

## Is It Safe? Pollution And Food Safety

---

# A Real War, More Ammo Required

By Angel Hsu

*China's pollution problems may not be the worst in history, but they are bad enough. Progress in correcting them has been real but inconsistent. Loud commitments by the new leadership, and a tough new environmental law, offer hope of a faster clean-up.*

The word “pollution” has almost become synonymous with China, as images of “airpocalyptic” smog, rivers turned red from illegal contamination, and food safety scandals make almost daily media headlines. More than two decades since market reforms propelled the country’s industrialization, China is suffering the consequences of unchecked growth. Earlier this year, government reports revealed one-fifth of arable land was potentially contaminated with heavy metals, and two-thirds of groundwater sites tested were found to be “very polluted” or “relatively polluted.” Only three Chinese cities met minimum standards for air quality in 2013.

Everyone knows China’s pollution is bad, but just how bad? One view—traditionally favored by officials—is that pollution is a normal externality suffered during successful industrialization. China’s problems are essentially no different to those suffered by the United Kingdom, United States, Germany and Japan during their most industry-intensive growth phases.

There is some justice to this perspective. Beijing’s off-the-chart air pollution levels are not much different to those experienced by Los Angeles in the 1950s and 1960s, and almost certainly quite a bit lower than the horrific London “Great Smog” of 1952, which caused 4,000

**Angel Hsu is director of the Environmental Performance Measurement Program at the Yale Center for Environmental Law and Policy.**

deaths. Accounts of Japan's industrial centers in the 1970s read much like descriptions of Chinese cities today. In other countries, it took decades of slowly mounting citizen pressure to get clean air and water as high on the national agenda as economic growth. The US did not really solve its acid rain problem (caused by sulfur dioxide emissions from coal burning) until after the Clean Air Act of 1990. And even today rich countries struggle: in March 2014 Paris slapped draconian restrictions on personal car use when particulate pollution reached dangerous levels.

We lack historical pollution data that would enable precise comparison between today's China and past peaks of environmental degradation elsewhere. But even with such data, knowing that Japanese or German citizens had it worse decades ago would be cold comfort to Chinese who must endure smoggy air, contaminated water, and heavy metal-laced food today. What we can say with confidence is that China's environmental challenge is among the most severe in the world, and the success that other industrial nations had in combating pollution (once they got serious about it) is not necessarily cause for optimism in China's case. Those countries used a wide range of mechanisms, including not only government enforcement but citizen pressure, judicial activism and market measures such as emissions permit trading schemes.

In China, virtually all methods other than top-down enforcement are weak, and some—notably independent judicial and civil-society action—directly conflict with the Communist Party's core principle of denying an independent political voice to other actors. There is little doubt that the central government has grown gradually more forceful in its efforts against pollution over the past decade, and the new government of President Xi Jinping and Premier Li Keqiang has raised the intensity of environmental policy by another notch. But they will need a far wider array of tools than past leaders have dared to use if they really want to clean up China.

### **Bad, bad, bad (mostly)**

One well-established cross-country analysis of pollution levels is the Environmental Performance Index (EPI) compiled by the Yale Center for Environmental Law and Policy ([www.epi.yale.edu](http://www.epi.yale.edu)). This index aggregates objective data on 20 indicators including air quality, water and sanitation, and carbon intensity, as well as environmental sustainability measures such as biodiversity and forest cover.

---

The success that other industrial nations had in combating pollution is not necessarily cause for optimism in China's case

The latest (2014) EPI shows that China's environment ranked 118th out of 178 countries, worse than those of most other big emerging economies (including Brazil, Russia and South Africa), and worse than most other

**Better than India, anyway**

Environmental Performance Index ranks, selected nations (2014)

	2014 EPI rank	10-year improvement in index score
Japan	26	2.2%
United States	33	2.2%
South Korea	44	7.4%
Taiwan	46	4.3%
South Africa	72	6.0%
Russia	73	4.2%
Brazil	77	3.7%
Thailand	78	1.9%
Indonesia	112	4.8%
<b>China</b>	<b>118</b>	<b>2.6%</b>
Vietnam	136	3.2%
India	155	5.4%

