

ROUND TABLE
Development of Small Hydropower in Kyrgyzstan: First steps taken
Bishkek, 4 February 2025

Development of Hydropower in Georgia

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**GENERAL
OVERVIEW OF
ENERGY SECTOR
IN GEORGIA**



Key Facts

Key Legislation - law on energy and water supply:

The primary law on energy and water supply establishes the general legal framework for the production, transmission, distribution, supply, and trade in the sector, as well as for natural gas transmission, distribution, supply, storage, and trade. It regulates criteria and procedures related to the electricity and natural gas sectors' management, organization, regulation, monitoring, and supervision. It also sets measures to ensure supply security and incorporates EU legal requirements into Georgia's legislation.

Key Institutions:

- **Ministry of Economy and Sustainable Development of Georgia** – Defines sector policies
- **Georgian National Energy and Water Supply Regulatory Commission (GNERC)** – Responsible for core regulatory functions, licensing production, dispatching, transmission, and distribution; tariff regulation; and dispute resolution

Electricity Sector:

- **Transmission System Operator** – JSC "Georgian State Electrosystem"
- **Electricity Market Operator** – JSC "Electricity System Commercial Operator" (ESCO)
- **Energy Exchange** – JSC "Georgian Energy Exchange" (GENEX)
- **Electricity Producers**
- **Distribution Licensees** – JSC "Telasi", JSC "Energo-Pro Georgia"
- **Exporters, Importers, and Consumers** (Direct and Retail Consumers)



Key Players and Their Roles

Ministry of Economy and Sustainable Development of Georgia

JSC "Georgian State Electrosystem"

Electricity Market Operator

Engurhesi LLC

JSC "Georgian Energy Development Fund"

JSC UES SAKRUSENERGO

State Agency of Oil and Gas

Georgian Oil and Gas Corporation

Georgian Gas Transportation Company LLC

Independent regulator: GNERC

Main Directions of Georgia's Energy Policy

- Gradual harmonization of Georgian legislation with EU legislation
- Development of local renewable energy sources
- Diversification of energy supply sources and optimal use of energy resources
- Formation of a new energy market model
- Implementation of energy efficiency measures
- Development of transmission infrastructure
- Strengthening Georgia's role as a transit country in the region
- Improving economic and competitive indicators in the energy sector
- Climate change mitigation and adaptation
- Protection of vulnerable consumers and addressing energy poverty



Georgia's Energy Policy Document and National Integrated Energy and Climate Plan

The Energy Policy Document of Georgia has been developed in accordance with Article 7 of the Law of Georgia on Energy and Water Supply and the Energy Community Regulation

The National Integrated Energy and Climate Plan combines the country's energy and climate development visions, sets goals and defines measures to achieve these goals

The plan defines target indicators, that Georgia has undertaken to achieve by 2030:

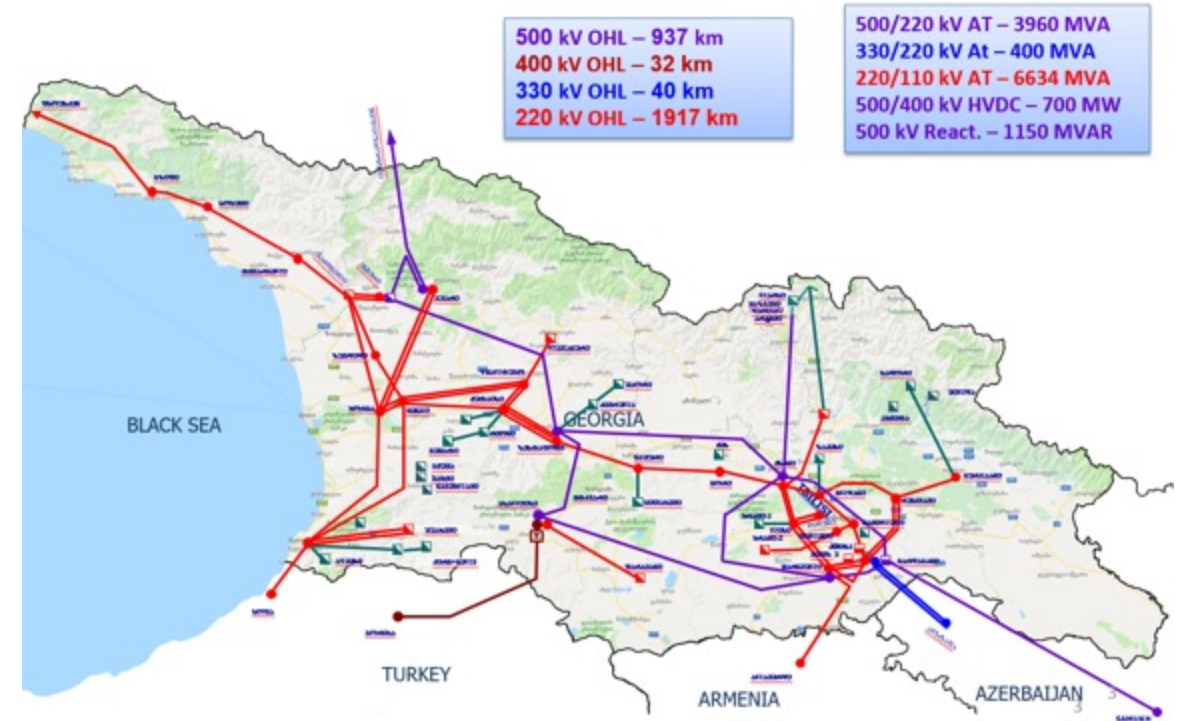
- 27.4% share of renewable energy in total final consumption
- 47% reduction in greenhouse gas emissions
- Increasing energy efficiency (primary energy consumption - 5.45 Mtoe, final energy consumption - 5.0 Mtoe)
- Increasing energy security

