



# **How Much Has the Hong Kong Government Spent on Improving Air Quality?**

*A Government Budget Study by Clean Air Network*

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## Highlights

- Historical records show that whenever the government spends more money on improving air quality, the air quality will get better, and vice versa.
- The amount of government expenditures for environmental protection as a percentage of total government expenditures has been gradually decreasing over the last decade, from 1.3% in 2000 to 0.8% in 2011.
- For the past decade, the government's annual budget for improving air quality has ranged from HK\$243 million to HK\$609 million, accounting for 0.12% to 0.28% of total government expenditures.
- From 1999 to 2010, less than 45% of the government budget set aside for improving air quality has been put to use.
- Comparison with other government projects with similar sized budgets indicates that the government needs to re-evaluate how highly it prioritizes clean air.
- Comparison with the Beijing Government and Guangzhou Government's budgets for air quality improvement shows that they are more aggressive in tackling their air pollution problems.
- Last year, air pollution caused eight deaths per day, making it more deadly than SARS, bird flu or swine flu. The Hong Kong Government should pay more heed to this serious public health issue.

## Introduction

In Clean Air Network's (CAN) recently released 2011 Air Quality Review, CAN concluded that 2011 was a particularly bad year for Hong Kong in terms of air pollution – roadside nitrogen dioxide (NO<sub>2</sub>) levels reached record highs, fine particulate matter (PM<sub>2.5</sub>) levels were more than three times higher than the World Health Organization's (WHO) recommended air quality guidelines, and visibility was the third worst it has been in Hong Kong's history. The newly revised Hedley Environmental Index (HEI) estimated the death toll was 3,200 in 2011 due to air pollution. All of these alarming statistics remind us that air pollution has become the biggest threat to public health in Hong Kong. We can't help but ask – what has our government done to remedy this crisis?

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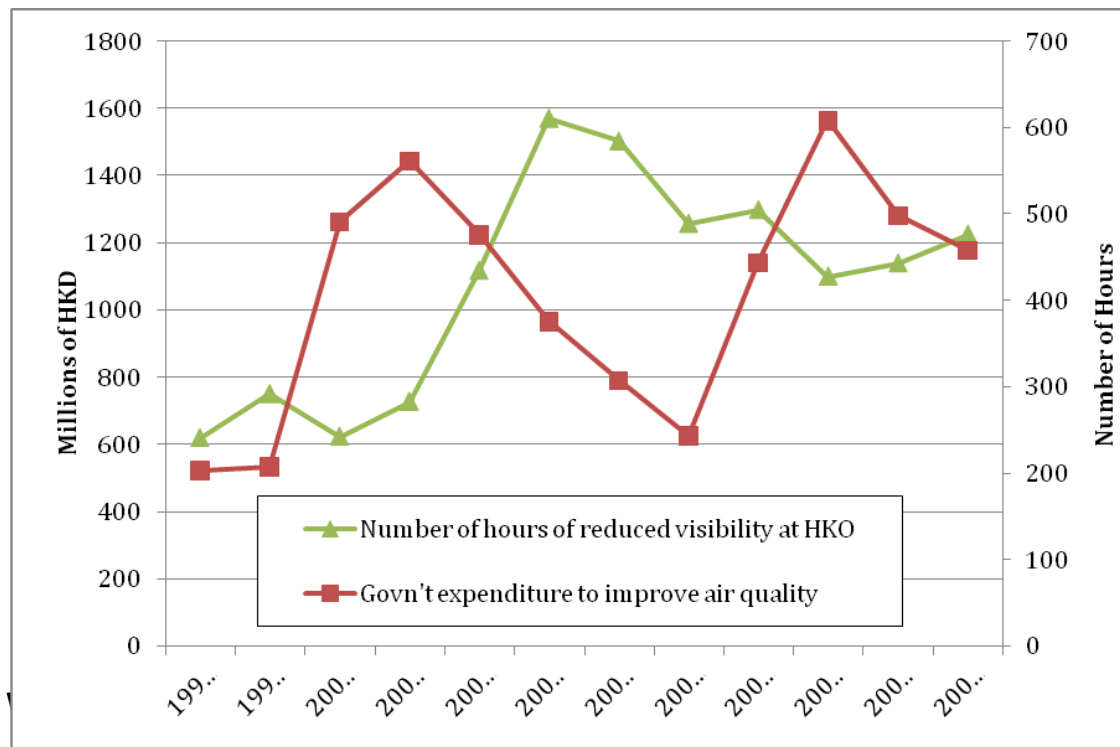
One way to understand what the government has done in this arena is to look at how much money it has invested to combat the problem. CAN has, therefore, gathered government expenditure data from 1998 to 2011 and summarized its analysis in the following report.

