FINAL REPORT

United Nations Development Programme Kazakhstan

00101036 "Institutional Capacity Development and Awareness Rising on Irrigation and Drainage Networks in the Almaty and Turkestan Regions"

09.03.2023

Reporting Period	2017-February 2023
Donor	Islamic Development Bank/Kazvodkhoz UNDP
Country	Kazakhstan
Project Title	**Institutional Capacity Development and Awareness Rising on Irrigation and Drainage Networks in the Almaty and Turkestan Regions**
Project ID (Atlas Award ID) Outputs (Atlas Project ID and Description) Strategic Plan and/or CPD Outcomes	00097216 00101036 Capacity building and awareness-raising. Outcome 3.2. By 2025, all people in Kazakhstan, in particular most vulnerable, benefit from increased climate resilience, sustainable management of environment and clean energy, and sustainable rural and urban development Output 4.1: Solutions developed, and resources mobilized for more sustainable use of ecosystems for the improvement of the well-being of local communities and nature
Implementing Partner(s)	UNDP
Project Start Date	2017
Project End Date	28.02.2023
Total Budget	USD***$890,000*** **(Kazvodkhoz)**
Total resources required	**USD*$890,000***
Revenue received	Donor: ***US$890,000***
Unfunded budget	USD$ 0.00
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I. Executive summary

The project implementation started in 2017 upon signing the project document and the cost-sharing agreement.. The project strategy was reviewed during the inception phase, but no significant changes were necessary and thus no changes were made to the project document i.e. indicators, risks and etc. The project has been under implementation through the early 2023 by strictly following the outlined key objectives within the approved results and resources framework (RRF). Project board meeting were conducted regularly to review the progress, risks, consider adaptive management as necessary and approve annual work plans for the periods to come. Capacity buildings activities were delayed due to COVID19 restrictions and later frequent changes at the management level of the KazVodKhoz that in most of the cases prevented from receiving timely decisions on planned activities. After delivering remaining technical capacity building activities, the project has been completed.

Thus, under the first component, the project undertook very important subject related activities such as comprehensive situational analyses. The situational analyses defined and clarified the present structure of the RSE “Kazvodkhoz”, staffing, regional representatives and situation with the irrigation water delivery and vertical drainage wells, intra and inter farms channels and finally briefly analyzed the socio-economic and environmental situations of the regions. The entire approach of the situational analyses including its plan and visits was well-coordinated and in prior agreed with the Kazvodkhoz”. The project hired a company to conduct an institutional assessment of the Kazvodkhoz. The project team took part in the revision of the state program on the development of the Agro-industrial complex 2017-2021 related to the resource mobilization parts in the irrigation water sector of the state program. As a result, recommendations were provided to the relevant paragraphs on improving the State subsidy systems to mobilize State financial support for water conservation programs such as increasing the subsidy up to 80% for the purchase of multi-use piped drip irrigation systems, for pasture flooding activities.

Under the second component, the project organized and conducted international study tours and working meeting to build capacity and raise awareness of the Kazvodkhoz staff.

Under the third component, the project conducted research and collected data to set a cornerstone for the future implementation activities related to enhancing the self- efficiency of Kazvodkhoz. As a result, the project researched a present tariff policy and developed the concept of the e-billing and automatization of the irrigation water supply systems.

As part of the fourth component, the project delivered trainings, workshops, and working meetings at national and local levels. However, during implementation, the project has encountered delays primarily due to the frequent reshuffle of the management of the CSR "Kazvodkhoz."

Considering incomplete activities and official request from Kazvodkhoz, project board approved the extension of the project till 31.12.2022 and by NtF till 28 February 2023 to complete procurement process of two vehicles to enhance the mobility of the regional branches in Taldykorgan and Shymkent regions to enable timely and quality services to the agricultural formations and individuals towards more profitable agricultural production on irrigated and drained lands.

II. Background

This project seeks to develop the Kazvodkhoz Republican State Enterprise's capacity as a state-leading entity and its branch offices in Almaty and Turkestan regions through institutional change management and improved

irrigation and drainage systems management governance, which would serve as an example throughout Kazakhstan. The project focuses on (i) Strengthening the institutional and human resources capacity of the central Kazvodkhoz office in Nur-Sultan and its branches in Almaty and Turkestan regions, as related to water delivery practices and better farmers' information services on-farm water management (water council & extension); (ii) Development of economic and financial instruments on irrigation and drainage water management; (iii) Development of a metered billing system for irrigation water management. The project intends to align the Kazvodkhoz Republican State Enterprise's functional responsibilities and authorities as a state-leading entity. The project also intends to expose RSE Kazvodkhoz and its branch offices in Almaty and Turkestan regions to international knowledge on more efficient management structures in the water sector. These changes will enhance the sustainability of irrigation supplies and systems as a foundation to encourage donors and investors to return to this sector. The project improves rural communities' ability in Almaty and Turkestan's sub-districts to access irrigation water supply systems with enhanced drainage systems to improve the lives of a substantial number of people living in Almaty and Turkestan regions. UNDP will support the government by developing the institutional capacity building in irrigation water supply and enhanced drainage systems to promote sustainable land management practices in the Almaty and Turkestan regions. The intended project outcomes are as follows: (i) Institutional Development of administrative departments (finance, operations and maintenance, and supervision, mechanization, technical design and planning, water use and delivery), as well as (ii) Capacity development of RSE Kazvodkhoz administration, field specialists and technical field staff (on-the-job training), (iii) Development of a new irrigation water tariff/billing system and (iv) Awareness raising of local farmers and the existing water user's associations (WUA) on efficient irrigation water and drainage network management.

