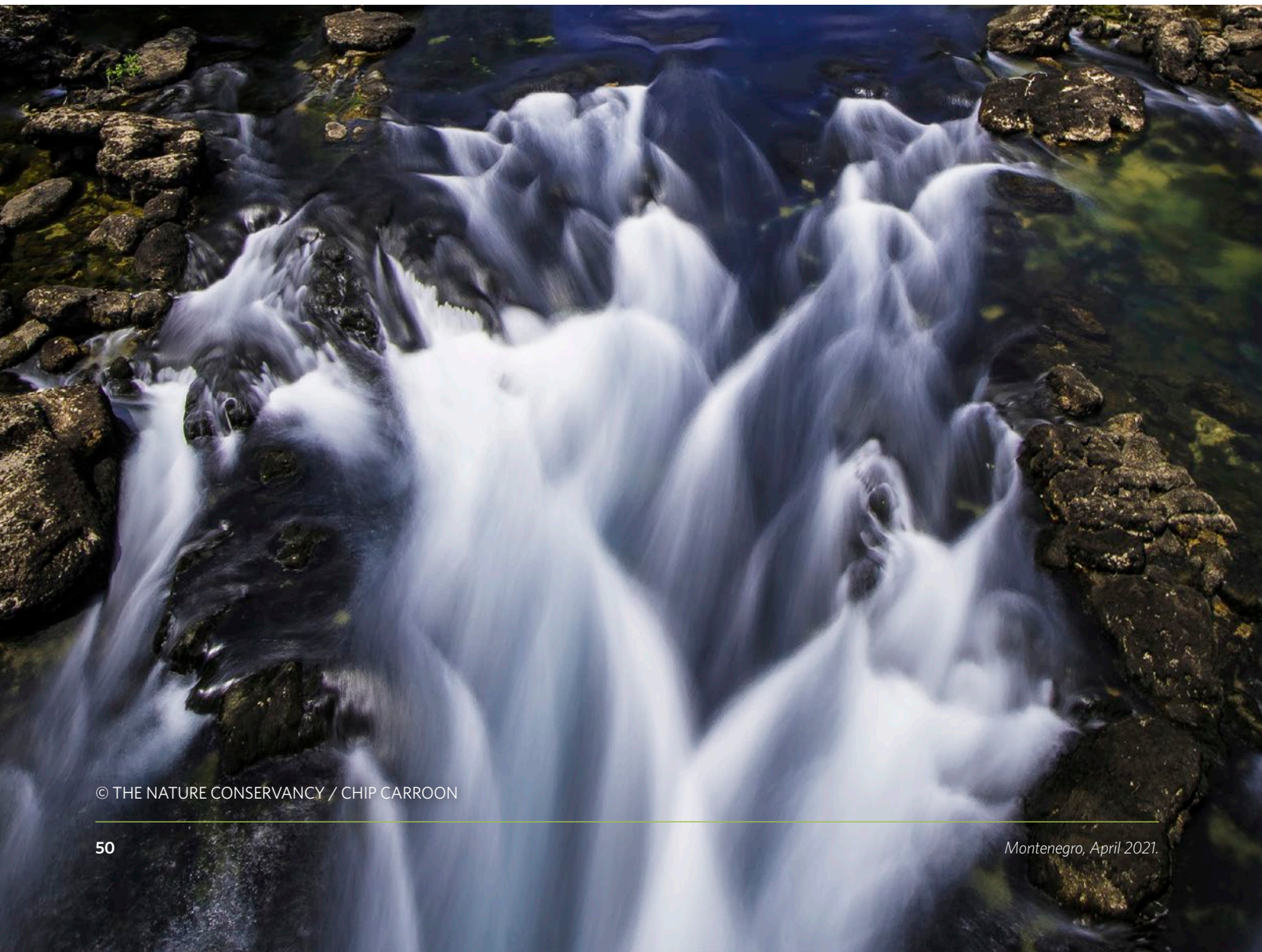
Based on the above, it can be concluded that the legal framework for the operation of the Park exists, i.e., that Montenegro has adopted relevant legislation from various sectors, which has provided a legal basis for the spatial protection and natural and cultural heritage within the Park. In approaching the European Union, Montenegro is actively consolidating its national legislation with the EU acquis, which should ensure, in turn, the consolidation of particular laws and measures envisaged by legislation.

The park should be the central entity for the implementation of these regulations. For some of these regulations, the Park has a direct mandate (nature protection), while for others, there should be support for supervision and implementation (domain of agriculture, tourism, water management). Cooperation of the Park with others along the law enforcement chain (police, inspections, prosecution and judiciary) is key to protecting this area. Therefore, it is recommended to establish a separate working group through which the cooperation, communication, and joint action of the competent institutions in this area will be strengthened (see Sections 5.3.3 and 5.5).

2.8.2. Strategic Framework

In addition to the adopted laws, several strategic documents in Montenegro regulate development both at the national level and at the level of individual sectors. The following table shows the strategies that are most relevant to the work of the Park.

Montenegro's commitment is a development based on the principles of sustainability, which includes nature protection, but also social and economic sustainability. This commitment is formulated in the strategic umbrella documents and transferred to sectoral strategies and development plans. For this area, sustainable agriculture and tourism are recognized as the main directions of development.



Montenegro, April 2021.

TABLE 6 - *Overview of the most important strategic documents that are relevant to the work of the Park*

Sector	Strategic document
General development	Directions of development of Montenegro; National Strategy for Sustainable Development until 2030; Strategic development plan of the municipality of Danilovgrad 2019-2023.
Nature protection	National level; National Biodiversity Strategy with Action Plan 2016-2020; Local Biodiversity Action Plan of the Municipality of Danilovgrad 2020-2024; Biodiversity Action Plan of the Capital City of Podgorica.
Environmental protection	National Chemicals Management Strategy 2019-2022 along with the Action Plan for the period 2019-2022; National strategy for transposition, implementation, and application of the acquis communautaire in the field of environment and climate change with the Action Plan for the period 2016-2020.
Agricultue	Agriculture and Rural Development Strategy for the period 2015-2020; Action Plan for Nutrition and Food Safety of Montenegro 2010-2014; Manufacturing Industry Development Strategy of Montenegro 2014-2018.
Fishing, hunting, forestry	Fisheries Strategy of Montenegro 2015-2020 with the action plan of Montenegro; Forestry development strategy.
Water protection and protection against the harmful effects of water	Water management strategy
Spatial protection	Spatial plan of Montenegro until 2020; Construction development strategy in Montenegro until 2020; The urban spatial plan of the municipality of Danilovgrad; The urban spatial plan of the municipality of Podgorica.
Tourism	Tourism Development Strategy in Montenegro until 2020; Rural Tourism Development Strategy of Montenegro with an action plan until 2023 Strategy for the development of cultural tourism in Montenegro with an action plan until 2023 Tourism Development Strategy in the Municipality of Danilovgrad until 2020.
Energetics	Energy Development Strategy of Montenegro until 2030.
Other	Industrial policy of Montenegro until 2020

Although there are inconsistencies in the policies of the sector and measures that cannot be considered sustainable (e.g., energy production from mini-hydropower plants, development of an industrial zone along the Park border, etc.), they can be used as a basis for protecting this area from various anthropogenic impacts and long-term conservation through sustainable use of resources. This allows the future manager of the Park to carry out protection activities, achieve cooperation with other sectors as well as funding opportunities. More details on sectoral policies are provided through the analyzes in Section 2.7.

2.8.3. Institutional Framework

The performance of the Nature Park activities will depend on other institutions' mandates and will be related to their activities. This chapter identifies the institutional actors which can contribute either positively (through synergies) or negatively (if there are any conflicts in policies and interests) to the Park's functioning.

2.8.3.1. Decision-Making and Policy

Government of Montenegro – According to the *Law on Nature Protection* (Official Gazette 54/16), the Government is in charge of declaring protected areas located on the territory of more than one municipality. Therefore, *The Act on the Proclamation of the Nature Park River Zeta* was adopted by the Government.

Ministry of Ecology, Spatial Planning and Urbanism ***(MEPSU)*** - Through the Directorate for the Environment regulates the policy of nature protection, i.e., adopts regulations in this area, including those related to protected areas, as well as the National Biodiversity Strategy with an action plan as the primary document of this policy. Through the process of declaring the Park, MEPSU submitted a positive opinion as part of the procedure. This Directorate improves the entire system of protected areas in Montenegro through various programs (establishing the *Natura 2000* network, UN/GEF projects in nature protection, and many others). These programs can be a source of financial, technical and administrative support to the Nature Park River Zeta.

Through other relevant directorates, *MEPSU* also regulates waste and wastewater management policy, space, construction, and tourism.

Ministry of Agriculture, Forestry, and Water Management ***(MAFWM)*** - Through several directorates, this ministry regulates the policies of agriculture, fisheries, forestry, hunting, rural development and water management. In other words, these are all production sectors that directly depend on natural resources and ecosystem services. MAFWM also implements various programs and projects in these areas intending to improve them and harmonize them with European standards and coordinates the implementation of the IPARD support program for agricultural producers in Montenegro.

Ministry of Economic Development – Regulates energy policies (whose strategic commitment is the generation of energy from renewable sources, with hydropower being given priority), mining and industrial development.

Ministry of Capital Investments – Adopts policies related to the development of all forms of transport, including inland waterway transport.

Ministry of Finance and Social Welfare – Manages the use of the state budget, contracts for EU funds, and issues regulations related to local self-government and state-owned enterprises.

Local governments – Have adopted development policies. The Municipality of Danilovgrad has adopted a policy of sustainable development and nature protection through the adopted *Local Action Plan for Biodiversity (LAB)*, which has the Municipality of Podgorica.

A remark

Montenegro has adopted a development direction based on sustainability principles, as defined by the umbrella document *National Strategy for Sustainable Development until 2030*. However, analysis of policies, decisions, and programs of different sectors indicates that nature protection issues, including protected areas, are not adequately integrated into sectoral policies and programs. Therefore, the Park may encounter barriers in implementing its activities due to other sectors' inconsistent policies, especially those based on the exploitation of natural resources. Indeed, there are synergies, as well as legal and strategic preconditions (e.g., laws for impact assessment and strategic impact assessment, National Strategy for Sustainable Development, etc.) that give the Park a foothold for resolving potential conflicts

2.8.3.2. Park Space Management

Managing Authority – This is the leading management body of the protected area, whose role is to adopt and implement a management plan and achieve protection objectives. At the time of writing, the Park has no established governing body. According to the current situation and experience with other protected areas in Montenegro, this body should be a state-owned company established by the local self-government. As for this Park, the local self-governments of Danilovgrad and Podgorica will have to agree on its management. Podgorica already has a municipal Agency for the Management of Protected Areas of Podgorica, but it is not defined how the two municipalities will coordinate the Park's management.

Management of hunting and fishing areas - Until establishing a unique management body, biodiversity management is reflected in protecting the Park area

as a hunting and fishing area. *MAFWM* – Directorate for Forestry, Hunting and Wood Industry regulates the system of use and management of hunting grounds (prepares the expert basis for giving hunting grounds for use, announces a competition for hunting ground users and selects candidates, supervises their work). On the territory of the Municipality of Danilovgrad, the management of the hunting ground is entrusted to the *LLC Public Company for Breeding, Protection, and Hunting of Game and Fish - Danilovgrad*, which also performs the protection and management of fishing resources. On the territory of the Municipality of Podgorica, it is the *Hunting Organization for Breeding, Protection, and Hunting of Wildlife - Podgorica* (which has the status of an NGO). Hunting ground users are obliged to bring and implement hunting bases and, based on it, annual hunting plans. They are also obliged to organize a hunting guard service, whose obligation is to monitor and report cases of abuse and violation of regulations within the hunting ground.

Forest Administration – Responsible for the conservation and management of forest resources. Within the Park, the Administration's competencies relate to protection against illegal logging, fires, floods, and coastal erosion control.

Municipal protection and rescue services – Deals with the rescue and protection of citizens, animals, material and cultural goods, and the environment endangered by disasters, natural disasters, technological incidents, and other accidents.

A remark
At the moment of preparing this document, negotiations were underway between the two municipalities to establish a governing body. In whatever form the governing body ends up, this document provides recommendations on what competencies it should have, as well as how to cooperate with other actors in this area (see Sections 5.3.3, 5.5, and Annex 4).

2.8.3.3. Enforcement and Supervision

Directorate for Inspection Affairs – is a state administration body that organizes the work of several inspections relevant to the activities of the Park. There are primarily environmental inspections that supervise the implementation of laws in the field of environmental protection, including nature protection. In addition to this, inspections of fisheries, forestry, hunting and plant protection, water inspection, spatial protection inspection, sanitary inspection, and inspection for protection of cultural goods and cultural heritage are also relevant.

Municipal communal inspections – Perform inspection supervision in the areas of communal activities. As defined by the relevant law, the most critical communal activities for the Park's work are public water supply, municipal wastewater management, atmospheric water management, management of all types of waste, maintenance of local watercourses, maintenance of municipal roads, and bicycle paths.

Municipal communal police – Provides communal supervision and maintenance of communal order.

Directorate for Food Safety, Veterinary, and Phytosanitary Affairs – Of the tasks performed by this Administration, the most important for the Park are: food safety of animal origin, food safety, food of non-animal origin safety, and animal by-products. The Management Board prepares professional databases, implements, consolidates, and monitors regulations in these areas, issues professional instructions, brochures, manuals, instructions, and measures. It also determines and monitors the fulfillment of conditions for performing work, establishes and maintains a central register of approved and registered food and feed facilities, as well as performs activities of plant and animal health protection, import of seed material and animal welfare.

LLC Protection of Spatial Planning of Montenegro – is a state-owned company established to support inspections within the Directorate for Inspection Affairs but also protected areas, local governments, and other state entities in order to achieve the most efficient implementation of laws related to spatial protection.

Police Directorate – In the context of nature protection, the most relevant is the Police Sector of General Jurisdiction - Department of Public Order and Peace, which on request or independently can preventively monitor the park, goes to the field, and reacts per its competencies. Criminal Police Sector (Department for the Suppression of General Crime) - undertakes measures and activities to prevent and sanction acts of general crime and achieves cooperation with the Prosecutor's Office. At the municipal level, there is the Security Center in Podgorica and the Danilovgrad Security Department.

The Public Prosecutor's Office – is in charge of prosecuting those who have violated the laws, including those in the field of environmental protection. This process begins with the filing and representation of the indictment.

Judiciary - A part of the judicial system whose role is to resolve legal disputes and make judgments in accordance with the law. Relevant courts in this context are the primary courts in Podgorica and Danilovgrad, the Misdemeanor Court in Podgorica.

A remark

The previous experiences regarding the implementation of regulations and supervision in the field of nature protection are such that there are specific bottlenecks in that system, the most important of which are poor coordination between institutions, unclear competencies, and especially lack of human capacity. The latter is reflected both in the number of employees and their level of knowledge pertaining to nature protection.

To better understand this situation, we should refer to the *Analysis of Criminal and Misdemeanor Legal Protection of the Environment in Montenegro* conducted in 2018 (Iković 2018). It has clearly shown that the number of processed cases in this domain is minimal. That Analysis identified as a particularly bottleneck a step in pre-trial proceedings, in which prosecutors reject a large number of reports. One of the reasons is the incompleteness and inadequacy of the reports themselves, while for the most part, this phenomenon is explained by the lack of awareness of public prosecutors about the importance of nature and environmental protection issues in general. Statistics conducted within this Analysis showed that the most significant number of processed reports by municipal courts relates to illegal logging (44%), construction (37%), fishing (10%), and hunting (3%). In the statistics, there is a noticeable absence of processed reports for criminal offenses such as environmental pollution, non-enforcement of environmental protection measures, food and water pollution. Also, the Analysis showed the inadequacy of the sanctions themselves because, in 64.1% of processed cases, a suspended sentence was imposed, 21.63% a fine, and 10.31% a prison sentence.

All this, therefore, indicates that the Park will face the following challenges in the enforcement system:

- establishing cooperation and coordination with other relevant services (inspections, police...)
- Achieving knowledge and capacity of own staff for adequate response and preparation of applications and adequate initiation of legal processes
- Inadequate response of the prosecutor's office and the judiciary for processing cases in the field of nature and environmental protection in this area.

Recommendations for mitigating these challenges relate to forming a separate working group whose task would amount to fostering cooperation along the law enforcement chain (see Section 5.3.3).

2.8.3.4. Monitoring and Providing Data

Agency for Nature and Environmental Protection - Conducts annual environmental monitoring when biodiversity monitoring is performed. The Agency (through its Sector for Nature Protection, Monitoring, Analysis, and Reporting) is working on improving the overall monitoring system in agreement with international practices and reporting needs and establishing a central information system on biodiversity. The biodiversity monitoring program has so far mainly referred to the area of national parks following national priorities, and as such, does not cover the area of this Park.

The Institute of Hydrometeorology and Seismology – is in charge of water monitoring in Montenegro by the Law on Waters. They maintain a network of measuring stations and monitor the physical, chemical, and biological characteristics of water in accordance with the EU Water Framework Directive. In the Park area, they collect data from the measuring stations Most in Danilovgrad and Vranjska Njiva. The Institute also performs regular measurements of climate factors and maintains a publicly available database on them.

The Ministry of Agriculture, Forestry and Water Management - Directorate for Forestry, Hunting and Wood Industry prepares the methodology for monitoring hunting species and collects and analyzes data on the condition of their populations, and keeps central hunting records on hunting ground users.

The Ministry implements the annual *Land Monitoring Program for the production of food of plant origin in line with the Law on Food Safety* (Official Gazette of Montenegro 57/15) and the *Law on Plant Nutrients* (Official Gazette of Montenegro 48/07 and Official Gazette of Montenegro 43/18). The program for monitoring the impact of pesticide use on the environment includes soil sampling to prove the possible presence of pesticides and other harmful substances determined by the *Rulebook on permitted quantities of hazardous and harmful substances in soil and their testing methods* (Official Gazette of Montenegro 18/97). In 2019, the monitoring program was launched through the ranking system of priorities, and five samples were tested in the Municipality of Danilovgrad. The results of analyses from the program are published on the website of the Food Safety, Veterinary, and Phytosanitary Administration, with information on the analytical methods used, the detection levels applied in the program, measures taken per law, cases of exceeding the MDK with an explanation. An integral part of the annual report consists of reporting on samples from regular inspections and specific programs.

Hunting ground users – According to the Law on Hunting, hunting ground users should count game and its numerous conditions and maintain databases (cadastre). The monitoring methodology is defined by the *Hunting Development Plan 2014-2024*.

A remark
As explained in Section 3.4.4, the state of data from the monitoring program is not satisfactory, especially when it comes to biodiversity. The applied methodologies are often questionable (e.g., in the case of monitoring by hunting ground users), as well as the comparability of data and periods, clearly defined indicators, as well as adequate geographical and taxonomic coverage, are missing.

In order to implement the future management plan and achieve the protection goals, the Park will have to use the existing data and cooperate with the institutions that provide them, as well as to establish its system for monitoring the state of biodiversity and the environment.

2.8.3.5. Research

Universities – At Montenegrin universities, there are experts in various fields who conduct research in them through regular activities and work on projects. Of the utmost importance for the work of the Park are the university units listed below. It is worth stressing again that they contribute to the corpus of knowledge related to the nature of Montenegro through their research work.

The University of Montenegro (UCG) – Faculty of Science – Department of Biology - Conducts biodiversity research. Expertise exists for microorganisms, plants, and invertebrates (some groups of arthropods, mollusks, arthropods), fish, mammals, ecology, and environmental protection.

The University of Montenegro (UCG) – Biotechnical Faculty – Conducts research related to primary agricultural production. Expertise exists for the areas of land, plant, agricultural animal production, genetic resources in agriculture.

The University of Montenegro (UCG) – Faculty of Metallurgy and Technology – Conducts research on environmental protection. Expertise exists in the areas of impact assessment, pollution management and remediation.

University of Donja Gorica (UDG) – Faculty of Food Technology, Food Safety, and Ecology – Conducts research related to production processes in the food industry, food safety and the impact of food production on the environment. Expertise exists for microbiology, ecology and environmental protection, urban agriculture, protected areas, and ecosystem services.

The UCG, UDG, as well as the Mediterranean University also possess the relevant expertise and launch projects in various scientific disciplines, which may be considered crucial for the work of the Park (for instance, economics, sociology, history, etc.).

Agency for Nature and Environmental Protection – Conducts research about establishing protected areas and implementing nature protection policy. Their experts are in charge of preparing Protection Studies, Natura 2000 research, and expertise in habitats, fungi, plants, some invertebrates (mollusks, insects, aquatic crustaceans), amphibians, reptiles, birds.

Museum of Natural History – In addition to museum/curatorial work, experts from the Museum of Natural History also conduct research that contributes to the knowledge of Montenegro's biodiversity. Expertise exists for the areas of plants, insects, amphibians, reptiles, birds, and mammals, as well as for fossils and geoheritage.

NGO sector – Some non-governmental organizations conduct research and have expertise in ecology and environmental protection. Among them, *The Montenegrin Society of Ecologists* (targets: habitats, reptiles...), *The Center for Protection and Study of Birds* (targets: birds and mammals), ENVPRO (targets: habitats, protected areas), *The Center for Climate Change, Natural Resources and Energy* (targets: climate change, protected areas, ecosystem services) stand out the most. Besides biodiversity research, the NGO sector projects incorporate research related to demographic, social, and economic issues as well.

A remark
Biodiversity research in this area is not strategically defined. Universities, research institutions, and the NGO sector do conduct research but on an *ad hoc* basis – i.e., following current needs, available funds, and researchers' personal interests. Indeed, expertise exists, and it could be mobilized through an organized research program whose goals should be defined by the Park itself. The purpose of the research, which would be based on a strategic approach, is to provide data and information for the park's management promptly. A strategic research approach would also facilitate the mobilization of funding, including national and international research funds.

2.8.3.6. Education, Capacity Building, Awareness-Raising

Educational institutions – On the Park territory, there is one kindergarten, three primary schools (with four rural, regional units), a music school, a high school, and a secondary school of internal affairs within the Municipality of Danilovgrad. Additionally, another primary school in Danilovgrad and several schools in Podgorica naturally gravitate to the Park's area. Topics in ecology and environmental protection can be found in these institutions' curricula. In schools, there are various sections and initiatives through which extracurricular activities related to these topics are conducted.

Higher education institutions – The universities mentioned above offer several study programs at the undergraduate and postgraduate level, where general and specialist knowledge relevant to the Park's work can be acquired. These include governance and management, finance, biology and environmental protection, law and others. These institutions also offer lifelong learning programs intended primarily for employees who want to improve their knowledge in some specific areas. Through national and international grant schemes, candidates are offered scholarships and other study benefits.

Vocational training institutions – In this regard, the following institutions should be emphasized:

Judicial and State Prosecutor's Training Center – through which training programs for prosecutors and judges are organized and implemented;

Police Academy – which provides education and professional training of police officers and customs officers, and organizes mandatory training programs for all those involved in the protection of persons and property, which includes supervisors of protected areas;

Regional School of Public Administration – Conducts various forms of education and capacity building of public administration employees, as well as networking, cooperation and research programs at the regional level.

Advisory services – i.e., professional services under the auspices of the *MAFWM*, which provide advice in the field of crop and livestock production. The services also educate agricultural producers, encourage networking and the creation of different associations, and publish publications in agriculture.

Monteorganica – An accredited body that controls and issues certificates in organic agriculture. Through this, Monteorganica promotes good agricultural practices aimed at reducing environmental impact.

NGO sector – NGO organizations are active in this area through various projects on educating the population and raising awareness on many issues, including various aspects of the environment. The most active environmental NGOs are gathered in the informal network of Coalition 27 (Green Home, Ozone). The NGO *Urban Rural, the Green Zeta Initiative, the NGO Podglavice, CZIP, the Society of Ecologists*, the mountaineering associations *Ćutuk* and *Prekornica* are especially active within the Park's territory.

Local tourist organizations (Danilovgrad and Podgorica) – Deal with the development and promotion of specific types of tourism, such as active holidays in nature (hiking, biking, hiking), sports and recreation, religious and cultural tourism, wine tourism, rural and mountain tourism. They distribute informational leaflets to tourists.

National Tourist Organization of Montenegro - Plans, organizes, and implements general tourist promotion in the country and abroad, creating conditions for the affirmation of tourist values of Montenegro.

A remark

Opportunities for education, training, and raising the awareness of the general public, individual groups and those employed in the nature protection system exist - both through formal education and through non-formal forms of education. A significant segment of the Park's work should be related to education. On the one hand, own staff - through attending studies (full-time, postgraduate), educational programs (lifelong learning, compulsory training), and various seminars, workshops, and similar educational events. On the other hand, the Park should work on raising public awareness on nature protection issues. Through this segment, the Park can also play a significant role in fostering the capacity building of other relevant services and institutions for nature and environmental issues (such as the prosecution, judiciary, police and others).

2.8.3.7. Funding

Government of Montenegro - One of the primary forms of funding for protecting biodiversity is an investment in protected areas from public budgets. So far, the government has allocated funds only for the national parks of Montenegro, of which he is the founder. However, as the Government passed the Decision on the Zeta Nature Park proclamation because it covers the territory of two municipalities, this can provide this Park with the

possibility of financing from the state budget.

Environmental Protection Fund (Eco Fund) – is a unique institution established by the Government in 2018, with the task of providing funds for implementing projects aimed at preserving all components of the environment and rational use of natural resources as necessary conditions for sustainable development. The idea of establishing and functioning of the Eco Fund implies that the funds collected by entities that perform activities that pollute the environment are purposefully placed in programs and projects in environmental protection at the state and local level. In the long run, it is expected that this will provide stable sources of funding for environmental activities, including nature protection. The Eco Fund, in line with national priorities, opens funding programs to which various institutions - including protected area managers - can apply for funding.

International organizations - Nature protection in Montenegro primarily relies on funds from projects funded by international organizations, most notably EU funds, the purpose of which is to help achieve standards for accession to the EU. These funds are thus in close connection to the EU policy.

Also, international development agencies and donor organizations are active in Montenegro and the region, providing support for nature conservation projects in line with the policies and needs of the governments that established them, as well as regional and global nature conservation policies. These include primarily *UNDP* – which supports projects to protect biodiversity, establish protected areas, improve their management and financing, and *GiZ* – which supports projects related to protecting key elements of biodiversity in particular areas, ecosystem services, and sustainable use of natural resources. Organizations such as *The Regional Center for Environmental Protection (REC), The Rockefeller Foundation, The Critical Ecosystem Partnership Fund, The MAVA Foundation, The Nature Conservancy* are pretty active and support small-scale civil grant programs related to research and protection of biodiversity or critical ecosystems, as well as programs concerning public awareness-raising and education.

A remark

Nature protection in Montenegro has generally not achieved financial sustainability. Investments through public budgets are not adequate in the sense that there is no strategic approach or clearly defined items, and the amounts of allocated funds alone are not sufficient for the full implementation of protection measures. Public investment mainly covers the basic operational costs of protected area management, but not the protection interventions, research, and accompanying program activities themselves. Managers are therefore in a position to provide funding for protection themselves - through the collection of various forms of fees, permits, concessions and services, as well as through projects.

This Park will find itself in a similar situation. It is expected that part of the fixed assets will be provided from the budget of local governments, potentially from the state, but this will almost certainly not be enough to achieve the protection goals set through the management plan. In this regard, recommendations on potential sources of funding are given in Section 5.4.

2.8.3.8. Other

There are several specific state institutions on the territory of Danilovgrad. These include:

- Military Center of Montenegro - Barracks "Milovan Šaranovic";
- Police Academy;
- Forensic Center;
- Directorate for Execution of Criminal Sanctions;
- Home for asylum seekers and refugees;
- Regional School of Public Administration (*RESPA*)

These institutions can be partners of the Park in several ways: by providing support for specific activities in the field such as cleaning campaigns, spatial protection, etc. (Military Center, Police Academy, Home for Asylum Seekers and Refugees, Directorate for Execution of Criminal Sanctions – through introducing socially responsible serving of sentences), education (Military Center, Police Academy, *RESPA*), law enforcement (Police Academy, Forensic Center). Therefore, in the future, the Park should establish cooperation with these specific institutions that can make a valuable contribution to the preservation of this area.

