adani

Power

Ref: APL/Mundra/EMD/EC/MoEFCC/209/11/23
Date- 25/11/2023

To,

Additional Principal Chief Conservator of Forest
Ministry of Environment, Forest and Climate Change
Integrated Regional Office (Near Kishan Circle)
Aranya Bhavan, Fourth Floor, Room No 407
Sector 10A, Gandhinagar, Gujarat 382010

Sub: Six Monthly Compliance Status report of Environment Clearances for Phase I, II & III along with Environmental Monitoring reports – reg.

Ref: Env. Clearance letter **J-13011/7/2007-IA-II (T)** dated- 13th August'2007
Letter No. **J-13011/1/2008-IA-II (T)** dated, 21st October'2008 and
Letter No. **J-13012/126/2008-IA-II (T)** dated, 20th May'2010 & Corrigendum dated 01/06/2011.
Transfer of EC from Adani Power Ltd. to Adani Power (Mundra) Ltd. dated 13.04.2018.

Dear Sir,

With reference to above subject, please find enclosed herewith Half yearly Environment Clearances (EC) compliance status report along with environmental monitoring results like Ambient Air Quality, Noise level, Water Quality, Soil, Met. data, Terrestrial Ecology & Marine Biology, CSR Report, Fly Ash, Green belt development report etc. for the period of **April'2023 to September'2023** in soft (**e-mail**).

This is for your kind information & record please.

Thanking You,
Yours faithfully,
for **Adani Power Limited, Mundra**

(**Santosh Kumar Singh**)
Authorized Signatory
Encl: as above

CC: Member Secretary
Central Pollution control Board
Parivesh Bhavan, East Arjun Nagar
Kendriya Paryavaran Bhawan
New Delhi- 110 032.

Member Secretary,
Gujarat Pollution Control Board
Paryavaran Bhawan, Sector -10 A
Gandhinagar-382 010

The Regional Officer,
Gujarat Pollution Control Board
Kandla Port Trust Building (KPT)
Gandhidham – Kutchh 370 201

Adani Power Ltd
Adani Corporate House
Shantigram, S G Highway
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Gujarat, India
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SIX MONTHLY COMPLIANCE REPORT OF ENVIRONMENTAL CLEARANCE (EC)

For

4620 (4×330+5×660) MW THERMAL POWER PLANT PHASE - I, II & III of Mundra TPP

At

MUNDRA TALUKA, KUTCHH DISTRICT GUJARAT

Submitted to:

Integrated Regional Office, Gandhinagar
Ministry of Environment, Forest & Climate Change,
Central Pollution Control Board, New Delhi &
Gujarat Pollution Control Board, Gandhinagar

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Power

Submitted By:

Environment Management Department
Adani Power Limited,
Tunda & Wandh Village,
Mundra Taluka, Kutchh District,
Gujarat

PERIOD: April'2023 – September'2023

Adani Power Limited, Mundra

CONTENTS

Adani Power Limited, Mundra

INTRODUCTION

Adani Power Limited, Mundra is located at village: Siracha & Tunda, Taluka Mundra, District Kutchh in Gujarat.

APL, Mundra has been granted Environmental Clearances from Ministry of Environment, Forest & Climate Change, Consent to Establish (CTE) and Consent to Operate (CTO) from Gujarat Pollution Control Board for Phase I, II & III and has also obtained all necessary statutory / mandatory clearance.

Adani Power Limited, Mundra (APL Mundra) has been restructured and the Mundra Thermal Power Plant has been demerged and transferred to Adani Power (Mundra) Ltd.

Adani Power (Mundra) Limited has commissioned the first supercritical 660 MW unit in the country. Mundra is also the World's First supercritical technology project to have received 'Clean Development Mechanism (CDM) Project' certification from United Nations Framework Convention on Climate Change (UNFCCC).

Environment Clearance for Phases I, II & III were transferred from Adani Power (Mundra) Limited to Adani Power Limited vide F. No. J-13011/7/2007-IA-II(T) dated; 24th April' 2023. Under the Hon'ble NCLT vide its order dated 08.02.2023 sanctioning the scheme of amalgamation of Adani power (Mundra) Limited with Adani Power Limited. Subsequently,

We have implemented the Environment Management System (EMS) ISO 14001:2001

ADANI POWER LIMITED, MUNDRA

Compliance status on Environment Clearance

For Phase – I 660 MW (2x330) TPP

Vide letter No.J-13011/7/2007-IA-II (T) dated 13.08.07

EC Transfer from APMuL to APL dated 24.04.2023.

Sr. No.	Conditions	Status
3-(i)	No activities in CRZ area will be taken up without prior requisite clearance under the provisions of the CRZ Notification, 1991.	CRZ Clearance obtained from MoEF&CC vide letter. No. 10 - 94/2007- IA - III dated 29th May' 2008. However, the facility for Sea water intake and outfall were not developed by Adani Power Ltd. The CRZ clearance has not been acted upon and the validity of 5 years under the CRZ Notification, 1991 is over. Presently there is no any CRZ clearance with Adani Power Limited, Mundra NIO suggested to develop integrated intake and outfall facility in place of multiple intakes and outfalls. This integrated intake & outfall has been approved by MoEF&CC under the clearance for Waterfront Development proposed by APSEZL. APL, Mundra is using this integrated intake and outfall facilities.
(ii)	The seawater intake structure shall be designed to ensure that the continuity of free flow of water in the two arms of Kotdi Creek is not hampered.	The integrated Intake channel developed by APSEZ is away from Kotdi Creek. The outfall crosses Kotdi Creek at one place, for which aqueduct has been provided so that the treated effluent does not mix with water in the Creek and does not Interfere with free flow of water in the two arms of Kotdi Creek.
(iii)	The recommendations made in the NIO report shall be effectively implemented in the project cycle.	Subsequent to NIO's recommendations, integrated intake & outfall facilities are developed by APSEZ and approved from MoEFCC New Delhi.
(iv)	It shall be ensured that the mangroves are not adversely affected due to the project.	The Thermal Power Plant is located well beyond the CRZ area and there are no mangroves at the plant site.
(v)	The temperature of discharged water shall be continuously monitored to ensure that it does not exceed the prescribed limit of 7°C above the ambient	The temperature of discharge water and the Intake water is monitored on daily basis. Differential temperature is well within the Stipulated limits. Please refer **Annexure V**

	temperature of receiving waters at any point of time.	
(vi)	Space provision shall be made for installation of FGD of requisite efficiency of removal of SO2, if required at later stage.	Space has been provided for FGD for future requirements. FGD installation is in progress in compliance with the CPCB directions vide letter No.: B- 33014/07/2017-18/IPC-II/TPP/152872, dated 11/12/2017.
(vii)	The total land requirement shall not be exceed 228 Ha for all the activities/facilities relating to the proposed power project.	The project has undergone two expansions. The total area has changed and the same has been approved by MoEF&CC. The total area for all three phases is 313 ha.
(viii)	Coal with ash content not exceeding 8% and sulphur content not exceeding 0.69% shall be used as fuel	Being followed. The coal is imported from Indonesia and South Africa. The ash content in coal is below 8% and sulphur content below 0.3%. The Ash content report is being sent to MoEF&CC, Regional office on quarterly basis. Ash content report is enclosed as **Annexure- VII.**
(ix)	Rainwater harvesting should be adopted. Central Groundwater Authority/Board shall be consulted for finalization of appropriate rainwater harvesting structure within a period of three months from the date of clearance	Rainwater harvesting (RWH) scheme has been submitted to Regional Office, CGWB, Ahmedabad. We have adopted the scheme and developed rainwater collection & groundwater recharging facilities at three locations within plant premises.
(x)	A bi -flue stack of 220 m height with exit velocity of at least 22 m/s shall be provided with continuous monitoring system.	Complied. A Bi - flue stack of 220-meter height is provided. Online analyzers for PM, SO2, NOX have been provided & maintained and calibration is being done on regular basis, exit velocity is more than 22 m/s. RTDMS commissioned for gas analyzer.
(xi)	High efficiency Electrostatic precipitator (ESPs) having efficiency of 99.9% shall be installed so as to ensure that particulate emissions do not exceed 100 mg/Nm^3.	Complied, ESP with efficiency of 99.9% installed in both the units to meet permissible norm for particulate emissions less than 50 mg/Nm^3. (As we have received renewed "Consent to Operate" (CTO). Please refer **Annexure – I**
(xii)	Fly ash shall be collected in dry form and its 100 % utilization shall be ensured from the day of commissioning of the plant. In case of emergency, the utilized ash may be disposed in the ash pond through High	Complied. Ash Generation & utilization details from Apr' 23 to Sept' 23. Please refer **Annexure- VII.**

	Concentration Slurry Disposal (HCSD) system.	
(xiii)	Regular monitoring of ground water quality including heavy metals shall be undertaken around ash dyke and project area to ascertain the change, if any, in the water quality due to leaching of contaminants from ash disposal area.	Four nos. of Bore well establish around the ash dyke & Ground water quality is being monitored on regular basis. Ground water analyses report enclosed. Please refer **Annexure - VIII.**
(xiv)	Noise level shall be limited up to 75 dB (A). For People working in high noise area, protective devices such as earplugs etc. shall be provided.	Noise level monitoring is being carried out on regular basis inside the plant locations & monitoring values are well within stipulated limits. Please refer **Annexure - I.** We are providing necessary PPE's like ear-muff and ear plug to all employee & workers. Occupational Health & Safety Management System as ISO ISO 45001:2018 implemented.
(xv)	A greenbelt shall be developed all around the plant boundary and ash dyke covering an area of at least 88.2 Ha.	The green belt of adequate width and density with local tree species has been developed to provide protection against dust and noise. Total green belt / plantation developed in 117.33 Ha (Out of total 313 Ha Land available for all three phases). Green belt/plantation is enclosed as **Annexure VI.**
(xvi)	First aid and sanitation arrangements shall be made for the drivers and contract labor during construction phase.	Complied. First aid and sanitation were provided for driver and contract labour during construction phase.
(xvii)	Regular monitoring of the air quality shall be carried out in and around the power plant and records shall be maintained. The location of the monitoring stations and frequency of monitoring shall be finalized in consultation with State Pollution Control Board. Six monthly reports shall be submitted to this Ministry.	Being Complied. The regular Environmental Monitoring is being carried out in & around plant premises and reports are being submitted on monthly basis to GPCB regional office, Bhuj. Online continuous AAQ Monitoring systems has been installed in consultation with GPCB and also established five AAQM locations in & around the plant with frequency of twice in a week, monitoring is being carried out by third party. Monitoring reports are enclosed as **Annexure I.** Online Continuous AAQ results are enclosed as **Annexure – IV.** Last Six-Monthly compliance report was

		submitted for the period of Oct' 22 to Mar' 23 had been submitted vide letter no. APL/EMD/EC/ MoEFCC/211/05/23 Dated: 22.05.2023.
(xviii)	For controlling fugitive dust, regular sprinkling of water in coal handling area and other vulnerable areas of the plant shall be ensured.	Being Complied. Regular water sprinkling is being done to control the fugitive dust in CHP area and all other areas. An additional mechanical sweeping machine have been deployed for cleaning the road. To control and minimize the fugitive air pollution at coal handling plant, dust extraction system has been provided in all the transfer towers as well as crusher house. Desalinated water is being used for dust suppression system. Windshields are also provided at coal stack yard area. Close conveyor system for Coal transportation is provided. Integrated Ash silo system (Ash transfer by Numeric system in pipe) is in place for ash handling.
(xix)	The project proponent should advertise within seven day of Environment clearance, in at least two newspapers widely circulated in the region around the project, one of which should be in vernacular language of the locality concerned, informing that the project has been accorded environmental clearance and copies of clearance latter are available with State Pollution Control Board/Committee and may also seen in the Website of Ministry of Environment and Forest in the - http://envfor.nic.in	Complied Published in Two News paper
(xx)	A separate environment-monitoring cell with suitable qualified staff should be set up for implementation of the stipulated environmental safeguards.	Complied. We have established a separate environmental management cell with well qualified staff to carry out regular surveillance for implementation of stipulated environmental safeguards and a full fledge Environment Lab for Air & Water has been established. **Environment Management System as per EMS** **ISO 14001: 2015 & Water Efficiency Management System (ISO 46001:2019) implemented.**

(xxi)	Half yearly report on the status of implementation of conditions and environmental safeguards should be submitted to this Ministry, the Regional Office, CPCB and SPCB.	Six monthly compliance reports in accordance to the Environmental clearance granted by MoEF&CC is being submitted to MoEF&CC, CPCB & GPCB regularly. Compliance status report updated on company's website. Last Six-Monthly compliance report was submitted for the period of Oct' 22 to Mar' 23 had been submitted vide letter no. APL/EMD/EC/ MoEFCC/211/05/23 Dated: 22.05.2023.
(xxii)	Regional Office of the Ministry of Environment & Forests located at Bhopal will monitor the implementation of the stipulated conditions. A complete set of documents including Environmental Impact Assessment report, Environment Management Plan and additional information/ clarifications submitted to this ministry subsequently should be forwarded to the Regional Office for their use during monitoring.	Being followed All necessary information forwarded to the MoEF&CC Regional Office, Bhopal on regular basis.
(xxiii)	Separate funds should be allocated for implementation of environmental protection measures along with item-wise break-up. These cost should be included as part of the project cost. The funds earmarked for the environment protection measures should not be diverted for other purposes and year-wise expenditure should be reported to the Ministry.	Being complied. Separate funds allocated for environmental protection measures. Expenditure details from Apr '2023 to Sept' 2023 (FY 2023-24) is enclosed as **Annexure X.**
(xxiv)	Full cooperation should be extended to the Scientists/Officers from the Ministry and its Regional Office at Bhopal/ the CPCB/ the SPCB during monitoring of the project.	Noted Full co-operation shall be extended to the Authority

ADANI POWER LIMITED, MUNDRA

Compliance status on Environment Clearance

For Phase – II 1980 MW (2x330 + 2x660) TPP

Vide letter No. J-13011/1/2008-IA-II (T) dated 21/10/08)

Transferred EC from APMuL to APL dated; 24.04.2023.

Sr. No.	Conditions	Status
3-(i)	The changes/ modification made in the scope of phase - I of the project should be get incorporated formally in the environmental clearance already granted.	Noted Changes in Phase-I communicated to MoEFCC
(ii)	Prior CRZ clearance under the provisions of CRZ Notification, 1991 for the activities to be taken up in the CRZ area as applicable to this project, shall be obtained.	CRZ Clearance was obtained from MoEFCC vide letter No. 10 - 94/2007- IA - III dated 29th May' 2008. However, the facility for Sea water intake and outfall were not developed by Adani Power Ltd. The CRZ clearance has not been acted upon and the validity of 5 years under the CRZ Notification, 1991 is over. **Presently there is no CRZ clearance available with Adani Power Limited-Mundra.** NIO suggested to develop integrated intake and outfall facility in place of multiple intakes and outfalls. This integrated intake & outfall has been approved by MoEFCC under the clearance for Waterfront Development proposed by APSEZL. Mundra TPP is using this integrated intake and outfall facilities.
(iii)	Regular monitoring of the thermal discharges into the sea shall be carried out and records maintained. The temperature changes, if any, in the sea water within the impact zone due to the project shall be carried out. Based on the same, necessary safeguard measures as may be required to protect the aquatic flora and fauna shall be taken. It shall be ensured that discharge temperature does not exceed the prescribed limits of 7°C above the ambient temperature of receiving waters at any point of time.	Being complied The temperature of discharge water and the intake water is monitored on a daily basis. Differential temperatures are well within the stipulated limits. Please refer **Annexure V.** Regular third-party marine monitoring also being carried out, monitoring report enclosed for the period of April'23 to Sept' '23 Please refer **Annexure – III**
(iv)	The recommendations made in the report of NIO relating to intake and outfall shall be implemented.	NIO suggested/recommended to develop integrated intake and outfall facility in place of multiple intake and outfall. This integrated intake & outfall has been approved by MoEF&CC under

		the clearance for Waterfront Development proposed by APSEZL. Mundra TPP is using this integrated intake and outfall facility.
(v)	The sulphur content in the coal to be used both for Phase–I and Phase-II shall not exceed 0.3 %.	Being complied The coal is imported from Indonesia and South Africa. It is ensured that sulphur content in coal below 0.3%.
(vi)	Appropriate measures shall be adopted to reduce the emissions of SO_2. It shall also be ensured that at no point of time the ground level concentration of SO_2 in the impact zone exceeds the prescribed limit. The proponent shall also provide, additional corrective measures as may be deemed necessary shall be taken.	Being Complied. The regular monitoring is being carried out in & around the plant premises. We have already installed online continuous monitoring system in all stacks. At no point of time, the ground level concentration of SO_2 has exceeded the permissible limits.
(vii)	Continuous meteorological data shall be collected at site for at least three years. Based on the data so collected, air quality modeling prediction shall be carried out. The results so obtained shall be analyzed and based on the same, additional corrective measures as may be deemed necessary shall be taken.	Complied. Continuous meteorological stations installed within plant premises; Details of metrological data observation enclosed as **Annexure I.**
(viii)	Two bi-flue stacks of 275 m height each for 2 X 330MW and 2 X 660 MW units shall be provided with continuous online monitoring equipments for SO_2, NOx and Particulate. Exit velocity of Flue gases shall not be less than 22.27 m/sec for 2 X 330MW stack and 22.97 m/sec for 2 X 660 MW units.	Complied Two bi-flue stacks 275 meters has been provided in all four boilers (2x330 MW + 2x660 MW) and online continuous emission monitoring system (CEMS) installed for PM, SOx & NOx. Exit velocity is more than 23 m/sec & records are being maintained. Please refer **Annexure I.** Regular stack emission monitoring is also being carried out by third party laboratory.
(ix)	High efficiency electrostatic precipitators (ESP's) shall be installed to ensure that particulate emission does not exceed 50 mg/ Nm^3	Complied Highly efficient Electrostatic Precipitator (ESPs) has been provided to each boiler to maintain particulate emission less than 50 mg/Nm^3. Please refer **Annexure I.**
(x)	The seawater intake structure shall be so designed to ensure that the continuity of free flow of water in the two arms of Kotdi creek is not hampered	The integrated Intake channel developed by APSEZ is away from Kotdi Creek. The outfall channel Crosses Kotdi Creek at one place, for which aqueduct has been provided so that the treated effluent does not mix with Creek water and does not Interfere with free flow of water in the two arms of Kotdi Creek. The Cooling tower (CT) blow down and Desalination plant Reject is being utilized for FGD scrubber system and FGD Outlet is disposed off to the sea through aeration chamber through Outfall

		Channel as recommended by NIO and approved by MoEFCC.
(xi)	It shall be ensured that the mangroves are not adversely affected due to the project.	The Thermal Power Plant is located well beyond the CRZ area and there are no mangroves at the plant site.
(xii)	Cooling towers with closed cycle system shall be installed COC of at least 1.5 shall be maintained.	Being Complied COC of 1.5 is being maintained
(xiii)	Space provision shall be made for installation of FGD of requisite efficiency of removal of SO2, If required at later stage.	Noted Space for FGD has been provided in the plant as per the guidelines of CPCB vide letter No. B-33014/07/2017/IPC-II/TPP/15872 dated 11.12.2017. However, as per MoEFCC Notification date 5th September 2022, Mundra TPP is falling under Category **"C"** Non- retiring TPPs and the timelines for compliance of SO_2 emission is up to December 2026. Accordingly, the work is under progress for compliance as per CPCB direction.
(xiv)	The total land requirement shall not exceed 254.49 ha for all the activities/ facilities relating to Phase - I and Phase - II of the proposed power project.	Noted The project has undergone two expansions. The total area has changed and the same has been approved by MoEF&CC. The total plant area for all three Phases is 313 ha.
(xv)	Rainwater harvesting should be adopted. Central Groundwater Authority/Board shall be consulted for finalization of appropriate rainwater harvesting structures within a period of three months form the date of clearance.	Rainwater Harvesting (RWH) scheme has been submitted to RO, CGWB, Ahmedabad. We have adopted the scheme and developed rainwater collection & groundwater recharging facilities at three locations within plant premises.
(xvi)	Fly ash shall be collected in dry form and its 100 % utilization shall be ensured from the day of the commissioning of the plant. In case of emergency, the utilized ash may be disposed in the ash pond through High Concentration Slurry Disposal (HCSD) system and bottom ash in conventional slurry mode.	Being Complied Ash Generation & utilization details from April '2023 to September' 2023 is enclosed as **Annexure VII.**
(xvii)	Adequate safety measures shall be provided in the plant area to check/ minimize spontaneous fires in coal yard, especially during summer season. Copy of these measures with full details along with plant layout location shall be submitted to the ministry as well as to the Regional Office of the Ministry of Bhopal.	Water sprinkler system and Hydrant system in operation to minimize spontaneous fires in coal yard.

(xviii)	Storage facilities for auxiliary liquid fuel such as LDO and HFO/LSHS shall be made in the plant area where risk is minimum to the storage facilities Disaster management Plan shall be prepared to meet any eventuality in case of accident taking place. Mock drills shall be conducted regularly and based on the same, modifications required, if any shall be incorporated in the DMP. Sulphur content in the liquid fuel will not exceed 0.5 %.	The LDO and HFO / LSHS are stored in designated location and minimum risk area. Emergency Management Plan (EMP) has been prepared & Mock Drill is being conducted on regular interval. Occupational Health & Safety Management System as ISO 45001:2018 implemented.
(xix)	Noise levels emanating from turbines shall be limited to 75 dBA. For people working in the high noise area, requisite personal protective equipment like earplugs/earmuffs etc. Shall be provided. Workers engaged in noisy areas such as turbine area, air compressors etc shall be periodically examined to maintain audiometric record and for treatment for any hearing loss including shifting to non - noisy/less noisy areas.	Regular noise level monitoring is being carried out inside the plant locations & monitoring values are well within limits. Please refer **Annexure- I.** We are providing necessary PPE's like earmuff and ear plug to all employees & workers. Occupational Health & Safety Management System as ISO 45001:2018 implemented.
(xx)	Regular monitoring of ground water quality including heavy metals shall be undertaken around ash dyke and the project area to ascertain the change, if any, in the water quality due to leaching of contaminants from ash disposal area.	Being complied Four nos. of Bore well establish around the ash dyke & Ground water quality is being monitored on regular basis. Please refer monitoring report in **Annexure-VIII.**
(xxi)	A greenbelt shall be developed all around the plant boundary and ash dyke covering and area of at least 98.2 ha.	Complied. The plantation & green belt development are adequate width and density with local tree species has been developed to provide protection against dust and noise. Total green belt / plantation developed in 117.33 Ha (Out of total plant area 313 Ha available for all three phases). Green belt/plantation is enclosed as **Annexure VI.**
(xxii)	First aid and sanitation arrangements shall be made for the drivers and contract labour during construction phase.	Complied. First aid and sanitation were provided for driver and contract labour during construction phase.
(xxiii)	Regular monitoring of ground level concentration of SO_2, NOx, Hg, SPM and RSPM shall be carried out in the impact zone and records maintained. If at any	Being Complied The regular Environmental Monitoring is being carried out in & around plant premises and reports are submitted to MoEF&CC, CPCB & GPCB. Please

	stage these levels are found to exceed the prescribed limits, necessary control measures shall be provided immediately. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with SPCB. Periodic reports shall be submitted to the Regional Office of this Ministry.	refer **Annexure- I** Online continuous monitoring systems Installed in consultation with GPCB. AAQM monitoring in and around also being done by third party twice in a week. Please refer. **Annexure – IV**
(xxiv)	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Complied Proper housing and infrastructure facilities were provided to labors during the construction. The temporary facilities have been removed after the completion of project.
(xxv)	The project proponent shall advertise in at least two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned within seven days form the date of this clearance letter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the State Pollution Control Board/ Committee and may also be seen at website of the Ministry of Environment and Forests http://envfor.nic.in	Complied
(xxvi)	A separate environment management cell with qualified staff shall be set up for implementation of the stipulated environment safeguards.	We have established separate environmental monitoring cell with well-qualified staff to carry out regular surveillance for implementation of stipulated environmental safeguards and full fledge Environment Lab accredited with NABL ISO/IEC 17025:2017 for Air, Water & Noise including marine biology as well as terrestrial ecology regularly. **Environment Management System as per EMS ISO 14001: 2015 Water Efficiency Management System (ISO 46001:2019) implemented.** Terrestrial monitoring report enclosed as **Annexure -II** and Marine monitoring Report is enclosed as **Annexure – III.**
(xxvii)	Half yearly on the status of implementation of stipulated condition	Six monthly compliance report accordance to the Environmental clearance granted by MoEFCC

	and environmental safeguards shall be submitted to this Ministry/Regional office /CPCB/SPCB.	being submitted to MoEFCC, CPCB & GPCB. Last compliance report was submitted for the period of Oct' 22 to Mar' 23 had been submitted vide letter no. APL/EMD/EC/MoEFCC/211/05/23 Dated: 22.05.23
(xxviii)	Regional office of the Ministry of Environment & Forest located at Bhopal will monitor the implementation of the stipulated conditions. A complete set of documents including Environmental Impact Assessment - Report and environment Management Plant along with the additional information submitted from time to time shall be forwarded to the Regional office for their use during monitoring.	Being complied. All necessary documents already submitted to MoEF&CC, Regional Office Bhopal. Addition information being forwarded time to time MoEF&CC, Regional Office Bhopal.
(xxix)	Separate funds shall be allocated for implementation of environmental protection measures along with item wise break up. These cost shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for other purposes and year wise expenditure shall not be diverted for other purposes and year wise expenditure should be reported to the Ministry.	Being followed Separate funds allocated for environmental protection measures. Expenditure details from April' 23 to September'2023 (F.Y. 2023-24) is enclosed as **Annexure - X.**
(xxx)	The project authorities shall inform the Regional office as well as the Ministry regarding the date of financial closure and final approval of the project by the concerned authorities and the dates of start of land development work and commissioning of plant.	Complied
(xxxi)	Full cooperation shall be extended to the Scientists/Officers from the Ministry /Regional Office of the Ministry at Bhopal/the CPCB/ the SPCB who would be monitoring the compliance of environmental status.	Noted Full co-operation shall be extended to mentioned authority.

ADANI POWER LIMITED, MUNDRA

Compliance status on Environment Clearance

For Phase – II 1980 MW (2x330 + 2x660) TPP

Vide letter No. J-13011/1/2008-IA-II (T) dated 21/10/08)

Transferred EC from APMuL to APL dated; 24.04.2023.

Sr. No.	Conditions	Status
3-(i)	The changes/ modification made in the scope of phase - I of the project should be get incorporated formally in the environmental clearance already granted.	Noted Changes in Phase-I communicated to MoEFCC
(ii)	Prior CRZ clearance under the provisions of CRZ Notification, 1991 for the activities to be taken up in the CRZ area as applicable to this project, shall be obtained.	CRZ Clearance was obtained from MoEFCC vide letter No. 10 - 94/2007- IA - III dated 29th May' 2008. However, the facility for Sea water intake and outfall were not developed by Adani Power Ltd. The CRZ clearance has not been acted upon and the validity of 5 years under the CRZ Notification, 1991 is over. **Presently there is no CRZ clearance available with Adani Power Limited-Mundra.** NIO suggested to develop integrated intake and outfall facility in place of multiple intakes and outfalls. This integrated intake & outfall has been approved by MoEFCC under the clearance for Waterfront Development proposed by APSEZL. Mundra TPP is using this integrated intake and outfall facilities.
(iii)	Regular monitoring of the thermal discharges into the sea shall be carried out and records maintained. The temperature changes, if any, in the sea water within the impact zone due to the project shall be carried out. Based on the same, necessary safeguard measures as may be required to protect the aquatic flora and fauna shall be taken. It shall be ensured that discharge temperature does not exceed the prescribed limits of 7°C above the ambient temperature of receiving waters at any point of time.	Being complied The temperature of discharge water and the intake water is monitored on a daily basis. Differential temperatures are well within the stipulated limits. Please refer **Annexure V.** Regular third-party marine monitoring also being carried out, monitoring report enclosed for the period of April'23 to Sept' '23 Please refer **Annexure – III**
(iv)	The recommendations made in the report of NIO relating to intake and	NIO suggested/recommended to develop integrated intake and outfall facility in place of

	outfall shall be implemented.	multiple intake and outfall. This integrated intake & outfall has been approved by MoEF&CC under the clearance for Waterfront Development proposed by APSEZL. Mundra TPP is using this integrated intake and outfall facility.
(v)	The sulphur content in the coal to be used both for Phase–I and Phase-II shall not exceed 0.3 %.	Being complied The coal is imported from Indonesia and South Africa. It is ensured that sulphur content in coal below 0.3%.
(vi)	Appropriate measures shall be adopted to reduce the emissions of SO_2. It shall also be ensured that at no point of time the ground level concentration of SO_2 in the impact zone exceeds the prescribed limit. The proponent shall also provide, additional corrective measures as may be deemed necessary shall be taken.	Being Complied. The regular monitoring is being carried out in & around the plant premises. We have already installed online continuous monitoring system in all stacks. At no point of time, the ground level concentration of SO_2 has exceeded the permissible limits.
(vii)	Continuous meteorological data shall be collected at site for at least three years. Based on the data so collected, air quality modeling prediction shall be carried out. The results so obtained shall be analyzed and based on the same, additional corrective measures as may be deemed necessary shall be taken.	Complied. Continuous meteorological stations installed within plant premises; Details of metrological data observation enclosed as **Annexure I.**
(viii)	Two bi-flue stacks of 275 m height each for 2 X 330MW and 2 X 660 MW units shall be provided with continuous online monitoring equipments for SO_2, NOx and Particulate. Exit velocity of Flue gases shall not be less than 22.27 m/sec for 2 X 330MW stack and 22.97 m/sec for 2 X 660 MW units.	Complied Two bi-flue stacks 275 meters has been provided in all four boilers (2x330 MW + 2x660 MW) and online continuous emission monitoring system (CEMS) installed for PM, SOx & NOx. Exit velocity is more than 23 m/sec & records are being maintained. Please refer **Annexure I.** Regular stack emission monitoring is also being carried out by third party laboratory.
(ix)	High efficiency electrostatic precipitators (ESP's) shall be installed to ensure that particulate emission does not exceed 50 mg/ Nm^3	Complied Highly efficient Electrostatic Precipitator (ESPs) has been provided to each boiler to maintain particulate emission less than 50 mg/Nm^3. Please refer **Annexure I.**
(x)	The seawater intake structure shall be so designed to ensure that the continuity of free flow of water in the two arms of Kotdi creek is not hampered	The integrated Intake channel developed by APSEZ is away from Kotdi Creek. The outfall channel Crosses Kotdi Creek at one place, for which aqueduct has been provided so that the treated effluent does not mix with Creek water and does not Interfere with free flow of water in the two arms of Kotdi Creek. The Cooling tower (CT) blow down and

		Desalination plant Reject is being utilized for FGD scrubber system and FGD Outlet is disposed off to the sea through aeration chamber through Outfall Channel as recommended by NIO and approved by MoEFCC.
(xi)	It shall be ensured that the mangroves are not adversely affected due to the project.	The Thermal Power Plant is located well beyond the CRZ area and there are no mangroves at the plant site.
(xii)	Cooling towers with closed cycle system shall be installed COC of at least 1.5 shall be maintained.	Being Complied COC of 1.5 is being maintained
(xiii)	Space provision shall be made for installation of FGD of requisite efficiency of removal of SO2, If required at later stage.	Noted Space for FGD has been provided in the plant as per the guidelines of CPCB vide letter No. B-33014/07/2017/IPC-II/TPP/15872 dated 11.12.2017. However, as per MoEFCC Notification date 5th September 2022, Mundra TPP is falling under Category **"C"** Non- retiring TPPs and the timelines for compliance of SO_2 emission is up to December 2026. Accordingly, the work is under progress for compliance as per CPCB direction.
(xiv)	The total land requirement shall not exceed 254.49 ha for all the activities/ facilities relating to Phase - I and Phase - II of the proposed power project.	Noted The project has undergone two expansions. The total area has changed and the same has been approved by MoEF&CC. The total plant area for all three Phases is 313 ha.
(xv)	Rainwater harvesting should be adopted. Central Groundwater Authority/Board shall be consulted for finalization of appropriate rainwater harvesting structures within a period of three months form the date of clearance.	Rainwater Harvesting (RWH) scheme has been submitted to RO, CGWB, Ahmedabad. We have adopted the scheme and developed rainwater collection & groundwater recharging facilities at three locations within plant premises.
(xvi)	Fly ash shall be collected in dry form and its 100 % utilization shall be ensured from the day of the commissioning of the plant. In case of emergency, the utilized ash may be disposed in the ash pond through High Concentration Slurry Disposal (HCSD) system and bottom ash in conventional slurry mode.	Being Complied Ash Generation & utilization details from April '2023 to September' 2023 is enclosed as **Annexure VII.**
(xvii)	Adequate safety measures shall be provided in the plant area to check/ minimize spontaneous fires in coal yard, especially during summer season. Copy of these measures with full details along with plant layout location shall be	Water sprinkler system and Hydrant system in operation to minimize spontaneous fires in coal yard.

	submitted to the ministry as well as to the Regional Office of the Ministry of Bhopal.	
(xviii)	Storage facilities for auxiliary liquid fuel such as LDO and HFO/LSHS shall be made in the plant area where risk is minimum to the storage facilities Disaster management Plan shall be prepared to meet any eventuality in case of accident taking place. Mock drills shall be conducted regularly and based on the same, modifications required, if any shall be incorporated in the DMP. Sulphur content in the liquid fuel will not exceed 0.5 %.	The LDO and HFO / LSHS are stored in designated location and minimum risk area. Emergency Management Plan (EMP) has been prepared & Mock Drill is being conducted on regular interval. Occupational Health & Safety Management System as ISO 45001:2018 implemented.
(xix)	Noise levels emanating from turbines shall be limited to 75 dBA. For people working in the high noise area, requisite personal protective equipment like earplugs/earmuffs etc. Shall be provided. Workers engaged in noisy areas such as turbine area, air compressors etc shall be periodically examined to maintain audiometric record and for treatment for any hearing loss including shifting to non - noisy/less noisy areas.	Regular noise level monitoring is being carried out inside the plant locations & monitoring values are well within limits. Please refer **Annexure- I.** We are providing necessary PPE's like earmuff and ear plug to all employees & workers. Occupational Health & Safety Management System as ISO 45001:2018 implemented.
(xx)	Regular monitoring of ground water quality including heavy metals shall be undertaken around ash dyke and the project area to ascertain the change, if any, in the water quality due to leaching of contaminants from ash disposal area.	Being complied Four nos. of Bore well establish around the ash dyke & Ground water quality is being monitored on regular basis. Please refer monitoring report in **Annexure-VIII.**
(xxi)	A greenbelt shall be developed all around the plant boundary and ash dyke covering and area of at least 98.2 ha.	Complied. The plantation & green belt development are adequate width and density with local tree species has been developed to provide protection against dust and noise. Total green belt / plantation developed in 117.33 Ha (Out of total plant area 313 Ha available for all three phases). Green belt/plantation is enclosed as **Annexure VI.**
(xxii)	First aid and sanitation arrangements shall be made for the drivers and contract labour during construction phase.	Complied. First aid and sanitation were provided for driver and contract labour during construction phase.
(xxiii)	Regular monitoring of ground level	Being Complied

	concentration of SO_2, NOx, Hg, SPM and RSPM shall be carried out in the impact zone and records maintained. If at any stage these levels are found to exceed the prescribed limits, necessary control measures shall be provided immediately. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with SPCB. Periodic reports shall be submitted to the Regional Office of this Ministry.	The regular Environmental Monitoring is being carried out in & around plant premises and reports are submitted to MoEF&CC, CPCB & GPCB. Please refer **Annexure- I** Online continuous monitoring systems Installed in consultation with GPCB. AAQM monitoring in and around also being done by third party twice in a week. Please refer. **Annexure – IV**
(xxiv)	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Complied Proper housing and infrastructure facilities were provided to labors during the construction. The temporary facilities have been removed after the completion of project.
(xxv)	The project proponent shall advertise in at least two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned within seven days form the date of this clearance letter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the State Pollution Control Board/ Committee and may also be seen at website of the Ministry of Environment and Forests http://envfor.nic.in	Complied
(xxvi)	A separate environment management cell with qualified staff shall be set up for implementation of the stipulated environment safeguards.	We have established separate environmental monitoring cell with well-qualified staff to carry out regular surveillance for implementation of stipulated environmental safeguards and full fledge Environment Lab accredited with NABL ISO/IEC 17025:2017 for Air, Water & Noise including marine biology as well as terrestrial ecology regularly. **Environment Management System as per EMS ISO 14001: 2015 Water Efficiency Management System (ISO 46001:2019) implemented.** Terrestrial monitoring report enclosed as **Annexure -II** and Marine monitoring Report is

		enclosed as **Annexure – III.**
(xxvii)	Half yearly on the status of implementation of stipulated condition and environmental safeguards shall be submitted to this Ministry/Regional office /CPCB/SPCB.	Six monthly compliance report accordance to the Environmental clearance granted by MoEFCC being submitted to MoEFCC, CPCB & GPCB. Last compliance report was submitted for the period of Oct' 22 to Mar' 23 had been submitted vide letter no. APL/EMD/EC/MoEFCC/211/05/23 Dated: 22.05.23
(xxviii)	Regional office of the Ministry of Environment & Forest located at Bhopal will monitor the implementation of the stipulated conditions. A complete set of documents including Environmental Impact Assessment - Report and environment Management Plant along with the additional information submitted from time to time shall be forwarded to the Regional office for their use during monitoring.	Being complied. All necessary documents already submitted to MoEF&CC, Regional Office Bhopal. Addition information being forwarded time to time MoEF&CC, Regional Office Bhopal.
(xxix)	Separate funds shall be allocated for implementation of environmental protection measures along with item wise break up. These cost shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for other purposes and year wise expenditure shall not be diverted for other purposes and year wise expenditure should be reported to the Ministry.	Being followed Separate funds allocated for environmental protection measures. Expenditure details from April' 23 to September'2023 (F.Y. 2023-24) is enclosed as **Annexure - X.**
(xxx)	The project authorities shall inform the Regional office as well as the Ministry regarding the date of financial closure and final approval of the project by the concerned authorities and the dates of start of land development work and commissioning of plant.	Complied
(xxxi)	Full cooperation shall be extended to the Scientists/Officers from the Ministry /Regional Office of the Ministry at Bhopal/the CPCB/ the SPCB who would be monitoring the compliance of environmental status.	Noted Full co-operation shall be extended to mentioned authority.

ADANI POWER LIMITED, MUNDRA

Compliance status on Environment Clearance

For Phase – III 1980 MW (3x660) TPP

Vide letter No. J-13012/126/2008-IA.II (T) dated 20.05.10

Transferred EC from APMuL to APL dated; 24.04.2023.

Sr. No.	Specific Conditions	Status
A -(i)	Phase – I and Phase – II projects shall be run purely on imported coal. Phase- III project shall be run on 70 % domestic and 30 % imported coal.	Phase I & II: Already commissioned being operated on imported coal. Phase-III: Domestic Coal Linkage for 70 % quantity granted by Ministry of Coal. Operational on blended coal.
(ii)	In case source of fuel supply is to be changed for Phase- I and Phase- II at a later stage, the project proponent shall intimate the Ministry well in advance along with necessary requisite documents for its concurrence for allowing the change.	Noted. Change in the source of fuel supply for Power Plant will be intimated to the Ministry well in advance along with necessary requisite documents for its concurrence for allowing the change.
(iii)	The project proponent shall examine in detail the possibility to adopting NIOT technology for desalination of sea water through Low temperature Thermal Desalination (LTTD) process. In case the same is not feasible detailed explanation shall be submitted.	Complied. The desalination plant is already commissioned. The LTTD process is not feasible at Mundra, and report already submitted to RO, MoEF&CC, Bhopal
(iv)	Marine biology shall not be disturbed in the Kotdi Creek and Gulf of Tunda due to any activity arising from the operation of power plant. Continuous monitoring of the marine biology in the area shall be undertaken and assessed for any changes beyond the natural variability identified and records maintained and submitted to the Ministry from time to time.	Complied. The integrated intake channel developed by APSEZL is away from Kotdi Creek, which is used by APL, Mundra also. The integrated outfall developed by APSEZL and being used by APL, crosses Kotdi Creek, through aqueduct without mixing with Kotdi Creek and without causing any obstruction to free flow. Marine biology monitoring is being monitored on regular basis. Monitoring report prepared by third party is enclosed as **Annexure – III**.
(v)	A comprehensive marine biological quality monitoring programme and mitigation measures shall be prepared and submitted within six months to the Ministry for immediate implementation.	Being Complied. A comprehensive marine biological quality monitoring report is prepared and implemented. Report being submitted to MoEF&CC. Monitoring report is enclosed as **Annexure – III**.

(vi)	A dedicated Environment Management Cell with suitable qualified personnel constituting of marine Biologist and an ecologist shall be set up under the control of a Senior Executive, who will report directly to the head of the Organization.	A dedicated Environment Management cell has been set up with qualified staff Including Ecologist & Marine Biologist. The head of the Environment Management Cell reports to the Station Head at Mundra. We have full-fledged Environment Lab accredited with NABL ISO/IEC 17025:2017 to carry out in-house environmental monitoring. **Environment Management System as per EMS ISO 14001: 2015 & Water Efficiency Management System (ISO 46001:2019) implemented.**
(vii)	The project proponent shall not be hamper the vocation of the fishing community in the area and it shall be ensured that local fishing community shall be allowed to carry out their vocation in the creek.	The power plant is located at a site, which is away from the fishing areas. Adani Power Ltd, Mundra. uses the marine facilities such as intake channel and outfall channel, developed by APSEZ Ltd., which is not hampering the vocation of fishing community. Our CSR activities enhance infrastructure & essential nets to fishermen communities for the betterment of their vocation in the area. Please refer **Annexure XI.**
(viii)	The project proponent shall adopt the fishing communities displaced/ affected by the power plant and in particular those residing in and around Zarpara, Kotdi, Navinal, and Tragadi for their overall socio-economic development.	No fishing community is displaced by the power plant. The fishing community is being supported by Adani Foundation under CSR activities of the company, being implemented through **Adani Foundation.** The CSR report is enclosed as **Annexure –XI.**
(ix)	An endowment of Fisherman Welfare Fund shall be created not only to enhance their quality of life through creation of facilities for fish landing platforms/ fishing harbour/cold storage, but also to provide relief in case of emergency situations such as missing of fisherman on duty due to rough seas, tropical cyclone and storms etc.	APL, Mundra provided adequate funds for creation, maintenance and support of facilities such as sanitation facilities, support schools, approach roads, cycle to school going children, fish lending sheds etc. as well as support for purchasing various essential materials like nets, cycle, iceboxes, anchors, weighing scales, other fishing equipment's etc. All these activities are undertaken as a part of CSR, being implemented through Adani Foundation. During recent **Biporjoy Cyclone**, Adani Foundation had worked for relief and recovery with Panchayat & Government body; provided food & shelter, 500 nos. of

		date trees restored, distribution of cement roof sheets, etc. Adani Foundation has also established "**Adani Vidya Mandir"** a school focusing on education of fisherman's children. Refer **Annexure XI.**
(x)	Suitable screens (in stages) shall be placed across intake channel to prevent entrainment of life forms including eggs, larvae, juvenile fish, plankton etc. during extraction of sea water.	Being complied. Suitably designed screen systems have been provided in the intake system.
(xi)	No ground water shall be extracted for use in operation of the power plant even in lean season.	Being Complied. There is no extraction of Ground water for use in operation of the power plant.
(xii)	No water bodies including natural drainage system in the area shall be disturbed due to activities associated with the setting up/operation of the power plant.	Being Complied. No ground water bodies/natural drainage will be disturbed.
(xiii)	FGD shall be provided for Phase- III units.	Complied. Sea water based FGD has been provided.
(xiv)	The system with COC of at least 1.3 shall be designed since the sea water has high TDS.	Being complied. COC of least 1.3 is being maintained
(xv)	Additional soil for leveling of the proposed site shall be generated within the sites (to the extent possible) so that natural drainage system of the area is protected and improved.	Complied. For leveling the site, the maximum additional soil has been generated within the site itself and maintained natural drainage system of the area.
(xvi)	High Efficiency Electrostatic Precipitator (ESPs) shall be installed to ensure that particulate emission does not exceed 50 mg/Nm^3.	Complied, High efficient Electrostatic Precipitator (ESPs) has been provided to each boiler to maintain particulate emission less than 50 mg/Nm^3. Please refer **Annexure-I**
(xvii)	Adequate dust extraction system such as cyclones/beg filters and water spray system in dusty areas such as in coal handling and ash handling points, transfer areas and other vulnerable dusty areas shall be provided.	Water spraying system is provided in coal handling area and dust extraction system provided in coal transfer & other vulnerable dusty area. Closed conveyor system for Coal transportation is provided. Wind shield around coal stack has been provided. Integrated Ash silo system (Ash transfer by pneumatic system through

		pipeline) is in place for ash handling at single place and frequently water sprinkling is being done in the area.
(xviii)	Utilization of 100 % Fly Ash generated for Phase-III shall be made from day one of operation of the plant. Status of implementation shall be reported to the regional office of the Ministry from time to time.	Being complied Ash Generation & utilization details from April' 2023 to September' 2023 Please refer **Annexure- VII.**
(xix)	Fly ash shall be collected in dry form and storage facility (silos) shall be provided. Unutilized fly ash shall be disposed off in the ash pond in the form of slurry form. 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. No ash shall be disposed off in low lying area.	Being followed Fly Ash is collected in dry form and storage silos have been provided. Unutilized ash is wet conditioned for disposal in Ash Dyke. Mercury and heavy metals are periodically monitored in the ash. No ash from Phase III Units is disposed off in low-lying area.
(xx)	Ash pond shall be lined with HDP/LDP lining or any other suitable impermeable media such that no leachate takes place at any point of time. Adequate safety measures shall also be implemented to protect the ash dyke from getting breached.	Ash dyke is provided with LDPE Lining. Safety measures are in place to prevent breaching of the dyke.
(xxi)	For disposal of Bottom Ash in abandoned mines (if proposed to be undertaken) if shall be ensured that the bottom and sides of the mined-out areas are adequately lined with clay before Bottom Ash is filled up. The project proponent shall inform the State Pollution Control Board well in advance before undertaking the activity.	No mines in the near by area.
(xxii)	There should not be any contamination of soil, ground and surface waters (Canals & village pond) with sea water in and around the project sites. In other wards necessary preventive measures for spillage from pipelines, such as lining of guard pond used for the treatment of outfall and intake should be adopted. This is just because the areas around the projects boundaries fertile agriculture and used for paddy cultivation.	Being complied. The Sea water is used within the plant premises only and in closed circuit. There is no contamination of soil, ground and surface water. There are no agricultural lands on see ward side of the power plant.
(xxiii)	To absorb the ground level pollutants, to	Being complied.

	act buffer against strong winds arising out of tropical cyclones/ storms, to reduce heat load and ameliorate environment, there is a need for shelterbelts/greenbelts/tree cover along the coastline, bunds around marshy areas, roadsides, around the project protected monuments, forts, waste places, School Campuses and other vacant lots. Coconut plantations can be developed along the coastline and near villages, school and forts. Stands of Casuariana should also be developed on some dunes and along coasts. Bamboos, Neem and other native trees should be planted in and around at the villages.	The plantation & green belt development is adequate width and density with local tree species has been developed to provide protection against dust and noise. Total green belt / plantation developed in 117.33 Ha (Out of total plant area 313 Ha for all three phases). Green belt/plantation is enclosed as **Annexure VI.**
(xxiv)	The above suggest Green Belt shall consist of 3 tires of plantation as cited above and largely comprising of native species around the power plant and at least 100 m width shall be raised. Wherever 100 m width is not feasible a 50 m width shall be raised and adequate justification shall be submitted to the regional office of the Ministry. Tree density shall not less than 2500 per ha with survival rate not less than 70 %.	Being complied. Green belt Being developed in & around plant area. We have well established Horticulture Department which has started large scale plantation/ Green Belt developed in and around the plant.
(xxv)	To meet the expenditure of these plantations and their management, a common Green Endowment fund should be created by the project proponents out of EMP budgets the interest earned out of it should be used for the development and management of green cover of the area.	APL, Mundra has internal department of Horticulture for developing greenbelt/landscaping of our APL, Mundra premises and its surrounding area. APL, Mundra has separate fund for such development.
(xxvi)	No wastewater should be discharged onto channel systems, backwaters, marshy areas and seas without treatment. The outfall should be first treated in guard pond and then discharge into deep sea (12 to 15 m depth). Similarly, the intake should be from deep sea to avoid aggregation of fish. The brine that comes out from desalinization plants should not be discharged into sea.	The Cooling tower (CT) blow down and Desalination plant Reject is being utilized for FGD scrubber system and FGD Outlet is disposed off into Sea through aeration chamber and common Outfall Channel as recommended by NIO and approved by MoEF&CC.
(xxvii)	The treated effluents conforming to the prescribed standards only shall be re circulated and reused within the plant (as	Desalination wastewater is treated and utilized for dust suppression, CHP make up, etc. effluent stream and storm water

	may be required). Arrangements shall be made that effluent and storm water do not get mixed.	drainage are isolated to prevent any mixing.
(xxviii)	The project proponent shall identify and develop new fodder farm/grazing land (Gaucher land) Firm financial commitment along with details for development of fodder farm/grazing land shall be submitted within three months to the Regional Office of the Ministry.	Fodder support is provided to various needy villages so as to facilitate the farmers and cattle owners in the time of need when fodder is highly expensive and in short supply. Total of 799413 kg of Dry fodder supported to 34 villages benefited & 16000 Cattles benefited. The detailed CSR report enclosed as **Annexure XI**.
(xxix)	The project proponent shall prepare an action plan to be submitted within three months to the Ministry for regeneration of mangroves in the area and shall specify the financial commitments for the same.	Mangrove plantation plan along with regeneration plan submitted to MoEF&CC. To enhance the marine biodiversity, till date Adani group has carried out mangrove afforestation in more than 2800 ha. Area across the coast of Gujarat.
(xxx)	The water containing brine shall be discharged only after cooling at ambient temperature in a guard pond such that the same meets the average salinity of sea water.	Being complied The Cooling tower (CT) blow down and Desalination plant Reject is being utilized for FGD scrubber system and FGD Outlet is disposed off into Sea through aeration chamber and Outfall Channel as recommended by NIO and approved by MoEF&CC.
(xxxi)	The project proponent shall set up single teacher school in every village in the study area so that village boy and girls do not have to walk long distances. The project proponent shall also explore the feasibility of providing cycles to school going children/students to address school dropouts. Report to this effect shall be submitted to the Regional Office of the Ministry from time to time.	All schools of the surrounding villages adopted for development by Adani Foundation, CSR activities being done by Adani Foundation. CSR Progress Report for April'23 to September'23 (FY 2023-24) is enclosed as **Annexure – XI.**
(xxxii)	Action plan for R&R (If applicable) with compensation package of the project affected persons be submitted and implemented as per prevalent R&R policy within three months from the date of issue of this letter.	Not applicable.
(xxxiii)	An amount of Rs. 36.0 Crores shall be	Complied.

	earmarked as one-time capital cost for CSR programme. Subsequently a recurring expenditure of Rs. 7.20 Crores per annum shall be earmarked as recurring expenditure for CSR activities. Details of the activities to be undertaken shall be submitted within one month along with road map for implementation.	A separate budget earmarked for CSR activities. CSR study report already submitted to ministry. CSR activities being carried out by Adani Foundation.
(xxxiv)	While identifying CSR programme the company shall conduct need-based assessment for the nearby villages to study economic measures with action plan which can help in upliftment of poor section of society. Income generating projects consistent with the traditional skills of the people besides development of fodder farm, fruit bearing orchrds, vocational training etc, can form a part of such programme. Company shall provide separate budget for community development activities and income generating programmes. This will be in addition to vocational training for individuals imparted to take up self employment and jobs. In addition, a special scheme for upliftment of SC/ST's and mariginalised population in the study area out of CSR programme shall be formulated and submitted to the Ministry within six months along with firm commitment of implementation. The scheme shall have an in-built monitoring mechanism.	Need based Assessment Study for development of CSR plan completed by VIKSAT, Ahmedabad. Report already submitted to MoEF&CC. Need based plan implementation is being started nearby villages; individuals who are economically weak undertake some economic activity that would help them achieve sustainable livelihood and financial independence. CSR progress report is enclosed **as Annexure XI.**
(xxxv)	If shall be ensured that in-built monitoring mechanism for the schemes identified is in place and annual social audit shall be got done from the nearest government institute of repute in the region. The project proponent shall also submit the status of implementation of the scheme from time to time.	Being complied Audit has been conducted by Indian Institute of Social Welfare and Business Management (IISWBM) of university of Kolkata. Social Audit Report is submitted to APL. Implementation of Social Accountability 8000 ISO SA8000:2014 is on progress.
B	**General Conditions:**	**Status**
(i)	A sewage treatment plant shall be provided (as applicable) and the treated sewage shall be used for raising greenbelt/plantation.	Sewage Treatment Plants (STP) installed within the plant and treated water being utilizing/recycle within the plant remises for plantation and green belt development.

(ii)	Rainwater harvesting should be adopted. Central Groundwater Authority/ Board shall be consulted for finalization of appropriate rainwater harvesting technology within a period of three months from the date of clearance and details shall be furnished.	Being Complied. Rainwater Harvesting (RWH) scheme has been submitted to RO, CGWB, Ahmedabad. We have adopted the scheme and developed rainwater collection & groundwater recharge facilities at three locations within plant premises.
(iii)	Adequate safety measures shall be provided in the plant area to check/minimize spontaneous fires in coal yard, especially during summer season. Copy of these measures with full details along with location plant layout shall be submitted to the Ministry as well as to the Regional Office of the Ministry.	Proper fire fighting and fire hydrant system has been provided in the coal stack yard. **Occupational Health & Safety Management System as** ISO 45001:2018 **implemented.**
(iv)	Storage facilities for auxiliary liquid fuel such as LDO and /HFO /LSHS shall be made in the plant area in consultation with department of Explosives, Nagpur. Sulphur content in the liquid fuel will not exceed 0.5 %. Disaster Management Plan shall be prepared to meet any eventuality in case of an accident taking place due to storage of oil.	The LDO and HFO/LSHS properly stored in minimum risk area. A Disaster management plan will be prepared covering the all the eventualities in case of accident due to storage of oil. On site plan has already been made and implemented. Disaster management Plan has already been prepared and implemented. **Occupational Health & Safety Management system as** ISO 45001:2018 **implemented.**
(v)	Regular monitoring of ground water level shall be carried out be establishing a network of existing wells and constructing new piezometers. Monitoring around the ash pond area shall be carried out particularly for heavy metals (Hg, Cr, As, Pb) and records maintained and submitted to the Regional Office of this Ministry. The data so obtained should be compared with the baseline data so as to ensure that the ground water quality is not adversely affected due to the project.	Being Complied Four nos. of Borewell establish around the ash dyke & Ground water quality monitored on regular basis by third party and periodic report being submitted to the MoEF&CC. Please refer **Annexure VIII.**
(vi)	First aid and Sanitation arrangement shall be made for the drivers and other contract workers during construction phase.	Complied First aid and sanitation was provided for driver and contract labour during construction.
(vii)	Noise levels emanating from turbines shall be so controlled such that the noise in the work zone shall be limited to 75 dBA. For people working in the high noise area,	Being complied Necessary action has been taken to maintain noise level 75dB (A). The working personals

	requisite personal protective equipment like earplugs/earmuffs etc. shall be provided. Workers engaged in noisy areas such as turbine area, air compressors etc shall be periodically examined to maintain audiometric record and for treatment for any hearing loss including shifting to non noisy/less noisy areas.	provided with appropriate personal protective equipment and periodic audiometric check up is being carried out and records are maintained. Regular noise level monitoring is being carried out inside the plant locations & monitoring values are well within limits. Please refer **Annexure- I.** **Occupational Health & Safety Management System as** ISO 45001:2018 **implemented.**
(viii)	Regular monitoring of ground level concentration of SO_2, NOx, $PM_{2.5}$ & PM_{10} and Hg shall be carried out in the impact zone and records maintained. If at any stage these levels are found to exceed the prescribed limits, necessary control measures shall be provided immediately. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with SPCB. Periodic reports shall be submitted to the Regional Office of this Ministry. The data shall also be put on the website of the company.	Being complied. Regular monitoring of PM10, PM2.5, SO2, NOX and Hg is being carried out by third party consultant as well as in house and records are maintained. Online Continuous Ambient Air Quality Monitoring System has been installed at three various locations within the plant premises. Monitoring result is available & within the permissible limits. Monitoring reports being submitted to regional office of the MoEF&CC, CPCB and GPCB periodically. Please refer **Annexure - I**
(ix)	Provision shall be made for the made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	The temporary facilities removed after the Completion of project.
(x)	The project proponent shall advertise in at least two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned within seven days from the date of this clearance letter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the State Pollution Control Board/Committee and may also be seen at Website of the Ministry of Environment	Complied. Advertisement published in the local newspaper.

	and Forests at http://envfor.nic.in	
(xi)	A copy of the clearance letter shall be sent by the proponent to concern Panchayat, Zila Parisad /Municipal Corporation, urban local Body and the Local NGO, if any, from whom suggestions/representations, if any, received while processing the proposal: The clearance letter shall also be put on the website of the Company by the proponent.	Complied.
(xii)	A separate Environment Management cell with qualified staff shall be set up for implementation of the stipulated environment safeguards.	We have established separate environmental monitoring cell with well qualified staff to carry out regular surveillance for implementation of stipulated environmental safeguards and full-fledged Environment Lab accredited with NABL ISO/IEC 17025:2017 to carry out in-house monitoring of Air, Water & Noise as well as terrestrial & marine ecology regularly. **Environment Management System as per EMS ISO 14001: 2015 & Water Efficiency Management System (ISO 46001:2019) implemented.** Terrestrial monitoring report enclosed as **Annexure – II** and Marine monitoring Report is enclosed as **Annexure – III.**
(xiii)	The proponent shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the regional office of MOEF, the respective Zonal Office of CPCB and SPCB. The criteria pollutant levels namely; SPM, RSPM ($PM_{2.5}$, & PM_{10}), SO_2, NO_X (ambient levels as well as stack emissions) shall be displayed at a convenient location near the main gate of the company in the public domain.	Six monthly Environmental Clearance compliance status report is regularly submitted to MoEF&CC, CPCB and SPCB. The same is sent by email also. Compliance status updated on Company's website. Regular monitoring of PM_{10}, $PM_{2.5}$, SO_2, NO_X and Hg is being carried out by third party and records are maintained. Please refer **Annexure I.** Display board is installed in main gate.
(xiv)	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well by e-mail) to the respective Regional Office of MOEF, the	Being Complied Half yearly compliance report is regularly submitted to MoEF&CC, CPCB & SPCB. The same is sent by email also. Compliance status updated on Company's website.

	respective Zonal office of CPCB and SPCB.	Last compliance report was submitted for the period of October'2022 to March'2023 had been submitted vide letter no. APL/EMD/EC/ MoEFCC/211/05/23 Dated: 22.05.2023.
(xv)	The environment statement for each financial year ending 31st March in Form V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website, of the company along with the status of compliance of EC conditions and shall also be sent to the respective Regional Offices of the Ministry by e-mail.	Being complied, Regular environment statement is being submitted to the Gujarat Pollution Control Board (GPCB). FY 2022-23 was submitted along with previous EC compliance report Dated: 12.08.2023. Please refer to **Annexure - IX.**
(xvi)	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the ministry of Environment and Forests, its Regional Office, Central Pollution Control Board and State Pollution Control Board. The project proponent shall upload the status of compliance of the environment of the environmental clearance conditions on their website and update the same periodically and simultaneously send the same by e-mail to the Regional Office, Ministry of Environment and Forests.	Six monthly Environmental Clearance compliance status report is regularly submitted to MoEF&CC, CPCB and SPCB. The same is sent by email also. Compliance status updated on Company's website.
(xvii)	Regional Office of Ministry of Environment and Forest will monitor the implementation of the stipulated conditions. A complete set of documents including Environment Impact Assessment Report and Environment Management Plan along with the additional information submitted from time to time shall be forwarded to the regional office for their use during monitoring. Project proponent will upload the compliance status in their website and update the same from time to time at least six monthly basis. Criteria pollutants levels including NOx (from stack & ambient air) shall be displayed at the main gate of the	Complied. Compliance status updated on Company's website. Display board already installed at main gate.

	power plant.	
(xviii)	Separate funds allocated for implementation of environmental protection measures along with item wise breakup. This cost shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for other purposes and year wise expenditure should be reported to the Ministry.	Being Complied. Separate funds allocated for environmental protection measures. Expenditures details F.Y. 2023-24 is enclosed as **Annexure-X.**
(xix)	The project authorities shall inform the Regional Office as well as the Ministry regarding the date of financial closure and final approval of the project by the Concerned authorities and the dates of start of land development work and commissioning of plant.	Complied
(xx)	Full cooperation shall be extended to the scientists/ officers from the Ministry/Regional office of the Ministry at Bangalore/CPCB/ the SPCB who would be monitoring the compliance of environmental status.	Noted, Full co-operation shall be extended to mentioned authority always.

*****

ENVIRONMENTAL MONITORING REPORT

April 2023 to June2023

AMBIENT AIR QUALITY, STACK EMISSION, WATER QUALITY AND NOISE MONITORING

Prepared By:

M/s. UniStar Environment and Research Labs Pvt. Ltd.

This report is released for the use of the M/s. Adani Power Ltd., Mundra (APL-Mundra) for Regulators and relevant stakeholders solely as part of the Environmental Clearance and Consent to operate (CTO) compliances. Information provided (unless attributed to referenced third parties) is otherwise copy righted and shall not be used for any other purpose without the written consent of UniStar Environment & Research Labs Pvt. Ltd.

QUALITY CONTROL							
Name of Publication	Environmental Quality Monitoring Report for the Quarter April 2023- June 2023						
Project Number	03	**Report No.**	UERL/ENV/JAN/ 4-6/2023	**Version**	1	**Released**	July 2023
Project Coordinator	Mr. Bhavin Patel						
Prepared By	Miss. Shweta A. Rana						
Checked By	Mr. Jaivik Tandel						
DISCLAIMER							
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FOR
UniStar Environment and
Research Labs Pvt. Ltd.

Mr. Jaivik Tandel
(Authorized By)

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LIST OF GRAPHS

EXECUTIVE SUMMARY

M/s. Adani Power Ltd., Mundra (APL-Mundra) places great emphasis on delivering long-term sustainable value for its respective stakeholders and is certain to fulfill them by sustaining perseverance in their actions. In ensuring to generate electricity at large scales and provide seamless access to electricity to households with generation capacity of 4620 in three phases. Mundra Thermal (coal Based) Power Plant near Village Tunda in Mundra, District Kutch, and Gujarat. APL-Mundra received Consolidated consent AWH-102106 on dated 17.07.2019 valid up to 29/06/2024.

The phased wise development being undertaken for ultimate capacity of power plant is shown below.

- First Phase : 2 x 330 MW
- Second Phase : 2 x 330 MW + 2 x 660 MW
- Third Phase : 3 x 660 MW

The Thermal Power Plant is located near Village Tunda, Mundra Taluka in Kutch District. The Site is closed to the sea, making cooling water perennially available for the power plant. The Power Plant is based on supercritical technology using imported coal.

All three phase of the power plant is operational and as the part of the compliance to the statutory requirement, M/s. Adani Power Ltd., Mundra (APL-Mundra) has entrusted the environmental quality monitoring study for the area surrounding the power plant. Towards achieving and sustaining Business excellence at the Plant, M/s. Adani Power Ltd., Mundra (APL-Mundra) Implemented ISO-14001:2015 Environment Management System (EMS), ISO 46001:2019 Water Efficiency management and Accreditation of NABL in Environmental Laboratory (ISO/IEC 17025:2017) vide Certificate No. TC-5215.

Various environmental parameters have been monitored during the period of April 2023 to June 2023. The detail of the environmental parameters along with frequency of monitoring is shown in subsequent sections.

1. ENVIRONMENTAL PARAMETERS

Sr. No.	Environmental Indices	Parameter	No. of Location and Monitoring.	Frequency of Sampling
1.	Ambient Air Quality	PM_{10}, $PM_{2.5}$, Sulphur Dioxide and Nitrogen Dioxide	**Three Location** 1. Siracha Village, 2. Kandagara VIllage 3. Wandh Village	Twice a week
2.	Ambient Air Quality	PM_{10}, $PM_{2.5}$, Sulphur Dioxide, Nitrogen Dioxide, Ozone and Mercury	**Five Location** 1. Siracha, 2. Kandagara, 3. Wandh, 4. 20 MLD Desalination plant, 5. Shantiniketan-1)	Once in a month
3.	Stack Monitoring	PM, Sulphur Dioxide, Oxide of Nitrogen and Hg	Nine Location	Once in a month
4.	Meteorological Monitoring	Wind rose, Wind speed, Wind direction, Rainfall, Temperature, Relative Humidity	One location	Round the clock
5.	Ground Water Monitoring for Surrounding Villages	Colour, Odour, Taste, Turbidity, Dissolved Solids, pH value, Total Hardness, Calcium, Boron, Copper, Iron, Manganese, Chloride, Sulphate, Nitrate, Fluoride, Phenolic Compounds, Mercury, Cadmium, Selenium, Arsenic, Cyanide, Lead, Zinc, Anionic Detergents as MBAS, Chromium Cr+6, Mineral Oil, MPN Index for Coliform Bacteria per 100 ml, Residual Free Chlorine, Aluminium, Alkalinity, Magnesium as Mg, Escherichia Coli in 250 ml.	Five Location	Once in Quarter
6.	Effluent Water Sample	pH, Temperature, colour, SS, O & G, BOD3, COD, Chlorides, TDS, Sulphates, Ammonical Nitrogen, % Sodium, Sodium Absorption Ratio, Sulphides, Total Chromium, Hexavalent Chromium, Copper, Lead, Zinc, Free available chlorine, Phosphate, Iron	Four Location	Once in a month / Quarter
7.	Combined effluent Water Sample	pH, Temperature, colour, SS, O & G, BOD3, COD, Chlorides, TDS, Sulphates, Ammonical Nitrogen, % Sodium, Sodium Absorption Ratio, Sulphides, Total Chromium, Hexavalent Chromium, Copper, Lead, Zinc, Free available chlorine, Phosphate, Iron	One Location	Once in a month
8.	STP Water Analysis	pH, Residual Chlorine, SS, BOD, COD, Faecal coliform	Three Location	Once in month/ Quarter

9.	Borwell water Near Ash Dyke Area	pH @ 25 ° C, Conductivity (µS), Chloride as Cl^- Salinity (ppt), Total Dissolved Solids, Carbonate as CaCO3, Bicarbonate as CaCO3, Mercury as Hg,Arsenic as As, Lead as Pb, Chromium as Cr, Cadmium as Cd.	Four Location	Once in a Quarter
10.	Surrounding Villages Soil Analysis	Magnesium as Mg %, Molybdenium as Mo in ppm, Phosphorus as P %, Calcium as Ca %, Zinc as Zn, Manganese as Mn, Potassium as K%, Nitrogen as N%, Iron as Fe%, Copper as Cu, Boron as B, Sulphurin %, Chloride as Cl%.	Five Location	Once in Six Month
11.	Noise Level Monitoring	Noise level monitoring in dB(A)	10 Location	Once in a Quarter
12.	Condensate Cooling tower	pH @ 25 ° C, Free available chlorine, Zinc as Zn, Hexavalent Chromium, Total Chromium, Phosphate	09 Location	Once in a Quarter
13.	Cooling tower Blow down	pH @ 25 ° C, Free available chlorine, Zinc as Zn, Hexavalent Chromium, Total Chromium, Phosphate	09 Location	Once in a Quarter
14.	Boiler Blow down	TSS, O & G, Total Copper, Total Iron	04 Location	Once in a Quarter

1.1 AMBIENT AIR QUALITY

The scenario of the Ambient Air Quality in the study region has been assessed through a network of 5locations of Ambient Air Quality Monitoring. The design of monitoring network in the air quality surveillance program was based on the following considerations.

- Topography / Terrain of the study area.
- Human Settlements
- Wind pattern
- Health status
- Representation of regional Background levels.
- Accessibility of monitoring site.
- Resource availability.

Pre-calibrated Respirable Dust Samplers (PM_{10}) & Fine Dust Samplers ($PM_{2.5}$) have been used for monitoring the existing AAQM Status. Maximum, Minimum, Average, Standard Deviation and percentile have been computed from the raw data collected at all individual sampling stations to represents the Ambient Air Quality Status.

The significant parameters viz., PM_{10}, $PM_{2.5}$, Sulphur Dioxide (SO_2) and Nitrogen Dioxides (NO_2) and Mercury were monitored within the study area of 10 km from the site.

1.2 FLUE GAS MONITORING

All three phases of the Thermal Power Plant is in operation. The flue gas emission from stack attached to individual boiler is monitored once in month during the monitoring period.

1.3 WATER QUALITY MONITORING

The water quality parameters as per IS: 10500 for water resource within the study area have been used for describing the water environment and assessing the impacts on it.

