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ENHANCING CAPACITY FOR LOW EMISSION DEVELOPMENT STRATEGIES (EC-LEDS) CLEAN ENERGY PROGRAM

COOPERATIVE AGREEMENT NO. 114-A-13-00008

ENVIRONMENTAL SCOPING STATEMENT REPORT



November 13, 2014

This publication was produced for review by the United States Agency for International Development. It was prepared by Winrock International.

ENHANCING CAPACITY FOR LOW EMISSION DEVELOPMENT STRATEGIES (EC-LEDS)

CLEAN ENERGY PROGRAM

ENVIRONMENTAL SCOPING STATEMENT REPORT

NOVEMBER 13, 2014

**Submitted to: US Agency for International Development
USAID/Georgia**

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Disclaimer: The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

ACKNOWLEDGEMENTS

The Initial Environmental Examination (IEE) for the *Enhancing Capacity for Low Emission Development Strategies (EC-LEDS), Clean Energy Program* was approved on June 22, 2012 (DCN: 2012-GEO-076). Pursuant to 22 CFR 216.6 a Scoping Statement and Programmatic Environmental Assessment have to be prepared for projects/sites that involve major refurbishment, rehabilitation or construction works in order to ensure environmental impacts and their significance are known and clearly identified prior to the approval of final pilot interventions and start of rehabilitation and implementation work.

This Scoping Statement report for EC-LEDS Clean Energy Program has been developed to define the scope and the significance of the issues to be addressed under the Programmatic Environmental Assessment (PEA). The team of scoping statement experts developed this report during the period 01/2013-03/2014.

The Scoping Statement team was comprised of a multidisciplinary team of experts: Mariam Bakhtadze was the environmental specialist and coordinator of the team of Georgian experts; Marina Shvangiradze was the climate change issues and mitigation projects expert; Anna Sikharulidze served as the municipality end-use survey expert; Giorgi Giorgobiani was the climate change mitigation project evaluation expert; and finally, the EC-LEDS Clean Energy Program COP, Dana Kenney, provided valuable comments on the municipality survey and provided quality assurance and control for the SS report.

Alex Sumbadze, the EC-LEDS Community Mobilization Specialist, contributed greatly to good communications between the institutions and public and the organization of scoping statement stakeholder meetings. All statements and suggestions received from the Inga Pkhaladze, EC-LEDS DCOP, were also greatly appreciated.

During the implementation of the Scoping Statement study, the SS team received support from NGOs (EEC, SDAP), the Ministry of Environment and Natural Resources Protection (MENRP), local municipalities and City Halls. We would expressly like to thank Mr. Ulrich Kindermann and Mr. Grigol Lazriev from the Climate Change Department of MENRP for their valuable contribution in data assessment process.

The author of the SS report is Mariam Bakhtadze of Winrock International, with contributions from Giorgi Giorgobiani (Winrock International) and Marina Shvangiradze (REMISSIA).

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ACRONYMS

ASE	Alliance to Save Energy
BEO	USAID Europe and Eurasia Bureau Environmental Officer
COM	Covenant of Mayors
CC	Climate Change
CFR	U.S. Code of Federal Regulations
CO ₂	Carbone Dioxide
DWG	DecisionWare Group
EA	Environmental Assessment
EC-LEDS	Enhancing Capacity for Low Emission Development Strategies
EE	Energy Efficiency
EIA	Environmental Impact Assessment
ESCO	Energy Service Company
EU	European Union
GB	Green Building
GBCG	Green Building Council of Georgia
GHG	Green House Gases
GoG	Government of Georgia
GWh	Gigawatt hour
IEE	Initial Environmental Examination
LFG	Landfill Gas
M&E	Monitoring and Evaluation
M&M	Mitigation and Monitoring
MDF	Municipal Development Fund
MENRP	Ministry of Environment and Natural Resources Protection
MEO	USAID Caucasus Regional Mission Environmental Officer
MoE	Ministry of Energy
MW	Megawatt Energy
NGO	Non-governmental Organization
PEA	Programmatic Environmental Assessment
RE	Renewable Energy
REMISSIA	NGO Sustainable Development Center REMISSIA
SDAP	NGO Sustainable Development and Policy Center
SEA	Supplemental Environmental Assessment
SEAP	Sustainable Energy Action Plan
SNC	Georgia's Second National Communication
SS	Scoping Statement
UNFCCC	United Nations Framework Convention on Climate Change
US CFR	United States Code of Federal Regulations
USAID	United States Agency for International Development
USG	United States Government
WI	Winrock International, US-based NGO

BACKGROUND AND PURPOSE

Brief Description of Program

Program Purpose

The purpose of the Enhancing Capacity for Low Emission Development Strategies (EC-LEDS) Clean Energy Program, funded by USAID/Caucasus, is to support Georgia's efforts to increase climate change mitigation through energy efficiency and clean energy. The broader goal is to enable more responsible management and development of Georgia's natural endowments. To achieve this goal, the required outcomes of the program are captured in following program objectives:

- (1) Support Georgian municipalities in institutionalizing and implementing climate change mitigation measures,
- (2) promote and facilitate private- sector investments in energy efficiency and green buildings and
- (3) build the capacity of the Government of Georgia (GOG) to develop and implement a national Low Emissions Development Strategy in support of the USG EC-LEDS initiative.

During the five years of the program, the EC-LEDS Clean Energy Program is expected to reduce GHG emissions in Georgia by at least 236,372.9 metric tons of CO₂ equivalent, facilitate up to \$14 million in private sector investments in clean energy, and lead to energy savings of up to 315 GWh equivalent (the equivalent of approximately \$22 million).

The EC-LEDS Clean Energy Program is comprised of three components:

- 1) Georgian Municipal Energy Efficiency, which will support at least 10 municipalities in quantifying and reducing GHG emissions, and institutionalizing climate change mitigation;
- 2) Green Building Rating and Certifying System, which will introduce a voluntary system for rating and certifying green buildings in Georgia and build market demand for certified buildings; and
- 3) National EC-LEDS Working Group and Advisory Assistance, which would provide advisory assistance to the GOG to articulate concrete actions, policies, programs and implementation plans under the bilateral EC-LEDS initiative.

Components 1 and 2 will be implemented throughout the five years, with Winrock maintaining overall program responsibility in the first three years, and continuation by local organizations in the last two years of the program. However, Component 3 will be completed by the end of the second year.

Program Need

Georgia's Second National Communication (SNC) to the UN Framework Convention on Climate Change (UNFCCC) forecasts that emission from Georgia's energy sector will increase by 24% between 2006 and 2025 to meet growing energy demands of the expanding industry, transport and residential sectors (for more information please refer to Annex F).

Table I. Emissions from Georgia’s Energy sector and emission reductions by subsector according to the business as usual (BAU) and alternative scenarios

	Current accounts	BAU scenario	Split Public scenario		National Policy scenario	
	2006	2025	2025		2025	
	Emissions (Gg CO ₂ -eq.)	Emissions (Gg CO ₂ -eq.)	Emissions (Gg CO ₂ -eq.)	Emission reduction (%)	Emissions (Gg CO ₂ -eq.)	Emission reduction (%)
Total emissions	5,964	16,397.0	14,422.0	12%	12,461.0	24%
composed by:						
Industry	668	3,547	2,970	16%	2,729	23%
Transport	1,286	6,456	6,456	0%	6,456	0%
Residential sector	1215	2,358	2,060	13%	1,922	18%
Agriculture	654	825	825	0%	516	37%
Service sector	526	507	436	14%	331	35%
Unspecified	76	507	507	0%	507	0%
Electricity generation	1,539	2,197	1,168	47%	0.00	100%

The projected accelerated growth of greenhouse gas (GHG) emissions in parallel with Georgia’s economic growth, the lack of an energy conservation culture, and the absence of institutional capacity and policies that promote energy efficiency and conservation, all are factors contributing the expecting increase in emissions. Inefficient energy use on one hand leads to greater GHG emissions and air pollution, affecting both human and the environment, and on the other hand, hinders Georgia’s ability to compete in regional and global markets.

To address the aforementioned issues, and support Georgia’s effort to pursue long-term, transformative development and accelerate sustainable economic growth while slowing the growth of GHG emissions, USAID-Caucasus launched a five-year EC-LEDS¹ Clean Energy Program, implemented by Winrock International in partnership with the Alliance to Save Energy (ASE), DecisionWare Group (DWG), Sustainable Development Center - Remissia, the Green Building Council – Georgia (GBCG), and Sustainable Development and Policy Center (SDAP- Center).

Program Components and outputs

The three components of the EC-LEDS Program and their associated activities are outlined briefly below.

¹ EC-LEDS is key component of US President’s Global Climate Change Initiative and is focus of State and USAID’s joint OMB High Priority Performance Goal (HPPG) on Climate Change. On December 17, 2012 USAID and the Ministry of Environment and Natural Resources Protection of Georgia signed a memorandum of understanding that supports LEDES and provides the framework for bilateral cooperation in Georgia.

COMPONENT I: GEORGIAN MUNICIPAL ENERGY EFFICIENCY (GEMUNEE)

Where appropriate, the EC-LEDS Program will provide technical assistance to municipalities of Georgia to meet the requirements of their commitments to the Covenant of Mayors (COM)², including those that are already signatories. Based on technical and financial feasibility analyses, cities/municipalities³ interested in joining or becoming signatories to the Covenant will receive organizational assistance to create a GHG emissions inventory, develop a Sustainable Energy Action Plan (SEAP)⁴ including a Monitoring, Reporting and Verification (MRV) plan, identify and fund mitigation projects, and establish a Sustainable Energy Office or regional Sustainable Energy Resource Center, in accordance with procedures and methodologies acceptable to the COM⁵. Program funds will provide technical assistance to at least 10 municipalities (including Tbilisi).

Per USAID requirements, the EC-LEDS program will support demonstration projects by providing partial grants, covering up to 20% (not to exceed \$50,000 per project) of total project implementation costs. The grant funds will be used strategically, either to test new technology/project types that have no precedent in the country or to leverage commercial financing so that the proposed investments can reach greater scale and serve more intended beneficiaries.

The EC-LEDS program will actively work with municipalities to help them identify potential demonstration projects. At least one project should be implemented in each participating municipality. Per the draft Grant Manual submitted to USAID for approval, potential grant projects will be selected from a list of projects identified in the process of developing SEAPs for participating municipalities, those identified through an open competition in those municipalities with SEAPs that have been completed and approved by the municipalities (to solicit more grant proposals and ensure inclusion of projects that may have not been identified through SEAPs) and unsolicited proposals, if such proposals contribute significantly to the achievement of program results and municipality targets and meet selection criteria. The EC-LEDS project will not be conducting energy audits to identify

² Covenant of Mayors (COM) is EU launched initiative aiming at supporting local governments in implementing sustainable energy policies. For more details please refer to following website: www.eumayors.eu

³ Georgia's self-governing entities include cities and municipalities. Cities are large inhabited localities with no less than 5,000 residents and has a network of industrial enterprises, tourism, socio-cultural institutions and serves as the local economic and cultural center. Those with a population of at least 15,000 in population are granted self-governing city status, though Parliament may grant it to smaller cities. Those that are self-governing are selected because they have urban areas that are attractive for development. Municipalities include areas outside of, or including, cities and consists of villages (with agricultural lands and other natural resources) or cities that have uniform socio-economic and natural-geographic characteristics. In February, 2014, a new local government law added 7 self-governing cities (Telavi, Ozurgeti, Zugdidi, Ambrolauri, Gori, Mtskheta and Akhaltsikhe, and their adjacent villages will be transformed into self-governing municipalities separate from the cities.

⁴ In 2008, the EU launched the Covenant of Mayors (COM) to endorse and support local governments in implementing sustainable energy policies. Cities and local authorities that want to join or become signatories to the COM must follow certain steps and take certain actions (e.g. signatories must create an inventory to quantify GHG emissions, develop a Sustainable Energy Action Plan (SEAP), and establish a Sustainable Energy Office or regional Sustainable Energy Resource Center, among other things). Seven cities are currently signatories in Georgia—Batumi, Gori, Kutaisi, Poti, Rustavi, Tbilisi, and Zugdidi.

⁵ Since April 2010 the City of Tbilisi became party to the Covenant of Mayors and with the assistance of the USAID (Winrock NATELI Program) and the EU (GIZ) work is being conducted on developing a GHGs reference scenario for Tbilisi City and the establishment of a Sustainable Energy Action Plan (SEAP). Several other cities have expressed interest in participating in this initiative thereby taking measures to mitigate the impact on climate change on the municipal level. These cities include: Rustavi, Kutaisi, Zugdidi, Gori, Poti and Batumi.

potential projects. However, if appropriate⁶, audits may be conducted by the applicants to establish baseline conditions for measuring energy savings and GHG impacts.

The evaluation criteria include how the project will support the municipality in meeting its COM commitments (particularly CO2 reduction goals), energy savings, feasibility of the approach, funding leveraged including public-private partnerships (PPPs) proposed, cost-effectiveness and realism of the project, organizational capacity of the applicant, replicability and scalability, plans for monitoring and evaluation, and addressing issues of gender, youth and people with disabilities. The energy and GHG emissions reductions estimates may be made by the applicants on the basis of energy audits already completed, technical prefeasibility studies indicating the cost, business plans, etc.. (Annex G provides additional detail about the EC-LEDS Grant program).

COMPONENT 2: GREEN BUILDING RATING AND CERTIFICATION SYSTEM

The EC-LEDS program will introduce a voluntary, market-driven system for rating and certifying green buildings (addressing following issues: sustainable sites, water efficiency, energy and atmosphere; materials and resources and indoor air quality), taking into account the different climate zones throughout Georgia where there is substantial construction and major rehabilitation activity (e.g. Tbilisi, the Black Sea coast, mountain resort areas, etc.). The voluntary system should include energy efficiency standards for residential buildings, hotels, and other building categories as appropriate, based on significant construction activity and potential energy savings (e.g., kindergartens/schools, commercial buildings). Following the selection of a rating and certification system, in coordination with municipalities, Ministries, and private sector stakeholders, the EC-LEDS Program will propose steps for institutionalizing the system in Georgia.

In addition, the EC-LEDS program will develop strategies to increase public awareness of green building standards and their benefits (i.e., energy cost savings and increased comfort levels), promote the use of green building standards among building owners and developers, and build market demand for qualifying buildings.

COMPONENT 3: NATIONAL EC-LEDS WORKING GROUP AND ADVISORY ASSISTANCE

The bilateral Enhancing Capacity for Low Emission Development Strategies (EC-LEDS) initiative provides a strategic framework for the GOG to articulate concrete actions, policies, and programs that slow the growth of emissions, while advancing economic growth and meeting Georgia's development objectives. This framework will provide a foundation for achieving long-term, measurable GHG emission reductions, as compared to a business-as-usual development pathway, and improving environmental management in Georgia. Representatives of the U.S. Government, including USAID, and representatives of the GOG (from various Ministries) will form a working group to achieve the goals and actions agreed upon by both countries in the Memorandum of Understanding signed on December 17, 2012. The recipient will also participate in the working group and will play a critical role in making sure that assistance activities link with national priorities, and that data, findings, and results at the municipal level are used to inform national actions, policies, and programs. Under this component, the recipient may also provide advisory assistance to the GOG, as needed. Areas for bilateral cooperation and assistance may include activities that increase and encourage the use of clean and energy efficient resources; support the development of a national GHG inventory system;

⁶ Projects which will be suitable for energy audits include for buildings and industry. However, energy audits are not appropriate for transportation projects, and many projects will include both energy-related and non-energy related emissions reductions which also can not be validated by an energy audit.

improve the policy environment in low emission economic growth; expand economy wide and technical modeling efforts; and improve governance of Georgia's natural resources.

Program Objectives and Expected Outputs

The activities briefly described above are expected to result in a number of important outputs, or results, from the Program. These outputs and their associated objectives are summarized in the table below.

Table I: Summary of Program Objectives and Expected Outputs

Objective	Output
Georgian Municipal Energy Efficiency (GeMunee)	<ul style="list-style-type: none"> - SEAPs developed (10) - On-job trainings for the municipalities - Sustainable energy offices established - Monitoring/reporting/verification plans developed; - Credit mechanism - Project financing (at least 10) - EE/RE project developed (at least 10) - Bankers trained in RE/EE financing - Sustainable energy public awareness plan developed
Green Building Rating and Certification System	<ul style="list-style-type: none"> - Certification credit system for Georgia established; - Certification procedures outlined; - Enhanced awareness on GB standards, rating, certification and accreditation systems (GoG, private institutions) - Regulatory incentive mechanism to facilitate zoning/permitting process for GB established
National EC-LEDS Working Group and Advisory Assistance	<ul style="list-style-type: none"> - MARKAL⁷ Georgia model developed; - Increase analytical capacity of decision makers - Advisory assistance to GoG

⁷ **MARKAL** is a numerical model used to carry out economic analysis of different energy related systems at the country level to represent its evolution over a period of usually of 40 – 50 years.

IEE Recommended
Environmental Determination

Categorical Exclusions:

A categorical exclusion is recommended for the following identified activities under 22 CFR 216.2(c)(2):

- Activities 1.1, 1.2, 1.3, 1.4, 1.5, & 1.8 under §216.2(c)(2)(i) Education, technical assistance, or training programs except to the extent such programs include activities directly affecting the environment (such as construction of facilities, etc.);
- Activities 2.1, 2.2, 2.3, 2.4 & 2.5 under §216.2(c)(2) (iii) Analyses, studies, academic or research workshops and meetings;

Positive Determination:

A positive determination is recommended for Activity 1.6. The activity relates to project preparation sub-activity that will enable financing of projects implemented under the SEAPs. In addition, if grant-making activities under Activity 1.7 will not be subject to environmental review and decision-making supplemental to this IEE, i.e., using the ERC process, then a positive determination will also be recommended for this activity.

22 CFR 216 Background

22 CFR 216 (often referred to as “Reg. 216”)⁸ is the US federal regulation defining USAID’s conditions and procedures for the environmental review⁹. These procedures apply to all new projects, programs or activities authorized or approved by USAID as well as to significant revisions of ongoing projects, programs, or approaches. The process is intended to prevent activities that are likely to cause significant environmental harm and to ensure that projects monitor and mitigate any negative effects on the environment. The CFR 216 regulation defines classes of actions that have been generally determined to have a significant adverse effect on the environment and therefore is subject to Environmental Assessment (EA) [216.2 (d)]. In certain cases where numerous actions are to be carried out under suggested USAID interventions, which might have significant cumulative effects or are common/generic to the classes of USAID typical activities, a single Programmatic Environmental Assessment (PEA) is applied as per 22 CFR 216.6(d). Pursuant to the Reg. 216, the PEA may be appropriate “in order to assess the environmental effects of a number of similar actions and their cumulative environmental impact in a given country or geographic area, or the environmental impacts are generic or common to a class of agency actions or other activities that are not country specific”. Subsequent Environmental Review and Mitigation and Monitoring reports on major individual actions will be necessary if foreseeable significant impacts of these actions have not been adequately evaluated in the PEA.

The Environmental Threshold Finding for the Proposed Action

The environmental threshold finding for the EC-LEDS program (the Initial Environmental Examination [IEE]¹⁰, DCN: 2012-GEO-076) states that the proposed interventions of the EC-LEDS program, in particular those related to component I of EC-LEDS Program: Municipal Energy Efficiency (including preparation activities to enable financing of projects implemented under SEAPs (sub-activity: 1.6) and providing partial grant support and project financing (sub-activity: 1.7) may have significant adverse environmental and social impacts. At the same time pursuant to 22 CFR 216.2(c)(2)(i), the EC-LEDS program IEE defines activities that receive categorical exclusion (refer to the Box #1).

This environmental scoping statement was prepared pursuant to 22 CFR 216.3(4). The scoping statement team made decision not to include Activity 1.7 in the PEA. Since the demonstration project activities (grant-making activities) under Activity 1.7 will not be initiated until later in

⁸ 22 CFR 216 Agency Environmental Procedures: http://www.usaid.gov/our_work/environment/compliance/22cfr216.htm

⁹ These requirements stipulate from sections 118(b) and 621 of the Foreign Assistance Act (the FAA) of 1961, as amended and are consistent with Executive Order 12114, issued January 4, 1979, entitled Environmental Effects Abroad of Major Federal Actions, and the purposes of the National Environmental Policy Act of 1970, as amended (42 U.S.C. 4371 et seq.) (NEPA).

¹⁰ The Initial Environmental Examination (IEE) is the document prepared by USAID and represents the initial screening of EC-LEDS program activities. IEEs establish mandatory environmental “conditions” [mitigation actions] that must be fulfilled during project or activity implementation to protect the environment and human health and welfare. The Initial Environmental Examination (IEE) for the EC-LEDS program was drafted and approved by the Europe and Eurasia Bureau Environmental Officer (BEO) on June 22, 2012 (DCN: 2012-GEO-076).

Year 1 and then in the subsequent years, it is not possible to develop an environmental Scoping Statement (ESS) with specific information about the individual projects. Instead, we have identified a variety of potential types of projects and conducted a generic scoping activity for these projects. When specific demonstration projects are identified, a review of the project scope will be performed to determine if it meets the criteria from the generic project scoping activity. The environmental review checklist will be used for identifying potential environmental impacts of proposed activities and processes.

Note that some individual projects might require an EA, while others may contribute to minor impacts that can be eliminated or adequately minimized by appropriate mitigation measures, others could meet the categorical exclusion requirements (not requiring further environmental review).

Purpose of Environmental Scoping Statement and PEA

Possible environmental impacts under activity 1.6 are expected to be common/generic to the classes of USAID/Caucasus actions. According to the USAID Initial Environmental Examination (IEE), the EC-LEDS Program received a positive determination requiring further environmental studies. Per the USAID approved IEE, *“the studies for the projects/sites that involve major refurbishment, rehabilitation or construction works will include an environmental assessment (EA) or Programmatic Environmental Assessment (PEA) per 22 CFR 216.6, to be approved by the Bureau Environmental Officer (BEO), to ensure environmental consequences are known and mitigation measures clearly identified prior to releasing of the studies as bankable documents”*.

Prior to the environmental assessment (per 22 CFR 216.3 (4) and approved IEE for EC-LEDS, it is necessary to develop a scope for the assessment to identify the significance and scale of the issues, including direct and indirect impacts to be addressed in the environmental assessment. The process should include a written statement (‘Scoping Statement’) on the scope and significant issues to be addressed. It should include a description, timing, outline, methodology and approach to be applied in the environmental assessment. The scoping statement shall be approved by the Bureau Environmental Officer (BEO). Individual (site specific) environmental assessments may be applied only to those actions for which foreseeable environmental impacts are not adequately evaluated during the environmental assessment.

In accordance with 22 CFR 216.3 (a)(4) procedure objectives of scoping statement is as follows:

- a) A determination of the scope and significance of issues to be analyzed in the Programmatic Environmental Assessment, including direct and indirect effects of the project on the environment;
- b) Identification and elimination of issues from the detailed study that are not significant or have been covered by earlier environmental review; or approved design considerations, narrowing the decision of these issues to a brief presentation of why they will not have a significant effect on the environment;
- c) A description of : a) the timing of preparation of environmental analysis, including the phasing; b) variations required in the format of Environmental Assessment, and c) the tentative planning and decision-making schedule; and
- d) A description of how the analyses will be conducted and the disciplines that will participate in the analyses.

It is anticipated that the proposed PEA will be able to simplify environmental due diligence for the larger set of activities expected under the EC-LEDS Program. The general objectives of the EC-LEDS PEA are as follows:

- Advance an understanding of the EC-LEDS Program supported projects by developing a document that will be useful to USAID/Caucasus/Georgia mission, the Government of Georgia, implementing partner personnel and others interested in working with these types of development investments;

- Analyze the institutional, legal, and regulatory aspects related to the sector, and make comprehensive and realistic recommendations regarding environmental standards, guidelines, law enforcement, and training, thus reducing the need for similar analysis in later EA work;
- Provide opportunities to consider alternative policies, plans, strategies or project types, taking into account their costs and benefits (particularly the environmental and social costs);
- Help to alter or eliminate environmentally unsound investment alternatives at an early stage, thus reducing overall negative environmental impacts, while also eliminating the need for project specific EAs for all these alternatives.
- Consider cumulative impacts of multiple ongoing and planned investments within building rehabilitation and water and sanitation upgrades sectors;
- Allow for comprehensive planning of general sector-wide mitigation, management, and monitoring measures, and for identifying broad institutional, resource, and technological needs at an early stage.
- Facilitate the ability of the USAID/Caucasus/Georgia Mission and its government partners and implementing agents to comply with the requirements of Reg. 216 as they apply to building rehabilitation and water and sanitation upgrade projects;

During the PEA exercise, a team of experts established to carry out the PEA will: a) identify environmental baseline issues of concern for structural measures to be planned and implemented under the EC-LEDS program; b) identify issues associated with rehabilitation, construction and operation that may generate potentially adverse environmental and social impacts; c) develop appropriate Monitoring and Mitigation Plans for the potential EC-LEDS program interventions and d) develop procedures for applying relevant PEA identified mitigation and monitoring requirements in the future to site-specific issues during implementation to refine Mitigation and Monitoring Plans as needed, and e) develop a standardized format for actual mitigation and monitoring reports.

Note: Procedures for development of environmental impact assessment are defined by the Georgian law on Environmental Impact Assessment¹¹. GoG law defines list of activities (projects) requiring mandatory EIA (per Georgian EIA law, none of the EC-LEDS proposed activities require development of EIA). At the same time GoG legislation does not consider development of PEA. Hence, GoG legislation does not envisages revision and/or approval of PEA report. Moreover, Georgian environmental legislation does not provide for preparation of the SS as part of EA process, and thus, does not contain any specific requirements for the preparation of SS (Annex C provides schematic for EIA process in Georgia). The PEA will be made available for public review and comment when the draft version of PEA is ready. The EC-LEDS Program stakeholders (government, non-government, private sector and public representatives) will be invited on PEA public hearing. In addition, a public hearing for the PEA will be advertised in the local newspaper and internet. All comments and suggestions received during public hearing will be incorporated in final PEA report. Final version of PEA report will be reviewed and approved by the USAID/Georgia Mission Environmental Officer (MEO) and the Europe and Eurasia Bureau Environmental Officer (BEO).

PURPOSE, METHODOLOGY AND ENVIRONMENTAL FINDINGS OF THE SCOPING PROCESS

¹¹ **The Law of Georgia on Licenses and Permits** establishes the permit for impact on the environment for activities imposing significant risks on human life or health. Procedures of the permit for impact on the environment are defined by **The Law of Georgia on Permit for Impact on the Environment**. The law regulates activities posing significant risk to human life or health and subject to mandatory ecological expertise. The law establishes the full list of such activities; defines procedures of permit issuance, environmental impact assessment, public participation, public hearings, list of documentation needed for obtaining permit, and other.

Public Scoping Process and Findings

Winrock International Georgia has conducted a scoping process in close consultation with EC-LEDS Program partners, including Sustainable Development Center Remissia (Remissia), Sustainable Development and Policy Center (SDAP-Center) and the Green Building Council of Georgia (GBC Georgia). To carry out the scoping process, environmental issues were identified, reviewed and prioritized. This was accomplished through following tasks:

- a) Identifying and reviewing existing reference materials and studies related to EC-LEDS Program Component I;
- b) Conducting interviews with national stakeholders and surveys of municipalities for assistance under Component I;
- c) Obtaining stakeholder input and feedback in organized meetings to ensure that significant environmental issues are identified.

This section describes the process of municipality surveys for assistance under component I and the public meetings used in the scoping process.

Desk Studies

The baseline studies were initiated at project inception phase and encompassed stakeholder analysis and project needs assessment (Annex H provides more detail on baseline studies reviewed during the SS). The main projects, programs and other activities related to the assessment of GHG's, evaluation of mitigation potential and projects aimed at abatement of GHG's have been considered in this desk review process. There are several projects initiated in Georgia and related to mitigation of emissions of greenhouse gasses and thus connected with LEDS process. These projects have been supported by GEF/UNDP, EU, USAID, and others, as well as bi-lateral assistance from countries. During the scoping statement baseline study exercise, all donor funded projects/programs were reviewed and further assessed by the SS team in order to identify possible cooperation areas with EC-LEDS program. It should be noted that the first mitigation strategy for Georgia was prepared within the Second National Communication of Georgia to the UNFCCC. Strategy covers whole territory but is relatively general and oriented on renewable and energy efficient technologies and overall potential of Georgia for abatement of GHGs. The strategy was supplemented with several project proposals mainly on the utilization of wind energy potential. The on-going project on preparation of Georgia's third national Communication (TNC) to the UNFCCC will update this mitigation strategy. More realistic mitigation strategy supported with concrete project proposals for implementation have been developed within the TNC for Adjara region in close cooperation with government of Adjara Autonomous Republic, Batumi city hall, and municipalities in Adjara as well as local experts. This CC mitigation strategy for Ajara also doesn't consider all potential sources for GHGs mitigation but only most important ones contributing at the same time to the Covenant of Mayor (CoM) process as far as Batumi City Hall is signatory of CoM.

Except of National Communications (NC) to UNFCCC the UNDP implements many other projects related to Climate change but the focus of most of them is on adaptation measures rather than on mitigation options. However, it should be highlighted that adaptation projects on rehabilitation of degraded lands and forests as well as afforestation also contribute to the removing CO₂ from the atmosphere. Other than NCs from UNDP implementing projects only "Renewable energy resources for local energy supply" (GEF) contributes to mitigation. This project aimed at establishment of "Revolving Fund" for renewable resources utilization in Georgia. The Fund was established in 2010 as a part of existing Municipal Development Fund. First activity financed through the Revolving Fund is rehabilitation of small and medium HPPs (Hydro Power Station) through concessional schemes. Main allocation for the Fund has been done by the Government of Germany. Financing of other renewable projects is planned at the next stages.

In addition, the socio-economic survey questionnaires were used as the quantitative method to determine public attitudes and awareness of climate change and GHGs emissions and to identify sources of emissions, energy consumption practices, energy efficiency programs as well as locally

available renewable sources. There were few questions which practically couldn't answer by respondents. This is one of the questions from questionnaire used for survey-*What current energy efficiency programs, efforts, activities do you have going on in your city? What kinds of programs, how long, what is the progress; in which sectors? Where do you get funding for EE programs and activities? What are your priorities in this area –what would you like to see happen for future planning? What are the main barriers (regulatory/legal, financial, technical, social/cultural)?*

These questions practically were not answered by the representatives of municipalities. Energy efficiency is not real priority for the government. Theoretically government has declared EE as an approach/means contributing to the energy security but there is no any EE program developed and actively supported by the Government. Government's participation and contribution to this process is that it welcome EE programs implemented by various donor organizations but the government itself is not interested in removing barriers to EE process. Relevantly, there are not EE programs supported by the local governments at the Municipalities' level. Local governments are aware that energy supply and energy security is the responsibility of private distributor companies. Local governments are not involved in energy consumption monitoring and planning process. In parallel to the decentralization process supported by the new Government awareness of local authorities should be particularly enhanced and they should be taught how to take energy demand in planning process. All barriers listed in the question exist in most of municipalities and among them should be highlighted cultural (in soviet countries wasting of energy was very typical and sometimes promoted by the Government), technical barriers related to the gap in technology needs and market.

Interviews with national stakeholders and Surveys of Municipalities

Stakeholder identification and engagement occurred throughout all stages of SS. During the period of December-February, the EC-LEDS team visited 15 local municipalities¹² in order to select those to provide technical assistance and support for developing and implementing SEAPs. Individual meetings were conducted with representatives of respective municipalities' top management and city halls. Consultations with authorities were taking place in the form of a small working group discussion. Annex B provides list of municipality and city hall representatives interviewed during the SS process (in total 35 representatives were interviewed and program goals and outcomes were discussed). This form of pre-scoping meetings was directed at identifying any policy, legal or administrative constraints that may exist, exchanging information on the proposal and its likely impacts, at the higher level of decision-making at the same time provide an opportunity for concerned representatives from municipalities to make them fully aware and informed of program benefits and effects as well as express opinions, and provide suggestions on the development of particular components of the program.

Based on these municipality baseline studies, interviews and the selection criteria, the EC-LEDS team identified the needs for each municipality and prioritized municipalities to support in developing and implementing SEAPs.

