

CHAPTER 10

SUMMARY AND CONCLUSION

10.1 Overview of the project

The project has been conceived to supply power to the Tata's steel plant coming up at Kalinganagar and to assist Orissa government's policy to promote power generation both by Independent Power Producers (IPPs) and captive power plants (CPPs). So the proposed 1000 MW power plant will supply 320 MW power to Tata Steel, 250 MW to GRIDCO and rest will be sold by TPC. The proposed site near Naraj Marthapur, Cuttack Sadar Tehsil, in Cuttack District of Orissa was selected after reviewing nine (9) sites by Central Mine Planning and Development Institute (CMPDI) and TCE Consulting Engineers. The site Naraj Marthapur was selected for having good connectivity for fuel supply, near to water source and negligible displacement issue.

The project has now been planned to have unit configurations as $2 \times 125 \text{ MW} + 2 \times 125 \text{ MW} + 2 \times 250 \text{ MW} = 1000 \text{ MW}$. About 990 acres of land has been identified and being acquired. Out of the total 990 acres of land, the Govt. land is about 21%. The land mainly consists agricultural land of single crop category and some waste land. Ash pond area of 30 acres is included in it. Puri Canal coming out of the Mahanadi bisects the site. The maximum daily requirement of coal for all the units would be about 16,368 tonnes per day. Coal will be obtained from the Talcher Coal Fields. The daily raw water requirement for the proposed power plant, including cooling tower, SG make up plus other services is estimated to be 96684 m³/day and will be available from the Mahanadi river about 3 km away. The selected steam turbine generators (STG) would be rated for 250 MW and 125 MW maximum continuous output at the generator terminals. Three (3) reinforced concrete chimneys each of 275 m height will be provided for six units (ie. one common chimney with separate flues for two units). Recirculation type cooling system with cooling tower is proposed for CW system using induced draught cooling tower.

Total 1310 TPD bottom ash and 5238 TPD fly ash will be generate from 1000 MW power plant. The fly ash (FA) system will be designed to evacuate fly ash in dry form from fly ash hoppers using pressure type pneumatic conveying system.

10.2 Overview of the Background Environment

A 10 kilometre radius zone has been considered as impact zone. The impact zone is partly in Mahanadi delta and partly in the eastern ghat region with hills and forests. Mahanadi, the major river of the state enters the plain stage at Naraj, near the site. The northern part of impact zone is a watershed between Mahanadi and Brahmani. Soil is mostly new alluvium and old alluvium with some tracts of low laterite. Satellite data of the study area was procured from National Remote sensing Agency based on the IRS-P6, LISS-III sensor and the same has been used for Land use/ Land cover studies. More than 40% of the impact zone comes under forest cover and 30% land is under agriculture.

The climate of the study region is tropical monsoonic type. The area experiences hot and humid summer and mild winter, Annual average rainfall is about 1560 mm. A meteorological monitoring station was set up at the site during the study period of March – May 2007. The parameters monitored were temperature, humidity, atmospheric pressure, wind speed and wind direction. To assess the present air quality of the area, eight (8) ambient air quality monitoring stations (A) were set up. Suspended Particulate Matter (SPM) and Respirable Particulate Matters (RPM) at the study area during the study period were found to be moderate. The levels were lower in the regions close to forest areas. Sulphur dioxide concentrations were found to be generally very low and Nitrogen dioxide concentrations were moderate and within residential limit.

Water samples were collected and analysed from six (6) locations for surface water and from four (4) locations for ground water to assess quality of the water. The water quality from all the river and canal water sources meets the Class C- of the Indian Standards for Inland Surface Water and is moderately hard and has moderate dissolved solids content. Ambient noise levels in commercial,

residential and sensitive areas within the study area were mostly within the prescribed standards.

Impact area is mostly rural area except a small portion of Cuttack city comes within impact zone. The impact zone has moderate presence of Scheduled castes population, and low presence of Scheduled Tribe population. Literacy scenario in the impact zone is quite good compared to the state's average. The agriculture is not the major occupation here. About 66% of working people are working in other professions, including in the industries and other commercial activities in the area. There is no major place of interest within 10 km except the Nandankanan Wildlife Park and ecotourism in Chandaka Wildlife Sanctuary.

