Stabilizing the Kyrgyz Energy Sector

August 2019

World Bank energy sector analysis is available at
Sector challenges

- Assets are old and in poor condition and the resulting risk of breakdown is significant:
  - Accidents such as the Bishkek CHP outage will become more frequent if not enough resources are dedicated to system maintenance and repairs.

- Energy needs are growing but new capacity is not increasing at the same pace:
  - In 2014-2016 power needed to be imported from neighboring countries for the first time to meet winter demand. Imports will continue to be needed in low hydrology years if current growth trends continue.

- Rapid deterioration of the financial situation after 2018 is expected due to a combination of decreasing electricity exports and increasing loan repayment obligations:
  - Export volumes have declined 38% from 2017 to 2018, and imports are forecast for 2019. Export are not expected to recover before 2022 and rather than revenues being generated from trade, additional costs will need to be covered in the next few years.
  - Loan repayment is scheduled to quadruple from actual repayment of KGS 2.76 billion in 2018 to KGS 12.6 billion in 2025. Obligations will continue to increase until a peak of KGS 14 billion in 2030.

Source: World Bank forecast based on loan information provided by each company as of April 2019
A structural deficit related to tariffs persists

- No electricity or heating tariff changes have occurred since 2015.
- Residential electricity tariffs below 700kWh are too low for sector stability.
  - Residential tariffs for consumption below 700kWh apply to 52% of total consumption and cover only 45% of cost of service level in 2018. While pumping stations and Toktogul district tariffs are also below the cost of service, these tariffs only apply to 5% and 0.4% of consumption, respectively.
  - Large residential consumers (>700kWh/month) and non-residential consumers are partly compensating for residential losses with tariffs above the cost of service (127% and 175%, respectively).

- Heating and hot water tariffs are below the cost of service for residential customers, as tariffs have not kept up with increasing costs.

![Actual Electricity Tariffs as a Percentage of the Cost of Service (2018)]

![Actual Heating and Hot Water Tariffs as a Percentage of Cost Recovery (2018)]
The sector deficit is growing rapidly

- Without a change in tariffs, the electricity sector is forecasted to have a deficit of KGS 6.8 billion by 2023, a severe deterioration of the situation in 2018.
- **An overall energy sector deficit is forecasted in all years 2019-2023, with a deficit of KGS 7.9 billion forecasted for 2023** (12-fold increase from 2018).

Note: This forecast is based on an energy balance forecast provided by the regulator, and our own estimate of costs going forward, based on actual costs in 2018 (as indicated in the Techno-Economic Indicators 2018, as provided by the State Regulatory Agency).
The consumption threshold for residential tariffs gradually decreases to 350 kWh by 2023.

Tariff increase below the consumption threshold and for pumping stations every other year, to reach KGS 1.3/kWh in 2023 (16% increase in 2019; 22% in 2021; 18% in 2023). The total increase is 69% for below the consumption threshold over five years.

This option leaves a KGS 3.2 billion electricity sector deficit at the end of 2023, a 52% reduction from the baseline scenario with no tariff increases.

Electricity Tariff Adjustment Proposal 2019-23 *

Note: * Deficit estimates are theoretical calculations by the World Bank based on the MTTP proposal submitted in 2018 by the regulator. Only residential tariffs (below the threshold) are adjusted, reflecting the fact that these are the customers currently below cost-recovery. Non-residential tariffs are currently above cost-recovery level.
Residential heat and hot water tariffs increase to KGS 1400/Gcal in 2019 (23% increase for heat and 43% increase for hot water), KGS 1600/Gcal in 2021 (14% increase for heat and hot water), and KGS 1800/Gcal in 2023 (13% increase for heat and hot water). This represents a total 59% increase in residential heat and 83% increase in residential hot water tariffs from the 2018 level through 2023.

All other end-user tariffs are raised to KGS 1800/Gcal in 2023 (6% increase).

This option leaves a KGS 313 million thermal sector deficit at the end of 2023, a 71% reduction from the baseline scenario with no tariff increases.

