Guidance document on the requirements for hydropower in relation to EU nature legislation

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https://ec.europa.eu/environment/nature/natura2000/management/docs/hydro_final_june_2018_sl.pdf

Smernice o zahtevah za vodno energijo v zvezi z naravovarstveno zakonodajo EU

Okolje

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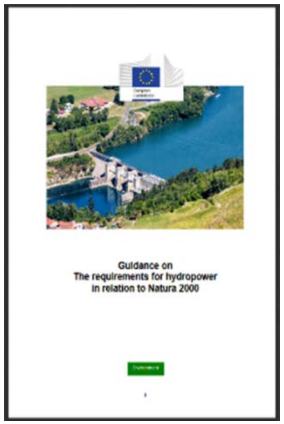
Guidance document on the requirements for hydropower in relation to EU Nature legislation

- Objective: Sets the general principles and requirements for hydropower in relation to Natura 2000 sites
- Examines the **types of effects** that might occur from hydropower and gives practical examples on how these can be avoided or at least minismised
- Targets to hydropower developers, authorities, practitioners, site managers, NGO's and other stakeholders concerned
- Developed through wide consultation with relevant stakeholders



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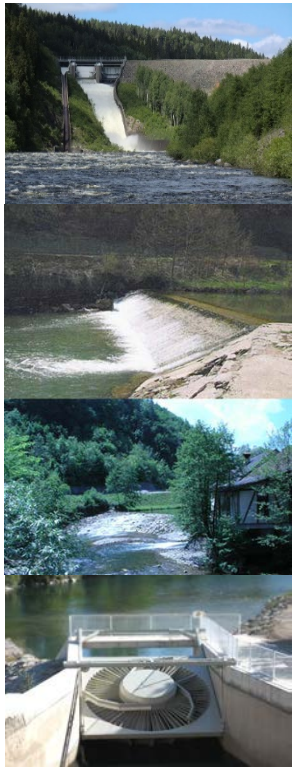
The context

Hydropower

- one of several **important** sources of RE
- key role in EU **Renewable Energy and Climate Change targets for 2020 and beyond**
- stable, flexible, efficient form of electricity
- "physical" potential to develop hydropower (esp. Balkans) – *vs.* **real (-environmental) potential**!

Europe's rivers

- **Major source of biodiversity**
- Part of our rich heritage
- Undergone **major changes** over the decades
- Reduced resilience and capacity to sustain wildlife
- Many in degraded state and **need for restoration**



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Hydropower in the EU

- Around 23.000 hydropower installations in EU (2011)
- 91% small (less than 10 MWH) - **13%** of total electricity production (TEP) from HPP – 2.1% total RE mix
- 9% large - **87%** TEP from HPP – 9% total RE mix
- Often concentrated in mountainous areas due to technical reasons

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Freshwater ecosystems and hydropower in the EU

- Rivers and lakes: **complex and highly dynamic ecosystems**
- **Valuable habitats** on their own right but also contribute to the maintenance of biodiversity (ecological corridors, encourage species dispersal, migration, responsible for development of forests, marshes, wet meadows, etc)
- Around **400 protected species and habitats** under B&H Directives depend on river and lake ecosystems for their survival
- Lakes and rivers: 4% of land surface of Natura 2000 network

Freshwater ecosystems and hydropower in the EU

- Intensive use of Europe's rivers (esp. last 150 years) - important economic and social resource
  - **Changes in hydro-morphology, natural flow dynamics and their ecological connectivity**
  - **Pollution and high nutrient loads**

- EEA State of Nature Report 2015: > **50% EU rivers and lakes not in good ecological condition**

