

MINUTES OF THE 12TH MEETING OF THE RE-CONSTITUTED EXPERT APPRAISAL COMMITTEE (EAC) ON ENVIRONMENTAL IMPACT ASSESSMENT (EIA) OF THERMAL POWER PROJECTS

The 12th Special Meeting of the re-constituted EAC (Thermal Power) was held on 10th November, 2017 in the Ministry of Environment, Forest & Climate Change at Indus Meeting Hall, Jal Wing, Ground Floor, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi under the Chairmanship of Dr. Navin Chandra. The following members were present:

- | | |
|---------------------------|--------------------------|
| 1. Dr. Navin Chandra | - Chairman |
| 2. Dr. N.P. Shukla | - Member |
| 3. Shri N. Mohan Karnat | - Member |
| 4. Dr. Manjari Srivastava | - Member |
| 5. Shri N.S. Mondal | - Member (Rep. of CEA) |
| 6. Prof. S.K. Sinha | - Member (Rep.. IIT/ISM) |
| 7. Dr. S. Kerketta | - Member Secretary |

Dr. S. Lele, Dr. J. K. Pandey, Shri S.D. Vora, Shri G. P. Kundargi, Dr. S. K. Paliwal and Dr. R. K. Giri could not be present due to preoccupation.

Item No.12.0: CONFIRMATION OF THE MINUTES OF THE 11TH EAC MEETING.

The Minutes of the 11th EAC (Thermal Power Sector) meeting held on 26.10.2017 were confirmed.

Item No. 12: CONSIDERATION OF PROJECTS

Item No. 12.1: Standardization of EC Conditions for Thermal Sector – presentation before the EAC

EC is given on the basis of assumption of 34% of ash content and 100 km distance of transportation in rail/road/conveyor/any other mode. Any increase of %ash content by more than 1% point, and/or any increase in the transport distance by more than 50 km will require application for modifications of EC conditions after conducting the 'incremental impact assessment' and proposal for mitigation measures.

A. Air Pollution:

1. Electrostatic Precipitators (ESPs) of adequate efficiency shall be installed in each unit to ensure that particulate matter (PM) emission to meet the stipulated standards.
2. Stacks of prescribed height shall be provided with continuous online monitoring equipment for SO_x, NO_x and Particulate Matter as per extant rules. Exit velocity of flue gases shall not be



less than prescribed limit. Mercury emissions from stack shall also be monitored on periodic basis.

3. Continuous Ambient Air Quality Monitoring Stations in the project area to monitor as per the NAAQMS, 2009 guidelines. Similarly, AAQ shall be carried out in the vicinity of the plant on various environmental parameters as per NAAQMS, 2009. Data from ground-level air quality monitoring will be uploaded in real time in the website of the company as a part access to the General Public.
4. Adequate dust extraction/suppression system shall be installed in coal handling, ash handling areas and material transfer points to control fugitive emissions.
5. Thermal Power Plant, other than the power plants located on coast and using sea water for cooling purposes, shall achieve specific water consumption, zero liquid discharge and emission standards as per MoEF&CC Notification S.O. 3305(E) dated 07.12.2015 or subsequent notifications issued time to time.
6. NO_x and SO_x emissions from individual stack shall be limited to as per the extant standards specified in the EPA Rules.

B. Noise Pollution:

7. Noise emanating from various sources shall be adhering to prescribed limit. Persons exposed to high noise areas shall use Personal Protective Equipment (PPE) like earplugs/ear muffs, etc.
8. Periodical medical examination on hearing impairment/loss shall be carried out for all the workers and maintain audiometric record and for treatment for any hearing loss including shifting to non-noisy/less noisy areas.

C. Health of Local Residents:

9. Biannual Health Impact Assessment, for workers and the residents staying in the vicinity of project affected areas, is to be conducted. The study shall take into account of chronic exposure to noise which may lead to adverse effects like ulcer, hypertension and incase of person suffering cardiac problem may cause heart attack too. Similarly, the study shall also consider the health impacts due to air and water polluting agents.
10. Base line health data within study area shall be collected and prepared. Mitigation measures should be taken for control of endemic diseases.
11. Impact on agricultural crops (as applicable) due to operation of the power plant shall be studied from an institute of repute on a long-term basis once in two years. The study shall also include impact due to heavy metals associated with emission from power plant.

