



Technical Assistance Report

Project Number: 50007-001
Policy and Advisory Technical Assistance (PATA)
September 2016

People's Republic of China: Remediation of Heavy Metal Contamination in Farmlands of Hunan Province

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Asian Development Bank

CURRENCY EQUIVALENTS

(as of 19 September 2016)

Currency unit	–	yuan (CNY)
CNY1.00	=	\$0.1499
\$1.00	=	CNY6.6701

ABBREVIATIONS

ADB	–	Asian Development Bank
HAC	–	Hunan Agriculture Committee
HPG	–	Hunan provincial government
<i>mu</i>	–	Chinese unit of measurement (1 <i>mu</i> = 666.67 square meters)
PRC	–	People's Republic of China
TA	–	technical assistance

NOTE

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

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POLICY AND ADVISORY TECHNICAL ASSISTANCE AT A GLANCE

1. Basic Data		Project Number: 50007-001	
Project Name	Remediation of Heavy Metal Contamination in Farmlands of Hunan Province (formerly Demonstrating Remediation of Heavy Metal Contamination in Farmlands of Hunan Province)	Department /Division	EARD/EAER
Country	China, People's Republic of	Executing Agency	Hunan Agriculture Committee
2. Sector		ADB Financing (\$ million)	
✓ Agriculture, natural resources and rural development	Agricultural policy, institutional and capacity development		0.20
	Land-based natural resources management		0.20
		Total	0.40
3. Strategic Agenda		Climate Change Information	
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive	Climate Change impact on the Project	Low
Environmentally sustainable growth (ESG)	Eco-efficiency Natural resources conservation		
4. Drivers of Change		Gender Equity and Mainstreaming	
Governance and capacity development (GCD)	Institutional systems and political economy	No gender elements (NGE)	✓
Knowledge solutions (KNS)	Knowledge sharing activities		
Private sector development (PSD)	Conducive policy and institutional environment		
5. Poverty and SDG Targeting		Location Impact	
Project directly targets poverty and SDGs	No	Rural	Medium
		Urban	Medium
6. TA Category:	B		
7. Safeguard Categorization	Not Applicable		
8. Financing			
Modality and Sources		Amount (\$ million)	
ADB		0.40	
Policy and advisory technical assistance: Technical Assistance Special Fund		0.40	
Cofinancing		0.00	
None		0.00	
Counterpart		0.00	
None		0.00	
Total		0.40	
9. Effective Development Cooperation			
Use of country procurement systems		No	
Use of country public financial management systems		No	

I. INTRODUCTION

1. The Government of the People's Republic of China (PRC) requested a policy and advisory technical assistance from the Asian Development Bank (ADB) during ADB's 2015 country programming mission to enhance the Hunan provincial government's (HPG) capacity to remediate contaminated farmlands. The technical assistance (TA) project was included in ADB's country operations business plan, 2016–2018 for the PRC.¹ ADB fielded a reconnaissance mission to Beijing in April 2016 and agreed with the Hunan Agriculture Committee (HAC) and other stakeholders on the TA project's impact, outcome, outputs, implementation arrangements, cost, and financing arrangements, as well as the terms of reference for TA consultants.² The design and monitoring framework is in Appendix 1.

II. ISSUES

2. According to the Survey of National Soil Pollution Status—jointly released in 2014 by the Ministry of Environmental Protection and the Ministry of Land and Resources—19% of the PRC's farmlands (an estimated 26 million hectares) is dangerously contaminated. In 2011, excessive levels of the harmful heavy metal cadmium were detected in rice and rice products sold in many PRC provinces. Rice from the central province of Hunan was singled out as especially affected.³

3. Hunan Province was earmarked as the major rice producer for the PRC's large and growing population. However, large areas of its once-fertile farmlands are currently contaminated from mining and industrial activities over the past few decades. In 2013, the Hunan Provincial Agricultural Department (now the HAC) surveyed 45 counties within the Xiangjiang river basin for heavy metals and collected samples from 1.8 million *mu* of rice production area. Survey results indicated that 44% of the 1.8 million *mu* of rice production areas were highly contaminated with cadmium (>0.8 milligram per kilogram); 34% moderately contaminated (0.2–0.8 milligram per kilogram); and 22% without contamination detected. The generally acidic soil conditions in Hunan also increase the rice crops' absorption of cadmium.

