HYDROPOWER PLANTS

OBJECTIVE

Electricity generation by hydropower plants.

DESCRIPTION

In a climate change adaptation perspective, it is crucial for utilities operating hydropower plants to get a detailed understanding of the future conditions in which each plant will operate. Climate change will result in seasonal variations of the water circle, with longer dry spells during which water will be scarcer than usual, earlier thawing of snow on the mountain slopes in springs and hence earlier occurrence of large inflows of melting water as well as accelerated melting of glaciers that will result in an initial increase in water availability followed by a worsening of water availability. In absence of upstream flow-controlling infrastructures, early and more abundant spring flows can be problematic for run-of-the-river plants, by causing a mismatch between electricity generation and demand. All these phenomena will require a thorough revision in the planning of hydropower plants' operation, maintenance and possibly climate-proofing engineering interventions. Moreover, accurate scenarios will be key in order to find shared solutions for competing uses during periods of water scarcity, by helping gauge the actual needs and the likely timing of the demand by the various users beside electric utilities: farmers, fisheries, residential use, water transport, recreation, etc.

EXPECTED RESULTS

Application of enhanced technological and engineering solutions, including: dams, spillways, fenced systems and fuse sockets.

RESULT INDICATORS

Nominal power production [W]
Fall or jump [m]
Flow [m^3/s]

INVOLVED ACTORS

Representatives of all relevant user categories.

EXPECTED TIMELINE FOR ACTION

- Short term (1-4 years)

BEST PRACTICES

- France
- Iceland
- Apulia Region – Italy

CRITICALITIES

Identifying the state-of-the-art scientific information actually relevant for the users' activities and packaging such information in such a way that the format and the language used to present it, are non-technical and accessible enough for users not familiar with the scientific disciplines applied. To this purpose the co-design stage is crucial.

SCOPE OF THE ACTION

- Adaptation

TYPE OF PROPOSED ACTIONS

- Grey
- Soft

SECTOR OF ACTION

- Energy
- Water resource management

CLIMATE IMPACTS

- Drought
- Floods
- Other

IMPLEMENTATION SCALE

- Municipality

SOURCE

https://climate-adapt.eea.europa.eu/help/share-your-info/general/adaptation-options-for-hydropower-plants