

Terms of Reference for
Procurement of Consultancy Services for
Climate Change studies in ULBs of Telangana

1. BACKGROUND:

UN-Habitat estimates that 70% of the world's population will live in urban areas by 2050 and approximately 60% of the growth is expected to take place in Asia. Most of the world's population and India's population now lives in towns and cities that are disproportionately located near coasts and rivers, distant water resource base and therefore faces substantial risks posed by hydro-meteorological risks. Rapid unplanned growth, urban areas in many cases retain high socioeconomic vulnerability, such as urban poverty, informal settlements, lack of municipal services, land tenure issues, etc., which are exacerbated by the exposure to climate-related shocks and stresses. The inter-phase between uncertainties associated with climate change, urbanization and increasing vulnerability has given rise to growing interest to address urban resilience to climate change.

Climate change and accelerating urbanization demand urgent formulation and implementation of rational adaptation/mitigation strategies backed by climate risk baseline study, future climate and growth scenarios, sector impact assessment and development of specific risk reduction/adaptation framework, identification and evaluation of opportunities (entry points) and benefits for formulating new climate resilient practices in the context of urban planning and management..

Cities and local authorities have the potential to influence both the causes and consequences of climate change. Major share of green house gas emissions being from urban area, the obligation falls on cities to provide leadership and direction and implement practical initiatives for the communities and citizens they represent. In a participatory manner, cities need to develop local strategies towards a sustainable future, addressing

climate change impacts; mitigation and adaptation through urban planning and management.

INITIATIVES BY GOVERNMENT OF TELANGANA:

Recently released Telangana State Sanitation Strategy (Urban) acknowledges Climate Change as one of the defining challenges for the 21st century and declares Government of Telangana's commitment to address the "challenge of urbanization" in line with National Action Plan on Climate Change (NAPCC). The Telangana State Sanitation Strategy (Urban) states the following implementation measures for integrating climate change issues with the strategy:

- Sanitation needs to be factored into climate change responses at regional and local governmental levels as part of disaster management response.
- The state to act on climate change through facilitating the integration of climate change adaptation into regional and local planning.
- The state to develop action plan for a rapid response to climate change disasters like flooding, to reduce the impact on people, infrastructure and sanitation in coordination with the disaster management team at the district level.
- Appropriate mitigation/adaptation measures to cope with the climate change impacts in the sanitation and hygiene sector as well.

2. OBJECTIVE OF WORK:

As envisaged in Telangana State Sanitation Strategy (Urban) and in line with National Action Plan on Climate Change, it is proposed to strengthen climate change resilience in ULBs of Telangana by develop an Action Plan for Climate Change Adaptation and Mitigation so as to make the city resilient to impacts of Climate Change and related hydro-meteorological disasters. The study will aim to

conduct advanced climate risk and vulnerability assessment of the ULBs (risk scoping and potential impact across urban infrastructure and key services), resulting in identification and considering entry points for new climate resilient practices/low carbon development / climate resilient urban plans, and strategic and actionable recommendations to strengthen the urban infrastructure and services (across drinking water supply/water security, urban drainage and sewage, urban transport, energy, public health, urban planning, housing, disaster risk management, etc), identification of sustainable urban infrastructure and management projects, and identification/support for institutional and capacity strengthening measures for urban resilience.

3. SCOPE OF SERVICES:

The scope of the assignment is to develop ULB level Action Plan for Climate Change Adaptation and Mitigation, a document that identifies the actions needed to implement to enhance cities resilience to climate change. The scope of this work broadly comprises the following activities. The consultant, based on methodology and work plan for the assignment or suggestions by the Review Committee, may have to undertake appropriate activities in addition to those mentioned below to achieve the objectives of the work stated above and to furnish quality deliverables.

3.1 Climate risk baseline study of ULBs

1. Existing climate risk context in Telanga with specific reference to ULBs

This should include/describe the following existing conditions, as far as possible in the context of the State of Telangana and its ULBs.

- Define key elements evidencing climate change, geographical and environmental context of the State, description of main climate hazards and their impacts currently experienced in urban areas (e.g. heavy rainfall and flooding, drought, heat waves, interruption to urban services and impact on urban infrastructure, cascade impact on infrastructure services, mortality/displacement /destruction of property and infrastructure etc);
- The existing vulnerability context in which hazards are translated into impacts on urban environment, i.e. which populations/areas are vulnerable to various hazards, exposure of sectors (public and private) /urban systems to various climate hazards, and key drivers of vulnerability (e.g. social, economic, policy, regulatory, urban planning and management);
- Current levels of adaptive capacity in the relevant population groups, urban systems, sectors and institutions; existing options available for response to manage and reduce existing risks, constraints that prevent action to reduce risk.

