

**SINGAPORE’S RESPONSES TO THE QUESTIONS BY THE SPECIAL
RAPPORTEUR ON HUMAN RIGHTS OBLIGATIONS RELATING TO
THE ENJOYMENT OF SAFE, CLEAN, HEALTHY AND
SUSTAINABLE ENVIRONMENT FOR HIS REPORT ON “AIR
POLLUTION AND HUMAN RIGHTS”**

1. Please provide specific examples of constitutional provisions, legislation, regulations, standards, policies and programmes in relation to preventing, reducing, or eliminating air pollution, both outdoor and indoor. Please include, inter alia, any instruments that refer directly to the right to a healthy environment and/or the right to breathe clean air.

Domestic sources of air pollution in Singapore are primarily from the industries and motor vehicles. To help ensure air quality remains good despite Singapore’s dense urban landscape and large industrial base, the Government has introduced legislation, strict enforcement programmes and air quality monitoring to minimise air pollution.

Legislation and regulations to prevent and reduce domestic air pollution include the Environmental Protection and Management Act which includes specific regulations in the following areas:

- Vehicle Emissions;
- Air Impurities;
- Ozone Depleting Substances; and
- Off-road Diesel Engine Emissions.

Singapore constantly reviews international air quality benchmarks such as the World Health Organisation Air Quality Guidelines. In 2010, the Government reviewed the recommendations of Singapore’s Advisory Committee on Ambient Air Quality, and finalised Singapore’s 2020 and long-term air quality targets. Singapore also monitors air quality on an hourly as well as daily basis through Singapore’s Pollutant Standards Index which monitors six pollutants (particulate matter, fine particulate matter, sulphur dioxide, carbon monoxide, ozone and nitrogen dioxide). The hourly and daily readings are made available to the public on a real-time basis.

2. Please provide specific examples of good practices in preventing, reducing, or eliminating air pollution, both outdoor and indoor. These examples may occur at the international, national, sub-national, or local level. Examples may involve air quality monitoring; guaranteeing procedural rights (e. g. public access to air quality information, public participation in decision-making about air pollution, access to remedies); air quality legislation, regulations, standards, and policies; initiatives to reduce air pollution from specific sectors (e.g. electricity generation, industry, transportation, indoor cooking, heating, and lighting); laws, policies and programmes to protect vulnerable populations from air pollution; laws, policies, or programmes to concurrently address air pollution and climate change; and effective enforcement of rules governing air pollution.

Emissions from Motor Vehicles

The government has set fuel quality and exhaust emission standards for all vehicles, and regulates the type and quality of fuel used in Singapore.

Since Jul 2013 and Jul 2017, Singapore has mandated the supply of Near Sulphur-Free Diesel (NSFD) with a sulphur content of 0.001% and cleaner petrol for motor vehicles with sulphur content lower than 0.001% to pave the way for tighter emission standards. This has also reduced HC and NO which will give rise to ozone.

With regard to emissions standards, the Euro VI standard has been applicable to all new diesel and petrol vehicles since 1 Jan 2018 and 1 Sep 2017 respectively. The emissions standard for all three-wheeled and large motorcycles with an engine capacity of more than 200cc were also tightened to Euro IV standard on 1 Jan 2018, while smaller motorcycles with an engine capacity of 200cc and below would need to comply with the Euro IV emission standard on 1 Jan 2020. As of 1 Jul 2012, all off-road diesel engines imported into Singapore have been compliant with the EU Stage II, US Tier II or Japan Tier I off-road diesel engine emission standards. These include construction equipment such as cranes, excavators, forklifts, and power generators.

Singapore also replaced the Carbon Emission-Based Vehicle Scheme (CEVS) with the Vehicular Emissions Scheme (VES). Under the VES, rebates or surcharges are imposed on all new cars, taxis and newly imported used cars based on their environmental impact. Compared to the CEVS, the VES is more comprehensive as it covers four more pollutants – hydrocarbons (HC), carbon monoxide (CO), nitrogen oxides (NO) and particulate matter (PM). To incentivise owners of diesel vehicles with Euro II or Euro III emission standards to upgrade to Euro VI (or equivalent) vehicles, the Government has in place an

enhanced Early Turnover Scheme for commercial vehicles which will remain in place till 31 July 2019.

During the mandatory periodic vehicle inspections for road tax renewal, diesel vehicles are required to undergo and pass the more stringent Chassis Dynamometer Smoke Test (CDST) which measures the vehicular smoke emitted under simulated road driving conditions.

The Government takes stringent enforcement action against smoky vehicles on the roads. The smoke opacity limit was tightened from 50 Hartridge Smoke Units (HSU) to 40 HSU on 1 Jan 2014. Owners of smoky vehicles are fined up to \$2,000 for the first offence and \$5,000 for subsequent offences. Smoky vehicles are inspected at the authorised vehicle inspection centres and owners are fined if the vehicle fails the inspection. In addition, these vehicles must be rectified through a re-inspection before the vehicle is allowed on the road.