D. Water and Wastewater Management:

12. A scientific study for deciding the minimum flow to be released during the lean season should be undertaken. Detailed



information on fish species composition and the likely impact of water withdrawal on these species should be included. Till the study is completed 15% of the average flow of 120 consecutive leanest days should be maintained for environmental flow. After the study is completed, water withdrawal must ensure minimum e-flow as per the study or the above 15% figure, whichever is higher.

13. Regular (at least once in six months) monitoring of groundwater in and around the ash pond area including heavy metals (Hg, Cr, As, Pb, etc.) shall be carried out as per CPCB guidelines. Surface water quality monitoring shall be conducted for major surface water bodies as per EMP. The data so obtained should be compared with the baseline data so as to ensure that the groundwater and surface water quality is not adversely affected due to the project. The data from this monitoring shall be published in the public domain within a day of receiving the results of sample analysis.
14. Zero Liquid Discharge shall be achieved except for the coastal power plants using seawater.
15. The total water drawal from River for all units should not exceed the requirement as stipulated and must meet minimum environmental flow standards as stipulated in #12 above. Data on daily water withdrawal and river flows measured immediately upstream and downstream of withdrawal site shall be published in real time (within 1 day) in the public domain. Hot water coming from the condenser should be properly cooled to ensure to keep the temperature of the receiving surface water is no more than 5 degrees Celsius above the temperature of the intake water.
16. Plant should be designed for zero discharge. The treated effluents emanating from the different plants such as DM plant, boiler blow down, ash pond/dyke, sewage, etc. conforming to the prescribed standards shall be re-circulated and reused. Sludge/ rejects will be disposed in accordance with the Hazardous Waste Management Rules.
17. In case of Closed cycle cooling system with cooling towers, COC shall be at least 5.0. In case of Power Plants with cooling tower and using seawater, COC shall be at least 1.5.
18. The outlet quality as well as the seawater near the outfall shall be monitored especially for temperature and salinity regularly. If the parameters are found to be of significant consequence, necessary remedial measures shall be taken. A report in this regard shall be submitted to Regional Office, MoEF&CC along with six monthly monitoring report.
19. As the seawater intake systems required for the plant falls in CRZ area, recommendations from SCZMA as per CRZ Notification, 2011 shall be implemented. Marine outfall shall be located at a distance where the disturbance to marine ecology is minimum.



20. As per the Revised Tariff Policy notified by Ministry of Power vide dated 28.01.2016, project proponent shall explore the use of treated sewage water from the Sewage Treatment Plant of Municipality/ local bodies/ similar organization located within 50 km radius of the proposed power project to minimize the water drawl from surface water bodies.
21. MoEF&CC Notification G.S.R 02(E) dated 2.1.2014 and subsequent notifications as amended time to time regarding use of raw or blended or beneficiated/washed coal with ash content not exceeding 34% shall be complied with, as applicable.
22. MoEF&CC Notifications on Fly Ash Utilization S.O. 763(E) dated 14.09.1999, S.O. 979(E) dated 27.08.2003, S.O. 2804(E) dated 3.11.2009, S.O. 254(E) dated 25.01.2016 and subsequent amendments issued from time to time shall be strictly complied with.
23. Wherever river falls in the project area, river protection/conservation plan to be submitted so that river could be protected which may help in river survival and making sustenance for round the year.

E. Disaster Management:

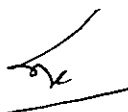
24. Adequate safety measures shall be provided in the plant area to control spontaneous fires in coal yard, especially during dry and humid season.
25. Storage facilities for auxiliary liquid fuel such as LDO and HFO/LSHS shall be made as per the extant rules in the plant area in accordance with the directives of Department of Explosives. Sulphur Content in the liquid fuel will not exceed 0.5%.
26. Ergonomic working conditions with First Aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.

F. Biodiversity Management:

27. The clearance from Standing Committee of NBWL under the Wildlife (Protection) Act, 1972 should be obtained, as applicable.
28. Wildlife Conservation plan be prepared for the area located within the project and implemented by the project proponent in consultation with the State Forest Department. Wildlife Conservation Plan also to be prepared outside the project area in the vicinity and implemented by the local state Forest Department.

