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Project Idea Note (PIN)

A PROJECT IDENTIFICATION

A 1 Project summary	
Title of project activity	Georgia Efficient Residential Lighting Project
Applicant	Energy Efficiency Centre Georgia
Host Country	Georgia
Project type	<input type="radio"/> Joint Implementation <input checked="" type="radio"/> Clean Development Mechanism
Category of project activity	Energy demand, energy efficiency
Generation of emission reductions	2009-2015
Estimated emission reductions (in t CO _{2e} up to 2012)	25731 tCO ₂
Crediting Period	7
Offered amount of emission reductions	CERs: 45743 tCO ₂
Proposed CER price (EUR)	12 €

B PROJECT PARTICIPANTS

B 1 Applicant	
Name	Energy Efficiency Centre Georgia
Type of organisation <i>Please also describe the ownership structure.</i>	NGO
Other functions of the Applicant within the project	<input type="radio"/> Sponsor <input type="radio"/> Intermediary <input checked="" type="radio"/> X Technical consultant <input type="radio"/> Other: _____
Main activities, knowledge and experience	<p>EEC Georgia is NGO with the main goal to support renewable energy and energy efficiency development and as a result improve national energy Security level and minimize negative environmental impact.</p> <p><i>Specific aims:</i></p> <ul style="list-style-type: none"> ✓ Preparation of the sustainable basis for the functioning of the energy sector; ✓ Realization of economically effective and environmentally friendly projects; ✓ Preparation and realization of training programs for energy managers and engineers; Analysis of economic potential of energy sources; ✓ Creation of EEC as the basic informational core for popularization of activities directed to developing new non nuclear energy technologies; ✓ Support to the establishment of business relation with foreign and local potential partners, International organizations and financial institutions. <p>EEC Georgia operates in energy, industrial and building sectors and provides consultancy services such as energy audits, policy analysis and development of pre-feasibility studies, pre-investment surveys, in particular the organization is providing:</p> <ul style="list-style-type: none"> • Training courses in renewable energy and environmental issues; • Assessment of technical and economic potential of the renewable energy resources; • Development and implementation of small scale hydro, solar, bioenergy and other renewable energy projects; • Searching the possibilities for attraction financing of renewable energy projects; • Activities for the development of CDM projects in Georgia.
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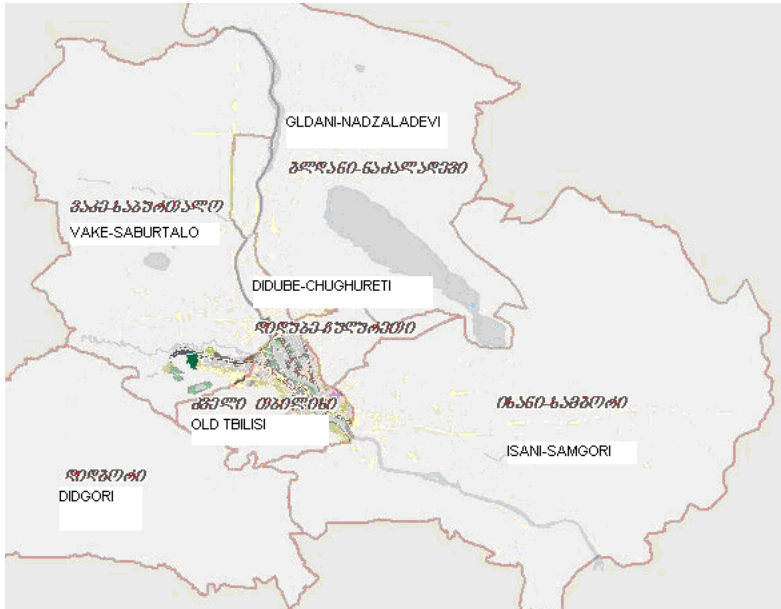
B 2 Project developer	
Name	Energy Efficiency Centre Georgia