III. Progress Review

Fill in the table with project indicators data:

Expected outputs	Output indicators	Data source	Baseline		Value for the previous year if different from baseline	Final Target for the project	Actual value for the project
			Value	Year			
Output 1.1. Enhanced institutional management and service delivery on irrigation water supply	- Number of administrative staff trained on new efficient structural system of planning, management, roles, scope of work and responsibilities. % of clients benefited upon improved quality service delivery.	*Project reports Feasibility assessment*	0	2016	The project trained 18 staff of Turkistan, Su-metrology branch offices of KVK, and six staff of the central office of KVK	31 60%	*24* -
Output: 1.2. Development of user guides for the personnel of the Kazvodkhoz/BAK/SKBK as services suppliers	Number of user's guides is developed and operational.	*Expertise reports and Kazvodkhoz/SKBK annual report*	0	2016	*9 user's guidance were developed*	*4*	*9*
Output 1.3. Economic mechanisms introduced for improved resource mobilization	Number of economics incentive mechanisms developed	*Reports on economic mechanisms*	0	2016		4	

Output 2.1. Improved inter-action between Kazvodkhoz/SKBK and water consumers	Number of joint meetings/forums on water supply service delivery conducted at local and regional level.	*Project reports*	0	2016		*6*	
	Strategic action plan developed to improve communication between Kazvodkhoz/SKBK and community.	*Strategic action plan*	0	2016	Strategic action plan developed in 2021	1	1
Output 2.2. Learning, dissemination and replication of international best practices in collaborative drinking water supply and delivery system developed and strengthened	Number of advanced international irrigation water supply and management practices are integrated into the national system.	*International best practices study and collection report*	0	2016	*The project provided recommendations on the suitable model of Supervisory Control and Data Acquisition (SCADA) systems in Kazakhstan.*	*2*	*1*
	A number of Kazvodkhoz SKBK and its agencies employees are getting trained on international water management trainings.	*TOR and RFP, BTOR*	0	2016	*67 employees were trained*	25	67
Outcome 2.3. Development of ToT programmes	Number of TOT modules developed	Training modules, LOP and Agenda	0	2016	*8 training modules on water-saving technologies conducted*	*6*	*8*
	Number of experienced trainers amongst the Kazvodkhoz/SKBK.	LOP and Agenda	0	2016	*11 trainers with an upgraded qualification in irrigation water-saving technologies in remote areas.*	8	11

	Number of Kazvodkhoz/SKBK personnel with improved knowledge.	Project report, LOP and agenda	0	2016	*Through exchange programes 67 staff of central Kazvodkhoz office in Astana and its branches in Almaty and Turkistan regions have improved knowledge and experience in water supply sector.*	210	67
Output 3.1. Baseline Survey on Rural Water Supply System and socio-economic condition of the communities in Almaty, Makhtaaral and Shardara districts with an ultimate objective to develop a new water tariff/billing system	Number of pilot projects identified after baseline survey and ready for approbation billing.	*Baseline survey report*	0	2016	*Not found*	*10*	
Output 3.2. Development of the Irrigation Water new tariff/Billing System for Makhtaral and Shardara district	Billing system and software developed and functional in Makhtaral and Shardara districts.	*Project reports*	0	2016	*Not clear from reports.*	*1*	
	Percentage of irrigated lands in project's target areas are equipped with metering system. As per APR 2021 the activity was cancelled, no information is available	*Field reports*	0	2016	*n/a*	*20%*	*n/a*

	Number of automated data collection system installed in Makhtaral and Shardara districts.	*Field reports*	0	2016	*n/a*	*n/a*	*6*

Output 3.3. Development of automated information database for proper operation of the South Kazakhstan Branch office for effective Irrigation Water Billing System in Makhtaral and Shardara districts	Established database reflecting profiles for irrigation water consumers from the target regions.	*Consultancy report and Billing Concept*	0	2016	*Not clear if established or not*	*1*	
Output 4.1. Awareness raising of the rural communities on irrigation water supply system and using Water Billing system and automatic metered irrigation water delivery	Percentage of increased awareness on the importance of a water billing system and collaborative water supply management approaches in enabling the development needs of different sectors and stakeholder groups	*Progress and consultancy report*	0	2016	*2002 people were taught*	*80%*	*100%*
	The number of publications, printing and information material on sustainable drinking water supply and management disseminated amongst the project beneficiaries.	*Progress report and printing materials*	0	2016	*Developed 13 brochures and guidelines Published four articles, two leaflets, and two infographics on national regional and district mass media portals*	*10000*	*21*
Output 4.2. Improved on-farm irrigation water use	Number of strengthened existing water extension centers in target regions.	*Project reports*	0	2016	*10 extension centres were strenghthened*	*2*	*10*

efficiency, operation and maintenance and enhanced system of extension services	Number of Kazvodkhoz personnel and farmers trained on water facility O&M and water use efficiency and technologies.	*Training modules, training reports*	0	2016	*2734 (including indirect 2829)*	*800*	*2734*
Output 4.3. Establishment of web based interactive water supply and delivery platform	Web based information platform on irrigation water supply systems established.	*Progress reports and established information platform*	0	2016	*The project has updated an effective information Internet portal of RSE "Kazvodkhoz," made available to industry entities and potential investors.*	*1*	*1*

