

# **Situation Analysis of Water Resources in Karachi**

## **Terms of References (ToRs) for Consultant**

### 1. GENERAL

This document contains Terms of Reference (TOR) for the Consultant, to be engaged by WWF-Pakistan (hereinafter called the Employer), for the preparation of the Report "Water Study of Karachi" (hereinafter called the Study).

### 2. OBJECTIVES AND SCOPE OF THE STUDY

The objective of the study is to provide an authoritative reference document, for use by stakeholders and participants of the ILES project, that collates key available information of the water resources of Karachi, describes the physical water and institutional water management situation and risks (**physical, reputational, regulatory and institutional risks**) of Karachi, and provides a robust evidence base to support the identification and implementation of water stewardship activities.

The scope of the Study shall include the following:

- a) Comprehensive water accounting for city of Karachi, including description and volumetric quantification of all significant water sources, stores, and discharges, sinks and losses. This should include, but may not be limited to, the following:
  - Sources
    - Groundwater
    - Surface water
    - Rainwater
  - Water Usage and Consumption
    - Domestic
    - Commercial
    - Institutional
    - Industrial, differentiated by sub-sectors, where possible
    - Agricultural
  - Outputs and stores
    - Discharges to surface water bodies
    - (Losses to-delete) Groundwater recharge, by leakage, percolation etc.
    - Waste water application to adjoining lands or agricultural fields
    - Evaporation

The water balance should be made spatially explicit (e.g. as a map or schematic) so that the spatial relationship of major abstraction points, discharge points, distributary canals, sewers, pipelines etc. can be identified.

- b) Identification of key present and future water risks at the city level to domestic and business sectors (and subsectors where appropriate), both in terms of water quantity and quality. This should consider, but not be limited to:
  - i. local and regional climate change scenarios and their likely impact on water resources
  - ii. demographic and economic changes
  - iii. trends in abstractions and water consumption in different sectors
  - iv. pressures from upstream factors e.g. land use change, water management infrastructure
  - v. physical, institutional, environmental and regulatory risk factors
  - vi. effects of infrastructure
  - vii. financial context (e.g. investment, water pricing)
  - viii. uncertainties due to gaps in current knowledge.

- c) Identification of potential water risk mitigation measures that address the root causes of the risks identified in b)
- d) Water balance of groundwater sources (as distinct from water balance for Karachi, above), underlying Karachi city, with particular reference to groundwater extraction, recharge, overall balance of aquifer and depletion.
- e) Pertinent hydrological characteristics and parameters (e.g. flow, seasonality, abstractions, quality status, operation of water management infrastructure) of surface water resources used by Karachi city, including Keenjhar Lake
- f) At a broad level, identification of other water users that rely on the same sources of water used by Karachi (e.g. Keenjhar Lake and Hub dam, other cities abstracting from same aquifer and within zone of hydrogeological influence).
- g) Water quality issues, including identification of key sources of pollution
- h) Brief outline of the institutional and regulatory context of water and waste water management of Karachi. To include:
  - i. In context of Karachi, the present status of management issues, political and social issues on the water of the city.
  - ii. How waste water discharges and abstractions from surface and groundwater are regulated (at a provincial level – specifically of Karachi). Assessment of the level of compliance with the existing rules.
  - iii. Outline of water and wastewater management institutions, including gap identification, reasons for failings in policy framework and implementation of regulations, and key criticisms raised by stakeholders. The technical operation of the municipal water and waste water infrastructure in Karachi and how it is linked to wider policy context.

### 3. CONSULTANT'S SCOPE OF SERVICES

The Consultant' scope of services shall comprise the following:

- a) Collation of all the requisite data and information (depending on the availability of data), for the purpose of the Study, and its timely submittal to the Employer. Both employer and consultant will be coordinating and updating the list if required.
- b) Review workshop with project team to discuss the available data and agree structure, scope and contents of final report.
- c) Carrying out all the required analyses of the collected data and information
- d) Workshop with project team to discuss analysis and conclusions
- c) Incorporation of feedback from analysis workshop. Preparation and submittal of the Draft Study Report, in accordance with the objectives and the scope, as delineated in Section 2
- d) Preparation and submittal of the Final Study Report, after due incorporation of the Employer's written comments and observations, on the Draft Study Report
- e) Time to Time feed back of the employer on the study

The Draft and Final Study Reports shall be submitted to the Employer, in form of a hard copy and soft (electronic) copy, each.

4. TIME FRAME

The entire set of tasks shall be completed in a time frame of about 90 days after award of contract.

Sr #	Reports to be submitted	Timeline
01	Inception Report	45days after award of contract
02	1 <sup>st</sup> Draft Study Report	70days after award of contract
03	Final Report	90days after award of contract

6. CONSULTANT'S REMUNERATIONS

The Consultant's remunerations, to be payable by the Employer, shall be on person-month basis and shall be deemed to be inclusive of all the taxes, overhead expenses and fee. Four person-months, of the Consultant, are proposed for the Study.

7. ELIGIBILITY CRITERIA FOR THE CONSULTANT:

**Qualification:** The Consultant must be Post Graduate in Environmental Sciences/Water Resource Management from reputable institute.

**Experience:** The Consultant must have 10 years' experience (If Masters) or 7 years' experience (If PhD) in dealing with environmental assessment studies and supervised water related projects.

8. REPORTING ARRANGEMENT

The Consultant will be directly reporting to project team and in close coordination with local project staff.

9. GENERAL CONDITIONS

- i. The assignment activities of the consultant will be supervised by the project team.
- ii. All documentation, reports shall be submitted in the English Language.
- iii. All the data, documents and reports produced by the consultant for the said services shall be the property of the WWF. The consultant shall not share and use these data, document and reports for any other purpose / job without the explicit written approval of WWF Pakistan.
- iv. In case the consultant fails to fulfill the contractual obligations and violate the contract agreement, the contract agreement shall be terminated by

Competent Authority and consultant shall not be liable to make any pending claims.

**PAYMENT MODE**

<b>Sr #</b>	<b>Prospective</b>	<b>% to be awarded</b>	<b>Amount (Rs)</b>
01	Inception Report	20 %	
02	Submission of Draft report	60 %	
03	Submission of Final Report	20 %	