Type of organisation	NGO
Other functions of the project developer within the project	<input checked="" type="radio"/> X Sponsor <input type="radio"/> Intermediary <input type="radio"/> Technical consultant <input type="radio"/> Other: _____
Main activities, knowledge and experience	<p>The main aim of EEC: support to the development of Energy Efficiency in basic sectors of Georgian economy.</p> <p><i>Specific aims:</i></p> <ul style="list-style-type: none"> ✓ Preparation of the sustainable basis for the functioning of the energy sector; ✓ Realization of economically effective and environmentally friendly projects; ✓ Preparation and realization of training programs for energy managers and engineers; Analysis of economic potential of energy sources; ✓ Creation of EEC as the basic informational core for popularization of activities directed to developing new non nuclear energy technologies; ✓ Support to the establishment of business relation with foreign and local potential partners, International organizations and financial institutions. <p>EEC operates in energy, industrial and building sectors and provides consultancy services such as energy audits, policy analysis and development of pre-feasibility studies, pre-investment surveys and cooperates with Georgian Technical University on arranging training courses.</p> <p>EEC staff currently is made up with 9 full time experts, including Doctors-Professors and experts with Ph.D. degree. According to project needs EEC cooperates practically with all leading energy experts in different fields. EEC employees have participated in numbers of international training programs and studies, conferences, workshops and seminars.</p>
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E-mail	eecgeo@eecgeo.org ; l_gari@eecgeo.org

B 3 Other project participants	
Name of project participant	Telasi electricity distributor company (EEC is trying to reach the company officials to discuss with them their participation in the project. Telasi involvement in the project will contribute to better selection of the households, implementation of the project and monitoring the results)
Type of organisation	<input type="radio"/> Governmental body: _____ <input checked="" type="radio"/> X Private enterprise

	<input type="radio"/> NGO <input type="radio"/> Other: _Independent consulting company_____
Function within the project	<input type="radio"/> Sponsor <input type="radio"/> Intermediary <input checked="" type="radio"/> Technical consultant <input type="radio"/> Other: _____
Name of contact person	Technical Director
Address	3 Vanis St.
Phone/fax	+ 995 32 25 52 11
E-mail	www.telasi.ge

C HOST COUNTRY

C 1 Location of project activity	
Host Country Party(ies)	Georgia
Region/State/Province etc.	
City/Town/Community etc.	Tbilisi
Brief description of the project location	<p>The project area is located in the Isani-Samgori and Gldani –Nadzaladevi districts of Tbilisi, in particular, its 4 settlements Varketili-III, Vazisubani, Sanzona and Gldani 4 densely populated settlements located in the suburbs of Tbilisi.</p> 

C 2 Status of Host Country	
Host Country	<ul style="list-style-type: none"><input checked="" type="radio"/> Signed and ratified, accepted, approved or acceded to the Kyoto Protocol<input type="radio"/> Signed the Kyoto Protocol and has demonstrated a clear interest in becoming a Party in due time<input type="radio"/> Has already started or is on the verge of starting the national accession process

D GENERAL PROJECT INFORMATION

D 1 General Information	
Project name	Georgia Efficient Residential Lighting Project
Project objective	The project aims at the reduction of end-user energy consumption and thus reduction of greenhouse gas emissions in residential buildings among the 51000 households in Tbilisi capital of Georgia.
Description of project background	<p>The big majority of the private households in Tbilisi, Georgia lack financial resources to buy high quality CFL and prefer buying classical incandescent lamps with very low initial cost in comparison with CFL. Classical incandescent lamps used by the majority of households consume on average four times more electricity than CFL and last 10 times less. This in its turn has a negative effect on the family budget as the average cost of 1 kWh electricity in Tbilisi is \$ 0,10 (€0,068).</p> <p>A 20-22 watt CFL has about the same light output as a 100 watt incandescent. A single 18 watt CFL used in place of a 75 watt incandescent will save about 570 kWh over its lifetime. Replacement of incandescent bulbs with a CFLs will also contribute to the reduction of CO2 emissions.</p>

