

PUBLIC HEALTH & ENVIRONMENT BULLETIN

DIRECTORATE OF PUBLIC HEALTH AND ENVIRONMENT

EDITORIAL TEAM

Dr. Okello Ayen Daniel

Director, Public Health and
Environment

Dr. Sarah Zalwango

Ag. Deputy Director, Public Health
and Environment

Dr. Otim Julius

Manager, Department of
Epidemiology and Disease

Dr. Alex Ndyabakira

Supervisor, Medical Services

Ninsiima Mackline

Epidemiologist

Mbabazi Stephen

Research, Learning and Adaptive
Coordinator

Executive Director's Message



It's our pleasure, to present to you the fourth issue of City Public Health and Environment Bulletin. In this issue, we present to you our efforts and interventions in securing the health of the city residents. Our concerted efforts through implementing partners over the years have enabled us to deliver quality services and advance public health and environment in the city.

We have registered success in the fight against COVID -19 in the city. The call to continue heeding to the Ministry of Health's guidelines is still on, if we are to take public health and environment of Kampala city to greater heights. However, we are still challenged by the continuing presence of other infectious and non-infectious diseases such as HIV/AIDS, Tuberculosis, Hypertension. In addition, other public health issues including pollution, road accidents and non-communicable diseases have put more strain on the available resources.

With support from you and our stakeholders, we shall continue to champion a smart city. I invite you to this issue of the Directorate of Public Health and Environment quarterly bulletin where we document our efforts towards securing the city's public health and environment.

Dorothy Kisaka
Executive Director
Kampala Capital City Authority

IN THIS ISSUE

01 *HEPATITIS B VACCINATION UPTAKE IN
KAMPALA CITY, 2020 - 2021*

02 *MATERNAL, NEONATAL, CHILD HEALTH
AND FAMILY PLANNING SERVICE
CONGESTION IN KCCA PUBLIC HEALTH*

04 *KCCA COMMEMORATES THE AIR QUALITY
AWARENESS WEEK*

09 *NOISE POLLUTION MANAGEMENT IN
KAMPALA CITY FOLLOWING RELAXATION OF
COVID-19 LOCKDOWN RESTRICTIONS*

Director's Message



We are half way 2022 and the just concluded year of 2021 was characterized by the persistent outbreak of COVID -19 and its effects that adversely affected the globe and Kampala.

Addressing public health and environment issues in the city was challenging because we had to find the delicate balance between life and livelihoods. Despite these challenges, our teams have continued to work tirelessly to mitigate adverse effects of the pandemic on the public health of the city population.

In this volume of our quarterly bulletin, we present to you articles, learnings, and adaptations registered by the Directorate of Public Health and Environment. This bulletin is therefore a documentation of our efforts, measures, learnings and adaptations that we should embrace in order to promote public health issues and environment in Kampala Capital City Authority.

Finally, I would like to thank you, the contributors, the readers and editorial team, for your interest in this bulletin and I encourage you to send us your invaluable feedback and ideas.

Dr. Okello Ayen Daniel
Director, Public Health and Environment
Kampala Capital City Authority

Editorial Team's Message

Dear Reader,

Congratulations upon having completed the year 2021, we welcome you to the fourth issue of KCCA's Directorate of Public Health and Environment bulletin. The overall goal is to disseminate information on public health and environment issues to policy makers and all stakeholders.

In this issue, we are happy to share with you articles in the following areas: hepatitis B vaccination uptake, commemoration of the Air Quality Awareness Week, MNCH and Family Planning Service Congestion in KCCA public health facilities, and noise pollution management. The efforts to curtail noise pollution following reopening of the recreation industry as well as ambient air pollution resulting from full capacity of the economy are some of the eye-catching topics that we bring to you in this bulletin.

While thanking you, we invite you to share with us your ideas and feedback. Yes, we are excited to hear from you and ready to extend our Bulletin family. For further information with regard to anything in this bulletin, please contact any of us: smbabazi@kcca.go.ug, andyabakira@kcca.go.ug, nmackline@kcca.go.ug.

Hepatitis B vaccination uptake in Kampala City, 2020 - 2021

Authors: Tumusiime Cathbert¹, Maria Nakabuye², Paul Kiggundu², Jude Tadeo Kirembwe², Mackline Ninsiima^{2,3}

