

**GARID**  
GREATER ACCRA RESILIENT AND  
INTEGRATED DEVELOPMENT

## **Greater Accra Resilient and Integrated Development Project**

### **Development of a Financing Plan for the Operations of a Sanitary Landfill at Ayidan, Ga South Municipality**

#### **TERMS OF REFERENCE: TECHNICAL ASSISTANCE ON FINANCIAL AND O&M FOR OPERATION OF LANDFILL**

**GH-MSWR-187038-CS-CQS**

**September 2022**

## **1. BACKGROUND**

### **1.1 General Context**

1. The Government of Ghana has received financing from the World Bank to support the implementation of the Greater Accra Resilient and Integrated Development (GARID) project. The project aims at supporting critical investments to deal with climate change impacts in the Odaw catchment basin in the Greater Accra Region (GAR). The key interventions will focus on challenges with drainage and solid waste interventions in the Odaw basin under Component 2 of the GARID project.

### **1.2 Assignment Overview**

2. Poor environmental sanitation is a key urban challenge for the Greater Accra Region (GAR) and has increasingly become a major contributory factor to flood risk over the past decade. The GAR generates between 3,000 and 4,000 tons of solid waste daily, out of which an estimated 80 percent is collected. It is estimated that 70% of waste is treated and effectively disposed. These problems have been exacerbated by challenges such as poorly managed land use, unregulated development of settlements and lack of medium-to-long term planning for appropriately sited final disposal and treatment facilities for solid wastes. The problem is further worsened by the sprawling growth of the metropolitan area and the lack of commensurate engineered landfill capacity in appropriate locations to ensure balanced coverage of efficient and systematic citywide solid waste collection.

3. Presently the GAR, with a population of approximately 3 million daily inhabitants, is served by 1(one) un-engineered disposal site. In addition, there are several waste recycling facilities including three (3) main ones supporting municipal waste management. The dumpsites and recycling facilities are privately owned and operated.

4. The Ministry of Sanitation and Water Resources (MSWR) through the Environmental Health and Sanitation Directorate (EHSD) is the lead agency for policy formulation and monitoring of the sanitation and solid waste sub-sector. In order to address the challenges of inadequate facilities for proper communal storage, haulage, treatment, recovery and disposal of solid waste the MSWR-EHSD is implementing of the GARID Project. Key aspects of the programme include the construction and installation of solid waste landfills and transfer stations. The Ayidan site located in the GA South Municipality is among the first of such facilities aimed at contributing to improving the management of final placement of solid waste within the GAR under the GARID project.

5. The design of landfill facilities is subject to Ghana Environment Protection Agency (EPA) approval after a thorough environmental and social impact assessment (ESIA) to ensure that technical designs, construction, operation, closure and after-care plans reflect the accepted and approved mitigation of environmental degradation and monitoring measures stipulated by the EPA.

6. Experience from previous investments by the Government of Ghana (GoG) and its partners, including the International Development Association (IDA), in the development of final disposal and treatment facilities, have often not yielded the desired outcomes. Critically, planned monitoring and mitigation measures specified in ESIA reports are largely not adhered to. At best, the ESIA reports are implemented on an ad-hoc reactionary basis to remedy environmental and

social impacts when they have already progressed beyond mitigation phases.

7. Important missing aspects in the development of such failed facilities in the past have been the lack of up-front assessment and commitment to securing financing for operations and maintenance (O&M) targeting the ESIA plans, closure and after-care, as well as costs for future incremental expansion of solid waste management infrastructure corresponding with growth of population and waste generation rates and lifespan/airspace of available facilities.

8. In addition, the coverage of the catchment of solid waste disposal sites are not well taken into account, leading to the rapid exhaustion of the design life of disposal sites as patronage extends further than the catchment limits and ultimately overwhelms the capacity of the facilities. Catchments need to be zoned with waste-inflows assigned to respective disposal sites in order for the site to handle all incoming wastes effectively for design-periods. The Kpone landfill site is a classic case in this regard, which was designed for a useful life of 15 years, but the air-space became exhausted within 5 years owing to reception of waste from the whole of the Greater Accra Metropolitan Area (GAMA) with a population exceeding 2.5 million.

