Collectif Rivières Naturelles

Ensemble pour des rivières libres et vivantes

SOS LOIRE VIVANTE

08 June 2023

Re: Nature Restoration Law, Article 7

Retain a strong and ambitious Article 7 to ensure the natural longitudinal and lateral connectivity of watercourses

Dear Members of the European Parliament's Environment Committee,

For several years now, groups of people have been sharply criticising the policy of restoring ecological continuity in France, despite the fact that it is essential to the achievement of a good ecological status of water bodies[1], and to the preservation of diadromous species, which have already been damaged by numerous other pressures.

Misinformation and lobbying campaigns aimed at political decision-makers and mill owners are lowering the level of the debate against a backdrop of populism, in order to put the brakes on the implementation of ambitious policies to restore our rivers. Using pseudo-scientific, unfounded arguments or misusing the data, these interest groups would have us believe that developing or "worse", removing a dam and restoring ecological continuity, would damage our "natural heritage".

In fact, quite the opposite is true: the general interest mission of the French State and its decentralised elected representatives, the managers of river unions and GEMAPI groups, the fishing federations, the environmental protection associations and the scientists all pursue a single objective: the restoration of our shared natural heritage.

There is an immeasurable gap between the value of a river in good condition and the negative consequences of degraded, exploited and abused rivers. Too busy extolling the virtues of small-scale hydroelectricity generating little power[2], these groups should be made aware of the state of our rivers[3] and they should make the efforts that society as a whole has consented to, to improve their quality and resilience. Governments across Europe are working to improve the longitudinal and transversal connectivity of watercourses[4], often with very positive and encouraging results.

The Nature Restoration Law, which will be shortly put to vote in the European Parliament, sets the target of restoring at least 25,000 km of free-flowing watercourses by 2030 (Article 7) in order to improve the natural longitudinal and lateral connectivity of watercourses. These objectives complement the obligations of the Water Framework Directive. We are convinced that these objectives are not up to the mark, given the significant degradation of aquatic ecosystems (25,000 km would represent only about 2% of the EU's watercourses) and that the barrier removal target should be raised to 15% of the length of EU rivers (178,000 km) by 2030.[5]

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[1] In 2019, the Fitness Check of the Water Framework Directive concluded that the main reasons for failing to reach the objectives of the directive are largely linked to insufficient measures to combat diffuse pollution of agricultural origin and the hydro morphological changes affecting water bodies. Restoring freshwater ecosystems is therefore essential if we are to maintain the natural functions of rivers, lakes and wetlands, https://www.wwf.eu/what_we_do/water/?uNewsID=357085

[2] France Nature Environnement : About the brochure published by the FFAM : "Les Moulins, quel potentiel hydroélectrique? Commentaire FNE sur le Potentiel des moulins FFAM_Atelier PPE 2024.pdf

[3] AMBER, https://amber.international/ , Belletti, B., Garcia de Leaniz, C. Jones, More than one million barriers fragment Europe's rivers, Nature, 588(7838), 436-441.

[4] Dams are coming down all over Europe: New report reveals another record-breaking year for dam removal in 2022 with a new country joining the movement https://damremoval.eu/dre-report-2022/

[5] Restoration of the natural connectivity of rivers and natural functions of the related floodplains in the Nature Restoration Law https://wwfeu.awsassets.panda.org/downloads/river_connectivity___lre_briefing.pdf

Numerous scientific studies and publications demonstrate the benefits of removing small river barriers, both for the survival and reproduction of migratory fish and for the general improvement of the functionality of a river, its biodiversity and the quality of its water, and offer responses to the attacks of the removal of river weirs. The French Biodiversity Office (Office français de la biodiversité) has already provided a reply in April 2018 in the form of a note,[6] in 2020 in response to the document circulated by the National Water and Human Rivers Coordination,[7]and in 2022 with a summary of the main ecological impacts of hydroelectric schemes on the functioning of watercourses.[8]

The results of the policy to restore ecological continuity which France has been pursuing for nearly 20 years, seeking to reconcile everyone's interests in a peaceful way,[9] are very far from the catastrophic image described by the federations of friends of mills! No owners have been forced to choose barrier removal to bring their structure into compliance with L214-17 of the Environment Code. The consultation between stakeholders in a catchment area, the public sponsorship of studies looking into different scenarios, and the financing offered by the Water Agencies, have resulted in solutions that are relevant to the owners of river barriers, with regards to the objectives set by the Water Framework Directive and, in the near future, the Nature Restoration Law. European and national governments, supported by NGOs, can together contribute to develop policy, planning and implementation of barrier removal to achieve the specific objectives of restoring longitudinal continuity.[10]

A number of misconceptions are currently holding back action, and false information is circulating about the effects of removing river barriers and the benefits that could be derived from the structures responsible for the fragmentation of ecosystems.