¹ThinkWell

²Kampala Capital City Authority

³Uganda Public Health Fellowship Program

Background

Hepatitis B infection is a worldwide health problem, especially in developing countries in Sub Saharan Africa. In Uganda, it is estimated that 8.5% of the population have hepatitis B virus infection (Kafeero et al., 2021). The disease prevalence varies from region to region being highest in the North and lowest in the Southwest. Prevalence of Hepatitis B in Kampala is estimated at 1.9% (MOH, 2019). Hepatitis B vaccination is the main preventive measure against Hepatitis B virus (HBV). Failure to receive Hepatitis B vaccination increases the susceptibility of developing liver fibrosis, cirrhosis, end-stage liver disease and hepatocellular carcinoma. In 2002, Uganda introduced Hepatitis B vaccination as part of the DPT-HepB-HiB pentavalent vaccine administered at 6, 10 and 14 weeks among infants into the routine childhood immunization program. This indicates that majority of the rest of the population have to seek for Hepatitis B vaccine from either Government hospitals or private facilities. The uptake of this service in government hospitals is however hindered by the inconsistencies in supply; thus, the need to pay for the Hepatitis B vaccine in private facilities. Hepatitis B vaccination uptake is also dependent on a number of factors like cost of vaccine, availability of vaccine at health facilities, level of education, knowledge about Hepatitis B virus and socio-economic status (Ssekamate et al., 2020). Furthermore, there are 3 interval doses which should be received to complete Hepatitis B vaccination which increases the likelihood of non-completion. Therefore, this analysis presents the uptake of hepatitis B vaccination from 2020 - 2021 in Kampala City.

Methods

We abstracted data on Hepatitis B vaccination from the electronic Health Management Information System (eHMIS) for a period of two years (January 2020 to December 2021). The period of data abstraction was based on the fact that the uploading of Hepatitis B

vaccination data into the eHMIS commenced in January 2020. The team abstracted data for Kawempe, Rubaga, Central, Makindye and Nakawa administrative divisions of Kampala City. Data was disaggregated by age groups and Hepatitis B doses received. Data analysis was conducted using STATA and Excel to generate results.

Descriptive analyses were computed for the different age-groups based on the eHMIS age categorization. Hepatitis B vaccine uptake was generated by dividing the number of persons who had received the first dose of Hepatitis B vaccine by the age specific target population and then multiplied by 100,000 population. Hepatitis B vaccine uptake percentage was obtained by dividing the number of persons who had received the first dose of Hepatitis B vaccine by the age specific target population and then multiplied by 100%. Hepatitis B vaccine completion was computed by dividing the number of persons who had received all the 3 doses of Hepatitis B vaccine by the age specific target population and then multiplied by 100,000 population. Hepatitis B vaccine completion percentage was obtained by dividing the number of persons who had received all the 3 doses of Hepatitis B vaccine by the age specific target population and then multiplied by 100%.

Results

The descriptive analysis presents very low uptake and completion of Hepatitis B vaccine across all age groups as indicated in Table 1. Among persons aged 20 - 59 who constitute the largest proportion of the population, only 3.11% had received the first dose of Hepatitis B vaccine with the trivial 0.46% completing all the 3 recommended doses.

Table 1: Stratified uptake and completion of Hepatitis B vaccination by age groups

Age group (years)	Target Pop	Hepatitis B vaccine uptake (/100,000)	Hepatitis B vaccine uptake (%)	Hepatitis B vaccine completion (/100,000)	Hepatitis B vaccine completion (%)
< 10*	446,380	127	0.13	34	0.03
10 - 19	281,486	1,697	1.70	328	0.33
20 - 59	871,107	3,111	3.11	464	0.46
> 60	66,624	3,949	3.95	743	0.74

*Excluding DPT-HepB-HiB pentavalent doses administered at 6, 10 and 14 weeks as part of the routine childhood immunization program

Discussion

Uptake and completion of Hepatitis B vaccine was very low across all age groups in Kampala, a cosmopolitan and central business district in Uganda. Compared to all other age groups, persons aged above 60 had slightly higher Hepatitis B vaccine uptake and completion percentages which could be attributed to numerous health check-ups among the elderly compared to younger age groups (Barua, Borah, Deka, & Kakati, 2017; Gabrani, Schindler, & Wyss, 2021). What is quite challenging is that very few receive all the recommended 3 doses among those who receive the first dose of Hepatitis B vaccine. Key to note is the need for targeted Hepatitis B vaccine awareness among persons aged 20 – 59 amidst the wide spectrum of a mobile and working population with decreased opportunities for Hepatitis B vaccination. Intensifying awareness about the need for Hepatitis B vaccine, increasing accessibility through Hepatitis B vaccination campaigns, and building confidence of the public in the safety and effectiveness of hepatitis B vaccine could improve the uptake and completion of Hepatitis B vaccination services.

References

- Barua, K., Borah, M., Deka, C., & Kakati, R. (2017). Morbidity pattern and health-seeking behavior of elderly in urban slums: A cross-sectional study in Assam, India. *Journal of family medicine and primary care*, 6(2), 345-350. doi:10.4103/2249-4863.220030
- Gabrani, J., Schindler, C., & Wyss, K. (2021). Health Seeking Behavior Among Adults and Elderly with Chronic Health Condition(s) in Albania. *Frontiers in public health*, 9, 616014-616014.
- Kafeero, H. M., Ndagire, D., Ocama, P., Kudamba, A., Walusansa, A., & Sendagire, H. (2021). Prevalence and predictors of hepatitis B virus (HBV) infection in east Africa: evidence from a systematic review and meta-analysis of epidemiological studies published from 2005 to 2020. *Archives of Public Health*, 79(1), 1-19.
- MOH. (2019). *Uganda guidelines for prevention, testing, care and treatment of hepatitis B and C virus infection*. Retrieved from Kampala:
- Ssekamate, T., Mukama, T., Kibira, S. P. S., Ndejjo, R., Bukenya, J. N., Kimoga, Z. P. A., . . . Mutyoba, J. N. (2020). Hepatitis B screening and vaccination status of healthcare providers in Wakiso district, Uganda. *PLOS ONE*, 15(7), e0235470.

