

## Minutes of the 22<sup>th</sup> meeting of Project Appraisal & Approval Committee (PAAC-EPC)

The 22<sup>nd</sup> meeting of the PAAC-EPC, chaired by Chairman, CPCB, was held on August 24, 2021 via video conferencing. List of participants is placed at Annexure - I.

02. Chairman, CPCB welcomed the members to the meeting. AQM division briefed the committee members about background and purpose of EPC funds, including core areas under which project and activities can be funded, committees constituted for its management, and their terms of reference (ToR). Subsequently, the committee was briefed about the status of EPC funds and proposals. Rs. 222.97 crore have been received in the EPC fund account as on 20.07.2021. A total of 109 proposals have been received, of which 85 proposals have been placed before the committee and have been evaluated, and 24 proposals are to be placed before the committee and that these will be placed for consideration in the present meeting. Out of the 85 proposals, the committee has sanctioned 28 projects and 32 proposals have been rejected. Out of the 25 balance proposals, 13 proposals are to be discussed and decided in the present meeting, 7 proposals will be placed before the PAAC in the next meeting and the remaining 5 proposals will be placed for discussion once inputs/comments are received from external department/proponent.

03. Subsequently, AQM division apprised the committee about the agenda of the meeting involving presentation on final findings of one project, consideration of one fresh proposal, two proposals referred to sub-committee and 23 proposals examined by the internal sub-committee and, 13 other proposals evaluated/examined earlier by PAAC and final decision to be taken on rejection/consideration of these proposals. The observations and decisions of the committee are summarized below:

### **A. Decision Support System for Early Warning, and Informed Actions in Delhi-NCR- Proposal of IIT Delhi received through CAQM**

Dr. Harsh Kota, IIT Delhi presented the proposal before PAAC along with other co-investigators from NEERI, C-DAC, IITM and IMD. The aim of the project proposal is to develop an interactive, intelligent expert system for planning and implementing air pollution mitigation measures for policy and operational governance in Delhi-NCR. The cost of the proposal was informed to be ₹97.70 lakhs excluding GST and costs regarding operational computation cost and server requirement, for 1-year duration. There are four major components



of the proposal viz. Physical component (Emission Inventory), Chemical component (Primary and secondary pollutants using chemical transport model), Engineering component (Emphasize on Source specific interventions) and Interactive user interface and dissemination component. The committee expressed that the proposal has been forwarded by Commission for Air Quality Management in Delhi-NCR and Adjoining Areas (CAQM) and the system/tool developed in the project will be utilized by it for informed decision making regarding measures to be taken for Delhi-NCR, and thus it has to fulfill the requirements of CAQM and, enquired whether review of proposal has been done by CAQM. Further, since there are already tools and data available such as primary emission data, emission inventory, SAFAR EWS, etc., whether these will be utilized to eliminate duplication of work. PI informed that already available tools, data will be used and will be further updated for use in the DSS model, to get the best outcome. PI further briefed that the proposal has been reviewed by CAQM and accordingly recommended for consideration and funding to CPCB.

PAAC emphasized that the DSS should be developed under complete guidance of CAQM since it is to be operated on a daily basis by CAQM. The PAAC approved the project in-principle and advised the PI to submit the proposal along with the revised cost including server cost and recurring cost for operation of this tool for 3 years, to CAQM and, CAQM shall forward the revised proposal along with its recommendation. Subsequently, the funds will be sanctioned by PAAC and shall be transferred to CAQM for the project.

#### **B. 25 old/new proposals discussed in sub-committee:**

Recommendations of the CPCB sub-committee on 21 proposals were already shared with PAAC members for their consideration. The sub-committee had recommended rejection of these 21 proposals.

After discussions, following 21 proposals were rejected by the PAAC due to lack of details/lack of utility/non-conformity with EPC core areas/repetition or duplication of work:

- i. **To develop a device for pollution control by vehicular emission by Sh. Baldev Raj**
- ii. **TREE PLANTATION in different places Delhi NCR by Sh. Ghanshyam Datta Bhardwaj**
- iii. **Development of an Infrastructure for advanced air quality analytics for Delhi-NCR by IIT Bombay:** PAAC expressed that the aspect of improved AOD measurement as proposed by the PI i.e. by modification and corrections of artifacts in AOD data caused by surface reflectance values, may be considered in satellite based PM<sub>2.5</sub> study already underway by Prof. Sagnik Dey, IIT Delhi.