Groundwater samples of nearby villages were collected at five locations the parameters of prime importance selected under physicochemical characteristics were estimated to describe the baseline environmental status of the water resources during the monitoring period. Four bore well samples surrounding the ash dyke area were collected during the month of May 2023 along with outfall water sample.

1.4 AMBIENT NOISE LEVEL MONITORING

The Ambient Noise levels within the plant premises were relocated at a different location (10 nos.) For the implementation of effective noise control programs.

1.5 MICROMETEOROLOGY

Meteorological parameters are important factors in the study of Air Pollution. The Transport and diffusion of the pollutants in the atmosphere are governed by meteorological factors.

Primary / Basic Meteorological Parameters

- Wind Velocity
- Wind Direction

Since the dispersion and diffusion of pollutants mainly depend on the above factors hence these factors are considered as primary meteorological parameters.

Secondary Meteorological Parameters

- Relative Humidity
- Ambient Temperature

The above-said factors are considered as secondary factors since these factors control the dispersion of the pollutant indirectly by affecting the primary factors.

METEROLOGICAL DATA

METEROLOGICAL DATA AVERAGE DAILY METEROLOGICAL DATA OF APRIL-2023

Date	Temp (Deg C)		Relative Humidity (%)		Rainfall (mm)
	Max.	Min.	Max.	Min.	Total
01.04.2023	34.2	21.2	94.4	37.3	0.0
02.04.2023	33.4	22.0	93.0	37.1	0.0
03.04.2023	34.2	24.1	86.2	34.0	0.0
04.04.2023	33.5	25.0	91.6	52.1	0.0
05.04.2023	34.0	24.0	90.1	28.2	0.0
06.04.2023	34.0	21.4	90.1	35.4	0.0
07.04.2023	36.0	22.2	89.3	28.1	0.0
08.04.2023	38.2	23.1	90.1	18.4	0.0
09.04.2023	37.1	23.0	92.0	19.2	0.0
10.04.2023	35.2	21.2	88.3	22.2	0.0
11.04.2023	35.0	22.0	86.1	39.2	0.0
12.04.2023	35.4	23.3	91.1	39.2	0.0
13.04.2023	39.4	24.0	83.2	18.3	0.0
14.04.2023	35.5	23.2	95.5	41.2	0.0
15.04.2023	35.2	25.0	96.5	38.4	0.0
16.04.2023	36.3	26.0	93.1	39.2	0.0
17.04.2023	36.2	25.0	97.2	38.1	0.0
18.04.2023	38.1	25.1	93.4	35.0	0.0
19.04.2023	39.3	25.0	85.3	23.1	0.0
20.04.2023	35.2	24.0	85.1	43.5	0.0
21.04.2023	34.1	24.2	90.1	50.3	0.0
22.04.2023	36.1	24.6	92.1	38.2	0.0
23.04.2023	34.5	23.5	95.6	50.1	0.0
24.04.2023	40.1	25.2	97.5	17.3	0.0
25.04.2023	38.3	24.4	73.1	24.1	0.0
26.04.2023	38.6	26.1	73.3	23.1	0.0
27.04.2023	36.2	24.2	86.4	30.3	0.0
28.04.2023	35.2	26.4	85.2	34.0	0.0
29.04.2023	32.5	23.0	91.5	53.0	34.5
30.04.2023	33.6	25.0	95.2	42.5	0.0
Min	32.5	21.2	73.1	17.3	0.0
Max	40.1	26.4	97.5	53.0	34.5

METEROLOGICAL DATA

METEROLOGICAL DATA AVERAGE DAILY METEROLOGICAL DATA OF MAY -2023

Date	Temp (Deg C)		Relative Humidity (%)		Rainfall (mm)
	Max.	Min.	Max.	Min.	Total
01.05.2023	33.5	25.0	88.2	42.1	0.0
02.05.2023	33.6	25.6	85.1	46.2	0.0
03.05.2023	36.1	25.0	92.5	41.1	0.0
04.05.2023	36.5	26.2	90.3	38.2	0.0
05.05.2023	38.1	27.0	89.6	29.1	0.0
06.05.2023	37.2	27.0	76.3	37.4	0.0
07.05.2023	37.0	26.2	91.4	39.5	0.0
08.05.2023	37.2	26.2	93.2	35.3	0.0
09.05.2023	38.0	26.0	94.1	46.1	0.0
10.05.2023	44.1	26.0	96.2	12.2	0.0
11.05.2023	43.1	28.1	80.3	10.6	0.0
12.05.2023	40.2	25.1	95.1	30.0	0.0
13.05.2023	36.6	27.0	95.1	52.1	0.0
14.05.2023	36.1	29.0	88.2	56.0	0.0
15.05.2023	35.4	30.0	84.6	57.1	0.0
16.05.2023	36.1	30.0	82.3	54.1	0.0
17.05.2023	35.4	30.1	80.1	53.2	0.0
18.05.2023	35.3	29.3	78.2	52.2	0.0
19.05.2023	36.4	27.2	88.2	50.6	0.0
20.05.2023	36.1	28.0	83.2	51.2	0.0
21.05.2023	36.0	29.0	78.2	52.1	0.0
22.05.2023	35.5	29.0	78.6	52.6	0.0
23.05.2023	35.5	29.2	79.2	55.2	0.0
24.05.2023	35.4	30.0	80.0	57.0	0.0
25.05.2023	35.3	30.0	81.4	60.1	0.0
26.05.2023	34.5	30.1	78.6	63.2	0.0
27.05.2023	34.6	30.0	79.4	60.5	0.0
28.05.2023	36.2	30.0	79.6	54.0	0.0
29.05.2023	36.1	30.1	82.0	53.2	0.0
30.05.2023	38.5	29.0	85.5	32.2	0.0
31.05.2023	36.6	27.2	86.4	47.1	0.0
Min	33.5	25.0	76.3	10.6	0.0
Max	44.1	30.1	96.2	63.2	0.0

METEROLOGICAL DATA

METEROLOGICAL DATA AVERAGE DAILY METEROLOGICAL DATA OF JUNE -2023

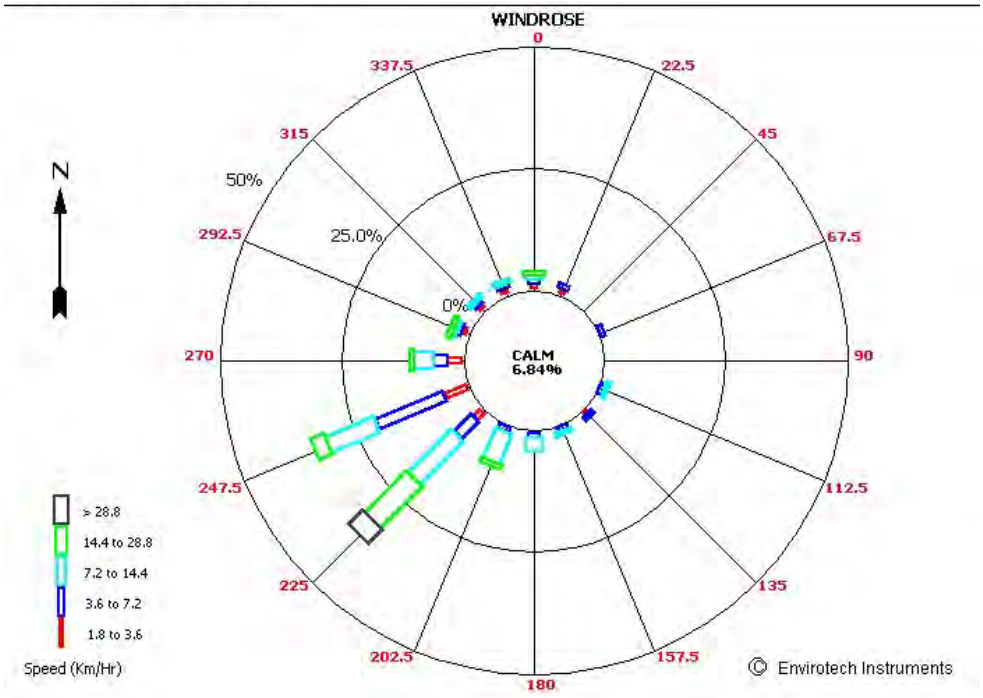
Date	Temp (Deg C)		Relative Humidity (%)		Rainfall (mm)
	Max.	Min.	Max.	Min.	Total
01.06.2023	35.5	30.2	77.5	55.5	0.0
02.06.2023	36.3	30.1	78.6	54.0	0.0
03.06.2023	36.3	30.2	83.1	54.1	0.0
04.06.2023	37.4	30.1	82.0	48.2	0.0
05.06.2023	36.6	29.0	81.3	52.0	0.0
06.06.2023	36.3	30.0	78.1	54.0	0.0
07.06.2023	37.2	30.0	80.5	52.2	0.0
08.06.2023	38.2	30.2	77.6	42.4	0.0
09.06.2023	38.1	30.1	79.0	45.2	0.0
10.06.2023	43.0	31.0	80.6	34.0	0.0
11.06.2023	42.6	31.3	67.6	29.6	0.0
12.06.2023	37.3	28.2	85.3	42.0	5.0
13.06.2024	34.0	28.0	94.2	69.0	31.5
14.06.2023	36.4	27.1	94.6	58.2	40.0
15.06.2023	32.4	29.0	92.2	73.3	100.5
16.06.2023	30.1	28.0	99.8	91.1	217.0
17.06.2023	33.2	29.2	99.0	73.4	0.0
18.06.2023	34.1	30.0	89.2	69.2	0.0
19.06.2023	34.6	30.0	86.5	63.2	0.0
20.06.2023	35.3	30.1	84.4	54.4	0.0
21.06.2023	36.0	30.0	84.3	53.5	0.0
22.06.2023	36.3	30.1	83.5	54.1	0.0
23.06.2023	36.4	30.0	82.0	54.1	0.0
24.06.2023	36.1	30.0	87.0	57.0	0.0
25.06.2023	36.2	30.1	85.6	54.5	0.0
26.06.2023	35.5	30.0	86.2	63.4	0.0
27.06.2023	34.0	27.2	97.5	72.2	44.0
28.06.2023	35.2	28.3	96.1	64.1	7.0
29.06.2023	35.2	31.0	87.3	67.1	0.0
30.06.2023	32.6	29.2	97.2	80.5	20.0
Min	30.1	27.1	67.6	29.6	0.0
Max	43.0	31.3	99.8	91.1	217.0

1.5.1 Wind Rose Diagram

ADANI POWER LTD., MUNDRA (APL-MUNDRA) MUNDRA WINDROSE FOR THE SEASON OF April to June 2023

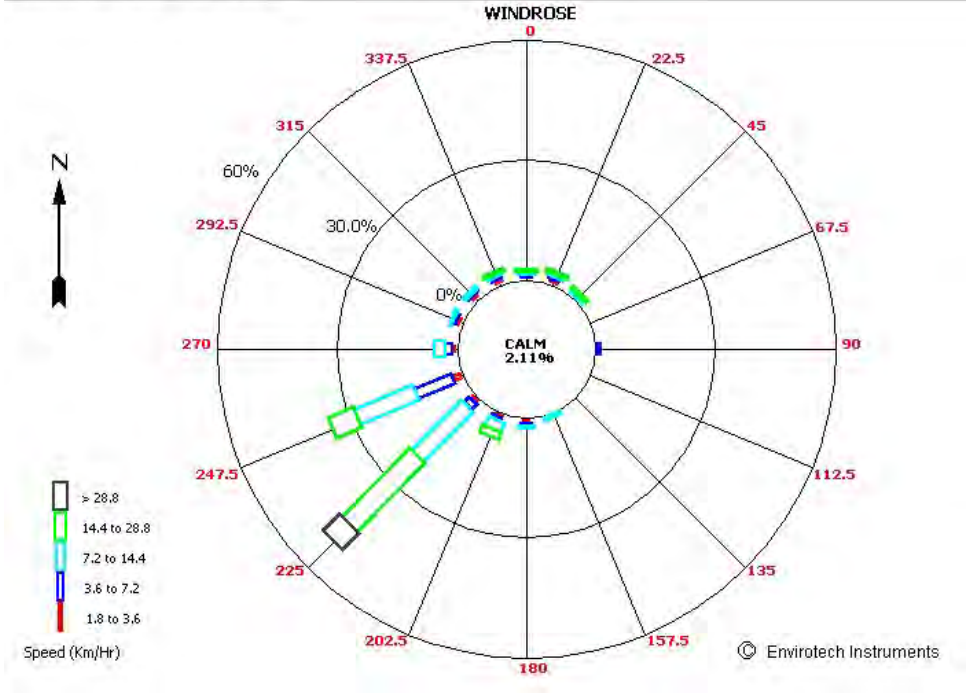
Time : 00:00 - 23:00
Date : 01/04/23 - 30/04/23

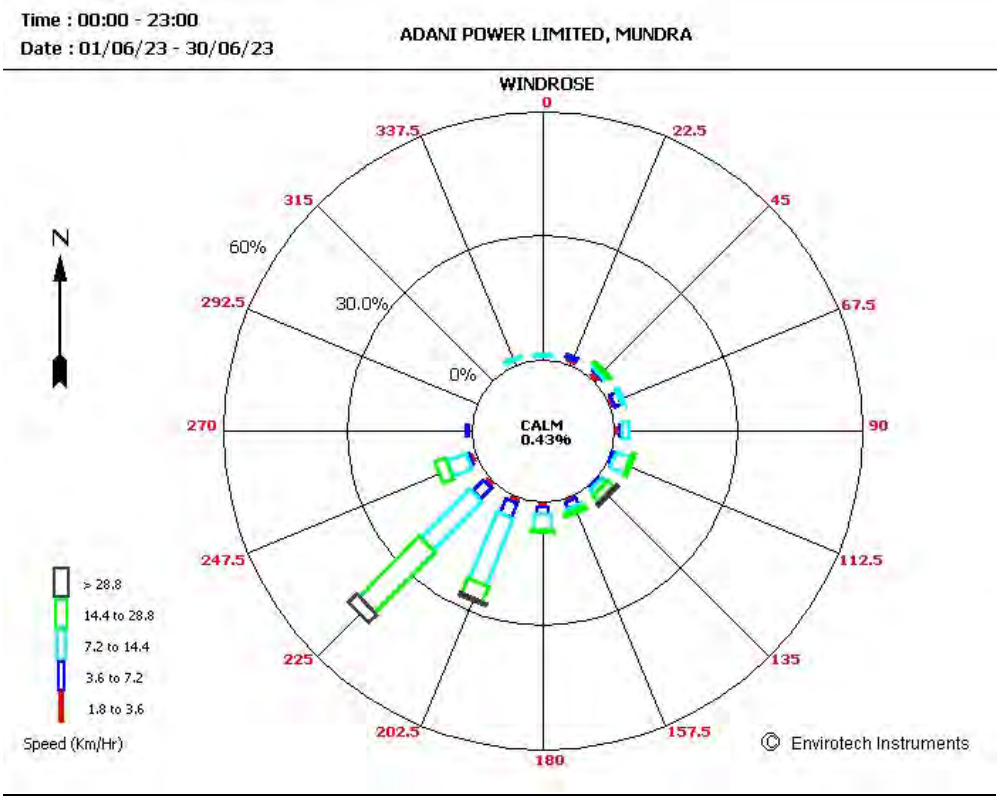
ADANI POWER MUNDRA LIMITED



Time : 00:00 - 23:00
Date : 01/05/23 - 31/05/23

Adani Power Limited, Mundra





Project	:	**M/s.Adani Power Ltd., Mundra (APL-Mundra)**	**Period**	:	April 2023 to June 2023
Location	:	**Village – Tunda, Dist. - Kutch**			
April 2023					
Wind Direction			**SW**		
Average Wind Speed			**9.9 Km/Hr**		
May 2023					
Wind Direction			**SW**		
Average Wind Speed			**13.6 Km/Hr**		
June 2023					
Wind Direction			**SW**		
Average Wind Speed			**15.6 Km/Hr**		

2 SCOPE & METHODOLOGY ADOPTED FOR ENVIRONMENTAL MONITORING

2.1 Introduction

The scope of the study includes detailed characterization of various environmental like air, water and noise within an area of 10 km radius in and around the power plant area at 20 MLD Plant, Shantiniketan-1 and surrounding villages named as Siracha, Wandh and Kandagara of Dist. Kutch. The above-mentioned environmental components were monitored at the study area and frequency of monitoring, number of samples along with methodology is as shown in below table.

2.2 Scope and Methodology for Monitoring of Various Environmental Attributes

Sr. No	Environmental Attributes	Sampling Locations	Sampling Parameters	Sampling Frequency	Total No of samples	Methodology
1	Ambient Air Quality	3	PM_{10}, $PM_{2.5}$, SO_2, NO_2	Twice a week (24 hourly Samples)	72	IS : 5182 & Reference APHA(AIR)
2	Ambient Air Quality	5	PM_{10}, $PM_{2.5}$, SO_2, NO_2, O_3, Mercury	Once in month (24 hourly Samples)	15	IS : 5182 & Reference APHA(AIR)
2	Flue Gas Stack Analysis	Unit 1 to 9 Boiler	PM, SO_2, NOx	Once in month	27	As per IS : 11255
3	Surrounding Villages Ground Water Analysis	5 water sample	Test specification as per IS : 10500 - 1991	Once in Quarter	5	AS per APHA Method
4	Water Quality of Outfall for APL-Mundra	1	As per CTO	Once in month	3	As Per APHA Method
5	STP Outlet	1	As per CTO	Once in month	3	As Per APHA Method
6	Bore well water Near Ash Dyke Area	4	Test specification as per IS : 10500 - 1991	Once in Quarter	4	As Per APHA Method
7	Cooling Tower Blow down Water Sample	9	As per CTO	Once in Quarter	9	As Per APHA Method
8	Condensate Cooling Tower Water Sample	9	As per CTO	Once in Quarter	9	As Per APHA Method
9	Boiler Blow down Water Sample	9	As per CTO	Once in Quarter	9	As Per APHA Method

3 ENVIRONMENT AIR QUALITY AND FLUE GAS EMISSION MONITORING

The principal objective of the ambient air quality was to assess the existing levels of the air pollution as well as the regional background concentration in the plant area. Air pollution forms important and critical factors to study the environmental issues in the study areas. Thus, air quality has to be frequently monitored to know the extent of pollution due to power plant activity and other ancillary activities. Details are provided in Section 3.1.1.

Flue gas monitoring analysis has been conducted by M/s. UniStar Environment and Research Labs Pvt. Ltd. Details are provided in Section 3.2.

3.1 Ambient Air Monitoring Data

3.1.1 Details of Ambient Air Quality Monitoring Stations

The detail of the ambient air monitoring locations including the distance from the project site with direction is as shown below.

S.No.	Code	Name of sampling location	Distance	Frequency
1	A - 1	Siracha Village	2.6 km (NE)	Twice a week
2	A - 2	Kandagara Village	3.2 km (NW)	Twice a week
3	A - 3	Wandh Village	2.0 km (SW)	Twice a week
4	A - 4	Nr.20 MLD Plant	1.2 Km	Once in month
5	A - 5	Nr. Shantiniketan-1	0.8 Km	Once in month

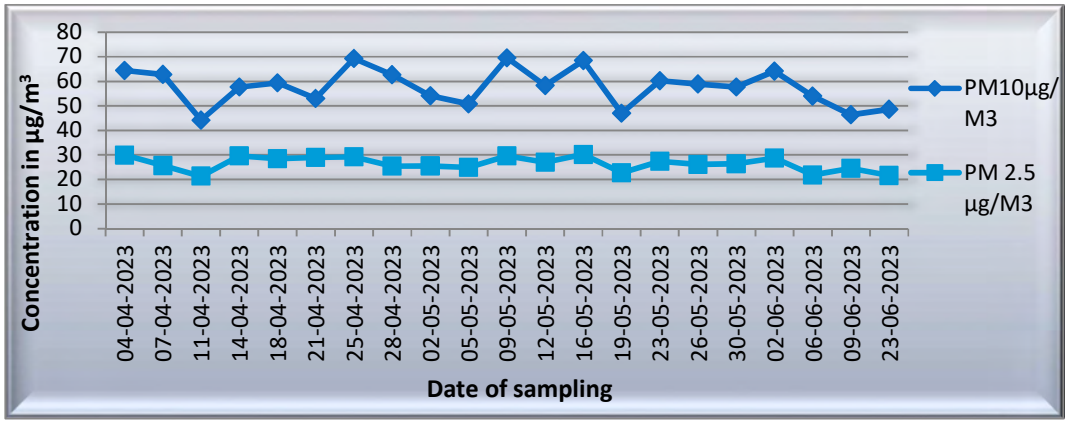
3.1.2 Location: Siracha Village

The Sampling station was located in the Siracha village. The Station is located at about 3.5 km away in Northwest Direction from the core zone area. The Respirable Dust Sampler & $PM_{2.5}$ was placed at a height of 3.0 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during the monitoring period (April 2023- June 2023) are as follows.

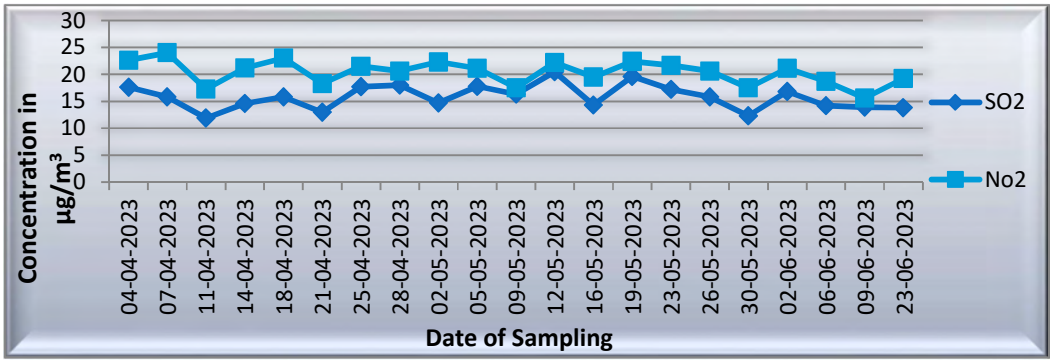
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
04-04-2023	64.4	29.9	17.6	22.6	-
07-04-2023	62.7	25.7	15.8	24	-
11-04-2023	44.2	21.3	11.9	17.3	-
14-04-2023	57.6	29.6	14.6	21.2	-
18-04-2023	59.3	28.5	15.8	23	18.5
21-04-2023	53	28.9	13	18.3	-
25-04-2023	69.2	29.2	17.7	21.5	-
28-04-2023	62.6	25.4	18	20.6	-
02-05-2023	54.1	25.5	14.7	22.3	-
05-05-2023	50.8	24.9	17.8	21.1	-
09-05-2023	69.5	29.6	16.3	17.5	19.3
12-05-2023	58.2	27	20.5	22.2	-
16-05-2023	68.4	30.2	14.3	19.5	-
19-05-2023	47	22.7	19.6	22.4	-
23-05-2023	60.2	27.4	17.2	21.7	-
26-05-2023	58.9	26.1	15.8	20.6	-
30-05-2023	57.6	26.4	12.3	17.5	-
02-06-2023	64.1	28.7	16.8	21.1	-
06-06-2023	54	21.8	14.2	18.7	-
09-06-2023	46.4	24.5	13.9	15.6	17.6
23-06-2023	48.5	21.6	13.8	19.2	-
Maximum Value	69.5	30.2	20.5	24	19.3
Minimum Value	44.2	21.3	11.9	15.6	17.6
Average Value	57.7	26.4	15.8	20.4	18.4
Standard Deviation	7.5	2.9	2.3	2.2	0.8
Permissible Limits	100	60	80	80	100

Units: µg/m^3

Graph 1: Particulate Matter Level Siracha Village



Graph 2: SO_2, NO_2 Level Siracha Village



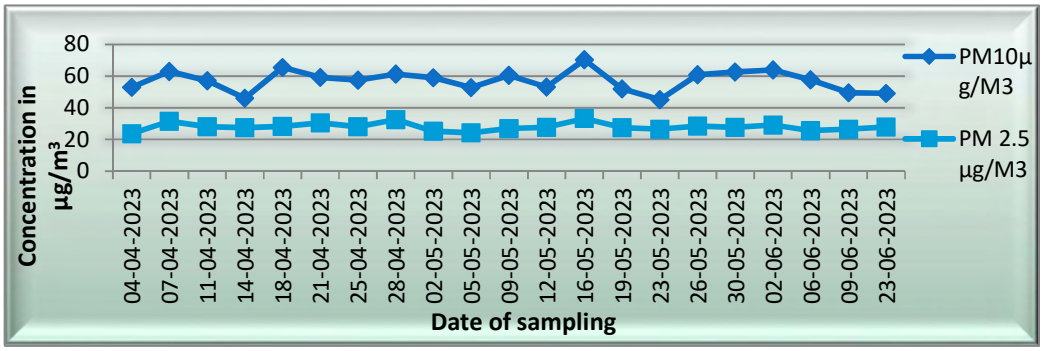
3.1.3 Location: Kandagara Village

The Sampling station was located in the core zone. The Station is located at about 3 km away in Northwest Direction from the Company premises. The Respirable Dust Sampler (PM_{10}) & $PM_{2.5}$Sampler were placed at a height of 2.5 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during the monitoring period (April 2023- June 2023) are as follows.

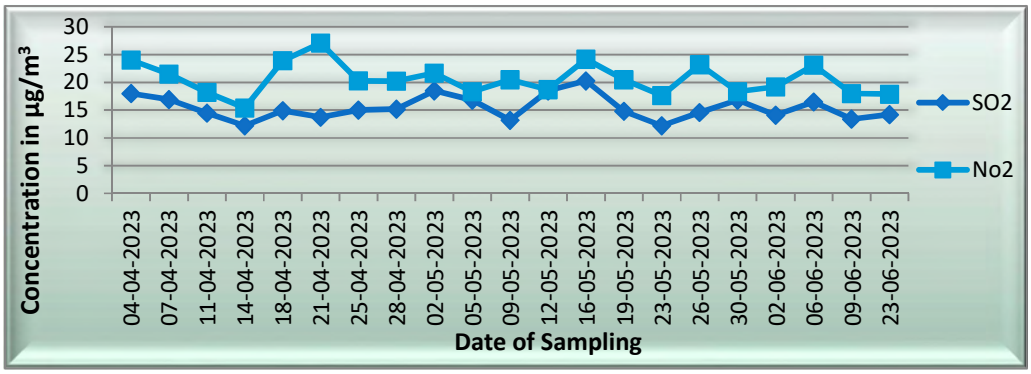
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
04-04-2023	53	23.7	18	24	-
07-04-2023	63	31.5	16.9	21.5	-
11-04-2023	57.2	28.1	14.5	18.2	-
14-04-2023	46.1	27.5	12.2	15.4	-
18-04-2023	65.5	28.3	14.9	23.9	19.6
21-04-2023	59.3	30.5	13.7	27.1	-
25-04-2023	57.6	28	15	20.3	-
28-04-2023	61.4	32.6	15.2	20.2	-
02-05-2023	59.1	25.3	18.5	21.7	-
05-05-2023	52.8	24.3	16.8	18.3	-
09-05-2023	60.5	26.9	13.2	20.5	20.5
12-05-2023	53.2	27.6	18.5	18.7	-
16-05-2023	70.4	33.3	20.3	24.2	-
19-05-2023	52	27.5	14.8	20.5	-
23-05-2023	45.2	26.6	12.2	17.6	-
26-05-2023	60.9	28.5	14.6	23.2	-
30-05-2023	62.6	27.6	16.8	18.3	-
02-06-2023	63.9	29.2	14.1	19.2	-
06-06-2023	57.7	25.5	16.5	23.1	-
09-06-2023	49.6	26.5	13.4	18	18.6
23-06-2023	49.2	27.8	14.2	17.9	-
Maximum Value	70.4	33.3	20.3	27.1	20.5
Minimum Value	45.2	23.7	12.2	15.4	18.6
Average Value	57.2	27.9	15.4	20.6	19.5
Standard Deviation	6.6	2.5	2.2	2.9	0.9
Permissible Limits	100	60	80	80	100

Units: µg/m^3

Graph 3: Particulate Matter Level Kandagara Village



Graph 4: SO2, NO2 Level Kandagara Village



3.1.4 Location: Wandh Village

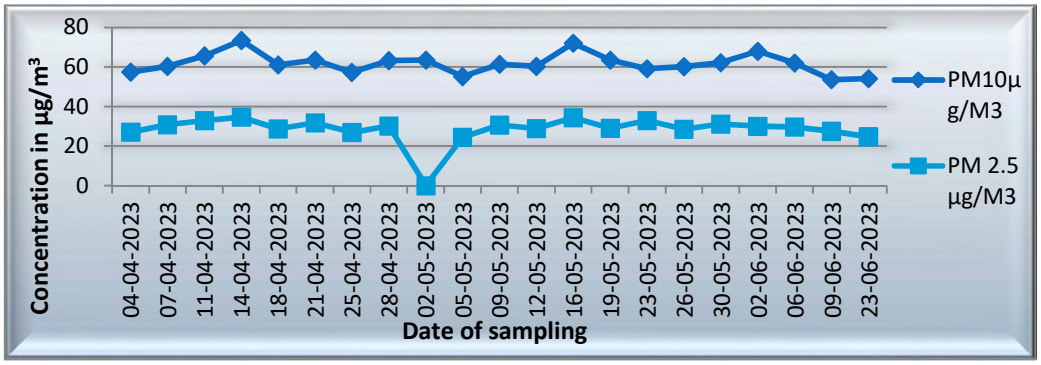
The Sampling station was located in the core zone in Wandh village. The Station is located at about 3.0 km away in Southwest Direction from the Company premises. The Respirable Dust Sampler Was placed at a height of 3.0 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during the monitoring period (April 2023- June 2023) are as follows.

Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
04-04-2023	57.5	27.1	19.8	25.2	-
07-04-2023	60.4	30.8	18.3	27.3	-
11-04-2023	65.7	33	15.6	20.2	-
14-04-2023	73.5	34.6	20.8	22.3	-
18-04-2023	61.1	28.7	16.7	22.2	23.8
21-04-2023	63.6	31.7	14.3	19.8	-
25-04-2023	57.3	26.9	19.1	23.8	-
28-04-2023	63.3	30.2	13.9	22.9	-
02-05-2023	63.6	30..8	17.5	22.6	-
05-05-2023	55.2	24.5	15.8	20.5	-
09-05-2023	61.4	30.7	14	21.5	24.9
12-05-2023	60.4	28.8	15.5	18.7	-
16-05-2023	72.1	34.3	21.3	26.2	-
19-05-2023	63.5	29	13.8	17.5	-

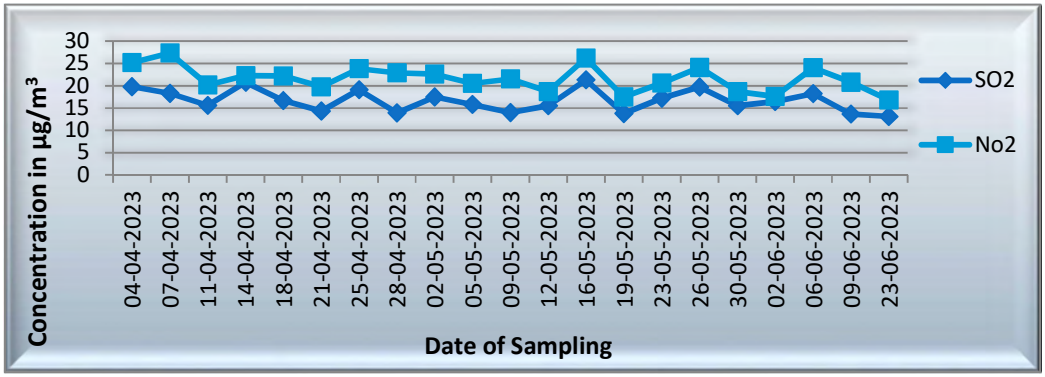
23-05-2023	59.1	32.9	17.2	20.6	-
26-05-2023	60.2	28.5	19.7	24.1	-
30-05-2023	62.2	31.2	15.5	18.7	-
02-06-2023	67.9	30	16.5	17.6	-
06-06-2023	62	29.6	18.2	24	-
09-06-2023	53.6	27.5	13.6	20.8	21.3
23-06-2023	54.1	24.7	13.1	16.8	-
Maximum Value	73.5	34.6	21.3	27.3	24.9
Minimum Value	53.6	24.5	13.1	16.8	21.3
Average Value	61.8	29.7	16.7	21.6	23.3
Standard Deviation	5.2	2.8	2.5	2.9	1.8
Permissible Limits	100	60	80	80	100

Units: µg/m^3

Graph 5: Particulate Matter Level Wandh Village



Graph 6: SO_2, NO_2 Level Wandh Village



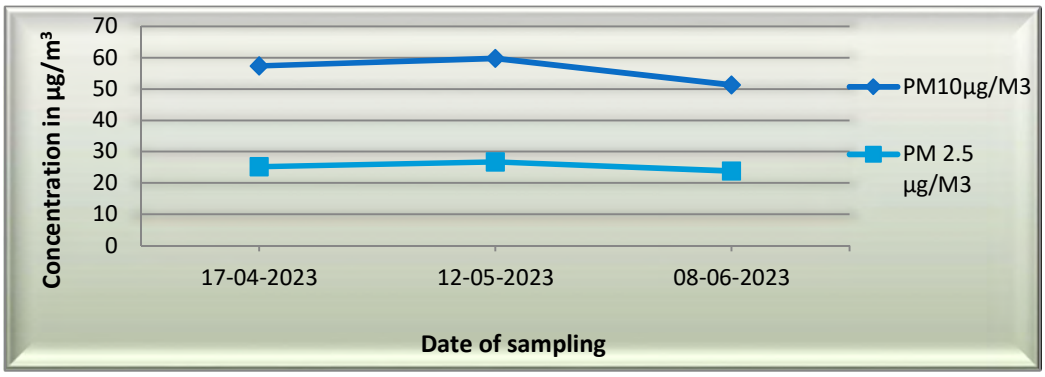
3.1.5 Location: Nr.20 MLD Plant

The Sampling station was located in the core zone in Company premises. The Respirable Dust Sampler (PM_{10}) & ($PM_{2.5}$) Sampler were placed at a height of 3 m above the ground level. Assess present pollution level the observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during monitoring period (April 2023- June 2023) are as follows:

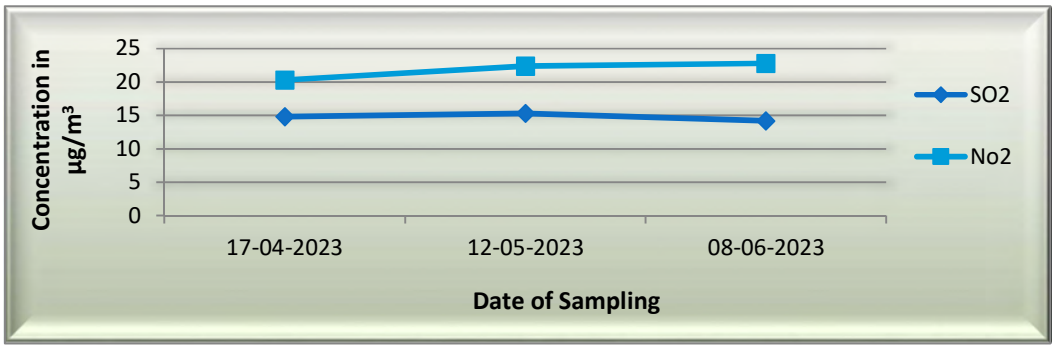
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
17-04-2023	57.4	25.2	14.8	20.3	15.8
12-05-2023	59.8	26.7	15.3	22.4	17.3
08-06-2023	51.3	23.8	14.2	22.8	16.8
Maximum Value	59.8	26.7	15.3	22.8	17.3
Minimum Value	51.3	23.8	14.2	20.3	15.8
Average Value	56.2	25.2	14.8	21.8	16.6
Standard Deviation	4.4	1.5	0.6	1.3	0.7
Permissible Limits	100	60	80	80	100

Units: $\mu g/m^3$

Graph 7: Particulate Matter Level Nr.20 MLD Plant



Graph 8: SO2, NO2 Nr.20 MLD Plant



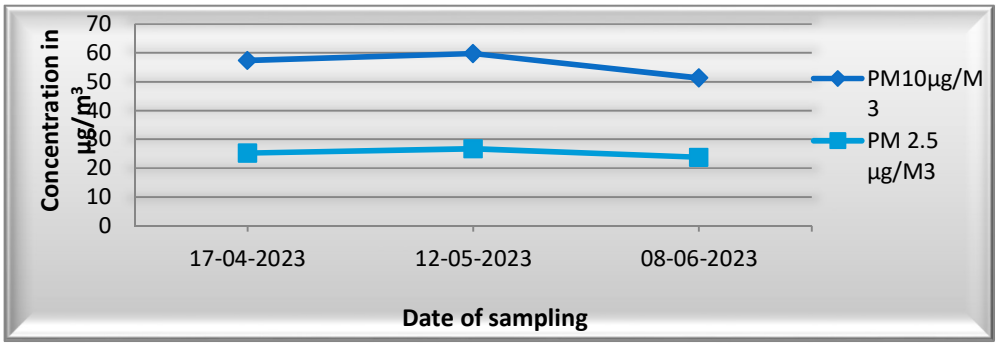
3.1.6 Location: Nr. Shantiniketan-1

The Sampling station was located in the core zone in company premises. The Respirable Dust Sampler PM_{10} & $PM_{2.5}$Sampler were placed at a height of 3 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during monitoring period (April 2023- June 2023) are as follows

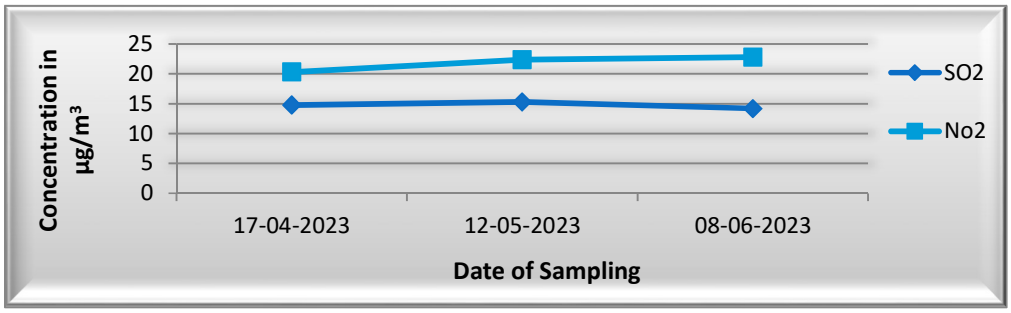
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
17-04-2023	**57.4**	**25.2**	**14.8**	**20.3**	**15.8**
12-05-2023	**59.8**	**26.7**	**15.3**	**22.4**	**17.3**
08-06-2023	**51.3**	**23.8**	**14.2**	**22.8**	**16.8**
Maximum Value	**59.8**	**26.7**	**15.3**	**22.8**	**17.3**
Minimum Value	**51.3**	**23.8**	**14.2**	**20.3**	**15.8**
Average Value	**56.2**	**25.2**	**14.8**	**21.8**	**16.6**
Standard Deviation	**4.4**	**1.5**	**0.6**	**1.3**	**0.7**
Permissible Limits	**100**	**60**	**80**	**80**	**100**

Units: $\mu g/m^3$

Graph 9: Particulate Matter Level Nr. Shantiniketan-1



Graph 10: SO2, NO2 Nr. Shantiniketan-1



3.1.7 Ambient Air Quality Monitoring:

The principal objective of the ambient air quality was to assess the existing levels of air pollution as well as the regional background concentration in the plant area. Air pollution forms critical factor to study the environmental issues in the study areas. Ambient Air Quality Monitoring has been carried out of 12 parameters at 05 Locations near surrounding villages within a 05 KM radius of the plant as per CEA guidelines.

Locations ⇨			Siracha	Kandagara	Wandh	Nr.20 MLD Plant	Nr. Shantiniketan - 1
Date ⇨			18/04/23	18/04/23	18/04/23	17/04/23	17/04/23
Sr. No.	Parameter	Unit	Results				
1	Particulate Matter as PM_{10}	$\mu g/m^3$	59.3	65.5	61.1	57.4	51.3
2	Particulate Matter as $PM_{2.5}$	$\mu g/m^3$	28.5	28.3	28.7	25.2	22.6
3	Sulphur Dioxide as SO_2	$\mu g/m^3$	15.8	14.9	16.7	14.8	12.9
4	Nitrogen Dioxide as NO_2	$\mu g/m^3$	23.0	13.9	22.2	20.3	18.7
5	Carbon Monoxide as CO	mg/m^3	1.23	1.27	1.33	1.21	1.18
6	Ozone as O_3	$\mu g/M^3$	18.5	19.6	23.8	15.8	14.2
7	Ammonia as NH_3	$\mu g/m^3$	<5.0	<5.0	<5.0	<5.0	<5.0
8	Lead as Pb	$\mu g/m^3$	<0.50	<0.50	<0.50	<0.50	<0.50
9	Nickel as Ni	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
10	Arsenic as As	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
11	Benzene as C_6H_6	$\mu g/m^3$	<1.0	<1.0	<1.0	<1.0	<1.0
12	Benzo (a) Pyrene (BaP)	ng/m^3	<0.1	<0.1	<0.1	<0.1	<0.1
13	Mercury	$\mu g/m^3$	<0.1	<0.1	<0.1	<0.1	<0.1
Note: **BDL: Below Detection Limit:1) Hg: 0.001 $\mu g/M^3$, 2) Ozone: 5.0 $\mu g/M^3$**							

Locations ⇨			Siracha	Kandagara	Wandh	Nr.20 MLD Plant	Nr. Shantiniketan - 1
Date ⇨			09/05/23	09/05/23	09/05/23	12/05/23	12/05/23
Sr. No.	Parameter	Unit	Results				
1	Particulate Matter as PM_{10}	$\mu g/m^3$	69.5	60.5	61.4	72.8	53.7
2	Particulate Matter as $PM_{2.5}$	$\mu g/m^3$	29.6	26.9	30.7	29.2	21.5
3	Sulphur Dioxide as SO_2	$\mu g/m^3$	16.3	13.2	14.0	17.4	13.1
4	Nitrogen Dioxide as NO_2	$\mu g/m^3$	17.5	20.5	21.5	24.8	19.2
5	Carbon Monoxide as CO	mg/m^3	1.28	1.32	1.37	1.37	1.20
6	Ozone as O_3	$\mu g/M^3$	19.3	20.5	24.9	20.7	15.8
7	Ammonia as NH_3	$\mu g/m^3$	<5.0	<5.0	<5.0	<5.0	<5.0
8	Lead as Pb	$\mu g/m^3$	<0.50	<0.50	<0.50	<0.50	<0.50
9	Nickel as Ni	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
10	Arsenic as As	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
11	Benzene as C_6H_6	$\mu g/m^3$	<1.0	<1.0	<1.0	<1.0	<1.0
12	Benzo (a) Pyrene (BaP)	ng/m^3	<0.1	<0.1	<0.1	<0.1	<0.1
13	Mercury	$\mu g/m^3$	<0.1	<0.1	<0.1	<0.1	<0.1
Note: **BDL: Below Detection Limit:1) Hg: 0.001 $\mu g/M^3$, 2) Ozone: 5.0 $\mu g/M^3$**							

Locations ⇨			Siracha	Kandagara	Wandh	Nr.20 MLD Plant	Nr. Shantiniketan - 1
Date ⇨			09/06/23	09/06/23	09/06/23	08/06/23	08/06/23
Sr. No.	Parameter	Unit	Results				
1	Particulate Matter as PM_{10}	$\mu g/m^3$	46.4	49.6	53.6	51.3	47.6
2	Particulate Matter as $PM_{2.5}$	$\mu g/m^3$	24.5	26.5	27.5	23.8	18.9
3	Sulphur Dioxide as SO_2	$\mu g/m^3$	13.9	13.4	13.6	14.2	12.8
4	Nitrogen Dioxide as NO_2	$\mu g/m^3$	15.6	18.0	20.8	22.6	20.3
5	Carbon Monoxide as CO	mg/m^3	1.23	1.25	1.29	1.20	1.17
6	Ozone as O_3	$\mu g/M^3$	17.6	18.6	21.3	16.8	14.2
7	Ammonia as NH_3	$\mu g/m^3$	<5.0	<5.0	<5.0	<5.0	<5.0
8	Lead as Pb	$\mu g/m^3$	<0.50	<0.50	<0.50	<0.50	<0.50
9	Nickel as Ni	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
10	Arsenic as As	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
11	Benzene as C_6H_6	$\mu g/m^3$	<1.0	<1.0	<1.0	<1.0	<1.0
12	Benzo (a) Pyrene (BaP)	ng/m^3	<0.1	<0.1	<0.1	<0.1	<0.1
13	Mercury	$\mu g/m^3$	<0.1	<0.1	<0.1	<0.1	<0.1

3.2 Flue Gas Monitoring Data

Stack Emission monitoring procedure includes tasks of Measurement, testing, sampling and analysis. Stack Emission testing is the process of evaluation of those gases and their degree of presence in atmosphere from industries to meet environmental standards.

Date	Location	PM in mg/Nm^3	SO_2 in mg/Nm^3	NO_x in mg/Nm^3	Mercury	Stack Velocity
14-04-2023	Boiler (Unit - 1)	39.8	555.6	245.6	BDL	22.4
12-05-2023	Boiler (Unit - 1)	31.6	582.3	265.4	BDL	22.1
14-04-2023	Boiler (Unit - 2)	37.9	533.4	262.3	BDL	23
18-04-2023	Boiler (Unit - 3)	35.6	518.9	238.4	BDL	23.4
18-04-2023	Boiler (Unit - 4)	36.2	508.4	233.5	BDL	23.5
13-04-2023	Boiler (Unit - 5)	38.9	468.4	264.4	BDL	23.2
11-05-2023	Boiler (Unit - 5)	33.8	472.3	272.3	BDL	23.4
22-04-2023	Boiler (Unit - 6)	36.8	456.9	284.5	BDL	23.3
11-05-2023	Boiler (Unit - 6)	40.1	423.6	289.6	BDL	23.6
10-04-2023	Boiler (Unit - 7)	34.2	176.4	256.8	BDL	24.1
05-05-2023	Boiler (Unit - 7)	32.6	174.8	254.2	BDL	23.7
23-06-2023	Boiler (Unit - 7)	31.8	176.8	263.9	BDL	23.3
10-04-2023	Boiler (Unit - 8)	33.4	159.3	269.5	BDL	23.5
05-05-2023	Boiler (Unit - 8)	35.8	165.6	268.7	BDL	23.2
23-06-2023	Boiler (Unit -8)	37.2	168.9	272.6	BDL	24.1
10-04-2023	Boiler (Unit - 9)	32.7	162.4	296.8	BDL	23.7
05-05-2023	Boiler (Unit - 9)	29.9	168.4	242.6	BDL	24
23-06-2023	Boiler (Unit - 9)	34.3	146.7	236.5	BDL	23.5
Permissible Limits		**50**	**<500 MWH-600 >500 MWH-200**	**450**		

As per CPCB letter No B-33014/07/2017/IPC-II/TPP/15872 dated 11.12.2017, & MOEF Gazette No. CG-DL-E-05092022-238614 dated 05.09.2022 SO2 (For Unit#1 to 6) and NOx (For all units) Permissible limits will be applicable after installation of FGD by year 2026. As per MOEFCC letter CG-DL-E-22102020-222659 dt. 22.10.2020 revised NOx limit

3 Ground Water Quality Monitoring

Groundwater is a vital natural resource, being increasingly under pressure of climate change and human activities. The main objective of Ground Water monitoring in the study area is to monitoring ground water quality and assess the impact on groundwater by the operation activities. Ground water monitoring has been conducted at 05 locations within 10 Km Radius Villages.

3.3 Ground Water Samples **DATE: 19/05/2023**

Sr. No	Parameter	Unit	Desirable Limits	Permissible limit in the absence of alternate source	Results		
					Tunda	**Kandagra**	**Siracha**
1	pH @ 25	--	6.5 – 8.5	6.5 – 8.5	8.19	8.16	8.21
2	Color	Pt-Co	5	15	<5	<5	<5
3	Odor	mg/L	Unobjectionable	Unobjectionable	Agreeable	Agreeable	Agreeable
4	Taste	mg/L	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity(NTU)	mg/L	1 NTU	5 NTU	BDL(MDL:0.1)	0.1	0.1
6	Total Hardness as $CaCO_3$	mg/L	200 mg/lit.	600 mg/lit.	152.5	121.5	277.2
7	Calcium as Ca	mg/L	75 mg/lit.	200 mg/lit.	39.7	24.4	76.2
8	Magnesium as Mg	mg/L	30 mg/lit.	100 mg/lit.	13.0	14.8	21.2
9	Total Dissolved Solids	mg/L	500 mg/lit.	2000 mg/lit.	1602	1562	1608
10	Total Alkalinity	mg/L	200 mg/lit.	600 mg/lit.	398.0	412.9	323.4
11	Chloride as Cl^-	mg/L	250 mg/lit.	1000 mg/lit.	547.3	478.3	508.0
12	Sulphate as SO_4^{-2}	mg/L	200 mg/lit.	400 mg/lit.	162.4	155.2	169.8
13	Nitrate as NO_3	mg/L	45 mg/lit.	45 mg/lit.	3.5	4.2	2.8
14	Copper as Cu	mg/L	0.05 mg/lit.	1.5 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
15	Manganese as Mn	mg/L	0.1 mg/lit.	0.3 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
16	Iron as Fe	mg/L	0.3 mg/lit.	0.3 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
17	Residual Free Chlorine	mg/L	0.2 mg/lit.	1.0 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
18	Fluoride as F	mg/L	1.0 mg/lit.	1.5 mg/lit.	0.82	0.65	0.59
19	Zinc as Zn	mg/L	5 mg/lit.	15 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
20	Phenolic Compound	mg/L	0.001 mg/lit.	0.002 mg/lit.	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)
21	Mercury as Hg	mg/L	0.001 mg/lit.	0.001 mg/lit.	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)
22	Cadmium as Cd	mg/L	0.003 mg/lit.	0.003 mg/lit.	BDL(MDL:0.003)	BDL(MDL:0.003)	BDL(MDL:0.003)
23	Selenium as Se	mg/L	0.01 mg/lit.	0.01 mg/lit.	N.D.	N.D.	N.D.
24	Arsenic as as	mg/L	0.01 mg/lit.	0.05 mg/lit.	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
25	Cyanide as CN	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)

26	Lead as Pb	mg/L	0.01 mg/lit.	0.01 mg/lit.	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
27	Anionic Detergent	mg/L	0.2 mg/lit.	1.0 mg/lit.	N.D.	N.D.	N.D.
28	Hexavalent Chromium	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
29	Mineral Oil	mg/L	0.5 mg/lit.	0.5 mg/lit.	N.D.	N.D.	N.D.
30	Aluminum as Al	mg/L	0.03 mg/lit.	0.2 mg/lit.	BDL(MDL:0.003)	BDL(MDL:0.003)	BDL(MDL:0.003)
31	Boron as B	mg/L	0.5 mg/lit.	1 mg/lit.	BDL(MDL:0.5)	BDL(MDL:0.5)	BDL(MDL:0.5)
32	Total Chromium as Cr	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
33	Total Coliform	(CFU/ 100 ml)	Absent	Absent	Absent	Absent	Absent
34	E. coli	(CFU/ 100 ml)	Absent	Absent	Absent	Absent	Absent
35	Total Bacterial Count	(CFU/ ml)	100 CFU/ml	100 CFU/ml	20	16	20
Note: BDL= Below Detection Limit. N.D. = Not Detected							

Continue….

Sr. No	Parameter	Unit	Desirable Limits	Permissible limit in the absence of alternate source	Results	
					Navinal	**Desalpur**
1	pH @ 25	--	6.5 – 8.5	6.5 – 8.5	8.05	7.97
2	Color	Pt-Co	5	15	<5	<5
3	Odor	mg/L	Unobjectionable	Unobjectionable	Agreeable	Agreeable
4	Taste	mg/L	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity(NTU)	mg/L	1 NTU	5 NTU	0.1	BDL(MDL:0.1)
6	Total Hardness as $CaCO_3$	mg/L	200 mg/lit.	600 mg/lit.	172.3	207.9
7	Calcium as Ca	mg/L	75 mg/lit.	200 mg/lit.	37.3	42.1
8	Magnesium as Mg	mg/L	30 mg/lit.	100 mg/lit.	19.2	25.0
9	Total Dissolved Solids	mg/L	500 mg/lit.	2000 mg/lit.	1472	1444
10	Total Alkalinity	mg/L	200 mg/lit.	600 mg/lit.	293.5	457.7
11	Chloride as Cl^-	mg/L	250 mg/lit.	1000 mg/lit.	557.5	465.8
12	Sulphate as SO_4^{-2}	mg/L	200 mg/lit.	400 mg/lit.	174.7	54.4
13	Nitrate as NO_3	mg/L	45 mg/lit.	45 mg/lit.	1.1	3.9
14	Copper as Cu	mg/L	0.05 mg/lit.	1.5 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)
15	Manganese as Mn	mg/L	0.1 mg/lit.	0.3 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)
16	Iron as Fe	mg/L	0.3 mg/lit.	0.3 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)
17	Residual Free Chlorine	mg/L	0.2 mg/lit.	1.0 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)
18	Fluoride as F	mg/L	1.0 mg/lit.	1.5 mg/lit.	2.4	0.62

19	Zinc as Zn	mg/L	5 mg/lit.	15 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)
20	Phenolic Compound	mg/L	0.001 mg/lit.	0.002 mg/lit.	BDL(MDL:0.001)	BDL(MDL:0.001)
21	Mercury as Hg	mg/L	0.001 mg/lit.	0.001 mg/lit.	BDL(MDL:0.001)	BDL(MDL:0.001)
22	Cadmium as Cd	mg/L	0.003 mg/lit.	0.003 mg/lit.	BDL(MDL:0.003)	BDL(MDL:0.003)
23	Selenium as Se	mg/L	0.01 mg/lit.	0.01 mg/lit.	N.D.	N.D.
24	Arsenic as as	mg/L	0.01 mg/lit.	0.05 mg/lit.	BDL(MDL:0.01)	BDL(MDL:0.01)
25	Cyanide as CN	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)
26	Lead as Pb	mg/L	0.01 mg/lit.	0.01 mg/lit.	BDL(MDL:0.01)	BDL(MDL:0.01)
27	Anionic Detergent	mg/L	0.2 mg/lit.	1.0 mg/lit.	N.D.	N.D.
28	Hexavalent Chromium	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)
29	Mineral Oil	mg/L	0.5 mg/lit.	0.5 mg/lit.	N.D.	N.D.
30	Aluminum as Al	mg/L	0.03 mg/lit.	0.2 mg/lit.	BDL(MDL:0.003)	BDL(MDL:0.003)
31	Boron as B	mg/L	0.5 mg/lit.	1 mg/lit.	BDL(MDL:0.5)	BDL(MDL:0.5)
32	Total Chromium as Cr	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)
33	Total Coliform	(CFU/ 100 ml)	Absent	Absent	Absent	Absent
34	E. coli	(CFU/ 100 ml)	Absent	Absent	Absent	Absent
35	Total Bacterial Count	(CFU/ ml)	100 CFU/ml	100 CFU/ml	22	10
Note: BDL= Below Detection Limit. N.D. = Not Detected						

3.4 Water Quality Monitoring – Plant area

Water quality monitoring is being monitored for impact study. Defined here as the sampling and analysis of water constituents and conditions. Constituents found naturally in water that can nevertheless be affected by human sources, such as dissolved oxygen, bacteria, and nutrients

3.4.1 Location: Outfall Channel

Sr. No.	Parameter	Unit	Date of sampling		
			14/04/2023	**05/05/2023**	**19/06/2023**
1	pH @ 25	--	8.12	8.09	8.09
2	Temperature	^{0}C (Intake)	28.5	30	29
		^{0}C (Outfall)	30.0	32	32
		^{0}C (Differential)	1.5	2.0	3.0
3	Color	Pt. CO. Scale	12	10	10
4	Total Suspended Solids	mg/L	24	25	22
5	Oil & Grease	mg/L	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)
6	Ammonical Nitrogen	mg/L	2.3	2.1	2.3
7	Sulphide as S-2	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
8	Total Chromium	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
9	Hexavalent Chromium as Cr+6	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)

10	Phosphate as PO_4	mg/L	0.26	0.23	0.19
11	Lead as Pb	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
12	Copper as Cu	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
13	Zinc as Zn	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
14	Iron (as Fe)	mg/L	0.146	0.137	0.121
15	Chemical Oxygen Demand(COD)	mg/L	52.1	44.3	40.4
16	Biochemical Oxygen Demand (BOD)	mg/L	14	12	11

3.4.2 Location: STP Outlet Water Sample;

Sr. No.	Parameter	Unit	SPCB Limit	Date of sampling		
				14/04/2023	**05/05/2023**	**19/06/2023**
1	pH @ 25 ° C	--	**6.5-8.5**	7.24	7.29	7.33
2	Total Suspended Solids	mg/L	**30**	16	18	20
3	Residual Chlorine	mg/L	**0.5 Min.**	0.67	0.72	0.65
4	Biochemical Oxygen Demand (BOD)	mg/L	**20**	14	16	14
5	Fecal Coliform	CFU/100ml	**<1000**	60	64	60

3.4.3 Location: ETP Outlet Water Sample;

S.N	Parameter	Unit	SPCB Limit	Date of sampling		
				14/04/2023	**05/05/2023**	**19/06/2023**
1	pH @ 25	--	**6.5 – 8.5**	7.06	7.11	7.08
2	Temperature	° C	**40 Max.**	30	31	30
3	Color	Pt. CO. Scale	**100 Max.**	10	10	10
4	Total Suspended Solids	mg/L	**100 Max.**	22	26	22
5	Oil & Grease	mg/L	**10 Max.**	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)
6	Chemical Oxygen Demand (COD)	mg/L	**100 Max.**	20.2	24.3	20.2
7	Biochemical Oxygen Demand (BOD)	mg/L	**30 Max.**	6	7	6
8	Chloride as Cl^-	mg/L	**600 Max.**	385.7	393.6	389.3
9	Total Dissolved Solids	mg/L	**2100 Max.**	1750	1810	1802
10	Sulphate as SO_4	mg/L	**1000 Max.**	59.4	62.8	59.4
11	Ammonical Nitrogen	mg/L	**50 Max.**	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)
12	% Sodium(Na)	mg/L	**60 Max.**	25.32	25.5	27.1
13	Sodium Absorption Ratio(SAR)	mg/L	**26 Max.**	0.58	0.63	0.64
14	Sulphide as S^{-2}	mg/L	**02 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
15	Total Chromium	mg/L	**02 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
16	Hexavalent Chromium as Cr+6	mg/L	**0.1 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
17	Phosphate as PO_4	mg/L	**5.0 Max.**	0.14	0.26	0.23

18	Copper as Cu	mg/L	**03 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
19	Lead as Pb	mg/L	**0.1 Max.**	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
20	Zinc as Zn	mg/L	**05 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
21	Residual Free Chlorine	mg/L	**0.5 Max.**	BDL(MDL:0.2)	BDL(MDL:0.2)	BDL(MDL:0.2)
22	Iron (as Fe)	mg/L	**1.0 Max.**	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)

Note: N.D. = Not Detected, **MDL** = Minimum Detection Limit

3.4.4 Location: Bore-well – 1 to 4 (Nr. Emergency Ash Pond) **Date: 22/06/2023**

Bore well Water Testing is the analysis of the water quality for domestic consumption or industrial use against set parameters for your safety. Bore well Water test is done, as it is groundwater, which has a higher chance of being polluted with mud, metals and such elements.

Sr.No.	Parameter	Unit	Results			
			Borewell-1	**Borewell-2**	**Borewell-3**	**Borewell-4**
1	pH @ 25 ° C	-	8.45	8.06	7.38	7.49
2	Conductivity (µS)	-	7860	4930	25590	13930
3	Total Dissolved Solids	mg/L	5252	2114	17132	9320
4	Chloride as Cl^-	mg/L	2414.5	641.4	9165.2	4582.6
5	Carbonate as CaCO3	mg/L	42.4	42.1	BDL(MDL:4.0)	BDL(MDL:4.0)
6	Bicarbonate as CaCO3	mg/L	172.5	247.5	283.4	92.4
7	Total Alkalinity	mg/L	212.1	290.4	232.3	75.8
8	Calcium as Ca	mg/L	62.8	24.36	667.7	133.5
9	Magnesium as Mg	mg/L	80.9	112.8	1024	285.8
10	Sodium as Na	mg/L	514.2	335.2	1548.7	845.7
11	Potassium as K	mg/L	53	32.7	131.6	112
12	Sulphate as SO4-2	mg/L	745.4	614.6	1764	702.2
13	Nitrate as NO3	mg/L	1.4	0.7	3.6	0.4
14	Phosphate as PO_4	mg/L	0.18	0.22	0.16	0.11
15	Fluoride as F	mg/L	1.26	1.03	1.06	1.3
16	Mercury as Hg	mg/L	BDL(MDL:0.001)	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
17	Arsenic as As	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
18	Lead as Pb	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
19	Chromium as Cr	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.005)	BDL(MDL:0.005)
20	Cadmium as Cd	mg/L	0.062	0.054	0.189	0.077
21	Iron (as Fe)	mg/L	BDL(MDL:0.1)	0.312	0.309	0.206
22	Zinc (as Zn)	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	0.074	0.051
23	Cobalt as Co	mg/L	0.06	BDL(MDL:0.5)	0.255	0.121
24	Copper as Cu	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	0.056	BDL(MDL:0.05)

25	Manganese as Mn	mg/L	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
26	Nickel as Ni	mg/L	0.085	0.098	0.243	0.173
27	Salinity	ppt	4.36	3.1	16.56	8.28
28	Barium as Ba	mg/L	N.D.	N.D.	N.D.	N.D.
29	Ground Water Table (BGL)	Mtr.	2.3	1.8	2.8	2.5

Note: N.D. = Not Detected, **MDL** = Minimum Detection Limit

3.4.5 Location: Cooling Tower Blow down Water Sample

	Parameter	Unit	Limit	Results		
				Unit-7	**Unit-8**	**Unit-9**
Date of Sampling				**05/05/2023**	**05/05/2023**	**05/05/2023**
1	pH @ 25 ° C	--	-	7.61	7.53	7.84
2	Free available Chlorine	° C	Min.0.5	0.75	0.92	0.85
3	Zinc as Zn	Pt. CO. Scale	1.0	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
4	Hexavalent Chromium as Cr+6	mg/L	0.1	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
5	Total Chromium as Cr	mg/L	0.2	0.072	0.056	0.069
6	Phosphate as P	mg/L	5.0	0.84	0.75	0.58

Note: All other Units are in Shutdown.

3.4.6 Location: Condensate Cooling Tower Water Sample

S.No.	**Parameter**	**Unit**	**Limit**	**Results**		
				Unit-7	**Unit-8**	**Unit-9**
Date of Sampling				**05/05/2023**	**05/05/2023**	**05/05/2023**
1	pH @ 25 ° C	--	**6.5 to 8.5**	7.58	7.69	7.71
2	Temperature °C (Inlet)	^{0}C	--	29	29.0	29.5
	Temperature °C (Outlet)	^{0}C	--	31.5	31.0	31.0
	Temperature °C (Differential)	^{0}C	**7**	2.5	2.0	1.5
3	Free available Chlorine	mg/L	**Min 0.5**	0.71	0.65	0.71

Note: All other Units are in Shutdown.

3.5 Soil Quality Monitoring: Date: 19/05/2023

Soil is a three-dimensional natural growth medium supporting plants, with variable proportions of solid, liquid, and gaseous phases. We have carried out Soil monitoring at 05 Locations of surrounding villages within 05 KM radius.

Locations of soil sampling		⇨	Kandagra	Tunda	Desalpur	Siracha	Navinal
Sr. No.	Parameter	Unit	Results				
1	Magnesium as Mg	%	0.0049	0.0037	0.0039	0.0029	0.0068
2	Molybdenum as Mo	%	N.D.	N.D.	N.D.	N.D.	N.D.
3	Phosphorous as P	%	0.291	0.319	0.2184	0.2784	0.2185
4	Calcium as Ca	%	0.038	0.020	0.012	0.015	0.010
5	Zinc as Zn	%	0.007	0.0014	0.0019	0.0016	0.0011
6	Manganese as Mn	%	0.018	0.017	0.0249	0.025	0.0204
7	Potassium as K	%	0.0053	0.0031	0.0031	0.0017	0.0024
8	Nitrogen as N	%	0.0074	0.0069	0.0061	0.0053	0.0073
9	Iron as Fe	%	0.319	0.391	0.4084	0.718	1.0061
10	Copper as Cu	%	0.0014	0.0002	0.0003	0.0006	0.0005
11	Boron as B	%	N.D.	N.D.	N.D.	N.D.	N.D.
12	Sulphur	%	0.0051	0.0053	0.0030	0.0060	0.0056
13	Chlorides as Cl	%	0.0057	0.0119	0.0127	0.0528	0.031
Note: N.D. = **Not Detected,**							

4 AMBIENT NOISE LEVEL MONITORING

The main objective of noise monitoring in the study area is to establish the baseline noise levels and assess the impact of the total noise generated by the operation activities around it. Noise monitoring has been conducted at 10 locations within the periphery of industry premises.

Date of Monitoring: 19-20.04.2023

Sr. No.	Location	Noise Level dB(A)			
		Sampling Time	Day Time dB(A) 06 am - 10 pm	Sampling Time	Night Time dB(A) 10 pm - 06 am
			Limit 75 dB(A)		Limit 70 dB(A)
1.	Nr. LDO Pump House	11:40 am - 12:25 pm	60.8	22:40 pm - 00:30 am	**59.6**
2.	Nr. 20 MLD Plant		58.8		**57.4**
3.	Nr. Pump House		61.3		**58.4**
4.	Nr. Coal Handling plant		62.2		**59.1**
5.	Nr. Gate No.4		54.4		**50.8**
6.	Nr. Integrated Ash Silo		64.3		**61.7**
7.	Nr. Main Gate		58.9		**55.7**
8.	Nr. APCH Building		56.6		**52.8**
9.	Nr. Shantiniketan-I		54.5		**49.1**
10.	**Nr. OHC Building**		**53.3**		**50.3**

Remark: Calibrated instruments were used during monitoring of above identified sample.

Date of Monitoring: 19-20.05.2023

Sr. No.	Location	Noise Level dB(A)			
		Sampling Time	Day Time dB(A) 06 am - 10 pm	Sampling Time	Night Time dB(A) 10 pm - 06 am
			Limit 75 dB(A)		Limit 70 dB(A)
1.	Nr. LDO Pump House	10:35 am - 12:20 pm	58.8	22:30 pm - 00:25 am	**56.2**
2.	Nr. 20 MLD Plant		62.8		**56.5**
3.	Nr. Pump House		60.5		**57.4**
4.	Nr. Coal Handling plant		63.9		**56.7**
5.	Nr. Gate No.4		51.2		**48.8**
6.	Nr. Integrated Ash Silo		64.6		**53.3**
7.	Nr. Main Gate		59.0		**57.1**
8.	Nr. APCH Building		49.7		**47.0**
9.	Nr. Shantiniketan-I		53.0		**50.5**
10.	**Nr. OHC Building**		**55.0**		**52.4**

Remark: Calibrated instruments were used during monitoring of above identified sample.

Date of Monitoring: 09-10.06.2023

Sr. No.	Location	Noise Level dB(A)			
		Sampling Time	Day Time dB(A) 06 am - 10 pm	Sampling Time	Night Time dB(A) 10 pm - 06 am
			Limit 75 dB(A)		Limit 70 dB(A)
1.	Nr. LDO Pump House	11:05 am - 13:00 pm	60.6	22:50 pm - 00:50 am	**59.0**
2.	Nr. 20 MLD Plant		59.2		**54.1**
3.	Nr. Pump House		57.2		**54.9**
4.	Nr. Coal Handling plant		64.9		**61.6**
5.	Nr. Gate No.4		55.3		**51.7**
6.	Nr. Integrated Ash Silo		67.0		**59.4**
7.	Nr. Main Gate		55.6		**52.0**
8.	Nr. APCH Building		53.6		**48.5**
9.	Nr. Shantiniketan-I		53.9		**49.7**
10.	**Nr. OHC Building**		**51.0**		**48.9**

Remark: Calibrated instruments were used during monitoring of above identified sample.

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ENVIRONMENTAL MONITORING REPORT

July 2023 to September 2023

AMBIENT AIR QUALITY, STACK EMISSION, WATER QUALITY AND NOISE MONITORING

Prepared By:

M/s. UniStar Environment and Research Labs Pvt. Ltd.

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QUALITY CONTROL							
Name of Publication	Environmental Quality Monitoring Report for the Quarter July 2023-September 2023						
Project Number	03	**Report No.**	UERL/ENV/JAN/ 7-9/2023	**Version**	1	**Released**	October 2023
Project Coordinator	Mr. Bhavin Patel						
Prepared By	Miss. Shweta A. Rana						
Checked By	Mr. Jaivik Tandel						
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FOR
UniStar Environment and
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Mr. Jaivik Tandel
(Authorized By)

UNISTAR ENVIROMENT & RESEARCH LABS PVT. LTD. GUJARAT VAPI

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EXECUTIVE SUMMARY

M/s. Adani Power Ltd., Mundra (APL-Mundra) places great emphasis on delivering long-term sustainable value for its respective stakeholders and is certain to fulfill them by sustaining perseverance in their actions. In ensuring to generate electricity at large scales and provide seamless access to electricity to households with generation capacity of 4620 in three phases. Mundra Thermal (coal Based) Power Plant near Village Tunda in Mundra, District Kutch, and Gujarat. APL-Mundra received Consolidated consent AWH-102106 on dated 17.07.2019 valid up to 29/06/2024.

