

TERMS OF REFERENCE FOR CONSULTANTS

A. Introduction

1. The proposed transaction technical assistance (TA) facility will help to prepare projects deliver capacity building, and policy advisory support for a multiyear lending program spanning 2017–2019 in the greater Beijing–Tianjin–Hebei (BTH) region to support air quality improvement. Central topics for the lending program are (i) enhancing policy and regulation for advancing the government’s air quality and sustainable development objectives, (ii) strengthening and deepening green finance, and (iii) promoting innovative low-emission technologies to transform industrial production towards clean production. The projects to be prepared 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 up to two key provinces in the greater BTH region; and (iii) an additional financing for the China National Investment and Guaranty Corporation’s Green Financing Platform Project. The loans to be prepared are likely to use the financial intermediation loan, policy-based, and results-based loan modalities and will all require similar policy analysis and technical, financial, economic, environment, poverty, social, governance, 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.
2. In preparing the series of loans as planned under the proposed TA facility, a set of individual consultants will be engaged by the Asian Development Bank (ADB) using individual consultant selection method and output-based partial lump-sum contracts. The use of the same set of consultants may reap important synergies and enhance ADB’s operation efficiency. However, since the 2018 and 2019 ensuing loans are not yet fully conceptualized, the engagement of individual consultants using input-based contracts offers necessary flexibility to adjust the consultants’ terms of reference and time allocation during TA implementation.
3. For the proposed complementary policy analysis and knowledge work, a consulting firm will provide a team of international and national consultants. The firm will be engaged by ADB using ADB’s quality- and cost-based selection method and output-based partial lump-sum contract. The firm should specialize in air quality analysis and policy advisory services. In addition, a number of resource persons will be engaged for the organization of a BTH workshop.
4. An overview of the required consulting services is summarized in Table A31:

Table A3.1: Summary of Consulting Services

Area of Expertise	Duration (person-months)
A. Individual Consultants	
a. International Consultants	
1. Technical Expert	2.0
2. Economist	4.5
3. Fund Management Expert	1.5
4. Financial Analyst	4.5
5. Environment Expert	4.0
Subtotal A.a	16.5
b. National Consultants	
1. Policy and Regulatory Expert 1	3.0
2. Legal Expert	3.0
3. Public Finance Expert	3.0
4. Financial Management Expert	7.5
5. Financial Structuring Expert	3.0
6. Economist	3.0
7. Environment Expert 1	6.0
8. Environment Expert 2	6.0
9. Technical Expert 1	6.0
10. Technical Expert 2	6.0
11. Technical Expert 3	6.0
12. Procurement Expert	5.0
13. Social Development Expert	3.0
14. Social Safeguards Expert	6.0
15. Project Coordinator	10.0
Subtotal A.b	76.5
B. Consulting Firm	
a. International Consultants	
1. Air Quality Policy Expert	4.5
2. Air Quality Economist	2.5
3. Atmospheric Modeling Expert	4.0
Subtotal B.a	11.0
b. National Consultants	
1. Policy and Regulatory Expert	5.0
2. Atmospheric Modeling Expert	5.0
3. Project Coordinator	5.0
Subtotal B.b	15.0
C. Resource Persons	
a. International Resource Persons	1.0
b. National Resource Persons	1.5
Subtotal C	2.5
Total (A+B+C)	121.5

Source: Asian Development Bank estimates.

B. Individual Consultant Requirements

1. International Consultants

a. International Technical Expert

5. **Objective and purpose of the assignment.** As part of its project preparatory activities, ADB performs a technical due diligence for its proposed projects. This includes appraisal of technical feasibility of a project, the quantification of emission control and pollution reduction capacity of proposed technologies, definition of technical project selection criteria, assessment of the projected costs, and assessment of the project management capacity of the executing and implementing agencies. The expert will help in preparing three ensuing projects in the greater BTH region, comprising (i) CECEP Emission Control and Pollution Reduction Fund, (ii) a policy-based and results-based loan for up to two provinces of the greater BTH region still to be determined, and (iii) an additional financing for the China National Investment and Guaranty Corporation's (I&G) Green Financing Platform.

6. **Detailed scope of work.** The expert will perform the following:

- (i) provide detailed technical descriptions of identified energy efficiency and renewable energy subprojects, including information on technology used, energy saved, emissions reduced, cost ranges, process diagram, and associated operation phase utility consumptions;
- (ii) evaluate the identified energy efficiency and renewable energy subprojects as to whether international best practices are used, and investigate if the technology is field-tested;
- (iii) determine issues and challenges that may arise for the identified energy efficiency and renewable energy subprojects;
- (iv) recommend to the executing agency on whether the identified energy efficiency and renewable energy subprojects are technically sound and cost effective;
- (v) quantify and calculate greenhouse gas reduction and air quality improvement benefits and other environmental benefits;
- (vi) support various capacity building activities relevant to the identified energy efficiency and renewable energy technologies and business models;
- (vii) suggest the most appropriate business model to develop energy efficiency and renewable energy subprojects;
- (viii) prepare methodologies for monitoring and verification of energy efficiency gains and energy consumption savings achieved as a result of the investment supported by ADB;
- (ix) appraise candidate projects with regards to the technical feasibility, energy-saving potential, avoided carbon dioxide and pollutants, cost estimates and implementation arrangements, and implementation schedule of the first batch of subprojects to be appraised before the loan approval;
- (x) prepare technical appraisal manual to be used in undertaking feasibility studies and appraising subprojects;
- (xi) identify the capacity building requirements—the capacity building will cover identifying energy efficiency and renewable energy projects; undertaking feasibility studies on technical designs of those projects; undertaking technical and financial appraisal of those projects; structuring performance-based energy saving contracts; and undertaking energy audits, monitoring, measurement, and verification mechanisms for energy savings achieved; and

- (xii) assist the project manager in preparing the sector assessment, project administration manual (PAM), and report and recommendation of the president (RRP) to the Board of Directors.

7. The consulting services required will include, but will not necessarily be limited to, the services described in these terms of reference. The consultant shall coordinate closely with the ADB project officer or the ADB project officer may augment the tasks outlined as required, to comply with ADB guidelines and procedures and to improve the quality of the overall due diligence. The tasks may be required to be carried out in close cooperation with the government, and consultation may be needed to ensure transfer of knowledge and full ownership of the processes and documents by the concerned government agencies.

8. **Key deliverables.** The expert will deliver the following: (i) sector assessment report, (ii) risk assessment report, (iii) technical due diligence report for subprojects, (iv) cost estimate of projects, (v) RRP, and (vi) PAM.

9. **Minimum qualification.** The consultant must have (i) at least a master's degree in engineering or related field; (ii) a minimum of 10 years of experience in structuring energy efficiency and renewable energy projects, (iii) at least 5 years of team leadership experience, (iv) excellent written and oral English skills, (v) experience in international cooperation and management, and (vi) good understanding of the energy and industrial sectors in the People's Republic of China (PRC).

10. **Consulting inputs and terms of engagement.** The technical expert will be engaged for a total of 44 working days on an intermittent basis. The expert is expected to commence work by April 2017 until October 2019.

b. International Economist

11. **Objective and purpose of the assignment.** As part of its project preparatory activities, ADB performs an economic due diligence for its proposed projects. The consultant will also help in preparing three ensuing projects in the greater BTH region, comprising (i) the CECEP Emission Control and Pollution Reduction Fund, (ii) a policy-based and results-based loan in up to two provinces in the greater BTH region, and (iii) an additional financing for the I&G's Green Financing Platform. The economist will carry out the economic analysis to assess the (i) economic rationale for the ensuing projects in terms of the market or nonmarket failures that are to be addressed; (ii) economic viability of subprojects in the context of a country's development and macroeconomic conditions and the relevant sector's goals, performance, and development plan; (iii) economic efficiency of all technically feasible alternative ways of achieving a subproject's objectives to identify the most efficient option as the preferred alternative; and (iv) the costs and benefits of such preferred alternative. Methodological details are provided in ADB's Guidelines for the Economic Analysis of Projects.¹

12. **Detailed scope of work.** The economist will perform the following tasks:
(i) conduct an economic analysis comprising quantitative and qualitative examination to determine the acceptability of an investment project in terms of economic viability, efficiency, and sustainability, generally following the methods provided in ADB's Guidelines for the Economic Analysis of Project.

¹ ADB. 1997. *Guidelines for the Economic Analysis of Projects*. Manila.

- (ii) undertake a country context assessment of air quality improvement interventions and analyses: (a) ADB value added in the lending program, (b) rationale for public investment in the projects, (c) required and feasible during the next 2–5 years with the objective of achieving industrial energy efficiency targets likely to be set for the chemical industry in the 13th Five-Year Plan, 2016–2020 and potential targets over the 14th Five-Year Plan, 2021–2015.
- (iii) review the status of financing air quality improvement in the greater BTH region.
- (iv) conduct a demand analysis for (a) green financing, and (b) air quality improvement and establish the current and future demand for green financing and clean air services to be delivered by the project. When necessary, the economist should conduct a survey, trend extrapolation, or forecasting models to estimate demand.
- (v) assess the economic efficiency of the project. For this, the economist should demonstrate that the project represents the most efficient option among available feasible alternatives for addressing the identified problem. In many cases, this means that the selected project should have the lowest discounted cost per unit of output or outcome. However, when project alternatives have very different benefit flows, for example, because of quality differences, alternative analysis cannot be based on the cost comparison alone, and the most efficient project option is the one with the highest economic net present value (ENPV), provided that its investment is within budget. The basis for selecting the preferred alternative needs to be clearly explained.
- (vi) conduct cost-benefit analyses for subprojects. The economic costs and benefits associated with the proposed subprojects require establishing the with-project and without-project scenarios and comparing the two. The costs and benefits are estimated in terms of a common economic price level and a common currency in order to allow comparison. In addition to costs and benefits that are directly related to the project, external factors such as the social cost of carbon and other environmental costs or benefits also need to be considered.
- (vii) calculate the ENPV and the economic internal rate of return (EIRR) for identified subprojects. The general criterion for accepting a project is achieving a positive ENPV discounted at the minimum required EIRR, or achieving an EIRR which is greater than the minimum required EIRR. The minimum required EIRR is 9%.
- (viii) conduct risk and sensitivity analyses of identified subproject by assessing project uncertainty and risks for major changes in project parameters that could render the project economically not viable. The sources of risk, and possible mitigating measures should be appraised. Sensitivity analysis assesses the impact of changing values of the different parameters on project outcome. Switching values are presented for key parameters. Project economic analysis may draw on ex-post evaluation results for similar projects to assess the likelihood of these switching values actually occurring. For projects that involve large investment, a quantitative risk analysis applying a probability distribution to key variables can be applied; and
- (ix) support the project team leaders in identifying indicators for the design and monitoring framework.

