

Burden of disease from household air pollution for 2016

V3 April 2018

Summary of results

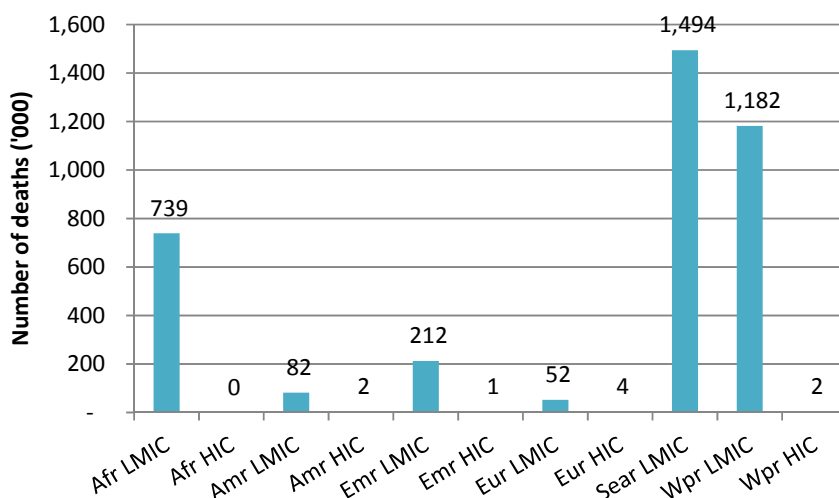
Globally, 3.8 million deaths were attributable to household air pollution (HAP) in 2016, almost all in low- and middle-income countries (LMIC). The South East Asian and Western Pacific regions bear most of the burden with 1.5 million and 1.2 million deaths, respectively. About 739'000 deaths occur in the African region, 212'000 in the Eastern Mediterranean region, 82'000 in the Americas and 52'000 in Europe. The remaining 9'000 deaths occur in high income countries.

The diseases included in the assessment are acute lower respiratory infection (ALRI), lung cancer, chronic obstructive pulmonary disease (COPD), ischaemic heart disease, and stroke. Non-communicable diseases account for 73% of these deaths.

The slight decrease in disease burden compared with the previous estimate of 4.3 million deaths from HAP for the year 2012¹ is mainly due to updated method for estimating disease risk, exposure and background disease rates².

Country estimates of deaths, disability-adjusted life years (DALYs), years of life lost (YLD) are provided by disease and sex in the WHO website³.

Figure 1. Total deaths attributable to HAP in 2016, by region



HAP: Household air pollution; Afr: Africa; Amr: America; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia, Wpr: Western Pacific; LMIC: Low- and middle-income; HIC: High-income.

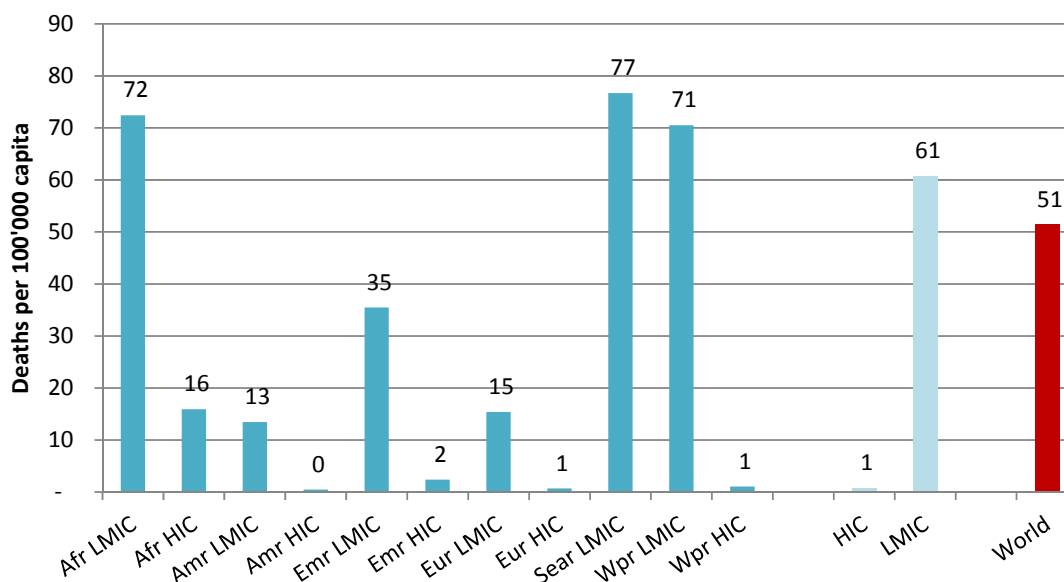
¹ Burden of disease attributable to household air pollution for the year 2012 - Summary. Geneva: World Health Organization, 2014. Accessed April 2018:

