



Federal Ministry of Environment

Highlights of the National Action Plan To Reduce Short-lived Climate Pollutants In Nigeria

Delivering Multiple Benefits for Clean Air and Climate

Context and Background

Nigeria is a country in West Africa with a population of about 190 million people. Nigeria is vulnerable to the impacts of climate change, many cities in Nigeria substantially exceed the World Health Organisation outdoor air quality guidelines, and 75% of the population use solid fuels for cooking, resulting in substantial exposure to air pollution indoors. It was estimated that in 2017 there were 114,000 premature deaths in Nigeria attributable to air pollution (indoor and outdoor). Projected population and economic growth indicates that without the development of policies to reduce emissions, these impacts are likely to substantially increase.

Nigeria became a member of Climate and Clean Air Coalition (CCAC) in 2012. The CCAC aims to scale up and accelerate action to reduce emissions of short-lived climate pollutants (SLCPs). These pollutants, which include black carbon, methane, tropospheric ozone and hydrofluorocarbons, contribute to both climate change and air pollution, and share many of the same emission sources as greenhouse gases and other air pollutants (e.g. residential cooking, transport, power generation, industry, agriculture, waste). Designing strategies to reduce SLCPs can therefore promote simultaneous improvement in air quality while reducing a country's contribution to climate change.

As part of the CCAC's National SLCP Planning Initiative (SNAP), Nigeria is prepared a National Action Plan to reduce SLCPs. The country is motivated to undertake the development of this National SLCP Plan in view of their development imperatives. SLCP emission abatements have relevance to Goals 2, 3, 6, 7, 9, and 11 of the Sustainable Development Goals, in addition to the direct link with the "Climate Action Goal".

The country recognizes the fact that reducing SLCP emissions could contribute to meeting Nigeria's emission reduction obligation under the Paris Agreement. In addition to this, reducing SLCPs emissions also have direct in-country agricultural and health benefits through improved air quality. The development of this plan involved assessing the current state of emissions in Nigeria, evaluating the benefits from different SLCP-relevant mitigation measures, and identifying specific actions to implement these measures through engagement with key stakeholders.

Current State of emissions and likely progression

In 2010, the base year for the analysis, the major sources of short-lived climate pollutants included residential cooking, biomass burning, waste and transport for black carbon, and agriculture and the residential sector for methane. It is important to note that the source sectors are also the major sources of many other air pollutants (e.g. organic carbon, nitrogen oxides, volatile organic compound) emissions, as well as being major sources of greenhouse gases like carbon dioxide. Projected population and economic growth means that estimated emissions of all pollutants were estimated to increase substantial over the next decades. For example, from 2010 levels, black carbon emissions were expected to grow 54% by 2030, and methane emissions by 34%.

Table 1: Emissions of greenhouse gases, air pollutants and short-lived climate pollutants in Nigeria in 2010 (units: kilotonnes)

Sector	Organic Carbon	Black Carbon	PM _{2.5}	Sulfur Dioxide	Nitrogen Oxides	Volatile Organic Compound	Methane	Carbon Monoxide	Carbon Dioxide
Agriculture	12.0	1.9	26.3	1.4	242.7	10.2	1,227.5	223.4	-
Biomass Burning	306.8	40.7	555.9	36.3	226.7	466.6	371.3	6,465.7	-
Charcoal IMaking	16.3	2.4	32.8	7.3	2.3	414.1	169.2	1,222.1	-
Commercial and Public Services	0.9	2.3	4.5	14.1	67.3	4.2	1.9	18.4	13,383.1
Electricity Generation	0.1	0.0	0.9	67.6	28.2	0.7	0.5	10.3	18,646.6
Energy Industry Own Use	0.1	0.1	0.3	18.7	10.3	0.3	0.1	3.5	5,926.0
Oil and Gas	-	-	-	67.6	4.4	234.9	166.0	6.6	7,154.8
Industrial Process Emissions	-	0.0	1.4	-	-	0.9	-	-	5,434.0
Industry	28.1	15.7	55.3	42.5	57.8	117.1	11.7	222.9	4,773.7
Non Specified Other	0.2	0.7	1.2	1.5	21.0	1.4	0.2	6.4	5,065.8
Residential	643.9	196.1	1,490.4	181.7	500.1	5,971.7	1,091.6	17,361.3	4,174.4
Telecommunications	0.5	0.7	1.6	7.8	15.9	0.8	0.2	2.2	1,254.2
Transport	12.2	28.6	65.7	2.5	1,194.4	340.5	17.2	1,680.5	101,596.0
Waste	235.5	29.0	437.9	22.3	218.9	1,009.8	394.3	1,698.0	-
Total	1,256.4	318.2	2,674.3	471.4	2,590.1	8,573.5	3,451.8	28,921.2	167,408.8

Emission reduction potential from implementation of SLCP mitigation measures

Priority mitigation measures were identified based on their emission reduction potential, alignment with national, regional and SDG priorities, and feasibility of implementation. In total 22 SLCP-relevant mitigation measures were identified (Table 2).

