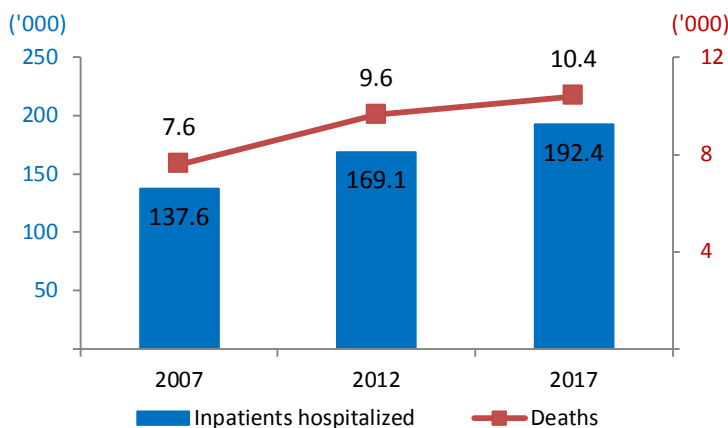




Air pollution in Hong Kong

Figure 1 – Number of inpatients hospitalized* and deaths due to respiratory diseases, 2007-2017



Note: (*) Referring to inpatient discharges and deaths.

Figure 2 – AQOs for major air pollutants in 2017

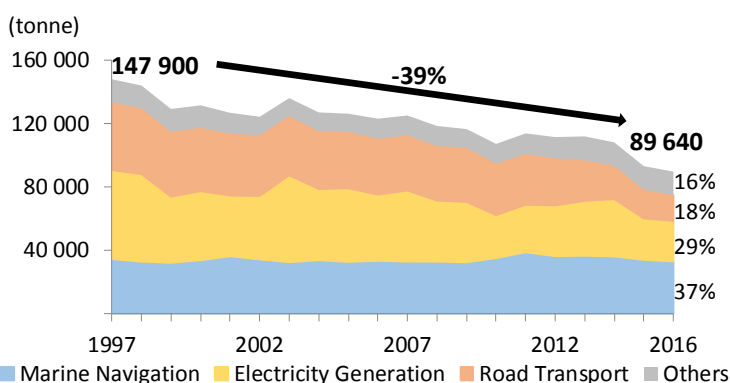
Air Pollutants	Monitoring Stations	Annual AQOs	Average concentration level [#]	Meeting AQOs
		µg/m ³	µg/m ³	
PM ₁₀	General	50	35	✓
	Roadside		39	✓
PM _{2.5}	General	35	22	✓
	Roadside		26	✓
SO ₂	General	-	8	-
	Roadside		7	-
NO _x *	General	40	43	✗
	Roadside		86	✗

Notes: (#) Average annual concentration level of the 12 general or 3 roadside air quality monitoring stations in Hong Kong, excluding Tap Mun.

(-) Not applicable.

(*) NO_x is expressed in terms of nitrogen dioxide.

Figure 3 – Total emission of NO_x by source*, 1997-2016



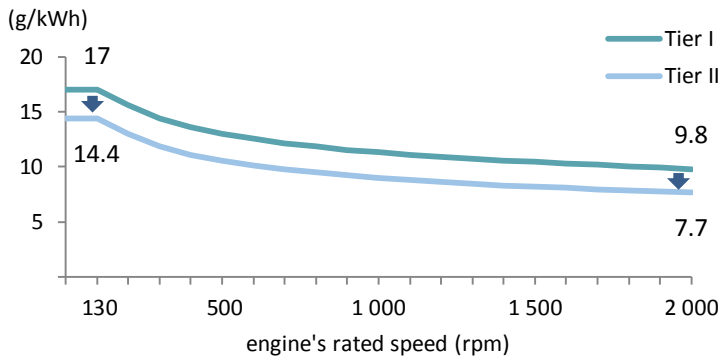
Note: (*) Excluded emission from hill fires.

