

Supplementary material

on

Study to assess the compliance of thermal power plants in India to new SO₂ emission norms (2015) and lay out phased plan for FGD implementation

as part of a Report

submitted by

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SIPAT THERMAL POWER PLANT

Sipat Super Thermal Power Station is located at Sipat in Bilaspur district in state of Chhattisgarh. The power plant is one of the coal-based power plants of NTPC. The coal for the power plant is sourced from Dipika Mines of South Eastern Coalfields Limited.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. SIP1 – Fig. SIP38) for the last three years (2018-2020) using data provided by NTPC developer for Sipat Power plant, Chhattisgarh, India.

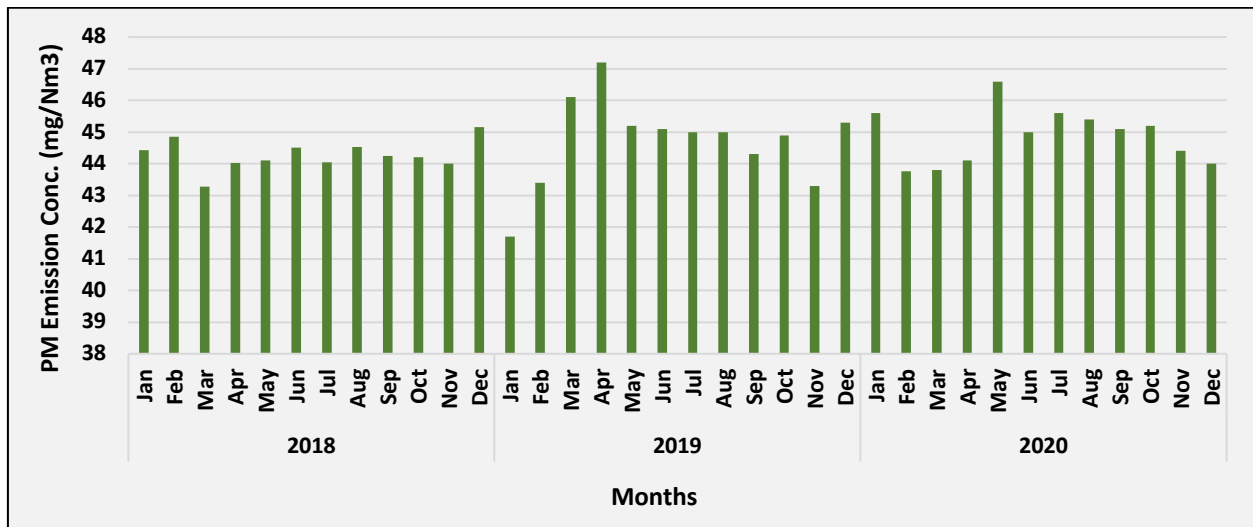


Fig. SIP1: Time series of monthly average PM Emission concentration in Sipat TPP (Stack 1)

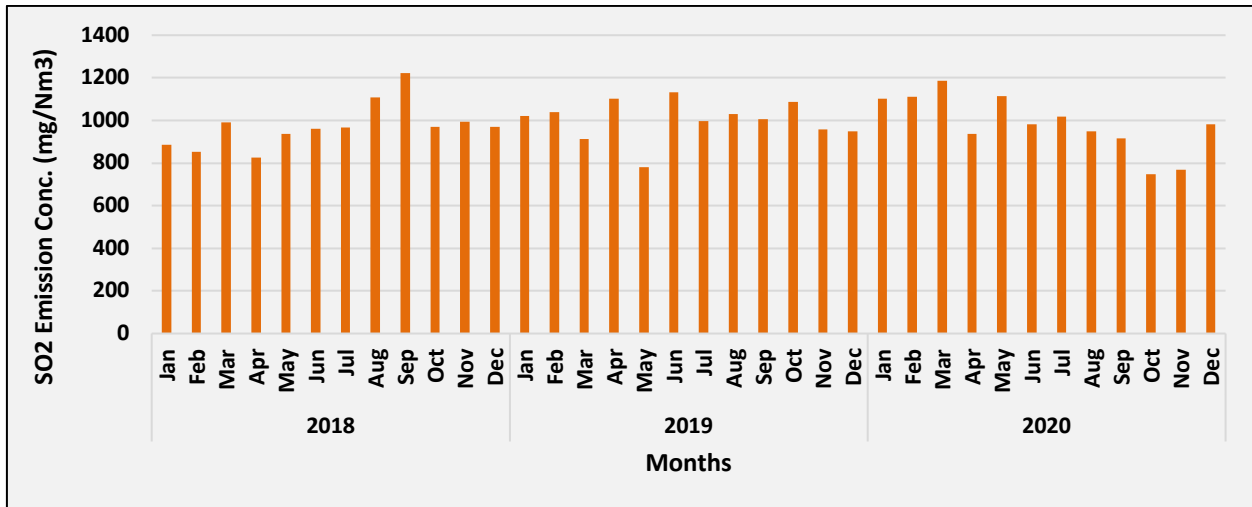


Fig. SIP2: Time series of monthly average SO₂ Emission concentration in Sipat TPP (Stack 1)

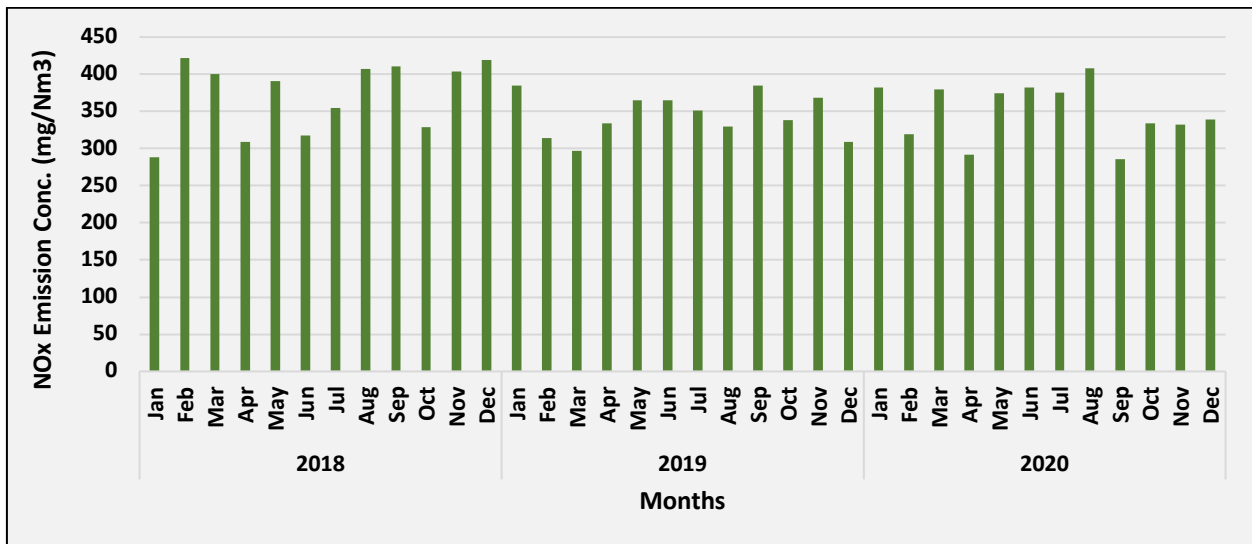


Fig. SIP3: Time series of monthly average NO_x Emission concentration in Sipat TPP (Stack 1)

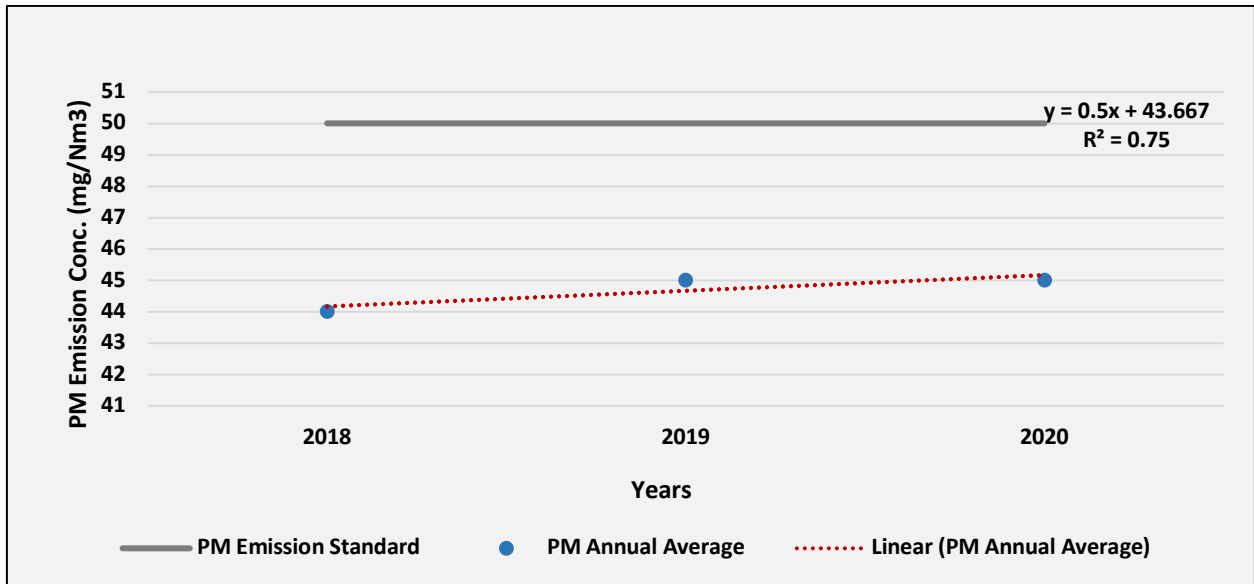


Fig. SIP4: Trend of annual mean PM Emission air concentration in Sipat TPP (Stack 1)

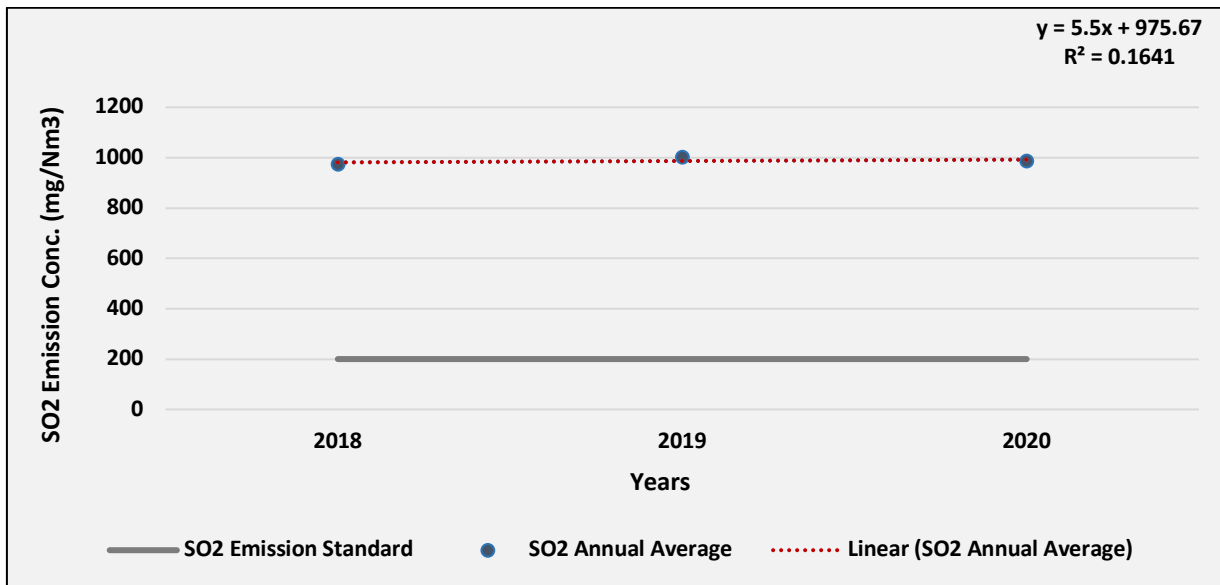


Fig. SIP5: Trend of annual mean SO₂ Emission air concentration in Sipat TPP (Stack 1)

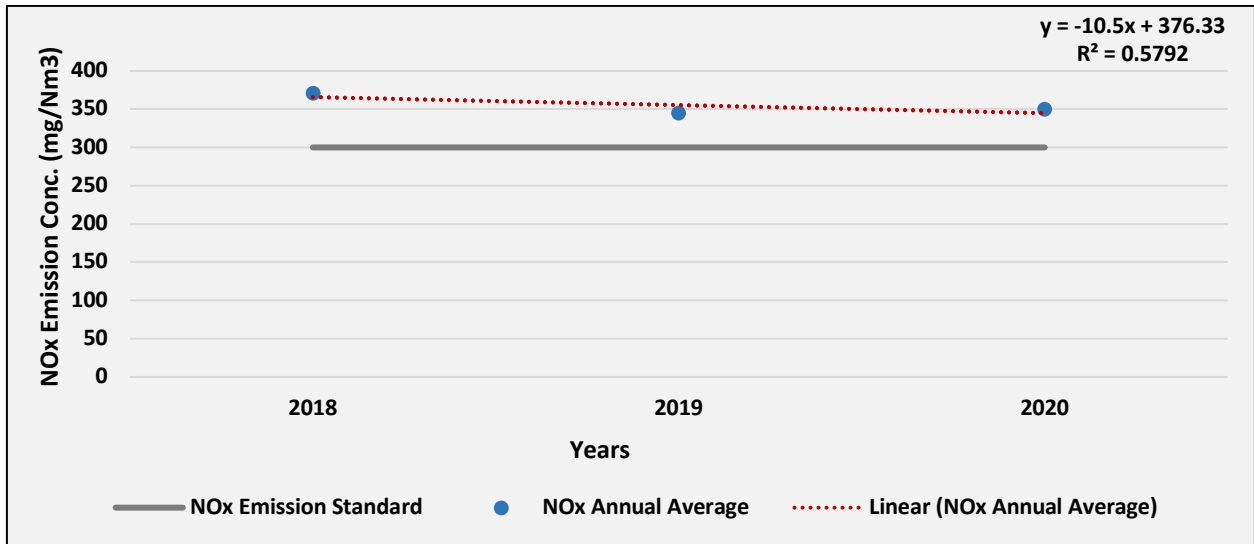


Fig. SIP6: Trend of annual mean NO_x Emission air concentration in Sipat TPP (Stack 1)

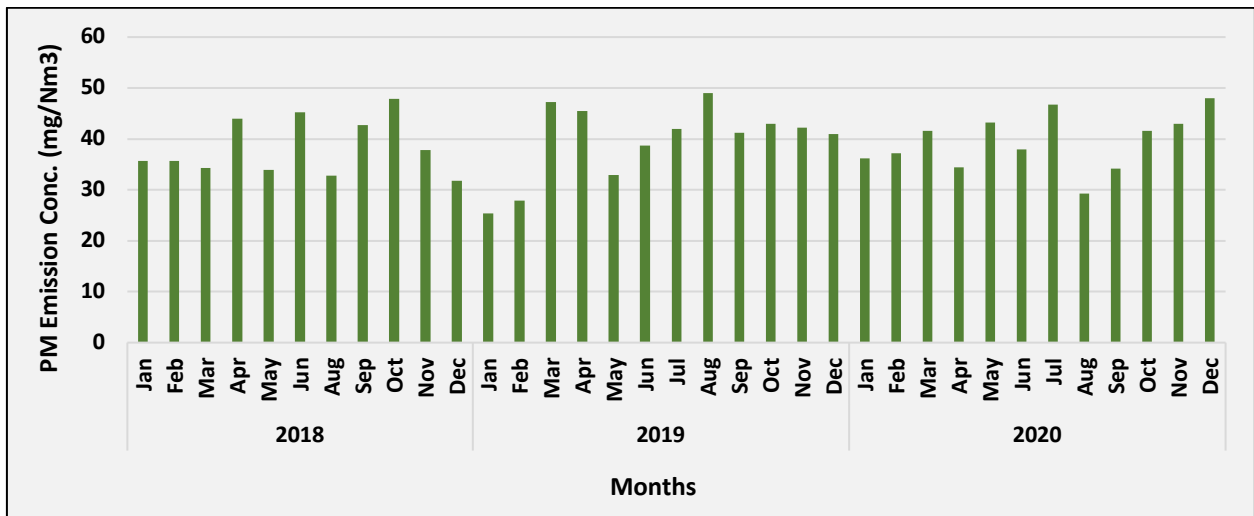


Fig. SIP7: Time series of monthly average PM Emission concentration in Sipat TPP (Stack 2)

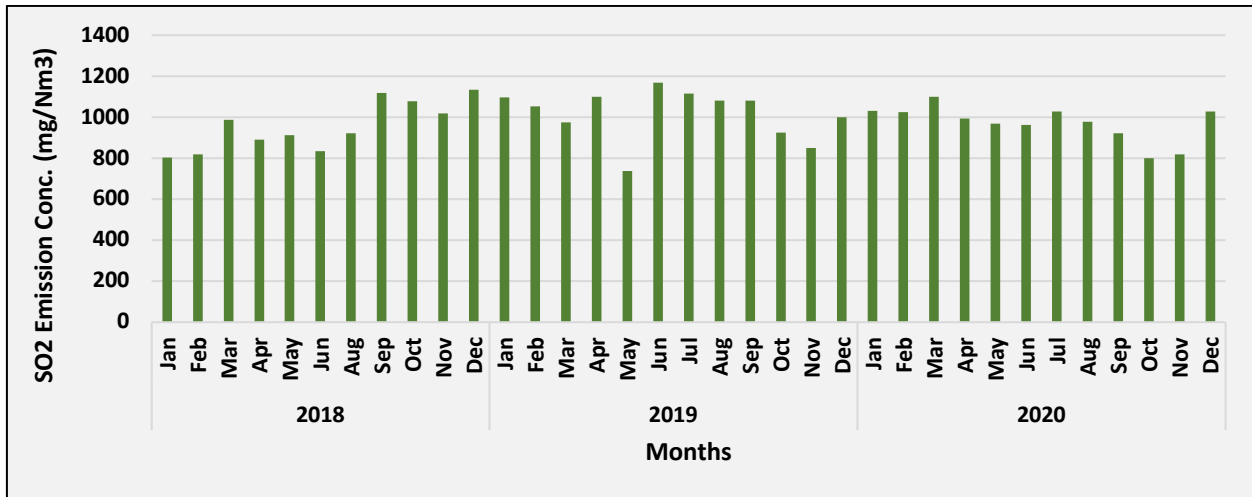


Fig. SIP8: Time series of monthly average SO₂ Emission concentration in Sipat TPP (Stack 2)

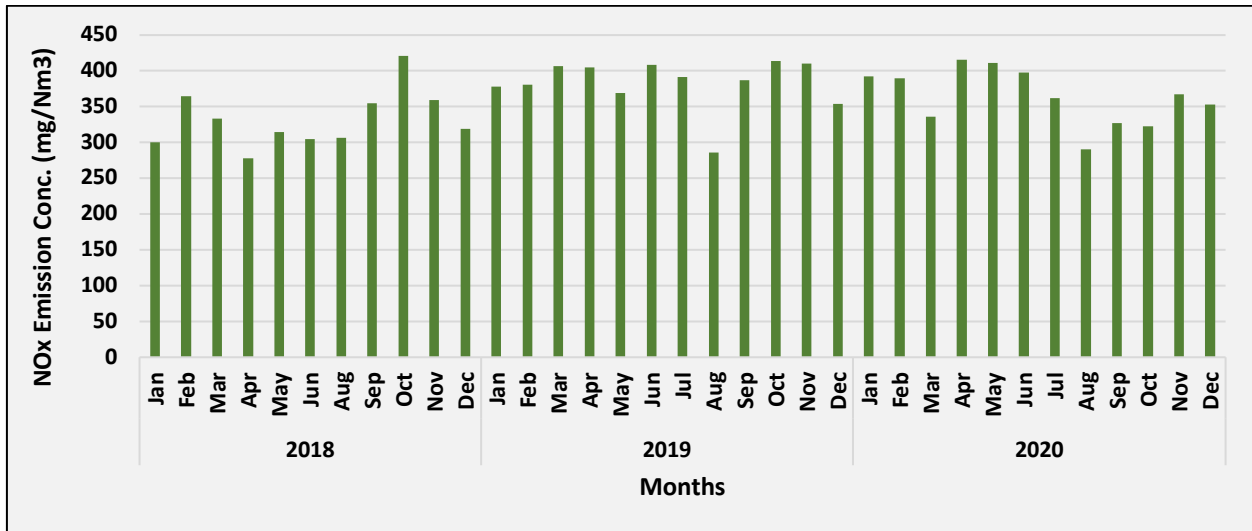


Fig. SIP9: Time series of monthly average NO_x Emission concentration in Sipat TPP (Stack 2)

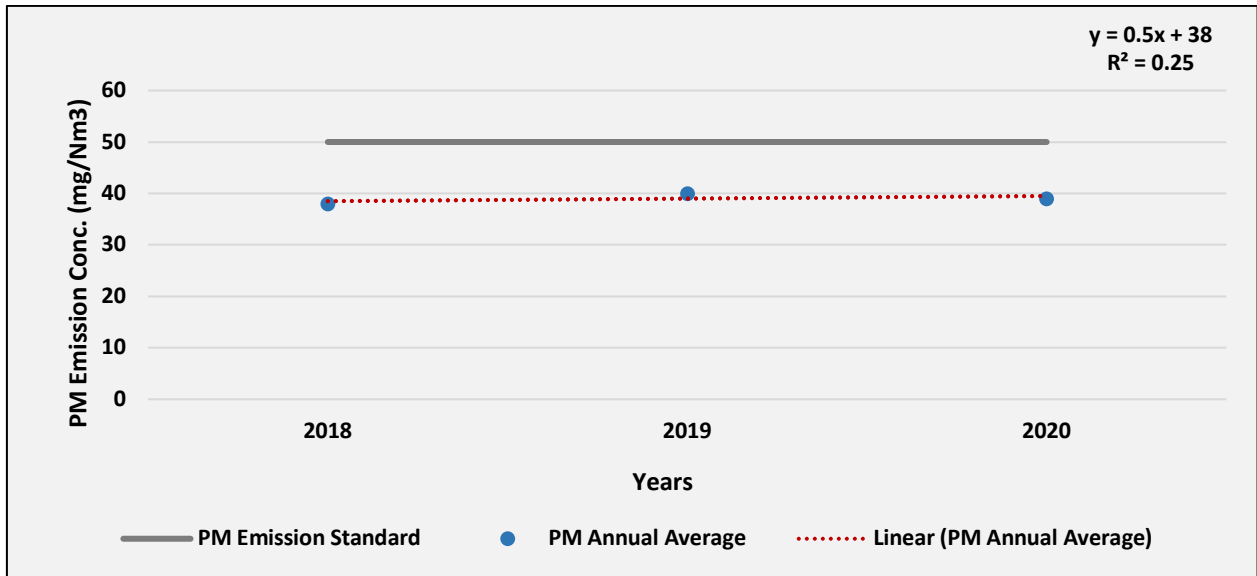


Fig. SIP10: Trend of annual mean PM Emission air concentration in Sipat TPP (Stack 2)

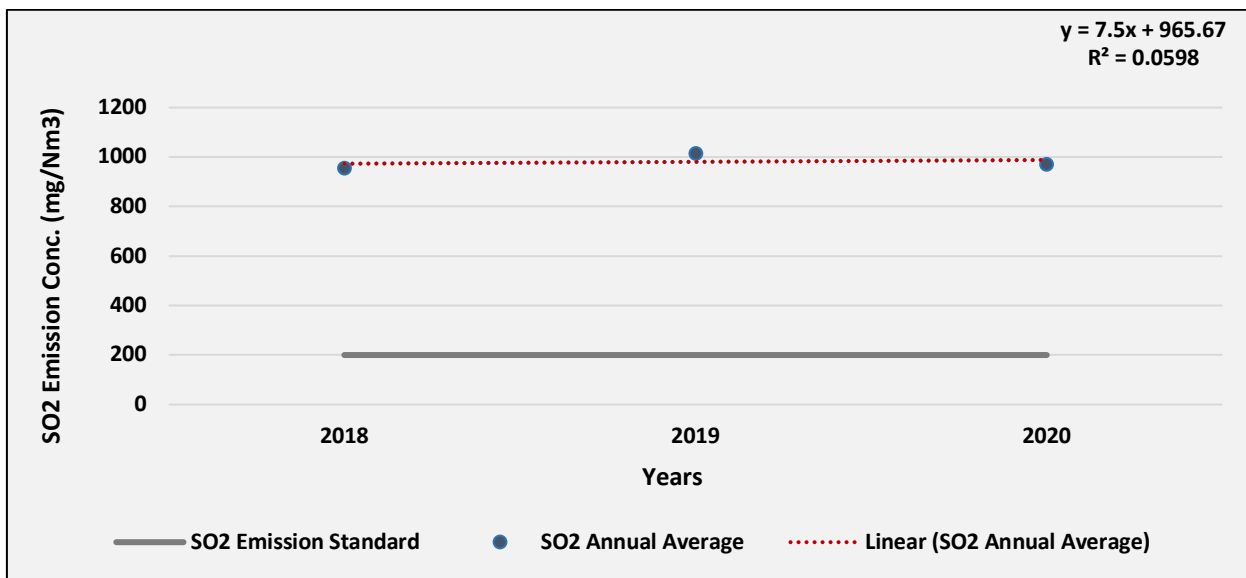


Fig. SIP11: Trend of annual mean SO₂ Emission air concentration in Sipat TPP (Stack 2)

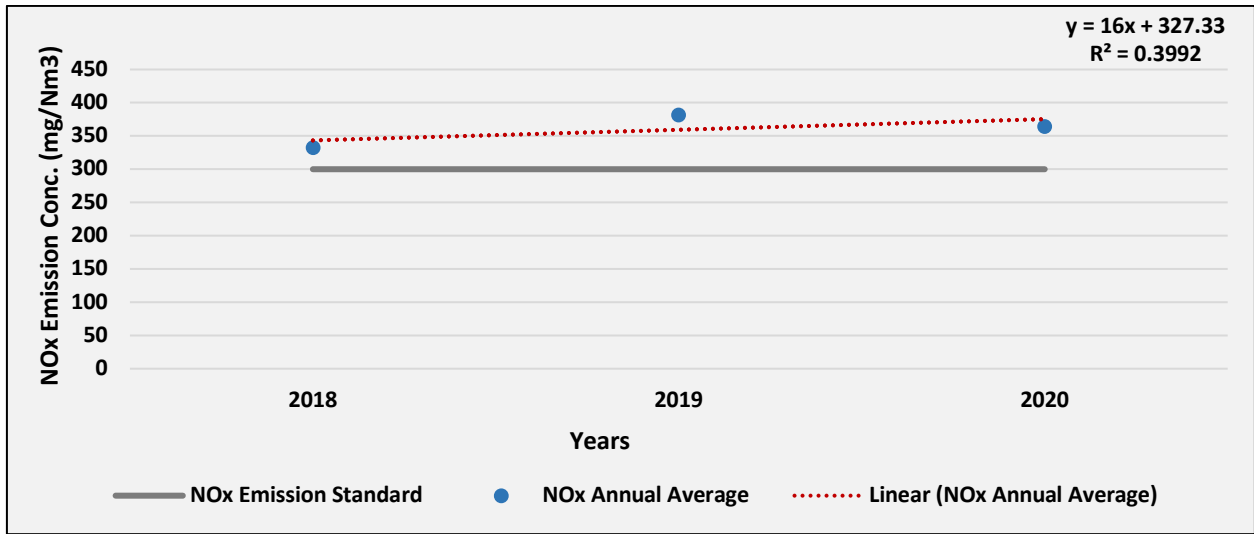


Fig. SIP12: Trend of annual mean NO_x Emission air concentration in Sipat TPP (Stack 2)

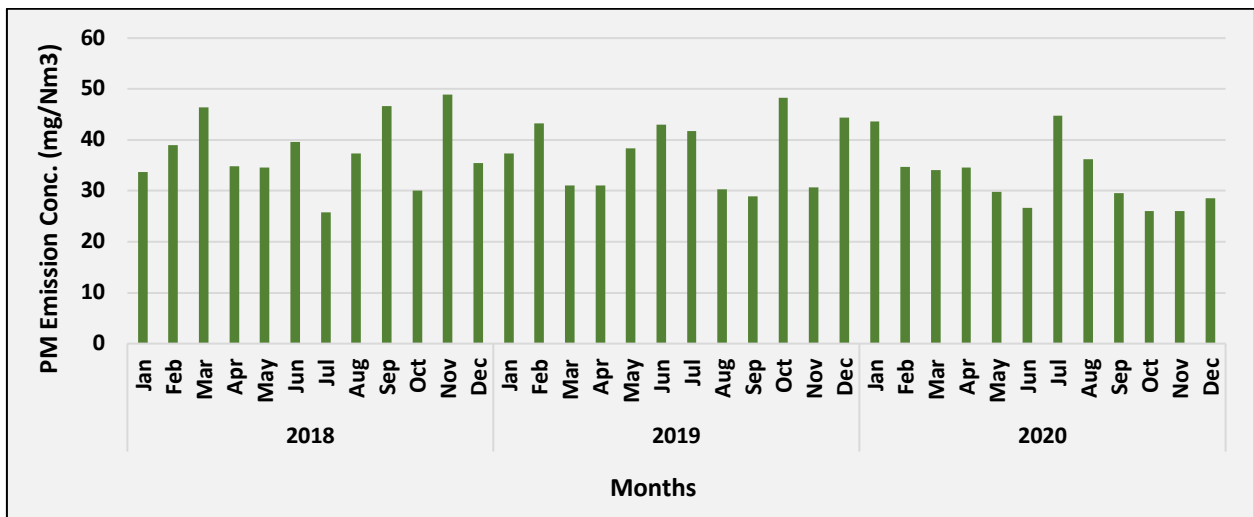


Fig. SIP13: Time series of monthly average PM Emission concentration in Sipat TPP (Stack 3)