Component 1: Institutional development of administrative departments (finance, operations and maintenance, and supervision, mechanization, Technical Design and Planning, Water Use and Delivery)

The project conducted a survey of the existing institutional structure of Su-Metrology, a branch of the RSE "Kazvodkhoz". This survey served as a prelude to preparing a comprehensive long-term development strategy for Su-Metrology. In designing and formulating the recommendation, the project relied on the data exchange and sharing of needed information from the central office of RSE "Kazvodkhoz" as well management of the Su-Metrology.
Under this activity project provided inputs/recommendations for functional strengthening & re-organization of Su-Metrology as appropriate; provided training and skill up-gradation for the 18 staff of Turkistan, Su-metrology branch offices of KVK, and six staff of the central office of KVK) in Shymkent city of Turkestan region. In addition, the project suggested modalities for establishment and management of service provision & business intelligence function in water metrology; and supported in areas such as irrigation and drainage facility management, metrological exploitation, and maintenance; explored the potential and provided recommendations in terms of support software to the metrology system for water intake and water supply, as well as payments systems and matrix for the effective metrological system under the corporate umbrella of the Kazvodkhoz.
In particular, the project assessed the Su-Metrology and its related departments, structure, functions, and competency levels of its office and staff; both in the context of the current and expected shift to a new management system (e.g., increased levels of automation, missing or weak functional aspects structures and introduction of new financial planning and metrological design) drawn from national and international good practices in irrigation water metrology facility management. The results of the completed task included:

- Mapped the skill and competency levels of Su-Metrology and provided a presentation on the most marketable institutional structure and human resources in the Turkestan region.
- Reviewed and documented Su-Metrology scope of works, policies, organizational structures, management structures, and existing and future programs, documented their experience on how to best implement state and none state-subsidized activities through a project-based approach;
- Examined the workload in the Su-Metrology management administration and suggested improvement in their organization, including relocation/merge/integration/bifurcation of functional offices.

Overall, the new irrigation water tariff was approved based on a comprehensive methodology and fee-setting formula. The SDGs were incorporated into the new water code approved by the Government of Kazakhstan in February 2021. The Project

produced a comprehensive institutional review of Kazakhstan's State Water Agency to strengthen the Water Agency's institutional and financial planning system, set out the most appropriate organizational structure and long-term strategy with a detailed action plan up to 2030; improved farm business management for 9400 local farmers on diversifying farm systems and increasing productivity on abandoned farmland and launched the Digital Geoportal https://ic.geoportal.kz/ using a spatial monitoring system for near-real information on the crop, water, soil type, and other financial information about the plot and land users' best farm's business management.

Along with this, two PPP tools were developed. One of those PPT tools was a cost-benefit instrument or database which automatically calculates the effectiveness of the PPP projects considering the location and nature of the water delivery (pumped or mechanical) regions. As part of the PPP initiatives, two master model plans/business plans for two PPP sites in Kazakhstan were developed and submitted to the RSE "Kazvodkhoz." Various financing methods were described and detailed in specific package solutions, considering the facilities, basins, and plans for developing irrigated lands, regional development, and other factors. A medium-term or long-term period for implementing PPPs (from 3 to 30 years) has been envisaged for two standard package solutions. Typical package solutions were included in the plans for the design, construction, reconstruction, modernization of the Hydro technical infrastructures, and the operation of the assets of Su Metrology. As part of this work, proposals were analyzed and developed for the digitalization of the water sector's work and the organization of "Smart water and metering systems."

In addition, the project engaged a national expert on space-based monitoring systems, who has provided a range of options for incorporating remote sensing technology into Kazvodkhoz CSR operational services.

The rationale for the activity was the introduction of modern technologies and innovation in water conservation and irrigation using cosmic monitoring technologies. Space monitoring is used for a wide variety of tasks. The use of remote sensing technology in water conservation in climate change conditions and the growing water deficiency is critical. Launching satellites, miniaturization, and developing digital technologies have significantly increased the available satellite data. As a result, space monitoring was widely distributed and used everywhere. The main advantage of cosmic monitoring is objectivity, inclusion, and relative cheapness.

Considering the above, the national project expert has assessed the possibility of introducing cosmic monitoring into the production activities of the RSE Kazvodkhoz. To reach the deliverables, the expert was tasked to develop recommendations and introduce space monitoring of irrigated land in regional branches of Kazvodhoz in the Almaty and Turkestan regions.

