GREATER MALÉ ENVIRONMENTAL IMPROVEMENT AND WASTE MANAGEMENT PROJECT
PHASE TWO: WASTE TO ENERGY (WTE) PLANT

Draft Terms of Reference for an Independent Environmental Monitor (IEM) (Subject to Finalization)

I. BACKGROUND

1. The Government of the Maldives is commissioning a design, build and operate (DBO) Contract for a Waste-to-Energy (WTE) Facility Project for the Greater Malé region to help in managing solid waste. The WTE Facility Project will be set up on the island of Thilafushi, Kaafu Atoll in the Greater Malé area. The project will be funded by the Asian Development Bank (ADB) and Asian Infrastructure Investment Bank (AIIB).

2. A concept design for the WTE Facility Project has been prepared by an engineering firm commissioned by the Maldives Ministry of Environment (ME). According to the concept design, the initial capacity of the facility shall be 167,000 Mg/y (two trains 250 tons per day or 10.5 tons per hour each), which then can be extended by a third train. Baled waste will be used as buffer to accommodate any waste volume fluctuations.

3. In relation to environmental management, the project is classified as Category A project per ADB Safeguard Policy Statement (SPS). The Category A classification derives from the project's likely significant adverse environmental impacts to air and marine environment that are irreversible, diverse, or unprecedented. Such classification requires the need of an independent external monitor or IEM.

4. The IEM shall be retained as an international expert under the WTE Facility Project with non-objection from ADB, and will report directly to ADB. The IEM shall not be involved in the day-to-day project implementation or supervision of the project. The IEM will closely coordinate his/her site visits and work with the project management unit (PMU).

II. PURPOSE.

5. An environmental impact assessment (EIA) report has been prepared for the project. The EIA contains an environmental management plan (EMP) developed to address the potential impacts and risks identified by the environmental assessment. The EMP includes the proposed mitigation measures, environmental monitoring and reporting requirements, emergency response procedures, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. This will be updated by the DBO Contractor based on the final detailed design, including the construction methods and materials to be used. The IEM will monitor compliance of the project in implementing the EMP.

III. DURATION

6. The engagement of the IEM shall commence on the Commencement Date of the DBO contract and end at the conclusion of the defects notification period following Commissioning of the plant. This duration is expected to be sixty (60) months. The engagement of the IEM may be

extended and should this be the case, notification of such an extension will be provided at least six (6) months before the expected date of the Commissioning Certificate.

7. The work will involve an initial visit of two months prior to or during the DBO Contractor mobilization, and every six months visits thereafter. Home office time will be allocated to report preparation and handling comments and questions from reviewers.

IV. QUALIFICATIONS

8. The IEM shall have the following qualifications:

(i) Degree in engineering, chemistry, environmental management or a related field. Masters or doctorate degree will be preferable.
(ii) Has extensive experience with day-to-day management and/or monitoring of incineration plants of municipal solid wastes, or other facilities involving incineration, and reporting of regular monitoring against the relevant emissions standards.
(iii) Prior experience on monitoring ADB-funded projects is preferable.

V. DUTIES

9. The IEM shall have the following duties:

(i) Become familiar with the project, including the EIA report and implementation arrangements for the project.
(ii) Contribute to the review of the updated EMP following the final detailed design, and provide comments and recommendations as necessary relating to (i) the adequacy of monitoring arrangements, (ii) the construction work method statements and (iii) the proposed mitigation measures to address newly identified negative environmental impacts and risks.
(iii) Review monthly environmental monitoring reports submitted by the Contractor to the project management unit (PMU) and quarterly environmental monitoring reports of PMU to ADB.
(iv) Inspect the project construction works and following construction, plant operations (depending on final arrangements in the future) every six months, assess the environmental impacts of the project based on the EMP and any other critical issues that may arise, and prepare a report on the findings.
(v) Recommend improvements to effectively implement the EMP and provide professional opinion on the degree of impacts, if any.
(vi) When on site, comply with all health, safety and welfare requirements, and participate in project meetings as required.
(vii) Submit all findings and reports directly to ADB.

VI. INDICATIVE COST

Cost Item	Description	Unit Cost (US$)	Total (US$)
A. Remuneration	Retention of international consultant for 77 equivalent days[1]	1,000.00	77,000.00
B. International Travel	11 international travels[2]	5,000.00	55,000.00
C. Per diem	Field work in Maldives for total of 55 days[3]	288.00.	15,840.00

Cost Item	Description	Unit Cost (US$)	Total (US$)
D. Miscellaneous Travel Expenses	Lump sum per international travel[4]	150.00	1,650.00
E. Contingency	5% of total cost		7,474.50
Grand Total			**156,964.50**

[1] (5 field working days + 2 home office days) for each monitoring activity
[2] 1 international travel prior to DBO Contractor mobilization plus 10 international travels for the next 5 years
[3] average of 5 field working days per monitoring activity
[4] lump sum of $150 per international travel