In March 2024, the National Environmental Agency issued a positive recommendation to approve the documents

On June 27, 2024, the Parliament of Georgia approved the State Energy Policy of Georgia and its annex, the National Integrated Energy and Climate Plan

Energy Security and Regional Aspects

- Energy security is a national security priority that influences the country's social, economic and political environment
- Improving energy security requires rapid infrastructure and energy efficiency development to bridge the gap between demand growth and local supply capabilities
- Georgia plays a crucial role in the South Caucasus energy transit corridor, contributing to the EU's energy security through the **South Caucasus Pipeline (SCP)**. Its strategic location allows its power transmission network to function as a transit hub between **East-West and North-South corridors**.



Black Sea Submarine Power Transmission Line

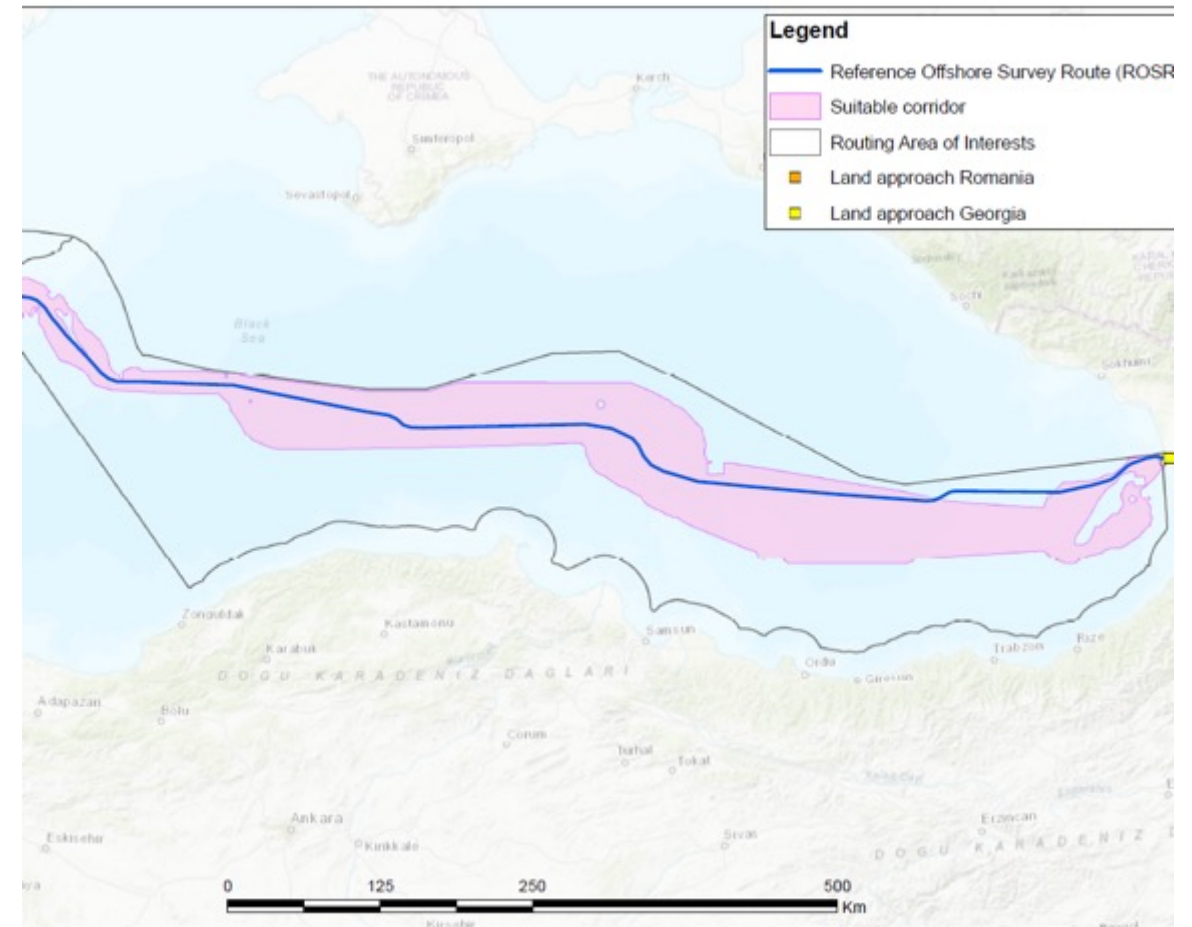
- The **technical and economic feasibility study** was completed in **July 2024** (The project is technically and economically feasible and promising)
- An agreement on establishing a **joint enterprise** was signed on **September 3, 2024**
- **Geological and geophysical studies** of the Black Sea seabed are planned for **2025**

