

Pollution Control Board, Assam Bamunimaidam, Guwahati-21


No. WB/LAB-319/19-20/151

Dated Guwahati, the 25th Jan, 2020

Expression of Interest

Pollution Control Board, Assam intends to engage reputed Educational & Research Institute recognized by State and Central Government for carrying out the Source Apportionment and Emission Inventory Study for Guwahati City and Sivasagar Town and prepare strategy for Cost-effective measure for abatement of air pollution in these towns.

Interested institutions may submit the Expression of Interest (EOI) by providing the required information as per prescribed format, which is downloadable from the website of the Board viz. <http://www.pcbassam.org>. Last date for submission of EOI is 10-02-2020.


Member-Secretary

Memo No. WB/LAB-319/19-20/151-A
Copy to :

Dated Guwahati, the 25th Jan, 2020

- 1) The APS Advertising Pvt. Ltd. for information & necessary action. They are requested to publish the 'Expression of Interest' notice immediately in one issue of the 'The Assam Tribune'/'The Telegraph' and submit the Bill in duplicate to the undersigned for necessary payment.
- 2) Prof. Sharad Gokhale, Nodal Faculty for NCAP, Department of Civil Engineering, IIT Guwahati, Guwahati-39 for information.
- 3) The Incharge, Central laboratory, Pollution Control Board, Assam for information.
- 4) The Head of IT Division, Head Office, PCBA to upload the 'Expression of Interest' notice along with Eoi document in the Board's website.
- 5) The Accounts Branch of the Board for information & necessary action.
- 6) The Notice Board of Pollution Control Board, Assam.
- 7) The Concerned file.


Member-Secretary

Swigil (APD)
Maditha mughal
25/1/2020

EXPRESSION OF INTEREST (EoI) DOCUMENT

FOR

**ENGAGEMENT OF REPUTED EDUCATIONAL AND RESEARCH
INSTITUTIONS**

FOR

SOURCE APPORTIOMENT AND EMISSION INVENTORY STUDY

FOR

GUWAHATI CITY AND SIBSAGAR TOWN IN ASSAM



POLLUTION CONTROL BOARD, ASSAM
BAMUNIMAIDUM, GUWAHATI – 781 021, INDIA

GUIDANCE DOCUMENT FOR THE EDUCATIONAL AND RESEARCH INSTITUTIONS FOR SUBMISSION OF EXPRESSION OF INTEREST (EOI) FOR SOURCE APPORTIONMENT AND EMISSION INVENTORY STUDY IN ASSAM

Objective and Scope of Work

1. Background:

Hon'ble National Green Tribunal (NGT) in its order dated 08-10-2018 has directed the State Government to constitute Air Quality Monitoring Committee (AQMC) and AQMC to prepare appropriate action plans for all the five non-attainment cities/towns of Assam to bring the standards of air quality within the prescribed norms. Pollution Control Board, Assam has prepared Air quality action plan for all the five non-attainment city/town viz. Guwahati, Nalbari, Nagaon, Silchar & Sivasagar in association with the Transport, Municipal Affairs, Agriculture, Industries & Commerce department of Govt. of Assam and has submitted to CPCB for approval. The three member committee as per direction of NGT has examined the city action plan of Guwahati, Nagaon, Nalbari, Sivasagar and Silchar on October 01, 2019 and has recommended the city action plan submitted by PCBA and finally Chairman, CPCB has approved the city action plan for Guwahati, Nagaon, Nalbari, Silchar & Sivasagar for grand implementation with immediate effect.

Three Member committee has suggest that AQMCs should duly address the issues like Emission Inventory, Source Apportionment and carrying capacity assessment on Vehicular pollution Industrial Emission, Population density, Construction activities so that city remain air quality compliant in future.

It has also been mandated by Hon'ble National Green Tribunal (NGT) that action plan shall include components like identification of sources and its apportionment considering sector like vehicular Pollution, Industrial Pollution, Dust Pollution, Construction activities, garbage burning etc.

