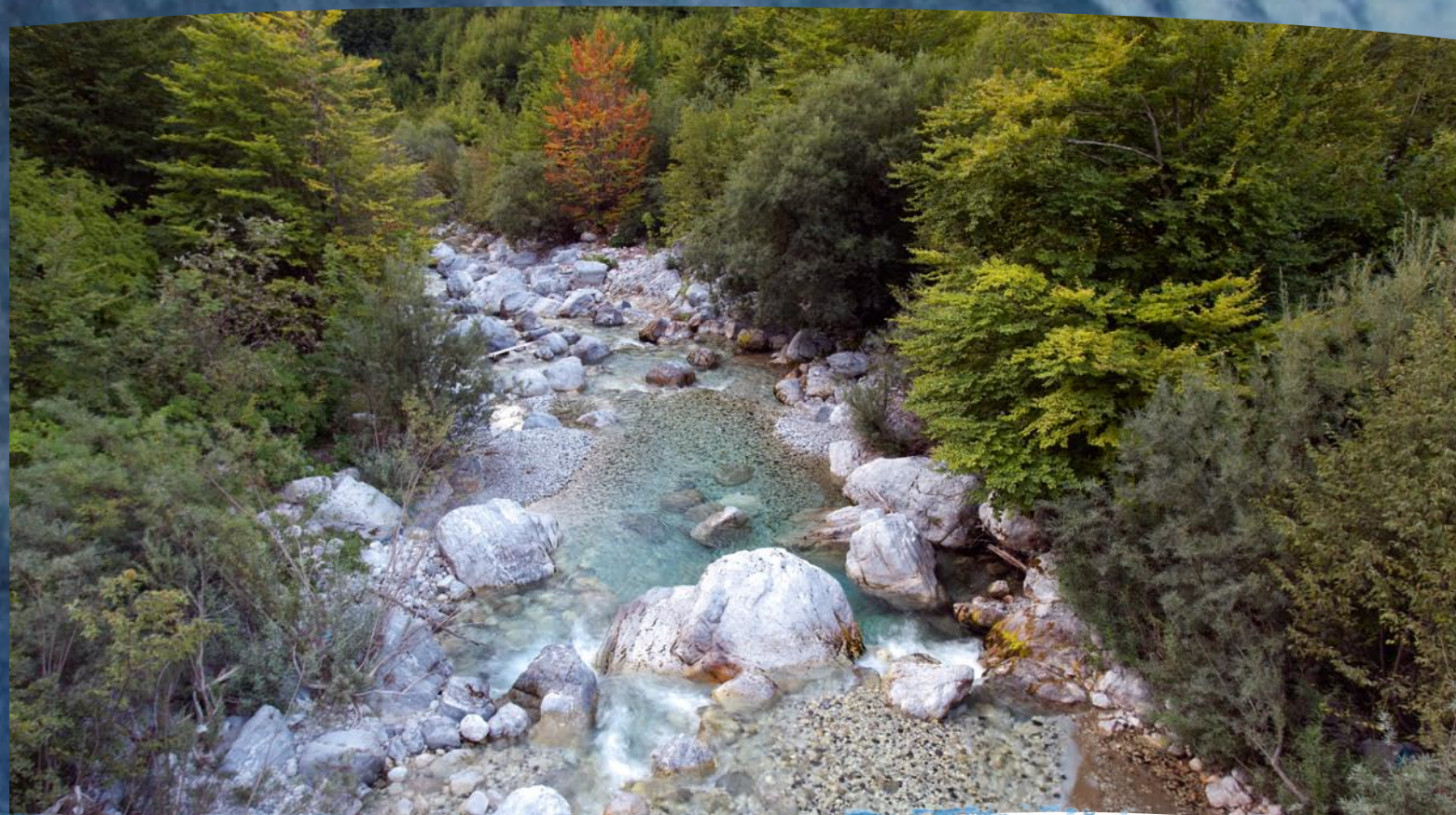
Save the Blue Heart of Europe

Balkan Rivers under attack from Hydropower Lobby



Save the Blue Heart

Balkan Rivers under attack

photo: Goran Safarek

# of Europe

from Hydropower Lobby

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Table of contents

Preface

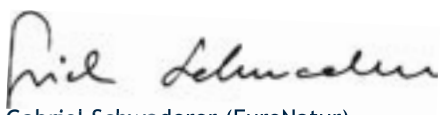
Balkan rivers – The Blue Heart of Europe

Did you know that Europe's best rivers can be found in the Balkans? Not many people know this, but it is true: nowhere else in Europe can one find rivers to rival the beauty and diversity of the Balkan rivers. Crystal-clear streams, untamed rivers with huge gravel islands, extensive alluvial forests, deep canyons, spectacular waterfalls, and – a very special feature – karst rivers that flood wide swathes of the landscape in spring only to afterwards disappear again and continue their flow underground. The Blue Heart of Europe beats in the Balkans. We — Riverwatch and EuroNatur — commissioned a study of these lifelines, the results of which were surprising, even to us: almost 80 % of a total length of 35,000 river kilometres that were examined are in very good, good or acceptable morphological condition, an astonishing result. The fauna is equally amazing. Would you have guessed that 15 species of trout occur in the Balkan rivers? Or that these rivers host 69 endemic fish species, i.e. species that occur only there and nowhere else in the world, including some species that spend most of the year in caves? No other region on our continent can match this.

However, it comes to no big surprise that this treasure is under threat. Plans are afoot for the construction of more than 630 medium- or large-scale hydropower plants. Taking into account all the small-scale projects, the actual number rises to a few thousand. Hardly any river would remain intact and unadulterated. This deluge of planned hydropower plants is absolutely excessive; it shows no concern for nature and biodiversity. Under the disguise of green energy generation, projects are planned and constructed just everywhere, even in national parks and other protected areas. And it gets even worse: these projects are often pushed forward by international organizations such as the World Bank or the European Bank for Reconstruction and Development (EBRD). It certainly looks like we have not learned from our past mistakes.

"But these countries need electricity!", we are often told. True. However, it is unacceptable to treat Europe's most precious rivers as if we were still living in the 1960s. We need planning that is appropriate to our time. This requires a spatial development plan which sets out where development may take place and, almost importantly, where it may not. The most valuable river stretches must be preserved.

This is what EuroNatur Foundation and Riverwatch are committed to achieving and why the "Save the Blue Heart of Europe" campaign was started. Not only are the Balkan rivers the jewels of Europe's natural heritage but they also offer us the unique chance to prove that we have learned from past mistakes. This is what we are fighting for. And we will need your help!



Gabriel Schwaderer (EuroNatur)

Ulrich Eichelmann (Riverwatch)

photo: Justus Lodemann

»I have participated in many protests aimed at protecting rivers and stopping hydropower plants. Some of Europe's most beautiful river landscapes, such as the Loire river basin or the Danube floodplains in Austria, have been maintained as a result of such protests. Resistance does pay off.«

Roberto Epple
European Rivers Network

Blue Heart of Europe at risk of a heart attack

Dam tsunami on the Balkan Peninsula

The Balkan rivers are of outstanding ecological, socio-economic and cultural value. But this does not seem to concern the hydropower lobby. It's almost like a goldrush on rivers.

According to investigations conducted by EuroNatur Foundation and Riverwatch, the Balkan Peninsula is about to be hit by a dam tsunami of alarming proportions:

- Almost all Balkan rivers are to be subjected to engineering measures for hydropower purposes.
- Plans are afoot for the construction of more than 630 medium- or large-scale hydropower plants (> 1 MW).
- If small plants are included in the count, the number of hydropower projects rises to a total of approximately 2000.
- Albania, Serbia and Macedonia alone are planning the construction of more than 400 hydropower plants each.

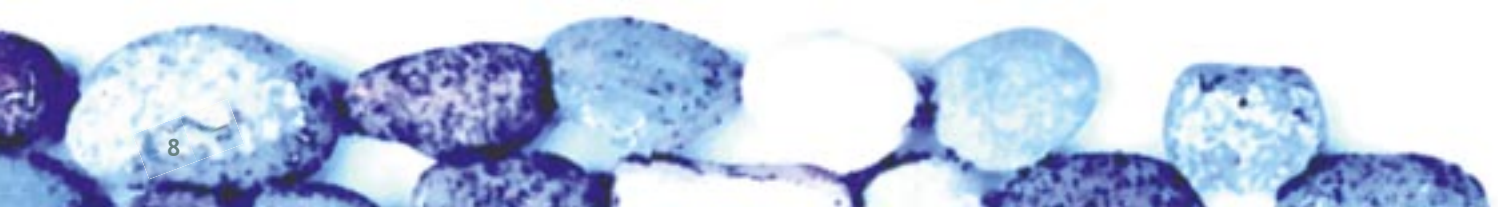
Not even areas with the highest protection status are safe from this development boom!
Our analyses have shown that out of a total of 1,640 planned large-, medium- and small-scale hydropower plants 817 plants (49 %) are projected in protected areas. Of these,