13. The consulting services required will include, but will not necessarily be limited to, the services described in these terms of reference. The economist will coordinate closely with the ADB project officer or the ADB project officer may augment the tasks outlined as required, to comply with ADB guidelines and procedures and to improve the quality of the overall due

diligence. The tasks may be required to be carried out in close cooperation with the government, and consultation may be needed to ensure transfer of knowledge and full ownership of the processes and documents by the concerned government agencies.

14. **Minimum qualification.** The economist must have (i) at least a master's degree in economics or related field, (ii) a minimum of 10 years of experience in economic analysis of projects, (iii) excellent written and oral English skills, and (iv) good understanding of the PRC's energy and industrial sectors. Experiences in macroeconomic and sector economic assessments for policy-based and results-based loans would be an important asset.

15. **Consulting inputs and terms of engagement.** The economist will be engaged for a total of 99 working days on an intermittent basis. The economist is expected to commence work by April 2017 until October 2019.

c. International Fund Management Expert

16. **Objective and purpose of the assignment.** As part of its project preparatory activities, ADB performs a financial due diligence for its proposed projects. The expert will help in preparing the CECEP Emission Control and Pollution Reduction Fund.

17. **Financial structuring.** The expert will work with the national financial management specialist and assist the ADB Finance Specialist and the team leader to identify a financial structure for the CECEP Emission Control and Pollution Reduction Fund, which supports effective and efficient project implementation and is in compliance with the government's regulations for establishing the green financing platforms.

18. The expert will perform the following:

- (i) review international experiences from the European Union and other countries, to be agreed upon between the consultant and ADB officer in-charge of the funds dedicated for promoting advanced technologies in environmental protection—in particular review the (a) fund structures and limited partnerships; (b) involvement of public investment in such funds; (c) innovative risk sharing mechanisms; and (d) financing mechanisms and instruments to support financing of clean air and low carbon projects, including but not limited to private equity, financial leasing, and, guarantees;
- (ii) create innovative business models to match financing demand and supply;
- (iii) ensure effective fund flow arrangements;
- (iv) assess pricing strategies for financing instruments;
- (v) draft fund management rules;
- (vi) decide on financial project selection criteria;
- (vii) create project screening, selection, and approval procedures;
- (viii) create green financing platform financial management procedures; and
- (ix) draw lessons learned, and advice ADB officer and team leader on structuring the CECEP Emission Control and Pollution Reduction Fund.

19. The consulting services required will include, but will not necessarily be limited to, the services described in these terms of reference. The expert will coordinate closely with the ADB project officer and the ADB project officer may augment the tasks outlined as required, to comply with ADB guidelines and procedures and to improve the quality of the overall due diligence.

20. **Minimum qualification.** The expert must have (i) a master's degree in finance, engineering, or related field; (ii) a minimum of 10 years of experience in fund management and financial structuring of funds; (iii) abundant knowledge on international innovation funds; and (iv) experience in evaluation and due diligence of private equity investments.

21. **Consulting inputs and terms of engagement.** The international fund management expert is expected to be engaged for a total of 33 working days. Expected commencement date is April 2017 and expected completion date is October 2017.

d. International Financial Analyst

22. **Objective and purpose of the assignment.** As part of its project preparatory activities, ADB performs a financial due diligence for its proposed projects. This includes an assessment of the projected costs, assessment of the financial management capacity of the executing and implementing agencies, and the additional financial intermediaries in accordance with ADB guidelines as well as the financial sustainability and viability of the project. In addition, an integrity due diligence for these institutions has to be conducted. The consultant will also help in preparing three ensuing projects in the greater BTH region, comprising (i) the CECEP Emission Control and Pollution Reduction Fund, (ii) a policy-based and results-based loan for up to two provinces in the greater BTH region, and (iii) an additional financing for the I&G's Green Financing Platform.

23. As an integral part of the project preparatory process for financial intermediation loans, ADB requires that a fiduciary risk analysis is conducted, including (i) support to the structuring of the green financing platform and green development fund; (ii) review and finalization of cost estimates; (iii) quantitative financial analysis including an assessment of the capital adequacy, asset quality, management capacity, earning quality, and liquidity and sensitivity (CAMELS) rating as well as financial projections; and (iv) qualitative assessment, which considers the financial management assessment, corporate governance framework, and risk management framework of the financial institution. ADB also requires integrity due diligence to be conducted.

24. The assessment has to be prepared in compliance with the Technical Guidance Note on Financial Due Diligence (2014), the Technical Guidance Note on Financial Management Assessment (2015), the Technical Guidance Note on Preparing and Presenting Cost Estimates for Projects and Programs Financed by the Asian Development Bank (2014), and Staff Instructions for Integrity Due Diligence and other relevant guidance provided by ADB for financial due diligence.²

25. The purpose of the financial structuring is to identify project implementation mechanisms, which supports efficient and effective project implementation and in compliance with the government's regulations.

26. The financial management assessment (FMA) will (i) identify the capacity, procedural, and organizational constraints that could hinder effective project implementation and agree on an action plan with the executing and the implementing agencies of the three ensuing loan projects to address these constraints; and (ii) determine the overall financial management risk, and establish appropriate review and supervision processes, to mitigate these risks. Specifically, the FMA will (i) assess strengths and weaknesses in project financial management practices

² ADB. Financial Management. <http://www.adb.org/projects/operations/financial-management-resources>

and capacity from the perspective of (a) organizational and staff capacity, (b) information management, (c) financial management practices, and (d) effectiveness; (ii) identify and evaluate financial management and internal control risks at the project level; and (iii) propose risk mitigation and management strategies and/or activities with appropriate timelines and suggested responsibilities.

27. For up to three entrusted loan banks, ADB requires assurances that the banks, acting as onlenders using financial intermediation loans and other investment operations, are financially efficient and viable institutions. In particular, they must demonstrate (i) financial soundness as evidenced by adequate capital, asset quality, liquidity, and profitability; (ii) adequate credit and risk management policies, operating systems, and procedures; (iii) compliance with prudential regulations, including exposure limits; (iv) acceptable corporate and financial governance and management practices including, among other things, transparent financial disclosure policies and practices; (v) sound business objectives and strategy and/or plan; (vi) autonomy in lending and pricing decisions; and (vii) adequate policies, systems, and procedures to assess and monitor the economic, social, and environmental impact of subprojects in accordance with parameters established by ADB for this purpose.

28. The international finance expert will work with the national financial management expert in conducting the financial due diligence.

29. **Detailed tasks and/or expected outputs.** The analyst's detailed tasks and/or expected outputs include the following:

- (i) **Financial structuring.** The expert will identify a financial structure for the CECEP Emission Control and Pollution Reduction Fund, which support effective and efficient project implementation and is in compliance with the government's regulations for establishing the green financing platforms. In particular, the consultant shall propose the following:
 - (a) innovative financing mechanisms and instruments to support financing of clean air and low-carbon projects in the greater BTH region;
 - (b) innovative business models to match financing demand and supply;
 - (c) effective fund flow arrangements;
 - (d) pricing strategies for financing instruments;
 - (e) fund management rules;
 - (f) financial project selection criteria;
 - (g) project screening, selection, and approval procedures; and
 - (h) green financing platform financial management procedures.
- (ii) **Financial management assessment for the executing and implementing agencies.** The analyst will perform the following tasks:
 - (a) review the available secondary information sources, including internal audit reports, external audit reports, and management letters for the last 3 years.
 - (b) assess project financial management arrangements based on interviews with the executing and implementing agencies, possibly other development partners, and relevant stakeholders. The analyst will review the internal financial management and control arrangements, internal and external auditor's reports, and sampling of specific transactions. The financial management assessment questionnaire (FMAQ) should be completed in consultation with the counterparties, for each of the

executing and implementing agencies involved. The assessment should include a review of the budgetary framework, external and internal audit, staffing, fund flows mechanism, financial accounting and reporting, management information systems, and detailed internal control activities (over payments, payroll, maintenance of bank balances, imprest accounts, advances, fixed assets, and completeness of liabilities).

