

Terms of Reference
Lead Advisory Consultant
Component 1: Enhancing the Air Quality Management (AQM)
Greater Cairo Air Pollution Management and Climate Change Project

Title: Lead Advisory Consultant for Component 1

I. Background

As part of the “Sustainable Development Strategy (SDS): Egypt Vision 2030”, the country committed to halving its fine particulate matter (PM₁₀) air pollution by 2030. Significant improvements have been made towards that goal in recent years. In fact, Cairo’s PM₁₀ concentration fell by about 25 percent over the past decade. Despite these improvements, the city’s pollution levels are still several times the WHO recommended concentrations and higher than national guidelines taking as these high levels are taking their toll on the health and quality of life of the population, in particular poor people. Subsequently, the Greater Cairo (GC) Cost of Environmental Degradation (COED) attributed to air pollution is by far the highest in the country, with a mean estimate equivalent to 1.35 percent of national GDP in 2017. Conversely, the GC COED attributed to waste (net of air pollution damages, via the burning of waste) is half the air pollution’s COED and results in a mean estimate equivalent to 0.68 percent of national GDP in 2017 which includes the opportunity losses from composting, recycling, methane capture, etc. Moreover, recent studies on the COVID-19 show that there is an increased likelihood of contracting the disease with high levels of ambient pollutants.

Climate change models project Egypt’s mean annual temperature to increase between 2 °C and 3 °C by 2050 and an increase in the duration of long-lasting heatwaves. Hot sandstorms known as khamsin blow millions of tons of grit from the Sahara to the North African coast and increases in local temperatures of up to 20 °C are projected to increase in frequency and intensity. By 2050 the intensity and seasonality of heavy rains, as well as the probability of droughts will increase. Long-lasting heatwaves likely will increase in duration of between 9 to 77 days by 2085. The GC area is vulnerable to all of these, as well as to river and urban flooding, water scarcity and wildfires. The impacts are severe, particularly for public health and agriculture. Climate change will put additional pressures on citizens’ health, in the form of increases in the prevalence and severity of cardiopulmonary conditions through heat and sandstorms, potential increases in vector-borne diseases, through decreased nutrition and food security and reduced water quality. Further, it has been demonstrated that extreme heat events are linked to worsening air pollution.

In response to this situation, the Government of Egypt (GOE) is seeking to reduce air and climate emissions from critical sectors and increase resilience to air pollution in Greater Cairo. The Ministry of Environment is in that respect implementing, with the support of the World Bank, the “Greater Cairo Air Pollution and Climate Change Management” (the Project). The Project aims specifically to reduce emissions that contribute to air pollution concentrations, thus leading to air quality improvements, and to simultaneously mitigate climate change. Air pollutants include PM₁₀ and PM_{2.5}, while climate pollutants include both longer lived greenhouse gases (GHGs) such as CO₂, as well as Short-lived Climate Pollutants (SLCPs) that include black carbon, methane and several short-lived HFCs.

Successful Integrated Climate and Air Quality Management Planning (IC-AQMP) requires a comprehensive understanding of baseline ambient air concentrations, including Short-Lived Climate Pollutants (SLCPs) and greenhouse gases (GHGs).

The Project is composed of the following components:

- **Component 1: Enhancing the Air Quality Management (AQM) & Response System** - This component will support the enhancement of the Air Quality Management (AQM) decision support system in GC through a strengthened AQM infrastructure (monitoring and analytical), capacity building activities, developing emergency response plans and raising public awareness through information dissemination.
- **Component 2: Support the operationalization of SWM Master Plans in GC**
- **Component 3 Vehicle Emission Reduction**
- **Component 4 Communication & Stakeholders Engagement**
- **Component 5: Project Management and Monitoring & Evaluation:**

(For more information: <https://projects.worldbank.org/en/projects-operations/project-detail/P172548>)

This assignment is requested in the context of Component 1 of the Project, as described here:

Component 1: Enhancing the Air Quality Management & Response System.

