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ASIC TRAINING OF JOURNALISTS:

AIR QUALITY POLICY IN GHANA, REGULATIONS AND Afri-SET

PRESENTER:

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- ▶ TRAINING WORKSHOP FOR JOURNALISTS
- ▶ VENUE: AMA AUDITORIUM, ACCRA, GHANA
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Presentation Outline

Introduction, Air Quality Issues

Governance/Legal frameworks

Institutional Mandates, policies and strategies

Why the need for AQ Management?

Ghana Standard for environment and health protection-requirements For Ambient AQ & Point source/stack emissions (GS 1236:2019); AND MVE (GS1219: 2018); and Regulations

Afri-SET Project

Conclusions



Identify the Problems in Ghana

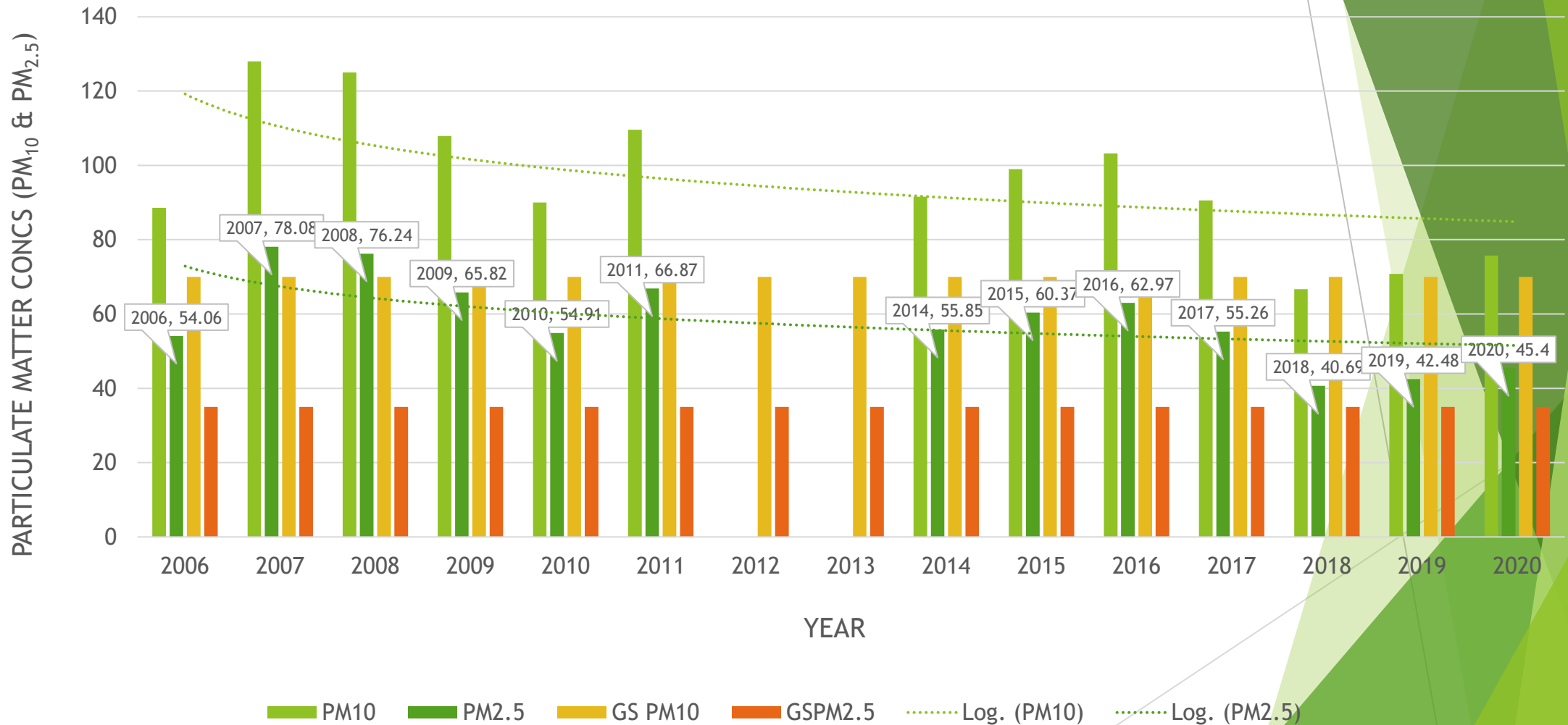


Why the need to solve for AQ Problems?

