Design of a Large-scale Remediation Approach of a Heavy Polluted River
A balance between remediation, ecological value and practical limits

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Throughout the years, industrial and domestic discharges in a local river, resulted in a 17 km long polluted river zone. A total surface of 63,5 ha is strongly polluted with heavy metals, chlorides and ionising radiation materials. The present pollution does not only effect the river water quality, but also the sediments, river banks and the surrounding area. The project is located in a Natura 2000 area. Antea Group was commissioned by the regulating authorities VMM and OVAM, to evaluate the possible remediation approaches and draw up a scope of work for this complex problem.

After further delimitation of the polluted soil and sediment, the complex mission started to find a balance between obtaining remediational objectives, prevention of structural damage to the existing valuable vegetation and peat log, the broader environmental plans for the whole valley, the practical implementation of the remediation works and the remediation cost. The river passes through several ecological valuable areas what makes the river, river banks and the surrounding area very difficult to access with heavy equipment, needed for possible remediational activities. An extended inventory of the terrain, the comparison of the different remediation techniques, the inventory of small scale dredging techniques for small, fast current rivers, combined with multiple consultations with the different involved stakeholders, resulted in a vast amount of data used to design a scientific based and generally supported remediation proposal for the different subareas and the different environmental compartments. For this, the BATNEEC-principal was implemented, but adjusted to the specific local conditions and problems. The classic evaluation frameworks were not applicable in the context of this project, because potential structural damage to the precious local environment could not be financially translated.

A project specific approach was developed in conjunction with the different involved actors and based on the extended practical experience.
The remediational approach consists of dredging the sediment and underlying riverbed combined with the installation of five sediment traps. The excavated sediment/soil will be removed by high-pressure tubing. At the transfer zones, the slurry will be drained by geotubing or laguning. The river bank and surrounding grounds will be remediated by a combination of an active (i.c. excavation and stabilisation) and a passive (i.c. phytostabilization and monitoring) technique, depending on the accessibility and the ecological value of the specific area.

By designing the remediational plan, a first important barrier has been taken to wipe out a historical environmental problem and to restore the area in its full ecological value. The first phase of the remediation works started in January 2017.