TERMS OF REFERENCE FOR CONSULTANTS

A. Introduction

1. A consulting firm will provide 55.5 person-months of national specialist inputs across three packages administered under this knowledge and support technical assistance (TA). Package 1 will deliver output 1 of the TA and develop new knowledge of natural resource use and models for green agriculture production. Package 2 will deliver output 2 of the TA and propose new models for the proper treatment, utilization, and management of rural organic waste. Package 3 will deliver output 3 of the TA and generate knowledge on the key constraints to, and opportunities for, rural vitalization in Qinghai Province. A consulting firm will be recruited using the quality-and-cost-based selection method, using a quality–cost ratio of 90:10 by submitting simplified technical proposal according to the Asian Development Bank’s (ADB) Procurement Policy (2017, as amended from time to time and Procurement Regulations for ADB Borrowers (2017, as amended from time to time). The successful firm should have prior experience and demonstrated expertise in the agriculture sector with specific experience in sustainable agriculture development and environmental protection. Experience working in the People’s Republic of China (PRC) is preferred and highly desirable. All national consultants hired as part of this TA must be fluent in written and spoken English and possess graduate degrees or equivalent experience relevant to this TA. There is also preference for provincial-level experience. For international resource persons who may be hired as needed, there is a preference for those with prior experience working in the PRC, an understanding of the country context, and familiarity with concerned government institutions. All consultants will provide inputs to the reports, with some taking a lead role in the overall supervision, oversight and quality-control.

2. Proposing entities are requested to prepare a detailed description of how they propose to deliver all three packages of the TA in the section of their proposal called “Approach and Methodology”. 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.

3. Entities must also describe their experience in the PRC and experience in sustainable agriculture development, environmental protection, and waste management and their ability to operate in the respective languages.

B. Terms of Reference

Package 1: Promote County-level Green Agricultural Development in Support of the Rural Vitalization Strategy: Research on Green Development Models in the PRC’s Major Grain-producing Areas

4. Package 1 will require a core team of national specialists with an estimate 17.5 person-months required, namely (i) Agriculture/climate smart agriculture specialist/team leader; (ii) Soil and natural resources management specialist; (iii) Livestock, biogas, organic waste specialist; (iv) Financial specialist; and (v) Economist. The need for additional consultant support from international specialists will be reviewed during implementation. If required, international specialists will be proposed as resource persons for the TA and will be recruited as needed. All experts engaged under the contract must be a citizen of an ADB eligible country.
Table 1: Summary of Experts

<table>
<thead>
<tr>
<th>National Specialists</th>
<th>Person-months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture/climate smart agriculture specialist/team leader</td>
<td>5.0</td>
</tr>
<tr>
<td>Soil and natural resources management specialist</td>
<td>3.5</td>
</tr>
<tr>
<td>Livestock, biogas, organic waste specialist</td>
<td>3.0</td>
</tr>
<tr>
<td>Financial specialist</td>
<td>3.0</td>
</tr>
<tr>
<td>Agriculture/natural resource economist</td>
<td>3.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17.5</strong></td>
</tr>
</tbody>
</table>


5. **Agriculture/climate smart agriculture specialist/team leader** (national, 5.0 person-months). The specialist will have the overall responsibility for the effective and timely implementation of Package 1 of the TA, ensuring the quality of all TA outputs described under the scope of services, and coordinating and consolidating inputs of government agencies and other specialists. The specialist will have a graduate degree in agriculture, natural resources or relevant discipline, and at least 10 years of work experience in climate-smart agriculture and rural development. Specific tasks will include the following:

(i) assume the overall responsibility for the preparation, coordination, research and writing of all reports, documents, and deliverables under Output 1;

(ii) develop outlines of the TA inception, interim, and final reports; assign work to the team specialists; compile inputs; and finalize inception, interim, and final reports;

(iii) manage and ensure the timely implementation of TA activities, including (a) collecting data through surveys and interviews; (b) organizing inception, interim, and final workshops; and (c) supporting the relevant agencies in organizing relevant workshops, conferences, and study tours;

(iv) lead the preparation of TA reports, and particularly the assessment of current natural resource use and animal/crop production systems in selected counties of Heilongjiang and Shandong provinces based on literature review, investigations, and data analysis;

(v) evaluate current subsidy and government policies and how they influence natural resource utilization, chemical fertilizer/pesticide application, and agriculture production systems;