The study area contains Chandaka - Dampara Wildlife Sanctuary & National Park, Nandankanan National park and some reserved forests. The reserve forests are primarily semievergreen type with predominant tree specieses are Kangada (*Xylia xylocarpa*), Kasi (*Bridelia retusa*), Giringa (*Pterospermum heyneanum*), Moi (*Lannea coromandelica*), Kalicha (*Diospyros sylvatica*), Kalchua (*Glochidion lanceolarium*), Dhaman (*Grewia tiliifolia*), Anonla (*Embica officinalis*), Ambo (*Mangifera indica*), Sidha (*Largerstroemia parviflora*), Sumari (*Caesia fistula*), Kochila (*Strychnos nux-vomica and Strychnos potatorum*), Bel (*Aegle marmelos*), etc. In addition there are patchy Sal forest, teak plantation, thorny bamboo brakes (*Bambusa bambos*) and scrub vegetation dominated by Eupatorium. A total 34 species of mammals were observed during survey. Elephant is one of the flagship species and indicative of the potential productivity of the habitat. In addition, there are a number of mammals viz' Leopards, Chital, Barking deer, Mouse deer, Wild pig, common langut, Rhesus mankey, small Indian Civet, Common Indian mongoose, small Indian Mongoose, Ruddy mongoose, sloth bear, Pangolin and Hyena etc were reported from this sanctuary. The prominent birds of the sanctuary are Peafowl, Red jungle fowl, crested Serpest Eagle, Black headed Oroole, Great Horned Owl, Paradise Fly Catcher, Concal and Stone Cuslew.

10.3 Overview of the Environmental Management

A number of probable negative impacts on environment due to construction activities have been identified and will be mitigated or neutralized with proper environmental control measures. Dust suppression methods, mainly sprinkling of water in dust prone activities will be taken up. Special care will be taken to ensure that the construction work does not impact Puri canal water. No washing of vehicles or any other construction related equipment will be done near the canal and canal water will not be used for this purpose. There shall not be any wastewater outlet in the canal. No construction workers' accommodation, canteen etc should be built near the canal. Proper sanitation and drinking facilities will be arranged for workers. Compensation for displacement and land will be provided in accordance with Orissa Government's policy.

The plant will generate effluent and waste during operation phase. The liquid effluents are generated from a number of units during operation of a power plant. Proper treatment of the streams can reduce the amount of discharge of pollutants in wastewater and also reuse of the treated streams helps in conservation of water. Cooling tower blowdown will be used for ash handling. Ash water from ash pond will be recycled back to the system after proper treatment. All other service water will be treated and collected in a common mixing basin (CMB). As much of treated wastewater will be reused in the plant for cleaning, gardening and dust suppression. Excess will be discharged through a single point. The quality of the discharged effluents will conform to Indian Standards for liquid effluents for thermal power plants as per EPA Notification. Treated effluent will be discharged in the Mahanadi River upstream of the intake point.

Gases will be dispersed through three double-flue 275 m high stacks. ISCST3 version 3 dispersion model of Environment Protection Agency of USA has been used in the present study to find out the maximum ground level concentration of the gaseous pollutants. It shows that maximum increase in GLC of SPM is very low. SO₂ will increase, however even with this increase the overall level of SO₂ will be much within residential and industrial limit. NO₂ increase will also be marginal. The plant noise will not have any impact on the local noise level.

The cement manufacturing units Ambja Cements Ltd and Ultratech Cements Ltd. have consented to take ash for reuse of the fly ash. Oily sludge will be separated and stored in lined pits. Used oil and the batteries will be sold to the authorized dealers.

An Environmental Management Plan has been formulated to ensure that the environmental quality of the area does not deteriorate due to the operation of the plant. A detailed monitoring for different environmental parameters will be carried out as per direction of Orissa Pollution Control Board. Stack emission, ambient air quality, wastewater quality, noise level etc. will be monitored. To save water resource rainwater harvesting has been planned. Plantation will be done to have a substantial green cover within the plant. A special environmental cell will be developed to implement the EMP.

10.4 Conclusion

The above discussion clearly highlights that the proposed 1000 MW coal-based power plant has been proposed to meet the required power demand from various sectors. While construction and operation of the plant can generate wastes but a detailed waste management programme and Environmental Management plan have been developed to mitigate the pollution potential. The project will meet all the stipulated environmental norms. Water use has been minimised by maximum use of wastewater and by rainwater harvesting. Utilisation of ash for cement production will also be an environment-friendly step. Though there are some forest areas and sanctuary around, it can be concluded that the implementation of EMP will ensure that the overall effect will not have any significant impact on local environment.

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