

# Smog: Learning the lessons of industrialization

FROM PAGE 1

In 1953, heavy November smog in New York killed between 170 and 260 people. Meanwhile, in 1954, similarly severe conditions resulted in the temporary closure of businesses and schools in Los Angeles for most of October.

The incidents triggered a series of strict, detailed laws and regulations designed to combat air pollution.

London's great smog led to the enactment of the first piece of legislation to specifically target air pollution in the world, the Clean Air Act of 1956, which was later amended and extended by the 1968 Clean Air Act.

The acts regulated the burning of solid, liquid and gaseous fuels, and increased the height of new industrial chimneys, that had not been included in previous legislation.

The efforts made by the UK government and residents were finally rewarded when the number of foggy days in London was reduced from several dozen per annum to 15 in 1975, further improving to just five days per year in 1980.

Meanwhile, the US has improved air quality by instigating strict emission standards on power plants, factories and automobiles.

The heavy smog in Beijing during the past few days has not only prompted heated discussion about comparisons between the three Western cities and the Chinese capital, but also led the public to ask questions such as, "What can we learn from the experiences of London and LA in tackling pollution?" More directly people have asked, "Do we stand a chance of seeing the end of incidents such as these?"

### Complicated situation

Experts said the intensity of pollution China faces today is not as severe as the US and UK experienced previously, but the scale is much larger and the causes are far more complicated.

When the developed countries tackled air pollution caused by burning coal, industrial pollution was not a major problem, and therefore they could deal with the problem incrementally, said Ming Dengli, head of the international cooperation office at the Beijing environmental bureau.

The battle against PM2.5 and ozone pollution started at a very late stage in the process.

However, Beijing's air pollution is characterized by a combination of coal-fired pollution, industrial pollution, motor vehicle emissions and dust, which have emerged almost simultaneously, he said.

"In the case of Beijing, the government has done almost everything that can be done, but with air pollution being a regional issue, there is no chance that the capital can make any significant changes in just a few days," said Zhang Lei, an associate professor focusing on studies into environmental policies at the School of Environment and Natural Resources at Renmin University of China.

However, she insisted that there are still lessons to be learned from the experiences of other cities, the first being effective implementation of the relevant laws.

It took London about 20 years to lose the nickname "The City of Fog" following the enactment of the Clean Air Act 1956. By comparison, China is still facing severe smog and haze 40 years after the introduction of relevant laws.

### Selling the policy

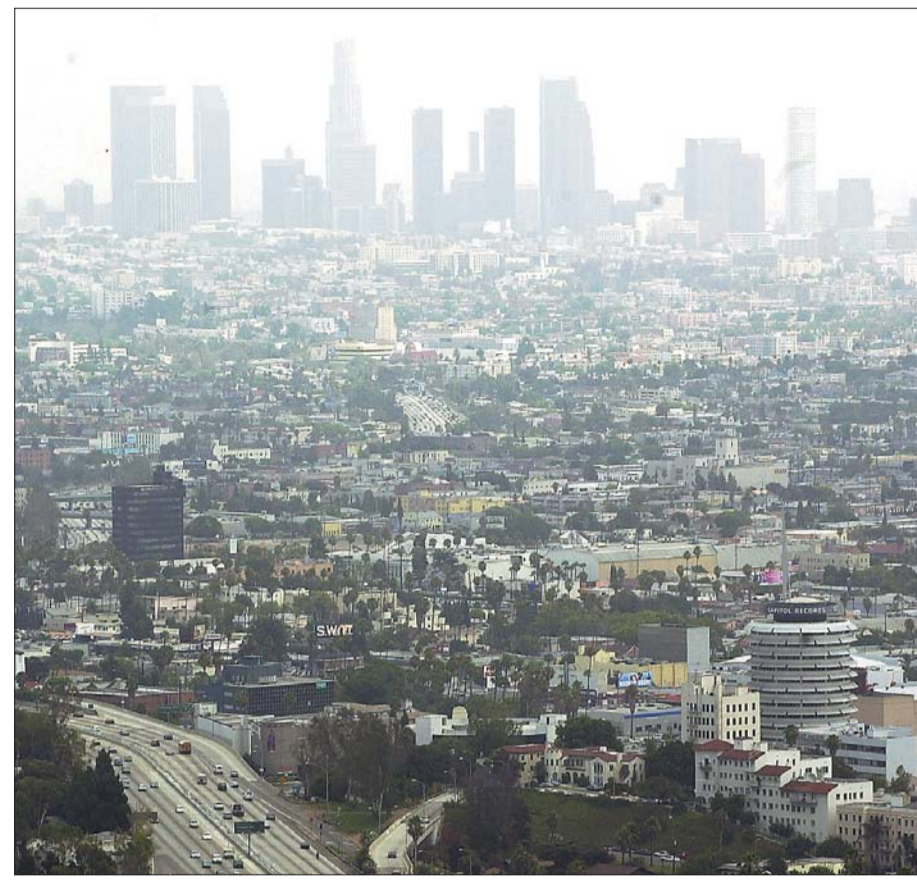
"Looking back 50 years, I can't imagine there are many people now who don't recognize that this was the right policy," wrote Ken Livingstone in an official memoir of the 1952 smog incident, published in 2002.

