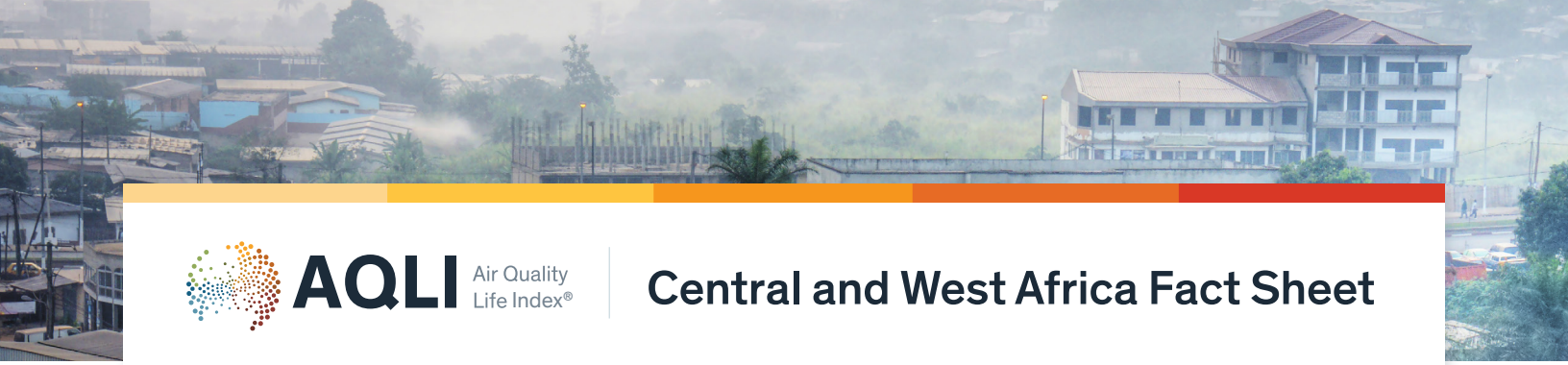


AQLI Air Quality Life Index®

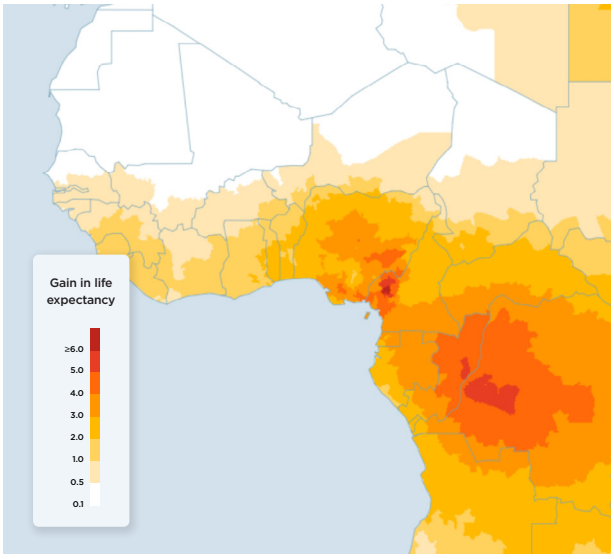
Central and West Africa Fact Sheet

In Central and West Africa, regions together comprising 27 countries and 605 million people, the average person is exposed to particulate pollution levels that are more than 4 times the World Health Organization's (WHO) guideline of 5 μg/m^3[1]. If these particulate pollution levels persist, average life expectancy in the regions would be 1.6 years lower, and a total of 971 million person-years would be lost, relative to if air quality met the WHO guideline. The Democratic Republic of the Congo, Rwanda and Burundi, are the top three most polluted countries in the region.