It should also be mentioned that the presence of the church is pronounced in this region because there are several important sacral buildings here, primarily the Ostrog Monastery. It is a pilgrimage destination due to which religious tourism is highly developed here. This represents an excellent potential for the development and diversification of the tourist offer in the Park, which, in turn, requires adequate integration.

3. Analysis of actors

3.1. Introduction

For the purposes of drafting this document, a research with the aim of obtaining information about the Park, local actors, as well as assessing and evaluating ecosystem services in this area. A detailed description of the methodology can be found in Annex 1.

This chapter presents the results of the analysis of the actors – their perceptions and attitudes towards the values of the Park and its management. The analysis is based on the results of interviews with the following actors identified as crucial (details in Annex 1):

- Competent institutions at the municipal level (4)
- Local population (through representatives of local communities - 3)
- NGOs acting in this area - (6)
- Farmers (7)
- Industry (4)

Analyses of respondents' answers on various aspects of the Nature Park.

3.2. Perception of values in the Park area

Respondents' answers to the question about the main values of the Park can be divided into four categories (Graph 4):

1) *Beauty of the area and the possibility for recreation and spending time in nature* - organising tours, socialising, sports and recreational activities such as swimming, boating, sport fishing, etc.

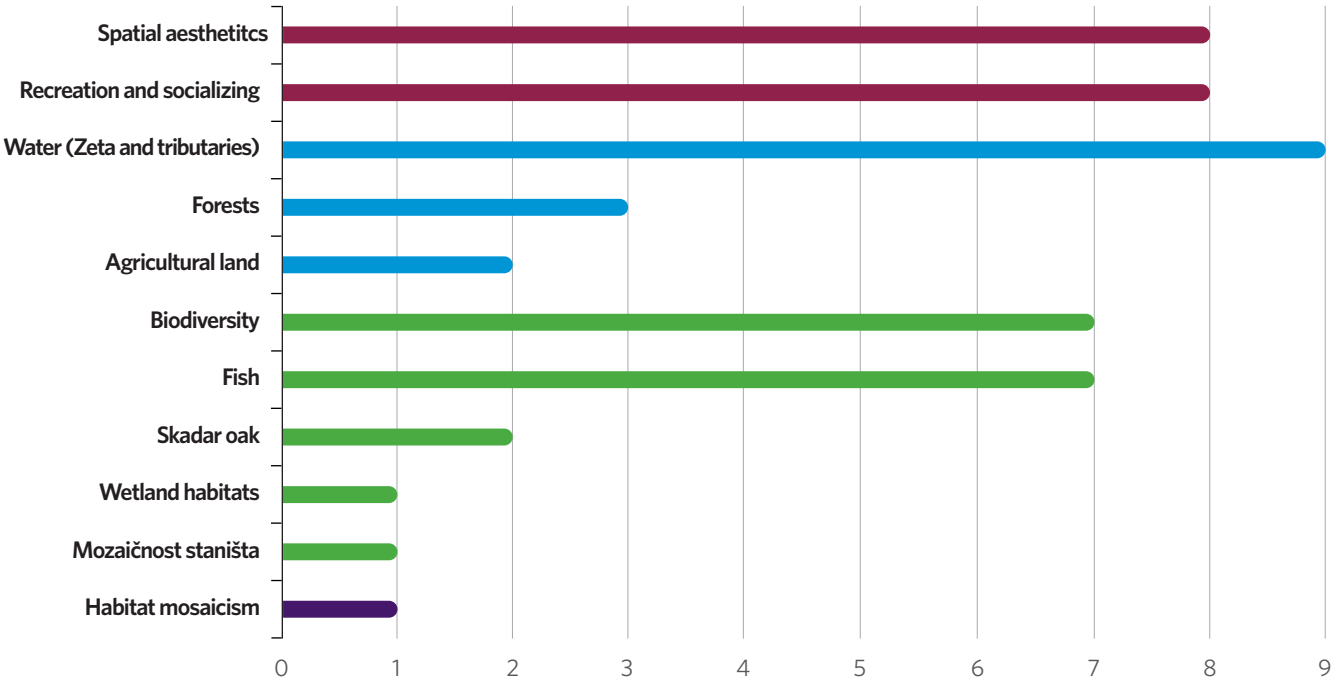
2) *Natural resources* – water, forests and agricultural land, emphasising water as a resource (common answer "water is life").

3) *Various components of biodiversity* - emphasising fish stock as a particular value.

4) *Cultural heritage* (one answer)

From these answers, it can be seen that the respondents primarily evaluate the intangible benefits of the area (aesthetic values, possibility for recreation), water as a resource and fish stock.

Perceptions of value



GRAPH 4 *- Perceptions of value in the Park area. Answer categories are given in different colours. Red - beauty of the area and the possibility for recreation and tourism; blue - natural resources; green - biodiversity; violet - cultural heritage. More details in the text.*

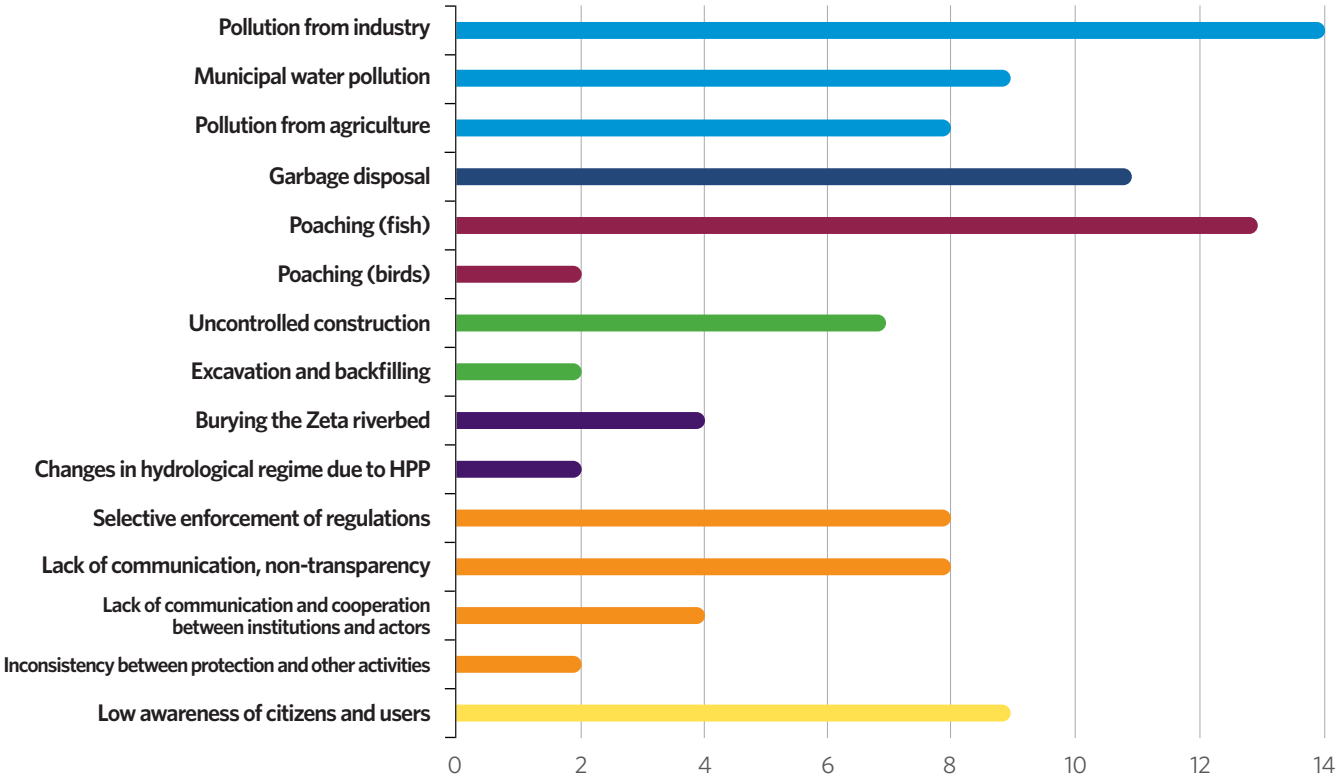
3.3. Perception of problems in the Park area

Respondents' answers regarding the problems in the Park area can be divided into seven categories (Graph 5):

1. *Pollution* – coming from various sources, primarily industry, but also municipal wastewater from septic tanks and city water supply system due to lack of sewage collector, as well as agricultural activities due to uncontrolled use of protective equipment and fertilisers.
2. *Inadequate waste disposal* – predominantly relates to municipal waste due to lack of communal infrastructure and low citizen awareness, but also to animal wastes from agricultural holdings and farms.
3. *Poaching* – primarily illegal fishing.
4. *Unsustainable land use* – uncontrolled construction, converting agricultural into construction land and construction waste backfilling.
5. *Changes in the hydrological regime of the Zeta river* – increased sedimentation due to non-maintenance of the riverbed (no activity on removing fallen trees and branches) and flooding due to the operation of hydropower plants.
6. *Behaviour of institutions* – in this category of answers, respondents cited issues such as selective implementation of regulations against those who threaten this area, non-transparency of the Municipality or the Park, lack of communication with local residents and users of the area, as well as with institutions (e.g. inspections, police, etc.) and non-compliance of protection plans with plans of other sectors (construction, agriculture, energy sectors...).
7. *Low awareness among citizens and users* – of the environmental values of the area and the need to preserve them.

Therefore, the respondents are aware of the problems not only in terms of environmental degradation, but also in terms of area management and the attitude of the Municipality, i.e. decision makers and other institutions towards the area, its users and polluters. Low awareness among citizens also stands out as one of the fundamental causes of endangering this area.

Perceptions of the problem



GRAPH 5 - *Respondents' perception of problems in the Park area. Answer categories are marked in different colours. More details in the text.*

3.5. Actors' involvement

Respondents included in this research were not involved in establishing the Park. Some representatives of the NGO sector were aware of the process and some of them commented on the Protection Study during the public hearing. Most of the respondents were not even aware that the Park was being established. They only learned it later from the media. There is an opinion among the users of the area that the process was not transparent, and that the public should have been involved, in order at least to be presented the things that the establishment of the Park will bring, particularly in relation to restrictions on use and activities (further detailed in the next section).

There is almost no cooperation among various actors. There are sporadic cases of cooperation within the NGO sector through projects, but other users of the area do not have coordinated cooperation. There are either no associations that would organise the work of farmers and other interest groups, or some informal groups that are active on an ad hoc basis, have no real power to influence decision-making processes and defend the interests of their members.

When it comes to informing the public, so far online news portals and social media have mostly advertised the activities on the establishment of the Park. The NGO sector regularly uses online news portals and social media as sources of information and is being kept up-to-date on the process, whereas other users mostly receive pieces of information later, from the media. In addition, these information channels are not always adequate for all users – the business sector prefers being informed via official emails. Farmers who are constantly busy working on their farms prefer to be informed by phone or in direct contact. Some local communities inform residents about certain activities using bulletin boards and invitations to meetings and workshops, but so far, this has not been applied to the Park and the topic of nature protection.

All respondents pointed out the need for transparency in the future work of the Park, which can be achieved by sharing pieces of information regularly using adequate channels, organising meetings and panels in order to achieve greater public participation. Almost all respondents pointed out the establishment and improvement of cooperation with actors as a priority for the future manager of the Park.

Successful and long-term development of the Park depends on the timely involvement of all actors and the public in general, which the Park should pay special attention to as of making first decisions. Recommendations on informing public and cooperation with the area users are given in section 5.3.3.

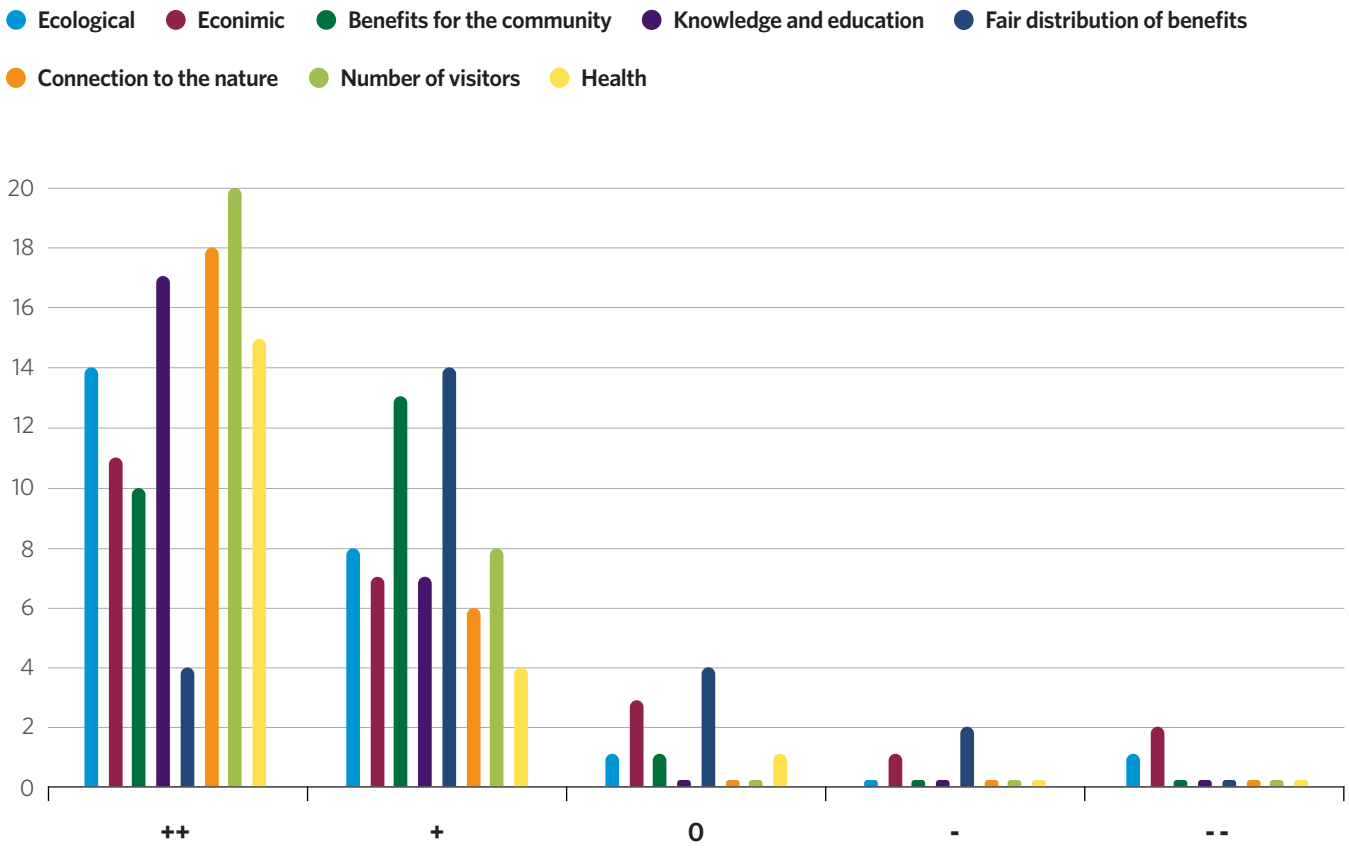
3.6. Attitudes towards the Park

Based on the sample covered by this research, it can be concluded that respondents generally expect that the establishment of the Park will have a positive outcome in this area: that it will contribute to species protection, create benefits for the local community, and improve knowledge and education, connection to nature, health and number of visitors. As referred to in Chart 6, in terms of these issues, respondents generally expect moderate or extremely positive contributions. Exceptions are the following:

- The majority of neutral and negative answers were registered in the category of *Economic contribution* of the Park. Two respondents rated the contribution as extremely negative, one as negative, and three as neutral. These respondents expressed concern that the Park would deny the possibility of income to local people and businesses by imposing restrictions and prohibitions. There are also fears that the establishment of the Park and the imposition of environmental standards on businesses located in the Park could jeopardise their business and provide market advantage to their competitors outside the protected area. Therefore, it was pointed out that environmental standards must be introduced indiscriminately in the whole Montenegro, regardless of whether the business is within a protected area, and in communication with the businesses themselves in order to reach compromise solutions.
- In the category of *Fair distribution of benefits from nature*, the respondents expressed scepticism that an impartial and indiscriminate attitude towards the users of natural resources would be achieved, as well as fairness in accessing the benefits that nature of this area provides.

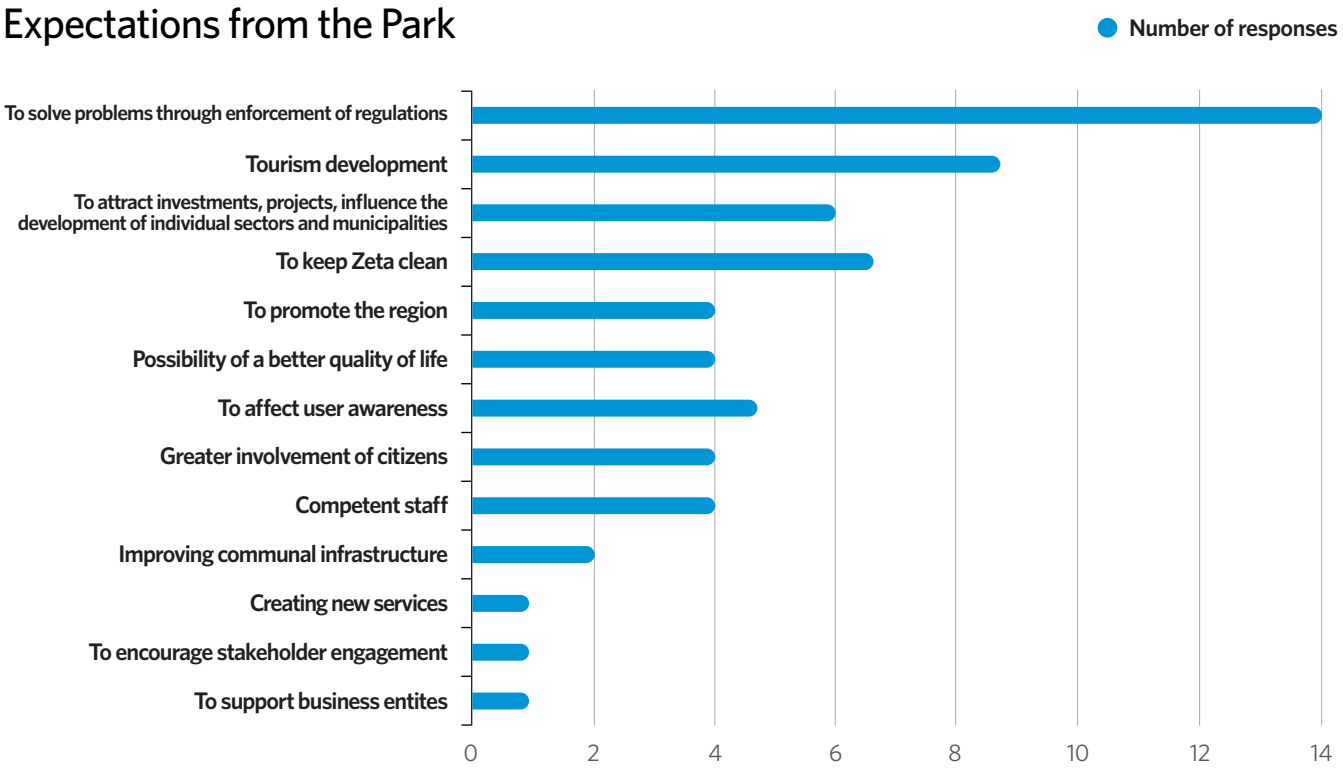
- When it comes to the *environmental contribution*, i.e. contribution to the protection of species and habitats, one respondent expressed expectations that the Park would have a very negative outcome, given that the area is densely populated and that various forms of land use predominate there, adding that achieving biodiversity protection would not be possible at all. Although giving a positive answer on this issue, one respondent expressed concern that the establishment of the Park would represent an additional motivation for local people to parcel and sell their plots as construction land at higher price because it is located in a protected area, which would have a negative environmental impact.
- When it comes to the *well-being of the community*, one respondent expressed fear that the introduction of various bans would mean that the local population would be denied the opportunity to use their own land and start various activities. Thus, the Park will negatively contribute to the local population.

GRAPH 6 - *Expected contribution of the Park. Respondents ranked the contribution on a scale from - (extremely negative) to ++ extremely positive. Most responses are in the range from + (moderately positive) to ++ (extremely positive), indicating a generally positive attitude toward the Park and what is expected of it. Negative answers are registered in the category of Environmental, Economic and Fair distribution of benefits from nature.*



Asked what they specifically expect from the Park, respondents gave different answers that are represented at Graph 7. As it can be seen, most of them expect the Park to represent a solution to environmental issues through unbiased regulations enforcement, but also to contribute to tourism and local community in general.

Those who are locally engaged in some economic activity – primarily agriculture – as well as landowners expressed fear that establishing the Park would mean denying activities on their own property in terms of banning the construction of facilities needed to perform activities. The very concept and activities of the Park are unknown to most of the respondents, particularly in terms of effects of prohibitions and zones on the performance of their activities and plans.



GRAPH 7 - *Specific expectations from the Park*

3.7. Perceptions of barriers to the operation of the Park

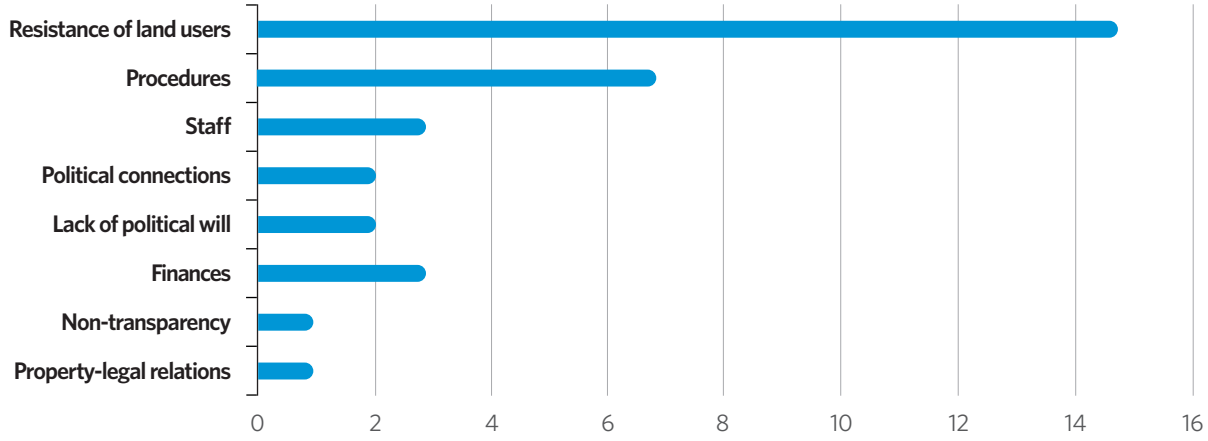
The respondents see several barriers (Graph 8) to the operation of the Park and the achievement of protection objectives. They recognise the resistance of local area users as the biggest barrier. In particular, they believe that primarily individuals and businesses that are accustomed to exploiting and endanger the environment of this area without any consequences (poachers, polluters) will show resistance to the Park, and that they will use various mechanisms to resist unselective regulations enforcement and penalties for such activities. They especially emphasise the industrial interests because of which the environment suffers.

Furthermore, as the second biggest barrier, the respondents point out the administrative procedures – related to the establishment of the management system, the supervisor's scope of competences and the law enforcement chain. Their fear is reflected in the fact that they believe that the procedures are slow, unclear, and that they allow abuses and various interpretations, which will disrupt the implementation of regulations and solving environmental problems.

Of the other barriers, respondents listed the following:

- competence of the staff that will be employed in the Park – emphasising that future staff must be employed based on their proficiency and not according to other criteria;
- political connection of the Park manager with economic entities and individuals and selective implementation of regulations;
- lack of political will to protect nature;
- funding the Park, i.e. lack of financial resources for all protection activities;
- lack of transparency in the work of the Park;
- property and legal issues that will hinder the implementation of regulations and protection of natural resources, particularly the protection of agricultural land against construction interests.

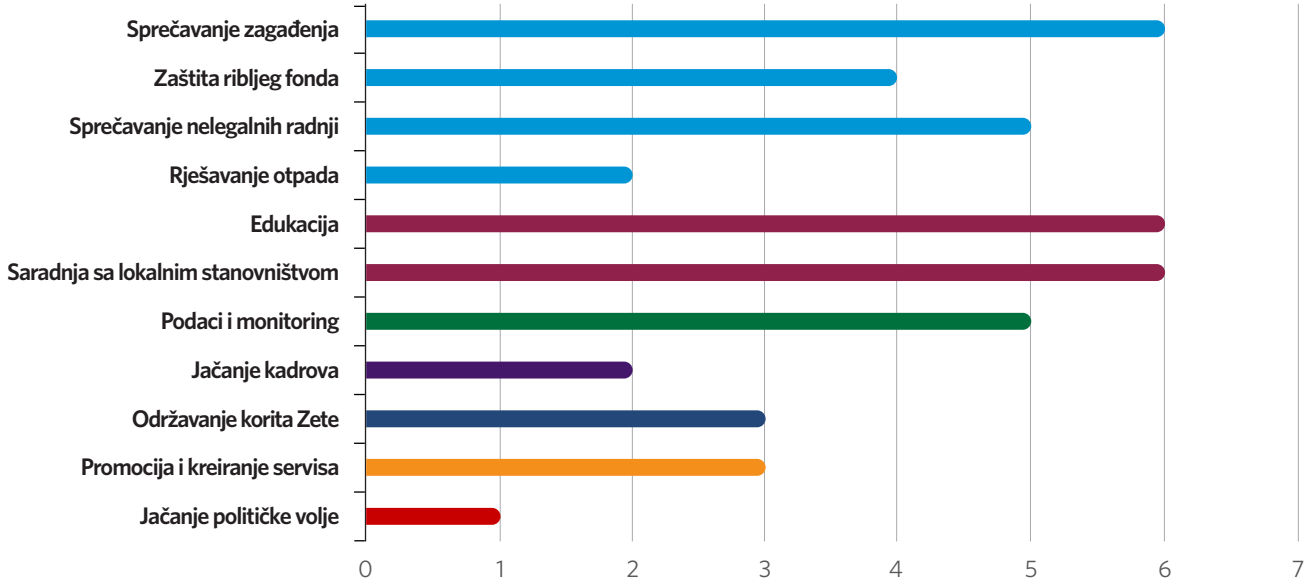
GRAPH 8 - *Respondents' perceptions of barriers to the work of future Park manager*



3.8. Perceptions of priority activities in the Park

Responses about the priority activities of the future manager can be divided into several categories (Graph 9):

1. *Prevention of activities that endanger natural values* – respondents primarily refer to preventing various forms of pollution, waste disposal and poaching, as well as all illegal activities in general that devastate nature in this area;
2. *Work with local people* – referring to involving local actors in the operations of the Park, as well as educating them on what the Park is, what benefits and barriers it brings, what nature protection implies and how to change their own habits to contribute to the protection;
3. *Data collection* – preparing studies on the current state of target species and habitats, mapping pollutants and other impacts as well as the establishment of a biodiversity monitoring system in the Park;
4. *Strengthening staff capacities* through education;
5. *Maintenance of the Zeta riverbed* – duly removal of fallen trees and branches that cause sedimentation and local flooding;
6. *Promotion of the region* and creation of tourism and environmental services;
7. *Strengthening political will* to tackle the environmental issues in the region.



GRAPH 9 - *Perceptions of priority activities in the operations of the Park after appointing its manager. Answer categories are marked in different colours. More details in the text.*

3.9. Conclusion and main messages of the analysis

3.9.1 Conclusion

Although the research sample size for the purposes of this study was limited, the fact the answers are compatible indicates that they can be taken as representative and that the recommendations given in Chapter V can be given based on them.

