



# Technical Assistance Report

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Project Number: 47305  
Research and Development Technical Assistance (RDTA)  
December 2013

## Republic of Uzbekistan: Innovations for Agriculture Modernization

## CURRENCY EQUIVALENTS

(as of 2 December 2013)

Currency unit	–	sum (SUM)
SUM1.00	=	\$0.00046
\$1.00	=	SUM2,171.59

## ABBREVIATIONS

ADB	–	Asian Development Bank
ha	–	hectare
HVC	–	high-value crop
MAWR	–	Ministry of Agriculture and Water Resources
TA	–	technical assistance

## TECHNICAL ASSISTANCE CLASSIFICATION

<b>Type</b>	–	Research and development technical assistance (RDTA)
<b>Targeting classification</b>	–	General intervention
<b>Sector (subsector)</b>	–	Agriculture and natural resources (agricultural production and markets)
<b>Themes (subthemes)</b>	–	<b>Economic growth</b> (widening access to markets and economic opportunities), private sector development (promotion of private sector investment)
<b>Location (impact)</b>	–	Rural (high), national (medium), urban (low), regional (low)

## NOTE

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

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## I. INTRODUCTION

1. The Government of Uzbekistan asked the Asian Development Bank (ADB) on 3 October 2013 for technical assistance (TA) to support cotton mechanization and crop diversification, and to complement the recently approved Amu Bukhara Irrigation System Rehabilitation Project.<sup>1</sup> ADB fielded a TA fact-finding mission during 5–15 November 2013 to evaluate key challenges and opportunities, and to consult with public and private stakeholders, to finalize the TA design and its implementation arrangements. The government concurred with the TA impact, outcome, outputs, cost, implementation and financing arrangements, and terms of reference for consultants. The design and monitoring framework is in Appendix 1.<sup>2</sup>

## II. ISSUES

2. Agriculture still plays a significant role in Uzbekistan's economy. In 2011, it employed about 27% of the country's total labor force.<sup>3</sup> While the national level of low-income people has declined from 21.8% in 2008 to 17.7% in 2010, 18.15% of the rural population, who largely depends on agriculture, still has low incomes. They spend 53% of their income on food, compared with 33% spent by the urban residents.<sup>4</sup>

3. Uzbekistan's agriculture sector is largely dominated by cotton and wheat farming, which is the main water-consuming subsector.<sup>5</sup> In 2012, the two crops accounted for about 70% of the total cultivated area, producing 34% of gross output of agriculture and accounting for 30% of rural employment.<sup>6</sup> The government largely supports wheat production to achieve food self-sufficiency. State-controlled procurement, pricing, processing, and marketing governs cotton, and to a lesser extent wheat, production. Export revenues from the cotton supply chain helped finance the government's import-substituting policies.

4. Other important crops are fruit, nuts, vegetables, and fodder, and government involvement is minimal. Uzbekistan is one of the major suppliers of fresh and processed fruits and vegetables in the region. In 2011, the agriculture sector grew by 6.6%, supported by fruit and vegetable production and livestock breeding.<sup>7</sup> The sector covers 90% of domestic demand for agriculture products and 70% of domestic trade.<sup>8</sup> Yet the country remains a net food importer, except for fruit and vegetable products. Diversification to non-cotton and wheat crops is hampered by government's commitment to ensure self-sufficiency in wheat production and to maintain its export receipts from cotton. With lack of price incentives to farmers to be more productive and efficient, cotton supply that sustains export revenues is achieved by devoting huge tracts of agriculture land to cotton production.

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<sup>1</sup> ADB. 2013. *Report and Recommendation of the President to the Board of Directors: Proposed Loans to the Republic of Uzbekistan for the Amu Bukhara Irrigation System Rehabilitation Project*. Manila.

<sup>2</sup> The TA project data sheet was first uploaded to ADB's website on 7 November 2013.

<sup>3</sup> European Union. 2013. *Uzbekistan: Selected Trade and Economic Issues*. Brussels.

<sup>4</sup> World Food Programme. 2008. *Poverty and Food Insecurity in Uzbekistan*. Rome.

<sup>5</sup> N. Djanibekov et al. 2010. *Pros and Cons of Cotton Production in Uzbekistan*. Ithaca: Cornell University.

<sup>6</sup> Ministry of Agriculture and Water Resources of the Government of Uzbekistan, Food and Agriculture Organization production statistics, and European Union. 2013. *Uzbekistan: Selected Trade and Economic Issues*. Brussels.

