Use of Rated Criteria to facilitate implementation of Government Policies to promote sustainability, innovation, and quality for Large Complex Projects

1. Introduction

India is committed to Sustainable development goals of United nations and working towards climate change aggressively. Government has prepared National climate change policy with a vision of promoting ecologically sustainable development. In the context of India, to effectively address climate change, it is critical that especially for infrastructure projects, a paradigm shift in the thought process is needed right from the stage when project is conceived to implementation of the project. The procurement of works for the infrastructure projects carries lot of importance as it determines how project shall take into account sustainability and environment conservation during design build and operation of the project.

Wastewater infrastructure has immense untapped potential to help India achieve its climate change goals. DBO modality for implementation of wastewater infrastructure is fairly standardised in India and primarily focusses on pre-qualification of the proposer based on their historical experience and thereafter selection based on the least cost basis. This procurement process, however, does not allow to evaluate proposer's proposal on key points such as climate change, sustainability, quality, innovation, risk management etc.

In India Government procurement system generally follows the General Finance Rules (GFR) 2022 issued by Department of Expenditure, Procurement manual 2019 (which provides framework of the Bid preparation and management) and CVC guidelines 2002 (which provides guidelines for formulating the eligibility criteria for the proposers). The manual broadly follows the principle of transparency, fairness, cost-effectiveness and accountability. General Financial Rules (GFRs) allow the government entities to conduct procurement activities independently. While the basic principles of public procurement are respected, the system has resulted in diversity in the procurement system in the country. However, procurement of work is done with prequalification of the proposers on the pass/fail basis and only on a least cost basis after prequalification. Although General Finance rules 2022 allow the government department to consider QCBS based selection process for procurement of works, the same has not ben adopted so far especially in the case of wastewater infrastructure.

Because of this, although the prevalent methods of selection of contractor achieve the objective of competitiveness and transparency, these do not take into account non-financial aspects such as quality, innovation, sustainability. Hence, the procurement system and framework need revision to take into account non-financial aspect while selecting the contractor so that client can get more value for money especially for complex and high value project.

The present case is the first of its kind procurement in India and takes into account financial as well as non-financial parameters of the contractor's proposal for procurement works for one of the high value contracts in Ahmedabad using QCBS method (Rated Criteria).

2. Ahmedabad municipal corporation – An Introduction

Gujarat is the fifth-largest Indian state by area and the ninth-largest state by population, situated on the Western Coast of India. Ahmedabad is the largest city in Gujarat and is one of the fastest growing cities in India. It is located on the banks of the Sabarmati River in the northern part of Gujarat. Ahmedabad is the commercial capital and growth engine of Gujarat State. The city's population as per 2011 census was 5.5 million and has grown at an annual rate of 3 percent in the last three decades. Ahmedabad Municipal Corporation (AMC) is responsible for developing and operating civic

infrastructure of Ahmedabad including utility infrastructure such as city's water supply, sewerage, drainage facilities and administration of the city.

