



REPORT OF THE REGIONAL EXPERIENCES WORKSHOP ON VEHICLE EMISSION INSPECTION & MAINTENANCE (I&M) PROGRAMS

28 November 2016, Laico Regency Hotel, Nairobi, Kenya



Environmental Compliance Institute (ECI)

<http://www.eci-africa.org>

1. Background

The transport sector remains the main source of urban air pollution in many developing and transitional countries, contributing to as much as 80% of urban air pollution in some cities. The key pollutant is small particulate matter (PM) causing an estimated 3.2 million premature deaths annually, with the majority coming from transport emissions. The smaller part of PM, black carbon, is an important climate pollutant. PM contributes to increased respiratory infections such as bronchitis and pneumonia as well as chronic lung and heart disease, premature deaths etc. Diesel PM is especially toxic, and is now classified as carcinogenic by the International Agency for Research on Cancer, the specialized cancer agency of the World Health Organization.

The Partnership for Clean Fuels and Vehicles (PCFV) has been supporting developing and transitional countries to implement clean fuels and vehicles policies to reduce vehicle emissions. To assist countries to develop and implement longer term vehicle emission strategies that look at fuels and vehicles as a system, the PCFV developed a Regulatory Toolkit that provides a menu of options for countries to match cleaner fuels to vehicle improvements. The toolkit can be accessed on the following link (<https://goo.gl/GUOIAAt>).

The East Africa sub-region adopted harmonized low sulphur fuels in January 2015. At the same time, the PCFV Regulatory Toolkit was piloted within the sub-region before completion in 2014/15. Following this support, Rwanda adopted mandatory vehicle emission testing from January 2015. Kenya and Uganda are also planning to follow suit. For successful implementation of the toolkit within the sub-region, it will be important to develop harmonized vehicle emission standards to match the harmonized fuel standards. In addition, each country in the sub-region will need to develop an effective vehicle inspection and maintenance program.

This workshop was implemented as part of UNEP's support towards helping the East African sub-region to initiate discussion on harmonization of vehicle emission standards in the sub-region in addition to helping Kenya among other East African countries to develop a roadmap for vehicle emissions inspection and maintenance program (I/M).

The workshop was organized by Environmental Compliance Institute (ECI) in collaboration with UNEP and the Partnership for Clean Fuels and Vehicles (PCFV).

2. Objectives of the workshop.

- i. To share regional experiences on vehicle emission testing and maintenance programs.
- ii. To develop a roadmap for implementation of vehicle emission testing and maintenance program in Kenya.

3. Composition of workshop participants.

The forum brought together 40 participants from government agencies, non-governmental organizations and the business sector in the fields of transport and environment. Facilitators and resource persons included experts in vehicle emission and maintenance programs from across Africa including Egypt, Botswana, Kenya, Rwanda and Uganda.

4. Agenda

The agenda of the one day workshop was as per the attached workshop program.

5. Opening remarks.

i) Welcome remarks by G. Opondo-ECI

Welcome remarks were delivered by Mr. Gerphas Opondo, the Executive Director of Environmental Compliance Institute (ECI). Having welcomed the participants to the workshop, he commended the existing partnership between ECI UN Environment (Transport Unit) and hoped for even greater cooperation going into the future.

ii) Remarks by Rob de Jong- UN Environment.

Mr. Rob de Jong conveyed his gratitude to the representatives of various countries for joining the workshop.

- He stressed on the need of working with the media on a global scale in promoting sustainable transport in Africa. Media involvement in I&M programs is a system that benefits both the consumers and the environment and therefore this should be presented in the most appropriate design. It offers a platform for awareness creation thus ensuring that there is a good and commendable kind of reception by the public.

- He further went on to emphasize that Kenya needs to put in place measures for promoting clean fuels given that the country has developed institutional and legal framework for the same.

iii. Keynote Address by Francis Meja, DG NTSA

Mr. Francis Meja, the Director General of the National Transport and Safety Authority (NTSA) began by welcoming representatives from other countries. He acknowledged that the workshop had come at an opportune time for Kenya. The following issues came out strongly in his key note address:

- Air pollution from motor vehicle is increasingly becoming a serious health problem. World Health Organization (WHO) have reported this to be the world's largest single health risk. It is also a cause of various environmental problems; acid rain, crop forest damage and definitely, climate change among others.
- Motor vehicle emission has resulted into 80% of air pollution especially sub- Sahara Africa due to poor vehicle maintenance and their large numbers in the cities, use of low quality fuels among others. This is mainly in the urban centers of developing and transition countries.
- Similar approaches like those in the developed world should be adapted by developing countries to promote sustainable transport.
- Kenya is yet to match cleaner vehicles with cleaner fuels and that NTSA is currently working on implementing a model for improved vehicle maintenance in key inspection centers for all vehicles in Mombasa and Nairobi. NTSA is currently working on a draft regulation for inspection of all categories of vehicles in Kenya. It is also committed to working with all stakeholders for realization of clean vehicle emission inspection and maintenance in Kenya.
- He recommended leveraging on ICT to link the vehicle emission details of all motor vehicles in Kenya. The need of NTSA to develop fully automated lane for vehicle testing and maintenance to reduce human intervention and thus the issue of corruption. Coupled with that, strong government oversight, quality assurance and regular calibration of vehicle testing equipment.

