
Terms of Reference

1. BACKGROUND

- 1.1 Egypt is facing a pressing need to both treat the sewage wastewater of its increasing population, and to treat the agricultural drainage discharges. As an arid, water scarce nation, Egypt is also keenly interested to safely and effectively treat and reuse of both domestic wastewater and agricultural drainage water. Currently, Egypt produces around 6.5bcm of untreated sanitary wastewater per year, and 12-13bcm of its drainage water enters the Mediterranean annually.

The sanitation facilities of Egyptian rural areas are facing lags behind potable water supply. As a result, coverage of urban sanitation was only 56% and rural coverage of villages 4% of village until as late as 2004, reached to 34% in 2019. The government pledged to raise the ratio of village's sanitation coverage by 2022 to 60%. It worth to highlight that the most commonly adopted solution in non-served villages is septic tanks, dug into the ground, some without proper flooring. However, septic tanks only work in certain environments. High tap water consumption, when coupled with the heavy clay soil of the Nile Delta and the low rate of infiltration and permeability of the Nile Valley, prevents the septic tanks from emptying naturally.

This causes a water logging situation – creating health hazards and agricultural damage both inside residential areas and in the surrounding agricultural fields. The potentially hazardous situation is further aggravated by residents manually emptying their septic tanks into nearby agricultural drains and irrigation canals, often in close proximity to their houses.

- 1.2 The Arab Republic of Egypt has received a grant from the African Development Bank (AfDB) of 400,000 UA towards the cost of Third National Drainage project implemented by the Egyptian Public Authority for Drainage Projects (EPADP). It is intended that part of the proceeds of this grant will be applied to eligible payments under the First component of this grant (Technical Studies to Strengthen EPADP Capacity for Improving Water Quality) for the contracting of a Consultancy Services for “In-stream wetlands study of in-stream wetlands for drainage water treatment and reuse in Egypt” with the aim of supporting the development of the water sector to enhance water infrastructure, evaluating of wetlands to improve drainage water quality, create jobs and opportunities, align gender streaming, and reduce poverty.

2- THE PROPOSED STUDY

2-1 Study Rationale and Conceptual Framework

- 2.1.1 Economic of scale make conventional wastewater treatment cost prohibitive in smaller more dispersed rural settlements. Domestic wastewater is typically discharged directly or indirectly to drainage canals. This practice has contributed to widespread degradation of drainage water quality and, so, the reuse of drainage plans in Egypt.

Identifying appropriate treatment options for improving drainage water quality has a high priority since villages without sanitation facilities can be expected to continue discharging their sewage to near-by agricultural drains and contamination of drainage water by untreated

or partially treated domestic sewage negatively impacts human health of downstream users and limits drainage water reuse.

Several treatment alternatives that vary in efficiency and cost are available. In general, the advantages of using natural biological processes relate to their 'low-tech/no-tech' nature, which makes them attractive in that the system require frequent inspections and constant maintenance to ensure smooth operation. In-stream wetlands treatment system has additional advantage that it requires limited land where the treatment process takes place nearby ore inside the drain (e.g. delta drains).

A deeper understanding of the policy and strategy of agricultural drainage water would enable the Bank to gain invaluable insights on how best to support the agricultural drainage sector in Egypt.

2-2 Objectives of the Study

2.2.1 The ultimate objective is to assess and investigate the applicability of wetlands system for drainage water treatment in Egypt and develop a "National Strategy" for improving the drainage water quality for agricultural reuse. It is also to develop specific training courses to strengthen the capacity of EPADP staff in preparing, assessing & evaluating of wetlands to improve drainage water quality.

2-3 Detailed Scope of the Study

2-3-1 Introductory Remark

Despite the fact that every attempt has been made to outline the study tasks and activities in detail, the Consultant should note that the list of activities is by no means exhaustive. The Consultant will be given certain latitude to critically verify the proposed scope of services and to use best professional judgment to propose revisions and improvements when deemed necessary in the course of proposal preparation. It is understood that the Consultant shall perform all work as necessary to fulfill the objectives of the Study. All the activities shall be carried out as per the latest applicable and relevant codes approved in Egypt and established best practices, guidelines and criteria

2-3-2 Scope of the Assignment

In Stream Wetlands are relatively cheap to build where land is available. They can be easily operated and maintained. Aesthetically, In Stream Wetlands looks more like a natural wetland landscape when compared to the conventional wastewater treatment plants. This system promotes sustainable use of local resources, which is an environment friendly biological wastewater treatment system.

