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Report No: PAD329

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT AND
INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 156.9 MILLION
(US\$ 242.5 MILLION EQUIVALENT)

AND A

PROPOSED LOAN

IN THE AMOUNT OF US\$18.29 MILLION

TO THE

REPUBLIC OF UZBEKISTAN

FOR A

SOUTH KARAKALPAKSTAN WATER RESOURCES
MANAGEMENT IMPROVEMENT PROJECT

MAY 14, 2014

Agriculture and Rural Development Unit
Sustainable Development Department
Europe and Central Asia Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective March 31, 2014)

Currency Unit = Uzbekistan Soum (UZS)

2,200 UZS = US\$1

US\$1 = SDR 1.546

GOVERNMENT FISCAL YEAR

January 1 – December 31

BANK FISCAL YEAR

July 1 – June 30

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank	KKGME	Karakalpakstan Hydro-Geological Meliorative Expedition
AF	Additional Financing		
BCM	Billion Cubic Meters	KMAWR	Karakalpakstan Ministry of Agriculture and Water Resources
BVO	Basin Water Organization		
CPS	Country Partnership Strategy	KPCC	Karakalpak Project Coordination Council
CSO	Civil Society Organization	LABAIS	Lower Amu Darya Basin Administration of Irrigation Systems
DA	Designated Account		
DIWIP	Drainage, Irrigation and Wetland Improvement Project	M&E	Monitoring and Evaluation
		MASSCOTE	Mapping System and Services for Canal Operation Techniques
DL	Disbursement Letter		
EIRR	Economic Internal Rate of Return	MAWR	Ministry of Agriculture and Water Resources
EMP	Environmental Management Plan	MCM	Million Cubic Meters
ENPV	Economic Net Present Value	MFERIT	Ministry of Foreign Economic Relations and International Trade
EPP	Emergency Preparedness Plan		
ERR	Economic Rate of Return	MIS	Management Information System
ESAMP	Environmental and Social Assessment and Management Plan	NCB	National Competitive Bidding
		O&M	Operation and Maintenance
ESIA	Environmental and Social Impact Assessment	OP	Operational Policy
		PAN-ISA	Pakhta-Arna-Nayman Irrigation System Administration
FA	Financing Agreement		
FAO	Food and Agricultural Organization Of The United Nations	PAP	Project Affected People
		PDO	Project Development Objective
FBM	Feedback Mechanism	PFI	Participating Financial Institution
FCC	Field Coordination Council	PIU	Project Implementation Unit
FFS	Farmer Field School	PMP	Pest Management Plan
FM	Financial Management	POF	Probability of Failure
FMR	Financial Management Report	POM	Project Operational Manual
FNPV	Financial Net Present Value	PPP	Public Private Partnerships
FVWRMP	Ferghana Valley Water Resources Management Project	QCBS	Quality and Cost Based Selection
		RAP	Resettlement Action Plan
FY	Fiscal Year	RBC	Right Bank Canal
GDP	Gross Domestic Product	RESP-II	Second Rural Enterprise Support Project
GOU	Government of Uzbekistan	RPF	Resettlement Policy Framework
HA	Hectare(s)	SCADA	Supervisory Control And Data Acquisition
HDP	Horticultural Development Project	SDC	Swiss Agency for Development and

I&D	Irrigation and Drainage		Cooperation
IBRD	International Bank for Reconstruction and Development	SKWRMIP	South Karakalpakstan Water Resources Management Improvement Project
ICB	International Competitive Bidding	SOE	Statement of Expenditures
ICR	Implementation Completion Report	TA	Technical Assistance
ICWC	Interstate Commission for Water Coordination	TOR	Terms Of Reference
IDA	International Development Association	TPM	Third Party Monitoring
IFAS	International Fund for Saving the Aral Sea	UNDP	United Nations Development Program
IFC	International Finance Corporation	UNICEF	United Nations Children's Fund
IFR	Interim Financial Reports	UNS	Agency Responsible for Lower Amu Darya Pumping Stations
ILO	International Labor Organization	UZS	Uzbekistan Soum
IPF	Investment Project Financing	VAT	Value-Added Tax
ISF	Irrigation Service Fee	WCA	Water Consumer Association
		WHO	World Health Organization
		WRM	Water Resources Management

Regional Vice President:	Laura Tuck
Country Director:	Saroj Kumar Jha
Country Manager:	Takuya Kamata
Sector Director:	Laszlo Lovei
Sector Manager:	Dina Umali-Deininger
Task Team Leader:	IJsbrand H. de Jong

UZBEKISTAN
South Karakalpakstan Water Resources Management Improvement Project

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PAD DATA SHEET

Uzbekistan

SOUTH KARAKALPAKSTAN WATER RESOURCES MGMT IMPROVEMENT (P127764)

PROJECT APPRAISAL DOCUMENT

EUROPE AND CENTRAL ASIA

ECSAR

Report No.: PAD329

Basic Information			
Project ID P127764	EA Category B - Partial Assessment	Team Leader IJsbrand H. de Jong	
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints []		
	Financial Intermediaries []		
	Series of Projects []		
Project Implementation Start Date 11-Jun-2014	Project Implementation End Date 30-Sep-2020		
Expected Effectiveness Date 8-Dec-2014	Expected Closing Date 30-Sep-2021		
Joint IFC: No			
Sector Manager Dina Umali-Deininger	Sector Director Laszlo Lovei	Country Director Saroj Kumar Jha	Regional Vice President Laura Tuck
Borrower: Ministry of Finance			
Responsible Agency: Ministry of Agriculture and Water Resources			
Contact: Telephone No.:	PIU (998-71) 241-0042	Title: Email:	 piu-diwp@buzton.com
Project Financing Data(in USD Million)			
<input checked="" type="checkbox"/> Loan	<input type="checkbox"/> Grant	<input type="checkbox"/> Guarantee	
<input checked="" type="checkbox"/> Credit	<input type="checkbox"/> IDA Grant	<input type="checkbox"/> Other	
Total Project Cost:	337.43	Total Bank Financing:	260.79
Financing Gap:	0.00		
Financing Source			Amount
BORROWER/RECIPIENT			76.64

International Bank for Reconstruction and Development	18.29
International Development Association (IDA)	242.50
Total	337.43

Expected Disbursements (in USD Million)

Fiscal Year	2015	2016	2017	2018	2019	2020	2021
Annual	32.80	62.75	59.19	61.54	30.43	10.77	3.31
Cumulative	32.80	95.55	154.74	216.28	246.71	257.48	260.79

Proposed Development Objective(s)

The project development objective (PDO) of the South Karakalpakstan Water Resources Management Improvement Project (SKWRMIP) is to restore irrigation and improve water management in the project area in a sustainable and financially efficient manner.

Components

Component Name	Cost (USD Millions)
Modernization of the Irrigation Network	273.85
Modernization of Agriculture	55.43
Project Management, Monitoring and Evaluation	8.10

Institutional Data

Sector Board

Agriculture and Rural Development

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Agriculture, fishing, and forestry	Irrigation and drainage	100	69	32
Total		100		

I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

Themes

Theme (Maximum 5 and total % must equal 100)

Major theme	Theme	%
Environment and natural resources management	Water resource management	70
Rural development	Rural services and infrastructure	20
Public sector governance	Other public sector governance	10
Total		100

Compliance			
Policy			
Does the project depart from the CAS in content or in other significant respects?	Yes []	No [X]	
Does the project require any waivers of Bank policies?	Yes []	No [X]	
Have these been approved by Bank management?	Yes []	No []	
Is approval for any policy waiver sought from the Board?	Yes []	No [X]	
Does the project meet the Regional criteria for readiness for implementation?	Yes [X]	No []	
Safeguard Policies Triggered by the Project	Yes	No	
Environmental Assessment OP/BP 4.01	X		
Natural Habitats OP/BP 4.04	X		
Forests OP/BP 4.36		X	
Pest Management OP 4.09	X		
Physical Cultural Resources OP/BP 4.11		X	
Indigenous Peoples OP/BP 4.10		X	
Involuntary Resettlement OP/BP 4.12	X		
Safety of Dams OP/BP 4.37	X		
Projects on International Waterways OP/BP 7.50	X		
Projects in Disputed Areas OP/BP 7.60		X	
Legal Covenants			
Name	Recurrent	Due Date	Frequency
4.01.(a) Remedy on Project Operational Manual	X		Yearly
Description of Covenant			
The Project Operational Manual has been amended, suspended, repealed or waived without the Association's prior approval.			
Name	Recurrent	Due Date	Frequency
4.01.(b) Remedy on child or forced labor	X		Yearly
Description of Covenant			
The Association has received evidence, that it considers credible, of the use of child or forced labor in connection with the Project activities or within the Project Area.			
Name	Recurrent	Due Date	Frequency
A.1. Section I, Schedule 2. Operation and maintenance of PIU	X		Yearly
Description of Covenant			

The Recipient shall operate and maintain the PIU until completion of the Project with staff (including the professionals specified in Section 5.01(b) of this Agreement), resources and terms of reference satisfactory to the Association.

Name	Recurrent	Due Date	Frequency
A.2. Section I, Schedule 2. KPCC and FCC		07-Jan-2015	

Description of Covenant

Not later than 30 days after the Effective Date, the Recipient shall establish and thereafter maintain until completion of the Project the KPCC and the FCC, both with functions, composition and terms of reference set forth in the Project Operational Manual and satisfactory to the Association in order to assist with the Project's implementation.

Name	Recurrent	Due Date	Frequency
A.3. Section I, Schedule 2. Compliance with Agreement and POM	X		Yearly

Description of Covenant

The Recipient, through MAWR, shall carry out the Project in accordance with this Agreement and the Project Operational Manual and shall not amend, suspend, abrogate, repeal or waive any provision of said Manual without the prior written approval of the Association.

Name	Recurrent	Due Date	Frequency
C.1.(a)Section I, Schedule 2. Compliance with the laws on child and forced labor	X		Yearly

Description of Covenant

The Recipient shall ensure that the Project is implemented in accordance with applicable environment and social standards and practices and in compliance with applicable laws and regulations on child and forced labor.

Name	Recurrent	Due Date	Frequency
C.1.(b)Section I, Schedule 2. Compliance with the laws on child and forced labor	X		Yearly

Description of Covenant

Without limitations to the provisions of paragraph (a) above, the Recipient shall, at the beginning of the cotton harvesting season during each year of Project implementation, instruct any involved local authorities within the Project Area to ensure strict compliance with applicable laws and regulations on child and forced labor while organizing cotton harvesting.

Name	Recurrent	Due Date	Frequency
C.2. Section I, Schedule 2. Environmental and Social Standards	X		Yearly

Description of Covenant

The Recipient, through the PIU, shall carry out Parts 1.1(i) and 1.1(iii) of the Project in accordance with the ESAMP, the RPF and the RAP(s), and shall not amend, suspend, abrogate, repeal or waive any provision of said Plans or Framework without the prior written approval of the Association.

Name	Recurrent	Due Date	Frequency
C.3. Section I, Schedule 2. Resettlement and ESAMP	X		Yearly
Description of Covenant			
The Recipient, through the PIU, shall carry out Part 1.1(ii) of the Project in accordance with the Bustan RAP, and shall not amend, suspend, abrogate, repeal or waive any provision of said Plan without the prior written approval of the Association.			
Name	Recurrent	Due Date	Frequency
C.4. Section I, Schedule 2. Resettlement and ESAMP (part 1)	X		Yearly
Description of Covenant			
Without limitation to the provisions of Section C.2 of this Schedule, for purposes of Parts 1.1(i), 1.1(ii) and 1.1(iii) of the Project and prior to the contracting of works for each proposed site, the Recipient, through the PIU, shall: (a) submit to the Association for its prior approval:			
Name	Recurrent	Due Date	Frequency
C.4. Section I, Schedule 2. Resettlement and ESAMP (part 2)	X		Yearly
Description of Covenant			
(i) the proposed design and site for said works and, where required by the respective ESAMP, RPF and local legislation, as applicable, any related environmental licenses and permits required under local legislation and site-specific RAP(s) (including any procedures for valuation, Compensation and other assistance to be provided), said site-specific plans and licenses and permits;			
Name	Recurrent	Due Date	Frequency
C.4. Section I, Schedule 2. ESAMP, RPF, RAP and local legislation (part 3)	X		Yearly
Description of Covenant			
and (ii) the proposed contract for said works to ensure that the provisions of the ESAMP and said site-specific plans are adequately included in said contract; and (b) ensure that such works are carried out in accordance with the respective ESAMP, RPF and RAP.			
Name	Recurrent	Due Date	Frequency
C.5. Section I, Schedule 2. Resettlement and ESAMP	X		Yearly
Description of Covenant			
The Recipient shall not commence any works for a specific part of the Project Area requiring resettlement and/or land acquisition under the Project until the respective RAP for said part of the Project Area is fully implemented.			
Name	Recurrent	Due Date	Frequency
C.6. Section I, Schedule 2. Dam Safety (part 1)	X		Yearly
Description of Covenant			
The Recipient, through the MAWR, shall carry out, in a manner acceptable to the Association and under			

the terms and conditions set forth in the Project Operational Manual, the following activities to improve the performance and safety of the Tuyamuyun Dam: (i) prepare, prior to the second dam safety inspection to be carried out during the last year of project implementation

Name	Recurrent	Due Date	Frequency
C.6. Section I, Schedule 2. Dam Safety (part 2)	X		Yearly

Description of Covenant

(or at any other date agreed upon by the Recipient and the Association), a dam safety plan; (ii) replace eight radial gates on the spillway; (iii) carry out routine maintenance works; (iv) carry out a bathymetric survey of the reservoir; (v) install a seismograph at the dam's site; and (vi) carry out reinforcing works for the Sultansanjar embankment.

Name	Recurrent	Due Date	Frequency
C.7. Section I, Schedule 2. TPM and Feedback Mechanism	X		Yearly

Description of Covenant

The Recipient shall take all necessary actions to enable the TPM Consultant to perform its activities in accordance with the applicable terms of reference, including but not limited to allowing and facilitating for the TPM Consultant to visit and monitor the Project Area, collect relevant data and communicate with Project stakeholders and beneficiaries.

Name	Recurrent	Due Date	Frequency
C.8. Section I, Schedule 2. TPM and Feedback Mechanism	X		Yearly

Description of Covenant

The Recipient shall: (a) review and discuss with the Association monitoring reports prepared by the TPM Consultant; and (b) promptly take any actions, as may be requested by the Association upon its review of said reports, with respect to compliance with the undertakings relating to child and forced labor as set forth in this Agreement, the Project Operational Manual and the ESAMP.

Name	Recurrent	Due Date	Frequency
C.9. Section I, Schedule 2. TPM and Feedback Mechanism (part 1)	X		Yearly

Description of Covenant

The Recipient: (a) shall and shall cause respective local authorities to fully collaborate with the TPM Consultant in developing an effective feedback mechanism in connection with the Project activities, as set forth in the TPM Consultant's terms of reference;

Name	Recurrent	Due Date	Frequency
C.9. Section I, Schedule 2. TPM and Feedback Mechanism (part 2)	X		Yearly

Description of Covenant

(b) shall review biannual reports of the TPM Consultant on grievances received, redress mechanism and any feedback provided; and (c) shall promptly implement or cause relevant local authorities to implement the recommendations provided in said reports.

Name	Recurrent	Due Date	Frequency
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B.3. Section II, Schedule 2. Audited Financial Statements	X		Yearly
Description of Covenant			
The Recipient shall have its Financial Statements audited in accordance with the provisions of Section 4.09 (b) of the General Conditions. Each audit of the Financial Statements shall cover the period of one fiscal year of the Recipient. The audited Financial Statements for each such period shall be furnished to the Association not later than six months after the end of such period.			
Name	Recurrent	Due Date	Frequency
1. Section V, Schedule 2. Restored Area and Cotton Production Area	X		Yearly
Description of Covenant			
The Recipient shall ensure that: (a) the Restored Area shall not be subject to the Recipient's procurement cotton quota established on a yearly basis by the following Recipient's Tumans: Beruni; Ellikala; and Turtkul; and (b) the Cotton Production Area shall not expand throughout the Project's implementation.			
Name	Recurrent	Due Date	Frequency
2. Section V, Schedule 2. Pumping stations	X		Yearly
Description of Covenant			
Upon completion of the activities under Part 1.1 of the Project, the Recipient shall: (a) dismantle the pumping stations currently managed by the UNS within a timeframe agreed upon with the Association; and (b) take appropriate actions to abolish the UNS and complete its closure within a timeframe agreed upon with the Association.			
Name	Recurrent	Due Date	Frequency
3.(a), (b) Section V, Schedule 2. UNS closure	X		Yearly
Description of Covenant			
3. For the purposes of the UNS closure referred to in paragraph 2 above, the Recipient shall: (a) ensure that as many UNS Staff as possible will continue to be employed under terms and conditions acceptable to the Association; (b) develop a Retrenchment Action Plan in accordance with the Retrenchment Framework, satisfactory to the Association,			
Name	Recurrent	Due Date	Frequency
3.(c) Section V, Schedule 2. UNS closure	X		Yearly
Description of Covenant			
and (c) carry out retrenchment of the UNS Staff in accordance with the provisions of the Retrenchment Action Plan, including providing Severance Payments to the eligible UNS Staff in accordance with the terms and procedures set forth in the Retrenchment Action Plan.			
Name	Recurrent	Due Date	Frequency
4. Section V, Schedule 2. Flow measuring (part 1)		31-Dec-2015	
Description of Covenant			

Not later than December 31, 2015 (or any other date agreed upon by the Recipient and the Association), the Recipient shall install real-time flow measuring stations at the off-take from the Amu Darya River into the Project Area and in each of the two escape canals releasing water from the Project Area into the Amu Darya River,

Name	Recurrent	Due Date	Frequency
4. Section V, Schedule 2. Flow measuring (part 2)		31-Dec-2015	

Description of Covenant

and thereafter shall: (a) monitor water abstractions and release flows during Project implementation; and (b) share the related data with the Amu Darya BVO based on the frequency and criteria set forth in the Project Operational Manual.

Name	Recurrent	Due Date	Frequency
5. Section V, Schedule 2. Uzpakhtasanoat (part 1)		31-Dec-2014	

Description of Covenant

Not later than December 31, 2014 (or any other date agreed upon by the Recipient and the Association), the Recipient shall enter into an agreement (or two agreements if necessary) with Uzpakhtasanoat (and/or any other entity agreed upon by the Recipient and the Association), in form and substance satisfactory to the Association,

Name	Recurrent	Due Date	Frequency
5. Section V, Schedule 2. Uzpakhtasanoat (part 2)		31-Dec-2014	

Description of Covenant

which shall define, inter alia, the terms of providing cotton harvesting equipment and services and other associated equipment to be purchased under Part 2.3 of the Project to Uzpakhtasanoat (and/or any other entity agreed upon by the Recipient and the Association),

Name	Recurrent	Due Date	Frequency
5. Section V, Schedule 2. Uzpakhtasanoat (part 3)		31-Dec-2014	

Description of Covenant

including the obligation of Uzpakhtasanoat (and/or any other entity agreed upon by the Recipient and the Association) to make available said equipment and services in the Project Area for the purposes of cotton harvesting mechanization, all in accordance with the criteria set forth in the Project Operational Manual.

Conditions

Source Of Fund	Name	Type
IDA/IBRD	5.01 (a) Project Operational Manual	Effectiveness

Description of Condition

The Project Operational Manual satisfactory to the Association has been adopted by the Recipient.

Source Of Fund	Name	Type
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IDA/IBRD	5.01 (b) PIU and accounting software	Effectiveness	
Description of Condition			
The PIU: (i) has been staffed with the professionals indicated in the Project Operational Manual (all in numbers and with experience and terms of reference satisfactory to the Association); and (ii) has updated its accounting software in accordance with the technical requirements and specifications set forth in the Project Operational Manual.			
Source Of Fund	Name	Type	
IDA/IBRD	5.01 (c) All conditions fulfilled	Effectiveness	
Description of Condition			
The Loan Agreement has been executed and delivered and all conditions precedent to its effectiveness or to the right of the Recipient to request disbursement thereunder, except only the effectiveness of this Agreement, have been fulfilled.			
Source Of Fund	Name	Type	
IDA/IBRD	B.1. (a) Section IV, Schedule 2. Withdrawal Conditions; Withdrawal Period	Disbursement	
Description of Condition			
Notwithstanding the provisions of Part A of this Section, no withdrawal shall be made for payments made prior to the date of this Agreement.			
Source Of Fund	Name	Type	
IDA/IBRD	B.1. (b) Section IV, Schedule 2. Compensation to Affected Persons	Disbursement	
Description of Condition			
For payments under Category (2) unless the Association has received satisfactory evidence from the Recipient (through the PIU) that Compensation to Affected Persons has been determined in compliance with the Bustan RAP or the RAP(s).			
Team Composition			
Bank Staff			
Name	Title	Specialization	Unit
Joseph Paul Formoso	Sr. Finance Officer	Sr. Finance Officer	CTRLA
Maurizio Guadagni	Sr. Rural Development Specialist	Sr. Rural Development Specialist	ECSAR
Valencia M. Copeland	Program Assistant	Program Assistant	ECSSD
Fasliddin Rakhimov	Procurement Specialist	Procurement Specialist	ECSO2
Alessandro Palmieri	Lead Dam Specialist	Dam Specialist	TWIWA
Winston Yu	Sr. Water Resources Spec.	Sr. Water Resources Spec.	ECSAR
Dilshod Khidirov	Sr. Rural Development Specialist	Rural Development Specialist	ECSAR
IJsbrand Harko de Jong	Lead Water Resource Specialist	Water Resources Specialist, TTL	ECSAR
Gulana Enar Hajiyeva	Sr. Environmental Specialist	Sr. Environmental Specialist	ECSSEN
Nina Masako Eejima	Senior Counsel	Senior Counsel	LEGES

Ahmed Shawky	Sr. Water Resources Specialist.	Environmental Safeguards	ECSAR		
Bobojon Yatimov	Sr. Rural Development Specialist	Sr. Rural Development Specialist	ECSAR		
Jeren Kabayeva	Rural Development Specialist	Rural Development Specialist	ECSAR		
Galina Alagardova	Financial Management Specialist	Financial Management Specialist	ECSSO		
Asli Gurkan	Social Development Specialist	Social Development Specialist	ECSSO		
Lola Ibragimova	Social Development Specialist	Social Development Specialist	ECSSO		
Shakhnoza Aslanova	Team Assistant	Team Assistant	ECCUZ		
Oydin Dyusebaeva	Executive Assistant	Executive Assistant	ECCUZ		
Kunduz Masyllkanova	Program Coordinator	Program Coordinator	ECSAR		
Hiromi Yamaguchi	Consultant	Operations Officer	ECSAR		
Cristian D'Amelj	Counsel	Counsel	LEGLE		
Ekaterina Romanova	E T Consultant	E T Consultant	ECSSO		
Ju Young Lee	Junior Professional Associate	Junior Professional Associate	ECSAR		
Non Bank Staff					
Name	Title	Office Phone	City		
Herve Plusquellec	Sr. Irrigation Specialist		Washington		
Giovanni Munoz	Sr. Irrigation Engineer (FAO)	390657055934	Rome		
Ben O'Brien	Sr. Agricultural Specialist (FAO)	390657055657	Rome		
Locations					
Country	First Administrative Division	Location	Planned	Actual	Comments
Uzbekistan	Karakalpakstan	Karakalpakstan	X		

I. STRATEGIC CONTEXT

A. Country Context

1. Uzbekistan, a resource rich and landlocked country, is the third largest country in Central Asia by land mass and the largest in population (30.5 million). Uzbekistan has sustained stable growth and poverty reduction, but reforms to address economic inefficiencies and structural impediments to growth are still in the early stages. Driven mainly by favorable terms of trade and public investments, its growth rate averaged 8 percent in 2012-13. The headcount poverty rate declined from 27.5 percent in 2001 to 15.0 percent in 2013 because of rapid economic growth, large government investments in education, health and infrastructure development, increases in public sector salaries, and increased remittances.

2. Despite an overall decline in poverty levels, rural poverty remains high (30 percent), and a large share of the poor are dependent on agriculture for employment and livelihoods. One of the government's cross-cutting development policy goals and priorities include the improvement of education, health and social services, so that the benefits of overall growth are shared more equitably by the entire population¹, in particular in a poor region such as Karakalpakstan.

3. With a poverty rate of 32 percent and a food poverty rate of 26.4 percent, the Autonomous Republic of Karakalpakstan – where the project will be operating – is one of the poorest regions of Uzbekistan. It is located in western Uzbekistan near the Aral Sea (see map in Annex 13), has an area of 160,000 km² and has a population of about 1.7 million people. The economy of the region, formerly largely dependent on fisheries, is now supported by cotton, livestock and melons, and relies heavily on extensive irrigation development, much of which is poorly managed. Wasteful water use has led to soil degradation and high operation and maintenance (O&M) costs, as much of the irrigated area depends on pumps, disproportionately contributing to Uzbekistan's high energy consumption per unit of gross domestic product (GDP), and eroding sustainability. Improving irrigation performance will help people move out of poverty and build their assets. The region has suffered from the shrinking of the Aral Sea that started during Soviet times – which has led to a human health crisis in the region². Infant mortality ranges from 70 to more than 100 per 1,000 live births, depending on the location in Karakalpakstan.³ Chronic malnutrition among children is double that of children living in Tashkent. It also has the highest female anemia rates in the world – 97 percent of women overall⁴ and 99.3 percent of pregnant women are anemic as opposed to 39.1 percent in the capital city, Tashkent. This has led to 4 out of 5 children being born anemic. This region is also reported to have the highest esophageal cancer rate in the world.⁵

¹ World Bank. 2011. *Country Partnership Strategy for the Republic of Uzbekistan for the Period FY12–FY15*. Report No. 65028-UZ. Washington, DC: World Bank, November 1, 2011

² Whish-Wilson, Philip. 2002. "The Aral Sea Environmental Health Crisis." *Journal of Rural and Remote Environmental Health* 1 (2): 29–34.

³ *ibid*

⁴ Pearce, Fred. 2004. *Keepers of the Spring: Reclaiming Our Water in an Age of Globalization*, Washington, DC: Island Press. p. 113.

⁵ *ibid*

4. Karakalpakstan continues to face a devastating degradation of livelihoods. Inefficient water management and deteriorating irrigation and drainage (I&D) systems have contributed to growing salinization of land and water resources in irrigated areas, exposure to dust storms and poor quality drinking water. These in turn have led to increasing food insecurity for the local population which forced many to relocate or endure severe living conditions at home. The collapse of the fishing industry, and decline of agriculture, healthcare and education systems have added to out-migration. Up to 30 percent of working age people in Karakalpakstan have left to work in Kazakhstan and Russia.

B. Sectoral and Institutional Context

Agriculture

5. Agriculture plays an important role in Uzbekistan's economy. As of 2012, 49 percent of the population - more than 14.5 million people - lived in rural areas. As in many parts of the world, the majority of poor people live in rural areas, and agriculture has a significant impact on rural livelihoods, jobs, and food security. In 2010, agriculture provided 25 percent of total employment. Although the sector's contribution to GDP declined from 34 percent in 2001 to 19 percent in 2011, farm output has doubled in real terms and continues to grow steadily, at a rate of 7.1 percent per year.

6. **Irrigation.** Because of the arid environment in many parts of the country, I&D is essential to sustaining agriculture and its benefits in terms of rural incomes, employment and livelihoods to the many poor that depend on it. More than 85 percent (4.2 million hectares) of the country's cropland is irrigated from the Amu Darya and Syr Darya Rivers and their tributaries.

7. Large-scale I&D development in Uzbekistan started in the late 1950s. Extensive waterworks, reservoirs and irrigation networks were constructed. This water infrastructure is now aging, and due to deteriorating infrastructure and poor management, the country loses US\$1.7 billion annually (about 8 percent of GDP). The annual decrease in agricultural production as a result of poor water management is estimated to be in the order of US\$2.0 billion. Over a quarter of irrigated lands depend on irrigation pumps, and a much larger proportion on drainage pumps. In some areas, water is lifted through cascades of pumping stations for more than 100 meters, which contributes disproportionately to Uzbekistan's high energy consumption per unit GDP. The poor management and aging infrastructure, together with the dependence on pumping, in turn contribute to raising O&M costs. Switching from lift to gravity irrigation would thus reduce the economic and financial costs of operating the systems.

8. O&M of the national I&D infrastructure has, over the past 10 to 20 years suffered from substantial underfunding with only about 15 - 25 percent of requirements covered by the Ministry of Agriculture and Water Resources (MAWR). More than 60 percent (US\$350 million) of the entire budget of MAWR is allocated to paying for electricity to power I&D pumping stations. Electricity for irrigation pumps accounts for 16 percent of the national electricity generation. Many of Uzbekistan's I&D systems are caught in a vicious cycle of inadequate O&M, poor service delivery quality, low agricultural productivity and farm income, and low cost recovery (figure 1). In Karakalpakstan, only half of the irrigable area is actually irrigated due to

limited investment budget and inefficient water supply systems, and the total crop area has decreased from 250,000 hectares (ha) to 190,000 ha following the prolonged drought in 2002.

9. Irrigated agriculture at present generates adequate revenues to finance the costs of irrigation. Cost recovery can be significantly improved. At the same time, switching from lift to gravity irrigation would significantly reduce the economic and financial costs of operating the systems to the country and farmers, and would help make recovery of O&M costs more sustainable.

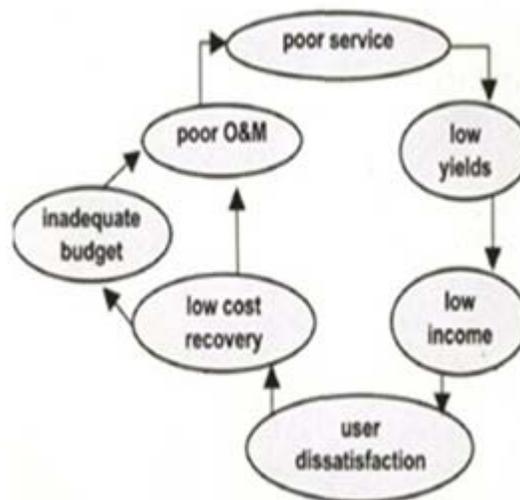
10. Recognizing that more O&M costs need to be recovered, Uzbekistan has taken steps to introduce payment for water service delivery, establish cost accounting in district irrigation departments, and divest the public sector of the responsibility for operating and maintaining of intra-farm I&D networks. Farmers are encouraged to organize themselves into Water Consumers Associations (WCAs) that have become responsible for operating and maintaining the smaller canals and some of the smaller pumping stations, while the public sector continues to be responsible for larger canals.

11. Some of the pumping stations are on the balance sheet of WCAs. High dependence on pumping and high O&M costs undermine the efforts of these WCAs to become financially viable, especially because many are still in development and can barely afford to pay the salaries of their officials. Moreover, the limited profits from cotton that are received by the farmers hamper their ability to pay the high O&M costs.

12. Improving water management would reduce water costs to farmers, and enable to them increase yield and cultivate higher value crops that would strengthen the farmers' capacity to pay. Dehkhan farmers⁶ that grow horticulture crops are now joining these WCAs, which has improved the financial situation of the WCAs.

13. The project will finance switching from pump irrigation to gravity irrigation, which will lower the costs of O&M. Irrigation supply will become more reliable as a result of the project, and farmers will be able to grow higher value crops, which will strengthen their capacity to pay for O&M. Farmers who grow cotton will be able to increase yields and they will benefit from cotton harvest mechanization.

Figure 1: Vicious Cycle in Irrigation and Drainage



Source: Authors

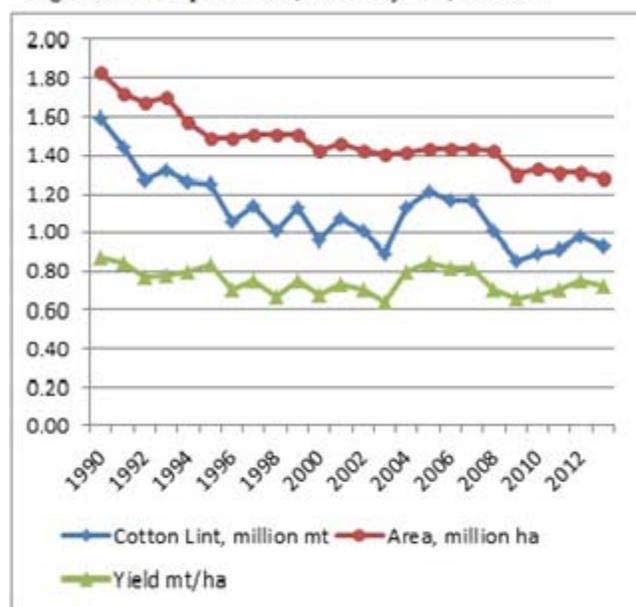
⁶ Citizens living in rural areas for at least three years are entitled to inheritable household plots or “dehkhan farms”. These are small-scale operations largely based on household labor that generally do not produce cotton or wheat. The dehkhan farms numbered 4.7 million in 2010. They occupied about 13 percent of irrigated arable land and produced 63 percent of gross agricultural output.

14. **Crop diversification.** Diversifying agricultural production away from cotton has become a priority for the government of Uzbekistan. Traditional agriculture in Uzbekistan was characterized by a mix of cereals, horticulture, and cotton production – all based on small to medium scale irrigation. When the country was part of the Soviet Union, irrigation expanded significantly, and cotton became predominant under a state-order system in which collective farms had to meet pre-allocated production targets. Cotton, however, is a highly water intensive crop and due to increasing water scarcity and other competing needs for water, extensive cotton production cannot sustainably be maintained over the longer term. Today, the government of Uzbekistan is taking measures to move to a more diverse and sustainable agriculture system.

15. Horticulture crops offer better export potential, tend to be less water intensive and generate higher value – gross margins per hectare are up to five times higher than cotton and wheat. Horticulture crops appear to be more resilient to climate change and increasing water scarcity. Indeed, cotton requires almost double the amount of water as wheat and grapes, and about five times that of apples.

16. As a result of the government’s priorities, cotton has declined from 1.83 million ha in 1990 to 1.28 million ha (about 37 percent of total cultivated area) in 2013 (figure 2). In the project area, the land used for cotton decreased from 44,000 ha in 2011 to 36,000 ha in 2013. The wheat area increased from about 0.4 million ha to about 1.4 million ha (about 47 percent of total cultivated area) during the same period. The area planted with horticultural crops has also increased significantly in recent years and now accounts for about 16 percent of cultivated area and horticulture crops are grown on about 21,000 private farms. Horticultural export earnings have jumped in recent years, from US\$373 million in 2006 to US\$1.16 billion in 2010. More notably, horticulture is an important source of income for the 4.7 million households that operate *dehkhans*⁷. The World Bank has supported the diversification into horticulture in Uzbekistan through various channels: policy dialogue, analytic work (e.g., “Horticulture Policy Note for Uzbekistan, Strengthening the Horticulture Value Chain” 2013), and investments (on-going Second Rural Enterprise Support Project, RESP-II, and its Additional Financing (AF), and the proposed Horticulture Development Project, HDP).

Figure 2: Cotton production, area and yields, 1990-2013



Source: USDA

17. **Farm restructuring.** The agriculture sector has been subject to continued farm restructuring. Starting in 1998, the former state and collective farms were converted into

⁷ See footnote 6.

cooperative farms (*shirkats*), where the production assets were managed by families, who held ownership shares. Then, between 2002 and 2007, the government undertook a massive conversion of *shirkats* into private leasehold farms. The land for the private farms was allocated by the government to farmers under a long-term lease for 30 to 50 years. As of 2010, there were about 66,134 private leasehold farms in Uzbekistan. These farms remain subject to the state's cotton and/or wheat procurement system, unless they have been designated for growing other crops (for example, horticulture or livestock).

18. The cotton and wheat supply chains in Uzbekistan remain dominated by the government, with farmers acting like “contract farmers.” The state provides subsidized inputs to cotton and wheat farmers, occasional debt write-offs, and support to cover I&D investments and O&M costs. Total subsidies for cotton production were estimated at US\$483 million in 2012 (see Appendix A to Annex 11 on cotton sector subsidies and taxes). Regional production targets for cotton and wheat are set annually by decree of the Cabinet of Ministers. The regional targets are subsequently translated into Oblast, District and individual farm-level production targets. The responsibility for monitoring all aspects rests with the regional administration at the Oblast and District levels. The state cotton procurement price for the new season is announced near harvest time, based on a cost-plus method plus an allowance for a nominal profit. This eliminates price risks for farmers, but fixes the price well below world market prices. Once subsidies are taken into account, farmers do make a profit on cotton production.

Cotton Harvesting and Child and/or Forced Labor

19. Cotton is harvested during the months of September and October. It is sensitive to weather conditions, and must be harvested as quickly as possible. Although mechanized harvesting was used more extensively during the Soviet times, the subsequent farm restructuring and institutional changes in the state cotton system during the transition led to the deterioration of the large mechanical cotton harvester combines, which were not replaced. Moreover, cotton harvesting technologies more suited to local conditions were until recently not locally available. A large workforce is needed when cotton is harvested by hand. High peak labor demand during the cotton harvest period, in combination with the state procurement system led to the state-sponsored use of forced adult and child labor for cotton - with staff from schools, universities, hospitals, and other government organizations joining the cotton harvesting, and local governments (*hokhimiyats*) providing the transportation. (See Annex 5 on child and/or forced labor issue).

20. The government of Uzbekistan is a signatory of several International Labor Organization (ILO) conventions related to child and/or forced labor⁸, but the enforcement of these conventions, as well as of existing national laws reflecting international agreements, has remained challenging, especially during the cotton harvest. Forced child labor in cotton harvesting used to be widespread. However, a joint ILO-government of Uzbekistan mission

⁸ ILO Convention No. 138 on Minimum Age for Admission to Employment, ILO Convention No. 182 on Worst Forms of Child Labor, ILO Convention No. 29 on Forced Labor, and ILO Convention No. 105 on Abolition of Forced Labor. In addition, the International Covenant on Civil and Political Rights, also subscribed by the government, prohibits forced labor (article 8).

which took place during the cotton harvesting season in September-October 2013 to monitor the use of forced child labor concluded that: “In general terms, the monitoring observed widespread awareness of national laws and instructions not to allow the use of children under 18 years of age in the cotton harvest. Moreover, it would appear from the monitoring that there was no systematic recourse to forced child labor.”⁹ However, forced child labor has been reportedly substituted with forced adult labor organized by local authorities and administrators of public institutions in many areas.

21. Recognizing the need to change the system, the government of Uzbekistan has announced its plans to fully mechanize cotton harvesting by 2016. The Asian Development Bank, with full engagement from the World Bank, is working with the government to formulate a strategy to mechanize agriculture, with a particular emphasis on cotton production.

22. The World Bank, in consultation with the government and development partners, has adopted a multi-pronged approach to address child and/or forced labor issues in Uzbekistan. These include (i) pursuing continuous country dialogue and collaboration with international/multilateral agencies and donors to address these issues; (ii) performing sector analytic work and policy dialogue to promote diversification away from cotton and mechanization of cotton harvesting (as described above in paragraphs 14-16); (iii) strengthening project-level mitigation measures and binding provisions, including implementing a Third Party Monitoring (TPM) and Feedback Mechanism (FBM) to help address child and/or forced labor issues in connection with the project activities or within the project area; and (iv) promoting crop diversification and intensification, and supporting agricultural mechanization through a number of investment operations, including the RESP-I, RESP-II, AF-RESP-II and the proposed HDP. This comprehensive effort to eliminate the use of child and/or forced labor in cotton harvesting has received wide support and endorsement from development partners and community based organizations.

23. More specifically, the proposed project will implement several measures with the aim to fully eliminate the occurrence of child and/or forced labor in the project area. There is an understanding with the government that the project will be a pilot and that the lessons learned will be applied to the preparation of a government strategy for agricultural diversification away from cotton and for mechanization of the production that remains. These measures include:

- (i) A covenant in the Financing Agreement (FA) that requires the government to comply with national legislation that prohibit the use of child and/or forced labor, and measures to address violations;
- (ii) A clear land use strategy that eliminates incentives for using child and/or forced labor in the entire project area of 100,000 ha, including crop diversification and cotton harvest mechanization (see table 1);
- (iii) Exemption from the state’s cotton procurement system for the 30,000 ha restored area, and commitment from the government not to expand the area under cotton (currently 36,000 ha);

⁹ See International Labor Organization. *High Level Mission Report on the Monitoring of Child Labor During 2013 Cotton Harvest in Uzbekistan*.

- (iv) Training, awareness raising and outreach activities on labor legislation and the regulations on child and/or forced labor (see Annex 3 for details)
- (v) A TPM and FBM, financed through a separate trust fund and focused on child and/or forced labor issues in connection with the project activities or within the project area, to be conducted during the cotton harvesting season (see Annex 3 and 5 for details);
- (vi) Additional covenants in the FA that require that local authorities fully collaborate with the TPM and that actions to ensure compliance will be taken promptly;
- (vii) Technical assistance (TA) to help the government develop a strategy for agricultural diversification and to review arrangements for independent certification that Uzbek cotton complies with child and/or forced labor regulations, in collaboration with the International Finance Corporation (IFC) and the private sector.

24. The TPM, which will be financed through a separate trust fund, will focus on child and/or forced labor issues in connection with the project activities or within the project area and will be conducted during the cotton harvesting season. Feedback will be collected from both project beneficiaries and other stakeholders in connection with the project activities. A fully independent FBM will be established, dedicated to reports on potential evidence on the occurrence of child and/or forced labor in connection with the project activities or within the project area. The TPM will be implemented by a reputable consulting firm with experience in social auditing and during implementation, the TPM consultant will work closely with civil society organizations (CSOs). Activities under the TPM and FBM include, among other things: (i) capacity building and learning; (ii) periodic unannounced site visits; and (iii) periodic assessment of local context and conditions. A Joint Working Group, consisting of representatives from the government, Bank and TPM consultant, will be established under the trust fund to discuss and resolve any differences during implementation of the assignment. While the trust fund is yet to be established, the World Bank has an ongoing dialogue with bilateral donors on this agenda and there is wide support for the approach that the Bank has adopted for elimination of child and/or forced labor in Bank-financed project areas. It is therefore expected that several bilateral donors will make financial contributions for TPM/FBM. In the event that no funding is secured before project effectiveness, the World Bank's own administrative budget will initially be used to start the program.

25. The economic analysis of the project estimates the benefits of the investments in mechanized cotton harvesting at US\$15.4 million annually (9.3 percent). The returns to investments in mechanization of cotton harvesting are estimated by taking into account: (i) the opportunity costs of students and highly skilled labor and (ii) the costs associated with providing transportation, lodging, and food and providing other supplies, such as aprons and gloves for the manual labor and comparing these with costs of mechanized cotton harvesting. In addition, cotton harvest mechanization is not expected to adversely impact employment in the project area. The crop diversification and intensification resulting from project activities are expected to generate additional demand for year-round labor. As opposed to cotton harvesting that is characterized by a peak demand for labor that is difficult to satisfy, production of horticulture crops, for example, requires a more evenly spread labor input throughout the growing season, which can be found on the market and, in fact generates income for low income families. As a result of improved irrigation, farmers will be able to move from two cycles (cotton and winter

wheat) to three cycles (with a third crop after winter wheat). This diversification will apply to about 70,000 ha within the project area and will create additional jobs year round.

26. The project will help restore 30,000 ha of degraded land that will be formally exempted from the state cotton procurement system and this has been reflected in a covenant. About 34,000 ha is designated for growing non-cotton crops, where the project will help farmers access markets and realize income. Cotton is currently grown on 36,000 ha, and the government has committed to not expanding this area. Out of this area, 70 percent will be mechanized with support of the project (25,200 ha). The remaining 30 percent (10,800 ha) is not suitable for mechanization and will be worked by voluntary labor, as the labor demand on this area accounts for only 5 percent of the available workforce in the project area. This includes 5,100 ha currently used for high-value cotton seed production which already attracts voluntary labor, and 5,700 ha with land configuration restrictions. The labor demand on these 10,800 ha will therefore be met with voluntary labor, which is sufficient since it will require only 5 percent of available labor.

Table 1: Land use strategy for eliminating forced labor incentives in the project area

	Pre-project (70,000 ha)		Post-project (100,000 ha)		Notes
Restored area	0		30,000		Exempted from state cotton procurement system
Cotton area	36,000		36,000		Government committed to not expand this area
<i>Of which mechanized</i>		0		25,200	<i>Project will finance mechanization</i>
<i>Of which cotton seed</i>		5,100		5,100	<i>Cotton seed generates higher prices which attracts voluntary labor</i>
<i>Of which physical land restrictions that make it unsuitable for mechanization</i>		5,700		5,700	<i>Voluntary labor</i>
Non-cotton area	34,000		34,000		Designated for wheat, fodder, horticulture crops, etc.
TOTAL	70,000		100,000		

Transboundary Water

27. The Amu Darya is the largest river in Central Asia, with a catchment area of 309,000 km² and a length of 2,540 km. The river is shared by Afghanistan, Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan. Most of the Amu Darya flow is generated in Tajikistan. Three major tributaries contribute to the river: the Kafirnigan, Sherabad, and Surhandarya. The annual flow of the Amu Darya is 74 km³. Two main reservoirs, Nurek and Tuyamuyun, and several on-system reservoirs on the Karakum, Karshi and Amu-Bukhara Canals have been developed, with a total storage capacity of 24 km³.

28. Water resource availability in Central Asia has important seasonal, geographic and economic dimensions, with downstream countries highly dependent on upstream countries for essential irrigation water. Climate change is expected to amplify variability in water resources both seasonally and geographically (see box 1). Hydropower resources are concentrated in the Kyrgyz Republic and Tajikistan, while thermal energy resources are concentrated in Uzbekistan, Turkmenistan and Kazakhstan. Energy-water linkages play a critical role in the future of Central Asia in terms of economic development, poverty alleviation and shared prosperity, food security,

public expenditures and cooperative relations. For example, upstream riparian country Tajikistan is considering development of dam infrastructure, the impact of which on regional water resources availability is currently being studied. These linkages are inextricable from perceptions of national security, regional stability and economic growth. Managing them requires managing complex technical and political issues and sometimes diverse development objectives. Yet history and experience elsewhere have demonstrated the potential for mutual benefits from sharing both energy and water resources across borders.

29. Five Central Asian states participate in the Interstate Commission for Water Coordination of Central Asia (ICWC), established in 1992, for the regulation of water resources in the Aral Sea Basin. Since 1999, the ICWC is part of the International Fund for Saving the Aral Sea (IFAS). Heads of Central Asian states occupy the post of IFAS president on a rotational basis, with Uzbekistan currently serving. Strategic directions for the IFAS are formulated by the Council of Heads of the five states in the region.

30. Kazakhstan, Turkmenistan and Uzbekistan are signatories to the 1997 United Nations Convention on Non-navigational Uses of International Watercourses. It establishes the principle of equitable and reasonable use, not to cause significant harm to neighbors, and the prior notification of planned measures.

31. A number of bilateral agreements on water management have been signed by Uzbekistan. According to the Water Management Partnership Agreement signed on January 16, 1996, by Turkmenistan and Uzbekistan, Turkmenistan agreed that the hydraulic infrastructure and Tuyamuyun Dam belong to Uzbekistan. Also, the parties agreed to cooperate on any emerging water use issues in both their territories, and try to resolve these issues by developing separate protocols.

32. Another agreement is the Partnership for Operation, Maintenance and Repair of Economic Entities in the border areas of Uzbekistan and Turkmenistan, dated March 10, 2008. The two parties agreed to, among other things, assist in the implementation of projects for the construction and reconstruction of water facilities with investments from international financial institutions, and to coordinate construction and reconstruction of water facilities on transboundary waters, guided by the principle of doing no harm to neighboring states in the use of transboundary watercourses. The two parties also agreed to regularly organize seminars and conferences to exchange information and experience in the fields of water management and water facility maintenance. A summary of the institutional arrangements for water resources management (WRM) in the lower Amu Darya is provided in Annex 12.

C. Higher Level Objectives to which the Project Contributes

33. Irrigated agriculture plays an important role in Uzbekistan in reducing poverty and creating shared prosperity, and the proposed project therefore helps the World Bank achieve its twin goals. First, rural poverty remains very high (30 percent) in Uzbekistan and even higher in Karakalpakstan (32 percent), and a large share of the poor are dependent on agriculture for employment and livelihoods. Building up the assets of the bottom 40 percent will help them participate in growth. Improving the performance of irrigated agriculture (in terms of increasing productivity, farm income and employment) will contribute to improving the livelihoods and

incomes of farming households – which have been continuously declining in Karakalpakstan – and, in turn, will contribute to reducing poverty and raising the incomes of the bottom 40 percent in the project areas. Second, climate change is expected to lead to more frequent weather extremes, such as increased risks of droughts and floods. Poor farming households tend to have the least capacity to cope with the adverse consequences of these events. Investments to improve the delivery of I&D services will provide more reliable access to irrigation water and thus would help reduce the production risks faced by, and reduce the vulnerability of, farming households, especially the poor. Third, giving farmer experience with good agricultural practices will contribute to more sustainable agricultural growth. The government’s efforts to restore irrigation, improve water management and move to a more diversified agricultural system, aim to enhance the government’s contribution to sustainable growth and poverty reduction and is fully consistent with the Bank’s twin goals of reducing poverty and creating shared prosperity in the poorest regions of Uzbekistan.

Box 1: Looking Beyond the Horizon: Adapting Agriculture to Climate Change

Recent analysis¹ suggests an increasing temperature trend in Uzbekistan that will accelerate in the near future. Although the degree of warming that will occur remains uncertain, the overall trend is clear and is evident throughout Uzbekistan, with average warming over the next 50 years of about 2 to 3 ° C, much greater than the increase of about 1.5 ° C observed over the past 50 years. Precipitation changes are much more uncertain than temperature changes. The medium impact forecast indicates a national increase in precipitation of about 80 mm per year, with most of this increase occurring in the desert and steppes zone. The higher elevation zones show no change or a slight increase in precipitation in this scenario.

The national averages, however, are less important for agricultural production than the seasonal distributions of temperature and precipitation. The forecast temperature increases are higher, and precipitation declines greater in July and August relative to current conditions – the June through August temperature increase can be as much as 4 - 5 ° C in the piedmont zones, for example. In addition, forecast precipitation declines could occur in the key June through August period in the desert and steppe zones, when precipitation is already lowest.

Seasonal changes in climate have clear implications for crop production. The direct temperature and precipitation effect of future climate change will be to reduce yields for most crops, but increase yields for fodder crops. Climate change will worsen current conflicts over water resources because the demand for irrigation water will increase as temperatures rise.

National-level adaptation is a high priority, including improving the capacity of farmers and extension staff to use water more efficiently. Other high-priority adaptation measures include optimizing water application efficiency, particularly for vegetable crops; providing the know-how to cultivate crops effectively for high yield; improving drainage capacity; and rehabilitating secondary irrigation capacity.

¹ World Bank. (2012). *Looking Beyond the Horizon: Adapting Agriculture to Climate Change in Four Europe and Central Asia Countries*. Washington, DC: World Bank.

34. The financial analysis (Annex 11) estimates that the project will generate incremental gross margins to an average dekhkan farmer with 0.20 ha between US\$126 and US\$320 per

year. For an average commercial farmer with 25 ha, incremental gross margins are estimated between US\$6,420 and US\$25,000 per year.

35. The government's medium-term growth and development strategy is reflected in the five-year Industrial Modernization and Infrastructure Development Program (2011-15). These documents embody four cross-cutting development goals and priorities, namely: (i) to increase efficiency of infrastructure, including irrigation, energy and transport; (ii) to enhance competitiveness of specific industries, including agro-processing; (iii) to diversify the economy and thereby reduce its reliance on a few commodity exports; and (iv) to improve access to and the quality and outcomes of education, health and other social services.

36. In line with the above development agenda the fiscal year (FY) 2012-15 Country Partnership Strategy (CPS) supports activities to improve the sustainability and competitiveness of the agricultural sector, including diversifying production into higher-value (non-cotton) agricultural products. The ongoing RESP-II aims to assist farmers and entrepreneurs to invest in and expand non-cotton related farming and agro-processing. The recently completed World Bank Horticulture Policy Note examines the opportunities for and challenges to the development of the horticulture sector in the country and identifies options to accelerate its growth. It is an important input to the formulation of the government's Horticulture Strategy and serves as the basis for a proposed Bank-financed HDP. To support increasing agricultural productivity and incomes, promote greater rural employment, and improve the environmental sustainability of agricultural production, the Bank supported implementation of a US\$74.55 million Drainage, Irrigation and Wetlands Improvement Phase-I Project (DIWIP, closed on June 30, 2013), and a US\$81.85 million Ferghana Valley Water Resources Management Project (FVWRMP) Phase-I Project.

37. The proposed project is fully consistent with the first pillar of the CPS - "Increasing the efficiency of infrastructure" - because it identifies continued support for WRM as a priority area of engagement. The project is also consistent with the government of Uzbekistan strategy and the World Bank's Central Asia Energy and Water Development Program (CAEWDP) as it aims to invest in the sustainable development and management of I&D systems, and in improving WRM in the lower Amu Darya. The project aims to sustain the benefits gained from the implementation of the predecessor DIWIP. It will strengthen institutions and capacities, and improve performance of public I&D and WRM service delivery by introducing rational water management at basin, main, secondary, and tertiary I&D scheme levels, and by enhancing stakeholder involvement in water management.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

38. The PDO of the project is to restore irrigation and improve water management in the project area in a sustainable and financially efficient manner.

Project Beneficiaries

39. A number of stakeholder groups have been identified:

- Farmers in the South Karakalpakstan project area, one of the poorest areas in Uzbekistan, will benefit from project investments through improvements in the quality of I&D service delivery, reduced O&M costs, training in O&M and water management, and access to mechanized cotton harvesting, which would contribute to improved incomes and facilitate crop diversification. Crop intensification and diversification will also create alternative employment opportunities. A comprehensive analysis of the benefits of irrigation in Uzbekistan is presented in Annex 2. It is estimated that 41,000 water users will be provided with new or improved I&D services;
- WCAs in the South Karakalpakstan project area will benefit from the project through training, provision of O&M equipment, lower costs for water delivery and higher O&M cost recovery, and more accountable and transparent water management at higher levels of the irrigation system.
- Employees in the South Karakalpakstan project area will benefit because they will no longer be required to work during the cotton harvest;
- Water management staff working for district, region and basin water management institutions in South Karakalpakstan, namely the Lower Amu Darya Basin Administration of Irrigation Systems (LABAIS), Pakhta-Arna-Nayman Irrigation System Administration (PAN-ISA) and Amu Darya Basin Water Organization (BVO), are expected to benefit from the project through training and tools for improved water management;
- Cotton ginneries in the South Karakalpakstan project area will benefit from the provision of cotton cleaning equipment;
- The government will benefit in terms of reduced O&M costs, and thus reduced fiscal costs, from the dismantling of pumping stations;
- Women in the South Karakalpakstan project area will benefit from targeted outreach and participation in the Farmer Field Schools (FFSs) and other training provided by the project.

PDO Level Results Indicators

40. PDO indicators include (i) improved irrigation water delivery service¹⁰, (ii) new or improved I&D services for water users (male/female), (iii) reduction in annual public and WCA expenditures for pumping, and (iv) increased collection rate by WCAs to cover O&M costs.

III. PROJECT DESCRIPTION

A. Project Components

41. The whole project area is located in South Karakalpakstan. Almost the entire drainage system of the project area (100,000 ha) has been rehabilitated under DIWIP. The major change introduced by DIWIP has been the suspension of Beruni and Kyzylkum pumping stations that once released saline drainage water into the Amu Darya and Lake Ayazkala. All drainage water

¹⁰ Quality of irrigation service delivery will be measured based on the Mapping System and Services for Canal Operation Techniques (MASSCOTE), a step-wise methodology to evaluate and analyze different components of an irrigation system.

from the project area is now drained via the former channel of the Janadarya to the Aral Sea. The newly constructed main drain and the rehabilitated on-farm and inter-farm drainage system now flow by gravity; high water table areas are considerably reduced; and some of the institutional issues have been addressed, including establishment and strengthening of 21 WCAs, training of 1,250 farmers and water management staff, and organization of 12 demonstrations. The gross value of production in the project area almost doubled from Uzbek Soum (UZS) 99 billion (about US\$50.1 million) to UZS 191.8 billion (about US\$97.1 million). Cotton yield increased by 22 percent from 1.69 t/ha to 2.07 t/ha, and salinity in the downstream parts of the Amu Darya declined from 1,270 mg/l to 800mg/l.

42. Following drainage improvement, the major issues that threaten productivity and sustainability of irrigated agriculture in the project area include the deteriorating irrigation infrastructure, inefficient water use and associated high costs of pumping to the public and WCA budgets, and the lack of incentives to farmers to improve production and productivity. More rational and accountable management of irrigation and water resources is required to improve the quality of service delivery to farmers. WRM is also limited by weak capacities of public I&D service providers, WCAs and farmers.

43. More than 40 percent of the irrigation supply in the project area continues to depend on three major pump stations and more than 20 floating pump stations that withdraw water from the Amu Darya. The total annual energy costs of pumping amount to about US\$2.39 million. The project will remove this dependence on pumping by developing a gravity off-take from Tuyamuyun reservoir and dismantling all lower Amu Darya pumping stations serving the project area, thereby eliminating the need to release large amounts of water into the Amu Darya for the exclusive purpose of serving these stations. Dismantling of pumping stations has been incorporated as a project covenant and the costs of fully dismantling the stations will be financed by the project. Studies have demonstrated that switching from lift to gravity irrigation will be possible without increasing the annual volume of water withdrawn from the Amu Darya. To achieve this, construction of a new 68km Bustan Canal and reprofiling of the Right Bank Canal (RBC) are required. In addition, secondary canals will be reprofiled, and deteriorated and damaged structures will be refurbished or replaced.

44. The government agreed that as many UNS staff, the agency responsible for managing the pumping stations, as possible will be redeployed upon its abolishment, and this has been reflected in a covenant. A Retrenchment Framework has been prepared as part of the Environmental and Social Impact Assessment (ESIA) in the event no suitable alternative employment can be found for some of the staff.

45. To complement investments in civil works, the project will also strengthen institutions and capacities, introduce more efficient irrigation management that is more accountable to stakeholders to help ensure sustainability, and promote crop diversification and intensification, including the production of a third non-cotton/non-wheat crop after winter wheat.

46. The project will not have a negative impact on the lower Amu Darya (see Appendix A in Annex 3). The project will restore irrigated areas that have been abandoned because the aging infrastructure can no longer serve these areas, and will improve agricultural productivity and

crop diversification. In addition, the project will improve overall irrigation efficiency from 32 percent to 47 percent, which will off-set the increase in crop water use as a result of intensification and diversification. The post-project abstraction from the Amu Darya River is estimated at 1,815 million cubic meters (MCM)/year, a reduction of 10 MCM/year over the current abstraction of 1,825 MCM/year, which results from shifting from using pumping stations to gravity irrigation. This shift eliminates the need to release water from the Tuyumayun reservoir required for the pumping stations to operate when water levels in the river are low. Reduced drainage flow as a result of efficiency gains will result in lower flows in the Janadarya Canal. The project will not have a net negative impact on water quality in the Aral Sea, as improvements in water quality in the lower Amu Darya (as a result of suspension of drainage into the Amu Darya) will be off-set by saline drainage flows that are captured by the Janadarya canal, which drains into the Aral Sea.

47. In addition, dismantling the Amu Darya pumping stations that are no longer needed once the gravity off-take into the project area has been developed, may lead to better management of releases from the Tuyamuyun reservoir, as these pumping stations need large releases from this reservoir to maintain adequate water levels in the river. Dismantling of pumping stations as a result of the project would allow Tuyamuyun managers to better schedule these releases and enhance their environmental impact, because they would no longer be driven exclusively by irrigation considerations. The project will closely monitor water abstractions from the Amu Darya into and escape flows from the project area, as well as the environmental and social impact. Relevant data will be shared on a real-time basis with the Amu Darya BVO. Agreements to release water into the Aral Sea would therefore not be undermined as a result of the project.

48. The project area is located downstream of the Tuyamuyun Dam and the project will therefore address important safety issues of the dam. A 2001 Tuyamuyun Dam Safety Inspection Report identified a number of dam safety issues, and a number of the proposed safety measures were implemented, as confirmed by a dam safety review prepared in 2009. During project preparation, it was agreed to include some of the pending measures in the project (see Annex 3 for details).

49. The project contains the following components: (i) Modernization of the Irrigation Network; (ii) Modernization of Agriculture; and (iii) Project Management, Monitoring and Evaluation.

50. **Component 1: Modernization of the Irrigation Network** (US\$273.85 million, of which US\$192.5 million IDA and US\$14.8 million IBRD). The objective is to restore the irrigated area in South Karakalpakstan in a financially efficient manner. Intermediate results indicators include (i) area provided with improved I&D services; (ii) reduction of energy consumption; (iii) irrigation water distribution schedule prepared; and (iv) dam safety plan for Tuyamuyun dam prepared and submitted to the government. This component will invest in infrastructure to restore irrigated area in South Karakalpakstan, and will consist of the following three subcomponents:

- *Subcomponent 1.1: Irrigation infrastructure improvement* through, inter alia: (i) improving sections of the Right Bank Canal (to increase the conveyance capacity from 75

to 150 m³/sec); (ii) constructing the Bustan Canal; and (iii) reprofiling and rehabilitating existing main and secondary canals, including Pakhta-Arna, Keltaminor, Old Bozyap and Bogyap Canals.

The construction of the Bustan Canal will eliminate the need for first level pumping from the Amu Darya¹¹. The rehabilitation of the existing canal systems will eliminate the need for second-level pumping from inter-farm canals to on-farm channels. Moreover, there are 90 main structures (control, cross-drainage and bridges) to be constructed or rehabilitated. More than 20 distribution canals (inter-farm canals) have been identified for rehabilitation. As a result of the project, overall scheme irrigation efficiency is expected to increase from 32 percent to 47 percent.

- *Subcomponent 1.2: : SCADA implementation:* Installation of Supervisory Control and Data Acquisition (SCADA) through the provision of goods, consultants' services and training, based on the criteria and methodology set forth in the Project Operational Manual (POM).

The project will install a SCADA system to monitor and control the operations of the irrigation system on a real-time basis. The SCADA system will be implemented in two phases: (i) installation of a simple remote automated monitoring system on the Ellikala Canal, and (ii) adoption of up-to-date control technology for the interconnected Pakhta-Arna system and the Bustan Canal.

Although SCADA makes it possible to measure water supply volumetrically, introduction of volumetric O&M charges will not be introduced under this project because this is fraught with technical, social and institutional complications, especially in an environment where non-volumetric cost recovery is already a challenge. Instead, the project will introduce volumetric measurement and management in part of the system, and water managers will be trained in operating SCADA and monitoring of volumetric supplies. This will lay the foundation for introducing volumetric O&M charges at a later stage, when water management capacities have strengthened. Data collected through SCADA will be made publicly available to evaluate water abstraction.

- *Subcomponent 1.3: Safeguards measures:* Support for (i) the implementation of the safeguards mitigation measures provided in the (a) Environmental and Social Assessment and Management Plan (ESAMP); (b) Resettlement Policy Framework (RPF); and (c) Bustan Resettlement Action Plan (RAP) and the RAP(s) prepared in connection with the project (including the provision of compensation); (ii) the carrying out of a dam failure mode study to analyze the impact on the Tuyamuyun Dam of a catastrophic event upstream; and (iii) dismantling of pumping stations within the project area.

¹¹ In the project area alone, the annual energy costs to operate the three major pumping stations and 20 floating pump stations amount to \$2.4 million per year

This subcomponent will address all safeguard measures under the project, including implementation of the ESAMP (including a pest management plan, PMP), RAP/RPF, and dam safety measures. The likely negative impacts of the project include some limited disruption of the ecosystem, resettlement of project affected people (PAP) and lack of safety at the construction sites, which will all be mitigated through the ESAMP, budgeted at about US\$10.6 million, under the joint responsibility of MAWR and the civil-work contractors. The project will also invest in the safety of the Tuyamuyun Dam. A full range of measures in compliance with the Bank's Operational Policy (OP) 4.37 on dam safety has been agreed to during preparation, after a Potential Failure Mode Analysis workshop and after a dam safety inspection by the dam authority, Gosvodkhoznadzor.

The government has agreed that as many UNS staff, the agency responsible for managing the pumping stations, as possible will be redeployed upon its abolishment, and this has been reflected in a project covenant. A Retrenchment Framework has been prepared as part of the ESIA in the event no suitable alternative employment can be found for some of the staff. On the basis of this Retrenchment Framework, this subcomponent will finance: (i) dismantling of the pumping stations; and (ii) the preparation of a detailed retrenchment plan for UNS staff who might lose their employment (conservatively estimated at about 10 percent of the UNS staff) as a result of the dismantling of the pumping stations.

51. **Component 2: Modernization of Agriculture** (US\$55.43 million, of which US\$43.0 million IDA and US\$3.2 million IBRD). This component will invest in improving irrigated agricultural production in the project area so that farmers take full advantage of improved water management by strengthening capacities, promoting crop intensification and diversification, investing in cotton harvest mechanization and conducting outreach and information dissemination. Intermediate results indicators include (i) operational WCAs created and/or strengthened; (ii) number of BVO, LABAIS and PAN-ISA staff trained and the percentage of trainees satisfied with the training; (iii) number of client (male and female) days of training provided; (iv) area producing a non-cotton/non-wheat crop; (v) percentage of cotton area harvested mechanically (70 percent of cotton area); and (vii) number of demonstrations established. All training under this component will be conducted in an iterative manner, including needs assessment, implementation and feedback/evaluation. The component contains the following subcomponents:

- *Subcomponent 2.1: Strengthening capacities of local water resource management institutions*, including Amu Darya BVO, LABAIS, PAN-ISA and the Karakalpakstan Meliorative Expedition (KKME), through the provision of goods and training.

Relevant stakeholders (in particular the WCA support unit in PAN-ISA) will be trained in providing support to WCAs. The subcomponent will also finance study tours to expose water resources and I&D stakeholders to a range of best water management practices, and will finance a canal management pilot.

- *Subcomponent 2.2: Crop Intensification and Diversification* through (i) capacity strengthening of selected farmers and WCAs through demonstrations, Farmer Field School (FFS), and the provision of goods and training on, *inter alia*, I&D management

and improved agricultural practices; (ii) assistance to farmers to access lines of credit (including assistance in the preparation of business plans); and (iii) provision of modern tools and maintenance equipment to WCAs to undertake on-farm maintenance activities.

Demonstrations and FFSs will focus on non-cotton/non-wheat crops to help farmers take full advantage of the opportunities that the project provides to intensify and diversify production away from cotton¹². Production in the area where irrigation will be restored under the project (30,000 ha) will be diversified, but diversification also takes place on land where cotton and wheat are grown, because the project will make it possible to grow a third crop after winter wheat. Outreach activities to attract as many farmers as possible will leverage demonstrations and FFSs for wider exposure. FFSs will also include a standard training module on Uzbekistan legislation relating to child and/or forced labor to raise awareness. The project will also support farmers to scale-up land leveling and deep ripping, and will promote soil testing, including a study into the establishment of a soil testing laboratory under the Karakalpakstan Ministry of Agriculture and Water Resources (KMAWR).

The project will provide assistance to help farmers access credit in support of intensification and diversification, including information dissemination and awareness raising, training and preparation of business plans and credit proposals. The project will not provide credit itself but will take advantage of existing lines of credit that have been established under RESP-II and HDP. Expansion of the coverage of both projects will be sought to include the South Karakalpakstan project area.

Prior to the provision of modern tools and maintenance equipment to WCAs to undertake on-farm maintenance activities, the project will conduct a study to identify options for doing so in a sustainable and financially viable manner. Upon successful identification of sustainable and financially viable options, the equipment will be provided upon meeting clear eligibility criteria regarding their capacity to fully utilize, maintain, and operate them, and recover their replacement cost after their useful life. An assessment of the financial viability of WCAs will be conducted, and the project will help WCAs prepare a business plan prior to the provision of equipment.

- *Subcomponent 2.3: Cotton Harvest Mechanization:* Support for cotton harvest mechanization through (i) the acquisition and provision of mechanized cotton harvesters in the project area; (ii) provision of cleaning equipment to ginneries; and (iii) strengthening cotton ginneries' capacity to operate and maintain the machinery and to adopt crop husbandry methods which are appropriate for cotton mechanization.

This subcomponent will support the government's strategy to fully mechanize cotton harvesting by 2016. To that end, the project will finance purchase of mechanized cotton harvesters. The aim is to mechanize about 70 percent of the project area¹³ by 2016, which

¹² In the project area, the land where cotton is being produced has decreased from 44,000 ha in 2011 to 36,000 ha in 2013

¹³ 30 percent of the cotton area is not suitable for mechanization because of physical land configuration and/or the land is used for cotton seed production

requires the purchase of about 230 cotton harvesters. To ensure timely procurement, bidding documents will be prepared before project effectiveness. The cotton harvesters will be provided to an entity that will ensure sustainability and likelihood of achieving cotton mechanization targets. To that end, the Borrower shall enter into an agreement (or two agreements if necessary) with Uzpakhtasanoat (and/or any other entity agreed upon by the Borrower and the Bank), that will define the terms of providing cotton harvesting equipment and services and other associated equipment to Uzpakhtasanoat (and/or any other entity that might be selected). The sub-component will also finance purchase of cleaning equipment for the ginneries so that the quality of machine-harvested fiber will be the same as hand picked cotton. The subcomponent will also strengthen capacities to operate and maintain the machinery and to adopt crop husbandry methods that are appropriate for cotton mechanization.

- *Sub-component 2.4: Communication, outreach campaigns and gender:* Support the development and carrying out of communications strategies and public awareness raising campaigns on project-related data and information, including on the issues relating to child and/or forced labor.

This subcomponent will ensure that relevant project-related data and information is made available and accessible to all users. The outreach activities will include preparation of project brochures to summarize key project information (including on project goals and benefits, legislation related to child and/or forced labor, resettlement and land acquisition, TPM and FBM), as well as short fact sheets providing key information on how to participate in FFSs and demonstrations. The project will also launch an awareness campaign to inform farmers about the implications of cotton harvest mechanization in terms of crop husbandry methods. Additional channels will be piloted to reach out to the beneficiaries via mobile phones and TV programs. The project will reach out to women farmers via Makhalla (village) committees to make sure they participate in consultation and planning meetings, establish a quota for women to take part in FFSs and demonstrations, ensure that FFSs and demonstrations are organized during particular months convenient for women to attend, and will help arrange transportation to facilitate their participation.

52. **Component 3: Project Management, Monitoring and Evaluation** (US\$8.10 million, of which US\$6.9 million IDA and US\$0.3 million IBRD): Strengthening the MAWR's and the Project Implementation Unit's (PIU) capacity for project management, monitoring and evaluation (M&E) (including, inter alia, the areas procurement and financial management) through the provision of goods, consultant services, training, and financing of incremental operating costs. Intermediate results indicators include the number of project monitoring reports submitted on time annually. This component will (i) support the preparation of a feasibility study and bidding documents for follow-up investment activities; (ii) develop a comprehensive management information and data collection and reporting system on key performance outputs and impact indicators through, inter alia, baseline surveys; participatory assessments; mid-term reviews; and final evaluations; (iii) support the preparation of a strategy for WRM in the lower Amu Darya area; (iv) development of operating rules for the Tuyamuyun Dam reflecting the fact that, following the dismantling of the pumping stations under component 1.3, water releases to serve downstream pumping won't be required; (v) provision of TA to assist the government in

developing a strategy for agricultural diversification away from cotton; and (vi) carrying out a study on the necessary requirements and arrangements to certify that cotton produced in the Borrower's territory complies with applicable laws and regulations on child and/or forced labor.

53. To reflect the more hands-on involvement of the PIU in day-to-day project management and implementation, staffing of the PIU will be strengthened, prior to project effectiveness, to include a number of technical, financial management, M&E and safeguards (social and environmental) experts. An independent M&E consultant will be recruited to establish a Management Information System (MIS) and arrange for data collection and reporting. This component will also finance preparation of a strategy for WRM in the lower Amu Darya, and assist the government in developing operating rules for Tuyamuyun Dam that will reflect the fact that water releases to serve downstream pumping are no longer required and that water will be abstracted from the dam through a gravity off-take. Detailed implementation arrangements will be spelled out in the POM, to be prepared as a condition of effectiveness.

B. Project Financing

Lending Instrument

54. The lending instrument is Investment Project Financing (IPF). Total project cost inclusive of taxes and duties is US\$337.43 million, of which US\$54.06 million are price and physical contingencies. About US\$26.59 million will be the government's contribution to finance (i) major repair works in Yambash Canal; and (ii) dam safety measures at the Tuyamuyun Dam, excluding the costs of a dam safety study. The government's contribution in forgone value added tax and custom duties will be US\$50.05 million. The project will be financed by an IDA credit in the amount of US\$242.50 million and an IBRD loan of US\$18.29 million.

55. The cost of the project is expressed in 2014 constant prices. Unit prices in Uzbek Soum have been converted to US dollars at the average official exchange rate of UZS 2,200 = US\$ 1.0. The costs of civil works are based on estimates of quantity of works and unit rates determined by a feasibility study team and are based on the cost of ongoing works and on costs from recently signed civil works contracts. Unit prices of equipment and goods are based on prices quoted by local and foreign suppliers. Rates of national staff salaries and international consultants are based on prevailing local and international consultant rates. Physical contingencies of 10 percent are included in the cost of civil works (except for Bustan Canal and the government financed civil works on dam safety) and zero percent physical contingencies are applied to all other cost items. Price contingencies are based on the forecasted annual local and foreign inflation rates and devaluation, and applied to all cost items except those under the Modernization of Agriculture component.

Project Cost and Financing

Uzbekistan

South Karakalpakstan Water Resources Management Improvement Proj

Components by Financiers
(US\$)

	IDA		IBRD		The Government (in foregone taxes and duties)		The Government (in cash)		Total	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
1. Modernization of Irrigation Network	192,543,595	70.3	14,809,524	5.4	39,907,268	14.6	26,589,938	9.7	273,850,325	81.2
2. Modernization of Agriculture	43,039,014	77.6	3,152,881	5.7	9,238,379	16.7	-	-	55,430,274	16.4
3. Project Management and Monitoring and Evaluation	6,917,391	85.4	281,870	3.5	905,081	11.2	-	-	8,104,343	2.4
Total PROJECT COSTS	242,500,000	71.9	18,244,000	5.4	50,050,729	14.8	26,589,938	7.9	337,384,667	100.0
Front-end fees	-	-	45,725	100.0	-	-	-	-	45,725	-
Total Disbursement	242,500,000	71.9	18,290,000	5.4	50,050,729	14.8	26,589,938	7.9	337,430,667	100.0

C. Lessons Learned and Reflected in the Project Design

56. The World Bank has a long engagement in Uzbekistan in supporting activities to increase agricultural productivity and diversification, promoting greater rural employment, increasing rural incomes, and improving the environmental sustainability of agricultural production. These include the DIWIP (US\$74.55 million, closed on June 30, 2013); the RESP-I (US\$43.45 million); RESP-II (US\$74.7 million) and AF-RESP-II (US\$44 million); and the FVWRMP Phase-I Project (US\$81.85 million). In the course of this engagement, the Bank has recognized progress requires a long-term engagement. The project will therefore build on the lessons learned from this engagement and will continue to pursue these efforts.

57. Mechanization of cotton harvesting has become a viable option in many countries, especially in view of the development of appropriate technologies (such as cotton harvesting machines that are pulled by or mounted on a tractor), that are more suited to medium-sized farms like the ones in Uzbekistan. This allows countries more options to meet cotton harvesting requirements.

58. The World Bank has recognized that addressing complex social issues, such as child and/or forced labor, requires a multi-pronged approach including policy dialogue; working together with national and international partners; sector-level support, such as technical advice on improving agricultural productivity and crop diversification, adoption of new technologies and I&D system improvements; support for cotton harvest mechanization; and mitigation measures and binding provisions at the project level. During project preparation, senior Bank management discussed with the government its concerns regarding reports of child and/or forced labor issues, and the project will take advantage of a number of measures that were agreed to during these discussions, including TPM and FBM as presented in paragraph 24 above. As evidenced by its Industrial Modernization and Infrastructure Development Program, and its support for cotton harvest mechanization, the government has confirmed its commitment to working with the Bank on this agenda. Development partners in Uzbekistan have confirmed their support to the Bank for its position.

59. The project builds on the DIWIP project and has incorporated a number of important lessons, including (i) the need to provide ample opportunities for all stakeholders to improve their agricultural knowledge base and practical expertise, (ii) the importance of I&D service delivery at all levels of the irrigation system, (iii) the need to improve the accountability and transparency of canal management to better respond to user demand, and (iv) the importance of strengthening WCAs and ensuring their involvement in the design and implementation of the

project. Another important lesson is the need to more closely involve local authorities in project design and implementation, because they play a key role in shaping its outcomes.

60. Experience from DIWIP and the WCA strengthening project funded by the Swiss Agency for Development and Cooperation (SDC), implemented in support of the RESP-II and its AF, suggests that, although good progress has been made to address and resolve some of the generic policy and legal issues, establishment and training of WCAs is facing significant challenges in Uzbekistan. The project will therefore invest in capacity strengthening of WCAs and laying the foundation for more responsibility by WCAs for on-farm water management and maintenance.

61. Finally, DIWIP, the FVWRMP and RESP-II have often faced protracted delays in the recruitment of international consultants and procurement of goods and works from international suppliers, as a result of contract registration. Discussions with the government on this matter have recently led to a resolution of these issues.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

62. Implementation arrangements for the project build on those that were adopted for DIWIP, but allocate more responsibility for project implementation to local authorities. The MAWR, with branches at the district and regional levels, is responsible for water planning in the country and for O&M of the main I&D systems down to farm level. The MAWR also administers international river systems with respect to water sharing and water quality control. Within MAWR, a deputy Minister acts as the project head with overall responsibility for the project within the MAWR and for liaising with other ministries and government agencies.

63. Responsibility for day-to-day project implementation will be delegated to the existing PIU and headed by a project director, supported by technical and administrative staff in Tashkent. The PIU will maintain an office in Beruni under the supervision of a deputy director. The PIU will be assisted by national and international consultants on contract administration and construction supervision, project management, M&E, capacity strengthening and irrigation.

64. A Karakalpak Project Coordination Committee (KPCC) will be established in Nukus to supervise and coordinate project implementation. The KPCC will be chaired by the deputy chairman of the Council of Ministers of Karakalpakstan. Its secretary will be the PIU director. Members of the KPCC will be the mayor (Hokhims) of concerned districts (Beruni, Ellikala and Turtkul); local representatives of the Departments of Agriculture, Forest and Livestock; the cotton association (Khloptaprom, responsible for cotton ginning); the National Environmental Agency (Goskompriroda); the Institute of Archaeology and Ethnography; and two farmers' representatives of each district. The main task of the KPCC is to coordinate the implementation of the project, review project M&E reports submitted by the M&E consultants, communicate the prohibition on the use of child and/or forced labor to project stakeholders, and to recommend necessary actions when project implementation problems occur. It will meet semi-annually, or at the request of the chairperson or the secretary.

65. A Field Coordination Committee (FCC) will be established and chaired jointly by the three district mayors in the project area. The PIU director or his designate will act as secretary. Its members include local representatives of the Departments of Agriculture, Forest and Livestock; KhloptaProm (the cotton agency responsible for cotton ginning); the national environmental agency (Goskompriroda); the Institute of Archaeology and Ethnography; and two farmers' representatives. Meetings will be open for attendance by stakeholders on an observer basis. The main task of the FCC will be to coordinate the implementation of the project at district level, exchange information about project activities (in particular on progress in the implementation of civil works and training), communicate the prohibition on the use of child and/or forced labor to project stakeholders, and recommend necessary actions when project implementation problems occur. The FCC will meet at least quarterly, or at the request from the chairperson or the secretary.

66. Dialogue between stakeholders will be further strengthened by investing in communication equipment, in particular for PAN-ISA and WCAs. In addition, the PIU will become more hands-on involved in day-to-day project management. To that end, the PIU will be strengthened to include a number of technical experts, including in M&E, environment and social issues, irrigation and agriculture. Furthermore, TA consultants will be located in the offices of district and regional offices of their counterparts to ensure relevance and ownership among these clients.

67. The PIU will submit semi-annual reports to the MAWR, KMAWR, KPCC and Bank no later than three weeks after each six-months period. The reports will cover progress and expected completion dates for civil works and equipment/goods contracts, progress on institutional components, training and studies, and activities of the PIU's M&E, procurement and financial consultants. The PIU will also submit annual reports to the same groups. These reports will contain an Annual Progress Report and an Annual Work Plan. The Annual Progress Report will cover the progress of each component, implementation of key features of the Environmental Management Plan (EMP), key performance indicators, operation of project facilities, and financial statements. The Annual Work Plan will contain a plan for implementation, updated disbursement profile, planned actions in compliance with safeguard policies, and target indicators for the coming year.

B. Results Monitoring and Evaluation

68. The PIU will be responsible for overall coordination of project monitoring. M&E consultants will be recruited by the PIU for independent monitoring of project progress, project impact, and the achievement of PDO. To that end, the PIU and M&E consultants will be responsible for setting up the project's MIS and arrange for data collection and reporting. The MIS will be based on the agreed project outcome indicators and annual performance targets presented in Annex 1.

69. M&E consultants will also monitor project compliance with social and environmental safeguards, and the impact of crop intensification/diversification and cotton harvest mechanization on employment opportunities in the project area (in particular on vulnerable groups). They will supervise implementation of the overall EMP and Social/Resettlement Management Plan, including the RAP, and will undertake careful review and monitoring of

specific sub-project social and EMPs as well as impact assessment and supervision of their implementation. These consultancies will also help to reinforce overall transparency and governance during project implementation. A baseline survey will be conducted before project effectiveness and additional surveys are scheduled to be held during mid-term review and at project completion. The PIU will submit to the MAWR, KPCC and Bank a semi-annual performance review.

70. Progress will also be monitored through regular implementation support missions conducted by the Bank and the government. M&E findings will provide feedback during these missions, and progress reports will be prepared immediately preceding the implementation support missions. A mid-term review of the project will be undertaken. The final Beneficiary Implementation Completion Report will be submitted to the Bank three months prior to the project's closing date. A separate Implementation Completion Report will be prepared by the Bank no later than six months after the project's closing date.

71. In addition to regular monitoring of project results, the project will participate in a TPM and an FBM. The TPM, which will be financed through a separate trust fund amounting to approximately US\$2.5 million over three years,¹⁴ will focus on child and/or forced labor issues in connection with the project activities or within the project area and will be conducted during the cotton harvesting season. Feedback will be collected from both project beneficiaries and other stakeholders. A fully independent FBM will be established, that is dedicated to reports on occurrences of child and/or forced labor in connection with the project activities. It is different from the feedback mechanism that will be established as part of the measures that accompany involuntary resettlement (see section E). The TPM will be implemented by a reputable consulting firm with experience in social auditing. Activities under the TPM and FBM include, among others things, (i) capacity building and learning; (ii) periodic unannounced site visits; and (iii) periodic assessment of local context and conditions. A Joint Working Group, consisting of representatives from the government, Bank and TPM consultant, will be established to discuss and resolve any disagreement during implementation of the assignment.

C. Sustainability

72. The project addresses sustainability at four distinct levels:

(a) *Financial viability of I&D*: A key concern associated with I&D is the insufficient allocation of resources to public I&D services and the inadequate recovery from farmers of private O&M costs. As a result, many irrigation schemes, not only in Uzbekistan, are faced with a vicious cycle of inadequate resources, poor I&D service delivery and limited willingness among farmers to pay. The project will address these concerns by (i) reducing the costs of irrigation management by providing gravity supply of water; (ii) involving local authorities more closely in the design and implementation of the project to ensure local ownership; (iii) making I&D service delivery more accountable to those who pay for these services, among others ways by piloting SCADA; and (iv) strengthening

¹⁴ This work will be mobilized in FY15. In the event that no funding is secured before project effectiveness, the World Bank's own administrative budget will initially be used to start the program.

capacities of WCAs and local authorities responsible for irrigation and water management.

(b) *Institutional sustainability*: Local authorities and agencies are responsible for agricultural extension and water service delivery after project closure. During DIWIP, some of the objectives were not fully achieved (e.g., introduction of a more rational water allocation schedule) as a result of inadequate stakeholder involvement. During preparation of the project, local authorities and staff from the MAWR have been closely involved. The project is designed to incorporate as much as possible the national and local stakeholders (for example, through SCADA, demonstrations and FFSS).

(c) *Environmental and social sustainability*: An ESAMP, drafted during project preparation and updated to better address child and forced labor issues in the project area, in addition to social analysis conducted by the Bank team, have identified measures to mitigate the project’s adverse environmental and social effects. Most of the proposed mitigation measures will be reflected in the construction contracts, and adequate resources have been allocated for implementation of additional measures. A RAP has been prepared and will be implemented prior to the start of works. The project will follow up diligently on the implementation of these ESAMPs and RAPs, and no withdrawal shall be made for works unless the Bank has received satisfactory evidence from the borrower that compensation to PAP has been determined in compliance with the Bustan RAP or all other RAP(s).

(d) *Climate change*: During project preparation, the Bank team has taken advantage of a detailed climate change study undertaken in Uzbekistan¹⁵. Many of the recommendations have been incorporated into the project, including (i) improved institutional framework and enhanced capacities for managing water resources; (ii) investments in I&D systems; and (iii) improved reliability of I&D service delivery.

V. KEY RISKS AND MITIGATION MEASURES

A. Risk Ratings Summary Table

Stakeholder Risk	Rating
Implementing Agency Risk	Substantial
- Capacity	Low
- Governance	Substantial
Project Risk	
- Design	Substantial
- Social and Environmental	High

¹⁵ World Bank. 2012. *Looking Beyond the Horizon: Adapting Agriculture to Climate Change in Four Europe and Central Asia Countries*. Washington, DC: World Bank (see box 1).

- Program and Donor	Low
- Delivery Monitoring and Sustainability	Moderate
Overall Implementation Risk	Substantial

B. Overall Risk Rating Explanation

73. The overall risk rating of the project is substantial (for further details, see Annex 8). The *operating environment* risks and risk management measures are as follows:

- Risk: Price verification by the Ministry of Foreign Economic Relations and International Trade is inconsistent with the Bank's procurement rules and may slow project implementation.
- Risk management: As a result of systematic Bank monitoring of contract registration and implementation and dialogue with government, project implementation and disbursement significantly improved. Currently, turnaround time in most cases for contract review and registration is less than one month after contract signature. The Bank's response, should systemic delays in procurement re-emerge, will include declaration of misprocurement in accordance with the Bank procurement guidelines until a resolution is reached.

74. *Project* risks and risk management measures are as follows:

- Risk: Child and/or forced labor may be used in the project area for cotton harvesting,
- Risk management: Enforcement of conventions related to child and/or forced labor, as well as of existing national laws reflecting international agreements, have been a challenge, in particular during the cotton harvest. The ILO monitoring mission, completed in November 2013, confirmed that it would appear that there was no systematic recourse to forced child labor, and that farmers and local authorities are well aware of the prohibition on child labor. However, forced labor of government employees has been prevalent, reflecting the challenge of transitioning away from a system that has been relying for more than two decades almost exclusively on handpicking for the cotton harvest, and there is a risk that the practice could occur in the project area. The project aims to eliminate the use of child and/or forced labor in the project area through promotion of crop intensification and diversification, cotton harvest mechanization, training, outreach and awareness raising, participation in a TPM and FBM (both financed through a separate trust fund),¹⁶ and an agreement not to increase the area that is subject to the state cotton procurement system. In addition, a number of covenants related to child and/or forced labor have been incorporated into the FA.
- Risk: There is a risk that the proposed TPM and FBM will not attract separate donor funding.

¹⁶ In the event that no funding is secured before project effectiveness, the World Bank's own administrative budget will initially be used to start the program.

- Risk management: The Bank has an ongoing dialogue with bilateral donors on this agenda and there is wide support for the approach that the Bank has adopted for elimination of child and/or forced labor in Bank-financed project areas. It is therefore expected that several bilateral donors will make financial contributions for the TPM/FBM. In the event that no funding is secured before project effectiveness, the World Bank's own administrative budget will initially be used to start the program.
- Risk: Important safeguards have been triggered, including in particular environmental assessment (OP4.01) and involuntary resettlement (OP4.12)
- Risk management: The team has reviewed implementation and M&E of safeguards issues in DIWIP and FVWRMP and has been satisfied with the arrangements for stakeholder involvement, disclosure and appeals. Safeguard compliance of FVWRMP and DIWIP is rated satisfactory. While this suggests that adequate compliance with safeguards policies is a realistic expectation during implementation of the project, PIU staff will be trained in environmental and social safeguards. The team will monitor implementation closely and will be particularly sensitive to stakeholder involvement, disclosure and appeals processes.
- Risk: Water flows in the lower Amu Darya may be reduced as a result of (i) reduced releases from the Tuyamuyun Dam after dismantling pumping stations, as water releases to serve these pumping stations when water levels in the river are low are no longer required; and (ii) the possibility that pumping stations will not be dismantled and will continue to be used for supplementary irrigation in the project area. Reduced flows would affect the ecology in the Amu Darya delta and wetlands and would affect downstream abstractions. Turkmenistan (downstream country) may be affected as a result of a modified flow regime in the river.
- Risk management: The project will develop operating rules for Tuyamuyun that would reflect the new situation without the pumping stations. The project will finance dismantling of pumping stations, and include the dismantling as a covenant in the project's FA. In addition, the UNS will be abolished, and this has also been reflected in a covenant. Real-time flow measuring stations will be installed at the off-take from the Amu Darya into the project area and in each of the two escape canals that release water from the project area into the Amu Darya. Water abstractions and release flows will be monitored by the project on a real-time basis, and the related data will be shared with the Amu Darya BVO.
- Risk: Dismantling the pumping stations and abolishing the UNS may require retrenchment of some of its staff. Retrenchment frequently confronts challenges due to social sensitivities and context specific situations that arise.
- Risk management: The Government of Uzbekistan (GOU) committed to redeploy UNS staff in response to increased demand for maintenance in the restored area and on the Bustan Canal. A Retrenchment Framework has been prepared as part of the ESIA in the event no suitable alternative employment can be found for all staff. A Retrenchment Action Plan will be prepared and its implementation has been reflected in a covenant.

- Risk: There is a risk that, if UNS staff are not retrenched, pumping stations cannot be dismantled.
- Risk management: Retrenchment of UNS staff has been reflected in a covenant. A Retrenchment Action Plan will be prepared and implemented to the satisfaction of the Bank. It is expected that most UNS staff will be redeployed and that a maximum of 10 percent of UNS staff for whom no convenient alternative employment can be found, will be retrenched.

75. *Riparian* risks and risk management measures are as follows:

- Risk: The project area is located in the downstream parts of the Amu Darya, an international river that forms part of the Aral Sea basin which is seeing severe competition over water among neighboring countries. Riparian issues in the Aral Sea basin are very sensitive. After the dismantling pumping stations, there is a concern that water releases from the Tuyamuyun Dam will be reduced, affecting the ecology in the Amu Darya delta and wetlands.
- Risk management: The water balance before and after the project confirms that the impact of the project in terms of water quantity will be positive as a result of irrigation efficiency gains. The post-project abstraction from the Amu Darya River is estimated to be reduced from the current abstraction of 1,825 MCM/year to 1,815 MCM/year. The project will dismantle pumping stations serving the project area. Uzbekistan has notified Aral Sea riparian countries in accordance with OP7.50 and has provided detailed information about the project and its impact on the Amu Darya as part of the notification. The riparian notification process has been completed in a manner satisfactory to the Bank in compliance with OP7.50. The project (under sub-component 2.1) will support capacity development of the lower Amu Darya BVO, which will contribute to enhanced cooperation between Turkmenistan and Uzbekistan in the management of lower Amu Darya water resources. The project will also develop operating rules for Tuyamuyun dam that would take the dismantling of pumping stations (and the possibility to reduce water releases to serve these) into consideration.
- Risk: There is a risk that water management staff at district and regional level (LABAIS, PAN-ISA) will not fully implement the project's more rational water management, as they face pressures from local governments. In addition, there is a risk that farmers may lack an incentive to improve production and productivity because of an unreliable irrigation water supply, poor-quality I&D service provision and low returns on cotton and wheat production.
- Risk management: The project will mitigate these risks by more closely involving local authorities and farmers in project preparation and implementation. The reliability of the irrigation water supply will be improved by strengthening capacities of water management authorities.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analyses

76. The economic and financial analysis for the project is summarized in Annex 11. The project will improve water service delivery to and water use efficiency on about 100,000 ha of which about 68,500 ha are currently irrigated. The project investments are expected to generate agricultural and non-agricultural (fiscal and social) benefits attributable to the improved reliability and availability of irrigation water, reduced costs of irrigation service and O&M, improved farm practices in areas of double cropping and farm-level water management and cotton harvest mechanization. The main agricultural benefits to the project area will derive from: (i) an average 17 percent yield increase and 20 percent increase in cropping intensity for commercial and dekhkan farms; and (ii) the increase in agricultural output from about 26,000 ha of irrigable lands that are currently abandoned but will be brought back into cultivation once the irrigation water supply is restored. The project will also generate benefits in the form of: (i) savings from the elimination of pumping irrigation costs; (ii) reduced O&M costs,¹⁷ 27 percent of which are financed from the public budget; and (iii) reduced costs of cotton harvesting through mechanization.

Financial Analysis

77. The project investments generate incremental financial returns to commercial and dekhkan farmers, the level of which varies depending on the range of project activities they benefit from. Commercial and dekhkan farmers will receive the highest incremental benefits, which derive from both: (i) improved productivity, intensification, and diversification on the currently irrigated land and (ii) incremental farm output on portions of farm land that will be brought back into production once the irrigation water supply is restored. The estimated incremental gross margins¹⁸ to an average dekhkan farmer with 0.20 ha of farm land will be: (i) US\$320 per year for a farmer with 0.14 ha of farm land that is currently irrigable but would benefit from improved crop productivity, intensity and diversification and about 0.06 ha of farm land that is currently unused but would return to production once water supply is restored; (ii) US\$126 per year for a farmer whose entire farm land (0.20 ha) is currently irrigable but would benefit from improved crop productivity, intensity and diversification; and (iii) US\$140 per year for a farmer who is involved both in crop (currently irrigated 0.20 ha) and dairy (five cows) production. For average commercial farms operating 25 ha of land, the incremental gross margins are estimated at: (i) US\$25,000 per year from improved crop productivity, intensity and diversification on 22 ha of presently irrigated land and from incremental production from currently unproductive 3 ha; and (ii) US\$6,420 per year for commercial farmers whose entire farm land (25 ha) is currently irrigated but would benefit from improved crop productivity, intensity and diversification. Commercial dairy farms benefiting from improved availability of fodder crops will gain an incremental gross margin at US\$56 per dairy cow.

¹⁷ The shift from pumped to gravity irrigation reduces some O&M expenditures, such as the reduced need for canal dredging due to the more rapid flow of water in the canals.

¹⁸ Gross margin is equal to revenue minus production costs before taxes and duties

78. *Project level analysis.* The estimated financial rate of return for the whole project is at 16.3 percent with a financial net present value (FNPV) of US\$ 121.9 million. The benefit to cost ratio is estimated at 1.6.

Economic Analysis

79. Agricultural (crop and livestock) returns are expected to be the largest source of net economic returns (87.1 percent) generated by the project investments in improved irrigation water supply. The average annual net agricultural economic returns will be US\$100.1 million. The switch from pumped to gravity irrigation is expected to generate (i) net annual savings in pumping and O&M costs, and (ii) savings in the form of the avoided O&M costs and salinization, estimated at about US\$2.4 million (or 3.6 percent). Economic benefits of the investments in mechanized cotton harvesting are estimated at US\$15.4 million annually (9.3 percent).

80. *Overall project analysis.* Economic internal rate of return (EIRR) to the project investments is estimated at 16.4 percent, with an economic net present value (ENPV) of US\$215.2 million and benefit to cost ratio of 1.5.

81. *Sensitivity and risk analyses.* The project is moderately sensitive to changes in project cost and scope of benefits, and to delays in benefit accumulation. A 20 percent project cost increase reduces the base EIRR to 14.4 percent. A 20 percent decline in benefits reduces the EIRR to 14.0 percent, and a two-year delay in benefit accumulation results in the economic rate of return (ERR) at 13.5 percent. When the cost of dam safety measures is included, but not the potential benefits expected from improved dam safety, the ERR remains above 12 percent. The analysis tested the project returns to two risk variables. When 50 percent of the area projected for vegetable production by commercial farmers is used for fodder crops, the EIRR is estimated at 13.8 percent. A simultaneous 20 percent reduction in benefits and a 20 percent increase in project costs will reduce the EIRR to 12.2 percent.

B. Technical

82. One of the challenges facing the project is that the investments in Bustan Canal represent about 40 percent of the overall project costs. However, benefits can be captured only if additional investments are made in the secondary network to ensure that water management advantages are extended to the field level and that farm productivity increases. It is therefore not technically and economically feasible to divide the project into a number of separate investment operations. During project preparation, a detailed feasibility study was conducted, and detailed designs were produced for the first 18 months of investments, as well as bidding documents for the Bustan Canal and associated works. Preliminary designs were prepared for subsequent years, including mostly the secondary canal network. During year one of project implementation, the large Bustan Canal contract will be tendered, following pre-qualification that will be done during project preparation. Pre-qualification documents for the Bustan Canal have been submitted to the Bank for no-objection, and pre-qualification will be completed prior to project effectiveness. The procurement plan is presented in Annex 7.

83. Even though it requires large investments, replacing pump irrigation by a gravity off-take from Tuyamuyun reservoir makes good technical sense. Public expenditures for I&D are high, and electricity costs, including those associated with the 27 percent of the irrigated area that depends on pumping in the country, reportedly represent about 70 percent of the MAWR budget. Uzbekistan is consuming one of the highest levels of energy per GDP percentage. This implies that much of the energy consumption in Uzbekistan is used for less productive purposes, with irrigated agriculture as one of the main culprits. The South Karakalpakstan project area has a particularly high level of electricity consumption. The total annual energy costs of pumping amount to US\$2.39 million.

84. In addition, providing gravity irrigation supply also benefits farmers by reducing O&M expenses for pumping that are covered by WCAs. This is especially important, because much of the cotton and wheat production in Uzbekistan has low returns, and high O&M costs undermine farm profitability and consequently affect incentives to invest in agriculture or to resort to child and/or forced labor.

85. The EFA confirms that, despite high investments, the ERR is favorable and robust under a number of scenarios.

86. To complement investments in civil works, the project will also strengthen institutions and capacities, introduce more rational irrigation management that is more accountable to stakeholders to help ensure sustainability, promote crop intensification and diversification, including through production of a third non-cotton/non-wheat crop after winter wheat, and invest in cotton harvest mechanization. Activities will be implemented in close consultation with local authorities. This reflects the experience gained during implementation of DIWIP and RESP-II. The project will also assist the government in developing operating rules for the Tuyamuyun Dam that will reflect the fact that water releases to serve downstream pumping are no longer required and that water will be abstracted from the dam through a gravity off-take.

C. Financial Management

87. The PIU will be responsible for financial management (FM) arrangements of the project. Assessment of these arrangements was undertaken in December 2012 in conjunction with the FM supervision of DIWIP. Overall, the FM arrangements at PIU, including budgeting, accounting, financial reporting, auditing, and internal controls, are assessed to be satisfactory to the Bank. The PIU operates a computerized accounting system, based on the 1-C software used by many Bank-funded projects in the country and is suitable for project accounting and reporting. The PIU has experienced FM staff, consisting of a chief accountant and a financial/disbursement specialist. However, given the heavy workload of the financial staff and complicated financial reports to be provided to the government and the World Bank, an additional financial specialist will be hired.

88. The PIU has fully complied with all FM requirements of the ongoing project including regular and timely submission of quarterly reports as well as satisfactory project audits. The latest FM supervision of the projects implemented by the PIU, conducted in December 2012, shows satisfactory FM arrangements. The FM system operated by the PIU is capable of recording all transactions and balances, and generates financial statements that are submitted to

the Bank regularly and on time. Internal control systems and procedures established by the unit ensure the reliability of accounting records and safeguarding of project resources and assets.

89. The PIU will customize the accounting software used for DIWIP to support project accounting and reporting. The system will have the functionality of automatic generation of reports for the government as well as statement of expenditures (SOEs) and interim financial reports (IFRs) required by the World Bank. The system shall have adequate security safeguards for reliable reporting and data integrity.

90. Disbursements from the IDA Credit Account and the IBRD Loan Account will follow the transaction-based method, that is, traditional Bank procedures, including advances to the designated account, direct payments, special commitments and reimbursement (with full documentation and against SOEs). For payments above the minimum application size, as specified in the disbursement letter (DL), the PIU may submit withdrawal applications to the Bank for payments to suppliers and consultants directly from the credit account.

91. The adequacy of FM arrangements will be continuously monitored during project supervision and adjustments made when necessary to ensure fiduciary compliance. An action plan has been agreed on with the PIU to ensure that adequate FM systems are in place before implementation begins. In addition, an FM specialist will review the annual audit report, quarterly IFRs, and a monthly reconciliation of accounts, and perform at least one complete implementation support mission per nine-month period, which could be complemented by other visits as necessary. More details on FM arrangements are provided in Annex 7.

92. Compensation payments will follow the process that has been established under the FVWRMP. The PIU will monitor compensation payments to PAP that have been identified in the RAP. Eligibility is determined by the hokhim following the recommendation of a committee that is established by the hokhimiyat. An independent agency is recruited by the local cadaster to determine the amount and kind of compensation. Payments will be transferred to the bank accounts of PAP. Beneficiaries will sign receipts and records will be kept by the PIU. Similarly, any retrenchment payments will follow the process that has been established in the Retrenchment Action Plan that will be prepared prior to dismantling the pumping stations and any retrenchment of UNS staff. The PIU will monitor retrenchment payments to UNS staff that have been identified in the Retrenchment Action Plan. The PIU will use a simplified SOE to monitor expenditures.

D. Procurement

93. Procurement for the proposed project will be carried out in accordance with the World Bank's "Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" dated January 2011 (Procurement Guidelines); and "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" dated January 2011 (Consultant Guidelines) and the provisions stipulated in the FA. If there is conflict between government decrees, rules and regulations and the Bank Procurement and Consultant Guidelines, then Bank Procurement and Consultant Guidelines shall prevail. In addition the project will also follow the Guidelines:

On Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants Dated October 15, 2006 and Revised in January, 2011.

94. The PIU will have overall responsibility for procurement under the project. The PIU has staff experienced in procurement under Bank financed projects. As part of project preparation the procurement capacity assessment and PRAMS have been completed. The procurement plan for the project was agreed during negotiations. The procurement risks identified and risk mitigation plan are detailed in Annex 7.

95. The project will be implemented mainly through large civil works contracts. The detailed design and preparation of bidding documents will be undertaken by an international consulting firm jointly with national consultants. An international consulting firm will act as the “Engineer” during construction supervision, and will prepare detailed designs of reprofiling secondary canals. The current contract with the international consultant that was recruited under DIWIP contains an assignment B that covers a number of activities that will be implemented under the project that will be negotiated conditional upon satisfactory implementation of the current assignment (assignment A). It was agreed that assignment B will contain construction supervision for the secondary canals. Preparation of detailed designs will be bid separately. The project team will support the borrower to launch the advanced procurement activities under the project.

96. Bidding documents for a number of important contracts will be prepared before project effectiveness to ensure timely implementation, including in particular the cotton harvesters and the Bustan Canal. Pre-qualification for the latter is underway, while technical specifications are being prepared for the harvesters.

E. Social (including Safeguards)

97. The social analysis of the project draws on the Social Assessment prepared for the SKWRMIP, an analysis of secondary materials, and first-hand evidence collected as part of mission in Uzbekistan. The Social Assessment was disclosed locally on February 6, 2013, and in the Infoshop on February 10, 2014. An update related to child and forced labor was disclosed in-country and in the Infoshop on May 5, 2014. The project is expected to have positive social impacts including increased knowledge and skills among farmers on modern agricultural and water management practices, improved WCA functioning, increased farm yields and income, and improved capacity for irrigation O&M among district and regional authorities. The project will raise awareness about child and/or forced labor, and will pay particular attention to the involvement of women in WCAs and FFSs. The local Makhalla (village) committees will have a strong role in providing specific outreach to women and providing advice on tailoring trainings to the needs of women. The terms of reference (TORs) for WCA and FFS activities will also have special provisions for outreach to women and quotas for their participation.

98. TPM, financed through a separate trust fund, will focus on child and/or forced labor issues in connection with the project activities or within the project area and will be conducted during the cotton harvesting season. If the TPM or associated FBM reveal the use of child and/or forced labor in connection with project activities or within the project area, the World Bank will

be entitled to take any appropriate measures. More details on child and/or forced labor issues in Uzbekistan and the TPM and FBM are presented in Annex 5.

99. The government is committed to redeploying the UNS staff after dismantling the pumping stations and the abolishment of the agency. Most of the UNS staff are expected to be redeployed in the project area, as a result of increased demand for maintenance in the restored area and on the Bustan Canal. However, there is a possibility that no suitable employment can be found for some of the UNS staff, and some staff members may need to be retrenched. It is conservatively estimated that about 10 percent of the workforce will be retrenched. Although this is not an issue of resettlement, a Retrenchment Framework has been prepared and attached as an annex to the project's ESAMP. This framework summarizes relevant national legislation and potential mitigation measures. A full (stand-alone) Retrenchment Action Plan, acceptable to the World Bank, will be prepared and approved under the project prior to the dismantling of the pumping stations. An analysis of alternatives to retrenchment, notably the possibility of transferring staff to other state companies, will be carried out. The plan will be based on the principle of non-discrimination and will reflect consultations with the workers and their organizations and comply with any collective bargaining agreements that may exist. The borrower will ensure that all workers receive notice of dismissal and severance payments mandated by law in a timely manner and that all outstanding payments, benefits, and pension contributions owed to the retrenched workers will be paid prior to the retrenchment.

100. Involuntary Resettlement (OP 4.12): This policy is triggered in this project due to land acquisition and resettlement anticipated in the rehabilitation works associated with the Bustan Canal and secondary canals. The project activities are expected to affect more than 400 ha of agricultural land, some access roads, and residential and small commercial properties. An assessment for resettlement associated with the development of the Bustan Canal estimated that about 83 properties will be affected. A RAP has been prepared for the resettlement associated with the construction of the Bustan Canal. Additional land and properties are likely to be affected when secondary canal designs are finalized, which is expected in the third year of project implementation. In view of future resettlement needs associated with these secondary canals, the government also prepared an RPF. A RAP for resettlement associated with secondary canals will be prepared on the basis of the RPF. A redress mechanism will be established as part of the RAP. The RPF and the Bustan RAP were approved and disclosed in the country and in the Infoshop on March 11, 2013. The borrower will implement the RAPs for all project activities requiring land acquisition and/or resettlement.

F. Environment (including Safeguards)

101. In compliance with OP 4.01, Environmental Assessment, the MAWR conducted environmental and social impact assessments and prepared an ESAMP, consisting of an Environmental Assessment and Management Plan (EAMP)¹⁹ and Social Assessment²⁰. The

¹⁹ Environmental Assessment and Management Plan, Executive Summary (volume 1), dated March 7, 2013; Environmental Assessment and Management Plan (volume 2), dated March 1, 2013 and updated April 9, 2014; and Addendum to Environmental and Social Assessment [sic] and Management Plan (volume 3), dated March 11, 2014.

²⁰ Social Assessment Framework, dated February 2013 and Annex to Social Assessment dated March 2014.

project design does not seek to promote a horizontal expansion of irrigated agriculture, but seeks to improve production per hectare. Hence the EAMP indicated that, as a result of improved water management in the project area, the project would have an overall positive impact on the lower Amu Darya basin and the environment, without undermining the water requirements of the riparians or the Aral Sea. The project safeguards are rated category B, and the applicable safeguards policies are as listed in Annex 7. The likely negative impacts (typical of irrigation development/rehabilitation projects) will be limited, such as limited disruption of the ecosystem (for example, removal of trees to enable developing the Bustan Canal), resettlement, and potential safety issues at the construction sites; and will all be mitigated through the EAMP, budgeted at about US\$10.6 million (of which US\$6 million are resettlement compensations) excluding the dam safety measures under the responsibility of the MAWR and the civil works contractors. The EAMP was disclosed locally on February 6, 2013 and in the Infoshop on March 7, 2013. The EAMP was updated to address the impacts related to the dismantling of pumping stations, and disclosed in-country on May 5, 2014, and in the Infoshop on May 6, 2014. An Addendum to the EAMP related to the impact of cotton harvest mechanization was disclosed in-country and in the Infoshop on March 11, 2014. Annex 7 provides a summary of the ESAMP and a detailed budget.

G. Other Safeguard Policies Triggered

102. In addition to OP4.01 on Environmental Assessment and OP4.12 on Involuntary Resettlement, the project triggered the following policies:

103. Natural Habitats (OP 4.04): One of the co-benefits of improving water management through the project components is to sustain the required seasonal water flow to Badai Tugay (a seasonally flooded forest adjacent to the project area). The canal needed for water supply to the forest has been developed under DIWIP, and this project should ensure the adequacy of its water resources. This policy is triggered to ensure that the project implements the supply of adequate water to the forest.

104. Pest Management (OP 4.09). On the basis of the ESIA, this policy is triggered because the increase in crop yield/production resulting from the project may cause concentrations of the fertilizer/pesticide/defoliant residues (in the soil, crop tissues, or the ambient waters) that exceed standards set by the World Health Organization (WHO) and by the government. If not properly managed, this can cause pesticide residue build-up in the soil as well as in surface and ground water, can disrupt agro-ecosystems and undermine sustainable agricultural production, and can pose human health risks. Also, insufficient infrastructure for storage and disposal of pesticides and related wastes may pose environmental risks. The project will, as part of its capacity building activities under component 2, support awareness raising activities and training programs targeted at WCAs and individual farmers. The training will promote application of biological control methods, and address optimal use of pesticides (preferable WHO class III) on the basis of economic thresholds, determination of adequate amounts, proper storage (away from water bodies and other sensitive receptors) and disposal. The project ESAMP duly addresses the environmental risks associated with the potential increase in the pesticide use.

105. Physical Cultural Resources (OP 4.11): This policy is not triggered because there are no project activities affecting cultural resources. Nevertheless, “chance find” provisions will be incorporated in the works bid documents.

106. Safety of Dams (OP 4.37): The project area is located downstream of the Tuyamuyun Dam. The dam safety safeguard policy is triggered as the project will affect, and investments will depend on the Tuyamuyun Dam. The 2001 Tuyamuyun Dam Safety Inspection Report identified a number of dam safety issues, notably (i) the safety of the Sultansanjar embankment (part of the dam), (ii) rehabilitating the hydro-mechanical equipment; (iii) improving dam instrumentation; (iv) updating the O&M manual; and (v) preparing an Emergency Preparedness Plan. In 2009, the government undertook a Dam Safety Assessment that clarified which of the proposed measures had already been implemented. On the basis of this report and meetings with stakeholders, a workshop was organized on site using the guidelines elaborated by US Federal Energy Regulatory Commission for conducting Potential Failure Mode Analysis. In addition, the dam authority (Gosvodkhoznadzor) conducted a diagnostic dam inspection. A second diagnostic inspection will be conducted in the last year of project implementation. The project will undertake the following activities: finalization of the dam safety plan, replacement of eight radial gates on the Tuyamuyun spillway, routine maintenance works, bathymetric survey of the reservoir, installation of a seismograph at the dam site, a Dam Failure Mode Analysis study, and reinforcement works on Sultansanjar embankment. Further details are provided in Annex 3.

107. Projects on International Waterways (OP 7.50): The project operates on the Amu Darya River which is a transboundary water body and OP7.50 is therefore triggered. The project interventions (for example, switching from pumping from the river to gravity diversion through construction of the Bustan Canal and reprofiling of secondary canals) will result in higher irrigation efficiency and bulk-water savings, as water releases from the Tuyamuyun Dam to serve the pumping stations are no longer required. Hence the current amount and quality of the flows in the Amu Darya, and the irrigation withdrawals by other Aral Sea riparian countries, will not be undermined.

108. On January 31, 2013, the government of Uzbekistan officially notified by letter four upstream and downstream riparian countries (Kazakhstan, Kyrgyz Republic, Tajikistan, and Turkmenistan), providing detailed information about the project and stating that project-supported activities will not undermine the quantity or quality of the current basin-water uses. A fifth letter to Afghanistan was sent by the Bank on February 2, 2013. In response to this notification, Turkmenistan raised concerns about the project in a number of letters that were sent to Uzbekistan between March 27 and September 2, 2013. The concerns related to the impact of the project on water abstractions into the project area; a potential increase in the water level of the Tuyamuyun reservoir, which would result in flooding of assets in Turkmen; and continued releases by Uzbekistan of saline drainage water into the Amu Darya.

109. The Uzbek government responded promptly to each of these concerns to the satisfaction of the Bank. In addition, a Bank team, in the company of Uzbek government officials, visited Turkmenistan in March, July and August 2013, and met with the Turkmen Minister of Water Economy and his team.

110. The Bank has carefully considered any potential impacts of the project and is satisfied that (i) the project will not cause appreciable harm to any of the riparian countries in the Aral Sea basin, and (ii) none of the project activities are expected to have any adverse effects on the quantity or quality of water flows to any riparian country in the Aral Sea basin.

Annex 1: Results Framework

Uzbekistan

SOUTH KARAKALPAKSTAN WATER RESOURCES MANAGEMENT IMPROVEMENT PROJECT (P127764)

Project Development Objectives

The PDO of the project is to restore irrigation and improve water management in the project area in a sustainable and financially efficient manner.

Project Development Objective Indicators

Indicator Name	Core	Unit of Measure	Baseline	Cumulative Target Values							Frequency	Data Source/ Methodology	Responsibility for Data Collection
				YR1	YR2	YR3	YR4	YR5	YR6	End Target			
Improved irrigation water delivery service (MASSCOTE M&E system)	<input type="checkbox"/>	1-4 (lowest to highest)	1.6	1.6	1.6	1.6	2	2	2.5	2.5	annual	PAN-ISA & WCA data, M&E report, beneficiary feedback surveys	PIU, M&E Consultant
Water users provided with new/improved irrigation and drainage services	<input checked="" type="checkbox"/>	Number	0	0	0	5,000	17,000	31,000	38,000	41,000	annual	Surveys, project progress reports, M&E reports	PIU, M&E Consultant
Water users provided with irrigation and drainage services (female)	<input checked="" type="checkbox"/>	Number	0	0	0	3,000	12,000	20,000	25,000	27,000	annual	Surveys, project progress reports, M&E reports	PIU, M&E Consultant
Reduction in annual public and WCA expenditures for pumping	<input type="checkbox"/>	Percent	0	0	0	0	0	0	80	80	annual	Electricity billing records; financial reports of MAWR and UNS; WCAs financial reports	PIU, M&E Consultant
Increased collection rate by WCAs to cover O&M costs	<input type="checkbox"/>	Percent	0	0	0	0	0	0	50	50	annual	WCAs financial reports	PIU, M&E Consultant

Intermediate Results Indicators

Indicator Name	Core	Unit of Measure	Baseline	Cumulative Target Values							Frequency	Data Source/ Methodology	Responsibility for Data Collection
				YR1	YR2	YR3	YR4	YR5	YR6	End Target			
Component 1: Modernization of the Irrigation Network													
Area provided with irrigation and drainage services - Improved	<input checked="" type="checkbox"/>	Hectare (ha)	0	0	0	10,000	40,000	57,000	70,000	75,000	annual	Surveys, project progress reports, M&E reports	PIU, M&E Consultant
Reduction of energy consumption	<input type="checkbox"/>	MWh	0	0	0	0	0	0	30,000	60,000	annual	Electricity company records	PIU, M&E Consultant
Irrigation water distribution schedule prepared	<input type="checkbox"/>	Yes/No	No	No	No	No	Yes	Yes	Yes	Yes	annual	Surveys, project progress reports, M&E reports	PIU, M&E Consultant
Dam safety plan for Tuyamuyun dam prepared and submitted to the government	<input type="checkbox"/>	Yes/No	No	No	No	No	Yes	Yes	Yes	Yes	annual	Project progress reports	PIU
Component 2: Modernization of Agriculture													
Operational WCAs created and/or strengthened	<input checked="" type="checkbox"/>	Number	0	0	0	5	10	15	20	25	annual	Project progress reports, M&E reports, training reports, surveys	PIU, M&E Consultant
Number of BVO, PAN-ISA, and LABAIS staff trained	<input type="checkbox"/>	Number	0	0	10	10	20	30	40	50	semi-annual	Training reports	PIU, M&E Consultant
Percentage of BVO, LABAIS and PAN-ISA staff satisfied with training	<input type="checkbox"/>	Percent	0	0	50	65	70	75	80	80	semi-annual	Training reports, beneficiary feedback surveys	PIU, M&E Consultant

Area producing non-cotton/non-wheat crop	<input type="checkbox"/>	Hectare (ha)	6,500	6,500	6,500	6,500	7,000	7,500	8,500	10,000	semi-annual	Surveys, project progress reports, M&E reports, satellite data	PIU, M&E Consultant
Client days of training provided	<input checked="" type="checkbox"/>	Number	0	0	0	200	300	500	600	600	semi-annual	Surveys, project progress reports, M&E reports, satellite data	PIU, M&E Consultant
Client days of training provided (female)	<input checked="" type="checkbox"/>	Number	0	0	10	30	60	100	120	120	semi-annual	Surveys, project progress reports, M&E reports, satellite data	PIU, M&E Consultant
Percentage of cotton area harvested mechanically	<input type="checkbox"/>	Percent	0	70	70	70	70	70	70	70	annual	Surveys, M&E reports	PIU, M&E Consultant
Number of demonstrations established	<input type="checkbox"/>	Number	0	0	20	70	120	195	245	245	semi-annual	Training reports, project progress reports, M&E reports	PIU, M&E Consultant
Component 3: Project Management, Monitoring and Evaluation													
Number of project monitoring reports submitted on time annually	<input type="checkbox"/>	Number	0	2	2	2	2	2	2	2	annual	M&E reports	PIU

Country: Uzbekistan

SOUTH KARAKALPAKSTAN WATER RESOURCES MANAGEMENT IMPROVEMENT PROJECT (P127764)

Project Development Objective Indicators

Indicator Name	Description (indicator definition etc.)
Improved irrigation water delivery service (Masscote M&E system)	This indicator measures the quality of irrigation water delivery service based on the MASSCOTE system (Mapping System and Services for Canal Operation Techniques), a step-wise methodology to evaluate and analyze different components of an irrigation system. The baseline target for this indicator was determined following a Rapid Appraisal Procedure to evaluate irrigation system performance.
Water users provided with new/improved irrigation and drainage services	This indicator measures the number of water users who are provided with new/improved irrigation and drainage services as a result of project investments.
Water users provided with new/improved irrigation and drainage services (female)	This indicator measures the number of female water users who are provided with new/improved irrigation and drainage services as a result of project investments.
Reduction in annual public and WCA expenditures for pumping	This indicator measures the reduction in actual expenditures by the MAWR and by WCAs (combined) for electricity for pumping irrigation water and for maintaining the pumping stations (staff salaries, etc.).
Increased collection rate by WCAs to cover O&M costs	This indicator measures the incremental increase in collection rate of O&M costs by WCAs under the project, expressed in percentage to the baseline recovery of O&M costs.

Intermediate Results Indicators

Indicator Name	Description (indicator definition etc.)
Area provided with improved irrigation and drainage services	This indicator measures the total physical area of land provided with improved irrigation and drainage services as a result of project investments, expressed in hectare (ha). The “improved I&D” refers to the upgrading, rehabilitation, and/or modernization of irrigation and drainage services in the project area with existing irrigation and drainage services.
Reduction in energy consumption	This indicator measures the total consumption of electric energy reduced after dismantling of pumping stations in the project area. The unit is megawatt-hours (MWh). Because some pumping stations use diesel, diesel will be converted into MWh equivalents.

Irrigation water distribution schedule prepared	This indicator shows whether an irrigation water distribution schedule is prepared to the satisfaction of the Bank.
Dam safety plan for the Tuyamuyun Dam prepared and submitted to the government	This indicator shows whether a dam safety plan for the Tuymuyun Dam is prepared to the satisfaction of the Bank.
Operational WCAs created and/or strengthened	This indicator measures the number of water user associations created and/or strengthened under the project that are operational. The WCA performance scoring will be used to assess whether a WCA is strengthened.
Number of BVO, PAN-ISA, and LABAIS staffs trained	This indicator measures the number of BVO, LABAIS, and PAN-ISA staff that participated in training under the project.
Percentage of BVO, LABAIS and PAN-ISA staff satisfied with training	This indicator measures the number of BVO, LABAIS and PAN-ISA staff that are satisfied with their training, as indicated by the response to evaluations conducted at the end of the training.
Area producing non-cotton/non-wheat crop	This indicator measures the area of land producing a non-cotton/non-wheat crop as a result of project investments, expressed in ha.
Client days of training provided	This indicator measures the number of client days provided, i.e., the number of clients who completed the training multiplied by the duration of the training expressed in days.
Percentage of cotton area harvested mechanically	This indicator measures the area of land within the project area that is subject to the state's cotton procurement system where cotton is harvested mechanically. The target area reflects the fact that 70 percent of the cotton area will be subject to harvest mechanization, as (i) land used for the production of cotton seed will not be mechanized; and (ii) some fields are not suitable as a result of unfavorable configuration.
Number of demonstrations established	This indicator measures the number of demonstrations established under the project, including demonstration plots for dehkhan farms, demonstrations for commercial production and irrigation and the establishment of the irrigation canal pilot on dehkhan farms, deep ripping, land leveling/grading, and crop rotation.
Number of project monitoring reports submitted on time annually	This indicator measures the number of semi-annual monitoring reports, prepared by the PIU, that were submitted on time.

Annex 2: Importance of Irrigation
UZBEKISTAN
SOUTH KARAKALPAKSTAN WATER RESOURCES MANAGEMENT
IMPROVEMENT PROJECT (P127764)

Introduction

1. Agriculture plays an important role in Uzbekistan's economy. As of 2012, 49 percent of the population - more than 14.5 million people - lived in rural areas. As in many parts of the world, the majority of poor people live in rural areas, and the sector has a significant impact on rural livelihoods, jobs, and food security. In 2010, agriculture provided 25 percent of total employment. Although agriculture's contribution to GDP declined from 34 percent in 2001 to 16.8 percent in 2013, farm output has doubled in real terms and continues to grow steadily, at a rate of 7.1 percent per year.

2. I&D plays an important role in Uzbekistan in reducing rural poverty and creating shared prosperity, generating employment, promoting economic growth and ensuring national food security, as the global food price crisis has highlighted. About 85 percent of the area potentially suitable for irrigation (about 4.2 million hectares), has been equipped for irrigation. A study (World Bank, 2003) found that a large number of irrigation schemes are economically and financially viable, and that arresting the deterioration of irrigation infrastructure would benefit the poor more than the non-poor.

3. At the household level, irrigated agriculture provides a livelihood to 64 percent of the population. Within rural areas, the poor are more likely to be employed in agriculture than the non-poor. Poor households have access to irrigation on a smaller percentage of their land than non-poor households, and irrigated land contributes three times more to per capita expenditure (a proxy for income) than does rainfed land. There are indications that the quality of I&D services strongly correlates with poverty: better off households have a more reliable supply.

4. In addition to its economic importance, I&D is a key player in a number of other arenas. It is by far the largest water user, accounting for an estimated 90 percent of all fresh water abstraction in the country. In an environment of increased competition over increasingly scarce water resources, irrigated agriculture will need to produce more with less water. Large irrigation abstractions have led to major environmental concerns in the Aral Sea. In other parts of the Aral Sea basin, high groundwater tables as a result of over-irrigation and poor drainage undermine the foundations of buildings, and corrosion caused by groundwater affects as many as 10 percent of the homes, schools and other public buildings. Failure to allocate water rationally among sectors, and disputes over water use amongst riparian countries are major constraints to economic growth. Related to water quantity, irrigation also has a significant environmental footprint in terms of salinization and water quality. An estimated 50 percent of Uzbekistan's irrigated area is experiencing salinity problems. Many people in Uzbekistan depend on irrigation for their drinking water supply, and the quality of water has an impact that reaches beyond irrigation.

5. Furthermore, I&D plays a critical role when it comes to allocating the countries' limited public resources. The state not only obtains large revenues from the agricultural sector, it also

provides significant support for I&D and subsidies to credit and other agriculture inputs to farmers. Contributions from the public sector for O&M are still significant. In particular, O&M costs are mainly subsidized by the state and only a small fraction is recovered from farmers. Around 27 percent of the irrigated area nationally depends on pumps, and pumping costs represent about 70 percent of the annual budget of MAWR. Notably, a 1 percent increase in irrigation efficiency would generate about US\$10 million in energy savings per year from reduced pumping costs. The scope for improving public expenditures by improving the performance of irrigation is therefore significant.

6. Despite its economic importance and its significant environmental and public expenditure footprint, much of Uzbekistan's I&D is locked in a vicious cycle of low productivity, inadequate funding for O&M, poor quality of I&D service delivery and weak environmental stewardship. As a result, an estimated 500,000 hectares have gone out of production country-wide, and a significant number of people are at risk of becoming unemployed or falling into poverty. The reduction in irrigated areas adversely impacts household incomes considerably, and this hurts the poor disproportionately. Improving irrigation sector performance and transforming the vicious cycle into a virtuous one is urgently needed to arrest the environmental, health and poverty concerns that Uzbekistan's irrigated agricultural areas, and its broader environment, are facing.

Annex 3: Detailed Project Description
UZBEKISTAN
SOUTH KARAKALPAKSTAN WATER RESOURCES MANAGEMENT
IMPROVEMENT PROJECT (P127764)

INTRODUCTION

1. The project area is entirely located in South Karakalpakstan. Almost the entire drainage system of the project area (100,000 hectares) has been rehabilitated under DIWIP. The major change introduced by DIWIP has been the suspension of the Beruni and Kyzylkum pumping stations that released saline drainage water into the Amu Darya and Lake Ayazkala. All drainage water from the project area now is drained via the former Janadarya Canal to the Aral Sea. The newly constructed main drain and the rehabilitated on-farm and inter-farm drainage systems now flow by gravity, the high water table areas are considerably reduced, and some of the institutional issues were addressed.

2. Following improvement of drainage, the major issues that threaten productivity and sustainability of irrigated agriculture in the project area include the deteriorating irrigation infrastructure, low water use efficiency and associated high costs of irrigation pumping, and the lack of incentives for farmers to improve production and productivity. Addressing these issues requires more accountable and more rational management of irrigation and water resources in the project area. At the same time, improved water resources management is also constrained by weak capacities of public I&D staff, WCAs and farmers.

3. More than 40 percent of the irrigation supply in the project area continues to depend on three large pumping stations that abstract water from the Amu Darya, and more than 20 smaller floating pumping stations. The total annual energy costs of pumping amount to US\$2.39 million. The project will remove this dependence on pumping by developing a gravity off-take from the Tuyamuyun Dam and dismantling all these pumping stations. These will contribute to improving the reliability of supply and eliminating the need to release large amounts of water into the Amu Darya to serve these stations when water levels in the river are low. Studies have demonstrated that this will be possible without increasing the annual volume of water abstracted from the Amu Darya (see Appendix A for a water balance before and after the project). This will require construction of a new 68 km canal and rehabilitation of the RBC. In addition, secondary canals will be rehabilitated, and deteriorated and damaged structures will be refurbished or replaced. To complement investments in civil works, the project will also strengthen institutions and capacities to introduce more rational irrigation management at all levels. This management will be more accountable to stakeholders to help ensure sustainability and promote crop intensification and diversification. It will also support cotton harvest mechanization. As a result of project interventions, irrigation delivery will be restored to about 30,000 hectares. It has been agreed with the government, as reflected in project covenants, that the area under the state's cotton procurement system will not increase in the project area.

4. Expected benefits include increased production from rehabilitated, currently abandoned land in downstream project areas and from vertical intensification on rehabilitated and currently

irrigated land, as well as reduced costs of pumping. Production of a third non-cotton/non-wheat crop after the spring wheat harvest will become possible in parts of the command area. PDO indicators include (i) improved irrigation water delivery service (using the MASSCOTE scoring methodology); (ii) the number of water users (male and female) provided with new/improved I&D services; (iii) reduced annual public and WCA expenditures for pumping; and (iv) increased collection rates by WCAs to cover O&M costs.

Lessons Learned and Reflected in the Project Design

5. The World Bank has a long engagement in Uzbekistan in supporting activities to increase agricultural productivity and diversification, promoting greater rural employment, increasing rural incomes, and improving the environmental sustainability of agricultural production. These include the DIWIP (US\$74.55 million, closed on June 30, 2013); the RESP-I (US\$43.45 million); RESP-II (US\$74.7 million) and AF-RESP-II (US\$44 million); and the FVWRMP Phase-I Project (US\$81.85 million). In the course of this engagement, the Bank has recognized progress requires a long-term engagement. The project will therefore build on the lessons learned from this engagement and will continue to pursue these efforts.

6. Mechanization of cotton harvesting has become a viable option in many countries, especially in view of the development of appropriate technologies that are more suited to medium-sized farms like the ones in Uzbekistan. This allows countries more options to meet its cotton harvesting requirements.

7. The World Bank has recognized that addressing complex social issues, such as child and/or forced labor, requires a multi-pronged approach which includes: policy dialogue, working together with national and international partners; sector level support, such as technical advice on improving agricultural productivity and crop diversification, adoption of new technologies and irrigation and drainage system improvements and support for cotton harvest mechanization, as well as mitigation measures and binding provisions at project level. During project preparation, Senior Bank Management discussed child and/or forced labor issues with the Government, and the project will take advantage of a number of measures that were agreed during these discussions, including TPM and FBM. As evidenced by its Industrial Modernization and Infrastructure Development Program, and its support for cotton harvest mechanization, the government has confirmed its commitment to working with the Bank on this agenda. Development partners in Uzbekistan have confirmed their support to the Bank for its position.

8. The TPM, which will be financed through a separate trust fund, will focus on child and/or forced labor issues in connection with the project activities or within the project area, and will be conducted during the cotton harvesting season. Feedback will be collected from both project beneficiaries and other stakeholders in connection with the project activities. Through the TPM, feedback will be monitored and collected on any issues related to the potential use of child and/or forced adult labor as defined by international conventions and national legislation. A fully independent FBM will be established, dedicated to reports of alleged occurrences or evidences of child and/or forced labor in connection with the project activities or within the project area. A Joint Working Group, consisting of representatives from the government, Bank and TPM

consultant, will be established to discuss and resolve any disagreement during implementation of the assignment. Activities under the TPM and FBM include, inter alia:

- (a) *Capacity building and learning*: learning materials on TPM and FBM will be integrated into training and capacity building activities under Component 2, offered to project beneficiaries, project teams, and other related stakeholders.
- (b) *Periodic site visits*. unannounced site visits by an independent consultant will be conducted to gather beneficiaries' feedback and any other evidence on the potential use of forced labor in connection with the project activities. Site visits will be held once a year, to coincide with the yearly cotton harvesting period.
- (c) *Periodic assessment of local context and conditions*: in-depth interviews will be conducted on the potential use of forced labor by project beneficiaries or in project areas with knowledgeable local stakeholders (e.g., regional and local government officials, non-governmental organizations (NGOs) and civil society organizations (CSOs) that are active in the area (journalists, academics, etc.).
- (d) *Designing and managing an FBM on child and forced labor matters*. An FBM will be established under a separate trust fund. The FBM will be based on the following principles:
 - (i) The FBM will be independent from other monitoring systems operated by the project. It will solely focus on collecting reports regarding the potential use of forced labor in connection with project activities or within the project area.
 - (ii) The FBM will follow strict complaint resolution procedures. All reports will be registered in a secure database fully controlled and managed by the firm. The firm shall collaborate with local and/or international stakeholders to investigate the reports. Well-founded complaints will be brought to the attention of the Bank and the project teams.
 - (iii) The firm will employ a variety of awareness raising strategies to ensure that project beneficiaries are fully aware of the FBM's availability, familiar with its mode of operation, and know how to use it.
- (e) *Analysis and evaluation*: a detailed report will be prepared that presents the findings of each TPM mission. Biannual reports will be prepared assessing the operation and effectiveness of the FBM system. All reports will be publicly disclosed after correction of any factual errors. Occurrence of child and/or forced labor in connection with project activities, as reported by the TPM and/or FBM, will be a violation of the Financing Agreement and the Bank may apply appropriate measures.

9. The project builds on the DIWIP project and has incorporated a number of important lessons, including (i) the need to provide ample opportunities for all stakeholders to improve their knowledge base and practical expertise, (ii) the importance of I&D service delivery at all levels of the irrigation system, (iii) the need to improve the accountability and transparency of canal management to better respond to user demand, and (iv) the importance of strengthening WCAs and ensuring their involvement in the design and implementation of the project. Another important lesson is the need to more closely involve local authorities in the design and implementation of the project, as they play a key role in shaping its outcomes. For example,

farmer training, demonstration plots, and FFSs needs to be better aligned with the regular programs of the Uzbekistan Mechanization and Electrification Institute (UZMEI) and the Central Asian Irrigation Research Institute (SANIIRI) to ensure sustainability, and extension workers will need to be more closely involved and trained in the design and implementation of farmer training under the project.

10. To complement the rehabilitation of drainage infrastructure that was financed by DIWIP, the project will rehabilitate irrigation infrastructure and improve its management, and will support activities to improve irrigated agricultural production. The project will build on the improved drainage facilities and strengthened capacities and institutions, and will help farmers take advantage of these improvements.

11. Experience from DIWIP and the SDC-funded WCA strengthening project, implemented in support to the RESP-II, suggests that, while good progress has been made in addressing and resolving some of the generic policy and legal issues, establishing and training WCAs is facing significant challenges in Uzbekistan. During DIWIP, as WCAs were founded in Uzbekistan, they were to replace the shirkats in maintaining the tertiary I&D networks. Encouraging results have been achieved, but much remains to be seen in WCA capacity and O&M cost recovery. The prevailing rate for water delivered under gravity is reported to be about UZS 16,000/ha (about US\$7.30/ha) per year. While commercial farmers generally contribute through the cotton account system, dekhkan farmers are harder to mobilize. In addition, repayment of O&M charges paid through the cotton account system has proven difficult. In practice, WCAs carry out only emergency maintenance on irrigation infrastructure after breakdowns; they do not undertake preventative or routine maintenance. The SDC project has made important progress in improving the legal and institutional environment for WCAs in Uzbekistan. A legal framework for establishing WCAs is in place (law “on Water and Water Use”), WCAs have been reorganized according to hydraulic boundaries, and assets have been formally handed over to WCAs. In the project area, WCAs in Beruni and Turtkul Tumans have been formed according to hydraulic boundaries; however, in Ellikala Tuman they still operate according to old collective farm boundaries. The project will address this issue and will establish the WCAs in Ellikala along hydraulic boundaries. Drawing from the mixed experience during the DIWIP and the SDC project, and considering the long-term nature of WCA capacity strengthening, the project will invest in strengthening of WCAs’ capacities and put in place the foundations for WCAs responsibility for on-farm water management and maintenance.

12. Finally, DIWIP, FVWRMP and RESP-II have often faced protracted delays in the recruitment of international consultants and procurement of goods and works provided by international suppliers, as a result of contract registration. However, as a result of systematic monitoring of contract registration and implementation, project implementation and disbursement significantly improved.

13. At the global level, important lessons have been learned with respect to volumetric measurement and pricing of water supplies. Experience suggests that introduction of volumetric water charges is fraught with technical, institutional and capacity challenges. Measuring equipment can be notoriously inaccurate, can easily be tampered with and is prone to vandalism; a robust monitoring and recording system needs to be put in place. Capacity strengthening of water management staff is a critical precondition for success. The project will therefore not

introduce volumetric water charges at this stage, but will lay the foundations, through introduction of SCADA, for volumetric pricing in the future.

PROJECT COMPONENTS

14. The project contains the following components:

Component 1: Modernization of the Irrigation Network, including (i) irrigation infrastructure improvement; (ii) SCADA implementation; and (iii) safeguards and dam safety measures.

Component 2: Modernization of Agriculture, including (i) strengthening capacities of local institutions; (ii) support for crop intensification and diversification; (iii) cotton harvest mechanization; and (iv) communication, outreach campaigns, and gender.

Component 3: Project Management, Monitoring and Evaluation.

Component 1: Modernization of the Irrigation Network (total cost US\$273.85 million, of which US\$192.5 million IDA and US\$14.8 million IBRD)

15. The objective of this component is to restore irrigated area in South Karakalpakstan in a financially efficient manner. Intermediate results indicators include (i) area provided with improved I&D services, (ii) reduction of energy consumption; (iii) irrigation water distribution schedule prepared; and (iv) dam safety plan for the Tuyamuyun Dam prepared and submitted to the government. The component will invest in infrastructure to restore irrigated area in South Karakalpakstan, and will consist of the following three subcomponents:

16. *Subcomponent 1.1: Irrigation infrastructure improvement* through, inter alia: (i) improving sections of the Right Bank Canal (to increase the conveyance capacity from 75 to 150 m³/sec); (ii) constructing the Bustan Canal; and (iii) reprofiling and rehabilitating existing main and secondary canals, including Pakhta-Arna, Keltaminor, Old Bozyap and Bogyap Canals. The construction of the Bustan Canal will eliminate the need for first-level pumping from the Amu Darya. The rehabilitation of the existing canal systems will eliminate the need for second-level pumping from inter-farm canals to on-farm channels. Moreover, there are 90 main structures (control, cross drainage, and bridges) to be constructed and rehabilitated. More than 20 distribution canals (inter-farm canals) have been identified for rehabilitation.

17. The Bustan Canal is 68 km long and has a bed width between 12 and 8 m with a head regulator at the tail of the RBC and a design duty of 105 m³/s. The side slopes of the canal will be gentle. The Bustan Canal has been partially excavated on about 43 km from its head on the RBC. A geotechnical investigation of the existing Bustan Canal embankments indicated that the coefficient of filtration is generally large, in the range of 4 to 5 m/day. Bustan Canal will therefore be lined with geomembrane lining of not less than 1 mm that will be installed between two geotextiles and sealed through a double welding technique. The geomembrane will be protected through the placement of a 12-cm-thick concrete slab cast using advanced canal lining machinery. The bidding documents will contain the technical specifications of the geomembrane and will set up performance tests to be carried out by an independent laboratory. Use of polypropylene fiber to improve the concrete's freezing/thawing resistance will be considered (about 1 kg/m³). The conservative design of Bustan Canal is imposed by the highly permeable

and non-cohesive sandy soils crossed by the canal along the first 35 km and further down when crossing fossil river beds of the Amu Darya.

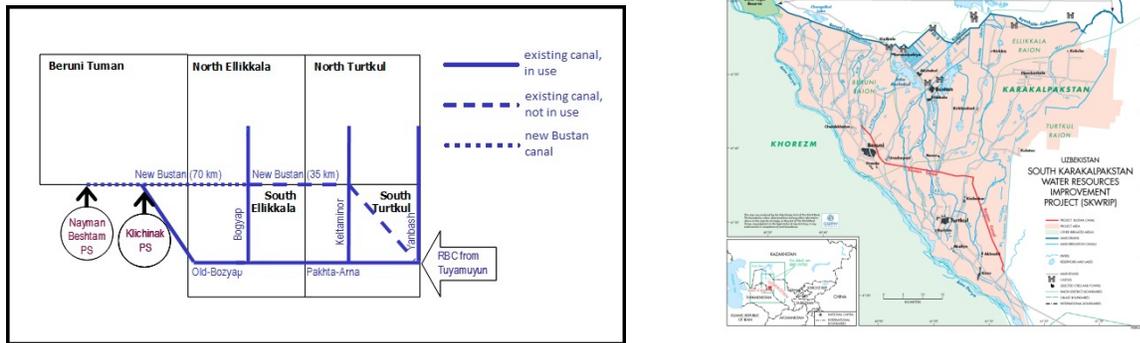


Fig. 1: Project area.

18. The existing RBC and the Bustan Canal have been designed to avoid sedimentation, assuming that the flow would not drop below a critical value. To meet these conditions, the project provides two escape channels, one at the tail of the RBC and the second one at the tail of the Bustan Canal to reject the excess water released from Tuyamayun back to the Amu Darya River. The project will also install a real-time flow measuring station at the off-take from the Amu Darya and in each of said escape canals, and relevant data will be shared on a real time basis with the Amu Darya BVO to enhance transparency of operations.

19. The Yambash Canal will be decommissioned and the discharge will be channeled through the Bustan Canal once its construction is completed. The transit capacity of the Bustan Canal at its head will therefore be $105 \text{ m}^3/\text{s}$. Despite its decommissioning, the Yambash Canal needs to be maintained under operational conditions to supply the Turtkul district until completion of the Bustan Canal down to the crossing of Keltaminor secondary canal, which is scheduled to happen in 2017. Urgent maintenance and repairs to stop the deterioration process and repair works will be undertaken by the GOU. The associated costs are estimated at US\$1.5 million.

20. The design capacities of the main distributaries will be as follows:

Primary Canal	Design capacity upstream of Bustan Canal (m^3/s)	Design capacity downstream of Bustan Canal (m^3/s)
1. Keltaminor	16.8	30.5
2. Bozyap	19.0	38.8
3. Amirabad		3.7
4. Bozyap		$6.8 + 6.5$
5. Shimon Yap		3.3
6. Nayman-beshtan		19.5
7. Kazak yap		7.2

21. The design capacity of the upstream Bogyap Canal will be decreased from 45 to 19 m³/s, whereas the design of the Kelltimanor Canal downstream of Bustan will be increased to 30.5 m³/s to pass the flow presently diverted through the Yambash Canal, which will be de-commissioned after completion of works in the Bustan Canal.

Pre- and Post-Project Water Balance (see appendix A)

22. The project area is located in the downstream part of the Amu Darya river. The new gravity abstraction withdraws water from Tuyamuyun reservoir through the RBC (see Annex 13 for a map of the project area). Over the past 20 years, the annual flow into Tuyamuyun has varied from about 13 to 47 km³ per year. The reliable inflow into Tuyamuyun reservoir is conservatively estimated at 25 km³ per year.

23. Abstractions are agreed on an annual basis among the Aral Sea riparian countries. They are adjusted on the basis of water availability forecasts. Average abstractions by Turkmenistan from the lower Amu Darya downstream of Tuyamuyun for the Dashouz irrigation area amount to 7,000 million m³ per year. Withdrawals by Turkmenistan have stabilized over the past years. It is not foreseen that Turkmen abstractions will significantly increase.

24. The project is expected to result in increased yields and a higher cropping intensity. In addition, restoring irrigation on 30,000 hectares will lead to increased water utilization. The pre-project annual evaporative demand is estimated at 578 million m³. As a result of intensification, the annual evaporative demand will increase to 853 million m³.

25. At the same time, however, as a result of the project, irrigation efficiency is expected to increase from 32 percent to 47 percent. The pre-project annual abstraction into the project area is 1,825 million m³. The post-project annual abstraction is estimated at 1,815 million m³. The project will therefore lead to an annual saving of 10 million m³. Efficiency gains will be achieved as a result of (i) repairing dilapidated irrigation infrastructure and reducing leakage from the network; (ii) canal lining using geomembrane on the Bustan Canal, one of the largest canals in the project area, effectively reducing seepage from the canal to 0. In view of the high permeability of the soils in the project area, installation of geomembrane will contribute significantly to efficiency increases; (iii) land leveling and deep ripping, promoted under DIWIP and the project as demonstrations, with possible adoption on a much larger area will contribute to increased on-farm water use efficiency; (iv) capacity strengthening of water management staff and farmers to use water more efficiently; (v) installation of SCADA to better manage and control water deliveries; and (vi) delivery of water by gravity so that inefficiencies of pump irrigation as a result of power outages are reduced. These system wide increases in efficiency off-set the increased crop demand as a result of crop intensification.

26. Dismantling of pumping stations, to be financed by the project, will also discontinue the supply of water from Tuyamuyun reservoir to serve these pumping stations during low water levels in the river. These pre-project releases are estimated to be 4,200 million m³ per year. Post-project releases are estimated at 1,280 million m³ per year. The associated annual gains of 2,920 million m³ can be released for other purposes, including the provision of ecological services to

the lower Amu Darya delta. These gains are therefore not considered in the calculation of post-project water availability.

27. More efficient irrigation in the project area will lead to reduced drainage flows. Pre-project annual drainage flows from the project area are estimated at 1,247 million m³, which is the difference between withdrawal and evaporative demand. The post-project annual drainage flows are estimated at 962 million m³ per year. In response to bilateral agreements between Turkmenistan and Uzbekistan, DIWIP developed an alternative outflow of these drainage flows into the Janadarya canal that discharges into the Aral Sea. Drainage flows are no longer released into the lower Amu Darya.

28. Pre-project total fresh water releases from Tuyamuyun reservoir are estimated at 16,175 million m³ per year, equal to the difference between the average annual water availability in the Amu Darya (25,000 million m³ per year), abstractions by Turkmenistan (7,000 million m³ per year) and the abstraction into the project area (1,825 million m³ per year).

29. Total releases from the project area include releases into the lower Amu Darya and drainage flows through Janadarya canal into the Aral Sea. Annual pre-project releases are estimated at 17,422 million m³ (16,175 million m³ plus 1,247 million m³). Annual post-project releases are estimated at 17,147 million m³ (16,185 million m³ plus 962 million m³). While annual flow in the lower Amu Darya and Aral Sea delta will increase by 10 million m³ per year, the drainage flow into the Janadarya canal will decrease by 285 million m³ per year. The net decrease represents about 1.5 percent of annual flow.

30. The project will not have a net impact on salt inflows into the Aral Sea. The salinity of the lower Amu Darya has decreased as a result of DIWIP, with saline releases concentrated in the Janadarya canal.

31. *Subcomponent 1.2: : SCADA implementation:* Installation of SCADA through the provision of goods, consultants' services and training, based on the criteria and methodology set forth in the POM. The SCADA system will be implemented in two phases:

- (i) Phase 1: A simple remote automated monitoring system will be installed during the first months of the project on the 25 km-long Ellikala Canal, consisting of the installation of acoustic water-level sensors designed to monitor the present operational practices. This does not require rehabilitation of the canal and control structures. The objective of this SCADA is to familiarize the PAN-ISA staff with SCADA before the installation of the large-scale system. The contract value would be low enough to allow procurement through shopping.

Ellikala Canal comprises a head regulator, three bifurcation structures and a tail regulator. Some gates have been motorized but not all are functional. Since all these structures are open to the public, vandalism is a concern. The SCADA will be limited to automatic remote monitoring of the water levels for this first pilot. Communication would be done through SMS-GPRS using mobile phone service which is available throughout the project area. The master station (or control center) will be located in the headquarters of PAK-ISA in Bustan.

Km	0.0	21	6.4	19	25.6	Tail structure
Water level sensors	3	3	3	2	3	1
Gate position sensors	4	3	3	3	2	1

- (ii) Phase 2: adoption of up-to-date control technology for the new Pakha-Arna system interconnected with the Bustan Canal through the installation of integrated products combining flow control with ultra-sonic water measurement, solar energy and communications to link with a remote control center. This equipment could be installed at the intakes of medium and small off-takes from the Bustan Canal downstream of Bozyap Canal with capacity ranging from 0.7 to 7.0 m³/s. The major structures on the Bustan Canal will be equipped with a conventional sliding gate, gate controller and flow measurement sensors. The two SCADA systems would be linked.

The SCADA system would comprise the head regulator at the tail end of the RBC, the three hydro-structures at the connection with the Keltaminor, Amirabad and Bogyap Canal and the tail structure connecting with the Beshtam-Nayman Canal. Public access to these structures will be prevented, and areas should be fenced and permanently guarded. Alternatively, the structures will be protected through a cage as done along the South Fergana Canal.

32. The system will be configured to allow (i) data to be displayed in tabular format and in the form of color graphic screens, (ii) alert in case of alarm such as water level above certain limit, and (iii) processing and data analysis. The following screens will be developed:

- Global representation of the hydraulic system and a longitudinal profile of canal showing water levels and flows;
- Schematic representation of each regulator showing status of the gates and water levels and flows;
- Tabular representation of flows and levels tabulated and summed totals at daily, 10-day, monthly and seasonal

33. While SCADA makes it possible to measure water supply volumetrically, introduction of volumetric O&M charges will not be introduced under this project in view of the technical and capacity constraints associated with volumetric measurements. Instead, water managers will be trained in operating SCADA and monitoring of volumetric supplies. This will lay the foundation for introducing volumetric O&M charges in the future, when water management capacities have strengthened. Data collected through SCADA will be made publicly available to evaluate water abstraction.

34. The SCADA contract will include:

- detailed design of the SCADA system
- supply and installation and tuning of the equipment
- software development
- training of PAN-ISA staff
- supply of spare parts
- maintenance and repairs during the duration of the project.

35. A second contract to be signed with the government agency responsible for the operation of the main structures will cover an additional five years of service and maintenance after project completion.

36. *Subcomponent 1.3: Safeguards measures:* Support for (i) the implementation of the safeguards mitigation measures provided in the (a) ESAMP; (b) RPF; and (c) Bustan RAP and the RAP(s) prepared in connection with the project (including the provision of compensation); (ii) the carrying out of a dam failure mode study to analyze the impact on the Tuyamuyun Dam of a catastrophic event upstream; and (iii) dismantling of pumping stations within the project area.

37. Measures that have been identified in the ESAMP include (i) sustaining the required seasonal water flow into Baday Tugay; (ii) implementation of a Resettlement Action Plan; (iii) incorporating “chance find” provisions into works contracts; (iv) support awareness raising activities and training programs targeted at WCAs and individual farmers on pest management, including application of biological control methods, optimal use of pesticides and defoliants (preferable WHO class III) on the basis of economic thresholds, determination of adequate amounts, proper storage (away from water bodies and other sensitive receptors) and disposal; (v) recruitment of an Environmental Officer to follow up the application of the ESAMP; and (vi) ensuring inclusion of the ESAMP-related clauses in the NCB/ICB bid documents and contracts, as well as ensuring implementation of the ESAMP in terms of: mitigation (by MAWR or by the contractors), monitoring (by MAWR), and training (by MAWR). The likely negative impacts of the project will include limited disruption of the ecosystem, resettlement and safety at the construction sites, and will all be mitigated through the ESAMP, budgeted at around US\$10.6 million, under the joint responsibility of MAWR and the civil-work contractors. Details about the ESAMP are provided in Annex 5.

38. The government has agreed that staff working for UNS, the agency responsible for managing the pumping stations, will be redeployed upon its abolishment, and this has been reflected in a project covenant. A Retrenchment Framework has been prepared as part of the ESIA in the event no suitable alternative employment can be found for some of the staff. On the basis of the Retrenchment Framework, this subcomponent will finance (i) dismantling of the pumping stations; and (ii) the preparation of a detailed retrenchment plan for UNS staff who will lose their employment (conservatively estimated at about 10 percent of the UNS staff) as a result of the dismantling of the pumping stations.

Component 2: Modernization of Agriculture (total cost US\$55.43 million, of which US\$43.0 million IDA and US\$3.2 million IBRD).

39. This component will invest in improving irrigated agricultural production in the project area so that farmers take full advantage of improved water availability and management. To that end, the project will strengthen capacities, promote crop intensification and diversification, invest in cotton harvest mechanization and conduct outreach and information dissemination. Intermediate results indicators include (i) operational WCAs strengthened; (ii) the number of BVO, LABAIS and PAN-ISA staff trained and the percentage of trainees that is satisfied with the training; (iii) number of client (male/female) days of training provided; (iv) area producing a

second non-cotton/non-wheat crop; (v) percentage of the cotton area harvested mechanically; and (vii) the number of demonstrations established. All training under this component will be conducted in an iterative manner, including needs assessment, implementation and feedback/evaluation. The component contains the following subcomponents:

40. *Subcomponent 2.1: Strengthening capacities of local water resource management institutions*, including Amu Darya BVO, LABAIS, PAN-ISA and KKGME, through the provision of goods and training. Relevant stakeholders (in particular the WCA support unit in PAN-ISA) will be trained in providing support to WCAs. The subcomponent will also finance study tours to expose water resources and I&D stakeholders to a range of best water management practices, and will finance a canal management pilot.

41. *Amu Darya BVO staff* will be trained in water resources planning and forecasting. Topics will include water resources assessments, environmental maintenance flows, impact of climate change on Amu Darya flows, matching supply and demand, and social and environmental costs and benefits of water resources management.

42. *LABAIS, PAN-ISA and KKGME staff* will be trained in improving the operation of I&D systems. The project will develop a canal management pilot that will demonstrate and train staff in the use of modern canal management tools and methods. Topics include matching supply with demand, modern irrigation scheduling systems and Geographic Information Systems (GIS), developing formal operational rules, strengthening rotation distribution, demand management and flow measurement. In addition, specific training will be provided to staff to accompany installation and use of the SCADA pilot (see component 1). This will include remote operation and control, data collection and storage, monitoring and evaluation and feed-back between M&E and implementation. Furthermore, capacities for I&D operation will be improved by establishing agreed operating rules, preparation of a scheme operation plan and training of staff in its use and implementation.

43. Staff from these organizations will also be trained in proper O&M, including Asset Management (e.g., FAO's Masscote²¹), regular system maintenance, prioritization of maintenance work and predictive planning and system assessment and monitoring. The training will be hands-on and will prepare annual and long-term O&M plans and rules for prioritization of emergency, regular and routine O&M.

44. *Subcomponent 2.2: Crop Intensification and Diversification* through (i) capacity strengthening of selected farmers and WCAs through demonstrations, FFS, and the provision of goods and training on, inter alia, irrigation and drainage management and improved agricultural practices; (ii) assistance to help farmers access lines of credit (including preparation of business plans); and (iii) provision of modern tools and maintenance equipment to WCAs to undertake on-farm maintenance activities. The objective is to introduce improved agronomic, salinity reduction and water management practices in support of crop diversification and intensification, and to develop the institutional capacity of WCAs for water management and O&M.

²¹ Modernizing irrigation management – the MASSCOTE approach:
<http://www.fao.org/docrep/010/a1114e/a1114e00.htm>

45. Capacity strengthening through demonstrations and FFSs includes the following activities:

- Demonstrations will cover the following areas: crop rotation and diversification, vegetable and secondary crop production, proper use of agro-chemicals, appropriate crop husbandry methods for mechanized harvesting, on-farm irrigation water measurement, conservation agriculture and minimum tillage, deep ripping and land leveling/grading (on approximately 10,000 hectares), and pest and salinity management and soil testing. A minimum of four demonstrations per Vilayat will be established for the full duration of the project, with a minimum of two per Vilayat devoted to non-cotton/non-wheat crops. Special attention will be paid to the promotion of a third crop after winter wheat. Outreach activities such as field days and study tours to attract as many farmers as possible will be implemented.
- FFSs (see box 2) will be organized that will focus on similar topics as the demonstrations, but that provide a hands-on opportunity to strengthen practical skills. The FFSs will be a group of 20 to 25 farmers from a single WCA, and will target all WCAs in the project area. The FFS will be conducted in farmers' fields, and has a provision for farmers to design, implement and monitor small experiments related to needs identified in the first training session, based on the overall themes of the training program. The FFSs will test the level of knowledge in the first and last session to assess the improved knowledge of farmers. The FFSs will also include a standard training module on Uzbekistan legislation relating to child and/or forced labor to raise awareness on child and/or forced labor issues.

The FFSs will also train farmers in using soil tests to more accurately assess the level of nutrients required for optimal crop production and to evaluate the risk of salinization. At present, reliable soil testing facilities are only available in Tashkent, and the project will therefore finance a feasibility study that looks at the various options for establishment, under KMAWR, of a soil testing lab and viability of such a service, and possible funding sources for longer term operation (private, public, PPP). Provisional funds will be set aside for support to establish the facility, based on the outcome of the study.

46. FFSs and demonstrations will be implemented by a national consultant, with support from an international institute that specializes in farmer training. Over the project period, the training and demonstration program will build capacity of local institutions (WCA support units in PAN-ISA, UZMEI, SANIIRI and the three Tuman Hokhimiyats) involved in agriculture in the project area to play a more important role in the provision of agriculture support services beyond the end of the project, and to encourage the translation of research findings into practical applications. To achieve this, the project will foster strong linkages between these institutions, the WCAs and farmers, and will include these institutions in the design and implementation of FFSs and demonstrations. The project will thus use the FFSs and demonstrations as opportunities to provide hands-on training to these institutions in strengthening capacities of farmers and WCAs. Communication between stakeholders will be strengthened by investing in communication equipment between PAN-ISA and WCAs. The exact curriculum of

demonstrations and FFSs will be determined in a participative manner at the beginning of the season, based on an evaluation of the previous year and demand from farmers.

47. The project will provide support to help farmers access credit in support of intensification and diversification, including information dissemination and awareness raising, training and preparation of business plans and credit proposals. To that end, a consultant will be recruited to train farmers in preparing submissions and in proper business practices. The project will not provide the credit itself but will take advantage of the existing lines of credit that have been established, among others through a proposed expansion of the coverage of RESP-II and HDP into South Karakalpakstan.

48. Prior to the provision of modern tools and maintenance equipment to WCAs to undertake on-farm maintenance activities, the project will conduct a study to identify options for doing so in a sustainable and financially viable manner. Upon successful identification of sustainable and financially viable options, the equipment will be provided upon meeting clear eligibility criteria regarding their capacity to fully utilize, maintain, operate and recover their cost to replace them after their useful life. An assessment of the financial viability of WCAs will be conducted, and the project will help WCAs prepare a business plan prior to the provision of equipment. A provisional sum to finance WCA equipment has been incorporate into the project budget.

49. *Subcomponent 2.3: Cotton Harvest Mechanization:* Support the cotton harvest mechanization through (i) the acquisition and provision of mechanized cotton harvesters to ginneries located in the project area; (ii) provision of cleaning equipment to ginneries; and (iii) strengthening cotton ginneries' capacity to operate and maintain the machinery and to adopt crop husbandry methods which are appropriate for cotton mechanization.

50. At present, almost all of the cotton in the project area is harvested using manual labor which poses constraints to farmers in recruiting adequate numbers of farm laborers to harvest the cotton in a timely manner. The government aims to achieve full cotton mechanization by the end of 2016. In response to this strategy, the project will finance the purchase of mechanized cotton harvesters and associated cotton cleaning equipment in the project area. The aim is to mechanize, before end 2016, about 70 percent of the 36,000 hectares in the project area that are currently used for cotton production²². To ensure timely procurement, bidding documents will be prepared before project effectiveness. Achieving full cotton harvest mechanization in the entire cotton area under the project is not feasible, as some farms produce cotton seed and mechanization will damage these seeds. In addition, some fields are too small or have excessive slope for mechanical harvesting.

51. The project will finance purchase of about 230 mechanized cotton harvesters. The machinery will be provided to an entity that is best able to ensure sustainability and likelihood of successful achievement of cotton mechanization targets. To that end, the Borrower shall enter into an agreement (or two agreements if necessary) with Uzpakhtasanoat (and/or any other entity agreed upon by the Borrower and the Bank), that will define the terms of providing cotton

²² On 34,000 hectares other crops than cotton are grown; 30,000 hectares is exempt from cotton quota. The government committed not to increase the area that is currently subject to the state cotton procurement system.

harvesting equipment and services and other associated equipment to Uzpakhtasanoat (and/or any other entity that might be selected). The sub-component will also finance purchase of cleaning equipment for the ginneries so that the quality of machine-harvested fiber will be the same as hand picked cotton. The subcomponent will also strengthen capacities to operate and maintain the machinery and to adopt crop husbandry methods that are appropriate for cotton mechanization. The economic analysis of the project estimates the benefits of the investments in mechanized cotton harvesting at US\$15.4 million annually (9.3 percent). The returns to investments in mechanization of cotton harvesting are estimated by taking into account: (i) the opportunity costs of students and highly skilled labor and (ii) the costs associated with providing transportation, lodging, and food and providing other supplies, such as apron and gloves for the manual labor and comparing these with costs of mechanized cotton harvesting. Additional investments to improve the quality of mechanically harvested cotton are also required in the ginneries, including additional drying, pre-cleaning and cleaning equipment. The project, through sub-component 2.2, will provide additional support to individual farmers to help them access the machinery, in particular through the GOU's Machinery Fund. Traditionally, cotton harvesting machines are self-propelled. These traditional machines are quite expensive and they can only be used for harvesting cotton. New technologies that can be attached to tractors have been developed. This type of cotton harvesting machinery is tractor mounted. After cotton harvesting, the harvester can be detached from the tractor, and the tractor can be used for other operations. This feature significantly reduces the costs of operation while increasing versatility. In addition to financing the mechanized cotton harvesters, the project will also finance, under sub-component 2.2, (i) training of farmers to adopt appropriate crop husbandry methods, including choice of appropriate cotton varieties, ensuring needed planting distances between rows²³, need for thinning, defoliation and preparation for harvest; and (ii) training of ginneries staff for hiring out the cotton harvester and improving the arrangements for harvesting (unloading and transport of cotton to the ginnery location).

52. *Subcomponent 2.4: Communication, Outreach Campaigns and Gender:* Support the development and carrying out of communications strategies and public awareness raising campaigns on project-related data and information, including on the issues relating to child and/or forced labor. The aim is to ensure that relevant project-related data and information are made available and accessible to all users and to encourage participation of farmers and in particular women. A stakeholder analysis will be conducted to make sure that the project has a good understanding of the different kinds of stakeholders for the different activities. The outreach activities will include preparation of project brochures to summarize key project information (including on project goals and benefits, legislation regarding child and/or forced labor, resettlement and land acquisition, TPM and FBM), and one page fact sheets providing key information on how to participate in FFSs and demonstrations. The project will also launch an awareness campaign to inform farmers about the implications of cotton harvest mechanization in terms of crop husbandry methods (planting at 90 cm distance, improved defoliation, thinning, etc). Specifically, the project outreach on child and/or forced labor will include a plan to (i) formally instruct local government authorities to eliminate child and/or forced labor; (ii) lay out the steps they need to undertake (meetings with communities, women's groups, etc.) to make sure that no child and/or forced labor will occur; and (iii) establish arrangements for them to report on a

²³ Cotton row distance for machine harvesting needs to increase from 60 cm for hand picking to 90 cm

Box 2: FARMER FIELD SCHOOL

The **Farmer Field School (FFS)** is specifically designed to target farmers in the command area of the WCA, including the member management committee, as a mechanism to introduce improved water, salinity and agronomic management practices, and to develop the institutional capacity of the WCA for water management and operation and maintenance of their own systems. The FFS starts as a year-long activity for 20-25 farmers, who meet regularly. A FFS is facilitated by specifically trained extension workers with knowledge of non-formal education methods, the field is used as the primary resource for discovery-based learning. The process respects the experience that farmers bring with them and facilitates group development. Farmers work in small groups to ensure that each participant's ideas are shared, his/her uniqueness is accepted, and existing knowledge recognized. The activities are designed to respond to the immediate needs of farmers and are geared towards encouraging creativity, inter-dependence and group solidarity. The FFS Trainers play a crucial role in ensuring that the environment and all resources contribute to the farmers' learning experiences.

A typical FFS employs educational methods that are experiential, participatory, learner-centered and emphasize group processes. All activities are designed to lead to the development of institutional capacity of the group. The FFS would generally include:

- A preparation meeting to identify participants, determine needs and FFS goals;
- Group dynamics activities, session evaluation and planning for the following week;
- Field studies with the following processes:
 - problem identification,
 - brainstorming and prioritization of options to address problems,
 - design of the field studies to test the feasibility of the prioritized options,
 - improved field observation and data collection to compare against farmer practices,
 - making informed management decisions,
- The meeting place is close to the field study plots;
- Seasonal before and after evaluation of participants knowledge;
- Cost benefit analysis;
- Planning for follow-up activities;
- In-built monitoring systems for quality control.

The goal of the FFS is to bring farmers together to carry out collective and collaborative inquiry with the purpose of initiating community action in solving community problems. The FFS will integrate practical lessons on water management and productivity in such a manner that it assists members of the WUA to implement water distribution and sharing arrangements that maximize the productivity of all its members and ensures equitable resource (water) distribution. The FFS uses water management and crop production as entry points because these are closest to the farmers' hearts in addition the FFS experience facilitates group cohesion that becomes valuable in addressing other community concerns, such as nutrition, health and sanitation.

regular basis what steps they have undertaken to make sure everyone knows no child and/or forced labor can take place. The team will receive regular progress reports from the government agencies, including copies of the instructions issued and other pertinent data. Additional channels to reach out to the beneficiaries via mobile phones and TV programs will be piloted. The project will reach out to women farmers via Makhalla (village) committees to make sure they participate in consultation and planning meetings, will establish a quota for women to take part in FFSs and demonstrations, will make sure that FFSs and demonstrations are organized during particular months that are suitable for women to attend, and will help arrange transportation if requested to facilitate their participation. Training materials developed by United Nations Children’s Fund (UNICEF) on child and/or forced labor will be included in the curriculum of FFSs.

Component 3: Project Management, Monitoring/Evaluation (total cost US\$8.10 million, of which US\$6.9 million IDA and US\$0.3 million IBRD)

53. The objective is to manage project resources in accordance with its objectives and procedures as outlined in the POM. Intermediate results indicators include the number of project monitoring reports submitted on time annually. The component will strengthen the MAWR’s and the Project Implementation Unit’s (PIU) capacity for project management, monitoring and evaluation (including, inter alia, the areas procurement and financial management) through the provision of goods, consultant services, training, and financing of incremental operating costs²⁴. Intermediate results indicators include the number of project monitoring reports submitted on time annually. This component will (i) support the preparation of a feasibility study and bidding documents for follow-up investment activities; (ii) develop a comprehensive management information and data collection and reporting system on key performance outputs and impact indicators through, inter alia, baseline surveys; participatory assessments; mid-term reviews; and final evaluations; (iii) support the preparation of a strategy for water resource management in the lower Amu Darya area; (iv) development of operating rules for the Tuyamuyun Dam reflecting the fact that, following the dismantling of the pumping stations under subcomponent 1.3, water releases to serve downstream pumping stations won’t be required; (v) provision of technical assistance to assist the government in developing a strategy for agricultural diversification away from cotton; and (vi) carrying out a study on the necessary requirements and arrangements to certify that cotton produced in the Borrower’s territory complies with applicable laws and regulations on child and/or forced labor.

54. To reflect the more hands-on involvement of the PIU in day-to-day project management and implementation, staffing of the PIU will be strengthened to include, prior to project effectiveness, a number of technical, financial management, M&E and social and environmental

²⁴ “Incremental Operating Costs” means the incremental expenses incurred by the PIU on account of Project implementation, management, monitoring and supervision (as such expenditures are set forth in the PIU semi-annual budget acceptable by the Association), including office supplies, office equipment maintenance, rental of office space, utility bills, communication, advertisement of procurement bids, reasonable local commercial banks charges, software maintenance, local travel, vehicles operation and maintenance, reasonable expenses for accident insurance of PIU staff and for third party liability insurance of PIU drivers, and salaries of the PIU staff (including the uniform social charges and the applicable income tax retained at the source but excluding salaries of civil servants of the Recipient), and any other incremental expense incurred by the PIU on account of Project implementation, provided that all said expenses are deemed acceptable to the Association.

safeguards experts. M&E consultants will be recruited by the PIU for monitoring of project progress, project impact and the achievement of project development objectives. Detailed implementation arrangements are described in Annex 7, and will be spelled out in detail in the POM, to be prepared as a condition of effectiveness.

55. Recently, 136 international apparel companies have pledged to avoid knowingly purchasing Uzbek cotton until the practice of forced labor is discontinued. The list of companies includes prominent industry leaders such as Disney, H&M, Gap, Walmart, Target, Tesco, Levi's, Nike, Fruit of the Loom, C&A, Marks and Spencer, Bed Bath & Beyond, Timberland, Nordstrom, and Abercrombie and Fitch. Cotton certification confirms that farmers and workers are paid fair prices and wages, work in safe conditions, protect the environment, and receive community development funds to empower and improve their communities. Eliminating the use of child and/or forced labor in cotton harvest could help Uzbekistan become eligible for certification, which could potentially help Uzbekistan better brand its cotton, which would lead to higher demand for Uzbek cotton and could help Uzbekistan fetch a higher price. Cotton certification could thus provide a financial incentive to the government to eliminate the practice of child and/or forced labor. In view of this, the project will finance a study to identify requirements that need to be satisfied to help Uzbekistan obtain a cotton certificate. The study will be conducted in close consultation with the IFC and cotton industry leaders.

South Karakalpakstan Water Balance

Water-Balance component		Without project (MCM/year)	With project MCM/year	Comments/assumptions
1	Reliable annual inflow available at Tuyamuyun	25,000 MCM/year	25,000 MCM/year	Conservative estimate. Inflow in a relatively low-flow year
2	Turkmenistan Abstraction	7,000 MCM/year	7,000 MCM/year	There was a rising trend over latest decade. Assume further rises offset by water-saving I&D modernization in Turkmenistan by 2025.
3	SK crop evapo-transpiration (ET ₀)	578 MCM/year	853 MCM/year	As a result of increased cropping intensity
4	SK irrigation demand (supply)	1,825 MCM/year (578*32%)	1,815 MCM/year (853*47%)	Cotton relatively reduced; Wheat increased; second crop introduced. Efficiency increases from 32 percent to 47 percent.
5	SK river diversions including extras for pumping stations	4,200	1,280	Major water savings due to switching to Bustan gravity irrigation
6	Return and escape flows (drainage)	1,247 (1,825-578)	962 (1,815-853)	Difference between irrigation demand and ET ₀
7	Fresh water for ecological functions in lower Amu Darya, and for M&I uses.	16,175 MCM/year (25,000-7,000-1,825)	16,185 MCM/year (25,000-7,000-1815)	Closing the balance.
8	Total (fresh plus saline) environmental flows.	17,422 MCM/year (16,175+1,247)	17,147 MCM/year (16,185+962)	Aral Sea riparian countries have committed to supplying 5 km ³ /yr (5 BCM/year) of water into the Aral Sea, and to providing a minimum flow of 50 m ³ /s (2.5 BCM/year) downstream of Takhtiash barrage to ensure the ecological survival of the Amu Darya delta.

Annex 4: Riparian Notification (OP7.50)

UZBEKISTAN: South Karakalpakstan Water Resources Management Improvement Project

Status of Notification to Riparians

1. The government of Uzbekistan officially notified the Aral Sea riparian countries (Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan) on January 29, 2013 of its intention to proceed with the project. A separate Notification was sent by the Bank on February 2, 2013 to Afghanistan as Uzbekistan did not wish to notify Afghanistan, because the country is not a member of IFAS. The deadline for responding to the Notification was two months (March 29, 2013). The Notification included an annex which provided a detailed justification of the design assumptions and maps of the proposed project, as well as a copy of OP7.50 in Russian.
2. On March 6, 2013, Turkmenistan officially responded to the Riparian Notification, expressing concerns about the project, and requested additional information to clarify water abstraction into the project area. A Bank team visited Turkmenistan on March 14 and 15, 2013, and met with the Deputy Minister of Water Economy and his team.
3. On March 27, 2013, Uzbekistan officially responded to the concerns of Turkmenistan and invited, on May 10, 2013, Turkmen officials from the Ministry of Water Economy to visit the project area. On May 14, 2013, Turkmenistan responded to the letter from Uzbekistan, reiterating its previously mentioned concerns about the project and requesting additional information. Uzbekistan formally responded to the issues raised by Turkmenistan in a letter dated May 14, 2013.
4. On July 8, 2013, a World Bank mission visited Turkmenistan, in the company of the Uzbek Deputy Minister of Agriculture and Water Resources. The mission was not able to meet with representatives from the Turkmen Ministry of Water Economy. On July 22, 2013, as a follow-up to this mission, Uzbekistan sent a letter to Turkmenistan reiterating the responses provided in the May 14, 2013 letter, and requesting Turkmenistan to respond.
5. On August 29, 2013, a World Bank mission, in the company of the Uzbek Deputy Minister of Agriculture and Water Resources, visited Turkmenistan. The mission met with the Turkmen Minister of Water Economy and his team. The mission explained that based on the technical analysis, the proposed project will not have any adverse impact on water flows and water quality in the lower Amu Darya river. Following the meeting, the Turkmen Minister raised no objections to the Bank's intention to continue with project preparation and Board submission.
6. On September 2, the Turkmen Minister of Water Economy sent a letter to Uzbekistan raising substantially similar concerns as those raised before. Uzbekistan responded to this letter on September 17, providing a detailed response to the Turkmen concerns.

Concerns Expressed by Turkmenistan and Responses

7. Throughout the communication, Turkmenistan raised a number of issues in response to the proposed project. Uzbekistan responded to each of these as follows:

- a) Concern: The proposed gravity off-take from the Amu Darya and the decommissioning of the pumping stations may lead to uncontrolled water abstractions into the project area.
Response: A detailed technical analysis clarified that irrigation efficiency would improve, as a result of which the net annual water abstraction into the project area would be reduced by an estimated 10 million m³. The capacity of the main canal would be reduced from 200 m³/s to 160 m³/s. In addition, the project will monitor abstractions and escape flows on a real-time basis, and will share these data with the Amu Darya Basin Water Organization, of which Turkmenistan is a member. All pumping stations will be decommissioned, and the UNS will be abolished, as reflected in a covenant.
- b) Concern: In order to satisfy water demand in the project area, the project may require an increase in the water level of Tuyamuyun reservoir, which would result in flooding of Turkmen assets.
Response: Quantitative evidence clarified that, at any point in time, the design inflow into the project area can be abstracted from Tuyamuyun reservoir with a reservoir level of 126.5 meter, the maximum currently agreed water level in the reservoir.
- c) Concern: Uzbekistan continues to release saline drainage water back into the Amu Darya, which Turkmenistan sees as a violation of the 1996 agreement between Turkmenistan and Uzbekistan.
Response: Under the Drainage, Irrigation and Wetlands Improvement Project (DIWIP), the predecessor project of SKWRMIP that improved drainage in the same project area, almost the entire drainage system of the project area has been rehabilitated. Two pumping stations that released saline drainage water into the Amu Darya have been decommissioned, and significantly less drainage water from the project area is flowing back to the Amu Darya.
- d) Concern: The project may have an impact on the existing agreed water allocation between Turkmenistan and Uzbekistan.
Response: Since the project will not result in an increase in water abstraction by Uzbekistan, the existing agreed allocation between Turkmenistan and Uzbekistan will remain valid.

Conclusion

8. The Bank has carefully considered any potential impacts of the project and is satisfied that (i) the project will not cause appreciable harm to any of the riparians in the Aral Sea basin; and (ii) none of the project activities are expected to have any adverse effects on the quantity or quality of water flows to any riparian in the Aral Sea basin.

9. Further, based on the above, the Bank is satisfied that all concerns raised by Turkmenistan have been addressed adequately. No further responses from Turkmenistan were received since mid-September 2013. In view of this, the Bank is of the opinion that the concerns raised by Turkmenistan have been adequately addressed. No responses to the riparian notification were received from other Aral Sea riparian countries.

Annex 5: Child and/or Forced Labor Issues
UZBEKISTAN: South Karakalpakstan Water Resources
Management Improvement Project

1. **This Annex is prepared in view of concerns regarding the use of child and/or forced labor (as defined by international conventions and national legislation) in cotton harvesting in Uzbekistan.** This Note draws on the Social Assessment prepared for the SKWRMIP, an analysis of secondary materials and first-hand evidence collected as part of missions in Uzbekistan. There has been no independently verifiable or accurate data on the scope or nature of child and/or forced labor in Uzbekistan as no survey was conducted by the ILO until the recent cotton harvesting season, which commenced in September 2013, and this only focused on child labor²⁵. UNICEF has led some observations, but those are informal and not considered as extensive as ILO monitoring. Hence, given the dearth of verifiable independent reporting and as data collection is sensitive and challenging, this Note reflects an effort to assess the current situation in light of the available information.

2. **The Bank has a long engagement with the government and development partners on child and/or forced labor issues.** Over the last few years, the Bank and its development partners (UNICEF, ILO, UNDP, the EU, the US, etc.) have invested considerable efforts to have the Government comply with its international obligations and to address the issue of child and/or forced labor in the country, and this collaboration has contributed to the recent deployment of the ILO monitoring mission to the country. Before 2013, UNICEF was designated by the Government as the main channel of dialogue on the child labor issues, and the Bank and other donors relied on monitoring by UNICEF to inform their own understanding of the situation. After the 2012 cotton harvest season, ILO was brought into the discussion by the Government in the role of monitoring child and/or forced labor, which resulted in the Government agreeing in July 2013 for the first time to allow ILO to monitor cotton harvesting activities for child labor during the harvest season. On behalf of the Government, a National Coordination Committee (consisting of representatives from the Ministry of Labor and Social Protection, Trade Union, Chamber of Commerce, etc.) was established to coordinate the monitoring process. Based on this engagement, the Bank's CPS for FY2012-2015 encourages a gradual shift away from the extensive state controlled cotton system towards a more liberal and diversified agricultural sector. In addition, Bank staff have engaged with a number of national and international NGOs on issues related to child and/or forced labor in Uzbekistan. Bank staff have systematically conveyed Management's views on child and/or forced labor, emphasizing that: (a) the Bank does not condone child and/or forced labor in any form; (b) the Bank recognizes the importance and complexity of the forced labor situation in Uzbekistan; and (c) the most effective way to address the issue is a holistic approach through policy dialogue, collaboration with other international organizations, and mitigation measures and binding provisions at the project level.

²⁵ See ILO: High Level Mission Report on the Monitoring of Child Labor During 2013 Cotton Harvest in Uzbekistan

3. **The government of Uzbekistan has signed and ratified several ILO conventions related to child and/or forced labor, and promulgated similar provisions in its national legislation.** These conventions include Convention No. 138 on Minimum Age for Admission to Employment, Convention No. 182 on Worst Forms of Child Labor, Convention No. 29 on Forced Labor, and Convention No. 105 on Abolition of Forced Labor. In addition, the International Covenant on Civil and Political Rights (ICCPR), also subscribed to by the government, prohibits forced labor (Article 8). Said legislation essentially prohibits any form of child²⁶ and forced labor,²⁷ ensures fair employment conditions and aims at creating adequate working environments. The GOU's domestic legislation includes a number of provisions prohibiting forced and child labor. In particular, the Constitution, the Labor Code, the Criminal Code and some other local laws and decrees contribute to laying out a legal framework in such areas.

4. **However, the enforcement of these conventions, as well as of existing national laws, has continued to be a challenge.** The international community, media and CSOs have consistently reported that Uzbekistan has been mobilizing forced and child labor for cotton harvesting. There appears to be a considerable discrepancy between the law on the books and the current practice, and state authorities seem to systematically mobilize large numbers of citizens (in particular government employees) to take part in cotton harvesting.

5. **The mobilization of labor for cotton harvesting is driven by the quota system that is organized by the GOU.** Since independence from the Soviet Union, Uzbekistan has followed a strategy of gradual transition from planned to market economy. State and collective farms organized during the Soviet period have been largely privatized since 2006. However, the transition from state collective farms to private leasehold farms disrupted the cotton supply chain, posing new challenges to the state organized cotton production system. New state organized methods were adopted for overseeing private leasehold farmers.

6. **The cotton and wheat supply chains remain dominated by the government with farmers operating like “contract farmers”.** Agricultural land is owned by the state, and private farmers (other than dekhkan farmers with household plots) are allocated farm land under long term leases for 30 to 50 years. These leases are often conditional on the acceptance of state quotas for planting cotton and wheat. At the same time, the state provides subsidized inputs for their production. During the transition from state collective farms to private farms, some

²⁶ For the purposes of Convention No. 182 on the Worst Forms of Child Labor, the term ‘child’ “shall apply to all persons under the age of 18” (Article 2). Article 3 provides that: “...the term ‘the worst forms of child labor’ comprises: (a) all forms of slavery or practices similar to slavery, such as the sale and trafficking of children, debt bondage and serfdom and forced or compulsory labor, including forced or compulsory recruitment of children for use in armed conflict; (b) the use, procuring or offering of a child for prostitution, for the production of pornography or for pornographic performances; (c) the use, procuring or offering of a child for illicit activities, in particular for the production and trafficking of drugs as defined in the relevant international treaties; (d) work which, by its nature or the circumstances in which it is carried out, is likely to harm the health, safety or morals of children.”

²⁷ For the purposes of Convention No. 29 on Forced Labor, the term forced or compulsory labor refers to “all work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily” (Article 2).

machinery, such as the machine cotton harvesters, has not been adequately maintained and hand picking of cotton has increasingly been adopted. It should be noted, however, that an increasing amount of land is allocated by the state for other agricultural purposes (notably, horticulture) and is no longer subject to the state quota system.

7. **The “State Order” system includes quotas on the production of cotton and wheat, as well as on area planted.** Quotas for the production of cotton and wheat are set and updated on an annual basis by the GOU.²⁸ Specific quotas for each oblast, region, and village are then determined by respective regional and local authorities. Precise quota allocations go down to the level of individual farms. The cotton under the quotas has to be sold back to the government at a pre-defined state procurement price announced close to the harvest time, with the price based on a cost plus method plus an allowance for a nominal profit. This eliminates price risks for farmers, but fixes the price well below world market prices. At the same time, before the planting season, farmers receive from the government subsidized loans to purchase inputs (e.g. fertilizer, pesticides) and to pay for farm machinery services needed for cotton production. Farmers that manage to produce cotton above the quota often sell on the “black market” for considerably higher prices.

8. **Regional and local authorities (Hokhimiyats) closely monitor cotton production and are personally responsible for ensuring that state quotas are met.** Leaching (to reduce soil salinity) is monitored in the winter; planting area, varieties, and dates are determined by the state in the spring; and fertilizer application during the growing season is directed by MAWR officials. During the cotton-growing season, state officials visit farms to determine yield potential and adjust planning targets and production quotas. Oblast- and regional level authorities hold Hokhimiyat officials personally responsible for ensuring that cotton production quotas are met, and these officials may face grave consequences if their localities fail to meet the assigned quota.

9. **Farmers who fail to meet the assigned quota incur considerable financial penalties.** The majority of farmers are contractually obligated to dedicate a certain percentage of their land to cotton production, fulfill an annual quota of cotton, and sell it to the GOU at a price fixed by the government. Reportedly, if a farmer does not meet the quota for three years in a row, the Hokhimiyat may reallocate his land to a different farmer, in addition to financial penalties. Indeed, it appears that land reallocation due to failures to meet cotton production quotas is not uncommon. In order to avoid the consequences of unmet quotas, some farmers buy cotton on the “black market” for high prices at their own expense and then sell it to the GOU at the state procurement price.

10. **Hokhimiyats typically function as headquarters for mobilizing workers for cotton harvesting.** They collaborate with the heads of governmental organizations to mobilize governmental employees to collect cotton during the harvesting season. As cotton is sensitive to weather conditions, it is critical to harvest it as quickly as possible, and large amounts of workers

²⁸ Concerns regarding child and forced labor primarily focus on cotton-harvesting and typically do not include wheat harvesting. Contrary to cotton, which is largely hand-picked in Uzbekistan, wheat is primarily harvested by machines and thus does not require the engagement of considerable workforce.

have to take part in the task. Farmers are typically unable to mobilize such large numbers of seasonal workers for a limited period of time. Thus, Hokhimiyats take care of workers' mobilization depending on the needs of each farm and closely oversee the process (often receiving reports from farmers on their performance on a daily basis). Persons involved in the organization of labor typically include the staff of the Hokhimiyat, the district prosecutor, the district police, and the director of the district departments of public services.

11. **Forced child labor in cotton harvesting used to be widespread, but has mostly disappeared in recent years.** A joint ILO-GOU mission took place during the cotton harvesting season in September-October 2013 to monitor the use of forced child labor in cotton harvesting. The ILO's official public statement at the completion of their monitoring activities is as follows: "In general terms, the monitoring observed widespread awareness of national laws and instructions not to allow the use of children under 18 years of age in the cotton harvest. Moreover, it would appear from the monitoring that there was no systematic recourse to forced child labor. While the law and practice are increasingly being applied, gaps remain in practice and child labor still has taken place during the cotton harvest to a limited extent." The ILO's full report was released in February 2014. Reports by international NGOs largely support this conclusion and indicate that fewer children from primary and junior secondary school (grade nine and below) have been observed in the fields since 2012. However, some NGOs raise concerns that while children below the age of 15 are not employed in the fields, children aged 15-17 are still mobilized to pick cotton.

12. **Forced child labor has been reportedly substituted with forced adult labor.** In order to comply with the state's cotton procurement system, the burden of cotton harvesting has apparently shifted from children to adults. According to available information, the Hokhimiyats currently work with the administrators of different governmental organizations (primarily schools, universities, hospitals, etc.) to compile a list of employees who would be mobilized during the cotton harvesting season (these lists consist of "brigades" of around 150-200 people each). Administrators then require their employees to join cotton harvesting and Hokhimiyats provide the transportation. University students may also be required by the university authorities to work in the fields during the cotton harvesting season. Cotton harvesters are required by their administrators to sign statements of consent prior to taking part in cotton harvesting.

13. **The level of coercion to take part in cotton harvesting seems to vary from one locality and organization to another.** In some localities and organizations cotton harvesting needs may be less considerable, and it may be fairly easy to refuse or to excuse oneself from taking part. In other places, a refusal can reportedly lead to serious complications in the work place (e.g., dismissal, rejection of promotion, denial of benefits such as a 13th month bonus, etc.). However, one can allegedly pay a "fine" in order to avoid cotton harvesting or pay someone else to go on his or her behalf. Reportedly, the performance of governmental employees in cotton fields affects their job evaluations and their prospects for promotion (those who pick more cotton are more likely to get promoted).

14. **Employment conditions in the fields vary, but tend to be generally poor.** It appears that everyone who participates in cotton harvesting is paid by the farmers (in addition to their regular salary as government employees). The standard payment appears to range between 0.1

USD and 0.3 USD per 1kg of cotton collected. It is not clear whether there are uniform daily cotton collection quotas that are imposed on harvesters. This seems to differ among various localities, but the average expectation is to collect around 60kg. While most harvesters seem to return home every day, others may be required to spend as long as one month in the fields away from home and are housed in poor sanitary conditions in places such as school gymnasiums, village cinemas, or public meeting halls. Transportation, food, and accommodation are in principle provided by local authorities, but their expenses may be deducted from the payments received by harvesters for their work. Moreover, some harvesters pay out-of-pocket to stay with local residents and escape unhygienic food and poor living conditions at the accommodations arranged by the authorities.

15. **The mass mobilization of government employees reduces access to public services, including health care, education, and social services.** Governmental employees are typically mobilized to pick cotton in shifts. In schools, while some teachers are sent to the fields, those who remain in schools teach additional classes, bring together children from several classes, or simply cancel classes. In hospitals, only emergency services may be offered due to the absence of large numbers of workers. Reportedly, payments of pensions and other social benefits are considerably delayed as governmental employees are at the cotton field and absent from their regular work places.

16. **About 36,000 ha in the project area is subject to the state's cotton procurement quota and a considerable number of future beneficiaries of SKWRMIP are therefore engaged in cotton production.** SKWRMIP intends to modernize the deteriorating irrigation network in project areas, and thus improve water supply to beneficiary farms in South Karakalpakstan. As such, it will serve large numbers of cotton producers. These farmers are naturally subject to the procurement system and workers mobilized by Hokhimiyats take part in cotton harvesting on their fields.

17. **The Project aims to restore irrigation and improve water management in an area where cotton is being grown.** The following measures have been agreed with the government and will be taken with a view to eliminating occurrences of child and/or forced labor in connection with the project activities or within the project area:

- (i) A covenant in the financing agreement that requires the government to comply with national legislation that prohibit the use of child and/or forced labor, and measures to address violations;
- (ii) A clear land use strategy that eliminates incentives for using child and/or forced labor in the entire project area of 100,000 hectares, including crop diversification and cotton harvest mechanization (see Table 1);
- (iii) Exemption of the state's cotton procurement system for the 30,000 ha restored area, and commitment from the government not to expand the area under cotton (currently 36,000 ha);
- (iv) Training, awareness raising and outreach activities on labor legislation and the regulations on child and/or forced labor (see Annex 3 for details)
- (v) A TPM and FBM, financed through a separate trust fund, to focus on child and/or forced labor issues in the project area in connection with the project activities or within the project area;

- (vi) Additional covenants in the financing agreement that require that local authorities fully collaborate with the TPM and that actions to ensure compliance will be taken promptly;
- (vii) Technical assistance to help the government develop a strategy for agricultural diversification and to review arrangements for independent certification that Uzbek cotton complies with child and/or forced labor regulations, in collaboration with the private sector.

18. At the same time, cotton harvest mechanization is not expected to adversely impact employment in the project area. The crop diversification and intensification resulting from project activities are expected to generate additional demand for year-round labor. As a result of improved irrigation, farmers will be able to move from two cropping cycles (cotton, and winter wheat) to three cropping cycles (with a third crop after winter wheat). This will apply to about 70,000 ha within the project area and will create additional jobs year round.

Table 1: land use pre- and post-SKWRMIP

	Pre-project (70,000 ha)		Post-project (100,000 ha)		Notes
Restored area	0		30,000		Exempted from state cotton procurement system
Cotton area	36,000		36,000		Government committed to not expand this area
<i>Of which mechanized</i>		0		25,200	<i>Project will finance mechanization</i>
<i>Of which cotton seed</i>		5,100		5,100	<i>Cotton seed generates higher prices which attracts voluntary labor</i>
<i>Of which physical land restrictions that make it unsuitable for mechanization</i>		5,700		5,700	<i>Voluntary labor</i>
Non-cotton area	34,000		34,000		Designated for wheat, fodder, horticulture crops, etc.
TOTAL	70,000		100,000		

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Annex 6: Summary of Request for Inspection
UZBEKISTAN: South Karakalpakstan Water Resources
Management Improvement Project

Summary of Request for Inspection of Forced Labor in the Cotton Sector under
Uzbekistan: Rural Enterprise Support Project – Phase II

1. On September 23, 2013, the Inspection Panel registered a Request for Inspection concerning the Uzbekistan: RESP II and its Additional Financing. The Request for Inspection was submitted by three NGOs on behalf of others who declare they live in project regions. The Requesters claimed that RESP II harmed those they represent and their communities through the inadequacy of the project’s measures to prevent Bank funds from contributing to “Government orchestrated forced labor” in the cotton sector. The Requesters claimed that the Bank was noncompliant with OP/BP 4.01, Environmental Assessment in excluding the issue of forced labor from the project’s Social Assessment, and stated that the Bank failed to adequately monitor compliance of child labor provisions. The Requesters also cite OP 13.60 on monitoring and evaluation, claiming that the project’s monitoring procedures, directed at farms or agribusinesses rather than the state, were insufficient to determine whether project funds are supporting state-sponsored forced labor.

2. In response to the Request, Bank Management did not agree with the allegations that non-compliance with Bank policy caused the harm alleged in the Request. On the contrary, Bank Management stated that RESP II contributes to the country’s diversification away from cotton production, the cultivation of which in many regions of Uzbekistan is associated with severe adverse social impacts including those raised in the Request.

3. The World Bank has been addressing child and/or forced labor issues in Uzbekistan through a multi-pronged approach, including: (a) pursuing continuous country dialogue and collaboration with international/multilateral agencies and donors to address these issues; (b) sector analytic work and policy dialogue, such as assisting government in formulating its horticulture strategy through the Horticulture Development policy note; and (c) strengthening project-level mitigation measures and binding provisions. Under RESP II, these included awareness raising and training of beneficiaries (e.g., credit line beneficiaries, WCAs) on national legislation regarding child labor; provisions in sub-loan agreements signed between the participating financial institution (PFI) and sub-borrowers that require the beneficiary to comply with national labor legislation as well as any applicable national and international law and regulation on child labor; monitoring by PFIs and the implementing agency of the use of child during the monitoring visits to the sub-borrowers, with use of child labor disqualifying the sub-borrower from further borrowing from the Credit Line; and supervision/implementation support by the World Bank. Following the Inspection Panel review, these provisions and measures have been expanded to cover forced labor. In addition, third-party monitoring (TPM) and a feedback mechanism (FBM) will be implemented, including in the context of RESP II, to help address potential child and/or forced labor use in the project areas. The adoption of TPM and FBM has been supported and endorsed by other development partners.

Annex 7: Implementation Arrangements
UZBEKISTAN: South Karakalpakstan Water Resources
Management Improvement Project

1. Implementation arrangements build on those that were adopted for DIWIP, but allocate more responsibility for project implementation to local authorities (Hokhimiyats, PAN-ISA, LABAIS and KKGME). MAWR is responsible for overall project implementation. MAWR, with branches at the Vilayat and Tuman level, is responsible for water planning in the country and for O&M of the main I&D systems up to farm level. The MAWR also administers international river systems with respect to water sharing and water quality control. Within MAWR, a Deputy Minister acts as the Project Head and has overall responsibility for the project within MAWR and for liaison with other ministries and government agencies.

2. Responsibility for day-to-day project implementation has been delegated to a PIU and headed by a Project Director, supported by a small group of technical and administrative staff in Tashkent. The PIU will maintain an office in Bustan under the supervision of a Deputy Director. Following the experience from DIWIP, the PIU will become more hands-on involved in day-to-day project management. To that end, the PIU will be strengthened to include a number of technical experts, including M&E, environment and social, irrigation and agriculture. Furthermore, national and international TA consultants that assist the PIU with project implementation, including civil-works contract administration and supervision, M&E, and institutional development, will be located in the offices of the clients of their services to ensure relevance and ownership among these clients.

3. The Project Director will have overall responsibility to MAWR for project implementation. Specifically, he will be responsible for:

- Liaison with Hokhimiyats and authorities at all levels throughout the implementation period, from preparation of design through to handover of the works
- Acting as Secretary of project coordination committees
- Establishing and maintaining good working relationships with communities and individual landowners to ensure a smooth site possession
- Acting as the contracting authority for all implementation contracts
- Coordinating the work of the M&E consultant and reporting on project impacts at all stages of implementation.
- Reporting to government and other financiers on implementation progress
- Maintaining proper accounts

4. A Karakalpak Project Coordination Committee (KPCC) will be established in Nukus under the Council of Ministers of the Republic of Karakalpakstan to supervise and coordinate project implementation. The KPCC will be chaired by the Deputy Chairman of the Council of Ministers of Karakalpakstan and will meet semi-annually. Its Secretary will be the PIU Director. Members of the KPCC are the Hokhims of concerned Tumans (Beruni, Ellikala and Turtkul), local representatives of the Department of Agriculture, Department of Forest and Department of Livestock, KhloptaProm (the cotton agency responsible for cotton ginning), the national

environmental agency (Goskompriroda), and the Institute of Archaeology and Ethnography, as well as two farmers' representatives of each Tuman. The main task of the KPCC is to coordinate the implementation of the project, review project monitoring and evaluation reports submitted by the M&E consultants, and recommend necessary actions when project implementation problems occur.

5. An FCC will be established and will be chaired jointly by the three Tuman Hokhims in the project area. The PIU Director or his designate will act as secretary. Its members include local representatives of the Department of Agriculture, Department of Forest and Department of Livestock, KhloptaProm (the cotton agency responsible for cotton ginning), the national environmental agency (Goskompriroda), and the Institute of Archaeology and Ethnography, as well as two farmers' representatives. Meetings will be open for attendance by stakeholders on an observer basis. The main task of the FCC will be to coordinate the implementation of the project at Tuman level, exchange information about project activities (in particular related to progress in the implementation of civil works and training), and recommend necessary actions when project implementation problems occur. The FCC will meet at least quarterly, or upon request from either the chairperson or the PIU Director. Communication between stakeholders will be further strengthened by investing in communication equipment, in particular between PAN-ISA and WCAs.

6. The PIU will submit semi-annual reports to MAWR, KPCC and the Bank no later than one month after the end of each six months. The semi-annual reports will cover progress and expected completion dates for civil works and equipment/goods contracts, progress on institutional components, training and studies, and activities of the PIU's engineering and M&E consultants, and procurement and financial staff. The PIU will also submit annual reports to MAWR, KMAWR, KPCC and the Bank. The report will contain an Annual Progress Report and an Annual Work Plan. The Annual Progress report will cover the progress of each component, implementation of key features of the environmental management plan, key performance indicators, operation of project facilities, and financial statements. The Annual Work Plan will contain a plan for implementation, updated disbursement profile, planned actions in compliance with safeguard policies, and target indicators for the coming year.

7. Tender documentation for investments during year 1 of the project, in particular Bustan Canal rehabilitation and purchase of cotton harvesters, will be completed before project effectiveness so that tenders can be issued as soon as possible. Similarly, recruitment of an engineering and M&E consultant will be initiated before project effectiveness.

Financial Management, Disbursements and Procurement

8. According to the findings of the Country Integrated Fiduciary Assessment (CIFA) report for Uzbekistan and UZ Accounting & Auditing ROSC report, the capacity in the accounting profession in the country is still low as there is no critical mass of professionally qualified accountants. Knowledge of internationally recognized accounting and auditing standards, such as IFRS, IPSAS, ISA, is limited, in both the public and private sectors. In particular, the PIU does not have any accountants with internationally recognized accounting qualifications. However,

the Chief Accountant is quite knowledgeable about National Accounting Standards that, in most cases, are based on international standards.

9. Most Bank-financed projects in the country are implemented through stand-alone project implementing agencies that install parallel accounting systems to those used in the respective line ministries. Audit of Bank-financed projects in the country have been performed by private sector firms that meet the Bank’s eligibility criteria. In 2011 the Bank conducted a review of local audit firms to determine their capacity to audit Bank-financed projects, and only two firms were qualified to conduct audits of the project.

10. **Implementing Entity:** The PIU will be responsible for implementation of the financial management (FM) function of the project, including the flow of funds, budgeting, accounting, reporting, and auditing. The FM assessment was carried out to determine the FM implementation risk and the FM arrangements at the PIU, including accounting, reporting, planning, and budgeting, and staffing is considered to be satisfactory to the Bank. Inherent Risk of the project is rated as Substantial, while the Control Risk and the Overall FM Risk are both considered to be Moderate.

11. **Strengths and Weaknesses:** There are no major weaknesses at the PIU. The significant strengths that provide a basis for reliance on the project FM system include (i) FM arrangements similar to an existing project being implemented by the PIU and found to be satisfactory; (ii) experienced FM staff; (iii) proper internal controls and well operational accounting system in place.

12. The following capacity building actions have been agreed to be implemented:

Actions for capacity building	Responsible	Completion date
Update the Financial Management Chapter of the POM to reflect the project related internal control, budgeting, external auditing, financial reporting and accounting policies and procedures	PIU	June 30, 2014
Modify the existing accounting software for accounting and financial reporting purposes of the proposed project. The accounting software will be specially designed to meet World-Bank-financed projects requirements including ability to generate Interim Financial Reports, withdrawal applications, statements of expenditure, and annual financial statements	PIU	August 25, 2014
Select additional Financial Specialist for the PIU.	PIU	August 25, 2014

13. **Budgeting and Planning:** The PIU had, in general, acceptable budgeting and planning capacity under DIWIP. The annual budget of the project will be based on the final procurement plan that is to be discussed and agreed with the PIU Director, and approved by the World Bank. All changes to the procurement plan will be reviewed by the PIU Director and approved by the

World Bank. The Director, the disbursement specialist, and the procurement specialists will be involved in the preparation of the annual budget. These budgets will form the basis for allocating funds to project activities and requesting counterpart funds from the government, where appropriate. The budgets will be prepared according to IFR format (disbursement categories, components and activities, account codes, and broken down by quarter).

14. **Accounting and Maintaining of Accounting Records:** The PIU has solid prior experience maintaining the independent accounting system. The project accounting will be maintained based on the National Accounting Standards of Uzbekistan. For reporting purposes, cash basis *International Public Sector Accounting Standards* and World Bank guidelines for Borrowers will be used under the project. The FM Manual under DIWIP properly reflects accounting policies and procedures and will be used under the proposed project. All supporting documents will be maintained in files for ready access by auditors and Bank staff. The project's chart of accounts will track all transactions and report them according to source of financing project components, and type and category of expenditure. The PIU under DIWIP uses the 1-C accounting system specially designed to meet the World Bank-financed project requirements, including ability to generate IFRs, withdrawal applications, statement of expenditures, and annual financial statements. In addition, regular backups of the accounting data are done by the accounting staff. For the purpose of the project, the PIU will modify existing accounting software that will be able to generate reports specifically tailored to the project needs. The system shall have safeguards against the input of inaccurate data or unauthorized access to the system. Regular backup of the accounting data shall be made by the accounting staff. The PIU has a well experienced financial management staff, consisting of a chief accountant and a financial/disbursement specialist. However, given the heavy workload of the financial staff and complicated financial reports to be provided for GOU and WB the additional financial specialist needs to be hired.

15. Payment of compensation payments will follow the process that has been established under the FVWRMP. The PIU will monitor compensation payments to PAP that have been identified in the RAP. Eligibility is determined by the Hokhim following the recommendation of a committee that is established by the Hokhimiyat. An independent agency is recruited by the local cadaster to determine the amount and kind of compensation. Compensation payments will be transferred to the bank accounts of PAP. Beneficiaries will sign receipts and records will be kept by the PIU. Similarly, any retrenchment payments will follow the process that has been established in the Retrenchment Action Plan that will be prepared prior to dismantling the pumping stations and any retrenchment of UNS staff. The PIU will monitor retrenchment payments to UNS staff that have been identified in the Retrenchment Action Plan. The PIU will use a simplified SOE to monitor expenditures.

16. **Internal Controls:** The PIU's internal controls system was assessed in to be capable of providing timely information and reporting on the project. The Financial Management Manual is well prepared and fully documents accounting and financial reporting policies and procedures. Under DIWIP, the PIU conducted monthly formal reconciliation of the World Bank disbursement data with project's accounting records via Client Connection. Formal reconciliation of the special and local accounts with the project records is done on a monthly basis, but informal reconciliation is done more frequently, usually upon receipt of bank

statements from the commercial bank. The PIU has adequate internal control procedures in place over operational expenses. The FM Manual for the project will be updated to reflect the specific activities of the project, like Audit TOR, frequency of submission, format of IFRs, and so forth.

17. **Financial Reporting:** The PIU prepares quarterly financial management reports (FMRs) for ongoing project. Those FMRs for FY 2011 and three quarters for FY 2012 are usually received on-time and generally found to be acceptable. project-management-oriented Interim Unaudited Financial Reports (IFRs) will be prepared under the project. The PIU will produce a full set of IFRs every calendar quarter throughout the life of the project. The format of IFRs has been agreed during the assessment and includes (i) Project Sources and Uses of Funds, (ii) Uses of Funds by Project Activities, (iii) Designated Account Statements, (iv) Disbursement Summary, and (v) a Statement of Expenditure Withdrawal Schedule. IFRs will be produced by the accounting software. These financial reports will be submitted to the Bank within 45 days of the end of each calendar quarter. The annual audited project’s financial statements and audit report together with the management letter will be provided to the Bank within six months of the end of each fiscal year and also at the closing of the project.

18. **External Audit:** The unqualified auditor’s report on the DIWIP project’s financial statements for FY 2011 has been received on time (on June 30, 2012). The proposed project audit will be conducted (i) by independent private auditors acceptable to the Bank, on terms of reference acceptable to the Bank, and selected by the PIU; and (ii) according to the International Standards on Auditing (ISA) issued by the International Auditing and Assurance Standards Board of the International Federation of Accountants (IFAC). The TOR will include (i) audits of financial statements, (ii) assessments of the accounting system, and (iii) a review of the internal control mechanisms. The following table identifies the required audit reports that will be submitted by the PIU together with the due date for submission.

Audit Report	Due date
The project Financial Statements include Project Balance Sheet, Sources and Uses of Funds, Uses of Funds by project activities, Statement of Expenditures Withdrawal Schedule, Designated Account Statement, Notes to the financial statements, and Reconciliation Statement	Within 6 months of the end of each fiscal year and also at the closing of the project

19. The audited financial statements will be disclosed to the public in a manner acceptable to the Bank. Following the Bank’s formal receipt of these statements from the borrower, the Bank makes them available to the public in accordance with the World Bank Policy on Access to Information.

20. **Flow of Funds and Disbursement arrangements:** Credit funds will flow to the project via disbursements to one designated account (DA) maintained by the PIU. The project will follow transaction-based disbursement procedures (advances to the DA, documentation of the advances based on statements of expenditures and supporting documents, direct payments, and special commitments). Withdrawals from the Credit Account will be requested according to

requirements in the Disbursement Letter. The Ceiling of the Designated Account will be US\$5,000,000. Withdrawal applications will be signed by two persons: (i) an authorized representative of the Borrower (Ministry of Finance); and (ii) another designated official, such as the PIU Director, or other persons delegated in writing by the Ministry of Finance.

21. Disbursements will be made on the basis of full documentation: (i) goods and civil works over US\$500,000; (ii) services contracts for consulting firms over US\$100,000 each, and (iii) individual consultants' contracts over US\$50,000 each. Disbursements under these amounts, and training and operating costs, will be made according to certified Statements of Expenditure. Documents to support the Statements of Expenditure will be held by the PIU for at least one year after the Bank receives the audit report for the fiscal year in which the last withdrawal from the Credit Account was made. A simplified Statement of Expenditure form will be used for the reporting of compensation payments. This information will be available for review during Bank staff supervision missions and for annual audits that assess the propriety of Statement of Expenditure disbursements and the quality of the records. A Project Disbursement Table is presented below. The table presents the percentage of expenditures to be financed by the Bank; the remainder will be financed by the government contribution.

Category	Amount of the Financing Allocated (expressed in US\$)	Amount of the Loan Allocated (expressed in US\$)	Percentage of Expenditures to be Financed (exclusive of taxes, except Withheld Taxes)
(1) Goods, works, non-consulting services, consultants' services and Training under the Project	231,577,762	17,686,414	100%
(2) Compensation under Part 1.3(A) of the Project	7,351,998	506,634	100%
(3) Incremental Operating Costs under Part 3 of the Project	3,570,240	51,227	100%
(4) Front-end Fee		45,725	Amount payable pursuant to Section 2.03 of this Agreement in accordance with Section 2.07 (b) of the General Conditions
TOTAL	242,500,000	18,290,000	

Procurement

22. **General:** Procurement for the proposed project will be carried out in accordance with the World Bank's "Guidelines : Procurement of Goods, Works and non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011 (Procurement Guidelines); and "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011 (Consultant Guidelines) and provisions stipulated in the Loan / Financing Agreement. If there is conflict between the government decrees, rules and regulations and the Bank Procurement and Consultant Guidelines, then Bank Guidelines shall prevail. In addition, the project will also follow "Guidelines On Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants dated October 15, 2006 and revised in January 2011". For each contract to be financed by the Bank, the different procurement methods or consultant

selection methods, the need for pre-qualification, estimated costs, prior review requirements, and time frame are agreed between the Borrower and the Bank project team in the Procurement Plan. The Procurement Plan will also present the thresholds for different procurement methods, and will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

23. The items to be procured would include the following:

- (a) Works to be procured under this project include the following: (i) construction of a 68 km long canal, representing about 50 percent of the overall project investments; (ii) rehabilitation of existing main canals (more than 20 distribution canals (inter-farm canals) have been identified for rehabilitation); (iii) installation of a Supervisory Control and Data Acquisition (SCADA) system to monitor and control the main canal irrigation system on a real time basis.
- (b) Goods to be procured under this project include procurement of about 230 machine cotton harvesters, soil testing laboratory, canal maintenance equipment for WCAs, and office equipment and vehicles for PIU and office equipment for FCCs.
- (c) Consulting services & training: Consulting services required under the project would include the following: (i) technical assistance in such areas as detailed design, contract administration and construction design and supervision; (ii) institutional development and training under component 2.1 and 2.2; (iii) preparation of a Lower Amu Darya Water Master Plan and (iv) M&E, including establishment of a performance based MIS, data collection and reporting on key performance output and impact indicators; (v) preparation of a feasibility study and bidding documents for a follow-on investment operation, possibly including the Right Bank Main Collector Development Project; (vi) a dam failure mode analysis as a result of catastrophic failure of upstream facilities; (vii) feasibility of a soil testing laboratory in Karakalpakstan; (viii) international institute to provide support to the demonstrations and FFSS; and (ix) technical assistance to farmers and WCAs in the preparation of business plans and submissions for credit or equipment.

Record Keeping

24. The procurement specialist of the PIU is responsible for maintaining procurement records. Separate files should be maintained for each contract (including both hard copy and electronic copy) under different projects. All the procurement documents (including bids, technical and financial proposals of consulting services) should be kept to the end of the project and then transferred to the government Archives. The originals of various valuable documents (such as bid security, performance guarantee, advance guarantee) are being kept in the safe by the PIU's accountant.

Risk Analysis and Mitigation Measures

25. Procurement Risk Assessment and Mitigation: As part of project preparation, an *Assessment of the Procurement Capacity of PIU* was carried out in January 2013 and a PRAMS was completed at preparation. The country procurement assessment report (Report # 25653 UZ) conducted in 2003 (by the Bank and ADB) identified the following weaknesses in the public

procurement system in Uzbekistan: (a) absence of a unified legislative framework; (b) inefficient and non-transparent procurement practices; (c) absence of a single institution with oversight or regulatory authority on public procurement practices; (d) weak capacity to deal with bidders' complaints; (e) lack of independent scrutiny of contracts; (f) lack of comprehensive anti-corruption measures; and (g) low skills/capacity of the staff handling public procurement at every administrative level. Further, the Bank noted recently the difficulty in obtaining a bank guarantee for bid security and performance security by the bidders and non-availability of alternative instruments for such purpose in the country's banking system in particular Joint Ventures. Private sector suppliers and contractors remain unsatisfied with the rules governing public procurement and have little confidence in the system's fairness. Transparency International ranks Uzbekistan at 170 out of 178 countries. The recent Country Integrated Fiduciary Assessment (CIFA) revised the procurement environment to be considered a high risk and no major change in public procurement environment was noticed during ongoing PEFA review. The risks identified and mitigation measures are summarized in the table below:

Description of Risk	Risk Rating	Mitigation Measures	Residual Risk Rating
Contract registration requirements are arduous and take long time which may seriously impact timeliness of procurement and contract implementation	S	The team will monitor contract award notification and publication of contract award details as per Bank Procurement and Consultant Guidelines. The team will further monitor receipt of signed prior review contracts and take timely action to ensure provisions of Bank Guidelines are followed, and Bank will take remedial action such as misprocurement if the delay is more than 42 days Bank's NO to BER or to negotiated contract	S
Government officials may intervene in the procurement decisions under the project	H	The POM shall clearly decide the responsibilities of the project stakeholders in the procurement process. The Bank's procurement procedures shall be followed strictly. Complaint handling system shall be defined in POM and will be in place.	M
Low level of competition due to high cost of doing business in the country and the less development of local manufacturing and contracting industry.	S	All major packages will be subject to ICB to aim at wider competition among qualified international contractors. Slice and packages would be followed and local contractors will be able to bid for lots or form associations	M
Perceived level of corruption in the country is high. The Transparency International ranked Uzbekistan the 170th	H	The Bank's Anti-Corruption Guidelines, Procurement Guidelines and Consultant Guidelines will be followed by the Borrower	S

<p>in the world (out of 178 countries) in 2012.</p>		<p>for the implementation of the project.</p> <p>Among other actions, the following specific actions would be included in the POM:</p> <p>a. Require each staff involved in procurement, including each member of a tender or evaluation committee, to sign a declaration of impartiality to certify in writing that his/her involvement does not create a conflict of interest, i.e., relationship with a supplier or consultant, etc.</p> <p>b. Put in place mechanisms to ensure that suppliers and contractors are paid according to their contract terms without any delays.</p> <p>c. To bring to the Bank notice each and every complaint received from any supplier or consultant relating to the procurement process, and to record and dispose of these complaints promptly and diligently.</p> <p>To maintain up-to-date procurement records and to make these available to the Bank staff, auditors.</p>	
<p>Overall</p>	<p>H</p>		<p>S</p>

H: High; S: Substantial; M: Moderate; L: Low.

26. Procurement Arrangements: As per implementation arrangement for the project, the responsibility for project implementation has been delegated to a PIU, under MAWR, headed by a Project Director, and supported by a Procurement Specialist in Tashkent. The POM will reflect that any price verification and reasonableness of recommended contract value will be carried out as part of bid evaluation and the contracts will be awarded and signed as soon as Bank’s no-objection is issued and signed contract and Performance Security (whenever required) is submitted to the Bank within 6 weeks of Bank’s no-objection to the BER. The POM will include the complaint registration and handling mechanism so any complaint is treated fairly and openly. Any complaints concerning the procurement or other aspects of the project implementation have to be registered and dealt within a time frame agreed in the POM.

27. Procurement Plan: PIU has developed a Procurement Plan (PP) covering procurement activities for the entire period of project implementation. This PP will be continuously updated by PIU as the project progresses and will be reviewed and approved by the Bank accordingly. The PP will be published on the Bank’s external website and PIU’s website by the time of

project negotiations. The POM will elaborate on the appropriate mechanisms for procurement according to Bank Guidelines. The General Procurement Notice (GPN) and advertisement of procurement opportunities will be published on UN Development Business Online (UNDB online), on the Bank's External website, and on MAWR's website and Uzbek media. The ICBs and major consultancy services will also be published in the Bank's external website and UN development business. The procurement plan at preparation, with preliminary cost estimates, is presented in Appendix A. The plan was finalized at negotiations. The Borrower has the option of not disclosing the cost estimates while disclosing the procurement plan.

28. Procurement Supervision and Procurement Post Review: Routine procurement reviews and supervision support will be provided by the procurement specialist based in the region/country office. The Procurement Plan shall set forth those contracts which shall be subject to the Bank's Prior Review. All other contracts shall be subject to Post Review by the Bank. In addition, two supervision missions are expected to take place per year during which ex-post reviews will be conducted for the contracts that are not subject to Bank prior review on a sample basis (e.g., 20 percent in terms of number of contracts). One ex-post review report will be prepared per fiscal year, including findings of physical inspections for not less than 10 percent of the contracts awarded during the review period.

Environmental (including safeguards)

29. Environmental Assessment (OP4.01): MAWR conducted environmental and social impact assessments and prepared an ESAMP consisting of an Environmental Assessment and Management Plan (EAMP)²⁹ and the Social Assessment³⁰. The project design does not seek to promote a horizontal expansion of irrigated agriculture, but to rehabilitate previously irrigated areas and to support agricultural intensification and diversification. Hence the EAMP indicated that, due to improving water management in the project area, the project would have an overall positive impact on the lower Amu Darya basin and the environment, without undermining the water requirements of the riparians or the Aral Sea. The project safeguards are rated category B, and the applicable safeguards policies are as listed below. The likely negative impacts (typical to irrigation rehabilitation projects) will be limited, such as limited disruption of the ecosystem (removal of trees and plantations to enable developing the Bustan Canal), resettlement, and safety at the construction sites, which will all be mitigated through the EAMP, budgeted at around US\$10.6 million. The EAMP will be implemented under the joint responsibility of MAWR and the civil-work contractors. The EAMP was disclosed locally on February 6, 2013, and in the Infoshop on March 7, 2013. The EAMP was updated to address the impacts related to the dismantling of pumping stations, and disclosed in-country on May 5, 2014, and in the Infoshop May 6, 2014. An Addendum to the EAMP providing an update related to the impact of cotton harvest mechanization was disclosed in-country and in the Infoshop on March 11, 2014. This Annex provides a summary of the ESAMP and a detailed budget.

²⁹ The EAMP consists of three volumes: an Executive Summary of the EAMP, the EAMP (as updated April 9, 2014), and the Addendum to EAMP.

³⁰ Social Assessment Framework, dated February 2013 and Annex to Social Assessment dated March 2014.

30. Natural Habitats (OP 4.04): One of the co-benefits of improving water management through the project components is to sustain the required seasonal water flow to Baday Tugay (a seasonally flooded forest adjacent to the project area). The canal needed for water supply to the forest has been developed under DIWIP, whereas the project should ensure the adequacy of its water resource.

31. Pest Management (OP 4.09). On the basis of the environmental assessment, this policy is triggered since the increase in crop yield/production resulting from the project may result in higher concentrations of the fertilizer/pesticide/defoliant residues (in the soil, crop tissues, or in the ambient waters) above the WHO/GOU permissible standards. If not properly managed, this can cause pesticide residue build-up in the soil as well as in surface and ground water, can disrupt agro-ecosystems and undermine sustainable agricultural production, and can pose human health risks. Also, insufficient infrastructure for storage and disposal of pesticides and related wastes may pose environmental risks. The project will, as part of its capacity building activities under Component 2, support awareness raising activities and training programs targeted at WCAs and individual farmers. The training will promote application of biological control methods, cover the topics on optimal use of pesticides (preferable WHO class III) on the basis of economic thresholds, determination of adequate amounts, proper storage (away from water bodies and other sensitive receptors) and disposal. The project ESAMP duly addresses the environmental risks associated with the potential increase in the pesticide use.

32. Physical Cultural Resources (OP 4.11). This policy is not triggered as there are no project activities affecting cultural resources. Nevertheless, “chance find” provisions will be incorporated in the works bid documents.

33. Involuntary Resettlement (OP4.12) is triggered in this project due to land acquisition and resettlement anticipated in rehabilitation works associated with Bustan Canal and secondary canals. The project activities are expected to affect over 400 ha of agricultural land, some access roads, residential and small commercial properties. An assessment for resettlement associated with the development of Bustan Canal estimated that about 83 properties which will be affected. All PAP will be compensated through the Credit in accordance with the RAP. A RAP has been prepared for the resettlement associated with Bustan Canal. Additional land and properties are likely to be affected when secondary canal designs are finalized, expected in the third year of project implementation. In view of future resettlement needs associated with these secondary canals, the borrower also prepared an RPF. A RAP for resettlement associated with secondary canals will be prepared on the basis of the RPF. The RPF and Bustan RAP were approved on March 7, 2013 and disclosed in the country and in Infoshop. The Borrower will implement RAPs for all project activities requiring land acquisition and/or resettlement.

34. Safety of Dams (OP4.37): OP4.37 is triggered because project area is located downstream of Tuyamuyun Dam, construction of which was completed in 1980. The reservoir operating rules may not need to be revisited, as SKWRIMP design would not require altering the common pre-project flow regime of the lower Amu Darya (see the water balance section under OP7.50 and Appendix A).

35. The 2001 Tuyamuyun Dam Safety Inspection Report identified a number of dam safety issues, notably (i) safety of Sultansanjar embankment (part of Tuyamuyun dam), (ii) rehabilitating the hydro-mechanical equipment; (iii) improving dam instrumentation; (iv) updating the O&M manual; and (v) preparing an Emergency Preparedness Plan (EPP). Since then, a dam commission (Panel of Experts) was mobilized, and the dam safety/operation review was updated in 2009. The review recommended a list of measures, most of which were funded and executed by GOU. To fulfill OP4.37 MAWR has summarized the 2009 update in a dam-assessment note, which was reviewed by the Bank’s dam safety advisor. Thereupon, the Bank and MAWR teams agreed that the dam authority (Gosvodkhoznadzor), assisted by PIU consultants, completed a “Potential Failure Mode Analysis” (PFMA). The outcome of the workshop, which took place on March 15, 2013 has been synthesized in a report that has been submitted to the Bank and to GOU. The report identifies recommendations which have been used to define measures to be undertaken during project implementation (see below). The report includes also inputs for preparing the three dam safety plans described in the following table. Hence, during preparation, a full Instrumentation Plan (IP), a preliminary O&M Plan, and a framework EPP, have been completed. A final dam safety plan will be prepared during the project prior to the second dam safety inspection to be carried out during the last year of project implementation.

Instrumentation Plan (IP)	This is a detailed plan for the installation of instruments to monitor and record dam behavior and the related hydrometeorological, structural, and seismic factors. It should cover the existing and the proposed additional instruments.
Operation and Maintenance Plan	A preliminary plan was provided to the Bank prior to appraisal. The plan is refined and completed during project implementation with the additions which will become necessary (e.g. new radial gates, additional instruments, etc.)
Emergency Preparedness Plan (EPP)	The broad framework plan and an estimate of funds needed to prepare the plan in detail are provided to the Bank prior to appraisal. The Plan will be finalized during project implementation as necessary.

36. The GOU’s dam authority (Gosvodkhoznadzor) will act as the project’s Panel of Experts and has undertaken a safety inspection prior to project appraisal. A second inspection will be undertaken in the last year of project implementation. The PIU Consultant has executed dynamic modeling to examine the dam’s ability to withstand seismic activity. A report has been submitted to the Bank and to GOU.

37. Measures to be undertaken during project implementation: as part of the project components, GOU will mobilize a counterpart contribution to finance replacement of eight radial gates and civil works on Sultansanjar embankment to improve dam performance or safety. The estimates are as follows:

- Consultancy services around US\$100,000, including TA to finalize the dam safety plan.
- Replacement of eight radial gates on the Tuyamuyun dam's spillway, estimated to cost US\$4.15 million.
- Routine maintenance works, estimated to cost US\$289,000.
- Bathymetric survey of the reservoir, estimated to cost US\$250,000
- Installation of a seismograph at the dam site, estimated to cost US\$60,000
- Dam Failure Mode Analysis study US\$240,000. This study will analyze the impact on Tuyamuyun of a catastrophic event upstream, which was identified as one of the potential dam failure modes.
- Reinforcing works for Sultansanjar embankment: Local authorities had proposed to continue the impermeable bentonite wall of 60 cm thick and 30-40 m depth (which was already done until KM:2+300) to KM:9+000. This is around 224,000 m³ of works that are estimated to cost US\$20.00 million. By raising the wall, an additional 1 Billion m³/year of water can be stored in the reservoir. The decision should be taken after the aforementioned dam-safety assessments are completed.

38. During project preparation, it was agreed that the above expenditures, with the exception of the Dam Failure Mode Analysis study, will be included in MAWR's budget and the works will be implemented during project implementation. Bank financing will be mobilized to conduct the Dam Failure Mode Analysis study, estimated to cost US\$240,000.

39. Projects on International Waterways (OP 7.50): The project operates on the Amu Darya River which is a transboundary water body, and also the drainage resulting from the project area returns back to the Aral Sea. Hence the project triggers OP 7.50. The project interventions (e.g. switching from pumping from the river to gravity diversion through construction of the Bustan Canal and remodeling the secondary canals) will result in bulk-water savings, as water releases from Tuyamuyun dam to serve the pumping stations are no longer required. Hence the current amount and quality of the flows in the Amu Darya, and the irrigation withdrawals by other Aral Sea riparian countries, will not be undermined.

40. Based on the water-balance calculations, the project will not lead to additional abstractions of water and will therefore not undermine the current water allocation in the lower Amu Darya. To ensure compliance, the project will (i) closely monitor abstractions into and escape flows out of the project area; (ii) finance dismantling of the first-level pumping stations from the Amu Darya river, which will be reflected in a covenant in the project's FA; (iii) include a covenant in the FA to abolish the agency responsible for management of lower Amu Darya pumping stations (UNS); and (iv) make abstraction and escape flow data into and from the project area available on a real-time basis to the Amu Darya BVO.

41. The GOU officially notified, on January 31, 2013, four Aral Sea riparian countries (Kazakhstan, Kyrgyz Republic, Tajikistan and Turkmenistan) with a letter stating that the project will not undermine the quantity or quality of the current basin-water uses. MAWR did not wish to notify Afghanistan as Afghanistan is not a member of IFAS and MAWR does not have any formal communication with Afghanistan in relation to water issues. In accordance with paragraph 4 of OP7.50, MAWR informed the Bank that it has no objection to the Bank issuing

the notification letter to Afghanistan. The Bank sent this letter on February 2, 2013. The riparian notification requested riparian countries to respond within two months after the date of the letter, i.e., by April 2, 2013, latest.

42. In response to the notification, Turkmenistan raised a number of concerns that are related to the project impacts on future water allocation in the lower Amu Darya. In an exchange of letters between Turkmenistan and Uzbekistan that took place between early March and mid-September 2013, Uzbekistan clarified that the project would not have an adverse impact on water flows and water quality in the lower Amu Darya by Turkmenistan. In addition, the Bank, in the company of the Uzbek Deputy Minister of MAWR, visited Turkmenistan on July 8 and August 29 and met with officials from the Turkmen Ministry of Water Economy. A detailed summary of the riparian discussions between Turkmenistan and Uzbekistan is presented in Annex 4.

43. The most recent letter from Turkmenistan was sent in early September and was responded to by Uzbekistan to the satisfaction of the Bank in mid-September 2013. No further concerns have been raised by Turkmenistan, and the Bank therefore considers that the Turkmen concerns have been adequately responded to by Uzbekistan.

44. Capacity of the implementing agency to address the ESAMP: MAWR will have overall responsibility for the ESAMP. In view of the good experience during implementation of DIWIP, the project will support MAWR in implementing the project through a PIU that is adequately staffed with needed specialists, including social and environmental specialists. Close involvement of I&D staff at Vilayat, Tuman and WCA level will be ensured, as well as of regional governments. The PIU will maintain a main office in South Karakalpakstan under the supervision of a Deputy Director. The PIU will be assisted by national consultants for all aspects of project implementation, including the ESAMP. An Environmental Officer will be appointed/hired as part of the M&E team/consultants to follow up the application of the ESAMP. At the design/tendering phase, this Officer will ensure an early inclusion of the ESAMP-related clauses in the NCB/ICB bid documents and contracts. Thereafter, at the construction/operation phase, the Officer will ensure implementation of the ESAMP in terms of: mitigations (by MAWR or by the contractors), monitoring (by MAWR), and training (by MAWR). To report on these ESAMP activities, the Officer will provide an ESAMP chapter as part of the project-wide semi-annual M&E report. The ESAMP and its budget are summarized as follows.

Summary of the ESAMP and budget:

Expense items	Environmental /social impact	Mitigation or monitoring measures	Responsible	Cost \$US
Mitigate disruption of ecosystem	Soil erosion	Procure drought-resisting plants for canal-bank stabilization to prevent wind erosion	PIU	773,000
	Disruption of flora and fauna	Restore trees and plants that would be cut down to access the construction site	PIU	
		Purchase special seeds, farm machinery, fertilizers for farm households	PIU	

WCAs and irrigation institutions training on environment and water quality	None	Purchase stationeries, office and other equipment; rentals for training premises	PIU	474,000 (covered under component 2)
ESAMP consultant for institutional development and training	None	Consultant	PIU	Part of project implementation support
Monitoring and evaluation consultant	None	Overall project monitoring and evaluation consultancy	PIU	Part of overall project M&E costs
Pilot plots	None	Pilot plots for on-farm water improvement, water sharing, and improving soil fertility	PIU	326, 000 (included in component 2)
Resettlement and compensation costs	None	Provide timely compensation payments (at full replacement cost) for loss of assets attributable directly to the project	PIU	7,400,000 (total cost)
	None	Resettlement assistance		
	None	Provide assistance to improve the displaced-persons livelihoods and standards of living (at least restore to the pre-project levels)	PIU	
Transportation of materials and personnel	Air pollution	Provide vehicles for transportation of materials, personnel, wastes; environmental tests for vehicles' exhaust	Contractor in coordination with MAWR	Embedded in works contract
	Safety and health	Provide traffic lights and warning signs for access roads and construction sites	Contractor in coordination with MAWR	Embedded in works contract
Contingencies	Soil erosion and salinization	Restore canals / control structures in case of bursting	Contractor in coordination with MAWR	Embedded in works contract
	Safety and health	Repair access roads	Contractor in coordination with MAWR	Embedded in works contract
	Environmental	Measures on incidental oil and fuel spill clearance	Contractor	Embedded

	pollution		in coordination with MAWR	in works contract
	Property ownership	Compensation for incidental damage to private entities or other emergency situations	Contractor in coordination with MAWR	Embedded in works contract
Compensatory water supply	Water shortage	Arrange temporary water intake either from canals, or using flexible irrigation pipes, in case of temporary closure of canals due to construction works	Contractor in coordination with MAWR	Embedded in works contract
Storage of construction materials, fuels and lubricants	Soil contamination	Provide containers for storage of solid wastes and used oil	Contractor in coordination with MAWR	Embedded in works contract
Additional ESAMP-related studies (mostly related to the core project components).		(1) Engineering of loessial pits for provision of project works with soils of certain quality; (2) Arrange construction works within boundaries of existing allotments to reduce land disruptions; (3) Determine type/structure of canal concrete lining; (4) Develop new on-farm irrigation systems instead of existing ones (concrete flumes, aryks), and introduce flexible polyethylene pipes with hydrants; (5) Recover soil excavated at cleaning the irrigation network, with determining best possible disposal and reclamation locations.	MAWR	TBD
Additional measures related to cotton harvest mechanization	Use of cotton harvest machinery		PIU	100,000
	Use of cotton cleaning ginnery equipment			
	Supply of diesel and lubricants			
	Storage and use of defoliant			
Preliminary total:				10,571,467

Additional mitigation measures on transparency

45. **Transparency.** The project team will ensure that project data and information are widely available and accessible. This will be done through various communication and outreach activities aiming to: (a) provide relevant, timely and accessible information to various stakeholders; and (b) promote stakeholders' engagement and ownership throughout project implementation, taking into account the lessons from DIWIP. In particular, the following measures will be adopted to increase transparency:

- The implementing agency will create posters about (a) the training programs available in FFSs, indicating the name of the courses, the date, venue and application procedures, and (b) the location and type of demonstration plots. The posters will be placed in easily accessible and highly visible public spaces such as Hokhimiyats, branches of local banks, cotton storage facilities and ginneries, and agricultural machinery rental depots.
- To promote more transparency in water management, the project will create simple Fact Sheets building on materials developed under DIWIP, on topics such as "Ten things to know about how to save water" or "Key facts about water user associations and water user fees: Where is your money going?". The Federation of WCAs established in each Tuman by PAN-ISA will be used to distribute the Fact Sheets on behalf of Hokhimiyats.
- WCAs will make water schedules available to the public by posting them in highly visible and easily accessible places.

Monitoring & Evaluation

46. The PIU will be responsible for monitoring of project implementation. To that end, independent M&E consultants will be recruited that will be responsible for setting up the project's MIS, data collection and reporting. The MIS will be based on the agreed project outcome indicators and annual performance targets as presented in Annex 1. A baseline survey has been conducted before project effectiveness and additional surveys are scheduled to be held during mid-term review and at project completion. The PIU will submit to MAWR, the KPCC and the Bank a semi-annual performance review.

47. The M&E consultants will also supervise implementation of the overall RPF and specific actions for compensation of crops, and environmental management plans and supervision of their implementation, training on environmental monitoring for the staff and the WCAs. M&E would be carried out using the latest technology such as satellite imagery and GIS systems.

48. Progress will also be monitored through regular implementation support missions conducted by the Bank and the government. Findings of M&E will provide feedback during these missions, and progress reports will be prepared immediately preceding the implementation support missions. A mid-term review of the project will be undertaken. The Beneficiary's final Implementation Completion Report (ICR) would be submitted to the Bank three months prior to the project's closing date. A separate ICR will be prepared by the Bank no later than six months after the project closing date.

49. The quality of irrigation water service delivery will be monitored by using the MASSCOTE methodology. MASSCOTE is a step-wise method to evaluate and analyze different components of an irrigation system, developed by the FAO. The MASSCOTE methodology is a systematic set of procedures for diagnosing the bottlenecks and performance and service levels within an irrigation system. MASSCOTE provides initial indicators that will be used as benchmarks in order to compare improvements in performance during the life of the project. The baseline information focuses on system capacity and behavior (sensitivity); perturbations; water networks and water balances, and the cost of operating the system. The methodology assigns a value from 1 to 4 to system performance. It is this value that the M&E will report.

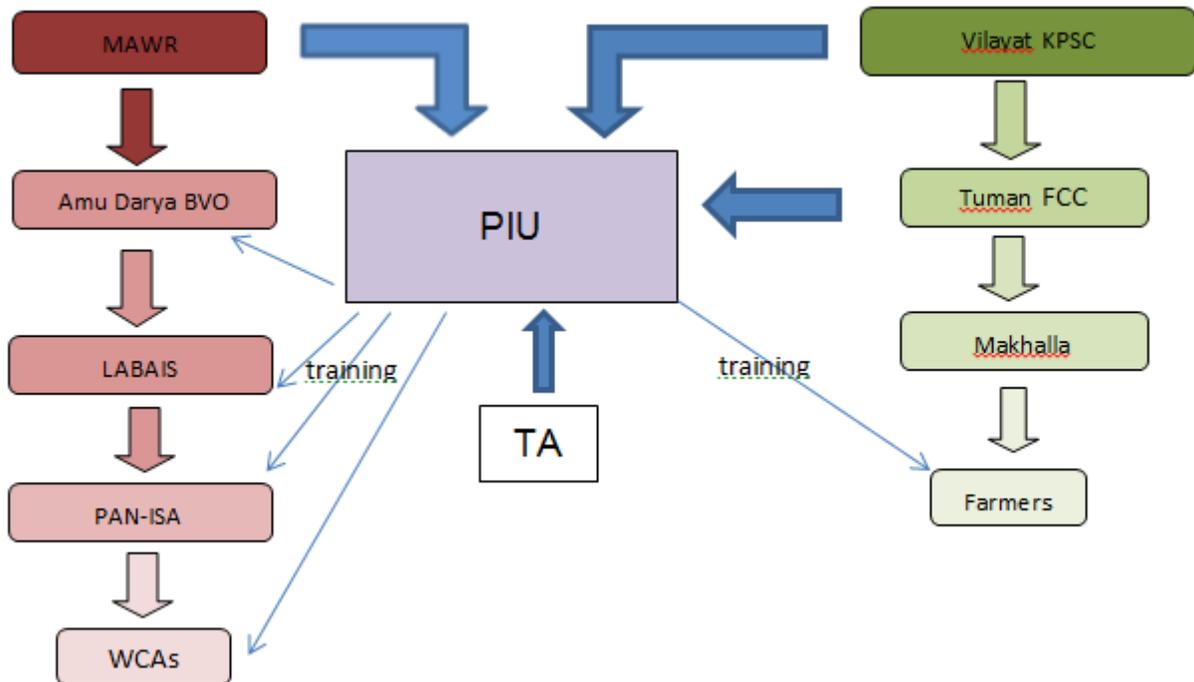


Fig 2: South Karakalpakstan WRMIP Management Organizational Chart

Procurement Plan

PROCUREMENT PLAN - GOODS AND WORKS				
(Date of PP: 25 April 2014; Update No/Her.; Date of WB No/HerL:)				
No/Нет	Package Number Номер пакета	Description Описание	Procu, Method Метод закупки	WB Review (Prior/ Post) рассмотре ние ВБ (пред/ послед)
WORKS / РАБОТЫ				
1	SKWRMIP/ICB/1	Bustan & Right bank Canal, Pakhta-Arna	ICB	Prior
2	SKWRMIP/ICB/2	Pilot SCADA System for Ellikala Canal	ICB	Prior
3	SKWRMIP/ICB/3	Pilot Area for improved canal control	ICB	Prior
4	SKWRMIP/ICB/4	Land leveling and deep ripping	ICB	Prior
5	SKWRMIP/ICB/5	Secondary Canals - Turtkul	ICB	Prior
6	SKWRMIP/ICB/6	Secondary Canals – Ellikkala 1	ICB	Prior
7	SKWRMIP/ICB/7	Secondary Canals – Ellikkala 2	ICB	Prior
8	SKWRMIP/ICB/8	Secondary Canals - Beruni 1	ICB	Prior
9	SKWRMIP/ICB/9	Secondary Canals - Beruni 2	ICB	Prior
10	SKWRMIP/ICB/10	SCADA System for Bustan	ICB	Prior
11	SKWRMIP/NCB/1	Environmental Management Plan Activities	NCB	Prior
12	SKWRMIP/MW/1	Office refurbishment	Shopping	Prior

GOODS / ТОВАРЫ				
13	SKWRMIP/GEQ/1	Cotton Harvesters	ICB	Prior
14	SKWRMIP/GEQ/2	Equipment for Ginneries	ICB	Prior
15	SKWRMIP/GEQ/3	Excavators for WCAs	ICB	Prior
16	SKWRMIP/GEQ/4*	Office equipment for PIU	NCB	Prior
17	SKWRMIP/GEQ/5	Office equipment for WCAs	NCB	Post
18	SKWRMIP/GEQ/6	Water measuring equipment for WCAs	NCB	Post
19	SKWRMIP/GEQ/7	Soil laboratory	NCB	Post
20	SKWRMIP/GEQ/8	Inputs and equipment for DPs	NCB	Post
21	SKWRMIP/GEQ/9	Vehicles for PIU	NCB	Prior

PROCUREMENT PLAN - CONSULTANTS

(Date of PP: 25 April 2014; Update No.; Date of WB NOL:)

No.	Package Number Номер пакета	Description Описание	Firm or Ind. Фирма или индивидуал	Select. Method Метод отбора	WB Review (Prior/ Post) рассмотре ние ВБ (пред/ послед)
1	SKWRMIP/Con/1*	Construction Supervision & Implementation Support Consultancy	Firm	QCBS	Prior
2	SKWRMIP/Con/2	Institutional Development & Training	Firm	QCBS	Prior
3	SKWRMIP/Con/3	Monitoring & Evaluation Consultancy	Firm	QCBS	Prior
4	SKWRMIP/Con/4	Design and Preparation of Tender Documents for ICB2-ICB10 Packages	Firm	QCBS	Prior
5	SKWRMIP/Con/5	Lower Amudarya WR Strategy, operating rules for Tuyamuyun Dam & Phase III	Firm	QCBS	Prior
6	SKWRMIP/Con/6	ESA for Phase III	Firm	QCBS	Prior
7	SKWRMIP/Con/7	Tuyamuyun Dam Safety Study	Firm	QCBS	Prior
8	SKWRMIP/Con/8	Strategy for agricultural diversification	Firm	QCBS	Prior
9	SKWRMIP/Con/9	Cotton certification	Firm	QCBS	Prior
10	SKWRMIP/Con/10	Preparation of Retrenchment Action Plan for UNS	Firm	CQ	Prior
11	SKWRMIP/Con/11	Audit 2014-2016	Firm	LCS	Prior
12	SKWRMIP/Con/12	Audit 2017-2019	Firm	LCS	Prior
13	SKWRMIP/Con/13	Audit 2020-2021	Firm	LCS	Prior

Annex 8: Operational Risk Assessment Framework (ORAF)

Uzbekistan: SOUTH KARAKALPAKSTAN WATER RESOURCES MANAGEMENT IMPROVEMENT PROJECT (P127764)

Project Stakeholder Risks							
Stakeholder Risk	Rating						
<p>Description:</p> <p>1.1.1 There is a risk that water management staff at Oblast and Raion level (AIS, BAIS) will not take full advantage of the project in the implementation of more rational water management, as they face pressures from local governments. Similar efforts under DIWIP have remained largely without result.</p>	<p>Risk Management:</p> <p>1.1.1. The Bank will ensure that the design of the project, including the proposed measures and targets for improved I&D management, will be done in close collaboration with local water management authorities. Workshops will be held with representatives from Hokhimiyats, AIS and BAIS to agree on performance targets and indicators. Intensive awareness raising campaigns will be launched. This would include information on the costs of I&D inefficiency to the national budget. Water managers will be fully involved in the assessment of these costs.</p>	<p>Resp: Bank</p>	<p>Stage: Both</p>	<p>Recurrent: <input type="checkbox"/></p>	<p>Due Date: 30-Jun-2015</p>	<p>Frequency:</p>	<p>Status: In Progress</p>
<p>1.1.2. There is a risk that WCAs may not be interested in improved O&M due to (i) the deteriorating I&D infrastructure; (ii) lack of knowledge and skills; (ii) high costs of O&M costs, including pumping, and (iii) lack of I&D machinery and equipment.</p>	<p>Risk Management:</p> <p>1.1.2. The project will reduce the costs of O&M by dismantling pumping stations, some of which are on the balance sheet of the WCAs, thereby improving the reliability of water supply and reducing O& costs. In addition, secondary canals will be rehabilitated, and deteriorated and damaged structures will be refurbished or replaced. The project's design also includes institutional strengthening that envisages training of WCAs. To address financial challenges, WCAs will develop a cost-benefit or “business-like” approach to their activities. Access of farmers and WCAs to I&D machinery and equipment is envisaged by the project.</p>	<p>Resp: Bank</p>	<p>Stage: Both</p>	<p>Recurrent: <input type="checkbox"/></p>	<p>Due Date: 30-Jun-2015</p>	<p>Frequency:</p>	<p>Status: Not Yet Due</p>
<p>1.1.3. There is a risk that farmers may lack an incentive to improve production and productivity due to an unreliable irrigation water supply and a poor quality of I&D service provision.</p>	<p>Risk Management:</p> <p>1.1.3. The project will organize Farmer Field Schools (FFS) and demonstrations to train farmers in improved water management techniques and in agricultural productivity to take advantage of the improved reliability of water supply.</p> <p>The project will address the issue of increased cost recovery through dismantling of pumping stations and training of WCAs.</p>						

<p>There is a risk of possible resistance by water users to support project I&D activities due to increased cost recovery</p> <p>There is a risk that the GOU's is not fully committed to strengthening WCAs and transferring to them the responsibility for on-farm O&M.</p> <p>1.1.4. The project area is located in the downstream part of the Amu Darya river. Riparian issues in the Aral Sea basin are very sensitive, and the project is likely to fuel riparian tensions. Upstream riparian Tajikistan is considering development of storage, the impact of which is currently being studied. Turkmenistan (downstream country) may be affected as a result of a modified flow regime in the river, in particular if pumping stations are not dismantled.</p> <p>1.1.5. The GOU committed to an exemption of the restored area regarding the state procurement system for cotton, and not to increase the area in the project area that is currently subject to these quotas. There is a risk that central and local authorities will not follow through on this commitment.</p>	<p>The project will address the issue of lack of GOU's commitment to strengthen WCAs through the continuous coordinated donors' efforts of working with GOU in promoting the role of WCAs.</p>					
	Resp: Bank	Stage: Implementation	Recurrent: <input type="checkbox"/>	Due Date: 30-Jun-2018	Frequency:	Status: Not Yet Due
	<p>Risk Management:</p> <p>1.1.4. The water balance before and after the project confirms that the impact of the project in terms of water quantity will be positive as a result of irrigation efficiency gains. The project will not expand irrigation into new areas, but will only serve existing irrigation areas and restore irrigation in previously irrigated areas. Agreed water releases into the Aral Sea delta will continue to be adhered to. The project will dismantle pumping stations serving the project area. Uzbekistan has notified Aral Sea riparian countries in accordance with OP7.50 and has provided detailed information about the project and its impact on the Amu Darya as part of the notification. Discussions with Aral Sea riparian countries will be pursued in the context of IFAS, the regional body responsible for riparian dialogue. The riparian notification process has been completed in a manner satisfactory to the Bank in compliance with OP7.50.</p> <p>The Amu Darya BVO meets regularly to exchange information on Tuyamuyun dam operation. In addition to that regular exchange, Amu Darya riparian countries will be formally briefed through the Amu Darya BVO about the project's activities as they relate to transboundary water, including dismantling of pumping stations and water abstraction and release flows into the project area.</p>					
	<p>Resp: Client</p>					
	Stage: Both	Recurrent: <input type="checkbox"/>	Due Date: 30-Jun-2018	Frequency:	Status: Not Yet Due	
	<p>Risk Management:</p> <p>1.1.5. The exemption of state cotton procurement system on the restored area and the commitment not to increase the area subject to these quotas has been included as a covenant to the FA. Regular monitoring and reporting will be undertaken. Through sub-component 2.4: Communication, Outreach Campaigns and Gender, project beneficiaries will be informed of the state procurement exemption. The MIS will monitor the exemption and the area under cotton, and will report on any violations.</p>					
	Resp: Client	Stage: Implementation	Recurrent: <input checked="" type="checkbox"/>	Due Date:	Frequency: Yearly	Status: In Progress
	<p>Risk Management:</p> <p>1.1.6. The project will purchase 230 cotton harvesters during the first year. It is expected that the</p>					

<p>1.1.6. The adoption of cotton harvest mechanization may be slower than intended.</p>	<p>harvesters will be available prior to the 2015 cotton harvest. Bidding documents will be prepared prior to project effectiveness. By making the harvesters available to cotton ginneries, and by agreeing with the government on a partial recovery of the costs of this service, the project is expected to reach full adoption before project closure.</p>					
<p>Resp: Client</p>	<p>Stage: Implementation</p>	<p>Recurrent: <input type="checkbox"/></p>	<p>Due Date: 31-Dec-2016</p>	<p>Frequency:</p>	<p>Status: Not yet due</p>	
<p>Implementing Agency (IA) Risks (including Fiduciary Risks)</p>						
<p>Capacity</p>	<p>Rating</p>	<p>Low</p>				
<p>Description: 3.1.1 The PIU has adequate capacity and a sound track record under DIWIP that ensures sufficient experience and capacity to effectively implement the project. However, given low salaries and frequent staff changes in PIU, there is a risk that it may not be able to cope with responsibilities during the project.</p>	<p>Risk Management: 3.1.1 PIU staff salaries were recently increased by over 50 percent, providing an incentive to staff to remain in position, although it is too early to gauge the impact. The capacity risks associated with any new specialists (in particular Procurement, Financial Management, Environment) will be mitigated by adequate training in Bank's procedures and provision by the Bank of regular implementation support. Adequate project budget will be allocated in support of this activity.</p>					
<p>Resp: Client</p>	<p>Stage: Both</p>	<p>Recurrent: <input type="checkbox"/></p>	<p>Due Date: 30-Jun-2015</p>	<p>Frequency:</p>	<p>Status: Not Yet Due</p>	
<p>Governance</p>	<p>Rating</p>	<p>Substantial</p>				
<p>Description: 3.2.1. Coordination between the central government, the Ministry of Agriculture, and Water Resources, PIU, local governments and authorities responsible for water management is a key factor for the success of the project. Past experience confirms that important decisions that affect local governments and local water management authorities are taken at the central level without adequate involvement of local parties.</p>	<p>Risk Management: 3.2.1. Local stakeholders will be closely involved in the identification, design and implementation of project investments. Irrigation management rules will be discussed and agreed with local water management authorities. Implementation will be closely monitored and is part of the project's results framework. A Steering Committee will be established comprising key stakeholders at local and national level to provide a forum for discussions and consensus in addressing issues related to overall project implementation so as to ensure that the objectives of the project are achieved satisfactorily.</p>					
<p>Resp: Client</p>	<p>Stage: Both</p>	<p>Recurrent: <input type="checkbox"/></p>	<p>Due Date: 30-Jun-2015</p>	<p>Frequency:</p>	<p>Status: Not Yet Due</p>	

This has had a negative impact on ownership by these local stakeholders, as a result of which some of the project objectives have not been achieved. Despite good intentions, there is a risk that results of the proposed project will be impacted in a similar way.	Resp: Bank	Stage: Both	Recurrent:	Due Date: 30-Jun-2017	Frequenc y:	Status: Not Yet Due
			<input type="checkbox"/>			

Project Risks

Design	Rating	Substantial				
4.1.1. Dismantling the pumping stations and abolishing UNS may require retrenchment of some UNS staff members. Retrenchment frequently confronts challenges due to social sensitivities and context specific situations that arise.	Risk Management:					
	4.1.1. The government has committed to redeploying as many UNS staff as possible. However, some staff may need to be retrenched and a Retrenchment Framework has been prepared as part of the ESIA. A Retrenchment Action Plan will be prepared and implemented to the satisfaction of the Bank, and in compliance with national legislation, and this has been reflected in a covenant.					
4.1.2. Pumping stations along the Amu Darya need a water level in the river that is high enough to enable them to operate. During low flows in the river, this is not the case, and water is therefore released from Tuyamuyun reservoir to increase the water level in the river. After dismantling of pumping stations, there is a risk that water releases from Tuyamuyun dam will be reduced, affecting the ecology in the Amu Darya delta and wetlands.	Resp: Client	Stage: Implementation	Recurrent:	Due Date: 30-Jun-2019	Frequenc y:	Status: Not Yet Due
			<input type="checkbox"/>			
4.1.3. Pumping stations may not be dismantled and there is a risk that they continue to be used for supplementary	Risk Management:					
	4.1.3. Dismantling of pumping stations has been reflected in a covenant, as well as abolishing the agency responsible for management of lower Amu Darya pumping stations (UNS). The dismantling of pumping stations will be paid for by the project.					

irrigation of the project area, thereby reducing run-off in the lower Amu Darya.	Resp: Client	Stage: Implementation	Recurrent: <input type="checkbox"/>	Due Date: 30-Jun-2018	Frequency:	Status: Not Yet Due
4.1.4. There is a risk that, if UNS staff are not retrenched, pumping stations cannot be dismantled.	Risk Management: 4.1.4. Retrenchment of UNS staff has been reflected in a covenant. A Retrenchment Action Plan will be prepared and implemented to the satisfaction of the Bank. It is expected that most UNS staff will be redeployed and that a maximum of 10 percent of UNS staff for whom no convenient alternative employment can be found, will be retrenched.					
	Resp: Client	Stage: Implementation	Recurrent: <input type="checkbox"/>	Due Date: 30-Jun-2018	Frequency:	Status: Not Yet Due
Social and Environmental	Rating High					
Description: 4.2.1 The project will trigger 6 safeguards policies. Safeguard issues - and the way they are being addressed - are sensitive in Uzbekistan, in particular because of a tradition of limited involvement of stakeholders in decision making processes. There is a therefore a risk of non-compliance with the Environmental Management Plan and with the Resettlement Action Plan, especially when it comes to stakeholder involvement, appeal processes and disclosure of information. While land acquisition is limited in particular in view of the magnitude of the investments, the project is expected to affect over 400 ha of agricultural land, some access roads and commercial enterprises (service and petrol stations. The RAP for Bustan works estimates	Risk Management: 4.2.1. The team has reviewed implementation and M&E of safeguards issues in DIWIP and FVWRMP and has been satisfied with arrangements for stakeholder involvement, disclosure and appeals. Safeguard compliance of FVWRMP and DIWIP is rated satisfactory. While this suggests that adequate compliance with safeguards policies is a realistic expectation during implementation of the project, PIU staff will be trained in environmental and social safeguards. The team will monitor implementation closely and will be particularly sensitive to stakeholder involvement, disclosure and appeals processes. The Bank will closely monitor implementation of the Resettlement Action Plan (RAP) for all project activities requiring land acquisition.					
	Resp: Client	Stage: Implementation	Recurrent: <input type="checkbox"/>	Due Date: 30-Jun-2018	Frequency:	Status: Not Yet Due
	Risk Management: 4.2.2. The team recognizes the importance and complexity of the child and/or forced labor issue in Uzbekistan, particularly in the agricultural sector, which requires a continued policy dialogue on agricultural policy, collaboration with other international organizations and practical enforcement of the child and/or forced labor conventions and laws. The Bank continues dialogue with the government and collaboration with international agencies to address this risk. At the project level the additional transparency and mitigation measures (Annex 7) are embedded in the project design to help eliminate the child and/or forced labor risk by including: instructions to local Hokhims to end the use of child and/or forced labor, covenants to respect related national legislation, exemption of the state cotton procurement					

that 83 properties will be affected.	system in the restored area, no expansion of the area subject to the state cotton procurement system, cotton harvest mechanization, participation in a TPM and FBM, crop diversification and intensification, technical assistance to study agricultural diversification and cotton certification, and strong support for communication campaigns to raise farmers' awareness about national child and/or forced labor laws and policies, the project monitoring and evaluation plan, including periodic beneficiary assessment, close monitoring of the progress and compliance on labor issues through regular supervision missions. In addition, the Bank will continue to work closely with UNICEF and other international agencies to address this issue, including using UNICEF modules on the labor standards as part of the Farmer Field School trainings. During project preparation and implementation, the team has engaged with the government on child and/or forced labor issues.					
4.2.2. There is risk that the child and/or forced labor could be deployed in the area covered by the project.	Resp: Bank	Stage: Both	Recurrent: <input type="checkbox"/>	Due Date: 30-Jun-2015	Frequency:	Status: Not Yet Due
Risk Management:						
4.2.3. Civil society is almost non-existent in Uzbekistan. The risk is that civil society will not play its role to provide checks and balances, in particular when it comes to addressing grievances from affected stakeholders.	4.2.3. The Social Analysis and the M&E framework will ensure that there is an information and feedback channel between project implementers and stakeholders.					
4.2.4. There is a risk that the proposed TPM and FBM will not attract separate donor funding.	Resp: Client	Stage: Implementation	Recurrent: <input type="checkbox"/>	Due Date: 30-Jun-2018	Frequency:	Status: Not Yet Due
Risk Management:						
4.2.4. The Bank has an ongoing dialogue with bilateral donors on this agenda and there is wide support for the approach that Bank has adopted for elimination of child and/or forced labor in Bank-financed project areas. It is therefore expected that financial contributions from several bilateral donors for TPM/FBM will be provided. In the event that no funding is secured before project effectiveness, the World Bank's own administrative budget will initially be used to start the program.						
	Resp: Bank	Stage: Both	Recurrent: <input type="checkbox"/>	Due Date: 30-Sep-2014	Frequency:	Status: Not Yet Due
Program and Donor	Rating Low					
Description: 4.3.1. Despite significant support for irrigation rehabilitation from the donor community in Uzbekistan, donor support for Uzbekistan and for irrigation rehabilitation may be	Risk Management: 4.3.1. The team will reach out to the donor community through its communication strategy that will among others report on child and/or forced labor issues in connection with the project activities or within the project area.					
	Resp: Bank	Stage: Implementation	Recurrent: <input type="checkbox"/>	Due Date: 29-Jun-2018	Frequency:	Status: Not Yet Due

declining in view of a number of persistent issues that some of the donors have raised, including child and/or forced labor.		tion						
Delivery Monitoring and Sustainability	Rating	Moderate						
Description:	Risk Management:							
4.4.1. Concerns about monitoring and sustainability relate to (i) weak systems and limited capacity for M&E by PIU, (ii) limited arrangements for O&M cost recovery from farmers and concerns about adherence to sustainable water management rules.	4.4.1. Recruitment of an independent M&E Consultant is envisaged by the project. It is expected that the M&E Consultant will provide training to the PIU staff, department in MAWR responsible for M&E, and relevant staff of local irrigation management authorities to strengthen their capacities in M&E.							
	Resp: Client	Stage: Implementation	Recurrent: <input type="checkbox"/>	Due Date: 30-Sep-2014	Frequency:	Status: Not Yet Due		
	Risk Management:							
4.4.2. The lack of technical data could affect the definition of realistic baseline and target values for all indicators.	4.4.2. The project will install an irrigation water measurement network to enhance capacity for M&E, and will link the data to a system of performance incentives.							
	Resp: Client	Stage: Implementation	Recurrent: <input type="checkbox"/>	Due Date: 30-Jun-2018	Frequency:	Status: Not Yet Due		
Overall Risk								
Implementation Risk Rating:				Substantial				
Description:								
The overall implementation risk rating of the project is substantial because of: (i) the issue of child and/or forced labor in particular for cotton production; (ii) the important safeguards issues that have been triggered, including in particular environmental assessment (OP4.01), involuntary resettlement (OP4.12), dam safety (OP4.37) and international waterways (OP7.50); (iii) the fact that the project area is located in the downstream parts of the Amu Darya, an international river that forms part of the Aral Sea basin, that is facing severe competition over water among riparian countries; and (iv) risks of fraud and corruption.								

Annex 9: Implementation Support Plan
UZBEKISTAN: South Karakalpakstan Water Resources
Management Improvement Project

Strategy and Approach for Implementation Support

1. The strategy for implementation support was developed based on the nature of the project and its risk profile. The project will be implemented by a PIU under MAWR that has substantial experience in the implementation of WB supported projects. The PIU will maintain an office in Tashkent that will ensure adequate communications with MAWR, Ministry of Finance, Ministry of Economy and other government bodies. The Project Director will have overall responsibility to MAWR for project implementation. The PIU will maintain an office in Bustan under the supervision of a Deputy Director.
2. A Karakalpak Project Coordination Committee (KPCC) will be established in Nukus under the Council of Ministers of the Republic of Karakalpakstan to supervise and coordinate project implementation. The KPCC will be chaired by the Deputy Chairman of the Council of Ministers of Karakalpakstan and will meet semi-annually. Its Secretary will be the PIU Director. Members of the KPCC are the Hokhims of concerned Tumans (Beruni, Ellikala and Turtkul), local representatives of the Department of Agriculture, Department of Forest and Department of Livestock, the national environmental agency (Goskompriroda), and the Institute of Archaeology and Ethnography, as well as two farmers' representatives of each Tuman. The main task of the KPCC is to coordinate the implementation of the project, review project monitoring and evaluation reports submitted by the M&E consultants, and recommend necessary actions when project implementation problems occur.
3. An FCC will be established and will be chaired jointly by the three Tuman Hokhims in the project area. The PIU Director or his designate will act as secretary. Meetings will be open for attendance by stakeholders on an observer basis. The main task of the FCC will be to coordinate the implementation of the project at Tuman level, exchange information about project activities (in particular related to progress in the implementation of civil works and training), and recommend necessary actions when project implementation problems occur. The FCC will meet at least quarterly, or upon request from either the chairperson or the PIU Director. Communication between stakeholders will be further strengthened by investing in communication equipment, in particular between PAN-ISA and WCAs.
4. Detailed reporting, financial management and procurement arrangements have been spelled out in Annex 7.

Implementation Support Plan

5. The Bank team will hold a project-launch workshop shortly after project effectiveness. Afterwards, the Bank will field semi-annual project implementation progress review missions. A Mid-term Review (MTR) mission will be fielded around 2017.

6. The project procurement, FM and safeguards missions will be undertaken as part of the regular project implementation progress review missions. Procurement prior reviews will be ongoing whereas post reviews will be annual.

7. *FM Supervision* - As part of its project supervision, the Bank will conduct risk-based financial management supervisions in the following ways: (a) review the project's quarterly financial reports, the project's annual audited financial statements, the auditor's management letter and remedial actions, if any; and (b) during the Bank's on-site supervision missions, review the following key areas (i) project accounting and internal control systems; (ii) budgeting and financial planning arrangements; (iii) disbursement management and financial flows, including counterpart funds, as applicable; and (iv) any incidences of corrupt practices involving project resources.

8. The Client will closely follow implementation of the EMP, RPFs and RAPs through the following:

- i. Ensure that the EMPs and RAPs have been prepared on time and disclosed with public consultations for all new locations, in line with the EMP and RPF.
- ii. All EMPs will be included in respective bidding documents both for construction and supervision. Contracts for construction and supervision will include provisions binding the hired party to implement the EMP measures and/or to supervise them, with adequate reporting submitted to the Client and therefore to the World Bank.
- iii. The World Bank environmental and social specialists will conduct regular implementation support and supervision of EMP and RPF implementation providing comments and inputs directly to the Client, including site visits and on-the-spot checks with both the contractor and supervisor during ongoing works.

Main focus in terms of support to implementation during supervision missions:

<i>Time</i>	<i>Focus</i>	<i>Skills Needed</i>	<i>Resource Estimate</i>
First 12 months	Start of implementation of first contracts in Components 1 and 2. Preparation of tender documents for the second set of contracts. Completion of design of secondary canals. Communication strategy M&E establishment	Project management Operational skills Mechanization skills FM Procurement Environmental and social safeguards Communications M&E	\$140,000
12-48 months	Continuation and completion of implementation of first set of contracts. Start of implementation of second set of contracts. Training	Project management Operational skills FM and Procurement Environmental and social safeguard M&E Training	\$ 100,000
Other	Social Safeguards, including child and/or forced labor	Expertise in social safeguards, including child and/or forced labor	\$ 20,000

Skills Mix Required

<i>Skills Needed</i>	<i>Number of Staff Weeks</i>	<i>Number of Trips/year</i>	<i>Comments</i>
TTL	10 /year	2-3	Field based staff
Engineer	6/year	2	HQ staff
Agricultural Specialist	4/year	Local trips	Local staff
Mechanization Specialist	4/year	2	HQ staff
Operational Specialist	4/year	1	HQ staff
Procurement Specialist	3/year	Local trips	Local staff
Financial management specialist	3/year	Local trips	Local staff
Environmental specialist	3/year	Local trips	Local staff
Social development specialist	8/year	2-3	HQ staff
Communications Specialist	3/year	Local trips	Local staff

Annex 10: Team Composition
UZBEKISTAN: South Karakalpakstan Water Resources
Management Improvement Project

Team Composition			
Bank Staff			
Name	Title	Specialization	Unit
Joseph Paul Formoso	Sr. Finance Officer	Sr. Finance Officer	CTRLA
Maurizio Guadagni	Sr. Rural Development Specialist	Sr. Rural Development Specialist	ECSAR
Valencia M. Copeland	Program Assistant	Program Assistant	ECSSD
Fasliddin Rakhimov	Procurement Specialist	Procurement Specialist	ECSSO2
Alessandro Palmieri	Lead Dam Specialist	Dam Specialist	TWIWA
Winston Yu	Sr. Water Resources Spec.	Sr. Water Resources Spec.	ECSAR
Dilshod Khidirov	Sr. Rural Development Specialist	Rural Development Specialist	ECSAR
IJsbrand Harko de Jong	Lead Water Resource Specialist	Water Resources Specialist, TTL	ECSAR
Gulana Enar Hajiyeva	Sr. Environmental Specialist	Sr. Environmental Specialist	ECSEN
Nina Masako Eejima	Senior Counsel	Senior Counsel	LEGES
Ahmed Shawky	Sr. Water Resources Specialist.	Environmental Safeguards	ECSAR
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Annex 11: Economic and Financial Analysis
UZBEKISTAN: South Karakalpakstan Water Resources
Management Improvement Project

Introduction

1. The project supports the sustainable improvement of water management and restoration of irrigated areas in three districts, namely Beruni, Elikkale and Turtkul of South Karakalpakstan. The project area covers about 100,000 ha of irrigable but saline and low quality agricultural land of which only around 68,500³¹ ha are currently cultivated. The recently closed DIWIP, which covers the same areas as the SKWRMIP, addressed drainage and related institutional issues in the entire project area, and contributed to reducing the groundwater table, waterlogging and salinity. However, the deteriorated irrigation infrastructure, low water use efficiency and associated with this, the high costs of pumping to the public and farm budgets and low incentives to improve production and productivity remain major impediments to sustainable development of irrigated agriculture. The project will address these constraints through two technical components. The Modernization of the Irrigation Network component will construct the Bustan Canal that will allow transition from pumping to gravity irrigation. It will also rehabilitate and modernize the main and secondary canals that will lead to significant reduction in water losses and costs of operation and maintenance (O&M) of canals. The Modernization of Agriculture component will address institutional aspects of irrigation water management. It will strengthen institutional and technical capacities of water management agencies to deliver irrigation services through the introduction of automated canal management, the development of scheme operation plans, training in I&D management, and the provision of some modern equipment and tools to WCAs. At the farm level, the component will disseminate best agricultural and water management practices and promote third cropping and crop diversification through demonstrations, farmer field schools, and other adaptive processes. The component will also introduce mechanized cotton harvesting to address issues of using highly skilled labor (medical doctors, university and school teachers, and scientists), students³² and representatives of private sector in manual cotton harvesting.

Methodology

2. The cost benefit analysis examines the viability of the project on the basis of a detailed analysis of: (i) crop and livestock production increases to measure agricultural benefits using farm models; (ii) savings from the eliminating pumping costs and reducing scheme O&M costs to capture non-agricultural benefits and (iii) cost and benefits of the adoption of mechanized cotton harvesting. Field level data, such as crop and livestock production, cropping patterns, cropping intensity, existing farm management practices and actual expenditures on pumped irrigation and scheme O&M were collected by the feasibility study team. Additionally, monitoring and evaluation data collected under the DIWIP, statistical data of the Ministry of

³¹ The raion statistics departments, *Agricultural production for 2013*

³² The group includes students of high schools, lyceum and vocational schools (children above 14 year old) and of universities

Agriculture and Water Resources, the State Committee on Statistics and findings of various studies conducted by or projects of the World Bank, UNDP, Ecology and Society, Medecins Sans Frontieres, the Adaptation Fund and Journal of Phytology, ILRF and UGFHR are used.

3. Incremental agricultural benefits to agricultural lands in the project areas are estimated by comparing the future without project (FWoP) and future with-project (FWiP) gross margins per ha of a representative selection of typical irrigated crops produced by commercial and dehkhan farmers. The project area will also continue to benefit from the impact of the drainage improvements generated by the DIWMIP. Hence, by the time the benefits of the project start to take effect in the project year (PY) 5, the DIWIP investments in drainage systems are expected to have already contributed to an increase in crop productivity in the entire project area. Therefore, the DIWIP target yields are assumed to be the baseline FWoP yields. The recent M&E data collected to measure the DIWIP impact suggest that this assumption is realistic. The comparison of the present situation (P) and FWiP gross margins for dairy cow production is applied to quantify incremental benefits to livestock farmers.

4. Savings in irrigation service costs will be generated by eliminating the irrigation pumping costs and reducing the costs of scheme O&M (e.g. through the reduced need for dredging of canals with faster irrigation flows). These are calculated by taking the average of the annual Government and farmers expenditures to operate the pumping stations during the latest five years. Incremental returns to average farms are estimated based on farm models for (a) dehkhan farm with 0.20 ha of land; (b) dehkhan farm with 0.20 ha of land and 5 dairy cows and (c) commercial farm with 25 ha of land and (d) commercial farm with 100 of dairy cows.

5. The returns to investments in mechanization of cotton harvesting are estimated by taking into account: (i) the opportunity costs of students and highly skilled labor and (ii) the costs associated with providing transportation, lodging, and food and providing other supplies, such as apron and gloves for the manual labor and comparing these with costs of mechanized cotton harvesting. The analysis conservatively valued the students' labor by applying the rural wage rate that is paid to hired rural workers. The value of highly skilled labor was conservatively estimated by taking the weighted average salary for junior level specialists including a teacher of a university, a medical doctor, school teacher and a specialist of a ministry. The labor costs of the private sector representative are estimated by taking the average salary of waitress, although such worker could potentially generate higher financial returns. Only a small portion of actual costs for food, lodging and incidentals are paid by cotton farmers and the rest are covered by the state mandated labor, employing institutions and parents in the case of students. Moreover, the analysis conservatively assumes that only 40 percent of such costs are covered by the forced labor. The analysis excludes the costs associated with: (i) the recruitment of other rural workers (so called mandikors) by the state mandated labor in order to meet the respective daily cotton quota and (ii) financial contributions of private businesses to manual cotton harvesting processes. The cost of mechanized harvesting is estimated based on official government estimates and estimates of the project preparation team, and it accounted for the operation and maintenance costs of harvester combines, the cost of defoliation, incremental field losses, and the loss of quality due to mechanical harvesting.

6. The mechanization of cotton harvesting will generate a number of important economic and social benefits that include (i) an increased lifetime income to students attributable to greater educational attainment, (ii) health benefits resulting from avoided interaction with agricultural chemicals and long hours of manual labor, (iii) potential benefits that would be generated to the entire economy by civil servants (teachers, researchers, scientists, medical doctors and others) spending their time carrying out their primary professional tasks rather than picking cotton; and (iv) incremental benefits from production of spring wheat that becomes possible due to shortened cotton harvesting period. However, due to lack of required data, these last set of benefits were taken into account in the cost/benefit analysis.

7. The overall project impact is calculated by aggregating agricultural and fiscal benefits. The project benefits are assessed for a period of 30 years, a period which corresponds to the potential technical life of the rehabilitated irrigation schemes if adequately operated and maintained, at 2013 financial prices and using opportunity cost of capital of 12 percent.

8. Financial prices of locally traded outputs and inputs are converted into economic prices by adjusting for direct agricultural subsidies, taxes, and using a shadow exchange rate factor. Economic prices for imported agricultural inputs and outputs are calculated at their border parity prices. Financial costs of unskilled labor (including schoolchildren and students) are converted into economic costs using a shadow wage rate conversion factor of 0.60 for rural agricultural labor and 0.80 for student and 1.0 to skilled labor who are involved in manual cotton harvesting. The official exchange rate used in the analysis is Soum 2,200.0 to US\$ 1.0.

9. Sensitivity analysis is conducted to test the robustness of economic returns of the project investments for three sensitivity scenarios: a 20 percent increase in the project cost, a 20 percent decline in the projected benefits, and a two year benefit delay. Additionally the analysis tested the returns to two risk variables: a risk of a 50 percent of irrigated areas projected for vegetable production by commercial farmers being used instead for fodder crops, a risk of a simultaneous 20 percent decline in the projected benefits and a 20 percent increase in the project cost.

Key Assumptions

10. **Project beneficiaries.** The project beneficiaries are dehkhan and commercial farms. The maximum size of dehkhan farms is restricted to 0.35 ha and an average dehkhan farm size in the project area is around 0.20 ha. The minimum size for the commercial farms is set at 25 ha and a majority of commercial farms in the project area operates land of this size.

11. **Estimated project benefits.** The project is expected to generate benefits from multiple agricultural and non-agricultural sources. Improved water management combined with better farm management practices are projected to improve agriculture performance in the project area through intensification, diversification and restored production. These benefits are quantified as follows:

12. *Agricultural benefits to the project area.* Intensification analysis considers benefits deriving from improved crop productivity and increased cropping intensity. Located in arid and semi-arid zones, the project area is one of the lowest productivity regions in the country.³³ Dehkhan farmers receive higher yields than commercial farmers; however, even their crop productivity is very low. As demonstrated in Table 1, cotton yield, which is grown by commercial farmers only, is only 1.5 t/ha. Average wheat yield for commercial farmers is 2.8 t/ha and 3.5 t/ha for dehkhan farmers. Yields for orchard crops produced by commercial and dehkhan farmers are 4 t/ha and 6 t/ha, respectively. In the project areas where the DIWIP investments in drainage infrastructure have started generating benefits, up to 27 percent increases in crop productivity had been recorded. However, there is still a room for further increases in productivity to reach their potential levels. With the project, crop productivity of commercial farmers is expected to increase (weighted averages) in the ranges of 14 percent (silage maize, capsicum and potato) and 33 percent (orchards). Under the FwiP case, the average cotton yield is estimated at 2.8 t/ha, a 27 percent increase from the FWoP level. A 25 percent yield increase is assumed for wheat and melon. Considering already higher yields received by dehkhan farmers, only modest increases in yields in the ranges of 10 percent (for rice) to 18 percent (melon) are assumed.

Table 1. Current and Future Yields (t/ha)

Crops	Commerical Farmers				Dehkan Farmers			
	Present \1	Future Without Project \2	Future With Project \3	Incremental/4	Present \1	Future Without Project \2	Future With Project \3	Incremental/4
Cotton								
Beruni	1.50	2.14	2.57	20%				
Elikkale	1.50	2.30	2.80	22%				
Turtkul	1.62	2.00	2.80	40%				
Wheat	2.50	3.20	4.00	25%	3.50	3.80	4.50	18%
Lucerne	10.00	12.00	14.00	17%	10.00	12.00	14.00	17%
Maize for silage	12.00	14.00	16.00	14%	12.00	14.00	16.00	14%
Rice	3.50	4.00	4.50	13%	3.80	4.20	4.60	10%
Capsicum	12.50	14.00	16.00	14%	15.00	17.00	19.00	12%
Tomato	12.00	14.00	16.00	14%	15.00	17.00	19.00	12%
Potato	11.00	13.00	15.00	15%	15.00	17.00	19.00	12%
Melon	30.00	40.00	48.00	20%	45.00	55.00	63.00	15%
Orchard 1	4.00	6.00	7.80	30%	6.00	7.00	8.00	14%
Notes:								
\1 Present scenario refers to a situation where impacts of DIWIP investments on crop productivity still early to record. This scenario represents without project crop yields and cropping patterns in downstream areas.								
\2 Future Without Project refers to situation where full impact of DIWIP productivity is realized. This scenario represents crop yields and cropping patterns in the project area without the project								
\3 Future With Project presents crop yields and cropping patterns attributable to the SKWRIP investments								
\4 Incremental yield increases from Future Without Situation and Future With Project Situation								

13. *Agro-climatic conditions in the project area allow a second cropping, if reliable and sufficient irrigation water supply is secured.* There is a wide variability in the cropping intensity

³³ M.Bhat et al, *Regional Variations in Agricultural Productivity – A study of Uzbekistan*, Journal of Phytology, 2011, 3(6)-38-41

(CI) across the project districts and between commercial and dehkhan farmers. The CI³⁴ is notably higher for dehkhan farmers. The average CI is estimated at 87 percent for dehkhan and 67 percent for commercial farmers. As Table 2 demonstrates the lowest CI is recorded in Elikkale district at 60 percent for commercial and 80 percent for dehkhan farmers. Commercial farmers in Turktul district have the highest CI at 82 percent. Dehkhan farmers in Beruni zone operate their lands at higher intensity at 109 percent. There is, therefore, a potential to significantly increase the CI. The analysis assumes that the improved availability and reliability of irrigation water supply combined with strengthened farming skills and adoption of double cropping technology will result in a 123 percent CI for dehkhan farmers and 114 percent CI for commercial farmers. For the entire project area, with the project CI is assumed to be at 115 percent.

14. *Diversification.* The State order system currently controls the cropping patterns on commercial farms and sets production quotas for cotton and wheat. Third crop production as well as production of other crops chosen by the farmers are allowed on small areas of farm lands (some 10-30 percent). The state also regulates production of fodder crops. Commercial livestock farmers with at least 30 standard head of cattle, for instance, receive around 0.30-0.45 ha per head for fodder crop production. As shown in Table 2, approximately 62 percent (36,000 ha) of commercial farm lands are currently used for cotton production, and the government committed not to increase the area within the project area that is currently subject to state cotton quota system. Another 34,000 hectares is not used for cotton, while the remaining 30,000 hectares is exempted from cotton quota. Wheat is grown on about 17 percent (10,000 ha) of lands and remaining areas are used for cultivation of lucerne (9 percent or 5,100 ha), silage maize (3 percent or 1,700 ha), fruit crops (3 percent or 1,500 ha) and melon (2 percent or 1,100 ha).

15. The shares of the state regulated crops in the future cropping patterns are projected taking into consideration declining trends in area under cotton and the recent strategic priorities for irrigated agriculture that consider increases in areas of high value crops such as vegetables and fruits to meet both rising domestic and export market demands. In addition, the state procurement system for cotton will not apply to the previously irrigated area that will be restored under the project. However, the analysis conservatively assumes a less optimistic scenario and suggests that the areas under the cotton production will remain same at 36,000 ha which translates to 37 percent of future cropping pattern, while wheat production is assumed to increase from 17 percent (or 10,000 ha) to 23 percent (or 22,400 ha). The share of rice is projected to remain at its current level of 340 ha (or 0.3 percent). This assumption is based on the recent Government policy that discourages rice production particularly by commercial farmers. Shares of fodder crops (Lucerne and silage maize) in overall cropping patterns are projected to increase from 12 percent (or 6,850 ha) to 18 percent (or 17,500 ha). It is assumed that around 14 percent (13,200 ha) of land will be used for vegetable and melon production. About 2 percent (1,500 ha) of the land is under orchards, and around 2,950 ha of land returning to the production is assumed for new orchards.

16. Dehkhan farmers are not restricted in their choice of crops to grow. They primarily produce vegetables, fruit and rice for the market as well as to meet household and livestock

³⁴ When calculated based on the total physical command area (not total physical farmed area)

requirements with respect to wheat and fodder crops. Current cropping patterns of dekhkan farms are dominated by wheat (46 percent or 5,750 ha) followed by vegetables and melon (26 percent or 3,300 ha), potato (12 percent or 1500 ha), Lucerne (5 percent or 670 ha), silage maize (3 percent or 400 ha), orchards (8 percent or 1,050 ha) and rice (0.1 percent or 9 ha). The analysis assumes a considerable increase in vegetable and melon production by dekhkan farmers (6,150 ha or 35 percent) that will be grown in the restored areas. Production of maize for silage largely as a second crop is also assumed to increase from 400 ha or 3 percent to 950 ha or 5 percent). Rice production is expected to increase from 9 ha to 140 ha in response to the decline in rice production by the commercial farmers. The analysis further assumes that around 300 ha (1.7 percent) of currently abandoned land will be used for fruit production.

Table 2. Present and Future Cropping Patterns and Cropping Intensity

Crops	PROJECT AREA								
	Cropping pattern (ha)								
	Commercial			Dekhan			Overall		
	Present	Future WoP	Future WiP	Present	Future WoP	Future WiP	Present	Future WoP	Future WiP
Cotton	35,933	35,933	35,933	-	-	-	35,933	35,933	35,933
Wheat	10,024	10,024	22,400	5,735	5,735	4,700	15,759	15,759	27,100
Lucerne	5,096	5,096	10,050	670	670	950	5,766	5,766	11,000
Maize for silage	1,739	1,739	7,480	370	370	2,437	2,109	2,109	9,917
Rice	337	337	337	9	9	140	346	346	477
Capsicum	660	660	4,420	871	871	2,050	1,530	1,530	6,470
Tomato	660	660	4,300	871	871	1,830	1,530	1,530	6,130
Potato	611	611	3,500	1,444	1,444	1,940	2,055	2,055	5,440
Melon	1,099	1,099	4,500	1,525	1,525	2,250	2,624	2,624	6,750
Orchard 1	1,479	1,479	1,479	1,051	1,051	1,051	2,530	2,530	2,530
Orchard 2	-	-	2,934	-	-	300	-	-	3,234
Gross cultivated area (ha)	57,637	57,637	97,333	12,545	12,545	17,648	70,182	70,182	114,981
Total physical command area (ha)	85,656	85,656	85,656	14,344	14,344	14,344	100,000	100,000	100,000
Total physical command area farmed (ha)	57,637	57,637	80,800	10,584	10,584	13,500	68,221	68,221	94,300
Cropping Intensity based on total physical command area (%)	67%	67%	114%	87%	87%	123%	70%	70%	115.0%
Cropping Intensity based on total physical farmed area (%)	100%	100%	120%	119%	119%	131%	103%	103%	121.9%

Notes:
 \1 Present scenario refers to a situation where impacts of DWIP investments on crop productivity still early to record. This scenario represents without project crop yields and cropping patterns in downstream areas.
 \2 Future Without Project refers to situation where full impact of DWIP productivity is realized. This scenario represents crop yields and cropping patterns in the project area without the project
 \3 Future With Project presents crop yields and cropping patterns attributable to the SKWRIP investments
 \ Cropping intensity is calculated based on (a) total physical command area that includes also lands that are unproductive due to lack of or poor water supply and (b) total physical farmed area that excludes unproductive lands

17. *Expansion.* Rainfed agriculture is not possible in the project area. Consequently, around 32,000 ha of irrigable lands without access to irrigation have been abandoned. Approximately 26,000 ha of abandoned land is believed to be state land and the remaining 5,500 ha is dekhkan land. The analysis conservatively assumes that the secured water supply together with the improved drainage conditions will result in the 26,000 ha (80 percent) of abandoned lands being brought back to agriculture. For the remaining area (6,000 ha) to return to production, significant investments in field level irrigation infrastructure on that land (to treat salinity or waterlogging) may be required and as such the analysis assumes that these areas will remain abandoned. Given that full recovery of abandoned land will take some time, the analysis assumes a gradual increase in yields over the 6 year period. In other words, the FWoP yields are assumed for the period of PY 5-10 that would increase to the FWiP level starting from the PY11 onwards.

18. *Benefits to livestock sector.* Livestock breeding is an important activity in the project area contributing 47 percent to the gross agriculture output. There are an estimated 250,000 cattle 200,000 sheep, goats and 450,000 poultry as well as much smaller numbers of other animals (e.g. horses and pigs) in the three project districts. The major challenge currently faced by livestock sector in the country is a shortage of animal feed caused by the reduction of areas sown to fodder

crops.³⁵ Main livestock producers are dekhkan farmers that contribute nearly 90 percent to the total livestock production. A majority of land officially allocated to livestock production is, however, leased by commercial farmers. In the arid and semi-arid project area which is well-known for its Karakul sheep, the feed deficiency is severe and livestock productivity is low with live body weight of cattle/cows recorded at 300- 350 kg/head and an annual milk production at 1,250 kg/head. The mortality rate is high at 12 percent for calves and 3 percent for cows and the calving rate is low at around 80 percent. According to various studies, livestock mortality is especially high during the harsh winter season when supply of even survival feed rations becomes difficult.

19. Considering the rising prices for fodder crops, their suitability for production as a third crop and the growing livestock population, the analysis assumes considerable expansion of Lucerne and silage maize production. At the project's full maturity (or PY11), the area for fodder crops will increase by 13,000 ha, thus contributing to meeting the growing demand for quality livestock feed. This would result in an incremental annual production of 83,000 tons of Lucerne and 127,000 tons of silage maize at project's full maturity.

20. The Karakul sheep and dairy cow production are main livestock activities in the project area. Given that the Karakul sheep are adapted to desert grazing, the analysis focused in the dairy cow. The benefits are calculated based on the increased fodder crops available to the livestock sector, using the dairy cow production model for a farm with a herd of 100 dairy cows. The improved livestock nutrition is expected to reduce the current mortality rates for cows and calves by 1 percent and 2 percent, respectively. The calving rate is projected to increase from the current level of 80 to 85 percent. The improved nutrition is also assumed to improve milk yields by 15 percent or from its current level at 1,600 lt/cow to 1,840 lt/cow. The lactation period, which is also likely to increase, is conservatively assumed to remain the same. The farm is assumed to stabilize the herd at 100 cows. The dairy production model is prepared for a five year period considering the dairy cow replacement rate. The expansion of fodder crop production will also lead to improved productivity of pastures that are currently overgrazed. However, this multiplier project benefit of the pasture regeneration is not taken into account in the analysis.

21. *Savings in costs of pumping and scheme O&M.* Around 40 percent of irrigation water supply in the project area is provided from three major pump stations that abstract water from the Amu Darya, and over 20 smaller floating pump stations. The project will remove dependence on pumping by developing a gravity off-take from Tuyamuyun reservoir and the construction of Bustan Canal. Currently the O&M of primary and secondary pumping stations costs around US\$3.8 million annually during wet years. But it reaches up to US\$5.2 million during dry years (please see Table 3). Around 27 percent of the cost that is associated with pumping stations that lift water from Amy Darya is subsidized by the Government. The balance of the pumping costs is paid for by farmers. The transition to gravity irrigation will also eliminate the O&M costs of the pumping stations and improve the reliability of irrigation water supply. It will also reduce irrigation scheme O&M by reducing sedimentation levels and subsequently the dredging

³⁵ Various studies and reports including UNDP Policy Brief 1(11) 2008, *Sustainable Development of the Livestock Sector in Uzbekistan: Status and Policy Recommendations*, and SKWRIP *Project Preparation and Feasibility Study*, May 2012

requirements. When dry season frequency is assumed to take place once in every five years,³⁶ the net savings in costs of pumping and scheme O&M are expected to be about US\$ 4.1 million per year. Using the increased flow of water to flush the sedimentation level during the non-irrigation season will also reduce the electricity needs, which has an estimated value of US\$525,000 per year. This estimate is net of the lost value of electricity and the incremental annual O&M cost of Bustan Canal estimated to cost US\$ 51,000 per year.

Table 3. Current and Future Costs of Pumping and Scheme O&M ('000 US\$)

	Current			Future Average	Savings
	Dry year	Wet year	Average		
1. O&M costs of primary pumping stations	1,354	993	903	-	1,065
2. O&M costs of secondary pumping stations	3,778	2,771	2,519	-	2,972
3. Dredging	-	-	29	26	3
4. Avoided O&M cost due to decreased sedimentation level	-	-	223	120	103
5. Incremental O&M cost of Bustan canal	-	-	-	- 51	- 51
6. Value of decreased electricity production due to (4)				- 525	- 525
Total	5,132	3,764	3,672	-	4,092

Source: Estimates of feasibility study team

22. *Benefits to mechanization of cotton harvesting.* The cotton sector generates substantial incomes to the economy in the form of export earnings and government tax revenues. In 2012 alone, the sector generated around US\$ 588 million in tax revenues and accounted for 11 percent of export earnings. The government, however, maintains cotton sector at high economic costs. The sector is heavily subsidized and highly skilled civil servants and students are forced to harvest cotton manually. Around 15-20 percent of all civil servants are reported to be involved in cotton production process at any given time. Moreover, cotton production is a financially less profitable business for farmers, who produce cotton to maintain land leases. The state fixed price for cotton is generally set quite low and generates only small profits for farmers. Consequently, cotton farmers have difficulty to accumulate funds to make on-farm investments such as improved irrigation, machinery, inputs, etc. The investments in mechanization of cotton harvesting will address issues of forced labor. The analysis estimates that the cost of manual harvesting of 1 kg of cotton is about US\$0.28, while the costs of mechanical harvesting is about US\$0.12 only. The incremental returns from mechanization of cotton harvesting are thus about US\$0.16 per kg of harvested cotton. As discussed in the para 4 and 5, the estimated benefit reflects only a small portion of the potential benefits as it underestimates the opportunity costs of forced labor (conservative assumptions) and it does not account for all potential benefits. At the farm level, the financial returns to mechanized cotton harvesting are positive at US\$0.02 per kg of cotton, assuming a cotton yield of 2.5 tons/ha (Table 4).

23. *Benefits to dam safety measures.* The economic rationale for investments in dam safety is the protection of human lives. There are a number of other benefits including (i) avoided physical damages to private and public assets downstream of the dam at risk; (ii) avoided indirect negative multiplier effects on the various sectors of the economies in downstream areas including damages to irrigated agriculture and industry; (iii) avoided replacement cost of the

³⁶ Droughts were recorded in 2000/2, 2005/6 and again 2008/9.

dam; and (iv) avoided negative environmental impacts. However, conversion of the value of human lives as well as values of other mentioned benefits into economic analysis is difficult.

24. Moreover, it is also difficult to estimate both the probability of failure (POF) of any given dam and a magnitude of reduction in the POF that is expected from the investments in dam safety measures. The dam safety study for Tuyamuyun dam concluded that further detailed study is required to understand the POF. The study, however, recommended strengthening dam safety cost of which is estimated at US\$26.73 million. As the key technical parameters such as the POF and the scopes of potential damages both in Uzbekistan and Turkmenistan were unknown at the project preparation time, the costs of dam safety measures as well as the potential benefits are excluded from the current analysis.

Table 4. Comparison of financial costs of manual and mechanized harvesting

	per ton	per ha (2.5 tons/ha)	per ha (3.0 tons/ha)
<i>Cost of manual cotton harvesting</i>			
<u>Cost of manual cotton picking fee[1], Soum</u>	262,500	656,250	787,500
<u>Associated cost[2] (transportation, aprons, food and etc)</u>	50,000	125,000	150,000
<u>Total cost of manual cotton picking, Soum</u>	312,500	781,250	937,500
<i>Cost of mechanized cotton harvesting</i>			
<u>Estimated cost of machine picking[3], Soum</u>	132,315	330,788	330,788
<u>Cost of defoliation[4], Soum</u>	12,331	30,828	30,828
<u>Incremental field losses[5] (8%), Soum</u>	72,494	181,234	217,481
<u>Loss of quality premium due to manual harvesting[6] (6% average), Soum</u>	51,684	129,209	155,051
<u>Total cost of mechanized picking, Soum</u>	268,824	672,060	734,148
Difference, Soum	43,676	109,190	203,352
Difference, US\$	20	50	92
Difference, US\$/kg	0.02	0.02	0.03
Notes:			
[1] Official cotton picking fee per ton of seedcotton			
[2] Bank staff estimate			
[3] Based on estimates received during the visit to Tashkent Tractor Factory.			
[4] International Cotton Advisory Committee			
[5] Bank staff estimate			
[6] Uzpakhtasanoat price list for 2013 crop with the weighted average price difference between manually and machine harvested cotton (Class I and II) across Sort I through IV.			

25. **Benefit accumulation phases.** The analysis assumes that farmers will start reaping benefits in the second season after completion of rehabilitation of the secondary and main canals. The percentage of the project area receiving benefits in each year is therefore based on the percentage of irrigation rehabilitation completed at the end of each year. Given that the rehabilitation of the secondary and main canals starts in PY2, annual incremental benefits will start to accumulate only in the PY5, after 15 percent rehabilitation works have been completed in PY2. The project will reach its full maturity in PY19, when all new orchard trees that will be planted on the restored areas will achieve their full fruit bearing years.

26. **Project costs.** The financial base cost of the project including physical contingencies in 2013 prices is estimated at US\$337.43 million. This includes the cost of dam safety measures at US\$26.73 million which has been excluded from the current analysis. The project cost components are distributed in the following proportion: Modernization of the Irrigation

Networks (81.2 percent), Modernization of Agriculture (16.4 percent), and Project Management, Monitoring and Evaluation (2.4 percent). The economic base cost of the project is estimated by removing all taxes and duties from the financial cost.

Financial Analysis

27. *Farm level impact analysis.* The financial impact of the project on farms varies by the type of farms (commercial versus dehkhan) and the benefits they receive from various project activities. As demonstrated in Table 5, commercial and dehkhan farmers will receive the highest incremental benefits. The benefits derive from both: (a) improved productivity, intensification, diversification on the currently irrigated land and (b) incremental production on portions of farm lands that will be brought back to production once irrigation water supply is restored. Respective incremental gross margins to an average dehkhan farmer with 0.20 ha of farm land will be: (a) US\$320 per year for a farmer whose 0.14 ha of farm land is currently irrigable but would benefit from improved crop productivity, intensity and diversification and around 0.06 ha of farm land is currently unused but would return to production once water supply is restored; (b) US\$126 per year for a farmer whose entire farm land (0.20 ha) is currently irrigable but would benefit from improved crop productivity, intensity and diversification; and (c) US\$140 per year for a farmer who is involved both in crop (currently irrigated 0.20 ha) and dairy production (5 cows).

Table 5. Financial Returns to Average Farms

	WP	WP	Incremental
Dehkhan farms			
a. Returns from improved crop production to average farm (0.20 ha)			
Gross margin, Soum	434,718	711,308	276,591
Gross margin, US\$	198	323	126
b. Returns from improved (0.14 ha) and restored (0.06 ha) crop production			
Gross margin, Soum	304,302	1,008,864	704,561
Gross margin, US\$	138	459	320
c. Returns from improved livestock production to average farm (5 cows)			
Gross margin, Soum	475,250	505,925	30,675
Gross margin, US\$	216	230	14
d. Return to average size dehkhan farm (0.20 ha of land and five cows) both from improved crop and livestock production			
Gross margin, Soum	909,968	1,217,233	307,266
Gross margin, US\$	414	553	140
Commercial farms			
a. Returns from improved crop production to an average farm (25 ha)			
Gross margin, Soum	9,887,000	24,008,000	14,121,000
Gross margin, US\$	4,494	10,913	6,419
b. Returns from improved (22 ha) and restored(3 ha) crop production			
Gross margin, Soum	5,996,081.42	60,781,350.89	54,785,269
Gross margin, US\$	2,725	27,628	24,902
b. Returns from dairy production to an average farm (100 cows) (per cow)			
Gross margin, Soum	1,901,000	2,023,700	122,700
Gross margin, US\$	864	920	56

28. For average commercial farms operating 25 ha of land, the incremental gross margins are estimated at (a) US\$25,000 per year from improved crop productivity, intensity and diversification on 22 ha of presently irrigated land and from incremental production from

currently unproductive 3 ha of land and (b) US\$6,420 per year for commercial farmers whose entire farm lands (25 ha) are currently irrigated but would benefit from improved crop productivity, intensity and diversification. Commercial dairy farms benefiting from improved availability of fodder crops will gain incremental gross margin at US\$56 per dairy cow.

29. *The investment-wise financial returns.* At the full maturity of investments, financial agricultural returns (crop and livestock) to the improved irrigation water supply would generate US\$137.7 million annually. The investments that would allow the switch from the pumped to gravity irrigation would generate savings in costs of pumping and scheme O&M and savings in the form of avoided O&M cost and salinization at US\$2.9 million annually. Adoption of mechanized cotton harvesting would generate financial returns of US\$1.7 million annually.

30. *Project level analysis.* Estimated financial rate of return for the whole project is at 16.3 percent with FNPV of US\$121.9 million. Benefit to cost ratio is estimated at 1.6.

Table 6. Summary Financial Results

FRR (%)	16.3%
FNPV (million US\$)	121.9
B:C	1.6

31. *Technical support to WCAs.* Access to and timely availability of machinery for maintenance of I&D infrastructure is one of the major obstacles for the WCAs to provide timely and adequate service to water users. Receiving loans from the commercial banks is not possible for WCAs as they lack collateral. Considering these issues, WCAs will be provided with modern tools and maintenance equipment, conditional upon meeting clear eligibility criteria, and following a study to identify sustainable and financially viable options for the WCAs to maintain the equipment. An assessment of the financial viability of WCAs will be conducted, and they will prepare a business plan prior to the provision of equipment.

32. WCAs will have to raise sufficient funds to cover O&M costs of the equipment, which can be done through increased Irrigation Service Fees (ISF) or through separate charges to farmers. Therefore, an accurate assessment of financial capacities of farmers and their willingness to pay needs to be carried out. When recommending the level of farmer's contributions, the global experience suggests that charges (e.g., the ISF and farmers contribution to machinery and equipment) should not exceed 8 percent of gross farm income in order to be accepted by water users.

Economic Analysis

33. *The investment-wise economic returns.* Agricultural (crop and livestock) returns are expected to be the largest source of net economic returns (87.1 percent) that will be generated by the project investments in improved irrigation water supply. The average annual net agricultural economic returns will be US\$100.1 million. The switch from pumped to gravity irrigation would generate the net annual savings in costs of pumping and scheme O&M and savings in the form of the avoided O&M costs and salinization would be about US\$2.4 million (or 3.6 percent).

Economic benefits to the investments in mechanized cotton harvesting estimated at US\$15.4 million annually (9.3 percent).

34. *Overall project analysis.* Economic rate of return (ERR) to the project investments is estimated at 16.4 percent, with an ENPV of US\$215.2 million and benefit to cost ratio of 1.5.

Table 7. Economic Indicators

Economic Indicators	
EIRR	16.4%
ENPV (million US\$)	215.2
B:C	1.5
Distribution of Benefits	
I. Savings from (a) replacement of pumping stations with gravity irrigation and (a) avoided incremental O&M costs and salinization, %	3.6%
II. Agricultural benefits from improved productivity, intensity and expansion and improved livestock production, %	87.1%
III. Returns to mechanization of cotton harvesting, %	9.3%

35. *Sensitivity and risk analyses.* The project is moderately sensitive to changes in the project cost, and scope of benefits, and to delays in benefit accumulation. A 20 percent project cost increases reduces the base EIRR to 14.4 percent. While a 20 percent decline in benefits reduces the EIRR to 14.0 percent, and while the two-year delay in benefit accumulation results in the ERR at 13.5 percent. When the cost of dam safety measures are accounted, but not the potential benefits expected from the improved dam safety, the ERR remains above 12 percent. The analysis tested the project returns to two risk variables. When 50 percent of the area projected for vegetable production by commercial farmers is used for fodder crops, the EIRR is estimated at 13.8 percent. A simultaneous 20 percent reduction in the benefits and a 20 percent increase in the project costs will reduce the EIRR to 12.2 percent.

Table 8. Results of Sensitivity and Risk Analyses

	ERR %	ENPV (million US\$)	ENPV (billion Soum)
Sensitivity Analysis			
Base case	16.4%	97.8	215.2
Costs increase by 20%	14.4%	61.5	135.4
Benefits decline by 20%	14.0%	42.0	92.3
Benefits accumulation delay by 2 years	13.5%	35.1	77.2
Simultaneous a 20% increase in the project cost and a 20% benefit decline	12.2%	5.7	12.5
A 50% of areas projected for vegetable production by commercial farmers is used for fodder crop production	13.8%	37.4	82.4

Cotton Sector Subsidies and Taxes

1. **Cotton Sector Subsidies.** The Uzbekistan cotton sector benefits from large subsidies which are not included in its production cost calculations directly. In 2012 Uzbekistan cotton farmers have benefited from an estimated US\$483 million in various subsidies (Table 2). Although some subsidies are cotton sector specific, the bulk of the financial assistance can be characterized as general agriculture sector support. The key cotton sector specific subsidies are: (i) assistance with cotton harvesting and post-harvest management provided in kind by the State Association of Cotton Ginneries; and (ii) state budget financial transfers to the farmers cultivating cotton on lands with lower than average quality of soils. The combined worth of these two support instruments was US\$120 million. Another example of (rare) cotton sector specific financial assistance is a country-wide write off of cotton farmers' debt to the government-owned input suppliers and service providers which have taken place several times over the past decade. A massive cotton sector debt worth more than several hundreds of millions of US Dollars accumulated over 2008-2009 has been 'frozen' in 2010 and is expected to be written off in the near future.

Table 2. Key subsidies for cotton production in 2012 (mln US\$)

Subsidies total	483
<i>Including</i>	
Irrigation and energy*	308
Financial assistance	60
Cotton procurement subsidy	60
Input price discounts	33
Credit subsidy**	22
*Without cross subsidy - lower electricity tariff for irrigation	
**Without debt write-offs	
Source: Bank staff estimates	

2. The single largest subsidy to the cotton sector is the support to I&D investments and operations and maintenance costs. In 2012 these were estimated at over US\$300 million not including the value of the cross sector subsidy for the agriculture tariff which could be worth as much as additional US\$250 million. In 2013 the total energy consumption by the Ministry of Agriculture and Water Resources and its subsidiaries -- it is the biggest electric power consumer in the country -- was 8,126 GWh and worth about US\$350 million. The other subsidy elements are the exemption from VAT on fuel and fertilizers as well as credit subsidies for farm working capital and purchases of farm equipment. Even with the inclusion of these subsidies into the calculation of the domestic production costs, Uzbekistan cotton production cost remain below the world's average levels.

3. **Cotton Sector Taxation.** Cotton sector is also subject to considerable levels of taxation – both explicit and implicit. The cotton industry is taxed mainly at two levels: the level of associated industries (cotton ginning and oilseed crushing industries) and economy-wide level. In 2012 the two largest taxes were the VAT on cotton fiber paid by the State Association of Cotton

Ginneries and the excise tax paid by the edible oil instruction industry. The former is more of an old Soviet ‘turnover’ tax rather than VAT. The nature of the VAT on cotton fiber --estimated at US\$250 million in 2012 – is questionable because the country’s trading regulations require that all exports are to be zero-rated for VAT (and almost all cotton is exported). The additional impediment created by this tax is that it extracts a considerable chunk of the world market price which would otherwise be shared by cotton farmers. Likewise, from a cotton farmer’s perspective, an excise tax on cotton seed oil is an exploitative one. It extracts the difference between an administratively set low price of cotton seed used for oil extraction and the market price for edible oil. In 2012 the value of this tax was estimated at US\$289 million. If the value of cotton seeds were to be determined by the market, this would have been an important source of revenue for cotton producers rather than for the state budget.

Table 3. Key taxes in cotton industry in 2012 (mln US\$)

Cotton industry taxes*	588
Taxes on ginneries (including VAT on fiber)	299
<i>including VAT</i>	251
Excise tax on cottonseed oil	289
*Excludes unified land tax Source: Bank staff estimates	

4. The two principal sources of implicit taxes are the international price gap and a foreign exchange gap jointly estimated at US\$537 million in 2012 (Table 4). The international price gap reflects the difference between the international market and the state administered price for cotton fiber which represents a windfall for the state budget. At US\$ 192 million the size of this tax is large, but not as prominent as it used to be during the early post-Independence years and not as large as the foreign exchange gap tax. A foreign exchange gap is a non-monetary loss to the sector resulting from a multiple exchange rate regime. Because the cotton export revenue has to be converted into the local currency using an overvalued exchange rate it represents an implicit tax on cotton sector exports and hence the loss to the cotton industry. At US\$345 million it is a single largest tax on Uzbekistan’s cotton industry.

Table 4. Estimated key implicit taxes in cotton industry in 2012 (mln US\$)

Estimated implicit taxes	537
<i>Including</i>	
Foreign exchange gap	345
International price gap	192
Bank staff estimates	

5. It is important to note that the larger elements of the financial flows out of the cotton sector are either non-cotton sector specific or reflect peculiarities of Uzbekistan’s national economic model. It is therefore evident that cotton sector finance matters span outside of simple agriculture policy considerations and are rather a reflection of the issues pertaining to the broader business environment and macroeconomic imbalances. Uzbekistan policy makers will need to address these imbalances in order to develop fair and market-friendly cotton industry taxation mechanisms. These measures are also needed for protection of cotton sector’s competitive advantage on international markets. To some extent such measures have been taken in the past.

Table 5. Cotton sector finances in 2000 and 2012

Cotton sector transfers per ton of seedcotton	2000	2012
Total implicit taxes on cotton (US\$)	206	160
Total formal taxes on cotton (US\$)	107	175
Total subsidies for cotton (US\$)	294	144
<i>Memo Items</i>		
Total implicit taxes on cotton as % of GDP	4%	1%
Total implicit taxes on cotton as % of Agriculture GDP	13%	5%
Formal taxes on cotton as % of GDP	2%	1%
Formal taxes on cotton as % of Agriculture GDP	7%	6%
Subsidies on cotton as % of GDP	6%	1%
Subsidies on cotton as % of Agriculture GDP	19%	5%
Source: Bank staff estimates		

6. **The Role of Cotton Sector in State Finances.** Since 2000 the level of economic distortions in the cotton sector has been reduced and majority of financial flows are now formal rather than informal. Due to a decline in importance of the cotton sector since the turn of the century, the magnitude of the cotton sector financial flows relative to national and agriculture sector GDP has been diminished (Table 5). Although on per ton and per hectare bases the level of total cotton sector taxation has remained fairly stable (6 percent growth on per ton and 5 percent growth on per hectare basis) the respective trends in the values of formal and informal cotton taxes have been markedly different. The value of formal taxes grew while the volume of implicit taxation declined. As a result, the share of implicit taxes has declined from over two thirds to less than a half of overall sector taxation. The relative value of cotton sector subsidies has also declined both as a share of national and agriculture sector GDP. Another important development is that the difference between formal sector taxes and subsidies has become positive (from negative US\$187 to a positive US\$31 per ton of seed cotton) meaning that it has now become possible to develop a public finance optimization program for phasing out both cotton sector taxes and subsidies in a budget-neutral manner in order to promote greater economic efficiency in the sector. Because larger taxes are cotton sector specific and subsidies generally do not target any particular group of producers any such program would disproportionately benefit cotton producers. Likewise, a reduction in macroeconomic imbalances is also expected to benefit cotton farmers more compared with grain and livestock sectors producers focusing mainly on serving the domestic (rather than export) market.

Table 6. Average production costs in major cotton producers per ton of cotton fiber in 2012/13

Pakistan	0.81
Brazil	0.89
Turkey	1.39
Uzbekistan	1.41
USA	1.98
China	2.06
Source: International Cotton Advisory Committee and Bank staff estimates	

Annex 12: Institutional Arrangements for Water Management in the Project Area

UZBEKISTAN: South Karakalpakstan Water Resources Management Improvement Project

State Irrigation and Drainage Institutions

Interstate level

1. At river level, planning is carried out by the BVO Amu Darya. This is the executive arm of the Interstate Committee for Water Cooperation (ICWC). The key function is to plan the distribution of water between regions, and to monitor this. They also own and operate key assets on the river (but not reservoirs).

Regional level

2. MAWR of the Republic of Karakalpakstan (RK) is responsible for the oversight of water management in Karakalpakstan. At the Lower Amu Darya sub-basin level, the LABAIS, representing Karakalpakstan and Khorezm, is responsible for water management (including both irrigation and drainage). LABAIS is also directly responsible for the Karakalpakstan Meliorative Expedition (KKME), pumping systems and electricity and communication management organizations.

Tuman level

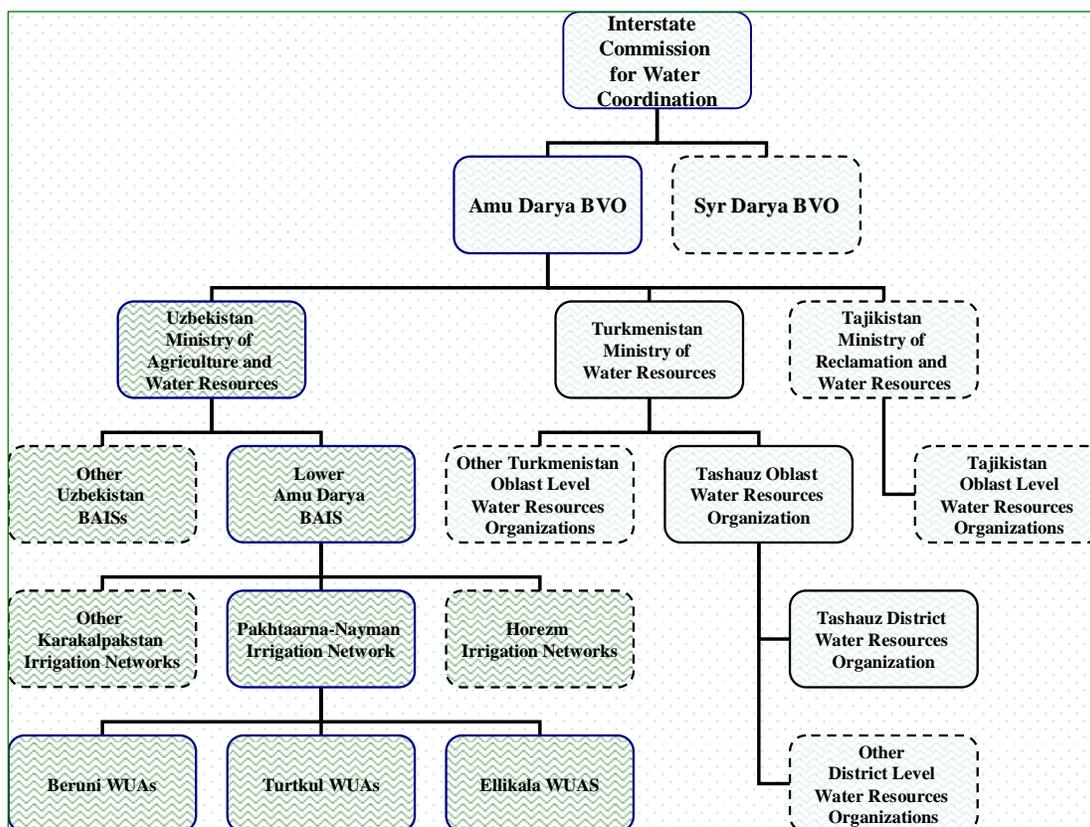
3. The way in which LABAIS is responsible for irrigation is through PAN-ISA, responsible for operating the off-farm network and distributing water to WCAs, and for drainage through KKGME. In the project area, KKGME is responsible for operation and maintenance of the drainage network.

4. The Rayvodkhoz (Tuman level branch of the MAWR) is responsible O&M of all inter-farm canals within district boundary except for Pakhta-Arna Canal, for agreeing with farms crop patterns at start of irrigation season, consequently planning irrigation deliveries and ensuring these deliveries are made available to the farms.

WCAs

5. WCAs are the only non-governmental organization involved in water management. There are currently 31 WCAs in the project area. The WCAs have an average size of about 2,937 ha, the smallest is about 1,338 ha and the largest about 5,773 ha. The average farm size in the project area is about 25 ha. In Beruni and Turtkul Tumans, WCAs were formed according to hydrological boundaries; in Ellikala Tuman these were formed according to old collective farm boundaries, not necessarily according to hydrological units. Under the 2009 Water Law, these WCAs in Ellikala will be reorganized along hydrological, rather than administrative, boundaries.

Fig 9.1: Institutional Structure for Water Management



6. The role of WCAs is to carry out water distribution among the water users and collect O&M fees. During DIWIP, at the time of foundation of WCAs in Uzbekistan, WCAs would replace the shirkats in the role of maintaining the tertiary (on-farm) I&D networks. In reality, due to shortage of funds, WCAs only carry out emergency maintenance on irrigation infrastructure after breakdowns; they do not undertake preventative maintenance unless a breakdown is imminent. No monitoring is carried out by WCAs. WCAs can charge an irrigation service fee (ISF). The prevailing rate for water delivered under gravity is reported to be around 16,000 UZS/ha per year. This is about 7.30 US\$/ha per year.

7. There are also Federations of WCAs established in each Tuman by PAN-ISA. Their members are the WCA managers and the Boards are elected by the membership. Although under their charters these federations have several responsibilities, in practice their main functions are to:

- Collect data from WCAs for the PAN-ISA, by checking bank accounts
- Distribute information on behalf of the Hokhimiyats.

Water Management at the Basin Scale

8. The Hydrological and Meteorological services (Gidromet) of the governments of Uzbekistan and Tajikistan provide estimates of the expected flows in the Amu Darya for each irrigation season. At quarterly meetings of ICWC, limits on the quantity of water to be allocated to the major areas of each country for the upcoming irrigation season are agreed, based on the

estimated flows. These quantities are typically defined for each ten day period. The international BVOs are responsible for the implementation and monitoring of these allocations.

9. For the Lower Amu Darya (downstream of Tuyamuyun), the BVO calls for a meeting of water specialists of Republic of Karakalpakstan and Khorezm province every 10-15 days to agree, in the context of the limits agreed by the ICWC, the releases from Tuyamuyun and the flow through Takhiatash barrage, and the flows allocated to each major off take. The volumes of water expected to be available are typically made by experience. It appears that operators such as Tuyamuyun reservoir authority have little access to reliable predictions of anticipated flows in the Amu Darya. Typically they are only fully aware of flows as they enter Uzbekistan's territory. This makes medium term month-by-month planning of water resources difficult. The bi-weekly meetings therefore are likely to only have reliable data on crop requirements, rather than a dynamic assessment of the anticipated river flows.

10. For the Lower Amu Darya, LABAIS represents Karakalpakstan and Khorezm; in practice the first deputy of the LABAIS, who is responsible for the PAN-ISA in Khorezm, also attends.

Water Management in the Distribution Network

11. Operation of irrigation canals in the project area is based on the same principle that any other irrigation system in Uzbekistan, which is to deliver at each bifurcation the set flow values to each canal which have been authorized by the BVO and the local canal management agency. This objective is physically impossible since the incoming flow at each bifurcation is not exactly the sum of the of the target flows because of the laws of canal hydraulics: transmission times, inaccuracies of flows at upstream structures and seepage losses. The management therefore allocates the deficits or excess of water proportionally to the demand of each branching canal. The consequences of this approach are large variations in water levels in the parent canal, which in turn results in large variations of diverted flows unless the openings of the gates are frequently re-adjusted. This type of operation is described as "chaotic" in the literature on canal operation.

12. This strategy of canal operation differs from the standard operation known as upstream control, which is to control the level in the parent canal and to provide the set flow to the next level canals. Under upstream control, it is extremely difficult to match the supply and demand down to the tail of the canal. It is therefore recommended to release some excess water at the head of a canal under upstream control to provide reliable and timely service to the tail end canals. Operational losses are inevitable in a canal under upstream control. If losses are not permitted, the service to the tail-enders is unreliable. Under downstream control, this problem is solved since by definition the supply matches the demand. However this concept is applied only in a few irrigation systems worldwide.

13. The off-farm network is operated and maintained by PAN-ISA. They have offices in Beruni and Turtkul, with the main office in Ellikala. Common observations on the distribution of water in South Karakalpakstan are that:

- Whilst there is an overall plan of how water is to be distributed, given available supplies, in practice there is no day-to-day transparency of what flows are being passed and what is imminent.

- The lack of meaningful water measurement compounds the haziness over what is occurring
- Irrigators, other than a few at the head of the canal systems and those with influence, are not able to properly plan for water deliveries; hence they operate inefficiently and this is, in part, reflected in the poor crop yields
- System operators do not have access to the tools (including information) to be able to respond to actual water demands in a coherent, systematic way which optimises overall water delivery
- Too often irrigation system managers are required to respond to the reactive demands of community leaders who highlight specific areas of water shortage (relative to actual demand) rather than being allowed to allocate water methodologically, taking into account all the various factors which impinge on optimum delivery.

14. Overall, water delivery is sub-optimal, with both apparent deficiencies in the form of high losses and hidden problems as exemplified by the loss of production on abandoned areas and the modest crop yields in the project area. Some of the key factors contributing to this situation are discussed below.

Planning

15. The lack of reliable operation of the pump stations means that PAN-ISA is not able to plan the distribution of water throughout the system; when pump stations are planned to be operated for short periods of time, this process of filling canals to the point of overflowing leads to inefficiencies in water use. In practice, a seasonal plan is developed using spreadsheets based on the area of each type of crop for each WCA, using generic loss factors for the whole network, and water requirements based on average soil parameters. However, the local Tuman department for agriculture and water resources, with the interest of the Hokhimiyat, may apply pressure to PAN-ISA to provide water when they consider it necessary (usually based on calendar dates and not field conditions) rather than when the WCA considers it necessary.

Flow measurement and reporting

16. Records of flow are required to be maintained for every structure, recorded in a journal. This journal is submitted by the structure operator to the head office of the canal authority at the end of every irrigation season. The project area is characterized by the absence of active flow measurement. There are few measuring structures and those that exist do not seem to be considered critical to water management decisions.

17. Flows are typically measured by recording the level on a gauge downstream of the structure, which is periodically calibrated. However, if a structure does not have a readable measuring staff (or does not have a permanent attendant), these flows are not likely to be recorded.

18. PAN-ISA produces seasonal reports on water use, including the volume supplied to each WCA, but given the lack of opportunity for flow measurement within the system these figures are primarily based on estimates and assumptions rather than recorded data. There is therefore no opportunity for mid-season interim assessments of water usage. Instead, decisions are taken by

professional judgment, often (but by no means always) backed by years of experience, of the status of water distribution. Furthermore, control decisions are often affected by requests to release, as an emergency, water to certain parts of the network where, for whatever reason, a shortfall in field applications has become critical. There are significant risks to this approach, not least because this experience is easily lost due to the high staff turnover in water management institutions.

19. In addition to the absence of a perceived need amongst operators, the general absence of flow measurement structures has arisen partly because conventional flow measurement devices involve some degree of hydraulic head loss. In the flat terrain of the project area such losses are seen negatively as the consequence is that fewer fields can be irrigated by gravity and pumping heads increase. The prevailing opinion is that head loss in the system should always be kept to the minimum possible in order to avoid water lifting and to allow farmers to irrigate by gravity.

Communication

20. Communications occur by mobile phone, and instructions are predominantly given through the main dispatch office at Ellikala. Authorization must be given by senior staff for adjustments to major structures. In general it appears that the system is operated by experience and rule of thumb, with no practical written rules.

21. In theory PAN-ISA collects water requirements from WCAs, collates them, and passes them on to the LABAIS. The LABAIS then takes these to the ICWC, and quotas are agreed for each country. The LABAIS then informs PAN-ISA what percentage of their requested water they receive, and this reduction is passed on to the WCAs. On the basis of requests from WCAs, PAN-ISA requests water from either the pump stations or Tuyamuyun reservoir.

Operational issues

22. In order to save water, it is often perceived that losses will be reduced (such as infiltration losses) if the duration of the canal operation is decreased. Thus the canals are filled to their maximum capacity (sometimes this is exceeded and breaches occur) for a short period of time, and farmers rapidly abstract their requirements. Reasons for this “pulsed”-flow approach are:

- Operational difficulties of Nayman-Beshtam Pump Station mean that the river flow sufficient for the pump station to operate may only be sustainable for a short period of time; hence the Nayman-Beshtam sub-system can only receive water for a very limited period.
- It is perceived that infiltration losses will be reduced if the canals are operated for a shorter period.

23. The attraction of this approach can be understood. However, there are several associated risks or problems:

- Farmers may not be ready to irrigate within the short window of water availability; this can often lead to the canal needing to be reopened later for the farmers who missed the first window, leading to a large loss of water
- When water is applied to fields rapidly, it is more difficult to measure and more difficult to prevent overflows or spills into the drains at a field level

- More water is required to fill the canals to their design level. Given that the cross section of many canals is effectively oversized, a significant volume of water is required (and often wasted) just to fill the canals.
- There is a risk of damage to structures at such large flows
- There is a risk of canal bank breaches, or structure overflows which lead to water flowing directly into the drainage network.

24. These problems and risks dramatically reduce the efficiency of such an approach, especially when farmers miss the initial window of opportunity to irrigate. The theoretical efficiency of rotation is unattainable because it does not allow for farmers to be late.

Water Management at Farm Level

25. WCAs are the primary organization involved in water management at the farm scale, with the farmers themselves responsible for water allocation and management at field level.

Planning

26. WCA staff are responsible for water management at an on farm level:
- Farmers submit requests for water, which are collated by the WCA and the WCA submits its requests to PAN-ISA.
 - After consultation with LABAIS and ICWC, PAN-ISA notifies the WCA of how much water will be available.

27. In theory, WCAs produce a plan of their water requirements at the beginning of the vegetation season, in accordance with agreed watering norms and crop patterns, considering losses in the system. These are checked with the local Tuman department of agriculture and water resources. In reality, the WCAs are often unable to create their own plans, and this is undertaken on their behalf by PAN-ISA. One problem found with this is that PAN-ISA typically only calculates losses to the head of the WCA system and makes no allowance for losses within the WCA (on farm) network.

28. This also means that there is no developed plan for the WCA to operate infrastructure within their territory, i.e. who should be taking water when, how much and for how long, as the PAN-ISA plan simply uses aggregated figures for the whole WCA. There are also difficulties, for example, in estimating the amount of rice grown in the WCA area, because this may be planted after the plan is formed, or on land assumed to be abandoned, in back yard plots destined for vegetables, or on land not officially counted.

Flow measurement

29. Under DIWIP, many new outlets were equipped with some form of water measuring device. The current design and operation of the network is a significant constraint to effective water management. Two key reasons are:
- Gravity command of fields is negligible in many cases, therefore water measuring structures must have minimal (ideally zero) head loss

- On-farm canals often do not run under a ‘normal’ hydraulic regime, thus measuring structures must be able to cope with submergence in a majority of locations

30. These factors restrict the choice of measurement structure, and thus whilst they have been installed, they are difficult to use. It was intended that fixed channel sections be used by measuring the velocity (using a simple surface float) and multiplying by the cross sectional area (noted by a gauge). It is likely that many of these structures are not used to measure water for the following reasons:

- Farmers lack the desire to measure water, and the beneficial effects of good water management on crop yields are seldom understood (although some progress was made in developing this knowledge through DIWIP demonstration plots and farmer field schools)
- There are currently few incentives for better water management: farmers are tied to state crops and there are few real financial (cash) incentives for better yields, nor is there a sense that permission (or opportunity) to grow secondary or cash crops is linked to more effective (i.e. reduced) water usage for state crops.

31. WCA staff are unlikely to be able to access these measuring devices as they lack transport to supervise the canals (which can often be 25-30 km long), and there are few maintenance roads alongside the canals. In such cases to visit every outlet would involve a long route; even if the WCA staff did have access to a working motor vehicle, they may not have funds for the fuel. Therefore, currently no 10-day operational plan is produced, and little water measurement is undertaken at tertiary offtake level.

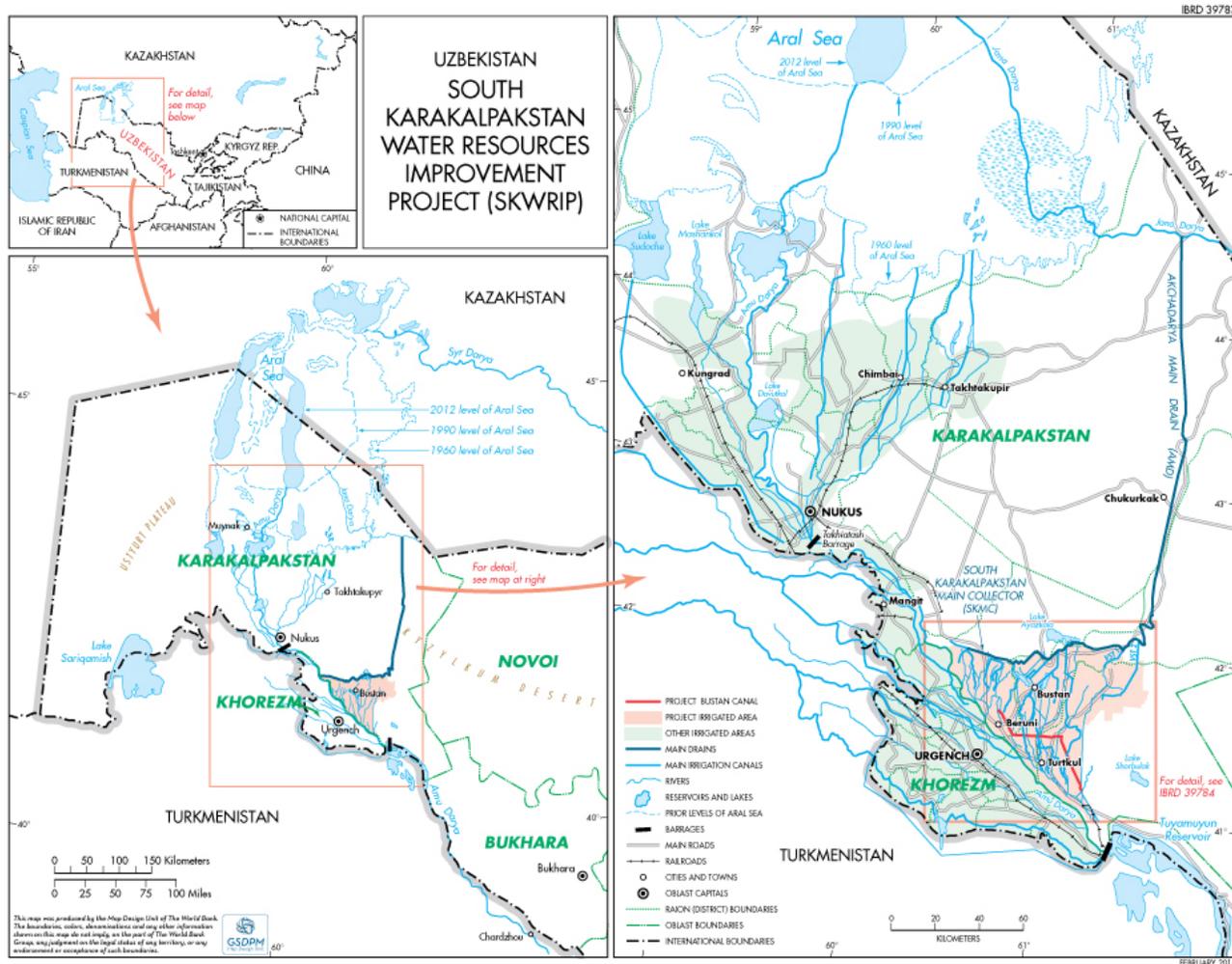
Communication

32. Throughout the irrigation season, the WCA applies for water to be supplied to each of its inter-farm canal five days in advance of the next ten day period, within their agreed limit. Provided that PAN-ISA has water available at the source, they are obliged to supply the requested water.

33. The level of communication between WCA staff and farmers varies between WCAs. One key factor is how much the WCA staff have access to transport and are able to visit the farmers in their area. A second factor is how much the WCA was a pre-existing community prior to being a WCA i.e. if the WCA is a former kolkhoz then it is easier for communication as they are a well-established community; if the WCA is formed from sections of different former Kolkhozes, the development of good communication will be more difficult.

Annex 13: Maps of Project Area

UZBEKISTAN: South Karakalpakstan Water Resources Management Improvement Project



Annex 13: Map of Project Area

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