This component comprises two subcomponents

- **Subcomponent 1.1: Reduction of air pollution and GHGs.** This subcomponent will support the carrying out of a program of TA activities on reduction of air pollution and GHGs, namely: (a) development of an Integrated Climate and Air Quality Management Plan (IC-AQMP) including a time-bound action plan for its implementation; (b) strengthening Air Quality Management (AQM) regulatory and policy tools through (i) developing a mobile source emissions inventory including road and nonroad sources, and integrating it with existing inventories and (ii) continuous monitoring of short lived climate pollutants, greenhouse gases, and carbon dioxide monitoring; (c) development and rolling out of a specialized AQM and green jobs skills training program in universities and ministries including curricula such as chemical engineering, atmospheric science, environmental economics and environmental health, renewable energy interventions, energy efficiency and environmental economics, and resource efficiency/circular economy interventions; and (d) strengthening policy dialogue by carrying out assessments of the environmental health and the economic benefits of priority climate and air quality interventions, including cost-benefit and cost-effectiveness of emission abatement investments and capacity-building initiatives such as the trainings program.
- **Subcomponent 1.2: Strengthening resilience to air pollution.** This subcomponent will strengthen resilience to air pollution through: (a) improving air quality forecasting tools through development of a chemical transport model-based approach and its integration with local air quality monitoring data and dissemination of the forecasting information; (b) establishing institutional response mechanisms for high pollution days such as definition of criteria and protocols for identification of air quality action days and development of emergency plans and applicable decision protocols for said air quality action days; and (c) strengthening the technical capacity of the National

Committee for Crisis Management and Risk Reduction for implementation and enforcement of the protocols.

These two subcomponents are to be achieved through ten pre-identified “Sub-tasks” (as ten separate subcontracts or bundled into fewer subcontracts that achieve the same intent):

- (i) Establishment of a SLCP/GHG Monitoring Network for GCA—to support in providing recommendations on the deployment, operation and maintenance of proposed network, (structured in a scoping and subsequent implementation phase). This network should integrate seamlessly with and support existing AQ monitoring networks (ambient & industrial) in GCA (including routine AQ monitoring sites in GCA as well as the recently designed source apportionment network and the telemetry monitoring system for point source of industrial facilities), thus an initial step may involve conducting a network assessment to review EEAA’s comprehensive AQ monitoring objectives and, QC/QA and requirement for enhancement road map. Implementation activities will include design and deployment of network components (including source apportionment and PM2.5/BC/CO2 monitoring components), but also analysis, data management, and quality assurance of GCA monitoring program.
- (ii) Establishment of an integrated Emission Inventory Database for GCA and Egypt – to provide operational support in refining the existing emission inventory consisting of a point and area source inventory for GCA, a biogenic and geogenic inventory for Egypt and a UNFCCC compliant GHG inventory for Egypt to create a unified and comprehensive national inventory database that includes a mobile source inventory per the existing mobile source inventory development roadmap. The resulting unified database should enable policy tracking, international reporting, and chemical transport modeling. The data base structure should enable reporting interfaces that enable data reporting from various users (e.g., governorate level reporting of traffic and vehicle registration data, industrial reporting of point source emission data, etc.) to report data into the national system.
- (iii) Development of an Integrated Climate and Air Quality Management Plan (IC-AQMP “Action” Plan)—to provide operational support to develop, assess, and evaluate policy options under a multi-level governance process to identify and justify elements of the GC Action Plan (including technical analysis, economic assessment and facilitation of consensus building process).
- (iv) Development Curricula , Sustainable training at Local Universities and license system – to provide operational support for the development and roll-out of a new environmental resource management curriculum at GCA universities. The outcome should result in enhanced training and knowledge – at both the undergraduate and graduate level – around principles, basics and updates of environmental science, and AQM planning specifically, to ensure a pipeline of trained professionals for EEAA, as well as better prepared students to address other green skills development needed for Egypt as a whole. This should be planned in collaboration with University of Cairo, either alone or in partnership with Helwan University, and Aim-shams University, to ensure that Cairo is producing a steady supply of students with skills needed for environmental management and the green economy. In order to enhance the quality of the professional market of

skilled professionals within Egypt, the Consultant should propose a rigorous international license and accreditation process.

- (v) Support Sustainable Development Within the Egyptian Government– to provide operational support to improve capacity of ministry staffs and sustainable development units - via executive skills training - to undertake integrated climate and air quality management planning and implementation of mitigation actions.
- (vi) Implementation of Micro- and Macroeconomic Assessment of Action Plan– to provide operational support to provide a sector-specific detailed economic analysis of actions identified by IC-AQMP working group (see III above) comparing implementation costs against health, agriculture, and energy benefits of interventions, as well as macroeconomic benefits of reduced health spending, alternative patterns of investment and quality of life improvements, for labor force, tourism, recreation, etc.
- (vii) Development of advanced Air Quality Forecasting system–to provide operational support to develop an enhanced AQ forecasting program (structured into a scoping and subsequent implementation phase) that builds on existing forecasting capacity for both poor air quality days and climatically extreme events. This work would likely involve an international vendor to provide support and training with local implementation partners who might carry on forecasting work at conclusion of project.
- (viii) Development of AQ Public Awareness Website– to provide operational support to create a public information portal that provides access to information on (a) general background on air pollution/ public action (b) current conditions/AQ index and local observations and data and (c) forecasts with self-protective actions for public/ sensitive populations.
- (ix) Establishment and Implementation Support for an Institutional Response Mechanism-to provide operational support to facilitate an intra-governmental stakeholder process to identify appropriate responses to declared “AQ Action Days” and implementation arrangements to be carried out by various government and private stakeholders (e.g., industries, schools, public health authorities, media, sensitive populations, etc.)
- (x) Provision of operational support for the newly developed source apportion (SA) monitoring network and chemical speciation analysis operated by EEAA/Cairo University -including knowledge transfer and capacity building for Egyptian colleagues as appropriate. This includes aspects of manual sampling, collection, transfer and storage, chemical speciation analysis, receptor modeling and reporting over calendar years 2022-2024, inclusive.