Thus, all the possible remote sensing systems applicable to Kazakhstan's irrigation water sector's condition and context were reviewed and a comprehensive overview of the current situation on using cosmic monitoring in Kazakhstan provided. He recommendations on space monitoring of irrigated land were developed and introduced to regional branches of Kazvodhoz in the Almaty and Turkestan regions. Finally, a transparent methodology for describing the block monitoring schemes for the irrigation sector of Kazakhstan was designed and delivered.

Component 2: Capacity development of technical field staff (on-the-job training)

Following the RSE "Kazvodkhoz" request, the project has conducted research and provided recommendations on the suitable model of SCADA systems in Kazakhstan. The so-called Supervisory Control and Data Acquisition (SCADA) is a computer control system that monitors and controls irrigation water supply processes. This software uses data communications, a graphical user interface, and comprehensive management to monitor and control irrigation systems.

As part of the recommendation, SCADA systems and developments in IT technologies may become an integral part of the Kazvodkhoz water supply processes. For Kazakhstan, it was recommended to use sophisticated and simple sensors to collect a wealth of data from critical components and water supply processes throughout branch offices, regardless of geographical location. SCADA technology then allows the transfer and conversion of that data into usable information. Human-machine interface (HMI) systems display and deliver the data to skilled technicians who can make data-driven decisions quickly and efficiently. Lastly, SCADA systems can work with RCM and maintenance strategies focusing on predictive maintenance. SCADA provides the data and technology to allow a great deal of automation and data collection, which means that problems and failures can be spotted before they cause major equipment damage, shut down an entire production line, cause a severe accident, or result in an environmental catastrophe. As technology continues to develop into the future, the potential for SCADA systems and related processes is excellent in helping companies increase revenue and safety. Please refer to Annex 2 for the presentation on SCADA.

As part of the subsequent activities, within component 2, the project has outlined and structured the billing system and what has to be done to create capacity at Kazvodkhoz and their branch representative levels. Indeed, it has to be mentioned that the effective work of Kazvodkhoz through such a billing system is to estimate total water management, and it requires an urgent comprehensive inter-sectoral information management system. Therefore, the solution to this problem could be an establishment of a comprehensive multi-purpose geoportal. The geoportal is aimed to create a comprehensive and integrated information system and tools to estimate overall water management, e.g., water consumption, payment services, and data visualization. It is proposed to implement the following five actions:

1. Create a unified database
2. Develop a GIS and Web-based GIS to provide information services for the residents and water supply services by the standard web browser.
3. Develop a software for accounting and payment services.
4. Install, assembly, and test equipment accounting (meters)
5. Make changes in the structure and organization of the water supply

1. Creating a unified database

When creating a geoportal, it is necessary to use different information to be checked up and tested at the field conditions. Therefore, the activity has to be carried out in three components.

Component 1.

It is necessary to develop targeted layers containing information about all addresses, their geographical location, and the technology of maintenance and use of the address layer. In addition, an addressable layer could also be helpful for the other social services agencies such as police, emergencies, fire services, ambulance service, etc. This is the beginning of creating digital settlements on a unified digital cartographic basis.

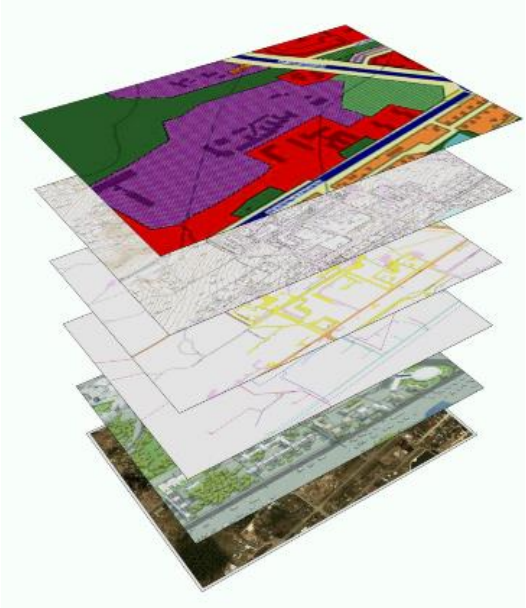
Component 2.

Inspecting and measuring all engineering networks involving operating organizations, e.g., the South Kazakhstan branch office of Kazvodkhoz, tasked with providing water to the sub-districts. All information will be compared with the existing technical documentation; in the case of a lack of documentation, the ground survey will be initiated. Assessing hatches, wells, columns, and water pipes which will be conducted jointly with the representatives of the organizations – providing maintenance services to the networks (South Kazakhstan branch office of Kazvodkhoz, TOO, LLP private and local cooperatives). Measurements will be scheduled with the use of electronic roulette and locator.

Component 3.

Creating the information database on the objects on the ground is designed considering building codes and a variety of indicators based on population, including commercial and industrial enterprises, sports facilities, etc.

- Database of real estate may include a mailing address, constructive building room; year of commissioning; residential area; general housing area; the number of residents, and the number of livestock.
- Database for production and outlets may include address, name owner, structure, view, commercial or industrial area, and the nominal demand for water permits.
- Database Utilities include material, pipe diameter, year foundations, depth of the wells, the degree of wear, and the length of the section.
- Database on population data includes numerical age structure and composition of the privileged categories of the population.



