



Georgia's Energy Sector Electricity Market Watch

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Total investment for transmission projects is estimated at EUR 683.9mn over 2018-2028. The Ten Year Network Development Plan (TYNDP) for 2018-2028 approved on 28 December 2017 incorporates revised forecasts of electricity consumption growth, and updated pipelines of power plant and transmission network projects. The TYNDP targets 49% of total investment to be spent over 2018-2020, mostly financed by credits from IFIs (KfW, EBRD, WB, ADB, EU-NIF) and GSE's own resources. Under the previous edition of TYNDP total estimated investment stood at EUR 735.4mn, and the decrease largely reflects already implemented projects in 2017: high voltage transmission lines - Batumi1, Batumi2, Derchi, Sataflia 2, Ajameti 3, etc. and substations - Jandara, Shindisi, etc. Commissioning dates for cross-border transmission projects were revised to 2020 from 2018 for 400kV line Marneuli (Armenia) and 154kV line Batumi - Muratli (Turkey), to 2021 from 2020 for 400kV line Akhaltsikhe - Tortum (Turkey) and to 2023 from 2021 for 500kV line Stepantsminda (Russia).

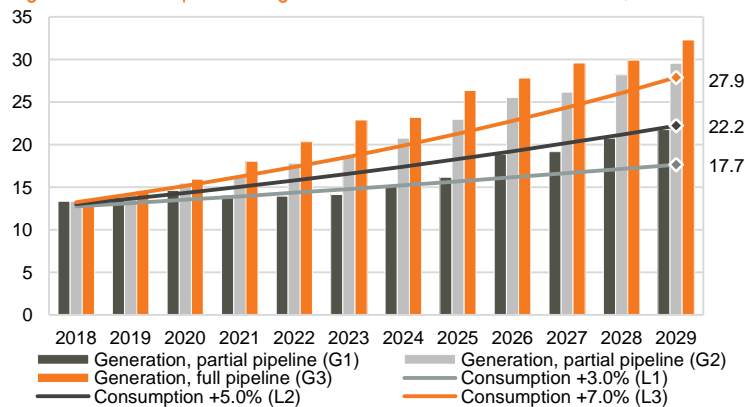
Electricity market highlights	
Balancing price of electricity in Georgia, January*	USc 5.0/ kWh
Market clearing price of electricity in Turkey, January*	USc 4.9/ kWh
Average export price for Georgian electricity, January**	USc 0.0/ kWh
Average import price for electricity, January	USc 5.1/ kWh
Guaranteed Capacity Fee, January	USc 0.7/ kWh
Y/Y change in domestic consumption in kWh, 1M18	7.6%
Y/Y change in exports in kWh, 1M18**	N/A
Y/Y change in exports to Turkey in kWh, 1M18**	N/A

*Average exchange rates in January GEL/US\$ = 2.5473; TRY/US\$= 3.7723

** There were no exports in January

Forecast for electricity consumption growth was revised upwards in TYNDP 2018-2028. The annual consumption growth rates in the pessimistic, moderate and optimistic scenarios are revised upwards from 1.0%, 3.5% and 5.0% to 3.0%, 5.0% and 7.0%, respectively. The generation scenarios vary by the assumed rates of commissioning for the power plant projects at different stages of development. The base case scenario is assumed to be L3G3, with consumption growth rate at 7.0% (reaching 27.9TWh in 2029) and full utilization of HPPs under construction, licensing and development stages, resulting in 32.3TWh total domestic generation in 2029. The base case scenario gives approximately 4.4TWh of net exports in 2029.

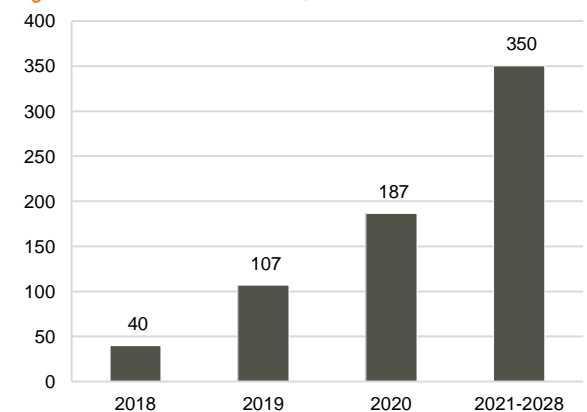
Figure 1: Consumption and generation scenarios for 2018-2028, TWh



Source: GSE, TYNDP

Note: G1 scenario foresees 100% commissioning of the HPPs under construction, 50% commissioning of HPPs at licensing stage and no implementation for the HPPs at feasibility stage. In G2 scenario 25% of projects at feasibility stage are added to the G1 scenario. Base case scenario is assumed to be L3G3, with 7% consumption growth and all projects at feasibility, licensing and construction stages are commissioned on time.