4. Cadmium's effects on human health have been well studied and documented. Academic publications and the media in the PRC have reported on cadmium contamination of rice crops due to contaminated farmland.⁴

5. Hunan has been trying to address soil pollution and farmland contamination. In March 2011, the State Council approved the Implementation Plan for Heavy Metal Contamination Remediation in Xiangjiang River in Hunan Province. From 2011 to 2013, the province took measures to reduce contamination from industry, including closing, reforming, and improving of environmental practices at enterprises that have the potential to emit toxic heavy metals.

6. The PRC government issued the Soil Ten Plan in May 2016, the most significant milestone to date in its efforts to combat soil pollution. The plan outlines a comprehensive set of actions regarding this issue.

¹ ADB. 2016. *Country Operations Business Plan: People's Republic of China, 2016–2018*. Manila.

² The technical assistance (TA) first appeared in the business opportunities section of ADB's website on 24 August 2016.

³ Z. Chen and Z. Yan. 2016. *China's Tainted Soil Initiative Lacks Pay Plan*. <http://english.caixin.com/2016-06-08/100952896.html>.

⁴ In February 2011, the Century Weekly published an article titled "Murder by Cadmium-Contaminated Rice" that gained widespread attention. The article reported that a dozen elderly people in a village in Guangxi Province suffered from *itai-itai* disease because of long-term consumption of rice containing excessive cadmium. These 12 people were unable to walk normally as a result of their illness. Symptoms of *itai-itai* include severe osteoporosis and osteomalacia with simultaneous severe renal dysfunction.

7. Despite increasing priority and effort from the central and provincial governments, remediating contaminated farmland faces numerous challenges. Key challenges are the lack of innovative and cost-effective technologies, and specific technical guidelines for contaminated farmland remediation.⁵ Farmland remediation is new to the PRC; capacity and knowledge of remediation techniques and practices is also limited and emerging.

8. The absence of an effective and efficient monitoring and early warning system for farmland contamination is another factor that jeopardizes remediation efforts. The absence of a legal and policy framework to deal with farmland contamination is also a stumbling block. Finally, the lack of a financing strategy to support contaminated farmland remediation in Hunan Province also results in the central and provincial governments having to shoulder much of the costs to remediate contaminated farmland.

9. To address some of these key issues, the HPG has requested this TA from ADB. The TA project will strengthen the capacity of provincial- and county-level administration for contaminated farmland remediation, management, and monitoring.

10. The TA project contributes to the strategic priorities in ADB's country partnership strategy 2016–2020, which includes addressing environmental challenges.⁶ The country partnership strategy highlights support for environmental management and restoration as a key cooperation area with the PRC. A memorandum of understanding signed between ADB and the PRC's Ministry of Environmental Protection in 2014 highlighted soil pollution and contaminated land management as an area for continued cooperation. The TA is built on an ADB-financed TA, which supported the PRC in developing recommendations for a national framework for soil pollution and contaminated land management.⁷ Lessons from this TA can potentially be replicated in other priority remediation sites, not only in the PRC but in other developing member countries facing similar challenges.

III. THE POLICY AND ADVISORY TECHNICAL ASSISTANCE

A. Impact and Outcome

11. The impact will be improved quality of arable land for rice farming in Hunan Province. The outcome will be enhanced capacity on the part of HPG and local-level administration for remediation, monitoring, and management of contaminated farmlands.

B. Methodology and Key Activities

12. The TA project will have three outputs: (i) technical guidelines, operational standards, and recommendations for cost-effective technologies and contaminated farmland remediation projects; (ii) strategies for sustainable financing for remediation activities; and (iii) knowledge of key stakeholders on contaminated farmland remediation.

⁵ The Hunan Environmental Protection Bureau (HEPB) and the Quality and Technical Supervision Bureau jointly released the "Standards for Soil Remediation of Heavy Metal Contaminated Sites (DB43/T1165-2016)" on 29 March 2016 and became effective on 20 May 2016. The standards mainly focused on remediation of heavily contaminated industrial sites.

⁶ ADB. 2016. *Country Partnership Strategy: Transforming Partnership: People's Republic of China and Asian Development Bank, 2016–2020*. Manila.

⁷ ADB. 2008. *Technical Assistance to the People's Republic of China for Preparing National Guidelines for Eco-Compensation in River Basins and a Framework for Soil Pollution Management*. Manila.

