



Technical Assistance Report

Project Number: 51004-002
Transaction Technical Assistance Facility (F-TRTA)
April 2017

People's Republic of China: Preparing Air Quality Improvement Program (2017–2019) in the Greater Beijing–Tianjin–Hebei Region (Financed by ADB's Technical Assistance Special Fund and the Clean Energy Fund under the Clean Energy Financing Partnership Facility)

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Asian Development Bank

CURRENCY EQUIVALENTS

(as of 21 March 2017)

Currency unit	–	yuan (CNY)
CNY1.00	=	\$.1449
\$1.00	=	CNY6.898

ABBREVIATIONS

ADB	–	Asian Development Bank
AQI	–	air quality index
BTH	–	Beijing–Tianjin–Hebei
CAAP	–	Comprehensive Action Plan for Air Pollution Prevention and Control
CECEP	–	China Energy Conservation and Environment Protection Group
CO ₂	–	carbon dioxide
PRC	–	People's Republic of China
PM _{2.5}	–	particulate matter less than 2.5 microns in diameter
TA	–	technical assistance

NOTE

In this report, "\$" refers to US dollars.

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TRANSACTION TECHNICAL ASSISTANCE AT A GLANCE

1. Basic Data		Project Number: 51004-002	
Project Name	Preparing Air Quality Improvement Program (2017-2019) in the Greater Beijing–Tianjin–Hebei Region	Department /Division	EARD/EAEN
Nature of Activity	Project Preparation	Executing Agency	Ministry of Finance
Modality	Facility		
Country	China, People's Republic of		
2. Sector	Subsector(s)	Financing (\$ million)	
✓ Energy	Energy efficiency and conservation		0.65
	Renewable energy generation - biomass and waste		0.23
	Renewable energy generation - solar		0.17
Finance	Infrastructure finance and investment funds		0.15
	Small and medium enterprise finance and leasing		0.20
Transport	Multimodal logistics		0.05
	Transport policies and institutional development		0.07
	Urban public transport		0.18
Water and other urban infrastructure and services	Urban policy, institutional and capacity development		0.05
	Urban sewerage		0.10
	Urban water supply		0.05
		Total	1.90
3. Strategic Agenda	Subcomponents	Climate Change Information	
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive	Climate Change impact on the Project	Medium
Environmentally sustainable growth (ESG)	Eco-efficiency Environmental policy and legislation		
4. Drivers of Change	Components	Gender Equity and Mainstreaming	
Governance and capacity development (GCD)	Institutional development	No gender elements (NGE)	✓
Knowledge solutions (KNS)	Application and use of new knowledge solutions in key operational areas Knowledge sharing activities		
Partnerships (PAR)	Foundations Official cofinancing Private Sector		
Private sector development (PSD)	Conducive policy and institutional environment Promotion of private sector investment		
5. Poverty and SDG Targeting	Location Impact		
Geographic Targeting	Yes	Rural	Medium
Household Targeting	No	Urban	Medium
SDG Targeting	Yes		
SDG Goals	SDG3, SDG7, SDG11		
6. Risk Categorization	Complex		
7. Safeguard Categorization	Safeguard Policy Statement does not apply		
8. Financing			

TRANSACTION TECHNICAL ASSISTANCE AT A GLANCE

Modality and Sources	Amount (\$ million)
ADB	1.50
Project preparatory technical assistance: Technical Assistance Special Fund	1.50
Cofinancing	0.40
Clean Energy Fund under the Clean Energy Financing Partnership Facility	0.40
Counterpart	0.40
Government	0.40
Total	2.30

