



Technical Assistance Report

Project Number: 48471-001
Policy and Advisory Technical Assistance (PATA)
September 2015

People's Republic of China: Study on Building an Ecological Security System for the National Core Grain Growing Area of Henan Province

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Asian Development Bank

CURRENCY EQUIVALENTS

(as of 31 August 2015)

Currency unit	–	yuan (CNY)
CNY1.00	=	\$ 0.1566
\$1.00	=	CNY 6.3872

ABBREVIATIONS

ADB	–	Asian Development Bank
HPFD	–	Henan Provincial Forestry Department
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: 48471-001	
Project Name	Study on Building an Ecological Security System for the National Core Grain Growing Area of Henan Province	Department /Division	EARD/EAER
Country Borrower	China, People's Republic of Not Applicable	Executing Agency	Henan Provincial Forestry Department
2. Sector	Subsector(s)	ADB Financing (\$ million)	
✓ Agriculture, natural resources and rural development	Forestry		0.40
		Total	0.40
3. Strategic Agenda	Subcomponents	Climate Change Information	
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive	Climate Change impact on the Project	Low
Environmentally sustainable growth (ESG)	Natural resources conservation		
4. Drivers of Change	Components	Gender Equity and Mainstreaming	
Knowledge solutions (KNS)	Knowledge sharing activities	Effective gender mainstreaming (EGM)	✓
5. Poverty Targeting		Location Impact	
Project directly targets poverty	No	Rural	High
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 technical assistance (TA) from the Asian Development Bank (ADB) for the Study on Building an Ecological Security System for the National Core Grain Growing Area of Henan Province. The TA is included in ADB's country operations business plan, 2015–2017 for the PRC.¹ A TA reconnaissance mission was conducted from 27 to 29 July 2015.² Government concurrence with the impact, outcome, outputs, implementation arrangements, cost, financing arrangements, and terms of reference was obtained. The design and monitoring framework of the TA is in Appendix 1.

II. ISSUES

2. Henan Province and the provinces of Jilin and Heilongjiang are the three core grain producing regions of the PRC and are considered by the government to be the three most important contributors to the country's food security. Henan covers a large part of the fertile North China Plain and has a total cropping area of 8,156,760 hectares. It is the nation's largest wheat and sesame producer and the second biggest producer of corn. It also produces a substantial share of the country's rice crop.³ Despite its importance and current high productivity, agriculture in Henan has been negatively affected by an intensification of agriculture practices. This has led to declining soil fertility, soil erosion, and land degradation and an overall deterioration in the environmental quality of its cropping areas. These worsening ecological conditions make it difficult for Henan to sustain its grain production and keep the province's crop productivity at the high levels required to meet the PRC's grain needs. The quality of the cropping ecosystem in Henan must be improved so that the province can continue to produce grain sustainably and fulfill its highly important obligations in maintaining national food security.

3. The ecology and productivity of cropping areas are strongly linked. Healthy ecosystems can support and promote crop production systems that are sustainable and have high yields. Agroforestry systems are a common feature in regions that have extensive areas devoted to grain cropping. Agroforestry involves the cultivation of crops in close proximity and association with trees or shrubs. This brings ecological and economic benefits as it has been shown to improve crop yields and soil fertility, reduce soil erosion, conserve soil moisture, recycle nutrients, protect crops from provide wind and storms, sequester carbon from the atmosphere, and increase biodiversity.

4. Agroforestry in Henan was traditionally characterized by the use of intercropping, alley cropping, and shelterbelt systems to protect crops, soil, and the ecosystem. Intercropping systems grow trees or shrubs among crops. Alley cropping alternates rows of closely spaced tree or hedge species with crop strips, and shelterbelt systems grow trees and shrubs around the crops. Now, however, these systems have been severely degraded or completely lost through more intensive agricultural practices, greater mechanization, and poor system maintenance and management.

5. Henan has done significant work to reforest its upland and mountainous areas but has paid little attention to the lowland cropping areas or support for agroforestry systems. The province's agroforestry systems need to be reestablished to protect the grain growing areas and

¹ ADB. 2015. *Country Operations Business Plan: People's Republic of China, 2015–2017*. Manila.

