



საქართველოს ეროვნული ბანკი  
National Bank of Georgia

# The Energy Sector Research

*Specialized Risks Department, SME Credit Risks Division*

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Giorgi Nioradze / Teona Tetvadze / Tamriko Azizyan / Giorgi Adeishvili

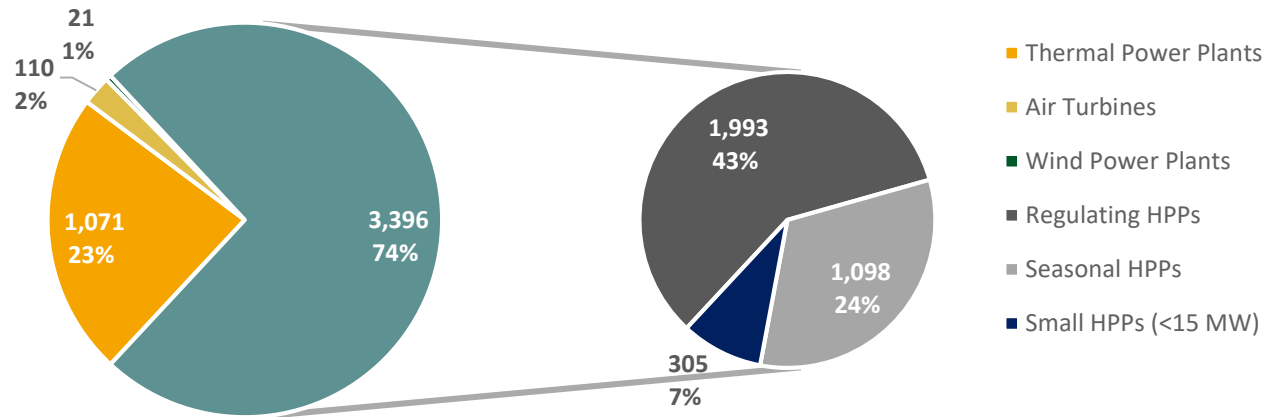
April, 2024

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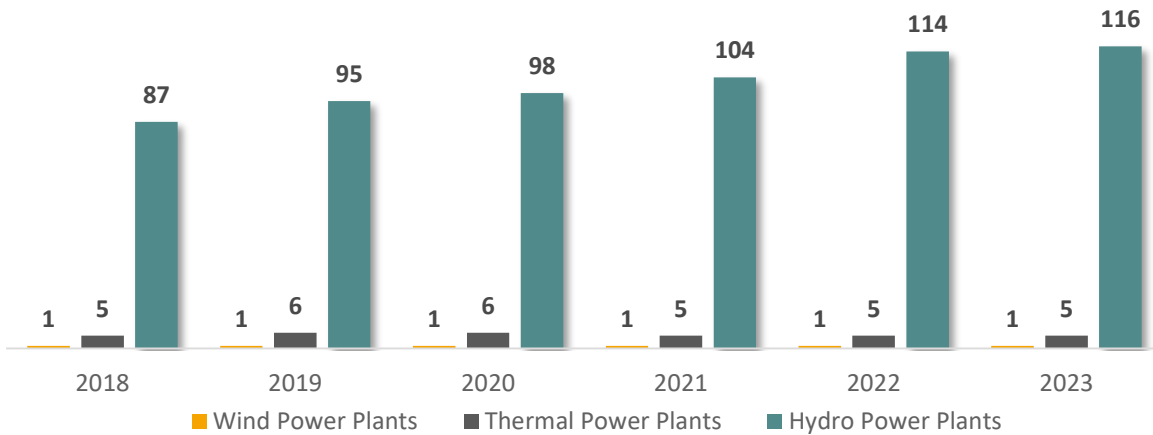
- **General Overview of the Energy Sector in Georgia**
- **Comparative Analysis of Energy System by Country**
- **General Overview of the Credit Portfolio Indicators of the Energy Sector in Georgia**
- **Financial Analysis of Electricity Power Plants of Georgia**
- **Main Conclusions and Recommendations**

# Hydro Power Plants make up to 74% of The Total Installed Capacity of the Georgian Energy System

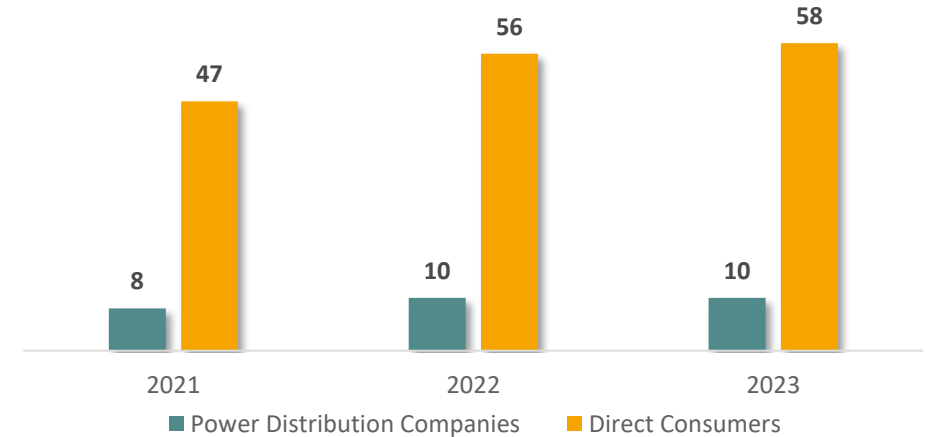
Breakdown of Installed Capacity by Power Plant Type (MW)



Number of Electricity Generating (units)

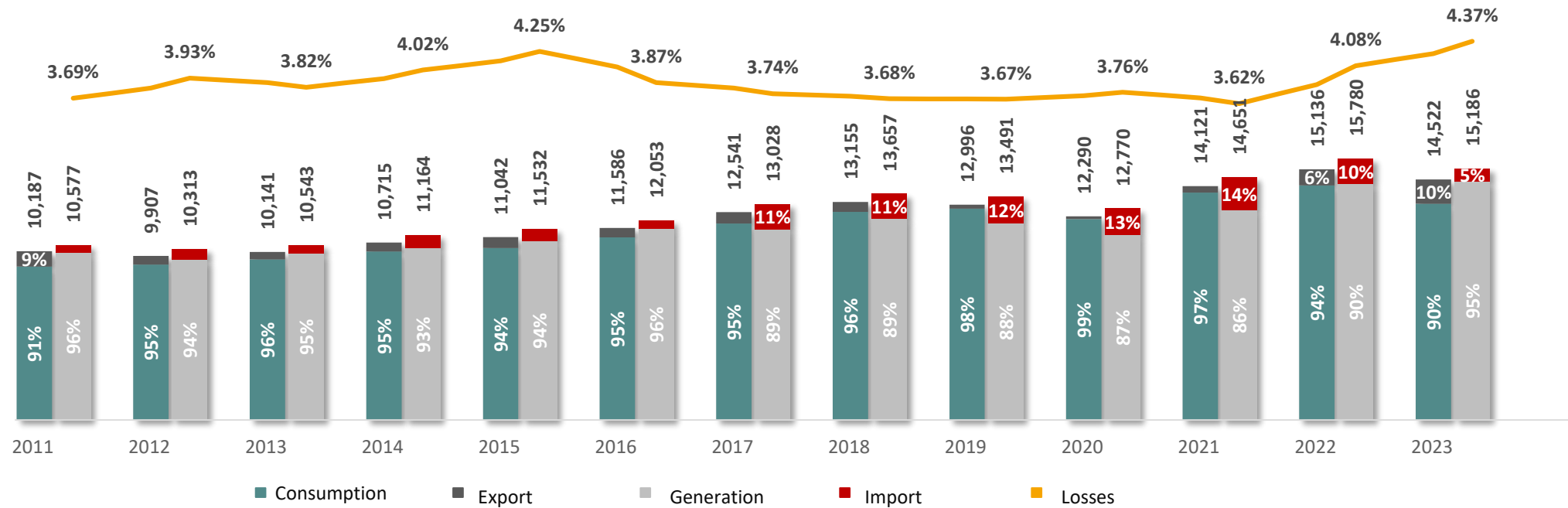


Number of Direct Consumers and Power Distribution Companies (units)



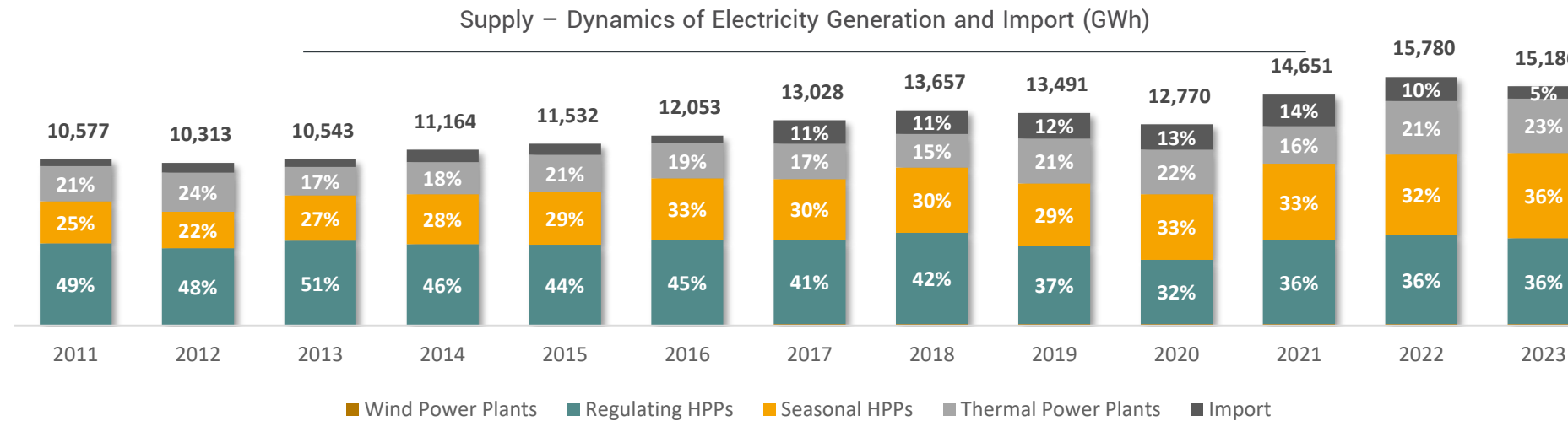
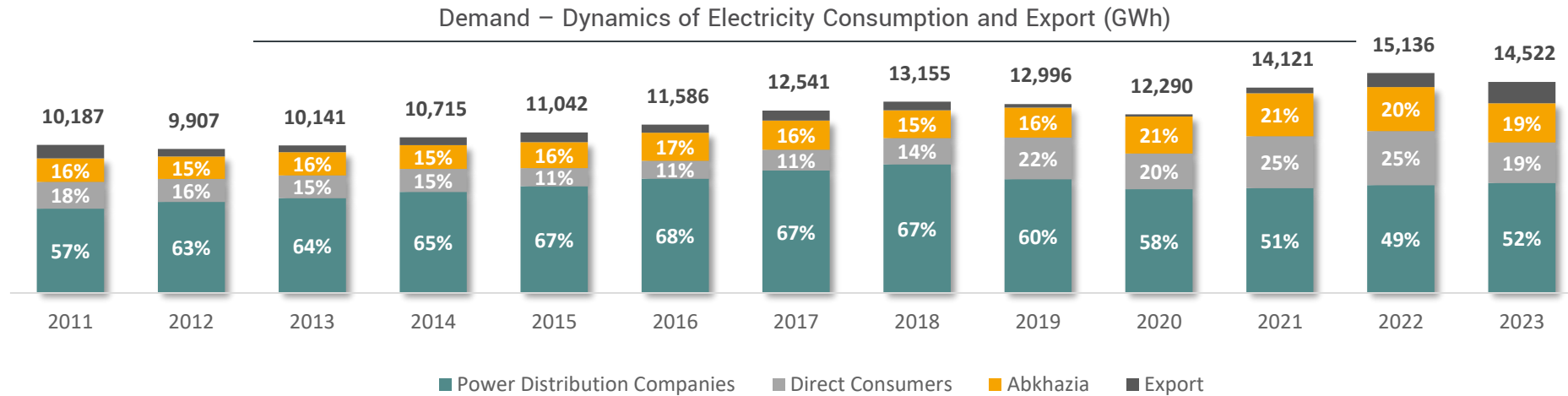
# In 2022-2023 Years, the Generation of the Georgian Energy System Exceeded the Domestic Demand