- iv. Spatio-temporal Analysis of Air-pollution Data (Delhi) for decision making and improved lifestyle management by Pondicherry University
- v. Improving Air Quality using Decentralize Waste management by Shudh Sustainable Solutions
- vi. Scalable air pollution measurement in Delhi-NCR using vehicle mounted and wearable sensors management by IIIT Delhi
- vii. Feasibility of using Real-Time Low-Cost PM<sub>2.5</sub> "Atoms" Monitor with CPCB Ambient Monitoring Network by IIT Kanpur
- viii. Assessment of Real World Vehicle Emission by Ms. Radhika
- ix. Air Pollution Reduction from Brick Kilns: Techno-socio-economic analysis of options by Integrated Research and Action for Development
- x. Development of Digital Application (App) for estimating disease burden benefits from adoption of improved technologies for Delhi by TERI
- xi. Development of traffic management plan for Ludhiana city by Punjab State Council for Science & Technology
- xii. Atmospheric Brown Carbon in Delhi: Identifier of different biomass burning sources, and its implication for radioactive forcing and visibility impairment by JNU Delhi
- xiii. Green Hack-a-thon: For innovative solutions to prevent and protect harm from air pollution by TERI
- xiv. Effect of air pollution on the health of workers at roadside eateries in Delhi & NCR area & its mitigation strategy by Amity University, Jaipur
- xv. Air pollution and inflammatory response: Airborne biological particle diversity and characterization in urban areas of North Indian Cities by NITK Surathkal
- xvi. Does poor ambient air quality adversely affect biomarkers in outdoor workers by TERI
- xvii. Performance and emission characteristics of a vehicle fueled with compressed biogas (CBG) by IIT Delhi
- xviii. Improve and maintain the overall Air Quality Index by reducing particulate pollutants like PM<sub>2.5</sub> and PM<sub>10</sub> by minimum of 20% by Devic Earth Pvt. Ltd., Bangalore
- xix. Cost saving from implementation of tradable market permit market for PM<sub>2.5</sub> in Industrial hotspot by TERI-SAS

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- xx. **Development of integrated multi-functional electric pole for reduction of air pollutants emanating from automobiles on roads of metropolitan cities by NIT Warangal**
- xxi. **Design of low cost filters for separation of particulate matter and toxic gas from air by IIT Delhi**

04 projects were considered by PAAC for further examination and discussions on the same are summarized below:

- i. **Demonstration of utilizing high cetane Green Diesel (produced through hydro processing of vegetable oil by CSIR-IIP's patented technology) in stationary and vehicular engines by CSIR-IIP:** CPCB sub-committee had recommended to obtain comments from MoRTH, MoPNG, ARAI and SIAM. PAAC was informed that comments have been received from MoRTH, MoPNG and ARAI, and that these have recommended that the proposal may not be considered for funding in the present form. PAAC recommended that the comments received may be shared with the PI and the proposal may be rejected in the present form. PI may consider submission of fresh proposal considering the comments.
- ii. **PM Related Burden of Disease in India Study (PRELUDE) by IIT Delhi:** The proposal aims to study association between PM, mortality and multi-system morbidity, associated with respiratory, cardio-metabolic and neuro-psychiatric disorders, in Delhi and Mysore city (control site). PAAC observed that it had already approved in-principle, a cohort study proposal related with cardio-metabolic disorders, received from IIT Delhi. Since this new proposal is more comprehensive and covers additional health aspects related to PM, both the PIs can jointly submit an integrated proposal for consideration of PAAC.
- iii. **Spatial variation and diversity of airborne biological particles in Delhi city by NITK Surathkal:** The proposal aims to do measurement and characterization of biological components (bacterial and fungal) in airborne particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>) and assess relationship between inflammation and biological components besides source tracking of airborne biological particles. PAAC agreed with the views and recommendation of sub-committee that the proposal apparently may open a new arena of expanding knowledge on airborne bacterial and fungal presence and their in-vitro reactivity on inflammatory/ respiratory diseases and immune system. PAAC



accordingly recommended that the proponent may be invited in the next meeting for presenting the proposal before the PAAC.