Figure 2: TYNDP Investments, EUR mn.



Source: GSE, TYNDP

LEAP model for Georgia forecasts 3.9% annual average growth of domestic consumption over 2015-2030. The Long-range Energy Alternatives Planning (LEAP) model was developed by Energy Efficiency Center Georgia (EEC), under the USAID's Governing for Growth (G4G) grant project "Electricity Demand Forecasting Model", enabling forecasting of monthly electricity demand and peak loads. The model uses a bottom-up approach, evaluating the end-use in household, commercial and public services, industry, transport, agriculture, forestry and fishing, crypto-currency mining, Abkhazian region and the losses of the system. In total, five scenarios are discussed in the report. The baseline scenario assumes the consumption trend without implementation of any new policies and takes into account past trends and functional relationships between demand drivers and end-uses, resulting in 18.9TWh annual consumption in 2030;

Eva Bochorishvili (G&T)
Head of Research | evabochorishvili@gt.ge | +995 322 401 111 ext.8036
Mariam Chakhvashvili
Analyst | mchakhvashvili@gt.ge | +995 322 401 111 ext.7897



The other scenarios include: 1) energy efficient scenario, decreasing forecasted consumption of 2030 to 16.6TWh, 2) customer-owned generation scenario (18.8TWh in 2030) and 3-4) two variations in GDP growth forecast, showing that 10% variation in GDP growth from base case scenario will lead to 0.7 TWh variation in consumption growth in 2030.

Several important legislative changes are expected in 2018. Georgia's obligation under the Energy Community Treaty, signed in October, 2016, includes implementation of seven different directives and regulations before the end of this year. The most significant is the directive concerning the common rules for the internal market in electricity (N2009/72/EC). We expect the first draft to be publicly available in late spring, 2018. Other directives due this year are: N2009/28/EC on promotion of the use of energy from renewable sources; N2012/27/EU on energy efficiency, directive N714/2009 on conditions for access to the network for cross-border exchanges in electricity; N2001/80/EC on the limitation of emissions of certain pollutants into the air from large combustion plants; N2010/75/EU on industrial emissions for new plants; N2010/30/EU on the indication by labeling and standard product information of the consumption of energy and other sources by energy-related products. There are several grant programs from different countries, assisting Georgia in reaching its goals toward the Energy community and implementing these acquis into the Georgian legislation

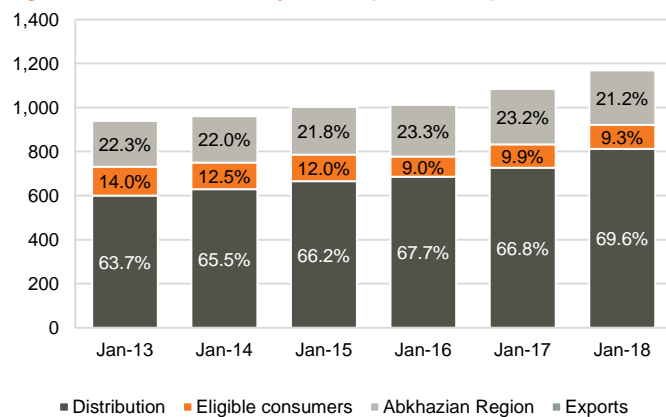
Renewable energy primary law for Georgia is expected to be adopted in August, 2018. The draft is being prepared with the assistance of the Norwegian Water Resources and Energy Directorate and Danish consortium NVE-NIRAS. The project aims to fulfill Georgia's obligation under Energy Community treaty towards implementation of directive N2009/28/EC. The directive requests contracting parties to set and therefore achieve national goals for the share of renewable energy into the total sources consumed in transport, electricity, heating and cooling in 2020. The law should define states' policy principles, missions, and general requirements, also promote the schemes supporting renewable energy. After adoption of the law, the secondary legislation will cover items such as detailed schemes on trading of renewable energy, approaches and procedures on integration of renewable energy into the grid, detailed rules and control mechanisms on implementation of obligatory quota for renewable sources in the transport sector, control and regulation of the construction norms, etc. The current scope for Niras, also includes preparation of action plan for implementation of the secondary legislation. This activity is financed by the US\$ 4mn grant from the Kingdom of Norway, and also includes trainings for students of Georgian Technical University and relevant Government institutions, working explicitly on renewable energy sources.