http://www.who.int/phe/health_topics/outdoorair/databases/HAP_BoD_results_March2014.pdf?ua=1

² Cohen et al. Estimates and 25-year trends of the global burden of disease attributable to ambient air pollution: an analysis of data from the Global Burden of Diseases Study 2015 Lancet 2017 Volume 389, No. 10082, p1907–1918.

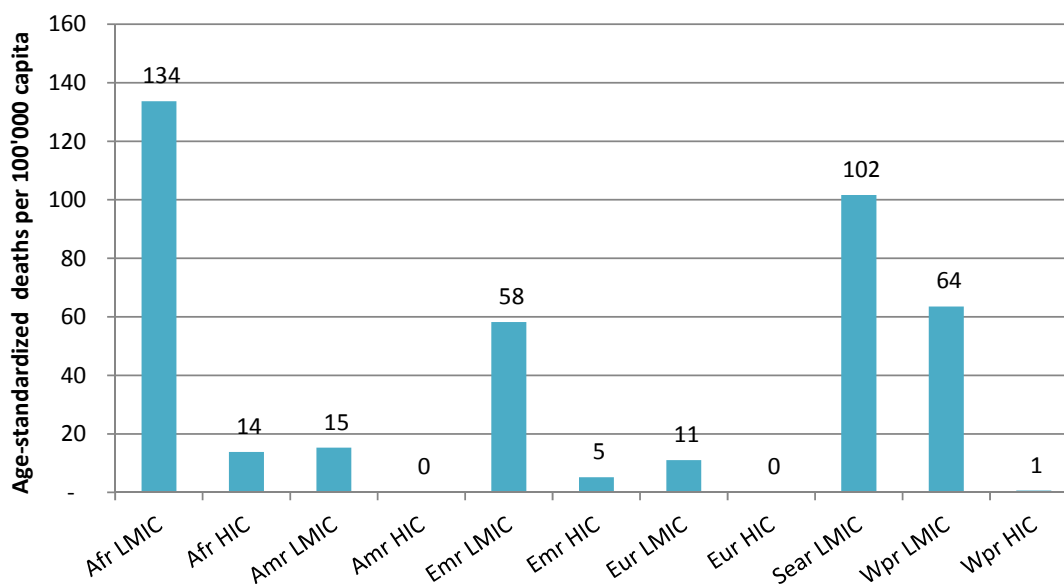
³ WHO Air Pollution : www.who.int/airpollution/data and Global Health Observatory: www.who.int/gho/phe/indoor_air_pollution

Figure 2. Deaths per capita attributable to HAP in 2016, by region



HAP: Household air pollution; Afr: Africa; Amr: America; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia, Wpr: Western Pacific; LMIC: Low- and middle-income; HIC: High-income.

