Tajikistan:
Financial Assessment of Barki Tojik

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Introduction

This assessment presents the analysis of the financial performance of Barki Tojik (BT), the vertically integrated national power utility of Tajikistan. The assessment is based on the financial model constructed for BT. The model is a time series simulation constructed based on BT’s audited Financial Statements for 2009-2012 following IFRS accounting standards. The financial model and this assessment draw substantially on Winter Energy Study of the World Bank released in November 2012.

BT has significant financial management deficiencies and the auditors of the 2011 and 2012 Financial Statements have not been able to express an opinion. The main concerns of the auditors were the trade and other receivables and payables carried in the consolidated statement, as well as the valuation of inventory and property, plant and equipment. Additionally, opaque cost items hindered in depth analysis. Given the discrepancies in the information and the difficulty to reconcile financial data, reliability is limited to the team’s best efforts to obtain accurate and trustworthy figures.

The assessment relies on projections of BT’s financial statements and aims to:

- Analyze the financial standing of the company based on its operational performance, solvency and liquidity;
- Forecast the financial performance of the company under various investment scenarios; and
- Assess the cost of domestic power supply

Presented below is the summary of key findings from the analysis.
Summary of Key Findings

The 2012 average weighted billed tariff was 27% lower than the estimated cost of supply. The company also does not generate adequate cash per kWh of domestic sales to fully cover the required operating and maintenance (O&M) costs, debt service (interest expenses and repayments of principal amounts), payments to Independent Power Producers (IPPs) and tax obligations. Operational inefficiencies amplify the cash generation shortage. Specifically, in 2012, the total electricity losses were close to 20% of supply. The collection rate for billed electricity at 87% during 2009-2012 is a drain on cash flows.

In 2012, the company had TJS325 million (US$68 million) of cash deficit to fully finance the expenses required for domestic supply. This is equal to 20% of estimated required revenue. The cash deficit is due to high losses, poor collection rates and high general and administrative expenses as well as unclassified costs. The inefficiency and overspending on the above items prevented the company from fully financing the required operating and maintenance costs to ensure reliability of existing infrastructure. Specifically, the company reported that it underspends around TJS80 million or 50% less than required on recurrent repairs.

Timely payments to IPPs are increasingly becoming an issue. The company struggles to pay in full and in a timely manner for electricity supplied by IPPs under the existing power purchase agreements (PPAs). This has resulted in litigation between the IPP operators and BT. Currently, the IPPs account for 15% of total annual electricity generation, which could increase to 20% if IPPs operated at full capacity. The less-than-full capacity generation by IPPs is due to delayed payments by BT and ongoing litigations. In 2012, payables to IPPs accounted for 60% of total receivables.

Difficulties of BT to service debt, which accounts for 20% of the country’s total public debt, will ultimately become a direct burden for the state budget. The company did not make any debt service payments in 2011-2012 and failed to meet the loan covenants with respect to cost-recovery tariff under the World Bank financed Additional Financing for Energy Loss Reduction Project (ELRP AF). The company has US$524 million of outstanding sovereign guaranteed debt as of January 1, 2013, which accounts for 20% of Tajikistan’s total public debt. The inability of the company to service debt will have serious fiscal implications for the country. Moreover, the company has significant investment needs to address the issue of winter energy shortage. Specifically, US$3.1 billion of capital investments in rehabilitation, new energy supply sources and energy efficiency are estimated to be required to eliminate the winter energy deficit by 2020. Due to the weak cash generation capability and limited balance sheet capacity, the company has to rely heavily on debt financing. Consequently, the increasing level of debt will impose further pressure for the company to service its future principle and interest payment.

Significant revenue increase will be required for BT to reach cost-recovery irrespective of long-term investment scenarios pursued. Specifically, with no new investments, except for

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1 In this note, the cost of domestic supply was estimated the following way: Total cash revenue requirement of BT / Estimated supply to end-users. The total cash revenue requirement was estimated as the amount of cash required to fully pay for expenses required for domestic supply: O&M, cost of electricity from IPPs, debt service and imports.

2 Excludes 2011 collection rate of 99%, which included recovery of previous arrears and significant advance payments.

3 Except as the Recipient and the Association shall otherwise agree, the Recipient shall take all actions necessary on its part, including but not limited to, tariff increases, and measures to improve collections from all categories of consumers, to enable the Project Implementing Entity achieve Short-Term Cost Recovery for the year ending 2013 and onwards.
CASA-1000 project, the cost of supply is expected to increase by 70% by 2020. Implementation of all measures required to eliminate the winter electricity deficit will increase the cost of domestic supply by 200% by 2020.

