PROJECT INFORMATION DOCUMENT (PID)
APPRAISAL STAGE

Report No.: PIDA18028

Project Name	Syr Darya Control and Northern Aral Sea Project, Phase 2 (P152001)
Region	EUROPE AND CENTRAL ASIA
Country	Kazakhstan
Sector(s)	Animal production (30%), Flood protection (30%), General water, sanitation and flood protection sector (40%)
Theme(s)	Infrastructure services for private sector development (14%), Rural services and infrastructure (29%), Water resource management (29 %), Other environment and natural resources management (28%)
Lending Instrument	Investment Project Financing
Project ID	P152001
Borrower(s)	REPUBLIC OF KAZAKHSTAN
Implementing Agency	Ministry of Agriculture, Committee for Water Resources
Environmental Category	B-Partial Assessment
Date PID Prepared/Updated	29-Dec-2014
Date PID Approved/Disclosed	30-Dec-2014
Estimated Date of Appraisal Completion	14-Jan-2015
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Decision	

I. Project Context

Country Context

Over the past decade, Kazakhstan has built a record of strong macroeconomic management and a rules-driven policy and fiscal framework. Kazakhstan is currently an upper middle-income resource-rich economy with significant but quite narrowly focused human capital endowments. Its main natural resource assets are in mineral (oil, gas, ferrous and non-ferrous metals) and agricultural sectors. Kazakhstan's economic growth increased from five percent in 2012 to six percent in 2013 driven by stronger private consumption and investment. However, Kazakhstan was affected by the global economic crisis in recent years. Weaker external demand led to a deficit in the current account in 2013 and to a sharp devaluation of the local currency in February 2014. These challenges encouraged the government to emphasize growth from non-oil sources in its development strategy, 'Kazakhstan's Way to 2050: Common Goal, Common Interests, Common Future'. The strategy's aim is for Kazakhstan to join the 30 most developed countries of the world, and is based on economic diversification, innovation, investment in human capital, and

international trade integration. Toward these goals, the strategy seeks to improve governance, quality of public services, and the business climate.

Sectoral and institutional Context

Syr Darya and the Transboundary Context:

The Syr Darya rises in two catchments in the Tian Shan Mountains in Kyrgyzstan and eastern Uzbekistan—the Naryn River and the Kara Darya, which converge in the Uzbek part of the Fergana Valley, then flows for some 2,212 km west and north-west through Uzbekistan and southern Kazakhstan to the remains of the Aral Sea. The Syr Darya drains a catchment area of over 800,000 square kilometers, but not more than 200,000 square kilometers actually contribute significant flow to the river. Its mean annual flow is around half of that of its sister river, the Amu Darya; typically 35–40 billion m3/year at the Toktogul Dam in Kyrgystan, 15–20 billion m3/year at the Chardera Dam in Kazakhstan (the Chardera reservoir is shared with Uzbekistan, with a total storage of 5 billion m3), then dwindling to as small as 3–4 billion m3/year at the Aral Sea.

The effect of upstream transboundary problems of the past and present have accumulated in the downriver part of the Syr Darya basin. The harnessing of the water resources of the Tian Shan mountain range during Soviet times through great storage schemes designed for irrigation in the Uzbek and Kazakh lowlands has altered the natural water flow. Under natural conditions the Syr Darya is a summer flood river fed by the melting of mountain snow and glaciers in summertime. This has shaped the Syr Darya flood plain, lakes, and the size of the Aral Sea. Along its course, the Syr Darya irrigates some of the most productive agricultural region in Central Asia, and supplies several towns with water. Massive expansion of irrigation canals in the middle and lower Syr Darya during the Soviet period, to water cotton and rice fields, caused ecological damage to the area. The amount of water withdrawn was so high that in some periods of the year, no water at all reached the Aral Sea, similar to water withdrawn from the Amu Darya in Uzbekistan and Turkmenistan. The considerable storage and diversion of the water for irrigation in Soviet times has thus led to the ecologically and economically disastrous drying up of the Aral Sea.

After independence, with the institutional breakdown of a unifying hand in river basin management, Kyrgyzstan, the upstream state that controls Toktogul, the largest reservoir in the Syr Darya basin, has opted for a hydropower regime, because of lack of other energy resources. Kyrgyzstan's hydropower is required most in winter. So great water masses are released downstream during a season when they are not needed for irrigation, which peaks in summer.

