Terms of References (ToR)

For

Feasibility assessment for installing early warning system on flood/water logging through IoT measures at Thane Municipal Corporation, Maharashtra under the project ‘Accelerating climate actions through the promotion of Urban Low Emission Development Strategies (Urban-LEDS II)’

About the project

Thane Municipal Corporation and ICLEI South Asia are implementing a project on ‘Accelerating climate action through the promotion of Urban Low Emission Development Strategies (Urban-LEDS II)’ in Thane funded by European Commission with support from the UN Habitat as an implementing partner. This project aims to reduce greenhouse gas emissions and support implementation of climate actions at local level by the promotion of Urban Low Emission Development Strategies (Urban LEDS) in cities/towns of emerging economies (Brazil, Colombia, India, Indonesia and South Africa) and Least Developed Countries (Bangladesh, Lao PDR and Rwanda). This objective is aligned with the implementation of the Paris Agreement under the UNFCCC.

Background

Looking at the adverse impacts of climate change, there are growing concerns to reduce green house gas emissions worldwide. About 44% of India’s rapidly growing carbon emissions have urban origins, emanating from transport, industry, buildings and waste contributing towards climate change. Recently, Ministry of Housing and Urban Affairs, Government of India has launched “Climate Smart Cities Assessment Framework” to facilitate cities in understanding climate sensitive development.

Thane being one of the smart cities selected under the Smart Cities Mission of Government of India, has proposed many interventions for core infrastructure, clean and sustainable environment, and application of smart solutions. However at the same time, almost every year the city also faces disaster like situation during monsoons because of its geographical location, incidences of high intensity rainfall in a short duration, high tides, and gaps in capacity of available infrastructure at a number of locations. This situation impacts the city through disturbing traffic, business, public transport systems, and life of citizens’ especially urban poor, women and children. Prevention of loss of properties and saving human lives are tomost priorities of any local authority in such situations. Receiving early warnings

1 Source: https://smartnet.niua.org/csc/overview.php
of water logging/impending floods will help the local administration to reduce losses and react proactively to tackle the situation.

Introduction of Internet of Things (IoT) based solutions and dedicated platform that communicates with citizens can help tap into new opportunities to tackle adverse impacts of climate change and improve quality of life for citizens of Thane city. Thane Municipal Corporation (TMC) has already initiated such interventions e.g. the DigiThane platform is in place to provide civic updates, undertake awareness drives, and improves urban life of citizens. Hence, merging early warning system for water logging/flooding with IoT based application will increase the resilience of Thane city towards climate change.

In this regard ICLEI – South Asia seeks expert consultancy services (individual or organization) to conduct feasibility assessment of developing early warning system for water logging/flooding in Thane city through IoT based measures. The details of consultancy are mentioned in the following table.

**Details of the consultancy services:**

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Details</th>
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<tr>
<td>A</td>
<td>Task</td>
<td>Feasibility assessment for installing early warning system on flood/water logging through IoT measures at Thane Municipal Corporation, Maharashtra under the project ‘Accelerating climate actions through the promotion of Urban Low Emission Development Strategies (Urban-LEDS II) Location: Thane, Maharashtra state, India</td>
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| B       | Overall scope of the work | The scope of above mentioned task is sub-divided into three (3) parts as following:  
Part I: Selection of the sites  
Part II: Feasibility assessment for installing early warning system for flood/water logging through IoT measures  
Part III: Overall support for preparing working documents/designs, preparation of tender document, selection of service provider, supervision during implementation, monitoring after implementation, providing training to municipal officials and suggesting priority bankable projects with cost estimates for inclusion in Thane’s climate action plan. |
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<th>C</th>
<th>Description of the scope</th>
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### Part I: Selection of sites

**Description:** Thane city is characterized by high hills on one side and submersible marsh land along the Thane Creek, and Ulhas River bank on the other side. The geographical jurisdiction of the Thane city spreads over an area of 128.23 sq. km. Tributaries of Vaitarna and Ulhas River forms major drainage in the Thane district. Thane district is situated between the western ghats on eastern side and Arabian Sea coast on the western side. Overall climate is equable with high rainfall days during monsoon and high humidity throughout the year. The normal annual rainfall over the district ranges from 1900 mm to 2600 mm. Out of total rainfall, 80% rainfall is expected from June to October and humidity is 61-86%, making a humid-per humd zone. TMC is also working on storm water management plan and integrated nallah development program.

