



# Report and Recommendation of the President to the Board of Directors

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Project Number: 50096-002  
November 2016

## Proposed Loan 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

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Asian Development Bank



## CURRENCY EQUIVALENTS

(as of 1 November 2016)

Currency unit	–	yuan (CNY)
€1.00	=	CNY7.3806
\$1.00	=	CNY6.7662
\$1.00	=	€0.9168
€1.00	=	\$1.0908

## ABBREVIATIONS

µg/m <sup>3</sup>	–	microgram per cubic meter
ADB	–	Asian Development Bank
AQI	–	air quality index
BOB	–	Bank of Beijing
BTH	–	Beijing–Tianjin–Hebei
CAAP	–	Comprehensive Action Plan for Air Pollution Prevention and Control
CO <sub>2</sub>	–	carbon dioxide
ESCOs	–	energy service companies
ESMS	–	environment and social management system
FIL	–	financial intermediation loan
GFP	–	green financing platform
I&G	–	China National Investment and Guaranty Corporation
LIBOR	–	London interbank offered rate
PAM	–	project administration manual
PM <sub>2.5</sub>	–	particulate matter less than 2.5 microns in diameter
PRC	–	People's Republic of China
SDIC	–	State Development & Investment Corporation
SMEs	–	small and medium-sized enterprises

## NOTE

In this report, "\$" refers to US dollar, and "€" refers to Euro

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## PROJECT AT A GLANCE

<b>1. Basic Data</b>		<b>Project Number:</b> 50096-002	
<b>Project Name</b>	Air Quality Improvement in the Greater Beijing–Tianjin–Hebei Region—China National Investment and Guaranty Corporation's Green Financing Platform Project	<b>Department /Division</b>	EARD/EAEN
<b>Country Borrower</b>	China, People's Republic of People's Republic of China	<b>Executing Agency</b>	China National Investment and Guaranty Corporation, State Development & Investment Corporation (SDIC)
<b>2. Sector</b>	<b>Subsector(s)</b>	<b>ADB Financing (\$ million)</b>	
✓ <b>Energy</b>	Energy efficiency and conservation		220.00
	Renewable energy generation - biomass and waste		60.00
	Renewable energy generation - solar		60.00
<b>Finance</b>	Small and medium enterprise finance and leasing		99.80
<b>Transport</b>	Urban public transport		59.80
	<b>Total</b>		<b>499.60</b>
<b>3. Strategic Agenda</b>	<b>Subcomponents</b>	<b>Climate Change Information</b>	
Inclusive economic growth (IEG)	Pillar 1: Economic opportunities, including jobs, created and expanded	Mitigation (\$ million)	499.60
Environmentally sustainable growth (ESG)	Global and regional transboundary environmental concerns	CO <sub>2</sub> reduction (tons per annum)	5,000,000
	Urban environmental improvement	Climate Change impact on the Project	Medium
<b>4. Drivers of Change</b>	<b>Components</b>	<b>Gender Equity and Mainstreaming</b>	
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 Pilot-testing innovation and learning		
Partnerships (PAR)	Commercial cofinancing International finance institutions (IFI)		
Private sector development (PSD)	Promotion of private sector investment		
<b>5. Poverty and SDG Targeting</b>		<b>Location Impact</b>	
Geographic Targeting	Yes	Rural	Medium
Household Targeting	No	Urban	High
SDG Targeting	Yes		
SDG Goals	SDG3, SDG11		
<b>6. Risk Categorization:</b>	Complex		
<b>7. Safeguard Categorization</b>	<b>Environment:</b> FI <b>Involuntary Resettlement:</b> FI <b>Indigenous Peoples:</b> FI		
<b>8. Financing</b>			
<b>Modality and Sources</b>		<b>Amount (\$ million)</b>	
<b>ADB</b>		<b>499.60</b>	
Sovereign Development financing institution (DFI): Ordinary capital resources		499.60	
<b>Cofinancing</b>		<b>0.00</b>	
None		0.00	
<b>Counterpart</b>		<b>1,327.50</b>	
Beneficiaries		360.00	
Others		942.00	
Project Sponsor		25.50	
<b>Total</b>		<b>1,827.10</b>	
<b>9. Effective Development Cooperation</b>			
Use of country procurement systems		Yes	
Use of country public financial management systems		Yes	





## I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan to the People's Republic of China (PRC) for the Air Quality Improvement in the Greater Beijing–Tianjin–Hebei Region—China National Investment and Guaranty Corporation's Green Financing Platform Project.

2. The proposed Green Financing Platform (GFP)<sup>1</sup> is the first of its kind dedicated to the greater Beijing–Tianjin–Hebei (BTH)<sup>2</sup> region that will leverage financing and scale up investments in green and pollution-reduction projects in sectors such as energy, transport, urban, and agriculture.<sup>3</sup> It will also address market failures that have inhibited investment flows in energy efficiency, and will target emission reduction from small and medium-sized enterprises (SMEs).<sup>4</sup> The GFP will reinforce Asian Development Bank's (ADB) policy-based loan approved in 2015 for Hebei Province by scaling up investments in the policy actions throughout the BTH region, thus, enlarging and accelerating its impacts.<sup>5</sup>

## II. THE PROJECT

### A. Rationale

3. Poor air quality in the BTH region is a serious health risk and economic burden. BTH, which generates nearly one-third of the PRC's gross domestic product, is also the country's worst-polluted region. It consistently experiences poor air quality caused by an excessive reliance on coal in the energy mix, high concentration of energy- and pollution-intensive industrial enterprises, concentration of cars and vehicles, and weak environmental standards.<sup>6</sup> Air pollution emergencies occur frequently in many of the region's cities.<sup>7</sup> Nearly 228 million people in the region live in cities where the average concentration of fine particles commonly known as particulate matter less than 2.5 microns in diameter (PM<sub>2.5</sub>) is predominantly higher than the safe level.<sup>8</sup> Ambient air pollution, particularly higher concentration of PM<sub>2.5</sub>, increases the risk of cardiovascular disease, respiratory diseases, and ischemic heart disease, and is the fifth leading cause of premature deaths in the PRC.<sup>9</sup> Children, the sick, and the elderly are the

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<sup>1</sup> Green financing platform is a term used to describe the project's financing approach which includes a set of diverse financial products with a common objective, which will also be adopted by a group of partner domestic banks.