Dynamics of Electricity Demand (Consumption & Export) and Supply (Generation & Import) (GWh)



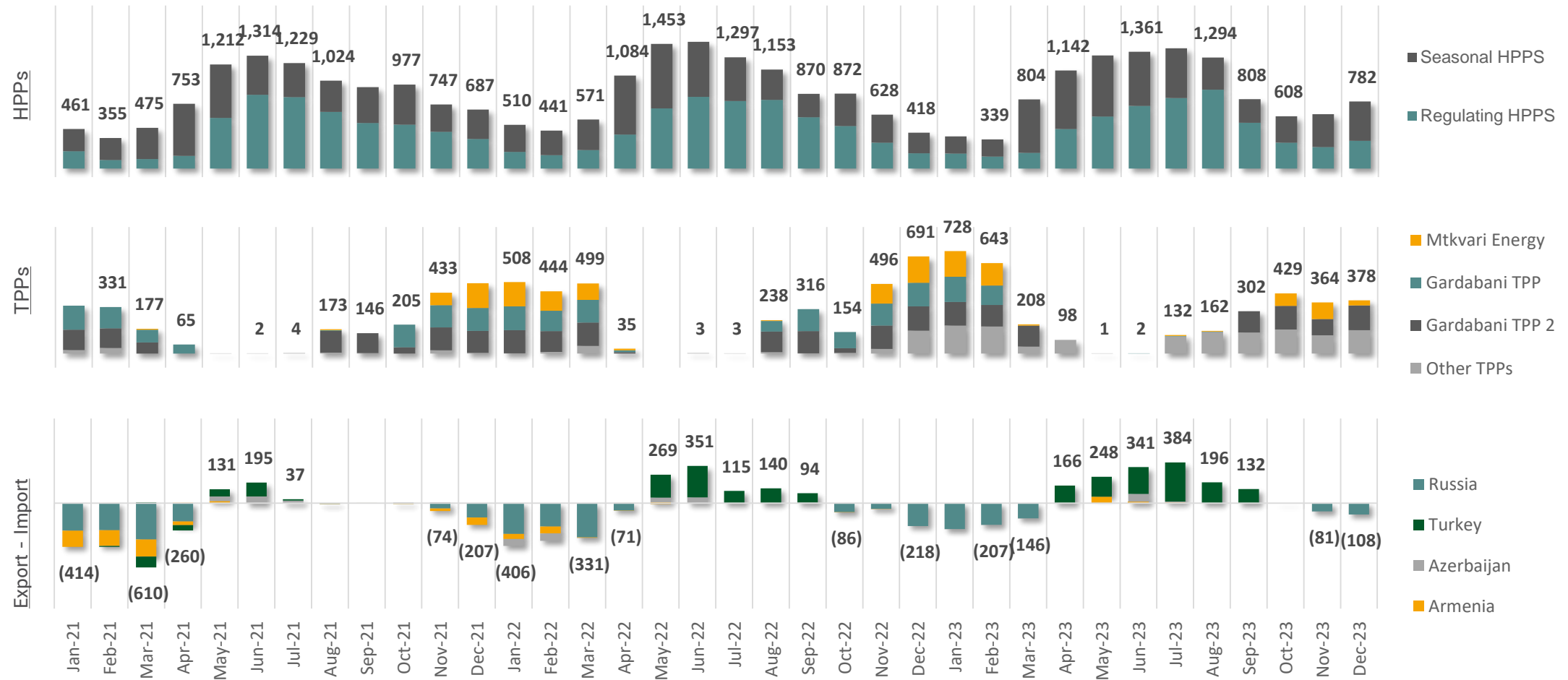
- The increased consumption of electricity and the decrease in the output of Enguri HPP in 2020 were the main reasons of causes of the increased import of electricity;
- Average annual growth for both indicators, consumption & exports and generation & imports was 4% during 2011-2022; However, both indicators decreased by 4% in 2023;
- Compared to the previous year, in 2023, the volume of exported electricity increased by 51%.

# Volume of Electricity Generated by Seasonal HPPs Grew on Average by 8% in 2020-2023 And Make Up 36% of Total Generation in 2023



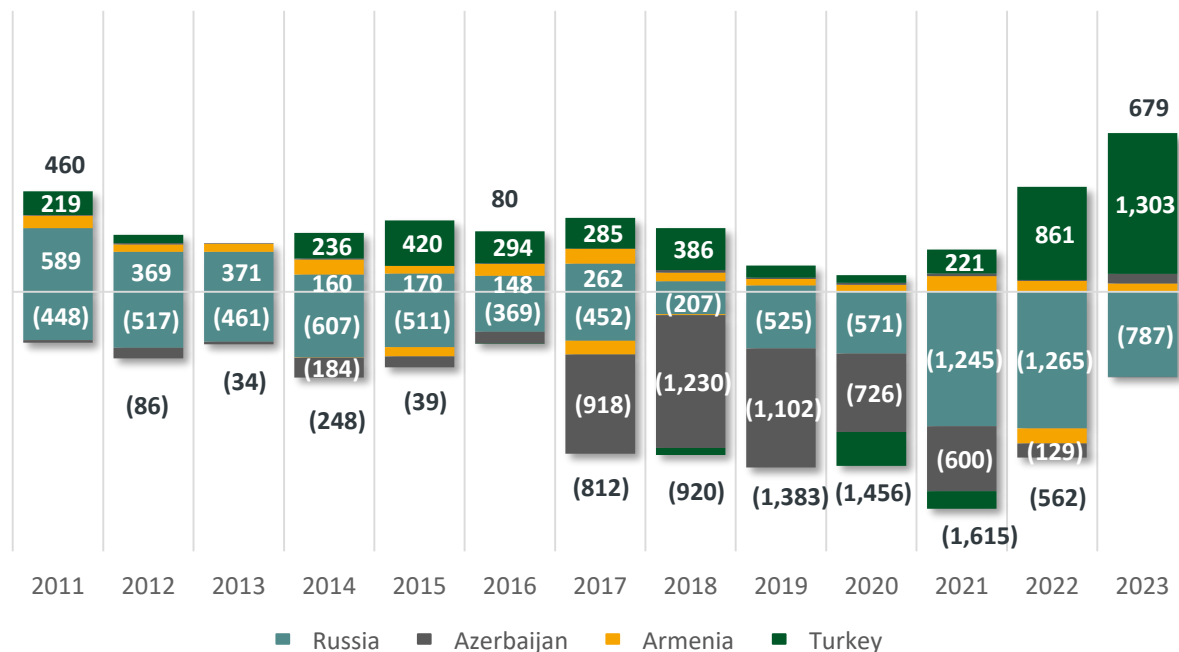
# The Seasonality of HPPs is Balanced by TPPs and Export-Import

Dynamics of TPPs, HPPs and Export-Import (GWh)

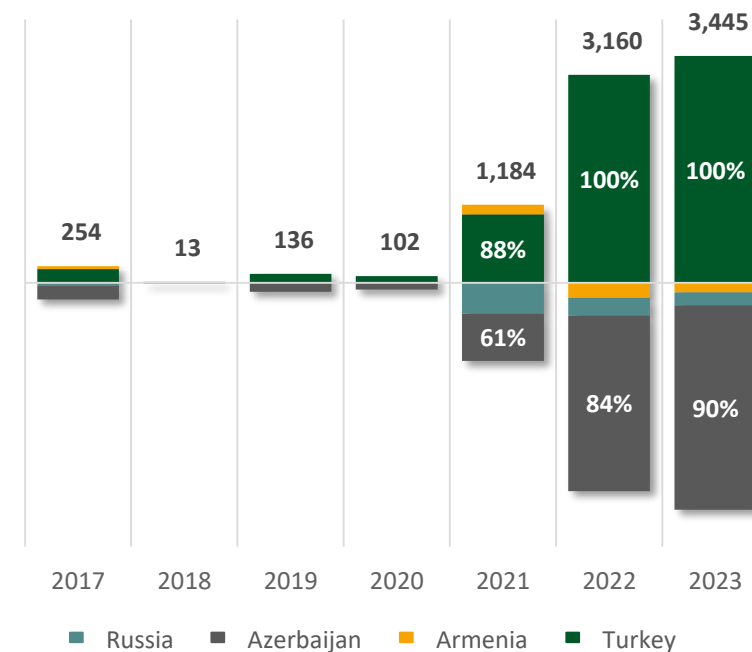


# In 2021-2023, the Exported and Transit Electricity from Georgia was Almost Completely Directed to Turkey, Caused by the Processes Taking Place in its Energy Market

Export-Import Dynamics by Country (GWh)



Transit Dynamics by Country (GWh)



- ❑ In 2017-2022, the Georgia's net export of electricity amounted to -1,125 GWh;
- ❑ In 2011-2023, Russia accounted for an average of 56% of the electricity imported into Georgia.

- ❑ In 2017-2023, 84% of the electricity transiting through Georgia was from Azerbaijan, and 98% of it was directed to Turkey.

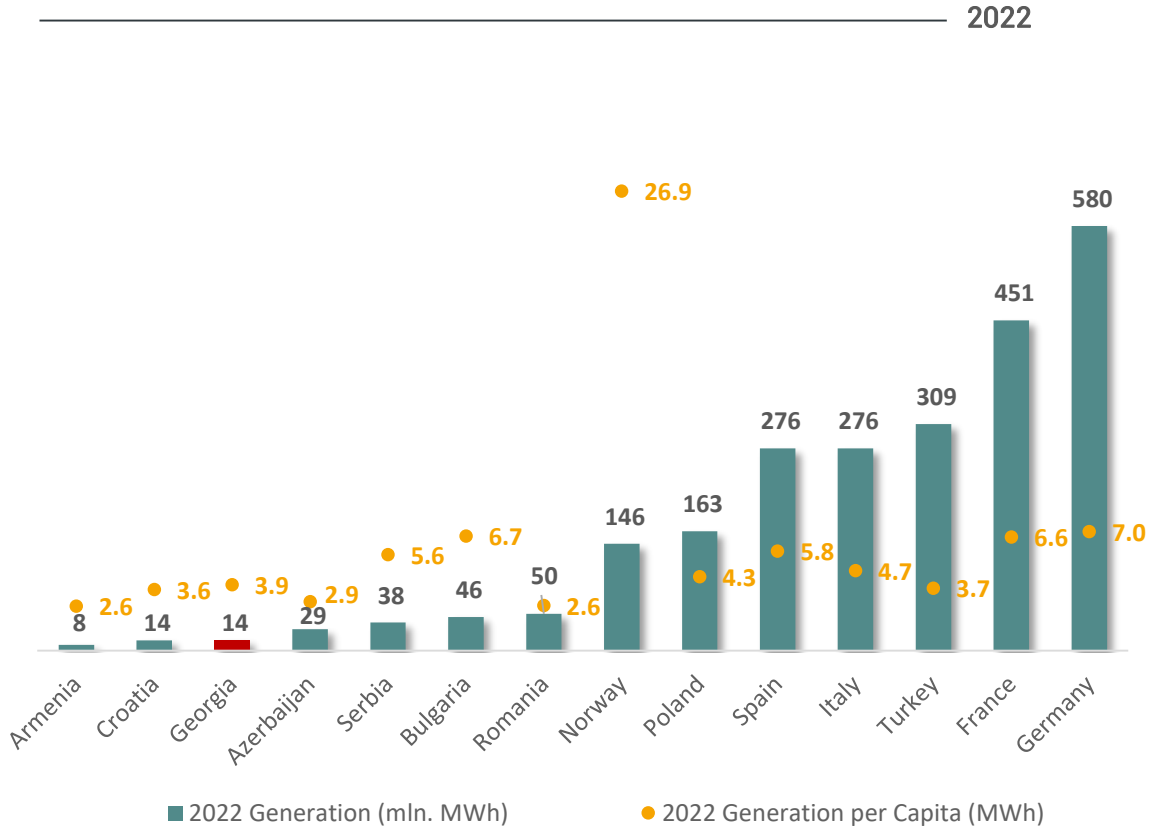
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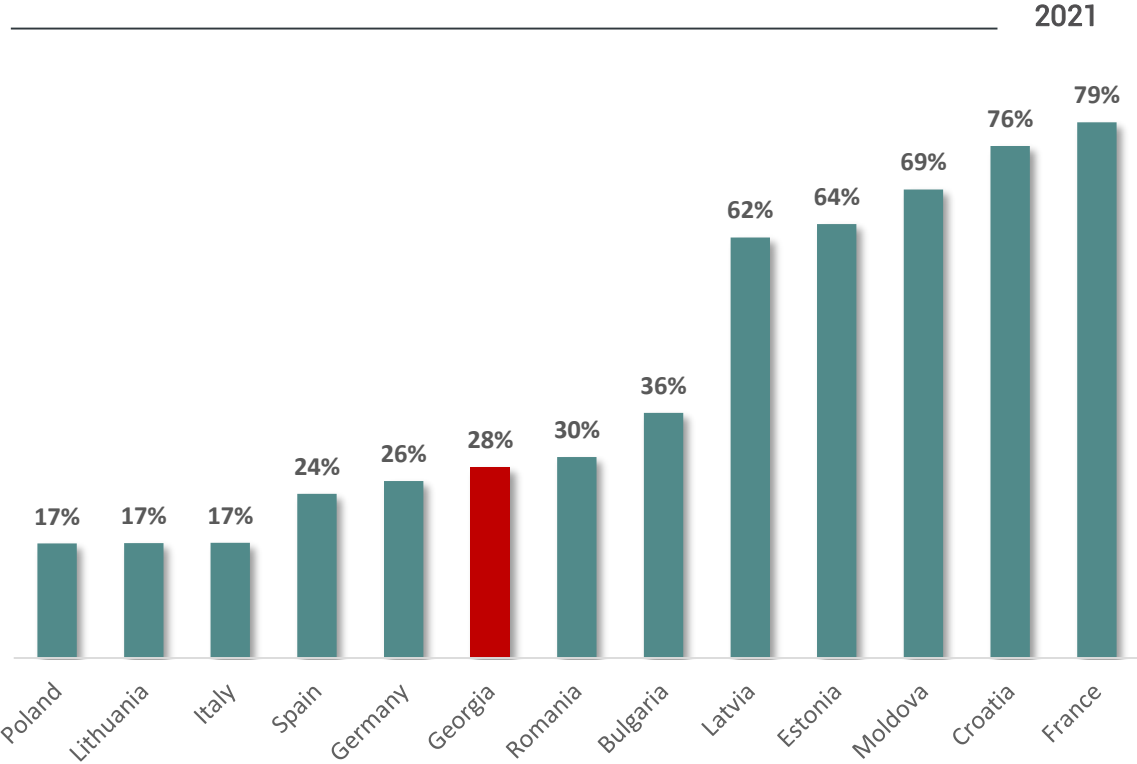


