# NMT NEWSLETTER JUNE 2020

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Climate & Development Knowledge Network

**NAIROBI NMT NEWSLETTER**

**June 2020**

# AIR QUALITY AND NON-MOTORIZED TRANSPORT

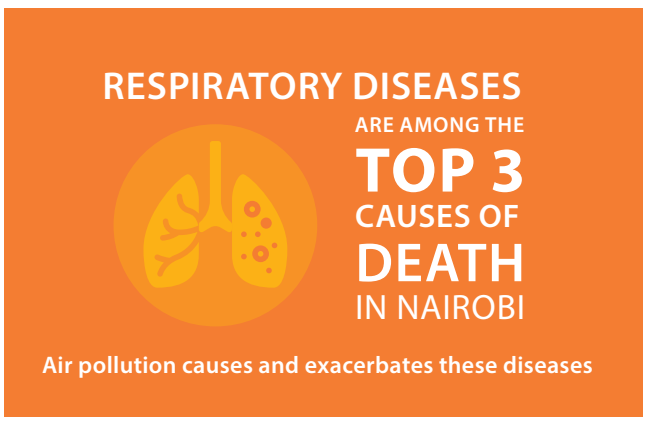
## WHERE WE ARE

Every year, Kenya suffers **19,112** premature deaths linked to air pollution.[1] Outdoor air pollution is responsible for 4,000 of these deaths annually, while indoor air pollution accounts for 14,000 deaths.[2] The main sources of outdoor air pollution are vehicular emissions, roadside rubbish fires, road dust, and industry. It has been estimated that 90% of urban air pollution in rapidly growing cities in developing countries is attributable to motor vehicle emissions.[3]

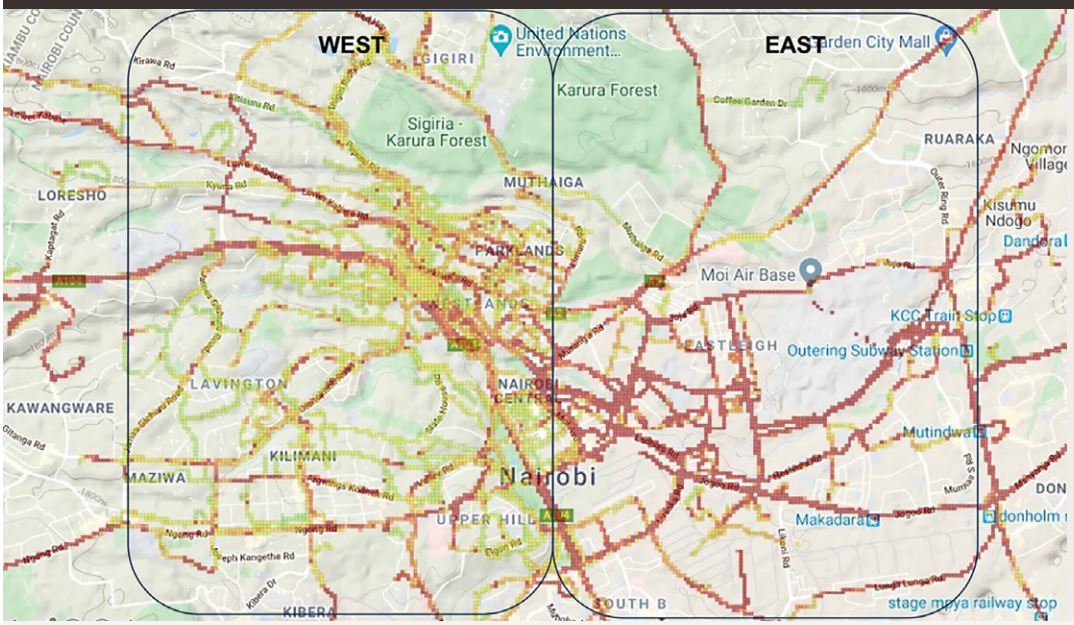
Air pollution causes and exacerbates respiratory diseases such as pneumonia, asthma, lung cancer, emphysema, and chronic obstructive pulmonary disease. These diseases rank among the **top three causes of death** in Nairobi and were the leading causes of morbidity in 2014.[4]

According to a study by the United Nations Environment Program (UNEP), Nairobi's air quality **breaches all limits set by the World Health Organisation**.[5] The study measured air pollutants such as particulate matter with a diameter of less than 2.5 micrometres (PM2.5), Nitrogen Dioxide ($NO_2$), Carbon Monoxide (CO), and Ozone ($O_3$). Currently, Nairobi's air contains an annual average of 17 micrograms per cubic metre of the deadly PM2.5, which is more than 70% the WHO recommended limit.[6] PM2.5 refers to the mixture of solid particles and liquid droplets found in the air such as dust, dirt, soot, or smoke that are too small to be seen with the naked eye. It is acutely dangerous because the ultra-fine particles can penetrate and lodge deep inside our lungs.

