Sindh
Solid Waste Management Board

CONSULTANCY SERVICES FOR TECHNO-ECONOMIC FEASIBILITY STUDY, INCLUDING PREPARATION OF PRELIMINARY DESIGN, COST ESTIMATION, PREPARATION OF PC-I DOCUMENT, RFP DOCUMENT ETC. FOR WASTE TO ENERGY PROJECT IN KARACHI

BRIEF SCOPE / TERMS OF REFERENCE FOR THE ASSIGNMENT

(Note: This is outline of ToR – Detailed ToRs, deliverables etc. shall be provided to shortlisted firms in RFP document)

The brief scope of work of the consultancy assignment is as follows:

Background:

Karachi is the biggest city of Pakistan having population of around 20 million. Solid Waste Management is the biggest problem in the city at the moment. Total waste generation of the city is about 12,000 tons/day. Out of 12,000 tons the 9,000 tons of waste is generated within the administrative jurisdiction of Karachi Metropolitan Corporation (KMC) / District Municipal Corporation (DMC) and District Council Karachi (DCK). The remaining 3,000 tons of waste is generated in areas of other civic administrative bodies e.g. Cantonment boards, SITE, KPT, Pakistan Railways etc. Presently, two landfill sites are available for proper disposal of the solid waste being produced in the city.

Currently the transportation costs regarding solid waste management service are very high as the landfill sites are at a distance of above 35 Kms form the city center and 70 Kms up and down. This distance is even +50 KMs (+100 Kms up down) from remote areas of Karachi.

On other hand present fleet of garbage collection vehicles currently available to DMC is not only inefficient but is also outdated, hence it is next to impossible to load and transfer all waste generated in the city to current landfill sites. As a result only 40% of the waste generated in the city reaches landfill sites and rest is either burnt or dumped in low lying areas or water bodies. Even at landfill sites the garbage, instead of proper disposal, is just dumped. Heaps of garbage, mostly burning, could be seen scattered in landfill sites of Karachi. In

this way, solid waste, which, is considered as an asset in developing world, has become a BIG LIABILITY in Karachi.

In fact the dilapidated and outdated garbage collection, transport and disposal system coupled with inept system, without any efficient monitoring mechanism, has rendered the Solid Waste Transport and Disposal System in Karachi incapable to deal with this important Public Health and Environmental issue.

Realizing the pathetic situation of Solid Waste Management throughout Sindh and particularly megacity of Karachi, Government of Sindh has established Sindh Solid Waste Management Board (SSWMB) in 2014.

As mandated by law, SSWMB is in the process of establishing an **Integrated Municipal Solid Waste Management Project** in Karachi whereby, in the Front End, door to door collection of garbage, manual and mechanical sweeping, community awareness and organization, transportation from community dustbins to Garbage Transfer Stations (GTS) and then in Back End, transportation of segregated quality waste to three waste energy clusters to each landfill site where RDF, Composting and other waste energy units will be established. Besides, Karachi has two exclusive cattle colonies with population of 350,000 and 60,000 cattle heads, mostly buffaloes, where Biogas projects would be highly feasible.

Waste-to-Energy technology is one of the most robust and effective alternative energy options to reduce CO_2 emissions and to save limited fossil fuel resources used by traditional power plants.

In order to implement the scheme i.e. **Integrated Municipal Solid Waste Management Project in Karachi with Waste to Energy Plants at each landfill sites**, Sindh Solid Waste Management Board (SSWMB) intends to hire the services of reputed and experienced National Consulting Firms for Feasibility Studies including but not limited to preparation of Preliminary Design, preparation of PC-I, bidding documents Document, etc., for Waste to Energy system in Karachi.

Scope of Consultancy Works:

- Conduct new and review existing MSW collection system and waste characterization reports;
- Assess the potential of energy from the waste fractions generated in the City of Karachi;
- Conduct new and review existing studies relating to different types of Waste to Energy systems, available WTE technologies currently being used;
- Recommend a number of preferred technologies. Propose a project timeframe for the development of this facility;

- Conduct feasibility of the proposed Waste to Energy plants based on scientific methodologies/criteria while taking into account technical, environmental and community related aspects and to prepare layout and maps;
- Prepare Preliminary Designs for waste to energy plants and prepare plans for Installation, Construction, Operation and maintenance of waste to energy plants;
- Rough Cost Estimates on the basis of Preliminary design;
- Prepare estimations regarding capital investment and O & M costs required for various sizes of plants;
- Prepare estimations of the net energy output and other byproducts with expected revenue potential;
- **Foreign Consultants Inputs (Minimum 100 hours):** Foreign consultants'/experts' inputs shall be taken for design criteria, specifications and engineering designs/ functionality requirements by local consultants and same should be documented and integrated into the considering the ground realities;
- Co-ordination with Sindh Environmental Protection Agency and conduct lEE/EIA, if required;
- Preparation of Feasibility Report;
- Preparation of Project PC-I incorporating all the Project Costs on the basis of Preliminary design;
- The total services shall also include any other extra work assignment relating to the project by competent authority of SSWMB not covered in contract. However, this shall be carried out on mutually agreed terms and conditions;
- Preparation of Bidding Documents as per SSPRA Rules 2010 (Amended 2013);
- Pre-qualification of Contractors as per SSPRA Rules 2010 (Amended 2013), if required.

Note: 6 Copies of each report shall be submitted by the Consultants.