

Minutes of the 24th meeting of Project Appraisal & Approval Committee (PAAC-EPC) and 9th meeting of the Advisory Committee, constituted for Smog Tower project

The 24th meeting of the PAAC-EPC and the 9th meeting of the advisory committee for the smog tower project, chaired by Chairman, CPCB, was jointly held on October 06, 2022 via video conferencing. List of participants is placed at Annexure - I.

02. MS, CPCB welcomed the members of the PAAC and the advisory committee, along with the invitees to the meeting. Members of the technical group also participated in the meeting. AQM division briefed the committee about background and purpose of EPC funds, including thrust areas under which project and activities are funded. Subsequently, the committee was briefed about the status of EPC funds and proposals received for consideration at CPCB under said funds. Rs. 283.39 crore has been received in the EPC fund account as on 01.10.2022, out of which Rs. 71.36 crore has been expended with a total committed expenditure of around Rs. 100 crore.

03. A total of 130 proposals have been received, out of which 109 proposals have been placed before the committee. Out of 109 proposals, 28 projects have been sanctioned by the committee and 75 proposals have been rejected, while 5 proposals are under consideration of TG and 1 proposal is to be placed before the PAAC for taking a decision. Out of remaining 21 proposals, 8 proposals have recently been discussed in Technical Group (TG), 8 proposals are to be placed before Technical Group after comments are received from concerned ministries/departments, 1 proposal is ready to be placed before TG on which comments have been received and 4 proposals on which views of CAQM have been received are to be placed before the PAAC for taking a decision.

04. Subsequently, AQM division apprised the committee about the agenda of the meeting, involving deliberations and taking decision on 2 proposals having recommendations of TG, 4 proposals from ULBs/SPCC which have been examined by CAQM and recommendations shared with CPCB and, CPCB guidelines for grant of one-time financial support for setting up of pelletisation and torrefaction plants to promote utilization of paddy straw. The agenda also included a detailed presentation on the Smog Tower project and results of the one-year performance evaluation study conducted by IIT Bombay. The observation and decisions of the committee are summarized below:

 

A. 04 infrastructure upgrade/maintenance proposals from ULBs/SPCB:

PAAC members were briefed that in the 2nd meeting of the Steering Committee on EPC funds held on 22.04.2022, it was expressed that CAQM may seek proposals from ULBs and other land-owning agencies in Delhi-NCR, for greening/plantation drives and paving on roadsides to reduce dust emissions which may be considered for funding under EPC funds. Subsequently, it was also decided that CAQM will scrutinise the proposals received and recommend them to PAAC for funding under EPC funds, on basis of priority. In this regards, recommendations on 04 proposals have been received from CAQM. Deliberations on the proposals are summarised below:

- i. **Proposal for road maintenance/construction submitted by Ghaziabad Municipal Corporation (GMC):** GMC had submitted proposal for 37 nos. of roads for construction/maintenance out of which CAQM has recommended 9 nos. of roads, at a cost of Rs. 17.78 crore. Proposal was further discussed and it was decided that the road stretch from Rathi road to Sara export in Vijay Nagar zone (ward-25) may not be considered in the present case, as there are other more important roads in terms of traffic volume and dust emissions. PAAC member enquired if road construction activities can be funded under EPC funds. Chairman, PAAC expressed that this funding is a one-time measure and is not to be construed as budgetary support. For regular maintenance of roads, municipal bodies must look at developing their own revenue sources by involving other stakeholders including industries. CPCB further informed that EPC funds are meant to be utilised for improvement of air quality in Delhi-NCR and road dust is one of the major contributors to air pollution in Delhi-NCR, and, that the Steering Committee had also granted its approval to seek proposals from ULBs and road-owning agencies, for reducing dust emissions. **Activities not considered under any other scheme may be considered for sanction under EPC fund.**

PAAC in-principle approved the works for 8 nos. of roads at a cost of Rs. 15.79 crore. PAAC also expressed that GMC may submit its proposal to CAQM for other road stretches which are to be taken up on priority. Further, Ghaziabad Municipal Corporation will give a certificate that there is no separate scheme for funding construction/maintenance of industrial area roads. It was decided that funds will be released in two instalments: 50% would be released after issue of work order and remaining 50% after completion of works. GMC would submit documentation clearly indicating before and after scenarios of the road stretch, for release of final instalment.



