Future Development of Energy Sector of Georgia

Ministry of Energy of Georgia

Key Players

Ministry of Energy – Policy Implementer

Georgian National Energy and Water Regulation Commission – (GNEWRC) – Independent Regulator

Georgian State Electrosystem – (GSE)
Technical Operator

Electricity System Commercial operator – ESCO
owned by market participants

Energy Security Strategy of Georgia

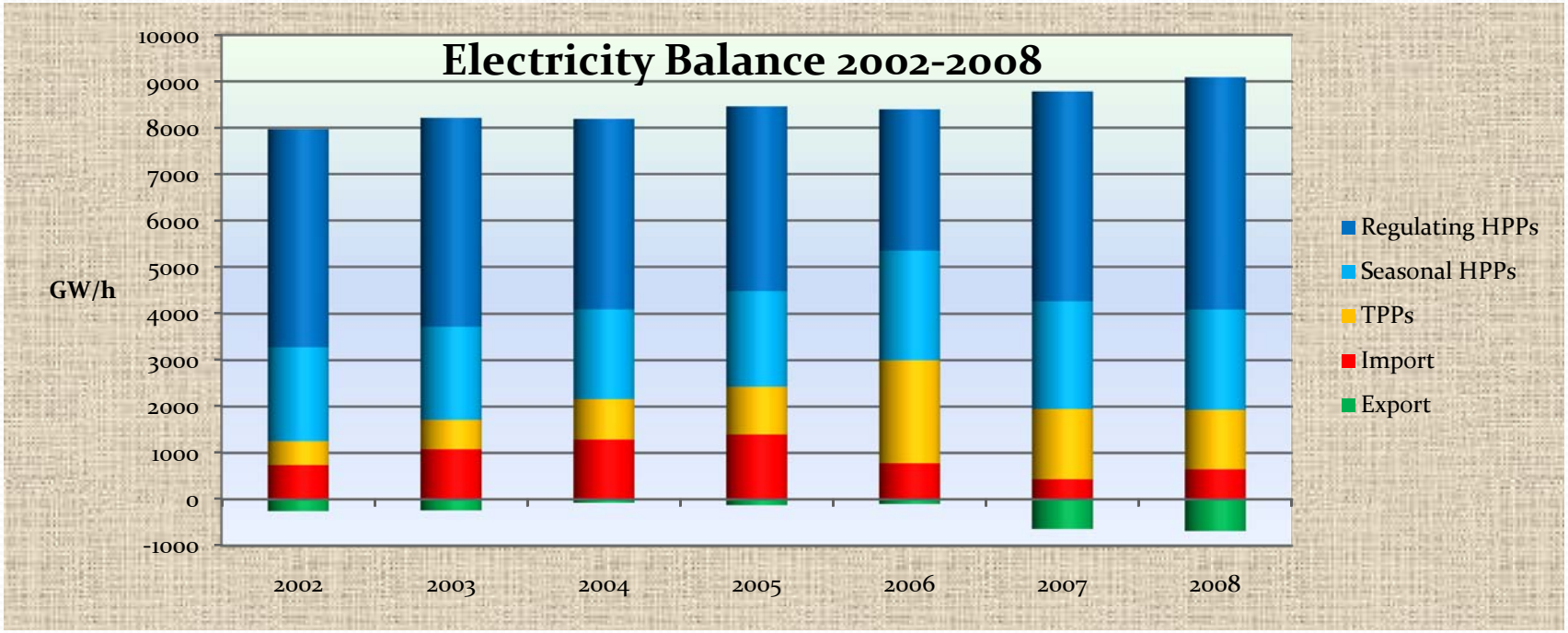
- **To ensure energy security of the country through diversification of energy sources and transit routs;**
- **To develop east-west and north-south energy transportation infrastructure in order to increase transit capacity of the country;**
- **To provide energy safety through the construction of new hydro power plants;**
- **To rehabilitate existing and construct new infrastructure for electricity transmission and natural gas transportation;**
- **To attract foreign investment in the energy sector in order to develop energy infrastructure of the country;**
- **To strengthen co-operation with the international organizations in order to contribute to acceleration of affiliation of the country in European and Euro-Atlantic organizations;**