The following features will be available in all segments of the database:
• View characteristics of the objects;
• Search for objects by specified criteria;
• Creation and editing of objects layer "Water";
• Monitoring the state of emergency facilities;
• Output to print reports;
• The ability to remotely connect databases and maps.

2. Development of geoportal

For the system's effective functioning, the following activities must be carried out.
1. The delivery of ultrahigh images and high resolution of the targeted sub-district territory.
2. Perform preliminary and thematic processing of satellite images.
3. The technologies of automated thematic interpretation of images.
4. Sampling, calibration, and verification of interpreted results.
5. As a result of the interpretation of satellite images, the GIS project includes a set of thematic vector layers equipped with legends.
6. Created geoportal
7. Training Kazvodkhoz and South Kazakhstan branch office of Kazvodkhoz on portioning the geoportal (different access to different users).

3. Development of software for accounting and payment services

4. Installation, assembly, and testing equipment on water meters

5. Changes in the structure and organization of the water supply

As per MoM the Activity 2.1.2. on implementation of a pilot project for the introduction of automated digital water measurement devices in one of the irrigation canals of the RSE Kazvodkhoz in Almaty or Turkestan regions was cancelled.

As part of the Activity 2.1.3. on conduction of research and provision of a recommendation to automatize the process of monitoring soil salinization in the Turkestan region, the project has covered six administrative sub-districts in Makhtaral with

the total irrigated lands 37059.0 ha. There are 303.0 thousand populations in the region, which places the district's in the third place after Shymkent and Saryagash regions, the rural population is 91.0% i.e. 276.0 thousand people. The regional center is Zhetysay which is located at 240 km from the regional center.
The total irrigated lands in the district is 138,8 thousand ha. The following crops are mainly grown in the region. Cotton- 77068.0 ha, maize - 11159.0 ha, vegetables - 3474.0 ha, melons - 26456.0 ha, alfalfa- 9520.0 ha, Rice – 2511 ha, other crops- 5906.0 ha.
The average water intake limit put in the region is 800,0 - 1100,0 million m³ but the actual water intake demand is 700,0 - 750,0 million m³. Thus, the average annual water deficit in the region is 150,0 - 250,0 million m³. A cotton is still dominating over the other crops and considered as monoculture in the region where the 60 % of the agricultural lands are occupied by this crop. As it is reported before the 90th there are 842 vertical drainage wells were operating and maintaining the ground water table in a normal manner in order to keep the lands in a good condition. However, due to long term absence of proper maintenance for some 40 years and the lack of budget funding, all vertical drainage wells are completely out of order with all their infrastructure. This has significantly deteriorated and land situation as the ground water table was raised up which is eventually contributed to the soil salinization. According to local water experts, in 2015 totally, out of 144,039.0 ha of irrigated land 39910.0 ha i.e. 28% are with high water table level ranging from 0-1m to 1-2m. The lands with medium-saline, and strong- very strongly saline soils reached - 56107.0 ha - 40%. The low salinized lands are 22532.0 ha - 16%. With high salinity groundwater are: - 42,964.0 ha (3-5g / l) and - 39,007.0 ha (more than 5 g / l). In total, 81,971.0 ha i.e. 57% of all irrigated land are affected by the soil salinization. Overall, the poor land situation has greatly impacted the overall regional land productivity which is caused the reduced yield of the major crops such as cotton - 2 – 2,4 ton / ha, whilst the yielding capacity of the cotton during the 1970-1990 has been reached to 3,5-4.0 ton per ha.
Meantime, it was reported that through 2000-2006, a World Bank and Asian Development Bank has implemented the project on Reconstruction of irrigation and drainage networks in an area of 50.0 thous. ha on the left side of the transboundary channel "Dostyk» through rehabilitation of 218 units of vertical drainage wells in order to rehabilitate and improve the irrigated lands, increase water availability, achieve stable yields of crop production. The project has left a number of best practices and lessons learned to take into consideration during implementation of the "Reconstruction of drainage wells and water networks in Maktaaral district of South Kazakhstan.

As per MoM the Activity 2.1.4 on demonstration of automation of 1 vertical drainage well in the Turkestan region was cancelled.

The project developed the billing system concept for the automation of irrigation water supply and provided the comprehensive views and instructions how to organize dispatch, automation of the irrigation water supply system, record water users, make estimates on planning, setting norms of water supply and the demand balance of irrigation water in irrigated regions and introduce financial and settlement mechanisms in the water sector. Besides, the UNDP provided a detailed description of the overall set and services of the database on water users, a card catalog for each water use in the metering system and tracking of water users, and prepared a list of equipment with a detail description of the parameters and characteristics and budget for automatization and installation of the e-billing system within the pilot activities of the project.

