

Qartli Wind Farm

Investment teaser

Georgian Energy Development Fund

September 2019



Qartli Wind Farm



Introduction

Qartli WPP represents the first operational wind farm in Georgia. The plant is currently state owned and its capacity is **20.7 MW**.

Situated in the Shida Kartli region of Georgia, the plant has a strategic location since it is close to east and central Georgia, where electricity consumption is highest. The Project also supports the Government of Georgia's strategy to foster low carbon generation and cover the country's seasonal winter demand.

The plant was built by Vestas and China Nuclear industry 23rd construction co. LTD. Construction was supervised by **Mott Mcdonald**.

Construction was completed on schedule with no delays, and the **plant started selling electricity to the grid in 2017**. Mott Mcdonald carries out quarterly monitoring of the plant while O&M arrangements are being carried out by equipment manufacturer, Vestas.

January 2016 **December 2016** **January 2017**

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Commencement of construction Construction completion Completion of testing and commissioning

Electricity off-take

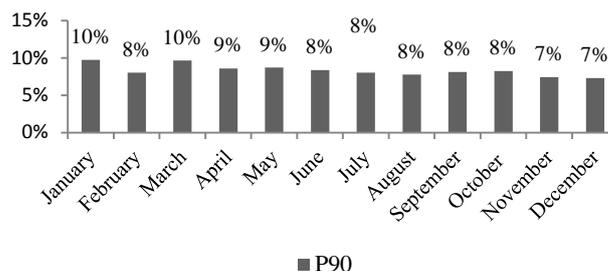
The plant has a power purchase agreement signed with ESCO (sole electricity market operator, 100% owned by the Government of Georgia). The PPA was originally signed for ten years under the tariff of USD 69/MWh. In September 2019, the PPA was extended by three years with the revised **tariff of USD 65/MWh**. The PPA under the new arrangement is valid until February 2030. Even though the purchase agreement covers 100% of the plant's output throughout the whole year, Gori WPP is obliged to sell power to Georgia during winter but is able to choose its off-taker and market for the remainder of the year, depending on the attractiveness of other selling possibilities (such as export to Turkey)

Production profile and seasonality

Plant production has been **in line with P50 scenario** for the first two years of operation.

The plant also integrates well into the grid since the production profile is spread evenly throughout the year, while Georgian market tends to experience deficit in the winter and surplus of electricity in the summer due to heavy reliance on hydropower plants.

Qartli WPP generation profile, % of annual generation



Financing structure

The plant construction costs were in line with market prices (USD 1.56 million per MW.) The windfarm was financed by EBRD loan in the amount of USD 21.72 million. The rest was funded by equity from the shareholders, Georgian Energy Development Fund and Georgian Oil and Gas Corporation (both state-owned entities.)



KEY PROJECT DETAILS

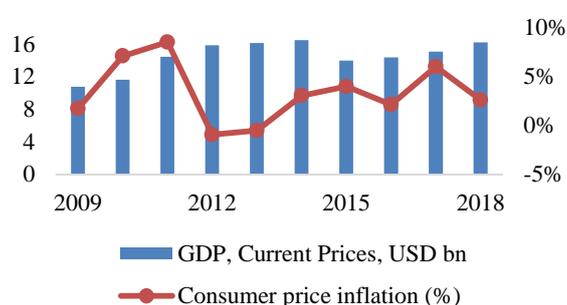
20.7 MW capacity	46% load factor (2018)	\$4.0 mm EBITDA (2018)
Technical Advisor Mott Mcdonald	6 turbines, hub height of 91.5 meters	84,202 MWh of clean energy generated in 2018
Capex of USD 1.56 mm per MW	18% net profit margin	27,187 tonnes of CO2 reductions a year

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Country Profile

- Georgia is located in the Caucasus region at the gateway between Europe and Asia. It is situated between the Black Sea, Russia, Armenia, Azerbaijan and Turkey and covers an area of 69,700 square kilometers.
- The country has a population of 3.8mn with 59%¹ of the population living in urban areas. The three largest cities in Georgia are Tbilisi (the capital) Kutaisi and Batumi.
- The country's GDP is USD 16.2 bn with the per capita GDP being USD 4,346 in 2018, the annual real GDP growth rate was 4.7% in 2018. Over the past three years Georgia's economy expanded by 5% on average.

