Integrated Assessment of Air Pollution and Climate Change for Sustainable Development in Africa

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(on behalf of the Assessment Team)

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1. Assessment Objectives

- The African Union's Agenda 2063, describes a vision of the "the Africa we want", but further guidance is required to assess how best to achieve that vision.
- The Africa Assessment aimed to examine the **challenges**, **implications** and **+** of a range of alternative development paths that might plausibly be taken to achieve the goals set out in Agenda 2063.

More specifically the assessment aimed to:

- ✓ examine how an ambitious development agenda for Africa can proceed at the same time as reducing air pollution, improving health and well being, limiting impacts on local ecosystems, and helping to avoid climate change impacts
- ✓ provide appropriate and timely responses to inform planning by governments and other stakeholders
- ✓ explore using modeling various options for enhanced synergies and avoided tradeoffs

The modeling does not determine which path is best, but helps to inform and facilitate discussions of this topic

2. Policy framework

Seventeenth Ordinary Session of the African Ministerial Conference on the Environment (AMCEN-17), *African Ministers agreed ''to emphasize the benefits of improving air quality, including through managing, and as nationally appropriate, reducing short-lived climate pollutants in the environment, agriculture, health and forest conservation, while responding to the aspirations of Agenda 2063 of the African Union and the Sustainable Development Goals (hereafter called Agenda 2030),* ***noting the need for an assessment with linkage between policies to address air pollution and policies to address climate change****''*

Partnership formed between AUC, UNEP ROA, SEI and CCAC *to produce the Integrated Assessment of Air Pollution and Climate Change for Sustainable Development in Africa*

AMCEN Decision 18/4: Climate change

Decide:

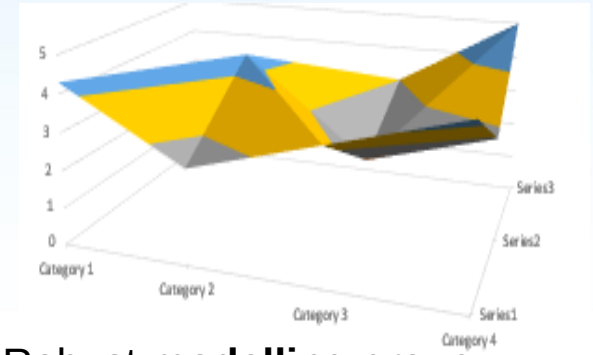
‘38. Note the completion of the integrated Assessment of Air Pollution and Climate Change for Sustainable Development in Africa and its report, in response to AMCEN decision 17/2. Urge African countries to support further development and implementation of the 37 recommended measures as a continent-wide Africa Clean Air Program, coordinated by strong country-led initiatives, cascaded to the Regional Economic Communities and higher levels of policy.’

3. Assessment Process – Science Policy Network

Creating a community through networks
Over 100 applications for authors/reviewers/ modelers

100 **authors** from 17 African countries in the 1st author meeting including Early Career Professionals

AUC, AMCEN and RECS participation-
>30 Countries confirmed **focal points** from the Ministry of Environment



Robust **modelling** group developing framework & scenarios, modelling seminars- iterative consultative process

Linkage made to **policy** global/regional/national policy framework (SDGs, Paris Agreement, UNEA, Agenda 2063, AMCEN, Regional AQ agreements, NDCs, NAQM)

Commitment from **International Advisory Group** including RECs, AUC, UNEP ROA, FAO, WHO, IEA, IHME, US EPA, IIASA, WASCAL, IMO

4. The big five sectors of the assessment

5. 37 Measures Modelled

Other Energy Sector Measures
E1. Efficient Charcoal Making
E2. Post-Combustion Emission Controls in Industry
E3. Coal Methane Capture
E4. Oil and Gas Methane Emissions.
P1. Industrial processes and product use (IPPU)
E5. Transmission and Distribution Loss Reduction
E6. Industrial Energy Efficiency
E7. Service Sector Energy Efficiency
E8. Reduce Demand for Cement
E9. CCS in Carbon Intensive Industries and Electric Generation
E10. Renewable Electric Generation: Solar, Wind, Geothermal and Hydropower

