Technical Assistance Report

Project Number: 46086
Policy and Advisory Technical Assistance (PATA)
September 2012

People’s Republic of China: Logistics System Development for Agricultural Products

Asian Development Bank
CURRENCY EQUIVALENTS
(as of 1 September 2012)

Currency Unit – yuan (CNY)
CNY1.00 = $0.1575
$1.00 = CNY6.3497

ABBREVIATIONS
ADB – Asian Development Bank
BPA – business process analysis
DRC – Development Research Center of the State Council
ICD-DRC – International Cooperation Department, Development Research Center
JPAD – Jiangxi Provincial Agricultural Department
JPRSDB – Jiangxi Provincial Rural Social Development Bureau
PRC – People’s Republic of China
TA – technical assistance
TMO – TA management office

TECHNICAL ASSISTANCE CLASSIFICATION
Type – Policy and advisory technical assistance (PATA)
Targeting classification – General intervention
Sector (subsector) – Agriculture and natural resources (agricultural production and markets)
Themes (subthemes) – Economic growth (promoting economic efficiency and enabling business environment, widening access to markets and economic opportunities, knowledge, science, and technological capacities)
Private sector development (policy reforms)
Location (impact) – Rural (high), urban (medium), and national (high)

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

Vice-President
Director General
Director
Team leader
Team members

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I. INTRODUCTION

1. The Government of the People’s Republic of China (PRC) has requested the Asian Development Bank (ADB) to provide policy and advisory technical assistance (TA) to help improve the country’s agricultural logistics systems. The TA was included in ADB’s PRC country operations business plan for 2012–2014. The TA, which is designed to contribute to balanced and sustainable development, improved rural incomes, and inclusive growth, is consistent with ADB’s PRC country partnership strategy for 2011–2015, and ADB’s Strategy 2020. In March 2012, an ADB mission reached an agreement with the government that the TA will include a national component supporting improved agricultural logistics in the PRC, with a provincial component in Jiangxi province as a pilot. During the mission and subsequent discussions, an understanding was reached on the project impact, outcome, outputs, implementation arrangements, cost, financing arrangements, and terms of reference for consulting services. The TA design and monitoring framework is in Appendix 1.

II. ISSUES

2. Logistics inefficiencies in the agricultural sector are among the main factors causing low returns to farmers, high and volatile food prices, and degraded quality of food supplies in PRC. As reflected in the 12th Five-Year Plan, the government has identified improved agricultural logistics as vital to reducing rural–urban income disparities and improving food security. Improved agricultural logistics are also critical for strengthening the competitiveness of the overall agriculture sector and expanding domestic consumption.

3. Improved agriculture logistics are particularly important with regard to perishable agricultural products. As much as 30% of fruit and vegetable production is lost due to spoilage during transportation, storage, and wholesale and retail activities. To compensate for spoilage, farmers rely heavily on chemical fertilizers, pesticides, and other inputs to raise crop yields. Furthermore, expansion of the middle-income class and increasing urbanization are resulting in growing demand for perishable agricultural products of high quality and value, placing additional pressure on agricultural logistics. Internationally, the agriculture sector tends to follow the example of manufacturing industries in the formation of tightly aligned value chains. Such value chains help improve efficiency; reduce risks related to quality, quantity and food safety; and are more responsive to consumer demands. Logistics is a vital dimension of the value chain.

4. Recognizing the need for a modern logistics system for the agricultural sector, the State Council issued a plan to guide development of the logistics industry in 2009. The plan calls for creating a supportive regulatory environment, extensive infrastructure investment, establishing technical standards, promoting integration of logistics processes, reducing barriers to trade and promoting competition. As part of the effort to implement the plan, in June 2010 the National Development and Reform Committee prepared a development plan (for 2010–2015) for cold

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4 The TA first appeared in the business opportunities section of ADB’s website on 27 July 2012.
chain logistics for agricultural products. Given the PRC’s size and agricultural needs, the task of achieving greater efficiency in logistics for the agriculture sector is a huge challenge, which will be met largely by the business sector. The government’s role is to support business-led initiatives through provision of (i) an enabling policy, regulatory, and institutional environment; and (ii) public infrastructure components of the supply and demand chain.