With this background, selected bidder has to undertake following steps while completing part I of the assignment:

1. Data collection for nallah catchments by TMC
2. Rainfall trend analysis
3. Review of existing plans and policies such as disaster management plan, flood mitigation plan, integrated nallah development program, lake rejuvenation plans etc.
4. Assessment of flooding/water logging events, identification of most vulnerable areas and short listing for detailed analysis
5. Selection of sites based on secondary data available with TMC and consultation with TMC officials, to estimate the runoff for selected locations and establishing baselines
6. Micro-catchment delineation for selected vulnerable areas, detailed analysis of the cause and recommendations

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2 City Development Plan, Thane Municipal Corporation, 2006
3 Ground water information: Thane district Maharashtra, Government of India, Ministry of water resources, Central ground water board, 2013
Part II: Feasibility assessment for installing early warning system for flood/water logging through IoT measures

Description: IoT measures have the potential to endorse low emission development in cities by breaking down barriers of distance and cost in the delivery of services and can result in greenhouse gas emission reductions. Hence in recognition of the critical role that IoT measures and smart city interventions will play, the selected bidder has to assess various technology options and select the best solution. The selected solution must be compatible to the Central Command and Control system of Thane Municipal Corporation and should solve the intended objective of the project.

Steps required to be undertaken while completing the part II of this assignment are as follows:
1) Review of various options available for early warning system for water logging/flooding through IoT measures and its infrastructure requirements.
2) Comparison and feasibility assessment of various solutions for the selected sites based on various aspects including technical, economical, environmental and social.
3) To assess compatibility of IoT measures with Central Command and Control system of Thane
4) Recommendations to select particular technology/tool/instrument (such as flood sensors, automatic rain gauge stations etc) for early warning system at potential water logging/flooding areas
Part III: Overall support for preparing working documents/designs/tender document/selection of service provider, supervision during implementation and monitoring

Description: The selected bidder has to provide handholding support and should prepare working documents/drawings/tender documents for engaging a work contractor and assisting ICLEI – SA and TMC to select a competent contractor/technology provider of early warning system(s) for water logging/flooding. Selected bidder should perform overall construction management/supervision and field level guidance during implementation of the selected system, which will be deployed as a pilot, along with monitoring of the same for providing intended results.

Steps required to be undertaken while completing part III are as follows:

1) Preparation of working documents/drawings/tender documents for engaging work contractor
2) Assistance in selection of work contractor and overall supervision during implementation of solutions and establishing links between central command and control center of TMC
3) Suggest and recommend various options to compare IoT results with best suitable manual method for pilot level implementation and actual monitoring
4) Training for the TMC officials for monitoring and evaluation/anticipation/prediction of water logging/flooding through installed systems to reduce reaction time and minimize impact on urban livelihood
5) Suggesting bankable projects with cost estimates for inclusion in the larger climate action plan being prepared for Thane city

Specific deliverables:

1) A report on baseline assessment and site selection (As mentioned in point ‘C’ – Description of scope, part I, points 1 to 6 of this document)
2) A report on feasibility assessment for installing early warning system for flood/water logging through IoT measures and review of existing systems (As mentioned in point ‘C’ – Description of scope, part II, points 1 to 4 of this document)
3) Tender document for pilot implementation based on
the selected site, technology etc. (As mentioned in point ‘C’ – Description of scope, part III, points 1 to 3 of this document)

4) Training material and program for TMC officials, suggesting bankable projects with cost estimates for the climate action plan of Thane city (As mentioned in section ‘C’ – Description of scope, part III, points 4 and 5 of this document)

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<th>Deliverables</th>
<th>Time line</th>
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<tr>
<td>1) A report on baseline assessment and site selection</td>
<td>Within one and half (1.5) months from the award of contract</td>
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<td>2) A report on feasibility assessment for installing early warning system for flood/water logging through IoT measures and review of existing systems</td>
<td>Within two and half (2.5) months from the award of contract</td>
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<tr>
<td>3) Tender document for pilot implementation based on the selected sites, technologies etc.</td>
<td>Within three and half (3.5) months from the award of contract</td>
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<td>4) Supervision during implementation and monitoring post implementation, training material and program for TMC officials, suggesting bankable projects with cost estimates for the climate action plan of Thane city</td>
<td>Within six (6) months from the award of contract</td>
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**F** Methodology

The consultancy will entail a combination of: comprehensive desk reviews and document analysis; baseline data collection and analysis, consultations with key stakeholders (if required), site visits, field work, presence in the meetings planned with decision makers/higher authorities of the Thane Municipal Corporation and ICLEI – South Asia.
The selection of a consultant (individual or organization) for the expert services will be quality based, depending on the technical bid and the financial bid submitted. Applicants must indicate the focus area(s) and sectors in which they have expertise to suit this assignment.