G. Solid Waste management:

29. Solid waste management should be planned in accordance with extant Solid Waste Management Rules.
30. Alternate technologies available for utilizing of dry fly ash shall be explored in consultation with reputed National Institutions. The fly ash utilization plan for existing power plant as well as

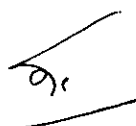


proposed project shall be drawn in consultation with respective institutions in addition to conventional utilization such as Cement and brick manufacturing.

31. Detailed and time bound action plan for phasing out of the existing units along with waste management plan shall be submitted and shall be inline with Construction and Demolition Waste Management Rules, 2016, if applicable.
32. Toxicity Characteristic Leachate Procedure (TCLP) test shall be conducted for any potential of leaching heavy metals into the surrounding areas as well as into the groundwater.
33. Ash pond shall be lined with impervious lining as per the soil conditions. Adequate safety measures shall also be implemented to protect the ash dyke from getting breached.
34. Fly ash shall be collected in dry form and ash generated shall be used in phased manner as per provisions of the Notification on Fly Ash Utilization issued by the Ministry and its amendment. By the end of 4th year, full fly ash utilization should be ensured. Unutilized ash shall be disposed off in the ash pond in the form of High Concentration Slurry. Mercury and other heavy metals (As, Hg, Cr, Pb, etc.) will be monitored in the bottom ash as also in the effluents emanating from the existing ash pond. Flyash utilization details shall be submitted to concerned Regional Office along with the six-monthly compliance reports and utilization data shall be published on company's website so that information is available in public domain.
35. In case of waste-to-energy plant, two major problems related with environment are fire smog in MSW dump site and another problem is of foul or bad smell which makes the lives of surrounding habitations very difficult. Therefore, following measures require to be taken up:
 - i) Water hydrant at all the dumpsites of MSW area to be provided so that the fire and smog could be controlled.
 - ii) To arrest foul smell, sprayer like microbial consortia may be provided for arresting the foul smell of MSW area.

H. Post Project Monitoring:

36. Environmental Audit of the project be taken up for preparation of Post Construction EIA and SIA report by the third party and report submitted to the Ministry.
37. Resettlement & Rehabilitation Plan as per the extant rules of Govt. of India and respective State Govt. shall be followed.
38. Free Fuel/Energy Conservation Plan to be implemented as envisaged in the EIA / EMP report. Renewable Energy Sources Obligation.
39. Monitoring of Carbon Emissions from the power plant shall be carried out annually from a reputed institute for the existing plant as well as for the proposed project.



I. Risk Mitigation and Disaster Management:

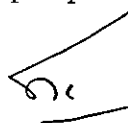
40. Safety management plan based on Risk Assessment shall be prepared to limit the risk exposure to the workers within the plant boundary. Leak detection devices shall also be installed at strategic places for early detection and warning.
41. Regular mock drills for on-site emergency management plan and Integrated Emergency Response System shall be developed for all kind of possible disaster situations.

J. Green Belt Development:

42. Native and indigenous species shall be part of green belt development plan.
43. Prior permission from the State Forest Department should be taken regarding likely impact of the proposed project on adjacent reserved forest. Measures should be taken to prevent impact of leaching of heavy metals, particulate emissions / fugitive emissions, if any from the proposed plant on the surrounding reserve forest or other Forests located within 10 km radius of the project. Further, Conservation Plan for the conservation of wild fauna in consultation with the State Forest Department should be prepared and implemented.

K. CSR activities:

44. Solar Panels shall be provided for in the surrounding villages as part of CSR activities. Provision of electricity.
45. Agriculture, organic farming, modern irrigation techniques, training youth and women, community biogas plants, tribal welfare activities shall be part of CSR activities.
46. Modern methods of agriculture organic forming, compost/vermiculture making and utilization, drip/direct to root irrigation) to be promoted in and around the Project area.
47. Women empowerment is important. Therefore, proper skill based training/long term livelihood revenue generation be created for all the affected people.
48. Computer facilities may be provided in the school along with a trained computer teacher to inculcate computer skill among the youths.
49. Preventive health programme may be preferred than the curative health programme such as nutrition development of small children in and around the project.
50. A scientific study on health, education and standard of living shall be conducted annually keeping in mind the parameters of Human Development Index.
51. Provision of counseling to resettled inhabitants as uprooting due to R&R leads to emotional stress, rise in family conflict and anxiety among project affected people.