5. The setting of appropriate standards is a basic step toward providing an enabling regulatory framework. The lack of comprehensive and consistent national standards on product handling, processing, packaging, shipping, storage, delivery, and certification is a serious impediment to the development of cold chain logistics for perishable agricultural products, and value chain formation generally. Without comprehensive and consistent standards, it is difficult to coordinate the value chain through contracts and reduce risk related to the quality and safety of perishables. Many government departments at both the central and local levels currently share responsibility for the setting and enforcement of relevant standards. In addition to improved coordination of these government departments, other key stakeholders in the cold chain—including farmers, manufacturers of logistics equipment, logistics service providers, distributors, and retailers—should be involved to ensure standards are appropriate and enforceable, as they will need to adopt new technologies and international best practices to meet the proposed standards.

6. Policy measures are also needed to promote development and growth of the agriculture logistics industry in the PRC, which is characterized by lack of integration of logistics processes, underdevelopment of third-party logistics, and a large number of small businesses operating on a limited scale. Structural changes such as industry consolidation and entry of large-scale third-party logistics service providers will help improve integration of the supply chain and lead to economies of scale. However, it is important to guard against monopolies or oligopolies and promote competition by encouraging entry of private capital and helping existing small businesses better position themselves in the industry.

7. ADB has provided a range of support to strengthen agriculture value chains, including logistics, in developing member countries. Logistics issues in Xinjiang and Inner Mongolia were evaluated under the Central Asia Regional Economic Cooperation program in 2008; a regional TA approved in 2009 examined obstacles to cross-border trade on the PRC–Mongolia and PRC–Viet Nam borders; several agricultural projects were supported in Gansu, Henan, Shanxi, and Shandong provinces following the value chain approach to enhance synergy and value addition. Lessons from these projects have included the need to greatly improve the efficiency of logistics systems in the country and strengthen related policies and regulations. ADB is preparing a private sector investment project in Tianjin to increase cold chain logistics capacity.

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10 ADB. 2012. Report and Recommendation of the President to the Board of Directors: Proposed Loan for Tianjin Cold Chain Logistics Facility Development Project. Manila. The project is scheduled for Board consideration in September 2012.
Building on past and ongoing ADB projects, the TA will focus on improving the regulatory and policy framework at the national level, in support of logistics systems for perishable agricultural products in the PRC.

8. At the provincial level, Jiangxi province has been selected as a pilot for two primary reasons. First, agriculture is an important sector in the province and the government is committed to improving agricultural logistics systems. About 38% of the labor force depends on agriculture and the province accounts for a substantial share of the PRC’s production of grain, pork, edible oil, vegetable, and hydroponic products. In its 12th Five-Year Plan,¹¹ Jiangxi provincial government identified modernization of agriculture as a development priority; an improved agricultural logistics system is one of the key factors for modernizing the sector. Under an earlier TA, key agricultural logistics problems were identified and measures to develop an effective agricultural logistics system were recommended as part of the rural development strategy for Jiangxi province.¹² The province is now formulating plans to invest in logistics infrastructure as part of the effort to achieve the goals included in its 12th Five-Year Plan. Second, Jiangxi is a low income province in which poor rural households will benefit from a well established logistics system. More than 8% of the rural population lives under the national poverty line and 21 counties are designated for national poverty alleviation assistance.

9. The TA will help Jiangxi province prepare a development plan for improving its agriculture logistics systems and identifying related investment priorities under the guidance of the national framework. Jiangxi province will serve as a case study for low-income agricultural provinces to showcase the benefits of an improved agricultural logistics system. Lessons and knowledge developed from the TA will be applied to improve agricultural logistics systems in other provinces.

III. THE TECHNICAL ASSISTANCE

A. Impact and Outcome

10. The TA will contribute to the development of agricultural logistics systems in the PRC, both at a national level and in Jiangxi province on a pilot basis. The impact will be improved agricultural logistics systems in the PRC and Jiangxi province. The outcome will be an improved policy and regulatory framework in support of cold chain logistics systems for perishable agricultural products in the PRC and improved agricultural logistics planning in Jiangxi province.

B. Methodology and Key Activities

11. For the national component, the TA will follow the value chain approach and carry out business process analyses (BPAs) of the value chain, focusing on product flow features. The efficiency of each chain segment will be assessed; and bottlenecks and requirements for standards will be identified through site visits, interviews with value chain participants, and on-the-spot tracking of product flow. For the provincial component, a framework will be used that combines economic geography and value chain analysis, focusing on three or four main agricultural products of the province. In addition to conducting business process analyses as in


¹² ADB. 2010. Jiangxi Rural Development Strategy, report under TA 7036-PRC: Provincial Development Strategies for Selected Provinces in the Central Region. Some recommendations as part of the rural development strategy for Jiangxi province are incorporated in the proposed TA activities, including development of agricultural logistics infrastructure and information platforms.
the national component, surveys on logistics costs will be done for the selected agricultural value chains. Further, for both components, consultations will be held with relevant government departments, key private enterprises operating in the agricultural logistics sector, and trade associations.