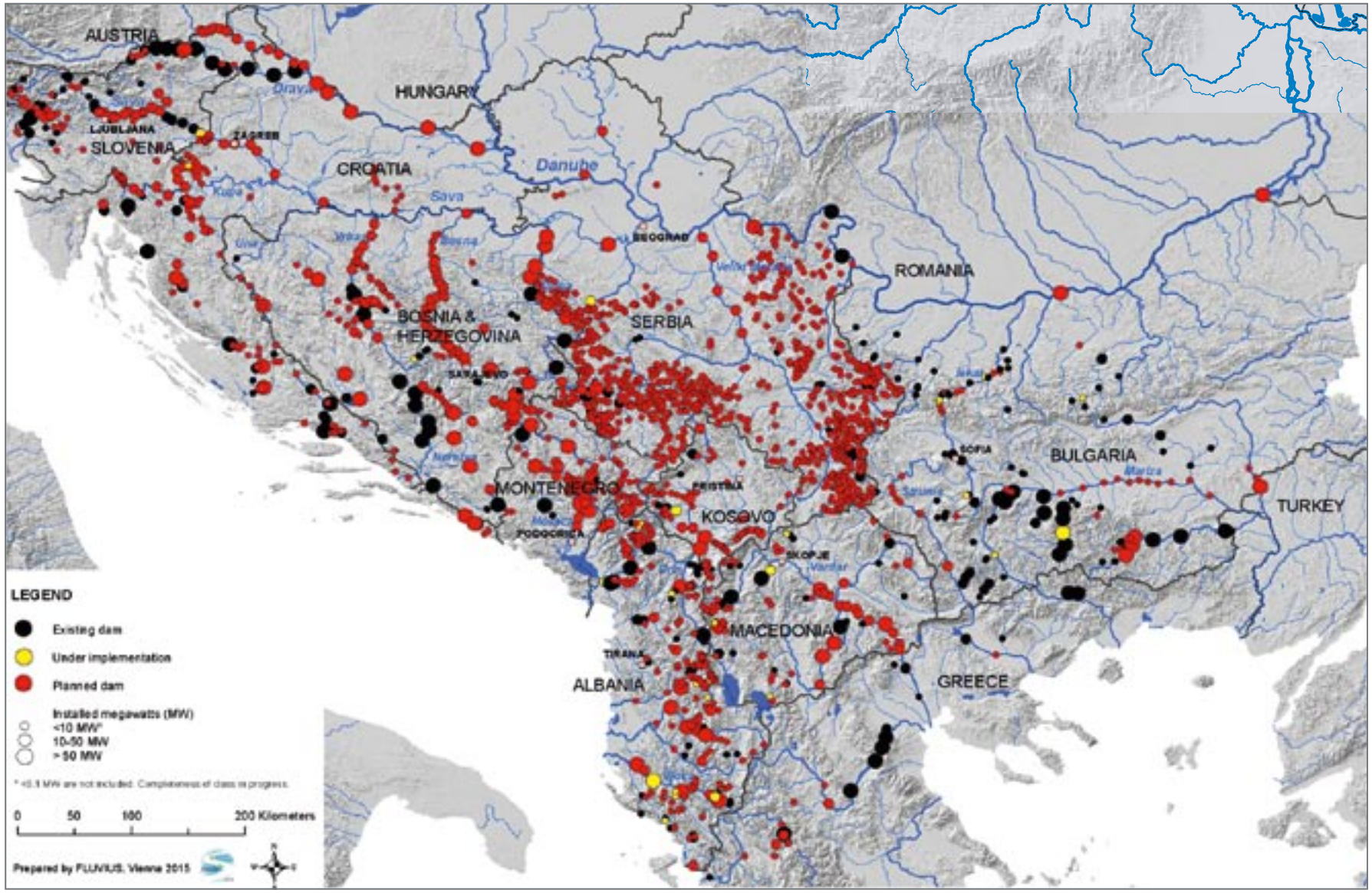
- 535 hydropower plants are planned in strict nature reserves, and of these, 113 are located in the midst of national parks;
- a further 282 projects are planned in other types of protected areas (protected landscapes etc.).

Protection status	Number of planned hydropower plants*
National Parks	113
Ramsar Sites/ Biosphere Reserves/ World Heritage Sites	23
Natura 2000 Sites	131
Strict national Protected Areas, incl. EMERALD Sites	268
Other national protected area categories	282

* Double counting was eliminated, so that projects are only counted in the highest category

These facts clearly show that the construction of power plants in protected areas is not an exception but rather the rule on the Balkan Peninsula! Not only does this approach threaten unique landscapes and species but it also represents a clear violation of legal provisions and directives. Moreover, protected areas are very likely to be impacted by a much larger number of projects, given that many of these are to be constructed in the immediate vicinity of national parks, Natura 2000 sites etc.



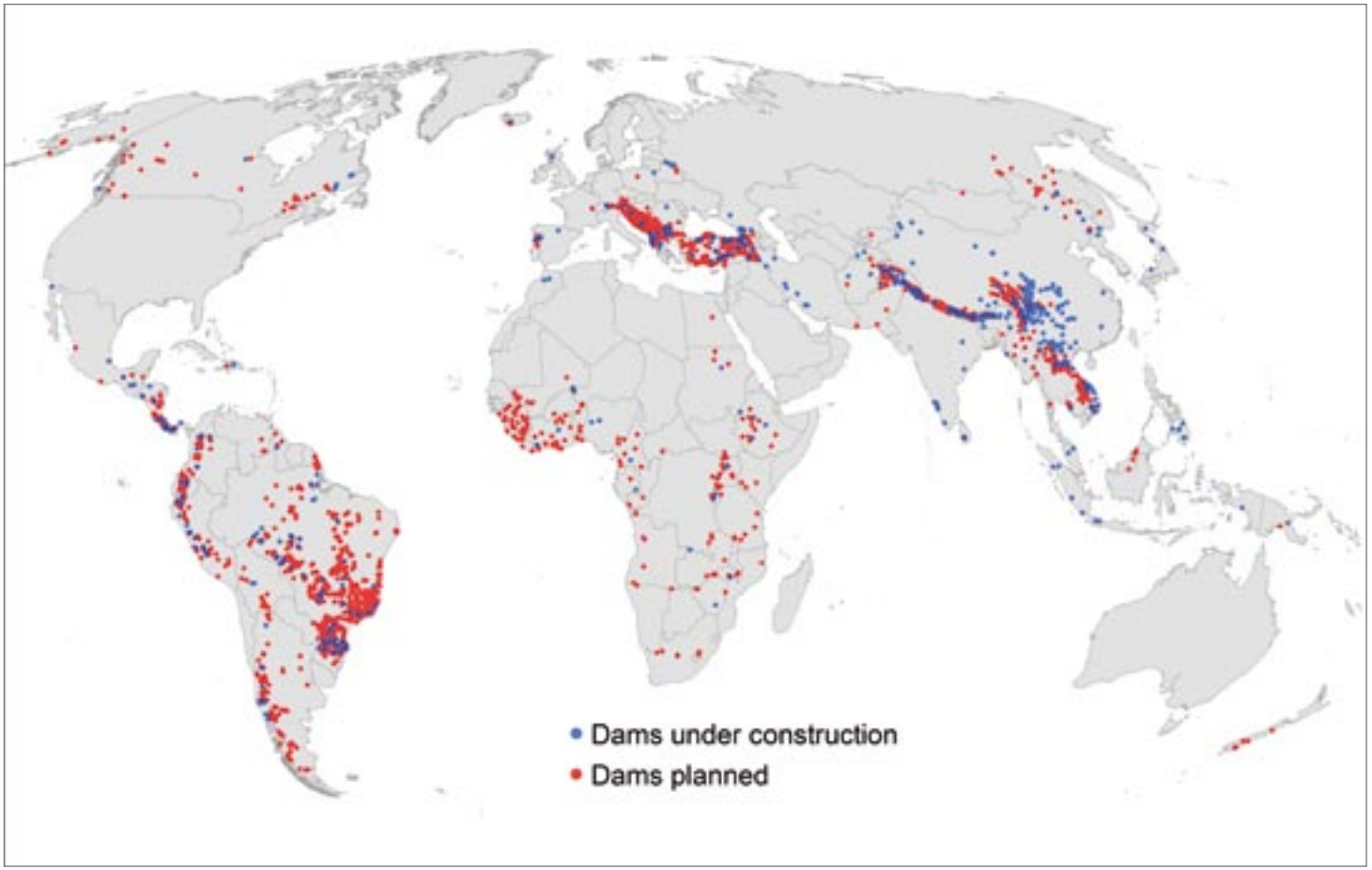


map: Dr. Ulrich Schwarz / FLUVIUS

Overview of hydropower plants in the Balkan region, in red are those in the pipeline.

Targeted by hydropower lobby

Hydropower expansion is threatening the last intact river systems worldwide, from the Amazon basin and Mesopotamia to the Himalayas, from Borneo to Chile. Plans for the expansion or construction of dams exist for practically any river on the globe. Even in regions such as the Alps, where most of the rivers are already being used for energy generation, the pressure is on to exploit the very last remaining river stretches. In 2010, worldwide expenditure on the construction of new hydropower plants amounted to approximately 100 billion US Dollar (in comparison: 19 billion was spent on solar energy). Under the disguise of "green energy generation", this current hydropower tsunami is without par. The Balkan Peninsula is one of the global hotspots for this alarming development.



