





# Potential life expectancy impacts of particulate pollution reductions in 50 most polluted regions of Central and West Africa

Country	Region	Population (in 100,000s)	PM <sub>2.5</sub> concentration 2021 (in µg/m <sup>3</sup> )	Life expectancy gains from reducing PM <sub>2.5</sub> from 2021 concentrations to the WHO guideline of 5 µg/m <sup>3</sup> (years)	Life expectancy gains from reducing PM <sub>2.5</sub> from 2021 concentrations by 30 percent (years)	Country	Region	Population (in 100,000s)	PM <sub>2.5</sub> concentration 2021 (in µg/m <sup>3</sup> )	Life expectancy gains from reducing PM <sub>2.5</sub> from 2021 concentrations to the WHO guideline of 5 µg/m <sup>3</sup> (years)	Life expectancy gains from reducing PM <sub>2.5</sub> from 2021 concentrations by 30 percent (years)
Cameroon	Hauts Plateaux	1.2	60.1	5.4	1.8	Cameroon	Boyo	1.8	45.2	3.9	1.3
Cameroon	Koung Khi	1	58.6	5.2	1.7	Democratic Republic of the Congo	Mushie	2.1	45.2	3.9	1.3
Cameroon	Menoua	4.1	58.3	5.2	1.7	Democratic Republic of the Congo	Masi-Manimba (ville)	0.4	45.2	3.9	1.3
Cameroon	Bamboutos	4.2	55.1	4.9	1.6	Democratic Republic of the Congo	Dekeke	2	45	3.9	1.3
Cameroon	Mifi	4.3	55.1	4.9	1.6	Democratic Republic of the Congo	Bolobo (ville)	0.8	44.9	3.9	1.3
Cameroon	Mezam	7.7	52.2	4.6	1.5	Democratic Republic of the Congo	Bulungu	12.2	44.9	3.9	1.3
Cameroon	Ndé	1.4	51.1	4.5	1.5	Republic of the Congo	Owando	0.9	44.7	3.9	1.3
Cameroon	Momo	2	50.8	4.5	1.5	Democratic Republic of the Congo	Lusambo	1.5	44.6	3.9	1.3
Cameroon	Haut Nkam	2.1	50.7	4.5	1.5	Nigeria	Sardauna	3.2	44.6	3.9	1.3
Democratic Republic of the Congo	Mangai	0.1	49.7	4.4	1.5	Democratic Republic of the Congo	Idiofa	16	44.4	3.9	1.3
Cameroon	Bui	4.7	49.5	4.4	1.5	Democratic Republic of the Congo	Dibaya-Lubwe	0.3	44.2	3.8	1.3
Democratic Republic of the Congo	Luebo (ville)	0.3	48	4.2	1.4	Democratic Republic of the Congo	Lodja (ville)	0	44.2	3.8	1.3
Democratic Republic of the Congo	Ilebo	5	47.5	4.2	1.4	Democratic Republic of the Congo	Bagata	6.9	44.1	3.8	1.3
Democratic Republic of the Congo	Oshwe	3.2	47.4	4.2	1.4	Cameroon	Lebialem	1.7	44	3.8	1.3
Cameroon	Ngo Ketunja	2.7	47.1	4.1	1.4	Democratic Republic of the Congo	Masi-Manimba	14.2	43.9	3.8	1.3
Democratic Republic of the Congo	Nioki	0.7	47.1	4.1	1.4	Democratic Republic of the Congo	Bena-Dibele	0	43.9	3.8	1.3
Democratic Republic of the Congo	Ilebo (ville)	1	47	4.1	1.4	Democratic Republic of the Congo	Lukolela	1.8	43.6	3.8	1.3
Democratic Republic of the Congo	Kutu	7.4	47	4.1	1.4	Democratic Republic of the Congo	Bandundu	2.1	43.6	3.8	1.3
Democratic Republic of the Congo	Luebo	3	46.9	4.1	1.4	Democratic Republic of the Congo	Bulungu (ville)	0.7	43.5	3.8	1.3
Democratic Republic of the Congo	Yumbi	1.4	46.5	4.1	1.4	Republic of the Congo	Impfondo	0.8	43.5	3.8	1.3
Democratic Republic of the Congo	Mweka	8.1	46	4	1.4	Democratic Republic of the Congo	Dimbelenge	4.8	43.3	3.8	1.3
Republic of the Congo	Mossaka	0.5	45.9	4	1.3	Democratic Republic of the Congo	Kole	3.1	43.1	3.7	1.3
Democratic Republic of the Congo	Demba	6.7	45.9	4	1.3	Democratic Republic of the Congo	Kiri	3.3	43.1	3.7	1.3
Democratic Republic of the Congo	Kikwit	11.2	45.8	4	1.3	Democratic Republic of the Congo	Bomongo	1.7	43.1	3.7	1.3
Democratic Republic of the Congo	Inongo	4.8	45.6	4	1.3	Democratic Republic of the Congo	Inongo (ville)	0.4	42.7	3.7	1.3

## ABOUT THE AIR QUALITY LIFE INDEX (AQLI)

The AQLI is a pollution index that translates particulate air pollution into perhaps the most important metric that exists: its impact on life expectancy. Developed by the University of Chicago's Milton Friedman Distinguished Service Professor in Economics Michael Greenstone and his team at the Energy Policy Institute at the University of Chicago (EPIC), the AQLI is rooted in research that quantifies the causal relationship between long-term human exposure to air pollution and life expectancy. The Index then combines this research with hyper-localized, satellite measurements of global particulate matter (PM<sub>2.5</sub>), yielding unprecedented insight into the true cost of pollution in communities around the world. The Index also illustrates how air pollution policies can increase life expectancy when they meet the World Health Organization's guideline for what is considered a safe level of exposure, existing national air quality standards, or user-defined air quality levels. This information can help to inform local communities and policymakers about the importance of air pollution policies in concrete terms.

Methodology: The life expectancy calculations made by the AQLI are based on a pair of peer-reviewed studies, Chen et al. (2013) and Ebenstein et al. (2017), co-authored by Michael Greenstone, that exploit a unique natural experiment in China. By comparing two subgroups of the population that experienced prolonged exposure to different levels of particulate air pollution, the studies were able to plausibly isolate the effect of particulate air pollution from other factors that affect health. Ebenstein et al. (2017) found that sustained exposure to an additional 10 µg/m<sup>3</sup> of PM<sub>10</sub> reduces life expectancy by 0.64 years. In terms of PM<sub>2.5</sub>, this translates to the relationship that an additional 10 µg/m<sup>3</sup> of PM<sub>2.5</sub> reduces life expectancy by 0.98 years. This metric is then combined with sea-salt and mineral dust removed satellite-derived PM<sub>2.5</sub> data. All 2021 annual average PM<sub>2.5</sub> values are population-weighted and AQLI's source of population data is <https://landsat.ornl.gov/>. We are grateful to the Atmospheric Composition Analysis Group, based at the Washington University in St. Louis for providing us with the satellite data. The original dataset can be found here: <https://sites.wustl.edu/acag/datasets/surface-pm2-5/>. To learn more deeply about the methodology used by the AQLI, visit: [aqli.epic.uchicago.edu/about/methodology](http://aqli.epic.uchicago.edu/about/methodology).