Activity 1 of Output 3.2.1 (REV): develop regional strategy for using wetlands as nutrient sink

(Note: this revised TOR has integrated the TOR of Activity 2 of Output 3.2.1 entitled cost-effective and sustainable mechanism to treat municipal wastewater & sewage: good practices and experience sharing and learning budgeted at $8,000 under 71200 based on the decision of the RWG-P).

TERMS OF REFERENCE
Natural Resource Specialist to develop regional wetland

Consultancy classification: Individual consultant
Budget line: 71200, Activity 1 and 2 of Output 3.2.1, Component 3. Budget: USD16,000;
Estimated start of work: Mid-November 2017 – June 20, 2018

Background and Justification
Based on the transboundary diagnostic analysis of the Yellow Sea, one of the major environmental problems is the enrichment of nutrients in the Yellow Sea which is the major cause of harmful algal blooms in the region. Water pollution in coastal areas has caused social and political attention because of its significant impacts on not only the environment, but also the economy and society as well. More importantly, water pollution issue has been intertwined with other issues such as coastal wetland loss, marine ecosystem degradation and coastal land reclamation, eutrophication from aquaculture, etc. Therefore, more cost-effective, innovative and integrated approaches rather than traditional engineering methods are needed to tackle water pollution in coastal areas under high development pressures in this rapidly changing time.

Manmade wetlands or use of wetland for tertiary treatment of pollution have been recognized as effective ways to remove nutrients and other pollutants from land-based sources in YS region by the PR China, RO Korea and international financial institutions such as the World Bank. Studies indicate that the constructed wetland's efficiency in water pollutants is reliable, particularly for nutrients removal with a very low wastewater background concentration, meaning it is suitable for the non-point source pollution.

In order to help local government design and invest in cost-effective and with spin-off effect of ecological services for public benefits, the project will develop a regional strategy for using wetland as nutrient sinks based on assessment of good practices that can be applied across YSLME in particular in use of wetland regulatory services to treat wastewater and sewage.

Objectives
The objective underlying the proposed consultancy is to develop a regional strategy for using wetlands as nutrient sink, especially for the coastal wetlands.

The specific objectives of the consultancy include:

- Review of the status of coastal wetlands and their roles in nutrient removals for the Yellow Sea coastal area, and the location, the method, the principle and the results of nutrient removal projects up to 2016 in PR China and RO Korea, and to compare the advantages and disadvantages.
- to synthesize and document knowledge in using wetland as nutrient sinks for improving the ecosystem health of Yellow Sea for replication of good practices for investment
- To propose strategies, approaches and methods to enhance investment, capacity, knowledge and awareness raising to mainstream use of wetland into urban planning, ocean park development, coastal wetland restoration projects and other investment decisions to enlarge wetland sink areas;

These objectives will also support of achieving SDG 14 and implementing CBD, RAMSAR and other relevant Conventions.

Expected Outputs

The consultant is expected to deliver the following results:

1. A review report of past and present and future projects in using wetland as nutrient sink, especially focused on the Yellow Sea Coastal Area, project designs, investment modalities, cost-effectiveness, ecosystem services generated from these projects and lesson learnt;
2. four case studies detailing the design, implementation modalities, results and services of wetland and species in removing nutrients from the projects, and cost-benefits of such projects; and
3. Proposed recommendations on strategies, approaches and methods to enhance investment, capacity, knowledge and awareness raising to mainstream use of wetland into urban planning, ocean park development, coastal wetland restoration projects and other investment decisions to enlarge wetland sink areas;

Activities

Activities include but not necessarily limited to the following tasks:

<u>For output 1: Synthesis for the practices using wetland as nutrient sinks in the Yellow Sea:</u>

