

## Kenya Air Quality Catalogue

This document is based on research that UNEP conducted in 2015, in response to Resolution 7 of the UNEA 1. It describes country-level policies that impact air quality. Triple question marks (???) indicate that information for the section couldn't be found.

Please review the information, and provide feedback. A Word version of the template can be provided upon request. Corrections and comments can be emailed to [air.quality@unep.org](mailto:air.quality@unep.org)

Kenya Air Quality Catalogue		
Goals	Status	Current Policies & Programmes
GENERAL OVERVIEW	<p><b>Overall situation with respect to air quality in the country, including key air quality challenges:</b></p> <ul style="list-style-type: none"> <li>•Traffic emissions have been identified as the leading cause of air pollution in major cities in Kenya</li> <li>•Traffic related emissions are exacerbated by the importation of second-hand vehicles</li> <li>•Poor solid waste management is also an important source of air pollution</li> <li>•Majority of the households use kerosene and biomass based fuel (charcoal) for domestic cooking leading to substantial indoor exposure to air pollution</li> </ul> <p><b>Air quality monitoring system:</b> Currently air quality monitoring is limited</p> <ul style="list-style-type: none"> <li>•Ambient Air Quality levels exceed the limits stipulated under the WHO guidelines for some parameters.</li> <li>•Major causes of air pollution are activities in the industrial sector, transport sector, energy sector, waste disposal operations and domestic cooking activities.</li> </ul> <p><b>Air Quality monitoring</b> Air Quality monitoring is limited,</p> <ul style="list-style-type: none"> <li>•Adhoc monitoring as response to air pollution complaints</li> <li>•Short-time research for academic requirements</li> <li>•No National Air Quality Monitoring Program</li> </ul>	<p><b>National Ambient air quality standards:</b> AAQS exist although they are not enforced</p> <p><b>National Air Quality Policy:</b> ???</p> <p><b>Air Quality legislation / programmes:</b> The Environmental Management and coordination Acts (EMCA) is the main law guiding pollution prevention including atmospheric pollution</p> <p><b>Other laws linked to air quality include;</b></p> <ul style="list-style-type: none"> <li>• Environmental Policy , 2013</li> <li>• Air Quality Regulations, 2014</li> <li>• Kenya Standards Act, Cap 496</li> <li>• Kenya Standard(KS 1515): Code of Practice on Inspection of</li> <li>• Occupational Health and Safety Act, 2007</li> <li>• Public Health Act, cap 242</li> <li>• National Transport and Safety Act, 2012</li> <li>• Energy Act, 2006</li> </ul>

<p>REDUCE EMISSIONS FROM INDUSTRIES</p>	<p><b>Industries that have the potential to impact air quality:</b></p> <ul style="list-style-type: none"> <li>● Cement manufacturing, cigarette production, incinerators, ferrous and non-ferrous metal recycling facilities; thermal power plants, sugar Factories, galvanized steel production and agricultural products processing e.g. flour are some of the major emission sources</li> </ul> <p><b>GDP of country:</b> USD 45.31B in 2013</p> <p><b>Industries' share of GDP:</b> 17.4%</p> <p><b>● Electricity sources:</b></p> <ul style="list-style-type: none"> <li>● 41.9% of the installed electricity generating capacity (1.698 million KW in 2010) is generated from fossil fuel; and 44.8% is generated from hydropower and the rest 13.3% is generated from various renewable sources.</li> </ul> <p><b>Others</b></p> <ul style="list-style-type: none"> <li>● Most emissions are associated with combustion facilities within the industries, e.g. boilers and standby power generators.</li> <li>● Industrial emissions contributes less than 7% of PM concentration<sup>1</sup></li> <li>● Particulate matter is considered the most important air pollutant in the country, ozone is also becoming a pollutant of concern in the country</li> <li>● Growth in industrial emissions is projected to increase in the coming years</li> </ul>	<p><b>Emission regulations for industries:</b></p> <ul style="list-style-type: none"> <li>● EMCA air quality regulations classifies some industrial sources as controlled facilities, however, this regulations are not yet operationalized.</li> </ul> <p><b>Small installation's emissions regulated:</b> <i>(Yes/No)</i></p> <p><b>Renewable energy investment promoted:</b></p> <ul style="list-style-type: none"> <li>● The Energy Policy and Act: Kenya's energy policy of 2004 encourages implementation of indigenous renewable energy sources to enhance the country's electricity supply capacity. The policy is implemented through the Energy Act of 2006, which provides for mitigation of climate change, through energy efficiency and promotion of renewable energy.</li> <li>● In addition, the Feed in Tariffs (FITs) energy policy of 2008 (revised 2012) promotes generation of electricity from renewable sources. It applies to geothermal, wind, small hydro, solar and biomass.</li> </ul> <p><b>Energy efficiency incentives:</b> <i>(ex: Subsidies, labelling, rebates etc)</i></p> <p><b>Incentives for clean production and installation of pollution prevention technologies:</b> Section 57; EMCA, 2015 provides for incentives and tax waivers</p> <p><b>Actions to ensure compliance with regulations:</b> <i>(monitoring, enforcement, fines etc)</i></p> <ul style="list-style-type: none"> <li>● Enforcement of the Environmental Audit regulations' 2003</li> <li>● Enforcement of the Air Quality Regulations, 2014</li> <li>● Surveillance of suspect emitters,</li> <li>● Promote adoption of self regulation principle</li> <li>● Adoption of ISO 14000 Series</li> <li>● EMCA, 2015 has reviewed the minimum penalty for environmental crime to 2 million KES</li> </ul> <p><b>Other actions at national, sub-national and / or local level to reduce industry:</b></p>
---	---	--