D 2 Category(ies) of project activity	
Project category <i>Please mark accordingly.</i>	<ul style="list-style-type: none"> <input type="radio"/> Construction (or retrofitting) of combined heat and power installations; <input type="radio"/> Fuel-switch projects in energy conversion installations and production plants to renewable energy sources or from energy sources with high carbon content to energy sources with lower carbon content, especially in existing district heating systems; <input type="radio"/> Construction (or retrofitting) of generating plants operated with renewable energy sources (especially wind power plants, biogas or biomass combined heat and power plants as well as hydroelectric power plants); <input type="radio"/> Projects whose purpose is the avoidance or (energy) recovery of landfill gas; <input type="radio"/> Waste management measures which contribute to the avoidance of greenhouse gas emissions, especially through energy recovery from waste, if possible with waste heat utilisation; <input type="radio"/> X Energy efficiency projects: projects serving the reduction of end-user energy consumption in residential buildings, public and private office buildings as well as industrial applications and processes (including waste heat potentials); <input type="radio"/> Other: _____

D 3 Technical aspects																			
<p>Technical description</p> <p><i>The essential technical aspects should be briefly presented.</i></p> <p><i>A detailed description (max. 3 A4 pages) should be enclosed with the PIN including the following aspects:</i></p> <p><i>Project purpose</i></p> <p><i>Applicant's facilities to generate Emission Reductions</i></p> <p><i>Description of technology employed and associated risks</i></p> <p><i>Milestones, time schedule and current status of implementation</i></p> <p><i>Key permits and expected date of approval</i></p> <p><i>Key contracts and expected date of signing</i></p> <p><i>Risks during project implementation and operation</i></p>	<p>The project envisages the distribution of the CFLs among the households in Isani-Samgori and Gldani –Nadzaladevi districts of Tbilisi in particular, Varketili-III settlement, Sanzona and Gldani settlements. All Tbilisi households are the customers of Telasi electricity distribution company. The total number of subscribers of the Telasi electricity distribution company, including suburbs is 450,000. The number of electricity subscribers in the chosen settlements is as follows:</p> <p>Sanzona- 28,300 households; Gldani-29,700 households; Varketili-13,000 households; and Vazisubani- 8,000 households. Telasi electricity distribution company has 3 different tariffs for households in accordance with monthly electricity consumption – up to 100 kWh- 13.48 tetri (0.058€)/ kWh; from 101 kWh to 300 kWh - 16.0 tetri (0.068€)/ kWh; from 301 kWh and upwards - 17.69 tetri (0.076€/ kWh). From the total number of 79,000 subscribers in the chosen settlements, the subscribers consuming up to 100 kWh will be excluded. Thus at this stage it is assumed that in total 51,000 families (subscribers) can participate in the project.</p> <p>In each household, 3 pieces of each 100 W standard incandescent bulbs will be changed to 20W compact fluorescent light bulbs. Average daily time in use per household is assumed to be 5 hours. As mentioned above the cost of 1 kWh is 0,068€. Currently annual consumption of electricity by 3 bulbs in a household with average daily usage of 5 hours is 547,5 kWh. The replacement of the standard incandescent bulbs with the 20 W compact fluorescent light bulbs will result in annual electricity consumption of 109,5 kWh (per household), making annual savings per household in electricity consumption equal to 438 kWh./</p> <p>The main risks that might arise are: number of subscribers willing to participate in the project is less than anticipated; light bulb manufacturer fails to supply bulbs in return for the future CERs;</p> <p>In order to reach 51,000 subscribers EEC will work closely Tbilisi city distribution company branch offices (relevant to project location areas) and involve their staff (26 persons) for additional salary in the project activities for three months period prior to start of monitoring. The electricity distribution company staff will be also involved in the monitoring process.</p> <p>Annual savings for each family on the electricity bill will be € 30,88.</p> <p>The annual utilization hours for each compact fluorescent light bulb is assumed to be 1825 hours. Technical lifetime of each CFL bulb is 10,000 utilization hours. Thus each family will be able to utilize the bulbs for 5,5 years.</p> <p>Distribution of compact fluorescent bulbs in the target areas</p> <table border="1" data-bbox="597 1684 1367 1927"> <thead> <tr> <th>CFLs to be distributed per year</th> <th>Project area 1</th> <th>Project area 2</th> <th>Project area 3</th> <th>Project area 4</th> <th>Total light bulbs</th> </tr> </thead> <tbody> <tr> <td>2008</td> <td>16,000</td> <td>18,000</td> <td>10,000</td> <td>7,000</td> <td>51,000</td> </tr> <tr> <td>2009</td> <td>16,000</td> <td>18,000</td> <td>10,000</td> <td>7,000</td> <td>51,000</td> </tr> </tbody> </table>	CFLs to be distributed per year	Project area 1	Project area 2	Project area 3	Project area 4	Total light bulbs	2008	16,000	18,000	10,000	7,000	51,000	2009	16,000	18,000	10,000	7,000	51,000
CFLs to be distributed per year	Project area 1	Project area 2	Project area 3	Project area 4	Total light bulbs														
2008	16,000	18,000	10,000	7,000	51,000														
2009	16,000	18,000	10,000	7,000	51,000														