The phased wise development being undertaken for ultimate capacity of power plant is shown below.

- First Phase : 2 x 330 MW
- Second Phase : 2 x 330 MW + 2 x 660 MW
- Third Phase : 3 x 660 MW

The Thermal Power Plant is located near Village Tunda, Mundra Taluka in Kutch District. The Site is closed to the sea, making cooling water perennially available for the power plant. The Power Plant is based on supercritical technology using imported coal.

All three phase of the power plant is operational and as the part of the compliance to the statutory requirement, M/s. Adani Power Ltd., Mundra (APL-Mundra) has entrusted the environmental quality monitoring study for the area surrounding the power plant. Towards achieving and sustaining Business excellence at the Plant, M/s. Adani Power Ltd., Mundra (APL-Mundra) Implemented ISO-14001:2015 Environment Management System (EMS), ISO 46001:2019 Water Efficiency management and Accreditation of NABL in Environmental Laboratory (ISO/IEC 17025:2017) vide Certificate No. TC-11824.

Various environmental parameters have been monitored during the period of July 2023 to September 2023. The detail of the environmental parameters along with frequency of monitoring is shown in subsequent sections.

1. ENVIRONMENTAL PARAMETERS

Sr. No.	Environmental Indices	Parameter	No. of Location and Monitoring.	Frequency of Sampling
1.	Ambient Air Quality	PM_{10}, $PM_{2.5}$, Sulphur Dioxide and Nitrogen Dioxide	**Three Location** 1. Siracha Village, 2. Kandagara VIllage 3. Wandh Village	Twice a week
2.	Ambient Air Quality	PM_{10}, $PM_{2.5}$, Sulphur Dioxide, Nitrogen Dioxide, Ozone and Mercury	**Five Location** 1. Siracha, 2. Kandagara, 3. Wandh, 4. 20 MLD Desalination plant, 5. Shantiniketan-1)	Once in a month
3.	Stack Monitoring	PM, Sulphur Dioxide, Oxide of Nitrogen and Hg	Nine Location	Once in a month
4.	Meteorological Monitoring	Wind rose, Wind speed, Wind direction, Rainfall, Temperature, Relative Humidity	One location	Round the clock
5.	Ground Water Monitoring for Surrounding Villages	Colour, Odour, Taste, Turbidity, Dissolved Solids, pH value, Total Hardness, Calcium, Boron, Copper, Iron, Manganese, Chloride, Sulphate, Nitrate, Fluoride, Phenolic Compounds, Mercury, Cadmium, Selenium, Arsenic, Cyanide, Lead, Zinc, Anionic Detergents as MBAS, Chromium Cr+6, Mineral Oil, MPN Index for Coliform Bacteria per 100 ml, Residual Free Chlorine, Aluminium, Alkalinity, Magnesium as Mg, Escherichia Coli in 250 ml.	Five Location	Once in Quarter
6.	Effluent Water Sample	pH, Temperature, colour, SS, O & G, BOD3, COD, Chlorides, TDS, Sulphates, Ammonical Nitrogen, % Sodium, Sodium Absorption Ratio, Sulphides, Total Chromium, Hexavalent Chromium, Copper, Lead, Zinc, Free available chlorine, Phosphate, Iron	Four Location	Once in a month / Quarter
7.	Combined effluent Water Sample	pH, Temperature, colour, SS, O & G, BOD3, COD, Chlorides, TDS, Sulphates, Ammonical Nitrogen, % Sodium, Sodium Absorption Ratio, Sulphides, Total Chromium, Hexavalent Chromium, Copper, Lead, Zinc, Free available chlorine, Phosphate, Iron	One Location	Once in a month
8.	STP Water Analysis	pH, Residual Chlorine, SS, BOD, COD, Faecal coliform	Three Location	Once in month/ Quarter

9.	Borwell water Near Ash Dyke Area	pH @ 25 ° C, Conductivity (µS), Chloride as Cl^- Salinity (ppt), Total Dissolved Solids, Carbonate as CaCO3, Bicarbonate as CaCO3, Mercury as Hg,Arsenic as As, Lead as Pb, Chromium as Cr, Cadmium as Cd.	Four Location	Once in a Quarter
10.	Surrounding Villages Soil Analysis	Magnesium as Mg %, Molybdenium as Mo in ppm, Phosphorus as P %, Calcium as Ca %, Zinc as Zn, Manganese as Mn, Potassium as K%, Nitrogen as N%, Iron as Fe%, Copper as Cu, Boron as B, Sulphurin %, Chloride as Cl%.	Five Location	Once in Six Month
11.	Noise Level Monitoring	Noise level monitoring in dB(A)	10 Location	Once in a Quarter
12.	Condensate Cooling tower	pH @ 25 ° C, Free available chlorine, Zinc as Zn, Hexavalent Chromium, Total Chromium, Phosphate	09 Location	Once in a Quarter
13.	Cooling tower Blow down	pH @ 25 ° C, Free available chlorine, Zinc as Zn, Hexavalent Chromium, Total Chromium, Phosphate	09 Location	Once in a Quarter
14.	Boiler Blow down	TSS, O & G, Total Copper, Total Iron	04 Location	Once in a Quarter

1.1 AMBIENT AIR QUALITY

The scenario of the Ambient Air Quality in the study region has been assessed through a network of 5locations of Ambient Air Quality Monitoring. The design of monitoring network in the air quality surveillance program was based on the following considerations.

- Topography / Terrain of the study area.
- Human Settlements
- Wind pattern
- Health status
- Representation of regional Background levels.
- Accessibility of monitoring site.
- Resource availability.

Pre-calibrated Respirable Dust Samplers (PM_{10}) & Fine Dust Samplers ($PM_{2.5}$) have been used for monitoring the existing AAQM Status. Maximum, Minimum, Average, Standard Deviation and percentile have been computed from the raw data collected at all individual sampling stations to represents the Ambient Air Quality Status.

The significant parameters viz., PM_{10}, $PM_{2.5}$, Sulphur Dioxide (SO_2) and Nitrogen Dioxides (NO_2) and Mercury were monitored within the study area of 10 km from the site.

1.2 FLUE GAS MONITORING

All three phases of the Thermal Power Plant is in operation. The flue gas emission from stack attached to individual boiler is monitored once in month during the monitoring period.

1.3 WATER QUALITY MONITORING

The water quality parameters as per IS: 10500 for water resource within the study area have been used for describing the water environment and assessing the impacts on it.

Groundwater samples of nearby villages were collected at five locations the parameters of prime importance selected under physicochemical characteristics were estimated to describe the baseline environmental status of the water resources during the monitoring period. Four bore well samples surrounding the ash dyke area were collected during the month of May 2023 along with outfall water sample.

1.4 AMBIENT NOISE LEVEL MONITORING

The Ambient Noise levels within the plant premises were relocated at a different location (10 nos.) For the implementation of effective noise control programs.

1.5 MICROMETEOROLOGY

Meteorological parameters are important factors in the study of Air Pollution. The Transport and diffusion of the pollutants in the atmosphere are governed by meteorological factors.

Primary / Basic Meteorological Parameters

- Wind Velocity
- Wind Direction

Since the dispersion and diffusion of pollutants mainly depend on the above factors, these factors are considered as primary meteorological parameters.

Secondary Meteorological Parameters

- Relative Humidity
- Ambient Temperature

The above-said factors are considered as secondary factors since these factors control the dispersion of the pollutant indirectly by affecting the primary factors.

METEROLOGICAL DATA

METEROLOGICAL DATA AVERAGE DAILY METEROLOGICAL DATA OF JULY-2023

Date	Temp (Deg C)		Relative Humidity (%)		Rainfall (mm)
	Max.	Min.	Max.	Min.	Total
01.07.2023	34.2	30.0	92.0	69.1	0.0
02.07.2023	37.2	30.1	86.5	58.1	0.0
03.07.2023	38.3	30.0	92.2	53.1	0.0
04.07.2023	37.6	30.2	88.4	53.1	0.0
05.07.2023	37.4	31.0	81.6	54.0	0.0
06.07.2023	37.1	29.1	93.1	60.1	56.0
07.07.2023	34.5	27.0	97.2	64.0	3.0
08.07.2023	34.2	29.0	95.4	69.2	6.5
09.07.2023	32.4	28.1	97.2	64.0	2.0
10.07.2023	36.2	30.0	90.2	61.1	0.0
11.07.2023	36.5	30.1	83.2	59.3	0.0
12.07.2023	36.4	30.3	83.0	56.2	0.0
13.07.2023	36.6	30.2	78.4	55.2	0.0
14.07.2023	36.5	30.1	83.0	57.0	0.0
15.07.2023	35.5	31.0	78.1	59.3	0.0
16.07.2023	35.4	29.2	88.2	56.2	0.0
17.07.2023	35.4	30.0	82.6	62.0	0.0
18.07.2023	35.0	29.3	95.4	66.0	0.0
19.07.2023	35.2	30.0	92.3	64.1	0.0
20.07.2023	37.0	28.0	96.2	55.1	14.0
21.07.2023	34.5	29.0	96.4	69.2	18.0
22.07.2023	32.4	28.0	96.0	79.0	2.0
23.07.2023	34.1	29.0	99.4	70.2	0.0
24.07.2023	34.2	28.1	98.4	71.4	23.0
25.07.2023	35.0	28.3	96.6	64.0	2.0
26.07.2023	34.4	29.0	93.1	63.2	3.0
27.07.2023	34.5	29.0	91.4	65.0	0.0
28.07.2023	32.3	29.3	90.4	70.2	0.0
29.07.2023	33.3	27.3	97.1	68.5	1.0
30.07.2023	33.2	28.0	97.6	72.0	0.0
31.07.2023	33.0	29.0	91.5	73.2	0.0
Min	32.3	27.0	78.1	53.1	0.0
Max	38.3	31.0	99.4	79.0	56.0

METEROLOGICAL DATA

METEROLOGICAL DATA AVERAGE DAILY METEROLOGICAL DATA OF AUGUST -2023

Date	Temp (Deg C)		Relative Humidity (%)		Rainfall (mm)
	Max.	Min.	Max.	Min.	Total
01.08.2023	32.4	29.1	87.2	74.0	0.0
02.08.2023	32.5	28.1	93.0	72.0	0.0
03.08.2023	33.3	28.5	98.0	68.3	0.5
04.08.2023	34.0	30.1	86.4	66.4	0.0
05.08.2023	34.6	30.0	88.5	61.2	0.0
06.08.2023	33.4	30.1	84.0	65.5	0.0
07.08.2023	33.0	29.2	83.5	67.0	0.0
08.08.2023	33.0	29.2	82.0	69.1	0.0
09.08.2023	32.2	29.0	86.0	70.2	0.0
10.08.2023	32.3	28.1	92.5	68.1	1.5
11.08.2023	33.0	27.1	97.3	68.4	6.5
12.08.2023	32.4	28.0	93.4	69.2	2.0
13.08.2023	32.0	29.0	84.1	69.2	0.0
14.08.2023	32.4	29.0	84.1	71.6	0.0
15.08.2023	34.1	29.1	86.1	63.0	0.0
16.08.2023	33.5	29.0	90.3	62.3	0.0
17.08.2023	33.2	28.1	86.4	64.6	0.0
18.08.2023	34.2	29.0	80.6	57.3	0.0
19.08.2023	34.1	28.0	81.0	57.3	0.0
20.08.2023	34.2	29.0	94.5	64.1	1.0
21.08.2023	32.3	27.0	97.2	66.2	0.0
22.08.2023	34.0	27.3	90.0	61.5	0.0
23.08.2023	33.1	29.0	88.3	66.1	0.0
24.08.2023	33.5	29.1	88.4	64.2	0.0
25.08.2023	34.1	29.0	87.5	61.3	0.0
26.08.2023	33.5	29.0	84.2	63.2	0.0
27.08.2023	34.3	29.1	82.2	58.3	0.0
28.08.2023	34.0	29.0	82.0	61.4	0.0
29.08.2023	34.4	29.0	84.0	56.0	0.0
30.08.2023	35.4	28.1	85.5	54.1	0.0
31.08.2023	35.6	27.1	89.4	52.1	0.0
Min	32.0	27.0	80.6	52.1	0.0
Max	35.6	30.1	98.0	74.0	6.5

METEROLOGICAL DATA

METEROLOGICAL DATA AVERAGE DAILY METEROLOGICAL DATA OF SEPTEMBER -2023

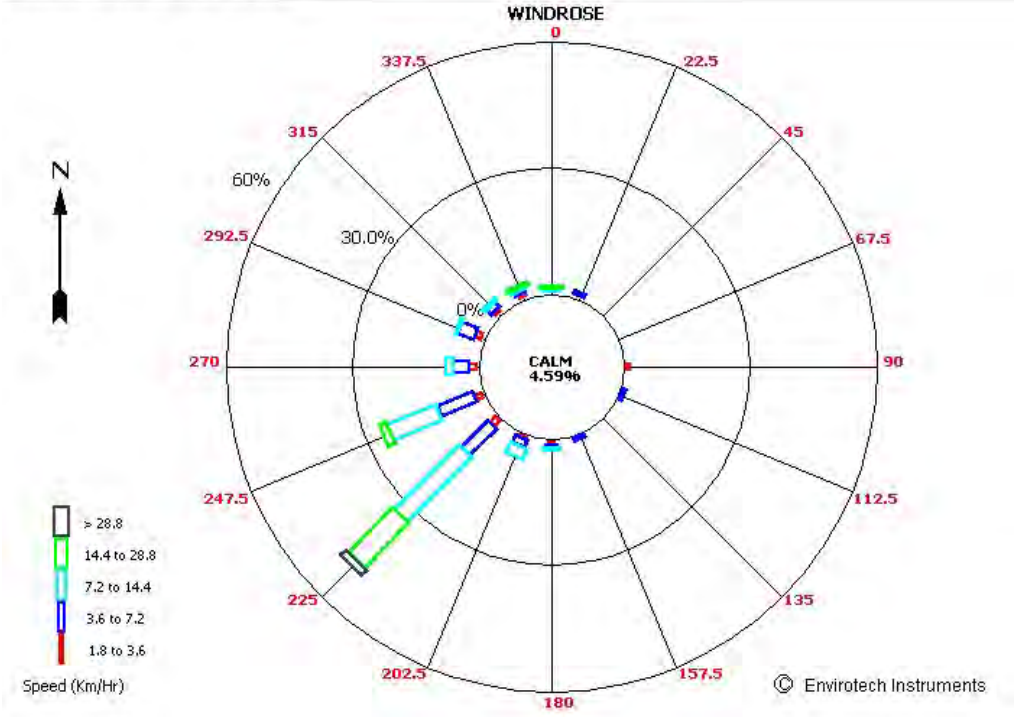
Date	Temp (Deg C)		Relative Humidity (%)		Rainfall (mm)
	Max.	Min.	Max.	Min.	Total
01.09.2023	36.5	27.3	91.6	45.2	0.0
02.09.2023	36.5	27.0	93.1	42.1	0.0
03.09.2023	35.6	27.3	88.4	51.4	0.0
04.09.2023	35.3	28.0	87.2	52.1	0.0
05.09.2023	35.4	28.2	88.4	54.1	0.0
06.09.2023	37.3	27.1	94.0	50.0	0.0
07.09.2023	38.3	29.0	88.5	42.1	0.0
08.09.2023	37.4	29.0	84.5	48.2	0.0
09.09.2023	36.1	29.2	82.3	55.2	0.0
10.09.2023	35.3	29.0	85.3	55.2	0.0
11.09.2023	35.3	29.1	83.4	56.1	0.0
12.09.2023	35.2	29.1	80.5	57.3	0.0
13.09.2023	35.5	29.0	85.2	52.1	0.0
14.09.2023	36.2	29.1	86.3	50.4	0.0
15.09.2023	36.3	28.3	91.4	48.5	0.0
16.09.2023	36.6	28.2	86.4	52.2	0.0
17.09.2023	34.2	29.1	83.1	63.1	0.0
18.09.2023	32.3	26.2	98.0	73.2	9.5
19.09.2023	33.1	26.0	99.3	77.3	4.0
20.09.2025	29.2	26.0	99.6	84.2	29.0
21.09.2023	34.3	28.0	97.6	61.5	0.0
22.09.2023	36.0	29.0	88.5	59.1	0.0
23.09.2023	35.2	29.3	90.0	62.5	0.0
24.09.2023	36.1	29.3	96.5	59.3	0.0
25.09.2023	35.6	28.0	96.1	54.4	3.0
26.09.2023	33.0	26.3	94.1	56.4	0.0
27.09.2023	35.2	25.0	86.4	50.0	0.0
28.09.2023	36.1	25.1	87.3	47.2	0.0
29.09.2023	36.1	26.2	91.0	45.5	0.0
30.09.2023	35.0	24.1	93.0	43.2	0.0
			86.4	45.2	0.0
Min	29.2	24.1	93.1	42.1	0.0

1.5.1 Wind Rose Diagram

ADANI POWER LTD., MUNDRA (APL-MUNDRA) MUNDRA WINDROSE FOR THE SEASON OF APRIL TO JUNE 2023

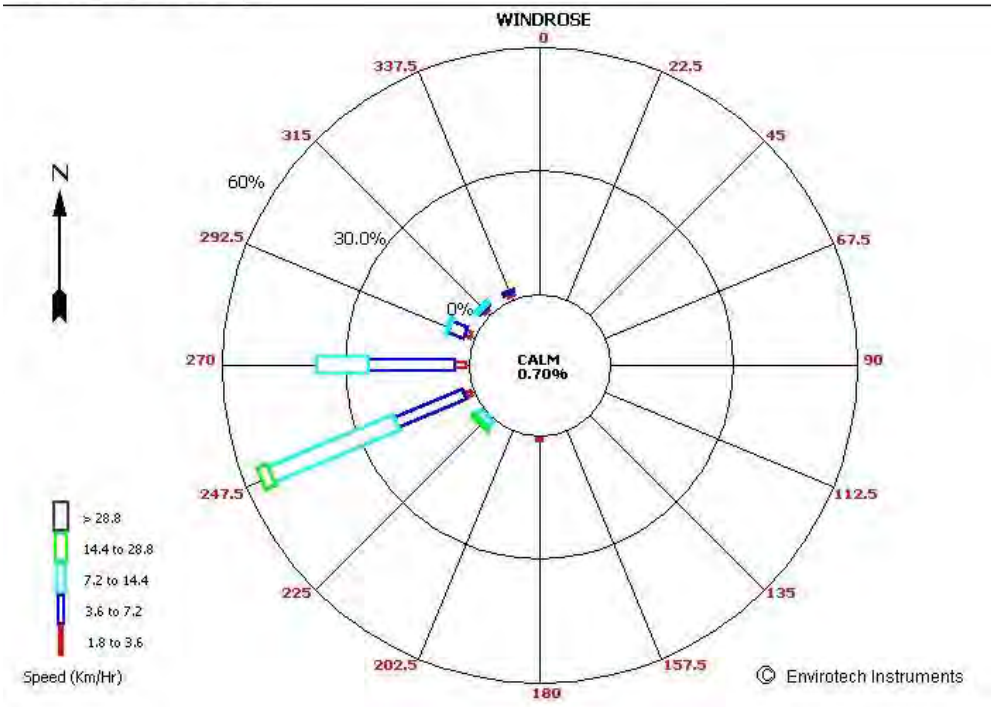
Time : 00:00 - 23:00
Date : 01/07/23 - 31/07/23

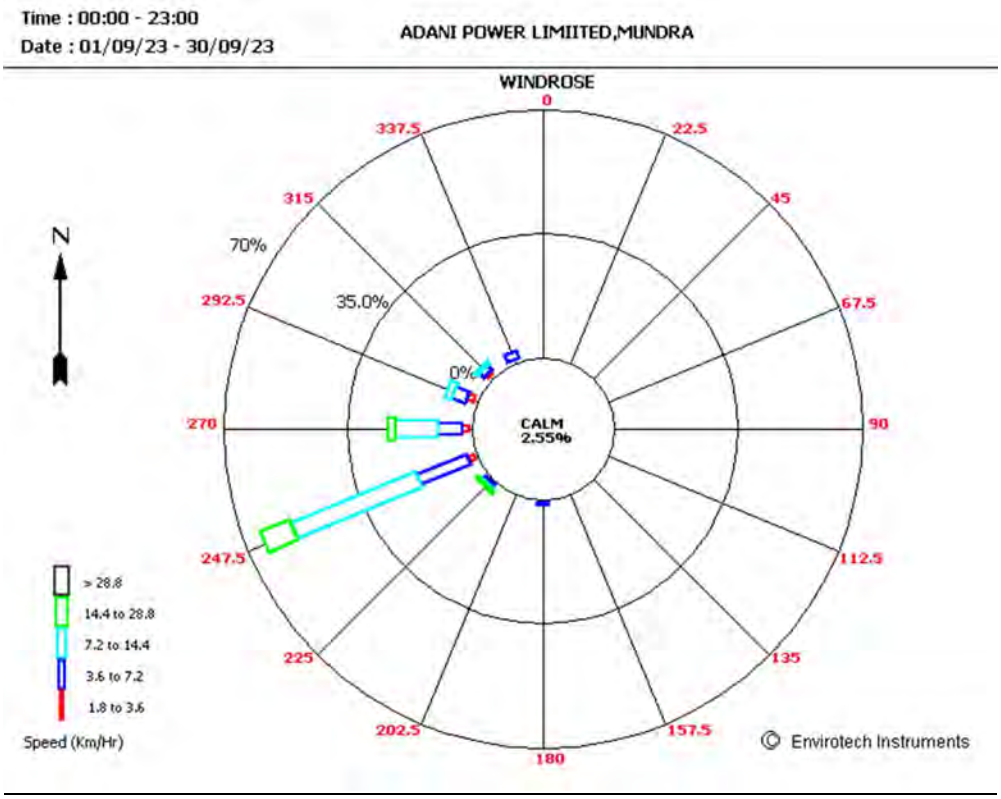
ADANI POWER LIMITED, MUNDRA



Time : 00:00 - 23:00
Date : 02/08/23 - 31/08/23

ADANI POWER LTD, MUNDRA





Project	:	**M/s.Adani Power Ltd., Mundra (APL-Mundra)**	**Period**	:	July 2023 to September 2023
Location	:	**Village – Tunda, Dist. - Kutch**			
July 2023					
Wind Direction			**WSW**		
Average Wind Speed			**9.7 Km/Hr**		
August 2023					
Wind Direction			**WSW**		
Average Wind Speed			**6.4 Km/Hr**		
September 2023					
Wind Direction			**WSW**		
Average Wind Speed			**6.7 Km/Hr**		

2 SCOPE & METHODOLOGY ADOPTED FOR ENVIRONMENTAL MONITORING

2.1 Introduction

The scope of the study includes detailed characterization of various environmental like air, water and noise within an area of 10 km radius in and around the power plant area at 20 MLD Plant, Shantiniketan-1 and surrounding villages named as Siracha, Wandh and Kandagara of Dist. Kutch. The above-mentioned environmental components were monitored at the study area and frequency of monitoring, number of samples along with methodology is as shown in below table.

2.2 Scope and Methodology for Monitoring of Various Environmental Attributes

Sr. No	Environmental Attributes	Sampling Locations	Sampling Parameters	Sampling Frequency	Total No of samples	Methodology
1	Ambient Air Quality	3	PM_{10}, $PM_{2.5}$, SO_2, NO_2	Twice a week (24 hourly Samples)	72	IS : 5182 & Reference APHA(AIR)
2	Ambient Air Quality	5	PM_{10}, $PM_{2.5}$, SO_2, NO_2, O_3, Mercury	Once in month (24 hourly Samples)	15	IS : 5182 & Reference APHA(AIR)
2	Flue Gas Stack Analysis	Unit 1 to 9 Boiler	PM, SO_2, NOx	Once in month	27	As per IS : 11255
3	Surrounding Villages Ground Water Analysis	5 water sample	Test specification as per IS : 10500 - 1991	Once in Quarter	5	AS per APHA Method
4	Water Quality of Outfall for APL-Mundra	1	As per CTO	Once in month	3	As Per APHA Method
5	STP Outlet	1	As per CTO	Once in month	3	As Per APHA Method
6	Bore well water Near Ash Dyke Area	4	Test specification as per IS : 10500 - 1991	Once in Quarter	4	As Per APHA Method
7	Cooling Tower Blow down Water Sample	9	As per CTO	Once in Quarter	9	As Per APHA Method
8	Condensate Cooling Tower Water Sample	9	As per CTO	Once in Quarter	9	As Per APHA Method
9	Boiler Blow down Water Sample	9	As per CTO	Once in Quarter	9	As Per APHA Method

3 ENVIRONMENT AIR QUALITY AND FLUE GAS EMISSION MONITORING

The principal objective of the ambient air quality was to assess the existing levels of the air pollution as well as the regional background concentration in the plant area. Air pollution forms important and critical factors to study the environmental issues in the study areas. Thus, air quality has to be frequently monitored to know the extent of pollution due to power plant activity and other ancillary activities. Details are provided in Section 3.1.1.

Flue gas monitoring analysis has been conducted by M/s. UniStar Environment and Research Labs Pvt. Ltd. Details are provided in Section 3.2.

3.1 Ambient Air Monitoring Data

3.1.1 Details of Ambient Air Quality Monitoring Stations

The detail of the ambient air monitoring locations including the distance from the project site with direction is as shown below.

S.No.	Code	Name of sampling location	Distance	Frequency
1	A - 1	Siracha Village	2.6 km (NE)	Twice a week
2	A - 2	Kandagara Village	3.2 km (NW)	Twice a week
3	A - 3	Wandh Village	2.0 km (SW)	Twice a week
4	A - 4	Nr.20 MLD Plant	1.2 Km	Once in month
5	A - 5	Nr. Shantiniketan-1	0.8 Km	Once in month

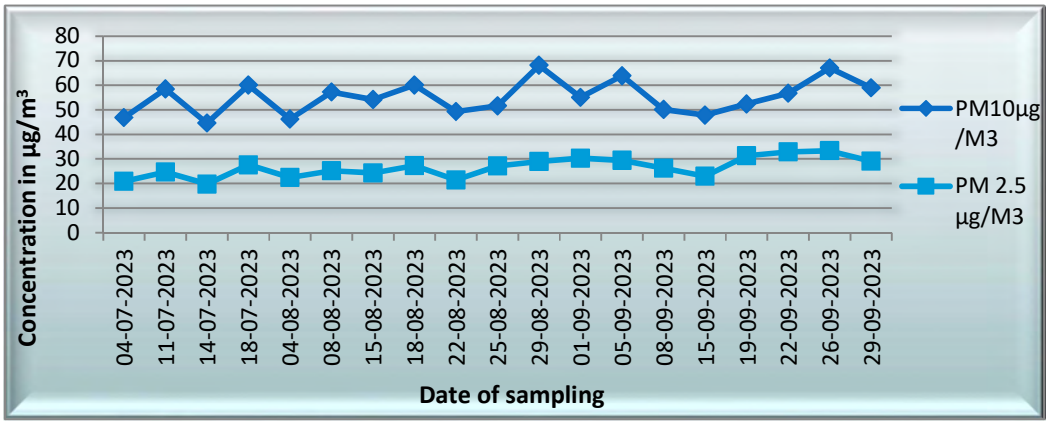
3.1.2 Location: Siracha Village

The Sampling station was located in the Siracha village. The Station is located at about 3.5 km away in Northwest Direction from the core zone area. The Respirable Dust Sampler & $PM_{2.5}$ was placed at a height of 3.0 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during the monitoring period (July 2023-September 2023) are as follows.

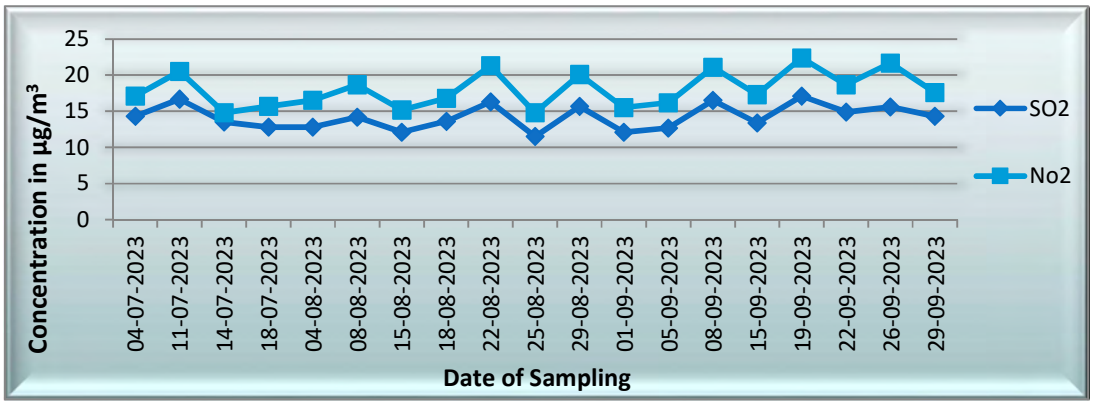
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
04-07-2023	46.8	20.9	14.3	17.1	--
11-07-2023	58.5	24.6	16.7	20.5	--
14-07-2023	44.6	19.8	13.5	14.8	16.8
18-07-2023	60.1	27.6	12.8	15.7	--
04-08-2023	46.2	22.4	12.8	16.5	--
08-08-2023	57.3	25.1	14.2	18.7	--
15-08-2023	54.2	24.3	12.1	15.2	15.2
18-08-2023	60	27.2	13.6	16.8	--
22-08-2023	49.3	21.5	16.3	21.3	--
25-08-2023	51.6	27.1	11.5	14.8	--
29-08-2023	68.1	29	15.7	20.1	--
01-09-2023	55	30.3	12.1	15.5	--
05-09-2023	63.9	29.4	12.7	16.2	--
08-09-2023	50.1	26.3	16.5	21.1	--
15-09-2023	47.8	22.9	13.4	17.3	18.6
19-09-2023	52.4	31.3	17.1	22.4	--
22-09-2023	56.7	32.9	14.9	18.7	--
26-09-2023	67.1	33.3	15.6	21.7	--
29-09-2023	59	29.1	14.3	17.6	--
Maximum Value	68.1	33.3	17.1	22.4	18.6
Minimum Value	44.6	19.8	11.5	14.8	15.2
Average Value	55.2	26.6	14.2	18.0	16.8
Standard Deviation	6.9	4.0	1.7	2.5	1.7
Permissible Limits	100	60	80	80	100

Units: µg/m^3

Graph1: Parculate Matter Level Siracha Village



Graph 2: SO_2, NO_2 Level Siracha Village



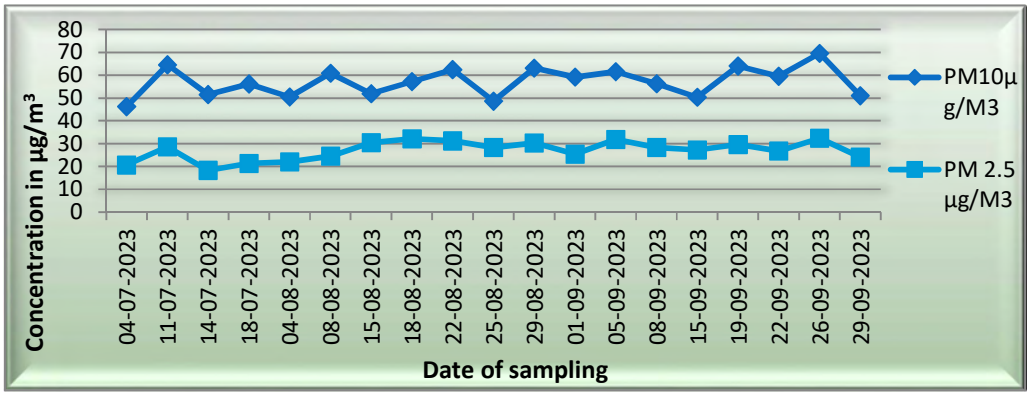
3.1.3 Location: Kandagara Village

The Sampling station was located in the core zone. The Station is located at about 3 km away in Northwest Direction from the Company premises. The Respirable Dust Sampler (PM_{10}) & $PM_{2.5}$Sampler were placed at a height of 2.5 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during the monitoring period (July 2023-September 2023) are as follows.

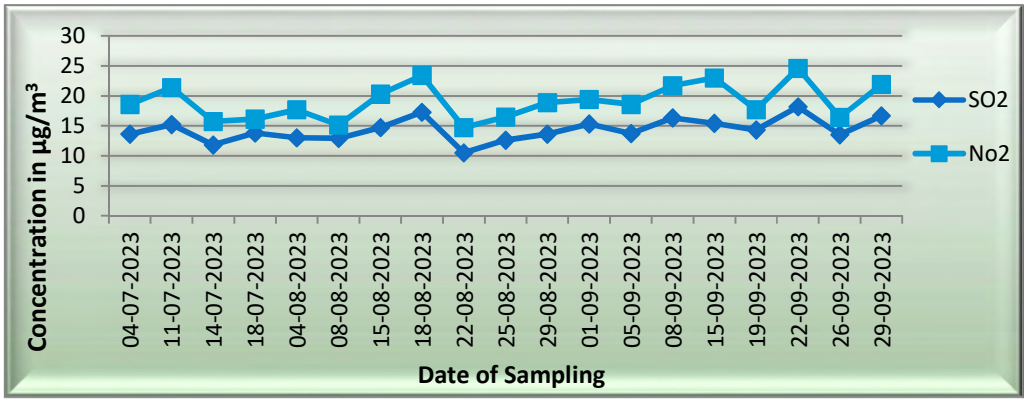
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
04-07-2023	46.3	20.7	13.6	18.6	--
11-07-2023	64.6	28.6	15.2	21.4	--
14-07-2023	51.5	18.3	11.8	15.7	15.4
18-07-2023	56.1	21.3	13.8	16.1	--
04-08-2023	50.5	22	13	17.7	--
08-08-2023	60.9	24.5	12.9	15.1	--
15-08-2023	51.9	30.5	14.7	20.3	17.8
18-08-2023	57.2	32.1	17.3	23.4	--
22-08-2023	62.5	31.2	10.5	14.7	--
25-08-2023	48.6	28.3	12.6	16.5	--
29-08-2023	63.1	30.3	13.6	18.9	--
01-09-2023	59.1	25.5	15.3	19.4	--
05-09-2023	61.5	31.9	13.7	18.6	--
08-09-2023	56.3	28.4	16.3	21.7	--
15-09-2023	50.3	27.3	15.4	23	19.2
19-09-2023	64.1	29.6	14.3	17.7	--
22-09-2023	59.6	26.7	18.2	24.6	--
26-09-2023	69.6	32.4	13.5	16.4	--
29-09-2023	51	24.1	16.7	21.9	--
Maximum Value	69.6	32.4	18.2	24.6	19.2
Minimum Value	46.3	18.3	10.5	14.7	15.4
Average Value	57.1	27.0	14.3	19.0	17.4
Standard Deviation	6.4	4.2	1.9	3.0	1.9
Permissible Limits	100	60	80	80	100

Units: µg/m³

Graph 3: Particulate Matter Level Kandagara Village



Graph 4: SO2, NO2 Level Kandagara Village



3.1.4 Location: Wandh Village

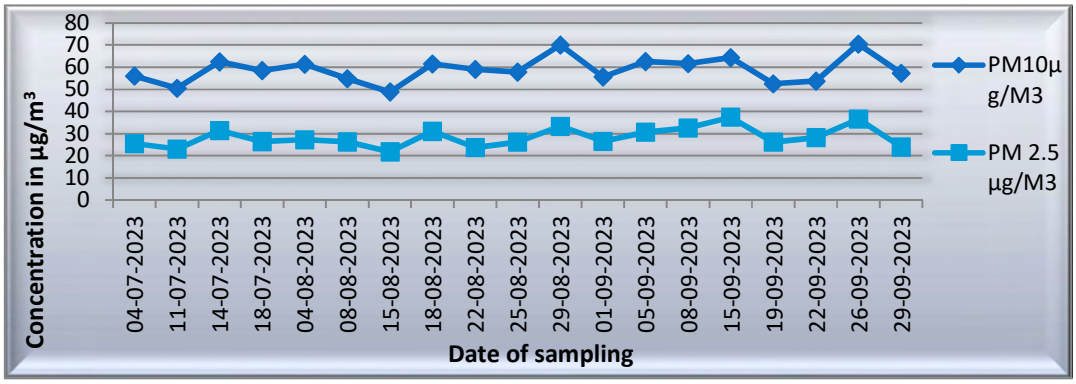
The Sampling station was located in the core zone in Wandh village. The Station is located at about 3.0 km away in Southwest Direction from the Company premises. The Respirable Dust Sampler Was placed at a height of 3.0 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during the monitoring period (July 2023-September 2023) are as follows.

Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
04-07-2023	**56.1**	**25.5**	**15.9**	**18.1**	--
11-07-2023	**50.5**	**23.1**	**17.1**	**21.3**	--
14-07-2023	**62.5**	**31.4**	**14.3**	**19.2**	**19.7**
18-07-2023	**58.5**	**26.4**	**14.8**	**22.7**	--
04-08-2023	**61.3**	**27.3**	**12.3**	**16.3**	--
08-08-2023	**54.8**	**26.3**	**16.8**	**22.9**	--
15-08-2023	**48.8**	**21.8**	**14.1**	**17**	**22.7**
18-08-2023	**61.5**	**31**	**11.7**	**15.3**	--
22-08-2023	**59**	**23.7**	**17.2**	**22.1**	--
25-08-2023	**57.8**	**26.2**	**15.7**	**20.4**	--
29-08-2023	**70**	**33.3**	**14.8**	**18.5**	--
01-09-2023	**55.6**	**26.5**	**14.4**	**16.1**	--

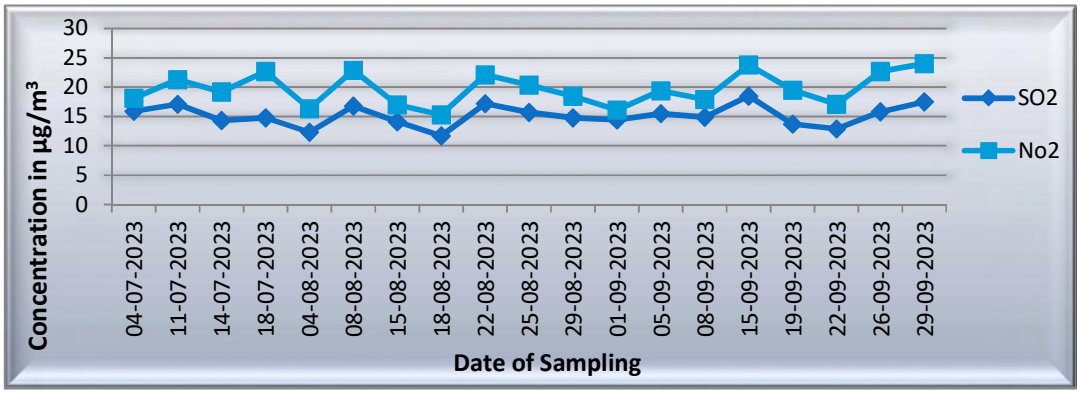
05-09-2023	62.6	30.7	15.5	19.4	--
08-09-2023	61.6	32.5	14.9	17.9	--
15-09-2023	64.3	37.4	18.5	23.8	25.9
19-09-2023	52.5	26.1	13.7	19.5	--
22-09-2023	53.8	28.2	12.9	17.1	--
26-09-2023	70.5	36.6	15.8	22.7	--
29-09-2023	57.3	24	17.5	24	--
Maximum Value	70.5	37.4	18.5	24	25.9
Minimum Value	48.8	21.8	11.7	15.3	19.7
Average Value	58.9	28.3	15.2	19.7	22.7
Standard Deviation	5.8	4.4	1.8	2.8	3.1
Permissible Limits	100	60	80	80	100

Units: µg/m^3

Graph 5: Particulate Matter Level Wandh Village



Graph 6: SO_2, NO_2 Level Wandh Village



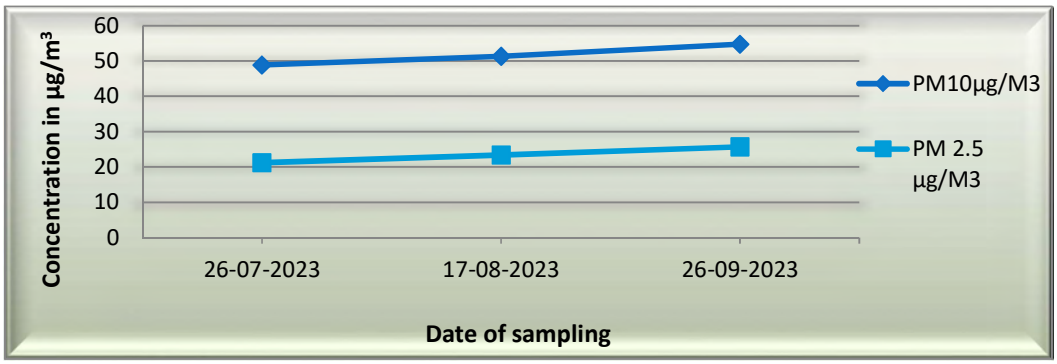
3.1.5 Location: Nr.20 MLD Plant

The Sampling station was located in the core zone in Company premises. The Respirable Dust Sampler (PM_{10}) & ($PM_{2.5}$) Sampler were placed at a height of 3 m above the ground level. Assess present pollution level the observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during monitoring period (July 2023-September 2023) are as follows:

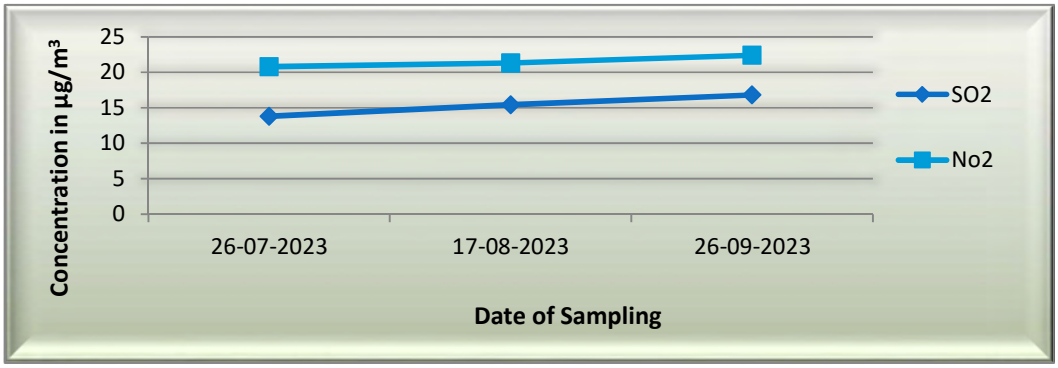
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
26-07-2023	48.9	21.2	13.8	20.8	15.2
17-08-2023	51.4	23.4	15.4	21.3	16.3
26-09-2023	54.8	25.7	16.8	22.4	19.2
Maximum Value	54.8	25.7	16.8	22.4	19.2
Minimum Value	48.9	21.2	13.8	20.8	15.2
Average Value	51.7	23.4	15.3	21.5	16.9
Standard Deviation	3.0	2.3	1.5	0.8	2.0
Permissible Limits	100	60	16.8	22.4	19.2

Units: $\mu g/m^3$

Graph 7: Particulate Matter Level Nr.20 MLD Plant



Graph 8: SO2, NO2 Nr.20 MLD Plant



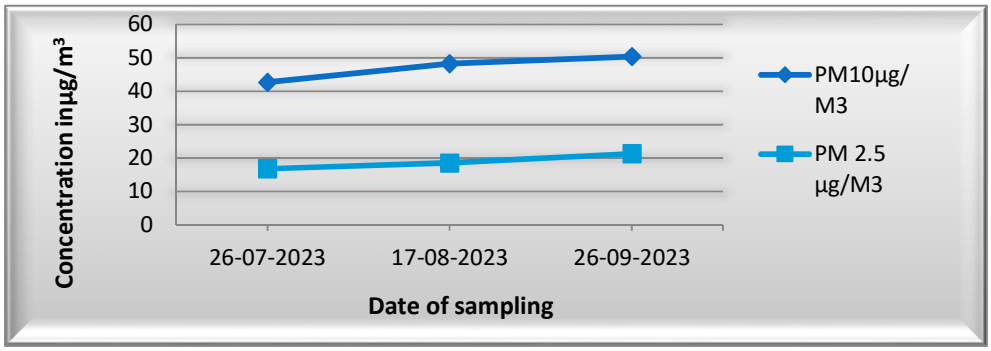
3.1.6 Location: Nr. Shantiniketan-1

The Sampling station was located in the core zone in company premises. The Respirable Dust Sampler PM_{10} & $PM_{2.5}$Sampler were placed at a height of 3 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during monitoring period (July 2023-September 2023) are as follows

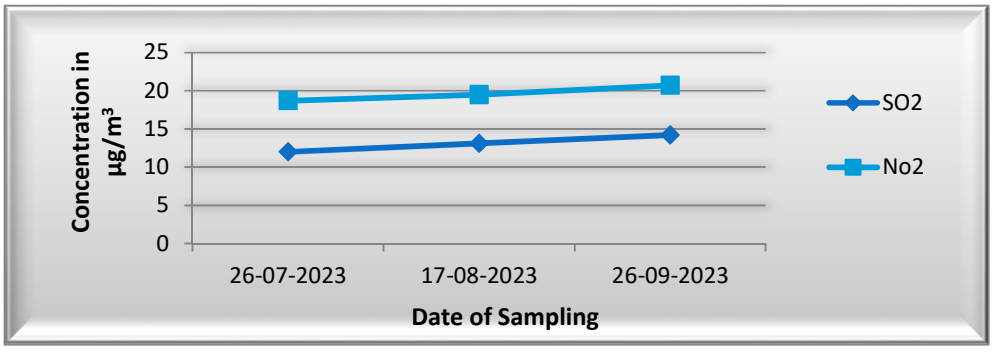
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
26-07-2023	**42.7**	**16.8**	**12**	**18.7**	**13.8**
17-08-2023	**48.3**	**18.5**	**13.1**	**19.5**	**14.2**
26-09-2023	**50.4**	**21.3**	**14.2**	**20.7**	**16.8**
Maximum Value	**50.4**	**21.3**	**14.2**	**20.7**	**16.8**
Minimum Value	**42.7**	**16.8**	**12**	**18.7**	**13.8**
Average Value	**47.1**	**18.9**	**13.1**	**19.6**	**14.9**
Standard Deviation	**4.0**	**2.3**	**1.1**	**1.0**	**1.6**
Permissible Limits	**100**	**60**	**80**	**80**	**100**

Units: $\mu g/m^3$

Graph 9: Particulate Matter Level Nr. Shantiniketan-1



Graph 10: SO2, NO2 Nr. Shantiniketan-1



3.1.7 Ambient Air Quality Monitoring:

The principal objective of the ambient air quality was to assess the existing levels of air pollution as well as the regional background concentration in the plant area. Air pollution forms critical factor to study the environmental issues in the study areas. Ambient Air Quality Monitoring has been carried out of 12 parameters at 05 Locations near surrounding villages within a 05 KM radius of the plant as per CEA guidelines.

Locations ⇨			Siracha	Kandagara	Wandh	Nr.20 MLD Plant	Nr. Shantiniketan - 1
Date ⇨			14/07/23	14/07/23	14/07/23	26/07/23	14/07/23
Sr. No.	Parameter	Unit	Results				
1	Particulate Matter as PM_{10}	$\mu g/m^3$	44.6	51.5	62.5	48.9	42.7
2	Particulate Matter as $PM_{2.5}$	$\mu g/m^3$	19.8	18.3	31.4	21.2	16.8
3	Sulphur Dioxide as SO_2	$\mu g/m^3$	13.5	11.8	14.3	13.8	12.0
4	Nitrogen Dioxide as NO_2	$\mu g/m^3$	14.8	15.7	19.2	20.8	18.7
5	Carbon Monoxide as CO	mg/m^3	1.22	1.19	1.24	1.20	1.17
6	Ozone as O_3	$\mu g/M^3$	16.8	15.4	19.7	15.2	13.8
7	Ammonia as NH_3	$\mu g/m^3$	<5.0	<5.0	<5.0	<5.0	<5.0
8	Lead as Pb	$\mu g/m^3$	<0.50	<0.50	<0.50	<0.50	<0.50
9	Nickel as Ni	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
10	Arsenic as As	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
11	Benzene as C_6H_6	$\mu g/m^3$	<1.0	<1.0	<1.0	<1.0	<1.0
12	Benzo (a) Pyrene (BaP)	ng/m^3	<0.1	<0.1	<0.1	<0.1	<0.1
13	Mercury	$\mu g/m^3$	<0.1	<0.1	<0.1	<0.1	<0.1
Note: **BDL: Below Detection Limit:1) Hg: 0.001 $\mu g/M^3$, 2) Ozone: 5.0 $\mu g/M^3$**							

Locations ⇨			Siracha	Kandagara	Wandh	Nr.20 MLD Plant	Nr. Shantiniketan - 1
Date ⇨			15/08/23	15/08/23	15/08/23	17/08/23	17/08/23
Sr. No.	Parameter	Unit	Results				
1	Particulate Matter as PM_{10}	$\mu g/m^3$	54.2	51.9	48.8	51.4	48.3
2	Particulate Matter as $PM_{2.5}$	$\mu g/m^3$	24.3	30.5	21.8	23.4	18.5
3	Sulphur Dioxide as SO_2	$\mu g/m^3$	12.1	14.7	14.1	15.4	13.1
4	Nitrogen Dioxide as NO_2	$\mu g/m^3$	15.2	20.3	17.0	21.3	19.5
5	Carbon Monoxide as CO	mg/m^3	1.16	1.23	1.29	1.22	1.19
6	Ozone as O_3	$\mu g/M^3$	15.2	17.8	22.7	16.3	14.2
7	Ammonia as NH_3	$\mu g/m^3$	<5.0	<5.0	<5.0	<5.0	<5.0
8	Lead as Pb	$\mu g/m^3$	<0.50	<0.50	<0.50	<0.50	<0.50
9	Nickel as Ni	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
10	Arsenic as As	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
11	Benzene as C_6H_6	$\mu g/m^3$	<1.0	<1.0	<1.0	<1.0	<1.0
12	Benzo (a) Pyrene (BaP)	ng/m^3	<0.1	<0.1	<0.1	<0.1	<0.1
13	Mercury	$\mu g/m^3$	<0.1	<0.1	<0.1	<0.1	<0.1
Note: **BDL: Below Detection Limit:1) Hg: 0.001 $\mu g/M^3$, 2) Ozone: 5.0 $\mu g/M^3$**							

Locations ⇨			Siracha	Kandagara	Wandh	Nr.20 MLD Plant	Nr. Shantiniketan - 1
Date ⇨			15/09/23	15/09/23	15/09/23	26/09/23	26/09/23
Sr. No.	Parameter	Unit	Results				
1	Particulate Matter as PM_{10}	$\mu g/m^3$	47.8	50.3	64.3	54.8	50.4
2	Particulate Matter as $PM_{2.5}$	$\mu g/m^3$	22.9	27.3	37.4	25.7	21.3
3	Sulphur Dioxide as SO_2	$\mu g/m^3$	13.4	15.4	18.5	16.8	14.2
4	Nitrogen Dioxide as NO_2	$\mu g/m^3$	17.3	23.0	23.8	22.4	20.7
5	Carbon Monoxide as CO	mg/m^3	1.19	1.25	1.32	1.26	1.23
6	Ozone as O_3	$\mu g/M^3$	18.6	19.2	25.9	19.2	16.8
7	Ammonia as NH_3	$\mu g/m^3$	<5.0	<5.0	<5.0	<5.0	<5.0
8	Lead as Pb	$\mu g/m^3$	<0.50	<0.50	<0.50	<0.50	<0.50
9	Nickel as Ni	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
10	Arsenic as As	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
11	Benzene as C_6H_6	$\mu g/m^3$	<1.0	<1.0	<1.0	<1.0	<1.0
12	Benzo (a) Pyrene (BaP)	ng/m^3	<0.1	<0.1	<0.1	<0.1	<0.1
13	Mercury	$\mu g/m^3$	<0.1	<0.1	<0.1	<0.1	<0.1

3.2 Flue Gas Monitoring Data

Stack Emission monitoring procedure includes tasks of Measurement, testing, sampling and analysis. Stack Emission testing is the process of evaluation of those gases and their degree of presence in atmosphere from industries to meet environmental standards.

Date	Location	PM in mg/Nm^3	SO_2 in mg/Nm^3	NO_x in mg/Nm^3	Mercury	Stack Velocity
18-08-2023	Boiler (Unit - 1)	34.9	552.8	27.3	BDL	22.2
04-09-2023	Boiler (Unit - 1)	32.3	572.3	272.4	BDL	22.4
18-08-2023	Boiler (Unit - 2)	30.5	535.6	256.7	BDL	23
04-09-2023	Boiler (Unit - 2)	31.5	545.7	244.7	BDL	22.6
17-08-2023	Boiler (Unit - 3)	32.8	528.9	234.8	BDL	23.3
05-09-2023	Boiler (Unit - 3)	33.4	556.3	256.9	BDL	23.4
17-08-2023	Boiler (Unit - 4)	34.3	517.4	228.1	BDL	23.5
05-09-2023	Boiler (Unit - 4)	35.1	557.8	261.4	BDL	23.5
17-08-2023	Boiler (Unit - 5)	35.1	508.7	262.4	BDL	23.2
11-09-2023	Boiler (Unit - 5)	40.4	476.4	264.8	BDL	23.2
17-08-2023	Boiler (Unit - 6)	38.9	423.2	284.9	BDL	23.8
11-09-2023	Boiler (Unit -6)	33.7	448.9	292.3	BDL	23.3
12-07-2023	Boiler (Unit - 7)	30.6	179.2	234.2	BDL	23.6
08-08-2023	Boiler (Unit - 7)	33.5	182.6	263.4	BDL	23.4
26-09-2023	Boiler (Unit - 7)	29.3	186.5	284.4	BDL	24.1
12-07-2023	Boiler (Unit - 8)	37.9	170.6	268.4	BDL	23.8
25-08-2023	Boiler (Unit - 8)	29.2	162.9	256.8	BDL	24.1
26-09-2023	Boiler (Unit -8)	31.5	162.4	286.6	BDL	23.5
12-07-2023	Boiler (Unit - 9)	35.3	151.3	223.1	BDL	24
25-08-2023	Boiler (Unit - 9)	38.1	168.7	252.3	BDL	23.7
26-09-2023	Boiler (Unit - 9)	35.4	141.9	218.7	BDL	23.7
Permissible Limits		**50**	**<500 MWH-600 >500 MWH-200**	**450**		

As per CPCB letter No B-33014/07/2017/IPC-II/TPP/15872 dated 11.12.2017, & MOEF Gazette No. CG-DL-E-05092022-238614 dated 05.09.2022 SO2 (For Unit#1 to 6) and NOx (For all units) Permissible limits will be applicable after installation of FGD by year 2026. As per MOEFCC letter CG-DL-E-22102020-222659 dt. 22.10.2020 revised NOx limit

3.3 Ground Water Quality Monitoring

Groundwater is a vital natural resource, being increasingly under pressure of climate change and human activities. The main objective of Ground Water monitoring in the study area is to monitoring ground water quality and assess the impact on groundwater by the operation activities. Ground water monitoring has been conducted at 05 locations within 10 Km Radius Villages.

3.3 Ground Water Samples **DATE: 11/08/2023**

Sr. No	Parameter	Unit	Desirable Limits	Permissible limit in the absence of alternate source	Results		
					Tunda	**Kandagra**	**Siracha**
1	pH @ 25	--	6.5 – 8.5	6.5 – 8.5	7.90	7.86	7.80
2	Color	Pt-Co	5	15	BDL(MDL:5.0)	BDL(MDL:5.0)	BDL(MDL:5.0)
3	Odor	mg/L	Unobjectionable	Unobjectionable	Agreeable	Agreeable	Agreeable
4	Taste	mg/L	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity(NTU)	mg/L	1 NTU	5 NTU	BDL(MDL:0.1)	0.1	0.1
6	Total Hardness as $CaCO_3$	mg/L	200 mg/lit.	600 mg/lit.	108	108.9	336.6
7	Calcium as Ca	mg/L	75 mg/lit.	200 mg/lit.	21.2	20.6	55.6
8	Magnesium as Mg	mg/L	30 mg/lit.	100 mg/lit.	14.7	14	48.1
9	Total Dissolved Solids	mg/L	500 mg/lit.	2000 mg/lit.	1174	1182	1014
10	Total Alkalinity	mg/L	200 mg/lit.	600 mg/lit.	354	286	332
11	Chloride as Cl^-	mg/L	250 mg/lit.	1000 mg/lit.	402	327	312
12	Sulphate as SO_4^{-2}	mg/L	200 mg/lit.	400 mg/lit.	96.2	119.5	142.6
13	Nitrate as NO_3	mg/L	45 mg/lit.	45 mg/lit.	2.2	2.7	2.5
14	Copper as Cu	mg/L	0.05 mg/lit.	1.5 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
15	Manganese as Mn	mg/L	0.1 mg/lit.	0.3 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
16	Iron as Fe	mg/L	0.3 mg/lit.	0.3 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
17	Residual Free Chlorine	mg/L	0.2 mg/lit.	1.0 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
18	Fluoride as F	mg/L	1.0 mg/lit.	1.5 mg/lit.	0.48	0.29	0.47
19	Zinc as Zn	mg/L	5 mg/lit.	15 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
20	Phenolic Compound	mg/L	0.001 mg/lit.	0.002 mg/lit.	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)
21	Mercury as Hg	mg/L	0.001 mg/lit.	0.001 mg/lit.	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)
22	Cadmium as Cd	mg/L	0.003 mg/lit.	0.003 mg/lit.	BDL(MDL:0.003)	BDL(MDL:0.003)	BDL(MDL:0.003)

23	Selenium as Se	mg/L	0.01 mg/lit.	0.01 mg/lit.	N.D.	N.D.	N.D.
24	Arsenic as as	mg/L	0.01 mg/lit.	0.05 mg/lit.	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
25	Cyanide as CN	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
26	Lead as Pb	mg/L	0.01 mg/lit.	0.01 mg/lit.	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
27	Anionic Detergent	mg/L	0.2 mg/lit.	1.0 mg/lit.	N.D.	N.D.	N.D.
28	Hexavalent Chromium	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
29	Mineral Oil	mg/L	0.5 mg/lit.	0.5 mg/lit.	N.D.	N.D.	N.D.
30	Aluminum as Al	mg/L	0.03 mg/lit.	0.2 mg/lit.	BDL(MDL:0.003)	BDL(MDL:0.003)	BDL(MDL:0.003)
31	Boron as B	mg/L	0.5 mg/lit.	1 mg/lit.	BDL(MDL:0.5)	BDL(MDL:0.5)	BDL(MDL:0.5)
32	Total Chromium as Cr	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
33	Total Coliform	(CFU/ 100 ml)	Absent	Absent	Absent	Absent	Absent
34	E. coli	(CFU/ 100 ml)	Absent	Absent	Absent	Absent	Absent
35	Total Bacterial Count	(CFU/ ml)	100 CFU/ml	100 CFU/ml	18	24	30
Note: BDL= Below Detection Limit. N.D. = Not Detected							

Continue….

Sr. No	Parameter	Unit	Desirable Limits	Permissible limit in the absence of alternate source	Results	
					Navinal	**Desalpur**
1	pH @ 25	--	6.5 – 8.5	6.5 – 8.5	7.80	7.80
2	Color	Pt-Co	5	15	BDL(MDL:5.0)	BDL(MDL:5.0)
3	Odor	mg/L	Unobjectionable	Unobjectionable	Agreeable	Agreeable
4	Taste	mg/L	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity(NTU)	mg/L	1 NTU	5 NTU	0.1	BDL(MDL:0.1)
6	Total Hardness as $CaCO_3$	mg/L	200 mg/lit.	600 mg/lit.	159.2	154.3
7	Calcium as Ca	mg/L	75 mg/lit.	200 mg/lit.	35.2	32.3
8	Magnesium as Mg	mg/L	30 mg/lit.	100 mg/lit.	16.4	22.4
9	Total Dissolved Solids	mg/L	500 mg/lit.	2000 mg/lit.	1098	1128
10	Total Alkalinity	mg/L	200 mg/lit.	600 mg/lit.	232.2	315.2
11	Chloride as Cl^-	mg/L	250 mg/lit.	1000 mg/lit.	343.1	351
12	Sulphate as SO_4^{-2}	mg/L	200 mg/lit.	400 mg/lit.	112.2	94.2
13	Nitrate as NO_3	mg/L	45 mg/lit.	45 mg/lit.	1.9	2.7
14	Copper as Cu	mg/L	0.05 mg/lit.	1.5 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)

15	Manganese as Mn	mg/L	0.1 mg/lit.	0.3 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)
16	Iron as Fe	mg/L	0.3 mg/lit.	0.3 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)
17	Residual Free Chlorine	mg/L	0.2 mg/lit.	1.0 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)
18	Fluoride as F	mg/L	1.0 mg/lit.	1.5 mg/lit.	0.51	0.44
19	Zinc as Zn	mg/L	5 mg/lit.	15 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)
20	Phenolic Compound	mg/L	0.001 mg/lit.	0.002 mg/lit.	BDL(MDL:0.001)	BDL(MDL:0.001)
21	Mercury as Hg	mg/L	0.001 mg/lit.	0.001 mg/lit.	BDL(MDL:0.001)	BDL(MDL:0.001)
22	Cadmium as Cd	mg/L	0.003 mg/lit.	0.003 mg/lit.	BDL(MDL:0.003)	BDL(MDL:0.003)
23	Selenium as Se	mg/L	0.01 mg/lit.	0.01 mg/lit.	N.D.	N.D.
24	Arsenic as as	mg/L	0.01 mg/lit.	0.05 mg/lit.	BDL(MDL:0.01)	BDL(MDL:0.01)
25	Cyanide as CN	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)
26	Lead as Pb	mg/L	0.01 mg/lit.	0.01 mg/lit.	BDL(MDL:0.01)	BDL(MDL:0.01)
27	Anionic Detergent	mg/L	0.2 mg/lit.	1.0 mg/lit.	N.D.	N.D.
28	Hexavalent Chromium	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)
29	Mineral Oil	mg/L	0.5 mg/lit.	0.5 mg/lit.	N.D.	N.D.
30	Aluminum as Al	mg/L	0.03 mg/lit.	0.2 mg/lit.	BDL(MDL:0.003)	BDL(MDL:0.003)
31	Boron as B	mg/L	0.5 mg/lit.	1 mg/lit.	BDL(MDL:0.5)	BDL(MDL:0.5)
32	Total Chromium as Cr	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)
33	Total Coliform	(CFU/ 100 ml)	Absent	Absent	Absent	Absent
34	E. coli	(CFU/ 100 ml)	Absent	Absent	Absent	Absent
35	Total Bacterial Count	(CFU/ ml)	100 CFU/ml	100 CFU/ml	28	16
Note: BDL= Below Detection Limit. N.D. = Not Detected						

3.4 Water Quality Monitoring – Plant area

Water quality monitoring is being monitored for impact study. Defined here as the sampling and analysis of water constituents and conditions. Constituents found naturally in water that can nevertheless be affected by human sources, such as dissolved oxygen, bacteria, and nutrients

3.4.1 Location: Outfall Channel

Sr. No.	Parameter	Unit	Date of sampling		
			11/07/2023	**11/08/2023**	**23/09/2023**
1	pH @ 25	--	7.92	7.87	7.82
2	Temperature	^{0}C (Intake)	28	29.5	30.5
		^{0}C (Outfall)	31.0	32.5	34.0
		^{0}C (Differential)	3.0	3.0	3.5
3	Color	Pt. CO. Scale	10	10	10
4	Total Suspended Solids	mg/L	16	36	32
5	Oil & Grease	mg/L	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)

6	Ammonical Nitrogen	mg/L	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)
7	Sulphide as S-2	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
8	Total Chromium	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
9	Hexavalent Chromium as Cr+6	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
10	Phosphate as PO_4	mg/L	0.15	0.17	0.15
11	Lead as Pb	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
12	Copper as Cu	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
13	Zinc as Zn	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
14	Iron (as Fe)	mg/L	0.114	0.122	0.118
15	Chemical Oxygen Demand(COD)	mg/L	36.1	39.5	40
16	Biochemical Oxygen Demand (BOD)	mg/L	9	13	13

3.4.2 Location: STP Outlet Water Sample;

Sr. No.	Parameter	Unit	SPCB Limit	Date of sampling		
				11/07/2023	**11/08/2023**	**23/09/2023**
1	pH @ 25 ° C	--	**6.5-8.5**	7.39	7.28	7.16
2	Total Suspended Solids	mg/L	**30**	16	12	14
3	Residual Chlorine	mg/L	**0.5 Min.**	0.76	0.65	0.74
4	Biochemical Oxygen Demand (BOD)	mg/L	**20**	15	13	16
5	Fecal Coliform	CFU/100ml	**<1000**	52	32	40

3.4.3 Location: ETP Outlet Water Sample;

S.N	Parameter	Unit	SPCB Limit	Date of sampling		
				11/07/2023	**11/08/2023**	**23/09/2023**
1	pH @ 25	--	**6.5 – 8.5**	7.13	7.22	7.09
2	Temperature	° C	**40 Max.**	28	29	29.8
3	Color	Pt. CO. Scale	**100 Max.**	10	10	10
4	Total Suspended Solids	mg/L	**100 Max.**	22	12	16
5	Oil & Grease	mg/L	**10 Max.**	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)
6	Chemical Oxygen Demand (COD)	mg/L	**100 Max.**	16.0	12.1	8.0
7	Biochemical Oxygen Demand (BOD)	mg/L	**30 Max.**	4	3	2
8	Chloride as Cl^-	mg/L	**600 Max.**	374.0	382.2	394.3
9	Total Dissolved Solids	mg/L	**2100 Max.**	1790	1556	1580
10	Sulphate as SO_4	mg/L	**1000 Max.**	52.1	58.4	61.5
11	Ammonical Nitrogen	mg/L	**50 Max.**	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)
12	% Sodium(Na)	mg/L	**60 Max.**	34.0	31.8	32.5
13	Sodium Absorption Ratio(SAR)	mg/L	**26 Max.**	1.0	1.0	1.0

14	Sulphide as S^{-2}	mg/L	**02 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
15	Total Chromium	mg/L	**02 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
16	Hexavalent Chromium as Cr+6	mg/L	**0.1 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
17	Phosphate as PO_4	mg/L	**5.0 Max.**	52.1	0.22	0.25
18	Copper as Cu	mg/L	**03 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
19	Lead as Pb	mg/L	**0.1 Max.**	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
20	Zinc as Zn	mg/L	**05 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
21	Residual Free Chlorine	mg/L	**0.5 Max.**	BDL(MDL:0.2)	BDL(MDL:0.2)	BDL(MDL:0.2)
22	Iron (as Fe)	mg/L	**1.0 Max.**	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)

Note: N.D. = Not Detected, **MDL** = Minimum Detection Limit

3.4.4 Location: Bore-well – 1 to 4 (Nr. Emergency Ash Pond) **Date: 26/09/2023**

Bore well Water Testing is the analysis of the water quality for domestic consumption or industrial use against set parameters for your safety. Bore well Water test is done, as it is groundwater, which has a higher chance of being polluted with mud, metals and such elements.