I. THE TECHNICAL ASSISTANCE FACILITY

A. Justification

1. **Rationale for series of ensuing projects.** The greater Beijing–Tianjin–Hebei (BTH) region is one of the core industrial areas in the People’s Republic of China (PRC).¹ It generates nearly one-third of the PRC’s gross domestic product and is home to 27% of the PRC’s population. It consistently experiences poor air quality² caused by the region’s excessive reliance on coal in the energy mix, high concentration of energy and pollution-intensive industrial enterprises, large number of cars and vehicles, and weak environmental standards and governance.³ For the same reasons, the greater BTH region is also responsible for about 40% of the country’s carbon dioxide (CO₂) emissions, the most abundant greenhouse gas contributing to climate change. Air pollution emergencies are frequent occurrence in many cities of the region.⁴ Ambient air pollution poses severe health risks and contributes to about 1.2 to 2.0 million premature deaths annually in the PRC, of which a disproportionately large number of them in the greater BTH region. It also causes productivity losses for the national economy estimated to amount up to \$300 billion per year.⁵

2. The measures by the Government of the PRC detailed in its Comprehensive Action Plan for Air Pollution Prevention and Control (CAAP) 2013–2017, which when adopted in 2013 introduced stringent air quality measures. These measures were aimed at rolling back air pollution by setting specific emissions targets on sulfur dioxide, nitrogen oxide, particulate matter less than 2.5 microns in diameter (PM_{2.5}) or less in diameter and volatile organic compounds nationally, and especially for the greater BTH region.⁶ To date, the government’s actions have helped to improve air quality on average.⁷ The air quality in the region is still far below the national and the World Health Organization standards.⁸ Due to its important contribution to the country’s CO₂ emissions, the BTH region is a common top priority under both the air quality and climate change policy goals. The PRC’s Thirteenth Five-Year Plan, 2016–2020, also reaffirmed the government’s commitment to accelerate air quality improvement.⁹ It sets ambitious targets for air quality progress, requiring hundreds of cities to meet “good” or “excellent” standards 80% of the time and to reduce by 25% the number of polluted days, and to

¹ The greater BTH region comprises Beijing and Tianjin municipalities, the provinces of Hebei, Henan, Liaoning, Shandong, and Shanxi as well as the Inner Mongolia Autonomous Region.

² Air quality index (AQI) is a common measure to capture quality of air and potential health impacts. AQI includes consideration of six atmospheric pollutants namely sulfur dioxide, nitrogen oxides, PM_{2.5}, carbon monoxide, ozone, and particulate matter 10 micrometers or less in diameter. In the PRC, the AQI varies from 50 (excellent) to 500 (severe pollution).

³ Coal use accounts for about 50% of air pollution in the region, and is the crux of the PRC government’s air pollution and CO₂ emissions problems. The industry has been identified as a critical sector for intervention as it is estimated that 54% of PM_{2.5} is attributable to the industrial sector within the greater BTH region.

⁴ In December 2015, the first “red alert” was issued for Beijing. The AQI threshold for red alert is >500 for one day or >300 for two successive days or >200 for four successive days.

⁵ The World Bank and Institute for Health Metrics and Evaluation University of Washington. 2016. *The Cost of Air Pollution*. Washington, DC.

⁶ CAAP aims to cut the level of fine particulate matter in the greater BTH region by 25%–30%. Annual average concentration of PM_{2.5} in the greater BTH region declined by 9.8% in 2014 and 21.3% in 2015, compared to the 2013 level.

⁷ With the results in air quality improvement achieved since the implementation of the CAAP between 2013 and 2016, it is estimated that by the end of 2017, key air pollutant levels would have declined in the greater BTH region PM_{2.5} (by 32%), sulfur dioxide (by 21%), nitrogen oxides (by 24%), and volatile organic compounds (by 6%).

⁸ The PRC standard for PM_{2.5} concentration is 35 microgram per cubic meter (µg/m³), compared with 10µg/m³ for the World Health Organization (WHO). In 2015, the region’s annual average PM_{2.5} concentration was 66 µg/m³.

⁹ State Council of the People’s Republic of China. 2016. *Outline of the Thirteenth Five-Year Plan for National Economic and Social Development of the People’s Republic of China*. Beijing (adopted in 2016).

reduce by 18% the number of days when PM_{2.5} exceeds allowable limits. The plan includes, for the first time, a total energy consumption cap, set at 5 billion tons of carbon equivalent.

