Sindh
Solid Waste Management Board

# INVITATION FOR EXPRESSION OF INTEREST (EoI)

(Reference: SSWMB/NIT-1/2016-17)

Sindh Solid Waste Management Board (SSWMB) intends to hire the services of reputed and experienced National **Consulting Firms** for following **Techno-Economic Feasibility Studies Including Preparation of Preliminary Design, PC-I Document, etc.,** for which **Expression of Interest (EOI)** are invited under Rule 72 (3) of Sindh Public Procurement Rules 2010 (Amended 2013). Separate EOI application is to be submitted for each Feasibility study.

(i) Feasibility Study – Establishment of Six Garbage Transfer Stations in Karachi.
(ii) Feasibility Study – Integrated Medical Hazardous Waste System in Karachi.
(iii) Feasibility Study – Integrated Industrial Solid Waste System in Karachi (All Industrial Areas)
(iv) Feasibility Study – Establishment of New Landfill Site for Karachi at Dhabeji.
(v) Feasibility Study – Waste to Energy.

1. **Dead line of Submissions:** The EoI applications (Separate application for each feasibility study) along with following documents must reach on the address mentioned herein below on or before 03:00 PM 29th August 2016; the same shall be opened publically on same day i.e. 29th August 2016 at 03:30 PM.

2. **Eligibility.**
   i. Valid Registration with FBR (Please attach NTN certificate);
   ii. Valid Registration with SRB (Please attach proof);
   iii. Valid Registration with Pakistan Engineering Council as Consulting Firm in relevant category and discipline, having relevant **Service Codes '0511' & Project Profile Code '1204 (ii)'.**

3. **Required Documents: Interested Consulting must include required details / documents** in his / her application.

4. List of Required Documents to be submitted with the application, Eligibility Requirement / Checklist and basic ToR (Scope of work) can be downloaded from www.sswmb.gos.pk and www.pprasindh.gov.pk or obtained from the office of undersigned from date of publication of this notice till 29th August 2016.

5. RFP documents containing detailed TORs, Evaluation Criteria, Deliverables etc. shall only be issued to Short Listed Consultancy Firms.

6. **Evaluation Criteria:**
   i. Applications with required documents attached shall be evaluated on pass or Fail/Yes or No basis (checklist); the qualification criteria is to achieve yes / pass in each category.
   ii. Applications of black listed firms shall not be considered;
   iii. Procuring agency shall disqualify the applicant if, at any stage, it finds that the information submitted for qualification was either significantly inaccurate or incomplete.

7. Procuring Agency may reject all or any bid subject to the relevant provisions of Sindh Public Procurement Rules 2010 (Amended 2013)

8. Interested firms should address their inquiries and submit their applications to the following:-

**Executive Director (Operations-I)**
Sindh Solid Waste Management Board
Bungalow No. 13, Al-Hmara Housing Society, Shaheed-e-Millat Road, Karachi
Tel No.021-99333705-7 Fax 021-99333700
URL: www.sswmb.gos.pk Email: info@sswmb.gos.pk

Sindh
Solid Waste Management Board

# REQUIRED DOCUMENTS, ELIGIBILITY REQUIREMNT & CHECK LIST - APPLICATION FOR INVITATION FOR EXPRESSION OF INTEREST (EoI) FOR FEASIBILITY STUDIES

(Reference: SSWMB/NIT-1/2016-17)

(i) Feasibility Study – Establishment of Six Garbage Transfer Stations in Karachi.
(ii) Feasibility Study – Integrated Medical Hazardous Waste System in Karachi.
(iii) Feasibility Study – Integrated Industrial Solid Waste System in Karachi (All Industrial Areas).
(iv) Feasibility Study – Establishment of New Landfill Site for Karachi at Dhabeji.
(v) Feasibility Study – Waste to Energy.