Agriculture
A1. Livestock - Reduce enteric fermentation by increasing productivity
A2. Livestock - Reduce enteric fermentation via digestibility of feed
A3. Livestock - Manure Management
A4. Crops - Rice
A5. Biomass burning
A6. Food Waste
A7. Diet - Protein source

Transport Measures
T1. Passenger Electric Vehicles
T2. Advanced Emissions Controls for Road Vehicles
T3. Hybrid Vehicles
T4. Public Transport
T5. Non-Motorized Transport
T6. Switch Freight from Road to Rail
T.7. Rail Electrification
T.8. Road Freight Electrification

Residential Measures
H1. Clean Lighting
H2. Clean Cooking
H3. Efficient Air Conditioning
H4. Efficient Refrigeration
H5. Other household energy efficiency

Waste
W1. Solid Waste Disposal - best practise landfill management to reduce open burning of waste, and methane capture at landfills
W2. Liquid Waste - Methane capture at wastewater treatment plants
W3. Solid Waste Disposal - Implement waste collection and development of formal landfill sites
W4. Solid Waste Disposal - Diversion of organic waste to composting or biogas
W5. Solid Waste Disposal - Reduce organic waste generation
W6. Universal access to improved water and sanitation services

Measures common to National and Regional Action Planning on SLCPs, Agenda 2063, SDGs and NDCs in African

6. Snapshot of results Integrated Assessment

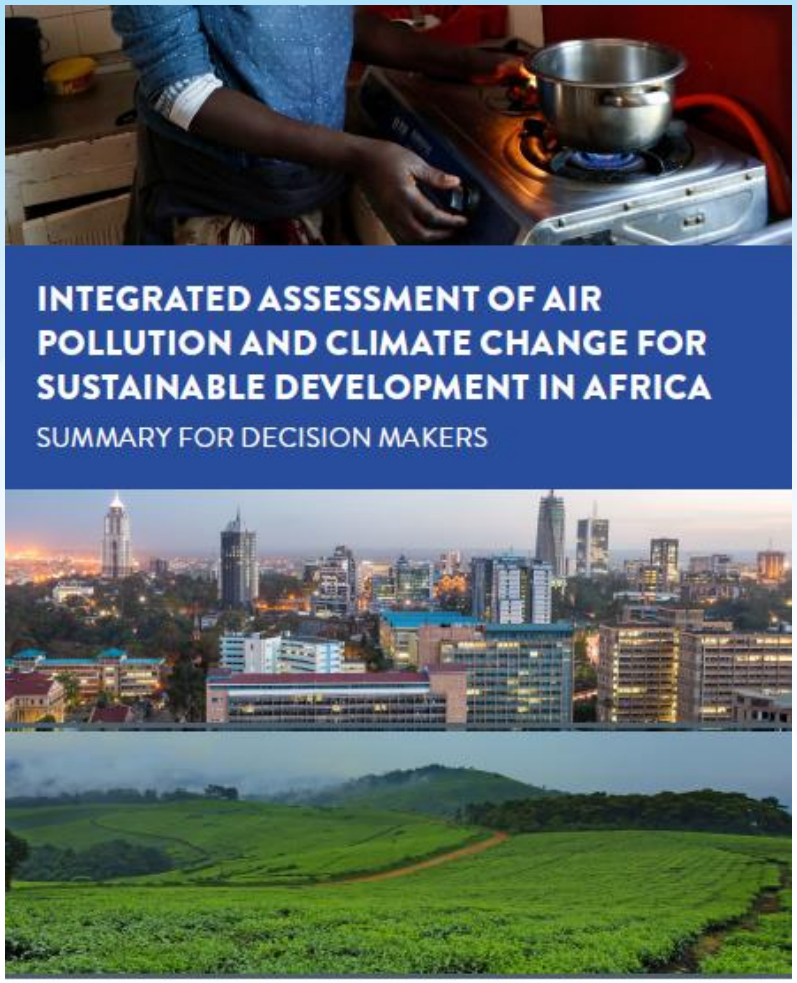
- **Substantial Emission Reductions** - reductions in emissions of greenhouse gases (GHG), Short-Lived Climate Pollutants (SLCPs) and other air pollutants (40-80%)