3. The CAAP and low-carbon development efforts are part of the government's wider goals. The 13th plan period marks the entry into the "new normal" of transformative change in development strategy, which (i) shifts the drivers of growth from focusing on the quantity of inputs, including environmental inputs, to their efficiency; (ii) focuses on the transformation of industrial production methods, a fundamental restructuring of the energy sector; and (iii) cultivates new growth points and competitive advantages driven by advanced technologies. The government's goal is to attain an ecological civilization in line with the United Nations Sustainable Development Goals and the 2015 Paris Agreement. Key levers identified by the government to drive the PRC's green development are (i) advanced, innovative technologies, which will transform the industry to adopt clean production methods; (ii) green finance; and (iii) policy reforms. The PRC's high ambitions on advancing environmentally sustainable development will lead to an unprecedented demand for financing. The government's green financing task force estimated those needs to range between CNY14.5 trillion and CNY29.8 trillion up to 2020.¹⁰ The CAAP targets alone will require CNY1.8 trillion in investment, and CNY250 billion within the greater BTH region. In addition, about CNY6.6 trillion in investments will be required to meet low carbon and clean energy targets in the 13th plan, of which only 10%–15% can be realistically financed with public funds.¹¹

4. The speed of "greening" of the economy has to overcome significant uncertainties, challenges, and barriers. The speed of this transformation will depend on the (i) policy framework the government sets, particularly in terms of regulations, their enforcement, and fiscal and financial support schemes for the private sector to invest in emission control and pollution-reduction projects; (ii) availability and scale of deployment of advanced technologies—many emission reduction technologies have been pilot tested, but not demonstrated and deployed; and (iii) availability of adequate financing. In September 2016, the government established its Guidelines for Establishing the Green Financial System, but major barriers persist.¹² On the supply side, key challenges include (i) insufficient information flow on new technologies, (ii) lack of capacity on the side of financial intermediaries in appraising advanced technologies, and (iii) reluctance to invest in new project types. On the demand side, there is still a lack of sufficient, and well-developed green projects.

5. **Programmatic approach to national priority.** The government has requested the Asian Development Bank (ADB) in 2015 to adopt a programmatic approach to address this national priority and assist pertaining challenges (para. 4). The first loan, approved in 2015, focused on policy reforms in Hebei province;¹³ the second, approved in 2016, emphasized improving access to finance for investment in green energy and pollution-reduction projects in the greater BTH region through the establishment of a Green Financing Platform.¹⁴ The lending program (2016–2020) is anchored on three key areas: (i) enhancing policy and regulation for advancing the government's air quality and sustainable development objectives; (ii)

¹⁰ China Council for International Cooperation on Environment and Development. 2016. *China's Green Finance Reform*. Beijing.

¹¹ Bloomberg Philanthropies and Green Finance Committee of China Society for Banking and Finance. 2016. *Green Finance for Low-Carbon Cities*. Beijing.

¹² People's Bank of China. 2016. *Establishing China's Green Financial System*. Beijing.

¹³ ADB. 2015. *Report and Recommendation of the President to the Board of Directors: Beijing–Tianjin–Hebei Air Quality Improvement–Hebei Policy Reforms Program*. Manila.

¹⁴ ADB. 2016. *Report and Recommendation of the President to the Board of Directors: People's Republic of China: Air Quality Improvement in the Greater Beijing–Tianjin–Hebei Region—China National Investment and Guaranty Corporation's Green Financing Platform Project*. Manila.

strengthening and deepening green finance; and (iii) promoting advanced, innovative low-emission technologies in line with the government's green development program.