(vi) research and analyze the social dimensions of production systems, investigating questions such as: who is still engaged in agriculture in these provinces; are young people moving out of agriculture; what is the demographic and gender composition of farming households in target provinces; and what knowledge, physical, social, financial, and infrastructure constraints do these households face?;

(vii) lead the development of the study frameworks, methodology, assign work responsibilities to the team members and reporting requirements in consultation with the executing and implementing agencies, ADB, team members and other key stakeholders and experts;

(viii) conduct consultations with experts, stakeholders, and policy makers on the draft reports; and incorporate their feedback into the revised drafts;

(ix) provide policy-level recommendations based on the evidence, research and findings from the assessment of existing natural resource use and agriculture production systems, the technical report on improved green production models, and other relevant sources; and

(x) participate in presenting the study findings in the TA review workshops, stakeholder consultation workshops, knowledge products, and conferences.

6. **Soil and natural resources management specialist** (national, 3.5 person-months). The specialist will be responsible for contributing to and supporting the assessment of existing natural
resource use and animal/crop production systems, as well as the technical models and report on improved green agriculture production models. The specialist will have a graduate degree in natural resource management, ecology or relevant discipline, and at least 7 years of relevant work experience in agriculture, environment, and natural resources. Specific tasks include the following:

(i) review the status and characteristics of soil and natural resource management in selected provinces in the PRC;
(ii) undertake relevant stakeholder consultation and research to provide an assessment of current natural resource use and inputs into agriculture green production models;
(iii) work with the team leader to identify work responsibilities, including distribution of tasks and deliverables;
(iv) prepare summary of domestic and international best practices relating to improved green models for animal/crop production;
(v) In Shandong, investigate how to use yellow river water basin resources more effectively for cash and food crops, and in Heilongjiang, analyze how to balance crop production with black soil protection and water saving; and
(vi) participate in and present findings at workshops and conferences.

7. **Livestock, biogas, organic waste specialist** (national, 3.0 person-months). The specialist will be responsible for contributing to all relevant deliverables of Output 1, focusing specifically on animal production systems and organic waste issues. The specialist will have a graduate degree in livestock, waste management, agriculture policy or related discipline, and at least 7 years of work experience working on issues related to agriculture, livestock, waste management, and food safety and security. Specific tasks include the following:

(i) lead the assessment relating to issues in the livestock and animal production sub-sector;
(ii) work with team members on producing recommendations for improved green production models in agriculture and livestock specifically;
(iii) develop climate-friendly models for animal production and crop cultivation, highlighting how to utilize natural resources more efficiently and manage agriculture waste effectively;
(iv) work with the team leader to identify work responsibilities, including distribution of tasks and deliverables;
(v) be the team focal point on organic waste, livestock, and biogas related issues and recommendations;
(vi) participate in and present findings at workshops and conferences; and
(vii) conduct other work assigned by team leader.

8. **Financial specialist** (national, 3.0 person-months). The specialist will be responsible for leading the financial analysis of improved green production models, highlighting the investment and resources required to realize these new technologies. The specialist must be fluent in English and should have (i) a postgraduate degree in finance or other relevant field, with a focus on agriculture and environment; (ii) 7 or more years of experience in the policy and practice of investment (public and private); and (iii) demonstrated experience with financial modeling, risk analysis, and value for money analysis. Working closely with the team leader and team members the specialist will undertake the following:

(i) conduct relevant research and stakeholder consultation to understand clearly the costs associated with any investment recommendations for improved green production models;
(ii) prepare inputs to the analytical and diagnostic assessments;
support preparation of financial and management plan for improved green production models; and
provide relevant inputs as required to the TA reports and participate in presenting study findings at workshops and other events.

9. **Agriculture/natural resources economist** (national, 3.0 person-months). The specialist will be responsible for leading the economic and cost-benefit analysis of improved green production models, highlighting precisely the economic costs and benefits associated with the new improved production models relative to the status quo. The specialist must be fluent in English and should have a postgraduate degree in economics, agriculture or natural resource economics, or related field, and at least 7 years of work experience undertaking economic analysis of development projects in the agriculture and natural resources sector. Specific tasks will include the following:

(i) assess the sector contexts;
(ii) work with team members to undertake data collection and stakeholder consultation;
(iii) establish economic rationale of improved green production models;
(iv) assess least-cost options;
(v) conduct economic cost–benefit analysis; and
(vi) participate in and present findings at workshops and conferences.