- ▶ Increased vehicle fleet and emissions worldwide; 64% of all hydrocarbons are consumed by vehicles. Higher emissions along road corridors.
- ▶ to protect the environment and public health from Air and Motor Vehicle Emissions.
- ▶ The air along road corridors that we breath contains toxins that causes premature deaths, due to ischaemic heart disease, stroke, chronic obstructive pulmonary disease, lower respiratory tract infections and lung cancer, and rank among the top ten leading causes of death in the world
- ▶ Children are more vulnerable to AP. 400,000 African children under five died prematurely because of the bad air they breathed (NATURE Journal| VOL 559|12 JULY 2018; <https://qz.com/africa/1316625>).
- ▶ Estimated economic cost of these deaths in 2013 (\$215 billion from outdoor pollution and \$232 billion from indoor pollution) is greater than that caused by unsafe water, malnutrition and unsafe sanitation (<https://qz.com/africa/1316625/> and Rana Roy, 2016). *Ghana; 2.5Bn eqv 4.2% of GDP.*
- ▶ 28,000 people died in Ghana due to air pollution according to WHO estimate (WHO, 2017)

Monitoring networks; annual PM₁₀ & PM_{2.5} concs (µg/m³): 2006-2020

Trend of Annual PM₁₀ and PM_{2.5} Concentrations (µg/m³): 2006-2020



Sources: Ghana EPA

GOVERNANCE

Legal Frameworks for Environmental management (Constitution of Ghana, Environmental Policy, EPA Act 1994, Act 490, EAR 1999 LI1652, Hazardous & Electronic waste control & management Act 2016, Act 917 and Regulations LI2250,; GS 1236: 2019; GS 1219:2019

ENVIRONMENT/REGULATORY (17#)

- ▶ EPA ACT 1994, ACT 490; Environmental Assessment Regulations, 1999 LI1652
- ▶ National Air Quality Guidelines, 2000
- ▶ WB Clean Air Initiative for Sub-Saharan African Cities
- ▶ National Environmental Policy, 2014
- ▶ Ambient AQ Monitoring, Capacity Building, Compliance and Enforcements
- ▶ Greater Accra Air Quality Management Plan (AQMP)
- ▶ Ghana Standard for Environment and Health protection-Requirements for ambient AQ and Point source/stack emissions (GD1236:2019)
- ▶ Ghana Standard for Environment and Health protection-Requirements for motor vehicle emissions (GS 1219, 2018)
- ▶ Road Vehicles - Measurement Methods for Exhaust Gas Emissions During Inspection or Maintenance (ISO 3929: 2003, IDT).
- ▶ Draft AQ Regulations and MVE Regulations
- ▶ West and central Africa (Abidjan Agreement) on Better Air Quality (2009)
- ▶ EPA/USEPA Accra Mega City Air Quality Management Project
- ▶ WHO Urban Health Initiative in Accra (promote the implementation of SLCP reduction strategies by mobilizing and empowering the health sector and building on its influential position, and by demonstrating the full range of health benefits that can be achieved from implementing SLCP/AP reduction strategies, particularly at the Accra Metropolitan area
- World Bank Executed PMEH project at UG and Adabraka (State of the Art Federal and Regulatory grade continuous air quality monitoring stations)
- “Affordable Air Quality Monitoring for Improved Air Quality Management in Ghana” (Kumasi)
- Networks of LCS in major cities (Accra, Tema, Kumasi, Tamale, Takoradi, HO

GOVERNANCE- CONT'N

TRANSPORT SECTOR

- ▶ National Transport Policy, 2008
- ▶ Ghana Road Traffic Regulations, 2012

Transport Sector Initiatives

- ▶ Motor Vehicular Emission Inventory (2005)
- ▶ Motor Vehicular Emission Inventory and fuel economy standards (2018);
- ▶ Cleaner Bus Standard (Soot-free bus strategies) in Ghana;
- ▶ Vehicle Fleet policy, 2010;
- ▶ Motor vehicle emission guidelines gazetted in 2017
- ▶ Ghana Fuel quality policy/Standard, 2017
- ▶ Electric Mobility Policy strategies, 2018
- ▶ Ghana Automobile Policy, 2020

LEGAL FRAMEWORK FOR ENVIRONMENTAL MANAGEMENT

- ▶ Article 36(9) of Ghana's Constitution requires
- ✓ the State to take appropriate measures to safeguard the national environment for posterity. Article 41(K) enjoins every citizen to protect and safeguard the environment
- ▶ Environmental Policy, The EPA Act 490 (1994), EA Regulations, 1999 (LI1652); Hazardous and Electronic Waste control & Management Act, 2016, Act 917 and Regulation LI 2250 and the GS 1236: 2019; GS 1219: 2019; all require the Agency to ensure that development does not compromise the quality of the Environment
- ▶ Sustainable Development Goals 3, 6, 11 and 13 requires appropriate measures to be implemented to reduce air emissions, hazardous waste, soil pollution and combat climate change and its impacts by 2030.