Project Impact:

- Strengthens Georgia's position as a reliable energy partner for the EU
- Enhances Georgia's role in ensuring European energy security

Project details:

- **Total length:** 1,155 km (including **1,100 km** under the Black Sea)
- **Transmission capacity:** **1,300 MW**



Georgia's electricity balance

Installed Capacity of Georgia's Energy System - 4,600 MW

 Hydropower Plants: 3,398 MW

 Wind Power Plants: 20.7 MW

 Thermal Power Plants: 1,181 MW

Installed Capacity (MW)	
Regulating Hydropower Plants	2,386.89
Seasonal Hydropower Plants	1,011.63
Thermal Power Stations	1181
Wind Power Station	20,7

Supply Structure, 8 Months of 2024	
HPP	14%
Wind Power Station	1%
Regulating Hydropower Plants	41%
Seasonal Hydropower Plants	33%
Deregulated Hydropower Plants	7%
Total Import	4%



Georgia's electricity balance

Electricity Balance (2024 Data, excluding Dec)

- **Generation:** 12,5 billion kWh
- **Local Consumption:** 9.66 billion kWh
- **Imports:** 0.47 billion kWh
- **Exports:** 1.04 billion kWh
- **Transit:** 0.75 billion kWh

New Hydropower Plants Construction

In 2013-2024 63 HPPs built with a total installed capacity of 773 MW, including:

2020 - 6 HPPs, with a total installed capacity of 24 MW

2021 - 5 HPPs, with a total installed capacity of 20.5 MW

2022 - 10 HPPs, with a total installed capacity of 26.7 MW

2023 - 5 HPPs, with a total installed capacity of 8.2 MW

2024 - 3 HPPs, with a total installed capacity of 50 MW

Hydropower Plants Commissioned in 2024

Hydropower Plant	Municipality	Installed Capacity (MW)	Avg. Annual Generation (GWh)	Investment (Million \$)
Dageti HPP	Bolnisi	0.8	7.1	1.4
Ajarneti HPP	Zestafoni	0.8	5.8	1.6
Chiura HPP	Oni	14.2	68.4	14
Lukhuni 2 HPP	Ambrolauri	17	86.5	23
Total		32.8	167.8	40

Hydropower Plants to be Commissioned in 2025

Hydropower Plant	Municipality	Installed Capacity (MW)	Avg. Annual Generation (GWh)	Investment (Million \$)
Skurhesi HPP	Khelvachauri	1.82	11.38	2.47
Vale HPP	Akhaltzikhe	1.83	9.91	3.0
Digomi HPP	Tbilisi	11.26	62.8	20.925
Basra 1 HPP	Ozurgeti	1.98	11.7	3.2
Basra 2 HPP	Ozurgeti	1.97	16.7	3.2
Basra 3 HPP	Ozurgeti	1.96	11.595	3.92
Roshka 4 HPP	Dusheti	0.93	4.26	1.9
Kodaliskali HPP	Akhalkalaki	0.9	5.51	0.54
Mtkvari HPP	Akhaltzikhe	54.1	268.0	115.0
Goginauri HPP	Shuakhevi	4.72	18.7	4.72
Jaghori-Nashumi HPP	Mestia	1.8	8.8	2.4
Stori 1 HPP	Telavi	33.6	150.0	50.85
Total		116.87	579.355	212.125