2. Expected/Anticipated future climate risk context in Telangana with specific reference to ULBs

This should seek to examine how conditions might evolve in the future by making reference/desk review of existing climate change reports in the context of the country and the State and undertake indepth climate variability and climate change assessment. The scope shall include:

- Define potential future evolution of climate variability and climate change related natural hazard risk (both sudden-onset and slow-onset) to State of Telangana and possible intensification and extensification trends including extreme rainfall, flooding, drought, heatwave conditions/urban heat islands over the next 25 to 50 years. The characterization of the future climate hazards may be based on data from global and regional climate models, downscaling methods/studies, and impact models. In addition the characterization will also employ expert judgement, past analogues of extreme events/conditions and use of statistical techniques (e.g. examine the impacts of changing means and variability of the occurrence of extremes using the historical data as a baseline);
- Define future urban development scenarios for ULBs and associated changes in population, built environment and infrastructure growth, economic activity, resource needs (water, energy needs) and spatial extent;
- Undertake strategic vulnerability analysis to determine potential future of vulnerability to climate change, based on plausible assumptions about how the drivers of vulnerability may change in conjunction with changing demographic, economic, environmental and resource availability and other conditions over the next 25-50 years. Key sectors/services to analyse includes (Water, Drainage and Sewage, Waste Management, Housing/Real Estate, Urban livelihoods, Urban Transport, Public Health, Energy, Food Security, Urban Governance, Disaster Risk Management etc);
- Determine potential future evolution of adaptive capacity, based on changes in access to resources, adopting sustainable growth choice and adaptation/mitigation actions.

3.2 Climate risk identification and evaluation of existing and urban future

This includes identification and description of the potential climate-related risks associated with the present scale of development, ongoing development projects and the anticipated / development plan of the ULBs in the next 25 to 50 years. The consultant shall evaluate the development plan / priority projects (including

alternatives), based on combined considerations of relevant climate hazards and relevant aspects of vulnerability and adaptive capacity and in consultation with the key stakeholders (Public and Private).

The evaluation of the risks should include:

- Determine risks to the successful implementation of projects, development plan wrt climate extremes that may be intensifying and could cause damage to project infrastructure;
- Determine risks on projects wherein climate change effects may offset the project benefits (impact on poverty, economy) or reduce the availability of key resources (water, land etc);
- Determine risks that development path / projects may increase the vulnerability of specific groups or sectors;
- Risks that the project or the development scenario may increase the vulnerability of built environment, natural systems or resources (this has to be seen from regional context), amplify the adverse impacts of climate change and accelerate environmental degradation of the urban areas and surrounding regions;
- Identify risks that the development trajectories could contribute to maladaptation, increase dependency on already stretched resources that might be unsustainable for the ULB to thrive under future climatic conditions.

The consultant will use scientific/analytical methods to assess the significance of different types of risk, rank risks according to criteria such as likelihood and potential to undermine intended project benefits, present impacts associated with them through use of quantitative analysis (in terms of timescale of implementation, probabilities, potential damage and losses, positive impact). Storylines created through a combination of development scenarios backed with analytical methods can be explored. It is recognized that the approach need not be measured by precision.

The consultant will further provide the context in which opportunities will be identified for promoting climate resilience through a suite of tailored adaptation and mitigation options, low-carbon pathway for urban development. Consultants will analyze the opportunities and the entry points for climate resilient practices in the context of the ULB's development scenario.

The validation of the scenarios and the results shall be done through a consultative process (public, private and the civil society).

3.3 Measure and recommendations for climate smart development

The consultant shall propose adaptation and mitigation measures to reduce climate-risks to the ULBø of Telangana. Consultant has to demonstrate that the measures drawn are technically feasible, financially viable, socially acceptable and ease of implementation. Timescale for implementation and scaling efforts should be determined in consultation with the key stakeholders. Sector / Service Area specific measures can be drawn upon and wherever possible interlinkages / collaborative platforms should be identified. In cases where the timescale associated with a proposed project / initiative are long, consideration should be drawn to identify how short term measures with budget allocation can interact with long term measures. The consultant will draw upon short-medium and long term risk reduction/adaptation/mitigation measures for ULBs. The consultant will address the following:

- Target key measures for the ULBto address impacts of climate change identified in 3.1 (for risks where there is high confidence in projections of climate change and associated impacts relating to specific aspects of population vulnerability, infrastructure vulnerability or hampering economic growth);
- For existing development plan/future or proposed development plan, suggest redesign of the project components or elements of the development plan that can enhance resilience and reduce maladaptation;
- Suggest ULB specific risk reduction/adaptation & mitigation framework for implementation;
- Prepare a brief estimation of the costs and identify key institution and stakeholders to lead the implementation efforts;
- Prioritize implementation of actions(through ranking or another suitable method) taking into consideration of risks that are severe. Suggest one or more alternatives for high value investment projects.

3.4 Climate Change Adaptation and Mitigation – Action Plans

The ULB level Climate Change Adaptation and Mitigation Plan for Telangana s, as one of the main outputs, should be a document that identifies the set of actions needed to implement the recommendationsinformed through analysis of future climate trends, urbanizationand associated vulnerability. The Action Plan should include:

- Climate Variability and Climate Change collating the predicted changes that would affect the city
- Possible Impacts- analyzes the impacts of these changes on the city population, infrastructure, institutions
- Risk Evaluations & Assessments

- Strategies prioritized to adapt or mitigate the impacts of climate change, key objectives, expected results, verifiable indicators, activities (adaptation, mitigation, optimization measures), agencies responsible for implementation of the activities, annexure highlighting the project brief along with indicative budget for implementation
- Engineering design considerations to be adopted for capital investments while formulating Detailed Project Reports (DPRs) and O&M of various urban services mentioned (water, waste-water, solid waste, etc.)
- Institutional arrangement for implementation
- Monitoring and supervision plan for implementation
- Proposed schedule of activities and timelines

4. SCOPE OF WORK:

Project Area: All ULBs of Telangana(except GHMC).

