

ENERGY EFFICIENCY CENTRE GEORGIA

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

"SAMGORI" WIND FARM

Tbilisi, Georgia

ARCHIL ZEDGINIDZE / LIANA GARIBASHVILI

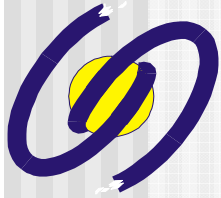
"KARENERGO"

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27 March, 2008

Tbilisi, Georgia





ENERGY EFFICIENCY CENTRE GEORGIA

PROJECT TITLE- „SAMGORI“ WIND FARM

Project Consultant: Karenergo Ltd.

Applicant: JSC CARRIDAN (ERPA contact)

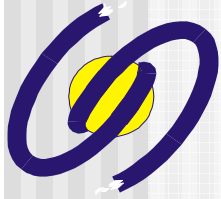
Project Location: Tbilisi, Georgia

Project consultant background:

Wind energy resources investigation and design of wind farms. Carried out wind energy potential research throughout the Caucasus and comprehensive research of the wind energy potential on the territory of Georgia. In 2004 published “Wind Energy Atlas of Georgia was.

Carried several feasibility studies & business plans for the construction of wind farms in various regions of Georgia- Batumi wind farm, Gori wind farm, Samgori wind farm and others.

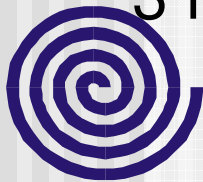
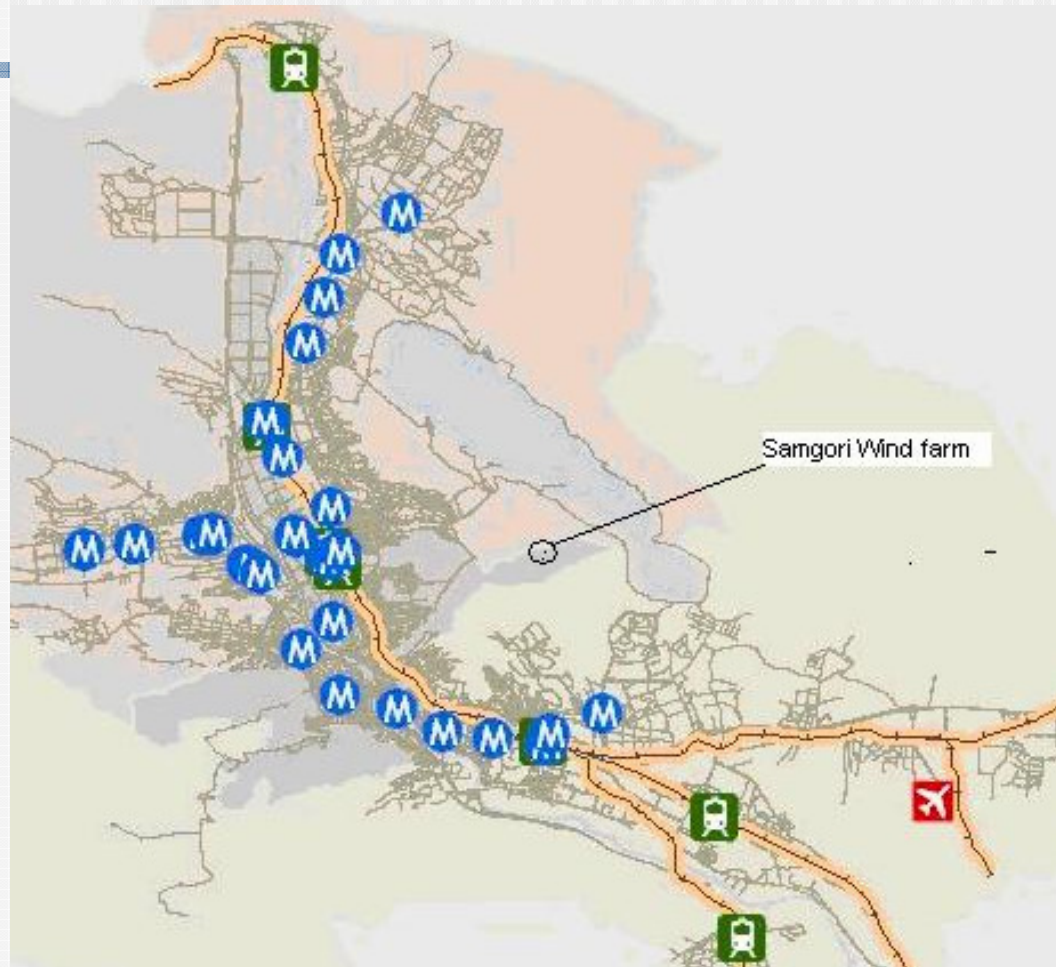


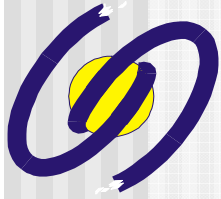


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PROJECT TITLE- „SAMGORI“ WIND FARM

„SAMGORI“ wind farm will be located on the banks of the Tbilisi water reservoir in the north-east suburbs of Tbilisi. The site represent a high elevation plateau with sufficient area to accommodate 20 turbines, each with a 3 MW capacity.





