

EMISSIONS OF TROPOSPHERIC OZONE PRECURSORS

Tropospheric ozone is a pollutant which is harmful to health and the environment. It is formed in the ambient air in very sunny hot weather through a series of complex photochemical reactions involving precursor pollutants such as nitrogen oxides (NO_x) and volatile organic compounds (VOCs).

Road transport in focus

In 2014, atmospheric emissions of NO_x and VOCs¹ from human activities were 76 and 46 kt respectively. The main sources of NO_x in Wallonia were road transport and the industrial sector (cement, glass, chemicals, etc.). VOCs were mainly emitted by agricultural activities (crops, livestock manure) and the use of solvents (paints, adhesives, degreasers, etc.).

Emissions continue to decrease

Since 1990, Walloon emissions of ozone precursors have decreased by 54% to reach 138 kt VOC eq² in 2014.

The main factors explaining the decrease in NO_x emissions (-53%) are:

- a branch agreement with the electricity producers;
- a 50% reduction in emissions from road transport (catalytic converters, EURO standards, etc.), despite the constant increase in traffic³ and the dominant share of diesel vehicles in the vehicle stock⁴;
- the closure of steel companies;
- process modifications in the chemical industry and cement plants.

Anthropogenic emissions of VOCs fell by 56% between 1990 and 2014, thanks in particular to the installation of catalytic converters on vehicles, the use of petrol vapour recovery systems when handling fuels in service stations, the use of

low solvent products and the application of new operating conditions in certain sectors (printing, dry cleaning, etc.).

Emission ceilings to be respected

Overall, Belgium respects the emissions ceilings laid down in the European directive⁵ (with adjustments granted by the EU for NO_x from 2010 to 2014, and for VOCs in 2010 in the transport and agricultural sectors). In Wallonia, additional measures still need to be taken with regards to those already envisaged in the Programme for the Progressive Reduction of Emissions of SO_2 , NO_x , VOCs and NH_3 (*Programme de réduction progressive des émissions de SO_2 , NO_x , COV et NH_3*)⁶ or in the Air-Climate Plan (*Plan air-climat*) (2008-2012). The Air Climate Energy Plan 2016-2022 (*Plan air climat énergie 2016-2022 - PACE*)⁷ lays down various measures to be implemented by 2022. The measures in the transport sector will have the greatest impact on reducing pollutant emissions of tropospheric ozone.

[1] The VOCs group various types of compounds (aldehydes, benzene, terpenes, etc.). Around 40% of Walloon emissions of VOCs (such as terpenes) are naturally produced by plants (forests in particular). [2] In order to assess the overall impact of emissions of NO_x and VOCs, the quantities emitted (in kt) of each pollutant are converted into kt VOC equivalent. [3] → TRANS 2 & 3 [4] → TRANS 5 [5] Directive 2001/81/EC, which will be repealed by Directive (EU) 2016/2284 laying down new and more ambitious targets from 2020 onwards [6] Walloon Government Decree of 25/03/2004 [7] → AIR Focus 3

Fig. AIR 3-1 Emissions of tropospheric ozone precursors (of anthropogenic origin) in Wallonia