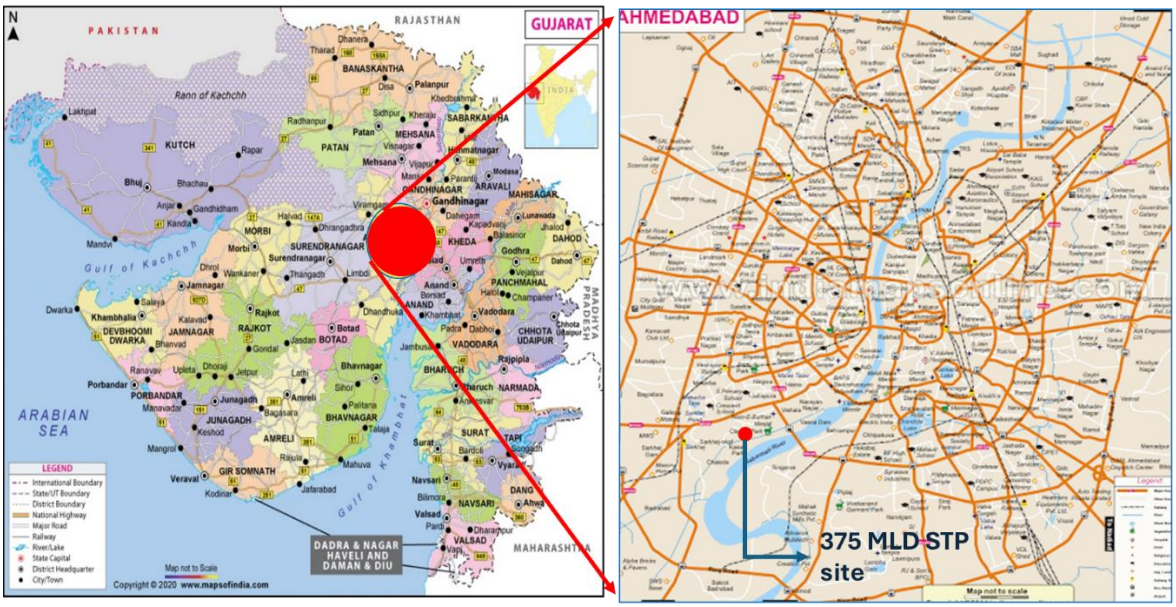

Figure 1 Area of Municipal corporation

3. Project Background

Ahmedabad Municipal Corporation (AMC) intends to augment and upgrade city's critical sewerage and drainage infrastructure under the Gujarat Resilient Cities Partnership - Ahmedabad City Resilience program (G- ARCP) which is funded by the World Bank.
Development of 375 MLD STP along with its associated facility at Vasna on western bank of River Sabarmati is one of the major projects being undertaken under the program. AMC aims to develop state of the art facility for treatment of sewage to prevent pollution into the river and with futuristic outlook considering factors such as sustainability, climate change (including energy efficiency) and innovation.

The scope of the Project includes design, build and operation of new 375 million litres per day (MLD) Sewage Treatment Plant (STP) including upgradation of the allied infrastructure including three terminal sewage pump stations with operation and maintenance for 10 years at Vasna.

The main elements of the Project are:

- Construction of new 375 MLD STP in two modules so as to minimise disruption to existing system and optimise available land while at the same time meeting the outline performance standards based on stringent compliance to NGT norms.
- Demolition of existing 126 MLD STP after commissioning of section 1 of STP and disposal of demolition waste in environmentally safe manner
- Rehabilitation/ replacement of existing assets at three terminal sewage pump stations (TSPS) viz Vasna AUDA TSPS, Vasna terminal TSPS and Vasna Barrage TSPS, including common headers/ rising mains to optimize the equipment and process efficiency.
- Laying of rising main from Vasna 126 MLD STP to New STP.
- Automated operation along with real time monitoring for effective operation and management of assets.

- Design construction and operation to be based on comprehensive Environment social impact assessment (ESIA) and Environment and social management plan (ESMP)

The project will prevent bypass of sewage during the rehabilitation of the assets and dispose all byproducts and rejects in an environmentally safe manner. The project is a high value Project (Award Cost of Rs. 778.16 Crores) and is inherently complex in nature as it has multiple components as well as multiple priorities to be addressed in time bound manner. Many of such requirements were first of its kind in the sector and hence could not be captured adequately through historical experience of the proposers. Hence it was critical to evaluate the technical proposal submitted by the proposers to identify the best fit (techno-economic) to address the project requirement.

4. Opportunity for newer Procurement Approach

The Procurement system at AMC has historically followed a standard method of prequalification of the proposers and selection on the basis of financial metrics. The process primarily focusses on pre-qualification of the proposer based on their historical experience and selection based on the least cost basis. This procurement process, however, does not provide adequate opportunity to evaluate key points such as sustainability, risk management, environment and social considerations, quality, innovation, and proposers understanding and their approach to implement the project.

For complex technical requirements and high value project where quality and capability of contractor is crucial for the successful performance of the contract besides considering techno-commercial factor, a rated criteria approach needs to be adopted. It is also important because there is an inherent risk that least cost proposer may not provide enough resources to address these aspects.

Under G- ARCP Project, Ahmedabad Municipal Corporation (AMC) decided to shift from their traditional procurement framework and adopt green procurement framework based on rated criteria/ QCBS which takes into account non price factors- as discussed above into decision making. AMC used the services of Royal Haskoning DHV Consulting Pvt. Ltd. in consortium with TTI Consulting Engineers (India) Pvt. Ltd as technical consultants. The use of rated criteria prioritized fit-for-purpose solutions rather than the lowest evaluated price. AMC, by using the green procurement framework, has successfully demonstrated an optimal approach to achieve India's Sustainable development and net zero goals by minimising GHG emissions, addressing pollution in an energy and resource efficient manner.