GDP and inflation index (2009-2018)

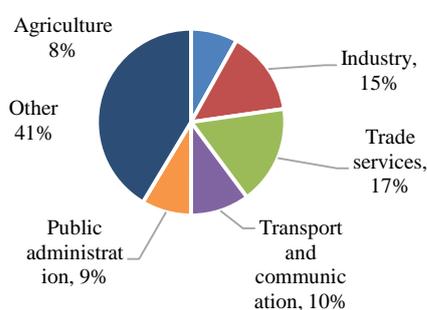


Georgia is an **import-oriented country** with the largest share of imports coming from Turkey (16%), Russia (10%) and China (9%), the economy mainly imports industrial supplies (27%) followed by consumer goods (18%)

- Industry (15%) and trade services (17%) are the two largest sectors accounting for Georgia's GDP, followed by Transport and communication (10%)

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Georgia's GDP by sector

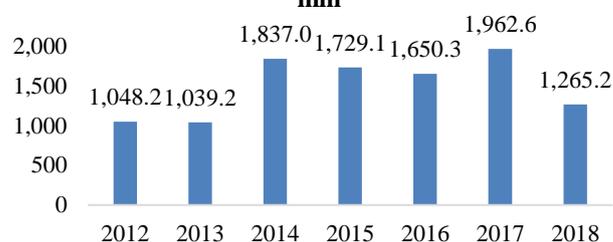


Investment Climate

- Georgia is rated Ba2 (stable) / BB (stable) / BB- (positive) by Moody's / Fitch / S&P, respectively. According to S&P, Georgia's economy is **expected to maintain comparatively high growth rates**, weathering periods of anaemic external demand as trading partners were hit by falling oil prices, regional currencies were devalued, and some fell into recession.
- The government of Georgia has taken several measures to increase Georgia's attractiveness to foreign investors with measures such as the **abolishment of income tax in 2017**, simplified administrative procedures and several support programs including government funds and free industrial zones
- In the World Bank's **ease of doing business** ranking, Georgia is ranked **6th out of 190 countries** worldwide, thereby strongly outweighing its regional peers, the country is moreover considered the **16th freest out of 176 countries**³
- Georgia further maintains close ties with the **EU** including an **association agreement** with a deep and comprehensive free trade area that came into full force in 2016.

Foreign Direct Investment

Foreign direct investment in Georgia, USD mm



- As of 2018, the major industries attracting foreign direct investments, catalyzing Georgia's economic development are the financial sector, the transport sector and the manufacturing sector.⁴
- Georgia's energy sector has also benefited strongly from FDI, with total investments in the sector in the 2011-2018 period cumulating to USD 1.5 bn.

¹ GlobalData

² Georgian National Statistics Office

³ 2019 Index of Economic Freedom, The Heritage Foundation

⁴ Georgian National Statistics Office

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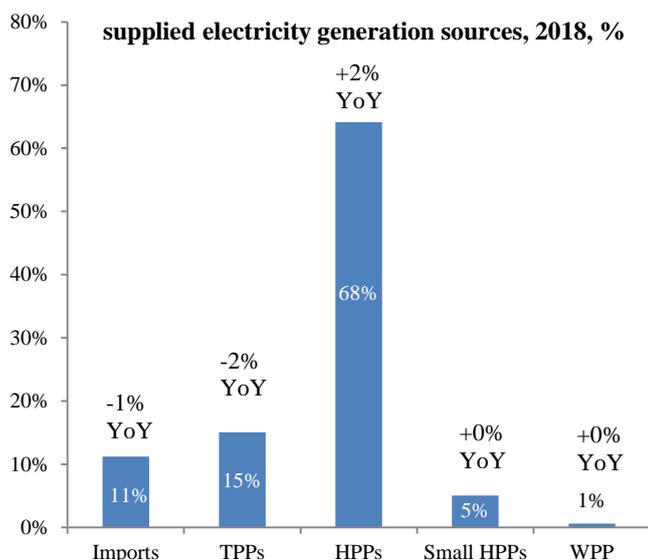
Power market in Georgia

Installed capacity

Georgia has a total current installed generation capacity of 3.3 GW, **90% of which consists of hydro power plants** and 10% of thermal power plants. The country's hydro power potential is estimated at up to c. 80 billion kWh p.a., of which up to 60 billion kWh may be economically attractive to develop.