**Package 2: Study on the Technology Integration and Policy Mechanism of Resource Utilization of Agricultural Organic Waste and Rural Clean Energy Development**

10. Package 2 will require a core team of national specialists with an estimate 19.0 person-months required, namely (i) Organic waste/crop straw specialist/team leader; (ii) Renewable energy specialist; (iii) Environmental specialist; (iv) Agriculture economist and financial specialist; and (v) Policy/institutional specialist. The need for additional consultant support from international specialists will be reviewed during implementation. If required, international specialists will be proposed as resource persons for the TA and will be recruited as needed. All experts engaged under the contract must be a citizen of an ADB eligible country.

<table>
<thead>
<tr>
<th>National Specialists</th>
<th>Person-months</th>
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<tbody>
<tr>
<td>Organic waste/crop straw specialist/team leader</td>
<td>5.0</td>
</tr>
<tr>
<td>Renewable energy specialist</td>
<td>4.0</td>
</tr>
<tr>
<td>Environmental specialist</td>
<td>4.0</td>
</tr>
<tr>
<td>Agriculture economist and financial specialist</td>
<td>3.0</td>
</tr>
<tr>
<td>Policy/institutional specialist</td>
<td>3.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>19.0</strong></td>
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</tbody>
</table>


11. **Organic waste/crop straw specialist/team leader** (national, 5.0 person-months). The specialist will have overall responsibility for the effective and timely implementation of Package 2 of the TA, ensuring the quality of all TA outputs described under the scope of services, and coordinating and consolidating inputs of government agencies and other specialists. The specialist will have a graduate degree in agriculture, natural resources or relevant discipline, and at least 10 years of work experience in waste management and clean energy development. Specific tasks will include the following:

(i) assume the overall responsibility for the preparation, coordination, research and writing of all reports, documents and deliverables under Output 2;
(ii) develop outlines of the TA inception, interim, and final reports; assign work to the team specialists; compile inputs; and finalize inception, interim, and final reports;

(iii) manage and ensure the timely implementation of TA activities, including (a) collecting data through surveys and interviews; (b) organizing inception, interim, and final workshops; and (c) supporting the relevant agencies in organizing relevant workshops, conferences, and study tours;

(iv) lead the preparation of TA reports, and particularly the assessment and situation analysis of current utilization of rural organic waste based on literature review, investigations, and data analysis;

(v) identify the necessary financial, institutional, and market requirements to pursue new technologies for the effective utilization of crop straw and clean energy development;

(vi) lead the development of the study frameworks, methodology, assign work responsibilities to the team members and reporting requirements in consultation with the executing and implementation agencies, ADB, team members and other key stakeholders and experts;

(vii) conduct consultations with experts, stakeholders, and policy makers on the draft reports; and incorporate their feedback into the revised drafts;

(viii) provide policy-level recommendations based on the evidence, research and findings from the assessment of existing rural organic waste utilization, the technical proposal on new models for effective treatment and utilization of crop straw and clean energy development, and other relevant sources;

(ix) participate in presenting the study findings in the TA review workshops, stakeholder consultation workshops, knowledge products, and conferences; and

(x) prepare TA documents/reports according to ADB and government requirements.

12. **Renewable energy specialist** (national, 4.0 person-months). The specialist will be responsible for contributing to and supporting the assessment of existing utilization of rural organic waste, identifying existing policies, incentive structures, and operation mechanisms that contribute to the lack of social capital for efficient resource utilization and clean energy development. The specialist will have a graduate degree in environmental management, sustainable development or related discipline, and at least 7 years of relevant work experience in clean energy development. Specific tasks will include the following:

(i) highlight and identify the policy, market, institutional, economic, and social factors contributing to poor utilization of rural organic waste for clean energy development;

(ii) undertake relevant stakeholder consultation and research to provide an assessment of existing utilization of rural organic waste and clean energy development;

(iii) propose guidelines for the development and implementation of new models for crop straw utilization and clean energy development;

(iv) work with the team leader to identify work responsibilities, including distribution of tasks and deliverables;

(v) identify how to incorporate renewable energy development in technical models of improved utilization of rural organic waste and crop straw; and

(vi) participate in and present findings at workshops and conferences.

