

## EMISSIONS OF ACIDIFYING POLLUTANTS

Air pollutants such as sulphur oxides ( $SO_x$ ), nitrogen oxides ( $NO_x$ ) and ammonia ( $NH_3$ ) can transform into acidic or potentially acidifying compounds. Atmospheric depositions of acidifying substances, better known as "acid rain", can disrupt plant growth, alter the quality of soils and surface water, and degrade architectural heritage.

### Nitrogen as the main factor

$NO_x$  and  $NH_3$  are the two gases which make the largest contribution to the phenomenon of acidification. In 2014, total emissions of acidifying pollutants amounted to 3,231 t Aeq<sup>1</sup>, representing one third of Belgian emissions of acidifying substances<sup>2</sup>. With 0.90 kg Aeq emitted per inhabitant, Wallonia was below the average for the 28 EU countries (0.98 kg Aeq per inhabitant). Emissions of  $NO_x$  and  $NH_3$  represented respectively 51% and 39% of total emissions. The main emitting sectors were agriculture (41.4%), road transport (23.8%) and industry (22.6%).

### Emissions continue to decrease

Air emissions of acidifying pollutants decreased by 61% between 1990 and 2014. Reductions were made mainly in the energy conversion (-93%), industry (-76%), road transport (-55%) and residential (-70%) sectors.

The reduction in  $SO_x$  emissions (-91%) is mainly due to the reduction in sulphur content of diesel and heavy fuel oil, as well as the increasing use of natural gas and the closure of coal-fired power plants.

$NO_x$  emissions decreased by 53%, notably thanks to the introduction of more efficient boilers, improved engine performance (EURO standards) and the widespread use of catalytic converters, although the effect of the latter two measures was mitigated by the increase in traffic. The closure of certain particularly polluting industries (steel, etc.)

and climatic conditions (very mild winter 2006-2007 and 2013-2014) also contributed to the decreases observed.

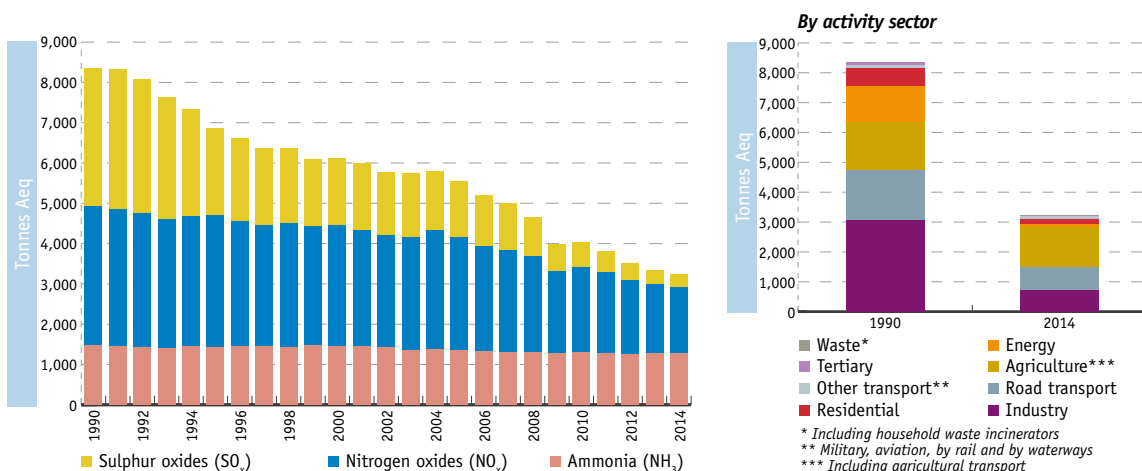
The moderate decrease in emissions of  $NH_3$  (-14%) is explained by the reduction of the size of the cattle stock<sup>3</sup> and the reduction in the quantities of mineral fertilisers applied<sup>4</sup>.

### Emission ceilings to be respected

Overall, Belgium respects the emissions ceilings laid down in the European directive<sup>5</sup> (with adjustments granted by the EU for  $NO_x$  from 2010 to 2014, 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  $NH_3$* )<sup>6</sup> 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*)<sup>7</sup> lays down various measures to be implemented by 2022. The measures in the transport sector will have the greatest impact on reducing acidifying pollutant emissions.

<sup>[1]</sup> In order to assess the overall acidifying impact of emissions of  $SO_2$ ,  $NO_x$  and  $NH_3$ , the quantities of each pollutant are converted into acid equivalent (Aeq) on the basis of the quantity of protons likely to be produced by each of these three gases. | <sup>[2]</sup> VMM *et al.*, 2016b | <sup>[3]</sup> → AGRI 3 | <sup>[4]</sup> → AGRI 5 | <sup>[5]</sup> Directive 2001/81/EC. This directive will be repealed by Directive (EU) 2016/2284 adopted on 14/12/2016, which sets new and more ambitious targets from 2020 onwards. | <sup>[6]</sup> Walloon Government Decree of 25/03/2004 | <sup>[7]</sup> → AIR Focus 3

Fig. AIR 2-1 Atmospheric emissions of acidifying substances in Wallonia



SOERW 2017 – Sources: SPW - AwAC (report carried out in February 2016, provisional data 2014)