6. **Ensuing projects.** The forthcoming country operations business plan, 2017–2019 finalized in consultation with the government and key stakeholders, include lending projects of \$500 million per year. These lending projects indicatively comprise the (i) Emission Control and Pollution Reduction Fund of the China Energy Conservation and Environment Protection Group (CECEP), (ii) policy reforms and results-based program in strategically selected provinces in the greater BTH region, and (iii) scaling-up for China National Investment and Guaranty Corporation's Green Financing Platform Project. The upcoming loans will use the financial intermediation loan, results-based and policy-based loan modalities, and will all require similar policy analysis and technical, financial, economic, environment, poverty, social, governance, and legal and regulatory due diligence. ADB lending support each year will be mutually reinforcing and will be backed up by analytical, policy advisory, and capacity development nonlending work—many of which are already in progress.

7. The proposed projects are fully aligned with the country partnership strategy, 2016–2020 for the PRC.¹⁵ The projects prioritize the management of climate change and environment to support the government's priorities in realizing an ecological civilization and the strategic priorities of ADB's Midterm Review of Strategy 2020.¹⁶

8. **Transaction technical assistance facility and justifications.** The proposed transaction technical assistance (TA) facility will provide project preparation, capacity building, and policy advisory assistance for a multiyear lending program spanning 2017–2019 (para. 6), which aims at improving air quality and facilitate low-carbon development in the greater BTH region.

9. As each project is a chain-link in ADB's programmatic approach and is likely to require similar due diligence, the TA facility approach is suitable to (i) enhance operational efficiency in preparing the projects, (ii) reap important synergies from working with the same team of consultants, and (iii) strengthen coordination.

B. Outputs and Activities

10. The major outputs and activities are summarized in Table 1.

Table 1: Summary of Major Outputs and Activities

Major Outputs	Delivery Dates	Key Activities with Milestones
1. 2017 China Energy Conservation and Environment Protection Group's emission control and pollution-reduction fund project prepared for approval and subsequent implementation	Q3 2017	1.1 Complete the financial structuring of the fund by Q2 2017 1.2 Identify and select advanced technology projects by Q2 2017 1.3 Conduct project due diligence by Q2 2017 1.4 Prepare loan documents and incorporate comments from peers and management by Q2 2017

¹⁵ ADB. 2016. *Country Partnership Strategy: Transforming Partnership—People's Republic of China, 2016–2020*. Manila.

¹⁶ ADB. 2014. *Midterm Review of Strategy 2020: Meeting the Challenges of a Transforming Asia and the Pacific, 2008–2020*. Manila.

Major Outputs	Delivery Dates	Key Activities with Milestones
		1.5 Prepare onlending, subloan and subproject, and other legal documents by Q1 2018 1.6 Strengthen Enabling Policies for Local Clean air investments
2. BTH workshop organized	Q3 2017	2.1 Engage resource persons, if any by Q2 2017 2.2 Organize a workshop by Q3 2017 2.3 Prepare conference proceedings by Q1 2018
3. Due diligence for 2018 project prepared	Q4 2018	3.1 Prepare, discuss, and reach an agreement with the Shandong Provincial Government on the policy matrix for air quality improvement by Q1 2018 3.2 Conduct program assessments and prepare program action plan by Q1 2018 3.3 Prepare loan documents and incorporate comments from peers and management by Q3 2017
4. Due diligence for 2019 additional financing for the China National Investment and Guaranty Corporation's Green Financing Platform Project prepared	Q1 2019	4.1 Confirm the eligibility of Green Financing Platform for additional financing by Q3 2018 4.2 Appraise project progress and confirm satisfactory project performance in terms of implementation progress, compliance with ESMS, and management of risks by Q3 2018 4.3 Appraise additional financing needs by Q4 2018 4.4 Prepare loan documents and incorporate comments from peers and management by Q1 2019

BTH = Beijing–Tianjin–Hebei, ESMS = environmental and social management system, Q = quarter.
Source: Asian Development Bank estimates.