Coincidentally, the Environmental Protection Department (EPD) recently announced the adoption of a set of new air quality standards, called Air Quality Objectives (AQOs), together with a package of air quality improvement measures. Although the new AQOs still lag far behind the WHO's recommended air quality guidelines, CAN hopes that this long-anticipated decision will promote more much-needed financial investment from the Government to improve Hong Kong's air quality.

### Money invested versus air quality – do we see an effective outcome?

The answer is YES. The graph below shows the amount the government spent on improving air quality from 1998 to 2011 (red line) and the number of hours of reduced visibility recorded at the Hong Kong Observatory (green line). Visibility is a direct indicator of air quality – greater visibility means less air pollution. **This graph demonstrates that when the Government spent more money on improving air quality, fewer hours of reduced visibility were recorded, indicating a direct and positive effect on air quality.**

Figure 1. Government expenditures to improve air quality versus number of hours of reduced visibility recorded at the Hong Kong Observatory (1998-2011)



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The following table lists the top ten government sectors with the highest spending in 2011. Figure 3 shows the amount the Environmental Protection Department (EPD) spent as a percentage of the government's total expenditures over the last ten years. In 2011, the Government spent the majority of their budget on "Miscellaneous Services," Social Welfare Department," "Education Bureau," and the "Food and Health Bureau" (Health Branch), each using approximately twelve percent to twenty percent of the total budget. From among 82 government sectors, the budget for the EPD ranked 18<sup>th</sup>. **From 2000 to 2011, the EPD's expenditures as a percentage of total government expenditures decreased from 1.3 percent to 0.8 percent.**

**Figure 2. Top ten government sectors with the highest spending (2011-12)**

Rank	Government Sector	2011-12 Government Budget (millions of HKD)	% of Total Government Budget
1	Miscellaneous Services	61246	19.83%
2	Social Welfare Department	41266	13.36%
3	Education Bureau	41050	13.29%
4	Food and Health Bureau (Health Branch)	37323	12.08%
5	Pensions	19772	6.40%
6	Hong Kong Police Force	13158	4.26%
7	University Grants Committee	11028	3.57%
8	Inland Revenue Department	6119	1.98%
9	Leisure and Cultural Services Department	5630	1.82%
10	Department of Health	4870	1.58%
18	Environmental Protection Department	2426	0.79%

**Figure 3. Environmental Protection Department (EPD) expenditures as a percentage of total government expenditures**

Year	EPD Expenditures/ Total Government Expenditures
2000-01	1.3%
2001-02	1.2%
2002-03	1.1%
2003-04	1.1%
2004-05	1.1%
2005-06	1.1%
2006-07	1.0%
2007-08	1.1%
2008-09	1.0%
2009-10	1.0%
2010-11	0.9%
2011-12	0.8%

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## How much was the government spending on improving air quality?

Over the past decade, the Hong Kong government's spending on improvements to air quality has ranged from 243 million up to 609 million a year. Government expenditures on measures to improve air quality as a percentage of the total government expenditures went from 0.26 percent in 2000 to 0.18 percent in 2011. This means that less than a quarter of the government's total spending is being used to clean up Hong Kong's air.