SDG Goal 3: Ensure healthy lives and promote well-being for all at all ages

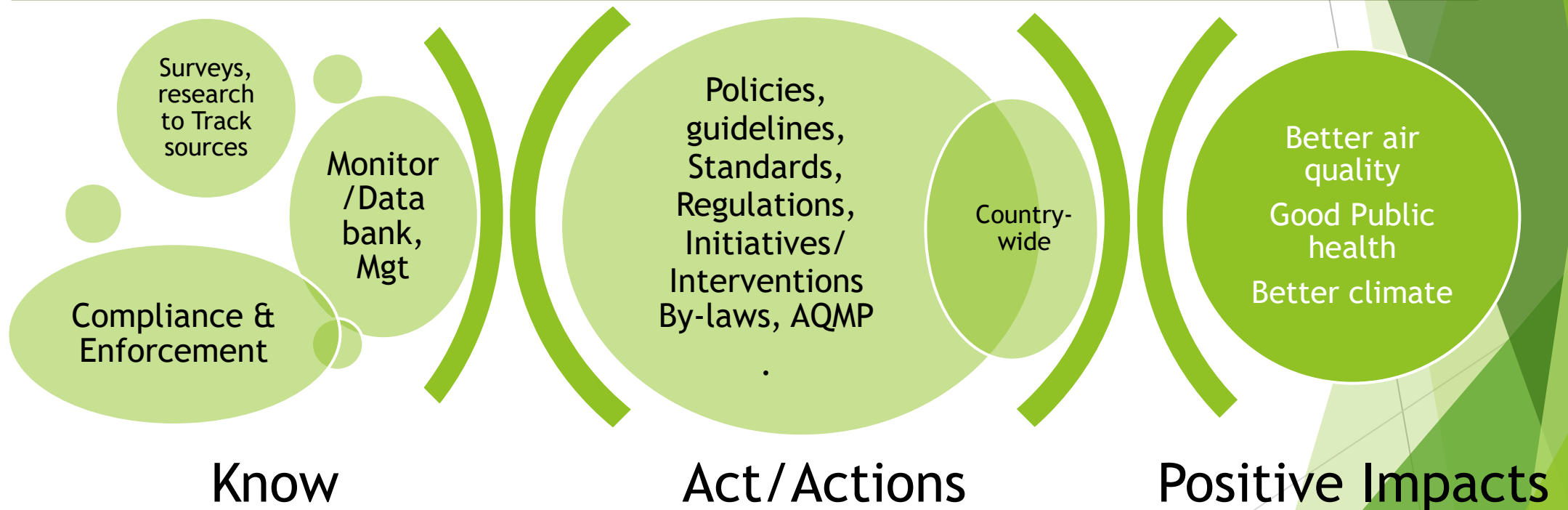
- ▶ *Target 3.9: substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination*

Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable

- ▶ *Target 11.6: reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.*
- ▶ *Indicator 11.6.2: Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted). Etc.*

WHAT ARE THE ENVIRONMENT/REGULATIONS TO SOLVED THE IDENTIFIED PROBLEMS?
What powers do we have to ensure that the regulations are effectively implemented?
What outcome do I expect to see?

EPA Act 1994, Act 490/EAR, 1999 (LI 1652); Local Governance Act 2016, Act 936; Act 917;
LI 2250