| S. No. | Criteria | Yes | No | Remarks |
|---|---|---|---|---|
| 1 | NTN Certificate | | | |
| 2 | SRB Registration | | | |
| 3 | PEC Registration as consulting firm valid for year 2016 with Service Code **0511** & Project Profile code **1204** | | | |
| 4 | **Profile of Firm** | | | |
| 4.1 | Name, Address, telephone, fax numbers and e-mail address of the firm; | | | |
| 4.2 | Ownership and organizational structure of the Firm | | | |
| 5 | **Experience and past performance.** | | | |
| 5.1 | The Consultant firm must have minimum three numbers of similar / identical assignments in last 15 years. | | | |
| 5.2 | List of similar site/geographical condition (minimum three assignments/ projects)<br>Performance Certificates of assignments/projects completed are to be attached. | | | |
| 6 | **Key Personnel Qualification & Experience.**<br>Academic qualification:<br>The Consultancy firm must have following key professionals (Minimum). | | | |
| 6.1 | Project Manager / Team Leader<br>PhD in Engineering / Master in Environmental Engineering with 10 / 15 years related experience with at least 2 SWM Projects in his credentials. | | | |
| 6.2 | Senior Design Engineer<br>Master in Engineering / BE (Civil) Engineering with 10 / 15 years related experience with at least 2 SWM Projects in his credentials. | | | |
| 6.3 | GIS Expert<br>Master's / Bachelors Degree with minimum 7 / 10 Years' Experience. | | | |
| 6.4 | Mechanical Design Engineer<br>Master in Engineering / Bachelors Engineering with 10 / 15 years of experience. | | | |
| 6.5 | Electrical Design Engineer<br>Master in Engineering / Bachelors Engineering with 10 /15 years of experience. | | | |
| 6.6 | Sociologist / Economist<br>Master's / Bachelors Degree, 7 / 10 years' experience. | | | |

| | | | | | |
|---|---|---|---|---|---|
| 6.7 | Input (Minimum 100 hours) from International Consultant / Consultancy Firm with SWM experience (at least 3 SWM Projects) – Association letter with the applicant firm to be attached along with credentials of the international Consultant / firm. | | | | |
| 7 | Financial Status<br>The Consulting firm should demonstrate that it has adequate financial strength by submitting copies of last three years Income Tax Returns or Accounts of the firm duly signed by a Qualified Auditor.<br>The minimum Qualifying criterion shall be: Average Annual Gross Fee Receipts for the last three years is above Rs. 100 Million.<br>***Note:***<br>***The only criterion for determining the Annual Gross Fee Receipt shall be Income Tax Returns or Audited Accounts of the Applicant (or Lead Firm in case of JV / Association).*** | | | | |
| 8 | (Brief CVs of all key Personnel be attached). | | | | |

NOTE: 1. Separate EOI application is to be submitted for each Feasibility study.

2. The application shall **NOT** be evaluated further unless the firm obtains **Yes** in all columns from Serial No. 1 to 8.

**Executive Director (Operations-I)**
**Sindh Solid Waste Management Board**

dated 28-08-2015, the Government of Sindh is pleased to re-constitute the following Committees of Sindh Solid Waste Management Board (SSWMB), with the following composition:-

1. **RULES MAKING COMMITTEE**

| | | |
|---|---|---|
| 1. | Executive Director (Operation), Karachi | Chairman |
| 2. | Secretary, SSWMB | Member |
| 3. | Deputy Director (Legal), SSWMB | Member |
| 4 | Deputy Director (Finance), SSWMB | Member |
| 5. | Deputy Director (Admn), SSWMB | Member/Secretary |
| 6. | Assistant Director (M&E), SSWMB | Member |
| 7. | Any co-opted member (up-to three) | |

2. **PROCUREMENT COMMITTEE-I (Operation/Project Purpose)**

| | | |
|---|---|---|
| 1. | Concerned Executive Director (Ops), SSWMB | Chairman |
| 2. | Deputy Director (Finance), SSWMB | Member |
| 3. | Representative of Local Government and Housing & Town Planning Department | Member |
| 4. | Representative of Environment Department | Member |
| 5. | Director/Deputy Director (Procurement), SSWMB | Member/Secretary |