There are a large number of different users in the Park whose interests are various. Nevertheless, there is generally a positive attitude towards the Park among them. They also have similar views that indicate the potential for synergy among them. This represents the strength and opportunity for this protected area, which the future manager needs to mobilise through the active involvement of actors in his/her work. Involving actors who already favour the idea of a protected area will contribute to achieving support from locals, the feeling that the protected area represents their initiative, synergy among the actors and resolving conflicts. In addition, certain responsibilities can be delegated to the actors, which will reduce the personnel and financial burden on the Park. Specific recommendations regarding the involvement of actors in the operations of the Park are given in section 5.3.3.

Users recognise intangible benefits, water and fish stock as the main values, whereas recognised problems include current way of managing the area, in addition to environmental degradation. Recognising problems, barriers and priority activities, they point out good management as crucial for successful operation of the Park and achieving protection goals. In addition, according to them, good management means the following:

- enforcing law in the same way for all (hence a non-selective approach), and achieving fairness;
- hiring staff who will be competent to perform their duties in the Park;
- work with local people and users of the area, consultations with them on a regular basis and transparency in work.

The expressed fears are caused by the fact that users of the area are not familiar with what the nature park means, where its borders and zones are, and what restrictions it will impose. Nevertheless, all respondents expressed willingness to contribute to the Park in various ways, which are presented in Table 7. Management that allows participation of various actors and provides them a chance to contribute will create actors' sense of responsibility for protection of Park's values.

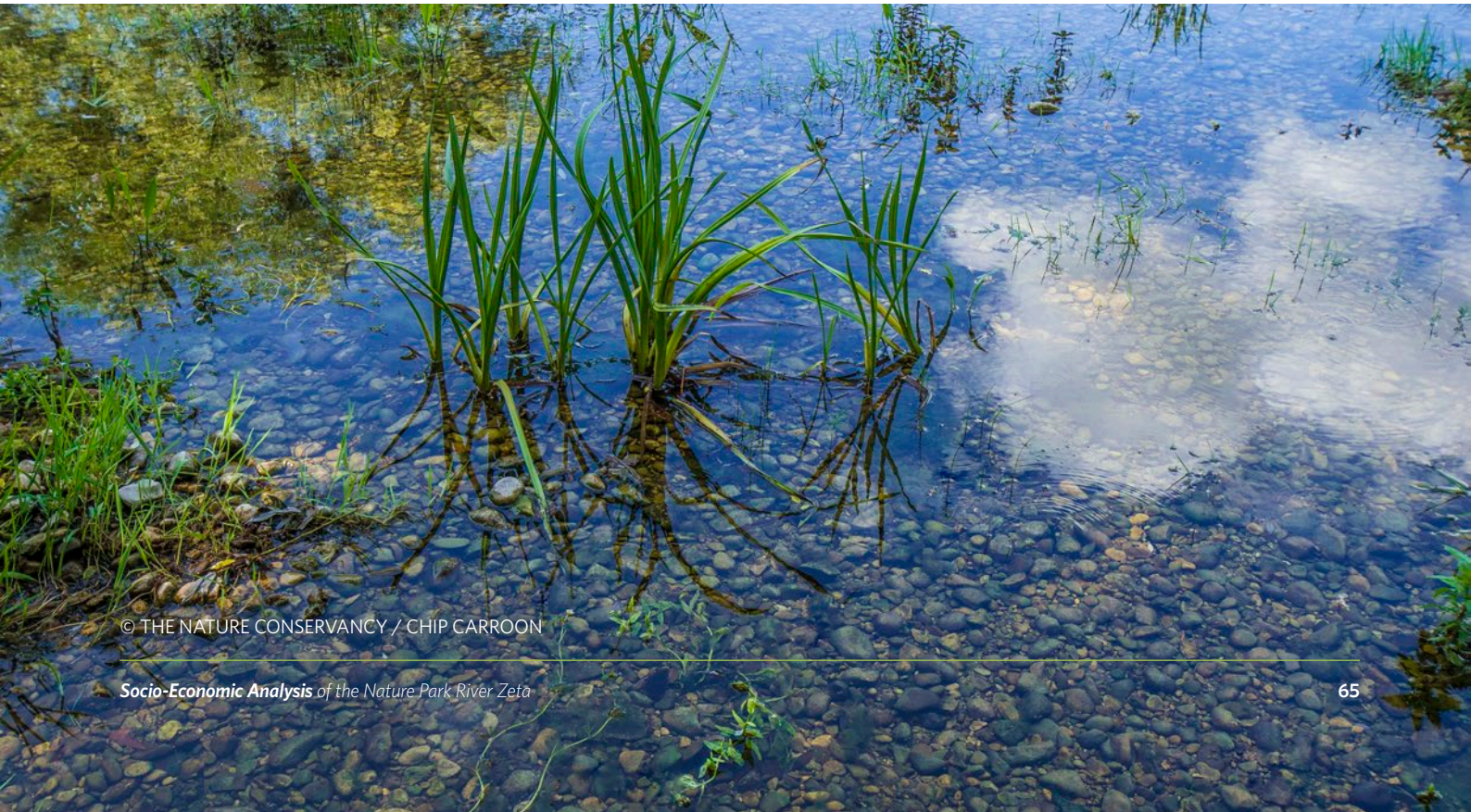


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TABLE 7 - *Actors' attitude to the Park area*

ACTOR	Municipal institutions	Local people	NGOs	Farmers and producer	Industry
Does the actor depend on / affect / both depend and affect the area?	Affect (by use and management plans and programs)	Quality of life depends on the quality of the environment; They affect the area through their activities, lifestyle (waste disposal, wastewater, logging, poaching)	Affect through the contribution to environmental protection and the introduction of innovative solutions	Depend on water and soil and their quality, ecosystem services; Affect by waste, plant protection treatment, irrigation and unsustainable use of agricultural land	It depends on agricultural land; Affects through waste and wastewater
What is in the actor's interests?	Sustainable development of the region, increasing living standards and quality of life	Possibility to use their own land, start a business, and recreation in the area; A better quality of life	Protection of natural and cultural values; Financial sustainability	Smooth running of activities; Increase in production volume	Smooth running of activities; Profitability
Needs	Responsible attitude of individuals and economic entities towards the area	Being informed on a regular basis on activities that may affect their activities; Better knowledge of the Nature Park; Greater political power	Greater political power; Better connection and cooperation with institutions	Protection of agricultural land (preventing pollution and conversion of agricultural into construction land), maintaining water quality, better market connectivity	Support in solving environmental issues
Attitudes towards the Park	Positive	Mostly positive, expressed fear that the Park will be a barrier	Positive	Neutral/ positive	Neutral
What can they contribute to the Park?	Financial, staff and technical support	Local knowledge, participation in protection activities (species monitoring, reporting irregularities, land use in accordance with the needs of nature, cleaning campaigns, promotion of recreational activities)	Knowledge and experience in project management, research and field work, participation in various activities, promotion of the Park, education and raising public awareness	Local knowledge	Cooperate in activities, conduct prescribed monitoring and run socially responsible business through the introduction of green and blue economy
Expectations from the Park	Contribution to the sustainable development of the region	To solve environmental issues and drive community development; That it will be a barrier to starting a business and using land	Preventing the loss of natural and cultural values	Developing agriculture by improving interconnections and market	Protection of agricultural land; Business barrier

3.9.2 Main messages of the Socio-economic analysis

Overall message

Good management of the Park is necessary for the protection of biodiversity, but also for the development of ecological processes that are the basis for ecosystem services from which people in the Zeta basin benefit (Figure 1). Therefore, the role of the River Zeta Nature Park should be to ensure quality of life in this area and create opportunities for local economic development through nature protection and sustainable use of natural resources. Support for this process should come from local actors who depend on or influence this area and its resources.

FIGURE 1

Schematic representation of the relationship between nature, the local community, and the PA's management body. Preserved biodiversity provides ecosystem functions and processes (green) that are the basis for ecosystem services from which people benefit (orange). The resulting benefits for people and biodiversity, are the basis for defining successful management of the PA. Good management practices (blue) will enable the sustainability of this system, that is, ensuring nature protection, good quality of life and economic development for local communities.

Messages towards the most important stakeholders

Park management:

River Zeta Nature Park is a unique protected area in Montenegro because it strives to preserve the complex river ecosystem in a densely populated area that is characterized by intensive use. Management must be based on a different model from the current practice in Montenegro, which implies the active involvement of local users of space and cooperation with them, as well as innovative approaches to protection and financing.

Local communities:

River Zeta Nature Park is a form of space management which, in a mosaic of different forms of use of space and activities, strives to preserve natural values that affect the quality of life of the local population and represent the basis for local economic development.

Agricultural sector:

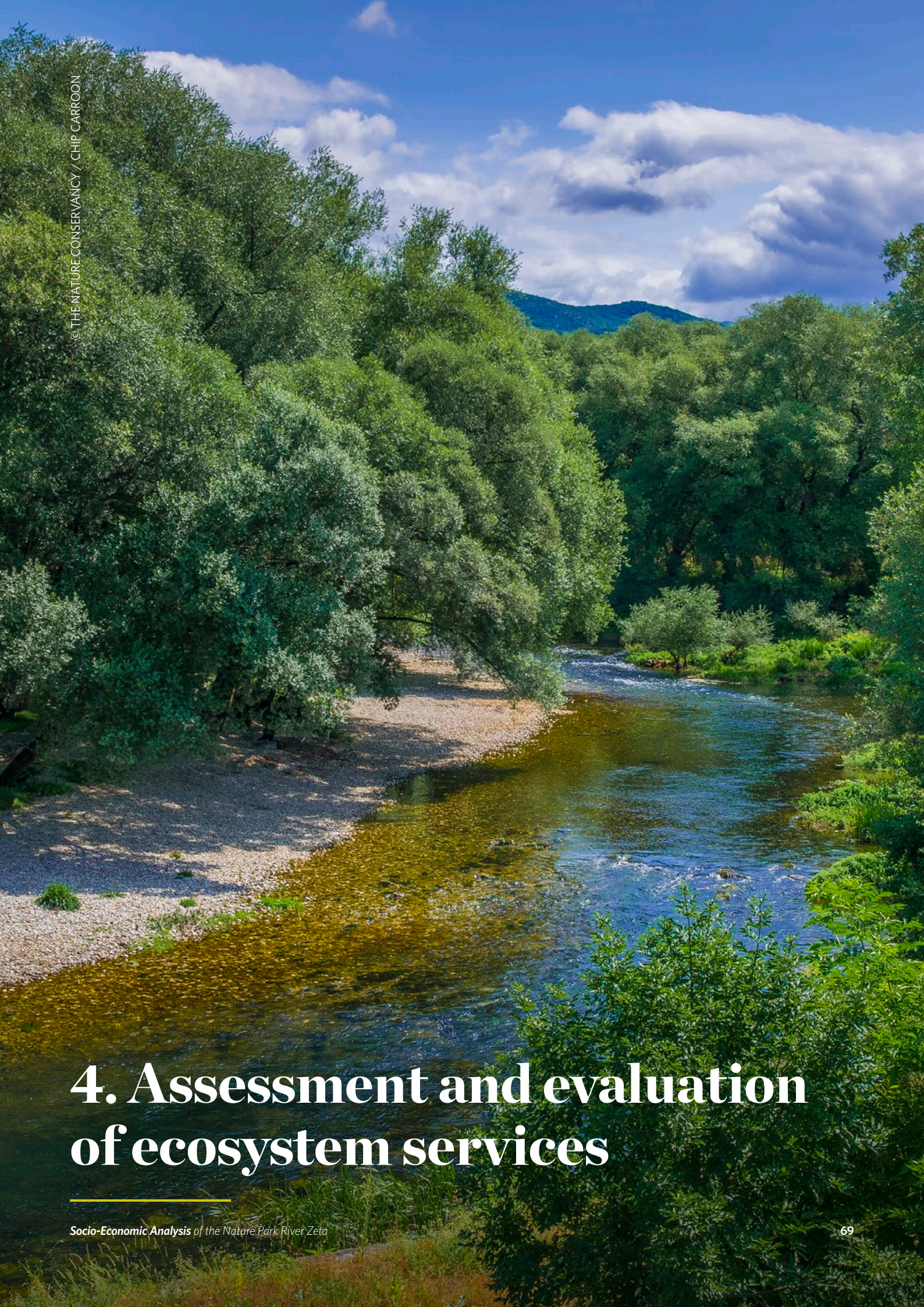
Agricultural production in this area is possible thanks to the services of ecosystems and the quality of the environment, for the preservation of which the Nature Park was established. Added value to agricultural products can be provided through the introduction of agricultural practices that are in line with environmental protection as well as branding related to the existence of a protected area. The Nature Park will be a partner and support to local farmers in this process.

NGO sector:

The management approach of the River Zeta Nature Park should be "people and nature" - in other words, the permanent protection of nature in this Park must go hand in hand with local economic development. In this process, NGOs can contribute to the success of the Park with their capacities, knowledge, and experience in the field of nature protection, project management, education, and public awareness.

Business sector:

River Zeta Nature Park is an institutional partner that can help in the transition to green business, achieving social and environmental responsibility, and increasing the value of products and services from this area.



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4. Assessment and evaluation of ecosystem services

4.1. Introduction

Ecosystem services are often explained as the benefits people obtain from ecosystems (definition according to the Millennium Ecosystem Assessment - MEA, 2006). Therefore, those are all the goods and services we get from plants, animals, fungi, microorganisms and their relations both with each other and with their environment. Ecosystem services are a concept that clearly demonstrates the contribution of biodiversity to human well-being, and as such, it is used as an argument to reconcile the need for nature protection with the need for development.

According to the MEA, ecosystem services can be classified as following:

- *Provisioning services* – refer to the products that can be obtained directly from nature, such as food (produced in agro-ecosystems, but also the one taken directly from natural habitats such as fish from the sea), animal feed (grass from pastures, hay), fuelwood, timber, fibres, various materials (oils, pigments, resins...), natural medicines, etc. These are tangible goods, they usually have direct economic and monetary value, and there are developed markets for them.
- *Regulating services* – refer to the benefits that are reflected in improving safety, security and quality of life. These services include, for example, climate regulation, prevention of floods and erosion control, purification of water, air and soil (improving their quality), water retention and aquifer recharge (obtaining sufficient quantities of drinking water), etc. These services are intangible. Since there is usually no market for them, they are usually not taken into account in planning and decision-making. Their economic value is most often reflected in the avoidance of costs that would arise due to erosion, floods, pollution, droughts, etc.
- *Cultural services* – refer to possibility of recreation and tourism, science and education, providing aesthetic experience, as well as a sense of spirituality, mental health, connection with nature. These services are also intangible, and their economic value is mainly reflected in tourism revenues.
- *Supporting services* – refer to the basic ecological processes that enable the existence of other ecosystem services. These include, for example, photosynthesis and primary production, the circulation of matter in ecosystems, soil creation, etc.

It is important to note that according to this classification, drinking water itself is not considered an ecosystem supply service because it is a product of inorganic nature. However, its quality and quantity depend on regulatory services such as purification and retention, and such an approach has been used in this analysis.

Since 2011, several studies to assess and evaluate ecosystem services related to protected areas have been conducted in Montenegro. They illustrate the unquestionable economic, social and cultural significance of ecosystem services. These studies have influenced the awareness of decision makers about the importance of biodiversity and initiated the integration of this concept into the Law on Nature Protection and the National Strategy for Sustainable Development by 2030 (NSSD), as well as into some strategic documents in the sector. This is the first time that the assessment and evaluation of ecosystem services is done in the process of establishing a protected area and as an input to the management plan, in order for them to be taken into account during management from the very beginning.

4.2. Assessment of ecosystem services in the Park area

Based on the existing literature, maps and reviews of the very ecosystems, a list of all potential services that ecosystems in this area can provide has been made. Based on the literature, statistics and interviews with the area users, benefits have been identified in terms of whether and to what extent ecosystem services really contribute to users, because although ecosystems may have benefits-generating functions, they are not considered ecosystem services if no or few people benefit from them. According on this, the following services have been identified:

Provisioning services

Food - the Zeta river is one of the main agricultural areas in Montenegro. As described in section 2.7.1, there are agroecosystems in this area, including aquaculture, where food of plant and animal sources is produced. Local population, as well as the whole of Montenegro, and the region (to which certain food products are exported) benefit from this.

Animal feed - VMuch of the agricultural land is covered by meadows and pastures that provide food for domestic animals. Animal farms directly benefit from this service, and indirectly processors and users of meat and dairy products.

Fuel - Biomass as an energy source is not exploited for commercial purposes in this area. However, some locals take biomass as a heating source in their households, and this service is mainly provided by the oak species. Cutting down trees for this purpose occasionally happens on the plots along the Zeta river. The process is somewhat more intense in the part of the Park that belongs to Podgorica, i.e. in the area of Velje Brdo, above Tološi and Mareza. Local population benefits from this service.

Regulating services

Land cover plays an important role in climate regulation at the local level, as it affects the absorption and emission of heat, solar radiation and water, and thus temperatures, humidity, and the volume and cycle of precipitation. That depends on the type of land cover, where natural vegetation – particularly forests – alleviates heats and temperature oscillations and extremes, maintains air humidity, provides shelter against strong solar radiation.

The Mediterranean climate prevails in the Zeta valley. It is characterised by hot and dry summers, and the natural vegetation – gallery forests around Zeta, groves, meadows – certainly mitigates the effects of such a climate. Local population benefits from that because the harmful effects of hot temperatures and solar radiation are reduced. The winegrowers have a special benefit from this service, because the Zeta river and the gallery forests that surround it create microclimatic conditions that greatly affect the production of certain grape varieties.

Carbon fixation - This service is reflected in fixing carbon from the atmosphere in organic compounds through biological processes, primarily photosynthesis. Vegetation takes carbon in its inorganic form (carbon dioxide) and converts it through the process of photosynthesis into organic compounds in which it remains "fixed". In this way, the amount of carbon dioxide as a greenhouse gas in the atmosphere is reduced, which has the potential to mitigate climate change, the benefits of which are felt globally.

Taking approximate data on the tight-binding potential for carbon of various ecosystems as estimated by ten Brink et al (2010), the following calculation can be made:

TABLE 8 - *Approximate estimate of fixed carbon in ecosystems in the Park area (source of the fixation estimate: ten Brink et al 2010)*

Ecosystem type	Fixation C (t/ha)	The area of the ecosystem in the Park (ha)	C Fixation per ecosystem within the Park (t)
Freshwater systems	285	174,7	49.789,5
Cultivated ecosystems	80	5.791,9	463.352
Forest ecosystems	280	3.892,7	1.089.956
Other terrestrial ecosystems	139	417,9	58.088,1
Total for the Park			**1.661.186**

According to this approximate estimate, the ecosystems within the Park store 1,661,186 tonnes of carbon. Just for a comparison, the average annual passenger car emissions in the EU is estimated at 1.8 tonnes of CO2 (the estimate by the European Federation for Transport and Environment AISBL 2018). Based on these data, it can be calculated that the Park area fixes the equivalent of annual CO2 emissions from 922,880 cars, which is 3.7 times more than the total number of cars registered in Montenegro in 2019 (source: MONSTAT).

Hydrological regime control - Vegetation acts as a regulator of water runoff by absorbing it, preventing rapid runoff, reducing evaporation, and thus contributing to the regulation of the hydrological regime of the Zeta River, its tributaries, and wetlands. Water level oscillations are characteristic for the Bjelopavlići plain – water level falls during the dry period, and then in the wet season, there is a water surplus and certain areas are flooded. In the absence of natural ecosystems, these oscillations would certainly be much more drastic. As mentioned above, the local population uses captured local water sources and their own wells for water supply, and water from the Zeta and its tributaries for irrigation. The vegetation contributes to the amount of water and its availability during the year, particularly in the dry season. Almost the entire population of this area have the benefits of this service.

Protection against floods - When the water level raises, vegetation near waterbodies can appear as a kind of sponge, absorbing excess water and mitigating the effects of floods. The Zeta River is prone to seasonal overflows and the vegetation on its banks plays the role of a buffer, in the absence of which the effects of floods would be much stronger and the harm greater.

Erosion and sedimentation control - The Zeta is a dynamic river, and due to water level variations and changes in the flow, riverbanks experience erosion and sediments are formed. Riparian vegetation plays a stabilising role by reducing the risk of erosion. In parts of the banks, vegetation has been cleared and the land has been washed away shortly after that. Mostly locals, primarily property owners along the Zeta, have benefits.

Control of species reproduction - Zeta is a habitat for rare, endemic and commercially important fish species, and there are hatcheries along the river where their populations are renewed. Other ecosystems within the Park include habitats important for the reproduction of other species (endangered and migratory species of birds, mammals, amphibians, insects, fungi, etc.)

Decomposition of harmful substances and pollutants – Leaves of plants take gases and particles from the air, their roots use taken substances, and thus the vegetation filters the air, water and soil. The existence of vegetation along the roads is particularly important because it absorbs gases and particles emitted by vehicles. Hedges that divide plots can prevent the spread of pesticides from neighbouring agricultural areas. Wetland vegetation absorbs dissolved substances that reach rivers or soil from surface water and groundwater. Local population benefits from this service because it affects the quality of air and water at the local level.

Pollination - Crop yields depend on the presence of pollinators – insects, birds and other organisms that pollinate plants. Natural ecosystems are a habitat for pollinators, and represent the source of this service, which is very important for an agricultural area such as the Zeta valley. People in this area also breed bees, which contributes to the provision of this service. Agricultural producers, particularly fruit growers have direct benefits from pollination, and thus the wider population of Montenegro that uses the products of this area.

Cultural services

Opportunity for science and education – the accessibility of ecosystems in the Park, the richness of their biodiversity and the presence of endemic and other important species and habitats are an ideal location for educational and research activities. Local educational, scientific and research institutions, the NGO sector, and ultimately the regional and global scientific community benefit from this service.

Opportunity for recreation and tourism - the presence of preserved ecosystems allows for various recreational activities and forms of tourism (hiking, swimming, boating, fishing, cycling, bird watching ...) by which this area is recognised. This contributes to the physical and mental health of the local population, which is currently the main user of this service.
This service also represents the basis for the development of the region as a tourism destination, which local population, municipalities and the entire economy of Montenegro can benefit from.

Supporting services

Habitat for wild plants and animals – Ecosystems represent habitats for wild species and thus enable not only their survival, but also the development of important ecological processes that form the basis for the provision of other ecosystem services. Aquatic ecosystems of the Zeta area are habitats for fish species, the most important of which are salmonids. Zeta is one of the two known habitats of Zeta softmouth trout. Grassy ecosystems maintain species diversity, including pollinators, and along with forest and wetland ecosystems and their specific vegetation represent habitats for important and endangered species of birds, mammals and other groups of organisms.

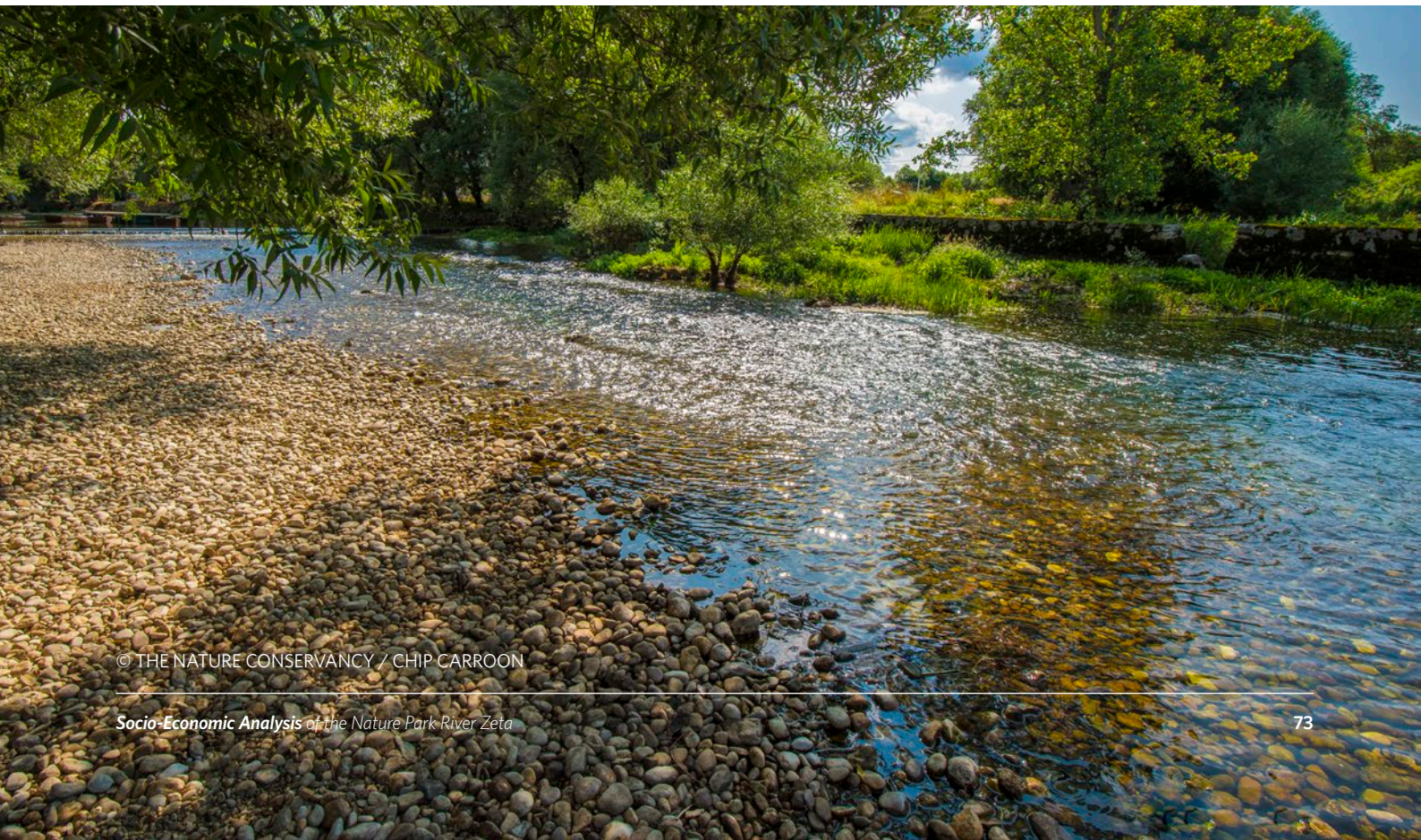
Some species, such as the levant sparrowhawk, depend on the river flow and riparian vegetation. In the past, the pedunculate oak was the main vegetation specie there. It provided much better conditions for the reproduction, growth and development of populations. Today, its habitats are fragmented due to urbanisation, industrialisation, agriculture and cutting down trees for firewood.

This service enables other ecosystem services such as tourism, recreation, pollination, science and education, food production..

4.3. Social evaluation of ecosystem services

Ecosystem services can have many values – in addition to monetary ones, the values are also reflected in their importance to local users because they see the values as a contribution to their well-being. Through social evaluation we can get information about users' perception of ecosystem services, as well as which services they particularly value and why, what they need from these services and whether there are any conflicts in perceptions and needs among different actors.

During the interviews conducted for the purposes of this document, respondents were asked to express their views on whether an ecosystem service is present in this area and, if so, to what extent it is important (methodology explained in Annex 1). Graph 10 shows how all respondents rated individual ecosystem services. As can be seen, the respondents evaluated the regulation services the best (in green, Figure 10). When it comes to the individual ones, the most important are: food, animal feed, pollination and the possibility for recreation and tourism.



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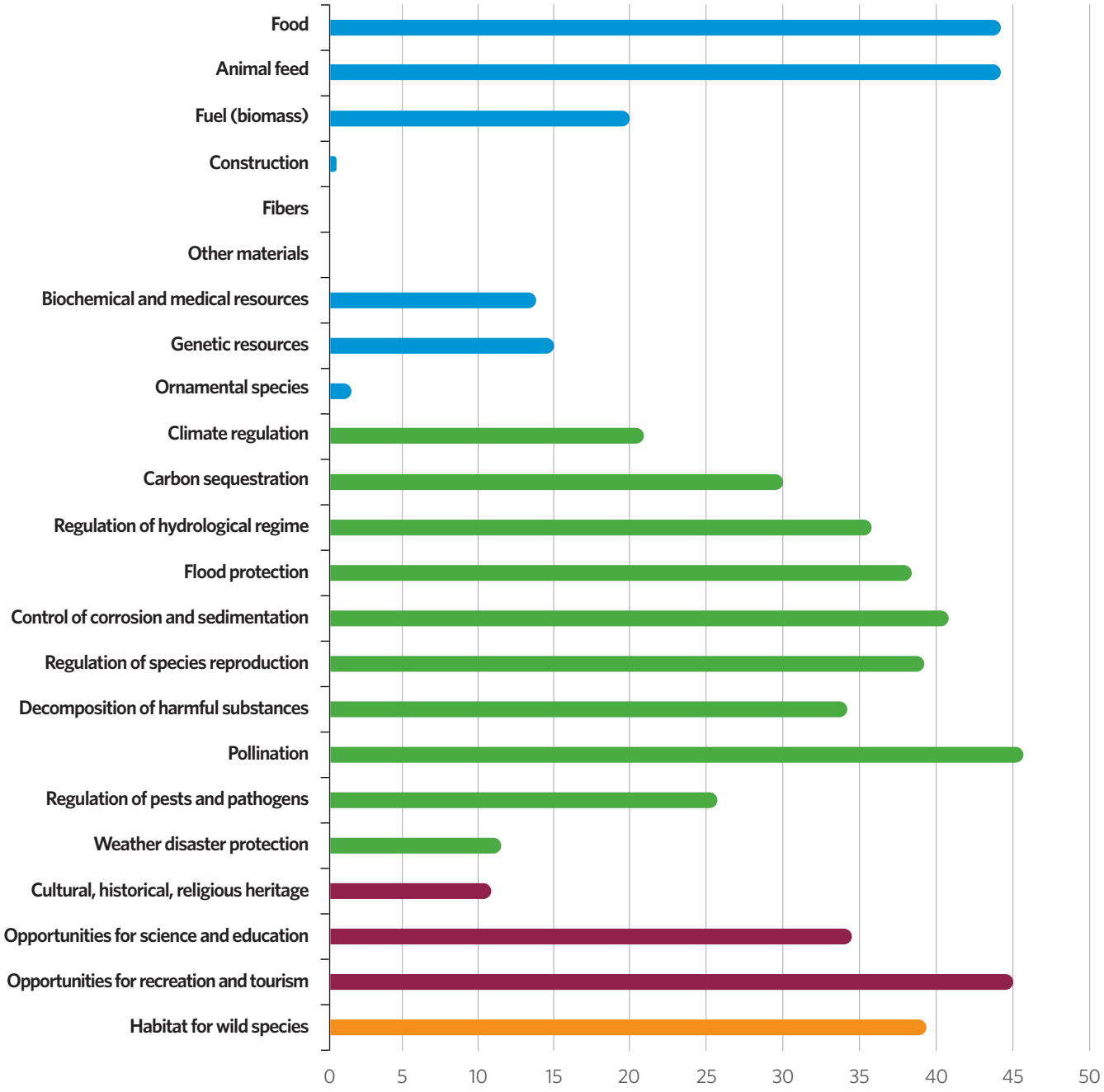
GRAPH 10

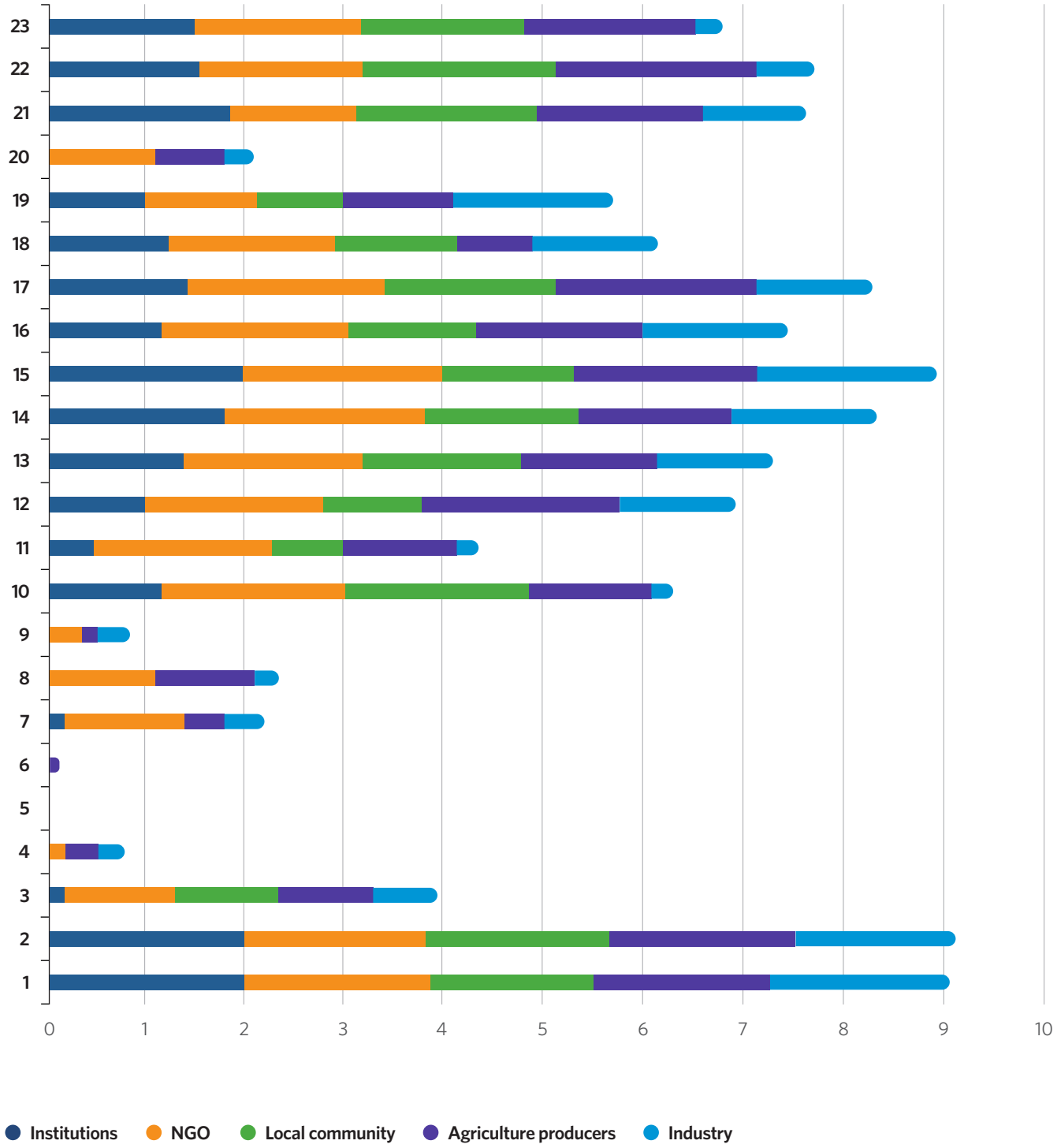
The total number of points the respondents gave to individual ecosystem services.
Legend: blue – provisioning services, green – regulating services, red – cultural services, yellow – supporting services



The analysis of the evaluation of certain groups of actors indicates that there is a uniform attitude towards ecosystem services, i.e. that decision-makers, users of the area and the general population recognise more or less the same services and evaluate them in a similar way (Graph 11). Thus, in the perception of ecosystem services, conflicts in attitudes among various actors are not recognised.

The only deviation can be seen in the fact that the surveyed representatives of the local population do not recognise most of the supply services (services 4-9, Figure 11) nor the cultural heritage (service 20, Figure 11) as important.

GRAPH 11 - *Respondents' perceptions of ecosystem services. If there is no service, respondents rated it 0; if it is present but few people benefit it, then they rate it 1; and if they felt that the ecosystem service is very important in the Park, the rate is 2. The overall rate of a group of actors is obtained as the average of individual answers of respondents from that group.*



Legend: Provisioning services: 1 – Food, 2 – Animal feed, 3 – Fuelwood, 4 – Timber, 5 – Fibres, 6 – Other materials, 7 – Biochemical and medical resources, 8 – Genetic resources, 9 – Ornamental species; Regulating services: 10 – Climate regulation, 11 – Carbon fixation, 12 – Hydrological regime control, 13 – Protection against floods, 14 – Erosion and sedimentation control, 15 – Control of species reproduction, 16 – Decomposition of harmful substances and pollutants, 17 – Pollination, 18 – Pesticides and pathogens control, 19 – Weather protection; Cultural services: 20 – Cultural heritage, 21 – Opportunity for science and education, 22 – Opportunity for recreation and tourism; Supporting services: 23 – Habitat for wild plants and animals.

4.4. Analysis of priority ecosystem services

Using the methodology described in Annex 2, ecosystem services have been prioritised for further analysis. Scores have been assigned to ecosystem services depending on various activities present in the Park area (separate table attached to this document). The degree of connection among various activities with ecosystem services was assessed, as well as the current degree of vulnerability, the number of users and the importance of ecosystem services for various actors. Based on all that, priority services, which will be described in more detail in the next section, have been selected.

They are the following:

- Provisioning services: food, animal feed;
- Regulating services: control of species reproduction;
- Cultural services: opportunity for recreation and tourism;
- Supporting services: habitat for wild plants and animals.

Various aspects have been analysed for selected services. Annex 2 also provides a preliminary economic evaluation of these ecosystem services. Given the lack of data, there are recommendations for activities the Park could perform related to this issue.

Legend for the symbols used below:

Service condition: **--** very bad, **-** bad, **+** good, **++** very good;

Trend: ↗ rising, → same, ↘ declining.

4.4.1. Ecosystem service: Food

Ecosystem that produces it: agroecosystems (arable land, fields, orchards, vineyards), the Zeta River (for aquaculture)
Current service condition: **+** (good)
The condition of the service is relatively good in the sense that: there are arable land that is used; no intensive production methods are applied, except on individual farms; there is a variety of agricultural products. There are also several fish farms (aquaculture) on the Zeta River.

Trend of the current offer: ↗
Demand for this ecosystem service is growing.

Expectations of future needs for this service: ↗
Due to various socio-economic factors and development priorities, demand for this service is expected to continue to grow.

Causes of change: The period up to 10 years ago was characterised by the abandonment of agriculture. Businesses from this sector have been started during the last decade. Farms are being enlarged, production is diversifying. Development policy that emphasises the agriculture development, increasing availability of various forms of support to producers, the fact they are better informed to make the production of food from this area is growing.

Main actors:
Actors supplying this service: farmers. There are those who are engaged in agriculture as the only activity and who are more inclined to intensive application of fertilisers, pesticides and irrigation water and those who do it as a secondary activity, who value product quality more than quantity, and who recognise the importance of branding, networking, integration and principles of environmental protection in their production.

Service users: the population of Montenegro
Actors who jeopardise this service: producers who do not adhere to the principles of good agricultural practice, water pollutants (industry, municipal wastewater), the construction sector (due to the conversion of agricultural to construction land).
The role of the Park in preserving the service: As previously shown, 47.5% of the Park area is agricultural land (Table 2). Out of that, 26.7% is located in zone II, where construction and similar forms of use are not allowed, which is expected to protect the agricultural land, and thus the service. Zone III contains 73.24% of the total agricultural land in the Park. Although a larger range of activities is allowed in the zone III, protection measures will certainly be implemented in it to prevent uncontrolled construction and degradation of the area. In this way, the Park will directly contribute to the protection of this service, provided that regulations and restrictions in the field of agricultural legislation and the protection of nature and the environment are respected.

Given that a significant percentage of the Park's area is agricultural land (47.5%, Table 2), and that agriculture is recognised as one of the main development sectors, the Park should take an active role in protecting this ecosystem service – on the one hand because of its economic and social significance, and on the other hand due to the preservation of biodiversity related to agroecosystems. Therefore, the Park should work on establishing cooperation with the competent ministry and farmers, particularly those engaged in farming as a secondary activity, because they recognise the possibilities in the existence of a protected area. In addition, the Park should work on the introduction of agriculture and environmental schemes and incentives to motivate producers to introduce biodiversity protection measures.

Based on the evaluation of this service, as well as for other socio-economic reasons stated in the document, the suggestion is to establish a special office within the Park that will deal with agriculture. For a start, this could be a working group that would eventually grow into a self-financing office for agricultural development (more in sections 5.3.3, 5.5).

4.4.2. Ecosystem service: Animal feed

Ecosystem that produces it: Natural and semi-natural pastures and meadows that are used for grazing and mowing; fields and arable land where fodder plants and corn are grown.

Current service condition: **-** (bad)
The main ecosystems that provide this service are threatened because of abandonment and succession, as well as conversion to construction land.

Trend of the current offer: ↘
Service supply is declining. There are animal farms that intensify their production and are motivated to increase the number of cattle through subsidies and market development. Availability of animal feed is one of the key limiting factors in this sector of agriculture. There are potentials for the production of hay, fodder plants and grain for livestock feed, but this ecosystem service is declining because landowners either do not maintain grasslands by mowing or grazing, or build housing and recreation facilities on that land.

Expectations of future needs for this service: ↗
Due to agricultural policies, local market preferences, disruptions of global supply chains due to the Covid-19 pandemic, an increase in demand for locally produced food of animal origin is expected. Therefore, following this trend, the need for this service will grow.

Causes of change: Grasslands disappear due to abandonment (succession) or conversion to construction land. The construction of facilities and supporting infrastructure reduces the available areas for grazing, mowing and growing fodder plants. The trend of construction of houses and cottages, along with attractive prices of construction land cause owners to parcel their land and sell it as construction plots.

Main actors:
Actors supplying this service: owners of land where grassy habitats are located.
Service users: livestock production sector in the region (a large number of farms), milk processing plants (through subcontractors) and ultimately the population of Montenegro that consumes these products.
Actors who jeopardise this service: construction sector, landowners who do not maintain the land by mowing and grazing it or who parcel the land and sell it as construction plots.
The role of the Park in preserving the service: Grassy habitats are important for the conservation of the biodiversity that inhabits them. This includes a large number of important species of plants, insects (including pollinators), amphibians... Preservation of traditional forms of mowing and grazing is the best way to preserve these elements of biodiversity. Therefore, the role of the Park should be reflected in encouraging landowners to continue grassland maintenance.

In this regard, the Park can provide education, but also establish protection schemes that would motivate landowners to maintain grassland habitats.

4.4.3. Ecosystem service: Control of species reproduction

Ecosystem that produces it: Spawning sites along the Zeta river. The highest concentration is upstream from the Slap area and in the tributaries of the Zeta.

Current service condition: **--** (very bad)
Hatcheries and fish stocks are generally endangered by poaching, changes in the hydrological regime because of the operation of hydropower plants, degradation and backfilling of the Zeta tributaries (due to the reconstruction of the railway), all of which make it impossible for species to reproduce and keep the stock stable.

Trend of the current offer: ↘
The use has been reduced due to the poor condition of the fish stock and the introduction of fishing ban.

Expectations of future needs for this service: ↗
Fish stock is considered one of the basic values of the Nature Park, and in addition to ecological significance, it is also the basis for the development of recreational activities and specific forms of tourism (fly fishing), which are expected to be an important part of development of sports and recreational tourism on the Zeta river. It is also important for restaurants that are part of the local tourism offer.

Causes of change: Changes in the hydrological regime of the Zeta river because of the operation of hydropower plants, backfilling of tributaries due to the construction of infrastructure (railways), poaching by illegal means, pollution.

Main actors:
Actors supplying this service: Hunting and fishing association engaged in raising and protection of wildlife (future protection service of the Park), sport fishermen.
Service users: sport fishermen, local hospitality facilities, local population.
Actors who jeopardise this service: local people involved in poaching, EPCG power supplier and Zeta Energy company, which regulate Zeta by the system of hydropower plants (Perućica, Glava Zete and Slap).
The role of the Park in preserving the service: By establishing protection service, research program, monitoring and defining and implementing conservation measures, it is expected that the Park will ensure the preservation of this service and its sustainable valorisation.

4.4.4. Ecosystem service: Opportunity for recreation and tourism

Ecosystem that produces it: Water surface of the Zeta river and its banks (beaches, gallery forests).

Current service condition: **-** (bad)
Recreation along the Zeta (swimming, excursions, sport fishing) is endangered by poor water quality (presence of harmful substances that cause allergic reactions), condition of fish stock (prevents sport fishing) and violation of aesthetic values (deforestation and fires, waste disposal, non-maintenance of the riverbed, which leads to the interruption of waterways). Also, poor accessibility and lack of refurbished beaches, trails, picnic points and other adequate infrastructure makes it impossible to valorise this service. It is additionally worsened by the inertia of local tourism organisations.

Trend of the current offer: →
Currently, mainly the local population who live next to the Zeta use the area for recreation, since they see that as a traditional form of spending free time.

Expectations of future needs for this service: ↗
The need for recreation and tourism development will grow as local and national development policies promote this activity. In addition, the city population has growing need for recreation and relief from stress in nature. This will be particularly important in the post-Covid period, as tourists are increasingly interested in outdoor activities (hiking, biking, sport fishing, i.e. the activities that allow little contact with people) and prefer protected areas and their offer.

Causes of change: As previously described, the factors that threaten this service are water quality degradation caused by pollution, loss of aesthetic values of the area due to waste disposal and non-maintenance of the riverbed. All that is a product of various activities in the region and the attitude of locals and businesses towards the area.

Main actors:
Actors supplying this service: municipalities (land use planning and protection, utilities), inspection services, nature and environmental protection sector (implementation of environmental protection regulations).
Service users: local people, municipalities, tourism sector.
Actors who jeopardise this service: polluters, poachers.
The role of the Park in preserving the service: The main role will be reflected in the preservation of natural habitats and the beauty of the area, but also in encouraging forms

of tourism that are in harmony with nature and have minimum effect on it (through education, introduction of standards, branding, promotion and marketing). In the case of the Park, recreation would be in the focus (water sports, hiking, cycling, sport fishing), as well as niche sectors such as science, rural and gastro tourism. Its role would also be to represent a market for the region's agricultural and food products. Tourism would be a way to "export" products from the Park area and to create a closed system of food production and marketing in the Park area.

4.4.5. Ecosystem service: Habitat for wild plants and animals

Ecosystem that produces it: The aquatic ecosystem of the Zeta river is a habitat for endemic, rare and other important species of fish and aquatic fauna (one of the two known habitats of softmouth trout). Terrestrial habitats are also important migratory stations and nesting grounds for endangered bird species. There are habitats of other important species of vertebrates (mammals, amphibians, reptiles), as well as higher and lower plants in the area of the Park as well. There are also habitats for species that provide other ecosystem services, including pollinators that significantly contribute to the success of agricultural crops in the region (particularly in the fruit-growing sector).

Current service condition: **–** (bad)
This service is threatened by the reduction of water quality and by the reduction of adequate habitat areas on the land because of urbanisation and environmental disturbance.

Trend of the current offer: ↘
It is declining as the areas of natural and semi-natural habitats decrease.

Expectations of future needs for this service: ↗
Habitat for wild species is a supporting service, i.e. one of the basic services that enables other ecosystem services. If there are no habitats for wild species, there is no pollination, fishing, tourism and recreation, and these are all environmental benefits the need for which will grow, as previously described.

Causes of change: Changes in land use, pollution, increase in population density, urban areas and environmental disturbance (as previously described).

Main actors:
Actors supplying this service: various institutions taking care of nature and environmental protection.
Service users: construction sector, polluters, tourism and visiting that is not under control.
The role of the Park in preserving the service: Protection of natural habitats and species is one of the basic tasks of the Park. To achieve this, it is necessary to research, clearly define goals, measures and activities and their consistent implementation with the involvement of other relevant actors. The park should also be engaged in educating the local population, as well as the tourism sector and all visitors about the importance of this service. It should also provide guidance to the business sector and enterprises on how to adapt their operations to the conservation of habitats for wild species.

4.4.6. Trade-offs among key ecosystem services

There may be synergies and trade-offs among ecosystem services. In some cases, an increase in one service causes an increase in another, while sometimes there is a conflict between them, i.e. an increase in one, reduces the supply in another service. If the key ecosystem services described above are analysed, the relationships among them can be presented as follows:

Synergies: Food and animal feed – an increase in the production of animal feed will contribute to the production of food of animal origin.

Conflict: An increase in food means increasing arable land, and reducing the area of wild habitats, as well as the degradation of ecosystems because of the use of fertilizers and pesticides. This further jeopardises the pollination service (which is not described in detail here), which conditions the success of plant production.

Increasing the volume of recreation and tourism also causes a reduction in the area of adequate habitat for wild species through disturbance (by very human presence) and the construction of supporting infrastructure.

It is also important to analyse the substitutability of certain ecosystem services in this area. Food and animal feed are services that can be compensated, as they are also produced in other areas and can be obtained from there. Recreation and tourism are also provided in other locations (the lakes Skadarsko, Pivsko, Krupac...), but the aesthetics of the Zeta river and the character of the region are unique in Montenegro and beyond. Therefore, its value cannot be compensated. In addition, the control of species reproduction and habitat for the local species cannot be compensated, because some of them do not exist in other habitats in Montenegro and the region.

4.5. The role of the Park in preserving ecosystem services

The Park has been set up to preserve natural and semi-natural habitats and their biodiversity in a variety of different forms of use. In the scenario without the Park, one can expect the degradation trend and loss of habitats and populations of species that provide certain benefits to be continued. This is a particular problem as the needs for the entire aforementioned ecosystem services are expected to increase. Therefore, the establishment of the Park should be an alternative to the "business as usual" approach. The Park is a chance to ensure economic benefits of the community that depend on preserved ecosystems.

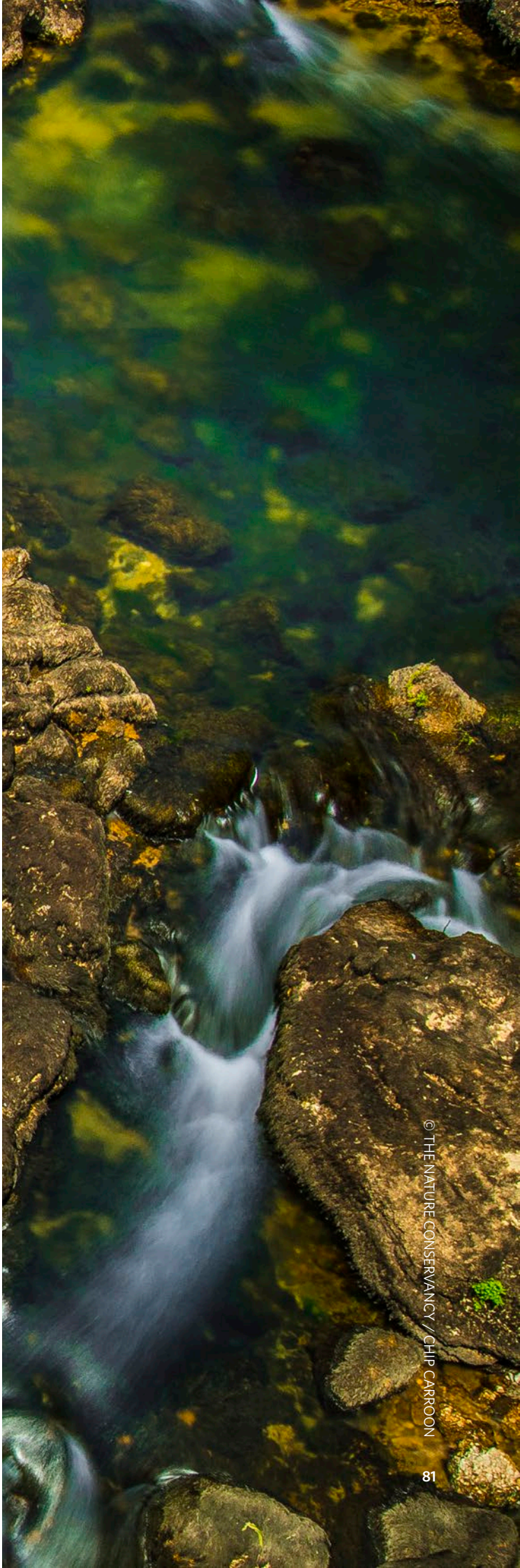
TABLE 9 - *Comparison of the state and needs of ecosystem services in the Zeta river valley in the two scenarios - without and with the Nature Park. Details explained in the text (sections 4.3.1-4.3.5).*

	WITHOUT THE PARK AND PROTECTION MEASURES			WITH THE PARK AND PROTECTION MEASURES	
ECOSYSTEM SERVICE	**Current state**	**Expected state**	**Expected environmental, social and economic effects**	**Expected state**	**Expected environmental, social and economic effects**
Food	+	+	The development of intensive agriculture continues and ecological footprint increases. A small number of economic entities and farms benefit from it.	++	Agriculture based on good practices is being developed, which reduces the ecological footprint of production. A large number of small producers benefit from it. They get a market for local products, as well as the tourism and hospitality sector. Consumers have access to healthy, locally produced food.
Animal feed	-	--	The trend of disappearance of grasslands through succession and conversion into construction land continues. The biodiversity of grassland habitats is being lost, as well as the potential for expanding animal production by small producers and thus by processing entities that depend on them as subcontractors.	+	Grass habitats are preserved through the maintenance of traditional uses (grazing, mowing). This preserves biodiversity, habitat mosaic and spatial aesthetics. Larger quantities of fodder are provided for the needs of livestock development at the local level. The chain of production of animal source foods in the territory of the Park is completed, which gives it additional value on the market.
Control of species reproduction	--	--	Populations of target species that can be economically valorised continue to decline and disappear. Environmental relations in habitats are disturbed, the possibility of economic benefits through valorisation is being lost. Only poachers benefit from it.	++	Hatcheries are preserved, and the condition of fish stock is improving. It provides a basis for the development of tourism activities based on sport fishing. Sports and recreational clubs, fishermen, local restaurants benefit from that. The Park has an additional source of funding.
Recreation and tourism	-	+	Visiting the Park remains in the form of recreational activities of the local population. Visiting brings disturbance and waste disposal into the Park area. There are no economic benefits.	++	The tourist offer of the area is diversifying. Visiting is organised and arranged, and ecological footprint reduced. Local businesses in tourism service are being set up. Economic benefits are felt by the local population, which develops and provides services to visitors (accommodation, food, guide services ...). The Park has an additional source of funding.
Habitat for wild plants and animals	-	--	The loss, degradation and fragmentation of wildlife habitats, the reduction and loss of their populations, and thus the ecosystem services they provide, continue. The quality of life of the local population as well as local agricultural products is declining. The potential for economic gain is being lost.	++	Habitats are preserved, whereas populations are stable and growing. Ecosystem services are preserved and valorised for the benefit of local development and funding the Park.

Based on the aforementioned facts, the role of the Park in the protection of biodiversity should be related to the conservation measures, but also to a proactive attitude towards the users of the area. This includes involving various actors, stimulating those who produce and maintain ecosystem services (e.g. those who maintain grasslands by mowing and grazing, sport fishermen), educating actors that jeopardise ecosystem services, mitigating conflicts, encouraging biodiversity-friendly business. As food and visiting are among the priority ecosystem services provided by this area, the Park should play a proactive role in the development of agriculture and tourism, by encouraging agricultural practices and forms of tourism that minimise the negative impact on biodiversity.

In this regard, the activities of the Park may include encouraging farmers to use natural fertilisers and pesticides, to set aside part of the property as a habitat for wildlife, educating tourism businesses on how to reduce the environmental footprint and disturbance, calculating the carrying capacity of the area, educating visitors and similar measures. Specific recommendations are given in sections 5.2.3. and 5.2.4.

Recognising ecosystem services, raising awareness of how the biodiversity of the Zeta river valley creates them and how this affects the well-being of the local population can motivate various conservation actors to support the Park, as well as create sources of funding. The Park should protect the supply of ecosystem services that affect human well-being by protecting nature. By cooperating with local users, the Park fulfils the potentials of development based on benefits from nature.



