

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

Report No.: PIDA48325

<b>Project Name</b>	District Heating Energy Efficiency Project (P146206)
<b>Region</b>	EUROPE AND CENTRAL ASIA
<b>Country</b>	Uzbekistan
<b>Financing Instrument</b>	Investment Project Financing
<b>Project ID</b>	P146206
<b>Borrower(s)</b>	UZBEKISTAN
<b>Implementing Agency</b>	Ministry of Housing and Communal Services, Kommunkhizmat Agency
<b>Environmental Category</b>	B-Partial Assessment
<b>Date PID Prepared/Updated</b>	26-Oct-2017
<b>Date PID Approved/Disclosed</b>	01-Nov-2017
<b>Estimated Date of Board Approval</b>	20-Dec-2017
<b>Appraisal Review Decision (from Decision Note)</b>	
<b>Other Decision</b>	

## **I. Project Context**

### **Country Context**

Uzbekistan is a lower-middle-income, minerals-rich country with a population of 32.3 million as of July 2017, the largest in Central Asia, and the annual population growth of 1.7 percent in recent years. Over the past decade Uzbekistan has maintained a high and stable economic growth rate and achieved gradual diversification by following a state-driven approach to development. Uzbekistan's economy has not only grown rapidly; it has also proven highly resilient to external shocks. According to official estimates, annual GDP growth averaged 7.2 percent over the 2000–16 period and contributed to a decline in the poverty rate from 27.5 percent in 2001 to 12.5 percent in 2016. This reduction in poverty appears to have been accompanied by equity gains, as the income of the bottom 40 percent of the income distribution is estimated to have grown at a slightly faster rate than that of the top 60 percent over the period 2008–13. Meanwhile, per capita GNI (current international \$) measured in purchasing-power parity (PPP) terms rose from US\$2,050 in 2001 to US\$6,640 in 2016. This is a notable achievement for the most populous country in Central Asia. The external current account and budget have been in small surplus and public debt is low.

Starting from 2017, the Government has adopted a new Strategy of Actions for 2017-2021 and started implementing important structural reforms. Since January 2017, a ban was lifted on the export of twelve types of products, mostly foodstuffs, e.g. meat, grains, sugar, vegetable oils, antiques, etc. On September 5, 2017, the Central Bank of Uzbekistan (CBU) allowed the official exchange rate to adjust

from 4,210 UZS to 8,100 UZS per dollar, helping converge the official rate with the curb market rate, and establishing a framework to allow it to float thereafter. The authorities also announced that restrictions to exchange rate convertibility (including the surrender requirements by which firms were mandated to sale a portion of their export revenues to the CBU at the official exchange rate) were removed, widening the participation in the foreign exchange market by the private sector. This decision helps reduce extreme disparities between official and unofficial exchange rates that were witnessed in Uzbekistan in 2009-2016, and if accompanied by complementary market-oriented reforms, this will be an important step to reduce market distortions and encourage private investment in the economy. Budget policy has stayed prudent in recent years, and the consolidated state budget, including the Fund for reconstruction and development (a reserve fund), is projected to maintain a lower surplus of 0.6 percent of GDP in 2017 as compared to 1.2 percent of GDP in 2016. High economic growth is expected to continue in the near term: the economy grew by 7.8 percent in 2016 and is projected to growth further at around 6 percent per year on average in 2017-19 as transitional adjustments unravel, given uncertainties, and the fact that remaining rigidities in the economy may not allow for a sufficiently rapid adjustment to take advantage of a more competitive exchange rate.

Uzbekistan's long-term development goal is to become an industrialized upper-middle income country through doubling the GDP and increasing the industry-to-GDP ratio up-to 40 percent by 2030. The Government's approach toward achieving this goal is to continue the transition to a more market-oriented economy, mitigate the potential negative consequences of external shocks, ensure equitable distribution of growth between regions, and maintain infrastructure and social services at an adequate level. In the medium term, the Government's key development priorities are to (a) further strengthen the macroeconomic stability and maintaining high rates of economic growth, including the balance of the state budget and stability of the national currency; (b) increase the efficiency of infrastructure, especially of energy, transport, and irrigation; (c) enhance the competitiveness of targeted, strategic industries, such as agro-processing, petrochemicals, construction materials, pharmaceuticals and textiles; (d) diversify the economy, particularly to reduce reliance on raw materials exports; and (e) improve access to and the quality and outcomes of education, health, and other social services so that the benefits of overall growth are shared equitably by the entire population.