Starting 1992, the Interstate Commission for Water Coordination of Central Asia (ICWC) developed a common strategy for transboundary water management for the Aral Sea basin, determining water allocations and reservoir operations in the Amu Darya and Syr Darya basins. Declarations on water sharing were signed in 1995 (Nukus) and in 1997 (Almaty). In March 1998, a long-term water and energy agreement was signed between the three riparian countries—Kazakhstan, Uzbekistan and Kyrgyzstan—vis-à-vis sharing hydropower benefits from Kyrgyzstan.

The International Fund for the Aral Sea (IFAS) was established in 1993 and an interstate council was created to coordinate and manage financial resources and programs in the field of ecological and socioeconomic development in the Aral Sea region. In the Ashgabat declaration of April 1999, the five heads of state again expressed their concern on the quality of life in the Aral Sea region. They acknowledged the need for an integrated and joint regional strategy based on an ecosystem

approach and integrated water management.

Complex allocation tradeoffs still exist in the Syr Darya basin. The energy-poor yet water-rich upstream countries (Kyrgyzstan and Tajikistan) use water for hydropower production in the winter. Conversely, the downstream states (Uzbekistan, Turkmenistan, and Kazakhstan) consumptively utilize water in the summer irrigation season. About 22 million people depend on irrigated agriculture for their livelihoods there, and 20 to 40 percent of the economic output of these countries is derived from agriculture, most of which is irrigated. The extensive development of irrigation since the 1950s is associated with severe environmental problems, most notably the desiccation of the Aral Sea, which has lost up to 90 percent of its pre-1960 volume.

All these challenges are further aggravated by an aging infrastructure in the basin and its management is increasingly compromised by the fact that the monitoring capacity of crucial environmental variables is declining. The irrigation and drainage infrastructure has fallen into disrepair in many parts of the basin, increasing soil salinity, water logging, and dampening agricultural yields.

The Kazakh part of the Syr Darya basin (lower Syr Darya) is thus the lowest part of a very complex, natural and man-made system.

The National Context:

Despite the aforementioned transboundary agreements, Kazakhstan faces river-basin management challenges related to both water quantity and quality.

Water quantity. The Toktogul Reservoir is operated in a hydropower regime, thus potentially limiting optimum river basin management with respect to irrigation delivery and winter flood prevention. Also Uzbekistan has built small, diversion dikes upstream of Chardera which restrict some of the Syr Darya flow that previously could flow during floods to the Arnasai-Aydarkul depression. The initial potential spillage into the depression was 2160 m3/s; it has currently reduced to as low as 600 m3/s. These developments contributed to limiting the flood retention capacity of the Chardera reservoir to a level below 1:500-year flood. Due to the lack of downstream reservoir capacity and freezing of the river in winter, winter flooding became more recurrent. Flooding impacts a significant number of people and livelihoods along the Kazakh part of the Syr Darya and its tributaries. Two main types of flooding have been identified. First, hazards exist from snow-melt induced events due to the sudden onset of spring. Second, river channel capacities are reduced in winter due to ice formation. High winter flows spill over the river banks and the breaking of ice dams can impact vast areas. Due to the flooding, less river water can be retained for the ecosystems and for irrigation in summer. The latter problem is compounded by significant unaccounted for flow diversions in mid-stream Syr Darya during the summer irrigation season.

Water quality. The insufficient water quantity translates into a water quality issue, as most of the country’s riparian territory is part of various internal drainage basins, none of which have an outflow to the sea. Hence pollutants are not flushed out regularly but rather accumulate internally on the weakly drainable lowland territory. Part of the problem originates from mid-stream agricultural activities as large amounts of agricultural discharge are drained back into the river. As the restricted lower Syr Darya flow receives increased effluent loads, the concentration of some water-pollutant parameters has been rising. Total dissolved solids have increased from 0.5–0.6 g/l

in the 1960s to 1 g/l today. As a result, soil degradation is increasingly becoming an issue in the irrigated parts of the country. The consequence includes loss of soil fertility, water logging, increased salinity, and herbicide and pesticide concentrations in aquifers, which are mostly used for domestic water supply. The combination of these impacts contributes to undermine local livelihoods, poses negative health impacts, and incentivizes farmers to exploit land and water resources mostly for short-term gains.