Policy and Objectives

Maximum utilization of Hydro and other Renewable resources

Replacement of Thermal generation by Hydros and other Renewables

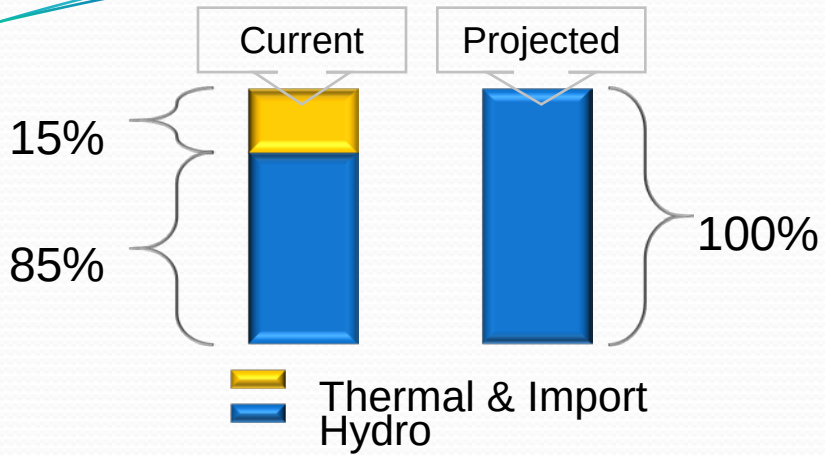
Expansion and Improvement of High Voltage Power Lines connected to the Electricity Systems of Neighboring Countries