52. Provision of counselors for school children to assess their psychological needs and also help to cope the demands of schooling.
53. Provision of special education for differently abled children/ special need children with learning disability.

Check List during consideration fresh ToR:

- i. Form-1
- ii. Pre-feasibility report as per MoEF, OM dated 30.12.2010.
- iii. Alternate sites (three) study report
- iv. Project Map with GPS co-ordinates on Survey of India Topo sheet along with .kmz/.kml file.
- v. Proof of application for Stage-I Forest Clearance (If forest land is involved)
- vi. Proof of application for CRZ Clearance/SCZMA recommendations. (If CRZ is involved)
- vii. Area map showing project vis-à-vis sensitive areas (national parks/wildlife sanctuaries/ eco-sensitive zones/ migratory corridors/ wetlands/ human settlements, etc.) located within the distance of 10 km from the periphery.
- viii. If the project is attracting the general condition, i.e. falling within 10 km of inter-state/international boundary, Critically Polluted Areas, project is to be treated as category 'A' irrespective of capacity. Map indicating distance from the project to CPA/inter- state/international boundary.
- ix. Map showing details and location of proposed sampling stations (air, noise, water, soil, etc.)
- x. Declaration of QCI-NABET accredited consultant within three months of issue of ToR
- xi. Authorization of the signatory by competent authority (CEO/Board of the company).
- xii. During the presentation (ToR and EC Appraisal), personnel capable of taking policy decisions shall be present.
- xiii. In case of Joint venture/SPVs, personnel representing respective JVs/SPV who are capable of taking decisions shall be present during the ToR/EC meeting.

Check during Consideration for fresh EC:

- i. Final EIA report, including study of impact of water withdrawal on downstream users and aquatic community in case of river water withdrawal
- ii. Public Hearing proceedings in Vernacular and English. Public hearing to be presided by the equivalent rank of ADM and above.
- iii. Public Hearing videography
- iv. Fuel Supply Agreement, MoU in case of imported coal.
- v. Report of the study on water sufficiency/availability vs total consumption for sustenance of aquatic life and down the stream

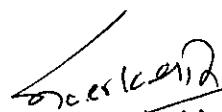


- users in lean season at 90% dependable year. Water allocation letter against the total commitment made by WRD and preparation of river/water conservation plan.
- vi. Project Feasibility Report.
 - vii. Stage-I Forest Clearance, if forestland involved.
 - viii. Recommendations of Chief Wildlife Warden and authenticated map showing project vis-à-vis protected areas, if falling within 10 km radius.
 - ix. NBWL recommendations, if project falls in eco-sensitive area/protected area, if project is a permissible activity.
 - x. RO/SPCB/CPCB certified compliance report of existing EC, in case of expansion projects.
 - xi. SCZMA recommendations in case of CRZ areas.
 - xii. Wildlife Conservation Plan (Core & Buffer), if schedule-I species are present within 10 km of study area.
 - xiii. R&R plan.
 - xiv. Need based assessment and vis-à-vis CSR scheme.
 - xv. Details of QCI-NABET accreditation and certificate.
 - xvi. Authorization of the signatory by competent authority (CEO/Board of the company).
 - xvii. During the presentation (ToR and EC Appraisal), personnel capable of taking policy decisions shall be present.
 - xviii. In case of Joint venture/SPVs, personnel representing respective JVs/SPV who are capable of taking decisions shall be present during the ToR/EC meeting.

The EAC members deliberated on the above in detailed. After incorporating the comments received from the EAC members including some suggestions from the Civil Societies, **the standardized EC conditions recommended by the Committee for finalization.** Member Secretary apprised the Committee that the standardized EC conditions of Thermal Sector be circulated to all the Regional Offices of the Ministry of Environment, Forest and Climate Change. On receipt of the same, all the comments shall be incorporated in the Standardized EC conditions and approval of the Competent Authority be taken accordingly.

Item No. 12.2. Any other items with the permission of the Chair.

As there were no items left, the special meeting ended with thanks to the Chair.