	2010	16,000	18,000	10,000	7,000	51,000
	2011					
	2012					
	2013					
	2014					
	2015					
	TOTAL	48,000	54,000	30,000	21,000	153,000

With the replacement of 51,000 bulbs with CFLs, annual savings in electricity will amount to 7 446 000 kWh. The emission factor for the Georgian electricity grid as specified by the DNA is 0,3839 kgCO2/kWh.

E PROJECT ORGANISATION

E 1 Project team	
Project-specific qualifications and experiences	<p>Since 2002, EEC Georgia has been working on Climate Change issues and Implementation of the Kyoto Protocol in the country through the involvement in various projects initiated by international and foreign organizations, in particular:</p> <p>2002- Eastern Climate Change Synergy Project- 10 various CDM project ideas prepared (EU DG TREN);</p> <p>2004-Preparation of UNFCCC 2nd National Communication- (UNDP/UNFCCC);</p> <p>2006-2008-CDM as instrument for industrial development and poverty alleviation in Caucasus-(Norwegian MOFA, Norsk Energy; ECON) - CDM Capacity building workshops, identification and development of PINs.</p> <p>On 31st of August 2007, the ERPA has been signed between the International Bank for Reconstruction and Development –IBRD (World Bank) “Community Development Carbon Fund-CDCF” and Energy Efficiency Centre Georgia - EEC Emission Reductions Purchase Agreement. This is the first Clean Development Mechanism (CDM) agreement in Georgia. The mentioned agreement will enter into force after the UNFCCC and Designated National Agency (Ministry of Environment and Natural Resources of Georgia) procedures are finalized. EEC acts as a Bundling Agency for this ERPA and will bundle Verified Emission Reduction (VER) of 9 Small Hydro Power Stations rehabilitated in the frame of USAID funded “Rural Energy Development-RED” project and supply to World bank during 7 years (2008-2015). Tbilisi city Electricity distribution company “Telasi” employees will be actively involved in the project implementation, in particular selection of project participants among households, distribution of bulbs and monitoring. (In Tbilisi all the electricity meters are placed out of the apartment (house) in a special box and only “Telasi” staff has access to the meters.</p>
E 2 Schedule	