Ghaziabad Municipal Commissioner would ensure that the sanctioned funds are not used for salaries or regular maintenance work or other such revenue expenditure. The work should be awarded following due tendering process and Municipal Corporation to ensure compliance of construction quality norms.

- ii. **Proposal for reducing road dust emission in NCR-UP submitted by UPPCB:** UPPCB submitted proposal for funding for road Works (Ghaziabad district), road dust control (anti-smog gun, mechanized sweeping machines for all districts including Loni) studies and capacity building, after consolidating requirements from ULBs of NCR districts of U.P. CAQM has recommended 37 nos. of machines (16 Mechanical Road Sweeping Machines (MRSM), 11 Truck Mounted Water Sprinklers and 10 Anti-smog Guns) for funding. PAAC expressed that Truck Mounted Water Sprinklers would not be considered for funding, due to limited effectiveness. PAAC in-principle approved procurement of 16 nos. of MRSM and 10 nos. of anti-smog guns, recommended by CAQM, at a capital cost of Rs. 14.33 crore. Further, UPPCB will give a certificate that there is no separate scheme for funding mechanical sweepers and anti-smog guns to avoid funding for the same items from multiple sources. PAAC suggested that equipment should be procured along with O&M for 5 years and O&M cost to be borne by State Govt.
- iii. **Proposal for road maintenance/construction submitted by Municipal Corporation of Delhi (MCD):** Proposal was submitted by MCD to CAQM for maintenance/construction/tiling/paving of 308 nos. of roads, out of which CAQM has recommended funding for 82 nos. of roads, at a cost of Rs. 32.67 crore. PAAC suggested that proposal may again be examined by CAQM for considering the priority roads. PAAC enquired about source of funding road construction/ maintenance works being executed by Municipal Corporation. MCD representative informed that their primary source of funding for road construction/ maintenance is from non-plan funds and Urban Development Fund of Central Government. A number of proposals were submitted for funding under UDF and only few proposals got approved. Chief Engineer, MCD mentioned that these roads may be funded in view of the shortage of funds. PAAC expressed that this may be examined by CAQM and would be considered after their recommendations.



- iv. **Proposal for greenery in parks and municipal schools submitted by Municipal Corporation of Delhi (MCD):** A proposal was submitted by MCD for development of urban forests in 7 areas and plantation in Municipal schools. CAQM has not recommended the proposal, stating that greening/plantation could be better funded through the enabling provisions under various bodies/agencies of GNCTD for a comprehensive plantation programme. In view of CAQM's recommendation, PAAC decided that the proposal may be rejected.

B. 02 proposals discussed in Technical Group under PAAC:

Observations made by the Technical Group on 02 proposals examined by it were discussed during the meeting and deliberations of PAAC are summarised below:

- i. **Heavy Duty vehicle fuel consumption calculation and validation through vehicle simulation tool by ARAI:** PAAC was briefed that project was already approved in-principle in the 23rd meeting and it was suggested to forward the proposal to the technical group for examination w.r.t cost and technical part. DST had also approved the proposal earlier. The technical group examined the proposal and had recommended the cost of the proposal may be reduced by 40% and same has been agreed by ARAI. The cost of project has come down from Rs. 4.25 crore (+ GST) to Rs. 2.55 crore (+GST). Further, ARAI has added a new element in the project about development of specific drive cycles for bus, LCV and ICV/MCV for Delhi-NCR besides development of simulation based FC calculation methodology.

ARAI mentioned that the cost reduction has no impact on the project scope, activities and deliverables. SIAM suggested that ARAI can consider handholding of OEMs, and it is willing to support ARAI efforts in the proposal. PAAC expressed that ARAI, OEMs and SIAM should work together on this project. PAAC approved the final proposal and sanction of Rs. 2.55 crore plus GST from EPC funds for the project to ARAI.

- ii. **Development of Personalized Face Mask with Highly Efficient Functionalized & Replaceable Filter Media submitted by NIFT, Kolkata:** PAAC was informed that the proponent aims to develop a face mask to not only capture Particulate Matter but also gaseous pollutants. The proposal was discussed in the 2nd meeting of the Technical

 

Group, and the TG had recommended rejection of the proposal in view of lack of clarity on certain critical aspects for face mask development such as pressure drop, breathability, CO2 expiration, replacement time, dead space, fit testing, etc. PAAC also suggested that EPC funds are primarily meant for improvement of ambient air quality and it may not be appropriate to fund this proposal.

