Georgia:

Security of Supply
**ELECTRICITY MARKET OVERVIEW**

- **Ministry of Economy and Sustainable Development of Georgia** - Policymaker
  - Development and implementation of the national policy, strategies and plans in the energy sector, including development of the legislative and regulatory framework
  - Attraction of investment in the sector
  - Development of competitive environment in the sector

- **Georgian National Electricity and Water Regulatory Commission (GNERC)** - Independent regulator
  - Issues licenses in electricity, natural gas and water sectors and controls/monitors of licensees activities
  - Resolves disputes between licensees and customers
  - Is responsible for market monitoring

- **Georgian State Electrosystem** – dispatch licensee

- **Technical operator/Transmission Services** - HV lines, HV substations
  - GSE and ET (100% state owned)
  - SakRusEnergo (50% state owned and 50% owned by Inter RAO)

- **Electricity System Commercial Operator (ESCO)** -
  - Balances market, emergency import/export
  - Trades with reserve capacity

**Generation**
- 89 Hydropower plants
- 5 Thermal plants
- 1 Wind Power Plant

**Distribution Companies**
- All 2 Distribution Co.s under the private ownership: Telasi, Energo-pro Georgia
Hydro Power:
89 Operating HPPs
Installed Capacity – 3285 MW

Wind Power:
1 Operating WPP
Installed Capacity – 20.7 MW

Thermal Power:
5 Operating TPPs
Installed Capacity – 924 MW

Total Generation Capacity 4230.57 MW

GENERATION STRUCTURE

HPPs 78%
WPP 0%
TPPs 22%
Hydro Potential of Georgia

- **Hydropower**
  - 300 out of 26,000 rivers capable of providing excellent opportunities for hydropower production
  - Only 22% of total hydro potential is utilized
  - HPP Greenfield potential of 40 TWh

- **Wind Energy**
  - The total installed capacity of wind power projects can be up to 1500 MW with average annual electricity generation of 4 billion kWh

- **Solar Energy**
  - During the year in most regions there are 250-280 sunny days and the annual average amount of sunshine hours is over 2000
EXISTING ENERGY INFRASTRUCTURE

Transmission Network (GSE and Energotrans):

- 500/400/330/220/110/35 kv transmission lines with overall length of 4380 km
  - 500 kv transmission lines with total length - 815 km
  - 400 kv transmission lines with total length - 32.6 km
  - 330 kv transmission lines with total length - 21.1 km
  - 220 kv transmission lines with total length - 1769.4 km

- 94 sub-stations, with total installed capacity - 12114 MWA
  - 6 substations of strategic importance - 500 kv
  - 24 substations - 220 kv

Interconnectors

<table>
<thead>
<tr>
<th>Country</th>
<th>Transmission line</th>
<th>Nominal voltage (kv)</th>
<th>Exchange</th>
<th>TTC Summer (MW)</th>
<th>TTC Winter (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia</td>
<td>„Kavkasioni“ AC-3x300</td>
<td>500</td>
<td>export</td>
<td>570</td>
<td>650</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>import</td>
<td>570</td>
<td>650</td>
</tr>
<tr>
<td></td>
<td>„Salkhino“ AC-400</td>
<td>220</td>
<td>export</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>import</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>„Mukhranis Veli“ AC-3x300</td>
<td>500</td>
<td>export</td>
<td>630</td>
<td>710</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>import</td>
<td>630</td>
<td>710</td>
</tr>
<tr>
<td></td>
<td>„Gardabani“ AC-480</td>
<td>330</td>
<td>export</td>
<td>210</td>
<td>240</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>import</td>
<td>210</td>
<td>240</td>
</tr>
<tr>
<td>Armenia</td>
<td>„Alaverdi“ AC-300</td>
<td>220</td>
<td>export</td>
<td>150 / 100</td>
<td>150 / 100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>import</td>
<td>150 / 100</td>
<td>150 / 100</td>
</tr>
<tr>
<td>Turkey</td>
<td>„Meskheti“ AC-3x500</td>
<td>400</td>
<td>export</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td></td>
<td>„Adjara“ AC-400</td>
<td>220</td>
<td>export</td>
<td>150 / 150</td>
<td>150 / 150</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>import</td>
<td>150 / 150</td>
<td>150 / 150</td>
</tr>
</tbody>
</table>
SUPPLY AND CONSUMPTION 2010-2018