Highlights

- There are growing concerns in the community over air quality in Hong Kong, as air pollution is considered as one of the key factors leading to respiratory disease (e.g. asthma and bronchitis). Over the past decade, the number of local people hospitalized due to respiratory diseases has surged by 40% to 192 400 in 2017, along with a 37% rise in the deaths caused by such diseases (**Figure 1**).
- There are four major types of air pollutants in Hong Kong, namely respirable suspended particulates ("PM₁₀"), fine suspended particulates ("PM_{2.5}"), sulphur dioxide ("SO₂") and nitrogen oxides ("NO_x"). At present, emissions of the first three types of pollutants can meet the Air Quality Objectives ("AQOs") revised in 2014. However, it is not so for NO_x which is generated mainly through combustion processes in engines. The concentration of NO_x at roadside reached 86 µg/m³ in 2017, more than twice the policy target of 40 µg/m³ (**Figure 2**).
- In spite of falling short of policy targets, actual emission of NO_x had fallen by a total of 39% during 1997-2016, along with implementation of policies targeting the three major emission sources, namely marine navigation, electricity generation and road transport (**Figure 3**). These measures included tightening emission standards for marine diesel engines and power companies, as well as phasing out highly polluting diesel vehicles. To cut such emissions further, the Government has stepped up further these measures in the more recent years, as discussed below.

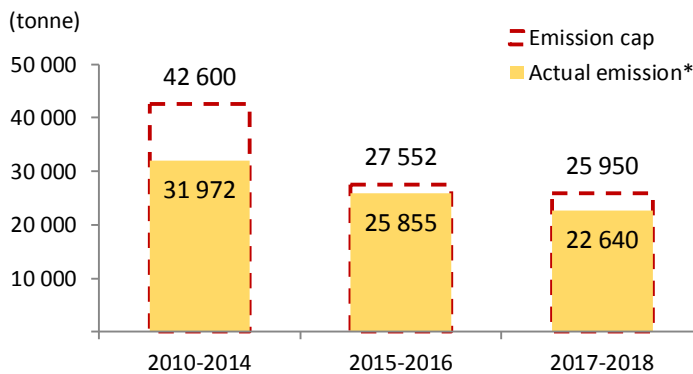
Air pollution in Hong Kong (cont'd)

Figure 4 – Regulatory limits of NO_x for marine diesel engines*



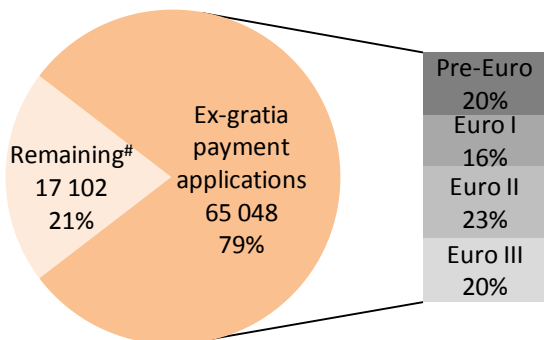
Note: (*) "Tier I" is applicable for ships constructed between June 2008 and June 2016, while "Tier II" is for ships constructed after July 2016.

Figure 5 – Regulatory limits and actual emission of NO_x in power generation



Note: (*) Figures refer to the average annual NO_x emission from public electricity generation across the period.

Figure 6 – Progress of phasing out pre-Euro IV DCVs* by September 2018



Notes: (*) DCVs refer to goods vehicles, light buses and non-franchised buses.
 (#) Figures included a total of 2 625 DCVs with expired vehicle licences as at 1 November 2018.

Highlights

- Marine navigation is now the largest generator of NO_x, producing 37% of the territory-wide emission in 2016. In line with global practice, the Government has tightened NO_x limits for marine diesel engines on ships newly built after July 2016 (**Figure 4**). This tightening for ships in tiers could reduce the permitted NO_x emission by 15%-21%.
- Electricity generation used to be the largest source of NO_x emission, but increasing usage of natural gas in fuel mix has effectively reduced such emission in the process of power generation as from 2010. While the upper limit of permitted NO_x emission has been reduced by 39% in seven years to 25 950 tonnes in 2017-2018, actual NO_x emission fell by 29% over the same period (**Figure 5**). As such, the share of power sector in overall emission NO_x has fallen from 33% in 2009 to 29% in 2016.
- While road transport contributed to just 18% of NO_x emission in 2016, pollution generated from diesel commercial vehicles ("DCVs") could have visible impacts on nearby residents. In 2013, while DCVs comprised 18% of overall vehicle fleet in Hong Kong, they accounted for 54% of NO_x emissions from road transport. The Government thus launched an incentive scheme in 2014 to phase out all 82 150 DCVs which were unable to meet the Fourth European emission standard ("Euro IV") by end-2019. As in September 2018, about 79% of the eligible owners have been granted ex-gratia payment to phase out their DCVs (**Figure 6**). It involved a total subsidy of HK\$8.8 billion dispensed over the past four years or so, or average subsidy of HK\$134,700 per DCV.

Data sources: Latest figures from Environmental Protection Department, Marine Department and Department of Health.

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