3. **PROCUREMENT COMMITTEE-II (Procurement of +1 Million for Head Office, SSWMB)**

| | | |
|---|---|---|
| 1. | Secretary, SSWMB | Chairman |
| 2. | Deputy Director (Finance), SSWMB | Member |
| 3. | Representative of Local Government and Housing & Town Planning Department | Member |
| 4. | Representative of Environment Department | Member |
| 5. | Director/Deputy Director (Procurement), SSWMB | Member/Secretary |

4. **PROCUREMENT COMMITTEE-III**
**(Procurement of less than 1 Million for Head Office, SSWMB)**

| | | |
|---|---|---|
| 1. | Secretary, SSWMB | Chairman |
| 2. | Deputy Director (Finance) / Deputy Director (Procurement), SSWMB | Member |
| 3. | Representative of SGA&CD, Government of Sindh | Member |

5. **CONSULTANT SELECTION COMMITTEE**

| | | |
|---|---|---|
| 1. | Executive Director (F&P), SSWMB | Chairman |
| 2. | Executive Director (Ops), Karachi, SSWMB | Tech. Member |
| 3. | Representative of P&D Department, Government of Sindh | Member |
| 4. | Representative of Finance Department, Government of Sindh | Member |
| 5. | Director/Deputy Director (Procurement)/Deputy Director (Finance), SSWMB | Member/Secretary |
| 6. | Two Co-opted Members | Member |

Contd'P/2

6. **RECRUITMENT COMMITTEE**

| | | |
|---|---|---|
| 1. | Secretary SSWMB | Chairman |
| 2. | Additional Secretary (S-I), SGA&CD | Member |
| 3. | Executive Director (F&P) | Member |
| 4. | Deputy Director (Procurement & Contract Management) | Member |
| 5. | Deputy Director (Admn) | Member/Secretary |

2. The above Committees shall function as per Sindh Public Procurement Rules, 2010 (Amended 2013).

MUHAMMAD SIDDIQUE MEMON
PAS
CHIEF SECRETARY SINDH

**NO.SO(C-IV)SGA&CD/4-21/10:** **Karachi, dated the 11th February, 2016**

A copy is forwarded for information and necessary action to:-

- The Additional Chief Secretary (Dev.), P&D Department, Govt. of Sindh.
- The Secretary to Governor Sindh.
- The Secretary to Chief Minister Sindh.
- The Administrative Secretaries (All), Government of Sindh.
- The Managing Director, Sindh Solid Waste Management Board.
- The Chairman/Members (all) of the Committee.
- The Secretary, Sindh Solid Waste Management Board.
- The Deputy Secretary (Staff) to Chief Secretary Sindh.
- P.S. to Chief Secretary Sindh.
- P.S. to Secretary (I&C), SGA&CD.
- Master file.

SECTION OFFICER (C-IV)

Sindh
Solid Waste Management Board

* ANNUAL PROCUREMENT PLAN FOR 2015-2016
(Under Rule 11 of the Public Procurement Rules 2010 Amended 2013)
Name of the Procuring Agency : **SINDH SOLID WASTE MANAGEMENT BOARD KARACHI.**

Dated:

| 1 | 2 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|
| **Sr No.** | **Name of Procurement (Description)** | **Estimated Cost (Rupees)** | **Procurement Method **** | **Tentative date of Procurement Notice Publication** | **Tentative date of Award of Contract** | **Tentative date of Completion** | **Remarks (If any)** |
| 1 | Acquiring of Head Office on Rental basis for SSWMB **(A03402)** | 11,600,000 | Open Competitive Bidding | October 2015 | October/ November 2015 | November 2015 | |
| 2 | Interior Designing, Renovation and Refurbishment of New Head Office **(A034070)** | 19,500,000 | Open Competitive Bidding | November 2015 | December 2015 | April 2016 | |
| 3 | Purchase of Office Furniture **(A09701)** | 28,000,000 | Open Competitive Bidding | January 2016 | Feburary 2016 | April 2016 | |
| 4 | Purchase of Air Conditioner **(A09601)** | 4,600,000 | Open Competitive Bidding | September 2015 | October 2015 | November 2015 | |
| 5 | Purchase of Office Stationary **(A03901)** | 2,700,000 | Open Competitive Bidding | November 2015 | December 2015 | December 2015 | |
| 6 | Printing and Publication (A03902) | 1,500,000 | Open Competitive Bidding | November 2015 | December 2015 | December 2015 | |
| 7 | Purchase of Computer / Hardware **(A09201)** | 6,300,000 | Open Competitive Bidding | December 2015 | January 2015 | January 2015 | |
| 8 | Purchase of Computer Stationary **(A03955)** | 1,100,000 | Open Competitive Bidding | November 2015 | December 2015 | December 2015 | |
| 9 | Purchase of Transport **(A09501)** | 3,750,000 | Quotation | Subject to approval of Summary by honorable Chief Minister and subsequent release of funds by Finance Department | | | |
| 10 | Procurement of Seven Individual Consultants & Three Consulting Firms **(A037)** | 70,000,000 | Open Competitive Bidding | September 2015 | October 2015 | November 2015 | |
| 11 | Hiring the Services of Procurement &Contracting Consultant (A03701) | 1,000,000 | Open Competitive Bidding | October 2015 | December 2015 | December 2015 | |
| 12 | Establishment of Six Garbage Transfer Stations with Material Recovery (MR) and Refuse Derived Fuel (RDF) facility in Karachi. | 1660.796 Million | Open Competitive Bidding | October 2015 | December 2015 | December 2015 | |
| 13 | Integrated Solid Waste Management Project Nawabshah Municipal Committee, Shaheed Benazirabad District (Phase - I) | 438.326 Million | Open Competitive Bidding | November 2015 | December 2015 | December 2015 | |

* The Annual Procurement Plan may be prepared on the assumption that total allocation budget will be released.
** Procurement method means Open Competitive Bidding / Petty Purchase / Quotatons / Direct Contracting / Negotiated Tendering.

(Please add additional sheets if required)

Sindh Solid Waste Management Board

# CONSULTANCY SERVICES FOR TECHNO-ECONOMIC FEASIBILITY STUDY, INCLUDING PREPARATION OF PRELIMINARY DESIGN, COST ESTIMATION, PC-I DOCUMENT, RFP DOCUMENT ETC. OF SIX GARBAGE TRANSFER STATIONS 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.

In fact the dilapidated and outdated fleet of garbage vehicles coupled with long hauling distance and inefficient monitoring has rendered the Solid Waste Transport and Disposal System in Karachi incapable to deal with this important Public Health and Environmental issue. Keeping in view the location of existing two landfills and proposed new land fill site, the type of vehicles in use and the prevailing mode of operation of SWM System, it is apprehended that transport and disposal of solid waste directly to the landfill sites shall not be financially

viable. Therefore, a transfer station will be required where smaller capacity trucks will unload and the waste will be transported onwards to the landfill sites through larger capacity trucks/ containers.

Most cities of the world and especially those with long hauling distance have established Garbage Transfer Stations (GTS) to solve the problem of Solid Waste Transport and Disposal System. These intermediate sites serve as the backbone of overall efficiency of the system as garbage generated in the residential and commercial localities is swiftly transferred from community / area dustbin to GTS by means of small vehicles. Due to short distance, the garbage vehicles are able to make more trips hence transport much more garbage from the localities in short time. At GTS, the garbage is either sorted out and compacted or simply compacted and transported in long vehicles / containers to the Landfill sites. Even if not compacted, long vehicles / containers are capable of transporting 25-40 Tons of garbage per trip as compared to 2-5 Tons capacity of garbage vans.

In order to improve the current situation of the Solid Waste Management, Sindh Solid Waste Management Board (SSWMB) plans to establish 06 (Six) Garbage Transfer Stations in the city. As a part of 'Integrated Solid Waste Management Strategy' the SSWMB intends to hire the services of reputed and experienced National Consulting Firms for conducting Techno-economic Feasibility Study to suggest most appropriate, technologically sustainable, economically feasible and environmentally safe option of GTS for Karachi. The consultant shall also be responsible for reparation of Preliminary Design, Cost Estimation, preparation of PC-I Document, RFP document, etc., for the proposed six garbage transfer stations in the city.