<sup>7</sup> Food and Agriculture Organization of the United Nations. 2013. *Eastern Europe and Central Asia Agro-Industry Development Country Brief*. Rome.

<sup>8</sup> International Fund for Agricultural Development. 2012. *President's Report: Proposed Loan and Grant to the Republic of Uzbekistan for the Horticultural Support Project*. Rome.

5. The government's Welfare Improvement Strategy for 2012–2015 aims to reduce the national level of low-income people from 17.7% in 2010 to 13.7% by 2015.<sup>9</sup> This will entail primarily greater rural productivity and more income-generating activities. Key measures to achieve these objectives are (i) further structural reforms to agriculture and the diversification of agricultural production; (ii) mechanization of the sector, infrastructure build-up, and agribusiness development; (iii) more productive use of land and water; and (iv) greater financial stability of farm entities and more market-oriented agricultural policies.

6. Rural labor is getting scarce as people migrate to urban centers for jobs in the more lucrative industrial and service sectors. In response, the government aims to expand mechanization by (i) exempting imported agricultural machinery that is intended for lease from customs duty and value-added tax; (ii) widening access to credit for suppliers of farm machinery and equipment that use locally produced parts; and (iii) establishing a special fund in the Ministry of Finance for Utselhoz mashlizing (Uzbekistan financing institution for purchase of agricultural machinery) to provide low-interest lease financing for agricultural equipment to agricultural machine-tractor parks (agricultural machinery leasing), other joint-stock companies that provide agricultural services, and farmers. However, these initiatives are driven more by the government and suppliers, and lack detailed analysis of market demand, farmers' financial and technical capacity, and the machinery's suitability to more profitable farming systems. There is also a need to improve institutional and financing mechanisms in procurement and leasing of agricultural machinery through possible involvement of the private sector.

7. To promote crop diversification, the government has been gradually reducing the cotton-growing areas, starting with low-production sites. By 2015, about 130,000 hectares (ha) of cotton areas are planned to be released for the production of high-value crops (HVCs) such as vegetables and fruit. To date, about 12,000 ha have been released for HVC farming. Market demand and supply for a suite of HVCs in Uzbekistan's various provinces, however, has to be analyzed to determine which HVCs are most suitable and can be integrated in the dominant cotton–wheat farming system. This entails (i) demonstration of cotton–wheat–HVC farming with appropriate technological and agronomic practices, and (ii) comparisons of the technical (yield impact) and socioeconomic (profitability; efficient use of labor, land, and water; and gender empowerment) performance of the demonstration farms with the traditional cotton–wheat farming system. It also means assessing the policy, institutional, and investment implications of crop diversification for potential government action.

8. ADB's Amu Bukhara Irrigation System Rehabilitation Project (footnote 1) contributes in part to the goal of sustainable economic and social welfare improvement. Specifically, the project will upgrade irrigation infrastructure, promote efficient water supply, and pilot crop diversification in the Amu Bukhara irrigation system's command area of about 250,000 ha in the Bukhara and Navoi provinces. The ADB-financed Land Improvement Project, which covers 162,300 ha of irrigated land, also contributes to the desired development outcomes by mitigating land degradation due to soil salinization in these provinces and Kashkadarya Province.<sup>10</sup>

9. While water- and land-enhancing interventions are important to sustain and improve farm incomes, they need to be complemented by better farming systems that use more effective technical and agronomic practices and improve labor use and crop yields. This TA proposes to

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<sup>9</sup> Republic of Uzbekistan. 2013. *Welfare Improvement Strategy of Uzbekistan (2012–2015)*. Tashkent.

<sup>10</sup> ADB. 2007. *Report and Recommendation of the President to the Board of Directors: Proposed Loans to the Republic of Uzbekistan for the Land Improvement Project*. Manila.

fill two major gaps in Uzbekistan's farming systems: (i) broaden access to agricultural machinery such as cotton harvesters and cultivators by exploring financing options (such as leasing, credit line) and potential engagement of the private sector; and (ii) promote crop diversification through market-driven HVCs that are suitable for integrated cotton–wheat–HVC farming.