USAID launched US\$ 7.5mn 3-year technical assistance project. USAID Energy Program (UEP) aims supporting Georgia in energy market and cross-border trade development via capacity building for government institutions and other market players. The program also concentrates on non-hydro renewables, willing to establish enabling environment and investment promotion plans; to support the wind farm developers and GSE in integrating new variable renewable energy (VRE) plants into the grid; and to advise the Government of Georgia on energy security policy and complex energy infrastructure operations, based on detailed domestic and regional studies. These measures will help Georgia to fulfill its obligations under the Energy Community Treaty.

Electricity Consumption, Exports, and Generation- January 2018

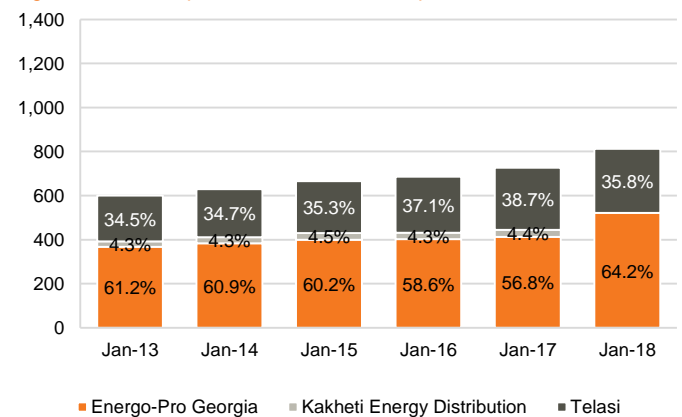
Domestic electricity consumption increased 7.6% y/y to 1.2TWh, slightly below the planned level (-2.3%). The growth was driven by 11.9% increase in consumption by distribution licensees: consumption by Energo-Pro Georgia subscribers, including former Kakheti Energy Distribution subscribers, increased 17.2% y/y, from relatively low level in January 2017 (2.7%/y/y); Telasi consumption was up 3.6% y/y, albeit from a high base in January 2017 (+10.5% y/y). Electricity usage by eligible consumers showed slight increase (+0.9%/y/y), while Abkhazian regions consumption was down 1.9%/y/y. Electricity export and transit didn't take place in January, 2018.

Figure 3: Domestic electricity consumption and export, GWh



Source: ESCO

Figure 4: Consumption of distribution companies, GWh

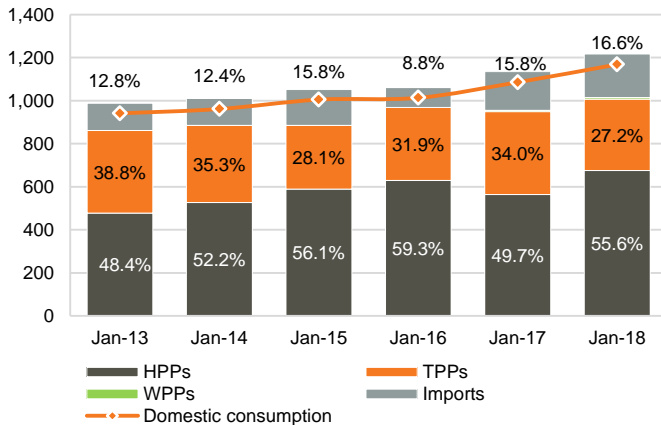


Source: ESCO
Note: Kakheti Energy Distribution was purchased by Energo-Pro Georgia in August, 2017