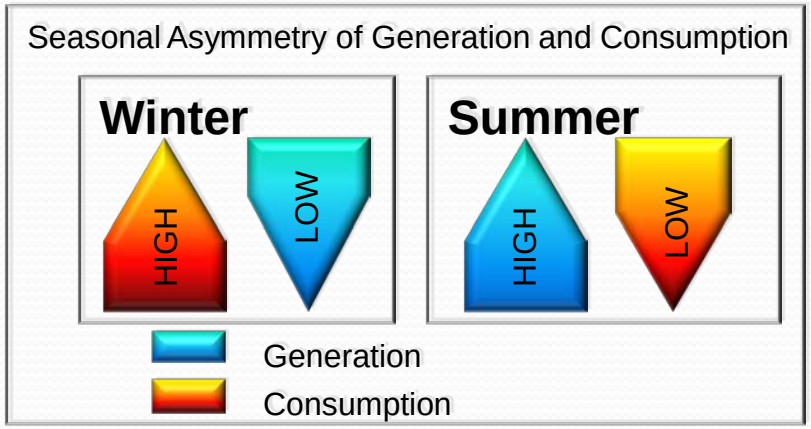


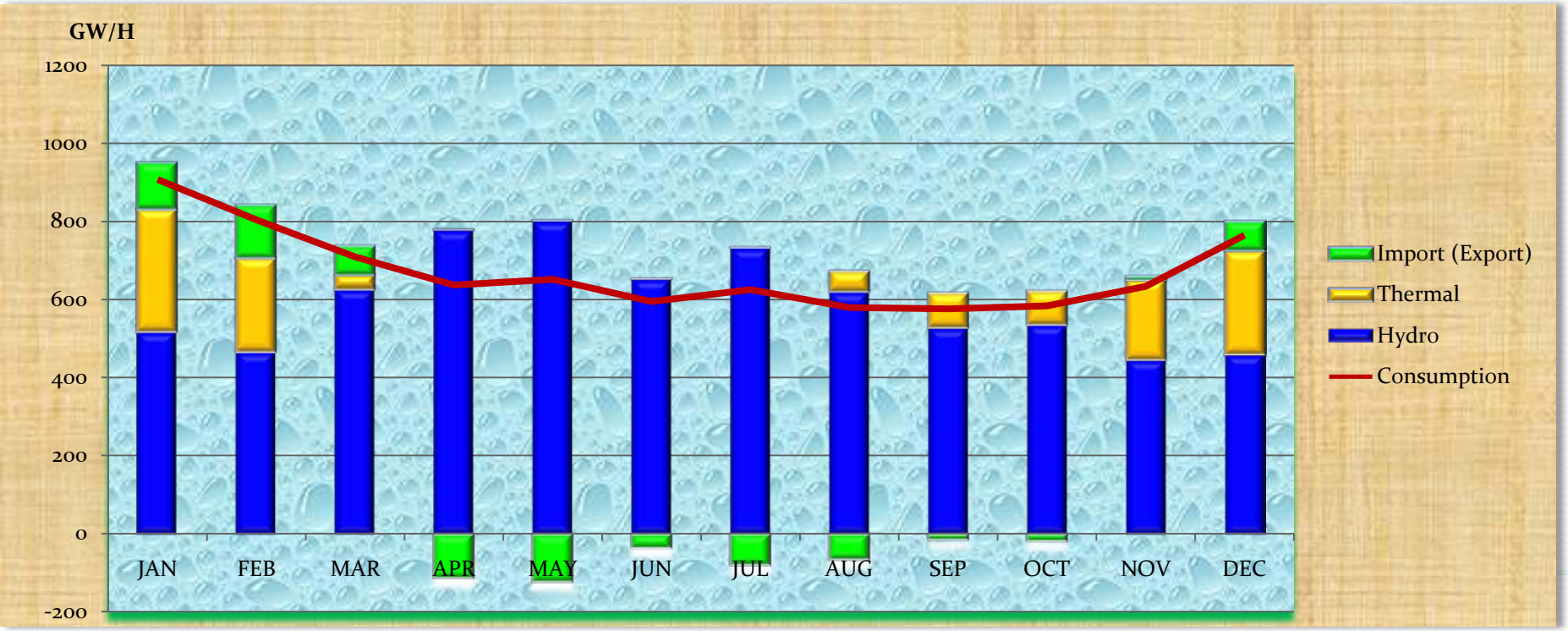
GW/h	2002	2003	2004	2005	2006	2007	2008
Export	*-252*	*-236*	*-71*	*-122*	*-96*	*-634*	*-679*
Import	*740*	*1080*	*1288*	*1399*	*777*	*434*	*649*
TPPs	*513*	*635*	*874*	*1031*	*2220*	*1515*	*1280*
Seasonal HPPs	*2026*	*2007*	*1933*	*2047*	*2352*	*2322*	*2164*
Regulating HPPs	*4686*	*4490*	*4095*	*3983*	*3049*	*4510*	*4997*

Total Domestic Generation	7225	7132	6902	7061	7621	8347	8441
Y-O-Y Growth % (Base year 2004)			0%	2%	10%	21%	22%
Total Growth from 2004 GW/h			0	159	719	1445	1539

