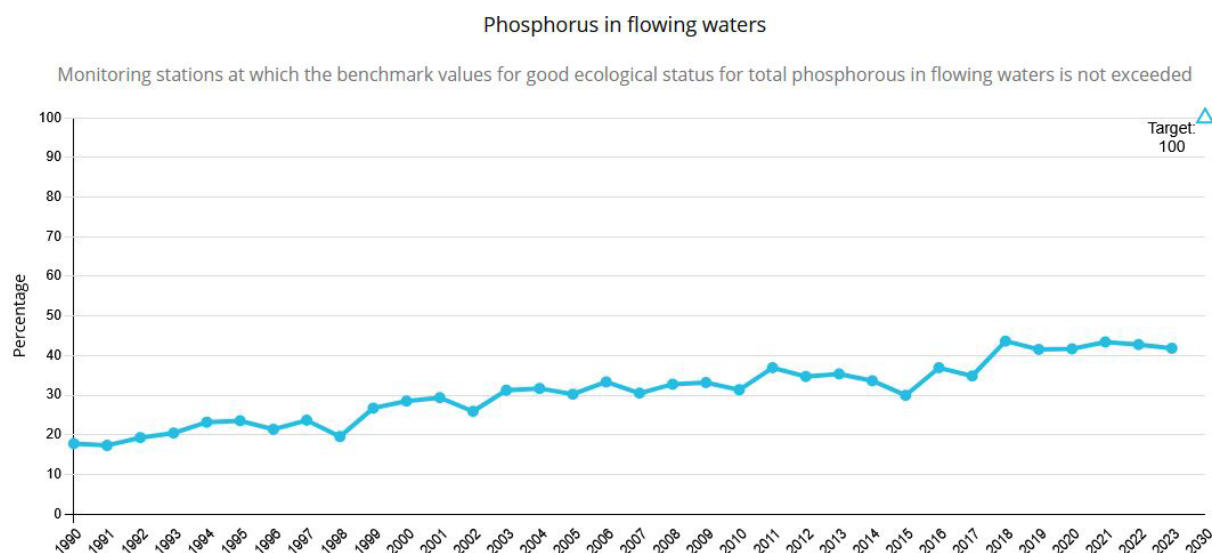




Water quality – Reducing the pollution of water with substances

6.1.a Phosphorus in flowing waters



Note(s):

Partly revised data.

Data source(s):

German Environment Agency on the basis of data from the German Working Group on Water Issues of the Länder and Federal Government

Definition

The indicator represents the proportion of monitoring stations (in %) at which the water body type-specific orientation value for good ecological status for phosphorus in water-courses is met.

Intention

Alongside nitrate pollution, phosphorus is one of the reasons why rivers, lakes and seas are over-supplied with nutrients (eutrophication). The consequences of this are algae growth, oxygen depletion and even fish kills or the emergence of toxic blue-green algae.

Target

Not exceeding benchmark values for specific types of water bodies at all monitoring points by 2030

Content and progress

Phosphorus typically enters surface waters through the input of phosphates. The phosphorus load in rivers is monitored by the Länder as part of surveillance conducted in accordance with the EU Water Framework Directive. The indicator is based on data from the overview monitoring network, which includes approximately 250 sampling stations. These are primarily located along the main courses of large rivers and at the confluences of major tributaries. The data is compiled by the German Environment Agency (UBA) based on information provided by the Federal/Länder Working Group on Water (LAWA). Lakes and other standing water bodies are not covered by this indicator.



The indicator assesses whether the applicable guideline value at each monitoring station was met or remained below the annual mean – however, it does not capture the extent of any exceedance. The results from individual monitoring stations are presented in aggregated form. Consequently, the value of the indicator depends on both the number and the representativeness of the monitoring stations.

As different water body types vary in their sensitivity to nutrients such as phosphorus, specific guideline values apply at different types of stations: for the majority of running waters, the guideline value is 0.1 milligrams of phosphorus per litre. For organically influenced rivers, the threshold is 0.15 mg/L; for marshland waters, 0.3 mg/L; and for tide-influenced transitional waters, 0.045 mg/L.

In 2023, the annual mean phosphorus concentration remained below the respective guideline value at 41.8% of monitoring stations in rivers. A further 50.9% of stations recorded medium concentrations, defined as values up to twice the guideline value. At 5.2% of stations, concentrations were between two and four times the threshold, while the remaining 2.2% exhibited even higher concentrations.

Over time, the proportion of stations complying with the guideline value has generally increased, more than doubling since 1990. Notably, the share of stations with very high concentrations (exceeding twice the guideline value) has declined substantially since the early 1990s. Significant contributing factors to the reduction in phosphorus pollution of flowing waters include the introduction of phosphate-free detergents and the reduction of phosphorus in treated wastewater discharges.

When considering the average trend over the past five years, the indicator has remained stable. The political target of complying with the respective guideline value at all monitoring stations by 2030 thus continues to be clearly missed. The indicators for phosphorus and nitrate content (6.1.a and 6.1.b) capture two key aspects of water quality. However, other factors also play an important role, such as the extent of natural habitats in water bodies and contamination by pollutants including pesticides, metals, and pharmaceuticals, which are likewise relevant to assessing water quality.

Type of target

Target with specific target value

Assessment

The proportion of monitoring points meeting the benchmark for good ecological status for total phosphorus should be increased to 100% by 2030.

According to the target formulation, the politically defined target was again not met in 2023. As the six-year average trend of the indicator does not move in the desired direction, indicator 6.1.a is assessed as thunderstorm for 2023.

