

## **MINUTES OF THE 52<sup>nd</sup> MEETING OF THE RE-CONSTITUTED EXPERT APPRAISAL COMMITTEE (EAC) ON ENVIRONMENTAL IMPACT ASSESSMENT (EIA) OF THERMAL POWER & COAL MINING PROJECTS**

The 52<sup>nd</sup> Meeting of the reconstituted EAC (Thermal Power) was held on 29<sup>th</sup> February & 1<sup>st</sup> March, 2016 in the Ministry of Environment, Forest & Climate Change at Teesta Meeting Hall, Vayu Wing, First Floor, Indira Paryavaran Bhawan, Jorbagh Road, New Delhi-110003. The following members were present:

- |   |   |                                 |
|---|---|---------------------------------|
| 1. Shri Anil Kumar                      | - | Chairman                        |
| 2. Prof. C.R. Babu                      | - | Member                          |
| 3. Shri T.K.Dhar                        | - | Member                          |
| 4. Shri N.K. Verma                      | - | Member                          |
| 5. Shri G.S. Dang                       | - | Member                          |
| 6. Dr. S.D. Attri                       | - | Member (Representative of IMD)  |
| 7. Shri P.D. Siwal/<br>Shri N.S. Mondal | - | Member (Representatives of CEA) |
| 8. Shri Manoj K Gangeya                 | - | Member Secretary                |

Shri J.L Mehta Shri A.K. Bansal, Shri Shantanu Dixit, Dr. Ratnavel, Representatives of CPCB and WII could not be present. List of other participants is at **Annexure-I**.

At the outset, the Committee welcomed the new Member Secretary, Shri Manoj K Gangeya. The services of the earlier Member Secretary, Shri B.B. Barman were duly acknowledged by the Committee.

### **Item No.1: CONFIRMATION OF THE MINUTES OF THE 50<sup>th</sup> EAC (LAST) MEETING.**

Based on comments/observations of Members that had been received, the Minutes of the 50<sup>th</sup> EAC (Thermal Power) meeting held during 28<sup>th</sup>- 29<sup>th</sup> January, 2016 were confirmed.

### **Item No. 2: CONSIDERATION OF PROJECTS**

#### **2.1 2x800 MW Uppur Supercritical Thermal Power Plant at Villages Uppur, Valamavoor & Thiruppalaikudi, Tehsil Tiruvadana, District Ramanatahapuram, Tamil Nadu by M/s Tamil Nadu Generation & Distribution Corporation Ltd. (TANGEDCO) - reg. reconsideration for EC & CRZ clearance.**

(2.1.1) The proposal was earlier discussed in the 38<sup>th</sup> Meeting of the EAC (Thermal Power) held during 25<sup>th</sup> -26<sup>th</sup> June, 2016, the minutes of which are as under:

**Quote** "The Project Proponent (PP) along with their environmental consultant, Bhagavathi Ana Labs Pvt. Ltd., Hyderabad made a presentation and *inter-alia*, provided the following information:

- (i) ToR for carrying out EIA study and preparation of EMP for the above proposal was accorded by the Ministry on 28.05.2012 and the validity of TOR was extended up to 27.5.2015 vide letter 08.09.2014. Public Hearing for the project was conducted on 04.07.2014. TANGEDCO have prepared the CRZ Maps through Institute of Remote Sensing, Anna University, Chennai. The State Coastal Zone Management Authority (SCZMA) recommended the proposal in its meeting held on 27.11.2014

and communicated the same to National Coastal Zone Management Authority (NCZMA) vide letter dated 16.12.2014, where its consideration is awaited.

- (ii) The total project area is 1013 acres which includes ash pond and green belt. The Administrative Sanction has been issued by Govt. of Tamil Nadu for land acquisition. Survey works have been completed. On obtaining EC, land acquisition process will be initiated. No R&R issues are involved in the land acquisition. No further expansion is envisaged due to non-availability of land etc. There are no National Parks, Sanctuaries, Elephant/Tiger Reserves, migratory routes/wildlife corridors, etc., within 10 km of the project site. Authenticated Map has been obtained from the Principal Chief Conservator of Forests and Chief Wildlife Warden. Gulf of Mannar Marine National Park is about 60 km aerial distance from the site. The proposed project site is at a distance of 28 km north of Ramanathapuram on the western side of East Coast Road, which is at a distance of about 600 m from the project site. The NH-210 is at a distance of 4 km west. The nearest Port is Tuticorin at a distance of 140 km south. The project site is located at about 1 km from the HTL, 500 m away from HTL of Palk Bay and about 2.5 km from HFL of Peyar River. Nearest Railway is Ramanathapuram at a distance of 28 km. The project cost is Rs.12,664.76 Crores (approx). The capital and recurring cost towards EMP is Rs. 478 Crores and 48 Crores respectively.
- (iii) It is proposed to use 100% imported coal (5.02 MTPA) for the project with maximum sulphur and ash contents of 0.8% and 10% respectively. MOU has been signed with M/s. MMTC on 25.05.2015 for supply of imported coal. Radio activity and heavy metal contents of coal to be sourced have been tested and the parameters are well within limits. The feasibility of transportation of coal for the Project has been carried out through M/s. RITES. Based on the report, it has been proposed to transport coal from Tuticorin Port Trust to the Project site through the existing railway line from Tuticorin - Vanchi Maniyachi - Manamadurai - Ramanathapuram and then a siding of 25.8 km from Ramanathapuram to Thiruppalaikudi and then take off to the power plant.
- (iv) The Ambient Air Quality (AAQ) was monitored during July - September, 2012. There are no existing/proposed industries in 10 km radius study area. The maximum base line concentration for PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub> was 66.6 µg/m<sup>3</sup>, 15.4 µg/m<sup>3</sup> and 18.9 µg/m<sup>3</sup> respectively. The maximum incremental concentration of PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub> would be 0.8 µg/m<sup>3</sup>, 35.32 µg/m<sup>3</sup> and 14.6 µg/m<sup>3</sup> respectively. Final GLC of all these will be within the prescribed AAQ limits.
- (v) The total sea water requirement for the Power Plant is about 15,376 m<sup>3</sup>/h and the cooling water discharge into the sea is 10,508 m<sup>3</sup>/h. COC of 1.3 has been proposed to optimize water usage. Desalination plant (11 MLD Capacity) is proposed for plant water, service water and potable water requirement of the plant and for supply of drinking water to nearby villages. Closed cycle cooling system with Natural Draft Cooling Towers (2 no.) is proposed. Roof tops as well as surface rain water harvesting will be implemented in the proposed plant site. The stored rainwater will be used for green belt development and dust suppression within the plant premises. Brine from the desalination plant and cooling tower blow down will be discharged into the sea after proper dilution. All other effluents will be treated in ETP/STP and utilized within plant premises. It is proposed to implement recirculation of ash pond water.

