



БИШКЕКЖЫЛУУЛУКТАРМАГЫ АКК
ОАО БИШКЕКТЕПЛОСЕТЬ

District Heating Efficiency and Reliability Improvement in Bishkek

Mr. Uran Raimbekov
Deputy Director General
OJSC Bishkekteploset
e-mail: raimbekov.u@mail.ru
phone: +996 772 539793

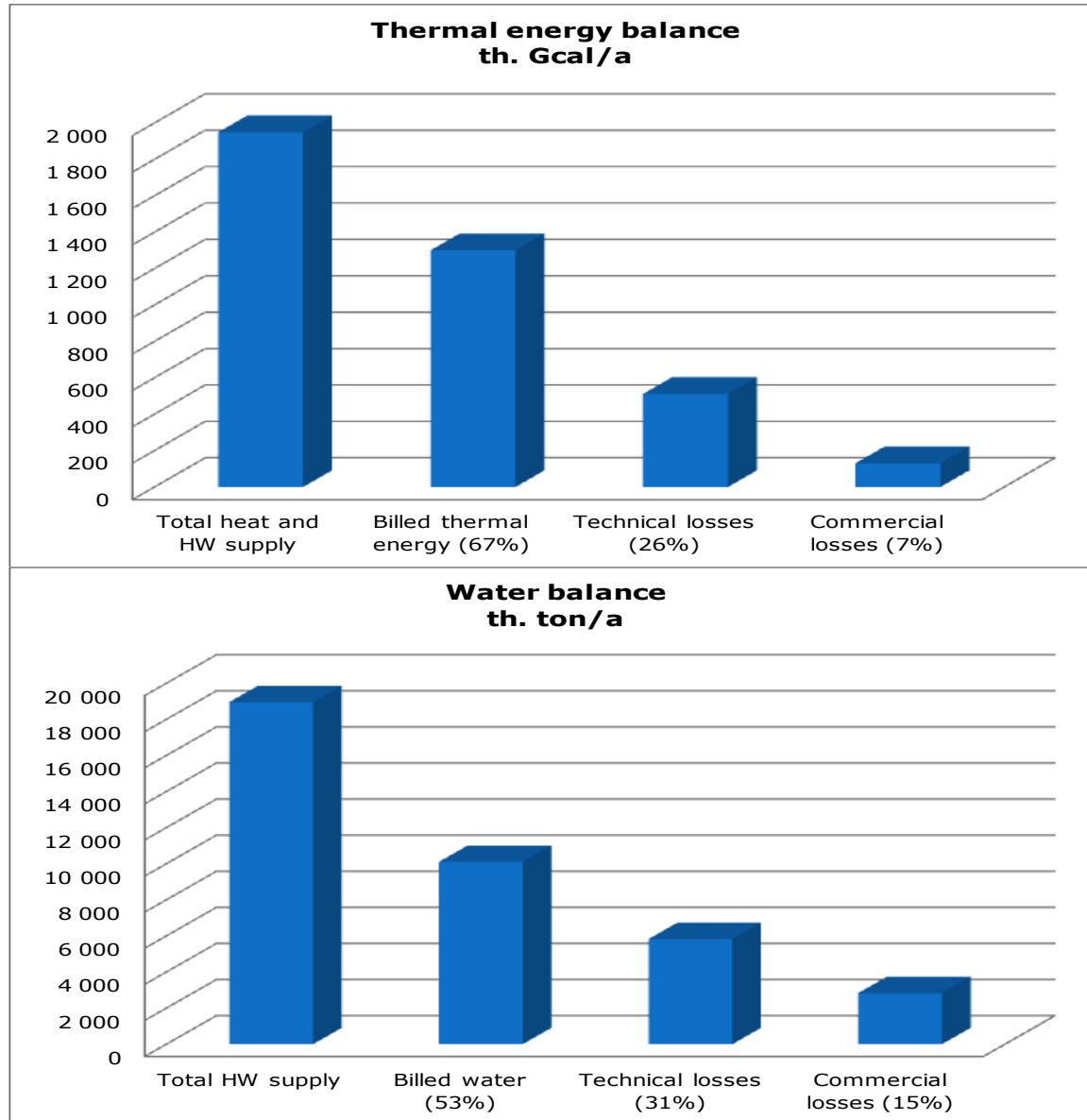
KYRGYZ REPUBLIC – key facts



District heating in Bishkek

- ❑ OJSC “Bishkekteploset” has been established in **1963**
- ❑ In 2016 BTS supplied a total of **1.3 million Gcal of heat** and **9.2 million tons of hot water** covering **~80-85% of all residential** multi-apartment buildings in Bishkek.
- ❑ BTS operates **454,1 km** of two-pipe heat supply networks
- ❑ **19 pump stations** in an open system mode

Key challenges to be addressed



Key challenges to be addressed

- ❑ Increase in breakdowns and deteriorating supply reliability
- ❑ Inadequate quality of service to customers
- ❑ Lack of incentives for energy efficient consumer behavior
- ❑ Constrained DH system transmission capacity
- ❑ Poor system control

The World Bank Heat Supply Improvement Project (HSIP)

