ENERGY

GEORGIAN NATIONAL INVESTMENT AGENCY

2016
GEORGIA - COUNTRY OVERVIEW

Area: 69,700 sq km
Population: 3.7 mln
Life expectancy: 75 years
Official language: Georgian
Literacy: 100%
Capital: Tbilisi
Currency (code): Lari (GEL)

GDP 2015 (E): USD 14 billions
GDP real growth rate 2015 (E): 2.8%
GDP CAGR 2010-2015 (GEL) (E): 4.9%
GDP per capita 2015: USD 3743
Inflation rate 2015: 4%
Total Public Debt to Nominal GDP (%): 35.5%
OVERVIEW OF GEORGIA’S ENERGY SECTOR

STRONG DEMAND GROWTH PROSPECTS

- Domestic Demand growth, which is expected to grow in line with GDP, requires an extension of Power generation by around 65% until 2025
- Georgia is surrounded by countries with a projected structural power deficit (e.g. Turkey, Southern Districts of Russia) or expensive power generation, opening up attractive export opportunities

HUGE UNTAPPED POTENTIAL

- 75% of economically viable hydropower potential not yet exploited (Approximately 25TWh)
- Over 60 potential HPP projects (<100MW) on the Pre-feasibility Study Level with Financial and Technical projection are available for investors
- In addition to hydro, there is considerable generation potential from wind, solar and other renewable sources

LIBERALIZED AND DEREGLATED MARKET

- Renewable projects are based on Build-Own-Operate (BOO) principle
- No tariff set for the newly built Renewable energy Plants- investor is free to choose the market and negotiate the price
- New and simplified rules for development of renewable energy projects

SOME LARGE PROJECTS ARE ALREADY UNDERWAY AND EVEN MORE ARE COMING

- 17 HPP Projects Under construction - installed capacity of 820 MW (7 HPPs started in 2015)
- Construction of 14 HPP Projects will commence in 2016 - installed capacity of up to 1,900 MW
- 26 HPP Projects are under feasibility studies with construction liabilities - installed capacity of up 1010 MW
GENERAL STATISTICS

CONSUMPTION VS GENERATION, TWH

IMPORT VS EXPORT, TWH

COMPONENTS OF TOTAL CONSUMPTION

IMPORT vs EXPORT BREAKDOWN 2011-2015
DOMESTIC DEMAND GROWTH REQUIRES AN EXTENSION OF POWER GENERATION

DOMESTIC DEMAND AND SUPPLY PROJECTIONS
TWh

- Georgia’s demand for electricity is increasing in line with expected GDP growth, requiring more HPP generation capacity
- Even after completing HPPs that are under development, demand will be higher than supply
GEORGIA IS SURROUNDED BY COUNTRIES WITH A STRUCTURAL POWER DEFICIT OR EXPENSIVE POWER GENERATION

1 Assuming current consumption and supply pattern
2 This does not even include countries with heavily subsidized electricity generation (e.g. Azerbaijan, Kazakhstan)
ATTRACTIVE EXPORT POTENTIAL IN THE REGION

