ENVIRONMENTAL STATEMENT IN FORM - V

Environmental Statement for the year ending March 2021

PART A				
General information				
1	**Name and Address of the unit**	NTPC Tamilnadu Energy Company Limited,		
	Address	Vallur Thermal Power Project, Vellivoyal Chavadi Post, Ponneri Taluk Thiruvallur Dist., Chennai – 600 103.		
	Name of the Occupier	Shri Kedar Ranjan Pandu Chief Executive Officer		
2	**Industry Category Primary (STC code), Secondary (STC code)**	Red/ Large		
3	**Production capacity**	3 × 500 MW		
4	**Year of establishment**	Dates of commissioning: Unit 1: 28.03.2012, Unit 2: 28.02.2013, Unit 3: 28.02.2014		
5	**Date of last environmental statement submitted**	28.04.2020		
PART B				
Water and Raw material Consumption				
(i)	**Water consumption (m3/day) 2020-21**			
	Process	35,654 m^3/day		
	Cooling	75,766 m^3/day		
	Domestic	25,831 m^3/day		
	Total water consumption	1,37,252 m^3/day		
(ii)	**Water consumption per unit of the product**			
	Name of the Products	**Water consumption per unit of product output L/KWh**		
		(2019-20)	**(2020-21)**	
	Electricity	10.41 L/KWh	11.47 L/Kwh	
(iii)	**Raw Material Consumption**			
	Name of the raw material	**Name of the product**	**Raw material consumption per unit of the product (Kg per Kwh)**	
			2019-20	**2020 -21**
	Coal	**Electricity**	0.744 Kg/Kwh	0.738 kg/Kwh

PART C				
Pollution discharged to environment/unit of output (Parameters as specified in the consent issued)				
(i) Water Pollution (2020 -21)				
Trade effluent (Central Monitoring Basin outlet):				
Pollutants	**Prescribed standards**	**Quantity of Pollutants discharged (mass/day)**	**Average annual value**	**Percentage of variation from prescribed standards with reasons**
pH	5.5-9		7.74	Nil
Temperature	40°C		30.40°C	Nil
BOD	30 mg/l	566.83 Kg/day	6.38 mg/l	Nil
COD	250 mg/l	9456.44 Kg/day	106.38 mg/l	Nil
TSS	100 mg/l	2648.73 kg/day	29.80 mg/l	Nil
Flow	243000 KLD	88890 KL/day	88890 KLD	Nil

(ii) STP Outlet			
Pollutants	**Prescribed standards as per CTO**	**Average annual value**	**Percentage of variation from prescribed standards with reasons**
pH	5.5-9	7.56	Nil
TSS	30 mg/l	21.78 mg/l	Nil
BOD	20 mg/l	7.65 mg/l	Nil

(iii) Air Pollution (2020-21)				
Pollutant parameter	**Prescribed standards**	**Quantity of Pollutants discharged (mass/day) (Kg/day)**	**Annual average value (mass/volume) mg/Nm^3)**	**Percentage of variation from prescribed standards with reasons**
Particulate matter				
a) PM Unit 1	50 mg/Nm^3	431.59	22.20	Nil
b) PM Unit 2		731.83	30.73	
c) PM Unit 3		652.97	24.98	
SO_2 emission				
d) SO_2 Unit 1	300 mg/Nm^3	16668.55	857.54	FGD (Flue gas desulphurization) installation is in progress to reduce the SO_2 emission
e) SO_2 Unit 2		21191.89	889.91	
f) SO_2 Unit 3		21005.83	803.46	
NO_x emission				
g) NO_x Unit 1	450 mg/Nm^3	7263.04	373.66	$DeNO_x$ system installed in Unit
h) NO_x Unit 2		10753.55	451.57	

i) NO_x Unit 3		12679.40	484.98	1 and Unit2. It is planned for Unit3 before Dec 2022.

PART D			
Hazardous Wastes (As specified under Hazardous and other Wastes (Management and Transboundary Movement) Rules, 2016			
Hazardous Wastes	**Total Quantity (Kg)**		
	2019 -20	**2020 -21**	**Remarks**
a) From Process			
5.1 - Used Oil	51.04 MT	22.08 MT	Generated Quantity
5.2 - Waste Oil		17.7 MT	
33.1 - Empty Containers		9 MT	
b) From pollution control facilities			

PART E		
Solid Wastes		
Solid Wastes (Domestic solid waste)	**Total Quantity (Kg)**	
	2019 -20	**2020 -21**
a) From process	62222	178850
b) From pollution control facilities		
(1) Quality recycled or reutilized within the unit	58560	175200
(2) Sold	-	-
(3) Disposal	-	-

