

# Terms of reference



Empowered lives.  
Resilient nations.

## GENERAL INFORMATION

**Title:** Consultant for *Developing Concept of Innovative Industry 4.0 Technology for Industrial Sewage and Water Waste Management and Monitoring*

**Project Name:** Reducing Releases of Polybromodiphenyl Ethers (PBDE) and Unintentional Persistent Organic Pollutants (UPOPs) Originating from Unsound Waste Management and Recycling Practices and the Manufacturing of Plastics in Indonesia

**Duty Station:** Home based

**Expected Places of Travel (if applicable):** Bandung, Karawang, Purwakarta

**Duration of Assignment:** 45 days within 4 months

## REQUIRED DOCUMENT FROM HIRING UNIT

<input checked="" type="checkbox"/>	TERMS OF REFERENCE
4	<b>CONFIRMATION OF CATEGORY OF LOCAL CONSULTANT, please select:</b> (1) Junior Consultant (2) Support Consultant (3) Support Specialist (4) Senior Specialist (5) Expert/ Advisor <b>CATEGORY OF INTERNATIONAL CONSULTANT, please select:</b> (6) Junior Specialist (7) Specialist (8) Senior Specialist
<input checked="" type="checkbox"/>	APPROVED e-requisition

## REQUIRED DOCUMENTATION FROM CONSULTANT

<input checked="" type="checkbox"/>	CV
<input checked="" type="checkbox"/>	Copy of education certificate
<input checked="" type="checkbox"/>	Completed financial proposal
<input checked="" type="checkbox"/>	Completed technical proposal: Sample of the report(s) which is previously conducted by the applicant and written test result

### Need for the presence of IC consultant in office:

- ☒ partial (project related meeting/workshop)  
☐ intermittent (explain)  
☐ full time/office based (needs justification from the Requesting Unit)

### Provision of Support Services:

Office space: ☐ Yes ☒ No

Equipment (laptop etc): ☐ Yes ☒ No

Secretarial Services ☐ Yes ☒ No

If yes has been checked, indicate here who will be responsible for providing the support services: N/A

Signature of the Budget Owner:

## I. BACKGROUND

On 28 September 2009, Indonesia ratified the Stockholm Convention on *Persistent Organic Pollutants (POPs)*. In order to address the issues of POPs in Indonesia, UNDP and the Ministry of Industry (Mol) are working together to implement “Reducing Releases of PBDEs/UPOPs in Plastic Manufacturing, Recycling and Unsound Waste Management” (or PBDEs-UPOPs Project). The project aims to assist the country to reduce the release of Polybrominated Diphenyl Ethers (PBDEs), toxic flame retardant, and Dioxin and Furans (PCDD/Fs), Unintentional POPs (UPOPs) by-products, as well as to strengthen sound management of chemicals and waste meant to protect human health and environment.

Under the coordination of UNDP and Mol, the project is:

1. Strengthening the national policy and regulatory framework to reduce UPOPs and PBDE releases from plastics manufacturing, recycling and disposal practices;
2. Reducing or eliminating the import and use of PBDE in plastic manufacturing;
3. Reducing UPOPs and PBDEs from unsound plastics recycling;
4. Reducing releases of UPOPs and PBDEs from unsound plastic disposal practices;
5. Undertaking monitoring, learning, adaptive feedback, outreach and evaluation.

Since major manufacturing industries, intentionally or unintentionally producing POPs or PBDEs, discharge their waste into sewage system, river is likely to become the most damaged environment. They produced wastewater degraded living and non-living objects in the river environment.

Considering this critical issue, it is important for the project to search innovative technology for industrial sewage and water waste management. Innovative technology should be developed and applied to achieve sustainable industry development. Therefore, the project is planning to hire a Consultant for *Developing Innovative Technology on Wastewater Management based on Industry 4.0*. The consultant need to undertake a research on the existing technology used for industrial sewage treatment and management, the reason why industries are reluctant to develop and install appropriate technologies to assure industrial waste treatment in accordance with the existing standards and provide the recommendation of appropriate technologies 4.0 for better water waste management.

### OBJECTIVES

In close coordination with UNDP and Mol, the consultant is requested to develop concept of innovative industry 4.0 technology for industrial sewage and water waste management and monitoring.

## II. SCOPE OF WORK, ACTIVITIES, AND DELIVERABLES

### SCOPE OF WORK

Under the supervision of UNDP, Mol and PMU, the Individual Consultant is required to carry out these following activities:

1. Conduct a desk study concerning the 4.0 technologies for treatment and monitoring the industrial sewage and water waste
2. Review the existing technologies that have been applied for industrial sewage and water waste treatment and monitoring in Indonesia
3. In coordination with UNDP, Mol, PMU and donor, the consultant is to conduct field visit and observe the situation in the field.
4. Observe and analyze the issues and gaps on the implementation of existing technologies in industrial sewage and water waste management and monitoring, especially in Citarum Watershed that will be addressed by survey and qualitative data collection through a survey at minimum 3 (three) industries located in Citarum Watershed (in Bandung and Karawang).
5. Develop and submit a draft of report concerning the methodology (approach) that has been planned and implemented.