<sup>2</sup> The greater BTH region consists of the Beijing and Tianjin municipalities; Hebei, Henan, Shandong, Shanxi, and Liaoning provinces; and Inner Mongolia Autonomous Region. The design and monitoring framework is in Appendix 1.

<sup>3</sup> Based on various data, these sectors combined are responsible for nearly 95% of air pollution in the BTH region.

<sup>4</sup> For the industrial sector, enterprises with fewer than 1,000 employees and total assets of less than CNY400 million are SMEs.

<sup>5</sup> Asian Development Bank (ADB). 2015. *Report and Recommendation of the President to the Board of Directors: Proposed Policy-Based Loan to the People's Republic of China for the Beijing–Tianjin–Hebei Air Quality Improvement–Hebei Policy Reforms Program*. Manila.

<sup>6</sup> Air quality index (AQI) is a common measure of the quality of air and its potential health impacts. AQI includes consideration of six atmospheric pollutants: sulfur dioxide, nitrogen oxide, particulate matter less than 2.5 microns in diameter (PM<sub>2.5</sub>), carbon monoxide, ozone, and particulate matter 10 micrometers or less in diameter. In the PRC, the AQI is categorized from 50 (excellent) to 500 (severe pollution).

<sup>7</sup> In December 2015, Beijing Air Pollution Emergency Headquarters issued a 'red alert' was issued for Beijing. The AQI threshold for a red alert is greater than 500 for 1 day, greater than 300 for 2 successive days, or greater than 200 for 4 successive days.

<sup>8</sup> The PRC standard for PM<sub>2.5</sub> concentration is 35 micrograms per cubic meter (µg/m<sup>3</sup>), compared with 10 µg/m<sup>3</sup> for the World Health Organization. In 2015, the region's annual average PM<sub>2.5</sub> concentration was 73 µg/m<sup>3</sup>.

<sup>9</sup> Health Effects Institute and Tsinghua University. 2016. *New Study: Air Pollution from Coal a Major Source of Health Burden in China*. Boston.

most vulnerable to such adverse effects. Exposure to high levels of PM<sub>2.5</sub> contributes to about 1 million premature deaths annually in the PRC, with a disproportionate number of these in the BTH region. The cost of premature mortality to the national economy is estimated as approximately 7.5% of the gross domestic product.<sup>10</sup> Together, these are compelling reasons to address the region's air quality issue.

4. The Government of the PRC is committed to improve air quality in the BTH region and has made good progress. In 2012, the State Council promulgated new ambient air quality standards that tightened the concentration limit of six atmospheric pollutants (footnote 6). In 2013, the government launched a nationwide Comprehensive Action Plan for Air Pollution Prevention and Control (CAAP), 2013–2017, the first plan of its kind in the PRC, which outlined the most stringent air pollution control measures in the PRC's history.<sup>11</sup> Since the CAAP launch, air quality has gradually improved in the BTH region (footnote 11), but is still far below national and World Health Organization standards (footnote 8). The CAAP pairs well with the PRC's commitment to peak its carbon dioxide (CO<sub>2</sub>) emissions by 2030 under the Paris Agreement because coal combustion is the single-largest source for both air pollution and CO<sub>2</sub> emissions (footnote 9). Since the BTH region is also responsible for about 40% of the country's CO<sub>2</sub> emissions, it is a common top priority under both air quality and climate change policy goals. The Thirteenth Five-Year Plan (2016–2020) has reaffirmed the government's commitment to accelerate air quality improvement and includes mandatory targets.<sup>12</sup>

5. Despite a promising start, tougher challenges remain to further improve air quality. CAAP helped accelerate the early retirement of surplus industrial capacity and galvanized actions for cost-effective, end-of-pipe measures to yield quick results.<sup>13</sup> But many similar international experiences have shown that air quality improvements require sustained long-term, coordinated, and multisector efforts. Since air pollution easily migrates to neighboring areas, a BTH region-wide approach is also essential.<sup>14</sup> These requirements pose significant new challenges for national, provincial, and city authorities in the BTH region that traditionally rely on a sector-specific and city- or province-specific approach and are structured accordingly.

6. Some important sectors and segments need increased attention and targeted support. Air quality is generally considered an urban issue that tends to ignore, for example, agriculture sector (biomass burning) and rural energy consumption, which together are responsible for 15% of the region's PM<sub>2.5</sub> emissions. Similarly, SMEs are key economic players in the BTH region, accounting for about 60% of industrial pollution.<sup>15</sup> But, because of SMEs' lack of knowledge in advanced and energy-efficient technologies, weak understanding of their cost-benefit evaluation, and, most importantly, difficulties in accessing commercial credit,<sup>16</sup> they are seriously constrained in taking actions to reduce pollution and emissions and are about 40% less energy

<sup>10</sup> World Bank and Institute for Health Metrics and Evaluation. 2016. *The Cost of Air Pollution: Strengthening the Economic Case for Action*. Washington, DC.

<sup>11</sup> CAAP aimed to cut the level of PM<sub>2.5</sub> in the BTH region by 25%–30%. Compared with 2013, the annual average concentration of PM<sub>2.5</sub> in the BTH region declined by 9.8% in 2014 and by a further 11.3% in 2015.