6. Presentations

(NB: The full texts of all the presentations in power point are available separately)

iv. Overview of I&M programs by Fabian Bert-UN Environment

Key highlights of the presentation were as follows:

- Focus on strategies for promoting sustainable low emission transport. Better transport planning, shifting to lower emission transport, promoting electric mobility, promoting cycling, walking and pooling of vehicles.
- Road vehicle Management and I&M strategies. Existence of stringent emission standards, good maintenance, proper vehicle registration, proper enforcement will have a positive impact.
- Strengthening policy and institutional design that ensures stakeholder dialogue, heavy regulation by government, development of centralized testing systems, strong oversight and quality assurance programs and a phased implementation approach to allow learning, adaptation and capacity building.
- Scope of these programs and standards should be such that inspection is imposed on all vehicle types, integrate safety standards, scrap age programs for PSVs and introduce road side testing as a complimentary measure to the I&M programs.
- Testing procedures and inspection fees are also critical areas of focus. Making inspection a mandatory requirement for vehicle operation; inspection should be inclusive of environmental compliance and mechanical worthiness before issuance of a certificate of conformity. Inspection centers should be economical, involvement of the private sector as emission testing centers and restricting it to test only centers for efficiency of the program.
- There is also need to strengthen vehicle maintenance and repair services industry.

v. Vehicle Emission Standards and I& M programs

In this session, several experiences on vehicle emission testing from represented countries were shared.

➤ *State of Vehicle Emission Testing in Kenya-Eng. Opera Nyaroya –NTSA*

Motor vehicle inspection in Kenya; mechanical roadworthiness alongside environmental compliance is mandated to the National Transport and Safety Authority (NTSA). The limiting factor is the lack of capacity in terms of manpower. Current statistics indicate that Kenya inspects 17,000-20,000 vehicles monthly. Inspection is limited to only 260,000 annually out of the present 2.5 million vehicles in the country.

All vehicle in Kenya should be subjected to inspection as per the Traffic Act 2012 but only PSVs and Commercial vehicles are inspected at the moment due to capacity gaps.

Strategies of up scaling motor vehicle emission testing in Kenya.

- Upgrading of motor vehicle testing centers to increase annual inspection rates to 800,000 annually.
- External garages has been authorized to do inspection to close on the existing gap.
- Training of motor vehicle inspectors.
- NTSA and KEBS and leading motor vehicle dealers have informed a task force to review the vehicle emission standards.

Summary

The key issues derived from the presentation were the following:

- The need for allocation of more resources for man power training hence need to build partnerships.
- Modernization of inspection centers.
- Need for creation of publicity and awareness on vehicle inspection and maintenance.

➤ **Vehicle Emissions in Kenya. Presentation by Eng. Charles Nzuka-MTI**

Some of the strategies that require to be incorporated into I&M programs as presented by Eng. Nzuka included:

- Vehicle emission reduction strategies such as cleaner vehicles, cleaner fuels, vehicle scape age programs, consumer education and introduction of programs to encourage cleaner and alternative transportation; carpooling, BRT systems, vehicle maintenance.
- Vehicle maintenance; use recommended fuel grades; use manufactures maintenance schedule; change oil regularly, keep the tire inflated.
- The government is already implementing the SGR project; also there are plans of developing the BRT system in Kenya. The government is also decongesting the cities through the development of by passes.
- The treasury through the government is encouraging the vehicle manufacturing companies to develop their plants in the country to reduce importation while promoting the purchase of new vehicles.

➤ **Overview of Vehicle Emission Regulations and Standards in Kenya (including ongoing reviews)- Presentation by Eng. M. Mwai-NEMA**

Key highlights of the presentation were:

- Existing regulatory framework: EMCA, 1999, Air quality regulations (2014).
- The role of NEMA is mainly ensuring coordination among respective players in the sector, capacity building and awareness creation on behavioral and attitudinal change.