- (vi) The Hydro-geological study was carried out through Anna University, Chennai. Based on the geological details of Thiruvadanai Taluk area, average safe depth of de-silting is from 0.30 m to 0.60 m. By desilting, the average increase in tank capacity will be about 20% to 40%. The channel of Naganendhal big tank is passing through the proposed plant area. Based on Hydrogeological study report, it is proposed to desilt and deepen the nearby tanks so that the water received from the water shed is stored in the tanks. Further, it is proposed to connect both Naganendhal big tank and Valamavur tank (2.2 km long and 6 m wide) so that the excess water can be diverted and connected to the Peyar River in the southern side of the plant boundary.
- (vii) The Temperature and Salinity Dispersion Modelling Study for drawl and discharge of sea water has been carried out through M/s. IIT Madras. The temperatures in the sea will rise by about 0.5-0.75°C within a radius of 2.0 km. Salinity will rise by about 4 ppt within 1.5 km distance from outfall. Beyond this, ambient conditions will be preserved. The intake/outfall pipelines will be laid over RCC Deck supported by concrete pillars. Height of Deck above Chart Datum will be 7.5 m and this will ensure free movement of fishing vessels. Considering Fish escape velocity of 0.15 m/sec, the Diameter of Intake Well is fixed as 14 m, with offshore pump house. The location of Intake Well is 5.0 Km from LTL and at 4.0 m water depth. The location of Outfall is 7 km at 5.0 m water depth.
- (viii) The Marine EIA Study has been carried out through M/s. WAPCOS. Field survey was conducted for three seasons i.e., June 2013, September 2013 and January 2014 for primary data generation on various aspects of marine water quality and ecology. 15 Nos. marine sampling points were selected in Thiruppalakudi and Uppur coastal villages. The Marine samples were collected and tested by a team of experts from the Centre of Advanced Study in Marine Biology of Annamalai University. The results of the survey indicate that the water is well oxygenated and nutrients are adequate supporting good plankton population, the base in the food chain. Similarly, the levels of heavy metals and petroleum hydrocarbon were found to be below permissible level in all the seasons. The outfall of the proposed TPP would not change the quality of existing natural coastal environment. The rise in temperature is not likely to cause any alteration in the biotic community of the coastal waters of the project area.
- (ix) The total ash generation is only 0.502 MTPA (1,375 Tonnes/day). 100% fly ash utilization is proposed. Many Cement Companies, viz., M/s. Tamil Nadu Cements, M/s. Dalmia Cements Ltd., M/s. Malabar Cements Ltd., M/s. Ultra Tech Cements Ltd., and M/s. Chettinad Cement Company Ltd., have furnished their expression of interest for off take of fly ash. The fly ash from the other running Units is being sold by e-auction and the same is proposed for the instant Unit. TANGEDCO will encourage small scale industry development in the industrially backward region by supplying fly ash to brick manufacturers. Ash Dyke of 138 acres has been provided within the Plant area for disposal of bottom ash in slurry form and the ash dyke will be lined with geo-membrane.
- (x) Detailed Socio-economic & Community Needs Assessment study has been conducted through M/s. Madras School of Social Work, Chennai. Based on the Community Needs Assessment, TANGEDCO has earmarked Rs. 38.0 crores and Rs. 3.0 crores as Capital Cost and recurring cost per annum for CSR respectively.

(xi) Public Hearing/Public Consultation for the project was conducted by Tamil Nadu Pollution Control Board on 04.07.2014. It was noted that the issues raised in the PH pertained to land acquisition not as per the 2013 Act, coal transportation, water source & availability, green belt, higher compensation for land, employment for land losers, effect on the livelihood of the fishermen, CRZ clearance not available, CSR activities etc. The Committee discussed the issues raised in the PH and the reply of the PP.

2. *The Committee inter-alia, noted that as per the O.M. dated 03.02.2015, the PP needs to apply online for CRZ clearance to the Ministry. The Committee shall consider the comments/remarks of CRZ sector of the Ministry as and when would be made available. Further, as per the Ministry's O.M. dated 7.10.2014, a preliminary Notification issued by the State Govt. regarding acquisition of land as per the provisions of Land Acquisition, R&R Act, 2013 is mandatory and needs to be submitted. After further and detailed deliberations, the Committee sought the following information/documents:*

- I. *Pictures and location of the creeks in a legible map.*
- II. *Action plan for harnessing solar power.*
- III. *Revised layout clearly depicting the various Units and facilities.*
- IV. *Clarification that the community land is not being acquired as per the definition of the State Govt.*
- V. *Commitment for development of thick green belt of minimum 50 m width between the ash pond and village tanks.*
- VI. *Notification issued by the State Govt. regarding acquisition of land as per the provisions of relevant act/rules.*
- VII. *Explore the possibility of making an embankment without raising the level of the project site.*
- VIII. *Letter from competent Port and Railway authorities for handling & transportation of the coal.*
- IX. *The transportation of coal shall be by Rail only. The PP shall take up the matter of transportation of coal by the shortest route which would save journey of around 100 km.*
- X. *Diversion of existing Nalahs shall be done in such a way that it shall not dry up the creeks and it shall be ensured that water flows perennially in the creeks so as to preserve the mangroves. Anna University, who has conducted the hydro-geological study, shall present the same in the next meeting.*
- XI. *The water quality data was not properly presented. Hence, the same needs to be done for the fresh water and sea water.*

- XII. *Details of proposed e-auction for fly ash, the LoIs from prospective takers along with quantities etc. to be submitted.*
- XIII. *Explore various avenues for utilization of bottom ash.*
- XIV. *Revised and detailed budgetary action plan for Public Hearing issues*
- XV. *Employment potential for locals.*
- XVI. *Detailed reply to the issues raised by ERC, New Delhi*
- XVII. *Borrowing of earth should be avoided and efforts be made to balance cutting and filling in the project area/ site.*
- XVIII. *In order to maintain tranquility and sanctity of the creek area by ensuring bare minimum disturbances, proposed sea-ward pipe line shall have to be realigned.*
- XIX. *Concerns were expressed on the high PH of water which needs to be dealt extensively in EIA.*

*On receipt of the above documentation and information, the case will be placed before EAC for reconsideration.” **Unquote.***

- (2.1.2) Upon submission of the reply by PP to the above, the proposal was again placed before the Committee in the 52<sup>nd</sup> meeting on 29<sup>th</sup> Feb – 01<sup>st</sup> Mar 2016, wherein the PP along with their environmental consultant, Bhagavathi Ana Labs Pvt. Ltd., Hyderabad, made a detailed presentation on the replies to the above sought information.
- (2.1.3) The Committee noted that the EAC (CRZ) in its 156<sup>th</sup> meeting held during 28-29 January, 2016 has recommended the grant of CRZ clearance for the foreshore facilities (cooling water intake and outfall structures) for the above proposed TPP in terms of the provisions of the CRZ Notification, 2011, subject to the following conditions:
  - i. There shall be no construction or development in the project site falling in CRZ-I. The construction shall strictly be as per the provisions of CRZ Notification, 2011.
  - ii. Filing activities shall be avoided during post monsoon period (January to March period), when regeneration of seagrasses takes place immediately after the North East Monsoon. There shall be no disposal of solid waste including the construction waste in CRZ and in the seagrass area.
  - iii. The location of storages of construction material and labour camps shall be away from the CRZ.
  - iv. To ensure good mixing the outfall shall be placed at a distance of more than 2.8 km from the intake, to reach 5.5 m contour.
  - v. The design of intake point shall ensure minimum turbulence at the intake and outfall points. The turbulence due to outfall near the sea belt shall not exceed 3%.
  - vi. There shall be no damage to the mangroves found in the project area.
  - vii. The PP shall monitor accumulation of sediments within mangrove vegetation as well as assist the change in the soil salinity in the vicinity of infrastructure corridor. The PP as committed shall indentify the potential area for mangrove

- Afforestation with the help on concerned department of Forest and undertake the plantation of mangroves saplings/plants in such identified areas.
- viii. The PP shall ensure compliance to all the recommendations made by the State CRZ Committee and the commitments made in respect of protection of the Seagrass meadows in the project area.
  - ix. The PP shall monitor level of turbidity at regular intervals and the filing shall be avoided in case of any high turbidity indication than that of the predicted values.
  - x. There shall be no dressing or alteration of the sand dunes, natural features including landscape changes for beautification, recreation and other such purpose.
  - xi. All waste (liquid and solid) arising from the proposed development will be disposed off as per the norms prescribed by Tamil Nadu State Pollution Control Board. There shall not be any disposal in to the sea/coastal water bodies.
  - xii. No labour camp, machinery and material storage is allowed in CRZ Area.
  - xiii. There shall no ground water drawl within CRZ.
  - xiv. There shall be online monitoring of the temperature and gradients at the discharge point and at a distance of 1.5 km from the final discharge point in the sea.
  - xv. The finding of such monitoring shall be shared with concerned State Pollution Control Board and the Regional Office of this Ministry.
  - xvi. The PP shall obtain necessary permission from concerned authorities for their proposed construction.