The Balkan Peninsula is one of the global hotspots for hydropower projects.

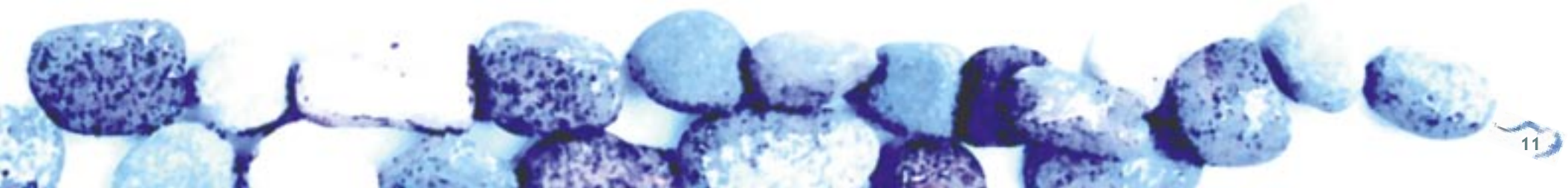
”Green energy” disguise

Is hydropower renewable and “green”?

Neither the one nor the other! Rivers are so much more than just water. With their banks, islands, floodplains, potholes and fords, natural rivers are amongst the most manifold and biodiverse ecosystems in our part of the world. A hydropower plant destroys this diversity fundamentally as well as the river’s natural dynamic; it blocks and alters the river’s discharge. However, for many people it is difficult to recognize the full extent of hydropower impact since much of the damage is hidden under water. “It’s still water, right?” is an all too common sentiment. But a natural river has as little in common with an impounded reservoir as a primeval forest has with a spruce plantation – both consist of trees but the ecosystems are fundamentally different. The same is true for rivers and reservoirs – one is diverse, the other monotonous. Hydropower is not renewable, nor is it a “green” form of energy generation. It has massive adverse and long-standing impacts on rivers, floodplains and biodiversity, if it does not destroy them outright.

Are small hydroelectric plants better than large-scale projects?

Contrary to the popular belief that “small is beautiful”, small hydropower plants are not necessarily more ecologically compatible than large ones. Small hydropower plants have the same detrimental impact on small rivers and streams as large plants have on major rivers. While lower reaches of rivers have long been subjected to river engineering measures, the upper reaches have often been spared and are still intact. They are the last refuges of trout, crayfish, mussels and rare aquatic insects. But under the disguise of “green form of energy generation”, it is these very headwaters, that are now targeted by extensive development of small hydropower plants. There are plans for thousands of these plants to be built in still pristine Carpathian, Alpine and especially Balkan valleys. The necessary attendant infrastructure (roads, powerlines, pipelines etc.) will destroy entire valleys in addition to the rivers. Small hydropower plants are therefore anything but ecologically sound. Moreover, they can actually be quite large. They often have an installed capacity of up to ten megawatts, as defined by law. Yet, they generate little energy at a high loss of nature. In the European Union, around 23.000 hydropower installations have been recorded (2011). About 91 % are small facilities (21,000), generating only 13 % of the total production. Larger hydropower plants represent only 9 % of all hydropower facilities but generate 87 % of the total production.



Hydropower plants have multiple and devastating effects. Experiences — facts and figures from other parts of the world — speak for themselves. We must not repeat those same mistakes in the Balkans!

Peter Bosshard, International Rivers

Due to dam building and other factors, the population of freshwater species declined by 37 % between 1970-2008 - more than the populations of any other ecosystem. Tropical freshwater populations declined by a stunning 70 %. Dams kill fish.

John Zablocki, The Nature Conservancy

The rivers of the Balkans are among the most beautiful, biodiverse, and intact river systems left in the world. Whether or not they remain that way depends entirely on the decisions we make today.

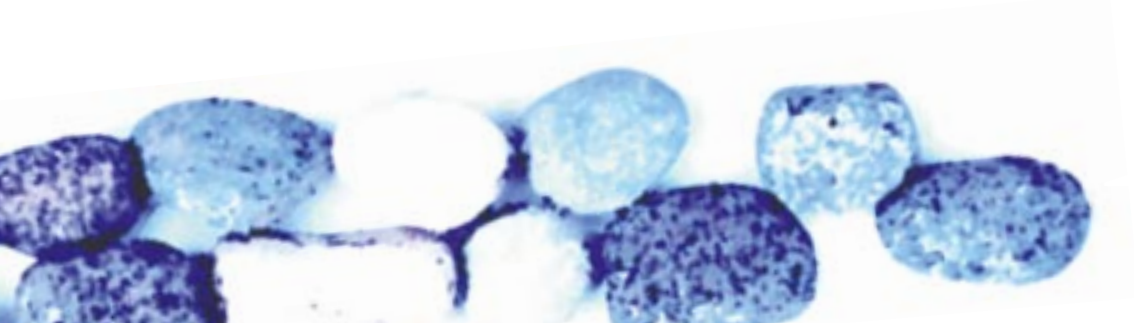
Robert Masonis, Trout Unlimited

In the US we have learned the harmful effects of dams the hard way. Many species, especially trout and salmon, suffer because of dammed rivers. River communities suffer as well. Today, in the US we are removing dams, not building them - more than 1.000 dams have been removed in the last 15 years. Europe and especially the Balkans should think twice about marching down the dam-building road in light of our experience. Fishermen, community leaders and conservationists should band together to protect their rivers.

Azzam Alwash, Nature Iraq and Winner of the Goldman Prize 2013

Millions of people suffer because of dams. I have witnessed this in my home country Iraq. Now dams upstream in Turkey, Syria and Iran are turning the Tigris and Euphrates rivers into small canals and instead of being the source of life for the marshes of southern Mesopotamia, the cradle of civilization, they bring slow death to the agricultural lands where civilization started. Hydropower is not green, dams cause deserts.

photo: Schöffelmann



The adverse impacts of hydropower plants

General impacts	Global facts and figures
The river's flow regime is fundamentally altered.	
Upstream of the dam wall, a section of the dynamic river is turned into a monotonous stagnant waterbody.	Worldwide, between 500 and 750 million people suffer from direct or indirect impacts of dams, e.g. as a result of declining fishing stock, limited availability of freshwater for household consumption or farming, or the decline of drinking water quality.
Often, large acreages are flooded which previously did not experience floods. Flood-plain habitats, settlements and agricultural lands are lost.	Between 40 and 80 million people have been displaced as a result of dam construction.
In reservoirs, the surface water's capacity for self-purification is impaired, leading to the accumulation of harmful substances. As a result, surface water and groundwater quality decreases.	4 % of greenhouse gas emissions are generated in reservoirs (primarily methane). Dams therefore contribute to climate change to the same extent as the total global air traffic.
The river's natural floodplains are cut off. Valuable habitats and flood retention areas are lost.	40 % of the world's river water is held behind dams.
	Global evaporation from dams amounts to 280 km^3 per year, which is equivalent to 7 % of the water used by the world's human population.
As natural flood retention areas are reduced, the risk of downstream floods increases. Both the speed and height of flood waves increase.	While in 1965 a flood wave took 65 hours to travel from Persenbeug (Austria) to Vienna, it only takes 24 hours today following the completion of the Danube hydropower plants.

General impacts	Global facts and figures
Dams block the passage of river species.	
Fish and other river fauna cannot pass dams and weirs. Most often, fish ladders still do not solve this problem.	Scientists are concerned that approximately 1,000 fish species may become extinct in the Amazon basin as a result of dams and hydropower plants construction (there are plans for 60 mega dams and 600 medium-sized power plants).
Reservoirs destroy habitats required by numerous fish species and other fauna for their life cycles, e.g. for reproduction.	In the Balkans, 75% of all threatened fish species are highly vulnerable to dam construction and would not survive in the long run.
The transport of river sediments is blocked.	
The movement of gravel and sand transported by the river is blocked by the dam wall. This material accumulates in the reservoir and is lacking downstream.	Worldwide, one third of all river sediments (sand, gravel) gets trapped in reservoirs and no longer reaches the sea.
As a result, riverbed erosion increases downstream, i.e. the river cuts deeper and deeper into its bed.	In many riverine regions this percentage is even considerably higher! In the Danube catchment, for example, 85 % of sediments are held back. In the Volga River the percentage is as high as 92 %.
This, in turn, leads to a drop in groundwater level, often by several meters, since the river level correlates with the groundwater level in the vicinity of a river. With major dams this impact can often be felt over distances of several hundred kilometres.	
As sediments no longer reach the sea, deltas and estuaries decline in size, with a corresponding loss of coastal habitats for species of fauna as well as for humans.	

The adverse impacts of hydropower plants

Hydropower plant operation …
… turns rivers into rivulets. For many hydropower plants water is carried through pipelines to generate electricity at a different location. Below the dam only a trickle of water remains (“residual water”) in the riverbed. During the summer months the riverbed may even fall completely dry.
… often brings daily floods. The most profitable power plants are those that generate electricity at peak demand. Dammed water is only released when demand is high, which means that penstock gates taking water to the turbines are only opened for a few hours per day, resulting in a flood wave flushing down the river. These daily floods are deadly for aquatic life below the dam.