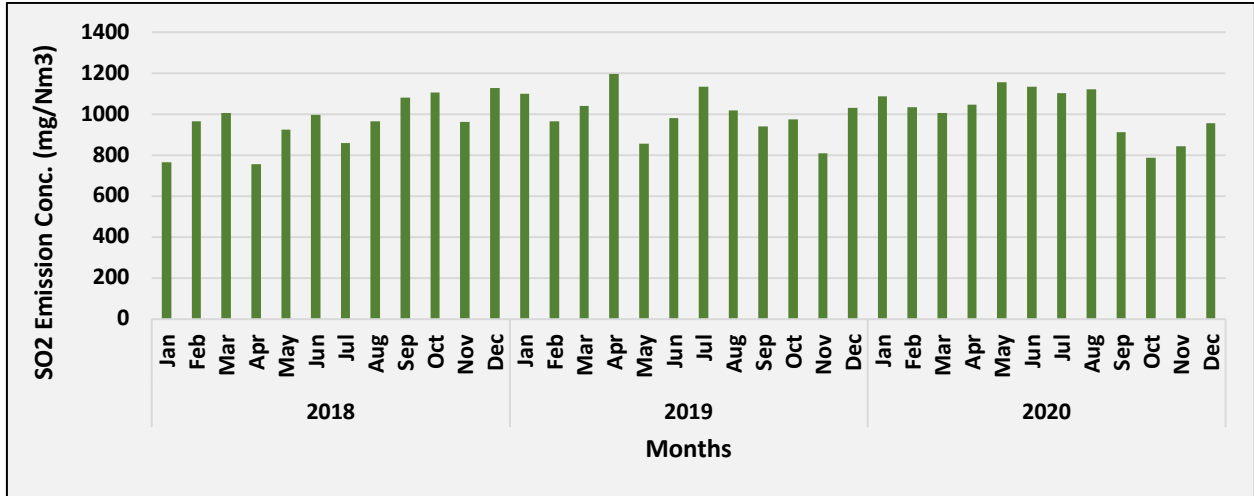


Fig. SIP14: Time series of monthly average SO₂ Emission concentration in Sipat TPP (Stack 3)

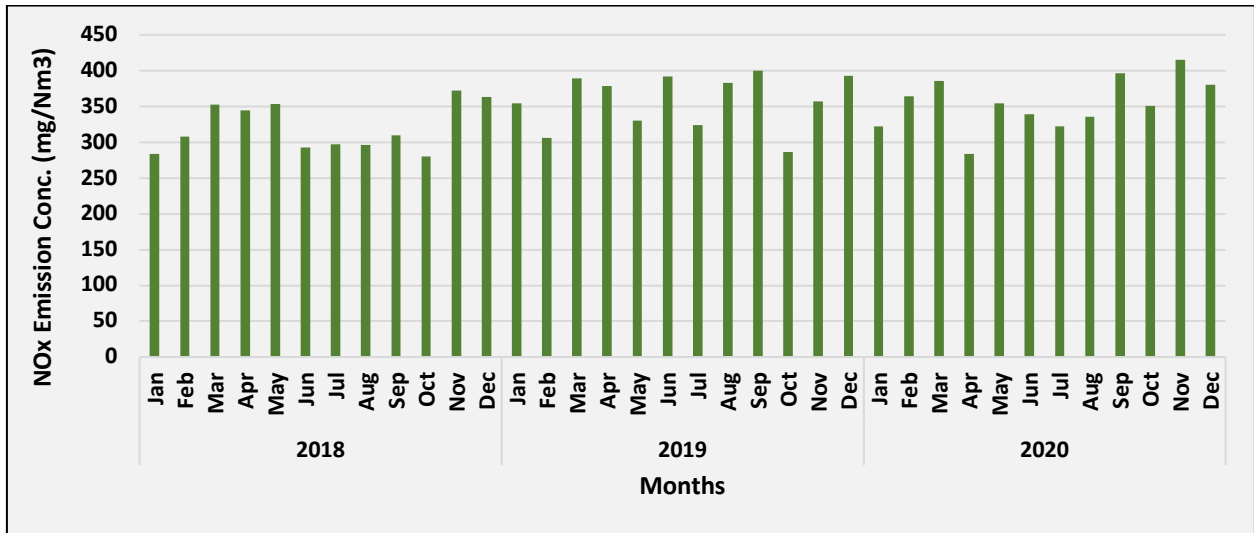


Fig. SIP15: Time series of monthly average NO_x Emission concentration in Sipat TPP (Stack 3)

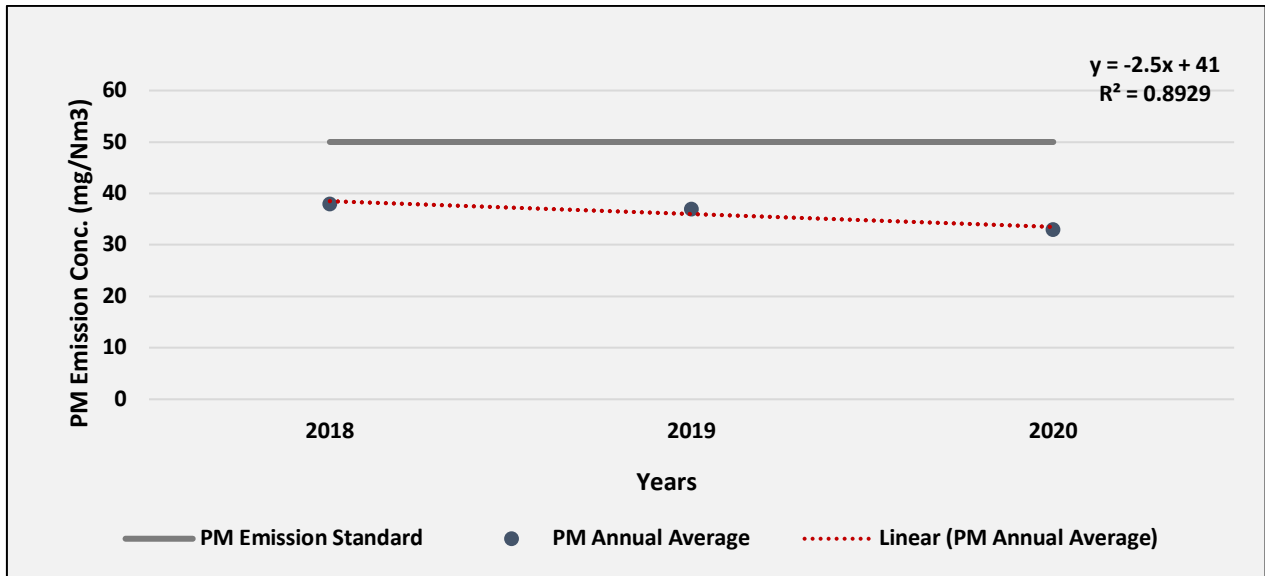


Fig. SIP16: Trend of annual mean PM Emission air concentration in Sipat TPP (Stack 3)

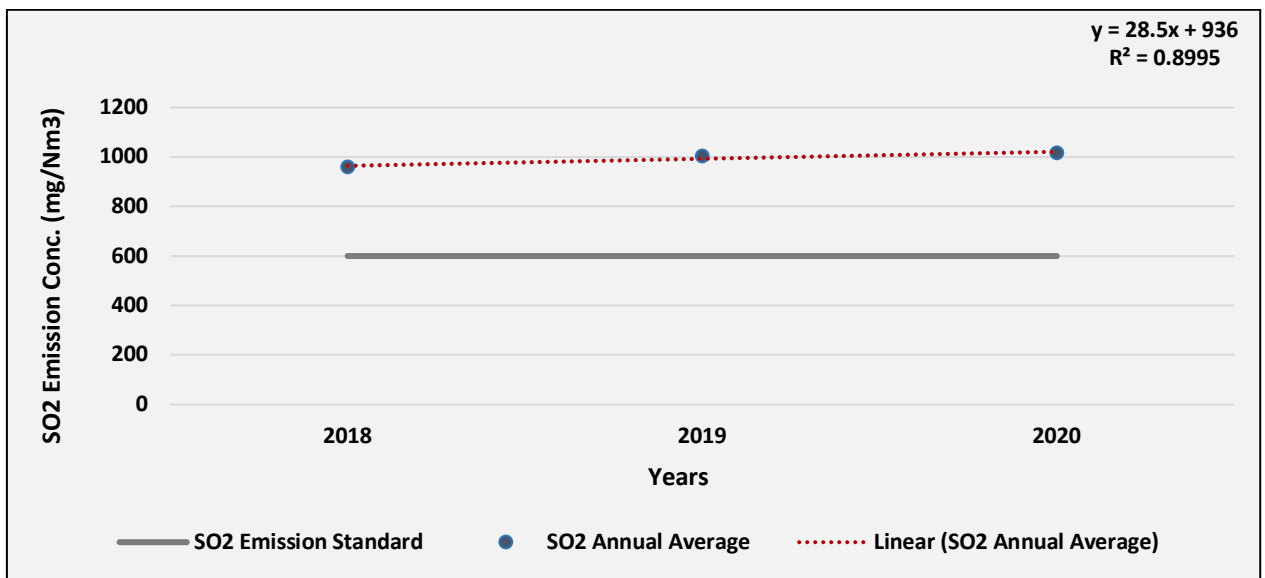


Fig. SIP17: Trend of annual mean SO₂ Emission air concentration in Sipat TPP (Stack 3)

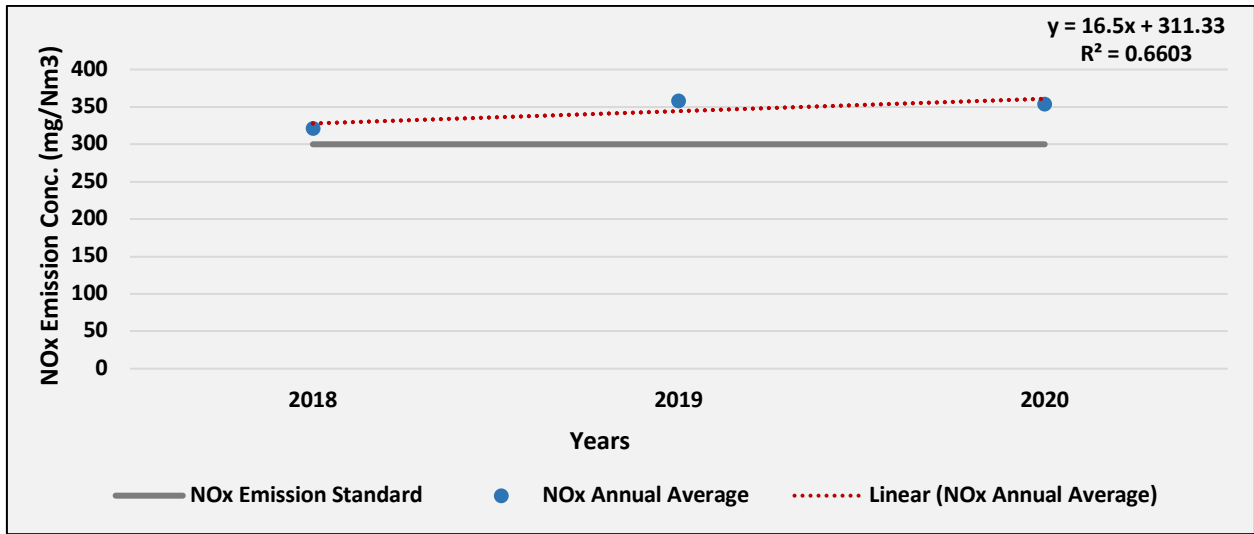


Fig. SIP18: Trend of annual mean NO_x Emission air concentration in Sipat TPP (Stack 3)

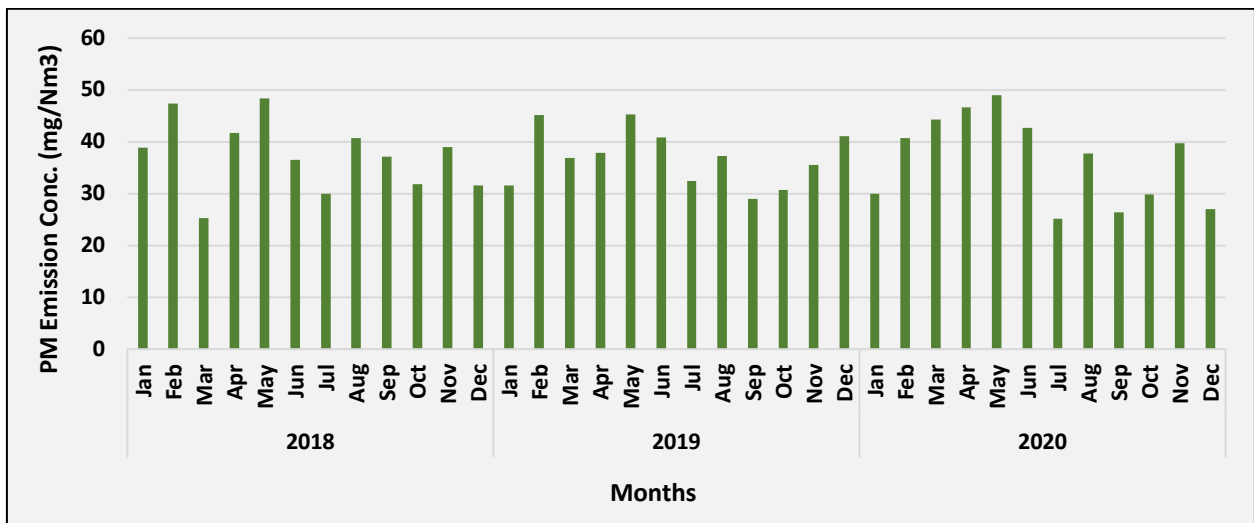


Fig. SIP19: Time series of monthly average PM Emission concentration in Sipat TPP (Stack 4)

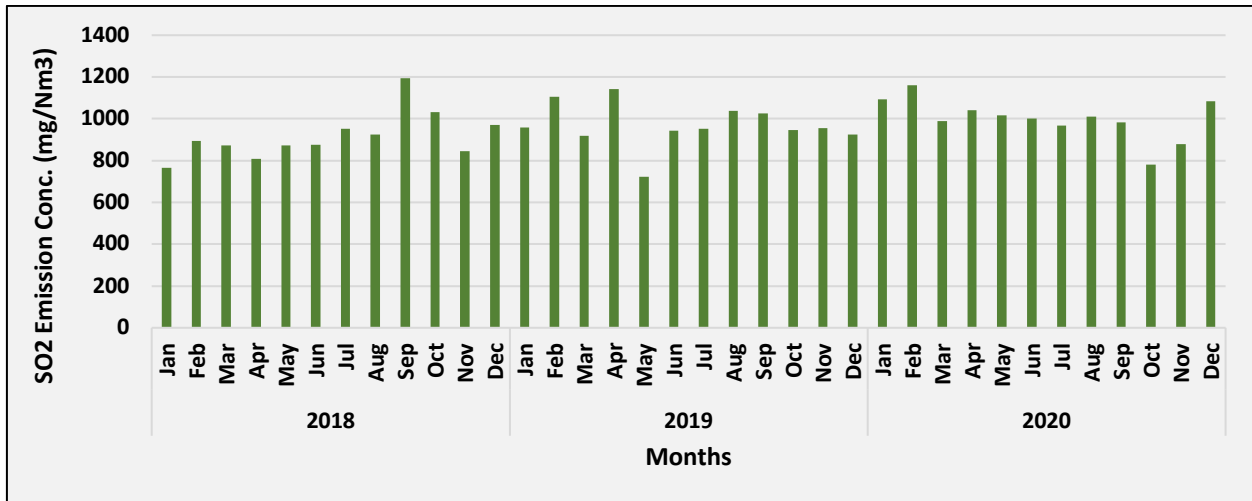


Fig. SIP20: Time series of monthly average SO₂ Emission concentration in Sipat TPP (Stack 4)

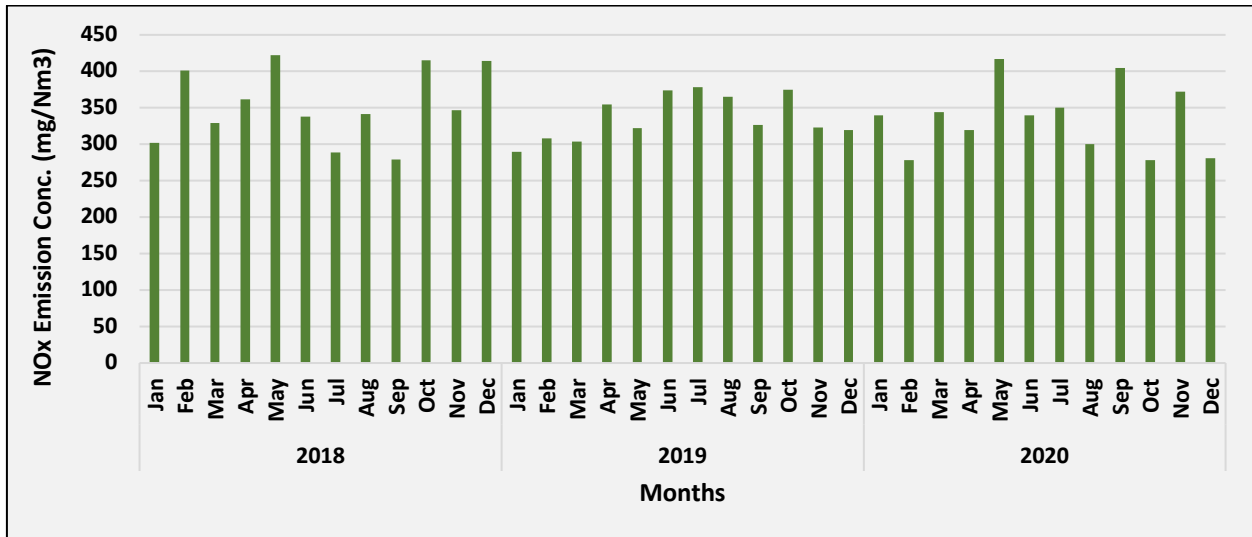


Fig. SIP21: Time series of monthly average NO_x Emission concentration in Sipat TPP (Stack 4)

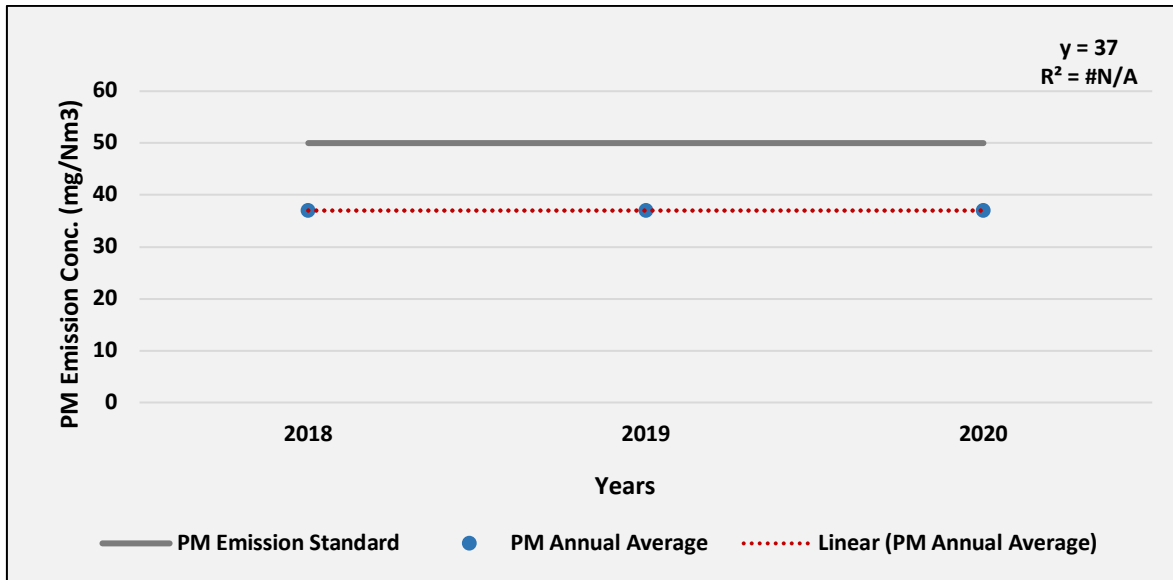


Fig. SIP22: Trend of annual mean PM Emission air concentration in Sipat TPP (Stack 4)

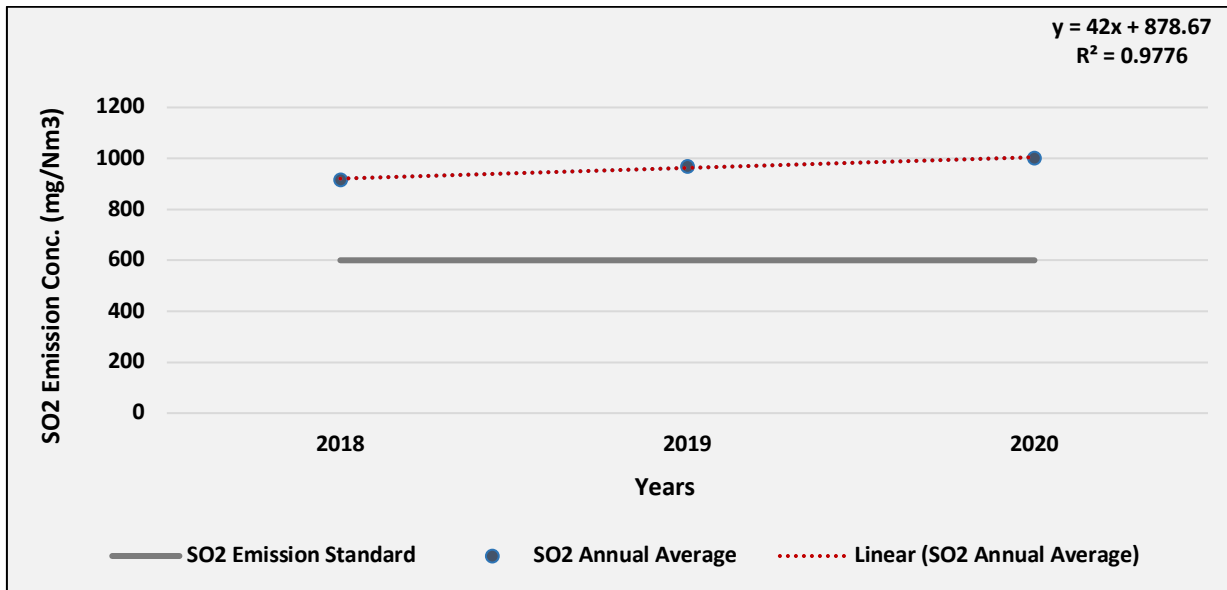


Fig. SIP23: Trend of annual mean SO₂ Emission air concentration in Sipat TPP (Stack 4)

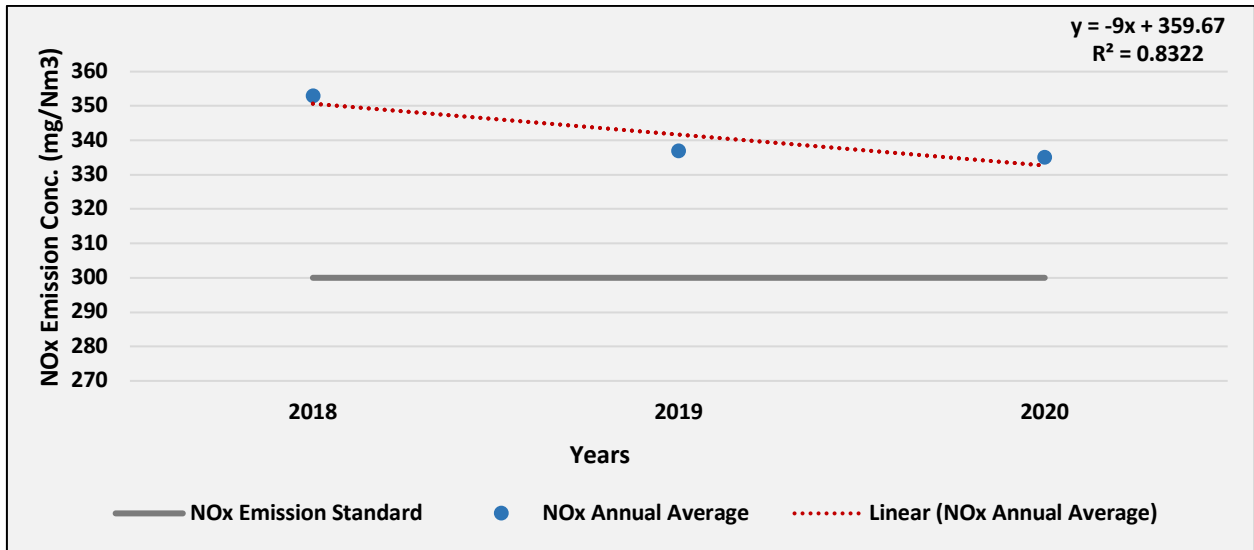


Fig. SIP24: Trend of annual mean NO_x Emission air concentration in Sipat TPP (Stack 4)

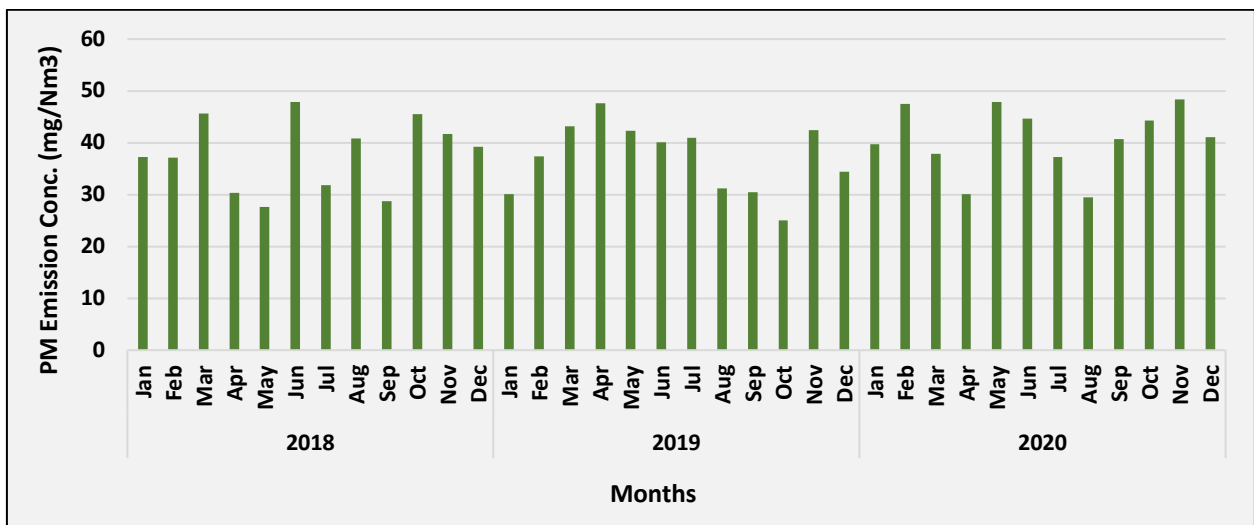


Fig. SIP25: Time series of monthly average PM Emission concentration in Sipat TPP (Stack 5)

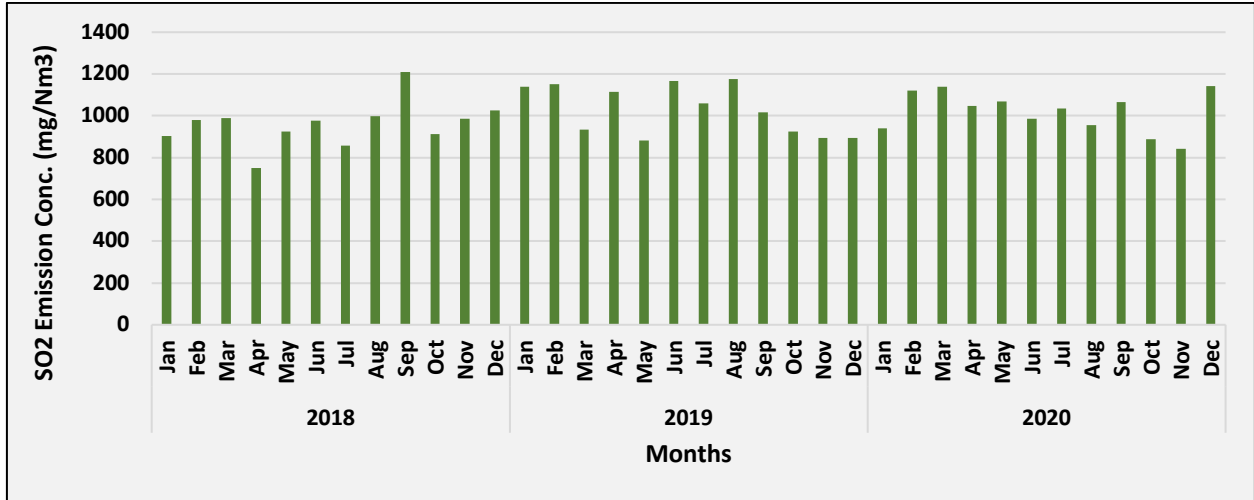


Fig. SIP26: Time series of monthly average SO₂ Emission concentration in Sipat TPP (Stack 5)