In 2021, a new tariff policy in the irrigation water supply in Kazakhstan was approved. The economic, financial, technical tasks, and target indicators were identified to be met when setting and calculating tariffs for irrigation water. A detailed calculation of the tariff was presented as an example, which should provide flexibility in the details of the calculation of tariffs depending on the capabilities and potential of the RSE "Kazvodkhoz." The reasons for the insufficient level of cost recovery at the current tariffs were identified and assessed. Proposals were prepared to improve the set of goals/parameters that should be taken into account when calculating tariffs for irrigation water, connection fees, and other charges, considering the assessment of government policy, local conditions and restrictions, and tasks to improve efficiency.
Besides, a Forecast was developed (a transition plan with a specific breakdown by years 3,5,7,8,10, 13,15,18,20) until 2040 of the change in the level of the tariff for irrigation water, taking into account the gradual reduction of state subsidies and support of the RSE “Kazvodkhoz”.
the processes for calculating tariffs for irrigation water at the Kazvodkhoz Republican State Enterprise through the automation of certain aspects of specialists' work from the planning and tariff setting department of the organization were improved and optimized.

Component 3: Development of a new water tariff/billing system

As part of this component, the project has updated and created an effective information Internet portal of RSE "Kazvodkhoz," made available to industry entities and potential investors. The ultimate goal of strengthening the official website of the RSE "Kazvodkhoz" was to increase the awareness of the society, Kazakhstani public and private companies, as well as foreign partners about the possibilities of developing and implementing projects involving investments in Kazakhstan, including through public-private partnership mechanisms, as well as promoting effective implementation of the functionality of RSE "Kazvodkhoz."
In particular, the following activities were delivered.

1. Studied the existing domain, its stability, and reliability, taking into account the CLOUD database for storing and processing data.
2. Studied website hosting.
3. Determined the multilingualism of the site (Kazakh, Russian, English).
4. Updated the design and color scheme of the site design layout.
5. Ensured the coordination of site technology depending on the intended hosting (HTML, php+MySQL, aspx, etc.).
6. Installed an electronic mail server (soft).

Component 4: Awareness raising of local farmers and the existing water user's associations (WUA) on efficient irrigation water management

The workshops, trainings and community outreach campaigns were conducted as part of the situational analyses to ease the process of the data collection and prioritization of the project outcomes and outputs. Particularly, the project conducted 4 training workshops with participation of the local communities in the Makhtaral and Shardara regions of the south Kazakhstan regions and Almaty regions to ease the process of data collection and prioritization of the issued in the irrigation water supply sector. The project conducted six expertise working meetings and field trips to design and elaborate needed equipment and technological need assessment for setting up a process of e- billing and automatization activities. Moreover, the project conducted three thematic workshops on effective agro technologies in dry and arid farming systems. The project supported the activities related to diversification of agricultural systems and to increase productivity of the abandoned farm lands. The project has also engaged the experts from a different extension centers seek to build the capacity of extension agents. The purpose of these farmers centered trainings were:

- Increase quality and improve control of seeds distributed at fairs;
- Promotion of reforestation with native drought tolerant species;
- Provision of agriculture technical assistance;
- Encourage communities to grow drought resistance crops as a strategy to reduce crop losses in the future.
- Apply new agriculture technique for soil conservation including mulching.

Overall, the project was able to engage more than 111 farmers (from six target regions: Aksu, Koksu, Eskeldi, Alakol, Makhtaral and Shardara) and 12 experts from the local akimats and 6 representatives of the different agricultural input suppliers.
Number of women and youth empowered and reached through improved education and job opportunities – 213 (102 women) have improved their farming business experience.
Besides, in 2021, an inventory of the Kazvodkhoz RSE's potential premises was carried out in the Shadrinsky district of the Turkestan region and in the Almaty region to organize 2 Knowledge Dissemination Centers in them. Further, an estimate was prepared for the repair and refurbishment of potential premises.

Training and participants by number of attendance and gender

Activity	**# of farmers**				**Remarks**
	Sharadara	Makhtaral	Aris	Total	

Farmers centred Trainings & Workshops	666	709	627	2002	These events have been conducted both at district and regional levels
Field day	89	97	101	287	
On job trainings	42	36	27	105	
Demonstration plots	12 (direct) 45 (indirect)	12 (direct) 31 (indirect)	12 (direct) 55 (indirect)	36 (direct) 131 (indirect)	
Working meetings	46	67	51	164	These events were conduct both at district and regional levels
Study tours/exchange meetings	29	31	44	104	These events were conducted both at district and regional levels
TOT trainings	12	12	12	36	Tot training conducted only for the staff of 10 extension centres
Grand total	896 (including indirect 929)	964 (including indirect 983)	874 (including indirect 917)	2734 (including indirect 2829)	

Number of hectares replicated

Activity	**# of hectares**				**Remarks**
	Sharadara	Makhtaral	Aris	Total	
Demonstration plots	22	42	32	96	The size of demo plots in 2021
Replication/out scaling	2238	4421	4496	11115	The data has been cumulatively collected from the farmers upon the face to face and M&E visits.

Number of practices documented and disseminated

#	**Practice disseminated**	**Remarks**

	Zero tillage	The zero tillage did not work everywhere as best as in some regions of the northern regions, depending on the soil type and structure and cost of production, this practice has not been recommended equally to all farmers and regions.
	Minimal tillage	Work best in all regions and have been widely circulated.
	Crop diversification	Worked best for the northern regions, did play best elsewhere.
	Mulching	Different mulching practices has been disseminated suchlike leaving straw residues with the heights 15-25 cm worked best for the northern regions both for green siderites as well as snow retention.
	Slotting of soil / Subsoiling	Cutting the soil across the slope cracks to the depth of 40-60 cm at a distance of 100-150 cm for complete absorption of the soil thawed and rain waters.