<sup>1</sup> S. M. Gaita and others, 'Source Apportionment and Seasonal Variation of PM2.5 in a Sub-Saharan African City: Nairobi, Kenya', *Atmos. Chem. Phys.*, 14 (2014), 9977–91 <<http://dx.doi.org/10.5194/acp-14-9977-2014>>.

		<p><i>(can include incentives to move industries to less populated areas here)</i></p> <ul style="list-style-type: none"> <li>• Harmonisation of the air Quality standards at the regional level</li> <li>• Identification of air Pollutant sources</li> <li>• Promotion of waste reduction activities</li> </ul>
REDUCE EMISSIONS FROM TRANSPORT	<p><b>Key transport-related air quality challenges:</b> <i>(ex: vehicle growth, old fleet, dirty fuel, poor public transport etc)</i></p> <ul style="list-style-type: none"> <li>• One of the fastest growing sector in Kenya with an average growth rate of 12% per year for light duty vehicles</li> <li>• The sector is estimated to emit up to 40% of all PM in urban areas</li> <li>• The sector is also an important indirect source of O<sub>3</sub></li> <li>• Frequent traffic jams/congestions in urban areas and poor vehicle maintenance exacerbates the air pollution problem</li> <li>• No vehicular exhaust emission measurements</li> <li>• Vandalism of non-functional air pollution control systems</li> <li>• Adulteration of fuels</li> <li>• Driving styles</li> </ul>	<p><b>Vehicle emission limit:</b> <i>(Euro rating)</i></p> <ul style="list-style-type: none"> <li>• Tail pipe emissions regulation as stipulated in EMCA fossil fuel emission control regulation of 2006 (degazetted under Reg 78 of the Air Quality Regulations, 2014)</li> </ul> <p><b>Fuel Sulphur content:</b> <i>(in ppm)</i> Fuel sulphur content capped at 50ppm</p> <p><b>Fuel Lead content:</b> Phasing out of leaded fuel (Phase out with effect from January, 2006)</p> <p><b>Restriction on used car importation:</b></p> <ul style="list-style-type: none"> <li>• Restriction on used car importation which is capped at 8 years</li> <li>• Additional excise duty: Kshs. 150, 000 for less than 3 years and KShs. 200,000 for vehicles between 3 and 8 years old</li> <li>• Duty variations based on engine size</li> </ul> <p><b>Actions to expand, improve and promote public transport and mass transit:</b></p> <ul style="list-style-type: none"> <li>• 5 No. BRT corridors have been identified</li> <li>• Passenger number restrictions for new public transport vans/minibuses</li> </ul> <p><b>Actions to promote non-motorized transport:</b> <i>(ex: include sidewalks and bike lanes in new road projects, car-free areas etc)</i></p> <p><b>Other transport-related actions:</b></p> <ul style="list-style-type: none"> <li>• NAMA established to manage implementation of the BRTs initiatives</li> <li>• Modification of transport modes to include railway transport</li> <li>• Blending of E10 in western Kenya</li> </ul>
REDUCE EMISSIONS FROM OPEN	<p><b>Outdoor, open burning:</b> <i>(ex: is it commonly done? burning what kinds of wastes? etc)</i></p> <ul style="list-style-type: none"> <li>• Uncontrolled waste burning is one of the practices that</li> </ul>	<p><b>Legal framework:</b> <i>(ex: is burning banned?)</i></p> <ul style="list-style-type: none"> <li>• EMCA waste management regulations of 2006</li> <li>• Air Quality Regulations, 2014 outlaws open-burning of waste</li> </ul>