- (c) identify and recommend appropriate funds-flow mechanism for all sources of project funding and recommend ring-fencing of ADB-funded expenditure, if necessary.
 - (d) prepare a narrative description of the project financial management systems, including identification of strengths and weaknesses.
 - (e) identify and assess financial management and internal control risks, on the basis of degree of impact and likelihood of occurrence using the following scale—high: likely to occur, high impact if the risk occurs; substantial: unlikely to occur, high impact if the risk occurs; moderate: likely to occur, low impact if the risk occurs; and low: unlikely to occur, low impact if the risk occurs; and
 - (f) propose risk mitigation and/or management strategies to address identified risks—high: risk avoidance/mitigation/transfer recommended; substantial: risk avoidance or mitigation or monitoring recommended; moderate: risk monitoring recommended; and low risk documentation and identification.
- (iii) **Financial management assessment for entrusted loan banks.** A financial intermediary should have adequate financial management systems and processes in place, supported by well-trained staff conversant with the policies and operating processes. The expert will evaluate the critical aspects of a financial management system including staffing, accounting policies and procedures, internal controls, audit systems, and reporting and monitoring systems. The expert will use the Technical Guidance Note on Financial Management Assessment and Financial Management Internal Control and Risk Assessment template for this purpose.
- (iv) **Quantitative financial analysis.** The financial performance of executing and implementing agencies, and the participating banks needs to be assessed. For the executing and implementing agencies, the financial statements need to be analyzed and relevant ratios be calculated to determine the profitability, solvency, liquidity, and capital adequacy of the agencies, including but not limited to the (i) debt service coverage ratio, (ii) debt–equity ratio, (iii) interest coverage ratio, (iv) current ratio, and (v) quick ratio.
- (v) **Cost estimates.** The analyst will prepare estimated project costs. The analyst will follow the guidance set out in ADB's Financial Due Diligence Note (2009) and Note on Preparation and Presentation of Cost Estimates (2014) and will perform the following:
- (a) prepare project cost estimates using excel for each main project cost item including base costs, physical contingencies, price contingencies, and financial charges during implementation—base costs are expressed in domestic currency and on real price basis, will represent the expected cost of the subprojects or subloans, and will distinguish between foreign exchange and local currency components;

- (b) prepare a disbursement schedule including S-curve for projections of contract disbursements and standard cost estimates tables (by expenditure category, by financier, by output, and by year);
- (c) determine the fund flow and reflow arrangements for subloans, including the onlending terms and conditions;
- (d) prepare a project financing plan taking into account any prospective cofinancing and assess veracity of proposed counterpart funding; and
- (e) provide costing and financial forecasting data to support assessment of economic viability.

30. The consulting services required will include, but will not necessarily be limited to, the services described in these terms of reference. The analyst will coordinate closely with the ADB project officer. The ADB project officer may augment the tasks outlined as required, to comply with ADB guidelines and procedures and to improve the quality of the overall due diligence. The tasks may be required to be carried out in close cooperation with the government, and consultation may be needed to ensure transfer of knowledge and full ownership of the processes and documents by the concerned government agencies.

31. **Minimum qualification requirements.** The analyst must have extensive international financial due diligence experience, which would include relevant prior ADB or other multilateral development bank experiences and in-depth knowledge of financial management-related issues in the PRC's state-owned enterprise (SOE), banking, and nonbank financial institutions sector. The expert would have at least 8 years of relevant experiences, and have a master's degree or equivalent in finance, or a relevant professional qualification such as a chartered financial accountant, chartered accountant, and chartered public accountant. The analyst should have in-depth understanding and experience in (i) corporate financial management assessment; (ii) international accounting standards; (iii) CAMELS assessment framework; (iv) abundant knowledge about the PRC's financial and fiscal systems; (v) extensive experience and skills in risk management, thorough understanding of financial analysis of investment holding companies, commercial banks and credit guarantee companies; and (vi) experience in international cooperation.

32. **Consulting inputs and terms of engagement.** The international financial analyst is expected to be engaged for a total of 99 working days on an intermittent basis. Expected commencement date is May 2017 and expected completion date is September 2019.

e. International Environment Expert

33. **Objective and purpose of the assignment.** As part of its project preparatory activities, ADB performs an environmental due diligence for its proposed projects. This includes institutional assessment of environmental and social management capacity of the executing and implementing agencies, and the additional financial intermediaries; preparation of a strategic environmental assessment; preparation of an environmental and social management system, environmental, and social project selection criteria in accordance with ADB guidelines; and preparation of environmental impact assessments for selected sample projects. The consultant will also help in preparing three ensuing projects in the greater BTH region comprising (i) the CECEP Emission Control and Pollution Reduction Fund, (ii) a policy-based and results-based loan in a province in the greater BTH region, and (iii) an additional financing for the China National Investment and Guaranty Corporation's Green Financing Platform.

34. As an integral part of the project preparatory process for financial intermediation loans,

ADB requires that an environmental due diligence is conducted, including (i) institutional capacity assessment of the executing and implementing agencies, (ii) environmental impact assessments of subprojects, (iii) environmental and social management system for the project, and (iv) capacity development of executing and implementing agencies, as well as participating financial intermediaries.

35. The expert, with the help of the national environmental specialists will conduct a rapid strategic environmental assessment (SEA) of the program and proposed policy actions, including an assessment of the economic and social outcomes as well as the environmental implications of the proposed policy interventions. In carrying out the assignment, the expert is required to prepare a scoping report as well as a more detailed SEA report. The environmental specialists will engage the stakeholders of the program and undertake a detailed assessment and analysis of the environmental and environment-related social risks likely to result from the program and the proposed policy actions. The scope of work will cover (i) scoping study to review policy context and baseline conditions and define the key environmental and social issues that need to be addressed in the more detailed study, and to develop the methodology for the rapid SEA study; (ii) a rapid SEA study including a rapid cost-benefit analysis of proposed policy actions covering social and environmental (PM_{2.5} emission reduction) benefits, assessment of environmental impacts for best-case and business-as-usual alternatives, definition of mitigation measures, and recommendations to improve the outcomes of proposed policy interventions; and (iii) a comprehensive rapid SEA report. The expert will also draw upon detailed reports prepared by the knowledge work prepared under this TA as well as other analytical work accomplished with other ADB TA projects.

36. **Detailed scope of work.** The expert will perform the following tasks:

- (i) act as focal point for environmental and social due diligence of the proposed projects;
- (ii) coordinate the work of national environment and social safeguards consultants;
- (iii) serve as contact between the ADB mission, the executing agencies for the ensuing financial intermediation loan project, and the additional financing in 2019; the implementing agencies; the National Development and Reform Commission, if needed; and other banks that are acting as financial intermediary of the project, if any;
- (iv) conduct institutional assessment of CECEP and update institutional assessment for I&G and other financial intermediaries in their environmental safeguards system and capacity to perform environmental due diligence works for potential projects under financial intermediary;
- (v) identify institutional gaps, if any, comparing to the requirements under the ADB's Safeguard Policy Statement (2009);
- (vi) perform site visits of potential and/or selected subproject sites together with ADB, CECEP, I&G, and other relevant institutions that are potentially involved in subproject selection and due diligence;
- (vii) during the site visits, assess their due diligence capacities and educate them if necessary on the Safeguard Policy Statement requirements;
- (viii) prepare an assessment report on CECEP, I&G, and other financial intermediaries, if any;
- (ix) be responsible for preparing an environmental and social management system (ESMS) both in English and Chinese for the CECEP Emission Control and Pollution Reduction Fund Project;
- (x) communicate and discuss with CECEP, I&G, and other financial intermediaries on ESMS and ESMS requirements and implementation; and

- (xi) perform capacity-building training on the Safeguard Policy Statement and ADB safeguards system for executing and implementing agencies and other FIs, so to support proper and timely implementation of ESMS for the project.
- (xii) preparation of Program Safeguard System Assessment and impact of relevant safeguards related action in the Program Action Plan;
- (xiii) preparation of matrix of Potential Environmental and Social Safeguard Impacts of Policy Reforms for PBLs.

37. The consulting services required will include, but will not necessarily be limited to, the services described in these terms of reference. The expert will coordinate closely with the ADB project officer or the ADB project officer may augment the tasks outlined as required, to comply with ADB guidelines and procedures and to improve the quality of the overall due diligence. The tasks may be required to be carried out in close cooperation with the government, and consultation may be needed to ensure transfer of knowledge and full ownership of the processes and documents by the concerned government agencies.

38. **Key deliverables** include (i) an institutional assessment for executing and implementing agencies; (ii) a risk assessment report; (iii) an ESMS for CECEP's project; and (iv) capacity building of stakeholders, including CECEP and participating financial intermediaries, if any.

39. **Minimum qualification.** The expert must have (i) at least a master's degree in environmental engineering, environmental management, or relevant fields; (ii) a minimum of 10 years of experience in environmental impact assessment; (iii) experience in clean energy generation, efficient industrial production, green transport, and solid waste and sewage treatment; and (iv) experience in international cooperation and clean energy generation and efficient industrial production. Oral and written English proficiency is required. Proficiency in Chinese would be an advantage.

40. **Consulting inputs and terms of engagement.** The international environment expert is expected to be engaged for a total of 88 working days. Expected commencement date is May 2017 and expected completion date is September 2019.

2. National Consultants

a. National Policy and Regulatory Expert

41. **Objective and purpose of the assignment.** As part of its project preparatory activities, ADB performs a review of the policy and regulatory environment and assesses its impact on the financial and economic sustainability of the project. Such a review is also necessary to ensure the alignment of the project with government priorities and ADB value added. The expert will help in preparing three ensuing projects in the greater BTH region comprising (i) the CECEP Emission Control and Pollution Reduction Fund, (ii) a policy-based and results-based loan for up to two provinces in the greater BTH region, and (iii) an additional financing for the I&G's Green Financing Platform.

42. **Detailed scope of work.** Specifically, the expert will perform the following:

- (i) review all relevant green financing policies and regulations in relation to setting up an emission control and pollution reduction fund and a green financing platform;
- (ii) support the ADB team leader and the project team in conducting all necessary policy and regulatory analysis for the project;

- (iii) prepare green financing, clean energy, air quality policy, and regulator assessment; and contribute to the preparation of the sector;
- (iv) provide and prepare linked documents for the policy and results-based loan in up to three provinces in the greater BTH region; and
- (v) familiarize oneself with ADB's project requirements and provide input for the project participants on the project implementing agreements.

43. The consulting services required will include, but will not necessarily be limited to, the services described in these terms of reference. The expert will coordinate closely with the ADB project officer or the ADB project officer may augment the tasks outlined as required, to comply with ADB guidelines and procedures and to improve the quality of the overall due diligence. The tasks may be required to be carried out in close cooperation with the government, and consultation may be needed to ensure transfer of knowledge and full ownership of the processes and documents by the concerned government agencies.

44. **Minimum qualification.** The expert should have a degree in public policy, sociology, law or other relevant field, with at least 5 years of relevant work experiences. The expert should have worked with banks and other financial institutions on financing agreements. The expert must be able to demonstrate that he or she understands and writes, clearly and fluently, high-quality legal provisions and terminology in English and Chinese. The expert must also be fluent in Chinese and English.