Implementation arrangements. A Project Coordination Unit (PCU) has been established at the MoE. The PCU ensures that the Project is implemented in accordance with the Legal Agreement signed between the GoE and the World Bank, the Project Appraisal Document (PAD), the Project Implementation Manuals (Project Operational Manual, M&E Manual, etc.).

Four Technical Implementation Units (TIUs) have also been established to oversee the implementation of all components. The TIU for Component 1 is chaired by the Head of the Environmental Quality Sector of the Egyptian Environmental Affairs Agency (EEAA) and includes members of the different departments of the sector (Ambient Air Quality, Vehicle Emissions, Early Warning, Industrial Facilities Emission).

II. Objective of the Assignment

The Project is seeking to hire a Lead Advisory Consultant for Component 1 of the Project referred to hereafter as “the Consultant”, to support the Component 1 TIU in the management, coordination, and implementation of Component 1. The Consultant for Component 1 ensures that organizational resources are used in the most cost-effective manner and to assist the Environment Quality Sector, EEAA and TIU of Component 1 in the implementation of the Project and to support to advance EEAA’s existing AQM planning efforts ensuring mobilizing and managing specialized companies to implement the activities or “Sub-tasks” identified during project preparation and others to be identified during implementation, and referred to hereafter as “Contracted companies”. This position is open for international and local consultants, but the Consultant is required to stay in Egypt for the whole period of the contract.

The Consultant will also suggest the composition of a small multi-disciplinary team of individual consultants to assist with the management, coordination and implementation of the Project’s Component 1 “Sub-tasks”.

III. Scope of Work and Specific Tasks

The scope of work of the Consultant includes the following 2 main Tasks A) Strategic Guidance and Coordination Tasks; and B) Operational tasks.

A. Strategic Guidance and Coordination Tasks

The Consultant will provide EEAA/TIU with managerial assistance and strategic guidance in coordinating workflow and project delivery for Component 1 of the Project. The scope of support and coordination includes the following:

1. **Assemble TIU1 Support** - The Consultant will identify and recommend to the TIU the profile of several individual consultants to form a multidisciplinary team providing technical assistance to the component’s TIU.
2. **Strategic Guidance and Program Design** - After consultation with & approval of the head of TIU; the Consultant will have the technical coordination responsibility among all hired individual consultants and contracted companies to ensure complementarity and integration of their work. This necessarily requires consideration of the interaction across “Sub-tasks” and integration within existing AQM-related programs and procedures in place at EEAA, CTA and Cairo University/GoE agencies and Ministries.
3. **Support EEAA in coordinating Component 1 activities and represent EEAA positions in meetings** - The Consultant will work with EEAA/PCU/TIU/WB and the relevant project partners to coordinate Component 1 Project with GoE, World Bank, local body and affiliated staffs carrying out the other project components related to sanitary municipal waste disposal, electric bus deployment and testing as well as stakeholder engagement. The Consultant may also be asked to present their work at other meetings.

4. **Job-shadowing and Capacity building** – The Consultant will provide on the job-training through shadowing to the Environmental Quality Dept and the Air Quality Unit to build the capacity of the concerned staff in areas of relevance to the project activities.
5. **Work with Governorates** - The Consultant may be required to support to liaise with the Governorates of Cairo, Giza, Qalyubia and different other agencies/ministries as the beneficiaries of the project. This may be through stakeholder processes or as direct outreach efforts on behalf of EEAA as implementation of the Project requires
6. **Work with Development Partners** - The Consultant will also facilitate coordination with other development partners that are also supporting Egypt and the MoE/EEAA staff with AQM planning.
7. **Work with CTA**: The Consultant will be required to support to liaise with consultant(s) who will be supporting the Cairo Transit Authority (CTA) – as an implementing partner of Component 3 of the project, which deals with vehicle emissions – to coordinate the vehicle emissions monitoring activities and to report to EEAA on the overall implementation of Component 3. While EEAA holds responsibility to ensure that CTA tasks under Component 3 of the Project are completed, CTA will host a separate TIU and have their own consultant(s) that will assist with project implementation related to the e-bus aspects of the Project.
8. **Miscellaneous** -Any other tasks relevant to the Project as requested by the Head of the Component 1 Technical Implementation Unit.