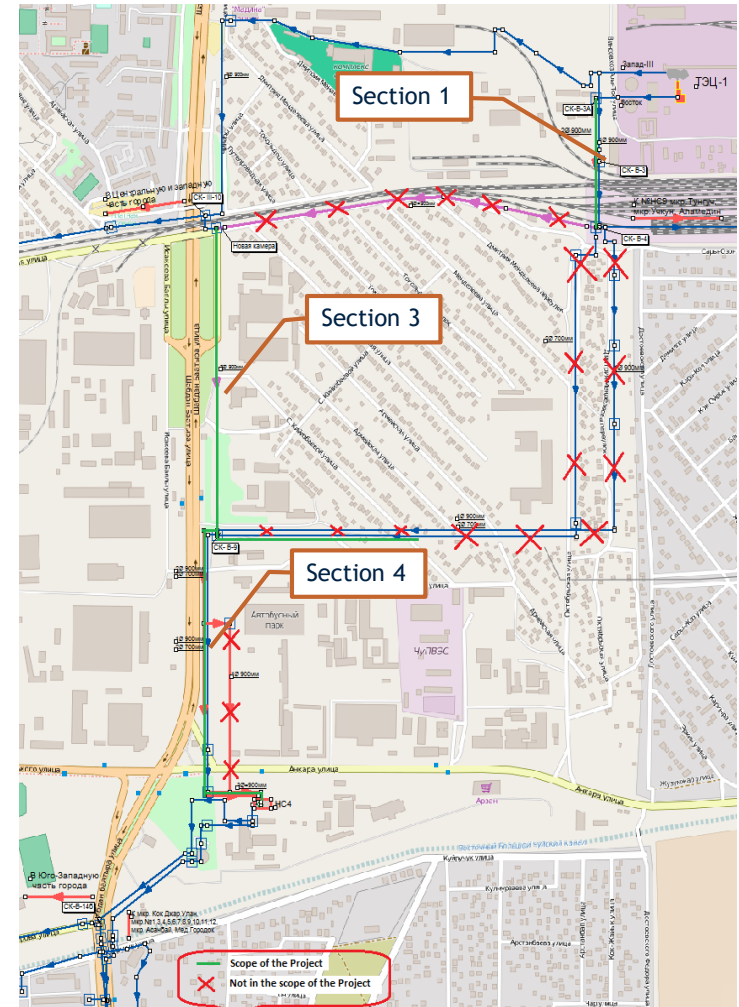
- ❑ Agreement signed between WB and KR in January 2018
- ❑ USD 31 million to be used for priority investments and capacity building, procurement of goods and works
- ❑ The two priority investment packages include:
 - **Package 1:** Modernization of individual heat substations (IHS) at building-level, and installation of metering equipment (estimated USD 21 million)
 - **Package 2:** Reconstruction of part of the ‘Vostok’ transmission pipeline (estimated USD 9 million)

Procurement package 1: consumer substations

- ❑ Open system both for Space Heating and domestic hot water (DHW)
- ❑ Package includes
 - **222 new substations** to be supplied and installed and upgrading of **1,825 existing substations**;
 - **4,000** heat and DHW meters
- ❑ Anticipated budget is **USD 21 million**
- ❑ Procurement schedule (preliminary)
 - Invitation For Bids out - October 2018
 - Bidding deadline - December 2018
 - Contract signing - January 2019

Procurement package 2: renovation of Vostok transmission line

- ❑ Assignment – renovation of one of five key transmission lines
 - Length: **3.0 km**
 - Preinsulated pipes installed in concrete channels
- ❑ 3 procurement packages envisage:
 - 1 package for each section
 - Supply & work type contract
- ❑ Preliminary procurement schedule
 - Invitation For Bids – November 2018
 - Bids received and assessed - December 2018
 - Contract signature – January 2019





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ОАО БИШКЕК ТЕПЛОСЕТЬ

District Heating Efficiency and Reliability Improvement in Bishkek

- Mr. Uran Raimbekov – Deputy Director General on Economic Issues and Investments; **email:** raimbekov.u@mail.ru
- Mr. Dmitriy Zinin – Head of Production and Technical Department; **email:** zinin.mitya@gmail.com
- Mr. Nurlan Kurumshiev – Head of Project Implementation Unit; **email:** kurumshiev@hotmail.com
- Mr. Herkko Lehdonvirta – World Bank Consultant; **email:** herkko.lehdonvirta@gmail.com

ANNEX

Scope of technical and economic assessment

Four key investment areas analyzed:

1. Building level substations with heat and HW meters
2. Apartment level heat and HW metering
3. T&D network improvement
4. Variable speed pumps and SCADA

Consumer substations including building level heat and HW metering

Scope of investment

- Repairing **1,825 existing substations**
- Installing **222 new substations** (with mixing control) mainly to replace remaining hydroelevators
- Installing **4,000 new heat and HW meters**

Rationale for investment

Investment costs	Energy, water and O&M cost savings	Energy and water savings	IRR
Up to USD 25.2 million	USD 3.2 million/a (77% heat energy cost savings)	<ul style="list-style-type: none">• Heat: 174,462 Gcal/a (-9%)• Water: 1,934,452 ton/a (-13%)• Electricity: 3,073 MWh/a (-5%)	12.4%

Prioritization and phasing

Preparatory activities

Replacement of critical pipes in the T&D network

Scope of investment

- Replacing **80% of pipes** older than 25 years
- Recommended scope of T&D upgrade adjusted in accordance with availability of funds

Rationale for investment

Investment costs	Energy, water and O&M cost savings	Energy and water savings	IRR
Up to USD 141.2 million (open system)	Up to USD 13.0 mill./a (62% O&M savings)	<ul style="list-style-type: none">• Heat: 245,574 Gcal/a(-13%)• Water: 4,942,270 ton/a (-26%)• Electricity: 4,325 MWh/a (-7%)	7.3%

Prioritization and phasing

Preparatory activities

VSD pumps and SCADA

Scope of investment

- Replacement of the **36 biggest pumps** at 13 booster pumping stations with new energy efficient pumps and VSD as well as the installation of a new SCADA system

Rationale for investment

Investment costs	Energy and O&M cost savings	Energy savings	IRR
USD 5.53 million	USD 0.95 million/a	6,041 MWh electricity (-33%)	18.6%

Prioritization and phasing

Preparatory activities