Planned (2025): 16 HPPs with a total capacity of ~150 MW

Construction of new power plants

Active Agreements on Power Plant Construction:

- **Total active contracts: 278**



Hydropower Plants: 208 contracts (1,733 MW, **8.62 billion kWh**, **\$2.66 billion** investment)



Wind Power Plants: 28 contracts (1,402 MW, **5 billion kWh**, **\$2.45 billion** investment)



Solar Power Plants: 42 contracts (817 MW, **1.4 billion kWh**, **\$621.2 million** investment)
(*Contracts signed since 2022*)

Techno-Economic Study

Type	Quantity	Installed Capacity (MW)	Avg. Annual Generation (GWh)	Est. Investment (Million \$)
Wind	25	1274	4896.8	2287
Hydro	144	1160	5912.3	1785.5
Solar	38	805	1424.3	614.3

Construction Permit - Construction Phase

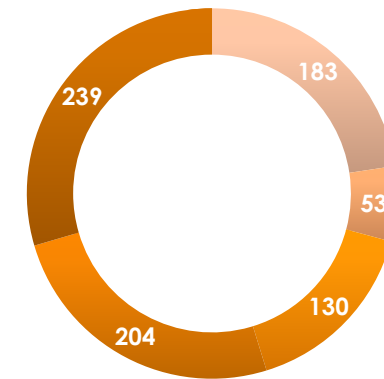
Type	Quantity	Installed Capacity (MW)	Avg. Annual Generation (GWh)	Est. Investment (Million \$)
Wind	3	128	382	182.7
Hydro	64	572	2715.8	877
Solar	4	11	17.3	6.9

* Only active contracts signed since 2022

Support Scheme – Capacity Auction (Second Round)

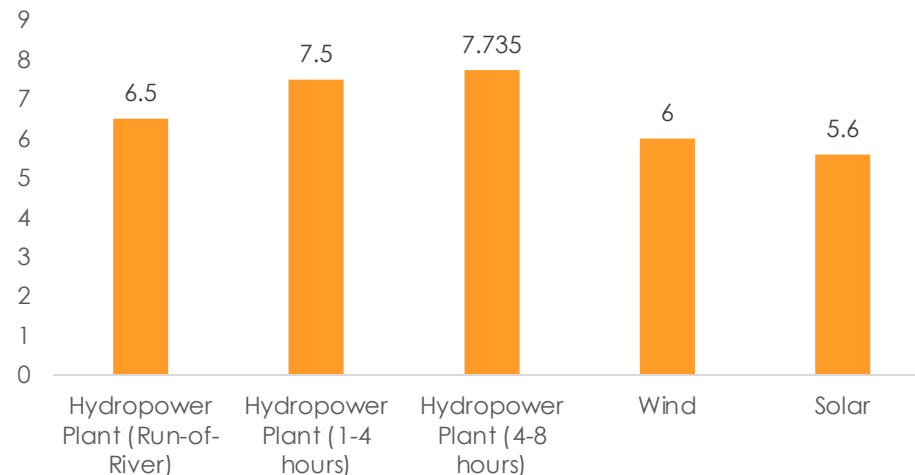
- **800 MW** auction held
- **147 bids** submitted (totalling **1,900 MW**)
- **Winners by category:**
 - **Run-of-river hydropower plants: 32 projects (183 MW)**
 - **Regulating hydropower plants (1-4 hours): 8 projects (53 MW)**
 - **Regulating hydropower plants (4-8 hours): 6 projects (130 MW)**
 - **Wind power plants: 7 projects (204 MW)**
 - **Solar power plants: 10 projects (239 MW)**

Capacity Allocated in the Auction



- Run-of-River Hydropower Plants
- Regulating Hydropower Plants (up to 1-4 hours)
- Regulating Hydropower Plants (up to 4-8 hours)
- Wind Farms
- Solar Power Plants

Median Tariff (\$ cents)



