

## Some considerations on the public aids for hydroelectric utilities in France

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At this time and to our best known, the article 4(7) of the WFD has been invoked for hydroelectric plant in only one case : the Chastang-Redenat pumping storage plant near by the Dordogne river in the French Adour Garonne district<sup>1</sup>. Perhaps, this is because only little hydroelectric plants are been built and these public authorities suppose that such plants automatically respect the WFD non degradation principle. However, as many rivers are already equipped by hydroelectric facilities (and other anthropic artefacts), this supposition does not take into account their cumulative impact<sup>2</sup>. In France, most discussions on the environmental impacts of the hydroelectric plants focus on the river ecological continuity that is menaced by dams and weirs. This impact is important, but it is far from being the only one of the hydroelectric plants. For example river hydrologic regime could also be heavily impacted by :

- reducing drastically natural flows by means of derivation
- avoiding frequent floods and their renewal role in the river morphology.
- flow peaking ...

One can mention also the flooding of natural areas into the reservoir created by dams and weirs.

Hereafter, we discuss two topics : continuity and so-called “biological tanks”

### Ecological Continuity

Lack of continuity interferes dramatically on fish migrations especially between fresh water streams and sea but also for local (i.e. “Holobiotic”) migration.

Fish passes lead to valuable mitigation effects. However they fall short to insure the required continuity as the number of dams increases on the same river. Moreover, passes only tackle upstream migration and have little effect on downstream migration. Downstream migration is critical for salmonid and shad smolts, but also for adult eels.

In the Rhône river, 8% loss are reported on eels adults that return back to the sea through each large Kaplan wheel of big run-of-river plant. Twelve dams lay on the Rhône between Lyon and the Sea.

Mediterranean shads is an endemic specie in which 50% of adults return to sea after reproduction. Unfortunately, shads are very sensible to choc. All these loss percentages should be greater in littler turbine wheels or in Francis turbines.

This point explain why it is of little interest to fully open to fish migration the lost area historically occupied by migrators few years ago<sup>3</sup>. As a consequence more research should

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<sup>1</sup> At this time, this project is in stand-by. The reasons seems to be twofold : firstly the to-day lack of economical soundness of pumping storage units, secondly the discussion between France and the EC on the hydroelectric concession as the project has been proposed by EDF as the counterpart to an extension of the Chastang dam concession act deadline.

<sup>2</sup> Hundreds of little plants are projected in the north of Alps.

<sup>3</sup> On the river Rhône, Shads reached up to the Bourget Lake and eels are mentioned up to the “pertes of Rhône” now drone in the Génissiat dam since 1948.

be done to develop more effective mitigation techniques and new plants should be avoided on rivers that are hosted by migrator fishes.

### **The “biological tanks” and their role in the WFD fulfillment in France**

France application of the WFD mainly consists in SDAGE. One of the SDAGE feature in order to fulfill DCE goals are the identification of “reservoirs biologiques” (“biologic tanks” denoted by “Rbio” in the sequel). These “Rbio” are river stretches that host some fauna species and offer to them suitable environment for their reproduction. Thus, preserving and, if possible, improving the Rbio capabilities guarantee the species presence in the rest of the catchment as long as these Rbio are in good functional state and are connected both upstream and downstream to the whole catchment.

### **Public aids in France**

Public aids to hydroelectric plants are given by guaranteeing feed-in tariffs to the produced energy. Broadly speaking these subsidies result in a value in €/kWh on a 20 years long contract<sup>4</sup>.

- Under electric power of 1MW, the plants sells the produced kWh at a guaranteed fixed price. This price is given by a dedicated public decision and is broadly the same whatever the granted plant.
  - Under 500kW, each kWh is sold straightforwardly at the given price to a “forced” buyer (This is the “forced buy” process<sup>5</sup>). In most cases, a subsidiary of the French historic utilities<sup>6</sup>, EDF, stands for this “forced buyer”.
  - Between 500kW et 1MW, produced kWh must be sell on the free market ... but the public aid is added to the sold price up to the fixed price (This is the “revenue complement” process).
- Above 1MW, the French process to get public aid (“Revenue complement”) is a tender process in order to get lower guaranteed prices by means of concurrency between attendees (note that each candidate projects involve a different river segment as they must master the ground area for building the projected plant features : concurrency does not involve the same area but different ones either on the same river or not).

This tender process is far from been clear as the submitted proposal are not public whatever there are selected or not. Moreover, the financial conditions (Typically the price of the produced kwh) obtained by the selected proposal are not known.

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<sup>4</sup> This contract could be extended if new investments are done on the plant in order to maintain or improve its production or to mitigate their impact on natural environment. However this investments should be greater than some threshold according to its nominal power (given in €/MW).