TRANSPORT SECTOR POLICIES/ STRATEGIES/INITIATIVES

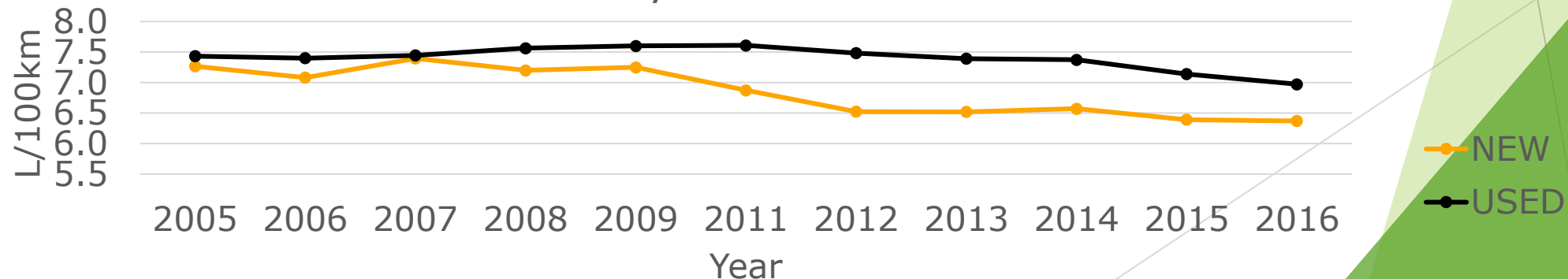
Are there any Initiatives?

▶ WB Clean Air Initiative for Sub-Saharan African Cities (2001)

Phaseout Lead in fuel in Ghana on 31st December 2003

- ▶ Motor Vehicular Emission Inventory under the sub-component of the DANIDA funded Transport Sector Programme Support II.(2005). Veh population and emission levels/effects?
- to carry out vehicular air pollution and greenhouse gas emissions inventory by gathering relevant activity data and on-the-field emission estimates; to prepare an emission policy strategy for the transport sector in Ghana.
- West & Central Africa Framework (Abidjan Agreement) on BAQ, 2009 (Sub-Regional AQ Framework)
- ▶ **Motor Vehicular Emission Inventory and fuel economy standards and policy strategies (2018)**
- Review existing policies and regulations to promote the use of cleaner and fuel-efficient vehicles in Ghana.
- Conduct Cost Benefit analysis of key policy interventions to promote fuel economy in Ghana.
- Provide policy recommendations aimed at reducing carbon emissions and promoting vehicle fuel efficiency

Fuel Economy of New and Used LDVs



Mandate & Strategic Objectives-2

How do we ensure clean air to breath? Any vehicle technology?/fuel availability & quality/cost?

- ▶ **Cleaner Bus Standard (Soot-free bus strategies) and sustainable transport in Ghana, 2017**
- ❑ Vehicle fleet population in Ghana has increase more than 300% relative to the 2005. Current vehicle fleet is impacting negatively on roadside air quality and human health.
- ❑ Urban buses are also large sources of black carbon emissions, the second largest contributor to human induced climate warming, and account for 25% of transportation-related black carbon emissions. Buses emit 250 times or more black carbon than a gasoline passenger vehicle travelling the same distance.
- ❑ Development of soot-free bus standards and system in Ghana. Leveraging on engine technologies (EVs Hybrids, devices, fuel additives etc.) to reduce emissions.
- ❑ Dissemination of the draft policy options of soot-free bus standard in Ghana
- ▶ **National Transport Policy, 2008**

Strategies include

- ❑ Development of a more rigorous public transport system to help alleviate congestion in urban areas
- ❑ Development of standards for public transport vehicles in line with international best practices
- ❑ Development and promotion of efficient and safe use of Non-Motorised Transport (NMT) facilities.

Limitation: Policy on importation of overaged vehicles into Ghana

[Ghana Customs, Excise and Preventive Service (CEPS) (Management Law) PNDCL 330 of 1993, Sections 46, 47, 48, 78-94, 123-192. This law is complemented by CEPS (Management) Act 1998 (Act 552), Act 565, Act 598 of 2001, Custom Excise Tax (CET) Act of 2015, Act 905)]

Mandates & Strategic Objectives-3

► Fleet renewal policy, 2010

- ❑ assist transport operators to acquire new vehicles to address the increasing fleet of old and ageing mini-buses and attendant poor air quality levels along major road corridors.
- ❑ no policy guidelines with respect to standards and technology supported by the policy. But currently, Euro 3 of better standards adopted.

► Ghana Road Traffic Regulations, 2012 (LI 2180)

Regulations contains new and several provisions which, when complied with by vehicle owners and motorists, would improve service delivery and by extension road safety and public health.

Reg 62: (Old/expired tyres, Under inflated/over inflated tyres; exposed ply on tyres; Over-loading (axle stress and frictions etc; Wearing out of brake shoes/pads; Poor maintenance of vehicles (alignments, lubricants, servicing etc.); weak engines.)

ARE THESE POLICIES & STRATEGIES WORKING? Yes/No

If No, what improvements are required?