Sr.No.	Parameter	Unit	Results			
			Borewell-1	**Borewell-2**	**Borewell-3**	**Borewell-4**
1	pH @ 25 ° C	-	8.52	8.21	8.31	8.02
2	Conductivity (µS)	-	12112	11230	26510	14110
3	Total Dissolved Solids	mg/L	7874	6984	18542	9510
4	Chloride as Cl^-	mg/L	3012.5	2812	9874.2	4623.4
5	Carbonate as CaCO3	mg/L	48.2	26.2	42.4	11.2
6	Bicarbonate as CaCO3	mg/L	189.4	174.2	294.2	114.3
7	Total Alkalinity	mg/L	232.4	212.4	252.4	87.1
8	Calcium as Ca	mg/L	71.7	61.2	704.2	147.8
9	Magnesium as Mg	mg/L	92.4	81.6	1154	304.2
10	Sodium as Na	mg/L	667.3	632.4	1604.3	904.1
11	Potassium as K	mg/L	60.2	48.4	142.5	123
12	Sulphate as SO4-2	mg/L	789.2	704	1882.1	735.2
13	Nitrate as NO3	mg/L	1.7	1.1	4.3	0.62
14	Phosphate as PO_4	mg/L	0.22	0.16	0.23	BDL(MDL:0.1)
15	Fluoride as F	mg/L	1.38	1.12	1.19	1.32
16	Mercury as Hg	mg/L	BDL(MDL:0.001)	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
17	Arsenic as As	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
18	Lead as Pb	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
19	Chromium as Cr	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.005)	BDL(MDL:0.005)
20	Cadmium as Cd	mg/L	0.048	0.033	0.171	0.059
21	Iron (as Fe)	mg/L	BDL(MDL:0.1)	0.216	0.259	0.137

22	Zinc (as Zn)	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	0.062	BDL(MDL:0.05)
23	Cobalt as Co	mg/L	0.06	BDL(MDL:0.5)	BDL(MDL:0.5)	BDL(MDL:0.5)
24	Copper as Cu	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
25	Manganese as Mn	mg/L	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
26	Nickel as Ni	mg/L	0.061	0.054	0.191	0.140
27	Salinity	ppt	5.44	5.08	17.84	8.35
28	Barium as Ba	mg/L	N.D.	N.D.	N.D.	N.D.
29	Ground Water Table (BGL)	Mtr.	2.2	1.7	2.6	2.4

Note: N.D. = Not Detected, **MDL** = Minimum Detection Limit

3.4.5 Location: Cooling Tower Blow down Water Sample

	Parameter	Unit	Limit	Results			
				Unit-1	**Unit-2**	**Unit-3**	**Unit-4**
	Date of Sampling			**19/08/2023**	**19/08/2023**	**11/08/2023**	**11/08/2023**
1	pH @ 25 ° C	--	-	7.58	7.51	7.56	7.41
2	Free available Chlorine	° C	Min.0.5	0.65	0.60	0.70	0.80
3	Zinc as Zn	Pt. CO. Scale	1.0	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
4	Hexavalent Chromium as Cr+6	mg/L	0.1	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
5	Total Chromium as Cr	mg/L	0.2	0.068	0.053	0.054	0.074
6	Phosphate as P	mg/L	5.0	0.52	0.34	0.39	0.65

	Parameter	Unit	Limit	Results			
				Unit-5	**Unit-6**	**Unit-8**	**Unit-9**
	Date of Sampling			**19/08/2023**	**11/08/2023**	**11/08/2023**	**11/08/2023**
1	pH @ 25 ° C	--	-	7.50	7.53	7.44	7.85
2	Free available Chlorine	° C	Min.0.5	0.71	0.90	0.60	1.1
3	Zinc as Zn	Pt. CO. Scale	1.0	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
4	Hexavalent Chromium as Cr+6	mg/L	0.1	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
5	Total Chromium as Cr	mg/L	0.2	0.059	0.080	0.061	0.059
6	Phosphate as P	mg/L	5.0	0.38	0.41	0.66	0.38

3.4.6 Location: Condensate Cooling Tower Water Sample

S.No.	Parameter	Unit	Limit	Results			
				Unit-1	Unit-2	Unit-3	Unit-4
Date of Sampling			→	**19/08/2023**	**19/08/2023**	**11/08/2023**	**11/08/2023**
1	pH @ 25 ° C	--	**6.5 to 8.5**	7.65	7.74	7.71	7.57
2	Temperature °C (Inlet)	^{0}C	--	29.0	29.0	29.0	29
	Temperature °C (Outlet)	^{0}C	--	31.0	32.0	31.5	31.0
	Temperature °C (Differential)	^{0}C	**7**	2.0	3.0	2.5	2.0
3	Free available Chlorine	mg/L	**Min 0.5**	0.60	0.80	0.81	0.70

S.No.	Parameter	Unit	Limit	Results			
				Unit-5	Unit-6	Unit-8	Unit-9
Date of Sampling			→	**19/08/2023**	**11/08/2023**	**11/08/2023**	**11/08/2023**
1	pH @ 25 ° C	--	**6.5 to 8.5**	7.66	7.69	7.74	7.61
2	Temperature °C (Inlet)	^{0}C	--	29.0	29.0	29.0	29.0
	Temperature °C (Outlet)	^{0}C	--	32.0	31.5	31.5	31.0
	Temperature °C (Differential)	^{0}C	**7**	3.0	2.5	2.5	2
3	Free available Chlorine	mg/L	**Min 0.5**	0.85	0.65	0.70	0.75

4 AMBIENT NOISE LEVEL MONITORING

The main objective of noise monitoring in the study area is to establish the baseline noise levels and assess the impact of the total noise generated by the operation activities around it. Noise monitoring has been conducted at 10 locations within the periphery of industry premises.

Date of Monitoring: 14-15.07.2023

Sr. No.	Location	Noise Level dB(A)			
		Sampling Time	Day Time dB(A) 06 am - 10 pm	Sampling Time	Night Time dB(A) 10 pm - 06 am
			Limit 75 dB(A)		Limit 70 dB(A)
1.	Nr. LDO Pump House	10:30 am - 12:10 pm	59.0	22:35 pm - 00:20 am	57.1
2.	Nr. 20 MLD Plant		58.3		54.2
3.	Nr. Pump House		56.3		53.9
4.	Nr. Coal Handling plant		61.9		54.1
5.	Nr. Gate No.4		50.2		45.8
6.	Nr. Integrated Ash Silo		61.4		52.1
7.	Nr. Main Gate		52.9		47.2
8.	Nr. APCH Building		49.4		48.9
9.	Nr. Shantiniketan-I		49.5		44.7
10.	Nr. OHC Building		49.8		46.5

Remark: Calibrated instruments were used during monitoring of above identified sample.

Date of Monitoring: 17-18.08.2023

Sr. No.	Location	Noise Level dB(A)			
		Sampling Time	Day Time dB(A) 06 am - 10 pm	Sampling Time	Night Time dB(A) 10 pm - 06 am
			Limit 75 dB(A)		Limit 70 dB(A)
1.	Nr. LDO Pump House	10:40 am - 12:25 pm	57.9	22:30 pm - 00:30 am	53.0
2.	Nr. 20 MLD Plant		59.2		52.3
3.	Nr. Pump House		56.4		50.2
4.	Nr. Coal Handling plant		61.1		55.6
5.	Nr. Gate No.4		51.4		45.5
6.	Nr. Integrated Ash Silo		57.9		54.0
7.	Nr. Main Gate		52.0		49.5
8.	Nr. APCH Building		50.6		47.9
9.	Nr. Shantiniketan-I		50.3		48.4
10.	Nr. OHC Building		53.3		45.2

Remark: Calibrated instruments were used during monitoring of above identified sample.

Date of Monitoring: 09-10.09.2023

Sr. No.	Location	Noise Level dB(A)			
		Sampling Time	Day Time dB(A) 06 am - 10 pm	Sampling Time	Night Time dB(A) 10 pm - 06 am
			Limit 75 dB(A)		Limit 70 dB(A)
1.	Nr. LDO Pump House	10:20 am - 13:15 pm	61.9	22:10 pm - 01:30 am	56.3
2.	Nr. 20 MLD Plant		67.6		61.9
3.	Nr. Pump House		58.7		58.0
4.	Nr. Coal Handling plant		65.8		60.2
5.	Nr. Gate No.4		57.3		50.0
6.	Nr. Integrated Ash Silo		62.3		59.2
7.	Nr. Main Gate		58.1		52.6
8.	Nr. APCH Building		50.6		47.7
9.	Nr. Shantiniketan-I		54.7		48.9
10.	Nr. OHC Building		55.3		49.9

Remark: Calibrated instruments were used during monitoring of above identified sample.

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Adani Power Limited, Mundra

Continues Emission Monitoring System Reports (Apr' 2023 TO Sep'2023)

	Unit 1			Unit 2			Unit 3		
Date	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm^3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)
1-Apr-23									
2-Apr-23									
3-Apr-23									
4-Apr-23									
5-Apr-23									
6-Apr-23									
7-Apr-23									
8-Apr-23									
9-Apr-23									
10-Apr-23									
11-Apr-23									
12-Apr-23									
13-Apr-23	22.9	544.3	160.8						
14-Apr-23	30.8	539.3	232.9	30.8	498.4	206.9			
15-Apr-23	29.6	538.3	232.4	30.5	517.8	214.5	27.8	516.3	221.4
16-Apr-23	31.1	537.3	232.2	31.2	520.2	212.8	31.8	529.3	227.4
17-Apr-23	30.4	537.9	232.3	31.0	514.2	219.3	31.7	521.5	220.7
18-Apr-23	33.5	539.4	233.0	33.0	512.5	220.9	33.0	509.0	216.9
19-Apr-23	30.6	552.6	254.3	30.6	499.8	236.3	31.8	487.6	216.8
20-Apr-23	30.0	561.5	271.3	30.8	511.4	223.2	33.1	503.9	214.1
21-Apr-23	28.7	551.8	259.5	29.3	524.8	208.3	31.9	505.6	223.0
23-Apr-23	30.3	546.7	253.2	22.6	521.1	212.7	28.5		
23-Apr-23									
24-Apr-23									
25-Apr-23									
26-Apr-23									
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28-Apr-23									
29-Apr-23									
30-Apr-23									
1-May-23									
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7-May-23									
8-May-23									
9-May-23									
10-May-23									
11-May-23	29.8	189.4	179.0						
12-May-23	28.7	556.8	242.9						
13-May-23									
14-May-23									
15-May-23									
16-May-23									
17-May-23									
18-May-23									
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30-May-23									
31-May-23									

Note : Blank coloum -Unit is in shutdown

Adani Power Limited, Mundra

Continues Emission Monitoring System Reports (Apr' 2023 TO Sep'2023)

	Unit 1			Unit 2			Unit 3		
Date	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm^3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)
1-Jun-23									
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29-Jul-23									
30-Jul-23									
31-Jul-23									

Adani Power Limited, Mundra

Continues Emission Monitoring System Reports (Apr' 2023 TO Sep'2023)

	Unit 1			Unit 2			Unit 3		
Date	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm^3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)
1-Aug-23									
2-Aug-23									
3-Aug-23									
4-Aug-23									
5-Aug-23									
6-Aug-23									
7-Aug-23									
8-Aug-23									
9-Aug-23									
10-Aug-23									
11-Aug-23							23.1	475.4	171.9
12-Aug-23							25.0	507.1	210.3
13-Aug-23									
14-Aug-23									
15-Aug-23									
16-Aug-23	25.6	450.0	224.8	27.5	521.5	234.7	28.8	427.7	163.4
17-Aug-23	31.5	539.6	220.5	29.8	519.3	220.6	31.1	506.8	213.1
18-Aug-23	32.8	546.4	249.1	29.0	517.8	238.6	31.6	501.1	229.9
19-Aug-23	35.1	536.0	237.8	30.5	518.9	236.9	35.5	485.5	218.4
20-Aug-23	31.1	527.1	232.1	27.5	521.5	234.7	29.5	497.6	230.2
21-Aug-23	33.7	518.3	214.7	30.4	520.4	236.2	34.0	504.6	227.1
23-Aug-23	35.1	520.0	221.0	31.3	517.8	235.1	35.3	509.7	233.4
23-Aug-23	29.9	531.1	244.2	27.0	516.6	236.2	28.7	501.1	230.3
24-Aug-23	29.3	540.6	248.3	25.3	463.4	184.5	26.6	498.1	242.6
25-Aug-23									
26-Aug-23									
27-Aug-23									
28-Aug-23	28.6	490.0	224.8	27.7	471.6	211.6			
29-Aug-23	29.3	540.6	248.3	28.0	524.6	231.2			
30-Aug-23	31.5	535.6	248.9	29.2	524.9	233.1			
31-Aug-23	35.2	542.9	252.0	30.5	522.9	229.5	23.4	516.6	247.8
1-Sep-23	37.5	562.2	263.2	32.4	524.0	232.9	35.7	532.7	250.3
2-Sep-23	38.6	573.7	273.4	33.1	524.0	233.8	37.3	541.6	254.1
3-Sep-23	29.3	577.0	274.5	28.1	523.0	230.2	25.2	515.2	230.5
4-Sep-23	30.6	561.0	259.7	28.7	529.6	228.5	30.2	527.5	234.9
5-Sep-23	31.2	549.5	248.6	29.3	522.4	233.2	31.3	529.9	244.1
6-Sep-23	29.9	548.2	248.0	28.5	515.0	237.1	28.2	584.3	270.1
7-Sep-23	29.4	550.9	250.7	28.0	524.7	234.2	30.6	488.0	210.8
8-Sep-23	29.4	550.1	249.9	28.0	524.6	230.9	30.6	506.3	217.6
9-Sep-23	29.3	543.9	242.6	27.7	523.7	230.7	30.0	509.9	216.4
10-Sep-23	29.5	548.1	249.7	28.0	525.2	232.1	31.7	509.8	218.1
11-Sep-23	30.2	548.6	248.5	28.7	523.9	229.5	31.6	508.5	224.5
12-Sep-23	35.1	546.0	248.6	31.3	522.1	232.9	35.5	505.0	215.7
13-Sep-23	38.5	549.4	250.4	32.8	524.4	233.8	37.1	518.0	232.5
14-Sep-23	39.5	546.9	245.0	33.4	523.1	229.2	37.4	509.7	229.5
15-Sep-23	33.5	550.9	251.0	30.2	523.1	232.6	34.5	500.1	232.2
16-Sep-23	30.0	547.9	250.2	27.5	523.4	232.8	30.0	516.1	231.9
17-Sep-23	29.6	546.5	249.1	27.6	521.4	230.8	30.8	505.6	223.1
18-Sep-23	29.5	544.3	250.7	28.4	526.3	231.1	31.7	508.1	231.0
19-Sep-23	30.7	541.8	246.5	29.1	524.2	232.5	32.1	509.0	231.6
20-Sep-23	31.6	542.8	249.4	29.9	524.1	228.6	31.4	508.0	229.7
21-Sep-23	32.7	561.6	268.0	29.5	521.4	235.7	32.3	508.9	224.1
23-Sep-23	31.3	551.8	254.0	29.0	522.2	233.3	30.5	507.4	219.2
23-Sep-23	31.1	522.8	231.3	29.1	522.2	231.4	31.0	527.2	237.6
24-Sep-23	28.7	526.7	240.8	27.9	524.5	233.6	29.6	520.6	234.1
25-Sep-23	31.1	529.9	240.6	28.9	520.4	234.4	31.3	525.2	232.8
26-Sep-23	31.8	537.8	241.0	30.0	523.5	231.3	34.5	515.3	231.0
27-Sep-23	33.9	550.9	245.5	30.3	523.3	235.8	34.3	509.3	222.6
28-Sep-23	30.4	558.9	247.8	28.7	522.3	231.6	33.7	524.2	230.0
29-Sep-23	33.3	566.0	258.4	30.6	522.0	231.9	34.1	524.1	231.7
30-Sep-23	32.5	552.7	249.0	30.4	522.9	235.3	33.8	526.2	233.2

Note : Blank coloum -Unit is in shutdown

Adani Power Limited, Mundra

Continues Emission Monitoring System Reports (Apr' 2023 TO Sep'2023)

	Unit 4			Unit 5			Unit 6		
Date	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)
1-Apr-23									
2-Apr-23									
3-Apr-23									
4-Apr-23									
5-Apr-23									
6-Apr-23									
7-Apr-23									
8-Apr-23									
9-Apr-23									
10-Apr-23							23.8	203.4	184.8
11-Apr-23							34.5	299.0	280.0
12-Apr-23				14.7	147.9	90.2	34.2	289.3	270.5
13-Apr-23				34.2	431.3	248.7			
14-Apr-23				32.2	416.9	245.2			
15-Apr-23	30.1	485.9	207.6	32.4	417.8	240.3			
16-Apr-23	32.9	523.6	234.0	32.4	416.4	246.9			
17-Apr-23	31.6	487.2	209.3	32.0	408.2	245.3			
18-Apr-23	32.5	484.3	209.2	33.6	421.7	239.7			
19-Apr-23	29.7	488.0	207.6	31.6	409.2	241.4			
20-Apr-23	30.8	482.3	207.5	32.3	400.7	238.7	35.3	301.8	271.4
21-Apr-23	30.3	487.1	209.7	31.5	435.7	249.1	34.7	351.9	280.4
23-Apr-23				30.9	457.9	241.6	33.8	394.4	276.2
23-Apr-23				31.9	456.7	245.9	33.4	401.7	277.6
24-Apr-23							35.1	386.8	277.7
25-Apr-23									
26-Apr-23									
27-Apr-23									
28-Apr-23									
29-Apr-23									
30-Apr-23									
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4-May-23									
5-May-23									
6-May-23									
7-May-23									
8-May-23							25.5	352.8	219.2
9-May-23				23.0	445.9	177.1	35.9	404.3	275.0
10-May-23				31.5	465.8	243.4	35.4	400.8	279.6
11-May-23				30.4	446.0	258.3	34.3	384.0	283.2
12-May-23				30.8	463.1	242.2	34.8	383.5	287.0
13-May-23							26.4	323.9	221.9
14-May-23							35.5	395.8	283.5
15-May-23							33.0	333.4	254.2
16-May-23									
17-May-23									
18-May-23									
19-May-23									
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31-May-23									

Note : Blank coloum -Unit is in shutdown

Adani Power Limited, Mundra

Continues Emission Monitoring System Reports (Apr' 2023 TO Sep'2023)

	Unit 4			Unit 5			Unit 6		
Date	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)
1-Jun-23									
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Adani Power Limited, Mundra

Continues Emission Monitoring System Reports (Apr' 2023 TO Sep'2023)

	Unit 4			Unit 5			Unit 6		
Date	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)
1-Aug-23									
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3-Aug-23									
4-Aug-23									
5-Aug-23									
6-Aug-23									
7-Aug-23									
8-Aug-23									
9-Aug-23									
10-Aug-23							26.4	289.7	203.9
11-Aug-23	32.6	499.6	229.7				35.0	317.4	275.5
12-Aug-23	26.4	424.9	163.7	24.6	344.9	193.6	34.5	300.4	282.7
13-Aug-23				30.9	452.3	241.0	35.4	287.7	289.4
14-Aug-23				32.1	459.1	240.2	29.0	380.3	167.0
15-Aug-23				32.3	472.9	245.9			
16-Aug-23	27.2	351.4	133.1	32.2	478.0	245.8	24.4	309.7	205.9
17-Aug-23	32.1	493.6	203.7	32.1	470.0	247.8	35.7	311.4	277.4
18-Aug-23	32.6	499.6	229.7	32.5	465.0	251.4	35.0	313.4	277.7
19-Aug-23	34.0	503.7	228.4	33.3	466.7	250.9	35.2	317.7	277.4
20-Aug-23	30.2	496.7	222.9	32.2	463.3	251.6	35.4	313.2	275.8
21-Aug-23	32.7	494.1	234.3	32.5	474.8	245.6	35.7	307.0	272.0
23-Aug-23	33.3	497.1	237.1	33.6	473.7	245.4	35.6	316.4	277.6
23-Aug-23	29.7	512.4	231.0	31.5	472.7	246.1	34.7	405.1	278.5
24-Aug-23	27.2	351.4	133.1	31.0	463.1	250.8	34.7	432.1	272.1
25-Aug-23				32.5	461.8	251.8	35.3	429.1	277.6
26-Aug-23				31.0	466.0	248.6	35.0	428.7	275.0
27-Aug-23				30.7	400.5	225.1	32.2	424.1	269.4
28-Aug-23				30.4	381.9	221.0	33.4	407.3	275.3
29-Aug-23				31.7	421.8	232.9	34.7	405.3	270.5
30-Aug-23				33.2	467.3	251.0	36.0	426.4	276.8
31-Aug-23	21.4	419.5	152.3	35.6	469.2	248.8	38.5	426.0	278.1
1-Sep-23	34.3	535.7	250.9	35.7	463.3	253.9	38.9	431.8	276.1
2-Sep-23	35.3	530.4	256.6	36.4	480.4	245.0	35.5	425.5	287.4
3-Sep-23	27.5	515.3	223.0	36.1	481.8	242.8	37.6	432.6	279.1
4-Sep-23	29.9	523.3	232.1	34.4	465.5	251.6	36.9	423.8	283.7
5-Sep-23	31.0	524.9	242.5	40.0	467.6	248.2	40.4	426.0	279.4
6-Sep-23	27.4	518.1	235.6	39.6	466.2	251.1	35.4	419.3	269.9
7-Sep-23	28.3	505.6	221.5	37.8	445.5	260.1	30.3	434.9	276.1
8-Sep-23	28.1	530.7	235.0	35.7	474.2	245.3	30.0	418.6	277.2
9-Sep-23	30.0	520.3	232.6	35.1	458.8	252.7	32.0	405.1	285.8
10-Sep-23	28.6	528.4	228.4	35.0	468.1	249.4	31.2	421.7	280.7
11-Sep-23	28.5	514.5	228.9	35.3	465.2	245.0	29.9	420.3	281.0
12-Sep-23	32.4	510.6	222.3	31.8	459.9	256.2	28.3	432.1	279.7
13-Sep-23	34.6	525.7	234.4	31.4	463.9	254.5	29.3	436.7	275.1
14-Sep-23	35.3	518.0	222.6	32.4	469.0	251.2	27.2	436.3	277.3
15-Sep-23	31.5	525.6	233.6	32.8	467.8	252.9	28.0	430.6	280.1
16-Sep-23	27.5	526.3	228.7				27.8	426.9	273.9
17-Sep-23	28.5	516.2	230.3				31.1	424.5	278.4
18-Sep-23	28.6	521.9	237.4				30.4	426.3	280.4
19-Sep-23	28.7	536.9	231.2				29.4	416.9	279.9
20-Sep-23	28.1	535.4	235.9				32.0	417.2	280.3
21-Sep-23	29.3	512.5	223.8				30.5	410.6	285.1
23-Sep-23	28.5	524.4	231.2				31.8	421.9	280.6
23-Sep-23	30.4	529.2	228.1				30.6	419.6	279.2
24-Sep-23	27.4	524.4	222.5				30.0	417.4	280.8
25-Sep-23	29.4	523.4	228.6				29.7	425.1	279.4
26-Sep-23	30.4	520.4	228.6				28.6	414.6	285.0
27-Sep-23	30.5	509.4	214.7				28.8	422.6	280.0
28-Sep-23	30.4	520.6	223.9				31.0	422.9	280.6
29-Sep-23	31.8	519.8	237.2				28.0	421.2	283.2
30-Sep-23	31.0	524.0	225.2				31.2	431.4	277.8

Note : Blank coloum -Unit is in shutdown

Adani Power Limited, Mundra

Continues Emission Monitoring System Reports (Apr' 2023 TO Sep'2023)

	Unit 7			Unit 8			Unit 9		
Date	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)
1-Apr-23				32.1	139.2	227.0	27.0	152.0	300.4
2-Apr-23				31.4	154.2	254.6	26.0	151.1	298.8
3-Apr-23				35.0	153.8	256.0	28.8	139.1	286.9
4-Apr-23				35.3	152.7	258.0	29.3	140.9	290.2
5-Apr-23				35.7	154.0	259.8	29.9	147.7	302.2
6-Apr-23				35.2	155.3	253.9	30.8	149.7	309.2
7-Apr-23				35.3	154.9	253.7	34.5	155.1	329.1
8-Apr-23	27.9	163.5	221.4	33.9	154.0	254.7	33.4	158.7	334.3
9-Apr-23	32.1	162.5	235.8	34.1	156.6	251.3	31.9	152.7	315.8
10-Apr-23	31.7	159.9	234.9	33.1	156.4	250.8	32.2	156.6	330.0
11-Apr-23	23.5	164.0	208.9	25.1	154.7	233.5	26.9	152.8	316.7
12-Apr-23				24.9	152.7	225.0	25.2	146.7	293.5
13-Apr-23				25.2	149.5	220.6	25.3	144.6	287.5
14-Apr-23				26.2	154.9	229.7	24.6	136.2	273.8
15-Apr-23				27.0	152.7	225.4	24.5	133.1	267.4
16-Apr-23				26.4	154.9	235.6	24.8	143.9	285.6
17-Apr-23				34.9	155.0	256.6	27.1	151.1	310.6
18-Apr-23				38.1	158.2	274.9	30.5	155.2	331.1
19-Apr-23				34.6	155.5	264.8	30.6	159.4	339.6
20-Apr-23	28.5	154.6	200.6	34.9	162.4	269.4	31.4	168.0	362.7
21-Apr-23	32.7	158.9	224.6	33.2	157.1	257.9	30.8	166.7	344.2
23-Apr-23	23.5	103.2	182.9	36.3	152.9	265.1	30.6	165.2	321.5
23-Apr-23				27.5	164.4	249.5	24.9	141.8	264.2
24-Apr-23				36.3	155.8	267.1	27.3	145.6	279.9
25-Apr-23				31.7	155.4	252.0	25.1	138.8	261.7
26-Apr-23	17.8	126.9	140.3	33.7	156.3	252.2	25.9	147.7	274.5
27-Apr-23	27.8	173.0	214.3	31.8	158.4	249.7	25.6	149.4	279.3
28-Apr-23	27.5	168.1	218.6	33.1	156.8	251.6	24.7	138.7	258.5
29-Apr-23	28.7	166.7	219.0	32.0	156.1	250.7	24.9	145.7	272.8
30-Apr-23	27.6	166.7	218.7	32.1	155.7	251.6	25.0	147.8	274.0
1-May-23	23.7	168.2	216.7	26.1	155.8	235.1	23.0	144.8	256.6
2-May-23	25.5	163.1	220.0	29.3	155.5	250.0	24.5	147.6	269.9
3-May-23	28.8	163.6	223.9	30.6	155.3	251.4	26.1	146.2	280.5
4-May-23	28.0	164.8	223.7	30.1	158.4	254.0	27.0	154.2	275.8
5-May-23	30.8	168.1	231.5	33.2	156.0	256.5	27.9	154.5	220.6
6-May-23	32.4	168.4	240.1	33.1	157.1	250.8	29.0	153.4	224.7
7-May-23	28.5	164.9	225.4	32.1	154.6	258.1	25.3	150.8	215.4
8-May-23	31.4	163.7	234.8	33.7	158.1	251.6	30.4	158.5	238.0
9-May-23	29.2	166.4	225.9	36.6	157.4	263.6	30.6	162.0	242.8
10-May-23	30.1	164.8	224.8	37.3	158.2	262.2	29.4	158.8	233.1
11-May-23	29.3	163.8	221.4	36.5	155.8	265.4	29.5	152.4	234.0
12-May-23	30.1	163.3	226.7	37.8	157.7	265.8	28.9	153.3	228.8
13-May-23	30.7	161.2	225.7	37.4	155.1	263.9	29.3	158.5	237.3
14-May-23	29.3	164.3	225.5	32.7	158.8	263.5	27.9	155.2	226.5
15-May-23	29.9	163.6	223.7	37.0	158.4	264.4	29.0	155.9	234.4
16-May-23	30.0	163.4	225.1	37.1	153.0	263.4	29.6	156.3	234.7
17-May-23	28.7	163.4	226.0	36.1	155.9	262.1	30.9	155.4	235.3
18-May-23	28.5	165.4	226.9	35.2	159.9	261.9	28.9	159.0	234.6
19-May-23	29.7	164.2	226.9	37.4	158.1	268.6	31.8	162.6	245.7
20-May-23	31.2	161.8	232.6	38.9	154.8	267.5	31.5	162.3	245.9
21-May-23	27.4	164.1	227.4	34.9	159.4	259.3	28.5	158.0	237.3
23-May-23	29.6	163.8	231.1	38.2	160.3	269.5	30.9	162.9	247.8
23-May-23	29.2	162.6	225.7	38.4	160.4	267.3	29.4	151.0	228.2
24-May-23	29.1	165.1	228.2	38.2	161.0	268.9	29.5	147.1	225.8
25-May-23	26.5	164.5	223.2	34.6	158.2	257.8	29.0	143.2	221.7
26-May-23	26.9	162.9	226.6	34.1	158.2	254.7	28.1	146.6	221.8
27-May-23	28.4	165.5	228.8	37.0	159.8	261.4	29.1	147.6	224.5
28-May-23	26.8	162.8	222.9	33.4	154.1	255.4	26.1	146.3	207.8
29-May-23	29.4	165.1	228.4	37.1	165.2	267.9	29.5	146.0	225.5
30-May-23	27.9	165.4	220.1	36.5	157.5	261.5	29.4	139.8	210.2
31-May-23	29.0	161.7	221.5	38.6	153.1	267.3			

Note : Blank coloum -Unit is in shutdown

Adani Power Limited, Mundra

Continues Emission Monitoring System Reports (Apr' 2023 TO Sep'2023)

	Unit 7			Unit 8			Unit 9		
Date	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)
1-Jun-23	28.5	163.0	228.0	36.9	163.2	265.7			
2-Jun-23	30.5	160.9	227.3	39.1	160.3	274.9			
3-Jun-23	31.3	164.0	229.8	40.1	165.1	280.4			
4-Jun-23	30.8	161.8	228.4	39.8	159.4	276.2			
5-Jun-23	30.4	162.7	227.0	38.8	155.9	274.5			
6-Jun-23	29.6	162.5	224.2	38.4	158.3	265.6			
7-Jun-23	31.8	161.8	232.3	41.1	160.4	277.6			
8-Jun-23	31.0	159.2	229.4	40.6	156.6	273.4			
9-Jun-23	31.2	162.1	232.5	41.1	163.1	278.5			
10-Jun-23	31.2	162.8	230.3	40.6	162.7	276.3			
11-Jun-23	28.5	165.1	225.6	35.7	157.7	260.8	25.8	151.7	170.8
12-Jun-23	30.8	163.9	225.8	41.0	161.5	278.8	32.8	139.6	200.9
13-Jun-23	30.2	163.6	225.1	38.6	159.1	271.6	33.9	138.6	208.6
14-Jun-23	29.2	162.1	224.1	36.8	155.8	259.9	33.5	134.5	193.5
15-Jun-23	28.1	162.6	221.3	36.4	150.1	260.0	34.3	143.9	206.0
16-Jun-23	13.1	114.5	112.1	26.9	103.2	118.2	33.3	139.9	199.9
17-Jun-23	22.7	149.3	194.4	N/A	61.0	25.8	35.8	149.5	219.8
18-Jun-23	26.9	163.0	227.6	23.8	63.4	33.7	34.9	141.2	205.9
19-Jun-23	27.1	163.5	231.4	28.7	153.6	244.3	35.3	145.4	212.9
20-Jun-23	28.3	164.4	234.9	26.7	150.5	244.9	34.3	147.9	214.1
21-Jun-23	28.1	165.0	235.9	31.5	156.7	250.1	33.7	145.5	211.6
23-Jun-23	29.1	167.2	243.0	33.0	160.3	246.8	34.1	139.7	208.7
23-Jun-23	29.3	171.1	242.0	33.5	159.9	247.4	33.1	140.7	203.9
24-Jun-23	29.2	166.5	239.6	34.7	155.8	251.6	34.0	152.0	217.2
25-Jun-23	24.5	165.9	229.3	30.9	157.6	247.4	32.8	139.4	199.8
26-Jun-23	25.8	167.2	231.3	32.3	155.9	248.0	32.5	150.0	210.4
27-Jun-23	30.0	169.3	239.5	34.9	155.1	251.5			
28-Jun-23	29.5	168.9	239.5	35.1	156.2	252.3			
29-Jun-23	31.7	168.0	237.9	35.6	156.3	253.1			
30-Jun-23	32.7	162.3	239.8	35.6	157.1	251.0			
1-Jul-23	31.5	169.0	240.2	35.5	156.3	253.9			
2-Jul-23	31.9	170.8	241.5	36.2	154.0	258.7			
3-Jul-23	33.6	167.1	244.4	39.1	151.9	265.4			
4-Jul-23	33.0	169.0	241.8	37.9	153.9	260.6	24.7	156.6	180.9
5-Jul-23	33.3	167.1	241.0	37.3	152.3	257.8	33.4	148.5	213.1
6-Jul-23	31.3	168.3	233.4	34.8	153.8	255.3	33.9	149.9	213.5
7-Jul-23	33.7	168.4	243.5	37.3	155.6	256.7	32.6	122.6	180.3
8-Jul-23	28.0	166.8	232.1	31.8	155.1	244.5	25.3	118.3	225.1
9-Jul-23	24.0	162.3	212.5	27.5	158.6	246.4			
10-Jul-23	31.6	159.3	230.6	37.0	153.8	257.2			
11-Jul-23	30.2	162.0	221.2	36.3	155.4	256.3	21.0	138.8	154.2
12-Jul-23	28.2	162.5	217.6	33.5	158.1	252.1	33.1	136.5	197.2
13-Jul-23	28.4	160.2	223.8	34.2	159.8	255.7	33.1	143.9	204.0
14-Jul-23	28.6	163.8	224.0	35.4	155.2	258.6	32.9	138.5	194.9
15-Jul-23	27.1	165.8	223.2	34.7	152.4	258.2	33.0	134.5	194.8
16-Jul-23	26.1	162.5	224.6	32.1	157.3	254.0	33.1	139.8	199.9
17-Jul-23	27.6	165.6	222.9	32.5	162.9	251.0	33.7	147.5	207.8
18-Jul-23	26.6	163.6	219.8	32.4	154.3	247.8	32.8	139.1	198.1
19-Jul-23	26.7	160.6	220.5	33.2	158.7	250.9	32.7	131.0	187.5
20-Jul-23	27.4	161.6	218.3	32.5	160.4	251.3	32.6	142.7	200.5
21-Jul-23	27.7	160.9	220.7	33.3	158.6	252.9	33.9	145.7	210.1
22-Jul-23	27.0	164.3	222.8	32.9	155.7	250.3	33.6	137.1	199.9
23-Jul-23	27.7	165.6	224.0	32.2	153.4	249.8	31.6	135.1	188.5
24-Jul-23	28.0	163.3	222.6	33.3	161.6	255.5	32.9	134.8	196.9
25-Jul-23	27.0	167.2	221.6	32.8	159.3	255.5	33.1	144.2	204.4
26-Jul-23	26.3	165.7	219.6	29.4	159.8	250.2	32.8	138.3	196.3
27-Jul-23	26.4	163.0	220.1	29.5	154.9	241.5	31.7	132.4	188.3
28-Jul-23	25.1	167.8	219.8	29.0	145.3	224.4	31.7	134.6	190.8
29-Jul-23	25.2	165.7	221.1	28.3	146.0	221.5	24.3	116.3	203.1
30-Jul-23	24.3	164.9	213.8	28.2	155.7	236.0			
31-Jul-23	27.8	163.8	227.9	30.8	152.2	240.2			

Adani Power Limited, Mundra

Continues Emission Monitoring System Reports (Apr' 2023 TO Sep'2023)

	Unit 7			Unit 8			Unit 9		
Date	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)
1-Aug-23	31.1	168.2	237.3	34.7	153.8	258.3			
2-Aug-23	30.7	168.2	238.5	34.7	154.9	256.7			
3-Aug-23	28.4	169.9	232.4	31.3	157.8	250.4			
4-Aug-23	30.7	167.2	236.8	34.6	156.9	251.0	26.7	116.3	194.1
5-Aug-23	33.0	175.3	251.6	35.3	155.5	253.2	32.2	149.1	212.3
6-Aug-23	28.3	171.0	236.0	31.1	157.6	247.6	31.8	152.0	213.1
7-Aug-23	32.0	178.2	254.5	33.7	155.0	252.8	32.9	154.2	217.6
8-Aug-23	32.1	176.9	252.5	36.0	152.1	261.3	34.3	156.1	227.1
9-Aug-23	32.8	180.5	259.0	37.5	150.9	264.4	36.7	158.1	239.5
10-Aug-23	32.4	181.1	258.4	37.9	152.5	263.7	37.1	155.3	239.0
11-Aug-23				37.0	154.6	263.1	38.4	156.4	243.8
12-Aug-23				37.1	150.1	264.6	36.6	153.9	237.2
13-Aug-23				34.6	154.8	255.4	36.0	153.1	227.4
14-Aug-23				36.6	151.6	258.8	35.5	150.1	228.8
15-Aug-23				36.3	156.7	257.5	35.0	156.3	229.6
16-Aug-23				38.5	154.7	263.6	40.0	159.6	253.6
17-Aug-23				37.3	155.2	259.6	39.9	152.8	247.7
18-Aug-23				37.9	155.7	264.0	39.9	153.2	250.6
19-Aug-23				38.8	153.9	268.5	39.8	160.2	249.1
20-Aug-23				37.2	153.2	260.6	35.0	137.4	212.0
21-Aug-23				39.5	156.5	272.7	39.6	161.7	250.7
23-Aug-23				37.7	154.7	263.0	39.9	163.0	252.8
23-Aug-23				34.7	154.7	257.9	40.0	163.2	254.0
24-Aug-23				27.8	158.6	247.6	37.3	158.3	240.6
25-Aug-23				26.2	157.8	235.0	37.9	154.6	240.6
26-Aug-23				25.8	152.2	230.3	37.4	148.3	236.6
27-Aug-23				24.8	158.0	241.3	37.0	146.2	235.6
28-Aug-23				24.3	156.2	234.0	37.7	155.1	240.7
29-Aug-23				24.3	160.5	240.2	38.2	152.6	243.1
30-Aug-23				24.4	164.9	250.3	38.8	145.6	244.0
31-Aug-23				24.6	163.2	247.4	37.7	152.4	244.1
1-Sep-23				23.9	160.2	247.8	35.9	150.5	239.9
2-Sep-23				24.7	158.2	244.3	37.4	149.5	233.7
3-Sep-23				25.2	151.9	222.8	38.1	148.1	229.4
4-Sep-23				25.3	157.1	235.1	39.7	141.9	233.5
5-Sep-23				28.4	162.7	249.1	39.7	149.6	245.1
6-Sep-23				28.8	161.1	251.5	39.6	152.0	235.4
7-Sep-23				27.5	162.0	257.4	39.8	152.1	233.1
8-Sep-23				31.7	154.7	258.5	36.0	162.3	241.2
9-Sep-23				29.7	156.1	252.8	40.6	148.2	227.2
10-Sep-23	21.4	148.9	192.6	29.4	155.5	254.3	39.0	151.3	214.2
11-Sep-23	24.7	169.5	232.8	31.2	153.5	254.9	41.1	150.6	216.8
12-Sep-23	27.9	171.3	246.4	26.3	138.9	200.5	39.2	144.1	218.4
13-Sep-23	28.7	174.9	249.2				35.3	150.3	218.9
14-Sep-23	25.7	179.1	256.3				34.2	150.3	231.2
15-Sep-23	27.2	176.7	252.1				35.5	145.6	233.6
16-Sep-23	25.2	178.3	254.2				34.7	151.1	235.0
17-Sep-23	28.5	170.1	228.6	23.1	116.8	251.9	33.0	153.9	222.1
18-Sep-23	28.4	173.3	241.4	33.9	155.9	254.9	32.7	138.4	203.2
19-Sep-23	28.8	177.9	253.8	29.6	139.2	208.4	28.1	153.3	215.1
20-Sep-23	26.1	183.6	264.9				29.0	149.5	213.9
21-Sep-23	27.5	180.5	259.0				28.9	153.1	229.6
23-Sep-23	27.2	182.2	262.1				29.4	150.8	227.3
23-Sep-23	27.1	173.7	242.4				27.6	154.3	226.7
24-Sep-23	27.5	172.8	238.6				28.3	154.2	213.3
25-Sep-23	27.5	169.8	230.6	23.4	142.1	150.0	30.2	150.0	211.8
26-Sep-23	26.8	183.3	263.5	30.6	156.5	272.0	32.7	134.3	195.0
27-Sep-23	26.3	183.8	264.9	32.4	154.5	259.8	28.3	152.9	228.4
28-Sep-23	26.1	183.1	265.6	32.4	154.0	258.6	30.2	147.0	216.9
29-Sep-23	26.7	177.6	265.9	32.0	155.7	275.0	27.4	162.7	240.4
30-Sep-23	27.92	177.28	263.66	33.22	156.83	267.82	29.4	157.1	229.3

Note : Blank coloum -Unit is in shutdown

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Terrestrial Ecology Report (April 2023 to September 2023)

Environment Department,
Adani Power Limited, Mundra
Village Tunda & Siracha, Taluka Mundra,
Mundra Kutch, 370 435
Gujarat, India.

List of Abbreviations

APL	:	Adani Power Limited, Mundra
CBH	:	Circumference at Breast Height
DBH	:	Diameter at Breast Height
EIA	:	Environmental Impact Assessment
GPS	:	Global Positioning System
H'	:	Shannon-Wiener Diversity Index
Ha	:	Hectare
IUCN	:	International Union for Conservation of Nature
IVI	:	Importance Value Index
MoEF&CC	:	Ministry of Environment, Forest & Climate Change, India
SEZ	:	Special Economic Zone

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1. The Study Area

The Mundra coast falls in Gulf of Kutch, an ecologically important area, supports variety of fishes and birds and other associated ecosystems and hence it is necessary to monitor the ecological environment to know if any changes are happening or not due to the operation activities of power plant.

The study area has been marked as 10 Km radial distance from the existing thermal power plant boundary near village Tunda, Mundra Taluka of Kutch district of Gujarat. The study area around the plant premises comprises of terrestrial ecosystem (Fallow and barren land) and coastal ecosystem (Sea and Creeks). Topography of the study area is plain. Part of Study area falls in notified industrial zone (SEZ).

2. Sampling Period and Sampling Locations

The study has been carried out during the months of **April 2023 to September 2023** in two different seasons comprising Pre-monsoon and Post-monsoon seasons.

Sampling locations were selected on the basis of topography, land use, vegetation pattern, etc. as per the objectives and guidelines of MoEF&CC. All observations were taken in and around sampling locations for quantitative representation of different species. List of sampling location for ecological study are given in **Table 1** and Study area map is presented in **Plate. 1**.

Table 1: List of Sampling Location

Sr. No.	Name of Location	Aerial Distance from Plant (Approx. Km)	GPS Location
1	Near Siracha Village	2.0	N 22° 50' 22.72" E 69° 33' 46.62"
2	Near Tunda Village	1.5	N 22° 50' 13.50" E 69° 32' 2.45"
3	Near Kandagra Village	3.0	N 22° 50' 22.01" E 69° 31' 33.35"
4	Near Navinal Creek	8.5	N 22° 48' 12.66" E 69° 37' 57.37"
5	Near Vandh Village	0.5	N 22° 48' 44.94" E 69° 32' 33.04"
6	Near Desalpar Village	7.0	N 22° 52' 50.91" E 69° 34' 45.99"
7	Common Intake Channel area	3.8	N 22° 47' 31.21" E 69° 32' 10.63"
8	Outfall Channel and Kotdi creek area	3.5	N 22° 48' 4.62" E 69° 34' 33.98"

Plate 1: Map showing Ecological Sampling Locations around 10 km radial distance

3. Collection of Primary Data

A. Vegetation Diversity

Methodology

The study area is dominated by the vegetation of dry deciduous scrub of small tree, shrub and very few large trees along with agricultural fields towards the northern part. Therefore the observation of vegetation was made by visiting different sampling stations and accordingly among available plants, the dominant plants species were recorded.

Observation

Forest Type: According to Champion and Seth, the vegetation in the study area can be classified as "VI – B Northern Tropical Forest" Sub type C-I Desert Thorn Forest (Kutch, Saurashtra, Gujarat). The forest patches falling under this category have mono-dominant *Prosopis juliflora*. *Acasia spp., Cassia auriculata Euphorbia spp., Ziziphus mauritiana* and *Ziziphus nummulari*a are also found in these scrubs.

Vegetation Structure and Composition: Trees Composition varies considerably in condition, composition and density with change in location. The vegetation has a very open appearance and is widely spaced with scanty natural growth typical of a saline soil with hot and humid climate mainly composed of co-dominant, thorny trees and shrubs which are xerophytic in nature. The dominant tree species vary from 5-10m in height and tends to be collected in clumps. Regeneration by root suckers is common, especially in *Prosopis* and *Capparis*. The perennial grasses grow in clumps and tussocks (Bunch). There is a thin growth of annual grasses after the rains. They wither after the rainy season.

Vegetation generally occurs near human settlement areas and agricultural bunds. The most dominant species in this region is *Prosopis juliflora*. Other tree species observed are namely *Salvadora oleoides, Salvadora persica, Phoenix sylvestris* and *Ficus religiosa.* Large horticulture crops of Chiku (*Manilkara zapota*), Coconut

(*Cocos nucifera*), Mango (*Mangifera indica*), Guava (*Psidium guajava*) and Date Palm (*Phoenix dactylifera*) are observed near northern part of the study area. Medicinal trees like *Aegle marmelos (Bel), Azadirachta indica (Neem), Tamarindus indica (Amli)* etc are also commonly observed in the study area.

The vertical structure of the vegetation shows three distinguished layers i.e. Top, Middle and Ground. *Azadirachta indica, Ficus benghalensis, Ficus racemosa, Mangifera indica, Tamarindus indica* etc. comprises top layer of the vegetation.

Salvadora oleoides, Phoenix sylvestris, Cassia auriculata, Capparis deciduas, Pithecellobium dulce, Solanum surattense **(Plate 3)**, *Euphorbia nevulia, Prosopis juliflora, Ziziphus mauritiana, Zizyihus nummularia, Tamarix dioica,* etc. forms middle layer of vegetation.

Ground layer vegetation consists of *Aloe vera, Achyranthes aspera, Boerrhavia repens*, *Calotropis gigantea* **(Plate 2)**, *Cynodon dactylon, Indigofera cordifolia, Suaeda fruticosa, Suaeda nudiflora, Solanum xanthocarpum, Tridax procumbens, Sporolobus maderaspatenus* etc.

Plate 2: Fruit of *Calotropis gigantea*

Plate 3: Flowers of *Solanum surattense*

Dominance, Density and Frequency: The floristic composition assessment of the study area has been evaluated. Phytosociological studies were carried out by using least count quadrant method. Trees, shrubs and herbs were sampled by taking randomly distributed 10 quadrates of 100 m^2, 25 m^2 and 1 m^2 respectively. The data obtained was further used to estimate Relative Density, Relative Frequency, Relative Dominance and calculation of Importance Value Index (IVI).

The Importance Value Index (IVI) for trees varies between 21.36 and 48.35. The highest IVI of studied tree recorded in study area is of *Prosopis juliflora* (48.35) and lowest IVI recorded is of *Acacia nilotica* (21.36) during study period. For shrubs, IVI varies between 10.44 and 31.82. The highest IVI of studied shrubs recorded in study area is of *Cassia auriculata* (31.82) and lowest IVI recorded is of *Calotropis gigantea* (10.44) during study period. The undergrowth vegetation (herbs) shows IVI in between 12.55 and 27.81. The highest IVI of studied herbs recorded in study area is of *Salicornia brachiata* (27.81) and lowest IVI recorded is of *Solanum xanthocarpum* (12.55) during study period. The details of IVI are presented in **Table 2 to 4** for tree shrubs and herbs respectively.

Diversity Index: Diversity means variety or variability. Species diversity therefore refers to the variation that exists among the different living forms. Species indicates the extent of biodiversity in the ecosystem. Species diversity is a statistical abstraction with two components. These are the number of species or richness and evenness or equitability. For better understanding of plant diversity, the Shannon-Wiener diversity index was used. The index considers two important characters of vegetation, i.e. floristic richness and proportional abundance of the species. Diversity index increases with floral spectra (more species means that more wide diversity) which represents actual scenario of ecosystem. The index is given as:

$$H' = -\sum_{i=1}^{s} \mathrm{Pi} \ln (\mathrm{Pi})$$

Where H' = Shannon-Wiener diversity index

Pi = Proportional abundance of the i th (individual) species

S = species richness (total number of species present)

ln = natural log (base $_e$)

The species diversity of the study area found to be **2.02, 2.20** and **2.33** for tree, shrub and herbs respectively. The details are presented in **Table 2 to 4** for trees, shrubs and herbs respectively.

Table 2: Study of Diversity Indices for Trees

Scientific Name	IUCN Category	No. of Plots in Sp. Occ.	Total No. Sp.	Total CBH (cm)	Radius (cm)	DBH (cm)	Total Basal Cover (Sq. Meter)	Density/ ha	R-Density	Domin.	R-Domin.	Freq.	R-Freq.	IVI	Pi	ln (Pi)	Pi X Ln (Pi)
Acacia nilotica	NE	5	14	41	6.52	13.05	0.01	140	5.69	0.13	4.56	0.5	11.11	21.36	0.0569	-2.8663	0.16
Azadirachta indica	NE	7	24	65	10.34	20.69	0.03	240	9.76	0.34	11.46	0.7	15.56	36.77	0.0976	-2.3273	0.23
Borassus flabellifer	NE	3	8	81	12.89	25.78	0.05	80	3.25	0.52	17.79	0.3	6.67	27.71	0.0325	-3.4259	0.11
Casuarina equisetifolia	NE	5	49	26	4.14	8.27	0.01	490	19.92	0.05	1.83	0.5	11.11	32.86	0.1992	-1.6135	0.32
Cocos nucifera	NE	4	27	81	12.89	25.78	0.05	270	10.98	0.52	17.79	0.4	8.89	37.66	0.1098	-2.2095	0.24
Mangifera indica	DD	6	25	63	10.03	20.05	0.03	250	10.16	0.32	10.76	0.6	13.33	34.26	0.1016	-2.2865	0.23
Phoenix dactylifera	NE	3	20	89	14.16	28.33	0.06	200	8.13	0.63	21.48	0.3	6.67	36.28	0.0813	-2.5096	0.20
Prosopis juliflora	NE	8	64	41	6.52	13.05	0.01	640	26.02	0.13	4.56	0.8	17.78	48.35	0.2602	-1.3464	0.35
Salvadora persica	NE	4	15	60	9.55	19.10	0.03	150	6.10	0.29	9.76	0.4	8.89	24.75	0.0610	-2.7973	0.17
Total			**246**					**2460**	**100**	**2.93**	**100**	**4.5**	**100**	**300**			**2.02**
																Shannon-Wiener	**2.02**

NE: Not Evaluated, **DD:** Data Deficient

Table 3: Study of Diversity Indices for Shrubs

Scientific Name	IUCN Category	No. of Plots in Sp. Occ.	Total No. of Sp.	Density/ ha	Relative Density	Frequency	Relative Frequency	IVI	Pi	ln (Pi)	Pi X Ln (Pi)
Aerva javanica	NE	4	8	20	6.25	0.40	9.76	16.01	0.0625	-2.7726	0.17
Calotropis gigantea	NE	3	4	10	3.13	0.30	7.32	10.44	0.0313	-3.4657	0.11
Calotropis procera	NE	4	11	28	8.59	0.40	9.76	18.35	0.0859	-2.4541	0.21
Capparis deciduas	NE	5	9	23	7.03	0.50	12.20	19.23	0.0703	-2.6548	0.19
Cassia auriculata	NE	6	22	55	17.19	0.60	14.63	31.82	0.1719	-1.7610	0.30
Euphorbia spp.	NE	4	13	33	10.16	0.40	9.76	19.91	0.1016	-2.2871	0.23
Tamarix dioica	NE	4	21	53	16.41	0.40	9.76	26.16	0.1641	-1.8075	0.30
Thevetia peruviana	NE	6	19	48	14.84	0.60	14.63	29.48	0.1484	-1.9076	0.28
Ziziphus mauritiana	NE	2	11	28	8.59	0.20	4.88	13.47	0.0859	-2.4541	0.21
Ziziphus numularia	NE	3	10	25	7.81	0.30	7.32	15.13	0.0781	-2.5494	0.20
		Total	**128**	**320**	**100.00**	**4.10**	**100.00**	**200.00**			**2.20**
										Shannon-Wiener	**2.20**

NE: Not Evaluated, **DD:** Data Deficient

Table 4: Study of Diversity Indices for Herbs

Scientific Name	IUCN Category	No. of Plots in Sp. Occ.	Total No. of Sp.	Density/ ha	Relative Density	Frequency	Relative Frequency	IVI	Pi	ln (Pi)	Pi X Ln (Pi)
Achyranthes aspera	NE	6	19	0.19	8.23	0.6	13.64	21.86	0.0823	-2.4980	0.21
Aloe vera	NE	4	22	0.22	9.52	0.4	9.09	18.61	0.0952	-2.3514	0.22
Boerrhavia diffusa	NE	5	16	0.16	6.93	0.5	11.36	18.29	0.0693	-2.6698	0.18
Citrullus colocynthis	NE	4	22	0.22	9.52	0.4	9.09	18.61	0.0952	-2.3514	0.22
Ipomoea biloba	NE	3	19	0.19	8.23	0.3	6.82	15.04	0.0823	-2.4980	0.21
Salicornia brachiata	NE	5	38	0.38	16.45	0.5	11.36	27.81	0.1645	-1.8048	0.30
Solanum xanthocarpum	NE	4	8	0.08	3.46	0.4	9.09	12.55	0.0346	-3.3630	0.12
Indigofera cordifolia	NE	3	14	0.14	6.06	0.3	6.82	12.88	0.0606	-2.8034	0.17
Sporolobus maderaspatenus	NE	3	20	0.20	8.66	0.3	6.82	15.48	0.0866	-2.4467	0.21
Suaeda fruticosa	NE	4	32	0.32	13.85	0.4	9.09	22.94	0.1385	-1.9767	0.27
Tridax procumbens	NE	3	21	0.21	9.09	0.3	6.82	15.91	0.0909	-2.3979	0.22
		Total	**231**	**2.31**	**100.00**	**4.4**	**100.00**	**200.00**			**2.33**
										Shannon-Wiener	**2.33**

NE: Not Evaluated, **DD:** Data Deficient

B. Faunal Diversity

Methodology

For animals, since they are capable of moving from one place to another, this makes their study entirely different. Therefore, specific methods were adopted for counting these animals in the field. The on-site information (observation and interview with local people) collected during survey was further enriched by the information collected from different secondary sources.

Observation

Mammals: The diversity in fauna basically depends upon density and diversity of flora. The richer the diversity among the flora better will be the diversity in fauna. Present conditions (sparse, dry and thorny vegetation) of the area do not support higher mammals, however animals like Fox and Jackal are commonly observed. Vermin animals like Nilgai, Wild Boar and Hare also observed from the study area.

Reptiles and amphibians: Area is devoid of good agricultural land, however standing orchards of coconut, mango and chiku attracts many rodents and birds, which ultimately attracts many reptiles and amphibians. Lizards such as monitor lizard and garden lizards are observed in the study area. The faunal elements observed in the study area during this period are given in **Table 5** and **Plate-4**.

Garden Lizard (*Calotes versicolor*)

Wild Boar *(Sus scrofa)*

Monitor Lizard (*Varanus bengalensis*)

Plate 4: Reptiles and mammals recorded the Study Area of 10 Km

Table 5: Fauna Observed in the Study Area

Sr. No.	Common Name	Scientific Name	IUCN Category	Wildlife Schedule
Mammals				
1	Nilgai	*Boselaphus tragocamelus*	*LC*	Schedule III
2	Indian Jackal	*Canis aureus indicus*	*LC*	Schedule II
3	Common Mongoose	*Herpestes edwardsii*	*LC*	Schedule II
4	Indian Hare	*Lepus nigricollis*	*LC*	Schedule IV
5	Wild Boar	*Sus scrofa*	*LC*	Schedule III
6	Stripped palm squirrel	*Funambulus palmarum*	*LC*	Schedule IV
7	Fruit Bat	*Cynopterus sphinx*	*LC*	Schedule V
Amphibians				
1	Indian Skipping Frog	*Euphlyctis cyanophlyctis*	LC	Schedule V
2	Indian bullfrog	*Hoplobatrachus tigerinus*	LC	Schedule V
Reptiles				
1	Garden lizard	*Calotes versicolor*	LC	Schedule IV
2	Indian Monitor lizard	*Varanus bengalensis*	LC	Schedule I
3	Indian cobra	*Naja naja*	LC	Schedule II
4	Rat Snake	*Ptyas mucosa*	LC	Schedule II
5	Common Indian krait	*Bungarus caeruleus*	LC	Schedule IV
6	Russel's viper	*Vipera russelli/ Daboia russelii*	LC	Schedule II
7	Saw scaled viper	*Echis carinatus*	LC	Schedule II
8	Indian Flap shell Turtle		Vulnerable	Schedule I

LC: Least Concern, **NT:** Near Threatened, **NE:** Not Evaluated.

C. Avifauna

Methodology

For survey of the birds, the area around APL, Mundra power plant and adjacent areas of the study area was carried out from **April to September, 2023**. Birds were observed once a week. A working day was divided into two parts, *viz.*, morning (06:00 to 08:00hr) and afternoon (17:00 to 19:00hr). Existing roads, bridle paths, embankments, cattle trails, plantation areas, shore lines, canal and pond banks, etc., were used to cover the study area. The trail length varied from 500m to 1000m and the visibility of these trails was 50m to 100m width on both sides. All types of habitats were visited weekly. Maximum field visits were carried on foot but sometimes vehicles were also used to cover long distance of the study area. Birds were observed either by a pair of binoculars (**Nikon Action 8x40CF**) or by naked eyes depending on the distance of the object. Long notes were taken on whether the observed birds were singing, feeding or flying over. For identification, external morphology and other modes i.e., colour, size, shape, flight, walk, habitat, call, and sitting postures were considered, followed by the use of Field guide by Ali (1996), Ali and Ripley (1983). A camera camera (**Nikon Coolpix P900**) with **83x zoom** lens was used for photography.

The estimates of the survey provide an index of the various species of birds in the study area and allow species comparison between them. For better understanding of avian diversity, the Shannon-Wiener diversity index was used. The index considers two important characters of birds, i.e. its richness and proportional abundance of the species. Diversity index increases with the avian spectra (more species means that more wide diversity) which represents actual scenario of ecosystem. The index is given as:

$$H' = -\sum_{i=1}^{s} \text{Pi} \ln (\text{Pi})$$

Where H' = Shannon-Wiener diversity index
Pi = Proportional abundance of the i [th] (individual) species
S = species richness (total number of species present)
ln = natural log (base $_e$)

Observation

Mundra coast provides very good grounds for roosting and food to the avifauna. The coastal wetlands in Mundra coast with broad intertidal mudflats, mangroves and salt pans offer a great diversity of habitats for birds to utilize for roosting, nesting and breeding.

The study area supports three habitat types of birds namely water birds, grassland birds and coastal birds. The birds like Mynas, Crows, Sparrows, Bulbuls, Babblers and Pigeons were commonly observed in and around villages. Areas with or near the agriculture fields, grain eating herbivorous species were dominant. These species includes Doves, Sparrows, Pigeons, etc. Insectivorous bird species viz. Bee-Eaters, Bulbuls, Wagtails, Desert Wheatears, Drongos, etc. were observed in the study area. Fruit eating birds like Bulbuls, Mynas and Sunbirds usually observed near the village settlements. Water habitat and fish eating birds like Curlews, Kingfishers, Herons, Lapwings, Plovers, Sandpipers, Indian Rollers, and Egrets were observed near the water bodies and in low-lying marshy areas. View of migratory birds & resident birds observed in the study area are shown in. List of birds observed during the study period in the study area are given in **Table 6**.

The Shannon Weiner Diversity Index for birds in the study area is found to be **3.62** during this period. The Species richness for the study area is found to be **48**. Proportional abundance of the individual species varies between 0.0045 and 0.1001. The highest abundance recorded was of Blue Rock Pigeon (0.1001) and the lowest recorded were of **Black-necked stork** (0.0045). The details are presented in **Table 6**.

Common Hoopoe *(Upupa epops)*

Painted Stork *(Mycteria leucocephala)*

Plate 5: Birds Observed in the Study Area of 10 Km

Red Wattled Lapwing (*Vanellus indicus*)

Black Drongo *(Dicrurus macrocercus)*

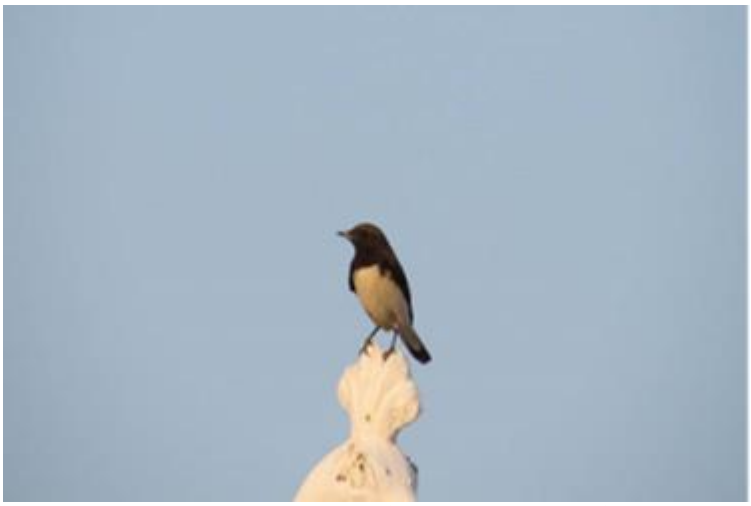
Oriental White Ibis (*Threskiornis melanocephalus*)

Black-Shouldered Kite *(Elanus axillaris)*

Indian Pond Heron *(Ardeola grayii)*

Desert Wheatear *(Oenanthe deserti)*

Plate 6: Resident Birds Observed in the Study Area of 10 Km



Variable Wheatear (*Oenanthe picata*)

Black Ibis (*Pseudibis papillosa*)

white-throated kingfisher *(Halcyon smyrnensis)*

Indian Robin (*Saxicoloides fulicatus*)

Pied Kingfisher (*Ceryle rudis*)

Green Bee Eater (*Merops orientalis*)

Plate 7: Resident Birds Observed in the Study Area of 10 Km

White-throated Munia (*Euodice malabarica*)

Common Crested Lark (*Galerida cristata*)

Grey Heron (*Ardea cinerea)*

Greater flamingoes (*Phoenicopterus roseus*)

Indian Roller (*Coracias benghalensis*)

Great Stone Plover (*Esacus recurvirostris*)

Plate 8: Birds Observed in the Study Area of 10 Km

Table 6: Study of Diversity Indices for Birds (Avi-Fauna)

Sr. No.	Common Name	Scientific Name	IUCN Category	Wildlife Schedule	Total	Pi	ln Pi	SWI
1	Black Drongo	*Dicrurus macrocercus*	LC	Schedule IV	57	0.0172	-4.0604	0.07
2	Asian Koel	*Eudynamys scolopaceus*	LC	Schedule IV	35	0.0106	-4.5481	0.05
3	Black Ibis/Glossy Ibis	*Pseudibis papillosa*	LC	Schedule IV	29	0.0088	-4.7362	0.04
4	Black-Winged Stilt	*Himantopus himantopus*	LC	Schedule IV	71	0.0215	-3.8408	0.08
5	Blue Rock Pigeon	*Columba livia*	LC	Schedule IV	331	0.1001	-2.3014	0.23
6	Black-necked stork	*Ephippiorhynchus asiaticus*	NT	Schedule IV	15	0.0045	-5.3954	0.02
7	Black headed Gull	*Chroicocephalus ridibundus*	LC	Schedule IV	25	0.0076	-4.8846	0.04
8	Brahminy Starling	*Sturnia pagodarum*	NE	Schedule IV	23	0.0070	-4.9680	0.03
9	Common Hoopoe	*Upupa epops*	LC	Schedule IV	25	0.0076	-4.8846	0.04
10	Cattle Egret	*Bubulcus ibis*	LC	Schedule IV	61	0.0185	-3.9926	0.07
11	Common Babbler	*Turdoides caudata*	LC	Schedule IV	135	0.0408	-3.1982	0.13
12	Common Crested Lark	*Galerida cristata*	LC	Schedule IV	51	0.0154	-4.1717	0.06
13	Common Myna	*Acridotheres tristis*	LC	Schedule IV	46	0.0139	-4.2749	0.06
14	Common Sandpiper	*Actitis hypoleucos*	LC	Schedule IV	186	0.0563	-2.8777	0.16
15	Common Swallow	*Hirundo rustica*	LC	Schedule IV	82	0.0248	-3.6968	0.09
16	Common Quail	*Coturnix coturnix*	LC	Schedule IV	51	0.0154	-4.1717	0.06
17	Common Teal	*Anas crecca*	LC	Schedule IV	35	0.0106	-4.5481	0.05
18	Desert Wheatear	*Oenanthe deserti*	LC	Schedule IV	61	0.0185	-3.9926	0.07
19	Greater Coucal	*Centropus sinensis*	LC	Schedule IV	36	0.0109	-4.5200	0.05
20	Greater Short-toed Lark	*Calandrella brachydactyla*	LC	Schedule IV	56	0.0169	-4.0781	0.07
21	Green Bee Eater	*Merops orientalis*	LC	Schedule IV	136	0.0411	-3.1908	0.13
22	Grey Heron	*Ardea cinerea*	LC	Schedule IV	51	0.0154	-4.1717	0.06
23	Greater flamingoes	*Phoenicopterus roseus*	LC	Schedule IV	56	0.0169	-4.0781	0.07
24	Grey Francolinm	*Francolinus pondicerianus*	LC	Schedule IV	68	0.0206	-3.8840	0.08
25	House Crow	*Corvus splendens*	LC	Schedule V	85	0.0257	-3.6608	0.09
26	House Sparrow	*Passer domesticus*	LC	Schedule IV	231	0.0699	-2.6611	0.19
27	Indian Pond Heron	*Ardeola grayii*	LC	Schedule IV	75	0.0227	-3.7860	0.09
28	Indian Robin	*Saxicoloides fulicatus*	LC	Schedule IV	36	0.0109	-4.5200	0.05
29	Indian Roller	*Coracias benghalensis*	LC	Schedule IV	42	0.0127	-4.3658	0.06
30	Large Egret	*Ardea alba*	LC	Schedule IV	56	0.0169	-4.0781	0.07
31	Laughing Dove	*Spilopelia senegalensis*	LC	Schedule IV	76	0.0230	-3.7728	0.09
32	Little Cormorant	*Microcarbo niger*	LC	Schedule IV	56	0.0169	-4.0781	0.07
33	Little Egret	*Egretta garzetta*	LC	Schedule IV	43	0.0130	-4.3423	0.06
34	Little Ringed Plover	*Charadrius dubius*	LC	Schedule IV	29	0.0088	-4.7362	0.04
35	Painted Stork	*Mycteria leucocephala*	NT	Schedule IV	71	0.0215	-3.8408	0.08
36	Pied Kingfisher	*Ceryle rudis*	LC	Schedule IV	28	0.0085	-4.7713	0.04
37	Purple Sunbird	*Nectarinia asiatica*	LC	Schedule IV	86	0.0260	-3.6491	0.09
38	Red Vented Bulbul	*Pycnonotus cafer*	LC	Schedule IV	164	0.0496	-3.0036	0.15
39	Red Wattled Lapwing	*Vanellus indicus*	LC	Schedule IV	67	0.0203	-3.8988	0.08
40	Rose-Ringed Parakeet	*Psittacula krameri*	LC	Schedule IV	49	0.0148	-4.2117	0.06
41	Spot billed duck	*Anas poecilorhyncha*	LC	Schedule IV	35	0.0106	-4.5481	0.05
42	Small Blue (Common) Kingfisher	*Alcedo atthis*	LC	Schedule IV	47	0.0142	-4.2533	0.06
43	Western Reef Heron	*Egretta gularis*	LC	Schedule IV	75	0.0227	-3.7860	0.09
44	White Breasted Kingfisher	*Halcyon smyrnensis*	LC	Schedule IV	49	0.0148	-4.2117	0.06
45	White-Eared Bulbul	*Pycnonotus leucotis*	LC	Schedule IV	33	0.0100	-4.6070	0.05
46	White-Throated Munia	*Lonchura malabarica*	LC	Schedule IV	76	0.0230	-3.7728	0.09
47	White Wagtail	*Motacilla alba*	LC	Schedule IV	29	0.0088	-4.7362	0.04
48	Wire-tailed Swallow	*Hirundo smithii*	LC	Schedule IV	46	0.0139	-4.2749	0.06
Total					**2891**			**3.63**
Shannon-Wiener								**3.63**

LC: Least Concern, **NT:** Near Threatened.

4. Green Belt Activities

Horticulture Department of Adani Power Limited, Mundra has taken many steps to develop plantation in and around the power plant premises.
The main objectives are:

- To improve the soil fertility
- To reduce the use of chemical fertilizers,
- To produce organic manure facility by utilizing the fly ash

To achieve the above objectives, APL, Mundra had constructed Vermicompost which is useful for growth of plants. From April 2023 to September 2023 total 236.44 MT of Vermicompost manure was produced and all are utilized in development of greenbelt in the plant premises. In addition to this Environment department had developed an Eco-Park, which is prepared with waste and reusable material. It spreads in 4.1366 ha of land. Eco-Park is based on Concept 4-R: Reduce, Reuse, Recover and Recycle. Eco-Park has an Organic Waste converter unit which converts kitchen waste into organic compost. From April 2023 to September 2023 total **7503 kg** of organic manure was produced from kitchen waste.

New nursery is established to cater the needs of new plantation and gap filing activities. Native trees species plantation are carried out to suppress the dust and for maintaining the aesthetic beauty of the region. The tree species include *Azadirachta indica, Casuarina equisetifolium, Jatropha, Salvadora oleoides and Cocos nucifera* were recently planted for greenbelt development. Plant species planted for landscaping are mainly evergreen species. These are *Caesalpinia pulcherrima*, *Ficua Panda, Hibiscus rosa-sinensis, Ixora hybrid and Plumeria alba.* Many orchard species are also grown inside the plant premises such as mango, chicku, Sapota and pomegranate.

The greenbelt details regarding area, species, and number of trees, palm & shrubs planted is given in **Annexure: III**.

