MAZINGIRA YETU
UHAI WETU
WAJIBU WETU

nema
mazingira yetu | uhai wetu | wajibu wetu

# Pan-African Dialogue on Urban Air Quality, Clean Vehicles and Sustainable Mobility, Eastland Hotel-24th August, 2016

*Title:* **Air Quality Regulations and Implementation in Kenya and Next Steps**

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National Environment Management Authority

# Outline of the Presentation

a) Mandate of the NEMA
b) Provisions of EMCA, 1999
c) Why the Air Quality Regulations?
d) Brief on key Provisions of the Regulations
e) What has been done on Emission Reduction?
*f) Status of Implementation*
*g) Challenges*
h) Way Forward

# Background

**Global Level**

- WHO, 2014 Report indicates that 3.7 Million premature deaths worldwide occurred in 2012 especially due to exposure to small particulate matter of 10 microns or less in diameter ($PM_{10}$)

- Low-and middle-income countries disproportionately experience the burden of outdoor air pollution with 88% of the 3.7 million premature deaths due to air pollution

# Background(2)

**National Level**

- The state of air quality has deteriorated over the years, resulting in increased reported cases of Upper Respiratory Tract Infections (URTI).

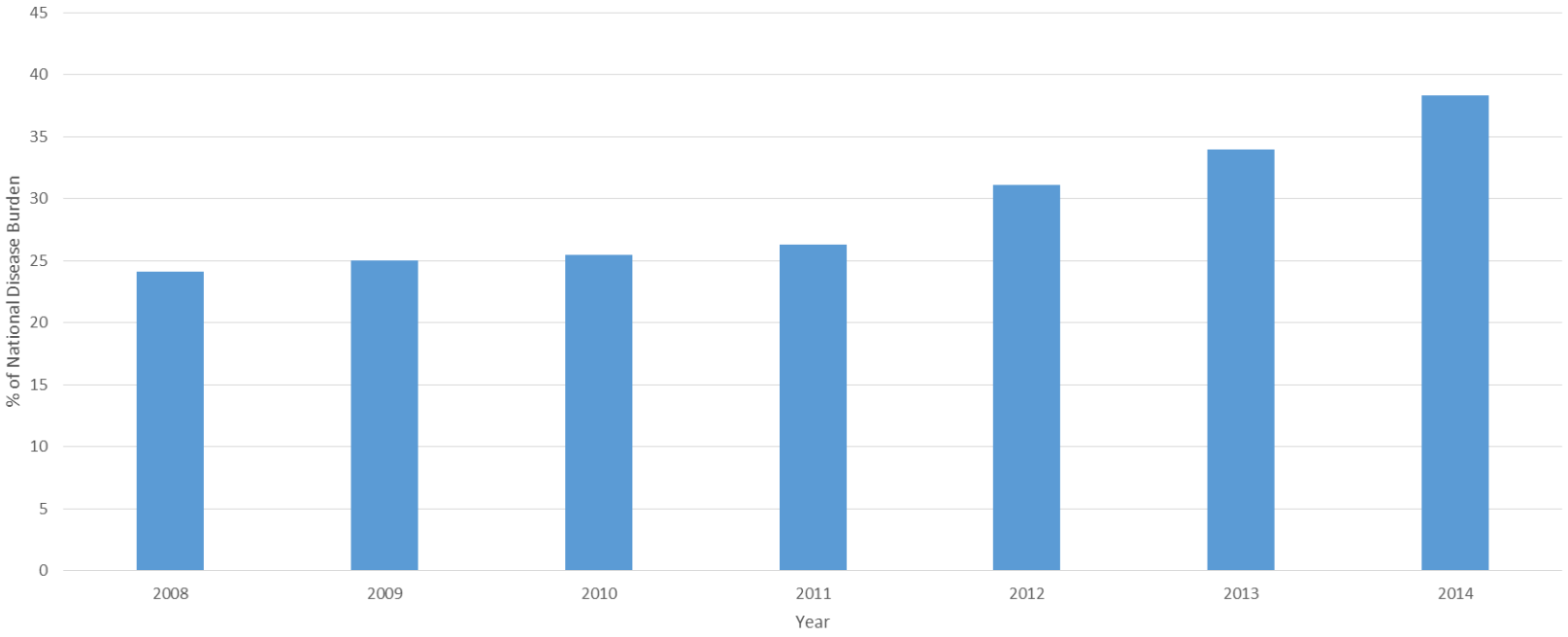
- The Economic Survey of 2014 indicates that 47 million cases reported of morbidity in Kenya; about 17 million cases were attributed to respiratory diseases.

# Background(3)

- This indicated an increased trend of 24.1%, 25.0%, 25.5%, 26.3%,and 31.1%, 34%, 36.2% for the period 2008, 2009, 2010, 2011, 2012, 2013 and 2014 respectively.