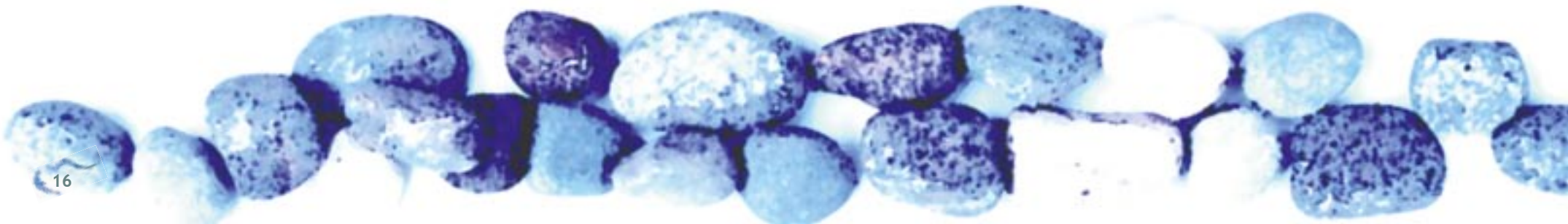


photo: Miha Ivanc

Fly fishing on Radovna river, an intact tributary of the Sava in Slovenia.

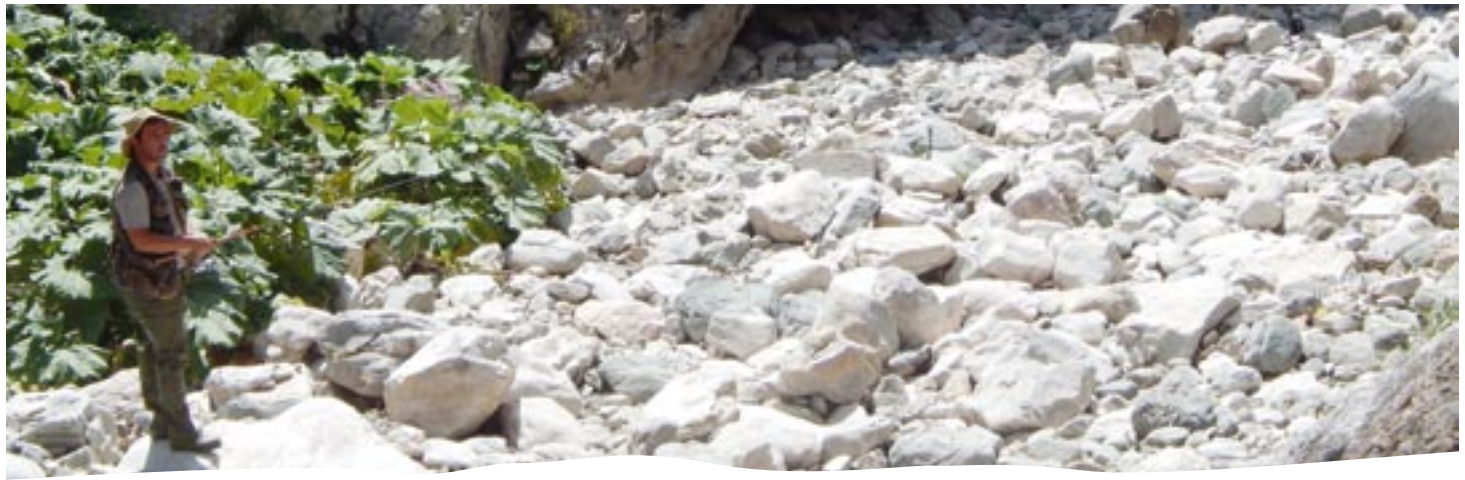


photo: Front 21

„Dry fishing“ on Crn Kamen river in Mavrovo National Park. The water is extracted and diverted to turbines and another catchment, causing the river to fall dry in summer.

Closing the gap between hydropower and nature conservation

"But every country needs energy!" is an often-voiced contention. True. But it is also true that hydropower plants always have adverse or even devastating impacts on watercourses and their inhabitants. How can we find a solution for this dilemma?

Three steps are required for the development of a modern and viable energy and conservation concept:

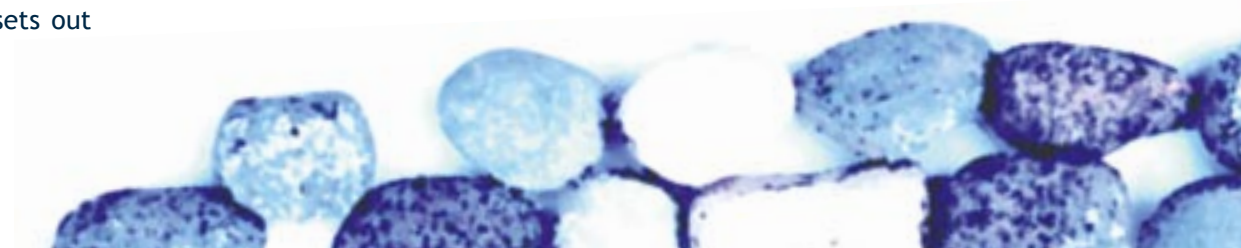
Step 1: Energy concept. A concept must determine how much energy a country actually needs and from which sources the energy shall come from (how much shall be derived from energy saving, sun, wind, gas, hydropower).

The following steps are indispensable for hydropower projects:

Step 2: Master plan. This spatial development plan needs to define "no go areas" for new hydropower projects, i.e. rivers or sections of rivers which for ecological, cultural or social reasons must under no circumstances be subjected to engineering measures. New hydropower plants may only be developed in carefully selected river sections.

Step 3: State-of-the-art Technology: New dams in approved sections may only be constructed in accordance with state-of-the-art technology.

A regional master plan for the Balkans is indispensable unless we want to risk the Blue Heart of Europe suffering a heart attack! At present, hydropower plants are being planned, authorized and funded all over the place, regardless of the ecological damage they cause. We are calling for a politically agreed upon, binding spatial development plan for the Balkan rivers. Such a plan would be similar to a preparatory land use plan or zoning plan which clearly sets out where development may take place and where not.



In contravention of European regulations

One of the reasons for the 'dam boom' on the Balkan Peninsula is poor implementation of existing legislation. While Slovenia, Croatia and Bulgaria have already joined the European Union, most other south-eastern European countries are aspiring EU membership. The European Union stipulates that prospective members must adhere to EU standards even during the accession process.

However, our analyses have shown that the opposite is true: Project applicants, financiers and authorities in the Balkans are systematically ignoring the following EU Directives:

- **Habitats Directive and EU Birds Directive:** Hydropower plants which are likely to have adverse effects on protected species and habitats must not be built. Often there is no proper assessment of compliance with these two EU Directives.
- **Water Framework Directive:** This Directive stipulates that the ecological and structural condition of surface waters must not deteriorate. Similar to above, the necessary assessment is mostly not carried out.
- **Environmental Impact Assessments (EIA)** are "pro forma" assessments in most cases. Both the assessment procedures and the contents of the EIAs are deficient and do not comply with EU guidelines. It is common for environmental reports to be based on incomplete, inaccurate or outdated data. As a result, almost all the EIAs attest to the projects' environmental compatibility.

Who is behind this?

Under the disguise of "development cooperation" and "green energy generation" many of the hydropower projects on the Balkan Peninsula are receiving support from primarily EU-based international banks, companies or energy groups.

They are the main beneficiaries of hydropower projects!

The Langarica case (Albania)

The Langarica is a small wild river that discharges into the Vjosa river (a key area of the campaign) near the village of Permet. It flows through a breathtaking wild canyon, under an ancient arch bridge at the exit of the canyon and passes hot springs which characterize the landscape. The area is located inside the Fir of Hotova National Park and the thermal springs are – as a touristic attraction – an important source of revenue for the region. However, regardless of the area's protection status and albeit massive protests of local communities, the Austrian corporation ENSO Hydro received a licence for the construction of a 9MW hydropower plant along the Langarica. The construction entails the diversion of almost the entire river water into pipes. As a result, the canyon will virtually fall dry downstream of the plant; the Ottoman bridge will lose its purpose and the future of the hot springs is put at risk. And all of this in the midst of a national park! The construction of the power plant is financed by international institutions: by the World Bank subsidiary IFC (International Finance Corporation), the "Green for Growth Fund Southeast Europe" as well as by the Development Bank of Austria (OeEB).

What is at stake?

Dynamic primeval landscapes

As yet, the Balkan rivers can flow freely, toy with the sediment they carry in their flow, form islands, and branch out unimpeded. They are the lifelines of nature, the beating Blue Heart of Europe. EuroNatur and Riverwatch assessed about 35,000 river kilometers between Slovenia and Albania in order to answer the following questions: In what condition is the rivers' physical structure (hydromorphology)? Are there gravel banks, erosion banks, variations in flow rates, and substrate diversity? To what degree have the rivers been straightened, dammed or otherwise affected by engineering measures? How unimpaired is their flow? The study's results are impressive:

- 30 % of the Balkan rivers are in a pristine state, another 50 % are in a good condition or only moderately modified.
- In other words, almost 80 % of 35,000 river kilometres are in a very good, good or acceptable hydromorphological condition.

