

## Air Quality Policies

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.

<b>Singapore</b>		
<b>GOALS</b>	<b>CURRENT STATUS</b>	<b>CURRENT/ PLANNED POLICIES AND PROGRAMMES</b>
GENERAL OVERVIEW	<ul style="list-style-type: none"> <li>● <b>Overall situation with respect to air quality in the country, including key air quality challenges:</b> Air quality compares well with major cities, and is in the “good &amp; moderate” range for 97% of the days in year 2014, and meets the WHO Air Quality Guidelines (AQG) for NO<sub>2</sub> and CO while PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and ozone are within the WHO Interim Targets ; Seasonal haze pollution emanating from forest fires in neighbouring countries is a problem</li> <li>● Ranked as Asia’s greenest city on the Economist Intelligence Unit’s Asian Green City Index</li> <li>● The country is ranked as one of the least corrupt in the world, which assists with enforcement of regulations</li> <li>● <b>Air quality monitoring system:</b> Advanced telemetric air quality monitoring network with 22 air monitoring stations to continuously monitor the 6 key air pollutants (i.e. ozone, NO<sub>x</sub>, CO, PM<sub>10</sub>, PM<sub>2.5</sub> and SO<sub>x</sub>).</li> </ul>	<ul style="list-style-type: none"> <li>● <b>National Ambient air quality standards:</b> Singapore has adopted the World Health Organisation Air Quality Guidelines (WHO AQG) for PM<sub>10</sub>, NO<sub>2</sub>, CO and ozone, and the WHO AQG’s Interim Targets for PM<sub>2.5</sub> and SO<sub>2</sub> as Singapore’s air quality targets for 2020. To work towards the air quality targets by 2020, the National Environment Agency (NEA) has put together a roadmap with a set of abatement measures to achieve sustainable growth and development while maintaining public health and economic competitiveness.</li> <li>● <b>National Air Quality Policy:</b> Singapore Sustainable Blueprint 2015 (<a href="#">Link</a>)</li> <li>● <b>Air Quality legislation / programmes:</b> Environmental Protection and Management Act Environmental Protection and Management (Air Impurities) Regulations Environmental Protection and Management (Vehicular Emissions) Regulations Environmental Protection and Management (Prohibition on the use of Open Fires) Order Environmental Protection and Management (Off-Road Diesel Engine Emissions) Regulations Transboundary Haze Pollution Act</li> <li>● <b>Other:</b> Besides regulatory controls, NEA also works with international organisations, relevant government agencies and industry groups to organise seminars and briefings to help the public and industry implement air pollution management policies.</li> </ul>
REDUCE EMISSIONS FROM INDUSTRIES	<ul style="list-style-type: none"> <li>● <b>Industries that have the potential to impact air quality:</b> In 2013, refineries &amp; power stations produce 97% local SO<sub>2</sub> and 36% local PM<sub>2.5</sub> (excluding transboundary haze events); Singapore motor vehicles contribute to 54% local PM<sub>2.5</sub>. Source: NEA Environmental Protection Division Report 2013</li> </ul>	<ul style="list-style-type: none"> <li>● <b>Emission regulations for industries:</b> Yes</li> <li>● <b>Small installation’s emissions regulated:</b> Yes</li> <li>● <b>Renewable energy investment promoted:</b> Singapore’s focus is on the research and test-bedding of clean energy solutions. The Energy Innovation Research Programme, jointly led by the Economic Development Board and Energy Market Authority, supports commercially relevant research and development through a project</li> </ul>

	<ul style="list-style-type: none"> <li>● <b>GDP of country:</b> \$298 billion</li> <li>● <b>Industries' share of GDP:</b> 28% (services' share is 72%)</li> <li>● <b>Electricity Sources:</b> oil, gas and waste incineration</li> </ul>	<p>funding mechanism.</p> <ul style="list-style-type: none"> <li>● <b>Energy efficiency incentives:</b> There are incentive schemes to encourage companies to incorporate energy efficient designs in new facilities, conduct energy audits, adopt energy efficient technologies and train their staff in energy management.</li> <li>● <b>Incentives for clean production and installation of pollution prevention technologies:</b> Tax incentives to encourage switch to cleaner, energy efficient / pollution control equipment</li> <li>● <b>Actions to ensure compliance with regulations:</b> NEA requires the industries to install air pollution control equipment to comply with emission standards. NEA carries out regular inspections on industrial and non-industrial premises to ensure compliance with pollution control requirements. Under NEA's source emission testing scheme, industries are required to conduct source emission tests to monitor their emissions regularly, and take remedial measures to comply with the prescribed air emission standards. Major emitters such as the oil refineries, power stations and refuse incineration plants have been required to install in-stack continuous emission monitors which are linked to NEA by telemetry. This is to enable NEA to monitor their emissions continuously on a real-time basis and to be alerted to emissions exceeding the allowable limits.</li> <li>● <b>Other actions at national, sub-national and/ or local level to reduce industry emissions:</b> Education and engagement strategy that includes training courses for our officers and industry dialogue sessions.</li> </ul>
<p>REDUCE EMISSIONS FROM TRANSPORT</p>	<ul style="list-style-type: none"> <li>● <b>Key transport-related air quality challenges:</b> contributes 57% of local PM2.5 emissions</li> <li>● There is an efficient public transport network serving the entire island at reasonable fares, including a Mass Rapid Transit system, Light Rapid Transit system, buses</li> </ul>	<ul style="list-style-type: none"> <li>● <b>Vehicle emission limit:</b> Euro 4 for new petrol vehicles, Euro 5 for new diesel vehicles, Euro 3 for new motorcycles (Euro 6 for new petrol vehicles by 1 September 2017 and by 1 January 2018 for new diesel vehicles)</li> <li>● <b>Fuel Sulphur content:</b> 50 ppm for petrol vehicles, 10 ppm for diesel vehicles. Fuel quality will be further tightened from 1 July 2017 onwards for petrol and 1 January 2017 onwards for diesel.</li> <li>● <b>Restriction on used car importation:</b> The vehicular emissions requirements for new car importation applies equally to used car importation</li> <li>● <b>Actions to expand, improve and promote public transport and mass transit:</b> Transport master plan aims to increase public transport mode share to 75% by 2030; double rail network by 2030 to 360km, and increase number of trains; add new bus routes and buses; and give buses priority on the road</li> </ul>