12. **Output 1: Policy and regulatory recommendations to improve PRC’s cold chain logistic systems.** The policy and regulatory recommendations will address the need for cold chain logistics standards and policy measures to facilitate development of cold chain logistics for perishable agricultural products. First, the TA will outline key elements of required cold chain logistics standards for selected perishable agricultural products and ways to harmonize existing standards. Technical standards on temperature control during transportation, storage, distribution, and retailing need to be established and harmonized so that supply chain capabilities can be established to meet these standards. Rules and regulations on validation of cold chains and product accreditation should follow international standards. Second, the TA will recommend policies to promote development and growth of the cold chain logistics industry for perishable agricultural products and adoption of new technologies and international best practices among logistics service providers. Economic instruments such as tax incentives and innovative supply chain financing will be reviewed as part of the effort to promote private sector investment. The reduction of barriers to interprovincial trade and streamlining of regulatory processes and competition policies will be recommended to improve the business environment and guard against anticompetitive business practices.

13. **Output 2: Agricultural logistics development plan for Jiangxi province.** The TA will (i) identify value chain participants; (ii) map distribution flows, including transportation routes and modes, and existing and potential markets in Jiangxi and nearby provinces; (iii) identify required logistics infrastructure and associated services; (iv) propose regulations and standards for agricultural logistics consistent with those recommended under the national component of the TA; and (v) prepare guidelines for information platforms serving farmers, logistics providers, and distributors. The TA will also analyze the distribution impact of agricultural logistics development in the province and provide recommendations on ensuring inclusive growth of the sector, especially for farmers and smallholders in the value chain.

14. **Output 3: Knowledge product.** The knowledge product will evaluate the efficiency and effectiveness of the PRC’s cold chain logistics system for perishable agricultural products, outline policy recommendations on establishing standards, and formulating industry policies and competition policies to facilitate sector development.

C. **Cost and Financing**

15. The TA is estimated to cost $1,200,000, of which $900,000 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 (i) counterpart staff remuneration and travel expenses; (ii) logistics support in arranging workshops and study tours; (iii) fully functional office space for consultants with water and utility supply, a telephone line, and free access to the internet and photocopying; and (iv) provision of basic data and related studies for consultants’ use. The cost estimates and financing plan are provided in Appendix 2.

D. **Implementation Arrangements**

16. For the national component, the Development Research Center (DRC) of the State Council will be the executing agency, headed by the vice president of DRC. The executing
agency will provide policy and strategy guidance during the TA implementation. The International Cooperation Department of DRC (ICD-DRC) will be the implementing agency. A TA management office (TMO) will be established in ICD-DRC, headed by the director. For the provincial component, the Jiangxi Provincial Agricultural Department (JPAD) will be the executing agency, providing strategy and policy guidance during TA implementation. The Jiangxi Provincial Rural Social Development Bureau (JPRSD) will be the implementing agency. The provincial component will be partially delegated to the JPAD according to the terms stipulated in the memorandum of understanding on delegated TA projects between the PRC and ADB.13 The procurement capacities of the JPAD and the JPRSD were assessed in June 2012, and the executing and implementing agencies of the provincial component were found to have sufficient resources and satisfactory procurement and oversight procedures to implement the TA. A TMO will be established in JPRSD, with the deputy director of JPRSD as head of the TMO.

17. The respective TMOs will carry out day-to-day activities under the TA and ensure active participation and inputs from relevant government departments, trade associations, and the private sector. The TMOs will also administer workshops, study tours, and field studies. Advance payment facilities will be set up within the TMOs, subject to the capacity of the executing agencies to complete the activities and liquidate advance payments according to ADB’s procedures. ICD-DRC and JPRSD will (i) communicate regularly to share research findings and lessons; and (ii) endeavor to coordinate project activities, such as workshops and study tours.

