

ENVIRONMENT ASSESSMENT (SUMMARY)

A. Environmental Performance and Issues

1. Environmental challenges in the People's Republic of China (PRC) are of such scope and seriousness that transformational responses are needed. During the 11th and 12th Five-Year Plans, some positive results have been achieved in industrial restructuring, energy conservation, and emission intensity reductions. Areas showing success in achieving the targets include reduction of sulfur dioxide emissions as an air pollutant; reduction of carbon intensity; and improvement of water quality and water use efficiency, forest coverage, and forest stock. However, environmental degradation continues to be a serious challenge and the national cost of pollution damage is estimated to be around 6%–9% of gross domestic product (GDP).

2. **Air pollution.** Air pollution is a serious health threat in the PRC, in terms of both mortality and morbidity risks. In early 2013, heavy smog affected 600 million people and an area of 2.7 million square kilometers across 17 provinces and cities. In effect, one-quarter of the country was blanketed and nearly half the total population affected. Of the PRC's 500 largest cities, less than 1% met the World Health Organization's particulate matter of less than 2.5 micrometers in diameter (PM_{2.5}) standards for air quality as of 2010. Air pollution is frequently in excess of levels considered safe, with seven of the PRC's cities considered among the 10 most polluted cities in the world.¹ Widespread smog covering multiple provinces is a recurring and intensifying hazard, underscoring the need for a comprehensive and stricter control policy focused on multiple source categories.

3. The major air pollution sources are coal-fired thermal power plants, heavy industry (iron, steel, and cement), and vehicle exhaust emissions, which combine with volatile organic compounds and other gases to cause dense smog. In 2011, coal accounted for almost 80% of total energy production. Energy consumption per unit of GDP has declined, but not significantly, during the first 3 years of the 12th plan period, which is in part a reflection of the difficulty in eliminating outdated industrial capacity. Also, the rapid increase in private vehicle ownership is dramatically compounding the air pollution problem. In 2011, vehicle emissions in the PRC produced 621,000 tons of PM_{2.5}, 4.4 million tons of hydrocarbons, 6.4 million tons of nitrous oxides, and 34.7 million tons of carbon dioxide. Diesel-fuelled heavy vehicles and early emission standard vehicles account for more than 60% of vehicle emissions.

4. **Water quality and availability.** Water quality and availability are critical issues in the PRC, as many surface water and groundwater sources have been badly polluted and water suitable for drinking, industrial, or agricultural use has become scarce in many areas. Water pollution caused high economic losses in the PRC. In 2013, almost 30% of the monitored sections of key national river basins were assessed as grade IV or worse. While this represents a big improvement over the measurements in 2011 (40%) and 2006 (54%), the situation remains serious for major rivers in the north of the country passing through large cities. Further, some 85% of all lakes are deemed to have poor water quality and over half of all lakes and reservoirs experience eutrophication due to excessive fertilizer runoffs. With the exception of the northern parts of the Yellow Sea, coastal waters are heavily polluted. The poor water quality near river deltas underscores the impact of upstream pollution on coastal water quality. The majority of rivers flowing into the East China Sea are assessed at class IV or worse.² The PRC's

¹ Asian Development Bank (ADB). 2012. *Toward an Environmentally Sustainable Future – Country Environmental Analysis of the People's Republic of China*, Manila.

² The PRC categorizes surface water quality into five classes: from I (best) to V (worst). Classes I–III can be used for

total discharge of industrial and urban sewage is about 42 billion cubic meters annually, only 23% of which is treated according to national sewage effluent discharge standards; the rest is mostly discharged directly into rivers. In turn, groundwater quality has been severely compromised. A survey of 118 cities indicated that 64% of their groundwater resources are heavily polluted;³ more than 400 PRC cities depend on groundwater for drinking water.

5. Although the government has made major advances in the control of point sources of water pollution, nonpoint source (NPS) pollution has proven to be much more difficult. Agricultural NPS pollution from fertilizer runoff, pesticides, and animal production facilities have been highly damaging to lakes, rivers, streams, and estuaries. Nonpoint sources collectively are estimated to account for 44% of total chemical oxygen demand emissions, and 57% of total nitrogen emissions and 67% of total phosphorous emissions. Improvements to water quality in the PRC importantly dependent on more effective control of NPS pollution. Currently, there is no standard or pollution cap for agricultural NPS pollution except for discharge standards of pollutants for livestock and animal breeding. As a result, there is no practical legal basis for controlling agricultural NPS pollution. Economic incentives and technical support are needed to encourage farmers to use best practices for NPS pollution control.