- **Reduced Premature Mortality** - Prevention of 200,000 premature deaths per year by 2030 and 880,000 deaths per year by 2063 due to outdoor and indoor air pollution;

- **Improving food security** - reducing desertification and increasing crop yields for rice, maize, soy and wheat;

- **African Climate Change Benefits** - limiting the negative effects of regional climate change on rainfall, especially in the Sahel region, and temperature in parts of Africa.

Multiple benefits for human health, crop yields and climate

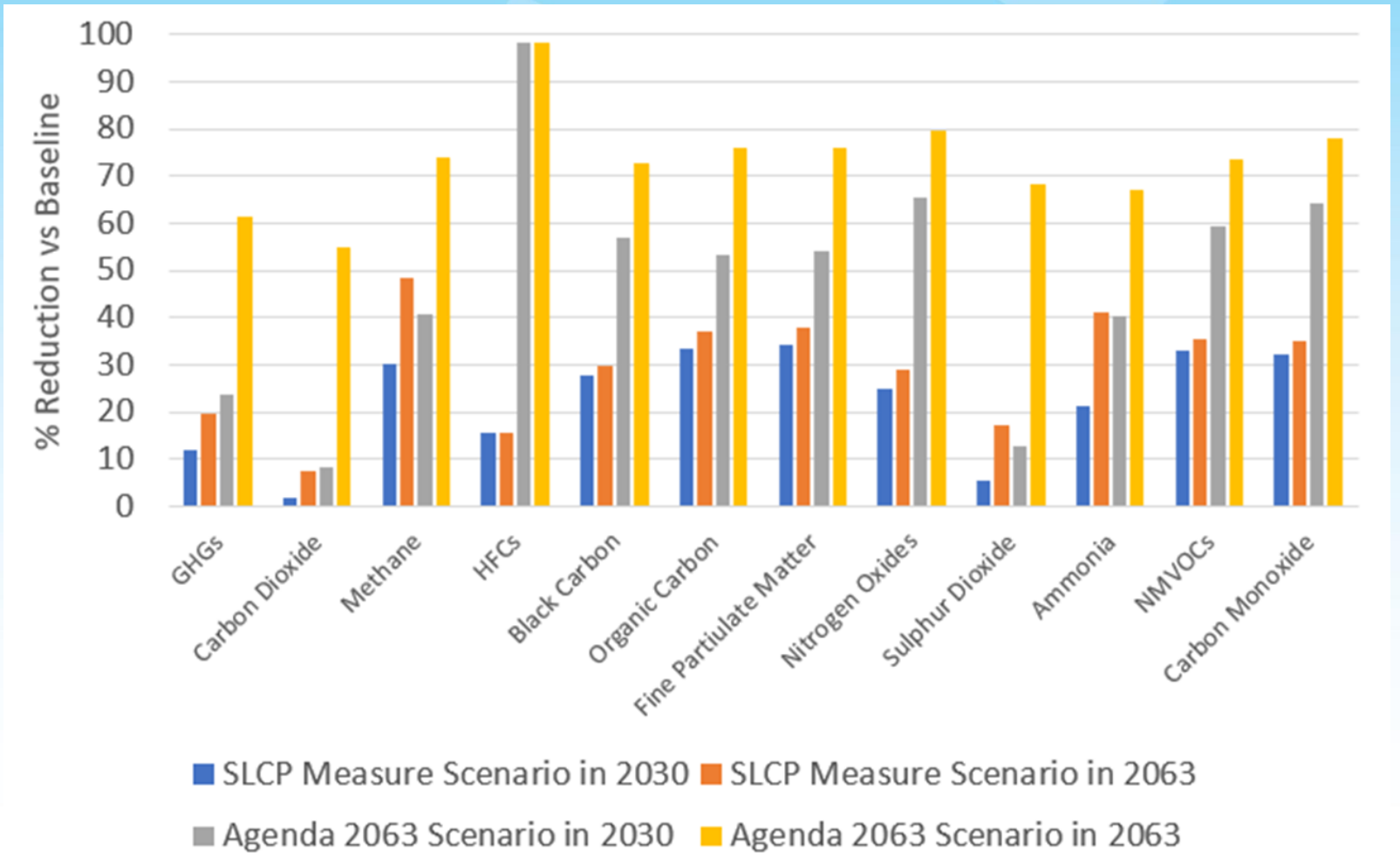


UN environment programme

CLIMATE & CLEAN AIR COALITION

African Union