# Based on the Indicator of Electricity Generation per Capita, Georgia has a Leading Position in the Region

Electricity Generation per Capita by Country



Market Share (%) of the Largest Producer in the Electricity Market by Country

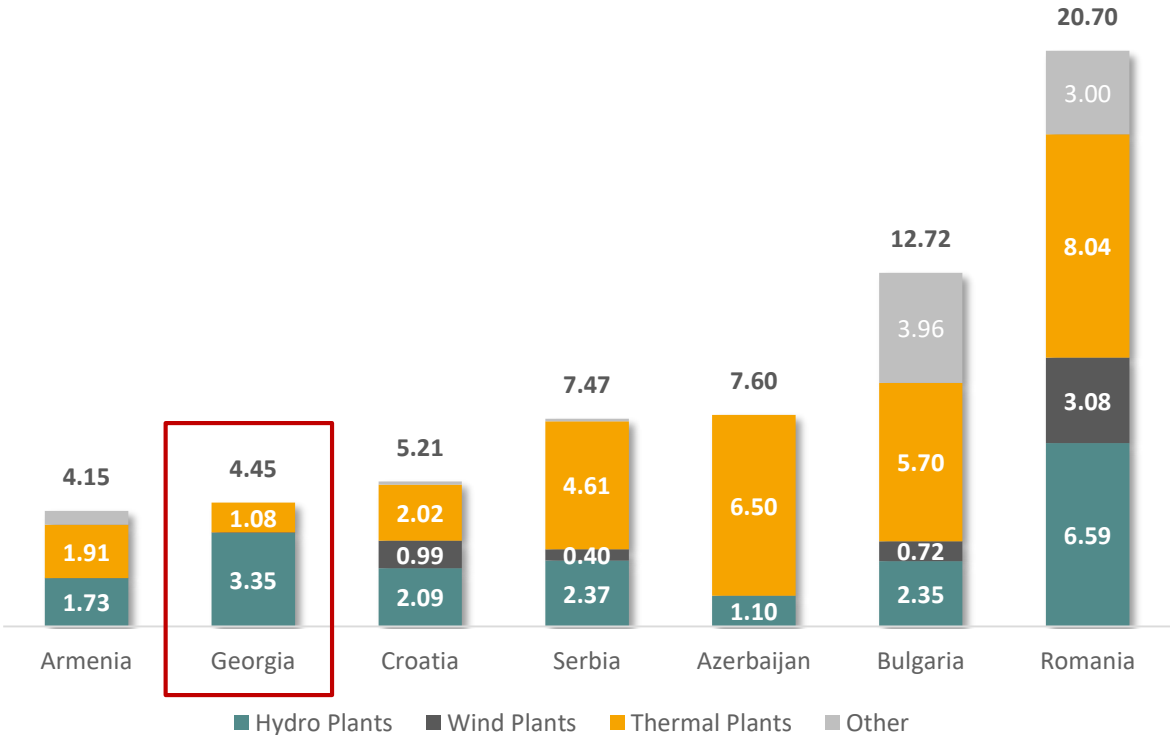


Source: Eurostat; Bloomberg; IEA (Armenia and Azerbaijan)

# Georgia, like Norway, Mainly Uses Hydro Resources to Generate Electricity, while the Sources of Generation in Other Countries are Relatively More Diversified

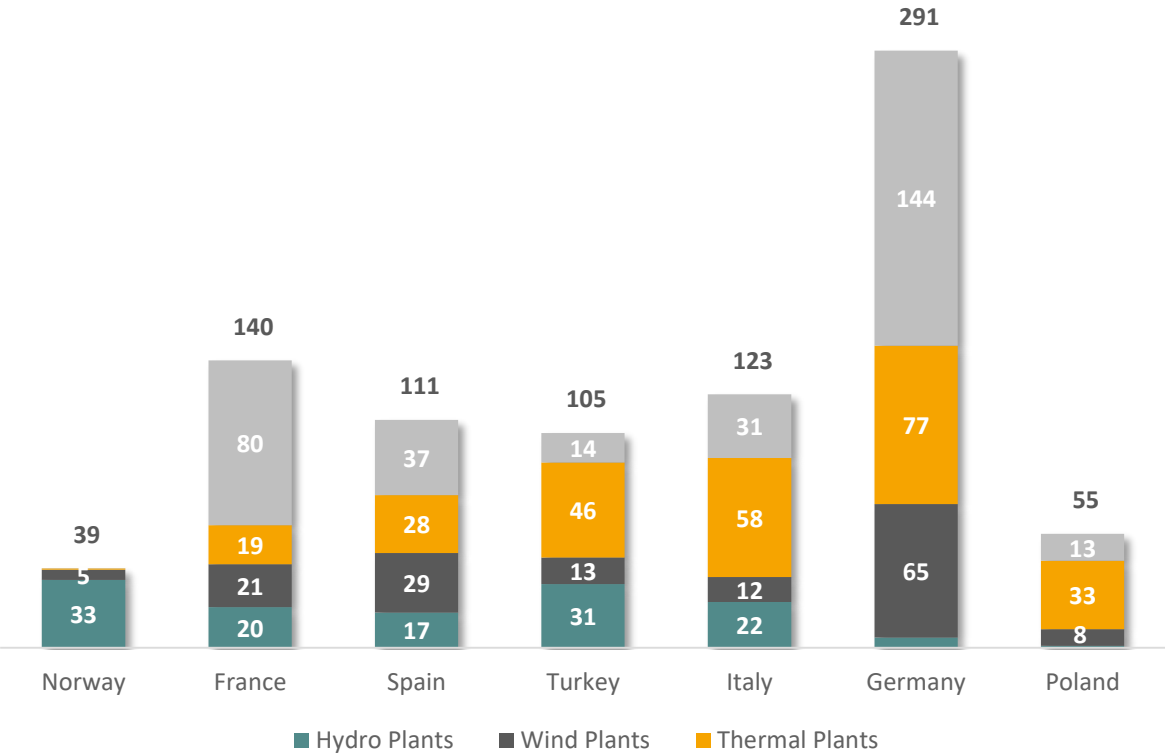
Installed Capacity (thousand MW) by Electricity Generation Sources by Country (Total Installed Capacity < 30 thousand MW)

2022



Installed Capacity (thousand MW) by Electricity Generation Sources by Country (Total Installed capacity > 30 thousand MW)

2022

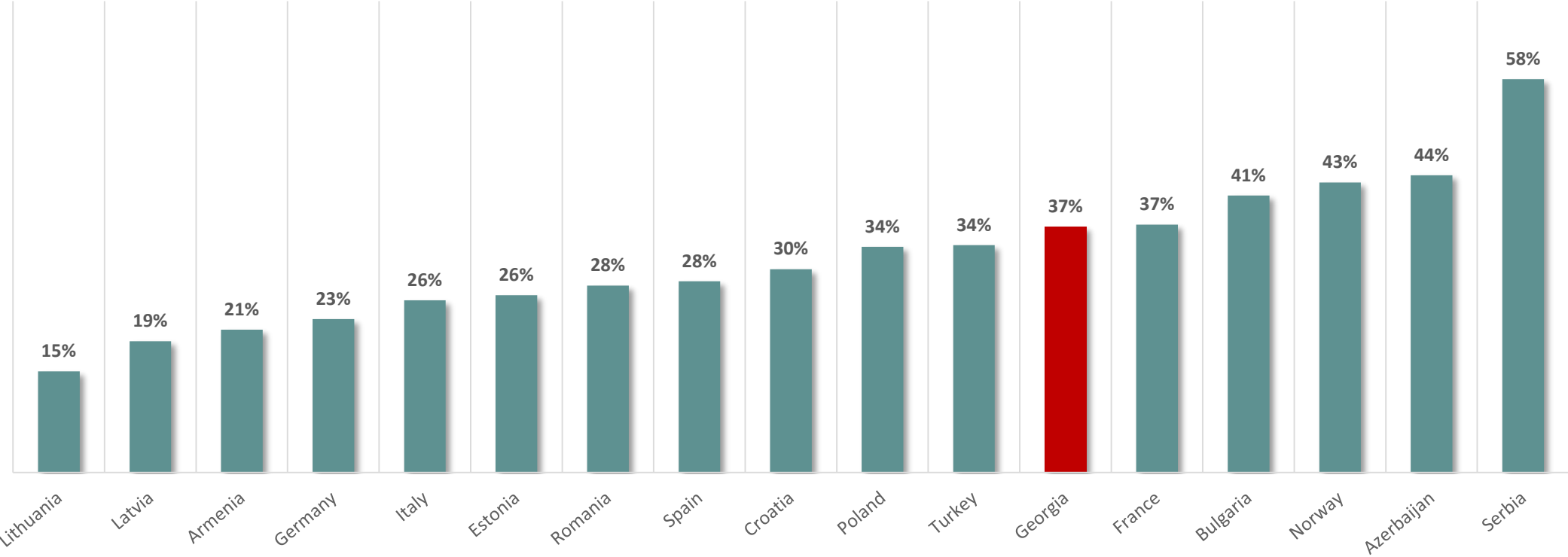


Source: Eurostat; Bloomberg; IEA (Armenia and Azerbaijan)

# Compared to Other Countries, Georgia has High Efficiency Rate due to the Country's Landscape, Climate Conditions and Installed Capacity Structure