KEY TAKE-AWAYS

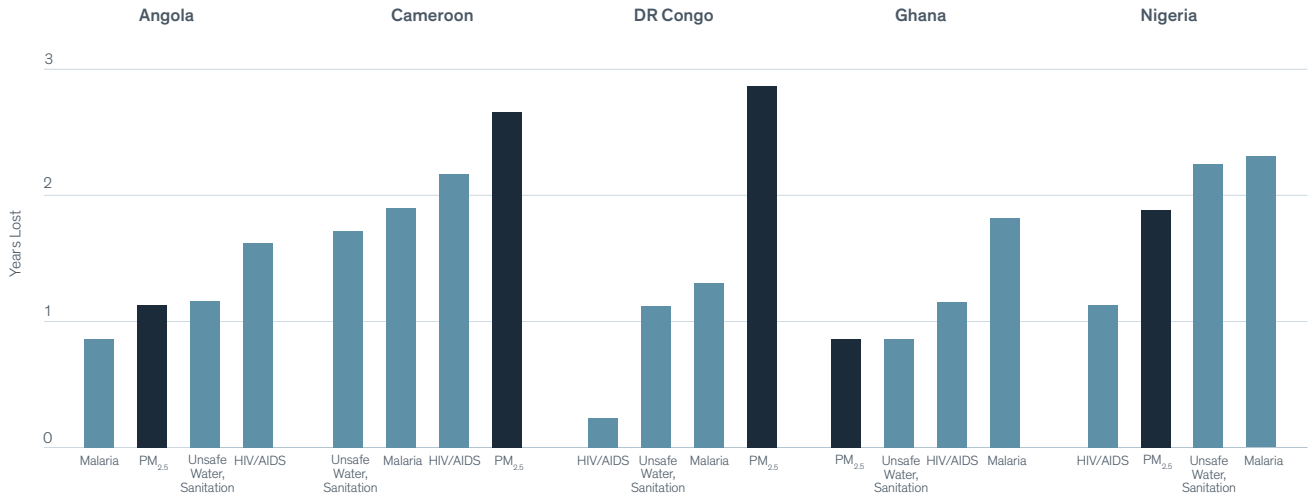
- **Democratic Republic of the Congo:** Air pollution in the Democratic Republic of the Congo shaves more off life expectancy than any other comparable health threat, such as HIV/Aids and Malaria. Here, average life expectancy is 2.9 years lower than what it would be if the region (as a whole) complied with the WHO guideline. Kinshasa, the capital and largest city of the Democratic Republic of the Congo and home to more than 11.2 million people, stands to gain 3.2 years of life expectancy on average if it complied with the WHO guideline.
- **Cameroon:** Cameroon, home to 27 million people, is the fifth most polluted country in the region and twelfth most polluted country in the world. Residents here could gain 2.5 years of life expectancy on average if air quality complied with the WHO guideline.
- **Nigeria:** Nigeria is one of the region's pollution hotspots, and the ninth most polluted country in the region. While malaria and unsafe water and sanitation decrease average life expectancy by more than 2 years, particulate pollution is not far behind. The country's most populous city is Lagos, home to 20 million people and one of the fastest growing cities in the world. Residents there could gain 1.5 years in life expectancy if air quality complied with the WHO guideline. The Sardauna region of Taraba state is the most polluted part of Nigeria, residents there could gain almost 4 years in life expectancy on average.
- **The Republic of Congo:** The Republic of Congo's capital, Brazzaville, is not only its most populous city with approximately 1.4 million residents, but is also the fifth most polluted in the region with a $PM_{2.5}$ level of 37.1 μg/m^3 in 2020. Residents in Brazzaville could gain 3.1 years in life expectancy on average if air quality complied with the WHO guideline. The average particulate pollution for the Republic of Congo as a whole stands at 31.6 μg/m^3, which if reduced to the WHO guideline will result in an increase in an average life expectancy of 2.6 years.

Figure 1 · Potential Gain in Years of Life Expectancy Through Permanently Reducing $PM_{2.5}$ From 2020 Concentrations to the WHO Guideline



1 Central Africa is here defined as the 11 countries in the Economic Community of Central African States. West Africa is defined following the United Nations' definition, which includes 16 countries.

Figure 2 · Life Expectancy Impacts of Particulate Pollution and Other Health Threats in the Five Most Populous Countries in Central and West Africa



Note: "DR Congo" refers to the Democratic Republic of the Congo.

Figure 3 · Potential Gain in Years of Life Expectancy Through Permanently Reducing $PM_{2.5}$ from 2020 Concentrations to the WHO Guideline, in 10 Largest Regions in Central and West Africa

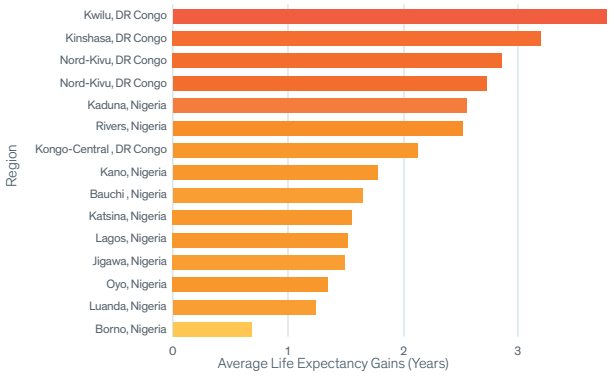
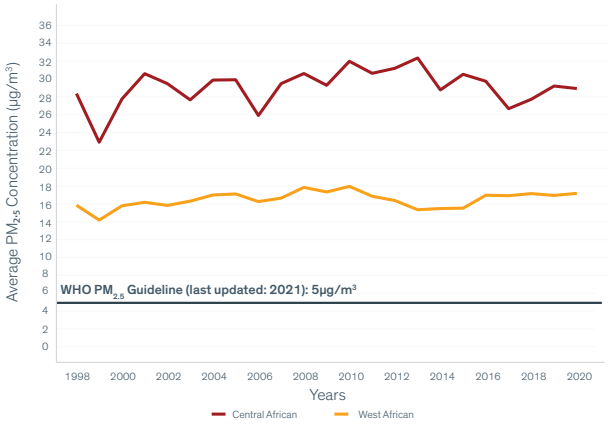