² The TA first appeared in the business opportunities section of ADB's website on 16 July 2015.

³ Government of the People's Republic of China, Henan Department of Statistics. 2015. *Henan Provincial Statistical Yearbook 2014*. Zhengzhou.

promote ecological security. This will improve the grain cropping ecosystem and ensure national food security by restoring soil fertility and proper conservation. Although agroforestry was a traditional practice in Henan, most of the knowledge and skills needed to set up, maintain, and manage these systems have been lost. Farmers need to be made more aware of the importance of such systems, their benefits, and the technical skills needed to manage them. Government institutions and policies need to be strengthened to enable more support for agroforestry actions. Because it involves both the agriculture and forestry sectors in its management and upkeep, agroforestry struggles to compete with conflicting demands and priorities in government that fall entirely within these sectors. The Henan Provincial Forestry Department (HPFD) needs a development framework that can promote the development of agroforestry. This framework should include policy support and a financing plan for agroforestry activities.

6. **Government policy and ADB's country partnership strategy.** This TA will support the government's aims to stabilize grain production in Henan to maintain national food security and to promote the sustainable use of the country's land and forests. These are to be key development priorities in the PRC's thirteenth five-year plan for 2016–2020, currently being prepared. The TA also supports the PRC government's policy adopted in 2012 to build an "ecological civilization".⁴ The government aims to build an ecological security system that can safeguard the grain production bases. Combining investment in rural sector with public participation will improve the urban and rural environments, which is part of the government's "ecological civilization" development agenda. The TA is in line with ADB's priorities in its country partnership strategy for the PRC for 2016–2020, which is currently being prepared, and in the ADB operational plan for sustainable food security.⁵ In both cases, ADB aims to support greater agricultural productivity and enhance the quantity, quality, and management of natural resources.

7. ADB had previous experience in agroforestry through a project financed by a grant from the Japan Fund for Poverty Reduction to develop a sustainable agroforestry land-use system in the northern region of the Lao People's Democratic Republic.⁶ Another project relevant to this TA is the Jiangsu Yancheng Wetlands Protection Project in the PRC, which proposes two agroforestry intercropping models combining forest and medicinal plants and forest and melons.⁷ The outputs from this TA will be relevant to all of the PRC's cropping areas, particularly those in the other two major grain growing regions in Heilongjiang and Jilin. The ecological security of both of these provinces could benefit from the example of an improvement of the agroforestry systems in Henan.

III. THE POLICY AND ADVISORY TECHNICAL ASSISTANCE

A. Impact and Outcome

8. The TA impact will be an increased contribution by Henan's grain production systems to national food security. The intended outcome is an improvement in the ecosystem of the core grain cropping region of Henan.

⁴ Government of the People's Republic of China. 2015. *Central Document Number 12: Opinions of the Central Committee of the Communist Party of China and the State Council on Further Promoting the Development of Ecological Civilization*. Beijing.

⁵ ADB. 2010. *Operational Plan for Sustainable Food Security in Asia and the Pacific*. Manila.

⁶ ADB. 2004. *Proposed Grant Assistance to the Lao People's Democratic Republic for Sustainable Agroforestry Systems Livelihood Enhancement of the Rural Poor*. Manila.

⁷ ADB. 2011. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Jiangsu Yancheng Wetlands Protection Project*. Manila.

B. Methodology and Key Activities

9. The TA project's three outputs will be (i) the recommendation of best practices in the technical management of agroforestry, (ii) the drafting of a strategy for agroforestry development, and (iii) the enhancement of capacity of the government and communities to implement agroforestry activities.

10. **Output 1: Best practices in technical management of agroforestry recommended.**

Technical assessments will be conducted under output 1 that will include a review of current environmental and socioeconomic data; land use and land development plans of the project area; impact of climate change on production systems; current management practices in Henan's grain production and agroforestry systems; the identification of hazards and threats to grain production; and national and international best practices in agroforestry that have been integrated into grain production. Consultations with communities and farmers will be a key part of these assessments. The TA will determine the attitudes and preferences in regard to integrating agroforestry systems into current cropping practices, their willingness to do so, and any constraints they will face. These technical assessments will identify the main constraints on and opportunities for better grain production. They will also assess how agroforestry systems and the integration of national and international best practices can be used to overcome these constraints, mitigate other risks to production, and enhance ecological security. The recommendations of improved agroforestry practices and system models will include financial analyses of the potential implementation costs and financial benefits.