Current project status	<input checked="" type="radio"/> Project idea <input type="radio"/> Planning <input type="radio"/> Implementation PIN (potential gold standard project)
Status of financing	The light bulb manufacturer will supply the bulbs in exchange of CERs generated by the project. The CER price is estimated to be 12 € which is lower than regular CER price in Europe. The cost of CFL bulb as indicated in the PIN is the market price for such a bulb in Georgia. At the initial phase of the project which is 6 months the funding in the amount of 19216 € could be obtained from donor organization. EEC Georgia has experience in developing and implementing projects which improve living conditions of the population, contribute to energy security of the country and have positive impact on environment reducing GHG emissions. By the end of the first six months period the project will generate income from selling the bulbs to the project participants at a nominal price of 1 GEL. The possible donors might be (British Embassy, Embassy of the Netherlands and other donors). In total as estimated the donor organizations will be approached to cover about 25000 € for the period of 18 months. For the remaining period till the end of the project the management and operation costs will be covered partially by the income generated from selling the bulbs to the population and the extra CER amount remaining after covering the cost of bulbs to the manufacturer.
Status of negotiations with the Host Country	PIN will be submitted to DNA after the partners agree
Status of permission procedures of authorities	Permissions from any regulatory bodies are not required for the project implementation
Project preparation	6 months (Selection of households by monthly energy consumption, letters to selected households to invite for the participation in the project, contracts with finally selected 17,000 households and distribution of bulbs).
Construction/assembly	In 2009 and 2010 the process will be repeated as in 2008.
Project lifetime	7 years
Generation of CERs	2009-2015
Other milestones	
Effect of PIN acceptance on the time schedule of the project	
E 3 Financial aspects	
Costs of project development (EUR)	

	YEAR	2009	2010	2011	2012	2013	2014	2015	TOTAL
CER volumes		2859	5718	8577	8577	8577	7147	4288	45743
CER revenue 12 euro		34308	68616	102924	102924	102924	85764	51456	548916
Income from selling bulbs	21848	21848	21848						65544
CFL costs	-173400	-173400	173400						-520200
Project management and operation	-19246	-24255	-24255	-10195	-10195	-10195	-10195	-10195	-118731
Total expenses	-192646	-197655	197655	-10195	-10195	-10195	-10195	-10195	-638931
Revenue	-170798	-141499	107191	92729	92729	92729	75569	41261	-24471

EXPECTED SCHEME OF FINANCING THE PROJECT: CFLS MANUFACTURERS INTERESTED IN OBTAINING CERs, INTERNATIONAL DONORS.

F GREENHOUSE GAS EMISSION REDUCTIONS

Only projects resulting in emission reductions of greenhouse gases listed in table F1 can be accepted as JI or CDM projects. All emissions and/or emission reductions must be stated in metric tonnes of CO₂ equivalent.

F 1 Greenhouse gases	
Greenhouse gases to be reduced by the project	<input checked="" type="radio"/> CO ₂ <input type="radio"/> CH ₄ <input type="radio"/> N ₂ O <input type="radio"/> HFCs <input type="radio"/> PFCs <input type="radio"/> SF ₆

The Project Boundary shall encompass all anthropogenic emissions by sources of greenhouse gases under the control of the project participants that are significant and reasonably attributable to the project activity.

F 2 Project Boundary	
Description of Project Boundary	According to the methodology for small scale projects II.C/Version 0,9 Sectoral scope:0,3 EB 33 "Energy Efficiency improvement projects" the project boundary is the physical , geographical location of each measure (each piece of equipment) installed.

F 3 Project emissions	
Description and estimation of project-specific greenhouse gas emissions within the Project Boundary	The proposed measures, replacement of standard incandescent lamps with CFLs will not give rise to any greenhouse gas emissions

F 4 Baseline	
Outline of considered Baseline methodology/scenario and estimation of Baseline emissions within the Project Boundary	<p>According to the used methodology, if the energy displaced is electricity, the energy baseline is calculated as follows: $EB = \sum i(ni \cdot pi \cdot oi)$ Where: EB annual energy baseline in kWh per year. $\sum i$ the sum over the group of "i" devices replaced for which the replacement is operating during the year, implemented as part of the project. ni the number of devices of the group of "i" devices replaced for which the replacement is operating during the year. pi the power of the devices of the group of "i" devices replaced. In the case of a retrofit activity, "power" is the weighted average of the devices replaced. In the case of new installations, "power" is the weighted average of devices on the market. oi the average annual operating hours of the devices of the group of "i" devices replaced.</p> <p>In year 1 baseline emissions will equal – 9,307,500 kWh x 0,3839 kg CO₂/kWh = 3,573 tCO₂; In year 2 -7,146 tCO₂; In year 3- 10,719 tCO₂; In year- 4- 10,719 tCO₂; In year-5- 10,719 tCO₂; In year 6- 8,923 tCO₂; In year 7- 5, 359 tCO₂;</p>

Leakage is defined as the net change of anthropogenic emissions by sources of greenhouse gases which occurs outside the Project Boundary, and which is measurable and attributable to the project activity.