<sup>12</sup> The Thirteenth Five-Year Plan requires (i) > 80% days with good air quality (less than 100 AQI) per year for cities at or above prefecture level, and (ii) 18% reduction in number of cities that do not meet the PM<sub>2.5</sub> national standard. Government of the PRC. 2016. *Thirteenth Five-Year Plan, 2016–2020*. Beijing.

<sup>13</sup> "End-of-pipe" actions require pollution control devices to scrub pollutants, which are effective for quick outcomes.

<sup>14</sup> A performance evaluation of the CAAP by the Clean Air Alliance of China found that 20% of PM<sub>2.5</sub> was a result of regional transmission from neighboring provinces.

<sup>15</sup> Yao Guoyan. 2012. SMEs should actively undertake the corporate environmental responsibility. *Environmental Protection*. 7. pp. 52–53.

<sup>16</sup> Banks consider SME transactions highly risky and require good credit ratings or high levels of collateral, which many SMEs cannot provide.

efficient than large enterprises in the same sector.<sup>17</sup> Energy service companies (ESCOs), which act as developers for energy efficiency improvement projects of SMEs and assume the technical and performance risks, can overcome many of these barriers and help SMEs. But ESCOs are generally SMEs themselves and face similar hurdles accessing credit.<sup>18</sup> The government established green credit policies in 2007 and then revamped them in 2012 as Green Credit Guidelines to encourage banks to support green industries and projects. But commercial banks appetite for green financing is still limited to large polluting and excess capacity enterprises instead of SMEs or ESCOs. A targeted approach combining credit enhancement and tailored financing can unlock investments. But there is no financing vehicle that can directly address these needs in the region.

7. The CAAP alone requires CNY1.8 trillion in investments, of which CNY250 billion is needed in the BTH region. About CNY6.6 trillion is needed to meet low-carbon and clean energy targets in the thirteenth plan. The scale of investment is a serious challenge, but bigger challenges are to address market failures and channel financing into these environmental and low-carbon projects for which returns are modest, perceived risks are high, and, despite conducive policies, commercial banks are hesitant to do transactions.

8. The government requested ADB to design the project and to establish a GFP so as to mobilize domestic financing to air quality improvements in the BTH region by leveraging ADB loan proceeds. The project will use the financial intermediation loan (FIL) modality, which is the most appropriate lending instrument to aggregate diverse projects across many sectors in the BTH region for which the financing requirements are not large enough to warrant direct lending by ADB. It also enables ADB and the government to establish partnerships with local commercial banks and domestic financial institutions to enable financing of such projects on commercial terms. This modality was also employed in similar energy-efficient and emission-reduction projects in the PRC during 2008–2015 and has proved highly successful.<sup>19</sup> The GFP builds on the lessons learned.<sup>20</sup>

9. The GFP will offer three complementary financial products:<sup>21</sup> (i) credit guarantees to enable commercial financing from banks, (ii) debt financing through entrusted loans,<sup>22</sup> and (iii) financial leasing for purchasing energy-efficient industrial equipment and other goods to obviate the need for large capital for SMEs and ESCOs.<sup>23</sup> In addition, GFP may make short-term equity

<sup>17</sup> International Energy Agency. 2015. *Accelerating Energy Efficiency in Small and Medium-Sized Enterprises*. Paris.

<sup>18</sup> Cash-flow financing is crucial for small ESCOs because they rely on energy-saving performance contracts in which debt repayments are tied to the energy cost savings guaranteed for the project.

<sup>19</sup> ADB. 2008. *Report and Recommendation of the President to the Board of Directors: Proposed Multitranchise Financing Facility and Administration of Grant to the People's Republic of China for the Guangdong Energy Efficiency and Environment Improvement Investment Program*. Manila; ADB. 2011. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Shandong Energy Efficiency and Emission Reduction Project*. Manila; ADB. 2011. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Hebei Energy Efficiency Improvement and Emission Reduction Project*. Manila; and ADB. 2015. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Chemical Industry Energy Efficiency and Emission Reduction Project*. Manila.

<sup>20</sup> Lessons include that (i) capacity of the financial intermediary is a crucial factor; (ii) in previous FILs, credit risks were borne by provinces or industrial entities, which led to a risk-averse approach in appraising transactions; and (iii) more rigorous due diligence can avoid high attrition rate among borrowers.

<sup>21</sup> These are broadly in line with the Group of Twenty and Organisation for Economic Co-operation and Development guidance note on diversification of financial instruments for infrastructure and SMEs.

<sup>22</sup> An entrusted loan refers to the extension of credit by a bank as an agent of entrusted funds from the GFP. The bank will administer the debt, but assumes no credit risk.

<sup>23</sup> In leasing arrangements, the equipment is owned by the financial leasing company.

investments in promising start-ups specializing in advanced low-carbon technologies to help overcome barriers of lack of credit history and the collateral.<sup>24</sup> The credit guarantees will ensure that technically sound and financially viable subprojects with high energy-saving and pollution-reduction potential but lack collateral will meet the commercial banks' requirements. The financial intermediary will partner with commercial banks to offer entrusted loans at near market rates, and partner banks are encouraged to provide cofinancing. GFP can provide lease financing through financial leasing companies.<sup>25</sup> The GFP will also be in close partnership with some major commercial banks, thereby not only catalyzing large cofinancing from commercial banks but also enhancing their capacity and interest in similar investments.

