District Heating and Electricity Tariff and Affordability Analysis

World Bank
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• Introduction

• Tariff adequacy and forecast of tariffs
• Distributional impacts of tariff adjustments
• Social protection

• Conclusions
• Recommendations for government
INTRODUCTION
Moldova is highly dependent on imported electricity and fuel

Electricity generation and import in Moldova

In 2013:
- 82% of electricity was imported
- 93% of domestic electricity generation was based on imported fuel
- 100% of centralized heat production was based on imported fuel
Fuel cost and the cost of imported electricity heavily influence the heat and electricity tariffs

**Heat Tariff Structure (Termocom), 2012**

- Heat other sources: 14%
- Own heat: 57%
- Cost of capital: 23%
- Operating costs: 1%
- Profit: 0%

**Electricity Tariff Structure (RED Nord), 2012**

- Electricity costs: 69%
- Capital costs: 13%
- Other costs: 8%
- Transmission: 7%
- Deviation: 5%
- Operating costs: -2%
The Energy Poverty rate is high in Moldova

“Energy Poverty” is defined as: More than 10% of total household expenditures devoted to energy (heat, electricity, gas, wood, coal)

Data source: HBS 2013
TARIFF ADEQUACY AND FORECAST OF TARIFFS
While tariffs have remained unchanged in 2012–2014, the utilities’ costs have increased*.

*Based on the costs provided by the companies.
The financial status of the sector has been deteriorating

Operating profit margin
Net profit margin
Return on total equity
Operating profit margin based on approved tariff

*Forecast

*Termocom – negative equity
The constructed scenarios project a range of potential tariff levels

- **Low scenario**
  - Based on July tariff adjustment
  - Tariffs as decided by ANRE on July 18, 2015 and assumed inflation thereafter
  - Heat tariff based on gas tariff as decided on July 18, 2015

- **High scenario**
  - Based on estimated maximum tariff
  - Estimated high value of commodity prices, exchange rate, other operating costs and investments
  - Past deviation divided to 2015-2019 tariffs
  - Revaluation impact included in full

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Commodity prices, exchange rate</th>
<th>Other operating costs</th>
<th>Deviation from past years</th>
<th>Investments</th>
<th>Revaluation of assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low scenario</td>
<td>Electricity: Tariff as of July 18, 2015</td>
<td></td>
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<tr>
<td></td>
<td>Heat: Gas tariff as of July 18, 2015</td>
<td>Heat: As approved in 2011</td>
<td>Heat: 0</td>
<td>Heat: BAU (annual average)</td>
<td>Heat: 0%</td>
</tr>
</tbody>
</table>
Based on High Scenario, nominal end user electricity tariff could be twice as high in 2020 compared to 2014

RED Union Fenosa nominal end user electricity tariff

End user electricity tariff includes generation, transmission, distribution and supply of electricity

Total deviation from 2012-2014 is 890 MDL
Based on High Scenario, nominal end user heat tariff could be 80% higher in 2020 compared to 2014.
Main finding: The energy sector has not been financially sustainable – further tariff increases are projected

- Financial status of companies has been deteriorating:
  - All companies analyzed, except for Union Fenosa, made a loss in 2013-2014.
  - Union Fenosa has accumulated a significant amount of receivables, based on an assumed revenue calculated based on tariffs according to regulation, but not approved by ANRE. The reported profit of the company is misleading and the situation is leading to cash flow issues for the company.

- Unsustainable status of the sector creates significant risks
  - In short to mid term, there is a risk for disruption of service due to inability to pay for bulk energy imports and for requiring a financial bail out
  - In long term, the sector operators cannot attract investments to expand and refurbish the infrastructure

- Tariff adjustment for electricity transmission and supply proposed by ANRE in July 2015 will improve the situation, but does not lead to financially sustainable situation.
  - Heat end user tariff needs to be adjusted to reflect current cost levels.
  - Significant accumulated losses in 2012-2015 for the companies may require additional tariff increases.

- The study estimates the minimum and maximum increases in the energy tariffs to range between a low and a high scenario (see table below).
  - The impact of the scenarios on population and on social assistance is analyzed in the following sections.

**Estimated range of nominal tariff increase***

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>Low scenario</th>
<th>High scenario</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>2020</td>
</tr>
<tr>
<td>Heat tariff projection (MDL/Gcal)</td>
<td>987</td>
<td>1,211</td>
<td>1,286</td>
</tr>
<tr>
<td><em>Heat tariff projection (USD/Gcal)</em></td>
<td>71</td>
<td>65</td>
<td>63</td>
</tr>
<tr>
<td>Electricity tariff projection (bani/kWh)</td>
<td>152</td>
<td>216</td>
<td>263</td>
</tr>
<tr>
<td><em>Electricity tariff projection (cents/kWh)</em></td>
<td>11</td>
<td>12</td>
<td>13</td>
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</table>

*Further scenarios presenting the impact of specific parameters are presented in appendix 1.
DISTRIBUTIONAL IMPACTS OF TARIFF ADJUSTMENTS
Energy tariff increase would increase poverty especially among rural population, whose main fuel is wood

Wood users are vulnerable to the electricity tariff increase, as a significant proportion of this category lives close to the poverty line. Poverty increase reaches 1.5 and 2.3 percentage points in 2016 for the low and high scenario respectively. As a consequence, the increase in poverty is higher in rural areas even if wood is the main heating source.