Aggregated data collected in 2020 confirms that PM2.5 levels in Nairobi are at dangerous levels.[7] The maps below depict a colour range that corresponds to the level of pollution. The data was collected using mobile sensors at different times over a few months covering a wide range of neighbourhoods. It was then collated to establish baselines relating to PM2.5 in Nairobi.



## Nairobi air quality levels during first quarter 2020




Acceptable levels of less than 30 micrograms per cubic metre.

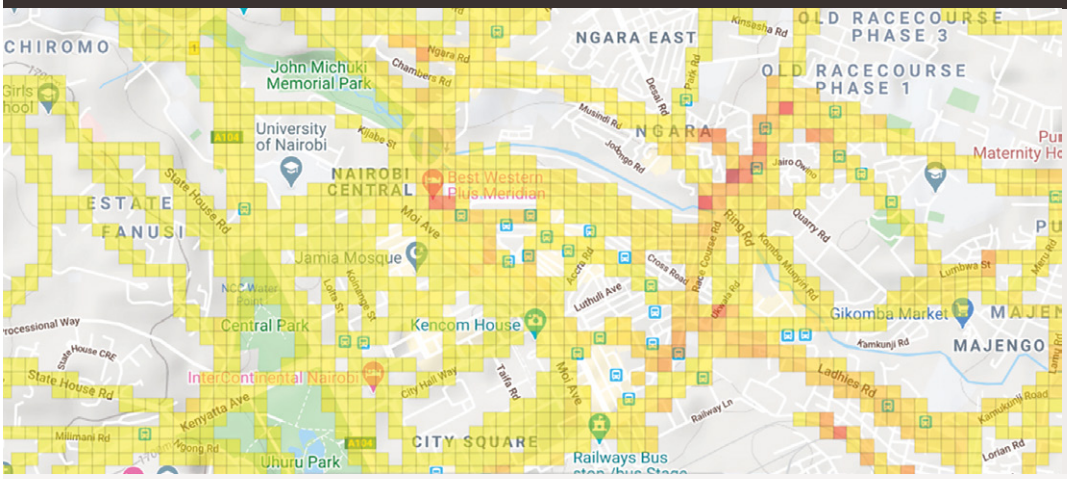
Dangerous levels of more than 30 micrograms per cubic metre.

(Source: Open-Seneca Nairobi 2020)[8]

### Observations

- The **west side of the city has better air quality** compared to the east side. Most upper class and higher middle-income neighbourhoods are located in the west side of the city. Roads with moderate to low air pollution include: *Peponi, Statehouse, Ngong, Oloitoktok, Limuru, Mamlaka, Northern Bypass, Ngecha, Kitisuru and Arboretum Drive.*
- The **east side of the city has poorer air quality** compared to the west side. Most of the lower-middle income and low-income neighbourhoods are located in the east side of the city. Roads with high air pollution include *Waiyaki Way, Jogoo, Landhies, Juja, Lungalunga, Outering and Kangundo.*
- Higher population and higher activity areas have greater pollution. These include markets, roundabouts, congested roads and dense neighbourhoods.

## Nairobi CBD air quality during week 1 (March 15–21) of COVID-19 lockdown




Micrograms per cubic metre:

| | |
|---|---|
| 0-10 | Good |
| 10-20 | Moderate |
| 20-29 | Unhealthy |
| 30+ | Hazardous |

(Source: Open-Seneca Nairobi 2020)[9]

### Observations

A decrease in activity at the onset of the COVID-19 lockdown period, on average, led to a slight improvement in air quality in most areas. However, it was not that significant, and the PM2.5 levels in the central business district highlight how much more work is needed to achieve good levels of air quality.