10. The importance of good air quality in the BTH region, which is home to nearly one-third of the PRC's total population, cannot be emphasized enough. It is a basic human need and a critical component of Sustainable Development Goal 3: Ensure healthy lives and well-being for all at all ages and Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable. Given the challenges and required actions (para. 5) in the BTH region, ADB and the government have agreed in principle on a multiyear lending support program during 2016–2020, which is well aligned with ADB's country partnership strategy priority of managing climate change and the environment and the government's thirteenth plan.<sup>26</sup> ADB's planned lending support during 2016–2020 will be about \$500 million per year and will focus on (i) strengthening policy and regulatory framework in the region, (ii) developing tailored financing approaches to unlock and channel investments in right areas, and (iii) leapfrogging technology in key sectors. ADB support will complement government and other development partners' actions, such as the World Bank.<sup>27</sup> Yearly ADB lending support will be mutually reinforcing and supported by analytical, policy advisory, and capacity development non-lending work, much of which is in progress.<sup>28</sup>

11. The 2015 policy-based loan (footnote 5) was ADB's entry point to address the BTH region's air quality issue. This loan was fully disbursed in June 2016. The GFP is a logical next step to fill a critical gap of a region-dedicated financing vehicle and expand the financial products tool kit to reduce primary air pollutants, and improve public health.<sup>29</sup> The proposed GFP will help address the twin challenges of air quality improvements and climate change mitigation.

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<sup>24</sup> The short-term equity investment will be with a clear exit strategy.

<sup>25</sup> The detailed description of the financial products offered by the platform is in the Project Administration Manual (accessible from the list of linked documents in Appendix 2).

<sup>26</sup> ADB. 2016. *Country Partnership Strategy: Transforming Partnership: People's Republic of China and Asian Development Bank, 2016–2020*. Manila.

<sup>27</sup> The details of coordination among development partners are detailed in Development Coordination (accessible from the list of linked documents in Appendix 2).

<sup>28</sup> ADB. 2014. *Technical Assistance to the People's Republic of China for the Study on the National Control of the Important Pollutant–Volatile Organic Compounds*. Manila; ADB. 2015. *Technical Assistance to the People's Republic of China for the Beijing–Tianjin–Hebei Regional Air Pollution Control*. Manila; ADB. 2016. *Technical Assistance to the People's Republic of China for Developing Cost-Effective Policies and Investments to Achieve Climate and Air Quality Goals in the Beijing–Tianjin–Hebei Region*. Manila; and ADB. 2015. *Technical Assistance to the People's Republic of China for the Study on the Coordinated Development of Beijing–Tianjin–Hebei*. Manila.

<sup>29</sup> The Framework for the Beijing–Tianjin–Hebei Air Quality Improvement Program, 2016–2020 (accessible from the list of linked documents in Appendix 2) provides further information on a framework concept of ADB support to the BTH region during 2016–2020. The details of individual projects under the framework will be mutually agreed.

## B. Impacts and Outcome

12. The impacts will be reduced air pollution and improved public health in the BTH region. The outcome will be accelerated air quality improvements and CO<sub>2</sub> emission reduction through scaled-up investments in green and pollution-reduction projects in the BTH region.

## C. Outputs

13. The outcome will be achieved through the following outputs:

- (i) **Output 1: Established green financing platform and leveraged commercial financing for pollution-reduction projects.** The BTH region-dedicated platform will scale up investments in sectors responsible for about 95% of the region's pollution. By 2022, at least CNY6 billion will be leveraged from cofinanciers.
- (ii) **Output 2: Lowered barriers and scaled-up financing for small and medium-sized enterprises and energy service companies from the green financing platform.** By 2022, SMEs and ESCOs will receive at least CNY1 billion investment from and as a result of the GFP. By working closely with domestic banks, the project will strengthen their capacity and interest in SMEs and ESCOs financing.
- (iii) **Output 3: Strengthened capacity in new financial products and to appraise and implement green financing projects.** Work closely with financial intermediary and partner entrusted banks to build their capacity in new financial products, enhance safeguard measures as reflected in the environmental and social management system (ESMS), and help them to better understand how to underwrite and appraise green and pollution-reduction projects and their implementation.<sup>30</sup>

## D. Key Features of the Project

14. The state-owned China National Investment and Guaranty Corporation (I&G) was selected by the government to set up the GFP because its core business areas are credit enhancement, assets management, and provision of investment and guaranty in many sectors. Moreover, I&G has an impressive track record of investment and guaranty operations in many BTH provinces and cities and has worked satisfactorily on a previous international financing institution's project.<sup>31</sup> I&G will be the financial intermediary and the executing and implementing agency. The State Development & Investment Corporation (SDIC), the controlling state-owned enterprise of I&G, will provide credit enhancement for I&G.<sup>32</sup> To assist I&G in its debt financing operation, the Bank of Beijing (BOB) has been selected through a competitive process to act as one of the entrusted banks.<sup>33</sup> Many other large commercial banks have expressed strong interest to act as an entrusted bank and/or cofinance subprojects selected by GFP.<sup>34</sup>

<sup>30</sup> A capacity development technical assistance is being processed (50096-003) to supplement GFP implementation and provide essential risk-mitigating measures. It aims to (i) improve the GFP's reach across all sectors, provinces, and cities through targeted outreach efforts; (ii) increase readiness of the subprojects; (iii) design and develop an information technology-based online platform for application by potential subprojects; and (iv) improve the capacity of the executing and implementing agencies, participating banks and financial institutions, and subborrowers in appraising such projects and implementing the ESMS.

<sup>31</sup> World Bank–Global Environment Facility project to provide first loss guarantee for energy efficiency projects.

<sup>32</sup> SDIC is one of the PRC's largest investment corporations with \$76.2 billion equivalent total assets in 2015.

<sup>33</sup> BOB, as an entrusted bank, will act as the agent of I&G (the principal). BOB will administer the entrusted loans according to the terms and rates agreed with I&G, which will bear the loan risks. BOB will also cofinance projects. In this regard a memorandum of understanding was signed with BOB on 3 November 2016.

<sup>34</sup> Including China Development Bank, China Merchant Bank, Guangfa Bank, China CITIC Bank, and China Everbright Bank.