18. The TA is tentatively scheduled to be implemented from 1 October 2012 to 30 September 2013. The TA activities will be undertaken by two consulting firms. The consulting firm for the national component is required to provide a total of 35 person-months of consulting services, with two international consultants (8 person-months) and three national consultants (27 person-months). The consulting firm will be engaged by ADB. The consulting firm for the provincial component is required to provide a total of 43 person-months of consulting services, with one international consultant (5 person-months) and four national consultants (38 person-months). The consulting firm will be engaged by JPAD. The consulting firms will be engaged following ADB’s Guidelines on the Use of Consultants (2010, as amended from time to time) using the quality- and cost-based selection criteria, with a quality–cost ratio of 80:20. For the Jiangxi province component, equipment will be procured by the TMO following ADB’s Procurement Guidelines (2010, as amended from time to time). Disbursements will follow ADB’s Technical Assistance Disbursement Handbook (May 2010, as amended from time to time). Upon TA completion, the equipment will be turned over to JPRSD. The TA findings and outputs, including the knowledge product, will be presented during the workshops and posted on the respective websites of ADB and the executing agencies, to share information with national and international stakeholders.

IV. THE PRESIDENT’S DECISION

19. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of $900,000 on a grant basis to the People’s Republic of China for Logistics System Development for Agricultural Products, and hereby reports this action to the Board.

13 Following an “enhanced partnership” model, JPAD, the executing agency for the provincial component, will undertake selected recruitment and implementation activities as outlined in the memorandum of understanding on enhanced partnership on technical assistance delegation to the executing agency. ADB will enter into contracts with consultants and have final responsibility for implementing the contract.
### DESIGN AND MONITORING FRAMEWORK

<table>
<thead>
<tr>
<th>Design Summary</th>
<th>Performance Targets and Indicators with Baselines</th>
<th>Data Sources and Reporting Mechanisms</th>
<th>Assumptions and Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact</td>
<td>By 2023: Agricultural logistics costs reduced by 10% in PRC and Jiangxi province (baseline: CNY 137,000,000 for PRC, CNY 2,900,000 for Jiangxi in 2012) Agricultural product wastage reduced to 24% in the PRC and Jiangxi province (baseline: 30% of perishable agricultural products spoiled in 2012) Cold chain logistics capacity provided by the private sector increased by 40% (baseline: 43,000,000 m³)</td>
<td>National and provincial agricultural statistics yearbooks, annual reports of relevant government departments and trade associations, and logistics indices where applicable</td>
<td>Assumptions Relevant government departments at the central level will adopt the policy and regulatory recommendations and allocate funds accordingly</td>
</tr>
<tr>
<td>Outcome</td>
<td>By September 2013: Policy and regulatory recommendations to improve the PRC’s cold chain logistic systems for perishable agricultural products submitted to the State Council A development plan for agricultural products logistics systems in Jiangxi province prepared and endorsed by the provincial government</td>
<td>TA reports Relevant government agencies’ comments on the strategic framework during the final review workshop Government policy announcements, notices or public speeches of officials</td>
<td>Assumptions The executing agencies consult and coordinate with relevant government departments, private sector representatives, and trade associations</td>
</tr>
<tr>
<td>Outputs</td>
<td>By September 2013: Report on policy and regulatory recommendations finalized and endorsed by DRC to State Council Development plan prepared and endorsed by Jiangxi provincial government</td>
<td>TA review missions and reports Consultant technical reports and reviewers’ comments Regular communication with and feedback from the executing agencies</td>
<td>Assumptions International experience and lessons be applied to the PRC’s agricultural logistics systems with modifications Background information and data are available DRC and JPAD provide counterpart resources in a timely manner</td>
</tr>
</tbody>
</table>

**Assumptions**
- Relevant government departments at the central level will adopt the policy and regulatory recommendations and allocate funds accordingly.
- The executing agencies consult and coordinate with relevant government departments, private sector representatives, and trade associations.
- International experience and lessons be applied to the PRC’s agricultural logistics systems with modifications.
- Background information and data are available.
- DRC and JPAD provide counterpart resources in a timely manner.

**Risks**
- Restructuring of government departments
- Lack of coordination among various government departments
Activities with Milestones

Output 1: Policy and regulatory recommendations to improve PRC’s cold chain logistic systems