<p>BURNING OF WASTE (OUTDOOR)</p>	<p>contributes to deteriorating air quality in urban centres</p> <ul style="list-style-type: none"> <li>• Agricultural waste burning can also impact air quality in the rural areas.</li> <li>• Due to the waste composition (plastics, waste tires, and other organic/inorganic materials) unregulated waste burning can be a source of health impairing emissions such as dioxins and furans<sup>2</sup></li> </ul>	<p><b>Actions to prevent open burning of municipal waste and / or agricultural waste:</b></p> <ul style="list-style-type: none"> <li>• Provision of transport services to the CBOs collecting waste in low and middle income residential areas</li> <li>• Initiate activities to promote composting activities</li> <li>• Promote segregation at source</li> <li>• Sensitise the local authorities on the health impacts of open-burning</li> </ul>
<p>REDUCE EMISSIONS FROM BIOMASS BURNING (INDOORS)</p>	<p><b>Dominant fuels used for cooking and space heating:</b></p> <ul style="list-style-type: none"> <li>• As of 2007, biomass energy, i.e. firewood, charcoal and agricultural wastes contributes approx. up to 70% of Kenya's final energy demand and provides for almost 90% of rural household energy needs, about one third in the form of charcoal and the rest from firewood.</li> <li>• Wood and kerosene is the dominant fuels used by the poor for cooking and lighting</li> </ul> <p><b>Impact:</b></p> <ul style="list-style-type: none"> <li>• Air pollution from indoor sources is the single largest contributor to the negative health effects of air pollution</li> <li>• Indoor air pollution causes an estimated 14,300 premature deaths every year<sup>3</sup></li> <li>• It is estimated that 80% of urban households' wood-fuel demand is met by charcoal.</li> </ul>	<p><b>Indoor air pollution regulated: (Yes / No)</b></p> <p><b>Promotion of non-grid / grid electrification:</b></p> <ul style="list-style-type: none"> <li>• The Kenyan Government is working to rapidly increase electrification rates in both urban and rural areas. As part of its national Vision 2030 Kenya aims to grow rural electricity access to 20% by 2012 and 40% by 2024<sup>4</sup>.</li> </ul> <p><b>Promotion of cleaner cooking fuels and clean cook stoves:</b></p> <ul style="list-style-type: none"> <li>• The cost of LPG is subsidized</li> </ul> <p><b>Other actions to reduce indoor biomass burning, or to reduce its emissions:</b></p> <ul style="list-style-type: none"> <li>• Promotion of adoption of clean cooking stoves</li> <li>• Promotion of adoption of clean and efficient cooking stoves</li> <li>• Minimum packaging of LPG containers reduced to 1Kg</li> <li>• Cost of miniature burners and lighting systems subsidised</li> <li>• Solar home heating and lighting systems uptake</li> </ul>

<sup>2</sup> IPEP, *A Study on Waste Burning Activities That Release Dioxins and Furans in Nairobi Kenya* (The International POPs Elimination Project, 2010) <<http://www.gaialibrary.org/content/study-waste-burning-activities-release-dioxins-and-furans-nairobi-kenya>> [accessed 14 July 2015].

<sup>3</sup> WHO, 'WHO | Country Profiles of Environmental Burden of Disease', WHO, 2008 <[http://www.who.int/quantifying\\_ehimpacts/national/countryprofile/en/#T](http://www.who.int/quantifying_ehimpacts/national/countryprofile/en/#T)>.

<sup>4</sup> 'Reegle - Clean Energy Information Gateway', *Reegle - Clean Energy Information Gateway* <<http://www.reegle.info>> [accessed 22 September 2015].