Accordingly, it has been envisaged in comprehensive Action Plan for clean air for non-attainment city/town of Assam to carry out one emission inventory and source apportionment study for each of non-attainment city/towns in two phase.

- | | | | |
|-----|----------|---|---------------------------|
| i) | Phase I | - | Guwahati & Sivasagar |
| ii) | Phase II | - | Nagaon, Nalbari & Silchar |

1.1 Objective of the Study

Since, air quality in urban centers are affected by a variety of complex sources, detailed scientific studies are required for identification of major sources, assessing their contributions to urban air pollution and suggest mitigation measures taking into consideration the techno-economic feasibility and other social factors. Accordingly, this study has been initiated to promote and demonstrate a more rational & proactive approach to air quality management in urban areas.

The objectives of the study are:

- To profile Ground Level Concentration (GLC) of air pollutants in different parts of the city *along with air shed of the city* including background, residential, commercial/mixed areas and source specific “hot spots” viz. kerbside/roadside, industrial zones, etc.
- To select “Emission Factors” (EF) for different categories of vehicles with due consideration to variations in fuel quality, technology, size and vintage of sources, control systems, etc.
- To select appropriate emission factors for other non-vehicular sources viz. industries, industrial & domestic fuel combustions, roadside dust, construction activities, generator sets, etc.
- To prepare inventory for different air pollutants, their emission rates & pollution loads from various sources along with spatial and temporal distribution in the city *including its air shed* covered under this project.
- To profile the source emission characteristics of different possible sources.
- To conduct source apportionment studies for PM10 and PM2.5 and prioritize the source categories for evolving cost-effective air pollution mitigation strategies/plans.
- To assess the impact of sources on ambient air quality under different management/interventions/control options and draw a roadmap of short term and long term measures as considered appropriate and cost effective to ensure “Cleaner air in urban areas”.

1.1 Scope of the Project

The proposed study is being executed under *Comprehensive Action Plan for Clean Air for Non-attainment Cities of Odisha*. Since, implementation of same interventions in two cities having different meteorology, topography and different typology of air polluting sources is unlikely to give same results, the choice of interventions to control urban air pollution has to be city- specific, drawn on the basis of scientific study with adequate & representative set of quality data/information.

The scope of the study shall focus on following:

- The overall project scope includes city-specific air quality monitoring, complete characterization of ambient dust (PM10 and PM2.5), emission inventory, source profiling, source apportionment using dispersion & chemical mass balance models.
- To address all the expected anthropogenic emission sources in urban areas, it is planned to include many non-criteria pollutants in the study for understanding the extent of problem and comparison with earlier database. The major air pollutants covered in this project include PM₁₀, PM_{2.5}, SO₂, NO_x, CO, Benzene, THC & PAH.
- The ambient air monitoring will be carried out over a period covering all three seasons in a year to get representative data on seasonal variations in meteorology as well as activities that have bearing on air quality. The purpose of ambient air quality monitoring is not compliance verification. Therefore, it is proposed to carry out continuous monitoring for one month in each season for three seasons covering the whole year at all the monitoring locations.
- Air monitoring stations will be installed at locations such as kerbside, residential, industrial and background (away from all the sources and in upwind direction). Each city will have *at least five to seven* air monitoring stations. However, the number of monitoring stations can be extended to more depending upon the activity profile of a particular city.