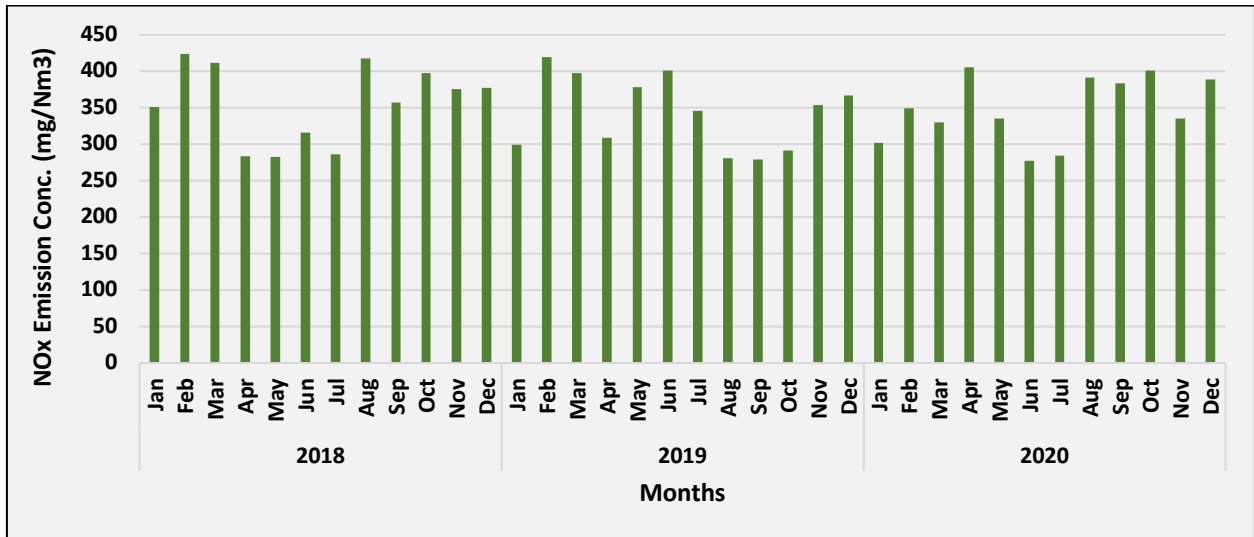


Fig. SIP27: Time series of monthly average NO_x Emission concentration in Sipat TPP (Stack 5)

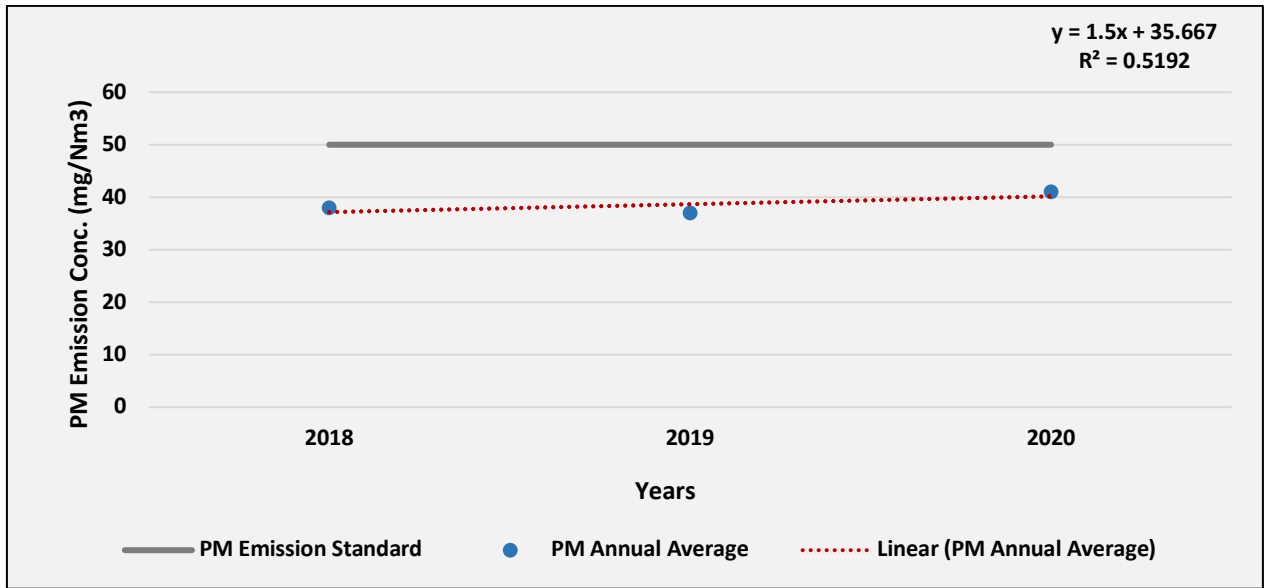


Fig. SIP28: Trend of annual mean PM Emission air concentration in Sipat TPP (Stack 5)

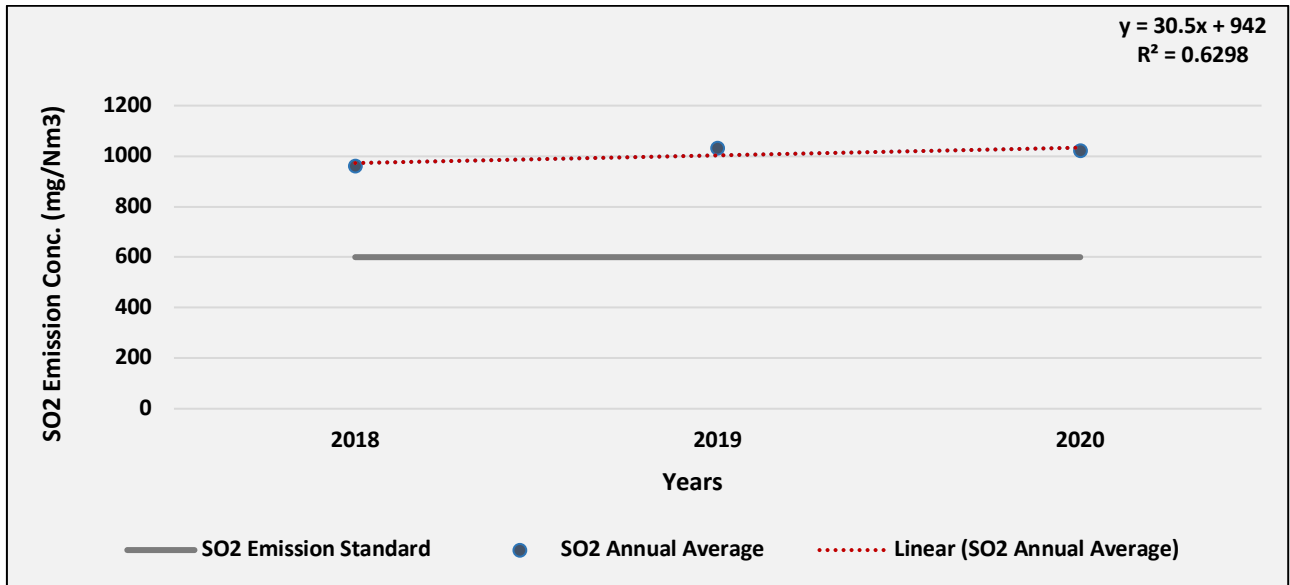


Fig. SIP29: Trend of annual mean SO₂ Emission air concentration in Sipat TPP (Stack 5)

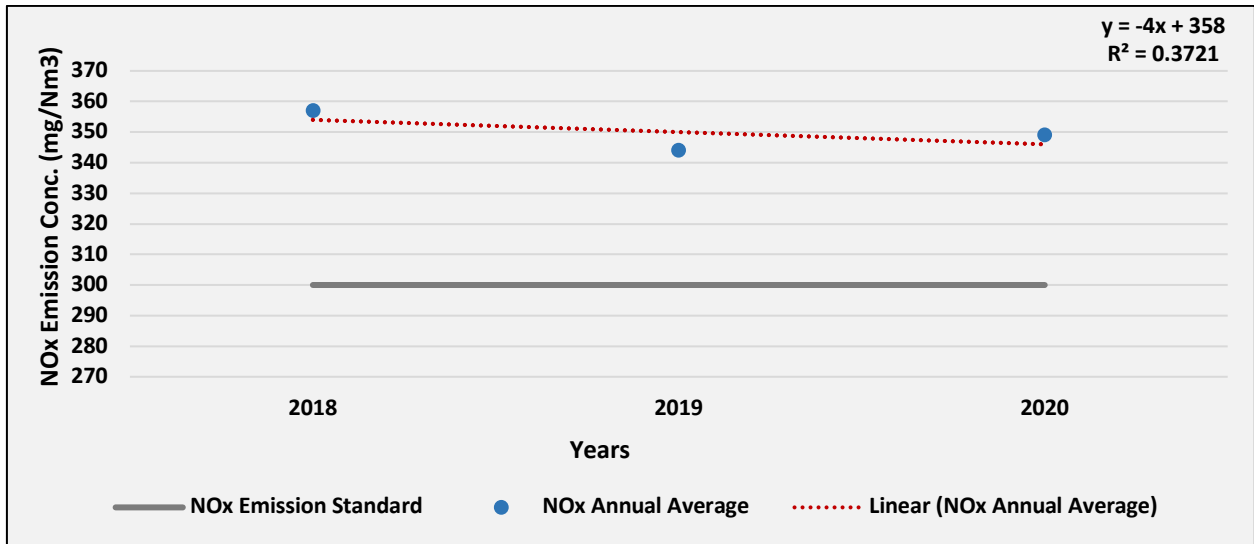


Fig. SIP30: Trend of annual mean NO_x Emission air concentration in Sipat TPP (Stack 5)

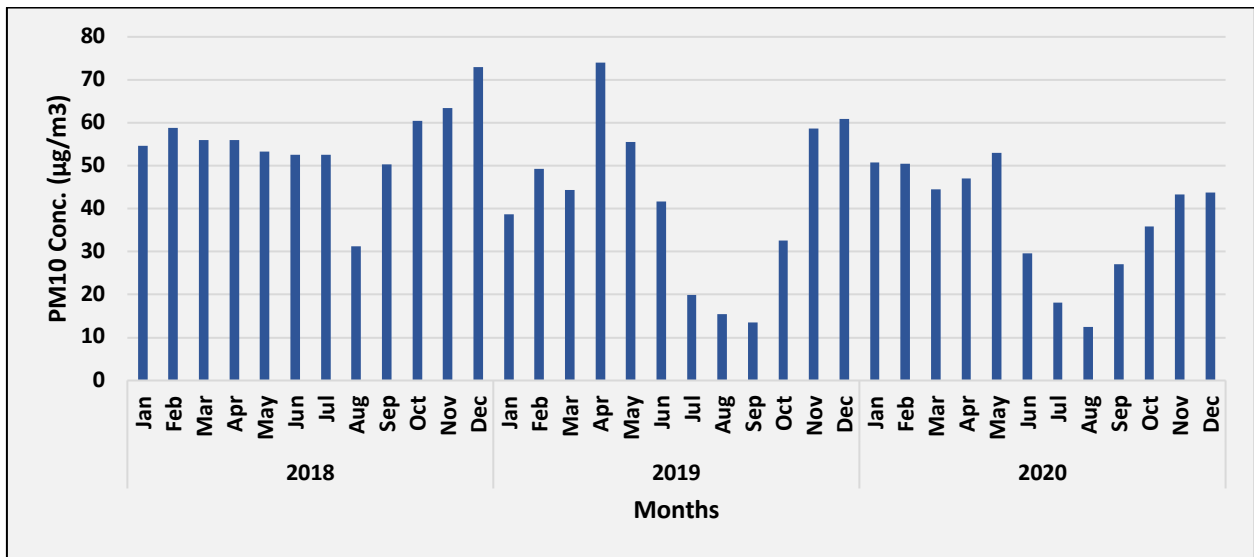


Fig. SIP31: Time series of monthly average PM₁₀ ambient air concentration in Sipat TPP (Ambient)

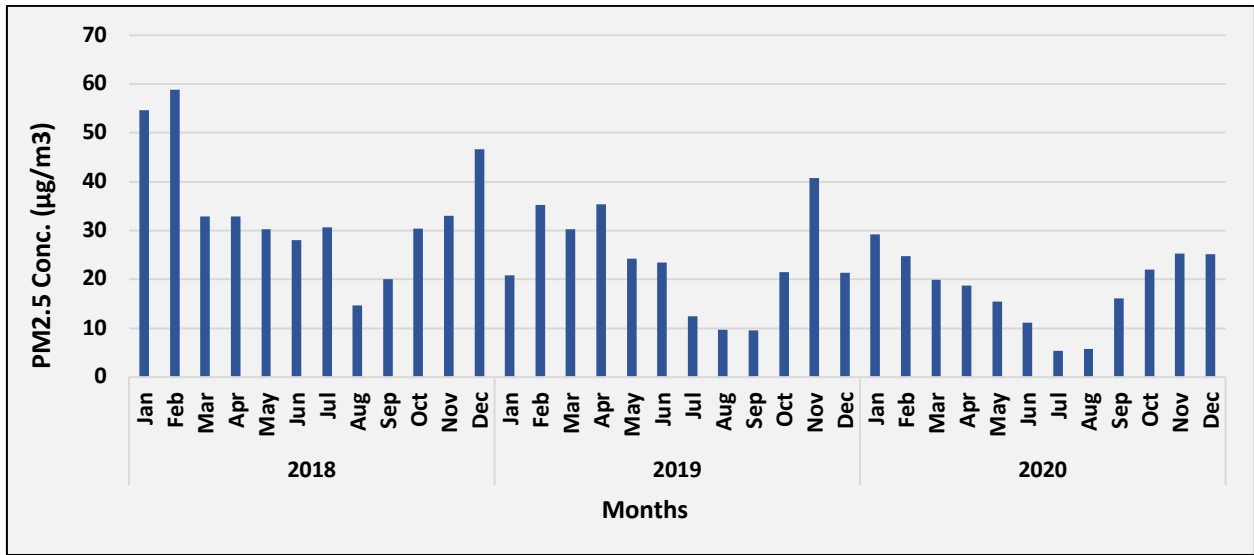


Fig. SIP32: Time series of monthly average $PM_{2.5}$ ambient air concentration in Sipat TPP (Ambient)

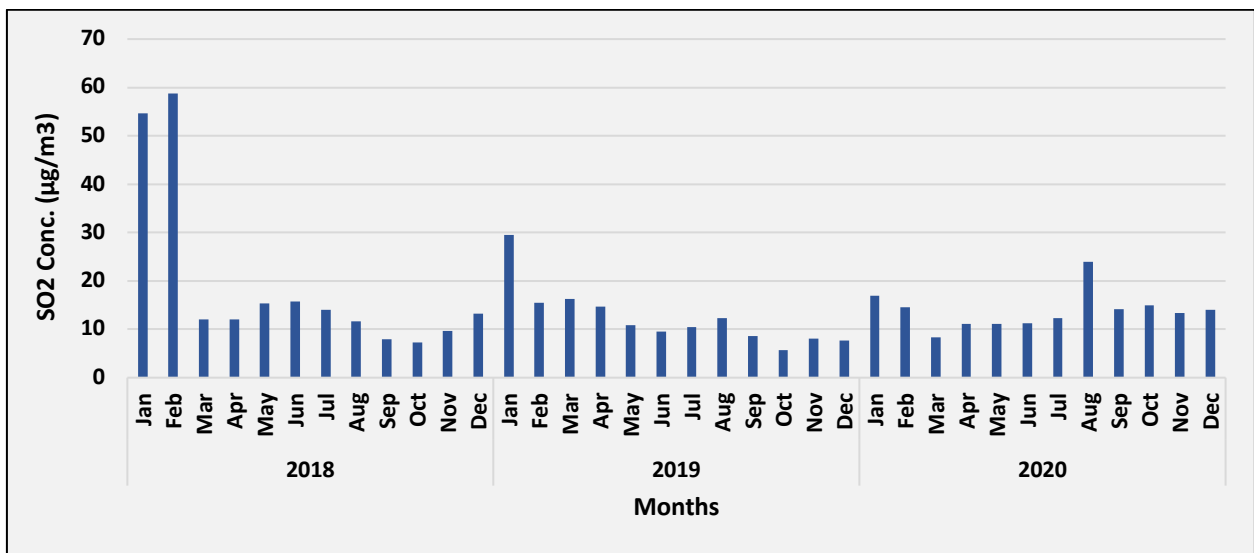


Fig. SIP33: Time series of monthly average SO_2 ambient air concentration in Sipat TPP (Ambient)

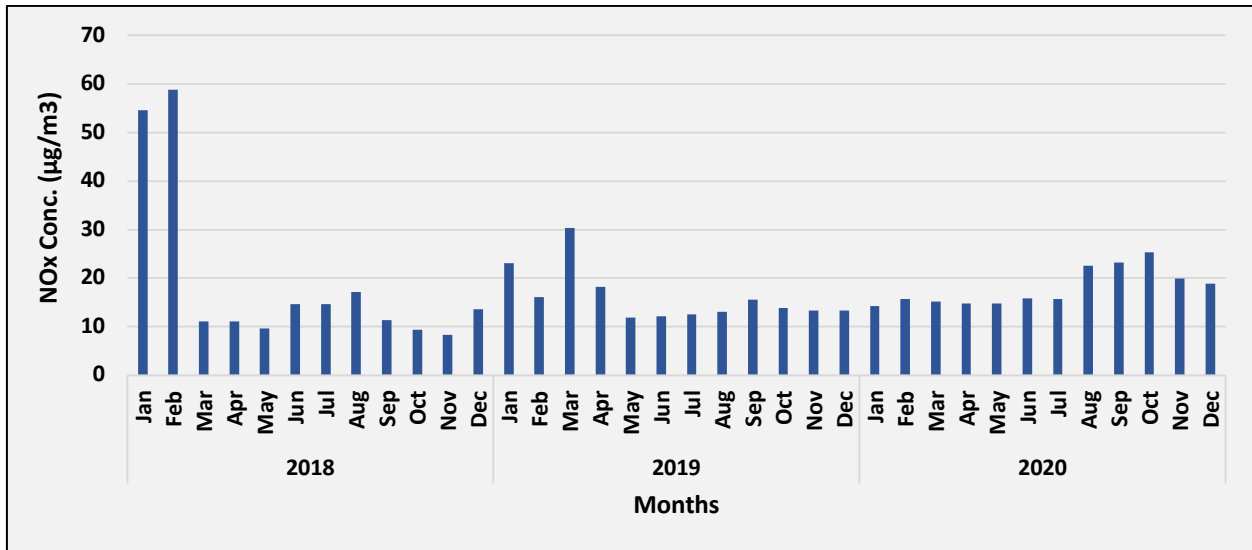


Fig. SIP34: Time series of monthly average NO_x ambient air concentration in Sipat TPP (Ambient)

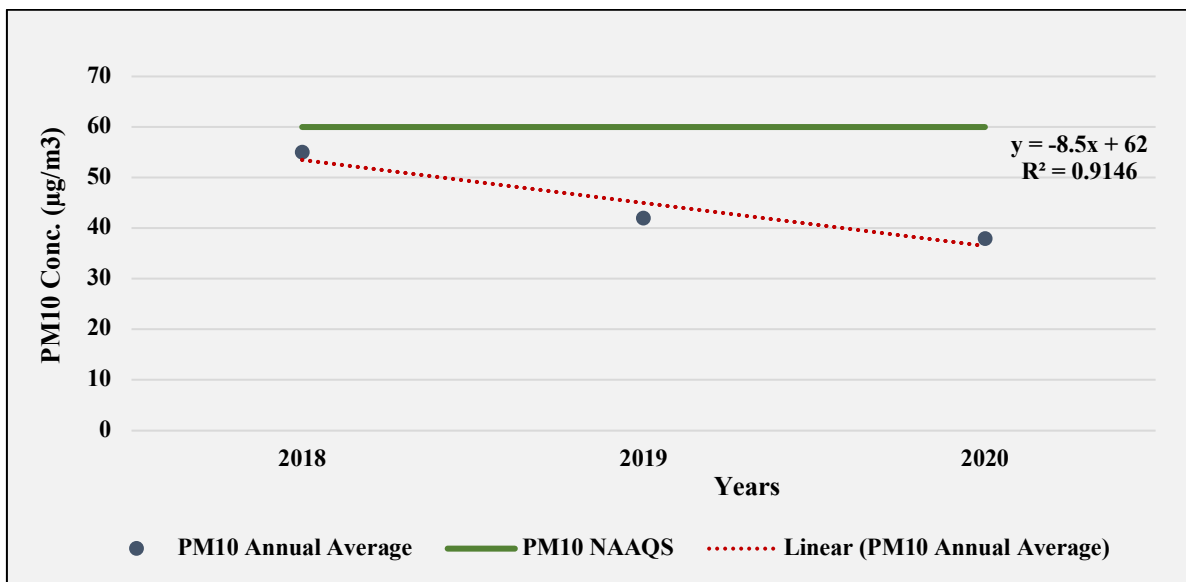


Fig. SIP35: Trend of annual mean PM₁₀ ambient air concentration in Sipat TPP (Ambient)

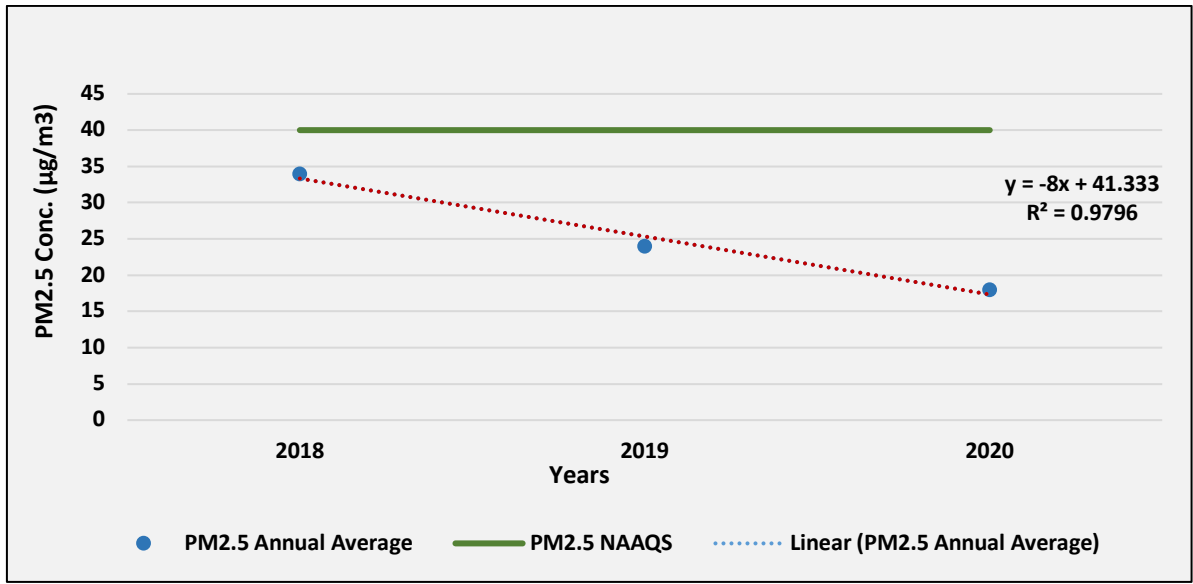


Fig. SIP36: Trend of annual mean PM_{2.5} ambient air concentration in Sipat TPP (Ambient)

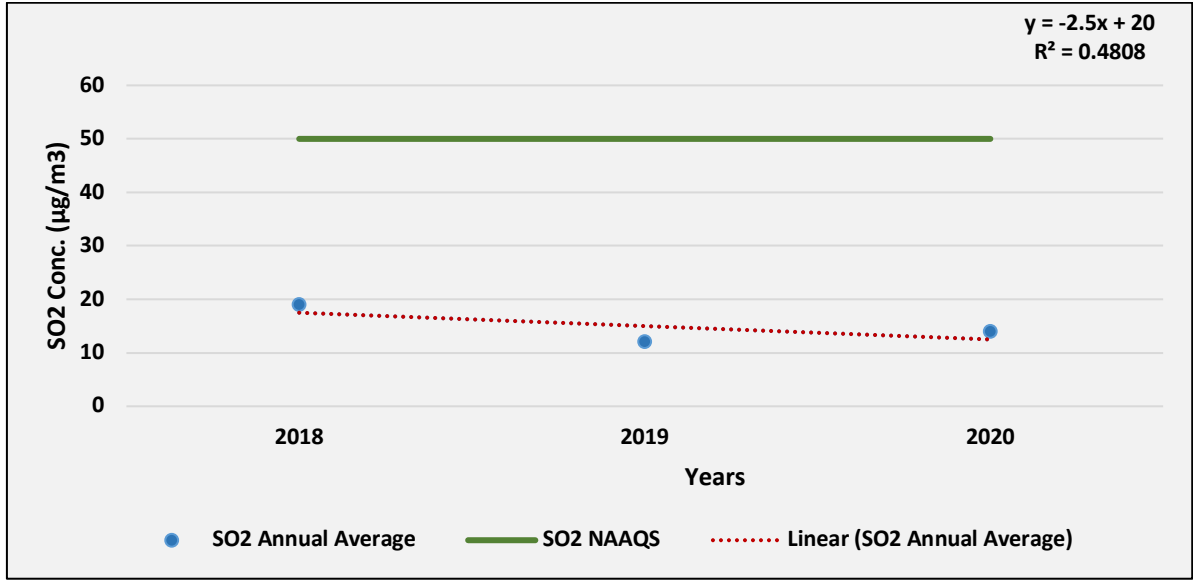


Fig. SIP37: Trend of annual mean SO₂ ambient air concentration in Sipat TPP (Ambient)

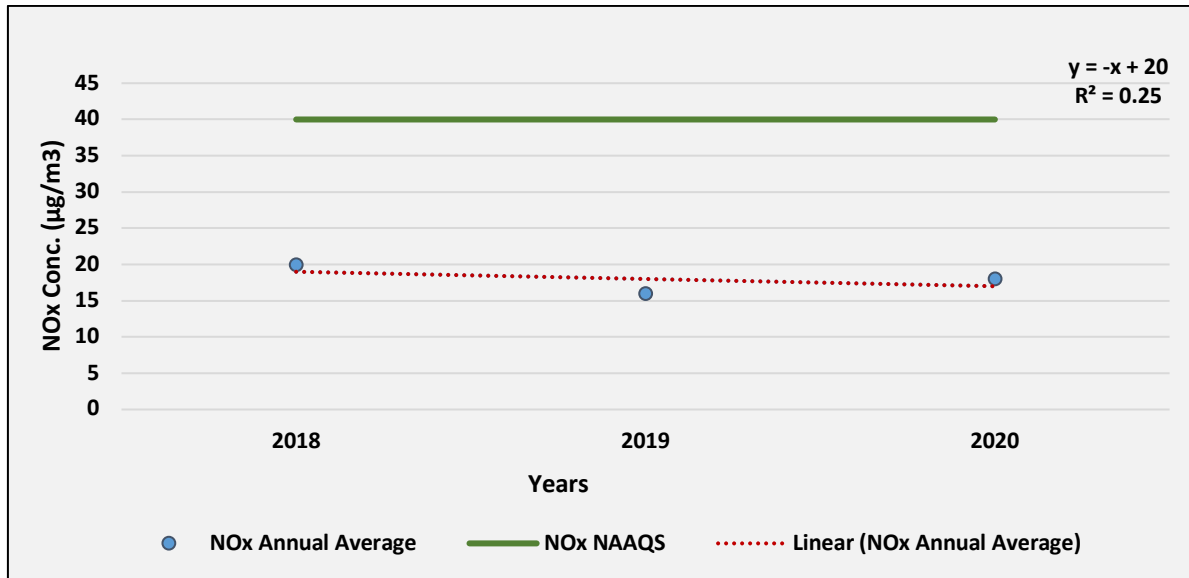


Fig. SIP38: Trend of annual mean NO_x ambient air concentration in Sipat TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

KORBA THERMAL POWER PLANT

Korba Super Thermal Power Plant is located at Jamnipali in Korba district in the Indian state of Chhattisgarh. The power plant is one of the coal-based power plants of National Thermal Power Corporation (NTPC). The coal for the power plant is sourced from Kusmunda and Gevra Mines. The source of water for the power plant is Hasdeo River.

A 500 MW, seventh unit expansion of the existing plant- Korba III power station - was commissioned in December 2010,[2] giving the station a total installed capacity of 2600 MW: four units of 500 MW each, and three units of 200 MW each.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. KOR1 – Fig. KOR50) for the last three years (2018-2020) using data provided by NTPC developer for Korba Power plant, Chhattisgarh, India.