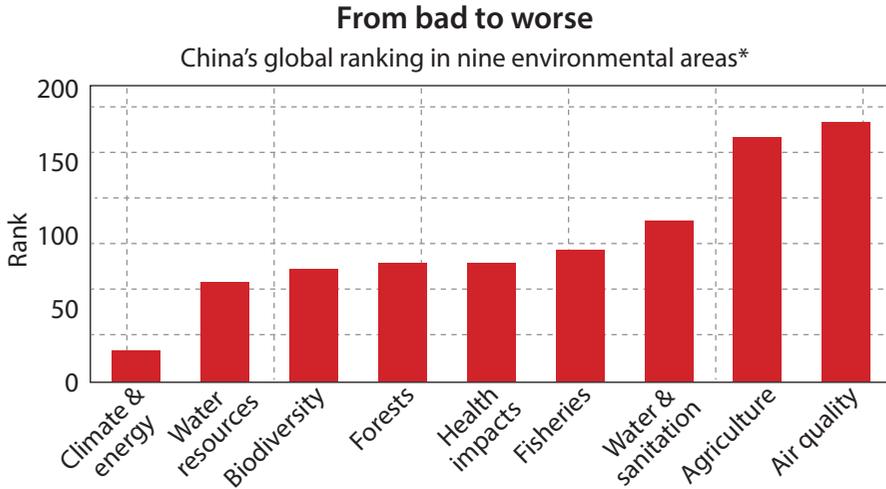
Yale Center for Environmental Law and Policy

important economies in Asia, with the notable exceptions of India and Vietnam. Moreover, China has one of the weakest 10-year records of improvement: its index score rose only 2.6% over the past decade, compared to gains of 3-8% in most other major emerging and Asian economies.

China looks especially bad on measures of air pollution, water management and access to sanitation. Not surprisingly for Beijing residents, it shows the world's worst exposure to airborne fine particulate matter (or PM<sub>2.5</sub>), with a staggering 98% of the population breathing air above the threshold considered safe by the World Health Organization. Only about one-third of wastewater is treated, and less than half the country's population is

covered by water treatment facilities. Almost one-third of China's population still lacks access to modern sanitary facilities, although in fairness China's score on sanitation measures has improved substantially in the last decade.

The one area where China scores well is in climate and energy, where it wins high marks for a successful effort to reduce the energy- and carbon-intensity of growth (that is, the amount of energy or carbon consumed per unit of GDP growth). In this category China ranks 21st of 121 countries, well ahead of rich nations such as Germany and the US. This is encouraging because it shows that when the central government pushes hard, it can achieve results. Reducing energy intensity was a central goal of the 2003-12 administration of Hu Jintao and Wen Jiabao. During the 11th Five Year Plan period (2006-10), China notched an impressive 19% reduction in energy intensity, thanks in large measure to a strong cocktail of policies including: closure of small, inefficient industrial and manufacturing facilities; mandatory energy use targets for the biggest 1,000 energy-consuming enterprises; and stricter energy efficiency standards for buildings and consumer appliances.



\*Out of 178 countries, except for Climate & energy (129 countries), Forests (137) and Fisheries (134)  
Yale Center for Environmental Law and Policy

### Targets, targets, targets

In general then, the situation is bad. What does Beijing plan to do about it? First off, it is setting targets. The 12th Five-Year Plan (for 2011-15) sets goals for 8-10% reductions in four key pollutants: sulfur dioxide and nitrogen oxides in the air, and chemical oxygen demand (COD) and ammonia in the water. It also mandates bigger reductions in energy and carbon intensity, which should have a positive impact on air pollution because they will tend to constrain the burning of coal, a major source of both PM<sub>2.5</sub> and sulfur dioxide emissions. These targets are credible because of the performance during the previous (2006-10) five-year plan period, when reduction targets for sulfur dioxide and COD were handily exceeded, and a very ambitious 20% energy intensity target was just barely missed.