In the UK, there was a great deal of public discontent after the government passed legislation aimed at phasing out coal fires in response to the 1952 incident. It meant that before



Heavy smog in London's Piccadilly Circus in December 1952.

PROVIDED TO CHINA DAILY



The skyline of Los Angeles obscured by a heavy layer of smog and fog on July 15, 2003.

PROVIDED TO CHINA DAILY

the widespread adoption of central heating many people had to use paraffin heaters and there was great resistance to change.

The lesson can also be applied to China.

It is wrong to believe that a lack of cooperation by the public results from a lack of awareness, said Zhang. More often, people don't change the way they behave because they are restricted by external conditions.

"If the government wants a higher take-up rate for public transport, they need to make it a better choice for the people," she said. "Traveling by bus or subway is a pleasant experience in many countries. The transport arrives on time and is always not crowded."

Greater public involvement in the decision-making process is also essential, said Ira S. Richards, a toxicologist and professor of public health at the University of South Florida.

"In the US, communities have some say in the production of the standard. Chinese communities have greater awareness today and they should play an important role in producing the standards for anti-air pollution," Richards said.

### Shifting the problem

"This pollution is an extreme case. Beijing's air quality now is better than in 2008, as can be seen from the aver-

age whole-year figure for 2012," said Su Yang, a senior research fellow at the Development Research Center of the State Council.

The quality of the air in China's capital has improved for 14 consecutive years, with the number of major pollutants falling.

The municipal government has been taking measures to cut coal consumption in the city for a number of years. Approximately 700,000 metric

tons of coal was saved in 2012 alone, thanks to projects that shifted the fuel source to forms of clean energy.

More than 300,000 old vehicles that failed to meet the city's emission standard, highest number in the country, were taken off the roads in 2012.

Regarding industrial pollution, the ultimate measure may be to ship it to somewhere else, according to Gerard Kuperus, an assistant professor of environmental studies at the Univer-

sity of San Francisco.

"China is today producing most of our electronics and consumer products. Providing electricity for such large-scale production creates massive pollution. In a sense, the way in which the US and Europe 'solved' part of their pollution problem is now causing pollution in other parts of the world, such as China. As we ship our products from China, we have, so to speak, 'shipped' part

of our air pollution to that part of the world. While China has seen tremendous economic growth, the people are paying for it with their health."

Peng Ying contributed to this story.

Contact the reporters at wuwengong@chinadaily.com.cn, tangyue@chinadaily.com.cn and zhangchunyan@chinadaily.com.cn



"We still remember clearly (the high air quality during) the Beijing Olympics and Paralympics. It is still our goal."

FANG LI, spokesman and deputy director of the Beijing Environmental Protection Bureau

"Beijing suffers from both London's old pollution problem (coal-powered power stations) and London's new pollution problem (traffic). To improve air quality, the Chinese authorities will need to tackle both these problems."

FRANK KELLY, professor of environmental health at King's College, London University



"In a sense, the way in which the US and Europe 'solved' part of their pollution problem is now causing pollution in other parts of the world, such as China. With shipping our products from China, we, so to speak, 'shipped' part of our air pollution to that part of the world. While China has seen a tremendous economic boost, the people are paying for it with their health."

GERARD KUPERUS, assistant professor of environmental studies at the University of San Francisco

"This pollution is an extreme case. Beijing's air quality now is better than in 2008, seen from the average whole-year figure for 2012. ... China is still experiencing rapid industrialization and it will certainly take decades before pollution slowly improves."

SU YANG, senior research fellow at the Development Research Center of the State Council



"In the US, communities have some say in producing the standard since pollution was a problem for some industrial cities decades ago. Chinese communities have greater awareness today and they should play an important role in producing the standard for anti-air pollution."

IRA S. RICHARDS, toxicology professor at the University of South Florida

"The way for China to tackle air pollution is to invest more in clean technology, a lot of which is already available in Europe and other developed countries. The challenge is the cost, but it can bring good returns in the long term"

ALAN ANDREWS, ClientEarth health and environment lawyer in the UK



"Beijing is in the midst of a period of population growth and growth in heavy industrial activity around its perimeters. These challenges will make dealing with the air pollution problem rather difficult."

STEPHEN ZAVESTOSKI, associate professor of environmental studies at the University of San Francisco.

"The environmental problems faced by China are unprecedented, both in terms of scale and intensity. In the case of Beijing, the government has done almost everything that can be done, but with air pollution being a regional issue, there is no chance that the capital can make any significant changes in just a few days."