5. Development of Framework

The broad framework adopted consisted of :

- Minimum qualification requirement for the proposers
- Rated Criteria to evaluate technical proposal with threshold scores
- Considering costing of project over whole Life cycle (to incentivise efficient operations)
- Proposers to guarantee power consumption to incentivise energy efficiency
- QCBS evaluation

The above aspects are discussed in detail below.

a. Minimum Qualification Requirement for the Proposers

AMC conducted Market Conference to assess the experience of the proposers available in the market so as to fix the eligibility criteria in such a way that the sufficient number of adequately qualified proposers participate without comprising of quality can be achieved. The proposers were assessed against minimum qualification requirements. Minimum eligibility was a pass/fail criterion.

b. Development of Rated Criteria Framework

Since this was the first time that Rated criteria of evaluation technical proposal was being adopted for procurement of works, there was no case study available which could be used as an example to prepare rated framework. Hence, A robust process (as detailed below) was adopted to arrive at the framework.

i. Identification of non-price factors

The parameters which are of utmost importance to the project were identified (listed below) and bid document required that the proposer must cover these aspects as part of their technical proposal (approach and methodology).

a. Approach to design of project ensuring sectional completion of STP
b. Risk management
c. Work program and proposers' approach to mitigate any delays that may arise due to identified critical activities
d. Innovation
e. Sustainability factors
f. Methodology of upgradation of TSPS
g. Approach for design and construction of project
h. Quality management
i. Environment and social consideration for the proposed project
j. Historical experience for managing project of capacity above the minimum requirement.

Above factors were grouped into relevant heads (to match the expected contents of technical proposal) to subjectively identify pros and cons of each proposal. For example: quality management, risk management, construction methodology were grouped into construction management strategy and the bid document clearly indicated the areas the proposers construction methodology would be evaluated on.

ii. Assigning Scores

Once the factors and sub factors were finalised, next step was to assign score to the factors and subfactors. Factors were arranged as per the priority and score was assigned according to their relative importance to the Project in meeting the objectives. For example, proposer's approach to design the facility was considered important to the project given the complex nature (which also involved existing STP to be kept operational by O&M contractors appointed by AMC) and stringent timeline of the project (4.5 years for two consecutive modules of STP). Hence, higher weightage was allocated to this factor. Under Design approach & methodology, the sectional design of the STP, process selection was given highest priority and marks were allocated accordingly.

iii. Rated Criteria Framework

Following technical factors with weightage was arrived at based on the above consideration.

Table 1: Technical Factors with Weightage

Sr No	Parameters	Score
1	**Design approach & Methodology**	

Sr No	Parameters	Score
A	Process Design - 125 MLD & 250 MLD	6
B	Hydraulic Design - 125 MLD & 250 MLD	3
C	Hydraulic Flow Diagram	2
D	P&ID	3
E	Layout	4
F	Proposal for automation of STP & TSPS	4
G	Energy efficiency aspect	4
	Maximum achievable for above Sr. No. 1	**26**
2	**Construction Methodology**	
A	Construction methodology and sequence	3
B	TSPSs upgradation strategy	4
C	Quality assurance and Quality Control	2
D	ESHS Management	2
E	Work Plan	4
F	Construction approvals	3
	Maximum achievable for above Sr. No. 2	**18**
3	**Operation and maintenance service Proposal**	
A	Operation management proposal	3
B	Preventive and corrective Maintenance, asset replacement schedule	3
	Maximum achievable for above Sr. No. 3	**6**
4	**STP Design, Build & Operation Experience**	**50**
	Total	**100**

Technical Proposals which attained the score of 70 percentile and above were further considered for opening of their financial proposal. Weightage of Technical score in combined technical and financial score was given as 10%.

iv. Bringing Objectivity in Subjective Parameters

Around 50% of the scores were based on the subjective parameters while the remaining 50% of the scores were allocated to historical experience relevant to identified subjective parameter. Proposers were required to submit duly filled forms with supporting experience certificate to claim the score/marks under the respective categories.