- Above statistics indicate the Upper Respiratory Tract Infections (URTI) as a national burden of disease had reached 36% in 2014.

# Morbidity Cases due to URTIs



# Causes of the Air Pollution

The above situation is aggravated by:

a) use of obsolete industrial production technologies without the appropriate air pollution control systems,
b) use of poorly maintained second-hand vehicles,
c) use of adulterated and dirty fuels,
d) use of dirty fuels in polluting domestic cook-stoves with minimal ventilation features, and
e) open-burning of wastes within the waste management system.

# Sources of Air Pollutants

- Sources that cause deterioration of the ambient air quality due to release of air pollutants include the:

(a) Industrial Sector

- *Stack Emissions (Chimney),*
- *Fugitive Emissions(indoor Air Quality Levels, Non-point Sources, Material Handling, Pavements(paved or Unpaved)*

***(b)Energy Sector,***

***(c)Transport Sector,(8yr age limit rule applied)***

(d)Waste Disposal Systems,

(e)Domestic Cooking and Lighting Activities

# Air Quality Standards & Guidelines

The Authority is obliged to recommend the:

a) Ambient air quality standards;

b) Occupational air quality standards;

c) Emission standards for various sources;

*d) Criteria and guidelines for air pollution control for mobile and stationary sources*

e) Any other air quality standards.

A taskforce formulated the Air Regulations, 2014.

# Contents of the Regulations

Parts of the Regulations:
*Part I: Preliminary*
Part II: General Prohibitions
Part III: Permissible Levels
Part IV: Controlled Areas
Part V: Stationary Sources
***Part VI: Mobile Sources***
*Part VII: Occupational Air Quality Limits*
Part VIII: Other Sources
Part IX: Licences
Part X: Appeals
***Part XI: Methods of Measurement, Analysis and Laboratories***
***Part XII: Inspection and Monitoring***
***Part XIII: Reporting***
*Part XIV: Miscellaneous*
Schedules: 14 No.

# Part V: Mobile Sources

- Mobile sources  means a moving producer of air pollution, mainly forms of transport such as ***motorcycles, cars, trucks,*** *trains and aeroplanes*.
- It regulates control of emissions from internal combustion engines,
- It defines general vehicular emission sources and vehicular emission limits.
- The Priority Air Pollutants (PAP) from mobile sources as include:-

  -Hydrocarbons, Volatile organic compounds, *Sulphur dioxide*, nitrogen oxides, particulate matter, carbon monoxide

# Part V: Mobile Sources(2)

- Reg (25) Prohibits emission of visible air pollutants from a stationary vehicle in excess of the limits set out under the prescribed *Kenya Standard.*
- Reg(25) obliges every owner or operator of a mobile source to control emission of PAPs listed under the 2nd Schedule.
- Emissions from internal combustion engines should not exceed the vehicular emission limits prescribed under the *Kenya Standard*

# Part V: Mobile Sources(3)

- It defines the methods of test for vehicular emissions and the inspection period for motor vehicles,
- Reg (26) indicates that the Authority in consultation with the agency responsible for motor vehicle inspection may order inspection of a vehicle emitting visible exhaust emissions
- Reg (27) requires all Commercial and PSV vehicles to be tested for exhaust emissions annually

# Part V: Mobile Sources(4)

- *It requires private vehicles to be tested for exhaust emissions once every two years.*
- It obliges the Authority in consultation with MVIU to designate private vehicular emission testing garages,
- NEMA and MVIU developed an evaluation criteria for these garages
- It regulates vehicular emissions in accordance with KS 1515 as indicated under the Fifth Schedule
- KS 1515 undergoing review to conform to Euro IV Standards(*mechanical safety comments received-Environmental*

# Implementation of the Regulations

- Establishment of *Baseline Ambient Air Quality Levels*
- 1No. Mobile Air Monitoring Laboratory for monitoring ambient air quality levels
- **Monitoring Program –** No national monitoring program for ambient air quality levels
- One monitoring station on top of Mount Kenya for measuring background $CO_2$, $O_3$, and $MH_4$ for the Global Atmospheric Watch program

# Air Quality Monitoring

Few studies have been carried out on status of air quality in Kenya. These include:

- Nairobi about 8; Mombasa and Kisumu about 2or3; respectively ; Thika and its environs- 1
- The study periods - average of 10 days over a 12 hour duration each day in the years: 1990, 1996, 2003, 2007, 2008, 2009, 2010 and 2014
- Source of funding - Columbia and Gothenbug universities, as well as the National Council of Science and Technology, Universities, GOK.