Support Scheme - Direct Negotiation

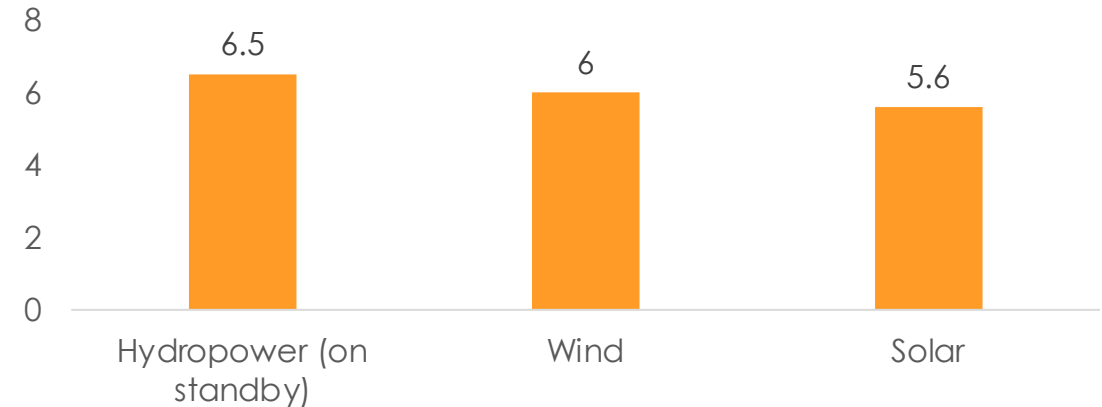


Amendments have been made to Resolution N556 of the Government of Georgia

Beneficiaries of the support scheme will have the opportunity to sign a direct agreement with the Georgian government and receive the median tariff set in the second capacity auction

The scheme will apply to existing grid-connected hydropower plants, as well as solar and wind power plants

Median fare (\$ cents)



Electricity Market Liberalization & Transmission System Operator Unbundling



Electricity Market

- **July 1, 2024:** A **transitional model** was introduced, allowing limited voluntary participation in **day-ahead and intraday markets**
- Full-scale implementation of **balancing and ancillary services markets** was postponed to **July 1, 2025**



Separation of the Transmission System Operator

Agreement on unbundling of transmission system operator:

- **Ministry of Economy** retains control over **transmission activities**
- **State Property Agency** to oversee **generation and trade activities**

**HOW IS THE
LANDSCAPE OF
THE ELECTRICITY
MARKET
EXPECTED TO
CHANGE?**



Factors shaping the future of electricity market

Objectives for achieving energy independence and promoting sustainable development in Georgia

Increased global demand on electronic appliances and electronic vehicles

Geopolitical tensions and Europe's need for energy independence

Decreased costs of solar panel installment/ technological development

Electricity exchange market

European integration

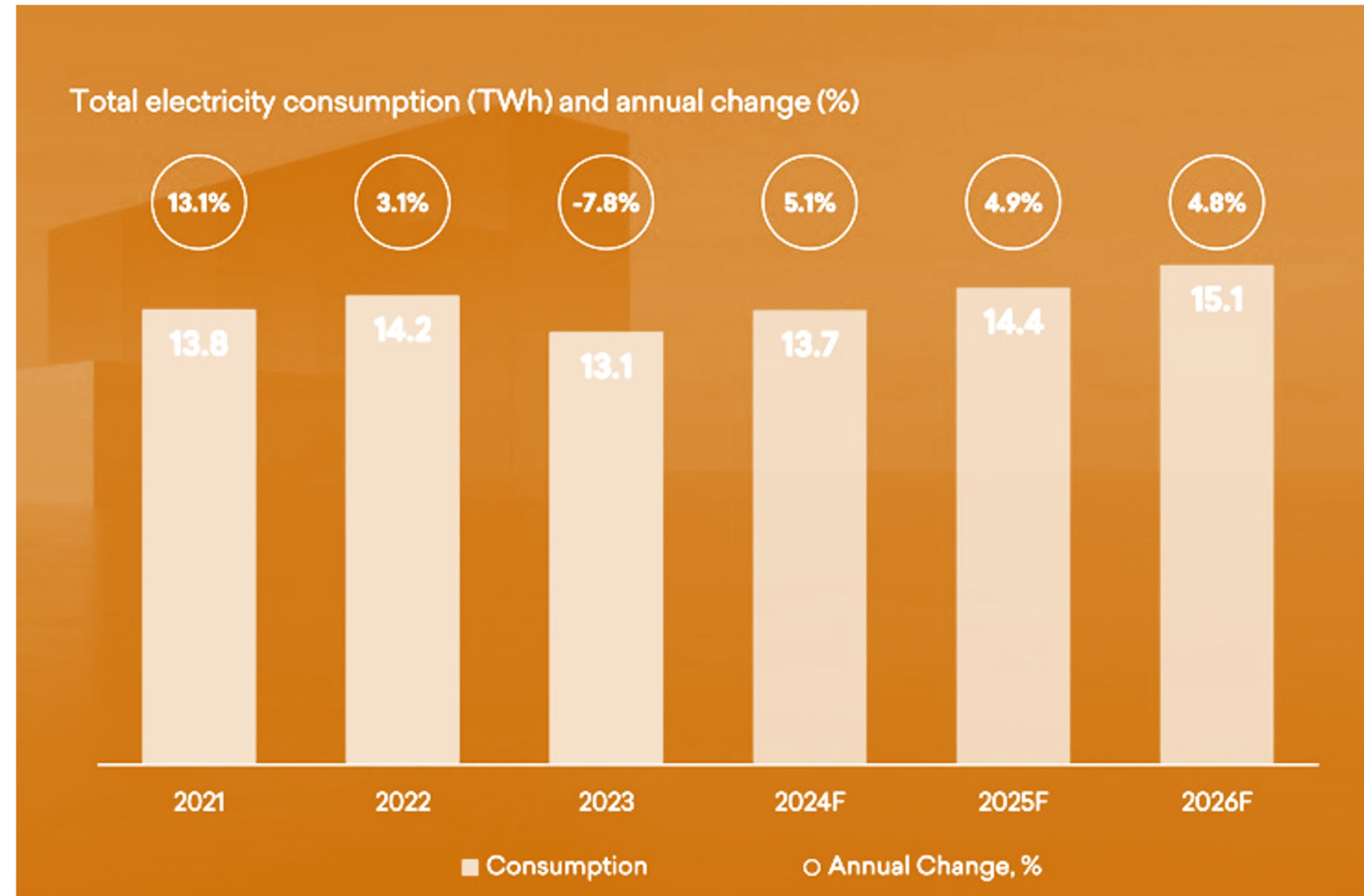
Climate change and sustainable energy policy