Figure 3. Age-standardized deaths per capita attributable to HAP in 2016, by region



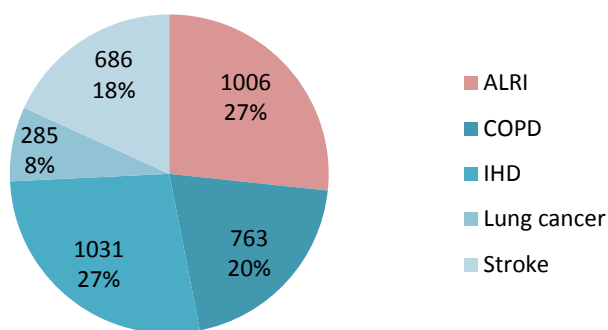
HAP: Household air pollution; Afr: Africa; Amr: America; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia, Wpr: Western Pacific; LMIC: Low- and middle-income; HIC: High-income.

Table 1. Population attributable fraction (PAF) for mortality attributable to HAP in 2016, by region and disease

WHO region	ALRI	COPD	Lung cancer	IHD	Stroke
Afr LMIC	52%	41%	29%	25%	25%
Afr HIC	9%	8%	8%	4%	4%
Amr LMIC	12%	9%	8%	5%	4%
Amr HIC	0.5%	0.2%	0.2%	0.1%	0.2%
Emr LMIC	33%	23%	11%	10%	11%
Emr HIC	4%	3%	3%	2%	1%
Eur LMIC	6%	5%	4%	2%	2%
Eur HIC	0.4%	0.2%	0.3%	0.1%	0.1%
Sear LMIC	42%	38%	36%	21%	19%
Wpr LMIC	35%	29%	29%	14%	13%
Wpr HIC	0.4%	0.4%	0.5%	0.2%	0.2%
HICs	0.5%	0.2%	0.3%	0.2%	0.2%
LMICs	40%	31%	25%	13%	14%
World	34%	25%	17%	11%	12%

HAP: Household air pollution; Afr: Africa; Amr: America; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia, Wpr: Western Pacific; LMIC: Low- and middle-income; HIC: High-income; ALRI: Acute lower respiratory disease; COPD: Chronic obstructive pulmonary disease; IHD: Ischaemic heart disease.

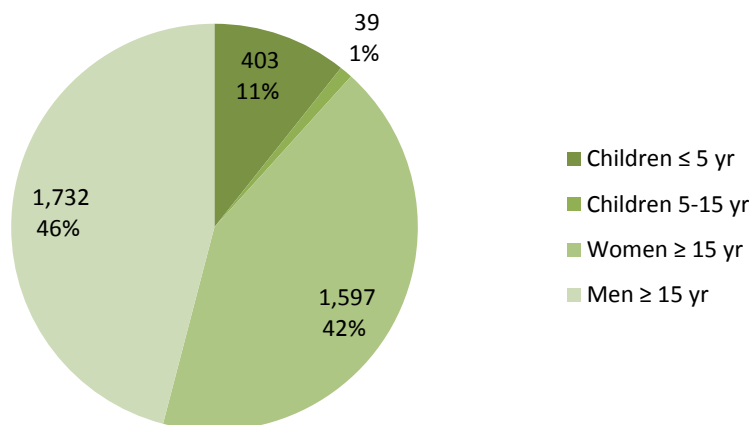
Figure 4. Deaths (000's) attributable to HAP in 2016, by disease



Percentage represents percent of total HAP burden (add up to 100%).

HAP: Household air pollution; ALRI: Acute lower respiratory disease; COPD: Chronic obstructive pulmonary disease; IHD: Ischaemic heart disease.

Figure 5. Deaths (000's) attributable to HAP in 2016, by age and sex



Percentage represents percent of total HAP burden (add up to 100%).

HAP: Household air pollution; yr: year.

For more information :

Household air pollution: www.who.int/airpollution/household

Maps and databases : www.who.int/airpollution/data

Global Health Observatory: [www.who.int/gho/phe/indoor air pollution](http://www.who.int/gho/phe/indoor_air_pollution)

Note: All figures presented have been computed by WHO to ensure comparability; thus they are not necessarily the official statistics of Member States, which may use alternative methods.

For further information, please contact:
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