Durable Freshwater Protection in Action:

A roadmap for preserving the most precious rivers of Southeast Europe

THE NATURE CONSERVANCY / WWF ADRIA

The Nature Conservancy

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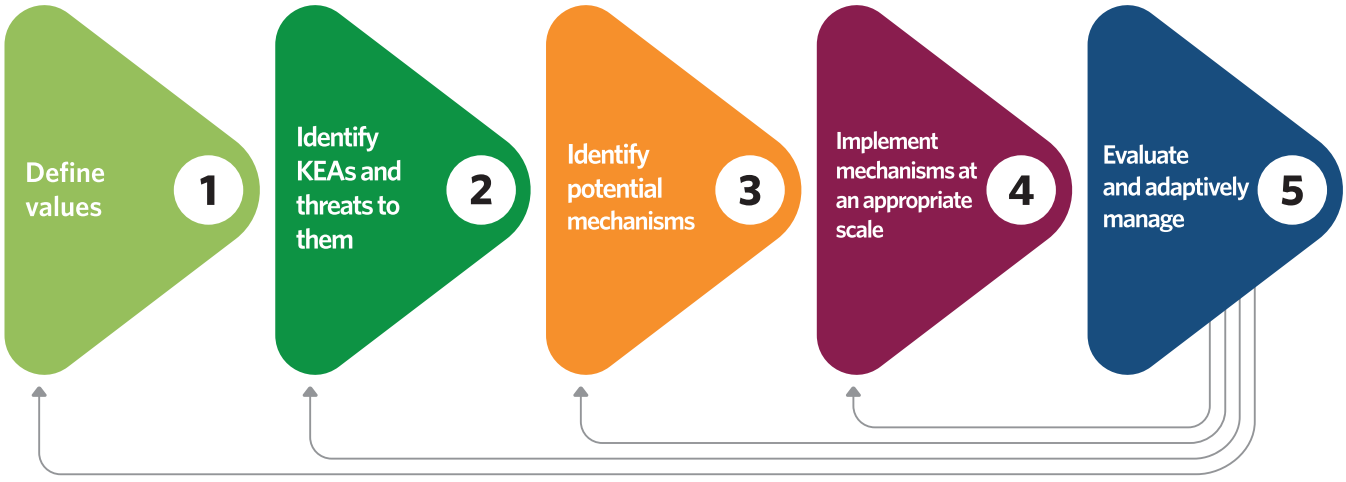
Freshwater ecosystems and the biodiversity they support are the most threatened and least protected on Earth. Freshwater ecosystems cover less than 3% of the surface of the Earth, yet harbour approximately 12% of all known species. These precious ecosystems provide benefits that are critical for human life, economies, and the livelihoods of billions of people worldwide. Almost one in three freshwater species are threatened with extinction, and in the last 50 years, populations of monitored freshwater species have declined by more than 85%. Southeast Europe is home to some of the healthiest and most stunning rivers in Europe. Unfortunately, these rivers have been under major development pressures, primarily changes in hydromorphology (caused by the planning and construction of numerous hydroelectric dams); severe overfishing (poaching); and, in more urban areas, water pollution (the release of untreated communal and industrial wastewaters as well as solid waste). If such a trend continues, over a hundred species in this valuable region could be lost.

What is more, the vast network of terrestrial protected areas around the globe, as well as in the region, does not guarantee adequate protection for the water courses flowing through them. In fact, a large number of planned hydropower plants are foreseen in areas with high biodiversity value, including Natura 2000 sites and national parks. **To preserve these rivers and their biodiversity, we need a new, comprehensive approach to freshwater protection – the durable freshwater protection framework.**

What is the durable freshwater protection framework?