Figure 4 · Average $PM_{2.5}$ Concentrations in Central and West Africa, 1998 to 2020



Average $PM_{2.5}$ Concentrations and Potential Life Expectancy Gains in 50 Most Polluted Regions of Central and West Africa

Country	Region	Population (Millions)	$PM_{2.5}$ Concentration, 2020 (µg/m³)	Years of Life Expectancy Gained through Reducing $PM_{2.5}$ Concentrations: From 2020 concentration to WHO guideline of 5 µg/m³	Years of Life Expectancy Gained through Reducing $PM_{2.5}$ Concentrations: From 2020 concentration by 30 percent
Cameroon	Hauts Plateaux	0.1	62.1	5.6	1.8
Cameroon	Menoua	0.4	60.8	5.5	1.8
Cameroon	Koung Khi	0.1	59.6	5.4	1.8
Cameroon	Bamboutos	0.4	57.5	5.2	1.7
Cameroon	Mifi	0.4	56.2	5	1.6
Cameroon	Mezam	0.7	55.8	5	1.6
Cameroon	Momo	0.2	53.3	4.7	1.6
Cameroon	Ndé	0.1	52.1	4.6	1.5
Cameroon	Haut Nkam	0.2	51.7	4.6	1.5
DR Congo	Nioki	0.1	50.3	4.4	1.5
Cameroon	Ngo Ketunjia	0.3	50.1	4.4	1.5
DR Congo	Bandundu	0.2	50.1	4.4	1.5
Cameroon	Bui	0.4	49.5	4.4	1.5
DR Congo	Kutu	0.7	48.4	4.2	1.4
DR Congo	Mushie	0.2	47.7	4.2	1.4
DR Congo	Mangai	0	47.6	4.2	1.4
DR Congo	Oshwe	0.3	46.9	4.1	1.4
DR Congo	Ilebo (Ville)	0.1	46.8	4.1	1.4
DR Congo	Dibaya-Lubwe	0	46.8	4.1	1.4
Cameroon	Lebialem	0.2	46.5	4.1	1.4
Republic of Congo	Mossaka	0	46.2	4	1.4
DR Congo	Inongo	0.4	46.1	4	1.4
Cameroon	Boyo	0.2	45.9	4	1.4
DR Congo	Yumbi	0.1	45.6	4	1.3
Nigeria	Sardauna	0.3	45.3	4	1.3
DR Congo	Bagata	0.7	45.3	4	1.3
DR Congo	Ilebo	0.5	45.2	3.9	1.3
DR Congo	bulungu (ville)	0.1	45.2	3.9	1.3
DR Congo	Owando	0.1	44.9	3.9	1.3
DR Congo	Lukolela	0.2	44.7	3.9	1.3
DR Congo	Luebo (Ville)	0	44.6	3.9	1.3
DR Congo	Loukoléla	0	44.2	3.8	1.3
DR Congo	Bulungu	1.2	44.1	3.8	1.3
DR Congo	Luebo	0.3	44	3.8	1.3
DR Congo	Idiofa	1.5	43.7	3.8	1.3
DR Congo	Masi-Manimba (ville)	0	43.6	3.8	1.3
DR Congo	Mbandaka	0.4	43.5	3.8	1.3
DR Congo	Kikwit	1	43.4	3.8	1.3
DR Congo	Masi-Manimba	1.3	43.2	3.8	1.3
DR Congo	Bomongo	0.2	43	3.7	1.3
DR Congo	Inongo (ville)	0	42.8	3.7	1.3
DR Congo	Mweka	0.8	42.8	3.7	1.3
DR Congo	Kiri	0.3	42.8	3.7	1.3
Republic of Congo	Impfondo	0.1	42.8	3.7	1.3
DR Congo	Bolobo (Ville)	0.1	42.7	3.7	1.3
Republic of Congo	Epéna	0	42.5	3.7	1.2
DR Congo	Demba	0.6	42.4	3.7	1.2
Cameroon	Donga Mantung	0.4	42.2	3.6	1.2
DR Congo	Kwamouth	0.1	42.1	3.6	1.2
Cameroon	Wouri	3.1	42	3.6	1.2
DR Congo	Bolobo	0.1	42	3.6	1.2

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 recent 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, global particulate measurements, yielding unprecedented insight into the true cost of particulate 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 particulates air pollution from other factors that affect health. The more recent of the two studies found that sustained exposure to an additional 10 µg/m³ of PM_{10} reduces life expectancy by 0.64 years. In terms of $PM_{2.5}$, this translates to the relationship that an additional 10 µg/m³ of $PM_{2.5}$ reduces life expectancy by 0.98 years. To learn more about the methodology used by the AQLI, visit: aqli.epic.uchicago.edu/about/methodology