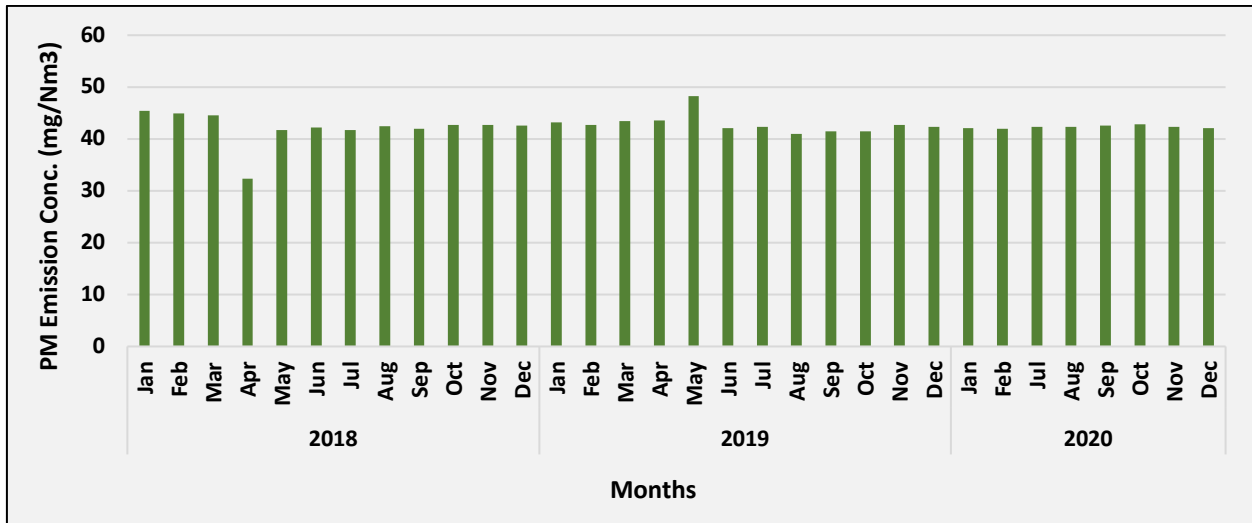


Fig. KOR1: Time series of monthly average PM Emission concentration in Korba TPP (Unit 1)

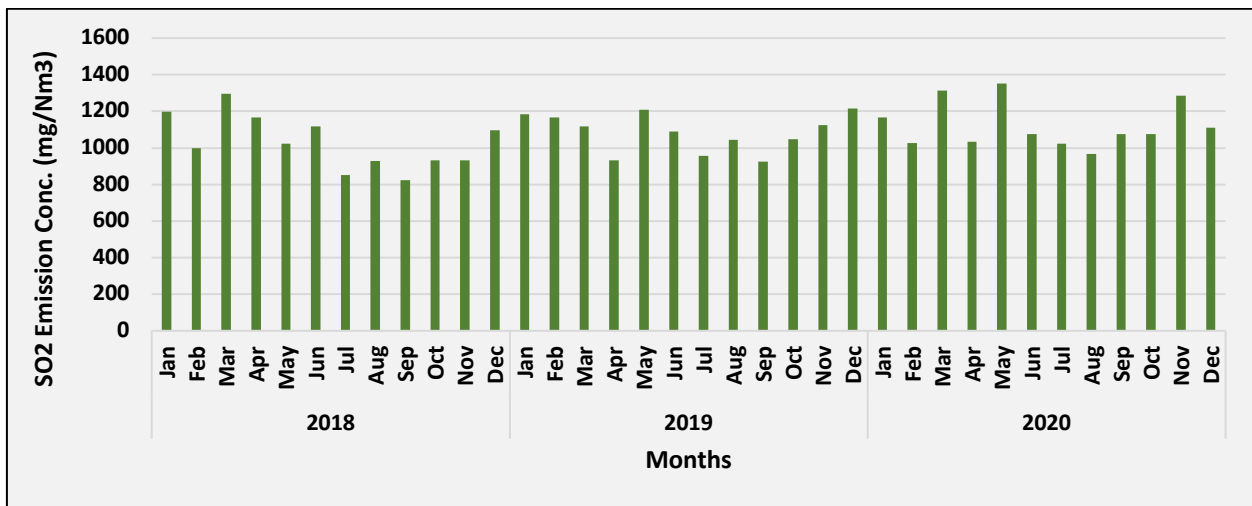


Fig. KOR2: Time series of monthly average SO₂ Emission concentration in Korba TPP (Unit 1)

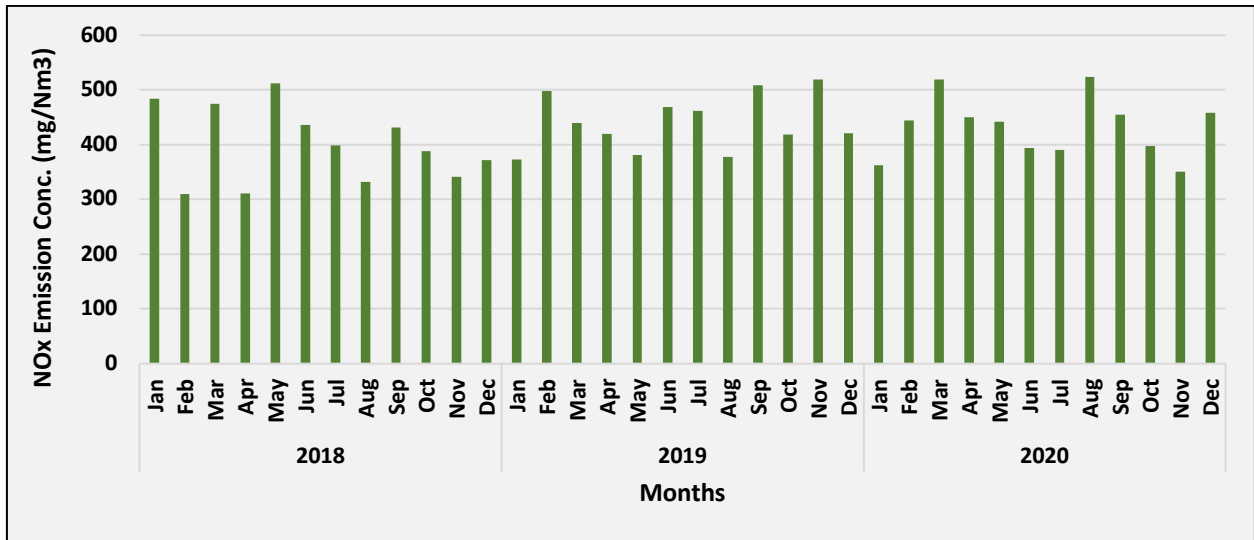


Fig. KOR3: Time series of monthly average NO_x Emission concentration in Korba TPP (Unit 1)

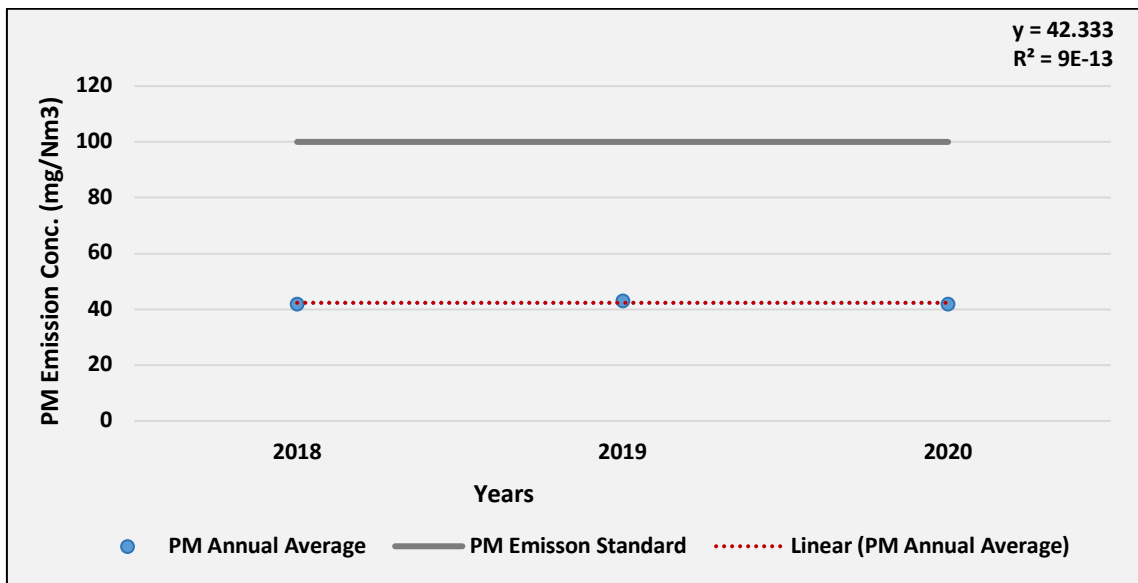


Fig. KOR4: Trend of annual mean PM Emission air concentration in Korba TPP (Unit 1)

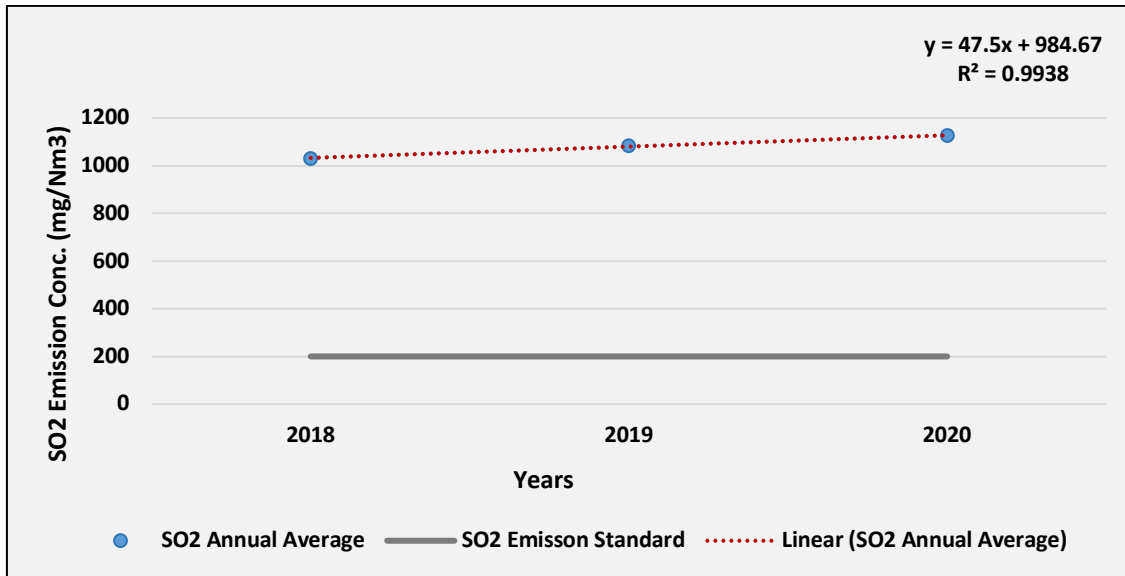


Fig. KOR5: Trend of annual mean SO₂ Emission air concentration in Korba TPP (Unit 1)

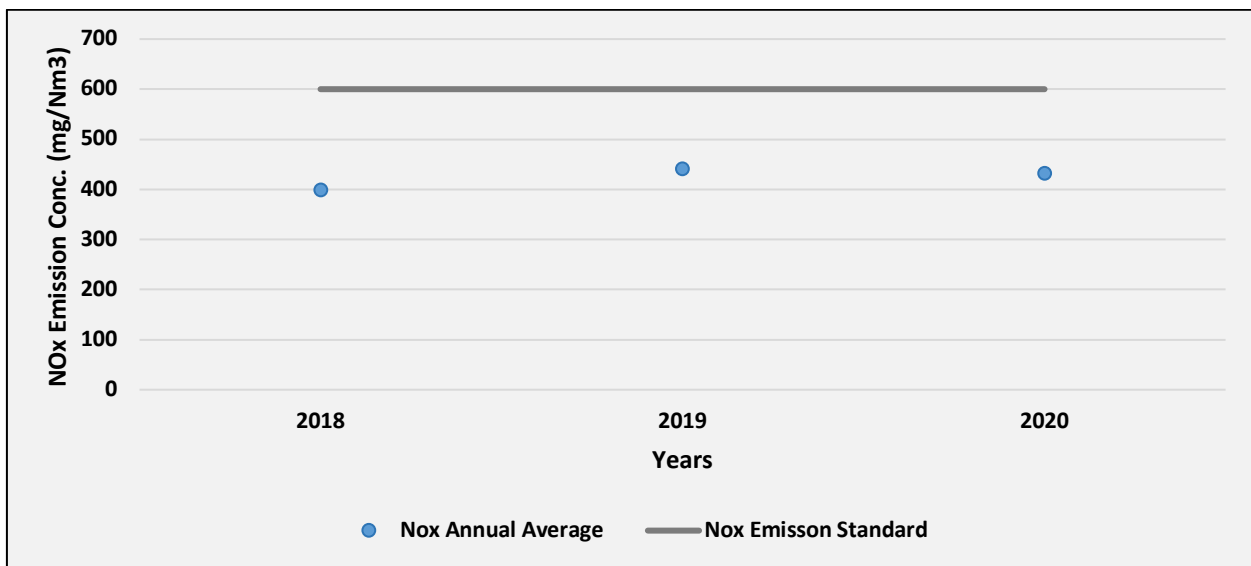


Fig. KOR6: Trend of annual mean NO_x Emission air concentration in Korba TPP (Unit 1)

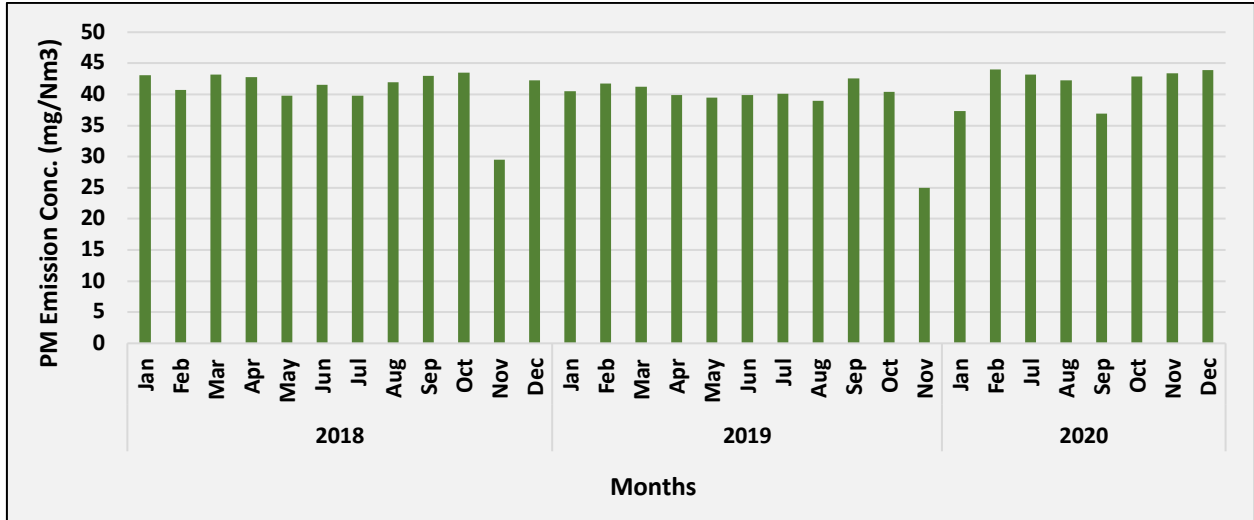


Fig. KOR7: Time series of monthly average PM Emission concentration in Korba TPP (Unit 2)

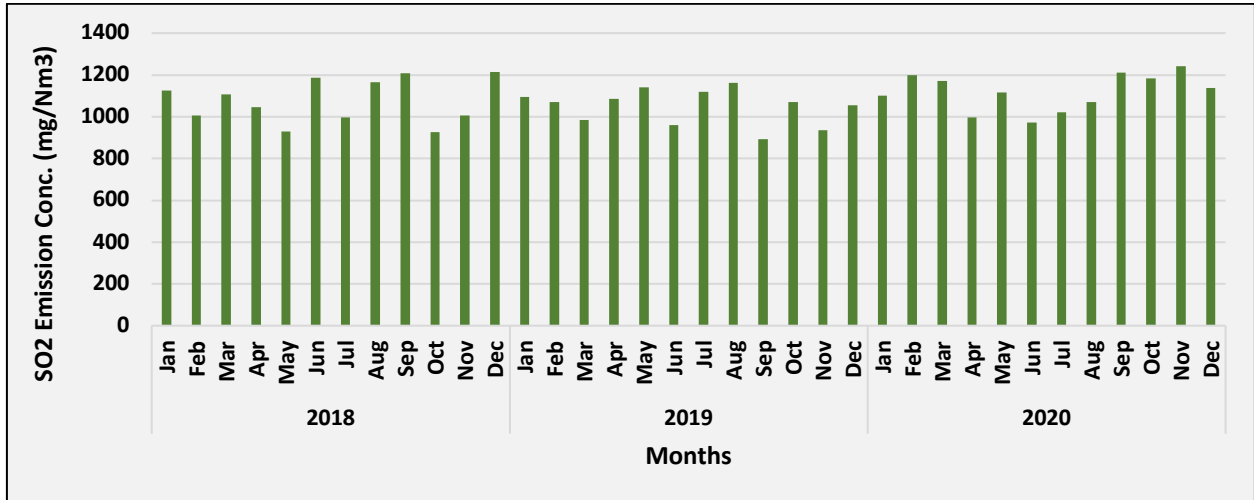


Fig. KOR8: Time series of monthly average SO₂ Emission concentration in Korba TPP (Unit 2)

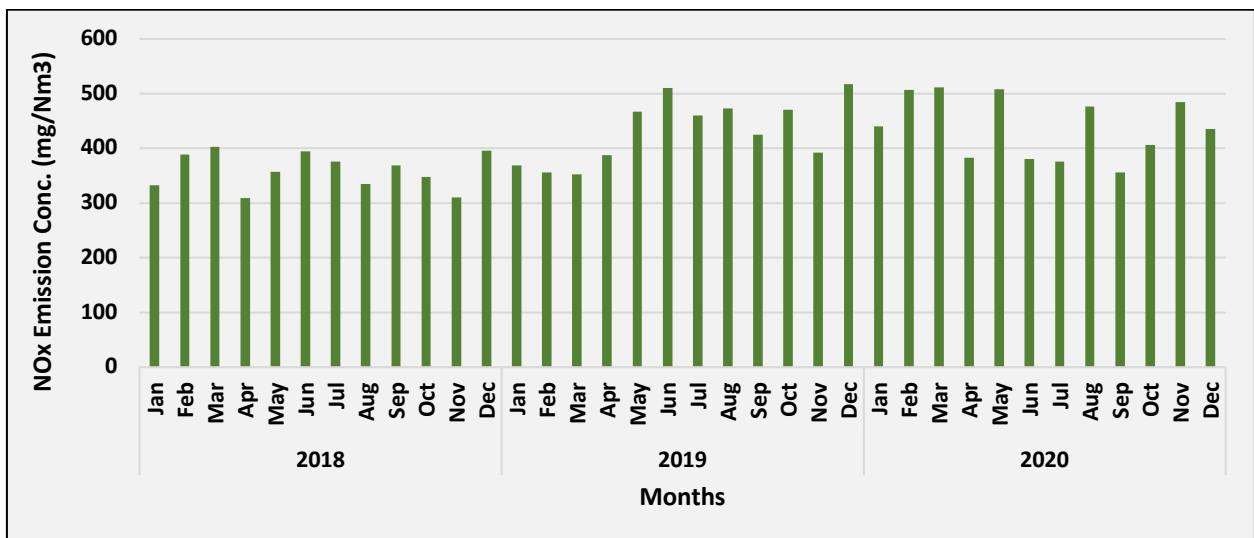


Fig. KOR9: Time series of monthly average NO_x Emission concentration in Korba TPP (Unit 2)

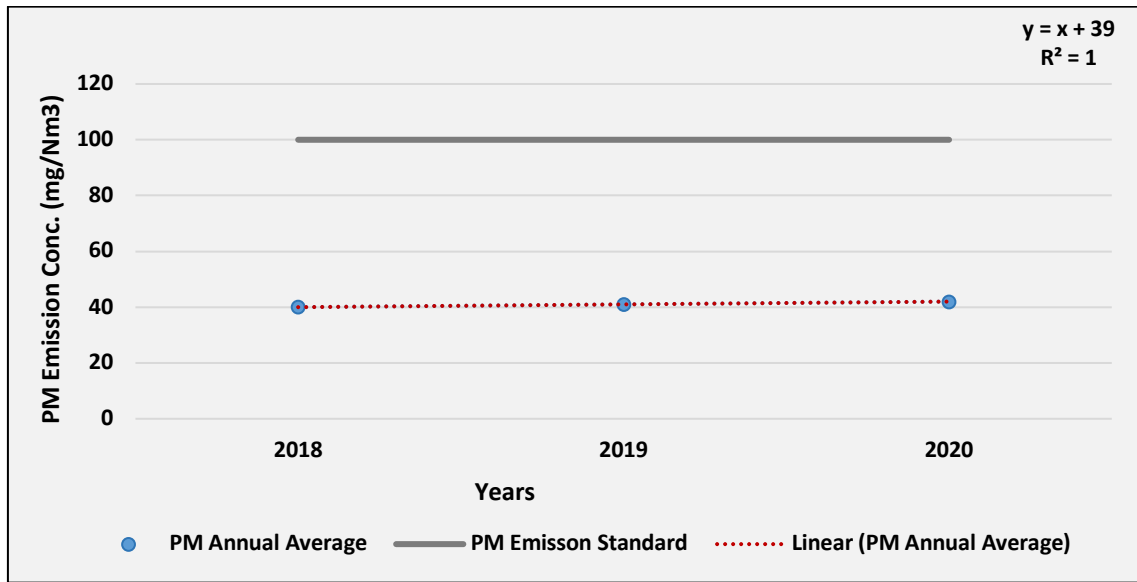


Fig. KOR10: Trend of annual mean PM Emission air concentration in Korba TPP (Unit 2)

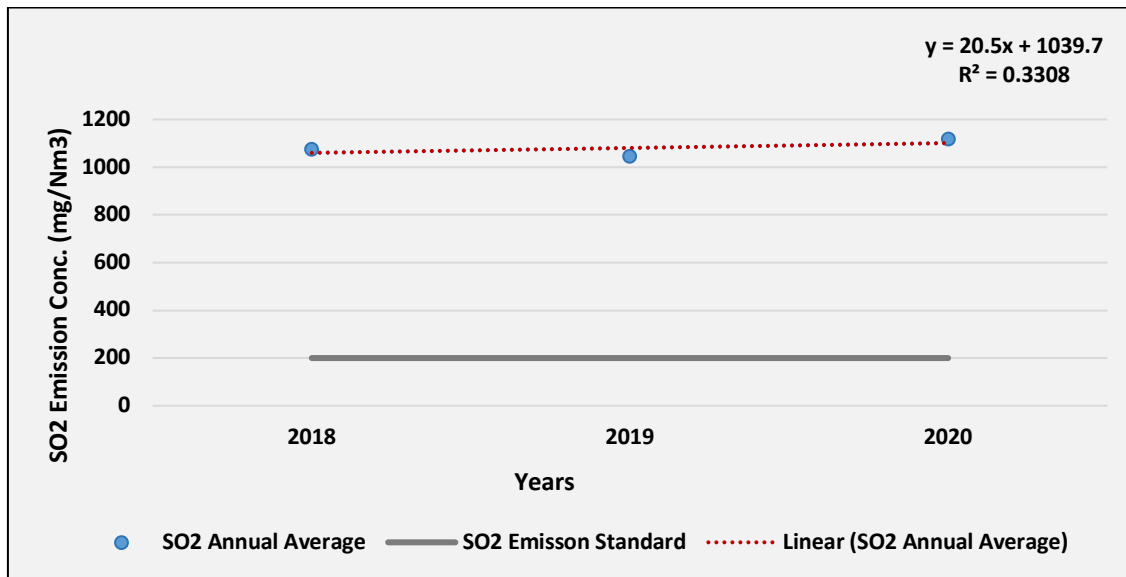


Fig. KOR11: Trend of annual mean SO₂ Emission air concentration in Korba TPP (Unit 2)

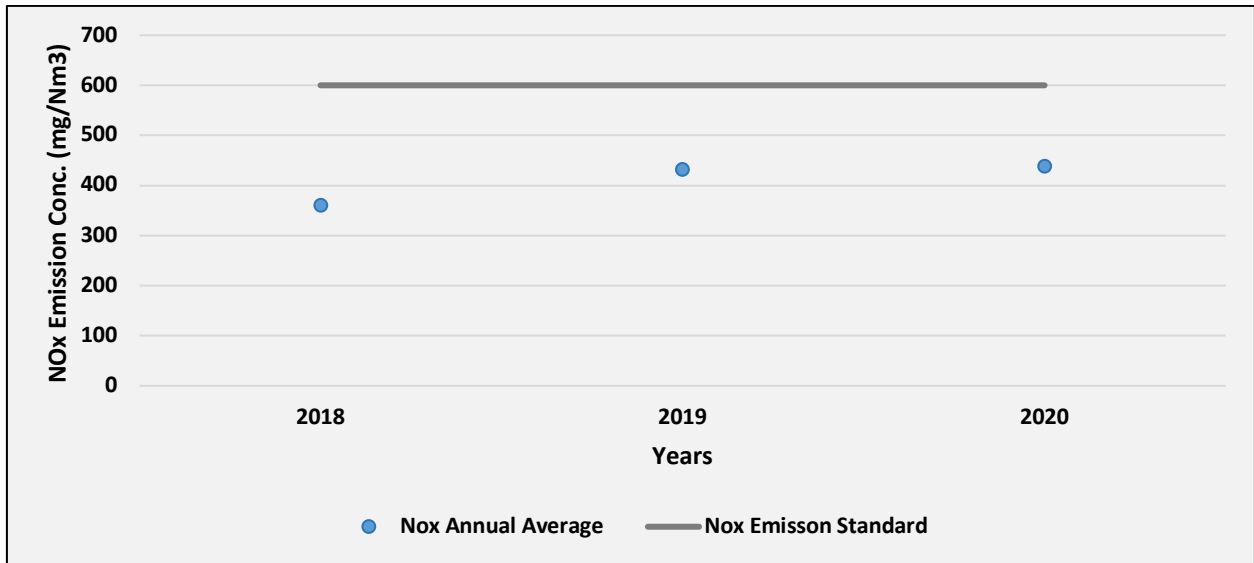


Fig. KOR12: Trend of annual mean NO_x Emission air concentration in Korba TPP (Unit 2)

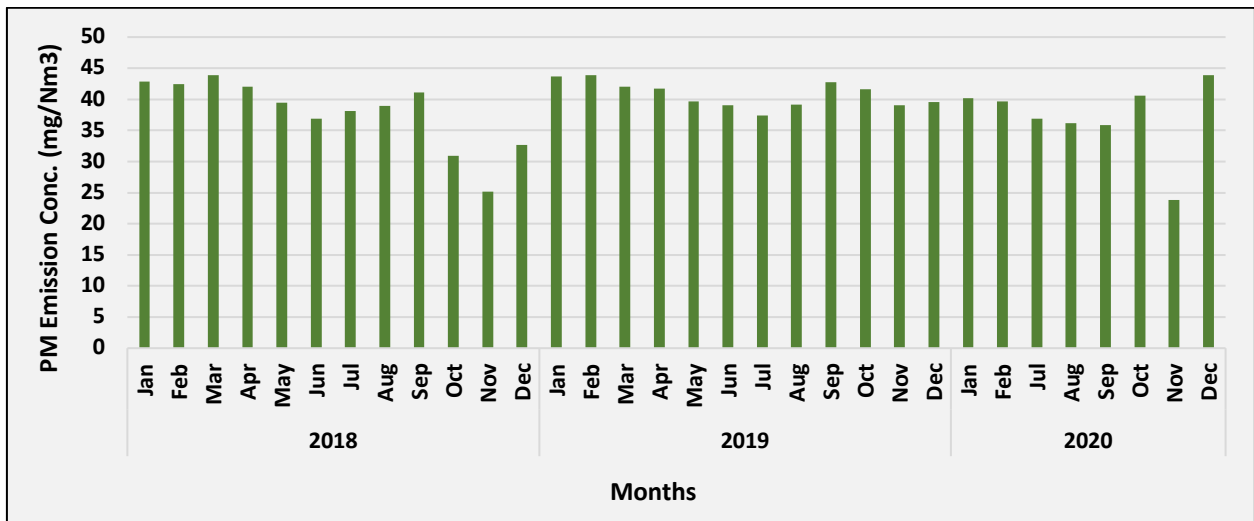


Fig. KOR13: Time series of monthly average PM Emission concentration in Korba TPP (Unit 3)