Electricity Generation Efficiency (%) by Country

2022

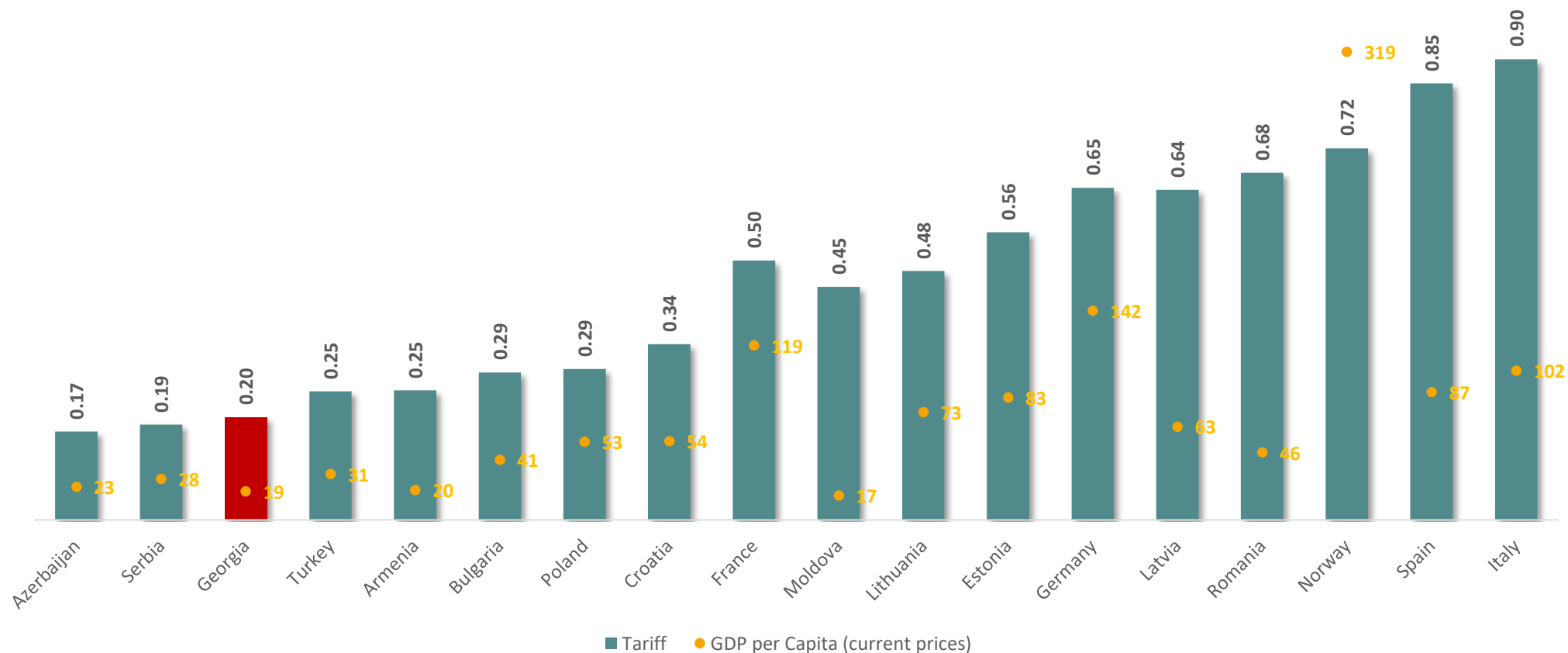


Source: Eurostat; Bloomberg; IEA (Armenia and Azerbaijan)

# The Household Consumer Electricity Tariff of Georgia Corresponds to the Region Average

Household Consumer Tariff (GEL per kWh) and GDP per Capita in Current Prices (thousand GEL) by Country

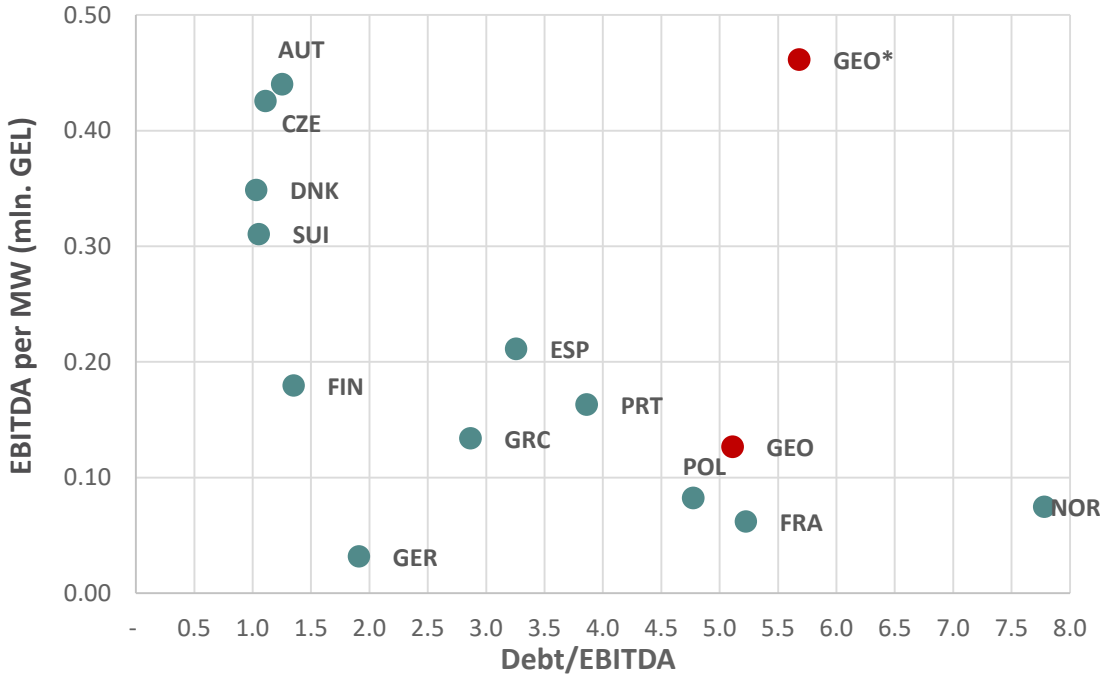
2022



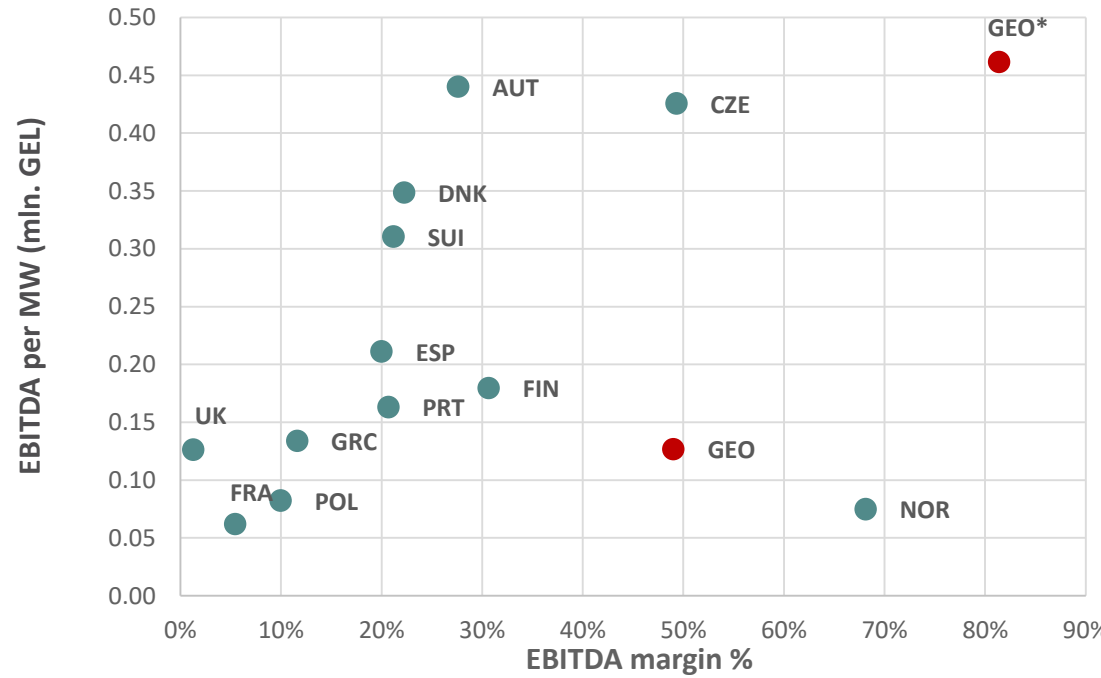
Source: Eurostat; Bloomberg; Worldbank and IEA (Armenia and Azerbaijan)

# Compared to the Presented Countries, the Private HPPs in Georgia are Characterized by High Leverage and Operating Profit

Debt/EBITDA ratio and EBITDA per 1 MW Installed Capacity of Electricity Producing Companies by Country



EBITDA margin (%) and EBITDA per 1 MW Installed Capacity of Electricity Producing Companies by Country

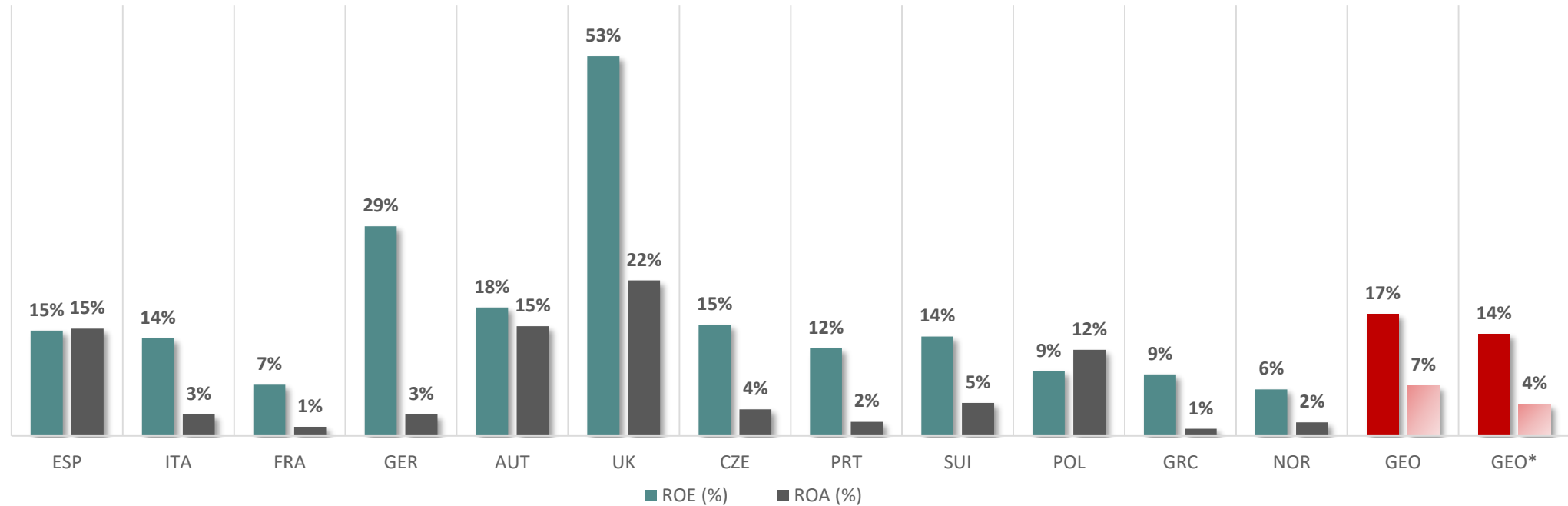


GEO - Calculated based on the Georgian banking sector data, including Hydro, Thermal and Wind Power Plants.  
 GEO\* - Calculated based on the Georgian banking sector data, does not include Regulated State HPPs and Thermal Power Plants.

- The data presented on both charts is calculated based on financial data of the relevant country in the „Bloomberg” database;
- Debt/EBITDA is calculated based on the on-balance bank debt exposures of electricity producing companies.

# The Total Profitability Ratios of the Energy System of Georgia Correspond to the Similar Indicators of the Presented Countries

Profitability Ratios of Electricity Producing Companies by Country



GEO - Calculated based on the Georgian banking sector data, including Hydro, Thermal and Wind Power Plants.

GEO\* - Calculated based on the Georgian banking sector data, does not include Regulated State HPPs and Thermal Power Plants.