45. **Consulting inputs and terms of engagement.** The national policy and regulatory expert is expected to be engaged for a total of 66 working days on an intermittent basis. Expected commencement date is May 2017 and expected completion date is September 2019.

b. National Legal Expert

46. **Objective and purpose of the assignment.** The expert will also help in preparing the financial intermediation loans for the greater BTH region comprising (i) the CECEP Emission Control and Pollution Reduction Fund, and (ii) an additional financing for the I&G's Green Financing Platform. As an integral part of the project preparatory process for financial intermediation loans, ADB requires that necessary template subloan and subproject and, depending on the project structure, additional legal agreements are drafted and approved by ADB. The objective of the assignment is to assist the implementing agency to draft onlending, subloan, and subproject agreements that reflect ADB's project standards and requirements. The proposed ADB agreements require various project participants to implement contracts that reflect the detailed requirements of the loan agreement and project agreement, and of the PAM for the project, and that otherwise are satisfactory to ADB.

47. **Detailed scope of work.** Specifically, the expert will do the following:
- (i) prepare and assist the implementing agency to prepare contracts and template contracts required to implement the project, in Chinese with English translations, and to ensure that they reflect all the requirements in the loan agreement, project agreement, and PAM;
 - (ii) prepare a template subproject agreement and ensure that it is coordinated with the templates of entrusted loan agreement to an energy service company (ESCO), entrusted loan agreement to non-ESCO subborrower, financial lease agreement and leasing subproject agreement, guarantee and guarantee counter-

- indemnity agreement, and equity investment agreement that the project participants propose to use for the project;
- (iii) advise the project participants on any revisions required to their proposed template—entrusted loan agreement, financial lease agreement, guarantee and guarantee counter-indemnity agreement and equity investment agreement, so that such agreements comply with project requirements;
- (iv) provide and prepare legal opinion;
- (v) draft template—subproject agreement—for use with all subprojects and ensure coordination with the templates for the various types of subloan agreements;
- (vi) advise project participants on any revisions required to the project participants' proposed templates for (a) entrusted loan agreements, (b) guarantee counter-indemnity agreement and guaranty agreement, (c) financial lease agreement, and (d) equity investment agreement so that they work in conjunction with the subproject agreement to meet project requirements and achieve project purposes;
- (vii) get familiar with ADB's project requirements and seek input from the project participants on the project implementing agreements;
- (viii) advise the implementing agency on the structure and requirements for each type of the required project implementing contracts;
- (ix) in close coordination with the implementing agency and the entrusted bank, and financial leasing company, develop draft project implementing contracts, in Chinese, that reflect all project requirements, PRC legal requirements, and prudent practices in the industry;
- (x) review and correct English translations of the draft project implementing contracts supplied by the implementing agency and provide those, together with the Chinese versions, to ADB for its review;
- (xi) coordinate with ADB to address ADB's comments and questions and communicate those to the implementing agency and other project participants; and
- (xii) coordinate revision and finalization of the draft agreements in Chinese and with translations into English for ADB final review—more than one round of revisions may be required.

48. The implementing agency will provide to the expert the relevant ADB project documents, agreements, and policy documents (primarily in English) for the expert's reference. The implementing agency will also provide to the expert standard contracts proposed to be used by the project participants as entrusted loan agreements, financial leases, guarantees and guaranty Counter-Indemnity Agreements and Equity Investment Agreement

49. **Minimum qualification requirements.** The consultant should have a degree in law, with at least 5 years of relevant work experience as a lawyer. The consultant must have worked with banks and other financial institutions on financing agreements. The consultant must have relevant experience in project financing with detailed implementation requirements and with multilateral development banks or global financial institutions. The consultant must be able to demonstrate that he or she understands and writes, clearly and fluently, high-quality legal provisions and terminology in English and Chinese. The consultant must also be fluent in Chinese and English.

50. **Consulting inputs and terms of engagement.** The national legal expert is expected to be engaged for a total of 66 working days on an intermittent basis. Expected commencement date is May 2017 and expected completion date is September 2019.

c. National Public Finance Expert

51. **Objective and purpose of the assignment.** As part of its project preparatory activities, ADB performs a financial due diligence for its proposed projects. The expert will help in preparing up to two policy-based and results-based programs in the greater BTH region.

52. **Detailed scope of work.** Specifically, the expert will support the team leader in preparing project reports. This will comprise the following tasks:

- (i) assist in preparing the program soundness assessment,
- (ii) assist in preparing the program results assessment,
- (iii) assist in preparing the program results framework.
- (iv) prepare fiduciary systems assessment,
- (v) prepare program financing and expenditure assessment,
- (vi) contribute to the poverty and social analysis,
- (vii) contribute to the capacity building component, and
- (viii) contribute to the programs' integrated risk assessment and mitigating measures.

53. The consulting services required will include, but will not necessarily be limited to, the services described in these terms of reference. The consultant will coordinate closely with the ADB project officer or the ADB project officer may augment the tasks outlined as required, to comply with ADB guidelines and procedures and to improve the quality of the overall due diligence. The tasks may be required to be carried out in close cooperation with the government, and consultation may be needed to ensure transfer of knowledge and full ownership of the processes and documents by the concerned government agencies.

54. **Minimum qualification requirements.** The expert must have relevant public finance due diligence experience, which would include relevant prior ADB or other multilateral development bank experiences and in-depth knowledge of public finance-related issues in the PRC. The expert would have at least 8 years of relevant experience, and have a master's degree or equivalent in public finance, or a relevant professional qualification. The consultant should have in-depth understanding of the PRC's financial and fiscal systems, public expenditure and financing assessment, public risk management, and experience in international cooperation.

55. **Consulting inputs and terms of engagement.** The national public finance expert is expected to be engaged for a total of 66 working days on an intermittent basis. Expected commencement date is May 2017 and expected completion date is September 2019.

d. National Financial Management Expert

56. **Objective and purpose of the assignment.** As part of its project preparatory activities, ADB performs a financial due diligence for its proposed projects. This includes an assessment of the projected costs, assessment of the financial management capacity of the executing and implementing agencies, and the additional financial intermediaries in accordance with ADB guidelines, as well as the financial sustainability and viability of the project. In addition, the national financial management expert will conduct an integrity due diligence for these institutions. The consultant will also help in preparing three ensuing projects in the greater BTH region comprising (i) the CECEP Emission Control and Pollution Reduction Fund, (ii) a policy-based and results-based loan for up to two provinces in the greater BTH region, and (iii) an

additional financing for the I&G's Green Financing Platform.

57. As an integral part of the project preparatory process for financial intermediary loans, ADB requires that a fiduciary risk analysis is conducted including (i) support in the structuring of the green financing platform and green development fund; (ii) review and finalization of cost estimates; (iii) quantitative financial analysis including an assessment of the CAMELS model as well as financial projections; and (iv) qualitative assessment, which considers the financial management assessment, corporate governance framework, and risk management framework of the financial institution. ADB also requires integrity due diligence to be conducted.

58. The assessment has to be prepared in compliance with the Technical Guidance Note on Financial Due Diligence (2014), the Technical Guidance Note on Financial Management Assessment (FMA) (2015), the Technical Guidance Note on Preparing and Presenting Cost Estimates for Projects and Programs Financed by the Asian Development Bank (2014), and Staff Instructions for Integrity Due Diligence and other relevant guidance provided by ADB for financial due diligence.

59. The purpose of the financial structuring is to identify project implementation mechanisms, which support efficient and effective project implementation and in compliance with the government's regulations.

60. The FMA will (i) identify the capacity, procedural, and organizational constraints that could hinder effective project implementation and agree on an action plan with the executing and the implementing agencies of the ensuing three loan projects to address these constraints; and (ii) determine the overall financial management risk, and establish appropriate review and supervision processes to mitigate these risks. Specifically, the FMA will (i) assess the strengths and weaknesses in project financial management practices and capacity from the perspective of (a) organizational and staff capacity, (b) information management, (c) financial management practices, and (d) effectiveness; (ii) identify and evaluate financial management and internal control risks at the project level; and (iii) propose risk mitigation and management strategies and/or activities with appropriate timelines and suggested responsibilities.

61. For up to three entrusted loan banks, ADB requires assurances that the banks, acting as lenders using financial intermediary loans and other investment operations, are financially efficient and viable institutions. In particular, they must demonstrate (i) financial soundness as evidenced by adequate capital, asset quality, liquidity, and profitability; (ii) adequate credit and risk management policies, operating systems, and procedures; (iii) compliance with prudential regulations including exposure limits; (iv) acceptable corporate and financial governance and management practices including, among other things, transparent financial disclosure policies and practices; (v) sound business objectives and strategy and/or plan; (vi) autonomy in lending and pricing decisions; and (vii) adequate policies, systems, and procedures to assess and monitor the economic, social, and environmental impact of subprojects in accordance with parameters established by ADB for this purpose.

62. The CAMELS model assesses both qualitative and quantitative factors to evaluate the past performance of the banks. The quantitative factors, covered primarily under capital adequacy, asset quality, earning quality, liquidity, and sensitivity are complemented by an analysis of qualitative factors, covered primarily under the management capacity of the CAMELS analysis. Qualitative factors encompass the entire financial management ethos, including but not limited to (i) budgeting; (ii) policies and practices; (iii) systems and processes; (iv) management information systems; (v) financial accounting and reporting; (vi) audit

arrangements; and (vii) the entities' specific corporate governance philosophy and practice and risk management policies and practices covering credit, market, liquidity, and operational and reputational risks.

63. The is required primarily to support ADB prior to, during, and after the loan fact-finding mission to ensure that ADB's due diligence requirements in terms of financial assessments and costs are complied with.

64. The consulting services required will include, but will not necessarily be limited to, the services described in these terms of reference. The expert will coordinate closely with the financial management specialist. The team leader, the ADB project officer, or the financial management specialist may augment the tasks outlined as required, to comply with ADB guidelines and procedures and to improve the quality of the overall fiduciary analysis. The tasks may be required to be carried out in close cooperation with the government, and consultation may be needed to ensure transfer of knowledge and full ownership of the processes and documents by the concerned government agencies.