As per approved AWP for 2022, the project developed Technical specifications and procured 2 vehicles for the regional branches of Kazvodkhos in Taldykorgan and Shymkent. Given the market realities associated with the shortage of vehicles in Kazakhstan and the lack of interest from local Suppliers, the procurement process took longer than expected. In this regard, the contract was signed on December 22, 2022, and the vehicles were expected to be delivered by February 2023. Kazvodkhoz was informed of this situation and agreed to receive the vehicles and pay for them in the beginning of 2023. In this regard, the Senior Management approved the extension of the project in Atlas/Quantum till 28 February 2023 (NTF IsDB 2 month extension.docx.pdf).

IV. Project Risks and Issues

No	Category[1]	Risk Event	Impact and probability	Prevention and Mitigation Measures	Date of Reporting (dd/mm/yyyy)	Risk Monitoring			
						Status[4]	Updated on (dd/mm/yyyy)	Risk submitted by/ updated by	Note

1	Financial	Insufficient financial resources for implementation of project. (Due to devaluation, lack of co-financial contribution and etc).	The project cannot implement its full-fledged activities in time and mode. P =3 I = 3	The project will use adaptive financial management allocations to address a current situation in the local markets.	05/2016	Changed	09/03/2023	UNDP	NTF IsDB Vehicle procurement.docx.pdf
2	Environmental	Extreme event other than drought strikes the area (severe flood, cyclone, etc.)	Both the project and the local key stakeholders may not be able to continue implementation of the project. P =2 I = 3	The project will cooperate with national partners such as Kazhydromet and national MoES to follow with the results of the early warning systems. Yet, the project will cooperate with the DRR projects, community and local partners to apply early response	05/2016	Created access to the geoportal for near real time monitoring and evaluation of natural factors.	09/03/2023	UNDP	The project team will monitor and enforce counter-measures in the event of an escalation.

				plans and measures					
3	Operational	An introduction of structural changes in RSE Kazvodkhoz and its branches in Almaty and the Turkestan regions. Different tariffs and e-billing systems may take a longer time to get approved by the Government of Kazakhstan.	Participants may not be able to ensure an effective water delivery system P =2 I = 3	The project will introduce best solutions and provide expertise support for preparation of solid terms of reference based on international experiences on organizational management, concepts of e-billing and economic incentives for better tariffs in water resource governance sectors.	05/2016	The project coordinates each activity considering the long-term climate forecasts.	09/03/2023	UNDP	Lack of water delivery and supply system in the country.
4	Other	No community commitment or involvement for improved communication and collaboration with the central RSE Kazvodkhoz office in Nur-Sultan	Community priorities may not be learned and water supply and delivery process may not be sustained.	The project will closely communicate with the local communities around the target neighbourhoods and villages for ensuring a bottom up approach for appropriat	05/2016	No rotation for the last 6 months	09/03/2023	UNDP	The project proposal is based on the community based situational analyses

		and its branches in Almaty and the Turkestan region on irrigation and drainage systems.	P =1 I = 1	e decision making.					

a. Updated project risks and actions

Project Risk 1: Insufficient financial resources for implementation of project. (Due to devaluation, lack of co-financial contribution and etc).

Actions taken: Insufficient amount for vehicles was covered from EF project (CO budgets). The total budget for 2022 was increased by USD 7300.

V. Gender Related Activities

In line with GEF and UNDP Gender Equality Strategies, the project has considered gender-specific and differential effects of the national level activities. The project used sex-disaggregated approach when preparing and analysing training attendance (such as participation of women farmers and training conducted by women trainers), and the potential influence on the practical project's efficiency. The project has also explored gender-differential access to and participation in the project's legal outcomes. The project also noted lessons learned from women stakeholders from WUAs. In total, 102 women and youth have improved their farming business experience. Trainings conducted in target districts for the season of 2020-2021 and beneficiaries per gender show that women participation was around 20%.

Percentage of trainees disaggregated by gender

Gender	Number	Percentage
Total:	2002	100
Men	1576	78,7
Women	426	21,3

VI. Lessons Learned

Benefits of cross-visits and experience sharing: Cross-visits organized in between the regions of Kazakhstan were very useful and the project partners have greatly appreciated the opportunities to learn from and exchange their experiences with regional and international experts. Following their participation in cross-visits to other regions

of Kazakhstan the project partners have altered their activities in terms of introducing new technologies on crop and soil management and diversifying their database with new and advanced best water saving practices. The lessons received from this cross-visit were very useful to the project partners, who are now considering applying this approach in their respective operational activities.