Maternal, Neonatal, Child health and Family Planning Service Congestion in KCCA Public Health Facilities

Authors: Richard Ssemujju¹, Cathbert Tumusiime¹, Michael Chaitkin¹, Paul Kiggundu², Angellah Nakyanzi¹, Tapley Jordanwood¹, Ileana Vilcu¹, Daniel A. Okello²

¹ThinkWell

²Kampala Capital City Authority

Background

Kampala has only 26 publicly managed health facilities for a population of about five million people (residents plus daily commuters). Kampala Capital City Authority (KCCA) only manages eight of these facilities, seven of which offer maternal, neo-natal, and child health (MNCH) and family planning services (KCCA, 2021). There are longstanding impressions that public facilities are overcrowded with clients, undermining service quality, client satisfaction, and health worker morale. These realities are often taken for granted with limited evidence describing the burden of service congestion. A rapid assessment was undertaken to validate and quantify common understandings about service congestion in KCCA public health facilities.

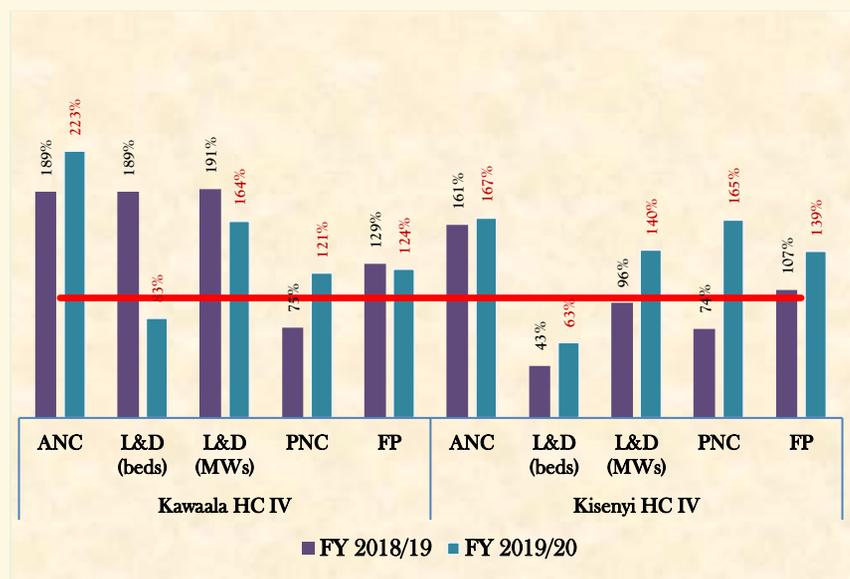
Methods

A mixed-methods study was conducted to estimate service congestion and explore health providers' perspectives on its drivers and consequences. Congestion was defined as utilization in excess of capacity. Data on utilization of antenatal care, labour and delivery, postnatal care, and family planning services for 2018/19 and 2019/20 were retrieved from the Health Management Information System for Kawaala Health Center IV and Kisenyi Health Centre IV, purposively selected KCCA-managed health facilities. Monthly client capacity was defined for each service based on available health workers (midwives) and infrastructure (beds). Norms for high-quality care were grounded on clinical guidelines (MOH, 2006) and health worker perspectives. Health workers also identified the drivers and consequences of congestion during key informant interviews. Data validation was conducted through cross-checking with the health facility registers. Data validation and interviews were conducted on site during December 2020 and January 2021, whereas focus group discussions regarding preliminary findings and interpretation were held in April 2021.

Results

All services were congested at both health facilities relative to human resource capacity. However, labour and delivery services were less congested based on bed capacity as shown in Figure 1.

Service utilization relative to capacity at Kawaala and Kisenyi Health Centre IVs



Antenatal Care (ANC); Labour and Delivery (L&D); Midwives (MWs); Postnatal Care (PNC); Family Planning (FP)

— Recommended Capacity Line

Figure 1: Service utilization relative to capacity at Kawaala and Kisenyi Health Centre IVs for FY 2018/19 and 2019/20

Antenatal care

Antenatal care utilization increased in both facilities between FY 2018/19 and 2019/20 after the 2020 COVID-19 lockdown; exceeding the recommended capacity in all the 24 months and 22 out of 24 months at Kawaala and Kisenyi Health Centre IVs respectively. In 2019/20, the average monthly ANC utilization was 223% with more than 39 excess daily ANC visits per midwife at Kawaala Health Centre IV.

Postnatal care

Postnatal care utilization also increased at both facilities during the study period; though declines in FY 2019/20 were registered possibly due to COVID-19. In Kisenyi Health Centre IV, the number of postnatal visits exceeded the capacity of midwives during 15 out of 24 months. This was highly attributed to major renovations at the health facility hence registering minimal utilization of postnatal care. Nevertheless, more than 10 excess daily postnatal visits per midwife were documented in Kisenyi Health Centre IV.

