

**PROJECT INFORMATION DOCUMENT (PID)
CONCEPT STAGE**

Report No.: AB3887

Project Name	Syr Darya Control and Northern Aral Sea Project - Phase II
Region	EUROPE AND CENTRAL ASIA
Sector	Flood protection (40%); General agriculture, fishing and forestry sector (40%); Irrigation and drainage (20%)
Project ID	P093825
Borrower(s)	GOVERNMENT OF KAZAKHSTAN
	Republic of Kazakhstan Kazakhstan
Implementing Agency	
	Committee for Water Resources Mozhaisky street 28a Astana Kazakhstan Tel: +73172356770 Fax: +73172356776 Consultants_astana@nursat.kz
Environment Category	<input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> FI <input type="checkbox"/> TBD (to be determined)
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1. Key development issues and rationale for Bank involvement

The Government of Kazakhstan recognizes the importance of sustainable development and acknowledges that despite its wealth of natural resources environmental problems are limiting the country's growth potential. Considering the limited water resources in the country, more effective utilization of water resources through better integrated management is an important focus area. The government has started this in the Syr Darya Basin through its commitment to improve the availability of water for productive purposes (irrigated agriculture, fisheries, industry, etc.), but also aiming at the revival of the Northern Aral Sea (NAS). The desiccation of the Aral Sea during the past forty years as a result of rapid development of irrigation schemes resulted in serious economic, social, and environmental damage in and around the Aral Sea. During the last decade, the Kyrgyz Republic increased its hydropower generation during winter as a result of which much water was released in the Syr Darya. These increased flows in the river during winter had little productive impact and did also not benefit the NAS because of limited flow capacity in reaches of the Syr Darya in Kazakhstan. Much of the water arriving in Kazakhstan had to be diverted into desert sinks and irrigation and drainage canals where it was lost for productive purposes.

The Syr Darya Control and Northern Aral Sea Project Phase 1 (SYNAS-1; P046045; FY01; US\$86 million, including a US\$64.5 million loan), which is expected to be completed at the end of 2008, aimed at securing the existence of the NAS at a level of 42 m above Baltic Sea level and improving ecological conditions in its area, and increasing agriculture and fish production in the Kazakh part of the Syr Darya Basin. It focused on the most urgent investments needed to reduce the water losses in the basin and to capture that water in the NAS. Construction of the 13-km Kok-Aral Dike, which separates the NAS from the Larger Aral Sea, was completed in August 2005. In addition, several new hydraulic structures were constructed on the Syr Darya, while other hydraulic structures and the Chardara Dam were rehabilitated, in order to increase the flow capacity of the Syr Darya and safely bring much more water than before to the NAS. SYNAS-1 is already showing impressive results, but there is still a lot of water in the basin that is lost for productive and environmental purposes. Therefore further optimization of the water resources management in the basin is feasible. Considering the excellent results of SYNAS-1, there is broad support for the proposed follow-on project. Government requested involvement of the World Bank to build on the successes of SYNAS-1. The World Bank is well placed to implement complex environmental projects and use its broad international knowledge of integrated water resources management.

The Country Partnership Strategy (CPS) objectives are closely aligned with key priorities of the government. The proposed project would contribute in particular to two strategic CPS pillars, namely Investing in Human Capital and Basic Infrastructure and Safeguarding the Environment.

2. Proposed objective(s)

The project development objective (PDO) of the proposed Syr Darya Control and Northern Aral Sea Project - Phase 2 (SYNAS-2) would be to improve water resources management in the Kazakh part of the Syr Darya Basin. The achievement of the PDO would increase the timely irrigation water supply to agricultural areas, increase fisheries production, and enhance human safety, the environment, and the general well-being of the population living around the NAS.

The preliminary key indicators include: (i) water supply to the major irrigation areas along the Syr Darya according to agreed contracts between the CWR and water management organizations; (ii) inflows into the NAS maintained at a level that keeps salinity levels below 10 gr/ltr; (iii) fresh-fish catches of at least 5,000 ton/year by the end of the project; (iv) floods with levels less than the design return period can be passed safely by the Syr Darya; and (v) evidence of high satisfaction rates among people around the NAS with their living conditions.

3. Preliminary description

The proposed SYNAS-2 would be designed to improve further the environmental and economic conditions along the Syr Darya and the NAS. It would build on the work done under SYNAS-1. This would be achieved by focusing more on integrated water resources management in the basin, which would require a number of structural interventions and strengthening the institutional and management capacity for integrated water resources management in the basin. The proposed components, with a total project cost estimated at about US\$300 million (including contingencies and miscellaneous costs), are described below.

Component A - Rehabilitation of Northern Aral Sea and Delta Lakes. Preliminary studies have indicated that given the available water resources in the Syr Darya the NAS can be enlarged further. This would fit into government's objective of increasing the fisheries potential in the NAS and having water return to the city of Aralsk and nearby fishing villages. The latter would require a NAS water level of at least 46 m or four meter higher than the Kok-Aral Dike. There are two options: (i) increasing the height of the Kok-Aral Dike; or (ii) constructing a new dike (Saryshiganak Dike) near Aralsk with a length of about 10 km. Considering the limited long-term volume of guaranteed water availability, the second option seems to be the preferred one, but this will need to be confirmed with a hydraulic model that is being developed and that will use almost 100 year of real river flow data. Besides a new dike, a 35 km adduction canal would have to be constructed to take water from the Syr Darya, a dredged channel to realize a navigable access to Aralsk harbor, as well as ship locks in the new dike. The preliminary cost for all these works is estimated at US\$60 million (all costs in this description section are base costs).