*(2.1.4) Based on the information and clarifications provided by the Project Proponent and detailed discussions held on all the issues, the Committee, having noted the clearance by the EAC (CRZ), recommended EC to the TPP subject to stipulations of the above conditions of EAC (CRZ) and the following additional conditions:*

- xvii. The sulphur and ash content of coal shall not exceed 0.8 % and 10 % respectively. In case of variation of quality at any point of time, fresh reference shall be made to the Ministry for suitable amendments to the environmental clearance.*
- xviii. The flow of fresh water into the creek shall be monitored to study the impact on/water availability for the mangroves. In case of adverse impact, mitigative measures shall be undertaken.*
- xix. Explore the commercial utilization of brine instead of discharging into sea.*
- xx. Sea water quality shall be continuously monitored for salinity, turbidity and temperature at selective sites across the impacted zone including estuarine waters. Mitigative measures shall be undertaken through institutes such as Annamalai University for continuous preservation of mangroves and their ecology. The monitoring data shall be uploaded on the company's website and also submitted to Regional Office of the Ministry every six months.*
- xxi. To minimize entrapment of even small marine flora and fauna, state of the art low aperture intake screens with high effectiveness for impingement and entrainment and fishnet around intake shall be installed.*
- xxii. Fish catch along the impacted zone of sea should be monitored periodically by the Department of Fisheries, Government of Tamilnadu. The project proponent shall accordingly take up the matter with the Fishery Dept., Govt. of Tamilnadu from time to time.*
- xxiii. A state-of-the-art environmental laboratory at the project site shall be established such that the laboratory has facilities for long term monitoring of sea water quality and sediment in the impacted zone over and above and ambient air, soil quality analysis of the area. The proponent shall undertake mitigative measures if there are any negative impacts.*

- xxiv. *Marginalized section of society particularly traditional fishermen communities shall be identified based on 2011 population census data and socio-economic study of the various strata of families such as those carrying out subsistence fishing, commercial fishing etc. shall be carried out and impact on their livelihoods shall be assessed separately. Accordingly, sustainable welfare scheme/measures such as providing fishnets, refrigeration of fish etc. shall be undertaken and status of implementation shall be submitted to the Regional Office of the Ministry within six months.*
- xxv. *An Environmental Cell comprising of at least one expert in environmental science/engineering, marine ecology, occupational health and social science, shall be created preferably at the project site itself and shall be headed by an officer of appropriate superiority and qualification. It shall be ensured that the Head of the Cell shall directly report to the Head of the Plant who would be accountable for implementation of environmental regulations and social impact improvement/mitigation measures.*
- xxvi. *The Corporate Environmental Policy shall be as per the Ministry's O.M. dated 26.04.2011 and amendments if any.*
- xxvii. *The PP shall submit the progress of the project to CEA on six monthly basis.*
- xxviii. *As committed by PP, the capital cost for CSR shall be revised by substantially enhancing it. Accordingly, the revised budget for the same and funds for mangrove protection & restoration shall be submitted to the Ministry before issuance of EC.*
- xxix. *The employment figures presented seem extremely low and hence, shall be relooked into.*
- xxx. *A green belt would be provided around the entire project site, including near the Temple.*

## **2.2 Patratu Super Thermal Power Project, Phase-I (3x800 MW) at Patratu, District Ramgarh, Jharkhand by M/s. Patratu Vidyut Utpadan Nigam Ltd. (PVUNL) - reg. reconsideration for ToR.**

(2.2.1) The proposal was earlier discussed in the 45<sup>th</sup> Meeting of the EAC (Thermal Power) held during 29<sup>th</sup> -30<sup>th</sup> October, 2015, the minutes of which are as under:

**Quote** "The PP made a presentation before the Committee. It was noted by the Committee that, Patratu Vidyut Utpadan Nigam Ltd. is a Joint Venture (JV) formed between NTPC Ltd. and Jharkhand Bijli Vitran Nigam Ltd. (JBVNL). However, the handing over and take over from the existing Authority, M/s. Patratu Energy Ltd. is not yet done. Further, the PP has no clear picture of the proposed site. The PP informed that ToR for 2X660 MW TPP was accorded for the same site on 09.05.2013 and the project will not come up. However, the Ministry was not informed of the same/requested for withdrawal of ToR and no representative from Patratu Energy Ltd. was present.

2. In view of above, the proposal was **deferred** and shall be considered only after submission of all the requisite information/documents. M/s. Patratu Energy Ltd. shall also request the Ministry for withdrawal of ToR accorded to 2x660 MW TPP as the above proposed TPP seems to be in the same location. **"Unquote.**

(2.2.2) In the 52<sup>nd</sup> meeting on 29<sup>th</sup> February & 1<sup>st</sup> March, 2016, it was seen from the documents circulated by the PP to the EAC members that the assets (including land for main plant, ash dykes I & II, and for the railway tract totaling 1,190.267 acres) had not yet been transferred to the PVUNL, and according to the PP, it was now expected to be transferred by the 1<sup>st</sup> week of March 2016 (as against the earlier committed time

frame of end Feb 2016). It was noted that PEL has requested the Ministry vide letter dated 16.12.2015 for cancellation of earlier ToR.

- (2.2.3) According to the site projection shown by the PP, it was seen that the site for the earlier proposal of 2X660 MW and for the present proposal of 3X800 MW were overlapping to some extent. In this connection it was recalled that for the earlier proposal of 2X660 MW, a Sub-Committee of EAC had visited the site prior to the grant of ToR, and had given recommendations for the ecological protection of that area and its surroundings. Since there was some overlap between the two sites, and since the sub-committee had made recommendations for that area, the PP was asked to indicate his response as well as his proposed ToRs for the new (3x800 MW) proposal with reference to the recommendations of the Sub-Committee report. *However, it was found that the PP was completely unprepared on this aspect and was even unaware of the Sub-Committees recommendations.*
- (2.2.4) It was also brought to the Committee's notice that phasing out/closure of the existing 10 units had been raised earlier, and the PP was asked to clarify the action taken with reference to this point. In this connection, it emerged that although officials of the JBVNL were present in the meeting, there was no clarity regarding the *State Govt.'s approval to the phasing out/closure plan of the existing 10 units of Patratu Energy Ltd. In addition, the EAC further noted that significant environmental damage has already been caused by the existing TPP. Hence, an action plan to rectify the same needs to be submitted.*
- (2.2.5) The proposal was accordingly **deferred**. *It was also noted that there was no senior level representation from either of the 2 JV partners i.e. NTPC and JBVNL. This needs to be taken care of for all future cases involving either of the JV partners.*
- (2.2.6) *A detailed reply to the issues raised by ERC, New Delhi in their communication to the EAC shall also be submitted.*

### **2.3 1,600 (2x800) MW Paraspani Thermal Power Project at Villages Paraspani, Teloliya & Telo, Tehsil Pthargama, District Godda, Jharkhand by M/s. Adani Power (Jharkhand) Ltd.- reg. ToR**