Family planning

Monthly family planning visits increased at Kisenyi Health Centre IV with most of the clients utilizing the long-term methods. Despite the slight decrease in the monthly family planning visits, clients opted for short term methods compared to long term methods at Kawaala Health Centre IV. Family planning visits at Kawaala Health Centre IV exceeded the capacity for midwives in 20 out of 24 months with nearly four excess daily visits per midwife.

Labour and delivery

Labour and delivery congestion was estimated based on bed and human resource capacity. In FY 2018/19, bed occupancy in Kawaala Health Centre IV far exceeded the recommended level. In 2019/20, bed occupancy did not exceed the recommended capacity at both health facilities due to the addition of beds in the early months of the financial year. Nonetheless, Kawaala Health Centre IV almost utilized nearly all its allocated beds compared to Kisenyi Health Centre IV. Client-to-midwife ratios for labour and delivery services were of a great concern; estimated at seven excess daily births per midwife in both health facilities. Monthly births per midwife exceeded capacity throughout all the months at Kawaala Health Centre IV. Caesarean sections increased at both health facilities. This is expected to increase the rate of bed occupancy since the average length of stay following a caesarean section is three times longer than that after a normal delivery.

Drivers and consequences of service congestion

Demand for antenatal care, postnatal care, and family planning services generally increased during the FY 2018/19 and FY 2019/20. This was highly attributed to provision of free services, strategic locations to the city population, availability of services during the COVID - 19 lockdowns, an opportunity to serve clients who could have sought services elsewhere. Furthermore, clinical practices such as booking of postnatal visits at discharge and integrating family planning counseling into other MNCH services may have reinforced utilization thus increasing congestion in facilities.

Increased service demand is desirable but can also be detrimental in congested health facilities. According to health workers and facility leaders, the challenges of congestion include hasty consultations, early discharges, long waiting times, and staff burnout. Health workers

described a range of coping mechanisms that raise concerns about service quality, such as diverting midwives away from complicated deliveries to higher-volume services and deferring the first postnatal care checkup to the first post-partum week rather than within the first 24 hours of delivery.

Conclusions

This study confirmed MNCH and FP service congestion at the two selected high volume KCCA managed health facilities. Renovations alleviated pressure on infrastructure, but both health facilities lacked sufficient health workers to meet the ever-growing demand for services. The findings highlight the urgent need for KCCA to find ways to increase access to high-quality services for those who live or work in Kampala Capital City. Options might include further expanding capacity at KCCA's public health facilities, improving operational efficiency, or purchasing selected services from private providers on behalf of the city's population. If left unaddressed, mounting congestion could further erode service quality and health worker morale, resulting in poor health outcomes.

For your information, comprehensive documentation of this study can be found at <https://thinkwell.global/wp-content/uploads/2022/02/KCCA-Landscape-Analysis-Final-2022-2.pdf> (Okello D A et al., 2021).

References

KCCA. (2021). Directorate of Public Health and Environment Annual Report: Kampala Capital City Authority (KCCA). 08, 2-3.

MOH. (2006). *The National Policy Guidelines and Service Standards for Sexual and Reproductive Health and Rights*. Retrieved from Kampala, Republic of Uganda:

Okello D A, Kiggundu P, Ssemujju R, Tumusiime C, Nakyanzi A, Jordanwood T, . . . Chaitkin M. (2021). *Magnitude and Consequences of MNCH and FP Service Congestion in KCCA Public Health Facilities: Findings from a Rapid Assessment of Utilization and Capacity at Kawaala and Kisenyi Health Centre IVs. Kampala*.

Retrieved from Republic of Uganda

<https://thinkwell.global/wp-content/uploads/2022/02/KCCA-Landscape-Analysis-Final-2022-2.pdf>

Kampala Capital City Authority commemorates the Air Quality Awareness Week

Authors: Mackline Ninsiima^{1,2}, Owen Robert², Caroline Sawe³, Alex Ndyabakira²

¹Uganda Public Health Fellowship Program

²Kampala Capital City Authority

³Expertise France

On 2nd May 2022, Kampala Capital City Authority (KCCA) joined the rest of the world to commemorate the 16th Annual Air Quality Awareness Week (2nd - 6th May) under the theme “**Be Air Aware & Prepared**”. The commemoration whose objective was to increase air quality awareness to the public commenced with the Community Clean Up and Proper Waste Management Sensitization Engagement held in Makindye Division. Makerere University AirQo Project and KCCA collaboratively organized the engagement during which community cleaning was conducted in Salama and Luwafu parishes of Makindye Division. Other partners that participated in this awareness driven strategy were US Mission Kampala, National Environment Management Authority (NEMA), African Medical and Research Foundation (AMREF), Makerere University Lung Institute, Uganda Media, Homeklin Waste Management Company, politicians, religious leaders, Village Health Teams, and community members.