**Scope of Consultancy Works:**

- Analysis and Waste characterization & Composition;
- Conduct new and review existing studies relating to different types of waste commonly handled at Garbage Transfer Stations (GTSs), segregation and management of specific materials, etc.;
- Identify suitable sites for GTSs or conduct feasibility of the proposed GTS sites based on scientific methodologies/criteria while taking into account technical, environmental and community related aspects and to prepare layout and maps;
- Carry out comparative study of different options for management of Solid Waste at GTS viz. Segregation of garbage with Material Recovery Facility (MRF) & Refuse Derived Fuel (RDF) followed by compaction option, simple compaction and transport in long vehicles / containers or just transfer and transport of garbage through long vehicles / containers without nay compaction. Based on this comparative study suggest most appropriate option for Karachi;
- Preliminary Engineering Design of GTS (Equipment specification and preliminary designs of civil works, utilities and electrical installations etc.);

- Rough Cost Estimates on the basis of Preliminary design;
- **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 (SEPA) for conducting Environmental Impact Assessment (EIA)/IEE if required;
- Acquisition of Environmental, Topographical, Geographical, Hydrological (surface & ground water), Metrological data and identification of all underground facilities (i.e. cables, drains, gas line, telephone and electric line);
- Prepare and submit all required surveys soil investigations, design related reports, GIS based maps and progress reports;
- Preparation of minimum three alternative layouts and processed design schemes for each of GTS;
- 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. This should 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.

The consultants shall adequately address the following objectives within their engineering analysis and designs:

- Safe and efficient flow of traffic for collection and transfer trucks into and out of, as well as within, the facilities;
- Safe and efficient unloading of collection trucks and loading of transfer trucks;
- Adequate storage capacity of Solid Waste to enable accommodation of peak periods of unloading by collection trucks;
- Adequate enclosure and ventilation for control of noise, odour and dust and to meet aesthetic needs;
- Office facilities for site supervisor and supporting staff;
- The fencing and gate control facilities, including weighbridges, to secure the site;
- Provision for parking space, workshop facilities and washing facilities;
- Drainage and sanitation facilities to fully meet the projected flow of twenty-year storm water;
- Ancillary services.

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

Sindh
Solid Waste Management Board

**CONSULTANCY SERVICES FOR TECHNO-ECONOMIC FEASIBILITY STUDY, INCLUDING PREPARATION OF PRELIMINARY DESIGN, ROUGH COST ESTIMATION, PREPARATION OF PC-I DOCUMENT, RFP DOCUMENT, ETC. FOR INTEGRATED MEDICAL HAZARDOUS WASTE SYSTEM 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:

## A. 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.

There are more than 500 Private Hospitals / Clinics, about 20 Major Laborites and 28 Government Hospitals in Karachi. It is estimated total of 200 to 250 ton hospital waste and clinical waste is generated daily in Karachi city. Term Medical Waste, Hospital Waste, Healthcare Waste, Medical Hazardous waste is interchangeably used to denote the waste generated in hospitals, health centres, clinics, blood banks and laboratories.

Medical Hazardous Waste is generated during diagnosis, treatment, or immunization of human beings or animals. It may include waste like sharps, non-sharp, disposables, syringes, bandages, blood parts, body parts chemical, pharmaceuticals, medical devices and radioactive materials. Poor management of Healthcare Waste exposes healthcare

workers, waste handlers and community to serious and sometimes life threatening infections, toxic effects and injuries.

Unfortunately, there are no systematic approaches to Medical Waste Disposal throughout Pakistan and Karachi is not an exception. Waste is simply mixed with the municipal waste in collecting bins at roadsides and then disposed of along with domestic waste. Disposable syringes, needles and other sharps are also not disposed of properly. In most cases waste pickers collect these items from area bins for recycling. In this process, not only they contract infectious diseases but act as a source of transmission of these infections to the community. It may be not be an exaggeration if they are labeled as living bombs. On the other hand re-use of these syringes and other disposal items has created a Public Health Emergency like situation, which is evident from prevalence rates of Hepatitis, AIDS and other communicable diseases.