- Total Demand for 2010 - 8,755 mln.kWh
  Total Demand for 2019* - 13,285 mln.kWh
  Annual average growth - 5%

- Total Generation 2010 – 10,058 mln.kWh
  Total Generation 2019 – 11,981 ,lm.kWh
  Increased by 19%
  More than 900MW new generation capacities

- Total Import 2010 – 222 mln.kWh
  Total Import 2019 – 1,545 mln.kWh
  Increased by 600%

* For November-December – forecast data
### Supply and Consumption 2018

<table>
<thead>
<tr>
<th>Month</th>
<th>TPPs</th>
<th>WPP</th>
<th>HPPs</th>
<th>Import</th>
<th>Total Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan</td>
<td>331.38</td>
<td>333.75</td>
<td>214.83</td>
<td>35.43</td>
<td>76.22</td>
</tr>
<tr>
<td>Feb</td>
<td>7.13</td>
<td>6.22</td>
<td>7.05</td>
<td>9.37</td>
<td>5.19</td>
</tr>
<tr>
<td>Mar</td>
<td>675.70</td>
<td>594.16</td>
<td>774.71</td>
<td>1,019.00</td>
<td>1,079.33</td>
</tr>
<tr>
<td>Apr</td>
<td>1,200.24</td>
<td>1,252.75</td>
<td>827.43</td>
<td>680.52</td>
<td>577.87</td>
</tr>
<tr>
<td>May</td>
<td>1,200.24</td>
<td>1,252.75</td>
<td>827.43</td>
<td>680.52</td>
<td>577.87</td>
</tr>
<tr>
<td>Jun</td>
<td>1,200.24</td>
<td>1,252.75</td>
<td>827.43</td>
<td>680.52</td>
<td>577.87</td>
</tr>
<tr>
<td>Jul</td>
<td>1,200.24</td>
<td>1,252.75</td>
<td>827.43</td>
<td>680.52</td>
<td>577.87</td>
</tr>
<tr>
<td>Aug</td>
<td>1,200.24</td>
<td>1,252.75</td>
<td>827.43</td>
<td>680.52</td>
<td>577.87</td>
</tr>
<tr>
<td>Sep</td>
<td>1,200.24</td>
<td>1,252.75</td>
<td>827.43</td>
<td>680.52</td>
<td>577.87</td>
</tr>
<tr>
<td>Oct</td>
<td>1,200.24</td>
<td>1,252.75</td>
<td>827.43</td>
<td>680.52</td>
<td>577.87</td>
</tr>
<tr>
<td>Nov</td>
<td>1,200.24</td>
<td>1,252.75</td>
<td>827.43</td>
<td>680.52</td>
<td>577.87</td>
</tr>
<tr>
<td>Dec</td>
<td>1,200.24</td>
<td>1,252.75</td>
<td>827.43</td>
<td>680.52</td>
<td>577.87</td>
</tr>
</tbody>
</table>