- (2.3.1) In the 52<sup>nd</sup> meeting on 29<sup>th</sup> Feb – 01<sup>st</sup> Mar 2016, the PP along with their environmental Consultant, Greencindia Consulting Private Limited, NCR, Ghaziabad made a presentation and *inter-alia*, provided the following information:
- i. Adani Power (Jharkhand) Limited, (APJL) is a subsidiary company of APL which has been formed to develop Thermal Power Plant in Jharkhand. The power plant is being developed as a result of the MoU signed between Government of India (GoI) and Government of Bangladesh (GoB) on 11.01.2010 with a view to enhance traditional ties of friendship, through economic co-operation. Accordingly, Adani Power Limited (APL) on 11.08.2015 signed a MoU with Bangladesh Power Development Board (BPDB), to develop a 2X800 MW thermal power plant on BOO basis in India and supply the entire power generated to Bangladesh Power Development Board (BPDB) through a dedicated Transmission Line.
  - ii. NOC from Ministry of Power, Government of India has been obtained to set up Thermal Power Plant in Jharkhand for supplying power to Bangladesh through a



dedicated 400 kV transmission line. Government of Jharkhand has signed MoU with Adani Power (Jharkhand) Limited for setting up this Power Plant.

- iii. After exploring four sites, the site at Paraspani has been finalized because of No Protected or Reserve Forest involved in project site, No Wildlife Sanctuary/National Park is located within 15 km from the project site, Land is mostly barren with single crop thus least impact on Agriculture and livelihood in comparison to other location and Minimum Displacement, therefore lesser R & R issues. A second order seasonal stream passes through the site, which will be conserved. To maintain natural drainage profile, storm water drains will be developed along the profile of first order streams.
- iv. The land requirement is 1,014 acres/410 Ha. (includes Main plant, Coal Storage, Water Reservoir and Green Belt) [Private land: 302 + Govt. land: 108]. The coal requirement is 7.0 MMTPA of Imported Coal which will be met from Indonesia, South Africa, Australia and other possible sources. The imported coal shall be received at Dhamra port (Odisha) and the same will be transported to the project site by rail. Coal storage of 15 days requirement of coal is proposed at the power plant. The annual requirement of coal is estimated to be about 7.0 MMTPA. Hasdiha- Godda Railway Line is under development. Railway Infrastructure will be developed from Godda to the Site. The nearest Railway Station is Hansdiha (39 Km, SW) and the nearest Sea Port is Kolkata Port (350 km, S). The project site falls under ZONE – III as per IS 1893: 200. The project cost is Rs. 13,906 Crores.
- v. The water requirement is 4,000 m<sup>3</sup>/hr (35 MCM per annum) which shall be sourced from Chir River with a water intake point at a distance of 20 km. The water will be drawn from the River Chir by constructing a pump house and pumping the water to the plant through a dedicated pipeline. An intermediate booster pumping station shall be provided for Paraspani site. Closed circuit cooling water system would be adopted for steam generator and turbine generator and common auxiliaries like air compressors, ash handling plant equipment etc. It is proposed to install Two (2) natural/induced draft cooling towers, one for each unit and of approx. capacity 92,000 m<sup>3</sup>/hr per tower. The cooling tower would be designed for a cooling range of 9°C. 100% Ash disposal shall be as per MOEF guidelines.

(2.3.2) *The Committee observed that although the proposed site seems to be suitable for the TPP w.r.t ecology etc., the PP did not provide the information/data regarding the water availability from Chir River so as to assess the impact of proposed water drawl on the downstream users and ecology. Accordingly, the proposal was **deferred** and the following information was sought:*

- i. Data from the State Irrigation Department justifying the water availability.*
- ii. Impact of proposed water drawl on the downstream users and ecology.*
- iii. Confirmation that the imported coal parameters shall be as per the O.Ms of the Ministry.*
- iv. Copy of the NOC from Ministry of Power for the export of power.*

(2.3.3) *However, as requested by the PP for generating the baseline data (meteorological and air quality) of pre-monsoon season from March, 2016 the Committee agreed for the same at the PP's own cost.*

**2.4 Expansion of existing 600 MW TPP to 2,200 MW by addition 2x800 MW Coal based TPP at Villages Bade Bhandar, Chhote Bhandar, Amlibhouna & Sarvani, Tehsil & District Raigarh, Chhattisgarh by M/s. Korba West Power Company Ltd.- reg. ToR.**

(2.4.1) In the 52<sup>nd</sup> meeting on 29<sup>th</sup> Feb – 01<sup>st</sup> Mar 2016, the PP along with their environmental Consultant, Greencindia Consulting Private Limited, NCR, Ghaziabad made a presentation and inter-alia, provided the following information:

- i. M/s Korba West Power Company Limited (KWPCCL), has established 1x600 MW domestic coal based thermal power project in Raigarh District in Chhattisgarh State which was commissioned on 31.03.2014. KWPCCL has got the environment clearance from MoEF&CC on 20.05.2010 for 1x600 MW. Adani Power Limited has signed definitive agreement with Avanta Power & Infrastructure Limited for transfer of 100% shares of KWPCCL (March, 2015). KWPCCL has proposed expansion by adding 2x800 MW Super Critical Units (Phase II) within the existing plant area. The project cost is Rs. 11,200 Crores
- ii. 1,219.9 acres land will be required for existing and proposed plant/units. Presently 889.9 acres land is available with proponent and additional land (330.0 acres) will be required for ash dyke area for expansion unit (Phase II). The annual requirement of coal (fuel) is estimated about 7.66 MMTPA for the proposed units i.e. 2x800 MW. The project is proposed on 100% Domestic coal. Coal from SECL/MCL will be transported to the project site by rail. Water required (4,000 m<sup>3</sup>/hr or 35 MCM/annum) for construction and operational purpose will be sourced from existing system i.e. Mahanadi River.

(2.4.2) *After detailed deliberations, the Committee recommended the following ToR in addition to the standard TORs (as applicable) at **Annexure-A1** for undertaking detailed EIA study and preparation of EMP.*

- *Compliance of the existing Unit to the standards for TPPs notified on 07.12.2015. Similarly, the compliance by the proposed expansion Units.*

**2.5 6x660 MW Coal Based Thermal Power Project at Village Nariyara, District Janjgir-Champa, Chhattisgarh by M/s KSK Mahanadi Power Company Ltd.- reg. EC amendment.**

(2.5.1) In the 52<sup>nd</sup> meeting on 29<sup>th</sup> Feb – 01<sup>st</sup> Mar 2016, the PP along with their environmental Consultant, Vimta Labs Ltd., Hyderabad made a presentation and inter-alia, provided the following information:

- i. EC was accorded to the above TPP on 19.10.2009 and its validity was extended till 31.12.2017. The CODs of Unit-I and Unit-II were declared on 18.05.2013 and 26.08.2014 respectively. The CODs of the remaining Units are targeted between September, 2016 and December, 2017.
- ii. KMPCL had firm coal linkage from 'Morga-II' Coal block of 'Gujarat Mineral Development Corporation Limited' (GMDC) (for first three Units) and 'Gare Pelma

Sector-III' coal block of 'Goa Industrial Development Corporation' (GIDC) (for last three Units). The coal requirement for the power plant is about 14.14 Million Tonnes Per Annum (MTPA) and was to be transported from coal mines to the site through rail mode. Due to delay in development of 'Morga-II' coal block, KMPCL approached 'Standing Linkage Committee (Long Term)' (SLC (LT)) and SLC (LT) authorized issuance of 'Letter of Assurance' (LOA) by Coal India Limited on tapering basis on 12.11.2008. On 11.06.2009, 'South Eastern Coalfields Limited', issued a 'Letter of Assurance' (LOA) for 74,91,000 (7.49 MTPA) tonnes per annum to meet the coal requirement of 1,800 MW (Units 1 to 3) out of 3,600 MW capacity at the power plant. Obtained amendment in EC including tapering coal linkage allocated by SECL as coal source until coal block becomes operational in 24.01.2012 for three units.