In order to improve the current situation of the Medical hazardous waste in the City, Sindh Solid Waste Management Board (SSWMB) intends to hire the services of reputed and experienced National Consulting Firms for conducting Feasibility Study including Preparation of Preliminary Design, rough cost estimation, preparation of PC-I and bidding Documents etc., for establishment of Integrated Medical Hazardous Waste System in Karachi.

**B. Scope of Consultancy Works:**

- Analysis and Waste characterization based on Survey of hospital industry to determine type and magnitude of disposal problem;
- Conduct new and review existing studies relating to different types of medical hazardous waste;
- Survey hospitals, health centres, clinics and laboratories in Karachi to determine type and magnitude of medical waste disposal problem;
- Assess available hazardous waste treatment and disposal alternatives, and costs involved, to compare economic impact of alternative methods;
- Propose the best possible Medical Hazardous Waste collection, transport, disposal & treatment system;
- Conduct feasibility of the proposed Medical Hazardous Waste collection, transport, disposal & treatment system based on scientific methodologies/criteria while taking into account technical, environmental and community related aspects and to prepare layout and maps;
- Preliminary Engineering Design of Medical Hazardous Waste Collection, Transport, Disposal & Treatment System (Equipment specification and preliminary designs of civil works, utilities and electrical installations etc.);
- **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 (SEPA) for conducting Environmental Impact Assessment (EIA)/IEE if required;
- Rough Cost Estimates on the basis of Preliminary design;
- Preparation of Feasibility Report;
- Preparation of Project PC-I, incorporating all the Project Costs on the basis of Preliminary design;
- Preparation of Bidding Documents as per SSPRA rules 2010 (Amended 2013);
- Pre-qualification of Contractors as per SSPRA rules 2010 (Amended 2013), if required.
- The 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.

The consultants shall adequately address the following objectives within their engineering analysis and designs:

- Site selection for placement of 'Bins' for safe storage of different types of Medical Hazardous Waste;
- Safe and efficient flow of traffic for collection and transfer trucks from health facilities to disposal sites;
- Safe and efficient unloading of collection trucks and loading of transfer trucks;
- Site selection for 'Medical Hazardous Waste Disposal & Treatment facilities';
- Adequate enclosure and ventilation at 'Medical Hazardous Waste Disposal & Treatment facilities' for control of noise, odour and dust and to meet aesthetic needs;
- Office facilities for site supervisor and supporting staff at 'Medical Hazardous Waste Disposal & Treatment facilities';
- The fencing and gate control facilities, including weighbridges, to secure the site;
- Provision for parking space, workshop facilities and washing facilities;
- Drainage and sanitation facilities to fully meet the projected flow of twenty-year storm water;
- Ancillary services.
- The Consultant firm is also expected to take into account following factors while preparation of Feasibility Study:
    - Existing rules and regulations
        - Federal
        - Provincial
        - Emission Standards
    - No. of sources generating waste and their quantity of waste (Data Collection):
        - Govt. Hospitals, No. of beds

- Private Hospitals, No. of beds
- Charity Hospitals, No. of beds
- Private Clinics
- Medical Labs
- Blood banks and transfusion centers
- Animal hospitals
- Pharmacies (expired medicines)
- Zoo, Safari parks

o Present system of Hospital Waste Management in waste generating sources:

- Hospitals having own incinerators?
  - Capacity
  - Type of Incinerator
  - Emission Control Devices
  - Ash Disposal, place and transportation system
  - Waste disposal - Landfill or any other place
  - Fee for disposal
  - Collection through Private Co
  - Collection through Govt. Agencies

o Proposed new Hospital Waste management:
  - Organisation in generating sources
  - Segregation system
  - Sanitation of infected hazardous waste
  - Collection
  - Transportation to the plant for disposal
  - Storage at plant
  - Disposal, reuse and incineration
  - Accidents and spillages
  - In case of accidents and spillages, the action to be taken
  - Waste minimization and reuse proposals

o Inspection and Implementation of rules and regulations in waste generating sources
o Capacity building of staff in generating sources to handle waste
o Fee charges from generating sources, if any
o Government strategy to manage hospital waste
  - Government Owned Hospitals
  - Private Hospitals
  - Combination Govt./Private (Partnership)

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

Sindh Solid Waste Management Board

# CONSULTANCY SERVICES FOR TECHNO-ECONOMIC FEASIBILITY STUDY, INCLUDING PREPARATION OF PRELIMINARY DESIGN, COST ESTIMATION, PC-I DOCUMENT, RFP DOCUMENT ETC. FOR INTEGRATED INDUSTRIAL SOLID WASTE SYSTEM IN ALL INDUSTRIAL AREAS OF 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.