□ The data presented on chart is calculated based on financial data of the relevant country in the „Bloomberg” database.

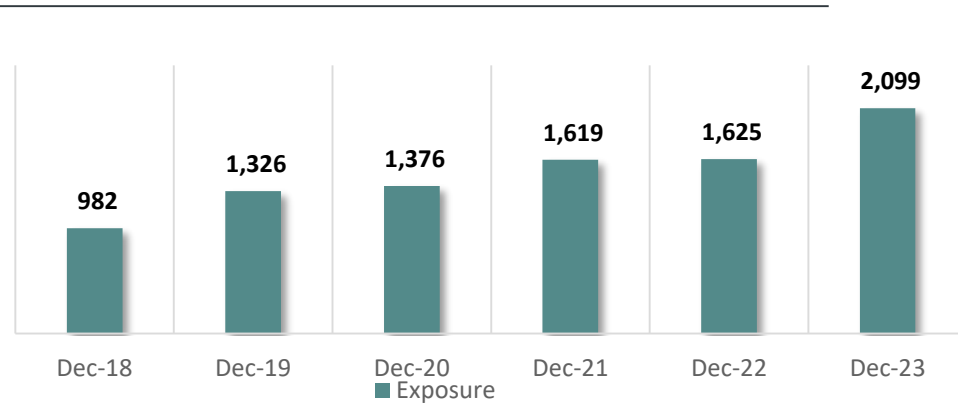
Source: Bloomberg; NBG

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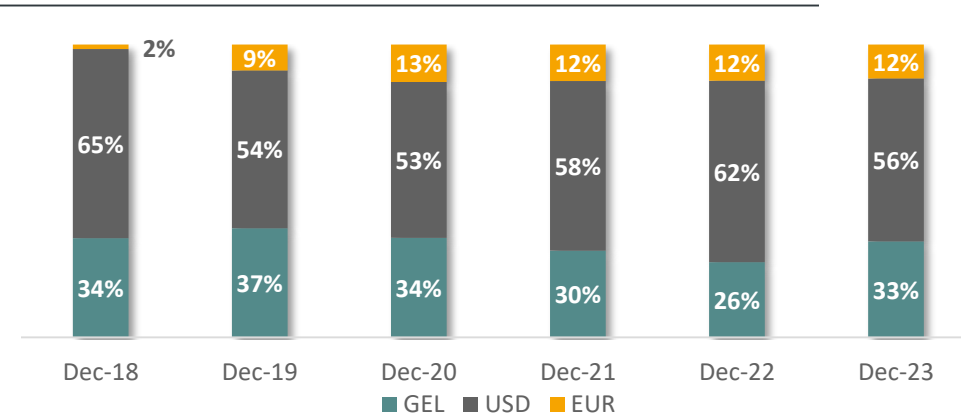
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# In 2018-2023, the Volume of bank Exposures Issued to the Energy Sector has Doubled and Occupies a Significant Share in the Total Business Credit Portfolio

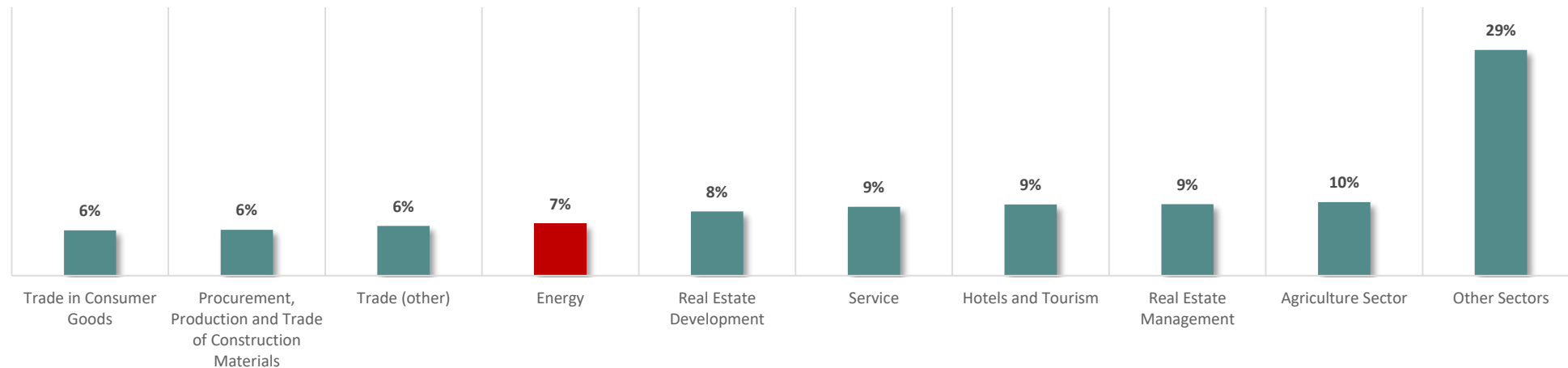
Energy Sector's Credit Portfolio Dynamics (ml. GEL)



Energy Sector Credit Portfolio by Currency



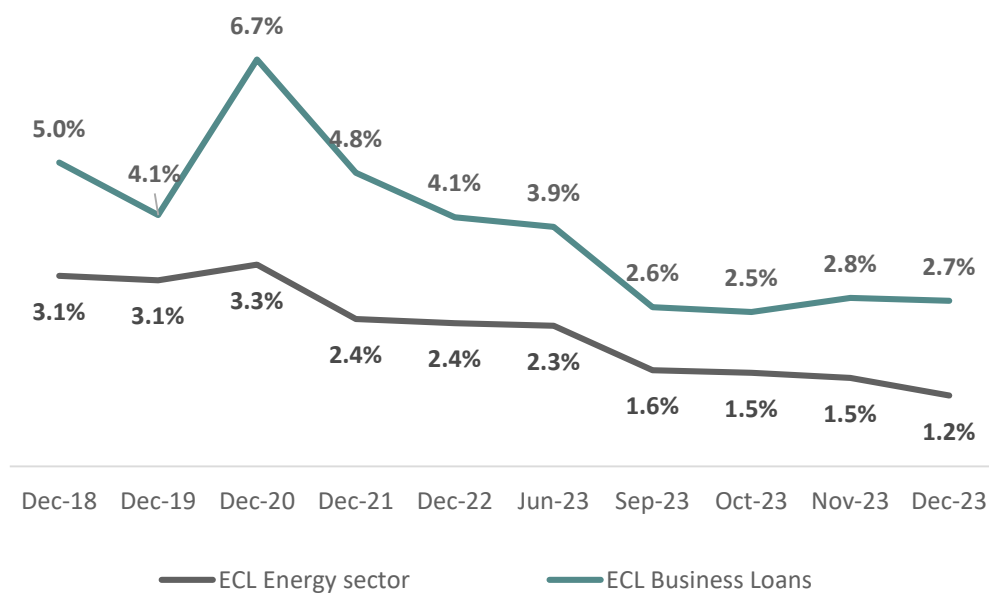
Business Exposures Breakdown by Economic Sectors (31/12/2023)



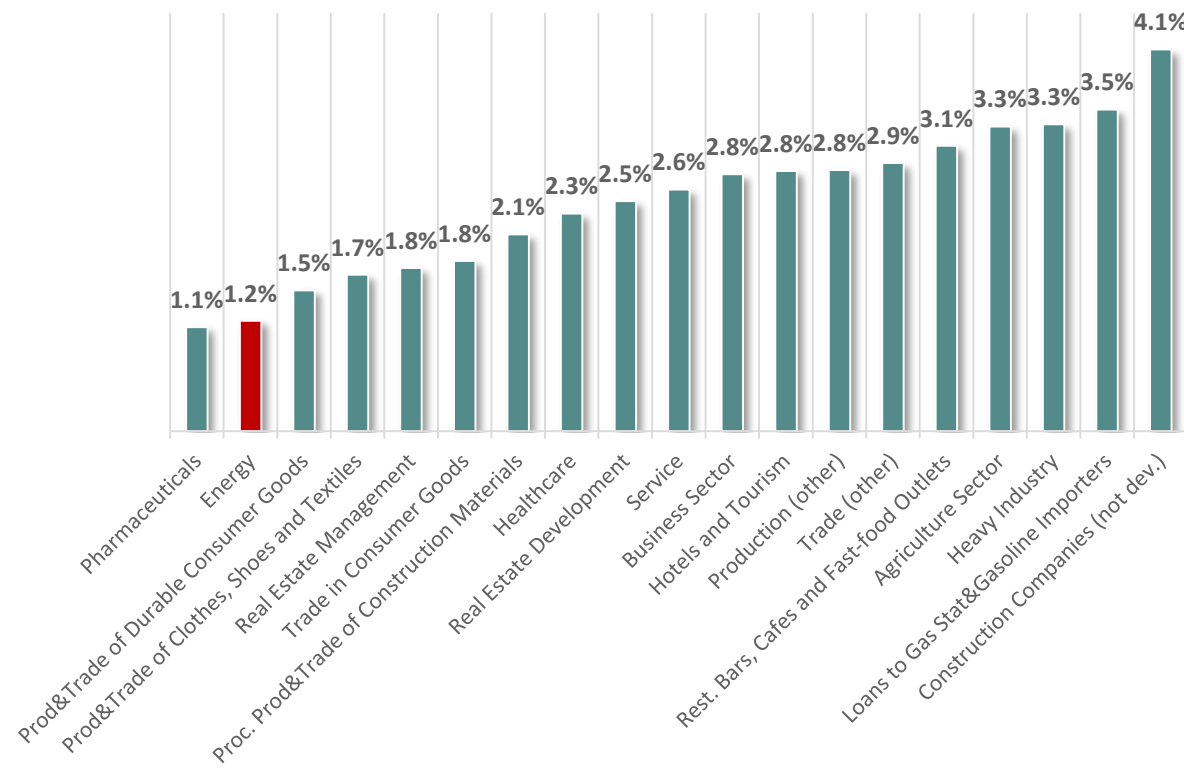


# The Energy Sector Credit Portfolio is Characterized by One of the Lowest Credit Risks

Expected Credit Loss (ECL) Dynamics



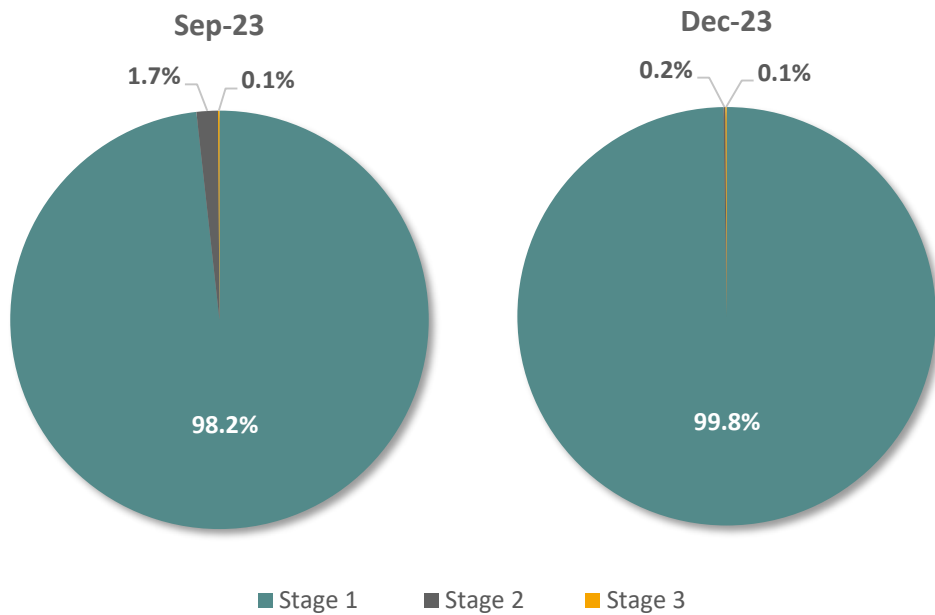
ECL by Economic Sectors (31/12/2023)