Hydro is the dominant source of electricity in Georgia, accounting for 73% of total generation in 2018. The hydropower system is comprised of a total of 76 regular, seasonal, and small hydro power plants in 2018, including eight storage HPPs and 69 run-of-the-river HPPs with little to no reservoir storage capacity.⁵

Generation including imported electricity constituted 13,440 GWh in 2018, and was comprised of the following sources:⁶



Electricity sales

In Georgia, generators can either sell power under a direct contract to eligible customers or sell power to the Electricity System Commercial Operator (“ESCO”) as part of the “balancing pool” system.

Electricity transmission

There are three electricity transmission license holders in Georgia: the core domestic network is currently owned by the state-owned Georgian State Electrosystem (GSE), also a holder of the dispatch license. The two other transmission companies, Sakrusenergo and Energotrans own and operate all interconnectors with the neighbouring countries and related infrastructure. Sakrusenergo is owned 50% by the Georgian State and 50% by the Russian Federal Grid

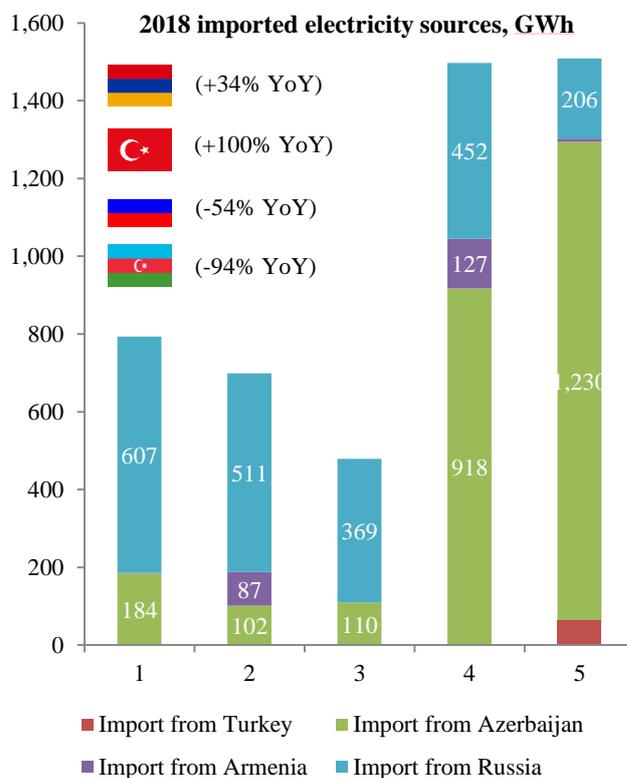
Company, whereas Energotrans is owned 100% by the Georgian state. The transmission licensees are obliged to transmit electricity from authorized generators to customers based on transmission tariffs established by the independent regulator.

For plants with power purchase agreements or direct agreements with counterparties on the territory of Georgia, transmission is free of charge.

Trade

Imports and exports of electricity are done through ESCO and/or based on direct contracts.

Due to growing consumption in Georgia, **amounts of imported electricity have been on the rise**. Imported electricity is sourced from Azerbaijan (81%), Russia (14%), Turkey (4%) and Armenia (1%).



⁵ Ministry of Economy and Sustainable Development

⁶ Electricity system market operator, www.esco.ge

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Regulatory framework

The law

The Georgian power sector is governed by the Law of Georgia on Electricity & Natural Gas. The law governs all activities related to electricity system operation, the trade in wholesale electricity, electricity generation, transmission, dispatch, distribution, import, export and consumption. The law reflects state policy in the energy sector and is intended to promote foreign and domestic investment for the purpose of rehabilitating Georgia's electricity and natural gas sectors. The Law is intended to encourage the prioritization of renewable sources of energy, to establish an independent regulatory framework for the electricity sector, to promote long-term financial stability and the development of the sector itself.