It was crucial to include the essential requirements for scoring on all proposed parameters in the bid document for fair and transparent process. This was also important to impart clarity to the proposer for preparation of technical proposal. The proposers were required to detail out in their technical proposal how the technical proposal address all these listed requirements. For example: proposer was required to include in their proposal following key points with regards to the “design approach and methodology”.

a. Organisation arrangement
b. Design statement - design statement setting out methodology to achieve Employers Requirements including but not limited to following:

c. construction of 375 MLD STP on sectional completion approach, with Section 1 having a minimum capacity of 125 MLD a minimum capacity of 125 MLD.
d. Process design, hydraulic design, P&IDs for Section I and II
e. phased rehabilitation/ replacement of existing assets and construction/installation of new units at TSPSs while ensuring that the baseline pumped wastewater flow quantity at any of the TSPS is not deteriorated
f. typical layout of Section I and II of STP and TSPSs showing tentative arrangements of different components as per the proposal while confirming that the land area earmarked for facilities is sufficient to rehabilitate/construct the required facilities while keeping the existing facilities under operation.
g. Proposal for automation of STP & TSPSs for Section I & II
h. details of how the ES requirements, ESMP suggestions, and any proposal to enhance ES outcomes will be incorporated into all design stages and how the implications for the construction phase has been considered;
i. details of the approach to managing risks, stakeholder engagement, consultation and environmental permits/consents;
j. value engineering (value management) arrangements, including consideration of ES issues
k. software systems intended to be employed for planning, design, records and reporting
l. Any added value the Proposer will bring including examples of innovative aspects of the design;
m. Strategy and course of action in response alarm generated by early warning depending on technology proposed and reactor configuration. Proposer is expected to detail out the same as part of approach and methodology.

A. Sustainable procurement: sustainability aspects including but not limited to energy efficiency, green building design, reduction of wastages, material reduction, sources of materials etc. demonstrating the Proposer's approach and commitment to sustainable design and construction practices;

6. Comprehensive Prebid Process to Familiarise the Proposer to New Rated Criteria Framework

During the prebid stage the prospers were briefed in detail about the rated criteria framework and were given sufficient time to understand the framework and raise queries. AMC responded to all the queries and explained in detail. Several rounds of queries were entertained, and adequate extension were provided to ensure proposers have sufficient time to make a good proposal. Several good suggestions were received from proposers which were used to further polish the rated criteria framework in Bid document through amendment. For example Sr. No. 4 to 12 in Table 2 were included after suggestions from proposers

7. Approach Adopted for Evaluation

Bid document clearly stated the evaluation methodology leaving no room of ambiguity and ensuring transparency. Further, AMC formed a technical evaluation committee of six members for evaluation of technical proposal. Each committee member were subject experts consisting of people from different government departments and reputed educational institution. Each member of the committee individually evaluated the technical proposal of each proposer and carefully assigned scores. The score assigned were based on proposer understanding of the project, quality of proposal and the extent to which they address the rated criteria framework and met the project objectives. A matrix of strength and weakness of technical proposal against each parameter was prepared for scoring. The technical committee also met to discuss their understanding of the proposal and this meeting was moderated

by one of the committee members. The final scores for each proposer were arrived by taking average of score assigned by individual technical committee member. This approach is demonstrated by example below.

Table 2 Rating Scores by Individual Evaluation Committee Members for Proposal A

Sr No	Parameters	Maximum	Evaluator						Average
		Score	1	2	3	4	5	6	Score
1	Design Approach & Method.	26	25	26	26	25	26	25.5	25.58
2	Construction Methodology	18	14	14	14.5	14	16	15.5	14.67
3	Operation and Maintenance Service	6	4	4	4	4	4	3.5	3.92
4	Design Experience	6	6	6	6	6	6	6	6.00
5	Construction Exp. by Value	4	4	4	4	4	4	4	4.00
6	Construction Exp by STP Cap.	6	4	4	3	4	4	4	3.83
7	Operations Experience	6	6	6	6	6	6	6	6.00
8	DBO Experience	6	3	3	3	3	3	3	3.00
9	DBO Exp. (Specific Experience	6	6	6	6	6	6	6	6.00
10	Construction of STP with Tertiary Treatment	5	5	5	5	5	5	5	5.00
11	Construction of STP with BNR System	6	6	6	6	6	6	6	6.00
12	Construction of STP with Pumping Station	5	5	5	5	5	5	5	5.00
	Total	**100**	**88**	**89**	**88.5**	**88**	**91**	**89.5**	**89.00**

