



Completion Report

PUBLIC

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Technical Assistance Number: 9785
August 2022

Kazakhstan: Gas Sector Development in Kazakhstan

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TECHNICAL ASSISTANCE COMPLETION REPORT

TA Number, Country, and Name: TA 9785-KAZ: Gas Sector Development in Kazakhstan		Amount Approved: \$225,000.00	
		Revised Amount: Not applicable	
Executing Agency: Asian Development Bank	Source of Funding: Technical Assistance Special Fund-Other Sources	Amount Undisbursed: \$102,445.09	Amount Used: \$122,554.91
TA Approval Date: 9 August 2019	TA Signing Date: 9 August 2019	TA Completion Date	
		Original Date: 30 March 2020	Latest Revised Date: 31 December 2021
		Financial Closing Date: 27 January 2022	Number of Extensions: 3
TA Type: Knowledge and support TA	Nature of Activity: Capacity development	TA Arrangement: Small-scale	

Description

Kazakhstan is rich in various types of fossil fuel and is a major oil exporter. For natural gas, it holds 0.5% of the world's total gas reserves, making it the 25th natural gas richest country. Upstream gas sector is controlled by Joint Stock Company KazMunayGas (KMG), which is 90% owned by Sovereign Wealth Fund Samruk-Kazyna JSC (Samruk-Kazyna Fund) and 10% by the National Bank of the Republic of Kazakhstan. KMG used to own 100% of JSC KazTransGas (KTG) – a National Gas Operator, which is responsible for transmission, storage, distribution, and sales of natural gas through its subsidiaries.¹ From 2021, KTG has been directly owned by Samruk-Kazyna Fund. KTG has preemptive rights to purchase marketable gas from independent domestic producers at a regulated price and sell it in domestic and export markets.

KTG supplies gas to around 2 million customer accounts in Kazakhstan, which serve approximately 9 million people, and controls 100% of the high-pressure gas transmission pipeline network. While this puts KTG in a monopolistic position in the country's natural gas transmission and distribution sector, the steep decline in the world oil/gas prices and the value of tenge in 2015 required actions to improve operational and financial efficiency of the company.

The government of Kazakhstan issued a decree in December 2015 to implement a privatization program to improve the efficiency of state assets and reduce budgetary support. As part of the privatization program, Samruk-Kazyna Fund prepared initial public offerings of at least 7 state-owned enterprises including KMG. Subsequently, in December 2017, the government adopted a State Digitalization Program to be carried out between 2018 and 2022, which aimed to uplift the living standards of Kazakhs, and boost economic activities in the country through transforming business and public administrations by utilizing state-of-the-art digital technologies and devices.

Following the directives of the government, KTG started in 2018 to develop a smart metering and billing platform, called the Narrow Band Internet of Things (NB-IoT), to (i) enable real-time monitoring of gas consumption by customers through mobile devices, and (ii) allow customers to make instant payments and request reconnection after being disconnected due to delayed payments. NB-IoT was tested worldwide but is considered innovative for Kazakhstan and the entire Central Asian region. Any technology malfunction would impact a significant part of the whole population in Kazakhstan. In this context, KTG requested Asian Development Bank (ADB) technical assistance (TA) in 2019 to assess the advantages, confirm anticipated benefits and costs, and evaluate risks of NB-IoT. KTG also requested ADB to assist in verifying KTG's financial models for the smart metering and Beineu-Bozoi-Shymkent Gas Pipeline (BSGP) projects;² and bring its safeguards monitoring and management system up to international levels.

Expected Impact, Outcome, and Outputs

Impact: Digitalization of the retail gas sector in Kazakhstan achieved by 2022.
 Outcome: Gas supply system improvements in Kazakhstan initiated.
 Outputs: (i) New smart gas metering technology selected, (ii) financial planning tools of KTG improved, and (iii) safeguard management system improved.

Implementation Arrangements

The executing agency for the TA was the Asian Development Bank. The Energy Division of ADB's Central and West Asia Department (CWEN) administered the TA, in close coordination with the Infrastructure Finance Division 1, Private

¹ On 30 November 2021, JSC KazTransGas was renamed as JSC QazaqGas.

² The BSGP project was developed jointly with China National Petroleum Corporation.

Sector Operations Department. ADB's Kazakhstan Resident Mission provided local administrative and coordination support.