		<ul style="list-style-type: none"> <li>● <b>Actions to promote non-motorized transport:</b> Transport master plan will expand network of sheltered walkways four-fold to 200km; add more integrated transport hubs so that commuters can easily switch between non-motorized transport and public transport; expand island-wide cycling path network to over 700km in length.</li> <li>● <b>Other transport-related actions:</b> The Carbon Emissions-Based Vehicle Scheme administered in 2013 provides rebates for vehicles with low carbon emissions and subjects vehicles with high carbon emissions to surcharges. The rebates and surcharges, ranging from \$0-\$30,000, serve to incentivise the uptake of vehicles with low carbon emissions.  The Early Turnover Scheme was implemented in 2013 to promote the early replacement of older and more pollutive Pre-Euro/Euro I/Euro II/ Euro III diesel commercial vehicles with newer and less pollutive Euro V and VI diesel commercial vehicles, or its equivalent.</li> </ul>
<p>REDUCE EMISSIONS FROM OPEN BURNING OF AGRICULTURAL/ MUNICIPAL WASTE (OUTDOOR)</p>	<ul style="list-style-type: none"> <li>● <b>Outdoor, open burning:</b> Transboundary haze pollution from land and forest burning in the region is a serious issue in the dry season</li> </ul>	<ul style="list-style-type: none"> <li>● <b>Legal framework:</b> Open burning of refuse or waste in or at any place without a permit is prohibited under the Environmental Public Health (Public Cleansing) Regulations.  The use of open fires in any industrial or trade premises is prohibited under the Environmental Protection and Management (Prohibition on the use of Open Fires) Order  The Transboundary Haze Pollution Act provides for criminal and civil liability for any entity that engages in conduct, authorise or condone any conduct regardless of whether the entity is in or outside Singapore, that results in transboundary haze pollution in Singapore.</li> <li>● <b>Actions to prevent open burning of municipal waste and / or agricultural waste:</b> All combustible waste are disposed of at waste-to-energy incineration plants, while non-combustible wastes and incineration ash residues are disposed of at an offshore sanitary landfill; there is an integrated solid waste management system that includes collection, recycling and disposal of all municipal waste generated.</li> </ul>
<p>REDUCE EMISSIONS FROM OPEN BURNING OF BIOMASS (INDOOR)</p> <p>(Note: This goal is</p>	<ul style="list-style-type: none"> <li>● <b>Dominant fuels used for cooking and space heating:</b> natural gas, electricity</li> <li>● <b>Impact:</b> No deaths from indoor air pollution (1,100 deaths/year for outdoor air pollution)</li> </ul>	<ul style="list-style-type: none"> <li>● <b>Indoor air pollution regulated:</b> Yes. The Singapore Standard (SS554:2009) governs the quality of indoor air quality and provides best practices for air-conditioned premise. It focuses on 3 key areas: (i) adequate outdoor air intake; (ii) use of low emission products indoors; and (iii) efficient air filtration. Under the Ministry of Manpower’s Workplace Safety and Health Act (WSHA), SS554:2009 serves as an Approved Code of Practice (ACOP) to provide practical guidance on safety and health for all workplaces. Indoor Environmental Quality (IEQ) is also a component of the Green Mark Scheme administered under the Building and</li> </ul>

<p>not relevant in Singapore's context due to the prevalence of the use of natural gas and electricity in households)</p>		<p>Control Authority (BCA) as a prerequisite requirement for existing buildings</p> <ul style="list-style-type: none"><li>● <b>Legislations that prohibit burning of waste and open fires</b> Open burning of refuse or waste in or at any place without a permit is prohibited under the Environmental Public Health (Public Cleansing) Regulations.<p>The use of open fires in any industrial or trade premises is prohibited under the Environmental Protection and Management (Prohibition on the use of Open Fires) Order</p><li>● <b>Promotion of non-grid / grid electrification: 100%</b></li></li></ul>
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**Secondary Sources used in the research:** <http://www.theguardian.com/world/2013/jun/21/singapore-air-pollution-record-high>, <https://www.mewr.gov.sg/docs/default-source/default-document-library/cos-2015-media-factsheet---spore-39-s-air-quality.pdf>