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MARINE MONITORING REPORT

June 2023 - September 2023

Submitted to

Adani Power Ltd. (APL), Mundra

Village Tunda & Sirach
Taluka Mundra
District Kutch- 370 435
Gujarat

Prepared by

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PREFACE

Adani Power Ltd., Mundra (APL-Mundra) is coal-based Thermal Power plant located near village Tunda and Siracha, Taluka Mundra District Kutch, Gujarat. with capacity of 4620 MW in Phased manner. Currently, APL is a largest coal based Thermal power plant in private sector in INDIA. APL-Mundra has commissioned the first supercritical 660 MW unit (Phase III) in the country. This is also the World's First supercritical technology project to have received the 'Clean Development Mechanism (CDM) Project' certification from United Nations Framework Convention on Climate Change (UNFCCC). Currently, the total power production capacity of the APL-Mundra has increased to 4620 MW.

APL-Mundra has engaged **M/s. UniStar Environment and Research Labs Pvt. Ltd., Vapi** to **carry out the** seasonal Marine Monitoring Study along with the seawater intake and outfall (discharge) channels of Mundra power plant. This marine monitoring study involved the assessment of Physio-chemical parameters at the earlier prescribed locations. The distribution and diversity of marine flora and fauna were assessed through water sampling from sub-tidal regions. Furthermore, the distribution of the benthic community was evaluated from the sediment samples collected along the sub-tidal and inter-tidal regions. The overall objective of this study is to monitor the status of prevailing ecology along the intake and discharge (outfall) channels, in terms of water and sediment quality through assessment of physico-chemical parameters and marine biota. This marine monitoring report provides a comprehensive analysis of the Data obtained through a monitoring study undertaken during June 2023 and September 2023.

Date: 25th October 2023

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UNISTAR ENVIRONMENT & RESEARCH LABS PVT. LTD. GUJARAT VAPI

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1. INTRODUCTION

1.1 OVERVIEW

Adani Power Limited (APL-Mundra) is an imported coal-based thermal power plant located near village Tunda and Siracha, Taluka Mundra, District Kutch, Gujarat, India. APL-Mundra is the largest single location private coal-based power plant in India. Mundra plant capacity is 4620 MW, comprising of 9 units with 4 units of 330 MW (Phase I and II) and 5 units of 660MW (Phase III and IV). The 330 MW units are based on subcritical technology and the 660 MW units are based on supercritical technology. APL-Mundra has created history by synchronizing the first super-critical technology-based 660 MW generating unit. This is not only the first super-critical generating unit in the country but also the fastest project implementation ever by any power developer in the country. The Power plant is situated within "Adani Port Special Economic Zone LTD." APSEZL, closed to the sea but out of CRZ area. The sea is perennial source of cooling water & other utility for the power plant.

M/S. UniStar Environment and Research Labs Pvt. Ltd., Vapi, India have carried out the routine Marine Monitoring Study in the vicinity of the APL-Mundra Mundra plant during **1st-2nd June 2023 and 29th-30th September 2023**. The sampling was carried out along the integrated sea intake channel (2 stations) and at vicinity of discharge/outfall channel water mixing region (2 stations). These integrated intake and outfall channels were developed and maintained by Adani Port and SEZ (APSEZ). One station was situated in between these two locations. This assessment involves the collection of Physico-chemical parameters from 5 subtidal locations (Table 1). The distribution and diversity of marine microflora (phytoplankton and pigments) and fauna (zooplankton) were assessed from water samples collected from 5 subtidal stations (Table 1). The assemblage of the macrobenthic community was studied from 5 sub-tidal and 3 inter-tidal stations. The present report presents a detailed account of the results observed during the Marine Monitoring Study at the vicinity of the APL-Mundra during June 2023 and September 2023.

1.2 OBJECTIVES

a) To analyses the Physico-chemical seawater parameter for understanding the water quality in the study area.

b) Evaluation of the prevailing status of marine biota through the quantitative and qualitative analysis of marine flora (phytoplankton and pigments) and fauna (zooplankton and macrobenthos).

c) To recommend adequate marine environmental management measures, if any.

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2. STUDY PROGRAM

2.1 STUDY PERIOD

The field investigations were carried out on 1st-2nd June 2023 (pre-monsoon season) and 29th-30th September 2023 (post-monsoon season). The sampling strategy was planned in such a manner as to get a detailed characteristic of the marine environment of the study area. Sampling and analysis for the marine environment have been carried out by **M/s. UniStar Environment and Research Labs Pvt. Ltd, Vapi, India**.

2.2 SAMPLING LOCATIONS

Sampling was carried out at 5 subtidal stations and 3 intertidal transects along with the sea intake and outfall channels. Out of 5 subtidal stations, 2 were in the sea intake channel, 2 along the discharge mixing (outfall channel) region and remaining 1 in between these two locations. One intertidal station was located along the sea intake channel and 2 were along the discharge region. The detailed geographic coordinates of sampling stations are given in Table 1 and Figure 1.

Table 1: Geographic coordinates, water, and sediment parameters at the subtidal sampling stations, APL-Mundra during June 2023 and September 2023.

Station	Station code	Locations	Coordinates		Water depth (in m)	
					June 23	Sept 23
1	St-1	Intake point	22°48'30.'50"N	69°32'57.84"E	5.4	5.2
2	St-2	Mouth of intake point	22°47'07.20"N	69°32'06.50"E	4.5	4.8
3	St-3	West port area	22°45'27.70"N	69°34'50.63"E	5.0	5.6
4	St-4	Outfall area	22°44'40.56"N	69°36'26.61"E	4.0	4.2
5	St-5	Outfall area	22°45'12.60"N	69°36'44.54"E	4.2	4.8

Table 2: Geographic coordinates, water, and sediment parameters at the intertidal sampling stations, APL-Mundra during June 2023 and September 2023.

Station	Station code	Tide Level	Coordinates		Intertidal exposed area	Sediment texture
I	IT-1 (HW)	High Tidewater level	22°47'07.55" N	69°32'16.91" E	5.1 m /4.9m	Silty sand
	IT-1 (LW)	Low Tide water level	22°47'06.38"N	69°32'11.62"E		Silty sand
II	IT-2 (HW)	High Tide water level	22°45'58.72" N	69°34'35.41" E	4.0 m /3.8 m	Silty Sandy
	IT-2 (LW)	Low Tidewater level	22°45'57.74" N	69°34'35.05" E		Silty sand
III	IT-3 (HW)	High Tidewater level	22°44' 52.21" N	69°36'41.64"E	4.5 m /4.2 m	Sandy
	IT-3 (LW)	Low Tidewater level	22°44' 51.23" N	69°36'39.28" E		Sandy

Figure 1: Map of the study area illustrating the subtidal and intertidal sampling stations.

2.3 SAMPLING STRATEGY

2.3.1 Sampling frequency

A sampling at the subtidal stations was carried out during the flood to ebb tides. Surface and bottom water samples were collected in duplicate for assessing water quality and marine biota. Intertidal samples were collected in duplicate during low tide at each transect.

2.3.2 Sampling methodology

For estimation of Physico-chemical parameters and marine flora (phytoplankton and pigments), subsurface samples were collected using the Niskin water sampler (5-litre capacity) with a mechanism for closing at the desired depth. Surface water samples were collected using a clean polyethylene bucket. Phytoplankton samples were collected in clean polyethylene bottles (1 L) fitted with inert cap liners and preserved with 4% Lugol's iodine solution. For pigment analysis, water samples were stored in clean, dark polyethylene cans (5 L). Chemical parameters samples were collected in polyethylene or glass bottles. Samples for phenol were collected in polyethylene or glass bottles and Petroleum Hydrocarbon samples collected in glass bottles. Dissolve oxygen (DO) and Biological Oxygen Demand (BOD) samples were collected in glass BOD bottles. The temperature was measured on the field with a calibrated thermometer. Analysis of other parameters was carried out in the laboratory.

For zooplankton, oblique hauls were made using Heron Tranter net attached with calibrated flow meter. Samples were stored in clean polyethylene bottles (0.5 L) and fixed with 5% formaldehyde.

For the analysis of macrobenthos, subtidal sediment samples were collected using a Van Veen grab covering an area of 0.04 m^2. Intertidal samples were collected using a metal quadrant. Samples were sieved with a 500 µ metal sieve and preserved with Rose Bengal-formalin solution and stored in plastic zip-lock bags.

2.4 SAMPLE ANALYSIS METHODS

2.4.1 Physico-chemical parameter:

Samples were analysed by using different analytical methods for estimations of Temperature, Turbidity, PH, Suspended Solid (SS), Salinity, DO, BOD, COD, Phosphate, Total nitrogen, Nitrite, Nitrate, Phenols and PHc. The samples collected during the field visit were brought to the laboratory for further analysis of physico-chemical parameters. The standard methods used for the analysis of water quality parameters are given in Table 3a, b.

2.4.2 Sediment Quality parameters:

Sediment texture, Petroleum Hydrocarbon (PHc), Phosphorus, Organic Carbon, Aluminium, Iron, Chromium, Nickel, Zinc, Lead, Copper, Cobalt, Cadmium, Mercury, Arsenic. The standard methods used for the analysis of each parameter.

2.4.3 Biological parameters:

2.4.3a Phytoplankton:

The Lugol's preserved samples were allowed to settle for 48-72 hrs. The identification and enumeration of phytoplankton cells were carried out under a compound microscope using the Sedgwick Rafter slide. Species were identified to the genus level.

2.4.3b Phytoplankton pigments:

For the estimation of Chlorophyll *a* (Chl *a*) and Pheophytin, a known volume of field-collected water sample was filtered through Whatman glass microfiber filters (GF/F). Then filter paper was macerated in 90% acetone and stored overnight in the dark at 4°C. For estimation of Chl *a* fluorescence of the extract was measured using Turner Fluorometer. For phaeophytin fluorescence was measured after acidification with 0.1 N HCl.

2.4.3c Zooplankton:

Formalin preserved sample was divided into 4 equal portions using the Folsom Plankton Splitter. One portion of the samples was used to determine biomass using the volume displacement method. Another portion was used for enumeration and identification of (25-50%) faunal composition.

For the quantification of zooplankton, 4-5 ml of the sample was taken in a zooplankton counting chamber. The identification was carried out under Stereomicroscope. The zooplankton were identified at the group level.

2.4.3d Benthos:

For enumeration and identification of the macrobenthos, the organisms were handpicked using forceps and a paintbrush. After sorting, organisms were preserved in 10% formalin. Identification of the organisms was done to the group level under a stereomicroscope.

3 WATER QUALITY MONITORING

3.1 RESULT OF PHYSICO-CHEMICAL WATER PARAMETER ANALYSIS

The monsoonal influx plays an important role in controlling the variation in the physico-chemical characteristic. Surface and bottom water temperatures observed in the study area were in a range between 29^0C to 31.5^0C in June 2023 (Table 3a) and 28.5^0C to 29.5^0C during September 2023 (Table 3b). The water temperature generally varied in accordance with the prevailing air temperature, tidal activity, and seasonality. The pH of the water is generally buffering effect, influenced by the freshwater and anthropogenic discharge from land. The observed pH in the study area was in the range of 7.7 to 8.0 in June 2023 and 7.9 to 8.1 during September 2023. Seawater turbidity is the cloudiness caused by large numbers of individual particles such as very fine clay and minute marine organisms. This also varies seasonally due to intrusion of land runoff and/or sediment resuspension. The turbidity was in a range between 0.1 to 1 NTU in June and 1 NTU during September. The suspended solids generally constitute silt and clay eroded from the land or shore erosions and suspension of the benthic layers from the seabed. Anthropogenic discharges also contribute to suspended solids in the form of contaminants such as oil and solid waste in a polluted area. On a seasonal basis, high TSS in seawater could be observed during the active monsoon season. In the study area, TSS was 62 to 96 mg/L during June 2023 and 68 to 98 mg/ during September 2023. Salinity is an indicator of (saline or freshwater) water masses intrusion within the region. The salinity of seawater may vary with the riverine or inland influx, rains, or evaporation in the region. The salinity variation during the present sampling was 36.7 to 38.2 in June 2023 and 35.5 to 36.8 during September 2023.

High DO level is an indication of good oxidizing conditions in an aquatic environment. In unpolluted waters equilibrium is maintained through oxygen production during photosynthesis, dissolution from the atmosphere consumption by the respiration and decay of organic matter in a manner that DO levels are close to or above saturation value. The DO level of the study area was varied from 3.8 to 6.1 mg/L in June 2023 and 4.0 to 5.9 mg/L during September 2023. The average DO value was 5.3 mg/L (in June) and 4.9 (in September), which indicates the oxygenated conditions in the study region. BOD is generally indicating the effective consumption of oxidizable matter in that water body. The industrial effluents contain high BOD levels. Thus, high BOD is also an indication of the intrusion of industrial polluted effluent into natural waters. BOD levels in the study area were varied from 2.8 to 4.2 mg/L in June 2023 and 2.7 to 3.4 mg/L during September 2023. Dissolved phosphorus and nitrogen compounds serve as the nutrients for phytoplankton growth. The high nutrient concentrations

in the seawater generally could be attributed to the anthropogenic and industrial influx. This could lead to further eutrophication and further deterioration of the pristine ecosystem. In the present study, Phosphate concentration was range from 0.14 to 0.4 µmol/L in June 2023 and 0.3 to 0.6 µmol/L in September 2023. Nitrite concentration was range from 0.6 to 0.9 µmol/L during June 2023 and 0.8 to 1.2 µmol/L in September 2023. Nitrate concentration was range from 2.1 to 4.8 µmol/L in June 2023 and 2.5 to 3.1 µmol/L in September 2023. The Phenol compounds and PHc were not detected in the present investigation.

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Table 3a: Water quality parameters reported during June 2023 and their test methods.

Sr. No.	Parameters	Station 1		Station 2		Station 3		Station 4		Station 5		Test Method Permissible
		S	B	S	B	S	B	S	B	S	B	
PHYSICAL QUALITY												
1	pH @ 25°C	7.8	8	7.9	8	8	7.9	8.1	8	7.9	7.7	IS 3025(Part 11)1983
2	Temperature (^{0}C)	31.5	30.5	31	30.5	30.5	29	31.5	30	30.5	30	IS 3025(Part 9)1984
3	Turbidity (NTU)	1	1	1	1	1	1	1	1	0.1	0.1	IS 3025(Part 10)1984
CHEMICAL QUALITY												
1	Total Suspended Solids (mg/l)	74	84	91	96	62	78	75	83	86	92	APHA 23rd Ed.,2017,2540- D
2	Salinity	37.2	38.1	37.9	38.2	37.1	37.3	36.7	36.8	37.7	37.8	By Calculation
3	Dissolved Oxygen (mg/l)	4.2	3.8	5.2	4.9	6.1	6	5.9	5.7	5.9	5.8	APHA 23rd Ed.,2017,4500-O, B
4	Biochemical Oxygen Demand (BOD) (mg/l)	2.9	3.8	3	4	2.8	3	3.1	3.4	2.9	4.2	IS 3025(Part 44)1993Amd.01
5	Sulphate as SO_4 (mg/l)	1998	2278	1832	2120	2020	2118	2150	2210	2109	2260	APHA 23rd Ed.,2017,4500- SO_4 E
6	Ammonical Nitrogen (µmol/l)	0.9	1.0.	0.8	1.2	0.9	1.1	0.8	0.9	0.9	1.2	APHA 23rd Ed.,2017,4500- NH_3 B
7	Total Nitrogen (µmol/l)	5.2	6.3	4.8	5.9	7.3	6.7	4.5	5.9	6.6	8.8	By Calculation
8	PO_4^{3-}-P (µmol/l)	0.3	0.4	0.2	0.3	0.2	0.2	0.4	0.3	0.3	0.1	APHA 23rd Ed.,2017,4500 –P,D
9	(NO_3^--N) (µmol/l)	2.8	3.5	3.4	4.8	2.4	2.3	2.1	3.3	3.1	3.6	APHA 23rd Ed.,2017,4500 NO_3-B
10	(NO_2^--N) Nitrite (µmol/l)	0.6	0.8	0.9	0.7	0.8	0.8	0.8	0.8	0.7	0.7	APHA 23rd Ed.,2017,4500 NO_2B
11	Phenol (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	IS 3025(Part 43):2020
12	PHc (ppb)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	APHA 23rd ED,2017,5520 F

Note: S=Surface; B=Bottom
BDL = Below Detection Limit and N.D. = Not detectable
BDL(MDL:0.01)
Turbidity= 0.1=1 to 10 NTU; 1=10 to 40 NTU; 5=40-100 NTU

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Table 3b: Water quality parameters reported during September 2023 and their test methods.

Sr. No.	Parameters	Station 1		Station 2		Station 3		Station 4		Station 5		Test Method Permissible
		S	B	S	B	S	B	S	B	S	B	
PHYSICAL QUALITY												
1	pH @ 25°C	8.1	8.0	8.0	8.1	8.1	8.1	8.0	7.9	8.1	8.0	IS 3025(Part 11)1983
2	Temperature (^{0}C)	29.4	29.2	29.5	29.2	29.2	28.8	29.2	29.0	29.5	29.1	IS 3025(Part 9)1984
3	Turbidity (NTU)	1	1	1	1	1	1	1	1	1	1	IS 3025(Part 10)1984
CHEMICAL QUALITY												
1	Total Suspended Solids (mg/l)	89	98	82	92	72.0	86	68.0	76	72	96	APHA 23rd Ed.,2017,2540- D
2	Salinity	36.2	36.8	36	36.6	36.1	36.34	35.7	35.75	36.66	36.84	By Calculation
3	Dissolved Oxygen (mg/l)	4.41	4.01	5.43	5.11	4.8	4.21	5.9	5.1	5.2	4.8	APHA 23rd Ed.,2017,4500-O, B
4	Biochemical Oxygen Demand (BOD) (mg/l)	3.2	3.4	2.9	3.3	3	3.4	3	3.4	2.7	3.2	IS 3025(Part 44)1993Amd.01
5	Sulphate as SO_4 (mg/l)	1878	2045	1909	2120	1946	2043	1934	2062	1825	2097	APHA 23rd Ed.,2017,4500- SO_4 E
6	Ammonical Nitrogen (µmol/l)	0.7	0.8	0.6	0.9	0.7	0.9	0.6	0.7	0.6	0.8	APHA 23rd Ed.,2017,4500- NH_3 B
7	Total Nitrogen (µmol/l)	6.25	7.4	5.9	7.0	6.3	7.2	5.5	6.9	5.6	6.8	By Calculation
8	PO_4^{3-}-P (µmol/l)	0.54	0.62	0.44	0.5	0.49	0.4	0.58	0.5	0.46	0.34	APHA 23rd Ed.,2017,4500 –P,D
9	(NO_3^--N) (µmol/l)	3	3.1	3	2.9	2.7	3.1	2.7	2.9	2.5	3	APHA 23rd Ed.,2017,4500 NO_3-B
10	(NO_2^--N) Nitrite (µmol/l)	0.93	1.0	0.92	1.1	0.82	1.2	0.93	0.9	0.8	0.94	APHA 23rd Ed.,2017,4500 NO_2B
11	Phenol (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	IS 3025(Part 43):2020
12	PHc (ppb)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	APHA 23rd ED,2017,5520 F

Note: S=Surface; B=Bottom
BDL = Below Detection Limit and N.D. = Not detectable
BDL (MDL:0.01)
Turbidity= 0.1=1 to 10 NTU; 1=10 to 40 NTU; 5=40-100 NTU

4 SEDIMENT QUALITY MONITORING

The sediment quality at different sampling stations was analysed only during June 2023 sampling. The results are presented in Tables 4. The sediment in the subtidal region was mainly composed of silty sand to loamy sand. The Aluminium was not detected on the surface sediments of subtidal stations. The highest Cobalt content was recorded within range from 8.6 µg/g (at ST-3) to 7.4 µgm/g (ST-1). At ST-5, the highest Copper content (13.1 µg/g) was recorded, whereas the lowest was detected at ST-3 (10.9 µg/g). The Zinc content was ranged from 12.2 µg/g (ST-3) to 8.0 µg/g (ST-4). In the subtidal stations, the phosphorus content was ranged from 591 µg/g to 490.8 µg/g. Organic carbon content was ranged within 0.9 % to 0.6 %. The Chromium content of marine sediment was ranged from 13.5 µg/g to 16.9 µg/g. The highest chromium content was recorded as 16.9 µg/g at ST-3. The highest Nickel content (22.8 µg/g) was recorded at ST-4 and lowest (20.6 µg/g) at ST-2. In the subtidal region, the highest Manganese content was recorded at ST-3 (171.8 µg/g). The Iron content was higher at ST-4 (2.5 %) and lower at ST-2 (10.9%). The PHc, Arsenic & Mercury was not detected in the sediments during this study.

Table 4: Subtidal sediment quality parameters and their test methods.

No.	Parameters	SUBTIDAL SEDIMENT QUALITY(µgm/gm)					Test Method Permissible
		Station 1	Station 2	Station 3	Station 4	Station 5	
1	Texture	Silty clay	Silty sand	Silty sand	Silty clay	Silty clay	--
2	Aluminium as Al%	N.D.	N.D.	N.D.	N.D.	N.D.	Spectrophometeric Method
3	Cobalt as Co(µg/g)	7.4	8.5	8.6	7.6	8.6	EPA 3050B :1996/7000B :2007
4	Copper as Cu(µg/g)	12.6	11.4	10.9	12.0	13.1	EPA 3050B :1996/7000B :2007
5	Zinc as Zn	9.1	11.2	12.2	8.0	12.1	EPA 3050B :1996/7000B :2007
6	Mercury(µg/g)	BDL	BDL	BDL	BDL	BDL	EPA 7471A Method
7	Phosphorous (Total)(µg/g)	578.2	591	531.4	517.7	490.8	IS 10158B (Stannous Chloride Method)
8	C(Org.) %	0.9	0.8	0.6	0.7	0.6	IS: 2720 (Part 22):1972
9	Chromium(µg/g)	14.2	13.5	16.9	14.9	15.5	EPA 3050B :1996/7000B :2007
10	Nickel(µg/g)	21.5	20.6	21.0	20.8	22.8	EPA 3050B :1996/7000B :2007
11	Manganese	148.5	152.7	171.8	142.3	128.2	EPA 3050B :1996/7000B :2007
12	Iron%	2	1.9	2.1	2.5	2.4	EPA 3050B :1996/7000B :2007
13	PHc(µg/g)	N.D.	N.D.	N.D.	N.D.	N.D.	APHA 23rd ED,2017,5520 F
14	Arsenic(µg/g)	BDL	BDL	BDL	BDL	BDL	EPA 1998, SW-846, Method 7061A 1992

Note: BDL= Below Detectable Limit and N.D. = Not detectable
BDL (MDL: 0.05)

5 BIOLOGICAL PARAMETERS (BIODIVERSITY STUDY)

Marine ecosystems are subject to a multitude of direct human pressures, such as overexploitation, eutrophication, pollution, and species introductions. These stressors can have synergistic effects on marine ecosystems, altering its functioning. Anthropogenic involvements constantly compromise the health of the marine ecosystem by disturbing the ecological balance. Hence the assessment of the biotic components along with abiotic factors is an integral part of environmental assessment and monitoring study. During the present investigation at APL-Mundra, the abundance and distribution of marine organisms (Plankton and benthos) were studied as part of routine environmental monitoring.

5.1 PLANKTONIC FORMS

The name plankton is derived from the Greek word “planktons”, meaning “wanderer” or “drifter”. While some forms of plankton are capable of independent movement and can swim up to several hundred meters in a single day, their position is primarily determined by currents in the body of water they inhabit. As per definition, organisms classified as "plankton" are unable to resist ocean currents. Plankton is primarily divided into two broad functional groups i.e., Phytoplankton and Zooplankton.

5.1.1 Phytoplankton

Phytoplankton are microscopic, single-celled photosynthetic organisms that live suspended in all water niches, including oceans, freshwater, and marine niche. Like the terrestrial ecosystem where plants are an integral part of the ecosystem, phytoplankton play key role in the biogeochemistry of the oceans. As they are dependent on sunlight for energy, they mostly inhabit the euphotic zone. Therefore, they are responsible for production of half of the atmosphere’s oxygen and more than half of the primary production in the oceans. There are many species of phytoplankton, each of which has a characteristic shape, size, and function. Marine species of phytoplankton grow abundantly in oceans around the world and are the foundation of the marine food chain. Marine phytoplankton are the producing (autotrophic) component in the ocean. There are fourteen classes of phytoplankton. Each class of phytoplankton contains unique attributes in size, cell structure, nutrients, and function.

5.1.2 Zooplankton:

Zooplankton occupies second position in the food web of the marine niche. They are the primary consumer’s organisms and generally feed on phytoplankton or small, microscopic group of organisms for they are nutritional needs. They are incapable of making their own food

from sun-light or inorganic compounds, and feed on organisms or the remains of other organisms to get the energy necessary for survival.

5.2 SIGNIFICANCE OF PHYTO- AND ZOOPLANKTONS

Phytoplankton are vital to marine ecosystems. They are producers, or autotrophs, that form the foundation of most marine food webs. As photosynthetic organisms, they can convert solar energy into chemical energy and store it in form of sugars. They are responsible for half of the photosynthetic activity on the planet. The significance of zooplanktons is found in their role of transferring biological production from phytoplankton to large organisms in the marine food web and the seafloor. The microscopic protozoan, tunicates, copepods, and other crustaceans graze upon many phytoplankton species. These in turn become food for other animals further linking the food web. Therefore, variability in reproduction of copepods would affect the survival of young fish that feeds on them.

Table 5: Test methods for phytoplankton and zooplankton analysis.

Sr. no.	Test performed	Method
1	Phytoplankton	APHA, Edition 23, Part 10000, 10200 F
2	Chlorophyll *a* and Pheophytin	APHA, Edition 23, Part 10000, 10200 H (with some modification)
3	Zooplankton	APHA, Edition 23, Part 10000, 10200 G
4	Macro benthos	APHA, Edition 23, Part 10000,10500 A-10500 D

5.3 PHYTOPLANKTON DIVERSITY:

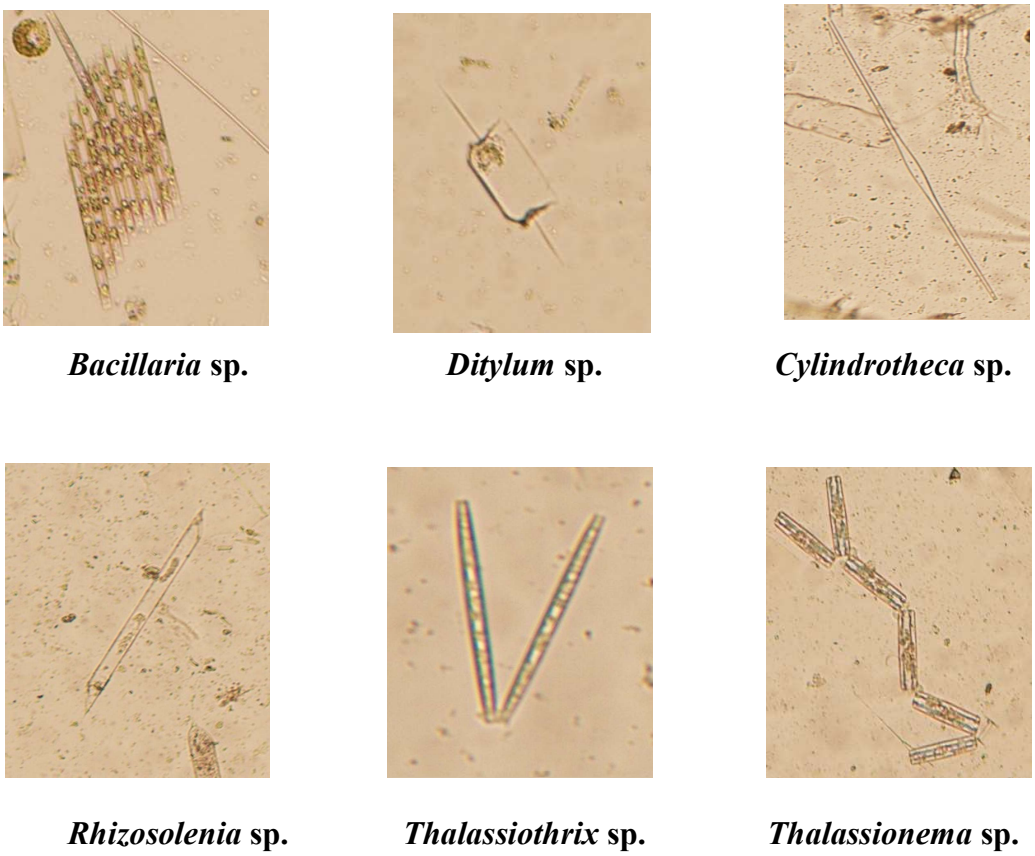
Phytoplankton sampling was carried out at 5 stations. At each station, water samples were collected from surface and bottom waters. During the sampling period the phytoplankton population in the coastal waters of APL-Mundra, was more diverse during the Pre-monsoon season (June 2023) than Post-monsoon (September 2023) (Table 6). However, the overall phytoplankton abundance was more during post-monsoon than the pre-monsoon season. The detailed species composition reported during both sampling period is given in Annexure I and II. In June 2023, the phytoplankton community was represented with a total of 29 phytoplankton genera belonging to diatoms (27 genera) and dinoflagellates (6 genera). Overall, 29 phytoplankton genera representing diatoms (27 genera) and dinoflagellate (2 genera)

reported during September 2023 sampling. Diatoms Species belonged to *Amphorprora* sp., *Asterionella* sp., *Bacillaria* sp., *Chaetoceros* sp. *Corethron* sp., *Coscinodiscus* sp., *Cyclotella* sp., *Cylindrotheca* sp., *Cymbella* sp., *Diploneis* sp., *Guinardia* sp., *Gyrosigma* sp., *Lauderia* sp., *Leptocylindrus* sp., *Licmophora* sp., *Lithodesmium* sp., *Navicula* sp., *Nitzschia* sp., *Odontella* sp., *Pinnularia* sp., *Pleurosigma* sp., *Pseudo-nitzschia* sp., *Synedra* sp., *Thalassiosira* sp. and *Thalassionema* sp. were common during both sampling period. Only 2 dinoflagellate genera i.e., *Prorocentrum* and *Protoperidinium* were reported during September 2023 as compared to June 2023 (5 genera).

The phytoplankton abundance in the study region was higher during the 109 to 233 cells x 10^2 L^{-1} during September 2023 as compared to June 2023 (ranged from 100 to 199 cells x 10^2 L^{-1}). In June 2023, the highest phytoplankton abundance was observed at Station 2 in the surface (199 cells x 10^2 L^{-1}) and then at Station 5 in surface water (166 cells x 10^2 L^{-1}). The lowest phytoplankton abundance (100 cells x 10^2 L^{-1}) was observed at Station 2 in bottom water. During September 2023, phytoplankton abundance was higher at Station 1 in bottom water (233 cells x 10^2 L^{-1}) and lowest at Station 3 bottom water (109 cells x 10^2 L^{-1}). The diatom genera, *Thalassiosira* (up to 30 cells x 10^2 L^{-1}) during June 2023 (Annexure I), whereas in September 2023, *Asterionella* (up to 40 cells x 10^2 L^{-1}) and *Coscinodiscus* (up to 41 cells x 10^2 L^{-1}) dominated phytoplankton assemblage (Annexure II). The study shows that the marine water around was enriched with the diverse phytoplankton population during the same period.

Table 6: Different marine biological parameters (phytoplankton abundance, Chlorophyll *a*, Pheophytin concentrations) reported from the marine waters of APL-Mundra, during June 2023 and September 2023.

Parameter	Sampling period	Sampling Stations									
		St-1	St-1	St-2	St-2	St-3	St-3	St-4	St-4	St-5	St-5
		S	B	S	B	S	B	S	B	S	B
Phytoplankton (cells x 10^2 L^{-1})	June 2023	156	111	199	100	132	105	145	102	166	115
	September 2023	191	233	157	135	144	109	184	134	188	149
Chlorophyll *a* (µg/L)	June 2023	2.1	1.6	2	1.8	2.1	1.9	2.1	1.7	2.2	1.5
	September 2023	2.4	2.8	2.4	2	2	1.9	1.9	1.7	2.1	1.8
Phaeophytin (µg/L)	June 2023	1.0	0.9	0.9	0.8	0.6	0.9	1.0	0.7	1.0	0.7
	September 2023	1.0	1.1	1.0	0.8	0.9	0.6	1.0	0.8	1.0	0.9



***Bacillaria* sp.** ***Ditylum* sp.** ***Cylindrotheca* sp.**

***Rhizosolenia* sp.** ***Thalassiothrix* sp.** ***Thalassionema* sp.**

Figure 2: Microphotographs of phytoplankton reported in the coastal waters of APL-Mundra, during June 2023 and September 2023.

5.4 PHYTOPLANKTON PIGMENTS (CHLOROPHYLL *a* AND PHEOPHYTIN):

Marine phytoplankton contains essential as well as accessory pigments like that of terrestrial plants. Phytoplankton pigments capture sunlight. The resulting photosynthesis and its products, especially the oxygen and organic compounds, all rely on the light energy captured by the different phytoplankton pigments. Chlorophyll *a* is the major pigment for light harvesting, and plays a significant role in photosynthesis and photoprotection, by extending the light collection window and protecting the cell from the damage of high irradiance levels or high ultraviolet light exposure.

Algal chlorophyll forms a series of degradation products upon degradation. In addition to Chlorophyll the naturally occurring pigments in algal cells. The nature of these degradation products depends on which part of the chlorophyll molecule is affected. As chlorophyll degrades, the initial step is either the loss of the magnesium from the center of the molecule or the loss of the phytol tail. This results in the formation of the molecule, phaeophytin. Depe on

the parent molecule several distinct molecules like phaeophytins, chlorophyllides, and pheophorbides can be produced. Thus, in addition to Chlorophyll *a* filtered seawater contains color degradation products of phytoplankton pigments.

5.4a CHLOROPHYLL *a* AND PHAEOPHYTIN CONCENTRATIONS

The phytoplankton biomass distribution expressed in terms of Chlorophyll *a* (Chl-*a*) and Pheophytin at selected stations in the coastal region of APL-Mundra, is presented in Table 6. Overall, Chl-a and phaeopigment concentration was more during the September 2023 (1.7 to 2.8 µg/L and 0.6 to 1.1 µg/L respectively) than the June 2023. In June 2023, the Chl-*a* concentrations in the study region were ranged from 1.5 µg/L to 2.2 µg/L. The Pheophytin content was ranged from 0.7 µg/L to 1.0 µg/L. The highest Chl-*a* and Pheophytin concentrations were observed at surface waters of all stations and highest Chl-*a* (2.2 µg/L) was observed at surface waters of Station 5. During September 2023, highest Chl-*a* concentrations was observed at Station 1 bottom water (2.8 µg/L) and lowest at Station 4 bottom water (1.7 µg/L).

The Chl-*a* and Pheophytin concentrations were more in the surface water as compared to the bottom water during June 2023, whereas not trend was observed in September 2023. The variations observed between the surface and bottom waters could be due to several natural biological variability.

The concentration of Pheophytin is a measure of the dead cells and is an indirect indicator of biotic and abiotic stress conditions of the algae leading to a deterioration of Chl-*a*. The ratio from concentrations of Chl-*a* and Pheophytin in an aquatic ecosystem suggests a balance between the growth and mortality of phytoplankton life. In healthy environments, ratios of Chl-*a* to Pheophytin generally exceed 1.1. In the present study, this ratio was ranged from 1.4 to 3.1. The Chl-*a* and Pheophytin ratio showed marginally elevated levels in the surface waters as compared to the bottom waters. Overall, the ratios of Chl-*a* and Pheophytin concentration in the study region were generally high (>1), indicating that the appropriate conditions prevailed for the phytoplankton growth.

5.5 ZOOPLANKTON DIVERSITY:

Zooplankton standing stock in terms of population and biomass revealed substantial spatial and temporal variation (Table 7). Zooplankton population was more abundant during September 2023 (12.4 to 16.2 nos. $\times 10^3/100\ m^3$) to than June 2023 (10.8 to 12.6 nos. $\times 10^3/100\ m^3$). In June 2023, the maximum zooplankton population (12.6 nos. $\times 10^3/100\ m^3$) and biomass

(2.5 ml/ 100 m^3) were recorded at station 4. The lowest zooplankton population (10.9 nos.×10^3/100 m^3) was observed at station 5 and biomass (1.3 ml/100 m^3) (Figure 4). During September 2023, the maximum zooplankton population and biomass were observed at Station 1 (16.2 nos. ×10^3/100 m^3) and Station 4 (2.9 ml/ 100 m^3) respectively.

Overall, Copepods (74.4 to 75.7%) and copepod nauplii (13 to 15%) dominated the zooplankton assemblage during both sampling periods (Figure 3). Other zooplankton groups such as brachyuran crab larvae, anomuran crab larvae, decapod (shrimps), fish and shellfish eggs, fish larvae, gastropod larvae, chaetognaths, polychaete larvae, siphonophore, ostracods, Oikopleura, Amphipods and Lucifer were also reported at various concentrations. Different groups of identified zooplankton groups are represented in Annexure III.

Table 7: Density and biomass of various zooplankton and macrobenthos groups in the coastal waters at the APL-Mundra during June 2023 and September 2023.

Parameter	Sampling period	Sampling Stations				
		St-1	St-2	St-3	St-4	St-5
Zooplankton						
Population (nos.× 10^3/100 m^3)	June 2023	12.28	12.23	11.26	12.6	10.85
	September 2023	16.27	13.05	12.72	16.17	12.97
Biomass (ml./100 m^3)	June 2023	2.5	1.6	1.5	2.5	1.3
	September 2023	2.8	1.5	1.7	2.9	1.7
Macro benthos						
Total abundance (nos./m^2)	June 2023	700	900	750	1100	950
	September 2023	640	720	590	690	810
Biomass (g/m^2)	June 2023	1.1	1.4	1.4	1.5	1.9
	September 2023	0.8	1.1	0.7	0.9	1.2

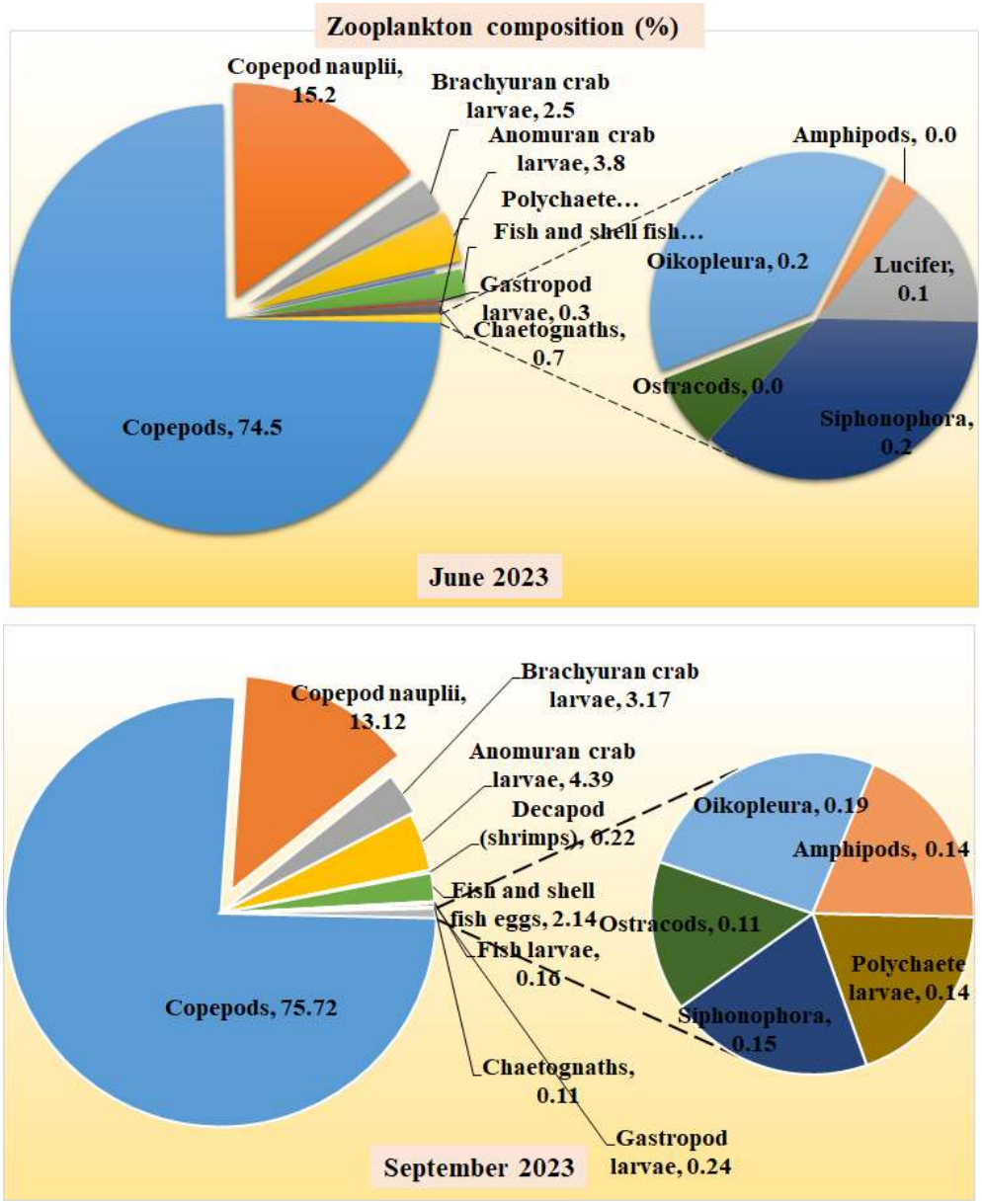


Figure 3: Percent composition of zooplankton groups reported from the marine waters of APL-Mundra during June 2023 and September 2023.

Fish Larvae

Copepods

Decapod

Crab larvae

Figure 4: Microphotographs of zooplankton reported along the APL-Mundra coast during June 2023 and September 2023.

5.6 Macrobenthic fauna

The benthic zone is the lowest ecological zone of a water body which usually involves the sediments at the seafloor. The benthic environment is divided into distinctive ecological zones based on depth, seafloor topography, and vertical gradients of physical parameters. These are the supralittoral, littoral, sublittoral, bathyal, abyssal, and hadal zones. The number of phyla and species of benthic animals exceeds those of pelagic species, at least partly because of the greater physical variety of benthic habitats. Benthic animals are separated into infaunal and epifaunal species, depending upon whether they live within sediments or on the surface of the seafloor, respectively. Size categories of the zoobenthos consist of the larger macrofauna (>1.0 mm), the small meiofauna which is characteristically found in sand and mud, and the microfauna which is made up mostly of protozoans.

Benthic organisms are morphologically different from those planktonic organisms. Many are adapted to live on the substrate (bottom). In benthic habitats, they can be considered dominant creatures. These organisms adapted to deep-water pressure so cannot survive in the

upper parts of the water column. Since light does not penetrate very deep ocean water, the benthic organisms often depend on the organic matter falling from the upper water column as their main energy source. This dead and decaying matter sustains the benthic food chain. The most benthic organisms are scavengers or detritivores. These organisms under being relatively stationary, are constantly exposed to changes undergoing in overlying water, and hence, respond very well to aquatic pollution. The macro benthos population is very sensitive to environmental perturbation and is highly influenced by the physicochemical characteristics of water, the nature of the substratum, food, predation, and other factors. The density of benthic invertebrates also fluctuates widely with the changes in the season.

5.6.1 Significance of macrobenthic organisms

The biomass of macrobenthic organisms in estuaries and coastal embayment is often high. It declines if communities affected by prolonged periods of poor water quality especially when anoxia and hypoxia are common. Burrowing and tube-building by deposit-feeding benthic organisms (bioturbation) help to mix the sediment and enhance the decomposition of organic matter. Nitrification and denitrification are also enhanced because a range of oxygenated and anoxic micro-habitats are created. For example, the area of oxic-anoxic boundaries and the surface area available for diffusive exchange are increased by tube-building macrobenthos. The loss of benthic suspension-feeders can further enhance turbidity levels because these organisms filter suspended particles including planktonic algae, and they enhance sedimentation rates through bio deposition (i.e., voiding of their wastes and unwanted food). Changes in the macro fauna (and flora) cause changes in nutrient storage pools. Macro fauna is also important constituents of fish diets and thus are an important link for transferring energy and nutrients between trophic levels, also driving pelagic fish and crustacean production. For these reasons, the benthic organisms are extremely important indicators of environmental change.

5.6.2 Benthic Diversity

5.6.2a Subtidal region:

The macrobenthic population study revealed large spatiotemporal variation with the benthic population during the study period. Overall, more macrobenthos abundance and biomass were reported at subtidal stations than at intertidal stations. The macrobenthos density and biomass was more during the June 2023 than September 2023. In June 2023, the macrobenthos density ranged from 700 no./m^2 to 1100 nos./m^2 at sampling stations (Table 7). The biomass of the macrobenthic community in the study region was ranged from 1.1 g/ m^2 to

1.9 g/ m^2 in the study region. The maximum abundance of benthic microorganisms was reported at Station 4 (1100 nos./m^2). The highest biomass of macrobenthic species was observed at Station 5 (1.9 g/m^2). During September 2023, the macrobenthos density and biomass was ranged from 590 to 810 nos./m^2 and 0.7 to 1.2 g/ m^2 respectively.

In species composition, Polychaete species (Phylum Annelida) belonging to the family Paraonidae, Pilargidae, Capitillidae, Cossuridae, Glyceridae, Ciratullidae, Nephthyida, Nereidae, Lumbriconeridae, Spionidae were abundant contributing ~82% to macrobenthic population during June 2023 (Annexure IV). In September 2023, species belongs to family Nephthyidae and Lumbriconeridae were not reported, whereas polychaete species contributed ~84% to macrobenthic population (Annexure IV).

Overall, the presence of Polychaete, Amphipods, and Nemerteans suggest the availability of food organisms for benthic predators in the area. The macrobenthic population reported during both studies reveals that the large spatial-temporal variation with the benthic population could be due to the change in bottom substratum.

5.6.2b Intertidal region

The sandy substratum with low organic matter affects the occurrence of the macrobenthic community in the intertidal region. In September 2023, low macrobenthos biomass was measured (0.06 g/m^2 to 0.4 g/m^2) in the intertidal region at the APL-Mundra (Annexure V). The lowest density of macrobenthic organisms was reported at station IT-2 (HW) (78 nos./m^2), whereas the highest density was reported at Station IT-2 (LW) (120 nos./m^2). During June 2023, the macrobenthic biomass was ranged from (0.08 to 0.6 g/m^2). At Station 1 (LW) the higher macrobenthic population (250 nos./m^2) and biomass (0.6 g/m^2) was reported. No macrobenthic community was observed at station 3 (HW and LW) may be due to sandy sediment during both sampling periods.

Polychaete sp. **Amphipod sp.**

Figure 5: Microphotographs of macrobenthic organisms observed in the sediment samples collected in the vicinity of APL-Mundra during June 2023 and September 2023.

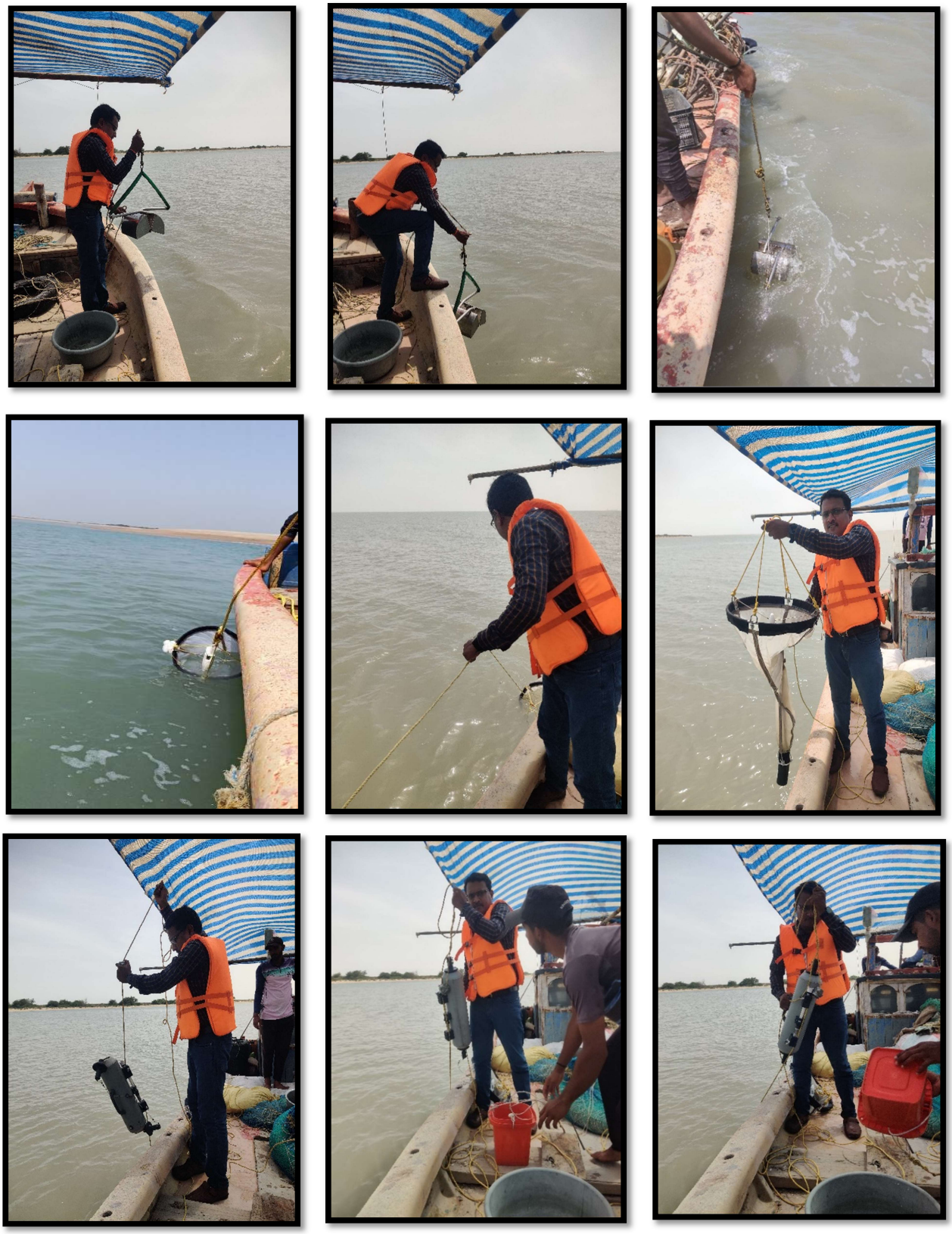
6 CONCLUSIONS

In the present study, a diversified planktonic and benthic population was observed along the integrated seawater intake and outfall channels developed by APSEZ in vicinity of APL. The diverse phytoplankton and zooplankton population during the pre-monsoon (June 2023) and post-monsoon season (September 2023) indicates that the water conditions along the channels are favourable for their survival and growth.

The enriched planktonic flora and subtidal benthic fauna could greatly benefit the fishery population in this region, especially along the outfall channel region. The impact of the outfall water could be minimal on the marine biota. Our recent fish bioassay study (carried out during both seasons) showed that the fish species *Mugil cephalus* had a 90% survival rate in absolute outfall water, which is consistent with these findings. Fish for the bioassay study were collected from Kotdi Creek. 90% survival of the fish population in bioassay and the diverse biota near outfall channel (present study) indicate that the abiotic characteristics, mainly temperature, of discharge water does not have the adverse biological impact. The well-constructed 11km-long outfall channel with an aqueduct over the Kotdi Creek enables cooling of outfall water, avoids mixing, and facilitates the natural flow of creek water as per the compliance condition. Furthermore, the overall physico-chemical and biological characteristics of the marine environment observed in the present seasonal study not significantly varied from the previous baseline marine monitoring study.

Table 8: Names of the Marine Monitoring Team Members

Sr. No.	Name of Person
1.	Mr. Vijay Thanki (Env. Chemist)
2.	Mr. Pravin Singh (Env. Chemist)
3.	Ms. Shweta A. Rana (Env. Microbiologist)
4.	Mr. Bhavin Patel (Env. Engineer)
5.	Dr. Sushant Sanaye (Marine Biologist)



PHOTOGRAPHS OF DIFFERENT TYPES OF SAMPLING

Annexures I: Phytoplankton abundance (cells×10^2/L) at different sampling stations in the coastal waters of APL-Mundra during June 2023.

Phytoplankton Genera	Sampling Stations									
	St-1	St-1	St-2	St-2	St-3	St-3	St-4	St-4	St-5	St-5
	S	B	S	B	S	B	S	B	S	B
Diatoms										
Amphorprora sp.	2	1	2	0	1	1	2	1	2	1
Asterionella sp.	4	3	5	3	1	0	5	4	6	7
Bacillaria sp.	2	0	6	3	2	1	4	2	8	4
Chaetoceros sp.	3	4	8	2	5	3	4	2	10	2
Corethron sp.	1	1	2	1	1	1	1	0	1	1
Coscinodiscus sp.	21	14	19	10	14	11	20	12	13	10
Cyclotella sp.	3	2	2	1	1	1	2	1	8	4
Cylindrotheca sp.	2	2	1	1	3	1	1	0	3	2
Cymbella sp.	0	1	0	0	0	0	0	0	0	1
Diploneis sp.	1	0	1	0	2	1	1	1	2	1
Ditylum sp.	3	2	4	2	2	1	4	2	5	3
Guinardia sp.	3	1	5	4	3	2	2	3	1	1
Gyrosigma sp.	2	1	2	1	1	1	2	0	5	1
Lauderia sp.	3	1	2	0	2	2	1	1	3	2
Leptocylindrus sp.	1	0	8	4	2	2	0	1	4	4
Licmophora sp.	2	2	3	1	0	0	1	2	5	1
Lithodesmium sp.	3	1	4	0	2	1	2	5	3	2
Navicula spp.	15	8	20	11	14	9	15	6	14	9
Nitzschia spp.	10	14	18	8	13	10	16	14	15	11
Odontella sp.	3	3	2	0	3	2	7	5	5	3
Pinnularia sp.	0	0	2	1	4	2	6	0	5	1
Plurosigma spp	9	8	11	5	10	8	4	5	4	4
Pseudo-nitzschia sp.	3	0	4	2	4	3	4	4	5	3
Rhizosolenia sp.	12	8	15	9	12	10	13	5	11	7
Synedra sp.	3	2	3	1	2	2	2	2	1	2
Thalassionema sp.	8	7	12	8	8	7	10	6	11	10
Thalassiosira sp.	28	19	30	13	14	12	10	9	9	6
Dinoflagellates										
Alexandrium sp.	1	1	1	1	1	2	0	1	1	2
Ceratium sp.	2	0	1	2	0	1	2	2	1	2
Gonyaulax sp.	1	0	0	1	0	1	1	1	1	2
Gymnodinium sp.	2	2	1	2	4	3	0	1	2	2
Prorocentrum sp.	1	2	1	2	0	2	1	2	1	2
Protoperidinium sp.	2	1	4	1	1	2	2	2	1	2
Total Phytoplankton (cells x 10^2 L^{-1})	**156**	**111**	**199**	**100**	**132**	**105**	**145**	**102**	**166**	**115**

Note: S=surface; B=bottom; St=station

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Annexures II: Phytoplankton abundance (cells×10^2/L) at different sampling stations in the coastal waters of APL-Mundra during September 2023.

Phytoplankton Genera	Sampling Stations									
	St-1	St-1	St-2	St-2	St-3	St-3	St-4	St-4	St-5	St-5
	S	B	S	B	S	B	S	B	S	B
Diatoms										
Asterionella sp.	25	40	20	20	18	6	19	3	34	29
Chaetoceros sp.	2	2	2	1	2	5	1	6	3	6
Corethron sp.	0	1	1	0	2	1	0	1	0	1
Coscinodiscus sp.	41	39	30	20	18	14	22	15	1	4
Cyclotella sp.	1	6	2	0	0	4	0	0	4	5
Cymbella sp.	0	1	1	1	0	0	0	0	0	2
Ditylum sp.	4	3	4	1	0	1	11	8	1	1
Guinardia sp.	15	21	12	20	0	2	3	10	16	0
Odontella sp.	20	20	18	8	16	5	15	12	19	14
Thalassiosira sp.	18	37	2	21	5	3	4	8	3	7
Amphora sp.	0	2	1	3	5	1	1	2	7	3
Amphorprora sp.	0	1	0	0	1	2	23	1	0	1
Bacillaria sp.	4	0	1	4	9	2	2	0	4	4
Cylindrotheca sp.	2	4	0	0	3	1	3	4	3	2
Diploneis sp.	0	0	1	1	1	0	0	1	0	2
Gyrosigma sp.	1	1	1	0	2	1	2	0	2	0
Lauderia sp.	0	0	2	1	1	0	2	1	0	0
Leptocylindrus sp.	5	5	3	3	0	2	0	1	1	4
Licmophora sp.	0	2	3	0	1	1	0	2	3	1
Lithodesmium sp.	3	0	1	1	2	4	3	8	4	3
Navicula spp.	20	10	12	5	10	4	15	10	30	15
Nitzschia spp.	5	24	12	15	21	12	16	10	21	18
Pinnularia sp.	5	0	0	2	0	6	10	0	2	2
Pleurosigma spp	1	0	8	2	5	2	14	12	12	2
Pseudo-nitzschia sp.	2	2	1	1	1	5	4	4	2	0
Synedra sp.	2	1	1	0	1	4	2	0	2	1
Thalassionema sp.	12	10	15	5	18	14	10	14	8	16
Dinoflagellates										
Protoperidinium sp.	2	0	2	0	1	3	0	0	1	1
Prorocentrum sp.	1	1	1	0	1	4	2	1	5	5
Total Phytoplankton (cells x 10^2L^{-1})	**191**	**233**	**157**	**135**	**144**	**109**	**184**	**134**	**188**	**149**

Note: S=surface; B=bottom; St=station

Annexures III: Density (nos. ×10^3/100 m^3) and biomass (ml/100 m^3) of various zooplankton groups in the coastal waters at the APL-Mundra during June 2023 and September 2023.

Zooplankton Groups	Sampling period									
	June 2023					September 2023				
	St-1	St-2	St-3	St-4	St-5	St-1	St-2	St-3	St-4	St-5
Copepods	9.1	9.7	8.7	9.7	7.6	11.0	10.4	9.8	13.056	9.6
Copepod nauplii	1.8	1.6	1.4	1.7	2.1	2.5	1.6	1.6	1.856	1.8
Brachyuran crab larvae	0.5	0.3	0.2	0.4	0.3	0.8	0.4	0.4	0.304	0.3
Anomuran crab larvae	0.5	0.3	0.4	0.5	0.3	1.4	0.5	0.3	0.496	0.6
Decapod (shrimps)	0	0	0	0	0	0.1	0.0	0.0	0.032	0.0
Fish and shellfish eggs	0.2	0.2	0.2	0.3	0.3	0.4	0.1	0.3	0.304	0.4
Fish larvae	0	0	0	0	0	0.0	0.0	0.0	0	0.0
Gastropod larvae	0	0	0	0	0.1	0.0	0.0	0.0	0.048	0.0
Chaetognaths	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0	0.0
Polychaete larvae	0	0	0	0	0	0.0	0.0	0.0	0.016	0.0
Siphonophora	0.1	0	0	0	0	0.0	0.0	0.0	0	0.0
Ostracods	0	0	0	0	0	0.0	0.0	0.0	0.016	0.0
Oikopleura	0	0	0	0	0	0.0	0.0	0.0	0.016	0.0
Amphipods	0	0	0	0	0	0.0	0.0	0.0	0.032	0.0
Lucifers	0	0	0	0	0	0.0	0.0	0.0	0	0.0
Population (nos.× 10^3/100 m^3)	**12.3**	**12.2**	**11.3**	**12.6**	**10.9**	**16.2**	**13.1**	**12.4**	**16.17**	**12.7**
Biomass (ml./100 m^3)	**2.5**	**1.6**	**1.5**	**2.5**	**1.3**	**2.8**	**1.6**	**1.7**	**2.9**	**1.7**

Annexures IV: Faunal composition, density (no/m^2) and biomass (g/m^2) of the macrobenthos community in the subtidal region at APL-Mundra during June 2023 and September 2023.

Taxa	Sampling period									
	June 2023						September 2023			
	St-1	St-2	St-3	St-4	St-5		St-1	St-2	St-3	St-4	St-5
Phylum Polychaeta											
Paraonidae	350	450	400	425	350		200	160	210	220	240
Pilargidae	25	0	25	0	50		70	10	20	30	60
Capitillidae	75	125	75	175	50		30	120	90	80	20
Cossuridae	50	50	25	0	25		50	60	20	40	20
Glyceridae	25	0	100	225	0		30	50	20	50	40
Ciratullidae	25	25	25	25	25		40	30	30	30	40
Nephthyidae	0	25	0	50	125		0	0	0	30	50
Nereidae	0	0	25	25	0		30	70	70	20	80
Lumbriconeridae	0	25	0	100	150		0	0	0	20	70
Spionidae	50	50	25	25	25		60	30	20	40	40
Phylum Nemertea											
Nemertea	25	0	0	0	25		10	10	20	20	10
Phylum Mollusca											
Bivalvia	25	125	0	25	25		30	70	0	20	30
Gastropoda	25	0	0	0	25		40	50	10	40	40
Phylum Arthopoda											
Amphipoda	25	25	50	25	50		30	40	70	10	50
Isopoda	0	0	0	0	0		20	20	10	40	20
Total abundance (nos./m^2)	**700**	**900**	**750**	**1100**	**925**		**640**	**720**	**590**	**690**	**810**
Biomass (g/m^2)	**1.1**	**1.4**	**1.4**	**1.5**	**1.9**		**0.8**	**1.1**	**0.7**	**0.9**	**1.2**

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Annexures V: Faunal composition, density (no/m^2) of macrobenthos from the sediments collected at High tide water level (HW) and Low tide water level (LW) in the inter-tidal region at APL-Mundra during June 2023 and September 2023.