The durable freshwater protection (DFP) framework[1] ('the framework') was created through a collaboration between civil society organisations to enable practitioners to set up effective freshwater protection initiatives. Civil society, governments, local communities, and the private and public financial sectors all have a role to play in protecting freshwater ecosystems that sustain biodiversity and provide essential services for nature and people in a changing climate. The framework (Figure 1) is a series of steps for building a protection strategy that avoids future threats to the values society wants to sustain. These steps strive to provide dedicated, secure, long-lasting and enforceable protection into the future. The framework suggests that a protection approach should persist for at least 25 years or have a high probability of renewal in securing a multi-generational (and therefore longer-lasting) investment.

FIGURE 1 - *A schematic representation of the DFP framework (KEA – key ecological attribute)*



[1] *The following brief summary of the durable freshwater protection framework has been adapted from: Higgins J, Zablocki J, Newsock A, Krolopp A, Tabas P, Salama M. Durable Freshwater Protection: A Framework for Establishing and Maintaining Long-Term Protection for Freshwater Ecosystems and the Values They Sustain. Sustainability. 2021; 13(4):1950. https://doi.org/10.3390/su13041950*

For this process to work, it is critical that each step relies on community and stakeholder input. Freshwater conservation leaders who wish to set up a similar process in their community should start by identifying and genuinely engaging with all key local actors. This is paramount to defining actions that the community will accept and be willing and equipped to co-implement with the formal decision-making and management bodies.

Define values & Identify KEAs and threats to them

Key stakeholders (i.e. local communities, NGOs, watercourse users, policy makers, experts and others) should work together to define:

- The values supported by freshwater ecosystems that society identifies as requiring protection (e.g. biological, cultural, scenic, economic, etc.);
- Fundamental characteristics of ecosystems that are essential for the long-term persistence of those values (key ecological attributes (KEAs));
- The threats to the KEAs and sources of those threats (Table 1).

TABLE 1 - *Key ecological attributes, threats to them, and examples of sources of those threats*

Key Ecological Attribute	Threat	Examples of Sources of Threats
Hydrologic regime (timing, magnitude, duration, frequency)	Water flow and level regime alteration, water withdrawal, inter-basin transfers	Dams, irrigation, energy or water resource development, change in land use and land cover
Connectivity (lateral, longitudinal, temporal)	Dams, levees, road/stream crossings	Dams, energy or water resource development, flood risk, infrastructure development, road development/poor culvert design
Water quality (e.g. nutrients, dissolved oxygen, sediments, temperature regimes, pH, toxins)	Watershed runoff or point sources of excess sediments and/or nutrients, bacteria, toxic chemicals, reduction of transport of natural sediments and nutrients from dams	Agriculture, urban areas, deforestation, animal management, sewage, industry, mining, water infrastructure, changes in land use and land cover
Habitat (structure, distribution, abundance, condition)	In-stream and lake shoreline gravel mining, channelization, floodplain and/or riparian and other wetland destruction/conversion	Dams and other water infrastructure, development, agriculture
Biotic composition (species composition, abundance, distribution)	Overharvesting	Poorly managed fisheries, aquaculture, pet and landscaping trade, international transportation

STEP 3

Identify potential protection mechanisms

With assistance from legal, policy, and other experts, identify potential protection mechanisms which are most likely to abate or mitigate those threats over the long term. There are two types of mechanisms, legal and non-legal. In Southeast Europe, legal mechanisms are more common. These include the administrative designation of protected areas, which cover a specific geographic area and prescribe obligations as well as restrictions on the usage of the space, e.g. National Parks or Nature Parks. Other examples of legal mechanisms can be found elsewhere in Europe (Table 2)[2]. This also shows that the framework is not completely new but based on European and global river protection practices that are effective and durable.

