

EEA Core Set of Indicators - CSI 003

Emissions of primary particulates and secondary particulate precursors

May 2005 assessment

working draft

About this document

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European Environment Agency



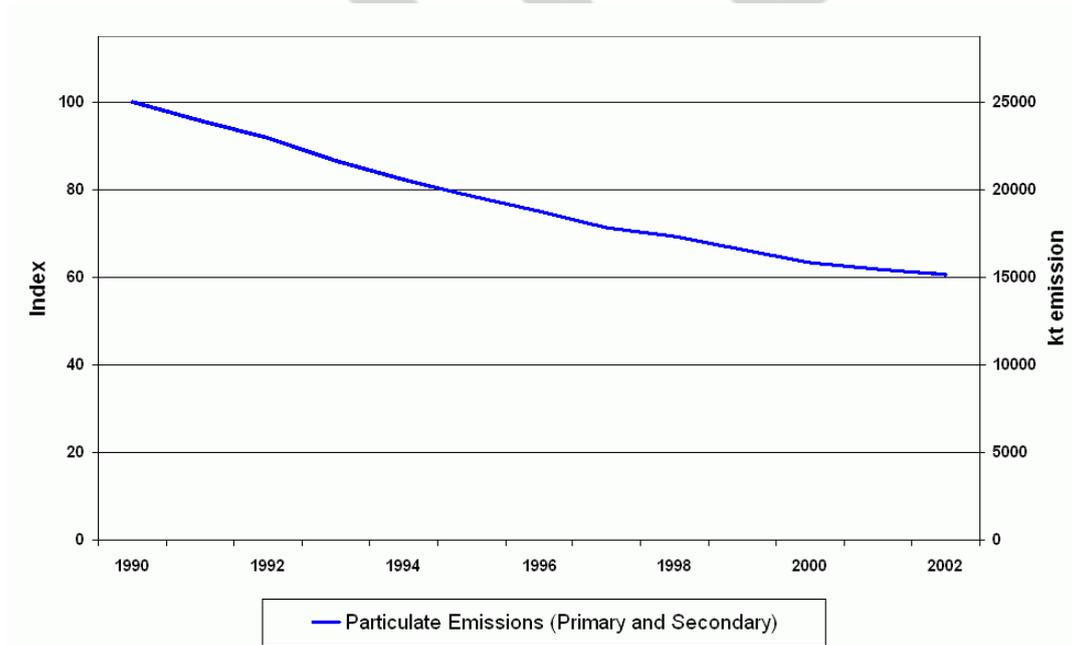


Key policy question: What progress is being made in reducing emissions of particulates (PM₁₀) and their precursors across Europe?

Key message: Total EU15 emissions of fine particulates have been reduced by 39% between 1990 and 2002. This is mainly due to reduction in emissions of the secondary particulate precursors, but also to reductions of primary PM₁₀ from energy industries.

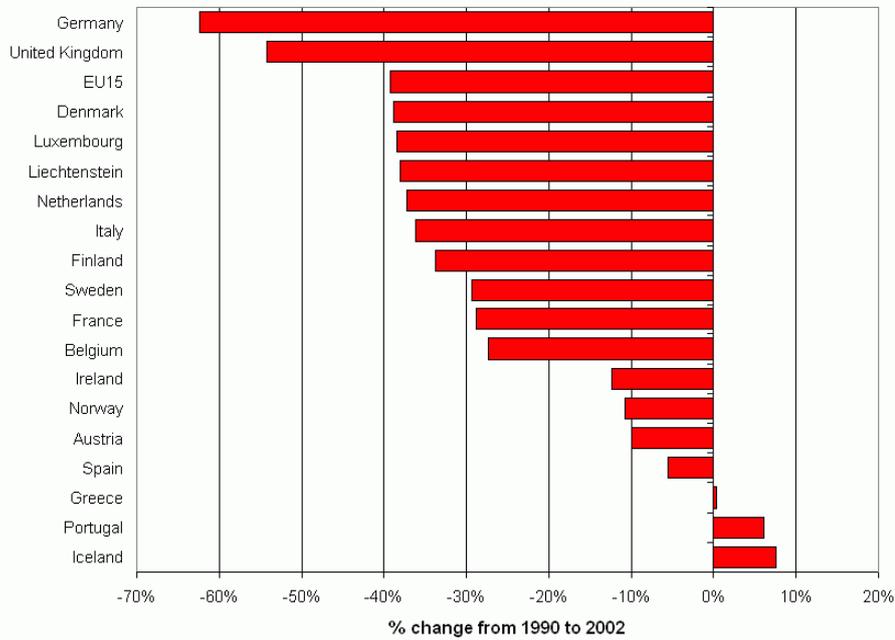
EU emissions of fine particles have been reduced by 39% between 1990 and 2002. Emissions of NO_x (55%) and SO₂ (20%) were the most important contributing pollutants to particulate formation in the EU15 in 2002. The reductions in total emissions between 1990 to 2002 are mainly due to the introduction of, or improvements to, abatement measures in the energy industries, road transport, and industry energy sectors. These three sectors contributed 46%, 22% and 16% to the total reduction in emissions, respectively.

Fig. 1: Emissions of primary and secondary fine particulates (EU15)



Data source: Data from 2004 officially reported national total and sectoral emissions to UNECE/EMEP Convention on Long-Range Transboundary Atmospheric Pollution. Where emissions of primary PM10 were not reported by countries, emission estimates have been obtained from the RAINS PM10 model (IIASA).

Fig. 2: Change in emission of primary and secondary fine particles (EU15 and EFTA3)



Data source: Data from 2004 officially reported national total and sectoral emissions to UNECE/EMEP Convention on Long-Range Transboundary Atmospheric Pollution. Where emissions of primary PM10 were not reported by countries, emission estimates have been obtained from the RAINS PM10 model (IIASA).