On 3rd May, 2022, Kampala Capital City Authority spearheaded by Dr. Okello Daniel Ayen, Director, Public Health and Environment Directorate participated in the press conference at Uganda Media Centre. The rationale of the press conference was to update the public about air quality management, monitoring and interventions that have been implemented to improve the air we breathe. This was a consolidated joint press conference with representatives from NEMA, Makerere University AirQo Project, Makerere University Lung Institute and Uganda Public Health Fellowship Program. Dr. Okello Daniel Ayen reminded the public that air is the greatest free gift we can offer to the incoming generations hence the need to comply to the recommended strategies aimed at improving air quality; adopting cleaner energy technologies, appropriate waste management and maintaining vehicles as per manufacturer's guidelines to reduce exhaust emissions.



Left to right: Dr. Kiggundu Thomas and Ms. Mackline Ninsiima (Field Epidemiology Fellows/UPHFP) with Dr. Alex Ndyabakira (KCCA Air Quality Management Team Lead), Dr. Daniel Okello Ayen (Director, Public Health and Environment, KCCA), Prof. Engineer Bainomugisha (Project Lead, AirQo), Mr. Arnold Waiswa Ayazika (Director, Environmental Monitoring and Compliance, NEMA) and Dr. Ivan Kimuli (Physician, Makerere University Lung Institute) at the launch of the 2022 Air Quality Awareness Week.

Furthermore, Kampala Capital City Authority in collaboration with My Tree Initiatives launched the tree planting activity aimed at planting one million trees across all the divisions of Kampala Capital City to counteract the effects of emissions from vehicles and industries in a campaign dubbed “one million tree challenge”. Ms. Olive Namazzi, had a media brief during the tree planting event commemorating the Air Quality Awareness Week with different media houses namely; Bukedde TV, Dream TV, Salt TV, UBC and SEE TV, Pearl FM, Bilal FM, Galaxy Radio and CBS Radio.



Ms. Olive Namazzi, the Executive Secretary for Health and Environment at KCCA with representatives from My Tree Initiatives planting a tree at Kamwokya Children's Park

Throughout the Air Quality Awareness Week, KCCA participated in several television and radio talk shows creating awareness about the need for intensified efforts to improve air quality in the city. “Our air quality management is data driven and evidence based. So, we have decided to consolidated our efforts in the development of the Kampala Capital City Clean Air Action Plan that calls for a multisectoral involvement in

the control of air pollution” remarked by Dr. Alex Ndyabakira, Team Lead, Air Quality Management, KCCA while being hosted at NTV Uganda. Additionally, KCCA’s COMSSA Project Officer Deogratius Kiryowa and NEMA’s Environmental Inspector Jennifer Kutesakwe were hosted on Radio Two, Akaboozi 87.9 FM to further enlighten the public about the Air Quality Awareness Week and the different interventions implemented to mitigate the effects of air pollution.

On May 5th, 2022 Dr. Alex Ndyabakira had an exclusive interview with the New Vision during which he described air quality monitoring in Kampala Capital City. Ms. Caroline Sawe, the Deputy Project Coordinator, Expertise France applauded the European Union for their utmost support to KCCA towards improving air quality, climate change adaptation and mitigation response. In the same article published on Monday, 9th May, 2022 in the New Vision, she further urged the public to always check out KCCA website (<https://www.kcca.go.ug/kampala-air-quality-monitoring-network>) for daily and real-time air quality monitoring. Let me also take the pleasure to request you to review key messages that were shared on different media platforms through the links below:

United Nations Environment Programme (UNEP): <https://www.unep.org/news-and-stories/story/africa-cities-embrace-clean-air-targets>

allAfrica: <https://allafrica.com/stories/202205040361.html>

NTV Uganda: <https://www.ntv.co.ug/ug/news/kampala-air-pollution-raises-health-concerns-3803582>

Daily Monitor: <https://twitter.com/DailyMonitor/status/1521701693746040835>

Last but not least, to emphasize that it’s everyone’s responsibility to improve the air they breathe, Ms. Mackline Ninsiima, a Field Epidemiologist from the Uganda Public Health Fellowship Program hosted at Kampala Capital City Authority published an article titled “Let’s improve the air we breathe” in the New Vision on Friday 6th May, 2022.



Kampala Capital City Authority establishes an official air quality monitoring program with a network of resilient sensors



Kampala Capital City Authority (KCCA) is a government entity established by an act of the Parliament of Uganda to run and administer the capital city of Kampala on behalf of the central government. Facing air quality challenges and with no reference

air quality monitoring network in place, KCCA partnered with Clarity to build air quality monitoring capacity and collect the data needed to inform regional and national air quality policy.