The TA envisaged the recruitment of three international individual consultants: gas technical expert, financial modeling expert, and safeguards expert to support the TA outputs. The gas technical expert was recruited twice: first, to verify selected smart gas metering technology; and second time for an additional task to assess KTG's cost estimates and proposed procurement method for the smart gas meters and verify the results of the pilot project. The financial modelling expert was not recruited. Instead, ADB staff assisted KTG to verify the financial models for the smart metering and BSPG projects. The safeguards expert, although recruited with delay, completed corporate audit of KTG's environmental and social management systems (ESMS), and designed a corrective action plan (CAP). Additional due diligence by ADB concluded that KTG's proposed projects may have significant social impacts which require more thorough analysis. Minor changes in implementation arrangements were approved in February 2020 to reallocate TA funds, extend the TA and hire a service provider to conduct detailed site surveys for the poverty, social and gender analysis, and gender action plan. The individual consultants were recruited based on output-based (lump-sum) contracts using individual consultant selection method while the service provider was hired through direct contracting.

Conduct of Activities

The TA was envisaged to be implemented from August 2019 to 30 March 2020. It was initially extended by 6 months to 30 September 2020, then to 31 March 2021, and was further extended to 31 December 2021. The reasons for the first TA extension were: (i) delayed recruitment of the safeguards expert due to unexpected unavailability of the first ranked candidate; and (ii) need to hire the service provider to thoroughly analyze the social and environmental situation in the regions related to KTG activities as described above. The second TA extension was triggered by restrictions from the coronavirus disease (COVID-19); and declaration of (i) force majeure by a major trade partner of KTG, China National Petroleum Corporation, and (ii) state of emergency by the government with subsequent lockdown of economic and social activities in the country. COVID-19 further disrupted TA implementation, particularly the preparation and implementation of CAP, thus requiring the third TA extension. At completion, 54% of the total TA budget was utilized while the allocation for studies and surveys, contingency, and a portion for consultants were unutilized.

The TA outputs were substantially completed. Output 1: New smart gas metering technology selected – achieved. NB-IoT was recommended as a reliable smart gas metering technology. The gas technical expert was mobilized in October 2019. By the end of the contract in February 2020, he submitted the report analyzing various radio technologies for smart gas metering and confirming the appropriateness of NB-IoT for KTG's business operations. The report also assessed and confirmed KTG's technical capacity to implement NB-IoT. The same expert was recruited in October 2020 to (i) verify the reasonableness of the cost estimates for smart gas meters, compliance with the technical requirements, procurement method, and meter installation schedule in coordination with NB-IoT installation; and (ii) assess the results of the pilot project, including locations, number of meters installed and their connectivity to the new billing system.

Output 2: Financial planning tools of KTG improved – achieved. KTG's financial planning tools improved after ADB staff assisted KTG in verifying their financial models for the smart metering and BSPG projects and provided final recommendations in August 2021.

Output 3: Safeguard management system improved – partially achieved. The safeguards expert was mobilized in March 2020, and KTG's safeguard management system was improved. However, the absence of data regarding the social situation in the regions related to supply of various energy sources prevented the accurate analysis of the impact of KTG projects. The same safeguards expert was requested to conduct detailed site surveys in project-affected areas to design actions for enhancing affordability and access to modern energy services for communities, including around 130 poor, vulnerable and female headed households. The identified actions are included in the design and monitoring framework of the non-sovereign *Advanced Gas Metering Project*.³ The results of the survey and corporate audit of KTG's ESMS helped identify gaps between the safeguards requirements and KTG practices, and design the CAP. The safeguards expert submitted the final Corporate and Project ESMS Audit Report on 6 August 2020, while submission of the final CAP was delayed until 14 January 2021 due to the COVID-19. The CAP was agreed with KTG management, but the final corporate approval and implementation is still subject to the signing and effectiveness of the facility agreements for the smart metering project.⁴

³ Political events in Kazakhstan in January 2022 resulted in replacement of entire top and mid-level management of KTG. The signing of the facility agreements is pending until new management reviews and approves the project.

⁴ ADB. 2021. [Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Republic of Kazakhstan for Joint Stock Company KazTransGas Advanced Gas Metering Project](#). Manila.