7. Measures can reduce SLCPs and GHGs significantly by 2030 and 2063



Emission reduction relative to baseline by 2063:

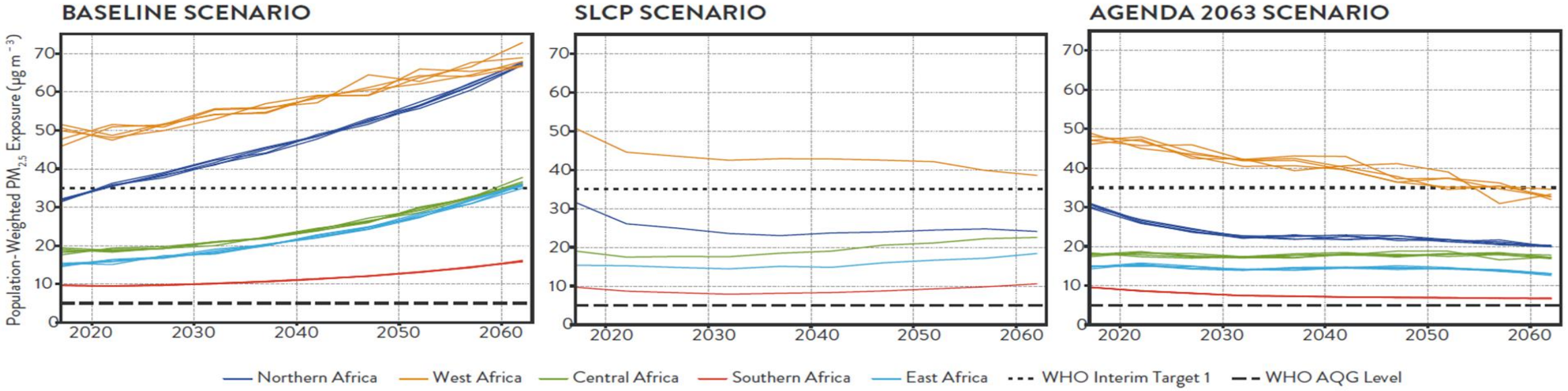
CO_2 -55%; CH_4 - 74%; N_2O - 40%; Black carbon - 72%; $PM_{2.5}$ - 75%; HFCs - 98%; NOx – 80%; NMVOCs - 72%

8. Air quality and health

- **Baseline**: Without policy intervention, outdoor air pollution will increase, leading to around 930,000 premature deaths per year in 2030 and **1.6 million per year in 2063.**

- **Agenda 2063**: By implementing the 24 energy sector measures and 13 non-energy sector measures, **180,000 premature deaths per year due to outdoor air pollution can be avoided in 2030 rising to 800,000 in 2063.**