Scoping Statement Stakeholder Meeting

Two public stakeholder meetings were held on February 7, 2014 in Tbilisi and on February 12, 2014 in Batumi with the purpose of providing information to the EC-LEDS program stakeholders on the goals of the program and ensure their involvement at the early planning stage. In total thirty people attended the meetings.

More specifically, the aim of the Stakeholder Meetings was:

- To inform EC LEDS project stakeholders about the goals of the program and ensure their involvement at the early planning stage;

¹² EC-LEDS interviewed representatives of following 15 municipalities: Tbilisi, Kutaisi, Rustavi, Batumi, Gori, Ozurgeti, Polti, Zugdidi, Zestaponi, Khashuri, Sagaredjo, Telavi, Mtskheta, Kazbegi, Akhaltsikhe

- To discuss the potential types of projects supported by the EC-LEDS program;
- To provide an opportunity for the proponents, relevant authorities, interested parties and other stakeholders to exchange information and express their views and concerns regarding the program and gain their feedback; and
- Ensure a positive attitude towards the program and increase cooperation between the EC-LEDS Program and program stakeholders

Public Notice:

Before conducting scoping statement stakeholder meeting, the EC-LEDS team members went to the field in order to get information in advance and ensure stakeholder engagement. Information on scoping statement stakeholder meeting was provided through public notices in Georgian language, local municipality representatives and NGO's. The EC-LEDS program pamphlets were distributed to the public 10 days in advance. The stakeholder meeting was advertised using CENN's mailing list (see www.cenn.org and Attachment C: advertisement). Advance public notices (10 days prior) were provided with adequate information regarding the project and importance of public participation. The date, place and the scope of the meeting were agreed upon with stakeholders (local government/municipalities, ministries, NGO's, private sector and donor organizations). In addition, the individual invitation letters were sent out to target organizations requesting their participation. Individual letters include information regarding the scoping statement stakeholder meeting, time, location and brief information on the EC-LEDS project. A detailed report on the Scoping Statement Stakeholder Meeting is presented in Annex A.

Summary findings of the scoping exercise are as follows:

- Geographic and thematic scope to be scrutinized in further detail through the PEA have been defined by examining various municipalities against set of criteria (including social, environmental and economic parameters) and individual interviews with high level management representatives of municipalities.
- Per the EC-LEDS cooperative agreement, the EC-LEDS Clean Energy Program, through the GeMunee component, will build on USAID's support for Tbilisi and expand assistance to at least nine other municipalities to enable their participation in the COM, including those that are already signatories. Assistance will be limited to those municipalities that are not receiving assistance for similar activities from other donors. Seven cities are currently signatories in Georgia—Batumi, Gori, Kutaisi, Poti, Rustavi, Tbilisi, and Zugdidi. The first city to become a signatory in Georgia, Tbilisi, developed and submitted its SEAP in 2011 and established a Sustainable Energy Agency with assistance from USAID. Assistance to the ten municipalities will include:
 - a) Development and implementation of SEAPs;
 - b) Establishment of Sustainable Energy Offices or Regional Sustainable Energy Resource Centers;
 - c) Development of Monitoring/Reporting/Verification Plans;
 - d) Development of Sustainable Energy Public Awareness Plans;
 - e) Identification and implementation of Demonstration Projects via Partial Grants; and
 - f) Development Credit Authority Guarantees and Financial Institution Assistance.
- 15 Municipalities were visited and assessed for assistance under Component I. EC-LEDS visited and assessed 15 Municipalities. Based on the evaluation criteria approved by USAID, Batumi received the highest score, followed by Kutaisi, Gori, Tbilisi, Poti, Rustavi and Zugdidi. All seven of these cities are signatories to the Covenant of Mayors, having signed in different years beginning in 2010. Batumi and Kutaisi have postponed their deadlines for submission of the SEAPs to COM secretariat. They both must submit their Sustainable Energy Action Plans by 15th of April 2014 or they will be eliminated from the list of

- signatory cities and will automatically lose the opportunity to receive benefits related to grant financing of potential projects announced by the COM.
- Gori, Tbilisi, Poti, Rustavi and Zugdidi were considered for the third Municipality to be assisted during Year I. Tbilisi, Gori and Rustavi have already submitted SEAPs to the EU. Zugdidi was chosen over Poti since their SEAP submission deadline to the COM secretariat is earlier than Poti's SEAP submission date.
 - Thus, the four municipalities to be assisted in FY 2014, prior to September 30, 2014 thus include Batumi, Kutaisi and Zugdidi for submission of their first SEAPs, and Tbilisi for submission of their Monitoring report.¹³ (please refer to Annex B: the final ranking of the municipalities according to the selection criteria).
 - Further consultations have been conducted with these municipalities to identify priority issues to be discussed in the SEAPs and potential types of projects to be supported under the EC-LEDS program..
 - the EC-LEDS team will reassess all municipalities again after the Local Government elections (to be conducted in July 2014), using the same criteria and will verify the additional 6 municipalities for support. In total, 10 municipalities will be targeted for EC-LEDS assistance through the SEAP development and grants program. Selected cities for SEAP development will be locations where at least 10 of 20 climate change mitigation projects will be implemented. Therefore, the PEA will focus on these areas.
 - Measures to be included in the SEAPs might have significant environment and social impacts, both negative and positive effects, on the environment. The majority of selected municipalities consider three main sectors as their top contributors to CO₂ emissions in cities and therefore to be discussed and analyzed in their respective SEAP documents. Those sectors are: *transport*¹⁴, *buildings and infrastructure (municipal waste, water treatment and waste water treatment management; energy efficient buildings; street lighting; and green spaces)*.
 - Priority demonstration projects to be implemented via the EC-LEDS grant fund will include projects identified through the SEAP process, aiming to mitigate emissions in each sector. Mitigation projects, even those of a small scale, may have a significant cumulative impact on the surrounding environment.
 - The evaluation criteria include how the project will support the municipality in meeting its COM commitments (particularly CO₂ reduction goals), energy savings, feasibility of the approach, funding leveraged including public-private partnerships (PPPs) proposed, cost-effectiveness and realism of the project, organizational capacity of the applicant, replicability and scalability, plans for monitoring and evaluation, and addressing issues of gender, youth and people with disabilities. The energy and GHG emissions reductions estimates may be made by the applicants on the basis of energy audits already completed, technical prefeasibility studies indicating the cost, business plans, etc.. (Annex G provides additional detail about the EC-LEDS Grant program).
 - The evaluation criteria include how the project will support the municipality in meeting its COM commitments (particularly CO₂ reduction goals), energy savings, feasibility of the approach, funding leveraged including public-private partnerships (PPPs) proposed, cost-effectiveness and realism of the project, organizational capacity of the applicant, replicability and scalability, plans for monitoring and evaluation, and addressing issues of gender, youth and people with disabilities. The energy and GHG emissions reductions estimates may be made by the applicants on the basis of energy audits already completed, technical

¹³ During the municipality selection process, Gori was ranked as #3 and city of Zugdidi #7. Deadline for submission of SEAP for Zugdidi was defined as June, 2014, hence EC-LEDS team made decision to support Zugdidi municipality in Year I

¹⁴ The 2nd National Communications of Georgia to the UNFCCC submitted in 2009 has identified transport as the key source of GHG emissions in Georgia and has identified the urban sector as a major source of GHG emissions. If Georgia is to reduce its greenhouse gas emissions in a cost-effective manner then it is clear that the transport sector has to be targeted and that sustainable transport has to be promoted. For more information please refer to following webpage: <http://unfccc.int/resource/docs/natc/geonc2.pdf>

prefeasibility studies indicating the cost, business plans, etc.. (Annex G provides additional detail about the EC-LEDS Grant program).

- After receiving the project proposals from the municipalities for implementation under the EC-LEDS Program, a robust process of screening will be conducted. The Environmental review Checklist (ERC) will be used in order to screen proposals and ensure that funded proposals will result in no adverse environmental impact, to develop mitigation measures, as necessary, and to specify monitoring and reporting. The documentation, with justification for not conducting a full EA, will be provided to the USAID/Caucasus/Georgia Mission Environmental Officer.
- Since the demonstration project activities will not be initiated until Year 2, continuing in the subsequent years, it is not possible to develop a scoping statement with specific information about the individual projects. Instead, we have identified a variety of potential types of projects and conducted a generic scoping activity for these projects. Note that some individual projects might require an EA, while others were identified as requiring monitoring or even meeting the categorical exclusion requirements. When specific demonstration projects are identified, a review of the project scope will be performed to determine if it meets the criteria from the generic project scoping activity. If it does, the proposed approach for that project type will be initiated; if not, the project will be subject to a separate scoping statement prior to its initiation.

LIST OF GENERIC PROJECT ACTIVITIES

Based on baseline studies and consultations with stakeholders, the EC-LEDS team has developed an indicative list of structural measures (climate change mitigation projects) that might be recommended and/or implemented under the EC-LEDS Program. Selection of these measures was determined by their high potential of energy savings, the lower cost required for measures to be taken, as well as time constraints¹⁵.

Table 3: Indicative list of typical structural measures that might be recommended and/or implemented under the EC-LEDS Program

#	Sector Area: Building Sector (existing and new buildings)	Location	Eligible for grant financing (Y/N)
Buildings (municipal and residential)			
1	Installation of space heating systems in municipal buildings¹⁶	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
	a) Heating systems with local boilers operating on natural gas	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
	b) Use of bio waste briquettes ¹⁷ for local space heating in municipal buildings (pilot project);	Kutaisi, Batumi, Zugdidi	Y

¹⁵ It is envisaged that development of the EC-LEDS supported climate change mitigation projects will facilitate successful implementation of SEAPs. Moreover, it is understood that implementation of EC-LEDS structural measures will generate achievable energy saving and CO₂ emission reductions for targeted municipalities; thus will support municipality commitment to reduce CO₂ emission by 2020 under the COM.

¹⁶ This measure foresees the installation of central heating systems in municipal buildings where modern heating systems currently do not exist. It is recommended to install boilers with furnaces operating on bio waste pellets. This will provide an opportunity for the use of various fuels like natural gas with the possibility to switch over to bio-waste pellets. It also should be noted that replacing individual heaters with central heating systems using efficient boilers will improve the indoor conditions as well as contribute to the reduction of CO₂ emissions.

¹⁷ Note: Bio-waste briquettes could be considered for heating purposes as a fuel instead of natural gas in municipal buildings bio-waste briquettes are carbon-free; according to researches done by various experts, shifting this fuel will result in

	production of wood waste pellets/briquettes (construction of pellet/briquette mill or installation of pellet/briquette production line)		
2	Refurbishment of municipal buildings	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
	a) Refurbishment of municipal buildings	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
	b) Thermal insulation of building's exterior structure	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
	c) Implementation of low-cost energy efficient measures; Low energy building (pilot project) ¹⁸	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
3	Use of solar water heating panels in municipal buildings (e.g. sports school, hospitals) ¹⁹	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
4	<i>Establishment of energy management and monitoring program in municipal buildings</i>	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
	a) Controlling energy consumption, specifying behavior patterns	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
	b) Development of municipal buildings energy database	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
	c) Specifying energy efficiency indicators for state procurement	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
5	Use of geothermal water for heating and hot water supply (pilot project) ²⁰	Tbilisi, Zugdidi	Y
6	Use of bio-waste briquettes for central heating (pilot project)	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
7	Installation of fluorescent bulbs in common property areas of residential buildings	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
8	Weatherization of common property areas (minimization of infiltration)	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
9	Insulation of roofs	Tbilisi, Kutaisi, Batumi,	Y

reductions of CO₂ emissions by $630.33 \times 0.202 = 127.33$ t/year (for one building with a total heated area $F=2495\text{m}^2$). It is assumed that above project will result at a fuel switch from natural gas to bio-waste briquettes.

¹⁸ The term "low energy building" is generally used to indicate buildings that have a higher energy performance than standard buildings, and thus will have a low energy consumption compared to a standard one. For implementation of above project following activities should be done: refurbishment of a building's structural components with enhanced energy efficiency, installation of central boiler and modern heating as well as a water supply system and installation of efficient bulbs.

¹⁹ Solar collectors transform solar radiation into heat and then transfer that heat to water that can be used for hot water supply purposes. This measure foresees the application of solar vacuum collectors for the hot water supply in municipal buildings like sports schools, kindergartens, and hospitals. It is assumed that solar vacuum collectors will be installed on the roof of building.

²⁰ Deposits of geothermal water resources are located in Tbilisi and Zugdidi cities. Currently geothermal water (mostly for domestic hot water supply purposes) is supplied to some part of Tbilisi city. Proposed project envisages application of modern technologies should be applied to reach a significant improvement in the utilization of geothermal water potential, because nowadays the distribution network pipelines aren't insulated and geothermal water received from the production well isn't returning back through a reinjection well. Hot water is distributed for a limited number of hours; very often without any schedule. The amount of water as well as its pressure in the system, especially in winter, is low. It is suggested to launch the pilot project for the identification of technical solutions aimed at improving the utilization of thermal water potential.

		Zugdidi	
10	Thermal insulation of residential buildings envelope	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
11	Low energy house (new building; pilot project) ²¹	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
12	Installation of solar thermal water heating panels for hot water supply purposes (pilot project)	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
13	Education/information / public awareness campaign	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
Sector Area: Transport sector			
14	<i>Improvement of Public Transport (PT) service</i>	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
	a) Electronic display boards on bus stops	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
15	<i>Popularization campaign for public transport (PT)</i>	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
	a) Public outreach /information campaigns	Tbilisi, Kutaisi, Batumi, Zugdidi	
	b) PT web page and transport guide development	Kutaisi, Zugdidi	Y
16	Private cars discouraging actions	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
Sector Area: Municipal Infrastructure			
17	Intelligent street lighting	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
18	EE improvements to water and wastewater systems such as pumps, meters, local metering, leak detection and repair	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
19	Landfill methane recovery for use in CHP, public buildings or for selling to the gas network	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
Sector Area: Green areas/spaces			
20	Establishment of nurseries	Tbilisi, Kutaisi, Batumi, Zugdidi	Y
21	Reforestation activities	Tbilisi, Kutaisi, Batumi, Zugdidi	Y

SCOPE AND SIGNIFICANCE OF ISSUES TO BE ANALYZED IN THE ENVIRONMENTAL ASSESSMENT

This section provides a description of applicable environmental and natural resources legal requirements, policies, laws and regulations, the 'Affected Environment' in the project areas, and alternatives and significant environmental effects that will be analyzed in the PEA.

²¹ Under this project it is expected that selected residential buildings will be fully upgraded considering their exterior properties as well as the application of efficient bulbs and the installation of a new heating system combined with a solar domestic hot water supply system.

Existing National Legal Framework

2005 Law on Licenses and Permits regulates and legally organizes activities posing certain threats to human life and health, and addresses specific state or public interests, including usage of state resources. It also regulates activities requiring licenses or permits, determines types of licenses and permits, and defines the procedures for issuing, revising and cancelling of licenses and permits.

2008 Law on Environmental Impacts Permit (issued by the Ministry of Environment and Natural resources Protection of Georgia) determines the list of activities and projects subject to ecological examination, requires an environmental assessment, and provides the legal basis for public participation in the process of environmental assessment, ecological examination and decision making on issuance of an environmental impact permit. The **2007 Law on Ecological Expertise** regulates the procedures for ecological expertise on the activities listed by the Law on Environmental Impacts Permit.

The EIA law of Georgia provides a list of activities requiring mandatory EIA and ecological expertise²². The following activities fall under the categories requiring an environmental impact assessment permit: 1) processing of mineral resources other than inert materials, any industrial processes using asbestos, production of construction materials, glass production, processing of municipal solid wastes, and building municipal landfills; 2) disposal, storage and processing/elimination of toxic wastes; 3) gasification, coal liquefaction and production of briquettes; 4) construction of main oil and gas pipelines; 5) construction of gas and oil terminals with a capacity in excess of 1,000 m³ each or in total, and construction of highways and bridges; 6) construction of high voltage transmission lines (more than 35 KV) and sub-stations (more than 110 KV); 7) construction of hydropower plants (2MW or more in capacity) and thermo power plants (10MW or more in capacity); 8) construction of metro (subway) stations; 9) construction of water reservoirs (10,000 m³ or more in volume); 10) construction of wastewater treatment plants (1,000 m³ or more in capacity), and pressure pipes of sewage systems; 11) construction of airport runways, railway stations and ports; 12) construction of dams and harbors; 12) chemical production (chemical processing of semi-fabricated/by-products and production of chemical substances); 13) production and processing of pesticides, mineral fertilizers, solvents, dyes, and plastics; 14) production of explosives, batteries, and graphite electrodes; 15) establishment of petroleum and gas industries (500 tonnes and more in capacity); 16) construction and operation of ferro-alloy plants; and 17) establishment of storage facilities for toxic and other hazardous chemicals. For other activities not listed in the law, technical requirements are established based on the Minister of Environment's order. Permits are issued on a permanent basis, and transfer of ownership is allowed. Several activities subjected to environmental impact authorization are also subjected to construction permitting.

Affected Environment

The Scoping Team conducted field visits in December and January 2013. Desk studies were conducted to gather baseline information and available information was collected from the information provided by municipalities and published sources including books, periodic publications, scientific journals, etc. This section is a brief description of the affected environment. The PEA Team will provide more detail in the PEA (see PEA outline in Section 5).

City of Tbilisi

²²Georgian legislation does not envisage screening and scoping procedures. Screening is the first key decision of the EIA process. Even though Georgian law provides the list of activities requiring mandatory EIA, above list is hard to be perfect. The purpose of screening is to determine need of an EIA. Aarhus observer report states that since project developments differ by scale and impact intensity, often rises issue whether given development proposal requires a permit or not. In such cases the Department of Licenses and Permits in agreement with other departments of the Ministry decides on a case-by-case basis (http://www.aarhus.ge/uploaded_files/616abe0f9cfda0c95fee49e060bdb156.pdf).

In 2010, by signing the Covenant of Mayors, Tbilisi City Hall joined an initiative under which Tbilisi should become a “low carbon city” by 2020. In order to achieve this goal, the Tbilisi City Hall elaborated a Sustainable Energy Action Plan for Tbilisi. When the actions proposed in the SEAP are implemented, the overall CO₂ emissions in Tbilisi will be reduced 25% by 2020 (Annex E presents list of climate change mitigation projects identified under the SEAP for Tbilisi city. Implementation of above structural measures will generate achievable energy saving and contribute Tbilisi city commitment to reduce CO₂ emission by 2020).

Tbilisi, the capital of Georgia, represents a significant industrial, social and cultural center in Georgia. The city stretches 33 km along the Mtkvari River and covers an area of 372 square km. The river divides the city into two parts, with the left side of the city exceeding the right in both territory and population. The southeast part of the city is 350 meters above sea level, while the populated areas of the Mtatsminda slope are located at 550-600 meters above sea level.

In January 2010, there were an estimated 1,152,500 people living in Tbilisi, which is almost 30% of Georgia’s total population. The growth rate of the population in the past ten years has been 1.1%. According to 2005 calculations, the population density in Tbilisi is 2,937 persons per square km. The densest region is the Didube- Chugureti district with 7,855 persons per square km, and the lowest density is in the Isani-Samgori district with 2,323 persons per square km.

In 2005, annual per-capita GDP in Tbilisi was 2,732 GEL, which is about 170 GEL, or 6.5%, more than Georgia as a whole. A significant portion of this economic growth can be explained by the ongoing economic activity of Tbilisi. Industrial output in the capital in 2005 increased by 501.5 million GEL and reached a total of 2,731.8 million GEL, which represented 53.8% of Georgia’s total industrial output. The production of goods and provision of services in Tbilisi differs in legal forms from the overall tendency existing in the rest of Georgia. The share of the non-governmental sector in the capital is about 10% higher than in the rest of the country and accounts for 84% of Georgia’s total output. Tbilisi’s economy is based on the fields of industry, transport and communications, which in aggregate represents more than a half of the output of the capital city.

Kutaisi is the second self-governing city in Georgia, based on population, following the Country’s capital Tbilisi. Kutaisi city is located along both banks of the Rioni river. The city lies at an elevation of 125–300 meters above sea level. To the east and northeast, Kutaisi is bounded by the Northern Imereti Foothills, to the north by the Samguruli Range, and to the west and the south by the Colchics Plan.

The city is surrounded by densely populated municipalities and is the center of western region of Georgia. Kutaisi signed the CoM together with Batumi on 15 July 2011. In the past, Kutaisi was an industrial center of western Georgia, having a large automobile factory. Currently, small and medium size enterprises are developing. The city has serious problems with their water supply, sewage system, landfills and an obsolete car park.

Population growth in Kutaisi in 2002-2012 was 5.8%. If the Parliament of Georgia stays in Kutaisi, a significant increase in population and infrastructure should be anticipated, which will thus increase energy demand.

City of Batumi:

Batumi is a seaside city on the Black Sea coast and it is also the capital of Ajara, the Autonomous Republic of Georgia, located in southwest Georgia. Batumi has signed the EU Covenant of Mayors and is now working on development of a Sustainable Energy Action Plan (SEAP), to be submitted by mid-July. Batumi, with a population of approximately 180,000 and urban territory of 19.5km², serves as an important port and a commercial center. Since 2011 the administrative area of Batumi has been increased to 65 km². The city is situated in a subtropical zone, rich in agricultural produce such as citrus fruit and tea. While industries of the city include shipbuilding, food processing, and light manufacturing, most of its economy revolves around tourism. Both energy consumption and GHG

emissions from the city of Batumi predominantly come from residential buildings and the transport sector.

Preliminary results of Batumi’s energy demand by sector and GHG emissions inventory are shown in table 1 and table 2 below:

Table 1:

Energy Consumption for the City of Batumi by Sectors (2011)

Sector Energy Consumption	GWh	Share, %
Residential buildings	436.0	39.3
Municipal buildings	21.0	1.9
Transport	490.0	44.1
Public Lighting	10.7	1.0
Other (Commercial, Industry etc.)	152.3	13.7
Total	1110.0	100

Source: preliminary data from 3rd Georgian National Communications to UNFCCC, not yet published

Table 2: GHG Footprint for the City of Batumi (2011)

Sector Emission reduction	1000 Tones CO _{2e}	Share, %
Residential buildings	49.5	24.7
Municipal buildings	3.4	1.7
Transport	126.6	63.0
Public Lighting	1.0	0.5
Other (Commercial, Industry etc.)	20.3	10.1
Total	200.8	100

Source: preliminary data from 3rd Georgian National Communications to UNFCCC, not yet published)

With an estimated 126,600 tonnes of CO_{2e} emitted per year representing some 63% of all emissions, the transport sector is the main source of GHG emissions.

Zugdidi is a city in western Georgia, located 318 kilometers west of Tbilisi. The city is the capital of the Samegrelo-Zemo Svaneti region. The city lies at an elevation of 100–110 meters above sea level. **Zugdidi** municipality has the largest population (176.6 thousand people) of all municipalities and is third by population after the two self-governing cities of Tbilisi and Kutaisi. The municipality is on the border with the conflict zone of Abkhazia, having the largest amount of IDPs after Tbilisi city.

Alternatives including Proposed Actions

This section describes the alternative actions that meet the project's purpose and need. All three alternatives are fully described below.

Alternative 1: No Action Alternative

This proposed Alternative is defined as maintaining the *Status Quo*, with no USAID and/or GoG funding and technical assistance for ensuring support of municipalities in implementing their respective SEAPs. This alternative provides the benchmark against which the action alternatives may be evaluated.

If the project were not implemented, there would be extensive impacts ranging from national to the local scale, including:

- Continued low management capacity of the cities and municipalities to plan and manage their energy resources in a sustainable way; potentially leading to no opportunity for environmentally sound practices for saving money, including savings from reduced energy costs;
- Continued negative impacts associated with 'un-managed' expansion of energy and city infrastructure sector;
- No opportunity for increasing local understanding about the importance of energy conservation; potentially leading to increased energy use;
- Increasing negative effects of climate change due to poor local preparedness and response, climate adaptation capacities and lack of finance;
- Poor health and environmental status of local citizens due to obsolescence/absence of sound planning and management of municipal infrastructure and green spaces²³

It is assumed that the no action alternative would result in adverse socioeconomic, health and safety impacts.

Alternative 2: Proposed Action Alternative

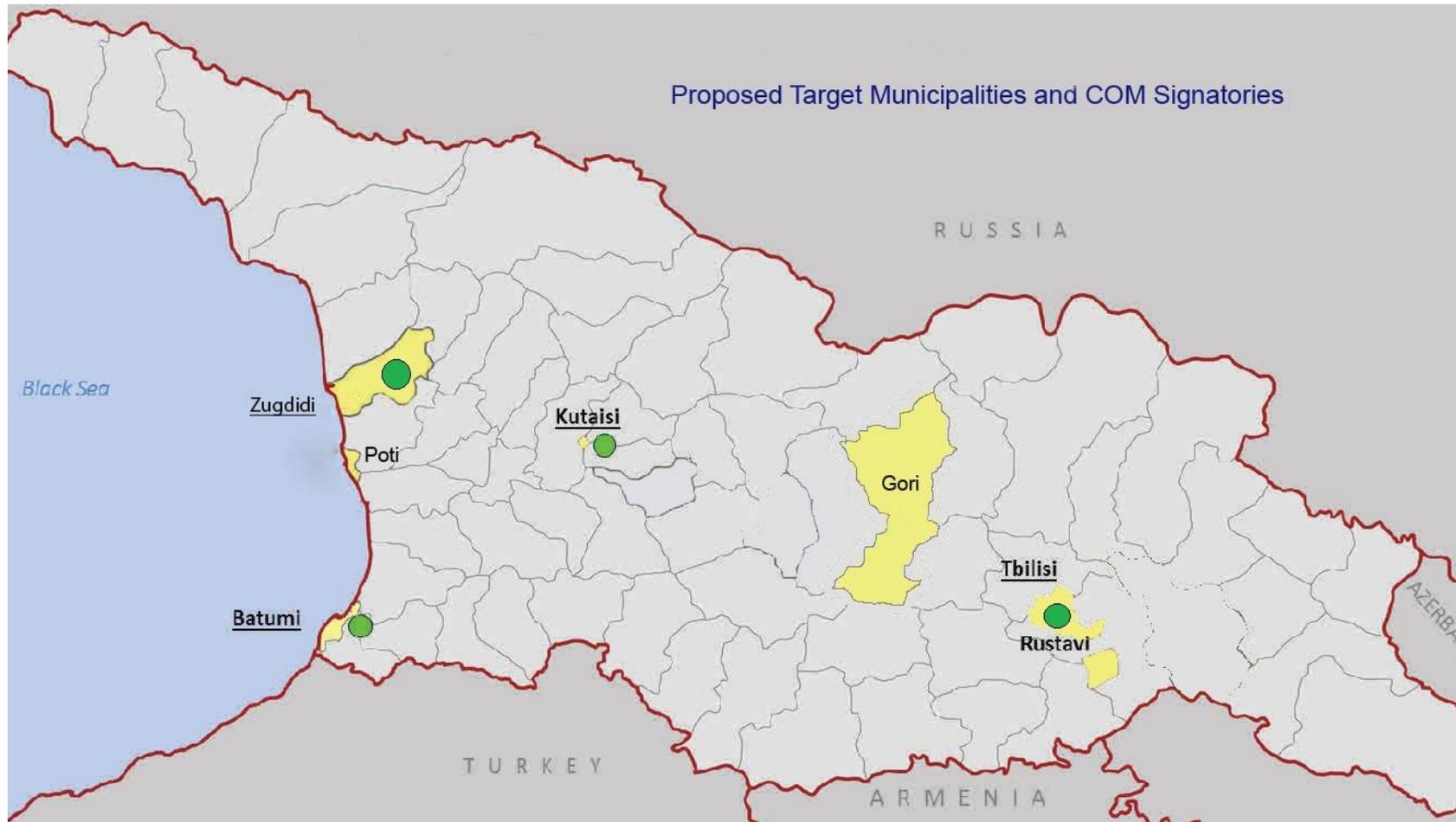
This proposed action implies operating the project as it is proposed. Overall it is planned to implement up to 20 climate change mitigation projects within 10 selected cities/municipalities. Currently the EC-LEDS program is assisting four targeted cities (Tbilisi, Batumi, Kutaisi and Zugdidi) Currently SEAP's are being developed for Batumi, Kutaisi and Zugdidi and an MRV²⁴ plan is planned for Tbilisi, with climate change mitigation project support being an integral part of these plans.

The four municipalities will be assisted in FY 2014 prior to September 30, 2014 and demonstration project activities will not be initiated until later in Year 1. Though a list of 6 additional municipalities was identified for assistance, final selection of remaining 6 cities will commence in the second half of 2014 after local elections, expected to take place in July. Project proposals for remaining 6 municipalities will be developed in the second half of 2015.

²³ Green urban development is a crucial issue for Georgia. Over sixty percent of Georgia's population lives in cities and transport related problems are growing. Most of the traffic is concentrated in urban areas. Urban transport is a rapidly growing energy consumer, driven by the rapid increase in the number of private vehicles, at the expense of less carbon intensive public transport.

²⁴ In 2010, Tbilisi municipality signed the Covenant of Mayors and took commitment to reduce CO₂ emissions by 20% by 2020. As COM signatory Tbilisi municipality elaborated the SEAP which envisages the implementation of EE measures in building and infrastructure sectors. Per COM regulations, Tbilisi City needs to submit its Monitoring, Reporting and Verification (MRV) plans. The EC-LEDS program will assist Tbilisi in developing methodologies for monitoring and verifying energy and GHG emissions associated with activities implemented under SEAP. The plans will address baseline energy consumption; measured savings in energy consumption and energy bills; GHG reductions; and how municipalities are using money saved on energy bills

Picture 1: Map of Targeted Municipalities Location



ALTERNATIVE I: PROPOSED ALTERNATIVE /DISCUSSION AND ANALYSES OF THE PROGRAM ALTERNATIVE

Following general categories of alternatives were considered at scoping stage of PEA process: a) location development alternatives and b) climate change mitigation project activities alternatives.

a) location development alternatives:

This alternative envisages selection of cities for further support for SEAP development. As it was discussed above (see chapter 2.3.2:Proposed Action Alternative), EC-LEDS Program already identified four cities (Tbilisi, Batumi, Kutaisi and Zugdidi) to be assisted for receiving technical assistance for SEAPs in FY2014. The list of 6 additional municipalities was identified for Y2 assistance. Final selection of remaining 6 cities will commence after local elections (in the second half of 2014).

The rationale behind selecting Y1 targeted cities is as follows: Based on the multi-criteria analyses, Batumi received the highest score, followed by Kutaisi, Gori, Tbilisi, Poti, Rustavi and Zugdidi. All seven of these cities are signatories to the Covenant of Mayors, having signed in different years beginning in 2010. Batumi and Kutaisi have postponed their deadlines for submission of the SEAPs to the COM secretariat. They both must submit their Sustainable Energy Action Plans by the 15th of April 2014 or they will be eliminated from the list of signatory cities and will automatically lose the opportunity to receive benefits related to grant financing of potential projects announced by the COM.

Gori, Tbilisi, Poti, Rustavi and Zugdidi were considered for the third Municipality to be assisted during Year 1. Tbilisi, Gori and Rustavi have already submitted SEAPs to the EU. Zugdidi was chosen over Poti since their SEAP submission deadline to the COM secretariat is earlier than Poti's SEAP submission date. Based on the assessment, and meetings with municipalities, the four municipalities to be assisted in FY 2014 prior to September 30, 2014 thus include Batumi, Kutaisi and Zugdidi for submission of their first SEAPs, and Tbilisi for submission of their Monitoring report.

The map illustrating EC-LEDS program targeted municipality locations is provided below (see Picture 1 above).

b) Climate change mitigation project alternatives

The selected cities for SEAP development will be locations where climate change mitigation projects will be implemented. The EC-LEDS team evaluated feasible alternatives for potential measures (climate change mitigation projects) to be included in SEAP plans. Given that site specific information on planned interventions is unavailable, only an indicative list of potential interventions and their feasible alternatives have been considered. The list of potential interventions may be corrected during the PEA process, when ample information is collected, issues identified and prioritized, and potential climate change mitigation actions recommended by the EC-LEDS team. In addition, the evaluation does not give a strong recommendation to any single measure, given that the feasibility of each action and its alternatives may vary depending on site-specific conditions.