65. **Detailed tasks and/or expected outputs.** The expert's detailed tasks and/or expected outputs are in paras. 67–68.

66. **Financial structuring.** The expert will work with the international finance specialist and assist the ADB finance specialist and the team leader to identify a financial structure for the CECEP Emission Control and Pollution Reduction Fund, which supports effective and efficient project implementation and is in compliance with the government's regulations for establishing the green financing platforms.

67. The expert will propose (i) innovative financing mechanisms and instruments to support the financing of clean air and low-carbon projects in the greater BTH region; (ii) innovative business models to match financing demand and supply; (iii) effective fund flow arrangements; (iv) pricing strategies for financing instruments; (v) fund management rules; (vi) financial project selection criteria; (vii) project screening, selection, and approval procedures; and (viii) green financing platform financial management procedures.

68. **Financial management assessment for the executing and implementing agencies.** The expert will perform the following:

- (i) review the available secondary information sources, including internal audit reports, external audit reports, and management letters for the last 3 years;
- (ii) assess project financial management arrangements based on interviews with the executing and implementing agencies, possibly other development partners, and relevant stakeholders. The expert will review the internal financial management and control arrangements, internal and external auditor's reports, and sampling of specific transactions. The FMAQ should be completed in consultation with the counterparties, for each of the executing and implementing agencies involved. The assessment should include a review of the budgetary framework, external and internal audit, staffing, fund flows mechanism, financial accounting and reporting, management information systems, and detailed internal control activities (over payments, payroll, maintenance of bank balances, imprest accounts, advances, fixed assets, and completeness of liabilities);
- (iii) identify and recommend appropriate funds-flow mechanism for all sources of project funding and recommend ring-fencing of ADB-funded expenditure, if necessary;

- (iv) prepare a narrative description of the project financial management systems, including identification of strengths and weaknesses;
- (v) will identify and assess financial management and internal control risks, on the basis of degree of impact and likelihood of occurrence using the following scale: (a) high: likely to occur, high impact if the risk occurs, (b) substantial: unlikely to occur, high impact if the risk occurs, (c) moderate: likely to occur, low impact if the risk occurs; and (d) low: unlikely to occur, low impact if the risk occurs; and
- (vi) propose risk mitigation and/or management strategies to address identified risks: (a) high: risk avoidance/mitigation/transfer recommended, (b) substantial: risk avoidance or mitigation or monitoring recommended, (c) moderate: risk monitoring recommended, and (d) low risk documentation/identification.

69. **Financial management assessment for entrusted loan banks.** A financial intermediary should have adequate financial management systems and processes in place, supported by well-trained staff conversant with the policies and operating processes. The expert will evaluate critical aspects of a financial management system including staffing, accounting policies and procedures, internal controls, audit systems, and reporting and monitoring systems. The expert will use the Technical Guidance Note on Financial Management Assessment and Financial Management Internal Control and Risk Assessment template for this purpose.

70. FMA is a risk-based assessment intended to (i) identify risks that country, sector, or project financial management systems and/or practices may lead to non-achievement, or suboptimal achievement of the project outcomes and/or outputs; (ii) identify risks in which ADB resources may be used other than for the intended purposes, whether due to leakage or inefficiency; (iii) assess the severity of the risk; and (iv) develop a practical risk management plan to address, at a minimum, high or substantial financial management risks at the project level that may, otherwise, adversely affect the achievement of the development outcomes.

71. FMA should identify risks and mitigation actions. It is intended to help improve project design either by implementing institutional strengthening for better financial management, or (at the very least) designing project-specific financial management arrangements to ring-fence project finances. Institutional assessments of the corporate governance and risk management frameworks are also required for the financial intermediaries aside from the financial management systems and processes. The institutional assessment questionnaire (will be provided) can be used for this purpose.

72. The key elements of a risk management framework include the identification, measurement, monitoring and management of credit, market, liquidity, and operational risks.

73. The key elements of a strong corporate governance environment include board composition and qualifications, corporate culture and values, role of the Board Committees, mandate and effectiveness of compliance, internal audit and risk management functions, and disclosure and transparency practices.

74. An understanding of the national corporation governance rules and regulations is also imperative while carrying out financial due diligence for the financial intermediary along with a review of the corporate governance statement disclosed as part of the financial intermediary's annual financial statements.

75. The financial intermediary should conduct its business with integrity in a professional and transparent manner where the customers and employees are clear about the service being

offered and its costs. The financial intermediary should have proper guidance on Know Your Customer norms and antimoney laundering and financing of terrorism policies. These policies should be evaluated and where necessary, the ADB Office of Anticorruption and Integrity can be consulted for specific inputs.

76. Using the FMAQ, the national financial management expert will collect information to assess the strengths and weaknesses of the financial management systems and controls. This should be achieved through interviews, obtaining copies of relevant documents and limited walk-through testing.

77. To support the FMAQ, the national financial management expert will obtain copies of key documents, exercising professional judgment (including sample bank reconciliation statement, extracts from fixed assets register, chart of accounts, organizational chart, and policy documents).

78. The assessment should include a review quality of internal audit (if any), staffing, fund flows mechanism, budgetary framework, financial accounting and reporting, management information systems, and detailed internal control activities (over payments, payroll, maintenance of bank balances, imprest accounts, advances, fixed assets, and completeness of liabilities). The assessment should also consider the external auditing arrangements in place.

79. The expert will assist in drafting the FMA report using the financial management assessment report template given in the Knowledge Addendum of the Financial Management and Analysis of Projects.³ The annex to the report should include the FMAQ and its responses; template financial statements, which are based on the entities chart of accounts, taking into account requirements of relevant national accounting standards and eligible expenditure categories; and details of the organizational structure as part of the final report. Audited terms of references or statement of audit needs, will also be required, as appropriate. Further, the expert will

- (i) prepare a risk analysis summary identifying risks arising from material deficiencies and propose practical recommendations for improving financial management functions and/or staffing for financial operations that are needed to mitigate risk;
- (ii) provide relevant detailed information to complete the financial management section of the risk assessment management plan, the governance section of the RRP, and the accounting and auditing section of the PAM; and
- (iii) assist the team leader and other involved consultants, and where necessary, explain to the borrower the financial management assessment, the financial evaluation, and the basis and compilation of financial forecasts and analyses, with justification for relevant proposed financial risk mitigation measures.

80. **Quantitative financial analysis.** The national financial management expert needs to assess the financial performance of the executing and implementing agencies, and the participating banks. For the executing and implementing agencies, the financial statements need to be analyzed and relevant ratios be calculated to determine the profitability, solvency, liquidity, and capital adequacy of the agencies, including but not limited to the (i) debt service coverage ratio, (ii) debt–equity ratio, (iii) interest coverage ratio, (iv) current ratio, and (v) quick ratio.

³ ADB. 2005. *Financial Management and Analysis of Projects*. Manila (p. 31 of 96).

81. The CAMELS assessment should be prepared for the participating banks. The most important criteria for determining the appropriateness of a financial intermediary to act as a financial intermediary include its profitability, solvency, and liquidity. Consultants should refer to existing publicly available information on financial institutions including Bankscope, Standard & Poor's, and Moody's Investor Service to avoid redundant efforts.

82. As a general principle, in addition to historical financial information, the executing and implementing agencies' projected financial information is also required to determine whether the agency's performance is, and will continue to be effective, efficient, and sustainable. Future performance should be estimated based on latest available historical financial information, key assumptions related to macroeconomic factors, and expected growth. The review of historical financial intermediary performance aids in an assessment of the financial intermediary's ability to (i) deliver subloans to achieve defined country and sector economic objectives, (ii) efficiently recover subloans, and (iii) cover all operating costs and make a reasonable profit on the invested capital. In addition, financial projections are required to assess whether (i) the proposed credit line is sized appropriately, (ii) the financial intermediary has the capacity to absorb the proposed credit line, and (iii) there is likely to be adequate demand for credit to enable absorption of ADB funds.

83. For the financial evaluation and analysis of the proposed project, the expert will perform the following:

- (i) coordinate closely with I&G to obtain all relevant information, including but not limited to audited financial statements for the last 3 years (also may be available from Bankscope) and 3–5 years projected financial statements, usually included as part of the business plan approved by the Board of Directors; and (ii) codevelop, where necessary, with the I&G projected financial statements (balance sheet, profit and loss, and cash flow statements) for a 3–5 year period including projected revenues and costs of the project;
- (ii) compute and analyze relevant ratios;
- (iii) prepare a financial analysis of the project or each subproject using financial internal rate of return and weighted average cost of capital computations to evaluate the financial viability of the project in real terms; and
- (iv) assist in developing financial covenants, in particular, actions needed to ensure project sustainability and/or to develop institutional development action plans, if weaknesses are identified in the assessment.

84. **Cost estimates.** The expert will prepare estimated project costs. The expert will follow the guidance set out in ADB's Financial Due Diligence Note (2009) and Note on Preparation and Presentation of Cost Estimates (2014) and will do the following:

- (i) prepare project cost estimates using Excel for each main project cost item including base costs, physical contingencies, price contingencies, and financial charges during implementation—base costs are expressed in domestic currency and on real-price basis, represent the expected cost of the subprojects or subloans, and distinguish between foreign exchange and local currency components;
- (ii) prepare a disbursement schedule including S-curve for projections of contract disbursements and standard cost estimates tables (by expenditure category, by financier, by output, and by year);
- (iii) determine the fund flow and reflow arrangements for subloans, including the onlending terms and conditions;

- (iv) prepare a project financing plan taking into account any prospective cofinancing and assess veracity of proposed counterpart funding; and
- (v) provide costing and financial forecasting data to support assessment of economic viability.

85. **Documents to be provided to the expert.** The following documents will be provided to the expert upon confirmation of availability and commencement of the project: (i) latest country partnership strategy and concept paper for the proposed project, (ii) any recent or relevant financial management assessment or financial analysis carried out for the same or similar entities, (iii) FMA reporting template, (iv) FMAQ, (v) sample Excel-based models, and (vi) soft copies of relevant ADB guidelines for financial management assessment and financial analysis. Upon request and if needed, a copy of the RRP, supplementary appendixes, and FMA reports of other similar ADB projects may also be provided.