- iii. In accordance with CCEA decision, Government of India through Presidential Directive dated 17.07.2013, mandated 'Coal India Limited' to sign Fuel Supply Agreements with Power developers including Tapering Linkage holders, identified by Ministry of Power for supply of the domestic coal quantity of 65%, 65%, 67% and 75% of 'Annual Contracted Quantity' (ACQ) for the remaining four years of the 12<sup>th</sup> Plan (i.e. from 2013-14 up to 2016-17). Further, New Coal Distribution Policy issued by Ministry of Coal, Government of India was amended on 26.07.2013 to outline the above directives for implementation. It was also directed that to meet its balance FSA obligations, CIL may import coal and supply the same to willing power plants on cost plus basis or Power plants may also directly import coal themselves, if they so opt. On 19.03.2014, 'Fuel Supply Agreement' (FSA) was signed between KMPCL and 'South Eastern Coalfields Limited' to supply 49,94,000 tonnes per annum to meet the requirement of two units of 600 MW capacity each (1200 MW). Through this FSA, SECL committed to supply 3.2461 MTPA (65% of ACQ) in 2014-15, 3.34598 MTPA (67% of ACQ) in 2015-16 and 3.7455 MTPA (75% of ACQ) in 2016-17 to meet the requirement of two units.
- iv. Third unit, Fuel Supply Agreement was signed between 'Eastern Coalfields Limited' and KMPCL on 12.08.2014 for 1.763 MTPA. Hon'ble Supreme Court, vide its orders dated 25.08.2014 & 24.09.2014 has cancelled allocation of all the coal blocks which also included 'Morga-II' and 'Gare Pelma Sector-III' Coal Blocks that were linked to KMPCL project. Pursuant to the cancellation of allotment of coal blocks by Hon'ble Supreme Court, Ministry of Coal, on 30.06.2015, cancelled the tapering linkage granted to KMPCL and directed CIL (SECL) to continue coal supplies to the Power Plant under MOU mechanism till 31.03.2016 or till formulation of new policy by Government of India, whichever is earlier.
- v. SECL is continuing coal supplies to 2 Units under the MOU dated 13.07.2015 to the extent of 67% of the 'Annual Contracted Quantity' (ACQ). To meet the balance quantity of coal & considering the inferior quality of coal supplied by SECL (which is lesser than design specification of Boiler of power plant), it is now necessary to procure coal of higher GCV including imported coal (available through Rail mode), in addition to E-auction coal and E-auction coal (washed coal) available through Road and rail Mode. Blending of SECL's coal with high GCV Coal from Imported and E-auction sources will meet the boiler requirements and also meet the balance coal requirement of the KMPCL units.
- vi. To meet the balance coal requirement for two units, KMPCL is also sourcing coal from SECL through forward e-auction process, which is supplied by SECL only by Road mode. Till November, 2015, Railway Logistics Plan allowed only Western Ports

to procure imported coal for the Power Plants situated in the state of Chhattisgarh. Railway Board, Ministry of Railways approved the procurement of imported coal by KMPCL from Eastern Ports namely Gangavaram, Vizag, Kakinada and Krishnapatnam ports (through Nagpur route). Rail distance from Kandla Port to KMPCL Power Plant is 1,675 km, which amounts to Rs. 3,277 per tonne transportation cost. After approval of Eastern Port through Nagpur route, the distance has come down to 1,467 km which has reduced the transportation cost to Rs. 2,865 per tonne and coupled with the fall in prices of imported coal, it is now financially viable to procure imported coal.

vii. Now on the basis of approval provided by the Railway Board, KMPCL is intending to import coal from eastern ports. Considering all above, to meet the balance coal requirement till CIL supplies 100% of coal from Domestic Sources, KMPCL is planning to procure coal through forward e-auction by Rail / Road mode, local vendors supplying SECL/CIL coal by Road mode and Imported coal from different countries including Australia, South Africa, USA, etc. Hence, it is requested to amend the EC for use of blended coal as linkage coal (71.55%), Open Market/E-auction coal (10%) and imported coal (18.45%).

viii. With blended coal, the predicted emission levels are less, when compared to 100 % domestic coal usage. Transportation of coal by road for four units will be 3.146 MTPA and rest of the coal will be transported through rail mode from Korba area and also from Krishnapatnam & Gangavaram ports. The modeling predictions show that the maximum concentration of CO observed is about 2.11  $\mu\text{g}/\text{m}^3$  and 3.39  $\mu\text{g}/\text{m}^3$  for NO<sub>x</sub> and 0.467  $\mu\text{g}/\text{m}^3$  for PM covering the entire road way. The resultant concentrations due to the additional traffic load is well within the NAAQS 2009 limits. Estimated peak traffic in terms of PCUs, when compared to the IRC recommendations for traffic capacity of the roads, it can be observed that the existing road network is adequate. Request for permission to transport coal from SECL to plant by road. Permit us to procure Imported, E-auction, E-auction (washery coal) coal till 100% supply of coal from CIL is received and request for inclusion of the above as additional coal sources in EC.

(2.5.2) *Regarding the PP's request for coal movement by road, the Committee noted that the request for transportation of coal by road was not a part of the application/documents submitted by the PP to the Ministry and to the EAC Members, and is being raised only in this meeting. The Committee was of the view that such heavy movement by road is not at all desirable, and needs to be discontinued/minimized; coal movement should primarily be by rail, with minimal quantities being moved by road. Traffic capacity of the roads being adequate as mentioned by the PP is only one of the factors; in any case, this aspect would need to be looked at by the concerned authorities before being placed for consideration before the EAC. In addition, issues such as the environmental impact, safety of other road users etc. due to movement of heavily laden coal trucks on such roads also needs to be looked at. The Committee however, noted that the existing EC permits road transportation of coal for 4 years which will expire by May, 2017 since the COD of 1<sup>st</sup> Unit is 18.05.2013. The PP stated that they had made all efforts to ensure rail transportation of coal and are not at fault for having to transport coal by road. The Committee however is of the considered view that for a TPP of such magnitude, road transportation in the long run cannot be recommended. Hence, the PP should take up the matter with the Railways and all other concerned authorities immediately so that the EC condition regarding 100% rail transportation from the 4<sup>th</sup> year or before can be duly complied.*

(2.5.3) *Regarding the PP's request for modification in the sourcing of coal, based on the information and clarifications provided by the PP and detailed discussions held on all the issues, the Committee recommended for amendment of EC for using blended coal as linkage coal (71.55%), E-auction coal (10%) and imported coal (18.45%) subject to the following additional conditions:*

- i. The Sulphur and ash content of domestic coal shall not exceed 0.6% and 36% as per EC. For imported coal, the same shall not exceed 0.8% and 25 % respectively or as per the MoU/FSA, whichever is lower.*
- ii. Imported coal transport shall be by rail only.*
- iii. Necessary action shall be taken for compliance of the Operating & Proposed Units to the standards for TPPs notified on 07.12.2015.*

**2.6 2x300 MW coal based TPP at Villages Bhengari, Nawpara, Katangdih & Khokhrama, Tehsil Ghargoda, District Raigarh, Chhattisgarh by M/s. TRN Energy Pvt. Ltd. – reg. EC amendment.**

The PP was absent and hence the proposal was deferred.