It is also an offence for motor vehicle engines to idle while stationary, for reasons other than traffic conditions. Exceptions include vehicles where the engine is needed to be running for operation of onboard equipment, moving vehicles in a queue, vehicles undergoing inspection or repair and enforcement/emergency vehicles.

Control of Industrial Emissions

The industrial emission standards for new industrial plants were tightened from 1 Jul 2015. Existing industrial plants also have to comply with the tightened standards in two phases – for some air pollutants since 1 Jul 2018, and the rest by 1 Jul 2023.

Substance ⁱ	Current Standard (mg/Nm ³)	Revised Standard (mg/Nm ³)	Compliance Timeline for New Plants	Compliance Timeline for Existing Plants
Mercury and its compounds	3 (expressed as mercury)	0.05 (expressed as mercury)		1 Jul 2018
Cadmium and its compounds	3 (expressed as cadmium)	0.05 (expressed as cadmium)		
Lead and its compounds	5 (expressed as lead)	0.5 (expressed as lead)		
Ammonia and ammonium compounds	76 (expressed as ammonia)	30 (expressed as ammonia)		
Fluorine, hydrofluoric acid or inorganic fluorine compounds	50 (expressed as hydrofluoric acid)	10 (expressed as hydrofluoric acid)		
Particulate substances including smoke, soot, dust, ash, fly-ash, cinders, cement, lime, alumina, grit and other solid particles of any kind	(i) 100 ; or	(i) 50 ; or	1 Jul 2015	
	(ii) where there is more than one flue, duct or chimney in any scheduled premises, the total mass of the particulate emissions from all of such flue, duct or chimney divided by the total volume of such emissions shall not exceed 100 mg/Nm ³ and the particulate emissions from each of such flue, duct or chimney shall not exceed 200 mg/Nm ³ at any point in time.	(ii) where there is more than one flue, duct or chimney in any scheduled premises, the total mass of the particulate emissions from all of such flue, duct or chimney divided by the total volume of such emissions shall not exceed 50 mg/Nm ³ and the particulate emissions from each of such flue, duct or chimney shall not exceed 100 mg/Nm ³ at any point in time.		
Carbon monoxide	625	250		
Oxides of nitrogen	700 (expressed as nitrogen dioxide)	400 (expressed as nitrogen dioxide)		
Sulphur dioxide (combustion sources)	-	(i) 1,700; or		1 Jul 2023
		(ii) where there is more than one flue, duct or chimney in any scheduled premises, the total mass of the sulphur dioxide emissions from all of such flue, duct or chimney divided by the total volume of such emissions shall not exceed 1,700 mg/Nm ³ on a daily basis.		

3. Please identify specific challenges that your government, has faced in attempting to address air pollution and its impacts on human rights.

In Singapore, we have pursued development on a sustainable basis since our independence. Environment protection and social inclusion have been integrated into our economic growth strategy, which meant taking a pragmatic, integrated and long-term view of economic development and sustainability. The challenge has been to find and manage the right trade-offs between economic and environment policies while ensuring that economic opportunities can be maximised to the benefit of our people. This careful balance of economic growth and sustainability has allowed us to create a cleaner, safer and more liveable Singapore which attracts talent and investment; the creation of jobs and business opportunities in the local economy; and a more sustainable, vibrant and cohesive society. As a result, Singapore was ranked as the most liveable city for Asian expatriates by ECA International in 2018.

In terms of addressing the challenge of air pollution, the government is ever mindful of additional compliance costs for businesses when emission standards are tightened and constantly seeks to maintain the delicate balance between implementing measures to achieve cleaner air and our economic competitiveness. We do so, for instance, by engaging affected stakeholders through extensive industry consultations on the policy rationale and implementation details and timeline. The Government recognises that the industry needs lead time for equipment modification and to resolve operational issues. We thus work closely with the industry players to ensure a staged approach in implementation.

From time to time, transboundary smoke haze from land and forest fires from the region also affect Singapore's air quality, particularly during the Southwest monsoon period from August to October. The primary cause of such pollution has been large-scale burning of land and forests by agroforestry companies in the region to make way for commercial plantations, though small holders and local communities have also contributed to small-scale fires for livelihood plantation. These fires have become a perennial problem in the region during the dry season which occurs annually between June and October. Smoke from these fires, is carried by the south-westerly/westerly winds to Singapore and Peninsular Malaysia.

