

CASE STUDY

How to Create an Airtight Solution to Pollution



Men exercising against the backdrop of an industrial development in the People's Republic of China. Photo credit: ADB. *The Clean Air Scorecard Tool helped the most polluted cities to identify gaps in air quality management and introduce measures to rectify them.*

Overview

The Asia and the Pacific currently accounts for 65% of the world's air pollution. The People's Republic of China (PRC) accounts for sizable share of this total, as evidenced by the fact that many of its cities shrouded in dirty, black air grapple with air pollution levels that far exceed World Health Organization (WHO) safety standards.

In 2010, Clean Air Asia introduced its Clean Air Scorecard Tool in Hangzhou and Jinan—two of the PRC's most polluted urban areas—to help accelerate air quality management initiatives and thereby reduce air pollution and greenhouse gas (GHG) emissions.

Developed by Clean Air Asia with assistance from ADB and the Swedish International Development Cooperation Agency, the Clean Air Scorecard Tool enables cities to identify gaps and weaknesses in their air quality management schemes and introduce concrete measures to rectify them.

Over the years, ADB has supported Clean Air Asia through the following technical assistance (TA)

projects:

TA 8751-REG: Mainstreaming Air Quality in Urban Development through South-South Twinning

- **Dates**

- Approval: November 2014
- Completion: N/A
- Closing: November 2016 (original)

- **Institutions and stakeholders**

- Executing Agency: ADB

- **Cost**

- Amount Approved: \$500,000
- Revised Amount: N/A
- Amount Disbursed: \$78,363.56 (as of November 2014)

TA 6510-REG: Capturing and Transferring Air Quality Management Knowledge in Asia

- **Dates**

- Approval: December 2008
- Completion: December 2010
- Closing: March 2011

- **Institutions and stakeholders**

- Executing Agency: ADB

- **Cost**

- Amount Approved: \$500,000
- Revised Amount: N/A
- Amount Disbursed: \$489,626.78

TA 6291-REG: Rolling Out Air Quality Management in Asia

- **Dates**

- Approval: December 2005
- Completion: November 2009
- Closing: February 2010

- **Institutions and stakeholders**

- Executing Agency: ADB

- **Cost**

- Amount Approved: \$655,000

- Revised Amount: \$3.58 million
- Amount Disbursed: \$3.48 million

TA 6144-REG: Better Air Quality Management in Asia

- **Dates**

- Approval: November 2003
- Completion: November 2008
- Closing: December 2008

- **Institutions and stakeholders**

- Executing Agency: ADB

- **Cost**

- Amount Approved: \$300,000
- Revised Amount: \$1.01 million
- Amount Disbursed: \$977,376

TA 6016-REG: Clean Air Initiative for Asian Cities

- **Dates**

- Approval: December 2001
- Completion: March 2006
- Closing: October 2006

- **Institutions and stakeholders**

- Executing Agency: ADB

- **Cost**

- Amount Approved: \$150,000
- Revised Amount: \$1.02 million
- Amount Disbursed: \$982,558

TA 5937-REG: Action Plans for Reducing Vehicle Emissions

- **Dates**

- Approval: September 2000
- Completion: November 2003
- Closing: March 2004

- **Institutions and stakeholders**

- Executing Agency: ADB; Clean Air Asia
- Stakeholders: The PRC, India, Indonesia, and Viet Nam.

- **Cost**

- Amount Approved: \$900,000
- Amount Disbursed: \$897,723.06

Context

As the PRC's economy has soared over the past 3 decades, so too has air pollution. When Clean Air Asia piloted its Clean Air Scorecard Tool in Hangzhou and Jinan in 2010, air pollution indices in both cities had topped 500, the highest level set by the government. Levels of particulate matter (a mixture of tiny particles and droplets that get into the air) were 20 times higher than WHO safety levels.

Challenge

Although the PRC government had for many years taken measures to address air pollution at the national level by integrating its policies on air quality management with those on climate change mitigation, these reforms had often not been replicated at the local level. Many Chinese cities lacked information on air quality management, and environmental protection bureaus were often wary of publicizing news and sharing experiencing on air pollution management. This resulted in policy gaps—such as the lack of monitoring standards on air quality management—and insufficient measures to improve air quality.



Street level view of smog in the skyline of a city in the PRC. Photo credit: ADB.

Solutions

Clean Air Asia designed its scorecard to be an objective way of looking at how cities address air pollution. Instead of judging and ranking cities based on air pollution levels alone, the tool looks at existing capacity, policies and measures, as these are better indicators for future levels of air pollution and greenhouse gas emissions.

The scorecard provides an overall clean air score ranging from zero to 100. The scoring is based on three indices:

- An Air Pollution and Health Index that assesses air pollution levels against WHO guidelines.
- A Clean Air Management Capacity Index that assesses a city's capacity to address the problem through institutional and policy framework and financing.
- A Clean Air Policies and Actions Index that assesses the enforcement of policies at the national and local levels.



