

# Pathways to Equitable Healthy Cities Project

## Key Stakeholders Workshop on Vehicle Emissions Control



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Accra, Ghana

Submitted by:  
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## **Introduction**

The Pathways to Equitable Healthy Cities Project aims to align the growth of cities with improved health. The project activities cover six cities across different continents involving academic and policy partners who are engaged on a wide array of topic including health, sanitation, housing, pollution, water, and climate change. Generally, the project focuses on three major areas which are:

1. Develop policy options
2. Evaluate policy options
3. Adapt policy to the focus cities

Connected to all these is the underlying notion of promoting equity. That notwithstanding, the project works in four general areas namely:

- a) Transportation and mobility
- b) Built and natural environment
- c) Water Sanitation and waste
- d) Urban Services e.g. health, water, safety

What the project does in all these is to measure and characterize complex urban environments because the project is interested in equity. The project also tries to predict the impact of policies on health. Over the recent past years, attention is being focused on inequality because it has become a barrier to social agenda and progress on sustainable development. Cities that have evolved beyond national governments can do a lot about inequality because city policymakers are closer to the constituents as has been seen in issues concerning climate change, housing as there are many innovative solutions coming from cities.

## **Workshop Event**

The Workshop was held on Tuesday 29<sup>th</sup> August 2023 at Alisa Hotel, Accra. It started from 9am and closed at 1pm. There were 27 participants in person and 8 participants who joined online (see Appendix 1). Participants were from regulatory actors in the vehicle licensing and environmental protection, policing, transport service delivery operator organisations, and regulation agencies, petroleum regulators, spatial planning actors at national and local level, donor projects, civil society organisations, academia, and media.

## **Opening**

The workshop was opened by Professor Samuel Agyei-Mensah, Principal Investigator for the research program in Ghana, with a brief welcome address. He noted that the burden of air pollution manifested in the excessive health delivery costs, especially in developing countries. In developing countries, Ghana included, emissions from vehicles had been identified as a major contributor to ambient air pollution, with poor fuel quality, aging vehicle fleets and a lack of obligatory roadworthy emissions tests as primary causes. He noted that the workshop had a good balance of stakeholders drawn from across the span of issues and expected that participant's contributions would provide a good basis for actions after the workshop.

The facilitator then requested for introductions from participants present and those that had joined the meeting online. Subsequently, the facilitator invited Professor Frans Berkhout, of the Department of Geography, Kings College London, and a member of the Pathways Team to set out the principal aims of the workshop.

## Goals and objectives of Workshop

Professor Frans Berkhout presented an overview of the Pathways to Equitable Healthy Cities Project and noted the evolution of the project since the first meeting in 2019. He indicated the key partners involved in the project and listed cities involved besides Accra, namely Vancouver, London, Dhaka, and Beijing and outlined the principal considerations of the meeting to set the context.

He noted that specific to the workshop, the objectives were to:

- Bring together key stakeholders
- Present new scientific evidence about air quality and pollution as well as the sources
- Assess current policy standards and practice
- Agree possible effective actions to reduce emissions.

Professor Berkhout noted that the importance of this engagement arose from the long-established linkage between air pollution and human health, manifesting in high incidence of conditions such as asthma, chronic obstructive pulmonary diseases (COPD), cardio-vascular diseases, dementia and even cancer. By working with the diverse group of stakeholders assembled, he anticipated that parties would co-produce the requisite actions that would ensure appropriate and timely action as well as develop social legitimacy for such agreed actions.

## Preliminary Discussions on Participant's experience of air pollution

As a way of setting the tone for the discussions, the facilitator opened the floor for preliminary discussions for participants to articulate their lived experience of air pollution in the city. Issues that were raised by some of the participants included:

- a) rampant waste-burning at the neighbourhood level
- b) exhaust fumes from vehicles and motorbikes, especially at the traffic intersections
- c) excessive fumes from trotros (minibuses operating as informal public transport) due to poor vehicle maintenance
- d) re-suspension of roadside dust particles from plying vehicles
- e) particles triggered by burst tires from articulator trucks on the highways
- f) inhalation of high levels of exhaust fumes by itinerant retailers or street traders or hawkers.