In view of the above, PAAC decided that the proposal may not be considered.

- C. Guidelines for grant of one-time aid for setting up of pelletisation and torrefaction plants to promote utilization of paddy straw:** CPCB briefed PAAC members that taking cognizance of the issue of paddy straw burning largely in the states of Punjab and Haryana, CPCB has prepared guidelines for one-time capital funding of paddy straw based pelletisation and torrefaction plants. These guidelines were discussed in Steering Committee meeting and were duly considered by the said committee. CPCB further briefed PAAC about the applicability, funding structure and other features of the guidelines. CPCB informed that Individuals, entrepreneurs and companies setting up units, after issuance of these guidelines, using only paddy straw generated from Punjab, Haryana, NCT of Delhi, NCR districts of Rajasthan and Uttar Pradesh, would be eligible for one-time financial grant towards capital investment done towards the plant and machinery under the guidelines. A corpus of Rs. 50 crores has been proposed from EPC funds, out of which Rs. 40 crore would be utilized for pelletisation units and Rs. 10 crore for torrefaction units. It was also informed that 40% of capital outlay of plant (i.e. excluding civil cost, land cost etc.), subject to a maximum grant of Rs. 14 lakh per Ton/hr for non-torrefied pellet plant and Rs. 28 lakh per Ton/hr for a torrefied pellet plant would be provided under the guidelines, with an overall cap of Rs. 70 lakhs for the former and Rs. 1.4 crore for the latter. Assuming complete utilisation of the corpus, ~1.1 million MT of paddy straw pellets are expected to produce in a year. There are provisions in the guidelines for guaranteeing setting up of plants and assured production of pellets, such as submission of bank guarantee, monitoring of project progress and paddy straw utilization in the plants by SPCB, independent third party audit to ascertain effective utilisation of the funds given to the Unit, etc. Application received for availing the grant would be examined by SPCB and if recommended, it would be further forwarded to a committee chaired by MS-CPCB.

Dr. Hasan, SIAM appreciated the initiative, however, expressed that the cost seems to be on the higher side. CPCB responded that the cost has been finalized after discussed

with market players and seeking inputs of National Mission on Biomass Utilization in Power Plants and that cost is actually on conservative side. Further, funds will be released on the basis of invoice and against bank guarantee. Chairman, PAAC further suggested that Make in India equipment may be encouraged under the guidelines and preference may be given to them during sanctioning.

PAAC approved the sanction of Rs. 50 crore of EPC funds towards the guidelines and authorised Chairman, CPCB to sanction release of funds to concerned SPCB/PCC for pelletisation/torrefaction plants, based on the recommendation of the committee to be chaired by MS-CPCB for scrutiny of applications.

D. Performance evaluation results of Anand Vihar Smog Tower project: PAAC was briefed that the smog tower project was approved in the 17th meeting. Subsequently, the smog tower was commissioned in September 2021, and is in operation. IIT Bombay was asked to make a presentation on the technical details, principle of operation, preliminary results and the strategy for tower operation this year, considering past experience.

Dr. Sahu, IITB presented the design aspects, post commissioning operational experience, measurement based performance evaluation results, CFD (Computational Fluid Dynamics) modelling results and the way forward. Dr. Sahu apprised the PAAC about the issues encountered such as filter dislodging, leak identification, additional emission load due to RRTS project, etc. He informed that with different type of challenges faced during operation, reduction of up to 21% in PM_{10} levels has been observed at a distance of 300m from the tower. For $PM_{2.5}$, reduction at a distance of 80m from the tower ranged between 24-49%.

Dr. Sahu expressed that efforts are being made to keep the system at its best working condition during the upcoming winter season, as the data would be crucial to draw meaningful inferences regarding viability of such air cleaning systems (ACS) in Indian scenario. With measured data and modelling capability, IITB may be able suggest design improvement for better performance of a zonal outdoor ACS. Further, the next phase of the study includes determining range of ACS including data of night time measurements.