A vehicle undergoes a vehicles emission testing in the PRC. Photo credit: ADB.

The tool evaluates a city's air quality situation based on the following indices:

- Air pollution and health, which rates air pollution levels of cities against WHO guideline values and interim targets;
- Clean air management capacity, which assesses a city's capacity to address the problem through institutional and policy framework and financing; and
- Clean air policies and actions index, which rates the presence and enforcement of policies and actions to address emissions from mobile, stationary, area, and transboundary sources.

The three indices contribute 33.3 points to the total Clean Air Score of 100. Cities are then categorized based on their overall score.

Source: Clean Air Initiative for Asian Cities Center. 2010. Clean Air Scorecard: Helping Improve Management of Air Pollution and GHG Emissions. Manila.

Results

The Clean Air Scorecard Tool in Hangzhou and Jinan gave both cities a rating of "good" based on the scorecard's parameters. A "good" score typically means that key components of a city's clean air management systems are already in place and that stakeholders have made an effort to involve other major sectors—such as transport, health, and energy—in addressing the problem. A "good" rating also implies that existing policies and actions have achieved some success in reducing air pollution and greenhouse gas emissions, even if air quality levels still exceed WHO safety levels.

The rating also means that more work needs to be done to cut emissions.

By applying the scorecard, Hangzhou and Jinan were able to identify a wide range of concrete measures to tackle their chronic air pollution rates.

- Both cities found they needed to examine the impact of air pollution on their economies and health, agriculture and tourism sectors as well as develop transport fuel efficiency and fuel economy standards as well as ambient air quality standards for PM2.5, ozone, and other toxic chemicals.
- Hangzhou identified the need to formulate smog alarm plans and include particulate matters and GHGs in its emission inventory.
- Jinan recognized the need to prioritize roadside monitoring and the monitoring of particulate matters—particularly PM2.5, tiny pollutants that because of their size can easily enter the lungs—in its emissions inventory.

Three years after the initial pilot, the scorecard was reapplied in both cities.

According to Qiuxia Wang, a communications officer at Clean Air Asia, overall air quality in Hangzhou and Jinan had improved as a result of actions taken by municipal governments.

Since its introduction, the scorecard has since been used in nine other Chinese cities: Changchun, Chongqing, Dalian, Foshan, Guangzhou, Harbin, Jiangyin, Tongxiang, and Zhaoqing. Regionally, the tool has been applied in Bangkok, Colombo, Ha Noi, Jakarta, Kathmandu, Manila, and Quetta.

Hangzhou and Jinan's pollutant levels from 2010 to 2015

		Annual Mean				24h Average	8h Average	Attainment Days
		PM2.5-- µg/m3	PM10-- µg/m3	SO2-- µg/m3	NO2-- µg/m3	CO-- mg/m3	O3-- µg/m3	
Jinan	2010		117	45	27			
	2011		156	85	53			
	2012		154	82	49			
	2013	108	191	93	59			
	2014	90	172	72	53			96
	2015	87	157	50	48			141
Hangzhou	2010		98	34	56			
	2011							
	2012							
	2013	70	105	28	53			217
	2014	64.6	98	21	50			228
	2015	57	85	16	49	1.5	167	242

Pollutants: SO₂ = Sulfur dioxide; NO₂ = Nitrogen dioxide; CO = Carbon monoxide, O₃ = Ozone.

Units of measurement: ug/m3 = microgram per cubic meter

Source: Clean Air Asia

Lessons

Creating a model network

ADB views Clean Air Asia as a model for creating self-sustaining networks that address important development issues. From its beginnings as a network fully dependent on the ADB, the United States Agency for International Development, and the World Bank, Clean Air Asia has evolved into an independent organization. Clean Air Asia demonstrates that networks can be effective in knowledge sharing and that this knowledge can be translated into policy dialogues, capacity development, and investment opportunities.



Video interview with Nessim Ahmad, deputy director general, Sustainable Development and Climate Change Department, on ADB's lessons from helping Clean Air Asia set up as an independent organization.

Resources

Clean Air Asia Initiative. 2014. *Clean Air Scorecard: A Clean Air Management Assessment Tool*. Manila.

Clean Air Initiative for Asian Cities. 2012. *Clean Air Action Planning in Chinese Cities: Hangzhou and Jinan Cases*. Manila.

ADB. 2014. *Technical Assistance Report: Mainstreaming Air Quality in Urban Development through South-South Twinning*. Manila.

ADB. 2011. *Completion Report: Capturing and Transferring Air Quality Management Knowledge in Asia*. Manila.

ADB. 2010. *Completion Report: Rolling Out Air Quality Management in Asia*. Manila.

ADB. 2008. *Better Air Quality Management in Asia*. Manila.

ADB. 2006. *Clean Air Initiative for Asian Cities*. Manila.

ADB. 2004. *Action Plans for Reducing Vehicle Emissions*. Manila.


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