Sensibly, the targets are most stringent in densely-populated regions where industry and pollution are most intensive: Beijing-Tianjin-Hebei (the so-called “Jing-jin-ji Megalopolis”), the Yangtze River Delta around Shanghai, and the Pearl River Delta around Guangzhou, which together account for nearly half the national population. In a nod to economic realism no binding targets were set for three far-western jurisdictions (Tibet, Qinghai and Xinjiang) where population is sparse and economic development remains the priority. The plan designates environmental targets as “mandatory,” while most economic targets are “indicative.” In theory, this should encourage local officials to pay more attention to environmental than economic goals, although in practice the habit of putting GDP before all else is proving very difficult to root out (for the obvious reason that

### Keeping the ball rolling

Targeted and actual reduction in environmental indicators, by five-year plan period

	2006-10 target	2006-10 achieved	2011-15 target
Sulfur dioxide (SO <sub>2</sub> )	-10%	-14.3%	-8%
Nitrogen oxides (NO <sub>x</sub> )	na	na	-10%
Chemical oxygen demand	-10%	-12.5%	-8%
Ammonia nitrogen	na	na	-10%
Energy intensity	-20%	-19.1%	-16%
Carbon intensity	na	-16.2%	-17%

National People's Congress

economic growth, unlike environmental good works, provides opportunity not only for promotion but also for graft). Despite this qualification, it's fair to say the 12th Plan is the greenest five-year plan ever.

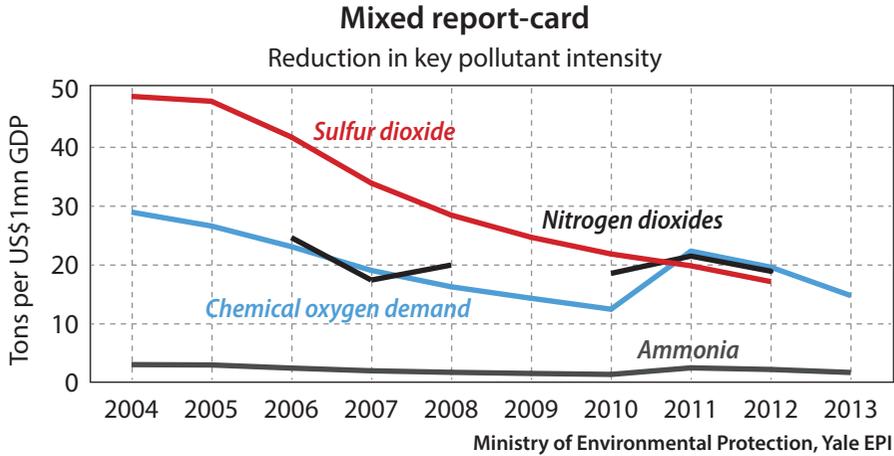
#### As usual, mixed results

Unfortunately, results so far are at best mixed. The government admitted at the end of 2013 that it had failed to meet its mandatory mid-term targets for four of its energy and environmental indicators: energy intensity, carbon dioxide emissions, nitrogen oxide emissions, and increased use of non-fossil fuels. Detailed data show that in 2011, the first year of the current plan period, the emissions of nitrogen oxides and COD actually increased, although both started to fall again in 2012.

Progress on air pollution has been variable. The emissions intensity of sulfur dioxide (the main cause of acid rain, resulting mainly from unfiltered coal combustion) has fallen by two-thirds in the past decade, thanks to a long-running and intensive campaign to install scrubbers on power plant smoke stacks. The Ministry of Environmental Protection (MEP) reports that in 2013, 87% of Chinese cities now meet the national standard for sulfur-dioxide emissions. For nitrogen oxides, however, only 39% of cities met the standard. And for PM<sub>2.5</sub>—a more recent focus of concern—only 4% of cities are up to standard.

Improvements in water have been a bit more consistent. MEP reports that both COD and ammonia nitrogen emissions fell by around 5% between 2011 and 2013, suggesting that the five-year plan reduction targets of 8% and 10% for these two pollution sources are achievable.