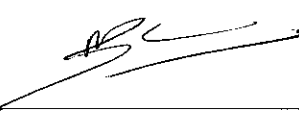
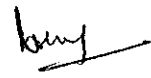
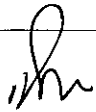
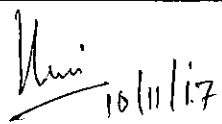
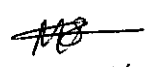

8/2/2018
(Dr S. KERKETTA)
MEMBER SECRETARY

LIST OF MEMBERS (Attendance Sheet)

12th (Special) EXPERT APPRAISAL COMMITTEE MEETING (Thermal & Coal Mining Sector)

DATE & TIME : 10th November , 2017

VENUE : BRAHMAPUTRA HALL,
INDIRA PARYAVARAN BHAWAN.

Sr.No.	Name of Member	Signature
1.	Dr. Navin Chandra Chairman	
2.	Dr. Narmada Prasad Shukla Member	
3.	Sh. N. Mohan Karnat, IFS Member	
4.	Dr. Sharachchandra Lele Member	abs
5.	Sh. P.D. Siwal/ Sh. N.S. Mondal, Member	
6.	Dr. R.K. Giri, Member	abs
7.	Dr. S.K. Paliwal, Member	abs
8.	Prof. D.C. Panigrahi/ Prof. S.K. Sinha/ Prof. Om Prakash Member	 10/11/17
9.	Dr. Jai Krishna Pandey, Member	Absent
10.	Dr. Manjari Srivastava, Member	 10-11-17

11.	Dr. Gururaj P Kundargi, Member	<i>Qedar</i> 10/11/17
12.	Shri Suramya Dolarray Vora, IFS (Retd.) Member	Absent
13.	Dr. S. Kerketta Member Secretary MoEFCC	<i>S. Kerketta</i> 10/11/2017

Subject: **Finalization of EAC terms for Thermal Projects**

Date: 12/19/17 11:42 AM

To: "Dr S. Kerketta" <s.kerketta66@gov.in>,
"Dr S. Kerketta" <suna1466@rediffmail.com>,
"Dr S. Kerketta" <sunamani1466@gmail.com>,
"Dr S. Kerketta" <s.kerketta66@nic.in>,
"N. Subrahmanyam" <n.subrahmanyam@nic.in>

From: navin chandra <navinchandrarrl@yahoo.com>

19/12/2018

Dear Dr. Kerketta Ji,

The Minutes prepared by you on the basis of the discussions held during the special meeting called for the purpose are in order. You may upload the minutes on the MoEF web site.

Thanking you,
yours sincerely,

(NAVIN CHANDRA)

Dr. Navin Chandra,
Director General
M P Council of Science and Technology (MPCST),
Vigyan Bhawan, Nehru Nagar, Bhopal - 462003 (M.P.) India
Phone : 91-755- 2671800 (Office)
e-mail : dg@mpcost.nic.in
navinchandrarrl@yahoo.com, navinchandraampri@gmail.com

**MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE
(I.A. DIVISION)**

**AGENDA OF 12th SPECIAL MEETING OF THE RE-CONSTITUTED EXPERT APPRAISAL
COMMITTEE ON THERMAL POWER PROJECTS**

DATE : 10th November, 2017

TIME : 10.30 A.M. ONWARDS

**VENUE : SUTLEJ MEETING HALL, JAL WING, GROUND FLOOR, INDIRA
PARYAVARAN BHAWAN, JORBAGH ROAD, NEW DELHI-110003.**

ITEM	
Item No. 12.0	CONFIRMATION OF MINUTES OF 11th EAC (Thermal) MEETING
Item No.	CONSIDERATION OF PROJECTS
12.1	Standardisation of EC conditions for all Thermal Power Plants (Coal, Lignite, Petcoke, Gas, Bio-mass & Municipal Solid Waste)
12.2	ANY OTHER ITEM WITH THE PERMISSION OF THE CHAIR.

1. Suggestions/inputs may be sent by e-mail to s.kerketta66@gov.in, n.subrahmanyam@nic.in & eac_thermal_coal@googlegroups.com

2. For any clarification, Dr. S. Kerketta, Director (Tel. No. 011-2469-5314) or N. Subrahmanyam, Scientist - C (Tel. No. 011-2469-5366) may be contacted.