



Report and Recommendation of the President to the Board of Directors

Project Number: 44458-013
August 2013

Proposed Loans Republic of Uzbekistan: Amu Bukhara Irrigation System Rehabilitation Project

CURRENCY EQUIVALENTS

(as of 1 August 2013)

| | | |
|---------------|---|-------------|
| Currency unit | – | sum (SUM) |
| SUM1.00 | = | \$0.00048 |
| \$1.00 | = | SUM2,073.97 |

ABBREVIATIONS

| | | |
|-------|---|---|
| ABIS | – | Amu Bukhara Irrigation System |
| ABISA | – | Amu Bukhara Irrigation System Authority |
| ADB | – | Asian Development Bank |
| BISA | – | basin irrigation system administration |
| CDM | – | Clean Development Mechanism |
| EMP | – | environmental management plan |
| GHG | – | greenhouse gas |
| ha | – | hectare |
| I&D | – | irrigation and drainage |
| IDC | – | interest during construction |
| IEE | – | initial environmental examination |
| ISA | – | Irrigation System Administration |
| JICA | – | Japan International Cooperation Agency |
| M&R | – | modernization and rehabilitation |
| MAWR | – | Ministry of Agriculture and Water Resources |
| O&M | – | operation and maintenance |
| OCR | – | ordinary capital resources |
| WCA | – | water consumers' association |

NOTE

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

| | |
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PROJECT AT A GLANCE

| | | | | | |
|--|--|--|--|---|------|
| 1. Project Name: Amu Bukhara Irrigation System Rehabilitation | | | | 2. Project Number: 44458-013 | |
| 3. Country: Uzbekistan | | 4. Department/Division: Central and West Asia Department/Environment, Natural Resources & Agriculture Division | | | |
| 5. Sector Classification: | | | | | |
| | | Sectors | Primary | Subsectors | |
| | | Agriculture and natural resources | ✓ | Irrigation, drainage, and flood protection | |
| 6. Thematic Classification: | | | | | |
| | | Themes | Primary | Subthemes | |
| | | Economic growth | ✓ | Promoting economic efficiency and enabling business environment | |
| 6a. Climate Change Impact | | | 6b. Gender Mainstreaming | | |
| Adaptation | | Medium | Gender equity theme (GEN) | | |
| Mitigation | | Medium | Effective gender mainstreaming (EGM) | | |
| | | | Some gender elements (SGE) | | ✓ |
| | | | No gender elements (NGE) | | |
| 7. Targeting Classification: | | | 8. Location Impact: | | |
| General Intervention | Targeted Intervention | | | National | Low |
| | Geographic dimensions of inclusive growth | Millennium development goals | Income poverty at household level | Rural | High |
| ✓ | | | | | |
| 9. Project Risk Categorization: Complex | | | | | |
| 10. Safeguards Categorization: | | | | | |
| | | Environment | B | | |
| | | Involuntary resettlement | C | | |
| | | Indigenous peoples | C | | |
| 11. ADB Financing: | | | | | |
| Sovereign/Nonsovereign | | Modality | Source | Amount (\$ million) | |
| Sovereign | | Project loan | Ordinary capital resources | 174.0 | |
| Sovereign | | Project loan | Asian Development Fund | 46.0 | |
| Total | | | | 220.0 | |
| 12. Cofinancing: | | | | | |
| Financier | | Category | Amount (\$ million) | Administration Type | |
| Japan International Cooperation Agency | | Loan | 100.0 | Parallel financing with full administration by JICA | |
| Total | | | 100.0 | | |
| 13. Counterpart Financing: | | | | | |
| | | Source | Amount (\$ million) | | |
| | | Government | 60.0 | | |
| | | Total | 60.0 | | |
| 14. Aid Effectiveness: | | | | | |
| | | Parallel project implementation unit | No | | |
| | | Program-based approach | No | | |

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on two proposed loans to the Republic of Uzbekistan for the Amu Bukhara Irrigation System (ABIS) Rehabilitation Project.¹

2. The proposed project is located in Bukhara Province and two districts in Navoi Province in the central part of Uzbekistan. The ABIS command area of 315,000 hectares (ha) had a population of 1.8 million in 2012. The project will address irrigated agriculture and water resources management issues in the main command area of 250,000 ha in the ABIS.²

II. THE PROJECT

A. Rationale

3. **Sector overview.** Irrigated agriculture is a key economic sector in Uzbekistan, accounting for 90% of agricultural production which employs about 27% of country's total labor force, and is the main source of livelihood in rural communities.³ More than 48% of the country's people live in rural areas and depend on irrigated agriculture for their livelihood. To improve rural living standards, the government developed the updated Welfare Improvement Strategy for 2012–2015 in 2013⁴ and launched the Integrated Rural Development Program in 2011.⁵ Enhancing the productivity and sustainability of irrigated agriculture—which covers 4.3 million ha—is a central theme of both strategies. Improving irrigation and drainage (I&D) is critical to better agriculture productivity and competitiveness, and to sound environmental management.