Karachi is industrial and corporate hub of Pakistan. City alone contributes approximately 20% to country's GDP and accounts for more than 50% of government's revenue. Karachi has four major industrial zones namely:

i. Korangi Industrial Area (3000 industrial units),
ii. Landhi Industrial Area,
iii. Sindh Industrial Trading Estate (SITE) (2500 industrial units) and
iv. F.B. / North Karachi Industrial Area.

Unfortunately no system exists in Karachi and rest of Sindh for proper collection and disposal of 'Industrial Solid Waste'. As per Sindh Solid Waste Management Board (SSWMB) Act, 2014, SSWMB is responsible for management

of all sorts of waste including 'Industrial Solid Waste' i.e. handling, storing, transporting and removal of 'Hazardous Industrial Waste' from Sindh.

In order to improve the current pathetic situation of the 'Industrial Solid Waste Management in Karachi', SSWMB plans to establish an **Integrated Industrial Waste Management System (mainly focused on Industrial Hazardous Waste)** in the city. As a part of implementation of 'Integrated Industrial Solid Waste Management Strategy' the SSWMB intends to hire the services of reputed and experienced National Consulting Firms for conducting Techno-economic Feasibility Study to suggest most appropriate, technologically sustainable, economically feasible and environmentally safe option of **Integrated Industrial Waste Management System (mainly focused on Industrial Hazardous Waste)** for Karachi. The consultant shall also be responsible for reparation of Preliminary Design, Cost Estimation, preparation of PC-I Document, RFP document, etc., for the proposed **Integrated Industrial Waste Management System** in the city.

## Scope of Consultancy Works:

- Analysis and Waste characterization of Industrial Solid Waste generated in different Industrial Areas of Karachi. Special attention is to be focused on following components:
    - Hazardous Industrial Waste;
    - Non-hazardous Industrial Waste;
    - Domestic Municipal Waste generated in Industrial Areas.

- Conduct new and review existing studies relating to different types of industrial waste;
- Survey industries to determine type and magnitude of waste disposal problem;
- Assess available hazardous waste treatment and disposal alternatives, and costs involved, to compare economic impact of alternative methods;
- Propose the best possible industrial solid waste disposal & treatment system;
- Conduct feasibility of the proposed industrial solid waste disposal & treatment system based on scientific methodologies/criteria while taking into account technical, environmental and community related aspects and to prepare layout and maps;
- Preliminary Engineering Design of Industrial Solid Waste Disposal & Treatment System (Equipment specification and preliminary designs of civil works, utilities and electrical installations etc.);
- **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 the same should be documented and integrated into the considering the ground realities.

- Rough Cost Estimates on the basis of Preliminary design.
- Preparation of Feasibility Report.
- Co-ordination with Sindh Environmental Protection Agency (SEPA) for conducting Environmental Impact Assessment (EIA)/IEE if required.
- 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.

The consultants shall adequately address the following objectives within their engineering analysis and designs:

- Site selection for placement of 'Bins' for safe storage of different types of Industrial Solid Waste;
- Site selection for 'Industrial Waste Transfer Stations', if required;
- Safe and efficient flow of traffic for collection and transfer trucks into and out of, as well as within the Industrial Areas;
- Safe and efficient unloading of collection trucks and loading of transfer trucks;
- Adequate storage capacity of Solid Waste to enable accommodation of peak periods of unloading by collection trucks;
- Adequate enclosure and ventilation for control of noise, odour and dust and to meet aesthetic needs;
- Office facilities for site supervisor and supporting staff;
- The fencing and gate control facilities, including weighbridges, to secure the site;
- Provision for parking space, workshop facilities and washing facilities;
- Drainage and sanitation facilities to fully meet the projected flow of twenty-year storm water;
- Ancillary services.