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5. Conclusions and Recommendations

5.1. Introduction

Nature Park *River Zeta*, like any protected area, was established in order to preserve the nature of this zone. However, it is in many ways specific and different from other protected areas in Montenegro. What distinguishes this park from other seemingly similar ones is the fact that it was established to preserve the river ecosystem located in an intensively populated area with different forms of its use.

The protection of river ecosystems is specific because their condition is affected by processes exceeding the boundaries of the protected area itself. Rivers can be conceived as linear systems that connect different administrative units – in this case, three municipalities with different development plans, priorities, profits, and interests concerning this area. Rivers also have a horizontal connection with the surrounding area. In other words, any activity that takes place in the entire basin area can have an impact on its ecosystem. Rivers have a vertical dimension as well. This dimension is manifested in the river's link with groundwater and water level oscillations. Due to the importance of water and aquatic ecosystems, their management and protection are under the mandates of different actors, who do not necessarily have the same visions, goals and approaches when it comes to planning and consumption.

In addition, Zeta flows through a populated area that is intensively exploited for agriculture and industry. Ecologically important habitats are located in the mosaic of arable and urbanized areas, which contributes to their degradation, fragmentation and prevents the free movement of fauna. Generally, conservation strategies in protected areas are not well adapted to populated areas where people interact intensively with rivers, which will be a challenge for this Nature Park.

Although there is, obviously, a plethora of aggravating circumstances for the Nature Park *River Zeta*, these circumstances can also constitute a solid argument to put this area's natural values under a special protection regime. This argument amounts to the claim that ecological processes and the survival of species and populations could have a chance only in such a protected area, where sustainable use would be encouraged. This also gives the Park an extraordinary and complex role as a nexus between nature protection, numerous activities, and forms of use, as well as a mediator between all users of space. The absence of stakeholder participation characterizes the classical approach to protected area management, as well as the lack of any sort of consultation with other sectors or clearly defined protection objectives for which a monitoring and evaluation system has not been established that would enable adaptability. This management approach is mainly inadequate and can lead to conflict and do more harm than good. Moreover, in a protected area such as Natural Park River Zeta, it will certainly not be adequate because of all the above. Therefore, in the rest of the document, and based on all previous analyzes, we stretch specific recommendations to the future manager in order to achieve the most effective management of this Park.

5.2. The Focus of the Park's Activities

The conservation study identified the central conservation values from an ecological perspective – in particular, the protection of soft trout and specific habitats, emphasizing bird habitats. However, from various strategic and planning documents, as well as through interviews with space users and analysis of ecosystem services, other values of this space have been identified, which should be priorities in the protection and management of space. These include protecting water quality, space, encouragement of local economic development through sustainable agriculture and tourism. Therefore, we recommend the Park Manager focus on the aforementioned priorities, and the guidance will be provided below.

Additionally, the Park should also engage in education and awareness-raising. It is a horizontal activity that permeates all other areas, and for each of them, special programs should be designed and implemented. For example, the Park should educate farmers on good agricultural practices, tourism service providers on environmentally friendly forms of tourism, businesses on greening businesses, the general public and preserving the environment, etc. Educational programs can be envisaged as workshops, lectures, the printing of information material and the like. A distinct segment of education should be cooperation with educational institutions – kindergartens, primary and secondary schools – in order to bring topics of importance for nature protection in the Park closer to the youngest population through curricula and extracurricular activities.

5.2.1. Biodiversity Protection

The Park's Objective: Protection of indigenous fish populations, primarily soft-mouth trout, then important habitats for birds as well as wetlands and those of importance for nature protection at the international level (Emerald/Natura 2000).

Legal grounds: Law on Nature Protection, Decision on the protection of rare, endemic and endangered plant and animal species, Law on freshwater fisheries, Law on Hunting, Convention on the Protection of Migratory Species of Wild Animals.

Strategic stronghold: National Biodiversity Strategy with Action Plan, Local Biodiversity Action Plan of the Municipality of Danilovgrad, Biodiversity Action Plan of the Capital City of Podgorica.

Key partners: Inspections - ecological, fishing, hunting, forestry; Ministry of Ecology, Spatial Planning and Urbanism, Ministry of Agriculture, Forestry and Water Management, Environmental and Nature Protection Agency, sports and fishing societies, environmental NGOs, police, prosecutor's office, judiciary, research institutions.

Potential conflicts: hunting societies, property owners, the construction sector.

A remark and recommendations: In order to be able to protect targeted biodiversity adequately, it is crucial to determine the current situation. Therefore, it is necessary to continue the started research to understand the population dynamics of the target species (population distribution, demographic parameters and structure, endangerment factors, etc.), as well as the distribution and condition of the target habitats. The knowledge gained in this way will help design adequate protection measures that may include active management of species and habitats (e.g., reproduction in non-natural conditions with reintroduction into natural habitats, establishment, and maintenance of migratory corridors, creating a mosaic of habitats needed for the life cycle of species, promoting biodiversity through mowing, grazing, removing invasive species, encouraging agrobiodiversity). Obtaining the information needed to create adequate protection measures is a process that requires human and financial resources. The Park can provide funds for this through targeted projects through which it can apply to relevant ministries (*MPSV* and *MEPPU*), the European Union or international funds that support projects on research and protection of biodiversity (*UNDP, GiZ, Birdlife International, Rockefeller Brothers Fund*).

It is strongly recommended that such projects be prepared in cooperation with scientific research institutions and the NGO sector. It is also recommended to introduce the so-called citizens' science concept in protection. This amounts to the inclusion of amateurs, viz., persons without formal education in a particular scientific field, in monitoring and research programs. For example, sport fishers have extensive experiential knowledge of fish populations and can help design and implement monitoring protocols.

Park u ovom trenutku ima podršku međunarodne organizacije *The Nature Conservancy*, kroz projekat koji sprovodi *NVO EnvPro*, u okviru kog će se definisati monitoring protokol za odabranu ciljnu vrstu uz aktivno učešće lokalnih aktera. Ovaj projekat može biti pilot i primjer dobre prakse povezivanja stručne i amaterske javnosti u sprovođenju monitoringa, istraživanja i zaštite vrsta.

Obtaining this type of information is a long-term process. During this time, the Park must establish a protection system against identified endangerment factors to prevent further habitat devastation and biodiversity loss. Therefore, in the first phase of Park management, it is necessary to establish a quality system of prevention of negative anthropogenic impacts. The municipality of Danilovgrad has already taken some steps in that regard; namely, it has introduced a total ban on fishing and use of motorboats in order to protect endangered fish stock, except in the vicinity of the bridge in Danilovgrad. Although intuitively adequate, these measures alone do not necessarily protect against poaching. This is because, in this way, the presence of sport fishers and other actors who have an interest in protecting the fish stock and who therefore represent potential partners for the surveillance of the Zeta area is eliminated. Their presence, along with establishing a notification system when you notice an illegal action, can significantly contribute to the prevention of poaching, space surveillance and the speed and efficiency of response in cases of illegal actions on Zeta. It is hence recommended that the Park Manager establish cooperation with these actors through a working group (see Section 5.3.3).

However, even if preventing illegal actions is timely, it still does not guarantee that the perpetrators will be adequately punished or that an ambiance will be created so that harmful activities for nature are deemed perilous. Therefore, in order to protect biodiversity, one of the priority activities of the Park Manager should be to establish cooperation with all actors in the law enforcement chain - namely, inspections, police, prosecutors, and the judiciary. In this regard, it is necessary

to influence education, capacity building, and creating a positive attitude towards nature protection among these actors (see recommendations in Section 5.3.3).

All this should be accompanied by strengthening the capacity for supervision fieldwork, as well as by educating both the staff of the Park and the users of the space and raising public awareness.

5.2.2. Water Quality Protection

The Park's Objective: Prevention of further degrading of Zeta water quality because of wastewaters stemming from industry and agricultural land.

Legal grounds: Law on Environmental Protection, Law on Waters, Law on Plant Protection Products, Ordinance on Permitted Quantities of Hazardous and Harmful Substances in Soil and Methods for Their Testing.

Strategic stronghold: Water Strategy, Agricultural Development Strategy, National Plan for the Use of Plant Protection Products

Key partners: Inspections – ecological, sanitary, water; Department of Hydrometeorology and Seismology, Institute of Public Health, Directorate for Food Safety, Veterinary and Phytosanitary Affairs, Water Administration, Ministry of Ecology, Spatial Planning and Urbanism, Ministry of Agriculture, Forestry and Water Management, Agency for Environmental and Nature Protection, Agromont Poultry Farm.

Potential conflicts: Industrial plants and intensively cultivated farmers who do not have a wastewater treatment and disposal system.

A remark and recommendations: Many entities affect the quality of water from Zeta – from industrial plants, through agricultural holdings, to households that are not only within the Park but in the entire drainage basin area. The lack of adequate wastewater treatment systems will be a situation for the Park Manager, whose solution goes beyond the scope of the Park itself. The entire system of state institutions dealing with the adoption and implementation of regulations and minimum standards related to the field of environmental protection from waste and wastewater (ministries, agencies, inspections, municipalities...) should be in charge of that. In this system, the Park should play the role of initiator of the transformation of the economy's attitude towards the environment through the establishment of dialogue between them and institutions, search for adequate technical solutions, support for project preparation and documentation and education. The Park will be supported by those economic entities that have already introduced environmental responsibility in their business and adequate technical solutions that reduce their impact on the environment (such as Agromont poultry farm). The park, in cooperation with the Institute of Hydrometeorology and Seismology and the Institute of Public Health, can also influence more frequent and larger sampling volumes within water quality monitoring.

5.2.3. Spatial Protection

The Park's Objective: Prevent uncontrolled urbanization and loss of agricultural land, preservation of ecosystem services and aesthetic values of the region.

Legal grounds: Law on Nature Protection, Law on Agricultural Land, Law on Spatial Planning and Construction of Facilities.

Strategic stronghold: Spatial plans, Sustainable Development Strategy of Montenegro.

Key partners: Ministry of Ecology, Spatial Planning and Urbanism, inspections - ecological, spatial protection, NGO sector, agricultural landowners.

Potential conflicts: Construction sector, property owners.

A remark and recommendations: The increase in the number of inhabitants in the river Zeta valley in recent decades has caused an increased volume of construction of housing and economic activities, which the facilities of local governments further contributed. In this context, it is important to note that the Nature Park was not foreseen by the existing spatial planning documentation made in the previous period (Spatial Plan of Montenegro from 2008, Spatila-Urban Plan of Danilovgrad from 2014, Spatial-Urban Plan of Podgorica from 2014). Therefore, the urban-technical conditions for the preparation of project documentation that are issued on the basis of the above spatial planning documents at this time do not imply specific requirements arising from the existence of the protected area.

The inconsistency of spatial and development plans, as well as inadequate capacities in the sector of spatial planning and control of spatial use, have led to the emergence of unplanned urbanization which permanently loses space, natural resources, primarily agricultural land, and aesthetic values of space. Therefore, the Park's role in this context should be to encourage sustainable urbanization, which will take into account natural and cultural values and the needs of local economic development.

In this regard, the Park may carry out the following activities:

- Marking the borders and zones of the Park with a clear definition of permitted and prohibited actions
- Mapping of habitats and agricultural land
- Cooperation with relevant institutions in order to harmonize spatial plans, improve spatial planning and implement regulations in this area
- Creating guidelines for sustainable urbanization that valorize traditional construction, preserve ecosystems, ecological corridors and the aesthetics of space, and prevent the loss of agricultural land
- Designing various forms of incentives that ensure development without endangering space (e.g., introducing special taxes on land sales, incentives for pasture maintenance or reconstruction of buildings following traditional architecture, etc.)
- Educating the local population about the importance of preserving space and natural resources

For a start, the Park can initiate some of the recommended activities using its own human resources, but to fully achieve the goals of spatial protection will require close cooperation of the Park, local governments, ministries, inspections, and other actors whose mandate is general planning and use of space. Therefore, over time, a special working group can be formed for this area of activity.

5.2.4. Promoting Local Economic Development Through Agriculture

The Park's Objective: To encourage agricultural production based on sound environmental practices, as well as to improve the value chain of agricultural products.

Legal grounds: Appropriate measures of the agriculture budget, which can be based on various lines and calls (infrastructure investments), assistance to young producers, lines that support the improvement of quality, and food safety and quality schemes.

Strategic stronghold: Agriculture and rural development strategy.

Key partners: Ministry of Agriculture, Forestry and Water Management, Advisory Services, Directorate for Food Safety, Veterinary and Phytosanitary Affairs, existing producer associations, Monteorganica, scientific research institutions, and the NGO sector.

Potential conflicts: Producers with intensive breeding.

A remark and recommendations: The park should play an active role in the agricultural sector in this area for several reasons. Firstly, because it is the activity that has the most significant impact on nature or biodiversity and therefore represents a barrier to achieving protection goals, and secondly, food and feed production are among the vital ecosystem services of this area (Sections 4.4.1 and 4.4.2). Finally, agriculture is a development opportunity for the region as well as a potential source of funding for the Park (through branding schemes and projects). Therefore, the role of the Park should be to favor relevant institutions and policies that emphasize the development of agriculture based on the principles of sustainability.

In terms of stimulating such agriculture in the region, the activities of the Park could span across the following domains:

- Education of producers in the field of the Code of Good Agricultural Practice, especially in terms of waste disposal.
- Educating producers about ecological values and ways in which they can contribute to their conservation (e.g., forms of mowing, grazing, planting, harvesting, crop protection, etc. which reduce the impact on wild species and habitats and encourage biodiversity). Farmers should be encouraged to continue managing their land in a way that means preserving ecological and social values, such as preserving the biodiversity of agricultural land, the cultural landscape, and the vitality of rural areas.
- Encouraging networking and importing producers in order to promote products and their market penetration better. For this purpose, measures already planned within the Agro-budget should be used to support the establishment of collection and purchase centers, as well as to support investments in rural tourism through the MIDAS II project funded by the Government of Montenegro and the World Bank.
- Mediation for better aggregation (collection of smaller quantities of products from individual producers) or mutual exchange of products (a local market where producers exchange surpluses or crops they can grow and do not need for those products they need. Eg: exchange of animal feed or grain for meat or dairy products).

- Branding of agricultural products originating from the protected area and support for their promotion. Launching an initiative to establish an environmental label for agricultural products that have a price premium on the market could be another initiative.
- Encouraging the preservation and valorization of indigenous varieties and breeds.
- Mediation in linking animal feed production with the livestock sector to provide sufficient quantities for local animal production. In this way, the production chain in the Park area could be completed and products branded.
- Encouraging domestic processing in order to increase the degree of finalization of products and production of traditional domestic products that could enter the system of protection of quality labels and organic products and be valorized on the broader market and the tourism sector.
- Agricultural waste management as a form of the business idea with the potential to bring funds to the Park (e.g., the conversion of branches after pruning into fire briquettes).
- Establishment of small craft shops for the placement of high-quality domestic food products.

Due to the above, we recommend that a working group be established within the management structure of the Park, and over time a separate office for agricultural development (more in Sections 5.3.3, 5.5).

5.2.5. Promoting the Development of Tourism at the Local Level

The Park's Objective: Encouraging the development of environmentally friendly tourism, with a focus on recreational activities.

Legal grounds: Law on Tourism (Official Gazette of Montenegro 31/05), Law on Tourism and Catering (Official Gazette of Montenegro 76/20), Rulebook on classification, minimum conditions, and categorization of catering facilities (Official Gazette of Montenegro 33/07).

Strategic stronghold: Strategy for the development of rural tourism until 2023, Strategy for the development of cultural tourism until 2023, Strategy for the development of tourism in the Municipality of Danilovgrad until 2020.

Key partners: Strategy for the development of rural tourism until 2023, Strategy for the development of cultural tourism until 2023, Strategy for the development of tourism in the Municipality of Danilovgrad until 2020.

Potential conflicts: Excessive visits to the Park can become a threat to the universal value of the location. The construction of new accommodation capacities can lead to further fragmentation of plots or fragmentation of habitats. More tourists would require the widening of roads, parking lots, driveways and contribute to noise and pollution.

A remark and recommendations: Visiting in the broadest sense is an inseparable part of the protected area - hence the word "park" in the terminology itself because it means a space open for recreation and tourism. The segment of the Park should be related to tourism for several reasons:

- Tourism is recognized as one of the development branches of this region by strategic documents.
- Recreational and religious tourism is already something that takes place in this area. However, it should be linked to the area's values by setting standards and educating both service providers and visitors.
- Possibilities of recreation and tourism are among the primary services of this area's ecosystem that should be valorized.
- Tourism is a potential source of employment and income for the local population.
- Tourism is a potential source of income for the Park (through tickets, fees, concessions, creation of services).
- Tourism provides an opportunity to raise awareness of the ecological values of the Park in the general public and create positive attitudes towards nature protection.

Therefore, the activities of the Park in this regard should be as follows:

- Defining recreational facilities and conditions for their performance;
- Education of service providers on environmentally friendly forms of tourism and activities;
- Encouraging new service providers;
- Estimates of the carrying capacity of the total space and individual locations;
- Mediation in connecting various tourist actors (local tourist organizations, tourist agencies, providers of tourist services);
- Encouraging the introduction of environmental standards in the tourism sector (certificates, standards);
- Creating an offer of scientific tourism, through which research expeditions would be conducted for the needs of the Park;
- Promotion of opportunities for recreation and tourist offers of the region.

As in the case of agriculture, it is recommended to establish a working group within the Park that would deal with tourism development in this area, which would eventually grow into a self-sustaining office (Sections 5.3.3, 5.5).

5.3. Recommendations for Park Management

5.3.1. Management Capacities

Protected area management requires a multidisciplinary approach that requires knowledge of biology, economics, law, sociology, management, and other disciplines and skills such as research, field, analytical, communication... The number of employees in the management structure will largely depend on availability finances, but for successful planning and implementation of activities in the Park staff should have the following:

General knowledge and competencies:

- *Financial management* – Achieving sustainable financing will be one of the biggest challenges of the Park, so that future staff will have to know how to provide funds from various sources, as well as dispose of them adequately and rationally.
- *Project management* – It is expected that projects will be one of the crucial forms of funding program activities and biodiversity monitoring, so this is one of the fundamental competencies that management ought to have. Competencies refer to the knowledge of the grant program, application process, project management, reporting... Project funding should be approached in a planned and strategic manner in order to provide funds for the activities that will be foreseen in the management plan.
- *Law, regulations* – Knowledge of relevant legal acts, especially legal procedures for processing and prevention of environmental damage. The physical protection service (supervisors) should be specially trained in this domain, as the first line of protection of the Park from illegal activities.
- *Research and monitoring design* – By this competence, we mean knowledge of research methods and design of monitoring protocols that will be necessary to provide new data and knowledge about the species and habitats that are subject to protection, but also about the environment and anthropogenic processes that affect it.
- *Relations with the population* – Knowledge of various forms of communication and public engagement, the ability to identify attitudes, motivations of actors, and adequate forms of cooperation with them.

Specific knowledge and competencies:

- *Knowledge of ecology* – Knowledge of basic ecological concepts (population dynamics, ecological interactions, functioning of ecosystems, disturbance and succession, endemicity and endangerment, protected species, important habitats, ecosystem services, conservation approaches, etc.).
- *Knowledge of agriculture* – Knowledge of agricultural concepts (primary production, the productivity of agroecosystems, forms of tillage, use of pesticides, fertilizers, animal production, processing, quality schemes, etc.).
- *Knowledge from tourism* - Knowledge of concepts in the field of tourism (carrying capacity, development of niche branches of tourism, development and promotion of destinations, certificate programs in tourism, marketing, etc.

Ideally, the staff should already have knowledge and experience in these areas. However, in practice, this is not easy to find, so shortcomings in competencies will have to be compensated through staff education. Potentials for staff capacity building can be realized through the following programs:

- *Formal educational programs* – Graduate, postgraduate studies, lifelong learning programs, and courses in various fields accredited at educational institutions and for which participants receive formal certificates and diplomas. The institutions listed in Section 2.8.3 offer programs that are relevant to enhancing Park's human resources. Supervisors also have a legal obligation to attend training for the protection of persons and property at the Police Academy in order to acquire the conditions for performing their work.
- *Informal programs* – Existing workshops and courses organized through various projects and programs by state institutions or the non-governmental sector.
- *Targeted training that suits the Park's needs* – The Park should define goals of the future management plan in the form of the staff training program, through which their capacities will be systematically raised. Such a program would envisage priority thematic areas, relevant educators and institutions, and a training schedule.
- *Communication with the local population* – Local users of space have extensive experiential knowledge related to various aspects of space - especially in terms of ecology (knowledge of fish population dynamics, animal movements, important habitats, ecological processes, etc.). Through regular communication and cooperation with them, this knowledge can be put in the function of space management and nature protection within the Park.

In addition to the above, it is necessary that employees are computer literate, that they can use a computer and have a minimum basic knowledge of English.

Strengthening human resources leads to the professionalization of work on nature protection, as well as more noticeable individual and institutional accomplishment. In order to better plan the personnel policy and strengthen the capacity of employees in the Park, Annex 4 provides a detailed overview of the necessary competencies and knowledge that employees in the Park should have. The proposal is based on the IUCN Guidelines for Competences in Protected Areas (Appleton 2016; more details in Annex 4).

5.3.2. Establishment of a Management System

In order to achieve the protection of the Zeta River Valley, the future Park Manager needs to establish an objective-oriented management system. This means that they should endorse a proactive approach to management that is oriented towards achieving results and desired outcomes. The following steps are required to achieve such a management system:

a) Setting clearly defined goals

Clearly defined goals are understood to be at the same time:

- *Precise* – or clearly defined, so no dilemma is left pertaining to what exactly is to be achieved
- *Measurable* – it is possible to measure whether the goal has been achieved and to what extent
- *Achievable* – that they can be achieved
- *Realistic* – they are in line with realizable possibilities (human and financial capacities, appropriate context, and circumstances)
- *Time-limited* – they ought to contain the deadline by which they should be met.

Consider the following example as an illustration:

Objective: To protect soft mouth trout in Zeta. This is an excellent example of a goal that is not clearly defined. First of all, it is not clear what exactly is to be achieved – whether to prevent its extinction, or to preserve the current population, or to return to some previous state when it was more numerous? Moreover, in the absence of data on the current and previous state of the population and its distribution, we cannot even know what number we want to achieve.

From what are we protecting the soft mouth trout? From poaching, pollution, or picnickers? Each of these things demands a different type of intervention.

Next, how will we measure whether the goal has been achieved? Is it enough just to notice its presence, or do we want to have a specific number of individual trouts per kilometer of the river? Do current circumstances allow this goal to be achieved? Is it realistic to ban all activities that endanger it and can we achieve all that? Do we have enough knowledge about this species to be able to protect it in the right way? In the end, the goal does not tell us how long it takes to achieve it, so it seems that it can go on indefinitely.

Compare with the following way of defining the goal:

Goal: By 2023, eliminate all types of poaching at familiar soft-mouth trout hatcheries.

In this case, the goal takes into account that we do not know enough about the population of this species, and we focus only on what we know at the moment - and these are the locations where fish are known to spawn. The focus of the goal is to prevent poaching (generators, nets, underwater rifles) so that the activities will be in the direction of constant monitoring of identified locations, particular actions in the field, initiating reports against poachers and the like. For that, we will need supervisors in the field whose service the Park will have, and we will monitor the success of achieving the goal through patrol lists, the number of cases in the field, the number of submitted reports. In the end, we know that we need to achieve this by 2023, and if we notice that it is not possible by then, the goal can be revised in time and adjusted to the situation on the ground.

b) Preparation of an action plan to achieve the goals

From clearly defined goals should follow the activities by which they can be achieved. The preparation of activities should include an analysis of potential barriers to achieving the objectives. Activities should be organized in an action plan that unambiguously sets out responsibilities and deadlines.

c) Establishment of a monitoring and evaluation system

One of the most critical elements of the management system is the definition of the monitoring and evaluation system. The purpose of this is to regularly monitor the

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effectiveness of activities and the degree of achievement of set goals. Without a monitoring system, it is not possible to monitor whether the activities and measures implemented by the Park have a purpose or effect.

In this regard, two types of indicators should be distinguished. First are the *process indicators* that monitor the implementation of the activities and measures. In the above example, if the activity is defined as organizing the protection service's work to prevent poaching, process indicators can be: number of patrols performed, number of hours spent by supervisors in the field, number of reported reports, number of police assistance, etc. By recording these indicators, we can monitor whether this activity is carried out according to plan and where there are bottlenecks, barriers and other types of problems.

The second type of indicators are *indicators of effect or success*. They refer to the monitoring of the state of the environment or broader processes in order to check whether the desired state of the field has been achieved. In the previously presented example, the success indicators would be the number and demographic structure of the soft mouth population, the sites where the individual trouts appear and the like.

In addition to defining the indicators themselves, it needs to be noted that monitoring is a long-term process and that realization analyses require a considerable amount of time to identify trends. Therefore, monitoring must be carried out continuously and not on an *ad hoc* basis or by applying different methodologies, protocols, and indicators. In this way, the desired information cannot be obtained. Conducting regular monitoring should be a clearly defined and indisputable item of financial planning and budget management of the Park.

In order to monitor the success of management, we recommend that the Park Manager from the very beginning starts applying the so-called *METT* tool (abbreviation for Management Effectiveness Tracking Tool, WWF 2007). The *METT* consists of a questionnaire that needs to be completed periodically. The number of points at each completion indicates whether the management system itself is progressing and being effective. Annex 3 provides an initial *METT* analysis and additional instructions on how to use this management tool.

d) Adaptation

Managing and developing a management plan cannot be considered as one event but as a time-consuming process. During the implementation of measures and activities, unforeseen things can always happen (natural disasters, environmental incidents, the shutting of funding sources...). Sometimes the envisaged measures do not contribute to achieving the goal because they were not adequately defined from the start due to lack of knowledge and information, or the set goals are already achieved, so it is not necessary to deal with them anymore. Therefore, management should be flexible enough to revise periodically and change the plan, viz., goals, and provide the option of adapting to situations that were not foreseen. Monitoring is a way to keep track of things like these, but the management process itself needs to be open enough to incorporate change.

The main management document is the management plan, in which all of the above should be clearly defined. The Law prescribes the content of the management plan on Nature Protection, which guides managers, but for the plan to have a purpose, the above should be an integral part of it.

d) Key objectives and activities

Based on all the analyzes done in this document, in Table 10, we give the key objectives and activities that should be part of the future management plan for this Park.