Table below provides a list of potential climate change mitigation projects and alternatives that are reasonably foreseeable, but may not necessarily occur. The potential projects of the Proposed Action cover a broad spectrum of possible climate change mitigation projects that may be implemented. Not all potential projects discussed in this SS will be implemented to the full extent discussed in this document. It is recognized that site specific information, technical designs, advancements in technology and other factors may drive certain changes to the potential projects described below. The PEA will be framed in a way that it addresses the projects that may move forward in the short and long-term.

Table 4: EC-LEDS Climate Change Mitigation Project Alternatives

#	Activity	Feasible Alternative(s)	Comments
Municipal Buildings			
1	Installation of space heating systems in municipal buildings	1. No space heating systems installed (no action alternative)	No capital cost is associated with this alternative. However, under this scenario, high heat consumption and loss in municipal buildings will continue to occur and no energy cost savings will be generated. Moreover, GHG emissions won't be avoided.
		2. Installing boilers with furnaces operating on bio waste pallets	This alternative will provide an opportunity for the use of various fuels like natural gas with the possibility to switch over to bio-waste pallets. It should be noted that replacing individual heaters with central heating systems using efficient boilers will improve the indoor conditions as well as contribute to the reduction of CO ₂ emissions, since it is known that the system's efficiency with a boiler is higher than the "Karma"-style individual heaters ²⁵ .
		3. Arrangement of space heating with local boilers operating on natural gas	It should be noted here that implementation of this measure (autonomous heating systems operating on natural gas) separately might not result in substantial energy savings. However, when combined with refurbishment of the building, including insulation of the building envelope, the expected energy savings and emissions reductions are achievable. In addition, it is important to note that by implementing this measure, safety standards in buildings (especially in kindergartens) will be improved.
		4. Use of bio-waste briquettes for local space heating	Bio-waste briquettes could be considered for heating purposes as a fuel instead of natural gas in municipal buildings. Bio-waste briquettes are a carbon-free fuel that provides the opportunity for meeting the targeted 20% reduction of CO ₂ by 2020. However, it should be mentioned that above alternative might be expensive, due to absence of bio-waste market domestically. Though it is environmentally more friendly than application of fuel wood etc.
2	Implementing low-cost energy efficient measures (heat and power)	1. None of EE measures implemented (no action alternative)	Does not require additional capital investment. Under this scenario, high heat consumption and loss in buildings will continue, no energy cost savings will be

²⁵ According to the Tbilisi SEAP report, the efficiency of "Karma" heater is reported to be 85-87% by producers. Tbilisi SEAP report uses an efficiency of 85%, assuming that the energy efficiency of a heater is affected by fluctuations of gas pressure in the gas distribution network. In addition, it should be noted that modern gas boilers have a higher energy efficiency rating. Therefore, the Tbilisi SEAP calculates 90% efficiency based on the same assumption regarding fluctuations in gas pressure during peak hours (Source: Tbilisi Sustainable Action Plan for 2011-2020, page 85).

	saving)		generated, and GHG emissions won't be avoided
		2. Installation of efficient lightening in municipal buildings	The replacement of incandescent light bulbs with compact fluorescent bulbs has the largest energy efficiency increase and consumption reduction potential.
		3. Refurbishment of municipal buildings ²⁶	This is a relatively high cost alternative. It is known that the building and its heating system present one single unit. By upgrading the structure of the building, the load of the heating system will be reduced. Activities under this alternative include the following: replacement of existing doors with PVC doors, installation of double glazed metal-plastic windows, and roofing repair.
		4. Thermal insulation of building	The projects that incorporate insulation of the exterior building have a greater energy saving potential but are characterized by relatively high investment costs.
		5. low energy pilot building ²⁷	Under this alternative, a building will be fully upgraded including insulation of its exterior as well as the application of efficient bulbs and the installation of a new heating system combined with a solar domestic hot water supply system. This is a relatively costly alternative, however, it has high energy savings potential
3	Use of solar water heating panels in municipal buildings (e.g. sports school, hospitals)	1. None of the solar panels installed (no action alternative)	No additional investment is required. Under this scenario, no energy savings will occur, and supply of hot water will continue to stay at very limited scale
		2. Proposed action	This measure foresees the application of solar vacuum collectors for hot water supply in municipal buildings like sports schools, kindergartens, and hospitals. This alternative could be an economically profitable measure. The energy saving potential of this alternative is high compared to using natural gas for water heating.
4	<i>Establishment of energy management and monitoring program in municipal buildings</i>	1. Controlling energy consumption, specifying behavior patterns	This alternative comprises technical assistance (TA) and per US CFR section §216.2 (c) (2) does not require an environmental assessment
		2. Development of municipal buildings energy database	This alternative comprises TA and per US CFR section §216.2 (c) (2) does not require environmental assessment process
		3. Specifying energy	Above alternative comprises TA and per US

²⁶ The analysis of Tbilisi SEAP shows that the payback period for implementation of measures for building exterior refurbishments which are high cost measures is up to 8 years which is relatively short payback period.

²⁷ The term "low energy building" is generally used to indicate buildings that have a higher energy performance than standard buildings, and thus will have a low energy consumption compared to a standard one

		efficiency indicators for state procurement	CFR section §216.2 (c) (2) does not require environmental assessment process
Sector Area: Residential Buildings			
5	Installation of central heating system in residential buildings	1. The use of geothermal water for heating and hot water supply and pilot project	This alternative is environmentally friendly and can be applied only in areas rich in geothermal resources. Furthermore, households using conventional fuel will need to pay a high price for fuel, while for the geothermal resource, there is no price for fuel. For better utilization of geothermal water potential, modern technologies should be applied (e.g. introducing heat pumps, geothermal water re-injection). ²⁸
		2. Use of bio-waste briquettes for central heating (pilot project)	Bio-waste briquettes could be considered as a feasible fuel for heating purposes as an alternative to natural gas in municipal buildings. Bio-waste briquettes are a carbon-free fuel that provide the opportunity for meeting the targeted 20% reduction of CO ₂ by 2020. However, it should be mentioned that the above alternative might be expensive, due to the absence of a domestic bio-waste market. Though it is environmentally friendlier than fuel wood for central heating.
6	Implementation of low-cost energy efficient measures (heat and power saving)	1. Installation of solar thermal water heating panels for hot water supply purposes (pilot project)	This alternative is assumed to be an economically profitable measure. The energy saving potential of this alternative is much higher than using natural gas for water heating.
		2. Installation of fluorescent bulbs in common property areas of residential buildings	This alternative assumes the replacement of incandescent lighting bulbs with fluorescent bulbs in the common property areas and has the largest energy efficiency increase and consumption reduction potential. In addition, this alternative will create the interest and show the advantages of energy efficient bulbs versus traditional incandescent bulbs
		3. Weatherization of common property areas (minimization of infiltration)	This alternative implies replacement of windows and weatherization of common spaces. This alternative will result in a natural gas savings, as well as a reduction in emissions.

²⁸ According different studies, nowadays geothermal water supply system exists only in Tbilisi city; the distribution network pipelines aren't insulated and geothermal water received from the production well isn't returning back through a reinjection well (see following source: Report on Georgia National Case Study for Promoting Energy Efficiency Investment, EEC Georgia, Tbilisi, 2013 http://www.unece.org/fileadmin/DAM/energy/se/pdfs/gee21/projects/cs/CS_Georgia.pdf)

		4. Insulation of roofs ²⁹	This alternative has a relatively low investment cost, does not require a long construction period and will result in high energy savings ³⁰ .
		5. Education/information / public awareness campaign	According to US CFR section §216.2 (c) (2) this alternative does not require an environmental assessment process
7	Thermal insulation of residential buildings envelope	1. None of EE measures implemented	This alternative does not require additional capital investment. However, under this scenario, high heat consumption and loss in buildings will continue, no energy cost savings will be generated, and GHG emissions will not be avoided
		2. Complete gasification of buildings	This is an expensive alternative in terms of both capital cost and operational costs. It is a less environmentally friendly option in terms of GHG emission and is not feasible for EC-LEDS purposes
		3. Installation of thermal insulation on the exterior of buildings	Projects that incorporate insulation of the exterior building have a high energy saving potential
Sector Area: Transport sector			
8	Improvement of Public Transport (PT) service	1. Introduction of new minibuses ³¹	This alternative has high capital costs. Its aim is introducing minibus service in a city which will increase the attractiveness, and popularity, of public transport. This alternative is less feasible than other alternatives for inclusion in the EC-LEDS grant program portfolio.
		2. Electronic display boards on bus stops	This is relatively high cost, but highly feasible, alternative envisages installment of electronic display boards at bus stops. It will increase the convenience of travelling by public transport modes.
9	Popularization campaign for public transport (PT)	1. Public outreach /information campaigns	This alternative comprises TA and per US CFR section §216.2 (c) (2) does not require an environmental assessment
		2. PT web page and transport guide development	This alternative comprises TA component and per US CFR section §216.2 (c) (2) does not require an environmental assessment

²⁹ The houses built during the Soviet era mostly use common construction practices that were used at that time. Roofs in buildings were typically mostly flat, insulation and waterproof layers were considered initially in the design and implemented in the construction phase, but with time these materials deteriorated due to the shorter lifetime (maximum of 30 years) for insulation construction materials that were produced in the USSR.

³⁰ Upgrading roofs of residential buildings from a thermal resistance value $R=0.83 \text{ m}^2\text{C}/\text{W}$ to $R=3.3\text{m}^2\text{C}/\text{W}$ the energy savings will result in 24.031 MWh of savings (Source: Tbilisi SEAP for 2011-2020, Tbilisi, Georgia) - QUESTION – Is 24,031 ACTUAL electricity savings or is it Mwh equivalent, no matter what the fuel or energy source? See me if you need an explanation (delete this comment after you answer the question – thanks).

³¹ Under this alternative it is assumed to introduce new transit minibuses (with a Euro 4 engine) in the cities. Above alternative was suggested by Mayors of cities of Rustavi, Batumi and Tbilisi. It is assumed that new minibuses will increase the attractiveness of public transport and make it popular.

10	Private cars discouraging actions	I. Municipal Fleet Renovation	This alternative has high capital costs. Its aim is substitution of municipal service cars with motor capacity cars. It is not as feasible as other options for inclusion in the EC-LEDS grant program portfolio.
Sector Area: Municipal Infrastructure			
11	Improving street lighting	Installing an intelligent street lighting management center ³²	This is a relatively costly alternative. It is estimated that the development and integration of an intelligent street lighting system will reduce electricity use by 40%-60%.
		Installing light-emitting diode (LED) Light for Street Lamps	LED lamps are more environmentally friendly than CFL bulbs as they do not contain lead or mercury. In addition, LED bulbs have greater energy efficiency potential than CFLs ³³ . These low-energy bulbs also open the possibility of using solar panels instead of running an electrical line, which could be particularly effective in remote areas.
12	Improving waste water treatment systems	EE improvements to water and wastewater systems such as pumps, meters, local metering, and leak detection	This proposed alternative is more environmental friendly, and includes the introduction of modern energy efficient techniques. It has significant energy saving potential.
		Rehabilitation of existing infrastructure	This proposed option envisages renovation/reconstruction of wastewater treatment plants to meet modern standards, purchasing new parts and devices and substituting the obsolete ones. Proposed activity includes full reconstruction of the plant to the designed capacity, entailing the collector; the measure implies connection of new pipelines to the collector to ensure full designed coverage of the population. This option will require significant finances and some legal/tax support as well. Besides, proposed alternative requires significant construction/rehabilitation work. It is not a feasible alternative as it requires high investment.
13	Landfill methane recovery for use in CHP, public buildings or for selling to the gas	Landfill methane recovery	This proposed alternative envisages methane recovery in the Norio ³⁴ landfill since the equipment considered for this measure is already available, and thus the costs would be lower. This proposed alternative requires

³² The core element of intelligent street lighting system will allow for the reduction of the intensity of the light output at night in the case of empty streets and roads, and will increase the voltage as cars approach the area. For example, lights will dim according to the time of the day and/or intensity of car traffic on the highways when motion detectors are installed. The

³³ According to Tbilisi City Energy Efficiency Concept Paper of 2008, the installation of LED (light-emitting diode) traffic lights has the potential to bring significant energy savings.

³⁴ Norio is the new municipal landfill for the city of Tbilisi that began operations in January 2011. Norio landfill has equipment already installed for the recovery of methane that will be generated by the large volume of anticipated waste over several years. Nowadays all other landfills except Norio have been closed. However, methane continues to be generated from these sites.

	network		relatively high capital costs, although it is an environmentally friendly alternative. However, some time is required before the gas will begin to generate (6 months is the anticipated time frame) . Other conditions (depth, management details, composition, possibility of selection/recycling) should be considered to calculate the amount of gas to be recovered, but it will be a constantly increasing quantity, exceeding 10 thousand tons CH ₄ by 2020, according to the baseline estimations (source: Tbilisi SEAP)
		LFG collection method	This proposed alternative envisages the construction and operation of LFG collection and flare system for closed landfills. The LFG collection system is composed of vertical collection holes, gas collection pipes, an airtight sheet, gasholders, measuring instruments, and blowers. This alternative requires high capital costs and some time before gas will begin to generate. However, this alternative will generate significant GHG emissions reductions
Sector Area: Green areas/spaces			
14	Establishment of tree nurseries and reforestation activities	1. No single plant nurseries established (no action alternative)	This alternative does not incur any capital costs. Under this scenario, seedlings/saplings from local nurseries will not be available due to absence of such nurseries. With the absence of tree nurseries, there will be a missed opportunity to obtain additional revenues from selling seedlings.
		2. Tree/planting activities are implemented in city parks	This alternative will need some capital investment. Under this scenario, management of city parks will improve, as well as city air quality and health condition of city population

Alternative 2: Cash Transfer Program

This alternative would provide cash transfers to municipalities, which would provide them with a choice in the selection of low carbon development solutions. This program would involve a pre-set amount for direct payment, and the municipalities would be required to define, design and organize eligible activities and report back to show the financial resources were used for the purposes intended under the EC-LEDS program.

Under this alternative, municipalities would select proper interventions on their own (with variable degree of project identification quality), choose their own contractors, oversight of the work would be piecemeal (depending on the capacities of the municipality), and contractors would not be held to the strict standards that EC-LEDS is held to. This alternative would fulfill the project purpose, and municipalities may feel more “ownership” of the selected and implemented interventions, since they will have greater responsibility for rehabilitation decisions. This may be a benefit in the long-term since they would also be expected to take greater responsibility for maintenance. But it is also acknowledged, that project implementation would proceed in non-harmonized manner and quality assurance might suffer, which might compromise achievement of local as well as nation-wide

outcomes of the program. Financial and monitoring responsibilities, as well as output quality would be degraded compared to implementation modality through single-point high quality management and engineering oversight.

Alternative 3: No Action Alternative

This proposed Alternative is defined as maintaining the *Status Quo*, with no USAID and/or GoG funding and technical assistance for ensuring support of municipalities in implementing their respective SEAPs. The No Action Alternative means that USAID would not support the project and therefore, it would be unlikely that the GoG and municipalities will be given opportunity to test and stimulate low emission municipal and other infrastructure and in level playing field for private actors. Private companies in their turn would not be able to have support in demonstrating economically viable climate friendly solutions. This alternative therefore only serves to provide the benchmark against which the action alternatives may be evaluated.

Under Alternative 3, population in key municipalities of Georgia would continue to live either with inadequate non-energy efficient sanitation facilities or in buildings with poor and/or unsafe living conditions, locked-in in high utility bills for energy and heating. Georgian population (rather its well off part) may undertake improvements on their own, or they may enlist contractors that are not experienced enough to rehabilitate their structures. Both of these possibilities would likely result in poor design and construction practices since there will be little or no oversight and construction will be haphazard, not held to the high standards that are required under the current program. The unsanitary conditions would continue to impact the environment with sewage and if poor construction practices are used. Asbestos removal could result in significant impacts to human health of workers and population. For structurally unsafe and/or unsanitary facilities, risk to public safety associated with building collapse and/or transmission of disease vectors would gradually increase. Some part of municipal population may move to alternative locations with better energy efficiency and insulation specifications, but this is unlikely, and if it occurs, only a small percent are likely to have the resources to move.

To summarize the above and provide some other arguments, if the project were not implemented, there would be extensive impacts ranging from national to local scale, including:

- Continued low management capacity of the cities and municipalities to plan and manage their energy resources in a sustainable way; potentially leading to no opportunity for environmentally sound practices for saving money, including savings from reduced energy costs;
- Continued negative impacts associated with ‘un-managed’ expansion of energy and city infrastructure sector;
- No opportunity for increasing local understanding about the importance of energy conservation; potentially leading to increased energy use;
- Increasing negative effects of climate change due to poor local preparedness and response, climate adaptation capacities and lack of finance;
- Poor health and environmental status of local citizens due to obsolescence/absence of sound planning and management of municipal infrastructure and green spaces³⁵.

It is thus assumed, that the no action alternative would result in adverse socioeconomic, health and safety impacts, and would also comprise the essentially the lost opportunity for initiating and

³⁵ Green urban development is a crucial issue for Georgia. Over sixty percent of Georgia’s population lives in cities and transport related problems are growing. Most of the traffic is concentrated in urban areas. Urban transport is a rapidly growing energy consumer, driven by the rapid increase in the number of private vehicles, at the expense of less carbon intensive public transport.

replicating concerted low emission sustainable development strategies and actions in targeted municipalities and the country at large.

Direct Effects of the Project on the Environment

Direct environmental and social effects of the EC-LEDS Program interventions likely to occur during implementation of on the ground activities, or after their completion, are associated with implementation of climate change mitigation projects.

Based on preliminary assessments and consultations on priority issues with selected stakeholders, we can assume that the majority of climate change mitigation projects will address implementation of small scale energy efforts for the building sector (e.g. installation of photovoltaic (PV) and/or solar hot water panels on existing buildings or installation of ground source heat pumps, weatherization, building refurbishment and thermal insulation, insulation of roofs, development of 'low energy' pilot building project etc.), followed by large scale projects covering geothermal systems, bio waste briquettes, landfill gas recovery, street lighting, wastewater treatment and green space management issues. During rehabilitation/installation and construction of the relevant infrastructure, the following adverse impacts may occur on environment and human health: a) noise and vibration; b) odor; c) pollution of surrounding environment (including air, water, soil); d) community disturbance due to the works of heavy machineries and e) other impacts. Some energy efficient devices might contain materials dangerous for health (e.g. energy efficient light bulbs contain certain amount of mercury); improper handling of these materials could have serious impacts on health. Issues like mercury recovery plans will be addressed in details in PEA report.

It should be mentioned that the potential direct negative effects related to the operation/maintenance phase of projects are mostly associated with improper Operation and Maintenance (O/M) of the systems and/or absence of appropriate environmental controls. These may include, but are not limited to: increased municipal wastewater discharge to surface waters; increased pollution of soil, water and air pollution due to uncontrolled waste (including hazardous) management; increased indoor and outdoor air pollution due to change of fuel from natural gas to biomass; and thermal pollution and release of offensive chemicals due to geothermal water utilization.

In addition, there will be a number of direct positive environmental and social impacts related to the project operation/maintenance phase. Specifically, most measures will mitigate or eliminate climate change related impacts on the environment, i.e. GHG emissions reductions, improved energy efficiency and enhanced utilization of RE, improved indoor and outdoor air quality and improved public health and social conditions.

In case building refurbishment activities are taking place, the building design will be reviewed under existing local and international Building Guidelines, which ensures that energy and water conservation issues are considered and environmental friendly materials are used (e.g. natural, recycled, and durable products or materials made from biodegradable sources) for building retrofitting. In selecting materials for rehabilitation, historic features, toxicity, and disposal considerations will be taken into account.

It is assumed that EC-LEDS Program will provide project assistance for the projects involving use of geothermal water for hot water supply to buildings. The PEA report should discuss technical solutions aimed at improving the utilization of thermal water potential (e.g. projects involving injection of geothermal water back into the geothermal system, metering etc). In addition, if decision is made to implement projects involving reinjection activities, the PEA should define requirements for relevant testing and determination of hydro dynamic, hydro chemical and thermal parameters of water containing horizons. Potential direct negative environmental and social effect related to the

construction/operation/maintenance phase of geothermal energy projects may include, but are not limited to: danger of production well cooling, risks of geological movements, increase of wastewater discharges into surface waters, impact on soil and vegetation and impact on workers safety (i.e. if reinjection activities at the geothermal reservoir are not managed properly, workers may suffer with hydrogen sulfide poisoning).

It is assumed that the EC-LEDS program will provide direct project assistance, and will assist landfill owners and operators, with modeling LFG extracting possibilities, assessing the feasibility of possible projects, and preparing cost analyses of projects. Generally, LFG is created as solid waste decomposes in a landfill. This gas consists of about 50 percent methane, about 50 percent carbon dioxide (CO₂), and a small amount of non-methane organic compounds. Instead of escaping into the air, LFG can be captured, converted, and used as an energy source. LFG is extracted from landfills using a series of wells and a blower/flare system. This system directs the collected gas to a central point where it can be processed and treated depending upon the ultimate use for the gas. From this point, the gas can be flared, used to generate electricity, replace fossil fuels in industrial and manufacturing operations, or upgraded to pipeline-quality gas where the gas may be used directly or processed into an alternative vehicle fuel. According to the Tbilisi SEAP document, the new municipal landfill for the city of Tbilisi (Norio landfill that began operations in January 2011) has equipment installed for the recovery of methane. The methane producing capacity from Norio landfill can be identified from the estimates of the emissions for every year, calculated using the IPCC waste model. The methane recovery is reasonable to carry out in the Norio landfill since there is equipment considered for this measure and the costs would be less. In the closed landfills a methane flare method is more appropriate. In addition, different conditions (depth, management details, composition – possibility of selection/recycling) should be considered to calculate the amount of gas to be recovered. The PEA report should discuss benefits of LFG collecting and flaring system. Besides, the PEA also should discuss the additional measures that must be taken to ensure that routine studies and activities for LFG system proper management and maintenance (i.e. groundwater surveys; erosion inspections; gas extractions;) are not interrupted. For development of landfill gas recovery projects, the EC-LEDS program will need to evaluate siting criteria based on engineering, environmental and socioeconomic factors such as perceptions of the neighboring residents, the magnitude of the environmental impacts, costs, existing land-uses and engineering feasibility. If the decision is made to implement such a project, it is likely that a Supplemental Environmental Assessment will be required.

Potential project under EC-LEDS program may cover EE improvements to wastewater treatment plants. This measure includes purchasing of new, modern devices (digesters, gas holders, aeration system), substituting the old devices of the secondary treatment, that have never worked. The measure will result in a new, modern plant with advanced technology, including methane recovery. The recovered methane will be held in new gas-holders, and used or sold. Sludge, removed after the wastewater treatment, can be composted for use in agriculture as fertilizer or dumped in the landfill. The major issues of concern for wastewater treatment plant EE upgrade projects may include but not limited to: a) pollution of land and water resources; b) water safety; c) human health safety etc. The PEA Team will identify and analyze significant environmental and socioeconomic issues during the assessment, paying attention to both direct and indirect impacts within the projects' area of influence. It is important to note that all phases of the project's life will be considered, from design and construction / rehabilitation to operation / maintenance of the facility and distribution systems.

It is also anticipated that small-scale RE and EE projects anticipated under the EC-LEDS Program will have impacts that can be mitigated by compliance with a specific set of measures identified for each anticipated activity. The mitigation measures to be adopted for a specific project would be determined through an environmental screening to be conducted for each proposed project by the program. In cases where the typical mitigation measures for such an activity are not sufficient to mitigate negative impacts, a more in-depth environmental review will be required in order to determine next steps, such as whether other mitigation and monitoring measures can be readily identified or a full environmental assessment is warranted.

A majority of USAID/Caucasus/Georgia's previous work undertaken by Winrock International Georgia (REP, NATELI, NATELI I and NATELI II) has focused on establishing small-scale pilot projects with grant financing and providing training and capacity building to Georgian individuals and organizations operating in this field. Various programs implemented from 2005 to 2013, provided EE/RE training and technical assistance to technical specialists and financed the implementation of number of small-scale EE projects (including weatherization, fuel switching, and efficient lighting) and RE pilot projects (including micro-hydro, biogas digester, and solar water heating, geothermal water heating projects (involving re-injection projects)). For each project, an environmental review document and EMMP plan were prepared for above projects by Winrock International Georgia employees (some of whom also served on the SS and PEA Team) and approved by the USAID Europe and Eurasia Bureau Environmental Officer and USAID MEO. Given this body of knowledge and experience, the PEA Team will utilize these EMMP Plans (covering site selection, construction/rehabilitation and operation/maintenance stages) to provide input to the mitigation and monitoring actions proposed for the similar activities under the EC-LEDS Program. In addition, the PEA will serve as the environmental manual for all projects under the EC-LEDS Program. The PEA will discuss impact characteristics and Mitigation and Monitoring (M&M) measures for all types of projects (projects covering EE/RE issues, wastewater treatment plants, FLG systems and green areas). Mitigation measures recommended by the PEA will be reflected in the environmental Monitoring and Management Plans (EMMP's) covering following issues: waste management, emissions and noise management, hazardous waste management (including mercury, PCB's, etc), pollution prevention and management, traffic management and community engagement and other issues. The EMMPs will also include monitoring indicators to determine the success of mitigation measures, and reporting requirements. It is expected that, most mitigation and monitoring measures will be included in the EC-LEDS implementation contracts issued by the WI-Georgia or other parties of the Program. WI-Georgia or its designated representatives will both monitor implementation of the mitigation measures to ensure they are effective for reducing or eliminating the environmental impacts

In general, the PEA Team will: 1) identify environmental baseline issues of concern for all types of projects, 2) identify the issues associated with rehabilitation/ and/or construction, operation and/or maintenance/or decommissioning that generate potential significant environmental impacts, 3) develop appropriate Mitigation and Monitoring plans for the potential significant impacts. The PEA will examine these issues in further depth to formalize the environmental due diligence process for the EC-LEDS program.

Indirect Effects/Cumulative Impacts

Some *indirect impacts* (secondary or chain impacts), such as management and disposal of hazardous wastes (mercury containing) from the energy efficiency lighting projects, might occur throughout the operation of the lighting. Most impacts are associated with the construction/rehabilitation/installation phase of proposed interventions and are expected to be temporary³⁶. It is assumed that the construction/installation period for each intervention will be very short (approximately 3-4 month). In addition, climate change mitigation projects will be implemented in residential areas (cities and/or rural settlements) where there are no especially sensitive features (e.g. protected areas and/or other sensitive landscape) nearby. Moreover, the indirect environmental and social impacts of the EC-LEDS program interventions will be relatively similar to the direct environmental impacts as described above.

The EC-LEDS Program will cause a number of spin-off effects. More precisely, it will lead to an increase in knowledge and capacity of municipalities on sustainable energy and natural resources management issues. Also, a successfully planned EC-LEDS campaign will influence energy consumption in the long term, encourage the market for energy efficient products and services, and influence changes in consumption pattern. In addition, the EC-LEDS program will create the

³⁶ The impact duration (temporary, permanent) is the length of time an impact will occur on certain receptor; it depends on the construction period and will be discussed in more details in PEA.

necessary conditions for implementation of the SEAPs and also provide a basis for commitment to, and continuation of, a long-term policy of energy efficient improvements and greenhouse gas reductions.

Cumulative impacts represent environmental impacts of a proposed action in combination with the impacts of other past, existing and proposed actions. Cumulative impacts occur when all impacts are taking place together in terms of location and time. During construction and/or operational phases, there might be a possibility that different impacts will be experienced over the same period of time. Most noticeably, this might happen during the construction period, when traffic, noise and air quality impacts will be disruptive to those living and working nearby the proposed projects.

Significant Environmental Issues and Effects of Planned Interventions to be Analyzed in the Environmental Assessment

The EC-LEDS program team has developed an indicative list (checklist) of structural measures to be implemented under the EC-LEDS program, with likely effects grouped in accordance with individual sectors and activity categories. The level/extent of “significance” was evaluated based on the criteria and methodology developed by USAID³⁷. The scoping team acknowledges that the detailed characteristics of each project proposal and site will determine the potential impacts; thus significant environmental and social analyses will be further discussed in greater details in the PEA document, but also in site specific documentation for each sub-project during implementation. Because of the different types of potential demonstration projects are envisioned under EC-LEDS Program, it is difficult to precisely indicate the direct effects for actual projects. Instead, we provide Table 5, which indicates anticipated significant negative impacts for each of the project types identified during this scoping exercise.

Table 5: Summary of Potential Significant Negative Impacts of EC-LEDS Structural Measures

Type of Structural Measure	Possible Impact	Significance Determination Filter				Potentially Significant
		Subject of USAID or GoG Requirements	Subject of Community Concern	Pollution Prevention Potential ³⁸	High Environmental Risk ³⁹	
I. Installing boilers with furnaces operating on bio waste pellets ⁴⁰	Land resources: change in land form, waste generation, soil erosion and contamination	X ⁴¹				X

³⁷ As reference documents for classifying activities with likely significant impacts, the EC-LEDS program team has used 216 CFR, Environmental Assessment of Construction and Development Proposed Effluent Guidelines (source: http://water.epa.gov/scitech/wastetech/guide/construction/upload/2002_07_03_guide_construction_envir_EA_sectionsI-5.pdf), Georgian EIA procedures and regulations and ADB Environmental Assessment Guidelines, 2003 (<http://www.adb.org/site/safeguards/environment>)

³⁸ Based on technical and business conditions, such as cost-effectiveness, has a high-potential for pollution prevention or resource-use reduction

³⁹ Associated with potential impact to the environment from high environmental loading due to one or more of the following: scale, magnitude, probability, duration (see attached worksheet - definitions used in determining environmental risk).

⁴⁰ This measure foresees the installation of central heating systems in municipal buildings (boilers with furnaces operating on bio waste pellets). This will provide an opportunity for the use of various fuels like natural gas with the possibility to switch over to biowaste pallets.

⁴¹ Above criterion will be met by new construction or major modification projects as per USAID requirements

	Social impacts: workers' and consumers'/operators' safety , nuisance, damage to cultural sites	X	X			X
	Air quality: increased air emissions	X				X
	Biodiversity: destruction of habitats/ecosystems, impact on wildlife due to emissions and dry and wet deposition of pollutants	X				X
2. Arrangement of space heating with local boilers operating on natural gas ⁴²						
	Social impacts: Workers' and consumers'/operators' safety (risk to fire, exposures etc.), damage to cultural sites	X	X			X
	Land resources: soil erosion and contamination	X				X
3. Use of bio-waste briquettes for local space heating ⁴³	Land resources: change in land form, soil erosion and contamination	X ⁴⁴				X
	Water resources: stream/river sedimentation and pollution	X				X
	Air quality: increased air emissions	X				X
	Biodiversity: destruction of habitats/ecosystems, impact on wildlife due to emissions and dry and wet deposition of pollutants	X				X
	Social impacts: workers' safety, nuisance, land-use change, damage to cultural sites, deterioration of	X	X			X

⁴² This group of activities includes arranging the central heating hydronic systems with local boilers for municipal and residential buildings operating on natural gas.