Several delta lakes, including Aksay Kunvandarya, Kamyshilbash, Akstatau, Lokhalinks, and Zhansai, would be rehabilitated. The revival of these water bodies would be instrumental in improving ecology and biodiversity of the river delta, and in increasing income of people through fish production and other products with economic use such as reeds that are used for fodder and house construction. In order to maintain an adequate replenishment of water to keep salinity and oxygen levels at a biologically adequate level, intermittent supplies of water to the lakes are needed. At present a large number of intakes and semi-natural canals are regulated in a crude and laborious fashion. The project would provide proper hydromechanical regulating structures and channels in order to manage the water as required. The preliminary estimated cost is US\$25 million.

Component B - Improving Conveyance Capacity of the Syr Darya. SYNAS-1 removed several of the worst constraints to river flow, yet there are other sections of the river that need attention in order to increase the flow capacity further up to 700 m³/sec in winter, which would be needed in order to reduce the water losses in the basin and sustainably operate the structures under Component A. The proposed interventions include: (i) construction of flood protection dikes, including up to 18 km of new dikes and rehabilitation and heightening of up to 108 km existing dikes, together with the necessary road overpasses, while up to 6 km of river channel straightening maybe be included. The preliminary costs are estimated at US\$27 million; (ii) rehabilitation of Kyzylorda left bank irrigation canal offtake to ensure its stability during high river flows (US\$3 million); (iii) replacement of two pontoon bridges with proper bridges to remove constrictions to river flows, especially ice-jams (US\$40 million); and (iv) construction of a small hydropower plant (HPP) at Aklak, which is currently being completed under SYNAS-1. Although the HPP would not directly improve the river conveyance capacity, it would make use of the increased and more dependable flows that in any case has to be discharged through the Aklak Structure. The optimum installed capacity is estimated at 8 MW, producing about 30 million kWh per year, which would be a significant contribution to reliable energy supply during the winter to one of the poorest regions of the country (US\$22 million).

Component C - Improving Safety of Chardara Dam. Several safety issues at Chardara Dam have been addressed under SYNAS-1, but the issue of safely releasing extreme floods remains. In the past in order to release high floods water would be released through one of the Chardara Dam emergency spillways into the Arnasai depression in Uzbekistan. The Uzbek government

constructed several years ago a number of dikes to avoid flooding from the depression as a result of which the capacity of the emergency spillway reduced from 2,160 m³/sec to 600 m³/sec as the free outflow in case of emergency was eliminated. An additional spillway would be constructed in the Chardara Dam with an outflow into the Syr Darya in order to allow the dam to pass at least a flood with a 1:1,000 probability of occurrence. A SCADA (Supervisory Control and Data Acquisition system) would be installed to optimize the operation of the various dam components. The estimated cost of the spillway and auxiliary activities is US\$33 million.

The Kazakhstan Government has approved the construction of the Koksarai Reservoir about 140 km downstream of Chardara Dam to improve the management of excessive winter flows, as well as aid summer irrigation supplies to the Kyzylorda region and environmental uses. The storage would be about 3 billion m³. Koksarai would eventually be constructed with government funds and the reservoir would be critical to reduce the flood-damage in the lower reaches of the Syr Darya during extreme flood events.

Component D - Improving Water Resources Management in the Syr Darya. This component would aim at enhancing institutional capacity to improve water management in the Kazakh part of the Syr Darya. This would cover: (i) development of water resources management simulation and optimization models and making them operational for day-to-day use, along with training of staff; (ii) upgrading of the hydrological network for accurate water flow and water quality measurements, with connection through a modern system of communication; and (iii) establishment of operation centers at the NAS, Kyzylorda, Chardara Dam, and CWR headquarters in Astana, linked through a modern communication system, with possibility of communication to upper riparian countries. The cost of the component is estimated at US\$5 million.

Component E – Project Management, Monitoring and Evaluation (M&E), Audits and Training. The component would cover the incremental cost for CWR, including the hiring of consultants to provide day-to-day management support. It would also finance consultants to provide M&E support and carry out independent audits. Finally, it would provide funds for training to strengthen the capacity of CWR and other related agencies. The total cost is estimated at US\$5 million.

4. Safeguard policies that might apply

Environmental Assessment (OP/BP 4.01). An Environmental Assessment (EA) of the project and of the various works that have to be undertaken under the project will be carried out as part of the project preparation studies. The EA will be consistent with procedures for completing the Kazakh Environmental Expertise Review and the World Bank Operational Policies 4.01 on Environmental Assessment. The EA will include the Environment Management Plan (EMP) for any adverse impact of the construction activities as well as of the operation of the project may have on the environment. The EMP will consist of mitigation measures, a monitoring program, and an institutional development/strengthening program for implementation of the EMP. Good environmental documents and procedures have been prepared under SYNAS-1 and these will be used for SYNAS-2 as well.

Safety of Dams (OP/BP 4.37). Under SYNAS-1, following a dam safety review prepared for the Chardara Dam included in the project, an independent panel of experts (IPOE) consisting of

international and national experts reviewed the design and oversaw the implementation of mitigating measures to ensure dam safety. Further work will be carried out on Chardara Dam under SYNAS-2 and an IPOE will remain in place, as needed.

Projects on International Waterways (OP/BP 7.50). Under SYNAS-1, the riparian states (the Kyrgyz Republic, Uzbekistan and Tajikistan) were notified about the project details. The Government of Kazakhstan will be requested to notify the riparian countries for the proposed SYNAS-2 as well.

5. Tentative financing

Source:		(\$m.)
Borrower		160
International Bank for Reconstruction and Development		140
	Total	300

6. Contact point

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