The power sector is regulated by the Georgian National Electricity and Water Regulatory Commission (GNEWRC), which also regulates the gas and water sectors. The regulatory regime for generation companies ranges from RAB based tariffs for old assets to unregulated prices for post-2008 assets. The Ministry of Energy (which from 22 December 2017 merged into the Ministry of Economy and Sustainable Development) sets the overall energy policy and facilitates investments in the sector. The majority of new generation projects have long term PPAs with the Electricity System Commercial Operator (ESCO) which generally cover a certain portion of annual electricity generated by the projects.⁷

Within the EU Association agreement described in detail below, the Government of Georgia intends to initiate energy market liberalization, first part of which has already started in May 2019. Liberalization envisions transition from long-term PPAs to an open market, where generators and consumers trade electricity through direct agreements.

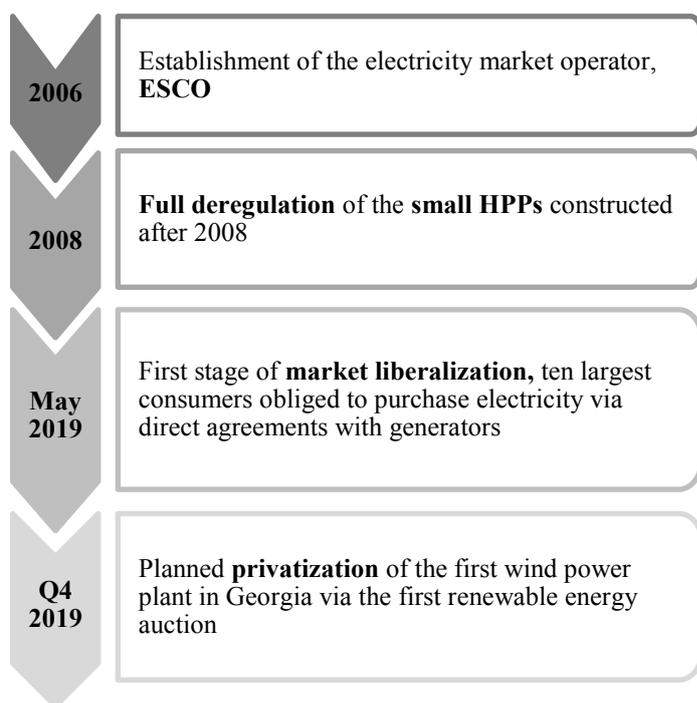
Wholesale power is sold under direct physical contracts and any uncontracted energy is cleared at monthly weighted average balancing prices by ESCO.

EU Association Agreement

In line with its EU Association Agreement (entered into force 1 July 2016), Georgia has become a contracting party of the Energy Community Treaty (the "Treaty") and member of the Energy Community, a group of EU and SE European Countries committed to fostering a legal and economic framework for the electricity and gas sectors. More specifically, the Treaty endeavors in the provision of a stable regulatory framework, stable and secure energy supply, the creation of a single regulatory space for trade in energy products, better consideration of environmental aspects including the development of renewable energy

sources as well as the development of increased competition within the sector. Georgia signed the Protocol concerning the Accession of Georgia to the Treaty on 14 October 2016, and Georgia is currently developing legislation compliant with Treaty requirements. The Government's commitment to the Treaty provides a framework for the development of renewable energy sources in Georgia, as well as an opportunity for diversification of the energy supply mix.

Timeline of legislative developments in renewable energy



⁷ Legislative herald of Georgia

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Contacts



Tornike Kazarashvili

Chairman of the Board of Directors

Qartli Wind Farm LLC

t.kazarashvili@gedf.com.ge



Omar Ogbaidze

Chief Financial Officer

JSC Georgian Oil and Gas Corporation

o.ogbaidze@gogc.ge



George Chikovani

Director

JSC Georgian Energy Development Fund

g.chikovani@gedf.com.ge

