



Terms of Reference (ToR)

For

Ambient water quality testing of 6 cities

1. Introduction and background

SNV Netherlands Development Organisation is a not-for-profit international development organisation that makes a lasting difference in the lives of people living in poverty by helping them raise incomes and access basic services. We focus on only three sectors (Agri-food, Energy and Water) and have a long-term, local presence in around 24 countries in Asia, Africa and Latin America. Driven by the Sustainable Development Goals, we are dedicated to a society in which all people are free to pursue their own sustainable development, and no one is left behind. This commitment to equity directs us to focus on gender and youth. For more information, please refer to our website: www.snv.org.

Over the past 9 years, Urban Sanitation programme of SNV has successfully developed a multi stakeholder coordination mechanism at the local level under the leadership of Local Government Institutions, bringing together local authorities, utility, national agencies, universities, private sector, and civil society around urban sanitation to achieve SDG goal and make institutionalization of FSM. Now, SNV Bangladesh has been focusing on urban water cycle and implementing a project titled '**Transitioning to sustainable urban water cycles in Bangladesh**' under water sector. The objective of this project is to contribute to the health and wellbeing of around 1.8 million people in 12 cities (8 Municipalities and 4 city corporations) by increasing their access to safe essential urban services (sanitation, solid waste, stormwater management) and by improving the cleanliness of their living environment.

The specific aim of the project is to support cities to address service delivery challenges in solid waste management (SWM), faecal sludge management (FSM), flood & drought management (F&DM) and advance the sector development as a whole, through strategic engagement with Government Agencies and partnering with other experienced civil society and private sector organisations working in the sector.

The water sector consists of 6 components:

1. Governance, regulations and enforcement;
2. Finance and Investment
3. Behavioural change communication;
4. Service provision
5. Treatment and circularity
6. Flood and drought management

Under the 6th component (flood and drought management), the project will measure the quality of wastewater from drainage outfall of all cities during baseline, midterm and end line.

Objective of the test:

One of the objectives of this project is to contribute to the health and well-being of around 1.8 million people in 12 cities by improving the cleanliness of their living environment. Good ambient water is one of the indicators of clean-living environment. So, the project will measure the ambient water quality at baseline, midterm and end line to observe the changes of ambient water.

2. Methodology

Sample selection criteria:

Surface water (River): The sample will be collected according to the following criteria-

- Minimum 1 km downstream from the drainage outfall/point of pollution
- Minimum three samples should be taken across the width at different depth of the river.
- If there is no significant variation between the samples then the sample can be taken at mid-stream or at the most convenient point of the river cross-section
- The sampling point will be prioritized based on the level of pollution of the point of pollution/drainage outfall
- The sample should not collect during flood/heavy rainfall/other natural calamities which have a great impact on water quality
- In case of one sample (due to budget, time limitations), the most downstream point should be selected for sampling.

Surface water (Lake, pond): The number and locations of sample collection points in lakes and ponds depend on the lake's size and morphology. However, the sample collection will be selected according to the following criteria-

- If a lake is small and well-mixed, one sampling location near the centre or at the deepest part of the lake may be adequate.
- If a lake has multiple basins, as shown in Figure 1, a monitoring location may be required within each basin.
- For the large, single-basin lake, four monitoring locations, one in each homogeneous sector, may be adequate.
- The large multi-basin lake has a monitoring location in each of the distinct basins
- And the small lakes along a river course have a monitoring location in each lake