The Balkan rivers hydromorphological quality is unmatched in Europe!

Most of the rivers in Germany and other European regions have been squeezed into artificial corsets, they have been dammed and their natural dynamics have been suppressed. Here are a few figures from the Balkans in comparison:

- In Albania and Montenegro, more than 60 % of the rivers are in a natural or near-natural hydrological condition. The same can be said for only 10 % of the rivers in Germany. 60 % of German rivers are heavily engineered.

The full study is available online at

www.balkanrivers.net/de/content/studien

map: Hydrologischer Atals Deutschland, BMU, 2003

map: Dr. Ulrich Schwarz / FLUVIUS

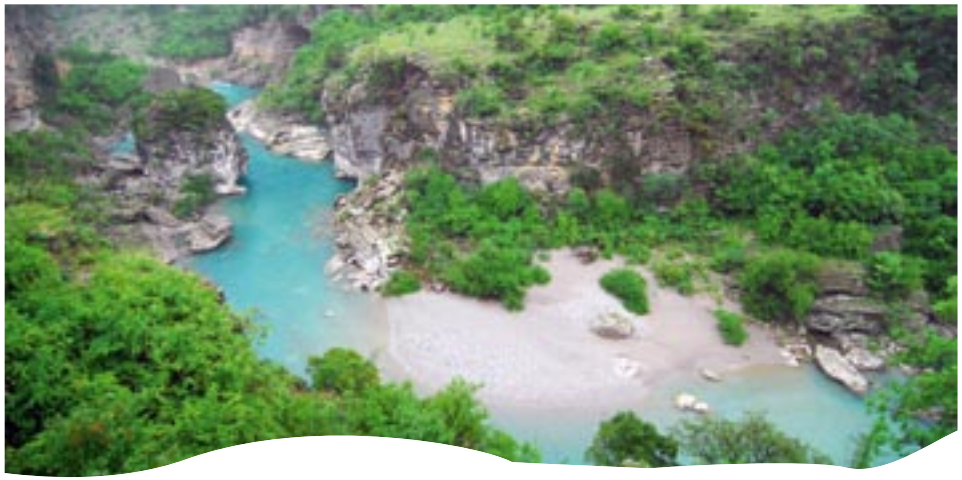
The Balkan rivers hydromorphological quality is unmatched in Europe (map right). See the hydromorphological map of Germany (left) for comparison - a rather typical river situation of European rivers, which results from river regulation, dam construction, navigation, and other hydro-engineering modifications.

Dynamic primeval landscapes

The following pages give an impression of the beauty and diversity of the Balkan rivers. All depicted river landscapes are threatened by planned hydropower plants!

photos: Anton Vorauer, Goran Safarek

Bregava, Bosnia and Herzegovina



photos: Anton Vorauer, Goran Safarek, Romy Durst, Angie Rother, Anton Vorauer

Morača, Montenegro

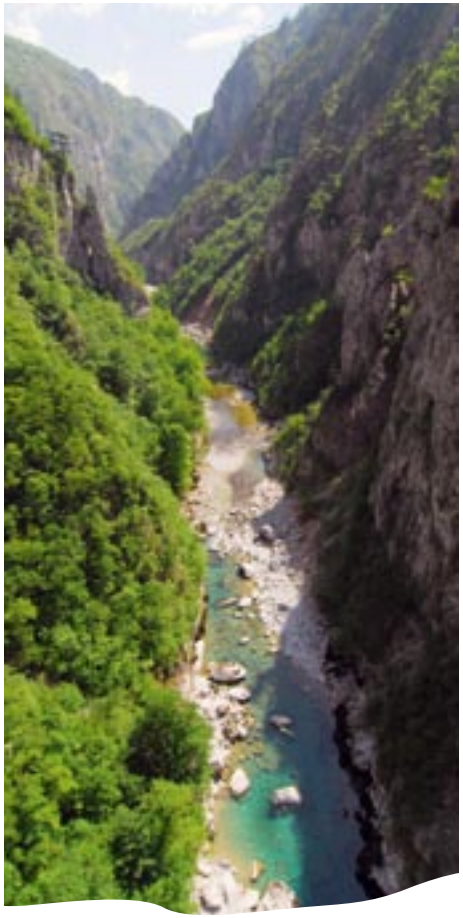
Kravice, Bosnia and Herzegovina

Neretva, Bosnia and Herzegovina

Krupa, Bosnia and Herzegovina

Mala Reka, Macedonia

Valbona, Albania



Piva, Montenegro

photos: RiverWatch, Ulrich Eichelmann, Tibor Mikuska, Paola Lucchesi

Soča, Slovenia

Tara, Montenegro

photos: Goran Safarek, Roland Dorozhani, Goran Safarek, Ljupcho Melovski

Save, Croatia

Vjosa, Albania

Crnojevica, Montenegro

Una, Bosnia and Herzegovina

Zrmania, Croatia

Lukovo Pole, Macedonia

Hotspot for European biodiversity

The Balkan rivers' dynamics are still able to create an extraordinary range of habitats for a multitude of species of flora and fauna. Trout and caddisfly larvae inhabit a maze of roots and rocks found in gushing mountain streams, wide gravel beds provide perfect spawning grounds for the Huchen (also known as Danube Salmon) while Great egrets and Black storks feed in the periodically inundated floodplains.

The Balkan rivers' biological diversity is breathtaking!

This is evidenced by another study conducted by EuroNatur Foundation and Riverwatch in 2011. Each individual result highlights the rivers' significance as hotspot for Europe's biodiversity.

- 28 % of all endangered European species of freshwater fish live in the Balkan rivers.
- Balkan rivers host 69 endemic fish species, i.e. species which only occur in the Balkans and nowhere else on earth.
- More than 40 % of all endangered European species of molluscs (mussels and snails), a total of more than 150 species, find habitat in the rivers and lakes of the Balkan Peninsula.
- The planned hydropower plants in the Balkans put between 70 and 75 % of these species at risk. They would not survive the alteration of their habitats caused by dam construction.

Many of the rivers in the region are largely unexplored. It is therefore quite likely that Balkan watercourses host numerous additional and yet to be recorded species.

The full study is available online at

www.balkanrivers.net/en/content/studies

Impressions from a biodiversity survey on the Vjosa river in Albania, in June 2014 in cooperation with GEO magazin.

photo: Romy Durst

photos: Adrian & Dalip Guri

In some areas the biodiversity is largely unknown, like on the Vjosa river in Albania.

Hotspot for European biodiversity

The species showcased on the following pages all have three things in common: they are rare, they need natural or near-natural watercourses, and they are threatened by hydropower projects. This selection of species stands for a long list of additional species of flora and fauna.

photo: Martin Hrouzek

The Scarce fritillary (*Eyphydryas maturna Romania*) is a species of butterfly which occurs alongside streams. Its caterpillar primarily feeds on leaves of the ash tree. All through Central Europe its populations have declined or the species has become locally extinct. In the Balkans, however, it still regularly occurs. One of the places where the species can still be found is the Mala Reka river in the Mavrovo National Park, one of the key areas in the „Save the Blue Heart of Europe" campaign.

photo: A. Hodalič

The Softmouth trout (*Salmo obtusirostris*) is one of four species of trout found in the Balkans. Moreover, the Balkans provide habitat to an additional 17 subspecies of trout. There is no other region on earth which hosts a similar diversity of trout species. Adriatic trout can reach 5 kg in weight. The species is found exclusively in the rivers Drina, Neretva, Krka and Jardo. It is critically endangered.

photo: blickwinkel/H. Baesemann

The Oriental plane (*Platanus orientalis*) is a tree most of us associate with parks and tree alleys. Its natural home are the floodplains of the Balkans and Asia. Oriental planes dominate and may form alluvial forests on rivers gravel banks, such as they can be found at the Vjosa river (a key area of the campaign). Mature oriental planes are the largest living beings found in the floodplains.

photo: Gregor Aljancic

The olm (*Proteus anguinus*) is found exclusively in flooded caves or, more precisely, in subterranean watercourses in the limestone karst region east of the Adriatic Sea. When the olm was first discovered in the 17th century, people thought they had found a dragon's offspring. The species is still shrouded in mystery to this day; its eggs have never been found in its natural habitat. Olms can live for more than 70 years and reach a length of more than 30 cm.

photo: Alexander Mrkvicka

The Striped nerite (*Theodoxus transversalis*) is a freshwater snail formerly typical to the Danube catchment. It occurs in larger Danube tributaries and has already gone extinct in Slovakia and Hungary. It cannot survive in dammed waters. 151 rare species of freshwater molluscs live in the Balkans, more than anywhere else in Europe.

photo: Kerstin Sauer

The Balkans' only breeding population of the European spoonbill (*Platalea leucorodia*) can be found in the Croatian Sava floodplains in the Lonjsko Polje Nature Park. Up to 150 breeding pairs of these heron-sized birds with odd shaped beaks raise their young here. They feed in the Sava river's extensive floodplains and can often be seen feeding together with storks and different heron species. The planned upgrading of the Sava river (a key area of the campaign) for inland navigation would change the floodplains' water regime and thus also threaten the spoonbills.