**Figure 1: Scenarios for Financial Projections**

![Scenarios Diagram]

Source: Bank team estimate.

**Opaque and inefficient cost structure:** Despite some improvement in details of expenses and costs disclosed, the company still has 14% of 2012 expenses classified as either “general expenses” or “other expenses”. There is no information available in the audited financial reports as what is included in those costs and whether these are economically efficient and justified costs related to core business activities of the company.

**Inadequate financial reporting:** The auditor of the 2011 and 2012 Financial Statements was not able to express an opinion. The main concerns of the auditor were the trade and other receivables and payables carried in the consolidated statement as well as valuation of inventories.
1. Power Sector Balance

The power sector accounts for about 7% of GDP and 35% of public investments. Reliable electricity supply is critical for the country’s economic growth. Electricity is a key input for the two largest exported commodities – aluminum and agriculture, which account for around 20% of the country’s annual GDP and 50% of exports.

The power sector is dominated by hydro generation with most of the plants built in the Soviet era. Hydropower accounts for over 99% of the total annual electricity generation in the country. The country faces winter electricity shortages due to a combination of limited availability of hydropower in the winter, lack of domestic thermal generation and significant reductions in electricity imports. The winter electricity shortage is estimated at around 2471 GWh, or 22% of winter demand. The level of losses is estimated at 15% of gross supply with donor supported loss reduction initiatives ongoing.

In 2012, the power trade with neighboring countries was very limited. Following the completion of CASA-1000 power transmission project, expected in 2018, the country will be able to export electricity both to Afghanistan and Pakistan.

Table 1: Power Sector Balance in 2007-2012

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total BT generation</td>
<td>GWh</td>
<td>17,340</td>
<td>14,809</td>
<td>14,197</td>
<td>14,614</td>
<td>13,895</td>
</tr>
<tr>
<td>Power from Sangtuda-1 and 2</td>
<td>GWh</td>
<td>0</td>
<td>1,106</td>
<td>1,698</td>
<td>1,616</td>
<td>2,150</td>
</tr>
<tr>
<td>Total generation</td>
<td>GWh</td>
<td>17,340</td>
<td>15,915</td>
<td>15,895</td>
<td>16,231</td>
<td>16,045</td>
</tr>
<tr>
<td>Station own use</td>
<td>GWh</td>
<td>68</td>
<td>60</td>
<td>40</td>
<td>30</td>
<td>34</td>
</tr>
<tr>
<td>Imports</td>
<td>GWh</td>
<td>1,053</td>
<td>1,917</td>
<td>1,257</td>
<td>338</td>
<td>65</td>
</tr>
<tr>
<td>Exports</td>
<td>GWh</td>
<td>969</td>
<td>1,054</td>
<td>1,216</td>
<td>192</td>
<td>202</td>
</tr>
<tr>
<td>Electricity losses</td>
<td>GWh</td>
<td>3,065</td>
<td>2,997</td>
<td>2,086</td>
<td>2,321</td>
<td>2,257</td>
</tr>
<tr>
<td>Electricity losses (% of gross supply)</td>
<td>%</td>
<td>17.7%</td>
<td>17.9%</td>
<td>13.1%</td>
<td>14.2%</td>
<td>14.2%</td>
</tr>
<tr>
<td>Total domestic electricity supply</td>
<td>GWh</td>
<td>14,291</td>
<td>13,720</td>
<td>13,811</td>
<td>14,025</td>
<td>13,617</td>
</tr>
<tr>
<td>Unmet electricity demand</td>
<td>GWh</td>
<td>2251</td>
<td>2318</td>
<td>2387</td>
<td>2471</td>
<td></td>
</tr>
</tbody>
</table>


2. Financial Inflows (Revenues)

Tariffs

In 2007-2012, the Government progressively increased the average billed tariffs, however, the real increase was significantly lower. In 2007-2012, the nominal increase of weighted average billed electricity tariff was around 296%, however, only 144% percent in real terms after accounting for the inflation during the same period.

After the last increase, the average billed tariff reached 9.5 diram/kWh as of the June 2013. Moreover, the Government introduced seasonal tariffs\(^4\) for TALCO and irrigation in 2012. An overview of historic tariff for main categories of consumers is presented below.

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\(^4\) Winter tariff effective from October 1 to April 30 and summer tariff – from May 1 to September 30.
The magnitude of tariff increase was uneven among various categories of consumers. In 2007-2012, the industrial (excluding TALCO) and residential users experienced the largest tariff increase. Meanwhile, TALCO and water supply/irrigation, accounting for 50% of total electricity consumption, had the lowest tariff increase. Such tariff increase patterns, combined with poor collection rates from irrigation/water supply and variable collection rates from TALCO, significantly impacted BT’s financial performance.