⁴³ This group of activities includes arrangement of boiler operating on bio-waste. The magnitude/level of the impact will depend on the size and/or the type of construction activities. All likely impacts will be considered significant against legal-regulatory criterion, since construction of bio-waste plant regardless of its size will require full EIA in accordance with US CFR 216. As for environmental risk or community concern, the level/magnitude of the impact will vary depending on the scale of construction works and the sensitivity of affected environment

⁴⁴ This criterion will be met by new construction or major modification projects as per USAID requirements

	population's health, increased cost related to air-borne diseases					
4. Installation of efficient lighting ⁴⁵	Workers' and consumers'/operators' safety					
	Hazardous waste generation ⁴⁶	X				X
Refurbishment of municipal buildings ⁴⁷	Social impacts: workers' safety, nuisance, land-use change, damage to cultural sites, deterioration of population's health					
	Land resources: visual disturbance, change in topography, soil contamination					
	Air quality: vehicle exhausts and dust from land works		X			X
low energy pilot building ⁴⁸	Social impacts: workers' safety, nuisance, land-use change, damage to cultural sites, deterioration of population's health	X				X
	Air quality: vehicle exhausts and dust from land works		X			X
	Water resources: surface and ground water pollution, change in ground water table	X				X
	Land disturbance, change in topography, soil	X				X

⁴⁵ This group of activities includes: i) installation of CFLs in municipal buildings; ii) installation of CFL's in common property areas of residential building

⁴⁶ Improper handling of CFL's may generate hazardous waste (mercury); impact scale will depend on the size of the project. Note: there is no national legislation on hazardous waste management in Georgia. Hazardous waste management issues are regulated under the Basel Convention (Annex I). Activity will require development of sound waste management plan

⁴⁷ This group of activities involves the insulation of building's (municipal/residential) exterior structure

⁴⁸ This group of activities includes construction of new building with three main energy efficiency dimensions identified for efficient buildings: a) high insulation of building exterior properties; b) efficient modern central heating and domestic water supply system and c) efficient lighting system. All likely impacts will be considered significant against legal- regulatory criterion, since construction of building regardless of its size will require construction permit in accordance with GoG and EIA in accordance with USCFR 216

	contamination and erosion					
Installation of solar water heating panels in buildings (municipal/residential) ⁴⁹	Workers and consumers'/operation's safety and aesthetic impact ⁵⁰	X ⁵¹	X			X
The use of geothermal water for heating and hot water supply and pilot project ⁵²	Water resources: decrease in water flow, increase in groundwater table, source water contaminations, potential impact of cooling the walls ⁵³	X ⁵⁴				X
	Land resources: soil contamination, land subsidence (caused by fluid withdrawal), thermal pollution and release of offensive chemicals ⁵⁵	X	X			X
	Social impacts: workers' safety, nuisance, damage to cultural sites, deterioration of population's health, accident risks (e.g. occupational hazards and accidents, risk of explosions)	X	X			X

⁴⁹ This group of activities includes the following: i) installation of hot water solar panels in municipal buildings (e.g. schools, hospitals, kindergartens, government buildings, etc.); ii) installation of hot water solar panels in residential buildings; iii) installation of photovoltaic systems in residential buildings; iv) installation of photovoltaic systems in public buildings (e.g. schools, hospitals, kindergartens, government buildings, etc.)

⁵⁰ The magnitude/level of aesthetic impact (e.g. the incompatibility of solar home heating with the existence of evergreen trees) will depend on the project size, methods used and local environmental conditions.

⁵¹ Activity will include procurement of electric/electronic equipment and materials (such as thermal solar panels, radiators, heat pipes). In this case the documentation confirming that materials/equipment's are procured from certified retailers should be available.

⁵² This group of activities may include following: i) direct use of geothermal energy for heating applications and ii) development of geothermal circulation system (apply re-injection techniques)

⁵³ One of the obstacles of geothermal reinjection is the danger of production well cooling. The possible cooling of production wells often occurs because of short-circuiting and scaling in surface equipment and injection wells because of the precipitation of chemicals in the water. The short circulating often occurs when the spacing between injection and production wells is small. In case of green-field project all necessary technical feasibility study of project area should be conducted (including geological, hydrogeological studies and chemical composition of geothermal waters), in order to identify, forecast and prevent possible cooling of wells.

⁵⁴ This impact is only relevant to a project that uses thermal geothermal water as a source and envisages increase in designed capacities through adding new intake facilities. In such a case, a special water use/abstraction license should be acquired for the use of thermal-water source. Furthermore, regardless the source of water or the size of water abstractions, all water users are obliged to report on water abstractions and wastewater discharges (water use accounting report) to the MENRP of Georgia, on an annual basis.

⁵⁵ The magnitude/level of environmental risk will depend on the project site and technology (open system or closed system) as geothermal reservoirs have a wide range of geothermal and chemical properties.

Weatherization of common property areas (minimization of infiltration)	Worker's safety	X	X			X
Insulation of roofs	Workers' safety	X	X			X
Electronic display boards on bus stops ⁵⁶	Workers' safety	X				X
improving street lighting ⁵⁷	Social impacts: workers' safety	X				X
Improving waste water treatment system ⁵⁸	Land resources: visual disturbance, change in topography, soil contamination, soil erosion and land fooling (in case of system overload)	X	X			X
	Water resources: decrease in source water flow, surface and ground water pollution	X				X
	Biodiversity: ecosystem/habitat degradation	X				
	Social impacts: traffic, nuisance, damage to cultural sites, workers and population H&S, increase number of contagious diseases	X	X			X
Landfill methane recovery for use in CHP, public buildings or for selling to the gas network	Land resources: change in land form, soil erosion and contamination	X				X
	Water resources: stream/river sedimentation and pollution, groundwater contamination	X				X

⁵⁶ This activity will include installing the electronic display boards on bus stops and will require procurement of electric/electronic equipment/materials. In this case the documentation confirming that materials/equipment's are procured from certified retailers should be available

⁵⁷ This group of activities includes replacing street lamps by the LED light bulbs. Note: Lighting products that use light-emitting diodes (LEDs) are energy-efficient and mercury-free.

⁵⁸ This group of activities may include the following: i) EE improvements to water and wastewater systems such as pumps, meters, local metering, leak detection and ii) rehabilitation of existing infrastructure. Magnitude/level of an impact against legal-regulatory criterion will depend on the class and the size of the project. US 22 CFR 216 classifies water management projects, including building of impoundments as well as new land development projects as those having significant impacts. These types of projects, therefore, are subject to EIAs. In accordance with Georgian legislation, wastewater treatment plants with a treatment capacity of 1,000 m³ or more and construction of impoundments with a total volume of 10,000 m³ or more are subject to environmental impact assessment and environmental impact permitting.

	Air quality: fugitive emissions	X				X
	Social impacts: labor, population and livestock H&S, nuisance, land-use change, damage to cultural sites, health impacts on population (waterborne and water-related diseases, spreading of contagious diseases via rodents, reptiles, birds, etc.)	X	X			X
Afforestation/Reforestation activities ⁵⁹	Land resources: soil erosion, landscape modification, land compaction	X				X ⁶⁰
	Water resources: stream/river/lake sedimentation/ silting	X				X ⁶¹
	Biodiversity: wildlife disturbance, destruction of habitats, invasive species, modification of natural forests, e.g. distribution	X				X ⁶²
	Social impacts: workers' safety, land use change, increase in risks of forest fires, increase in costs related to forest fires, loss of access to forests by locals, increase in conflicts between local farmers and the owner/operator of the forest plantation over various land uses, Introduction of pests and diseases in the area	X	X			
Establishment of tree nurseries	Land resources: soil erosion and compaction,				X	X

⁵⁹ This group of activities may include the following: i) afforestation/reforestation of forests of state importance; ii) afforestation/reforestation of local importance (municipal) forests; iii) development of energy-tree forest plantations. According to Georgian legislation, afforestation/reforestation projects in state-importance forests require developing afforestation/reforestation plans and its approval by the Ministry of Energy and Natural Resources. Therefore, all likely impacts of such projects will be considered significant against legal-regulatory criterion

⁶⁰ The magnitude/level of environmental risk will depend on the project size, methods used and local environmental conditions

⁶¹ The magnitude/level of environmental risk will depend on the project size, methods used and local environmental conditions

⁶² The magnitude/level of environmental risk will depend on the project size, methods used and local environmental conditions

	land space modification					
	Water resources: pollution of stream/lake located nearby tree nursery ⁶³ , increase in water usage for irrigation of nursery				X	X ⁶⁴
	Biodiversity: wildlife disturbance, habitat destruction, including aquatic biota habitat destruction				X	X
	Social impacts: workers' safety, damage to cultural sites	X	X			X

Definitions Used in Determining Environmental Risk

Table below provides the definition for determining the environmental risk. The environmental and social impacts will be assessed based on best judgment of the staff preparing the PEA document. A scale of 1 to 5 will be used and the table below discusses how each value can be determined. The lower the aggregate score the lower the overall impact. This will determine the types of projects that will require actual EAs.

Parameter	Rating Categories				
	1	2	3	4	5
Scale	Insignificant volume/quantity	Low volume/quantity	Medium volume/quantity	Medium volume/quantity	High volume/quantity
Severity	Minimal impact	Moderate impact but localized and readily containable	Moderate impact over multiple locations	Significant impact and/or regional	Extreme impact and/or potential for global impact
Probability	Very unlikely under any operating condition	Occurs during abnormal/emergency conditions. Probability anticipated and managed	Occurs during routine maintenance activities	Occurs during major maintenance activities	Occurring during normal operating conditions
Duration	Spike situation extremely short-term duration within one day	Less than one month	One to six months	Less than one year	Long-term duration greater than one year or continuous

⁶³ The magnitude/level of environmental risk will depend on the project type and scale, methods used, and local environmental conditions

⁶⁴ The mMagnitude/level of environmental risk will depend on the project scale

For ease of evaluation, the potential significant impacts identified in Table 5.1 have been combined into “impact categories” as shown in the tables. The PEA team will address below listed significant negative impacts identified through above scoping process, but examine them in greater depth through various literature reviews, stakeholder interviews and field investigations.

Table 5.1: Potential Significant Impacts identified during the Scoping Process (‘Impact Categories’)

Activities or Endpoints	Significant Concerns Identified During Scoping;(will be scrutinized during PEA process)	Impact Category
Geology, Soils and Land Use	1) Contamination of soil by accidental spills (fuels, oil and other); and by disposal of debris and generated wastes; and through storm water runoff	1) Waste generation from construction/rehabilitation and demobilization could contaminate soil and water. 2) Poorly planned and maintained onsite sewage treatment systems can contaminate soil, water, and affect human health.
Water Resources	1) Groundwater infiltration/contamination due to disposal and/or accidental spill of oil and lubricants and other waste materials 2) Lack of on-site sanitary facilities for construction workers causing pollution to surface and groundwater	1) Waste generation during construction/rehabilitation and demobilization could contaminate soil and water. 2) Lack of facilities or use of environmentally unsound sanitation facilities for construction workers could contaminate soil and water. 3) Poorly planned and maintained onsite sewage treatment systems can contaminate soil, water, and affect human health.
Socio-economic Issues	1) Introduction of short-term labor force into the community 2) Disturbance of residents due to construction machinery, traffic and/or possible removal activities 3) Employment opportunities in the construction/rehabilitation activities 4) Improvement of livelihoods, including improved standards of living for affected people	1) Construction labor issues could derail support for the project. 2) Construction activities could temporarily affect the quality of life of local population. 3) Labor issues could derail support for the project. 4) Positive effect (see indirect impacts) 5) Lack of a clear process and understanding of ownership could derail project support and affect maintenance of the upgraded infrastructure.
Public Health Issues	1) Potential worker safety impacts due to accidents 3) Occupational Health and Safety concerns due to improper handling and disposal of hazardous wastes at project site (e.g. asbestos) 4) Concerns due to improper cleanup practices and removal/disposal of hospital/medical wastes at project site (e.g. biohazards/infectious agents, asbestos,	1) Worker safety may be compromised if safeguards are not in place. 2) Public safety may be compromised if safeguards are not in place. 3) Hazardous waste, mainly from removal of material containing asbestos, could affect human health and the environment. There would also be hazardous waste produced as a result of water/sewage upgrades if there would be asbestos or other hazardous waste generation

Activities or Endpoints	Significant Concerns Identified During Scoping;(will be scrutinized during PEA process)	Impact Category
	<p>mold, silver, lead, mercury, PCBs, radioactive wastes).</p> <p>5) Health and sanitation problems due to inadequate housing and sanitation structures for laborers</p> <p>6) Improper handling of construction materials</p>	<p>involved in placement of water and sewage pipes and in constructing on-site treatment.</p> <p>4) Waste from cleanup and removal and disposal of hospital and medical wastes could affect human health and the environment.</p> <p>6) Lack of facilities or use of environmentally unsound sanitation facilities for construction workers could contaminate soil and water.</p> <p>7) Worker safety may be compromised if safeguards are not in place.</p> <p>8) Poorly planned and maintained onsite sewage treatment systems can contaminate soil and water, and affect human health.</p> <p>9) Poor potable water quality could affect human health.</p>
Air Quality	<p>1) Generation of dust due to construction equipment; emissions from combustion of fossil fuels by construction equipment; and increase of vehicle traffic emissions during construction</p>	<p>1) Air pollution due to dust and emissions during construction phase.</p>
Waste Generation	<p>1) Disposal of debris and construction wastes</p> <p>2) Sanitation facilities at construction sites during construction phase;</p> <p>3) Hazardous waste impact during rehabilitation activities (e.g. asbestos)</p> <p>4) Hospital/clinic/medical service building rehabilitation impacts from improper cleanup practices and removal/disposal methods (e.g. biohazards/infectious agents, asbestos, mold, silver, lead, mercury, PCBs, radioactive waste).</p> <p>5) Contamination from demolition, construction site demobilization, and site cleanup.</p>	<p>1) Waste generation during construction/rehabilitation and demobilization could contaminate soil and water.</p> <p>2) Lack of facilities or use of environmentally unsound sanitation facilities for construction workers could contaminate soil and water.</p> <p>3) Hazardous waste, mainly from removal of material containing asbestos, could affect human health and the environment. There would also be hazardous waste produced as a result of water/sewage upgrades if there would be asbestos or other hazardous waste generation involved in placement of water and sewage pipes and in constructing on-site treatment.</p> <p>4) Hospital/medical waste from cleanup and removal and disposal of hospital/medical wastes could affect human health and the environment.</p> <p>5) Waste generation, including storm water runoff, during construction/rehabilitation and demobilization could contaminate soil and water.</p>

Activities or Endpoints	Significant Concerns Identified During Scoping;(will be scrutinized during PEA process)	Impact Category
		6) Waste generation, including storm water runoff, during construction/rehabilitation and demobilization could contaminate soil and water.

Moreover, the Scoping Team identified issues considered not significant and therefore, further analysis would not be provided in the PEA, those are: ecosystems and sensitive habitats; biodiversity; historical and cultural sites; aesthetic values; and air quality (operation phase). Issues considered not significant are the same for building rehabilitations and water/wastewater improvements.

IDENTIFICATION AND ELIMINATION OF ISSUES THAT ARE NOT SIGNIFICANT

Issues Not Covered by the PEA

Section §216.2 (c) (2) permits a categorical exclusion from the applicability of USAID’s environmental compliance procedures when the following activities are involved⁶⁵: ‘Education, technical assistance, or training programs except to the extent such programs include activities directly affecting the environment (such as construction of facilities, etc.)’;

There are a number of elements of the EC-LEDS Program which qualify for such an exclusion, since they derive from these three types of activities. The following table provides a summary of activities envisioned under this Program which require attention under the PEA while others can be excluded from consideration.

Table 6: Relationship of Program Objectives and Expected Output

Objective	Outputs	Included in PEA
Georgian Municipal Energy Efficiency (GeMunee)	<ul style="list-style-type: none"> - SEAPs developed (10) - On-job trainings for the municipalities - Sustainable energy offices established - Monitoring/reporting/verification plans developed; - Credit mechanism - Project financing (at least 10) - EE/RE project developed (at least 10) - Bankers trained in RE/EE financing - Sustainable energy public awareness plan developed 	<ul style="list-style-type: none"> - YES - - - - - - Yes - -
Green Building Rating and Certification System	<ul style="list-style-type: none"> - Certification credit system for Georgia established; - Certification procedures outlined; - Enhanced awareness on GB standards, rating, certification and accreditation systems (GoG, private institutions) - Regulatory incentive mechanism to facilitate zoning/permitting process for GB established - Project financing - GB Project developed - Bankers and developers trained in Green Buildings 	<ul style="list-style-type: none"> - - - -
National EC-LEDS Working Group and Advisory Assistance	<ul style="list-style-type: none"> - MARKAL Georgia model developed; - Increase analytical capacity of decision makers - Advisory assistance to GoG 	<ul style="list-style-type: none"> - - -

⁶⁵ except to the extent that such activities have a direct effect on the environment

METHODOLOGY AND SCHEDULE FOR PREPARATION OF ENVIRONMENTAL ANALYSES

METHODOLOGY FOR CONDUCTING ENVIRONMENTAL ANALYSES

Impact Identification/Screening

Impact screening will comprise three phases: **a) identification** – specifying the probable major impacts associated with each phase of the project; **b) prediction** – forecasting the nature, magnitude, extent and duration of the major impacts; and **c) evaluation** – determining the residual impacts that cannot be mitigated. Impact identification and prediction will be based on baseline municipality survey studies to be conducted under the EC-LEDS Program prior to the start of the program, as well as on findings of the ongoing detailed studies. In addition, the PEA team will use a combination of checklists, matrices and experts' opinions for impact identification, prediction and evaluation. The EMMPs for the EC-LEDS Program activities are presented in annex D.

Impact Identification/Screening

Central to the assessment of environmental impacts is the identification of significance criteria. The PEA technical specialists (in close consultation with EC-LEDS program stakeholders) will identify significance criteria for all technical disciplines (e.g. land, water, socioeconomics, etc.) addressed in the PEA. A significance determination will be based on the nature, likelihood, duration and magnitude/intensity of the impact on the environmental receptors due to pressure(s) imposed by the stressors. Special matrices and a scoring scale will be used to measure and grade the "significance of the effect". Attention will be given to direct, indirect and cumulative impacts within the project influence area. The mitigation measures for each significant impact will be defined and further incorporated into the Mitigation and Monitoring Plan.

It is important to note that all phases of the project's life, from design and construction / rehabilitation to operation and maintenance and decommissioning will be considered in the PEA.

Data Sources

The study will use all available information collected from published sources, such as the National Statistics Office of Georgia, various relevant Ministries, regional governance and self-governance authorities, as well as published sources from academia and other available sources. Data sources will include all available EAs for similar types of projects in the country. In addition, the USAID environmental compliance website: http://www.usaid.gov/our_work/environment/compliance/database will be searched to identify useful information for other countries.

Public Consultation Process

During the PEA development process, the EC-LEDS Program team will conduct a series of consultations with stakeholders, such as the primary counterpart ministries, regional and local bodies of governance, academia, non-governmental organizations, and concerned citizens.

This will include presentations and consultations on the following issues:

- likely negative and positive impacts of the project activities,
- magnitude and significance of impacts,
- measures to mitigate negative effects and enhance benefits, and
- monitoring of implementation of mitigation measures.

The consultations will be conducted through bi-lateral and multilateral meetings. Comments and recommendations received during the consultations will be recorded and incorporated into the environmental assessments and mitigation and monitoring plans.

Timing and Phasing of the PEA

The analysis completed in this SS provides the framework that will guide the work of the PEA team pursuant to the process described in USAID's environmental procedures. The team has

determined which potential environmental impacts will be subject to further analysis after consideration of alternative mitigation measures, while insignificant impacts will not be considered further.

In order to carry out the PEA, the scoping team envisions the following additional arrangements, methods, timing and phasing:

Approval of the SS: This SS will be reviewed and approved by the USAID/Georgia Mission Environmental Officer (MEO) and the Europe and Eurasia Bureau Environmental Officer (BEO).

Interim Period: After this SS is approved, the PEA implementation team will begin development of the PEA. This will be done to allow work to begin, but will be accomplished in a manner that is flexible to incorporate comments that may be received during the SS review process. Initial work will include development of scopes of work for PEA team members including technical activities; levels of effort and the schedule of PEA activities, and filling gaps identified in the scoping process. The PEA team will begin analysis of significant environmental and socioeconomic issues, paying attention to both direct and indirect impacts within the project scope. It is important that all phases of the project life be considered, from design and construction to operation and maintenance.

PEA Development Period: The proposed period of conducting the PEA will be approximately five weeks, broken down as follows:

- Week 1: Establish PEA team and develop PEA detailed SOW
- Week 2: Complete data analyses and collection of additional baseline information including required elements under the PEA's affected environment,
- Week 3: Final field evaluations, stakeholder discussion sessions, assessment of significant environmental impacts and development of project alternatives,
- Week 4: Begin writing PEA; additional meetings to fill critical information gaps as needed;
- Week 5: Finalize PEA

ENVIRONMENTAL ASSESSMENT FORMAT AND PEA TEAM COMPOSITION

Environmental Assessment Format

1. SUMMARY

(Summary of findings: The summary shall focus the major conclusions, areas of controversy, if any, and issues to be resolved. Specifically, project alternatives and recommended option, impacts and environmental consequences of project alternatives, and Environmental Mitigation and Monitoring Plans)

2. PURPOSE

(Underlying purpose and need to which the project is responding in proposing the alternatives including the proposed action. Also, brief description of EC-LEDS Program and description of the two subcomponents, what they do, objectives and rationale for what they do.)

3. ALTERNATIVES, INCLUDING THE PROPOSED ACTION

(Present, compare & contrast the environmental impacts of the proposal and its alternatives. Principal technology section, descriptions of the project alternatives considered, pros and cons for each. Rationale for the recommended alternative and its impact on the project.)

4. AFFECTED ENVIRONMENT

(Section that covers the required elements under the PEA's affected environment. Describes the environment around the project development area. Site locations and details about the foot-print of the project. Data and analyses in the PEA shall be commensurate with the significance of the impact with less important material analyzed, summarized, consolidated or simply referenced, as appropriate.)

5. ENVIRONMENTAL CONSEQUENCES

(Environmental impacts of alternatives and proposed action, and adverse impacts that cannot be avoided. This section of PEA should include discussions of direct effects and their significance; indirect effects and their significance; possible conflicts between the recommended actions, policies and controls for the areas concerned; energy requirements; and the design of the built environment, including the recommended alternatives and mitigation measures; and means to mitigate adverse environmental impacts for design/construction and operation/maintenance. In addition, it covers the results of meetings with stakeholders.)

6 ENVIRONMENTAL MITIGATION AND MONITORING PLANS

(Overall description of interventions associated with the recommended alternative, and recommended measures available; Environmental Mitigation Plan and Environmental Monitoring Plan)

7. LIST OF PREPARERS

8. ANNEXES

PEA Team Make-Up

Data collection, field studies, analyses and PEA preparation will be conducted by a specialized team of scientists and engineers from Winrock International Georgia, its partner organizations and invited experts. The PEA multi-disciplinary team (below see PEA team composition) will follow an inter-disciplinary approach in its work, including: a) joint preparation for field visits (identification of key issues); b) conducting interviews with local municipality members (a lead person and reporter designated for each site); c) developing screening guidelines (to be prepared by the PEA Team Leader) to ensure that all issues are covered and team responsibilities are clearly understood; d) arranging post-visit review sessions, to discuss preliminary findings and identify possible mitigation and monitoring actions; and, e) assigning the responsibilities for preparation of report pieces.

Environmental assessment team composition:

Dana Kenney – EC-LEDS Program COP; Quality assurance and control

Mamuka Gvilava, Environmental Specialist, PEA Team leader. He will provide overall monitoring and supervision of activities, will lead the team of experts, assign responsibilities

Mariam Bakhtadze, EC LEDS Environmental Specialist, overall monitoring of activities, environmental compliance and permit related issues

Giorgi Giorgobiani, EC LEDS Financial Specialist, project identification and financing issues

Nino Lazashvili, EC- LEDS EE/RE Manager/Engineer - energy related issues

Avtandil Lomiashvili, EC-LEDS Consultant, RE Specialist, RE project related issues

Marina Shvangiradze, NGO REMISSIA, Climate change mitigation issues

Anna Sikharulidze, NGO REMISSIA, Climate change mitigation issues

Levan Natadze – NGO GBC Georgia, Green building, building retrofitting, energy efficiency issues

Karina Melikidze – NGO SDAP-Center, Building Energy Audit issues

Alec Sumbadze, EC LEADS Community Mobilization Specialist, arranging public hearings and stakeholder meetings

ANNEX A: SCOPING STATEMENT STAKEHOLDER MEETING

Stakeholder Meeting Report

Background:

As part of this process the EC-LEDS team organized a program scoping statement stakeholder meeting with the aim of informing project stakeholders about the goal of the program.

The scoping statement stakeholder meeting for EC-LEDS was held in Tbilisi, at hotel 'TORI' on February 7th, 2014 and in Batumi at the Civic Engagement Center office on February 12th, 2014. The goal of the meeting was to inform EC LEDS project stakeholders about the goal of the program and ensure their involvement in the early planning stage.

This report presents a description of the meeting, lists of participants, and an overview of the training materials.

The general aim of the scoping meeting was to cover a wide range of stakeholders from national to local level government agencies, donor organizations, private sector, NGO's as well as individual residents in potential intervention zones.

The specific objectives of the scoping statement stakeholder meeting were:

- To inform EC LEDS project stakeholders about the goal of the program and ensure their involvement at the early planning stage;
- To discuss the potential types of projects to be supported by the EC-LEDS program;
- To provide an opportunity for the proponents, relevant authorities, interested parties and other stakeholders to exchange information and express their views and concerns regarding the program and gain their feedback; and
- Ensure the positive attitude towards the program and increase cooperation between EC-LEDS Program and program stakeholders

The working language of the workshop was Georgian (consecutive translation from Georgian to English was provided). In total, 30 participants attended the scoping statement stakeholder meetings. Meeting agendas, the meeting notifications, lists of participants and photos are attached to this document as illustrative materials.

Timing and Logistics

Two stakeholder meetings were held in Tbilisi and in Batumi, respectively. The following dates and locations were selected for the stakeholder meetings:

1. Tbilisi: The meeting was held at Hotel 'TORI' conference room; Meeting date: 7 February. The Tbilisi meeting covered a wide range of stakeholders (representatives of various targeted Ministries, donor organizations, Tbilisi's Mayor and local municipalities of Eastern Georgia were invited to participate);
2. Batumi City (Western Georgia): The meeting was held at the Center for Civic Engagement Conference Room⁶⁶. Meeting date: 12 February. The EC-LEDS program targeted municipality representatives of Western Georgia to participate on meeting.

⁶⁶ The Batumi Center for Civic Engagement was established with support of the USAID funded G3 Program. The Center provides a large meeting hall, conference room, and computer lab and library/resource center for public use. The center is equipped with audio-visual equipment (see: <http://cce.ge/DesktopDefault.aspx?alias=CCE&lang=en&tabid=4638>).

The stakeholder meetings were delivered in Georgian and English with all meeting materials provided in Georgian and distributed among the participants. The training was free for all participants.

The full agenda for the meeting is provided in **Attachment B**.

Public notice

The stakeholder meeting announcement was disseminated using CENN's mailing list (see Attachment C: Notification). The date, place and the scope of the meeting were agreed upon with stakeholders (local government/municipalities, ministries, NGOs, private sector and donor organizations).

Individual invitation letters were sent out to target organizations requesting their participation.

A total of 30 persons attended the stakeholder meetings. A full list of participants is provided in Attachment A.

Presenters

The Scoping Statement Stakeholder meetings were opened by Ms. Mariam Bakhtadze (EC-LEDS Environmental Specialist), who introduced the key speakers and provided information on the purpose of the meeting to the attendees.

Ms. Dana Kenney introduced meeting participants to the scope and goal of the EC-LEDS program and provided a brief overview of LEDS process.

The second presentation was provided by EC LEDS Program Environmental Specialist Mariam Bakhtadze; the presentation covered the following topics:

- a) USAID environmental regulation (REG 216): A presenter reviewed the US Federal Regulation defining the USAID pre-implementation environmental impact assessment (EIA) process. Information on USAID's mandatory environmental conditions that must be fulfilled during program implementation to protect environment, health and welfare were introduced.
- b) EC-LEDS Program goals and objectives: A presenter provided detailed information on Component I of the EC-LEDS program. A presenter outlined the types of potential demonstration projects, discussed the ways to define criteria for selecting municipalities/cities for further cooperation.
- c) Discussion of proposed projects and their possible impacts; Participants discussed the potential demonstration projects as well as associated environmental and social impacts.

The EC-LEDS team stressed the importance of public participation in the early project design phase. Mr. Giorgi Giorgobiani (EC-LEDS Financial Expert) provided detailed information about development of credit guarantees and financial assistance for energy efficiency improvements in the EC-LEDS program participating municipalities.

Mr. Giorgobiani highlighted the below mentioned concepts to be applied while designing and implementing the EC-LEDS demonstration project activities:

- Climate change mitigation projects should be prioritized by the SEAP/municipal economic development strategy;
- Technical, economic, environmental sustainability of the projects;
- Private business should be involved with bringing their value into the process;

- The program should look at all possible ways of identifying collaboration opportunities with other donor programs as well as potential for leveraging funds from private sector, local and international financial institutions;

Ms. Marina Shvangiradze (NGO REMISSIA, EC-LEDS Program partner organization) discussed the municipality selection process and selection criteria. After presenting the slideshow presentation of the EC-LEDS Program to the stakeholders, an interactive discussion was held. Stakeholders were asked to raise questions and make comments.