13. **Output 1: Technical guidelines, operational standards, and recommendations for cost-effective technologies and contaminated farmland remediation projects.** Through a literature review, international best practice, and learning missions, the project will prepare technical guidelines, operational standards, recommendations for cost-effective technologies and contaminated farmland remediation projects. Specific activities include the following:

- (i) identify key stakeholder groups responsible for remediation;
- (ii) implement targeted rapid soil surveys to confirm the extent of heavy metal contamination in the targeted pilot sites, with particular focus on sites known to be contaminated with cadmium;
- (iii) review international and domestic best practice and approaches to remediate farmland contaminated with cadmium; and prepare the best combination of technology and approach to be applied for targeted contaminated lands;⁸
- (iv) conduct and participate in workshops and expert group meetings, and prepare draft technical guidelines and operational standards for contaminated agricultural land remediation, and monitoring guidelines;
- (v) develop specific criteria for selecting pilot sites; and
- (vi) design pilot remediation projects and technology to be applied in potential pilot sites.

14. **Output 2: Strategies for sustainable financing for remediation activities.** The TA consultants will conduct the following activities:

- (i) review and analyze the scale of the contaminated sites in Hunan Province—specific activities will include (a) analysis of the extent of contaminated lands, including different pollutants and priorities; (b) economic analysis of remediation options; and (c) estimation of funding required and time horizon for remediation work;
- (ii) collect and analyze information from past pilot studies in Hunan and other provinces, and synthesize lessons learned and successful experiences for sustainable financing for contaminated farmland remediation;
- (iii) work with the Hunan Provincial Finance Department and other relevant stakeholders in identifying potential sources of finance for remediation activities—the analysis will explore the following potential sources of funding: (a) HPG’s budget financing, (b) central government transfers (taxes and/or penalties on polluting industries), (c) levies on beneficiaries of soil remediation, (d) fees and charges on agricultural or industrial products, (e) tariffs for water use, (f) philanthropic or impact investors, and (g) remittances; and
- (iv) work with key government agencies to discuss and identify suitable fund structures and mechanisms, including (a) legal and governance arrangements, (b) prioritization for spending, and (c) investment and/or interest earnings.

15. **Output 3: Knowledge of key stakeholders on contaminated farmland remediation enhanced.** Specific activities include the following:

- (i) key government officials from the HAC, and relevant county-level government departments to participate in an international study tour that will focus on contaminated farmland remediation technology and approaches;
- (ii) disseminate a synthesis of the key findings of the TA to concerned stakeholders to enable wider application for contaminated farmland management in the PRC and other developing member countries facing similar issues; and
- (iii) implement training and capacity-building seminars and workshops for key stakeholder groups on farmland contamination and remediation approaches.

⁸ The international consultant will develop a program for a proposed study tour to be conducted in an ADB member country.

C. Cost and Financing

16. The TA is estimated to cost \$550,000, of which \$400,000 will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF-other sources). The HPG and relevant local governments (e.g., Heshan District) will provide counterpart support in the form of investment in staff, office space, office supplies and equipment, workshop costs, administrative support, and other in-kind contributions. The cost estimates and financing plan are in Appendix 2.

D. Implementation Arrangements

17. The TA will be implemented for 18 months from 1 November 2016 to 30 April 2018. The HAC will be the executing agency. A TA consultative and/or advisory committee will be established to provide guidance on TA implementation. The committee will consist of technical experts and senior government officers and will be chaired by the director of Hunan Provincial Finance Department's Foreign Loan Office. The TA management office will be established within HAC and will be responsible for day-to-day operations including overseeing the TA consultants' work plans, reviewing their outputs, and coordinating with the consultants to prepare for the provincial- and county-level workshops. The director of the Foreign Economic and Technical Cooperation Center of HAC will function as the executive director of the TA. TA implementation will be closely coordinated with various agencies, particularly with the Provincial Environmental Protection Bureau, Provincial Finance Department, and local government.

18. A consulting firm will be engaged in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time) using the simplified technical proposal and quality- and cost-based selection method, with a quality-cost ratio of 90:10 because of the high technical complexity of the consulting assignment.⁹ TA funds will be disbursed following the *Technical Assistance Disbursement Handbook* (2010, as amended from time to time). The outline terms of reference for consultants are provided in Appendix 3.