<sup>5</sup> This process correspond to the exemption in Art 4.3 of Directive (EU) 2018/2001

<sup>6</sup> <https://www.edf-oa.fr/>

Hereafter we discuss of some projects in the Auvergne Rhone Alpes region : firstly, project whose electric power is less than 1MW and lastly, some projects of greater electric power and that have been selected by means of some tender process.

### **Without tender process**

At least two hydroelectric plants are projected in Rbios of the SDAGE.

- On the river “La Bonne” (Commune of Valjouffrey)
- On the river « La Sallanche » in the river Arve catchment (Commune de Sallanches).  
The river Arve meets the River Rhône in Geneva (Switzerland).
- On the river “Malsanne” in the “La Bonne” catchment (Commune de Chantepérier).

Projects on river “La Sallanche” and “La Bonne” are included in Liste 1 river segments which is a kind of “No-Go” area limited to ecological continuity constraint.

There exists other projects that interferes with Rbio but there are not precisely known as their existence is kept hidden by the public authorities until the project is fully defined, thus avoiding the opportunity to modify the project according to ecological requirements and people demand.

- On the streams « Nant du Clou » and « Nant Bruyant » (Savoie department, Communes de Quièges et de Villard-sur-Doron)

### **With Tender Process**

Until now, four (4) request for proposal have been carried out since 2016, and some selected projects interfere heavily with biodiversity and, thus, with non-degradation of the ecological state or even with good state goal of some WB.

- The Vichy plant<sup>9</sup> is to be built on the Allier river. Allier hosts an Atlantic salmon population which is in danger. The build of this plant results in increasing the financial interest to maintain the dam in the high position, increasing the difficult encountered by the smolts in their migration towards the sea.
- Two selected plants are projected on Rbio :
  - The Nan-Rouge projected plant<sup>7</sup>. The Nan Rouge is a mountain stream that belongs to the river Isère catchment. River Isère is the main Rhône affluent in the Northern of Alpes Mountains et is also the river that brings the greater electric power and production in France.
  - The “Ugine” projected plant <sup>7</sup>. As the “Sallanche” (see above) the river “Ugine” meets the Arve River.

Here we focus only on Rbio but other protected area are involved with many others projected plants. For example many project are located within Natura 2000 Area (such is the “Rif Garcin” project in the Taillefer mountain, Commune d’Ornon) or within the adhesion area of National Parc (numerous projects in the river Romanche catchment or in the river Durance Catchment such as the “Petit Tabuc”<sup>8</sup> in the “commune du Monetier les Bains”, “Le

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<sup>7</sup> has been selected on the third call of the triannual 2017/S 082-159305 call for proposal

<sup>8</sup> without tender process

Ponturin”<sup>9</sup> and on its affluent, the “Nant Benin”<sup>9</sup> in the commune of “Peisey-Nacroix”...). For example, about ten of little hydroelectric projects are either already built or in progress within the upper catchment of the Romanche River (On “the Ferrand”, the “Lavalette stream”, “the Gâ”, “the Salve”, “the Maurian” and the Romanche river itself in the Communes of La Grave, Villard d’Arène, Mizoen, Clavans, Besse) most included in the adhesion area of the “Parc National des Ecrins” without any study about their cumulative effect !

**Conclusion :** France rivers have been equipped with hydroelectric plants since more than one century. The most part of the hydroelectricity capabilities have been built. The rare streams that, until now, run freely are the target of today little hydroelectric projects. These projects get their economic soundness from the massive helps they benefit from public authorities. Their effect on biodiversity will be of dramatic importance as they destroy the rare segments of rivers that remains “biodiversity tanks” which are able to feed and to sow the rest of the hydrologic networks. The global process that lead the hydroelectric plants projects to get the public subsidies in France is far from being compliant with the biodiversity protection. The reasons are twofold : on the first side, the natural environment is clearly not taken in account as first class constraint in the authorization process whatever this process include or not a “call for proposal”, on the other side, the choice of the localization is let to the project holder, thus, discarding the ecological sensibility from the selection criteria

Note that there are others projects outside the Auvergne Rhône-Alpes Region that reduce or destroy “Rbio” capabilities. For example, many projects are planned or have been already fulfilled in the Provence Alpes Cote d’Azur (PACA) Region especially in the departments of the Hautes Alpes (05), the Alpes de Haute Provence(04) and the Alpes Maritimes (06), that interfere with Rbio. In the Hautes Alpes department, one can mention two projects :

- The “Torrent des Ayes” Commune de Villard Saint Pancrasse
- The « Torrent de Pra Reboul » Commune de Saint Crépin

These examples whose list is far from been exhaustive, are given as evidences of the way France actually uses the possibility given by the European authorities to encourage the development of little hydroelectric plants whatever their impact on the water bodies. We advocate that such aids shall be stopped or, at least, given within a far more selective process as the one followed to-day in order to take into account natural environment more seriously.

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<sup>9</sup> has been selected on the first call of the triannual 2017/S 082-159305 call for proposal