Electricity Balance 2008







Georgian HPPs

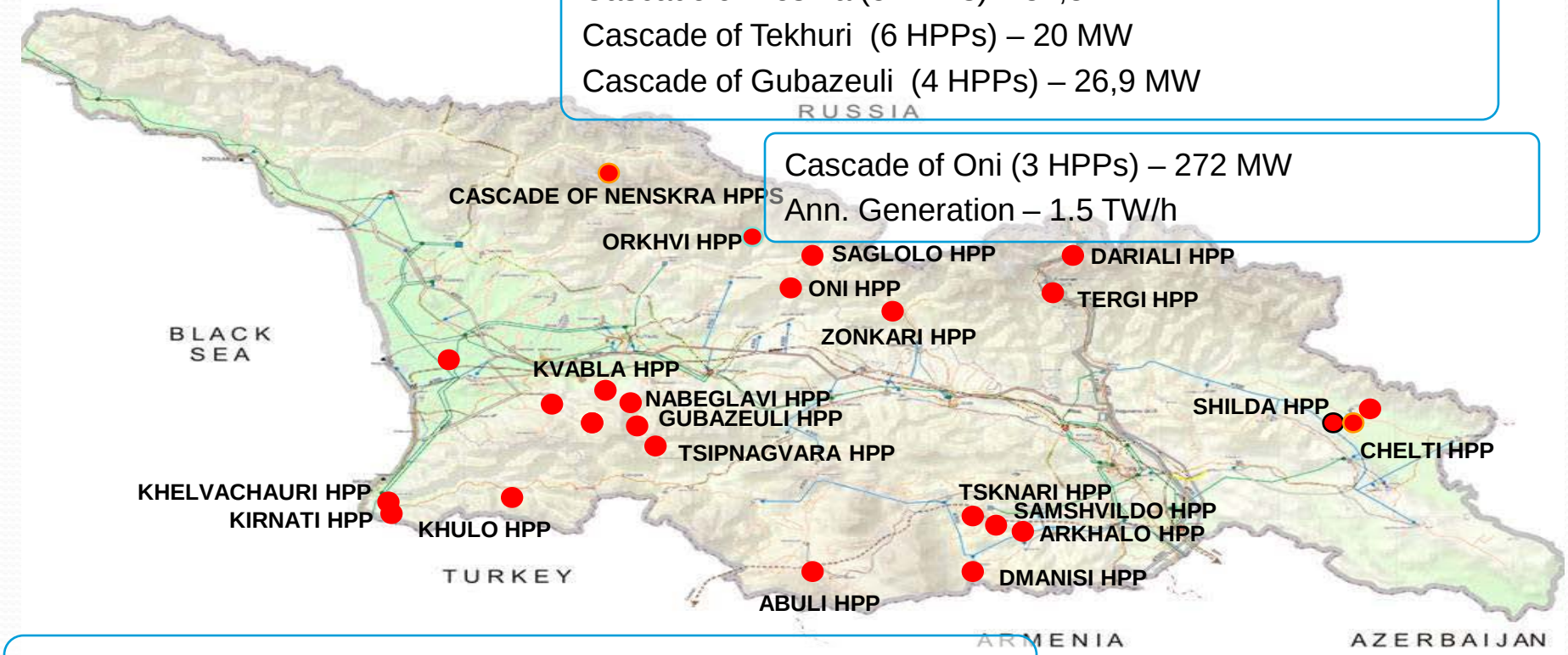
Name	Installed Capacity MW	Working Capacity MW	Annual Generation GW/h	Efficiency
Generation Total	**3,320**	**3,029**	**8,441**	**32%**
Thermal Plants Total	**710**	**660**	**1,279**	**22%**
Mtkvari Energetika(300)	*300*	*280*	*492*	*20%*
Tbilsresi (150)	*300*	*270*	*662*	*28%*
Airturbine	*110*	*110*	*125*	*13%*
Hydropower Plants Total	**2,610**	**2,369**	**7,162**	**35%**
Regulating HPP's Total	**1,991**	**1,796**	**4,998**	**32%**
Enguri HPP	*1,300*	*1,180*	*3,130*	*30%*
Vardnili HPP	*220*	*200*	*561*	*32%*
Khrami 1 HPP	*113*	*90*	*220*	*28%*
Khrami 2 HPP	*110*	*110*	*347*	*36%*
Shaori HPP	*38*	*36*	*131*	*42%*
Dzevrula HPP	*60*	*50*	*133*	*30%*
Moonlake Georgia	*20*	*20*	*60*	*34%*
Zhinvali HPP	*130*	*110*	*415*	*43%*
Seazonal HPP's Total	**618**	**573**	**2,164**	**43%**
Rioni HPP	*48*	*48*	*160*	*38%*
Gumati Cascade	*66*	*60*	*236*	*45%*
Vartsikhe Caskade	*184*	*160*	*763*	*54%*
Lajanuri HPP	*113*	*110*	*341*	*35%*
Zemo Avchala HPP (Zahesi)	*37*	*32*	*134*	*48%*
Ortachala HPP	*18*	*18*	*80*	*51%*
Chitakhevi HPP	*21*	*21*	*89*	*49%*
Atsi HPP	*16*	*16*	*54*	*39%*
Bzhuzha HPP	*12*	*12*	*59*	*56%*
Satskheni HPP	*14*	*12*	*18*	*17%*
Tetrikhevi HPP	*14*	*8*	*13*	*18%*
Khadori HPP	*26*	*26*	*95*	*42%*
Other Small HPP's (under 13MW)	*50*	*50*	*123*	*28%*

