**Support to enhance energy efficiency of education facilities**

**Terms of Reference for a firm**

Disclaimer: The following terms of references (ToR) have been shortened to reflect essential points to be included in the terms of reference. Every organization can then adapt it to their standard ToR template.

**Scope of Services**

The firm (from now on referred to as the Consultant) is expected to: (i) define criteria to select a set of representative school buildings for the walk-through audits; (ii) conduct walk-through audits in the selected set of school buildings; (iii) provide technical recommendations for the design of energy efficiency upgrades for school facilities at pre-feasibility study level, including analysis of expected costs and benefits; and (iv) provide technical recommendations to guide the preparation of intervention and costing strategy to improve energy efficiency (EE) of school facilities nation-wide. The Consultant will work under the guidance of the TTLs for this assignment and closely collaborate with an international EE Consultant.

**Task 1: Define criteria and select a set of representative school buildings for the walk-through audits**

As part of this task, the Consultant shall propose a set of criteria to select 25 school facilities for the walk-through audits. These school facilities shall be selected from a group of 50 schools which have been previously identified based on criteria established under the investment project. The objective is to select 25 school facilities which are representative of the diversity of needs of the entire group in terms of energy consumption and efficiency.

This task includes collection of data and information about school facilities, including building specific key parameters (as outlined below). In terms of overall approach for collection of required data/ information, the Consultant is expected to conduct first a review of the existing and available information, including from Government agencies, available energy audits conducted and reports prepared by other donors (including World Bank, UNICEF, EBRD, etc.). On this basis, the Consultant is expected to propose a plan for collecting the missing data, discuss and agree on the proposed plan as part of the inception report, and subsequently follow-up to close the identified data gap.

Relevant activities to be performed and information/ data to be collected, evaluated and presented by the Consultant will include (but will not be limited to):

* Collect and present (in a structured way) data on the selected buildings stock or about other similar school facilities; data should include information (to the extent possible and available) on: square area of the buildings, type of heating system and fuel used, energy use and energy related costs, number of users, facility age, etc.
* Propose criteria to select and identify a set of 25 representative school facilities for the walk-through audits. These criteria will be reviewed and agreed by the Bank team in advance.

***Deliverables Task 1*:** The Consultant will prepare a summary report of Task 1 in accordance with the scope outlined in this ToR. This will also include sharing of information/data collected as well as detailed references to information sources. As interim outputs, the Consultant will provide regular updates on progress and data collection issues.

**Task 2: Walk-through energy audits in selected school facilities**

The Consultant will work with the International Consultant to perform walk-through audits in selected 25 school facilities. The walk-through audit procedure and report’s format will be agreed and discussed with the International Consultant and the Bank team, but is expected to include the following information:

* *Description of the selected facilities:* Report on the location, climate, usage and technical characteristics and conditions of the building structures and systems and identify relevant and applicable legal requirements, environmental and other standards that need to be considered for implementation.
* *Energy baseline*: Building on information collected through the walk-through energy audits the Consultant will establish an energy consumption baseline for the selected school buildings.
* *Energy efficiency opportunities:* Present a methodology to analyze and identify different applications of energy efficiency measures per selected building, such as replacement of windows and doors, insulation of walls, floors and roof, replacement of lighting and electric system. Develop a heating strategy considering the heating demand after rehabilitation along with proper ventilation considerations.

***Deliverables Task 2***: Walk-through audit plan (in collaboration with international consultant), and energy audit reports for the selected school buildings.

**Task 3: Provide technical recommendations for the design of energy efficiency upgrades for 25 school facilities at pre-feasibility study level, including analysis of expected costs and benefits**

As part of this task, the Consultant shall analyze existing and collected information about the 25 selected school facilities, and provide technical recommendations for the design of energy efficiency upgrades in collaboration with International Consultant. These recommendations will inform the design of solutions under the ERIK project. The objective is to propose solutions for various levels of upgrade, with respective quantification of benefits and expected costs.

Relevant activities to be performed and information/ data to be collected, evaluated and presented by the Consultant will include (but will not be limited to):

* + Establish various levels of upgrade for EE and describe the objectives and scope of each level.
	+ Propose a recommended technical design: Based on results of the analysis described above, recommend solutions for energy efficient measures from a technical and financial perspective per school building (or set of buildings with similar EE needs) for various levels of upgrade. This should take into account technology risk, institutional setup, the impact of the local climate, the cost and availability of the technology, and any other relevant factors.
	+ Expected results: Report the expected costs and energy savings as well as other benefits arising from the suggested energy efficiency measures for the various levels of upgrade.