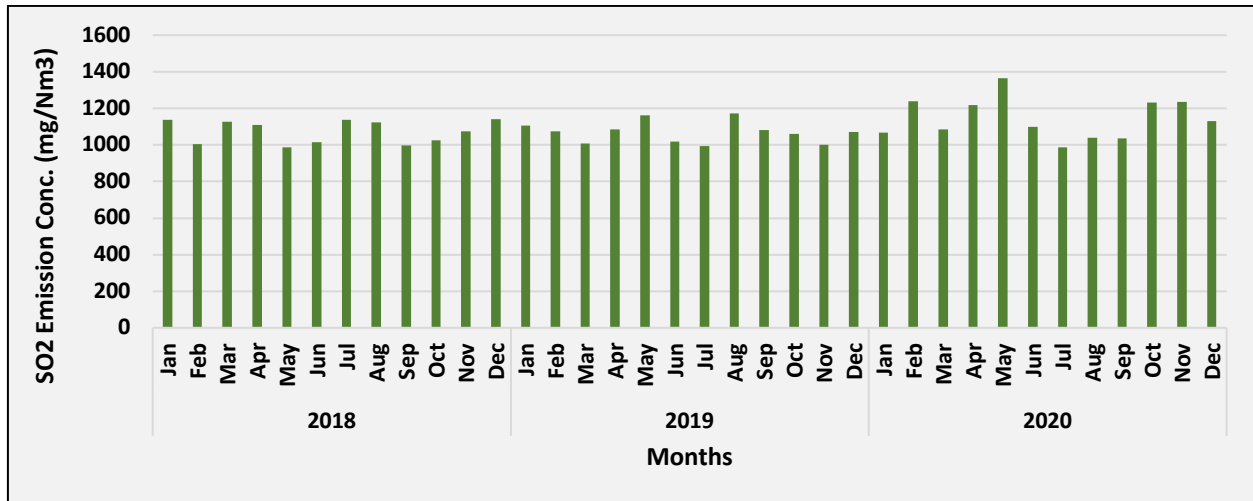


Fig. KOR14: Time series of monthly average SO₂ Emission concentration in Korba TPP (Unit 3)

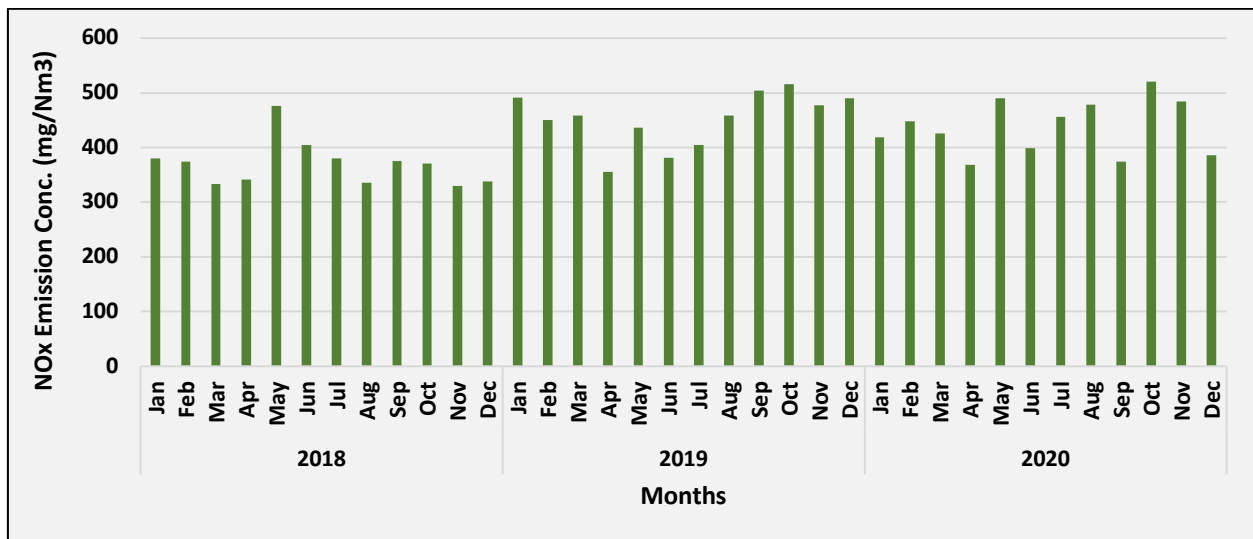


Fig. KOR15: Time series of monthly average NO_x Emission concentration in Korba TPP (Unit 3)

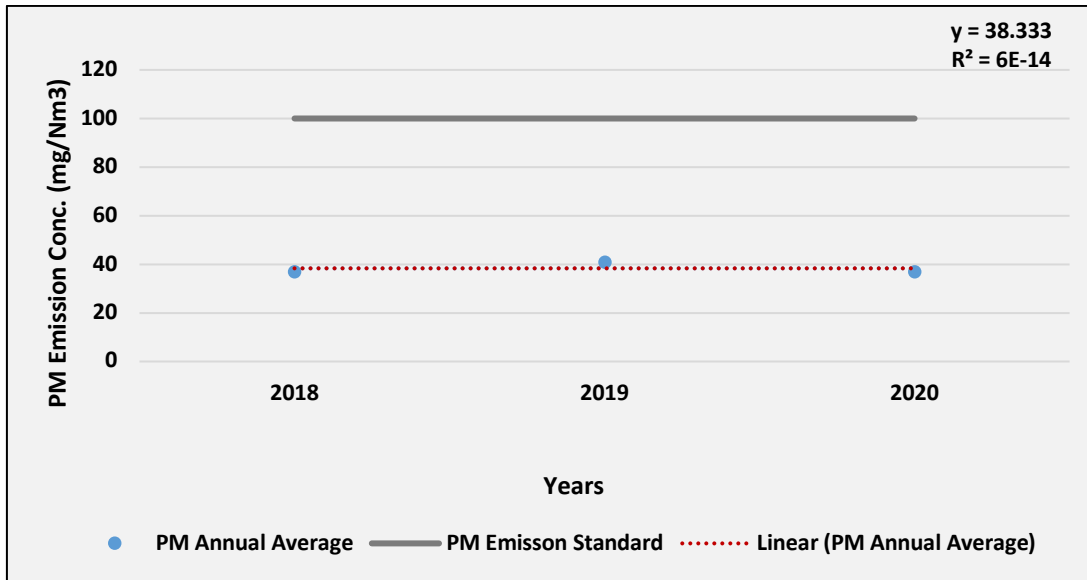


Fig. KOR16: Trend of annual mean PM Emission air concentration in Korba TPP (Unit 3)

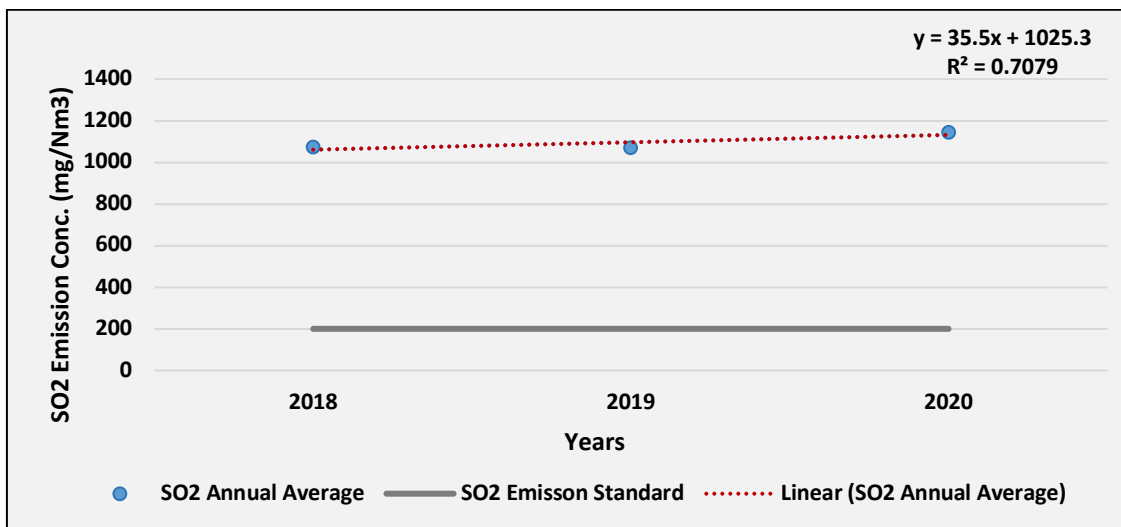


Fig. KOR17: Trend of annual mean SO₂ Emission air concentration in Korba TPP (Unit 3)

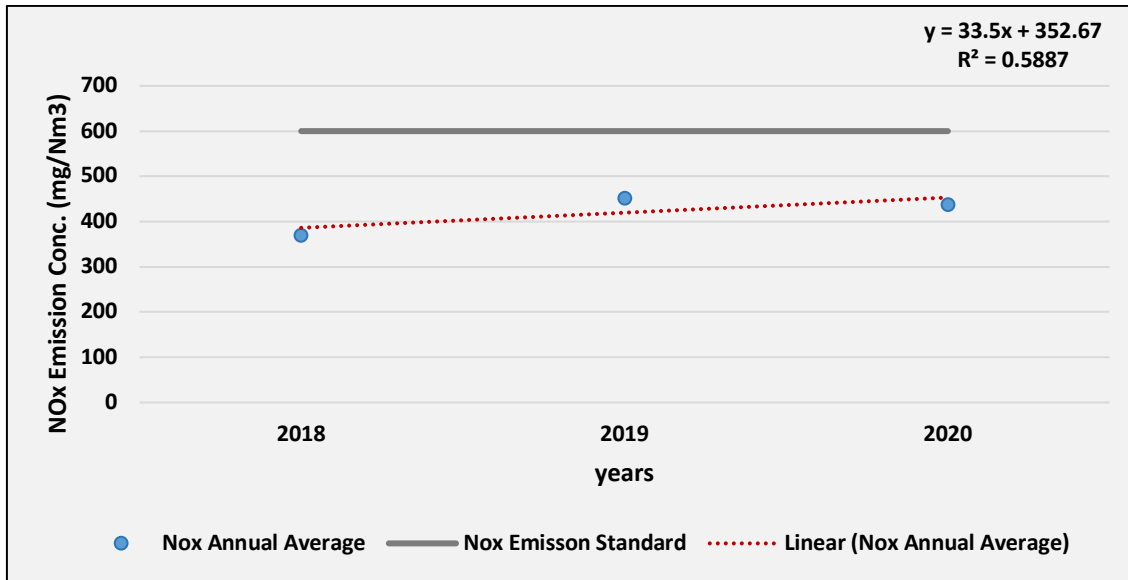


Fig. KOR18: Trend of annual mean NO_x Emission air concentration in Korba TPP (Unit 3)

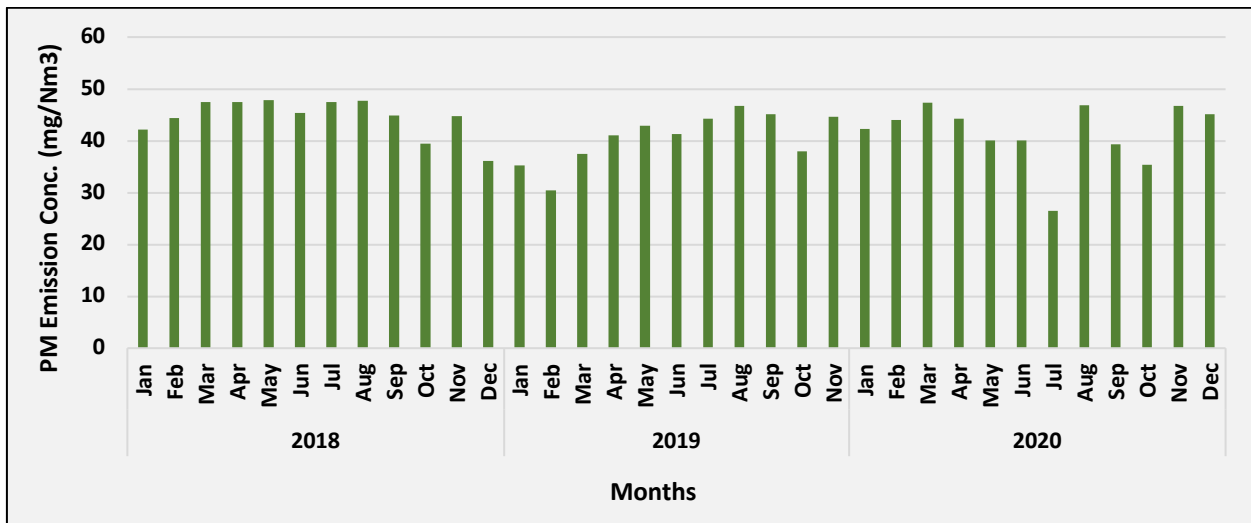


Fig. KOR19: Time series of monthly average PM Emission concentration in Korba TPP (Unit 4)

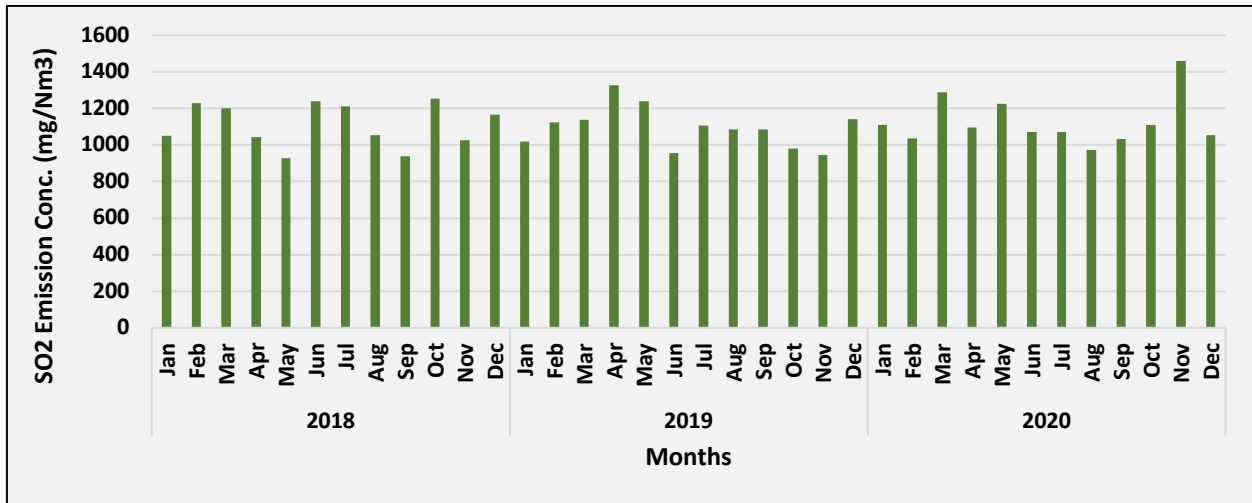


Fig. KOR20: Time series of monthly average SO₂ Emission concentration in Korba TPP (Unit 4)

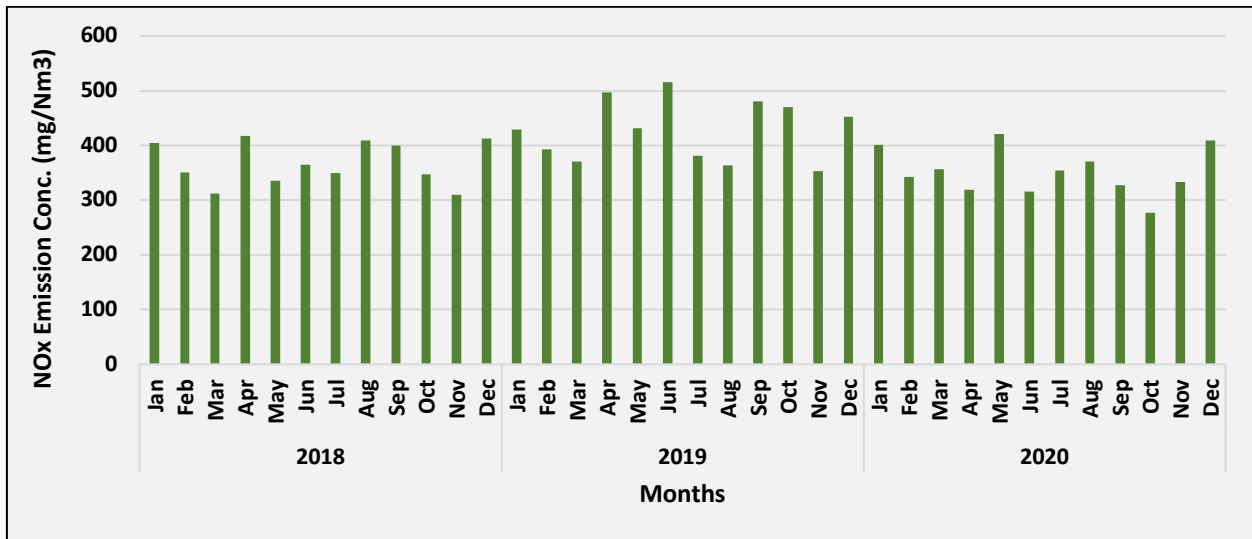


Fig. KOR21: Time series of monthly average NO_x Emission concentration in Korba TPP (Unit 4)

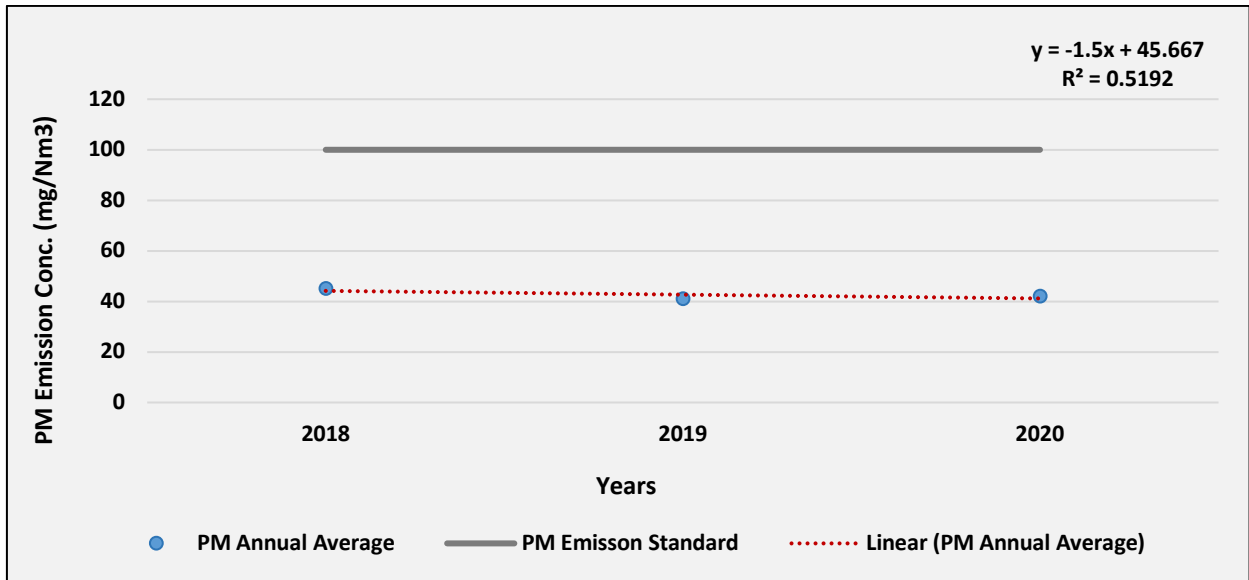


Fig. KOR22: Trend of annual mean PM Emission air concentration in Korba TPP (Unit 4)

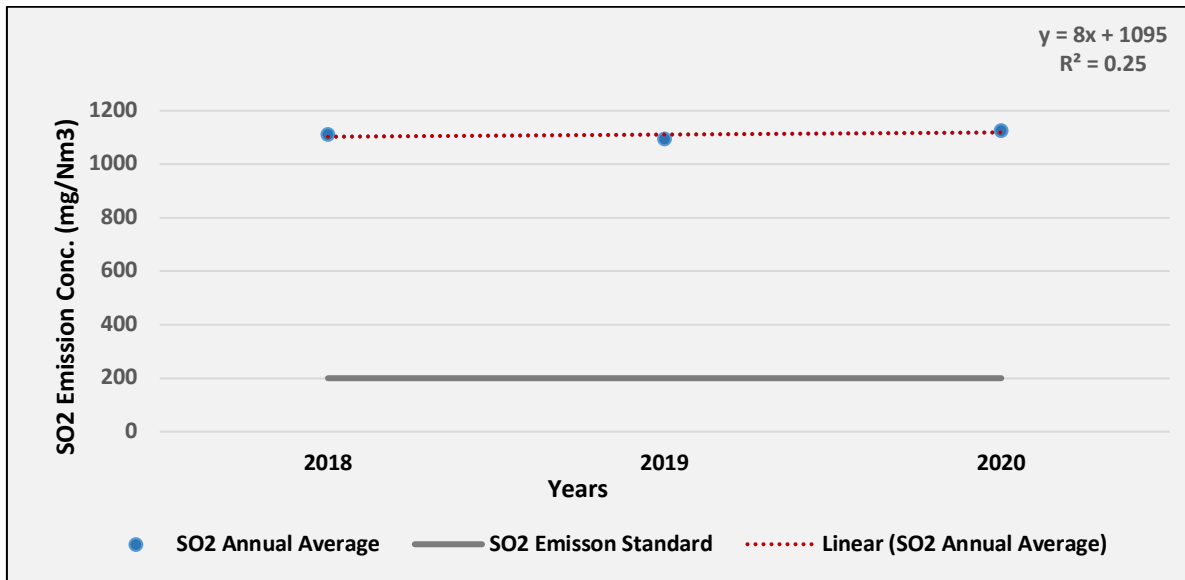


Fig. KOR23: Trend of annual mean SO₂ Emission air concentration in Korba TPP (Unit 4)

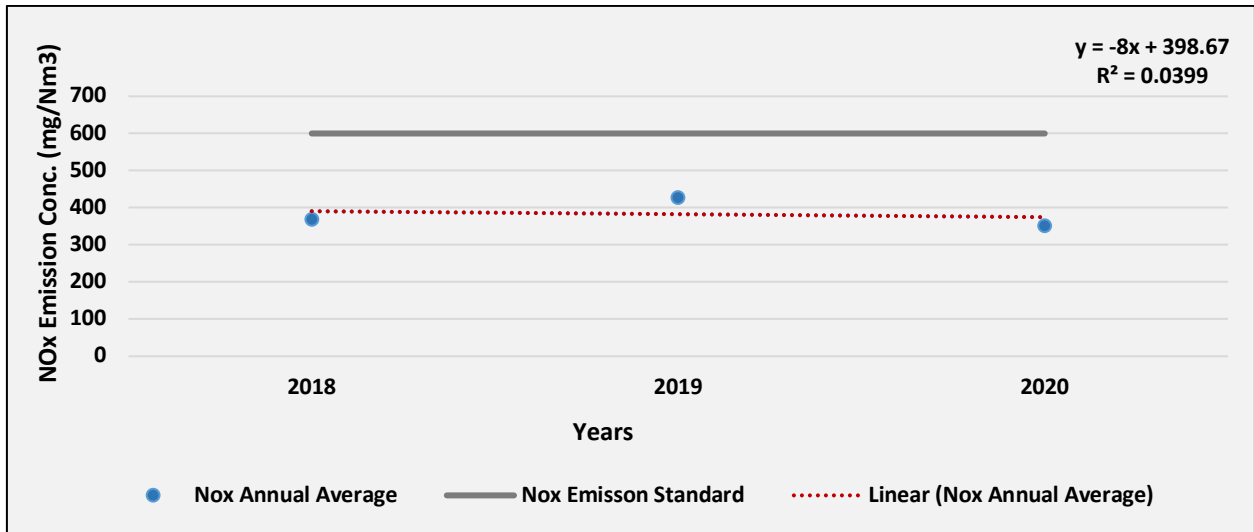


Fig. KOR24: Trend of annual mean NO_x Emission air concentration in Korba TPP (Unit 4)

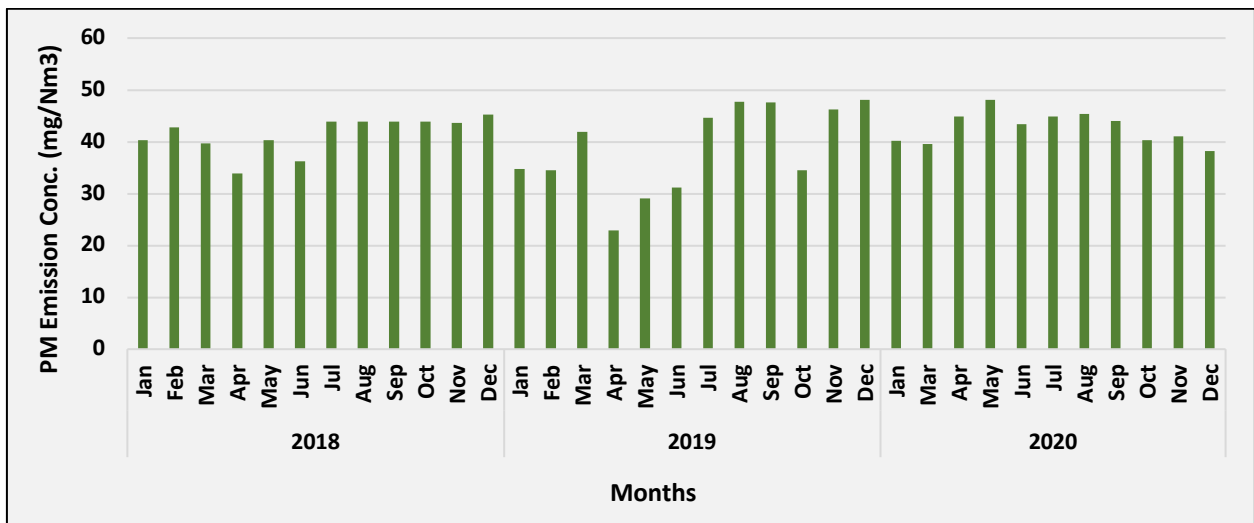


Fig. KOR25: Time series of monthly average PM Emission concentration in Korba TPP (Unit 5)

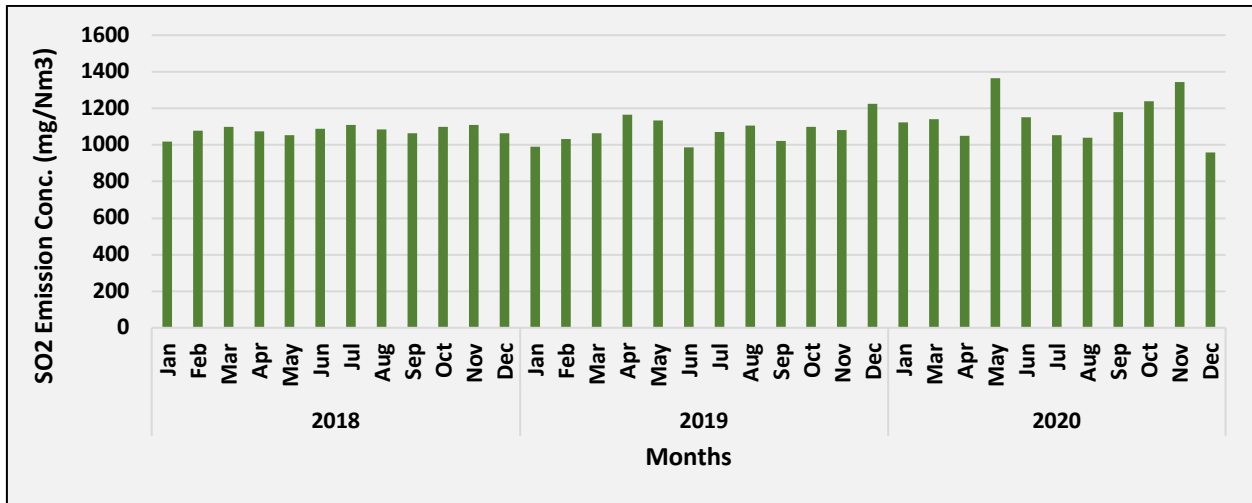


Fig. KOR26: Time series of monthly average SO₂ Emission concentration in Korba TPP (Unit 5)

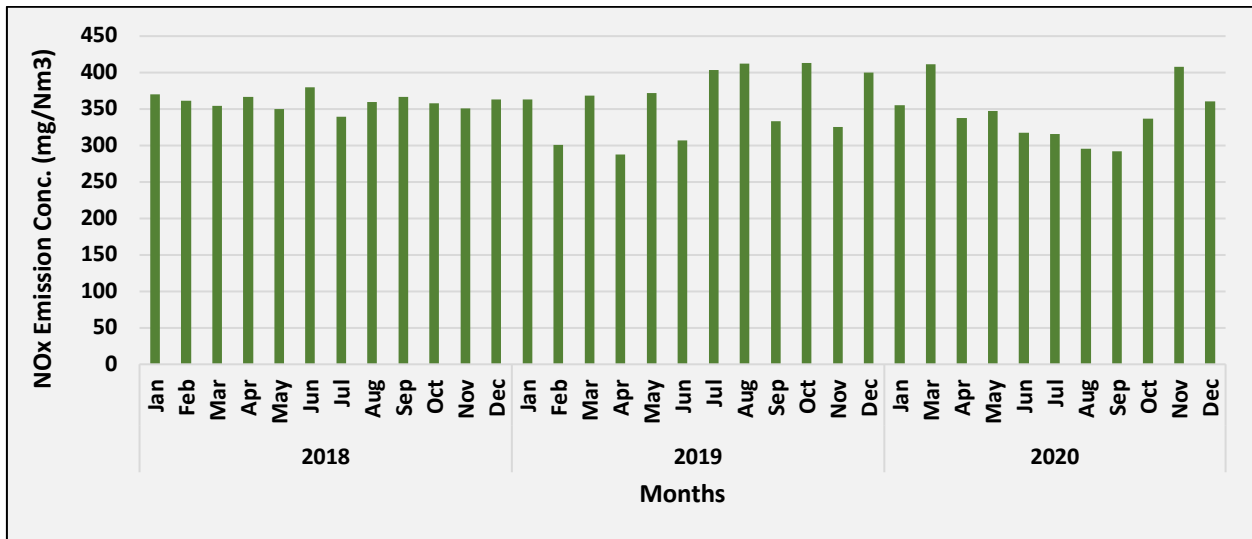


Fig. KOR27: Time series of monthly average NO_x Emission concentration in Korba TPP (Unit 5)