The facilitator noted that the issues raised showed that people's lived experience of air pollution was widespread and needed attention. Participants were invited to take account of these experiences in the light of empirical data from research work that was to follow in order to align and ground the discussions that would follow the presentation.

There were two presentations by lead experts in the field of air pollution – one from academia and the other from policy. The first presentation was by Raphael Arku (PhD) and titled "**Sources of Air Pollution in Accra and contribution of the Transport Sector**". The second presentation was by Emmanuel Appoh, former Director, Air Quality Department of Environmental Protection Agency of Ghana. His presentation was titled "**Vehicle Emission Standards in Ghana**". The presentations are attached in Appendices 2 and 3.

## Presentations

### Presentation 1: Sources of air pollution in Accra and the contribution of the transport sector by Prof Raphael E. Arku, University of Massachusetts Amherst



In this presentation<sup>1</sup>, it was recognized that Accra's rapid urbanization was triggered by, and in turn also affected, economic activities, energy use and transportation services, all of which made corresponding contributions to the levels of air pollution in the metropolitan area. Generally, air pollution emanated from a variety of activities in energy, industry, transport, waste, residential developments, agriculture, and windblown dust. The research thus sought to establish:

- Which of these sources of air pollution were dominant?
- Whether there was any evidence of shifting, over time, in the dominant sources of air pollution?

The research was a continuation of an ongoing assessment air quality in the Greater Accra Metropolitan Area with the initial phase covering the period 2006 to 2008 and measurements taken in 4 principal locations – Jamestown, Nima, Asylum Down and East Legon. The latest phase, on the other hand, recorded air pollution measurements on a much larger scale, totaling 150 sites that combined research in fixed as well as rotating sites, and covered the period 2019 to the present.

The combined results of these assessments revealed significant changes in the dominant source of air pollution affecting the city. In the earlier study, the combination of particles from burning of aged biomass and fresh biomass were the principal source across all the study sites. In respect of the incidence of PM<sub>2.5</sub> pollutants, the earlier study found them to be relatively higher for traffic-related air pollution as compared to household level pollution in 3 of the 4 study locations (for Adenta, Nima and East Legon). On the other hand, the reverse was the case for James town, with the incidence of PM<sub>2.5</sub> being significantly higher from residential activities than from traffic. At the time, this situation was explained by the very high rate of food production in James Town using wood fuel for energy. Similarly, in all 4 sites, the emissions from traffic related causes exceeded the national standards at the time, whilst that from residential causes fell just within or slightly above the national standards with the exception of Jamestown which recorded almost 50% above the national guideline standard<sup>2</sup>. It is important to note that the first study recorded, across all four sites, significantly low levels of nitrogen dioxide (NO<sub>2</sub>). Lastly, the research also found taxi drivers, to be the most exposed to high levels of PM<sub>2.5</sub> almost throughout the entire day, followed closely by minibus drivers, whose exposure exceeded taxi drivers in all but 1 (from midnight to 6:00am) out of the 4 blocks of 6-hour time periods. On the other hand, street hawkers and street vendors had quite low levels of exposure to PM<sub>2.5</sub> pollutants across all 4 blocks of time, below the national guideline standard.