PART F
Characteristic (in terms of consumption of quantum) of hazardous as well as solid wastes and disposal practice adopted for both these categories of wastes.
Hazardous Waste
Used/Spent oil and Waste Oil are being stored in sealed drums under covered shed and disposed to authorized recyclers.
Solid Waste
NTECL has distributed colour coded dustbins to every house in the township. Solid waste is being segregated at source. Organic waste is being composted. Accumulated Plastic Waste up to 2020 was given to Shrivi Green Energy, Sy No 191/2, Kallur (M), Kurnool district who is

authorized by Andhra Pradesh Pollution Control Board for production of Furnace oil from waste plastics. Further, installation of 200 kg biogas plant at plant and township canteens are in progress.

PART G

Impact of the pollution abatement measures taken on conversation of natural resources and on the cost of production

Complete Sea water based plant

NTECL meets all its purposes entirely through sea water thereby preserving the scarce fresh water resource.

NTECL operates on closed cycle cooling water system. Further, Ash water recirculation system is in service where ash pond effluent is circulated back to the station for ash mixing and disposal into ash pond. A separate drain separation system is under construction to make sure that sea water does not mix with storm water.

Additionally, a solar drinking water project of 125TPD is commissioned at NTECL and operations are expected to start soon.

Fig 1: Solar Desalination Plant at NTECL

4.5 Km long closed pipe conveyor

Coal is transported inside NTECL plant from Ennore port through closed pipe conveyor of length 4.5 Km thereby preventing any accidental spillage on Ennore creek.

Fig 2: Pipe conveyor at NTECL

Entire NTECL plant area was leveled by filling pond ash from neighbouring power plant

During the construction stage of NTECL, entire plant area was leveled using 30 lakhs m^3 of ash from the ash ponds of neighbouring thermal plant NCTPS thus minimizing the usage of good earth.

PART H

Additional measures/investment proposal for environmental protection including abatement of pollution or prevention of pollution

FGD construction and NOx control measures

In order to meet SO_2 limit of 200 mg/Nm^3, NTECL has awarded contract for FGD (Flue Gas

Desulphurization) installation to M/s Tata Projects Ltd in April 2020 for Rs 875 Crores for all 3 Units. The works are in progress and installation is expected to be completed by November 2022. Though the construction work was affected during COVID- 19 lockdowns in the year 2020 &2021, now the works are in full swing.

In order to meet NO_x limit of 450 mg/Nm^3, NTECL has awarded combustion modification contract to M/s GE Power India Limited for Rs 20 crores for all 3 Units. Installation is completed in Unit 1 and Unit 2 and the standards are achieved. It is planned to be done in December 2021 for Unit 3.


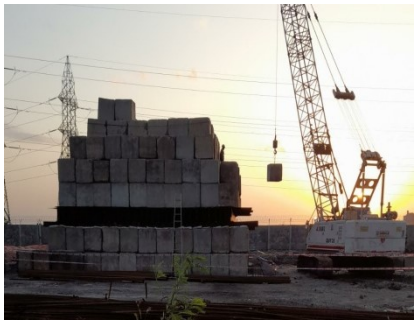


Fig 3: FGD Construction at NTECL, Fig NOx reduction works in boiler

Electro Static Precipitator

Each Unit is connected to highly efficient Electro static Precipitator (99.52% efficiency) that maintains the Particulate Matter emissions from stack within 50 mg/Nm^3. Stacks for height 275 m are provided for wide dispersion of emissions into the atmosphere.

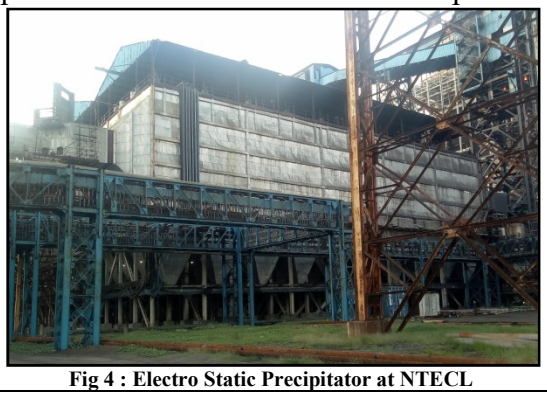

Fig 4 : Electro Static Precipitator at NTECL

Ash Utilization

There are 3 Ash Silos of capacity 1700 MT each for collecting Ash in Dry form where fly ash is collected and 80% of it is sold to cement industries and 20% is given freely to bricks and tiles manufacturers as per MoEF&CC conditions. Pond ash is being issued free of cost for NHAI road works etc. Ash utilization at NTECL is shown in the table below.

