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"INOGATE Technical Secretariat & Integrated Programme in support of the Baku Initiative and the Eastern Partnership energy objectives" Project

**BUILDING PARTNERSHIPS FOR
ENERGY SECURITY**

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“Capacity building for financing of EE/RES projects” under Ad Hoc Expert Facility – AHEF, provided by INOGATE New ITS Project



Georgian Energy Efficiency and Renewable Energy Business Environment

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Tbilisi, Georgia, July, 9-13, 2013**



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Key Energy Data (2011)

TPES



Total Primary Energy Supply (TPES): 3.1 Mtoe

Natural gas	41.3%
Oil	28.5%
Hydro	19.2%
Biofuels	8.9%
Coal and peat	1.8%
<u>Geothermal</u>	<u>0.3%</u>
Total	100 %

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Key Energy Data (2011)

TFC

Total Final Consumption (TFC): 3 Mtoe

Natural gas	31.5%
Oil	32.8%
Electricity	22.9%
Biofuels	10.4%
Coal and peat	2.1%
<u>Geothermal</u>	<u>0.3%</u>
Total	100 %



Key Energy Data (2011)

TFC per sector



Total Final Consumption (TFC) per sector:

Industry	31.0%
Transport	26.7%
Residential	31.3%
<u>Commercial & other</u>	<u>11.0%</u>
Total	100 %



Key Energy Data (2011)

Electricity Generation



Electricity Generation: 10.2 TWh

Hydro	77%
<u>Natural gas</u>	<u>23%</u>
Total	100%

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Why Energy Efficiency?

- Increase security of supply (political/economical issue)
- Improved competitiveness (commercial issue)
- Save scarce capital resources (management issue)
- Improved environment (social issue)



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Legal and Regulatory Framework



- Law "On Electricity And Natural Gas"
- State programme "Renewable Energy 2008"
- Law: "Georgian National Energy and Water Supply Regulatory Commission (GNERC)"
- General Directions and Guidelines - MoENR
- Renewable Energy promotion programme – managed by MoENR
- Specific areas of regulation - (GNERC) e.g -
define el. tariff methodology and tariffs;
setting el. Supply/consumption rules, Licensing
generation, transmission and distribution;
conflict resolution; etc .

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Key Georgian Policies

“Main directions of State Policy in the Power Sector of Georgia”

(enacted in 2006, not updated since)

- Energy security
- Development of renewable energy sources
- Decreasing energy import dependency
- Creating attractive investment climate to encourage energy sector investments
- Liberalizing electricity market
- Cooperation in developing cross border trade in electricity and market convergence
- Establishing measures for energy efficiency



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Key Georgian Policies



- Observer to Energy Community (EnC) since 2007
- End of 2012: Applied to join EnC
- High aspirations to join EnC and to agree on a DCFTA and PCA with EU

DCFTA – Deep and Comprehensive Free Trade Agreement
PCA – Partnership and Cooperation Agreement



Prompt Action Required to Support Serious Intention

- Urgent need to take responsibility and leadership to develop and align legal framework.
- Establish a roadmap for accession to EnC.
- Most important: Align environmental, RES and EE laws with international commitments and EU acquis.



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RES and EE Status-quo

Georgia:

- Vast renewable energy sources
- Predominant use of hydropower (63%), then biomass (13%)
- Developed hydropower capacity accounts for 18% only
- Hydro power plants (HPPs) provide up to 80% of electricity
- Meets 100% of own electricity demand in summer
- In colder months dependent on natural gas imports both for heating and electricity generation
- Wind and solar potential not fully assessed



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Overlooked Opportunities

Georgia:

- Has not explored its EE potential in
 - building sector
 - industry sector
 - transport sector
- No legal framework to support EE
- Government preparing RES law but not EE
- EE law: Good basis for developing demand side policies and EE
 - Less loss in gas and electric distribution networks
 - More metering of household and industry consumption
- Demand side EE: High untapped potential
- Loss reduction potential in transmission and distribution systems



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Kyoto Process

Georgia:

- Signed Kyoto Protocol in 1999
- Has potential to attract investment through Clean Development Mechanism (CDM)
- CDM hardly being used
- Very little political support for CDM projects
- UNFCCC records:
 - 11 CDM projects under consideration
 - 10 projects under validation
 - 3 registered or pending registration



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Main Barriers to Implementing CDM Process, Identified

- Weak market infrastructure
- Inaccessibility of data to construct baseline scenarios
- Small potential of CDM projects
- Despite its international commitment under Kyoto, Government of Georgia has not
 1. assessed national emission and air pollution performance.
 2. No plans in place for sustainable development up to 2020 and 2030.

