

**ENERGY EFFICIENCY CENTRE GEORGIA**

# **CDM as Instrument for Industrial Development and Poverty Alleviation in Caucasus"**

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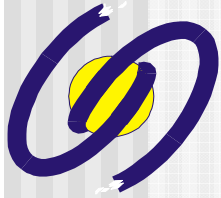
**Small Hydro Plant  
at Enguri HPP  
Georgia**



**Gross Energy Ltd.  
ENERGY EFFICIENCY CENTRE GEORGIA  
*LIANA GARIBASHVILI*  
27 March, 2008  
Tbilisi, Georgia**

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**ENERGY EFFICIENCY CENTRE GEORGIA**

## **Small Hydro Plant at Enguri HPP**

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**Project Consultant: Gross Energy Ltd**

**Applicant: To be defined (ERPA will be negotiated after investor is finally determined)**

**Project Location:**

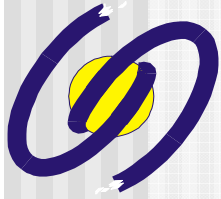
**Samegrelo-Zemo-Svaneti Region, Georgia**

**Project consultant background:** company founders are leading energy specialists, financial experts, engineers and executives with vast experience in research and design. Together with Norwegian Company ECON prepared the pre-feasibility study for 14 sites. In addition prepared technical-economic studies for 35 small and medium size HPPs

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## Small Hydro Plant at Enguri HPP

**Project activities:** Construction of 10 MW HPP with annual production 74 mln kWh electricity. Estimated annual revenues:

3 various alternatives have been considered:

Electricity tariff -0,05 USD - 3,700.000 USD

Electricity tariff -0,04 USD - 2,960.000 USD

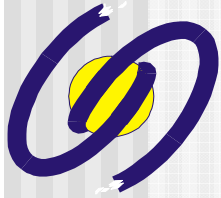
Electricity tariff -0,02 USD - 1,480.000 USD

### **Project objective:**

The project is a small HPP with installed capacity 10 MW located in Samegrelo-Zemo-Svaneti Region, Jvari district, Georgia. The purpose of the project is to dispatch renewable electricity to the national grid or directly to end-users thus improving energy supply of the agricultural region.

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## Small Hydro Plant at Enguri HPP

### CERs generated by the project:

Average annual capacity kW	Expected Annual Generation kWh	Baseline Emission Factor ( $EF_y$ ) (kg CO <sub>2</sub> / kWh)	Emission Reductions (tons of CO <sub>2</sub> )
10,000	74,000,000	0,3839	28,409

**Emission Reductions for 10 years crediting period -284, 090 tCO<sub>2</sub>**

### Project Implementation:

Preparation – 2008

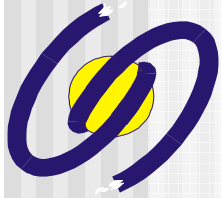
Physical implementation – 1 year

Status of the project: PIN, pre-investment study

carried out for the Ministry of energy, interested

investors identified.





## Small Hydro Plant at Enguri HPP

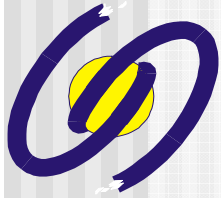
### Financial calculations without CDM in USD

Alternative	Investment	Net savings	PB	PO	IRR	NPV	NPVQ
Tariff-0,05	11,000,000	3,370,000	3,3	4,2	24%	5,406,571	0,49
Tariff-0,04	11,000,000	2,630,000	4,2	5,7	15%	1,803,941	0,16
Tariff-0,02	11,000,000	1,150,600	9,6	32,9	1%	- 5,401,308	-0,49

### Financial calculations with CDM in USD

Alternative	Investment	Net savings	PB	PO	IRR	NPV	NPVQ
Tariff-0,05	11,000,000	3,796,500	2,9	3,3	33%	16,285,294	1,48
Tariff-0,04	11,000,000	3,055,000	3,6	4,2	25%	10,961,876	1,00
Tariff-0,02	11,000,000	1,575,600	7	9,6	8%	326,721	0,03





## Small Hydro Plant at Enguri HPP

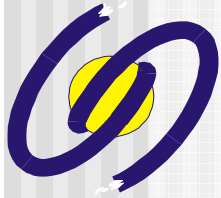
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Barriers to the implementation of the project demonstrate the proposed CDM project is additional.

**Investment barrier:** country remains in non-investment rating category; high inflation, substantial infrastructure needs, poor institutional capacity and political uncertainty from regional conflicts, shortage of local capital;

**Institutional Barrier:** low collection rates of the distribution company from high system losses;  
Carbon revenues can help to mitigate these risks;  
Transmission line failure





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## Small Hydro Plant at Enguri HPP

### **Expected contribution to sustainable development :**

Project Investments will have a positive impact on the local economy;

New employment opportunities created for the region;

Diversification the sources of electricity generation and decrease dependence on imports

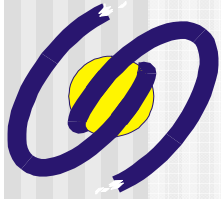
Substitution of fossil fuels;

Improved Air quality and Meeting the Kyoto Protocol goals;

Better living conditions;

Development of local intellectual capacity





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**Cost and financing:**

**Expected costs of project  
implementation:**

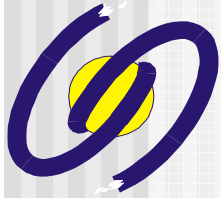
**10,528,790 USD = 6,870,511.EUR**

**Estimated revenues from sale of  
emission reductions:**

**3,409,080 €**

**Expected scheme of financing the  
project:** interested investors





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THANK YOU

Energy Efficiency Center Georgia

Tel. 995 32 24 25 40/24 25 41

Fax. 995 32 24 25 42

[www.eecgeo.org](http://www.eecgeo.org)

Ministry of Energy/Gross Energy Ltd.

Tel:8(99)588976

[gross\\_energy@yahoo.com](mailto:gross_energy@yahoo.com)

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