Faunal groups	Sampling period												
	June 2023							September 2023					
	IT-1 (HW)	IT-1 (LW)	IT-2 (HW)	IT-2 (LW)	IT-3 (HW)	IT-3 (LW)		IT-1 (HW)	IT-1 (LW)	IT-2 (HW)	IT-2 (LW)	IT-3 (HW)	IT-3 (LW)
Phylum Annelida													
Polychaetes	50	75	25	100	-	-		30	52	56	68	-	-
Phylum Nemertea													
Nemertea	0	25	25	0	-	-		0	8	4	12	-	-
Phylum Mollusca													
Bivalve	25	50	25	50	-	-		4	20	0	12	-	-
Gastropoda	0	25	0	0	-	-		8	4	4	8	-	-
Phylum Arthropoda													
Amphipoda	25	50	50	25	-	-		36	20	16	20	-	-
Isopoda	0	25	0	25	-	-		0	0	0	0	-	-
Total density (no/m^2)	**100**	**250**	**125**	**200**	-	-		**78**	**104**	**80**	**120**	-	-
Biomass (g/m^2)	**0.08**	**0.6**	**0.5**	**0.4**	-	-		**0.06**	**0.4**	**0.1**	**0.2**	-	-

Note: LW=low water during low tide; HW=high water during high tide; St=Station

adani Power	Adani Power Limited - Mundra	Annexure-IV
	Summary of Continues Ambient Air Quality Monitoring System Reports (Apr'2023 To Sept'2023)	

		Station: ECO Park				Station: Near Main Gate				Station: Near Ash Pond			
Parameters		PM10	PM2.5	SO_2	NO_2	PM10	PM2.5	SO_2	NO_2	PM10	PM2.5	SO_2	NO_2
UNIT		ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3
MONTH	GPCB LIMIT	100	60	80	80	100	60	80	80	100	60	80	80
Apr'23	Minimum	56.2	17.9	17.5	10.5	51.4	17.5	18.7	13.2	43.4	19.4	20.5	10.7
	Maximum	71.3	31.2	27.2	22.7	83.3	29.8	25.0	23.1	64.3	31.5	32.1	25.1
	Average	64.4	25.7	22.5	17.3	74.1	25.3	22.6	19.6	53.6	23.5	27.4	18.9
May'23	Minimum	60.1	19.3	19.3	11.3	46.6	19.6	20.1	14.9	47.1	21.6	18.6	14.8
	Maximum	72.1	34.8	28.3	23.5	67.5	31.9	26.4	24.8	78.0	33.7	30.2	29.2
	Average	66.3	24.1	24.2	18.1	56.8	27.4	24.0	21.3	69.7	25.7	25.5	23.0
June'23	Minimum	45.0	17.9	13.4	11.7	41.1	16.7	14.1	13.9	42.7	20.2	15.8	16.0
	Maximum	66.0	27.4	24.2	20.6	62.0	28.2	23.3	22.9	69.9	31.2	29.8	29.3
	Average	54.2	22.3	20.3	16.6	50.3	24.0	19.8	19.8	62.3	24.1	24.7	23.3
July'23	Minimum	41.2	20.6	12.3	18.4	43.4	21.5	11.1	16.7	47.3	26.7	13.2	19.8
	Maximum	54.1	29.1	17.6	28.1	57.3	30.9	16.4	26.4	66.4	36.1	18.5	34.2
	Average	47.8	24.9	14.0	22.7	50.3	26.2	12.8	21.0	54.4	31.4	14.9	28.2
Aug'23	Minimum	44.2	23.4	13.2	17.0	45.2	22.5	12.9	16.5	46.5	26.6	14.1	21.7
	Maximum	57.2	31.7	17.0	31.0	58.2	30.8	16.7	30.5	64.4	34.9	18.5	35.7
	Average	51.0	28.3	14.7	22.8	52.0	27.0	14.4	22.3	53.5	31.2	15.5	27.6
Sept'23	Minimum	50.4	19.4	16.6	21.1	49.2	20.3	16.2	20.5	51.5	27.1	13.4	16.8
	Maximum	68.4	33.5	20.4	35.1	68.2	36.8	20.0	34.5	76.2	39.2	36.2	36.7
	Average	57.7	28.9	18.0	26.1	56.7	30.2	17.6	25.6	59.3	32.6	25.7	27.7

adani Power	**Adani Power Limited, Mundra**
	Differential Water Temperature Report (April'23 to September'23)

Month: April'2023			
Date	**Intake Reservoir (ºC)**	**Outfall channel (ºC)**	**Temp. difference (ºC)**
01/04/2023	28.0	OTS	OTS
02/04/2023	28.0	OTS	OTS
03/04/2023	28.5	OTS	OTS
04/04/2023	28.5	30.0	1.5
05/04/2023	29.0	30.5	1.5
06/04/2023	29.0	31.0	2.0
07/04/2023	29.5	31.0	1.5
08/04/2023	29.0	31.5	2.5
09/04/2023	29.5	31.5	2.0
10/04/2023	30.0	31.5	1.5
11/04/2023	30.0	32.0	2.0
12/04/2023	29.5	31.5	2.0
13/04/2023	29.5	32.0	2.5
14/04/2023	30.0	32.5	2.5
15/04/2023	29.5	32.5	3.0
16/04/2023	30.0	33.0	3.0
17/04/2023	30.0	32.5	2.5
18/04/2023	29.5	33.0	3.5
19/04/2023	29.5	33.0	3.5
20/04/2023	31.0	32.5	1.5
21/04/2023	31.0	32.5	1.5
22/04/2023	31.5	33.0	1.5
23/04/2023	31.0	33.0	2.0
24/04/2023	30.5	33.5	3.0
25/04/2023	30.0	33.0	3.0
26/04/2023	30.0	33.5	3.5
27/04/2023	29.5	33.0	3.5
28/04/2023	29.0	33.0	4.0
29/04/2023	29.5	32.5	3.0
30/04/2023	29.5	32.0	2.5
Min.	**28.0**	**30.0**	**1.5**
Max.	**31.5**	**33.5**	**4.0**
***Average**	**29.8**	**32.2**	**2.4**

Note: OTS=Outfall Temporary Shutdown

*Intake Channel temperature data during OTS not considered in calculation.

adani Power	**Adani Power Limited, Mundra**
	Differential Water Temperature Report (April'23 to September'23)

Month: May'2023			
Date	**Intake Reservoir (ºC)**	**Outfall channel (ºC)**	**Temp. difference (ºC)**
01/05/2023	30.0	32.0	2.0
02/05/2023	30.5	32.5	2.0
03/05/2023	30.5	33.0	2.5
04/05/2023	31.0	33.5	2.5
05/05/2023	31.0	33.5	2.5
06/05/2023	30.5	33.0	2.5
07/05/2023	31.0	33.5	2.5
08/05/2023	31.0	33.0	2.0
09/05/2023	31.5	34.0	2.5
10/05/2023	31.5	34.0	2.5
11/05/2023	31.5	34.0	2.5
12/05/2023	31.5	34.0	2.5
13/05/2023	32.0	34.0	2.0
14/05/2023	31.5	33.5	2.0
15/05/2023	31.5	33.5	2.0
16/05/2023	31.0	33.5	2.5
17/05/2023	31.0	33.5	2.5
18/05/2023	30.5	33.0	2.5
19/05/2023	31.0	33.5	2.5
20/05/2023	31.0	33.0	2.0
21/05/2023	31.5	33.5	2.0
22/05/2023	31.0	33.0	2.0
23/05/2023	30.5	33.0	2.5
24/05/2023	31.0	33.5	2.5
25/05/2023	31.5	34.0	2.5
26/05/2023	31.0	34.0	3.0
27/05/2023	31.0	33.5	2.5
28/05/2023	31.5	34.0	2.5
29/05/2023	31.5	34.0	2.5
30/05/2023	31.5	34.0	2.5
31/05/2023	32.0	34.0	2.0
Min.	**30.0**	**32.0**	**2.0**
Max.	**32.0**	**34.0**	**3.0**
Average	**31.1**	**33.5**	**2.4**

adani Power	**Adani Power Limited, Mundra**
	Differential Water Temperature Report (April'23 to September'23)

Month: June'2023			
Date	**Intake Reservoir (°C)**	**Outfall channel (°C)**	**Temp. difference (°C)**
01/06/2023	33.0	35.5	2.5
02/06/2023	32.5	35.0	2.5
03/06/2023	33.0	35.0	2.0
04/06/2023	33.0	35.0	2.0
05/06/2023	32.5	34.0	1.5
06/06/2023	33.0	35.0	2.0
07/06/2023	33.0	36.0	3.0
08/06/2023	33.0	36.0	3.0
09/06/2023	33.0	35.5	2.5
10/06/2023	32.5	35.0	2.5
11/06/2023	32.5	35.5	3.0
12/06/2023	32.5	35.5	3.0
13/06/2023	32.5	35.0	2.5
14/06/2023	33.0	36.0	3.0
15/06/2023	32.5	35.5	3.0
16/06/2023	32.5	35.0	2.5
17/06/2023	32.5	35.0	2.5
18/06/2023	32.5	34.5	2.0
19/06/2023	31.5	34.0	2.5
20/06/2023	31.0	34.0	3.0
21/06/2023	30.5	33.0	2.5
22/06/2023	31.0	33.5	2.5
23/06/2023	30.0	33.0	3.0
24/06/2023	30.0	32.0	2.0
25/06/2023	30.0	32.0	2.0
26/06/2023	30.5	32.0	1.5
27/06/2023	30.0	32.5	2.5
28/06/2023	30.0	32.0	2.0
29/06/2023	29.5	32.0	2.5
30/06/2023	29.5	32.0	2.5
Min.	**29.5**	**32.0**	**1.5**
Max.	**33.0**	**36.0**	**3.0**
Average	**31.8**	**34.2**	**2.5**

adani Power	**Adani Power Limited, Mundra**
	Differential Water Temperature Report (April'23 to September'23)

Month: July'2023			
Date	**Intake Reservoir (ºC)**	**Outfall channel (ºC)**	**Temp. difference (ºC)**
01/07/2023	29.0	32.5	3.5
02/07/2023	29.5	32.5	3.0
03/07/2023	28.0	31.5	3.5
04/07/2023	28.5	32.0	3.5
05/07/2023	28.5	31.5	3.0
06/07/2023	28.5	32.0	3.5
07/07/2023	28.0	31.5	3.5
08/07/2023	28.5	32.0	3.5
09/07/2023	29.0	32.5	3.5
10/07/2023	28.5	32.0	3.5
11/07/2023	28.5	32.0	3.5
12/07/2023	28.0	32.0	4.0
13/07/2023	28.5	32.0	3.5
14/07/2023	28.0	32.0	4.0
15/07/2023	28.5	32.0	3.5
16/07/2023	28.5	32.0	3.5
17/07/2023	28.5	32.0	3.5
18/07/2023	29.0	33.0	4.0
19/07/2023	29.0	32.5	3.5
20/07/2023	29.5	33.0	3.5
21/07/2023	29.5	33.0	3.5
22/07/2023	29.0	32.5	3.5
23/07/2023	28.5	32.0	3.5
24/07/2023	29.0	32.5	3.5
25/07/2023	28.5	32.0	3.5
26/07/2023	28.5	32.0	3.5
27/07/2023	28.5	32.5	4.0
28/07/2023	29.5	33.0	3.5
29/07/2023	29.0	33.0	4.0
30/07/2023	29.0	32.5	3.5
31/07/2023	28.5	32.5	4.0
Min.	**28.0**	**31.5**	**3.0**
Max.	**29.5**	**33.0**	**4.0**
Average	**28.7**	**32.3**	**3.6**

adani Power	**Adani Power Limited, Mundra**
	Differential Water Temperature Report (April'23 to September'23)

Month: August'2023			
Date	**Intake Reservoir (ºC)**	**Outfall channel (ºC)**	**Temp. difference (ºC)**
01/08/2023	29.0	33.0	4.0
02/08/2023	29.5	33.5	4.0
03/08/2023	29.0	33.5	4.5
04/08/2023	29.0	33.5	4.5
05/08/2023	29.5	33.5	4.0
06/08/2023	29.5	34.0	4.5
07/08/2023	29.0	33.5	4.5
08/08/2023	29.5	34.0	4.5
09/08/2023	29.5	34.0	4.5
10/08/2023	30.0	33.5	3.5
11/08/2023	30.0	33.5	3.5
12/08/2023	30.5	33.5	3.0
13/08/2023	30.0	34.0	4.0
14/08/2023	30.5	34.0	3.5
15/08/2023	30.0	34.0	4.0
16/08/2023	29.5	33.0	3.5
17/08/2023	29.0	34.0	5.0
18/08/2023	29.0	33.5	4.5
19/08/2023	29.5	33.5	4.0
20/08/2023	29.5	33.0	3.5
21/08/2023	29.0	33.5	4.5
22/08/2023	30.0	33.5	3.5
23/08/2023	30.5	33.5	3.0
24/08/2023	30.0	34.0	4.0
25/08/2023	30.0	34.5	4.5
26/08/2023	30.0	34.0	4.0
27/08/2023	29.5	34.0	4.5
28/08/2023	30.0	34.0	4.0
29/08/2023	30.0	34.0	4.0
30/08/2023	29.5	34.0	4.5
31/08/2023	30.5	33.5	3.0
Min.	**29.0**	**33.0**	**3.0**
Max.	**30.5**	**34.5**	**5.0**
Average	**29.7**	**33.7**	**4.0**

adani Power	**Adani Power Limited, Mundra**
	Differential Water Temperature Report (April'23 to September'23)

Month: September'2023			
Date	**Intake Reservoir (°C)**	**Outfall channel (°C)**	**Temp. difference (°C)**
01/09/2023	30.0	33.5	3.5
02/09/2023	30.5	34.0	3.5
03/09/2023	30.0	33.5	3.5
04/09/2023	30.0	34.0	4.0
05/09/2023	30.5	34.0	3.5
06/09/2023	30.5	33.5	3.0
07/09/2023	30.0	34.0	4.0
08/09/2023	30.0	34.0	4.0
09/09/2023	30.5	34.0	3.5
10/09/2023	30.5	34.0	3.5
11/09/2023	30.5	34.0	3.5
12/09/2023	30.0	34.5	4.5
13/09/2023	30.0	34.0	4.0
14/09/2023	30.5	34.0	3.5
15/09/2023	30.5	34.5	4.0
16/09/2023	30.0	34.0	4.0
17/09/2023	30.5	34.5	4.0
18/09/2023	30.0	34.0	4.0
19/09/2023	29.0	33.0	4.0
20/09/2023	29.5	33.5	4.0
21/09/2023	29.0	33.0	4.0
22/09/2023	29.5	33.5	4.0
23/09/2023	30.0	34.0	4.0
24/09/2023	30.0	34.0	4.0
25/09/2023	30.5	34.5	4.0
26/09/2023	30.0	34.0	4.0
27/09/2023	30.0	34.0	4.0
28/09/2023	30.5	34.0	3.5
29/09/2023	30.5	34.5	4.0
30/09/2023	30.0	34.0	4.0
Min.	**29.0**	**33.0**	**3.0**
Max.	**30.5**	**34.5**	**4.5**
Average	**30.1**	**33.9**	**3.8**

adani Power	Adani Power Limited- Mundra
	Greenbelt Details (April'23 to September'23)

Annexure: VI

Greenbelt Details:

Area (ha)	No. of Trees & Palm Planted	No. of Shrubs Planted
117.33	236257	1405154

Plant species planted at Adani Power Limited, Mundra

Sr. No.	Scientific Name	Common Name
Tress		
1.	*Achras sapota*	Sapota / Chiku
2.	*Areca catechu*	Nut Palm tree
3.	*Azadirachta indica*	Neem
4.	*Bismarckia nobilis*	Bismarckia Palm
5.	*Bauhinia blakeana*	Kachnar
6.	*Callistemon viminalis*	Pink Bottle brush
7.	*Callistemon lanceolatus*	Red Bottle brush
8.	*Casuarina equisetifolia*	Saru/Casuarina
9.	*Cocos nucifera*	Nariyal/Cocconut
10.	*Delonix regia*	Gulmohar
11.	*Ficus benghalensis*	Baniyan tree
12.	*Ficus religiosa*	Peepal Tree
13.	*Punica granatum*	Pomegranate
14.	*Emblica officinalis*	Aamla
15.	*Ficus infectoria*	Pilkhan /White Fig tree
16.	*Mangifera indica*	Aam/ Mango
17.	*Polyalthia longifolia*	Ashok/ False Ashok
18.	*Psidium guajava*	Guava
19.	*Salvadora oleoides*	Peelu
20.	*Citrus limon*	Lemon
21.	*Syzygium cumini*	Jamun
22.	*Wodyetia bifurcata*	Palm
Shrubs		
23.	*Allamanda*	Yellow Bell
24.	*Bougainvillea spectabilis*	Bougainvillea/ Booganbel
25.	*Catharanthus alba*	Vinca
26.	*Clerodendrum inerme*	Wild Jasmine
27.	*Cycas circinalis*	Cycas
28.	*Euphorbia cotinifolia*	Tropical Smoke Bush
29.	*Euphorbia milii*	Christ Thorn
30.	*Ficus panda*	-
31.	*Hymenocallis caroliniana*	Spider Lily
32.	*Ixora hybrid*	Ixora
33.	*Jasminum molle*	Jui
34.	*Jatropha curcas*	Ratanjyot,
35.	*Nerium indicum*	Kaner
36.	*Nerium odoratum*	Kaner
37.	*Plumeria alba*	Champa

adani Power	**Adani Power Limited- Mundra**
	Greenbelt Details (April'23 to September'23)

Sr. No.	Scientific Name	Common Name
38.	*Tecoma*	Yellow Trumpetbush
39.	*Ziziphus mauritiana*	Ber/Bor/Indian plum
40.	*Furcraea macdougalii*	Furcraea
41.	*Nicadevia*	Nicadevia

adani Power	**Adani Power Limited, Mundra**
	Ash Production & Disposal (April 2023 to September 2023)

Month	Total Ash Generation	For Cement Manufacturing (Fly Ash + Bottom Ash + Pond Ash)	For Export / Domestic Treaders	Filling of low-lying area	Ash Dyke	Dyke Ash lifted for reutilization Embankment / Back Filling	Bottom Ash lifted for Embankment / Back Filling	Total Ash Utilization	% Utilization
Apr'23	56261	26695	12397	0	0	10280	5000	54372	96.64
May'23	40402	18964	16942	0	0	0	6060	41966	103.87
June'23	23417	14962	5963	0	0	0	3513	24438	104.36
July'23	22533	16285	5009	0	0	0	3380	24675	109.50
Aug'23	36616	21969	8650	0	0	0	1792	32411	88.52
Sept'23	66680	31498	13873	0	0	0	2598	47970	71.94
Total	**245909**	**130374**	**62835**	**0**	**0**	**10280**	**22343**	**225831**	**91.84**

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Ref: APL/Mundra/ENV/FLYASH/433/23
Date: 16.07.2023

To,
Additional Principal Chief Conservator of Forest (APCCF),
Ministry of Environment Forests and Climate Change,
Integrated Regional Office (Near Kisan Circle),
Aranya Bhavan, Fourth Floor,
Room No.: 407, Sector 10 A,
Gandhinagar- 382010

Subject: Advisory regarding implementation of implementation of Notification No. G.S.R. 2(E) dated: 2nd January 2014 for supply and use of coal with ash content - regarding
Ref: File No. L-11011/21/2014-IA. I (T), dated: 13.04.2015

Dear Sir,

With reference to above subject and reference, we are submitting herewith the compliance of said notification.

The half yearly compliance reports of Fly Ash management for environmental safeguards stipulated in the EC and Consent are being regularly submitted to both the regional offices of MoEFCC, Gandhinagar as well as Gujarat Pollution Control Board (GPCB). We are also submitting the half yearly & annual reports of Fly ash utilization & Ash content of Coal to Central Electricity Authority (CEA) since plant operation.

We are enclosing herewith the monthly as well as **Quarterly Average Ash Content** in the coal during the period of **April'2023 to June'2023** as Annexure – I.

Total Capacity of TPP:		**4620 MW**
Phase – I	:	660 (2x330) MW
Phase – II	:	1980 (2x330) + (2x660) MW
Phase – III	:	1980 (3x660) MW

This is for your kind information and record please.

Thanking You,

Yours faithfully,
For Adani Power Limited, Mundra

(R N Shukla)
Authorized Signatory
Encl: As above

Adani Power Limited
Adani Corporate House
Shantigram, Near Vaishno Devi Circle,
S. G. Highway, Khodiyar,
Ahmedabad-382421, Gujarat India
CIN: L40100GJ1996PLC030533
Tel +91 79 2656 7555
Fax +91 79 2555 7177
info@adani.com
www.adanipower.com
Registered Office: "Adani Corporate House", Shantigram, Near Vaishno Devi Circle, S. G. Highway, Khodiyar, Ahmedabad-382421

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Annexure – I

ADANI POWER LIMITED, Mundra
ASH PERCENTAGE IN COAL

(From April' 2023 to June' 2023)

Month	Coal Consumption (MT)	Ash Content in Coal (%)
April'2023	733245	7.67
May'2023	783468	5.16
June'2023	571717	4.10
Quarterly Average (%)	**---**	**5.64**

MT: Metric Tone

Adani Power Limited
Adani Corporate House
Shantigram, Near Vaishno Devi Circle,
S. G. Highway, Khodiyar,
Ahmedabad-382421, Gujarat India
CIN: L40100GJ1996PLC030533

Tel +91 79 2656 7555
Fax +91 79 2555 7177
info@adani.com
www.adanipower.com

Registered Office: "Adani Corporate House", Shantigram, Near Vaishno Devi Circle, S. G. Highway, Khodiyar, Ahmedabad-382421

Ref: APL/Mundra/ENV/FLYASH/503/23
Date: 12.10.2023

To,
Additional Principal Chief Conservator of Forest
Ministry of Environment Forests and Climate Change,
Integrated Regional Office (Near Kisan Circle),
Aranya Bhavan, Fourth Floor,
Room No.: 407, Sector 10 A,
Gandhinagar- 382010

Subject: Advisory regarding implementation of implementation of Notification No. G.S.R. 2(E) dated: 2nd January 2014 for supply and use of coal with ash content - regarding
Ref: File No. L-11011/21/2014-IA. I (T), dated: 13.04.2015

Dear Sir,

With reference to the above subject and reference, we are submitting herewith the compliance of said notification.

The half yearly compliance reports of Fly Ash management for environmental safeguards stipulated in the EC and Consent are being regularly submitted to both the regional offices of MoEFCC, Gandhinagar as well as Gujarat Pollution Control Board (GPCB). We are also submitting the half yearly & annual reports of Fly ash utilization & Ash content of Coal to Central Electricity Authority (CEA) since plant operation.

We are enclosing herewith the monthly as well as Quarterly Average Ash Content in the coal during the period of **July'2023 to September'2023** as Annexure – I.

Total Capacity of TPP:		**4620 MW**
Phase – I	:	660 (2x330) MW
Phase – II	:	1980 (2x330) + (2x660) MW
Phase – III	:	1980 (3x660) MW

This is for your kind information and record please.

Thanking You,

Yours faithfully,
For Adani Power Limited, Mundra

(R N Shukla)
Authorized Signatory
Encl: As above

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"Adani Corporate House"
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Annexure – I

ADANI POWER LIMITED, MUNDRA

ASH PERCENTAGE IN COAL

(From July'2023 to September'2023)

Month	Coal Consumption (MT)	Ash Content in Coal (%)
July'2023	610317	3.69
August'2023	942689	3.88
September'2023	1250997	5.33
Quarterly Average (%)	**---**	**4.30**

MT: Metric Tone

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TEST REPORT

ULR No.	--	Report No.	**URC /23/06/L-0841**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**30/06/2023**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 1**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**3 Lit**	Appearance	**Colourless**
Sampling Date	**22/06/2023**	Sample Received Date	**24/06/2023**
Test Started Date	**24/06/2023**	Test Completion Date	**29/06/2023**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**23/06/L-0841**		

TEST RESULTS:

DISCIPLINE: Chemical Testing			**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Unit of Measurement**	**Results**
PHYSIO-CHEMICAL PARAMETERS				
1.	pH @ 25 ° C	IS 3025(Part 11):2022	--	8.45
2.	Conductivity	IS 3025(Part 14):1984	(µS/cm)	7860
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	5252
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	2414.5
5.	Carbonate as CaCO3	IS 3025(Part 51):2001	mg/L	42.4
6.	Bicarbonate as CaCO3	IS 3025(Part 51):2001	mg/L	172.5
7.	Total Alkalinity	IS 3025(Part 23):1986,	mg/L	212.1
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	62.8
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	80.9
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	514.2
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	53
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	745.4
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	1.4
14.	Phosphate as PO_4	APHA 23rd Ed.,2017,4500-P, D	mg/L	0.18
15.	Fluoride as F	APHA 23rd Ed.,2017,4500 F, D	mg/L	1.26
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	4.36
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 23rd Ed.,2017,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	mg/L	BDL(MDL:0.01)
19.	Lead as Pb	IS 3025 (Part 47):1994	mg/L	BDL(MDL:0.01)
20.	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	BDL(MDL:0.05)
21.	Cadmium as Cd	IS 3025(Part 41):1992,	mg/L	0.062
22.	Iron (as Fe)	IS 3025(Part 53):2003,	mg/L	BDL(MDL:0.1)
23.	Zinc (as Zn)	IS 3025(Part 49):1994,	mg/L	BDL(MDL:0.05)
24.	Cobalt as Co	APHA 23rd Ed.2017-3500-Co	mg/L	0.06
25.	Copper as Cu	IS 3025(Part 42):1992	mg/L	BDL(MDL:0.05)
26.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	mg/L	BDL(MDL:0.1)
27.	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	0.085
28.	Barium as Ba	APHA 23rd Ed.2017-3500 –Ba,	mg/L	N.D.
29.	Water Level	--	Meter	2.3

Note: BDL= Below Detection Limit, **MDL** = Minimum Detection Limit,

********* End of Report *********

Checked By:

Nilesh C. Patel
(Sr. Chemist)

Authorized By:

Nitin B. Tandel
(Technical Manager)

Note: This report is subject to terms and conditions mentioned overleaf. **UERL/CHM/F–2/05**

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TEST REPORT

ULR No.	--	Report No.	**URC /23/06/L-0842**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**30/06/2023**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 2**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**3 Lit**	Appearance	**Colourless**
Sampling Date	**22/06/2023**	Sample Received Date	**24/06/2023**
Test Started Date	**24/06/2023**	Test Completion Date	**29/06/2023**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**23/06/L-0842**		

TEST RESULTS:

DISCIPLINE: Chemical Testing			**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Unit of Measurement**	**Results**
PHYSIO-CHEMICAL PARAMETERS				
1.	pH @ 25 ° C	IS 3025(Part 11):2022	--	8.06
2.	Conductivity	IS 3025(Part 14):1984	(µS/cm)	4930
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	2114
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	641.4
5.	Carbonate as CaCO3	IS 3025(Part 51):2001	mg/L	42.1
6.	Bicarbonate as CaCO3	IS 3025(Part 51):2001	mg/L	247.5
7.	Total Alkalinity	IS 3025(Part 23):1986,	mg/L	290.4
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	24.36
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	112.8
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	335.2
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	32.7
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	614.6
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	0.7
14.	Phosphate as PO_4	APHA 23rd Ed.,2017,4500-P, D	mg/L	0.22
15.	Fluoride as F	APHA 23rd Ed.,2017,4500 F, D	mg/L	1.03
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	3.1
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 23rd Ed.,2017,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	mg/L	BDL(MDL:0.01)
19.	Lead as Pb	IS 3025 (Part 47):1994	mg/L	BDL(MDL:0.01)
20.	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	BDL(MDL:0.05)
21.	Cadmium as Cd	IS 3025(Part 41):1992,	mg/L	0.054
22.	Iron (as Fe)	IS 3025(Part 53):2003,	mg/L	0.312
23.	Zinc (as Zn)	IS 3025(Part 49):1994,	mg/L	BDL(MDL:0.05)
24.	Cobalt as Co	APHA 23rd Ed.2017-3500-Co	mg/L	BDL(MDL:0.5)
25.	Copper as Cu	IS 3025(Part 42):1992	mg/L	BDL(MDL:0.05)
26.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	mg/L	BDL(MDL:0.1)
27.	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	0.098
28.	Barium as Ba	APHA 23rd Ed.2017-3500 –Ba,	mg/L	N.D.
29.	Water Level	--	Meter	1.8

Note: BDL= Below Detection Limit, **MDL** = Minimum Detection Limit,

********* End of Report *********

Checked By:
Nilesh C. Patel
(Sr. Chemist)

Authorized By:
Nitin B. Tandel
(Technical Manager)

Note: This report is subject to terms and conditions mentioned overleaf.

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Extended Work Office : G.I.D.C., Dahej-II, Bharuch, Gujarat.
CIN: U73100GJ2007PTC051463

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TEST REPORT

ULR No.	--	Report No.	**URC /23/06/L-0843**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**30/06/2023**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 3**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**3 Lit**	Appearance	**Colourless**
Sampling Date	**22/06/2023**	Sample Received Date	**24/06/2023**
Test Started Date	**24/06/2023**	Test Completion Date	**29/06/2023**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**23/06/L-0843**		

TEST RESULTS:

DISCIPLINE: Chemical Testing			**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Unit of Measurement**	**Results**
PHYSIO-CHEMICAL PARAMETERS				
1.	pH @ 25 ° C	IS 3025(Part 11):2022	--	7.38
2.	Conductivity	IS 3025(Part 14):1984	(µS/cm)	25590
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	17132
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	9165.2
5.	Carbonate as CaCO3	IS 3025(Part 51):2001	mg/L	BDL(MDL:4.0)
6.	Bicarbonate as CaCO3	IS 3025(Part 51):2001	mg/L	283.4
7.	Total Alkalinity	IS 3025(Part 23):1986,	mg/L	232.3
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	667.7
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	1024
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	1548.7
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	131.6
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	1764
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	3.6
14.	Phosphate as PO_4	APHA 23rd Ed.,2017,4500-P, D	mg/L	0.16
15.	Fluoride as F	APHA 23rd Ed.,2017,4500 F, D	mg/L	1.06
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	16.56
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 23rd Ed.,2017,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	mg/L	BDL(MDL:0.01)
19.	Lead as Pb	IS 3025 (Part 47):1994	mg/L	BDL(MDL:0.01)
20.	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	BDL(MDL:0.05)
21.	Cadmium as Cd	IS 3025(Part 41):1992,	mg/L	0.189
22.	Iron (as Fe)	IS 3025(Part 53):2003,	mg/L	0.309
23.	Zinc (as Zn)	IS 3025(Part 49):1994,	mg/L	0.074
24.	Cobalt as Co	APHA 23rd Ed.2017-3500-Co	mg/L	0.255
25.	Copper as Cu	IS 3025(Part 42):1992	mg/L	0.056
26.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	mg/L	BDL(MDL:0.1)
27.	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	0.243
28.	Barium as Ba	APHA 23rd Ed.2017-3500 –Ba,	mg/L	N.D.
29.	Water Level	--	Meter	2.8
Note: BDL= Below Detection Limit, **MDL** = Minimum Detection Limit,				

********* End of Report *********

Checked By:
Nilesh C. Patel
(Sr. Chemist)

Authorized By:
Nitin B. Tandel
(Technical Manager)

Note: This report is subject to terms and conditions mentioned overleaf.

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TEST REPORT

ULR No.	--	Report No.	**URC /23/06/L-0844**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**30/06/2023**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 4**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**3 Lit**	Appearance	**Colourless**
Sampling Date	**22/06/2023**	Sample Received Date	**24/06/2023**
Test Started Date	**24/06/2023**	Test Completion Date	**29/06/2023**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**23/06/L-0844**		

TEST RESULTS:

DISCIPLINE: Chemical Testing			**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Unit of Measurement**	**Results**
PHYSIO-CHEMICAL PARAMETERS				
1.	pH @ 25 ° C	IS 3025(Part 11):2022	--	7.49
2.	Conductivity	IS 3025(Part 14):1984	(µS/cm)	13930
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	9320
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	4582.6
5.	Carbonate as CaCO3	IS 3025(Part 51):2001	mg/L	BDL(MDL:4.0)
6.	Bicarbonate as CaCO3	IS 3025(Part 51):2001	mg/L	92.4
7.	Total Alkalinity	IS 3025(Part 23):1986,	mg/L	75.8
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	133.5
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	285.8
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	845.7
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	112
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	702.2
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	0.4
14.	Phosphate as PO_4	APHA 23rd Ed.,2017,4500-P, D	mg/L	0.11
15.	Fluoride as F	APHA 23rd Ed.,2017,4500 F, D	mg/L	1.3
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	8.28
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 23rd Ed.,2017,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	mg/L	BDL(MDL:0.01)
19.	Lead as Pb	IS 3025 (Part 47):1994	mg/L	BDL(MDL:0.01)
20.	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	BDL(MDL:0.05)
21.	Cadmium as Cd	IS 3025(Part 41):1992,	mg/L	0.077
22.	Iron (as Fe)	IS 3025(Part 53):2003,	mg/L	0.206
23.	Zinc (as Zn)	IS 3025(Part 49):1994,	mg/L	0.051
24.	Cobalt as Co	APHA 23rd Ed.2017-3500-Co	mg/L	0.121
25.	Copper as Cu	IS 3025(Part 42):1992	mg/L	BDL(MDL:0.05)
26.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	mg/L	BDL(MDL:0.1)
27.	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	0.173
28.	Barium as Ba	APHA 23rd Ed.2017-3500 –Ba,	mg/L	N.D.
29.	Water Level	--	Meter	2.5

Note: BDL= Below Detection Limit, **MDL** = Minimum Detection Limit,

********* End of Report *********

Checked By:
Nilesh C. Patel
(Sr. Chemist)

Authorized By:
Nitin B. Tandel
(Technical Manager)

Note: This report is subject to terms and conditions mentioned overleaf. **UERL/CHM/F–2/05**

UniStar
Environment and Research Labs Pvt. Ltd.

White House
Near G.I.D.C. Office, Char Rasta,
Vapi - 396 195. Gujarat, India.
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TEST REPORT

ULR No.	--	Report No.	**URC /23/09/APML-0562**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**03/10/2023**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 1**	Location	**Nr. Emergency Ash pond**
Sample Qty.	**3 Lit**	Appearance	**Colourless**
Sampling Date	**26/09/2023**	Sample Received Date	**28/09/2023**
Test Started Date	**28/09/2023**	Test Completion Date	**02/10/2023**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**23/09/APML-0562**		

TEST RESULTS:

DISCIPLINE: Chemical Testing			**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Unit of Measurement**	**Results**
PHYSIO-CHEMICAL PARAMETERS				
1.	pH @ 25 ° C	IS 3025(Part 11):2022	--	8.52
2.	Conductivity	IS 3025(Part 14):1984	µS/cm	12112
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	7874
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	3012.5
5.	Carbonate as CaCO3	IS 3025(Part 51):2001	mg/L	48.2
6.	Bicarbonate as CaCO3	IS 3025(Part 51):2001	mg/L	189.4
7.	Total Alkalinity	IS 3025(Part 23):1986,	mg/L	232.4
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	71.7
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	92.4
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	667.3
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	60.2
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	789.2
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	1.7
14.	Phosphate as PO_4	APHA 23rd Ed.,2017,4500-P, D	mg/L	0.22
15.	Fluoride as F	APHA 23rd Ed.,2017,4500 F, D	mg/L	1.38
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	5.44
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 23rd Ed.,2017,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	mg/L	BDL(MDL:0.01)
19.	Lead as Pb	IS 3025 (Part 47):1994	mg/L	BDL(MDL:0.01)
20.	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	BDL(MDL:0.05)
21.	Cadmium as Cd	IS 3025(Part 41):1992,	mg/L	0.048
22.	Iron (as Fe)	IS 3025(Part 53):2003,	mg/L	BDL(MDL:0.1)
23.	Zinc (as Zn)	IS 3025(Part 49):1994,	mg/L	BDL(MDL:0.05)
24.	Cobalt as Co	APHA 23rd Ed.2017-3500-Co	mg/L	BDL(MDL:0.5)
25.	Copper as Cu	IS 3025(Part 42):1992	mg/L	BDL(MDL:0.05)
26.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	mg/L	BDL(MDL:0.1)
27.	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	0.061
28.	Barium as Ba	APHA 23rd Ed.2017-3500 –Ba,	mg/L	N.D.
29.	Water Level	--	Meter	2.2
Note: BDL= Below Detection Limit, **MDL** = Minimum Detection Limit,				

********* End of Report *********

Checked By:

Nilesh C. Patel
(Sr. Chemist)

Authorized By:

Nitin B. Tandel
(Technical Manager)

Note: This report is subject to terms and conditions mentioned overleaf. **UERL/CHM/F–2/05**

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TEST REPORT

ULR No.	--	Report No.	**URC /23/09/APML-0563**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**03/10/2023**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 2**	Location	**Nr. Emergency Ash Pond**
Sample Qty.	**3 Lit**	Appearance	**Colourless**
Sampling Date	**26/09/2023**	Sample Received Date	**28/09/2023**
Test Started Date	**28/09/2023**	Test Completion Date	**02/10/2023**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**23/09/APML-0563**		

TEST RESULTS:

DISCIPLINE: Chemical Testing			**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Unit of Measurement**	**Results**
PHYSIO-CHEMICAL PARAMETERS				
1.	pH @ 25 ° C	IS 3025(Part 11):2022	--	8.21
2.	Conductivity	IS 3025(Part 14):1984	µS/cm	11230
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	6984
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	2812
5.	Carbonate as CaCO3	IS 3025(Part 51):2001	mg/L	26.2
6.	Bicarbonate as CaCO3	IS 3025(Part 51):2001	mg/L	174.2
7.	Total Alkalinity	IS 3025(Part 23):1986,	mg/L	212.4
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	61.2
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	81.6
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	632.4
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	48.4
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	704
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	1.1
14.	Phosphate as PO_4	APHA 23rd Ed.,2017,4500-P, D	mg/L	0.16
15.	Fluoride as F	APHA 23rd Ed.,2017,4500 F, D	mg/L	1.12
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	5.08
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 23rd Ed.,2017,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	mg/L	BDL(MDL:0.01)
19.	Lead as Pb	IS 3025 (Part 47):1994	mg/L	BDL(MDL:0.01)
20.	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	BDL(MDL:0.05)
21.	Cadmium as Cd	IS 3025(Part 41):1992,	mg/L	0.033
22.	Iron (as Fe)	IS 3025(Part 53):2003,	mg/L	0.216
23.	Zinc (as Zn)	IS 3025(Part 49):1994,	mg/L	BDL(MDL:0.05)
24.	Cobalt as Co	APHA 23rd Ed.2017-3500-Co	mg/L	BDL(MDL:0.5)
25.	Copper as Cu	IS 3025(Part 42):1992	mg/L	BDL(MDL:0.05)
26.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	mg/L	BDL(MDL:0.1)
27.	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	0.054
28.	Barium as Ba	APHA 23rd Ed.2017-3500 –Ba,	mg/L	N.D.
29.	Water Level	--	Meter	1.7
Note: BDL= Below Detection Limit, **MDL** = Minimum Detection Limit,				

********* End of Report *********

Checked By:
Nilesh C. Patel
(Sr. Chemist)

Authorized By:
Nitin B. Tandel
(Technical Manager)

Note: This report is subject to terms and conditions mentioned overleaf.

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TEST REPORT

ULR No.	--	Report No.	**URC /23/09/APML-0564**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**03/10/2023**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 3**	Location	**Nr. Emergency Ash Pond**
Sample Qty.	**3 Lit**	Appearance	**Colourless**
Sampling Date	**26/09/2023**	Sample Received Date	**28/09/2023**
Test Started Date	**28/09/2023**	Test Completion Date	**02/10/2023**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**23/09/APML-0564**		

TEST RESULTS:

DISCIPLINE: Chemical Testing			**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Unit of Measurement**	**Results**
PHYSIO-CHEMICAL PARAMETERS				
1.	pH @ 25 ° C	IS 3025(Part 11):2022	--	8.31
2.	Conductivity	IS 3025(Part 14):1984	µS/cm	26510
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	18542
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	9874.2
5.	Carbonate as CaCO3	IS 3025(Part 51):2001	mg/L	42.4
6.	Bicarbonate as CaCO3	IS 3025(Part 51):2001	mg/L	294.2
7.	Total Alkalinity	IS 3025(Part 23):1986,	mg/L	252.4
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	704.2
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	1154
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	1604.3
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	142.5
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	1882.1
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	4.3
14.	Phosphate as PO_4	APHA 23rd Ed.,2017,4500-P, D	mg/L	0.23
15.	Fluoride as F	APHA 23rd Ed.,2017,4500 F, D	mg/L	1.19
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	17.84
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 23rd Ed.,2017,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	mg/L	BDL(MDL:0.01)
19.	Lead as Pb	IS 3025 (Part 47):1994	mg/L	BDL(MDL:0.01)
20.	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	BDL(MDL:0.05)
21.	Cadmium as Cd	IS 3025(Part 41):1992,	mg/L	0.171
22.	Iron (as Fe)	IS 3025(Part 53):2003,	mg/L	0.259
23.	Zinc (as Zn)	IS 3025(Part 49):1994,	mg/L	0.062
24.	Cobalt as Co	APHA 23rd Ed.2017-3500-Co	mg/L	BDL(MDL:0.5)
25.	Copper as Cu	IS 3025(Part 42):1992	mg/L	BDL(MDL:0.05)
26.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	mg/L	BDL(MDL:0.1)
27.	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	0.191
28.	Barium as Ba	APHA 23rd Ed.2017-3500 –Ba,	mg/L	N.D.
29.	Water Level	--	Meter	2.6
Note: BDL= Below Detection Limit, **MDL** = Minimum Detection Limit,				

********* End of Report *********

Checked By:
Nilesh C. Patel
(Sr. Chemist)

Authorized By:
Nitin B. Tandel
(Technical Manager)

Note: This report is subject to terms and conditions mentioned overleaf.

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TEST REPORT

ULR No.	--	Report No.	**URC /23/09/APML-0565**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**03/10/2023**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 4**	Location	**Nr. Emergency Ash Pond**
Sample Qty.	**3 Lit**	Appearance	**Colourless**
Sampling Date	**26/09/2023**	Sample Received Date	**28/09/2023**
Test Started Date	**28/09/2023**	Test Completion Date	**02/10/2023**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**23/09/APML-0565**		

TEST RESULTS:

DISCIPLINE: Chemical Testing			**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Unit of Measurement**	**Results**
PHYSIO-CHEMICAL PARAMETERS				
1.	pH @ 25 ° C	IS 3025(Part 11):2022	--	8.02
2.	Conductivity	IS 3025(Part 14):1984	µS/cm	14110
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	9510
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	4623.4
5.	Carbonate as CaCO3	IS 3025(Part 51):2001	mg/L	11.2
6.	Bicarbonate as CaCO3	IS 3025(Part 51):2001	mg/L	114.3
7.	Total Alkalinity	IS 3025(Part 23):1986,	mg/L	87.1
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	147.8
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	304.2
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	904.1
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	123
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	735.2
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	0.62
14.	Phosphate as PO_4	APHA 23rd Ed.,2017,4500-P, D	mg/L	BDL(MDL:0.1)
15.	Fluoride as F	APHA 23rd Ed.,2017,4500 F, D	mg/L	1.32
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	8.35
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 23rd Ed.,2017,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	mg/L	BDL(MDL:0.01)
19.	Lead as Pb	IS 3025 (Part 47):1994	mg/L	BDL(MDL:0.01)
20.	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	BDL(MDL:0.05)
21.	Cadmium as Cd	IS 3025(Part 41):1992,	mg/L	0.059
22.	Iron (as Fe)	IS 3025(Part 53):2003,	mg/L	0.137
23.	Zinc (as Zn)	IS 3025(Part 49):1994,	mg/L	BDL(MDL:0.05)
24.	Cobalt as Co	APHA 23rd Ed.2017-3500-Co	mg/L	BDL(MDL:0.5)
25.	Copper as Cu	IS 3025(Part 42):1992	mg/L	BDL(MDL:0.05)
26.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	mg/L	BDL(MDL:0.1)
27.	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	0.140
28.	Barium as Ba	APHA 23rd Ed.2017-3500 –Ba,	mg/L	N.D.
29.	Water Level	--	Meter	2.4
Note: BDL= Below Detection Limit, **MDL** = Minimum Detection Limit,				

********* End of Report *********

Checked By:
Nilesh C. Patel
(Sr. Chemist)

Authorized By:
Nitin B. Tandel
(Technical Manager)

Note: This report is subject to terms and conditions mentioned overleaf.

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CIN: U73100GJ2007PTC051463

Annexure - IX01C

adani
Power

Ref: APL/MTPP/GPCB/Env Statmnt/056/23
Date: 12/08/2023

To,

The Regional Officer,
GUJARAT POLLUTION CONTROL BOARD,
Kandala Port Trust Office,
Sector 8, Ghandhidham,
KUTCH, GUJARAT 370201

Sub: SUBMISSION OF ENVIRONMENT STATEMENT FOR THE YEAR OF 2022-23

Ref: CTO No. – AWH 102106 on dtd. 17/07/2019 GPCB ID - **29389**

Dear Sir,

With reference to above subject, kindly find enclosed herewith Environment Statement FORM-V for the financial year **2022-23** duly filed as per format of Environment Statement prescribed format of GPCB along with Environmental monitoring report.

This for your kind information & record please.

Thanking you,
Yours faithfully,
For **Adani Power Limited, Mundra**

(R N Shukla)
Head Env & Forest

Encl: As Above

CC
The Member Secretary,
GPCB, Paryavaran bhavan,
Sector- 10 A, Gandhinagar

14/08/23
Gujarat Pollution Control Board
Head Office
Sector No.-10-A,
Gandhinagar-382010

Adani Power Ltd
Adani Corporate House
Shantigram, S G Highway
Ahmedabad 382 421
Gujarat, India
CIN: L40100GJ1996PLC030533

Tel +91 79 2555 4444
Fax +91 79 2555 7177
www.adanipower.com

ENVIRONMENTAL STATEMENT

FOR THE FINANCIAL YEAR

2022 - 2023

Adani Power Limited

Vill: Tunda & Siracha

Mundra, Kutch Gujarat

ENVIRONMENTAL STATEMENT

FORM-V

(See Rule 14)

From:

Adani Power Limited
Plot No. Tunda [180/P], Siracha,
Village: Tunda, Tal: Mundra,
Dist: Kutch
Gujarat – 370435

To,
Gujarat Pollution Control Board,
Paryavaran Bhavan,
Sector 10 A,
Gandhinagar 382010

Environmental Statement for the Financial Year ending the 31st March 2023

PART- A

(i) Name and address of the occupier of the industry operation	: Shri. Mayank Doshi, **Adani Power Limited.** Tunda [180/P], Siracha. Village: Tunda Tal: Mundra Dist. Kutch Gujarat: 370435
(ii) Industry Category Primary (STC Code) Secondary – (SIC Code)	: AADCA2957LST001
(iii) Production Capacity (Power)	: Phase I: 2 x 330MW Phase II: 2 x 330M +2x660MW Phase III: 3 x 660 MW
(iv) Year of Establishment	: Phase I – U#1 - Aug'09, U#2-Mar'10 : Phase II –U#3 -Aug'10, U#4-Dec'10 -U#5 - Dec'10, U#6-Feb'12 : Phase III –U#7 – Nov'11, -U#8–Mar'12, U#9-Mar'12
(v) Date of the last Environmental Statement submitted.	: **01/08/2022**

PART – B

WATER AND RAW MATERIAL CONSUMPTION

a. Water Consumption for the period (April'22 – March'23)

Process* : 379 KL/Day

Cooling & Boiler Feed : 223810 KL/day

Domestic** : 5693 KL/day

- * Sea water drawl for RO water production
- **Domestic water quantity includes Potable water and service water

Name of Product	Process Water Consumption per Unit of Product Output	
	During the previous year (2021 - 2022)	During the current year (2022 - 2023)
Power Generation	0.0139 Lit/Unit	0.0139 Lit/Unit
Specific Water Consumption	1.84 Lit/Unit	1.74 Lit/Unit

b. Raw Material Consumption

Name of Product	Name of Raw Materials	Unit	Consumption of Raw Material Per Unit of Power	
			During the previous Financial Year (2021-2022)	During the current Financial year (2022-2023)
POWER	Fuel Oil	KL	0.063 KL/mus	0.019 KL/MUs
	Coal	MT	550.32 MT/mus	573.71 MT/Mus

*mus: million units

PART – C

POLLUTION DISCHARGED TO ENVIRONMENT / UNIT OF OUTPUT

a. Water:

Outfall water Quantity	: 184462 KL/day
Avg. Domestic effluent quantity	: 313 KL/ Day

Note:

1. Average temperature of seawater intake and outlet water is enclosed as **Annexure –I.**
2. Effluent treated water is reused for water sprinkling to Coal stack yard and Road.
3. The Cooling tower (CT) blowdown and desalination reject water is utilized for FGD scrubber system to control the sulfur emission and FGD effluent is passes through aeration basin for final discharge. Treated water discharges to sea as per the norms and as per suggested by NIO recommendation.
4. Third party Environment monitoring reports is enclosed as **Annexure - III**.
5. Treated sewage water (STP) is being utilized in plantation & Green Belt development.

b. **Air:**

Sr. No.	Stack Attached to	Pollutant	Quantity of Pollutants Discharge in Mass/day (Kg/Day)	Concentration of Pollution Discharged in Mass/Volume (mg/Nm^3)	Variance (exceeding allowed Quantity)
1	Boiler unit I	PM	1129.5	36.2	No deviation
2	Boiler unit II	PM	1001.9	31.7	No deviation
3	Boiler unit III	PM	1190.2	34.4	No deviation
4	Boiler unit IV	PM	1172.1	33.7	No deviation
5	Boiler unit V	PM	2181.5	34.8	No deviation
6	Boiler unit VI	PM	2341.8	37.2	No deviation
7	Boiler unit VII	PM	2068.7	35.5	No deviation
		SO2	10069.8	173.0	No deviation
		NOx	14932.9	256.5	No deviation
8	Boiler unit VIII	PM	2051.4	33.7	No deviation
		SO2	10981.6	180.4	No deviation
		NOx	16163.9	265.5	No deviation
9	Boiler unit IX	PM	2053.0	32.9	No deviation
		SO2	9669.8	155.1	No deviation
		NOx	16891.9	271.0	No deviation

All Stack Emission data are average of monthly monitoring reports.

PART - D

As specified under Hazardous Waste (Management & Handling & Transboundary movement rules) Amendment Rules 2016

Sr. No.	Hazardous Wastes	Total Quantity (KL)	
		During the previous financial year (2021-2022)	During the current financial year (2022- 2023)
1.	Used Oil	14.48	23.1
2.	Spent Resins	0.0	0.0
3.	Discarded Container	13.03	8.75
4.	Oily Cotton Waste	3.07	4.4

PART – E

Solid Wastes

Details	Ash Generation (in MT)	
	(2021- 2022)	(2022- 2023)
From Process (Fly Ash)	**344815 MT**	**302521 MT**
From Pollution Control facilities	NIL	NIL

PART-F

Please specify the characterization (in terms of composition and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both the categories of wastes.

Non-Hazardous Solid Waste

Solid Waste generation : Ash (**Fly ash & Wet ash**)

Ash Utilization in 2021-22 : 102.9 %

Hazardous waste disposal details is enclosed **as Annexure – II.**

Ash utilization data is enclosed as **Annexure –III.**

PART – G

Impact of the Pollution abatement measures taken on conservation of natural resources and the cost of production

The unit has installed highly efficient super critical boilers in Unit 5, 6, 7, 8 and 9. The environmental advantages of super critical boiler are as below:

Reduction in coal consumption
Reduction in Green house gases
Reduction of water requirements
Overall reduction in Auxiliary Power Consumption
Reduction in requirement of Ash Emergency land & Consumptive water

The APL has commissioned the first supercritical 660 MW unit in India. APL, Mundra is also the world's first supercritical technology based thermal power project to have received 'Clean Development Mechanism (CDM) Project' certification from United Nations Framework Convention on Climate Change (UNFCCC).

PART – H

Additional measures / Investment proposal for environmental protection including abatement of pollution, prevention of pollution.

1. Greenbelt of about 147.33 developed and further development in progress...

Area (ha)	No. of Trees & Palm Planted	No. of Shrubs Planted
147.33	341758	1405154

2. Online ambient air quality monitoring stations has been installed at three different directions & closed to the plant boundary.

3. Seawater based FGDs has been installed at Unit 7, 8 & 9 for SO_2 reduction in Stack Emissions. The Cooling tower (CT) blow down and Desalination plant Reject will be utilized for FGD scrubber system and FGD effluent will be disposed off to the sea through aeration chamber.

4. Online Effluent Quality Monitoring System has installed at final outfall channel.

5. Emergency ash pond provided for disposal of unutilized ash.

6. We have adopted Ammonia Flue Gas Conditioning System in Unit 1 & 7 for bringing down the SPM level from the flue gas is through ESP. It is based on effective dispersion & diffusion of ammonia gas in the flue gas.

7. Regular water sprinkling is being done to control the fugitive dust in CHP area and all other areas. In addition, mechanical sweeping machine have been deployed for cleaning the road.
8. Wind breaking wall provided coal yard area for reducing fugitive emission & coal loss.

9. Single Use Plastic Free Project for "Certification for Single Use Plastic Free Company" is being implemented at APMuL, Mundra site in line with compliance of Plastic Waste Management Rule 2011. Various exercised being carried out for compliance of single use plastic ban initiatives at site and based on that inspection checklists are filled and submitted to CII, New Delhi for final assessment and certification process.

PART – I

Any other particulars for improving the quality of the Environment.

1. We have Implemented **ISO-14001:2015** Environment Management System (EMS) for Mundra TPP of Adani Power Limited. The department wise core team has been established to maintain the compliance of the standard. All Head of the Departments are responsible for ensuring the compliance of the standard.
2. NABL - NABL granted laboratory accreditation under the new name "ENVIRONMENTAL LABORATORY- ADANI POWER LIMITED" in accordance with ISO/IEC 17025: 2017 standards. A new certificate (No. TC-11824) has been issued with a validity period of 23.06.2023 to 28.05.2024.
3. APL, Mundra also participated in GRI-G4 Sustainability reporting initiative for sustainable development and published reports from FY2014-15 to FY 21-22 which are available on the website and FY 22-23 under progress.
4. GPCB appointed Schedule#1 Environmental Auditors (School of Engineering-R K University, Rajkot) successfully conducted environmental audit of APL, Mundra. Audit report received on 05.06.2023 is submitted in the office of GPCB Gandhinagar on 16.06.2023.
5. Membership with GPCB authorized TSDF agency is renewed with 5 Years validity up to 14.12.2024 for disposal of identified hazardous Waste material generated from our plant operation. Certificates received.
6. Organic waste converter installed for converting the canteen waste into organic manure. The organic manure is used for gardening.
7. Fly ash utilized to produce vermicomposting.
8. The Rooftop Rainwater collection & groundwater recharging Scheme has been adopted & installed at three locations within plant premises.
9. Green belt development/plantation work is swing, and our efforts are being made to develop more greenery in and around the plant.
10. Digital LED Display board is installed at main gate of plant for display the environmental parameters.

11. Integrated Ash silo system has been commissioned & make operational to handle ash at single location to minimize fugitive emission & minimize vehicle movement.
12. Ash bagging plant has been commissioned & make operational for fine ash bagging for export to increase ash utilization.
13. Boiler & turbine high-energy drain passing survey has been done for reducing heat losses.
14. Condenser cleaning for vacuum improvement, which increase plant efficiency & improve heat rate.
15. Best start-up practices adopted for reducing start-up oil consumption.
16. Replacement of cooling tower fans existing blades with energy efficient blades for aux. power saving
17. CW pump & CT fans operation optimization for auxiliary power saving
18. Compressor operation optimization for auxiliary power saving.
19. Periodic energy audit and implementation
20. Elimination of chlorine tonner by replacing sea water-based Electro chlorination plant. This eliminates the chlorine gas hazards from the environment.

21. Biodiversity:

- APL is also committed towards biodiversity conservation by adhering to the Biodiversity Policy and APL is an active signatory member of India Business Biodiversity Initiative (IBBI).
- APL is continuously monitoring by adopting various scientific techniques for monitoring Biodiversity (terrestrial & Marine) of in and around 10 km radius distance of each operational locations.
- An Eco-Park is developed, which is being prepared with waste and reusable material. The main concept for this park is to promote waste recovery, recycling, reuse and environmental engineering among the employees and visitors. It also gives a platform for experimental garden for plantation activities.
- The Eco-Park has been developed to provide shelter and breeding ground to the local and resident birds with an area of approximately 2 ha inside the plant premises. The area is covered with live fencing of Casuarina sp. and Prosopis *juliflora* plant species. To attract birds, *fruitivorus* plants like Sapota (Manilkara zapota), Pomegranates (Punica granatum), Neem tree (*Azadirachta* indica), Banyan Tree (Ficus *benghalensis*), and *Pilu* (Salvadora persica) are planted.
- To support avifauna in developed Eco-Park, we have deploying Sparrow Nest at various locations of plant premises.

- The Eco- Park serves as a habitat for the reptiles like frog, lizard, and snake whereas mammals like *Mangoose* are also occasionally sighted. 28 resident bird species have been identified during the monitoring.
- The company has an ambitious target to create a net positive biodiversity impact at all out operations and projects. At the time of proposing new projects, wildlife and biodiversity studies are carried out.
- Moreover, raising awareness among employees on biodiversity is one of the major efforts towards conservation initiatives.

Sign:

Name: R.N Shukla
Designation: Head Environment & Forest
Address: Adani Power Limited, Mundra

Annexure-1

Monthly Temperature average differential records during

April-2022 to March-2023

Months	Intake Reservoir ºC	Outfall channel ºC	Temp. Difference ºC
April, 2022	30.1	32.6	2.5
May, 2022	32.9	OUM	OUM
June, 2022	32.3	34.5	2.2
July, 2022	31.6	34.5	2.9
August, 2022	30.3	33.4	3.1
September, 2022	30.9	33.4	2.5
October, 2022	31.4	34.1	2.7
November, 2022	28.5	31.5	3.0
December, 2022	23.8	27.1	3.3
January, 2023	20.9	24.3	3.4
February, 2023	23.7	27.1	3.4
March, 2023	26.6	28.4	1.8

Note: * Outfall channel under Maintenance

Annexure-2

Hazardous Waste Disposal data for FY 2022-23

Sr. No.	Waste	Waste Category	Waste disposal Limit (MT)	Waste disposal Qty.	Disposal Method	Remarks
1	Used Oil	5.1	62.7	23.10	Send to Authorized Registered Recycler.	M/s Jawrawala Petroleum, Narol, Ahmedabad
2	Discarded Containers/ Barrels	33.11	160	8.75	Send to Authorized Registered Recycler.	M/s Tawakkal Decontaminators, Danilimda, Ahmedabad
3	Spent Ion-exchange Resin	35.2	2035	0.0	Send to TSDF Site for Incineration by common incinerator	M/s Saurashtra Enviro Projects Pvt Ltd, Surat
4	Oily Cotton Waste & Oil Filters	33.2	15	4.4	Send to TSDF Site for Incineration by common incinerator	M/s Saurashtra Enviro Projects Pvt Ltd, Surat
5	Chemical Sludge	35.3	200	0.0	Send to TSDF Site for Secure Landfill	M/s DETOX INDIA PVT LTD, Surat
6	Used Lead Acid Batteries	--	--	63.88	Send to Authorized Registered Recycler.	M/s Shri Nagendra Metals Pvt. Ltd, Anjar
7	E - Waste	--	---	12.50	Send to Authorized Registered Recycler.	M/s Galaxy Recycling, Gondal, Rajkot

Annexure-3

Ash Utilization Report

April-2022 to March-2023

Month	Total Ash Production (MT/Month)	For Cement Manufacturing (Fly Ash + Bottom Ash + Pond Ash) (MT/Month)	For Brick / Construction / Export / Domestic Treaders (MT/Month)	Filling of low lying area (MT/Month)	Ash Dyke (MT/Month)	Dyke Ash lifted for reutilization Embankment / Back Filling (MT/Month)	Bottom Ash lifted for Embankment / Back Filling (MT/Month)	Total Ash Utilization (MT/Month)	% Utilization
Apr-22	44352	31524	3721	0	0	0	6677	41922	94.52
May-22	39782	32827	4253	0	0	0	5389	42469	106.75
Jun-22	50497	39175	5679	0	0	0	6111	50966	100.93
Jul-22	23652	8821	12367	0	0	0	2753	23941	101.22
Aug-22	13543	1785	10387	0	0	0	1018	13190	97.40
Sep-22	26598	8920	14089	0	0	0	3410	26420	99.33
Oct-22	12937	6741	5780	0	0	0	2097	14618	112.99
Nov-22	11169	897	9242	0	0	322	1675	12136	108.66
Dec-22	10501	1100	7982	0	0	1950	1577	12609	120.07
Jan-23	25146	4012	16075	0	0	1575	4008	25671	102.09
Feb-23	22123	6661	11401	0	0	575	3616	22254	100.59
Mar-23	22221	9102	12430	0	0	0	3559	25091	112.91
TOTAL	**302521**	**151566**	**113407**	**0**	**0**	**4422**	**41892**	**311286**	**102.90**
Note:- Total 1497 MT Ash stocked in silo and bags and will be utilized in upcoming month.									

adani Power	Adani Power Limited, Mundra Expenditure for Environmental Protection & CER (Period: April 2023 – September 2023)	Annexure – X

Expenditure for Environmental Protection & CER		
		(Fig. in Rs. Lacs)
Sr. No.	**Particular**	**Expenditure from Apr'23 to Sept' 23**
1	Rural Development/CER/CSR Activities	374.81
2	Green belt development	73.59
3	Legal, Consent Fee, GPCB lab bills	0.72
4	Hazardous waste disposal cost	0.64
5	Treatment and Disposal cost (Wastewater & Sewage Treatment)	57.27
6	Maintenance cost of ESP & FGD (Material Cost)	647.0
7	Services for providing software support for transferring CEMS and EQMS data to GPCB and CPCB	2.66
8	Annual maintenance charges for CAAQMS, EQMS, main gate display Board	11.59
9	In House Monitoring cost	5.85
10	Calibration of Env. Field Equipment's & Lab Equipment's	0.40
11	Third Party monitoring coast	7.28
12	Insurance, training, and external environmental management	1.74
	Total	**1183.55**

World Environment Day, 2023 Celebration
Adani Power Limited - Mundra

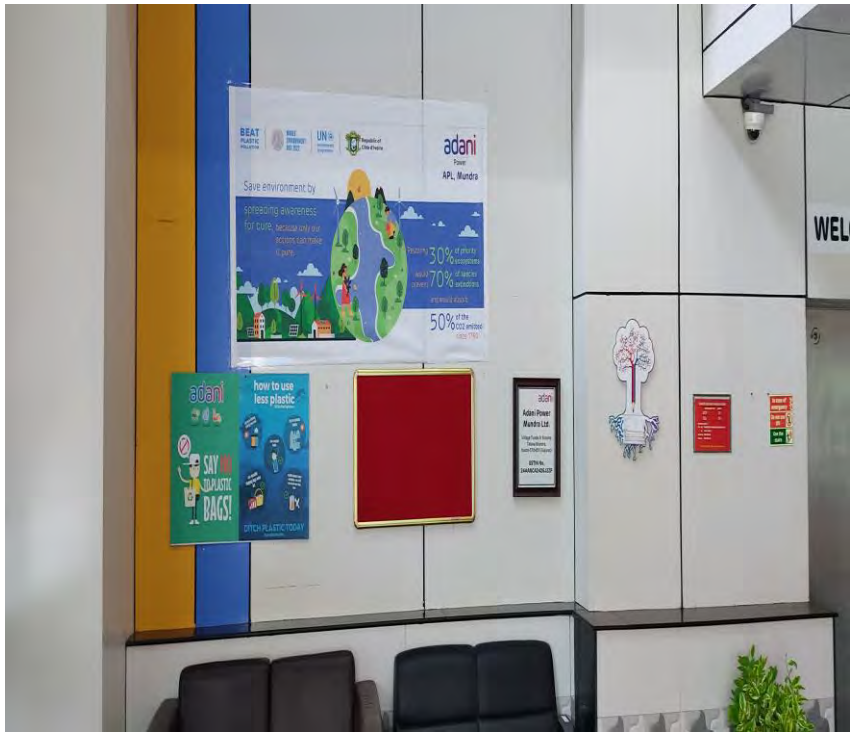
World Environment Day, 2023 Celebration at Adani Power Limited - Mundra

World Environment Day 2023 has been celebrated under the theme of " # Beat Plastic Pollution: Solution to Plastic Pollution", highlighting the need of people's actions on plastic pollution matters. The steps governments and businesses are taking to tackle plastic pollution are the consequence of this action.

On this Event, APL, Mundra Environment Department has organized following awareness programme and activities.

- Jute bag Distribution among the all Employees.
- Symbolic Tree Plantation.
- Poster Making Competition for Employees & Associates.
- Ideas / Suggestions for betterment of Environment.
- Essay Writing Competition.
- Spot Quiz & Online Quiz
- Home Gardening Competition.
- Awareness Program for Homemakers at Samudra Township.
- Mass awareness rally on Plastic Pollution at Samudra Township.

Sensitizing APL - Mundra Employees and associates through Banners and Circulars



Symbolic Plantation

Shri Mayank Doshi, Station Head & Shri Pramod Bihari Prasad, O & M Head planting saplings on the WED, 2023 Celebration

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Dignitaries and Employees planting saplings on the WED, 2023 Celebration

WED, 2023 at APL, Mundra

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Jute Bag Distribution among all Employees

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Glimpse of Spot Quiz Organized at Various Department

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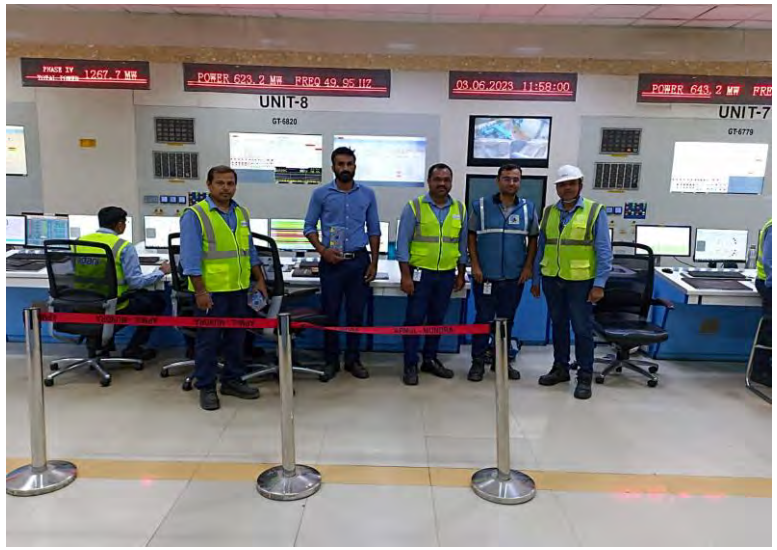
Glimpse of Spot Quiz Organized at Various Department



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Poster Making Competition

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Winners of Environmental Posters Competition

1st Winner
Mr. Jay Patel
EMD

2nd Winner
Mr. Ashav Akhiyania
MMD BOP

3rd Winner
Mr. Mayur Rastogi
Operation 660

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Essay Competition

Essay Competition		
Prize	**Employee Name**	**Department**
1st	Mr. Hussain Dagia	Civil
2nd	Mr. Bharat Palejiya	Chemistry
3rd	Mr. Kalpesh Modi	Operation 660

Best Idea / Suggestion Competition

Best Idea / Suggestion Competition		
Prize	**Employee Name**	**Department**
1st	Mr. Pankaj Kumar Jangid	Store
2nd	Mr. Farhan Shaikh	EMD
3rd	Mr. Veerendra Kumar Chandala	APTRI

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Home Balcony Gardening Competition

1st Winner

Mrs. Rachna Avinash Singh
&
Mr. Avinash Kumar Singh

2nd Winner

Mrs. Jaswinder Kaur
&
Mr. Jagjit Singh

3rd Winner

Mrs. Sonal Haresh Kachchhi
&
Mr. Haresh Kactchhi

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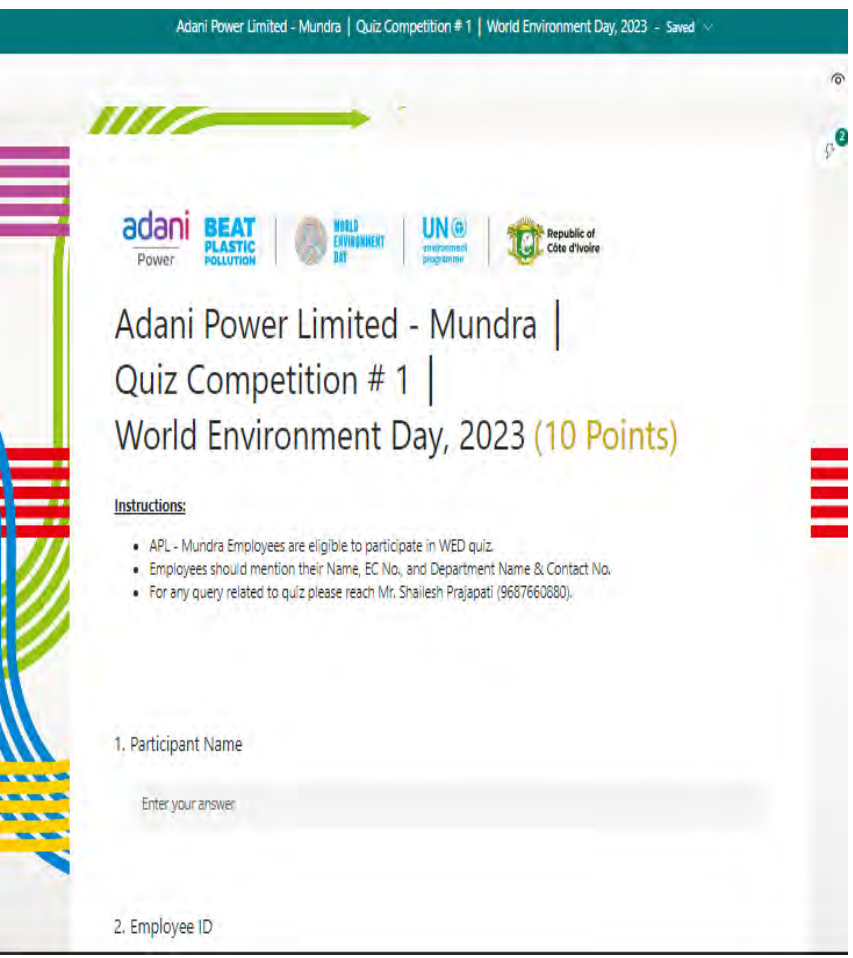

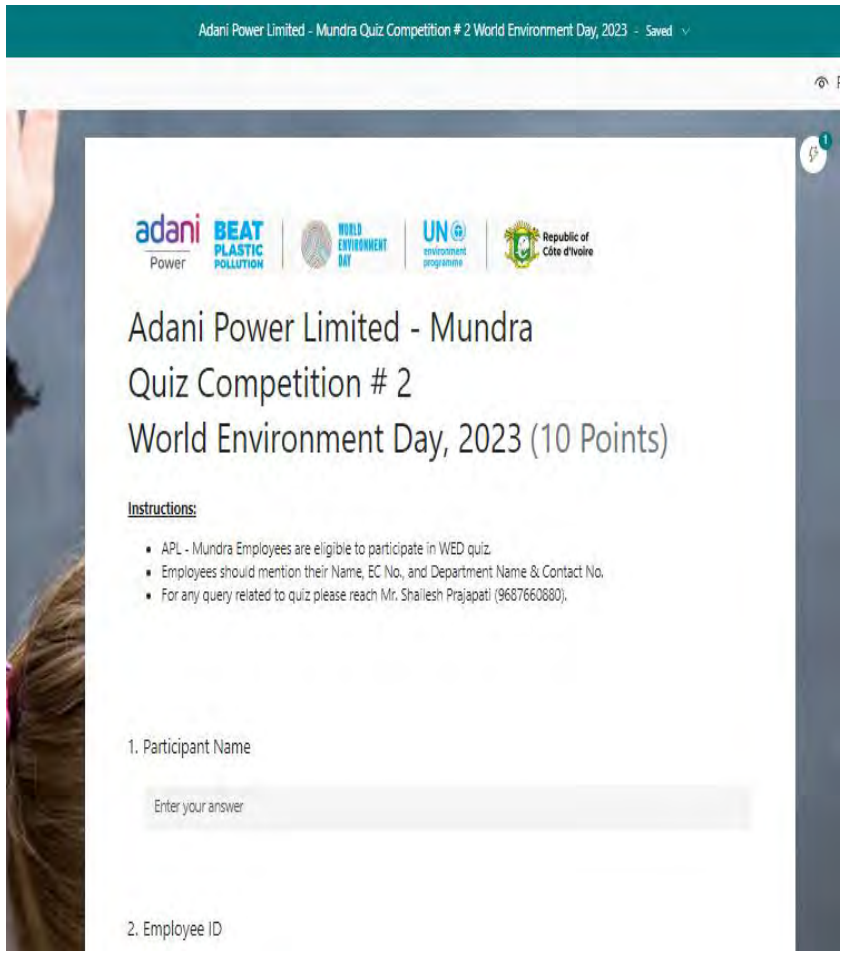

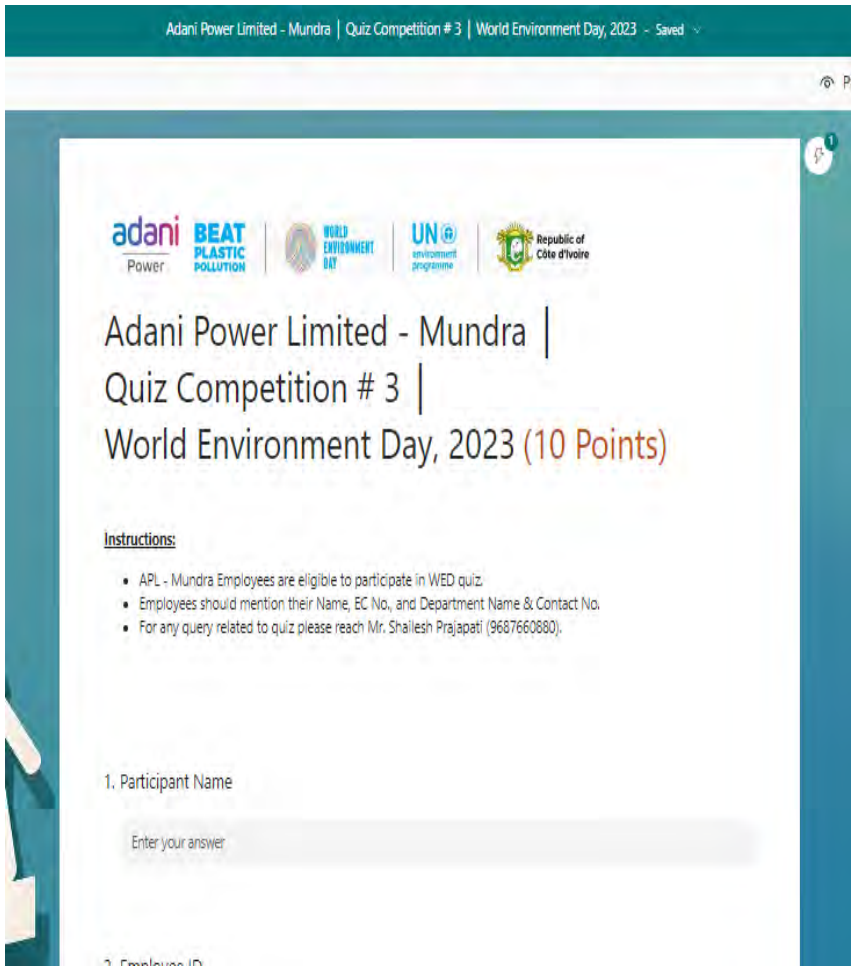

Environmental Online Quiz Competition (03 Days)

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Winners of Online Quiz

Online Quiz # 1

Prize	Employee Name	Department
1st	Mr. Amrut Mohanty	Chemistry
2nd	Mr. Viveksinh Mahida	MTP & OE
3rd	Mr. Pareshkumar Patel	AHP Operation

Online Quiz # 2

Prize	Employee Name	Department
1st	Mr. Pankaj Nigam	Chemistry
2nd	Mr. Shaileshkumar Gurjar	Operation-330
3rd	Mr. Dharmesh Keshvani	Store

Online Quiz # 3

Prize	Employee Name	Department
1st	Mr. Prakher Shukla	MTP & OE
2nd	Mr. Prashant Akabari	SHO
3rd	Mr. Vijaykumar Patel	MMD-BOP

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Awareness Program on Environment for Homemakers/Housewives

- In view of creating awareness on adverse effects of environmental Pollution and uncontrolled use of Plastic products in our society an Environment awareness Programme has been organized as a part of World Environment Day 2023 celebration activities for the Homemakers / Housewives of APL, Mundra employees.