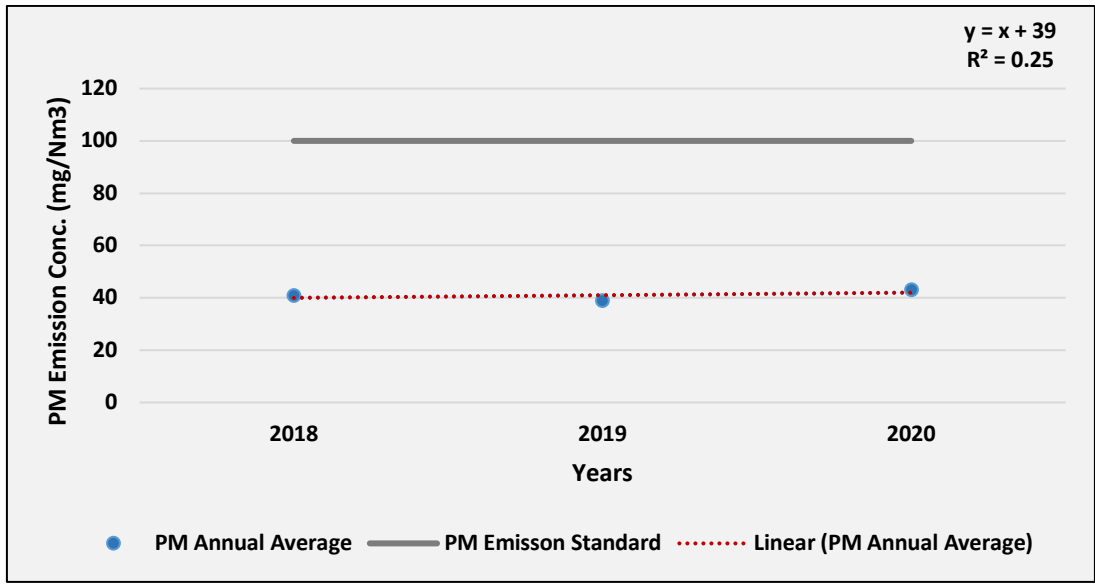


Fig. KOR28: Trend of annual mean PM Emission air concentration in Korba TPP (Unit 5)

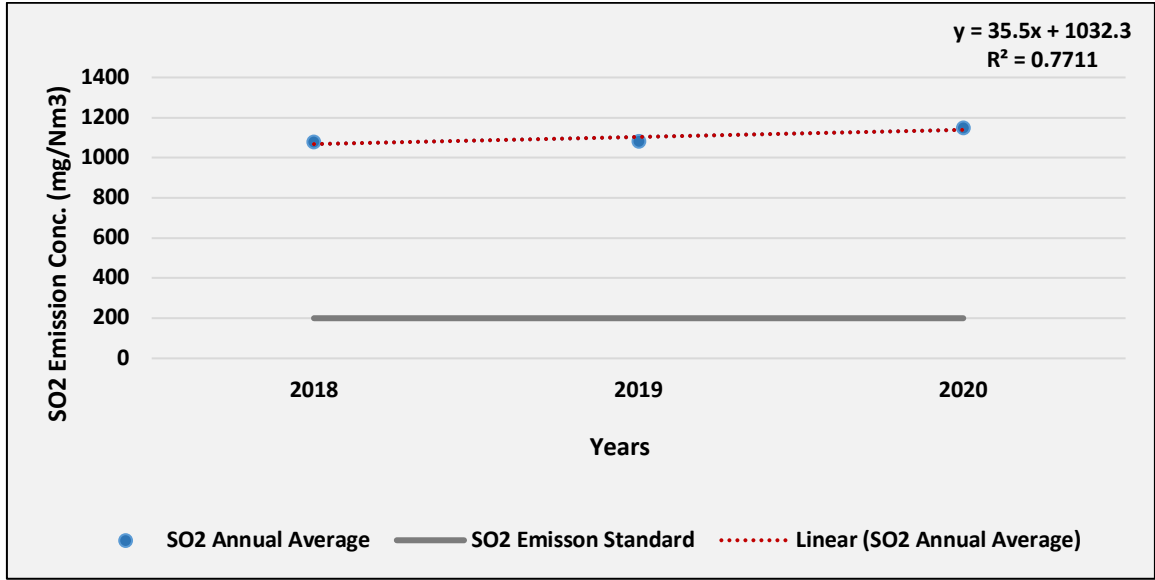


Fig. KOR29: Trend of annual mean SO₂ Emission air concentration in Korba TPP (Unit 5)

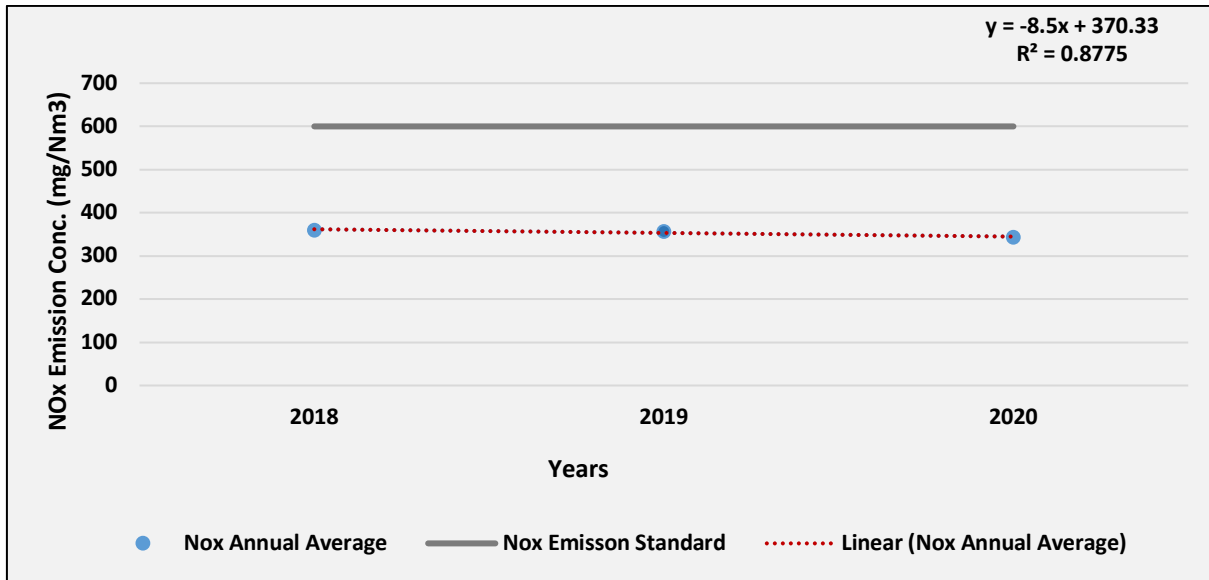


Fig. KOR30: Trend of annual mean NO_x Emission air concentration in Korba TPP (Unit 5)

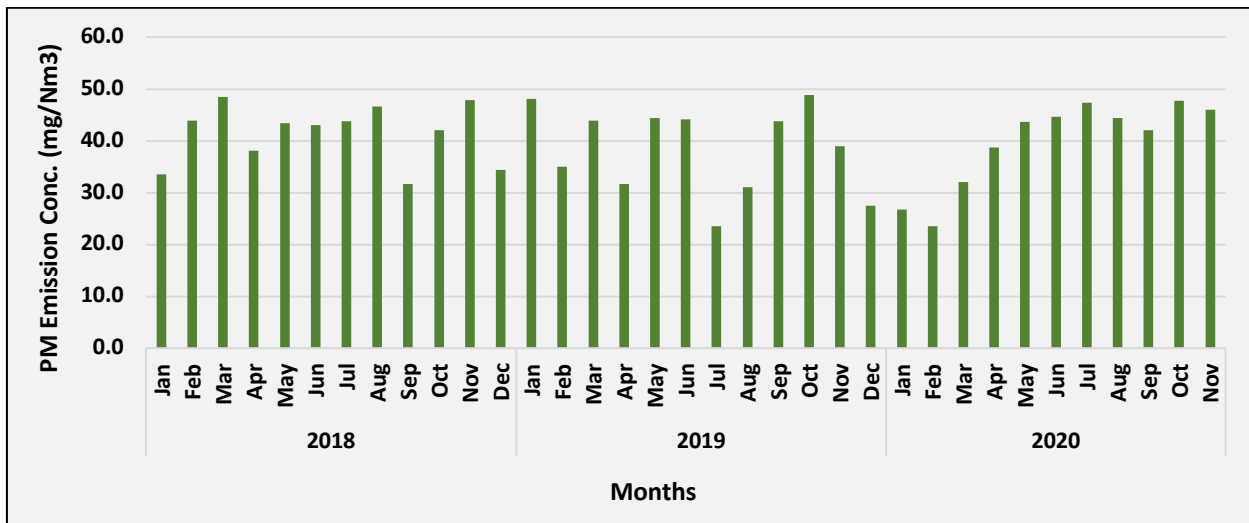


Fig. KOR31: Time series of monthly average PM Emission concentration in Korba TPP (Unit 6)

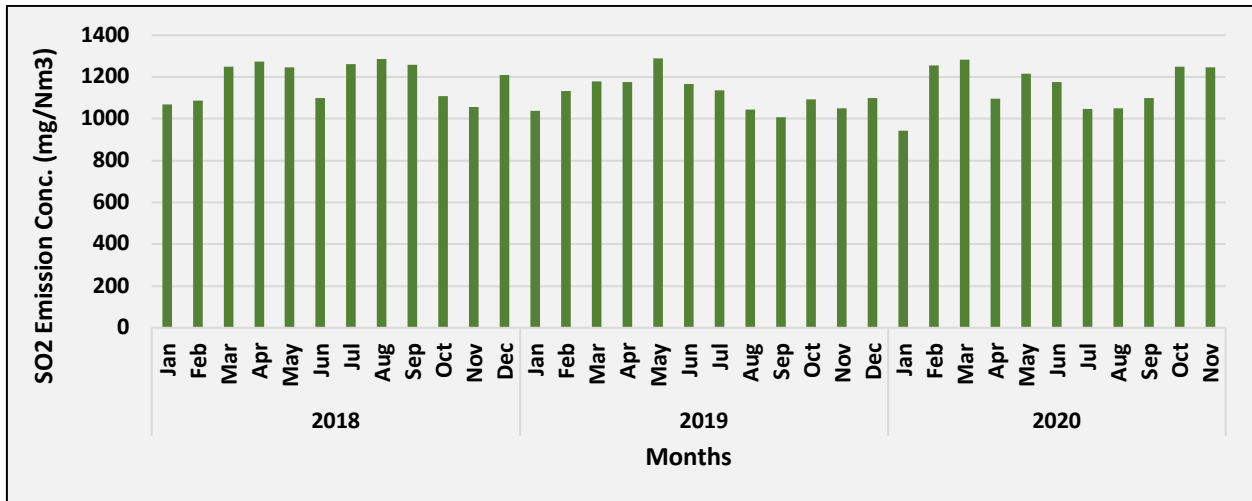


Fig. KOR32: Time series of monthly average SO₂ Emission concentration in Korba TPP (Unit 6)

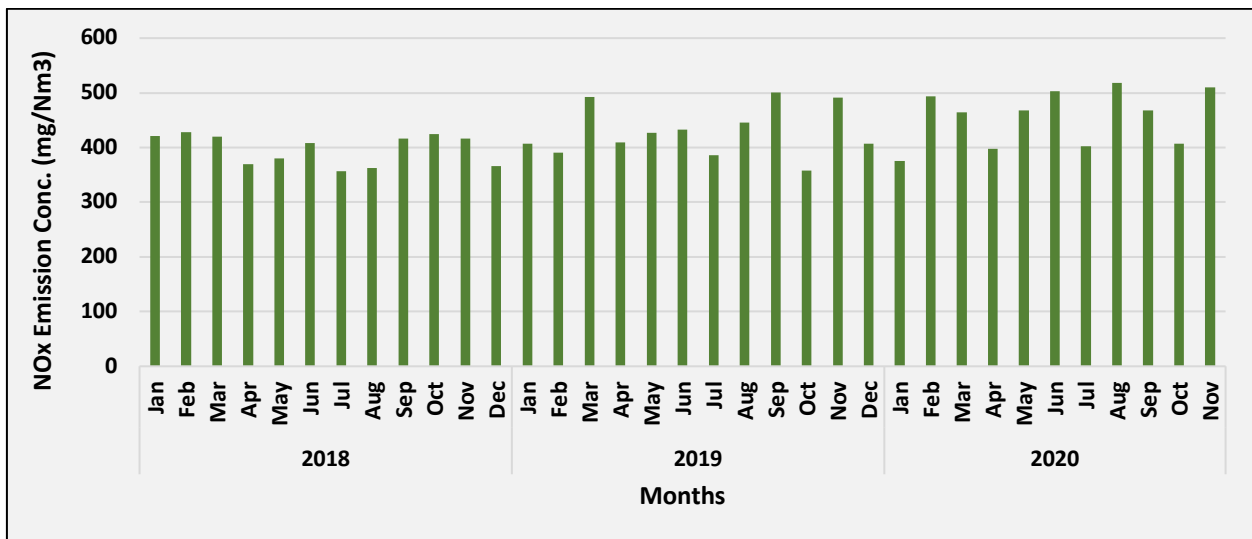


Fig. KOR33: Time series of monthly average NO_x Emission concentration in Korba TPP (Unit 6)

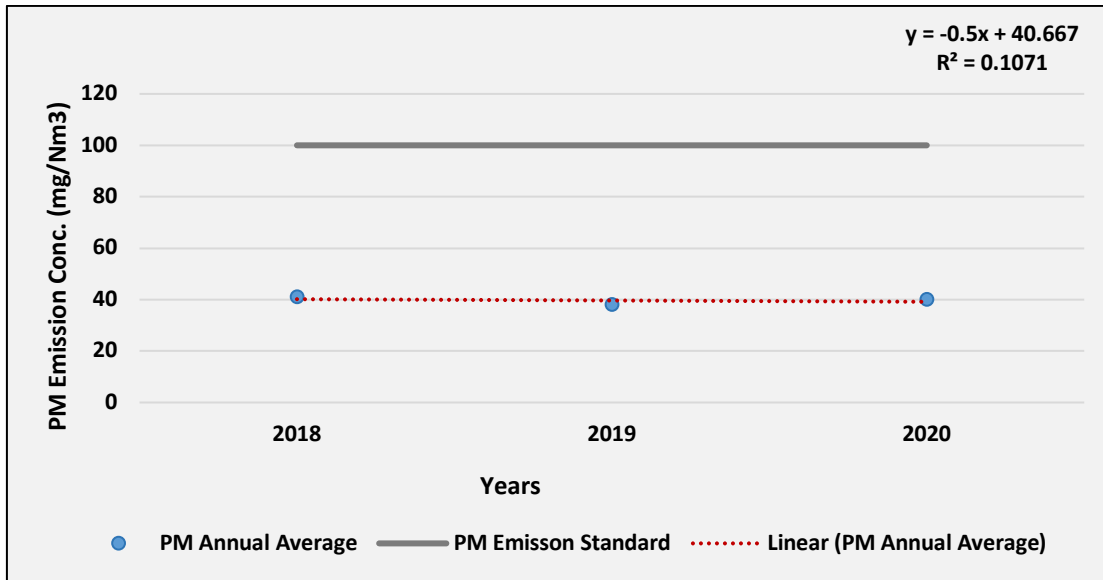


Fig. KOR34: Trend of annual mean PM Emission air concentration in Korba TPP (Unit 6)

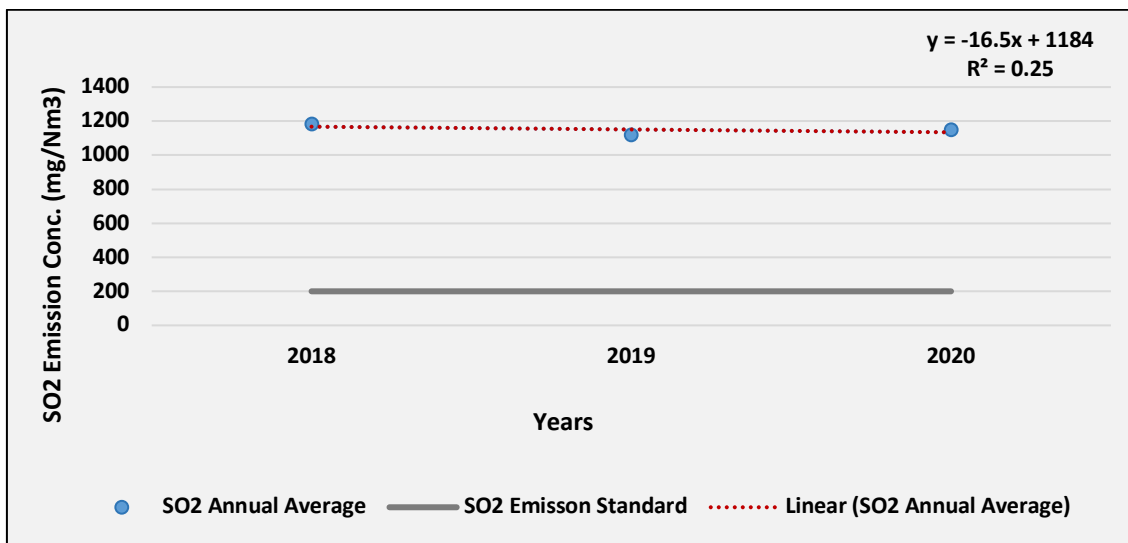


Fig. KOR35: Trend of annual mean SO₂ Emission air concentration in Korba TPP (Unit 6)

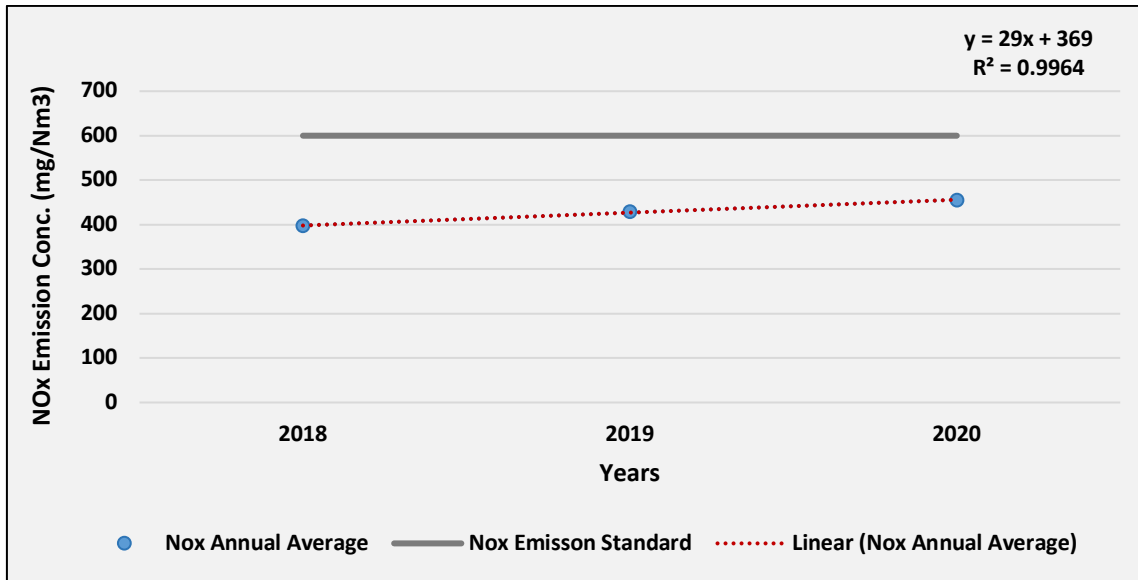


Fig. KOR36: Trend of annual mean NO_x Emission air concentration in Korba TPP (Unit 6)

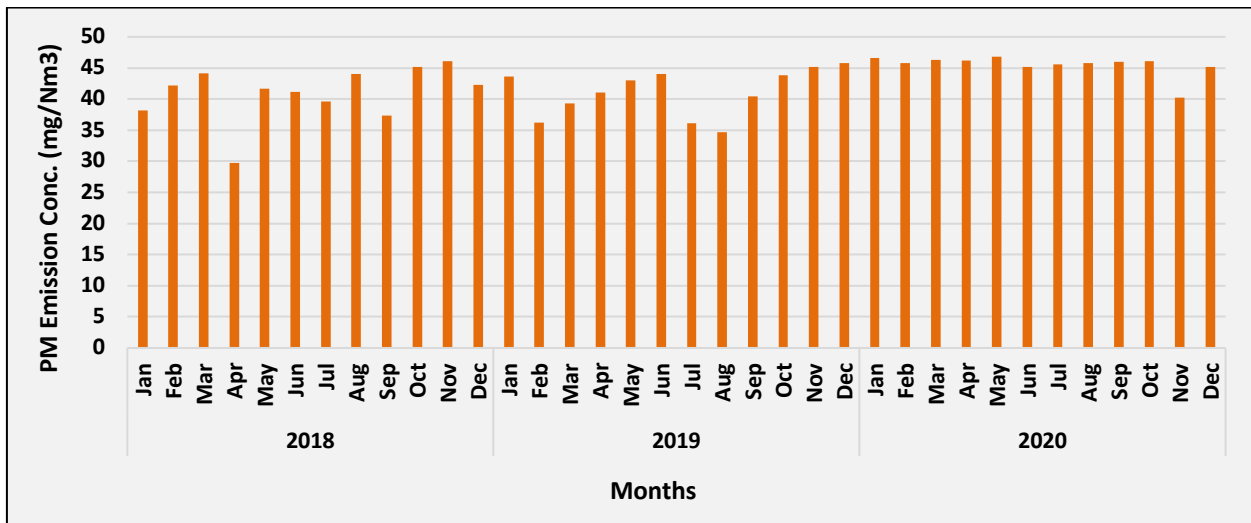


Fig. KOR37: Time series of monthly average PM Emission concentration in Korba TPP (Unit 7)

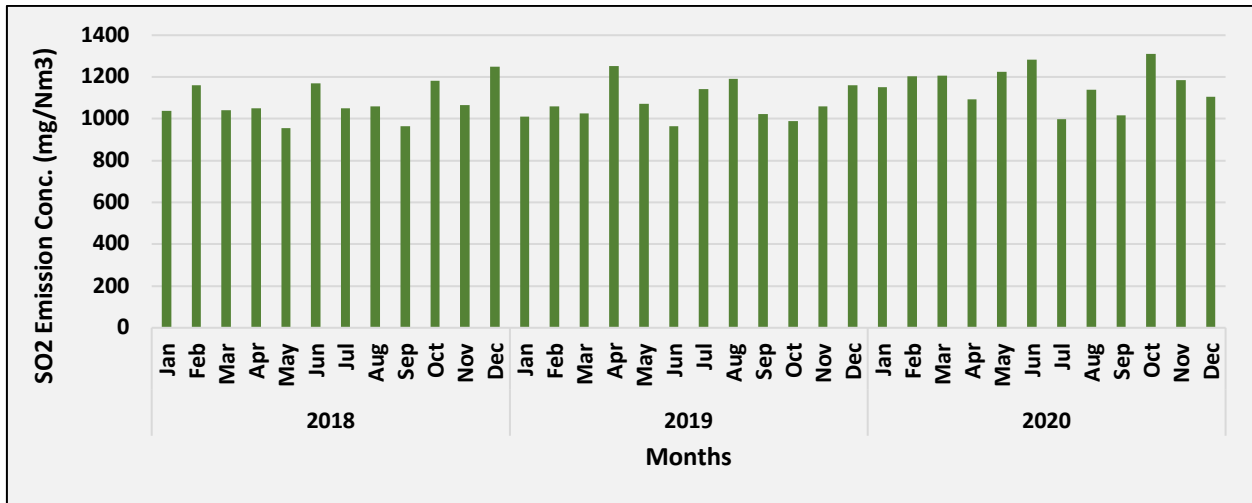


Fig. KOR38: Time series of monthly average SO₂ Emission concentration in Korba TPP (Unit 7)

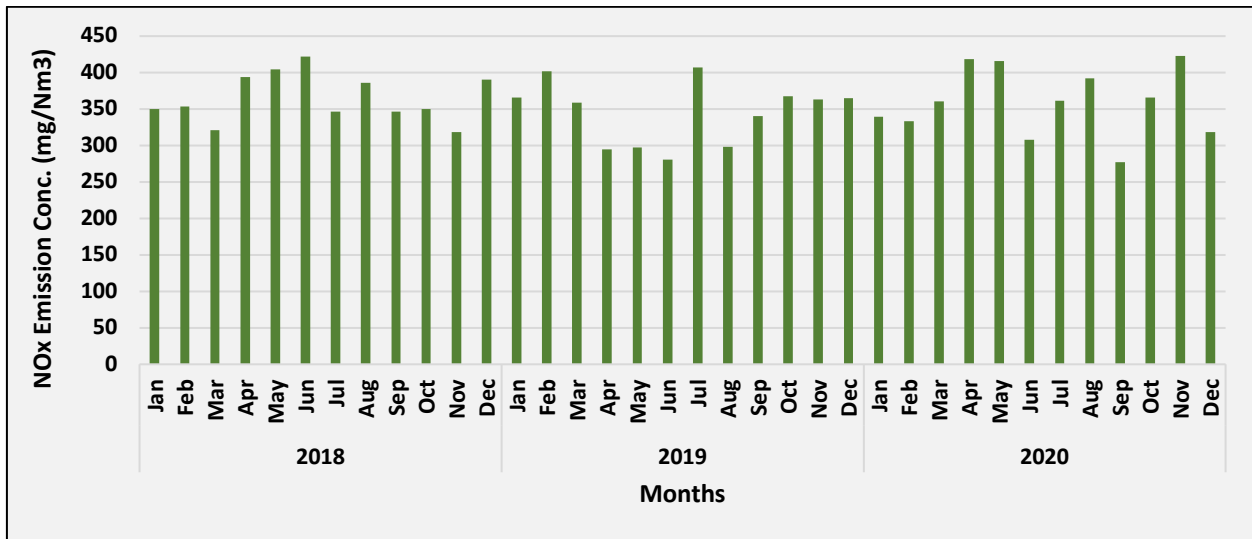


Fig. KOR39: Time series of monthly average NO_x Emission concentration in Korba TPP (Unit 7)

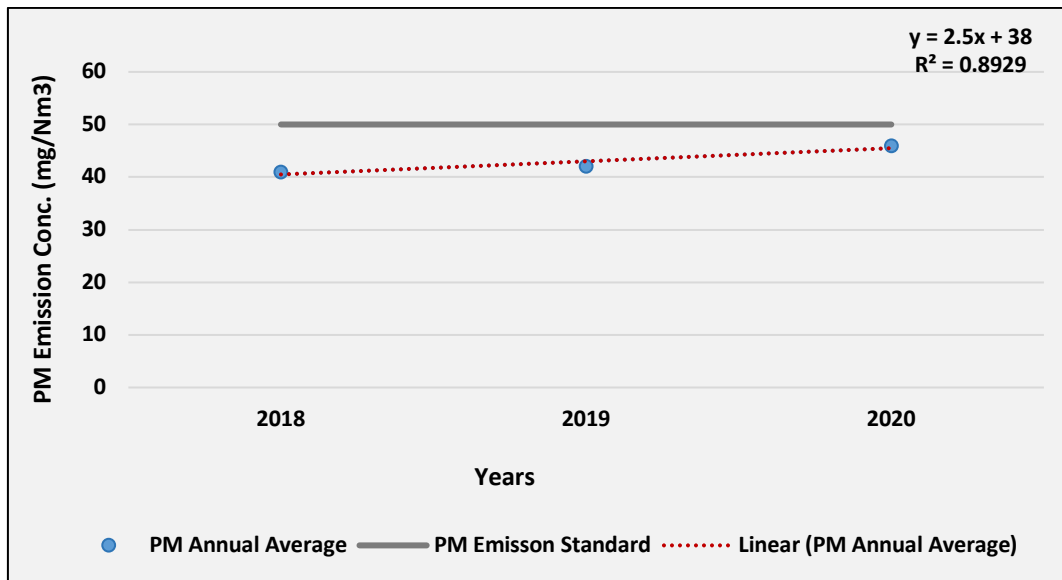


Fig. KOR40: Trend of annual mean PM Emission air concentration in Korba TPP (Unit 7)