Energy self-sufficiency

Hight economic activity remains the main driver of the consumption

The main drivers of electricity demand:

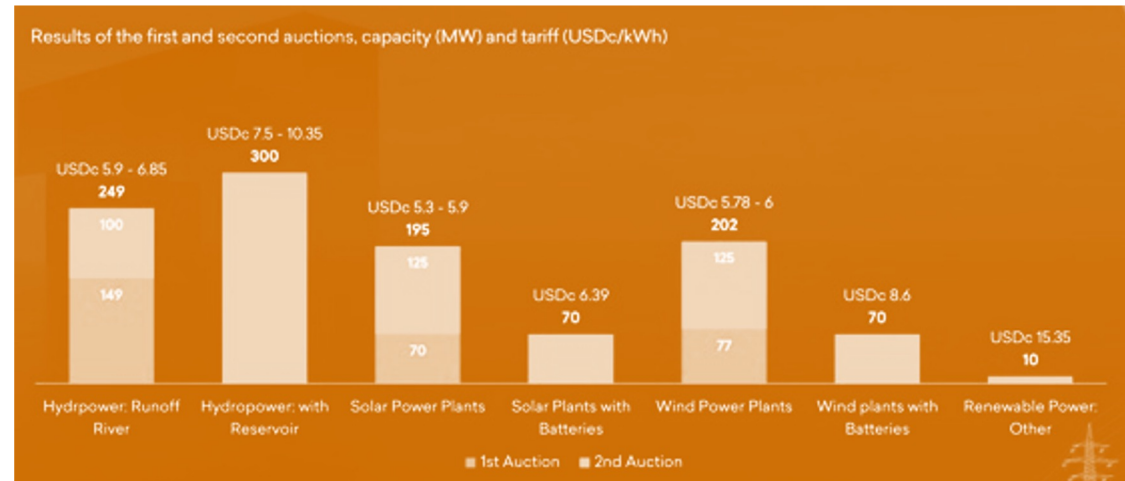
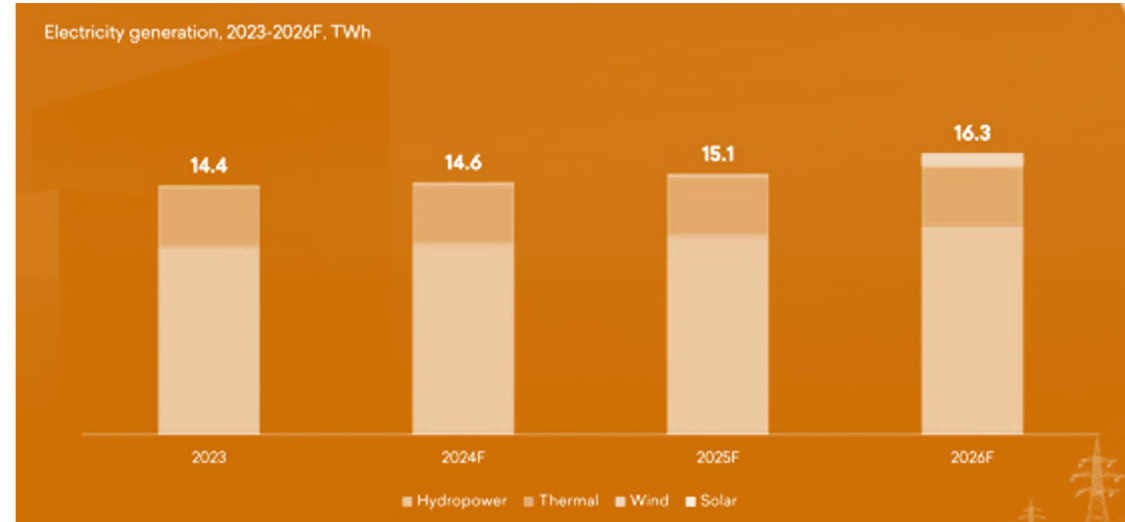
- Increase in incomes, improvement of dwelling conditions, reduction of household size, urbanization
- Increased importance of Georgia as a transit corridor
- Increased use of electronic appliances and devices
- Gradual recovery of electricity consumption of direct consumers