### Supply and Consumption 2019

<table>
<thead>
<tr>
<th>Month</th>
<th>TPPs</th>
<th>WPP</th>
<th>HPPs</th>
<th>Import</th>
<th>Total Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan</td>
<td>404.60</td>
<td>420.20</td>
<td>425.70</td>
<td>158.60</td>
<td>0.20</td>
</tr>
<tr>
<td>Feb</td>
<td>5.80</td>
<td>7.40</td>
<td>8.20</td>
<td>6.80</td>
<td>6.10</td>
</tr>
<tr>
<td>Mar</td>
<td>600.60</td>
<td>511.20</td>
<td>540.40</td>
<td>800.70</td>
<td>1,150.10</td>
</tr>
<tr>
<td>Apr</td>
<td>1,042.80</td>
<td>873.90</td>
<td>606.70</td>
<td>580.30</td>
<td>509.60</td>
</tr>
<tr>
<td>May</td>
<td>1,185.00</td>
<td>1,150.10</td>
<td>873.90</td>
<td>606.70</td>
<td>509.60</td>
</tr>
<tr>
<td>Jun</td>
<td>1,185.00</td>
<td>1,150.10</td>
<td>873.90</td>
<td>606.70</td>
<td>509.60</td>
</tr>
<tr>
<td>Jul</td>
<td>1,185.00</td>
<td>1,150.10</td>
<td>873.90</td>
<td>606.70</td>
<td>509.60</td>
</tr>
<tr>
<td>Aug</td>
<td>1,185.00</td>
<td>1,150.10</td>
<td>873.90</td>
<td>606.70</td>
<td>509.60</td>
</tr>
<tr>
<td>Sep</td>
<td>1,185.00</td>
<td>1,150.10</td>
<td>873.90</td>
<td>606.70</td>
<td>509.60</td>
</tr>
<tr>
<td>Oct</td>
<td>1,185.00</td>
<td>1,150.10</td>
<td>873.90</td>
<td>606.70</td>
<td>509.60</td>
</tr>
<tr>
<td>Nov</td>
<td>1,185.00</td>
<td>1,150.10</td>
<td>873.90</td>
<td>606.70</td>
<td>509.60</td>
</tr>
<tr>
<td>Dec</td>
<td>1,185.00</td>
<td>1,150.10</td>
<td>873.90</td>
<td>606.70</td>
<td>509.60</td>
</tr>
</tbody>
</table>
IMPORT AND EXPORT 2010-2019

Import&Export (mln.kWh), 2010-2019

IMPORT BY COUNTRIES 2010
- Russia: 95%
- Armenia: 5%
- Azerbaijan: 0%
- Turkey: 0%

EXPORT BY COUNTRIES 2010
- Russia: 73%
- Turkey: 20%
- Armenia: 6%
- Azerbaijan: 1%

IMPORT BY COUNTRIES 2019*
- Russia: 37%
- Turkey: 0%
- Armenia: 63%
- Azerbaijan: 0%

EXPORT BY COUNTRIES 2019*
- Turkey: 46%
- Armenia: 25%
- Azerbaijan: 24%
- Russia: 23%

* Period of January-October
Total losses for the transmission and distribution network

- 2001 – 18.53%
- 2006 – 13.20%
- 2016 – 7.21%
- 2018 – 6.48%
  - Transmission network – 1.92%
  - Distribution - 5.09%

Losses determined for 2018–2020

- for Transmission Licensees - 2.06%
  - was – 4.41%
- for Distribution Licensees –
  - JSCo Telasi – 5.88%
  - JSCo Energo-Pro Georgia – 9.8%

- GNERC Resolution N10 April 17, 2014 on Approving Network Rules
- GNERC Resolution N15 July 30, 2014 on Approving Rules of Calculation of the Electricity Normative Losses
- GNERC Resolution N34 December 12, 2017 On Approving of the Normative Losses of Electricity in the Electricity Networks of Georgia
Development of Renewable Resources
- Hydropower – 126 projects
- Wind - 18
- Solar - 16
- Biomasses

Development of Transmission Network
- Ten Years Network Development Plan (since 2015)
  - Construction and strengthening of internal transmission network
  - Construction and strengthening of interconnection network

Construction of New TPPs
- 230MW TPP will be put into operation in 2019
- ~ 250 MW TPP under elaboration
- ~ 250 MW TPP planned

Gas Storage
- Feasibility study completed
- Technical data: volume 23-250 mln m³
- Project completion is planned in 2023
- This project is the most crucial for the energy security of Georgia
POWER SUPPLY OF GEORGIA

TEN YEAR NETWORK DEVELOPMENT PLAN OF GEORGIA 2019-2029

GSE
GEORGIAN STATE ELECTRICITY
Thank you!

Elen Goksadze
Head of Analysing and Planning Division
of Energy Policy Department
Ministry of Economy and
Sustainable Development of Georgia
2, Sanapiro St, Tbilisi 0114, Georgia
Phone: (995 32) 2 35 78 26
Mob.: (995 599) 98 62 66
http://www.economy.ge/