11. **Output 2: Strategy for agroforestry development drafted.** The TA will support an analysis of the current institutional, policy, and regulation setting for implementing agroforestry projects. It will also help determine how this setting can be improved to encourage the increased use and sound maintenance of existing agroforestry systems in core grain growing areas and the establishment and proper maintenance of new ones. The review will look at agriculture and forestry issues. It will examine current national eco-compensation programs, policies, and regulations that promote the provision of ecosystem services and assess the opportunities to gain financial benefits and support from such programs to provide ecosystem services through agroforestry systems. The TA will also make recommendations for improved agroforestry management policies and regulations based on the technical and financial analyses from output 1, as well as the institutional or policy and eco-compensation assessment. After consultations between government agencies, a draft strategic agroforestry development plan will outline management mechanisms for the agroforestry sector. The plan details will include the financing required to implement it, as well as the sources of this financing.

12. **Output 3: Government and community capacity to implement agroforestry activities enhanced.**

The project will build government and community ability to carry out agroforestry activities by developing a training program and delivering training to forestry extension agents. It will use the training-of-trainers approach, as well as awareness-raising activities involving communities and agroforestry enterprises.⁸ A strengths, weaknesses, opportunities, and threats analysis will be conducted on extension services and their capacity to provide training to farmers and enterprises. The TA will develop training materials and provide training to forestry and agriculture extension staff and community leaders who will play a role in providing extension services to villagers and agroforestry enterprises. The project will include an international study tour that will demonstrate the current best practices in the integration of

⁸ The training-of-trainers approach improves the skills of the professionals responsible for providing training or in a position where they could provide training. It not only enhances the technical skills of the people who will give the training but also provides them with an improved understanding of the concepts, skills, and methods of teaching and learning and of how these can be applied to various types of training events.

agroforestry and grain production. An agroforestry knowledge product will be produced on the agroforestry opportunities and issues identified during the output 1 and 2 activities.

13. Capacity strengthening under the TA will build an important foundation for expanding agroforestry in Henan's grain growing areas. It will include development of the new training materials, the training-of-trainers program, and the provision of equipment (computers, projectors, cameras, printed resource, and training materials). The provincial, municipal, county, and village extension and forestry officers who will be trained will then be responsible for training and providing extension support to farmers, private enterprises, and state-owned enterprises. This will raise awareness about the benefits of agroforestry systems, the improved agroforestry models, and agroforestry maintenance and management practices. The project will provide these trainers with basic equipment such as computers and printers that they need to carry out this training.

14. The TA project design assumes that (i) sufficient willingness to cooperate exists between community members and local government institutions; (ii) local communities and the private sector will be interested in receiving agroforestry training; and (iii) they will be willing to invest in agroforestry systems, with or without the support of national subsidies.

15. Risks include the possibility that the data required for the assessment will not be available. In addition, communities in the core grain producing areas may not want to invest in agroforestry shelterbelts. Policy conflicts and competition between agencies could arise within government over land use, which could affect the preparation of the agroforestry development strategy. The most differences most likely to emerge would be between government policies and agency views regarding grain production versus ecological conservation. Some of the various government departments involved in the project activities may be unable to reach a consensus on the strategies and policy framework required to implement the envisaged agroforestry expansion.

C. Cost and Financing

16. The TA is estimated to cost \$500,000, of which \$400,000 will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF-other sources). The government will provide counterpart support in the form of the remuneration and travel expenses of counterpart staff (including a translator), local transport for consultants to government offices in Zhengzhou (the capital of Henan), provision of available relevant government data and studies for the TA consultants' use, meeting rooms, office facilities, geographic information system maps, and other in-kind contributions. The cost estimates and financing plan are in Appendix 2.