4. The major challenges in the irrigated agriculture sector include insufficient investment. The state's share in I&D expenditures was only about 1% against targeted 8% during 2007–2010, and its share in agricultural investment declined from 4.1% to 3.1% during 2006–2010. Other challenges include (i) reduced agricultural productivity due to low water-use efficiency (about 40% on average); (ii) deteriorating system and on-farm infrastructure that has outlived its economic life; (iii) reliance on pump irrigation—which covers 65% of the irrigated area and consumes 20% of the country's electricity; (iv) low energy efficiency at pump stations, which are of out-dated designs and are in a state of disrepair; (v) poor water management practices at almost every level of the irrigation system; and (vi) high climate sensitivity, illustrated by projections that the country's water deficits will increase by 500% from 2 km³ in 2011 to 11–13 km³ by 2050.⁶ Although production is declining, cotton remains a major agricultural crop. Adherence to international core labor standards is a concern; the government is cooperating with the International Labour Organization (ILO) to address the situation.

5. The Ministry of Agriculture and Water Resources (MAWR) is responsible for the development, operation and maintenance (O&M), and management of water resources,

¹ The design and monitoring framework is in Appendix 1.

² The Asian Development Bank (ADB) provided project preparatory technical assistance: ADB. 2011. *Technical Assistance to the Republic of Uzbekistan for Preparing the Amu Bukhara Irrigation System Rehabilitation Project*. Manila (TA 7917-UZB).

³ Republic of Uzbekistan. 2013. *Overview of the Economic and Social Policy During The Implementation Period of the Welfare Improvement Strategy for 2007-2010*. Tashkent.

⁴ Republic of Uzbekistan. 2013. *Welfare Improvement Strategy of Uzbekistan (2012-2015)*. Tashkent.

⁵ ADB. 2011. *Report and Recommendation of the President to the Board of Directors on a Proposed Multitranchise Financing Facility to Uzbekistan for Housing for Integrated Rural Development Program Investment Project*. Manila.

⁶ World Bank. 2010. *Climate Change and Agriculture—Uzbekistan Country Note*. Washington, DC.

including I&D. Following MAWR's reorganization in 2003, specialized interregional irrigation system authorities, including the Amu Bukhara Irrigation System Authority (ABISA), oversee the water intake from main rivers, such as the Amu Darya, as well as irrigation water supply through main canals and main pump stations, and manage the O&M of these assets. O&M responsibilities for the remaining portion of the overall system were divided between the basin irrigation system administrations (BISAs) at basin water management level, irrigation system administrations (ISAs) at each I&D system level, and water consumers' associations (WCAs) at the farm level. This reorganization has remained in the transition stage, however, and improving the coordination between the BISAs, ISAs, and WCAs and upgrading their technical skills would improve water management efficiency.

6. ADB has helped the government improve agriculture performance through five projects since 2001, including two projects in irrigation. The rehabilitation of Amu Zang Irrigation System will increase the reliability, efficiency, and sustainability of irrigation water supply.⁷ The Water Resources Management Sector Project will sustain and increase agriculture productivity in irrigation system areas in selected river basins.⁸ ADB's positioning in the agriculture and natural resources sector was rated *satisfactory*, and its sector strategy has been considered *highly relevant* to the government's priorities and the sector's needs, which include financing for large physical investments such as I&D rehabilitation, an area in which the government and development partners recognize ADB's expertise.⁹

7. **Amu Bukhara Irrigation System Authority overview.** Population growth of 1.7% a year in the ABIS command area will have a potentially significant impact on the availability of water.¹⁰ About 6,500 farmers depended on agricultural activities in the command area in 2011, with support from 145 WCAs. The ABIS intake channel from the Amu Darya River and about 22 kilometers (km) of the 385-km main canal from the intake channel are located in neighboring Turkmenistan. O&M of these sections is carried out by the MAWR under a bilateral agreement between the two countries.¹¹ The ABIS also provides domestic water supply for an estimated 725,000 people in its command areas.¹² Cotton cultivation has gradually declined in the command area since 1990 due to an increase of winter wheat and more diversified cropping.¹³

8. The ABIS was commissioned in 1965, and its main pump stations covering 250,000 ha have exceeded their design life spans. The system's canals are in poor condition. The supply of irrigation water has become more unreliable due to several major failures of ABIS pumping equipment. Continued breakdowns leading to future declines in pumping capacity seem likely. Expenditures on O&M have been high (SUM154 billion, including electricity costs of SUM122 billion, in 2011).¹⁴ Another factor in the declining water supplies has been the ABIS's inadequate regulatory structures and its inefficient water supply operations and management. This has resulted in low conveyance efficiency (15%–20% of water does not reach farms from main canal intakes, and 15% of water does not reach main canal intakes from the intake of Amu Darya

⁷ ADB. 2004. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Uzbekistan for Amu Zang Irrigation Rehabilitation Project*. Manila.

⁸ ADB. 2008. *Report and Recommendation of the President to the Board of Directors on Proposed Loan to the Republic of Uzbekistan for Water Resources Management Sector Project*. Manila.

⁹ ADB. 2011. *Country Assistance Program Evaluation: Uzbekistan*. Manila.

¹⁰ Bukhara Province. 2012. *Statistic Bulletin*. Bukhara. <http://www.buxoro.uz/>

¹¹ The agreement on cooperation on water economics between Uzbekistan and Turkmenistan was signed in January 1996.

¹² This 2011 figure was obtained from the statistic departments of the Bukhara Province and the Kizil Tepa and Karmana districts.

¹³ The areas planted to cotton have been reduced by 55%–60% since 1990.

¹⁴ ABISA O&M cost report for 2007–2011.

River), which in turn pose a serious threat to agricultural production and to the livelihood of local communities. The aging, energy-inefficient pump stations are also consuming overly large amounts of electricity—equivalent to about 60% of total energy consumption in Bukhara Province—and their greenhouse gas (GHG) emissions in 2011 are estimated to be equivalent to 758,000–935,000 tons of carbon dioxide. Land quality in the ABIS command area is deteriorating, with about 12% of land in the Bukhara Province considered unsuitable for agriculture. This is mainly due to salinity, attributed to overuse of irrigation water under arid climatic and poor drainage conditions, which leads to salt accumulation in the soil.

9. **Climate change impacts.** Climate change is expected to affect the ABIS in several ways. The average demand for crop water is likely to increase by about 9% by 2050. Climate change alone will result in a decrease in average Amu Darya River flow from the current 38 km³ per year to an estimated 22–28 km³/year, and the year-to-year variability of its flow is expected to increase from its historic range of 31%–34% to 36%–44% in 2050. More frequent water deficits will have the potential in some years to pose serious irrigation problems by 2050.¹⁵

10. The government's Welfare Improvement Strategy estimated the investment requirements for the agriculture and irrigation sector during 2012–2015 to be \$2.1 billion and called for foreign investments of \$1.9 billion. The project will help fill the resulting financial gap and support the government's 2011 Integrated Rural Development Program, which prioritized improvement in water management, higher productivity from water use, and the rehabilitation of irrigation systems. The project is consistent with the priorities of the ADB's country partnership strategy for 2012–2016, which recommends that ADB provide new assistance for rehabilitation of major irrigation systems to be more energy-efficient and climate-resilient.¹⁶ The strategy also recommends ADB's support to the improvements in climate-adaptive on-farm water management and the productivity of water resources.

B. Impact and Outcome

11. The expected impact of the project is sustained economic and social welfare improvement in communities dependent upon the ABIS. The expected outcome is a sustainable and reliable water supply in the ABIS command area.

C. Outputs

12. **Output 1: One new pump station built and four existing ones modernized and rehabilitated.** This output includes (i) the replacement of Khamza 1 pump station and its auxiliary pump station with a new Khamza 1 pump station, and (ii) modernization and rehabilitation (M&R) of the Kuyu Mazar, Khamza 2, and Kizil Tepa and its auxiliary pump stations. The benefits will be (i) reduced energy consumption, (ii) sustained and reliable water supply without operational and system failures, and (iii) a reduction of GHG emissions by 23%.

13. **Output 2: Conveyance efficiency in the ABIS main canal increased.** This will be achieved by (i) the M&R of 22 key regulatory and/or diversion structures, and (ii) installation of water measurement gauges and wireless radio communication systems along the ABIS main canal in Uzbekistan. The M&R of these structures and the modernized irrigation system management will reduce inefficient water discharge from the main canal.

¹⁵ Centre of Hydrometeorological Service of the Republic of Uzbekistan. 2008. *Second National Communication of the Republic of Uzbekistan under the United Nations Framework Convention on Climate Change*. Tashkent.

¹⁶ ADB. 2012. *Country Partnership Strategy: Uzbekistan, 2012–2016*. Manila.

14. **Output 3: The capacity of BISA, ISAs, WCAs, and farmers to adapt to climate change increased.** This output will be delivered through (i) M&R of inter- and on-farm canals and regulation structures in three selected areas; (ii) introduction of climate-adaptive agronomic practices, cropping patterns, and water-saving irrigation technologies in demonstration farms in three selected areas; (iii) the development of a modernized, climate-adaptive water operation and management plan to increase water productivity based on a detailed water balance assessment, and (iv) capacity development of the BISA, three ISAs, and three WCAs in Bukhara Province.¹⁷ These measures will also support the government strategy to diversify crops and ensure food security in the project area.

15. **Output 4: Project and ABIS managed efficiently.** The activities for achieving this output will comprise project management, institutional, and operational support. The project management support will include (i) implementation of safeguards requirements, and (ii) project supervision, procurement, and financial management. The project will also strengthen institutional and human capacity, ABIS operations, and management in ABISA. A modernized plan will be adopted so that energy and water are used efficiently in the operation and management of pump stations and main canals. Capacity building will also be provided for the ABISA to integrate GHG monitoring-reporting-verification systems. To augment O&M financing, the commercialization of carbon credits will be pursued through the Clean Development Mechanism or other mechanisms.

16. In addition, drainage channels at inter-farm and on-farm levels that are in poor condition will be rehabilitated by the government's Amelioration Fund¹⁸ and the ongoing ADB-financed Land Improvement Project to reduce soil salinity in the ABIS command area.¹⁹

D. Investment and Financing Plans

17. The project is estimated to cost \$380 million (Table 1).

Table 1: Project Investment Plan
(\$ million)

| Item | Amount ^a |
|---|---------------------|
| A. Base Cost^b | |
| 1. Output 1: One new pump station built and four existing ones modernized and rehabilitated | 285.1 |
| 2. Output 2: Conveyance efficiency in the ABIS main canal increased | 8.7 |
| 3. Output 3: The capacity of BISA, ISAs, WCAs, and farmers to adapt to climate change increased | 2.0 |
| 4. Output 4: Project and ABIS managed efficiently | 12.7 |
| Subtotal (A) | 308.5 |
| B. Contingencies^c | 55.0 |
| C. Financing Charges During Implementation^d | 16.5 |
| Total (A+B+C) | 380.0 |

ABIS = Amu Bukhara Irrigation System, BISA = basin irrigation system administration, ISA = irrigation system administration, WCA = water consumers' association.

^a Includes taxes and duties of \$41.5 million, including value-added tax and customs duties exempted by the

¹⁷ The ABIS command area is covered by five ISAs—four in Bukhara Province and one in Navoi Province—as well as 145 WCAs.

¹⁸ In 2007, the government established the Amelioration Fund to improve drainage conditions and address waterlogging and soil salinity problems.

¹⁹ ADB. 2007. *Report and Recommendation of the President to the Board of Directors on Proposed Loan to the Republic of Uzbekistan for Land Improvement Project*. Manila.

government, cost of environmental and social mitigation of \$2.0 million, and financing charges during implementation of total \$16.5 million, both of which will be financed by the government.

^b In late 2012 prices.

^c Physical contingencies computed at 8% for civil works; 10% for equipment; and 8% for consulting services, including necessary field research and development, training, surveys, and studies. Price contingencies computed at an average of 2% on foreign exchange costs and 10% on local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

^d Includes interest and commitment charges to be financed by the government. Interest during construction (IDC) for ADB's ordinary capital resources (OCR) loan has been computed at the 5-year forward London interbank offered rate plus a spread of 0.4% and maturity premium of 0.2% per year. Commitment charges for ADB's OCR loan are 0.15% per year to be charged on the undisbursed loan amount. IDC for ADB Asian Development Fund loan has been computed at 2.0% per year. IDC for the scope of works to be financed by Japan International Cooperation Agency (JICA) loan has been computed at 1.4%. The front-end fees for JICA loan are 0.2% of its loan amount. IDC and the front-end fees for JICA's loan will be financed by the government.

Source: Asian Development Bank estimates.

18. The financing plan for the project is shown in Table 2.

Table 2: Financing Plan

| Source | Amount (\$ million) | Share of Total (%) |
|--|---------------------|--------------------|
| Asian Development Bank | 220.0 | 57.9 |
| 1. Ordinary capital resources (loan) | 174.0 | |
| 2. Special Funds resources (loan) | 46.0 | |
| Cofinancier | | |
| Japan International Cooperation Agency | 100.0 | 26.3 |
| Government ^a | 60.0 ^a | 15.8 |
| Total | 380.0 | 100.0 |

^a Includes taxes and duties of \$41.5 million, including value-added tax and customs duties exempted by the government, the cost of environmental and social mitigation of \$2.0 million, and financing charges during implementation of \$16.5 million.

Source: Asian Development Bank estimates.

19. The government has requested two loans from ADB: (i) \$174 million from ADB's ordinary capital resources (OCR), and (ii) a loan in various currencies equivalent to SDR 30,535,000 (\$46 million) from ADB's Special Funds resources (the Asian Development Fund) to help finance the project. The OCR loan will have a 25-year term, including a grace period of 7 years, a straight-line repayment method, an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, a commitment charge of 0.15% per year, and such other terms and conditions set forth in the draft loan agreements. Based on this repayment method, the average loan maturity is 16.25 years, and the maturity premium payable to ADB is 0.20% per annum. The government has provided ADB with (i) the reasons for its decision to borrow under ADB's LIBOR-based lending facility based on these terms and conditions, and (ii) an undertaking that these choices were its own independent decision and not made in reliance on any communication or advice from ADB. The Asian Development Fund loan will have a 25-year term, including a grace period of 5 years, an interest rate of 2.0% per annum during the grace period and thereafter, and such other terms and conditions set forth in the draft loan agreements.

20. The government has also requested parallel financing from the Japan International Cooperation Agency (JICA) of up to ¥100 billion (about \$100 million) to finance the M&R of Khamza 2 and Kizil-Tepa auxiliary pump stations under output 1 of the project and the cost of consulting services to administer and monitor this M&R at these pump stations under output 4 of

the project. The financing and administration of these activities will be fully carried out by JICA in accordance with its relevant policies, procedures and guidelines.²⁰

21. The government will finance taxes and duties, including value-added tax and customs duties in the form of exemption; financing charges during implementation; and the implementation of the environment management plan as required, all of which are estimated in the amount of \$60.0 million.

E. Implementation Arrangements

22. The implementation arrangements are summarized in Table 3 and described in detail in the project administration manual.²¹

Table 3: Implementation Arrangements

| Aspects | Arrangements | | |
|-------------------------------------|---|---|----------------------------|
| Implementation period | March 2014–February 2020 | | |
| Estimated loan closing date | 29 February 2020 | | |
| Management | | | |
| (i) Executing agency | MAWR | | |
| (ii) Project management office | In MAWR in Tashkent | | |
| (iii) Project implementation office | In ABISA in Bukhara | | |
| Procurement ^a | ICB | 4 contracts | \$170 million ^b |
| | NCB | 3–5 contracts | \$0.7 million ^b |
| | Shopping | 10–15 contracts | \$0.3 million ^b |
| Consulting services ^a | QCBS | 173 person-months international 535 person-months national | \$6.5 million ^b |
| | LCS | 7 contracts for audit | \$13,000/contract |
| Advance contracting | Advance contracting is expected to recruit a project implementation consultant and to procure the turnkey contracts. | | |
| Disbursement | The loan proceeds will be disbursed in accordance with ADB's <i>Loan Disbursement Handbook</i> (2012, as amended from time to time) and detailed arrangements agreed upon between the government and ADB. | | |

ABISA = Amu Bukhara Irrigation System Authority, ICB = international competitive bidding, LCS = least-cost selection, MAWR = Ministry of Agriculture and Water Resources, NCB = national competitive bidding, QCBS = quality- and cost-based selection.

^a These do not cover the scope to be financed and administered by the Japan International Cooperation Agency.

^b These estimated costs do not include contingencies.

Source: Asian Development Bank estimates.

III. DUE DILIGENCE

A. Technical

23. The project's technical viability and sustainability has been assessed as part of the due diligence exercise. The need to construct a new Khamza 1 pump station was justified by the consultant's survey and assessment in 2012 that concluded insufficient seismic capacity of the existing Khamza 1 pump station. Selection of the sections that will undergo M&R at the other pump stations under the project followed international best practices, as did the assessments of the potential GHG emission reductions and the energy efficiency of each pump station. The need for further O&M by the government of the sections of the ABIS that lie in Turkmenistan

²⁰ ADB and JICA will enter into an agreement to address issues arising from cofinancing of this project, including environmental and social safeguard aspects.

²¹ Project Administration Manual (accessible from the list of linked documents in Appendix 2).

was confirmed by a special field survey. Climate change risk was assessed through the use of the latest modeling results and projections to propose adaptation options.

B. Economic and Financial

24. **Economic analysis.** Recurrent costs and benefits schedules were prepared for the without- and with-project situations. Four separate elements to analyze economic viability were identified: (i) energy costs; (ii) costs for the maintenance of pump stations; (iii) other O&M costs for ABIS; and (iv) periodic maintenance costs (under the with-project scenario only).

25. In the without-project situation, the following was assessed as a base case: the operating capability of the pumps would gradually decline without the project, but the pumps would keep running. In this case, it was assumed that current maintenance costs would increase over time. A matching decline in cropped area resulting from a decrease in water supply from the diminishing pump capacity was also estimated and, by applying crop budgets in economic prices, a schedule of overall net income for the project area was calculated. In the with-project situation, the analysis assumed that the overall net income in the project area would remain the same as at present. The maintenance costs under the with-project scenario would be higher than those without the project due to the increased servicing needs of the modern equipment to be provided by the project, which is considerably more sophisticated than what is currently in use. In the with-project scenario, however, power consumption is significantly reduced by the improved pumping efficiency provided by the new equipment. The resulting gains in reduced power costs more than offset the higher maintenance costs.

26. The analysis found the economic internal rate of return to be 14%, indicating that the project is economically viable. Results of the sensitivity analysis confirmed the robustness of the project's economic viability.

27. **Financial analysis.** The results of a farm budget analysis indicated that regardless of farm size, the without-project scenario would decrease the total ABIS service areas by up to 20%.²² Under the with-project scenario, the entire area would continue to receive ABIS service. The financial sustainability of ABIS O&M will be improved under the with-project scenario by the project's (i) introduction of an ABIS operation and management plan to use water and energy more efficiently, as well as its capacity building for ABIS staff, (ii) reduction of power consumption by the replacement of old pumps and motors with energy-efficient ones, (iii) aim to trade carbon credits to complement O&M expenditure, and (iv) ensuring that the MAWR provides the ABIS with fully required O&M funds, including an increase to cover O&M expenditures for ABIS sections in Turkmenistan. Administration budgets for both ABISA and the BISA have been fully financed by the MAWR.

C. Governance

28. **Financial and procurement management.** The assessment found that the MAWR's financial, accounting, and procurement systems, including management, reporting, and monitoring capacity, are not adequate enough to manage the project directly. The accounts of projects fully funded by the MAWR have not been audited by independent external auditors, but through procedural audits required by the Ministry of Finance. A regular and thorough external annual audit will be carried out on the project accounts each year. The project will require a project management office (PMO) staffed with experienced personnel. This is because the

²² An analysis was conducted in 2012 for farms of 50 ha, 100 ha, and 200 ha in size.

MAWR staff still lack sufficient financial and procurement management capacity and experience to manage large-scale investment projects directly or to prepare bidding documents and evaluate bids for relatively large contracts that require a complex bidding process. In addition, the PMO will ensure the compliance of accounting policy and procedures with both national and ADB regulations.

29. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government and the MAWR. The specific policy requirements and supplementary measures are described in the project administration manual.²³

D. Poverty and Social

30. **Household and poverty reduction impacts.** The primary beneficiaries of the project will be the rural communities and the farmers in the ABIS area. The reliable and sustainable water supply under the project, including drinking water for 725,000 people, will help to sustain household incomes and food security and reduce poverty. The core cause of low domestic agricultural production is inadequate access to irrigation water. About 93% of respondents in survey area reported using water from rivers, canals, and ditches to irrigate their land, and about 87% said that a lack of irrigation water dramatically affects crop production on their plots.²⁴ Every fourth household surveyed did not use its land for crop production at all due to an insufficient and/or unreliable supply of water for irrigation, and 14.5% of respondents said this was due to too little water in the ABIS canals. Although 16% of the national population was living below poverty line in 2011, the figure across project area respondent households was 49%. Poor families were more severely affected by irrigation water shortages than non-poor ones. About 29% of the water in the project area is required for cotton farming.²⁵ There are concerns about core labor standards, particularly during the harvest. ADB is committed to supporting adherence to the core labor standards. Suitable loan covenants have been included to ensure such adherence in relation to project activities, and will be monitored during project implementation. ADB will also closely interact with the government, including through policy dialogue, the ILO, and other institutions on this matter.

31. **Gender impacts.** Women do most of the unpaid domestic work in project area households and have little authority in household decision making. Women are also underrepresented in water management institutions, making up only 9.3% of the employees of ABISA and 10% of the staff of the BISA of Bukhara Province. They are completely absent from management. 53%–68% of employment in agriculture on a full time basis in surveyed areas was women. This is mainly due to the migration of men to neighboring countries to find well-paid jobs. Because women lack representation in the WCAs, those that have a dispute over access to irrigation water must somehow gain the involvement of the National Women's Machinery, a public organization, to pursue their cases.²⁶ Yet project surveys found that 74% of people felt that women play an important role in managing water rationally.

32. To encourage the involvement and representation of women in water management, the project will include interventions to guarantee participation by women in the water resources

²³ Project Administration Manual (accessible from the list of linked documents in Appendix 2).

²⁴ Based on project preparatory technical assistance socioeconomic survey (November 2012 in Bukhara and Romitan districts).

²⁵ Other usage of the water includes vegetable; wheat; fodder; fruit; maize; pre-irrigation/leaching; as well as drinking water.

²⁶ The National Women's Machinery is the women's committee of Uzbekistan, which is registered as a public organization but chaired by the deputy prime minister in charge of women's issues. The women's committee has branches and representatives in all regions.

field. The project will hire at least one female staff member in the project implementation office. It will engage a gender specialist consultant to conduct an information campaign that clearly identifies the important role women play and should play in farming and water management in the ABIS area. The specialist will train women in WCAs to become members of the WCA secretariats and to improve water management services and decision making.

E. Safeguards

33. **Environment (category B).** The initial environmental examination (IEE) was undertaken and an environmental management plan (EMP) was prepared in accordance with ADB's Safeguard Policy Statement (2009). The public, including civil society organizations were adequately consulted. The IEE indicated that most environmental impacts will occur during construction. The MAWR has agreed to implement the EMP and submit regular reports on its implementation. The IEE report, including the EMP, has been published on the ADB website. During project implementation, ADB and JICA will each be responsible for safeguard compliance in their respective project activities.

34. **Indigenous peoples (category C).** The project will not involve or affect any ethnic minority or indigenous people, as defined by ADB's safeguard policy. The poverty and social assessment study showed that no ethnic minority or indigenous peoples were present in the project area.

35. **Involuntary resettlement (category C).** The project will not require land acquisition. The new Khamza pump station will be constructed within areas owned by the ABISA. These areas have been fenced since the establishment of the ABIS in the early 1960s. Since the project is within the existing facilities, the social compliance audit report which confirmed that no land will be acquired for the project with no past and present claims on the land for this existing facilities was prepared and has been disclosed on the ADB website.

F. Risks and Mitigating Measures

36. Major risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.²⁷

Table 4: Summary of Risks and Mitigating Measures

| Risks | Mitigating Measures |
|---|--|
| Improper accounting and auditing may allow the misconduct of project's fund. | A separate accounting policy for the project will be developed following the requirements of ADB and the MOF. The MAWR has not been audited by an external auditor. The project accounts will be audited by independent external auditors in accordance with the International Standards on Auditing, which comply with the requirements of ADB. |
| MAWR's weak capacity may cause misprocurement and consequently delay project implementation. | The MAWR does not have a department responsible for procurement. Staff members who have gained some procurement capacity through their involvement in donor-financed projects still lack the ability to evaluate tenders through international competitive bidding. Project implementation consultant will help the PMO prepare tender documents that meet ADB's requirement, and provide the project staff with trainings in tender evaluation. |
| Insufficient budget allocation for system O&M and low capacity in the ABISA may threaten ABIS sustainability. | The project will (i) improve O&M practices by establishing a water- and energy- efficient ABIS operation and management plan and capacity building programs, (ii) reduce power consumption by replacing old pumps and motors with energy-efficient ones, (iii) trade carbon credits to complement O&M expenditure, and (iv) ensure that the MAWR provides the ABIS with fully required O&M funds, including an increase to cover O&M expenditures for ABIS sections in Turkmenistan. |
| Slow government | The risk of implementation delays arises from the MAWR's slow internal approval |

²⁷ Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

| | |
|--|--|
| approvals could delay tendering, procurement, engagement of consultants, and project implementation. | processes, a lack of cooperation between government agencies, and delayed recruitment of necessary staff. A delay in approval of project implementation consultant by the Ministry of Foreign Economic Relation Investment and Trade has also been identified as a possible risk to timely implementation. Advance contracting to recruit project implementation consultant and to procure the turnkey contracts will reduce these risks. The government has assured ADB of adequate and timely release of counterpart funds. The authority for endorsing procurement decisions including contract variations in the MAWR will be delegated to the project manager. Advanced actions are being taken to establish the PMO and recruit staff. |
|--|--|

ABIS = Amu Bukhara Irrigation System, ADB = Asian Development Bank, MAWR = Ministry of Agriculture and Water Resources, O&M = operation and maintenance, PMO = project management office.

Source: Asian Development Bank.

IV. ASSURANCES AND CONDITIONS

37. The government, the MAWR, and the Ministry of Finance have assured ADB that implementation of the project shall conform to all applicable ADB policies including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement, as described in detail in the project administration manual and loan documents.

38. The government, the MAWR, and Ministry of Finance have agreed with ADB on certain covenants for the project, which are set forth in the loan agreements.

39. The government and the MAWR have agreed with ADB that disbursement of the proceeds of the loans, except for consulting services and project management and monitoring, will be conditional upon (i) establishment by the MAWR of a fully operational organization structure for project implementation to ADB's satisfaction, including a project management office in the MAWR in Tashkent and a project implementation office in ABISA in Bukhara Province, (ii) the appointment of a project manager by the government acceptable to ADB, and (iii) the effectiveness of the loan agreement between the government and JICA.

V. RECOMMENDATION

40. I am satisfied that the proposed loans would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve

- (i) the loan of \$174,000,000 to the Republic of Uzbekistan for the Amu Bukhara Irrigation System Rehabilitation Project, from ADB's ordinary capital resources, with interest to be determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; for a term of 25 years, including a grace period of 7 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan agreement presented to the Board; and
- (ii) the loan in various currencies equivalent to SDR30,535,000 to the Republic of Uzbekistan for the Amu Bukhara Irrigation System Rehabilitation Project, from ADB's Special Funds resources, with an interest charge at the rate of 2.0% per annum during the grace period and thereafter; for a term of 25 years, including a grace period of 5 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan agreement presented to the Board.

Takehiko Nakao
President

7 August 2013

DESIGN AND MONITORING FRAMEWORK

| Design Summary | Performance Targets and Indicators with Baselines | Data Sources and Reporting Mechanisms | Assumptions and Risks |
|---|---|---|---|
| Impact Sustained economic and social welfare improvement in communities dependent upon the ABIS | Average farm incomes of SUM91.6 million in 2012 maintained in 2025 ^a | Province and district statistics | Risk Crop sale prices at the farm level decline significantly. |
| Outcome Sustainable and reliable water supply in the ABIS command area | ABIS main irrigated area of 250,000 ha in 2012 maintained in 2020. Number of drinking water users, 725,000 in 2011, maintained in 2020. | Province and district statistics Province and district statistics | Assumptions Government support for agricultural production and drainage improvement in target areas continues. The bilateral O&M agreement between Uzbekistan and Turkmenistan is maintained. Approval of JICA financing and implementation of the JICA's financed part of the project is timely. Risk Climate change has serious adverse effects in project area. |
| Outputs 1. One new pump station built and four existing ones modernized and rehabilitated | 3.850 km ³ of pumped water ensured by 2020, compared with 4.080 km ³ average during 2006–2011 Energy efficiency (1m ³ /kW) increased from 72% in 2012 to 87% in 2020 Annual GHG emissions reduced by 23% from 0.76 million tCO ₂ e in 2011 to 0.58 million tCO ₂ e in 2020 Carbon credits traded and/or commercialized for \$178,000 a year and used for ABIS O&M before 2020 | M&E and PMO reports M&E and PMO reports M&E and PMO reports GHG MRV reports Climate emission reduction purchase agreement(s) and MAWR budget allocation reports | Assumptions Government financing is allocated and disbursed on time. JICA's financed activities are implemented on time. Risk Carbon credit market prices decline. |
| 2. Conveyance efficiency in the ABIS main canal increased | Water conveyance efficiency increased from 85% in 2012 to 90% by 2020 | M&E and PMO reports | Assumption Government financing is allocated and disbursed on time. |

| Design Summary | Performance Targets and Indicators with Baselines | Data Sources and Reporting Mechanisms | Assumptions and Risks |
|--|--|---|---|
| 3. The capacity of BISA, ISAs, WCAs, and farmers to adapt to climate change increased | <p>Demonstrated climate change resilient agricultural practices and irrigation practices in 3 pilot OFIS areas adopted by 50% of farmers along each OFIS by 2019</p> <p>Climate change adaptive water management and agricultural extension plan covering up to 2040 operated by BISA, ISAs, and WCAs by Q1 2018</p> <p>Women make up an average of 20% of WCA secretariats in selected OFISs by 2020, compared with 0% in 2012.</p> | <p>M&E and PMO reports</p> <p>M&E and PMO reports</p> <p>BISA, M&E, and PMO reports</p> | <p>Assumption Government financing is allocated and disbursed on time.</p> <p>Risks Local governments have low commitment to the relaxation of cotton and wheat production quotas for selected farms.</p> <p>The BISA lacks commitment to adopting the water management plan.</p> |
| 4. Project and ABIS managed efficiently | <p>Project management unit in Tashkent and project implementation office established by Q3 2013.</p> <p>M&E system established by Q4 2013.</p> <p>Water- and energy-efficient ABIS operation and management plan operational by Q1 2016</p> | <p>M&E and PMO reports</p> <p>M&E and PMO reports</p> <p>ABISA report</p> | <p>Assumptions Decision making for project implementation is timely.</p> <p>JICA's financed activities are implemented on time.</p> <p>Risk ABISA has a low commitment to adopting the ABIS operation and management plan.</p> |
| Activities with Milestones | | Inputs | |
| <p>1. One new pump station built and four existing ones modernized and rehabilitated</p> <p>1.1 Complete tender document for turnkey contract of new Khamza pump station by Q2 in 2014</p> <p>1.2 Implement contract for new Khamza pump station by Q1 in 2015</p> <p>1.3 Replace Khamza 1 and its auxiliary pump stations with new Khamza pump station by Q4 2019</p> <p>1.4 Complete tender document for turnkey contract of Khamza 2 pump station by Q2 in 2014</p> <p>1.5 Complete tender document for turnkey contract of Kuyu-Mazar pump station by Q2 in 2014</p> <p>1.6 Complete tender documents for turnkey contract of Kizil-Tepa pump station by Q2 in 2014</p> <p>1.7 Complete tender documents for turnkey contract of Kizil-Tepa auxiliary pump station by Q2 in 2014</p> <p>1.8 Modernize and rehabilitate Khamza 2, Kuyu-Mazar, Kizil-Tepa, and Kizil-Tepa auxiliary pump stations by Q4 in 2019</p> <p>1.9 Submit letters of intent for CDM project development by Q4 2014</p> <p>1.10 Complete carbon project documentation by Q4 2014</p> <p>1.11 Complete carbon project validation and/or submission for CDM registration by Q4 2015</p> <p>1.12 Identify potential carbon credit buyers by Q4 2017</p> | | <p>ADB loans: \$220 million OCR loan: \$174 million ADF loan: \$46 million equivalent</p> <p>Japan International Cooperation Agency (loan): \$100.0 million equivalent</p> <p>Government: \$60.0 million</p> | |

| Activities with Milestones | Inputs |
|---|--------|
| <p>2. Conveyance efficiency in the ABIS main canal increased</p> <p>2.1 Complete detailed design and tender document for packaged single contract of regulatory and/or diversion structures M&R by Q3 in 2016</p> <p>2.2 Implement contract by Q1 in 2017</p> <p>2.3 Modernize and rehabilitate 22 regulatory and/or diversion structures by Q3 2019</p> <p>3. The capacity of BISA, ISAs, WCAs, and farmers to adapt to climate change increased</p> <p>3.1 Complete detailed design and tender document for contract of the first IFIS and OFIS M&R by Q1 in 2015</p> <p>3.2 Start demonstration of climate change adaptation in the first farm by Q4 in 2015</p> <p>3.3 Identify two other pilot areas and demonstration farms by Q3 in 2015</p> <p>3.4 Complete detailed designs and tender documents for contracts of the second and the third IFISs and OFISs M&Rs by Q1 in 2016</p> <p>3.5 Start demonstrations of climate change adaptation in the second and the third farms by Q4 in 2016</p> <p>3.6 Complete water balance assessment by remote sensing and measurements by Q2 in 2017.</p> <p>3.7 Develop climate change adaptive water management and agriculture extension plan by Q4 in 2017</p> <p>4. Project and ABIS managed efficiently</p> <p>4.1 Establish PMO in Tashkent and PIO in ABISA by Q4 2013</p> <p>4.2 Field implementation consultant to support PMO and PIO by Q2 2014</p> <p>4.3 Develop M&E system and contracting M&E by Q3 2014</p> <p>4.4 Oversee and monitor safeguards activities (2014–2020)</p> <p>4.5 Strengthen project management capacity (2014–2020)</p> <p>4.6 Develop water- and energy-efficient ABIS operation and management plan by Q4 in 2015</p> | |

ABIS = Amu Bukhara Irrigation System, ABISA = Amu Bukhara Irrigation System Authority, ADB = Asian Development Bank, ADF = Asian Development Fund, BISA = basin irrigation system administration, CDM = Clean Development Mechanism, GHG = greenhouse gas, ha = hectare, IFIS = inter-farm irrigation system, ISA = irrigation system administration, JICA = Japan International Cooperation Agency, kW = kilowatt, m³ = cubic meter, MAWR = Ministry of Agriculture and Water Resources, M&E = monitoring and evaluation, M&R = modernization and rehabilitation, MRV = monitoring-reporting-verification, OCR = ordinary capital resources, OFIS = on-farm irrigation system, O&M = operation and maintenance, PIO = project implementation office, PMO = project management office, Q = quarter, tCO₂e = tons of carbon dioxide equivalent, WCA = water consumers' association.

^a Average farm income is based on 67 ha (the average farm size).

LIST OF LINKED DOCUMENTS

<http://www.adb.org/Documents/RRPs/?id=44458-013-3>

1. Loan Agreement (Ordinary Operations)
2. Loan Agreement (Special Operations)
3. Sector Assessment (Summary): Agriculture and Natural Resources
4. Project Administration Manual
5. Contribution to the ADB Results Framework
6. Development Coordination
7. Economic and Financial Analysis
8. Country Economic Indicators
9. Summary Poverty Reduction and Social Strategy
10. Initial Environmental Examination
11. Risk Assessment and Risk Management Plan

Supplementary Documents

12. Financial Management Assessment
13. Procurement Capacity Assessment
14. Social Compliance Audit Report