The hotspot areas that still recorded dangerous levels of air pollution are:

- Globe roundabout getting into Tom Mboya Street.
- Ring Road & Quarry Road, Kariokor roundabout.
- Downtown-Landhies Road, Gikomba open air market.

## OUR CHALLENGE

The main challenge is that Kenya does not regularly **monitor or report** its air quality. There is a lack of adequate, real-time, publicly accessible data.[10]

Providing access to local air quality data and improving knowledge about air pollution exposure could be a powerful factor in helping to decrease the mortality rates and disease burden in Kenya. Such information would go a long way in encouraging vigilance and protecting vulnerable groups such as children and those with pre-existing respiratory conditions.

## WHAT WE ARE DOING ABOUT IT

There are several efforts towards addressing the data deficit and creating the impetus for improving, monitoring and reporting of air quality in Nairobi. The newly established Nairobi Metropolitan Services with oversight on County Transport, Planning, Health and Environment supports a clean air quality vision for Nairobi. There are commendable initiatives on increasing NMT infrastructure, re-carpeting roads to reduce road dust and managing unsanitary dumping of waste.

Nairobi City County in partnership with C40 Cities and UNEP, has drafted an Air Quality Action Plan (2019-2023). The Plan seeks to create an evidence base for policy interventions and enforcement related to air quality management. The County has partnered with UNEP to deploy air quality monitors in five neighbourhoods. The monitors in Eagle Estate on Mombasa Road, Braeburn, and Garden Estate on Thika Road are recording real-time data. The monitors on Luthuli Avenue and Mukuru Kwa Reuben are being improved to collect real-time data.[11]

Open-Seneca Nairobi, a group of young innovators together with local and international groups, is using science to raise public awareness about air quality in cities. Their vision is to have a critical mass of monitors deployed across Nairobi to record as much data as possible. The high cost of monitors, however, inhibits their accessibility. Consequently, they are exploring ways of assembling monitors using locally sourced, cheaper materials and welcome partnerships from interested stakeholders.[12]

Sensors Africa (incubated by Code for Africa) is a pan-African citizen science initiative that monitors air, water and sound pollution to give citizens actionable information about their cities. Their website provides real-time data on air pollution in neighbourhoods where monitors have been deployed. This data is being used to advocate for communities' rights, particularly in low-income neighbourhoods.[13]

We are confident that improving NMT will contribute to accomplishing our shared air quality goals. By forging ongoing partnerships with all stakeholders we can improve data collection and synthesis, increase public awareness, and create opportunities to achieve cleaner air for Nairobi County.

## DID YOU KNOW?

**Children are most vulnerable to the effects of air pollution** because they are closer to the ground where pollutants that can affect their developing brains and bodies are at a peak level. Moreover, children breathe more rapidly than adults, hence they absorb more pollutants.[14]

Recent studies suggest that there is a direct correlation between air pollution and higher death rates in people with COVID-19. This is largely attributable to pre-existing respiratory conditions, many of which are linked to poor air quality. The research suggests that **people in polluted areas are far more likely to die from the coronavirus** than those living in cleaner areas. Long-term exposure to $NO_2$ may be one of the most important contributors to the fatality rate of COVID-19.[15]

Globally, cities are **turning to cycling as a safer and healthier means of transportation during and post-COVID-19**. During lockdown, cycling has been shown not only to enable better physical distancing than public transit but it also contributes to an improvement in air quality as a result of decongestion.[16] Uganda has recently hinted about its intention to revive bicycle factories to encourage cycling as a safe and healthy mode of transport post-COVID-19.[17]

## MEET YOUR CITY CHAMPIONS

**Mercyline Odhiambo**

Public Health Officer & Climate Change Coordinator, Nairobi City County

**"My vision is to reduce morbidity and mortality from exposure to poor air quality within Nairobi County."**

**Margaret Kariuki**

Environment Officer, Air Quality Management, Nairobi City County

**"My vision for the city is to have a clean and healthy environment through the promotion of clean air for all."**

## ENDNOTES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## ABOUT CDKN

CDKN works to enhance the quality of life for the poorest and most vulnerable to climate change. We support decision-makers in designing and delivering climate compatible development.


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Front Image: © Critical Mass Nairobi. Cyclists ride through the streets of Nairobi as part of a pro-cycling campaign.


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