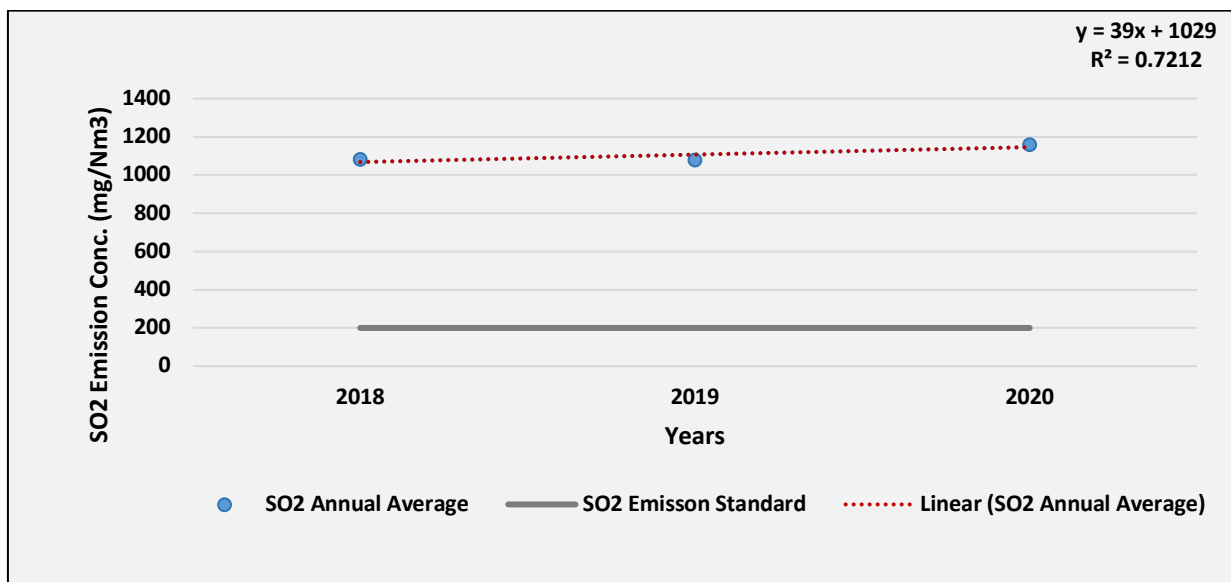


Fig. KOR41: Trend of annual mean SO₂ Emission air concentration in Korba TPP (Unit 7)

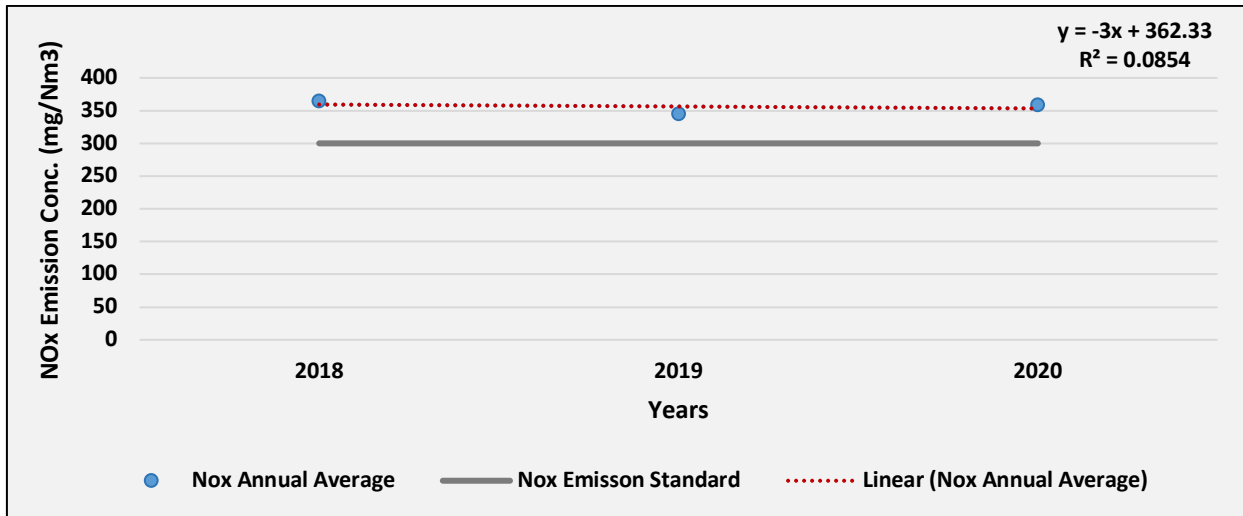


Fig. KOR42: Trend of annual mean NO_x Emission air concentration in Korba TPP (Unit 7)

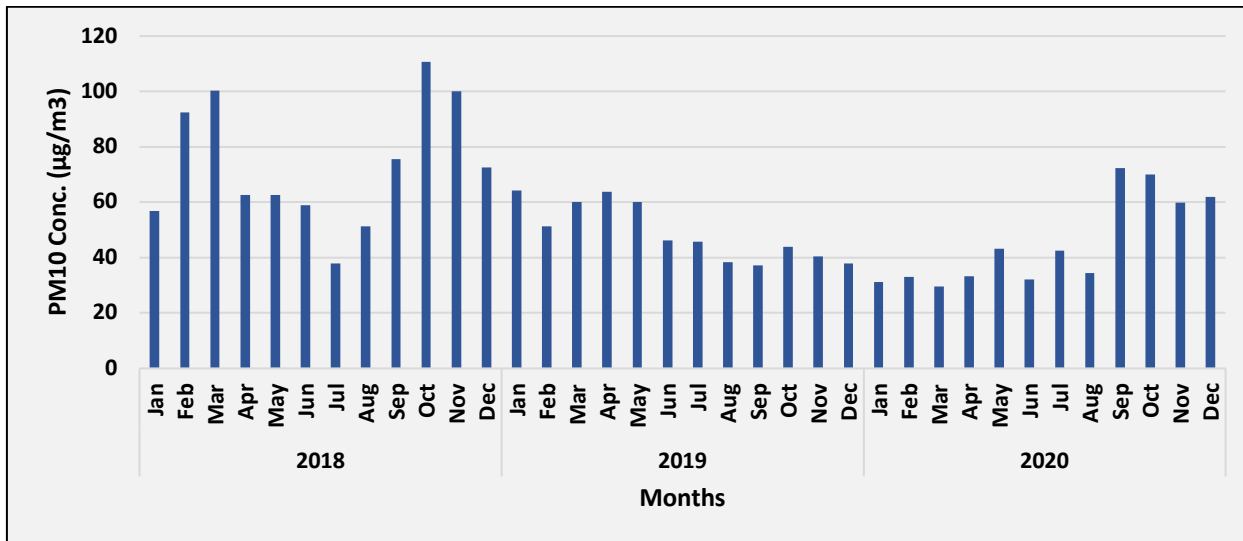


Fig. KOR43: Time series of monthly average PM₁₀ ambient air concentration in Korba TPP (Ambient)

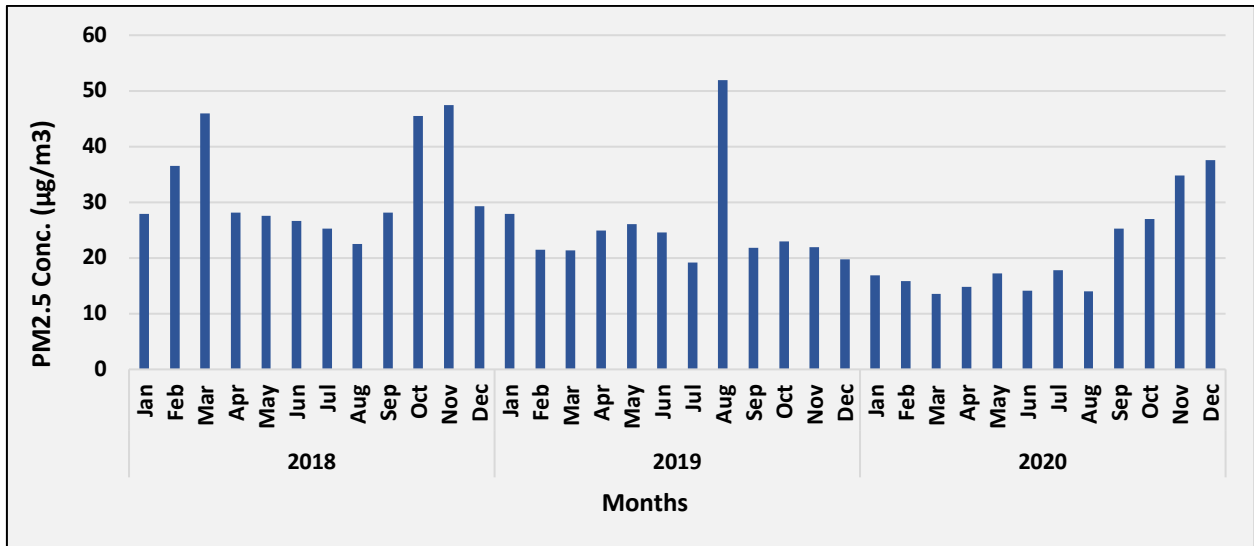


Fig. KOR44: Time series of monthly average PM_{2.5} ambient air concentration in Korba TPP (Ambient)

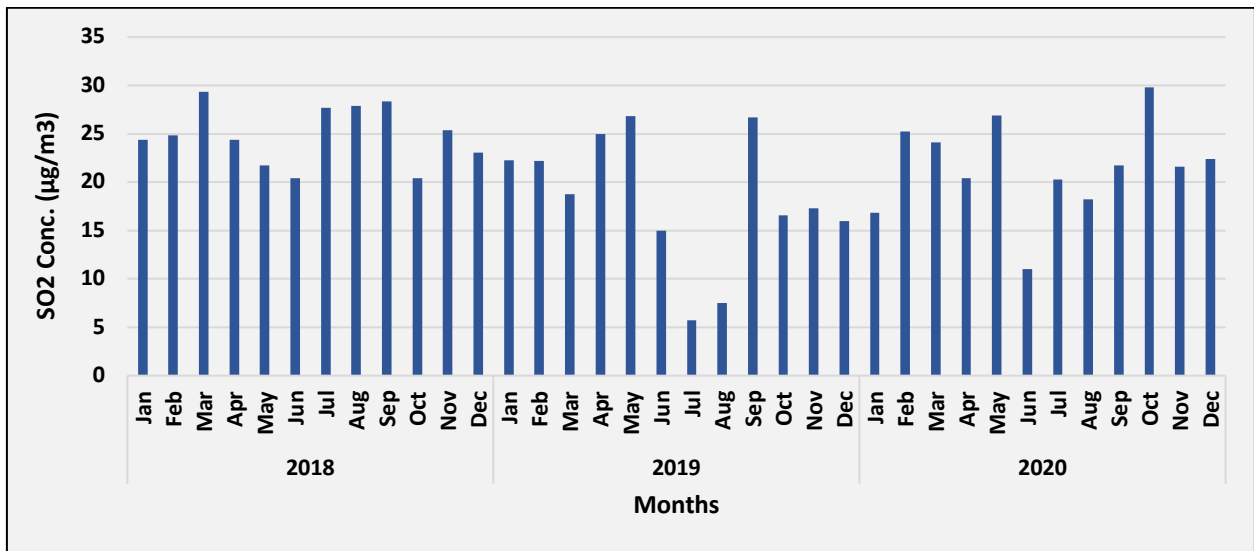


Fig. KOR45: Time series of monthly average SO₂ ambient air concentration in Korba TPP (Ambient)

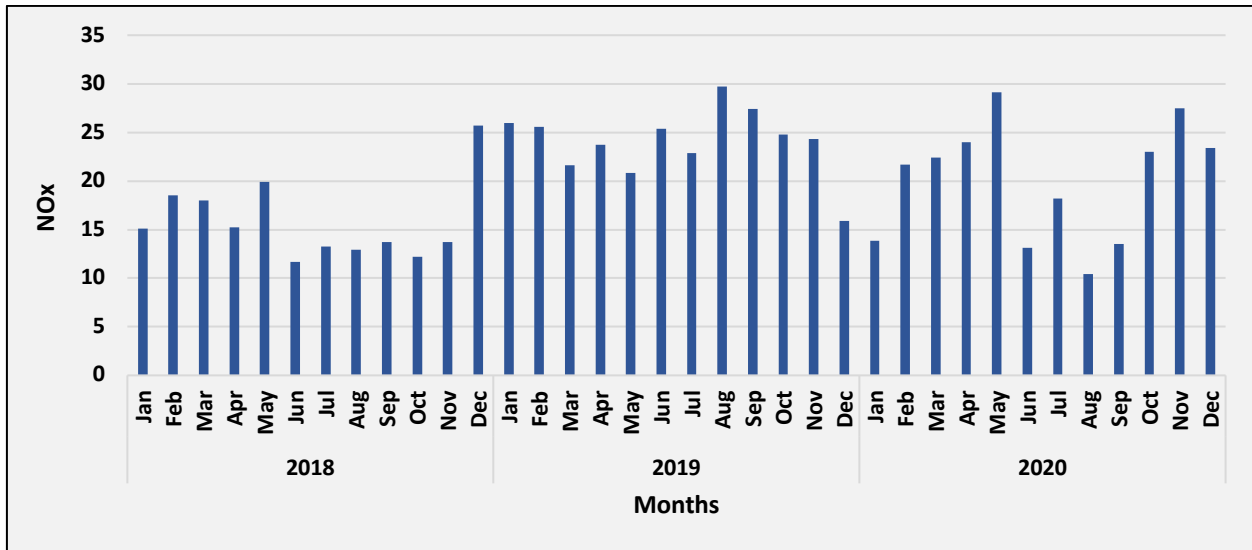


Fig. KOR46: Time series of monthly average NO_x ambient air concentration in Korba TPP (Ambient)

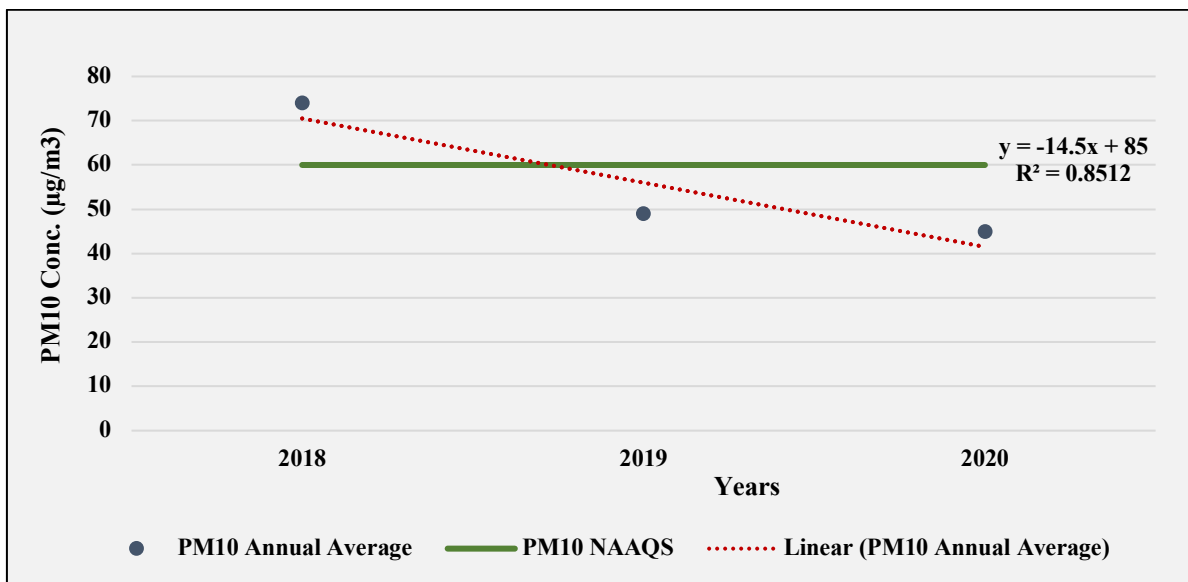


Fig. KOR47: Trend of annual mean PM₁₀ ambient air concentration in Korba TPP (Ambient)

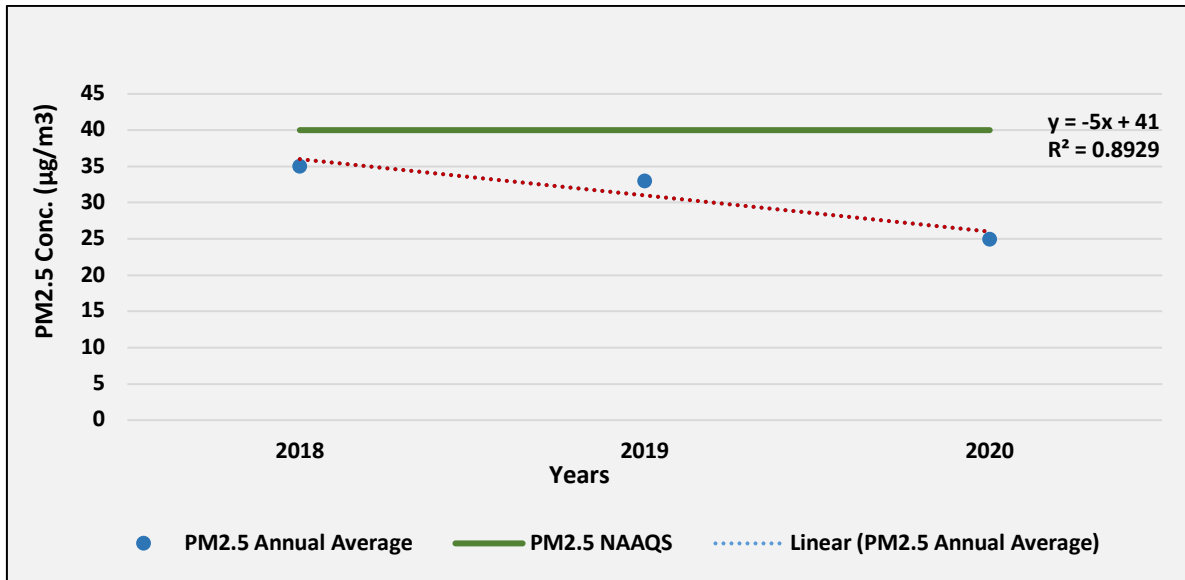


Fig. KOR48: Trend of annual mean $PM_{2.5}$ ambient air concentration in Korba TPP (Ambient)

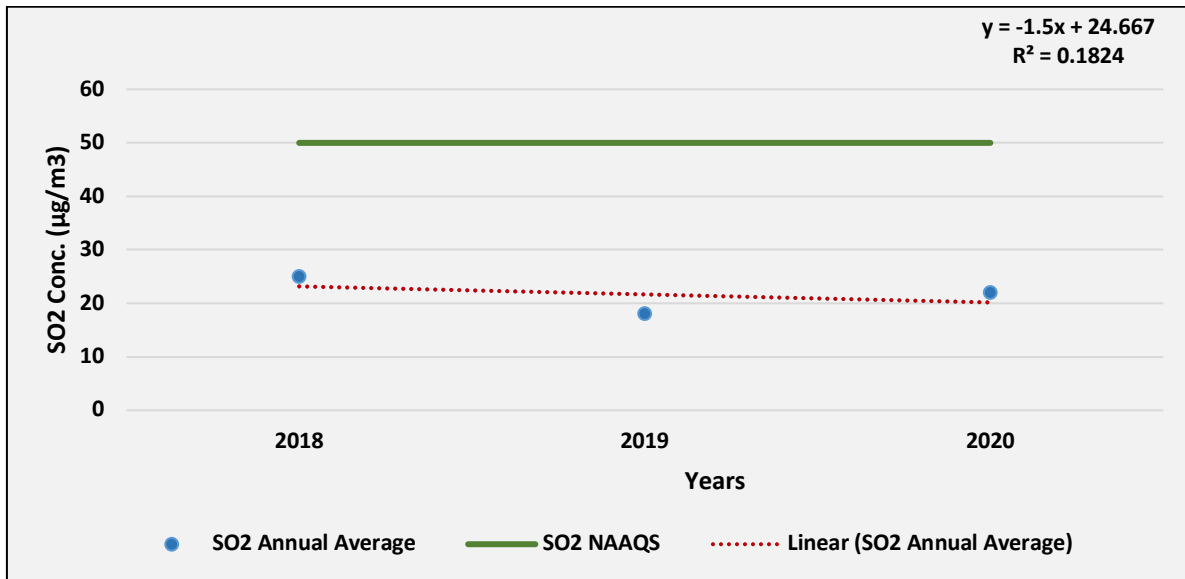


Fig. KOR49: Trend of annual mean SO_2 ambient air concentration in Korba TPP (Ambient)

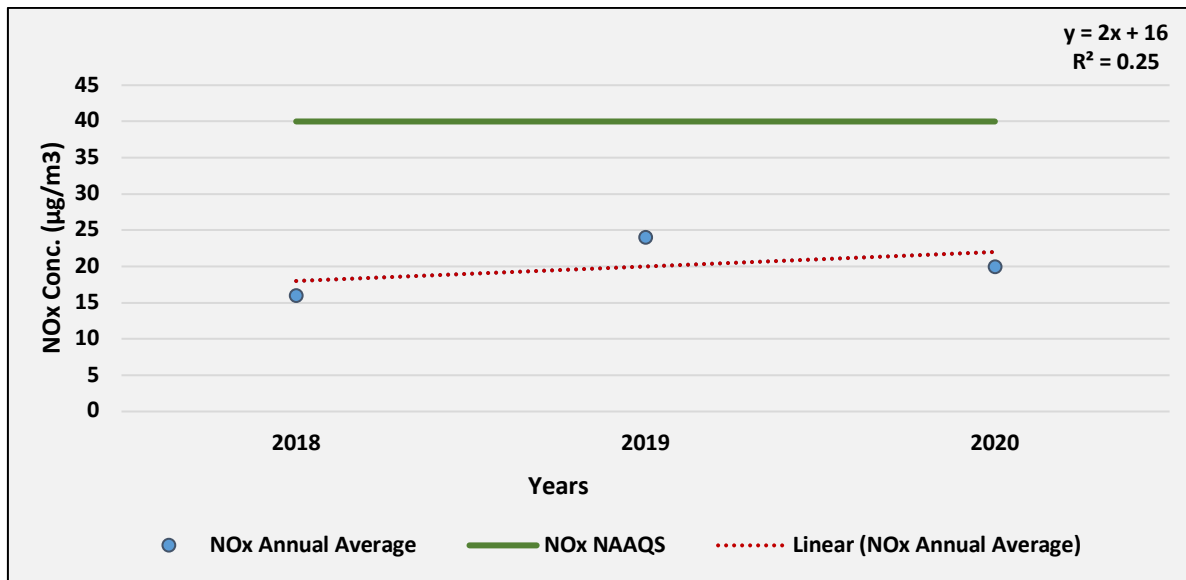


Fig. KOR50: Trend of annual mean NO_x ambient air concentration in Korba TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀ for the year 2018 is exceeding whereas the PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ parameter are much higher than the emission norms. Emission of particulate matter and NO_x are within the limit range.

MAUDA THERMAL POWER PLANT

Mauda (Mouda) power station is a 2,320-megawatt (MW) coal plant in Maharashtra, India, consisting of 2 x 500 MW Units and 2 x 660 MW Units. The exact location coordinates for the power plant is 21.1807403, 79.3965411

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. MAU1 – Fig. MAU32) for the last three years (2018-2020) using data provided by NTPC developer for Mauda Power plant, Maharashtra, India.

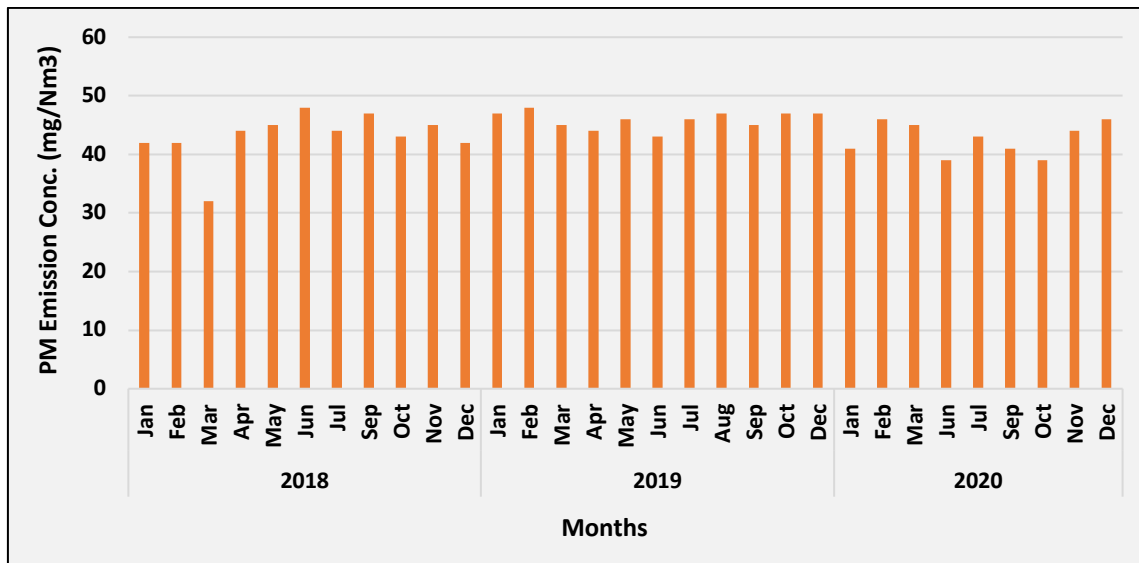


Fig. MAU1: Time series of monthly average PM Emission concentration in Mauda TPP (Unit 1)

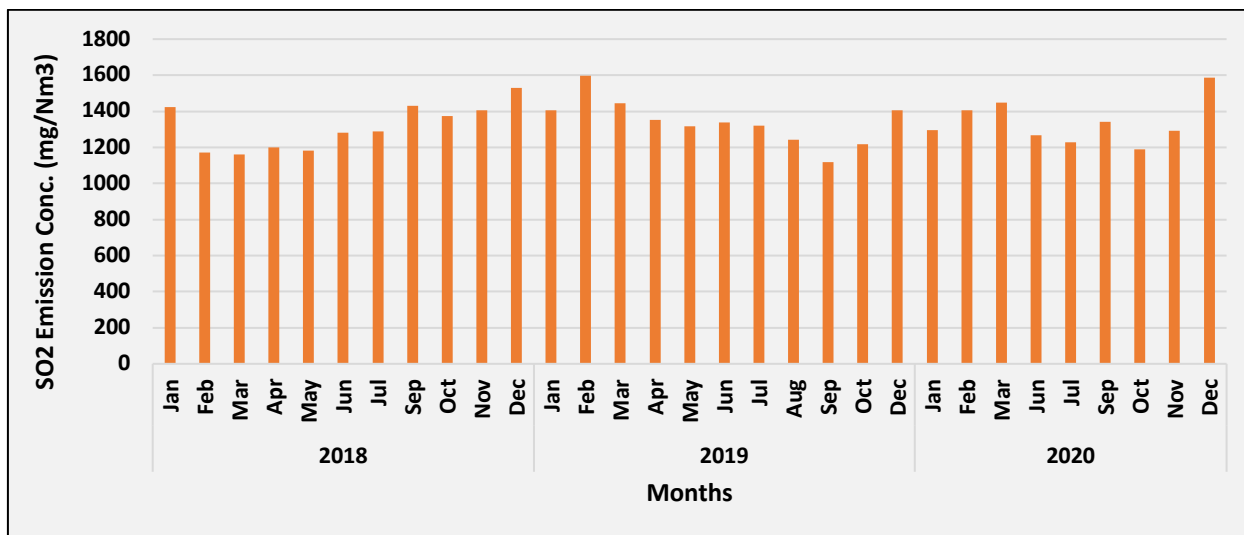


Fig. MAU2: Time series of monthly average SO₂ Emission concentration in Mauda TPP (Unit 1)

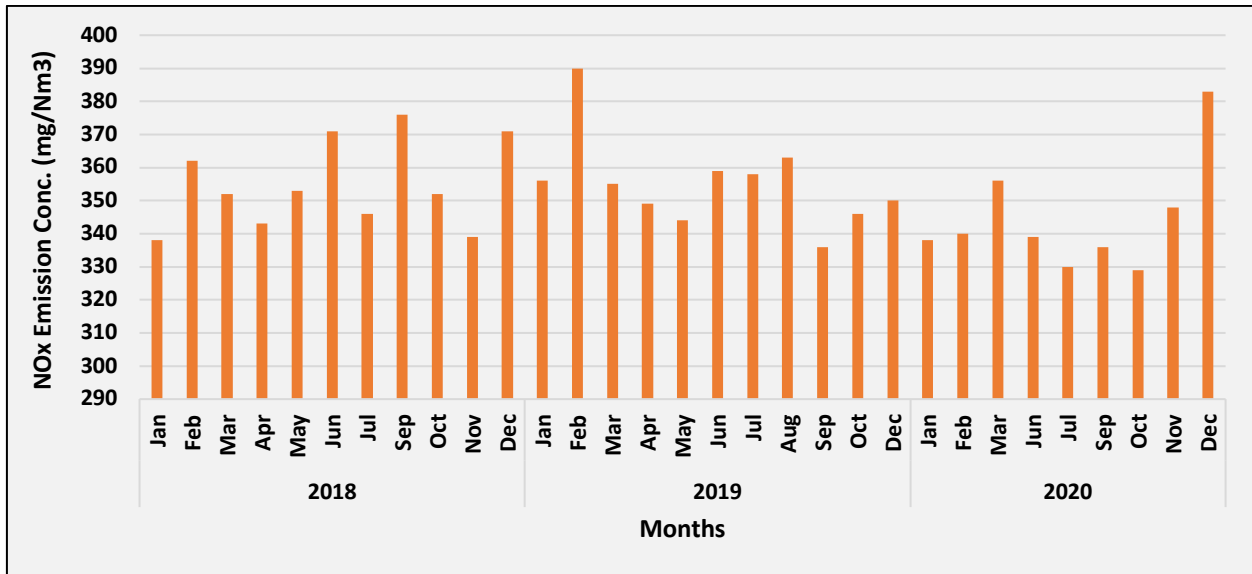


Fig. MAU3: Time series of monthly average NO_x Emission concentration in Mauda TPP (Unit 1)