9. The government has developed an integrated strategic, city-wide, environmental sanitation master planning of engineered landfills and related ancillary facilities such as waste transfer stations. This planning is bereft of management optimization targets, whereby the design, procurement, operations, and maintenance is assessed and concluded based on scenarios and options featuring different arrangements of public sector and private sector capacities towards the optimal balance and sharing of risk, cost, expertise, and performance.

10. Based on the above experiences, the GARID project is applying different approaches all aimed at achieving sustainable investment outcomes for the development of final disposal and treatment facilities. The current assessment of options is for the sustainability of investments in the Ayidan landfill project.

11. The assignment will be carried out by a Consultant with the requisite staff to define options for the consideration of the MSWR-EHSD and GARID, covering operations and maintenance (O&M) costs, as well as management arrangements for achieving sustainable facility development, especially the long-term functioning of the Ayidan landfill site.

12. The GARID Project Coordinating Unit (PCU) through the MSWR-EHSD is responsible for managing the assignment as part of Component 2 of the GARID project.

### **1.3 Objective**

13. The overall objective is to *develop a financing plan for the sustainable operations of the Ayidan landfill site* including assessment of institutional arrangements for optimal financing mechanisms for O&M, closure and after-care management of the facility. Note, financing for design and construction of the facility has been made available through the GARID project and is not within the scope of this financial analysis.

### **1.4 Specific Objectives**

14. In order to achieve the overall objective, the assignment is expected, inter alia, based on existing technical designs, if any, and on financial and economic analysis, to provide;

- a) the main cost items for operation and maintenance costs (OPEX) applied over the entire implementation of the proposed development (including any phased approach), operation and after-use period of the Ayidan landfill;
- b) institutional and management arrangements including financing options/mechanisms that will have to be considered for sustaining effective operation and maintenance of the landfill including rehabilitation, repair and replacement of equipment, the incremental development of new operation-phases, if applicable, as well as after-care and after-use;
- c) scenarios of capital and O&M expenditure/investment requirements (for both fixed and recurrent expenditure) based on unit cost analysis over a phased time-horizon appropriate for the various institutional and management options discussed under b);
- d) advise on the imperatives for optimization of disposal capacity in the context of the city-wide demand for such services, and
- e) a sustainable financing plan based on the foregoing assessments to guide operations of the Ayidan landfill including the necessary policy, legislation, regulatory, and management measures to enhance implementation of the plan.

15. When completed, the report(s) of the assessment shall constitute inputs for a workshop that will be organized for discussing the Sustainable Financing Plan and Implementation Framework for the Operations of the Ayidan landfill facility.

## 2.0 Scope of Services

Task 1: Confirm a situational analysis of the solid waste management sector within the GAR based upon existing literature and validation of understanding with the GARID-PCU and the World Bank. Variables to be considered include but are not limited to:

- Size and growth rate of population
- Waste generation rates and characterization
- Stock-taking of capacity and performance of existing facilities/operations for solid waste collection, transfer, treatment, recovery, and final disposal
- Overview of legal and institutional framework governing the solid waste management sector
- Synthesizing key challenges impeding sustainable financing and operations across the waste value chain
- Benchmarking investments and expenditures in the sector as total sum and cost per tonne of waste managed.

Task 2: Establish the expected lifecycle costs for operation and ongoing investment into the Ayidan landfill

- Taking into consideration **Full Cost Accounting** (FCA), defined as: "...a systematic approach for identifying, summing, and reporting the actual costs of solid waste management considering past and future outlays, overhead (oversight and support service) costs, and operating costs."
- Determine actual current costs.
  - Collect revenue data
  - Collect cost data with the focus on cost drivers

- Analyze data
- Use capital budgeting to estimate needed capital outlays over a reasonable timeframe
- Estimate future costs
  - Use cash flow analysis to assist in determination on contracting for services (computer modelling).