ZHANG LEI, associate professor of environmental policy at Renmin University of China

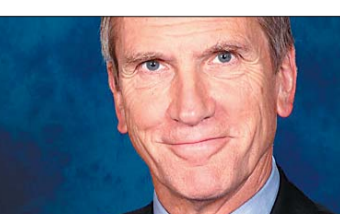


"I have been to Beijing and experienced the air pollution there. Beijing's air pollution problems stem from a) the increasing number of vehicles being driven as China's economy continues to grow and b) the increasing use of coal for power generation."

JOHN R. BALMES, professor of respiratory health studies at the University of California, San Francisco

"The British authorities, alongside the European authorities, brought in a series of clean-air laws, which put limits on polluting organizations. As a consequence, enormous changes occurred in the second half of the 20th century. These pieces of legislation can be a lesson for China."

MICHAEL GIBBONS, chairman of the World Energy Council's UK Member Committee



"I believe that the US has improved its air quality by instituting strict emissions standards on its power plants, factories and automobiles. Probably the two most important regulations were requiring the use of scrubbers on the coal-fired power plants and reducing emissions from cars."

THOMAS UNNASCH, professor of Global Health Infectious Disease Research at the University of South Florida



### LOS ANGELES 1940s and 1950s

#### EVENT

LA was one of the first cities in the US to experience severe air pollution problems, called "gas attacks" at the time.

**Cause:** LA's location in a basin, ringed by mountains, made it susceptible to the accumulation of auto exhaust and emissions from local petroleum refineries.

#### IMPACT

**2,000** car accidents in a single day  
In 1954, visibility was drastically reduced by dense smog in Los Angeles.

#### SOLUTION

In the late 1940s and early 1950s, air pollution officials made significant strides in reducing smoke and fumes by regulating open burning at garbage dumps, reducing smoke from factories and cutting sulfur dioxide emissions from oil refineries. These measures reduced the "dustfall" by two-thirds, or 1,200 tons per square mile annually, to the level of the 1940s, before smog became a serious problem.

### LONDON 1952

The Great Smog of 1952, or the Big Smoke: A period of cold weather, combined with an anticyclone and windless conditions, allowed airborne pollutants, mostly caused by the use of coal, to form a thick layer of smog over the city. It lasted from Dec 5 to Dec 9, 1952, and then dispersed quickly following a change in weather conditions.

**Cause:** Combustion of coal.

**4,000** premature deaths  
**100,000** people taken ill from the effects of smog  
More recent research suggests that the total number of fatalities was considerably higher, at around 12,000.

The incident led to several changes in practices and regulations, including the Clean Air Act of 1956. The Act introduced a number of measures to reduce air pollution, especially by introducing "smoke-control areas" in some towns and cities in which only smokeless fuels could be burned.



### MEXICO CITY 1992

In 1992, the United Nations declared Mexico City the most polluted on the planet.

**Cause:** Vehicle emissions.

**1,000** deaths believed to be caused by high levels of ozone  
**35,000** hospitalizations a year  
A 2007 World Bank report said air pollution was a major cause of respiratory and cardiovascular diseases in the Philippines.

In 2010, the authorities planned to further reduce vehicle emissions, the city's greatest source of pollution. Pemex, the state oil monopoly, planned to build a \$9.3 billion plant to produce low-sulfur fuel. Mexico City Mayor Marcelo Ebrard expanded the low-emissions Metrobus system, which has eliminated 80,000 tons of carbon monoxide annually since 2005.



### MANILA 1999

According to the World Health Organization, the level of lead in Manila's air was more than three times the established safety limit. Concentrations of suspended particulate matter were also dangerously high. Other pollutants have not been measured.

**Cause:** Vehicle emissions and industrial sources.

**PHP7.6b** (\$187m) annual cost to the country

Officials explained that the improvement in the ambient air quality in 2009 can be attributed to the conversion of vehicles to alternative and clean fuels, such as liquefied petroleum gas or biofuels, and that mobile sources accounted for a large proportion of airborne pollutants.



### TEHRAN 2013

A high level of air pollution is a constant problem for Tehran's 8 million residents. It forced the closure of schools and government offices on Jan 12, for the second time in a month.

**Cause:** Tehran's pollution is mainly blamed on bumper-to-bumper traffic in a city wedged between two mountains, which trap fumes, and is also exacerbated by using lower-grade gasoline.

**4,460** deaths a year caused by air pollution

Officials have promised to increase the production of higher-grade gasoline with Euro 4 and 5 standards, used in European countries.

GUILLERMO MUNRO / CHINA DAILY  
Source: British Broadcasting Corporation, US Environmental Protection Agency, The Washington Post, AFP, UN, Los Angeles Times, Philippine Daily Inquirer



A policeman assists a woman during a dense London fog in 1953.

PROVIDED TO CHINA DAILY