Table 3 Final Scoring Table

Criteria/Technical Quality Attribute	Max. Score	Proposal A Score	Proposal B Score	Proposal C Score
Design Approach & Method.	26	25.25	22	18
Construction Methodology	18	14.83	16	14
Operation and Maintenance Service	6	3.92	4	3
Design Experience	6	6.00	6	3
Construction Exp. by Value	4	4.00	4	4
Construction Exp by STP Cap.	6	4.00	3	3
Operations Experience	6	6.00	6	4.5
DBO Experience	6	3.00	6	3
DBO Exp. (Specific Experience)	6	6.00	3	3
Construction of STP with Tertiary Treatment	5	5.00	3	5
Construction of STP with BNR System	6	6.00	4	6
Construction of STP with Pumping Station	5	5.00	5	5
Total Score	100	89.00	82.00	71.50
Best Score	**89.00**			
Final Score in percentile		**100%**	**92.13%**	**80.34%**

The final technical score arrived as above was divided by the highest technical score to convert to percentile for further combined evaluation. All the proposal achieving score above 70% were considered for financial opening. Scores were intimated to all the proposers with details of proposed financial opening. A standstill period was kept prior to financial opening for debriefing and addressing queries of the proposer on technical evaluation, if any.

After the financial opening, the details of cost submitted by the proposers for capital and operation period were evaluated to arrive at Evaluated Project cost for each proposer using NPV factors listed below.

Table 4: NPV Factors for Financial Evaluation.

Operation Period	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Discount factor	0.935	0.873	0.816	0.763	0.713	0.666	0.623	0.582	0.544	0.508

The above NPV factors were used to arrive at Evaluated proposal price and formula for Evaluated proposal price was as follows.

Evaluated proposal price = Design-Build price + interim O&M + NPV of guaranteed power cost for 10 years + NPV of O&M price during Operation Service Period of 10 years

The combined evaluation was arrived at by applying the technical and financial weighting as 10% and 90% respectively. The proposers were then ranked based on their score with the highest scoring proposer as the first-ranked Proposal. The Proposer with the highest combined total score was then recommended as successful proposer.

Table 5: Combined Evaluation of Proposals.

Proposer	Technical Score	Weighted Technical Score (2)*T	Financial Score	Weighted Financial Score (4)*P	Combined Score (3) + (5)	Rank
(1)	(2)	(3)	(4)	(5)	(6)	(7)
A	100.00	10.00	95	85.5	95.50	Rank 2
B	92.13	9.21	70	63	72.21	Rank 3
C	80.34	8.03	100	90	98.03	Rank 1

*Note: weightage of Technical Score – 10% and weightage of Financial Score – 90***%**

8. Learnings and Takeaways from the Success Story

The above case presents lot of key insights which can be used as guiding pointers for development of rated criteria-based procurement framework for any project. Following are crucial for success of such endeavours.

1. The team developing the rated criteria should have in depth understanding of the project
2. Taking assistance of a qualified technical consultant for developing the framework, if required
3. Identifying the critical factors for the project and establishing the priorities
4. Establishing minimum requirement for each parameter on rated criteria framework and listing the same in bid document for transparency

5. Defining the evaluation methodology of the technical proposal in the RFP
6. Providing sufficient time for proposers to raise prebid queries if any
7. Providing sufficient time for proposers to make good quality technical proposals
8. Identifying sufficient number of appropriate technical evaluation committee members
9. Ensuring adequate documentation of the process

9. Conclusion

The approach adopted in the study yielded highly successful result and saw a very good participation from reputed proposers. Significant participation from reputed proposers helped AMC award this Contract on very competitive price. Thereby also addressing apprehensions that assigning weightage to technical parameters may result in higher contract award price than estimate. Encouraged by this successful case AMC has also adopted this rated criteria framework for second large procurement in wastewater sector and successfully closed the second case as well.

Several reports from CAG (Comptroller and Auditor General of India) have highlighted issues with wastewater infrastructure in India and many of these issues are related to in adequate attention to design and poor maintenance. The current framework is a clever approach to seek private sector expertise in addressing such issues by not only seeking innovative proposals but holding the technology provider and operator accountable to commitment made as part of the technical proposals.

Wastewater, in particular, contributes to between 7-10% of global anthropogenic CH4 (McKinsey Sustainability, 2021). Based on GHG Platform India estimates, GHG emissions from the Waste sector in India amount to 114.49 million tonnes of CO2e in 2018. Wastewater is the largest contributor, with 55.7% of GHG emissions resulting from domestic wastewater and industrial wastewater accounting for 32.8% of the Waste sector emissions. Such rated criteria based green procurement approaches which incentivise climate mitigation and adaptation has a huge potential in helping India meet its climate change targets.