



FACTSHEET

GIVING A DAM: HOW HYDROPOWER IS DESTROYING EUROPE'S RIVERS



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SMALL HYDROPOWER PLANT ON THE ALLIER RIVER IN VICHY

FRANCE

The Allier River is one of the main ecological corridors for the migration of protected fish species. Yet, in 2018 French authorities awarded the retrofitting of an existing barrier on the river into a new small hydropower project (3.45 MW) operated by the SHEMA Company (EDF subsidiary) during a national call for tenders. As a result, the plant is set to receive a premium on the sale of electricity for 20 years. Even though it is built on an existing obstacle, the planned plant will extend the lifetime of the barrier and make it more difficult for fish to pass, especially for downstream migration.

A group of NGOs coordinated by the European Rivers Network (ERN) has mobilised against this project. They are pointing out the inconsistencies of the project with policies on river continuity restoration, as well as numerous shortcomings in the way environmental issues have been taken into account. According to these NGOs, the planned hydropower plant should not be built. At the very minimum, its activities should be halted during the migration period.

INCONSISTENCIES OF THE PROJECT WITH ENVIRONMENTAL POLICIES

For several decades, a policy framework [1] has been in place to remove or, at least, reduce the environmental impact of dams in the Loire basin, including the Allier River and its tributaries. A number of ambitious steps were taken: the removal of five of the main dams, the abandonment of three dam projects and, in 2021, the [partial removal of the Poutès dam](#) 210km upstream from Vichy.

THE LOIRE-ALLIER BASIN, A MIGRATORY AXIS OF EUROPEAN IMPORTANCE

The Allier River is the main tributary of the Loire River. The Allier basin includes some of the last wild rivers in Europe, which are home to several species of protected migratory fish, such as the Atlantic salmon, Sea Lamprey and European eel. In France, 82 to 86% of the potential spawning Atlantic salmon of the entire Loire basin can be found on the Allier migration axis. Many rivers in the basin are classified under national law (Environmental Code, article L214-17) for the protection of migratory fish and are specifically targeted by several management plans:

- The Loire River Basin Management Plan, targeting the good status of the water bodies according to the Water Framework Directive,
- The Plan Loire Grandeur Nature, since 1994, which led to the removal of a few main dams on the basin,
- The Management Plan for Migratory Fish (PLAGEPOMI), which includes 16 priority barriers for continuity in the Loire basin,
- The Climate Change Adaptation Plan of the Water Agency.

For several decades now, ambitious plans have been put into place to remove or, at least, equip and manage dams across the Loire basin, including the Allier River and its tributaries. However, despite positive steps to mitigate harm to freshwater ecosystems, the development of small hydropower plants in the basin is booming.

The planned hydropower project in Vichy runs against the national Biodiversity Plan, which promotes the restoration of continuity on 50,000 km of rivers by 2030, mainly on rivers classified to protect migratory fish. It also runs against the commitments set by the EU Biodiversity Strategy to restore at least 25,000 km of free-flowing rivers in the EU.

IGNORANCE OF CUMULATIVE IMPACTS AT THE BASIN LEVEL

The studies carried out for the Vichy hydropower station do not assess the cumulative impacts of the barriers on the Loire-Allier axis. However, considering the cumulative effects of barriers, even when they are equipped with fish passes, is necessary for maintaining declining populations of highly migratory species. Fish passes have limited effectiveness depending on the species and the development stages of the fish, and having to swim through many of them might still cause significant fish mortality throughout a migratory corridor.

The Allier River is classified in lists 1 and 2 for the protection of migratory fish under the Environmental Code, article L214-17. According to this article, the rivers classified in list 1 play a role of “biological reservoirs”, which means that “no authorisation or concession may be granted to construct new works if they constitute an obstacle to ecological continuity”. It is necessary for rivers or river sections categorised in list 2 to ensure “sufficient sediment transport and circulation of migratory fish”, which means that “all infrastructure must be managed, maintained and equipped according to rules defined by the administrative authority” [2].

The specifications for the calls for tender include a section on the “environmental unacceptability of a project”, which mentions that the local administrative authority (in this case, the prefect) may deem a project unacceptable on a river classified in List 1, Art. L214-17, particularly on “rivers that cannot tolerate additional cumulative impacts”, such as “the migration axis for the Allier salmon” [3]. At the time of writing this case study, the operator is still awaiting the environmental authorisation from the authorities.

