

SDG Goal 3 Good health and well-being

SDG Target 3.9 **By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination**

SDG Indicator 3.9.1 **Mortality rate attributed to household and ambient air pollution**

Time series **Attributable deaths due to long-term exposure to fine particulate matter (PM_{2.5}) among the population aged 25 years and older**

1. General information on the time series

- Date of national metadata: 9 June 2022
- National data: <http://sdg-indicators.de/3-9-1/>
- Definition: The time series measures the number of deaths as a result of a disease classified with the following ICD-10-codes, which are attributable to particulate matter (PM_{2.5}):
 - J44: Chronic obstructive pulmonary disease (COPD)
 - C33-C34: Lung cancer
 - I60-I69: Stroke
 - I20-I25: Ischemic heart disease
 - E10-E14: Diabetes mellitus type 2

ICD-10 is the International Statistical Classification of Diseases and Related Health Problems 10th Revision (German Modification).
- Disaggregation: age group; type of disease

2. Comparability with the global metadata

- Date of global metadata: July 2016
- Global metadata: <https://unstats.un.org/sdgs/metadata/files/Metadata-03-09-01.pdf>
- The time series is compliant with the global metadata.

3. Data description

- The data is derived from the German Environment Agency (UBA). Attributable deaths are the deaths that can be statistically attributed to exposure to a risk factor. In calculations of the environmental burden of disease, the number of attributable deaths is determined by multiplying the population attributable fraction estimated for a specific risk factor by the number of deaths from a particular disease, stratified by sex and age-groups. It is assumed that these deaths are due to the exposure to the risk factor. This means, in turn, that if the exposure to a risk factor is completely reduced, it will not lead to any disease burden. Thus, if the risk factor was no longer present, these persons would live longer.

4. Access to data source

5. Metadata on source data

6. Timeliness and frequency

- Timeliness: Irregular
- Frequency: Annual

7. Calculation method

- Unit of measurement: Number
- Calculation:

Attributable deaths = Deaths [Number] · Population attributable fraction [%]

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SDG Target 3.9	By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination
SDG Indicator 3.9.1	Mortality rate attributed to household and ambient air pollution
Time series	Disability-adjusted life years (DALYs) attributable to long-term exposure to particulate matter (PM2.5) among the population aged 25 years and older

1. General information on the time series

- Date of national metadata: 9 June 2022
- National data: <http://sdg-indicators.de/3-9-1/>
- Definition: The time series measures the total sum of healthy life years lost due to death and morbidity as a result of this disease classified with the following ICD-10-codes, which are attributable to particulate matter (PM2.5):
 - J44: Chronic obstructive pulmonary disease (COPD)
 - C33-C34: Lung cancer
 - I60-I69: Stroke
 - I20-I25: Ischemic heart disease
 - E10-E14: Diabetes mellitus type 2
 ICD-10 is the International Statistical Classification of Diseases and Related Health Problems 10th Revision (German Modification).
- Disaggregation: age group; type of disease

2. Comparability with the global metadata

- Date of global metadata: July 2016
- Global metadata: <https://unstats.un.org/sdgs/metadata/files/Metadata-03-09-01.pdf>
- The time series not compliant with the global metadata, but provides additional information.

3. Data description

- The data is derived from the German Environment Agency (UBA). Disability-adjusted life years (DALYs) are the healthy life years lost due to death and morbidity that can be statistically attributed to exposure to a risk factor. In calculations of the environmental burden of disease, the number of DALYs is determined by multiplying the population attributable fraction for a specific risk factor by the number of deaths from a particular disease, stratified by sex and age-groups. It is assumed that all these DALYs are attributable to exposure to the risk factor. This means, in turn, that if the exposure to a risk factor is completely reduced, it will not lead to any disease burden and thus no DALYs. Thus, if the risk factor was no longer present, the population's life expectancy would rise.

4. Access to data source

- 12-month prevalence of known chronic obstructive pulmonary disease (COPD) in Germany (only available in German):
<https://edoc.rki.de/handle/176904/2783?locale-attribute=en>
- 12-month prevalence of known diabetes mellitus in Germany (only available in German):
<https://edoc.rki.de/handle/176904/2580?locale-attribute=en>
- 12-month prevalence of stroke or chronic complaints resulting from stroke in Germany (only available in German):
<https://edoc.rki.de/handle/176904/2583?locale-attribute=en>

5. Metadata on source data

6. Timeliness and frequency

- Timeliness: Irregular
- Frequency: Annual

7. Calculation method

- Unit of measurement: Years
- Calculation:

DALYs = Years of life lost due to death[number] + Years lived with disability [number]

Years of life lost due to death = $D_{a,c} \cdot RLE_a$

Years lived with disability = $P_{a,c} \cdot DW_c$

$D_{a,c}$ = Age (a) and cause (c) specific number of death in the respective year

RLE_a = Age (a) specific remaining life expectancy at age of death

$P_{a,c}$ = Age (a) and cause (c) specific prevalence in the respective year

DW_c = Cause (c) specific disability weight indicating the severity of a disease