10. Mechanized farming of cotton and wheat will reduce the need to employ forced labor during harvesting. International experience with mechanical harvesting is that it can produce the same quality cotton with less waste than hand picking, and is also hygienic.<sup>11</sup> This would have an important bearing on international concerns over the use of forced labor during cotton harvesting in Uzbekistan. In response to such concerns raised by civil society and others, the government accepted for the first time the involvement of the International Labour Organization in joint monitoring of labor issues during the 2013 cotton harvest season. ADB is coordinating closely with the International Labour Organization, as well as other development partners, on this matter. The government's target to increase the number of cotton harvesting machines during 2012–2016 will significantly reduce labor requirements, including child or forced labor, during cotton harvesting.

11. Uzbekistan women will benefit from mechanization in particular, and from more efficient integrated farming systems in general. They perform multifarious roles aside from household chores. Specifically, they work in cotton and wheat fields from cultivation to harvesting. They also take care of the *dekhan* farms (small household plots), which are the main source of cash income for farm households. Mechanization will help not only eliminate child or forced labor but also reduce the burden of women in cotton production and harvesting, and enhance households' cash incomes through increased HVC production.

12. The TA will support the Welfare Improvement Strategy for 2012–2015 and the government's commitment to enforce international labor standards by working on key aspects of the agriculture strategy: (i) promoting crop diversification through demonstration of an integrated cotton–wheat–HVC farming system; (ii) assisting mechanization by exploring financing options (including leasing arrangements, credit line) for agricultural machinery and other production tools; and (iii) finding more opportunities for private agribusiness investment.

13. The TA is consistent with the country partnership strategy, 2012–2016 for Uzbekistan, which supports the country's transformation into a modern industrial and service economy through sustained and inclusive growth, and poverty reduction, among others.<sup>12</sup> To help improve the business environment in Uzbekistan, the country partnership strategy specifies that ADB provide demand-led TA in areas determined jointly with the government.

### III. THE TECHNICAL ASSISTANCE

#### A. Impact and Outcome

14. The TA impact will be greater profitability of farmers. The TA outcome will be the development of investment concepts for agricultural mechanization and crop diversification.

<sup>11</sup> M. Shafiq, M. Sharif, J. Longmire, and M. Azeem. 1991. *Labour Problems and the Economics of Introducing Mechanical Cotton Pickers in the Southern Punjab, Islamabad, Pakistan*. <http://repository.cimmyt.org/xmlui/bitstream/handle/10883/874/34615.pdf>

<sup>12</sup> ADB. 2012. *Country Partnership Strategy: Uzbekistan, 2012–2016*. Manila.

## B. Methodology and Key Activities

15. The outputs of the TA will be: (i) suitable financing arrangements for agricultural mechanization and crop diversification developed, and (ii) diversified cropping systems improved.

16. **Output 1: Suitable financing arrangements for agricultural mechanization and crop diversification developed.** The TA will first conduct a gap analysis of current financing and institutional arrangements (as well as leasing modalities) for provision of agricultural machinery, particularly cotton harvesting machines. The TA will also point out international good practices of financing, and private or public–private investment mechanisms that are suitable for Uzbekistan’s efforts to mechanize farming and diversify crops, including risk management instruments for value-chain financing—e.g., repurchase agreement, trade receivables finance, trader finance, warehouse receipts, and commodity finance. Farm-specific assessments will evaluate farmers’ financial and technical capacity, and the farming system’s suitability for the recommended agricultural machinery. Based on the analyses, the TA will (i) recommend financial and institutional mechanisms (a) for provision of energy-efficient agricultural machinery, in particular lease finance and alternative financing modalities for cotton harvesting machines and other farming tools, and (b) for crop production, processing, and storage, with potential public–private partnership or full private sector financing; (ii) prepare and implement a plan to increase the capacity of relevant agencies for new financing mechanisms; and (iii) develop a concept for investing in agricultural mechanization, which will include a credit line.

17. **Output 2: Diversified cropping systems improved.** Through analysis of constraints and opportunities in growing and supplying HVCs, the TA will recommend (i) potential HVCs that meet market demand and suit agro-ecological and logistics conditions; and (ii) how to promote certain HVCs, given the weather and soil conditions, in at least two provinces.<sup>13</sup> In parallel, the TA will pilot-test two types of mechanized farming systems: (i) cotton–wheat–HVCs farming and (ii) HVC farming in cotton-free areas.<sup>14</sup> Partnerships with private sector suppliers of agricultural machinery and input will be explored for the pilot-tests. The TA will study the socioeconomic and environmental impacts of the two types of farming systems, with a focus on the opportunity costs of land, water, energy, and labor; and on the social implications of replacing rural labor with machinery. A key aspect of the output is to demonstrate (i) how effective and efficient mechanization and agronomic practices will lead to an increase in cotton and wheat yields despite using less land, water, fuel, and labor; and (ii) that this will allow to reduce (a) the cotton areas in favor of growing HVCs and (b) child labor and/or forced labor. Based on the analytical results and pilot tests, the TA will recommend a package of policy measures, action plan, and institutional arrangements for crop diversification, and develop a concept for investing in crop diversification including potential credit support.