TABLE 10 - *Recommendations of key tasks, goals, and activities for the work of the Park, with accompanying indicators for monitoring and evaluation*

Assignment	Mgmt. goal	Activities	Process indicator	Success indicator
Biodiversity protection	By 2022, eliminate all types of poaching at known soft-trout hatcheries	• Establish a protection service • Train supervisor training • Establish a patrol protocol • Establish cooperation with the police, prosecutor's office, judiciary • Establish a working group to prevent poaching	• Number of supervisors employed • Number of hours spent on training • Defined patrol protocol • Number of hours spent on patrols • Number of conducted patrols • Number of applications submitted • Number of police assistance • Number of processed applications • Num. and type of sentences imposed • Participation of the interested public	• Level of income from agriculture • The contribution of the local food market to national GDP • Share of agricultural and food products from the Park area on the domestic market • Export of agricultural and food products from the Park area • Number and amount of investments in food production in the Park area • Number of employees in the agricultural sector
	By 2025, increase the number of soft-mouth trout populations by 20% compared to the initial state	• To determine the number and demographic structure of the soft-trout population • Determine the needs of the reproductive cycle of this species • Establish a reproduction and reintroduction program • Establish a monitoring protocol for soft-mouth trout	• Prepared research protocol/ methodology • Expert study done (fishing basis) • A system of reproduction outside the natural habitat and subsequent reintroduction has been established	• Level of income from agriculture • The contribution of the local food market to national GDP • Share of agricultural and food products from the Park area on the domestic market • Export of agricultural and food products from the Park area • Number and amount of investments in food production in the Park area • Number of employees in the agricultural sector
	By 2024, declare an IBA area in the Park area	• Carry out field analyzes on the coverage of the area, the presence of key species, and the satisfaction of the IBA criteria • Prepare adequate documentation for the nomination of the IBA area • Establish a monitoring protocol to monitor the IBA area	• Prepared and conducted field research • Report on fulfillment of IBA criteria • Prepared and submitted application for IBA status • IBA nomination	• Level of income from agriculture • The contribution of the local food market to national GDP • Share of agricultural and food products from the Park area on the domestic market • Export of agricultural and food products from the Park area • Number and amount of investments in food production in the Park area • Number of employees in the agricultural sector
	By 2024, stop reducing the area of *Natura 2000* habitats identified so far	• Make a detailed assessment of the distribution and condition of *Natura 2000* habitats • Perform a risk analysis for individual *Natura 2000* habitats • Prepare a set of measures for prevention and risk mitigation of *Natura 2000* habitats	• Research program • Number of field trips and hours spent in mapping and risk assessment • Prepared map of *Natura 2000* habitats • Prepared risk analysis of individual sites • Prepared set of measures for prevention, risk imitation of *Natura 2000* habitats	• Level of income from agriculture • The contribution of the local food market to national GDP • Share of agricultural and food products from the Park area on the domestic market • Export of agricultural and food products from the Park area

		• Prepared program for the restoration of *Natura 2000* habitats • Establish a monitoring program for *Natura 2000* habitats • Implementation of protection measures	• Prepared program for the restoration of *Natura 2000* habitats • Monitoring program established • Monitoring reports • Number of implemented measures	• Number and amount of investments in food production in the Park area • Number of employees in the agricultural sector
Water quality protection	By 2025, eliminate pollution inputs from industrial plants and municipal wastewater	• Establish a working group with representatives of relevant institutions (inspections, ministries, police) and businesses along with the Zeta (processing and other industries) in order to apply best practices for wastewater management • Adopt a set of standards and obligations that known polluters must meet by 2024 in order to prevent Zeta pollution • Adopt an incentive program for polluters to implement pollution prevention measures (promotion of environmentally responsible producers on the market, branding of green products from the Park, etc.) • Implement the adopted standards and obligations in order to eliminate the input of pollution from wastewater • Apply penal policy for violating regulations • In cooperation with the Institute of Hydrometeorology and Seismology, establish an expanded Zeta water monitoring system • Regularly monitor water quality at several locations	• Establishment of a working group and adopted work protocol • Number of meetings and minutes of meetings • Adopted set of standards and obligations • Adopted program for the promotion of environmentally responsible producers • Number of performed inspections • Number of submitted and processed applications • Number and type of penalties • Zeta water quality monitoring program established • Number of measuring habitats and sampling frequency	• Level of income from agriculture • The contribution of the local food market to national GDP • Share of agricultural and food products from the Park area on the domestic market • Export of agricultural and food products from the Park area • Number and amount of investments in food production in the Park area • Number of employees in the agricultural sector
Spatial protection	By 2024, stop all forms of unplanned construction on the territory of the Park	• Mark the borders and zones of the Park • In cooperation with relevant institutions, work on harmonization of spatial planning documentation • Map habitats and agricultural land • Prepare guidelines for sustainable urbanization • Design and introduce incentive measures for land protection • Design and implement a program of education and raising awareness of the local population on the topic of spatial protection	• Borders and zones of the Park marked in digital format and in the field • Spatial plans (at the state and municipal level incorporate the protected area and protection needs • Database on the distribution of habitats and agricultural land • Prepared document with guidelines for sustainable urbanization • Guidelines adopted by the local government • Prepared proposal of incentive measures • Measures adopted by local self-government • Designed education program • A number of educational activities (workshops, presentations, appearances in the media, etc.) • Printed materials	• Areas of natural habitats and agricultural land (percentage change from baseline) • Number of facilities built according to the guidelines • Number of beneficiaries of incentive measures • Number of inspection reports and processed cases of unplanned construction

Promoting local development through agriculture	By 2024, stop reducing the current area of agricultural land	• Establish zero conditions of areas under various agricultural production forms (pastures, mowing fields, arable land, gardens, orchards, vineyards...) • Improve the implementation of spatial planning regulations • Implement the implementation of regulations on the use of plant protection products • Establish a program of education of agricultural producers on good agricultural practices • Establish incentive schemes for pasture conservation and biodiversity	• Report and maps on the distribution of different categories of agricultural land • Cadastre of agricultural producers • Number of inspections, number of submitted and processed fines, and amount of fines for illegal construction and improper use of protected means and disposal of waste from farms • Adopted education program • Number of conducted educational activities • Number of participants in educational activities • Adopted incentive program for pasture and biodiversity conservation • Number of farms that apply pasture and biodiversity conservation schemes	• Areas of agricultural land by categories (pastures, mowers, arable land, gardens, orchards, vineyards...) • State of biodiversity on agricultural land (habitat areas, number, and population dynamics)
	By 2025, improve the market for local agricultural products	• Establish a branding system for local agricultural products • Establish a program to promote local agricultural producers - Establish cooperation with the tourism sector and retail chains • Design and implement a consumer education program on local agricultural products	• Established quality schemes, brands, etc. for local agricultural products • Established a program for the promotion of producers • Signed memoranda and agreements with retail chains and the tourism and hospitality sector • Implemented public awareness campaign on local agricultural products • Number of agricultural producers included in seeds • Number and scope of incentive measures and loans granted to producers from various sources	• Level of income from agriculture • The contribution of the local food market to national GDP • Share of agricultural and food products from the Park area on the domestic market • Export of agricultural and food products from the Park area • Number and amount of investments in food production in the Park area • Number of employees in the agricultural sector
Promoting local development through tourism	By 2023, create three tourist products based on the values of the Zeta River Valley, which enhance the local tourist market	• Establish a working group with representatives of tourism in the region • Based on the assessment of natural values, potential, and the tourist market, design three tourist products of the region • Establish a program of certificates for the implementation of tourist products • Establish a system of education of tourism service providers on reducing the impact on biodiversity and the environment • Design and implement a marketing campaign in the local market	• Number of included tourist companies • Designed three products, done environmental impact assessment, designed measures to mitigate the environmental impact of these products • Adopted education program • Number of tourist companies participating in the education program • Number of tourist companies that provide created products • Number of tourism companies that have introduced voluntary certificate and standard schemes	• Number of visitors and overnight stays • Satisfaction of visitors • Daily visitor consumption • Average duration of the visitor's stay • Level of income from tourism • The contribution of local tourism to national GDP • Number and amount of investments in tourism in the Park area • Number of employees in the tourism sector in the region • Percentage of locally produced food, beverages, and other goods and services offered to visitors
Assignment	**Mgmt. goal**	**Activities**	**Process indicator**	**Success indicator**

5.3.3. Cooperation With Actors

The classic approach to protected area management involved centralized management by a state institution and planning and management that did not consider the local population, their needs, attitudes, and opinions. Such an approach may be adequate in the case of protected areas covering large areas of wilderness in which there is no human presence or use. Nevertheless, for inhabited areas and where various activities occur, such as the River Zeta Nature Park, this is not a good approach. Moreover, the application of such an approach can lead to various conflicts and even prevent the achievement of protection goals.

Therefore, in this case, not only is it desirable but rather indispensable for local actors to be involved in the management of the Park. Establishing cooperation of the Park with local actors will ensure the achievement of trust and thus support, facilitate the removal of barriers, and can also improve financial sustainability. Adequate involvement of local actors is a win-win situation.

In the case of this Park, the recommendations for involving actors are as follows:

Involvement in decision making

The future governing body should have a steering committee. Besides the park director and representatives of the municipalities of Danilovgrad and Podgorica, this committee would include representatives of the main actors in this area – such as associations of agricultural producers, travel agencies or property owners, representatives of major industries (Lazine, Niksen), the Forest Administration, the Water, and Energy Sector (EPCG) as well as the civil sector. Their inclusion could harmonize plans and programs with the need to protect the Park, as well as ensure their support for the protection itself and the implementation of appropriate measures. Membership in this body would be on a professional basis (contractual).

Establishment of an advisory forum

The advisory forum would be a body that would bring together representatives of local communities, local businesses, NGOs. This body would advise in developing and revising the management plan and activities within the Park and could provide project ideas and other inputs for the Park's work. A contract would also regulate participation in the work of the body.

Establishment of thematic working groups

Thematic working groups would be formed following specific problems or initiatives and would bring together representatives of actors interested in the field. Specifically, we propose the formation of several working groups for:

- *Cooperation in the law enforcement system* – This group would bring together representatives of inspections, police, prosecutors, and the judiciary. The purpose would be to exchange information and joint planning of the protection of the Park space. A different segment would be the education of the police, prosecutors, and judges on the importance of nature protection, all with the aim of promoting the implementation of laws in this area and permanent prevention of illegal activities. We especially emphasize the role of the Police Academy, as well as the Training Center in the Judiciary and the State Prosecutor's Office, which can play a significant role in educating actors in the law enforcement chain.
- *Water management* – This group's work would be related to improving regulations that prevent and mitigate water pollution and the hydrological regime's regulation. Also, it would be the main channel of communication between the relevant services (inspections, ministries), the Park, municipalities, and economic entities (manufacturing industry, EPCG). Through this group's work, information would be shared, recommendations and advice given, and the introduction of standards and technologies and compliance with regulations related to water protection would be agreed upon. This group's work would also focus on improving the water regime of the Zeta (maintenance of watercourses, which includes: removal of sediments and partial deepening of the riverbed, mitigation of curves without significant changes in the course of the riverbed, earthworks and similar works on coastal landscaping and maintenance, earthworks in the inundation zone , clearing and mowing of plants, construction of regulatory and protective water facilities).
- *Protection of fish stocks* – This working group would gather sport fishers and other representatives of the local population interested in preventing poaching and restoring fish populations. Through this group's work, protocols for joint patrolling, monitoring, reporting and restoration of populations would be established.

- *Spatial protection* – The group would gather representatives of local governments; relevant ministries and inspections; the Real Estate Administration; local construction companies and associations of landowners; urban planners; and architects; who would work on harmonization of spatial planning documentation; preparing guidelines for sustainable urbanization; and incentives for natural habitats, and agricultural land on private estates.
- *Agriculture* – Whose role would be to work on networking of agricultural producers, creating a system of exchange and aggregation of products, branding, marketing, as well as designing education programs for producers. For the management of this working group, as well as all activities related to agriculture, a separate office should be established within the Park, which would eventually become self-sustaining (financed through branding schemes, social entrepreneurship, etc.).
- *Tourism* – Which would bring together local tourism businesses and work on establishing a tourist offer, introducing standards, marketing, promotion, and education to reduce tourism's ecological footprint. Moreover, this working group could eventually turn into a self-sustaining service within the structure of the Park.

If necessary, working groups can be formed to address some other issues which will be identified in due course. Membership in these groups would be on a voluntary basis and related to current issues, projects, or specific initiatives.

Delegating responsibilities to actors

The park as an institution is the central subject matter of protection of this area, but that does not mean that it is the only one, i.e., that it can and should take over all the burden of protection on its own. The reason for this lies in the expectation that the human and financial capacities of the Park will be severely limited; therefore, some activities should be delegated to local actors who would take responsibility for their implementation.

In this regard, the possibilities are as follows:

- *Support of the local population for protection services* – Mediated by the inclusion in the working group for the protection of fish stocks, where the local population (primarily sport fishers) would provide information, monitor the terrain, and participate in the prevention of poaching. This requires the establishment of standard protocols for monitoring, reporting, action procedures and the like. Over time, in addition to work on the protection of fish stocks, other endangered elements of biodiversity should be included, such as certain plant species, forests, birds and others.
- *"Citizens' science"* – or civic science is an approach in which citizens who do not have formal competencies in the field of research and monitoring and are not in the system of scientific research institutions perform research and monitoring and thus obtain information on biodiversity needed for the Park. Representatives of the NGO sector, local communities, sport fishers, students and the like can submit information on the distribution of species and habitats, changes in ecosystems and thus create the knowledge base needed for the Park's work, according to agreed protocols and with proper education. Establishing this type of cooperation would imply the initial education of stakeholders on research and monitoring protocols. A BioBlitz event has already been organized on Zeta once, which illustrates this type of approach.
- *Stewardship* – Refers to the transfer of responsibility for the management and protection of biodiversity to other entities. These schemes are popular in the context of agriculture, where property owners are obliged to introduce specific measures to protect nature on their property. For example, owners of holdings with valuable habitats or populations of keystone species undertake not to carry out activities on that part of the holding other than interventions to monitor and protect those habitats and species. In this way, responsibility for protection is delegated to property owners with appropriate incentives. This type of delegation would be under the Park's supervision and subject to some kind of contractual relationship.

Timely notification and dissemination

Through interviews with various actors, it was clear that there is currently no established system of timely notification of what is happening in this area. Those who are computer literate are informed through portals and social networks, but even that is on an individual basis and in accordance with personal interests. In particular, the local population feels that they have no power over what is happening to the space in which they live, and as such, they can neither provide adequate support to the Park nor feel it as something of their own.

Therefore, the Park should establish a system of regularly informing the public about everything that is happening. One aspect of dissemination can be online advertising through existing or new websites (we especially emphasize the portal *Ja volim Danilovgrad* [I love Danilovgrad], which is followed by a large number of people), but it is also important to introduce other communication channels acceptable to all actors. This includes information and advertising through local communities, the establishment of a printed newsletter of the Park, and the use of local media (radio, newspapers). Business representatives pointed out that it would be most convenient for them to receive notifications and calls via official email addresses. In the case of important decisions that may affect actors' activities (such as a total fishing ban, a ban on the use of motorboats, the introduction of new taxes, etc.), information must be placed on time and through communication channels that are adequate for target groups.

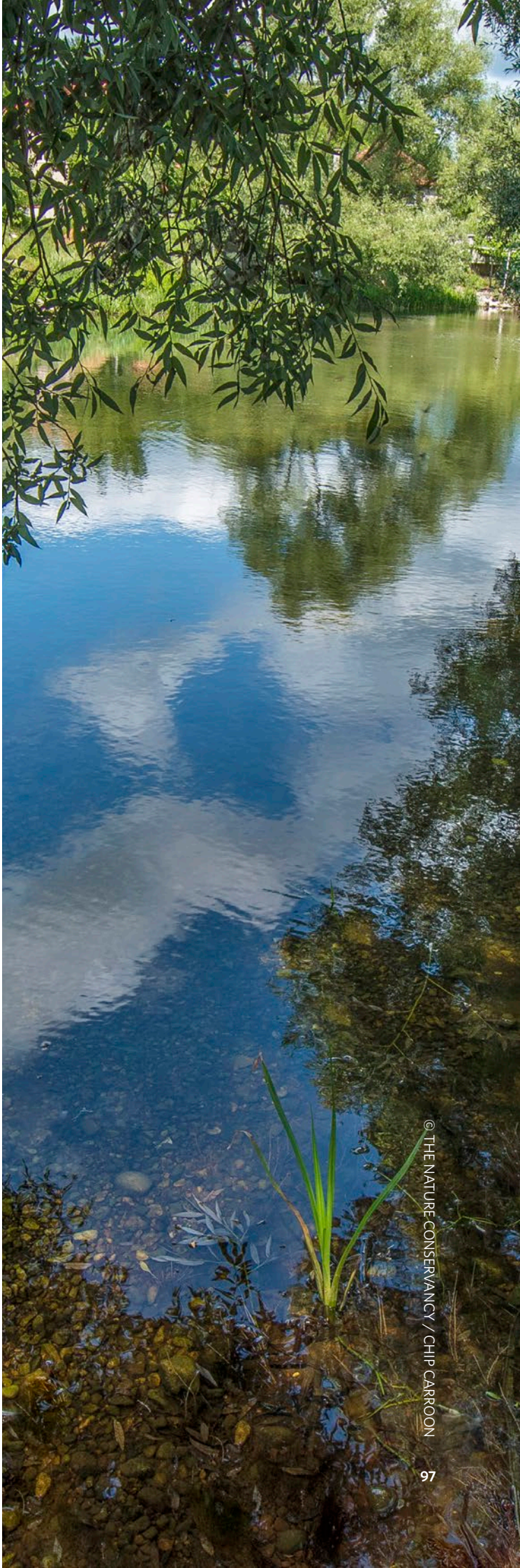
To begin with, we suggest that information should include what exactly a nature park is, what are the boundaries and zones within the Nature Park *River Zeta*, and what restrictions it brings to local activities. Through conducted interviews, it became clear that space users and locals were not familiar with these things. The opportunity should also be taken to present the short-term and long-term benefits of these bans.

In addition to the above, digital solutions for public participation should be introduced, such as e-surveys and questionnaires, which would ensure two-way communication between the Park and citizens and obtain additional inputs for the Park's work from the perspective of a wider audience.

Education

Education and raising public awareness of nature's importance and its protection are essential tasks of any protected area. Therefore, this Park should establish a unique program through which different target groups could be educated on important topics pertaining to this area's successful protection.

Initially, we suggest that the Park design and implement education on the environmental values of the area as well as the benefits that the population has from them. Over time, the Park should develop special educational programs with educational institutions, which would influence the blossoming of awareness among the youngest population.



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5.4. Funding

Achieving financial sustainability is a challenge for any protected area, so this Park will be able to provide funds from various sources to carry out its activities.

According to the *Nature Protection Act*, funds for the operation of protected area managers can be provided from the following sources:

- *Budget of Montenegro and local self-government units* - The municipality of Danilovgrad is currently planning to allocate funds for the basic operating costs of the Park. Work should be done to ensure that funds from public budgets are secured and allocated in advance, as well as that they are available promptly. These funds should ensure the continuity of the Park (salaries and contributions of employees, basic running costs).
- *Fees for the protected area consumption* – During the first year of operation, the Park should have established at least one funding mechanism from the fees, and it is recommended that for a start it be permitted for sport fishing, which would be defined in cooperation with sport fishers through conversations within the working group.

Over time, the potentials will be determined and the possibilities of introducing other forms of compensation will be defined. The Law on Nature Protection recognizes several types of fees, but not all of them are adequate to apply in this case. Recommendations on this issue are summarized in the following Table 11.

TABLE 11 - *Assessment of the adequacy of fees for the use of protected areas listed in the Law on Nature Protection*

The type of compensation as defined by the Law	Recommendation for Nature Park River Zeta
Entering a protected natural asset	The introduction of entry fees is not recommended as it can cause conflicts that would exceed financial gain.
Providing services to visitors (use of guides, sightseeing, parking, camping, and use of information and educational materials)	It is not applicable at this time as these services have yet to be established. Once developed, it becomes feasible to introduce fees.
Catering, sales, accommodation, and infrastructure facilities (restaurants, bungalows, temporary facilities, advertisements, substations, use of land for sports and other events)	Applicable and recommended. The municipality of Danilovgrad has facilities that can be used for these purposes - specifically, this includes the arranged space under the bridge in Spuž, which could be valorized by preparing a business plan and giving it under a concession agreement.
Rental and/or use of facilities and premises of the manager	Not adequate at this time.
Use of a protected natural resource sign	Not applicable at the moment, but it is in the context of branding, for which a system and cooperation with local actors should be established.
Organized wildlife sightings	Applicable - one of the central ecological values of this area is the ornitofauna which gives it the status of a potential IBA area. Bird watching, especially during migration, is an activity that can be developed in cooperation with experts and the NGO sector (Center for the Protection and Study of Birds).
Shooting feature and commercial films, videos, and commercials	Applicable. Some locations on Zeta have already been used for videos (e.g., the bridge on Tunjevo in Sergej Ćetković's video), so River Zeta can be promoted as such a destination.
Rental of sports and recreation equipment and boats (boats, kayaks, and bicycles)	Applicable, but the necessary equipment must be procured first. It is suggested that this be through donations and/or projects.

- *Donations* - Corporate donations can come from economic entities operating in this area, and contracts can regulate them. Sporadic donations from individuals or companies can contribute to the funding, but not permanently.
- Other sources under the law. Through conducted analyzes and interviews, potential sources of funding were identified and presented in Table 12.

TABLE 12 - *Other potential funding sources of the Nature Park*

Mechanism	Description
The polluter pays	The polluter pays principle is defined in the Law on Environmental Protection and the Law on Financing Water Management. In this case, it can be activated for manufacturing industries located in the Park area, quarries, Railways, farms, and other entities, with confirmation of the harmful effects on the nature of the Park. Municipalities may, with the prior consent of the Government, prescribe fees for the protection and improvement of the environment, depending on their needs and specific conditions. The modality of compensation should be adjusted both in relation to the type of damage to the environment and in relation to the economic strength of the entity to which it relates. Therefore, it should be formulated for each subject separately. Activation of this mechanism affects the business of economic entities because it can reduce their profitability. However, it can also encourage businesses to reduce pollution and initiate green technologies and practices in their business. The mechanism may be an opportunity for businesses to improve consumer perceptions. The disadvantages of the mechanism are the low political will to initiate it, the non-selective approach concerning polluters, the administrative procedures for activating the mechanism. This is not a permanent source of funding, as it can be used until pollutants introduce environmental practices and environmental standards.
Branding	Montenegro already has a policy for the quality of agricultural products and several schemes and standards. The park would, in this case, be a support to local farmers to introduce these schemes and standards. Besides, the Park could establish a memorable brand for agriculture, but also other products and services from its territory (souvenirs, tourist services, etc.), which would imply specific standards and a recognizable, unique visual identity. Financial benefits would be realized by selling the right to use the brand or taking a percentage of the branded products. The agricultural and tourism development offices we recommend in this document could be self-financing in this way. This mechanism's disadvantages are that its establishment requires a more extended period, cooperation with many users, establishing the market, and marketing the brand. Also, depending on the set standards, not all actors will be able to meet them. In addition to funding sources, this mechanism's benefit is reflected in adding value to local products and services and improving the market for them, which increases the motivation for sustainable business among local actors and their support to the Park.
Donations and sponsorships	Many economic entities have planned social responsibility schemes within their business, through which they donate funds to specific initiatives. The Park Manager should communicate with all economic entities on this issue and offer them some of his activities and project ideas that fit into the policy and image of these entities. These funds should, therefore, be clearly labeled and earmarked for specific initiatives of interest to the donor. It is also to be expected that good management of the park will motivate individual volunteer donations from various entities, including the citizens themselves. This is not a permanent or permanent source of funding, but it can undoubtedly support some program activities. We believe that the engagement of the working groups proposed by the structure of the governing body could be funded (cf. Sections 5.3.3, 5.5) because, through this, the companies would recognize their interest in getting involved in solving problems in the Park that affect them.
Innovative businesses	In cooperation with local communities, non-governmental organizations, science and technology parks, and the like, the Park can start various innovative businesses and start-ups. Some ideas include: collecting bio-waste on the Park territory and making firewood briquettes, making souvenirs, making applications and platforms (following the example of seljak.me or sjever.me). These mechanisms require start-up resources and human resources. However, establishing some kind of business incubator at the Park can permanently generate project and business ideas that can be a stable source of funding for the Park. The advantage is that there are many grant programs for such initiatives, through which initial resources could be provided.

Projects	It is to be expected that the projects will be the primary source of funding for the Park. Project management should be approached strategically - targeting grant schemes and donors that fund the types of activities that the Park will define in the management plan. Therefore, we suggest that the managing authority structure has exceptional service for projects that will deal with planning, writing applications, implementation, and evaluation of projects (Section 5.5). A list of international institutions supporting nature conservation projects is given in Section 2.8.3.7, so the Park should regularly monitor their programs and project calls. In addition to the above, donor funds that are not directly related to Montenegro but relate to internationally important biodiversity components, such as birds, should be targeted. Project ideas should be developed in collaboration with local actors.
Crowdfunding	This is a form of fundraising based on all interested individuals and legal entities (individuals, smaller or larger firms). Payments are voluntary, as are the amounts themselves, and collection is done through some online platforms such as Kickstarter, IndieGoGo, and others. By searching through these platforms, it can be noticed that this is a potential source of funding for conservation projects, especially if they are of some charismatic, rare, and endangered species. This is not a permanent form of funding but can be helpful for projects such as in situ protection of endangered species, filming of documentaries and educational films, support for the preservation of sustainable practices among the local population, and the like.
Payment for ecosystem services (PES)	PES schemes mean a formally established arrangement through which users of ecosystem services reward those who produce those services, which can be achieved in various ways - by direct payment or other forms of incentives. As an example, we cite the situation in which water users pay a certain fee to a protected area which, through habitat conservation, provides an ecosystem service of water retention and purification in the catchment area of the source and thus ensures its quantity and quality. In this Park case, the ecosystem services identified through the conducted research may be candidates for introducing PES schemes. It is important to note that incentives through PES schemes can be targeted at all those who provide the service - including property owners, for example, if their practices maintain biodiversity and thus the ecosystem service. Therefore, in addition to bringing some funding to the Park itself, PES schemes can also be an incentive to local actors to preserve biodiversity, as well as one of the mechanisms to encourage rural development.

For the first five years of the Park's operation, the founders should provide the primary means for work to ensure the functioning, continuity of work and create capacities within the Park.

During this time, other financial mechanisms need to be developed in order to diversify funding sources and maximize the financial independence of the Park itself.

- Stewardship schemes - Represent the delegation of the obligation to preserve important habitats located on private land to the owners of that land. For example, per these schemes, farmers would be obliged to maintain grassland habitats through mowing or grazing, to enclose their yards with a fence (however, they should not disturb part of the property if it is inhabited or reproduced by a sensitive species), to afforest, to maintain hedges and animal migration corridors, to cultivate autochthonous varieties and breeds and maintain genetic diversity, to maintain the riverbed, to educate visitors on their property about the importance of nature protection and the like. This type of management should involve contractual relationships and incentives for property owners to carry out activities. Property owners could be motivated by tax exemptions or other benefits.

- Mobilization of the local population and NGO sector for various activities such as clean-up campaigns, organization of promotional events, cultural manifestations, and the like

- Applying the knowledge and experience of the NGO sector to write projects and applications with donor institutions.

- Usage of existing internet and IT tools (portals, social networks...) for promotion and information.

5.5. Proposed Structure of the Nature Park

The management structure of the Park should reflect:

- Focus of action – What, according to the recommendations of this Analysis, should be the protection of biodiversity, water, space, development of agriculture and tourism (Section 5.2).
- The need for public participation – Which, per our recommendations, should be through the involvement of actors in the board of directors, the Park Council and the working group on current issues (5.3.3).
- Sources of financing – In terms of security from the public budget and opportunities for obtaining financing through projects and other schemes (5.4).
- National requirements (as defined in the Law on Nature Protection) as well as good practices regarding the organizational structure of the protected area.

With this in mind, we propose the following governance structure:

Board of directors

Composition: Representatives of municipalities (Danilovgrad and Podgorica), the Government, scientific research institutions, major businesses, and NGOs active in the region - a total of up to 10 members, who would meet periodically, and at least four times a year.

Task: Harmonization of protection and activities in the Park with development plans and initiatives outside the Park, providing guidelines and recommendations for work, approval of management plans and significant initiatives, supervision of the Park's work (approval of narrative and financial reports).

Funding: A contract would bind board members, and funding for their engagement should be secure, i.e., from the public budget.

Park Council

Composition: Representatives of the local population such as presidents of local communities, prominent individuals, presidents of associations of space users (e.g., landowners, agricultural producers, travel agencies, caterers, etc.), representatives of NGOs active in this area.

Task: Providing inputs and advice for the work of the Park, giving initiatives for projects, participation in the development of management plans and project applications.

Funding: A contract would bind council members, and funding for their engagement should be secure, i.e., from the public budget.

Park Director

Task: The Park director should deal with nature protection policy, planning, projects, manage affairs and supervise the work of employees, organize an employee education program. He/she/they is/are responsible for the work and quality of work of the Park.

Required competencies: Detailed competencies required for a Park Director are described in Annex 4, Table A4-1.

Funding: Salary and contribution costs should be provided within the basic funds for the operation of the Park (public budget).

Legal and administrative service

Task: Performing legal and administrative tasks, financial management of the Park.