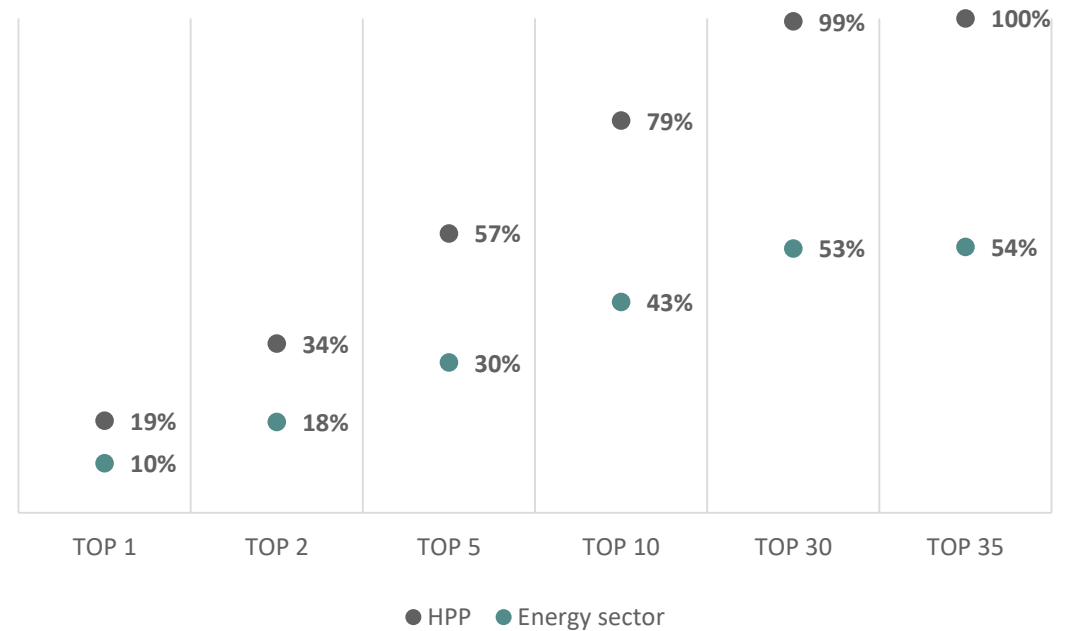
Until July 2023, the reserve is computed according to the „Regulation on Approval of Asset Classification and Setting Up and Use of Loan Loss Reserves by Commercial Banks” and from July 2023, in accordance with the „The Regulation on Identifying Risk Categories of Financial Instruments and Expected Credit Losses”;

# The Energy Sector Credit Portfolio is Distinguished by a High Level of Concentration

Energy Sector Exposures Breakdown by Stage



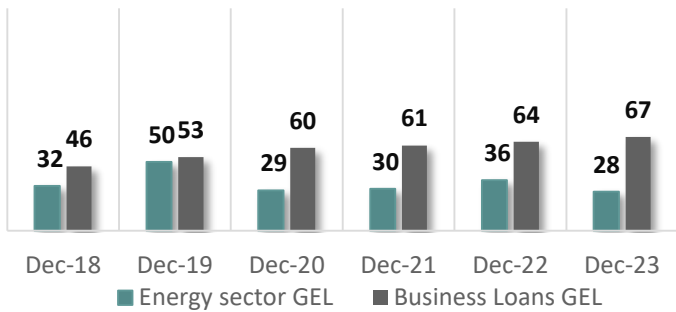
Concentration of Top Borrowers by On-Balance Exposures



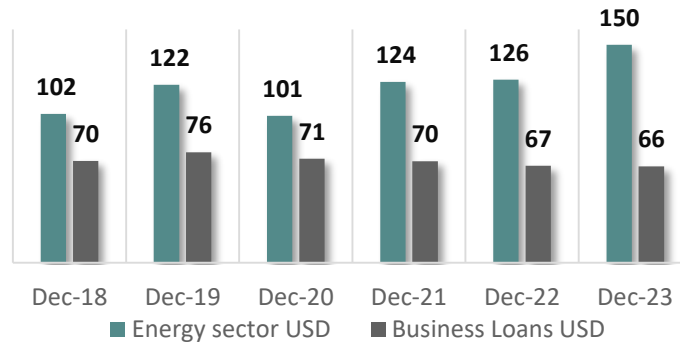
□ HPP exposures include only on-balance sheet liabilities of HPP's, while Energy sector include exposures of all borrowers in the sector.

# In Contrast to Other Sectors, the Energy Sector Demonstrates an Average Loan Maturity that is Twice as Lengthy, Accompanied by Comparable Interest Rates.

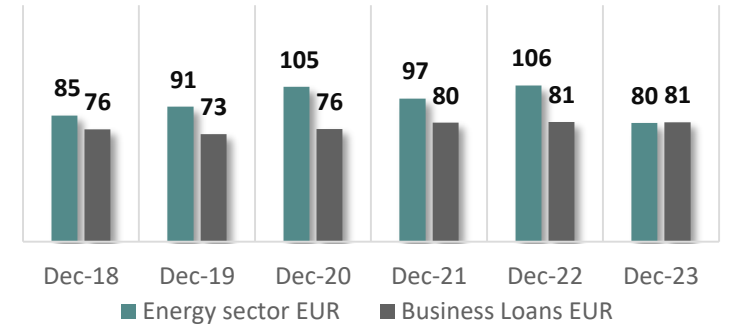
Contractual Maturity of the Loan (Month) - GEL



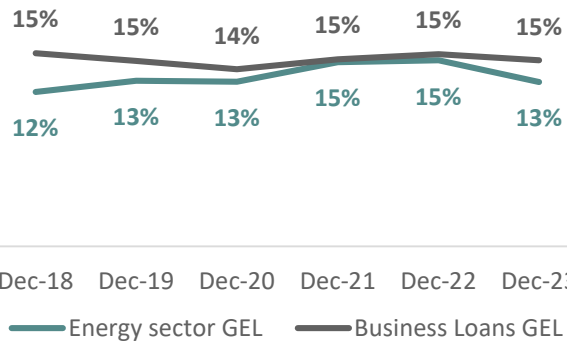
Contractual Maturity of the Loan (Month) - USD



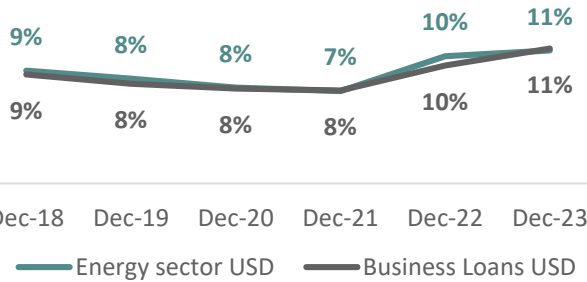
Contractual Maturity of the Loan (Month) - EUR



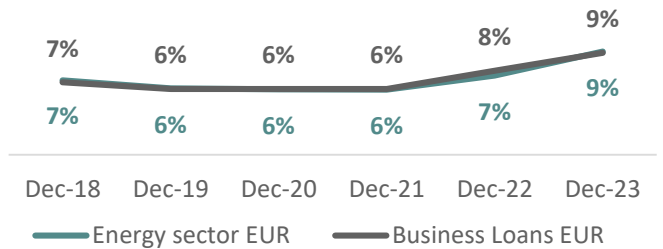
Interest Rate - GEL



Interest Rate - USD



Interest Rate - EUR



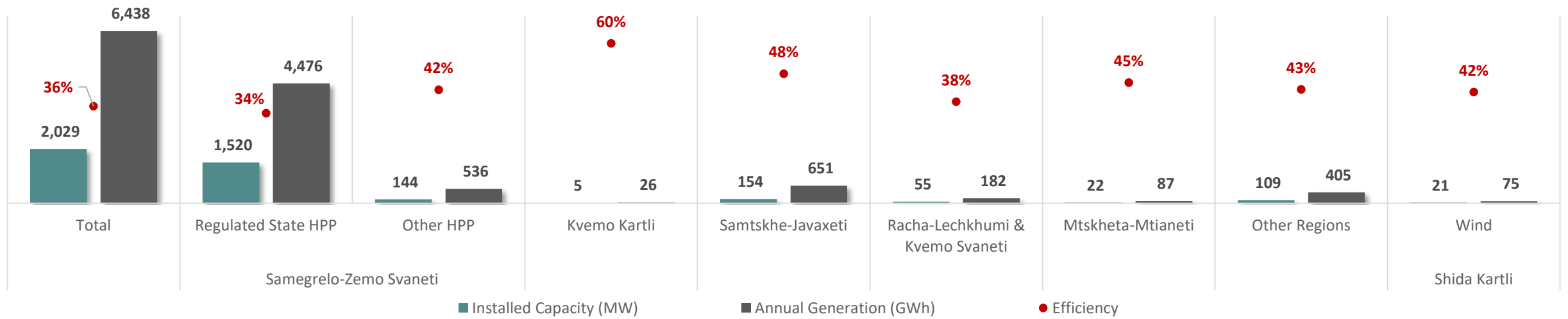
□ The rise in interest rates is attributed to the escalation of the EURIBOR 6M interest rate, which surged from 0.54% to 2.56% in December 2022 for euros, and for dollars, the SOFR 6M increased from 0.049% to 2.89% in December 2022;

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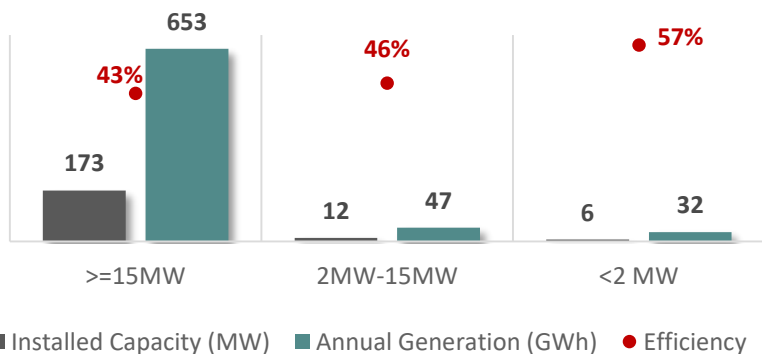
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# Comparing Operating HPPs to HPPs under construction, the average efficiency rate of the latter is higher, reaching 44%