## C. Cost and Financing

18. The TA is estimated to cost \$1,200,000, of which \$1,000,000 will be financed on a grant basis by ADB’s Technical Assistance Special Fund (TASF-other sources). The government will

<sup>13</sup>The selected provinces will meet the following criteria: (i) they are benefitting from ADB’s ongoing irrigation investment projects; (ii) they include local governments that plan to reduce cotton areas in favor of an integrated cotton–wheat–HVC farming system; and (iii) they include areas that do not have significant development assistance for HVCs.

<sup>14</sup>The test site of the cotton–wheat–HVC farming system with a target size of 50–100 ha will be in the Jondor district of Bukhara Province, where one of three demonstration farms financed by ADB’s Land Improvement Project is located, and which is also within the command area of the Amu Bukhara Irrigation System Rehabilitation Project.



provide counterpart support in the form of counterpart staff and their domestic transport, office accommodation and utilities in Tashkent and two provinces, logistical support during field visits, data and reports as needed, workshop facilitation, secretarial assistance, the use of agricultural machinery procured and to be procured under the Land Improvement Project (footnote 10), and other in-kind contributions. The cost estimates and financing plan are in Appendix 2.

#### **D. Implementation Arrangements**

19. The TA will be implemented over 3 years (January 2014–December 2016). ADB will be responsible for overall TA management and coordination. The Environment, Natural Resources and Agriculture Division of the Central and West Asia Department, and the Agriculture, Rural Development and Food Security Unit of the Regional and Sustainable Development Department will be the focal point in ADB for the TA implementation in collaboration with the Uzbekistan Resident Mission.

20. The Ministry of Agriculture and Water Resources (MAWR) will be the executing agency. A special TA steering committee co-chaired by the minister of economy and the minister of MAWR, with members from the Ministry of Economy, MAWR, the Ministry of Labor and Social Welfare, and the Uzbekistan Fund for Reconstruction and Development, will be established and meet half-yearly to provide policy guidance. The deputy minister of agriculture in MAWR will be designated as the TA director with responsibility for overall TA implementation and will appoint two TA coordinators from provincial agriculture departments to oversee the pilot-test activities in cooperation with TA consultants and other stakeholders.<sup>15</sup>

21. The TA requires 14 person-months of international consulting services and 39 person-months of national consulting services covering agricultural development, agricultural science, agricultural financing, agricultural engineering, agriculture and marketing economics, and capacity development. The consultants will be recruited through a firm using quality- and cost-based selection with a ratio of 80:20. The TA proceeds will be disbursed in accordance with ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time). All procurement will be carried out in accordance with ADB's Procurement Guidelines (2013, as amended from time to time), and consultants will be recruited in line with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time).

22. Monitoring and evaluation are integral to the design and implementation of the TA. In coordination with MAWR, a baseline assessment at TA inception and outcome evaluation at TA completion will be undertaken. Provincial and district statistics will be verified and validated in terms of veracity and credibility in their use for monitoring and assessing the outcome and impact targets.

#### **IV. THE PRESIDENT'S DECISION**

23. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$1,000,000 on a grant basis to the Government of Uzbekistan for Innovations for Agriculture Modernization, and hereby reports this action to the Board.

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<sup>15</sup> One from Bukhara and another from a province to be determined at the beginning of TA implementation.

## DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p><b>Impact</b> Greater profitability of farmers</p>	<p>Average annual farm income increased by 20% by 2020 (2012 baseline: \$600/hectare)</p>	<p>Province and district statistics</p>	<p><b>Assumption</b> The government allocates enough resources for sustainable farming systems</p> <p><b>Risk</b> The local governments are reluctant to reduce cotton-growing area</p>
<p><b>Outcome</b> Development of investment concepts for agricultural mechanization and crop diversification</p>	<p>Agricultural mechanization investment concept defined with clear objectives and targets (by December 2016)</p> <p>Crop diversification investment concept defined with clear objectives and targets (by December 2016)</p> <p>Recommended investment actions supported by the government and development partners (by December 2016)</p>	<p>MAWR reports</p> <p>CPS or COBP of ADB or other development partners</p>	<p><b>Assumption</b> The government continues supporting mechanization and crop diversification</p>
<p><b>Outputs</b> 1. Suitable financing arrangements for agricultural mechanization and crop diversification developed</p>	<p>Financial and institutional mechanisms for provision of agricultural machinery (e.g., lease and other finance modalities for cotton harvesting machines and other farm machinery, credit line system) endorsed by the Ministry of Finance (by December 2016)</p> <p>Financing and institutional mechanisms for HVC production, processing, and storage involving private sector and/or public-private partnerships endorsed by the Ministry of Finance (by December 2016)</p> <p>A plan to increase the capacity of relevant agencies for new financing mechanisms developed and implemented (by December 2016)</p>	<p>TA's M&amp;E reports to MAWR</p>	<p><b>Assumption</b> The government supports the private sector's involvement in agricultural mechanization</p> <p><b>Risk</b> Price of fuel rapidly increases</p>
<p>2. Diversified cropping systems improved</p>	<p>Market-demand-driven HVCs that take into account the agro-ecological, transport, and logistics conditions studied in at least two provinces, and the gaps in growing and supplying these HVCs identified (by December 2014)</p> <p>Lucrative and sustainable crop-</p>		<p><b>Assumption</b> Local governments support the reduction of cotton areas</p> <p><b>Risk</b> Frequency of extreme climate events increases</p>

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks														
	<p>diversified farming systems pilot-tested, one in cotton–wheat area and one in cotton-free area (by June 2016)</p> <p>Report on economics of diversified farming systems (including mechanized cotton–wheat–HVC farming) presented and endorsed by MAWR for publication (by August 2016)</p> <p>Package of policy, action plan, and institutional arrangements for crop diversification endorsed by MAWR (by 30 August 2016).</p>		HVC prices move erratically														
<p><b>Activities with Milestones</b></p> <p>1.1 Recruit and field consultants (by 31 May 2014)</p> <p>1.2 Conduct gap analysis of current financing and institutional arrangements (by December 2014)</p> <p>1.3 Conduct gap analysis of farmers' financial and technical capacity, and the farming system's suitability for the recommended agricultural machinery (by December 2014)</p> <p>1.4 Research international good practices of financing and institutional (private, public–private) mechanisms for mechanization and crop diversification, including risk management instruments such as, but not limited to, value-chain financing, repurchase agreement, trade receivables finance, trader finance, warehouse receipts, commodity finance, to determine suitable options for Uzbekistan (by December 2014)</p> <p>1.5 Conduct scenario analysis of various financing and institutional mechanisms (by December 2015)</p> <p>1.6 Conduct training on financing arrangements and highlight areas for potential PPP or private sector investment (by December 2016)</p> <p>1.7 Prepare a concept for investing in agricultural mechanization (by December 2016)</p> <p>1.8 Make recommendations to the government (by December 2016)</p> <p>2.1 Recommend HVCs that meet market demand and suit soil and transport conditions in two provinces (by July 2014)</p> <p>2.2 Conduct gap analysis of HVC farming (by July 2014)</p> <p>2.3 Pilot and demonstration works on mechanized diversified farming systems to confirm feasibility (from 1 June 2014 to 30 June 2016)</p> <p>2.4 Study economics of cotton mechanization and crop diversification—including land, water, energy, and labor efficiencies—on demonstration farms (from June 2014 to 30 June 2016)</p> <p>2.5 Submit package of policy, action plan, and institutional arrangements for mechanized crop diversification to MAWR (by 30 September 2016)</p> <p>2.6 Present a concept for investing in crop diversification (by December 2016)</p>		<p><b>Inputs</b></p> <p><b>ADB: \$1,000,000 (TASF-other sources)</b></p> <table border="1" data-bbox="1005 835 1442 1213"> <thead> <tr> <th data-bbox="1005 835 1133 869">Item</th> <th data-bbox="1279 835 1442 869">Amount (\$)</th> </tr> </thead> <tbody> <tr> <td data-bbox="1005 875 1133 909">Consultants</td> <td data-bbox="1344 875 1442 909">639,000</td> </tr> <tr> <td data-bbox="1005 915 1133 978">Demonstration and field services</td> <td data-bbox="1360 915 1442 978">75,000</td> </tr> <tr> <td data-bbox="1005 984 1133 1047">Training and workshops</td> <td data-bbox="1360 984 1442 1047">75,000</td> </tr> <tr> <td data-bbox="1005 1054 1133 1087">Surveys and studies</td> <td data-bbox="1360 1054 1442 1087">75,000</td> </tr> <tr> <td data-bbox="1005 1094 1133 1157">Miscellaneous administration and support costs</td> <td data-bbox="1360 1094 1442 1157">36,000</td> </tr> <tr> <td data-bbox="1005 1163 1133 1197">Contingencies</td> <td data-bbox="1344 1163 1442 1197">100,000</td> </tr> </tbody> </table> <p>Note: The government will provide counterpart support in the form of counterpart staff and their domestic transport, office accommodation and utilities in Tashkent and two provinces, logistical support during field visits, data and reports as needed, workshop facilitation, secretarial assistance, the use of agricultural machinery procured and to be procured under the Land Improvement Project, and other in-kind contributions.</p>		Item	Amount (\$)	Consultants	639,000	Demonstration and field services	75,000	Training and workshops	75,000	Surveys and studies	75,000	Miscellaneous administration and support costs	36,000	Contingencies	100,000
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ADB = Asian Development Bank, COBP = country operations business plan, CPS = country partnership strategy, HVC = high-value crop, MAWR = Ministry of Agriculture and Water Resources, M&E = monitoring and evaluation, PPP = public–private partnership, TA = technical assistance, TASF = Technical Assistance Special Fund.