Below are the questions and comments highlighted during the meeting:

Questions & Remarks:

Questions	Remarks
<p>Will program work on development of the energy efficiency finance models to address the particular needs of private end users (e.g. commercial and industrial businesses, residential customers)?</p>	<p>WI will work with the GOG, municipalities, and investors to overcome policy and regulatory barriers to facilitate formation of viable PPPs, such as ESCOs and identify mechanisms for financing PPP projects; WI team will do a sector-wide assessment of available financial mechanisms and establish a working relationship with all active IFIs and local commercial banks. Training for bankers will be designed and conducted to introduce bankers to the essentials of appraisal and valuation of EE projects, loans for ESCOs to engage in energy performance contracts, EE-specific risk assessment techniques, and monitoring plans.</p>
<p>Batumi mayor expressed interest in EC-LEDS green building component and asked question about potential future cooperation with EC-LEDS program on GB issues</p>	<p>EC-LEDS team discussed the possibility of supporting Batumi municipality in working with the private sector on green buildings. WI team provided detail information on potential market driven approaches for promoting EE in buildings, including developing GB rating and certification system for Georgia. WI team expressed importance of close stakeholder cooperation for identifying appropriate GB policy approach for Georgia.</p>
<p>Zugdidi municipality raised importance of energy efficiency public awareness issues. The Zugdidi Sakrebulo representative mentioned that people are aware they need to save energy because prices have risen (unlike in Abkhazia where they are still highly subsidized and people waste energy), but they do not know the technologies or methods to apply them, or how much they can save by applying them. They mentioned that Zugdidi municipality is rich with geothermal energy potential. Importance in investing in geothermal to reduce energy bill for the municipal building was discussed by Zugdidi municipality. Question was asked about possibility of funding such project under EC-LEDS program.</p>	<p>The EC-LEDS team provided information on public awareness promotional strategy for EC-LEDS program. It was mentioned that EC-LEDS Awareness Team will develop a National Communications Plan to define target audiences, key messages and slogans, provide templates for media materials, identify country-wide dissemination channels and timelines, develop, and provide plans for training activities. The EC-LEDS representatives also mentioned that EC-LEDS Awareness Team will work with municipal officials, including PR/Press units, to tailor and implement the plan at the municipal level. They will conduct baseline municipal assessments of the barriers to and benefits of adopting specific energy-saving behaviors. Issue of involving various target groups (youth, women, people with disabilities etc) in EE promotional campaign was discussed.</p>

	<p>G. Giorgobiani mentioned that EC-LEDS program is working on development of framework for encouraging various focus group involvements in EE project demonstration activities, which could facilitate their innovative thinking.</p>
<p>Kazbegi municipality representative emphasized importance of EE/RE/SEAP related trainings for municipality energy managers and other dedicated persons from participating municipalities.</p>	<p>Ms. Shvangiradze explained that at first stage, the needs of all selected municipalities will be evaluated. Those that have priority need (i.e. SEAP submission deadline before September 2014) and have not secured assistance from other sources will be supported first in completing their SEAPS. In addition, specific on-job training will be given to those municipalities that have SEAPS and have identified priority mitigation measures in development of mitigation project proposals.</p>

ATTACHMENT A: LIST OF PARTICIPANTS

	First Name	Last Name	Organization	Mobile	E-mail
1	Tamar	Abuladze	Akhalsikhe Municipality Sakrebulo	599 40 25 50	
2	Zurab	Enukidze	Telavi Municipality Gamgeoba	551 50 30 00	
3	Katerina	Poberezhna	CENN	599 11 10 73	
4	Medea	Inashvili	Ministry of Environment and Natural Resources Protection of Georgia	599 24 81 92	
5	Vakhtang	Zarkua	Fund of Energy Efficiency	599 48 48 62	eef.georgia@gmail.com
6	Neli	Verulava	Energy Efficiency and Natural Resources Protection	599 96 11 57	neli.verulava@mymail.ge
7	Merab	Chirakadze	GTU - Institute "Talgha"	599 98 98 32	
8	Tinatin	Kikacheishvili	Self-Governing Rustavi City Hall	599 15 80 84	redd.tinatinkikacheishvili@gmail.com

9	Valerian	Melikidze	SDAP	0322 99 08 02	vmelikidze@sdap.ge
10	Vladimer	Malovichko	UNESLO	568 71 43 10	
11	Aleksandre	Tsivtsivadze	MKR	597 23 88 44	
12	Ani	Papelishvili	Gori Municipality	599 85 18 06	
13	Levan	Tskhakaia	Fund "Caucasian Ecology"	577 15 70 65	l.cxakaia@gmail.com
14	Imeda	Vardiashvili	Self-Governing Rustavi City Hall	599 85 78 23	redd.imeda.vardiashvili@gmail.com
15	Murad	Kharaishvili	Caucasus Energy Efficiency Program	595 61 11 10	murad.kharaishvili@energocredit.com
16	Ivane	Tsiklauri	UNDP	558 12 72 27	
17	Manana	Marsagishvili	Kazbegi Municipality	599 67 68 87	marsagishvili.m@gmail.com

18	Nino	Chologauri	TBILISI CITY HALL - Municipal Department of Economical Policy	577 15 78 52	n.chologauri@tbilisi.gov.ge
19	Irina	Tchitanava (deda Serafima)	Patriarchy Department	592 14 04 01	
20	Tamar	Antidze	Heinrich Boell Foundation	577 77 40 35	tako.antidze@ge.boell.org
21	Zurab	Tabaghua	Self-Governing Rustavi City Hall	551 90 78 98	z.tabaghua@gmail.com
22	George	Abulashvili	Energy Efficiency Centre Georgia; Covenant of Mayors	599 97 40 03	g_abul@eecgeo.org
23	Levan	Natadze	GBC Georgia	599 48 16 87	gbcgeorgia@gmail.com
24	Nino	Shanidze	Business area KfW Development Bank	599 54 70 50	nino.shanidze@kfw.de
25	Enrico	Spiller	kfw BANKENGRUPPE	577 55 56 04	enrico.spiller@kfw.de
	First Name	Last Name	Position	Mobile	E-mail
26	Manana	Jorjikia	Poti Municipality; Expert of Georgia's Third National Communication on Climate Change	593 64 85 52	mananajorjikia555@gmail.com

27	Lasha	Nakashidze	Batumi City Hall - Economic Policy Service; Strategic Planning, Investment and Economic Development Department - Head of Department	577 11 51 39	lasha.nakashidze@gmail.com
28	Tite	Aroshidze	Batumi City Hall - Economic Policy Service; Deputy Chief	577 30 26 68	titemeister@gmail.com
29	Lali	Kharebava	Zugdidi Municipality Sakrebulo; Head of Legal Department	599 85 24 09	lalixarebava@gmail.com
30	Giorgi	Gasashvili	Zugdidi Municipality Sakrebulo; Public Outreach Department- Main Specialist	599 85 24 47	sabediano@gmail.com

ANNEX B: LIST OF MUNICIPALITY REPRESENTATIVES INTERVIEWED DURING THE SCOPING PROCESS

	Name	Organization	Position	Telephone	E-mail
	Eastern Georgia Municipalities				
1	Zviad Archuadze	Tbilisi City Hall	Head of Economic policy service		archuadze@tbilisi.gov.ge
2	Salukvadze Mamuka	Tbilisi City Hall	Head of city development department	599 10 07 10	m.salukvadze@tbilisi.gov.ge
3	Maia Grdzelidze	Tbilisi City Hall		577155580	m.grdzelidze@tbilisi.gov.ge
4	Tamar Abuladze	Akhaltzikhe	Head of Administration of Akhaltzikhe Municipality Council	5 99 40 25 50	tamar-abuladze@rambler.ru
5	Oleg Sandroshvili	Akhaltzikhe	Chairman of Akhaltzikhe Municipality Council	5 95 28 20 48	osandroshvili@gmail.com osandroshvili@yahoo.com
6	David Razmadze	Gori	Chairman of Gori Municipality Council	995 599 851 800	d.razmadze@gmail.com
7	Givi Khuroshvili	Gori	Administration of Gori Municipality Council	(+995) 599 851 827	givikhuroshvili@gmail.com
8	Anna Papelashvili	Gori	Administration of Gori Municipality Council	995 599 851 806	anapapelishvili@gmail.com

9	Shalva Eloshvili	Kazbegi	Head of Kazbegi Municipality	9 95 90 3177	Shalva.eloshvili@gmail.com
10	Givi Metreveli	Telavi	Head of Telavi Municipality	995 599 505 466	Telavi.gamgeoba@gmail.com
11	Zurab Butskhrikidze	Telavi	Deputy Chairman of Telavi Council	+995 59917 58 71	http://telavi-gov.ge
12	Zurab Enukidze	Telavi	Head of Department of Agriculture Development Contact person	5 51 50 30 00	Zurab_enukidze@mail.ru
13	Nikoloz Kiknavelidze	Mtskheta	Head of Consulting Center; Ministry of Agriculture of Georgia	595858389	nikolozk@yahoo.com
14	Nugzar Khukhunaishvili	Mtskheta	Deputy Governer		nugzari61@mail.ru
15	David Chachkhiani	Rustavi city	Head of Economic Development service; Rustavi city hall	0(341) 224787 0(341) 224797	red.department@gmail.com
16	Tinatin Kikacheishvili	Rustavi city	Leading specialist; Economic Development Service of Rustavi city hall	0(341) 22 47 87; +995 (599) 15 80 84;	redd.tinatin.kikacheishvili@gmail.com
Western Georgia Municipalities					

1	Jemal Ananidze	Batumi city hall	Mayor of Batumi city		j.ananidze@batumi.ge
2	Lasha Nakashidze	Batumi City hall	Head of Economic Development Division Responsible for CoM process	5 77 11 51 39	Lasha.nakashidze@gmail.ge
3	Tite Aroshidze	Batumi City hall	Responsible for transport sector of city Batumi	5 77 30 26 68	titemeister@gmail.com
4	Malkhaz Chrelashvili	Kutaisi City hall	Kutaisi City Hall - Audit and Control Department	595 43 04 54	mchrelashvili@gmail.ru
5	David Sarsania	Poty city mayor	Mayor of City Poti		
6	Vasil Todua	Poty city mayor	Deputy Mayor of City Poti	591 41 417 555	vasiltodua@gmail.com
7	David Khomeriki	City mayor of Poty	Deputy Mayor of City Poti	591 417505	khomerikidato@gmail.com
8	Manana Jorjikia	City mayor of Poty	specialist	5 93 64 85 52	Mananajorjikia555@gmail.com

9	Gia Gasashvili	Zugdidi city mayor		995 599 852 447	sabediano@gmail.com
10	Giorgi Sulukhia	Zugdidi Council	Deputy Chairman of Zugdidi Council	599852402	grigolsxuluxia@gmail.com
11	Lali Kharebava	Zugdidi Council	Head of Juridical Department	599 852409	lalizarebavazug@posta.ge
12	Tariel Tutarashvili	Zestafoni municipality	Head of Zestafoni Municipality	595 22 55 50	tariel.tutarashvili@gmail.com
13	Nugzar Qamushadze	Zestafoni municipality	Deputy Head of Zestafoni Municipality		
14	Tamaz Bejuashvili	Zestafoni Council	Chairman of Zestafoni Council		
15	Irakli Peradze	Zestafoni council	Head of Infrastructure Development Commission of Council		
16	Vitali Chinchaladze	Zestafoni council	Head of financial department of Zestafoni Council		
17	Malkhaz Loladze	Zestafoni council	Head of infrastructure development department		

18	Temur Tsitsilashvili	Zestafoni council	Head of Architecture unit		
19	Boris Tchitchinadze	Zestafoni council	Head of Administration of Zestafoni council	595 334845	borkach@mail.ru

ATTACHMENT B: MEETING AGENDA



Enhancing Capacity for Low Emission Development Strategies EC-LEDS Clean Energy Program

Scoping Statement Stakeholder Meeting for EC-LEDS Program

February, 2014

AGENDA

Time	Introductions	Speakers	Duration
11:00–11:15	Registration		Duration
11.15–11.20	Opening Remarks; presentation of agenda	USAID, EC-LEDS Program	5 min
11:20–11:50	EC-LEDS Program brief overview	<i>Key Speaker:</i> Dana Kelley	30 min
11:50–12:35	– USAID Env. Reg 216 Requirements and Purpose of Scoping Statement; Presentation of Identified Environmental/Social Issues; EC-LEDS Component I: Municipal Energy Efficiency	Speaker: M. Bakhtadze; (<i>co-speakers:</i> G.Giorgobiani; M.Shvangiradze)	45 min
12:35	Break		10 min
12:45–13.45	Questions and Discussion Session	<i>Facilitated by</i> M. Bakhtadze	1 hour
Concluding Remarks			

ATTACHEMENT C: STAKEHOLDER MEETING ANNOUNCEMENT



Enhancing Capacity for Low Emission Development Strategies Clean Energy Program EC-LEDS

დაბალემისიებიანი განვითარების სტრატეგიების შესაძლებლობათა გაძლიერება
სუფთა ენერჯის პროგრამა

Announcement:

Subject: Scoping Statement Stakeholder Workshop Meeting

Project: EC-LEDS Clean Energy Program

Dear Sir/Madam,

The U.S. Agency for International Development (USAID) is supporting the project Enhancing Capacity for Low Emission Development Strategies/EC-LEDS Clean Energy Program. The EC-LEDS Clean Energy Program is implemented by Winrock International Georgia. The EC-LEDS Clean Energy Program assists Georgian municipalities in institutionalizing and implementing climate change mitigation measures, promotes and facilitates private-sector investments in energy efficiency and green buildings and builds the capacity of the Government of Georgia to develop and implement a national Low Emission Development Strategy (LEDS).

Through this project, USAID supports Georgia's efforts to increase climate change mitigation through energy efficiency and clean energy activities, and enable more responsible management and development of Georgia's natural endowments.

The EC-LEDS Clean Energy program is preparing a Scoping Statement for an Environmental Assessment. As part of this process the EC-LEDS is organizing a stakeholder meetings. The purpose of the meetings are to ensure program stakeholders' involvement at early the planning stage and receive feedback and reach a common understanding on program planned activities.

The EC-LEDS is organizing two stakeholder meetings, which will be held a) in Tbilisi, on February 7, 2014 at the hotel TORI at a time of 13:00 and b) in Batumi city on February 12, at Civic Engagement Center office; at a time of 11:00. For additional information, please contact Ms. Mariam Bakhtadze by e-mail: mbakhtadze@field.winrock.org; or mob: 599193091

განცხადება 'დაბალემისიებიანი განვითარების სტრატეგიების შესაძლებლობათა გაძლიერება/სუფთა ენერჯის პროგრამის' დაინტერესებულ პირთა შეხვედრის შესახებ

გაცნობებთ, რომ აშშ-ის საერთაშორისო განვითარების სააგენტოს/USAID მხარდაჭერით, საქართველოში ხორციელდება პროექტი - 'დაბალემისიებიანი განვითარების სტრატეგიების შესაძლებლობათა გაძლიერება/სუფთა ენერჯის პროგრამა', რომელსაც ახორციელებს 'ვინროკ ინტერნეიშენალ' ჯორჯია. 'დაბალემისიებიანი განვითარების სტრატეგიების შესაძლებლობათა გაძლიერება/სუფთა ენერჯის პროგრამა' სამი კომპონენტისგან შედგება. მისი მიზანია, ა) დახმაროს საქართველოს მუნიციპალიტეტებს კლიმატური ცვლილებების შერბილების ინსტიტუციონალური ღონისძიებების განხორციელებაში, ბ) კერძო სექტორის ინვესტიციების მოზიდვის წახალისება/მხარდაჭერა ენერგოეფექტურობასა და მწვანე შენობებში, და გ) უზრუნველყოს საქართველოს მთავრობის შესაძლებლობების გაძლიერება ეროვნული დაბალემისიებიანი განვითარების სტრატეგიის შემუშავება/განხორციელების საკითხში.

პროექტის ფარგლებში დაგეგმილია სამუშაო შეხვედრა დაინტერესებული მხარეების თანამონაწილეობით, რათა გათვალისწინებულ იქნეს თქვენს მიერ გამოთქმული მოსაზრებები და გამოცდილებები, რაც მნიშვნელოვნად გაზრდის პროექტის მიზნდევით დაგეგმილ ღონისძიებების ეფექტურობას.

პროექტის დაინტერესებულ პირებთან შეხვედრები გაიმართება 2014 წლის 7 თებერვალს, თბილისში სასტუმრო თორის საკონფერენციო დარბაზში 13:00 საათზე (მის: თბილისი, ჭანტურიას ქ. #10) და 12 თებერვალს ბათუმის დემოკრატიული ჩართულობის ცენტრის საკონფერენციო დარბაზის შენობაში 11:00 საათზე (მის: ფარნავაზ მეფის ქ. #62-64). დამატებითი ინფორმაციისათვის დაუკავშირდით მარიამ ბახტაძეს ტელეფონზე: ტელ: 599193091 ელ.ფოსტა: mbakhtadze@field.winrock.org

ATTACHMENT D: PHOTOS





ANNEX C: MUNICIPALITY RANKING CRITERIA AND SELECTION PROCESS

EC-LEDS visited and assessed 15 Municipalities. Based on the evaluation criteria already agreed with USAID, Batumi received the highest score, followed by Kutaisi, Gori, Tbilisi, Poti, Rustavi and Zugdidi. All seven of these cities are signatories to the Covenant of Mayors, having signed in different years beginning in 2010. Batumi and Kutaisi have postponed their deadlines for submission of the SEAPs to COM secretariat. They both must submit their Sustainable Energy Action Plans by 15th of April 2014 or they will be eliminated from the list of signatory cities and will automatically lose the opportunity to receive benefits related to grant financing of potential projects announced by the COM. Based on the evaluation, including meetings with Batumi and Kutaisi, these two cities were selected as the first priority cities to receive technical assistance for SEAPs under the EC-LEDS Clean Energy Program.

Gori, Tbilisi, Poti, Rustavi and Zugdidi were considered for the third Municipality to be assisted during Year I. Tbilisi, Gori and Rustavi have already submitted SEAPs to the EU. Zugdidi was chosen over Poti since their SEAP submission deadline to the COM secretariat is earlier than Poti's SEAP submission date. The four municipalities to be assisted in FY 2014, prior to September 30, 2014 thus include Batumi, Kutaisi and Zugdidi for submission of their first SEAPs, and Tbilisi for submission of their Monitoring report. The final ranking of the municipalities according to the selection criteria is listed below:

Summary Ranking of Municipalities

Municipality	Rank	COM Signatory	SEAP Status
Batumi	1	x	Due 4-15-14
Kutaisi	2	x	Due 4-15-14
Gori	3	x	Submitted in 2013
Tbilisi	4	x	Submitted in 2011; Monitoring report overdue
Poti	5	x	
Rustavi	6	x	Submitted in 2012
Zugdidi	7	x	Due 6-30-14
Zestafoni	8		
Khashuri	9		

Sagarejo	10		
Telavi	11		
Mtskheta	12		
Kazbegi	13		
Akhaltzikhe	14		
Ozurgeti	15		
	To be assisted in FY 2014		

EC-LEDS will produce three SEAPs in year one for Batumi, Kutaisi and Zugdidi. In addition the EC-LEDS program will produce the Monitoring, Reporting and Verification report (MRV) for the city of Tbilisi which missed their deadline for the MRV report submission. Rustavi must submit its MRV report to the COM by the end of calendar year 2014.

Local Government elections will be conducted in July 2014 and certain changes in the senior as well as middle management of the municipalities will take place. EC-LEDS will reassess all municipalities again after the elections, using the same criteria. It is expected that there may be changes in Tbilisi and Zugdidi, but no changes will be made to our plans to assist Batumi and Kutaisi, as the deadline for the submission of SEAPs for both cities is April 15th 2014. Below please find tables summarizing the scores and ranking of all 15 municipalities according to the eight criteria agreed with USAID:

1. Criterion 1: CoM Signatory municipality or strong intention to join COM
2. Criterion 2: Population and per capita CO₂ by municipalities in the last three years.

Municipality	Population (Thousand)			CO ₂			Combination			Average Rate of change	Rank
	2009	2010	2011	2009	2010	2011	2009	2010	2011		
Akhaltzikhe	46.9	47.7	48.2	2.9	2.8	3.2	136.01	133.56	154.24	9.1	3
Batumi	122.5	140.4	170.8	2.9	2.8	3.2	355.25	393.12	546.56	95.7	14
Gori	135.8	144.1	145.3	2.9	2.8	3.2	393.82	403.48	464.96	35.6	12
Kazbegi	4.9	4.9	4.9	2.9	2.8	3.2	14.21	13.72	15.68	0.7	1
Khashuri	61.4	62.3	62.5	2.9	2.8	3.2	178.06	174.44	200.00	11.0	6
Kutaisi	188.6	192.5	194.7	2.9	2.8	3.2	546.94	539.00	623.04	38.0	13
Ozurgeti	77.2	77.9	78.4	2.9	2.8	3.2	223.88	218.12	250.88	13.5	9
Mtskheta	56.6	57.1	57.4	2.9	2.8	3.2	164.14	159.88	183.68	9.8	4
Poti	47.5	47.7	47.8	2.9	2.8	3.2	137.75	133.56	152.96	7.6	2

Rustavi	117.4	119.5	120.8	2.9	2.8	3.2	340.46	334.60	386.56	23.1	10
Sagarejo	59.0	59.4	59.8	2.9	2.8	3.2	171.10	166.32	191.36	10.1	5
Tbilisi	1136.6	1152.5	1162.4	2.9	2.8	3.2	3296.14	3227.00	3719.68	211.8	15
Telavi	69.8	70.5	71.0	2.9	2.8	3.2	202.42	197.40	227.20	12.4	8
Zestafoni	75.1	75.4	75.7	2.9	2.8	3.2	217.79	211.12	242.24	12.2	7
Zugdidi	171.6	175.0	176.6	2.9	2.8	3.2	497.64	490.00	565.12	33.7	11

Per capita emissions in Georgia for the last three years (2009, 2010, 2011)

Years	Population (person)	CO2 (tons)	CO2 tons Per capita/year
2009	4 385 400	12 567 000	2.9
2010	4 436 400	12 453 000	2.8
2011	4 469 200	14 270 00	3.2

3. Criterion 3: Willingness of a municipality to address emissions through facilitation and implementation of energy efficiency improvement and Criterion 5- Willingness of the municipality to contribute with human resources especially ensuring implementation and monitoring of SEAP

Municipality	Criteria 3 (8)	Criteria 5 (9)
Akhalsikhe	40	45
Batumi	120	135
Gori	80	90
Kazbegi	40	45
Khashuri	40	45
Kutaisi	120	135
Ozurgeti	0	0
Mtskheta	40	45
Poti	80	90
Rustavi	80	90
Sagarejo	40	45
Tbilisi	120	135
Telavi	80	90

Zestafoni	80	90
Zugdidi	80	90

4. Criterion 6: Annual expenditures in municipalities for infrastructure improvements/construction.

Municipality	Budget share (%) used for infrastructure development	Criteria 6 (10)		Scores
		6.1	6.2	
Akhalsikhe	70	1	13	130
Batumi	95	1	15	150
Gori	75	1	14	140
Kazbegi	23	1	3	30
Khashuri	35	1	7	70
Kutaisi	40	1	10	100
Ozurgeti	11	0	0	0
Mtskheta	36	1	8	80
Poti	55	1	12	120
Rustavi	27	1	5	50
Sagarejo	45	1	11	110
Tbilisi	37	1	9	90
Telavi	22	1	2	20
Zestafoni	33	1	6	60

Zugdidi	25	1	4	40
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5. Criterion 7: Total population within the municipalities

Municipalities are ranked in the range of 1-15 using 2011 year population data

Municipalities	Population (Thous. Person) In 2011	Rank	Scores
Akhaltsikhe	48.2	3	15
Batumi	170.8	12	60
Gori	145.3	11	55
Kazbegi	4.9	1	5
Khashuri	62.5	6	30
Kutaisi	194.7	14	70
Ozurgeti	78.4	9	45
Mtskheta	57.4	4	20
Poti	47.8	2	10
Rustavi	120.8	10	50
Sagarejo	59.8	5	25
Tbilisi	1 162.4	15	75
Telavi	71.0	7	35
Zestafoni	75.7	8	40

Zugdidi	176.6	13	65
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6. Criterion 8: Annual energy consumption in municipalities (if known)

This criterion by its nature is very similar to criteria 2 and 6. However, unlike criterion 2, these figures are measured (for criterion 2, CO₂ is estimated for whole country). The municipalities are ranked by the % increase in energy consumption for three years (2009, 2010, 2011). The latest year of available data is 2011 because emissions have not yet been estimated for 2012. This will be done at the end of 2014 or 2015.

This criterion is similar to Criteria 6 because it has the same mechanism of pre-filtering and the same approach of ranking starting from the maximum score of 15 and then decreasing from there. The minimum score depends on the number of cities providing energy consumption data for the last three years.

Municipality	2010	2011	2012	Criteria 8 (4)		Rank	Scores
	TJ*	TJ*	TJ*	8.1	8.2 %		
Akhaltikhe	0	0	0	0	0	0	0
Batumi	2300.7	2801.8	3301.1	1	0.20	13	52
Gori	326.9	343.3	383.6	1	0.08	11	44
Kazbegi	0	0	0	0	0	0	0
Khashuri	0	0	0	0	0	0	0
Kutaisi	2126.7	2346.0	2233	1	0.03	10	40
Ozurgeti	0	0	0	0	0	0	0
Mtskheta	0	0	0	0	0	0	0
Poti	1725.2	2363.6	3002.0	1	0.37	14	56
Rustavi	1677.3	2230.3	4175.7	1	0.60	15	60
Sagarejo	326.5	319.6	347.5	1	0.03	9	36
Tbilisi	11649.8	11869.8	12069.8	1	0.02	8	32
Telavi	581.2	512.0	586.8	1	0.01	7	28
Zestafoni	0	0	0	0	0	0	0
Zugdidi	300.5	324.7	359.7	1	0.09	12	48

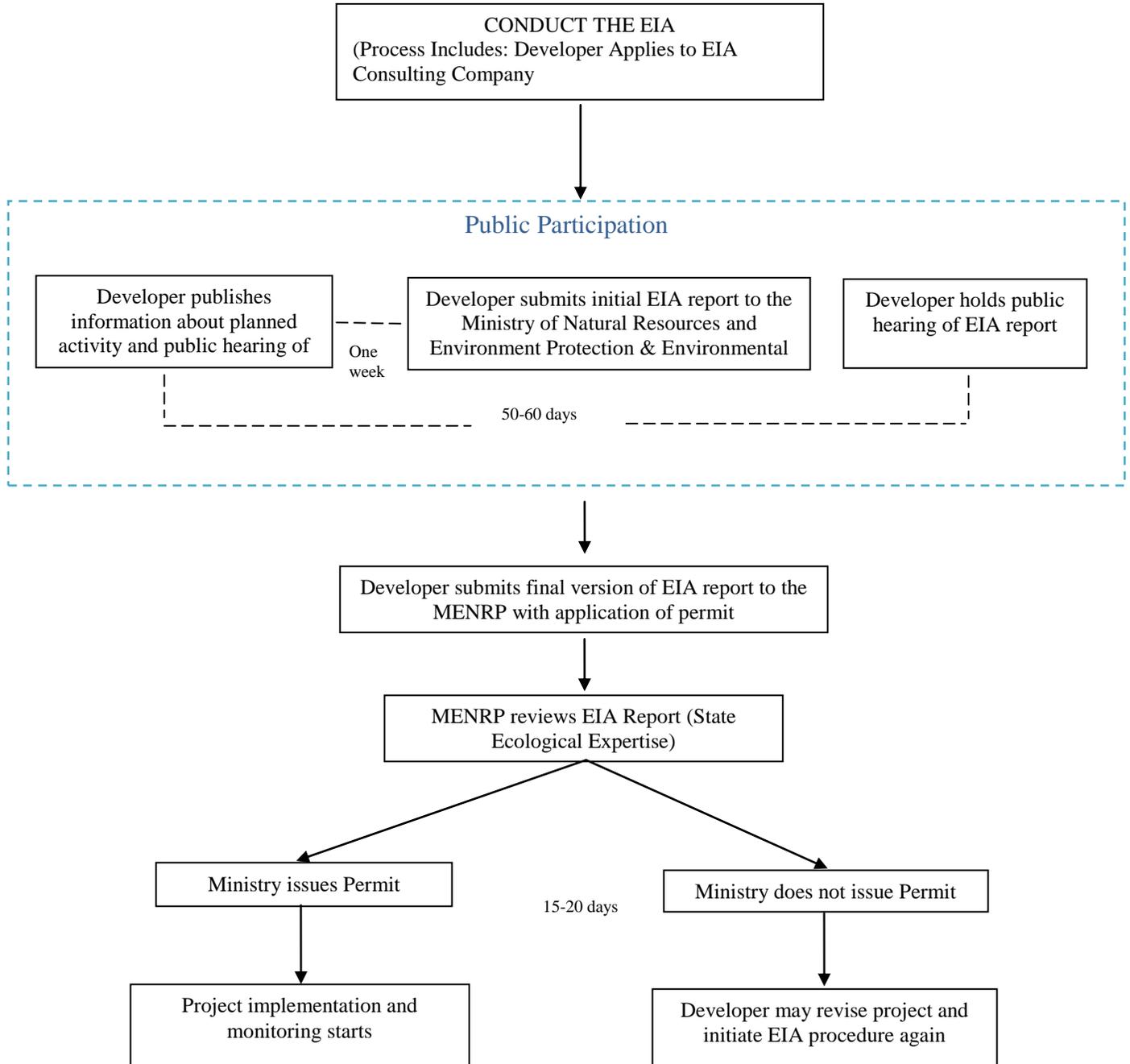
***Terrajoule**

7. **Final table of multi-criteria analysis for selection of SEAP municipalities** : All criteria scores and ranking (those who expressed interest in cooperating with EC-LEDS at this time indicated as “yes” for Criteria 4

Municipality	Criteria 4 a)	Criteria 1 (10)	Criteria 2 (7)	Criteria 3 (8)	Criteria 5 (9)	Criteria 6 (10)		Criteria 7 (5)	Criteria 8 (4)		Total scores	Rank
						6.1	6.2		8.1	8.2		
Akhaltshikhe	Yes	150	98	120	135	1	130	15	0	0	23.0	14
Batumi	Yes	150	84	80	90	1	150	60	1	52	171.7	1
Gori	Yes	50	7	40	45	1	140	55	1	44	160.9	3
Kazbegi		100	42	40	45	1	30	5	0	0	52.0	13
Khashuri		150	91	120	135	1	70	30	0	0	98.5	9
Kutaisi	Yes	0	63	0	0	1	100	70	1	40	166.5	2
Ozurgeti		50	28	40	45	0	0	45	0	0	4.5	15
Mtskheta	Yes	150	14	80	90	1	80	20	0	0	58.5	12
Poti	Yes	150	70	80	90	1	120	10	1	56	155.6	5
Rustavi	Yes	50	35	40	45	1	50	50	1	60	153.0	6
Sagarejo		150	105	120	135	1	110	25	1	36	65.6	10
Tbilisi	Yes	50	56	80	90	1	90	75	1	32	165.2	4
Telavi	Yes	100	49	80	90	1	20	35	1	28	65.3	11
Zestafoni	Yes	150	77	80	90	1	60	40	0	0	107.0	8
Zugdidi	Yes					1	40	65	1	48	152.3	7

ANNEX D: FLOWCHART OF THE EIA PROCESS IN GEORGIA

2.2. Flowchart of the EIA Process in Georgia



ANNEX E: ENVIRONMENTAL MITIGATION AND MONITORING PLAN

Project Impacts (from IEE): Project preparation activities that enables financing of projects implemented under the SEAP's and partial project grant financing activities may have the potential to create serious adverse impacts on land, water and biodiversity

IEE ⁶⁷ Condition	Potential Impact(s)	Specific Mitigation Measure	Responsible Party	Monitoring/Verification Method		Estimated Cost/ Budget Notes
				Indicator	Data Source/ Frequency	
Activity 1.6: Undertake project preparation activities to enable financing of projects implemented under the SEAP's						
Energy efficiency improvements (e.g. weatherization, new windows, indoor lighting, hot water etc) to public buildings	Activity may generate toxic waste materials that may contaminate land and surface/groundwater (e.g. lead paint, asbestos and/or mercury etc).	Identify partners/ establish partnerships (public/private) on proper handling of toxic wastes; For activities that involve medical facilities and operations develop and implement adequate procedures and capacities to properly handle, label, treat, store, transport and dispose of sharps, blood, and other infectious waste ⁶⁸	WI Environmental Specialist	Periodic checks to ensure procedures are being followed ; documentations on waste landfill bills, testing results and certification on waste transportation is provided	Unit Progress Reports	Incorporated in LEDS Program budget
		Identify areas of collaboration (i.e., mechanisms/ opportunities to provide transport/storage/ disposal services for toxic waste)	WI Environmental Specialist	Type of collaboration	Unit Progress Reports	Incorporated in LEDS Program budget
		Secure participation of accredited transporters/recyclers/ handlers of toxic wastes in LEDS project areas	WI Environmental Specialist	Number of partner accredited toxic waste handlers/ transporters/ recyclers	Unit Progress Reports	Incorporated in LEDS Program budget

⁶⁷ Initial Environmental Examination.