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PROJECT TITLE- „SAMGORI“ WIND FARM

Project activities: Wind farm installed capacity 60 MW; Project implementation-2 years

Phase-I

4 VESTAS V 90- 3,00 MW turbines- farm capacity 12 MW

Annual Generation 24 GWh

Phase-II

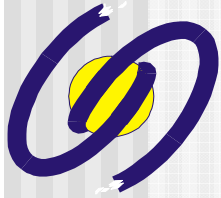
4 more VESTAS V 90- 3,00 MW turbines- increasing the wind farm capacity to 24 MW; Annual Generation 60 GWh

Phase-III

12 more VESTAS V 90- 3,00 MW turbines increasing the farm capacity to total 60 MW; Annual Generation 150 GWh

Objective:Electricity production from renewable energy. This is in line with the Georgian government's priority of expanding the percentage of electricity produced from renewable sources. The project will also assist in making the country self sufficient in electricity.





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„SAMGORI“ WIND FARM

CERs generated by the project:

2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
7,872	19,680	49,200	49,200	49,200	49,200	49,200	49,200	49,200	49,200	421,152

Project Implementation:

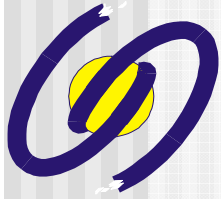
Preparation/Licensing – land parcelling permit and grid connection permits for the proposed wind farm have been obtained, tariff negotiated with the ESCO (electricity system commercial operator)

Physical implementation – start 2008

Expected date of commencement –Phase I-2008

CDM status- PIN- prepared; co-investors are sought.





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„SAMGORI“ WIND FARM

Expected costs of project implementation:

TOTAL: € 58,581,600

Cost of project by stages:

Stage 1: € 11,715,800

Feasibility study: € 300,000

Development: € 200,000

Engineering: € 250,000

Energy Equipment: € 5, 755,000

Balance of plant: € 4,355,000

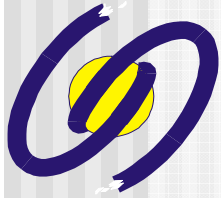
Miscellaneous: € 855, 800

Stage 2: € 11,715,800

Stage 3: e 35,150, 000

TOTAL: € 58,581,600



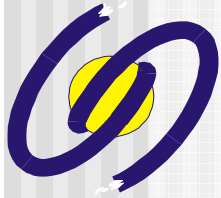


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Revenues from the sale of electricity. The average electricity purchase tariff is 0,028 €. Revenue from potential sale of CERs not included, and O&M costs not subtracted.

Year	Installed capacity (MW)	Generation (GWh/y)	Annual revenue €
2009	12	24	672,000
2010	24	60	1,680,000
2011	60	150	4,200,000
2012	60	150	4,200,000

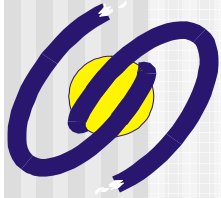




„SAMGORI“ WIND FARM

- **Estimated revenues from sale of emission reductions:**
- **Estimated revenues (2009-2012)- € 1,511,424**
- **10 year crediting period- € 5,053,824**
- **Expected scheme of financing the project**
- **At present JSC CARRIDAN (joint Georgian-American company) expressed committment to finance the project partially.**





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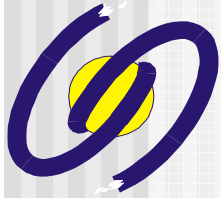
These barriers demonstrates that the CDM project is additional

Technology and know-how: first wind farm project

Investment barrier: Due to the barriers and obstacles relating to technology, cost and funds, the wind power plants would lack investment appeal for the project owner without CDM. Large initial investment in a technology which is still perceived as high risk; apply the technology of VESTAS Company leads to technical risks

Large capital investment required and the relatively low electricity tariff in Georgia, a preliminary investment analysis shows that the IRR of the project is low, estimated at under 7%, without the revenues from CDM.





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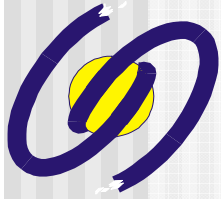
„SAMGORI“ WIND FARM

Expected contribution to sustainable development:

- decrease of fossil fuels usage
- better use of the local natural resources
- application of clean and efficient technologies.
- meeting the Kyoto Protocol goals by helping to reduce GHG emissions.
- improved energy security, will reduce energy imports and will promote the country's sustainable development due to an improvement in the stability of energy supply to customers.

The project will produce electricity with no emissions of CO₂ or pollutants.





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THANK YOU

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