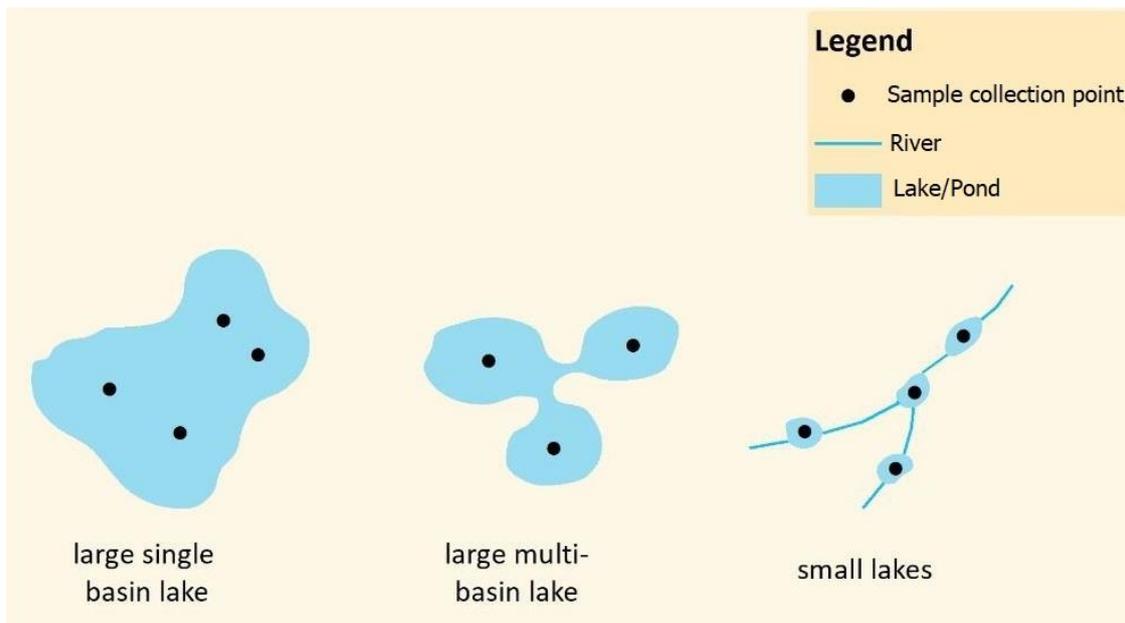


Figure 1: Sample collection mechanism from lake/pond

Groundwater:

Samples of groundwater can be taken from existing wells supplying water for domestic, municipal, irrigation or industrial uses, from springs or from purpose-built monitoring wells. Each has advantages and disadvantages with respect to practicality, cost and technical aspects. Considering the municipal context, the sample should be taken from municipal and domestic well.

According to the above-mentioned criteria, SNV will select the sample collection point by discussing with the concerned Paurashava or City Corporation. After selecting the sample collection point, the consultant/institute/agency will collect samples by their own arrangement according to the standard sample collection method.

Sample selection procedure:

- At first, all surface water bodies (lake, pond) will be listed with detailed information like GIS location, area and volume of water according to GIS data.
- Then the listed water bodies will be prioritized based on the volume of water, density of HH around the water body and level of pollution.
- The density of HH around the water body will be observed by Google Maps.
- The level of pollution will be observed by physical visit.
- For the river and Khal, one sample must be collected from downstream.
- Another two points could be selected from the upstream and midpoint of the river but it will depend on the context.
- For groundwater, the sample will be collected from municipal service tube wells of different depth.
- In absence of municipal service tube well, the groundwater sample will be collected from different depth community/individual tube well.

Testing parameters:

According to SDG 6.3.2 (level-1), the following parameters need to be tested for ambient water-

Serial no	Parameters	Unit	River	Lake/Pond	Groundwater
1.	Dissolved oxygen (DO)	Milligram/litter (mg/l)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.	BOD ₅		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3.	COD		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4.	Electrical conductivity	Siemens per meter [S/m]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5.	Nitrate (NO ₃)	Milligram/litter (mg/l)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6.	Nitrite (NO ₂)		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7.	Orthophosphate		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8.	pH	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Testing method: The parameters which are possible to test at the field, should be tested at field. Other parameters will be tested in any public university Lab test. The parameters with possible testing method are listed below-

Serial no	Parameters	Unit	Testing method
1.	Dissolved oxygen (DO)	Milligram/litter (mg/l)	Field test
2.	BOD ₅		Lab test
3.	COD		Lab test
4.	Electrical conductivity	Siemens per meter [S/m]	Field test
5.	Nitrate (NO ₃)	Milligram/litter (mg/l)	Lab test
6.	Nitrite (NO ₂)		Lab test
7.	Orthophosphate		Lab test
8.	pH	-	Field test

3. Scope of Work

SNV Bangladesh is looking for a renowned consultancy firm/institute/agency to measure the above-mentioned parameters. Sample collection, transportation, processing (if required), Lab test and other related activities are included with this assignment.

