

Taulant Hazizaj, a cage fighter turned environmentalist, stands on a browning hillside overlooking his extensive olive grove and the sweeping braids of the Vjosa River, watching as two workers scrape a small circle around the base of each tree, readying them for a new drip-irrigation system. Soon, though, too much water might be his problem because the Albanian government looks to implement a plan to build an enormous dam just downstream. Touted as green energy, the dam would back up the Vjosa and its waters would rise up the hillside, destroying Hazizaj's livelihood and eliminating the last, large, free-flowing river system in Europe.

The musclebound entrepreneur looks more like a bouncer than a conservationist, but the plan to flood his 3,800 trees near the ancient village of Kuta has forced him into this new role. Hazizaj waves his arm outward across the view of the wide valley, with the Vjosa at the bottom, out over the villagers' farmlands, from wheat fields on the banks of the river's channels on up through vineyards, zucchini patches and herds of grazing sheep and up farther to his olive groves. "All this," he says, will be lost.

The Vjosa runs some 270 kilometers from its headwaters in the mountains of northern Greece, crossing through the ridges and plains of southern Albania, eventually flowing into the Adriatic Sea. "The Vjosa is the last remaining big, wild river system in Europe outside the Arctic," says Martin Pusch a senior scientist at the Leibniz Institute of Freshwater Ecology and Inland Fisheries in Berlin. "From a pan-European standpoint, the river must be preserved at any cost."

The Vjosa is not the only river valley facing hydropower projects. Across the Balkan nations, 1,355 new hydroelectric plants are either under construction or planned. Many are located on pristine rivers that have never been exploited for their energy potential, and about half are in protected natural areas, according to a December 2015 report by finance watchdog Bankwatch. Some 200 recent projects have already been completed and 113 are being built, says the report.

In Albania drowning the river with the proposed main dam and reservoir at Pocem would eliminate a unique opportunity for scientists to research an intact, free-flowing river system. Further, the river and its tributaries are breeding grounds for eels that swim thousands of kilometers from the Sargasso Sea in the Atlantic. Other rivers on the Balkan Peninsula are home to the endangered Danube salmon, a species that can grow almost 1.5 meters long and weigh more than 50 kilograms. Almost 70 endemic fish species call the Balkan rivers home and some 40 percent of all endangered freshwater mollusk species in Europe are found here. The land surrounding the rivers is also home to the critically endangered Balkan lynx, and much of it would disappear underwater.

Increasing power output seems to be a high-priority goal for the Albanian government and businesses. Lured by the prospect of exporting electricity to other European countries hungry for green power, planning and construction have gone ahead mostly unchecked, says Zamir Dedej, director of the Albanian National Agency of Protected Areas, in Tirana, the nation's capital. "We live in a country where sometimes not all the rules are respected," he says. "There is a lot of corruption inside of process." He says that in the protected areas under his jurisdiction 77 hydropower licenses have been given. Some of the installations have already been built and 44 more are under construction. His environmental ministry does not have enough data or experts to calculate "how much economic damage will be caused to the environment," he says during an interview in his small government office. This should be done through an environmental impact assessment. But he says the studies done by the companies that won contracts have all fallen short.

Bankwatch, which monitors international banking in central and eastern Europe, notes that international development banks are playing a key role. So far, it says, the European Bank for Reconstruction and Development, the European Investment Bank and the World Bank's International Finance Corporation have extended loans totaling 818 million euros to 75 hydropower projects, including 30 directly affecting protected natural areas. "Our analysis clearly shows that especially for the EBRD, but also the World Bank group, financing hydropower projects in protected areas is the norm, not an exception," said Bankwatch's Pippa Gallop in a statement in December. "They need to finally start taking their internal safeguard policies seriously."

The EBRD has hired an independent consultant to examine Bankwatch's report. The preliminary findings show that of 21 projects listed by Bankwatch, two have been directly financed by the EBRD and 19 have been financed by that bank via agreements with other organizations and banks. Of those, four have been canceled, five are in established protected areas, three are in proposed new protected areas, three are in places that are recognized as important wildlife areas and four are in locations with no protection status. The EBRD says the projects in protected areas have not had a significant impact on the sites.

The International Finance Corporation's press office wrote in response to questions that "new hydroelectric and other renewable energy sources improves the energy mix in the region. Needless to say, that has to be done with an utmost care for biodiversity as well as natural and cultural heritage."

The trade-offs in deciding whether to dam a wild river can be difficult to assess. An undammed river can have more assets than an altered one, "and natural beauty is certainly

one of them," says Christoph Denk, head of the EBRD Tirana Office. But he adds that hydropower—the ability to generate electricity from a renewable resource with zero emissions—is valuable as well. "This will have to be weighed in each instance against each other." Denk says the EBRD has financed small hydropower projects in Albania that did not require large dams with reservoirs.

The situation is complicated further by climate change, which Denk calls a "serious concern" for Albania. He says it "needs to be taken into account when planning further renewable energy resources." A significant portion of Albania's electricity already comes from hydropower, and in dry years production can drop to much less than 50 percent of the system's capacity, Denk says. Furthermore, studies suggest that Albania, like the rest of the Balkans, will become drier as the planet continues to warm, lessening the usefulness of hydropower projects.

Still, Denk says, moving to renewable energy resources is very important for the region because as a whole it relies to a large extent on coal-fired power plants, although Albania already gets 85 percent of its power from hydroelectric plants. Although the overall impact of clean energy is beneficial to the planet, pristine river systems like the Vjosa are not renewable. Once they are dammed their unique value is destroyed, says RiverWatch founder Ulrich Eichelmann.

Damming the Vjosa would be a major loss, Eichelmann adds. "You must imagine a river like a big tree with branches," he explains. "The trunk is the main river, but the trunk can only survive if the branches are intact." The Vjosa's tributaries are still free of dams, he says, but "when you cut down a certain amount of branches, it doesn't matter if the trunk is still there."

source: scientificamerican.com