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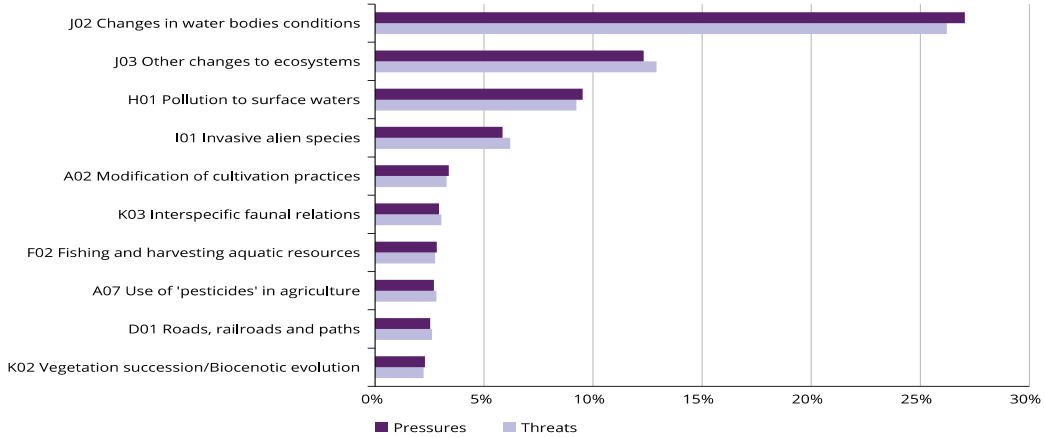
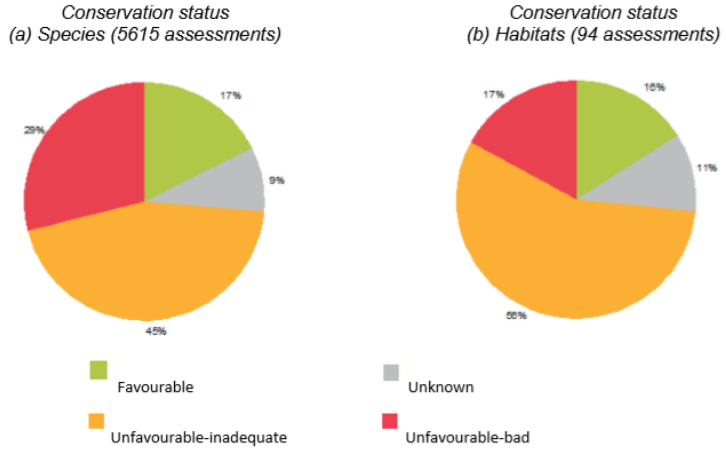
Figure 4.37 **Top 10 (% of frequency) reported high-ranked pressures and threats for species (Habitats Directive) associated with rivers and lakes ecosystem**





Conservation status and trends of species (a) and habitats (b) (Habitats Directive) associated with rivers and lakes ecosystem. Source EEA, 2015b, Article 17 reports and assessments.

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Contents of Guidance Document (1)

Chapter 1 – EU Policy and Legislative Framework

- Provisions of Habitats and Birds Directives and relationship with other relevant environmental legislation (WFD, Floods Directive, EIA, SEA)

Chapter 2 – Freshwater Ecosystems and Hydropower in the EU

- **Information on the state of EUs river and lake ecosystems**
- **Main pressures and threats**
- **Effects of hydropower**
- **Cumulative effects**

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Contents of Guidance Document (2)

Chapter 3 – Good practice examples in mitigating effects and applying ecological restoration measures to hydropower

- The aim is to provide useful advice, ideas, suggestions

Chapter 4 –Good practices in applying an integrated planning approach to hydropower

- Stresses the need to take into account the river's ecological requirements early in planning phase

Chapter 5 - Appropriate Assessment under Habitats Directive

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Potential impacts from hydropower

Impacts on species and habitats may vary depending on:

- Individual characteristics of the river
- Physical and ecological state (already degraded or pristine ??)
- Type and scale of hydropower plant
- Species and habitats present

! Need to look at each facility on a case – by – case basis

! Operators/developers of HPP need to have an understanding of the complexities of the riverine ecosystems and the obligations under nature legislation

! This will improve the quality of the assessments and speed up decision – making

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Potential impacts from hydropower

Changes river morphology and riverine habitats
Barriers to migration and dispersal of protected species
Disruption of sediment dynamics
Water chemical and temperature changes (eg. construction of dams)
Injuries and killing of animals
Displacement and disturbance
Impacts on terrestrial species and habitats
CUMULATIVE IMPACTS (other projects already present?)

Good practice examples in mitigating the negative effects

Some examples:

- Restoration of river continuity/removing obsolete structures
- Fish passes
- Reduction of fish mortality- installation of screens at inlets
- Restoration of adequate ecological flow/sediment dynamics

(Monitoring systems to be established)

* Specific chapter in the guidance document on good practice examples on mitigation and /or ecological restoration measures under different circumstances

