

## EXPOSURE TO ROAD TRAFFIC NOISE

## HEALTH 1

From certain thresholds upwards, environmental noise causes annoyance but also has adverse effects on sleep, cognitive functions and the cardiovascular system of the individuals exposed to it. In particular, road traffic noise is said to be responsible for 89% of the 10,000 premature deaths per year attributable to environmental noise in Europe<sup>1</sup>.

To reduce the effects of environmental noise, legislation<sup>2</sup> requires (i) a mapping of noise exposure, (ii) public information on noise exposure and its effects, and (iii) the implementation of action plans. Two indicators have been selected to establish noise exposure mappings:  $L_{den}$  and  $L_{night}$ , which were designed to respectively assess annoyance and sleep disturbance due to noise. These indicators represent the annual average noise levels in dB (A) over all periods of day, evening and night ( $L_{den}$ ) and during night periods ( $L_{night}$ ). Noise effects on sleep are observed below 40 dB (A)  $L_{night}$  while the risk of hypertension, coronary heart disease and stroke increases from 50 - 55 dB (A)  $L_{den}$ <sup>3</sup>. According to WHO<sup>3</sup>, the average annual nocturnal exposure at night should not exceed 40 dB (A).

### Cumulative delays

The Walloon mappings<sup>4</sup> of noise exposure along major roads<sup>5</sup> were planned<sup>6</sup>: (i) in 2007 for roads with traffic exceeding 6 million vehicles per year (veh./year) (1,060 km of roads and motorways) and (ii) in 2012 for roads with traffic between 3 and 6 million veh./year (1,567 km of roads and motorways). They were finalised in 2008<sup>7</sup> and 2016<sup>8</sup> respectively. The corresponding action plans were anticipated<sup>2</sup> in 2008 and 2013. A first comprehensive plan was approved at first reading by the Walloon Government in mid-2017. As the legislation requires an update of mappings and action plans every 5 years, the 2008 mapping needed to be revised in 2013. This started in August 2017.

### Nearly one million inhabitants affected

According to the maps drawn up, approximately 766,800 inhabitants were exposed to more than 55 dB (A)  $L_{den}$  along roads with traffic in excess of 3 million veh./year, considering only this noise source. More than<sup>9</sup> 948,600 inhabitants were exposed to more than 45dB(A)  $L_{night}$ .

### At-the-source measures should be encouraged

The Walloon Government has recently set, at 70 dB (A)  $L_{den}$  and 60 dB (A)  $L_{night}$ , the limit values above which noise abatement measures - to be fixed in the expected action plan - are required for major roads<sup>10</sup>. The best cost/benefit ratio is that of at-the-source measures: setting noise limits for vehicles (engine, exhaust), the promotion of silent tyres, the installation of low-noise road surfaces (e.g. poro-elastic)<sup>11</sup>. However, up until now, the actions taken by the EU Member States have mainly consisted of (i) measures on the noise propagation path (anti-noise panels, embankments, vegetation barriers, etc.) (32%), (ii) measures at the receiving point (insulation of buildings) (23%), (iii) traffic management measures (roundabouts, speed bumps, etc.) (22%) and (iv) spatial planning (12%)<sup>1</sup>. In 2016, the cumulative length of anti-noise installations on the Walloon road network reached 58 km.

[1] EEA, 2014. Impact underestimated due to incomplete reporting. | [2] Walloon Government Decree of 13/05/2004 (Directive 2002/49/EC) | [3] WHO, 2009 | [4] Referred to as "strategic noise mapping" according to Directive 2002/49/EC | [5] → Map 46 | [6] Walloon Government Decree of 13/09/2007 | [7] Walloon Government Decree of 12/03/2009 | [8] Approval by the WG on 20/07/2017 | [9] The noise level class 45-49 dB(A) was not considered for roads with traffic between 3 and 6 million vehicles/year. The figure shown is therefore probably underestimated. | [10] Walloon Government Decree of 22/12/2016 | [11] EEA, 2015

Fig. HEALTH 1-1 Exposure\* to road traffic noise in Wallonia