Note: Deficit estimates are theoretical calculations by the World Bank based on the MTTP proposal submitted in 2018 by the regulator.
Combined Tariff Adjustment Proposal

- The combined proposed tariff adjustment plan is expected to result in a total sector deficit of KGS 3.6 billion in 2023, an 55% reduction from the baseline scenario with no tariff increases.

*The baseline forecast is based on no tariff changes in 2019-2023

Note: Deficit estimates are theoretical calculations by the World Bank based on the MTTP proposal submitted in 2018 by the regulator.
There is room to increase electricity tariffs while still protecting poor populations

- In an average month, 85% of connections do not reach the 700kWh consumption threshold. Even in the winter, average consumption is below 700kWh and there is room to lower the threshold for a significant part of the population, with compensating provisions for the poor and vulnerable households.

- Increasing electricity and heating tariffs through 2023, as proposed, is expected to result in real income losses of 2% (for electricity) and 0.1% (for heating) of total household expenditures for poor households. But effects may vary between seasons and across different regions, and well-targeted mechanisms of support should be considered.

- In the short term, a seasonal top-up to existing social assistance programs is recommended, including the Uybulogo komok (UBK)/monthly benefits for poor families (MBPF) program; pensions (specifically for low income pensioners and disability pensioners; or municipal household utility subsidy program(s) (HUSP) for the urban poor.

- In the medium term, the multiple top-ups and small programs (both at the republican and municipal levels)* which are supporting energy payments, should be rationalized and integrated into existing (and reformed) social assistance system.

<table>
<thead>
<tr>
<th>Tariff Option</th>
<th>Not Poor</th>
<th>Poor</th>
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</thead>
<tbody>
<tr>
<td>Electricity tariff increase scenario</td>
<td>1.88</td>
<td>2.07</td>
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<tr>
<td>(cumulative effect through 2023)</td>
<td></td>
<td></td>
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<tr>
<td>Thermal tariff increase scenario</td>
<td>0.57</td>
<td>0.12</td>
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<tr>
<td>(cumulative effect through 2023)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2.45</td>
<td>2.19</td>
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* These programs include: energy related pension top-ups; energy related top-ups to special categories (e.g. veterans), household utility subsidy program(s) (HUSP), coal distribution and coal cost compensation schemes.
Breaking the revenue fluctuation cycle

• The electricity sector faces large swings in revenues, driven by the year-on-year export variation caused by changes in hydrologic conditions.
  - During dry years, such as 2009 or 2015, there is not enough generation from hydropower, and the higher-cost CHPs must run beyond the heating season and/or imports must be used to fill the gap.
  - The cycle repeats in a predictable manner. In 2015, the last crisis year, imports hit a high of 365 GWh, and the energy sector deficit reached KGS 9.3 billion. Based on current information, the peak of the next dry cycle can be expected 2020-21.

• The negative impact from sector swings is getting more severe as demand growth outstrips supply additions and new export obligations need to be honored.
  - There are plans for 394 MW of new generation by 2023 through new construction and rehabilitation (+ 10%).** During 2007-2018, residential consumption has increased by 71%.
  - The CASA 1000 line is to be completed in 2023, triggering commitments for exports to Afghanistan and Pakistan. The additional export opportunities could be worth up to US$90 million annually but if they cannot be honored, export orders will be filled by neighboring countries and fines could be levied.

• Policy measures exist to address financial/fiscal risks implied by the fluctuation in hydrology.

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* World Bank figure derived from “EPP Tables” Excel file prepared by the Head of Forecast and Economic Analysis Unit
Tools for Hydrologic Risk Mitigation

- **Tariff adjustment**
  - Regular adjustments following the MTTP to reach medium term cost recovery

- **Cash Reserve**
  - Reserves from the fiscal balance sheet, used to cover short term shortfalls in generation and minor climate shocks

- **Stabilization Fund**
  - Paid into in wet years and paid out of in dry years, based on hydrological/generation criteria

- **Contingency Loan**
  - Credit line from IFIs and/or commercial banks, based on hydrological/generation criteria

- **Weather Insurance**
  - A regular premium is paid, and a payout is made in the event of extreme weather events

- **Energy portfolio diversification and interconnection**
  - Diversification of sources (including other renewables) and/or interconnection to neighbors
Thank you for your attention!