D. Implementation Arrangements

17. The HPFD will be the executing agency. The provincial project office of the HPFD will be the implementing agency. The director of the provincial project office will be responsible for coordinating operational matters and technical collaboration with the consultants. The HPFD will provide office space, access to communications and copiers, and logistical support for TA implementation. The director of the provincial project office will also be responsible for submitting reimbursement claims for approved expenditures for logistical support for training, seminars, and conferences.

18. The HPFD will convene meetings and workshops during the inception, interim, and final stages of TA implementation for the offices and departments concerned, including the national and provincial departments of agriculture, forestry, and water resources.

19. The TA will be implemented over 16 months—tentatively, from 1 November 2015 to 28 February 2017. The consultants will submit an inception report to ADB within 2 months of start-up and an interim report 5 months into implementation. They will submit a draft final report to ADB 10 months after the TA begins and a final report at conclusion. The inception, interim, and draft final reports will be subject to review by ADB and the government. All reports will be written in English and translated into Chinese. The outline terms of reference for consultants are in Appendix 3.

20. 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. The quality–cost ratio will be 90:10 due to the high technical complexity of the consulting assignment. The TA will require 21 person-months of consulting services (3 person-months of international and 18 person-months of national inputs). The consulting team will consist of an international agroforestry management specialist, who will be the team leader. The team will have six national specialists—an ecology specialist who will be deputy team leader, a forestry planning specialist, an institutional and policy specialist, a climate change specialist, a finance specialist, and a training and extension specialist. Procurement of equipment will be conducted in accordance with ADB's Procurement Guidelines (2015, as amended from time to time). The proceeds of the TA will be disbursed in accordance with ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time). Resource persons may be recruited to review the consultants' outputs and share knowledge during workshops in accordance with ADB's guidelines on recruiting and administering resource persons.

21. The TA results will be disseminated through the release of the project reports, as well as through workshops and media releases by ADB and the HPFD. The training program will be based on the TA assessment results to ensure that information on the training needs is up-to-date and that the technical expertise required is provided in the training. A knowledge product will be developed and disseminated in hard copies by ADB, the resident mission in the PRC, and the HPFD. It will be posted on the ADB website. Evaluation of the TA outcome will follow ADB guidelines and be provided to the HPFD.

IV. THE PRESIDENT'S DECISION

22. 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 Government of the People's Republic of China for the Study on Building an Ecological Security System for the National Core Grain Growing Area of Henan Province, and hereby reports this action to the Board.

DESIGN AND MONITORING FRAMEWORK

Impact the Project is Aligned with

The contribution of grain production systems in Henan Province to national food security in the PRC is increased (Henan Provincial Grain Production Core Region Plan, 2008–2020)

Project Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
<p>Outcome</p> <p>The ecosystem of the core grain production region of Henan Province improved</p>	<p>By 2017</p> <p>a. Three agroforestry models offered to farmers for their implementation (2015 baseline = 0)</p> <p>b. Agroforestry development and financing plan endorsed by Henan provincial government. (2015 baseline = 0)</p>	<p>a.–b. HPFD annual report</p>	<p>Communities and enterprises are not willing to invest in agroforestry shelterbelts within the core grain growing area.</p>
<p>Outputs</p> <p>1. Agroforestry best practices in technical management recommended</p>	<p>By 2016</p> <p>1a. Three agroforestry models that incorporate best technical management practices prepared. (2015 baseline = 0)</p>	<p>1a. Interim and final technical and progress reports of the technical assistance project</p>	<p>Data required for technical assessments is not available.</p> <p>Some departments may be unable to reach consensus on the strategies required to implement agroforestry activities and policy framework.</p>
<p>2. Strategy for agroforestry development drafted</p>	<p>2a. Gender-sensitive policy framework for agroforestry development prepared. (2015 baseline = 0)</p> <p>2b. Financing plan for agroforestry development prepared. (2015 baseline = 0)</p>	<p>2a.–2b. Interim and final technical and progress reports of the technical assistance project</p>	<p>Preparation of the agroforestry strategy is delayed due to potential conflict between competing government policies and agencies on land use, specifically those promoting grain production and those promoting ecological conservation.</p>
<p>3. Government and community capacity to implement agroforestry activities enhanced</p>	<p>3a. Gender-sensitive agroforestry training manuals prepared. (2015 baseline = 0)</p> <p>3b. 100 trainers trained, including at least 30 women. (2015 baseline = 0)</p>	<p>3a. Training manual</p> <p>3b. Training assessment reports</p>	