**2.7 2x515 MW Imported Coal Based Thermal Power Plant at Villages Kattupalli & Kalanji, Taluk Ponneri, District Thiruvallur, Tamil Nadu, by M/s. Chennai Power Generation Ltd.- reg. reconsideration for ToR**

The PP requested for deferment as they did not receive any information regarding the meeting till the previous night of the meeting day.

**2.8 Permission for pilot project proposal for disposal of fly ash generated from 460 MW TPP of Talcher TPP of M/s NTPC Ltd. into mine void of South Balonda OPC of M/s Mahanadi Coalfields Ltd., in Talcher Coalfields, District. Angul, Orissa - Continuation reg.**

(2.8.1) Permission for the above pilot project proposal was accorded by the Ministry (based on EAC recommendation) on 05.09.2013 for a period of one year, subject to various studies on the impacts of ash disposal in mine voids. The said permission was extended for one year (based on EAC recommendation) on 02.03.2015 subject to compliance of interim Orders and final Judgment of Hon'ble NGT. Additional studies to be conducted by the PP/NEERI were also prescribed.

(2.8.2) NTPC vide letter dated has inter-alia, informed the Ministry that Hon'ble NGT vide its Order dated 20.08.2015 has allowed the use of ash in backfilling of mines withdrawing its earlier Order dated 24.09.2014. NTPC has undertaken various studies involving NEERI, Nagpur. However, due to difficulties associated with core drilling in filled-in mine voids and some unavoidable circumstances at NEERI, the reports will take another three months to finalize. The interim reports of the studies were submitted. It was requested to extend the permission for another six months, pending the submission of final reports. The matter was accordingly referred by the Ministry to the EAC. NTPC and NEERI has presented the findings of the various studies as per the interim reports.

(2.8.3) *After detailed deliberations, the Committee recommended the said permission for a further period of one year, subject to the following:*

- (i) *Regular monitoring and review of the continuing study by NEERI etc. to ensure an objective analysis of impact which will form the basis for grant of further permission.*
- (ii) *Incorporation of Radioactive tracer studies for heavy metals in the study.*
- (iii) *Submission of final report of the study comprising of following:*
  - a) *Particle size distribution of fly ash.*
  - b) *Analysis of ash being used for backfilling w.r.t. heavy metal contents etc.*
  - c) *TCLP values and water elute test data at different times for different coal characteristics.*
  - d) *Trace metal analysis of As, Hg and Pb at different places for various samples.*
  - e) *Mine pit water samples analysis data for various periods particularly for trace metals.*
  - f) *Data from Piezometric well etc. which is in the upstream directions of ground water flow.*
  - g) *Location, distance and direction of the wells from where the samples are taken and the mine pit.*
  - h) *Periodic analysis of underground aquifers for heavy metals (leached from backfilled ash, if any) at a few selected points based on aquifer movement. The reference point may be taken when these were determined first time.*
  - i) *Based on data generated and its analysis, the study should clearly establish whether or not the ash backfilling in mine voids be permitted further or not. If yes then what are the precautions and what regular monitoring has to be done.*

### **3.0 Any Other Item with the Permission of the Chair:**

#### **3.1 Fly Ash Disposal in Mine Voids**

(3.1.1) The following are the general observations/views of the EAC on the above subject.

Fly ash disposal in mine voids is not environmentally safe because of the following:

- (i) The infiltration of rain water falling on fly ash filled mine void is confined only to the top 1 m or even less, and as such there will be reduction in recharging of ground water in the area;
- (ii) The interface between the water and fly ash at the bottom of fly ash filled void results in leaching of heavy metals into ground water system as evident by high levels of trace elements particularly heavy metals in ground water samples collected from sites located close to the ash filled voids;
- (iii) since there is no lining, the fly ash and soil interface along the periphery (vertical cut surfaces) of the fly ash filled void will also contribute to leaching of heavy metals in ground water samples;
- (iv) it has been reported that at the bottom of constructed fly ash dyke, the fly ash filled was floating on the water which led to the collapse of the entire ash dyke at NALCO TPP (Talcher);
- (v) ash filled dykes/voids cannot support the tree species because of poor root system development which in turn results in uprooting of trees even by low velocity winds;
- (vi) the bioaccumulation of heavy metals in biota inhabiting the ash filled dykes is not yet studied;
- (vii) the lining system for mine void filling is not yet worked out, and even in US, where lining is a must for mine void fills, the leaching of heavy metals into ground water system took place due to cracks in the lining; and
- (viii) the present practice of lining for ash dyke is just not functioning at may ash dykes.

(3.1.2) In light of above mentioned facts, a detailed well-planned, multidisciplinary, long-term (atleast for 10 years) research is urgently needed to address the problems of fly ash disposal into mine voids. This research can be supported by corpus provided by the corporate Sectors that generate power and produce Coal. MoEFCC is requested to take necessary action to launch the programme under environment research division/EIA division.

### **3.2 Coal Fired Thermal Power Plant of 3x150 MW at Haldia, District Purba Medinipur, West Bengal by M/s India Power Corporation (Haldia) Ltd. – reg. EC amendment**

(3.2.1) The EAC noted that following was the earlier decision as per the MoM of last meeting:

*“Based on the information and clarifications provided by the PP and detailed discussions held on all the issues, the Committee recommended for amendment of EC for **using imported coal and in case of the shortfall of imported coal, if any, a blend of maximum 30% domestic e-auction coal may be used** subject to the following additional conditions.*

(i) *The Heads of Agreement for the imported coal shall be translated into a firm MoU/FSA and submitted to the Ministry.*

(ii) *The blending of coal shall be strictly in conformity with the recommendations of BHEL.*

(iii) *The Sulphur and ash contents in the imported coal shall not exceed 0.6% and 20% respectively any given time. The Sulphur and ash contents in the blended coal shall not exceed 0.5% (maximum as per the EIA/EMP) and 30% respectively any given time as indicated in the PP’s presentation. In case of variation of coal quality at any point of time, prior approval of the Ministry shall be obtained. Ash % in domestic coal shall be governed by the MOEF&CC policy/guidelines.*

(iv) *The CSR Budget for the construction phase be suitably enhanced by Rs. 20 to 25 Lacs per annum as agreed to during the deliberations. However, the budget for operation phase cannot be less than that or the amount as per the CSR policy of GOI till the operation of the plant.*

(v) *The PP shall advertise in the local leading newspapers and place on their website, the Ministry’s approval on the above amendment for public information”.*

(3.2.2) Subsequent to the meeting, the PP vide letter dated 11.02.2016, with justification, has again requested for use of Imported coal (100%) in addition to Indian coal (100%) with a provision of using blending of 50% domestic (e-auction) with imported coal.