Figure 3: Nominal Tariff Increases in 2007-2012

The weighted average billed tariff in 2012 was 27% lower than the estimated cost of domestic supply. Despite significant increase in tariffs in 2007-2012, the company still fails to generate enough cash flow from domestic sales and, thus, does not fully cover the required expenses needed for sustainable provision of electricity service. This is due to high electricity losses, poor and inconsistent collection rates as well as some unexplained financial discrepancies between the billed energy and the revenue recognized on the income statement. Specifically, the company recovers in cash only 63% of the revenue billed. Given, the gap between the average
billed tariff and cost-recovery tariff, the company does not comply with the loan covenant under the ongoing World Bank financed ERLP AF.

The expected average 2013 billed tariff of 9.5 diram/kWh is still 20% lower than the estimated cost of supply. Thus, the World Bank project loan covenant will not be honored in 2013 either.

In the longer term, the cost of supply is estimated to increase from the current level of 12 diram/kWh to 20-36 diram/kWh depending on the investments scenario pursued by the Government. Thus, significant revenue increases will be required to eliminate the cash deficit of the company and fully cover the cash expenses required for elimination of the winter energy deficits and financial sustainability of the sector.

**Figure 4: Tariffs in 2010-2012**

![Figure 4: Tariffs in 2010-2012](image)

**Table 2: Tariffs and Costs in 2010-2012, diram/kWh and USc/kWh**

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weighted average billed tariff (diram/kWh)</td>
<td>6.9</td>
<td>8.2</td>
<td>8.7</td>
<td>9.5(^5)</td>
</tr>
<tr>
<td>Weighted average billed tariff (USc/kWh)</td>
<td>1.6</td>
<td>1.7</td>
<td>1.8</td>
<td>2.1(^6)</td>
</tr>
<tr>
<td>Cost of supply (diram/kWh)</td>
<td>7.7</td>
<td>8.7</td>
<td>11.9</td>
<td>11.9</td>
</tr>
<tr>
<td>Cost of supply (USc/kWh)(^7)</td>
<td>1.7</td>
<td>1.8</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>Compliance with ERLP AF loan covenant</td>
<td>-</td>
<td>-</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Cash from domestic sales (diram/kWh)</td>
<td>6.2</td>
<td>7.2</td>
<td>5.5</td>
<td>-</td>
</tr>
<tr>
<td>Cash from domestic sales (USc/kWh)</td>
<td>1.4</td>
<td>1.5</td>
<td>1.1</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: Bank team estimate.

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\(^6\) Calculated at the expected TJS/US$ exchange rate at the end of 2013.

\(^7\) Calculated at 2011 average annual TJS/US$ exchange rate.
**Billed Revenue and Collection**

Electricity bill collection rates are volatile with wide differences among various categories of consumers. Specifically, the average collection rate was around 85% in 2008-2010, increased to 99% in 2011 and then reduced to 86% in 2012. The large variation in collection rates was primarily due to unstable payment discipline by pumping irrigation and water supply, residential consumers and consumers categorized as “others.”

The collection rates were the highest for the industrial consumers (exclusive of TALCO) and the agriculture. Those categories were pre-paying their bills in 2008-2012. The electricity bill collection rate for TALCO and residential consumers are quite volatile. The collection rates were the lowest for irrigation and water supply, which had a major impact on BT cash flows given that the sector accounts for sizeable share of consumption. Specifically, in 2012, water supply and irrigation accounted for 12% of billed supply, but contributed only 0.3% of BT’s collected revenue.

**Figure 5: Bill Collection Rates in 2007-2012**

![Chart showing bill collection rates by main categories of consumers from 2007 to 2012.](source: Bank team estimate.)

**4. Financial Outflows (Costs)**

**Total Cost Breakdown**

BT total costs, including depreciation and financing cost, were TJS1.1 billion (US$230 million) in 2010 and increased to TJS1.4 billion (US$290 million) in 2012. The major cost items include material costs, financing costs, and “other expenses”. These costs accounted for 74% of total costs in 2012. It is our understanding that material costs also include power purchase costs for electricity supplied by IPPs as well as variable operating costs of existing plants. The IPP costs were estimated at TJS260 million or 16% of the estimated cost of service. In 2012, the tariff for

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8 The bill collection rates reported by BT do not reconcile with operating cash flows in the audited financial statements possibly due to non-cash payments from some of the customers. In 2012, the cash collections were 63% compared to total reported collection of 86%.
Sangtuda-1 HPP was USc 2.2/kWh and the tariff for Sangtuda-2 HPP - USc 2.9/kWh, i.e. higher than the average billed tariff.