15. To strengthen GFP targeting and ensure its financial viability, apart from entrusted loans, the platform is designed as follows: (i) up to €91.6 million of the ADB loan amount will be used to support credit guarantees to enhance the credit of subborrowers so as to meet commercial banks' credit requirements, (ii) up to €91.6 million of the ADB loan amount will target leasing operations, and (iii) short-term equity investments will be limited to €25 million. To manage its liquidity reserve for credit guarantees, I&G will use ADB loan proceeds to invest in high credit quality and highly liquid financial assets.<sup>35</sup>

16. The GFP will leverage large commercial cofinancing. An estimated €1.2 billion cofinancing and counterpart funds is expected from the first batch of subprojects. Since the payback period of subprojects is typically 3–8 years, as the initial batch of subloans is repaid, the proceeds will be relent to another set of subprojects. For this purpose, a reflow account will be established. It is expected that reflows from the first batch will be relent to additional batches of subprojects with an estimated investment of €2.4 billion. Thus, the GFP is expected to leverage €3.6 billion.

## E. Investment and Financing Plans

17. The investment cost of the first batch of subprojects is estimated to be €1,675 million (Table 1), including the financial charges on entrusted and cofinancing loans.

**Table 1: Indicative Investment Amounts for First Batch of Subprojects**  
(€ million)

Item	Amount
<b>A. Subproject Investment Cost<sup>a</sup></b>	
1. Subprojects supported through entrusted loans	620.0
2. Subprojects supported through financial leasing facility	115.0
3. Subprojects supported through guarantees	800.0
4. Subprojects supported through investment in early stage technology	25.0
<b>Subtotal (A)</b>	<b>1,560.0</b>
<b>B. Guarantee Loss Reserve<sup>b</sup></b>	<b>91.6</b>
<b>C. Project Management Expenses</b>	<b>23.4</b>
<b>Total (A+B+C)</b>	<b>1,675.0</b>

<sup>a</sup> Includes taxes and duties estimated to be €102 million, of which an estimated €30 million will be from the Asian Development Bank (ADB) loan proceeds. The amount of taxes and duties to be financed by ADB (i) is within the reasonable threshold identified during the country partnership strategy preparation process, (ii) does not represent an excessive share of the investment plan, and (iii) applies only to ADB-financed expenditures. The financing of taxes and duties is considered relevant to project success. The interest cost of ADB loan proceeds during implementation has been estimated at the 5-year forward euro interbank offered rate plus a spread of 0.5%. Commitment charges for an ADB loan have been estimated at 0.15% per year to be charged on the undisbursed loan amount. The total financial charges of the ADB loan during implementation have been estimated at €5.5 million. However, they are not included in the table to avoid double counting as I&G can recover this through the interest on subloans.

<sup>b</sup> The guarantee loss reserve may be used for investment in high credit quality, highly liquid financial assets.  
Source: ADB estimates.

18. The government has requested a loan of €458 million (\$499.6 million equivalent) from ADB's ordinary capital resources to help finance the project.<sup>36</sup> The loan will have a 15-year term, including a grace period of 10 years,<sup>37</sup> an annuity repayment at the 10% discount rate option, an

<sup>35</sup> Such financial assets should preferably be high quality (AA- or better as rated by a reputable local rating agency); they may include green bonds.

<sup>36</sup> Three scenarios for CNY, United States dollar, and euro lending were built to simulate the risks under different scenarios. Based on the simulation, I&G decided to borrow in euro.

<sup>37</sup> A longer grace period is essential to seek the rollover of ADB loan proceeds and larger impacts.

annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, a commitment charge of 0.15% per year, and such other terms and conditions set forth in the draft loan and project agreements. Based on this, the average loan maturity is 12.95 years, and there is no maturity premium payable to ADB. The loan is expected to leverage €863.6 million from local commercial banks.<sup>38</sup> Subborrowers will provide about €330 million as counterpart contributions.

19. The ADB loan proceeds will be onlent from the Ministry of Finance to I&G through SDIC on identical repayment, tenors, and pricing terms of ADB's loan. SDIC and I&G will bear the foreign exchange risk. I&G will utilize the ADB loan amount through financing instruments (para. 15) under the platform. Fund flow, implementation, nature and scope of the financial instruments, and risk-sharing arrangements are described in Appendix 1 of the Project Administration Manual (PAM).<sup>39</sup> The financing plan for the first batch of subprojects is in Table 2.

**Table 2: Financing Plan for First Batch of Subprojects**  
(€ million)

Item	Amount
A. Asian Development Bank <sup>a</sup>	458.0
B. Domestic Commercial Banks <sup>b</sup>	863.6
C. China National Investment and Guaranty Corporation <sup>c</sup>	23.4
D. Subborrowers <sup>d</sup>	330.0
<b>Total (A+B+C+D)</b>	<b>1,675.0</b>

<sup>a</sup> Comprises €366.4 million to support the entrusted loan and financial leasing program, and €91.6 million for the guarantee loss reserve.

<sup>b</sup> Comprises €643.6 million to fund guaranteed investments and €220 million to cofinance projects under the entrusted loan program.

<sup>c</sup> Includes costs for the project management office and for hedging exchange rate and interest rate risks.

<sup>d</sup> Includes counterpart contributions to investments supported by the guarantees and entrusted loans.

Source: Asian Development Bank estimates.

## F. Implementation Arrangements

20. The implementation arrangements are summarized in Table 3 and described in detail in the PAM (footnote 39).

**Table 3: Implementation Arrangements**

Aspects	Arrangements
Implementation period	March 2017–March 2022
Estimated completion date	31 March 2032 (loan closing date: 30 September 2022)
<b>Management</b>	
(i) Oversight body	SDIC
(ii) Executing agency	I&G is the executing agency.
(iii) Financial intermediary and implementing agency	I&G will bear the credit risk of the subprojects and will have subproject approval authority, subject to ADB concurrence in certain circumstances. I&G will be required to obtain a no objection from ADB for subprojects above the free limit of €50 million and any environment <i>category A</i> subprojects. I&G will enter into partnership agreements with the Bank of Beijing for administering entrusted loans providing cofinancing.
(iv) Implementation unit	The PMO established in I&G will act as the main implementation unit and will have up to 20 full-time staff. The PMO will enter into a strategic corporation framework agreement with the Appraisal Center for Environment and Engineering to provide expertise on environment assessment and monitoring. I&G will also recruit technical experts in technical appraisal and monitoring, as necessary.