The implementation of these 22 mitigation measures could result in substantial reductions in the emissions of SLCPs, with an 83% reduction in black carbon emissions in 2030 compared to the baseline scenario and a 62% reduction in methane emissions. Crucially, the implementation of these measures could also reduce carbon dioxide emissions by 13% (excluding the LUCF sector), and therefore contribute to Nigeria meeting its target GHG emission reductions outlined in its Nationally Determined Contribution. These measures could also substantially improve air quality, reducing the contribution of Nigerian emissions to average outdoor fine particulate matter exposure in Nigeria by 64%, which could avoid approximately 4000 premature deaths in 2030 associated with outdoor fine particulate matter exposure. Additional benefits that could result are additional health benefits from reduction in indoor air pollution, and improved agricultural crop yields due to improved air quality and less damage due to ozone air pollution.

Table 2: Priority SLCP mitigation measures included in National SLCP Plan

Source Sector	SLCP Abatement Measures
<i>Transport</i>	<ol style="list-style-type: none"> 1. Renewal of urban bus fleet in Lagos 2. Adoption of CNG Buses in Nigeria 3. Introduction of low sulphur Diesel and Petrol 4. Elimination of high emitting vehicles that do not meet vehicle emission standards 5. Reduction of vehicle journeys by car through transport modal shifts
<i>Residential</i>	<ol style="list-style-type: none"> 6. Increase in population using modern fuels for cooking (LPG, electricity, kerosene, biogas, solar cookers) 7. Replacement of traditional biomass cookstoves with more efficient improved biomass stoves 8. Elimination of kerosene lamps
<i>Oil & Gas</i>	<ol style="list-style-type: none"> 9. Elimination of gas flaring 10. Fugitive emissions/leakages Control 11. Methane Leakage Reduction
<i>Industry</i>	<ol style="list-style-type: none"> 12. Improved Energy Efficiency in industrial Sector
<i>Waste Management</i>	<ol style="list-style-type: none"> 13. Reduction of methane emissions and open burning of waste at open dumpsites through adoption of digesters at dump sites 14. Septic sludge collection 15. Sewerage Systems and Municipal wastewater treatment plants
<i>Agriculture</i>	<ol style="list-style-type: none"> 16. Increased adoption of intermittent aeration of rice paddy fields (AWD) 17. Reduce open-field burning of crop residues. 18. Anaerobic Digestion (AD) 19. Reduce methane emissions from enteric fermentation
<i>Power[Energy]</i>	<ol style="list-style-type: none"> 20. Expansion of National Electricity Coverage 21. Increase share of electricity generated in Nigeria from renewables
<i>HFCs</i>	<ol style="list-style-type: none"> 22. Elimination of HFC Consumption.

Table 3: Key reductions in emissions and impacts estimated from the implementation of the 22 mitigation measures included in Nigeria's National SLCP Plan

	2030 baseline	2030 SLCP Plan
Black Carbon emissions	614 kt	-83%
Methane emissions	4614 kt	-62%
Carbon dioxide emissions	251 Mt	-13%
Population-weighted PM _{2.5} concentration	49 µg m ⁻³	-22%
Pop-weighted PM _{2.5} from national emissions	17 µg m ⁻³	-64%
PM _{2.5} attributable premature deaths	48,000 people	-14%
Global average temperature change due to Nigeria emissions	0.01879 °C (in 2050)	-80% (in 2050)

Implementation of Nigeria's National SLCP Plan

In order to realise the benefits that could result from these mitigation measures in Nigeria, concrete actions will be taken so that the 22 mitigation measures are implemented. As part of the National SLCP Planning, engagement with sectoral Ministries, Departments and Agencies (MDAs) have identified key barriers and actions for implementation of these measures. Following the endorsement and publication of the National SLCP Plan, for the successful implementation of the plan the SLCP mitigation actions will be mainstreamed within the plans and strategies of the sectoral MDAs responsible for a particular source sector, so that budget can be assigned to these activities by the Ministry of Budget and National Planning. Given the substantial synergies between the National SLCP Plan and other ongoing planning activities, such as the Sustainable Development Goals and climate change planning (e.g. Nationally Determined Contribution, National Communications etc.), it is also necessary that the National SLCP Plan links to these other activities to maximise the impact of these planning processes.