Recent Government Investments and Programs:

The limited internal capacity along the lower Syr Darya in Kazakhstan to intermittently store flows for flood control and/or to offset demand and supply imbalances, entailed that Kazakhstan invests in increasing this river storage/conveyance capacity, while also maintaining a dialogue with the upper riparian (for example, Uzbekistan on the Arnasai depression and Kyrgysta n on the Toktogul operation).

To address the demand-supply seasonal imbalances in lower Syr Darya and degradation of the Aral Sea and its delta lakes, the government prepared a long-term program (Aral Sea Basin Program [ASBP] 1993) which includes: modifications in the Chardera Dam to address reduced spills to Uzbekistan's Arnasai depression; rehabilitation of weirs and replacement of pontoon bridges with high-level bridges to increase the carrying capacity of the river; rehabilitation of irrigation and drainage infrastructure; flood protection measures; improvement of hydraulic infrastructure in the delta; and complementary measures which will be beneficial to the riparian communities and the environment. On this program, the World Bank supported the Syr Darya Control and Northern Aral Sea (SYNAS) Phase I project (US$85 million, 2001–2010), which implemented a targeted subset of this program along the Syr Darya, notably by building an earthen dike, the Kok-Aral dike, to restore the Northern Aral Sea (NAS).

The SYNAS project met its targets. It increased NAS volume by 68 percent (as the Kok-Aral dike raised NAS from 38 m to 42 m +Baltic Sea Level [BSL]), reduced its salinity by 50 percent, increased fish production per year by more than three times, reduced the distance from NAS to Aralsk city from 75 km to around 20 km, improved flora and fauna, and public health, contributed to doubling the number of residential houses in project adjacent areas, improved the safety of Chardera dam, and reduced water losses along lower Syr Darya.

Also recently Kazakhstan built the Koksaray balancing reservoir downstream Chardera Dam, with a storage capacity of 2.2 billion m3, which, if operated in conjunction with the Chardera Dam, can provide some flood mitigation. The Koksaray depression can store excess winter flow that can be used later for irrigation and for maintaining the environmental flows, albeit the evaporation losses in Koksaray can be as high as 0.4 billion m3/year. The Koksaray reservoir would be adequate to store Toktogul's excess winter releases if these releases were to continue in the same pattern as they have over the past years. Such in-country additional storage options thus warrant to be complemented by agreeing with the riparian on the sustainable operation of the hydraulic structures along the Syr Darya.

Building on the SYNAS outcomes, the government requested for the Bank's support to prepare a second phase, SYNAS2, to scale up the same line of SYNAS interventions, as part of the government's fulfillment of the overall Syr Darya program. The SYNAS2 project is envisaged to be the first stage of a two-stage investment program; the second stage being SYNAS3, which would

focus mainly on continuing the NAS restoration, possibly in addition to building an additional emergency spillway and embankment works at Chardera Dam.

The SYNAS2 interventions would help to mitigate floods and increase the conveyance capacity along lower Syr Darya, which could also help in tapping the inter/intra-seasonal storage capacity of water bodies such as the Koksaray and the NAS. For instance, as SYNAS2 would support flood mitigation investments along Syr Darya, this would complement Koksaray's function; if Koksaray happens to be empty at the start of a potentially dangerous flood in the basin, it can act as a buffer and thus mitigate flood impacts; whereas if Koksaray can be filled sufficiently at the beginning of the irrigation season, it can help improve the diversions for irrigation as well as for the ecosystems throughout the season, both in adequate quantity and permissible quality.

Also as part of managing the lower Syr Darya basin, in accordance with a government law enacted on July 7, 2006, for protecting the "natural territories," the government approved a program to protect several natural habitats. These included the Kamyshlybash and Akshatau lakes. Thus, SYNAS2 improves the water diversion to these lakes, to contribute to the broader program goal of reviving their ecosystem and improving their potential for producing fisheries, musk beavers breeding, and reeds that are used for forage and dwelling construction.

The government has also started rehabilitating irrigation and drainage systems on the lands located in Kazakhstan's lower Syr Darya Basin. The recently signed World Bank supported project, Second Kazakhstan Irrigation and Drainage Improvement Project (IDIP2), includes supporting rehabilitation of irrigation and drainage systems on the lower Syr Darya. As irrigation consumes the largest quantity of water, one goal of SYNAS and SYNAS2 has been to help ensure adequate supplies to the irrigation systems, while ensuring availability of water for environmental and domestic uses.

II. Proposed Development Objectives

The project development objectives (PDOs) are to improve flood management capacity and improve water provision for developing aquaculture and other socioeconomic activities in the project areas along the lower Syr Darya.