The consultant should have the following minimum qualifications and experience:

1) Master’s degree in a relevant discipline. PhD or additional advanced training will be a plus. Relevant disciplines include water resources/watershed, Civil/Environmental engineering or other related quantitative disciplines.

2) The consultant/team lead shall have demonstrated experience of minimum 15 years in the field of water resources/watershed/flood management for municipal services

3) The applicant must possess at least 5 similar assignments in past and able to show written proofs of the same. Experience in the field of watershed mapping, water resource management, disaster management, modeling of water systems especially storm water management, its design and implementation of water conservation and flood management measures will be considered.

4) The consultant shall demonstrate ability to effectively work and manage similar projects of consultancy

5) The consultant shall demonstrate strong understanding of the field related to this project and municipal services

6) The consultant shall have excellent communication skills in English (Hindi and Marathi are also preferred languages while interacting with municipal officials and key stakeholders)

7) The consultant shall have good interpersonal skills and knowledge of the field including government schemes and missions

8) The consultant shall have ability to collaborate with other team members across boundaries and contribute productively to the team’s work and output, demonstrating respect for different points of view. Able to use strong interpersonal and teamwork skills to cultivate effective, productive relationships and partnerships across organizational boundaries.
The selection of Consultant(s) would be on the basis of a combination of the Technical and Financial bid submitted by the applicants.

Qualified candidates should send cover letter, technical and financial proposals (in separate envelopes) to the contact information provided in the section ‘J’ of this ToR in soft copy no later than 17th December 2019. Please send your application with “Feasibility Assessment for early warning system on flood management under URBAN LEDS II – Thane” in the subject line and on a sealed envelope.

Technical Bid should cover the following aspects:

- Details of organization/institute (Consultancy/company profile), experience on assignments of similar nature, the outline should indicate, inter alia, the profiles and names of the staff provided (if in case of a firm), duration of the assignment, contract amount, and firm's involvement.
- The bidder must submit at least three written evidences from last 5 years in the form of Letter of intent/Work order/ project completion certificate issued by the client (any city/ state/ national/ international agency) for similar work. On-going consulting assignments can be submitted with detail of progress supported by suitable documents (E.g. copy of invoice or payment received till date or through certificate from the respective client).
- CVs of key personnel along with time distribution should be given. All relevant CVs shall be provided in full detail. If the CV of a proposed staff is found incorrect, the award of the consultancy to the bidder may also be liable to cancellation in such an event.
- Each page of the CV must be signed in original by the authorized representative together with original or electronic signature of the key team member at the proposal stage. However, at the time of contract signing, original signatures of both authorized representative and the Key Personnel shall be required.
- The consultant shall make the assessment of support personnel, both technical and administrative, to undertake the assignment. Additional support and administrative staff shall be provided by the consultant as needed for the timely completion of the
Assignment, within the total estimated cost. Consultant should provide time estimates of Key Personnel as well as support staff in the staffing schedule. It is stressed that the time period for the assignment indicated in the TOR should be strictly adhered.

- **Proposal submission should clearly outline the approach and methodology for undertaking the current assignment. It should include project Schedule with activity and duration to accomplish the task within the scheduled project duration along with detailed work plan.**

- Against the list of proposed staff, details of tasks assigned to each staff as per his/her experience shall influence the evaluation.

Financial bid should include following aspects:
- Cost of man-days (unit rate)
- Minimum and maximum number of days that can be committed by each expert(s)
- Any additional costs/overheads/administrative charges. Travel, per diems (where applicable) and accommodation expenses should be quoted separately as part of the bid.
- The financial proposal shall be inclusive of all the costs including taxes associated with the assignment.
- It is clarified that, the financial proposal should be prepared in INR.
- The total amount indicated in the financial proposal shall be without any condition attached or subject to any assumption, and shall be final and binding. In case any assumption or condition is indicated in the financial proposal, it shall be considered nonresponsive and liable to be rejected.
- The final amount should be quoted in both figures and words. (In case of any discrepancy between the amount quoted in figures and words, the amount quoted in words will be considered for evaluation purposes)
- A copy of valid Pan Number
- Registration details with GST
- Last 3 financial year’s balance sheet (or as applicable), audited by certified Chartered Accountant need to be submitted.