- In order to catch the diurnal variations of sources as well as the typical meteorological changes, it is proposed to conduct 8-hourly monitoring (06.00 to 14.00s, 14.00-22.00, 22.00-06.00 hrs.) in a day. The sampling shall be done continuously for 30 days in a season. Thus for three seasons there would be 90 sampling days. Thus, total 90 sampling days would cover the all days of week to give a fair representation of three seasons of a year.
- Monitoring of meteorological parameters would be carried out simultaneously at each station at same height of ambient air monitoring to ensure proper representation of the activities of the surrounding area for a given monitoring location. Additional meteorological data for the study period will also be collected from India Meteorological Department (IMD).
- A detailed emission inventory would be carried out for *line*, *point* and *area* sources. Data on emission inventory, available through secondary sources, will be collected. Besides, primary surveys shall be carried out for identification & spatial distribution of sources and preparation of detailed emission inventory for zone of influence (2km x 2km area) around each ambient air quality monitoring location. City level emission inventory, available through secondary sources, shall be refined based on the data generated through primary surveys carried out within the zone of influence around each monitoring location.
- In order to get a wider cross section of vehicles in-use or on-road and the actual distance traveled by each sample vehicle, inspection & maintenance practices being adopted etc., a systematic survey of vehicle population will be undertaken in the city. Also, special emphasis will be laid on the emissions from vehicles of pre Euro/India 2000 for assessing cost-effective solutions as these represent major segment in total vehicle population.
- Emission factors developed by ARAI for each representative vehicles considering vehicle technology, age, fuel, traffic conditions and prevailing Inspection & Maintenance practices including influence of fuel quality with or without tail pipe treatment, will be used for estimating vehicular emission.
- Emission inventory of industrial and other sources will be prepared though secondary sources. Primary surveys may be also being conducted to crosscheck and validate the secondary data.
- With regard to emission factors for point sources, firstly the database available on emission characteristics with Pollution Control Boards and other sources (particularly for small-scale industries) would be scanned. For area sources, certain database generated in a few US-EPA studies (for India, Bangladesh and other countries of the region) would also be reviewed. For other source types, for which information is not available, the factor developed by US-EPA, EU, WHO would be scanned and then their normalization for Indian conditions have to be done.
- The Emission inventory (EI) data will be analyzed using appropriate technique like IPIECA tool, IVE model or other equivalent technique being used by reputed organizations like CARB, US EPA or EPEFE.
- Source apportionment analysis will be carried out for PM10 and PM2.5 using receptor model like CMB model. For this purpose, detailed analysis of PM10 and PM2.5 will be carried out.
- *The study on source profiling of various polluting sources in Indian context will be considered to be used as input to CMB model for source apportionment study.*

- With regard to dispersion modeling and intervention analysis, refined city-level emission inventory will be used.
- On completion of data collection, validation and interpretation of the assimilated information, a detailed road map will be drawn considering all possible measures for air quality improvement. These measures will be classified into short and long term with due priority to low cost measures that give maximum benefits.