86. **Key deliverables.** The expert will (i) prepare the financial structuring report; (i) prepare an FMA report for Sciencetech Documentation and Information Center (SDIC), I&G and CECEP, and up to three banks; (ii) prepare a risk analysis summary; (iii) provide relevant detailed information to complete the financial management section of the risk assessment management plan, the governance section of the RRP, and the accounting and auditing section of the PAM; (iv) prepare cost estimates; and (v) conduct a financial evaluation and a financial forecasts and analyses for the green financing platform, SDIC, I&G, and CECEP, and the participating banks, with justification for relevant proposed financial risk mitigation measures.

87. **Minimum qualification requirements.** The expert must have relevant financial due diligence experience, which would include relevant prior ADB or other multilateral development bank experiences and in-depth knowledge of financial management related issues in the PRC's SOE, banking, and nonbank financial institutions sector. The expert would have at least 8 years of relevant experiences, and have a master's degree or equivalent in finance, or a relevant professional qualification such as a chartered financial accountant, chartered accountant, and chartered public accountant. The expert should have in-depth understanding and experience in (i) corporate financial management assessment for SOEs; (ii) public financial management and international best practices in accounting and auditing; (iii) the CAMELS assessment framework; (iv) abundant knowledge about the PRC's financial and fiscal systems; (v) extensive experience and skills in risk management and thorough understanding of financial analysis of investment holding companies, commercial banks, and credit guarantee companies; and (vi) experience in international cooperation.

88. **Consulting inputs and terms of engagement.** The national financial management expert is expected to be engaged for a total of 165 working days on an intermittent basis. Expected commencement date is May 2017 and expected completion date is September 2019

e. National Financial Structuring Expert

89. **Objective and purpose of the assignment.** As part of its project preparatory activities, ADB performs a financial due diligence for its proposed projects. The consultant will help in preparing the CECEP Emission Control and Pollution Reduction Fund.

90. **Financial structuring.** The expert will work with the national financial management specialist and assist the ADB finance specialist and the team leader to identify a financial structure for the CECEP Emission Control and Pollution Reduction Fund. The fund supports effective and efficient project implementation and is in compliance with the government's

regulations for establishing the green financing platforms.

91. The expert will review and assess national experiences in green funds dedicated for promoting advanced technologies in environmental protection. In particular, the expert will review (i) fund structures and limited partnerships; (ii) involvement of public investment in such funds; (iii) innovative risk-sharing mechanisms; (iv) financing mechanisms and instruments to support financing of clean air and low carbon projects—including but not limited to private equity, financial leasing, and guarantees; (v) innovative business models to match financing demand and supply; (vi) effective fund flow arrangements; (vii) pricing strategies for financing instruments; (viii) fund management rules; (ix) financial project selection criteria; (x) project screening, selection, and approval procedures; (xi) green financing platform financial management procedures; and (xii) the status of financing air quality improvement in the greater BTH region. The expert will draw lessons learned, and advice the ADB officer and team leader on structuring the CECEP Emission Control and Pollution Reduction Fund.

92. The consulting services required will include, but will not necessarily be limited to, the services described in these terms of reference. The expert will coordinate closely with the ADB project officer and the ADB project officer may augment the tasks outlined as required, to comply with ADB guidelines and procedures and to improve the quality of the overall due diligence.

93. **Minimum qualification requirements.** The expert must have (i) a master's degree in finance, engineering, or related field; (ii) a minimum of 10 years of experience in fund management and financial structuring of funds; (iii) abundant knowledge about international innovation funds; and (iv) experience in evaluation and due diligence of private equity investments.

94. **Consulting inputs and terms of engagement.** The national financial structuring expert is expected to be engaged for a total of 66 working days on an intermittent basis. Expected commencement date is May 2017 and expected completion date is September 2019.

f. National Economist

95. **Objective and purpose of the assignment.** As part of its project preparatory activities, ADB performs an economic due diligence for its proposed projects. The national economist will support the international economist in performing an economic analysis to assess the (i) economic rationale for the ensuing projects in terms of the market or nonmarket failures that are to be addressed; (ii) economic viability of subprojects in the context of a country's development and macroeconomic conditions and the relevant sector's goals, performance, and development plan; (iii) economic efficiency of all technically feasible alternative ways of achieving a subproject's objectives to identify the most efficient option as the preferred alternative; and (iv) costs and benefits of such preferred alternative. Methodological details are provided in ADB's Guidelines for the Economic Analysis of Projects.⁴

96. **Detailed scope of work.** The national economist will support the international economist. Detailed tasks are as follows:

- (i) support the international economist in undertaking a country context assessment of air quality improvement interventions and analyses: (a) ADB value added in the lending program; (b) rationale for public investment in the projects; and (c)

⁴ ADB. 1997. *Guidelines for the Economic Analysis of Projects*. Manila.

required and feasible during the next 7 years with the objective of achieving industrial energy efficiency targets likely to be set for the chemical industry in the PRC's 13th plan, 2016–2020⁵ and potential targets over the 14th plan, 2021–2015.

- (ii) support the international economist in conducting a demand analysis for (a) green financing, and (b) air quality improvement and establish the current and future demand for green financing and clean air services to be delivered by the project. When necessary, the economist will conduct a survey, trend extrapolation, or forecasting models to estimate demand.
- (iii) support the international economist in assessing the economic efficiency of the project. For this, the economist will demonstrate that the project represents the most efficient option among available feasible alternatives for addressing the identified problem. In many cases, this means that the selected project should have the lowest discounted cost per unit of output or outcome. However, when project alternatives have very different benefit flows, for example, because of quality differences, alternative analysis cannot be based on the cost comparison alone, and the most efficient project option is the one with the highest ENPV, provided that its investment is within budget. The basis for selecting the preferred alternative needs to be clearly explained.
- (iv) support the international economist in conducting cost-benefit analyses for subprojects. The economic costs and benefits associated with the proposed subprojects require establishing the with-project and without-project scenarios and comparing the two. The costs and benefits are estimated in terms of a common economic price level and a common currency in order to allow comparison. In addition to costs and benefits that are directly related to the project, external factors such as the social cost of carbon and other environmental costs or benefits, also need to be considered.
- (v) support the international economist in calculating the ENPV and the economic internal rate of return (EIRR) for identified subprojects. The general criterion for accepting a project is achieving a positive ENPV discounted at the minimum required EIRR, or achieving an EIRR that is greater than the minimum required EIRR. The minimum required EIRR is 9%.
- (vi) support the international economist in conducting risk and sensitivity analyses of identified subproject by assessing project uncertainty and risks for major changes in project parameters, which could render the project economically not viable. The economist will appraise the sources of risk and possible mitigating measures. Sensitivity analysis assesses the impact of changing values of the different parameters on project outcome. Switching values are presented for key parameters. Project economic analysis may draw on after evaluation results for similar projects to assess the likelihood of these switching values actually occurring. For projects that involve large investment, a quantitative risk analysis applying a probability distribution to key variables can be applied.
- (vii) assist the international economist in supporting the project team leaders in identifying indicators for the design and monitoring framework.

97. The consulting services required will include, but will not necessarily be limited to, the services described in these terms of reference. The economist will coordinate closely with the ADB project officer or the ADB project officer may augment the tasks outlined as required, to

⁵ 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).

comply with ADB guidelines and procedures and to improve the quality of the overall due diligence. The tasks may be required to be carried out in close cooperation with the government, and consultation may be needed to ensure transfer of knowledge and full ownership of the processes and documents by the concerned government agencies.

98. **Minimum qualification requirements.** The economist will have (i) at least a bachelor's degree in economics or related field, (ii) a minimum of 5 years of experience in economic analysis of projects, (iii) excellent written and oral English, and (iv) good understanding of the PRC's energy and industrial sectors. Experiences in macroeconomic and sector economic assessments for policy-based and results-based loans would be an important asset.

99. **Consulting inputs and terms of engagement.** The economist will be engaged for a total of 66 working days on an intermittent basis. Expected commencement date is April 2017 and expected completion date is October 2019.

g. Two National Environment Experts

100. **Objective and purpose of the assignment.** As part of its project preparatory activities, ADB performs an environmental due diligence for its proposed projects. The experts will also help in preparing three ensuing projects in the greater BTH region comprising (i) the CECEP Emission Control and Pollution Reduction Fund, (ii) a policy-based and results-based loan for up to two provinces in the greater BTH region, and (iii) an additional financing for the I&G's Green Financing Platform.

101. As an integral part of the project preparatory process for financial intermediation loans, ADB requires that an environmental due diligence is conducted, including (i) institutional capacity assessment of the executing and implementing agencies, (ii) environmental impact assessments of subprojects, (iii) ESMS for the project, and (iv) capacity development of executing and implementing agencies, as well as participating financial intermediaries.

102. The environment experts will also support the international environment expert in preparing the strategic environmental assessment for the policy and results-based loan projects. The environment experts will cooperate with the international environment expert and the national social safeguard expert to conduct a rapid strategic environmental and social assessment (SESA) of the program and proposed policy actions, including an assessment of the economic and social outcomes as well as the environmental implications of the proposed policy interventions. In carrying out the assignment, the experts are required to prepare a scoping report and a more detailed strategic environmental assessment report. The environment experts will engage the relevant stakeholders of the program and undertake a detailed assessment and analysis of the environmental and environment-related social risks likely to result from the program and the proposed policy actions. The scope of work will cover (i) scoping study to review policy context and baseline conditions and define the key environmental and social issues that need to be addressed in the more detailed study, and to develop the methodology for the rapid SEA study; (ii) a rapid SEA study including a rapid cost-benefit analysis of proposed policy actions covering social and environmental (PM_{2.5} emission reduction) benefits, assessment of environmental impacts for best-case, and business-as-usual alternatives; definition of mitigation measures; and recommendations to improve the outcomes of proposed policy interventions; and (iii) a comprehensive rapid SEA report. The experts will also draw upon detailed reports prepared by the knowledge work under this TA as well as other analytical work accomplished with other ADB TA projects.