TURKISH GENERATION DEFICIT IS EVOLVING OVER THE COMING YEARS

Energy deficit forecast

TWh

Consumption

Generation

2013 14 15 16* 17* 18* 2020*

TURKISH CONSUMPTION PROFILE PERFECTLY MATCHES GEORGIA’S GENERATION

Generation Georgia

Consumption Turkey

Surplus due to increased river flows

Increased consumption due to air conditioning

GEORGIA’S GENERATION COSTS ARE HIGHLY COMPETITIVE

Current generation tariff, $ cents

New generation Cost, $ cents

6.0-13.0

3.0

3.2-9.8

4.0-4.5

3.0

9.0-12.0

2.0

TRANSMISSION CAPACITY IS CURRENTLY BEING UPGRADED

Transmission capacity, MW

2018-22

2016

860 1,860

860 1,560

1,200 1,200
## EXPANSION OF CROSS-BORDER TRANSMISSION SYSTEMS

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Routing</th>
<th>2016 Existing MW</th>
<th>2018-2022 Under Construction /Planned</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 KV</td>
<td>Georgia-Russia Kavkasioni OHL</td>
<td>700</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Georgia-Russia Kazbegi OHL</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Georgia-Azerbaijan Gardabani Samukhi OHL</td>
<td>850</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Georgia-Armenia Marneuli-Airum OHL</td>
<td>700</td>
<td></td>
</tr>
<tr>
<td>400 KV</td>
<td>Georgia-Turkey Meskheti OHL</td>
<td>700</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Georgia-Turkey Akhattsikhe-Tortum</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td>400 KV</td>
<td>Georgia-Azerbaijan Gardabani OHL</td>
<td>350</td>
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<tr>
<td>220 KV</td>
<td>Georgia-Russia Salkhino OHL</td>
<td>160</td>
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<tr>
<td></td>
<td>Georgia-Turkey Adjara OHL</td>
<td>160</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Georgia-Armenia</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>154 KV</td>
<td>Georgia-Turkey Muratli-Batumi OHL</td>
<td>350</td>
<td></td>
</tr>
</tbody>
</table>

### Transmission capacity after upgrade (MW)

<table>
<thead>
<tr>
<th>Country</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turkey</td>
<td>1560</td>
</tr>
<tr>
<td>Russia</td>
<td>1860</td>
</tr>
<tr>
<td>Azerbijan</td>
<td>1200</td>
</tr>
<tr>
<td>Armenia</td>
<td>850</td>
</tr>
<tr>
<td>Total</td>
<td>5470</td>
</tr>
</tbody>
</table>

During the next 10 years, around 600 million Euros will be invested in upgrading transmission and grid infrastructure.
GRID MAP OF GEORGIA 2022
LIBERALIZED AND Deregulated MARKET

- All Renewable projects are based on Build-Own-Operate (BOO) principle
- All new HPP plants are totally deregulated - No tariff set for the newly built HPPs - investor is free to choose the market and negotiate the price
- There is no fee for the connection to the transmission grid and no license required to export
- No Generation license is required for <13MW Capacity HPPs
- Developer benefits from carbon credits trading
- New HPPs have priority access to the capacity on the new interconnection to Turkey
- Generation and Export activities are exempted from VAT
- Government approved new, simplified rule of Expression of Interest for construction technical and economic feasibility study, construction, ownership and operation of hydropower plants in Georgia
INVESTMENT OPPORTUNITIES

- Georgia is one of the top countries in terms of water resources per capita
- Today 78% of total electricity is generated from Hydro Power Plants
- Georgia could produce additional 25 TWh annually with hydro resources alone
- There are over 60 potential HPP projects on the Pre-feasibility Study Level with Financial and Technical projection ready for investors

- GENERATION AND EXPORT ACTIVITIES ARE EXEMPTED FROM VAT
- NEW HPPS HAVE PRIORITY ACCESS TO TRANSMISSION LINE TO TURKEY
- HPPS SMALLER THAN 13 MW DON’T NEED GENERATION LICENSE
- HPPS SMALLER THAN 2 MW DON’T NEED ENVIRONMENTAL IMPACT PERMIT
SIMPLIFIED PROCEDURES FOR EXPRESSION OF INTEREST

1 PROJECT SELECTION & EOI LETTER SUBMISSION

Letter Should Contain:
1. Project name & location
2. Preliminary scheme
3. Estimated capacity and output
4. Estimated date of completion

2 ANNOUNCEMENT OF EXPRESSION OF INTEREST BY THE MOE

- Information will be published on Ministry of Energy’s official website
- The tendering period lasts 2 months

3 SELECTION

Participants who successfully passed the qualification process are required to submit a pre-construction bank guarantee (USD 5,000 per MW) within 15 days. Priority will be given to the party offering the lowest electricity price. Electricity prices are to be submitted to Ministry of Energy in a sealed envelope.

4 SIGNING THE MOU WITH THE GOG AND ESCO

Project is divided in two stages:
1. Pre-construction stage
2. Preparation of feasibility study and environmental impact assessment

Construction stage
Company should submit bank guarantee
- USD 100,000 – for HPPs below 100MW
- USD 50,000 – for HPPs above 100MW
INVESTMENT OPPORTUNITIES

- Wind potential of Georgia is estimated at 4 TWh

- Wind power is very important because of higher generation during winter, when hydro generation is lower.

- It’s estimated that share of wind power in total generation will reach 10% by year

- In 2016, Pilot 20 MW wind farm project, “Kartli 1” was initiated by Georgian Energy Development Fund, with potential to be expanded up to 150 MW

- There are numerous other locations with strong winds and high generation potential

GENERATION AND EXPORT ACTIVITIES ARE EXEMPTED FROM VAT

NO FEE FOR THE CONNECTION TO GRID; NO LICENSE REQUIRED TO EXPORT
INVESTMENT OPPORTUNITIES

SOLAR POWER

In most regions of the country there are 250-280 sunny days in a year, which is approximately 6000-6780 hours per year. The annual radiation of the Sun varies depending on regions from 1250-1800 KWh/m², while the average sun radiation equals 4.2 KWh/m².