***Deliverables Task 3:*** The Consultant is expected to prepare a summary report of Task 3, including detailed reference to information sources, in accordance with the scope outline in this ToR. This will include files with calculations and other relevant information used to quantify costs and benefits. As intermediate deliverables, the consultant will share drafts of the assessments conducted for the points outlined above with the Bank team in order to provide comments and guidance before preparing the final report.

**Task 4:** **Provide technical recommendations to guide the preparation of intervention and costing strategy to improve energy efficiency of school facilities nation-wide**

As part of this task, the Consultant shall build on the results of the activities above, and other relevant existing and available information and provide recommendations for scaling up EE investments in school infrastructure nation-wide. These recommendations will support the preparation of a national intervention and investment strategy to improve the safety and quality of school infrastructure. Information collection and analysis will be conducted through desk review of existing assessments and information, as well as stakeholder interviews, including governmental and non-governmental institutions as well as other development partners.

Specifically, the Consultant is expected to:

* + Review relevant past, ongoing and planned programs, initiatives and studies on EE in school facilities; specifically, the Consultant is expected to review and evaluate government/ donor-funded investment programs/ plans, studies (e.g. World Bank studies on urban heating options, disaster risk management, health/education sector, urban development, etc.), collect available energy audits, and describe initiatives/ program that are relevant to energy usage and EE in school buildings, including those initiated by the Government/ local administrations (e.g. Government fuel switching program for public buildings, regulation on use of electricity for public buildings, Comprehensive Development Plan, City Environmental Sector Plan, ordinances pertaining to Green Building, among others) and other donors (e.g. Urban Development Project, UNDP, EBRD) and partners (e.g. recent fact finding mission of Energy Charter on assessing the EE framework in Kyrgyzstan).
	+ Analyze the policy, regulatory, institutional, technical and financial EE framework in order to support the evaluation of key issues and barriers hampering EE investments in school infrastructure.
	+ Analyze the current and planned institutional set-ups to support EE policy formulation, including planning, policy formulation, implementation, monitoring and evaluation functions.
	+ Assess the budgeting process for energy expenses for school buildings, including aspects such as the method of the budget system for energy expenses, responsibilities for paying the energy bills, how budget is allocated (e.g. lump sum per registered student, specific budget item for energy expenses, etc.), ability of public entities to retain energy cost savings, etc.
	+ Review public procurement rules and procedures and related regulatory requirements relevant for energy efficiency investments, including for instance ability to bundle procurements, combining of different types of services needed for energy efficiency investments (e.g. audits, designs, supervision), requirements for state approvals and licenses (e.g. including underlying regulatory requirements such as approval of designs, audits of designs, other state expertise or licenses, handling of commissioning tests, etc.
	+ Review the EE supply market (e.g., energy auditors, design companies, construction companies, energy efficient equipment suppliers, etc.) to understand their capacity, and related legislative/ regulatory requirements.
	+ Prepare a matrix of key barriers identified for energy efficiency and a list of potential recommendations on how to address the barriers.
	+ Prepare technical recommendations to guide the preparation of intervention and costing strategy to improve energy efficiency of school facilities nation-wide.

***Deliverables Task 4:*** The Consultant is expected to prepare a summary report of Task 4, including detailed reference to information sources, in accordance with the scope outline in this ToR. As intermediate deliverables, the consultant will share drafts of the assessments conducted for the points outlined above (points can be bundled) with the Bank team in order to provide comments and guidance before preparing the final version of the report.

**Duration and Deliverables**

The assignment will be implemented between May and December 2018.

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| **Task** | **Deliverables** | **Timeline** |
| 1 | Draft report of Task 1 | May 31 |
| 2 | Plan, walk-through audits and related reports | June 30 |
| 3 | Draft report of Task 3  | September 30 |
| 4 | Draft reports of Task 4 | December 31 |

**Qualifications of the firm and key specialists/individuals**

The Consultant should be a qualified firm that has demonstrated experience in all areas required for this assignment, including performance of detailed energy audits for public buildings; preparation policy and legislative initiatives in the field of energy efficiency.

The key team is expected to include the following:

* Team Leader, responsible for managing/overseeing the entire consultancy contract implementation; University degree (Master’s equivalent) in economics, construction engineering, architecture or related field; minimum seven (7) years of experience in project management, including experience in project management of similar energy efficiency assignments
* EE expert, responsible for collecting and compiling information; University degree (Master’s equivalent) in engineering, economics or other relevant field; minimum seven (5) years of experience in energy efficiency, including analysis of policies and legislation.
* Technical expert, responsible for conducting the walk-through energy audits; University degree (Master’s equivalent) in engineering or architecture; minimum of (5) years of experience in conducting energy audits, ideally with experience in the area of renewable energy applications in the buildings sector.