

Overview of mitigation measures implemented in France to reduce ecological impacts of hydropower

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ABSTRACT: Around 2,500 hydroelectric power stations in France are spread over 250,000 km of rivers. With an installed capacity of 25 718 MW and a mean output of 58 TWh (which represents 12% total consumption), France is the third largest European producer of hydroelectricity. A great number of small hydropower plants are located in the headwaters and generate a low output whereas a low number of large hydropower plants generate a high output.

The main ecological impacts of hydropower plants concern the change in aquatic habitat due to the creation of an impoundment, the modifications of flow regime (minimum instream flow, hydropeaking) and the alteration of fish and sediment continuity. Environmental conditions and the characteristics of hydroelectric schemes vary widely across the country. Their combination generate ecological impacts of very varied nature and intensity. The will to maintain a balance between preserving a good ecological status in hydro-systems and providing for multiple uses of water has been made clear in French legislation.

This talk will give, for each type of ecological impact, an overview of 1) regulations in France to reduce these impacts, 2) mitigation measures implemented to respect these regulations 3) the tools and research available to guide their implementation. Some examples of good practices which go beyond regulatory requirements will be given for different study cases.

In conclusion, a good diagnosis is necessary to identify appropriate actions. Mitigation measures have to be adapted to specific environmental conditions, take into account the processes which operate at different spatial scale, the natural variability of ecosystems and account for climate change. The future challenge is to develop technical and environmental solutions which allow for increased flexibility of production and reduced ecological impact in a context of climate change and in respect of social needs.