1.1. Assess the strengths and weaknesses of the PRC’s agricultural logistics systems through a literature review, focus group discussions, and consultations with relevant government departments, private enterprises and trade associations (by month 1).
1.2. Conduct business process analyses for three to four selected perishable agricultural products to collect data on critical aspects of inefficiencies, identify key processes and problems, and develop recommendations on addressing the issues and problems (by month 3).
1.3. Conduct an international study tour to obtain in-depth knowledge of international best practices (by month 4).
1.4. Conduct a review of international experience in the development of agricultural logistics systems for perishables, particularly standards related to cold chain logistics and product accreditation, enabling policies and strategies, and how they would apply to the PRC (by month 5).
1.5. Conduct a workshop to discuss findings with participation of national and international experts, relevant government departments, and representatives of the private sector and trade associations (by month 6).
1.6. Outline key elements of required standards on cold chain logistics for selected perishable agricultural products and steps to harmonize existing standards, such as adoption of HACCP, GMP, and GlobalGAP.
1.7. Develop policies and regulations to promote development and growth of the cold chain logistics industry for perishable agricultural products by promoting adoption of modern technologies and international best practices, and introducing economic incentives and policy reforms (by month 9).
1.8. Conduct a workshop with participation of national and international experts, relevant government departments, private enterprises and trade associations to discuss policy, regulatory, and other recommendations (by month 10).
1.9. Finalize policy, regulatory and other recommendations to improve the PRC’s cold chain logistic systems for perishable agricultural products (by month 11).

Output 2. Agricultural logistics development plan for Jiangxi province

2.1. Review the current state of agricultural supply chains and logistics networks in Jiangxi province through a literature review, focus group discussions, and consultation meetings; for key agricultural commodities and/or products that contribute significantly to the province’s agricultural sector, identify major businesses active in the agricultural logistics industry and existing (and potential) markets in nearby provinces (by month 1).
2.2. Conduct a survey of the logistics costs of three to four key agricultural supply chains in Jiangxi province to (i) identify value chain participants; (ii) map distribution flows, including transportation routes and modes, and existing and potential markets within Jiangxi and in nearby provinces; and (iii) estimate costs related to transportation, warehousing, and inventory management (month 3).
2.3. Conduct an international study tour to obtain in-depth knowledge of international best practice and an in-country study tour to learn from experience of more developed provinces in the PRC (by month 4).

2.4. Conduct a workshop to discuss findings with the participation of national and international experts, relevant government departments, and representatives of smallholder farmers, logistics service providers, and trade associations (by month 5).

2.5. Identify logistics infrastructure investment priorities and financing options based on production, transportation, and consumption patterns of key agricultural products in Jiangxi province (by month 6);

2.6. Develop guidelines for establishing information platforms for selected agricultural products (by month 7).

2.7. Analyze the distribution of benefits that will result from agricultural logistics development in Jiangxi province, particularly the impact on smallholder farmers (by month 8).

2.8. Prepare policy and regulatory recommendations to address problems with the existing logistics system, including proposed standards and industry incentives to promote private sector investment in the industry (by month 9).

2.9. Conduct workshop to discuss the development plan and policy, regulatory, and other recommendations (by month 10).

2.10. Finalize the development plan and recommendations based on feedback received during the workshop (by month 11).

Output 3. Knowledge product

3.1. Prepare a draft knowledge product, evaluating the efficiency and effectiveness of the PRC’s cold chain logistics system for perishable agricultural products, and outlining policy recommendations on establishing standards and formulating industry policies and competition policies to facilitate development of the sector (by month 11).

3.2. Incorporate comments and feedback, finalize and publish the knowledge product (by month 12).

ADB = Asian Development Bank, DRC = Development Research Center of the State Council, JPAD = Jiangxi Provincial Agricultural Department, GlobalGAP = the Global Partnership for Good Agricultural Practice, GMP = good manufacturing practices, HACCP = hazard analysis critical control points, PRC = People’s Republic of China, TA = technical assistance, TASF = Technical Assistance Special Fund.

## COST ESTIMATES AND FINANCING PLAN

($'000)

<table>
<thead>
<tr>
<th>Item</th>
<th>National Component</th>
<th>Jiangxi Province Component</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asian Development Bank</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Consultants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a.) Remuneration and per diem</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i. International consultants</td>
<td>198.00</td>
<td>130.00</td>
<td>328.00</td>
</tr>
<tr>
<td>ii. National consultants</td>
<td>98.00</td>
<td>145.00</td>
<td>243.00</td>
</tr>
<tr>
<td>(b.) International and local travel</td>
<td>40.00</td>
<td>20.00</td>
<td>60.00</td>
</tr>
<tr>
<td>(c.) Reports and communications&lt;sup&gt;b&lt;/sup&gt;</td>
<td>10.00</td>
<td>20.00</td>
<td>30.00</td>
</tr>
<tr>
<td>2. Workshops and field studies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a.) In-country study tour and field work&lt;sup&gt;c&lt;/sup&gt;</td>
<td>14.00</td>
<td>10.00</td>
<td>24.00</td>
</tr>
<tr>
<td>(b.) International study tour&lt;sup&gt;d&lt;/sup&gt;</td>
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<td>60.00</td>
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<tr>
<td>(c.) Workshop</td>
<td>25.00</td>
<td>30.00</td>
<td>55.00</td>
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<tr>
<td>3. Equipment&lt;sup&gt;e&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Miscellaneous administration and support costs&lt;sup&gt;f&lt;/sup&gt;</td>
<td>5.00</td>
<td>5.00</td>
<td>10.00</td>
</tr>
<tr>
<td>5. Contingencies</td>
<td>30.00</td>
<td>45.00</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td>450.00</td>
<td>450.00</td>
<td>900.00</td>
</tr>
</tbody>
</table>

