Comparative Analysis of Techniques for Proper Management of Harvested Plants from Floating Treatment Wetland

Terms of References (ToRs)

1. GENERAL

This document contains terms of reference (TOR) for hiring services of Consultant/s to conduct research study on "**Comparative Analysis on Techniques for Proper Management of Harvested Plants from Floating Treatment Wetland** "(herein called **the consultant**), to be engaged by WWF Pakistan (hereinafter called Employer).
WWF-Pakistan is implementing the European Union (EU) funded project namely

"International Labour & Environmental Standards Application in Pakistan's SMEs (ILES)" aims at enhancing capacities of the textile and leather sectors to adopt Smart Environmental Management Practices (SEMPs) to reduce overall energy and water footprint of textile and leather manufacturing, in addition to addressing other relevant environmental issues such as air and noise pollution, and solid waste management. Under the umbrella project WWF-Pakistan intends to support textile & Leather enterprises in "Implementation of resource efficient technologies" on the following objective and scope.
The floating treatment wetland (FTW) is an efficient, economical and ecofriendly approach for

the clean-up of water contaminated with organic and inorganic pollutants. Some indigenous plants are grown in industrial and domestic wastewater to remove both organic and inorganic pollutants from the effluent. The use of floating treatment wetland (FTW) is an efficient, economical and ecofriendly approach for the clean-up of water contaminated with organic and inorganic pollutants.

2. OBJECTIVES

The objective of the consultancy is to suggest technically & financially viable and environmentally sustainable techniques for Proper Management of Harvested Plants from Floating Treatment Wetland (FTW).

3. SCOPE OF WORK:

The Consultant/s will be responsible for the delivery of the tasks assigned by WWF-Pakistan. The Consultant/s will be bound to execute the duties as mentioned in the TORs.

- Harvest plants (Stem, Leaves) from Floating Treatment Wetland Site
- Perform testing of plant samples to identify the concentration of metals in the plants
- Discuss in detail the amount of heavy metals/kg of plants

The study will focus on (but not limited to) three interventions for proper management of harvested plants from Floating Treatment Wetland:

a) PHYTO-MINING

- Incinerate the harvested plants in lab
- Collect ash and Separate of metals

b) IMMOBILIZATION

- Enlist techniques for immobilization of heavy metal from FTW plants
- Shortlist techniques to run lab scale experiments
- Run the experiment for immobilization of heavy metals as per selected technique

c) BIOCHAR

- Collect and shred the harvested plants form FTW
- Run experiments for Engineered biochar generation
- Perform test on End products
- Perform Environmental footprint assessment, cost-benefit analysis and a comparative analysis for the studied techniques
- Discuss in details the applications and financial feasibility of the end products
- Recommend environmentally sustainable and financially viable technique

4. DELIVERABLES

- Inspection report within 15 days of contract signing
- Progress report after every 15 days
- Draft report after 3 months
- Finalized reports at the end of consultancy
- 1 dissemination workshop

5. REPORTING GUIDELINES

i. The citation of reference is must for secondary information

ii. The references used in the report should not be before 2015 otherwise need justification.

iii. The report should have the similarity index not exceeding 15 per cent.

iv. The report should be according WWF-Pakistan's communication guidelines

v. Specimen Report / Sample write is required along with the proposal

vi. All the figures, pictures, graphs, maps need to be provided separately also in high resolution along the report

vii. Tables should not be in picture form.

viii. Multiple revisions will be required for mutual consent of consultant and employer

6. REQUIREMENTS:

- The consultant should have a degree in chemistry/ Chemical / Environmental Engineering / Environmental Sciences with more than 10 years of working experience and with at least 3 reference projects implemented in the last 3 years related to similar technologies
- The consultant/team should have research experience/published articles
- The consultant/team should have an experience of phyto-mining and nanotechnology.
- Qualification should be environmental/chemical engineering or sciences
- Should have experience in water, wastewater & floating treatment wetland research
- The Lab should have following Instruments for this project

o Furnace

o Shaking incubator

o Filtration assembly

o ATR-FTIR Spectrophotometer

o Mineral Synthesizer

o Redox Meter

o Atomic Absorption

7. TIME FRAME

The time duration for completion of this training consultancy is **3 Months**

8. GUIDELINE FOR SUBMISSION OF PROPOSAL/EXPRESSION OF INTEREST:

Interested consultants should submit the following documentation to Muzzammil Ahmed (mahmed@wwf.org.pk), Maham Zahara (mzahara@wwf.org.pk)
Brief introduction of consultant (attach detailed CV with references)

- Application form available at WWF website
- Understanding of the context
- Methodology

- Design Portfolio
- Work plan
- The consultant will submit the cost of assignment in lump sum including all applicable taxes of the Government of Pakistan.

9. SELECTION CRITERIA:

Applicant's proposal shall be evaluated based on the Quality and Cost Based Selection (QCBS) method. Under QCBS both technical and financial proposals shall be evaluated as per following criteria against a maximum score of 100 points;

- Technical Proposal 70%
- Financial Proposal 30%

The following criteria shall be used as a basis for evaluation of technical proposals:

- Qualifications (maximum 30 points)
- Experience relevant to the assignment (maximum 30 points)
- Adequacy of the proposed methodology and work plan (maximum 20 points)
- Skills & Competencies for the assignment (maximum 10 points)
- Prior experience with WWF-Pakistan (maximum 10 points)