⁶⁸ "Healthcare Waste: Generation, Handling, Treatment and Disposal" Guidelines can be used as a source of information and best practices (http://www.usaid.gov/our_work/environment/compliance/ane/ane_guidelines.htm)

IEE ⁶⁷ Condition	Potential Impact(s)	Specific Mitigation Measure	Responsible Party	Monitoring/Verification Method		Estimated Cost/ Budget Notes
				Indicator	Data Source/ Frequency	
		Conduct a training on waste safe handling, storage and disposal	WI Environmental Manager	Number of events; training materials developed; signed list of participants kept; training report kept	Unit Progress Reports	Incorporated in LEDS program budget
	Human health impact	Ensure workers have access to, and utilize, appropriate safety gear. Workers' training incorporates safety measures; Restrict access to site to ensure public safety and site security	LEDS site manager	Visual inspection of construction and operation activities (photo documentations kept), and examine if there are signs of negative impacts as a result. Inclusion of safety procedures in training programs	Standard monitoring and reporting protocol Monitoring frequency: Weekly safety inspections. Training programs	
Energy efficiency street lightening	Activity may generate toxic waste that may impact soil and water resources	Development/ Updating and distribution of information materials on proper waste disposal; development waste management procedures (including procedures for waste segregation, packaging and disposal)	Environmental Manager, PA Specialist	Number of training materials, leaflets, brochures	Unit Progress Reports	Incorporated in LEDS program budget
Co-generation Heat and Power (CHP), including	Improper stockpiling of wastes and oil fuel may impact surface and ground water quality.	Where wastes and diesel and oil fuel are held onsite, adequate measures will be implemented to control runoff, including containing and covering on non-permeable grounds.	Powerhouse manager and LEDS site manager	Visual inspection of waste containment (develop field inspection report with supporting photo	Report on what measures are to be taken once the project design is complete.	Incorporated in LEDS program budget

IEE ⁶⁷ Condition	Potential Impact(s)	Specific Mitigation Measure	Responsible Party	Monitoring/Verification Method		Estimated Cost/ Budget Notes
				Indicator	Data Source/ Frequency	
biomass fuel that feeds into and serves heating networks for municipal buildings				documentation), any evidence of leakage, and examine if there are signs of negative impacts as a result.	Standard monitoring and reporting protocol	
	Unsafe waste disposal may pose impact on land, water resources and human	Wastes will be disposed of appropriately. Appropriate waste disposal facilities will be provided, with preference given to contracting with a waste disposal company, if available.	Powerhouse manager and LEDS site manager.	Records kept of quantities of wastes collected, stored, and disposed, including any treatment actions taken, and location and method of disposal. These records will be available to the LEDS team upon request.	Report on what measures are to be taken once the project design is complete. On-going records of waste production and treatment. Standard monitoring and reporting protocol.	Incorporated in LEDS program budget

IEE ⁶⁷ Condition	Potential Impact(s)	Specific Mitigation Measure	Responsible Party	Monitoring/Verification Method		Estimated Cost/ Budget Notes
				Indicator	Data Source/ Frequency	
	Air and water pollution due to improper operation and/or maintenance of equipment	Machinery and equipment maintained in good working condition and regularly inspected for leaks that may runoff or be emitted into the air. Maintenance and operations procedures used which follow the manufacturers' guidelines for safety	Powerhouse manager and LEDS site manager	According to equipment manufacturer's specifications.	Maintain inspection and maintenance records. Report on the inspection and maintenance procedures according to the technology supplier once design is finalized and technology supplier selected.	Incorporated in LEDS program budget
	Human health and Safety risks	Ensure plant workers have access to, and utilize, appropriate safety gear. Workers' training incorporates safety measures; Restrict access to site to ensure public safety and site security Medium and small-scale enterprise guidelines will be consulted for input on necessary training and proper management ⁶⁹	Powerhouse manager and LEDS site manager.	Visual inspection for presence of safety equipment and discussion with staff on their familiarity with it. Inclusion of safety procedures in training programs.	Standard monitoring and reporting protocol Monitoring frequency: Weekly safety inspections. Training programs	Incorporated in LEDS program budget

⁶⁹ "Medium and small-scale enterprises guidelines" available at http://www.usaid.gov/our_work/environment/compliance/ane/ane_guidelines.htm

IEE ⁶⁷ Condition	Potential Impact(s)	Specific Mitigation Measure	Responsible Party	Monitoring/Verification Method		Estimated Cost/ Budget Notes
				Indicator	Data Source/ Frequency	
	Human health issues from exposure/improper use	Fuel properly stored and fire safety equipment is on site and maintained	Powerhouse manager and LEDS site manager	Visual inspection for presence of safety equipment and discussion with staff on their familiarity with it. Inclusion of safety procedures in training programs	Standard monitoring and reporting protocol Monitoring frequency: Weekly safety inspections. Training programs	Incorporated in LEDS program budget
Energy efficiency improvements to water and wastewater systems such as pumps, meters, local metering, leak detection and repair	Contamination of waterways/ sources and/or soil from runoff due to leaking fuel or lubricants from construction equipment	Machinery and equipment maintained in good working condition and will be regularly inspected for leaks Any maintenance of equipment or machinery onsite will only occur over non-permeable areas with adequate containment measures to capture spills Fuel/oil storage will be provided with adequate containment measures to capture spills; excess will be disposed of properly	Implementing partner Sub-grantees report to WI, who in turn report to USAID within 24 hours	Visual inspection of equipment to ensure proper working condition; ensure adequate containment measures are in place Water quality tests for contamination (if necessary)	Monitoring weekly during construction Reporting in quarterly reports	Incorporated in LEDS program budget
	Sanitation risk from construction/demolition could include dust and debris, demolition waste such as lead paint and other toxic materials can contaminate soil, groundwater, waterways	Prior to demolition, determine whether toxics are present Maintain safeguards to contain toxics and dispose of properly Ensure construction crews wear protective gear	Implementing partner Sub-grantees report to WI, who in turn report to USAID	Site analysis complete to determine presence of toxics Periodic site visits to ensure workers are properly protected	Analysis complete prior to construction Monitor weekly during construction Reporting in	Incorporated in LEDS program budget

IEE ⁶⁷ Condition	Potential Impact(s)	Specific Mitigation Measure	Responsible Party	Monitoring/Verification Method		Estimated Cost/ Budget Notes
				Indicator	Data Source/ Frequency	
				and materials contained	quarterly reports	
Landfill methane recovery for use in CHP, public buildings or for selling to the gas network	Improper storage/disposal contaminates waterways/ water sources Human health issues from exposure/improper use	Properly store and dispose of all inventory When applicable, wear protective gear and use in a well-ventilated area	Training is conducted by LEDS team Monitoring conducted by LEDS team	Due diligence and training complete	Monitoring conducted as part of site visits by Winrock program staff Reporting in quarterly reports	Incorporated in LEDS program budget
Improvements to apartment buildings managed by condominium association or other housing maintenance organizations organized by municipality	Community concern over the benefit sharing	Put in place measures to register and deal with complaints and grievances from the community concerning the project. Ensure any damage to private property is adequately measured and compensated based on prior and informed consent	Municipality, Condominium association and LEDS site manager The LEDS Community Outreach Coordinator is responsible for working with the Condominium to establish this system.	Existence of plan and stakeholder discussions as evidence that community is aware of the measures; Stakeholder discussions	Standard monitoring and reporting protocol	Incorporated in LEDS program budget

IEE ⁶⁷ Condition	Potential Impact(s)	Specific Mitigation Measure	Responsible Party	Monitoring/Verification Method		Estimated Cost/ Budget Notes
				Indicator	Data Source/ Frequency	
Activity 1.7. Provide partial project grants and project financing						
Possible construction activities include: Minor rehabilitation / renovation of buildings for EE interventions; Installation of “green” improvements such as solar panels. The guiding principles for minimizing and	Siting of new physical facilities/structures disruptive of communities’ needs/activities	Encourage joint participation of experts and community members in selecting sites for action	Implementing partner Sub-grantees report to WI, who in turn report to USAID	Community approval of technical plans Periodic community consultation	Monitoring complete prior to construction Reporting in quarterly reports	Incorporated in LEDS program budget
	Destruction of vegetation and wildlife habitat on and around construction site	Sites should be selected with as little existing vegetation and as little overlap with local wildlife habitat as possible Any trees that are damaged or destroyed inadvertently during construction in and around the project site should be replaced using native species If the area is habitat for any rare or endangered species, actions should be taken before project initiation and a trained expert in local flora/fauna should be consulted	Implementing partner Sub-grantees report to WI, who in turn report to USAID	Site selection process completed properly Visual inspection of vegetation and site surroundings to ensure damage is negligible Technical approval (if necessary) by local flora/fauna expert	Monitoring weekly during construction Reporting in quarterly reports	Incorporated in LEDS program budget

IEE ⁶⁷ Condition	Potential Impact(s)	Specific Mitigation Measure	Responsible Party	Monitoring/Verification Method		Estimated Cost/ Budget Notes
				Indicator	Data Source/ Frequency	
mitigating potential environmental impacts can be applied across each of these small-scale sub-activities. More significant construction activities will require additional detailed analysis prior to initiation of work.	Contamination of waterways/ sources and/or soil from runoff due to leaking fuel or lubricants from construction equipment	<p>Machinery and equipment maintained in good working condition and will be regularly inspected for leaks</p> <p>Any maintenance of equipment or machinery onsite will only occur over non-permeable areas with adequate containment measures to capture spills</p> <p>Identify equipment or machinery location area and maintenance management procedures; Develop oil spill response plan;</p> <p>Fuel/oil storage will be provided with adequate containment measures to capture spills; excess will be disposed of properly</p>	Implementing partner Sub-grantees report to WI, who in turn report to USAID within 24 hours	<p>Visual inspection of equipment to ensure proper working condition; ensure adequate containment measures are in place</p> <p>Water quality tests for contamination (if necessary)</p>	Monitoring weekly during construction Reporting in quarterly reports	Incorporated in LEDS program budget
	Construction waste and rubble create safety hazard and/or damage aesthetics	Remove all solid waste and rubble and dispose of in proper location; develop waste management plan (plan should discuss waste collection, storage and safe disposal requirements as well as development contractors roles and responsibilities)	Implementing partner Sub-grantees report to WI, who in turn report to USAID	Visual site inspection to ensure site is clear	Completion of activity Reporting in quarterly reports	Incorporated in LEDS program budget

IEE ⁶⁷ Condition	Potential Impact(s)	Specific Mitigation Measure	Responsible Party	Monitoring/Verification Method		Estimated Cost/ Budget Notes
				Indicator	Data Source/ Frequency	
	Increased turbidity of runoff water due to soil erosion	Construction site will be graded as necessary such that water is not allowed to run off into adjacent drainages Where excavated soils are stored onsite, adequate measures will be implemented to control runoff, including covering exposed soils or erection of physical barriers	Implementing partner Sub-grantees report to WI, who in turn report to USAID	Visual site inspection to confirm runoff controls are in place; examine for signs of excessive runoff, particularly into waterways/ storm drains	Monitoring weekly during construction Ad hoc monitoring around periods of significant rainfall Reporting in quarterly reports	Incorporated in LEDS program budget
Any pilot projects involving community groups	Potential adverse social impacts if communities are not engaged in planning and implementation processes	Encourage joint participation of experts and community members in selecting sites for action	Implementing partner Sub-grantees report to WI, who in turn report to USAID	Community approval of technical plans Periodic community consultation	Monitoring complete prior to implementation Reporting in quarterly reports	Incorporated in LEDS program budget
grants to support enterprises that use chemicals such as dyes, acid, oil, other potential contaminants	Improper storage/disposal contaminates waterways/water sources Human health issues from exposure/improper use	Properly store and dispose of all inventory When applicable, wear protective gear and use in a well-ventilated area	Training is conducted by implementer Monitoring conducted by implementer Implementer responsible for reporting in	Due diligence and training complete Grant recipient completes management plan that addresses potential impacts	Monitoring as part of finalization of grant award process; statement of completion of due diligence in final grant award documents	Incorporated in LEDS program budget

IEE ⁶⁷ Condition	Potential Impact(s)	Specific Mitigation Measure	Responsible Party	Monitoring/Verification Method		Estimated Cost/ Budget Notes
				Indicator	Data Source/ Frequency	
			quarterly reports		Monitoring conducted as part of site visits by program staff Reporting in quarterly reports	

ANNEX F: PRESENTS LIST OF CLIMATE CHANGE MITIGATION PROJECTS IDENTIFIED UNDER THE SEAP FOR TBILISI CITY

Below is the list of climate change mitigation projects identified under the SEAP for Tbilisi city. Implementation of above structural measures will generate achievable energy saving and contribute Tbilisi city commitment to reduce CO₂ emission by 2020

Action Plan Table for Tbilisi Transport Sector

KEY actions/measures per sector & field of action	Responsible Agency	Implementation Period [start & end time]	Estimated costs per action/measure	Expected energy saving per measure [MWh/a]	Expected renewable energy production per measure [MWh/a]	Expected CO2 reduction per measure [thsd/t] in 2020	CO2 reduction target per sector [t] in 2020
							533.5
Renovation of Municipal Fleet	Economic Policy Department, Tbilisi City Hall	2012-2013		4.163		1.04	
Popularization Campaign for Public Transport (PT)	Economic Policy Department, Tbilisi City Hall			156.66		34.89	
Information campaign (commercials, etc.)		2013-2020	to be defined				
Marketing		2013-2020					
PT web-page and transport guide development		2013					
Improvement of PT service	Economic Policy Department, Tbilisi City Hall			208.88		46.52	
The electronic display boards on 450 bus stops, showing times/schedules, etc		2012	1400000 GEL				
New Comfortable mini-busses		2010-2011					
Electronic display boards in mini-		2010-2011					

buses (
Improved top-up services		2010-2011							
Technical Inspection of mini-buses		2010-2011							
Improved safety measures in minibuses		2010-2011							
Better pricing schemes		2010-2011							
Improvement and optimization of routes		2011-2020							
Dedicated Bus lanes		2015-2017	to be defined by feasibility study						
Alternative PT service	Economic Policy Department, Tbilisi City Hall					286.01		57.373	
Optimization of bus fleet		2010	---						
Extension of Subway to University Station		2013-14	54000000GEL						
Development of Tram Network		2014-15	to be defined by feasibility study						
Private cars discouraging actions	Economic Policy Department, Tbilisi City Hall					420.12		91.986	
Environmental islands		2017-2020	to be defined by feasibility study						
Pricing		2017-2020							
Parking management		2017-2020							
Encouragement of low emission cars	Economic Policy Department, Tbilisi City Hall	2015-2020	to be defined			740.60		198.45	
The Street Light Management Centre	Economic Policy Agency, Tbilisi City					375.0		94.492	

	Hall							
Pekini st Green Wave		2010		388280 GEL				
Budapeshti-Vazisubani str. Green Wave		2010		9661 GEL				
Green Wave by Isani station		2010		330650 GEL				
Green Wave at Tsereteli ave		2012		1203125 GEL				
Green Wave at Kazbegi ave		2012		687500 GEL				
Green Wave at Guramishvili and Dadiani ave		2013		2578125 GEL				
Full run Street light management centre		2020		27500000GEL				
Improved Road Infrastructure	Economic Policy Agency, Tbilisi City Hall				34.7		8.731	
Intensification str		2010		2673000 GEL				
New street from Heroes Square		2010		91826000 GEL				
Gelovani-Agmashenebeli Tunnel		2011		8486000 GEL				
Tunnel at Gorgasali str		2012		8486000 GEL				
New Street connecting Sheshelidze and Gobronidze str		2011		1000000GEL				
New bridge connecting Poti and Dadiani str		2015		54000000GEL				
				TOTAL:	2226.06		533.482	533.5

ACTION PLAN TABLE FOR TBILISI BUILDING SECTOR

KEY Actions/Measures per sectors/fields of action	Responsible Agency	Implement ation Period [start & end time]	Estimate d Costs per action/m easure (in GEL)	Expected Energy Savings per measure [MWh/a]	Expected Renewable Energy Production per measure [MWh/a]	Expected CO₂ Reduction per measure [t/a] in 2020	CO₂ Reduction Target per sector [t] in 2020
							183353
Installation of space heating systems in municipal buildings	Economic Policy Agency, Tbilisi City Hall		1 780 000	1055	6305.3	1482.9	
Heating systems with local boilers operating on natural gas		2012-2015	1 130 000	1055		209.6	
Use of biowaste briquettes for local space heating in municipal buildings/pilot project		2014-2018	650 000		6305.3	1273.3	
Installation of efficient lighting in municipal buildings	Economic Policy Agency, Tbilisi City Hall		41760	1147.5		447.9	
Lighting system with fluorescent bulbs		2012-2015	41760	1147.5		447.9	
Refurbishment of	Economic		1 925 293	3642.95		753.8	

municipal buildings	Policy Agency, Tbilisi City Hall						
Insulation of building's exterior structure/ development of energy passport		2014-2020	1 744 000	3277		661.7	
Low energy building/pilot project		2015-2016	181 293	365.95		92.1	
Use of renewable energy sources for hot water supply purposes	Economic Policy Agency, Tbilisi City Hall		117000		189	37.8	
Use of solar collectors in sports schools		2015-2020	65 000		105	21	
Use of solar collectors in hospitals		2016-2020	52 000		84	16.8	
Education/Information /Public Awareness/ Campaigns	Economic Policy Agency, Tbilisi City Hall	2012-2020	70125	1287		260	
Establishment of energy management and monitoring program in municipal buildings	Economic Policy Agency, Tbilisi City Hall		500 000			1850	
Controlling energy consumption, specifying behavior patterns							
Development of municipal buildings							

energy database							
Specifying energy efficiency indicators for state procurement in tender documentation for carrying out rehabilitation							
Installation of central heating systems in residential buildings	Economic Policy Agency, Tbilisi City Hall		7 696 000		57200.7	11506.37	
Use of geothermal water for heating and hot water supply/pilot project		2013-2015	6 896 000		50895.4	10280.87	
Use of biowaste briquettes for central heating and pilot project		2015-2020	800 000		6305.3	1225.5	
Installation of efficient lighting system	Economic Policy Agency, Tbilisi City Hall		1 000 000	29410		11730	
Installation of fluorescent bulbs in common property areas of residential buildings		2012-2018	1.000. 000	29.410		11730	
Refurbishment of residential buildings	Economic Policy Agency, Tbilisi City Hall		262829520	698381		141659.6	
Weatherization of		2012-2018	31 749 600	109722		22161.6	

common property areas/ minimization of infiltration							
Insulation of roofs		2014-2020	79137000	216270		44037	
Insulation of residential building's exterior structure		2015-2020	150 000 000	367983		74330	
Low energy house/pilot project		2014-2018	1 942 920	4397		1131	
Use of renewable energy sources for hot water supply purposes	Economic Policy Agency, Tbilisi City Hall		650 000		1050	210	
Installation of solar collectors for hot water supply purposes (pilot project)		2013-2016	650 000		1050	210	
Education/Informatio n Campaign	Economic Policy Agency, Tbilisi City Hall		60 000	90332		18247	
Carrying out trainings in energy efficiency construction issues for different target groups (smart energy construction experts)							
Mass-media and energy efficiency campaign							

				825255.5	64745	188185.4	
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ACTION PLAN TABLE FOR STREET LIGHTING SECTOR

KEY actions/measures per sector/field of action	Responsible Agency	Implementation Period [start & end time]	Estimated costs per action/measure	Expected energy saving per measure [MWh/a]	Expected CO2 reduction per measure [thsnd/t] in 2020	CO2 reduction target per sector [t] in 2020
						8.45
Intelligent Street Lighting Management Centre	Economic Policy Agency, Tbilisi City Hall	2012-2013	3 000 000 GEL	21.11	8.45	
				21.11	8.45	

ACTION PLAN TABLE FOR MUNICIPAL LANDFILLS

KEY actions/measures per sector/field of action	Responsible Agency	Implementation Period [start & end time]	Estimated costs per action/measure	Expected CO2 reduction per measure [t/a] in 2020	CO2 reduction target per sector [t] in 2020
					249111
Landfill Gas (LFG) Collection and Flare from Closed Landfill Sites (Gldani 2 and Iagluja)	Economic Policy Agency, Tbilisi City Hall	2012-2020	5,199,308 USD (Construction) 72,497 USD/Year (Operation)	106580	
Construction and operation of LFG flaring system at Gladni 2			3,772,478 USD (Construction) 27,711 USD/Year (Operation)	40330	
Construction and operation of LFG flaring system at Iagluja			1,426,830 USD (Construction) 24,786 USD/Year (Operation)	66250	
Landfill Gas (LFG) Flare from New Landfill Site (Norio Landfill)	Economic Policy Agency, Tbilisi City Hall	2012-2020	12 mil EURO	142532	
Construction and operation of LFG flaring system at Norio				142532	
				249111	

1. These calculations have been made based on the consideration that the measures will begin giving results from 2012.
2. For recovery the consideration was made that all the methane generated will be recovered.
3. The logic for calculation of emission reductions for flaring activities was the formula: $ER \text{ (in t CO}_2\text{e)} = X(\text{CH}_4) \times 21 - X(\text{CH}_4) \times 44/16$ (CO₂ after flaring).
X is amount of recovered methane
4. All the calculations are based on the conservative assumption of a dry temperate climate.

ACTION PLAN TABLE FOR WWT

KEY actions/measures per sector/field of action	Responsible Agency	Implementation Period [start & end time]	Estimated costs per action/measure	CO2 eq. reduction target (t/a) in 2020*	Aggregated CO2 eq. reduction in 2020
					163870
Overall rehabilitation of the plant to the designed capacity	Economic Policy Agency, Tbilisi City Hall	2012-2020	20 mil USD		
Extension of the collector to the designed capacity					
Rehabilitation of the secondary and tertiary treatment devices and facilities to the extent of operation					
Rehabilitation of the plant secondary treatment facilities (methane-tank, digester), recovery and utilization (self-consumption, sold or flared) of gas	Economic Policy Agency, Tbilisi City Hall	2013-2020	10 mil USD	163870	
Checking and re-construction/rehabilitation of the secondary treatment facilities of the plant (methane-tank, digester, aeration tank),					
Operation of the secondary treatment facilities of the plant					
				163870	

THE ACTION PLAN TABLE FOR GREEN SPACES

KEY actions/measures per sectors/field of action	Responsible Agency	Implementation Period [start & end time]	Estimated costs per action/measure	Expected CO2 reduction per measure [thsnd/t] in 2020	CO2 reduction target per sector [t] in 2020
					3534.3
Development of Green Spaces	Economic Policy Agency, Tbilisi City Hall				
Creation of “environmental islands”		2012-2020			
Conjunction of Mziuri and Tbilisi Zoo		2013-2016			
Khudadovi forest reforestation (63, 5 ha)		2014-2018			
Turtle Lake area reforestation (29,2 ha)		2015-2020			
Planting trees/plants	Economic Policy Agency, Tbilisi City Hall				
150,000 green plants		2012-2015			
10,000 trees/plants		2012-2013			
11,400 tree/plants (including 3 ha of Khudadovi Forest)		2011		3534.3	
Improved administration and regulation	Economic Policy Agency, Tbilisi City Hall				
Forests under Tbilisi City Hall administration		2012-2015			
Stricter regulations for green areas		2012-2013			

ANNEX G: GEORGIA'S ENERGY SECTOR FORECASTS BASED ON THE GEORGIA'S SECOND NATIONAL COMMUNICATION (SNC) TO THE UN FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC)

Georgia's energy sector evolution scenarios. According to a bottom-up analysis procedure, in addition to describing the structure of Georgia's Energy sector, several scenarios were developed that explored a range of possible future energy pathways. They combined narrative (scenario storylines) and modelling methods (using LEAP) to illustrate alternative contexts, and to analyse potential outcomes. At this stage, only three possible scenarios were explored: a Baseline scenario (BAU scenario 0), a Split Public scenario (scenario 1) and a National Policy scenario (scenario 2).

The storylines for these scenarios have to be discussed separately.

Quantitative characteristics of Energy sector evolution scenarios. According to the above storylines the modelled parameters were chosen and estimated quantitatively. The scenario elements are modelled using explicit assumptions of how energy, technology, and activity parameters change over time. This approach links contextual narratives to specific physical changes in use patterns, technology attributes, and demographic drivers.

The modelled parameters are presented in the second column of Table 5.2. It is important to recognise that scenarios do not aim to make any distinct claims about how the future will actually unfold. Rather, the results demonstrate a subset of the many activities and outcomes that are possible. This subset includes activities which are in accordance with scenario storylines and our present knowledge of energy systems, and which enable us to estimate critical uncertainties present in Georgia's energy system.

Modelling Results

Energy consumption. According to the BAU scenario, energy consumption of demand sectors in future will significantly increase. Results show that by 2025 the largest energy consumption will be in the transport sector, followed by the residential and industrial sectors (Fig. 5.3).

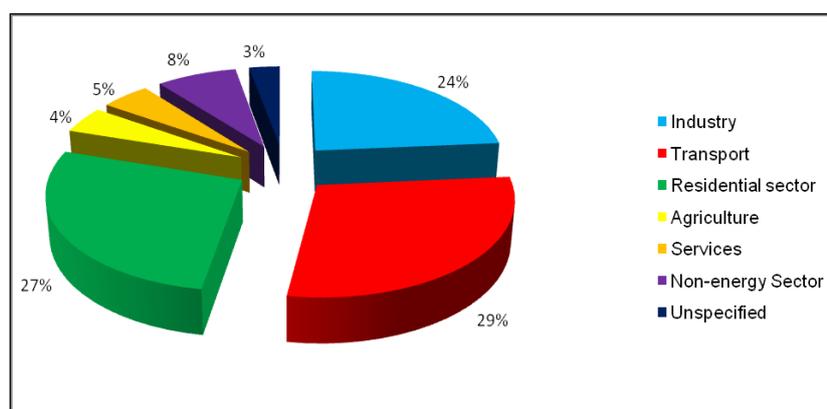


Figure. 5.3. Distribution of energy consumption in demand sectors in 2025 according to the 'BAU scenario'

Each of the alternative scenarios demonstrates energy savings compared to the BAU scenario in 2025, with the National Policy scenario showing greater energy savings (10%) than the Split Public scenario (6%). The largest component of these savings is to be derived from the industrial sector (51%), with residential (44 %) and service sector (4%) activity savings making up smaller shares. At

this stage, alternative scenarios have not considered the possibilities of savings in transportation and other demand sectors (Fig. 5.4).

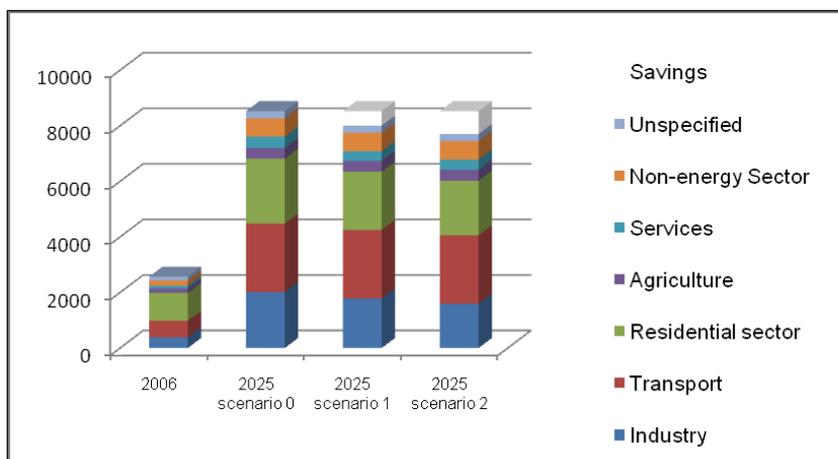


Figure 5.4. Energy consumption and energy savings by demand sector according to the BAU and alternative scenarios (thousand toe)

Table 5.3 below shows the possibilities of energy savings for each demand sector and each type of fuel separately.

Table 5.3. Energy consumption and energy savings for demand sectors and fuel types according to the BAU and alternative scenarios

	Current accounts	BAU scenario	Split Public scenario		National Policy Scenario	
	2006	2025	2025		2025	
	Consumption (thousand toe)	Consumption (thousand toe)	Consumption (thousand toe)	savings (%)	Consumption (thousand toe)	savings (%)
Residential sector						
Energy Consumption:	1,000.8	2,336.4	2,098.5	10%	1,967.1	16%
composed by:						
Renewable	0.0	0.0	0.0		36.5	
Oil Products	75.2	34.0	34.0	0%	34.0	0%
Natural gas	201.2	885.5	764.2	14%	718.1	19%
Electricity	395.6	875.7	802.4	8%	768.8	12%
Biomass	328.8	541.3	498.0	8%	409.8	24%
Industry and service sectors						
Energy consumption:	490.0	2,421.5	2,136.2	12%	1,965.3	19%
composed by:						
Solid fuel	3.0	6.0	5.5		5.5	
Renewable	0.0	0.0	0.0		65.2	
Oil products	102.7	521.8	392.9	25%	352.3	32%

Natural gas	195.0	981.4	880.5	10%	788.9	20%
Heat	28.0	126.8	114.8	9%	106.5	16%
Electricity	132.0	667.8	641.4	4%	545.6	18%
Crude Oil	5.3	21.2	18.3	14%	18.3	14%
Biomass	24.0	96.5	83.0	14%	83.0	14%
Agriculture						
Energy consumption:	160.0	388.7	388.7	0%	388.7	0%
composed by:						
Renewable	0.0	0.0	0.0		114.1	
Oil products	64.0	155.5	155.5	0%	98.4	37%
Natural gas	58.0	140.9	140.9	0%	83.8	40%
Heat	4.0	9.7	9.7	0%	9.7	0%
Electricity	14.0	34.0	34.0	0%	34.0	0%
Biomass	20.0	48.6	48.6	0%	48.6	0%
Transportation and other sectors						
Energy consumption:	915	3,379.6	3,379.6	0%	3,379.6	0%
Total energy consumption:	2,565.8	8,526.2	8,002.9	6%	7,700.6	10%

Residential, agricultural, industrial and service sector savings are to be achieved in the alternative scenarios, through energy efficiency and renewable energy activities. Results show that small but wide-spread actions (such as the replacement of light bulbs) have measurable impacts on the whole system.

Electricity Generation. The structure of Georgia's future electricity sector is highly uncertain. The BAU, Split Public and National Policy scenarios all explore different shares of wind energy in the electricity generation sector. That is why the structure of the electricity generation sector is different in all these scenarios. But all scenarios show that to fulfil the increased demand on electricity caused by a growing economy, the country needs to apply maximum efforts to ensure its electricity supply.

In all scenarios there is the need to maximise the use of hydro resources and implement a majority of those projects that nowadays exist in the country (Annex VI) – this concerns small and medium hydro plants (504 MW) as well as large hydro plants (1,426 MW). If energy-efficiency measures are not implemented, the country will need an additional 300 MW thermal plant, and as small as a 300 MW wind plant. The Split Public scenario does not necessarily need a thermal plant, but an additional 590 MW capacity will be needed. In the National Policy scenario, the capacity of wind plants will increase to 810 MW, and the energy savings in the demand sector will make it possible to reduce thermal generation to zero.

Table 5.4. Electricity generation in BAU and alternative scenarios

Current accounts	BAU scenario	Split Public scenario	National Policy scenario
Total generation 7,419 mln kWh	Total generation 24,316 mln kWh	Total generation 22,978 mln kWh (saving 6%)	Total generation 21,245 mln kWh (saving 13%)

Hydro – 5,316 mln kWh	Hydro – 19,696 mln kWh	Hydro – 19,531 mln kWh	Hydro – 19,331 mln kWh
Thermal – 2,103 mln kWh	Thermal – 3,891 mln kWh	Thermal – 2,068 mln kWh	Thermal – 0
Wind - 0 kWh	Wind – 729 mln kWh	Wind – 1,378 mln kWh	Wind – 1,912 mln kWh

Greenhouse-gas emissions. Reducing absolute and per-capita emissions from the Energy sector will require alternatives to the current trends. In order to explore opportunities for change, this analysis investigates the GHG implications of the scenarios, and considers their potential for mitigating emissions.

Figure 5.5 shows the trends of emissions from Georgia’s Energy sector, according to the BAU (Scenario 0) and alternative scenarios (scenario 1 and 2).



Figure 5.5. Emissions from Georgia’s Energy sector according to the BAU and alternative scenarios (thousand Gg CO₂-eq.)

In 2006, the GHG emissions from the Energy sector in Georgia equalled about 6.506 thousand Gg in CO₂-equivalent. According to the traditional (BAU) scenario, by 2025, emissions will approximately triple compared to 2006 emissions, but will be less compared to the 1990 level (36.592 thousand Gg.). Each of the alternative scenarios demonstrate emission reductions compared to the BAU scenario in 2025, with the National Policy scenario showing greater reductions (24%) than the Split Public (12%). In the National Policy scenario, the largest component of these reductions is to be derived from electricity generation (55%) followed by the industrial (20%) and residential sectors (11%). The results show how different measures influence GHG emissions (Figure 5.6).

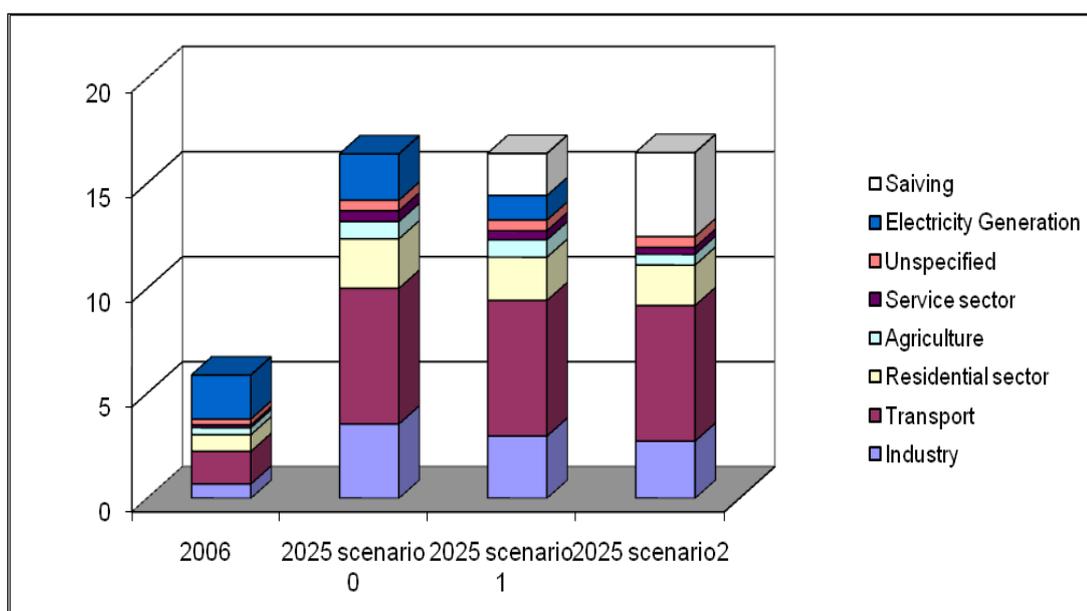


Figure 5.6. Emissions from Georgia's Energy sector (by subsectors) according to the BAU and alternative scenarios (thousand Gg CO₂-eq.)