Technical Assistance Assessment Ratings

Criterion	Assessment	Rating
Relevance	<p>The TA is rated <i>relevant</i> from approval and after completion. The TA is aligned with the government's strategy and supports its State Digitalization Program which aims to enhance efficiencies in business and public administrations and boost economic activities through state-of-the art technology. The TA is consistent with ADB's Strategy 2030, in particular the following operational priorities: (i) addressing remaining poverty and reducing inequalities; (ii) accelerating progress in gender equality; (iii) tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability; and (iv) making cities more livable. The project is in line with ADB's country partnership strategy for Kazakhstan, 2017–2021, focusing on public sector assistance to national holding companies and the reduction of emissions in the energy sector. The TA was adequately designed, and small-scale knowledge and support TA was the most appropriate modality.</p> <p>Before the TA, NB-IoT has not been used anywhere in Central Asia. The TA analyzed the costs, benefits and technical specifications of various communication technologies for smart meters. In February 2020, the TA confirmed that NB-IoT is most appropriate to achieve KTG's goals, i.e., reduce losses and operational and maintenance costs. The TA also supported ADB's efforts to drive innovation in the energy sector in Kazakhstan.</p>	Relevant
Effectiveness	<p>The TA is rated <i>effective</i> as the intended outcome and outputs in the design and monitoring framework in Appendix 1 were achieved, except for the CAP implementation under the third output. The TA also helped KTG improve its financial planning; and environmental and safeguards policies to internationally recognized standards, including through (i) development of a grievance redress mechanism, (ii) enhanced measures for meaningful consultation with affected stakeholders, including detailed site surveys to design actions for enhancing affordability and access to modern energy services for women; and (iii) augmented monitoring of contractors' environmental and social performance. An important achievement of the TA was KTG's decision for companywide implementation of a new smart metering project which created an opportunity for ADB loan financing. In September 2021, ADB approved a non-sovereign corporate finance loan of \$100 million equivalent in local currency to procure and install up to 1 million smart gas meters based on NB-IoT technology (footnote 4). The TA was critical in initiating the engagement and negotiations in developing the loan (footnote 3). KTG's corporate approval of the CAP is subject to signing the ADB's facility agreements for the loan. Specific gender and social related actions at the corporate and customer levels are also part of the <i>Advanced Gas Metering Project</i>.</p>	Effective
Efficiency	<p>The TA is rated <i>efficient</i>. One output to improve KTG's financial planning was achieved through ADB's internal resources. This and travel restrictions due to COVID-19 resulted in savings of TA funds. Cumulative TA extension of 21 months was partly caused by COVID-19 and associated events such as force majeure and lockdown in Kazakhstan. These factors were beyond the control of the EA.</p>	Efficient
Overall Assessment	<p>Overall, the TA is rated <i>successful</i> as it was relevant throughout and after TA completion, achieved its intended outcome and outputs despite COVID-19 restrictions, and with savings. The new smart metering and billing system supported by this TA and the subsequent loan, will reduce gas losses and methane emissions to the atmosphere and enable customers to monitor gas consumption online via mobile devices, leading to demand-side efficiency.</p>	Successful
Sustainability	<p>The subsequent loan will ensure that the selected modern smart gas metering technology is implemented and set targets for loss and emission reduction are achieved. It will also guarantee that KTG's environmental and safeguards standards are on an international level since the adoption of the CAP is a condition for loan signing and effectiveness and will be monitored throughout the loan tenor.</p>	Likely sustainable

Lessons Learned and Recommendations

Design and/or planning	<p>The TA was adequately designed. However, during implementation, the financial planning tools of KTG were improved through ADB's internal resources resulting in savings. Future TA design should also assess if some of the tasks could be accomplished with the bank's internal resources.</p>
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Implementation and/or delivery	The implementation of the TA was impacted by unprecedented pandemic related lockdown and force majeure, which were difficult to predict. However, the presence of the KTG staff in the field helped to complete all the tasks, although with some delays. ADB and the governments should remain ready to adapt to such situations and provide the necessary resources (e.g. virtual work arrangements) to minimize delays.
Management of staff and consultants	The consultants performed satisfactorily and delivered quality outputs. The delay occurred during recruitment of the social safeguards' consultant when at the last minute the first-choice expert became unavailable due to health reasons. As above, flexible arrangements should be adopted to ensure that consultants still perform satisfactorily and deliver quality outputs despite lockdowns. Staff resources may also be tapped, such as in the case of this TA.
Knowledge building	NB-IoT is one of the latest communication technologies and is currently being extensively rolled out all over the world in electricity, gas, water, urban transport, etc. The technology experience gained with this TA will support replication of similar projects elsewhere.
Stakeholder participation	Site surveys and stakeholders focus group consultations on environmental, safeguards and gender issues related to KTG's main activities such as gasification, natural gas delivery and new metering system were conducted. Following regions of Kazakhstan were covered: Turkestan, Zhambyl, Kyzylorda, Almaty regions, cities of Almaty and Shymkent, and the selected districts and settlements in these regions. Collected social and demographic data can be useful for other projects in these regions.
Partnership	Not applicable. Due to the specifics of the assignment and related confidentiality of commercial aspects, no other stakeholders participated in the TA except KTG and its daughter companies.
Post-TA financial resources	The TA resulted in ADB's non-sovereign loan financing, which reinforced the same objectives.