Actions towards emission reduction:

- The Government has continued to carry out awareness campaigns through electronic and print media highlighting the health advantages of lead phase-out and environmental impacts of high sulphur fuels.
- In 2014, the government adopted the EAC standard EAS: 178 on maximum fuel sulphur content of 50ppm.
- Construction of by-passes to reduce traffic jams within the urban centers and operation of commuter trains for 3 routes.
- The Government has established the Petroleum Monitoring Unit to monitor quality of fuels in respect to adulteration. Adulteration increases exhaust emissions and higher fuel consumption.
- Fuel adulteration is a major challenge owing to different tax rates of kerosene and diesel. Government should harmonize the taxes; remove the subsidy on kerosene.

Challenges:

- Inadequate experts on air pollution control systems
- Inadequate analytical capacity on: exhaust emission measurements, ambient air quality measurements, stack emission measurements.
- Limited capacity on indoor air measurements.
- Unethical practice by some of the experts.
- Unethical practice by some operators on self-monitoring reporting.

Recommendations on vehicle emission reduction strategies:

- Implement the Air Quality Regulations, 2014.
- Finalize the guidelines on economic instruments.
- Enhance collaboration on vehicular exhaust emission measurements:

- Designate private vehicular exhaust emission testing centers.
- Procure mobile vehicle exhaust emission equipment for referral centers).
- Build analytical capacity on vehicular exhaust emission measurements in the relevant institutions.
- Capacity building on air pollution control issues in the relevant institutions.
- Create awareness on effects of the 'Me First Mentality' on the urban air quality.
- Attitudinal Change.

Vehicle Emission Standards and I&M Programs: Egypt's Experience- A presentation by Samir El Mowafi (Technical Advisor of the Ministry of Environment).

The presentation covered the following issues:

- I&M programs in Egypt integrates awareness creation, repair industry, on road testing and identification of gross polluters. The program has centralized testing systems that separates roles of inspection from those of maintenance.
- Existing system for vehicle emissions testing in Egypt is such that equipment are jointly procured for sustainability.
- Challenges and areas of improvement are issues of financial sustainability where testing fees are high than operation costs, issues of limited test capacity due to space constraints and the high risks of human errors due to manual operation of equipment.
- Recommends use of transit Buses, scrap page programs and Recycling of old taxis.
- In order to ensure that new vehicles being sold by dealers comply with the emission standards, vehicle manufacturers tend to design vehicles with the standards that matches those of the importing countries.

➤ **Vehicle Emission Standards and I& M programs. Uganda's Experience-A presentation by Ronald Amanyire – Ministry of Works and Transport.**

The presentation covered the following areas:

- Legal framework: The Traffic and Road Safety (Motor Vehicle Inspection) Regulations, 2016.
- Frequency of inspection: motorcars and dual purpose vehicles once every year, commercial Vehicles (includes PSVs and all other vehicles used for business) twice every year – every six months.
- Emission standards; According to Uganda Standard – Petrol Engines, CO must be less than 4.5%, Hydrocarbons for 4 Stroke engines – 1,200 PPM, Hydrocarbons for 2

Stroke engine – 7,800 ppm, Special Engine – 3,300 PPM. Diesel Engines, vehicles manufactured between 1980 and 2008 – smoke meter reading (smoke density) must not be more than 2.5m⁻¹ for normal engines and not more than 3.0m⁻¹ for turbo charged engines.

Challenges

- Constant clamour for restricting vehicle imports based on age.
 - Cost of repairs is lower than cost of new vehicles.
 - Other factors affecting pollution from vehicles; fuel characteristics (properties and quality), emission control systems, maintenance, traffic congestion, simple things such as tyre, suspension, alignment and braking systems can lead to burning of more fuels and more pollution.
 - Fiscal policy challenges.
 - Gaps in emission control Standards on Emissions and New Vehicles
 - Low monitoring capacity
 - Harmonisation with different sectors: Energy, Environment, Trade etc.
- **Vehicle Emission Standards and I&M Programs- Rwanda’s Experience; A presentation by Remy Duhuze, Rwanda Environment Authority.**

The key elements of this presentation included:

- Policies and regulations: - Commercial vehicles undergo emission inspection every six (6) months for emissions standards compliance. Passenger vehicles for personal transport emissions are inspected once a year for emission standards compliance.
- Standards: Air quality specification RS 741, RSEAS 158, quality of gasoline, RSEAS 177 – Quality for Diesel, RSEAS 751.
- Fuel standards; unleaded fuel and Low Sulphur fuel (less than 50ppm) standards are now in force. Rwanda Standards Bureau (RSB) controls quality of imported fuel to ensure compliance.
- Inspection is done by Rwanda National Police. Rwanda has only 4 inspection centers, one for each of the four provinces.
- **Vehicle Emission Standards and I&M Programs- Botswana’s Experience; presentation by Kesenye**
- The most efficient emission test for motorcycles in Botswana is on road test. Motorcycles have the widest range of emissions in her urban centers.