- xxii. **Artificial Neural Network (ANN) Based Prediction System Integrated with SENSurAIR PM<sub>2.5</sub> Sensor by IIT Delhi:** The proposal aims to do field calibration of sensors recently developed under DST funds and deploy these to generate PM<sub>2.5</sub> data, and, further develop ML algorithm for PM<sub>2.5</sub> concentration prediction using one year collected data. PAAC expressed that the proposal is a novel attempt at validating indigenously developed sensors on which funds have already been expended by DST. Accordingly, PAAC recommended that the proponent may be invited in the next meeting for further discussions on the project.

**C. Proposals apprised previously and to be rejected by PAAC (based on external department/experts feedback):**

12 proposals which were discussed previously in the sub-committee/PAAC, were deliberated upon in the meeting and were rejected by the PAAC on grounds of non-submission of revised proposal within prescribed timelines/ repetition or duplication of work/ non-recommendation from External departments or line ministries. List of the 12 proposals rejected by PAAC is given as under:

- i. **Monitoring and analyzing how buildings breathe an IoT and AI based solution for monitoring, analyzing and advising on indoor air pollution by CSIR-CIO**
- ii. **Conducting studies and making recommendations to the CPCB regarding the strengthening of its powers and streamlining of its functions in light of its perceived role among various stakeholders, thereby fulfilling its score objective of managing air quality in Delhi-NCR by VIDHI Centre for Legal Policy**
- iii. **Investigations into mass and chemical characterization of fugitive dusts and setting up environmental guidelines for control of these emissions in Delhi-NCR (In-principle approved) by IIT Kanpur**
- iv. **Study of vehicular noise emission and noise mapping over Delhi-NCR by CSIR-NPL**
- v. **Develop a mesh network of smart pollution detection, reporting and cleaning system by Bharti School of Telecommunication Technology and Management, IIT Delhi**



- vi. Development of Stabilized Zirconia-based Highly Sensitive and Selective Exhaust Gas Sensors for Implementation in Urea-SCR DeNOx Vehicular-Emission Control System by Pondicherry University
- vii. Carrying out assessment of source emission profile of various make of in use diesel engines of vehicles as well as DG equipment and Studying the effect of specific fuel additives for on-road engine performance for pollution level by Eeshan Biotech
- viii. The Development and Usage of Pyrotechnic Devices for Cloud Seeding to Fight Delhi-NCR Winter Smog M/s Sri Kaliswari Fireworks Pvt. Ltd.
- ix. Cleaner Technologies for Industrial Pollution Control in Delhi by National Institute of Industrial Engineering
- x. Measurement of performance and emission characteristics of biodiesel, alcohols and peroxide blends in diesel engines by IIT Roorkee
- xi. Cloud seeding in Delhi region for creating artificial rains (In-principle approved) by IIT Kanpur: The PAAC expressed that the project is not required at present, and as and when required, CPCB would contact the PI.
- xii. Micro scale air pollutant dispersion modeling for forecasting & management of air quality by Fluidyn Consultancy Private Limited

**D. Air Quality Management through Big Data, Machine Learning and AQI Predictive Modelling approaches applied towards assessing, estimating and predicting pollution levels in Delhi-NCR (In-principle approved) by Kam Kanakdurga Education & Consultancy Services Pvt. Ltd.:**

PAAC in its 21<sup>st</sup> meeting had made following observations regarding this proposal-

- Comparison with proposed DSS being developed by CAQM
- Conformity of award of projects to private agencies under GFR
- Response of M/s KKD on the project cost proposed by CPCB committee

PAAC was apprised that the projects by CAQM and M/s KKD are based on different approach, and that selection by direct negotiation/nomination, on the lines of single tender mode of procurement of goods, can be considered under exceptional circumstances mentioned under GFR Rule 194 but, M/s KKD has not agreed to the cost proposed by CPCB.

The PAAC further expressed that the DSS being considered for funding by PAAC is more comprehensive, and accordingly, this proposal may be rejected.