GEOTHERMAL POWER

Georgian geothermal water reserves reach 250 mln m³ per year. At present there are more than 250 natural and artificial water channels where the average temperature of geothermal waters ranges from 30 to 110 °C, while the total debit is 160 000 m³ per day and night. These water channels are grouped into 44 deposits. Within the territory of 3500 km there are bore-hole wells with the water temperature of 85 °C and more. Up to 80% of the geothermal deposits are in Western Georgia. In the Zugdidi-Tsaishi geothermal area, there are now 9 productive, 7 reinjection and 3 observation bore-hole wells which are considered to be exploitable.

BIOMASS POWER

Thanks to an advantageous geographical location and a climate favorable to forest and agricultural development, Georgia is endowed with major potential for biomass power plants, especially for producing heat and hot water. Biomass could be one of the most important sources of power supply in rural areas, given that forests cover 40% of the country’s total territory.
SUCCESS STORIES

ONGOING PROJECTS - INVESTORS FROM ALL OVER THE WORLD ARE INTERESTED IN GEORGIA’S ENERGY SECTOR

- USA 108 MW
- Norway 400 MW
- Estonia 6 MW
- Austria 8.5 MW
- Bulgaria 35 MW
- Turkey 99 MW
- Georgia 8 HPPs 126.5 MW
- China 24 MW
- India 702 MW
- South Korea 280 MW
- Georgia 8 HPPs 126.5 MW

17 HPP PROJECTS UNDER CONSTRUCTION - INSTALLED CAPACITY OF 820 MW

14 HPP PROJECTS AWAITING PERMITS - INSTALLED CAPACITY OF UP TO 1,900 MW

26 HPP PROJECTS FEASIBILITY STUDIES ARE UNDER WAY - INSTALLED CAPACITY 1010 MW
ACCESS TO FINANCE

PARTNERSHIP FUND
- 100% state owned investment fund
- Operating fields: Energy; Hospitality & Real Estate, Manufacturing, Agribusiness
- Finances up to 49% of equity in new investment projects
- Pre-defined exit strategy

GEORGIAN ENERGY DEVELOPMENT FUND
- 100% state owned Joint Stock Company
- Mission: realization of country’s alternative energy projects
- Finances up to 30% equity in energy projects
- Exit option after commissioning

GEORGIAN CO-INVESTMENT FUND
- USD 6 billion private equity fund
- Investment sectors: Energy & Infrastructure, Hospitality & Real Estate, Manufacturing, Agriculture, Logistics
- Minimum Project Size: USD 5 M
- GCF equity stake in projects: 25%-100%

INTERNATIONAL FINANCIAL ORGANIZATIONS
- European Bank of Reconstruction and Development (EBRD)
- International Finance Corporation (IFC)
- Asian Development Bank (ADB)
- European Investment Bank (EIB)
THE GOVERNMENT OF GEORGIA FACILITATES YOUR INVESTMENT

PROJECT ENTRY/NEGOTIATIONS
- Georgian National Investment Agency
- Ministry of Energy of Georgia

TECHNICAL AND LICENSING
- Georgian National Energy and Water Supply Regulatory Commission

TRANSMISSION, DISPATCHING AND SYSTEM OPERATION
- Georgian State Electrosystem

DISTRIBUTION AND OFFTAKE
- Electricity System Commercial Operator
- Commercial distributors (e.g., Telasi, EnergoPro)
- Eligible direct consumers (Using more than 1 GW of energy)
- Export offtakers

DOMESTIC PARTNERS

CONTRACT NAVIGATOR
- Support investors before, during & after investment process
- Links to all state authorities and business partners
GEORGIAN NATIONAL INVESTMENT AGENCY

- The investment promotion agency under the direct supervision of the Prime Minister of Georgia
- “One-stop-shop” for investors to support companies before, during & after investment process
- Moderator between investors, government and local companies

OUR SERVICES

INFORMATION
General data, statistics, sector researches

COMMUNICATION
Access to Government at all levels/Local partners

ORGANIZATION
Organization of site visits & accompanying of investors

AFTERCARE
Legal advising & Supporting services