Small and Medium Hydro Projects

The Cadastre of small hydro power technical potential of Georgia's rivers includes around 300 potential places for new hydro with total capacity 4000 MW

Cascade of Neskra (5 HPPs) – 87,3 MW
Cascade of Tekhuri (6 HPPs) – 20 MW
Cascade of Gubazeuli (4 HPPs) – 26,9 MW

Cascade of Oni (3 HPPs) – 272 MW
Ann. Generation – 1.5 TW/h



Information on Potential Projects available at:

www.minenergy.gov.ge

New projects / Large Scale

Cascade of Oni HPPs

- Installed capacity – 272 MW;
- Average projected annual generation – 1,530 TWh;

Khudoni HPP

- Installed capacity – 750 MW;
- Average projected annual generation – 1,66 TWh;

Cascade of Namakhvani HPPs

- Installed capacity – 450 MW;
- Average projected annual generation – 1,6 TWh.

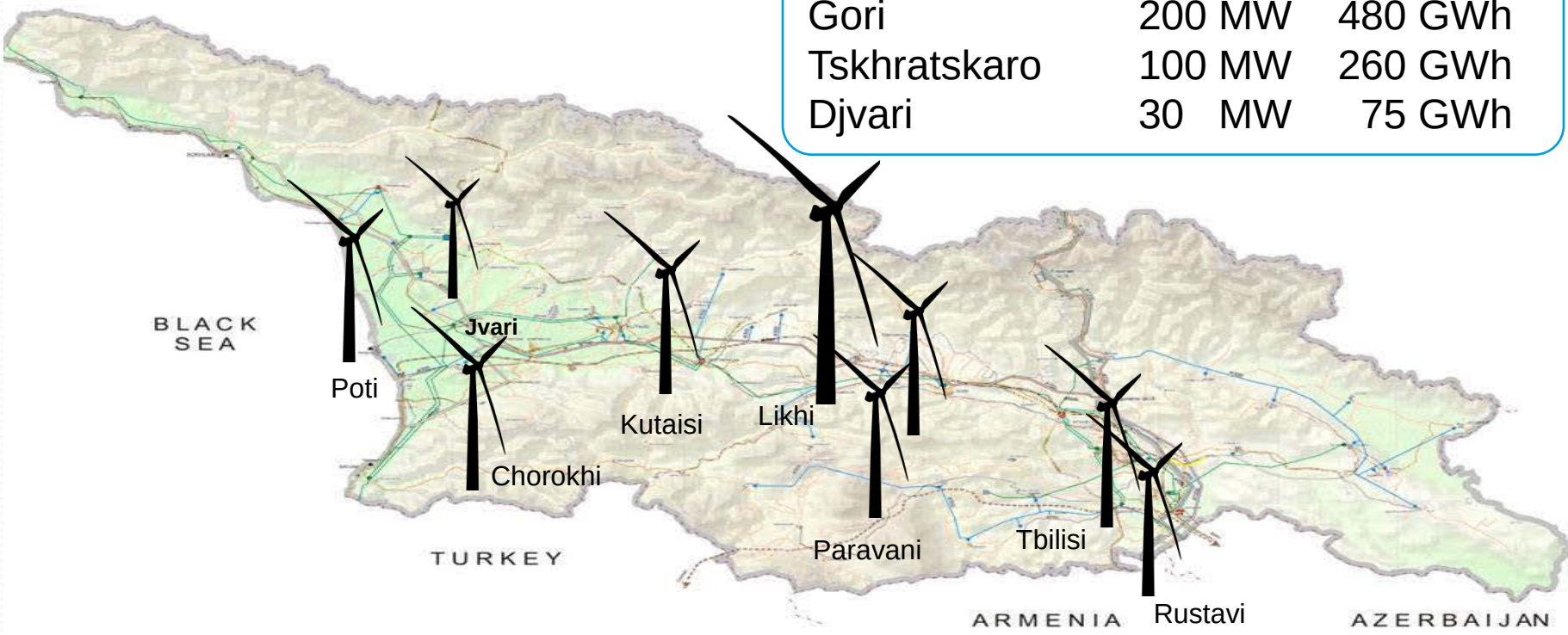
Wind Power Potential

Potential Wind Farms In Georgia

Total capacity	~ 2000 MW
Total output	~ 5000 GWh

Some of the potential windfarms:

Likhi	630 MW	2000 GWh
Kutaisi	150 MW	340 GWh
Gori	200 MW	480 GWh
Tskhratskaro	100 MW	260 GWh
Djvari	30 MW	75 GWh



Source: KARENERGO - Scientific Wind Energy Center

State Investment Program "Renewable Energy"

Small and Medium Scale HPPs (<100 MW)

- The GoG has approved the standard terms and conditions for the greenfield investments in HPPs. The Ministry of Energy has announced the solicitation of expressions of interest by investors in greenfield HPPs and other renewable energy plants under BOO structure
- A list of prospective greenfield HPP sites has been published by the Ministry of Energy on its website (www.minenergy.gov.ge). The list comprises 81 sites, with small and medium scale capacity. Most of the prospective HPPs comprising the list that are expected to be run-off-the-river facilities
- Investors interested in investing in greenfield HPPs from the list are required to submit a standard application form to the Ministry of Energy of Georgia, available on its website. Once an application is received for a particular greenfield site, the site will be marked as "Under Offer" on the MoE website, and will remain available for other investors to submit competing applications during a 30-day period. If no competing application is submitted during this period, the initial prospective investor is automatically declared the winner upon submitting a bank guarantee in the amount of US$170,000 per MW of prospective capacity, and is invited to sign a standard MoU with the Ministry of Energy, as well as other standard documentation. In the event that more than one prospective investors apply for the same greenfield site, the winner will be declared in accordance with a transparent formula assigning equal weights to the size of the bank guarantee (per MW of prospective capacity) and declared time to completion
- The winner will be able to purchase the land of the greenfield site at a nominal price following the execution of a land sale and purchase agreement (SPA) with the Mnistry of Economic Development of Georgia (MoED)

Large Scale HPPs (>100 MW)

- The GoG invites interested prospective investors to initiate discussions regarding the terms and conditions of investing in several large greenfield HPP sites, with prospective capacities ranging from 100 MW to 700 MW
- Short listed bidders shall be selected in accordance to the conditions for expression of Interest by GoG
- Winner signs the MOU with GOG and gets its support through out the whole period of investment
- The winner will be able to purchase the land of the greenfield site at a nominal price following the execution of a land SPA with the MoED