The largest emitter of GHGs is the transport sector. In 2006, its share in total emissions from Energy sector was 23%. Emissions from the transport sector increased along with the growth of the population, driving intensity, and the economy, and in 2025 it should be represented by 39%. This fact once more indicates that national government must pay more attention to the necessity of modern policy adoption in the transportation sector.

Table 5.5. Emissions from Georgia's Energy sector and emission reductions by subsector according to the BAU and alternative scenarios

	Current accounts	BAU scenario	Split Public scenario		National Policy scenario	
	2006	2025	2025		2025	
	Emissions (Gg CO ₂ -eq.)	Emissions (Gg CO ₂ -eq.)	Emissions (Gg CO ₂ -eq.)	Emission reduction (%)	Emissions (Gg CO ₂ -eq.)	Emission reduction (%)
Total emissions	5,964	16,397.0	14,422.0	12%	12,461.0	24%
composed by:						
Industry	668	3,547	2,970	16%	2,729	23%
Transport	1,286	6,456	6,456	0%	6,456	0%
Residential sector	1215	2,358	2,060	13%	1,922	18%
Agriculture	654	825	825	0%	516	37%
Service sector	526	507	436	14%	331	35%
Unspecified	76	507	507	0%	507	0%
Electricity generation	1,539	2,197	1,168	47%	0.00	100%

A significant result would be the possibility to reduce emissions in the electricity generation sector by increasing the share of plants working on renewable resources. According to the National Policy scenario, in 2025, the share of renewable resources in electricity generation sector will be at a maximum in 2025, and emissions will be reduced to zero. The figure below shows emissions from the electricity generation sector, according to different scenarios.

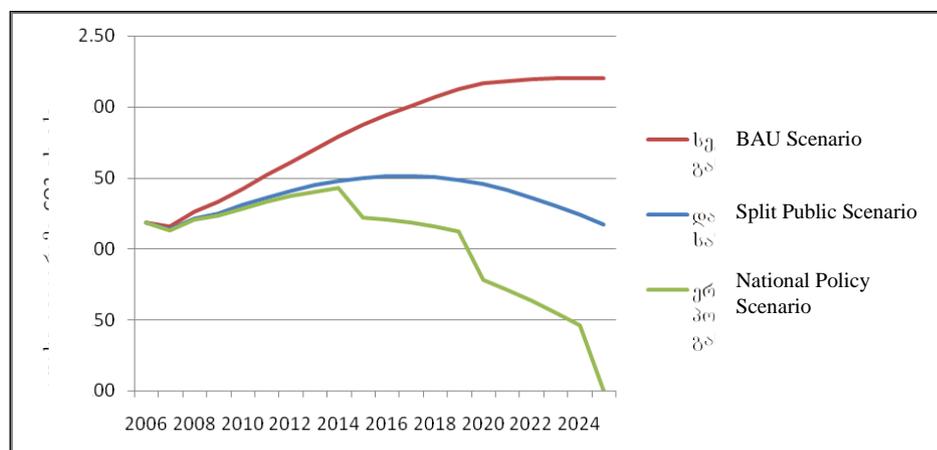


Figure 5.7. Emissions from Georgia’s electricity generation sector according to the BAU and alternative scenarios (thousand Gg CO₂-eq.)

ANNEX H: EC-LEDS PROGRAM GRANT SELECTION CRITERIA

Identification and Implementation of Demonstration Projects via Partial Grants. The goal of this grant program is to support municipalities engaged in the Covenant of Mayor’s process in identifying and implementing projects aimed at reducing CO₂ emissions, while meeting the municipalities’ clean economic development objectives and helping them meet their CO₂ reduction commitments undertaken under the Covenant of Mayor’s agreements. The grants will provide support to municipalities, legal entities, both for profit and non-profit, private or partially or fully owned by Local or Central Government, nongovernmental organizations (NGOs), think tanks, universities, etc. to promote investments in climate change mitigation projects to meet the objectives as described above.

Based on consultation with the Government of Georgia, the Municipalities and USAID the following are priority areas for grant support:

- Energy efficiency Improvements to public buildings either belonging to or maintained by the municipality
- Energy efficient street lighting;
- Energy efficiency improvements to water and wastewater systems, such as pumps, meters, local metering, leak detection and repair
- Landfill methane recovery for use in CHP, public buildings or for sale to gas network
- Improvement of efficiency of municipal transport fleet
- Substitution of traditional fuels with clean fuels in transport
- Increasing the share of renewable energy in municipality’s energy balance
- Improvement of industrial processes to achieve reduced energy consumption

An applicant may submit more than one application, but should not combine two or more proposals in a single document. The following are examples of activities that may be supported by grant funds. All activities should focus on the priority areas noted above. These are illustrative only:

- Transfer of technology;
- Design and implementation of a pilot project aimed at introducing innovative technologies.
- Procurement of new equipment to for industry for increased efficiency
- Energy efficiency improvement to buildings (kindergartens, schools, municipal buildings, condominiums, etc.).

I. Funding Information

Funding. Winrock will support implementation of demonstration projects by providing partial grants, covering up to 20% of total project implementation costs. Total grant awards for this RFA will be \$500,000. Individual grants can be any amount up to and not exceeding \$50,000. It is anticipated that at least ten grants will be awarded (at least one grant per participating municipality) if high quality, fundable applications are received. EC-LEDS reserves the right to reject any and all applications if they do not satisfy the selection criteria and objectives of the program or such action is considered to be in the best interest of the program.

Cost sharing. Applicants must contribute financial and/or in-kind resources to leverage the USAID grant and will be requested to provide plans for activity sustainability beyond USAID support. Sources of financial contribution may be any one, or combination of the following:

- Private equity
- Commercial bank loans
- The municipal budget
- Municipal Development Fund
- Government budgetary funds
- Local capital markets (such as municipal bonds)
- Concessionary lending from International Financial Institutions
- Grants from other donors, or other USAID programs

Special consideration will be given to public-private partnerships.

Funding restrictions.

Grant funds may be used for the following types of expenses:

- Expenses related to research and collection of data.
- Direct costs for project-related events, such as rental of facilities, translation, and equipment used in workshops or colloquia.
- Communication expenses related to performance of proposed project.
- Salaries for staff and consultants performing work in the proposed project.
- Transportation costs related to performance of the proposed project.
- Purchase of limited equipment required to implement the proposed project.
- Other expenses directly related to project implementation.

2. Application Review Information

Grants Selection Process.

The following sections document the guidelines for Winrock International in the management of the EC-LEDS grants program. Some of these directives will be included in the Grant Award agreement template.

Grant Regulations: Grants will be administered in accordance with Winrock policies and procedures and USAID regulations.

Types of Grants and Applicable Conditions: These grants will be awarded as fixed price Sub-grants.

Competition: Potential grant projects will be selected from a list of projects identified in the process of developing SEAPs for participating municipalities. Winrock will announce an open competition in those municipalities with SEAPS that have been completed and approved by the municipalities, to solicit more grant proposals and ensure inclusion of projects that may have not been identified through SEAPs. In addition, Winrock will consider unsolicited proposals for grant financing, if such proposals contribute significantly to the achievement of program results and municipality targets and meet selection criteria.

Public Notice: Winrock will advertise the grants program in public media at the time of release of the Request for Applications. In addition to advertising the grants program through public media (print and the internet), Winrock will directly contact relevant legal entities (both commercial and non-profit), as well as other organizations that meet the criteria, inviting interested participants to attend a briefing on the EC-LEDS grants program.

Grant Application Format: Winrock will issue the documents found in Appendix A-1, RFA, and A-2 Grant Application (including Attachments A, B and C to the application) to the public. The other documents in this Appendix are for internal management use only.

Evaluation Criteria: The Criteria are detailed below.

Evaluation Committee: Winrock will form a Technical Evaluation Committee that includes a mix of expertise to assess the technical and financial viability of grant applications. The Committee will include up to three representatives from Winrock International, one representative from Sustainable Development Center Remissia (Winrock's partner leading the SEAP development process); a representative from USAID; representatives from the Ministries of Environment, Energy, and Economy to be agreed upon by USAID and Winrock; a representative from the municipality where the RFA is issued; and an Independent Consultant with technical/engineering expertise hired by Winrock. The EC-LEDs Chief of Party will chair the Evaluation Committee.

Winrock will ensure that the members of the Evaluation Committee do not have conflicts of interest respecting the organizations submitting grant applications. In the case where the municipal government is an applicant for a grant in response to the RFA issued in their municipality, the municipality representative will be asked to exclude him/herself from participation in the Evaluation Committee to avoid any potential conflicts of interest.

Winrock will provide the Evaluation Committee with a written evaluation procedure and matrix that specifies the criteria and methodology for evaluating the applications consistent with this Request for Applications (RFA). The Evaluation Committee will prepare a written evaluation of each application, comparing it against the criteria. The written evaluation will include numerical scoring and a brief narrative discussing each applicant's strengths and weaknesses with respect to the criteria. Based on the Committee's evaluation, Winrock will then prepare and submit for USAID's concurrence, a recommendation for grant awards, including a discussion of how the applications ranked with the criteria.

After the initial evaluation meeting, the Evaluation Committee will determine if more information is needed about the applications before finalizing selection. A second round of discussions will be held by the Committee to review proposals if there is a need to obtain additional information prior to a final decision on any one or all grant applications.

Grants will be evaluated for competency, suitability, and capability, with cost reasonableness always a factor. The evaluation may entail interviewing, site visits, background research and/or solicitation of additional information.

Evaluation Committee will review all eligible and complete applications. The decisions of the Committee will be final. No appeal process will be possible. All applications will be evaluated and ranked based on the criteria detailed below.

Evaluation Criteria. Technical, cost and other factors will be evaluated relative to each other as described herein. Applicants must address these criteria in *Attachment A – Proposal Description and Application* - of the grant application.

Criterion	Points
Demonstration of how the activity will support subject municipality in meeting its commitments under COM, particularly its CO₂ reduction goals. Is the proposed activity in line with EC-LEDS objectives and the identified list of priority areas?	20 Points
Technical Approach. Is the technical approach feasible in the given time period with the given resources. Is the technical approach innovative?	20 Points
Leveraging. To what extent does the proposed activity leverage other funding sources and provide a cost-share plan? Is there a Public-private partnership structure proposed? Are there any formal commitments obtained from various financing sources?	10 Points
Cost-effectiveness and cost realism of the application. Is the proposed cost within the expected range? Are the costs reasonable, allowable and allocable? Can the organization demonstrate that it adheres to basic accounting and management principles? Are staffing plans, operating expenses and other costs reasonable? Will USAID’s investment in the grant produce meaningful results given the proposed budget?	10 Points
Institutional Capacity. Does the organization present evidence that it possess the technical, managerial, and financial capacity to accomplish the proposed tasks? Should include information about qualifications and identify areas of excellence relating to grant application, whether by educational achievements, research, contributions to Georgia’s energy sector, work experience, or otherwise. Universities, NGOs, and think tanks may state their institutional qualifications as relevant to the grant application.	10 Points
Sustainability and Replicability. What is the probability that the activities will be sustainable over the long term without continued external	

support? Will this work lead to follow-on activities and funding from other sources? Will the project be replicable for stakeholders and beneficiaries?	10 Points
Beneficiaries. Who are the direct and indirect beneficiaries of the project? Include information on how the participants and beneficiaries in the program will be identified and reached.	5 Points
Collection and analysis of new data. Projects proposing the collection or use and analysis of data are desired. Data will assist in understanding whether issues are significant, how options for addressing issues will affect the various sectors, and whether proposed solutions will work as predicted.	5 Points

ANNEX I: BASELINE STUDY FOR EC-LEDS PROGRAM

I. Introduction

Georgia ratified the UN Framework Convention on Climate Change (UNFCCC) on 29 July 1994 and Kyoto Protocol to the Convention on 16 June 1999. In May 1997 the Country started the preparation of its Initial National Communication (INC). At that point not enough time had passed since the Rio Summit on Sustainable Development and signing of three Rio Conventions and the understanding of sustainability of different processes and its linkage to the proper management of natural resources, including the climate change related phenomena and their possible negative and sometimes positive impacts on the sustainability of different ecosystems and economy sectors was quite low among the scientists, decision makers and public not to mention the private sector that was in its very early stage of development in all transition countries including Georgia. After dismantling of the Soviet Empire in 1992 post-soviet countries were flooded by social, economic and political problems and the significance of climate change vulnerability and mitigation of GHGs as well as other environmental problems had disappeared among the existing challenges. Despite the lack of expertise, lack of full recognition of the risks related to this problem and complex environment for the implementation of environmental projects at the initial stages, Georgia started quite actively involving in the climate change international process and developing national capacities since the ratification of Convention.

Since the ratification of the UNFCCC in 1994 Georgia has achieved significant progress towards meeting its commitments to the Convention. Since the finalization of the Second National Communication (SNC) in 2009, the Government has made significant progress in the elaboration of national plans which integrate elements of climate change issues into sectoral policies. Currently Georgia is implementing its Third National Communication (TNC) which is more focused on the decentralization of this document preparation process, meaning the disaggregation of GHGs national inventory accelerated by the Covenant of Mayor (CoM) process initiated by the EU cities and expended to the East for non-EU countries, improving/establishing local statistics and facilitating the ownership approach. Georgia is non-Annex I Party to the Convention not having quantitative commitments on reduction of GHGs gases but the High Level segment of Georgia's delegations represented at the negotiations has always recognized country's responsibility to contribute in global process and voluntarily take commitments for abatement of GHGs in its territory. Georgia's delegations always demonstrated country's political will and readiness to develop the economy in the sustainable manner but it was also permanently highlighted that international technology transfer process and financial support in development of green economy are crucial in this commitment fulfillment process. Two main sectors of NCs are linked to the LEDS preparation process GHGs inventory and mitigation.

The principle approach in INC and subsequent communications implementation process always was and is to make process broad, national wide and increase the national capacities as much as possible. The stocktaking exercise of TNC demonstrated that general awareness on the global warming and climate change is relevantly high at the decision making level, among the private sector and scientists. However, the country still faces lack of multidisciplinary expertise and experience, availability of data and research studies on vulnerability and mitigation, gaps in knowledge of technologies and trained staffs for operation of new technologies. These are still pending issues.

As a result of analysis of NCs and other climate change related projects implementation process it could be concluded that main barriers identified are: limited availability of local expertise in multidisciplinary areas requiring application of computer models, poor statistics of data necessary for vulnerability and GHGs emissions assessment, absence of disaggregated statistics, lack of coordination of processes and projects at national and international donors' levels.

Main sectors covered by GHGs national inventory are energy including transport, industry, agriculture, Land Use Land Use Change and Forestry (LULUCF) and waste. Specificity of GHGs inventory of post –Soviet countries and for Georgia among them is that emissions in 1990-1992 are still reflection of soviet/centralized economy structure while starting from 1993 there is period of economy collapse and after 2000 slow stabilization of market economy. The country is still in transitional period when there is significant difference between infrastructures and emission sources

in cities and villages. As a consequence emission from whole territory reflects combination of these two and couldn't be simply downscaling either at city or country side (villages) levels. According to the information provided in Georgia's SNC emission from the country's territory from 48 million tons in CO₂eq in 1990 fell down to 9 million tons in CO₂eq in 1995 and then started increasing reaching 12.3 million tons CO₂eq in 2006. Energy sector including transport stays the biggest contributor for whole period (1990-2006) while industry sector being second in 1990-1991 was substituted by agriculture in 1992 and was still second till 2006. Results of the third national inventory are not yet final but preliminary assessments show increase in energy and industry sectors.

2. Objective of study

Objective of the study is to identify main gaps in and barriers to preparation and implementation of LEDS. Findings provided in this study don't cover policy issues, legislation, coordination of process and full picture of local capacities at the cities/municipalities level. Regarding the sectors this baseline study doesn't cover agriculture, industrial processes (only if they are in the territory of a city) and Land Use, Land Use Change and Forestry sectors but is mainly focused on energy (including transport and industry) and waste/wastewater treatment sectors which could significantly contribute to the low carbon development process.

3. Methodology applied

Methodology applied for conducting the baseline study on the problems in preparation and implementation of LEDS consists of following components: carrying out the desk review of climate change related projects, programmes and strategies aimed at the planning of clean development; development of questionnaire for survey; establishment of criteria for selection of cities for survey; conducting the survey of selected cities (visiting municipality, introducing the objective and substance of LEDS). Based on this information about gaps for preparation of LEDS will be identified.

Desk review. Main projects, programmes and other activities related to the assessment of GHGs, evaluation of potential for mitigation and projects aimed at abatement of GHGs have been considered in this desk review process. The list of this information sources is attached to the study but most important ones should be highlighted here: SNC of Georgia, TNA (Technology Needs Assessment phase I and phase II), SEAP (Sustainable Energy Action Plan) of Tbilisi City, SEAP of Rustavi City and the results of the first year of implementation of the TNC of Georgia.

Special **questionnaire** has been developed for assessment of current circumstances/baseline situation in selected cities/municipalities. Questionnaire is focused on identification of gaps and barriers to the process of preparation and implementation of LEDS. In particular, it should facilitate the collection of information about the level of awareness of local municipalities on climate change and GHGs emission process, sources of emissions, energy consumption and energy efficiency programmes as well as locally available renewable sources; and assessment of availability of local statistics and city development strategies/plan.

Criteria have been established for the selection of cities/municipalities for survey. Three main criteria applied in selection process are participation/intention of participation in CoM process, potential of increasing the GHGs from their respective territories because of their economic activities and representativeness of municipality which would facilitate the spread of the process in other municipalities of similar size and activities.

This study is limited by 10 cities/municipalities in Georgia selected according to the developed criteria. Following 10 cities/municipalities have been surveyed: five self-governing cities (Tbilisi, Kutaisi, Batumi, Rustavi and Poti) and five other cities (Gori, Khashuri, Sagarejo, Zestaponi, Zugdidi). Among these 10 cities/municipalities five (cities of Tbilisi, Kutaisi, Batumi and Rustavi and Municipality of Gori) are signatories of CoM process and some of others (city of Poti) intend to join the process soon.

4. Results of assessment

Results of desk review

There are several projects initiated in Georgia and related to mitigation of emissions of greenhouse gasses and thus connected with LEDS process. These projects have been supported by GEF/UNDP, EU, USAID, and others, as well as bi-lateral assistance from countries.

GEF (Global Environmental Facilities)

The first mitigation strategy for Georgia was prepared within the Second National Communication of Georgia to the UNFCCC. Strategy covers whole territory but is relatively general and oriented on renewable and energy efficient technologies and overall potential of Georgia for abatement of GHGs. The strategy was supplemented with several project proposals mainly on the utilization of wind energy potential. The on-going project on preparation of Georgia's Third national Communication (TNC) to the UNFCCC will update this mitigation strategy. More realistic mitigation strategy supported with concrete project proposals for implementation have been developed within the TNC for Adjara region in close cooperation with government of Adjara Autonomous Republic, Batumi city hall, and municipalities in Adjara as well as local experts. This CC mitigation strategy for Ajara also doesn't consider all potential sources for GHGs mitigation but only most important ones contributing at the same time to the Covenant of Mayor (CoM) process as far as Batumi City Hall is signatory of CoM.

Except of National Communications (NC) to UNFCCC the UNDP implements many other projects related to Climate change but the focus of most of them is on adaptation measures rather than on mitigation options. However, it should be highlighted that adaptation projects on rehabilitation of degraded lands and forests as well as afforestation also contribute to the removing CO₂ from the atmosphere. Other than NCs from UNDP implementing projects only "Renewable energy resources for local energy supply" (GEF) contributes to mitigation. This project aimed at establishment of "Revolving Fund" for renewable resources utilization in Georgia. The Fund was established in 2010 as a part of existing Municipal Development Fund. First activity financed through the Revolving Fund is rehabilitation of small and medium HPPs (Hydro Power Station) through concessional schemes. Main allocation for the Fund has been done by the Government of Germany. Financing of other renewable projects is planned at the next stages.

USAID

Other donors strongly supporting climate change activities in Georgia are USAID and the EU, both of which have been increasing their activities contributing to mitigation of greenhouse gasses since 2008-2009. Among the ongoing projects being implemented in Georgia under the financial and technical support from USAID and oriented on GHGs mitigation are: "New Applied Technology Efficiency and Lighting Initiative (NATELI)" (implemented by Winrock Georgia, 2011-2013) aimed at the promotion of new energy efficient and renewable technologies, facilitate the solutions in the provision of clean and affordable energy to off-grid villages, contribute to the energy security and Georgia's integration into European and Black Sea/Caspian Energy Markets; Hydropower Investment Promotion Program (implemented by Delloite, 2010-2013) which will assist the Government of Georgia in undertaking specific key tasks necessary to attract investments into Georgian hydropower development; "Institutionalization of Climate Change Adaptation and Mitigation in Georgian Regions (ICCAMGR)" (Implemented by National Association of Local Authorities of Georgia (NALAG) 2011-2015) will attempt to integrate environmental and climate change considerations into policy priorities of local authorities through the establishment of special units on climate change, environment and sustainable agriculture;

Through NATELI project USAID funded the development of Tbilisi Sustainable Energy Action Plan, which provided new vision for Georgian cities to successfully continue their economic and social development while intelligently managing their energy resources and energy demand and reducing GHG emissions on their development pathway.

In this study we don't cover in detail USAID funding opportunities, rather we try to analyze the activities of other donors, especially EU, which can supplement USAID's current and future activities.

EU

Energy concerns are at the heart of the partnership between the EU and its Eastern neighbor countries, including Georgia. However, it should be highlighted that even most of them contribute to the abatement of GHGs not all of them are directly linked to the climate change problem. Energy networks, energy concerns related to environmental protection as well as security of energy supply to the EU are among the priority areas for cooperation. Different tools are at the EU's disposal to take up these challenges together with the partners on its eastern borders. These tools include:

- The European Neighborhood Policy (ENP) was launched in 2004. The ENP is a broad political strategy which has the ambitious objective of strengthening the prosperity, stability and security of Europe's neighbourhood in order to avoid any dividing lines between the enlarged EU and its direct neighbours. European Neighborhood Partnership Instrument (ENPI) is the financial instrument which supports the ENP through certain assistance actions. The ENPI is the main source of funding for the 17 partner states: ten Mediterranean countries – ENPI-South (Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Occupied Palestinian Territory, Syria, Tunisia) and six Eastern European countries – ENPI-East (Armenia, Azerbaijan, Belarus, Georgia, Moldova, Ukraine), as well as Russian Federation. The European Neighborhood Policy (ENP) is further enriched with regional and multilateral co-operation initiatives, which includes Eastern Partnership (EaP). It was launched in May 2009, the Eastern Partnership (EaP) intensified the level of engagement of the EU with the six partner countries in the ENPI-East.

While in earlier editions the EU Neighborhood Policy mainly addressed the national level and therefore also focused on national energy strategies and projects, now the awareness of the importance of local action in the field of energy and climate change mitigation is increasing. Evidence of this process can be found in: (a) the ENPI Regional East Program 2010 - 2013, which mentions the Covenant of Mayors as appropriate initiative to encourage sustainable energy actions at local level, as well as the preparation and implementation of "sustainable energy action plans – SEAPs" as result and possible indicator of achievement. (b) the European Commission's latest neighborhood policy evaluation from May 2012, which states that "local and regional authorities have a key role to play in narrowing the gap between the population and institutions, promoting a culture of political participation at local level and ensuring that policy decisions take local needs into account." As a perspective we can therefore assume, that both programmes and funding instruments will be developed further in order to address better the needs and courses of action of the local level. National bodies should use the current negotiations of the next ENP Action Plans to get the local level mentioned explicitly and included as potential recipient of project funding.

From the approximately € 12 billion of EU funding available under the Financial Framework 2007 - 2013, 73 % were allocated between 2007 and 2010 to the funding of the countries' own political, governance, economic and social reform programmes. The remaining budget goes into multi-country and crossborder cooperation programmes, while a small share of € 745 million goes to the Neighborhood Investment Facility (NIF) for projects of common interest focusing primarily on energy, environment and transport, offering therefore opportunities for cities to upgrade their district heating, water or public transport infrastructure. The facility brings together grants from the European Commission and the

EU Member States with loans from European public Finance Institutions, as well as own contributions from the partner countries. By pooling different resources, the NIF plays a key role in donor coordination and increasing aid. In addition, the NIF supports the implementation of regional and multilateral processes, in particular the Union for the Mediterranean, the Eastern Partnership and the Black Sea Synergy. Despite its limited volume (€ 418 million for infrastructure and private sector projects), the NIF leverages a total project volume of more than € 14 billion.

The ENPI Info Centre (www.enpi-info.eu) displays regularly the current funding programmes and financial instruments. Please note that for now only programmes for the current financial period (2007-2013) can be indicated. On 1 January 2014 the European Neighborhood Instrument (ENI) enters into force. For the period 2014 - 2020 € 18 billion are allocated. This corresponds to a rise of more than 40 % , but the distribution of funds is still under decision. It is likely that most of the funding programmes will be continued and partially be reshaped and/or renamed.

Covenant of Mayors (CoM): The EU Commission launched the Covenant of Mayors process in 2008, as part of the EU Climate and Energy Package, to support the efforts of local authorities to implement sustainable energy policies. Under the Covenant of Mayors, cities aim to meet and exceed the European Union 20% CO₂ reduction objective by 2020 through the implementation of Sustainable Energy Action Plans (SEAP). This process has model of multi-level governance and financial and technical support. Since the launch of the initiative, it has been an overwhelming success in the EU and abroad, with a growing number of cities joining from the Eastern Partnership region. The Covenant of Mayors is one of the priorities under the Eastern Partnership Energy Security platform and the Commission has launched a project (€6,8 million) in 2011 that includes the establishment of a branch office of the Covenant of Mayors in Lviv (Ukraine) and Tbilisi (Georgia). The office provides technical assistance to strengthen capacity in the municipalities to deal with sustainable energy issues through the implementation of sustainable energy action plans. The project also finances a number of grant contracts involving demonstration projects in the region. The project covers six Eastern Partnership countries (Azerbaijan, Armenia, Belarus, Moldova, Georgia, Ukraine) and five Central Asian countries (Tajikistan, Kyrgyzstan, Kazakhstan, Uzbekistan, Turkmenistan). Currently five cities from Georgia are signatories of CoM: Tbilisi, Batumi, Kutaisi, Rustavi and Gori. These cities are also included in the EU funded projects. Tbilisi, Batumi and Kutaisi participate in the project: “Removing barriers to the local municipalities to join the Covenant of Mayors process through dissemination of Tbilisi City experience”. This project considers preparation of SEAPs for Batumi and Kutaisi, implementation of energy-efficiency pilot projects in Tbilisi and Kishinev and organization of joint workshops with participation of the UNFCCC Focal Points from non-Annex I Parties (former Soviet countries) and representatives of municipalities of cities from the same countries. Objective of these workshops to consider and agree the methodology for preparation of SEAP. Rustavi and Gori participate in project “Covenant of Mayors Capacity Building Model for Ukraine and Georgia: Model Solution for Eastern Partnership and Central Asian Countries”. The

purpose of the project is to support local authorities in Ukraine and Georgia (and in the long-term in other Eastern Partnership and Central Asian (EaP/CA) countries) in improving their energy security, reducing greenhouse gases emissions, diminishing dependence on fossil fuels, and improving their citizens quality of life. The following specific objectives were assigned: To facilitate the effective participation of municipalities in Ukraine and Georgia (and in the long-term in other EaP/CA countries) in the Covenant of Mayors by the provision of supportive materials and institutionalized technical expertise; To increase the capacity of project cities in Ukraine and Georgia to address their Covenant commitments through the development and implementation of local sustainable energy policy and Sustainable Energy Action Plans (SEAPs). Different funding mechanisms managed centrally by European commission and supporting Covenant of Mayors include:

- Interregional cooperation (INTERREG IV C): Projects are strictly focused on the exchange of experiences and some light pilot initiatives - testing methodologies and tools. Investment activities are not supported;
- URBACT: European exchange and learning programme for cities promoting sustainable urban development. Cities work together to develop solutions to major urban challenges, reaffirming the key role they play in facing increasingly complex societal changes;
- Intelligent Energy – Europe (IEE) offers a helping hand to organizations willing to improve energy sustainability. Launched in 2003 by the European Commission, the programme is part of a broad push to create an energy-intelligent future. It supports EU energy efficiency and renewable energy policies, with a view to reaching the EU 2020 targets. The IEE considers local authorities as a main target group. It co-finances projects that contribute to the success of the Covenant of Mayors initiative, notably through promotion, facilitation of networking among local authorities, regions and their local partners and technical support to Covenant Signatories.
- ELENA – European Local Energy Assistance – is a facility that provides grants for technical assistance. ELENA is financed through the European Intelligent Energy-Europe programme with an annual budget of €15 million. The Council of Europe Development Bank (CEB) has developed the CEB-ELENA facility in partnership with the European Commission and with the support of the Intelligent Energy Europe II programme. The main difference between CEB-ELENA and other ELENA facilities is that CEB-ELENA supports only projects that are aimed to benefit disadvantaged regions or populations, with the overall objective of fostering social cohesion in Europe. CEB-ELENA provides support to public entities by subsidizing the technical assistance that they need to prepare and implement energy efficiency or renewable energy projects, such as retrofitting housing, schools and hospitals, investing in district cooling and heating networks or improving the energy efficiency of trams and buses.
- ELENA-KfW. This new technical assistance facility has been launched by the European Commission in cooperation with the German group KfW. It supports

medium-sized investment projects of less than €50 million with a focus on carbon crediting.

- The Smart Cities initiative will support a limited number of larger technology-focused projects of cities and regions featuring pioneering measures in sustainable use and production of energy as well as in mobility.
- A new European investment fund for sustainable energy projects is to be launched in 2011. This fund will use the unspent €146 million from the European Economic Recovery Programme, supplemented by co-funding from the European Investment Bank, in order to provide equity, guarantees and debt products for public authorities and entities acting on their behalf. The fund will focus on investments in buildings, local energy infrastructure, distributed renewable installations and urban mobility.
- Sustainable Energy Initiative. The European Bank for Reconstruction and Development (EBRD) supports municipal sustainable energy projects in the countries of its operation. The areas of intervention (e.g. municipal energy infrastructure, transport, carbon market, etc.) target municipalities, local banks, Small and Medium Enterprises and other local actors.