19. The TA project will follow the standard monitoring and supervision procedures for ADB-administered TA projects. ADB will carry out monitoring and review missions at the inception, interim, and final phases of the project. During these missions, ADB, the executing agency, the consultants, and stakeholders will review the technical progress of the project and provide feedback for integration and improvement for the TA. Progress will be measured against the targets and indicators in the design and monitoring framework (Appendix 1) and the consultants' terms of reference (Appendix 3). Progress will be reported in TA progress reports, which will be reviewed by ADB and other experts to provide additional feedback and guidance. Best practices and lessons learned will be disseminated through project reports, training program, TA workshops, and media releases.

IV. THE PRESIDENT'S DECISION

20. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$400,000 on a grant basis to the People's Republic of China for the Remediation of Heavy Metal Contamination in Farmlands of Hunan Province, and hereby reports this action to the Board.

⁹ Lump sum payments and/or output-based contracts will be considered under the TA in line with the Midterm Review Action Plan Nos. 2.9.2. and 2.10.2. ADB. 2014. *Midterm Review of Strategy 2020: Action Plan*. Manila.

DESIGN AND MONITORING FRAMEWORK

Impact the Project is Aligned with			
Quality of arable land for rice farming in Hunan Province improved (The Implementation Plan of Pilot Trial for Restoring and Remediation for Heavy Metal Pollution Farmland and Adjustment of Cropping Structure in Hunan). ^a			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
<p>Outcome</p> <p>Hunan provincial government and local-level administration's capacity for remediation, monitoring, and management of contaminated farmlands enhanced.</p>	<p>By April 2018:</p> <p>The newly developed tools and guidelines for contaminated farmland remediation in Hunan endorsed by the intersectoral project advisory group and recommended for adoption as official guidelines (2016 baseline: 0; target: 1).</p>	<p>Hunan Agriculture Committee's Annual Report and TA final review mission report.</p>	<p>Provincial government's priorities change and soil pollution and contaminated land remediation is no longer a priority.</p>
<p>Outputs</p> <p>1. Technical guidelines, operational standards, and recommendations for cost-effective technologies for contaminated farmland remediation prepared.</p> <p>2. Strategies for sustainable financing for remediation activities developed.</p> <p>3. Knowledge of key stakeholders on contaminated farmland remediation enhanced.</p>	<p>1a. Recommendations for pilot studies for contaminated farmland remediation in targeted counties prepared by month 12 (2016 baseline: 0; target: 3).</p> <p>1b. First draft technical guidelines and operational standards for contaminated farmland remediation, and monitoring of sites prepared by month 14 (2016 baseline: 0; target: 1).</p> <p>2a. First draft report with recommendations for long-term, secure, and sustainable financing for remediation activities prepared by month 10 (2016 baseline: 0; target: 1).</p> <p>3a. Seminars, training, and information-sharing workshops on remediation of contaminated farmlands and sustainable financing options for 30–40 provincial- and county-level participants conducted by month 15 (2016 baseline: 0; target: 3).</p> <p>3b. At least one study tour</p>	<p>1a–1b. Interim and final technical and progress reports of the TA project.</p> <p>2a. Interim and final technical and progress reports of the TA project.</p> <p>3a–3b. Workshop and seminar reports.</p>	<p>Government agencies and technical institutes are reluctant to share detailed data from contaminated land surveys because this information is sensitive and classified.</p>