Future Outlook

By 2026, electricity generation will be 16.3 TWh, mainly at the expense of hydropower

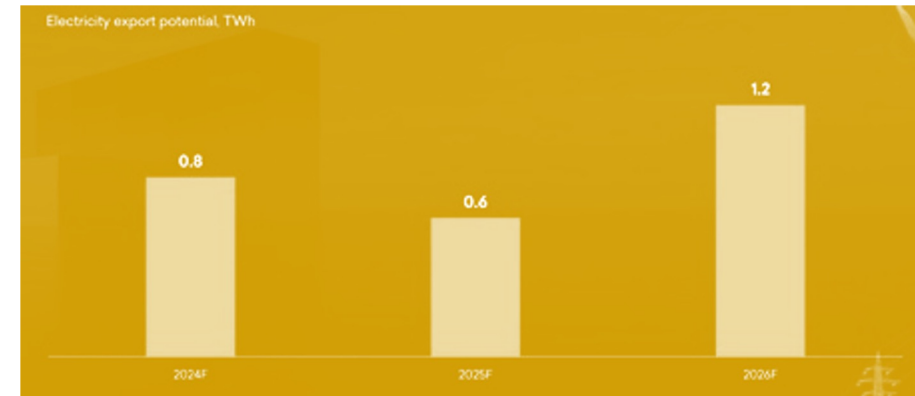
Starting from 2023, a new market incentive mechanism has been implemented, increasing investor interest in the sector. The second auction attracted even more diversified technologies to the sector



**WHAT IS THE
POTENTIAL OF
THE SECTOR?**



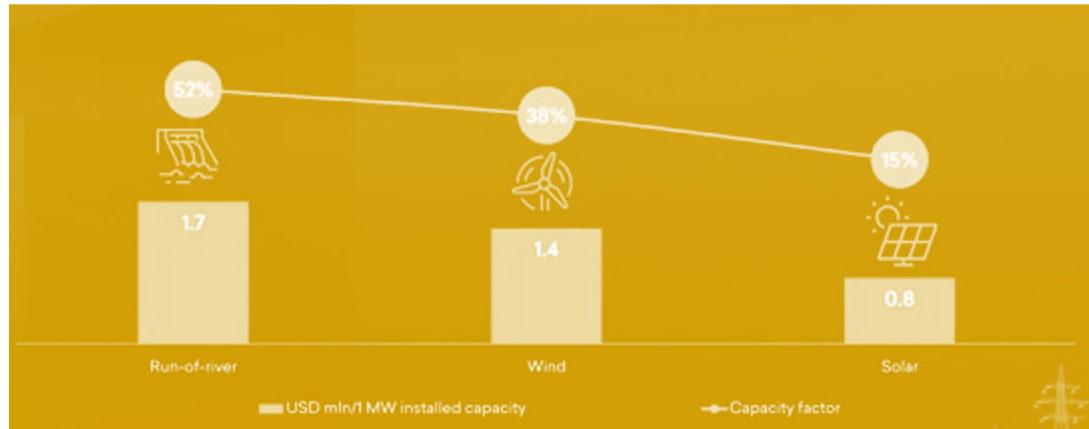
Georgia Has a Stable Interconnection With Neighbours