NO DATA ABOUT THE ECONOMIC PROFITABILITY OF THE PLANT

For each call for tender, the French Energy Regulatory Commission (CRE) gives an estimate of the overall premium that would be granted to all the winners. However, the details for each plant are not available. This is a recurring problem for many small power plant projects, as the producers are not required to make such information public.

An estimate of the premium granted to the producers was made on the basis of data from the French Energy Regulatory Commission (CRE) for the 3rd period of the 2nd call for tenders. It represented a mean of €2.5 million/MW for plants >1MW and located on new sites [4]. **Thus, even if the characteristics of Vichy's plant are quite different, we can estimate that the public cost of the project is around €7.5 million during the 20-year contract.**

HYDROPOWER DEVELOPMENT IN FRANCE

In 2018, the overall French hydropower infrastructure consisted of approximately 2 500 plants, totalling an installed capacity of 25.5 GW. It includes about 400 hydropower concessions representing 90% of the overall power and 2,100 small plants (installed capacity < 4.5 MW) representing 10% of the overall installed capacity.

Since 2016, the small plants can benefit from one of two types of financial support: the feed-in tariffs (plants < 500kW) or the premium on electricity sales, notably granted to the plants between 0.5 and 4.5 MW.

Since 2016, the plants between 1MW and 4,5MW are selected by the French Ministry during national calls for tenders. The first call for tenders was launched in 2016. The second call was divided into periods. The first three periods took place in 2018, 2019 and 2020. Vichy's plant was one of the 14 awarded plants in 2018.

The Auvergne Rhône-Alpes region is the leading French region for hydropower, with 11.6 GW of electric power, which represented 45% of national production in 2019. This region is home to rivers with high biodiversity value, including the last wild rivers in Europe, which are home to migratory fish. Despite their unique value, producers continue to invest in small hydropower plants on these high-stake rivers as they receive financial support.

NO ASSESSMENT OF CLIMATE CHANGE IMPACTS ON THE ENERGY EFFICIENCY OF THE PLANT

The water supply of Vichy's plant is calculated by the producer based on past flow records (1963 – 2018). However, according to the Explore 2070 study carried out by the Biodiversity and Water Direction of the Ministry for Ecological Transition, and which served as a basis for the National Climate Change Adaptation Plan (CCAP), **by 2065, the river flow is expected to have decreased to a mere 25% of what it was in the 1960s due to climate change impacts [5]**. The 2022-2027 Loire-Bretagne River Basin Management Plan foresees significant changes compared to the 2016-2021 River Basin Management Plan, 47% of which are based on estimates in the CCAP [6].

However, **there is no data to predict how climate change will impact the production and energy efficiency of the plant** in the decades to come. This uncertainty is alarming, given that the plant is relied on to produce sufficient electricity to supply 7,500 people in the area.

CONCLUSIONS

The award of a feed-in premium to the Vichy hydropower dam on the Allier River, a biological corridor for migratory fish, runs against the dynamics of river continuity restoration in the entire basin. Far from being an isolated case, this project illustrates a broader issue caused by subsidies to small power plants whose effects run counter to national and EU environmental policies.

Sources:

[1] The Loire River Basin Management Plan, targeting the good status of the water bodies according to the Water Framework Directive ; the "Plan Loire Grandeur Nature", since 1994, which led to the removal of several priority main dams on the basin, and the Management Plan for Migratory Fish (PLAGEPOMI), which includes 16 priority barriers for continuity in the Loire basin.

[2] Environmental Code, [article L214-17](#).

[3] Commission for Energy Regulation, « Cahier des charges de l'appel d'offres portant sur la réalisation et l'exploitation d'installations hydroélectriques – Développement de la petite hydroélectricité », December 2017.

[4] [Précisions sur le régime des micro-centrales électriques en fonction de la puissance](#), Jacques Pulou, Collectif rivières 05.

[5] « BILAN DES CONNAISSANCES DES IMPACTS DU CHANGEMENT CLIMATIQUE SUR LE SAGE ALLIER AVAL », avril 2017.

[6] Loire – [Bretagne River Basin Management Plan website](#).

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