TABLE 2 - *Overview of River Protection Legislation in Europe and Year of Entry into Force (Schaeffer, 2019)*

Country (EU/EEA)	As of (Year)	Name of Legislation	Legislation in Detail	Degree of Protection
Slovenia	1976	**Slovenian Law on the Protection of the Soča and Tributaries** ('Zakon o določitvi zavarovanega območja za reko Sočo s pritoki') frequency)	The law is specifically designed to protect the **Soča River** (from its source to the Indricja rivers) and tributaries	Prohibits hydropower and other projects that would affect the hydrological regime of the river or the water quality, plus a wide array of other objectives
Finland	1987	**The Rapids Protection Act** ('Koskiensuojelulaki' (35/1987))	Designation of **53 rivers / river stretches** as protected (together with two other single-river based acts: 1 prior addition in 1983 and 1 subsequent in 1991)	Dams, energy or water resource development, flood risk, infrastructure development, road development/poor culvert design
Sweden	1999	**Swedish Environmental Code** ('Miljöbalken', Chapter 4, §6)	Designation of 4 '**National Rivers**' ('Nationalälvarna') and 22 other river stretches as protected	Prohibits hydroelectric power plants and water regulation, or water transfer, for power purposes
Norway	2001	**The Protection Plan for Water Courses** (statutory through the 'Water Resources Act' (2001) – a total of four protection plans from 1973 and 1993, with supplements in 2005 and 2009)	A provision for a total of **388 rivers or river stretches** where protection aims are to be given 'preponderant weight'	Allows authorities to deny the licensing of a hydropower project on the designated rivers or river stretches
Spain	2015	**Natural River Reserve Scheme** ('Reservas Naturales Fluviales'– introduced in the Spanish Water Law ('Ley de Aguas') – in 2005)	First list of **53 reserves** designated in 2015, followed by **82 additional reserves** in 2017, to protect rivers in their natural state and rivers with little to no human impact to date	Rivers parallelly designated as Natura 2000 sites, to complement hydraulic/water-related aspects (especially over-abstraction), and licensing processes are binding for water authorities

[2] *T. Schäfer. Legal Protection Schemes for Free-Flowing Rivers in Europe. The Nature Conservancy. 2019.* https://www.nature.org/content/dam/tnc/nature/en/documents/Legal_Protection_Schemes_for_Free-Flowing_Rivers_in_Europe_FINAL_21FEB.pdf

STEP 4

Implement mechanisms at an appropriate scale

Apply the protection mechanisms at the appropriate scale to effectively protect the identified values and KEAs.

As our practice has shown, these types of solutions can be implemented at a municipal level (e.g. the Zeta River in Montenegro) or scaled to build nation-wide legislation (e.g. the United States' *Wild and Scenic Rivers Act; Spain's Natural River Reserve Scheme*).

STEP 5

Evaluate and adaptively manage

Monitor and evaluate the status and changes in the condition of values and KEAs, the scope and degree of threats and the sources of those threats, and the implementation successes or failures of the protection mechanisms.

Adaptively manage the protected area by improving existing mechanisms and/or applying new mechanisms as new threats emerge and circumstances change over time (e.g. local biomonitoring projects; monitoring programmes required by the EU Water Framework Directive and Nature Directives).

The Zeta story: *a case study on durable freshwater protection in Southeast Europe*

Almost 20 000 people live in close proximity to the lower Zeta River and about 70 000 in the area comprising the whole watercourse. These communities directly and indirectly rely on the health of the Zeta River for their livelihood (agriculture, wood production and fishing) as well as their well-being (recreation), both of which are based on ecological services. What is more, the Zeta River is a biodiversity hotspot on a European and global scale[3], a home to the unique and endangered softmouth trout (*Salmo obtusirostris*). All of these values create a complex mosaic of interactions and connections which have one thing in common – they all benefit from a stable and healthy river. This has prompted The Nature Conservancy and WWF Adria to collaborate with local civil society, municipal governments, experts and the community to support a truly durable and effective protection of the Zeta River in Montenegro.

All of these values have been recognised by the international scientific community, but also by local civil society, municipal governments and citizens. In our framework, this corresponds to ▶ **Step 1 – Define values**. Numerous previous studies have already mapped out the key KEAs and threats. The KEAs are the biotic composition (species composition, abundance, distribution) and water quality, and they are under pressure from many sources, the most critical of which are all anthropogenic: water pollution, unplanned urbanisation and poaching (▶ **Step 2 - Identify KEAs and threats to them**).