Users of natural gas stoves are the most vulnerable to the gas tariff increase. For this group the increase in poverty reaches 2 and 3 percentage points for low and high scenario respectively (but note that this is a very limited category)*.

Simulated poverty share (%)

Note that the poverty rates for 2016 and 2020 are simulations intended to capture only the impacts of tariff increases, by comparing the yearly baselines with the high and low scenarios. They do not represent World Bank poverty forecasts which would depend on a plurality of other factors not taken into consideration here.

* Natural gas stove category too small for statistically significant results, as they represent only 2% of the households nationally.
Energy tariff increase would increase the share of energy costs in total expenditures moderately

Energy share would reach on average 18 to 20 percent of total expenditures in 2016 depending on the tariff increase scenario, thus would increase by 2.3 to 3.8 percentage point compared to the baseline scenario for the same year.

Average energy expenditure share would reach 24% in 2016 for the poorest households for the high scenario.

By 2020, the share would decrease to 17 and 18 percent respectively for the low and high tariff scenarios assuming World Bank projection for economic growth. This means respectively a 3 and 4.6 percentage point increase compared to the baseline.

<table>
<thead>
<tr>
<th>Residence</th>
<th>Energy share (%)</th>
<th>Energy share increase compared to baseline (percentage point)</th>
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<tbody>
<tr>
<td></td>
<td>Low scenario</td>
<td>High scenario</td>
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<tr>
<td></td>
<td>2016</td>
<td>2020</td>
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<tr>
<td>All</td>
<td>18.2%</td>
<td>16.7%</td>
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<tr>
<td>Chisinau</td>
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<tr>
<td>other urban areas</td>
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<tr>
<td>rural</td>
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<tr>
<td>Central Heating</td>
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<tr>
<td>Gas central system</td>
<td></td>
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<tr>
<td>Nat. Gas stove</td>
<td></td>
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<tr>
<td>Wood or coal stove</td>
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<tr>
<td>Electric heaters</td>
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<td>quintile 1</td>
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<td>quintile 2</td>
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<td>quintile 3</td>
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<td>quintile 4</td>
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<td>quintile 5</td>
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Energy expenditure share of total expenditures
SOCIAL PROTECTION
Moldova has targeted social assistance programs that can help protect the poor from income and price shocks

- Two targeted social assistance programs, Ajutor Social and Heating Allowance, channel effectively social assistance to poor households.
  - Since 2009, the government of Moldova has launched two targeted cash transfers, Ajutor Social (AS) and Heating Allowance (HA). The programs target the poor well: about 80% of the AS and over 50% of HA benefits go to poorest 20% of population.
  - The effective coverage of the programs remains modest: in 2014 AS covered 3% of total population and HA about 7%. With the current income thresholds the coverage of HA can potentially be increased to 30%.
  - Effective coverage of the poorest quintile by AS benefits declined between 2012-14 from 19% to 12%.

- Most social assistance benefits remain categorical, i.e. they are provided to certain groups of population (disabled, elderly, children) regardless of their welfare.
  - Categorical benefits accounted for 1% of GDP whereas AS and HA accounted for 0.6% of GDP in 2014.
  - The beneficiaries of AS and HA mostly reside in rural areas, which is consistent with the national poverty profile.
  - The municipal heating benefits in Chisinau and Balti are important to complement the national programs.
Recommended adjustments to compensate energy cost increase

The following adjustments are recommended to social assistance programs to compensate for higher energy costs:

- **Increase in eligibility threshold**
  - The threshold for receiving AS (GMI) must be regularly revised to reflect increasing cost of living (including electricity cost). Likewise, the threshold for HA should be adjusted accordingly at 1.6xGMI.
  - The change in GMI should reflect increasing energy costs as part of overall increase in cost of living (inflation).

- **Increase in social assistance benefits per household**
  - The AS benefit size adjusts automatically with GMI growth as it fills the gap between the actual household income and GMI.
  - The HA benefit size should be revised in line with average increase in monthly heating cost per household during heating season.
The fiscal impact of compensating energy tariff increases through national social assistance programs

- With the adjusted GMI, the number of eligible households rises in 2016 and then declines as real income growth, based on WB forecast, starts to offset part of tariff increase.
- The total fiscal impact of AS and HA programs ranges from low to high scenario in 2016 between 0.7-2.2% of GDP and in 2020 between 0.5-1.7%.