- The above programme was chaired by Mrs. Shilpa Doshi, Mrs. Laxmi Mula & Mrs. Leena Datar as Guest of Honor.

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Mass Awareness Rally On Plastic Pollution at Samudra Township

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Growth with Goodness

Thank You

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Foundation

GUJRAT CSR

Six Monthly Report

2023-24

Dahej - Hazira – Kutch

Adani Foundation
Adani House, Port Road, Mundra – Kutch 370 421
[info@adanifoundation.com] [www.adanifoundation.com]

Preface

Taking inspiration from the philosophy of our Chairman of trusteeship, the Adani Foundation strives to create sustainable opportunities. It does so by facilitating quality education, enabling the youth with income-generating skills, promoting a healthy society by women empowerment and supporting infrastructure development.

With an aim to contribute to the holistic development of communities, the Adani Foundation is contributing to the global agenda of meeting Sustainable Development Goals (SDGs).

Adani Foundation Gujrat sites are catalyst for rural communities residing in villages of Kutch,, Surat and Bharuch District. AF has transformed thousands of lives by serving community to uplift their standard of living by performing CSR activities in various in terms of Infrastructure, Social development, Education, Agriculture, Women empowerment, Water conservation and management and empowering fishermen and Tribal community.

Pankti Shah
Head CSR Gujrat
Adani Foundation

INDEX

CSR DAHEJ

DEMOGRAPHIC DETAILS

4 Taluka

38 Gram Panchayat

49 Village

16,397 Household

72,423 Population

30,586 ST Population

EDUCATION : UTTHAN

Project Utthan by Adani Foundation, launched in September 2021 in Lakhigam village, Bharuch, aims to improve elementary education outcomes and support progressive learners ('Priya Vidyarthi'). Adani Foundation Dahej partnered with the Department of Primary Education for its implementation in 14 Government Schools, involving a comprehensive intervention.

- Enhancing the teaching learning outcomes
- Empowering 'Priya Vidyarthi's' (Progressive Learners)
- Introducing English as a third language in class 1 to 4
- Arresting dropout rates
- Collaborating for teachers' capacity building

Coverage: 2942 students of 08 Govt. Schools

683 progressive learners covered under reading, writing and numeracy

772 students taught English as a 3rd language

Home visits: 173, Parents' Meeting: 17, Mothers' Meet: 86

Library books issued to 509 students

510 students covered under E - learning

Summer activities

24th April to 1st May 20203
Focus - Curricular & Co-curricular area

1154 Students attended

IT on wheels Program

Launched – January 2023
Focus – Basics of Computer

A Van carries **25** laptops & a teacher

Sport support

Sport's kit distribution in

10 primary school of tribal area

World Book Day

On April 23rd, Celebrated by

725 progressive learner from 9 schools

National Sports Day

Aug 29th – B'day of Major Dhyan Chand

553 celebrated from 7 schools

Academic Year-2023-24													
Sr.	Name of School	Strength of School	Progressive Learner	Mainstream	Reading			Writing			Numeracy		
					0 to 1	1 to 2	2 to 3	0 to 1	1 to 2	2 to 3	0 to 1	1 to 2	2 to 3
1	Primary School Lakhigam	446	87	-	75	11	0	52	35	0	66	20	0
2	Primary School Luvara	137	62	-	15	31	12	9	32	21	6	31	23
3	Primary School Jageshwer	154	28	-	8	3	0	8	2	0	11	2	0
4	Primary School Ambetha	121	46	-	11	9	6	9	13	3	5	14	7
5	Kumarshala Dahej	451	74	-	66	7	0	50	24	0	69	4	0
6	Kanyashala Dahej	420	66	-	59	0	0	64	0	0	15	0	0
7	Primary School Nava Vadiya	35	-	-	-	-	-	-	-	-	-	-	
8	Primary School Jolva	170	33	-	20	0	0	12	18	3	23	1	0
9	Primary School Suva	268	45	-	25	2	0	20	17	8	23	8	0
10	Primary School Rahiyad	222	66	10	22	18	3	22	19	6	32	18	8
11	Primary School Koliyad	91	50	-	9	2	0	12	1	0	9	3	0
12	Primary School Vengni	92	38	-	2	8	9	6	6	9	2	11	5
13	Primary School Kaladara	165	40	-	21	14	6	20	12	12	18	15	13
14	Ashramshala Atali	170	48		33	12	5	40	9	3	29	15	6
	Total	2942	683	10	366	117	41	324	188	65	308	142	62

COMMUNITY HEALTH

Adani Foundation celebrated Mother's Day with mothers and children of 3 tribal villages: Pada, Machhmadi and Mauza in association with Health Department and Women and Child Development. 52 mothers and 25 children participated in this day celebration. CHO of Umadabra sub centre, Kinjalben explained the importance of health and hygiene. She also explained the importance of outdoor games for children and 7 steps of hand washing through activities. After that mothers cut the cake After On this occasion Adani Foundation distributed sports items among the children. Mothers expressed their gratitude towards Adani Foundation and assured that they will take good care of their wards.

Kishori Utkarsh Pahel (KUP) is an awareness program designed for adolescent girls' health, nutrition, life skills, rights and Govt. schemes. KUP is District Administration's CSR initiative. This will be implemented in all 78 villages of Netrang taluka of Bharuch District. AF will fund the program and it would be implemented by CSR BOX of Bharat cares. In 1st phase, program would be launched in 39 villages of Netrang taluka.

As part of SWOT analysis, CSR Nodal Officer in Collector office, Bharuch Mr. Vincent held the preliminary discussion meeting with the school and non-school going girls, teachers and Headmasters has been initiated from 22nd July 2023 in coordination with Mr. Hiren Patel, BRC, Netrang; Bharat Cares and Adani Foundation at Netrang. This was the 1st kick off meeting of Kishori Utkarsh Pahel.

Pradhan mantri jan Arogya yojana:

58 beneficiaries of 2 tribal villages : Kawachiya & Mahundikhanch got support for renewal of their PMJAY cards. After identification of these deprived beneficiaries team shared this information with Asha and MO. Now these people got renewed PMJAY cards of insured cover 10 Lacs

PASHUDHAN PROGRAMME

Project Pashudhan (AH) is a transformative endeavor focused on enhancing the quality and productivity of local Milch cattle, aimed at improving the livelihoods of families engaged in animal husbandry.

Highlights: April to September-2023

Sr. No.	Particulars	Nos
1	Total Villages Covered	30
2	No of Families Benefitted (Direct)	101
3	No of Artificial Inseminations (Cow +Buffalo)	276
4	No of Conform Pregnancy (Cow + Buffalo)	147
5	No of Female Calves Born (Cow +Buffalo)	78
6	No of male Calves Born (Cow +Buffalo)	10
7	Total Dairy Farms in Project Area	90
8	Employment created for families through dairy farming	42
9	Total Milk cooperative society in Project Area	8
10	No. of Private wonder for milk Collection in villages	28
11	No of Farmers Private Milk Sale in villages	193

Impact Of Cattle Breeding Program

Sr. No.	Particular	Amount Rs.
1	Calving of 04 Cow & Buffalos progenies are occurred till date. Assuming average milk production per lactating progeny will be 2000 litters. Accordingly, it is expected that they will produce total 7000 litters of milk which is being sold @ Cow Rs. 35 & Buffalo 55/litter	3,05,000
2	Total 78 female calves are born in project villages whose age wise valuation as Asset Value is in attached sheet.	5,16,000
3	Total 10 Male calves are born in project villages whose age wise valuation as Asset Value is in attached sheet.	10,000
4	Promotion of Fodder varieties of BNH-10 Fodder Production 204.7 Tone	4,80,110
5	Employment created for 42 families through dairy farming. Assuming average Monthly Income from each Families will be Rs.6000/-.@ 06-month Total Income Rs. 36000/- from these 42 Families will be Rs.15,12,000/-	15,12,000
	Total Rs.	28,23,110

SUSTAINABLE LIVELIHOOD DEVELOPMENT

Animal Health Statistics

Sr. No.	Description	Cows	Buffaloes	Total
1	Total Inseminations	100	177	274
2	Conventional Inseminations	100	14	114
3	Sex Sorted Inseminations	0	160	160
4	Animals Examined for Confirm Pregnancy	7	6	13
5	Confirm Pregnancy in Examined Animals (Cows)	7	0	7
6	Confirm Pregnancy in Examined Animals (Buffaloes)	0	5	5
7	Animals Examined for Confirm Pregnancy	111	191	302
8	Confirm Pregnancy in Examined Animals (Cows)	54	0	54
9	Confirm Pregnancy in Examined Animals (Buffaloes)	0	92	92
10	Total Calving Reported	33	53	86
11	Calving (Conventional Semen)	12	8	20
12	Calving (Sex Sorted Semen)	21	45	66
13	Animals Sold After Pregnancy	-	-	29
14	Animals Selected for Heat Synchronization and Insemination	11	78	89
15	Animals Vaccinated for Hemorrhagic Septicemia (HS)	267	3080	3347

- Conception rate for conventional semen is 50%.
- Conception rate for SSS is 39.25%
- Twelve training programs in Manad and Kadodara CBC involved 346 beneficiaries, including 147 females and 109 tribal participants.
- A total of 957 kg of mineral mixture was distributed to 474 livestock holding families both after insemination and during training programs, aiming to enhance productivity and fertility.

PASHUDHAN PROGRAMME

FODDER PRODUCTION

The BNH-10 is a soft, succulent perennial type green foliage, resulting from a hybrid between Napier and BAIF Bajra. This hybrid offers substantial green biomass that can be harvested continuously for 3-4 years, yielding 7-8 harvests annually. On average, it provides an impressive yield of 200 to 250 tons per hectare per year. In terms of nutrition, the BNH-10 contains 9-10% crude protein and boasts a digestibility rate of 60-65%. This fodder variety provides numerous benefits for dairy animals, notably enhancing their fertility and productivity.

Name of CBC	No of Beneficiary	Area in Guntha	During Month Production in Ton	Total Production in Ton	Market Rate Rs.	Savings in August 2023
Dahej	14	110	3	6.1	1800	5400
Manad	29	290	19.7	34.5	2100	41370
Kadodara	27	270	34.3	71.1	2300	78890
TOTAL	70	670	57	111.7	6200	125660

LINKAGES TO STRENGHEN AGRICULTURE

S.N	Scheme	Ben. Enrolled
1	National Food Security Mission	246
2	Soil Health Card	20
3	Krishi Vai Vidhya Karan Yojna	63
4	I- Khedut Portal	5

- **Mineral Mixture :** A total of **257 kg** mineral mixture distributed **131** farmers as support for better fertility and productivity of dairy animals.
- **Soil health card scheme** : **20** farmers of 2 villages Vengni and kaladara had benifitted
- **Farm School activity : 25** farmers had supported with calcium feed supplements through ATMA.

SUSTAINABLE LIVELIHOOD DEVELOPMENT

Annpurna Project

AF Dahej, in partnership with Krishi Vigyan Kendra, Chaswad (Bharuch), conducted a training program on natural farming at KVK. 63 farmers from five tribal villages participated. The training sessions delved into organic farming methods, emphasizing Jiwamrit, Ghanamrit, and other organic fertilizers. In addition to the training, participants were provided with seeds of finger millet, cluster beans, and Indian beans for their demonstration plots. The seeds, weighing a total of 56.3 kg, had a combined value of Rs. 18,420.

The Annapurna Project, conducted by the Adani Foundation in collaboration with Krishi Vigyan Kendra, Chaswad, encompasses various activities aimed at enhancing farmers' capacity. These activities include exposure visits, soil testing, and seed distribution. We have identified 42 poor farmers from tribal villages who will receive support in the form of seeds and technical guidance. These farmers cultivate a variety of crops, including soybeans, pigeon peas, paddy, cotton, and sorghum.

Suva Gaushala is in the process of developing an integrated model for cow-based products, including diyas, logs, pots has received an order for 9150 diyas from the District Rural Development Agency (DRDA) in Bharuch.

Program Name	Number of Beneficiaries	Remarks
Dan Sahay Yojna	253	Enhancing livestock nutrition and feed management.
Krushi Vaishava Dhyakaran Yojana	63	Training on improved seeds, fertilizers, and sowing practices.
ATMA Project Exposure Visit to Navsari Agri University	50	Farmers preparing JIWAMRIT after the visit.

Adani's Mahila Movement for Advancement

Adani Foundation is supporting Jaidevmogra Maa Group Hathakundi since September 2022. This group got a platform in Gram Bharti, Ahmedabad to exhibit their bamboo craft items. With AF support group got a loan of Rs.1.50 lacs under micro finance scheme of Livelihood Mission for raw materials.

To make the group more strengthen AF extended their support by providing different machineries for bamboo cutting, polishing, toolboxes on 15th May 2023. These will help group members and other youths of Hathakundi village to make market competitive products with good quality and attractive look. They will save their time and energy in bamboo string cutting and ultimately their income will be enhanced.

Group members are primitive tribe KOTWALIYA. Their life is based on bamboo products.

145 artisans of Kotwaliya tribe of 2 villages – Hathakundi (136) and Pingot (9) registered under Hastakala Setu Yojna for artisan card. AF team had a meeting with Dy. Commissioner of District Industries Centre (DIC), Bharuch for Kotwaliya's artisan card. Special camps were held in the villages for this drive. Artisan card will pave the way for exhibition of bamboo craft items made by Kotwaliya and other support. Kotwaliya is a tribe of Particularly Vulnerable Tribal Group (PVTG) and bamboo craft is their main occupation.

Adani's Mahila Movement for Advancement

Self Help Group - Achievements April to September 2023							
S.N	Group	Members	Type of Business	Monthly Saving (In Rs.)	Total Savings	Monthly income (In Rs.)	Income
1	Shiv Shakti Sakhi Mandal, Jageshwar village	10	Bag making & Apparel unit	1600/-	88,565/-		
2	Mahadev Mahila Sakhi Mandal, Luvara	11	Vermi compost	1100/-	36,374/-		6,000.00
3	Sadhdada Mahila Sakhi Mandal, Lakhigam village	11	Amul Parlour & Snacks	5500/-	1,66,228/-	22,767/-	127,052.00
4	Ekta Mahila Sakhi Mandal, Jolva village	10	Bag making & Apparel unit	1000/-	23,005/-	16,580/-	69,760.00
5	Gaushala Mahila Sakhi Mandal, Suva	10		1000/-	16,000/-		22500.00
	Total	52		10,200/-	3,30,172/-	39,347/-	2,25,312.00
Tribal area SHG details							
6	Jay Devmogra Maa Group, Hathakundi	10	Bamboo crafts	1000/-	12000/-	25000/-	84,500.00
7	Shree sakhi mandal, Kavchiya	10	Saving	1000/-	10000/-		
8	Anjali sakhi mandal, Pada	10	Saving	1000/-	12000/-		
9	Sarvoday Sakhi Mandal, Koliyapada	11	Saving	1100/-	17200/-		
	Total	41		4,100/-	51,200/-	25000/-	84500.00
	Grand Total	93		14300/-	3,81,372/-	64,347/-	3,09,812.00

VRIKSH SE VIKAS

Vruksh se Vikas is a part of Honorable Chairman Sir's pledge of 100 million trees by 2030 – announcement made at World Economic Forum, Davos. AF Dahej's mission of **10000 plantation every year**. In 2023 – 24, total 18550 nos. of tree plantation completed in 14 tribal villages of Netrang taluka (Bharuch district) against the target of 10000 trees.

Plantation in FY 2023 – 24

S.N	Tree name	Number of trees planted	Village name	Area brought under green cover (Acre)	Amount utilized	Annual CO2 fixing potential after 5 years (kg)
1	Mango	5000	Vankhuta, Pada, Mungaj, Dabhal, Anjoli, Koliyapada, Vankol, Punpujiya, Hathakundi, Juni Jamuni, Kavachiya, Rajvadi, Mahudikhanch & Mandavi	33.28	454650	625000
2	Guava	3650	Same as above	18.72	185895	91250
3	Sapota	2500	Same as above	16.64	252325	125000
4	Custard Apple	2500	Same as above	12.48	102325	125000
5	Citrus	2500	Same as above	12.48	114825	125000
6	Jamun	2400	Same as above	12.48	86232	240000
Total		18550		106.08	1196252	1331250

Community Infrastructure

Construction of Multipurpose hall at Lakhigam - Civil work has been completed at multipurpose hall at Lakhigam. Finishing work like flooring painting, fixing of doors and window, fixing of lights and fans inside the hall, fabrication work, fixing of window section etc. has been competed at hall.

FLOOD RELIEF WORK

Program Name: Adani Foundation Flood Relief Program

Program Description: Timely support provided by Adani Foundation to flood victims in the affected villages of Mangleshwar, Nikora, and Ankleshwar in Bharuch district. The program involves distributing grocery kits to alleviate the immediate needs of flood-affected families.

Beneficiary Villages:

- Mangleshwar
- Nikora
- Ankleshwar

Total Ration Kits Distributed: 1000

Ration Kit Contents:

Item	Quantity
Wheat/Wheat flour	5 kg
Rice	1 kg
Toor Dal	2 kg
Salt	1 kg
Edible Oil	1 liter
Potatoes	2 kg
Onions	1 kg
Turmeric Powder	100 grams
Chilly Powder	100 grams

From Shy Learner to Confident Student

Hello, everyone! I'm Jagrutiben Vinubhai Thakor, a sixth-grader at Kanyashala Dahej. I live in Dahej village with my parents and three older siblings. Today, I want to share my journey of transformation from a shy and hesitant learner to a confident speaker and a good student, all thanks to the dedicated efforts of an Utthan Sahayak.

A year ago, I was extremely shy. I wouldn't speak in class, rarely greeted anyone, not even my teachers, and didn't interact with my classmates. My academic performance was also suffering—I couldn't read my textbooks, write in Gujarati, or even do basic counting.

Then, a wonderful teacher named Arunaben, an Utthan Sahayak, joined our school. She started teaching progressive learners, and I was one of them. Normally, I would either skip class or sit at the back, trying to stay out of the teacher's sight. Arunaben asked all of us to introduce ourselves, including me, but I couldn't find my voice. She noticed my hesitation.

After a few days, she asked me to sit beside her in class and encouraged me to learn. I had a lingering fear that if I made a mistake, my classmates would laugh at me. Arunaben understood my fear, and her unwavering support and dedication gradually filled me with hope. I began to learn. Now, I can confidently read, write, and count. I've become one of the favorite students of my teachers.

I owe my transformation to Project Utthan and the Adani Foundation. Thank you!"

IMPACT STORY: GROWING HOPE

Mohammad Siraj Raj, 42, belongs to the village of Pakhajan in the Vagra block of **Bharuch district**. He is one of the large farmers from Pakhajan village prefers to grow pigeon peas, green gram, val, maize and wheat in his 15 acres of land and the wastage of agriculture produce gives to his buffaloes. Initially he was not satisfied with the quantity and quality of milk produced by his dairy animals as well as the health condition of them. His primary goal is to increase the productivity of his dairy animals. Since the inception of Kadodara Cattle Development Centre, Mr. Sirajbhai Mohammad Raj has been a participant in Adani Foundation's Kamdhenu Project implemented at field level by BAIF.

After inception of this program, the project team repeatedly interacted with Sirajbhai to motivate him for the best animal husbandry practices. Then he realized that green fodder has an important role as feed for the milch animals because it provides nutrients necessary for health maintenance and milk production.

He has shown interest in developing high yielding fodder crop variety. Through this program, he has received inputs for **fodder development plot of BNH 10 a hybrid napier variety,** which have become a stable source of fodder, generating Rs. 80,000 fodder annually. This has significantly improved his ability to meet the fodder requirement of his dairy animals. Mr. Sirajbhai has gained valuable technical knowledge from the Kamdhenu project, which he applied to his dairy animals to enhance the productivity and fertility of his dairy animals. After feeding BNH 10 his buffaloes showed a 20% increase in milk production as well as improvement in quality of milk and subsequent increase in income of Rs. 25000/- annually. Apart from this he overcame the problem of frequent rumen dysfunction for which he had spent a lot of money in the past. He strongly believes that producing green fodder is a better option than buying an alternative to feed animals primarily for dairy animals.

CSR Hazira

DEMOGRAPHIC DETAILS

32 Village

21,682 Household

1,00,000 Population

16,000 ST Population

EDUCATION

Navchetan Vidyalaya

- In June, Navchetan Vidyalaya's Primary Wing hosted 'Praveshotsav' to welcome new Class-I students, with Mr. Neeraj Bansal, CEO of Adani Hazira Port Ltd., as the chief guest, and Dr. Jijnashaben Oza, Regional Officer of GPCB, Surat, as the special invitee.

- We celebrated Environment Day with a plastic-free theme and Yoga Day with all 400 students practicing calming pranayama exercises.

- The school hosted a PTM session with Mr. Vaibhav Parikh, a Student Counselor, to guide parents on positive parenting.

- The Gujarat State Examination Board, Gandhinagar, conducted an Elementary Drawing exam on 01/07/2023 for students in Class V to VIII during the academic year 2022-23. A total of 72 students from the Mora cluster participated, with 56 from Navchetan Vidyalaya Primary Wing and 16 from Essar International Schools. Additionally, Navchetan Vidyalaya Primary Wing hosted an exciting Dish Decoration Competition for students in Class IV to VIII on July 4th, 2023, to foster and showcase their creative talents.

- From the 2022-23 academic year, the school launched the Students Police Cadet (SPC) Program, with 50 Class VIII students actively engaged. Experienced Police personnel have been conducting classes since July to provide unique insights into law enforcement.

- 150 students, both boys and girls, participated enthusiastically, showcasing their creativity by decorating dishes with colorful designs.

EDUCATION

- **Identifying Progressive Learners:** The baseline assessment of students from the 3rd to 7th standard across all Utthan schools to identify progressive learners has been successfully completed.

- **Mothers' Meet:** The Mothers' Meet serves as an invaluable opportunity for parents to witness the nurturing environment in which their children are growing. During the Six months, we were pleased to welcome 570 mothers to these meetings.

- **Cultivating Culture of Reading**: As part of the Utthan Project's mission to instill positive habits in students, we are proud to announce that 5000+ books were distributed to students during the six months of encouraging a love for reading.

- **IT On Wheels:** In April – Sept 2023, our IT on Wheels initiative benefited a total of 575+ students in Classes VI to VIII from 12 Government Primary schools. This mobile IT program is designed to bring digital education to students, ensuring they have access to the latest technology tools for enhanced learning experiences.

- **Play Way Methods for Holistic Development**: AF believes in the power of play to improve instruction in core subjects like mathematics and literacy while also fostering holistic development in children. Our innovative use of play materials and environments is tailored to enhance various developmental domains in students

570 mothers engagement

5000+ books distributed

575+ student got computer literacy

506 students took part in Science exhibition

EDUCATION

- **Science Exhibition:** A total of 506 enthusiastic students of class -VI to VIII from 07 Utthan schools actively participated in our Science Exhibition.
- **Independence Day Celebration:** Our students celebrated Independence Day with fervor, showcasing their patriotism through dance performances to patriotic songs.
- **National Sports Day Celebration:** To celebrate National Sports Day. We had the privilege of hosting a sports coach from DLSS who enlightened the Utthan schools' students about various sports and potential career paths. Our progressive learners demonstrated their athletic prowess at Navchetan Vidyalaya,.
- **World Environment Day celebrated** in Government Primary School under Utthan Project. 397 Students from 18 Government Primary School From 02 blocks of Surat District participated.
- **International Day of Yoga** in the Government Primary School, under Project Utthan. Total 1645 Students and Teachers from 22 school participated during this Yoga Day Celebration. Under UTTHAN project, Adani Foundation- Hazira had Celebrate National Reading Day in 22 Utthan School with Total 564 Students

1645 students and teachers celebrated Yoga day

506 students took part in Science exhibition

397 Participated in environment day

Block	Number of villages covered	Number of Utthan Schools	Number of students	Number of Progressive students	Number of students Mainstreamed	Number of competencies completed
Choryasi	8	10	1720	697	79	252
Olpad	15	15	1102	422	49	124
Umarpada	7	7	1374	384	23	78
Total	30	32	4196	1503	151	454

COMMUNITY HEALTH IN TRIBAL AREA

- We have organized Multi specialty medical health checkup camp at Kevdi Village in Umarpada taluka of Surat district. Through our Health checkup camp total 300 patients benefitted. our aim was not only to provide immediate medical assistance but also to create awareness about the importance of preventive care.

- Additionally, we have referred 08 individual's cataract patients detected during camp for operation at Divya Jyoti hospital, Mandvi and operation of patients successfully completed.

- "TB Free Umarpada" program was organized by Adani Foundation, Hazira and Taluka Health Office Umarpada at inland Umarpada of Surat district in the presence of former Minister and MLA Ganpat Sinh Vasava and General Manager Marine Services of Adani Hazira Port Captain Ashish Singhal. In this program, about 70 TB patients diagnosed in Umarpada taluka were distributed under the Pradhan Mantri Nikshay Nutrition Yojana. Adani Foundation will provide nutritional kits to these patients for the next six months.

- Conducted Awareness session under "TB free Gram panchayat" in Chokwada village regarding TB free umarpada project in umarpada block of Surat district. More than 100 villager participated in awareness program.

300 patient benefited by our health camp

8 successful cataract operation

70 TB patient supported with kits

SUSTAINABLE LIVELIHOOD DEVELOPMENT - LINKAGES

- 10 Forms filled under Manav Garima Scheme to provide tool kit for Bamboo artisans from Panchamba, Umargot, Ghanawad and Kevdi village of Umarpada taluka.
- Artisan card received from Govt. of Gujarat and distributed to 55 Artisans of kotwaliya community from Panchamba, Umargot and Ghanawad villages.
- 32 form for kotwaliya bamboo artisan filled up under the scheme of Dattopant Thengadi Artisan Interest Subsidy Scheme. Per beneficiary will be received Rs.20000. Total leverages of Rs. 6,40,000
- Kitchen Garden Training provided to 25 women from our Core village with help from KVK, Surat. Expert provide Training through presentation and videos on various topics like: Natural farming, Organic farming, seasonal vegetables and fruits, importance of kitchen garden etc. 25 kitchen garden seeds kit were distributed to women for developing kitchen garden on their back yards.

SUSTAINABLE LIVELIHOOD DEVELOPMENT - LINKAGES

- **Meeting with SHGs members:** Conducted 10 regular meetings of SHG groups on regular saving and identified Enterprise need for to support SHGs. Discussed on exposure visit which will be planed on August at BAIF. Meeting with SHGs whose are involving in making bamboo craft products and discussed about sell at local village
- **SHGs Exposure visit at BAIF, Dang:** 110 SHGs members from the project villages participated in Exposure visit at BAIF, Dang. They visited and meeting done with SHGs, bamboo artisan whose are working as group and sell different types bamboo products. Then Visited AGC bamboo hand craft cooperative society and know how they run society as group, Visited Cashew Factory which is run by SHGs members,
- **SHGs members participated in Exhibition at Saputara:** one SHGs members from Anandi SHG, Kevdi village participated 10 days Hand craft exhibition organized by Small cottage industry Govt of Gujarat with her husband. From 10 days they earned around Rs. 14,000 from selling bamboo products.
- **Farmer Exposure visit at BAIF, Lachhakdi , Vasada:** 100 farmers from the project villages participated in farmers Exposure visit at BAIF, Vasada. They visited Wadi concept, Water conversation structure, pickle processing unit and kitchen garden. They also visited Kaju factory which is rune by 15 members mandala. Face to face intervention done with the farmers and know about FPO , Role and responsibilities of FPO members etc...

WOMEN EMPOWERMENT PROJECT

- **Harsha Sakhi Mandal** started canteen at ground floor SS1 building inside Adani Hazira Port premises. They have started operation from 1st August-23. Apart from regular canteen operation they also taking orders for special occasions.
- **Maa Mahakali Sakhi Mandal & Maa Ramkul maa Sakhi Mandal** received and completed order for 200 Jute bags from Law College, Gandhinagar.
- **Sai Krishna Sakhi Mandal** : During festival season SHG group received orders and sold 210 kg. sweets (Mohanthal & Kajukatli).
- **SHG Meeting:-** Regular Meeting with SHG Group and Formation of Two new SHG Group.

Name of IG Activities of SHG's	Financial year of Inception	Income in the reporting month (In Rs.)	Income (From April. To this reporting month of the (FY23-24 Rs.)	Cumulative income (from inception of the groups in Rs.)
Harsha Sakhi Mandal	10/10/09	297929	445000	680850
SaiKrishna Sakhi Mandal	17/9/20	79800	320125	680250
Santoshi Sakhi Mandal	10/6/21	15000	315250	675780
Pragati Sakhi Mandal	17/6/08	8000	250000	375320
Roshani Sakhi Mandal	12/08/08	15000	222595	624120
Jay Mahakali Sakhi Mandal	15/7/20	10000	150530	370520
Jay Ramkulmaa Sakhi Mandal	15/1/20	10000	125670	250320
Saheli Sakhi Mandal	27/01/14	15000	405000	1160000
Paardevi Maa Sakhi Mandal	10/10/20	20000	370545	805810
Shree Sai Sakhi Mandal (Halapati)	10/2/23	500	6000	6000
Maa Meladi Sakhi Mandal (Halapati)	10/2/23	1000	12000	12000
Dhara Sakhi Mandal (Halapati)	19/07/22	1000	6000	36000
Maa Sindhavai Sakhi Mandal	22/8/22	1000	12000	16000
Star Sakhi Mandal	7/2/22	1000	55780	115230

PROJECT UDAAN

- The aim of this project is to inspire young minds by giving them exposure visits at Adani facilities such as Adani Hazira Port & Adani Wilmar Limited Hazira.
- During this year, 2800 students from 56 different schools, colleges and other educational institutions of Surat, Navsari, Bharuch & Vadodara district have visited AHPL & AWL Hazira. Total 11.58 lacs revenue generated till September-23.

IMPORTANT ACTIVITIES

Household Baseline Survey – Halpati community :

Conducted Household baseline survey of 38 households from Halpati community at Halpatiwas in Vanswa village.

Collected various details like education, livelihood, infrastructure, Assets available, Fishing tools available, avail Govt. schemes, documents available etc. to better understand about their current situation and plan accordingly for betterment of community.

Survey helps us in developing targeted activities based on category wise or age group wise in near future for each vertical.

Meeting with Shree Dinesh Vasava (District TB Officer, Surat) :

AF team visited civil hospital, Surat and met Mr. Dinesh Vasava (District TB officer) to plan about implementation of "TB Free Umarpada" project in Umarpada block of Surat district.

Discussed about how we will implement project in villages of umarpada block. Role and responsibilities of District medical department and Adani foundation in program and how our program is benefitted to TB patients.

IMPACT STORY- Overcoming Challenges with a Smile

Introducing Muskankumari Sandeepbhai Mishra, a cheerful third-grade student at Bhatlai Primary School, known for her ever-present smile and passion for both studies and sports. She wholeheartedly engaged in all school activities.

During a routine health check by the government health department, Doctor Sejalben suspected a heart issue in Muskan and urged her parents to submit a report. Struggling financially, they were directed to a trust's hospital for a reduced-cost report. The diagnosis confirmed a heart defect, devastating her family.

The Mishra family, with six members and one breadwinner, faced challenges. The Utthan Sahayak, deeply moved, provided unwavering support to aid Muskan's recovery. Muskan's father faced job loss due to documentation issues, but the support assistant stepped in to help, securing his job and starting Muskan's treatment.

With constant support from the Utthan Sahayak and Doctor Sejalben, Muskan's treatment was arranged at the Mehta Institute of Cardiology and Research Centre in Ahmedabad, free of cost. After dental treatment was added to her medical journey, Muskan's father lost his job. To make ends meet, Muskan's mother began working, while her elder sisters managed the household.

In this trying time, the Utthan Sahayak provided crucial assistance to the Mishra family, helping them navigate through adversity.

CSR Kutch

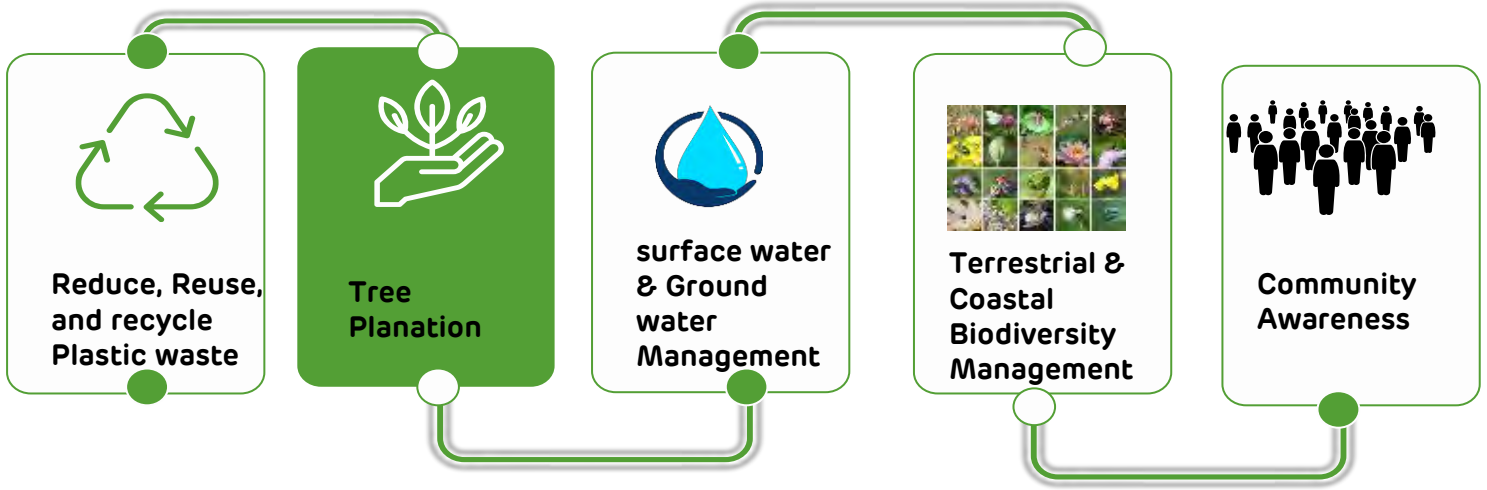
Demographic Details

Block	Villages	No. of HHs	Population
Mundra	61 Village and 9 Fishermen Vasahat	35192	153179
Anjar	3 Villages	4350	18500
Nakhtrana	8 Villages	4093	16373
Bite – Abdasa	12 Villages	2415	9660

1. Adani Ports and SEZ Limited
2. Adani Power Mundra Limited
3. Adani Wilmar Limited
4. Adani Wilmar – Caster Limited
5. Kutchh Copper Limited
6. Mundra Solar Panel Making Unit
7. Green to PVC Mundra Limited
8. Adani Kandla Bulk Terminal Port Pvt Limited
9. Adani Solar Limited – Bitta, Abdasa
10. Adani Green Energy Limited – Nakhatrana
11. Adani Green Energy Limited - Khavda
12. Adani Transmission Limited – Mandvi

Environment Sustainability

Action to environment Sustainability



The environment and biodiversity serve as the lifeblood of our planet, playing a crucial role in maintaining ecological balance and sustaining life in all its diverse forms.

Preserving them is more than a necessity; it is a shared responsibility to secure the health and well-being of both present and future generations.

Adani Foundation embodies this commitment through its varied environmental projects. These range from extensive tree plantation and mangrove restoration to innovative biogas provision, drip irrigation, groundwater recharging, and water conservation.

Environment Sustainability

Water Conservation Project

The water landscape of our Business periphery villages has undergone a significant transformation due to our proactive approach to groundwater and surface water conservation and management work. Our mission is clear – to nurture and sustain water resources. We are primarily focusing on initiatives such as pond deepening, reinforcing check dams, implementing Rainwater Harvesting Systems (RRWHS), setting up borewells, and cleaning river inlets.

These efforts have led to enhanced water storage, ensured consistent water access for drinking and agricultural use.

Sr. NO	Project	Unit	Outcome	Impact
1	Check dam Restrengthening-Nana Kapaya	1	Water Storage Capacity increased by 48000 Cum	60 + farmer's 120+Acre Area of Agri land can be Irrigated
2	Recharge Borewell	21	Reduce Salinity ingress , and preventing water run	150+ farmer's 260+ Acre Area of Agri land for Irrigated
3	Pipe Culvert at Checkdam at Bhujpur	1	prevent water runoff into sea side.	35 farmer's 120+Acre Area of Agri land can be Irrigated

*** Funded by -Mundra Petro chem Limited**

Impact

- **483** Total area covered (Acre)
- **335** Total Farmers benefitted (No)
- **7%** TDS Reduction
- **7.2%** Increase Revenue %
- **1150** Reduce in health expenses Monthly

Environment Sustainability

Vruksh Se Vikas – Massive Drive

Since 2014, we has embarked a transformative journey to execute a wide range of tree plantation drive in collaborating with local communities and forestry departments .

1.Miyawaki Forest Development: Native species planation In the 2 acre area at Nana Kapaya village creating a flourishing mini-forest with 5,508 trees,..

2.Massive Public Plantation Drives: Barren spaces were transformed into lush green havens through our massive public plantation drives. One notable example is the Bhupur Visri Mata Temple, where 25,000 trees were planted.

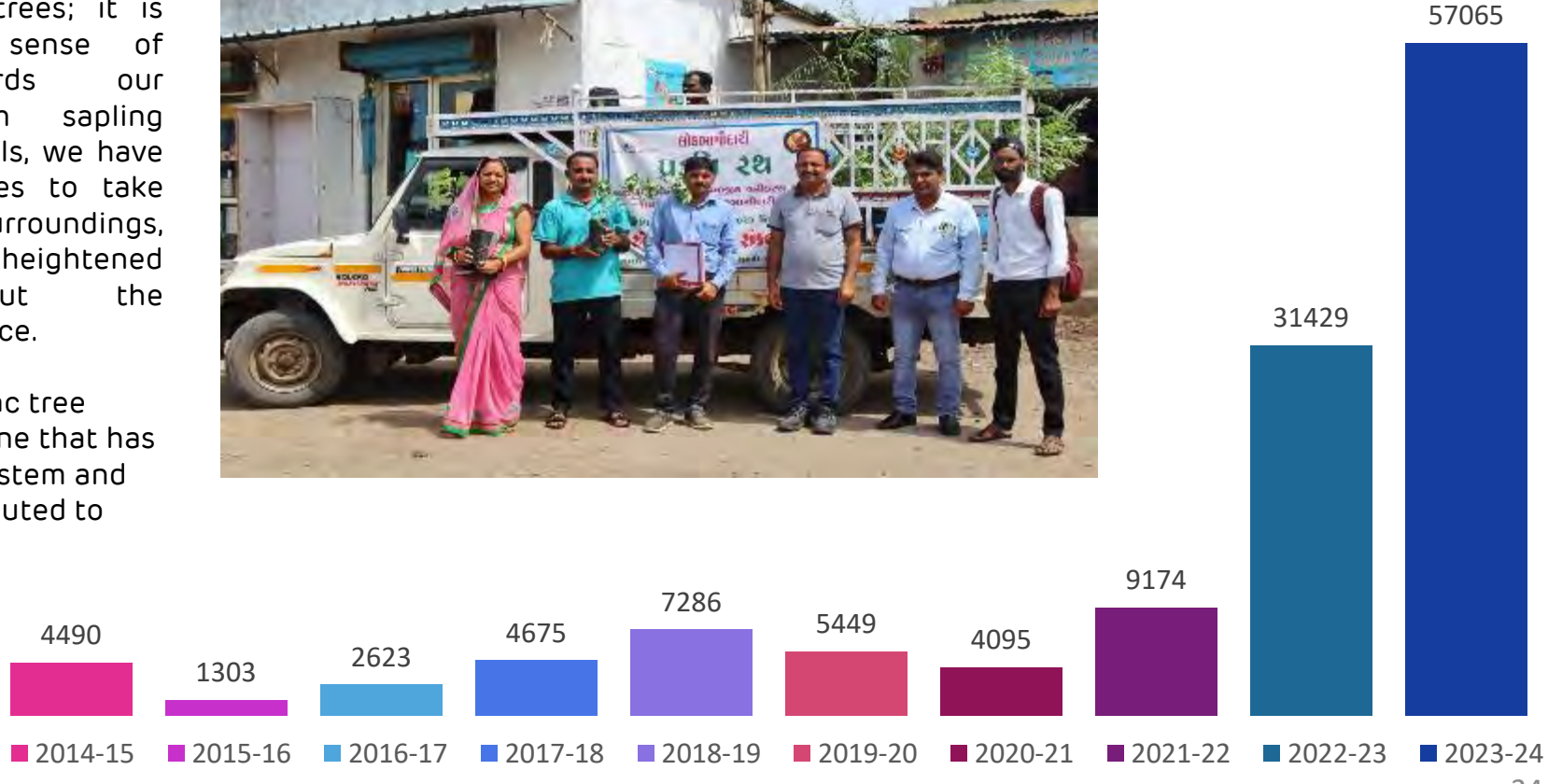
Environment Sustainability

Vruksh Se Vikas – Massive Drive

1.27 Lac tree plantation

Prakrurath: This initiative goes beyond just planting trees; it is about fostering a sense of responsibility towards our environment. Through sapling distribution to individuals, we have empowered communities to take ownership of their surroundings, leading to a heightened consciousness about the environment's significance.

Till the date Total 1.27 Lac tree plantation have been done that has enriched the local ecosystem and also significantly contributed to carbon sequestration



Environment Sustainability

Home Bio Gas

Home biogas systems, adept at converting organic waste into renewable energy, present a sustainable and eco-friendly solution for cooking. We have started this project in 2020, with farmers contributing 10% towards the cost, that persisted till 2022. Since then, we have scaled our initiative by aligning with government home biogas schemes to amplify the reach and adoption of this eco-friendly technology in wider rural regions.

The deployment of home biogas has been particularly transformative for women, offering a healthier, smoke-free cooking environment reducing greenhouse gas emissions.

Current year we process to facilitate 258 Gobardhan unit through Gov.

Phase	unit	Unit Cost In Rs.	AF Support in Lac	Beneficiaries Contribution in Lac	Gov. Convergence in Lac	Total in Lac
Phase -1	125	23200	29	3.75	0	32.75
Phase -2	100	42000	42.0	5.0	0	47
Phase -3	100	42000	0	5.0	37	42
Phase -4	258	42000	6.45	6.45	95.46	108.36
Total	**583**	**149200**	**77.45**	**20.2**	**132.46**	**230.11**

*** Funded by -Mundra Petro chem Limited**

Environment Sustainability

Mangrove Biodiversity

In 2010, we initiated a mangrove plantation project at Luni coastal belt, ultimately leading to 162 hectares of dense mangrove forests. Subsequently, we expanded our efforts by planning and implementing a multi-species mangrove plantation across an additional 20 hectares. These plantations are diligently maintained and continually monitored. Notably, these forests have evolved into a thriving habitat for various marine and migratory bird species, enriching the local ecosystem..
Since PhD scholars and students frequently visit this area for study. we plan to establish it as a Center of Excellence, serving as a hub to create awareness among students and facilitating research activities for scientist

- **Spices of Mangroves** — **4+**
- **Coastal Spices as habitat preservation** — **60+**
- **Hector Avicennia marine plantation** — **160+**
- **Hector Biodiversity park** — **20+**

*** Funded by -Mundra Petro chem Limited**

Mangrove Plantation Work Detail

Sr. No	Year	Number	Men days	Remarks
1	2011-12	50000	3000	
2	2012-13	125000	6943	
3	2013-14	60000	1480	
4	2014-15	125000	6501	
5	2015-16	65000	3533	
6	2016-17	20000	3125	
7	2017-18	100000	3666	
8	2018-19		7539	Algal Removal work
9	2019-20		6261	Algal Removal work
10	2020-21		4830	Algal Removal work
11	2021-22	97000	5200	
12	2022-23	100000	4445	
	Total	**742000**	**56523**	

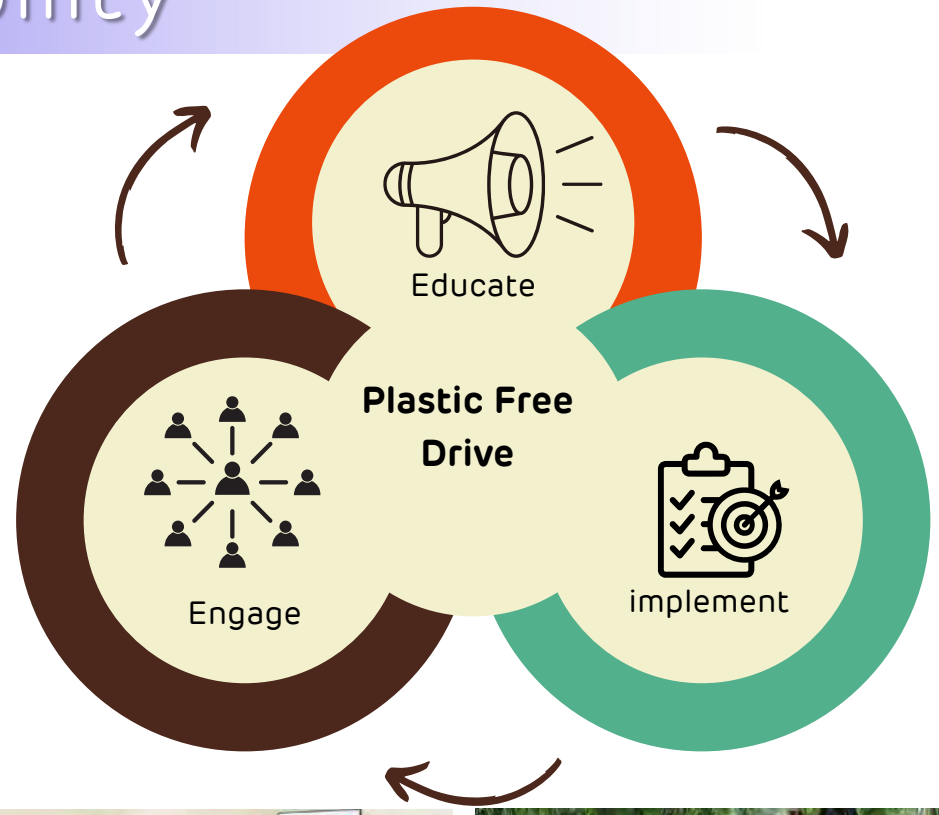
Environment Sustainability

Plastic free Drive

Objective: The central aim of the Plastic-Free Drive is to empower and enlighten students as key agents of change, enabling them to disseminate awareness and instill the practice of reducing single-use plastics within their community.

1.Educate: Spread awareness about the harmful effects of plastic on the environment, marine life, soil health, and human well-being.
2.Engage: Mobilize community members, especially the youth and family members to actively participate in plastic waste reduction activities.
3.Implement: Introduce sustainable alternatives to ensure proper disposal and recycling. As of now we supply to APSEZ plastic waste management plant.

Outreach :-
10000 Students of Primary Schools.
990 Students of Secondary Schools of Mundra Block.



* Funded by -Mundra Petro chem Limited

Environment Sustainability

Natural Farming

Natural farming is an urgent need of the hour, We have initiated a comprehensive approach to promote natural farming practices through a variety of activities aiming to minimize pesticides and chemicals uses ,lead to produce , nutritious, chemical-free produce which is benefitting both farmers and consumers by providing healthier and more sustainable food options as well as plays significant role to flourishing environment and balanced ecosystem.
Funded By GPVC- Mundra Petro chemical limited

250 Farmers	05 exposure	857 Farmers	257 Gobardhan	35 Farmers	Rs.7.47 Lacs RG
• **Awareness Sessions at Village Level:** Spreading awareness on natural farming benefits and address their concerns.	• **Hands-On Training & Exposures :** Arranged Workshop and training to emphasizing on real-world techniques.	• **Link with Government Scheme**: facilitation of govt. Cow Nurturing scheme to promote eco-friendly farming practices.	• **Bio-gas Support:** Link with Gov Gobar Dhan Biogas Unit Nutrient-rich slurry serves as an essential organic fertilizer for natural farming	• **Natural Farming Certification Process** to obtain natural farming certification through the Gujarat Organic Product Certification Agency (GOPCA) for the 35 Farmers who are Members of Raj shakti Sahakrai Mandali.	• **Marketing Assistance:** Provide platforms and resources ensuring fair prices and broader consumer reach.

UTTHAN – FLAGSHIP EDUCATION PROGRAM OF ADANI FOUNDATION

Project Utthan, launched by the Adani Foundation in 2018–19, is an innovative intervention to enhance students' learning capabilities, provide facilities to schools, and achieve better learning outcomes at the grassroots level. The project adopts government primary schools to convert it as model schools, tutors' progressive learners, introduces English as a third language, and conducts various academic and co-curricular activities to enhance quality of education. It also works on staff capacity building and engages educators, SMC members and parents, especially mothers, to improve children's basic literacy and numeracy skills.

*** Funded by – Kutchh Copper Limited**

- Adopting government primary schools
- Main streaming Progressive learners
- Enhancing Learning Outcomes
- Arresting dropout rates
- Introducing English as a Third Language
- Enabling Joyful Learning Spaces
- Collaborating for teachers' capacity building

UTTHAN OBJECTIVES

- Strengthening Government primary schools
- Appointing an Utthan Sahayak in each school who acts as a catalyst and facilitator
- Providing resources and facilities
- Literacy, numeracy and skills for life
- Government school teachers' capacity building
- Special focus on 'Priya' Vidyarthi's (progressive learners)
- Training students for Competitive exam

UTTHAN REACH

10499	999	250	150	150	3000
69	8	2	5	5	2
Primary School	High School	Adani Evening Education Centre	Adani Competitive Coaching Centre	Adani English Coaching Centre	IT On Wheels

PROGRESSIVE LEARNER

2541 Progressive Learner; Assessment of 6314 Students (3 to 7 Std.)

MOTHERS MEET

400+ Mothers Meet : 10000+ Mothers Joined.

COMPETITIVE EXAM

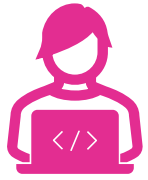
877 Students preparing Competitive Exam. 354 JNV, 273 PSE & 250 NMMS

ENGLISH : THIRD LANGUAGE

5000+ Facilitating English from Classes 1-4.

LIBRARY ACTIVITY

72000+ Book Issued : 924 Library Activities, OASIS 200+ Reading Workshop



IT ON WHEELS

4170 students Empowered with digital skills & knowledge.

SUMMER CAMP

4300+ students of Primary & High Schools participated .

Our other various initiatives include:

- ✓ Kutch University has conducted an impact assessment of IT on Wheels, which has been evaluated and certified by the DEO Office.
- ✓ Exposure Visit of Project officers from three different locations to learn about the best practices.
- ✓ Computer Classes in High school : 200 Students took advantages of this computer classes.
- ✓ Career Counselling in 8 Utthan High Schools.
- ✓ Plastic Bag Free village workshop in all High schools.
- ✓ Remedial classes during summer break.
- ✓ Day Celebration : World Book Day, World Environment Day, National Reading Day, International Yoga Day, National Plastic, Bag Free Day, Raksha Bandhan, Independence Day & Celebration of Sports Day.
- ✓ Planned various Capacity Building Program (CBP) & Exposure visit for Utthan Sahayak & Students.
- ✓ Achievements : • Utthan sahayak motivate mothers to open an account of Sukanya Samrudhi Yojana • Utthan supported Taluka levels Kala Utsav in Primary & High Schools. •Utthan Sahayak supported Taluka level Science Fair. •06 students selected in District Level Sports School (DLSS).

Utthan in High Schools

Utthan Aligned With GoI & GoG

NEP 2020 | Samagra Shiksha | Nipun Bharat | RTE

Utthan in High Schools

8 High school

2 teachers hired, (1 Math's & Science, and 1 English)

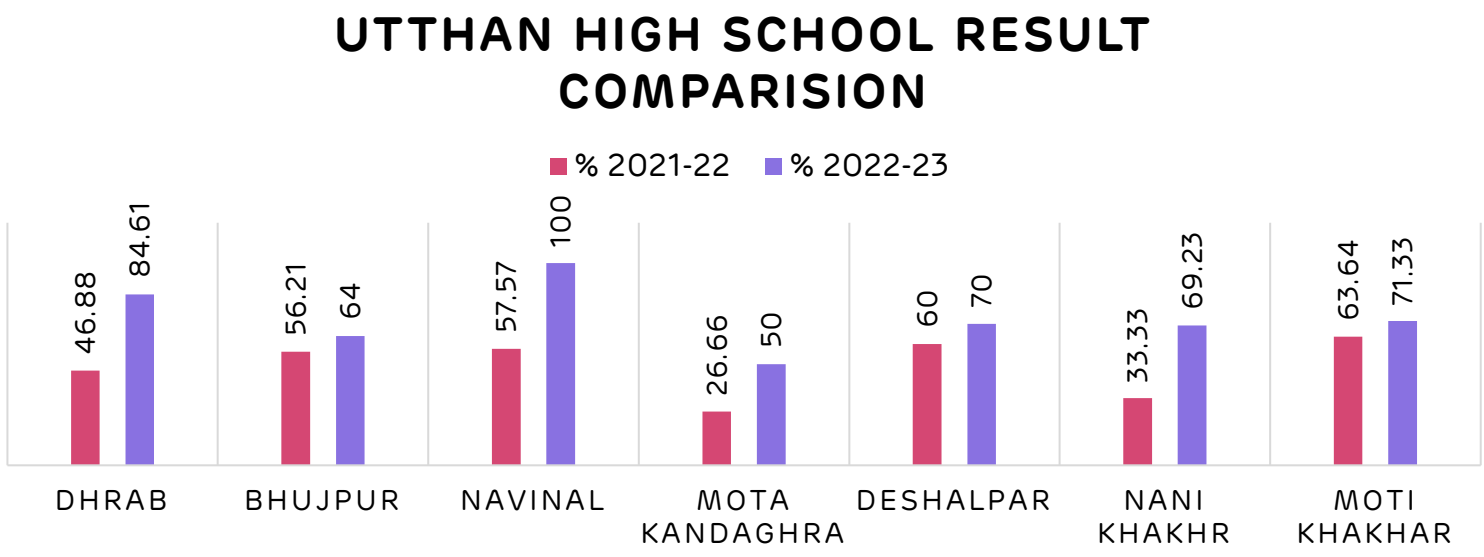
Goal is to improve the students' fundamental skills in these subjects.

2 AEEC

help students improve their academic performance by revising the syllabus and clearing their doubts

Our trained teachers and volunteers provide personalized guidance and feedback to the students in a conducive learning environment these programs will boost the confidence and skills of the students and prepare them for a brighter future.

Good Board Result



Adani Education Evening Centre is running in 2 centers, where Utthan Sahayak teaches Maths, Science & English for an additional 2 hours. This has had an impact on the board results.

Adani Vidya Mandir, Bhadreshwar

Empowering Communities through Free and Compulsory Education

Adani Vidya Mandir, Bhadreshwar, was established in June 2012 with the goal to have access of quality and cost free Education with essential amenities like food, uniforms, and books, to Financial Weaker community children of the Mundra Block.. The school boasts excellent infrastructure and resources necessary for the holistic development of each student. Children are admitted to the school form Senior Kg to 10th Standard.

Few notable points:

- We are empowering economically disadvantaged families through free and quality education
- We are fostering an environment of academic excellence.
- Pioneering Excellence: The First Gujarati Medium School in Gujarat Accredited by NABET
- Over 600 Students Learning Each Year in AVMB
- More than 35% of enrolled students in AVMB come from the Fisherfolk community.

- Work shop was conducted on Mental Health and behavioral change
- AVMB got 1st rank in Vaadan, Gayan and drawing in Kala Maha Kumbh competition and selected for Next block level competition
- AVMB selected for district level Kho-kho Match competition organized by SGFI-School Game Federation of India,
- 2 students selected for District Level Athletic Competition

AVMB STD 10 – SSC Board Result (2022-23)		
Sr. No.	**Grade**	**Student**
1	Above 80%	8
2	Above 70%	8
3	Above 60%	6
4	Above 50%	0
5	Above 40%	1
	Total Students	23

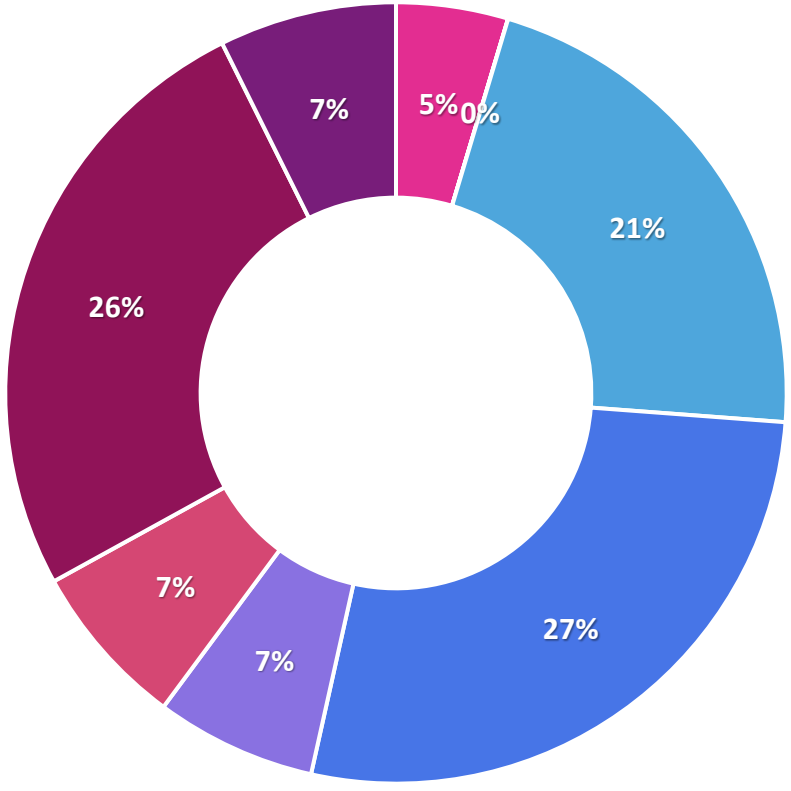
100% Success: Adani Vidya Mandir Bhadreshwar's Remarkable Achievement in Gujarat Board Standard 10th Examination.

Community Health

Quality healthcare is not just about addressing illness; it's about providing everyone an equal opportunity to not just long life, but also rich in quality.

At the Adani Foundation, our steadfast commitment is to offer accessible and affordable healthcare. Through Our diverse healthcare initiatives which are dedicated to cultivating a healthier society to the develop strong and vibrant nation."

CH MIS Data Month April to Sep - 2023		
Sr. No.	**Projects**	**Total**
1	Medical Supports	**1007**
2	Diaylsis	**58**
3	Mobile Van	**4690**
4	Rural Clinice	**5939**
5	Health Camp	**1448**
6	Speciality Health Camp	**1489**
7	Ayushman Card	**5584**
8	Blood Donation Camp	**1598**
Total		**21757**



Our Mobile Health Care Units and Rural Clinic Services have made significant strides in delivering essential healthcare to remote rural areas and underserved populations Since the inception.

MHCU Outreach :- 29 Villages -31 Stoppage
Rural Clinic:- 7 Villages Of Mundra And Mandavi Block

SROI 1:541 (Ref.Soulace impact assessment report)

- **10629 individuals** benefited from the services.
- **35 villages** villages covered.
- **20 %** average savings on healthcare-related costs.
- **25%** People are aware and become health Conscious

29-Villages
31-MHCU Stoppage
7-Rural clinic

Medical Support Poor Patients.
Adani Foundation's Medical support program is a beacon of hope for the less fortunate, offering aid for a diverse range of ailments, from kidney problems to heart conditions and beyond at Our Adani Hospital Mundra.

In the critical cases, after stabilizing patients we refre them to GKGH, Bhuj, for advanced treatment with ened to end co-ordination

Live Impacted -1008 People

Community Health

Dialysis Support:
In Mundra, where water quality challenges contribute to a higher prevalence of urinary infection lead to kidney failure cases. Our Dialysis Support Program is designed to assist those in extreme need and Financial weaker.
The program is not only alleviating their financial burden but also enabling them to lead healthier lives.

Live Impacted:- Two Patients 58 Times

Our health camp initiatives are designed to bridge healthcare gaps in underserved regions, offering a holistic approach for community well-being with combining Preventive and Precautionary measure through Awareness session , Health check Camp, screening and treatment.

The "Cataract-Free Mundra"
The initiative is a dedicated effort to eradicate cataract-related vision impairments specially focused on Senior citizen through Meticulous planning as below.

Outreach:- 9 Villages
Lives Impacted:-473

- Comprehensive Eye Screenings at Village level
- Cataract Surgeries to GKGH ,Bhuj
- Post-Operative Care and Follow-up.

As well as we arranged gynecological and ophthalmic and general health camp at Village level in collaboration with KCL limited, GKGH Bhuj, and THO Mundra,

CH MIS Data Month April to Sep - 2023

Sr.	Projects	Total
1	Health Camp	1448
2	Speciality Health Camp	1489
3	Blood Donation Camp	1598
	Total	**4535**

*Funded by – Kutchh Copper Limited

Community Health

Ayushman card facilitation

Ayushman Bharat PM-JAY is a global healthcare milestone, offering an unprecedented health cover of Rs. 5 lakhs per family annually for secondary and tertiary care. Adani Foundation has started 100% Ayushman Card coverage in all villages of Mundra in coordination with the District Health Department.

Villages -25 Villages
Live Impacted:- 5,584 Ayushman cards have been Issue.

25 Village

5,584 Ayushman cards Issue

Women Health & Well Being
Outreach-18 Village
Lives Impacted:-2230+ women.

- **Gynec Health Check-ups:** Conducted thorough check-ups, with GKGK referrals when necessary.

Sustainable Livelihood Development

"Raj Shakti Prakrutik Kheti Sahkari Mandali

The Adani Foundation has taken a proactive step by organizing awakening and awareness sessions to promote natural farming practices in Mundra block Villages. These efforts led to the formation of the "Raj Shakti Prakrutik Kheti Sahkari Mandali," comprised of 35 dedicated farmers who are deeply committed to natural farming.

We have started green Carnival to provided a platform for these farmers to sell their agricultural produce in our two colonies in Mundra. Encouraged by positive feedback, the farmers have set-up a organic Agri produce shop in Mundra, It serves as an inspiration for others to embrace eco-friendly agricultural practices. Now 302+ farmers are collaborated with Mandli.

Previously, these farmers used to sell their produce in bulk to vendors. Now, they are able to sell directly to consumers, leading to a 35% increase in their income. Furthermore, they have applied for the "GOPCA" certificate from the Gujarat Organic Product Certification Agency, highlighting their commitment to organic farming practices.

They have started Collective organic farming in the 200 acre of agri land with proper fencing and technique.

Rajshakti Prakrut sahakari Mandali had Opportunity to meeting with honorable Governor of Gujarat Achrya devvrat at Gandhinagar on 30 August. As well as had exposure to Gautirth vidhyapith Bansi ghar Gaushala,Ahmedabad.

Sustainable Livelihood Development

Dates Restoration

In the aftermath of the devastating Bipor Joy cyclone, our farming community faced a severe setback as numerous Date, Mango, and other fruit plants were damaged and uprooted. These plants, which served as a vital source of income for farmers, were left in shambles.

To address this crisis and provide a ray of hope, we embarked on the Dates Restoration Project in collaboration with Krishi Vigyan Kendra (KVK) and other agricultural experts. This project aimed to rejuvenate and revive the fallen Date plants.

As of the current date, 615 Date plants have been successfully restored. These plants are now on the path to recovery and are expected to bear fruit in the upcoming season this will providing significant financial relief to farmers.

Kitchen Garden Kit

We have ve supported vegetable kitchen garden kits to 500 farmers with the aim to enable them to grow fresh and nutritious, chemical-free vegetables. This will enhance their food security and promote self-reliance.

Tree Restored : 500 Unit

Each Date trees is projected to yield approximately Rs. 25,000, Total Yield in Next Season:-Rs.1.53 Cr.

*** Funded by – Mundra Petrochemicals Limited**

Sustainable Livelihood Development

Fodder Support

Our Fodder Support Program is dedicated to assisting our neighboring villages during the challenging seasons of summer, drought, and crop failures. Through this program, we have provided a significant amount of Green and dry Fodder to ensure the well-being of both the communities

Grassland Development Program
We have started Grass land development with a primary objective to create a self-sustaining village by converting common pastureland (Gauchar) into fertile and productive grasslands to ensure a reliable source of fodder for the community, especially during challenging times.

Total area :- 213 acres of gauchar land has been cleaned and allocated for Grass land development with strong Community Contribution and Mobilization.

Villages : Zarpara ,Siracha, Gundal , Kukadsar
Out put:- Cattle relayed for one Month due to fodder Production

Cattle Health camp
we had arranged Cattle Health Camps, in close coordination with Government Veterinary doctors and the Animal Husbandry Department, dedicated to ensuring the crucial veterinary care to a significant number of cattle, effectively addressing their immediate health needs. To date, we have successfully treated more than 500 cattle, ensuring their health and vitality.

799413 Kg Dry Fodder Support

2353303 Lac Kg Green Fodder Support

24 Beneficiary Villages

16000 Cattle benefitted :-

Sustainable Livelihood –Fisherfolk Community

Education

Vehicle Transportation Facilities
We extend vehicle transportation services to school-going children from Luni and Randh Fishermen Settlements to the AVMB School, Bhadreshwar Similarly, we ensure for Juna Bandar Fisherfolk Students to the nearest Government School and enable them to school for regularity and easy to reach school.

Funded By AF	-	165 Students
Funded By	-	53 Students

Education Kits Support
Education Kits including notebooks, guides, and bags, to fisherfolk students studying in 9th to 12th standard to enhance their learning experience

Funded By AF	-	15 Students
Funded By GPVC	-	42 Students

Outcome

- Increased Attendance- 75%
- Enhanced Learning: 20%
- Parental Engagement:- 25%
- Cultural Shift:-10%

Educational awareness sessions were conducted in four Fisherfolk Vasahat of GPVC Villages to highlight the importance of education, with a particular focus on promoting girl-child education.

Primary Schools	- 445 Students
Secondary Students	- 42 Students

Youth employment
Our main objective is to offer sustainable employment opportunities to the local fishing community in APSEZ Mundra. We bridge the gap between industries and Fisherfolk youth by facilitating job placements.
Currently, we have successfully engaged a total of 12 Fisherfolk youth in this endeavor.

Scholarship Support
We are deeply committed to empowering the future of fisherfolk communities through education. To this end, we provide scholarship support to 30 deserving students, covering their actual school fees. In our unwavering commitment to promoting gender equality and advancing girl child education, we extend 100% fee support to female candidates and 80% to male candidates."

*** Funded by – Mundra Petrochemicals Limited**

Sustainable Livelihood –Fisherfolk Community

Cement Roof Sheet Support

fisherfolk Home were significantly damaged by the Bipor Cyclone. In response to that we provided 2696 cement sheets to 336 fisherfolk households of Juna Bandar, Luni, and Randh Bandar to support their recovery."

Potable water Distribution

Providing access of potable Drinking water Facilities to Nine sherfolk vasahat on Daily bases, either By Water tanker or Linkage with Nearest Gram panchayat.

More than 5000 Fisherfolk Population are getting benefit which impact on their health and efficiency.

Sr. no	Vashat Name	Population	Water Quantity in KL
1	Luni Bandar	401	15000
2	Bavdi Bandar	535	20000

Sagar Mitra

We have introduced the 'Sagar Mitra Card' to simplify access for Fisherfolk to specific fishing routes within APSEZ. This digital card is connected to a digital punching machine located at designated entry points. Initially, we have implemented this system for Navinal Fisherfolk, and so far, we have issued a total of 57 Sagar Mitra Cards."

