



DRÖDA RESERVOIR

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Country: Germany

Name of the site: Dröda Reservoir

Area (ha/km²): 110/1.1

Ecosystem type: Deep (stratified)
temperate reservoir

SITE DESCRIPTION

The Dröda Reservoir is a eutrophic water body in Saxony, Germany, with a surface area of 1.1 km², a maximum depth of 36 m, and a mean depth of 13 m. Built in 1971, it supplies drinking water to four cities and 35 municipalities in the Vogtland region, while also providing flood control, low-flow support, and hydropower. Its 53 km² catchment is dominated by agriculture, and diffuse nutrient inputs have increased algal biomass in recent decades. With a short water residence time of about one year, the reservoir is especially vulnerable to external nutrient loading, making catchment-based interventions essential.

CHALLENGES

Dröda Reservoir is affected by diffuse phosphorus inputs from its predominantly agricultural catchment. These nutrient inputs promote increased algal biomass and raise the risk of harmful algal blooms, threatening water quality in this drinking water reservoir. The challenge is to intercept phosphorus before it enters the reservoir, providing an effective near-term response while longer-term catchment measures to reduce diffuse nutrient losses are developed and put in place.



Photo by: Andre Künzelmann (UFZ)



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CURRENTLY USED RESTORATION MEASURES

Several restoration measures are already in place to improve water quality in the Dröda Reservoir. Riparian buffer strips reduce nutrient runoff, pre-dams and retention ponds are periodically dredged to remove accumulated sediments and nutrients, and pure oxygen is added during summer stratification to limit internal phosphorus release. Within FERRO, an iron-based coagulant is dosed at the reservoir's main inflow to bind phosphorus and suspended particles into dense flocs. These flocs settle in the pre-dam, where they can be harvested and reused as an alternative phosphorus fertiliser. This practical and cost-effective approach reduces external phosphorus loading, improves water quality, limits algal blooms, and demonstrates a circular solution that can be integrated into long-term reservoir management and transferred to other lakes and reservoirs.



Photo by: Andre Kunzelmann (UFZ)

STAKEHOLDERS

The main stakeholder is the Saxonian Reservoir Administration (Landestalsperrenverwaltung Sachsen, LTV), which is responsible for managing the Dröda Reservoir. LTV has implemented long-term restoration measures, including riparian buffer strips, regular sediment removal from pre-dams and retention ponds, and hypolimnetic oxygenation during summer stratification. Within FERRO, LTV supported the implementation of inflow flocculation by installing a new power connection, improving access roads, conducting intensive biweekly monitoring, co-financing the ferric chloride (FeCl_3) used for phosphorus removal, and obtaining the necessary permits and approvals from the relevant authorities to test the restoration measures. Through these activities, LTV benefits from improved reservoir water quality and is better able to ensure a reliable supply of high-quality raw water to the drinking water treatment company while supporting a practical and transferable approach to sustainable phosphorus management.