The latter study (2019) expanded the scope of the research to also measure black carbon emissions and environmental noise levels for the entire GAMA space. Although the latter study had more sites for recording air pollution measurements (150) than the earlier study (4), the types of study sites could

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<sup>1</sup> See Appendix 2

<sup>2</sup> The national guideline adopted the WHO annual PM<sub>2.5</sub> guideline of 10µg/m<sup>3</sup> and NO<sub>2</sub> guideline of 40 µg/m<sup>3</sup>

be clustered such that they mirrored the 4 types of locations used in the earlier study – commercial-industrial, high-density, medium-to-low density, and peri-urban. The research found that sites in localities that were predominantly commercial and industrial suffered the highest levels of PM<sub>2.5</sub> incidence, a few of which reached more than five times the (old) WHO annual guideline<sup>3</sup>. Emissions in high-density neighbourhoods followed closely the levels of the commercial-industrial sites. Generally, the medium to low density neighbourhoods and peri-urban locations had comparatively lower levels of PM<sub>2.5</sub>, albeit all locations recording higher than the guideline standards. However, the evidence showed that the PM<sub>2.5</sub> concentration levels had almost halved between the two study periods, although still above the guideline standard.

On the other hand, the 2019 study showed that whilst the emissions of NO<sub>2</sub> and NO, matched the same patterns as the PM<sub>2.5</sub> with respect to the different locality types (highest in commercial-industrial and lowest in peri-urban), a major finding was the extent of the NO<sub>2</sub> concentrations which recorded between 25% and 180% increases compared to the 2006 study.

In terms of noise pollution, sources such as road transport and speech recorded relatively high levels in the daytime within the commercial-industrial precincts, whereas noise from animal and insects recorded marginally higher levels near the peri-urban precincts at night time, which is to be expected, for a rapidly urbanizing city of Accra's caliber.

Lastly, comparing the evidence from the 2019 study to that of the 2006 study, it was clear that road traffic was displacing biomass use, as the dominant sources of air pollution for the Accra metropolis.

### **Presentation 2: “*Vehicle Emission Standards in Ghana*” by Emmanuel Appoh, former Director, Air Quality Department of Environmental Protection Agency**

The presenter outlined the main national laws, regulations, policies and strategies, guidelines and standards that governed the motor vehicle emissions regime in Ghana, including the establishment of the Environmental Protection Agency (EPA), road traffic regulations, among others. The World Bank Clean Air Initiative for Sub-Saharan African Cities (2001) was also mentioned as a protocol that gave guidance on the requisite standards to be pursued, for example culminating in the phasing out of lead from fuel in Ghana in 2003. A study supporting reforms in fuel economy standards had shown that for both new and used vehicles, fuel economy improved (Figure 1) when fuel quality changed to reduce emissions in OECD countries, from which most of the vehicles in Ghana were imported from.

Although the number of vehicle fleets in Ghana had increased by more than 300% between 2005 and 2017, it was observed that the current fleet is adversely impacting roadside air quality due to very high levels of black carbon emissions, urgently necessitating the completion of the draft policy options of soot-free bus standards in Ghana.

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<sup>3</sup> Between the earlier study of 2006 and the latter study of 2019, WHO annual PM<sub>2.5</sub> guideline of 10µg/m<sup>3</sup> had been halved, thus elevating the quantum of emissions and the degree of exposure.