The energy sector continues to provide large implicit subsidies to the rest of the economy in Uzbekistan though the subsidies have been decreasing since 2010. According to the International Energy Agency (IEA), energy subsidies decreased from US\$10.3 billion in 2013 to US\$6.5 billion in 2015, which was about 10 percent of the GDP. The depressed energy and fuel prices for domestic consumers deprive the energy sector of financial resources needed for rehabilitation, modernization, and expansion; undermine incentives for energy efficiency investments; and create pressures to boost gas exports. The government has been increasing domestic energy prices and tariffs in the past years and intends to pursue this policy in the coming years.

Natural gas is the primary fuel in the energy supply mix and a major source of commodity exports. It accounts for 86 percent of the total primary energy supply followed by oil, hydro, and coal. In the past decade, gas production increased by 13 percent, reaching about 60 billion m<sup>3</sup> per year to meet the growing domestic demand, as well as expand gas exports, which have been growing, mostly driven by sales to China and Russian Federation. Gas exports generated around US\$2 billion in 2016 - or about 20 percent of the total revenue stemming from export of goods.

### **Sectoral and Institutional Context**

Uzbekistan is the second-most energy-intensive economy in ECA as measured by energy intensity per unit of GDP. While Uzbekistan's energy intensity declined by about 45 percent during 1998-2013, the

country's energy use per unit of GDP is 3.1 times higher than the average for the ECA region. The high level of energy intensity is common for all parts of the entire energy supply chain, from energy generation to transmission and distribution, as well as all main sectors, including industry and agriculture. The government has been making efforts to reduce energy intensity by modernizing industry and energy assets and reducing energy losses.

The five-year road maps on energy efficiency and district heating system development (Presidential Decree #2343 'On the Program of Measures to Reduce Energy Intensity, the Introduction of Energy-Saving Technologies in the Sectors of Economy and Social Sphere in 2015–2019', Presidential Decree #2912 'the Program on the Development of District Heating System in 2018–2022') set ambitious targets to significantly increase energy efficiency in all sectors of economy via further modernization, technical and technological re-equipment of existing production facilities, establishment of new production facilities exclusively based on modern energy-efficient technologies, and wider utilization of the renewable energy sources. The district heating (DH) modernization is one of the key pillars of these programs along with power generation and industrial energy efficiency.

The DH sector used to be one of the largest gas consumers, after industry and the power sector. During the Soviet times, most of the urban settlements in Uzbekistan were provided with space heating and hot water supply. DH services have traditionally been supplied by public sector companies under municipal ownership. The municipal governments have been closely involved in approving key aspects of the operations of DHCs. There are 33 DH companies (DHCs) in the country in total and most of them were transferred to the structure of the Ministry of Housing and Communal Services (MHCS) established in April 2017. The largest DH system in the country is in Tashkent, with a share of about 78 percent of the country's overall DH services.

The quality and availability of DH services have been on a steady decline. Most of the DH sector assets were put in operation in the 1950s–1970s. Because of the expected growth in heat demand and industry practice at that time, they were often oversized and still remain so. Also, the DH systems were predominantly designed as open systems for hot water supply, which caused accelerated wear and tear of heat transportation and distribution networks and inefficient use of energy. These legacy deficiencies were further compounded by significant under-investment in maintenance, rehabilitation, and modernization of the DH assets over the past two decades, which resulted in deterioration and deficiency of DH services. Except Tashkent, the capital city, all other cities lost the culture of investments in operation and maintenance of the DH infrastructure.

Lack of DH services have caused several problems. DH services have degraded in all the cities of Uzbekistan, and in several of them, the services have ceased to exist for the entire city or a part of it. In these circumstances, electricity and gas have been extensively used for producing heat and hot water in multi-apartment buildings (MABs) and public buildings, causing a number of problems:

- i. Inefficient use of electricity and natural gas due to wide usage of crude devices;
  - ii. Overloaded power sector assets, which caused the accelerated wear and tear of the assets and as a result frequent power outages, especially in winter period; and
  - iii. Safety and health risks that stem from the use of poor quality or polluting heaters and stoves.
- These risks disproportionately affect household members who are primarily responsible for carrying out energy-related tasks, such as women carrying out household tasks, men and women using faulty or poor quality electric, gas, and coal heaters and stoves, and elderly home-bound family members spending a large amount of time at home.

Unviable operation of the DH utilities is stemming from (i) heat tariffs which are below cost-recovery levels, (ii) low heat bill collection rates, (iii) high network heat and water losses, (iv) poor operational

management, and (v) under-investments in rehabilitation of main assets. In order to revive the DH sector, the following challenges need to be tackled.