 

PAAC appreciated the efforts of IIT Bombay and other project partners. Dr. Hasan, SIAM sought to know IIT's view on overall level of performance of the tower. IIT Bombay expressed that the present tower is the first of its kind in the world and hence is not a technology demonstration project but is in fact a R&D project. Any technology takes time to mature and studies are still ongoing to understand the capacity of this technology, so, it is too early to judge it. Owing to its unique nature and being a pilot project, very little information was available and most of the present knowledge and capacity has been developed in the course of the tower operation. Issues which arose during operation and other factors such as activities in the vicinity and meteorology provided a learning opportunity and have played a significant role in affecting the performance of the tower. Dr. Hasan further added that CPCB may come out with a report on the performance of the two smog towers. MS-CPCB expressed that experiments are being conducted on the pilot project and another year of operation is left. Once completed, report would be submitted by IIT Bombay, which would be duly reviewed by air quality experts, and the results would be disseminated.

Dr. Joshi enquired if such smog towers can be indigenously developed. IIT Bombay expressed that there is now a significant level of understanding from the operation of this tower, and significant modification in the design suited to Indian conditions is possible.

Dr. Shankar Aggarwal, NPL expressed that natural decay is required for CADR calculation and for such ambient air purifier, there are many other standards/methods and terminology that can be used. He also suggested using Particle loading vs pressure drop plots and isokinetic sampling for obtaining meaningful insights on the tower efficiency.

MS-CPCB welcomed the suggestions and requested Dr. Shankar to provide his suggestions/comments in writing along with relevant literature/standards, so that these can be shared with IITB for examination and suitable incorporation in future activities.

Meeting ended with vote of thanks to the chair.



List of PAAC members

1. Sh. Tanmay Kumar, Additional Secretary and Chairman, CPCB
2. Dr. Prashant Gargava, Member Secretary, CPCB
3. Sh. Manoj Shrivastava, Director, MoEF&CC
4. Dr. J.B.V. Reddy, Scientist F, DST
5. Sh. V.K. Soni, Head-EMRC, IMD
6. Sh. R.K. Agrawal, Director, CAQM
7. Sh. R.K. Jaiswal, Development Officer, Ministry of Heavy Industries
8. Sh. Utsav Sharma, RO- Ghaziabad, UPPCB
9. Sh. Praveen Kumar, RO- Noida, UPPCB
10. Representative from HSPCB
11. Representative from RSPCB
12. Representative from DPCC
13. Dr. Rashid Hasan, Advisor, SIAM
14. Dr. Sandeep Garg, SIAM

List of Technical Group members

1. Dr. T.K. Joshi, Health Expert
2. Dr. Shankar Aggarwal, Senior Principal Scientist, CSIR-NPL
3. Dr. Abhijit Pathak, Scientist D, CPCB
4. Sh. Ankush Tewani, Scientist D, CPCB

List of Advisory Committee members

1. Sh. P.K. Gupta, Director, CPCB
2. Sh. Ravi Kant Gupta, SGM, EIL
3. Sh. R.P. Singh, GM, NBCC

Invitees

1. Sh. Nitin Gaur, Municipal Commissioner, Ghaziabad
2. Sh. N.K. Chaudhary, Chief Engineer, Ghaziabad Municipal Corporation
3. Sh. M.D. Gupta, Chief Engineer, Municipal Corporation of Delhi
4. Sh. R.K. Taneja, Chief Engineer, Municipal Corporation of Delhi
5. Sh. Sudhir Mehta, Chief Engineer, Municipal Corporation of Delhi
6. Sh. Upkar Goswami, JE (civil), Municipal Corporation of Delhi
7. Dr. S. Juttu, General Manger, ARAI
8. Sh. Rairikar Sandeep, Dy. General Manager, ARAI
9. Dr. S.S. Thipse, Senior Deputy Director, ARAI
10. Dr. M.R. Sahu, Asst. Professor, IIT Bombay
11. Dr. Prashant Nawale, IIT Bombay
12. Dr. Veerendra Sahu, IIT Bombay
13. Dr. Aditya Sharma, IIT Bombay
14. Ms. Riya Parikh, IIT Bombay
15. Ms. Labhini Pagarware, IIT Bombay
16. Sh. Rajendra Inani, Business Unit Head, Tata Projects Limited
17. Sh. Prakash Kumar, Tata Projects Limited

CPCB Officials

1. Sh. Gautam Kumar Sharma, Scientist B, CPCB
2. Sh. Toshesh Bhargava, SRF, CPCB
3. Sh. Amit, IT division, CPCB