Provide recommendations on an appropriate 4.0 technologies for management and monitoring of industrial sewage and water waste.

**Expected Outputs and deliverables**

<b>Deliverables</b>	<b>Estimated number of working days</b>	<b>Completion deadline</b>	<b>Review and Approvals Required</b>
1. Work Plan and Methodology (Approach) to conduct the activities.	2 days	6 December 2018	Programme Officer/NPM
2. Desk Study on: 2.1 Technical analysis on the 4.0 technologies for treatment and monitoring the industrial sewage and water waste. 2.2 Analysis on the existing technologies that have been applied for industrial sewage and water waste treatment and monitoring in Indonesia.	6 days	20 December 2018	Programme Officer/NPM
3. Survey and qualitative data collection in minimum three (3) industries located in Citarum Watershed: 3.1 Site selection in coordination with UNDP, Mol, PMU and donor, including one time travel to Jakarta for consultation. 3.2 Field visit: data collection and simulation. 3.3 Development challenges. 3.4 Issues and barriers on the implementation of the technologies applied on industrial sewage and water waste management in Citarum Watershed.	17 days	20 Jan 2019	Programme Officer/NPM
4. Draft of Report that contains: 4.1 Work Plan. 4.2 Methodology. 4.3 Desk study. 4.4 The results of survey and assessment concerning the development challenges, issues and barriers. 4.5 Recommended actions.	13 days	19 Feb 2019	Programme Officer/NPM
5. Final report (the submitted report is in English. All raw data should be provided in flash disk), one time travel to Jakarta for report submission/presentation.	7 days	7 Mar 2019	Programme Officer/NPM
Total	45 days		

### III. WORKING ARRANGEMENTS

#### **Institutional Arrangement**

- a) Head of BPPI Ministry of Industry as National Project Director (NPD) and National Project Manager (NPM) will directly supervise the Expert, and he will be directly responsible to, reporting to, seeking approval/acceptance of output from NPD, NPM and Programme Manager UNDP.
- b) The PBDEs&UPOPs Project Management Unit (PMU) will be responsible for liaising the consultant to provide all relevant administrative and financial support to provide documents, set up stakeholder interviews and arrange field visit (if needed) for the completion of the work.
- c) The expected frequency of the reporting is as stated in the Expected Deliverable mentioned above.

#### **Duration of the Work**

- a) Duration of work is 45 working days from December 2018 to March 2019.
- b) Expected starting date is on December 2018 and expected completion of work is on March 2019.
- c) Unforeseen delay will be further discussed by UNDP as a basis for possible extension.
- d) Feedback from UNDP and government partners to the submitted report can be expected within 10 working days from the date of submission.

#### **Duty Station**

- a) The consultant's duty station will be home based.
- b) The consultant is working on the output based, thus no necessary to report or present regularly.

### IV. REQUIREMENTS FOR EXPERIENCE AND QUALIFICATIONS

#### **Academic Qualifications:**

Master's degree in Industrial engineering or Mechanical or Environmental Engineering or other relevant field of study with minimum 5 years of working experiences

#### **Years of experience:**

- Having minimum 5 years working experiences on water waste management and monitoring;
- Having research experiences on industrial sewage and water waste;
- Working with government, industrial, and private sectors regarding research on water waste.

#### **Competencies and special skills requirement:**

- Good knowledge on 4.0 technology
- Good knowledge on industrial sewage and water waste
- Confidence and comfortable to communicate with government officials particularly from Ministry of Industry
- Proven track record of experience in facilitating group discussion, and skills in consulting with various stakeholders such as associations, industries, government institutions

### V. EVALUATION METHOD AND CRITERIA

Individual consultants will be evaluated based on the following methodologies:

#### **Cumulative analysis**

When using this weighted scoring method, the award of the contract should be made to the individual consultant whose offer has been evaluated and determined as:

- a) responsive/compliant/acceptable, and
- b) Having received the highest score out of a pre-determined set of weighted technical and financial criteria specific to the solicitation.

\* Technical Criteria weight; 60%

\* Financial Criteria weight; 40%

Only candidates obtaining a minimum of 60 point would be considered for the Financial Evaluation

<b>Criteria</b>	<b>Weight</b>	<b>Maximum Point</b>
<u>Technical</u>		
Criteria A: qualification requirements as per TOR: 1. Master's degree in Industrial engineering or Mechanical or Environmental Engineering or other relevant field of study with minimum 5 years of working experiences 2. Having minimum 5 years working experiences on water waste management and monitoring; 3. Having research experiences on industrial sewage and water waste; 4. Working with government, industrial, and private sectors regarding research on water waste.	40%	10  10  10  10
Criteria B: Brief Description of Approach to Assignment  1. Understands the task 2. Important aspects of the task addressed clearly and in sufficient details. 3. Planning logical, realistic for the efficient project implementation.	60%	25  20  15
• <i>Criteria C: Further Assessment by Interview (if any)</i>	N/A	