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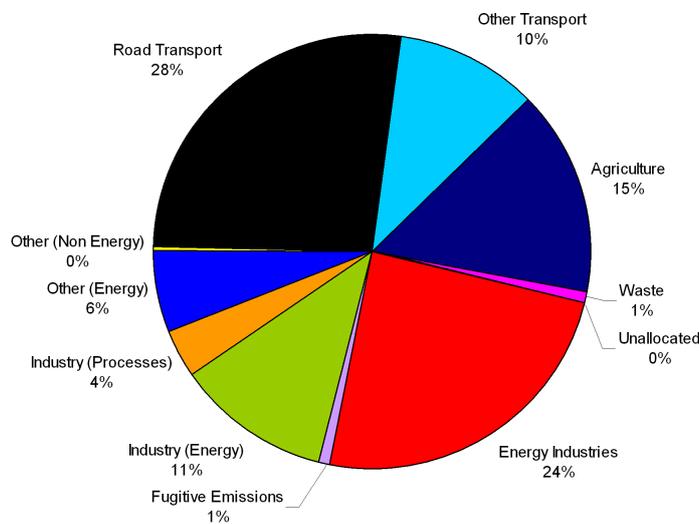
Specific policy question: How do different sectors and processes contribute to the emissions of PM₁₀ and their precursors?

The most important sources of PM₁₀ emissions in 2002 were road transport (28% of total emissions) followed by the energy industry (24%) sectors.

As described in the main assessment message, the emission reductions between 1990 to 2002 are mainly due to abatement measures in the energy industries, road transport, and energy use by industry. Overall, the reduction in emissions of energy-related particulate pollutants was mainly achieved through a combination of the use of lower sulphur content fuels, fuel switching from coal and oil to natural gas, the deployment of emission abatement technologies in the energy supply and industry sectors, and an increased market penetration of catalytic converters for road vehicles.

Emissions of primary PM₁₀ and secondary PM₁₀ precursors are expected to decrease in the future as further improved vehicle engine technologies are adopted and stationary fuel combustion emissions are controlled through abatement or use of low sulphur fuels such as natural gas. Despite this it is expected that in the near future in the majority of the urban areas over the EU15 territory PM₁₀ concentrations will still be well above the limit values, mainly as a result of the continued growth of road transport. Substantial further reductions in emissions will therefore be needed to reach the air quality limit values set in the EU First Daughter Directive to the Framework Directive on Ambient Air Quality.

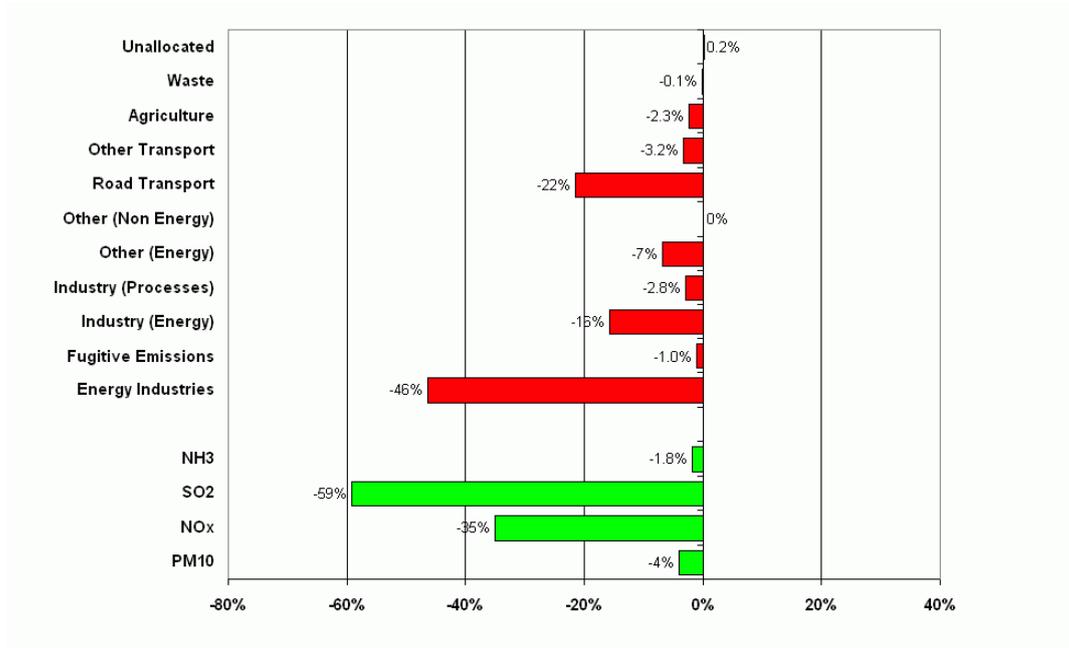
Fig. 3: Sector split for primary and secondary fine particulate emissions (EU15)



Data source: Data from 2004 officially reported national total and sectoral emissions to UNECE/EMEP Convention on Long-Range Transboundary Atmospheric Pollution. Where emissions of primary PM₁₀ were not reported by countries, emission estimates have been obtained from the RAINS PM₁₀ model (IIASA).



Fig. 4: Contribution of the change in emissions of primary and secondary fine particulates (PM10), per sector and per pollutant (EU15)



Data source: Data from 2004 officially reported national total and sectoral emissions to UNECE/EMEP Convention on Long-Range Transboundary Atmospheric Pollution. Where emissions of primary PM10 were not reported by countries, emission estimates have been obtained from the RAINS PM10 model (IIASA).

Note: 'Contribution to change' plots show the contribution to the total emission change between 1990-2002 made by a specified sector/ pollutant.

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