<sup>38</sup> ADB and domestic commercial banks will enter into a separate collaborative cofinancing arrangement through a memorandum of understanding to ensure the application of ADB policies and other requirements.

<sup>39</sup> Project Administration Manual (accessible from the list of linked documents in Appendix 2).

Aspects	Arrangements
Procurement	The subborrowers will use commercial practices acceptable to ADB for procuring goods and services using the proceeds of subloans and investments. A procurement manual has been prepared to provide guidance on how commercial practices can be adopted in a manner consistent with ADB's procurement principles.
Retroactive financing and/or advance contracting	The executing agency may enter into subloan agreements prior to the loan agreement signing with ADB, and this will be deemed as advance contracting. Retroactive financing may be provided to any subloan being refinanced or to a subproject that was commenced before the effective date, provided that expenditures were incurred not earlier than 12 months prior to the signing of the loan agreement, and that the subproject to be refinanced has been vetted under I&G's environmental and social management system and is fully compliant. The total retroactive financing will not exceed 20% of the loan amount.
Disbursement	The loan proceeds will be disbursed following ADB's <i>Loan Disbursement Handbook</i> (2015, as amended from time to time) and detailed arrangements agreed between the government and ADB, and described in the project administration manual as special disbursement guidelines. <sup>a</sup>

ADB = Asian Development Bank, I&G = China National Investment and Guaranty Corporation, PMO = project management office, SDIC = State Development & Investment Corporation.

<sup>a</sup> Project Administration Manual (accessible from the list of linked documents in Appendix 2).

Source: ADB.

### III. DUE DILIGENCE

21. The PAM details the subproject selection criteria, covering applicable technical, financial, economic, and environment and social safeguard requirements. It also includes guidelines on the screening and appraisal of individual transactions. I&G is required to prepare appraisal reports to verify compliance with selection criteria and obtain ADB's no objection for subprojects that (i) are financed with retroactive financing, (ii) receive financing in excess of the free limit of €50 million, and (iii) are assessed as *category A* for the environment.

22. A detailed appraisal of the 11 representative potential subprojects was carried out.<sup>40</sup> These projects include waste heat capture and delivery, agriculture waste utilization, distributed renewable energy, energy efficiency, smart transport and electrical vehicles, and emission-reduction and are spread across the BTH region. The representative subprojects cost €340 million and would utilize about €124 million of the ADB loan. Another set of potential subprojects with total investment needs of €1 billion is currently being appraised.

#### A. Technical

23. Technical due diligence of representative subprojects (i) verified the technical feasibility and appropriateness of the proposed technology to achieve the desired energy savings and pollution reductions; (ii) verified estimated cost; and (iii) reviewed main contract packages to be procured and proposed procurement methods.

#### B. Economic and Financial

24. Financial due diligence confirmed the financial viability of SDIC, I&G, and BOB. SDIC and I&G have a strong financial standing and are capable of meeting financial obligations and debt service payments without difficulty.<sup>41</sup> The integrity due diligence of I&G showed no negative findings. Subprojects and subborrowers will need to meet economic and financial viability criteria as agreed with I&G and acceptable to ADB, as documented in the PAM. The

<sup>40</sup> The technical description of representative sample subprojects is in the Introduction of Technologies Used for Sample Subprojects (accessible from the list of linked documents in Appendix 2).

<sup>41</sup> Financial Management Assessment (accessible from the list of linked documents in Appendix 2).



financial assessment of the platform demonstrated its sustainability under prudent loss assumptions.<sup>42</sup>

25. The financial internal rate of return was calculated for the appraised representative subprojects. It ranges from 4.78% to 22.80%, which is much higher than the weighted average cost of capital. The economic internal rate of return of the appraised subprojects ranges from 17.28% to 25.39%.

### C. Governance

26. **Financial management assessment.** The financial management assessment was conducted following ADB's Financial Management and Analysis of Projects.<sup>43</sup> The results for SDIC, I&G, and BOB showed that adequate financial management systems and procedures are in place to meet ADB requirements. The external audit reports from 2012–2015 for SDIC, I&G, and BOB had unqualified opinion. BOB fully complies with the regulator's prudential regulations. The financial management risks before mitigation were assessed to be moderate (footnote 41).

27. **Procurement risk assessment.** Procurement will follow ADB's Procurement Guidelines (2015, as amended from time to time) applicable to FILs, and appropriate procedures will be adopted. The procurement assessment was conducted on representative potential subprojects. It showed that most of subborrowers' procurement practices followed established domestic commercial practices, and procurement procedures aligned with the PRC's procurement laws acceptable to ADB. To provide guidance on this, a project-specific procurement manual has been prepared and included in Appendix 5 of the PAM.

28. **Corruption prevention.** ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with SDIC, I&G, and BOB. The specific policy requirements and supplementary measures are described in the PAM.

### D. Poverty and Social

29. The project will have positive social impacts by reducing air pollution and mitigating the negative economic impacts of the local pollution. Improved air quality will directly benefit 371.7 million people, including 14.6 million poor people in the BTH region. In addition, the project will indirectly create new employment opportunities.