Challenge no. 1. Low efficiency of the DH utilities operation. At present, the efficiency of heat generation equipment is in the range of 65–70 percent (as compared to the industry’s international benchmark of above 90 percent), while heat network losses reach 40-50 percent in some extreme instances (as compared to the industry’s international benchmark of below 15 percent). The DH utilities need large investments in upgrade and renovation of the main assets. The envisaged switching to the closed system, installation of pre-insulated pipes and efficient gas boilers will help reduce heat and water losses significantly.

Challenge no. 2. Financial viability of DH utilities. Today’s operational performance of Uzbekistan’s DHCs is inadequate, due to a number of regulatory and operational deficiencies in the DH sector, such as: (i) heat billing mainly based on consumption norms instead of meter readings at the building level, (ii) poor cash collection, and (iii) tariffs set at levels insufficient to cover investments in rehabilitation of main assets required for their efficient operation. At the same time, increasing the tariffs could be socially acceptable only if improvements in the quality of services can be demonstrated or credibly promised to customers.

Challenge no. 3. Consumers’ trust in good quality services provision, both in heat supply and commercial aspects, and reinstallation of in-building infrastructure with modern equipment and building level heat metering for better heat and hot water service. Gas shortages in the past years disrupted the functioning of DH utilities. As a result, the quality and availability of DH services have been on a steep decline across the board. Due to the lack or absence of the district heating services in some DH systems, existing in-building pipelines and radiators were not used for the long period and became obsolete. In many MABs the apartment owners totally dismantled them. To regain their customer base, the DH companies need to make every effort to encourage the apartment owners to restore the piping and radiator systems in their apartments in order to benefit from the forthcoming state-of-the-art DH system.

To improve energy efficiency, quality, and availability of heating services, the government in 2017 established the MHCS, transferring district heating system from municipalities to the Ministry. Moreover, the government approved ‘the Program on the Development of District Heating System in 2018–2022’. According to the mentioned programs the main priorities in the district heating sector are to ensure: (i) performance of unified policy in the district heating sector; (ii) effective implementation of programs on development, modernization and upgrade of district heating sector; (iii) introduction of energy-efficient technologies into the sector; (iii) organization of modern automated metering system; (iv) replacement of heat-boiler equipment, trunk distribution networks, and in-house heating systems; (v) transition from open to closed systems with installation of building-level individual heat substations (IHS); (vi) and introduction of decentralized heating options to make space heating more cost-effective.

## **II. Proposed Development Objective(s)**

The project development objective is to improve the efficiency and quality of heating and hot water services in selected cities of Uzbekistan.

## **III. Project Description**

### **Component Name**

Modernization of District Heating Systems

**Comments (optional)**

The component will finance energy efficiency investments in renovation of heat production and transportation and distribution systems, including installation of building-level IHS and heat meters for billing purposes. In addition, gas, electricity, and water supply systems will be upgraded, where it is needed for DH purposes. The component will also finance procurement of specialized maintenance equipment for the participating DHCs.

**Component Name**

In-building Improvements

**Comments (optional)**

This component will finance replacement of in-building heating system (distribution pipelines and radiators), as well as demonstration of cost-effective weatherization measures (e.g., roof insulation, sealing of entrance doors, roof hatch, and seismic joints) in selected residential buildings and social facilities.

**Component Name**

Implementation Support and Capacity Building

**Comments (optional)**

This component will finance capacity-building and implementation support for the Ministry of Housing and Communal Services, the Project Coordination Unit (PCU) in the Kommunkhizmat Agency, participating DHCs and their Project teams, and home owners associations of the MABs and their management companies.

**IV. Financing (in USD Million)**

Total Project Cost:	232.00	Total Bank Financing:	140.00
Financing Gap:	0.00		
<b>Financing Source</b>			<b>Amount</b>
BORROWER/RECIPIENT			92.00
International Development Association (IDA)			140.00
Total			232.00

**V. Implementation**

The Ministry of Housing and Communal Services (MHCS) has the overall responsibility for the implementation of the proposed project. The participating cities include Andijan, Bukhara, Chirchik, Samarkand, and Sergeli (Tashkent). The Project Executing Agency is the Kommunkhizmat Agency (KA) under the MHCS. The Project Coordination Unit (PCU) of KA will be responsible for the procurement of the goods, works, and services, and undertake financial management, public relations, consolidate environmental and social safeguards measures in compliance with the requirements of the World Bank and prepare periodical reports to the World Bank. Under the PCU's oversight, the district heating companies of the participating cities will participate, among others, in the definition of technical specifications, tender evaluations, and construction supervision. The proposed project will be implemented in two overlapped phases: the first phase focuses on Bukhara and Chirchik; and the second phase, focuses on the remaining cities of Andijan, Samarkand, and Sergeli (Tashkent).

**VI. Safeguard Policies (including public consultation)**

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

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