<table>
<thead>
<tr>
<th></th>
<th>Low scenario</th>
<th>High scenario</th>
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<tbody>
<tr>
<td></td>
<td>2015</td>
<td>2016</td>
</tr>
<tr>
<td>Number of HHs benefiting from AS</td>
<td>50,832</td>
<td>51,181</td>
</tr>
<tr>
<td>Number of HHs eligible for AS</td>
<td>126,796</td>
<td>127,666</td>
</tr>
<tr>
<td>Number of HHs benefiting from HA</td>
<td>136,466</td>
<td>154,536</td>
</tr>
<tr>
<td>Number of HHs eligible for HA</td>
<td>397,066</td>
<td>449,644</td>
</tr>
<tr>
<td>AS budget, current take-up, mln MDL</td>
<td>425</td>
<td>506</td>
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<tr>
<td>AS budget, perfect take-up, mln MDL</td>
<td>1,061</td>
<td>1,261</td>
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<tr>
<td>AS budget, current take-up, % of GDP</td>
<td>0.36</td>
<td>0.39</td>
</tr>
<tr>
<td>AS budget, perfect take-up, % of GDP</td>
<td>0.89</td>
<td>0.98</td>
</tr>
<tr>
<td>HA budget, current take-up, mln MDL</td>
<td>171</td>
<td>390</td>
</tr>
<tr>
<td>HA budget, perfect take-up, mln MDL</td>
<td>496</td>
<td>1,136</td>
</tr>
<tr>
<td>HA budget, current take-up, % of GDP</td>
<td>0.14</td>
<td>0.30</td>
</tr>
<tr>
<td>HA budget, perfect take-up, % of GDP</td>
<td>0.42</td>
<td>0.88</td>
</tr>
<tr>
<td>AS+HA budget, current take-up, % of GDP</td>
<td>0.50</td>
<td>0.69</td>
</tr>
<tr>
<td>AS+HA budget, perfect take-up, % of GDP</td>
<td>1.31</td>
<td>1.86</td>
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</tbody>
</table>
SUMMARY OF KEY FINDINGS
Energy tariffs need to ensure cost recovery to ensure security of supply and sustainable development of the sector

- Fundamental regulatory structures and billing performance are at a fairly good level:
  - Moldova has in place a fundamentally well structured regulatory system that is considered to be in principle adequate also by private sector operators
  - The electricity distribution service quality has improved significantly and there is good billing performance in both heat and electricity sectors
- Significant short to mid term risks are related to consumer tariffs for heat and electricity not covering all service production costs:
  - Risk of major financial bail out being required with significant fiscal implications
  - Risk of disruption of service due to inability to pay for bulk energy imports
- New electricity tariffs decided upon by ANRE in July cover fairly well current operating costs, but further actions are needed to ensure the long term development of the sector:
  - A long term plan on recovery of past accumulated debt needs to be reached
  - Without a credible long term plan, the sector operators cannot attract investments to expand and refurbish the infrastructure
  - Efficiency of the sector may deteriorate as the focus of the management is on short term financing and not on developing operations
Increasing energy tariffs will increase the demand for social assistance programs

Based on scenario analysis, the electricity tariff increase by 2020 is estimated to be 73-113% and heat tariff 30-78%. Analysis also assumes 50% increase in gas tariff by 2020.

Due to tariff increases, the poverty rate is expected to be 1-1.5 %-points higher in 2020, a moderate increase compared to a scenario without tariff increases.

Increasing need for social assistance may lead to social program share of government budget to increase from 0.5% of GDP to 1.9-2.2% in 2016 and 1.3-1.7% in 2020.

However, this would require a significant increase in take-up of programs.
RECOMMENDATIONS FOR GOVERNMENT
Recommendations for immediate actions by government on tariff setting methodologies

- The credibility of the regulatory regime needs to be restored and the financial status of the utilities improved. Tariff adjustments are required for electricity supply, heat supply as well as heat and electricity generation.
- There should be automatic pass through of costs for fuel and imported electricity to ensure timely adjustment of tariffs to avoid further accumulation of losses/debt.
- Timely setting of tariffs and calculation of base costs at the beginning of a regulatory period should be ensured by starting the consultation process well in advance and determining a firm deadline for approval of tariffs.
- To avoid imposing a large impact on the population through big one-time increase, it is recommended that ANRE and Government negotiate for medium term adjustment of tariff to resolve the accumulated losses in a structured manner.
- Design a plan to communicate about the planned tariff adjustments, their reasons and available social assistance.
Recommendations on social assistance policies

• Improve the take-up of Ajutor Social and Heating Allowance programs as well as municipal benefits through better outreach to increase the coverage of the poorest population
• Increase the threshold for social assistance and maintain the adequacy of benefits in line with the increasing energy costs
  • Increase the Guaranteed Minimum Income in line with the increasing cost of living (including electricity costs)
  • Increase the Heating Allowance benefit size in line with increasing heating costs
• Prepare for the fiscal impact of increasing social assistance in the macroeconomic and fiscal management
  • Consolidate categorical benefits to create fiscal space for expanding the targeted transfers and discuss the implications with IMF