Sl. No	Financial year	Ash generated (Million Tonne)	Ash utilized (Million Tonne)	Ash utilization (%)
1	2020-21	1.277	1.568	122.80%
2	2019-20	1.744	2.11	121.02%

Fig 5: 3 No of Dry ash silos at NTECL

Online continuous environmental monitoring

Effluent, stack, and Ambient Air Quality parameters are being transmitted continuously to TNPCB since 2015 and to CPCB since 2017. In addition to that, ground water and surface water samples around NTECL are periodically tested and the results are within prescribed limits.

Fig 6: Online continuous environmental parameters transmission to TNPCB

Sewage Treatment Plants

NTECL has 2 sewage treatment plants of capacities 80 KLD and 1.2 MLD for plant and township areas. Treated water is being monitored and used for horticulture purposes inside the plant premises.

PART I

Any other particulars for improving the quality of the environment

Wind Barriers for Coal Stock yard

Wind barriers of 12 m height that are taller than coal stocks are erected in coal stock yard to catch coal dust. Wash water from coal handling area is collected at Coal Slurry Settling Pit, treated and sent for final disposal.

Fig 7: Wind barrier for coal stock yard at NTECL

Dust suppression, Dust extraction at Coal Handling Plant

Dust suppression system is installed at all transfer points of coal handling system to contain the fugitive dust due to coal movement.

Dust Extraction System at coal handling plant is in progress. Installation work got delayed due to covid-19. Now works are in progress and shall be completed by July 2021.

Fig 8: Dry Fog Dust suppression sytem

Rain water harvesting Ponds

2 Rain Water Harvesting system with 2 Ponds of total capacity 75,250 m^3 as per the recommendation of CMWSSB (Chennai Metropolitan Water Supply and Sewerage Board) and designed by WAPCOS Limited is implemented at NTECL.

Fig 9: Rain water harvesting ponds at NTECL

Green belt development

7500 tress (4000 outside and 3500 inside NTECL area) were planted in the year 2020-21. Till now 19,760 numbers of trees within NTECL premises and 24,000 nos. of trees outside plant premises are planted through Forest Department, Govt of Tamilnadu. 80 acres of own land is kept unutilized with natural vegetation and an eco park is being developed here by Forest Department.

1000 trees were planted in NTECL Township on World Environment Day 5.06.2021.

NTECL is doing Mangrove plantation through MS Swaminathan Research Foundation in its own land by adopting Fish bone canal method.

Fig 10 a: Green belt development at NTECL

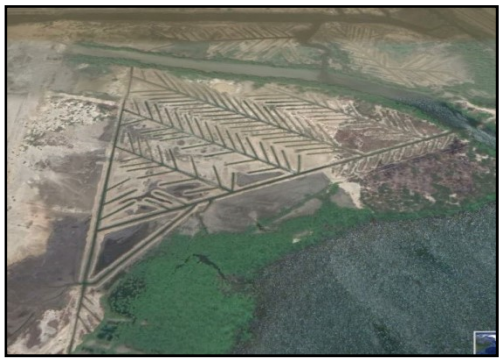

Fig 10 b: Mangrove plantation site seen in google maps

Fig 10 c: Casurina plantation in progress along eastern boundary

Fig 10d: Plantation of 1000 No trees on World Environment Day

Biogas Plant for canteen

NTECL is installing 200 Kg Biogas plant for canteen food waste at Plant and Township.

Fig 11: Installation of Biogas plant for canteen food waste at NTECL Plant

World Environment Day celebration

World Environment Day is celebrated on June 5th at NTECL with various competitions and events among employees, contractors, families and children in order to raise awareness about Environment and its protection. In 2021, First prize winners were awarded with home Kitchen waste composting units.

Fig 12: Home food waste composters awarded during WED 2021.

Funding to SWIFT, Coimbatore

Fig 13: Funding to SWIFT, Coimbatore

NTECL provided funding to SWIFT (Society for Wildlife Interface and Forestry Training, Coimbatore) under CSR scheme in Feb 2021.

Ash dyke stability study by IIT Madras

NTECL conducted Ash Dyke stability study through IIT Hyderabad in 2021.

Fig 13: Ash Dyke stability study by IIT Madras

Environmental Award to NTECL

NTECL emerged as 'WINNER' in "Implementation of New Environmental Norms - Existing Thermal Power Plants" during SO_x NO_x 2021 conference organized by Mission Energy Foundation, Mumbai. This award is given to NTECL for the progress made in FGD construction and Combustion Modification works.

Fig14: NTECL Winner of Mission Energy Foundation's, Implementation of new environmental norms award 2021.