Joint management of Latvian – Lithuanian transboundary river and lake water bodies (TRANSWAT)

Recommendations for amendment of national water legislations

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Background

⇨ HYDROPOWER and DAMS belong to the main factors causing the degradation of aquatic environment in the EU

⇨ ECOLOGICAL FLOW estimation is vitally important to achieve good ecological status of impacted water bodies

⇨ The CONCEPT of the Ecological Flow and corresponding LEGISLATIVE REQUIREMENTS have been investigated in the frame of the **ECOFLOW** project (2017-2019, project deliverables **T1.2.1** and **T3.2**)

⇨ The **TRANSWAT** project further explicates the idea of Ecological Flow, with regard to HYDROPOWER PLANT CASCADES

E-Flow in HPP cascades: EU requirements [1]

Use of water resources for hydropower generation is regulated by:
⇨ Water Framework Directive (WFD);
⇨ Birds and Habitats Directives;
⇨ Environmental Impact Assessment Directive.

These EU Directives, as well as WFD Guidance Documents No. 4, No. 31, and some other legislation documents, stress the need to ensure **ecological flow regime** in order to achieve good ecological status of water bodies.

E-Flow in HPP cascades: EU requirements [2]

⇨ **GD No. 31** states that river ecosystems deteriorate most due to HPP cascades. However, no special requirements for HPP cascades are presented.

⇨ **ECOSTAT report** (2016) on Common understanding of using mitigation measures for reaching GEP for HMWBs impacted by water storage mentions "rivers characterized by chains of ponded reaches" and "rivers altered by several impounded reaches" as causing more severe environmental consequences.

⇨ **The Guidance** (2018) on the requirements for hydropower in relation to EU Nature legislation emphasizes that if there are several HPPs in the catchment area, the risk of cumulative or combined effects should be considered.

LITHUANIAN legislative framework [1]

⇨ **STR* 2.02.06:2004 Hydrotechnical structures. Basic provisions**

- interests of all water users have to be taken into account while designing, constructing and operating hydrotechnical structures (HTS) in rivers;

- for the calculations of the designed hydro junction spillway, it is necessary to assess the position of the structure in the cascade and the discharges released by the HTS situated above at the normal and maximum headwater level;

- the most appropriate regime for river flows in the lower reaches must be provided and guaranteed.

*technical regulations for construction

LITHUANIAN legislative framework [2]

⇨ **STR 2.05.19:2005 Engineering hydrology. Basic calculation requirements**

- in rivers with cascades of reservoirs or hydro junctions, the maximum discharges must be calculated by estimating the impact of the *upper* hydro junctions on the *lower* ones

⇨ **Typical regulations for the use and maintenance of water reservoirs (LAND 2-95)**

- require to provide information on the influence of the other (above and below) reservoirs on the operation regime of the Reservoir, as well as the influence of the Reservoir on the operation regime of other reservoirs (above and below)

LITHUANIAN legislative framework [3]

⇨ Procedures **For issuing authorizations to reduce the water level in reservoirs and dammed lakes** and **For Environmental Flow Calculation** of the Minister of Environment

- *cascades of hydrotechnical structures* are <u>not</u> mentioned

⇨ **The Water sector development program for 2017-2023** of the Government of the Republic of Lithuania

- stresses out that the ecological condition of rivers deteriorates the most when cascades of reservoirs are installed

Recommendations for LITHUANIA [1]

⇨ **STRs** (**technical regulations for construction**)

- a definition for HTS cascade should be provided;

- it should consider HTS cascades as a special case and require using the modeling methods to accomplish hydraulic, hydrodynamic and infiltration calculations to effectively operate this entire layout of HTSs.

Recommendations for LITHUANIA [2]

⇨ **Procedure for Environmental Flow Calculation**

- in the future, the concept of environmental flow (i.e. the average of minimum flow of 30 days in the low period (May-October) of 80% or 95% probabilities) should be replaced by the concept of ecological flow (E-flow) regime;

- the new procedure for calculating the ecological flow regime should also include cases of HPP cascades.

Recommendations for LITHUANIA [3]

⇨ **Typical regulations for the use and maintenance of water reservoirs (LAND 2-95)**

- should be regularly reviewed and updated;

- the concept of ecological flow regime included;

- additional requirements for the operation and synchronization of HTS cascades in the river provided.

LATVIAN legislative framework [1]

⇨ **Regulation No. 505** (01.09.2015) of the Cabinet of Ministers of Latvia "On the construction standard LBN 229-15: Hydrotechnical constructions of class A hydropower plants"

- **definition** of a cascade of HPPs;
- when designing hydrotechnical constructions operating in cascades, their **coordinated work** should be foreseen under different hydrological conditions;
- for **class A** hydrotechnical constructions, technical solutions should be chosen that allow the HPP to work in **natural inflow** operation mode, to ensure minimum guaranteed flow or ecological flow downstream

* does not consider class B and C where small HPPs usually belong

LATVIAN legislative framework [2]

⇨ **Regulation No. 736** (23.12.2003) "Regulations on water resources use permits"

- when issuing permits, Regional Environmental Boards take into account:
  - operation of **other water users** in that water body
- permit must include:
  - values of **water level** in the HPP reservoir (backwater), as well as allowable water level regime and water level fluctuations;
  - values of the minimum guaranteed flow and of the **ecological flow**;
  - at the tail race, and in the whole impacted river stretch, **minimum guaranteed flow** has to be provided;
  - **E-flow** has to be provided in case of risk to fish populations/ ecosystem

- the values of water level at the **tail race** and flow rate during **flood** periods - only in water use permits for HPPs > 2 MW (and small HPPs are < 2 MW)

Recommendations for LATVIA [1]

⇨ Consider the possibility to provide a more informative definition of HPP cascades in the **Regulation No. 505**.

⇨ It seems reasonable to provide differentiated requirements for the class B and class C hydropower plants operating single or in cascades, in the legislative acts such as **Regulation No. 736**.

Recommendations for LATVIA [2]

⇨ **Regulation No. 736** states that the flow that has to be provided "by default" at the tail race and in the impacted river stretch is *minimum guaranteed flow*. Requirement to provide ecological flow comes into effect if there is an *expert conclusion* on the (risk of) negative impact. HPP cascades usually have a major impact on the river system, therefore it is reasonable to include the requirement to provide **ecological flow regime** for small HPP cascades.
It is the E-flow, not minimum flow, that should be provided "by default".

- General phrases regarding "negative impact on aquatic environment" should be replaced with something more precise and measurable.

⇨ **Instructions** for calculation of the ecological flow regime for the cascades of HPPs are provided in the project deliverables.

Recommendations for LATVIA [3]

⇨ There should be a strict requirement in the **Regulation No.736** that a conclusion of a fish expert / aquatic habitat expert is **necessary** for the elaboration of revised HPP operation permit (once per 7 years).

⇨ The conclusion of the fish expert / habitat expert should also be recognized as a **legitimate basis** for the revision of a previously issued permit.

⇨ It should be stressed that it is not just E-flow (constant value) but **Ecological flow regime** (dynamic through the year) that has to be provided in the river ecosystem.

Thank you!

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