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
	for 5–6 key provincial government stakeholders organized by month 6 (2016 baseline: 0; target: 1).		
Key Activities with Milestones			
<p>1. Technical guidelines, operational standards, and recommendations for cost-effective technologies for contaminated farmland remediation prepared.</p>			
<p>1.1. Identify key stakeholder groups responsible for implementing remediation efforts (Q4 2016). 1.2. Implement targeted rapid soil surveys to confirm extent of heavy metal contamination in the pilot sites, with a particular focus on cadmium (Q1–Q2 2017). 1.3. Review international and domestic best practice and approaches for remediation of farmlands contaminated with cadmium; prepare the best combination of technology and approach to be applied to pilot sites (Q4 2016–Q2 2017). 1.4. Conduct workshops and expert group meetings to prepare draft technical guidelines, operational standards, and monitoring approaches (Q3–Q4 2017). 1.5. Develop specific criteria for selecting pilot sites (Q3–Q4 2017). 1.6. Design pilot projects and technology to be applied in pilot sites (Q3–Q4 2017).</p>			
<p>2. Strategies for sustainable financing for remediation activities developed.</p>			
<p>2.1. Review and analyze the scale of the contaminated sites in Hunan (Q1 2017). 2.2. Collect and analyze information from past pilot studies in Hunan and other provinces, and synthesize lessons learned and successful experiences for sustainable financing (Q1–Q2 2017). 2.3. Identify potential sources of finance for remediation (Q2–Q3 2017). 2.4. Discuss and identify suitable fund structures and mechanisms, including (i) legal and governance arrangements; (ii) prioritization for spending; and (iii) investment and/or interest earnings (Q2–Q3 2017).</p>			
<p>3. Knowledge of key stakeholders on contaminated farmland remediation enhanced.</p>			
<p>3.1. Participate in an international study tour to understand contaminated farmland remediation technology and approaches better (Q2 2017) (G/CD). 3.2. Disseminate a synthesis of the key findings of the TA to concerned stakeholders to enable wider application for contaminated farmland management in the People's Republic of China and other developing member countries facing similar issues (Q1 2018) (KNS). 3.3. Implement training and capacity-building seminars and workshops for key stakeholder groups on farmland contamination and remediation approaches (Q2 2017–Q1 2018) (G/CD).</p>			
Inputs			
ADB: \$400,000			
Note: The Hunan provincial government and relevant local governments (e.g., Heshan District) will provide in-kind contributions such as staff, office space, office supplies and equipment, workshop costs, and administrative support.			
Assumptions for Partner Financing			
Not applicable.			

ADB = Asian Development Bank, G/CD = governance and capacity development, KNS = knowledge solutions, Q = quarter, TA = technical assistance.

^a Government of the People's Republic of China, Ministry of Agriculture and Ministry of Finance. 2014. *The Implementation Plan of Pilot Trial for Restoring and Remediation for Heavy Metal Pollution Farmland and Adjustment of Cropping Structure in Hunan*. Hunan.

Source: Asian Development Bank estimates.

COST ESTIMATES AND FINANCING PLAN

(\$'000)

Item	Amount
Asian Development Bank^a	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	110.0
ii. National consultants	119.5
b. International and local travel	61.8
c. Reports and communications	5.0
2. Training, workshops, seminars, conferences, and study tour ^b	55.0
3. Surveys	20.0
4. Miscellaneous administration and support costs ^c	4.0
5. Contingencies	24.7
Total	400.0

Note: The technical assistance is estimated to cost \$550,000, of which contributions from the Asian Development Bank (ADB) are presented in the table above. The government will provide in-kind contributions such as staff, office space, office supplies and equipment, workshop costs, and administrative support. The government's in-kind contribution accounts for an estimated 27% of the total technical assistance cost.

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

^b Includes insurance costs for participants. Study tour to be conducted in an ADB member country.

^c Includes interpretation and translation costs.

Source: Asian Development Bank estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

A. Introduction

1. A consulting firm will be engaged in accordance with the Guidelines on the Use of Consultants (2013, as amended from time to time) of the Asian Development Bank (ADB) using the quality- and cost-based selection method, with a quality–cost ratio of 90:10 given the high technical complexity. The simplified technical proposal approach will be used.

B. Terms of Reference

2. The consulting firm will assist the Hunan provincial government, through the Hunan Agriculture Committee (HAC), to (i) prepare technical guidelines, operational standards, and recommendations for cost-effective technologies and contaminated farmland remediation projects; (ii) develop strategies for sustainable financing for remediation activities; and (iii) enhance the knowledge of key stakeholders on contaminated farmland remediation. The selected firm will have experience in contaminated land remediation and in working partnerships with national or international experts and agencies on contaminated farmland remediation.

3. The consulting firm is expected to deliver the technical assistance (TA) outputs and implement the following anticipated tasks in order to accomplish the respective outputs. The consulting firm is encouraged to be innovative in refining the tasks to ensure effective delivery of the outputs.