**Task 3:** Identify and quantify the potential revenue sources available including government payments, user tariffs and proceeds from material recovery. Understand any challenges associated with each and develop an action plan to ensure sufficient, reliable revenue to cover the expected year by year costs.

- Set and collect solid waste management fees.
  - Determine type of fees/tariffs to be applied to waste producers
  - Determine method of fee/tariff collection.

**Task 4:** Develop a performance regime for the landfill including all responsibilities, performance indicators, penalty/incentive regime. Develop a plan for contract supervision for operational phase of landfill including an ongoing and reliable funding source.

- Identify planning goals and objectives
- Define baseline system requirements
- Risk mitigation strategies to the financial plan
- Monitoring and evaluation plan

**Task 5:** Develop a payment mechanism and assess the pros and cons of various payment modalities (e.g. bill of quantities/per tonnage received, fixed price elements/quantity guarantees) that balances the interests and priorities of the future operator with the need to ensure adequate performance while addressing the preferences of relevant line Ministries including the Ministry of Sanitation and Water Resources; the Ministry of Local Government; the Ministry of Finance.

- Legal and financial instruments to ensure accountability / de-risk payments

**Task 6:** Develop a communications plan to address any expected stakeholder resistance and/or support any required behavioral change. Stakeholders include but are not limited to: national and local government authorities, waste management service providers, informal waste collectors and pickers, commercial and industrial waste generators, and households.

**Task 7:** Prepare draft procurement documents for the operator contract, to include:

- For example: [https://ppp.worldbank.org/public-private-partnership/sites/ppp.worldbank.org/files/ppp\\_testdumb/documents/services%20contract%20schedules%20Lot%202.pdf](https://ppp.worldbank.org/public-private-partnership/sites/ppp.worldbank.org/files/ppp_testdumb/documents/services%20contract%20schedules%20Lot%202.pdf)

**Task 8:** Support Government during procurement process.

### **3.0 Consultant's Qualifications**

16. The assignment shall be carried out by a firm:

- a) That provides engineering advisory services
- b) Which has been in existence and operation for at least 10 years

- c) With experience in developing institutional and management options, tariffing and fee-fixing for municipal services and
- d) With experience in assignments involving the assessment of operations of an engineered landfill

### **3.1 Consultant's Staffing and Skills**

17. The Consultants team shall be made up (i) Lead Environmental Services Management Expert (Sanitary Engineer), (ii) Municipal Finance and Business Development Expert with no less than 15 years of experience and (iii) Contract manager and (iv) civil engineers. The Environmental Services Management Expert shall be the Team Leader, and shall be suitably qualified in delivering the assignments, manage the whole assignment and be responsible for:

- (i) coordinating and managing the sub-tasks (1-8) listed above to achieve the stated objectives;
- (ii) ensuring that the overall assignment outputs effectively lead to the preparation of the Sustainable Financing Plan and Implementation Framework for the Operations of the Ayidan Landfill Facility;
- (iii) delivering and ensuring quality of all outputs such as the inception, draft and final reports;
- (iv) arranging technical and other inputs as required from MSWR-EHSD, GARID-PCU, the World Bank Group and other relevant organizations;
- (v) facilitating the organization and delivery of a consultation workshop on the Sustainable Financing Plan and Implementation Framework (S-PPIF) for the Operations of the Ayidan Landfill Facility;

18. The Team Leader shall be conversant with municipal solid waste management (MSWM) options, MSWM unit cost analysis as well as policies and regulations. The Team Leader shall have not less than 15 years of experience.

The Team Leader shall have

- not less than 15 years of working experience and be conversant with sanitation sector policies, plans and programmes and have international working experience, preferably in other African countries, and engaged in delivering similar assignments.
- The Team Leader shall have not less than 12 years of previous experience in developing and/or managing national and city-level plans, programmes and projects including those sponsored by development partners.
- A background post-graduate qualification in environmental/public health/sanitary engineering, and practical experience in institutional design and managing environmental sanitation services are pre-requisites.
- The Team Leader should have adequate environmental sanitation sector knowledge and conversant with municipal solid waste management (MSWM) options, MSWM unit cost analysis as well as policies and regulations

19. The Contract Manger shall have

- hold postgraduate qualification in Procurement or Contract management or related field

- not less than 12 years of relevant working experience with background experience in contracting and procurement of infrastructural facilities
- S/he shall have strong analytical skills in appraisal of contracts and their effects and impacts on plans, programmes and services.
- The Contract manager shall have specific experience in drafting contracts and KPIs for delivery of services.