(3.2.3) *After detailed deliberations, the EAC recommended that since the subject matter is of technical in nature, the matter may be referred by the Ministry to CEA for their advise on whether the request of the PP can be agreed to.*

There being no agenda item left, the meeting ended with a vote of thanks to the Chair. The next meeting of the EAC (Thermal Power) is scheduled for **31<sup>st</sup> March & 1<sup>st</sup> April, 2016.**

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**Terms of Reference (TOR):**

- i) The proposed project shall be given a unique name in consonance with the name submitted to other Government Departments etc. for its better identification and reference.
- ii) Vision document specifying prospective long term plan of the project shall be formulated and submitted.
- iii) Latest compliance report duly certified by the Regional Office of MoEF for the conditions stipulated in the environmental and CRZ clearances of the previous phase(s) for the expansion projects shall be submitted.
- iv) The project proponent needs to identify minimum three potential sites based on environmental, ecological and economic considerations, and choose one appropriate site having minimum impacts on ecology and environment. A detailed comparison of the sites in this regard shall be submitted.
- v) Executive summary of the project indicating relevant details along with recent photographs of the proposed site (s) shall be provided. Response to the issues raised during Public Hearing and the written representations (if any), along with a time bound Action Plan and budgetary allocations to address the same, shall be provided in a tabular form, against each action proposed.
- vi) Harnessing solar power within the premises of the plant particularly at available roof tops and other available areas shall be formulated and for expansion projects, status of implementation shall also be submitted.
- vii) The geographical coordinates (WGS 84) of the proposed site (plant boundary), including location of ash pond along with topo sheet (1:50,000 scale) and IRS satellite map of the area, shall be submitted. Elevation of plant site and ash pond with respect to HFL of water body/nallah/River and high tide level from the sea shall be specified, if the site is located in proximity to them.
- viii) Layout plan indicating break-up of plant area, ash pond, green belt, infrastructure, roads etc. shall be provided.
- ix) Land requirement for the project shall be optimized and in any case not more than what has been specified by CEA from time to time. Item wise break up of land requirement shall be provided.
- x) Present land use (including land class/kism) as per the revenue records and State Govt. records of the proposed site shall be furnished. Information on land to be acquired including coal transportation system, laying of pipeline, ROW, transmission lines etc. shall be specifically submitted. Status of land acquisition and litigation, if any, should be provided.
- xi) If the project involves forest land, details of application, including date of application, area applied for, and application registration number, for diversion under FCA and its status should be provided along with copies of relevant documents.
- xii) The land acquisition and R&R scheme with a time bound Action Plan should be formulated and addressed in the EIA report.
- xiii) Satellite imagery and authenticated topo sheet indicating drainage, cropping pattern, water bodies (wetland, river system, stream, nallahs, ponds etc.), location of nearest habitations (villages), creeks, mangroves, rivers, reservoirs etc. in the study area shall be provided.
- xiv) Location of any National Park, Sanctuary, Elephant/Tiger Reserve (existing as well as proposed), migratory routes / wildlife corridor, if any, within 10 km of the project site shall be specified and marked on the map duly authenticated by the Chief Wildlife Warden of the State or an officer authorized by him.



- xv) Topography of the study area supported by toposheet on 1:50,000 scale of Survey of India, along with a large scale map preferably of 1:25,000 scale and the specific information whether the site requires any filling shall be provided. In that case, details of filling, quantity of required fill material; its source, transportation etc. shall be submitted.
- xvi) A detailed study on land use pattern in the study area shall be carried out including identification of common property resources (such as grazing and community land, water resources etc.) available and Action Plan for its protection and management shall be formulated. If acquisition of grazing land is involved, it shall be ensured that an equal area of grazing land be acquired and developed and detailed plan submitted.
- xvii) A mineralogical map of the proposed site (including soil type) and information (if available) that the site is not located on potentially mineable mineral deposit shall be submitted.
- xviii) Details of fly ash utilization plan as per the latest fly ash Utilization Notification of GOI along with firm agreements / MoU with contracting parties including other usages etc. shall be submitted. The plan shall also include disposal method / mechanism of bottom ash.
- xix) The water requirement shall be optimized (by adopting measures such as dry fly ash and dry bottom ash disposal system, air cooled condenser, concept of zero discharge) and in any case not more than that stipulated by CEA from time to time, to be submitted along with details of source of water and water balance diagram. Details of water balance calculated shall take into account reuse and re-circulation of effluents.
- xx) Water body/Nallah (if any) passing across the site should not be disturbed as far as possible. In case any Nallah / drain is proposed to be diverted, it shall be ensured that the diversion does not disturb the natural drainage pattern of the area. Details of proposed diversion shall be furnished duly approved by the concerned Department of the State.
- xxi) It shall also be ensured that a minimum of 500 m distance of plant boundary is kept from the HFL of river system / streams etc. and the boundary of site should also be located 500 m away from railway track and National Highways.
- xxii) Hydro-geological study of the area shall be carried out through an institute/ organization of repute to assess the impact on ground and surface water regimes. Specific mitigation measures shall be spelt out and time bound Action Plan for its implementation shall be submitted.
- xxiii) Detailed Studies on the impacts of the ecology including fisheries of the River/Estuary/Sea due to the proposed withdrawal of water / discharge of treated wastewater into the River/Sea etc shall be carried out and submitted along with the EIA Report. In case of requirement of marine impact assessment study, the location of intake and outfall shall be clearly specified along with depth of water drawl and discharge into open sea.
- xxiv) Source of water and its sustainability even in lean season shall be provided along with details of ecological impacts arising out of withdrawal of water and taking into account inter-state shares (if any). Information on other competing sources downstream of the proposed project and commitment regarding availability of requisite quantity of water from the Competent Authority shall be provided along with letter / document stating firm allocation of water.
- xxv) Detailed plan for rainwater harvesting and its proposed utilization in the plant shall be furnished.
- xxvi) Feasibility of near zero discharge concept shall be critically examined and its details submitted.
- xxvii) Optimization of Cycles of Concentration (COC) along with other water conservation measures in the project shall be specified.

- xxviii) Plan for recirculation of ash pond water and its implementation shall be submitted.
- xxix) Detailed plan for conducting monitoring of water quality regularly with proper maintenance of records shall be formulated. Detail of methodology and identification of monitoring points (between the plant and drainage in the direction of flow of surface / ground water) shall be submitted. It shall be ensured that parameter to be monitored also include heavy metals. A provision for long-term monitoring of ground water table using Piezometer shall be incorporated in EIA, particularly from the study area.
- xxx) Socio-economic study of the study area comprising of 10 km from the plant site shall be carried out through a reputed institute / agency which shall consist of detail assessment of the impact on livelihood of the local communities.
- xxxi) Action Plan for identification of local employable youth for training in skills, relevant to the project, for eventual employment in the project itself shall be formulated and numbers specified during construction & operation phases of the Project.
- xxxii) If the area has tribal population it shall be ensured that the rights of tribals are well protected. The project proponent shall accordingly identify tribal issues under various provisions of the law of the land.
- xxxiii) A detailed CSR plan along with activities wise break up of financial commitment shall be prepared. CSR component shall be identified considering need based assessment study and Public Hearing issues. Sustainable income generating measures which can help in upliftment of affected section of society, which is consistent with the traditional skills of the people shall be identified. Separate budget for community development activities and income generating programmes shall be specified.
- xxxiv) While formulating CSR schemes it shall be ensured that an in-built monitoring mechanism for the schemes identified are in place and mechanism for conducting annual social audit from the nearest government institute of repute in the region shall be prepared. The project proponent shall also provide Action Plan for the status of implementation of the scheme from time to time and dovetail the same with any Govt. scheme(s). CSR details done in the past should be clearly spelt out in case of expansion projects.
- xxxv) R&R plan, as applicable, shall be formulated wherein mechanism for protecting the rights and livelihood of the people in the region who are likely to be impacted, is taken into consideration. R&R plan shall be formulated after a detailed census of population based on socio economic surveys who were dependant on land falling in the project, as well as, population who were dependant on land not owned by them.
- xxxvi) Assessment of occupational health and endemic diseases of environmental origin in the study area shall be carried out and Action Plan to mitigate the same shall be prepared.
- xxxvii) Occupational health and safety measures for the workers including identification of work related health hazards shall be formulated. The company shall engage full time qualified doctors who are trained in occupational health. Health monitoring of the workers shall be conducted at periodic intervals and health records maintained. Awareness programme for workers due to likely adverse impact on their health due to working in non-conducive environment shall be carried out and precautionary measures like use of personal equipments etc. shall be provided. Review of impact of various health measures undertaken at intervals of two to three years shall be conducted with an excellent follow up plan of action wherever required.
- xxxviii) One complete season site specific meteorological and AAQ data (except monsoon season) as per latest MoEF Notification shall be collected and the dates of monitoring shall be recorded. The parameters to be covered for AAQ shall include PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub>, CO and Hg. The location of the monitoring stations should be so decided so as to take into consideration the upwind direction, pre-dominant downwind direction,