6. **Soil contamination.** A report⁴ issued jointly in 2014 by the Ministry of Environmental Protection (MEP) and the Ministry of Land and Resources (MLR) concluded that 16% of the PRC's soil is polluted and almost 20% of farmland is polluted. More than 80% of polluted land is contaminated by inorganic materials, with the top three pollutants being cadmium, nickel, and arsenic. Compared to levels recorded in 1988–1990, cadmium pollution has increased by 50% in the southwestern and coastal areas. Soil contamination is most severe in three industrial zones (the Yangtze River Delta, the Pearl River Delta, and the northeast industrial hub). The main pollution sources are human, industrial, and agricultural activities. Industrial waste contaminates land around factories and mines while automobile exhaust pollutes soils along the main highways. Pollution of farming land results from irrigation with untreated wastewater, the improper use of fertilizers and pesticides, and concentrations of livestock breeding. Soil pollution is difficult to control and remedy.

7. **Solid-waste management** Solid waste is of three categories: municipal solid waste (MSW), industrial solid waste (ISW), and hazardous waste. The PRC generates about 360 million tons of MSW annually, approximately half as city waste. Most MSW (50%) is placed in landfills, while the rest is burned, used as fertilizer, or simply dumped. Rapid urbanization is greatly compounding the MSW management problem. However, the ISW management problem is much more serious, because more than 3 billion tons of ISW are generated annually, the largest component (33%) of which is mining waste. Other major components are coal ash and blast-furnace slag. Although about 60% of ISW is reused as source material or energy, the technical means for recycling are relatively ineffective. Hazardous waste amounts to about 35 million tons annually, resulting mostly from industries and chemical products. High-level disposal facilities are inadequate and hazardous waste ends up mixed with ISW or even MSW; the poor treatment of electronic waste and chromium created serious air and water pollution.

8. **Ecosystems degradation.** The PRC is facing serious ecological challenges: some 70%–80% of the PRC's croplands, forestlands, and grasslands are degraded in varying degrees

drinking water.

³ United Nations Development Programme (UNDP). 2013. *China National Human Development Report 2013: Sustainable and Livable Cities: Toward Ecological Urbanization*. Beijing.

⁴ Ministry of Environmental Protection and Ministry of Land and Resources. 2014. *A report on soil contamination*. Beijing.

of severity. Less than 10% of derelict mining land has been reclaimed and continuing mine closures add to the unusable terrain. Mangrove areas have declined by half since the 1950s and more than 50% of the PRC's lakes and water systems have been polluted to class III levels or worse. Soil erosion from flooding and poor natural resource management has resulted in large-scale land degradation. Habitat destruction has included urbanization, clearance of forests, draining of wetlands, unsustainable harvesting, pollution, and the introduction of alien species. Around 10%–20% of the PRC's flora species are either vulnerable or endangered.

9. **Economic implications of environmental degradation.** Estimates of the cost of pollution for the PRC range from 6% to 9% of GDP. Clearly, it is very difficult to estimate the cost of pollution, as it involves the human cost in terms of increased morbidity and mortality. According to a major study,⁵ air pollution contributed to 1.2 million premature deaths in the PRC in 2010. In addition, air, water, and soil degradation has undermined the productivity of agriculture and other resource-based industry, as well as weakened the productivity of the labor force.

B. Government's Strategy

10. **Build “Ecological Civilization”.** Building an “ecological civilization” is one of the PRC's most important policy challenges.⁶ The concept was first included in 2007 by the 17th Party Congress as one of five major goals characterizing a “well-off and well-rounded society.” During the 18th Party Congress in 2012, “construction of ecological civilization” was incorporated into plans for promoting economic, political, cultural, social, and ecological progress in the PRC and was written into the Party Constitution. The Congress stated that “promoting ecological civilization is a long-term task of vital importance to the people's well-being and China's future.”

11. **Environmental legislation and amendments.** Renewed emphasis is being placed on control of air, water, and soil pollution. Perhaps most importantly, the government has instituted sweeping reforms to correct what have been notoriously weak and ineffective environmental regulations. In 2014, the Standing Committee of the National People's Congress adopted extensive revisions to the Environmental Protection Law (EPL). The amended law is expected to provide for much heavier sanctions for environmental violations, including fines that accumulate for each day that violations continue. Public involvement in environmental protection is encouraged and whistleblowers are protected. An amendment to the Air Pollution Control Law has been adopted that will restrict various sources of smog and make information on environmental cleanliness more readily available to the public. Other environment-related laws and administrative regulations are expected to be revised in accordance with the amended EPL.