#### 20. Civil Engineer

Master's degree in Civil Engineering, or other field related to this assignment

At least 10 years' experience in operating and maintaining large scale solid or liquid waste infrastructure.

#### 21. Municipal Finance and Business Development Expert

Master's degree in finance or other fields related to this assignment and at least 10 years of experience in designing and developing financial management systems in general and for WaSH in particular. Adequate knowledge and familiarity with the GoG and Development partners financial management systems is important

### 4.0 Outputs and Review Process

22. The Consultant, during the assignment, shall consult with the Solid Waste Specialist of GARID-PCU and agree on areas (and projects/reports/documents) to be reviewed and the additional background sources of information that will be required. The consultant shall carry out the tasks outlined above, prepare and submit all reports as indicated below:

- An Inception Report outlining how the consultant will carry out the tasks, including; a work schedule for the entire assignment; the areas (projects and reports/documents) selected for further detailed analyses; comments on the TOR; outline of review process and tools, if any, to be used; and the format of consultative/stakeholder workshop(s) to be held. The Inception Report shall be submitted within 4 (four) weeks after signing of the contract for the assignment.
- A report on: Institutional, management, investment and financing options for optimizing operations of the Ayidan landfill site with summaries of the key areas covered under the assessment including the outputs of tasks (1) – (4). This Report shall be completed and submitted 8 weeks after signing of contract for the assignment. A presentation of preliminary key findings shall be made to MSWR-EHSD and GARID-PCU. Observations/comments shall be incorporated in a final version of the completed report. The final version shall have an Executive Summary no longer than 2 pages.
- A Draft Sustainable Financing Plan and Implementation Framework for the Operations of the Ayidan Landfill based on the outputs of tasks (1) – (7). The draft document(s) shall be completed 11 weeks after commencement of assignment.
- A Consultative Workshop on the outputs shall be held 3 weeks after the submission of the draft report on the Sustainable Financing Plan and Implementation Framework for Landfill Operations. The Consultants shall be responsible for facilitating the workshop and collation of comments. A separate workshop report of not more than 10 pages summarizing the main findings shall be prepared by the Consultant for submission to GARID-PCU 1 week after the consultative workshop.

- *A Final Sustainable Financing Plan and Implementation Framework for the Operations of the Ayidan Landfill* shall be prepared and submitted 2 weeks after the consultative workshop incorporating comments from the workshop and comments of MSWR-EHSD and GARID-PCU. The Final report shall have an Executive Summary no longer than 2 pages.

23. The Consultant shall prepare all reports and all workshop presentations in formats that can be transmitted electronically to the MSWR-EHSD and GARID-PCU. All reports shall be submitted in 4 hardcopies and 1 soft copy.

### **5.0 Timing and Budget**

24. MSWR-EHSD through the GARID project will provide funding to cover the Consultants costs and all-in fees under a lump sum contract. The whole assignment is expected to be carried out between January to May, 2023. The estimated time input is 20 man months.

### **6.0 Study Management**

25. MSWR-EHSD is the Client for this assignment and the Project Coordinator GARID-PCU will be responsible for the final approval for payments and reviewing reports and organizing consultation sessions.

26. The Solid Waste Expert GARID-PCU, will have direct oversight for approving the Consultants' outputs and shall be responsible for the day-to-day supervision of the consultants' work and provide direction so that the consultants' delivery of the assignment meets the set objectives and scheduled delivery dates.

### **6.0 Services to Be Provided by the Client**

The client will provide the following documents:

- GARID Project Appraisal Document
- GARID Solid Waste Management Strategy
- Design report (including an O&M manual) on the Ayidan landfill
- Technical Audit Report on Kpone landfill