**Figure 4. Hong Kong Government expenditures to improve air quality (2000-2011)**

	Government expenditures to improve air quality (millions of HKD)	% of Government expenditures to improve air quality/total government expenditures	% of government expenditures to improve air quality/total EPD expenditures
2000-01	492	0.26%	20%
2001-02	562	0.28%	23%
2002-03	343	0.17%	15%
2003-04	476	0.23%	21%
2004-05	376	0.19%	17%
2005-06	307	0.16%	15%
2006-07	243	0.12%	12%
2007-08	444	0.21%	20%
2008-09	609	0.23%	24%
2009-10	499	0.21%	22%
2010-11	458	0.23%	24%
2011-12	559	0.18%	23%

Below is a table summarizing itemized government expenditures on projects to improve air quality from 1999 to 2010, as listed in the annual government budget estimate reports. Overall, the government invested a total of HK\$5485.78 million on various air pollution control projects over the past decade.

Items with the highest amount of spending were all aimed at reducing roadside pollution, including the one-off grant to encourage early replacement of pre-Euro and Euro I diesel commercial vehicles (HK\$3,176 million), the one-off grant to encourage taxis to switch from diesel to liquefied petroleum gas (HK\$725.52 million), the one-off grant to assist with retrofitting pre-Euro heavy diesel vehicles with particulate removal devices (HK\$600 million), the one-off grant to encourage early replacement of Euro II commercial diesel vehicles (HK\$539.4 million), and the one-off grant to encourage public light buses to switch from diesel to liquefied petroleum gas (LPG) or electricity (HK\$ million). Some of these items have utilized all of their allotted budget and proven successful,

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such as the subsidy for taxis, however, most of the items have yet to expend even half of their earmarked funds and are proving ineffective. The one-off grant to encourage early replacement of pre-Euro and Euro I diesel commercial vehicles is one such item. This early retirement scheme started in 2007 with the largest government budget ever for improving air quality (HK\$3176 million). However, when the 18-month project was over, only 16,000 commercial diesel vehicles out of the 59,000 eligible vehicles had participated in the scheme. This was largely due to the subsidy being too low to be an attractive incentive to drivers. As a result, only HK\$597 out of the total HK\$3,176 million (less than 20 percent) had been used by the end of the project. This is just one example; **from 1999 to 2010, less than 45% of the government budget set aside for improving air quality has been put to use.**

**Figure 5. Itemized government expenditures on projects to improve air quality from 1999 to 2010 (based on Annual Government Budget Estimate Reports)**

	Starting Year	Approved Commitment (millions of HKD)	Actual Expenditure (millions of HKD)	Actual expenditure /approved commitment
Consultancy study on air pollution problems in the Pearl River Delta Region	1999	15	13.4	89%
Feasibility study on retrofitting heavy duty diesel vehicles with diesel catalysts	1999	1.7	0.4	24%
Trial Scheme for liquified petroleum gas public lightbuses	2000	5.05	0	0%
One-off grant to assist owners of pre-Euro diesel light vehicles to retrofit their vehicles with particulate traps	2000	50.88	21.22	42%
One-off grant to encourage diesel taxi owners to replace their vehicles with liquefied petroleum gas taxis	2000	725.52	700.04	96%
Survey of air quality for covered public transport interchanges	2000	1.7	0.4	24%
Supporting scheme for extending the dynamometer smoke test to large diesel vehicles	2001	4.1	2.23	54%
One-off grant to assist owners of pre-Euro diesel heavy vehicles to retrofit their vehicles with particulate removal devices	2002	600	349.62	58%
One-off grant to encourage diesel public light bus owners towards early replacement with light buses that run on liquefied petroleum gas or electricity	2002	261	142.26	55%
One-off grant to assist owners of pre-Euro diesel heavy vehicles of long idling operational mode to retrofit their vehicles with emission reduction devices	2005	70	42.55	61%