Source: Asian Development Bank

**COST ESTIMATES AND FINANCING PLAN**

(\$)

<b>Item</b>	<b>Amount</b>
<b>Asian Development Bank<sup>a</sup></b>	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	350,000
ii. National consultants	234,000
b. International and local travel	50,000
c. Reports, translation, and communications	5,000
2. Demonstration and field services <sup>b</sup>	75,000
3. Training and workshops <sup>c</sup>	75,000
4. Surveys and studies	75,000
5. Miscellaneous administration and support costs <sup>d</sup>	36,000
6. Contingencies	100,000
<b>Total</b>	<b>1,000,000</b>

Note: The technical assistance (TA) is estimated to cost \$1,200,000, of which contributions from the Asian Development Bank are presented in the table above. The government will provide counterpart support in the form of counterpart staff and their domestic transport, office accommodation and utilities in Tashkent and two provinces, logistical support during field visits, data and reports as needed, workshop facilitation, secretarial assistance, the use of agricultural machinery procured and to be procured under the Land Improvement Project, and other in-kind contributions. The value of the government's contribution is estimated to account for 16.67% 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> Including, for example, land preparation, field trials, cross-site visits, farmer field days.

<sup>c</sup> Including translation and interpretation costs.

<sup>d</sup> Including, for example, field and office supporting staff, office supplies, stationaries.

Source: Asian Development Bank estimates.

## OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

1. The technical assistance (TA) will require 14 person-months of international consulting services and 39 person-months of national consulting services. The consultants will be recruited through a firm using quality- and cost-based selection with a quality–cost ratio of 80:20. The consulting firm should have at least 10 years of experience in agricultural development, mechanization, crop diversification, and rural finance, with proven satisfactory project and TA experience in Central Asia, particularly in Uzbekistan. The consultant team will need to submit (i) an inception report within 2 months of fielding, (ii) quarterly progress reports, (iii) draft final report by October 2016, and (iv) final report acceptable to the Asian Development Bank (ADB) by December 2016. For each report, the consultant team needs to submit three copies each to ADB and the government, in both English and Russian.