Follow-up Actions

The Portfolio Management Division of the ADB Private Sector Operations Department will continue monitoring CAP implementation under the third TA output which is subject to signing the facility agreements for the subsequent loan (footnote 3).

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DESIGN AND MONITORING FRAMEWORK

Impact Digitalization of the retail gas sector in Kazakhstan achieved by 2022 (State Program “Digital Kazakhstan”).		
Results Chain	Performance Indicators with Targets and Baselines	Achievements
Outcome Gas supply system improvements in Kazakhstan initiated	a. By 2019, KTG’s investment and financing plan for smart metering and billing system approved. (2019 baseline: N/A)	a. Achieved with delay. KTG approved an investment and financing plan for new gas smart metering and billing system.
Outputs 1. New smart gas metering technology selected 2. Financial planning tools of KTG improved 3. Safeguard management system improved	1a. By October 2019 , smart gas metering technology assessment completed (2019 baseline: N/A) 2a. By October 2019, assessment on the financial models of KTG, including smart meters and BSGP projects completed. (2019 baseline: N/A) 3a. By March 2020, environmental and social safeguard management system assessed with a new monitoring plan developed (2019 baseline: N/A)	1a. Achieved with delay. The consultant evaluated various communication systems and finally NB-IoT technology was selected, technical parameters were defined, and pilot project was implemented. 2a. Achieved but not through TA. Internal resources of ADB supported KTG in preparation of investment and financing plan for smart gas metering including local currency refinancing plan for BSGP. ^a 3a. Partially achieved. TA prepared corporate audit of ESMS and CAP based on detailed site surveys. KTG’s corporate approval of CAP is subject to the signing of ADB’s facility agreements. ^b
Actual Key Activities with Milestones 1. New smart gas metering technology selected 1.1 Consultants recruited (1 October 2019) 1.2 Smart metering and billing technology assessed, and recommendation provided (February 2020) 1.3 KTG’s technical capacity assessed, and recommendation provided (February 2020) 2. Financial planning tools of KTG improved 2.1 Consultants recruited - not done. Output 2 was completed by ADB staff. 2.2 Financial models for smart metering and BSGP projects assessed, and recommendation provided (October 2020) 2.3 Financial model for KTG corporate assessed, and recommendation provided (August 2021) 3. Safeguard management system improved 3.1 Consultants recruited (2 March 2020) 3.2 KTG’s environmental and social safeguards system assessed (August 2020)). 3.3 Recommendations on environmental and social management system to meet international standards provided (January 2021) 3.4 Improved environmental and social management system is adopted and implemented (pending signing and effectiveness of facility agreements for subsequent loan [footnote b])		
Actual Inputs Asian Development Bank: \$122,554.91		

ADB = Asian Development Bank, BSGP = Beineu-Bozoi-Shymkent Gas Pipeline, CAP = corrective action plan, ESMS = environmental and social management systems, KTG = KazTransGas, N/A = not applicable, TA = technical assistance

^a The BSGP project was developed jointly with China National Petroleum Corporation.

^b ADB. 2021. [Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Republic of Kazakhstan for Joint Stock Company KazTransGas Advanced Gas Metering Project](#). Manila.

Source: Asian Development Bank.

TECHNICAL ASSISTANCE COST

Table A2.1: Technical Assistance Cost by Activity
(\$'000)

Item	Amount	
	Original	Actual
1. Consultants	150.0	87.6
2. Seminars, workshops, and training	20.0	0.0
3. Studies, surveys, and reports	35.0	35.0
4. Contingency	20.0	0.0
Total	225.0	122.6

Source: Asian Development Bank estimates.

Table A2.2: Technical Assistance Cost by Fund
(\$'000)

	Technical Assistance	Special Fund–Other Sources	Total Cost
1. Original	225.0		225.0
2. Actual	122.6		122.6
3. Unused	102.4		102.4

Source: Asian Development Bank estimates.