The increase in total costs in 2012 was primarily driven by high inflation and significant increase in material costs due to increased inventories. The company had sizeable “other” costs, which accounted for 14% of the total costs. However, there was no information available as to whether those “other” costs were economically justified expenses required for efficient provision of electricity service.

The company fails to service the debt in a timely manner, which was evidenced by the late debt service payment in 2012. This late payment resulted in sizeable penalties, totaling 25% of financing costs in 2012.

**Figure 6: BT Cost Structure in 2010-2012**

![Cost Structure Chart]

Source: Bank team estimate.

**Working Capital**

The trade and other receivables fluctuated in the past three years, ranging from TJS564 million (US$128 million) in 2010 to TJS268 million (US$61 million) in 2012. The receivables volatility is not consistent with the reported high collection rates for billed electricity during the same time period. Large amount of inventory suggests that the company has too much capital tied up in non-producing assets.

The trade and other payables increased significantly in 2009-2012 from TJS354 million (US$86 million) in 2009 to TJS660 million (US$139 million) in 2012. Arrears to creditors have been reported since 2011.

Overall, the large working capital movement mainly due to significant delay of payments to creditors generated a large positive cash flow to finance the annual operational deficit. Therefore, the annual total cash flow appeared positive on the financial statement. Should the company make full payments on a timely manner, the underlying cash would be a negative value.

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9 The audit reports for 2011 and 2012 do not disclose information regarding the cause of such a rapid build-up of inventory. Given that there is very limited thermal generation in the last two years, fuel reserves are very unlikely to explain such a large increase in inventory.
Additionally the delay of payment to suppliers and IPPs is not a sustainable business practice and will have a negative impact on mobilizing private investment to fulfill any future financing requirement.

Figure 7: BT Working Capital Changes

![Diagram showing working capital changes from 2009 to 2012.](Image)

Source: Bank team estimate.

**Debt Service**

The company’s reliance on debt has significantly increased during 2010-2012 without matching increase in operating income and cash flows. The gearing ratio (ratio of total liabilities to total assets) increased from 66% in 2009 to 84% 2012. Total outstanding debt as of December 2012 was US$630 million at a weighted-average cost of debt of 3.3%. The increase of long-term debt is driven by the Government borrowing from IFIs and bilaterals to finance new capital investments and rehabilitation of existing core assets. Principal and interest payments on the existing loan balance are presented in the table below. However, it should be noted that the company’s actual interest expenditure in 2011-2012 were significantly below the accrued amount, which leaves the burden on the state budget. In 2012, the company had to pay a penalty of TJS89 million (US$19 million) due to its late payment on debt service.

The company’s debt service coverage ratio has been below 1.0 in 2011 and 2012 clearly demonstrating the severe liquidity problem it is currently facing. The cash shortfall has been dealt with by delaying payment to creditors including IPPs and debt holders. The situation going forward is not sustainable and has to be addressed urgently. Potential measures include tariff adjustment and improvements in operating efficiency (e.g. loss reduction, improved collection of energy bills).

**Table 3: Debt Service, TJS million**

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle repayments</td>
<td>205</td>
<td>34</td>
<td>113</td>
</tr>
<tr>
<td>Interest</td>
<td>77</td>
<td>155</td>
<td>347</td>
</tr>
<tr>
<td>Total required debt service</td>
<td>282</td>
<td>389</td>
<td>460</td>
</tr>
<tr>
<td>Outstanding debt</td>
<td>2,304</td>
<td>2,784</td>
<td>2,882</td>
</tr>
</tbody>
</table>

Source: Audit reports for 2011 and 2012.

The company’s cash deficit (before borrowing) in 2012 was estimated at TJS325 million (US$68 million) or 20% of the required total revenue to finance all expenses. However, it should be
noted that the below cash deficit was estimated considering only actual cash expenses. With all the required cash expenses included, the deficit would be significantly larger.