To address these issues and protect the identified values, in 2019, a group of local non-governmental organisations (NGOs) (the Centre for Protection and Research of Birds, Green Home, the Montenegrin Ecologic Society, the Society of Young Ecologists Nikšić, Ozon, Association Dinarides Parks, 9. December, and EnvPro) and WWF Adria[4] partnered with the local governments (the Municipality of Danilovgrad and Capital City Podgorica) to advocate for the long-term protection of the Zeta River. This initiative was informed by a 2019 legal assessment which identified applicable laws for the development of freshwater protection in Montenegro.[5]

Following this, the Municipality of Danilovgrad ('the municipality'), supported by the NGOs, started the 'procedure for declaring a protected area', which is prescribed by the Law of Nature Protection. This procedure was chosen because it represents a tried-and-true way to ensure the administrative protection of the target area and because of enabling conditions: the municipality had already planned to protect the Zeta River in the *Spatial Plan of the Municipality of Danilovgrad (2014-2020)*. This was an effective ▶ **Step 3 – Identify potential legal mechanisms for river protection**.

Following the selection of this procedure, the national Agency for Nature and Environment Protection of Montenegro developed the *Study for protection and establishment of protected natural area* – Zeta River ('the Study') (▶ **Step 4 - Implement the mechanisms at an appropriate scale**). The Study analysed and assessed the natural values of the lower Zeta River and the pressures they are under, as well as gave recommendations for future management to mitigate these pressures and protect and improve hydromorphologic and ecologic conditions. Following the publication of the *Study, Zeta River Nature Park* (category V under the International Union for Conservation of Nature's (IUCN) classification)[6] was officially designated as a protected area (PA) in December 2019 by the *Government of Montenegro*. With this designation, the lower stretch of the river was protected. We view this designation as an important step forward for the long-term protection of the Zeta River, and we hope conditions will be met for conservation of the upper part of the river in the near future.

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[3] *The Zeta River has been identified as a potential Important Bird Area (IBA) in the third expansion of the IBA list by BirdLife in 2006. Following this, the area was the subject of a research study for a Natura 2000 project funded by the European Union (EU), which was conducted in Montenegro from 2016 to 2019, and so the Zeta River has met Special Protected Areas (SPA) standards based on the EU Birds Directive. Last but not the least, the Zeta River has the characteristics of an Area of Special Conservation Importance (ASCI), which are areas that are part of the Emerald network (Bern Convention on the Conservation of European Wildlife and Natural Habitats).*

