Yerevan, Armenia, 20 October 2006

UNDP/GEF-KfW project “Georgia – Promoting the Use of Renewable Energy Resources for Local Energy Supply”
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Project Manager
(janelidze@caucasus.net)
Project financing:

- **Donors:**
  - *GEF (through UNDP)* - USD 4.3 million;
  - *Government of Germany (through KfW)* - EURO 5,112,918.
  - *Government of Georgia* - USD 150,000 (in kind)
  - *Other local sources* - USD 3.4 million
MAIN OBJECTIVE OF THE PROJECT

- Removing the key barriers to the increased utilization of local renewable energy resources. The initial focus will be on promoting the use of geothermal resources for hot water supply and the use of small hydro power for local electricity production.

- The activities are designed to be replicated in a regional context for countries in the Caucasus and in the broader CIS region.

- A specific emphasis throughout the project implementation will be placed on leveraging additional financial resources for the capitalization of the proposed Renewable Energy Fund.
ORGANISATIONAL CHART OF THE PROJECT IMPLEMENTATION ARRANGEMENTS

GEF
USD 4.3 Mio.

PROJECT SUPERVISORY COMMITTEE

UNDP

PMU

USD 1.65 Mio.

supervision

monitoring

Renewable Energy Fund Georgia (EUR 5.11 + USD 2.0) Million

USD 2.65 Mio

KfW
management & monitoring

Financial Consulting Support

German Government EUR 5.11 Mio.

USD 2.0 Mio.

EUR 5.11 Mio

USD 0.65 Mio

USD 0.2 Mio

Local Bank Credit Line

Window I
Geothermal Power

Window II
Small Hydro Power Plants

T. A. COMPONENT

Private operators/municipalities

Private Operators

Technical Assistance for:

- Monitoring and Evaluation
- Legal and Regulatory Framework
- Project Preparation and Management
- Loan Application
- Payment collection and billing (geothermal)
FINANCING SCHEME

- Establishment of RE Revolving Fund (REF);
- Selection of local Programme Bank(s);

Interest: 3%; Payback: 7 years; Grace period: 1 year

Interest: 5%; Payback: 7 years; Grace period: 1 year
MAIN STEPS

1. Expression of interest by the owners of SHHP, geothermal utilities;
2. Selection of long list of candidate projects;
3. Preparation of necessary documents (finalization of pre-feasibility studies, PPAs, etc.) – TA component of the project;
4. Selection of Short list of candidate projects;
5. Submission of loan applications to the programme bank(s);
6. Issuance of loans by bank(s);
7. Announcement of tender and rehabilitation;
8. Monitoring and evaluation
ACTUAL STATUS OF THE PROJECT

- Technical Assistance component started in May 2004
- Update of information;
- Preliminary study of new candidate projects;
- Selection of International Technical Advisor

- Financial component started after signing of Financing Agreement between KfW and Government of Georgia in June 2005
- Selection of Participating Banks
ACTUAL STATUS OF THE PROJECT (2)

SHPP-component

- For 14 selected projects sites pre-feasibility studies after the necessary field investigations have been prepared.

- After discussions with PMU final pre-feasibility studies have been prepared.

- The activities to be followed have been specified and the selection of max. six projects for implementation in the first round will be done during the next quarter ending on December 31st, 2006.
Geothermal component
• Field mission of the International expert to specify possible resources and reservoir management for the future.
• Required in-situ test has been indicated.
• The Assessment Report “Suburtalo Geothermal Project” has been prepared.

Renewable energy strategy
• The establishment of new regulation has been studied and a legal opinion requested to progress on the proposal for the National Renewable Energy Strategy.

Renewable Energy Fund
• The preparatory works to start with the implementation of the first small hydropower plants beginning of 2007 according to agreed programme are on time
To Do List

Small hydropower development

- Pre-feasibility studies have to be submitted to the relevant owners.
- Hydrological data
- For all selected project sites available hydrological data has to be updated
- Field survey works have to be conducted for the future engineering works for all projects which will be considered in the first round (max. 6). These works shall include and cover the area of
  - The complete intake;
  - The headrace and forebay;
  - The right of way for the penstocks;
  - The powerhouse area.
To do list (2)
Saburtalo geothermal project