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

Sindh Solid Waste Management Board

# CONSULTANCY SERVICES FOR TECHNO-ECONOMIC FEASIBILITY STUDY, INCLUDING PREPARATION OF PRELIMINARY DESIGN, COST ESTIMATION, PC-I DOCUMENT, RFP DOCUMENT ETC. FOR ESTABLISHMENT OF NEW LANDFILL SITE FOR KARACHI AT DHABEJI

## 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.

There are two landfill sites available for the disposal of the solid waste being produced in the city. These two landfills located at Gond Pass and at Jam Chakro (Near Surjani Town) are not proper sanitary landfills but open and burning dumps. These landfills have contributed to water and air pollution and serve as a breeding ground for insects / rodents and many vectors of disease transmission. In addition, these dumps are unsightly and very often have effect of depressing the value of nearby land and properties. Moreover both landfill sites are located on one side i.e. Northwest of the city. No landfill site is available to cater the need of eastern side of the Karachi.

An acceptable alternate to the poor practices of waste disposal has been the sanitary landfill. This alternate requires the planning and applying of engineering and construction techniques. In order to achieve above said objectives and improve the current situation of the garbage disposal, Sindh Solid Waste Management Board (SSWMB) plans to establish a new landfill site on eastern side

of city for which 3000 (Three thousand) acres of land have been acquired for new landfill site at Dhabeji.

As a part of 'Integrated Solid Waste Management Strategy' the SSWMB intends to hire the services of reputed and experienced National Consulting Firms for conducting Techno-economic Feasibility Study to suggest most appropriate, technologically sustainable, economically feasible and environmentally safe option of Sanitary Landfill Site for Karachi. The consultant shall also be responsible for reparation of Preliminary Design, Cost Estimation, preparation of PC-I Document, RFP document, etc., for the proposed Sanitary Landfill Site near Dhabeji.

With the establishment of sanitary landfill site, the water, air pollution and leachate will be controlled effectively. The waste to energy plants along with composting facility at landfill could also be established. After this landfill the value of land and property of nearby area will be increased. Apart from this sanitary landfill will provide clean and healthy atmosphere.

Necessary Infrastructure and various other facilities required to make the proposed landfill site functional and safe shall include but not limited to the following:

- Roads on and off the site and ramps;
- Buildings (Office, Guard room and watch & ward towers);
- Utilities above and below ground;
- Scales;
- Fire protection facilities.
- Surface drainage (natural and constructed) and ground water;
- Profiles of soil and bedrock;
- Leachate collection and treatment facilities;
- Gas control devices;
- Security fencing and gates;
- Workshops;
- Parking lots;
- Electrical sub - station and area lightening;
- Water supply system (storage and network);
- Sewerage system (network and disposal arrangements).

**Scope of Consultancy Works:**

- Analysis and Waste characterization;
- Conduct new and review existing studies relating to different types of Landfill sites;
- Conduct feasibility of the proposed Landfill site at Dhabaji based on scientific methodologies/criteria while taking into account technical, environmental and community related aspects and to prepare layout and maps;

- Preliminary Engineering Design of Landfill Site (Equipment specification and preliminary designs of civil works, utilities and electrical installations etc.);
- Rough Cost Estimates on the basis of Preliminary design;
- **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 (SEPA) for conducting Environmental Impact Assessment (EIA)/IEE, if required;
- Acquisition of Environmental, Topographical, Geographical, Hydrological (surface & ground water), Metrological data and identification of all underground facilities (i.e. cables, drains, gas line, telephone and electric line);
- Prepare and submit all required surveys soil investigations, design related reports, GIS based maps and progress reports;
- Preparation of Feasibility Report;
- Preparation of Project PC-I, incorporating all the Project Costs on the basis of Preliminary design;
- Preparation of Bidding Documents as per SSPRA rules 2010 (Amended 2013);
- Pre-qualification of Contractors as per SSPRA rules 2010 (Amended 2013), if required;
- 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.

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

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.