### E. Safeguards

30. The project is classified *financial intermediary*. An ESMS<sup>44</sup> was developed to meet national laws and requirements of ADB's Safeguard Policy Statement (2009). The ESMS provides guidance on (i) screening, categorization, and review of subprojects; (ii) organizational structure and staffing, including skills and competencies in environmental and social areas; (iii) capacity building; and (iv) monitoring and reporting. I&G and SDIC will be responsible for ESMS implementation. The ESMS provides for the inclusion of environment *category A* subprojects. If any such subprojects are included, ADB will review and approve the environmental impact assessments, which must meet Safeguard Policy Statement requirements on disclosure and consultation.

<sup>42</sup> Financial Analysis and Economic Analysis (accessible from the list of linked documents in Appendix 2).

<sup>43</sup> ADB. 2005. *Financial Management and Analysis of Projects*. Manila.

<sup>44</sup> Financial Intermediary: Environmental and Social Management System Arrangement (accessible from the list of linked documents in Appendix 2).

## F. Risks and Mitigating Measures

31. Major risks and mitigating measures are summarized in Table 4 and detailed in the risk assessment and risk management plan.<sup>45</sup> To strengthen GFP implementation and address these risks, a grant-financed technical assistance is being finalized (footnote 30) that will mitigate risks identified in Table 4. The integrated project benefits and impacts are expected to outweigh the costs.

**Table 4: Summary of Risks and Mitigating Measures**

Risks	Mitigating Measures
The economic slowdown reduces the ability of or appetite for commercial banks to lend and for private sector to invest in projects they perceive as high risk.	A credit guarantee facility has been included under the platform to enhance the creditworthiness of potential subborrowers.
Weak demand from borrowers may slow implementation.	The initial market assessment indicated strong demand, and, as the government gradually seeks more action, demand is likely to increase. The forthcoming TA will strengthen the GFP reach and interactions with potential borrowers. <sup>a</sup> GFP ownership in the region is very high.
Complexity due to the multitude of lending instruments within the platform may affect the safeguard compliances and technical and financial due diligence.	The environmental and social management system has good ownership by I&G, which has also partnered with institutions to build its capacity in these areas. The forthcoming TA supports safeguard compliances and reporting. <sup>a</sup>

ADB = Asian Development Bank, GFP = green financing platform, I&G = China National Investment and Guaranty Corporation, TA = technical assistance.

<sup>a</sup> ADB. Forthcoming. *Technical Assistance to the People's Republic of China for Strengthening Capacity in the Implementation of the Green Financing Platform for the Greater Beijing–Tianjin–Hebei Region*. Manila.

Source: ADB.

## IV. ASSURANCES

32. The government, SDIC, and I&G have assured ADB that implementation of the project shall conform to all applicable ADB policies, including those concerning anticorruption measures, safeguards, gender, procurement, and disbursement as described in detail in the PAM and loan documents. The government, SDIC, and I&G have agreed with ADB on certain covenants for the project, which are set forth in the loan agreement and project agreement.

## V. RECOMMENDATION

33. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the loan of €458,000,000 to the People's Republic of China for the Air Quality Improvement in the Greater Beijing–Tianjin–Hebei Region—China National Investment and Guaranty Corporation's Green Financing Platform Project, from ADB's ordinary capital resources, with interest to be determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; for a term of 15 years, including a grace period of 10 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board.

Takehiko Nakao  
President

18 November 2016

<sup>45</sup> Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

## DESIGN AND MONITORING FRAMEWORK

<b>Impacts the Project is Aligned with</b>			
Air pollution reduced and public health in the BTH region improved (Comprehensive Action Plan for Air Pollution Prevention and Control of the PRC and the Thirteenth Five-Year Plan) <sup>a</sup>			
<b>Results Chain</b>	<b>Performance Indicators with Targets and Baselines</b>	<b>Data Sources and Reporting</b>	<b>Risks</b>
<b>Outcome</b> Air quality improvements and CO <sub>2</sub> emission reduction accelerated	By 2024: a. The investment in pollution reduction doubles from 2015 levels (2015 baseline: CNY15 billion)  b. Annual concentration of PM <sub>2.5</sub> reduced by 25%; SO <sub>2</sub> and NO <sub>x</sub> reduced by 15% in the BTH region (2015 baseline: PM <sub>2.5</sub> is 73 µg/m <sup>3</sup> ; SO <sub>2</sub> is 7.83 million tons and NO <sub>x</sub> is 8.19 million tons)  c. Ratio of days with good air quality (AQI <100) per year reaches >80.0% in cities at or above prefecture level in the BTH region, benefiting more than 200 million people (2015 baseline: 76.7%)  d. At least 5 million tons of CO <sub>2</sub> emissions per year avoided compared with 2015 (2015 baseline: 10.3 billion tons)	a–b. Beijing and Tianjin municipalities; Hebei, Henan, Shandong, Shanxi, and Liaoning provinces; and Inner Mongolia Autonomous Region annual yearbooks  a–d. Midterm review of the green financing platform in 2019 to check that the trajectory confirms the progress is on track  c. Ministry of Environmental Protection report on Thirteenth Five-Year Plan targets  d. National and international data and reports under the Paris Agreement	The economic slowdown reduces appetite for green investments.  Weak demand from borrowers may slow implementation.
<b>Outputs</b> 1. BTH-dedicated green financing platform established and commercial financing for pollution-reduction projects leveraged	By 2022: 1a. At least CNY6 billion commercial cofinancing leveraged by the platform (2015 baseline: 0)	1a–1d. Regular reports on GFP implementation and project completion report	Complexity due to the multitude of lending instruments within the platform may affect the safeguard compliance, and technical and financial due diligence.

