ORGANIC POLLUTANT CONTENT IN WATER COURSES

WATER 7

Some water courses may not achieve good status or good ecological potential required by the Water Framework Directive (WFD) 2000/60/EC due to organic matter inputs exceeding the self-purification capacity of aquatic ecosystems. However, the significant efforts made in recent years, mainly in terms of waste water treatment, suggest a gradual improvement in the situation.

The BOD_5 (biochemical oxygen demand over 5 days) represents the amount of dissolved oxygen used by microorganisms to oxidise the organic matter of a water sample maintained at 20°C for 5 days. This makes it possible to estimate the amount of biodegradable organic matter.

The water in the Scheldt basin is of less good quality

In 2015, 8.8% of all monitoring sites in the Scheldt basin recorded BOD_5 values above 10 mg O_2/l, compared to 0.9% in the other basins[1]. This difference can be explained mainly by the presence of numerous artificialised areas to the north of the Sambre-et-Meuse line, involving a greater number of waste water discharges. The north of Wallonia is also an intensive livestock farming area and an area of field crops, where the risk of erosion is high[2]. Various agro-food industries are also present in the Scheldt, Haine, Dendre and Senne valleys. In addition, most of the water courses in the Scheldt basin have a relatively low flow rate[3], which reinforces the negative impacts of domestic and industrial discharges on water quality.

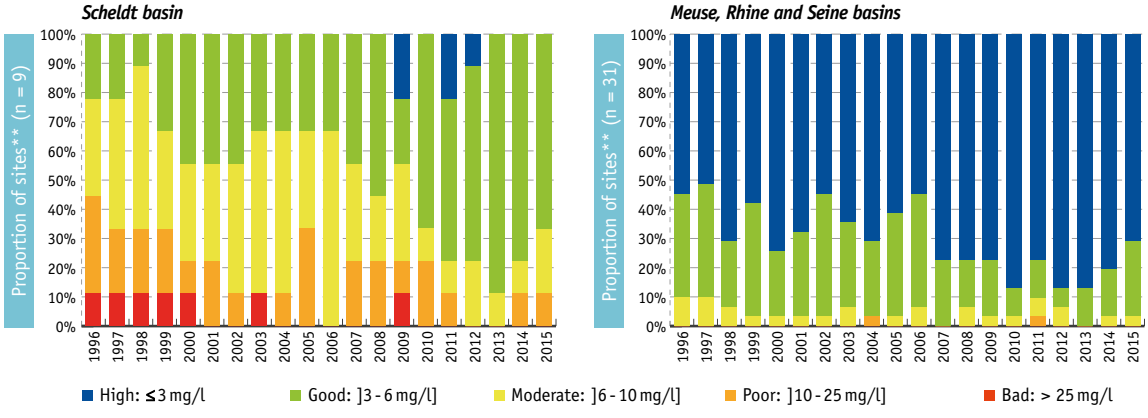
"Up and down" improvement

The increase in the equipment rate in Walloon urban waste water treatment plants[4] and the reduction of industrial pollutant loads discharged over the last twenty years[5] have made it possible to reduce the organic pollution of water courses. This improvement, illustrated by the decline in BOD_5, is particularly visible in the Scheldt Basin. As a result, Walloon water courses are becoming increasingly oxygenated: in the Meuse, Rhine and Seine basins, the proportion of sites with a minimum oxygen saturation rate of more than 90% increased by a factor of 6.5 between 1996 and 2015. By playing with the concentration or dilution of organic pollution, flow variations influence the progression of water courses quality. The increase in median flows observed in 2012 and 2013[3] may partly explain the improvements observed in both years. A similar trend, measured by a decrease in chemical oxygen demand (COD)[6], is also evident for industrial organic pollutants.

For water bodies which do not reach good status or good ecological potential required by the WFD, Wallonia implements measures listed in the second River Basin Management Plans[7], aimed in particular at the residential, agricultural and industrial sectors. These measures include continued investment to improve collective and on-site treatment, support for improving the exchange of organic matter between farmers, and monitoring discharges of polluting substances[8] from industry or urban waste water treatment plants.

[1] → Map 29 | [2] → SOILS 3 | [3] → WATER 2| [4] → WATER 18 & WATER 19 | [5] → WATER 4 | [6] The COD represents the amount of oxygen needed to oxidise organic and mineral substances in water with strong chemical oxidisers. It makes it possible to estimate the pollutant load of waste water. | [7] → RBMPs 2016-2021 adopted by the Walloon Government on 28/04/2016; → WATER 21 | [8] 91 substances included in the European Pollutant Release and Transfer Register (E-PRTR)

Fig. WATER 7-1 Status of water courses according to biochemical oxygen demand (BOD_5)* in Wallonia



** 90th percentile of annual BOD_5. The method of calculating P90 has been modified (and applied over the entire time series) from previous publications.*
*** Monitoring sites for which data are available annually between 1996 and 2015*

SOERW 2017 – Source: SPW - DGO3 - DEE (AQUAPHYC database)