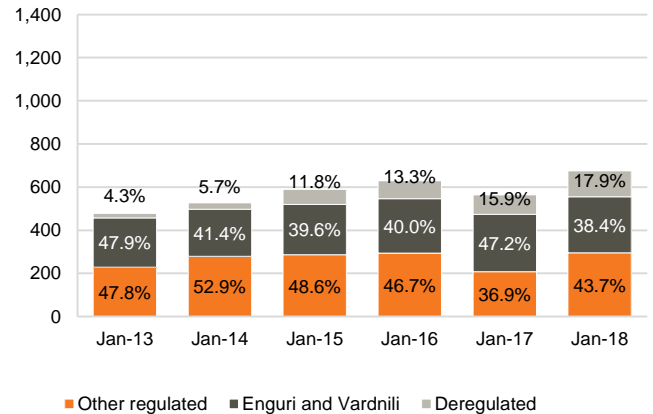
Electricity generated by domestic sources increased by 6.1% y/y to 1.0TWh, slightly above (+2.2%) the planned level. Hydro generation showed significant increase (+19.9%/y/y) from a low base (-10.4%/y/y) in January, 2017. Enguri/Vardnili generation was slightly down 2.7% y/y, while generation of other regulated and deregulated HPPs increased 43.9% y/y and 34.4% y/y, respectively. Thermal generation declined 14.0% y/y, which was 18.3% below the planned level. Wind generation increased 9.6%/y/y to 7.1GWh and contributed 0.6% of total supply. Electricity import increased 12.9% y/y to 202.1GWh, and accounted for 16.6% of total electricity supplied to the grid in January 2018. Notably, electricity import was 22.5% below the planned level. 92.2% of imported electricity came from Azerbaijan, while the rest came from Russia (4.0%) and Armenia (3.7%). The guaranteed capacity fee was up 6.4% y/y to USc 0.7/kWh. The increase can be explained by new guaranteed capacity fee rates in force from January, 2018. Gardabani CCGT and Mtkvari Energy operated at full power for almost the entire month, while the other three thermal power plants were mostly on standby.

Figure 5: Electricity generation and domestic consumption, GWh



Source: ESCO

Figure 6: Hydro generation, GWh

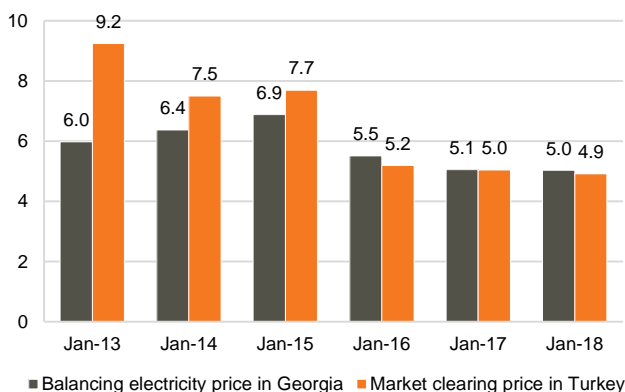


Source: ESCO

Electricity Prices in Georgia and Turkey

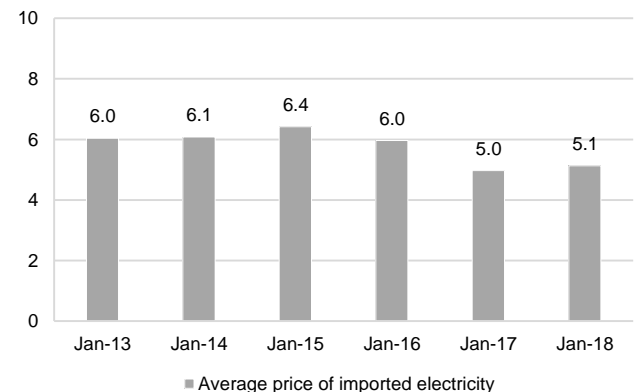
Average import price was up 3.2% y/y to USc 5.1/kWh. However, the wholesale market prices in Georgia was slightly decreased to USc 5.0/kWh (-1.1% y/y). Electricity traded at the wholesale price through the market operator accounted for 19.7% of total electricity supplied to the grid in January 2018, with the rest traded through bilateral contracts. Average monthly market clearing price in Turkey decreased -2.4% y/y to USc 4.9/kWh in January 2018.