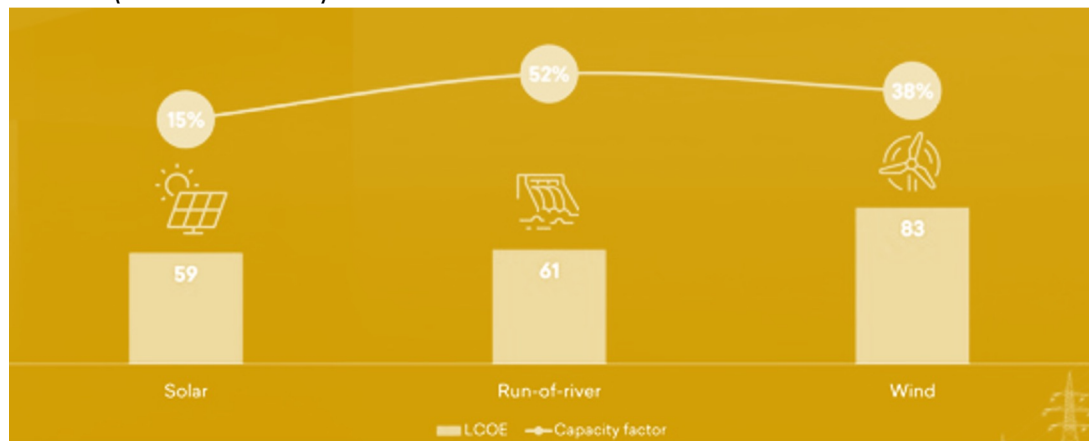
- Expansion is on the way
- 2024-2026 export potential exceeds 2.5 TWh
- The Black Sea Cable will connect Georgia to the European energy system

Why HPPs?

Construction cost of power plants per one MW installed capacity and capacity factor utilization rates (USD mln, %)

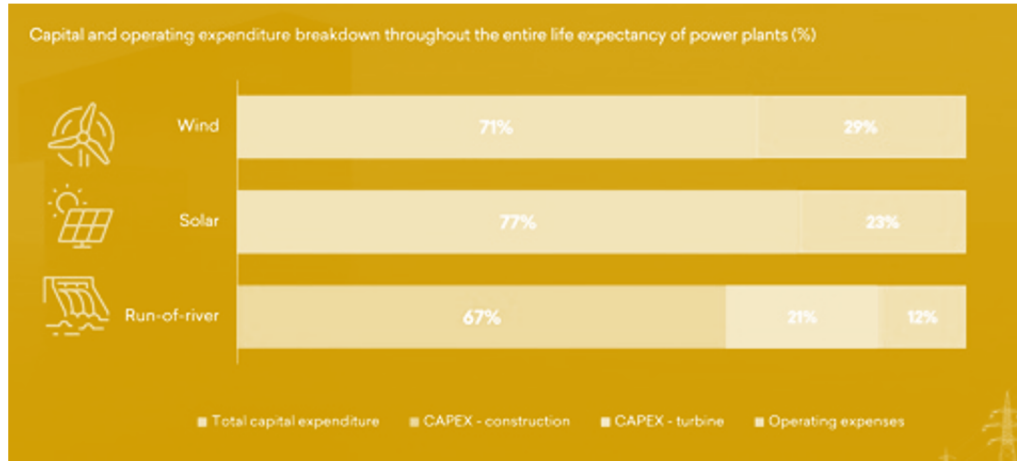


Levelized cost of electricity and capacity factor utilization rate (USD/MWh, %)



- Based on capacity factor and capital expenditures, wind and run-of-river power plants are the most attractive investment projects
- Based on the levelized cost of electricity analysis, solar and run-of-river power plants appear to be the most attractive investment projects

Why HPPs?



- Taking the varying capital intensiveness into account, run-of-river power plants require the least operating expenses as a percentage of total costs

Based on the experience of implemented and ongoing hydroelectric plants:

- Average ROE: up to **15%**
- Average payback period: **14 years**
- Average EBITDA margin: **80-85%**
- The ratio of average overspending to total planned costs: **22%**

It is important to identify potential social issues in advance and have an action plan to address them to minimize any disruption

THANK YOU



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