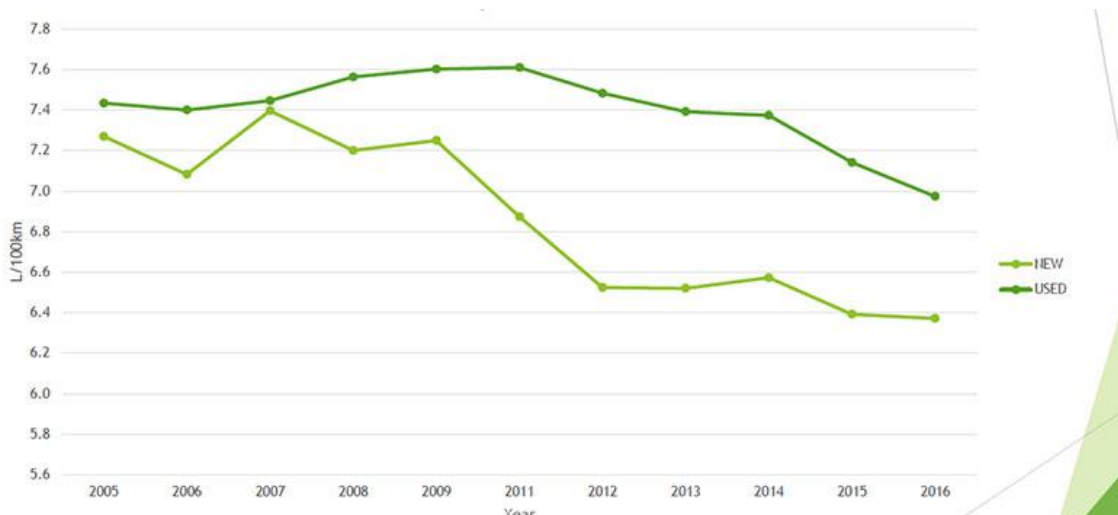


Figure 1: Fuel Economy of New and used Vehicles

Another critical issue of note is the contradictions arising from the tax regime that substantially differentiates, and inadvertently incentivizes importation of over-aged and second-hand vehicles as compared to new vehicles. Related to this is the competition that this tax advantage is giving to the new Ghana Automotive Development Policy, which is aimed at generating highly skilled jobs in the assembly and manufacture of vehicle components and parts (and by extension entirely new vehicles) with the spillover effect of improving fuel emissions and reducing vehicle emissions.

In conclusion, the presenter noted the need to harmonise the existing policies and various standards on air emissions into a uniform national air quality policy. The presenter also advocated for review of the over-age vehicle policy to ensure that through the implementation of the new automotive policy there would be increased patronage of new vehicles assembled in Ghana, ultimately reducing emissions that would otherwise come from second-hand and overaged vehicles.

## Issues emerging from Plenary Discussions

### A. Review of regulations

- B. Again, it was observed that the country had so many laws covering sources and standards that could support the quest to regulate vehicle emissions. These had been progressively developed over a period. However, it was recognized by EPA and other key stakeholders that there needed to be some revisions in the laws to strengthen coordination across the multiple agencies and to enhance standards. In view of the interconnectedness of the sub-region, it is important to take account of the different regimes in the various countries and harmonise the laws and standards.
- Notable misalignment between traffic management regulations for the police, and the expectation of an enforcement role in emissions control for the police from environmental regulators. The Police require a revision of the current laws if they are to play any role in overseeing emissions control.
  - The Attorney General's office is reviewing a draft bill that will allow for mobile spot checks / testing of vehicle emissions.
  - As a result of the privatized vehicle testing regimes whereby private operators are given licenses by DVLA, it has been observed that some vehicle owners adopt permit-shopping tactics across multiple franchises to avoid complying with the test requirements. DVLA is in

the process of digitalization which would include networking all testing centers to remove the opportunity for permit shopping practices.

### **C. Police participation in oversight of air pollution**

- After the review of the regulations, there has to be adequate resourcing of MTTD to enforce the air pollution regulations (e.g. purchasing on-the-spot testing equipment). This might require private sector involvement.
- The hours assigned traffic police (6-hour slots) over-exposes them to vehicular emissions especially as their assignment covers the peak periods of traffic. Therefore, there is the need for changes to be made for the scheduling of traffic police.
- The high levels of vehicle emissions have implications of the types of protective gear MTTD personnel have to wear to reduce their exposure to the pollutants
- There is a significant rise in numbers of motorbikes that ultimately converge at traffic stops and contribute significantly to the over-exposure of the police personnel manning these stops. Some stringent measures need to be applied to the motorcycles as are applied to the vehicles.