B) Operational Tasks:

These tasks will assist the Environment Quality Sector, EEAA and TIU of Component 1 in advancing EEAA's existing AQM planning efforts. This includes listed below and identified during project

AQ-related Policy Support - The Consultant will, together with the assembled multi-disciplinary team of individual consultants, provide support to the Ministry of Environment and technical assistance and advisory services for policy formulation, planning, follow-up on related national plans, identification of indicators, preparation of briefs and presentations, etc. This also includes, if needed, the identification of additional activities and preparation of detailed terms of reference for policy and advisory services to be provided by contracted companies, as new Sub-tasks(s) of Component 1.

1. **Prepare Terms of Reference for "Sub-tasks"** - Prepare, in collaboration with the multidisciplinary team of individual consultants, detailed Terms of Reference (ToRs) for hiring contracted companies. Preliminary TORs have been prepared for several Sub-tasks during preparation and will be reviewed/amended as needed and confirmed before proceeding with the preparation of the detailed TORs. Some of the sub-tasks can be "bundled" and advertised for bidding in one single package, after agreement with EEAA/TIU, PCU and the World Bank, on the rationale for bundling and potential benefits.
2. **Support Procurement Process** - Support, together with the team of consultants, EEAA/TIU and PCU in the Procurement process of related Component 1 Sub-tasks. The Consultant will support EEAA/TIU in during the different stages of the procurement process, including but not limited to the review of TORs

if needed, preparation of technical notes and clauses for the preparation of the bidding documents, review of technical and financial proposals of companies, preparation of summary evaluation reports for the members of the evaluation committees, and other related tasks as requested by the EEAA/TIU and the PCU.

3. **Coordinate Sub-tasks** - The Consultant will support EEAA/TIU with contract coordination of contracted companies. This includes closely supervise and follow-up contracts implementation with the Contracted Companies to ensure that all deliverables are in accordance with the TORs and of acceptable quality, implemented on schedule as per the agreed workplans and milestones, and within approved budgets.

IV. Qualifications:

Proven ability to lead strategic planning, results-based management, and reporting; solid knowledge in contract management, information and communication technology, general administration; ability to lead a process, implementation of new systems, and affect staff behavior/attitudinal change.

- University Degree in Engineering, Science, Operations Management, Social Sciences, International Development, Economics, or related fields. Advanced university degree will be preferable.
- At least 20 years relevant work experience, at least 10 of which involve similar senior experience of operational management of projects or programs with strong background and work experience in project management
- Proven track record of experience (minimum 10 years) dealing with air quality and vehicle emissions (planning & monitoring & control & policies).
- Previous working experience with international or regional specialized consultancy firms working in the field of air quality management (policy development, institutional strengthening, technical and operational, etc.)
- Previous working experience with development professionals, including technical and financial partners,
- Broad access to both academic and private sector expertise as well as experience with funding agencies that can contribute knowledge and know-how to EEAA
- Experience working with capacity constraints experienced by low- and middle-income countries in undertaking complex data analysis and environmental assessments.
- Substantive project operational and management experience, including detailed work-plan preparation as well as human resources, procurement, ICT, finance, project management and performance, management, and logistics.
- Good oral communication skills and conflict resolution competency to manage inter-group dynamics and mediate conflicting interests of varied actors
- Good written communication skills, with analytic capacity and ability to synthesize project outputs
- Good knowledge of computer proficiency, including MS Office products (Word, Excel, PowerPoint) and web-based management systems

- Fluency in written and spoken English required. Fluency in written and spoken Arabic is also preferred.

V. REPORTING

The Consultant will report directly to the Head of TIU for Component 1 and under his supervision. All deliverables will be subject to review by the EEAA team, PCU and the World Bank for clearance.

VI. Level of Effort and Contract duration

The contract is a full-time, time-based contract for the duration of 1 year. The consultant should expect to stay in Egypt for the entire contract duration and the assignment may require occasional travel inside Egypt. The assignment is renewable based on an annual performance evaluation conducted by the Head of TIU for Component 1, the Project Coordinator and the National Project Director.