C. Cost and Financing

11. The TA facility is estimated to cost \$2.3 million, of which \$1.5 million will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF-other sources) and \$400,000 will be financed on a grant basis by the Clean Energy Fund¹⁷ under the Clean Energy Financing Partnership Facility and administered by ADB. The key expenditure items are listed in Appendix 2. The government will provide counterpart support in the form of counterpart staff, office accommodation, office supplies, secretarial assistance, information and documents relevant for the preparation of the loan projects, and other in-kind contributions.

D. Implementation Arrangements

12. The TA activities for ensuing projects will start only after the project concept paper on such ensuing project is approved by ADB.

13. **Administration of the technical assistance facility.** ADB will administer the TA facility. ADB's Energy Division, East Asia Department with support from other divisions in the same department will select, administer, and supervise the consultants' outputs for the respective loan projects, and will evaluate consultants.

¹⁷ Financing partners: the governments of Australia, Norway, Spain, Sweden, and the United Kingdom.

Table 2: Implementation Arrangements

Aspects	Arrangements		
Indicative implementation period	April 2017–December 2020		
Executing agency	Ministry of Finance		
Implementing agencies	All implementing agencies of the ensuing projects, including (i) China Energy Conservation and Environment Protection Group; (ii) China National Investment and Guaranty Company (iii) Strategically selected province in the greater BTH region still to be determined		
Consultants	To be selected and engaged by ADB		
	5 individual international consultants	16.5 person-months	\$ 400,000
	15 individual national consultants	76.5 person-months	\$ 850,000
	1 firm through QCBS (90:10)		\$ 400,000
	5 resource persons	2.5 person-months	\$35,000
Procurement	To be procured by ADB following ADB's Procurement Guidelines (2015, as amended from time to time).		
Disbursement	The TA resources will be disbursed following ADB's <i>Technical Assistance Disbursement Handbook</i> (2010, as amended from time to time).		

ADB = Asian Development Bank, BTH = Beijing–Tianjin–Hebei, QCBS = quality- and cost-based selection.
Source: Asian Development Bank estimates.

14. **Consulting service descriptions.** Consultants will be engaged following ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). For the preparation of the loan projects, consultants will be engaged through the TA, using the individual selection method and output-based partial lump-sum contracts. To prepare a series of loans as planned to be supported by this proposed TA facility, which all require the same set of due diligence, important synergies may be reaped from engaging the same consultants. Since the 2018 and 2019 loan projects have not yet been fully conceptualized, the engagement of individual consultants offers the necessary flexibility in preparing those loan projects. The expertise of the consultants will cover the entire range required to conduct necessary due diligence for the loan projects. In addition, for the complementary policy analysis to facilitate the preparation of the policy and results-based loan, a firm will be engaged using quality- and cost-based selection method and output-based, partial lump-sum contract. The estimated budget of \$400,000 will be financed on a grant basis by the Clean Energy Fund¹⁸ under the Clean Energy Financing Partnership Facility. The project team will engage five resource persons using time-based contracts to assist in the organization of the BTH workshop. The terms of reference for consultants are in Appendix 3.

II. THE PRESIDENT'S DECISION

15. The President, acting under the authority delegated by the Board, has approved (i) ADB administering a portion of technical assistance not exceeding the equivalent of \$400,000 to be financed on a grant basis by the Clean Energy Fund under the Clean Energy Financing Partnership Facility, and (ii) ADB providing the balance not exceeding the equivalent of \$1,500,000 on a grant basis to the Ministry of Finance of the People's Republic of China for Preparing Air Quality Improvement Program (2017–2019) in the Greater Beijing–Tianjin–Hebei Region, and hereby reports this action to the Board.

Takehiko Nakao
President

10 April 2017

¹⁸ Financing partners: the governments of Australia, Norway, Spain, Sweden, and the United Kingdom.