Hydromorphological alterations	Main ecological impact	Mitigation of…	Mitigation measure options
River continuity for upstream fish migration reduced or interrupted	Fish: populations of migratory and other riverine fish absent or abundance reduced	Upstream continuity for fish	- Ramp - Fish pass - By-pass channel
River continuity for downstream fish migration reduced or interrupted	Fish: Populations of migratory and other riverine fish absent or abundance reduced	Downstream continuity for fish	- Less damaging turbines for fish - Fish screens - By-pass channel - Fish pass
Artificially extreme low flows or extended low flows	Reduced abundance of plant & animal species. Alterations to composition of plant & animal species	Low flow	- Provide additional flow - River morphology changes
Loss of or reduction in flows so that they are not sufficient to trigger and sustain fish migrations	Migratory fish absent or abundance reduced	Fish flow	Provide fish flow
Loss, reduction or absence of variable flows sufficient for flushing	Alteration/reduced abundance of fish and invertebrate species	Variable flow	- Passive flow variability - Active flow variability
Rapidly changing flows (including hydro peaking)	Reduction in abundance of animal and plant species due to stranding and wash out	Rapidly changing flows	- Balancing reservoir(s) (internal) - Relocate tailrace - Reduce rate - Modify river morphology - Balancing reservoirs (external)

When is a fish ladder deemed an adequate mitigation measure?
Findings of the ECJ Ruling 142/16 on the Moorburg coal-fired powerplant

The Moorburg coal-fired power plant is situated within the port of Hamburg, on the south bank of the southern section of the Elbe river. This is a migratory route for certain fish species listed in Annex II to the Habitats Directive and as such plays an important role in a number of Natura 2000 areas situated upstream of the Geesthacht weir (Germany) whose conservation objectives cover these species. These areas are **situated up to a distance of approximately 600 km from the plant.** The Geesthacht weir is situated on the Elbe corridor, in between the Moorburg power plant and the Natura 2000 areas.

Before authorisation for construction of the Moorburg plant was granted on 30 September 2008, an environmental impact assessment was conducted under German water legislation. This assessment concluded that the authorisation was compatible with the conservation objectives of the Natura 2000 areas because the operator had agreed to install a second fish ladder approximately 30 km from the plant, by the Geesthacht weir. There was therefore an intention to compensate for fish killed during the operation of the cooling mechanism, which draws large quantities of water from the river in order to cool the Moorburg plant ('the fish ladder'). In addition, the impact assessment prescribed multi-phase monitoring in order to verify the effectiveness of the fish pass. The Commission considered that the authority concerned had wrongly classified the fish ladder as a mitigating measure.

Restoring river connectivity in Austria

Austria's river basin management plan states that **the lack of longitudinal and lateral continuity is one of the principal pressures** on the country's rivers. It recognises that a good ecological status under the WFD is only achievable if the migration of aquatic species and the transportation of sediment is made possible both from the river's head to the mouth and from the river to its wetlands. River connectivity is also vital for the recovery of species and habitats protected under the two Nature Directives.

The restoration of the longitudinal continuum is therefore seen as one of the primary goals of the management plan. The **priority areas for the removal of migratory barriers were identified in 2009, and a number of river restoration projects have since been implemented**. Several have been co-financed under the EU LIFE programme. This has ensured that the restoration measures introduced are improving not only the river's connectivity for the benefits of the WFD and migratory fish, but also the overall conservation condition of the various Natura 2000 sites along the river.

In 2011, these efforts were taken to a new level with the launch of a major LIFE+ project designed to implement an extensive network of measures on the Austrian part of the Danube. Called 'LIFE+ Network Danube', it is the **largest project of its kind in Austria so far, with a total budget of €25 million**. The project is run by VERBUND, Austria's leading electricity company, with the support of the Federal Ministry of Environment and the Fishing Associations. It aims to build on the work done under previous LIFE projects along the Danube, which together have already succeeded in making 20 km of the rivers Melk, Pielach and Ybbs passable for migrating fish species.

The project will implement a wide range of different actions along the upper part of the Danube in order to improve its overall ecological status and the conservation status of some 17 fish species listed in the Habitats Directive. **Ecological stepping stones will also be created** between four major Natura 2000 sites along the river, which should also improve their overall conservation status.

Integrated planning approach and appropriate assessment under the Habitats Directive

Importance of strategic planning

- **Integrate** water, nature and energy policy objectives
- Link strategic planning for the aquatic environment and nature conservation with national energy planning on RE
- Meet the objectives of the Water Framework Directive and the River Basin Management Plans (RBMPs), regional approaches (e.g. ICPDR)
- Allows involvement of interested parties
- Helps streamline authorisation process

Assessment procedure

- Procedure on article 6(3) with specific guidance on hydropower (coordination with SEA, EIA and WFD requirements)

Thank you!

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EC Guidance document (translated in all EU languages)
https://ec.europa.eu/environment/nature/natura2000/management/docs/hydro_final_june_2018_en.pdf

Management of Natura 2000 sites
http://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm