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Report No: PAD292

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US$102,902,440

TO THE

REPUBLIC OF KAZAKHSTAN

FOR A

SECOND IRRIGATION AND DRAINAGE IMPROVEMENT PROJECT

May 31, 2013

Sustainable Development Department
Central Asia Country Unit
Europe and Central Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective April 2013)

Currency Unit = Kazakh Tenge (Tg or KZT)
KZT 148.45 = US$ 1

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AC Ltd	Agricultural Company
ACP	Agricultural Competitiveness Project
ADB	Asian Development Bank
AMC	Anti-Monopoly Commission
APC	Agricultural Production Cooperative
APPAP	Agricultural Post-Privatization Assistance Project
BWA	Basin Water Administration
CA	Conservation Agriculture
CSE	Communal State Enterprise
CSU	Central RCC Support Unit
CWR	Committee of Water Resources
EA	Environmental Assessment
EMP	Environmental Management Plan
EIRR	Economic Internal Rate Of Return
ENPV	Economic Net Present Value
FM	Financial Management
FMR	Financial Management Report
FS	Feasibility Study
FSC	Farmers' Services Center
GIS	Geographical Information System
GDP	Gross Domestic Product
HAE	Hydrogeologic Amelioration Expedition
I&D	Irrigation and Drainage
IARC	International Agricultural Research Center
IBRD	International Bank for Reconstruction and Development
IDIP-1/2/3	First/Second/Third Irrigation and Drainage Improvement Project
IPM	Integrated Pest Management
ISF	Irrigation Service Fee
KAF/I/M	KazAgro Finance/Innovation/Marketing
M&E	Monitoring and Evaluation
MOA	Ministry of Agriculture
MOEP	Ministry of Environmental Protection
MOF	Ministry of Finance
MOM	Management, Operation and Maintenance
O&M	Operation and Maintenance
OSU	Oblast RCC Support Unit
PDO	Project Development Objective
PEFA	Public Expenditure and Financial Accountability
PIDM	Participatory Irrigation Development and Management
PMU	Project Management Unit
POM	Project Operational Manual
PPL	Public Procurement Law
RRA	RCC Regulatory Authority
R&D	Research and Development
RCC	Rural Consumer Cooperative
RSE(KVK)	Republican State Enterprise(KazVodKhoz)
RSU	Raion RCC Support Unit
SPA	Sub-Project Area
SU	Support Unit
SYNAS	Syr Darya Control and Northern Aral Sea
SRI	Systems for Rice Intensification
TOT	Training-of-Trainers
VAT	Value Added Tax
VDW	Vertical Drainage Well
WB	World Bank
WMO	Water Management Organization
WUA	Water Users' Association
WRMLIP	Water Resources Management and Land Improvement Project

Regional Vice President:	Philippe H. Le Houerou
Country Director:	Saroj Kumar Jha
Sector Director:	Laszlo Lovei
Country Manager:	Sebnem Akkaya
Sector Manager:	Dina Umali-Deininger
Task Team Leader:	Ahmed Shawky M. Abdel Ghany

REPUBLIC OF KAZAKHSTAN
Second Irrigation and Drainage Improvement Project

TABLE OF CONTENTS

I. STRATEGIC CONTEXT 11
A. Country Context 11
B. Sectoral and Institutional Context 11
C. Higher Level Objectives to which the Project Contributes 13
D. Ongoing/Complementary Activities by the Bank and Other Partners 14
II. PROJECT DEVELOPMENT OBJECTIVES 14
A. Project Development Objective 14
1. Project Beneficiaries 14
2. PDO Level Results Indicators 14
III. PROJECT DESCRIPTION 15
A. Project Components 15
B. Project Financing 21
1. Lending Instrument 21
2. Project Cost and Financing 21
C. Lessons Learned and Reflected in the Project Design 22
IV. IMPLEMENTATION 23
A. Institutional and Implementation Arrangements 23
B. Results Monitoring and Evaluation 24
C. Sustainability 24
V. KEY RISKS AND MITIGATION MEASURES 26
VI. APPRAISAL SUMMARY 27
A. Economic and Financial Analysis 27
B. Technical 28
C. Financial Management 29
D. Procurement 30
E. Social (including safeguards and gender) 30
F. Environmental (including safeguards) 32
G. Other Safeguard Policies Triggered 33
H. Conditionalities 34

Annex 1: Results Framework and Monitoring **35**
Annex 2: Detailed Project Description **40**
Annex 3: Implementation Arrangements **71**
Annex 4: Operational Risk Assessment Framework (ORAF) **94**
Annex 5: Implementation Support Plan **98**
Annex 6: Team Composition **100**
Annex 7: Economic and Financial Analysis **101**
Annex 8: Background on Formation of Water Management Organizations in Kazakhstan **108**
Annex 9: Project Map **109**

PAD DATA SHEET

Kazakhstan

Second Irrigation and Drainage Improvement Project

PROJECT APPRAISAL DOCUMENT

EUROPE AND CENTRAL ASIA

ECSAR

Report No.: PAD292

Basic Information			
Project ID	Lending Instrument	EA Category	Team Leader
P086592	Investment Project Financing	B - Partial Assessment	Ahmed Shawky M. Abdel Ghany
Project Implementation Start Date		Project Implementation End Date	
01-Jul-2014		30-Jun-2021	
Expected Effectiveness Date		Expected Closing Date	
01-Jul-2014		31-Dec-2021	
Joint IFC			
No			
Sector Manager	Sector Director	Country Director	Regional Vice President
Dina Umali-Deininger	Laszlo Lovei	Saroj Kumar Jha	Philippe H. Le Houerou

Borrower: Ministry of Finance			
Responsible Agency: Ministry of Environmental Protection			
Contact:	Mr. Tolebai Kenenbayev	Title:	Technical Expert
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Project Financing Data(in USD Million)					
[X]	Loan	[ ]	Grant	[ ]	Other
[ ]	Credit	[ ]	Guarantee		

Total Project Cost:	343.0	Total Bank Financing:	102.9
Total Cofinancing:		Financing Gap:	0.00

Financing Source	Amount
Borrower	240.10
International Bank for Reconstruction and Development	102.9
Total	343.0

Expected Disbursements (in USD Million)

Fiscal Year	2014	2015	2016	2017	2018	2019	2020	2021
Annual	0.00	1.77	2.57	12.87	29.17	29.15	18.72	8.65
Cumulative	0.00	1.77	4.34	17.21	46.38	75.53	94.25	102.90

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	60		
Agriculture, fishing, and forestry	Agricultural extension and research	30		
Public Administration, Law, and Justice	Sub-national government administration	10		
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	33
Rural development	Rural services and infrastructure	33

Rural development	Rural policies and institutions	17
Public sector governance	Decentralization	17
Total		100

Project Development Objective(s)

Proposed Development Objective(s)

The Project development objective is to improve irrigation and drainage service delivery to support farmers in the Project areas. This will be achieved through rehabilitation and modernization of irrigation and drainage systems; improved management, operation and maintenance of these systems; and more efficient use of associated irrigated lands; all with improved participation of users in developing and managing the rehabilitated / modernized systems.

Components

Component Name	**Cost (USD Millions)**
Rehabilitation and Modernization of I&D Systems Infrastructure	323.38
Sustainable Management, Operation and Maintenance of I&D Systems	6.93
Agricultural Development	9.80
Project Management, Technical Assistance, and Training	2.89

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**

Description of Covenant

Conditions

Name	**Type**
Article IV, 4.01 (a) Operational Manual Update and (b) PMU Establishment	Effectiveness

Description of Condition

(a) The Operational Manual has been adopted by the Borrower in a manner satisfactory to the Bank.

(b) The PMU has been established by the Borrower, within the CWR, with composition, resources and terms of reference satisfactory to the Bank, including the selection of a financial management specialist and a disbursement specialist.

Name	**Type**
Article IV, 4.01 (c) Project Accounting System	Effectiveness

Description of Condition

(c) The Borrower has signed a contract, with terms of reference satisfactory to the Bank, for the installation of a fully automated project accounting system capable of generating interim unaudited financial reports.

Name	**Type**
Schedule 2, Section IV.B.1 (c) Environmental Assessment and Site-specific Dam Safety Plan	Disbursement

Description of Condition

Notwithstanding the Provisions of Part A of this Section, No Withdrawal shall be made:

(c) under Category 1, unless an EA and, if applicable, a Site-specific Dam Safety Plan, have been prepared by the Borrower, in connection with the site for which withdrawal for expenditures has been submitted.

Team Composition			
Bank Staff			
Name	**Title**	**Specialization**	**Unit**
Lynette Alemar	Senior Program Assistant	Senior Program Assistant	ECSSD
Joseph Paul Formoso	Senior Finance Officer	Disbursement Specialist	CTRLA
Yuling Zhou	Lead Procurement Specialist	Lead Procurement Specialist	EASR2
Joop Stoutjesdijk	Lead Irrigation Engineer	Former TTL	SASDA
Ian T. Anderson	Consultant	Consultant (Engineering)	EASHH
John Otieno Ogallo	Sr Financial Management Specialist	Sr Financial Management Specialist	ECSO3
Aliya Kim	Financial Management Analyst	Financial Management Analyst	ECSO3
Anara Akhmetova	Procurement Assistant	Procurement Assistant	ECCKZ
Katelijn Van den Berg	Senior Environmental Economist	Senior Environmental Economist	ECSEN
Gulana Enar Hajiyeva	Senior Environmental Specialist	Environmental Safeguards Specialist	ECSEN
Ahmed Shawky M. Abdel Ghany	Sr Water Resources Spec.	Team Lead	ECSAR
Bakyt Arystanov	Consultant	Operations Specialist	ECSEN
Nurbek Kurmanaliev	Procurement Specialist	Procurement Specialist	ECSO2
Roxanne Hakim	Senior Anthropologist	Social Safeguards Specialist	ECSSO
Janna Ryssakova	Consultant	Social Development Specialist	OPSOR
Hiromi Yamaguchi	E T Consultant	Operations Officer	ECSAR
Larysa Hrebianchuk	Program Assistant	Program Assistant	ECSSD
Kosuke Anan	Social Development Specialist	Social Development Specialist	ECSSO
Ramiro Ignacio Jauregui-Zabalaga	Counsel	Counsel	LEGLE
Sofia De Abreu Ferreira	E T Consultant	Associate Counsel	LEGLE

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Anara Jumabayeva	Senior Economist (FAO)	390657056384	Rome
Michael Sandoz	Irrigation and Drainage Expert (FAO)		
Olaf Verheijen	Irrigation Institutional Expert		
Benoist Veillerette	Agricultural Economist		
David Colbert	Environmental Specialist (FAO)		

I. STRATEGIC CONTEXT

A. Country Context

1. Among the four states sharing the resources of the Syr Darya River basin, Kazakhstan is the 'tail-ender,' which means that it suffers the most from the effects of inadequate water resources management. The Government recognizes the importance of sustainable development and acknowledges that water resource problems will continue to limit national economic growth and exacerbate inequitable wealth distribution between rural and urban areas, despite the abundance of national oil resources. Recently, the Government vowed to ensure growth of gross domestic product (GDP) by 4.0-5.0 percent while holding the annual inflation rate to 6.0-8.0 percent, thus supporting vulnerable populations.[1] For instance, the 2011 economic policy prioritizes domestic market price stability, primarily for key food products to protect vulnerable social groups. For this purpose, the Government and local authorities will continue to develop municipal wholesale food markets and trade infrastructure, protect competition, tackle price collusion and monopolies, and reduce intermediaries between producers and end users.

B. Sectoral and Institutional Context

2. ***Agriculture Sector.*** The Government considers development of the agricultural sector and the irrigation sub-sector extremely important to diversify the national economic base, provide rural employment, increase food security, and reduce poverty. The agricultural sector declined severely during the 1990s and now contributes only about 8.0 percent to GDP despite employing one-third of the economically active population and providing income to the majority of rural people, who comprise 60 percent of the country's poor. Overall, agriculture is now showing encouraging signs of recovery—sustained annual growth of over 4.0 percent during the past few years. The Government has prioritized agricultural product processing; for example, it is proceeding with major investments in cotton processing and developing of the textile industry, and it is planning to re-launch sugar beet processing in southern Kazakhstan, where it was previously a major industry. Strategic crops such as cotton, rice, sugar beet, and fodder depend on irrigation, but wide spread deterioration of irrigation and drainage (I&D) systems due to inadequate maintenance constrain agricultural productivity, particularly in the south where agriculture is otherwise potentially highly profitable.

3. Cropping patterns and crop performance in irrigation schemes are worsening due to poor water management and inappropriate agricultural practices. For instance, recent average irrigated crop yields are around 1.8-2.0 tons per ha for wheat and 2.3-2.5 tons per ha for cotton, which is low for irrigated conditions. All farmers report a continued decline of soil fertility, which is acknowledged to be a result of inadequate crop rotation and land husbandry, and of poor farm-level irrigation water management. However, smallholder farmers in particular have few options to change since they lack machinery, quality inputs, or access to knowledge and advice.

4. ***Irrigation and Drainage Sub-sector.*** As mentioned above, strategic crops such as cotton, rice, sugar beet, and fodder are fully dependent on irrigation, particularly in the south where agriculture is potentially highly profitable. About 2.4 million ha of land was equipped with

[1] The economic policy statement of the Ministry of Economy and Development Trade (January 2011).

irrigation infrastructure, and where needed, drainage systems. Since 1991, Kazakhstan's irrigated area has shrunk due to deteriorated I&D systems; estimates are that only about 55 percent of the total developed area is now under full irrigation, albeit with low operating and water use efficiency. About 70 percent of the irrigated area nationwide is in the four oblasts of southern Kazakhstan, which also have among the highest population densities.[2] Surface irrigation is commonly practiced, using basin and furrow methods, depending on the crops. System performance is poor, water-use efficiency is low, and water supply and distribution is unreliable, because during the last few years, the intention has been to serve as many farmers as possible by reducing the number of irrigations per season. These problems have extended to the drainage systems, many of which function poorly due to blockages from reeds, weeds, and grasses, which have exacerbated the silting up of drains. Many vertical drainage wells (VDWs) and drainage pump sub-stations are damaged; few VDWs function at all and often water tables have risen to near ground level, increasing soil salinity. Soil salinity and alkalinity have often forced land out of production, especially in South Kazakhstan and Kyzylorda oblasts. Not surprisingly, overall productivity is gradually declining on the irrigated lands now under cultivation.

5. In the last few years, the limited management, operation and maintenance (MOM) carried out on the I&D systems and infrastructure has been of two types: (i) MOM of the main I&D infrastructure, which is normally the responsibility of the Committee for Water Resources (CWR), through eight Basin Water Administrations (BWAs), and which is carried out using allocations from the State budget; and (ii) MOM of the inter-farm and on-farm I&D systems, which is carried out by water management organizations (WMOs)[3] with funding from both State subsidies and collected water user fees. Central and regional authorities carried out some maintenance on the main canal systems and some main drains but scant funds have been available for basic maintenance on lower-level systems.

6. The January 21, 2002 Government Resolution No.71 advocates for the water sector to be economically viable through charges levied for water-service delivery. As part of the Government programs to revitalize the irrigation subsector, two major policy decisions were promulgated in 2003: (i) the Water Code, and (ii) the Law on Rural Consumer Cooperatives (RCCs) of Water Users (amended in 2006). Some background on the development of WMOs including RCCs in Kazakhstan is provided in Annex 8.

7. ***Institutional Considerations***. Following the promulgation of Law No. 404 on Rural Consumer Cooperatives of Water Users in April 2003, RCCs are recognized as a voluntary, non-commercial association of physical persons and/or legal entities that own and/or use plots of land in the command area of an irrigation scheme with the purpose to jointly use the irrigation infrastructure for agricultural purpose. Following formal registration under Law No. 404, the RCC is a legal entity with powers, rights and obligations that are stipulated in Article 6 and 7 of the Law. Membership of the RCC is on a voluntary basis but an RCC can only be registered if at least half of the water users in the command area have become members. Members and non-members of the RCC must have equal access to irrigation water. A total of 33 RCCs already exist in 7 of the 10 sub-project areas (SPAs) selected for IDIP-2.

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[2] Almaty, Kyzylorda, South Kazakhstan, and Zhambyl oblasts.

[3] The main WMO at the level of the former Kolkhoz and Sovkhoz is the RCC, set up under the Law on Rural Consumer Cooperatives for the purpose of managing I&D infrastructure at on-farm level.

8. More recently, in accordance with Presidential decree No.466 issued January 16, 2013, "On Further Improvement of the Public Administration System of the Republic of Kazakhstan," the authority for protecting and supervising the efficient use of natural resources, formulating state water management policy, managing water resources and developing the fishing industry have been transferred from the Ministry of Agriculture (MOA) to the Ministry of Environmental Protection (MOEP). Based on the Government Resolution No.172 issued February 25, 2013, "Issues of the Ministry of Environmental Protection," the Committee of Water Resources (CWR) has been transferred to the MOEP, to a large extent intact and with substantially unchanged organizational structure and responsibilities. Therefore, the CWR under the MOEP will be the implementing agency for the Project.

9. ***Conclusions.*** The key development challenges include the following: (i) to rehabilitate and modernize I&D systems and return lands to their formerly highly productive condition; (ii) to develop sustainable I&D system management to improve water use efficiency and water resources management practices, and reduce environmental degradation; and (iii) to improve land and agricultural practices to increase overall productivity of irrigated agriculture. A 2006 Agricultural Policy Assessment, funded by the Joint Economic Research Program (JERP), reached the same conclusion; it confirmed the strategic importance of agriculture and recommended the following: "Develop a comprehensive program of irrigation system rehabilitation and modernization; develop and build the capacities of public and private institutions involved in irrigation; gradually raise Irrigation Service Fees (ISFs) to needed amounts for long-term MOM of irrigation systems and improved management of limited water resources. In view of environmental externalities of water subsidies, gradually decrease the subsidy element and have water users pay for the real cost of the service."

10. As a result, the Government began a program to improve water use efficiency in agriculture and reduce demands on scarce surface water resources. The Government strategy is to accelerate the improvement of over one million ha of irrigated land through several mechanisms: (i) rehabilitate and modernize I&D infrastructure; (ii) adjust water pricing; (iii) establish water control mechanisms; (d) improve practices in on-farm water management and agriculture; and (iv) strengthen institutional capacity, including that of water user organizations and agricultural advisory services. Meeting these challenges would increase the contribution of irrigated agriculture to the economy and improve living conditions among agriculture-dependent populations.

C. Higher Level Objectives to which the Project Contributes

11. The Project is firmly in line with the current Country Partnership Strategy (CPS) for Kazakhstan (FY2012-17). The Project builds on the Government's development program to achieve international standards for public services and enterprises, and to increase the competitiveness of its tradable non-oil sectors, by investing in human capital and infrastructure. Specifically IDIP-2 would directly contribute to meeting the Government "Strategic Plan for Development 2020" in terms of improving public spending on irrigation and drainage, raising agricultural competitiveness and rural employment, while reducing the negative environmental externalities of water subsidies.

D. Ongoing/Complementary Activities by the Bank and Other Partners

12. The World Bank and the Asian Development Bank (ADB) have been the principal financiers assisting the Government with I&D sub-sector development during the past decade. The first Irrigation and Drainage Improvement Project (IDIP-1), supported by the World Bank and implemented from 1996 to 2004, began before the Government strategy for the sub-sector was developed. A comparable project was the ADB-supported Water Resources Management and Land Improvement Project (WRMLIP), implemented from 1998 to 2006. The IDIP-1 involved rehabilitating I&D infrastructure on 32,000 ha and related improvements in water management and systems operations and maintenance (O&M). It was implemented in several oblasts; results were encouraging, although crop production increases were inconsistent among rehabilitated areas. Challenges remained in the areas of performance of RCCs and WMOs and adequacy of O&M arrangements, primarily due to a lack of post-IDIP-1 institutional and extension support. Lessons learned from both projects, as taken into account in the design of the presently proposed Second Irrigation and Drainage Improvement Project (IDIP-2), are presented later below (Section III.C).

II. PROJECT DEVELOPMENT OBJECTIVES

A. Project Development Objective

13. The Project development objective (PDO) is to improve irrigation and drainage (I&D) service delivery to support farmers in the Project areas. This will be achieved through rehabilitation and modernization of I&D systems; improved management, operation and maintenance (MOM) of these systems; and more efficient use of associated irrigated lands; all with improved participation of users in developing and managing the rehabilitated/modernized systems.

1. Project Beneficiaries

14. The primary project beneficiaries include individual farmers, farm families and communities, farmers' organizations, and public, private and civil society organizations involved in agriculture, agro-business, and water management, within the project intervention areas or directly affected by project interventions. Project stakeholders also include the CWR, Republican State Enterprises (RSEs), Communal State Enterprises (CSEs), local governments, agriculture production cooperatives (APCs), agro-business and agro-marketing organizations, agricultural companies (AC Ltd.), RCCs, and farmers' associations. It is estimated that a total number of about 27,000 farming families have households and land within the ten SPAs and hence that these will represent the project target group and principal direct beneficiaries. A further 11,000 farming families outside of the ten SPAs but within the project raions will also benefit from the project's institutional and agricultural development interventions.

2. PDO Level Results Indicators

15. The PDO indicators for the proposed Project are (i) total agricultural land area provided with improved irrigation and drainage services (hectares), and (ii) total number of water users provided with improved irrigation and drainage services (total number, and number of females).

Intermediate results indicators are (i) number of subprojects for which detailed designs and environmental assessments and management plans are prepared (number), (ii) incremental irrigation water volume added (cubic meters), (iii) number of operational water user associations created and/or strengthened (number), (iv) number of subprojects where water information and communication technology for modernized performance is developed (number), (v) number of farmer-days of training provided (total number, and number of female farmer-days), and (vi) number of local government support units established and trained to provide irrigation and agricultural advisory services (number). Further details on these indicators and their target values are provided in Annex 1, Results Framework and Monitoring.

III. PROJECT DESCRIPTION

16. The proposed Project responds to the Government strategy to accelerate the improvement of irrigated land, improve the efficiency of water use in agriculture, and reduce demands on scarce surface water resources. Better use and management of irrigation infrastructure will help develop the agricultural sector to benefit the national economy and rural people.

17. Before Project preparation started, the Government delineated SPAs to be covered under the Government development program with support from World Bank. The SPAs covered about 220,000 ha including 13 systems (see Table 1 in Annex 2).

18. During Project preparation, CWR prepared a feasibility study (FS). This FS went through several Government formal expert reviews and corresponding modifications. Implementation of part of the Government program as described in the FS is planned in two phases, the first of seven years duration and the second of six years duration. It is proposed that the Bank will support Government implementation of the program through two specific investment projects. The first of these, the Second Irrigation and Drainage Improvement Project (IDIP-2), covering about 113,000 ha in ten SPAs and will be implemented from mid-2014 to mid-2021, as proposed in this Project Appraisal Document. During the first two to three years of IDIP-2, it is expected that the Government's FS will be updated on the basis of early and ongoing IDIP-2 experiences and lessons, and that the second investment project, currently denoted the Third Irrigation and Drainage Improvement Project (IDIP-3), would then be prepared. This Project Appraisal Document covers IDIP-2 only.

19. The two proposed Projects will have similar components, the main one being the rehabilitation and modernization of I&D infrastructure. Both Projects will provide support for institutional development for the sub-sector institutions, which is a long-term activity; IDIP-2 will design and implement institutional development activities, which will then receive continuing support under IDIP-3 as the activities are phased into government agencies towards the end of the Project. Similar arrangements will apply for Project agricultural development activities.

A. Project Components

20. The four main components of the Project will be: (i) Rehabilitation and Modernization of I&D Systems Infrastructure; (ii) Sustainable MOM of I&D Systems; and (iii) Agricultural Development and (iv) Project Management, Technical Assistance and Training. These are

summarized below, while detailed descriptions are provided in Annex 2, Detailed Project Description.

21. The proposed Project will provide support to areas in Almaty, Kyzylorda, South Kazakhstan and Zhambyl oblasts. These areas have favorable agro-climatic conditions for increasing irrigated crop productivity, warmer weather, large plains, and a comparative advantage in cropping activities especially for production of higher-value crops with export potential such as cotton, fruits and vegetables. This will contribute to raising local employment levels through related processing and manufacturing. Farms are small and population densities are high, so I&D-related interventions would extend benefits to a larger number of rural people.

Component 1: Rehabilitation and Modernization of I&D Systems Infrastructure (US$323.38 million, of which US$310.35m for civil works and US$13.03m for related design and supervision consultancy services).

22. ***Sub-component 1.A. Rehabilitation and Modernization of Existing I&D Infrastructure.*** This component will support rehabilitation and modernization of I&D infrastructure on approximately 113,000 ha.

23. The current poor state of infrastructure renders many irrigation systems incapable of delivering adequate and timely irrigation water to the farmed areas, especially during peak summer demand. As a result, farmers are unable to apply sufficient water—either for crop water demands or for leaching requirements. As already indicated, operational policy during the last few years has been to serve as many farmers as possible with a reduced number of irrigations per season; this has reduced crop yields and has led to land degradation.

24. Assistance to I&D rehabilitation and modernization is based on requirements to supply farms with adequate and timely irrigation water and to remove excess water to lower water tables and salinities to appropriate levels. Rehabilitation support will cover both off-farm and on-farm works. Including off-farm works aims to ensure the future reliability of primary conveyance and drainage networks that support full operation of rehabilitated lower-order systems; it is considered essential that the main bottlenecks in the primary supply canals, cross regulators, outlet structures to the secondary canals, and primary drainage network, be addressed.

25. The list of systems proposed for IDIP-2, areas commanded, and indicative estimated total rehabilitation costs, are presented in a detailed table in Annex 2.

26. ***Sub-component 1.B. Design and Supervision of the rehabilitation and modernization of I&D Infrastructure, and Dam Safety Plans.***

27. This Sub-component will provide technical assistance for the design and supervision associated with the rehabilitation and modernization of irrigation and drainage infrastructure, including preparing Site-specific Dam Safety Plans.

28. Design and Supervision consultants will involve farmers in examining each system in detail, including farming methods, to determine rehabilitation and modernization needs (see Figure 1 in Annex 2). Approaches will aim to optimize use of existing networks, and interventions will aim to reconstruct destroyed or damaged system sections, including hydraulic

structures, to remove bottlenecks, and to introduce improved modern designs. This will increase potential for timely and adequate water availability to farmers, improve water management at all levels, ensure adequate drainage of excess water, and help control groundwater tables.

29. ***Irrigation Area Site-specific Dam Safety Plans.*** Site-specific Dam Safety Plans will be prepared to assess the safety of existing dams and other hydraulic structures (e.g., weirs) in the SPAs. The Site-specific Dam Safety Plans will identify the interventions required to ensure that the dams function as planned and present no threat to areas downstream. The IDIP-2 area includes at least six hydraulic structures (five dams and one large weir) that serve some of the SPAs. Although dam safety plans for five dams have been carried out previously, they will need to be updated. It is then planned to carry out the needed interventions in two stages as described below.

30. The first stage of identified dam safety improvements will be implemented during IDIP-2 implementation and be financed in parallel by the Government, including: (i) the implementation of identified dam-specific priority works and (ii) the undertaking of detailed dam-specific investigations to determine the scope of additional identified interventions needed to safely secure future dam operation. The first stage will also include studies covering all of the identified dams to (i) check the hydrology and dam capacity for passage of extreme floods, (ii) investigate seismic hazard and dam seismic stability, and (iii) determine safety procedures and emergency preparedness. The dam improvements will be carried out under separate but parallel Government financing arrangements (see Section IIIB below) with IDIP-2 technical assistance support.

31. The second stage works required for the additional needed dam improvement interventions, including major dam repairs or upgrading, identified as necessary in the Site-specific Dam Safety Plans supported under IDIP-2, will be undertaken under a proposed follow-up project (e.g. IDIP-3).

Component 2: Sustainable Management, Operation and Maintenance of I&D Systems (US$6.93 million, of which US$0.63m for goods/equipment, US$3.67m for consultancy services, US$2.40m for training and US$0.23m for operating costs[4]).

32. This component will support:

a) Developing and strengthening RCCs and water-management organizations[5] (WMOs) through: (i) supporting the establishment of the enabling training and support units (Rural Support Units, RSUs); (ii) supporting Participatory Irrigation Development and Management (PIDM) activities including related water-sector studies and access to credit and leasing resources; and (iii) enhancing MOM activities including water-monitoring tools.
b) Modernizing and strengthening of on-farm water management (at the RCC level).
c) Modernizing and strengthening of the MOM of the main irrigation and drainage system.

33. Through this component, IDIP-2 will introduce the international experience in "Participatory Irrigation Development and Management" (PIDM), which integrates the "top-

[4] Eligible expenditures under Components 2, 3 and 4 include non-consultancy services.

[5] The intention is that RSUs will work primarily with RCCs; however, some flexibility will be needed if and where WMOs have not yet formed into RCCs.

down" and "bottom-up" approaches for modernizing I&D services (further details are provided in Annex 2, Project Description). International experience has defined "I&D Modernization" in terms not only of infrastructural modernization but also of associated institutional reform as needed for financial and environmental sustainability (See Box 1 in Annex 2). Thus, alongside and in conjunction with Component 1, Component 2 aims to ensure the sustainability of the rehabilitated and modernized I&D infrastructure and to reduce the negative externalities of water subsidies, both of which are considered to be critical requirements.

34. In parallel to the rehabilitation and modernization of I&D systems, this component will address institutional, technical and financial issues facing the I&D sector by building institutional capacity to enable the main system service provider, RCCs and water users to improve water use efficiency and productivity.

35. ***Sub-component 2.A. Developing and Strengthening Rural Consumer Cooperatives and Water Management Organizations.*** This sub-component would provide technical assistance, training and goods to develop and strengthen rural consumer cooperatives and water-management organizations through: (i) supporting the establishment of the enabling training and support units (i.e. the Rural Support Units, RSUs)[6]; (ii) supporting PIDM activities including related water-sector studies[7] and access to credit and leasing resources; and (iii) enhancing MOM activities, including water monitoring.

36. ***Sub-component 2.B. Modernization and Strengthening of On-farm Water Management.*** This sub-component would provide technical assistance and training to modernize and strengthen on-farm water management (at the RCC/WMO level). On-farm practices for a representative sample of the SPAs will be analyzed to recommend and implement improvements. Inefficiencies in RCC distribution of irrigation water at the on-farm level at present lead to over-abstraction from the source, low level of productivity per unit of water diverted, and water logging and salinisation. Measures to help RCC staff develop effective and efficient O&M of the on-farm irrigation system can dramatically improve individual farmers' performance. Under this sub-component, the technical and economic feasibility of the installation of pressurized on-farm distribution systems in the IDIP-2 SPAs will be assessed. This sub-component would be supported by measures identified for improving farmers' water management practices at the on-farm level under Component 3, Agricultural Development.

37. ***Sub-component 2.C. Modernization and Strengthening of Main System MOM.*** This sub-component would provide technical assistance, training and goods to modernize and strengthen the MOM of the main I&D systems. This sub-component would: (i) review the work activities of main service providers, provide recommendations for upgrades and modernization to achieve the best service levels possible, and support implementation of agreed changes;[8] (ii) determine minimum levels of O&M expenditure required to sustain I&D systems over time; and

[6] Through consulting services, goods or operating costs, not civil works. These RSUs will most likely be housed in the CWR's raion-level offices, while they would provide services at various (central, oblast and raion) levels. See the Organigram in Annex 3.

[7] This activity may include providing technical assistance to support the establishment of an RCC Regulatory Authority (RRA), which is one of the "good practices" in PIDM.

[8] The main system includes the primary inter-farm canals and vertical drains which are managed by either CWR's RSE and its branch offices at oblast level, or by CSEs under the Akimat.

(iii) adopt modern processes (e.g. remote sensing and geographic information systems (GIS) to monitor land condition, water logging, and salinity, and to determine crop types and areas) by expanding and improving existing capabilities.

Component 3: Agricultural Development (US$9.80 million, of which US$0.27m for equipment, US$5.51m for consultancy services, US$3.33m for training and US$0.69m for operating costs).

38. This component will support:

a) Strengthen farmers capacity through: (i) improving farm management and land use; (ii) supporting knowledge transfer on innovative agro-techniques; and (iii) supporting agro-cooperatives, including establishing and strengthening the enabling farmers services centers (FSCs).
b) Support farming and irrigation mechanization through: (i) developing water-saving techniques, (ii) facilitating access to maintenance equipment for the on-farm irrigation systems, and (iii) strengthening the related advisory facilities.

39. ***Sub-component 3.A. Strengthening Farmers Capacity.*** This component aims to increase productivity and incomes of IDIP-2 farmers[9] by strengthening their capacity to (i) organize and acquire effective technical knowledge on more sustainable agricultural production technologies and efficient irrigation water management systems; and (ii) test, purchase/lease, and then access machinery for irrigation infrastructure maintenance and on-farm services using existing financial resources. Activities will be organized in two clusters as follows:

(i) Training for target groups in agro-technical fields, farmers' organization and sustainable land management;
(ii) Demonstration plots in sub-project areas for improved and sustainable agronomic practices and on-farm water management; and
(iii) Extension and advisory services through establishment of 10 Farmers' Services Centers (FSCs) [10] as pilots.

40. ***Sub-component 3.B. Support Irrigation System and Farm Mechanization.*** The Project intends to support valid on-going initiatives including relevant programs implemented by KazAgro Holding (of the Ministry of Agriculture of the Republic of Kazakhstan) and its sub-agencies such as KazAgro Innovation (KAI), KazAgro Finance (KAF) and KazAgro Marketing (KAM), will work as much as possible with existing service providers, and will use aspects of programs that are applicable for the irrigation schemes in the SPAs. Above all, the Project must ensure that farmers benefit from rehabilitated I&D systems and increase their agricultural production. Refer to the Organigram in Annex 3. Activities will be organized as follows (the demonstration equipment will be Government owned/leased/provided):

(i) Machine demonstrations to farmers and potential small contractors for farm-level maintenance of canals and ditches, with an advisory facility to investigate options for

[9] The POM elaborates on a participatory approach to target IDIP-2 farmers, summarized by Figure 1 in Annex 2.
[10] Through consulting services, equipment or operating costs, not through civil works. These FSCs will most likely be physically housed in the CWR's raion-level offices (while they would practically serve the SPAs level). See the Organigram in Annex 3.

ownership/leasing, O&M and cost-recovery mechanisms of scheme maintenance machinery; and

(ii) Demonstrations for farmers in Project SPAs of machines and techniques, with an advisory facility for farmers to enable their access to credit and leasing schemes for farm machinery purchase/lease.

41. Training needs will be assessed and programmed with strong farmer participation, and training will be delivered through on-farm farmer group training; workshops and seminars; specialized courses for interest groups; on-site demonstration and research and development (R&D) activities; and study tours. Demonstration plots would be used for 'on-farm participatory research' activities. The system includes mechanisms to verify performance and effectiveness, including beneficiary assessments, and will be flexible enough to allow for needed adjustments.

42. Ultimately, the intention is that the FSCs will provide sustained demand-driven advisory and other support services. To this end they will need to be established as semi-autonomous bodies with a legal status and a management plan that will ensure that they become financially self-sustainable through combined Government support and fee-for-service revenues from farmers. However, during the Project lifetime, IDIP-2 would cover most FSC-related costs. The component design is adaptable and can be scaled up through the national extension and advisory system program promoted by the Ministry of Agriculture (MOA) and implemented by KAI.

43. Machinery numbers and types for farming and construction to maintain on- and inter-farm infrastructure must be more clearly identified. Also, more research is required on farmer outreach modalities, financing, and cost-recovery methods for the machinery, particularly for small farmers. During the first two years, the Project will conduct demonstrations of machines and mechanization techniques to farmers in the SPAs, using machinery to be provided through Government agencies, so that they will be able to make informed choices about types of mechanization and aspects of ownership/leasing, operation, maintenance and financing (including access to existing finance). Based on the resulting experience a mechanization program would then be defined for taking to scale under the proposed second project (e.g. IDIP-3).

Component 4: Project Management, Technical Assistance and Training. (US$2.89 million, of which US$2.67m for consultancy services, US$0.06m for goods, US$0.08m for training and US$0.08m for operating costs).

44. The MOEP will be the Project implementing agency and will be supported by MOA technical departments particularly for the Component 3 agricultural development interventions. The day to day management and implementation of activities will be undertaken by CWR, under the MOEP.

45. The component will include operational support for the Project Management Unit (PMU) to be established within CWR. The PMU will be a team within the CWR, not a separate entity, and will report to a CWR Deputy Chairperson. The PMU staff will be recruited as individual consultants, required only for the duration of the Project. The PMU will be responsible for Project management, administration and coordination, including procurement, financial

management (FM) and monitoring and evaluation (M&E) in accordance with the Project Operational Manual (POM), Loan Agreement and other Project documents.

46. The PMU will be assisted by consultants (individuals and companies) for specific M&E surveys, environmental audits, and independent financial audits.

B. Project Financing

1. Lending Instrument

47. A Investment Project Financing (IPF) will be used as the lending instrument for IDIP-2.

2. Project Cost and Financing

48. The total estimated cost of the investment Project is around US$343 million. Financing will be through an IBRD loan of US$102,902,440 (about 30 percent of the total) and a Government contribution of around US$240.1 million (about 70 percent of the total). Estimated total costs by component and year are shown in the table below.

Table 1. Estimated total costs

Estimated Project Costs (US$ thousands)*								
Component	**PY1****	**PY2**	**PY3**	**PY4**	**PY5**	**PY6**	**PY7**	**Total**
1. Rehabilitation and Modernization of I&D Systems	4,885.8	4,885.8	39,740.3	94,102.6	94,102.6	59,434.1	26,227.6	**323,378.7**
2. Sustainable MOM of I&D Systems	427.7	1,675.1	1,150.1	1,090.5	964.3	876.8	745.9	**6,930.5**
3. Agricultural Development	446.1	1,595.2	1,568.7	1,556.0	1,610.6	1,707.1	1,320.6	**9,804.2**
4. Project Management	149.8	391.1	431.8	461.6	489.5	520.3	450.7	**2,894.8**
TOTAL	**5,909.4**	**8,547.1**	**42,890.8**	**97,210.6**	**97,167.1**	**62,538.4**	**28,744.8**	**343,008.1**
* Estimates include all allowances for taxes, physical contingencies and price contingencies "" Project year.								

49. Further Project cost details are presented at the end of Annex 2, Project Description.

50. The above indicated Project investments are subject to further investments to be financed separately and in parallel by the Government alone (in the order of US$ 10 million). These are for needed Project items not covered by the above IBRD/Government joint financing estimates, including (i) implementation of specified Environmental Management Plan (EMP) measures and programs, (ii) implementation of the formulated dam safety and improvement works, instrumentation and studies, (iii) paying of needed local PMU and RCC SU staff salaries, and (iv) provision of equipment, goods and facilities in support of Project development and technical assistance activities. Also projected is some additional self-financing by RCCs and farmers for procurement of RCC private assets (in the order of US$1 million). Project-financed support for items covered by these separate parallel financing provisions will primarily be in the form of technical assistance.

C. Lessons Learned and Reflected in the Project Design

51. ***I&D Improvements and Institutional Development.*** Rehabilitation and modernization component activities were developed using experiences gained during IDIP-1 and WRMLIP. Principles that influenced Project design include the following:

- Avoid potential undermining of the value of investments in inter-farm and on-farm systems by improving also the main off-farm irrigation conveyance and main drainage systems;
- Use a rational approach to define boundaries between on-farm and off-farm works, which was not possible at the start of IDIP-1. Since all farms are now privatized, systems ownership is clearer, permitting the formulation of suitable cost-recovery/sharing arrangements;
- Use a participatory approach so that farmers, through RCCs, identify their needs and influence the rehabilitation agenda resources allocation, decision-making, implementation and monitoring. At all Project stages, decisions on priorities, works required, and scale of investments must be discussed with farmers. It is therefore essential to maintain close collaboration with RCCs throughout the rehabilitation process — surveys, design, procurement, construction and transfer of responsibilities for completed works;
- Include sustainable interventions to address the underlying causes of infrastructure deterioration, so as to sustain the benefits of infrastructure restoration. Establish arrangements for regular infrastructure maintenance, including adequate RCC budget provisions, and strengthen the involved institutions in water management, systems MOM, FM and institutional administration.

52. ***Agriculture.*** A major lesson learned from IDIP-1 and WRMLIP is that system rehabilitation must be integral to the overall agricultural production process, and that wider support for agricultural development should be an integral element of the Project, in order to realize substantial productivity gains on the rehabilitated lands. Also recommended was prioritizing smaller farms and higher population densities, so as to extend Project benefits to greater numbers of farmers. A coherent integrated approach must be adopted that includes facilitating improved cropping practices, extension/information services, training, business development and marketing. The agricultural development program design and implementation will address these issues with emphasis on smallholders, and will incorporate and adopt relevant lessons from the recently closed Agricultural Post-Privatization Assistance Project (APPAP) and Agricultural Competitiveness Project (ACP).

53. ***Mechanization.*** Another identified priority was access to machinery by farmers of rehabilitated schemes. However, farmers must first improve their organizational capacity, and become familiar with modified cropping patterns and new production systems, before they can make informed decisions on types and quality of machinery to purchase. Secondly, farmers must have better capacity to access existing financial instruments before they can improve their scheme and farm machinery stocks. Therefore, IDIP-2 will study and help to pilot machinery and equipment needs, usage and options in the Project SPAs, and will thereby create conditions for farmers to be able to make informed choices about machinery, equipment and finance

arrangements to be implemented under the second project (i.e. IDIP-3). In the unlikely event that this second project does not materialize in a timely manner, the Government and the Bank will consider reallocating Project funds to machinery and equipment on the basis of IDIP-2 study and experience results. Also, IDIP-2 will provide advisory activities to ensure that interested farmers can access existing finance facilities (including KazAgro Finance and Agrarian Credit Corporation).

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

54. The Project implementing agency will be the MOEP, and the day-to-day management and implementation activities will be undertaken by the CWR under the MOEP, which was the implementing agency for IDIP-1 and Syr Darya Control and Northern Aral Sea (SYNAS) Phase I Project and is implementing other World Bank-funded projects including the Nura River Clean-up Project. The CWR, which is responsible for the country's overall water sector, has considerable experience with implementation of internationally-financed projects. Day-to-day project management and implementation responsibilities will be assumed by the CWR's PMU, which will have offices in Astana and Shymkent.

55. The CWR PMU in Astana, headed by a Deputy Project Coordinator, will work out of the CWR head office and will deal especially with Project fiduciary needs (procurement and FM) and with the Government agencies, especially the Ministry of Finance (MOF). Procurement and FM teams will also serve other projects under CWR implementation. At least one experienced irrigation/hydraulics engineer will be recruited to coordinate with the Government and other agencies in Astana.

56. The CWR PMU in Shymkent, headed by a Project Coordinator, will provide Project technical management support. In addition to the Project Coordinator, the core team will comprise managers for each Project component, an M&E specialist and an environmental specialist. The Project Coordinator will have overall responsibility for day-to-day Project implementation and managing Project staff. The component managers will ensure that all tasks are implemented according to agreed work plans, and will supervise consultants, monitor financial and technical inputs and outputs, and contribute to progress reports. Managers must liaise with several agencies involved in Project implementation; each such agency will appoint a part-time coordinator counterpart liaison. The PMU M&E staff will establish a Project M&E system that will allow CWR and others to track Project progress and promptly identify any constraints. The PMU environmental specialist will monitor and report on implementation of the framework EMP and the site-specific environmental assessments (EAs).

57. An engineering specialist, an institutional specialist, and an agricultural specialist will be appointed to the PMU in each of the four Project oblasts to provide day-to-day Project coordination in the oblasts and continuous feedback to the PMU in Shymkent.

58. Shymkent will be the central office for the consultants, including the engineering design and construction supervision team (Component 1), the institutional development team charged with developing and training SUs and RCCs (Component 2), and the agricultural development

team charged with farmers' participatory training and demonstrations and with the set up and running of the FSCs (Component 3). To cover the 10 widely separated SPAs it is anticipated that the consultants will have local offices in each oblast.

59. More complete details on Project management and administration arrangements are provided in Annex 3, Implementation Arrangements.

B. Results Monitoring and Evaluation

60. The CWR and its PMU have direct responsibility for Project M&E activities, contracting out these functions when needed. Project implementation activities, progress and achievements will be reviewed continuously and systematically. The M&E activities are to: (i) measure inputs and outputs, including PDO and intermediate result indicator values and undertake initial baseline and final impact assessment survey (see Annex 1); (ii) provide progress reports and facilitate reporting to the Government and the Bank; (iii) alert Project management to actual or potential implementation problems so that timely adjustments can be made; (iv) evaluate beneficiary responses to the Project; and (v) provide a feedback loop for the PMU to reflect on and improve its performance.

61. The M&E results will be presented in quarterly progress reports on rehabilitation works, institutional and agricultural development and training activities, studies, and project performance and result indicators, and in Financial Management Reports (FMR). The reports will include issues identified during Project implementation, and actions to resolve issues that affect progress. The fourth quarterly report will be an annual report detailing progress and including an approved annual work plan and budget for the following year. Further details on Project M&E arrangements are included in Annex 3, Implementation Arrangements.

C. Sustainability

62. Adequate funding of MOM of I&D systems remains a substantial risk in Kazakhstan due to limited Government budgetary allocations and low ISF levels. To be sustainable, the irrigation sub-sector must have sufficient funding for infrastructure MOM. The Project will strive to ensure that ISFs are set based on actual system needs on a scheme-by-scheme basis. After actual MOM costs are known on a system-by-system basis, a methodology can be devised to phase in a system of user payment for irrigation services. The Government may be overestimating users' ability and willingness to pay. Generally the ISF at present is a small percentage of variable agricultural production costs, so a gradual increase in ISF would be possible, certainly as agriculture becomes more profitable. A social assessment revealed that most farmers are willing to pay if they get satisfactory irrigation service. The key to payment cooperation is involving end-users in participatory planning and empowering them to make financial decisions. Also, service provider collection and use of funds must be transparent and accountable. Finally, Government officials, parliamentarians, and other decision and opinion makers must be willing to fully support the user-pays principle, and the gradual implementation of ISF increases. The Project will address all these issues.

63. Under IDIP-1 and WRMLIP the capital cost repayment level was set at 70 percent. This was deemed to be excessive where the Project objective is sustainable MOM following

rehabilitation. Following I&D system rehabilitation under IDIP-2, water users face two key financial challenges, namely (i) ISF payments to cover continuous ongoing costs of MOM of I&D systems; and (ii) payments of amortization costs to share in the financing of future rehabilitation or replacement of physical I&D systems infrastructure.

64. The ISF for MOM of the I&D system is to be charged annually and may also include an additional fixed percentage for amounts to be saved for build-up of an Emergency Repair Fund to serve as the users' share of future rehabilitation or replacement costs.

65. Before deciding on this cost recovery approach and level for IDIP-2, three options were analyzed as part of Project appraisal:

- Option 1. Water users pay back a portion of capital costs for rehabilitation works, and collect an ISF that covers the annual MOM costs plus a surplus to be banked for future infrastructure replacement costs;
- Option 2. The Government covers rehabilitation works costs and water users collect an ISF that covers annual MOM costs (including those for the main I&D system) plus a surplus to be banked for future infrastructure replacement costs (only for RCCs inter- and on-farm I&D systems); and
- Option 3. The Government covers rehabilitation works costs and water users collect an ISF that covers the annual MOM costs only while relying on the Government to cover future infrastructure replacement costs (possibly through another rehabilitation project).

66. The second option has been selected as the most appropriate and realistic means of achieving asset sustainability and farmer commitment aligned with the PIDM concept, whereby end-users will gradually become responsible for all future recurrent costs of inter- and on-farm I&D infrastructures[11]. This option is also forward–looking and focuses on charging and collecting sufficient funds for adequate O&M of the I&D system plus an additional levy to go towards future capital replacement costs for the inter- and on-farm I&D systems as system components reach the end of their useful life. Under the PIDM concept, water users see the set-aside fund as a future benefit rather than as a penalty for past failures, such as poor I&D system maintenance, that are often not their fault. The basic focus is therefore on recovery of full MOM costs at on-farm level. In addition RCCs would deposit a fixed percentage of their annual O&M costs into a separate reserve emergency fund to be available to cover costs of future rehabilitation and emergency repairs of their inter- and on-farm I&D systems. Also, to assess and secure farmer commitment towards scheme rehabilitation and the PIDM concept, the Project would seek an upfront cash contribution from farmers (e.g. up to 5.0 percent of the estimated inter- and on-farm rehabilitation cost) to be held in a joint bank account, the proceeds of which would be used to purchase RCC office furniture and equipment after the rehabilitation works are complete.

[11] These are on-farm (i.e. tertiary) and small inter-farm (i.e. small secondary) canals within an RCC command, which represent about 55% to 65% of all I&D works values across the 10 SPAs. The remaining 35% to 45% of the works values are inter-farm works (i.e. big secondary canals and VDWs), which are state/publicly owned. Following a recent ownership-transfer process, all I&D infrastructure have become state/publicly owned (see paragraph 90).

67. A farm-level analysis, presented in Annex 7, Economic and Financial Analysis, projected the impact on farm incomes of various service fee levels, using as indicators the fees as percentages of post-Project gross farm output and incremental net farm revenue. From the analysis, for a potentially acceptable maximum fee level, it is recommended that rehabilitation capital costs for public and semi-public assets not be recovered and that cost recovery be aimed to cover (i) full MOM recurrent costs, (ii) reasonable user contributions towards the eventual replacement cost of inter- and on-farm I&D infrastructure within the RCC command areas, and (iii) acquisition of private assets such as the RCC furniture, vehicles, and equipment. If water users make no contributions, their perception of the I&D system as Government-owned-and-run will continue and they will expect the Government to continue to pay for MOM costs and future rehabilitation. However, if water users agree to pay full MOM costs plus part of the replacement costs, they will be more committed to appropriate rehabilitation works, monitoring the scope and quality of the works during construction, and caring for the system after completion of the works. The Project will therefore focus on building up MOM cost recovery to full and sustainable levels over the first 3 to 5 years following completion of rehabilitation works.

68. A key factor to ensure adequate fee recovery is the formation of effective RCCs, financial autonomy for the RCCs, farmers' involvement in decision-making, RCCs employing skilled technical personnel who can deliver high quality services, and use by both RCCs and the CWR/RSEs of simple, transparent and accountable systems for assessment, billing, collection and use of ISFs. This would lead to the virtuous cycle of improvements in I&D service delivery, crop production, farmer income, and ability and willingness to pay. However, once decided on, cost-recovery requirements will need a well-designed communications program to ensure that all water users understand their benefits and obligations—including a repayment schedule to ensure maximum transparency in the contractual agreement between water users and water system service providers.

69. Existing levels of fee recovery also leave the main system and inter-farm service providers under-funded and unable to adequately operate and maintain the higher-order I&D systems. Unless more funding is found to rectify this shortfall, systems scheduled for rehabilitation under IDIP-2 could require rehabilitation again in only 10-15 years. Therefore, the Project will support the main system service providers to improve their level of service and to increase the fee recovery to sustainable levels. Improved service delivery and water management at the off-farm (main), inter-farm, on-farm, and field levels will increase agricultural productivity, thereby increasing water user ability and willingness to pay.

V. KEY RISKS AND MITIGATION MEASURES

A. Risk Ratings Summary Table

Risk	**Rating**
Stakeholder Risk	Moderate
Implementing Agency Risk	Substantial
- Capacity	Substantial
- Governance	High

Risk	Rating
Project Risk	Moderate
- Design	Moderate
- Social and Environmental	Moderate
- Program and Donor	Low
- Delivery, Monitoring and Sustainability	Substantial
Overall Implementation Risk	Substantial

B. Overall Risk Rating Explanation

70. The overall project implementation risk rating is Substantial. This arises from the overall risk ratings of the risk categories summarized in the above table and detailed further in Annex 4, Operational Risk Assessment Framework (ORAF). The highest risk is governance and procurement related (as explained in Annex 4 and indicated in the above Summary Table). The basis for perceived prospects for successful implementation would be (i) the high-felt need for I&D infrastructure rehabilitation, associated institutional strengthening for systems MOM, and consequent sustainable agricultural production enhancements, (ii) the stakeholders' familiarity with and support for previous such interventions, (iii) the corresponding sound economic indications, and (iv) the strong and well-established implementing agency with its experienced and capable PMU. Identified moderate stakeholder risks relating to potential lack of interest or commitment are well addressed by the Project's strong focus on farmer-centered development and service provision and on future systems MOM sustainability. Working against the positive implementing agency and PMU aspects are the identified high or substantial risks of poor public sector functioning, less-than-fully-satisfactory capacity in FM, and important deficiencies in public procurement processes. Project measures to counteract these include substantial institutional support and training coupled with firm imposition of procedure, process and guideline requirements and with regular and comprehensive reviews and supervision. Finally, a series of identified substantial and moderate project-related risks relate to (i) potentially inadequate availability, quality and performance of implementation partners (consultants, contractors, service providers, other agencies), (ii) possible cost overruns and funding shortfalls for implementation and MOM, and (iii) social and environmental impact and safeguard issues. Project design incorporates measures and provisions that will serve to mitigate each of these, as detailed in Annex 4.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

71. Analyses were undertaken to assess Project financial feasibility for farmers and economic feasibility for the national economy, as well as to examine aspects of cost recovery and sustainability, and of Project impact on national and local governments. Analysis was undertaken for (i) the component for rehabilitation and modernization of I&D systems, and (ii) the overall

Project. Results are summarized here below, and details are provided in Annex 7, Economic and Financial Analysis.

72. A separate economic analysis was carried out for the envisaged Component 1 civil works in each SPA; results showed expected economic internal rates of return (EIRRs) in the range of from 21 percent to 28 percent for 9 of the 10 SPAs, the outlier being 16 percent for the Akdala SPA, which could still be considered adequate. Overall, Component 1 yields net incremental benefits with an economic net present value (ENPV) of US$224 million (US$1,977 per ha), at a discount rate of 10 percent, and an EIRR of 23.8 percent. Sensitivity analysis shows that the component is moderately sensitive to variables including Project cost increases, Project benefit decreases and Project benefit delays. Individual SPA investments remain viable with Project cost increases of 20 percent (EIRR range of from 13 percent to 24 percent), Project benefit decreases of 20 percent (EIRR range of from 13 percent to 23 percent), and Project benefit delays of 2 years (EIRR range of from 12 percent to 20 percent).

73. Economic analysis for the overall Project, including for the effects of economic costs of Components 2, 3 and 4, indicates a yield of net incremental benefits with an ENPV of US$ 193 million (US$ 1,707 per ha), at a discount rate of 10 percent, and an EIRR of 22.3 percent. Sensitivity analysis again shows moderate Project sensitivity to all of the above-mentioned variables, and for the same three changes indicated above the overall Project EIRR drops to 19 percent, 19 percent and 16 percent respectively.

74. Financial analysis shows that farmers will be able to finance MOM costs through an annual ISF in the order of 11 percent of the projected gross farm revenue.

B. Technical

75. Technical sustainability will be achieved through the provision of adequate consulting services for system rehabilitation design and construction supervision. Preparation of all final design and tender documents and implementation supervision will be carried out by an internationally-led consulting firm in conjunction with local design institutes. All staff must have wide knowledge of similar works to develop an optimum modus operandi between local and international companies. Environmental sustainability will be addressed through implementing the agreed EMP to minimize any negative Project impacts.

76. Estimated unit rates for the range of anticipated Project rehabilitation works were based on recent contracts and confirmed with local contractors. In addition to the direct expenses of labor, materials and fuel, rates include contractor overheads and profits, and appropriate taxes were added to the cost estimates for each system.

77. Total rehabilitation cost estimates include a civil works physical contingency allowance of 12 percent, which should be sufficient to account for the current lack of detailed designs for most schemes and the consequent approximate nature of quantity requirement estimates. If not needed to compensate for higher-than-estimated unit prices or quantities, the allowance may serve to help meet additional high priority rehabilitation needs that may be identified during the course of the Project.

78. The agricultural development component design is in line with best international practices. It scales up and improves on the IDIP-1 pilot experience, and builds on activities and institutional arrangements pursuant to the MOA's strategies and policies. The collaborative arrangements anticipated between national research institutions and International Agricultural Research Centers (IARCs) would improve international networking and enhance the introduction of adapted modern technologies.

C. Financial Management

79. Assessment of the financial management arrangements established by the Committee of Water Resources (CWR), under the Ministry of Environmental Protection (MOEP) was conducted in November 2010, in conjunction with the FM supervision of the SYNAS-1 Project, and in August 2012, in conjunction with FM supervision of Ust-Kamenogrsk Environmental Remediation Project. The assessment was updated in April 2013 following the delayed processing of the project, and focused on arrangements for budgeting, accounting, internal control, financial reporting, auditing and staffing. The aim of the assessment was to determine the capacity of the PMU established by the CWR to provide satisfactory financial management support for the proposed Project. The Project will be implemented by the PMU within CWR that implemented the closed SYNAS-1, Nura River Clean Up Project (IBRD Loan financed activities closed in June 2011, but the counterpart financed portion is still under implementation and is expected to end in December 31, 2013), and the Kamenogorsk Environmental Remediation Project (closing Date December 2014). The PMU has established FM arrangements that have been assessed as Moderately Satisfactory (MS) mainly due to inability of the accounting system to generate Interim Financial Reports (IFR).

80. The CWR has accumulated significant experience in implementation of Bank-financed projects. However, following the closing of SYNAS-1 and the Nura River Clean-Up Project, some of the FM staff of the PMU have left. The CWR has intimated that the financial manager and accountant currently working on the SYNAS-1 Component funded by the Government would be transferred to IDIP-2 upon completion of project activities in December 2013. Also the project accounting system does not fully meet project accounting and reporting requirements, and is incapable of being upgraded to support accounting and reporting under IDIP-2. A number of actions have been proposed to strengthen the financial management arrangements. These actions include updating financial and accounting procedures in the POM, installing an automated accounting system to support project accounting and reporting requirements of the proposed Project, with capacity to generate IFRs, and hiring of at least one FM Consultant (All Effectiveness Conditions). Implementation of these actions will ensure that the FM arrangements are fully satisfactory for recording all transactions and balances, preparing financial reports and safeguarding Project assets.

81. Overall the financial management arrangements established by the CWR, including accounting, internal controls, reporting and staffing, are moderately satisfactory, mainly due to deficiencies in the accounting system and staffing capacity. The fiduciary risk is rated *Substantial* due to country and sector circumstances, and financial management arrangements that do not meet the minimum requirements of the World Bank. The project accounting and reporting system will need to be fully automated to support the full spectrum of project financial management and disbursement functions, accompanied by training to ensure staff can

proficiently use the system for accounting and reporting. The project will rely on the existing financial management arrangements established for SYNAS-1 and other projects implemented by the PMU under the CWR. However, the accounting software would need to be replaced by one that is easily adaptable to project accounting, with in-built controls and ability to track all expenditures and receipts and generate IFRs. In addition, the Project Operational Manual (POM) will be updated to incorporate activities under IDIP-2. Satisfactory implementation of the Action Plan in Annex 3 will ensure fully satisfactory financial management arrangements by effectiveness.

D. Procurement

82. ***Procurement in Accordance with World Bank Guidelines.*** Procurement for the Project will be carried out in accordance with: (i) "Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers", dated January 2011; (ii) "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers", dated January 2011; and (iii) the provisions stipulated in the Loan Agreement.

83. ***Public Procurement Environment.*** Public procurement reform in Kazakhstan began in 1996. The initial Public Procurement Law (PPL) was first enacted in June 1997. A new PPL was introduced on July 21, 2007 (No. 303-III) and put into force from January 1, 2008. Several amendments were introduced. The current/applicable PPL is dated July 2007 with amendments on January 13, 2012.The procurement system in Kazakhstan is highly decentralized, with some centralized planning and oversight. The Government has been consistently adjusting the public procurement system to align it with the improvements and changes in the overall market economy system. However, the June 2009 Public Expenditure and Financial Accountability Framework (PEFA) report identified the following deficiencies in the implementation of the PPL: (a) excessive use of less competitive procurement methods; (b) excessive use of single-source procurement; and (c) perception of non-independence of the complaint handling system.

84. ***Procurement Risk.*** **The overall procurement risk rating for the project is High.** This risk rating is based on experience from past and ongoing World-Bank-financed projects in Kazakhstan, general public procurement environment and current capacity of CWR in handling the procurement. To mitigate the risk, an experienced procurement specialist who is familiar with the World Bank procurement procedures will be hired in the PMU. The World Bank's procurement staff based in country office will provide advice and assistance on a regular basis. The procurement packages will be carefully prepared in order to foster competition, wide and advance advertising will be carried out, and proactive search and contact of potential contractors, suppliers and consultants will be ensured. The initial procurement plan covering the entire project period was developed by the CWR. Details on project procurement assessment and arrangements are presented in Annex 3, Implementation Arrangements.

E. Social (including safeguards and gender)

85. ***Project Stakeholders.*** Project stakeholders include individual farmers, farmers' organizations, and public, private and civil society organizations involved in agriculture, agro business, and water management. Stakeholders also include the CWR, RSE, CSEs, local

governments, APCs, agro-business and agro-marketing organizations, agricultural companies, RCCs and farmers associations.

86. ***Creating Awareness.*** It is envisaged that awareness campaigns on Project activities, benefits, and obligations will be carried out for all shareholders, including all water users so that they fully understand the type, extent, costs and anticipated benefits of the rehabilitation works in their command areas, since they are being asked to formally agree to the proposed works and costs.

87. ***Ability and Willingness of Water Users to Pay.*** The local-level CWR administrations estimate that existing expenditure on main systems O&M is 4-5 times lower than the amount needed to properly operate and maintain the systems. To address this issue, it is envisaged that water users will gradually become responsible for the payment of the full MOM costs through the payment of higher ISFs to be collected by their RCCs. The financial analysis shows that farmers will be financially able to pay for the full MOM costs, which is estimated to be 11 percent of the projected gross farm revenue. However, the financial ability of farmers to pay higher ISFs largely depends upon (i) the ability of the RCCs to supply irrigation water to all water users in an adequate and timely manner, and (ii) the ability of water users to grow (more) profitable crops and have higher yields. Therefore, the Project will undertake activities to ensure efficient water management and sustainable MOM of all on-farm I&D systems through capacity building of all RCCs (Component 2) as well as implementation of a comprehensive agricultural development program (Component 3). To ensure water users' willingness to pay (higher) ISFs, a key Project activity is using a participatory approach to mobilize and actively involve water users (through their RCCs) in decision making related to planning, design and implementation of all envisaged Project activities, including setting investment priorities.

88. ***Social Assessment and Safeguards.*** Social Assessment findings and issues, and Project approaches and arrangements for ensuring and achieving social and community protection and enhancement, are further detailed in Annex 3, Implementation Arrangements, while specific safeguard aspects are discussed below in conjunction with environmental and other safeguards.

89. ***Strengthening Participation of Women.*** The Project will encourage the active participation of women in all envisaged Project activities through the social mobilization activities of Component 2. It will dedicate separate sessions for women, aiming at increasing their roles in, and equal access to, Project activities and benefits throughout the subproject cycle, including those of RCC membership, administration and decision-making and of agricultural production improvement interventions. Women's involvement in the Project will be monitored as a supplementary indicator of the PDO Core Indicators on direct beneficiaries and on received farmer training.

90. By mid CY2012, the Government transferred the ownership of the semiprivate/community-owned I&D infrastructure (e.g. tertiary or secondary canals within the RCC command) to Oblast and State records (CWR records), in order to legitimize spending public funds on these assets (as per a new Government public financing law). The transfer process was participatory (through conducting public meetings) and overseen by Oblast courts. Farmers/RCC members had the option not to transfer the infrastructure to the Government, which however meant that they would not benefit from public funding through the Project (to

rehabilitate/modernize such infrastructure and receive CWR technical backstopping on how to operate and maintain them). As the Project will only finance I&D infrastructure that have been voluntarily transferred to the Government, World Bank OP4.12 is not triggered. Consistent with the "opt-out" option adopted during the transfer process, the POM will provide specific screening criteria and a grievance redress mechanism to identify and exclude any sites (e.g. a tertiary/secondary canal within a given SPA) where there is evidence of involuntary transfer or unresolved issues relating to the transfer.

F. Environmental (including safeguards)

91. The IDIP-2 has been classified as Category "B" under OP 4.01 on Environmental Assessment; it is anticipated that the Project will not involve any significant or irreversible adverse environmental impacts. The Project will not construct new irrigation systems, resettle people, or acquire land. It is expected that potential adverse environmental impacts will be prevented or minimized using measures identified in the framework EMP during Project preparation. Site-specific EA measures and programs are to be implemented by CWR under separate but parallel Government financing arrangements supplemented by project-financed provisions primarily for technical assistance support (see Section IIIB above).

92. The Framework Environmental Management Plan (Framework EMP) for IDIP-2, prepared by CWR in late CY2007 and disclosed in July 2008, reflected lessons learned from IDIP-1 and includes guidelines for regular monitoring and measuring. For each SPA, a site-specific EA will be carried out, including an Environmental Impact Assessment and Environmental Management Plan. No resettlement will take place under the Project.

93. The overall Project environmental impact is expected to be positive, without significant, irreversible, cumulative, or long-term adverse impacts. Rehabilitation and modernization of selected I&D systems will create environmental benefits by improving irrigation water management, decreasing water losses, and reducing soil alkalinity, salinity, and water-logging. Furthermore, Project proposed support to strengthen environmental monitoring and analysis will improve CWR's overall ability to monitor the environmental impacts of Project interventions and take appropriate action. Potential adverse environmental impacts include higher levels of agrochemical pollution and water contamination from increased use of fertilizers and pesticides, soil erosion associated with existing practices of irrigation and agricultural production, and environmental impacts from construction activities, including improper disposal of excavated sediments from canals.

94. The Framework EMP recommended several broad preventive actions and mitigation measures to address potential adverse environmental impacts; these include: (i) technical assistance, training and workshops on the approach to be followed and requirements for implementing the Framework EMP; (ii) laboratory and field equipment support to the organizations entrusted with implementing the Framework EMP; (iii) public outreach/awareness campaigns; (iv) environmental monitoring and analysis (including sampling, laboratory testing, and reporting) for all I&D systems to be undertaken by established local organizations; and (v) enforcement of environmental clauses to address construction-related impacts in construction contracts for civil works. Overall, the environmental benefits of Project interventions are expected to outweigh potential adverse impacts.

95. A major international TA consulting firm will be hired by CWR to assist with detail design, supervision and EAs/EMPs for the SPA infrastructure developments and with the corresponding dam safety plans and improvement interventions. The cost of implementing the Framework EMP is estimated at US$4m, financed as follows: (i) TA/studies (10 SPA-specific EA/EMPs for all 10 IDIP-2 SPAs, and 6 Site-specific Dam Safety Plans including safety assessments/updates for 5 IDIP-2 SPAs), training and some monitoring equipment, totaling about US$1.5m, financed by IDIP-2 budget; and (ii) dam safety equipment/works as needed (i.e. as determined from the 6 Site-specific Dam Safety Plans), and additional water-quality monitoring equipment, estimated at a total of US$2.5m, financed in parallel by the Government. The canal-level and land/soil-level water-quality monitoring is currently performed by two pertinent monitoring units, in the MOEP/CWR and MOA respectively, and this is expected to continue over the course of the Project. Details on Project environmental and social management and safeguard arrangements are included in Annex 3, Implementation Arrangements.

G. Other Safeguard Policies Triggered

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment (OP/BP 4.01)	[X]	[ ]
Natural Habitats (OP/BP 4.04)	[ ]	[X]
Pest Management (OP 4.09)	[X]	[ ]
Physical Cultural Resources (OP/BP 4.11)	[ ]	[X]
Involuntary Resettlement (OP/BP 4.12)	[ ]	[X]
Indigenous Peoples (OP/BP 4.10)	[ ]	[X]
Forests (OP/BP 4.36)	[ ]	[X]
Safety of Dams (OP/BP 4.37)	[X]	[ ]
Projects in Disputed Areas (OP/BP 7.60)*	[ ]	[X]
Projects on International Waterways (OP/BP 7.50)	[X]	[ ]

96. The Framework EMP carried out during Project preparation confirmed that the safeguard policies related to Pest Management, Safety of Dams, and Projects on International Waterways, are triggered.

97. ***Pest Management.*** Farmers use agro-chemicals in the SPAs, particularly in cotton-growing areas, but pesticide and fertilizer use is relatively low due to poor economic conditions. However, improved water availability at field level may give farmers more confidence resulting in increased use of fertilizer and pesticides. A separate pest management plan was not required because the Framework EMP provides mitigation measures for improper pest management, e.g. pest management and integrated pest management (IPM) promotion in farmer capacity training.

98. ***Safety of Dams.*** Some of the SPA irrigation systems are linked to or served from dams and river structures, almost all of which were identified and assessed for safety and performance during Project preparation. Interventions are required to ensure that they will function as planned and present no threat to areas downstream. The approach to effecting these is as described above (Section IIIA, Component 1) and in Annex 2, Detailed Project Description.

By supporting the proposed Project, the Bank intends no prejudice to final determination of parties' claims on disputed areas.

99. ***Projects on International Waterways.*** Most SPAs involve irrigation systems that draw water from rivers that are international waterways shared by Kazakhstan with neighboring Kyrgyzstan (upper riparian) and Uzbekistan (both upper and lower riparian). The Project will not enlarge existing irrigation systems or develop new irrigation areas, therefore, Project interventions are not expected to adversely affect the quality or quantity of water flows to the downstream riparian state (Uzbekistan is a riparian country as it shares the Aral Sea with Kazakhstan). Also, any potential changes in water flow or deterioration in water quality during the construction works will be mitigated through the Framework-EMP implementation. Rehabilitation and modernization of infrastructure and improvements in water management should increase system efficiency, generate water savings and provide reliable water supply to users. Therefore, the Project is exempt from the notification requirement in this safeguard policy. Approval for this exemption was received from the Regional Vice President on April 7, 2008 (which has been updated by a subsequent, supplemental approval received on March 19, 2013).

H. Conditionalities

Effectiveness conditions:

1. The Operational Manual has been adopted by the Borrower in a manner satisfactory to the Bank[12].

2. The PMU has been established by the Borrower, within the CWR, with composition, resources and terms of reference satisfactory to the Bank, including the selection of a financial management specialist and a disbursement specialist.

3. The Borrower has signed a contract, with terms of reference satisfactory to the Bank, for the installation of a fully automated project accounting system capable of generating interim unaudited financial reports.

Disbursement conditions:

For the Site for which withdrawal for expenditures has been submitted, an EA and, if applicable, a Site-specific Dam Safety Plan, verifying that all required dam safety interventions have been undertaken by the Borrower, have been prepared, satisfactory to the Bank[13].

[12] The Project Operational Manual has been drafted, but needs to be updated by including a Chart of Accounts.
[13] The dam safety disbursement conditions are applicable to only 5 out of the total of 10 IDIP-2 SPAs.

Annex 1: Results Framework and Monitoring

KAZAKHSTAN: Second Irrigation and Drainage Improvement Project

Project Development Objectives

PDO Statement

The Project development objective is to improve irrigation and drainage service delivery to support farmers in the Project areas. This will be achieved through rehabilitation and modernization of irrigation and drainage systems; improved management, operation and maintenance of these systems; and more efficient use of associated irrigated lands; all with improved participation of users in developing and managing the rehabilitated / modernized systems.

These results are at

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			
Water users provided with new/improved irrigation and drainage services (number)	Yes	Number	0	0	0	48000	75000	90000	120000	120000	Annual	Field visits, baseline and impact assessment surveys	PMU supported by M&E consultants
Water users provided with irrigation and drainage services - female (number)	Yes	Number Sub-Type Breakdown	0	0	0	16000	25000	30000	40000	40000	Annual	Field visits, baseline and impact assessment surveys	PMU supported by M&E consultants
Area provided with irrigation and	Yes	Hectare (Ha)	0	0	0	40000	60000	80000	10000	100000	Annual	Field visits, baseline and impact	PMU supported by M&E

drainage services - Improved (ha)		Sub-Type Breakdown										assessment surveys	consultants

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			
Number of Subprojects where detailed designs and EAs/EMPs are prepared (Component 1, supported by Components 2 and 3)		Number	0	3	6	9	10	10	10	10	Annual	Baseline and impact assessment surveys	PMU supported by M&E consultants
Incremental irrigation-water added (Component 1)		Cubic Meter (m3)	0	0	30 million	150 million	330 million	570 million	870 million	870 million	Annual	Baseline and impact assessment surveys. Volumetric metering or desk-based method	PMU supported by M&E consultants
Operational water user associations created and/or strengthened (number)	Yes	Number	0	0	10	20	30	35	35	35	Annual	Field visits, baseline and impact assessment surveys	PMU supported by M&E consultants
Client[14] days of training provided (number)	Yes	Number	0	270	4500	9000	13000	18000	21000	24000	Annual	Field visits, baseline and impact assessment surveys	PMU supported by M&E consultants
Client days of training provided - Female	Yes	Number Sub-	0	90	1500	3000	4000	6000	7000	8000	Annual	Field visits, baseline and	PMU supported by M&E

[14] World Bank OPCS Guidance on "clients": Includes scientists, extension agents, agro-dealers, farmers, community members, business owners, etc, to be defined by the project.

(number)		Type Break-down										impact assessment surveys	consultants
Number of Subprojects where "Water Information and Communication Technology" (e.g. Remote Sensing, GIS modeling) is developed to help modernize Subproject performance (Component 2)		Number	0	0	0	2	3	4	5	5	Annual	Field visits, baseline and impact assessment surveys	PMU supported by M&E consultants
Local government units strengthened (via establishing Rural Support Units and Farmer Support Centers) to provide irrigation and agronomic advisory services (Components 2 and 3)		Number	0	5	15	20	20	20	20	20	Annual	Field visits, baseline and impact assessment surveys	PMU supported by M&E consultants

Annex 1 (cont'd): Results Framework and Monitoring

KAZAKHSTAN: Second Irrigation and Drainage Improvement Project

Results Framework

Project Development Objective Indicators	
Indicator Name	Description (indicator definition etc.)
Water users provided with new/improved irrigation and drainage services (number)	This indicator measures the number of water users who are provided with irrigation and drainage services under the project.
Water users provided with irrigation and drainage services - female (number)	This indicator measures the number of female water users who are provided with irrigation and drainage services under the project.
Area provided with irrigation and drainage services - Improved (ha)	This indicator measures the total improved area of land provided with irrigation and drainage services under the project, including in (i) the improved area provided with new irrigation and drainage services, and (ii) the improved area provided with improved irrigation and drainage services, expressed in hectare (ha).

Intermediate Results Indicators	
Indicator Name	Description (indicator definition etc.)
Number of Subprojects where detailed designs and EAs/EMPs are prepared (Component 1, supported by Components 2 and 3)	Funded mainly by Component 1 (design TA) but facilitated by the participatory approach introduced and funded by Component 2.
Incremental irrigation-water added (Component 1)	Monitored physically by flow meters or estimated desk-based by correlating the increased yield to the increased water (through yield-response functions such as from FAO33 or FAO56).

Operational water user associations created and/or strengthened (number)	This indicator measures the number of water user associations created and/or strengthened under the project that are operational.
Client days of training provided (number)	This indicator measures the number of client days of training provided i.e. the number of clients who completed training multiplied by the duration of training expressed in days.
Client days of training provided - Female (number)	This indicator measures the number of female client days of training provided i.e. the number of female clients who completed training multiplied by the duration of training expressed in days.
Number of Subprojects where "Water Information and Communication Technology" (e.g. Remote Sensing, GIS modeling) is developed to help modernize Subproject performance (Component 2)	This infers an important subcomponent of Component 2 which introduces low-cost modern approaches to off-farm and on-farm water management.
Local government units strengthened (via establishing Rural Support Units and Farmer Support Centers) to provide irrigation and agronomic advisory services (Components 2 and 3)	The RSUs and FSCs (as part of the project-wide TA) would probably be housed in the same premises of CWR/KVK raion-level offices (10to 12 offices). The target number here expresses the total number of thematic units where the mandate of RSUs (10-12 units) is distinct from that of a FSC (9-10 units), not the number of physical units.

Annex 2: Detailed Project Description

KAZAKHSTAN: Second Irrigation and Drainage Improvement Project

Component 1: Rehabilitation and Modernization of I&D Systems Infrastructure

100. ***Scheme Locations, Command Areas and Infrastructure Improvements.*** In the case of IDIP-1, the Project area was spread across the entire country, which made Project implementation management difficult and overhead costs high. Building on this and other experiences and lessons learned during IDIP-1, the recommended IDIP-2 area is more compact and focuses on areas with the most favorable agro-climatic conditions, namely the southern areas in South Kazakhstan, Kyzylorda, Zhambyl and Almaty oblasts. In these areas the warmer weather and large plains provide a comparative advantage in cropping, especially for higher value crops. Related processing and manufacturing can generate employment locally. Farms are small and population density is higher, thus extending I&D rehabilitation benefits to more rural people. Acting on this recommendation, the Government delineated SPAs covering some 220,000 ha for two proposed Bank-funded Projects to extend over an overall period of about 10 years. Table 1 below shows the Projects' physical rehabilitation component program. I&D infrastructure rehabilitation will be carried out for about 113,000 ha served by 10 systems under the first project (IDIP-2) and for about 107,000 ha served by 7 systems under the second project (IDIP-3).

Table 1: Program for implementation of physical rehabilitation components

Oblast	Raion	Ref. No.	Sub Project Area (SPA)	Total Projects area (ha)	IDIP-2 area (ha)	IDIP-3 area (ha)
South Kazakhstan	Makhtaaral	1	Makhtaaral-I	24,447	24,447	0
	Makhtaaral	1	Makhtaaral-II	15,310	15,310	0
	Shardara, Arys	2	Kyzylkum-I[8]	74,000	20,630	53,370
	Turkestan	3	Arys Turkestan-I	26,000	10,000	16,000
Kyzylorda	Zhalagash, Syr Darya	4	Kyzylorda-I	30,000	15,123	14,877
Zhambyl	Baizakh	5	Utemis	4,967	0	4,967
	Shu	6	PMK (Tasotkel)	5,172	5,172	0
	Zhambyl	7	Kapal	5,000	5,000	0
	Merke	8	Big ShuCanal (BSC)	5,000	0	5,000
	Kordai	9	GMC	5,000	5,000	0
Almaty	Talgar	10	Malai-Sarinsky	2,481	2,481	0
	Balhash	11	Akdala	5,000	5,000	0
	Taldykurgan	12	Karatal	5,006	0	5,006
	Enbekshikazakh	13	BAC-I	12,520	5,000	7,520
Total areas				**219,903**	**113,163**	**106,740**
Total numbers of systems				**13**	**10**	**7**

101. ***Sub-component 1.A. Rehabilitation and Modernization of Existing I&D Infrastructure.***

102. The component will support rehabilitation and modernization of I&D infrastructure through works and technical assistance. During the final design stage of Project implementation, design consultants, in close consultation with RCCs and farmers, will determine details of proposed interventions suitable for local farming methods. The component aims to upgrade and modernize as much of the existing networks as possible to increase timely and adequate water supply to the farmers, improve water management at all levels, and ensure adequate drainage of excess water and control of groundwater tables.

103. Typical problems in the schemes under consideration include:

- Collapsed or damaged off-take and in-canal structures;
- Overgrown and silted irrigation canals and drainage channels;
- Damaged or collapsed concrete canal lining;
- Damaged or collapsed canalettes (elevated parabolic flumes);
- Damaged or inoperable VDWs;
- Damaged, missing or inoperable control gates;
- Vandalized electrical systems, especially at major structures and VDWs control gates;
- Eroded upstream and downstream protection works and aprons at diversion weirs.

104. Assistance to I&D development aims to supply agricultural lands with adequate quantities of irrigation water in a timely manner and to remove excess water to reduce water table build up and salinity. Support for rehabilitation will cover both off-farm and on-farm works to preclude the potential for the future failure of main conveyance and drainage networks. It is essential that the engineering work fully addresses the entire system and identifies improvements for sections that limit irrigation water supply to farms or evacuation of drainage water. The main proposed works will include the following:

(a) Repair river headworks, and main canal cross regulators, concentrating on upstream and downstream protection works and regulating gates;
(b) Improve or construct improved off-take structures from the main canals to the identified farm systems;
(c) Clean, repair or reconstruct unlined irrigation canals and drainage channels to restore needed design capacities;
(d) Construct lining at locations where high seepage losses have been identified;
(e) Repair or replace concrete lining, using either precast flumes (canalettes), precast vertical or inclined slabs, or cast-in-situ concrete;
(f) Repair, replace or construct canal structures, including cross regulators, off-takes, and division boxes;
(g) Repair or replace VDWs, using lessons from IDIP-1implementation;
(h) Level land to improve water use within irrigated blocks. Many scheme areas will also need some degree of land preparation and deep ploughing; and
(i) Improve measuring and calibration sites by establishing hydroposts at suitable locations, especially where water is diverted to a lower-order system; introduce automatic weather stations.

105. The completion of these works should produce the following results:

(a) More reliable flows to the irrigated farms with sufficient unit flows to meet peak irrigation and leaching requirements;
(b) Reduced conveyance losses and seepage from canals and reduced leakage from structures;
(c) Better overall on-farm water management, with reduced operational losses;
(d) Increased water availability sufficient to reclaim formerly irrigated lands and bring them back under irrigation; and
(e) Implementation of a preventative O&M program to reduce deferred maintenance and to better manage the I&D infrastructure.

106. ***Sub-component 1.B. Design and Supervision of the rehabilitation and modernization of I&D Infrastructure, and Dam Safety Plans.***

107. This Sub-component will provide technical assistance for the design and supervision associated with the rehabilitation and modernization of irrigation and drainage infrastructure, including preparing Site-specific Dam Safety Plans.

108. ***Irrigation Area Site-specific Dam Safety Plan.*** Interventions are required to ensure that dams that supply water to some of the SPAs function well and present no threat to downstream areas. Conservation and management of large dams and associated reservoirs in Kazakhstan falls under the responsibility of CWR. For the IDIP-2 area, at least five dams and one large weir serve a total of five of the Project SPAs. Under IDIP-2, Site-specific Dam Safety Plans (including safety assessments) for five of the six structures will be updated, to take stock of rehabilitation and other improvements that have been completed to date. A Site-specific Dam Safety Plan will undertake a dam safety assessment for the sixth structure[15].

109. First-stage priority investigations and other TA described in Table 2 below under 'Priority 1', modified as appropriate to accord with findings from the six Site-specific Dam Safety Plans completed in 2007, will be undertaken under IDIP-2. Any works, goods or equipment for dam safety interventions will be financed by the Government under parallel financing. The identified 'Priority 2' items will also be investigated under IDIP-2, but the corresponding actual works including any needed major dam repairs or upgrading is planned to be undertaken under the proposed follow-up project (i.e. IDIP-3). In addition, the first stage under IDIP-2 will include studies/updates covering all of the identified dams to (i) check the hydrology and dam capacity for passage of extreme floods, (ii) investigate seismic hazard and dam seismic stability, and (iii) determine safety procedures and emergency preparedness.

[15] A pre-project assessment of the Kapchagay dam was precluded due to security restrictions on access to the site. Based on indications provided by CWR officials, the dam is a multi-purpose dam of high importance in a supposedly good state of repair and operational security. Therefore, pending the assessment to be undertaken at project commencement, it was assumed that there would be no high-priority physical improvement needs at that dam to be met under IDIP-2.

Table 2: Recommended Works for Dams and Storage Reservoirs

Location	SPA	Description	PRIORITY	
			1	2
ArysRiver Diversion Weir	Arys-Turkestan	Repair gates, fix/replace mechanical and electrical control equipment, fix concrete works		
Bugun Dam	Arys-Turkestan	Geotechnical investigation; Install piezometers, settlement stations and accelerometers; Replace or repair gates and fix/replace mechanical and electrical control equipment; Clean toe drainage system; Repair downstream slope; Repair concrete facing.		
		Repair drainage system (if required); Improve dam seismic stability (if required).		
Karazhantak Dam	Arys-Turkestan	Geotechnical investigation; Install piezometers, settlement stations and accelerometers; Complete and repair the concrete channel on dam crest.		
		Repair concrete lined canal on downstream slope; Improve dam seismic stability (if required).		
Tasotkel Dam	GMC	Geotechnical investigation; Install additional piezometers, settlement stations, and accelerometers; Inspect and refurbish or replace gates and mechanical and electrical control equipment; Replace electric cabling.		
		Prevent abnormal seepage around outlet and regrade dam crest; Improve dam seismic stability (if required).		
Bartogai Dam	BAC	Provide upstream rock fill protection near crest and in other areas.		
		Modify spillway and lower maximum water level in the reservoir; Reinforce rock face adjacent to spillway (if required based on seismic stability analyses); Provide remedial measures for seepage control in the abutments (if required); Improve dam seismic stability (if required).		
Kapchagay Dam	Akdala and Malai-Sarinsky	Pending dam assessment, items remain to be determined (TBD)	TBD	TBD

110. ***Off-Farm Works.*** Main I&D systems have been affected by prolonged lack of maintenance and repair. There would be risks of further problems or system failure if the Project did not include some support for the main I&D infrastructure rehabilitation. Therefore, the Project will provide for key repairs to these parts of the I&D systems, including main canals, cross regulators, outlet structures to the secondary canals and main drainage network. Rehabilitation and modernization will facilitate proper operation of the main systems.

111. Off-farm systems are national assets, benefiting much wider areas than the selected SPAs. The costs related to MOM of these main/off-farm systems are intended to be fully recovered within 5 years after the completion of all rehabilitation/modernization works through annual charges to be paid by the RCCs to the main system operator.

112. ***Vertical Drainage Wells.*** Considerable work on the design and operation of VDWs has been undertaken under the ADB- and World Bank-funded projects in Makhtaaral. New VDWs in 2012 cost about US$100,000 each but replacing them has more benefits than rehabilitation because it reduces recurrent costs to farmers and avoids replacement in 7-8 years.

113. The main objective of VDW pumping is to lower the water table after the summer irrigation season to allow for autumn irrigation and winter rainfall to leach the soils. Pumping starts in November and continues until the end of February; some pumping also takes place from

June to the end of October, but only at about 50 percent of the winter rate. The total annual average is 2,544 pumping hours according to the estimate by the Shymkent Design Institute, and the average annual pumping cost is US$21.4 per hectare.

114. Under IDIP-1, all VDWs were handed over to water user groups for MOM. Instead, these wells, together with main canals and drains, and off-farm secondary canals and drains, are to be classified as 'off-farm' infrastructure items. VDWs under the control of RCCs and other WMOs have given less-than-optimum results because the wells are not operated both to meet farmers' crop water needs and to maintain a correct environmental balance between water table depth and salinity. First, farmers are unfamiliar with the MOM of the VDWs and the area of influence of each well. Second, many wells rehabilitated under IDIP-1 and WRMLIP are not operated efficiently because farmers cannot pay the electricity costs and do not understand how to optimize well operation, with the result that planned benefits have not been fully achieved in most areas. VDWs should be treated collectively as components of a well field because they function like a main drainage system benefiting large numbers of farms and farmers. Hence they would be better operated and maintained by the Operational Section of the RSE at raion level, or by a private company under contract to the RSE.

115. ***On-Farm Works.*** The CWR feasibility study estimates rehabilitation needs for all SPAs based on the design standards and norms of Kazakhstan derived from those adopted in the former Soviet Union, which are sufficient to provide overall estimates of the scope of works to be financed under IDIP-2. A detailed needs assessment will be carried out during preparation of final designs and tender documents under the Project, emphasizing improved cost-effective designs and modernization.[16]

116. ***Water Measuring Structures.*** Flow measurement structures and hydroposts are included in the works proposed for each SPA. Appropriate modern structures easily managed and operated by the RCCs are needed. Several suitable designs have been used in other countries in the region for structures that are simple to build and operate; these should be considered for use during the final designs for IDIP-2. The main and secondary canals should include automatic water level recorders, and their location and use should form part of a clear plan for measuring flows at intervals in both irrigation and drainage off-farm systems.

117. ***Component Costs.*** In estimating Component 1 costs, physical contingencies have been included at around 12 percent; experiences during IDIP-1 confirmed the need to include contingencies at a relatively high rate to cover variations resulting from detail designs. Estimate rates for final design, supervision and contract administration, shown in Table 3, have been based on the Government norms, adjusted somewhat for implementation by an international/national consultants' consortium.

[16] Experienced international consultants and teams of national consultants will be involved in the preparation of realistic and cost-effective rehabilitation and modernization proposals for the on-farm I&D systems, as well as for the off-farm and other Component 1 infrastructure systems.

Table 3: Adopted Estimate Rates for Design, Supervision and Administration

Description	Estimate Rate (% of Total Base Cost)
Design	2.5
Supervision	2.0
Contract Administration (Government, Construction Expertise, etc.).	0.5

118. Indicative estimated costs for rehabilitation and modernization of the off-farm and on-farm I&D systems under IDIP-2, excluding price contingencies, amount to about US$273 million as shown in Table 4 below. The average unit area base cost estimate is US$1,837/ha (range from US$1,252/ha to US$2,762/ha), while the total inclusive unit area cost estimate average is US$2,411/ha. This average cost per hectare compares well with completed costs for IDIP-1 (US$2,383/ha).

119. Cost increases under IDIP-1 occurred on half of the contracts due to variations in scope of work. Overall civil works costs for IDIP-1 increased by about 11 percent, excluding price contingencies. Thus the proposed contingency rate of around 12 percent of the base cost for civil works proposed for IDIP-2 seems reasonable. However, to ensure that significant cost overruns do not occur, the consultant team fielded for the final design works and supervision should be highly experienced with such works. Budgets derived for each SPA must be treated as the overall envelope within which the scope of works should be refined at the time of detail design. Under IDIP-2 this approach should yield desired results if the adjustment of the scope of works and development of the overall cost estimates receive regular scrutiny as the Project proceeds.

Table 4: Indicative Estimated Costs of I&D System Civil Works

Oblast	Sub-Project Area (SPA) Reference Number and Name*		Area (ha)**	Base Rehabilitation Cost Estimate (US$)	Base Cost per ha (US$)	Total Rehabilitation Cost Estimate (US$)	Total Cost per ha(US$)
South Kazakhstan	1	Makhtaaral-I***	24,447	46,164,846	1,888	60,601,055	2,479
	1	Makhtaaral-II***	15,310	29,361,069	1,918	38,542,568	2,517
	2	Kyzylkum-I	20,630	43,312,332	2,099	56,856,531	2,756
	3	Arys Turkestan-I	10,000	19,788,402	1,979	25,976,434	2,598
Kyzylorda	4	Kyzylorda-I	15,123	19,043,207	1,259	24,998,208	1,653
Zhambyl	5	PMK (Tasotkel)	5,172	9,568,190	1,850	12,560,259	2,429
	6	Kapal	5,000	6,261,512	1,252	8,219,549	1,644
	7	GMC	5,000	6,999,535	1,400	9,188,360	1,838
Almaty	8	Malai-Sarinsky	2,481	3,886,916	1,567	5,102,394	2,057
	9	Akdala	5,000	9,681,825	1,936	12,709,429	2,542
	10	BAC-I	5,000	13,809,824	2,762	18,128,295	3,626
Total Base Costs for all SPAs (including overhead and profit)			**113,163**	**207,877,659**	**1,837**		
Design, Supervision & Administration			5%	10,393,883			
Value Added Tax (VAT)			12%	26,192,585			
Physical Contingencies****			12%	28,418,955			

Overall Total Cost for all SPAs (excluding price contingencies)*****	**113,163**	**272,883,081**	**2,411**	**272,883,081**	**2,411**

* Names correspond to those used in SMEC FS contract planning and phasing. Some SPAs are parts of larger command areas for which only parts of the infrastructure systems are to be rehabilitated.
** Areas are net irrigated area values based on results of SMEC preparation engineering studies and CWR's FS for Construction Expertise.
*** Makhtaaral SPA is divided into two sub-schemes but is considered to be one SPA.
**** Physical contingency allowances are at around 12% of civil works base costs plus VAT.
***** All cost estimates are subject to refinement following completion of detail designs to be effected after project effectiveness.

Component 2: Sustainable Management, Operation and Maintenance of I&D Systems

120. International experience has defined "I&D Modernization" not only in terms of infrastructural modernization but also of the associated institutional reform, as needed for financial and environmental sustainability (See Box 1 below). Thus, parallel to and in conjunction with component 1, this component aims to ensure the sustainability of the rehabilitated and modernized I&D infrastructure and to reduce the negative externalities of water subsidies, which are critical requirements (as per the aforementioned Government Resolution No.71, Law on Role of RCCs, and JERP 2006 findings). This component will thus address institutional, technical, financial, and environmental issues confronting the I&D sector by building institutional capacity to enable the main-system service provider, RCCs and water end-users to improve water-use efficiency and productivity. This component will include:

- Undertake social mobilization of the RCCs to raise awareness of the Project and to engage them in its detailed-design stage (to elicit their views on the various rehab/modernization options);
- Strengthen the CWR's RSE (state-owned KazVodKhoz (KVK) enterprise) branches to undertake the MOM of the main I&D system, including the inter-farm canals/drains (in return of receiving some ISF from RCCs, that complements the state subsidies to MOM);
- Conduct a comprehensive review of existing legislation on water resources and I&D to identify areas that could be strengthened to support development of irrigated agriculture;
- Strengthen the RCCs so that they can gradually takeover MOM of their respective on-farm (and possibly the small-size inter-farm) canals/drains, by: (i) undertaking MOM themselves and/or (ii) collecting and administering the ISF as "revolving funds" (i.e. retained within each RCC), to be able to outsource the MOM to private contractors. Thus, eventually, for this on-farm level of the I&D system, the Government (CWR branches) may only provide technical backstopping to RCCs but will no longer be responsible for MOM.
- Demonstrate improved on-farm water management (to curb farmers' water miss/overuse), including selective and targeted piloting of: (i) modern/pressurized technologies and (ii) soft-type irrigation-advisory services.

121. The activities to be carried out under this component include:

(2.A.) Developing and Strengthening of RCCs and WMOs:

(i) Supporting the establishment of the enabling training and support units (i.e. RSUs);
(ii) Supporting PIDM activities including related water-sector studies and access to credit and leasing resources; and

(iii) Enhancing MOM activities, including water-monitoring tools.

(2.B.) Modernizing and Strengthening of On-farm Water Management.

(2.C.) Modernizing and Strengthening of Main System MOM:

(i) Support to main system service providers;
(ii) Determination of sustainable MOM costs and ability to pay; and
(iii) Modernization of scheme performance assessment using remote sensing and GIS (including for water monitoring).

Sub-component 2.A. Developing and Strengthening of RCCs and WMOs.

122. ***Support for the Establishment and Operation of RCC Support Units.*** This sub-component aims to form RCC SUs to establish viable and sustainable RCCs. The intended sub-component output is established and fully functioning RCC SUs that cover all 10 IDIP-2 SPAs, to support the formation and development of RCCs located in all 10 of these SPAs. The RCC SUs will also be expected to assist other WMOs to be restructured and registered as RCCs under Law No. 404.

123. International experience shows the benefits of external assistance and support in the early years of water user's associations (WUAs). However, the formation of RCCs is now being carried out in an ad hoc manner by the CWR affiliates or Akimats at oblast and raion level; this unmanaged process has no staff training on how to form and support RCCs, and no dedicated budget with which to accomplish this. In 2003, the Government passed legislation on the formation of RCCs, which are equivalent to WUAs, yet many areas remain without these associations. The RSE branch offices are trying to assist in RCC formation, but they lack necessary funds and expertise. The Government introduced differential subsidies to encourage RCC formation; individual WMOs receive a 25 percent subsidy on their bulk water fees, and RCCs receive a 40 percent subsidy on bulk water fees. Concern exists that water users form 'paper' RCCs to qualify for the higher subsidy. Experience from other countries in forming WUAs shows the following:

- A sound legal base is essential;
- 10-15 years is a typical time frame needed to establish fully functioning, effective and sustainable WUAs;
- Early stages of WUAs development are characterized by mistrust and farmers need to see the benefits of having their own WUA;
- Water users are unlikely to form associations on their own; external support is required from community organizers, community mobilizers, and support units, typically provided through a development project or a Government-supported program;
- Early on, the support unit personnel must explain and promote the benefits of the association and may need to assist in grouping water users into hydraulic units, mapping these units, identifying landholding plots, etc.;
- Once the association is formed and registered, the support unit will need to carry out training for the association's council or management board, executive staff, and water users, which is time- and resource-intensive;

- After basic training, the association can carry out its primary function of system O&M, and fee collection for services provided;
- Over time, as water users appreciate association benefits, support grows, management board and executive staff gain experience and confidence, and service levels improve; and
- External support is needed until associations achieve independence.

124. Under the Project, RCC development will be normalized. In Shymkent there will be a Central RCC Support Unit (CSU) aligned with the PMU. Oblast RCC Support Units (OSUs) will be established in each of the four oblasts in the branch offices of the RSE, which is the agency within the CWR responsible for MOM of I&D infrastructure. At raion level there will be 7 RSUs covering the 10 SPAs[17] in the offices of the organization managing inter-farm canals and providing water to RCCs/WMOs at the raion level.[18] The staff of RCC SUs at central, oblast and raion level will comprise national consultants recruited through the consultancy firm that has been awarded the contract. In addition to working for the RSU, the national MOM expert working at raion level will also support the KVK Operational Sections and/or CSEs with improving the O&M of the off-farm I&D system. Similarly, the water management specialist will provide technical support to individual farmers through the FSC (under Component 3).

125. Each RSU will comprise a social/institutional expert, a MOM expert and a water management specialist to help improve water management. The social/institutional expert will act as RSU coordinator. Initially these experts will help establish the not-yet-existing RCCs and will raise awareness among all RCCs; later the roles will expand and the RSUs will help the RCCs with identification and formation of irrigation zones, designation of zonal representatives, asset surveys, maintenance management, performance assessment and improved water management techniques. The RSUs will be provided with a vehicle, training room, office and field equipment, and running costs for office and field work. The RSUs will be expected to work initially in the SPAs and later in all the irrigation systems in a raion. Table 5 below summarizes RSU command areas and anticipated workloads.

126. Each OSU will comprise a three-person coordinating unit with the same staff functions as those of the RSU and will be provided with a vehicle, a training room and equipment for the office, as well as running costs. The four OSUs will oversee and support the RSUs to develop strategy and action plans for RCC development within their oblasts, and to provide training to RSUs and RCCs. Once all RCCs have been formed in the SPAs, the OSU and RSUs will work together to strengthen RCCs throughout each of the SPA raions; the OSU will then assist other raions in the oblast to form and/or strengthen RCCs.

127. The CSU will be formed and aligned with the PMU office to coordinate all RCC-related activities, including preparing guidelines for RCC formation, training OSU and RSU staff, preparing RCC training material, and organizing awareness campaigns. The CSU will have six

[17]In Zambyl oblast, one RSU will be established that will support the development of 7 RCCs in three SPAs with total area of 15,172 ha. In Almaty Oblast, one RSU will be formed to support the development of 5 RCCs in three SPAs with total area of 12,481 ha

[18] Several organizations manage the inter-farm canals at the raion level; some are the RSE branch offices at oblast level and operational sections at raion level, others are CSEs under the Akimat. The actual location of the RSU at raion level will be decided for each SPA at Project commencement.

staff, namely an RCC development specialist as the unit head and specialists in FM, M&E, legal, training and O&M. It will also have an administrator/interpreter and will be provided with vehicles, offices, training room, office and training equipment, and running costs.

128. The intention is to establish RCC SUs as part of the institutional framework to continue functioning post-Project with support and funding from the Government and/or water users. The RCC SUs will be trained to work with other WMOs to be able to provide advice and assistance in relation to water management and system maintenance.

129. Base data on command areas, estimated number of RCCs to be covered by IDIP-2 and the proposed number of RSUs for IDIP-2 are presented in the following Table 5 below.

130. ***Development of RCCs and other WMOs***. This sub-component will support the operation of the RCCs to ensure the RCCs in the SPAs are viable and sustainable with a sound institutional, financial and technical basis. Such support of the operation of RCCs will improve the MOM of the I&D systems. It is estimated that about 39 RCCs will be supported within the direct IDIP-2 SPAs. The intended outcomes are:

(a) Viable and sustainable RCCs formed and functioning;
(b) On-farm water management improved, leading to more productive and efficient water use; and
(c) Service delivery by RCCs improved, leading to an ability to set higher ISFs to match sustainable MOM needs and increased levels of fee recovery.

Box 1. International Experience on Modernizing Large-scale Irrigation & Drainage

In large-scale irrigation, the objective is to improve farming profitability sustainably through improved service at the least cost. The inflexible water delivery systems and bureaucratic institutional design that characterize much large scale irrigation makes the response to changing markets and profit opportunities difficult. Further improvements in profitability have to be made through integrated system modernization, that is, by turning both the irrigation delivery system and the institutional structure around to focus on delivering a sustainable, efficient, and demand-responsive water delivery service. Large scale irrigation and drainage modernization thus requires an integrated package of physical improvements and institutional change in addition to agronomic improvements.

Physical improvements will include a broad range of "hardware" investments and related management practices to assure an efficient, least-cost water service delivery that meets farmer needs. Optimization tools have been developed that allow the most cost-effective investments to be selected.

The parallel *institutional changes* to create a demand-responsive water service delivery typically include a reduction of the role of governments in management and financing, and promotion of decentralization, agency accountability, and scheme financial autonomy as an interim milestone toward full scheme management transfer. Efficiency improvements should be introduced to reduce costs and expand the revenue base: in the irrigation reform in Victoria, Australia, 80 percent of the improvement in financial performance came from system efficiency gains and an expanded revenue base, and only 20 percent from increased water charges. Water user associations have proved effective in modernization programs, and user participation should be included at each step of the decision process. Scaling up to water boards or user federations should be encouraged.

A vital component of institutional change—scheme financial autonomy—depends on cost recovery. Low cost recovery leads inexorably to poor service: if systems are to deliver quality service, somebody has to pay for it. Within a scheme, it has to be clear what investment, operations and maintenance, and other costs should be recovered from whom, and how—for example, the costs of upstream works could be financed by government, downstream works at the tertiary and quaternary level by the irrigators, with cost sharing for the secondary canal level.

Overall, irrigation "modernization" is a process implemented over an often lengthy period, with changes sequenced and integrated as needed. Priorities are a focus on the objective of farmer profitability through improved service delivery; a market-driven demand orientation; integration of physical investment, agronomic improvements, and institutional change including a reduced role for government; involvement of users throughout; efficiency improvements to reduce costs; and scheme financial and managerial autonomy.

Figure 1. A Checklist for "Participatory Irrigation Development and Management" PIDM (requiring interaction between the four IDIP-2 Components)

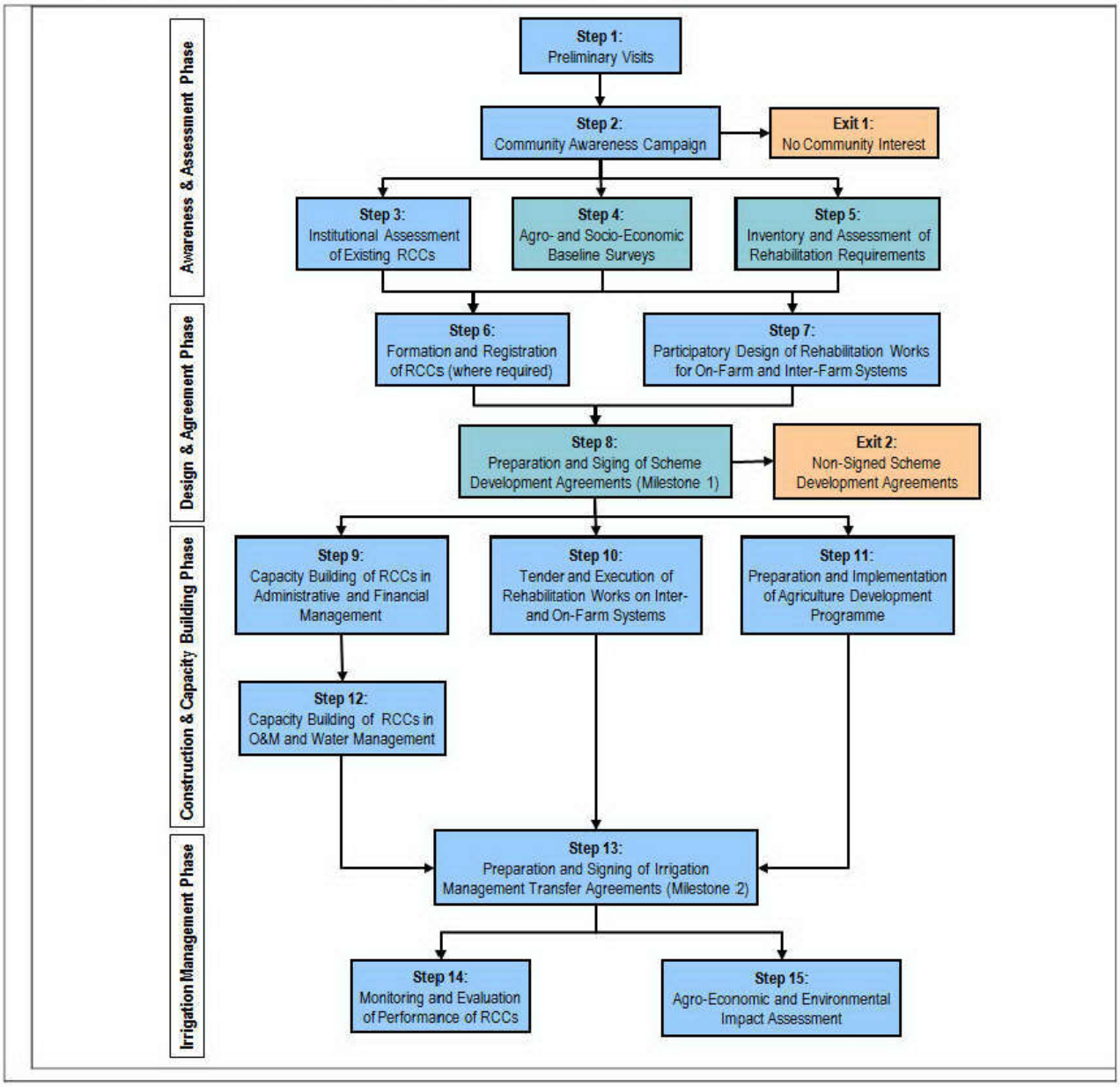


Table 5: Number of RCCs and RSUs in the IDIP-2 Project Area

Oblast	Raion	SPA	Total Command Area (ha)	Number of Farming Households in Raion	Total Estimated Number of RCCs	IDIP-2 Area (ha)	Estimated Number of RCCs under IDIP-2			Number of RSUs under IDIP-2
							Existing	New	Total	
South Kazakhstan	Makhtaaral	Makhtaaral-1	24,447	10,132	45	24,447	5	8	13	1
	Makhtaaral	Makhtaaral-2	15,310			15,310				1
	Shardara, Arys	Kyzylkum-1	74,000	5,299	25	20,630	5	2	7	1
	Turkestan	Arys Turkestan-1	26,000	10,600	11	10,000	3	0	3	1
Sub-Total			**139,757**	**26,031**	**81**	**70,387**	**13**	**10**	**23**	**4**
Kyzylorda	Zhalagash, Syr Darya	Kyzylorda-1	30,000	2,451	20	15,123	5	0	5	1
Sub-Total			**30,000**	**2,451**	**20**	**15,123**	**5**	**0**	**5**	**1**
Zhambyl	Baizakh	Utemis	4,967	-	9	-	-	-	-	-
	Shu	PMK (Tasotkel)	5,172	1,765	10	5,172	2	0	2	1
	Zhambyl	Kapal	5,000	1,307	10	5,000	3	0	3	
	Kordai	GMC	5,000	859	13	5,000	0	2	2	
	Merke	Big Shu Canal	5,000	-	6	-	-	-	-	-
Sub-Total			**25,139**	**3,931**	**48**	**15,172**	**5**	**2**	**7**	**1**
Almaty	Talgar	Malai-Sarinsky	2,481	n.a	2	2,481	0	1	1	1
	Balhash	Akdala	5,000	292	11	5,000	0	2	2	
	Enbekshikazakh	BAC-1	12,520	5,227	29	5,000	2	0	2	
	Taldykurgan	Karatal	5,006	-	8	-	-	-	-	-
Sub-Total			**25,007**	**5,519**	**50**	**12,481**	**2**	**3**	**5**	**1**
Total			**219,903**	**37,932**	**199**	**113,163**	**25**	**14**	**39**	**7**

131. Water users in the SPAs now have little support. Under IDIP-1 and WRMLIP, Project teams formed and supported WUAs, but support ended with the Project. The CWR through the RSE and Akimat provide some support, but their staff lacks training to do this fully.

132. RCC SUs will conduct awareness campaigns among water users about the benefits of forming and/or training RCCs; work with water users and local leaders to form RCCs; conduct basic training and capacity building to develop RCCs' institutional, financial, and technical capability; provide targeted support, advice, and training; and monitor RCC performance[19].

133. Support will also be provided to promote and raise awareness about RCCs through the media, a quarterly newsletter, and training videos related to: (i) RCC functions; (ii) budget preparation and setting of the ISF; (iii) sustainable O&M procedures; and (iv) water management. When RCCs are operational, SU staff will help them produce O&M manuals for generic and location-specific O&M procedures.

134. The project will support the preparation of water-sector studies, as needed to support IDIP-2 activities particularly under Component 2, which may include a review of water-sector legislation. In case a review of the legislation is deemed needed during the first year of IDIP-2 implementation, existing legislation on water resources, irrigation, drainage and RCCs will be reviewed to find areas that could be strengthened to support irrigated agricultural development, including the following:

- Water Code;
- Law No. 404 on Rural Consumer Cooperatives of Water Users;
- Tax Code and its relation to RCCs and water delivery;
- Anti-Monopoly Commission (AMC) role in ISFs; and
- Any other legislation affecting fee recovery from water users.

135. The potential outputs from this sub-component will be the following:

(a) Review and recommendations for updating legislation and regulations on water resources, irrigation and drainage, and RCCs;
(b) Review and recommendations for RCC/user contracts on ISF recovery;
(c) Draft legislation and regulations, as required.

136. There have been significant changes made in legislation related to water resources and RCCs during the last years, notably in the promulgation of the 2003 Water Code and Law 404 dealing with the establishment of RCCs, also passed in 2003. With regard to the latter, there is concern that the legislation fails to separate RCC governance and management functions. International experience has shown that it is desirable to separate these two functions. More thought should also be given to representational issues within RCCs, especially where they comprise a mix of peasant farms, production cooperatives, and agricultural companies. As

[19] Minimal support will be provided by the project towards RCC staffing costs, vehicles, offices, or equipment. The ability of an RCC to finance its own costs is a key milestone in the establishment of viable RCCs. The staff salaries (if any) may be financed through the ISFs charged to water users within the RCC command.

indicated, the current legislation related to RCC formation and development will be reviewed and proposals made for strengthening this where appropriate.

137. The Project will provide international and national legal specialists to review legislation, recommend how to strengthen it, and draft any revisions. This activity will include a small training component to pass on the knowledge gained to the RCC SUs.

138. ***Technical Assistance to Support the Establishment of RCC Regulatory Authority (RRA).*** As part of the technical assistance under this Component, the Project may support establishing an RRA to oversee, regulate, and support the formation and development of RCCs in Kazakhstan. The TA may assess the following requirements for a RAA:

(a) Regulatory office establishment;
(b) RCCs monitoring and regulation; and
(c) RCCs performance monitoring.

139. It is common for governments to monitor and regulate WUAs in the early stages in countries where I&D systems were government-owned and managed, to ensure that infrastructure is maintained and remains operational. This also protects the interests of disadvantaged groups, and prevents water users from exploitation during management transfer. At present, an appropriate legal and institutional framework to monitor and regulate RCCs does not exist. Due to the lack of such a framework, the AMC may intervene in ISFs set by RCCs and main system service providers if they are considered to be too high. The Project proposes that the role of the AMC and associated bodies, such as the Akimat, be reviewed and that recommendations be made for comprehensive RCC regulatory functions on behalf of the Government. This review will be aligned with the review of water sector legislation outlined above.

140. The Project, if proven essential, would provide TA to support the establishment of the RRA, which may include preparing legislation, and will include drafting RRA terms of reference. The proposal is to establish the RRA with a two–person staff, which may be expanded if, for example, RRA offices need to be established at the oblast level. The Project will provide the RRA, once established, office with furniture and equipment and funding for establishing a database of registered RCCs. Initially, the RRA will be established in the CSU; then, when it is fully functional, it will be transferred to the MOEP.

Sub-component 2.B. Modernization and Strengthening of On-farm Water Management.

141. Inefficient irrigation water distribution at the on-farm level is leading to over-abstraction of source water, low levels of productivity per unit of water diverted, and water logging and salinization. Measures to develop effective and efficient O&M of on-farm irrigation systems by RCC staff can improve performance of individual farmers within the RCC command area.[20]

142. This sub-component will analyze existing on-farm practices in a representative sample of the SPAs, and make recommendations for improvement. A variety of measures will be

[20] Though the intention is that RCC SUs will work mostly with RCCs, allowance needs to be made for situations where WMOs have not been formed into RCCs.

considered to implement the recommendations—preparing and disseminating simple guidelines for RCC staff, incorporating the recommendations into training for the RCC SU staff, and preparing and implementing awareness campaigns among water users. This sub-component will be supported by measures identified under Component 3, Agricultural Development, for improvements in water management practices by farmers at the on-farm level.

143. Project activities will include the following:

(a) Fieldwork to collect data, analyze and understand the current situation;
(b) Preparing recommendations and reaching agreement with RCCs and water users on improvements;
(c) Implementing and monitoring agreed approaches in SPAs;
(d) Evaluating performance improvements and the feasibility of long-term adoption of working practices;
(e) Preparing awareness creation and promotional material for wider adoption of developed working practices; and
(f) Training RCC SU staff and RCC staff in the working practices.

144. The Project will provide funding for international and national technical assistance, funding for field work, and funding for awareness creation and promotion/training material.

145. The outputs from this component will be the following:

(a) Identified, tested, and in-use working practices for efficient on-farm water management; and
(b) RCC SU staff and RCC staff trained in the water management working practices.

Sub-component 2.C. Modernization and Strengthening of Main System MOM.

146. ***Support to Main System Service Providers.*** Reliable, timely and adequate water supplies in the main system increase on-farm crop production, and a well-managed main system conserves water and reduces wastage, thereby reducing water source abstraction, alleviating water logging and salinization, and maintaining environmental flows in the river system.

147. This sub-component seeks to modernize and strengthen the main system service providers in the SPAs, to improve service to water users.[21] It is aimed to review work activities, to make recommendations for upgrading and modernizing provider activities, and to provide support to implement agreed changes. Training and capacity building of staff will also be key activities.

148. There are three main issues to be addressed:

- Make irrigation systems more efficient, reduce water losses, and improve service delivery;

[21] The main system comprises the inter-farm canals which are managed either by the RSE through its branch offices at oblast level and operational sections at raion level or by CSEs under the Akimat.

- Improve irrigation system maintenance to reduce losses and improve service delivery; and
- Improve drainage to reduce water logging/salinization and hence increase irrigated area/crop yields and production.

149. Operation procedures must be more efficient, flexible and demand driven. Existing poor maintenance is not entirely due to lack of funding. After rehabilitation, maintenance procedures must be established to ensure long-term system functioning and reduce drainage problems.

150. Project activities will modernize and strengthen these three areas:

(a) *Management.* Existing management systems in each SPA will be assessed; proposals will be made to modernize and strengthen *inter alia,* FM, management information, human resources, and operations. Measures will be identified to increase ISFs to levels sufficient to sustain the I&D systems, and for staff training, including training in client relations.
(b) *Operations*. Existing procedures used for operation of I&D systems will be reviewed and recommendations will be made to strengthen and update them; this includes computer scheduling, automatic recorders to measure water level and discharge, and modern flow measuring devices, such as weirs and flumes.
(c) *Maintenance*. Inadequate funding hampers maintenance, which will be considered in reviewing existing maintenance management processes and procedures. Recommendations will consider the existing situation and potential future increases in maintenance funding. Maintenance management improvement proposals will include I&D infrastructure management procedures and inventories.

151. The water service provider will develop and adopt updated procedures, which will be included in a manual, to be based on existing O&M manuals and distributed to staff. Project training materials will be stored in a format that enables use for future staff training.

152. The expected outputs and outcomes of the sub-component will be the following:

(a) Processes and procedures for MOM of I&D systems upgraded and modernized;
(b) I&D infrastructure management plans prepared for each I&D system, plus a complete I&D infrastructure inventory;
(c) MOM handbooks/manuals prepared and in use;
(d) Improved O&M for I&D systems;
(e) Enhanced service delivery to water users; and
(f) Improved water conveyance efficiency, reduced losses, reduced water logging/ salinization.

153. Project support will include funding for international and national technical assistance, training, computers, and vehicles and motorbikes to increase operations staff field mobility.

154. ***Determination of Sustainable MOM Costs and Ability to Pay.*** Current expenditures on main system O&M are estimated to be 4-5 times lower than required to keep the system in good

operational order. The basic organizational structure is sustained with minimal operating costs, but there is inadequate expenditure on system maintenance.

155. This sub-component will determine minimum levels of expenditure required for O&M for adequate long-term I&D system performance. The analysis will include consequences of failure to maintain the system, and the associated lost production and income as the system deteriorates due to inadequate maintenance. Another analysis will cover water users' ability to pay the ISF, based on typical crop, farm, and household budgets. These analyses will cover representative sample in the 10 SPAs. Based on system-specific data, water users' willingness to pay I&D service fees will be analyzed, as this can often be as important as the ability to pay.

156. Lessons learned from this work should be applied. Leaflets, brochures and posters will be prepared and distributed. The knowledge gained will be used in the RCC and water users' training. The analysis may be used to petition the Government for targeted subsidies or measures to facilitate sustainable MOM of I&D systems, e.g. VDWs.

157. The Project will support this sub-component with funding for international and national technical assistance, for surveys, and for awareness campaigns.

158. The outputs from this sub-component will be:

(a) Expenditure figures required for sustainable MOM on a system basis;
(b) Status of ability and willingness of water users to pay for I&D services; and
(c) Increased awareness among water users, service providers and senior Government of the costs required for sustainable MOM and the consequences of underfunding MOM.

159. ***Modernization of Scheme Performance Assessment using Remote Sensing and GIS.*** Limited financial resources for operational staff and O&M staff cutbacks make it difficult to monitor the performance of the about 1.3 million hectares under irrigation to identify and quantify problem areas, particularly water logging and salinization. Remote sensing can be very cost effective to monitor system performance and land condition over large areas. Remote sensing can also determine crop types and areas, identify water logging and salinity, and with analysis can estimate the crop water use.

160. The sub-component proposes to adopt these modern processes and to assign this work to the Hydrogeological Amelioration Expeditions (HAEs) within MOA. The HAEs are already investigating the use of remote sensing and GIS to monitor land condition, water logging, and salinity. This sub-component will build on and strengthen this existing capability, and HAEs should be strengthened to be able continue this work following Project completion.

161. Project activities will include:

(a) Identifying the extent and applicability of remote sensing;
(b) Recruiting national remote sensing contractor(s) to assist the HAEs in developing a monitoring program, digitizing maps, and developing a GIS; and
(c) Training sub-project area HAE staff in remote sensing techniques.

162. Digitized maps will be useful for monitoring, during design and construction, and as a basis to enhance irrigation management capacity for service providers (public agencies, CWR/RSE in particular) and RCCs and other WMOs. Digitized maps will include raion-level maps that show the CWR/RSE-managed infrastructure, including flow measuring structures for future contracted water deliveries to RCCs. Maps will be generated from information on existing maps and aerial photos, supplemented with data gathered by walk-through surveys using global positioning system (GPS) technology, especially for the location of regulatory structures and lower-order canals and drains.

163. The Project will provide funding for international and national technical assistance, funding to employ the national remote sensing contractor(s), and funding for equipment and software to enable the use of remote sensing data in the HAE offices.

164. Outputs from this sub-component will be the following:

(a) Information on the performance of the I&D systems using remote sensing and GIS; and
(b) HAE staff trained to use remote sensing to monitor performance/ evaluate I&D systems.

Component 3: Agricultural Development

165. The agricultural development component under IDIP-2 will contribute to improving agricultural production and productivity. The SPA farmers' exposure to intensive on- and off-farm training of good agricultural practices, sustainable land and water management, and direct R&D involvement to introduce adapted international technologies are expected to gradually raise productivity and decrease land degradation. Project activities aim to create the best conditions for farmers to exploit the comparative advantages of their production systems, in particular for high-value crops, which will provide opportunities for smallholders, who are a farming category at high risk for marginalization.

166. This Project-specific SPA-dedicated agricultural development component was included, considering also that improved agricultural efficiency and production was deemed critical for the generation of sufficient farmer revenues to maintain adequate MOM and I&D systems upkeep after rehabilitation. It will seek to link with and support existing relevant and compatible programs and services, particularly those of the MOAs KazAgo Holding and its subsidiary agencies.

167. The component is organized around two clusters as follows:

(3.A.) Strengthening the Farmers Capacity

(i) Conduct participatory training for specific target groups in various agro-technical fields, farmers' organizations, and sustainable land management;
(ii) Implement improved and sustainable agronomic practices and on-farm water management through demonstration plots in SPAs;
(iii) Supporting agro-cooperatives, including establishing and strengthening the enabling farmers services centers (FSCs).

(3.B.) Support Irrigation System and Farm Mechanization

(i) Demonstrate machinery for farm-level I&D system maintenance to RCCs and small contractors; and strengthening the related advisory facilities (e.g. to investigate options for ownership, O&M, and cost recovery mechanisms for system maintenance machinery); and

(ii) Demonstrate farm machines and techniques to farmers in SPAs; and strengthening the related advisory facilities (e.g. to facilitate farmers' access to credit and leasing schemes for farm machinery).

168. IDIP-2 accounts for about 113,000 ha in 10 SPAs, ranging from 2,500 ha to 40,000 ha. The raions in which the SPAs are located have about 38,000 farming families. The SPAs include 9,987 farm holdings up to 20 ha and 529 farm holdings above 20 ha (see Table 6 below). This means that IDIP-2's target group includes about 10,500 farm holdings that will be directly involved in the foreseen capacity-building activities; the remaining 27,500 farming families will also be able to benefit from anticipated training and R&D activities and will have access to the FSCs promoted by the Project. For targeting, smallholders (cultivating ≤20ha) will be organized in groups of about 30 farmers, totaling 333 groups, and the large farms (cultivating >20ha) will be in groups of an average of 10 farmers, totaling about 55 groups (see Table 7 below).

Table 6: Farm Numbers and Holdings

Sub-project Area (SPA)		Raions	Total Farming Families in Raions	SPA Area (ha)	First Phase			SPA Farm Holdings up to 20 ha (no)		SPA Farm Holdings over 20 ha (no)	
					(%)	(ha)	farming families	Entire Project	First Phase	Entire Project	First Phase
	S. Kazakhstan Oblast		**26031**	**139757**		**70357**	**26031**	**15163**	**9596**	**1356.32**	**363**
1	Makhtaaral	Makhtaaral	10132	39757	100%	39757	10132	6976	6976	99	99
2	Kyzylkum	Shardara; Arys	5299	74000	28%	20720	5299	4912	1375	754	211
3	Ary Turkestan	Turkestan	10600	26000	38%	9880	10600	3275	1245	140	53
	Kyzylorda Oblast		**2451**	**30000**		**15000**	**2451**	**0**	**0**	**35**	**18**
4	Kyzylorda	Zhalagash; Syrdaya	2451	30000	50%	15000	2451	0	0	35	18
	Zhambyl Oblast		**9320**	**25139**		**15172**	**3931**	**353**	**191**	**445**	**122**
5	Utemis	Baizak	887	4967	0%	0	0	162	0	86	0
6	Tasotkel (PMK)	Shu	1765	5172	100%	5172	1765	191	191	32	32
7	Kapal	Zhambyl	1307	5000	100%	5000	1307	0	0	88	88
8	Big Shu Canal	Merke	4503	5000	0%	0	0	0	0	115	0
9	GMC	Kordai	859	5000	100%	5000	859	0	0	2	2
	Almaty Oblast		**6382**	**25007**		**12489**	**5519**	**501**	**200**	**90.2**	**26**
10	Malai-Sarinsky	Talgar	n.a.	2481	100%	2481	n.a.	0	0	1	1
11	Akdala	Balkash	292	5000	100%	5000	292	0	0	2	2
12	Karatal	Karatal	863	5006	0%	0	0	0	0	3	0
13	BAC	Enbekshikazak	5227	12520	40%	5008	5227	501	200	58	23
	TOTALS		**44185**	**219903**		**113018**	**37932**	**16017**	**9987**	**1416**	**529**

Source: Elaborations from SMEC Feasibility Study (2006). Entire Project and First Phase

Table 7: Farmer Groups Demonstration Areas and Farmers Service Centers

	Sub-project Area (SPA)	Raions	Smallholder Groups (average of 30)		Larger Farmer Groups (average of		Demonstration areas (aprox.	Demonstration area with		Demonstration area with Larger		Farmer Information Service Centres	
			Entire Project	First Phase	Entire Project	First Phase		Entire Project	First Phase	Entire Project	First Phase	Entire Project	First Phase
	S. Kazakhstan Oblast		**506**	**320**	**99**	**36**	**140**	**117**	**57**	**23**	**9**	**3**	**3**
1	Makhtaaral	Makhtaaral	233	233	10	10	26	25	25	2	2	1	1
2	Kyzylkum	Shardara; Arys	164	46	75	21	40	27	8	12	3	1	1
3	Ary Turkestan	Turkestan	109	41	14	5	74	65	25	8	3	1	1
	Kyzylorda Oblast		**0**	**0**	**36**	**2**	**30**	**0**	**0**	**30**	**15**	**1**	**1**
4	Kyzylorda	Zhalagash; Syrdaya	0	0	3	2	30	0	0	30	15	1	1
	Zhambyl Oblast		**11**	**6**	**33**	**13**	**25**	**6**	**3**	**19**	**12**	**5**	**3**
5	Utemis	Baizak	5	0	9	0	5	3	0	2	0	1	0
6	Tasotkel (PMK)	Shu	6	6	3	3	5	3	3	2	2	1	1
7	Kapal	Zhambyl	0	0	9	9	5	0	0	5	5	1	1
8	Big Shu Canal	Merke	0	0	11	0	5	0	0	5	0	1	0
9	GMC	Kordai	0	0	1	1	5	0	0	5	5	1	1
	Almaty Oblast		**17**	**7**	**9**	**4**	**25**	**1**	**0**	**24**	**19**	**4**	**3**
10	Malai-Sarinsky	Talgar	0	0	1	1	5	0	0	5	5	1	1
11	Akdala	Balkash	0	0	1	1	13	0	0	13	13	1	1
12	Karatal	Karatal	0	0	1	0	5	0	0	5	0	1	1
13	BAC	Enbekshikazak	17	7	6	2	2	1	0	1	1	1	0
	TOTALS		**534**	**333**	**177**	**55**	**220**	**124**	**61**	**96**	**54**	**13**	**10**

Source: Elaborations from SMEC Feasibility Study (2006). Entire Project and First Phase

169. The main project consultants, selected through competitive procurement, will deliver most component activities, mainly through the FSCs. In particular, the consultants will oversee: (i) establishing and managing ten FSCs; (ii) managing the farmers' participatory training activities; (iii) organizing and managing farm-level participatory research and operating demonstration sites; and (iv) demonstrating, training, and evaluating equipment and machinery. The PMU will procure machinery, based on specifications developed by the service provider. The PMU will provide the consultants with an annual operational budget for these activities (see also Annex 3, Implementation Arrangements).

170. The component-related main output will be that SPA farmers acquire skills to access services for sustained increases in agricultural productivity. Farmers will have long-term access to responsive advisory services at raion level.

Sub-component 3.A. Strengthening Farmers Capacity.

171. ***Participatory Training.*** Activities will start with raion-level workshops. A Training-of-Trainers (TOT) process will be initiated through three internationally-recruited Master Trainers who will run a five-day course for about 40 Principal Trainers drawn from universities, research institutions, and the private sector, including professionals supported and trained by other projects (e.g. recently closed ACP and APPAP). These Principal Trainers will help identify and then train about 388 Facilitators during a 14-day intensive course. Facilitators will be selected from among the most progressive farmers who will become the vectors for interactions with Farmer Groups. Master Trainers will develop training course curricula for Principal Trainers and Facilitators. Training modules will include: (i) participatory training approaches and techniques; (ii) participatory research approaches and techniques; (iii) good agricultural practices; (iv) sustainable land and water management practices and experiences; (v) promotion of farmers' organizations; (vi) potential synergies with ongoing agricultural development-related projects; and (vii) facilitating farmer access to financial and credit instruments. In addition, trainees will learn about Project management, in particular IDIP-2 management issues, and will be linked to other Project implementing partners.

172. A farmer Training Needs Assessment will follow with assistance from international experts, which will provide the basis for planning a farmer group Training Program. Facilitators will participate in this phase and help organize formation of an estimated 388 Farmer Groups.

173. Farmer capacity will be built through interrelated training activities, such as:

(a) Farmer group training (to be organized by Facilitators, assisted by on-demand specialists) will be conducted on farmer holdings with an agreed schedule and frequency. Training will follow a typical crop cycle pattern (for an average of about six months).Group members willset the agenda by identifying common problems and needs. Typically, Facilitators and specialists will offer technical expertise on production techniques. Farmers then begin to adopt improved technologies in their own fields, and gradually, farmers 'own' the training process and can experiment with techniques in local ecological conditions, assisted by on-demand expertise. Then, the Facilitator establishes networks and linkages among individuals and organizations to support the group and members on finance, marketing, etc.

(b) Raion-level workshops/seminars will be organized annually. The first one seeks farmer validation for the Training Program; subsequent training will be theme-specific and serve as a participatory beneficiary assessment exercise to evaluate sub-component performance and output validity. Training program adjustments may occur at these stages.

(c) Special Courses for targeted in-depth or specialized training in topics such as converting to organic farming, international certification, value chain development, agribusiness, farmers' organization, and farm management. About 60 small-scale and 20 large-scale groups will be selected from among the Farmer Groups.

(d) Study Tours for Facilitators and other selected farmers to learn and exchange experiences with farmers in the country.

(e) Participatory R&D on the demonstration sites will allow responsive research activities in cooperation with research institutions to test and adapt existing technology outputs and approaches. Sustainable water management activities such as land leveling and planning, optimum field irrigation, water monitoring, soil moisture measurement, irrigation scheduling, evaporation measurement, knowledge on soil structure features, and on-farm discharge measurement, will be important topics that could be implemented with the participation of the International Water Management Institute (IWMI) and the Institute of Irrigation and Water Management in Taraz.

174. The on-farm extension/training activities and workshop and seminar courses described under (a) and (b) above will aim to improve farmers' organizational capacity; enable efficient farm management; promote sustainable land management (e.g. Conservation Agriculture

(CA)/no-tillage[22]) and good agricultural practices (e.g. IPM, integrated nutrient management, organic agriculture); and yield enhancing techniques (e.g. Systems for Rice Intensification (SRI)).

175. Issues that emerge from on-farm training activities that require more research attention (e.g. CA, SRI, salinity and alkalinity mitigation measures) can form part of the research agenda practiced on demonstration sites. Emphasis will be given to improve the capacity of the smallholders to grow high-value crops under low-cost production systems. Training will aim to improve SPA farmer capacity to access existing services and facilities available from KAI, KAF, KAM or other relevant organizations.

176. The Project will cover operational costs of the activities described above (e.g. workshops, seminars, TOT training days, international Master Trainers, studies and assessments, farmer groups training days, Facilitators out-of-pocket expenses, special courses and study tours). The Project will provide resources for required national and international technical assistance. Provisions will be made to facilitate collaborative programs between research institutions of southern Kazakhstan and IARCs to strengthen relationships and improve exchange of knowledge and best international practices to benefit farmers in the SPAs. Primary outputs under the Participatory Training activity will include:

(a) 40 Principal Trainers trained to train farmer Facilitators;
(b) 388 farmers trained to become Facilitators of SPA farmer groups;
(c) 333 smallholder farmer groups (about 9,900 farmers) and 55 larger farmer groups (about 530 farm managers) have undertaken intensive in-field and seminar/workshop training;
(d) 60 smallholder farmer groups and 20 larger farmer groups have undertaken specialized training course;
(e) About 70 facilitators/farmers have participated in study tours; and
(f) Collaborative programs with IARCs expose researchers and farmers to best international technologies and new networks are created.

177. ***Demonstration Sites.*** Demonstration areas will be concentrated on about 0.1 percent of the total irrigated area to be rehabilitated or about 115 ha in selected areas of SPA farmers' irrigated land. Demonstration plots should be selected to represent a full range of soils, land forms, and farm layouts that prevail in each SPA. Demonstration sites will become the nucleus of research and development/demonstration activities in sustainable water management, farm machinery application, and farmer support services, to ensure effectiveness. Demonstration areas should focus on different landholding types, sizes and cultivated areas for smallholders (on 61

[22] CA is a technology for resource-saving agricultural crop production that strives to achieve acceptable profits together with high and sustained production levels while concurrently conserving the environment.CA is characterized by three key practices which are linked to each other, namely: (i) continuous minimum mechanical soil disturbance; (ii) permanent organic soil cover; and (iii) crop rotations. It increases soil fertility; yields tend to increase over the years with yield variations decreasing. No till allows 30 to 40 percent reduction of the production costs (fuel), reduction of time and labor, and reduces the costs of investment and maintenance of machinery in the long term.

ha) and for larger farms (on 54 ha). Site landowners will enter an agreement with the Project that grants a concession for Project duration and will benefit from crop proceeds on these experimental sites. The Project will facilitate the provision and use of experimental equipment and implements from the Government resources and will provide resources for crop production costs, costs of labor and operations and other costs incurred during trials. The main outputs under the Demonstration Sites activities include:

(a) 115 ha SPA farmer-owned land utilized as demonstration sites to develop participatory research activities involving farmers and researchers;
(b) 388 farmer groups have participated in on-demonstration site research activities; and
(c) Participatory research approaches tested by national research institutions.

178. ***Farmers' Services Centers.*** The Project will create ten FSCs attached to rehabilitated irrigation schemes to serve the SPA farmers and be available for the farming population of 12 raions. The FSCs would be conveniently linked to KAI if feasible and would be a conduit for ongoing delivery of advisory services. In the future, the FSCs could extend their capacity beyond knowledge and advisory to other demand-driven agricultural support services. The FSC annual programs and action plans will be designed during the Training Needs Assessment/Planning Process and validated during farmer training workshops. It will be mandatory to determine FSCs future management and financing plan.

179. ***Support of Farmers' Services Centers***. Project resources will be made available for the technical staff (e.g. agronomy expert, irrigation expert, and economist), for information campaigns and publications, television and radio air time for information broadcasting, and operational expenses. The main output will be:

(a) 10 FSCs established and operational, with approved sustainable plans for beyond the Project period, as advisory service centers for farming families in Project raions.

180. ***Sub-component 3.B. Support Irrigation System and Farm Mechanization (****Farm Mechanization and Construction Machinery for On-farm Maintenance of the Irrigation and Drainage Infrastructure/Systems).* Farmers require mechanical capacity sufficient to improve crop production through timely tillage, planting, sowing and harvesting, and to ensure that the on- and inter-farm I&D infrastructure is maintained. Initial farm machinery investments will be postponed (e.g. until IDIP-3); meanwhile under IDIP-2 detailed information and data will be collected on existing I&D infrastructures and real needs. Initial investments for construction machinery for maintenance of on- and inter-farm I&D infrastructure will also be postponed (e.g. until IDIP-3), pending fully prepared and operational RCCs and other WMOs. Meanwhile, under IDIP-2, machinery numbers, types and requirements for the individual SPAs will be be clearly identified. Issues that require clarification include:

- How to ensure suitable and timely machinery services to smallholders (5 to 20ha)?
- What are options for financing replacement or new machines?
- Can small and large farmers pay market rates for machinery services?
- How will users in remote locations access spare parts and repair services?
- How can smaller farms organize multi-farm use of machinery to make it financially feasible?

- If farm machinery is procured under a future project, how will ownership transfer and cost recovery be organized?
- How will the private sector machinery and support services sector be developed, particularly in rural areas?

181. During the first three years the Project with Government support will implement machine and mechanization technique demonstrations in the SPAs so that farmers can make informed choices on available mechanization. The Project can clarify ownership, operation, financing, and cost recovery modalities, which could differ among farmer groups. Details on farm mechanization will be assembled to provide accurate investment figures for immediate and future needs. There will be two main activities:

(a) Preparation of leasing packages or other arrangements for farm machinery and irrigation maintenance equipment to be supplied for demonstration and evaluation; and
(b) Provision of technical support for SPA-level farmers to select machinery, to advise on financing and maintaining I&D infrastructures, and to collect baseline data on the machinery park in the SPAs to define future capital investment requirements. The Project will also support advisory services to farmer groups to enable their access to existing financial instruments for machinery purchase by them if appropriate and desired.

182. Farm machinery for demonstrations and evaluations will comprise two main packages: one based on a 45 HP tractor, the other on a 75-80 HP tractor, with scope for specialist machinery, such as for horticultural production. The 45 HP tractor package is for smallholder farmers—about 13 packages will be needed. For larger farms, 12 packages of medium-sized machinery will be needed. In most SPAs both small and medium equipment will be evaluated.

183. For irrigation infrastructure maintenance equipment for demonstrations and evaluations, 13 packages comprising a small excavator, a tractor-digger-loader, a small grader, a trench digger, a small bulldozer, a hydraulic boom mounted ditch cleaner, a rotary ditch cleaner, and other attachable implements for agricultural tractors, will be needed.

184. The Project will investigate machinery operating modalities including specialist farmers and/or existing machinery owners/contractors, who will be trained and contracted to demonstrate and evaluate machinery on behalf of the Project. Detailed ownership and running cost data will be collected. The RCCs will not take control of irrigation maintenance equipment and farm equipment, particularly if they are in the first stages of development, to avoid expectations that provision of centralized machinery services will become an RCC function. Instead, these services are best provided through private sector contractors or farmer owner/operators.

185. ***Technical support***. International expert assistance will be required for machinery specification, training and organization on a full-time basis for the first two years and then for three months in the third year. For the 10 SPAs covered by IDIP-2, nine engineers are to be recruited or made available from existing staffing. The engineers will undergo intensive training—four workshops in the first year and later on-the-job training in the SPAs on an as-needed basis. This training will enable the engineers to carry out or provide machinery advisory,

demonstration and evaluation activities; these functions will be in place until modes of ownership and machinery operation are established. Tasks will include:

(a) Collect current data on the machinery park in the SPAs including number, age, functionality and type to identify future investment needs;
(b) Demonstrate to farmers and small contractors machinery types and sizes; assist in selection for their circumstances;
(c) Investigate modalities of machine ownership and operation for timely machinery services to small farmers;
(d) Propose options for multi-farm use of machinery to ensure financial viability of ownership and operation;
(e) Advise on the development of a private machinery and support services sector, particularly in rural areas; and
(f) Develop a machinery investment plan for possible future implementation.

186. ***Strengthening the related advisory facilities that are within or outside the FCSs.*** Technical support will include assistance to farmers interested in purchasing machinery, through special advisory services within the FSCs. The advisory services will help farmers apply for financing and will guide them through other follow-up activities and requirements to access credit and other financial facilities available through KAF or other appropriate public or private sector organizations.

187. Through this activity farmers will be able to optimize their farm machinery and equipment selection and availability, and understand machine ownership or other usage options including financing and realistic pricing and cost recovery for farm machinery services. The activity will help to move the farmer community, the RCCs and local authorities away from the concept of a centralized often unreliable supply of machinery services and towards a more competitive and effective private sector market for machine services and repair and maintenance facilities.

Component 4: Project Management, Technical Assistance, and Training

188. The component will include support to the PMU to be established as a team within CWR, reporting to a CWR Deputy Chairperson. The PMU will comprise incremental staff required for the Project duration, recruited as individual consultants. The PMU will be responsible for Project management, administration and coordination, including procurement, FM and M&E according to the POM, Loan Agreement, and other Project documents, including safeguards. The PMU will have two offices, one in Astana, mainly for Project fiduciary tasks, and one in Shymkent, for managing technical aspects.

189. The PMU will be assisted by teams of consultants (individuals and companies) for M&E surveys, environmental audits and independent financial audits.

Project Costs and Implementation Timeframe

190. Project yearly and overall total cost estimates including price contingency allowances, by components, by financiers and by disbursement categories, are summarized in Tables 9, 10 and 11 below.

191. An envisaged Project implementation timeframe is also presented in the indicative schedule diagram of Figure 2 below. The schedule shown will be subject to change on the basis of final procurement plan and detail design stage outcomes. Meanwhile it is noted that, in the diagram, implementation activities have been grouped into five phases, namely (a) inception, (b) works design and institutional/agricultural support setup, (c) works construction and management capacity building, (d) infrastructure and support systems management, and (e) project management and technical assistance, of which the first four are sequential but also overlapping. Also envisaged is the carrying out of the SPA development activities for two separate and sequentially staggered batches of SPAs. This will allow for processes and procedures to be modified or refined as appropriate for improved implementation in the second batch areas, based on experiences and lessons learned during implementation in the first batch areas. Of principal importance however would be (i) the allocation to the second batch of those SPAs for which prior dam safety improvement interventions are required, and (ii) the scheduling for implementation of these dam improvement interventions in parallel with the early implementation activities for the first batch. A tentative allocation of SPAs to the two batches is shown in Table 11 below.

Table 8: Summary of Project Costs by Components

Component	PY1	PY2	PY3	PY4	PY5	PY6	PY7	Total
Thousand KZT								
1. Rehabilitation and Modernization of I&D Systems	720164.7	720164.7	5901430.4	13974234.7	13974234.7	8825960.2	3894791.6	**48010981.0**
2. Sustainable Management, Operation and Maintenance of I&D Systems	63043.1	246907.9	170790.4	161937.8	143200.2	130211.2	110773.4	**1026864.1**
3. Agricultural Development	65750.6	235126.2	232944.7	231060.9	239180.6	253508.4	196107.0	**1453678.3**
4. Project Management	22084.8	57647.6	64119.0	68541.0	72696.4	77266.2	66927.2	**429282.2**
TOTAL	871043.2	1259846.4	6369284.4	14435774.4	14429311.9	9286946.1	4268599.2	**50920805.5**
US$'000								
1. Rehabilitation and Modernization of I&D Systems	4885.8	4885.8	39740.3	94102.6	94102.6	59434.1	26227.6	**323378.7**
2. Sustainable Management, Operation and Maintenance of I&D Systems	427.7	1675.1	1150.1	1090.5	964.3	876.8	745.9	**6930.5**
3. Agricultural Development	446.1	1595.2	1568.7	1556.0	1610.6	1707.1	1320.6	**9804.2**
4. Project Management	149.8	391.1	431.8	461.6	489.5	520.3	450.7	**2894.8**
TOTAL	5909.4	8547.1	42890.8	97210.6	97167.1	62538.4	28744.8	**343008.1**
Exchange rate	147.4	147.4	148.5	148.5	148.5	148.5	148.5	

Table 9: Summary of Project Costs by Financiers

Financier	PY1	PY2	PY3	PY4	PY5	PY6	PY7	Total
% financing								
Republic of Kazakhstan	70	70	70	70	70	70	70	
IBRD	30	30	30	30	30	30	30	
TOTAL	100	100	100	100	100	100	100	
Thousand KZT								
Republic of Kazakhstan	609730.3	881892.5	4458499.1	10105042.0	10100518.4	6500862.2	2988019.4	**35644563.9**
IBRD	261313.0	377953.9	1910785.3	4330732.3	4328793.6	2786083.8	1280579.7	**15276241.7**
TOTAL	871043.2	1259846.4	6369284.4	14435774.4	14429311.9	9286946.1	4268599.2	**50920805.5**
US$'000								
Republic of Kazakhstan	4136.569	5982.988	30023.563	68047.421	68016.959	43776.850	20121.343	**240105.693**
IBRD	1772.815	2564.138	12867.241	29163.181	29150.125	18761.507	8623.433	**102902.440**
TOTAL	5909.384	8547.126	42890.804	97210.602	97167.084	62538.357	28744.775	**343008.133**

Table 10: Summary of Project Costs by Disbursement Categories

		Base Costs								
Category[23]		**PY1**	**PY2**	**PY3**	**PY4**	**PY5**	**PY6**	**PY7**	**Total**	**Total, in US$000**
a) Civil Works	mln. KZT	0.000	0.000	4999.607	11187.378	10509.355	6233.880	2577.909	35508.130	239111.99
b) Design and Supervision	mln. KZT	720.165	666.819	87.833	82.166	77.186	70.377	53.706	1758.252	11909.78
c) Training, monitoring and TA	mln. KZT	115.502	331.062	317.970	299.922	272.913	257.553	195.457	1511.832	12078.86
d) PMU Consultants' services	mln. KZT	13.850	48.957	52.188	52.188	52.104	52.104	42.252	313.642	2115.22
e) Goods and equipment	mln. KZT	19.478	100.743	12.406	0.061	0.061	0.061	0.061	186.251	900.80
f) Recurrent costs	mln. KZT	2.048	18.943	20.758	20.038	19.678	19.558	14.803	115.827	781.04
Total	**mln. KZT**	**150.879**	**499.705**	**403.322**	**372.209**	**344.755**	**329.276**	**252.573**	**2127.552**	**15875.92**
Inflation index		1.00	1.08	1.16	1.24	1.32	1.40	1.48		
Category		**Total Costs (with price contingencies)**								
a) Civil Works	mln. KZT	0.000	0.000	5799.544	13872.349	13872.349	8727.433	3815.306	46086.981	310350.04
b) Design and Supervision	mln. KZT	720.165	720.165	101.886	101.886	101.886	98.528	79.486	1924.000	13028.61
c) Training, monitoring and TA	mln. KZT	115.502	357.547	368.845	371.903	360.245	360.574	289.276	2223.892	14999.48
d) PMU Consultants' services	mln. KZT	13.850	52.873	60.538	64.713	68.777	72.945	62.532	396.229	2671.56
e) Goods and equipment	mln. KZT	19.478	108.803	14.391	0.076	0.081	0.086	0.090	143.004	969.44
f) Recurrent costs	mln. KZT	2.048	20.459	24.079	24.847	25.975	27.381	21.909	146.699	989.00
Total	**mln. KZT**	**871.043**	**1259.846**	**6369.284**	**14435.774**	**14429.312**	**9286.946**	**4268.599**	**50920.806**	**343008.13**
Exchange rate		147.4	147.4	148.5	148.5	148.5	148.5	148.5		
Total in US$	**000' US$**	**5909.384**	**8547.13**	**42890.80**	**97210.60**	**97167.08**	**62538.36**	**28744.78**	**343008.13**	

[23] Eligible expenditures under Components 2, 3 and 4 include non-consultancy services (their exact items and costs would be determined through the detailed design stage and along project implementation; their total cost is not expected to exceed US$1 million),

Figure 2: Indicative Implementation Schedule Diagram

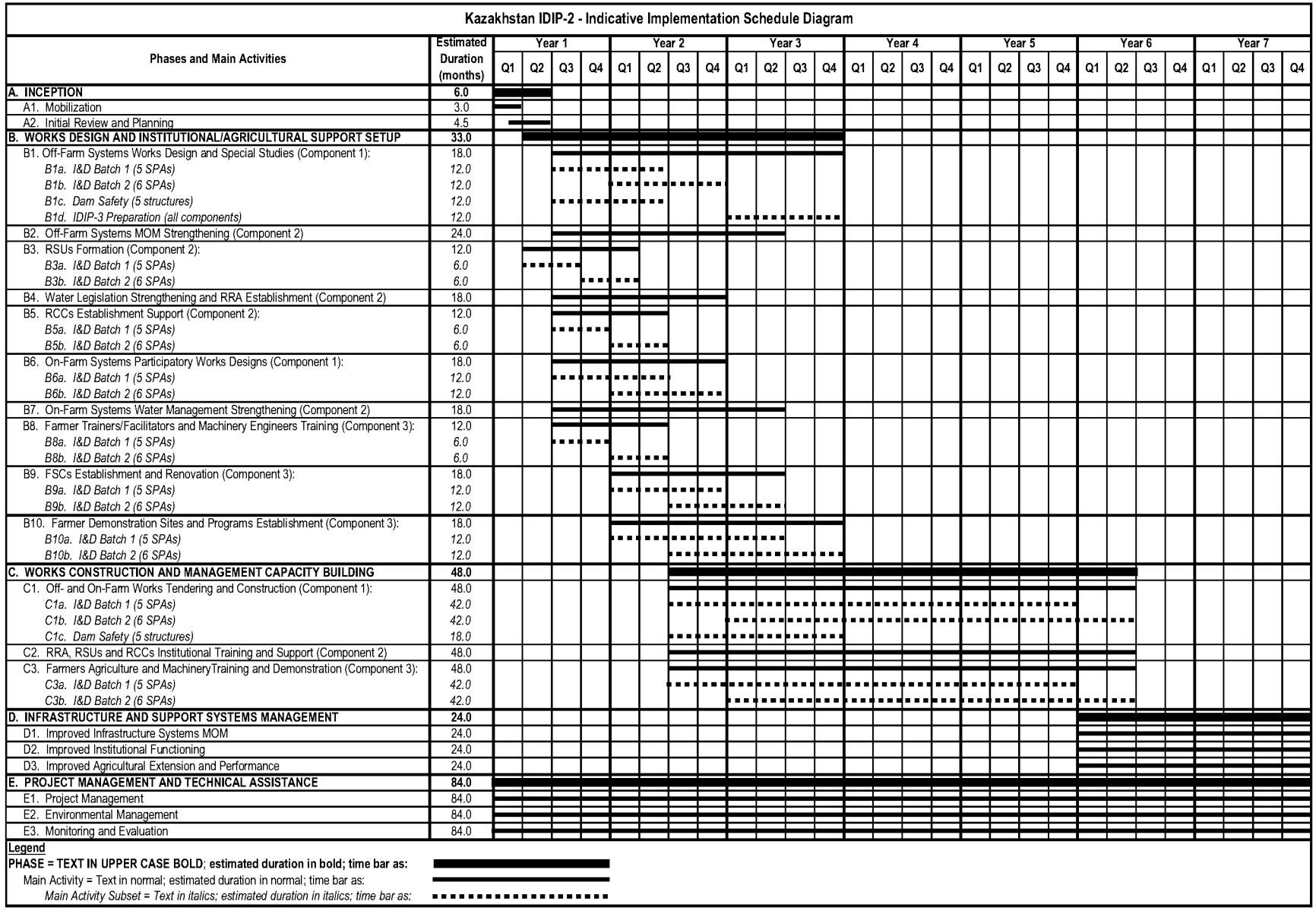


Table 11: Indicative SPA Implementation Batches

Kazakhstan IDIP2 - Indicative Subproject Area Implementation Batches					
Batch 1 SPAs			Batch 2 SPAs		
Ref. No.	Name	IDIP-2 Area (ha)	Ref. No.	Name	IDIP-2 Area (ha)
1a	Makhtaaral-1	24,447	1b	Makhtaaral-2	15,310
2	Kyzylkum-1	20,630	3	Arys-Turkestan-1 *	10,000
4	Kyzylorda-1	15,123	9	GMC *	5,000
6	PMK (Tasotkel)	5,172	10	Malai-Sarinsky *	2,481
7	Kapal	5,000	11	Akdala *	5,000
			13	BAC-1 *	5,000
Total Areas (ha)		**70,372**	**Total Areas (ha)**		**42,791**
Total SPAs (No.)		**5**	**Total SPAs (No.)**		**6**
* Denotes SPA with required or potentially required prior dam safety interventions					

Annex 3: Implementation Arrangements

KAZAKHSTAN: Second Irrigation and Drainage Improvement Project

Project Management and Administration Arrangements

192. ***The Ministry of Environmental Protection and the Committee of Water Resources.*** The MOEP will be the Project implementing agency. It will be supported by MOA technical departments, especially for the agricultural development component. The CWR, under the MOEP, will carry out the day to day Project activities.

193. ***Project Management Unit in Astana and in Shymkent.*** The PMU will support CWR in Project implementation. The PMU will be a team within the CWR, reporting to a CWR Deputy Chairman. The PMU will comprise incremental staff required only for the Project duration, to be recruited as individual consultants. The PMU will be responsible for Project management, administration and coordination, including procurement, FM and M&E, according to the POM, Loan Agreement, and other Project documents, including safeguards. The PMU will have two offices, one in Astana, mainly for Project fiduciary tasks, and one in Shymkent, for managing technical aspects closer to Project sites. These arrangements are similar to those for other CWR projects.

194. A PMU group comprising five professional staff and a driver will be established in CWR's office in Astana to deal with procurement and FM, and for Project coordination with Government agencies, especially the MOF. A senior engineer with managerial experience will be recruited as Deputy Project Coordinator to coordinate issues with the Government and other agencies in Astana. Procurement and FM staff will be part of a larger team that serves related projects under CWR implementation. A senior procurement specialist will oversee and manage a small team of procurement specialists and report to the Deputy Project Coordinator; the team will be responsible for all procurement activities, including preparing tender documents and bid evaluation reports, and communication with bidders. One procurement specialist will have primary responsibility for IDIP-2 with backup arrangements in place. Similarly, a senior FM specialist will lead a team of financial staff responsible for all Project financial aspects. The IDIP-2 will have at least one dedicated accountant/disbursement officer with backup arrangements in place. The FM specialist will have direct responsibility for Project accounting, reporting, administration of the Designated Account, and auditing arrangements. The FM specialist will supervise the accountants/disbursement officers, who will have day-to-day responsibility for Project accounting, disbursement and recording of all financial data in the FM system.

195. The PMU technical team, including a Project Coordinator, a manager for each component, an environmental specialist, and an M&E specialist, will be in Shymkent to provide technical management support. Shymkent will also be the base for the core team of the design and construction supervision consulting engineering team.

196. The Project Coordinator will have overall day-to-day responsibility for Project implementation and managing Project staff, and overall responsibility for preparing progress reports and annual work plans, which will include an estimate of the annual budget and procurement and financing plans. The manager for the I&D infrastructure component will ensure

that technical aspects of the engineering investigations, surveys and designs are carried out professionally, and will supervise the design consultants to, inter alia, ensure that structure modernization and cost effectiveness are incorporated in the design approaches. The I&D infrastructure manager will also have overall responsibility to coordinate contract management and construction supervision and to ensure that construction supervision consultants comply with contracts. Component manager for institutional development and agricultural development will ensure that component tasks are implemented in accordance with agreed plans and will supervise consultants and the service provider. This will require liaising with several agencies involved in Project implementation. Each such agency will appoint a part-time coordinator to liaise with component managers.

197. As part of its overall responsibility for IDIP-2, the PMU in Shymkent will ensure regular environmental M&E of Project activities. The environmental specialist will oversee the environmental monitoring and management, and will record and analyze the results of monitoring. The PMU will report monitoring program results in progress reports. The M&E specialist and staff will establish and operate a Project M&E system to allow CWR, World Bank and others to track Project progress and results, and to promptly identify constraints. M&E staff will also prepare quarterly progress reports.

198. Two PMU-employed specialists— one for engineering and one for institutional and agricultural issues—will be appointed in each of the four Project oblasts to provide day-to-day Project coordination and regular feedback to the PMU in Shymkent, linking with other national teams/institutions established under each Project component in the sub-project areas.

199. Design and construction supervision consultants will be engaged for the component concerned with rehabilitation and modernization of I&D systems. An international consulting firm will be recruited. For the design and construction supervision of each system the firm will contract with an experienced local design institute qualified to assist in these tasks. To cover the 10 widely separated SPAs it is anticipated that a core team of Consultants will be based in Shymkent and will have sub-offices in SPA locations. A wide range of disciplines is envisaged; knowledge transfer between the international and national design and supervision teams is part of the assignment. The Government aims to introduce modern cost-effective structures to improve water regulation and distribution, which will be achieved through close cooperation between Project engineers and local design institutes. The Consultant's teams will be divided into design teams and supervision teams, which will assist each other with any design modifications needed during construction. The Consultant team leader will oversee all aspects from survey and design work through to contract management and supervision, with assistance from the national design institute engineers. Changes can be incorporated within existing budgets, without reducing the quality of the works or the functioning of the systems, provided that the supervising Consultants are well experienced in such types of project and are able to continually adjust the scope of works to meet available budgets and keep a close control over amounts spent on variation orders.

200. The institutional development consultant team will also be based in Shymkent, where it will cooperate closely with the CSU, primarily to train the OSUs and RSUs to help establish and develop RCCs, and to help develop training material for RCCs development.

201. The agricultural development consultant team, also to be based in Shymkent, will undertake and deliver all component activities and outputs related to the agricultural development component through Project-supported FSCs. The team will work closely with the Akimat Agriculture Departments. The consultants may enter into a special agreement with the South-Western Scientific Production Center of Agriculture (SWSPCA, now under KAI) in Shymkent, responsible for coordinating all research activities in south-western Kazakhstan. The SWSPCA operates through a competitive grant system to award research contracts to institutions and will apply the same system for the on-farm participatory research activities to be performed in the Demonstration Sites.

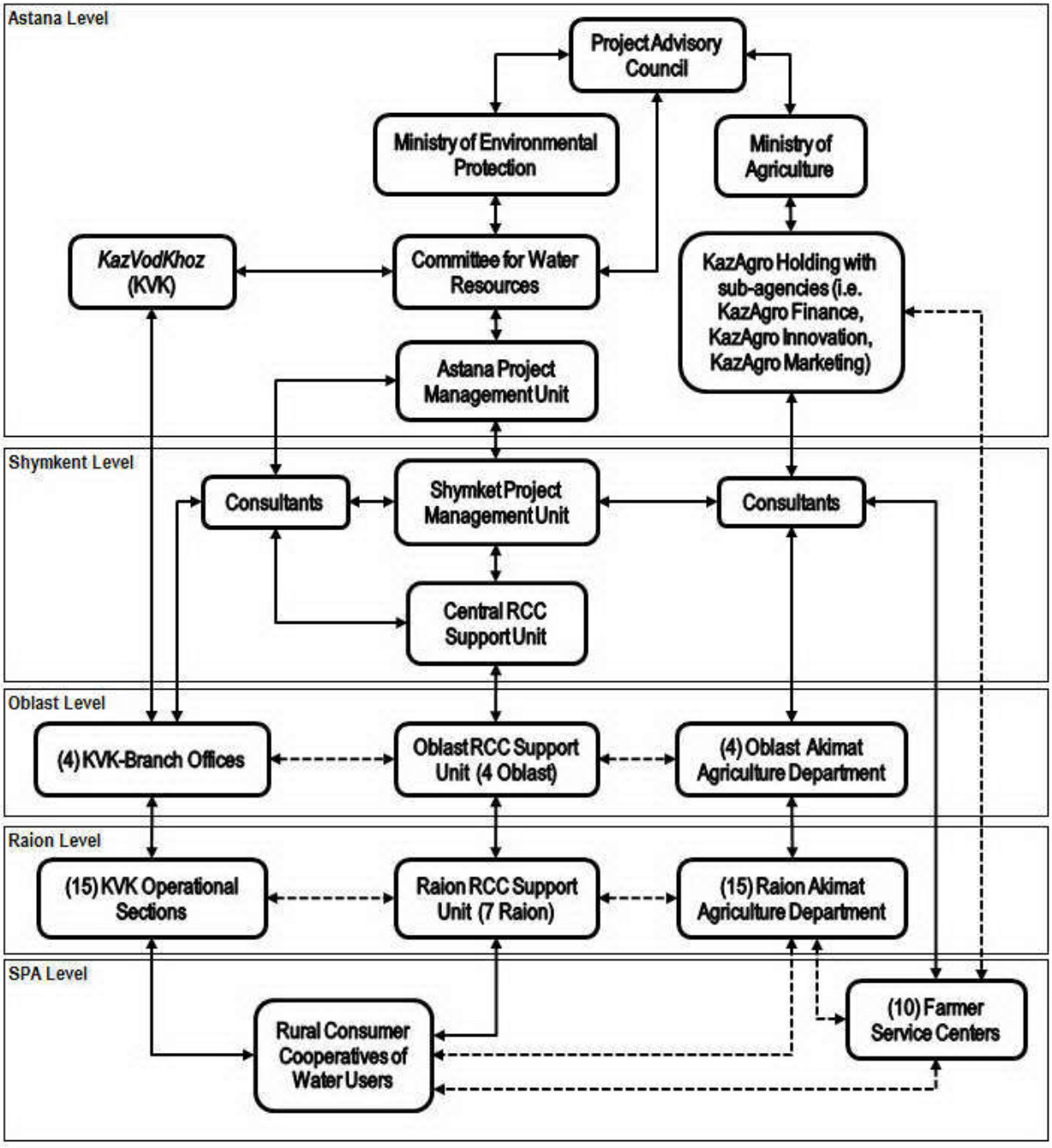
202. A project implementation organigram is shown in Figure 3 on the following page.

Financial Management and Disbursement Arrangements

203. The Project will be implemented by the PMU within CWR that implemented the closed SYNAS-1, Nura River Clean-Up Project (IBRD Loan financed activities closed in June 2011, but the counterpart financed portion is still under implementation and is expected to end in December 31, 2013), and the Kamenogorsk Environmental Remediation Project (closing Date December 2014). The PMU has established FM arrangements that have been assessed as Moderately Satisfactory (MS) during FM supervision, mainly due to inability of the accounting system to generate Interim Financial Reports (IFR).

204. Overall responsibility of the project will be vested with CWR. Current arrangements with respect to financial management are as follows: the financial management function of SYNAS-1 is represented by two people - Financial Manager and accountant. Financial Manager of the project is a very experienced and qualified person who has worked for the project for more than 6 years and she also participated in a number of the World Bank trainings on FM and Disbursements. In addition to SYNAS, CWR is also implementing Nura River Cleanup Project and Ust-Kamenogorsk Environmental Remediation Project. Groups of Consultants implementing projects within the CWR are supervised by the Chairman of the Committee and the Deputy Chairman. Thus, the management of the CWR is also knowledgeable of the Bank's processes and procedures.

Figure 3: Project Implementation Organigram



205. ***Strengths.*** CWR, under the MOEP, has had significant project implementation experience, implementing a number of World Bank-financed projects, such as SYNAS-1, Nura River and Clean Up and Ust-Kamenogorsk Environmental Remediation Project, which is a major strength. The CWR has had overall control over accounting transactions; including regular reconciliations of account balances with Treasury to ensure accurate financial reports; budget

formulation process, financial reporting and disbursement functions. The budget formulation process is reliable and in accordance with Kazakhstan Budget Code.

206. ***Weaknesses/ Action Plan.*** As indicated above, FM arrangements established for the closed SYNAS-1, Nura River Clean Up projects, and the ongoing Ust-Kamenogorsk Environmental Remediation Project, have been assessed as moderately satisfactory. The accounting system used is outdated and does not have capacity to generate IFRs. Some of the more experienced FM staff have also left, thus creating a capacity gap. A time-bound action plan has been developed (see Table 12 below) the implementation of which will ensure fully satisfactory FM arrangements by Loan Effectiveness.

Table 13: Time-bound Action Plan

Weakness	Remedy/Action	Responsibility	By
Existing POM relates to previous Projects and does not describe FM arrangements of the proposed Project.	Develop the Project Operational Manual (POM) to document financial management procedures, in line with legislation and satisfactory for the proposed Project, with a Chart of Accounts for Project accounting.	CWR	By Effectiveness
Automated accounting software previously installed was not capable of generating financial statements and reports acceptable to the Bank	Install a fully automated Project accounting system, using suitable accounting software, capable of generating interim financial reports	CWR	Contract for the installation of a fully automated Project accounting system, with terms of reference satisfactory to the Bank by Effectiveness. The accounting system needs to be installed and functioning, with the FM and disbursement staff trained within three months after effectiveness.
Regular FM staff of the CWR not capable of handling additional FM workload of the project	Recruit Financial Management Consultant dedicated to the Project	CWR	Contract to be signed with Terms of Reference (TOR) satisfactory to the Bank by Effectiveness. The FM Consultant and Disbursement Specialist/Accountant will need to undergo training on project financial management and disbursement procedures within six months after Effectiveness.

207. ***Budgeting.*** According to existing budget formulation procedures, all donor-financed grants and projects must be included in the Government budget, and approved by the Government and the parliament. Budgets can be revised during the year although there is limited potential for including amendments related to Bank-financed projects. The MOF Treasury system does not process payments, including replenishment applications for Designated Accounts and direct payments, for Project expense categories that are not approved as a part of the Government budget. Therefore, it is critical that during budget formulation, the CWR ensures

that budgets submitted to the Government are accurate. The MOEP budget department handles this process; MOEP's consolidated budgets are agreed with the Government agencies. Project budgets form part of the MOEP consolidated budget and the Project FM consultant will help prepare budget details.

208. ***Accounting System***. The PMU within the CWR has maintained some automated accounting system for projects implemented by the CWR. However, the accounting system is outdated and does not generate IFRs. The CWR will need to install and maintain an automated Project accounting system using suitable accounting software, such as the 1-C accounting software, which will have capacity to generate financial statements or reports acceptable to the World Bank. A signed contract for upgrading the accounting system is a Condition of Effectiveness, while installation and full operation of the software will need to take place within three months after Effectiveness. The accounting system will have a module for fixed assets register that will be updated to ensure that Project-related fixed assets are identified for Project reporting purposes. The accounting system will also have a contract management module to monitor all contracts during implementation.

209. ***Internal Controls and Internal Audit.*** The CWR has maintained an effective internal control system developed according to MOF instructions to ensure that budget expenditures are authorized, supporting documents are maintained, accounts are reconciled periodically, and assets, including cash, are safeguarded. The MOEP issues separate orders and procedures to regulate specific areas of activities. The CWR will need to develop a Project Operational Manual (POM) to documents key internal controls to be followed in the use of funds, ensuring complete accounting transactions, reliable accounting data, safeguard of Project assets, authorization and documentation of expenditures, segregation of duties, including clear job descriptions, and flow of funds to support specified Project activities, including management of bank accounts. The CWR will maintain accounts and records, and maintain and operate automated accounting system with in-built controls and capable of generating quarterly and annual financial statements in compliance with Bank requirements.

210. The CWR accounting unit follows MOF Treasury procedures to reconcile account balances of MOEP with Treasury records. All budget categories' actual spending and remaining budget balances are reconciled with treasury records twice a month. The same procedures are expected to be applied to Project Designated Account, and budget categories.

211. The MOEP has established a Department for Financial Control (Internal Audit), and this is expected to strengthen the internal control environment within the CWR through regular reviews.

212. ***Financial Reporting***. The PMU within the CWR has been submitting IFRs required under the closed and ongoing projects within the stipulated reporting time-lines. These reports have been prepared using excel spreadsheet as the accounting system currently in place does not have capacity to generate IFRs. For IDIP-2, quarterly un-audited interim financial reports (IFRs) will be required and will include: (a) Project Sources and Uses of Funds, (b) Uses of Funds by Project Activity, (c) Designated Account/ Reconciliation Statements and Disbursement Summary. Financial reports will be submitted to the Bank within 45 days of the end of each quarter. The first quarterly IFRs will be submitted after the end of the first full quarter following initial disbursement. Formats for annual financial statements and IFRs have been agreed during

negotiations and will be included in the POM. The CWR will maintain a project accounting system with capacity to generate IFRs incorporating all components, sub-components and expenditure categories, as appropriate.

213. ***Disbursement and Funds Flow Arrangements.*** The Borrower will establish a Designated Account in a commercial bank, acceptable to IBRD. The Account ceiling will be specified in the Disbursement Letter. Disbursements from the IBRD Loan Account will follow the transaction-based method, i.e., traditional Bank procedures: Statements of Expenditure (SOEs), Direct Payments, Special Commitments. For certain payments, above the Minimum Application Size as specified in the Disbursement Letter, the Borrower will submit withdrawal applications to the Bank for payments to contractors, suppliers and consultants directly from the Loan Account. Payment orders would be prepared by the implementing agency after ensuring that invoices are accurate and complete, and signed by Project management. Payment orders then submitted to Treasury for final processing and transfer of funds to contractors. The Financial Manager would also ensure completeness and accuracy of all withdrawal applications.

214. All disbursements will be made on the basis of full documentation for (a) contracts for goods costing more than the equivalent of US$500,000 each; (b) contracts for works costing more than the equivalent of US$3.0 million each; and (c) contracts for consulting, as well as non-consulting services costing more than the equivalent of US$200,000 each, and contracts for services performed by individuals costing more than the equivalent of US$50,000 each. Disbursements below these thresholds will be made on the basis of certified SOEs; and supporting documentation will be retained by the implementing agency for at least one year after receipt by the IBRD of the audit report for the year in which the last disbursement was made, or for such a period required by local legislation.

215. ***External Audit Arrangements***. MOF is responsible for selection and appointment of auditors for the projects included in the list of the Government priority projects, especially those financed by loans, and it is expected that the proposed Project would be included in that list. In the past submission of audit reports were delayed due to a number of factors, including inadequate budgetary allocation in the Republican Budget, and the lengthy procurement process. However, during the past two years submission of audit reports under the IBRD portfolio has improved significantly, with most of the audit reports for fiscal year ended December 31, 2011 being submitted on time.

216. Project financial statements will undergo annual audits, covering all aspects of the Project. Audits will be performed by independent auditors acceptable to the Bank, and in accordance with ISA issued by the International Auditing and Assurance Standards Board of the International Federation of Accountants (IFAC). The CWR will prepare auditor TORs and clear them with the Bank before providing the TOR to the MOF to begin the process of contracting the auditor. Annual audit reports will consist of a single opinion on the financial statements of the Project, incorporating the Project accounts, including Designated Account Reconciliation, and SOE Withdrawal Schedule; and a Management Letter. The audit reports will be submitted to the Bank not later than six months after the end of the fiscal year to which they relate. The cost of the audit will be financed by MOF as is the current practice under the IBRD portfolio. The MOEP/CWR will provide the auditor with full access to Project-related documents and records, and with information required for the audit. Sample Project audit TORs will be included in the POM.

Audit Report	Due Date
Continuing Entity Financial Statements	N/A
Project Financial Statements: (i) Project Balance sheet, (ii) Project Sources and Uses of Funds, (iii) Uses of Funds by Project Activity, (iv) SOE Withdrawal Schedule (v) Statement of Designated Account, and (vi) notes to financial statements, and reconciliation statement	No later than six months after end of each calendar year audited, including the last audit

217. The audited Project financial statements will be made publicly available in a manner satisfactory to the World Bank. Upon receipt of the audit reports the World Bank will also make them publicly available in accordance with the Bank's access to information policy.

Procurement Arrangements

218. ***Procurement in Accordance with World Bank Guidelines.*** Procurement for the Project will be carried out in accordance with (i) World Bank Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers (January 2011), (ii) World Bank Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers (January 2011); and (iii) the provisions stipulated in the Loan Agreement.

219. ***Procurement Plan.*** A draft procurement plan has been developed covering procurement activities for the entire project period. The initial procurement plan has been agreed at the technical negotiations (and is attached in Addendum 3.1 to this annex). Thereafter, the plan will be updated at least once per calendar year and each update will be subject to the World Bank's prior review. The initial procurement plan together with the subsequent updates will be published on the World Bank's external web site in line with the requirements of Bank Guidelines. A General Procurement Notice (GPN) covering the project procurement activities will be prepared and published after negotiations. Specific Procurement Notices will be published for all ICB and NCB procurement, as well as, all consulting services contracts as required under the respective Guidelines.

220. ***Procurement by CWR through PMU.*** Procurement activities will be carried out by CWR through a PMU established for managing several Bank-financed projects. The PMU is a project team within the CWR, reporting to a Deputy Chairman of CWR. The PMU would comprise incremental staff required only for Project duration, recruited as individual consultants. Currently, the PMU has a procurement specialist based in Astana who deals with procurement under the Ust-Kamenogorsk Environmental Remediation Project (World Bank-financed project). Due to the workload and to improve the procurement capacity, the project includes budget to hire an additional procurement specialist. The risk assessment rating for the entire project was done through Procurement Risk Assessment and Management System (P-RAMS). Identified risks and proposed mitigation measures are described in the Operational Risk Assessment Framework (ORAF) (see Annex 4). The procurement risk is rated as high.

221. ***Procurement of Works.*** Works procured under this Project would include rehabilitation and modernization of I&D infrastructure. The works contracts above US$5.0 million equivalent will follow ICB procedures. The works contracts below US$5.0 million equivalent will be procured under National Competitive Bidding (NCB) procedures. All bidding documents and

contracts will include measures to minimize or mitigate environmental impact and will take into account recommendations in the EMPs. The World Bank Standard Bidding Documents (SBD) shall be used for all ICB packages. In case of NCB, the sample bidding documents shall be prior reviewed and agreed by the World Bank before launching the bidding process.

222. ***Procurement of Goods.*** Goods procured under this Project would include maintenance equipment, farm machinery, office equipment, and vehicles. Goods contracts above US$500,000 equivalent will be procured under ICB procedures using the World Bank SBD for procurement of goods. The NCB method will be applicable for procurement of goods contract with the estimated budget less than US$500.000. The sample NCB bidding documents shall be prepared taking into account the NCB conditions set forth in the Loan Agreement. In case of NCB, the sample bidding documents shall be prior reviewed and agreed by the World Bank before launching the bidding process. Goods contracts with the estimated budget less than US$100,000 equivalent may be procured using Shopping procedures on the basis of at least three written price quotations obtained from qualified suppliers. The list of suppliers to be invited to submit quotations should be defined by a tender committee.

223. ***Selection of Consultants.*** Consultant services required under the Project would include Design & Supervision for Rehabilitation and Agriculture & Institutional Development. The methods for selection of consultants will include Quality and Cost Based Selections (QCBS), Quality Based Selection (QBS), Fixed Budget Selection (FBS), Least Cost Selection (LCS), Selection based on Consultants Qualifications (up to US$200,000), Single Source Selection in compliance with Paragraph 3.8 of the Consultant Guidelines, and Individual Consultants (IC). Contracts estimated to cost above US$300,000 equivalent will be advertised on-through UNDB, on the World Bank External website and in local media (one newspaper of national circulation or the official gazette, and the website of the CWR). Shortlists of consultants for services estimated to cost less than US$200,000 equivalent per contract may be composed entirely of national consultants under the provisions of paragraph 2.7 of Consultant Guidelines.

224. ***Operating Cost.*** The expenses would include the office rent, communications, translations, bank charges, office supplies, cost of advertisements, mail and business trip expenses. Such cost will be financed by the project based on the annual budget prior reviewed and agreed by the Bank. The purchase will be carried out in accordance with the implementing agency's internal administrative procedures and as per budget agreed with the Bank. Operating cost will not include salaries of civil servants.

225. ***Training and Study Tours.*** Training and study tours will be carried out based on the annual training/study tours plan to be prepared by the CWR, prior reviewed and agreed by the Bank. The institutions for training/study tours would be selected considering the availability of such services, duration of training/study tour and reasonableness of cost.

226. ***Governance and Anti-Corruption Action Plan (GAC).*** The project will follow the World Bank Group Anti-Corruption policies as set forth in the Guidelines On Preventing and Combating Fraud and Corruption in Projects financed by IBRD Loans and IDA Credits and Grants (current edition). The Bank team intends to maintain close oversight and will carry out prior review of all major contracts according to the thresholds that will be regularly reviewed and adjusted as needed in the Procurement Plan. The following measures will be carried out to mitigate corruption risk:

- *Training of Fiduciary Staff:* This will start from the project launch and continue periodically thereafter; training will be customized to the procedures and methods that would be required in the next 12 month period. The relevant project staff shall attend the Central Asia regional procurement workshops organized by the Bank on a regular basis;
- *Prior Review:* There will be close supervision by procurement accredited staff of the Bank. In addition, all contract amendments will be subject to prior approval by the Bank;
- *Publication of Advertisements and Contracts:* All publications for advertisements and contract awards, including the results of the awards, will be done in accordance with the Procurement Guidelines and published in the World Bank client connection system and on external websites, i.e., UNDB and World Bank websites;
- *Debarred Firms*: Appropriate attention will be given to ensuring that debarred firms or individuals (to be verified from the Bank's external website) are not given opportunities to compete for Bank-financed contracts;
- *Temporary Suspended Firms*: Appropriate attention will be given to ensuring that temporary suspended firms or individuals (to be verified through client connection) are not given opportunities to compete for Bank-financed contracts;
- *Complaints:* All complaints by bidders will be diligently addressed and monitored in consultation with the Bank;
- *Evaluation Committee:* If required, the Bank will review qualifications and experience of proposed members of the Evaluation committee(s) with a view to avoiding nomination of unqualified or biased candidates. All members will be required to sign a confidentiality/impartiality form;
- *Civil Works Supervision:* Contractors carrying out irrigation rehabilitation works will be supervised by technically qualified engineering firms, selected by the CWR to ensure that quality specified in the contract is delivered in a timely manner;
- *Monitoring of Contract Awards:* All contracts are required to be signed within the validity of the bids/proposals and, in case of prior review contracts, promptly after the no objection is issued. Procurement Plan format shall include information on actual dates (of no objections and award) and will be monitored for cases of delay which will be looked at on a case-by-case basis to identify the reasons. The CWR will maintain up-to-date procurement records available to the Bank staff and auditors.
- *Monitoring of Payment vs. Physical Progress:* Monitoring reports prepared for the Bank will be customized to include a form to monitor physical progress compared to payment installments to avoid upfront loaded payments;
- *Timeliness of Payments:* Payment to contractors, suppliers and consultants will be monitored through semi-annual interim un-audited financial reports (IFRs) to ensure timely payments. The CWR will maintain a system/database to ensure payments to the suppliers and contractors are paid without delay according to the conditions of the contract.
- *Frequency of Procurement Supervision:* Initially, procurement supervision will include prior review of contracts and procurement supervision missions (part of project supervision missions) once every six months. Phone and video consultations will also be

used for discussion of particular cases to speed up preparation of the tenders. Once the capacity of the implementing agency is strengthened, frequency of procurement supervision missions and prior review thresholds may be revised.

- *Post Review:* All the contracts not subject to prior review will be post reviewed. There will be few shopping contracts.

- *Prior Review Thresholds*: Prior review thresholds will be set up in the Procurement Plan and will be generally based on the following requirements:

  - All contracts awarded through ICB Works (>US$5.0 million);
  - First NCB contract less than US$5.0 million equivalent;
  - All contract awarded through ICB Goods (>US$500,000);
  - All consulting contracts for firms >$200,000 and contracts with individual consultants estimated to cost US$50,000 equivalent or more
  - All direct contracts, single-source contract and amendments to the prior review contracts

Table 14: Thresholds for Procurement Methods and Bank Prior Review

Expenditure Category	Contract Value Threshold (US$)	Procurement Method	Contracts Subject to Prior Review
Goods	>= 500,000	ICB	All ICB contracts
	<500,000	NCB	First 2 NCB contracts
	<100,000	SH	First contract
	NA	DC	All DC contracts
Works	>=5,000,000	ICB	All ICB contracts
	<5,000,000	NCB	First NCB contract
	<100,000	SH	First contract
	NA	DC	All DC contracts
Consultant Services (including training)	>=200,000	QCBS/QBS/LCS/FBS a/ b/	• >=$100,000 for firms • All SSS • All TORs
	<200,000	CQS	
	NA	SSS	
	NA	IC	• >=$50,000 for individuals • All SSS • All TORs

Notes: a/ Shortlist may be composed entirely of national consultants for assignments of less than US$200,000 equivalent per contract.
b/ As appropriate, these methods may be adopted for assignments costing less than $200,000.

Abbreviations:

Goods and Works
ICB – International Competitive Bidding
NCB – National Competitive Bidding
SH – Shopping
DC – Direct Contracting

Consultant Services
QCBS – Quality and Cost Based Selection
QBS – Quality Based Selection
LCS – Least Cost Selection
FBS – Fixed Budget Selection
CQS – Selection Based on Consultants' Qualifications
SSS – Single Source Selection
IC – Individual Consultants

Table 15: Summary of Procurement Risk Assessment

Risk	Rating Before	Mitigation	Rating After
The CWR staff lack capacity to undertake the proposed procurement work under the Project, particularly regarding international procurement or World Bank procurement guidelines.	High	Qualified procurement consultants will provide on-the-job training to the CWR staff and to bid evaluation committee members. Consultants will provide assistance in the preparation of bidding documents, bid evaluation reports and contract agreements. Training in procurement under World Bank guidelines will also be provided by Bank staff during the Project launch workshop.	Substantial
Limited technical equipment of CWR (low internet speed, lack of appropriate ITC equipment and their operators) as well as insufficient coordination of information flows in communicating with the Bank.	High	The CWR will procure the services of fast internet providers and operators as well the required ITC equipment, and will establish internal regulation to organize the communication with the Bank.	Substantial
Bid evaluation committee members are not familiar with international procurement procedures, and may obstruct or delay the procurement process, especially the evaluation of bids and proposals.	High	Consultants will provide assistance in the preparation of bidding documents, bid evaluation reports and contract agreements. The risk will continue to be high as some of the evaluation committee members may not agree with the consultant assessments.	High
Lack of awareness of procurement opportunities available in the Project for civil works, goods and services	Medium	Carry out public awareness programs using various media, such as newspapers, brochures, radio, TV, project website, etc	Low
Poor quality of bidding documents, including ambiguous technical specifications; unclear and unrealistic requirements, such as delivery and completion time which bidders would be unable to meet; and frequently no qualifications and experience	High	Prepare and make widely available clear, easy to understand standard bidding documents containing all bidding requirements. Train CWR staff in preparing unambiguous technical specifications and set up mechanisms for obtaining technical experts in relevant areas for the preparation of specifications. Create and maintain a database of sample specifications and prepare sample of technical specifications for items procured frequently	Substantial
Faulty technical design may cause excessive variation orders. Poor quality construction may require remedial works.	Medium	The supervising engineers will review detailed design/technical specifications while preparing the bidding documents.	Low
Corruption or collusion may lead to the award of high price contracts	High	Experienced procurement consultants will be hired. The Bank will carry out prior review of practically all contracts under the project.	Substantial
Use of national procurement procedures such as NCB, especially small contract sizes, for most or all of the contracts as a means to award contracts to domestic contractors/ suppliers	Moderate	Ensure proper packaging of contracts so that most of the contracts fall under ICB to allow for international competition and more participation by more internationally reputed firms.	Low

Environmental and Social Management and Safeguard Arrangements

A. Social Safeguards and Issues

227. This section discusses findings of the Social Assessment conducted during Project preparation, Project social implications, outstanding issues, potential social risks, and poverty in Kazakhstan.

228. ***Principal Project Beneficiaries***. About 38,000 farming families are resident in the 10 raions where the IDIP-2 SPAs are located. Based on the 2006 SMEC Feasibility Study, a total of 10,516 farm holdings are located in the command area of the 10 SPAs, of which 9,987 are farm holdings of 20 ha and less and the remaining 529 farm holdings are larger than 20 ha, corresponding mainly to ACs and APCs. The land operated by the farm holdings larger than 20 ha belong to individual households, who decided to pool their farms in an AC or APC. Based on average landholding sizes for the 10 SPAs, it is estimated that the land operated by the 529 farm holdings larger than 20 ha belong to about 17,000 households. Therefore, it is estimated that a total number of about 27,000 households have land in the 10 SPAs and they are the IDIP-2 target group and principal direct beneficiaries. The remaining 11,000 farming families living outside the 10 SPAs will also benefit from IDIP-2 activities such as the strengthening of the capacity of their RCCs and the implementation of an agriculture development program including the establishment and operation of FSCs.

Table 16: Farm holdings and estimated number of households in Project areas

SPA	Size (ha)	Farm Holdings ≤ 20ha			Farm Holdings > 20ha				Total Estimated Number HHs
		Number HHs	Estimated Average Size (ha)	Estimated Total Area (ha)	Number	Average Size (ha)	Estimated Total Area (ha)	Estimated Number HHs	
Makhtaraal	39,757	6,976	3	20,928	99	190	18,829	6,276	13,252
Kyzylkum	20,720	1,375	10	13,750	211	33	6,970	697	2,072
Ary Turkestan	9,880	1,245	4	4,980	53	92	4,900	1,225	2,470
Kyzylorda	15,000	0	5	0	18	833	15,000	3,000	3,000
Tasotkel	5,172	191	5	955	32	132	4,217	843	1,034
Kapal	5,000	0	5	0	88	57	5,000	1,000	1,000
GMC	5,000	0	5	0	2	2,500	5,000	1,000	1,000
Malai-Sarinsky	2,481	0	5	0	1	2,481	2,481	496	496
Akdala	5,000	0	5	0	2	2,500	5,000	1,000	1,000
BAC	5,008	200	3	600	23	192	4,408	1,469	1,669
Total	**113,018**	**9,987**	**4.1**	**41,213**	**529**	**135.7**	**71,805**	**17,007**	**26,994**

229. ***Water Management Organizations***. A mix of WMOs run I&D systems; the primary organization is the RCC. When lands and I&D infrastructures were redistributed from former Kolkhoz and Sovkhoz farms, different forms of shareholders grouped spontaneously to form WMOs.

230. The Project's main focus is RCCs, but it will seek to strengthen all forms of WMOs that exist within the SPAs. Due to the specific formation of existing WMOs, this approach is broader than the general process adopted for formation of WUAs, and will include individual farmers, limited liability companies, APCs, and peasant farms. Comprehensive and long-term interventions are needed to establish effective RCCs and other WMOs. Fee recovery to cover O&M costs is key. Individual farmers will be encouraged to form RCCs, and the Project will provide a full program of establishment and support.

231. The Project institutional component aims to strengthen accountability, legitimacy, and competence of RCCs and participating CWR offices. The Project, through the RCC SUs and associated capacity-building activities, will be a key agent for effective working relationships between the RCCs and CWR. The expected social implications include increased local organizational capacity, enhanced social cohesion among water users at all levels, and increased equity in access to water and economic benefits of irrigation.

232. After the break-up of the Soviet Union, a vacuum emerged in management of Sovkhoz and Kolkhoz farms. Farm assets were divided—sometimes among people that had worked on the farms, and sometimes portions of the land and assets were allocated for distribution to people that had lived on the farms. The Project will address the following social issues. The Project will emphasize water users' capacity and willingness to pay for I&D services; sufficient contributions are essential to guarantee system sustainability. So far, issues related to capacity and willingness to pay were explored with general figures, not based on actual rehabilitation or O&M cost or an agreed cost recovery percentage or fee level for water users on a scheme-by-scheme basis.

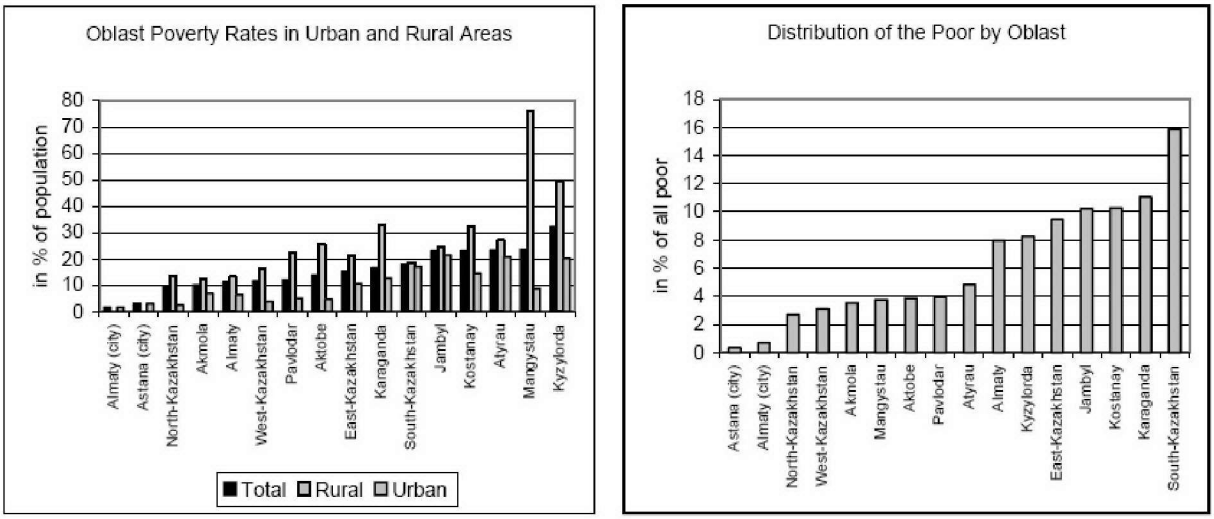
233. ***Risks of adverse social impacts of the Project.*** The Project will focus on whether economically weaker farmers will be unable to pay ISFs, perhaps because they were excluded from decision-making when the rehabilitation contract and costs were negotiated; or voted for rehabilitation, but miscalculated costs; or disagreed but were outvoted. Farmer incapacity to pay the ISF will lead to reduced access to I&D and eventually to no access at all. Since land leases are conditional on the land being used to its full capacity, inability to pay the ISF could result in loss of land rights. A related risk is that the Project will increase the cost of the irrigation services and land value, so economically stronger farmers could use the ISF to gain access to more land. These consequences have occurred in other former Soviet Union countries. The Project RCC support coping mechanisms will be developed to minimize risks while developing strong community cohesion.

234. ***Poverty in Kazakhstan and the Project Area.*** Kazakhstan has made significant economic progress recently but income gaps still exist. Poverty in Kazakhstan has a strong regional

character and most of the poor live in rural areas according to a recent World Bank report on poverty. [24]

235. Figures 1 and 2 below show that poverty fell more rapidly in urban centers and has become an increasingly rural phenomenon; an estimated 64 percent of all poor live in rural areas. Variations among oblast poverty rates are large—between 2.0 and 32 percent. Oblasts with the highest incidence of poverty are Kyzylorda (32 percent) followed by Mangystau, Atyrau, Kostanay, Dzhambyl, and South-Kazakhstan (23 – 18 percent). However, given large differences in oblast population size, more than half of all poor persons live in the following oblasts: South Kazakhstan, Karaganda, Kostanay, Dzhambyl, East Kazakhstan, and Kyzylorda.

Figures 1 and 2: Poverty Rates and Distribution by Oblast



Source: World Bank estimates based on Household Budget Survey (2002).
Note: Total, urban and rural rates are based as share of oblast population, living in all urban and rural areas of relevant oblast.

236. Poverty and income disparity are still common today. According to official statistics, around 8 percent of the head count earn less than the national/ECA poverty benchmark, $PPP 2.5 per capita per day[25]; and as many as 42% earn less than $PPP 5. The minimum wage and minimum pension are KZT 18,666/year and KZT 19,066/year respectively (as per the Law on Republican Budget for 2013 - 2015).

237. The Project area covers three out of six poor oblasts which have high population density and where more than half of the population is rural. The fourth oblast in the Project area is Almaty oblast, which has better parameters with regard to poverty incidence.

B. Environmental Assessment

238. IDIP-2 has been classified as Category "B" under OP 4.01 Environmental Assessment; the Project is not expected to involve any significant or irreversible adverse environmental impacts. The Project will not undertake construction of new irrigation systems; no resettlement is

[24] Dimensions of Poverty in Kazakhstan, World Bank, November 2004.
[25] Regional poverty line of $PPP 2.5 per capita per day can be used for ECA countries, corresponding to the mean national poverty line of the four poorest countries in ECA.

required; OP 4.12 is not triggered. The legal agreement contains a negative covenant that no land shall be acquired under the Project that results in resettlement. Any potential adverse environmental impacts are expected to be prevented or minimized by appropriate preventive actions or mitigation measures identified in the Framework EMP and the site-specific EMPs, to be implemented by CWR during the Project. The Framework EMP for IDIP-2 reflects lessons learned from IDIP-1, including guidelines for regular monitoring and measurements.

239. The overall Project environmental impact is expected to be positive, and no significant, irreversible, cumulative or long-term adverse impacts are expected. The rehabilitation and modernization of selected I&D systems will realize definite environmental benefits by improving irrigation water management, decreasing water losses, and reducing soil alkalinity, salinity and water logging. Furthermore, the Project's proposed support for strengthening environmental monitoring and analysis will improve CWR's overall ability to monitor the environmental impacts of Project interventions and take any appropriate actions. The potential adverse environmental impacts are similar to those for IDIP-1—higher agrochemical pollution and water contamination from increased use of fertilizers and pesticides, soil erosion from existing practices of irrigation and agricultural production, and environmental impacts from construction activities, including improper disposal of excavated sediments from canals. These adverse impacts are not significant and can be effectively prevented, minimized, or eliminated by appropriate preventive actions or mitigation measures and effective construction supervision. Overall, the environmental benefits of the Project's interventions are expected to outweigh any potential adverse impacts.

240. The Framework EMP is the mechanism that ensures that the environmental prevention and mitigation measures identified will be properly undertaken during Project implementation. The Framework EMP includes a monitoring plan and institutional strengthening activities to help ensure that Project impacts are beneficial and sustainable in the Project areas. Finally, the Framework EMP establishes institutional arrangements, proposes a schedule for implementing these activities and indicates costs. Each SPA system will have a site-specific EA/EMP carried out, which will comprise the development of an Environmental Impact Assessment (EA) and EMP.

241. The Framework EMP recommends several broad preventive actions and mitigation measures to address the potential adverse environmental impacts identified. These include: (i) technical assistance, training, and workshops on the approach to be followed and the particular requirements for implementing the Framework EMP to be carried out by the organizations/agencies;(ii) laboratory and field equipment support to organizations/agencies entrusted with implementing the Framework EMP ; (iii) public outreach/awareness campaigns; (iv) environmental monitoring and analysis (including all sampling, testing in laboratory and reporting) for all I&D systems to be undertaken by established local organizations/agencies; (v) enforcing environmental clauses in the construction contracts for civil works for the I&D system to address the construction-related impacts; and (vi) small-scale ecological/biodiversity investments.

242. ***Mitigation Plan***. The preventive actions and mitigation measures depend on the phase of Project implementation in which the preventive actions should be taken or the potential impacts are likely to occur:

- the design phase, which covers the detailed, pre-construction planning and design of the I&D rehabilitation works;
- the construction phase, which covers the actual civil works financed by the Project at selected I&D systems and involves the immediate construction impacts and sediment/waste disposal impacts; and
- the operation phase, which covers the period after actual construction of the civil works has been completed and involves the continuing and longer-term impacts on water and soil quality.

243. ***Monitoring Plan.*** The monitoring of the environmental situation in Southern Kazakhstan is already carried out by the South Kazakhstan Hydro-geological Amelioration Expedition (SKHAE) based in Shymkent that covers South Kazakhstan and Zhambyl oblasts. This is a well-organized organization that has competent and suitable staff, but lacks adequate equipment and facilities to carry out the tasks assigned to it. The Project will assist the Expedition with equipment and training to take on the monitoring in the SPAs. A similar organization will be sourced in Almaty to cover that oblast, while a branch of SKHAE will cover Kyzylorda oblast. This will form part of the capacity building to be undertaken under IDIP-2 and is essential to form the long-term sustainability of interventions. Monitoring will extend beyond IDIP-2; an established organization such as SKHAE will be reinforced to ensure continuity and support to follow-up projects.

244. ***Oversight of Compliance with Preventive Actions and Mitigation Measures.*** The PMU with support of the International/National Consultants will oversee implementation of preventive actions and mitigation measures required by the Framework EMP, by the site-specific EMP, or by the Ministry of Ecology and Biological Resources (MOEB). They will conduct random evaluations of Project sites to evaluate the effectiveness of measures taken and the impacts of Project activities on the environment.

245. ***Monitoring of Ecological Indicators.*** During the life of IDIP-2, regular periodic monitoring and analysis will be carried out on soils, water resources and ground water levels at sites of Project rehabilitation works, and on construction practices in relation to environment, including ecological monitoring activities identified in the EA or in the site-specific EMP as part of the preventive actions and mitigation measures proposed to address potential adverse impacts. This monitoring will include regular analysis of:

- quantity and quality of irrigation water withdrawals and drainage waters discharged, i.e. analysis of mineralization, pH, temperature and turbidity (as initiated under IDIP-1);
- quality of selected receiving waters, i.e. analysis of chemicals and pesticides; and
- quality of soils, including salinity and humus content (content of phosphorus, potassium, nitrogen), and groundwater levels and mineralization, where needed.

246. The water management specialists in MOAs raion HAEs will take samples of soil and water at selected Project sites, record results and report periodically to the PMU. Samples taken for chemical analysis will be analyzed at the oblast laboratory maintained by CWR or MOA. The PMU will analyze and report annually on the results water quality monitoring, recommending any preventive actions or mitigation measures if warranted.

247. ***Pest Management.*** Farmers use agro-chemical pesticides in the SPAs, particularly in the cotton-growing areas, but use of pesticides and fertilizers is relatively low because few farmers can afford them. However, improved water availability at field level may increase farmers' confidence and incomes and they may start using more agro-chemicals. The Framework EMP provides mitigation measures to address impacts of improper pest management, i.e. pest management and IPM promotion in the farmers capacity building and training program; therefore, a separate pest management plan was not required.

248. ***Safety of Dams.*** The Framework EMP carried out during Project preparation confirmed that the Project triggers the safeguard policy related to Safety of Dams (OP 4.37). The "Dam Safety Evaluation" carried out during project preparation (disclosed in 2008) included a program to check and monitor existing dams. Where these dams are outside national borders, close liaison will occur with Kyrgyzstan, where the dams are located, facilitated by similar programs/projects in Kyrgyzstan. Discussions held with CWR and its subsidiary BWAs revealed that this process is in place and good cooperation and data exchange exist.

249. During IDIP-2, detailed reviews, studies, investigations and assessments of the relevant irrigation dams will be undertaken, and pre-identified priority remedial works will be carried out as necessary by the Government under parallel financing. Qualified engineering contractors, experienced with development or rehabilitation of dams, will be contracted to undertake these priority remedial measures. The PMU, through the engineering consultant team, will oversee implementation of any remedial measures to ensure satisfactory compliance with OP. 4.37. Further required remedial measures identified through the IDIP-2 studies will be implemented under the follow up project (e.g IDIP-3).

250. ***Projects on International Waterways.*** The I&D systems in all oblasts involve irrigation systems that draw water from rivers that are international waterways shared by Kazakhstan with neighboring Kyrgyzstan and Uzbekistan. As there will not be any enlargement of existing irrigation systems or development of any new irrigation areas, Project interventions are not expected to adversely affect the quality or quantity of water flows to downstream riparian states. Also, any potential changes in water flow or deterioration in water quality during the construction works will be mitigated through Framework EMP implementation. The rehabilitation and modernization of infrastructure and improvements in water management should increase system efficiency, generate water savings and provide reliable water supply to the users. In addition, excess flows will enable improved management of the flora and fauna in the lands and lakes downstream and to the north of the I&D systems. Considering the above, the Project is exempt from the safeguard policy notification requirement.

C. Institutional Strengthening

251. To ensure implementation of environmental activities (preventive actions/mitigation measures, monitoring) IDIP-2 will provide institutional strengthening to the CWR, particularly to the PMU established within CWR, as well as support for public outreach on environmental management issues to the RCCs and RCC members. Institutional strengthening will comprise building technical capacity within the PMU, delivering technical assistance and training, purchasing sampling and monitoring equipment, and support for public outreach/awareness activities. A Project goal is to institutionalize these environmental activities within CWR.

252. ***Technical Capacity within the PMU.*** The PMU will recruit a full-time environmental specialist to be based in Shymkent for the Project duration to oversee and coordinate implementation of all environmental oversight and monitoring activities in the site-specific EAs/EMPs.

253. ***Technical Assistance and Training.*** The environmental specialist will organize environmental training for water management specialists in the oblast offices, to raise environmental awareness and strengthen overall environmental management capacity in the Project team. Training will address technical skills to perform environmental oversight and monitoring functions; the environmental specialist will support environmental outreach activities for RCCs and RCC members, to raise awareness of on-site compliance with environmental requirements and the results of water quality monitoring activities.

254. ***Public Outreach and Awareness.*** The Project will support improved outreach on environmental concerns to the RCCs and RCC members and dissemination of information on the environmental compliance and water quality monitoring activities of the Project and CWR. This support will include oblast-level meetings or workshops with RCCs, distribution of print material on soil and water quality monitoring, or other public outreach and information activities.

255. ***Monitoring and Laboratory Equipment.*** The Project will provide field sampling and laboratory analysis equipment to support the soil and water quality monitoring program performed by HAEs at the raion and oblast levels.[26].

D. Schedule

256. Implementation of the activities described in the Framework EMP will begin in the first year of Project implementation, with an immediate review and refinement of the details of the mitigation plan, monitoring plan and institutional strengthening program. The PMU, with the support of the environmental specialist and the International/National Consultants, will ensure implementation of the mitigation and monitoring plans and institutional strengthening program as appropriate, given the schedule of infrastructure rehabilitation at selected sites under the Project. The preparation of site-specific EAs/EMPs, with their mitigation measures for construction impacts, for example, will track the pace of infrastructure rehabilitation. These activities will continue, as appropriate, throughout the life of the Project.

257. The institutional strengthening activities will take place over the life of the Project, on the basis of identified needs, with scheduled training for CWR water management specialists occurring early in Project implementation, followed by the outreach activities with the RCCs. The environmental specialist will be provided to the PMU on a full-time basis for the life of the Project. The monitoring plan will be implemented throughout the life of the Project based on the schedule of rehabilitation activities, with periodic monitoring used to evaluate the impacts of mitigation measures and track baseline environmental conditions in the Project areas. Most of the purchase of field equipment should take place in the first year of the Project, but additional needs may be identified later.

[26] The project will be providing a GIS – see Component 2 – which will also serve for mapping the monitoring network, displaying environmental monitoring results, identifying areas of particular concern, etc.

E. Institutional Responsibilities

258. Responsibility for implementing the Framework EMP will fall on the MOEP, and, particularly on CWR ; CWR will have overall responsibility for implementation and will ensure that the Framework EMP is fully integrated into Project implementation. Specifically:

(a) The PMU will ensure that: (i) the design and assessment of physical works complies with Kazakh environmental norms, regulations and requirements; (ii) the preparation of site-specific EMPs complies with guidelines included in the Framework EMP; and (iii) the physical implementation of the activities under the Project complies with the above environmental requirements. The PMU engineers and design engineers from the International/National Consultants assume primary responsibility for providing designs and for preparation of the bidding documents with specifications, taking into account environmental protection requirements. Contractors will be responsible for implementation of rehabilitation works in accordance with environmental requirements specified in the site-specific EMPs and bidding/contract documents.

(b) The International/National Consultants will ensure that all preventive actions and mitigation measures identified by the site-specific EMP are undertaken in a proper and timely manner and will take the necessary actions to monitor their effectiveness. To the extent feasible, the local MOEP staff in the Project raions will assist the International/National Consultants in monitoring implementation of the mitigation plan. Where it becomes apparent that different or additional measures are required to minimize potential negative impacts, the environmental specialist, with the advice of the MOEP staff, will recommend such measures to the PMU.

(c) The International/National Consultants will oversee implementation of the ecological monitoring plan specified in the Framework EMP , ensuring that the monitoring assigned to the CWR hydro-geological expeditions is performed effectively and that the information is shared promptly with appropriate Project and CWR officials.

(d) The International/National Consultants will directly manage the institutional strengthening activities recommended by the Framework EMP, including scheduling training, overseeing the purchase of equipment and managing efforts to raise RCC awareness.

Monitoring and Evaluation Arrangements

259. ***Monitoring and Evaluation Components.*** M&E will need to cover the main Project processes, which include the following:

- Rehabilitation of I&D systems in 10 SPAs;
- Formation of RCC SUs, including establishing RCC SU offices and training of RCC SU staff;
- Forming and supporting RCCs within the 10 SPAs, including training RCC staff followed by on-site support for some core RCC tasks, including holding meetings, setting budgets, forming representative zones, preparing I&D infrastructure management plans, and preparing maintenance plans and budgets;

- Reviewing water sector legislation and preparing proposals for updating;
- Establishing the RRA, including establishing the office, recruiting RRA staff, training, and M&E of key work functions;
- Measures to strengthen MOM of the main systems by service providers, including identifying and implementing measures to improve the overall management; measures to improve system operation; measures to quantify maintenance costs, establish I&D infrastructure management programs, and prepare short and medium-term maintenance plans; and measures to improve performance assessment through the use of remote sensing and GIS;
- Measures to improve on-farm water management to reduce water waste, water logging, and salinisation;
- Capacity building for farmers and farm managers, including participatory training, demonstrating improved and sustainable farm practices, and providing research, extension and agricultural information services;
- Improving farm and O&M mechanization by demonstrating agricultural and maintenance machinery and providing farmers with information on choices, including support to access available credit schemes and financing mechanisms; and
- Organizing semi-autonomous FSCs to provide sustainable agricultural advisory services.

260. Arrangements to implement the proposed Project components create a relatively complex set of target values for results indicators because components are programmed for completion at different times.

261. Under Component 1, Rehabilitation and Modernization of I&D Systems Infrastructure, the handover of the first batch of completed works is planned to commence in Project Year 6, which gives 2 years under this Project to evaluate impacts of the physical works. Most of the M&E for these systems will be done under IDIP-3. Under Component 2, Sustainable MOM of I&D Systems, as much work as possible will be carried out in the early Project years, thereby: (i) establishing new institutional structures as soon as possible; and (ii) allotting as much Project time as possible to embed and support changes that have taken place. In this case some institutional development aspects will run ahead of the physical rehabilitation work in the belief that improvements in water management and other Project benefits can be partially achieved without physical rehabilitation. Formation of RCCs, collaboration of water users on water management, improving water delivery, improving the setting and collection of service fees are Project aspects that can be carried out before and during the execution of the physical rehabilitation work. Well-established RCCs will be better able to help supervise the physical rehabilitation works and improve the MOM of the on-farm system. A similar situation applies under Component 3, Agricultural Development, for which training and demonstration activities will be initiated as soon as feasible under IDIP-2 through a Training of Trainers process to establish a critical mass of Farmer Facilitators, selected from among the most progressive farmers to train and build capacity of the target SPA farmers. All training and demonstration activities will be delivered and managed by the FSCs. The FSCs will also be the venues that will host the agricultural production and irrigation maintenance machinery advisory services activities. This substantive work will then be reinforced and strengthened under IDIP-3.

262. ***Organization of M&E.*** Due to the time lag between IDIP-1 and IDIP-2, the Project will need to start over with the M&E processes and procedures. An M&E specialist will be recruited

into the PMU team; the specialist and the component managers will collect, compile, and process the large amount of Project-generated data. Also, an international M&E specialist will be recruited to help formulate a plan and program to monitor and evaluate Project activities, and provide support during early Project implementation stages, including identifying processes to be monitored and procedures for data collection, processing, analysis, and reporting. The specialist will identify training needs and train the Project M&E staff, and other staff (e.g. RCC SU staff). This will include a series of "awareness-creating" workshops on the role of M&E, participatory approaches to M&E, survey design, use of indicators to monitor Project performance, and report writing.

263. The M&E plan will detail the Project M&E framework, and processes and procedures for each component, distinguishing between the management information systems for Project management to monitor and evaluate day-to-day Project implementation, and information systems for reporting to the Government and the Bank on Project implementation progress, outcomes and results.

264. ***Data Collection, Analysis, and Use of Information.*** Data for M&E will be drawn from internal Project documents and records, from secondary data sources where available, and from specially designed surveys and studies, using interviews and participatory techniques. Primary instruments will include the following:

(a) *Regular Reporting by PMU Component Managers.* Procedures for regular reporting by Project staff on the progress of Project activities will be established early on. These data will be used to report on financial disbursement and physical progress of the works. The M&E staff will need to liaise closely with the Project financial manager.

(b) *Regular Reporting by RCC Support Units.* Reporting systems should be established for the RCC SUs at all levels to report on Project progress on a quarterly basis. Reports will include data on visits made, progress on establishing RCCs, training carried out, meetings held by RCCs for members, formation of representative zones, service fees set and collected, etc., and will be a primary source of data for M&E staff progress reports on institutional and agricultural components.

(c) *RCC Annual Survey and Report.* A key task of the RRA will be to collect and analyze annual data from the RCCs to assess RCC performance. This report will cover the institutional, technical, and financial aspects of RCCs, including the frequency and efficacy of meetings, the setting and collection of irrigation (and where applicable drainage) service fees, cropping patterns, crop yields, water delivery, etc.

(d) *Annual Water Users' Survey.* These will be carried out from Project Year 3 onwards among a sample of water users to gauge their awareness of RCC matters and satisfaction with RCC services. The M&E staff will develop the questionnaire and procedures for selection of RCCs and randomized sampling of water users within an RCC. The survey will be administered and collated by the RCC SU staff.

(e) *Internal Monitoring by RCCs.* Once RCCs are established and functioning, the M&E team and the RCC SUs will encourage RCCs to develop their own internal M&E systems. Specifically, assistance will enable RCC members and farmers to analyze

water use, crop area and crop yield information. The aim will be to enable RCC members to gain insight into the performance of their irrigated farms thus enabling them to make informed crop production decisions.

(f) *Monitoring Institutional and Organizational Change.* The Project aims to strengthen the main system service providers' ability to deliver reliable, adequate and timely water supplies to RCCs and other WMOs. Procedures will be required to monitor and evaluate changes in the main system service providers' capabilities over the lifetime of the Project. The tools developed for this assessment need to be able to measure complex parameters, such as attitudes and motivation amongst staff to service delivery.

(g) *Regular Reporting by Farmer Service Centers.* The FSCs will be charged with delivering all farmers' capacity building activities (on-farm training; workshops, seminars and courses; on-farm research and demonstration activities including on mechanization; etc.). Progress on all anticipated outputs (see Annexes 1 and 2) will need to be measured and reported quarterly. Workshop proceedings are an important management tool that can help verify performance and assess farmer responsiveness.

(h) *Baseline and Impact Evaluation.* Baseline surveys for Project components will be developed in detail for every SPA at the start of the Project. Surveys will be required where the Project is effecting change, such as in the patterns of water distribution, service fee collection levels, the incidence of water logging and salinisation, farmer attitudes to service levels, farmer knowledge levels, access to machinery and credit for farm machinery, etc. These parameters must be measured again at the end of the Project with impact surveys, though some impacts may not be evident immediately. It is anticipated that during the proposed next Project (IDIP-3) some of these impacts can be measured. Where appropriate, surveys will include household surveys and interviews with key stakeholders to establish Project impact.

Role of Partners

265. No other major donor or financier is currently involved in the I&D sub-sector. The ADB is not financing development in the agricultural sector and I&D sub-sector at present, but it may launch a follow-up activity similar to WRMLIP. In that case, IDIP-2 would ensure close cooperation with any ADB-funded project and develop uniform approaches and methodologies towards institutional development, implementation arrangements, and other project activities, to avoid duplication.

Annex 4: Operational Risk Assessment Framework (ORAF)

KAZAKHSTAN: Second Irrigation and Drainage Improvement Project

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Project Stakeholder Risks						
Stakeholder Risk	**Rating**	**Moderate**				
Risk Description: (1) There could be a lack of interest from farmer groups to participate in feedback processes and consultations to develop sustainable advisory/support services through the FSCs; uptake of existing financial facilities to purchase farm and scheme machinery may be poor. (2) Crop returns may be too low for users to commit to meeting the full ISF and RCC O&M charges once all costs are passed on to them.	Risk Management: (1) Project communications for public outreach and awareness, participatory planning, training of farmers, and overall capacity building activities would minimize this risk; also, investment appetite among farmer groups is typically underestimated, and specific well-directed financial advisory services and synergies with other projects (e. g. ACP and APPAP) will contribute to addressing this issue.					
	Resp: Client	Status: In Progress	Stage: Both	Recurrent	Due Date: 31-Dec-2013	Frequency
	Risk Management: (2) The Project design provides for detailed and substantive evidence to be communicated to RCC management and water users regarding the true O&M costs, the consequences (financial and social) of inadequate levels of O&M financing, and the benefits to be derived from adequate levels of funding. The Project sustainability priority and focus is on full and adequate ISF charges and payments for MOM of I&D systems, including reasonable contributions to future I&D infrastructure works replacement, as opposed to recovery of capital works investment costs. Maximization of potential farm returns through the Project agricultural development component will be a further important mitigating factor.					
	Resp: Client	Status: In Progress	Stage: Implementation	Recurrent	Due Date: 31-Dec-2013	Frequency
Implementing Agency (IA) Risks (including Fiduciary Risks)						
Capacity	**Rating**	**Substantial**				
Risk Description: (1) Government intention to establish a farmer-responsive farmer training and advisory services system through KAI may not be realized effectively. (2) The PMU within CWR has established FM arrangements; these were assessed as Moderately Satisfactory to the World Bank. The overall IDIP-2 FM risk rating is Substantial.	Risk Management: (1) KAI is successfully restructuring the National Agricultural Research System (NARS), has the credibility and potential to establish a functional advisory system, and has the best available network. The WB-supported ACP has effectively supported KAI's development in this area.					
	Resp: Client	Status: In Progress	Stage: Both	Recurrent	Due Date: 31-Dec-2013	Frequency
	Risk Management: (2) Actions needed include updating financial and accounting procedures in the POM (an Effectiveness condition), upgrading and customizing Project accounting system to support reporting requirements of the new Project (a related Effectiveness condition is the signing of a contract by the Borrower with terms of reference satisfactory to the Bank), and enhancement of the staffing by hiring a FM Consultant. In addition, the following mitigation measures are recommended: (a) updating control procedures in the POM; (b) regular submission of interim financial reports that will be used to monitor overall Project financial activity; (c) Project financial statements will be audited by independent auditors on terms acceptable to the World Bank; and (d) regular, risk-based FM supervision and procurement prior and post reviews to ensure continued adequacy of FM and procurement arrangements.					

	Resp: Both	Status: In Progress	Stage: Both	Recurrent	Due Date: 31-Dec-2013	Frequency
Governance	**Rating**	**High**				
Risk Description: Public procurement lacks transparency, and the perceived country risk results in IDIP-2 receiving a procurement risk rating of High. Identified risks include: (i) remaining inconsistency of Government fiduciary systems, including procurement, with international standards; (ii) potential for attempts to influence procurement decisions, particularly from local institutions in view of decentralized Project implementation arrangements; (iii) difficulties in recruiting qualified procurement consultants due to the low MOF salary levels; (iv) procurement delays; and (v) perceived level of corruption in the country (see Annex 3 for procurement risk assessment details).	Risk Management: Mitigation measures include, among others, the following: (i) procurement for the Project will be carried out in accordance with (a) "World Bank Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers (January 2011)"; (b) "World Bank Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers (January 2011)"; and (c) the provisions stipulated in the Loan Agreement; (ii) , the Bank team will carry out prior review of all major contracts and ex-post review of other contracts; (ii) further periodic and regular procurement training will be provided, in addition to the four-day workshop held in September 2009, and (iv) the Project will follow the World Bank Group anti-corruption policies as set forth in "Guidelines On Preventing and Combating Fraud and Corruption in Projects financed by IBRD Loans and IDA Credits and Grants" (current edition).					
	Resp: Bank	Status: In Progress	Stage: Both	Recurrent	Due Date: 31-Dec-2013	Frequency
	Risk Management:					
	Resp:	Status:	Stage:	Recurrent	Due Date:	Frequency
Project Risks						
Design	**Rating**	**Moderate**				
Risk Description: (1) Consultants may fail to develop and adopt improved and cost-effective designs for rehabilitation works, resulting in designs that exceed budget allocations and/or may not be well suited to MOM by RCCs (for the RCC-level systems). (2) The Framework EMP carried out during Project preparation confirmed that the Project triggers the safeguard policy related to Safety of Dams. (3) The Project could experience cost overruns during implementation.	Risk Management: (1) A strong combination of international and national consultants will be recruited to form a team that can provide best international practice and local knowledge and can achieve high-quality designs for systems that are appropriate for local conditions and that RCCs can operate and maintain reasonably and at minimum cost.					
	Resp: Client	Status: In Progress	Stage: Implementation	Recurrent	Due Date: 31-Dec-2013	Frequency
	Risk Management: (2) Detailed reviews, studies and assessments of the relevant irrigation dams will be undertaken, and pre-identified priority remedial works will be carried out. Qualified engineering contractors experienced with development or rehabilitation of dams will be contracted to execute these priority remedial works. The PMU, through the Engineering Consultant team will oversee implementation of remedial measures. Further required remedial measures identified through the studies and assessments will be planned for implementation under IDIP-3.					
	Resp: Client	Status: In Progress	Stage: Implementation	Recurrent	Due Date: 30-Apr-2014	Frequency
	Risk Management: (3) Physical and price contingency allowances are included in the cost estimates. The detailed design can be guided by the BATNEC concept (Best Available Technology Not Entailing Extra Cost).					

	Resp: Bank	Status: In Progress	Stage: Implementation	Recurrent	Due Date: 30-Apr-2014	Frequency
Social and Environmental	**Rating**	**Moderate**				
Risk Description: (1) Potential farmer incapacity to pay the ISF could lead to reduced access to I&D and eventually to no access at all. Land leases are conditional on the land being used to its full capacity, so inability to pay the ISF could result in loss of land rights. A related risk is that, with Project-generated increases in both the charges for irrigation services and the value of the land, economically stronger farmers could use ISF payments to gain access to more land. (2) Project impacts could include higher agrochemical pollution and water contamination from increased use of fertilizers and pesticides, greater soil erosion from existing irrigation and agricultural practices, and environmental degradation from construction activities including improper disposal of excavated sediments from canals.	Risk Management: (1) Project RCC support coping mechanisms will be developed to minimize these social risks while developing strong community cohesion. Establishment of FSCs at raion level and the formation of farmers groups will improve access to extension and training services for all farmers, including the smaller farmers, with the aim of improving their agricultural production and productivity and hence generating higher net farm incomes.					
	Resp: Client	Status: In Progress	Stage: Implementation	Recurrent	Due Date: 31-Dec-2015	Frequency
	Risk Management: (2) Each SPA system will have a site-specific EA carried out, which will comprise the development of an Environmental Impact Assessment and an EMP. The Framework EMP recommends several broad preventive actions and mitigation measures to address the potentially adverse identified environmental impacts, including (i) technical assistance, training, and workshops on the approach to be followed and the particular requirements for implementing the Framework EMP to be carried out by the responsible organizations/agencies; (ii) laboratory and field equipment support to the organizations/agencies entrusted with implementing the Framework EMP; (iii) public outreach/awareness campaigns; (iv) environmental monitoring and analysis (including all sampling, testing in laboratory and reporting) for all I&D systems to be undertaken by established local organizations/ agencies; (v) enforcing environmental clauses in the construction contracts for civil works for the I&D system to address the construction-related impacts; and (vi) small-scale ecological/biodiversity investments.					
	Resp: Client	Status: In Progress	Stage: Implementation	Recurrent	Due Date: 31-Dec-2015	Frequency
Program and Donor	**Rating**	**Low**				
Risk Description:	Risk Management:					
	Resp:	Status:	Stage:	Recurrent	Due Date:	Frequency
Delivery Monitoring and Sustainability	**Rating**	**Substantial**				
Risk Description: (1) Required inter-sectoral coordination with other ongoing projects (ACP, APPAP) could fail to occur and synergies may not materialize. (2) Cost overruns may result from receiving bids that are higher than pre-bid cost estimates (a calculated risk, given the use of only moderate physical contingency allowances and modest levels of consultancy services and goods in the cost estimates). (3) Capable contractors may not be attracted to carry out the civil works contracts. (4) A suitable provider for advisory and extension support services may not be adequately functional at the SPA level. (5) Adequate funding of MOM of I&D systems remains a substantial risk in Kazakhstan due to limited government budgetary allocations and low ISF values.	Risk Management: (1) The World Bank is the responsible partner for such projects and will ensure that maximum synergies occur between the three projects. Specific Project implementation arrangements are crucial to ensure smooth coordination and relevant synergies.					
	Resp: Bank	Status: In Progress	Stage: Both	Recurrent	Due Date: 30-Apr-2014	Frequency
	Risk Management: (2) Mitigations as needed will include: (a) seek additional financing at the Mid Term Review; (b) reduce scope of works (through reduced spatial coverage, i.e. level B Project restructuring); and (c) adjust consultant bid documents to prioritize bidders who offer acceptable quality at low price (e.g. QCBS evaluated at 70 percent quality and 30 percent price, as opposed to 80 percent and 20 percent, and/or budget envelope declared during tendering).					

	Resp: Bank	Status: In Progress	Stage: Implementation	Recurrent	Due Date: 31-Dec-2017	Frequency
	Risk Management: (3) Most works will be internationally tendered; earlier Bank and ADB projects have indicated substantial interest among foreign contractors, who will work with national contractors that have earlier project experience. Contract durations will be realistic, based on previous experiences.					
	Resp: Client	Status: In Progress	Stage: Implementation	Recurrent	Due Date: 31-Dec-2014	Frequency
	Risk Management: (4) The Project will support competitive procurement of a TA consortium, providing several services including extension services. Assistance and guidance from WB/FAO on extension and advisory services would also be mobilized.					
	Resp: Client	Status: In Progress	Stage: Implementation	Recurrent	Due Date: 31-Dec-2013	Frequency
	Risk Management: (5) The Project will strive to have the ISF level set based on actual system MOM needs on a scheme-by-scheme basis. After actual MOM costs are known on a system-by-system basis, a methodology will be devised to gradually phase in a system of full user payment for irrigation services.					
	Resp: Client	Status: In Progress	Stage: Implementation	Recurrent	Due Date: 30-Apr-2014	Frequency
Other (Optional)	**Rating**					
Risk Description:	Risk Management:					
	Resp:	Status:	Stage:	Recurrent	Due Date:	Frequency
Other (Optional)	**Rating**					
Risk Description:	Risk Management:					
	Resp:	Status:	Stage:	Recurrent	Due Date:	Frequency
Overall Risk						
Implementation Risk Rating: **Substantial**						

Annex 5: Implementation Support Plan

KAZAKHSTAN: Second Irrigation and Drainage Improvement Project

Implementation Support Strategy and Approach

266. Implementation support is tailored to the implementation arrangements detailed in Annex 3. The CWR, PMU and main consultancy organizational arrangements (structure, responsibilities, locations, etc) are well formulated and indeed well tried since they correspond closely to those in use for previous comparable projects (IDIP-1 and SYNAS-1). Also well outlined in Annexes 3 and 4 are the required and expected procedures and measures designed to mitigate identified risks and ensure successful implementation. These are applicable to both the client implementation organizations (for implementation) and the Bank's implementation support team (for review, facilitation, supervision and due diligence), and cover the full range of the technical engineering, institutional and agricultural development aspects as well as the corresponding managerial, fiduciary, socio-environmental safeguard and M&E aspects. The main areas of focus and skills requirements for implementation support to be provided by or through the Bank are as summarized in the following table.

Implementation Support Main Focus and Skills

Time	Focus	Skills Needed	Resource Estimate	Partner Role
First twelve months	Start of implementation: • Support to detailed design • Support to implementing initial activities (e.g. PIDM) • M&E establishment	• Project management • Operational skills • I&D planning and design skills • Rural (institutional / agricultural) development skills • FM • Procurement • Environmental and social safeguards • M&E	$120,000/year	NA
Months 13 to 84	Implementation of second and third phase I&D rehabilitation schemes: • Support to implementation for all schemes • M&E	• Project management • Operational skills • I&D design, construction supervision and O&M skills • Rural (institutional / agricultural) development skills • FM • Procurement • Environmental and social safeguards • M&E	$100,000/year	NA

Time	Focus	Skills Needed	Resource Estimate	Partner Role
Other	• Design TA • Institutional strengthening (WUAs, O&M, fees determination, equipment, etc.) • Agricultural support and extension services including mechanization	• Expertise in I&D design • Expertise in institutional development (WUAs, O&M, tariffs and machinery) • Expertise in agricultural extension and mechanization	$30,000	NA

Implementation Support Plan

267. The table below shows the estimated input requirements for key personnel to carry out the implementation support for the project.

Implementation Support Plan Skills Mix

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
TTL and Irrigation Specialist	10/year	2	HQ staff
Agriculture Specialist	3/year	2	HQ staff
Operational Specialist	8/year	Local trips	Local staff
Procurement Specialist	4/year	Local trips	Local staff
FM Specialist	3/year	Local trips	Local staff
Environmental Specialist	3/year	2	HQ staff
Social Development Specialist	3/year	1	HQ staff
Institutional/WUA specialist	2/year	2	HQ/FAO staff
Agriculture extension specialist	2/year	2	Local staff
Water legislation specialist (water lawyer)	1/year	1	HQ staff

268. ***FM Supervision Plan.*** Project implementation progress reports will be monitored in detail during supervision missions. FM specialists will review the IFRs regularly; results or issues will be followed up during supervision missions. Annual audited Project financial statements and management letters will be reviewed, and issues will be identified and followed up with the implementing agency.

269. The FM supervision missions will include a review of Project FM and disbursement arrangements (and will include limited transactions review of a sample of SOEs, and movements on the Designated Account) to ensure compliance with Bank requirements and contract management. In addition, FM supervision will focus on the effectiveness of the Project internal control framework and accounting record keeping accuracy. Risk-based FM supervision will be conducted, initially every six months during early Project implementation, and frequency may be reduced later, subject to satisfactory performance.

Annex 6: Team Composition

KAZAKHSTAN: Second Irrigation and Drainage Improvement Project

World Bank staff and consultants who worked on the project

Name	Title	Unit
Ahmed Shawky M. Abdel Ghany	Sr Water Resources Spec. (TTL)	ECSAR
Aliya Kim	Financial Management Analyst	ECSO3
Anara Akhmetova	Procurement Assistant	ECCKZ
Bakyt Arystanov	Consultant	ECSEN
Danielle Malek Roosa	Senior Counsel	LEGES
Gulana Enar Hajiyeva	Senior Environmental Specialist	ECSEN
Hiromi Yamaguchi	E T Consultant	ECSAR
Ian T. Anderson	Consultant	EASHH
Janna Ryssakova	Consultant	ECSEN
John Otieno Ogallo	Sr Financial Management Specialist	ECSO3
Joop Stoutjesdijk	Lead Irrigation Engineer	SASDA
Joseph Paul Formoso	Senior Finance Officer	CTRLA
Katelijn Van den Berg	Senior Environmental Economist	ECSEN
Kosuke Anan	Social Development Specialist	ECSSO
Larysa Hrebianchuk	Program Assistant	ECSSD
Lynette Alemar	Senior Program Assistant	ECSSD
Nurbek Kurmanaliev	Procurement Specialist	ECSO2
Ramiro Ignacio Jauregui-Zabalaga	Counsel	LEGLE
Roxanne Hakim	Senior Anthropologist	ECSSO
Sofia De Abreu Ferreira	E T Consultant	LEGLE
Yuling Zhou	Lead Procurement Specialist	EASR2

Annex 7: Economic and Financial Analysis

KAZAKHSTAN: Second Irrigation and Drainage Improvement Project

270. ***Purpose of the Analyses.*** The financial analysis intends to assess Project impact on farm performance of water users, in particular (i) improved crop performances, on the basis of crop budgets before Project and at full development after the Project for each SPA, (ii) projected impact on household incomes and poverty levels, on the basis of typical farm models, and (iii) water users' potential ability to pay fees for irrigation services. The economic analysis aims to assess Project impact at the national level, through first aggregating costs and benefits for each SPA and adjusting financial prices to get economic values, and then performing an economic analysis of the entire Project by aggregating all Project costs and projected benefits.

271. ***Expected Benefits from Project Interventions.*** Sufficient, timely and reliable supply of water to users will result from restored and sustained I&D infrastructure and sustainable MOM. Combined with agricultural development activities, these would produce Project benefits as follows:

- *Improved agricultural performances*, including: (i) yields increased to levels conservatively assumed to correspond to those achieved on average by farmers on well functioning I&D schemes; (ii) scheme crop area and intensity increases, through an estimated 16,700 ha (about 15 percent of the command area of 113,163 ha), currently left fallow for lack of functioning infrastructure, being put back under cultivation, and through achieving estimated increased crop intensities of from 1.1 to 1.2 as a result of reasonable additions of short-cycle crops to the cropping patterns; (iii) increased prices of some commodities due to improved quality resulting from reduced salinity and use of modern agricultural technologies; and (iv) progressive partial transformations of cropping patterns into more sustainable patterns with higher value crops;
- *Improved soil conditions*, through lower incidences of salinity and water logging due to improved drainage, producing positive impacts on crops and environmental and social benefits such as lower risks of desertification, increased sustainability of farming systems, better quality of potable water, and reduced damage to housing due to high water tables;
- *Increased water use efficiency,* through decreased water losses and reduced withdrawals from the Syr Darya.

272. ***Methodology***. The methodology is based on the following principles:

- The analysis aims to quantify incremental benefits attributable to the Project by comparing projections (based on scenarios) of crop performances with Project and without Project;
- The without-Project scenario derives from the "before Project" situation by applying a modest annual rate of crop performances decrease (about 2.0 percent per year) based on past yield trends;
- To avoid errors of comparison of non-average climatic conditions, the "before Project" situation corresponds to 2007-10 average crop yields and cropping patterns in each SPA;

- With-Project projections correspond to realistic and conservative estimates of yield increases and modified cropping patterns resulting from improved water supply; and
- Prices were converted into economic values in the analysis by calculating import and export parity prices of major inputs and outputs. An opportunity cost of labor corresponding to 80 percent of current cost of unskilled labor was used for farm labor.

Financial Analysis

273. ***Crop performance***. The financial analysis is based on crop budgets, i.e. typical input-output models of various crops based on observed practices. Two sets of crop budgets were prepared for each of the 10 SPAs, namely:

- *before Project* models, consisting of actual budgets based on averages of crop performances recorded in the respective SPAs during 2007-10, to mitigate risk of excessive climatic influence on a specific year;
- *with Project* model, consisting of projected performances at full development (i.e., four years after completion of rehabilitation work) when full benefits of Project interventions are assumed to have materialized. Projections are based on conservative assumptions derived from actual yields and input use practiced by farmers when good water supply is available; projections have been cross-checked with crop budgets developed by the Bank-financed ACP.

274. Table 17 below summarizes crop performances in Project areas before and after Project. Yields vary somewhat from one scheme to another. The Table provides typical yields. Family labor is not assumed as a financial cost. This exercise aims to analyze financial net returns per hectare. The following observations can be made:

- Vegetables show the best results in return per ha and return per m^3 of water. However, their development is limited, maximum 5 percent of cropping patterns, due to marketing difficulties and high labor intensity;
- Cotton shows sufficient financial return per m^3 of water, but much less labor intensive than vegetables and assured marketing; this explains why cotton occupies between 50and 70 percent of irrigated areas in South Kazakhstan;
- Rice shows good financial results per hectare under current price conditions. However, the economic analysis shows that good results rely on the existing Government subsidized scheme, without which economic returns per hectare appear much lower. Rice crops demand for water is high at 20,000 to 25,000 m^3 per ha; but the return per m^3 is low;
- Current low yields shows lucerne has a relatively low return, but it improves soil fertility in crop rotation; potential exists for sufficient returns if yields are increased (with-Project scenario);
- Soya, wheat and sugar beet have similar financial returns per $m^3$of water.

Table 17: Crop Performances in the Project Areas Before and After Project

Crop	Yield (ton/ha)		Net Return per ha (KZT/ha)		Net Return per water (KZT per 000 m^3)	
	Before Project	With Project	Before Project	With Project	Before Project	With Project
Cotton (e.g. Makhtaaral)	1.85	3.50	25,533	186,893	3,427	28,317
Lucerne (e.g. Kyzylkum)	6.83	15.00	14,164	51,531	1,018	7,060
Maize (e.g. Makhtaaral)	3.35	7.00	94,021	225,616	13,058	43,388
Rice (e.g. Kyzylorda)	3.53	5.50	106,477	221,441	4,437	10,396
Soya (e.g. BAC)	1.50	2.50	40,936	72,458	9,200	16,282
Sugarbeet (e.g. Kapal)	14.20	35.00	46,192	194,710	5,532	23,319
Vegetables (e.g. Malaisary)	28.00	36.00	348,177	541,473	40,722	69,867
Wheat (e.g. Kyzylkum)	2.88	4.00	61,544	100,748	11,547	18,902

275. ***Farm Models.*** Farm models aim to assess Project impact at household level. Four representative farm models were worked out on the basis of average farm sizes observed in some SPAs: Kyzylkum (10 ha); Makhtaaral (3 ha); Arys Turkestan (4 ha); and BAC (3 ha). Table 18 summarizes farm model analysis results.

Table 18: Results of Farm Model Analysis

Farm Model	Location (SPA)	Area (in ha per household)	Net Agricultural Income per HH*				
			Before Project		With Project		Change (in %)
			KZT	US$	KZT	US$	
1	Kyzylkum	10	524,267	3,557	1,415,177	9,601	+170
2	Makhtaaral	3	89,860	610	404,939	2,747	+350
3	Arys Turkestan	4	108,752	738	573,472	3,891	+427
4	BAC	3	52,183	354	458,971	3,114	+780

* Exchange Rate: US$ 1 = 147.4Tenge

276. Improvement in farm revenues depends upon farm size, cropping pattern, and status of irrigation schemes. For instance, the highest farm revenue increases of KZT 891,000 are projected to occur in Kyzylkum due to large farms and major deterioration of the irrigation scheme, which means that rehabilitation would bring substantial benefits from yield/price increases and reclaimed land. In contrast, farms in Makhtaaral SPA are projected to have revenue increases of about KZT 315,000 due to small farms and lower rehabilitation benefits because all land is already receiving some irrigation.

277. The Project would reduce poverty. Table 18 shows that the Project would generate additional annual household farm incomes of from KZT 315,000 (Makhtaaral) to KZT 891,000 (Kyzylkum), corresponding to percentage increases of from 170 (Kyzylkum) to 780 (BAC).

278. ***Cost of Water – Irrigation Service Fee.*** The farm-level analysis aims to calculate the impact on farm incomes of various levels of ISF following Project implementation in order to assess beneficiaries' capacity/willingness to pay ISFs. The analysis assumes that future ISFs incorporate the cost of scheme O&M; no recovery of rehabilitation cost is expected. The analysis was undertaken for Kyzylkum scheme on a per hectare basis. Evaluating capacity to pay compares the ISF with: (i) gross revenue per hectare, of which a maximum of around 10 percent for the ISF is assumed would be acceptable to water users; and (ii) incremental financial benefits expected from Project interventions, of which a maximum of 30 percent for the ISF might be acceptable to water users.

279. Water users in the SPAs currently pay the equivalent of about KZT 583 (US$4) per 1,000 m^3, corresponding to about KZT 2,916 (US$19.8) per hectare, assuming that on average 5,000 m^3 are charged to water users in Kyzylkum. This would correspond to only about 2 percent of with-Project gross farm output. However, this amount covers only about 20 percent of requirements to adequately manage, operate and maintain the schemes, according to oblast specialists.

280. Under the Project, the ISF would have to be substantially increased over time to eventually cover full O&M costs for the scheme. The Project's second component will include survey work to estimate the actual cost of O&M. At this stage, estimates show that current ISFs would have to be increased about 5 times to KZT 15,185/ha. This would correspond to almost 11 percent of with-Project gross farm output and to 17 percent of with-Project incremental farm revenue (see Table 19). These levels should be acceptable to farmers if and when projected benefit levels are realized or exceeded.

Table 19: Service Fee Calculations under 0% Investment Cost Recovery

	Value in US$	Value in Tenge	As % of Gross Output	As % of Incremental Farm Revenue
Investment Cost Recovery	-	-	0.0%	0.0%
Total Water Fee (by adding O&M)	102	15,185	10.7%	17.0%

Economic Analysis

281. The economic analysis aims to assess country-level Project impact and includes four steps: (i) convert financial prices into economic values to assess the real costs and benefits from the country point of view; (ii) analyze the 10 SPAs using economic values and aggregating economic costs and benefits at scheme level; (iii) undertake economic analysis of the overall Project by aggregating all costs and benefits; and (iv) perform a sensitivity analysis.

282. ***Financial Prices and Economic Values.*** Financial prices have been converted into economic values for the economic analysis to correct potential national price distortions. Most outputs (wheat, cotton, rice, maize) and inputs (fertilizers) are tradable commodities on international markets so their export parity prices were translated to their economic values, since Kazakhstan is a net exporter of these commodities. The main difficulty is uncertainty about medium-term international price projections, since commodity prices have recently been soaring

for rice, wheat, maize, fertilizers and to a lesser extent, cotton. The analysis has applied average international prices observed during 2010. Table 20 below summarizes the conversion of financial prices to economic values.

283. Table 20 below shows that cotton prices on the international market are now higher than the prices paid to producers. Wheat, rice, maize and sugar beet remain subsidized; their prices are Government-controlled to some extent. Some commodities are not traded internationally; in the absence of obvious distortion, a conversion rate of 100 percent was applied, for example, to melon and potatoes. Local fertilizer and fuel prices correspond roughly to their parity prices. Family labor is valued at KZT 880 per day (80 percent of cost for unskilled labor in rural areas) in economic terms.

Table 20: Summary of Financial and Economic Prices

Item	Unit	Financial Price (KZT)	Economic Value (KZT)	Conversion Factor
Outputs / Commodities				
Cotton	Ton	73,300	86,894	119%
Wheat	Ton	28,500	25,625	90%
Rice	Ton	58,000	23,900	41%
Maize	Ton	32,690	17,554	54%
Melon	Ton	14,000	14,000	100%
Sugar Beet	Ton	7,700	5,775	75%
Lucerne	Ton	19,195	23,034	120%
Soya	Ton	45,000	45,492	101%
Inputs				
N Fertilizers	Kg	34.60	29.21	84%
P Fertilizers	Kg	23.90	21.31	89%
K Fertilizers	Kg	29.55	29.55	100%
Machinery Services	per ha	various	various	100%
Paid Labor	Day	1,080	1,080	100%
Family Labor	Day	0	880	na

284. The Project I&D rehabilitation estimated investment costs include 12 percent physical contingencies added to the base costs. The further 12 percent VAT allowance was excluded from the economic analysis because it does not represent national costs, simply redistribution among national agents. Price contingencies were also excluded since the analysis is undertaken in constant terms.

285. ***Economic Analysis of Scheme Rehabilitation.*** An economic cost-benefit analysis of rehabilitation for each of the 10 proposed SPAs was undertaken in the following way:

(a) Financial prices were converted to economic values in crop budgets and rehabilitation cost estimates as described in the previous section;
(b) Rehabilitation costs were spread over a projected construction period of 3 to 5 years;
(c) MOM costs were added from the first year after completion and estimated for each SPA;
(d) The 'without-Project' crop performances correspond to the current situation (average during 2007-10) reduced by an estimated 2.0 percent per year corresponding to the continued scheme degradation if no rehabilitation takes place. This corresponds to a

combination of two trends observed in the field due to insufficient water and/or excess water in parts of the schemes leading to waterlogging and secondary salinity: (i) decreased yields; and (ii) decreased land area under cultivation;

(e) Agricultural returns were calculated by multiplying SPA crop areas by without- and with-Project crop budgets to arrive at incremental benefits from Project activities; and

(f) Costs and benefits were aggregated over a 20-year period to calculate the Economic Internal Rate of Return (EIRR) and the Economic Net Present Value (ENPV) assuming a 10 percent discount rate;

286. Results for each of the 10 SPAs are summarized in Table 21 below.

Table 21: Summary Economic Analysis of 10 Proposed SPAs

SPA	Main agricultural Crop(s)	Base Cost* (in US$/ha)	EIRR (percent)	ENPV (US$/ha)
Makhtaaral	Cotton	2,455	24.7%	2,952
Kyzylkum	Cotton	2,373	26.2%	3,550
Arys Turkestan	Cotton	2,169	27.6%	3,286
Kyzylorda	Rice	870	23.0%	891
Tasotkel	Wheat , Lucerne	1,384	25.2%	1,813
Kapal	Wheat, Lucerne	1,396	23.0%	1,500
GeorgiyevskyCanal	Wheat, Maize, Lucerne	1,570	21.2%	1,406
Malay Sarinsky	Diversified	1,277	26.1%	1,879
Akdala	Rice, Wheat, Lucerne	963	15.7%	390
Big AlmatyCanal	Lucerne, wheat, soya	1,570	25.5%	2,106
All 10 SPAs		1,603	23.8%	1,977
Overall Project			**22.3%**	**1,707**

*Excludes price contingencies and VAT but includes all implementation costs and physical contingencies

287. All SPAs show acceptable economic returns.

Overall Economic Analysis

288. If all 10 SPAs are aggregated, the base cost per hectare averages about US$1,980 and the overall EIRR is 23.8 percent. In addition, economic costs for the other two components and for implementation and management were added. The overall EIRR is calculated at 22.3 percent and the ENPV (with a 10 percent discount rate) is estimated at around US$193.0 million.

Sensitivity Analysis

289. Sensitivity analysis was conducted on variables likely to significantly affect economic viability, or variables considered at risk for value change; these included Project cost increase to 20 percent, Project benefit decrease to 20 percent, and a 2-year delay in Project benefits. Results of sensitivity analysis are in Table 22 below.

Table 22: Results of Sensitivity Analysis

Sub-scheme	Base EIRR	Sensitivity Analysis Scenarios and EIRRs		
		Project Cost Increase (+ 20%)	Project Benefit Decrease (- 20%)	Delay in Project Benefits (2 years)
1. Makhtaaral (South Kazakhstan)	24.7%	21%	21%	18%
2. Kyzylkum (South Kazakhstan)	26.2%	23%	22%	19%
3. Arys Turkestan (South Kazakhstan)	27.6%	24%	23%	20%
4. Kyzylorda (Kyzylorda)	23.0%	20%	19%	17%
6. Tasotkel (Zhambyl)	25.2%	22%	21%	19%
7. Kapal (Zhambyl)	23.0%	20%	19%	17%
9. GMC (Zhambyl)	21.2%	18%	18%	16%
10. Malai Sarinski (Almaty)	26.1%	23%	22%	19%
11. Akdala (Almaty)	15.7%	13%	13%	12%
13. BAC (Almaty)	25.5%	22%	21%	19%
Overall Project	**22.3%**	**19%**	**19%**	**16%**

290. The analysis shows that the overall Project is moderately sensitive to increased Project costs (EIRR drops from 22 percent to 19 percent) and to decreased Project benefit projections (EIRR drops from 22 percent to 19 percent). The EIRR is more sensitive to a two-year delay in achieving Project benefits (EIRR drops from 22 percent to 16 percent).

Annex 8: Background on Formation of Water Management Organizations in Kazakhstan

KAZAKHSTAN: Second Irrigation and Drainage Improvement Project

291. After the breakup of the Soviet Union, a vacuum was created in the management of the Sovkhoz and Kolkhoz farms[27]. The assets of these farms were split up and divided amongst different parties. In some locations the division was between the people that had been working on the farms, in other locations a portion of the land and assets was allocated for distribution to all individuals that lived on the farms;

- The assets comprised the land, equipment, machinery, buildings and the irrigation and drainage system. There were also liabilities, which also had to be shared out;
- Individuals were allocated shares in the assets (and liabilities), typically with each person, including infants, being eligible for a unit of the shares. A family of five would thus have a shareholding of five units;
- Land shares were relatively easy to distribute as the land was divided by the total number of shareholdings. Distribution of the other assets was not always so easy, as shares did not divide down into usable units (for example, shareholders had a part of a tractor, not a whole tractor). Shares in canals and drains could be allocated as a proportion of the relevant total length;
- In some cases where there were liabilities associated with the share distribution some individuals elected not to share in those liabilities, they took their land share and gave up their right to other parts of the share-out. In such cases the other assets were pooled and the opportunity arose for some individuals to acquire these assets, possibly at a modest price;
- Following the share-out there was a spontaneous grouping of shareholders of different forms, families being one of the main groupings. Due to the way in which the land had been allocated these groupings might cut across hydraulic boundaries[28];
- Many of these groupings of individuals organized themselves into legal entities, and had to do so by a certain date. Some did not, for a variety of reasons, and thus gave up their rights to the assets. These assets were then available for others to take up;
- Large WMOs were then formed from these groupings of individuals. These organizations might be APCs, ACs Ltd. or RCCs;
- In locations where the secondary canal was within the Sovkhoz or Kolkhoz the registered landowners each have a share in the secondary canal. These shares are pooled within the various WMOs who then acquire a share of the secondary canal. The WMO then liaises with other WMOs to manage the secondary canal. In some cases the WMO can register its right to manage the secondary canal, in other locations the WMOs can group together to form a WUA.

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[27] Sovkhoz: State farm or State-owned farm; financed by the State. Later, these formed into specialized Sovhozes (e.g. specialized in livestock breeding etc).
Kolkhoz: Collective or communal farm; organized by farmers/peasants themselves using their self funds.

[28] This is for example the case in South Kazakhstan and Kyzylorda where two of the WMOs interviewed had land in different command areas.

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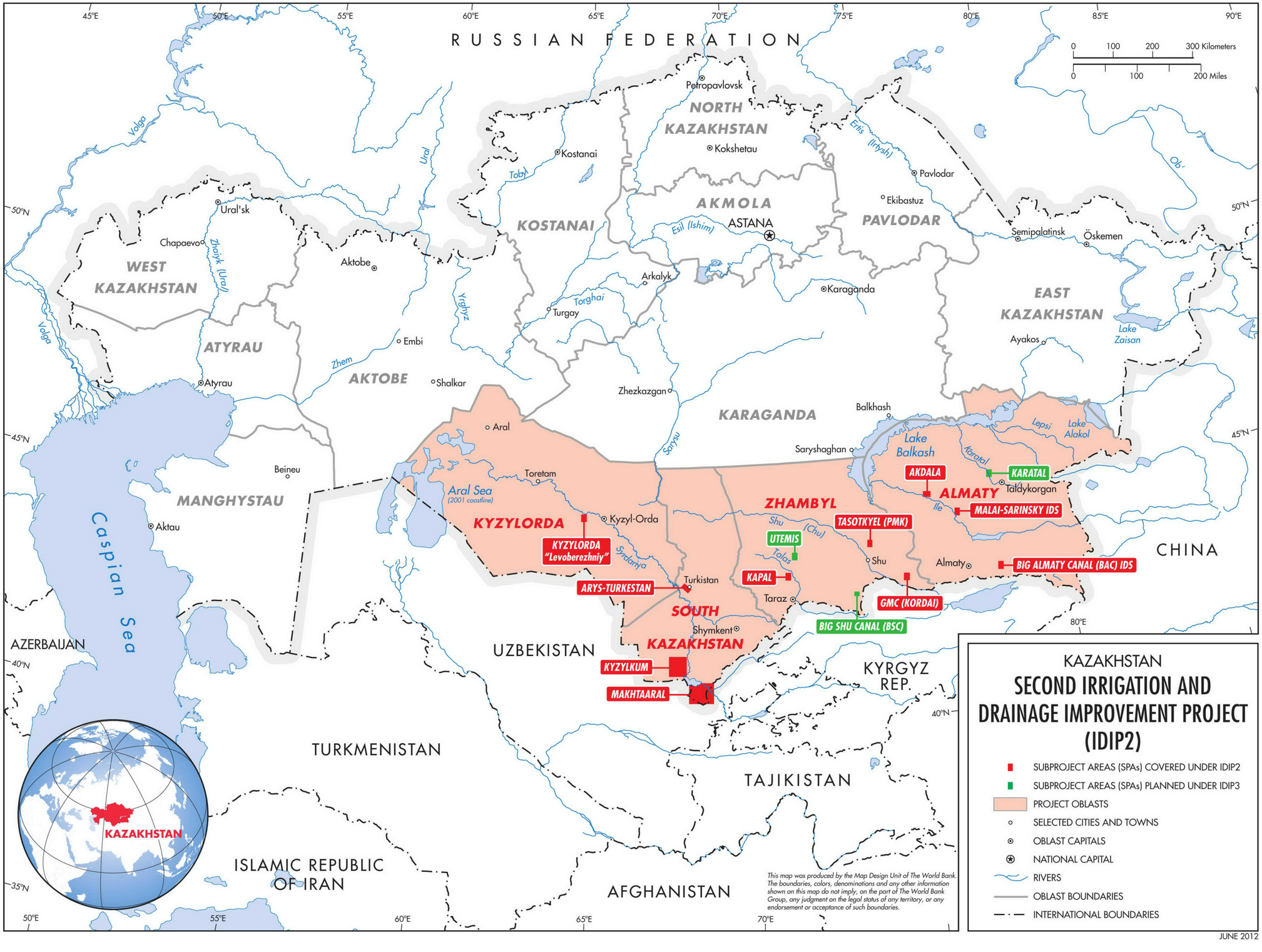

JUNE 2012