Key Activities with Milestones (after consultant mobilization)**1. Agroforestry best practices in technical management recommended**

- 1.1 Review and analyze current environmental and socioeconomic data and studies available for the core grain growing region. By month 2
- 1.2 Identify hazards and threats and their impact on the grain growing areas, including projected climate change impacts, spatial distribution of environmental disaster risks, as well as loss and damage from such impacts. By month 2
- 1.3 Review current agroforestry, forestry, and agriculture land use management practices, and identify practices that increase or decrease hazards and risk to the grain growing areas. By month 2
- 1.4 Conduct consultations and workshops with farmers and communities to assess their attitudes and preferences in regard to integrating agroforestry systems into current cropping practices, their willingness to do so, and any constraints they will face. By month 3
- 1.5 Review national and international best practices in agroforestry models and ecosystem services that can be provided by agroforestry systems to support and protect grain production areas and promote ecological security. By month 4
- 1.6 Make recommendations to HPFD for new agroforestry models and management practices and improve existing ones, incorporating best practices from national and international experience that promote ecological security. By month 5.
- 1.7 Conduct a financial analysis to determine potential implementation costs and financial benefits of implementing these improved agroforestry practices and models. By month 5

2. Strategy for agroforestry development drafted

- 2.1 Identify and review the current institutional, management, and legal and/or policy framework for the agriculture, forestry, and agroforestry sectors, identifying gaps, issues, and constraints and/or barriers. By month 2
- 2.2 Review national eco-compensation programs, policies, and regulations that promote provision of ecosystem services and assess opportunities for financial benefit and support from such programs for provision of ecosystem services. By month 2
- 2.3 Provide recommendations for improved agroforestry management, policies, and regulations based on the surveys and data inputs, proposed agroforestry models, and financial analyses from output 1 as well as the institutional or policy and eco-compensation assessment by month 3.
- 2.4 Conduct consultations and a workshop to discuss preliminary results and finalize identification of priority agroforestry activities or projects. By month 4
- 2.5 Write a strategy and action plan, including prioritized projects, links to eco-compensation, policies and regulations, recommendations for improvement and changes, a detailed work plan, and budget. By month 6
- 2.6 Develop a sustainable financing plan to support implementation of the agroforestry development plan. By month 6

3. Government and community capacity to implement agroforestry activities enhanced

- 3.1 Conduct a training needs assessment that includes a SWOT analysis of agroforestry capacity and evaluation of current training materials, and define an updated training program. By month 2
- 3.2 Develop agroforestry training materials. By month 3
- 3.3 Conduct training in agroforestry to develop the capacity of local communities and government staff. By month 7
- 3.4 Plan the international study tour to see best practices in integrating agroforestry and grain growing. By month 3
- 3.5 Develop an agroforestry knowledge product that addresses gaps, opportunities, and issues identified in activities under outputs 1 and 2. By month 11
- 3.6 Facilitate a working group, including relevant experts and CSOs, to develop the agroforestry development strategy. By month 9
- 3.7 Conduct workshops for provincial and local level stakeholders to present and discuss TA results. By month 11

Project Management Activities

Mobilize consulting firm, develop study framework, and submit draft inception report by month 1.
 Collect data required to perform activities associated with outputs 1 and 2 by month 2.
 Conduct inception workshop and submit revised inception report with detailed approach and implementation arrangements for the project by month 2.
 Organize and hold the international study tour by month 3.
 Prepare interim report including lessons learned from study tour and dissemination workshop by month 5.
 Prepare and start training events by month 6.
 Prepare final report and dissemination workshop by month 11.
 Prepare the draft knowledge product by month 11.
 Publish the final agroforestry strategic development plan by month 12.
 Finalize the knowledge product by month 13.

Inputs

ADB: \$ 400,000

Note: The government will provide counterpart support in the form of the remuneration and travel expenses of counterpart staff (including a translator), local transport for consultants to government offices in Zhengzhou (capital of Henan), provision of available relevant government data and studies for the consultants' use, meeting rooms, office facilities, geographic information system maps, and other in-kind contributions.