25 Node-S air sensors	3.0 million residents	National Policy
installed across the five divisions of Kampala	with access to real-time, local air quality data	supported with data from the sensor network

“Our vision is to transform Kampala into a vibrant, attractive, and sustainable city. A city cannot be sustainable without clean energy sources, attractive if the air quality is very poor, and vibrant if people are not operating at their best due to poor health.” Dr. Alex Ndyabakira, Epidemiologist, Kampala Capital City Authority

Urbanization and industrialization cause deterioration of air quality in Kampala

Kampala, the capital of Uganda, is a vibrant city that is home to around 1.5 million residents – a number which doubles to 3 million on a daily basis when people from nearby communities commute into the city. Situated on the edge of Lake Victoria, this growing city’s natural resources have faced increasing pressure in recent years. With high rates of urbanization and industrialization, air quality, in particular, had visibly deteriorated – but apart

from a single air monitoring station located at the U.S. embassy, the city had no access to air quality data representative enough.



KCCA has demonstrated leadership in the global battle against climate change by developing a Climate Change Action Strategy to support

Uganda’s commitment to the Paris Agreement. The goals of the strategy are to reduce emissions by 22% from the “business as usual scenario,” reduce the future costs of climate adaptation, and protect the most vulnerable communities in Kampala.

The strategy addresses three general areas of planning:

- the short and long-term adaptation of the city to climate change impacts
- charting a low-emissions development path for the city
- transforming the threat of climate change into an opportunity for Kampala residents

Recognizing the intrinsic relationship between fossil fuel consumption and air quality, KCCA undertook a Preliminary Air Quality Baseline Assessment in 2018 to determine if air quality improvement should be included as a priority initiative in the Kampala Climate Change Action Strategy. As there was no official air monitoring network available at the time, KCCA looked to several sources to inform their air quality study.

Previous research in the Journal of Environmental and Public Health [found PM2.5 mass concentrations above 100 µg/m³ for all days sampled in one Kampala neighborhood](#) – more than three and four times higher than the mass concentration limit recommended by United States Environmental Protection Agency (USEPA) (35 µg/m³) and World Health Organization (WHO) air quality guidelines (25 µg/m³), respectively. Another study in 2014 [found a mean PM2.5 concentration of 132.1 µg/m³](#) – more than five times the World Health Organization (WHO) cut-off. The findings of these

studies were substantiated by [data from a federal air quality monitor at the US Embassy in Kampala](#), which also reported hourly and daily values far above the USEPA and WHO guidelines. It became clear to KCCA that poor air quality posed a serious risk to the health of Kampala residents and should be prioritized in the city's five-year strategy.

KCCA wanted to chart a path to sustainable growth and improved air quality, but to do so they needed to know where they were starting. They needed air quality monitoring infrastructure that could be used to benchmark progress toward their air quality and sustainability goals.

All of the evidence was pointing to the fact that we needed to implement a dependable air quality monitoring network that would provide more precise data to characterize air quality in Kampala. We needed a system that had advanced capabilities and was easy to use in an urban setting like ours. We have limited staff and needed to find an efficient solution we could run cost-effectively.”
Dr. Alex Ndyabakira, Epidemiologist, Kampala Capital City Authority

Implementing an official network of air quality sensors in Kampala

KCCA recognized that to successfully establish an air quality monitoring program for the first time, they needed more than just the equipment to take measurements. They needed an air quality monitoring partner that could help them plan and operate the network and help them build air quality monitoring capacity through knowledge sharing. They decided to partner with Clarity.

Our goal was to find a partner that had experience – which Clarity demonstrated with their monitoring sites across many countries – but that could also offer technical support and help us build air quality monitoring capacity in our own team.” Dr. Alex Ndyabakira, Epidemiologist, Kampala Capital City Authority

Clarity worked with KCCA to design an air quality monitoring network that would fit their budget and needs – ultimately helping them implement 25 Node-S air sensors, with 5 devices allocated to each Urban Division of Kampala.

KCCA realized that simply collecting air quality data would not be sufficient to make progress on improving air quality – they needed a way to make the data public to raise awareness about air pollution and inspire residents



to take action. Most of the air pollution in Kampala originates at the community level, and the city and the central government are limited in their ability to make a meaningful dent in air pollution without community buy-in. They needed community members to support the cause by taking steps like making emissions-reducing upgrades to their vehicles and refraining from burning rubbish in their homes.

Clarity's OpenMap provided KCCA with a seamless way to share air quality data from their network with the general public. OpenMap allows them to visualize the current air quality readings from the sensors on an intuitive map, which they could easily [embed on KCCA website](#) to ensure the data was available to all Kampala residents. KCCA was also able to take advantage of Clarity's Remote Calibration services, which ensure that the data from KCCA's sensors are as accurate as possible.

KCCA leads a data-driven campaign to improve air quality in Uganda

With the official air quality monitoring network in place for several years now, KCCA's Clarity Nodes have become a key tool in their efforts to characterize and raise awareness about air quality in Kampala. In July 2021, KCCA used data from their monitoring network to publish a report on [The state of ambient air pollution in Kampala City from January through May of 2021](#). This report served to substantiate the findings of previous research on air quality in Kampala – for all the sites included in the report, concentrations of PM_{2.5} were consistently between 65 to 110 µg/m³ higher than the World Health Organization (WHO) cut-off. These findings highlight the urgency of implementing community-based and inclusive initiatives to address dangerous levels of air pollution in Kampala. With data from the monitoring network to ground-truth their concerns about air quality, KCCA has successfully engaged the public in the conversation about air quality across a range of platforms.