103. **Detailed scope of work.** The experts will assist the international environmental expert in the following tasks:

- (i) if the selective subprojects are high-risk category B and involve existing facilities in accordance with the ESMSs requirements, conduct an environment and occupational health audit and prepare an environmental audit report, including time-bound common action plan (CAP), in Chinese;
- (ii) if the proposed subproject is categorized as B and is high risk, in accordance with the requirements of the ESMS and in conjunction with the subborrower, undertake an environmental assessment, including meaningful consultation, and prepare in Chinese language an initial environmental examination complete with environmental management plan (EMP) and environmental monitoring plan (EMOP), in accordance with the requirements of Appendix 1 of ADB's Safeguard Policy Statement (2009);
- (iii) if the selective subproject was preliminarily assessed as high or medium in climate risks, prepare a climate risk and vulnerability assessment;
- (iv) monitor the subprojects and confirm that they comply with all applicable environmental safeguard requirements, including PRC regulations, CAP, environmental impact assessment (EIA), IEE, EMP, EMOP, subproject ESMS, and grievance redress mechanism (GRM);
- (v) visit each subproject site quarterly in accordance with the ESMS requirements during construction and operation to monitor the implementation of subproject-specific CAP, EMP, EMOP, subproject ESMS, and GRM;
- (vi) document and promptly report to the executing agency any actual or potential breach of the compliance requirements and, if necessary, prepare a CAP in accordance with the requirements of Appendix 1 of ADB's Safeguard Policy Statement (2009);
- (vii) prepare environmental monitoring reports in accordance with the ESMS requirements during construction and operation;
- (viii) in the event of an unanticipated impact or a minor or major change in subproject scope, reconfirm the categorization, update the EIA and IEE, as required, and, if necessary, prepare a CAP in accordance with the requirements of Appendix 1 of ADB's Safeguard Policy Statement (2009);
- (ix) prepare consolidated semiannual environmental monitoring reports in English during the first 3 years after loan effectiveness, and semiannual ESMS implementation reports until project closure, and submit them to the executing agency;
- (x) provide training to subproject companies on the requirements of ADB's Safeguard Policy Statement (2009), project ESMS, PRC laws and regulations, EIA, IEE, EMP, EMOP, subproject ESMS, GRM, on information disclosure, meaningful consultation, environmental management systems, and compliance with Environmental, Health and Safety (EHS Guidelines, as well as on other topics to be identified by the executing agency;
- (xi) for low-risk category B or category C subprojects, prepare an environmental and social due diligence report to demonstrate that the subprojects comply with ESMS requirements;
- (xii) preparation of Program Safeguard System Assessment and impact of relevant safeguards related action in the Program Action Plan; and
- (xiii) preparation of matrix of Potential Environmental and Social Safeguard Impacts of Policy Reforms for policy-based loans (PBL).

104. **Scoping study for the strategic environment assessment.** The experts will

prepare the program's scoping report. The scoping study will provide (i) a description of the PBL program and proposed policy actions; (ii) a brief description of the environmental requirements of ADB and the executing agency that are relevant to the PBL and sectors addressed by the program; (iii) a brief presentation of the regional and provincial policy context pertaining to the program; (iv) an identification of the key stakeholders and relevant authorities and the stakeholder engagement mechanism for the rapid SEA study; (v) an identification of the key program–environment interactions, i.e., potential environmental and environmentally linked social impacts and contribution of program actions to key environmental concerns; (vi) an identification of the impact identification and evaluation methodology to be used in the rapid SEA study; and (vii) a proposal of the methodology including time frame for the rapid SEA study.

105. **Rapid strategic environmental assessment study.** The scope and methodology of the rapid SEA will be agreed with the ADB team on the basis of the scoping study. The experts will assess proposed policy interventions against SEA objectives developed during the scoping study and compare likely effects of implementation (positive and negative) against two alternatives, the best-case scenario, and the business-as-usual scenario. The experts will prepare a matrix of impacts for each proposed policy action in accordance with an agreed-upon structure. The analysis will cover cost-benefit of the proposed policy actions. The experts will also assess proposed performance indicators with regard to their usefulness to identify the environmental and social effects (positive and negative) of the proposed policy actions and responsible authorities. The experts will also consider the cumulative and indirect effects.

106. **Policy interventions.** Based on the findings of the rapid SEA study, and in consultation with key stakeholders, the experts will recommend mitigation measures and policy interventions to be incorporated into the program loan to ensure the program's sustainability. This may also include recommendations on strategic policy interventions that are beyond the capacity of the borrower or the scope of the PBL program, and would require follow-up actions or investments. It will also include recommendations for the improvement of the proposed performance indicators defined in the design and monitoring framework. Together with the project team or individually, the experts will negotiate through policy dialogue the recommendations to be integrated in the final policy matrix actions. The experts will prepare a report documenting the rapid SEA, including methodology, findings, recommendations, and limitations. The report will be attached as a supplementary appendix to the RRP and will follow an agreed-upon format and structure.

107. **Minimum qualification requirements.** The experts must have (i) at least a master's degree in environmental engineering or relevant fields; (ii) a minimum of 10 years of experience in environmental management of clean energy generation, efficient industrial production, green transport, solid waste treatment, and EIAs; and (iii) experience in international cooperation.

108. **Consulting inputs and terms of engagement.** Each of the two national environment experts is expected to be engaged for a total of 132 working days on an intermittent basis. Expected commencement date is May 2017 and expected completion date is September 2019.

h. Three National Technical Experts

109. **Objective and purpose of the assignment.** As part of its project preparatory activities, ADB performs a technical due diligence for its proposed projects. This includes an assessment of the technical feasibility, in accordance with ADB guidelines. The experts will help in preparing three ensuing projects in the greater BTH region comprising (i) the CECEP Emission Control

and Pollution Reduction Fund, (ii) a policy-based and results-based loan for up to two provinces in the greater BTH region, and (iii) an additional financing for the I&G's Green Financing Platform.

110. As an integral part of the project preparatory process for proposed loans, ADB requires that a technical due diligence is conducted, including (i) project management capacity assessment of the executing and implementing agencies, (ii) technical feasibility assessments of subprojects, (iii) definition of project selection criteria, and (iv) capacity development of the executing and implementing agencies and participating financial intermediaries.

111. **Detailed scope of work.** Tasks include the following:

- (i) conduct a market assessment on total low carbon and green market size, investment requirement, barriers to mobilizing these investments, capacity constraints, and a road map for addressing these barriers;
- (ii) undertake a review of the status of financing green and low-carbon projects in the PRC, and a review of the green and low-carbon projects financed by ADB and the multilateral development banks and how the effectiveness and coverage of these projects can be improved;
- (iii) review the institutional and management structure for the proposed project from the point of view of effectiveness in achieving the desired outcomes, decision-making and approval authorities for new investments and risk management and risk sharing—make recommendations to improve the proposed institutional structure of the proposed project;
- (iv) prepare subproject selection criteria to be adopted for different types of financing products to be offered by the proposed project;
- (v) prepare methodologies for monitoring and verification of energy efficiency gains and energy consumption savings achieved as a result of the investment supported by ADB;
- (vi) appraise candidate projects with regards to the technical feasibility, energy saving potential, avoided carbon dioxide and pollutants, cost estimates and implementation arrangements, and implementation schedule of the first batch of subprojects to be appraised before the loan approval;
- (vii) prepare technical appraisal manual to be used in undertaking feasibility studies and appraising subprojects;
- (viii) identify the capacity-building requirements—the capacity building will cover identifying energy efficiency and renewable energy projects; undertaking feasibility studies on technical designs of those projects; undertaking technical and financial appraisal of those projects; structuring performance-based energy saving contracts; and undertaking energy audits, monitoring, measurement, and verification mechanisms for energy savings achieved;
- (ix) provide detailed technical descriptions of selective renewable energy subprojects including information on feedstock, associated emissions and other environmental discharges, cost ranges, process diagram, and associated operation phase utility consumptions;
- (x) evaluate the selected subprojects as to whether international best practices of agricultural waste utilization technologies are used;
- (xi) identify issues and challenges that may arise for selected agricultural waste utilization subprojects;
- (xii) advise the executing agency on whether the selected subprojects are technically sound and cost-effective;

- (xiii) quantify and calculate greenhouse gas emission reduction and air quality improvement benefits, and other environmental benefits;
- (xiv) support various capacity-building activities relevant to agricultural waste utilization technologies;
- (xv) investigate local biomass data to ensure reliability; and
- (xvi) review the feasibility study report, and collect relevant biomass energy information and parameters.

112. **Minimum qualification requirements.** The experts should have (i) a postgraduate degree in engineering, chemical engineering, processing engineering, environmental engineering, or in any relevant field; (ii) at least 10 years of work experience in agriculture waste utilization; and (iii) experience in international cooperation.

113. **Consulting inputs and terms of engagement.** Each of the three national technical experts is expected to be engaged for a total of 132 working days on an intermittent basis. Expected commencement date is May 2017 and expected completion date is September 2019.

i. National Procurement Expert

114. **Objective and purpose of the assignment.** As part of its project preparatory activities, ADB performs a procurement capacity assessment and risk assessment for the proposed projects in accordance with ADB guidelines. The expert will help in preparing three ensuing projects in the greater BTH region comprising (i) the CECEP Emission Control and Pollution Reduction Fund, (ii) a policy-based and results-based loan for up to two provinces in the greater BTH region, and (iii) an additional financing for the I&G's Green Financing Platform.

115. **Scope of work.** Specifically, the expert will do the following:

- (i) work on the first phase of the project preparatory TA implementation period to work on the project design and due diligence of the financial intermediation loan—this includes procurement due diligence and capacity assessment of the management team of the proposed financing platform;
- (ii) undertake a procurement capacity assessment of financial intermediary with respect to the institutional ability to comply with ADB's procurement guidelines applicable to financial intermediation projects;
- (iii) conduct assessment of the executing and implementing agencies' own procurement rules and procedures;
- (iv) assist in preparing the PAM;
- (v) coordinate the inputs of technical and environment experts in appraising the subprojects to be approved after ADB loan approval,
- (vi) prepare guidelines and a template for quarterly and annual progress reports to be prepared by the implementing agency for ADB and government authorities; and
- (vii) provide capacity building on loan disbursement procedures and assist the implementing agencies in preparing withdrawal applications during the first 12 months of project implementation.