Let’s get things straight!

Barrier removals do not result in the loss of freshwater

The water level upstream of a river barrier is artificial. Removing the structure therefore simply enables re-establishing the natural water level. The quantity of water in a river is measured by its flow rate, which is not increased by the reservoirs. In fact, the flow of the river does not vary, only the speed of the current and the river stretch return to their natural characteristics. The removal of a small number of dams is therefore not responsible for the drying up observed in many rivers in the summer of 2022: rather, it is a consequence of climate disruption, sometimes exacerbated by the over-use of water resources.

The recharge of alluvial aquifers is not improved by reservoirs in minor river beds

Connections between water tables and rivers ensure that alluvial water tables are properly recharged, whether by flowing or stagnant water. Some reservoirs even impair groundwater recharge when their bottoms are clogged with fine sediment. The low permeability of these sediments prevents water from flowing through the gravels. On unclogged bottoms, the circulation of water in the gravels also helps to cool the water and limit evaporation.
Groundwater recharge beyond the minor bed depends on the rivers' lateral continuity with the banks and the major bed, on the proper functioning of wetlands and on the presence of living soil and vegetation that slows down run-off and ensures that rainwater or floodwater is properly infiltrated throughout the catchment area.

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[6] Responses to certain contradictory arguments on the merits of maintaining and restoring ecological continuity
professionnels.ofb.fr/sites/default/files/pdf/cdr-ce/2018_Delib_CS_AFB_Continuite.pdf
[7] Response to the document distributed by the CNERH to MPs and senators on 10/09/2019,
https://professionnels.ofb.fr/sites/default/files/pdf/cdr-ce/2020-01_Elements-Reponses-CNERH_VF.pdf
[8] Summary of the main ecological impacts caused by hydroelectric schemes and their consequences on the functioning of watercourses.
https://professionnels.ofb.fr/sites/default/files/pdf/cdr-ce/2022-01_Synthe%CC%80se-Impacts-Hydroelectricite.pdf
[9] Action plan for a peaceful policy on restoration of the ecological continuity:
https://www.ecologie.gouv.fr/sites/default/files/plan_action_pour_politique_apaisee_restauration_continuite_ecologique.pdf
[10] European Center for River Restoration: A pan-European survey to strengthen and improve policies and strategic planning regarding river continuity restoration

A mill weir has no influence on flood retention

Most of the weirs have a very small storage capacity compared with the large volumes of water that can pass through during floods. In most cases, the reservoirs created are already full when the highest flows occur; all the water coming from upstream then flows directly downstream. In addition, the heightening generated by the weir increases the upstream water level compared with a situation without a weir, and therefore increases the risk of flooding locally. It should be noted that many weirs are currently dismantled in areas at risk of flooding.

A weir has no influence on water replenishment

The small volumes of water stored upstream of the weirs do not allow to sustain a higher flow than that of the river for a sufficiently long time to improve the situation in times of low flows. The volumes needed to sustain water levels over the long term require much larger structures. In addition, the pond created by the reservoir can generate evaporation and heating of the water, and is not necessarily a favourable 'refuge' environment for native species, which are dependent on flowing, oxygenated water. Observing fish in reservoirs when rivers dry up is common, but they may be less demanding species. Finally, the quantities evaporated in reservoirs can be significant in hot weather, whereas in the absence of a weir the wetted width naturally decreases, thus reducing potential evaporation.

Weirs do not promote oxygenation of the aquatic environment more than a natural river with diversified flow

The mixing of water immediately downstream of a weir will of course ensure local oxygenation, but not more effectively than in a natural river with sufficient heterogeneous hydraulic conditions (flow speeds and morphological shape) to ensure good dissolution of atmospheric oxygen. Conversely, the presence of weirs often leads to a reduction in the local concentration of dissolved oxygen:

- by causing the water in the reservoir to warm up in summer, due to the decrease in the flow upstream of the barriers (at constant atmospheric pressure and in the absence of mixing, respiration and photosynthesis, warm water contains less dissolved oxygen than cold water).
- at the end of the night, as a result of the development of aquatic plants caused by the reduction in flow speed upstream of the weir, which consume oxygen at night without producing any. This process is exacerbated by the eutrophication of the reservoir, due to an increase in the amount of organic matter, the biodegradation (by aerobic micro-organisms) of which, leads to massive consumption of dissolved oxygen in the water.
- as a result of the failure to comply with the minimum flows to be delivered downstream of the obstacles, in the case of exploitation of water resources.