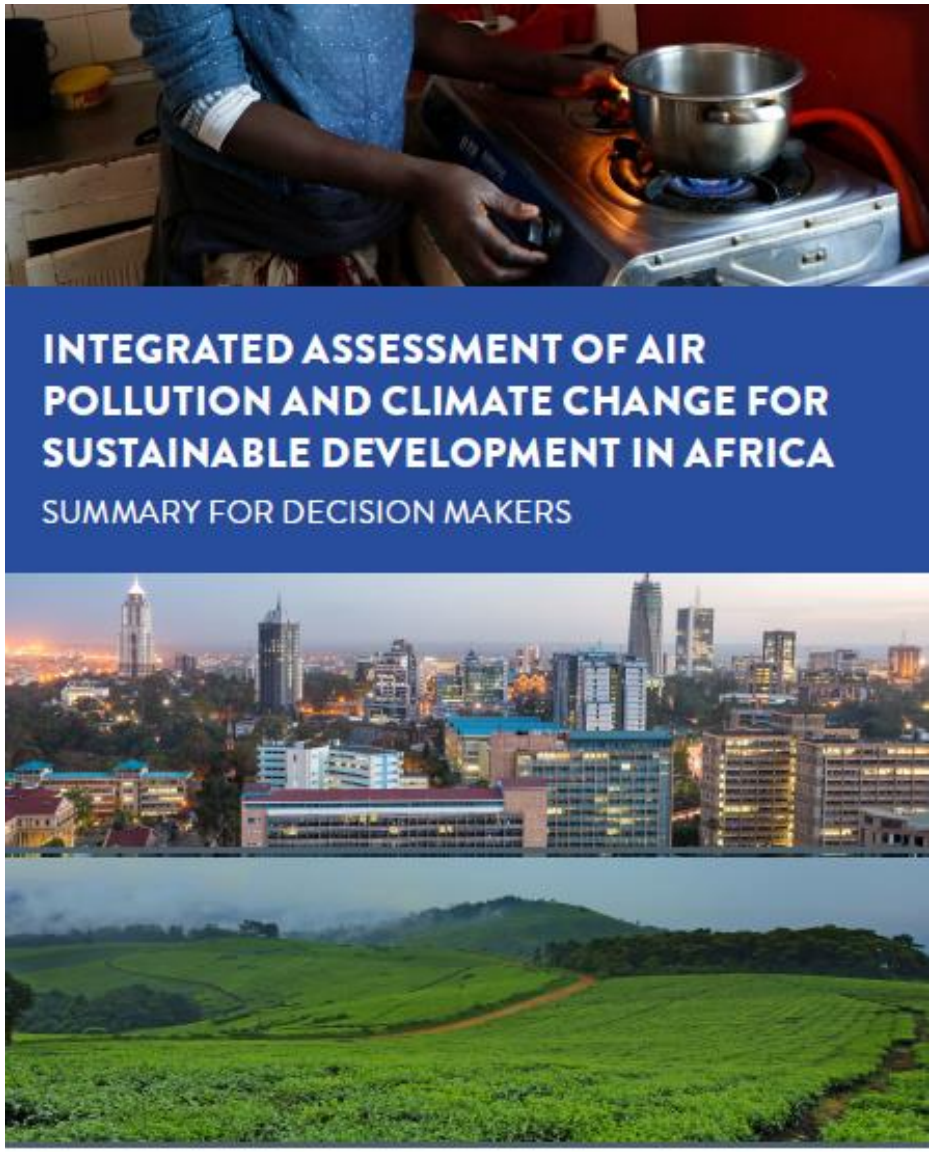
- **Agenda 2063**: In addition, a further **20,000 premature deaths could be avoided from indoor air pollution through these same measures, rising to 80,000 avoided premature deaths by 2063.**



Clean Air Program for Africa

- ✓ The main purpose of a Clean Air Program is to have better air quality at continental level, and healthier and more livable cities, (contained in FTYIP of Agenda 2063)

- ✓ Meets the objectives of SDG 3, 7, 11, 13 and objectives of the AU Climate Change and Resilient Development Strategy and Action Plan (2022-2032)



Full Technical Report and Summary for Decision Makers available for download at:

https://www.ccacoalition.org/resources/full-report-integrated-assessment-air-pollution-and-climate-change-sustainable-development-africa