Note: The technical assistance (TA) is estimated to cost $1,200,000. Contributions by the Asian Development Bank are presented in the table above. The government will provide counterpart support in the form of counterpart staff time; remuneration and travel expenses; logistics support in arrangement of workshops; fully functional office space for consultants, with free water and utility supply, telephone lines and free access to the internet and a photocopying machine; and other in-kind contributions. The value of government contribution is estimated to account for 25% of the total TA cost.

<sup>a</sup> Financed by the Asian Development Bank’s Technical Assistance Special Fund (TASF—other sources).

<sup>b</sup> Includes a translator for the translation of reports.

<sup>c</sup> For the national component, this includes three in-country field trips to conduct field studies. For the Jiangxi province component, this includes one in-country study tour and three field trips within Jiangxi province.

<sup>d</sup> Includes an overseas study tour for a maximum of six persons each for the national and the Jiangxi province component.

<sup>e</sup> Includes computers and other office equipment under the provincial component. The equipment will be turned over to the Jiangxi Provincial Agricultural Department, the executing agency of the provincial component, upon TA completion. Procurement will be done following the Asian Development Bank’s Procurement Guidelines (2010, as amended from time to time).

<sup>f</sup> Includes interpreter and publication of reports.

Source: Asian Development Bank estimates.
OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

A. Terms of Reference

1. National Component

1. **Team leader and logistics policy specialist** (national, 9 person-months). The team leader will have a postgraduate degree related to economics, management, logistics or transportation, and at least 15 years of research experience in logistics, distribution, and related development policy. The team leader will also have field experience as a team leader managing projects financed by international organizations in developing countries. The team leader and logistics specialist will be responsible for the final outputs of the study, as well as for the daily coordination and supervision of the team. Specifically, the team leader shall undertake the following tasks:

   (i) prepare a detailed work plan and tasks for the consultant team in consultation with the executing agency, key stakeholders, and other experts;
   (ii) develop outlines and guide preparation of various reports, including the inception, interim, and final reports;
   (iii) prepare concise monthly progress reports (no more than two pages each);
   (iv) ensure timely implementation of technical assistance (TA) activities, guide preparation of main deliverables and overall coordination of the inputs from team members;
   (v) coordinate with the executing agency and government agencies concerned and ensure access to necessary data from the government;
   (vi) organize consultation meetings with relevant government departments, trade associations, and industry representatives and review relevant literature to prepare a profile of the People’s Republic of China (PRC) agricultural products logistics system, including its main features, recent developments, associated policy measures, and the perceived general weaknesses and strengths of the system;
   (vii) organize an international study tour, in consultation with the executing agency, in one or two countries that have structural similarities to the PRC with respect to key dimensions in order to learn international best practices;
   (viii) develop outlines and guide preparation of the knowledge product;
   (ix) present the results and findings of the TA in workshops; and
   (x) conduct other related work assigned by the executing agency and Asian Development Bank (ADB) project officer.

2. **Deputy team leader and logistics specialist** (international, 4 person-months). The deputy team leader will have a postgraduate degree related to logistics, transportation, economics, or management. The deputy team leader will have at least 15 years of experience in logistics or operations research and practice. The deputy team leader will have extensive work experience with international organizations and/or governments concerning logistics-related projects. The specialist shall undertake the following tasks:

   (i) draft the inception, interim, and final reports, and their revised versions;
   (ii) conduct a review of international experience in the development of cold chain logistics systems for agricultural products, associated policy measures, and their implementation costs and benefits;
(iii) provide recommendations on industry policies and competition policies to promote third-party logistics and industry consolidation while ensuring a competitive business environment, and to reduce barriers to interprovincial trade;
(iv) draft the knowledge product with guidance from the team leader and inputs from the other team members; and
(v) provide inputs for other TA activities and various reports as required by the team leader.