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One-off grant to encourage early replacement of pre-Euro and Euro I diesel commercial vehicles with new ones complying with the prevailing statutory emission standard	2007	3176	596.68	19%
Review of the Air Quality Objectives and Development of a Long Term Air Quality Strategy for Hong Kong - Feasibility Study	2007	8.7	8.23	95%
Study of Volatile Organic Compounds and Photochemical Ozone Pollution in the Pearl River Delta Region - Feasibility Study	2007	9.70	4.62	48%
Study of Major Industrial Air Pollution Sources in the Pearl River Delta Region - Feasibility Study	2007	9.83	5.44	55%
Provision of refilling service for a trial on ferries using ultra low sulphur diesel	2009	7.2	3	42%
One-off grant to encourage early replacement of Euro II diesel commercial vehicles with new ones complying with the prevailing statutory emission standard	2010	539.4	-	-
Total		5485.78	2429.5	44%

## Budget Comparison

The table below compares some of the government projects to improve air quality, with other government projects that were given a similar budgets. The Government set aside HK\$8.7 million to review the most outdated Air Quality Objectives (AQOs), while a study of the engineering feasibility for the potential columbarium development in Tsuen Wan District was allotted HK\$11 million; HK\$70 million was earmarked for the subsidy scheme to encourage taxis to switch to liquefied petroleum gas, and at the same time, 80 million was given to traveling expenses for government officials and their children; HK\$300 million was assigned to the Pilot Green Transport Fund, simultaneously, HK\$482 million was reserved for government officials' home financing allowance.

**This comparison reflects how the government prioritizes different projects and begs the question - has our government shown that they are giving air pollution, an issue critical the public's well-being, the standard of attention and resoures it deserves?**

Another way to answer this question is to compare the amount of government spending on air quality improvements between Hong Kong and China. Beijing suffers far higher levels of air pollution than Hong Kong does, however their Government is much more aggressive in tackling the problem. In 2011, the Beijing Government set aside HK\$2.1 billion to improve air quality, HK\$390 million of which was for vehicle emissions control. In comparison, the Hong Kong Government allotted only HK\$559 million for air quality measures. Even Guangzhou seems to have grasped the importance of the issue more strongly than the Hong Kong Government has, with the Guangzhou Government designating HK\$860 million for replacement of old polluting vehicles on their roads.

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**Figure 6. Comparison between itemized government measures to improve air quality compared with other government projects with similar budget items**

Itemized government measures to improve air quality with budget (HKD)	Other government project with similar budget for 2011-12 (HKD)
Review of the Air Quality Objectives and Development of a Long Term Air Quality Strategy for Hong Kong - Feasibility Study (8.7 million)	Engineering feasibility study for the potential columbarium development in Tsuen Wan District (11 million)
One-off grant to assist owners of pre-Euro diesel heavy vehicles of long idling operational mode to retrofit their vehicles with emission reduction devices (70 million)	Long and Meritorious Service Travel Award Scheme (80 million)
One-off subsidy to owners of LPG taxis and light buses for replacing catalytic converters (150 million proposed)	Leave passage allowance, passages and related expenditure, including baggage and travelling allowances, in respect of eligible government officers and their dependants, and children of eligible officers being educated overseas (160 million)
Assist franchised bus companies to purchase 36 electric buses for trial runs (180 million proposed)	Highways Department's railway planning studies carried out by consultants (191 million)
Pilot Green Transport Fund (300 million)	Light and power expenses of Government Property Agency (268 million)/ Government officer's home financing allowance (482 million)
One-off grant to encourage diesel taxiowners to replace their vehicles with liquefied petroleum gas taxis (726 million)	Government officer's home purchase allowance (763 million)

## Conclusion and Suggestions

- There is a positive correlation between government spending on improvements to air quality and the number of days of good air quality in Hong Kong for the past decade.
- Although a considerable amount of money has been set aside for air pollution reduction projects, less than 45% of the funds have actually been put to use from 1999 to 2010.
- The amount of money that the Government has invested in air quality improvements in comparison with other government expenditures on less life-threatening issues indicates that the Government needs to re-evaluate how it prioritizes air quality and public health protection.

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- In comparison with China, the Hong Kong Government's budget to improve air quality is not in line with Hong Kong's economic status.
- More financial investment from the government to improve air quality is needed to remedy the greatest public health crisis that Hong Kong currently faces.
- Moreover, financial incentives to reduce air pollution need to provide sufficient subsidy amounts in order to achieve effective outcomes.

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