COST ESTIMATES AND FINANCING PLAN

(\$'000)

Item	Amount
A. Asian Development Bank^a	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	400.0
ii. National consultants	850.0
b. Out-of-pocket expenditures	
i. International and local travel	50.0
ii. Reports and communications	20.0
iii. Surveys	15.0
iv. Training, seminars, and conferences	0.0
2. Training, seminars, and conferences	65.0
3. Contingencies	100.0
Subtotal (A)	1,500.0
B. Clean Energy Fund^b under the Clean Energy Financing Partnership Facility	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	200.0
ii. National consultants	115.0
b. Out-of-pocket expenditures	
i. International and local travel	20.0
ii. Reports and communications	5.0
iii. Surveys	5.0
iv. Training, seminars, and conferences	15.0
2. Training, seminars, and conferences	25.0
3. Contingencies	15.0
Subtotal (B)	400.0
	Total (A+B)
	1,900.0

Note: The technical assistance (TA) is estimated to cost \$2.3 million, of which contributions from the Asian Development Bank and the Clean Energy Financing Partnership Facility are presented in the table above. The government will provide counterpart support in the form of counterpart staff, office accommodation, office supplies, secretarial assistance, information and documents relevant for the preparation of the loan projects, and other in-kind contributions. The value of government contribution is estimated to account for 17.4% of the total TA cost.

^a Financed by the Asian Development Bank's Technical Assistance Special Fund (TASF-other sources).

^b Financing partners: the governments of Australia, Norway, Spain, Sweden, and the United Kingdom. Administered by the Asian Development Bank.

Source: Asian Development Bank estimates.

PROJECTS UNDER TECHNICAL ASSISTANCE FACILITY

Table A2: Indicative Consultants' Inputs Allocation
(person-months)

Consultants' Position	Indicative risk category of ensuing projects and person-month allocations			
	Total	2017 Loan complex	2018 Loan complex	2019 Loan complex
A. International Consultants				
Technical Expert	2.0	2.0	0.0	0.0
Economist	4.5	1.5	2.0	1.0
Finance Expert 1	4.5	1.5	1.5	1.5
Finance Expert 2	1.5	1.5	0.0	0.0
Environment Expert	4.0	1.5	1.5	1.0
Air Quality Policy Expert	4.5	4.5	0.0	0.0
Air Quality Economist	2.5	2.5	0.0	0.0
Atmospheric Modeling Expert	4.0	4.0	0.0	0.0
2 Resource Persons	1.0	1.0	0.0	0.0
Subtotal A	28.5	20.0	5.0	3.5
B. National Consultants				
Policy and Regulatory Expert 1	3.0	0.0	3.0	0.0
Policy and Regulatory Expert 2	5.0	5.0	0.0	0.0
Atmospheric Modeling Expert	5.0	5.0	0.0	0.0
Legal Expert	3.0	3.0	0.0	0.0
Public Finance Expert	3.0	0.0	3.0	0.0
Financial Management Expert	7.5	3.5	2.0	2.0
Financial Structuring Expert	3.0	3.0	0.0	0.0
Economist	3.0	1.0	2.0	0.0
Environment Expert 1	6.0	3.0	0.0	3.0
Environment Expert 2	6.0	3.0	0.0	3.0
Technical Expert 1	6.0	3.0	1.5	1.5
Technical Expert 2	6.0	3.0	1.5	1.5
Technical Expert 3	6.0	3.0	1.5	1.5
Procurement Expert	5.0	2.0	1.5	1.5
Social Development Expert	3.0	0.0	3.0	0.0
Social Safeguards Expert	6.0	1.5	3.0	1.5
Project Coordinator 1	10.0	5.0	3.0	2.0
Project Coordinator 2	5.0	5.0	0.0	0.0
3 Resource Persons	1.5	1.5	0.0	0.0
Subtotal B	93.0	50.5	25.0	17.5
Total (A+B)	121.5	70.5	30.0	21.0

Source: Asian Development Bank.

. LIST OF LINKED DOCUMENTS
<http://www.adb.org/Documents/RRPs/?id=51004-002-2>

1. Terms of Reference for Consultants