

# MANAGEMENT OF SEDIMENT - GLOBAL ANALYSIS

Solid material (SM) transported by water collected for the production of hydroelectricity has a negative impact on the exploitation of these facilities.



In catchment areas, glacier retreat has exposed new zones of erosion, which have contributed to an increase in the quantity of transported SM.

Confronted with this problem, it is necessary to have a complete understanding of the particular parameters of each facility, the hydrology of its catchment area and its evolution as well as the sedimentary processes, in order to take the adequate measures for conserving storage volumes and minimising wear on mechanical parts.

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## Methodology

- compilation of historic data, measures and monitoring of SM intake and levels at dams
- physical characterisation of Material in Suspension (M.I.S) (grading, abrasiveness)
- detailed study of the dam (types of silting, density currents and conditions of formation, interior flow dynamism,...)
- aid to decision-making through monitoring the different sedimentary deposits at the key points of the installations
- propositions of possible variants and recommendations for exploitation
- advice and support during elaboration of new projects or renovation

## PRESTATIONS COMPLÉMENTAIRES

### Management of sediment - Characterisation of Material in Suspension

The physical characteristics of transported Material in Suspension (M.E.S.) and its concentration govern the sedimentation mode of basins and the speed of turbine abrasion.

### Underwater Inspection

Underwater inspection enables owners of hydroelectric schemes to ascertain the state of the underwater parts of their projects (silting, disorder in the concrete and mechanic elements, etc.), by penetrating both depth and visibility.

### Dam monitoring

The objective of dam monitoring is to prevent long-term dam deterioration and to ensure dam safety. The Swiss concept for monitoring dams provides for 4 levels of monitoring.

## CONTACT

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### Specific skills

The Expertise & Development Department at HYDRO Exploitation offers the following specific skills :

- global approach also based on the long term phenomenon of the transport of solid material in installations
- control of the latest bathymetric technology and sediment analysis
- design and monitoring concept of local or global M.I.S transport on installations
- proposition of made-to-measure solutions for sediment management with regard to installations and legal clauses

### Client benefits

Owners of hydroelectric installations can be reassured of long term functioning and safety of their installations. They can also :

- benefit from exploitation orders from their installations relative to the transport of solid material
- anticipate risk situations (flooding, silting of production and safety systems)
- plan their investments in connection with the silting of dams
- benefit from advice and concrete solutions for sediment management based on global analysis
- consult simply one contact

Catchment area	Channelling	Dam production systems
<ul style="list-style-type: none"> <li>• General Characteristics.</li> <li>• Hydrologic Regime</li> <li>• Water intakes (+ evolution)</li> <li>• Intakes and nature of the SM (+ evolution)</li> </ul>	<ul style="list-style-type: none"> <li>• State of silting</li> <li>• Process of alluviation</li> <li>• Hydrodynamic basin</li> <li>• Extraction and methods</li> <li>• Preventative measures</li> </ul>	<ul style="list-style-type: none"> <li>• Aid for exploitation</li> <li>• Quality of turbined water</li> <li>• State of wear and tear on wheels</li> <li>• Monitoring</li> </ul>