F 5 Leakage	

Description and estimation of Leakage	Substituted bulbs are collected and their destruction is ensured by the project participants
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F 6 Emission reductions									
Crediting period		7 years							
Estimated annual and total abatement of greenhouse gas emissions in tonnes of CO ₂ equivalent in comparison to the Baseline scenario (taking into account Leakage)									
	YEAR	2009	2010	2011	2012	2013	2014	2015	TOTAL
Project activity Emissions tCO ₂		715	1430	2145	2145	2145	1788	1073	11441
Baseline Emissions tCO ₂		3574	7148	10722	10722	10722	8935	5361	57184
Emission reduction tCO ₂		2859	5718	8577	8577	8577	7147	4288	45743

G (ADDITIONAL) ECOLOGICAL, SOCIO-ECONOMIC AND/OR DEVELOPMENT EFFECTS

G 1 Expected environmental effects	
Expected global/local environmental effects (positive and negative) of the project ¹	<p>The project will contribute to the local environmental sustainability since it will decrease the use of electricity generated using the fossil fuels. Therefore the project contributes to the better use of the local natural resources. In addition the project uses clean and efficient technologies.</p> <p>The project will contribute to meeting the Kyoto Protocol goals by helping to reduce GHG emissions.</p>

G 2 Socio-economic and development aspects	

<p>Expected social and economic effects of the project</p>	<p>The project will contribute:</p> <ul style="list-style-type: none"> ➤ Towards the reduction in energy consumption in the residential sector and improving the security of supply and better use of local resources and decrease dependence on electricity and gas imports. ➤ Towards improving the economic well being of families. Decrease in energy consumption will result in annual savings in family budget of about 297,8 €. Energy security since the use of modern energy efficient technology will decrease the dependence on fossil fuels - the project diversifies the sources of electricity generation and decreases dependence on imported natural gas from Russia. ➤ Towards improving the living conditions of the population in Tbilisi through the improvement of the power supply in the city. ➤ To transfer of new technology and its broad application among the population. ➤ Rise awareness among households about potential savings by energy efficiency measures
<p>Project-related employment structure</p>	<p><input type="radio"/> Employees under 14 years</p> <p><input checked="" type="radio"/> Employees over 14 years</p>

H ADDITIONALITY AND SUSTAINABILITY EFFECTS

H 1 Additionality	
<p>Presentation of the Additionality of the project</p>	<p>A significant barrier to the implementation of this project demonstrate clearly that the proposed CDM project is additional. The major barrier is:</p> <p>Investment barrier - the project needs high investments in comparison to revenue it generates. As the light bulbs will be distributed at a nominal price of 1 GEL each the project will not generate enough revenue to cover operating costs, selling CERs and getting revenues from the sales also will not be enough to pay both the cost of CFLs and the annual operating costs. As stated above the generated revenue of the CERs is not sufficient to cover the cost of CFL bulbs and project management and operation costs.</p>

H 2 Sustainability Effects	
<p>Summarising description of the project's contribution to the sustainable development of the Host Country</p>	<p>The project will contribute to the improvement of economic well being of the population in the project implementation area and the improvement of their social well being through the improvement of power supply. The project will also have an awareness rising effect in the field of energy efficiency among the participating households.</p> <p>Decrease in energy consumption will reduce the GHG emissions and improve air</p>

	<p>quality in the city.</p> <p>The project will contribute to meeting the Kyoto Protocol goals by helping to reduce GHG emissions.</p>
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