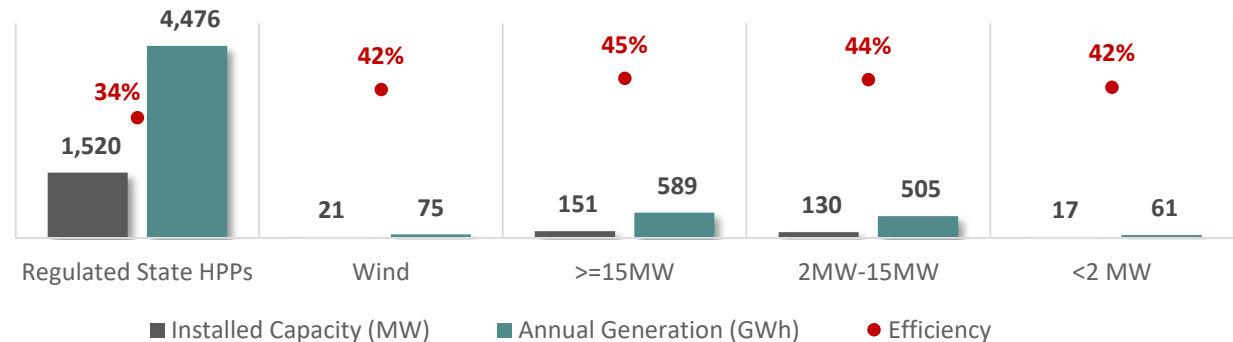
Breakdown of HPPs By Regions



Breakdown of HPPs Under Construction by Installed Capacity

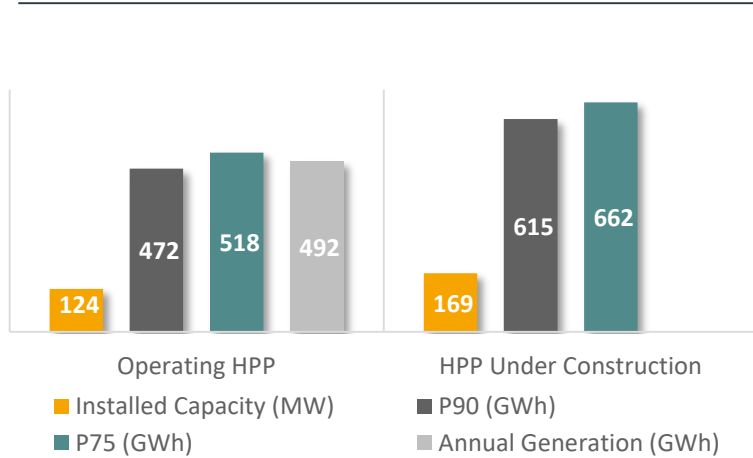


Breakdown of Operating HPPs by Installed Capacity

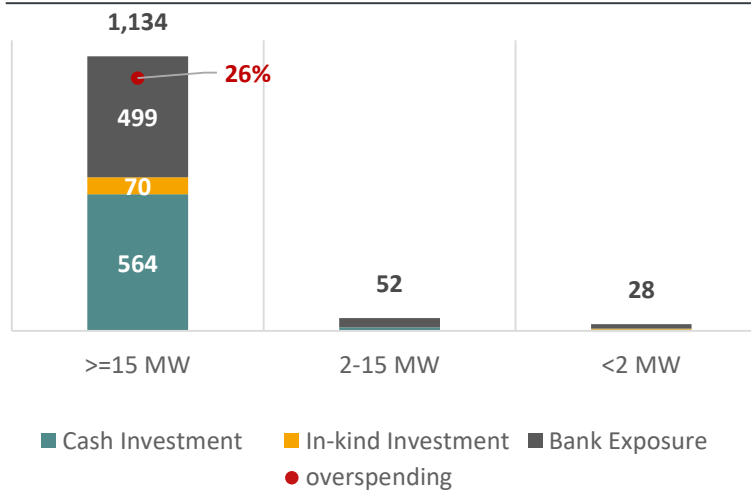


# The Expenditure for Installed 1 MW of Capacity Amounts to an Average of 4.5 Million GEL

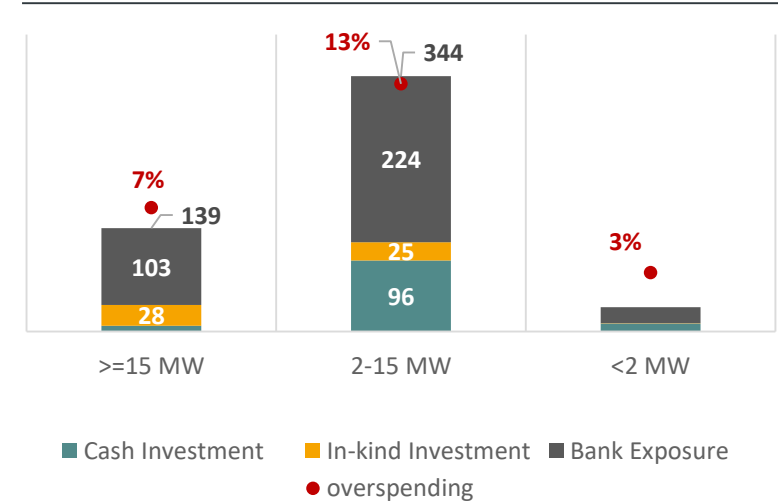
Comparison of HPP's generation with P90 and P75 generation



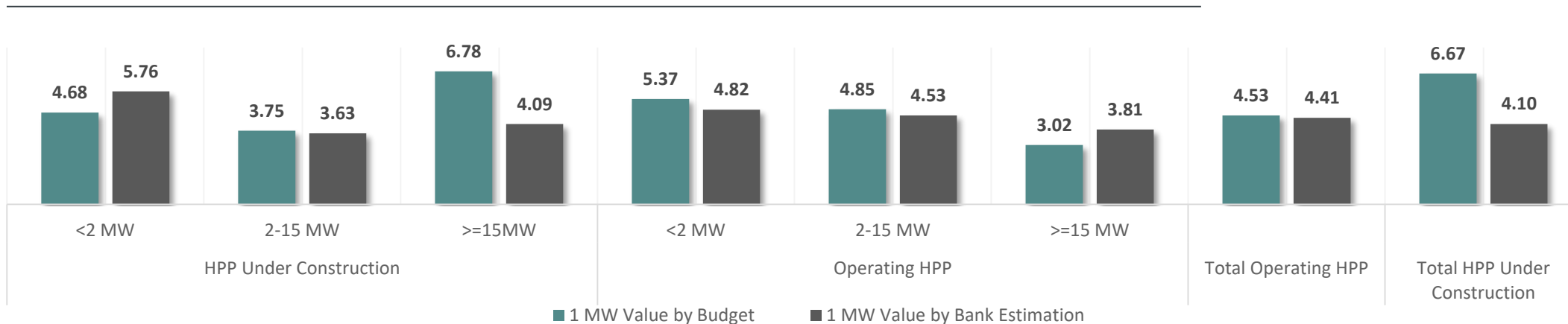
HPP Under Construction (mln. GEL)



Operating HPP (mln. GEL)

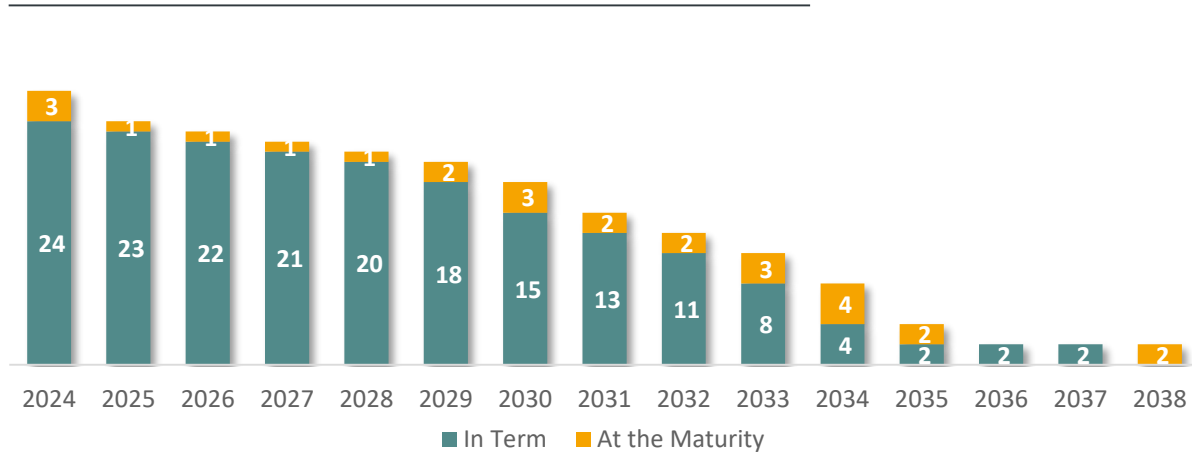


1 MW Installed Capacity Estimation (mln. GEL)

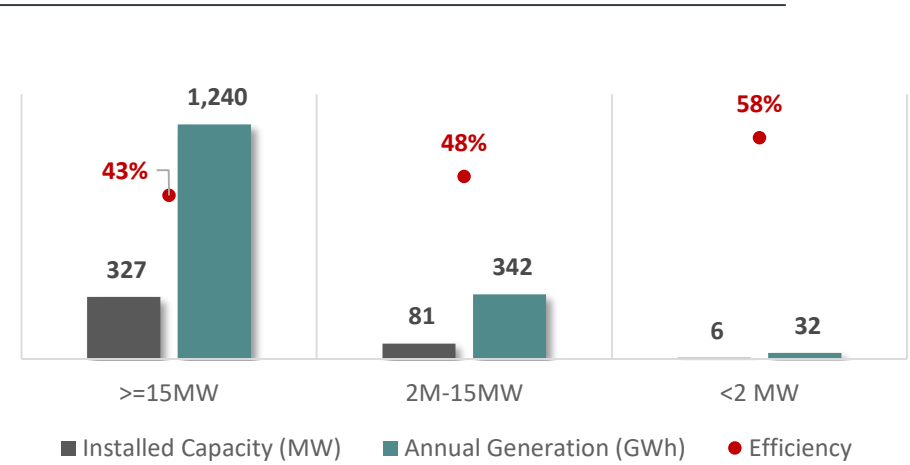


# The Duration of Active Power Purchase Agreement (PPA) Contracts is 10 Years, with a Contracted Rate of 6 Cents

Breakdown of the Contracts with PPA Agreement by the Maturity (Number)



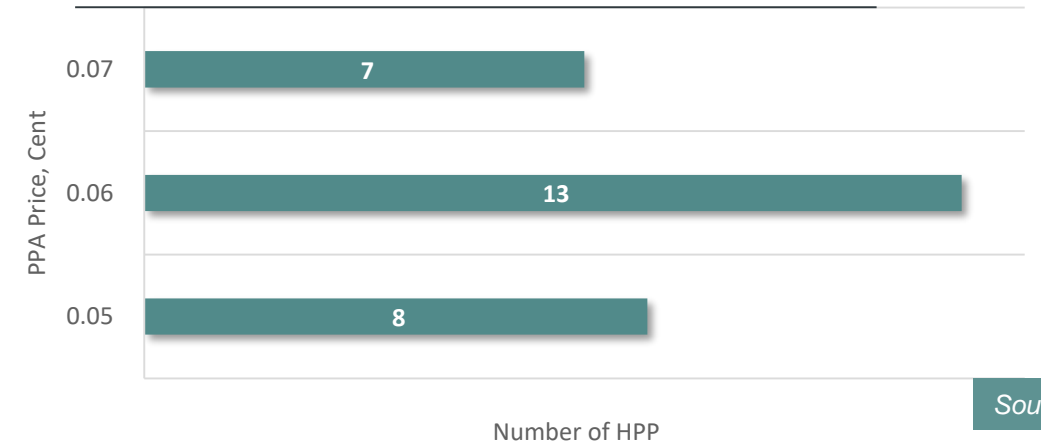
Efficiency Rate of HPPs with PPA Agreement by Installed Capacity



Breakdown of the Contracts with PPA Agreement by the Initial Maturity

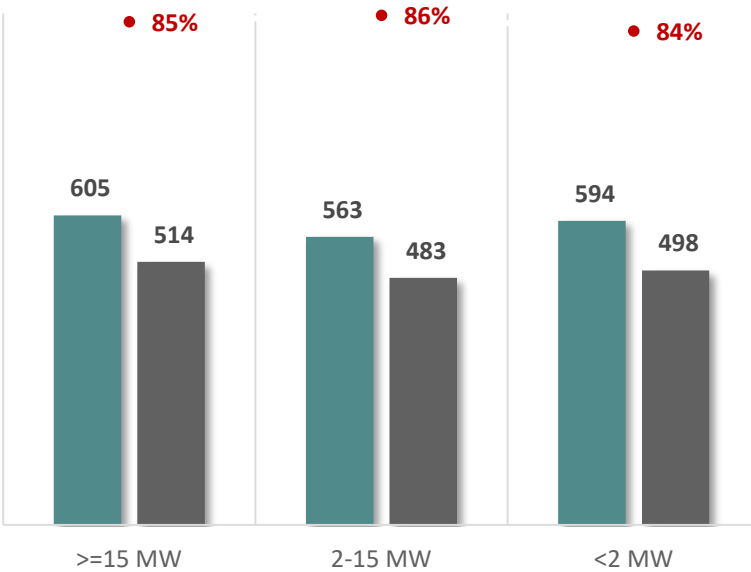


Breakdown of Contracts with PPA Agreement by Price

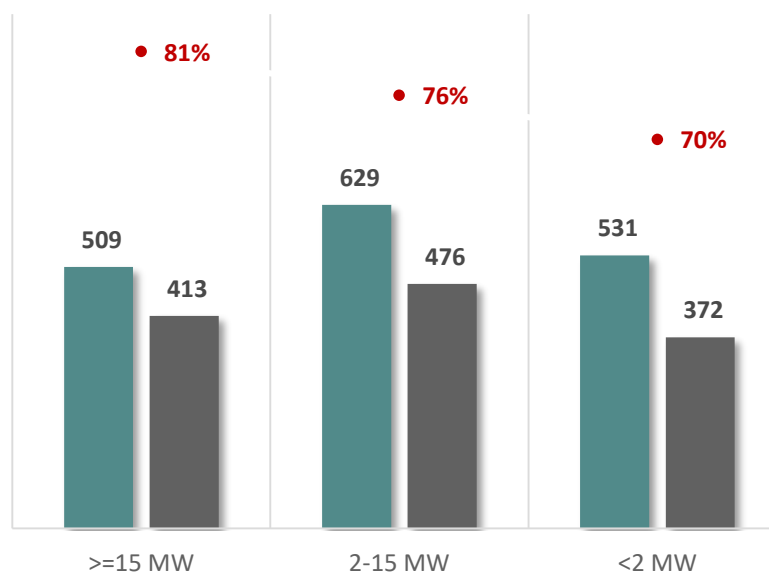


# The Projected Operational Profit for HPPs Under Construction Exceed those of Operating HPPs, Primarily Attributed to their Higher Efficiency Levels