# Capacity to Address Air Quality Issues

- **Overview of Ambient Air Quality Levels** – limited data from adhoc measurements of ambient air quality levels for academic requirements and as response to air pollution complaints.
- **Analytical Capacity for Emission Measurements** – About 3 No laboratories that have the necessary equipment for carrying out stack emission measurements.
- **Vehicular Exhaust Emission Measurement** – 17No. motor vehicle inspection centres in the country and 1No. mobile laboratory for roadside monitoring of vehicular exhaust

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# Requirements for Implementation of Air Quality Regulations

- An Implementation Strategy and Implementation Plan have been developed;
- The Strategy includes:
  - Determination of baseline ambient air quality levels;
  - Establishment of a National Air Quality Monitoring Program;
  - Establishment of a National Emission Source Inventory;
  - Strengthen the technical and analytical

# Challenges in Monitoring Air Quality

a) Few experts on air pollution dispersion modelling
b) Limited experts on air pollution control systems
c) Inadequate performance monitoring of the facilities,
d) Poor uptake of the industry self-regulation principle, i.e. few have installed a Continuous Emission Monitoring System as required.
e) Few facilities operating under ISO14000

# Challenges in Monitoring Air Quality(2)

a) Unethical practices on reporting on self-monitoring requirements,

b) Limited analytical capacity (Public and private sectors), *some unethical on reporting*

c) Zoning conflicts due to misuse of 'change of user' planning option.

d) Non-adherence to planning guidelines

# Strategies to Improve Air Quality in Cities(1)

## National Level

a) Fast-track implementation of the Air Quality Regulations, 2014.
b) Establish baseline Ambient Air Quality Levels.
c) Determine inventory of priority air pollutants Sources.
d) Identify local laboratories which can be reoriented to carry out stack emission measurements
e) Build/create technical capacity on air pollution control technologies

# Strategies to Improve Air Quality in Cities(2)

- **National Level** – *Transport Sector*

a) Provide adequate equipment at the vehicle inspection centres
b) Provide training and skills development to the staff at the Vehicle inspection units
c) Identify public garages that can be upgraded to vehicular exhaust emission testing centres
d) Designate private garages as testing centres for vehicular exhaust emissions measurements;
e) Promote attitudinal change towards

# Strategies to Improve Air Quality in Cities(3)

## Sub-regional Level

a) Harmonise the air quality regulations at the EAC level
b) Implement the 50ppm sulphur content as per the EAS 178
c) Harmonise the vehicle inspection code of practices
d) Adopt a common age limit for vehicles imported into the region
e) Harmonise the vehicular emission limits in the region
f) Establish a regional network of experts on

# Summary of Requirements

(a)Stationary Sources

- ✓Install appropriate air pollution control systems
- ✓Submit self-monitoring stack emission measurements as per Reg(68)
- ✓Ensure EA reports- *indoor air quality surveys*
- ✓Information to workers on exposure levels

(b)Mobile Sources

- ✓Ensure regular maintenance of our vehicles
- ✓Respect time of others-*follow driving guidelines*

# Summary of Requirements(2)

(c)Waste Disposal Systems

- ✓Minimise open-burning of wastes
- ✓Promote adoption of best environmental practices in waste management

(d) Domestic Cooking & Lighting Activities

- ✓Install adequate and appropriate ventilation in residential places
- ✓Promote adoption of clean cooking stoves
- ✓Promote uptake of solar lighting

# Actions Taken

- Inspection of cases on *air pollution complaints*
- Commissioned laboratories to carry out *stack emission measurements* at some facilities
- Commissioned a Laboratory to carry out *ambient air quality measurements* at some hotspot areas
- Requested high risk facilities to submit their stack emission monitoring records to the Authority as per Reg(68) *(energy sector, cement sector, steel sector, Sugar sector, among others)*
- *Preliminary assessment of stationary sources*

# Challenges

- Inadequate experts on air pollution control systems
- Inadequate analytical capacity on stack emission and ambient air quality measurements*(Public and Private)*
- Unethical Practice by some of the experts
- Unethical practice by some operators on self-monitoring reporting
- *Zoning conflicts due to 'change of user' option in planning*

# Way Forward

a) To build analytical capacity of the laboratories on air quality measurements
b) To review legislations on tax regime for importation of used v.v. new vehicles
c) To review the environmental and health impacts of fuel subsidies
d) To promote trainings on air quality issues
e) To promote establishment of a network of experts on air quality issues in the region
f) To promote compliance with land-use planning and zoning requirements;
g) To promote uptake of energy saving technologies at the domestic or household level;

# Way Forward

- Review KS 1515 to conform to Euro IV Stds
- Review:
  - Vehicular exhaust emission limits
  - Noise emission limits

  to enhance environmental compliance.
- Develop “vehicle standards” for Kenya

# *End*

*Thank You All*