Mandates & Strategic Objectives-4

► Ghana Fuel quality policy, 2017

- ❑ purpose of the National Fuel Quality Policy is to provide the framework for the development of guidelines, standards, and regulations. Fuel Quality Standard gazetted. ECOWAS fuel specifications.....
- ❑ provide the basis for the strategies, programs and actions required to reduce the risks of poor-quality fuels to the environment, health and durability of equipment using the fuels, and contribute to efforts towards curbing climate change.
- ❑ Low sulphur fuels (50ppm sulphur maximum) standard published etc.

► Ghana Automobile Policy, 2020

Key Strategic Objectives

- ❑ improve vehicle safety and environmental standards; and
 - ❑ transform the quality of the national road transport fleet and safeguard the natural environment
 - ❑ Vehicle finance scheme for local manufactured vehicle purchases.
- Household Air Pollution. Training programmes, clean cook stoves etc.

Are there any MVE Standards; & status of implementation? Any obstacles to implementation?

AQ Standard

- ▶ It is meant to ensure clean air and protect the environment and public health. **Is the objective achieved?**
- ▶ Ambient air and point sources/stack emissions.
- ▶ Responsibility of Regulator, MMDAs, Industry. Are they effective? Yes/No.

MVE Standard

- ▶ The Motor Vehicle Emission Standard is meant to ensure clean air and protect the environment and public health.
- ▶ Vehicles emissions are affected by driving patterns, the vehicle type and age, fuel type and quality, road conditions, axel load, traffic speed and congestion, etc., as well as altitude and other ambient conditions.
- ▶ This Ghana Standard specifies the requirements for exhaust emissions of motor vehicles as well as tractors, farm equipment (such as combine harvester, etc.), mobile industrial/construction machines (such as excavators).
- ▶ The Ghana Standard has been set so as not to put too many vehicles off the road on introducing motor vehicle emission requirements in the country.
- ▶ Euro 2 modification adopted as temporal measure

What is the Contest?

- ▶ Improving air quality in Africa faces two main obstacles: lack of monitoring equipment due to high capital cost and training to run that same instrumentation.
- ▶ The use of low-cost air quality sensors (air sensors) is a promising avenue to address at least the first of these obstacles. The low-cost aspect of the sensors helps ensure that they can be widely deployed and in places where traditional (expensive) reference-grade air quality monitoring could not otherwise penetrate.
- ▶ LCS face a few key problems: 1) LCS are not as plug-and-play as most manufacturers suggest; they always require multiple data quality and calibration steps. 2) When examining how well these sensors perform or how they should be calibrated, there is a strong mid-latitude, Global North bias. Uncalibrated sensors are insufficient for making policy decisions
- ▶ The difference between actual pollution levels and what low-cost sensors report can be significant. **Do not satisfy requirement under GS1236:2019**
- ▶ Afri-SET will fill this data gap and enable that leapfrogging by establishing a facility dedicated to testing LCS in realistic West African conditions, providing training for careers in air quality monitoring, and communicating those results: Afri-SET - The air quality Sensor Evaluation and Training centre for West Africa.

Objectives of Afri-SET

1. To establish a low-cost air sensors evaluation and training hub in Ghana.
2. To facilitate capacity building of students and air quality practitioners in Africa.
3. To promote long-term sustainability and replication of the center.

Activities of Afri-SET

<https://afriset.org/>

1. To establish a low-cost air sensor evaluation and training hub in Ghana.
 - i. Develop Standard Operating Procedures (SOPs). **Has it been achieved. Yes/No?**
 - ii. Build a website to host data, reports, calibration protocols and other knowledge product in both English and French.
 - iii. Evaluate at least 10 sensors type in Year 1



Set-up of Sensor Array at the Afri-SET facility, UG



11 LCS installed for evaluation at Afri-SET Facility



Airbeam 3



Airly



Airnote



Modulair



Airgradient



1

Praxis



Atmos



IQair



Airqo

11/1/2023



SensorAfrica



Air Quality EGG

List of manufacturers



CONCLUSION

- ▶ Need to harmonize the existing policies and standards on air emissions into a national Air quality Policy
- ▶ Encourage government of Ghana to review the over-age vehicle policy since new policy on Ghana Automobile policy is in place
- ▶ Effectively implement the vehicle fleet policy
- ▶ Incentivize purchase of new vehicles assembled in Ghana.
- ▶ Deploy dense networks of calibrated LCS in major cities in Ghana for relevant data collection and awareness creation.
- ▶ Prospect of calibrated/corrected data from sensors being used for policy formulation
- ▶ Sustainability of the Afri-SET project after sponsorship expiration.

Thank you!

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