photo: Gernot Pohl

The Little tern (*Sterna albifrons*) is a most elegant little wetland bird species. Unfortunately, it has become very rare in Europe as its breeding grounds – gravel banks and sandbanks in larger rivers – have become scarce. One of their last breeding sites can be found along the Sava river near Zagreb. This site is, however, at risk from hydropower projects.

photo: Alfred Limbrunner

Another 'specialty' of the Sava floodplains is the Lesser spotted eagle (*Aquila pomarina*). Around 30 to 40 breeding pairs nest in the alluvial forest along the Sava river. The Lesser spotted eagle is one of the smallest and rarest of Europe's eagle species. In addition to natural or near-natural forests it is dependent on wet meadows, where it hunts its prey "on foot".

photo: Hans Glader

The European otter (*Lutra lutra*) can still be found in most of the rivers and streams on the Balkan Peninsula, though not abundantly. It feeds on anything its territory provides: fish, amphibians, mice, muskrats, ducks and so on. Females give birth to up to four pups which she nurses for three months.

photo: Wolfram Graf

This photograph has captured something very special! It shows an individual of the Balkan Goldenring, a rare subspecies of the *Cordulegaster heros pelionensis*. This rare dragonfly reaches a size of up to 10 cm and is only found in south-eastern Europe. Its habitat consists of cool, shady streams with gravel or sand beds. It is at risk primarily due to small hydropower plants (water diversion and damming).

Fritillaries (*Fritillaria meleagris*) are amongst the most beautiful of flowering plants on wet meadows. Most of its habitat has been destroyed due to drainage and, as a result, the plant is endangered throughout Europe. The Mavrovo National Park (a key area of the campaign) hosts the endemic Fritillaria macedonica, a species that is under acute threat from the Lukovo Pole hydropower project.

photo: Gunther Willinger

photo: Wolfgang Graf

The Siphonoperla genus of stoneflies (*Siphonoperla spec.*) is a very diverse and still largely unexplored genus in the Balkans. The photo shows a species that has yet to be formally described. It was recently discovered in the headwater region of the Sutjeska National Park in Bosnia-Herzegovina. Many of the species live in small streams and are also under particular threat from the construction of small hydropower plants.

photo: Tamás Németh

The 5-7 mm long *Potamophilus acuminatus*, a species of riffle beetle, is a highly specialized inhabitant of streams. It occurs exclusively in clean, fast-flowing watercourses and is dependent on the presence of semi-submerged deadwood, conditions that nowadays have become very rare. For this reason the species has become extinct in many countries. We found it in the Vjosa river in Albania in the summer of 2014.

photo: Marjan Komnenov

The European black widow (*Latrodectus tredecimguttatus*) occurs in steppe-like areas with sparse vegetation such as can be found on the gravel banks of major rivers. It primarily feeds on small beetles. The behaviour in which the female eats the smaller male after mating has inspired the common name of „widow spiders“. This species was recorded during a three day survey at the Vjosa river in Albania. Another 80 spider species were recorded as part of the survey, including 11 first species records for Albania.

photo: Dieter Bock

The European pond turtle (*Emys orbicularis*) lives in stagnant or slowly flowing watercourses. It can reach a length of up to 18 cm and may live for 60 years. It can still be found in many wetlands in the Balkans. Females bury their 9-15 eggs in sandy banks of watercourses, with the nesting sites being well exposed to sunshine. The turtles hatch in late summer. Females occasionally then lay a second clutch of eggs.

photo: Jörg Freyhof

The rare *Delminichthys krbavensis*, a fish species of the minnow family, is restricted to the karstic freshwater springs and streams of the Krbavsko Polje in Croatia. Any change to its habitat can spell the end of this species' existence. It is one of a total of 69 species of fish endemic to the Balkans, i.e. species that occur nowhere else in the world but there.

The Huchen – last of its kind

The Huchen (Hucho hucho) is an outstanding specialty of the Balkan rivers. Amongst fishermen its reputation precedes it: It is known as rare, huge, and hard to catch! The species is endemic to the Danube catchment and therefore also known as Danube salmon. Apart from its large size and rarity, it is characterized primarily by its very specific habitat requirements.

- Huchen can reach a length of up to 180 cm, making it the largest freshwater fish species at our latitudes net to the sturgeon and catfish.
- In Germany and Austria, only residual populations remain of the formerly widespread species. It is estimated that between 70 and 90 % of the original Huchen populations have been lost over the last 100-200 years. Over time, most of the species' habitat has been destroyed as a result of water pollution, gravel extraction, and in particular the construction of hydropower plants.
- Huchen are dependent on free flowing, cool and oxygen-rich rivers for feeding and reproduction.

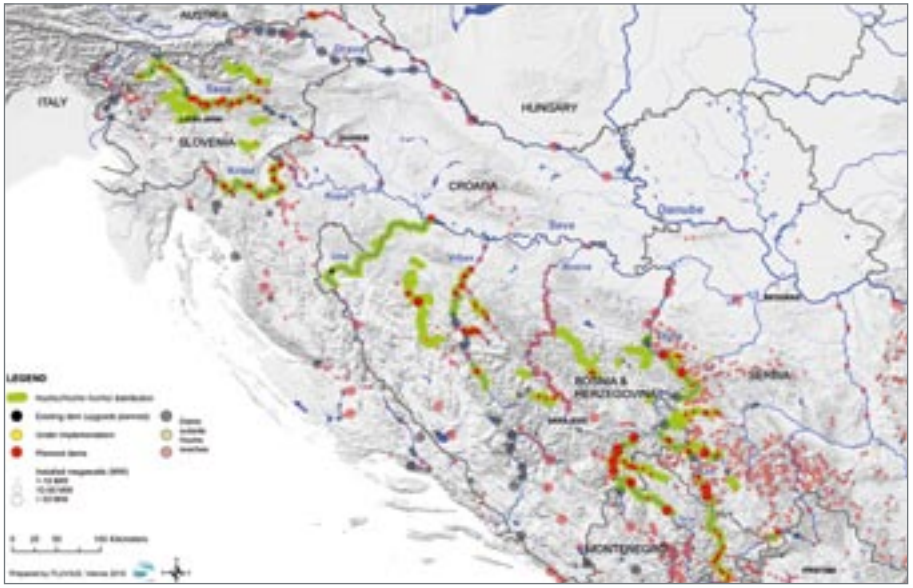
Reliable data for the Huchen's occurrence in the Balkan rivers was not yet available. Within the framework of the Blue Heart of Europe campaign, an international team of 18 experts has shown that the rivers of the Balkan Peninsula are of outstanding importance for the survival of this fish species. It is estimated that approximately 70 % of the species' global population occur in the Balkan rivers, and in particular in the Sava catchment.

- Self-sustaining populations of Huchen were recorded along 1,822 river kilometres, making the Balkans a global hotspot for the species.
- Of these 1,822 river kilometres, 1,000 km are under threat due to the planned construction of 93 hydropower plants.
- If these plans are carried out, at least 60-70 % of the Huchen population in the Balkans are likely to be lost. The species would then be on the brink of extinction as the remaining populations might be too small and too fragmented to guarantee the species' long-term survival.

The Huchen is an indicator species. If we manage to maintain this species we will also maintain other rare species such as Danube roach, Common zingel and Souffia along with it.

maps: FLUVIUS

Distribution of Huchen on the Balkans. More than 1,800 river kilometers with healthy populations.



Huchen populations and hydropower planning in Western Balkan.

photos: Clemens Ratschan

93 dams are planned inside Huchen stretches, putting this marvellous species at risk of extinction.

Experiencing nature at its best

Intact rivers are essential not only for fauna but also for humans. The Balkans' pristine river landscapes have the potential to boost sustainable socio-economic development. The desire to slow down, the longing to experience nature and wilderness first-hand are becoming particularly prevalent in western industrialized countries. This is an opportunity for the communities along the Balkan rivers to establish their regions as attractive green tourism destinations. It does necessitate however that the Blue Heart remains unharmed!

The complex network of the Balkan rivers is a true paradise for outdoor enthusiasts:

- Those who engage in canoeing and kayaking find spectacular canyons, picturesque valleys and lush alluvial woodlands, turquoise crystal clear waters and rich wildlife.
- Flyfishers find themselves in largely untouched landscapes offering fabulous outdoor experiences.
- Flyfishing is considered the most considerate form of fishing and is rapidly gaining in popularity. The president of the European Fly Fishing Association (EFFA) estimated the number of flyfishers in Europe at about one million and rising in a 2012 interview.

For the people in Balkan riverine regions, intact rivers offer recreational opportunities and sustainable livelihoods!

This is, for example, demonstrated by data from the Slovenian Soča valley. The Soča river is one of Europe's most pristine wild mountain rivers:

- Canoe and kayak businesses showed a turnover of almost 18 million Euro in 2012.
- Local fishing associations earn an average 500,000 Euro per annum in flyfishing rod licence fees.
- Tourists/visitors to the Soča valley spend an average of 30 Euro per day on food and accommodation.
- In a survey, 86 % of visitors to the area highlighted the significance to them of the area's intact nature; conservation measures at the Soča river are correspondingly strict.