Best Practices on water and land management:

To document best practices on water, use efficiency and sustainable land management taking into consideration the best practices uploaded into the international best practices data base such as World Overview of Conservation Approaches and Technologies (WOCAT) cannot satisfy the demands of farmers at the grass roots level since it does not specify the step-by-step implementation procedure. WOCAT Best Practices only provide information relative to the types of best practices and places where they have been implemented with little or no description of the technology used. As such, they are only suited as a key database for the donor community to get background information on previous activities implemented, 'farmers' qualification enhancement and the gaps and advantages of the region. The project takes these lessons into account during the development and improvement of the instructions on wheat production sector.

VII. Conclusions and Way Forward

The capacity of the Kazvodkhoz State Enterprise and its branch offices in Almaty and South Kazakhstan Regions was enhanced, the use of economic instruments in efficient irrigation water increased, and awareness of local community population on irrigation water conservation and saving in Agriculture raised.

The project provided recommendations to the relevant paragraphs of the state program on the development of the Agro-industrial complex 2017-2021 on improving the State subsidy systems to mobilize State financial support for water conservation programs such as increasing the subsidy up to 80% for the purchase of multi-use piped drip irrigation systems, for pasture flooding activities.

The project developed the billing system concept for the automation of irrigation water supply and provided the comprehensive views and instructions how to organize dispatch, automation of the irrigation water supply system, record water users, make estimates on planning, setting norms of water supply and the demand balance of irrigation water in irrigated regions and introduce financial and settlement mechanisms in the water sector.

VIII. Financial Status

Activity	Approved budget	2018 year expenses	2019 year expenses	2020 year expenses	2021year expenses	2022year expenses	2023year expenses
Component 1: Institutional development of administrative departments (finance, operations and maintenance and supervision, mechanization, Technical Design and Planning, Water Use and Delivery)							
1.1. Enhanced institutional	94,000.00	11,832.16	11,699.42	15,407.14	31,580.63	0	0

management and service delivery on irrigation water supply							
1.2. Development of user guides for the personnel of the Kazvodkhoz/BAK/SKBK as services suppliers	72,600.00	49,814.47	10,977.08	5,000.00	3,648.09	0	0
1.3. Economic mechanisms introduced for improved resource mobilization	126,100.00	22,495.18	32,940.79	10,708.93	13,593.39	0	0
	292,700.00	84,141.81	**55,617.29**	31,116.07	48,822.11	0	0
Component 2: Capacity development of technical field staff (on-the-job training)							
2.1. Improved inter-action between Kazvodkhoz/SKBK and water consumers	45,600.00	25,000.00	4,686.39	15,000.00	23,307.19	0	0
2.2. Participation, learning, dissemination and replication of international best practices in collaborative drinking water supply and delivery system developed and strengthened	95,800.00	65,938.46	45,862.16	51169.16	11,386.00	0	0
2.3. Development of ToT programmes	46,000.00	29,760.93	50,000.00	62,833.05	15,207.73	0	0
	187,400.00	120,699.39	100,548.55	129,002.21	49,900.92	0	0
Component 3: Development of a new water tariff/billing system							
3.1. Baseline Survey on Rural Water Supply System and socio-economic condition of the communities in Almaty, Makhtaaral	10,000.00	652,49	2,797.41	3,460.67		0	0

and Shardara districts with an ultimate objective to develop a new water tariff/billing system							
3.2. Development of the Irrigation Water new tariff/Billing System for Makhtaral and Shardara districts	86,350.00		5,000.00	8,412.81	- 1,103.92	0	0
3.3. Development of automated information database for proper operation of the South Kazakhstan Branch office for effective Irrigation Water Billing System in Makhtaral and Shardara districts	112,000.00		40,594.82	16,180.23	447.56	0	0
	208,350.00	652.49	68,392.23	28,053.71	**- 656.36**	0	
Component 4: Awareness raising of local farmers and the existing water user's associations (WUA) on efficient water management							
4.1. Awareness raising of the rural communities on water supply system and using Water Billing system and automatic metered irrigation water delivery.	0.00	1,782.00	57,615.24	19,029.13			
4.2. Improved on-farm irrigation water use efficiency, operation and maintenance and enhanced system of extension services.	40,000.00		5,000.00	10,277.40	29,431.34	1,363.59	57931,87 (includes UNDP funds)

4.3. Establishment of web based interactive water supply and delivery platform	52,550.00		10,368.63	2339.37	2101.06		
	92,550.00	1,782.00	72,983.87	31,654.90	31,532.40	1,363.59	57931,87
General Management Support							
Admin staff	33,000.00	6,000.00	0	2530.25	2,944.65	823.88	0
Evaluation	10,000.00	0	0	0	0	0	0
GMS	66,000.00	480.00	0	202.42	235.60	66.21	0
	109,000.00	6,480.00	0	2,732.67	3,180.25	890.09	0
Total as per Prodoc (Kazvodkhoz)	**890,000.00**						
Total delivery	***834,216.37**	**213,755.69**	**262,868.12**	**222,559.56**	**132,779.32**	**2,253.68**	***57931,87**

*The accurate figure of 2023 FY and cumulated expenses will be posted to 2nd qt 2023 CDR

IX. Annex

Insert the latest approved Annual Work Plan (AWP), relevant copies of media coverage, publications, etc. Specific reporting requirements from donors can also be inserted here.

AWP for 2022.pdf