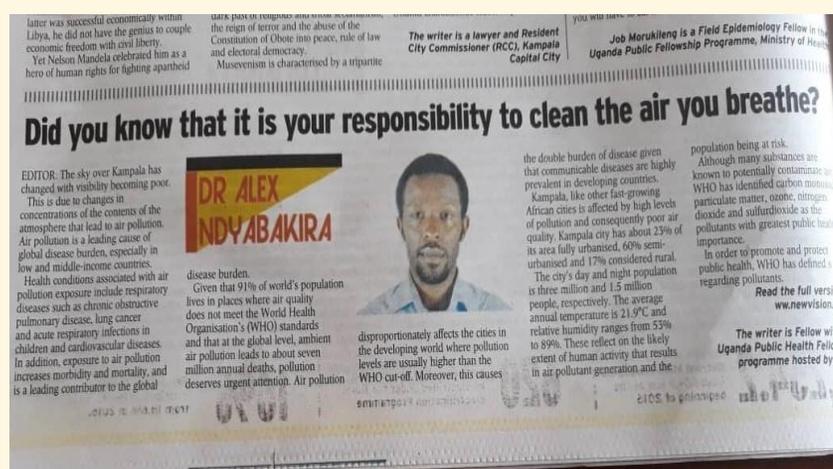
For the past several years, KCCA has held an Air Quality Awareness Week to publicize its efforts to improve air

quality in Uganda and emphasize the importance of community engagement with these programs. KCCA frequently shares air quality information on their social media channels – a typical Twitter post sees over 4,000 people visit KCCA website to view air quality data.



A panel of speakers poses for a picture during Uganda’s 2021 Air Quality Awareness Week. KCCA held a press conference with influential speakers including Dr. Okurut (Executive Director of NEMA), Dr. Okello (Director of Public Health and the Environment for the KCCA), and Professor Beinomugisha from Makerere University, to address the public about air quality issues. The event was organized through the government media center, and broadcast through the KCCA live stream. (Source: [KCCA](#))

In addition to hosting events and sharing data from the air monitoring network on their website and social media channels, KCCA has been successful in engaging the media to amplify its message about the importance of air quality. KCCA representatives have appeared on talk shows on national television to discuss air pollution and contributed articles to local newspapers.



As part of the KCCA’s air quality awareness campaign, Dr. Alex Ndyabakira and other representatives have been featured in newspapers and other media outlets.

Building coalitions for clean air action in Sub-Saharan Africa

Apart from empowering KCCA to characterize air quality and raise awareness, data from KCCA monitoring network is also helping KCCA build a broad coalition of

partners to take action on air pollution in the region. The network has provided the information KCCA needed to spearhead a data-driven approach to building regional and national air quality policy. KCCA regularly receives requests for air quality data from other government agencies, such as the Ministry of Works, which is responsible for all infrastructure in Uganda and uses data from KCCA network to inform transportation planning. For example, looking at air pollution concentrations near roads in Kampala helped the Ministry determine that the second COVID lockdown did not yield as much of a reduction in vehicle traffic as the first lockdown.

The [National Environmental Management Authority \(NEMA\)](#) – charged with managing environmental issues nationally in Uganda – is currently developing national air quality regulations for Uganda and is using KCCA air quality data to benchmark and shape these policies. The East African Community Secretariat – a regional intergovernmental organization comprised of Burundi, Kenya, Rwanda, South Sudan, Tanzania, and Uganda – is also working to develop air quality policies at the regional level. Air quality data from KCCA network will play a significant role in informing this policy. With these and other partners in place and several years of data as a baseline, KCCA’s next step will be to publish the Kampala Clean Air Action Plan (CAAP), which will outline the steps that KCCA will take over the next five years to get air pollution under control in Kampala. Having baseline air quality data is key to enabling KCCA to set realistic targets that can be achieved in that five-year time frame. Once the CAAP is underway, the monitoring network will become even more important, serving as the primary tool by which KCCA can measure progress toward their air quality goals.

“When we implement the CAAP, the monitoring network will become even more important than before. To know that a change in air quality has happened, we need to be able to measure it. The network will allow us to know whether our actions are effective or not – as well as which actions are more effective than others so that if we need to prioritize resources, we will be able to use them rationally.” Dr. Alex Ndyabakira, Epidemiologist, Kampala Capital City Authority

For more information on the KCCA Air Quality Monitoring Program, kindly reach out to Dr. Alex Ndyabakira, Tel: +256 774 380 914, Email: andyabakira@musph.ac.ug

Noise pollution management in Kampala City following full relaxation of COVID-19 lockdown restrictions

Authors: Susan Nalwada¹, Mackline Ninsiima^{1,2}, Alex Ndyabakira¹

¹Kampala Capital City Authority

²Uganda Public Health Fellowship Program

On 21st March 2020, Uganda declared the COVID 19 outbreak. One of the strategies deployed by the MOH to curb the spread of the COVID - 19 pandemic was to institute a nation-wide lockdown that included closing all night clubs, bars and entertainment facilities where the risk of spread was declared more likely to be higher than usual. The KCCA Noise Pollution Task force team under the Environment Management Unit, constituted of Environmental Inspectors and Legal Enforcement Officers was mandated to monitor the various entertainment facilities to ensure enforcement of COVID-19 SOPs as stipulated by the Uganda Government.