4. **Output 1: Technical guidelines, operational standards, and recommendations for cost-effective technologies for contaminated farmland remediation.** Anticipated tasks are as follows:

- (i) identify key stakeholder groups responsible for remediation;
- (ii) implement targeted rapid soil surveys to confirm extent of heavy metal contamination in potential demonstration sites, with a particular focus on cadmium;¹
- (iii) review international and domestic best practice and approaches for remediating farmland contaminated with cadmium; and prepare the best combination of technology and approach to be applied to pilot sites, including phytoremediation;²
- (iv) work with key government staff to organize and participate in key TA review workshops (inception, interim, and final) and separate expert group meetings to prepare draft technical guidelines, operational standards, and monitoring approaches;³
- (v) work with the HAC to develop specific criteria for selecting pilot sites; and
- (vi) work with the HAC in designing pilot remediation projects and technology to be applied in potential demonstration sites.

¹ The anticipated costs for the targeted soil surveys should be included in the financial proposal.

² Phytoremediation is the direct use of living green plants for the contaminated site itself for the removal of the contaminants from the soils. United Nations Environment Programme, Division of Technology, Industry and Economics. *Phytoremediation: An Environmentally Sound Technology for Pollution Prevention, Control and Remediation*. <http://www.unep.or.jp/letc/Publications/Freshwater/FMS2/1.asp>

³ In addition to the main TA review mission workshops, the consulting firm may specify the number of anticipated small-scale workshops and expert group meetings it finds appropriate for the project. The format of the draft technical guidelines and operational standards shall comply with government requirements, including the number of pages.

5. **Output 2: Strategies for sustainable financing for remediation activities.** Anticipated tasks are as follows:

- (i) review and analyze the scale of the contaminated sites in Hunan Province—specific activities will include (a) analysis of the extent of contaminated lands, including different pollutants and priorities; and (b) estimation of funding required and time horizon for remediation work;
- (ii) collect and analyze information from past pilot studies in Hunan and other provinces, and synthesize lessons learned and successful experiences for sustainable financing for contaminated farmland remediation;
- (iii) work with the Hunan Provincial Finance Department and other relevant stakeholders in identifying potential sources of finance for remediation activities, including: (a) the Hunan provincial government’s budget financing, (b) central government transfers (taxes and/or penalties on polluting industries), (c) levies on beneficiaries of soil remediation, (d) fees and charges on agricultural or industrial products, (e) tariffs for water use, (f) philanthropic or impact investors, and (g) remittances; and
- (iv) identify suitable fund structures and mechanisms, including (a) legal and governance arrangements, (b) prioritization for spending, and (c) investment and/or interest earnings.

6. **Output 3: Knowledge of key stakeholders on contaminated farmland remediation enhanced.** Anticipated tasks are as follows:

- (i) support the key government officials from the HAC and the relevant county government departments in preparing for and participating in an international study tour to understand contaminated farmland remediation technology and approaches better—this will include communication with relevant international partners and host institutions and preparation of a study visit program;⁴
- (ii) disseminate a synthesis of the key findings of the TA project to concerned stakeholders to enable wider application for contaminated farmland management in the People’s Republic of China (PRC) and other developing member countries facing similar issues; and
- (iii) implement training and capacity-building seminars and workshops for key stakeholder groups on farmland contamination and remediation approaches.

7. **Technical assistance design, implementation, management, monitoring, and reporting.** The consulting firm’s anticipated tasks are as follows:

- (i) further refine the overall detailed TA implementation framework, and take the lead in drafting the TA inception, midterm, and final reports along with input from other invited resource persons and in consultation with the HAC and Hunan Provincial Finance Department;
- (ii) manage and ensure timely implementation of the TA activities;
- (iii) lead preparation of the final draft knowledge product in consultation with relevant experts, the executing agency, and ADB (with reference to output 3);
- (iv) coordinate and ensure wide review and feedback from key stakeholders is received on all TA reports;
- (v) work with HAC, Hunan Provincial Finance Department, and ADB in organizing TA workshops (i.e., inception, midterm, and final workshops) and other seminars discussing and presenting the TA results; and

⁴ The firm’s financial proposal shall include the costs for the study tour to the most relevant destination. As a general guideline, the costs for study tour shall not exceed 10% of the total TA budget.

- (vi) ensure the relevant TA technical and progress reports are available in English and Chinese and contain summaries that are comprehensible to stakeholders.

C. Key Expertise

8. The proposing entities will determine the number and the nature of experts required to achieve the objectives of the contract, in accordance with their proposed approach and methodology. However, ADB requires a minimum of two key experts, one of which will be expected to act as team leader:

- (i) soil and land remediation specialist and team leader (international); and
- (ii) soil and land remediation specialist and deputy team leader (national).