The Proposals/ bid documents must be duly signed by the
authorized representative/signatory on each page and stamped as detailed below. This shall not contain any alternative items or suggestions, comments or conditions:

i. By the partner holding the Power of Attorney in case of a partnership firm / limited liability partnership (A certified copy of the Power of Attorney shall accompany the proposal)

ii. By the proprietor in case of a proprietary firm; by a duly authorized person holding the Power of Attorney or by a Board Resolution in case of a Limited Company or a corporation (A certified copy of the Power of Attorney/Board Resolution shall accompany the proposal)

iii. By the authorized representative of the Member in Charge in case of Joint Venture / consortium (A certified copy of Board Resolution/Power of Attorney indicating the representative shall accompany the proposal).

Please note:

a) The bidder shall acquaint with the work and working conditions at site and locality. No claim shall be entertained on this issue after the bid has been submitted.

b) All or any accessories/consumables/items required for satisfactory commissioning of the study/work shall be deemed to be included in the contract and shall be provided by the bidder without extra charges.

c) Failure to comply with or provide the above listed items in the Technical Proposal may result in disqualification. The bidder shall produce original documents for cross verification as and when requested by ICLEI South Asia. Each page of all the documents mentioned above as well as technical and price bid documents shall be duly signed by bidder.

d) The application shall be submitted through email as mentioned in section 'J - Contact information' of this ToR on or before 17.12.2019.

f) The hard copy of bid document shall reach the above mentioned address not later than 3 days from the last date of submission of bid document, provided the bid has been submitted through email before the due date of submission.

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f) The hard copy of bid document shall reach the above mentioned address not later than 3 days from the last date of submission of bid document, provided the bid has been submitted through email before the due date of submission.
|   | Envelop I: Cover letter and Technical Bid;  
  | Envelop II: Financial Bid; and  
  | Both the Envelops I & II to be placed and sealed inside Envelope III  

Envelop I: sealed and shall be supercribed as:  
**Part A: Technical bid for**  
“Feasibility Assessment for early warning system on flood management under URBAN LEDS II – Thane”

Envelop II: sealed and shall be supercribed as:  
**Part B: Financial bid for**  
“Feasibility Assessment for early warning system on flood management under URBAN LEDS II – Thane”

- Envelop III: sealed and shall be supercribed as:  
  “Feasibility Assessment for early warning system on flood management under URBAN LEDS II – Thane”

| I | Payment schedule | First instalment (20%): At the time of signing the contract  
  | Second instalment: (20%): Satisfactory submission and acceptance of the deliverable number (1 and 2) by ICLEI – South Asia as mentioned in section “D- Specific deliverables’ of this ToR  
  | Third Instalment (30%): Satisfactory submission and acceptance of the deliverable number (3) by ICLEI – South Asia as mentioned in section “D- Specific deliverables’ of this ToR  
  | Fourth Instalment (30%): Satisfactory submission and acceptance of the deliverable number (4) by ICLEI – South Asia as mentioned in section “D- Specific deliverables’ of this ToR  

| J | Contact information | For email submission and queries:  
  i) Mr. Nikhil Kulkarni  
  Assistant Manager,  
  ICLEI South Asia,  
  Thane, Maharashtra, India.  
  Tel: 97665 28899  
  Email: nikhil.kulkarni@iclei.org  
  ii) Ms. Soumya Chaturvedula, |
Other terms and conditions

1) The Terms of Reference (ToR) shall be downloaded free of cost from the ICLEI South Asia website

2) The bid shall be valid for a period of 60 days from the date of submission of bid document

3) A bidder shall submit the bid documents that satisfies each and every condition laid down in this notice, failing which, the bid will be liable to be rejected by ICLEI South Asia

4) In case the bidder wishes to sub-contract part of his deliverables, the final responsibility of delivery and performance solely lies with the bidder

5) Selected consultant has to deliver expertise and assist project team which will be consists of the representatives of ICLEI – South Asia and officials of Thane Municipal Corporation.

6) Selected consultant (individual or organization) is expected to perform the activities as mentioned in the section ‘D’ and provide deliverables as mentioned in the section ‘E’ following the methodology prescribed in the section ‘F’ of this ToR.

7) The consultant is allowed to propose amendments to the methodology, when they find it necessary. Actual amendment in methodology will be in force only after written approval from ICLEI – South Asia.