### **D. Participation of MMDAs**

- There should be a role for the MMDAs in emissions control including tree planting along streets to assist in carbon reduction. Furthermore, it is suggested that MMDAs ensure that specific corridors are reserved for non-motorised transport
- MMDAs must also work better with public transport operators in determining the location of terminals and stops. Operators are organically driven to where prospective passengers congregate whilst MMDAs and other agencies need to include these operators in planning exercises to take advantage of the operators' market intelligence.
- The Bus Rapid Transit (BRT) system needs to be reviewed and revived, to reduce lower-occupancy vehicles on the roads. The engagement with the public transport operators must be deepened for their support of the system.
- The use of canopy trees along pedestrian walkways is important for addressing air pollution specifically, flood controls, and climate change, generally. The national tree planting program needs to be more strategic, especially in the cities to cater for emissions.

### **E. Awareness creation**

- Awareness creation on the findings and implications of the research is urgent. It needs to feed into an advocacy strategy to elicit behaviour modification for citizens regarding the outcomes of this study and the broader air pollution in cities.
- Public sensitization should also be targeted at key institutions and their management as well as general staff. In particular, the rank and file of the Police service needs to be given thorough briefing. Sponsorship for this could be arranged through civil society organisations such as Good Governance Africa.
- Partnership with other urban-linked interventions including the Greater Accra Resilient and Integrated Development Project (GARID) on media platforms is an important approach to widening the public sensitization. In this respect, it was agreed that the urban-focused television program about to start in September, 2023, "Public Concern – Urban Agenda" would feature these issues on air pollution and have the research team as panelist.
- The University and its research staff should begin to canvas for partnership with civil society organisations such as CDD Ghana who have initiated urban-focused advocacy.

## **F. Standards**

- Issues of standardisation for air pollution has to look into cross-country trucks driving to ports and through Ghana
- Ghana Standards Authority should certify spare parts in accordance with international standards
- There has to be better incentives for importers of new vehicles and environmentally-friendly cars.

## **Conclusion**

Participants were hopeful that the issues raised would gain traction through effective collaboration among partners. In this regard, the task falls on all to work towards the proffered solutions through direct programs as well as leveraging planned activities to forge partnerships towards these goals. The organizers were hopeful that objectives of the workshop had been achieved and that the research team had enough material to follow up their research with actual implementation.





Appendix 1: List of In-Person Participants

	<b>Name</b>	<b>Organization</b>
1.	Samuel Agyei-Mensah	University of Ghana, Legon
2.	Isaac Arthur	CUMS, UG
3.	Simon Bawakyillenu	ISSER, UG
4.	Richard Donkor	Ghana Energy Commission
5.	Richard Nyarko	Ghana Police Service – MTTD
6.	Jacob Doku Tetteh	University of Ghana, UG
7.	Dina Adjei Boadi	University of Ghana, UG
8.	Raphael Arku	UMass, Amherst
9.	Allison F. Hughes	University of Ghana, UG
10.	Ernest Agyemang	University of Ghana, UG
11.	K.O. Sarfoh	Facilitator
12.	Elvis Kyere-Gyeabour	University of Ghana, UG
13.	Edward T.Sarpong	Good Governance Africa (NGO)
14.	Abbas Ibrahim Moro	Ghana Private Road Transport Union (GPRTU)
15.	George Owusu	ISSER, University of Ghana
16.	Emmanuel Appoh	Afri-SET/EPA
17.	Mathias Borketey	Afri-SET
18.	Benjamin Peh	Driver Vehicle & Licensing Authority (DVLA)
19.	C/Supt Dr. Samuel Sasu-Mensah	Ghana Police- MTTD
20.	Nii Laryea	University of Ghana, UG
21.	Emmi Quaye	The Daily Graphic
22.	Doreen Andoh	The Daily Graphic
23.	Alice Selasi Osafo	University of Ghana, UG
24.	I.M. Fyon	University of Ghana, UG
25.	C. Wrigley-Asante	University of Ghana, UG
26.	Nancy Owusuaa	University of Ghana, UG
27.	Kofi Kekeli Amedzo	Land Use & Spatial Planning Authority (LUSPA)

**Appendix 2 – Presentation 1: Sources of air pollution in Accra and the contribution of the transport sector**

**Appendix 3 - Presentation 2: *Vehicle Emission Standards in Ghana***