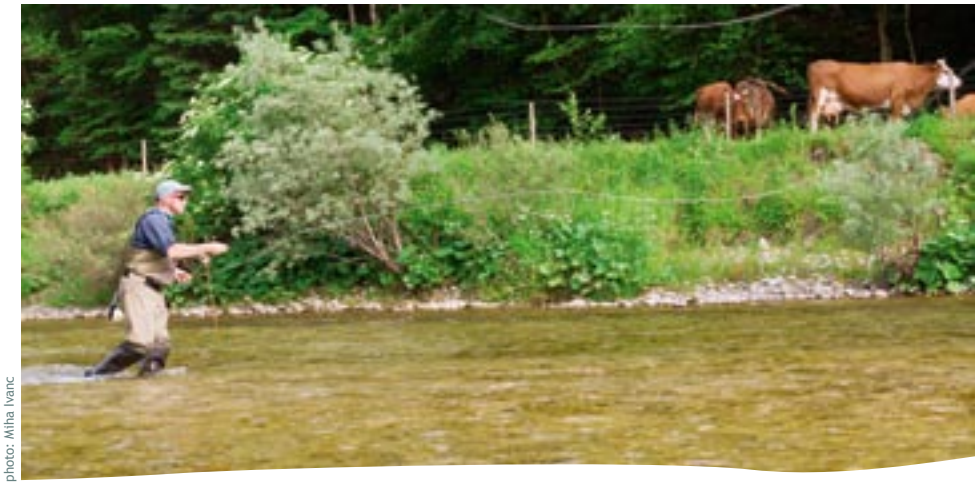


photo: Miha Ivanc

photo: Goran Safarek

photos: Goran Safarek

photo: Rok Rozmann / leeway-collective.com

Rivers are lifelines for people.

photo: Neža Posnjak

»Dams rob the Balkan youth of their economic prospects.
We should have a say in what happens to our rivers since it is OUR future they are planning to spoil.«

Kristina Glojek
Geographer (Slovenia)

photo: Adnan Zvonic

"Flyfishing is a passion and the rivers in the Balkans are like a paradise to me. Fishing goes hand in hand with river protection, if you ask me, and at the same time it is a potential source of income for many communities situated along the rivers. Dams would destroy all of this."

Adnan Zvonic
a flyfisher from Konjic (Bosnia and Herzegovina)

photo: Jörg Freyhoff

"The rivers of the Balkan Peninsula, including the ones underground, are THE European hotspot for freshwater biodiversity. Here, more endemic and threatened species exist than anywhere else on the continent. If these dam projects become reality it would mean a disaster for most of them."

Jörg Freyhoff
European Chair of the IUCN/SSC Freshwater Fish Specialist Group

photo: Kerstin Sauer

"The Mavrovo National Park is the last stronghold of the Balkan lynx. The plans to build a number of hydropower plants and supporting infrastructure inside the national park boundaries undermine our efforts to safeguard this critically endangered cat."

Thies Geertz
EuroNatur Coordinator of the Balkan Lynx Recovery Programme

”Save the Blue Heart of Europe“ campaign

Our mission

We – the conservation organizations EuroNatur Foundation and Riverwatch in cooperation with local partner organizations – endeavour to preserve the Balkan Peninsula's unique river landscapes as part of Europe's natural heritage. Our aim is to save the ecologically most valuable streams and rivers from destruction. They shall be preserved,

- for the benefit of nature and biodiversity;
- as destinations for lovers of nature who travel there to experience living river landscapes;
- as the basis of sustainable socio-economic development in their respective regions, for this and future generations;
- as symbols of deep cultural meaning for local communities;
- as research areas, given that these rivers' ecological integrity is largely unmatched in Europe.

It is for these reasons that we have started the “Save the Blue Heart of Europe” campaign.

Three key areas

The campaign focuses on three areas of particular ecological significance. All three areas are under threat from major hydropower projects:

- the Vjosa river in Albania
- the Mavrovo National Park in Macedonia
- and the Sava river along its entire course through Slovenia, Croatia, Bosnia-Herzegovina and Serbia

Our objectives

- To inform the national and international public about the Balkan rivers' uniqueness and the threats they are facing.
- To stop the dam projects planned in the three key areas.
- To build up additional knowledge about the biodiversity of those Balkan rivers playing a crucial role in terms of biological connectivity and endemism (species that are unique to a defined geographic location and are not found elsewhere in the world) in the region.
- To initiate the development of a master plan for the Balkan rivers (see Page 18).

All the campaign information is available at www.balkanrivers.net

In our campaign, we concentrate on three key areas (marked green): the Vjosa river, the Mavrovo National Park and the Sava river. They are particularly valuable and thus need to be spared from hydroelectric development at all costs.

The campaign's key areas

Mavrovo, one of Europe's oldest national parks

In one of Europe's oldest national parks, the Mavrovo National Park in Macedonia, plans exist for the construction of 20 hydropower plants; another one is under construction and one has already been completed. These projects threaten to destroy biodiversity which has developed here over thousands of years.

- The Mavrovo National Park hosts more than 1000 plant species as well as unique primary beech forests.
- In addition to other large carnivores, the national park is home to one of the world's rarest cats – the critically endangered Balkan lynx, a subspecies of the Eurasian lynx. The Mavrovo National Park is the only region where the Balkan lynx is known to successfully reproduce.

National parks serve to protect nature and biodiversity and offer opportunities for recreation. In Mavrovo, however, the national parks idea is about to be corrupted to the point of absurdity!

- Inside the protected area, there are plans to build two major dam facilities ("Boskov Most" and "Lukovo Pole") with funding from the World Bank and the European Bank for Reconstruction and Development (EBDR).
- Boskov Most (in the south of the national park): The dam is designed to generate electricity at peak demand. To this end, the Mala Reka stream and other tributaries are to be diverted into an impounding reservoir. The Mala Reka would almost completely dry out below the dam wall. The planned peaking operation would be disastrous for biodiversity.
- Lukovo Pole (on the border to Kosovo): Several tributaries of the Radika river are to be diverted into a reservoir. This project is planned in one of the ecologically most valuable and most beautiful parts of the national park.

Project impacts

- All dam projects in Mavrovo National Park violate national parks guidelines and may risk the revocation of Mavrovo's status as a national park.
- Disturbance effects resulting from the plants' construction would pose an additional threat to the Balkan lynx population.
- If the projected hydropower plants were to be built hardly any stream would be left unregulated in the Mavrovo National Park.
- A considerable number of species would be lost. Amongst others, fish species, otters, dragonflies and almost all stream insects would be affected.
- According to the organization PlantLife, the Lukovo Pole project would affect 17 endangered plant species as well as 13 endangered habitat types.

We call for:

- No new hydropower plants in the national park!
- All investors must withdraw their project funding!

Detailed information can be found at www.balkanrivers.net/en/key-areas

photo: Romy Durst

Radika River

Burnet (Zygaena spec.) and Marbled White (Melanargia galathea).

photos: Gabriel Schwaderer, MES

Balkan lynx (Lynx lynx martinoi)

photo: Ljupcho Melovski

Site of dam construction for Lukovo Pole.

photo: Gabriel Schwaderer

Mala Reka

Vjosa – Europe's wild jewel

The Vjosa river is amongst the most important lifelines of the "Blue Heart of Europe". It flows freely along its entire course of more than 270 kilometres! What's more, even the tributaries are largely intact, creating the last pristine system of wild rivers in Europe. The Vjosa is as yet largely unexplored. Initial research has shown that it hosts an extraordinary diversity of species and habitats.

- The waters' dynamics create a unique mosaic of gravel banks and islands. In some places the riverbed expands over more than two kilometres in width.
- The Vjosa river and its adjacent habitats host species that have become rare or have gone extinct in Central Europe and which are indicative of a very healthy ecosystem.
- The above include a number of migratory fish species such as the critically endangered European eel.
- The fish species Ohrid loach and Pindus stone loach are found only in the Vjosa river and a few other neighbouring rivers.

People benefit

- Nature tourism is continuously gaining in importance and safeguards the livelihoods of a growing number of small enterprises.
- The well-known Langarica hot springs are an important tourist attraction and source of revenue for the region.

The Vjosa river is a major asset because of its pristine nature, the very characteristic that is now at stake!

- A total of 33 hydropower plants are projected along the Vjosa and its tributaries, six of which in Greece (where the Vjosa is called Aoos) and 27 in Albania.
- The Albanian government has plans for a chain of eight hydropower plants along the Vjosa river itself.
- One of the plants, near the town of Tepelena in Albania, has been under construction since 2007 (the Kalivac project). While the project has been stalled for the time being, construction could recommence at any time!

Expected impacts?

- The construction of just a single dam on the Vjosa would be sufficient to cause massive disruption to the river's hydrological regime and sediment transport.
- The Kalivac dam would destroy a unique valley landscape. One of the largest and last remaining habitats of the European eel and other migratory fish species would be lost.
- If the hydropower projects on the tributaries became reality, this would mean the end for the Vjosa as well. The change in water regime and sediment transport would have severe negative impacts on the main river. It is like cutting off all branches of a tree – the entire tree will ultimately die.