Common Barriers Preventing EE Investments



- Focus on core business and short term objectives
- Energy bill a small portion of cost base
- Poor capital planning tools to prioritise investments
- No corporate planning for future tariff increases or environmental obligations (e.g., on emissions).
- No in-house expertise to assess EE/RES projects.
- Lack of information on options and financial reward
- Separated responsibility for energy expenditures and conservation.
- Residential sector barriers:
 - Low awareness of benefits (financial and comfort)
 - Weak installation capacity
 - Long pay-back periods
 - Disagreement and widely varying credit capacity among apartment dwellers

Energy Price Comparison: Georgia to EU



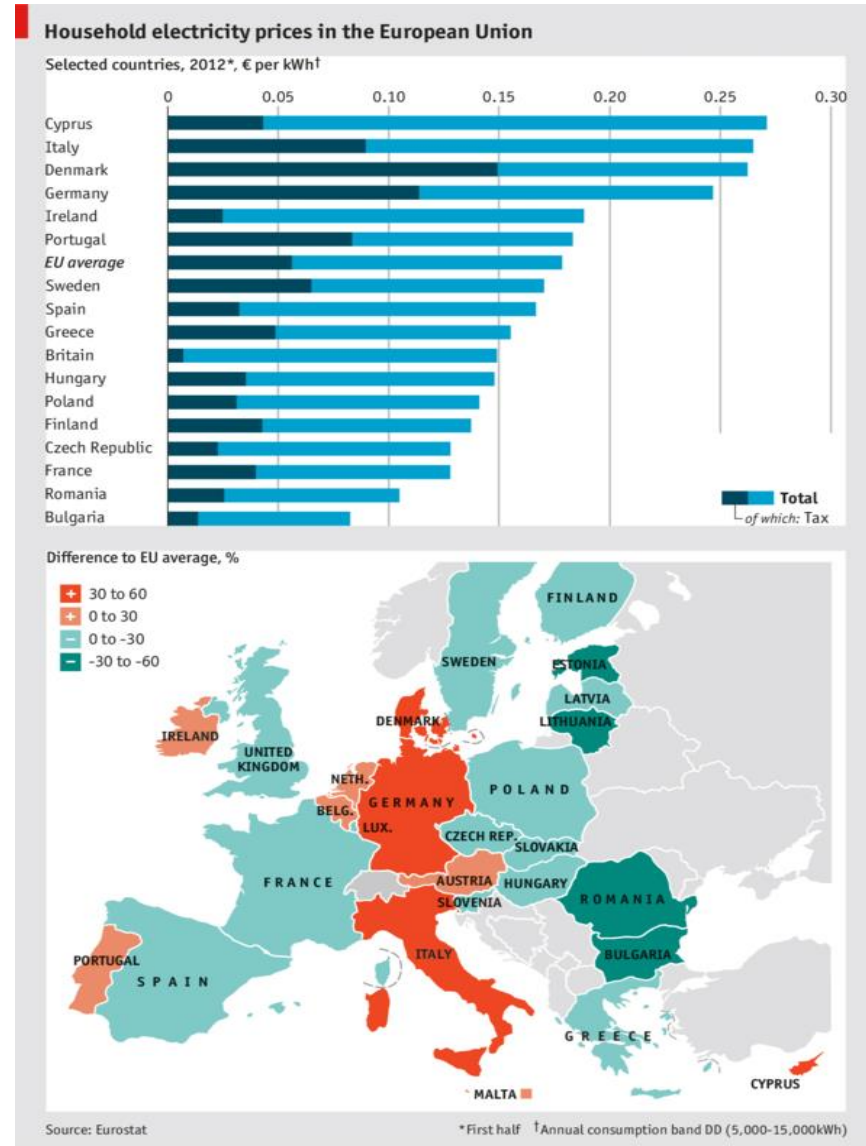
Electricity - Household
 EU average 17.4 € cent/kWh
 Georgia 7.6 € cent/kWh

Electricity - Industry
 EU average 10.0 € cent/kWh
 Georgia 4.7 € cent/kWh

Gas - Household
 EU average 5.8 € cent/kWh
 Georgia 2.3 € cent/kWh

Gas - Industry
 EU average 4.2 € cent/kWh
 Georgia 1.8 € cent/kWh

1m³ gas = 10 kWh



Source: Eurostat * First half † Annual consumption band DD (5,000-15,000kWh)
 Economist.com/graphicdetail

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Financing Available for EE/RE Projects



- **EBRD** - CEEP I and CEEP II: \$105 M in total with permanent technical assistance
- **KfW** - Renewable Energy credit line €15 M with ad hoc technical assistance
- **Austrian Development Bank** - €15 M with ad hoc technical assistance
- **IFC** - Residential EE credit line - €14 M

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EE and RES Technologies Applicable for Funding in Industry



Industrial Energy Efficiency Investments		Renewable Energy Investments
On site cogeneration of heat and electricity	Rehabilitation of steam distribution systems	Wind farms
Rehabilitation of boilers	Process heat recovery	Run-of-river hydro plants
Replacement of old gas boilers with condensing boilers	Absorption chillers/new chillers	Solar hot water systems for processes or heating
Switch from electric heating to fuel based direct heating	Energy management systems or building management systems	Biomass systems generating heat only or heat and electricity
Process improvements including enhanced controls	Variable speed drives on select electric motors	Gas engines using biogas
Rehabilitation of compressed air systems	Rehabilitation of power distribution systems	Diesel engines using biodiesel

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EE and RES Technologies Applicable for Funding in Built Environment



- Insulation of building envelope
- Double-glazed windows
- Efficient heating boilers
- Solar water heaters
- Efficient ventilation and air-conditioning systems
- Geothermal heat pumps
- Modern illumination systems

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Thank you



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