

Science for Environment Policy

Harmful traffic pollution falls within Munich low emission zone

Low emissions zones (LEZs) can substantially reduce local levels of traffic-based air pollution, a new study has shown. Monitoring air pollution in Munich, Germany, researchers found that particulate matter from traffic sources dropped by 60% after implementation of an LEZ.

Traffic exhaust is a major source of fine particulate matter, a type of [air pollution](#) that has been linked to respiratory and cardiovascular diseases. In order to reduce build-up of such traffic-based air pollution, especially in highly populated areas, some European cities have implemented LEZs, in which only low-emission vehicles are permitted.

To test how effective LEZs are at reducing air pollution, researchers examined a case study in the city of Munich. The area chosen was in the inner city, on a main road, with a mixture of residential and commercial buildings. Approximately 41,000 vehicles passed through the area every day. In 2008, a LEZ was introduced for the area which restricted access of heavy-duty, high-emission vehicles. Only passenger cars and light trucks with Euro 3 and Euro 4 vehicle emission standards are allowed into the area.

In 2006 and 2007, before the implementation of the LEZ, levels of PM_{2.5} (particulate matter with a diameter of not more than 2.5 micrometres) were measured every third day between October and February. This process was then repeated in 2009 and 2010, after the LEZ had been put in place, with a total of 82 samples taken.

Once the samples had been taken, the researchers further analysed the chemical components of the particles, enabling them to identify distinct sources of the pollution. The results demonstrated that the main sources of particulate pollution in the LEZ area are traffic, coal and wood combustion and cooking.

The implementation of the LEZ had a strong beneficial effect on traffic-based pollution. Particles from traffic were reduced by 60%, and the 'elemental carbon' from traffic exhaust, an important component of aerosol pollution which has been linked to respiratory problems, fell from 1.1 to 0.5 micrograms per m³.

Air pollution in the LEZ area (from other sources as well as traffic) fell slightly, but not significantly, between the two periods. The authors suggest that this may be the result of increased wood combustion. The winter of 2009/2010 was unusually cold, and there is an increasing trend in Germany for wood fires, which meant that the amount of pollution from wood combustion increased by 180%.

Overall, the researchers conclude that the LEZ had an important, positive impact on the amount of traffic pollution in this highly populated urban centre. They also stress, however, that other sources of pollution should be carefully considered, and that more research into the health impacts of solid fuel combustion is needed.



30 May 2013
Issue 330

Subscribe to free
weekly News Alert

Source: Qadir, R. M., Abbaszade, G., Schnelle-Kreis, J. *et al.* (2013). Concentrations and source contributions of particulate organic matter before and after implementation of a low emission zone in Munich, Germany. *Environmental Pollution*. 175: 158-167

Contact:
raeed.qadir@helmholtz-muenchen.de

Read more about: [Air pollution](#), [Urban environment](#)

The contents and views included in Science for Environment Policy are based on independent, peer-reviewed research and do not necessarily reflect the position of the European Commission.

To cite this article/service: "Science for Environment Policy": European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.