Structure of the Power Sector

Direct contracts between power producers & consumers

Balancing market – ESCO

PPA's* between HPP developers & ESCO

HPPs with designed capacity up to 13 MW deregulated

Electricity export - deregulated

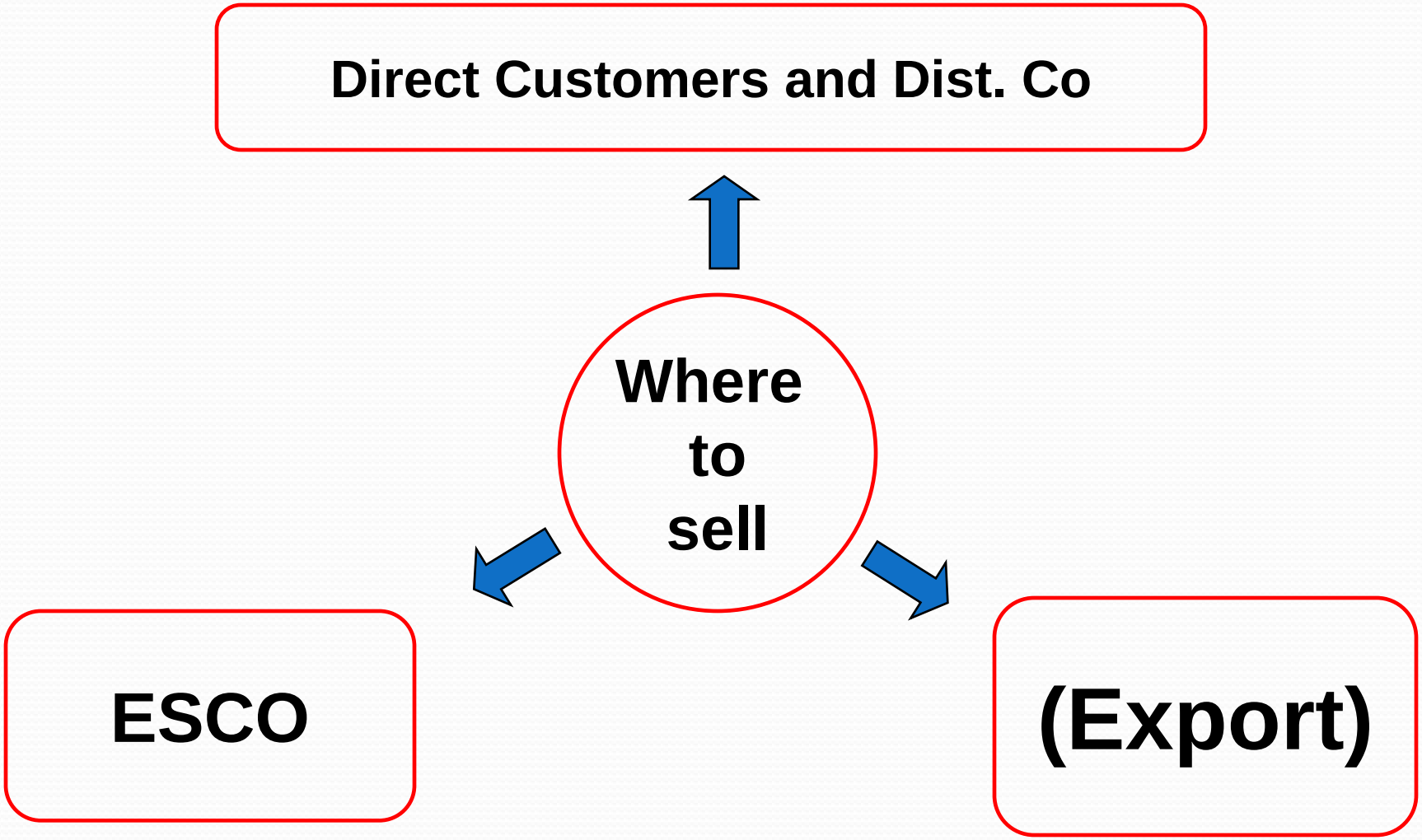
**PPA – Power Purchase Agreement*

Necessary permits, licenses and rights to construct new HPP in Georgia

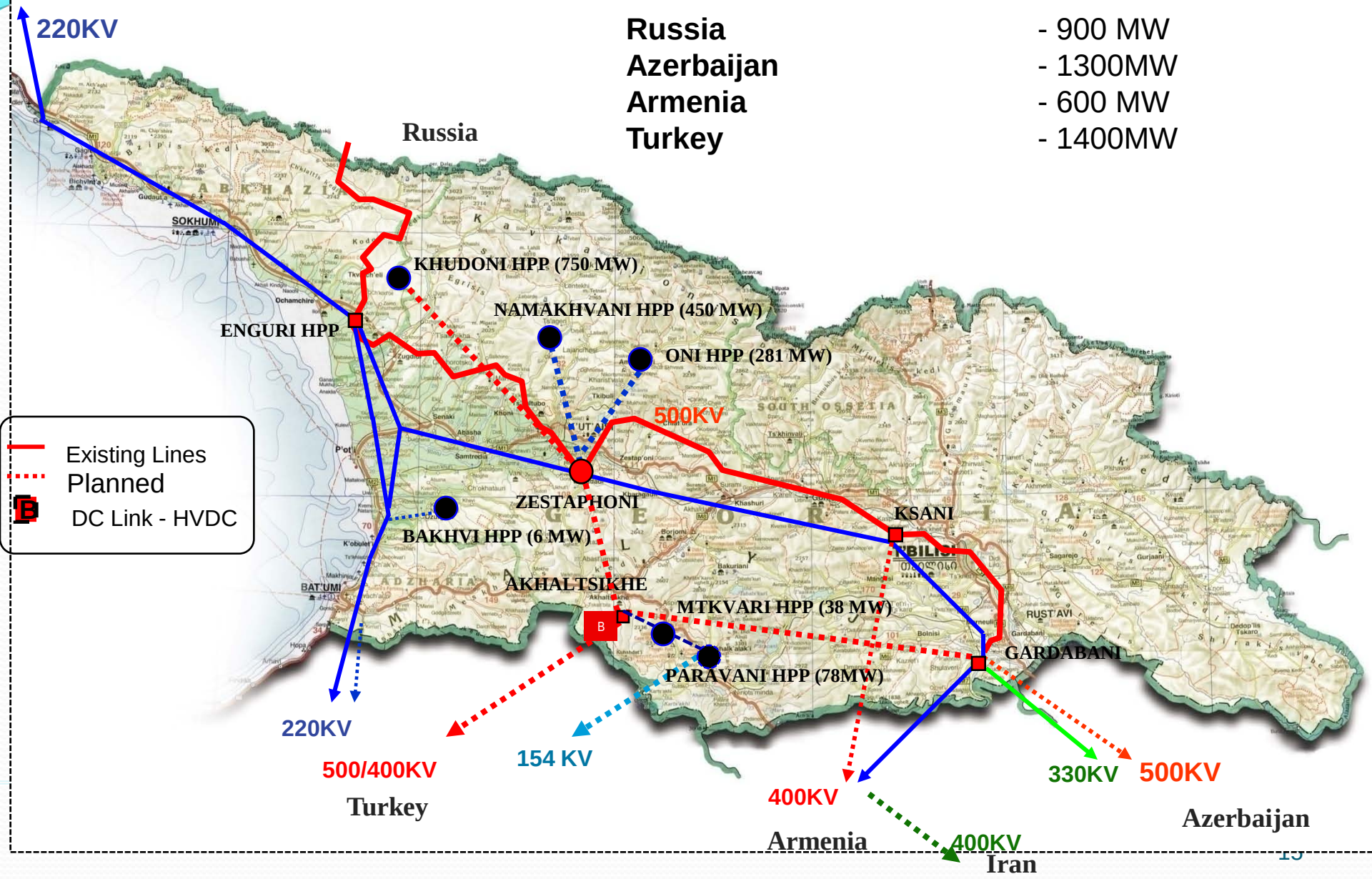
Permit or License	Issuing Authority
Acquisition or rent agreement on land	**Local authorities**
Water usage Permit	**Ministry of Environment**
Permit for construction	**Ministry of Economy**
Generation license (if above 13 MW)*	**GNEWRC**

** Hydro Power Stations less than 13mw do not need generation license*

Market Overview



Transmission Capacity of Georgia



Russia	- 900 MW
Azerbaijan	- 1300MW
Armenia	- 600 MW
Turkey	- 1400MW

Attractive Investment Environment

- ✓**Easy , transparent, fast evaluation and approval of procedures**
- ✓**BOO based offer**
- ✓**Government support through whole process of project development**
- ✓**Guaranteed power purchase for the first 10 years of operations**
- ✓**Direct Contracts and Deregulated Market Price**
- ✓**Licence free export**

Safe Investment Environment

- ✓ **Georgia – Member of European Energy Charter**
- ✓ **Georgia – Observer of European Energy Community on the way to Membership**
- ✓ **Georgia – Active Participant of European Commission Program INOGATE project**
- ✓ **Involvement in European Neighborhood Policy**

WHY the Energy Sector of Georgia?

- ✓ **Large economic HPP greenfield potential at 32 TWh**
- ✓ **Deregulated power sector with very impressive turnaround since 2004**
- ✓ **Distribution companies privatized and operating at a profit**
- ✓ **Significant existing private investment in generation assets**
- ✓ **Strong government support for developing hydropower resources**
- ✓ **Increased simplification of procedures**
- ✓ **Increasing export markets**

www.georgiahydroinvest.com
www.minenergy.gov.ge

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THANK YOU

Ministry of Energy of Georgia