Assumptions for Partner Financing

Not applicable

ADB = Asian Development Bank; CSO = civil society organization; HPFD = Henan Provincial Forestry Department; People's Republic of China; SWOT = strengths, weaknesses, opportunities, and threats; TA = technical assistance. 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	73.5
ii. National consultants	120.0
b. International and local travel	29.2
c. Reports and communications	5.0
2. Equipment ^b	57.0
3. Training and workshops	
a. Facilitators	3.2
b. Training program and workshops	52.5
c. Study tour ^c	40.0
4. Miscellaneous administration and support costs ^d	9.6
5. Contingencies	10.0
Total	400.0

Note: The technical assistance (TA) is estimated to cost \$500,000, of which contributions from the Asian Development Bank (ADB) are presented in the table above. The government will provide counterpart support in the form of in-kind contributions to finance the remuneration and travel expenses of counterpart staff (including a translator), local transport for consultants to government offices in Zhengzhou (capital of Henan), provision of available relevant government data and studies for the consultants' use, meeting rooms, office facilities, geographic information system maps, other support to the consultants as required, and other in-kind contributions. Costs of surveys will be financed by the government. The value of government contribution is estimated to account for 20% of the total TA cost.

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

^b Includes computers and office equipment. Any equipment that is procured under the TA will be disposed of in accordance with ADB policy and turned over to the executing agency.

^c An international study tour will be conducted. Finalization of the destination and program of events will be completed after recommendations are provided by the consultant TA team leader and the extension and training specialist.

^d Includes workshop translation, office supplies, administration, and logistics costs.

Source: Asian Development Bank estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

A. Introduction

1. A consulting firm will be engaged by the Asian Development Bank (ADB) for the technical assistance (TA) to the People's Republic of China (PRC) for the Study on Building an Ecological Security System for the National Core Grain Growing Area of Henan Province. Recruitment will follow ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). It will use the quality- and cost-based selection method and a quality–cost ratio of 90:10, given the high technical complexity of the consulting assignment, and invite simplified technical proposals. The successful firm should have prior experience and demonstrated expertise in forestry and agroforestry management, developing environmentally and economically sustainable natural resource and land use recommendations, integrated watershed management, and agriculture. Experience in working in the PRC is preferred. Under the supervision of ADB and the Henan Provincial Forestry Department (HPFD), the firm will (i) lead the TA project's implementation, (ii) assemble and support the specialists, (iii) facilitate and promote the involvement of civil society organizations (CSOs), (iv) support the active involvement of local resource personnel, and (v) use the firm's pool of national and/or international expertise to achieve the TA outputs. All international and national consultants must be fluent in spoken and written English and possess graduate degrees or equivalent experience. ADB prefers that international specialists assigned to the TA speak and read Chinese. National specialists who have experience in Henan province are preferred. All consultants will provide inputs for the reports. It is estimated that the TA will require 3 person-months of international and 18 person-months of national consulting services. The geographic focus is the core grain growing region in the PRC's Henan Province.

B. Terms of Reference

2. **Team leader and agroforestry management specialist** (international, 3 person-months). The team leader and agroforestry management specialist will be responsible for the overall coordination and supervision of the TA activities and outputs and for ensuring the technical quality of key deliverables. The team leader should have (i) at least 15 years of experience in international and national best practices in forestry, agroforestry, and sustainable watershed management; (ii) prior experience conducting assessments of and designs for agroforestry systems for grain growing regions; (iii) a graduate degree in forestry, ecology, or equivalent; and (iv) demonstrated ability to manage a team, prepare reports, lead meetings, and work with CSOs, the government, and local communities. Working closely with team members, the HPFD, and other stakeholders, the team leader will

- (i) prepare the detailed TA methodology and work plan;
- (ii) lead the TA implementation, including coordination of team inputs and timely delivery of project outputs;
- (iii) maintain communication, with assistance from the deputy team leader, with the HPFD and the project team;
- (iv) review, edit, and compile the inputs of the other team members;
- (v) support the other team members in their assigned tasks and oversee the quality of deliverables;
- (vi) lead and coordinate with the technical team to undertake the assessment on the current status, challenges, and opportunities for agroforestry development in the core grain growing areas;

