Tackling Urban Air Pollution in Africa: Opportunities for Cost Effective Solutions

Urban Pathways
Supporting Low Carbon Plans for Urban Basic Services in the context of the New Urban Agenda

Launch-Kenya
Nairobi, 6-7th September 2018

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Background: Air Pollution a global challenge?

**THE TRANSPORTATION SECTOR**
A major contributor to global energy-related CO₂ emissions

GLOBAL ENERGY-RELATED EMISSIONS
≈ 30 Gt CO₂

TRANSPORT EMISSIONS
≈ 7 Gt CO₂

ROAD TRANSPORT EMISSIONS
≈ 5 Gt CO₂

**LEGEND**

- **RAIL**
- **AIR**
- **ROAD**
- **SEA**
- **HEAVY-DUTY VEHICLES**
- **LIGHT-DUTY VEHICLES**

Sources:
Background: Where Does Urban Air Pollution come from?

Unequal access to clean air

1 out of 9 deaths are due to air pollution
What is the impact of Air Pollution in Africa?

How do we know the impact of air pollution in cities in Africa?

1/7 Strengthening the role of the United Nations Environment Programme in promoting air quality

2/21 Sand and dust storms

Commercial production Open Source Monitor August 2017

WMO / IGAC/ UNEP Report on Low Cost Sensors May 2018

Viability of PM2.5 measurement using fused modeling February 2019

Call to countries to pilot low cost sensors March 2017

UNEA 4 March 2019

3/8. Preventing and reducing air pollution to improve air quality globally

UNEA 3 December 2017

US-EPA evaluates UNEP Low Cost Device July 2017

2014

Affordable air monitoring initiative launched December 2015

Nairobi pilots 2016

Air Quality Monitoring Programme

2019

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Air Quality Monitoring Programme

2014

2019
Status of Air Quality Monitoring
Sensor based monitoring

- Not a replacement for regulatory grade, reference monitors
- Must be selected to fit a purpose
- Quality assurance is critical (as with any data collection)
- Partnerships and engagement with government, private sector and the public to scale
The Strategy

Infrastructure to monitor
- Leveraging Low Cost Sensors

Network Management
- Leveraging Cloud based platforms

Visualization
- On-line Analysis Modeling
  - Quality Control & Assurance
Street closures, Nairobi CBD – Nov 2016

Source: (UN Environment Report, 2018)
Base stations provides:
- Electricity
- Security

Devices installed at height 3-5 m.
GET ALL THE INFORMATION YOU CAN, WE’LL THINK OF A USE FOR IT LATER.
Visualization
Advanced AIR QUALITY ANALYTICS

- Pollution Rose
- Calendar Plot
- Time Variation
- Scatter Plot
- Polar Plot
- Trend Level
Leveraging technology

Source US-EPA
...completing the picture

Aim – hourly averages of PM2.5 globally
+30 countries requesting to participate in an initial pilot study on sensor devices

This year at least 5 pilot countries targeted around the world (Bosnia-Herzegovina, Costa Rica, Peru, Kenya, Ethiopia)

Air quality and health assessment in 6 countries underway (Benin, Ethiopia, Botswana, Mongolia, Sri Lanka and Thailand)

Developing a country package to ease capacity building and promote autonomy (i.e. IoT, automation, common platform, guidelines, etc)

Early 2019 test the viability of fused modelling for Africa

Late 2019 extend coverage of fused modelling to Asia
Thank you
"You two need to go inside and get some fresh air."