8) The bidder shall be deemed to have carefully examined the work and site conditions’. In this regard, he/she will be given necessary information to the
best of knowledge of ICLEI South Asia in consultation with TMC but without any guarantee to it.

9) If applicant has any doubt as to the meaning of any portions of these general contract terms, or the scope of the work, or any other matter concerning the contract, he/she shall in good time, before submitting his tender, set forth the particulars thereof and submit them to the point of contact, as given in this TOR, by email in order that such doubts may be clarified authoritatively before tendering. Once a tender is submitted, the matter will be decided according to the tender conditions in the absence of such authentic pre-clarification.

10) All applications will be treated in the strictest confidence and only successful candidates will be contacted for further discussions.

11) The technical and financial proposals should be submitted as separate documents.

12) In case the winning bidder fails to indicate his intent to undertake the said work within the stipulated time of 7 (seven) days and observe the formalities as above, the Letter of Intent will be cancelled and the next bidder will be finalised by ICLEI South Asia in Consultation with TMC senior officials.

13) ICLEI South Asia reserves all the rights to reject any proposal, and to terminate the selection process and reject all proposals at any time, without thereby incurring any liability to the affected applicant or any obligation to inform the affected applicants of the grounds for such decision.

14) It should be noted that the consultant has to work in Thane – Thane Municipal Corporation (TMC) jurisdiction and hence instructions to bidders will be given by ICLEI South Asia in consultation with TMC officials.

15) ICLEI South Asia will be overall in-charge for all the works that would be executed under the present scope of work.

16) The applicant shall also obtain necessary permissions from concerned government departments related to the work/data collection if deemed necessary and in coordination with TMC and ICLEI South Asia.

17) All data and information received from Thane Municipal Corporation and ICLEI South Asia for the purpose of this assignment are to be treated confidentially and are only to be used in connection with the execution of these Terms of Reference.

18) The contents of written materials obtained and used in this assignment may not be disclosed to any third parties without written approval from ICLEI South Asia and TMC.

19) ICLEI South Asia will take final decision for site selection, technology selection, terms and conditions of tender document, selection of service provider and implementation in consultation with Thane Municipal Corporation.

20) The decision of ICLEI South Asia will be final and binding.

21) The proposals received will be scrutinized and evaluated by the ICLEI – South Asia in consultation with TMC.
22) Detailed Work Order will be issued to winning applicant within ten (10) days of announcing the results.

23) The selected applicant is to forward the signed and sealed work order to ICLEI at the earliest or not more than seven (7) working days of issue of work order.

**Extension of date of completion**
On occurrences of any events causing delay as stated hereunder, the bidder shall intimate immediately in writing to ICLEI South Asia.

**Materials/Appliance at site**
Neither ICLEI South Asia nor TMC undertake any responsibility for supply of any materials/ equipment/ Appliance/ tool for site analysis to the bidder.

All materials/ equipment/ tools brought to site by the bidder shall be the responsibility of the bidder. TMC and ICLEI South Asia shall extend help as and when approached by the bidder to keep any materials/ equipment/ Appliance/ tool, however not liable for any loss, theft or damage due to fire or other cause, the responsibility for which shall lie entirely on the bidder.

**Final Inspection of Work**
TMC and ICLEI South Asia team shall jointly make final inspection of all work included in the contract/work order, or any portion thereof, or any completed structure forming part of the work of the contract, as soon as practicable after notification by the bidder that the work is completed and ready for acceptance.

**Conflict Resolution**
In case of a conflict, the same would be addressed through mutual discussions. In case the conflict cannot be mutually sorted, the ICLEI South Asia’s decision would be final and binding. This contract shall be governed by the laws of India. Bidder shall apply Indian law to the merits of any dispute or claim, without reference to rules of conflict of law. The courts at Delhi alone shall have the jurisdiction in this regard.

**Termination of Contract**
In case the consultant is unable to perform as per the expectations of the project team and/or project cities, the contract of the consultant can be terminated based on mutual consent. In case of contract termination, the consultant would be paid on the basis of deliverables completed to the satisfaction of ICLEI – South Asia.

**Force Majeure**
In case of extraordinary events under force majeure (Natural phenomena, including but not limited to abnormally bad weather, unprecedented flood and
draught, earthquakes & epidemics, Political upheaval, strikes, lockouts, acts of any Government (domestic/foreign) including but not limited to war, properties, and quarantine embargoes), the terms of contract can be redrafted through mutual consent. In such cases, none of the parties can be held liable under the Contract.