116. **Minimum qualification requirements.** The expert must have at least a bachelor's degree in engineering or relevant field, and minimum 5 years of experience in procurement, project management, and loan disbursement procedures of international financial institutions.

117. **Consulting inputs and terms of engagement.** The national procurement expert is

expected to be engaged for a total of 110 working days on an intermittent basis. Expected commencement date is May 2017 and expected completion date is September 2019.

j. National Social Development Expert

118. **Objective and purpose of the assignment.** As part of its project preparatory activities, ADB performs a poverty impact analysis and social development analysis for its proposed projects. The experts will help in preparing a policy-based and results-based loan for up to two provinces in the greater BTH region.

119. **Scope of work.** Specifically, the experts will support the team leader in preparing the linked documents to the RRP for up to two policy-based and results-based programs in the greater BTH region. This will comprise the following tasks:

- (i) assist the team leader in designing the disbursement-linked indicators, verification protocols, and disbursement schedule;
- (ii) assist in preparing the program results assessment;
- (iii) assist in preparing the program results framework;
- (iv) contribute to the poverty and social analysis;
- (v) contribute to the capacity-building component; and
- (vi) contribute to the programs' integrated risk assessment and mitigating measures.
- (vii) preparation of Program Safeguard System Assessment and impact of relevant safeguards related action in the Program Action Plan;
- (viii) preparation of matrix of Potential Environmental and Social Safeguard Impacts of Policy Reforms for PBLs.

120. **Minimum qualification requirements.** The experts must have (i) at least a master's degree in social development or relevant field; (ii) a minimum of 5 years of experience working on internationally financed projects with land acquisition impact, and in-depth knowledge of current PRC legislation regarding land acquisition; (iii) proven experience in social safeguard due diligence of industrial projects; and (iv) experience with poverty, social, and gender analysis, preferably in the energy efficiency sector.

121. **Consulting inputs and terms of engagement.** The national social development expert is expected to be engaged for a total of 66 working days on an intermittent basis. Expected commencement date is October 2017 and expected completion date is September 2019.

k. National Social Safeguards Experts

122. **Objective and purpose of the assignment.** As part of its project preparatory activities, ADB performs a social safeguards due diligence for its proposed projects. The experts will help in preparing three ensuing projects in the greater BTH region comprising (i) the CECEP Emission Control and Pollution Reduction Fund, (ii) a policy-based and results-based loan for up to two provinces in the greater BTH region, and (iii) an additional financing for the I&G's Green Financing Platform.

123. As an integral part of the project preparatory process for financial intermediary loans, ADB requires that a social due diligence is conducted including (i) institutional capacity assessment of the executing and implementing agencies, (ii) ESMS for the project, and (iii) capacity development of the executing and implementing agencies and participating financial intermediaries in applying the ESMS.

124. The experts will also support the international environment expert in preparing the strategic environmental assessment to assist the preparation of the policy and results-based loan project. The experts will cooperate with the national environment experts to conduct a rapid SESA of the program and proposed policy actions, including an assessment of the economic and social outcomes and environmental implications of the proposed policy interventions.

125. **Scope of work.** The experts will perform the following tasks:

- (i) undertake social safeguard due diligence for candidate subprojects to be approved before the ADB loan approval;
- (ii) assist in preparing the ESMS for social safeguards screening, with an aim to exclude any subprojects with potential involuntary resettlement or ethnic minorities issues;
- (iii) conduct poverty, social, and gender analysis and prepare summary poverty reduction and social strategy; and
- (iv) undertake the social safeguard due diligence of candidate subprojects to be approved after the approval of ADB loan in accordance with the requirement of ESMS to ensure compliance with ADB safeguard policies.

126. **Minimum qualification requirements.** The experts must have (i) at least a master's degree in social development or relevant field; (ii) a minimum of 5 years of experience working on internationally financed projects with land acquisition impact, and in-depth knowledge of current PRC legislation regarding land acquisition; and (iii) proven experience in social safeguard due diligence of industrial projects; and (iv) experience with poverty, social, and gender analysis, preferably in the energy efficiency sector.

127. **Consulting inputs and terms of engagement.** The expert is expected to be engaged for a total of 132 working days on an intermittent basis. Expected commencement date is April 2017 and expected completion date is October 2019.

I. National Project Coordinator

128. **Objective and purpose of the assignment.** As part of its project preparatory activities, ADB performs a procurement capacity assessment and risk assessment for the proposed projects in accordance with ADB guidelines. The coordinator will help in preparing three ensuing projects in the greater BTH region comprising (i) the CECEP Emission Control and Pollution Reduction Fund, (ii) a policy-based and results-based loan for up to two provinces in the greater BTH region, and (iii) an additional financing for the I&G's Green Financing Platform.

129. **Scope of work.** The coordinator will perform the following tasks:

- (i) support the ADB team leader in coordinating with the PRC Ministry of Finance and the National Development and Reform Commission, provincial governments, and the executing and implementing agencies for the ensuing loans and other institutions involved in the preparation and implementation of the BTH loans;
- (ii) support the ADB team leader in coordinating with the international and national consultants, follow-up on deliverables, and review and compile reports;
- (iii) support the ADB team leader in preparing knowledge sharing and capacity development events;
- (iv) coordinate site visits and subproject appraisals by ADB, consultants, and the executing and implementing agencies;

- (v) follow-up on project implementation progress of approved projects in the greater BTH region; and
- (vi) provide capacity building on loan disbursement procedures and assist the implementing agency in preparing withdrawal applications during the first 12 months of project implementation.

130. **Minimum qualification requirements.** The coordinator must have (i) at least a bachelor's degree in engineering or relevant field, (ii) a minimum of 5 years of experience in procurement, project management, and loan disbursement procedures of international financial institutions.

131. **Consulting inputs and term of engagement.** The coordinator is expected to be engaged for a total of 220 working days on an intermittent basis. Expected commencement date is April 2017 and expected completion date is October 2019.

C. Consulting Firm Requirements

132. The project team will undertake a source apportionment study and demonstrate how the key influences on air quality in the strategically selected city could be analyzed, using a combination of state-of-the-art techniques. The study will build on the method developed in the Jinan City study to deliver the next steps towards managing and improving air quality in strategically selected cities throughout the PRC.

133. ADB will engage the consulting firm following the Guidelines on the Use of Consultants (2013, as amended from time to time) using the quality- and cost-based selection method (90:10) with an output-based partial lump-sum contract. It is estimated that the technical assistance (TA) will require a team of consultants consisting of three international consultants (11 person-months) and three national consultants (15 person-months) for TA implementation. The international consultants comprise an air quality policy expert, an air quality economist, and an atmospheric modelling expert. The national consultants comprise an air quality policy expert, an air quality modelling expert, and a project coordinator.

134. The following terms of reference are indicative and meant to provide guidance on achieving the objectives of the proposed TA.

135. **Terms of reference.** The consultant team will support ADB in conducting air quality analysis in selected cities, review existing policies, and prepare additional measures and an action plan for air quality improvement in those cities. It will be reporting to the ADB's team leader. In particular, the consultant team will

- (i) select up to three cities in two provinces of the greater BTH region;
- (ii) secure air quality data for selected cities and establish a baseline inventory;
- (iii) conduct baseline air quality modeling;
- (iv) develop emission control scenarios;
- (v) prepare economic analysis of emission controls;
- (vi) assess improvements in emissions;
- (vii) assess improvements in air quality;
- (viii) assess wider benefits; and
- (ix) prepare air quality action plan.

136. **Deliverables.** The consulting firm will produce the following deliverables:
- (i) Output 1: Understanding of baseline conditions and existing air quality policies in selected cities established
 - (ii) Output 2: Long list of policies and emission control scenarios in an interactive process with local key stakeholders developed
 - (iii) Output 3: Economic analysis of emission control measures
 - (iv) Output 4: Quantitative assessment of emissions reductions resulting from each policy measure
 - (v) Output 5: Quantitative assessment of air quality improvements resulting from each policy measure
 - (vi) Output 6: Quantitative assessment of wider economic and health benefits from shortlisted policies
 - (vii) Output 7: Action plan for air quality policies and measures up to 2020 for the selected cities prepared

D. Reporting Requirements

137. The consultants will submit (i) an inception report within 2 months after mobilization, (ii) a revised inception report within 2 weeks after receiving comments from the executing and implementing agencies and ADB, (iii) an interim report within 9 months after mobilization, (iv) a revised interim report within 2 weeks after the interim workshop, (v) a draft final report within 20 months after mobilization, and (vi) a final report 1 month after the final workshop and receiving comments from ADB.

138. All TA deliverables and progress reports will be written in English. National consultants will be responsible for translating documents into Chinese. Three copies of the deliverables will be submitted to ADB in English, and 10 copies will be submitted to the executing agency (three in English and seven in Chinese). The deliverables and progress reports should address the terms of reference, with details appropriate to that stage of the TA. The consultants invited to participate in the workshops and seminars will present key findings to relevant government agencies for low carbon and clean air development in the greater BTH region invited to participate in the workshops and seminars.

139. ADB will conduct inception, interim, and final review missions in addition to regular monitoring of TA implementation. During the missions, meetings with executing and implementing agencies and consultants will be held. ADB, together with the executing and implementing agencies and the consultants, will review consultant performance, implementation progress, and completion of deliverables based on the design and monitoring framework and the consultants' work plan. The reports submitted by the consultants will be reviewed by the executing and implementing agencies, ADB's cross-divisional team, other relevant government agencies, and external peer reviewers. The final outputs will be disseminated to key policy makers and stakeholders through the executing agency. The proceeds of the TA will be disbursed in accordance with ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time).