3. Cold chain logistics specialist (international, 4 person-months). The specialist will have a postgraduate degree related to food safety, transportation, agricultural economics, or management and at least 5 years of experience in cold chain logistics and transportation. The specialist shall undertake the following tasks:

(i) review existing regulations and standards relevant for cold chain logistics for perishable agricultural products in the PRC, and assess the need for (a) rules and standards on temperature control during transportation, storage, distribution and retailing; and (b) on validation of cold chains and product accreditation following international quality standards, such as the hazard analysis critical control points system, good manufacturing practices, and the Global Partnership for Good Agricultural Practice;
(ii) based on the review and consultations with government departments, private enterprises and trade associations, outline key elements of required standards that are lacking, and outline steps to adopt international standards in the PRC;
(iii) provide recommendations on harmonizing existing rules and standards; and
(iv) provide inputs for other TA activities, various reports and the knowledge product as required by the team leader.

4. Logistics and inventory management specialist (national, 8 person-months). The logistics and inventory management specialist should have a postgraduate degree related to logistics, food safety, transportation, management, economics or supply chain management and at least 5 years of experience in cold chain logistics or logistics operations management. A university degree with considerable specialized experience in logistics and transportation may be considered in lieu of a postgraduate degree. The specialist shall undertake the following tasks:

(i) summarize the main features of the PRC’s distribution and inventory systems related to perishable agricultural products logistics, development trends, and relevant national plans;
(ii) provide inputs for developing recommendations on rules and standards on (a) temperature control during transportation, storage, distribution and retailing; (b) validation of cold chains; and (c) product accreditation;
(iii) examine impediments to interprovincial commerce in agricultural products and their implications for logistics costs, and provide recommendations on facilitating domestic trade to lower logistics costs; and
(iv) provide inputs for other TA activities, various reports and the knowledge product as required by the team leader.

5. Agricultural value chain specialist (national, 10 person-months). The agricultural value chain specialist should have a postgraduate degree related to economics or business management and at least 5 years of experience in agricultural value chain management or analysis. A university degree with considerable specialized experience in agricultural value chain management may be considered in lieu of a postgraduate degree. The specialists shall undertake the following tasks:
(i) review recent trends in farm production and distribution, focusing on organization of business linkages among key players in production, processing, packaging and distribution; explore new distribution tools, such as e-commerce for agricultural produce trading;
(ii) design and implement business process analyses of three to four perishable agricultural products to collect data on critical aspects of inefficiencies, identify key processes and problems, and develop recommendations on addressing the issues and problems; and
(iii) provide inputs for other TA activities, various reports and the knowledge product as required by the team leader.

2. Provincial Component

6. Team leader and logistics specialist (national, 10 person-months). The team leader for the provincial component will have a postgraduate degree related to economics management, logistics or transportation, and at least 15 years of experience in logistics and/or agricultural economics. They will also have field experience as a team leader for managing projects financed by international organizations in developing countries. They will be responsible for the final outputs of the study, as well as for the daily coordination and supervision of the provincial component team. Specifically, the team leader for the provincial component shall undertake the following tasks:

(i) prepare a detailed work plan and tasks for the consultant team of the provincial component in consultation with the executing agency, key stakeholders, and other experts;
(ii) develop outlines and guide preparation of various reports, including the inception, interim, and final reports;
(iii) prepare concise monthly progress reports (no more than two pages each);
(iv) ensure timely implementation of TA activities, guide preparation of main deliverables and overall coordination of the inputs from team members;
(v) coordinate with the executing agency and government agencies and ensure data access;
(vi) organize an international study tour, in consultation with the executing agency, in one or two countries and an in-country study tour to learn the best international and PRC practices applicable to Jiangxi province;
(vii) review the current state of agricultural supply chains and logistics networks in Jiangxi province through a literature review, focus group discussions, and consultation meetings; for the main agricultural commodities and/or products that contribute significantly to the province’s agricultural sector, identify key players in the agricultural logistics industry, and existing (and potential) markets in nearby provinces;
(viii) prepare policy recommendations on improving efficiency and effectiveness of the agricultural logistics system, including industry incentives and development of rules and regulations on standards guided by the national component;
(ix) provide recommendations on infrastructure investment priorities under the development strategy;
(x) present the results and findings in workshops; and
(xi) conduct other related work assigned by the executing agency and the ADB project officer.
7. **Deputy team leader and agricultural logistics specialist** (international, 5 person-months). The deputy team leader for the provincial component will have a postgraduate degree related to logistics, transportation, economics or business management, and at least 15 years of experience in logistics or agricultural economics. They will have work experience on projects financed by international organizations, and assist the provincial component team leader in the coordination and supervision of the provincial component TA team. The specialist shall undertake the following tasks:

(i) draft various TA reports, including the inception, interim, and final reports, and their revised versions;

(ii) in consultation with the national component team, review international experience for the development of effective agricultural products logistics systems, associated policy measures and their effectiveness;

(iii) provide recommendations on infrastructure investment priorities, policy reforms, and industry incentives as part of the development strategy; and

(iv) provide inputs to other TA activities and various reports as required by the team leader.