Required competencies: Detailed competencies required to perform these duties are given in Annex 4, Table A4-2.

Funding: The service should have a minimum of two employees whose work will be covered through fixed assets for the Park's work (public budget). Strengthening of the service should take place in a planned manner, following the needs and expansion of activities, and funds for additional staff and activities can be provided from projects.

Project administration

Task: Systematic project planning, communication with donors and monitoring of project calls, preparation of applications, project implementation, and reporting.

Required competencies: Detailed competencies required to perform these duties are given in Annex 4, Table A4-2.

Funding: Funding for this service should be through projects.

Protection service

Task: Physical protection of the space, prevention of illegal activities, participation in monitoring and research, cooperation with local users of space, work with visitors.

Required competencies: Detailed competencies required to perform these duties are given in Annex 4, Table A4-3.

Funding: The protection service is the basis of biodiversity protection itself, and funds for its work should be provided from fixed assets (public budgets). Additional activities, strengthening of human and technical capacities can be afforded through projects.

Development service

Task: Development of management plans, design of activities for the protection of natural and cultural values and space, design and implementation of monitoring and research; designing and implementing education and promotion programs, cooperation with local actors.

Required competencies: Detailed competencies required to perform these duties are given in Annex 4, Table A4-2.

Funding: Fixed assets for work (salaries and contributions) should be provided from fixed assets (public budgets). Additional activities, strengthening of human and technical capacities can be afforded through projects.

Agricultural Development Office

Task: Encouraging sustainable agriculture in the region, education, and networking of producers, product branding, market creation, promotion of local products, social entrepreneurship.

Required competencies: Detailed competencies required to perform these duties are given in Annex 4, Table A4-2.

Funding: This office should be self-financing, i.e., to generate funds through the provision of advisory services, user contributions in the branding system, projects, and donations.

Tourism Development Office

Task: Education and networking in tourism, creation of new tourist products and services, setting tourist standards, promotion, and marketing of destinations, education of visitors, construction of tourist infrastructure of the Park (visitor centers, observatories, etc.).

Required competencies: detailed competencies required to perform these duties are given in Annex 4, Table A4-2.

Funding: this office should also be self-financing, i.e., to generate funds through the provision of advisory services, user contributions, projects, and donations.

Working groups

Working groups would be established as needed to address current issues. They would bring together relevant actors and be coordinated by employees of the Park's professional services. Funds for these groups' work would be needed for the organization of meetings and protection and education activities, which can be provided through the basic budget and projects.

To start the work of the Park, we propose the establishment of the following working groups:

Working group for cooperation in the law enforcement system

Composition: Representatives of the police, inspections, prosecutors, and the judiciary.

Task: Promoting the implementation of laws in the field of nature, environment and space use, joint actions in the field, education on nature and spatial protection, and legal processes.

Water management working group

Composition: Representatives of inspections, the Agency for Nature and Environmental Protection, processing complexes, the Ministry of Agriculture, Forestry and Agriculture, Water Administration, EPCG, property owners.

Task: Improving compliance with regulations related to water protection, the introduction of environmental standards and support for technology transfer, regulation of the hydrological regime, maintenance of the riverbed.

Working group for the protection of fish stocks

Composition: Representatives of sports and fishing companies, NGO sector, fisheries inspection, Ministry of Agriculture, Forestry and Water Management, research institutions.

Task: Joint action in the prevention of poaching, monitoring

and research of fish stocks, promotion, and education of the public.

Working group for spatial protection

Composition: Representatives of inspections, the Ministry of Ecology, Spatial Planning and Urbanism, municipal secretariats for urbanism, construction, and NGO sector.

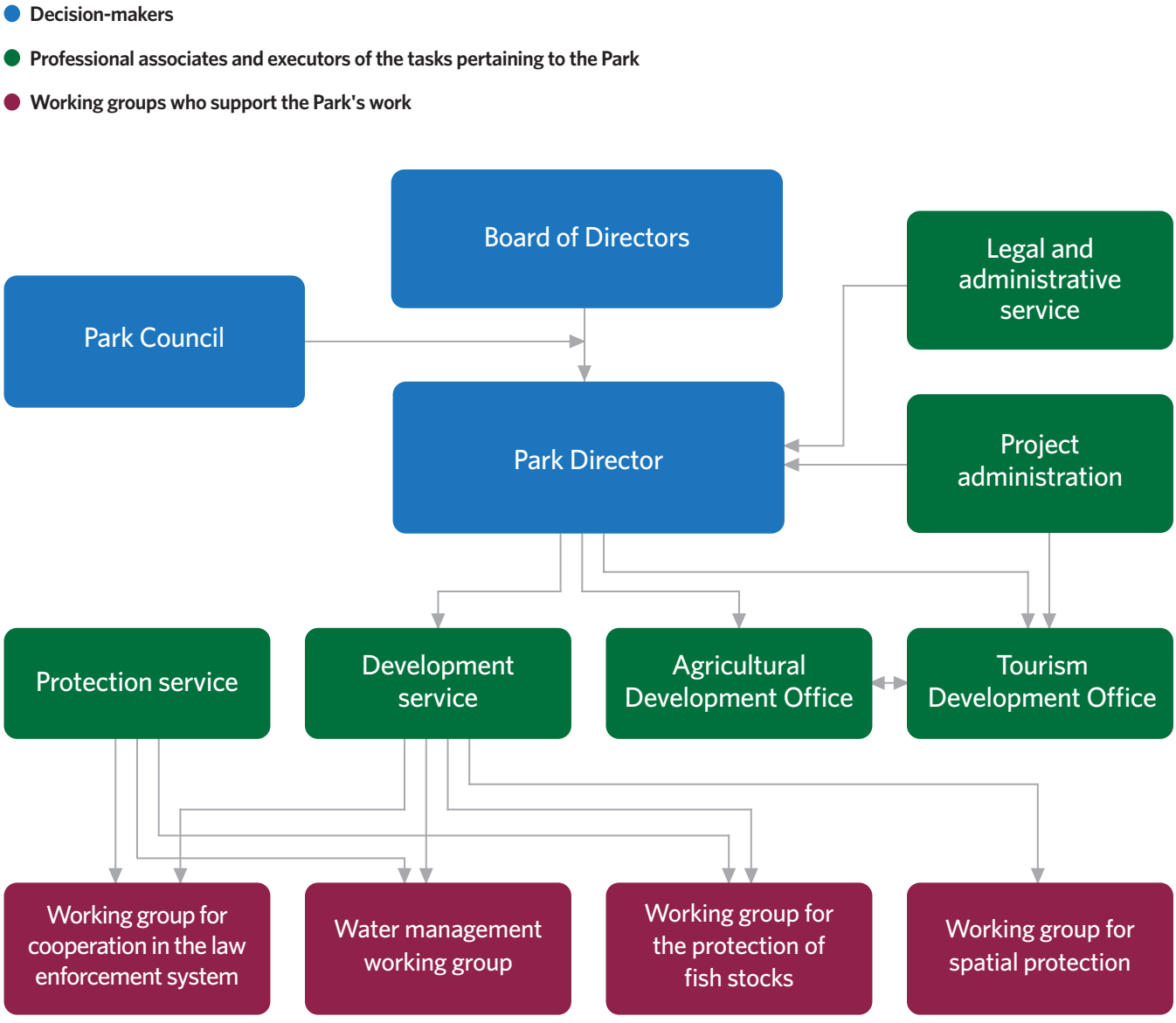
Task: Establishing sustainable urbanization in accordance with nature protection, preserving the aesthetic values of environmental quality.

The proposed structure of the management body is revealed in Figure 2.

This model should be adopted after the Development Strategy is defined (which will be an integral part of the Park Management Plan).

In the first year after Park installation, the minimum working structures to be established are the following: director (who would lead the Park, legal and administrative processes, prepare a recruitment and training plan, work on public information and finance and initiate the management plan), expert associate in the Development Service (who would be responsible for the process of drafting the management plan, initiating the monitoring program, organizing working groups and preparing the project grant) and two field supervisors (who would also participate in communication with local actors and monitoring programs).

FIGURE 3 - *Proposed structure of the Park management. The arrows show the mutual interaction between individual sectors.*



5.6. Estimate of the Basic Expenses of the Park

Table 13 gives an estimate of the primary expenditures of the Park. Some of the costs are one-time – such as equipping services with uniforms, vehicles, boats, computers. In contrast, others are current and relate to salaries and contributions, as well as the cost of materials and services that are paid every month. The full range of basic costs is shown below and the amounts of items are determined following market prices and information from neighboring protected areas.

TABLE 13 - *Estimate of primary expenditures of the Park*

Revenues	**Amount**	**Unit**	**In total**
Director	900	12	10.800
Expert associate for administrative and legal issues	600	12	7.200
Expert associate for projects	600	12	7.200
1st Supervisor	400	12	4.800
2nd Supervisor	400	12	4.800
3rd Supervisor	400	12	4.800
Expert associate for development	600	12	7.200
In total			**46.800**
Taxes and contributions	**Amount**	**Unit**	**In total**
Director	702	12	8.424
Expert associate for administrative and legal issues	469	12	5.628
Expert associate for projects	469	12	5.628
1st Supervisor	312	12	3.744
2nd Supervisor	312	12	3.744
3rd Supervisor	312	12	3.744
Expert associate for development	469	12	5.628
In total			**36.540**
Equipment	**Amount**	**Unit**	**In total**
Uniforms for supervisors	200	3	600
Radio connections	50	4	200
Computers	600	6	3.600
Vehicle	15.000	1	15.000
Motorboat	2.500	2	5.000
In total			**24.400**

Material expenses	Amount	Unit	In total
Office supplies	50	12	600
Chemicals	10	12	120
Fuel	300	12	3.600
Electricity	80	12	960
Water	20	12	240
Communal infrastructure and providing	10	12	120
Travel expenses	0,25	20.000	5.000
In total			**10.640**
Services	**Amount**	**Unit**	**In total**
Phone	150	12	1.800
Internet	30	12	360
Marketing	3.000	1	3.000
Maintenance	2.000	1	2.000
Working capital insurance	5	96	480
Representation	2.000	1	2.000
Post office	20	12	240
Office rental	300	12	3.600
In total			**13.480**
Financial expenses	**Amount**	**Unit**	**In total**
Taxes	200	1	200
Bank fees	20	12	240
Lawyer	500	1	500
Consulting	1.000	1	1.000
In total			**1.940**
IN TOTAL			**133.800**

Provided that the Park is allocated premises within the Municipality and does not need to have running costs such as communications, maintenance, etc., the minimum funds required to start work are provided in Table 14.

It amounts to 60,580.00 EUR for one year. Besides salaries and contributions for essential staff, this cost includes basic equipment for services, fuel for field trips, representation for organizing meetings with actors, marketing costs (printing of information and training materials), and unavoidable bank costs.

TABLE 14 - *Minimum required funds for the first year of operation of the Park*

Revenues	**Amount**	**Unit**	**In total**
Director	900	12	10.800
1st Supervisor	400	12	4.800
2nd Supervisor	400	12	4.800
Expert associate for development	600	12	7.200
In total			**27.600**
Taxes and contributions	**Amount**	**Unit**	**In total**
Director	702	12	8.424
1st Supervisor	312	12	3.744
2nd Supervisor	312	12	3.744
Expert associate for development	469	12	5.628
In total			**21.540**
Equipment	**Amount**	**Unit**	**In total**
Uniforms	200	2	400
Radio connection	50	4	200
Computers	600	3	1.800
In total			**2.400**
Material expenses	**Amount**	**Unit**	**In total**
Fuel	300	12	3.600
In total			**3.600**
Services	**Amount**	**Unit**	**In total**
Marketing	3.000	Q	3.000
Representation	2.000	1	2.000
In total			**5.000**
Financial expenses	**Amount**	**Unit**	**In total**
Taxes	200	1	200
Bank fees	20	12	240
In total			**440**
IN TOTAL			**60.580**

Annex 1 - The Interview Research Methodology

For the purposes of gathering information but also analyzing the attitudes and needs of local actors, in the period of drafting the document (June 2020 - April 2021), a survey was conducted. The primary research method was to interview relevant actors. The interviews were semi-structured, with open-ended questions, which are provided below.

Needs and interests:

- What are your activities?
- How are they connected to this space? (do they depend on it, or affect it, or both)
- Does the state of nature in this area affect your activities? If yes, in which way exactly?
- Do you expect the establishment of the Park to have an impact on your activities?

Attitudes:

- How important is Zeta to you? What does the river mean to you?
- How would you describe Zeta? What do you think are the main features of this natural area?
- Do you have any problems related to this space?
- What do you see as the positive outcomes of establishing the Park?
- What do you see as the negative outcomes of establishing the Park?

Power:

- Did you participate in any way in the establishment of the Park? How?
- Do you think you should be part of the management of the Park? How?
- How do you get information about the Park? What constitutes an adequate channel of communication and information?

Connection with other actors:

- Do the activities of some other actors affect your activities? How
- Do you have cooperation with any other actors in this area? How?
- Is there a group of actors that you would work with if you had the chance? Which one?

Perceived value:

- What do you think are the most important elements of the nature of the Zeta River Valley?
- What are the biggest threats to the nature of the Zeta River Valley?

Perception of the Park:

- Do you think that the establishment of the Park will solve the environmental problems in the region?
- Do you think that the Park can have the following effects:

Influence	Significant negative effect --	Small negative effect -	No effect 0	Small positive effect +	Significant positive effect ++
Ecological (on species, habitats)					
Economic (on income, individuals, households, living standard)					
Social (community well-being)					
Social (knowledge and education)					
Social (fair distribution of benefits from nature)					
Cultural (connection with nature)					
Cultural (increased number of tourists)					
Health (mental health, sense of well-being)					

- What obstacles can the Park encounter in its work?
- What do you think should be the priority activities of the Park?
- How do you think the Park should be funded? Do you have a proposal for funding sources?
- What do you expect the Park to do for you?
- What can you contribute to the Park?

Questionnaires were completed through individual interviews with stakeholder representatives (one-on-one), be it a direct contact or telephone. The interviews lasted about 1 hour and 15 minutes on average.

The preliminary list of respondents was made in consultation with the Municipality of Danilovgrad, and additional respondents were identified through the consultation process itself. A total of 24 representatives of the following groups of actors were examined:

- Relevant institutions at the level of the Municipality of Danilovgrad (secretariats, Society for breeding, protection and hunting of venison and fish, Communal Inspection and Police, Forest Administration - Danilovgrad regional unit)
- Local population (local communities Kosov Lug, Slap, Spuž)
- NGOs active in this area - (Rural-Urban, Podglavice, Montenegrin Society of Ecologists, Center for Protection and Study of Birds, Mountaineering Society Ćutuk, Mountaineering Society Prekornica).
- Agricultural producers (Donkey farm Martinići, Garden Ekologika Mareza, the farm of Miga Bojović, farm Radulović, Lavender plantation Sunčana dolina, the farm of Srđan Radeč, Vinarija Ražnatović).
- Industry (*EPCG, Lazine Dairy, Agromont Poultry Farm, Niksen-Čavor Pig Farm*)

Interviews were analyzed for keywords to assess the respondents' attitudes and perceptions of the Park (results can be consulted in Chapter III). Other information obtained through interviews was used in the document where appropriate (e.g., proposals for funding sources).

Annex 2 - Ecosystem Services Assessment and Evaluation Methodology

An2.1 Selection of Ecosystem Services for Analysis

The methodological approach of integrating ecosystem services into development planning developed by the German organization GiZ (2018) was used to assess and evaluate ecosystem services in the Nature Park *River Zeta*. Consistent with this methodology, the following steps have been undertaken:

Based on the region's biophysical characteristics (presence of certain ecosystems and species), a list of all potential ecosystem services that this area can provide has been made.

The next step was to evaluate the link of these ecosystem services with different activities and sectors present in the region (different forms of food production, tourism, construction, etc.). This was done in the following way: a strong connection obtained a score of 2, but if the link exists albeit it is weak, a score of 1 is obtained, and, finally, if there is no link at all, a score of 0 is given. The score is related to assessing whether a particular activity depends on or affects the ecosystem service. It is important to note that in this context, it is not vital whether the link is positive (i.e., whether, for example, a particular ecosystem service contributes to a sector – say, water quality to agriculture) or negative (e.g., agricultural sector negatively affects water quality), but only whether the connection exists at all.

Besides, a score from 0 to 2 is used for estimating the degree of vulnerability of the ecosystem service, how many people benefit from such a service, and whether the service is significant to decision-makers and the general public. The grades were grounded in expert knowledge. The purpose of these assessments was to identify ecosystem services of primary importance, that would be analyzed in more detail. The results are shown in a table available at the following link: Table of priority ESs.

Based on all this, the services with the highest total number of points were singled out as priorities. They include food, animal feed, regulation of species reproduction, opportunities for recreation and tourism, and habitat for wild species of plants and animals. They are analyzed in more detail within Section 4.4.

An2.2 Social Evaluation of Ecosystem Services

During the interviews, respondents were also asked to give their opinion on individual ecosystem services. Respondents were presented with a complete list of all potential ecosystem services, and they gave a score of 0, 1, or 2, thereby indicating how important the service is in this area. The stakeholder group's mean score was later calculated, and these values were used in the analysis (Section 4.3).

An2.3 Economic Evaluation of Ecosystem Services

A preliminary economic evaluation was performed for priority ecosystem services. It is important to note that no data could be used for accurate valuation, so the following estimates should be taken with a grain of salt. Indeed, this analysis further indicates the importance of ecosystem services and their economic potential and provides a recommendation for further research and analysis that could be conducted through the future work of the Park.

An2.3.1. Ecosystem Service: Food

With respect to data availability, this section provides the valuation of food of animal origin, which has a direct market value, and the market price method was used. Market research identified the prices of selected products, and the quantities were estimated according to official statistics. Multipliers and indirect effects of production, income, and employment are not included, nor are amounts adjusted for the effects of subsidies and other price changes.

The table below presents the basic components of the model and data sources.

Ecosystem service		Component	Indicator	Data sources used to estimate the value
Food	Production of animal origin	Milk	Production value	Study of protection and establishment of the protected natural asset *River Zeta* / market research
		Sheep	Production value	Study of protection and establishment of the protected natural asset *River Zeta* / market research
		Cattle	Production value	Study of protection and establishment of the protected natural asset *River Zeta* / market research
		Poultry	Production value	Study of protection and establishment of the protected natural asset *River Zeta* / market research
		Eggs	Production value	Study of protection and establishment of the protected natural asset *River Zeta* / market research
		Goats	Production value	Study of protection and establishment of the protected natural asset *River Zeta* / market research
		Pigs	Production value	Study of protection and establishment of the protected natural asset *River Zeta* / market research

The primary value of food of animal origin is estimated at 1,573,845.00 euros in 2019, where the most significant share is played by livestock components - pig breeding and egg production (30%) and milk production (28%). This value should be taken to indicate the ecosystem service's value until detailed field research is done. Due to the lack of data, the analysis included neither bee nor fish products nor direct investments from the agro-budget in the area covered by the Park.

Also, in addition to animal origin products, plant origin products have a substantial share in this service. The development of field and vegetable production in the municipality of Danilovgrad is indicated by data from 1,548 ha of arable land on the territory of the entire municipality, most of which belongs to the Zeta river's valley.

Large factories for food production (*Niksen-Čavor, Lazine, Agromont, Katunjanka, Mlini...*) with their products can only be partially involved in calculating the value of ecosystem services. However, they primarily form the purchase market of products from the Park area. On account of their demand, it can be concluded that there is a significant lack of supply of products coming from the territory of the Park. For example, 1/3 of the purchased milk is procured by the Lazine dairy from a subcontractor located in the Park area and 2/3 from other Montenegro municipalities. The situation is similar to the purchase of corn by *Mlini*. This data supports the fact that there is room for improving agricultural production in the Park area and enhancing links in the food production chain.

Trends in agricultural production indicate the progress of this sector. The Park can use its chance to preserve biodiversity through quality schemes of agricultural and food products and the protection of agricultural and food products to some of the existing designations of origin that guarantee the protection of small producers and traditional production methods, which, in turn, secures the conservation of agroecosystems.

An2.3.2. Ecosystem Services: Animal Feed

As agricultural land, which includes arable land, orchards, and pastures, makes up almost half of the Park, food production, together with animal feed production, is the most significant economic activity in the Park. It finds its placement directly with cattle breeders from the Park area, and from the interviews with them, it turned out that it is in deficit concerning their needs. There is also a larger producer of animal feed in the Park - the Agromont factory with an annual production of 25,000 tons, while the capacity of the factory is about 50,000 tons of animal feed per year, which is the estimated need of domestic farms for these goods. The factory imports raw materials for the main product and cannot be included in the service evaluation. However, it can be a market for the placement of small-scale producers from the Park area.

The economic valuation of this service would be calculated through the market price method. This analysis requires data on crops grown, production volume, yield per hectare, product placement, and subsidies (if any). The prices of animal feed on the market are stable and range from 15 euros for corn to 20 euros for fodder plants.Natural fodder is also a component of this service. The price of hay in bales is 14.50 euros. In addition to improving animal feed production by evaluating this component, the pastures within the Park, which are important grassland habitats, would be additionally preserved.

An2.3.3. Ecosystem Services: Prospects for Recreation and Tourism

The potential for the ecosystem service *Recreation and tourism* is difficult to measure at the moment since measures against the spread of COVID-19 have put heavy constraints on the movement of both domestic and international tourists.

According to preliminary data from *MONSTAT*, in the first half of the year, 108320 tourists stayed in Montenegro in the form of collective accommodation, which represents a decrease of 78.5% compared to the same period last year. In other words, during the current year, there was a decrease in the number of arrivals of both domestic (53.2%) and foreign tourists (81.6%) in collective accommodation in comparison to 2019. In the structure of total stays in collective accommodation, the most significant number of arrivals was recorded in coastal municipalities (63.1%) and then in Podgorica (20.8%). The municipality of Danilovgrad has a negligible percentage of tourist arrivals (Data source: *MONSTAT* 2020).

However, this service still has outstanding potential. Due to the pandemic of COVID-19, tourists are keen on outdoor activities (hiking, cycling, sport fishing, i.e., those activities that allow little or no contact with people), which gives primacy to protected areas with their offer. In the case of *River Zeta* Park, tourism would be a way to enable the "export" of products from the Park area and to create a closed system of food production and marketing in the Park area

An2.3.4. Ecosystem Services: Regulation of Species Reproduction and Habitat for Wild Plant and Animal Species

The available monetary methods cannot accurately estimate the values of these two services, and those in the total value of services from a particular area are commonly underestimated. The proposed methods for their valuation, depending on the available data, are production functions, cost substitutions, and loss avoidance costs. The *Production function* method provides an answer to how much value is created due to ecosystem service. The *Cost replacement* method, however, answers the following question: How much does it cost to replace an ecosystem service. Finally, the *Loss avoidance* cost method queries how much cost is avoided due to the service offered by the ecosystem? In all these methods, it is crucial to avoid duplication of values (for example, calculating the value of fish as a commodity on the market and as part of an ecological process). In cases where certain species have recreational value, experimental choice methods or the approach of discovered preferences such as travel costs can also be used.

When no data are available for the first assessment of these services, the Benefits transfer method is used, i.e., monetary assessment based on studies done in other areas. Basically, the method estimates values for one context by adjusting values from other similar contexts. This approach would be appropriate for the Park because the method is flexible, requires less time, and lower research costs compared to the methods mentioned above. It should be emphasized that this method must be used for sites with similar biophysical and socio-economic circumstances in order to avoid reduced accuracy and validity of the data.

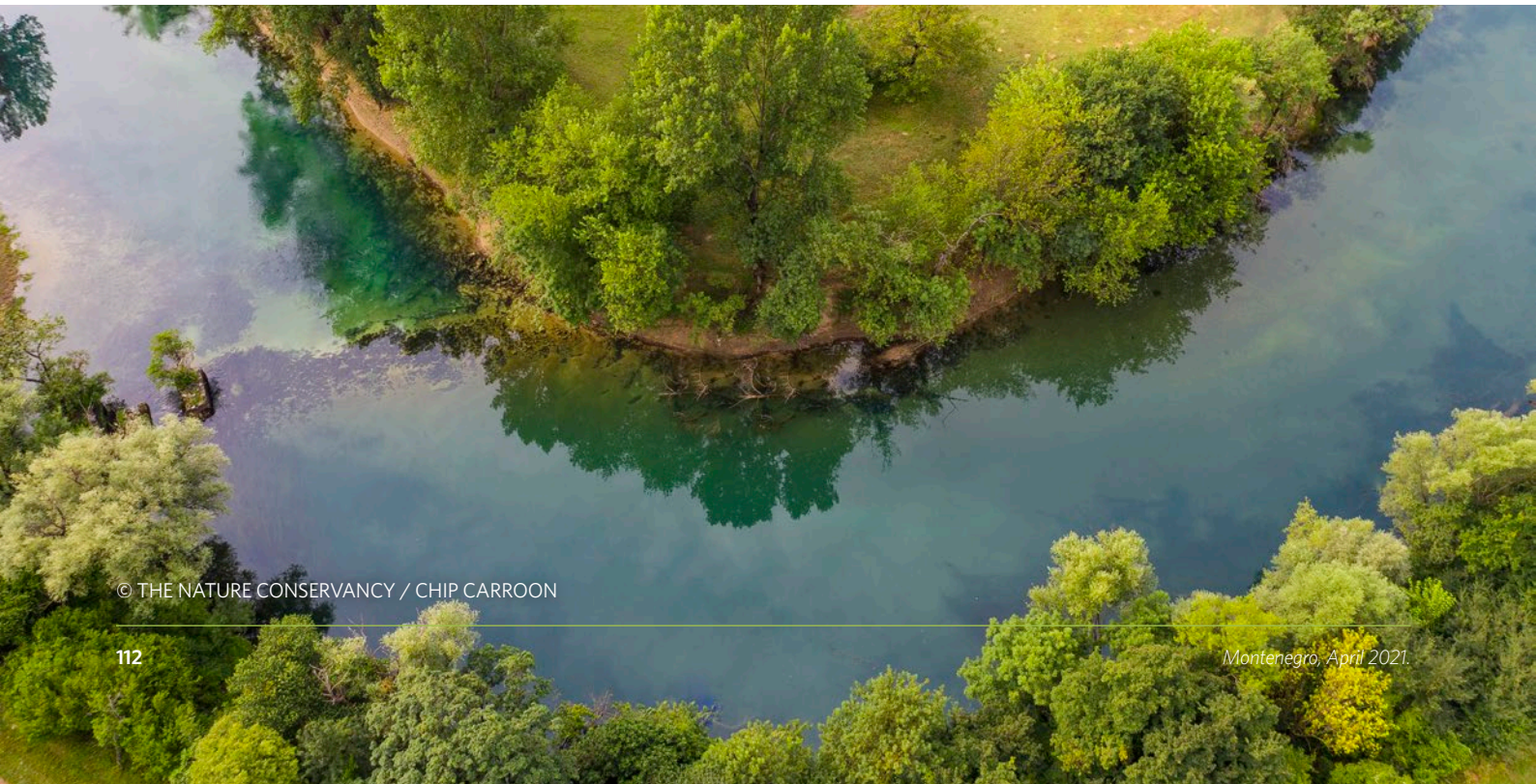
Annex 3 - A Tool for Improving Management Effectiveness

Management Effectiveness Tracking Tool (*METT*) was developed by WWF (2007) and is now used worldwide as a practical tool to assess the effectiveness of protected area management quickly. This tool is also used by major donor agencies – such as the Global Environmental Facility (*GEF*) and its implementing agencies, the World Bank and UNDP, as an indicator of success for their projects. This tool, of course, has limitations and should not be the only option for evaluating management performance. However, it is undoubtedly recommended to the Park Manager as a sound basis for reviewing the management situation.