**E. Does Poor Air Quality from Crop burning in close proximity to residential areas adversely affects Children's respiratory health:**

The PAAC was informed that the project was awarded to TERI in November 2018 at a cost of ₹50.197 lakhs plus taxes, and was discussed in the 20<sup>th</sup> PAAC-EPC meeting, where it was recommended to forward the final report along with the findings and recommendations to DST for examination and comments. The same was discussed by a DST appointed expert panel in its meeting held on 04.11.2020 and the panel had suggested to incorporate certain points in the final report and submit a white paper highlighting the study outcomes and data that can be utilised by policy makers. The report and the whitepaper were subsequently submitted by the PI and the whitepaper was also shared with the PAAC members for consideration/concurrence. The study has been completed as per the MOU and the final instalment is to be released on acceptance of findings of the project by PAAC.

Dr. Meena Sehgal, the PI along with her colleagues presented the final findings of the project. The study, conducted with 3644 participants having age between 10-60 years, strengthens the evidence on association between PM<sub>2.5</sub> exposure due to crop residue burning and poor respiratory health with increased respiratory symptoms and compromised lung function with the highest number of respiratory complaints reported by the elderly population (>40-60 y) and the lowest by the young population (>18-40 y) during crop burning period. The study observed 11-15% decline in lung function based on LFT parameters (FEV1, FVC and PEF) with increase in PM<sub>2.5</sub> concentration (per 100 µg/m<sup>3</sup>) during crop residue burning period, and that the youngest age group (>10-18 y) has the highest risk of reduction in lung function as compared to the other age categories (>18-40y and >40-60 y) both for male and female groups.

After discussions, PAAC accepted the findings of the project and recommended to release the final instalment. PAAC asked the PI to submit a brief write-up on health implication of crop residue burning for considering including its dissemination through IEC activities conducted by state governments.

04. Chairman, CPCB expressed that most of the proposals submitted for consideration under EPC funds are in the nature of research work, a number of such studies have already been completed while only a few studies for on-ground implementation/demonstration of tangible interventions/measures have been received so far. Dr. P.K. Banerjee, SIAM agreed to



the same. Submission of proposals seeking to encourage micro-level air quality management may be encouraged, such as development of a small model zone/area in Delhi where on-ground measures may be undertaken to reduce dust, traffic congestion, management of municipal solid waste, etc., which could subsequently be replicated by MCDs and other local bodies. PAAC recommended that proposals, intended for on-ground mitigation and management of air pollution, should be invited from SPCBs, ULBs, technical institutions, etc.

Meeting ended with vote of thanks to the chair.

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**List of Participants (through VC):**

1. Sh. Naresh Pal Gangwar, Chairman, Central Pollution Control Board
2. Dr. Prashant Gargava, Member Secretary, Central Pollution Control Board
3. Sh. Sunil Kumar, Joint Secretary (Ref.), MoPNG
4. Dr. V.K. Soni, Head EMRC, IMD
5. Sh. R. K. Jaiswal, Development officer, DHI
6. Sh. M. P. George, Scientist 'D', DPCC
7. Dr. Kiran Kumar, Scientist 'C', DST
8. Sh. P. K. Banerjee, Executive Director, SIAM
9. Dr. Rashid Hasan, Advisor, SIAM
10. Sh. Vivek Goyal, RO- Bhiwadi, RSPCB
11. Sh. Praveen Kumar, RO- Noida, UPPCB
12. Representative, RO- Greater Noida, UPPCB
13. Representative, RO- Ghaziabad, UPPCB
14. Representative, RO- Gurugram, HSPCB

**List of Proponents (through VC):**

1. Dr. Harsha Kota, IIT Delhi
2. Sh. Sunil Gulia, NEERI
3. Dr. Manoj Khare, C-DAC
4. Dr. Sachin Ghude, IITM
5. Dr. Meena Sehgal, Fellow, TERI
6. Dr. Kanhaiya Lal, TERI
7. Ms. Mahima Uttreja, TERI

**CPCB Officials:**

1. Sh. P. K. Gupta, Sc. 'E' and Head, AQM Division
2. Sh. Abhijit Pathak, Scientist 'D', Air Lab
3. Sh. Sharandeep Singh, Scientist 'D', AQM Division
4. Sh. AnkushTewani, Scientist 'D', AQM Division
5. Sh. Gautam Kumar Sharma, Scientist 'B', AQM Division
6. Sh. Toshesh Bhargava, SRF, AQM Division
7. Sh. Rajendra, SA, IT Division

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