

Increased air pollution cuts victims' lifespan by a decade, costing billions

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One of the benefits to cutting fossil fuel consumption is lowering air pollution. A new study in the August issue of *Ecological Indicators* shows that, on average, an increase in pollution particles in the air of 10 micrograms per cubic meter cuts victims' life expectancy by 9-11 years - more than previously thought. But the estimated economic cost of this differs wildly between the US and the EU because of the calculations used.

The author of the study, Prof. Mikael Skou Andersen of Aarhus University in Denmark, says we need a robust and consistent way of determining the economic benefit of reducing [air pollution](#) to produce compelling data that encourages countries to reduce their use of [fossil fuels](#).

When we burn fossil fuels, tiny particles are released, causing [air pollution](#). This is known to cause premature death, and policies that aim to reduce our consumption of fossil fuels often cite the potential health benefits - and related cost savings - linked to reducing air pollution.

But calculating the costs associated with [premature death](#) caused by air pollution is complex and has resulted in very different estimates: because of the different methodologies used, the cost of air pollution related to fossil fuel consumption is estimated to be three times higher in the US than the EU.

"The existing literature is ambiguous and there are differences in the approaches adopted in EU and USA for how to account for such costs," commented Prof. Andersen. "People are willing to pay a price to reduce risks for dying prematurely, provided we have an understanding of the implications and magnitudes of such risks."

In the US, the cost-benefit analysis of reducing air pollution is calculated based on the number of lives saved, with each life currently estimated to be worth \$7.4 million. But in Europe, the focus is on the change in [life expectancy](#): most of the victims of air pollution-related deaths are in their 70s and 80s, so the number of life years lost is thought to be only one or two. This leads to a much lower cost estimate.

To work out a more accurate figure, Prof. Andersen used a life table of 100,000 people with an age distribution that matches the current population, which showed estimated mortality rates by age. He

determined the number of people expected to survive for their remaining lifetime in each age group and totaled this to give the total number of expected life-years. He then simulated the effect of long-term exposure to increased air pollution (of 10 micrograms of small particles per cubic meter) on mortality.

The result revealed the average age of an air pollution victim is 78.9 years and their average loss of life expectancy is 9-11 years - much longer than a frequently cited estimate of 1-2 years. For comparison, the estimated loss of life years to traffic fatalities is 35-40 years. Dr. Andersen hopes that this information will inform international institutions and policy makers that want to accurately account for deaths caused by air pollution due to [fossil fuel consumption](#).

"There is concern about air pollution and its health impacts, more so following 'diesel-gate'," said Prof. Andersen. "But many European countries are unable to meet the [air pollution standards](#) they have agreed to in the European Union. We need to understand the true impact of long-term exposure to air pollution to develop better informed policies and reduce fossil [fuel consumption](#)."

More information: Mikael Skou Andersen, Co-benefits of climate mitigation: Counting statistical lives or life-years?, *Ecological Indicators* (2017). [DOI: 10.1016/j.ecolind.2017.03.051](https://doi.org/10.1016/j.ecolind.2017.03.051)

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