12. **Government's action plans to reduce pollution.** The Air Pollution Prevention and Control Action Plan (APPCAP) covers 2013–2017. The APPCAP is the PRC's most detailed and rigorous air pollution control plan to date and underscores the determination of the government to rectify years of unsustainable development. With clear emission standards and reduction targets and heavy penalties for failing to meet the standards and targets, the objectives of the plan are to improve overall air quality by 2017. Measures include reduced use

⁵ *Global Burden of Disease Study 2010*, The Lancet, Vol. 380, No. 9859, December 13, 2012.

⁶ “Ecological civilization” is seen as being closely connected with Chinese traditional cultures as well as modern environmental ethics and sustainable development principles. It refers to achieving harmony between people and nature, requiring people to respect, protect, and maintain a harmonious relationship with nature. It includes activities to mitigate ecological damage, relieve pressures on natural resources, and improve the balance between the environment and the economy. The recently concluded Third Plenary Session of the 18th Communist Party of China Central Committee introduced institutional reforms for ecological civilization.

of coal as a source of energy, increased use of nonfossil energy sources, and more efficient and cleaner production methods. Coal consumption for energy use is targeted to fall from 80% currently to 65% by 2017, and energy efficiency is targeted to improve by 20% relative to 2012 levels. Fuel oil will be upgraded, heavy-polluting vehicles will be banned, and high-polluting and energy-intensive industries will be more tightly regulated.⁷ In mid-2014, the State Council issued performance assessment measures for the APPCAP, which set out the methods, time windows, main indicators, and procedures for annual performance assessments. The amended EPL further toughens the regulatory measures concerning air pollution.

13. The State Council passed a 5-year plan in 2011 designed to provide by 2015 safe drinking water to almost 300 million rural residents. In the same year, the State Council issued Central Document No. 1 requiring governments at all levels to invest 10% of revenues from property transfers into water conservation projects.⁸ On 16 April 2015, the government also announced an action plan that includes a list of measures to tackle water pollution, with the aim of improving the quality of the water environment around the country by 2030. With regards to groundwater, the plan envisages that by 2020 groundwater overdraft will be reduced and the aggravated pollution of groundwater will be preliminarily controlled.

14. Released in 2014 by the MEP and MLR, the National Survey of Soil Pollution highlighted the extent of soil pollution, which is around 16% overall, but much higher in some areas. However, to date no specific laws regarding soil pollution and land management have been issued. An official legislative preparatory group was established in 2012 by the MEP and a draft law is expected to be issued soon. The MEP is also working on a national action plan for soil environmental protection, which will concentrate on strengthening the legal system.

15. **Economic instruments.** Economic instruments for environmental protection are potentially a vital complement to regulatory measures, with potential applications in a wide range of sectors to control pollution from industrial and agricultural sources. However, while charges to date have provided revenues for the government and incentives for environmental protection, their effectiveness has been undermined by conflicts of interest. In 2015, the PRC published a draft law on environmental taxes to reduce pollution in key industries.

C. ADB Strategy for Environmental Protection

16. The Asian Development Bank (ADB) has increased its operational emphasis on the environment, which is one of the three strategic agendas under Strategy 2020. Environmental protection will continue to be a major strategic objective of ADB support to the PRC. ADB will work with the government to implement the memorandum of understanding, signed on 8 January 2014 with the MEP to promote environmental protection. ADB will support a growth process that is cleaner and more sustainable by promoting innovation in technologies, policies, and management practices; prioritizing renewable energy and energy efficiency; encouraging the use of low-carbon transport systems; protecting degraded rural ecosystems; and encouraging the development of green and livable urban cities. To achieve these objectives, ADB will (i) pilot new loan models through large-scale flagship projects to reduce pollution and impacts on human health; (ii) support integrated water resources management and sustainable land management, water and air pollution control, and reforestation and biodiversity protection; (iii) promote the greater use of market-based instruments, including innovative eco-

⁷ The government has committed CNY1.75 trillion (about \$285 billion) and clarified the responsibilities of different ministries and provincial governments for the 80 tasks listed in the APPCAP.

⁸ More than CNY70 billion (\$11.2 billion) was committed during 2014 for major water projects.

compensation mechanisms; and (iv) improve environmental enforcement and compliance. ADB pursues a balanced mode of safeguards work in its operations in the PRC.