The removal of a weir does not destroy wetlands, nor does the weir create a wetland.

In some cases, the presence of a weir for decades, or even centuries, may have increased the hydromorphy of the soil upstream. This is all the more common when the river and its minor bed have been moved to the hillsides. These factors need to be taken into account upstream in the technical criteria prior to construction work (Malavoi and Salgues, 2011). Overall, projects to restore ecological continuity which include relocating the river to its original bed, contribute more to restoring the functions of connected wetlands than the maintenance of elevated wetlands with artificial hydraulic supply. In any case, the technical choices take wetlands into account in the preliminary studies, as well as all the issues associated with maintaining the water level, particularly in relation to built heritage.

Various techniques are available to avoid the risk of regressive erosion

The risk of regressive erosion may exist, particularly and for rivers that have “elevated”, when regular maintenance of the river barrier has been missing, when the barrier has naturally fallen without technical support, or when inappropriate works have taken place. As part of a programme to restore ecological continuity, these risks can be avoided by a variety of techniques: gradual opening and removal, reinforcement of the barrier, stabilisation of the bed and its longitudinal and cross-sectional profile, installation of anti-erosion and fish-passage weirs, etc.

The development of weirs is responsible for the increase of continuity problems

In Europe, the collapse of salmon populations observed between the 10th and 17th centuries, is correlated with the geographical expansion of water mills. Since then, the impact of these structures on continuity has increased because the weirs have been verticalised, sealed, sometimes raised, and/or managed differently. For instance, the installation of hydroelectric turbines has generated new impacts on fish downstream. As another example, the closure of certain permanent passages in the weirs (such as the timber rafting passes), to increase the flow through the turbines, has limited the ability of certain structures to be crossed. It is also important to recall that technically, a fish pass is only moderately effective; the cumulative impacts of several migratory barriers and fish passes, even if they are modern and well-maintained, will ultimately lead to a reduction in fish populations all along a migratory route to the most favourable "upstream" areas.

A mill weir is not a beaver dam

The scientific references to beaver dams in America concern oligotrophic and braided rivers. These watercourses are well maintained and beaver dams diversify their habitats, without impacting the ecological continuity through the natural porosity of their structures for ecological and sediment passage. This is in no way the case with a concrete structure across a watercourse, and the structures are not comparable in any way.

Some concrete case studies, showing results!

Case study on the cumulative impact of reservoirs

Study of the physical, thermal, hydrological, hydro morphological and sedimentary impacts of sills on the Rance river.[11]
Restitution of the study of cumulative impacts of artificial reservoirs: Restitution of the studies carried out full-scale on 8 pilot basins, highlighting results that can be attributed to the accumulation of reservoirs, such as the increase in water temperature downstream in the case of reservoirs on watercourses and the reduction of low-water flows.[12]

Increase in salmon numbers on the Orne and Vire.

The results observed on the Orne and Vire rivers by the Seintormigr association, which is responsible for monitoring migratory fish populations in the Seine-Normandy basin, clearly show a major increase in salmon numbers
in salmon numbers since the start of the removal of structures.[13]

Hydro morphological restoration of the Hem: in-depth scientific monitoring

The initial results confirm the added value of the work on the hydromorphology of the river, with a marked improvement in the overall morphological index and a significant recovery in sediment dynamics. The fish presence in the restored stations is now good to very good, and the monitoring of diadromous migratory species shows a clear progression of the colonisation front towards the upstream part of the catchment area.[14]

Removal of the Pasteur weir in Hirson- Haut de France, Aisne

The removal of two weirs in this commune had a dual objective: to reduce the head of water upstream to prevent flooding, and to restore the free movement of fish. The operation was carried out by the Entente Oise-Aisne and the Water Agency of Seine-Normandy.[15]

Other references from the Resource Centre on water bodies:
Compendium of experiences on the longitudinal continuity of watercourses : https://professionnels.ofb.fr/fr/node/1222

[11] Study of the physical, thermal, hydrological, hydromorphological and sedimentary impacts of the Rance sills
[12] Report on the cumulative impact of artificial reservoirs
[13] Benefits of restoring ecological continuity in Normandy: the example of salmon on the Orne and Vire rivers: https://www.seinormigr.fr/msmedias/medias/plaquettes-de-communication/RCE_SAT_Orne_Vire_RCE_v5.pdf?r=0.5708497524444069
[14] Feedback on the Hem
[15] Feedback on the Gland (Hauts de France)