The consultancy firm is expected to develop a suitable methodology for collecting data and reviewing existing studies. The data and information provided should facilitate a deeper understanding of the key challenges of the agricultural drainage water reuse. The specific scope of works will include the following main tasks:

- Prepare GIS map(s) for potential In-Stream Wetlands in the studied area;
- Assessment the performance of at least one existing in-stream wetland for agricultural drainage clean-up
- Design a small scale pilot project for in-stream wetland treatment in one of the polluted agricultural drains in the Delta to be constructed and assessed;
- Specify the Operation and Maintenance methodology for the pilot area;
- Conduct Environmental and Social Impact Assessment (ESIA) to the studied area;
- Conduct on-job training to the staff of the pilot area;

- Conduct three (3) workshops on agricultural drains pollution, treatment and reuse options, and awareness; followed by a National Conference on "In-Stream Wetlands Potentiality for Agricultural Drainage Treatment and Reuse".
- Submit Final Report including the outcomes and recommendations of the Study as well as the design album of the implemented pilot area.

Hereafter is a detailed description of activities to be performed by the consultant under each part.

4.1. Workshops and Training

Due to COVID-19 Pandemic, and limitation of the travel, workshops and training could be made on-line and by using virtual means. The consultant should separate the cost of the workshops and training and to be presented separately in his financial offer.

Workshops

The consultant shall advise EPADP on the most relevant stakeholders to be invited to the workshops and shall organize and deliver three workshops as follows:

- A workshop to present the consultant's work plan (Inception Report) to the stakeholders.
- A workshop to discuss the draft final report.
- A final national conference to present the findings and the recommendations of the study.

Training

Two training Modules will be implemented:

- Implementation and Operation and Maintenance of the in-stream wetland areas.
- On-Job training for the field staff of the pilot area of the study.

6. CONSULTANT TEAM SKILLS AND EXPERIENCES

6.1 Necessary Consultant team skills and experience

The consultant will comprise a team, managed by experienced Project Team Leader (PTL). The members of the team will have both the skill and experience necessary to undertake the range of tasks set out in these terms of reference. Preferably they are employed by well recognized institutions in order to include specific knowledge not covered by the expert below. Each individual on the team must be personally available to do the work as and when required. The PTL will be held accountable, in terms of the consultant contract, for ensuring project deliverables and for the professional conduct and integrity of the team.

Proposed project team members

The skills and experience required by the team is summarized as follows:

- Team leader
- Wetland expert
- Drainage and Irrigation Expert
- Environmental and social Specialist

7.2.2 Experience required for consultant team

▪ Team leader (Project Manager)

The project manager will be responsible for the overall project planning and implementation as well as coordination and management of the experts proposed for the project. He/she will promote the exchange of the knowledge and experience between the team members, provide

liaison with relevant Government Departments and assure timely and accurate reporting. He/she has a MSc /PhD degree in a related field, preferably has previous experience working with Egyptian Institutions or in the region for at least 5 year and has at least 10 years of experience in international projects is highly preferred for such position. The Consultant must have a good working knowledge of the English Language and the use of Microsoft Word, Excel and Project software.

- **Wetland Expert**
Good experience in designing and implementing previous Wetland projects.
- **Drainage and Irrigation Expert**
Good experience in designing and implementing previous drainage projects, experience with farmers' associations and irrigation assessments.
- **Environmental and Social Specialist**
Good experience in environmental and social requirements and standards to prepare the EIA of the project.

All experts must have university degree in civil engineering or related subjects, minimum 5 years of work experience, good working knowledge of the English and/or Arabic Languages and computer skills.

Other experts might be needed such as (not limited to. The consultant has the right to include experts to the team as needed).

8. MANAGEMENT OF CONSULTANT BY EPADP

- 8.1 A project officer will be appointed by the EPADP to take full responsibility for managing the consultant's work and for ensuring delivery on the project. EPADP will establish a project team to engage regularly with the consultant for efficiently completing the various delivery items. The project team will meet at start, after activity 1 and activity 2 and at the end of the project and the consultant and/or relevant expert will report progress at these meetings, as instructed by the project officer. The project officer will confirm that the consultant has satisfactorily completed each deliverable before invoices can be submitted to the EPADP for payment.
- 8.2 EPADP will provide relevant data and information related to the project to be used by consultant to fulfill their duties during the consulting service period.

9. CONSULTANT SERVICE DELIVERABLES

The consultant should deliver number of reports to include but not limited to:

- Inception Report with detail work plan (within 1 months of the commencement of services).
- Draft Report with the study procedures and findings to be discussed and reviewed by EPADP's project team.
- Final Report taking into consideration any comments from the Project team on the Draft Report.
- Also, an assessment report about the workshops shall be prepared at the end of the project.

All reports should be written in English in (2) hardcopies and softcopy (CD) and an Arabic summary.

10. TIME SCHEDULE

The proposed overall schedule of this assignment shall not exceed six (6) months. The overall timetable and schedule of the activities is shown in the outline below:

Proposed Time Schedule

#	Activity	M1	M2	M3	M4	M5	M6
1	Inception report						
2	First workshop						
3	GIS report						
4	Second Workshop						
5	ESIA report						
6	Design of Pilot area						
7	Third workshop						
8	Final workshop						
9	Final report and Albums						