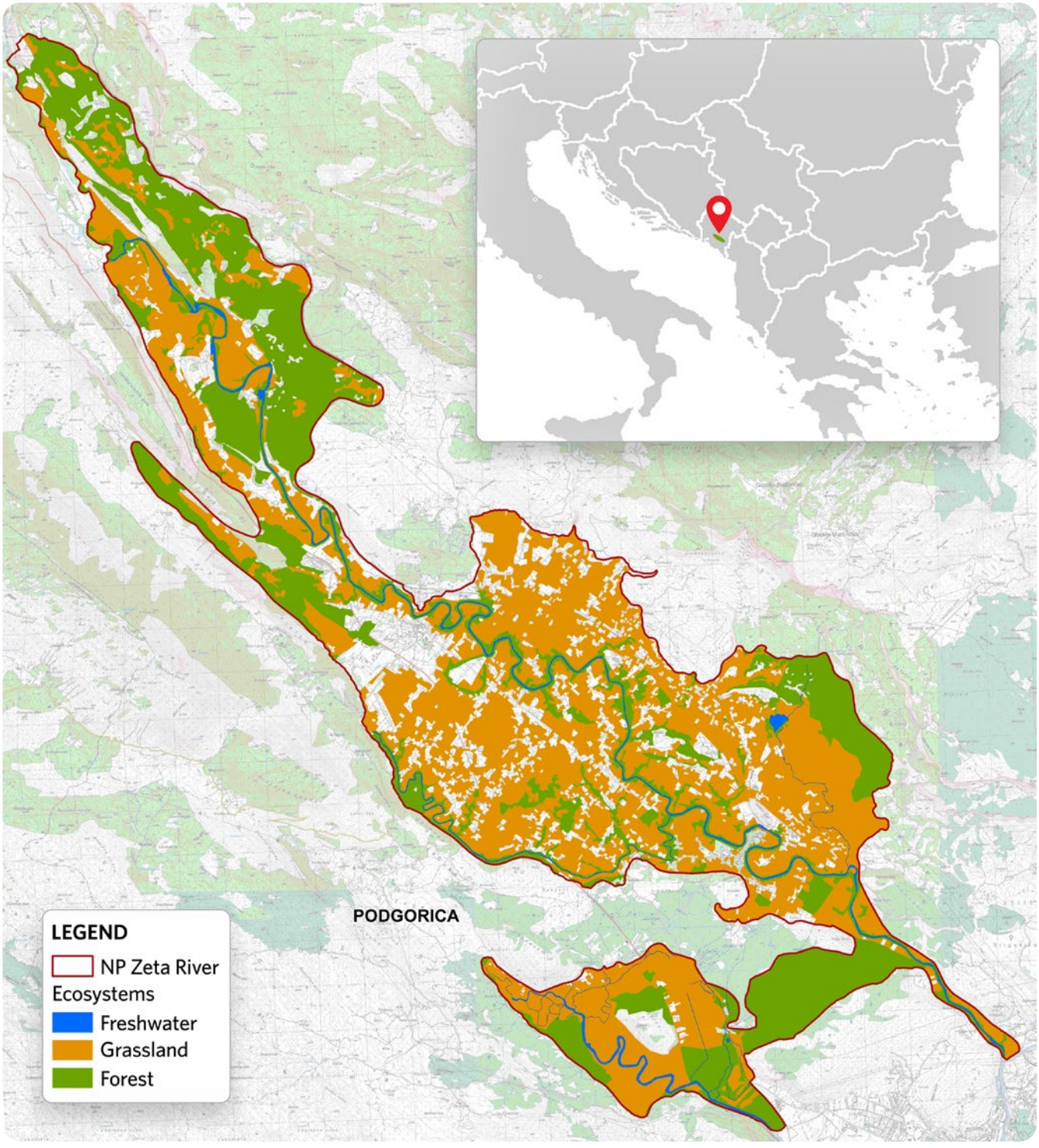
[4] *TNC expresses sincere gratitude to partners from the non-governmental sector – to Milija Čabarkapa from the NGO Ekotim / WWF Adria as well as to Aleksandar Perović from the NGO Ozon – who were first to recognise the importance of preserving the Zeta River and offered their support for such an initiative.*

[5] *An assessment of applicable laws and institutions relevant to the development of a 'Durable River Protection Mechanism' in the European Union and countries in the Western Balkan region was completed in 2019 for the following countries: Croatia, Slovenia, Montenegro, Serbia, and Bosnia and Herzegovina.*

[6] *Category V areas are those where long-lasting interactions between man and nature have produced recognisable and significant ecological, biological, cultural and aesthetic values, and where the preservation of the integrity of that relationship is necessary to protect and maintain the area and preserve nature and other values.*

The Zeta River Nature Park is still nascent, yet several initiatives have shown that when the government and NGOs team up, a lot can happen. While we await the formal establishment of the park's management body, we have worked together to develop a document which will serve as the basis for the future five-year management plan of the park – *Socio-Economic Analysis of the Zeta River Nature Park*.[7] The Analysis is based on the input of local community representatives and offers a realistic way to protect the Zeta River: it includes a manual for setting up a sound management and funding system for the *Zeta River Nature Park*. The Analysis demonstrates that the successful management of the park requires the commitment and collective action of all key stakeholders.