The pollution was particularly severe in 1994, 1997, 2006, 2010, 2013 and 2015. The 2013 and 2015 episodes were the worst since 1997 with the PSI levels reaching unprecedented levels. The episode in 2015 was the longest haze event on record with a total of 46 days when air quality deteriorated into the "Unhealthy", "Very Unhealthy" and "Hazardous" ranges. This resulted in

school closures on 25 September 2015, disruption of multiple large-scale outdoor public events (such as the cancellation of charity runs and sports meets) and impact on the respiratory health of the local population.

To address this challenge, ASEAN Member States have been making concerted national efforts and regional cooperation, to fully and effectively implement the ASEAN Agreement on Transboundary Haze Pollution (AATHP), and the Roadmap on ASEAN Cooperation towards Transboundary Haze Pollution Control with Means of Implementation to achieve a Haze-Free ASEAN by 2020. To sustain momentum on the Roadmap, ASEAN Member States are also looking into conducting a mid-term review of the implementation of the Roadmap to achieve the vision of a haze-free ASEAN by 2020.

4. Please specify ways in which additional protection is provided for populations who may be particularly vulnerable to air pollution (e.g. women, children, persons living in poverty, members of Indigenous peoples and traditional communities, older persons, persons with disabilities, displaced persons, and national or ethnic, religious and linguistic minorities).

In 2013 and 2015, Singapore experienced severe episodes of transboundary haze pollution. In 2015, air quality based on Singapore's Pollution Standards Index (PSI) deteriorated into the "Unhealthy", "Very Unhealthy" and "Hazardous" for 46 days. This resulted in school closures on 25 Sep 2015, disruption of multiple large-scale outdoor public events (such as the cancellation of charity runs and sports meets) and impacted local population health.

The Government activated the Haze Subsidy Scheme in 2013 and 2015 to subsidise medical treatment for haze-related illnesses faced by children, the elderly and lower and middle-income citizens. (These illnesses included asthma, bronchitis, chronic pulmonary disease, conjunctivitis and upper respiratory tract infections.) Approximately \$3.3million and \$0.5m were disbursed in 2013 and 2015 respectively to help these vulnerable groups. In 2013, approximately 17,000 people benefited from these medical subsidies, and approximately 77,000 in 2015.

In addition, the Government publicised health advisories and worked with the community to implement several measures such as the distribution of care packs and face masks to the needy, ensuring adequate supply of protective face masks in the market, and educating the public on health effects of the haze. Plans to provide air purifiers to schools, if necessary, were also prepared.

5. Please provide specific examples related to the regulation of businesses and other non-State actors in relation to the protection of human rights from air pollution and the fulfilment of their obligations in this regard.

Various voluntary efforts have been made by NGOs and the business community to address the direct and indirect sources of air pollution. In 2015, the Association of Banks in Singapore developed guidelines comprising environmental, social and governance criteria that require banks to disclose their commitment toward responsible financing. The Singapore Stock Exchange also introduced a “comply or explain” sustainability reporting requirement that came into effect in 2018. In 2016, the Singapore Alliance on Sustainable Palm Oil was founded by World Wide Fund for Nature (WWF) Singapore, Unilever, Danone, Ayam Brand, IKEA and Wildlife Reserves Singapore to increase trade, use and production of certified sustainable palm oil. A total of 17 companies accounting for over 81 brands and 200 F&B outlets have joined the Alliance. Finally, the standards of the Singapore Green Labelling Scheme (SGLS) which encompasses peatland management and fire prevention standards were enhanced to make it one of the most stringent environmental performance standards for auditing the environmental impact of supply chains in the region.

In 2014, Singapore also enacted the Transboundary Haze Pollution Act (THPA), making it an offence for any entity to engage in or condone the conduct of causing or contributing to haze pollution in Singapore. The Act targets conduct that occurs outside Singapore and creates statutory duties and civil liabilities for the entities involved, on top of criminal liability. The Act is consistent with international law, respects the sovereignty of other countries and complements their efforts to hold accountable entities that have caused serious harm to the environment and their people.

6. How do you ensure that the rights of environmentalists working on air quality issues (environmental human rights defenders) are protected? What efforts has your Government made to create a safe and enabling environment for them to freely exercise their rights without fear of violence, intimidation, or reprisal?

Currently, there are more than 120 NGOs, non-profit organisations, social enterprises and green groups that address environment related issues operating in Singapore. These include Greenpeace Singapore, Conservation International Singapore, World Wide Fund for Nature (WWF) Singapore, the Singapore Alliance on Sustainable Palm Oil, People’s Movement to Stop Haze,

Biodiversity Roundtable, Nature Society of Singapore, Singapore Environment Council and ZeroWaste Singapore.

These organisations have regularly published their works/commentaries, served as consultative partners to the Government as well as provided their views/feedback on environmental issues, and organised events to raise awareness as well as funds for their respective causes. In this regard, these organisations are stakeholders and co-creators of Singapore's sustainability efforts, and therefore operate freely in accordance with Singapore's laws and regulations.