We call for:

- A stop to the planned dam projects on the Vjosa river and its tributaries.
- The establishment of a Vjosa National Park — the first European Wild river National Park — encompassing the river along its entire length from its mountain headwaters to its estuary in the Adriatic Sea.

Detailed information can be found at www.balkanrivers.net/en/key-areas

photos: Romy Durst, Goran Safarek

A Vjosa National Park would provide residents of the valley with new economic opportunities.

Press conference on the banks of the Vjosa in May 2014, at which we put forward our demands for a Vjosa National Park.

photos: Adrian Guri, Goran Safarek

Tessellated water snake (Natrix tessellata).

photo: Goran Safarek

Vjosa's upper reaches.

photo: Roland Dorozhani

In the middle reaches, Vjosa's riverbed expands from one side of the valley to the other – at its maximum almost 2.5 km in width.

Sava river – Europe's natural source of flood protection

With its alluvial forests, ox-bows, steep natural banks and adjacent agricultural land shaped by its interaction with the river, the Sava represents one of Europe's ecologically and culturally most interesting river landscapes. Along its length of 950 km, the Sava river connects four countries and more than eight million people.

- The large natural floodplain areas in the middle section provide a unique natural flood protection system.
- Along its length the river is lined with a huge network of species-rich alluvial forests with English oak and ash.
- The floodplains provide rich feeding grounds for numerous bird species such as the now rare Spoonbill, White stork and many heron species. The Sava floodplains are of outstanding European importance for the protection of the White-tailed eagle, Lesser-spotted eagle and Black stork. Sand martins can still be found breeding in the steep natural riverbanks.
- The river's free flowing Slovenian section is home to the Huchen, Europe's largest salmonid freshwater fish.

Symbol of regional identification

Over the centuries, people living along the Sava river have adapted to the river's water regime. The diversity of regional artisan products is as great as that of this unique river landscape itself. Both regional products and eco-tourism offer growing prospects.

The Sava river is coming under attack from both dam projects and development for inland navigation!

- The existing 17 hydropower plants in the upper reaches of the Sava catchment are causing significant damage downstream. Nonetheless, alone on the Sava river itself, another 22 plants are projected. Moreover, almost all its tributaries are subject to further development plans.
- As part of a project entitled "Zagreb on Sava", seven hydropower plants are to be built, along with a 34 km long bypass canal to divert flood waters around the Croatian capital.
- The still free-flowing lower reaches of the Sava are earmarked for inland navigation development despite the fact that commercial shipping makes very little use of the Sava as a waterway.

Impacts of the developments

- Inland navigation development and the planned hydropower projects would severely disrupt the Sava's natural dynamics, dry out the floodplains and destroy the river system's biodiversity.
- Along with the river's dynamics, a unique natural flood protection system would be lost.
- Construction of the hydropower plants would spell the end of the Huchen as a species, despite its status as a protected species under the EU Habitats Directive.
- The communities living in the Sava catchment would lose their basis for sustainable regional development.

We call for:

- No new hydropower plants on the Sava river!
- No inland navigation development for additional shipping classes!

Detailed information can be found at www.balkanrivers.net/en/key-areas

photo: Kerstin Sauer

European Stork Village Cigoc in the Sava floodplains.

The old breed of the Posavina horses is ideally adapted to the repeated flooding in the Sava water meadows.

Because the water is not prevented from naturally flooding Sava's banks at Lonjsko Polje Nature Park, downstream flood waves are smaller and slower.

photos: Kerstin Sauer, Frank Scheil

Fire-bellied toad (Bombina bombina).

photos: Goran Safarek, Martin Schneider-Jacoby

Natural riverside of the Sava.

photo: Gunther Willinger

Turopolje pigs on pasture at Lonjsko Polje Nature Park. They are also excellently adapted to their often flooded environment and thus unique.

photo: Roland Tasho

»We don´t want dams here on the Vjosa.

Instead we prefer a national park, not only to protect the river, but also for the economic benefit of our municipality.«

Gilberto Jaçe
former Mayor of Përmet, a small town on the banks of the Vjosa

photo: Pavel Bečka

" In the Balkans even national parks are under threat from the construction of hydropower plants. That is totally unacceptable. National parks protect world natural heritage and national natural heritage. Power plants have no place there. "

Hans Bibelriether
former Director of the Bavarian Forest National Park

Imprint

About us

We are a coalition of NGOs who have launched the “Save the Blue Heart of Europe” campaign in order to raise awareness about the imminent dam craze on the Balkan Peninsula and to spare the most valuable rivers and river stretches from destruction.

International Team:

EuroNatur Foundation
www.euronatur.org

RiverWatch — Society for the Protection of Rivers
www.riverwatch.eu

Contact: info@balkanrivers.eu
www.balkanrivers.net

Our local partners:

Albania

EcoAlbania
www.ecoalbania.org

Macedonia:

MES
Macedonian Ecological Society
http://mes.org.mk

Eco-sense
Center for environmental research and information
www.ekosvest.com.mk

Front 21/42
Environmental Citizens' Association
www.front.org.mk

Croatia:

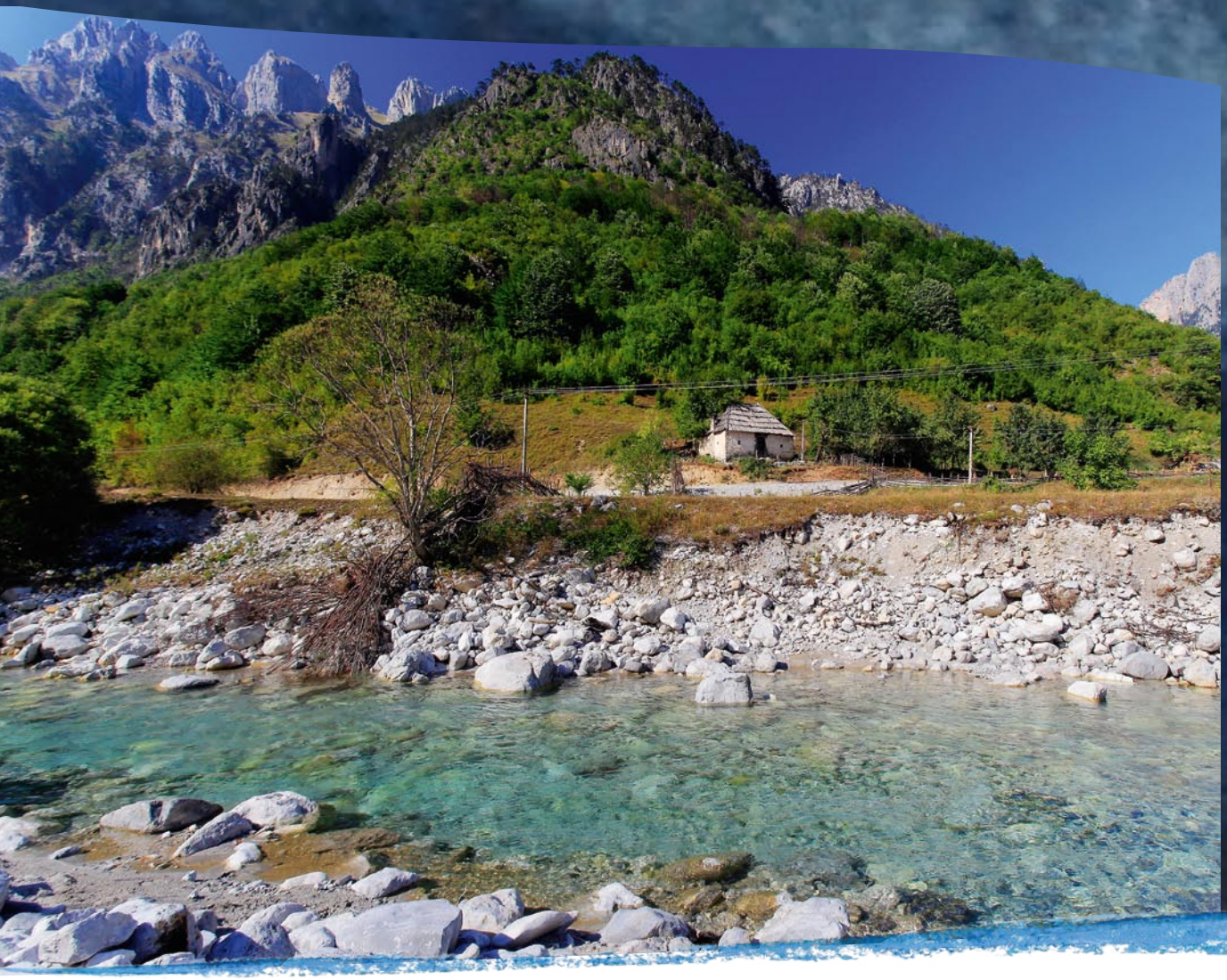
CSBNP
Croatian Society for Bird and Nature Protection
www.ptice.hr

Slovenia

Neža Posnjak
Coordinator of the „Save the Blue Heart of Europe" campaign in Slovenia

The "Save the Blue Heart of Europe" campaign receives financial support from the Mava Foundation and the Manfred-Hermsen-Stiftung (Foundation for nature conservation and environmental protection).

photos cover: Goran Safarek, Roland Dorozhani

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