MAP 1 - *Map indicating the distribution of Zeta River major ecosystem types*



[7] *Authors of the Analysis: Marija Vugdelić Ph.D., Aleksandra Martinović Ph.D., Ines Pajović M.Sc, Jovana Drobnjak M.Sc, and Jelena Milić*

Preparing and implementing the best management practices for freshwater in 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 a high quality of life for people and nature in the PA, while creating opportunities for local economic development through nature protection and the sustainable use of natural resources. A PA's success, particularly for freshwater, requires support and active participation from local stakeholders who depend on the health of the ecosystem and its resources (Figure 2).

FIGURE 2 - *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 the successful management of the PA. Good management practices (blue) will enable the sustainability of this system, ensuring nature protection, good quality of life and economic development for local communities.*

Following the study, the Municipality, Capital City Podgorica and The Nature Conservancy made an agreement to form a working group to develop a five-year management plan for the Zeta River Nature Park. The goal of this working group is not only to create an ambitious management plan, but also to ensure the management plan is based on an external stakeholder consultation process in order to channel the views and recommendations of the local population as well as ensure their support for and ownership of the process.

As a part of implementing good management practices (**Step 5 – Evaluate and adaptively manage**), in cooperation with a local NGO EnvPro and supported by the United States Forest Service (USFS), at the end of 2020, TNC launched a project which is citizen-led and aims to establish a biomonitoring system for the Zeta River Nature Park. The final deliverable of the project will be a methodology for the establishment and maintenance of a community-led biomonitoring system which can be transferred and replicated on other rivers and watersheds.

How can durable freshwater protection be scaled up and replicated across Southeast Europe?

This decade is a turning point for the future of nature and the environment, and especially for the rivers, the bloodstream of our planet. The impetus for the protection of rivers in the European Union (EU) has never been stronger: the EU has developed a Biodiversity Strategy for the period from 2021 to 2030 in accordance with the UN Convention on Biological Diversity. All this will translate into new and updated National Biodiversity Strategies and Action Plans (NBSAPs) for each Member State and EU accession countries in Southeast Europe. Combined with the third (and last) cycle of the River Basin Management Plans (RBMPs) 2021-2027, this makes for two pieces of comprehensive environmental legislation that can address the priorities of river protection. The NBSAP process is set to start in 2022, and the third cycle of RBMPs will be finalised in 2021 and will follow public consultation procedures at the EU level. It is imperative that, through such consultations and through other channels, the protection of rivers be promoted to ensure that the topic remains central and is approached with great ambition.

As such, The Nature Conservancy and WWF Adria call on:

Local and county governments *to protect the most precious freshwater habitats on their territories and equip them with adequate planning, management and financing resources.*

National governments *to develop a systemic approach to freshwater protection by adopting comprehensive freshwater protection laws, corresponding to our Durable Freshwater Protection framework.*

The Energy Community Secretariat *to facilitate dialogue among non-governmental organisations, governments and renewable energy (hydropower) promoters, which would help find solutions for the conservation of the most valuable freshwater habitats while also advancing the renewable energy transition.*

The Regional Biodiversity Task Force for the Western Balkans, coordinated by the Regional Cooperation Council (RCC) *to develop an ambitious Western Balkans 2030 Biodiversity Action Plan, identifying priority freshwater ecosystems for protection. This process should include civil society and expert input from across the region.*

The European Commission, European Investment Bank and European Bank for Reconstruction and Development *to enable financial and technical assistance for EU Member States and accession countries to implement comprehensive durable freshwater protection mechanisms, in order to meet the EU Biodiversity Strategy's targets by 2030 and develop ambitious NBSAPs by the end of 2022.*

NGOs and the expert community *to reach out to us if they are interested in learning more about our approach, wish to provide critical feedback to it or would like to join the initiative. We are open to learning through collaboration and new partnerships.*

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