- (vii) lead and coordinate the technical team to develop the strategy and action plan, including prioritized projects, links to eco-compensation, policies and regulations, recommendations for improvement and changes, a detailed work plan, and a budget;
- (viii) provide recommendations for the organization and the program of activities for the international study tour;
- (ix) provide oversight and a technical contribution to the development of agroforestry training materials and proposed agroforestry models;
- (x) lead the development of an agroforestry knowledge product that addresses gaps, opportunities, and issues identified in TA outputs 1 and 2 and provide substantive inputs;
- (xi) participate in and facilitate stakeholder meetings, TA planning workshops, team meetings, and workshops to provide information on and jointly review TA results with project stakeholders; and
- (xii) prepare and submit progress reports to ADB and the HPFD, including inception, interim, and final reports.

3. **Deputy team leader and ecology specialist** (national, 5 person-months). The deputy team leader and ecology specialist will collect and analyze information related to grain cropping and agroforestry in Henan Province. The specialist should have (i) at least 10 years of experience in agriculture and forestry, with at least 5 years of work experience in agroforestry; (ii) demonstrated expertise in analysis and agroforestry systems; and (iii) a graduate degree in forestry or the equivalent. The specialist will

- (i) work with the team leader to help coordinate team inputs and timely delivery of TA outputs;
- (ii) act as the primary liaison between the HPFD and the project team;
- (iii) liaise with relevant focal points for other domestic and internationally supported initiatives, ensuring effective communication and cooperation;
- (iv) help review, edit, and compile the inputs of the other team members, and help support the other team members in their assigned tasks;
- (v) organize and facilitate stakeholder meetings, TA planning workshops, and team meetings;
- (vi) contribute to the development of the survey and data needs required for all assessments under TA output 1 and oversee all data collection, data input, and analysis for these assessments;
- (vii) provide at least three recommendations for improved agroforestry models, management, policies, and regulations based on the surveys and data inputs, proposed agroforestry models, and financial analyses from TA output 1, as well as the institutional or policy and eco-compensation assessment;
- (viii) conduct the training needs assessment together with the training and extension specialist, and contribute to the development of the training materials; and
- (ix) provide inputs to the reports and knowledge product.

4. **Forestry planning specialist** (national, 3 person-months). The forestry planning specialist will collect and analyze information related to forestry planning and management in Henan Province to make recommendations for improved practices. The specialist should have (i) at least 10 years of experience in forestry, with at least 5 years of work experience in forestry planning and sustainable forest management; (ii) demonstrated expertise in analysis and forestry systems; and (iii) a graduate degree in forestry or the equivalent. The specialist will

- (i) contribute to the development of the survey and data needs required for all assessments under TA output 1;

- (ii) analyze data of forestry management and planning, including management and utilization, constraints, demand, and resource flows, and provide recommendations for improved agroforestry and forestry planning and management, for inclusion in the report for TA output 1;
- (iii) contribute to the development of the agroforestry development strategy with recommendations for improved forestry or agroforestry planning in the institutional and policy context;
- (iv) conduct the training needs assessment together with the training and extension specialist and contribute to the development of the training materials and training program;
- (v) contribute to consultations and workshops to inform and jointly review TA results with project stakeholders; and
- (vi) provide inputs for the reports and knowledge product.

5. **Institutional and policy specialist** (national, 2 person-months). The institutional and policy specialist will review the current institutional and policy settings for agroforestry management in Henan Province. The specialist should have (i) at least 10 years of experience in institutional and/or organizational development; (ii) experience in analyzing policy and making policy recommendations, preferably in the forestry and agriculture sectors; and (iii) a graduate degree in policy, organizational development or business management, or the equivalent. The specialist will

- (i) review the current institutional, management, and legal or policy framework for the agriculture, forestry, and agroforestry sectors, identifying gaps, issues, constraints, and/or barriers;
- (ii) review national eco-compensation programs, policies, and regulations that promote provision of ecosystem services and assess opportunities for financial benefit and support from such programs for the provision of ecosystem services;
- (iii) provide recommendations for improved agroforestry management, policies, and regulations based on the surveys and data inputs, proposed agroforestry models and financial analyses from TA output 1, as well as the institutional or policy and eco-compensation assessment;
- (iv) contribute substantively to the development of the strategy and action plan, including prioritization of projects, links to eco-compensation, policies and regulations, recommendations for improvement and changes, a detailed work plan, and budget;
- (v) facilitate working groups that include relevant experts and CSOs for participatory development of the agroforestry development strategy;
- (vi) contribute to consultations and workshops to inform and jointly review TA results with project stakeholders; and
- (vii) provide inputs for the reports and knowledge product.