Women Empowerment

Project Saheli

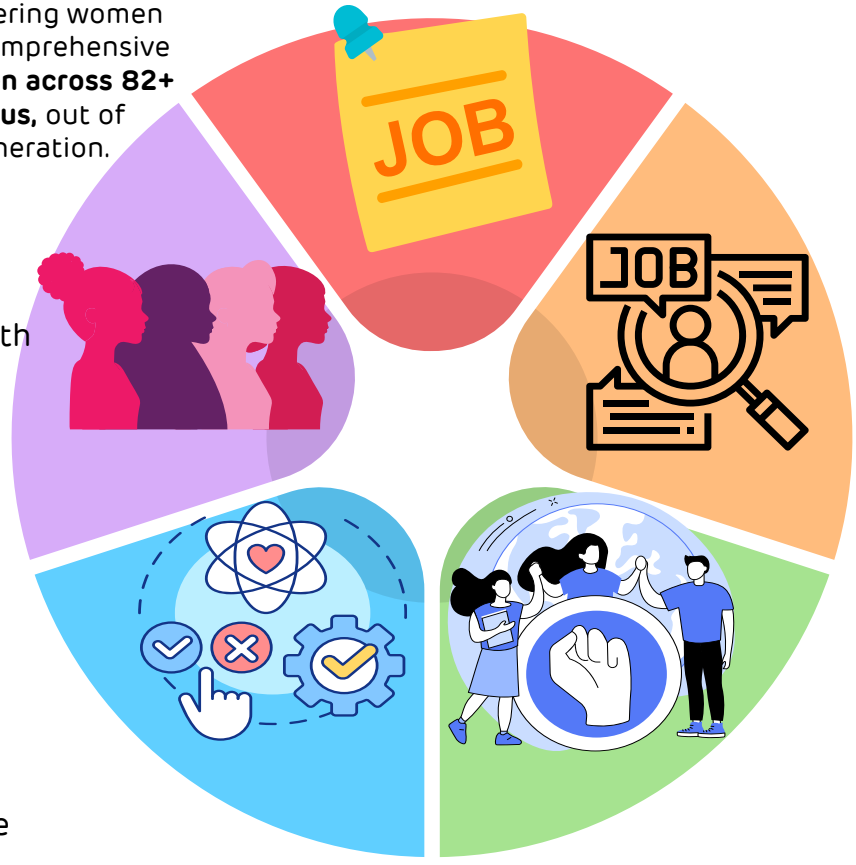
- Kutch Copper Limited is dedicated to empowering women both financially and socially. To that end, a comprehensive training program that has reached **850 women across 82+ Self Help Groups with 30+ Lacks saving Corpus,** out of which 5 groups have outstanding revenue generation.

Self Help Groups

- 82 Self Help Groups in coordination with National Rural Livlihood Mission.
- 850+ Members
- 31 Lacs Saving Amount Corpus

Making SHG Self Reliant

- 16 SHG are on path ways of self reliance.
- Various handicraft, dry and fresh food making, stitching, tie and die etc.
- 160+ women - Monthly average income @ 7000 of each member oer Month



Job Sourcing - Govt

- 11 Women supported for application and process of Gram Rakshak Dal, Bank Sakhi , Bima Sakhi and Professional Resouce Person.
- Average income 4200 Per Month

Job Sourcing - Private

- Coordination for Job by Unnati Portal with Adani Group company companies, Britania, B Medical and Emphazer company
- 387 Women supported till date for job sourcing of 18 villages
- Average income 10200 Per Month

Social Empowerment

- 2 Livlihood Enhancement Training through RSETI
- Financial support for business set up
- Legal rights and domestic violence workshops
- Family counselling for Job sourcing

*** Funded by – Kutchh Copper Limited**

Women Empowerment

Menstrual Hygiene Awareness

Objective :-
To educate and empower rural girls and women about menstrual health, break down negative social views on menstruation, supply to enhance their overall health, education, and empowerment."

18 Villages

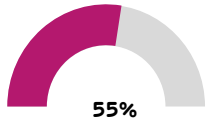
1587 Women participated

494 School girls

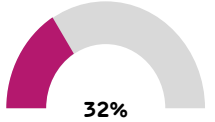
Till date 36% women had never used sanitary Napking single time now they started using due to our intervention. This will reduce UTI @ 22%. As our sample survey

Process

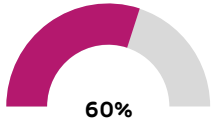
- Conducted Awareness Session at Village level
- Awareness Session at Schools
- Provide Sanitary pad
- Feed back and Evolution



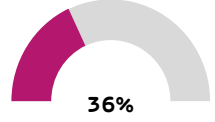
Women Never heard about Menstrual hygiene



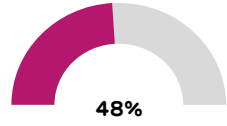
Women faced mild infection in life-time



were using cloths on regular basis



Women had never Used sanitary pads



Women had no information about UTI

Source :Women Sample Survey Report July 2023

*** Funded by – Kutchh Copper Limited**

Women Empowerment

Millet Program

Village Name	Women Participated	Millet dish prepared
Bidada	67	22
Moti Bhujpur	61	12
Mundra	50	20
Mota Bhadiya	50	22
Mandvi	50	24
Siracha	40	14
Tragdi	24	13
Nani Bhujpur	37	23
Kandagra	36	15
Navinal	36	24
Nani-Khakhar	36	18
Nana Bhadiya	25	12
Deshalpar	33	17
Total	**545**	**236**

*** Funded by – Kutchh Copper Limited**

International year of Millets-2023

With the vision of promoting the culture touch, awareness, benefits and consumption of millets in Mundra, we conducted Millet competition in Nine villages.

Community Infrastructure Development

Adani Foundation is dedicated to enhancing the quality of life of communities under the **Community Infrastructure Development Initiative**. It acknowledges the government's role in providing fundamental infrastructure facilities and strives to bridge gaps, ensuring its activities are tailored to meet specific needs and responsive to grassroots requirements. Some of the initiatives include constructing check dams, deepening ponds to augment water storage capacity, infrastructure support to fisherfolk communities, and facilitating access to clean drinking water for villagers.

GPVC

Restrengthening & Desilting of Check dam – 720+ Benefited

Road Renovation and Civil Maintenance Work at Fisherman Vasahat – 600+ Benefited

Construction of Pipe Culvert – 400+ Benefited

River Cleaning and JCB Support - 2250+ Benefited

10 JCB Support for 45 days to Farmers for Cleaning Vadi vistar after cyclone – 1650+ Benefited

6 Percolation Bore well Recharge – 4000+ Benefited

KCL

4 location Pipe Support – 4800+ Benefited

Renovation of High School at Zaarapa – 2200+ Benefited

Renovation of Approach road Vadi Vistar at Mota bhadiya village.- 7200 Benefited

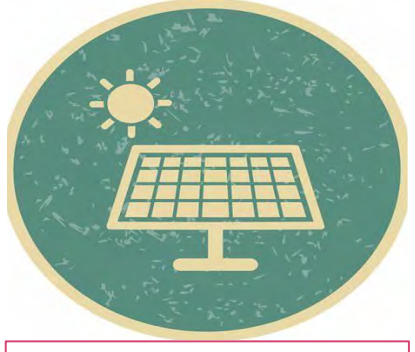
3 Villages - Renovation of Godown and Gaushala Shed

Community Infrastructure Development

377 - AC Roof sheet support to Fisherfolk Vasahat – 1700+ Benefited

2 Development of Common Gathering flooring work – 4000+ Benefited

195 Stall – Vegetable market– 900+ Benefited



Solar Panel System at Mundra – 600+ Benefited

Maintenance, Fencing & Material Support - 30+ Benefited

Renovation of Shed at Shekranpir Bhopavandh - 2000+ Benefited

Work done during Biparjoy Cyclone

Cyclone Biparjoy caused huge losses in Mundra and nearby villages. Adani Foundation's worked for relief and recovery with Panchayat & Government body. More than 17,000 people benefited from various efforts. Adani foundation consider this as ethical responsibility and a source of satisfaction. Stakeholders and government bodies also appreciated the efforts.

Meetings with Taluka & District government officials to facilitate assistance and coordination with local authorities.

Connect With Government & community

Health teams and ambulances on standby in case of emergency.

Health Team

Reached to more than 10000 people by Awaz de to aware all, specially for fisherfolk settlement.

AWAZ DE

4500+ Workforce migration with basic amenities.

Relocate to a secure location

100+ Team member distributed for each taluka/Villages as per requirement

Duty delegation

Monitoring

Tracking the cyclone's progress by AF team member.

Connect

Team members in directly touch with 10 Temporary housing & 60 Villages.

Government

Co- ordinating with Government organizations from Talati to Collector.

Panchayat

Co-oridnate with Gram pancahayat in case they need any emergency support.

Pre-cyclone preparation

- Team distribution
- Workforce migration
- Basic amenities
- Awareness efforts.
- Meetings with government.

During cyclone

- Food and shelter provision
- Fodder support
- Awareness messages
- Vehicle support.
- Coordination with Panchayat

Post-cyclone relief

- Temporary housing
- Food packets
- Excavator support
- Transfer of affected individuals.
- Provision of fodder

Some Glimpses of BiporJoy Relief Work

PROJECT UDAAN

202 institutes visit

5 Corporate visit

13226 Participants

The Project Uddan is an educational initiative led by the Adani Foundation, with the overarching goal of inspiring students to think big through a comprehensive educational mission. As part of this initiative, educational tours are organized, allowing school and college to visit various Adani Group facilities, including Adani Port, Adani Power, and Adani Wilmar refineries at different locations. These tours provide valuable insights for students to aspire for great achievements in their own lives. Moreover, the project enhances students' learning experiences and encourages them to envision themselves as future entrepreneurs, innovators, and leaders.

During six month Udaan project had conducted 202 institutes visit and 5 corporate visit. Total 13226 participants (7688 Male Students, 4861 Female Students and 677 Faculties).

Adani Skill Development Centre

Total Admission in Both centre 2023-24

Mundra

Courses	Female	Male	Total	Revenue Generated
Digital literacy	4	3	7	4130
Hydrography	-	3	3	15,000
Advance Excel training	-	18	18	18,850
RTG Crane Operator	-	15	15	1,50,000
Mud work	30	-	30	Fees Received on F.Y. 2022-23
Solar Technician	-	-	Training Completed on F.Y. 2022-23	42260
Total	**34**	**39**	**73**	**2,30,240**

Bhuj

Courses	Female	Male	Total	Revenue Generated
Digital literacy	34	10	44	25960
Hydrography	-	9	9	45,000
EDP – Tie up with CED	09	21	30	14500
GDA	14	09	23	1,35,280
5 S	-	01	01	590
Interview Skills	-	01	01	00
Industrial Safety	-	01	01	3540
Total	**57**	**52**	**109**	**2,24,870**

Adani Skill Development Centre, Mundra

Digital Literacy

Digital literacy training was provided to seven students at Bhujpur Government High School, and as a part of the DEO project, certificates were distributed .

RTG Crane operator

RTG crane operator training is successfully given to 15 candidates.

Beauty therapist

The distribution of certificates for beauty therapist training celebrated the successful culmination of the program

Mud work

After the mud work training in Dhrab Village, a certificate distribution ceremony was held, benefiting a total of 30 female participants.

Advance Excel training

Eighteen employees from Sumitomo India Ltd. Co. underwent advanced Excel training, significantly boosting their skills.

Adani Skill Development Centre, Bhuj

Digital Literacy

ASDC has partnered with Tally as the Knowledge Partner for its Tally - GST course. The first batch, consisting of 16 students from Bhuj location, achieved a remarkable 100% pass rate.

Real-time exposure

Twenty-five Nursing Assistant trainees gained valuable real-time experience in Emergency services through interactions with 108 Ambulance services and an industry visit.

We offer on-the-job training to nursing students to build their confidence and prepare them for delivering high-quality patient care.

Hydrography training

Provided practical Hydrography training to nine participants.

Entrepreneurship Development Programme (EDP)

Conducted EDP training in collaboration with CED, Gandhinagar, for a total of 30 trainees.


THE CENTRE FOR ENTREPRENEURSHIP DEVELOPMENT

CED

Since 1979
(A GOVERNMENT OF GUJARAT ORGANISATION)
ISO 9001:2015 Certified

ઉદ્યોગસાહસિકતા વિકાસ સંસ્થાન(સીઈડી)
(ગુજરાત સરકાર દ્વારા સંચાલિત)
ગાંધીનગર

Certificate

The Centre for Entrepreneurship Development, Gandhinagar
is pleased to award this certificate to

શ્રી / શ્રીમતી / કુમારી સચિનકુમાર રામજીભાઇ મહેશ્વરી ને

Shri / Smt / Kum. Sachinkumar Ramjibhai Maheshwari for

Entrepreneurship Development Programme - EDP - II
(THROUGH ONLINE MODE)
From Date: 17/08/2021 To Date: 09/09/2021 at: 02/KACHCHH-2/2021-22 YOUTUBE

સફળતાપૂર્વક તાલીમ પૂર્ણ કરવા બદલ સારૂં આ પ્રમાણપત્ર એનાયત કરે છે.
after successful completion of the training.
The certificate is valid for 3 Year from the date of issue.

Date(તારીખ): 16/09/2021
Place(સ્થળ): Gandhinagar
Promoted by:

GIIC GIDC GSFC
Govt. of Gujarat

Dr. R. N. Prasad
Director

CED
www.ced.gujarat.gov.in
No. CED/EDP - II/2021-22/6366

NOTE: THIS IS COMPUTER GENERATED CERTIFICATE AND IT DOES NOT REQUIRE MANUAL SIGNATURE

Placement

We successfully hosted a placement drive at our center on April 23rd, where 11 out of 15 candidates secured positions at KK Patel Hospital with an impressive average monthly salary of Rs. 17,000.


Tally
adani
TEPL

Certificate of Merit

This certificate is awarded to
Vishwaba Jadeja
Devendrasinh
for successfully completing
TallyEssential Comprehensive
and securing Grade A

AKBPTL - TUNA

ADANI KANDLA BULK TERMINAL PVT LTD -TUNA

Potable Water Distribution
Potable water (17.5 KL per Day) Distribution to Vira and Dhavlvaro Bandar on regular base through Water tanker Regularly through **AKBTPL and GWIL**

Fodder Support
Support of Dry & Green Fodder to Tuna and Rampar Village and Gaushala during Scarcity. That impacted on Cattle health and Milk Productivity.

Total 7410 Kg Dry and 447473 Green Fodder Distribution 1228 3 Villages1228.

Prakrut Rath –Tree Plantation
Total 3000 Tree sapling were distributed to individual And 500 tree have planted at Common place and school with ensure their responsibility for watering and caring.

The paver block work at Vandi and Tuna Common Gathering which enhances their usability and convenience for the community. During the monsoon season, certain areas of Wandi village get waterlogged , .we took measures to clean and address the issue Immediately.

AGEL-Dayapar

Dayapar Adani Wind Energy project is a large-scale wind power project located in the Kutch district of Gujarat, India. It is one of the biggest wind farms in the country, with a total capacity of 575 MW. The project was developed by Adani Group and Inox Wind, it project was commissioned in April 2019 and supplies clean energy to various states in India through power purchase agreements with Maharashtra State Electricity Distribution, NTPC, PTC India

Sr. No.	CSR Activities	Beneficiaries	
1	Ayushman Health card Camp	86	Nana Valaka & Mota Valka
2	General health camp	267	Nana Valaka & Mota Valka Ghadani, Paneli
3	Animal Health camp	1,500+	Gahadani
4	Tree Plantation	5,435	AGEL Surrounding Villages

Village Name									
Village Detail	Mota Valka	Paneli	Ghadani	Ludbay	Amara	Muru	Deshalpar	Haroda	Total
Total Household	224	87	357	278	700	218	351	120	2335
Population	926	520	2224	1509	1913	1329	2025	718	11164
Male	473	261	1110	807	943	696	1026	379	5695
Female	453	259	1114	702	970	633	999	339	5469
BPL	79	34	155	83	180	123	138	24	816
ICDS-Anganwadi	2	1	2	1	2	1	1	1	11
Children Number	180	18	112	35	65	35	32	15	492
Primary School	2	1	2	1	2	1	1	1	11
Students	298	61	242	145	325	143	237	40	1491
Higher secondary School	No	No	No	No	1	No	1	1	3
Students					35		63	20	118
Disable Person	3	3	11	7	5	2	6	5	42
Pond/Chackdams	9	12	8	8	8	6	4	7	62
Two Wheeler	125	40	100	37	80	47	117	40	586
Four Wheeler	25	10	30	15	30	21	38	3	172
Loading Vehicle	1	2	1	6	3	7	9	4	33
Cattle Poppulation	3905	672	1937	3911	1375	1250	1375	1250	15675
Cow	100	166	180	100	175	230	80	100	1131
Buffalo	3750	162	367	3756	350	220	325	250	9180
Sheep/Goat	55	344	1390	55	850	800	970	900	5364
Total Milk Production-(Ltr)	1520	1000	1100	1400	514	700	550	600	7384
Dairy	2	1	2	1	2	1	1	1	11
Land Details (Accor)	2112	3009	2914	268	3154	5678	2015	2043	21193
Farming Land (irrigated)	452	447	805	10	914	317	715	450	4110
Non Irrigated	345	300	510	94	720	335	93	110	2507
Gauchar & Other Land	1315	2262	1599	164	1520	5026	1207	1483	14576
Health Facilities									0
PHC	1	1	1	1	1	1	1	No	7
CHC	No	No	No	No	1	No	1	No	2
Drinking Water									
Home connection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Sanitation									
Toilet facilities	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Electric Facilities									
Individual home connection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Women SHG	7	3	8	2	1	5	11	No	37

AGL Khavda

Adani Khavda renewable solar plant is a hybrid power project that will use both solar and wind energy to generate electricity It will be built in the Khavda desert along the Indo-Pak border in Kutch district of Gujarat, having Total capacity of 20,000 megawatts (MW), making it the world's largest hybrid renewable energy park and will be cover an area of 72,600 hectares of waste land[1].

It is expected to play a major role in fulfilling India's vision of generating 450 gigawatts (GW) of renewable power by 2030

Tree plantation:- We distributed 650 tree saplings to primary schools along with an awareness session highlighting the importance of trees.

Ayushman Card Facilitation to Dinara, Khavda, Birndiyari, Gorivalli Villages. Total 311 Card Issued.

We have conducted Primary baseline assessments and created Village profile of 07 villages and identify their specific needs, aspirations, and developmental potential.
Though we have started some entry point activities and Based on Village profile data Initially we will start Project Utthan and Some Health and Livelihood projects.

Village Name								
Village Detail	Mota & Kotada	Kuran	Mota Dinara	Nana Dinara	Khavda	Tuga & Jam Kunariya	Khari	Total
Total Poppulation	5500	1800	7500	4000	11000	3300	3600	36700
Total Family	700	300	3000	2500	800	673	470	8443
SC	NO	YES	NO	NO	YES	NO	YES	
ST	NO	NO	NO	NO	YES	NO	NO	
OBC	YES	YES	YES	YES	YES	YES	YES	
General	NO	YES	NO	NO	YES	NO	YES	0
BPL	35	60	500	300	37	500	100	1532
ICDS-Anganwadi	YES	YES	YES	YES	YES	YES	YES	
Children Number	250	45	350	200	300	300	150	1595
Primay School	YES	YES	YES	YES	YES	YES	YES	
Secondary School	NO	YES	NO	YES	YES	YES	NO	
Higher secondary School	NO	YES	NO	NO	YES	NO	NO	
Above 18 to 30 Yrs: 10th pass	15	200	60	12	40	50	40	417
Disable Person	40	12	100	17	10	15	25	219
Senior cityzone	100	100	100	500	500	80	300	1680
Widow	50	60	60	50	20	30	60	330
Unemployed Youth	200	45	40	20	50	120	100	575
Two Wheeler	150	150	250	50	300	70	200	1170
Four Wheeler	15	50	50	25	80	15	20	255
Loading Vehicle	10	43	50	90	100	57	30	380
Cattle Poppulation								
Cow	3400	400	4000	6000	250	8000	3000	25050
Buffalo	3000	350	3000	300	1500	600	10000	18750
Sheep	200	100	1000	1500	50	360	150	3360
Goat	600	2000	2500	200	800	3300	2500	11900
Total Milk Production-(Ltr)	1500	600	2000	6000	3000	3200	4000	20300
Dairy	2	2	3	4	2	2	2	17
Land Details (Accor)								
Farming Land	1000	2500	12500	3200	741	2000	600	22541
Gauchar	200	4500	2000	1800	100	412	480	9492
Health Facilities								
Sub-PHC	NO	YES	YES	NO	NO	NO	YES	
PHC	NO	NO	NO	YES	NO	NO	NO	
CHC	NO	NO	NO	NO	YES	NO	NO	
Drinking Water								
Home connection	YES	YES	YES	YES	YES	YES	YES	
Sanitation								
Toilet facilities	NO	YES	YES	YES	YES	YES	YES	
Electric Facilities	YES	YES	YES	YES	YES	YES	YES	
Individual home connection	YES	YES	YES	YES	YES	YES	YES	
Women SHG	NO	NO	NO	NO	NO	NO	NO	
Sakhi mandal	NO	NO	NO	NO	NO	NO	NO	

Sanghi Cement

Sanghi Cement, located near Moti ber village of Abdasa block , in Kutch, Gujarat. stands as a notable player in the cement industry. The company's presence in the region has a significant impact on the local economy and community.

We have conducted Primary baseline assessments of sanghi Cement Periphery 10 villages. The primary objective of this initiative is to gain a deep understanding of the socio-economic and environmental conditions of these villages, to identify their specific needs, aspirations, Based on that We will design Comprehensive CSR Projects in the core of education, healthcare, livelihood enhancement, women's empowerment,.

6.6 MMTPA capacity Clinker Plant

6.1 MMTPA capacity Cement Plant

143 MW capacity power plants

Village Name											
Village Detail	Nani Ber	Moti ber	Vayor	Hothaiy	Aakri Moti	Nava Vas	Golay	Pakho	Jadva	Pipar	Total
Total House Hold	137	606	1129	116	227	79	288	39	732	192	3545
Poppulation	478	2205	4027	534	426	215	642	130	254	881	9792
Male	248	1272	2715	266	224	111	316	72	373	429	6026
women	230	933	1312	268	202	104	326	58	359	452	4244
BPL											
0-16 Roster	17	24	39	7	51	13	8	9	12	41	221
0-20 Roster	53	56	76	18	70	20	44	11	25	76	449
others	36	21									57
ICDS-Anganwadi	1	3	4	1	2	1	2	0	1	1	16
Children Number	32	122	284	66	34	27	87	0	31	26	709
Boy	20	80	169	35	22	15	45	0	20	15	421
Girl	12	42	115	22	13	12	32	0	11	11	270
Primay School	1	3	2	1	2	1	1	1	1	4	17
Studnets Number	114	401	407	93	59	21	136	19	141	203	1594
Boy	64	213	219	35	33	11	74	8	72	100	829
Girl	50	188	188	22	26	10	62	11	69	103	729
Secondary School	NO	NO	1	NO	No	No	No	NO	No	No	1
Studnets Number	4	4	55	0	5	0	3	0	8	6	85
Boy	0	0	37	0		0		0			37
Girl	0	0	18	0		0					18
Higher secondary School	NO	NO	YES	NO	NO	No	No	0			0
Arts stream-Students	8	5	18	0	0	0		0	10	0	41
Science Stream	No	0	4	0	0	0		0			4
Agriculture											0
Farmers	55	85	151	35	84	15	63	0	53	43	584
Gruh Udhuog	1	0	0	0	0		0	0			1
Cattle Poppulation											0
cow	137	430	366	61	212	350	276	180	1228	581	3821
Buffalo	429	537	426	310	224	43	551	227	1127	841	4715

Village Name											
Village Detail	Nani Ber	Moti ber	Vayor	Hothaiy	Aakri Moti	Nava Vas	Golay	Pakho	Jadva	Pipar	Total
Land Details (Hector)											
Forest	195	191	0	0	0	432	1098	513	0	0	2429
not usable	128	35	406	0	705	116	23	399	1020	4236	7068
Non agri	386	323	35	466	35	0	16	478	1543	9	3291
barred	444	760	209	154	893	24	0	60	96	634	3274
Farming Land	710	281	1083	134	710	66	1167	0	338	400	4889
Gauchar	0	83	113	48	1142	0	32	128	398	98	2042
others					118						118
Irrigation Land-(Hector)		0									0
Canal	102	0	0	0		0	0	0	0		102
well	35	80	50	44	3	0	0	0	0	200	412
lift irrgation	15	44	0	0		0	16	0	56		131
Health Facilities											0
Sub-PHC	No	1	2	No	No	No	No	No	No	1	4
PHC	No	No	1	No	No	No	No	No	No	No	1
CHC	No	No	No	No	No	No	No	No	No	No	0
District Hospital	No	No	No	No	No	No	No	No	No	No	0
Drinking Water											0
Home connection	85	227	990	116	172	79	288	39	254	102	2352
without connection	52		139	0	25	0					216
Sanitation		227									227
Toilet facilities	137	227	990	116	167	60	288	39	200	100	2324
without drainage connection	50		840	0	30	19			54		993
Electric Facilities											0
individual home connection	137	227	990	116	113	60	91	37	240	100	2111
Agri connection	35		10	7	7	0		10	30	2	101
Women SHG	2	2	3	0	1	0		0	3	2	13
Sakhi mandal	11	12	23	4	1	0	5	0	4	15	75
Others											0
Senior Citizen card	5	3		2	21	2	2	0	2	10	47
Widow Penson	1	1		4	3		1	1	26	8	45
Ayushman Card	20	35		32	24		0	0	0	0	111
Disable Pension			3		0		1	0	2	0	6
LPG Gas	58	1	780	10	19	10	60		100	15	1053

ATL-Mandvi & Rapar Block Villages

Adani Transmission is a company active in the power transmission and distribution sector in India and internationally. It holds a significant position as one of India's largest private sector power transmission companies, with a combined network spanning over 12,000 circuit kilometers. We wil start CSR initiatives in 12 villages located within the Mandavi and Rapar Block areas, intersected by the Adani Transmission Line."

We have conducted Primary baseline assessments and created Village profile of 12 villages and identify their specific needs, aspirations, and developmental potential. Based on that We have started CSR Activities in the core of education, healthcare, livelihood enhancement, women's empowerment,.

Village Name							
Village Detail	Kidiyanagar	Bhimasar	Moti khakhar	Gangapar	Moti Bhadai	Nani Bhadai	Total
Total House Hold	1300	1765	436	80	250	116	3947
Poppulation	9000	15000	2139	272	1171	498	28080
BPL	250	290	50	1	31	10	
ICDS-Anganwadi	10	10	1	0	1	1	23
Children Number	30	600	34	0	38	20	722
Primay School	10	13	2	1	1	1	28
Studnets Number	1083	1547	246	6	160	160	3202
Secondary and high secondry School	125	245	144	0	120	NA	634
Agriculture							0
Farmers	650	750	150	80	200	105	1935
Gruh Udhuog	1	0	1	NA	NA	NA	2
Cattle Poppulation							
Cow	400	750	700	100	686	600	3236
Buffalo	2600	1000	500	NA	768	188	5056
Sheep	1500	2500	1000	NA	100	NA	5100
Goat	1500	2500	1000	NA	200	NA	5200
Land Details (acers)	16702	4777	1000	3000	10460.00	4637	40576
Forest	0	100	NA	50	0	NA	150
not usable	1500	100	NA	200	1000	NA	2800
Non agri	NA	386	NA	300	1000	2537	4223
barred	NA	444	NA	450	NA	NA	894
Farming Land	11500	3500	600	1800	7800	2000	27200
Gauchar	3000	237	400	200	600	100	4537
Irrigation Land-(Hector)		0					
well	550	650	150	80	200	105	1735
lift irrgation	100	100	100	60	150	80	590
Health Facilities							0
Sub-PHC	1	1	1	NA	NA	NA	3
PHC	1	1		NA	NA	NA	2
CHC	No	No		NA	NA	NA	0
District Hospital	No	No		NA	NA	NA	0
Drinking Water	1300	1765	436	80	250	116	3947
Home connection	1300	1765	436	NA	250	116	3867
without connection	0	0	0			NA	0
Sanitation							0
Toilet facilities	1200	1650	400	80	200	100	3630
without drainage connection	100	115	36	NA	50	16	317
Electric Facilities							0
individual home connection	1300	1765	436	80	250	116	3947
Agri connection	600		1	80	NA	105	786
Women SHG	2	2	1	NA	200	0	205
Sakhi mandal	10	12	3	NA	1	1	27
Others						0	0
Widow Penson	400	400	40	5	50	25	920
Disable Pension	60	55	13	2	11	10	151

Events

Mother's Day Celebration

On May 14th, we celebrated Mother's Day in Mundra. Mrs. Chhaya ben Gadhvi, former District Education Chairperson of Kutch, delivered an inspiring speech about the importance of mothers in shaping families and our nation's future. More than 200 Mother had participated.

Inauguration of Ground water Recharging projects

On May 17th, Inaugurated a groundwater recharging project involving 21 percolation wells. We were honored to have notable attendees, including Mr. S.K. Prajapati (DDO Kutch), Mr. Rakshit Shah (EDM, APSEZ, Mundra), Mr. Mahendra Gadhvi (Chairman, Kutch Jilla Panchayat), and local Taluka Panchayat Presidents at the event.

Employee Volunteer Program

On May 14th and 15th, 2023, in Samudra Township, Mundra, the Adani Foundation organized a "Joy of giving" in partnership with the Indian Coast Guard Station, Mundra, with the noble aim to assisting those in need with essential items. We gathered old but usable clothes, utensils, and books to provide support to those less fortunate.

Organic Vegetable Shop Inauguration

Adani Foundation is promoting natural farming in Mundra through the "Rajshakti Prakrutik Kheti Sahkari Mandali," a group of 32 farmers. They opened a shop on May 24th to sale their produce open market

Events

Launching Of "Prakruti Rath"

On June 2nd, 2023, Adani Foundation Mundra and Kutch Copper Limited, along with the Government of Gujarat's Social Forestry Department, launched "Prakruti Rath," a 30-day environmental initiative aimed to distribute 50,000 tree saplings to 61 villages via an innovative vehicle that educates about environmental awareness.

Vegetables Kitchne Garden Kits Distribution

On June 3rd, Mundra Petrochemical and Adani Foundation celebrated World Environment Day in collaboration with the District Horticulture Department and distributed kitchen garden kits to over 500 farmers. In the Esteemed presenece of Mr.Amit Arora Collector Kutch.

State-level Kabaddi Tournament

State-level Kabaddi tournament was scheduled through The Maharana Pratap Group of Bhujpur ,more than 21 teams had participated from across Gujarat. We sponsored Rs. 25,000 to The winning team Rs. 15,000 to runner sup Team . We continue to support and encourage young talents for their growth and achievements..

Inauguration of Dates Restoration

Adani Foundation surveyed cyclone-caused agricultural crop damage, particularly date trees. They initiated a comprehensive project in partnership with KVS to restore the trees, commencing on June 24th in the presence of Mr. Anirudh Dave, MLA of Mundra-Mandvi, and Mr. Rakshit Shah, Executive Director of APSEZ, Mundra.

Events

Education Kits Distribution

On June 23rd, Mundra Petrochemicals organized a special program to distribute education kits to students in grades 9 to 12 from the Fisherfolk community. Mr. Omprakash Sir, representing Mundra Petrochemicals, shared an inspiring message about the Important of education. 40 students had benefited.

Inauguration Of Vegetable Market

Adani Foundation developed the Vegetable Market in Mundra, offering 195 stalls for convenient vegetable trading. It was handed over to Mundra Nagarpalika on June 24th, with Mr. Anirudh Dave (MLA Mundra-Mandavi) and Mr. Rakshit Shah (Executive Director of APSEZ, Mundra) present.

Guru Purnima Day Celebration

On July 3rd, Project Uthhan Mundra celebrated Guru Purnima Day across 69 primary schools and 8 high schools. The day commenced with a special prayer dedicated to the teachers (Gurus), followed by engaging activities such as drama performances and elocution competitions among the students.

Millet Food Competition

AF organized a Millet Dish competition on July 14th. in Collaboration of ICDS Department.Top three winners were recognized, and rewarded them, encouraging millet-based cooking

Events

Conservation of the Mangrove Ecosystem

On July 26th, Mundra Petrochemical celebrated Mangrove Day with spreading awareness over 9th and 10th-grade students and Fisherfolk The session ended with a Mangrove plantation. 150 + People had participated.

Kala Utsav Program

Kalautsav program was organized in collaboration with the District Education Department, on the 11th of August. The event was featured with various competitions, including drawing, singing, and instrumental playing. 70+ students from secondary and higher secondary schools from42 School of Mundra had participated..

Rakshabadhan Celebration

On Rakshabandhan, eco-friendly Rakhi making competition took place in all Utthan schools of Mundra. 46 exceptional girl students tied their Rakhis to BSF soldiers in Jakhau as a gesture of respect and gratitude.

Dr. Priti G Adani mam's 58th Birthday

On August 29th, Mundra Petrochem Ltd. marked Dr. Priti G Adani's 58th birthday with three impactful initiatives: 8,000 tree plantings in Deshalpar village, 500 sapling distributions at Government High School, and a workshop for 60 farmers on sustainable farming, all geared towards enhancing the local ecology and community resilience.

VVIP and VIP visits

Kajal Oza – Vaidhya

Famous Gujarati author and motivational speaker Mrs. Kaajal Oza Vaidya visited our Natural farming fields in Mangra village.

Fulcrum Batch 0

HODs of different business group of Adani came for CSR visit of Batch-0 as part of Fulcrum Leadership Development Program at Mundra.

Jay Vasavda Visit

Famous Gujarati writer and orator Mr. Jay Vasavada had visited our CSR work.

Pranav Adani Sir's Visit

Mr. Pranav Adani, along with other VIP guests, visited the Mangrove Plantation area in Luni coastal.

VVIP and VIP visits

VIP Visit : Ms. Lisa

Mrs Lisa MacCallum, Independent Director of Adani Energy Solution had visited our CSR work at Mundra.

VIP Visit – Sairam Dave

Mr. Sairam Dave, a renowned humorist and educationalist, visited Uthhan to inspire and motivate the students and teachers.

Journalist Visit

All journalist team came from Jarkhand ref by Ms. Varsha Chainani. They visited Women Empowerment and Agriculture Projects

AVMB Visit – Sairam Dave

Mr. Sairam Dave, a renowned humorist and educationalist, visited AVMB to inspire and motivate the students and teachers.

Award & Recognized

The Gujarat State Disaster Management Authority has acknowledged Adani Ports and SEZ for their outstanding support in establishing the world's top-ranking Miyawaki forest at Smruti Van, Bhuj. The Adani Foundation team actively monitored the project's advancement and made frequent site visits to ensure effective coordination..

Mr. Rajubhai, a team member of the Adani Foundation, was honored with the District Level Van Mitra Award by the District Administration during the 74th Van Mahotsav for his outstanding contributions to intensive tree plantation initiatives.

Case Study

A Breath of Change: Soanbai's Bio Gas Journey

Sonbai Vishram, a diligent 46-year-old woman, resides with her close-knit family in Vadi Vistar, Zarapara. She oversees a herd of 13 cattle with enthusiasm while caring for her seven family members. However, her life was far from easy. Every day, she would wake up at the crack of dawn and head into the dense farm to gather firewood. The Chulha, a traditional clay stove, was her only means of cooking, but it came with a hefty price.

Chopping wood and inhaling the thick smoke took a toll on Sonbai's health. Her eyes stung, her chest felt heavy, and she often found herself coughing uncontrollably. Furthermore, a lot of time is consumed by cutting wood. She deeply longs for more moments with her family, rather than devoting all her time to woodcutting; this sometimes leads to feelings of regret and sadness.

Seeing her mother's condition, her daughter Jetbai felt deeply disheartened. Fortunately, she learned that Mundra Petrochem was distributing biogas through a government-funded project "Gobardhan" to assist those in needs. She reached out to the Mundra Petrochem team, and upon witnessing her helplessness, they extended their support. They took full responsibility for all the documentation, registration, banking work, and installation. They also cover 50% of beneficiaries' biogas expenses. Additionally, they offered comprehensive training in biogas usage and maintenance, along with regular follow-up visits.

As soon as the biogas stove was up and running, Sonbai's life began to transform. Cooking became a breeze, and the air in her kitchen was free of choking smoke. Now, after eight months of using biogas, Sonbai's health has shown remarkable improvement, and she feels more energetic than she has in years.

She couldn't believe the remarkable transformations that had occurred in her life. Now, whenever she meets our team, she expresses her gratitude, and witnessing her radiant smile and heartfelt thanks, we find the true reward for our efforts.

Rising Above the Menstrual Taboo

This is a story of Laxmiben and many women like her living in Zarpara village. As women, they have the incredible gift of giving birth, but they also go through the monthly menstrual cycle. However, in many villages, including Zarpara, menstruation is considered a taboo topic. Women are often hesitant to talk about their personal experiences, and many don't even know about the menstrual cycle and its science.

Seeing the challenges faced by these women, Devalben and Roopaben, with the support of the Adani Foundation, organized a menstrual hygiene awareness camp in Zarpara. In this camp, they provided education about menstrual health to all the women. In just a short session, women began to open up and talk freely about their experiences. They revealed that they had never used menstrual products and typically relied on old, used cloths. In addition to this, their daughters had to miss school due to a lack of resources and the uncomfortable feeling during their periods.

Hearing these stories, Devalben and Roopaben explained the harmful effects of using old cloths and not maintaining proper hygiene during menstruation. They introduced the women to different menstrual products and taught them how to use and dispose of them correctly. They also discussed the various health issues that could arise from poor menstrual hygiene. Many women realized that they had experienced symptoms of these health problems but had never paid attention to them.

To help the women understand better, they showed an informative video about the menstrual cycle. After the session, the women felt grateful for the knowledge they had gained. Many of them admitted that they had never taken menstruation seriously before but were now committed to practicing proper menstrual hygiene. Those with symptoms of menstrual health issues decided to seek medical advice and treatment. All the women pledged to use sanitary pads regularly and ensure that their children's health and education were not affected by menstruation.

Our team was equally delighted that these women had broken free from the menstrual taboo and were determined to prioritize their menstrual hygiene.

Mayuri's Journey: A Tale of Determination and Hope

Mayuri comes from a simple middle-class family with four sisters. Her mother is a homemaker, while her father is a wage earner. They didn't have a lot of money, and life was tough.

Despite the financial hardships, Mayuri applied for the PSE exam, hoping it would open doors for her future education. She embarked on this journey alone, being the sole girl in her class brave enough to take on the competitive exam.

Mayuri's life took a hopeful turn when she crossed paths with Utthan Sahayak. This mentor provided her with a comprehensive guide for the PSE exam. This guide was like a lifeline for her. It made her feel more confident and less confused.

Mayuri was determined to succeed. She worked really hard. She found books and old exam papers to study from. She even watched videos on YouTube to learn more. She spent 2-3 hours studying every day, sometimes giving up fun things to focus on her studies. She didn't keep all that knowledge to herself; she shared what she learned with her friends and even during school prayers.

Mayuri went to the library often and used teaching and learning materials to learn more. She read a lot and practiced so much that she became really good at school competitions and public speaking. Her general knowledge improved and she became an expert in Gujarati grammar.

But, despite all her hard work, Mayuri didn't get the top score in the PSE exam. It was really disappointing for her. She had worked so hard, and it felt like all her efforts were in vain. But, it wasn't all bad. This experience taught her to never give up and to keep hoping for a better future.

The Magic of Practice: a remarkable Handwriting Transformation

Buchiya Nita, a diligent third-grade student at Gundala Kanya School, faced a deep-seated issue - her handwriting. Despite the correctness of her content, her messy handwriting often cast a shadow on her answers, making them appear incorrect. She held a belief that her handwriting would never improve and that it didn't hold much significance.

One fateful day, a compassionate Utthan Sahayak named Chauhan Kinjalba stepped in to assist her. Kinjalba aimed to aid Nita in enhancing her handwriting and enlighten her about its importance. Kinjalba noticed the errors Nita made while writing and gently pointed them out, allowing Nita to rectify them independently.

Nita's daily homework included writing a paragraph. Through persistent practice and unwavering commitment, her handwriting gradually became neater over several months. The ultimate test arrived when a calligraphy competition was organized. To the delight of everyone, Nita secured the second position in the competition, and her heart brimmed with joy at the remarkable improvement in her handwriting.

From a mischievous troublemaker to a responsible scholar

The teacher-student relationship is like the two wheels of a cart. When both wheels work together smoothly, the cart goes forward without any interruption. However, if one wheel comes loose, the cart stops in its tracks.

One such story revolves around Kumbhar illiyash, a student at Gundala Kumar School. Utthan Sahayak learned from teachers and fellow students that Illiyash was quite mischievous. He occasionally took items from other kids in class, sometimes bothered his classmates, disrupted the class with his behavior, and frequently seemed disinterested in his lessons.

Utthan Sahayak decided to have a loving and understanding conversation with Illiyash to encourage him to change his behavior. They would sit together every day, and she would teach him new habits and engage him in various activities. Gradually, Illiyash started developing an interest in learning, and with consistent effort and engaging activities, his active mind was redirected toward education, leading to a positive change in his behavior.

Just as milk and curd complement each other, Illiyash, once a mischievous child, has transformed into a well-behaved student today.

Raisingh's Inspiring Journey: Overcoming Disability to Find Independence

This is the story of Raysi maheshwari, who lives in Mota Kapaya village. When he was just 2 years old, he was affected by polio, and as he grew, 75% of one of his legs became nonfunctional. His childhood was different from other kids, he faced a lot of difficulties in doing daily tasks and had to depend on others. It's truly hard to put into words the profound difficulties he endured because of his condition. In the face of disability, Raysi's thirst for education and his refusal to depend on others for his livelihood remained unwavering. His determination was unbreakable, and he fearlessly confronted every obstacle that crossed his path.

Raysi completed his education up to the 12th grade and started searching for a job to become financially independent. However, transportation was a big challenge for him. He had to walk long distances many times, even though it hurt because of his disability.

Fortunately, in 2021, he learned about a job fair organized by the Adani Foundation on World Divyank Day. He decided to participate and impressed the interview panel with his skills. As a result, he got a job as a Gate operator at Rangoli Gate, Adani Port with a monthly salary of Rs. 13,000. Because of his dedication and hard work, his salary was later increased to Rs. 18,000 within a short time.

In addition to the job, he received medical certificates and continuous support from our team. Raysi is married now and has two children. His wife is also disabled, and the Adani Foundation supported her with a wheelchair. Now, she can efficiently manage household chores in less time.

Raysi and his family deeply appreciate these assistances. He now earns enough to provide for his family and support his children's education. The family is no longer financially dependent on anyone and lives with dignity and happiness. The Adani Foundation feels fortunate to witness the positive changes in the lives of people like Raysi, and consider it as the most meaningful reward for their efforts.

Shaping Lives:
From Pagdiya Fishing to Prosperity

Fisherman of Luni Village, a father of four boys and a girl, toiled tirelessly in the trade of Pagdiya fishing to ensure his family's survival. Despite the inherent vulnerability and daily hardships, he nurtured a singular dream - to provide his children with education and a better quality of life.

Through immense sacrifice and unwavering determination, he managed to educate his children up to the primary level. However, as their education progressed, financial constraints became a significant impediment. Unfortunately, two of his children had to drop out after completing the seventh year of their education due to these financial limitations.

Upon learning about their struggles, our organization reached out to him, extending scholarships to support the further education of his children. This assistance rekindled hope, allowing his second child to rejoin high school. Subsequently, it paved the way for the third and fourth child to continue their studies up to the twelfth grade.
However, our support did not end after their high school graduation. We maintained consistent contact, providing guidance and mentorship to tailored their individual interests and strengths, with the aim of helping them establish their careers.

As a result of our interventions, the children have experienced a remarkable transformation. The eldest, Mr. Altaf, attended RTG training for three months and is now employed as an RTG Operator at Adani Port, earning a salary of Rs. 22,000 per month. The second son found employment at MICT as a supervisor, earning Rs. 17,000 per month. The third child pursued his passion for photography and started his own photography studio, earning more than Rs. 20,000 per month.

Their father, Ali Mammad, expressed his heartfelt gratitude towards the Adani Foundation for their scholarship support, which served as a beacon in shaping their children's lives.

Breaking Waves of Poverty: Empowering Fisher folk through Education

The Fisher folk community resides a significant distance from the main city. Their primary means of sustaining themselves centers on fishing. This community experiences financial hardship and lacks access to education. They are hesitant to explore other professions because they have no education, awareness, or support. The challenging circumstances of their parents also affect the well-being and future prospects of their children.

Due to financial struggles, the children in the fishing community could only manage to complete their primary education before being compelled to join their parents in fishing jobs. This heart-wrenching cycle not only robbed them of the opportunity for a brighter future but also kept their community trapped in the clutches of relentless poverty.

Upon discovering their dire circumstances, the Adani Foundation Team with Mundra Petrochemical empathetically engaged with the children, who tearfully expressed their deep desire for education but sadly acknowledged the lack of sufficient resources to afford the necessities for school.

In an effort to uplift underprivileged children in the community, our team decided to provide them with vital learning materials to alleviate their financial burden. We provided students in grades 9 to 12 with essential educational materials, including textbooks, notebooks, and school bags. This initiative benefited a total of 61 students from the villages: Navinal, Modva, Tragdi, and Zarapara.

As a result of our support, both the children and their parents found substantial financial relief concerning education. This resulted in a decrease in school dropouts, and the children started attending school consistently. They now study without the burden of financial constraints and have a renewed determination to chase their dreams and secure stable jobs.

We consider ourselves incredibly fortunate to have been able to assist these children. Our longstanding wish has been for the children of fisher folk not to be confined to the path of becoming fishermen but to instead pursue education and secure stable jobs, thus breaking the cycle of poverty.

Unleashing Potential: Education beyond Boundaries

Modhva is a small village in Mandvi having a handful population, the life here revolves around the gentle rhythm of fishing. Families struggle with making ends meet as meager earnings barely cover daily expenses. The children in the village receive a basic education, advancing only to classes 5 or 6. Unfortunately, after this stage, a significant number of these young learners are bound to leave school and join their parents in the fishing trade.

Acknowledging the plight of undereducated students, Adani Foundation in coordination with GPVC team organized distinct meetings with both the students and their parents. In a heartfelt confession, the students expressed their eagerness to attend school but due to the lack of a local high school and financial constraints, they were unable to attend the nearby high schools. The parents clarified that their village serves as the last settlement along the coastline. Consequently, because of its remote location, there are no available transportation facilities. Their means of livelihood barely cover their essential expenses, leaving them unable to afford personal vehicles or rely on daily public transportation. Many parents wish to educate their children but feel helpless to do so.

Recognizing the economic challenges faced by the parents and driven by a commitment to educate these vulnerable children, our team stepped forward to assist by offering a complimentary transportation solution. Through firm dedication, we secured a van capable of accommodating twelve students, which has now been provided to the villagers in need. A local resident has been entrusted with the role of the driver, receiving a fair wage for their service.

Since June 2023, a group of six girls and five boys have shown unwavering commitment to attending school in the village of Gondiyali, situated 16 km away from Modhva. The fear of dropping out no longer casts its shadow, and parents are relieved of the burden of transportation expenses.

Upholding the belief that education is a boundless right accessible to all, GPVC team wholeheartedly extend our wishes for a future brimming with opportunities and success for these children.

Shaping Lives:
From Pagdiya Fishing to Prosperity

Imagine finding yourself trapped in the clutches of old age, battling declining health, and struggling with dire financial constraints. What would be Next ? However, within these challenging and circumstances, there are some remarkable stories of individual ,Through his journey, we witness how timely intervention and unwavering support can breathe new life into individuals and their families, igniting a flame of hope, healing, and renewed optimism.
One such story is that of Siddique Bhai Khatri, a 63-year-old resident of Mundra, Kutch fighting a relentless battle with tobacco addiction, succumbs to the merciless grip of oral cancer. As he receives the devastating biopsy report, it not only reveals the grim reality of his failing health but also serves as a stark reminder of his near-empty bank balance. With the exorbitant cost of the necessary operation hovering around 2 lakhs, Siddique Bhai finds himself teetering on the precipice of desperation.

Recognizing the Adani Foundation as a trusted ally in times of health-related crises, Siddique Bhai connected to Kishor Bhai, a representative from the foundation. personally visited Siddique Bhai's home on same day, This gesture of care provided much-needed solace to Siddique Bhai and his worried wife, who openly shared their financial predicament and concerns about the illness.

Understanding the urgency of Siddique Bhai's situation, Kishor Bhai assisted him in swiftly obtaining the Ayushman Card. **Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (PM-JAY), offers comprehensive healthcare coverage of up to 5 lakhs for various hospitalization** within a remarkable 8-hour timeframe. This prompt response and timely access successfully underwent Sidikbhai to the much-needed operation at Adani GK General Hospital.

After a recovery period of 8 days, Siddique Chacha returned home, reinvigorated and ready to face life's challenges anew. Today, two months later, he can be seen in the marketplace, his eyes twinkling with joy and gratitude. Meeting Kishor Bhai, Siddique Chacha's eyes speak volumes, conveying his deep appreciation for the Ayushman Card and the support provided by the Adani Foundation.

As of the date, over 5584 Ayushman cards have been issued, enabling individuals to access essential healthcare services.

Press Note

દિવ્ય ભાસ્કર **કચ્છ ભાસ્કર** 25-06-2023

મુન્દ્રામાં નવી શાકમાર્કેટ અઠવાડિયામાં ધમધમતી થશે

નગર અને બારોઈરોડના તમામ લારીધારકોને સ્થાયી થવા પાલિકાનું આહવાન

સ્ટોલદીઠ રૂ.4500 ભાડું : લાઈટ બિલ પાલિકા ભોગવશે

ગૌતમભાઈ અદાણી ના ૬૧ માં જન્મદિવસની કચ્છ સ્થિત વિવિધ પ્રકલ્પો દ્વારાવિવિધ સેવાકીય કર્યો કરી ઉજવણી કરવામાં આવી

કેટલાક લોકો જન્મે છે ચાંદીની ચમચી સાથે તો કેટલાક મહેનતથી પોતાના જીવનને આદર્શ બનાવે છે. મહેનતથી પોતાના જીવનને આદર્શ બનાવનારાઓમાં ઉદ્યોગપતિ શ્રી ગૌતમભાઈ અદાણી મોખરે છે. ગૌતમભાઈ માત્ર ભારતમાં જ નહીં પણ વિશ્વમાં મોખરાની હરોળના ઉદ્યોગપતિ છે. તેઓ માત્ર ઉદ્યોગપતિ તરીકે જ નહીં અનેક જીવદયા અને સેવાકીય પ્રવૃતિઓ માટે પણ પંકાય છે. આવા લોકલાડીયા ગૌતમભાઈના જન્મદિવસની અનોખી ઉજવણી મુન્દ્રા ખાતે કરવામાં આવી. અદાણી વીલમાર લી. નાં કર્મચારીઓ દ્વારા મુન્દ્રા તાલુકાના નિરાધાર વૃધ્ધો અને દિવ્યાંગોને રાશનકીટ સપોર્ટ આપવામાં આવ્યો. મુન્દ્રા તાલુકાની ૭-પીએચસી અને ૨-સીએચસી માં ૫૦૦૦૦ જેટલા વૃક્ષો અને રોપાનું વિતરણ કરવામા આવેલ છે. જેમાં શતાવરી, ગરમાળો, ગુલમહોર, જમુન, તુલસી, ગિલોય વગેરે નો સમાવેશ થાય છે. આ ઉપરાંત અન્નદાતાનું ઋણ ચૂકવવા દર વર્ષે અદાણી ગ્રુપના દરેક બીઝનેશના કર્મચારીઓ બ્લડ ડોનેશન કેમ્પ યોજે છે. અને હજારોની સંખ્યામાં રકતદાન કરી શ્રી ગૌતમભાઈ સાહેબનો જન્મદિવસ ઉજવે છે. અદાણી ફાઉન્ડેશન તરફથી જન્મદિવસની ઉજવણીના ભાગ રૂપે મુન્દ્રા અને માંડવીના માછીમાર સમુદાયના બાળકોને શૈક્ષણિક કીટ આપવામાં આવી હતી. આ બાળકો બંદર ઉપરથી શાળામાં નિયમીત રૂપે જઈ શકે તે માટે વાહન સુવિધાની પણ જાહેરાત કરવામાં આવેલ છે.

જૂન મહિનાના બીજા અઠવાડીયાદરમ્યાન આવેલ વાવાઝોડાના કારણે ખારેકના પાકને ખુબજ નુકશાન થયું છે. કૃષિ વિજ્ઞાન કેન્દ્ર અને કચ્છ કોપ સર્વિસનાં માધ્યમથી અદાણી ફાઉન્ડેશને શકય તેટલા ખારેકના ઝાડને બચાવવાનું ભગીરથ પ્રયાસ આદર્યો છે. ૫૦૦ થી પણ વધુ ખારેકના ઝાડને પ્રથમ ચરણમાં નવજીવન આપવામાં આવશે તેવી જાહેરાત આજના સપરના દિવસે અદાણી ફાઉન્ડેશન દ્વારા કરવામાં આવી આશુભ શરૂઆત કરતા શ્રી અનિરુધ્ધભાઈ દવેએ જણાવ્યુ કે ખારેક એ કચ્છનું કલ્પવૃક્ષ છે, વાવાઝોડામાં નુકશાન પામેલા દેશી ખારેકનાં ઝાડને સજીવન કરવાની આ પહેલ સરાહનીય છે. ખેડુતોની આર્થિક સદ્ધરતા માટે પણ આ પ્રયાસ પણ સારા પરિણામ લાવશે.

મુંદ્રા તાલુકાના તમામ લોકોને 'આયુષ્યમાન' હેઠળ આવરી લેવાશે

વાવાઝોડાનાં અસરગ્રસ્તોને ભોજન, આરોગ્ય સહિતની અદાણી જૂથની સેવા

ફાઉન્ડેશન દ્વારા લોકોને હજારો ફૂડ પેકેટ અપાયા : રેસ્ક્યૂ ટીમ ખડેપગે રહી

ઉમરપાડામાં ટીબીનાં ૭૦ દર્દીઓને ધારાસભ્ય ગણપત વસાવાના હસ્તે પૌષ્ટિક કીટનું વિતરણ

વાંકલ, તા.૧૮

ઉમરપાડા ખાતે ટી.બી.મુક્ત ભારત કાર્યક્રમ અંતર્ગત અદાણી ફાઉન્ડેશન તેમજ તાલુકા આરોગ્ય કચેરી ઉમરપાડા દ્વારા ટીબી મુક્ત ઉમરપાડા કાર્યક્રમ યોજાયો હતો. જેમાં માજી મંત્રી અને ધારાસભ્ય ગણપતસિંહ વસાવા અને અદાણી પોર્ટના મરીન સર્વિસના જનરલ મેનેજર કેપ્ટન આશિષ સિંઘલ ઉપસ્થિત રહ્યા હતા.

નિદાન થયેલા ૭૦ જેટલા ટીબી દર્દીઓને ન્યુટ્રીશન કીટનું વિતરણ થયું હતું. અદાણી ફાઉન્ડેશન દ્વારા આગામી છ માસ સુધી આ દર્દીઓને પોષક આહારથી ભરપૂર કીટ આપવા આવશે ધારાસભ્ય ગણપત વસાવાએ કાર્યક્રમની શરૂઆત કરતાં જણાવ્યુ હતું કે, અદાણી ફાઉન્ડેશન દ્વારા આદિવાસી વિસ્તારના ટીબીના દર્દીઓ માટે ઉમરપાડા વિસ્તારમાં કામગીરી શરુ કરી છે એ ખૂબ જ પ્રશંસનીય છે. પૌષ્ટિક ખોરાક ખાવાથી આ રોગ જલ્દી મટાડી શકાય છે, એમ

(તસવીર : સંતોષ મેસુરીયા)

તેમણે ઉમેર્યું હતું. આજના કાર્યક્રમમા ઉમરપાડા તાલુકા પંચાયતના પ્રમુખ રમેશ વસાવા, કારોબારી અધ્યક્ષ ગુલાબ વસાવા, કરણ વસાવા, રવીસિંહ ચૌધરી, શાંતિલાલ વસાવા, અમીષ વસાવા. આરોગ્ય વિભાગના ડૉ. નંદિતા [illegible], ડૉ. વિપુલ બરોડિયા, ડૉ. નવીન જૈન, ડૉ. વિશ્વા સહિત અનેક લોકો ઉપસ્થિત રહ્યા હતા. કાર્યક્રમની શરૂઆતમાં ઉમરપાડા ઈન્ચાર્જ મેડિકલ ઓફિસર ડૉ.વિપુલ બરોડિયાએ ગ્રામજનોને ટીબી ટેસ્ટ કરાવવા માટે અપીલ કરી હતી જેથી નાનામાં નાના લક્ષણો પણ જોવા મળે અને તરત ઈલાજ પણ શરૂ થઈ શકે. તાલુકાના ચોખવાડા ગામ ખાતે ટી.બી. જનજાગૃતિ કાર્યક્રમ યોજાયો હતો જેમાં ગામના સરપંચશ્રી સમેત 125 જેટલા ગ્રામજનોએ ભાગ લીધો હતો. કાર્યક્રમ દરમિયાન ઉપસ્થિત લોકોએ દેશને ટીબી મુક્ત બનાવવાના શપથ પણ લીધા હતા. આ કીટમાં ઘઉંનો લોટ 2 કિલો, ચણા અને મગ દાળ 3 કિલો, મિક્સ દાળ 1 કિલો, તેલ 500 ગ્રામ, મગફળી 500 ગ્રામ અને ગોળ 1 કિલો જેટલી સામગ્રી હતી.

અદાણીફાઉન્ડેશનદ્વારાઉમરપાડાનાટીબીનાદર્દીઓનેછમહિનાસુધીકીટઆપવામાંઆવશે

અદાણી ફાઉન્ડેશન દ્વારા મુંદ્રાના મહિલા સ્વસહાય જૂથને ગૌ દાન !

ગાય આધારિત ઉત્પાદનો લાભાર્થીઓ માટે 'કામધેનુ' સમાન

Press Note

રાજ્યપાલનું પ્રાકૃતિક ખેતી માટે આહ્વાન

મુંદરા સ્થિત અદાણી ફાઉ. સાથે શ્રી રાજશક્તિ પ્રાકૃતિક ખેતી મંડળીના ખેડૂતોએ મુલાકાત લીધી

ભુજ, તા. ૩૧ : અદાણી ફાઉન્ડેશને ખેડૂતો પ્રાકૃતિક ખેતી અપનાવતા થાય અને લોકોને કેમિકલ યુક્ત પૌષ્ટિક ખોરાક મળી રહે તેવા ઉમદા ઉદ્દેશને સાકાર કરવા બીડું ઝડપ્યું છે. આ સંદર્ભે મહત્વપૂર્ણ માર્ગદર્શન મેળવવા ગુરુવારે ગુજરાતના રાજ્યપાલ આચાર્ય દેવવ્રતજીની મુલાકાતનું આયોજન કરાયું હતું.

રાજ્યપાલ આચાર્ય દેવવ્રતજીની સ્વદેશી કોપ્રથમ શ્રી રાજશક્તિ પ્રાકૃતિક ખેતી સહકારી મંડળીના ખેડૂતોએ મુલાકાત લીધી હતી, તેમની સાથે અદાણી ફાઉન્ડેશનના ગુજરાત સીઈઓ આર વ્રજ પંક્તિબેન શાહ અને પદાધિકારીઓ દર્શે રહ્યા હતા.

કચ્છની સૌ પ્રથમ શ્રી રાજશક્તિ પ્રાકૃતિક ખેતી સહકારી મંડળીના ખેડૂતોએ રાજ્યપાલની ફળદ્રુપ મુલાકાત લઇ પોતાના પ્રાકૃતિક ઉત્પાદનો દેવવ્રતજીને અર્પણ કરી પ્રાકૃતિક ખેતીના અનુભવોનું આદાન-પ્રદાન કર્યું હતું. આ મુલાકાત બાદ ખેડૂતોમાં નવી ઊર્જાનો સંચાર થયો હતો.

રાજ્યપાલે જણાવ્યું કે 'ખેડૂતોમાં વર્ષોથી વણાયેલી પ્રાકૃતિક ખેતીના વિચારો આજે મને ઊંડી રહેલા દેખાય છે મને પ્રાકૃતિક ખેતી કરતો ખેડૂત કદી દુઃખી જોવા નથી મળ્યો. આપ સૌ ખેતી સાથ કરતી બહેનોને સાથે લાવ્યાં તે બદલ અભિનંદન આપું છું.' તદુપરાંત જે ખેડૂતોના ખેતરનો ઓર્ગેનિક સર્ટીફેન 2.0થી વધુ છે તેઓને અભિનંદન આપ્યા હતા.

દેવવ્રતજીએ મુંદરા તાલુકાને પ્રાકૃતિક ખેતી તરફ લઈ જવાની સામૂહિક જવાબદારી ઉઠાવવા ખેડૂતોને આહ્વાન કર્યું હતું. એટલું જ નહીં, પ્રાકૃતિક ખેતીના પાંચ આયામો જીવામૃત, ધન જીવામૃત, અગ્નિહોત્ર, આચ્છાદન અને પંચગવ્ય ઘરે જ બનાવી ખેતીમાં તેનો ઉપયોગ કરી ઉત્તમ ઉત્પાદનો મેળવવા સૂચન કર્યું હતું.

આ મુલાકાત માટે માંડવીના પદ્મશ્રી અનિરુદ્ધભાઈ દવેએ ખેડૂતોને પ્રોત્સાહન પૂરું પાડ્યું જણાવ્યું કે 'કચ્છ દરેક બાબતની પહેલ કરવામાં હંમેશાં અગ્રેસર છે ત્યારે મને વિશ્વાસ છે કે આપણા ખેડૂતો આ બાબતે પાછીપાની નહીં કરે. આપના ઉત્પાદનોને ઉત્તમ બજાર મળી રહે તે માટે આપણે શ્રી સમિયારા પ્રયાસો કરીશું.'

આ પ્રસંગે અદાણી ફાઉન્ડેશનના શ્રી એસ.આર. સેડ પંક્તિબેન શાહે રાજ્યપાલને આશ્વાસન આપતાં જણાવ્યું કે 'પ્રકૃતિ પ્રત્યેનું ઋણ અદા કરવામાં અદાણી પરિવાર ક્યારેય પાછીપાની નહીં કરે. હંમેશાં ખેડૂતોની પડખે રહીને ઉદ્યોગગૃહના સામાજિક ઉત્તરદાયિત્વને નિભાવશે.'

ખેડૂતોએ ગૌવંશ આધારિત ખેતી માટે બરછીગીર ગોંસાળા ખાતે ગોપાલ સુતરિયા પાસેથી પણ માર્ગદર્શન મેળવ્યું હતું. એટલું જ નહીં, દેશ-વિદેશમાં પ્રાકૃતિક ખેતઉત્પાદનોની માંગ વધી રહી છે ત્યારે તેની વેચાણ વ્યવસ્થાને સમજવા અમદાવાદ સ્થિત 'મુષ્ટિ ઇનોવેશન'ની મુલાકાત પણ લીધી હતી.

અદાણી ફાઉન્ડેશન દ્વારા હાથ ધરાયેલી પહેલોના પરિણામે શ્રી રાજશક્તિ પ્રાકૃતિક ખેતી સહકારી મંડળીની સ્થાપના કરવામાં આવી હતી. ૩૦ ખેડૂતોથી શરૂ કરાયેલી સંસ્થા આજે ૨૨૫થી વધુ સભ્ય સંખ્યા સાથે પ્રગતિના પંથે છે.

अदाणी फाउंडेशन, दहेज द्वारा 'पेड़ों के माध्यम से विकास' ग्रामीण विकास अभियान

फलदार पौधों से आने वाले वर्षों में किसान की आय में वृद्धि होगी

सूरत। अदानी फाउंडेशन, दहेज ने वृक्ष के माध्यम से विकास नामक एक ग्रामीण विकास अभियान शुरू किया है। बच्चे पर्यावरण के प्रति जागरूक हों, गांव की जलवायु स्वच्छ हो और लोग फलों के पेड़ों से आय अर्जित करें, इस सोच के साथ अदानी फाउंडेशन, दहेज-भरूच ने स्कूली बच्चों और ग्रामीणों को पौधे और फलदार पेड़ वितरित किए।

भरूच जिले में 1250 घर, आठ स्कूल और आंगनबाड़ियां मिलाकर 19000 फलदार पौधे लगाने का लक्ष्य है। पहले दिन 2325 फलदार पौधों का उंबडबारा, पुनपुजिया, हाथाकुंडी व मौजा गांवों में वितरण किया गया। पौधों को वितरित करने का उद्देश्य पर्यावरण को बचाना, स्कूली छात्रों को पेड़ों के फायदे और महत्व को समझाना और फलदार पेड़ों के माध्यम से किसानों की आय में वृद्धि करना है। फलदार पौधे आने वाले वर्षों में किसान के काम आएंगे और उनकी आय में वृद्धि होगी। किसानों को केसर आम, सीताफल, जाम्बू, बारहमासी नींबू, चीकू और जमरूख की कलम वितरित की गईं ताकि वे कम समय में फल दे सकें। अदानी फाउंडेशन दीर्घकालिक सतत विकास गतिविधियों के लिए लगातार प्रयासरत है और भरूच जिले के ग्रामीण और आदिवासी क्षेत्रों के गांवों में उस दिशा में प्रयास कर रहा है।

अदाणी फाउंडेशन अने अदाणी ग्रीन એનર્જી દ્વારા લખપતમાં આરોગ્ય કેમ્પ યોજાયા

अदाणी नवचेतन विद्यालय, जूनागामમાં ફળાઉ છોડ અને શૈક્ષણિક કીટ આપી શાળા પ્રવેશોત્સવ

ભરૂચના પૂરગ્રસ્ત ત્રણ ગામમાં અદાણી ફાઉન્ડેશન દ્વારા રાશનકીટનું વિતરણ

- પૂર પ્રકોપમાં ફૂડ પેકેટ્સ બાદ 15 દિવસના રાશનની સહાય

(1.81 MB) KUTCH PATRIKA 29...

અદાણી ફાઉન્ડેશન દ્વારા બિદડામાં મધર્સ-રે ઉજવણી અંતર્ગત મિલેટ્સની વાનગી બનાવવાની હરીફાઈનું કરાયેલું આયોજન

અદાણી ફાઉ. દ્વારા મુંદ્રામાં પશુધનની સુરક્ષા માટે પશુ આરોગ્ય કેમ્પનું આયોજન

૨૦,૦૦૦ પશુઓને તંદુરસ્ત અને નિરોગી રાખવા અનોખી પહેલ

અદાણી ફાઉન્ડેશન અને કચ્છ કોપર લિમિટેડના સહયોગથી મુંદ્રામાં પશુ આરોગ્ય કેમ્પનું આયોજન કરવામાં આવ્યું છે. જિલ્લા પંચાયત સંચાલિત પશુ દવાખાના દ્વારા પશુઓને રસીકરણ તથા ઉપયોગી સારવાર કરવામાં આવી રહી છે. મુંદ્રા તાલુકાના ૨૦,૦૦૦ જેટલા પશુઓને તંદુરસ્ત અને નિરોગી રાખવાના આ પહેલ કરવામાં આવી છે. પશુપાલકોની સુવિધા માટે આ કામગીરી તેમને ઘરઆંગણે જ પૂરી પાડવામાં આવે છે. પશુધનનું આરોગ્ય અને ઉત્પાદકતા જાળવી રાખવા બિમારી પહેલા જ તેમને રસીકરણ કરવામાં આવે છે. આરોગ્ય કેમ્પમાં કૃમિનાશક દવાઓ, નાના જીવો માટે ટીવમિંગ અને ચેપી ગર્ભપાતને અટકાવવા અસરકારક કામગીરી કરવામાં આવી રહી છે. જેમાં સ્થાનિકો, પશુપાલકો અને ગ્રામ પંચાયતોનો પૂરતો સહયોગ સાંપડી રહ્યો છે. અદાણી ફાઉન્ડેશન દ્વારા પશુઓની સારવાર માટે દવાઓ અને વ્યવસ્થા પૂરી પાડવામાં આવી છે. જ્યારે જિલ્લા પંચાયતના પશુપાલન વિભાગના પશુ ડોક્ટર્સ સેવા આપી રહ્યા છે. તો કચ્છ કલ્પતરૂ પ્રોડ્યુસર કંપની, સરહદ ડેરી, સ્થાનિક ગ્રામ પંચાયતો તેમજ ગોવાળ, ગૌસેવા સમિતિના સાથ -સહકારથી અદભૂત કામગીરી ચાલી રહી છે. મુંદ્રાના સિરાચા, નવીનાળ, ઝરપરા, પ્રઝ, ભુજપુર, મોટી ખાખર વગેરે ગામોના ૮૩૦૦ પશુધનને સારવારની કામગીરી પૂર્ણ કરાઈ છે, જ્યારે બાકીના ગામોમાં આ કામગીરી ચાલુ છે. આરોગ્ય કેમ્પની સાથોસાથ પશુ પોષણ માટે ઉત્તમ ઘાસચારા એન.બી.-૨૧ નું વાવેતર, મિનરલ મિક્સર અને ચેપી ગર્ભપાત નિવારણની કામગીરી યથાવત જારી છે. કચ્છમાં ખેતી અને પશુપાલન એ મુખ્ય વ્યવસાય છે, આ પહેલથી તેને મજબૂત બનાવવા માટેના પ્રયાસો થઈ રહ્યા છે. અદાણી ફાઉન્ડેશન દ્વારા પશુપાલનના મુખ્ય ચાર આધારસ્તંભો પશુ સંવર્ધન, પશુ પોષણ, પશુ આરોગ્ય અને પશુ વ્યવસ્થાપનને મજબૂત બનાવવા ભરસક પ્રયાસો કરવામાં આવી રહ્યા છે. વળી ખેડૂતો પ્રાકૃતિક ખેતી તરફ પ્રેરાય તે માટે બેઠકો અને ટ્રેનીંગ દ્વારા માર્ગદર્શન કરવામાં આવે છે.

બાળકોના ભવિષ્યને ઉજ્વળ બનાવવા અદાણી ફાઉન્ડેશનના ભગીરથ પ્રયાસો