8. **Agricultural value chain specialist** (national, 10 person-months). The agricultural value chain specialist for the provincial component of the TA will have a postgraduate degree related to logistics, economics or business management, and at least 5 years of experience in agricultural products value chain management. A university degree with considerable specialized experience in agricultural value chain management may be considered in lieu of a postgraduate degree. The specialist shall undertake the following tasks:

(i) design and implement surveys of three to four selected agricultural products together with the logistics and inventory management specialist to (a) identify key players in input distribution, production, processing and packaging, transportation, warehousing, logistics service and distribution; (b) describe distribution flows by mapping out relevant transportation routes and modes, and existing market access; and explore potential markets in nearby provinces other locations; and (c) assess connections between actors and processes;

(ii) analyze the distribution of benefits that would result from agricultural logistics development in Jiangxi province, particularly the impact on smallholder farmers, and provide policy recommendations on increasing benefit distribution to the poor and smallholders; and

(iii) provide inputs for other TA activities, various reports and the knowledge product as required by the team leader.

9. **Logistics and inventory management specialist** (national, 10 person-months). The logistics and inventory management specialist for the provincial component will have a postgraduate degree related to business management, transportation economics, and at least 5 years of experience in logistics and inventory management. A university degree with considerable specialized experience in logistics and inventory management may be considered in lieu of a postgraduate degree. The specialist shall undertake the following tasks:

(i) conduct a review of the logistics and inventory infrastructure for key agricultural products in Jiangxi province and identify capacity constraints and deficiencies;

(ii) design and implement surveys of three to four selected agricultural products together with the agricultural value chain specialist to identify costs, both fixed and variable, attributable to transportation, warehousing and inventory management, and evaluate efficiency in comparison to international, national and regional averages;
identify investment priorities and financing options for logistics infrastructure—such as distribution centers and market information platforms, cold-chain storage, collection points and farm-to-market roads—based on production, transportation, and consumption patterns of key agricultural products in Jiangxi province; and

provide inputs for other TA activities, various reports and the knowledge product as required by the team leader.

10. **Management information system specialist** (national, 8 person-months). The specialist will have a postgraduate degree related to business management or management information systems, and at least 5 years of experience in management information systems and distribution. A university degree with considerable specialized experience in management information systems and distribution may be considered in lieu of a postgraduate degree. The specialist shall undertake the following tasks:

(i) review policies and regulations concerning provision and dissemination of market information in Jiangxi province;

(ii) provide recommendations to enhance the regulatory framework and industry incentives to strengthen market information critical to an effective agricultural products logistics system;

(iii) prepare guidelines on establishing information platforms for selected agricultural products in Jiangxi province; and

(iv) provide inputs for other TA activities and various reports and the knowledge product as required by the team leader.

B. **Reporting Requirement**

11. The consultants will submit the following reports, all in English, with a hard and soft copy to ADB and the executing agencies.

(i) **Inception report.** The team leader will submit the inception report within 1 month of the TA inception workshop, after discussions with the executing agency and consultant team. The inception report will include a work plan outlining major milestones of the TA activities, outputs, the methodology, draft outlines of the interim and final report, deliverables of each consultant, and the timeline of the deliverables.

(ii) **Interim report.** The team leader will submit the draft interim report by month 6 and finalize it by month 7, incorporating comments and feedback from ADB and the executing agency. The interim report will include a summary of activities and findings with sub-reports attached.

(iii) **Final report.** The team leader will submit the draft final report by month 11 and finalize it by month 12, incorporating comments and feedback from the workshops. The final report will include a summary of all TA activities and findings with sub-reports attached.

(iv) **Monthly progress report.** This will summarize the TA activities completed each month (no more than 2 pages).

(v) **Knowledge product.** The team leader for the national component will submit the draft knowledge product by month 11 and finalize it by month 12, incorporating the comments and feedbacks from reviewers.