The gains in water quality have come mainly from a big push on wastewater treatment, which is the subject of a specific five-year plan issued in April 2012. This plan calls for 261mn cubic meters of daily wastewater



treatment capacity (50 times the total treatment capacity of New York City) to be installed over five years. The problem is not so much building these plants as ensuring they are fully used. According to government data from 2011, at least 221 newly built treatment plants had utilization rates lower than 50%, and many were not used at all.

Finally, reductions in energy and carbon intensity—one of the great success stories of the 2006-2010 period—have slowed. In the first two years of the current plan period, energy intensity fell just 5.5% and carbon intensity dropped by 6.6%. Both figures suggest the target of reductions over five years of 16% and 17% respectively may not be met. The State Council has admitted “the trend is very grim,” and set more stringent goals (on a province-by-province basis) for reduction in vehicle emissions, elimination of coal-fired boilers, and adoption of non-fossil fuels, for the remainder of the plan period.

### **Xi and Li seem to mean business**

Adding it all up, it seems clear that China continues to make substantial, but inconsistent, incremental progress in its fight against pollution. The difficulty is that the environmental damage was so severe to begin with that “substantial incremental progress” leaves the country decades away from achieving levels of environmental quality that would be considered acceptable in richer neighbors such as South Korea and Taiwan. Hope for a more rapid pace of improvement rests on two pillars: greater commitment to the issue by the new Xi-Li leadership, and openness to a wider range of techniques than the traditional top-down enforcement measures.

There is little doubt that environmental protection ranks higher on the agenda for Xi and Li than it did for Hu and Wen—although it is worth

remembering that the Hu/Wen era did see a huge reduction in sulfur dioxide emissions and significant gains in energy intensity. Several actions signal a stronger commitment at the top:

- Amendments to Environmental Protection Law, the first in 25 years. These strengthen local enforcement authority and expand the roles of civil society and the judiciary in environmental governance.
- Premier Li's pledge of a "war on pollution" at the March 2014 session of the National People's Congress, and his inclusion of environmental protection as one of the main specific goals in his annual work plan—a status the environment never achieved in the work plans of his predecessor.
- Adoption (in September 2013) of a national air pollution control plan with an estimated price tag of US\$275bn. By contrast, the total implementation cost of the US Clean Air Act of 1990 was around US\$85bn.
- Public release of soil pollution data previously considered a state secret.
- The launch of seven carbon emissions trading schemes in Beijing, Shanghai, Guangdong, Shenzhen, Tianjin, Chongqing and Hubei. These pilots make China the second largest carbon market in the world, behind the EU.

These commitments are impressive, but the fact that they coincide with a failure to meet the current anti-pollution targets calls their credibility into question. This points to the second big requirement beyond political will: government willingness to diversify its suite of regulatory tools, and to increase the role for non-government actors.

Environmental governance has long run afoul of the conflict between cleanup mandates from the top and the desire for economic growth, however dirty, by local officials (such conflicts are also not unknown in the US). But it is now clear that central policy is aligned with the trend in citizen sentiment, at least in relatively affluent urban areas. Local protests against new industrial projects such as chemical plants are now routine, and a survey by the Chinese Academy of Environmental Planning published in February 2014 found that 58% of respondents were "willing to sacrifice economic gains for the sake of the environment," nearly 75% agreed that current environmental regulations are inadequate, and 98% agreed that the public should be consulted in the formation of anti-pollution plans.

The amendments to the Environmental Protection Law appear to reflect the desire both to put more teeth into traditional enforcement methods, and to enable more activism by the judiciary and civil society. Local Environmental Protection Bureaus (EPBs) can now fine non-compliant polluters, with no limit, on a daily basis—a move that could decisively shift the balance of power in favor of EPBs and against companies. The amended law requires local governments to carry out environmental impact assessments (EIAs) for all new development projects. The law also provides for public-interest litigation to be brought by citizen groups; about 300 environmental organizations can, in theory, take advantage of this new avenue.

These developments are promising. It is still too early to judge whether they will be enough to shift the incentives of local governments in a more environmentally-friendly direction. But they do suggest that Beijing's “war on pollution” will not simply be a war of words.