- The major challenge in arriving at improved air quality with reduced vehicular emissions is complains from vehicle dealers who lack the capacity to ensure correct procedures on emission tests.

He recommended that:

- Emission standard for new vehicles raised to the South African Standard (Euro 3 to 4).
- Imported used vehicles should fulfil EURO 3 Standard (proved by certificates from the country of origin) as a minimum requirement.
- Imported used vehicles should not exceed an age of 7 years for light vehicles and 10 years for heavy vehicles.

7. Recommendations on Roadmap for Implementation of Vehicle Emission Inspection in Kenya

Following the expert presenatations, discussions and facilitated dialogue with all participants, the following were the agreed recommendations for a Roadmap for Implementation of Vehicle Emission Inspection & Maintenance Program in Kenya:

i. Policy, Legal and Regulatory Framework:

Legal and policy framework

- There is need to harmonize all sector based policies, laws and regulations on vehicle emissions inspection and maintenance in order to assure coherence.
- There is need to strengthen existing laws and regulations for effectiveness and efficiency
- There is need to harmonize regional regulatory frameworks including standards on vehicle inspections and maintenance in order to ensure better air quality within the region.
- Harmonize vehicle emission standards with the existing cleaner fuel standards in order to achieve meaningful emission reductions. The ongoing review process for vehicle inspection standards provides a good opportunity to incorporate better standards.
- Use of economic instruments to encourage cleaner vehicle technologies should be introduced within the legal framework and enforced.
- Introduce heavy penalties for non-complying vehicles.

Institutional Framework

- There is need to properly define roles of regulatory institutions in order to avoid overlapping of roles and conflicting mandates.
- There is need to promote Public Private Partnerships towards investment in vehicle emissions inspection and maintenance.
- There is need to decentralize inspection services to make the same easily accessible. However, there should be some level of central control for purposes of quality assurance.
- In order to curtail possibilities of corruption within the I&M program, there is need to integrate information technology into the system so as to minimize human intervention.
- There is need to license private garages for vehicle repair maintenance to improve quality services.
- There is need to modernize vehicle emission inspection centers in order to handle the large vehicle population efficiently.

Capacity Building

- ii. There is need to mobilize skills and build capacity of all relevant players for an effective I&M program.
- iii. There is need to train mechanics on how to do targeted vehicle maintenance for emission tests.
- iv. There should be curriculum review in order to align it with the current trends on sustainable transport such as cleaner fuels and I&M programs.
- v. There is need for more funding to the technical institutions to support research in vehicle emission testing and maintenance.

Compliance & Enforcement

- Collaboration between regulatory institutions should be enhanced for effective enforcement of existing laws, regulations and standards.
- Effective compliance promotion (education & awareness) should be stepped up in order to encourage behavioural change among the vehicle owners and operators.
- The Treasury should allocate more resources to the regulatory bodies to ensure they have sufficient resources to carry out their mandates.
- Introduce economic instruments and incentive schemes to encourage compliance.

Annex 1: Programme/Agenda

TIME	SESSION	RESPONSIBLE
0800 – 0845	Arrival and Registration	ECI
0845 – 0900	Welcome & Introductions	Gerry Opondo, ECI/ Rob de Jong UN Environment
0900 – 0925	Overview of I&M Programs	Fabian Bert-UN Environment
0925 – 0940	Keynote Address	Francis Meja, Director General National Transport and Safety Authority (NTSA)
0940 – 1005	State of Vehicle Emission Testing in Kenya	Eng. Opere Nyaroya – National Transport & Safety Authority
1005 – 1030	Overview of Vehicle Emission Regulations and Standards in Kenya (including the ongoing reviews)	Eng. M. Mwai- National Environment Management Authority (NEMA).
1030 – 1100	TEA/COFFEE BREAK	
1100 – 1140	Vehicle Emission Standards and I&M Programs – Egypt’s Experience	Dr. Samir El Mowafi –Technical Advisor of the Ministry of Environment
1140 – 1220	Vehicle Emission Standards and I&M Programs – Uganda’s Experience	Ronald Amanyire - Ministry of Works and Transport
1220 – 1300	Vehicle Emission Standards and I&M Programs – Rwanda’s Experience	Remy Duhuze – Rwanda Environment Management Authority
1300 – 1400	LUNCH BREAK	
1400 – 1530	Dialogue & Recommendations on Roadmap for Implementation of Vehicle Emissions Inspection in Kenya and East Africa	Moderator: Peter Odhengo National Treasury
1530 – 1600	Next Steps & Closure	UN Environment/MOTI

Annex 2: List of Participants

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