- Conduct desk review to assess the status and trends of the threats, stresses and underlying causes on nutrient load in the Yellow Sea, especially focused on the underlying causes such as physical factors, policy, biological factor, etc.
- Desk review to coastal wetlands distribution of Yellow Sea Coastal area, identifying the vegetation, area, history, sediment and water condition, and ecological service of these wetlands.
- Survey the past and present and future projects mainly concentrated on using wetland as nutrient sinks based on the published and grey literatures focusing on project designs, investment modalities, cost-effectiveness, ecosystem services generated from these projects and lesson learnt; and then teasing out the work concepts, researching progress, technical proposal, mainly focused on the tackled problem, the solutions and the efficiency, etc.
- Analyze constraints, opportunities, threats, issues, problems and capacity needs and identify solutions through consultation with stakeholders and interest groups, forming a series technical scheme in nutrient removals based on coastal wetlands.
- Incorporate comments into a final report, and then submit a final draft in electronically (in English).

For Output 2: to synthesize and document knowledge in using wetland as nutrient sinks for improving the ecosystem health of Yellow Sea for replication of good practices for investment

- Prepare a synthesis report of latest developments in using wetland as nutrient sinks to diversify approaches for coastal wetland restoration with amplified spinning effects
- To select and agree on wetland restoration modalities, including 1) return fish ponds and salt-making ponds to bays and coastal marshes, such as Wuyuan Bay, Xiamen; 2) using wetland for tertiary treatment associated with Sewage treatment plants, such as Ningbo World Bank Project; 3) use species and aquaculture to achieve the co-benefits of sustainable harvest and environmental performance, such as intertidal shell fish farming in RO Korea; and 4) nutrient bioextraction in coastal areas of China through restoration, such as of Tamarix;
- Prepare four case studies detailing the design in theory and practice, monitoring system, results and services of wetland and species in removing nutrients from the projects, and cost-benefits of such projects;
- Document the investment modality for replication;

Output 3: Proposed recommendations on strategies, approaches and methods to enhance investment, capacity, knowledge and awareness raising to mainstream use of wetland into urban planning, ocean park development, coastal wetland restoration projects and other investment decisions to enlarge wetland sink areas

- Facilitate the conduct of framework YSLME nutrient removal projects, which included develop explicit goals, time-bound targets and actions in line with the proposed solutions to assist the bordering countries of YSLME to implement provisions of the CBD, Ramsar and other conventions of a regional approach;
- Identify areas of the coastal wetland as nutrient remover, especially for these projects, mainly using the criteria for selection, taking into account of both social and cultural context as well as and assessment result, propose a series project at regional level for improved ecosystem services.
- Identify opportunities to enhance investment, capacity, knowledge and awareness raising to mainstream use of wetland into urban planning, ocean park development, coastal wetland restoration projects and other investment decisions to enlarge wetland sink areas;
- Consolidate the assessment results into a concrete proposal of recommendations for using wetlands as nutrient sinks;
- Present the results of the study at YSLME Biodiversity Conservation Planning Workshop to be held in May 2018 and revise and develop the proposal into a strategy for the YSLME management.

Inputs

UNDP/GEF YSLME Phase II Project Management Office (PMO) will provide the background information and documents.

Timing

The consultancy will begin in mid-November 2017 and complete in June 20, 2018.

Reporting

Under supervision of the Chief Technical Advisor and technical guidance of the RWG-P, in close collaboration with the local project team, the consultant will conduct the following activities:

1. By November 15, submit a draft synthesis report on the use wetlands as nutrient sink in YSLME areas including four case studies on typical projects to maximize the regulating services of wetlands; and
2. By June 30, submit a concrete proposal of strategy containing recommendations for using wetlands as nutrient sinks;

The consultant can submit reports in English electronically to Mr. Yinfeng Guo, CTA/Manager at email: yinfengg@unops.org.

Competencies

- A good understanding of development and coastal wetlands environment contexts of North East Asia
- Advanced university education at MSc or Ph.D. level with expertise in the area of biology, marine sciences or natural resource management
- At least 7 years of professional experience in coastal and marine ecosystems
- Strong skills in analysis and evaluation, and experience in wetland restoration projects
- Ability to produce high quality reports, publications in English