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
<p>2. For SMEs and ESCOs from the green financing platform, barriers lowered and financing scaled up</p> <p>3. Capacity in new financial products and to appraise and implement green financing projects strengthened</p>	<p>1b. CNY1 billion invested in energy efficiency and distributed renewable projects to reduce share of coal to 62% in the mix (2015 baseline: 64%)</p> <p>1c. At least 1 million square meters of floor area retrofitted with energy-efficient heating, and other measures and smart control (2015 baseline: 0)</p> <p>1d. Low-emission public transport promoted through green leasing in at least three cities of the BTH region (2015 baseline: 0)</p> <p>1e. Clean and energy-efficient agriculture biomass utilization demonstrated (2015 baseline: 0)</p> <p>By 2022:</p> <p>2a. Cash-flow financing through at least two commercial banks for SME and ESCO financed by the platform (2015 baseline: 0)</p> <p>2b. CNY1 billion invested in SMEs and ESCOs for green investment projects by the platform (2015 baseline: 0)</p> <p>By 2022:</p> <p>3a. 40 investment projects appraised for cofinancing by commercial banks (2015 baseline: 0)</p>	<p>1a–1d. At least three commercial banks partner with the platform for entrusted loans and cofinancing</p> <p>1b. At least 100 distributed renewable energy Projects financed by the platform</p> <p>1c. Energy audit report of building energy efficiency and district heating retrofit projects supported by GFP</p> <p>1d. Green leasing projects assessment report of GFP</p> <p>1e. Project completion report</p> <p>2a–2b. Subproject appraisal reports and project completion reports</p> <p>2a. Midterm survey with ESCOs, SMEs, and commercial banks to assess the impact</p> <p>3a–3c. Subprojects appraisal reports</p> <p>3a–3c. Project completion report</p>	

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
	<p>3b. 50 people trained on energy management (2015 baseline: 0)</p> <p>3c. Five workshops for 100 participants organized on project appraisal and management (2015 baseline: 0)</p>		

### Key Activities with Milestones

#### 1. BTH-dedicated green financing platform established and commercial financing for pollution reduction projects leveraged

- 1.1 BTH-dedicated green financing platform established (Q2 2017).
- 1.2 CNY6 billion commercial cofinancing leveraged by the platform (Q4 2021).
- 1.3 Implement fuel switching from coal to natural gas and renewable energy projects (Q4 2019).
- 1.4 Implement energy efficiency improvement and emission-reduction projects in industries (Q4 2018).
- 1.5 Implement agricultural waste-to-energy project (Q4 2018).
- 1.6 Implement distributed renewable energy project (Q4 2018).
- 1.7 Improve energy efficiency in buildings (Q4 2017).
- 1.8 Construct clean and low-emission (electric and compressed or liquefied natural gas) charging and filling infrastructure (Q4 2019).
- 1.9 Promote clean and low-emission transport projects (Q4 2018).

#### 2. For SMEs and ESCOs from the green financing platform, barriers lowered and financing scaled up

- 2.1 Leverage cash-flow financing from commercial banks for SMEs and ESCOs financed (Q4 2021).
- 2.2 Invest in green projects for SMEs and ESCOs (Q4 2018).

#### 3. Capacity in new financial products and to appraise and implement green financing projects strengthened

- 3.1 Adapt and implement ESMS (Q4 2016).
- 3.2 Appraise projects for cofinancing by commercial banks (Q4 2017).
- 3.3 Organize workshops on energy management (Q4 2019).
- 3.4 Organize workshops on project appraisal and management (Q4 2018).

#### Inputs

ADB: €458 million loan  
Domestic commercial banks: €863.6 million  
Subborrowers funding: €330 million  
Implementing agency-funded project management costs: €23.4 million

#### Assumptions for Partner Financing

The subborrowers are expected to contribute a minimum of 20% of the project cost as equity contribution, and the cooperative cofinancing to be mobilized at portfolio level is expected to be no less than €863.6 million. Total partner inputs assume ADB proceeds are reinvested three times on average during the full financial intermediation loan project life cycle.

$\mu\text{g}/\text{m}^3$  = microgram per cubic meter, ADB = Asian Development Bank, AQI = air quality index, BTH = Beijing–Tianjin–Hebei, CO<sub>2</sub> = carbon dioxide, ESCO = energy service company, ESMS = environmental and social management system, GFP = green financing platform, NO<sub>x</sub> = nitrogen oxide, PM<sub>2.5</sub> = particulate matter less than 2.5 microns in diameter, PRC = People's Republic of China, Q = quarter, SMEs = small and medium-sized enterprises, SO<sub>2</sub> = sulfur dioxide.

<sup>a</sup> Government of the PRC. 2013. *Comprehensive Action Plan for Air Pollution Prevention and Control of the People's Republic of China*. Beijing; and Government of the PRC. 2016. *Thirteenth Five-Year Plan, 2016–2020*. Beijing.

Source: ADB.

### **LIST OF LINKED DOCUMENTS**

<http://www.adb.org/Documents/RRPs/?id=50096-002-3>

1. Loan Agreement
2. Project Agreement
3. Sector Assessment (Summary): Multisector (Agriculture, Natural Resources, and Rural Development; Energy; Finance; and Transport)
4. Project Administration Manual
5. Contribution to the ADB Results Framework
6. Development Coordination
7. Financial Analysis
8. Economic Analysis
9. Country Economic Indicators
10. Summary Poverty Reduction and Social Strategy
11. Financial Intermediary: Environmental and Social Management System Arrangement
12. Risk Assessment and Risk Management Plan

### **Supplementary Documents**

13. Introduction of Technologies Used for Representative Subprojects
14. Summary Environmental Assessment for Representative Subprojects
15. Financial Management Assessment
16. Procurement Risk Assessment and Management
17. Detailed Sector Assessment: Agriculture, Natural Resources, and Rural Development; Energy; Finance; and Transport
18. Interventions in the Greater Beijing–Tianjin–Hebei Region in Accelerating Air Quality Improvement
19. Framework for the Beijing–Tianjin–Hebei Air Quality Improvement Program, 2016–2020
20. Indicative Subprojects