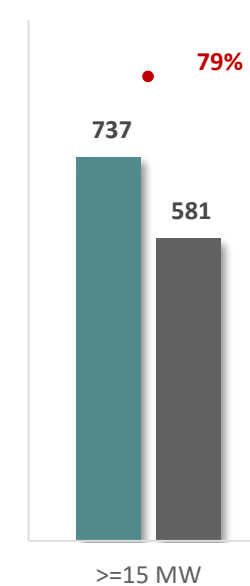
HPPs Under Construction (thousand GEL, 06/2023)



Operating HPPs (thousand GEL, 06/2023)



Operating WPPs (thousand GEL, 06/2023)



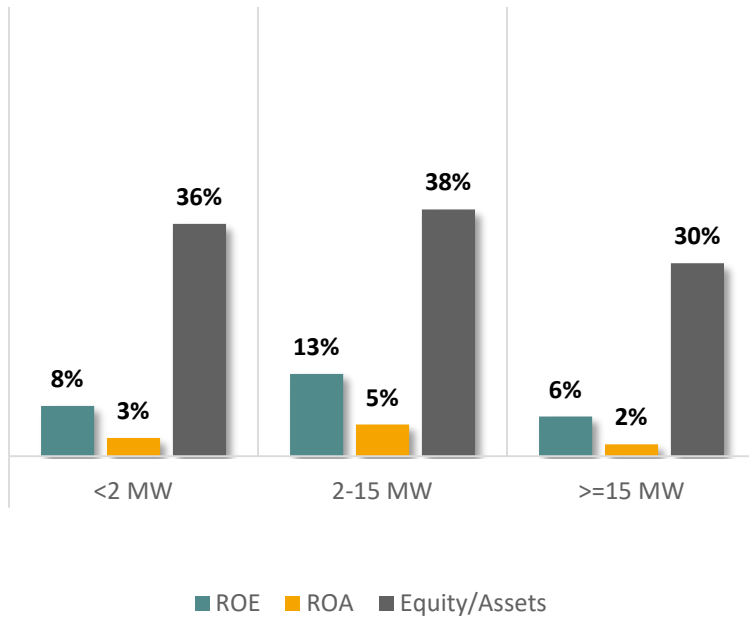
■ Revenue per MW ■ EBITDA per MW ■ EBITDA Margin %

□ The information is provided excluding data of the regulatory state hydropower plants (HPPs) and thermal power plants.

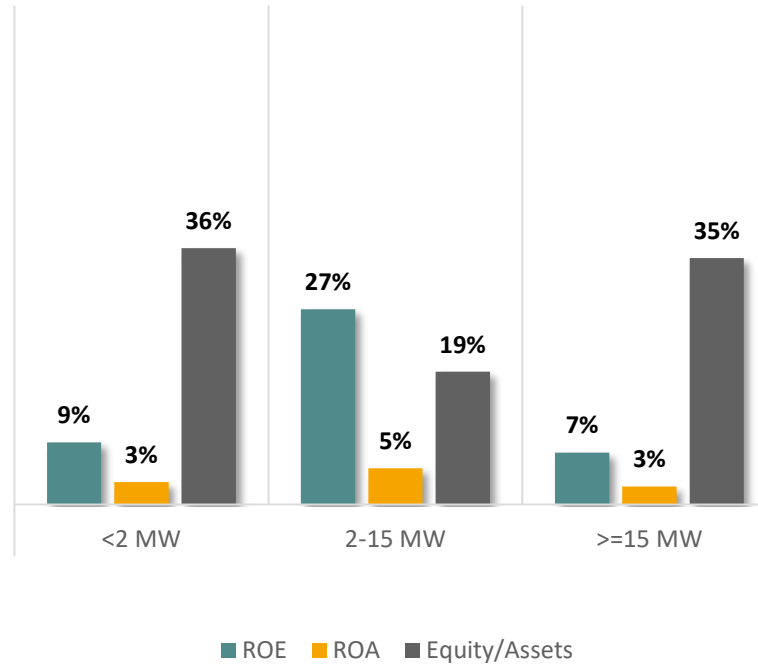


# HPPs Typically Use an Average of 30% to 38% of Equity for Financing Assets

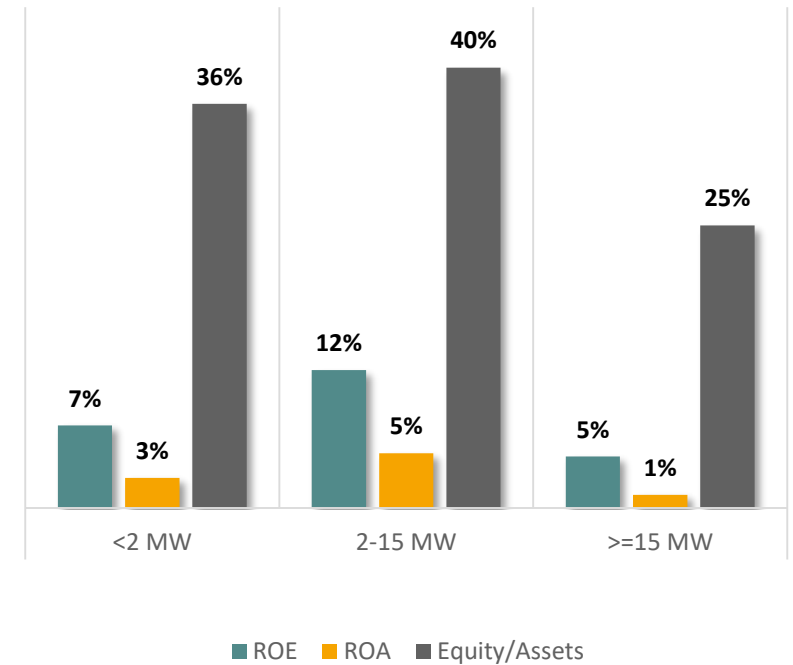
HPPs Consolidated Information (06/2023)



HPPs Under Construction (06/2023)



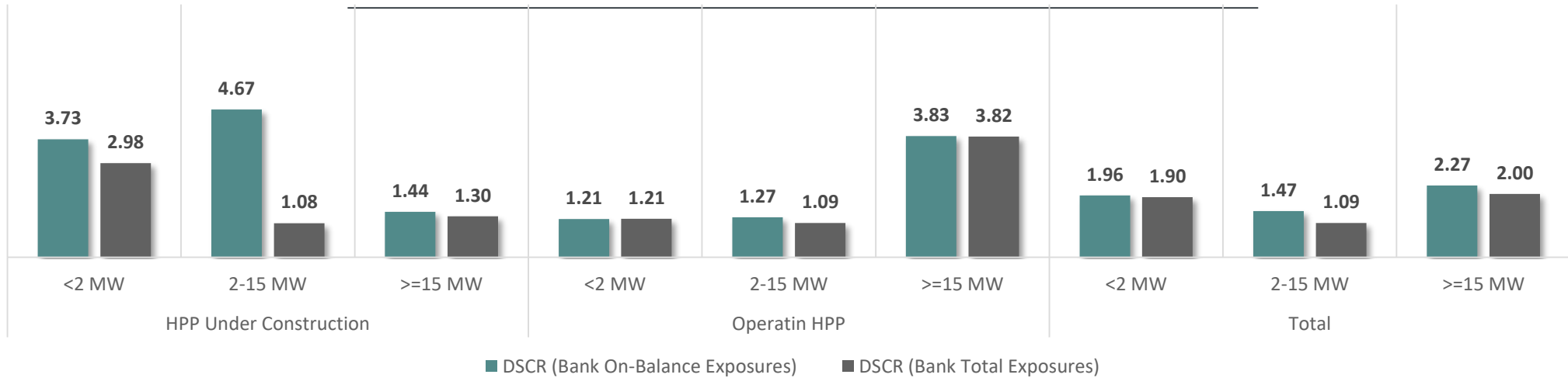
Operating HPPs (06/2023)



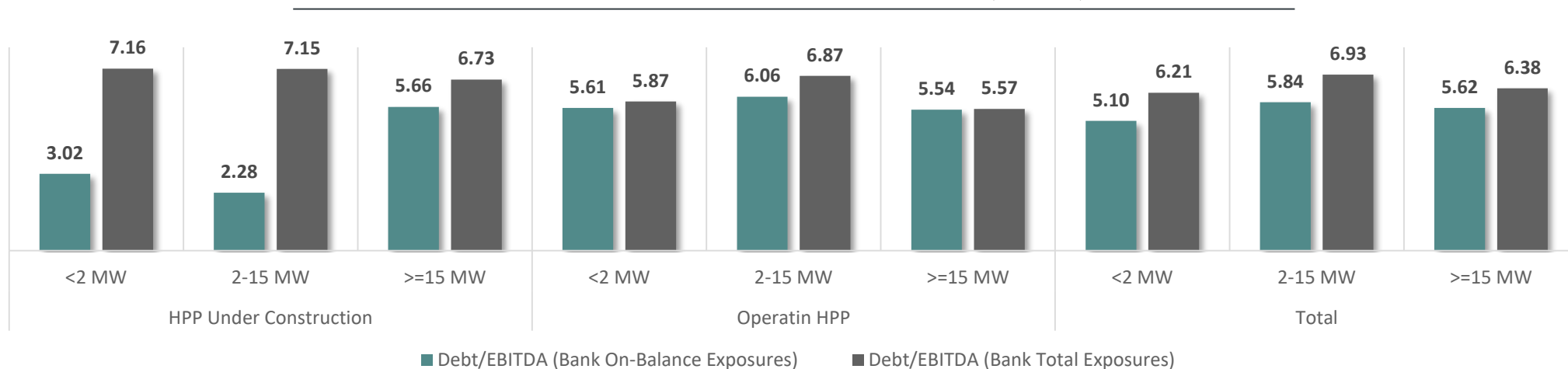
□ The information is provided excluding data of the regulatory state hydropower plants (HPPs) and thermal power plants.

# From a Supervisory Perspective, the Solvency Metrics of Borrowers Within the Energy Sector Meet Satisfactory Thresholds

Borrowers DSCR Ratios by Type of HPP (06/2023)



Borrowers Debt/EBITDA Ratios by Type of HPP (06/2023)



# The National Bank of Georgia's vision and implemented supervisory changes

A high share of the energy sector's credit portfolio in the total credit portfolio also contributes to financial stability and reduces its cyclicity;

The sector was considered hedged against foreign currency risk and the capital requirement for commercial banks lending to the energy sector was eased.

The National Bank of Georgia promotes sustainable financing. A taxonomy of sustainable finance was published and one of the main subcategory is renewable energy;

By December 2023, green loans issued under the taxonomy totaled around 881 million GEL, with 65 percent allocated to the renewable energy sector.

## Key findings of the research

■ Sector lending is characterized by stable growth rates, low credit risk and high dollarization;

■ Analysis of costs and valuations per 1 MW of under construction HPPs revealed that banks valuations and actual costs are generally in line. The expenditure for Installed 1 MW of capacity amounts to an average of 4.5 million GEL;

■ Detailed analysis of borrowers revealed that the results of the P90 scenario assessed by the banks more closely estimates the actual generation than the P75's, which in some cases exceed the actual generation;

■ EBITDA margin averages 85% in under construction HPPs and 75% in operating HPPs;

■ Solvency analysis of the energy sector indicates the sector's financial sustainability and ability to absorb shocks;

■ Compared to the countries discussed in the research, HPPs in Georgia have higher efficiency, due to the country's landscape and favorable climatic conditions.



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**Thank You for Your Attention!**