Out of 12, we have already tested the ambient water of 6 cities. The rest 6 cities need to be tested. Primarily, 9 samples per selected city are considered but this number could be increased or decreased according to the city context. The breakdown of nine samples and the selected cities are listed below-



Serial No.	Paurashava/ City Corporation	District	No. of samples (River/ Cannel)	No. of samples (Lake/ Pond)	No. of samples (GW)	Total sample
1.	Rajshahi City Corporation	Rajshahi	3	3	3	9
2.	Sylhet City Corporation	Sylhet	3	3	3	9
3.	Chapai Nawabganj Paurashava	Chapai Nawabganj	3	3	3	9
4.	Joypurhat Paurashava	Joypurhat	3	3	3	9
5.	Bagerhat Paurashava	Bagerhat	3	3	3	9
6.	Kushtia Paurashava	Kushtia	3	3	3	9
Total=			18	18	18	54

4. Deliverables

The consultancy firm/institute/agency will produce the following deliverables of acceptable quality:

1. Details of sample collection
 - *GPS locations of sampling point*
 - *Date of sampling*
 - *Time of sampling*
 - *Climatic conditions during sampling*
 - *Method of sampling*
 - *Preservation procedure etc.*
2. Details of field and Lab test
 - *Details of field kit*
 - *Field testing procedure*
 - *Lab testing procedure*
3. All test reports
4. Photos of all activities

5. Consultant and SNV responsibilities

The consultancy firm/institute/agency will be responsible for organising all logistics, transport, sample collection equipment, sample preservation (if required), Laboratory test and analysis, necessary meetings and all activities required to conduct the assignment.

SNV will collect necessary secondary documents like GIS data and city maps if available. After collecting the data, SNV officials will visit every city in person and select the sample collection point according to the above-mentioned methodology and by discussing with the concerned officials of paurashava and city corporation.

When the consultancy firm/institute/agency will go to the cities for sample collection, a validation/sharing meeting will be held with the concerned Paurashava/City Corporation before going to take sample. SNV will communicate with the cities for the meeting, both SNV and the representatives of the consultancy firm/institute/agency will attend the meeting.

6. Timeframe

The total duration of the assignment will be for **4 weeks after signing of the contract**. Commencement of the services is expected by **last week of January 2024**.

7. Qualifications for the assignment

Any consultancy firm/institute/agency who has demonstrated expertise and ability to address all aspects of the scope of work can apply. Work experience with faecal sludge and wastewater testing with own

Laboratory setup will get preference. Minimum 2 years' experience in sample collection & testing activities is desirable.

8. Selection criteria:

Criteria	Score
Technical capacity (laboratory setup, technicians etc.)	30
Relevant experience	20
Financial proposal	50
Total=	100

9. Payment Scheme

The payment will be done based on the deliverables following below table:

SNV will make payments in compliance with the rules of Bangladesh Government.

Payment will be made to the agreed account based on the receipt of invoice after the successful completion of each of the following phases of the assignment:

Instalment	Deliverable	Percentage of payment
1 st instalment	Outline of the assignment	30%
2 nd instalment	Draft report	30%
Final payment	Final report	40%

9. Applications

Interested applicants are requested to apply with the below-listed documents to qualify. Any incomplete applications will not be considered.

- Maximum two-page capacity statement convincing on the ability to complete the scope of work with quality.
- Sample collection and Laboratory testing plan
- Budget sheet showing total costs needed to successfully implement the assignment including travel, HR, logistics, materials, VAT-TAX, etc.
- SNV Due Diligence Self Declaration form and annexes including trade license, BIN registration certificate and TIN certificate.

The electronic copy of the application duly signed should be submitted to bangladesh@snv.org with the subject line: **Ambient water quality testing of 6 cities** no later than 3 p.m. (local time) on **21 December 2023**

For any query related to the ToR, please email **Md. Sumon Ali, Sanitation Engineering Advisor** Email: sali@snv.org to keep CC bangladesh@snv.org.

[Click here- SNV Due Diligence Self-Declaration form and annexes](#)

Annex
Sample budget sheet for ambient water quality test

S.N	Parameter	Unit	Qty	Rate	Amount
A. Sample collection					
1	Sample collection, transportation from Sylhet	nos			
2	Sample collection, transportation from Rajshahi	nos			
3	Sample collection, transportation from Kushtia	nos			
4	Sample collection, transportation from Bagerhat	nos			
5	Sample collection, transportation from Joypurhat	nos			
6	Sample collection, transportation from Chapai Nawabganj	nos			
Sub Total (A)					
B. Test					
7	Dissolved oxygen (DO)	Sample			
8	BOD ₅	Sample			
9	COD	Sample			
10	Electrical conductivity	Sample			
11	Nitrate (NO ₃)	Sample			
12	Nitrite (NO ₂)	Sample			
13	Orthophosphate	Sample			
14	pH	Sample			
Sub Total (B)					
Total (A+B) including all					