Currently active in Georgia EU programmes are:

- INOGATE Programme: The INOGATE Programme is the technical energy cooperation programme between the EU and Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine and Uzbekistan. Although the INOGATE programme was established in 1996, it was given shape in its current form under the Ministerial Energy Conference in Baku in 2004 (called Baku Initiative) that defined the four objective areas of the programme in the field of energy market convergence, energy security, sustainable energy and energy investments. With the launch of the Eastern Partnership in 2008, INOGATE also became the main instrument to support the objectives under the Energy Security Platform and assist countries that are part of the EU Energy Community Treaty to make the necessary reforms. The INOGATE programme has a Secretariat based in Kiev and Tbilisi. The ongoing projects in Georgia funded through INOGATE include: Energy Saving Initiative in the Building Sector - ESIB implemented together with Energy Efficiency Center-Georgia, and Supporting Participation of Eastern European and Central Asian Cities in the 'Covenant of Mayors'.
- Other EU funded projects include ENPI East - Waste Governance. The EU-funded regional project Waste Governance – ENPI East aims to assist and support Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russia and Ukraine in their efforts to reduce environmental and safety risks arising from inappropriate waste management. The project is implemented by a Consortium led by Spain's Eptisa, with regional partners mainly represented by the Ministries of Environment of the Partner Countries.
- CIUDAD – Sustainable urban development. The programme “Cooperation in Urban Development and Dialogue” (CIUDAD) aims to promote mutual understanding, dialogue

and cooperation between local actors in the EU and in the Partner Countries of the Eastern and Southern Neighborhood (ENPI region) through the provision of capacity building for the modernization and strengthening of local and regional government. It also seeks to create new partnerships and strengthen existing ones, among local and regional authorities in the ENPI region (South-South, East-East and South-East partnerships), leading to long-term benefits extending beyond the life of the programme. The CIUDAD programme run from 2009 to 2012 and co-finances 21 local grant projects in the Neighborhood's South and East. The projects reflect the overall objective of CIUDAD and in particular the following themes: Environmental Sustainability and Energy Efficiency, Sustainable Economic development and reduction of social disparities and Good governance and sustainable urban development planning. Projects implemented through INOGATE programme are financed under this umbrella. One of the project implemented in Georgia is elaboration of six strategic development plans for six eastern European cities, which is led by the municipality of Ukrainka (Ukraine). Ozurgeti city was involved from Georgia. Development plan doesn't consider energy sector at all. Various seminars on EE were held by the programme for bankers, students and other stakeholders. Meetings for Energy Community programme is also organized within CUIDAD. The Energy Community entered into force in 2006, and aims to extend the EU internal energy market to South East Europe and beyond, and enhance the overall security of supply. Parties have committed themselves to liberalise their energy markets and implement key EU legal acts in the area of electricity, gas, environment and renewable energy. Among the Eastern Partners, Moldova (since May 2010) and Ukraine (as of February 2011) are both full members of the Energy Community. Armenia and Georgia have observer status. With the support of CUIDAD 6 new pilot cities from Armenia, Georgia, Moldova and Ukraine will be included in MODEL project. MODEL stands for "Management of Domains Related to Energy in Local Authorities". It encourages municipalities to become models for their citizens and local stakeholders in the field of rational use of energy. To change their city's image, decision makers from 6 pilot cities in Armenia, Georgia, Moldova and Ukraine decided to follow the steps of 43 pilot cities from 10 New Member States and Croatia and will take concrete steps to improve the quality of life of their citizens through sustainable energy development. The actions coincide with actions of CoM, including gathering energy statistics and development of SEAP. The city participating from Georgia is Tbilisi.

- Greening economies in eastern neighborhood. The aim of this project was to develop a first cross ENPI assessment to illustrate the scale of the potential benefits for the countries of addressing environmental challenges. This was to help raise awareness of the benefits and provide an evidence base on benefits to help those ministries and other actors wishing to take measures to improve the environment and help in the transition to a resource efficient, green, equitable economy

Other projects developed in support to the implementation of the UNFCCC and the Kyoto Protocol financed by the EU Commission and implementing by the REC (Regional Environmental Center) and the Ministry of Environment include public awareness activities organized through a week long "climate week" organized every year since 2009, as well energy projects such as "Energy Saving initiative in the Building (ESIB) sector in the Eastern European, Caucasus and Central Asian Countries" implemented by INOGATE through EE Center-Georgia (EEC) . ESIB will assess the EE in buildings potential in partner countries and provide tools to improve the situation: High level policy advice; Operational ad hoc technical assistance; Capacity building; Support to demonstration

projects; ESIB expert community platform and knowledge base. ESIB and EEC will co-organize Energy Efficiency Days in Georgia and elaborate joint South Caucasus events devoted to energy efficiency issues in buildings.

“Support to Kyoto Protocol Implementation” assisted the country in preparation of several CDM project proposals and “Support to Climate Change Mitigation and Adaptation in Russia and East countries (Clima East)” started in January 2013 and supporting participant countries in preparation NAMAs (Nationally Appropriate Mitigation Actions). The latest is in the process of preparation of countries’ work-plans with focus on priority sectors for mitigation in each country.

In July 2010, the European Commission adopted a project that will support the cities joining the Covenant of Mayors from the countries of the European Neighbourhood region and Central Asia. The project foresees the establishment of a branch office of the Secretariat of the Covenant of Mayors in the region as well as the technical involvement of the European Commission's Joint Research Centre in Ispra. The project also includes a call for proposals for innovative approaches towards sustainable energy and city networks in the European Neighborhood region and Central Asia. The project started in 2011.

EBRD

EBRD is mainly involved in waste management and hydropower projects. Examples are paravani HPP, Ajara Solid waste landfill project, Rustavi Solid waste management system, Tbilisi landfill project and others). New landfill for Tbilisi City and new wastewater treatment system in Ajara are in compliance with EU standards and were constructed with the financial support from EBRD. “Regulatory Support for Renewable Heating & Cooling Policy” is a project funded by EBRD and implementing by Allplan (Austria). Project covers six countries – Georgia, Armenia, Turkey, Ukraine, Bulgaria and Romania. In the scope of the project the study has been conducted and the report has been prepared by EEC. The study reflected the situation in Georgia in terms of renewable heating and cooling. Based on this study the recommendations for Georgia will be elaborated.

World Bank, GIZ and others

World Bank’s projects are not directly linked to mitigation, but some of them, for example, highway and local roads improvement as well as transport infrastructure and service development projects will contribute to mitigation indirectly. WB carries several regional and infrastructure improvements projects that it important to synergy with.

Sustainable economic development and Environment and natural resources are among the priorities of Germany’s support to Georgia through Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), but currently their activities are limited by forests, biodiversity and rehabilitation of degraded pastures which also contribute to the removal of CO₂ from atmosphere. In past GiZ has in its project pipelines biogas installations and 5 million to “Revolving Fund” mentioned above was contributed by the Government of Germany. GiZ also participated in preparation of Tbilisi City SEAP.

Other on-going projects connected with mitigation are:

- Provision of Implementation of Renewable Energy and Energy Efficient Projects (Project donor - BP EXPLORATION (Caspian Sea) Ltd. and its partners in Oil & Gas). The projects to be implemented include: Introduction of Solar Thermal System in Tbilisi Public School #203 for Deaf and Diminished Hearing Children; Introduction of Solar Thermal System in SOS Tbilisi Children’s Village; Energy Saving Measures for Tbilisi Infant House; Development of RE and EE Demonstration Projects and Accessible RE&EE Funding Mechanism.
- CDM program of activities for Greenfield hydropower projects in Georgia (funded by Norwegian Ministry of Foreign Affairs). The main purpose of this project was to establish the national unit for managing the small HPP CDM programme. Unfortunately, such unit was not established.

Desk review of above mentioned latest projects showed that there is not mitigation strategy (the only strategy by 2025 is in SNC which cover only energy consumption sector) accepted/approved by the Government of Georgia and which would be developed based on realistic projection of GHGs from all sectors and from whole territory of Georgia and based on assessments of availability and feasibility of low carbon technologies for implementation of the strategy. Recently the projects and financial support provided by donors are mainly defines by donors priority programmes rather than the country's priorities.

Results of interviews

Five self-governing cities and five other municipalities authorities have been interviewed for baseline situation assessment. As it was mentioned above Tbilisi, Kutaisi, Batumi, Rustavi and Poti are self-governing cities. Four of them Tbilisi, Kutaisi, Batumi and Rustavi have already joined the CoM process and signed the agreement. Poti has ready all necessary documentation including the decision from local authority "Sakrebulo" but have not yet signed agreement. It might be some delay in signing process as far as there are some new approaches from the new government which should be taken into consideration. Clear position declared by the new government is to facilitate decentralization process and increase the responsibilities and authorities of municipal governments and increase the number of self-governing cities. Logically such approach should accelerate the CoM signing process by the Poti Government rather than become barrier. Fifth municipality signing the CoM is Gori. Gori city itself is not yet self-governing city but municipal center of Gori municipality. It could be concluded that LEDS process could significantly contribute to the increase in number of self-governing cities because cities having development strategy and more over low carbon development strategy have more potential to be independent.

From these five CoM signatory cities only two have submitted SEAP to the CoM office. Tbilisi submitted SEAP on 30 March 2011 exactly in one year after signing the document and Rustavi made submission 1 November 2012 after one time postponing deadline by 6 months beyond of 2 May 2011. Batumi and Kutaisi municipalities are in delay. They anticipated preparation of their SEAPs with the EU financial support provided through grant project "Removing barriers to the local municipalities to join the Covenant of Mayors process through dissemination of Tbilisi City experience" won by the Tbilisi municipality in partnership with NGO "Remissia", Municipalities of Kutaisi, Batumi and Kishinev. Unfortunately, because of some technical barriers linked to the financial regulations of the Tbilisi Municipality the project doesn't start yet which is the reason of delay in preparation of SEAPs. Energy consumption of **Batumi city** assessed within the TNC process and some measures for reduction of GHGs emissions from the city's territory are planned in Ajara region mitigation strategy but still energy efficiency measures for building sector, which is leading sector in CoM process, is not assessed and SEAP document itself is not prepared. Practically transport and waste/wastewater treatment sectors are well assessed for Batumi. For finalization and submission of Batumi SEAP street lightening and building sector should be assessed and the report should be prepared. Batumi is the only city in Georgia having new wastewater treatment system corresponding to the EU standards (financed by EBRD). It started operation in the beginning of 2012. Unfortunately the system is not equipped with methane capturing and utilization or flaring system. This system was in initial project but finally was not installed because of transaction costs.

Tbilisi SEAP considers all potential GHGs emitting sectors (building, transport, waste/wastewater treatment, street lighting and green zones) except industry. In general a SEAP must cover the following sectors: Buildings (including municipal buildings, equipment/facilities, tertiary (non-municipal) buildings and equipment/facilities, and residential buildings), municipal public lighting, urban road transportation (including municipal fleet, public transportation, private and commercial transportation) urban rail transportation, and fuel consumption for heat/cold production, only if heat/cold is supplied as a commodity to final end-users within the territory. However, other sectors could be also included if municipality intends to take actions there for mitigation. Tbilisi SEAP was prepared by the local NGO "Remissia" which has applied different methodology than applied by the

EU cities. In particular, a baseline scenario/reference scenario approach was offered instead of fixed baseline year approach applied by Annex I cities from the EU and from former Soviet countries (Ukraine, Belarus). Reference scenario approach encloses a city's development perspective and potential of increase in GHGs because of development needs and demonstrates perspective of development with lower emission pathway. The LEAP (Long-Term Energy Alternative Planning) model was applied for assessment of BAU (Business As Usual) scenario by 2020 for the Transport, Building and public lighting sectors in SEAP. IPCC methodology of the first order decay model was used for other sectors of SEAP such as (solid waste and waste water treatment). Using these tools future projection of CO₂eq has been done by 2020. Relevantly GHGs emission reduction in 2020 was calculated below the BAU scenario and not against any fixed baseline year. This approach was appraised and shared by other municipalities in Georgia and in other non-Annex I countries. However, it should be mentioned that this approach requires larger statistics and future trends of macroeconomic parameters which are not always available at the sectoral and city level. Development of such parameters and statistics is quite expensive and not accessible for transition/developing countries. As a response to removing this barrier, the JRC (Joint Research Centre) of the EU Commission developed coefficient for COM East Countries (COM was expanded to the East for all former Soviet Countries)

Summary of the country-specific coefficients for CoM-East signatories to estimate their CO₂ or GHG emissions in 2020 based on baseline year (2005-2020) estimates.

Table

BAU proje C.	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
ARM	1.2	1.2	1.2	1.2	1.2	1.3	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0
AIE	1.9	1.9	1.9	1.9	1.9	1.8	1.7	1.6	1.6	1.5	1.4	1.3	1.2	1.1	1.0	1.0
BLR	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
GEO	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.4	1.4	1.3	1.3	1.2	1.1	1.1	1.0	1.0
KAZ	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
KGZ	1.4	1.5	1.5	1.6	1.6	1.7	1.6	1.5	1.5	1.4	1.3	1.3	1.2	1.1	1.0	1.0
MDA	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	1.0
TJK	2.7	2.7	2.7	2.7	2.6	2.5	2.3	2.2	2.0	1.9	1.7	1.5	1.4	1.2	1.1	1.0
TKM	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
UKR	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
UZB	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	1.0

Comparing with the coefficient received in Tbilisi city SEAP (baseline year 2009 with 3,012,277 tCO₂eq. and BAU scenario in 2030 to 5,153,512 t CO₂eq) 1.71 the default coefficient from the table 1.62 is conservative and countries can use these coefficients if more detailed and costly assessments are not available for them.

Rustavi city SEAP encompasses three sectors only: building, transport and street lightening sectors. This SEAP has fixed baseline year 2011 with emission 389 370 t CO₂eq. SEAP was prepared by the Municipality itself and reduction planned in SEAP is 27.8%. Methodology applied by Rustavi is fixed baseline year (2011) and relevantly reduction should be demonstrated below 2011. Without projection of GHGs trends by 2020 the reduction plan might be not feasible. However, after two

years the city can revise the current SEAP. Rustavi city has economy development strategy (2009-2013) identifying the following priorities for the city development: creating an enabling environment for the development of local entrepreneurship, support the technical infrastructure development, strengthening of local governance, improving social environment and public welfare, and protecting and ameliorating natural environment. The inclusion of environmental issues in city's strategy is really unique. Now NALAG (National Association of Local Authorities of Georgia) is helping city to develop new updated development strategy for 2013-2017, which is not finalized yet. The draft version doesn't give evaluation on the achievements of previous strategy. As with all other NALAG strategies, the main priorities of funding are focused on defense, public order and safety; infrastructure development, rehabilitation and exploitation; education, culture, religion and sport; public health and social security. Environmental issues are still mentioned as strategic challenges to overcome. Activities include study of the forest lands, development of parks, evaluation of inert material, evaluation of wind potential on Ialguja mountain and others.

It should be mentioned that in past Rustavi was industrialized city (it was settled in 1950-ies when a Metallurgical Plant was constructed). Because of such industrial objects as Metallurgical Plant, Fertilizer Factory "Azoti" and cement production this city could be considered as one of the biggest emitter of GHGs from industry sector. All these industrial objects are private and out of control of municipality. However, different incentives and clean technologies might be offered to these entrepreneurs under the various mechanism and schemes developed by the UNFCCC, Kyoto Protocol (KP), multilateral and bilateral donors for reducing the emission. Such mechanism established by the KP is CDM (Clean Development Mechanism), it might be NAMA or LEDS in future. Some CDM proposals were prepared for cement factory, for "Azoti" and for metallurgical plant. However, none of them was realized. Metallurgical plant has now new owners and most likely the old process is at some level renovated but recent energy efficiency is not assessed.

Kutaisi is second by population self-governing city in Georgia following the Country's capital Tbilisi. The city is surrounded by densely populated municipalities and has the status of center of West Georgia. Before the October elections of Georgia's Parliament the City was announced as parliament city but this status could be changed again. Because of its location it is strategic city in the East-West corridor of Georgia. Kutaisi signed the CoM together with Batumi on 15 July 2011 and was involved in the EU grant project mentioned above to be financed for preparation of SEAP. The process is pending and city currently is in the similar to Batumi situation. Difference is that Batumi has some sectors assessed within the TNC while Kutaisi doesn't have at all information/data on recent energy consumption and future demand in case of development. For a long time Kutaisi didn't have city development strategy but it had "Environmental Action Plan" developed by REC Caucasus in 2005-2006. Action plan is focused on cleaning of city, increase solar energy utilization in heat supply sector and support energy efficiency programmes. In past, Kutaisi was industrial center of the west Georgia having big automobile factory. Currently, small and medium size enterprises are developing. City has serious problem of water supply, sewage system, landfills and obsolete cars park. Kutaisi is actively involved in CoM training programmes but only one person is attending events (respondent) who has many other responsibilities and it could be considered that such representation is very formal and doesn't facilitate establishment of real capacity. Recently the City's development strategy for 2013-2017 was adopted. This is only strategy among the reviewed ones that have energy efficiency, renewables and CO₂ reduction in the action plan for the sectors of street lightening, waste management, heat supply and public transport park. Increase of green areas in the City is also part of the strategy. However, implementation of such actions related to the EE, RE and waste is under the responsibility of private sector and foreign investors. Main problem identified in this case as well as in other existing strategies is that development activities are planned without knowledge and consideration of current energy consumption and future demand in case of development or population growth. Population growth in Kutaisi in 2002-2012 is 5.8% which is 4 rate among municipalities and self-governing cities (Marneuli municipality -9.6%, Tbilisi city-8.4%, Zugdidi municipality-6.2%). In case the Parliament of Georgia stays in Kutaisi significant increase of infrastructure and population should be anticipated which will be increasing the energy demand.

Another COM signatory but not self-governing city is **Gori**. City has not yet submitted SEAP. COM was signed on 13 July 2012 and by 13 July 2013 submission should be done. SEAP is planned to be

prepared under the EU funded project of “Covenant of Mayors Capacity Building Model for Ukraine and Georgia: Model Solution for Eastern Partnership and Central Asian Countries”. As it was mentioned above Gori is not self-governing city but it’s municipality and it signed COM as municipality though majority of measures will NALAG and aimed at preparation of cosio-economic development plan for 2013-2017. Aim of this programme is to increase participation of stakeholders in identification of priorities and planning future development. It should be highlighted that among the similar development plans reviewed during survey Gori is the only case where energy (unfortunately only electricity) consumption trends are provided for 2009-2012. The trend is increasing. Increase in residential sector is 2.3% while population growth is not observed (insignificant -1.7% which could be considered as uncertainty) and increase in industry sector is 40% which is very high having into mind that agriculture and food product processing are main economical activities in the municipality. Priorities identified for 2013-2017 are mainly social type (education, religious and culture, public health, strengthening security (Gori municipality has border with the second conflict zone in Georgia, Kvemo Kartli)) and rehabilitation and development of infrastructure is only activity which could be linked to the LEDS process. It could be concluded that energy consumption data is included in the description of baseline situation because Gori has signed the COM and they understand importance of this parameter. However, no activity is planned in the programme regarding energy consumption or generation. It might be included in the final version (only drafts are available at this stage) but probability is very low because the Municipal Authorities have not relevant awareness. Survey process showed that these two processes are not in cooperation but are being implemented in parallel by different groups and different responsible persons from the municipality. Such approach will be one of the barriers when preparing and implementing LEDS and should be removed as the first priority.

Poti is self-governing city. The city is not yet signatory of COM but it was approved by the Previous Mayor to join the Process. Position of new authorities is not yet defined. Poti City Hall is informed about COM process. Information on this initiative was received from the Tbilisi City Hall which is the first among Georgian cities signed the COM. Representatives of Poti City Hall actively involved in information sharing process under the COM programmes. All self-governing cities and Poti among them systematically have trainings within the different projects financed by the EU and implemented by different stakeholders (INOGATE, EE Center-Georgia, CoM office in Tbilisi city. Poti is one of few industrial cities in Georgia. Poti port is one of the biggest consumer of electricity with very low efficiency. This high power consumption is related to the location of city (0.8-2 m a.s.l.) and huge pumping systems for supply to population drinking water and for operation/drainage of sewage system. Most of pumps are obsolete and inefficient and electricity supply is low quality not acceptable for pumps. Therefore, most of pumping systems are out of order majority of time. Wastewater treatment plant doesn’t exist recently and wastewater is directly sent to the Black Sea. Construction of one wastewater treatment plant is planned but only one treatment plant is not enough for the city having significant level differences in its territory. Recently 10 sewage pumps exist delivering the wastewater to the sea without any treatment. 5 of these 10 pumps are very old with very low energy-efficiency.

Zugdidi (population 176.6 thous.), Zestahoni (75.7 thous.), Khashuri (62.5 thous) and Sagarejo (59.8 thous.) are other municipalities included in survey. Main criteria for inclusion of these municipalities are different: **Zugdidi** is municipality having largest amount of population and the municipality is third by population after two self-governing cities Tbilisi and Kutaisi, municipality is on the border with conflict zone in Abkhazia having the largest amount of IDP after Tbilisi city; **Zestaphoni and Khashuri** are cities from different regions but both located on the East-West highway, in past both of these cities had increasing trends of population but recently both show very low but decreasing trends, population growth in past was the results of well-developed industry and location, e.g, Zestaphoni was one of the few industrial cities having ferroalloy factory, which still works but with very low capacity; **Sagarejo** municipality is third by population in Kakheti region but it is located very close to Tbilisi-city which gives opportunity of fast development of agriculture (particularly animal breeding), increase in population and provide different type of services to the Tbilicity city as it was in past. Sagarejo and Zestaphoni were not involved in any development plan assessment programme and at the time being they don’t have vision of future, they don’t have identified

problems. The main reason for including these two municipalities was to achieve the representativeness of medium sized-municipalities without on-going COMO processes in the survey. Since they represent average municipalities of Georgia, assessment of their needs and their involvement in the process will facilitate the spreading of the process further in other municipalities. Common findings identified during the survey are: none of these municipalities has considered energy consumption trends in their socio-economic development studies and plans, none of them has awareness on climate change (at least responsible persons for economy development) most likely caused by replacement of old staffs, problems identified during socio-economic assessment are mainly social, only rehabilitation and construction of infrastructure identified in most cases could be considered as development priority, if other priorities are identified in exceptional cases these are agriculture and tourism which coincide with the priorities of the central government of Georgia. None of these surveyed Municipalities, except of Tbilisi city, has persons/units responsible for energy statistics.

Details of survey see in Annexes/questionnaires attached to the report.

There were few questions which practically couldn't answer by respondents.

This is one of the questions from questionnaire used for survey-What current energy efficiency programs, efforts, activities do you have going on in your city? What kinds of programs, how long, what is the progress; in which sectors? Where do you get funding for EE programs and activities? What are your priorities in this area –what would you like to see happen for future planning? What are the main barriers (regulatory/legal, financial, technical, social/cultural)?

These questions practically were not answered by the representatives of municipalities. Energy efficiency is not real priority for the government. Theoretically government has declared EE as an approach/means contributing to the energy security but there is no any EE programme developed and actively supported by the Government. Government's participation and contribution to this process is that it welcome EE programmes implemented by various donor organizations but the government itself is not interested in removing barriers to EE process. Relevantly, there are not EE programmes supported by the local governments at the Municipalities' level. Local governments are aware that energy supply and energy security is the responsibility of private distributor companies. Local governments are not involved in energy consumption monitoring and planning process. In parallel to the decentralization process supported by the new Government awareness of local authorities should be particularly enhanced and they should be taught how to take energy demand in planning process. All barriers listed in the question exist in most of municipalities and among them should be highlighted cultural (in soviet countries wasting of energy was very typical and sometimes promoted by the Government), technical barriers related to the gap in technology needs and market.

Another question- What current renewable energy programs, activities are happening in your area? What kinds of programs, how long, what is the progress; in which sectors? Where do you get funding for RE programs and activities? What are your priorities in this area –what would you like to see happen for future planning? What are the main barriers (regulatory/legal, financial, technical, social/cultural)?

Situation with this question is the similar. Municipalities are not ready to response this question. Even if there are studies for some of this municipalities aiming at the utilization of renewable energy for the local use implementation of results of feasibility studies are not actively supported by relevant municipalities. Only renewable energy considered by the government as priority for country is hydro. Other types of renewables (wind, geothermal, solar, etc) are not promoting by the central government. Therefore, at regional and municipality levels should be given priority to renewable and particularly in heat supply sector.

Conclusions

- Despite declarations made by different ongoing projects and programmes on broad stakeholder involvement in the preparation and implementation process, the biggest barrier to the successful preparation and implementation of LEDS will be cooperation between ongoing programmes implemented by different donors under the responsibility of different

authorities. Successful removal of this barrier is pre-condition of successful implementation of LEDS.

- In October 2012 the President of Georgia appointed New Government as a result of Parliamentary elections. Despite the fact that in accordance with the Constitution of Georgia the elections of local governments don't coincide with the Parliamentary elections, which was the reason for appointment of new Government, some changes still have happened in local governing structures following the changes in central government. Consequently, most of newly appointed authorities have not enough experience and knowledge and in particular, vision of future development. More experienced persons from the old staff supported most of interviewed authorities. It will take time to bring awareness to the new authorities. In addition, priorities could be changed. Therefore, it seems unfeasible to develop the LEDS based on priorities identified in previous socio-economic development studies. In addition, maximum decentralization of local governments is one of the priorities of new Government which might (for sure) lead to revision of existing priorities and development ways. Within the preparation of LEDS first step should be identification of real priorities based on more strong and sound statistics.
- Energy consumption trends are not considered or used by municipalities in their development process and they don't see at all their role in energy supply or energy efficiency process. In most cases even energy consumption by municipal buildings or transport having economic impact on municipalities' budget is out of their interest. One of the reasons might be that more than 80% of municipal budgets are grants received from the central budget and second, that energy suppliers are private companies and municipalities don't see their role in this process. Contribution of energy consumption trends not only in GHGs emission process, but in municipalities' budget is very important issue where the awareness should be significantly enhanced.
- Practically none of the existing or under preparation development strategies or action plans consider energy statistics and trends in planning which put feasibility of these plans under high risk. To establish legal mechanism for continuous collection of energy statistics should be top priority of LEDS process.
- Practically all reviewed strategic plans developed in 2007 have the same priorities for all municipalities and these priorities are: rehabilitation or pavement of local roads, improve the drinking water supply and irrigation systems, increase of social aid programmes, solid waste and wastewater treatment. Local peculiarities and resources for development as well as future energy demand are not assessed from the perspective of future planning.
- There are many small pilot projects demonstrating the utilization of renewable energy or improvement of EE (e.g. in the process of rehabilitation of municipal or residential buildings). These projects are being implemented in the municipalities by different NGOs and sometimes bilateral investors (e.g. initiative of Japanese government- rehabilitation of kindergarten in Khashuri municipality) but such projects in most cases are not linked to the climate change or energy efficiency and don't contribute to the climate change or energy efficiency awareness raising. Such projects and activities are chaotic nature and therefore their effect is not tangible.

- Practically signing of CoM by cities or municipalities happens without any preliminary assessment of mitigation potential and sectors for inclusion in SEAPs. Such approach increases the risk of feasibility of SEAPs developed by the cities/municipalities after joining the COM process. Assessment of mitigation potential and potential measures to be implemented should be done before the signing commitments.
- Solid waste landfills in most cases don't have enough capacities to receive all wastes produced in the municipalities, they are old, unmanaged, not in compliance with elementary sanitary norms. Municipalities (except of cities) have not sewage systems and wastewater treatment systems. Wastewater treatment systems are only in Tbilisi and Batumi as well as modern landfills complying with the EU standards. To establish regional landfills was the priority of the previous government which would be easier for management than many landfills at municipalities level. Final decision is not clear yet but from the perspective of methane capture and utilization or flaring it is more attractive to have big landfills.
- Disaggregated at the sectors, regions or municipality level energy statistics doesn't exist which is another issue which should be solved as the first priority.
- Lack of information on energy efficient and renewable technologies is also identified as significant barrier to the LEDS development.
- One of most significant barriers is lack of capacity at municipal level to address the issues concerning energy consumption, energy efficiency, renewable energy and emissions. There is a lack of capacity able even to evaluate current situation, and to perform simple energy management activities at least in municipal buildings, not mentioning energy planning or measure developments.

Activities to be implemented for successful preparation and implementation of LEDS

General Concept

It is clear and it is basis that concept and purpose of LEDS is not exactly the same as SEAP under COM. SEAPs are constructed on sectors where municipalities have influence (building, transport, street lightening, solid waste and waste-water, green spots in cities, etc). LEDS couldn't avoid private sector which is significant consumer of energy and emitter of GHGs from non-energy sources. How to work with the private sector and promote implementation of modern energy efficient and renewable technologies in private sector is principle difference between SEAP and LEDS.

- ***Approach for development of LEDS should be Bottom-Up but coordinated from one central agency***

LEDS should be developed based on the different initiatives ongoing in the country and supported by the donors, central and local authorities, and, demonstrating their feasibility. In most cases preparation of strategies and development plans implies top-down approach which is not in fact feasible at least in Georgia. Only the stakeholder consultation process can not ensure the feasibility of strategy. Full involvement of local authorities and their priorities in the LEDS preparation process is pre-condition for successful implementation of a strategic plan.

Nevertheless the process should be coordinated by some central agency. The coordination should include capacity building, provision of information and tools, checking consistencies, etc.

The best example of such approach is the Covenant of Mayors initiated by the EU. Through this Covenant process the international negotiation process on LEDS and NAMA is shifted from the country level to the cities level which are biggest pollutant and emitters of GHGs and have quite complicated infrastructure. If the Covenant process manages to involve the critical number of non-Annex I cities in the process, it will assist non-Annex I countries to correctly formulate their political platforms in the negotiation process, develop at country level aggregated LEDS and understand the benefits from and impediments to the LEDS process.

For full and effective application of bottom-up approach in this process the strong political willingness should be demonstrated by the central authority.

- ***GHGs national inventory process should be disaggregated***

As it was mentioned in the above approach in order to prepare a country's LEDS (LEDS is not exactly the same but very similar to a SEAP; LEDS is broader process covering all sectors and social issues) the preparation process should be disaggregated at the regional and sectoral levels along with the disaggregation of the national inventory process. Process of inventory disaggregation is costly, requiring additional human and financial resources. Statistics recently produced by the country is very centralized serving the economic purposes only and not always fits GHGs inventory purpose. In short- term perspective this gap could be filled with information and statistics produced by different national and international studies. In long- term perspective disaggregated statistics at urban and regional level should be produced nationally.

- ***LEDS process should be in close cooperation and integrated in the regional development strategies***

Similarly to the SEAPs of cities, the regional LEDS should be developed considering the regional/municipalities priorities which do not always coincide with the national priorities. Regional/municipalities development strategy should be prepared and approved by the country. According to this vision regional development strategies should be prepared by each of 9 regions of Georgia or 67 municipalities and self-governing cities. All 9 regions in Georgia have development strategies, but not all 67 municipalities. Unfortunately none of them considers environmental or climate change issues or sustainable utilization of natural resources. These strategies are completely oriented on business as usual development. Therefore the first priority in preparation of LEDS should be intervention into the strategy preparation process where it's already initiated. Next step should be the revision of existing strategies and integration of the low carbon development elements into the existing ones. Finally, the local authorities in the regions/municipalities where the process of development of local development plan is not initiated yet should be supported in this direction.

- ***Sectoral approach could be also considered as option for some strategic/priority sector for the central authority***

Sectoral approach in LEDS preparation vs. regional approach should be also considered in planning process for the sectors which have high economic development priority for the country (such as export of hydropower, development of tourism, etc) and significantly increasing trend of energy consumption. It should be mentioned that sectoral approach is more economic (cheap) option comparing with the regional one.

- ***Long-term projection of business as usual scenarios should be conducted at disaggregated levels (cities, regions, municipalities, sectors) as well as country level***

Despite of the approach applied for preparation of LEDS, long-term projection of business as usual scenarios should be conducted at the different disaggregated levels such as self-governing cities/municipalities, regions and sectors in order to produce the complete picture and cross check the results. From the long-term projection tools recommended by LEDS web portal "Open Energy Info", two models are already being implemented in Georgia: LEAP and MARKAL. Simpler tools, like LEAP (Long- term Energy Alternatives Planning) or some other tool (depending on municipality) should be applied at the disaggregated level in order to reduce the costs of statistics required by the MARKAL model. At the aggregated level MARKAL model should be recommended for national

planning giving cost-benefit analysis and cost efficiency of different alternatives. The role of MARKAL is also to provide necessary input information for local tools, such as national emission growth coefficients for simpler approaches, or elasticities of demands, penetration levels of technologies, etc. for LEAP.

- ***Alternative development scenarios slowing the growth rate of GHGs emissions should be considered from short-term and long-term perspective***

First attempt to assess the alternative development scenarios for the energy sector has been conducted in the second National Communication of Georgia.

Alternative development scenarios which could be considered in short-term perspective are alternatives which could be implemented immediately, which are in priorities of the government and for which barriers can be easily removed. The rest, less feasible options, should be considered in long-term perspective.

- ***Broad stakeholder consultations***

All possible stakeholders shall be consulted in LEDS preparation process: central and local authorities, private sector representatives, NGO's, etc.

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