Figure 7: Electricity prices in Georgia and Turkey, USc/kWh



*There were no exports to Turkey in January 2018.
Source: ESCO, EPIAS

Figure 8: Average price of electricity imports, USc/kWh



*Exports are negligible in January.
Source: ESCO, GeoStat



Table 1: Electricity Balance (GWh)

	2016	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	2017	Jan-18
Domestic consumption	11,007	1,012	1,019	933	856	870	985	1,037	918	947	1,032	1,163	11,856	1,168
<i>y/y growth rate</i>	7.7%	13%	8%	8%	1%	3%	10%	14%	16%	7%	7%	0%	7.7%	8%
Abkhazian region	1,927	234	205	171	132	102	113	119	101	136	194	241	2,002	247
<i>y/y growth rate</i>	3.9%	20%	7%	14%	8%	1%	3%	2%	-8%	-4%	-1%	-5%	3.9%	-2%
Eligible consumers	1,209	113	129	128	95	131	136	138	122	121	107	102	1,427	108
<i>y/y growth rate</i>	18.1%	25%	12%	5%	-27%	6%	21%	66%	91%	62%	32%	-17%	18.1%	1%
Distribution companies	7,872	666	685	634	629	637	736	780	695	690	732	819	8,427	812
<i>y/y growth rate</i>	7.1%	9%	8%	7%	6%	3%	9%	10%	13%	4%	6%	4%	7.1%	12%
Energo-Pro Georgia	4,740	381	410	390	393	399	463	484	456	457	481	528	5,254	521
<i>y/y growth rate</i>	11%	10%	9%	6%	6%	4%	11%	12%	22%	13%	18%	8%	8.1%	17%
Telasi	2,789	256	246	216	209	211	240	261	239	233	251	292	2,935	291
<i>y/y growth rate</i>	5%	8%	8%	9%	7%	0%	5%	9%	12%	1%	-1%	-2%	5.2%	4%
Kakheti Energy Distr.	343	28	29	27	27	28	33	35	-	-	-	-	239	-
<i>y/y growth rate</i>	-30%	5%	7%	8%	6%	6%	14%	9%	-100%	-	-	-	-	-
Domestic generation	11,574	809	741	817	1,093	1,138	1,247	1,035	821	828	968	1,080	11,531	1,014
<i>y/y growth rate</i>	0%	0%	-12%	-7%	2%	4%	18%	8%	3%	-9%	-3%	-9%	-0.4%	6%
HPPs	9,329	362	544	722	1,085	1,128	1,234	944	706	583	658	682	9,211	676
<i>y/y growth rate</i>	-1%	-33%	-22%	-1%	1%	3%	16%	6%	10%	-11%	2%	0%	-1.3%	20%
TPPs	2,235	442	188	86	0	1	5	83	107	239	304	393	2,233	331
<i>y/y growth rate</i>	0%	62%	26%	-40%	N/A	-76%	321%	31%	-32%	-6%	-14%	-21%	-0.1%	-14%
WPPs	9	6	9	9	8	9	7	8	7	7	5	6	88	7
<i>y/y growth rate</i>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	178%	-19%	872.2%	10%
Imports	479	250	311	147	2	0	1	73	133	157	110	135	1,497	202
<i>y/y growth rate</i>	213%	106%	134%	493%	-41%	-100%	-78%	597%	449%	832%	766%	302%	212.6%	13%
Exports	559	0	0	0	200	230	222	32	0	0	1	0	686	-
<i>y/y growth rate</i>	23%	N/A	N/A	N/A	5%	9%	71%	16%	N/A	N/A	N/A	N/A	22.7%	N/A
Net export/import	80	(250)	(311)	(146)	199	230	221	(41)	(133)	(157)	(109)	(135)	(811)	(202)
Transit	850	16	4	5	4	-	-	93	32	15	23	53	254	-
<i>y/y growth rate</i>	N/A	-49%	-84%	-90%	N/A	N/A	N/A	-33%	-69%	-89%	-83%	-61%	-70%	N/A

Source: ESCO



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Address: 79 D. Agmashenebeli Avenue, Tbilisi 0102, Georgia

Tel: + (995) 32 2401 111

Email: research@gt.ge

Head of Research

Eva Bochorishvili | evabochorishvili@gt.ge

Head of Analytics Unit

Giorgi Iremashvili | giremashvili@gt.ge

Analyst

Mariam Chakhvashvili | mchakhvashvili@gt.ge

Analyst

Bachana Shengelia | bshengelia@gt.ge

Analyst

Ana Nachkebia | ananachkebia@gt.ge

Analyst

Kakhaber Samkurashvili | ksamkurashvili@gt.ge

Economist

Lasha Kavtaradze | lashakavtaradze@gt.ge

Analyst

Ioseb Kumsishvili | ikumsishvili@gt.ge