1.2 Study Framework

The framework of the proposed for the SA & EI study is shown as Fig. 1

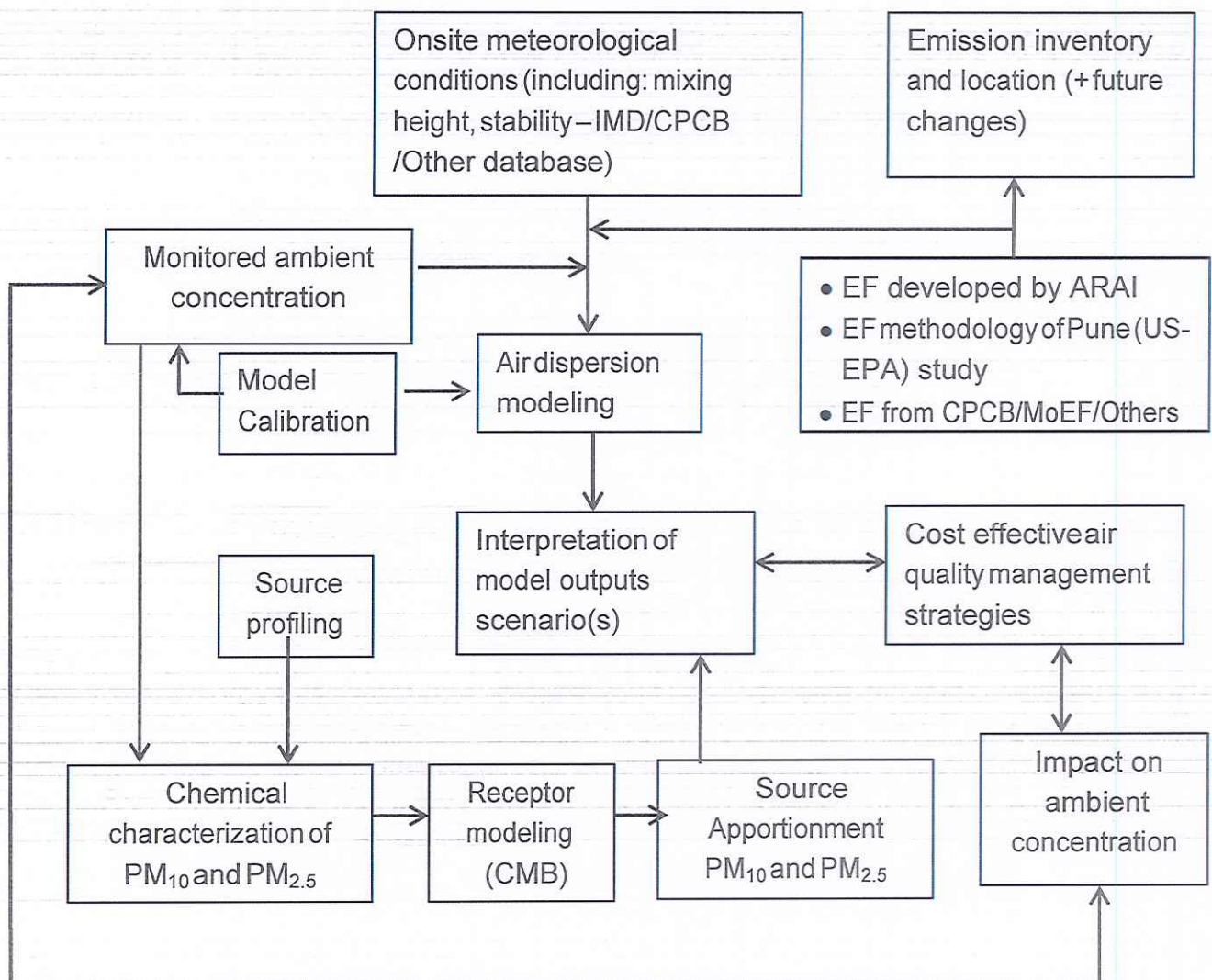


Fig. 1: The framework proposed for the SA & EI study

1.3 Expected deliverables of the assignment

Each assignment shall be for a period of 18 months and the delivery schedule shall be as follows:-

1. Interim Report after completing field visits and monitoring of environmental parameters- 15 months
2. Draft final report - 17 months
3. Final report after incorporating modifications suggested by the Board - 18 months

2.1 Area details:

The study area shall be the city/ municipal limit of respective city and including its air shed.

3.1 Instruction to reputed educational and research institution

- Reputed educational and research institutions are requested to submit Expression of Interest (EOI) for carrying out the proposed study of “**Source Apportionment and Emission Inventory (SA & EI) Study for Guwahati City & Sivasagar Town In Assam**”. The EOI shall indicate their interest in carrying out SA & EI and measures for cost effective abatement of air pollution in the study area.
- Interested educational and research institutions may submit the Expression of Interest (EOI) by providing required information as per the **prescribed format**, which is downloadable from the Website: www.pcbassam.org/tender.html of Pollution Control Board, Assam.
- The EOI filled in as per the prescribed format and supported with relevant documents must reach the Office of Member Secretary, Pollution Control Board, Assam, Bamunimaidum, Guwahati-781 021 on or before 21-12-2019, 5.00 P.M. The envelope must be clearly superscripted as “**EXPRESSION OF INTEREST FOR SOURCE APPORTIOMENT AND EMISSION INVENTORY STUDY FOR GUWAHATI CITY and SIVASAGAR TOWN IN ASSAM**”. The EoI can also be submitted through Registered Post/ Speed Post. But the authority shall not be held responsible for any postal delay for non-receipt of EoI within scheduled date and time.
- The PCB, Assam reserves the right to reject any or all EoIs without assigning any reasons thereof.
- The EoIs will be evaluated by an Evaluation Committee (EC) constituted for the specific purpose. The scores will be assigned to the response of each institution based on the weightage assigned to each of the criteria in EoI (please refer **section-3.1**). The weightage criteria will be followed as per following **Table-I**.