In February 2022, the Uganda Government relaxed the restrictions on night clubs, bars and entertainment facilities that had been put in place to control COVID-19 thereby approving full economy operation. All the entertainment facilities such as bars and night clubs and places of worship were opened up after the two years' period of closure. The KCCA Noise Pollution Team met the Kampala bar owners headed by the executives of Legit Entertainment Bar Restaurant Association (LEBRA), an organization that represents 1,500 bars in Kampala and over 6,000 countrywide. The purpose of the meeting was to increase awareness among the business owners and managers about the laws and ordinances which govern them with respect to mitigation of noise pollution without forgetting sensitization about COVID-19 control. Furthermore, the team committed to ensure that the rules and regulations were defined and broadcast on media for the public awareness.

The noise pollution hotline (+256-761 007 800) and call center numbers have been availed to the Public to report cases of noise pollution from the five divisions of the Kampala City. This is one of the mitigation strategies implemented to reduce noise pollution. On average, over 30 complaints are received weekly and forwarded to the surveillance teams for action. During the pandemic, over 25 facilities would be handled but the numbers have

increased since the economy fully opened. An initial engagement and sensitization about the need to control noise pollution has been conducted in addition to the enforcement of continuous monitoring of these entertainment facilities during weekdays and weekends (24/7). Failure to comply attracts issuance of a minimizing notice; stop notice and an impoundment may also be implemented. However, a discontinue notice for non-compliant premises can be also be issued. In other instances, a compliance agreement is signed between KCCA and the nuisance author which might eventually lead to prosecution in court, sealing off the facility or revoking trading licenses for long term facilities.

Following the full economy opening, over 150 complaints are received monthly and an average of 120 facilities are inspected including bars, churches and night clubs. More than 25 nuisance notices were served, whereas more than 20 facilities faced impoundment of sound equipment due to non-compliance during February and March, 2022. Despite the fact that we encourage co-existence between communities and business owners, most nuisance authors are engaged and educated by the KCCA Noise Pollution Team about the rules and regulations concerning noise pollution to which most of them willingly comply. Ultimately, Kampala Capital City Authority calls up everyone to follow noise pollution management guidelines for a better city.

PUBLIC HEALTH EVENTS

World Health Day

7th April 2022

The world celebrated, World health day and the theme for this year's celebration was "Our Planet, Our Health". The theme emphasized the need for an urgent action to keep humans and the planet healthy and foster a movement to create societies focused on their wellbeing. It's estimated worldwide that about 13 million deaths occur due to environmental related causes. In Uganda, World Health Day commemorations took place at the Ministry of Health headquarters and it was emphasized by the Commissioner of health services in charge of environmental health that climate change can cause adverse effects on the lives of the people if not mitigated.

World Immunization Week

22nd April 30th April 2022

World Immunization Week is normally celebrated during the last week of the month of April. The goal for the celebration is to highlight the collective action needed and to promote the use of vaccines to protect people of all ages against vaccine preventable diseases. In Uganda, world immunization week was celebrated in appreciation of the services offered Grace Achir from Nebbi General Hospital who has served tirelessly and committedly to do routine immunization at the facility.

commemorate the World Hypertension Day celebrations. The celebrations took place in Kampala at KCCA grounds where the chief guest was the KCCA’s Executive Director, Dorothy Kisaka. She emphasized the importance of living healthier lives if we are to avoid non-communicable diseases like hypertension. Free screening of blood pressure, glucose levels, and body mass index were conducted as preventive services to commemorate the World Hypertension Day.

World Malaria Day

25th April 2022

The world celebrated, Malaria Day and the theme for the celebration was, “Domesticating the Fight against Malaria” According to WHO, malaria is a preventable and treatable disease that continues to have a devastating impact on the health and livelihood of people around the world. Uganda joined the rest of the world to celebrate the day, and as part of the activities to commemorate World Malaria Day, Rt. Hon. Prime Minister Robinah Nabbanja flagged off a bicycle ride at Namboole Stadium to raise awareness on malaria and prevention measures on Sunday, 24th April 2022.

Air Quality Awareness Week

2nd May- 6th May

The world celebrated Air Quality Awareness Week, the theme for the celebration was, “Be Air Aware and Prepared”. The goal of Air Quality Awareness Week was to share information on air quality and how it affects health, as well as encouraging people to incorporate knowledge of the Air Quality Index into their daily lives.

World Hypertension Day

17th May 2022

The world celebrated Hypertension Day and the theme for this year’s celebration was “Measure your Blood Pressure Accurately, Control it and Live Longer”. Uganda joined the rest of the world to

ACKNOWLEDGEMENTS