Table 4: Cash Surplus / Deficit of the Company, TJS million

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash Revenue</td>
<td>768</td>
<td>728</td>
<td>821</td>
</tr>
<tr>
<td>Cost of Sales</td>
<td>148</td>
<td>129</td>
<td>524</td>
</tr>
<tr>
<td>Operating and other cash costs</td>
<td>664</td>
<td>733</td>
<td>354</td>
</tr>
<tr>
<td>Taxes</td>
<td>119</td>
<td>152</td>
<td>144</td>
</tr>
<tr>
<td>Interest Payment</td>
<td>13</td>
<td>0</td>
<td>40</td>
</tr>
<tr>
<td>Principle Repayment</td>
<td>205</td>
<td>34</td>
<td>113</td>
</tr>
<tr>
<td><strong>Total Cash Costs</strong></td>
<td>1149</td>
<td>1048</td>
<td>1175</td>
</tr>
</tbody>
</table>

|                                | 2010 | 2011 | 2012 |
|                                | (381)| (320)| (354)|
| Other Cash Income              | 124  | 281  | 29   |
| **Total Cash Deficit w/o Other Income** | (257)| (39) | (325)|

Source: Bank team estimate.

Snapshot of BT Financial Performance in 2010-2012

The overall financial performance of the company was poor in 2010-2012 as measured by liquidity, operating performance, solvency and profitability indicators.

Table 5: Key Financial Ratios of BT

<table>
<thead>
<tr>
<th>Ratios</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liquidity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sufficiency of total current assets to meet short-term obligations (current ratio)</td>
<td>73%</td>
<td>52%</td>
<td>50%</td>
</tr>
<tr>
<td>Sufficiency of cash, marketable securities and receivables to meet short-term obligations (quick ratio)</td>
<td>42%</td>
<td>16%</td>
<td>16%</td>
</tr>
<tr>
<td><strong>Profitability</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross profit margin</td>
<td>67%</td>
<td>59%</td>
<td>53%</td>
</tr>
<tr>
<td>Net profit margin</td>
<td>20%</td>
<td>(12%)</td>
<td>(7%)</td>
</tr>
<tr>
<td><strong>Solvency</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Debt service coverage ratio</td>
<td>1.24</td>
<td>0.66</td>
<td>0.62</td>
</tr>
</tbody>
</table>

Source: Bank team estimates
3. Financial Projections and Cost of Domestic Supply

The financial projections for BT under two scenarios are presented below.

**Scenario 1: BAU without Tariff Increase**

Under the Business As Usual (BAU) Scenario, BT does not increase tariffs, implements CASA-1000 project, but no other investments are made to reduce losses, improve energy efficiency or eliminate winter electricity deficit. In this scenario, weighted average posted tariff remains at 9.5 diram/kWh and is not adjusted upward, implying 7% annual reduction in real tariff due to forecast inflation. The financial projections for BT under this Scenario are presented below.

The BAU Scenario is projected to bring negative net profits until 2018. The profitability recovers with commissioning of CASA-1000, but insufficient to realize positive net profits. The company’s total liabilities to assets are expected to increase to 120% by 2020. A combination of increased principle and interest payments in 2016, followed by negative profits due to below cost-recovery tariffs will push the debt service coverage ratio slightly below 1.0x in 2014, which is expected to recover only by 2021 mostly due to additional income from electricity exports under CASA-1000. Liquidity remains a serious point of concern throughout the forecast period.

**Figure 8: Financial Projections under Scenario 1: BAU without Tariff Increase**

Under Scenario 1, the cost of domestic supply is expected to increase 67% reaching 20 diram/kWh by 2020. Without any tariff increase, the average tariff will significantly lag the cost-recovery level with disastrous financial and, potentially, supply reliability consequences.
**Scenario 2: Investments to Eliminate Winter Shortages and Inflation-adjusted Tariff Increase**

Under the Scenario 2, BT makes all of the new investments required for elimination of winter electricity deficit, commissions CASA-1000 project in 2018, executes the asset rehabilitation program, and increases the tariffs at the rate of domestic inflation.

In this scenario, the sizeable investments are forecast to push BT into negative net income and inability to service debt obligations. From 2014 onward, the DSCR falls below 1.0 and does not recover to 1 during the entire forecast period. Principle and interest payment obligations increase 473% vis-à-vis investment Scenario 1, while increased energy sales raise revenue by 24%. The gearing ratio surpasses 100% in 2017. The cash position becomes unsustainable in 2017, when the availability of cash and liquid assets to pay for current liabilities falls below 0.

Under Scenario 2, the cost of supply is expected to increase 200% to reach 36 diram/kWh in 2020. The cost of supply increases due to increased debt service given the investments in rehabilitation of existing hydropower plants, loss reduction program, new generation investments, imports and fuel switching with total cost of US$3.1 billion. The tariff increase at the rate of inflation will not be sufficient to reach the cost of service.

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Figure 10: Financial Projections under Scenario 2 (with inflation-adjusted tariff increase)

Source: Bank team estimate

Figure 11: Cost of Supply under Scenario 2 (with inflation-adjusted tariff increase)

Source: Bank team estimate.