

Science for Environment Policy

Public health costs of air pollution fall in Europe but remain high for maritime shipping

The public health impacts of air pollution in Europe remain large, but are falling thanks to regulatory actions to cut emissions, a recent study finds. However, it issues a warning about the public health impacts of emissions from rising levels of international ship traffic.

Exposure to air pollution has been linked to long-term [health](#) problems, especially heart and lung conditions and may lead to early death in some cases. The long-term health impacts can be valued and monetised based on individuals' willingness to pay for avoiding such illness and early death. Poor air quality and the public health threat can therefore be valued and shown to cost the European [economy](#) billions of euros each year.

In this study, the researchers valued these public health costs from air pollution in Europe for the years 2000, 2007, 2011 and 2020. A modelling technique was used which maps the long-range transport and physical and chemical changes of emissions in the atmosphere from specific sources and sectors in the Northern Hemisphere. Population data were used to calculate the number of people potentially exposed to the pollution, and the health impact of this exposure was valued.

Overall, the study suggests that, as air quality improves in response to legislation, its public health impact will fall by 2020 across Europe. As a result, public health costs of air pollution are expected to fall from €803 billion a year in 2000 to €537 billion in 2020. The number of people dying prematurely from the effects of air pollution is calculated to fall from around 680,000 people in 2000, to around 450,000 in 2020.

This picture reflects the positive impact that air pollution policy is expected to have: the researchers assume for land-based sources, emission reductions that would meet the targets for 2020 set by the 2005 EU Thematic Strategy on Air Pollution¹ (although this is not fully guaranteed by the existing legislation), and for seaborne sources they take into account the effects of the recently revised Directive on the sulphur content of fuels², which requires ships operating in Sulphur Emission Control Areas (SECA) in the Baltic and North Seas and the English Channel to use low sulphur fuel.

While emissions on land are generally falling, shipping emissions are expected to increase by 5% due to the growth of international ship traffic in the Northern Hemisphere. The 7% (or €58.4 billion) contribution of shipping emissions to the total health costs in Europe in 2000 is likely to increase to 12% (or €64.1 billion) in 2020.

The trend for pollution from shipping is different in the Baltic Sea and North Sea region, at least for sulphur dioxide emissions which are projected to fall as a result of the new, stricter SECA standards. The effect of this drop is a 36% reduction in public health costs in Europe from international shipping, from €22 billion in 2000 to €14.1 billion in 2020.

In Denmark, which is especially affected by large amounts of ship traffic in the Baltic and North Sea, the reduction of sulphur dioxide emissions will result in health costs decrease from €627 million in 2000 to €357 million in 2020.

However, the picture is not as positive for pollutants other than sulphur dioxide, in particular, nitrogen oxides. No special emission control areas (NECAs), with stricter emission requirements, for nitrogen oxides have been established yet. An overall growth of maritime traffic in the Baltic and North Seas and resulting increase of air pollution from ships means that health costs from shipping will remain at about 14% of the total health costs from all emission sources in Denmark from 2000 to 2020.



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www.atmos-chem-phys-discuss.net/13/5923/2013/acpd-13-5923-2013.html

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1. See: http://europa.eu/legislation_summaries/environment/air_pollution/128159_en.htm

2. See: http://ec.europa.eu/environment/air/transport/ships_proposal.htm