5. SCHEDULE OF MILESTONES:

The consultant shall submit an inception report consisting of full scope review of existing literature and proposed methodology within one week from the date of signing. This report will be discussed at an inception meeting with review committee to facilitate sharing of work plan by the consultant and expected outcomes of the work by the client.

Sl. No.	Stage / Milestone	Time line allotted for submission by the Bidder.
1.	Inception Report along	15days from the date

	with detailed stakeholder engagement strategy	of signing of the contract.
2	Climate Risk Baseline study of ULBs	45 days from the date of signing of the contract
3.	Risk identification and evaluation of ULBs	60 days from the date of signing of the contract.
4	Adaptation and Mitigation measures for ULBs	75 days from the date of signing of the contract.
5	Climate Change Adaptation and Mitigation ó Action Plan (CCAM-AP)	90 days from the date of signing of the contract.

Period of Assignment:

The consultant shall complete the whole assignment and furnish the final documents/ reports within a period of **90 days** from the date of signing of contract.

6. REVIEW OF REPORTS:

All the reports submitted by the Consultant will be reviewed by the Review Committee.

Composition of Review Committee:

1. Director of Municipal Administration
2. Engineer-in-Chief (PH)
3. Superintending Engineer, TMDP
4. Project Manager, TUFIDC

6. DATA, SERVICES AND FACILITIES TO BE PROVIDED BY THE CLIENT:

The data to the extent available with the ULBs / PH Engineering Department related to this work will be shared with the consultant. Climate information will have to be obtained by the consultant from IITM Pune and IMD. The consultant will estimate the time taken to obtain this information and accordingly sequence the study timeline/delivery of outputs.

8. TEAM COMPOSITION FOR THE ASSIGNMENT:

The team proposed by the consultant for the assignment shall consist the following key professionals and supporting staff. For technical evaluation, CVs of only key professionals will be considered. CVs of supporting staff shall be got approved by the employer at the time of concluding agreement.

List of Key Professionals whose CVs will be evaluated:

Key Staff / Position	Number	Minimum Qualifications and Experience desired.
Project Manager (Team Leader)	1	Post Graduate in Environmental Engineering / Environmental Science with 10 years of experience in studies, policy formulation, preparation of mitigation and adaptation plans, resilience strategies and Action plans in the field of climate change related to urban areas.
Assistant Project Manager.	1	Post Graduate in Engineering / Science with 5 years of experience in studies, policy formulation, preparation of mitigation and adaptation plans, resilience strategies and Action plans in

		the field of climate change related to urban areas.
Energy Expert	1	Graduate in Electrical Engineering with 10 years of experience in energy audit and energy efficiency - power sector
Social Scientist	1	Post graduate in Social Sciences with 10 years experience in the sector of urban poor and preparation of SIA reports.
Transport Specialist	1	Post graduation or equivalent in Transportation with 10 years of experience in urban transport.
GIS Specialist	1	Post graduation in Urban Planning / Civil Engg. / GIS & Remote sensing / Earth Sciences with 5 years of experience in Urban GIS field.
EIA Expert	1	Post Graduate in Environmental Engineering / Environmental Science with 10 years of experience in studies, policy formulation, preparation of mitigation and adaptation plans, resilient strategies and Action plans in the field of climate change related to urban areas.

Supporting team:

Supporting Staff / Position	Number	Desired Qualifications and Experience.
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Field Engineer	3	Graduate in Engineering /Post graduate in Environmental Science with 5 years of experience in planning, designing and execution of Waste Water Management projects.
Financial Expert	1	Graduation in Commerce / MBA(Finance) with adequate exposure to financial and economic analysis of municipal infrastructure financing and institutional development.

NOTE: The staffing requirement specified above is minimum requirement only. The consultant shall deploy required additional staff based on the quantum of work to complete the assignment in time.

9. PAYMENT SCHEDULE:

Sl. No.	Stage / Milestone	% of total consultancy fee payable at the milestone	Time line allotted for submission by the Bidder.
1.	Inception Report along with detailed stakeholder engagement strategy	10%.	15days from the date of signing of the contract.
2	Climate Risk Baseline study of ULBs	20%	45 days from the date of signing of the contract
3.	Risk identification and evaluation of ULBs	30%	60 days from the date of signing of the contract.

4	Adaptation and Mitigation measures for ULBs	20%	75 days from the date of signing of the contract.
5	Climate Change Adaptation and Mitigation ó Action Plan (CCAM-AP)	20%	90 days from the date of signing of the contract.

Note: All the payments are subject to acceptance of the reports and of the documents by the competent authority/Review Committee at every stage of the work.