1. **Agricultural development specialist and team leader** (international, 7 person-months, intermittent)
2. The international agricultural development specialist will
  - (i) provide overall team leadership for supervision and coordination of activities of the consultants, including briefing consultants on their arrival and jointly formulating individual work plans consistent with those of the TA, and reporting to ADB and the government;
  - (ii) advise ADB and the government on TA planning and implementation issues, and deal with the issues, and determine priorities and management of TA resources;
  - (iii) oversee the studies (on the basis of international good practices) on market development, financing, and institutional mechanisms for sustainable agricultural mechanization; analyze agriculture-related policies; and, in consultation with major stakeholders, develop a package of recommendations for the process of mechanization of diversified cropping systems and a strategy for sustainable farming systems;
  - (iv) advise the agricultural engineers on mechanization of farming systems, i.e., row crop mechanization, and explore partnerships with private sector providers of agribusiness machinery for pilot-testing;
  - (v) in consultation with the government and private agribusiness machinery partners, develop a 3-year plan for pilot-testing on the demonstration farms (a) a cotton–wheat–high-value crop (HVC) farming system and (b) a HVC system in cotton-free areas, ensuring synergy in the provision of farm machinery and agronomic management services by the private agribusiness partner and relevant government agencies, and sustainability with reference to the high water table and salinity situation;
  - (vi) coordinate with ADB's ongoing Land Improvement Project and Amu Bukhara Irrigation System Rehabilitation Project to ensure implementation and expansion of sustainable mechanized farming systems on the demonstration farms of these projects;
  - (vii) coordinate with the private agribusiness partner in developing a tool kit of good practices for sustainable cotton–wheat–HVC farming;
  - (viii) ensure active participation and engagement of other machinery and agronomic service providers in the agricultural mechanization and crop diversification;
  - (ix) on the basis of (a) the good practices evolving on the demonstration farms; (b) the studies conducted on market development, financing, and institutional mechanisms for sustainable agricultural mechanization; and (c) analysis of

- agriculture-related policies, develop a package of recommendations and a plan for mechanizing diversified and sustainable cropping systems; and
- (x) lead the consultant team in the preparation of, consultation on, and finalization of a concept for investing in mechanization and crop diversification.

3. The international agricultural development specialist will have at least a master's degree in agricultural economics or agriculture, with strong knowledge on integrated farming systems that are suitable in arid situations, and preferably on cotton–wheat–HVC farming. The consultant should have at least 15 years of experience in project development on agriculture, agribusiness, sustainable resource management, agricultural mechanization, and food value chains. The consultant should be familiar with ADB project implementation and management procedures, have previous satisfactory experience in leadership, and have relevant work experience in the Central Asia region.

## **2. Agriculture specialist and deputy team leader** (national, 20 person-months)

4. The national agriculture specialist will
- (i) assist the team leader in the supervision and coordination of activities of the consultants and of the demonstration farms, advising ADB and the government on TA planning and implementation issues, and dealing with the issues;
  - (ii) with the agriculture and marketing economist, analyze constraints and opportunities to growing and supplying HVCs, and name potential HVCs that meet market demand, taking into account the agro-ecological, transport, and logistics conditions in Uzbekistan's major provinces;
  - (iii) study and recommend how to adopt certain HVCs in different regions given their weather and soil conditions;
  - (iv) oversee the fieldwork on the demonstration farms: introducing and demonstrating the most important agronomic practices and crop management, such as but not limited to laser leveling of fields; deep tillage during primary ground preparation; permanent beds and minimum tillage; use of high-quality treated seed; temperature-based timing for planting; optimal water allocation and use; pre-plant application of nitrogen and phosphorus; efficient use of labor and mechanization during cultivation and harvesting; timely insect control; and correct preparation of the crop for mechanical harvesting in a cotton–wheat–HVC system;
  - (v) organize and supervise the capacity building workshops and field visits for farmers outside the demonstration farms and for pertinent technical staff of the Ministry of Agriculture and Water Resources (MAWR) on good agronomic management practices (e.g., better cotton initiatives) and use of machinery and implements for cotton–wheat–HVC farming systems;
  - (vi) provide technical support and data to the research team in studying the socioeconomic and environmental impacts of agriculture mechanization and crop diversification; and
  - (vii) contribute to the preparation of, consultation on, and finalization of a concept for investing in agricultural mechanization and crop diversification.

5. The national agriculture specialist will have at least a master's degree with specialization in horticulture, agricultural science, or agronomy. The consultant should have at least 10 years of experience in horticultural development and farm production.

## **3. Agricultural financing specialist** (international, 5 person-months)

6. The international agricultural financing specialist will

- (i) identify international good practices of alternative financing, and institutional arrangements for the acquisition, lease, credit line or other hire–purchase modalities, as well as market development for farm machinery and equipment that suits sustainable farming systems;
- (ii) based on the review of current practices of financing farm machinery and equipment, and of the economic-political environment, recommend to the government various suitable financing and institutional arrangements that will facilitate farmers' access to farm machinery and equipment that is suitable for sustainable farming systems;
- (iii) recommend to the government the financing and institutional processes required to develop a market for such agricultural machinery and equipment; and
- (iv) contribute to the preparation of, consultation on, and finalization of a concept for investing in agricultural mechanization and crop diversification, which will include a credit line.