13. **Environmental specialist** (national, 4.0 person-months). The specialist will be responsible for identifying the existing rural pollution caused by agricultural waste and traditional rural energy supply and consumption models and assessing the environment impact of alternative solutions to rural energy. The specialist must have a graduate degree in agriculture, resources and environment or relevant discipline, and at least 10 years of work experience in agricultural waste treatment, rural clean energy development or environmental engineering. Specific tasks include will include the following:
(i) review and collect relevant information and parameters about solutions to rural pollution;
(ii) assist the team leader in designing solution proposals to rural pollution and then decide what clean energy supply should be proposed, taking local economic, social, and environmental factors into consideration;
(iii) conduct an environmental risk assessment to the alternatives to make sure no influence will be cast on local residents and no environmental risks will be taken in the selected pilot areas;
(iv) assist the team leader in writing necessary reports on sections about how clean energy supply will resolve environmental pollution problems;
(v) assist the team leader in analyzing social impact made by clean energy supply including the economic influence on target customers, impacts on lifestyles, etc.; and
(vi) assist the team leader in providing training and workshops to the relevant agencies.

14. **Agriculture economist and financial specialist** (national, 3.0 person-months). The specialist will be responsible for leading the economic and cost-benefit analysis of new models for the effective reutilization of crop straw and clean energy development, highlighting precisely the economic costs and benefits associated with the new models relative to the status quo, and also highlighting the investment and resources required to realize these new technologies. The specialist must be fluent in English and should have a postgraduate degree in economics, agriculture or natural resource economics, or related field, at least 7 years of work experience undertaking economic analysis of development projects in the agriculture or renewable energy development sector, and demonstrated experience with financial modelling, risk analysis, and value for money analysis. Specific tasks will include the following:
   (i) assess the sector contexts including economic costs associated with ineffective rural waste treatment and utilization;
   (ii) work with team members to undertake data collection and stakeholder consultation;
   (iii) establish the economic rationale of improving utilization of crop straw;
   (iv) conduct economic cost–benefit analysis;
   (v) undertake relevant research and stakeholder consultation to understand clearly the costs associated with any investment recommendations for crop straw utilizing and clean energy development;
   (vi) prepare inputs to the analytical and diagnostic assessments;
   (vii) support preparation of financial and management plan for improved models; and
   (viii) provide relevant inputs as required to the TA reports and participate in presenting studying findings at workshops, conferences and other events.

15. **Policy/institutional specialist** (national, 3.0 person-months). The specialist will be responsible for working with the other team members and the team leader to compile the policy-level recommendations report and action plan for improved utilization of crop straw. The specialist must be fluent in English and should have a post-graduate degree in public policy, economics, agriculture or related field, with at least 8 or more years of experience working on policy, institutional and governance issues. Specific tasks will include the following:
   (i) prepare policy recommendations for provincial and national government agencies on how to effectively utilize rural organic waste for agriculture and clean energy;
   (ii) identify the key policy, institutional, and governance issues that need to be addressed in order to ensure that the effective treatment, management, and utilization of rural organic waste is an integral part of PRC’s sustainable development agenda;
   (iii) provide recommendations for improving coordination and cooperation across agencies towards these goals;
(iv) prepare action plan including investment required to pursue new models and technologies for effective utilization of rural organic waste and clean energy development; and
(v) provide relevant inputs as required to the TA reports and participate in presenting study findings at workshops and other events.

**Package 3: Research on the Implementation of Rural Vitalization Strategy in Qinghai Province**

16. Package 3 will require a core team of national specialists with an estimate 17.0 person-months required, namely (i) Policy and institutional specialist/team leader; (ii) Waste management specialist; and (iii) Agriculture/natural resources economist. The need for additional consultant support from international specialists will be reviewed during implementation. If required, international specialists will be proposed as resource persons for the TA and will be recruited as needed. All experts engaged under the contract must be a citizen of an ADB eligible country.

**Table 3: Summary of Experts**

<table>
<thead>
<tr>
<th>National Specialists</th>
<th>Person-months</th>
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<tbody>
<tr>
<td>Policy and institutional specialist/team leader</td>
<td>7.0</td>
</tr>
<tr>
<td>Waste management specialist</td>
<td>4.0</td>
</tr>
<tr>
<td>Agriculture/natural resources economist</td>
<td>6.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17.0</strong></td>
</tr>
</tbody>
</table>


17. **Policy and institutional specialist/team leader** (national, 7.0 person-months). The specialist will have overall responsibility for the effective and timely implementation of Package 3 of the TA, ensuring the quality of all TA outputs described under the scope of services, coordinating and consolidating inputs of government agencies and other specialists, and leading the policy report on key constraints to rural vitalization in Qinghai. The specialist will have a graduate degree in public policy, agriculture, or relevant discipline, and at least 10 years of work experience on policy, institutional and governance issues, preferably in rural development. Specific tasks will include the following:

(i) assume the overall responsibility for the preparation, coordination, research and writing of all reports, documents and deliverables under Output 3;
(ii) develop outlines of the TA inception, interim, and final reports; assign work to the team specialists; compile inputs; and finalize inception, interim, and final reports;
(iii) manage and ensure the timely implementation of TA activities, including (a) collecting data through surveys and interviews; (b) organizing inception, interim, and final workshops; and (c) supporting the relevant agencies in organizing relevant workshops, conferences, and study tours;
(iv) prepare research and policy report examining key constraints to rural vitalization in Qinghai, and recommendations for addressing those challenges;
(v) investigate issues including agriculture modernization and environmental protection, rural–urban integration, rural infrastructure and service delivery, and governance and institutional challenges in the province;
(vi) lead the preparation of TA reports based on literature review, investigations, and data analysis and identify key priority areas for provincial government attention and action;
(vii) lead the development of study frameworks, methodology, assign work responsibilities to the team members and reporting requirements in consultation with the executing and implementation agencies, ADB, team members, and other key stakeholders and experts;
(viii) conduct consultations with experts, stakeholders, and policy makers on the draft reports; and incorporate their feedback into the revised drafts;
(ix) provide policy-level recommendations based on the evidence, research and findings from the report on the key constraints and challenges facing Qinghai in pursuit of the rural vitalization strategy, and other relevant sources; and
(x) participate in presenting the study findings in the TA review workshops, stakeholder consultation workshops, knowledge products, and conferences.

18. Waste management specialist (national, 4.0 person-months). The specialist will be responsible for leading the technical report on how to promote ecological livable villages in Qinghai, and work with the team leader and other members to research and identify key issues and constraints to effective solid waste and waste water management. The specialist will have a graduate degree in environmental management, sustainable development or related discipline, and at least 7 years of relevant work experience in waste management and rural development. Specific tasks will include the following:
(i) examine existing issues and situation in solid waste and waste water management;
(ii) review both domestic and international best practices and technologies for solutions on effective waste management and thus ecological livable villages;
(iii) lead the preparation of technical report on promotion of ecological livable villages;
(iv) propose technologies and recommendations for the effective management of solid and water waste based on sound economic and financial analysis, highlighting specifically what these models would look like, and the guidelines for implementation and the investment required;
(v) work with the team leader to identify work responsibilities, including distribution of tasks and deliverables; and
(vi) participate in and present findings at workshops and conferences.

19. Agriculture/natural resources economist (national, 6.0 person-months). The specialist will be responsible for leading the economic and cost-benefit analysis of new models and technologies to promote ecological livable villages, highlighting precisely the economic costs and benefits associated with the new models for effective solid waste and waste water management relative to the status quo. The specialist must be fluent in English and should have a postgraduate degree in economics, agriculture or natural resource economics, or related field, and at least 7 years of work experience undertaking economic analysis of development projects in agriculture and rural development. Specific tasks will include the following:
(i) assess the current economic costs associated with ineffective waste management;
(ii) work with team members to undertake data collection and stakeholder consultation;
(iii) establish the economic rationale of improved waste management;
(iv) assess least-cost options for promoting ecological livable villages;
(v) conduct economic cost–benefit analysis; and
(vi) participate in and present findings at workshops and conferences.

20. TA Coordinator (national 2.0 person-months). The specialist will be responsible for the coordination and management of the three TA outputs to ensure synergies and sharing of lessons. The specialist must be fluent in English and should have at least 5 years of work experience as a project coordinator or manager, and preferably with ADB project experience. Specific tasks will include the following:
(i) coordinate with assigned team leader from each package to organize timely implementation of the TA activities including support to preparation of review missions and reports;
(ii) coordinate the outputs with the executing agencies, implementing agencies, and ADB for smooth implementation and arrangement of activities;
(iii) coordinate with assigned team leaders, executing and implementing agencies to identify opportunities for knowledge exchange and cross-learning between TA outputs and coordinate exchange events; and
(iv) participate in and coordinate the organization of review workshops and missions as well as associated workshops and conferences as required.

C. Reporting and Terms of the Assignment

21. All documents will be submitted in both English and Chinese to the executing and implementing agency and ADB in hard and electronic copies. The final outputs will be posted on the ADB website in both languages. National experts will be based in the PRC while international resource persons will be brought in for specific tasks, inputs, and deliverables.