The *METT* contains general information on the protected area (Form 1), assessments of major threats (Form 2) as well as assessments of various aspects of management (the *METT* form itself). The assessment can be carried out by anyone related to the protected area, but the same person/persons should be included in the periodic evaluation for consistency in the assessment.
By allocating scores for certain aspects of management, the sum is obtained, and the manager for the next period can define as a goal the extent to which he wants to increase that sum and in which aspects of management.
In this document, we have given the first *METT* estimate, based on which it can be seen that the current sum is 14 (follow the link – *METT*). This is a low value, which is to be expected considering that the Park is still in the process of being established, and that at the time of writing this document, there is no management structure, management plan, employees, budget, etc. Nevertheless, based on that, we gave recommendations to the Park to establish basic management mechanisms by the end of the first year and thus increase its *METT* sum to 30. We also gave recommendations to increase the *METT* sum to 84 by the end of the first five-year period defined by the management plan. These values should be set as management goals.

A *re-METT* evaluation should therefore be done after the first and after the fifth year of the Park's operation, and to check whether these management improvement objectives have been achieved, and if not why they have not, and to be one of the foundations for adaptive management.

Forms 1 and 2 are below, while the *METT* form itself is available as an Excel file that is part of this document and can be accessed here.



Montenegro, April 2021.

FORM 1 – GENERAL DATA ON THE PROTECTED AREA				
Name, position, and contact person who used the METT	Marija Vugdelić, consultant, NGO Nexus m.vugdelic@t-com.me, within the preparation of *Socio-economic analysis for the Nature Park River Zeta*, a project financially supported by *The Nature Conservancy*			
Evaluation date	December 2020			
Name of the protected area	Nature Park *River Zeta*			
International WDPA code (available at www.protectedplanet.net)	555691975			
Category	**National**	**IUCN**	**International status**	
	Natural Park	**V**	**KBA**	
Country	Montenegro			
Location	Municipalities of Danilovgrad and Podgorica			
Proprietorship	**State**	**Private**	**Local communities**	**Other**
	+			
Upravljačko tijelo	In the process of establishment (*Agency for Management of Protected Areas of Podgorica*)			
Area (ha)	12173.6			
Number of employees	Full time		Temporary	
Annual budget without salaries and employee contributions				
The central values for which the area is protected	• Population of soft trout in the upper reaches of the river Zeta, • Potential IBA area, • The characteristics of the areas that can nominate it for the status of Areas of Special Conservation Importance (ASCI) that make up the EMERALD network, • Typical wet ecosystems of the lower course of the river Zeta (zones of Kosovo Lug, Martinić, Ždrebaonik, and others); the Moromiš wetland with the river Brestica which connects it with Zeta			
The two main goals of protection				
Goal 1	Biodiversity and water protection			
Goal 2	Local development			
Number of people involved in filling the METT	1			
Including:	Manager of NPRZ	Employee of NPRZ	Other incumbents	NGO
	Local community	Benefactors	External experts	Other
			+	
International status				
UNESCO World heritage				
Date of entry	Site name	Surface	Coordinates	
The criterion for which the status was obtained				
Ramsar Site of International Importance				
Date of entry	Site name	Surface	Coordinates	
The criterion for which the status was obtained				
UNESCO Man and the Biosphere				
Date of entry	Site name	Surface	Coordinates	
The criterion for which the status was obtained				
Other				
Key Biodiversity Area (KBA)	2000ha of the area has KBA status			

FORM 2 - THREATS TO THE PROTECTED AREA

1. Residential or commercial development in a protected area

Threats from settlements and other forms of land use with significant impact other than agricultur

Title	High	Medium	Low	Not applicable
1.1 Construction of residential buildings and settlements	+			
1.2 Commercial and industrial areas	+			
1.2 Tourist and recreational infrastructure			+	

2. Agriculture and aquaculture in the protected area

Threats from agriculture due to intensification of activities

Title	High	Medium	Low	Not applicable
2.1 Growing annual or perennial plants		+		
2.1a Drug cultivation				+
2.1 Forest plantations				+
2.4 Animal farms and grazing		+		
2.4 Aquaculture			+	

3. Energy production and mining in the protected area

Threats from the production of abiotic resources

Title	High	Medium	Low	Not applicable
3.1 Oil and gas exploitation				+
3.2 Mining and quarrying		+		
3.3 Energy production, including from hydro sources	+			

4. Transport and service corridors in the protected area

Threats from transport corridors and the vehicles that use them, including animal mortality on the roads

Title	High	Medium	Low	Not applicable
4.1 Roads and railways (animals killed on roads)	+			
4.2 Transmission systems (electrical, telecommunication, etc.)			+	
4.3 Waterways and canals			+	
4.4 Airways				+

5. Biological resource use and harm within a protected area

Threats from consumptive use of "wild" biological resources including both deliberate and unintentional harvesting effects; also persecution or control of specific species (note this includes hunting and killing of animals)

Title	High	Medium	Low	Not applicable
5.1 Hunting, killing and collecting terrestrial animals (including killing of animals as a result of human/wildlife conflict)		+		
5.2 Gathering terrestrial plants or plant products (non-timber)			+	
5.3 Logging and wood harvesting			+	
5.4 Fishing, killing and harvesting aquatic resources	+			

6. Human presence and harassment in the protected area

Threats from non-direct exploitation activities that alter, destroy or disturb habitats and species

Title	High	Medium	Low	Not applicable
6.1 Recreation and tourism		+		
6.2 War, demonstrations, military exercises				+
6.3 Research, education			+	
6.4 Protected area manager activities (eg infrastructure construction, vehicle use, etc.)				+
6.5 Vandalism, intentional destructive activities			+	

7. Modifications of natural systems

Threats from other activities that convert or degrade natural habitats or change the way the ecosystem works

Title	High	Medium	Low	Not applicable
7.1 Fires (natural and intentionally started)	+			
7.2 Dams, hydrological regime modifications, water management/water use	+			
7.3a Increased habitat fragmentation	+			
7.3b Isolation from other habitats (e.g., deforestation, river barriers without adequate migration corridors)	+			
7.3c Other edge effects	+			
7.3d Loss of key species (e.g., top predators, pollinators...)	+			

8. Invasive and other problematic species and genes

Threats from species that have or are expected to have a negative effect on native biodiversity

Title	High	Medium	Low	Not applicable
8.1 Invasive allochthonous plants			+	
8.1a Invasive allochthonous animals			+	
8.1b Pathogens (introduced or native but with new / stronger influence)			+	
8.2 Introduced genetic material (e.g., GMO)				+

9. Pollution

Threats from the point or diffuse sources

Title	High	Medium	Low	Not applicable
9.1 Municipal wastewater	+			
9.1a Wastewater from protected premises (e.g., hotels, restaurants, visitor centers)	+			+
9.2 Wastewater from industry, mining, military activities				
9.3 Pollution from agriculture				
9.4 Garbage and solid waste	+			
9.5 Air pollution			+	
9.6 Energy pollution (e.g.,. overheating, light, radiation...)			+	

10. Geological threats

Title	High	Medium	Low	Not applicable
10.1 Volcanoes				+
10.2 Earthquakes, tsunamis			+	
10.3 Avalanches, landslides				+
10.4 Erosion, sedimentation		+		

11. Climate change and extreme weather conditions

Title	High	Medium	Low	Not applicable
11.1 Displacement and habitat changes			+	
11.2 Drought	+			
11.3 Extreme temperature	+			
11.4 Storms and floods	+			

12. Specific cultural and social threats

Title	High	Medium	Low	Not applicable
12.1 Loss of cultural ties, traditional knowledge, and practices of space use	+			
12.2 Natural degradation of cultural goods	+			
12.3 Intentional destruction of cultural heritage	+			

Annex 4 - Proposal of Required Competencies for Staff

Since protected areas represent a link between nature and people, protection and development, their management requires a wide range of knowledge and competencies, as well as multidisciplinarity. The lack of adequate staff is a problem that protected areas face everywhere globally, and in Montenegro, this is especially the case given the lack of specific educational programs that would educate and improve staff for this context.

Therefore, due to the need to professionalize jobs in protected areas, IUCN has developed a guide to competencies in protected areas (Appleton 2016), which is used here to prepare a list of required competencies and knowledge of the future staff affiliated with the Nature Park River Zeta. This list should be used as a guide for the following:

1. **Staff recruitment** – The list of competencies can be used to prepare vacancies, define job tasks, and systematize jobs in the management structure.

2. **Preparation of institutional training programs for staff** – Because it is possible to assess which competencies and knowledge are missing and based on that to design training programs.

3. **Self-evaluation of employees** – Based on whether they can independently develop the skills and knowledge they need.

In accordance with the *IUCN* document's guidelines, lists of required competencies and knowledge have been prepared for three levels of employees – management, professional associates, and supervisors.

TABLE A4-1 - *Competences and knowledge required for Park management*

Category of work	Field of work	**Employee level:** Management (director, heads of services, chairman of the board)	
Planning and management	Nature protection policy, planning, and projects	**What an employee should do:**	**Required competencies:**
		Develops and prepares project proposals and plans for the protected area	Potential sources of funding, application formats of various benefactors
		Implementation of projects and plans	Project management, project monitoring, and evaluation system, application of process monitoring indicator
		Infrastructure construction project management	Legal framework for infrastructure construction, tender and contract award procedures, the concept of environmental impact assessment, and relevant legislation
		Coordination of activities in the Park with other users of the space	Knowledge of different actors, property rights, methods of use, relevant regulations
	Leadership and development	Improving the institutional capacities of the Park	Principles of institutional capacity development, provision of financial resources, the national system of support to protected areas
		Establishing procedures for strategic, planned, and adaptive management of the protected area and monitoring of success	Strategic and planning management, principles of adaptive management, principles of process monitoring
		Establishing cooperation with other organizations	Knowledge of all actors related to the Park, their responsibilities, roles and rights, methods of communication and networking, building partnerships
		Establishing participatory Park management	Knowledge of actors, principles of public participation in management
		Promotion and implementation of innovations in Park management	Acquaintance with the latest developments and trends in protected area management, examples of good practice, new tools and technologies that can help manage
		Effective knowledge and information management	Principi i prakse upravljanja znanjem i informacijama, informacioni bezbjedonosni protokoli, pravni zahtjevi po pitanju pristupa i korištenja informacija, uspostavljanje sistema za cuvanje i pristup informacijama
		Introduction of standards in the management system	Acquaintance with relevant standards (e.g., ISO 9000, ISO 14000, ISO 24000)
	Human Resources management	Development of organizational structure and systematization	Knowledge of organizational structure norms, required competencies
		Ensuring a stable, healthy, safe working environment	Knowledge of legislation in the field of labor and labor rights, safety at work
		Preparation and implementation of capacity building programs	Assessment of staffing needs, training and learning techniques, range of capacity improvement options

		Supervision, evaluation, and motivation of employees	Work-related procedures, ways to assess work success, motivation techniques, communication, conflict resolution
	Financial management	Preparing a business plan for the Park	Knowledge of business planning principles, relevant legislation, policies and practices, options for diversification of funding sources
		Preparation of annual budgets, financial plans	Relevant legislation and standards for budgeting, financial planning, and accounting procedures
		Financial reporting	Relevant legislation and reporting and audit procedures
		Providing secure sources of income for the Park	Relevant legislation, rules, and norms, potential funding sources, policies and criteria of potential donors
		Negotiation and supervision of contracts and concessions	Relevant legislation, rules and norms, contract details
	Administrative duties and reporting	Reporting on the work of the Park	Demands and report formats, analytical skills
		Providing documentation	Meeting protocols, communication and meeting management techniques, document storage and access systems, legal requirements for storage and access to information and documents
		Supervision of the work of the Park and reporting on the work	Acquaintance with the performance monitoring systems (e.g., METT), national monitoring and reporting requirements
	Communication and Cooperation	Maintaining effective communication with employees, and other actors and partners of the Park	Communication techniques
		Conflict resolution	Negotiation techniques and conflict resolution
Applied nature protection	Biodiversity protection	Manages key habitat and species protection programs	Knowledge of environmental aspects, best practices, and approaches in protection
		Management of programs for sustainable use of natural resources in the Park	Knowledge of the potential of natural resources, the principles of sustainable use, relevant regulations
	Law enforcement	Manages the development and implementation of strategies, plans and operational procedures for law enforcement in the Park	Poznavanje relevantne legislative, sistema sprovođenja zakona
		Coordinates law enforcement with other relevant services and institutions (inspections, police, prosecution, judiciary)	Knowledge of the role and competencies of other institutions, procedures for joint action
		Manages the adoption of regulations at the Park level	Knowledge of legislation and legal procedures
	Local communities and culture	Manages the development of plans and strategies for the involvement of local communities in the work of the Park and takes care of their implementation	Knowledge of regulations, practices, and approaches for public participation, knowledge of the specifics of local communities, their interests, the principles of good governance and management, participatory planning techniques, communication skills, negotiation, conflict resolution

		Enables activities that support the sustainable development of local communities	Knowledge of the needs of local communities, sources of support for economic development
	Tourism, recreation, and visiting	Manages the development of plans for tourism, recreation, and visits to the Park	Knowledge of the tourism sector, relevant regulations, and strategies, options for tourism activities in the protected area
		Establishment of infrastructure for visitors (visitor centers, info points, etc.)	Regulations and processes for the construction and installation of tourist infrastructure, principles, and practices for reducing the ecological footprint of tourist infrastructure, procurement procedures, contracting and supervision of the construction of tourist infrastructure
		Development of business plans and payment systems for tourist products in the Park	Principles of business planning and budgeting, economic analysis, pricing, relevant legislation
		Establishing partnerships and agreements with local communities and businesses for the development of tourism and recreation	Acquaintance with the local economy and other opportunities, the principles of small business development
	Awareness-rising and education	Manages the development of the Park's communication strategy	Principles, practices and techniques of education, awareness raising and social marketing, participatory planning process
		Manages the development of the image and brand of the Park	Principles of branding for protected areas, marketing techniques
		Manages the design and implementation of campaigns on current issues	Campaign implementation techniques
		Manages the development of a media strategy for the Park	Principles of cooperation with media, knowledge of the main media actors and programs

TABLE A4-2 - *Competences and knowledge required for professional services of the Park*

Category of work	Field of work	**Employee level:** Professional associates (from different services)	
Planning and management	Human Resource Management	**What employees should do:**	**Required knowledge:**
		Preparation of work plans and monitoring of their implementation	Objectives, expected outcomes of the management plan
		Preparation and implementation of training and education plans	Training needs assessment techniques, ways to provide training and education, methods of assessing the success of training programs
	Financial management	Keeps records of income and expenses, accounts, and inventory	Familiarity with regulations in the field of accounting, accounting, and other administrative systems of the organization
		Preparation of financial and material reports	Rules and requirements regarding reporting, auditing, accounting
		Conducts procurement procedures	Acquaintance with public procurement regulations
		Preparation of budgets, and revenue and expenditure plans	Acquaintance with budgeting principles, material needs of the Park

	Administrative duties and reporting	Preparation of analytical and technical reports and assessments	Familiarity with the structure of the content of specific reports and other documents, analytical skills
		Prepares official reports and projects	Acquaintance with reporting requirements and report formats
		Maintains documentation	He knows the systems of keeping and keeping documents, information management
	Communication and cooperation	Presents plans, programs, and work results both in writing and orally	Acquaintance with presentation techniques, different communication channels, and audio-visual aids for effective communication
		Conducts training and education programs for employees	Pedagogical and didactic methods, good knowledge of the topic of training and education
		Facilitates meetings and workshops	Techniques of facilitation and managing meetings and workshops, acquaintance with the principle of participation, acquaintance with protocols and procedures of official meetings
Applied nature protection	Biodiversity protection	Outlines and implements programs for research and monitoring of habitats and species	Knowledge of ecological aspects of target habitats and species, monitoring methods, monitoring indicators, field skills, statistical data processing, research skills
		Contributes to national biodiversity assessments and monitoring	The specialist knowledge of individual taxonomic groups and habitats, national criteria for the protection of endangered species and habitats, national indicators for monitoring the state of biodiversity
		Habitat restoration program management	Knowledge of ecological aspects, approaches, and best practices of restoration of endangered habitats
		Prepares and implements measures for the protection of target species and habitats	Detailed knowledge of target species and habitats, adequate approaches to protection, research, analytical, field skills
		Prepares, proposes, and implements measures for sustainable use of natural resources	Detailed knowledge of ecological aspects, possibilities of sustainable use, conducting assessments for use, research, and analytical skills
	Law enforcement	Collects relevant data needed to support law enforcement (e.g., the situation on the ground, GIS data, information from the local population) and provides support to protection services and other institutions	Knowledge of operational procedures, methods of collecting data from various sources, knowledge of relevant legislation and competencies of actors in the law enforcement chain
		Cooperates with the local population in preventing illegal activities	Acquaintance with and cooperation with local communities, communication skills, and conflict resolution
		Prosecutes charges against offenders in the Park	Knowledge of legal processes and operational procedures
	Local communities and culture	Cares about the protection of cultural heritage	Specific knowledge related to the preservation and restoration of cultural heritage
		Maintains a good and productive relationship with local communities	Knowledge of local communities, communication skills, and conflict resolution
		Outlines and implements programs and projects related to socio-economic issues within the Park	Research, analytical, field skills, reporting

		Provides support to the local population for the development of projects and initiatives	Acquaintance with development needs and plans of the local population, principles of public participation, sources of financial support
		Provides support to the local population for small business development	Knowledge of relevant legislation, small business planning, marketing, management
	Tourism, recreation, visiting	Informing and educating tourists and visitors	Interpretation skills
		Supervision of the ecological footprint of tourism and recreation in the Park	Visitor impact monitoring, knowledge of options and practices to reduce visitor impact
		Marketing of tourist products in the Park	Acquaintance with marketing options and methods
	Awareness-raising and education	Outlines and implements education and awareness-raising programs and supporting materials	Principles of education related to ecology and environmental protection, knowledge of different educational methods and approaches
		Plans and organizes special events (workshops, fairs, open days, the celebration of important dates...)	Principles of event management
		Manages and maintains content about the Park on the Internet and social networks	Knows the communication strategy of the Park, various aspects of online presentations, the use of adequate programs and applications
		Outlines and implements formal educational programs	Preparation of syllabi for formal educational programs (learning outcomes, lesson plan, etc.), knowledge of educational and pedagogical methods
		Maintains cooperation and communication with the media in order to place information about the activities of the Park	Principles and practices of media relations, knowledge of relevant media and their programs
	Fieldwork	Designs, organizes, and reports on fieldwork (research, monitoring, periodic visits)	Knowledge of terrain, ecological aspects of species and habitats, reporting
		Manages equipment for fieldwork (needs plan, procurement, maintenance, consumption)	Inventory making, public procurement, basic maintenance procedures
	Technology	Uses appropriate IT methods for collecting, processing, storing, and accessing information (files, databases, GIS tools ...)	Computer and internet literacy, knowledge of relevant IT tools

TABLE A4-3 - *Competences and knowledge required for the protection service (supervisors)*

Category of work	Field of work	**Employee level:** Supervisors	
Planning and management	Human Resource management	**What employee should do:**	**Required knowledge:**
		Supervision over the work of employees in the Protection Service	Basic techniques of supervision and motivation, details of jobs and tasks performed
	Financial management	Monitors and maintains the flow of finances, materials, and equipment needed for the service	Knowledge of the basic principles of financial data management, inventory, equipment maintenance procedures
	Administrative duties and reporting	Keeps work records	Acquaintance with document formats and systems of their records (records, etc.)

		Prepares work reports	Acquaintance with report formats and reporting requirements
	Communication and cooperation	Effectively communicates work plans and results	Communication and presentation skills
Applied nature protection	Biodiversity protection	Recognizes and identifies the main ecosystems, habitats, plant, and animal species of the Park	Knows the biological and ecological characteristics of target species and habitats
		Recognizes threats to important flora and fauna and changes in both habitats and populations	Acquaintance with various threats and zero state of biodiversity
		Adequately records the observed condition and changes in the field	Keeping records and patrol sheets, use of maps and GPS, reporting
		Provides support to research and monitoring programs	Knowledge of target species and habitats, protocol monitoring
	Law enforcement	Conducts supervision of the Park area and operational procedures (patrolling, inspections, collection of information and evidence, etc.)	Knowledge of operational procedures, field skills, record keeping, reporting
		Identifies illegal actions and threats to nature within the Park	Knowledge of illegal activities, changes in habitats, and species
		Communicates with local users of the space about the rules, rights, and laws that apply in the Park	Knowledge of relevant legislation, communication skills
		Prosecutes offenders within the Park	Conducting legal procedures following the law (apprehension, confiscation of equipment, writing a report...)
		Provides support for particular actions to prevent illegal activities within the Park	Relevant legislation, cooperation with other institutions
		Responds adequately in case of physical, verbal, and non-verbal attacks and threats and non-violent conflicts	Knowledge of relevant legislation and operational procedures, conflict resolution techniques, and communication skills
	Local communities and culture	Communicates with the local population	Knowledge of local circumstances, mentality, traditions, practices, communication skills
		Participates in programs of cooperation and support to local communities	Knowledge of local circumstances, mentality, traditions, practices, communication skills
	Tourism, recreation, and visiting	Maintains and manages the use of tourist infrastructure	Maintenance of ramps, info points, and the like, communication skills, interpretation, and sales
		Providing information and support to visitors	Communication and interpretation skills, knowledge of biological, ecological, social, economic, and other aspects of space
		Responding to accidents and emergencies involving visitors	First aid, emergency procedures
	Awareness-raising and education	Provides basic information about the Park	Knowledge of different aspects of the Park, communication skills
	Fieldwork	Fire protection organization	Fire risk assessment, principles of prevention and prevention of fire spread, procedures for action in case of fire
		Mapping in space	Knowledge of topographic maps and GPS devices, mapping principles

		Performs interventions in space (mowing, waste removal, cleaning the riverbed...)	Adequate use of tools (mowers, chainsaws, drills...)
		Field inspection	Management of vehicles and vessels, first aid, swimming, use of communication equipment
	Technology	Use of audiovisual equipment (cameras, drones...)	Acquaintance with equipment, data storage

Annex 5 - Bibliography and List of Sources

Official Documents:

- Agencija za zaštitu prirode i životne sredine Crne Gore (2019) - Studija zaštite i uspostavljanja zaštićenog prirodnog dobra Dolina rijeke Zete
- Akcioni plan biodiverziteta glavnog grada Podgorice 2017
- Lokalni akcioni plan za biodiverzitet Opštine Danilovgrad 2020-2024
- Treći nacionalni izvještaj Crne Gore o klimatskim promjenama 2020
- Pravni akti navedeni u tabeli 5
- Strateški dokumenti navedeni u tabeli 6

Official Databases:

- Agencija za zaštitu prirode i životne sredine Crne Gore – prirodainfo.me
- Centralni registar privrednih subjekata
- Key Biodiversity Areas - http://www.keybiodiversityareas.org/
- MONSTAT – monstat.org
- Uprava za bezbjednost hrane, veterinu i fitosanitarne poslove - https://www.ubh.gov.me/uprava
- Zavod za hidrometeorologiju i seizmologiju - http://www.meteo.co.me/

Professional literature:

Appleton, M.R. (2016). A Global Register of Competences for Protected Area Practitioners. Gland, Switzerland: IUCN

- European Federation for Transport and Environment AISBL (2018) - CO2 emissions from cars: the facts
- GiZ (2018) - Integrating Ecosystem Services into Development Planning. A stepwise approach for practitioners
- Millennium Ecosystem Assessment, 2005. Ecosystems and Human Well-being: Synthesis. Island Press, Washington, DC.
- Rubinić, B., Sackl, P., Gramatikov, M. (2019): Conserving of wild birds in Montenegro. The first inventory of Potential Special Protection Areas in montenegro. AAM Consulting Budapest
- Saveljić D, Vizi A, Vešović-Dubak N, Jovićević M (2007) – Područja od međunarodnog značaja za boravak ptica u Crnoj Gori, CZIP
- P ten Brink et al. (2011). Estimating the Overall Economic Value of the Benefits provided by the Natura 2000
- Network. Final Report to the European Commission, DG Environment, Brussels 2011.
- Vlachogianni T. (2015) - The natural wealth and legacy of the Drin River Basin: inspiring our collective actions, MIO-ECSDE
- WWF (2007) – Management Effectiveness Tracking Tool

Data sources for maps:

Basic substrates:

- Topographic map 1: 25000 - Real Estate Administration of Montenegro, 2009.
- Boundaries of municipalities and settlements - Real Estate Administration of Montenegro
- Rivers Zeta and Morača - Topographic map 1: 25000 - Real Estate Administration, 2009.
- Border of PP River Zeta and protection zones - website of the Agency for Nature and Environmental Protection - Prirodainfo.me

Map 1 – Ecosystem distribution

- Map of the existing use of space

Map 2 – Protection zones

- Border of PP River Zeta and protection zones - website of the Agency for Nature and Environmental Protection - Prirodainfo.me

Map 3 – Map of KBA and SPA

- Border of PP River Zeta and Protection Zone - website of the Environmental Protection Agency - Prirodainfo.me
- Boundaries of municipalities and settlements - Real Estate Administration of Montenegro
- KBA database http://www.keybiodiversityareas.org/site/results?reg=7&cty=272&snm=
- Agency for Nature and Environmental Protection, Study of protection and establishment of the protected natural asset of the Zeta river valley, Podgorica, 2019.

Map 4 – The most important historical sites

- Spatial urban plan of the municipality of Danilovgrad, Official Gazette of Montenegro - municipal regulations no.12/14, CEP, MonteCEP, Planet Cluster-Spain, Belgrade, Kotor
- Spatial urban plan of the municipality of Podgorica, Official Gazette of Montenegro - municipal regulations, number 6/2014, Winsoft doo, Podgorica.

Map 5 – Land use

- Border of PP River Zeta and Protection Zone - website of the Environmental Protection Agency - Prirodainfo.me
- Boundaries of municipalities and settlements - Real Estate Administration of Montenegro
- Spatial urban plan of the municipality of Danilovgrad, Official Gazette of Montenegro - municipal regulations no. 12/14, CEP, Monte CEP, Planet Cluster-Spain, Belgrade, Kotor
- Spatial urban plan of the municipality of Podgorica, Official Gazette of Montenegro - municipal regulations, No. 6/2014, Winsoft doo, Podgorica,
- Orthophoto 2018 - Real Estate Administration of Montenegro

Map 6 – Map of traffic infrastructure

- Spatial urban plan of the municipality of Danilovgrad, Official Gazette of Montenegro - municipal regulations no.12/14, CEP, MonteCEP, Planet Cluster-Spain, Belgrade, Kotor
- Spatial urban plan of the municipality of Podgorica, Official Gazette of Montenegro - municipal regulations, number 6/2014, Winsoft doo, Podgorica.

Map 7 – Map of electrical and hydrotechnical infrastructure

- Spatial urban plan of the municipality of Danilovgrad, Official Gazette of Montenegro - municipal regulations no.12/14, CEP, MonteCEP, Planet Cluster-Spain, Belgrade, Kotor
- Spatial urban plan of the municipality of Podgorica, Official Gazette of Montenegro - municipal regulations, number 6/2014, Winsoftd.oo, Podgorica.

Map 8 – Beaches and tourist infrastructure

- Study Socio-economic analysis of PP Zeta
- Orthophoto 2018
- Google Earth map

Map 9 – Population and settlements

- Boundaries of municipalities and settlements - Real Estate Administration of Montenegro
- Census of Montenegro 2011 - MONSTAT
- Spatial plan of Montenegro until 2020, Official Gazette of Montenegro no. 24/08, Montenegro Engineering, IAUS, Urban Institute of the Republic of Slovenia,
- Spatial urban plan of the municipality of Danilovgrad, Official Gazette of Montenegro - municipal regulations no. 12/14, CEP, MonteCEP, Planet Cluster-Spain, Belgrade, Kotor
- Spatial urban plan of the municipality of Podgorica, Official Gazette of Montenegro - municipal regulations, number 6/2014, Winsoft doo, Podgorica.

Mapa 10 – raspored poljoprivrednih djelatnosti

- Study Socio-economic analysis of PP Zeta
- Orthophoto 2018
- Google Earth map

The Nature Conservancy

Socio-Economic Analysis
of the Nature Park River Zeta

Montenegro, April 2021.