- Preparatory works have to be done to calculate reservoir parameters and to prepare final modelling of the geothermal reservoir.
<table>
<thead>
<tr>
<th>Project name</th>
<th>Type of turbine</th>
<th>Installed capacity</th>
<th>Est. yearly energ. output</th>
<th>Cost per KW inst.</th>
<th>Cost per kWh/a</th>
<th>Net budget in €</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Civil</td>
</tr>
<tr>
<td>Abasha</td>
<td>Francis vertical</td>
<td>1,320 KW</td>
<td>11.89 Mio kWh/a</td>
<td>906.4 €</td>
<td>14.2 cents</td>
<td>164,100</td>
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<tr>
<td>Marktkopi</td>
<td>Francis vertical</td>
<td>1,520 KW</td>
<td>7.63 Mio kWh/a</td>
<td>921.0 €</td>
<td>18.3 cents</td>
<td>141,400</td>
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<tr>
<td>Chkhorotsku</td>
<td>Francis vertical</td>
<td>2,980 KW</td>
<td>21.1 Mio kWh/a</td>
<td>658.0 €</td>
<td>9.2 cents</td>
<td>291,750</td>
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<tr>
<td>Tskhomareti</td>
<td>Francis horizontal</td>
<td>690 KW</td>
<td>4.90 Mio kWh/a</td>
<td>1,283 €</td>
<td>18.1 cents</td>
<td>248,730</td>
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<tr>
<td>Orbeli</td>
<td>Francis horizontal</td>
<td>525 KW</td>
<td>3.72 Mio kWh/a</td>
<td>1,383 €</td>
<td>19.5 cents</td>
<td>155,500</td>
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<td>Dashbashi</td>
<td>Francis horizontal</td>
<td>1,440 KW</td>
<td>9.77 Mio kWh/a</td>
<td>1,094 €</td>
<td>16.1 cents</td>
<td>234,860</td>
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<tr>
<td>Misaktseli</td>
<td>Francis horizontal</td>
<td>1,380 KW</td>
<td>12.4 Mio kWh/a</td>
<td>1,287 €</td>
<td>14.31 cents</td>
<td>266,700</td>
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<tr>
<td>Machakhela</td>
<td>Francis horizontal</td>
<td>910 KW</td>
<td>5.94 Mio kWh/a</td>
<td>1,281 €</td>
<td>19.6 cents</td>
<td>224,370</td>
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<tr>
<td>Mukhrovanii</td>
<td>Francis horizontal</td>
<td>85 KW</td>
<td>470,000 kWh/a</td>
<td>3,247 €</td>
<td>58.7 cents</td>
<td>113,500</td>
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<td>Akhakalaki</td>
<td>Francis horizontal</td>
<td>1,100 KW</td>
<td>6.74 Mio kWh/a</td>
<td>1,206 €</td>
<td>19.7 cents</td>
<td>565,000</td>
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## Development of New Small HydroPower Projects

<table>
<thead>
<tr>
<th>Project</th>
<th>Type</th>
<th>Capacity (KW)</th>
<th>Energy (Mio kWh/a)</th>
<th>Cost (€)</th>
<th>E &amp; M</th>
<th>Hydros</th>
<th>Others</th>
<th>Total €</th>
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<tbody>
<tr>
<td>Gudauri Stage1</td>
<td>Francis horizontal</td>
<td>2,200</td>
<td>12.71</td>
<td>1,291</td>
<td>24.2 cents</td>
<td>1,338,185</td>
<td>1,052,000</td>
<td>19,000</td>
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<td>Borjomi</td>
<td>Pelton horizontal</td>
<td>1,260</td>
<td>6.34</td>
<td>1,170</td>
<td>23.2 cents</td>
<td>309,000</td>
<td>932,000</td>
<td>15,000</td>
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<td>Satise</td>
<td>Francis horizontal</td>
<td>2 x 858</td>
<td>8.92</td>
<td>943.5</td>
<td>18.2 cents</td>
<td>378,970</td>
<td>997,000</td>
<td>13,000</td>
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<tr>
<td>Nabeghlavi</td>
<td>Pelton horizontal</td>
<td>880</td>
<td>6.25</td>
<td>1,840</td>
<td>25.9 cents</td>
<td>520,000</td>
<td>752,000</td>
<td>10,000</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td>18,006</td>
<td>118.87</td>
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<td></td>
<td>4,952,065</td>
<td>11,542,000</td>
<td>261,100</td>
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