6. **Climate change specialist** (national, 2 person-months). The climate change specialist will collect and analyze information related to projected climate change impacts. The specialist will help identify climate risks and threats, as well as opportunities for actions and/or activities in agroforestry and grain crop management, and provide inputs for the TA assessments. The specialist will have (i) at least 10 years of experience and demonstrated expertise in evaluating climate risk in an agriculture and forestry setting, (ii) prior experience in incorporating climate change impacts into agriculture and/or forestry management practices, (iii) demonstrated expertise in agriculture and forestry, and (iv) a graduate degree in agriculture or the equivalent. The specialist will

- (i) define data requirements and collect data regarding the Henan Province grain growing area cropping responses to changes in climate and land use;
- (ii) identify climate hazards and threats and their impact on the grain growing areas, including projected climate change impacts, spatial distribution of environmental disaster risks, as well as loss and damage from such impacts;
- (iii) review current agroforestry, forestry, and agriculture land use management practices and identify practices that increase or decrease climate hazards and risks to the grain growing areas;
- (iv) make recommendations in regard to climate change adaptation and mitigation options for the agroforestry assessment, reports, agroforestry development strategy, training materials, and the knowledge product;
- (v) prepare materials and hold events to raise awareness about climate change;
- (vi) contribute to consultations and workshops to inform and jointly review TA results with project stakeholders; and
- (vii) provide inputs for the reports and knowledge product.

7. **Finance specialist** (national, 2 person-months). The finance specialist will collect and analyze information related to the assessment of costs of different types of agroforestry models, assess loss and damage costs, and contribute to the financing plan for agroforestry sector development in Henan Province. The specialist should have (i) at least 10 years of experience in finance; (ii) demonstrated expertise in financial evaluation; and (iii) a graduate degree in finance, economics, accounting such as chartered accountant, certified public accountant or chartered financial analyst, or the equivalent. The specialist will

- (i) gather data and carry out the financial analysis of the proposed agroforestry systems and their management to determine potential implementation costs and financial benefits for local communities and the grain growing agricultural sector in Henan Province;
- (ii) assess and estimate the financial cost of climate-related loss and damage caused by hazards and threats to grain growing areas and crops;
- (iii) develop a sustainable financing plan to support implementation of the agroforestry development plan;
- (iv) contribute to consultations and workshops to inform and jointly review TA results with project stakeholders; and
- (v) provide inputs as required for the agroforestry assessments, strategic development plan, reports, and knowledge product.

8. **Training and extension specialist** (national, 4 person-months). The training and extension specialist will develop training materials and implement the training-of-trainers program. The specialist should have (i) at least 7 years of experience in developing training materials; (ii) demonstrated expertise in implementing training-of-trainer programs; and (iii) a graduate degree in forestry, agriculture, vocational training, or the equivalent. The specialist will

- (i) conduct a training needs assessment that includes a strength, weaknesses, opportunities, and threats analysis of agroforestry capacity, evaluation of current training materials, and will define an updated training program;
- (ii) conduct consultations and workshops with farmers and communities to assess their attitudes and preferences in regard to integrating agroforestry systems into current cropping practices, their willingness to do so, and any constraints they will face;
- (iii) provide recommendations for the organization and program of activities for the international study tour;

- (iv) define the agroforestry training program and approach (including climate change issues), and develop the training materials;
- (v) conduct training in agroforestry and awareness raising about climate change to develop the capacity of local communities and government staff;
- (vi) contribute to consultations and workshops to inform and jointly review TA results with project stakeholders; and
- (vii) provide inputs as required for the agroforestry assessments, strategic development plan, reports, and knowledge product.