9. **Soil and land remediation specialist and team leader** (international, 5 person-months). The specialist will (i) be responsible for overall coordination and supervision of TA activities and outputs; (ii) be responsible for day-to-day liaison with HAC and other provincial government agencies supporting the TA-related work; (iii) develop a detailed implementation schedule, and assign tasks to relevant specialists of the team in consultation with ADB and HAC; (iv) lead the activities of the team to deliver the TA outputs; (v) compile inputs from team members, and feedback from ADB and HAC to prepare the TA inception, interim, and final reports. The specialist should meet the following minimum qualifications:

- (i) an advanced university degree in environmental science, soil science, natural resources management, or a related field, with at least 10 years of relevant international experience;
- (ii) a sound understanding of the issues affecting farmland contamination, and broader contaminated land remediation and management;
- (iii) experience and understanding of recent technological advances and its application in contaminated farmland remediation;
- (iv) demonstrated experience in similar assignments with international organizations, including functioning as a team leader;
- (v) field experience or knowledge on farmland remediation works abroad and on-the-ground working experience in the PRC, or the region will be an advantage;
- (vi) ability to work with multiple stakeholders including the government, private sector, and donor agencies; and
- (vii) excellent English language skills, including the ability to conduct oral presentations and to produce high-quality written reports.

10. **Soil and land remediation specialist and deputy team leader** (national). The specialist will (i) support the team leader in coordinating and supervising TA activities and outputs, and liaise with HAC and other government agencies; (ii) lead in reviewing national case studies and experiences in contaminated farmland remediation; and (iii) support the team leader in delivering the TA outputs. The specialist should meet the following minimum qualifications:

- (i) an advanced university degree in environmental science, soil science, natural resources management, or a related field, with at least 8 years of relevant national experience;
- (ii) sound understanding of the issues affecting farmland contamination, and broader contaminated land remediation and management;
- (iii) experience in contaminated farmland remediation work in the PRC;
- (iv) demonstrated experience in similar assignments with international organizations;
- (v) ability to work with multiple stakeholders including the government, private sector, and donor agencies; and

- (vi) good English language skills, including the ability to conduct oral presentations and to produce written reports in English.

11. In addition to these key experts, the proposing entities should also include in the technical proposal, personnel work plan, and financial proposal all other “non-key experts” required in accordance with their proposed approach and methodology. The proposing entity must also indicate the number of person-months for which each key or non-key expert will be required, including specifying the number of person-months to be spent in the field.

12. All experts engaged under the contract, whether key or non-key experts, must be citizens of an ADB member country.

D. Preparation of Proposal

13. Proposing entities will prepare a detailed description of how they propose to deliver the outputs of the contract under the “Approach and Methodology” section of the proposal. In this narrative, entities should be explicit in explaining how they will achieve the outputs, and include any information on their existing activities upon which they may eventually build as well as the details of what staff will comprise the project team. Moreover, proposing entities must also observe the following:

- (i) describe their experience in the PRC and their ability to operate in Chinese;
- (ii) submit only one curriculum vitae for each key and non-key expert included in the proposal—only the curriculum vitae of key experts will be rated as part of the technical evaluation of proposals; however, ADB will still review and individually approve or reject the curriculum vitae for each non-key expert position in the proposal; and
- (iii) include and budget for all positions—both key and non-key experts—in the financial proposal, in accordance with the person-month allocation required for each as defined by the consulting firm.

E. Terms of the Assignment

14. The consultants are expected to commence work in December 2016. The assignment of experts is intermittent in nature. The terms will be revised based on consultations among the parties involved according to changes and or additional requirements identified during implementation.

F. Reporting

15. The consulting firm will be responsible for collating and compiling individual consultant reports and submitting them as part of the inception, interim, and final reports. A first draft of the knowledge product is expected to be submitted together with the interim report. Specifically, the consultants will submit the following reports: (i) an inception report by month 3; (ii) an interim report by month 10; (iii) a draft final report by month 15; and (iv) a final report 1 month after the final workshop. The inception report, revised interim report, revised draft final report, and revised final report should incorporate and address comments received from ADB, the executing agency, and other invited reviewers.

16. All documents will be submitted to ADB and the executing agency in both English and Chinese and in hard and electronic copies.