III. Project Description

Component Name

Component 1: Increasing the water conveyance and flood protection capabilities of the lower Syr Darya

Comments (optional)

Component Name

Component 2: Improving water provision and management in the Syr Darya middle delta lakes area

Comments (optional)

Component Name

Component 3: Enhancing river basin management, contribution to preparing the SYNAS3 project, and project coordination

Comments (optional)

IV. Financing *(in USD Million)*

Total Project Cost:	126.00	Total Bank Financing:	107.00
Financing Gap:	0.00		

For Loans/Credits/Others	**Amount**
Borrower	19.00
International Bank for Reconstruction and Development	107.00
Total	126.00

V. Implementation

INSTITUTIONAL AND IMPLEMENTATION ARRANGEMENTS:

The SYNAS2 implementing agency will be the Ministry of Agriculture (MOA), and the day-to-day management and implementation activities will be undertaken by the Committee for Water Resources (CWR) under the MOA, which was the implementing agency for the completed Irrigation and Drainage Improvement Project (IDIP), Nura River Clean-up Project, and SYNAS, and is currently implementing other World Bank-funded projects including IDIP2 and Ust-Kamenogorsk Environmental Remediation Project. The CWR, which is responsible for the country's overall water sector, has considerable experience with implementation of internationally-financed projects. The project management responsibilities will be assumed by the CWR's Project Working Group, which will have two offices: a project management unit (PMU) in Astana and a project implementation unit (PIU) in Kyzylorda. The Astana PMU will host the project director and fiduciary staff. The PIU in Kyzylorda will host the design and supervision consultants, supported by the CWR and local administrative staff in Kyzylorda (oblast level and 7 raion levels, totaling 700 staff). The project also engages an independent panel of experts (POE) as part of addressing OP 4.37 - Safety of Dams for the Chardera and Koksaray Dams. The POE will review the Chardera/Koksaray safety and operation plans, and review the surveys, studies, and designs for additional dam-safety works and the NAS restoration investment (envisaged under SYNAS3). Overall, the financial management (FM) and procurement arrangements in the CWR are satisfactory.

RESULTS MONITORING AND EVALUATION:

The Kyzylorda PIU will include M&E consultants supervised by the Astana PMU. The project budget includes budget for M&E consultants, M&E incremental costs, modeling/DSS, and some water-monitoring equipment (hydroposts). An intensive baseline survey is not needed as the PDO and outcome baseline indicators are simple (either zero or estimated from the analysis performed by the feasibility study). The project semi-annual progress report will include an M&E chapter informed by undertaking: (1) independent land and beneficiary surveys (including on gender engagement and female beneficiaries) and (2) water modeling/desk-based estimates and in-situ measurements.

SUSTAINABILITY:

The infrastructure introduced by SYNAS2 is publicly owned, and the central and local governments

are entrusted with its operation and maintenance. A socioeconomic assessment was conducted during the SYNAS2 preparation, involving interviews and consultations with local stakeholders, and people's perceptions were elicited on: (i) the problems aimed to be tackled by the SYNAS2 subprojects, (ii) expected socioeconomic benefits, (iii) alternative or supplementary projects and strategies that could tackle these problems. The stakeholders' perception is that SYNAS2 will generate substantial social benefits, as the beneficiaries are both urban and rural communities dependent on water for their livelihood, as well as communities benefiting from the regulation of seasonal floods. While SYNAS2/government will bear the capital investments, the local administrations in the two oblasts where SYNAS2 operates (mainly Kyzylorda, but also South Kazakhstan as to Chardera Dam) would shoulder the operation and maintenance (O&M) costs together with the oblast/raion level offices of MOA/CWR. Ring-fenced cost sharing by the end users for this main-system level is not sought, as the government has the mandate and the capacity to undertake O&M at that system level. Ensuring modern designs and quality construction for the SYNAS2 subprojects will help in sustaining the assets and in systemizing their O&M. Also as SYNAS2 increases the government capacity in river-basin modeling, the government will be more capable of making informed decisions as to the O&M of the lower Syr Darya water infrastructure.

The social and gender aspects of the project have been covered by the land acquisition framework (LAF) and environmental assessment and management framework (EMF) to ensure having tangible additional mechanisms for engaging the beneficiaries including women during project implementation.

VI. Safeguard Policies (including public consultation)

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

Comments (optional)

VII. Contact point

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