7. The international agricultural financing specialist should have at least a master's degree in a relevant field with at least 15 years of experience in financing and institutional arrangements as well as market development for agricultural machinery and equipment that suits sustainable farming systems.

**4. Agricultural financing specialist (national, 8 person-months)**

8. The national agricultural financing specialist will
- (i) review the current financing and institutional arrangements and associated regulations for developing an agricultural machinery market in Uzbekistan;
  - (ii) assess market supply and demand for agricultural machinery, equipment, and other farm implements in the country;
  - (iii) identify the constraints and issues with access to suitable agricultural machinery, equipment, and implements by farmers and farmer groups;
  - (iv) with the international agricultural financing expert, assess alternative financing and institutional arrangements for purchasing agricultural machinery and other equipment and on selling them to farmers that ensure sustainable farming systems; and
  - (v) contribute to the preparation of, consultation on, and finalization of a concept for investing in agricultural mechanization and crop diversification.

9. The national agricultural financing specialist should have at least a master's degree in agricultural finance or relevant field, with at least 10 years of experience in financing and institutional arrangements as well as market development for agricultural machinery and equipment.

**5. Agriculture and marketing economist (national, 5 person-months)**

10. The agriculture and marketing economist will
- (i) conduct an initial and detailed review and analysis of the current marketing systems in Bukhara, Uzbekistan, for cotton–wheat–HVC farming products. The review should include the current status in meeting domestic and international quality requirements, demand potential for the TA project's focus crops, and the availability of timely and suitable agricultural marketing information to farmers (men and women);
  - (ii) carry out value-chain analysis of the main HVCs being demonstrated by the TA, including gaps found in the chain, and advise on the forward and backward links

- that may be developed to the benefit of the main beneficiaries (farmers and their groups) considering the specific needs of and potentials for women;
- (iii) conduct farm budget analysis with demonstration farmers to assess the economic and financial viability of adopting the TA's proposed activities;
  - (iv) analyze potential negative impacts from mechanization on wages and employment for low-income population;
  - (v) lead the baseline assessment at TA inception, and outcome evaluation at TA completion;
  - (vi) assist the team leader in the conduct of policy dialogues with the government and other stakeholders on how to ensure a more market-orientated agriculture sector; and
  - (vii) contribute to the preparation of, consultation on, and finalization of a concept for investing in agricultural mechanization and crop diversification.

11. The specialist should hold a master's degree in agricultural development, economics, or marketing and have at least 10 years of experience.

**6. Capacity development specialist** (international, 1 person-month)

12. The capacity development specialist will
- (i) assess the capacity building needs of farmers, technical staff at MAWR, small and medium agribusinesses, farmers' groups and water users' associations;
  - (ii) work jointly with the team leader and the agribusiness partner in designing the capacity building training plan and workshops for the TA project's implementation period;
  - (iii) develop the evaluation assessment reports and the proper modality for these training sessions, and
  - (iv) establish the appropriate learning tours and resource requirements.

13. The specialist should have at least a master's degree in the conduct of workshops on sustainable farming systems, and have at least 10 years of work experience in developing and implementing capacity-development-related activities.

**7. Social development specialist** (national, 3 person-months)

14. The social development specialist will
- (i) conduct focus group discussions and consultations with stakeholders, local and international nongovernment organizations, the International Labour Organization, and the government on the proposals for investment in agricultural mechanization and crop diversification;
  - (ii) monitor social risks associated with works related to cotton farming, and advise on mitigation measures;
  - (iii) prepare the initial poverty and social analysis for the proposals on investment in agricultural mechanization and crop diversification; and
  - (iv) recommend concrete measures for monitoring the commitments to eliminate forced labor, in coordination with the International Labour Organization, as well as the implementation of plans to reduce land area devoted to cotton and the expansion of crop diversification; these measures shall be incorporated in the proposals for investment in agricultural mechanization and crop diversification.

15. The specialist should have at least a master's degree in social science and have at least 10 years of work experience in social assessment, community consultations and engagement, and social risk mitigation.



**8. Unallocated** (international, 1 person-month; national, 3 person-months)

16. Subject to emerging needs during TA implementation, expertise may be needed in agronomics, agricultural engineering, public–private partnerships and value-chain development, and monitoring and evaluation.