Table-1: The scoring criteria

The scoring criteria	SI No	Sub Criteria	Marks	Total Marks
Past Experience of the Institute	1.	Past experience of studies of similar nature	36	
	2.	Sector Past experience of studies in related sector	18	
	3.	Studies carried out in India	06	
	Total			
Experience of Key Personnel	1.	Qualification	07	
	2.	Relevant Experience	18	
	Total			
Facility available for conducting such studies	1.	Rating of the educational and research institution	15	
	Total			
Grand Total Marks				100

- The assignment of marks within each criteria and final qualifying marks will be decided by the Evaluation Committee
- The shortlisted educational and research institutions for final selection process will be called for submission of technical and financial bids through Request for Proposals (RFPs)

3.2 Eligibility/ prequalification Criteria of shortlisting educational and research institution

- Educational or research institute like University, IIT, NIT or CSIR laboratory or any other similar institutions recognized by Govt. of Assam / Govt. of India
- The institution must have similar type of experience in conducting Source Apportionment & Emission Inventory (SA & EI) or other such Air Pollution Control related and metrological studies
- The institution should have capacity to undertake all type of measurement on atmospheric phenomena, Climate and weather monitoring facility survey of area, modeling studies and other related measurement towards execution of the project.
- The institutions should have qualified & experienced Scientist/Engineers/ Meteorologists/ Atmospheric Experts, Surveyor etc. to conduct the field work as well as preparation of SA & EI. The educational qualification of functional experts, area of specialization and technical skill, experience and expertise in relevant field will be criteria for selection of institution.

4.1 Format for submission of Expression of Interest (EoI) for Source Apportionment and Emission Inventory Study in Guwahati City and Sivasagar Town in Assam

Name of the Educational /Research Institute				
Year of Registration/ Incorporation/ Establishment of the Institute				
Address of communication				
Phone	Fax	E-mail	Website	
Core area of specialization (✓ in appropriate box)		<input type="checkbox"/> Meteorological and tropical weather study <input type="checkbox"/> Climatological studies <input type="checkbox"/> Source Apportionment and source profiling Study <input type="checkbox"/> Industrial Process Analysis <input type="checkbox"/> Emission Inventory Study <input type="checkbox"/> Analysis and evaluation of air pollution models <input type="checkbox"/> Any other similar studies		
Key persons for above areas of specialization (Pls enclose separate sheets if space provided is inadequate)				
Name	Highest Educational qualification	Area of specialization	Experience	Year of association with the institute

Project executed by the Institute on Source Apportionment, Emission Inventory, study (during last ten years) (Pls enclose separate sheets if space provided is inadequate)

Name of the project	Description of project	Name of the Client	Date of completion / Or on going

The Bio-data of the principal investigator of the above projects and research papers published in peer reviewed journals.

Details of facility available to conduct such type of studies (please present brief description of offices, laboratory etc.)

I hereby declare that the above information is true to the best of my knowledge and I am authorized by my firm to fill up and submit on its behalf.

Authorized Signatory

To

The Member Secretary,
Pollution Control Board, Assam,
Bamunimaidum, Guwahati-781021

**Sub: Expression of Interest for engagement “Source Apportionment And
Emission Inventory Study for Guwahati City And Sivasagar Town In
Assam”**

Sir,

I/ We do submit herewith our EoI in prescribed format in sealed cover as per
requirement for the above stated study.

Yours faithfully,

Signature_____

Name_____

Designation_____

Institution Name, Seal

& Address _____