- other dominant directions, habitation and sensitive receptors. There should be at least one monitoring station each in the upwind and in the pre - dominant downwind direction at a location where maximum ground level concentration is likely to occur.
- xxxix) In case of expansion project, air quality monitoring data of 104 observations a year for relevant parameters at air quality monitoring stations as identified/stipulated shall be submitted to assess for compliance of AAQ Standards (annual average as well as 24 hrs).
- xl) A list of industries existing and proposed in the study area shall be furnished.
- xli) Cumulative impacts of all sources of emissions including handling and transportation of existing and proposed projects on the environment of the area shall be assessed in detail. Details of the Model used and the input data used for modeling shall also be provided. The air quality contours should be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any. The windrose and isopleths should also be shown on the location map. The cumulative study should also include impacts on water, soil and socio-economics.
- xl ii) Radio activity and heavy metal contents of coal to be sourced shall be examined and submitted along with laboratory reports.
- xl iii) Fuel analysis shall be provided. Details of auxiliary fuel, if any, including its quantity, quality, storage etc should also be furnished.
- xl iv) Quantity of fuel required, its source and characteristics and documentary evidence to substantiate confirmed fuel linkage shall be furnished. The Ministry's Notification dated 02.01.2014 regarding ash content in coal shall be complied. For the expansion projects, the compliance of the existing units to the said Notification shall also be submitted
- xl v) Details of transportation of fuel from the source (including port handling) to the proposed plant and its impact on ambient AAQ shall be suitably assessed and submitted. If transportation entails a long distance it shall be ensured that rail transportation to the site shall be first assessed. Wagon loading at source shall preferably be through silo/conveyor belt.
- xl vi) For proposals based on imported coal, inland transportation and port handling and rail movement shall be examined and details furnished. The approval of the Port and Rail Authorities shall be submitted.
- xl vii) Details regarding infrastructure facilities such as sanitation, fuel, restrooms, medical facilities, safety during construction phase etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase should be adequately catered for and details furnished.
- xl viii) EMP to mitigate the adverse impacts due to the project along with item - wise cost of its implementation in a time bound manner shall be specified.
- xl ix) A Disaster Management Plan (DMP) along with risk assessment study including fire and explosion issues due to storage and use of fuel should be carried out. It should take into account the maximum inventory of storage at site at any point of time. The risk contours should be plotted on the plant layout map clearly showing which of the proposed activities would be affected in case of an accident taking place. Based on the same, proposed safeguard measures should be provided. Measures to guard against fire hazards should also be invariably provided. Mock drills shall be suitably carried out from time to time to check the efficiency of the plans drawn.
- l) The DMP so formulated shall include measures against likely Fires/Tsunami/Cyclones/Storm Surges/Earthquakes etc, as applicable. It shall be ensured that DMP consists of both On-site and Off-site plans, complete with details of containing likely disaster and shall specifically mention personnel identified for the task. Smaller version of the plan for different possible disasters shall be prepared both in English and local languages and circulated widely.

- li) Detailed scheme for raising green belt of native species of appropriate width (50 to 100 m) and consisting of at least 3 tiers around plant boundary with tree density of 2000 to 2500 trees per ha with a good survival rate of around 80% shall be submitted. Photographic evidence must be created and submitted periodically including NRSA reports in case of expansion projects. A shrub layer beneath tree layer would serve as an effective sieve for dust and sink for CO<sub>2</sub> and other gaseous pollutants and hence a stratified green belt should be developed.
- lii) Over and above the green belt, as carbon sink, plan for additional plantation shall be drawn by identifying blocks of degraded forests, in close consultation with the District Forests Department. In pursuance to this the project proponent shall formulate time bound Action Plans along with financial allocation and shall submit status of implementation to the Ministry every six months.
- liii) Corporate Environment Policy
  - a. Does the company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.
  - b. Does the Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions? If so, it may be detailed in the EIA.
  - c. What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions. Details of this system may be given.
  - d. Does the company has compliance management system in place wherein compliance status along with compliances / violations of environmental norms are reported to the CMD and the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism should be detailed in the EIA report.

All the above details should be adequately brought out in the EIA report and in the presentation to the Committee.

- liv) Details of litigation pending or otherwise with respect to project in any Court, Tribunal etc. shall invariably be furnished.

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**List of Participants**

2.1 M/s. Tamil Nadu Generation & Distribution Corporation Ltd. (TANGEDCO)

1. Sh. S. Sambath Kumar, Director
2. Sh. R. Kamaraj, Chief Engr.
3. Sh. D. Sundar, Supdt. Engr.
4. Sh. A. Munavar Sultana, Executive Engr.
5. Sh. N. Srinivasan, Executive Engr.
6. Sh. G. Ravi Kumar, Civil Engr.
7. Sh. E. Shyam Sundar, Bhagavati Anna Lab.

2.2 M/s. Patratu Vidyut Utpadan Nigam Ltd. (PVUNL)

1. Sh. R.K. Baderia, HoD (Env.)
2. Sh. C.V. Subramanian, CEO
3. Sh. Anil Kumar, ED (JUUNL)
4. Sh. T.K. Konar, AGM
5. Sh. Sidheshwar Tiwary, (JUUNL), CE (Project)
6. Sh. Masoon Ali, NTPC
7. Sh. Rajeev Bajjal, NTPC
8. Sh. Vivek P. Srivastava, NTPC
9. Sh. Sankalp Srivastava, NTPC
10. Sh. A.K. Soni, Sr. Mgr.

2.3 M/s. Adani Power (Jharkhand) Ltd.

1. Sh. Abhilash Mehta, Project Director
2. Sh. J. Bhatnagar, PD
3. Sh. Santosh Kumar Singh, Head Env.
4. Sh. R.N. Shukla
5. Ms. Nandini Choudhary, GCPL
6. Sh. Harender Kumar, GCPL
7. Ms. Dipannita Das, GCPL
8. Sh. Sanjay Tibrewal

2.4 M/s. Korba West Power Company Ltd.

1. Sh. J. Bhatnagar, Director
2. Sh. Santosh Kumar Singh
3. Sh. Gattu Rambhav
4. Ms. Nandini Choudhary, GCPL
5. Sh. R.N. Shukla
6. Sh. Sanjay Tibrewal
7. Sh. Harender Kumar, GCPL
8. Ms. Dipannita Das, GCPL

2.5 M/s. KSK Mahanadi Power Company Ltd.

1. Sh. G.P. Rao
2. Sh. Pranav
3. Dr. Acharyulu
4. Sh. H.S. Rajore
5. Sh. Satyendra Singh
6. Sh. Sagar. K
7. Sh. Kishore. S, Vimta Labs

2.8 M/s. NTPC Ltd.

1. Sh. R.K. Baderia, HoD (Env.)
2. Sh. A.K. Srivastava, GM (AV)
3. Sh. KRC Murty, GGM-TTPS
4. Dr. Paras R Pujari, NEERI
5. Sh. Masoom Ali
6. Sh. Ram Krishna Khandekar
7. Sh. Ramesh Chandra Kukreti
8. Sh. Amit, Manager (Env. Engr.)