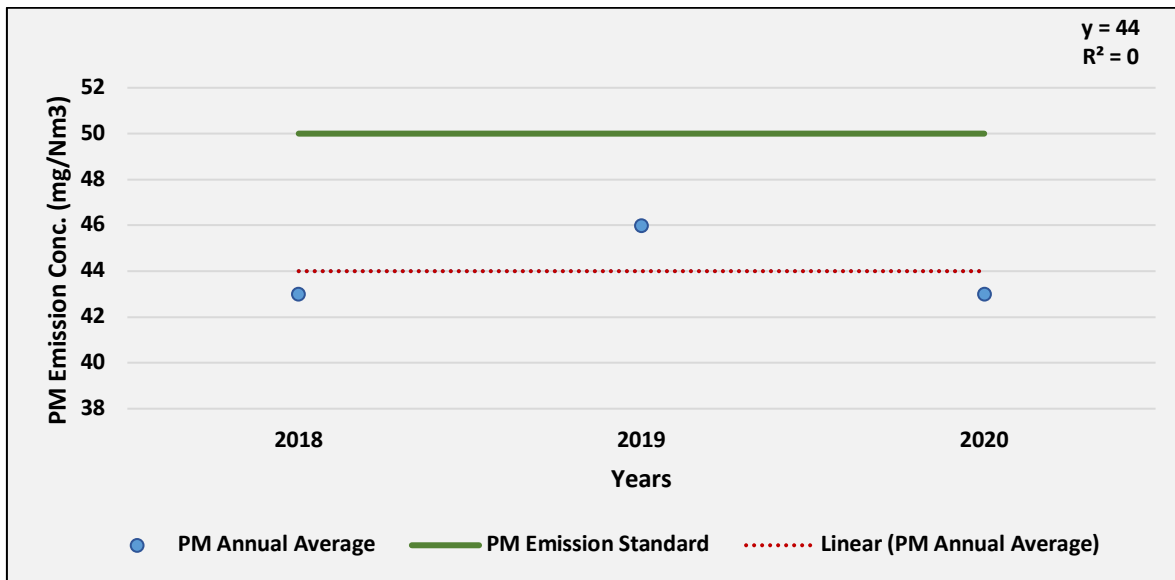


Fig. MAU4: Trend of annual mean PM Emission air concentration in Mauda TPP (Unit 1)

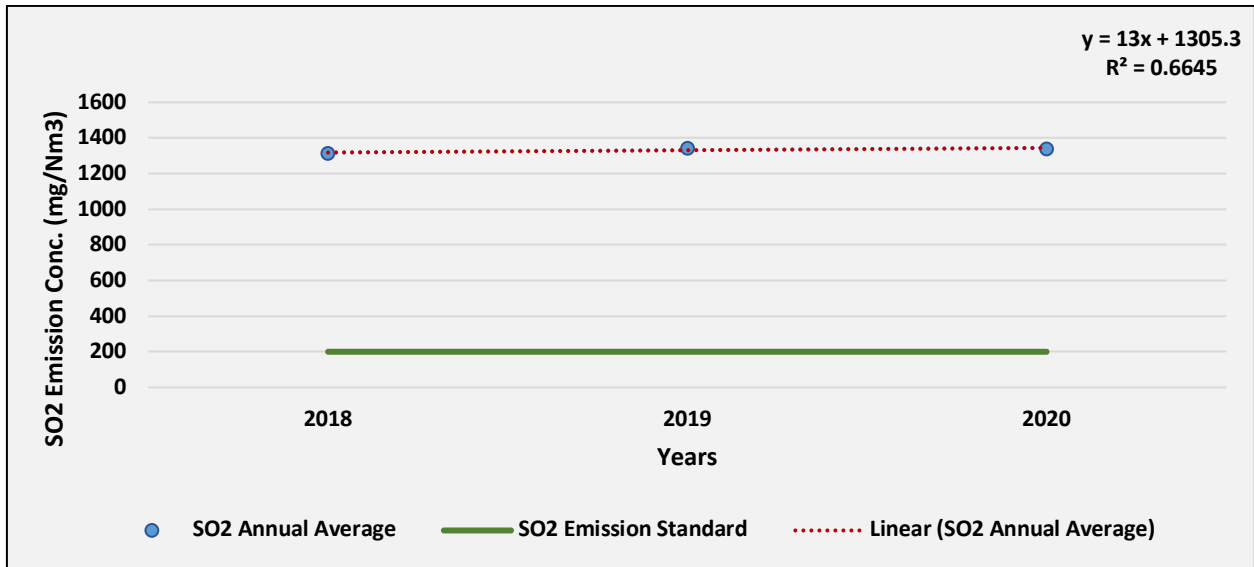


Fig. MAU5: Trend of annual mean SO₂ Emission air concentration in Mauda TPP (Unit 1)

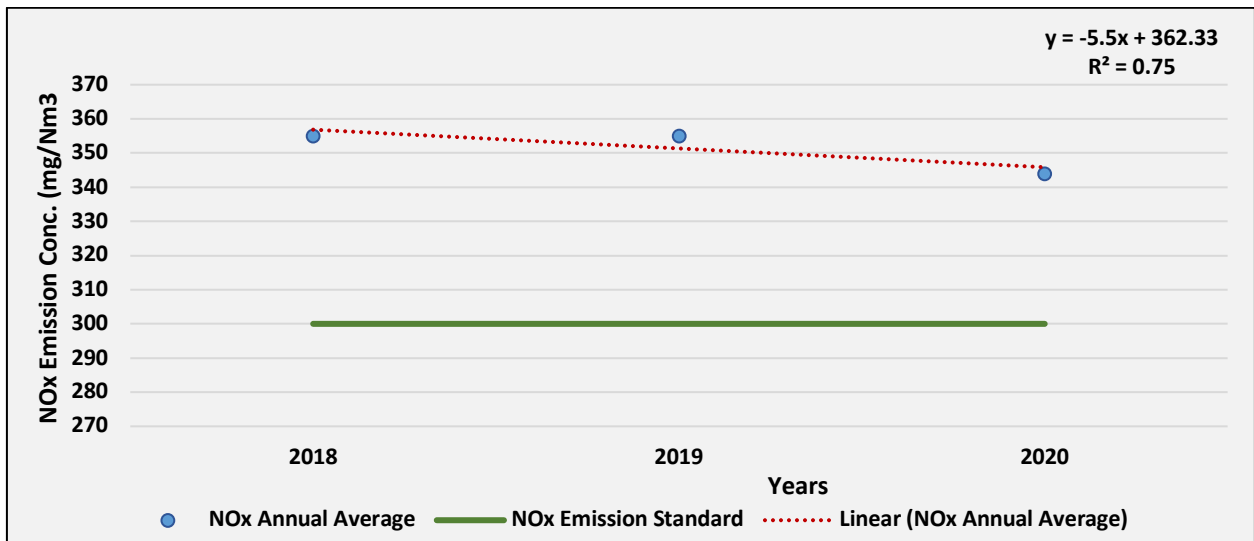


Fig. MAU6: Trend of annual mean NO_x Emission air concentration in Mauda TPP (Unit 1)

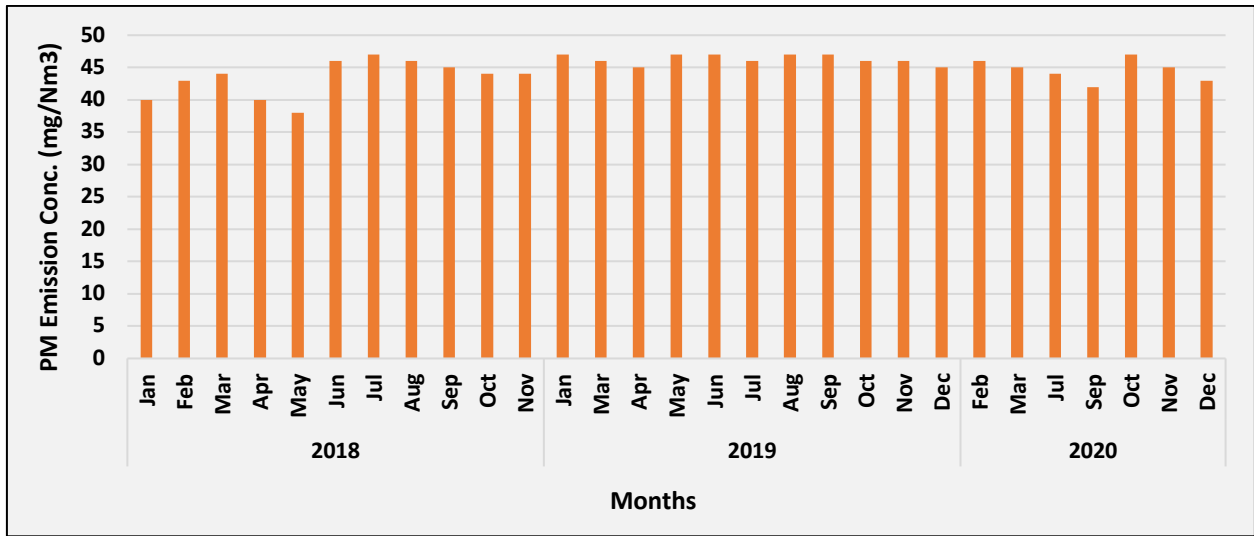


Fig. MAU7: Time series of monthly average PM Emission concentration in Mauda TPP (Unit 2)

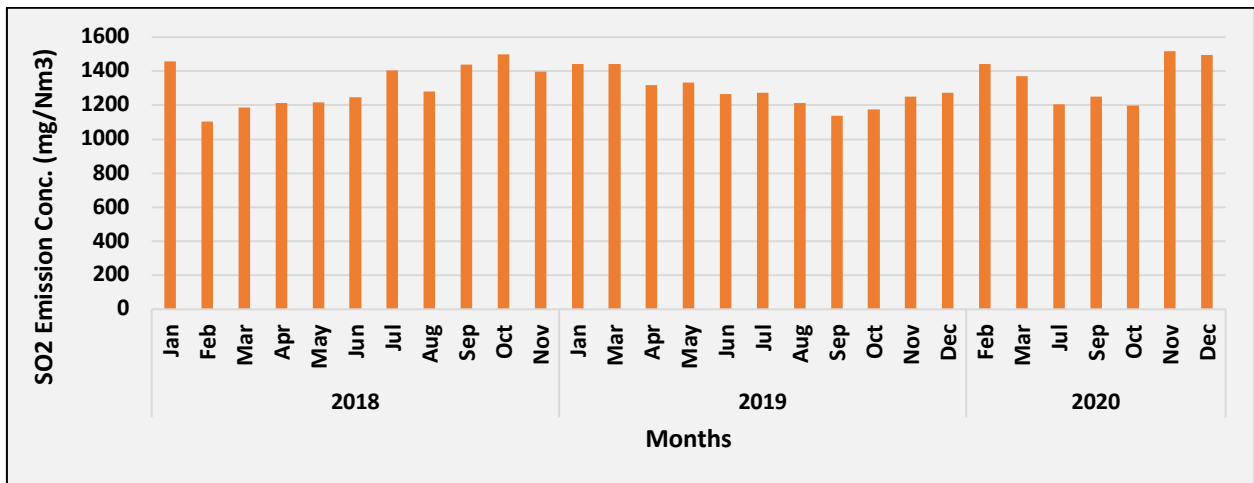


Fig. MAU8: Time series of monthly average SO₂ Emission concentration in Mauda TPP (Unit 2)

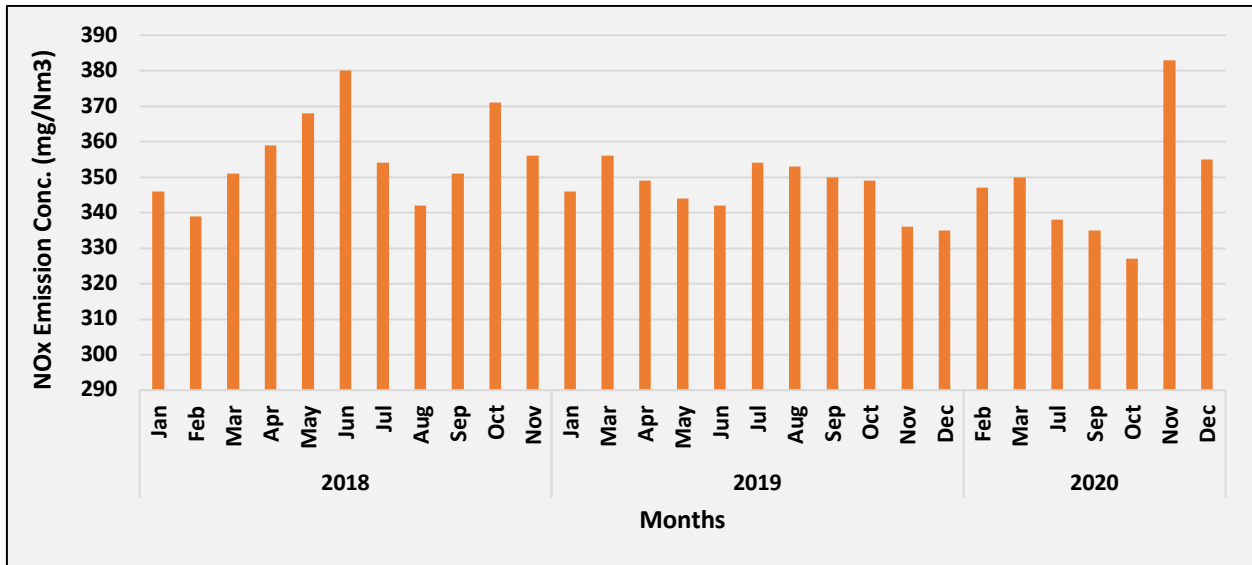


Fig. MAU9: Time series of monthly average NO_x Emission concentration in Mauda TPP (Unit 2)

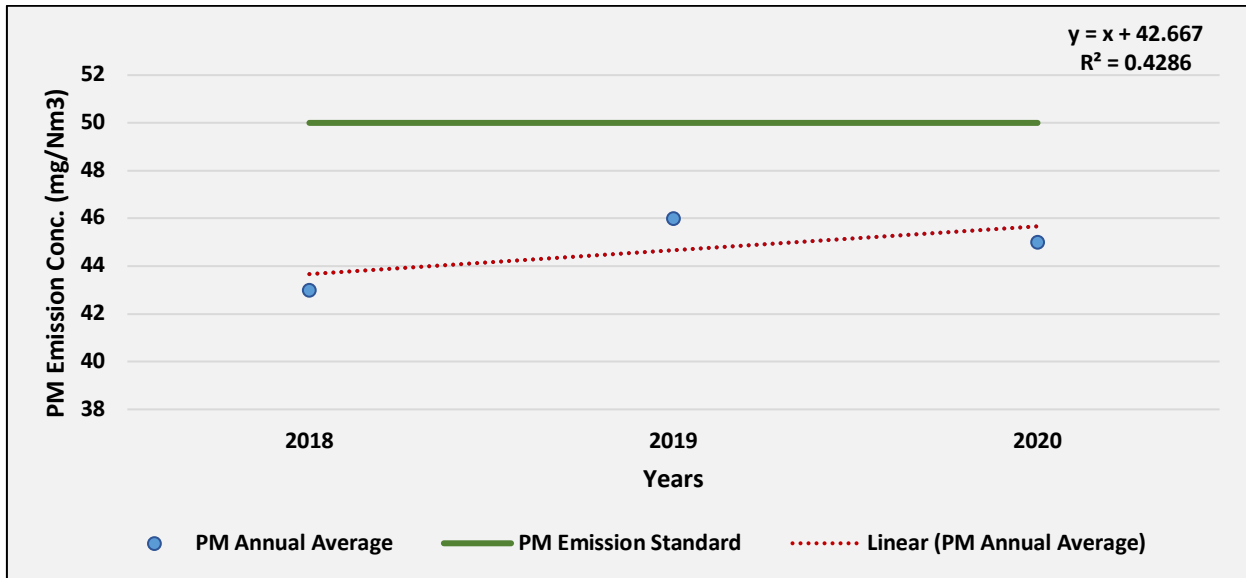


Fig. MAU10: Trend of annual mean PM Emission air concentration in Mauda TPP (Unit 2)

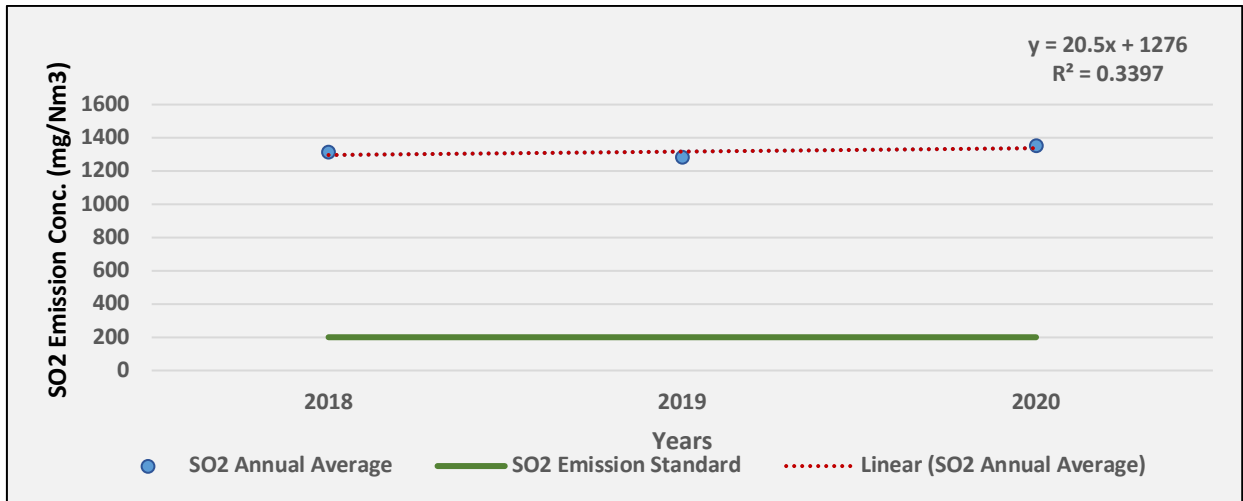


Fig. MAU11: Trend of annual mean SO₂ Emission air concentration in Mauda TPP (Unit 2)

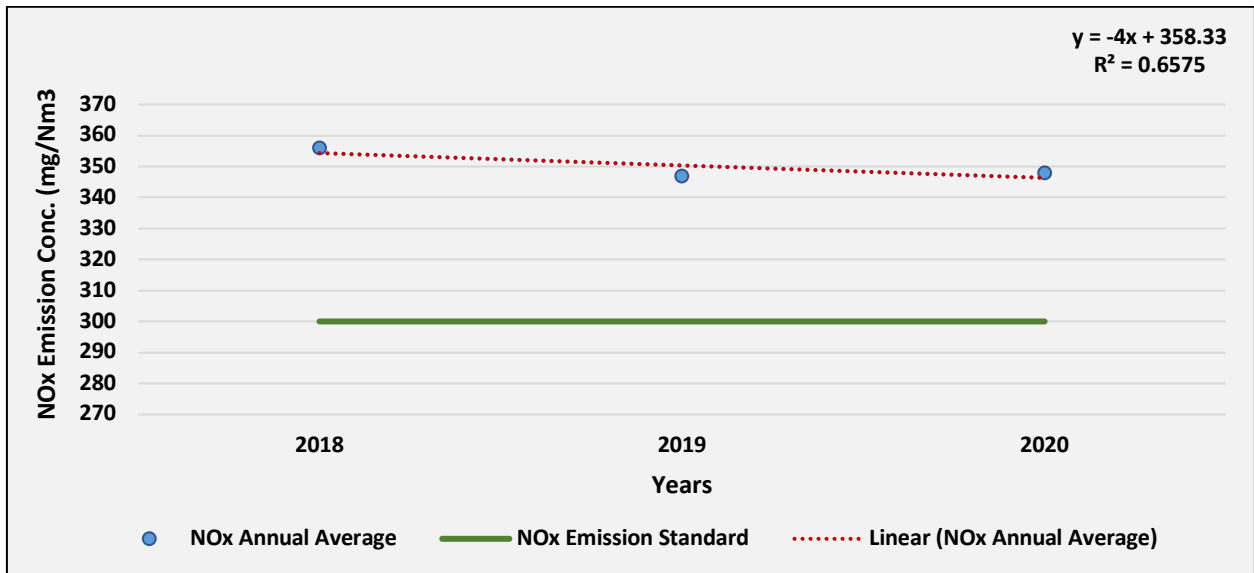


Fig. MAU12: Trend of annual mean NO_x Emission air concentration in Mauda TPP (Unit 2)

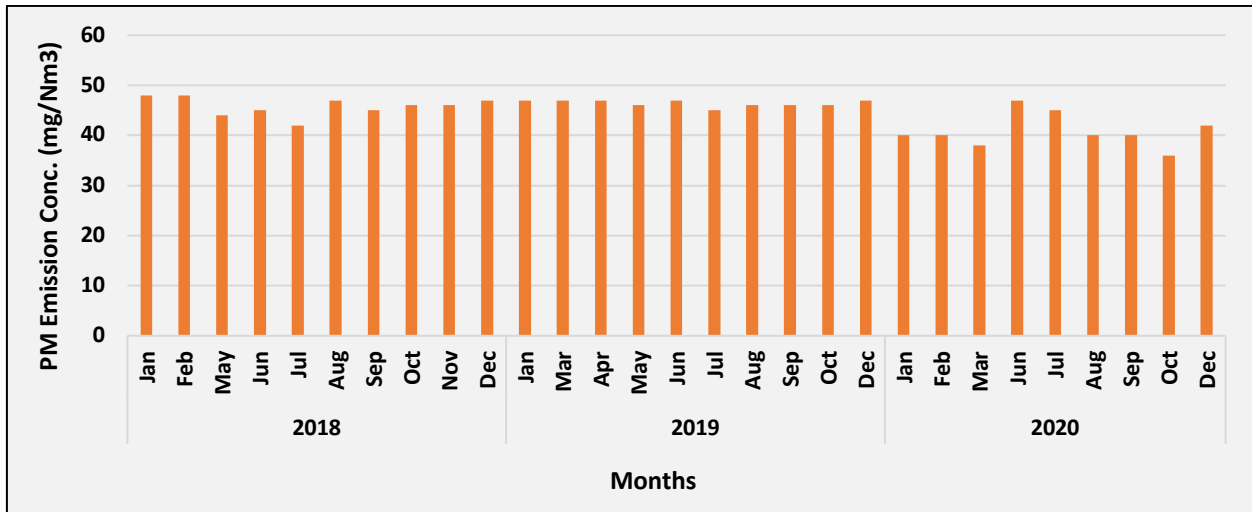


Fig. MAU13: Time series of monthly average PM Emission concentration in Mauda TPP (Unit 3)

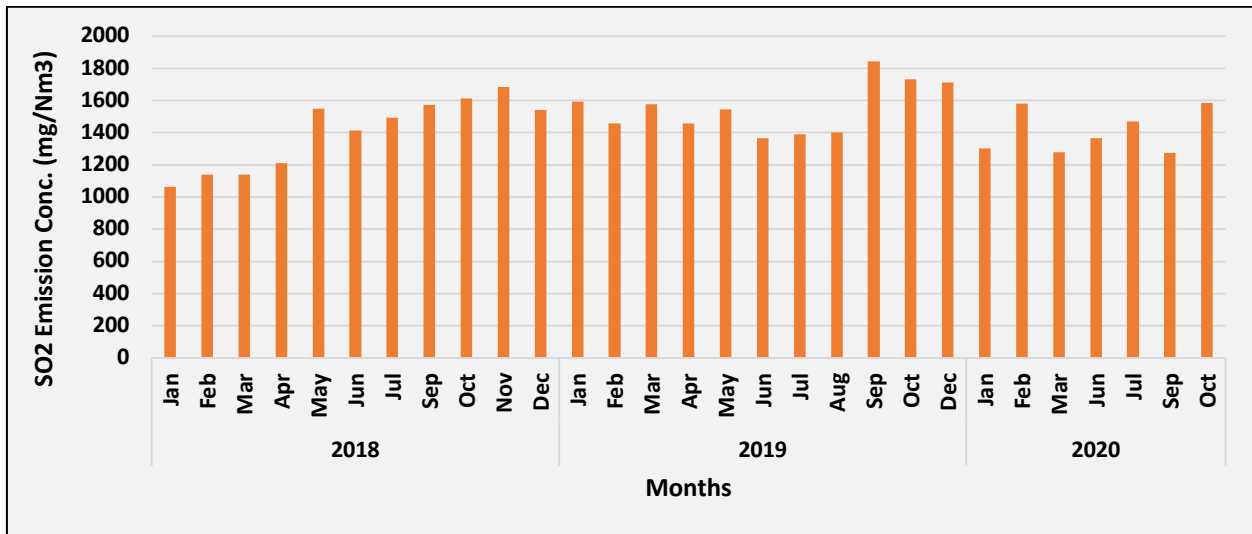


Fig. MAU14: Time series of monthly average SO₂ Emission concentration in Mauda TPP (Unit 3)

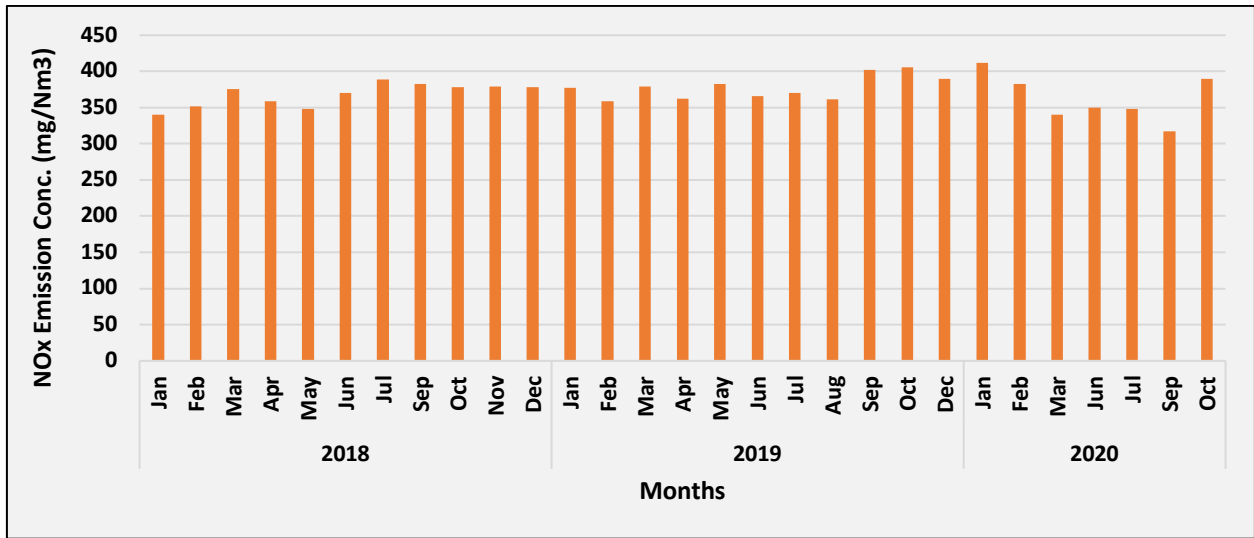


Fig. MAU15: Time series of monthly average NO_x Emission concentration in Mauda TPP (Unit 3)

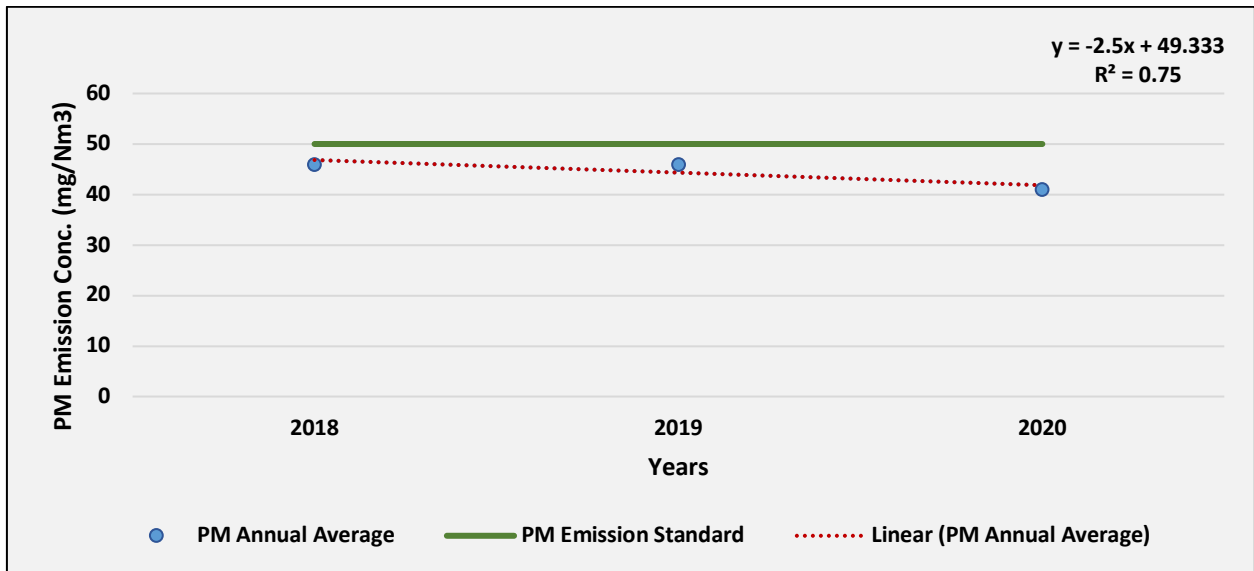


Fig. MAU16: Trend of annual mean PM Emission air concentration in Mauda TPP (Unit 3)

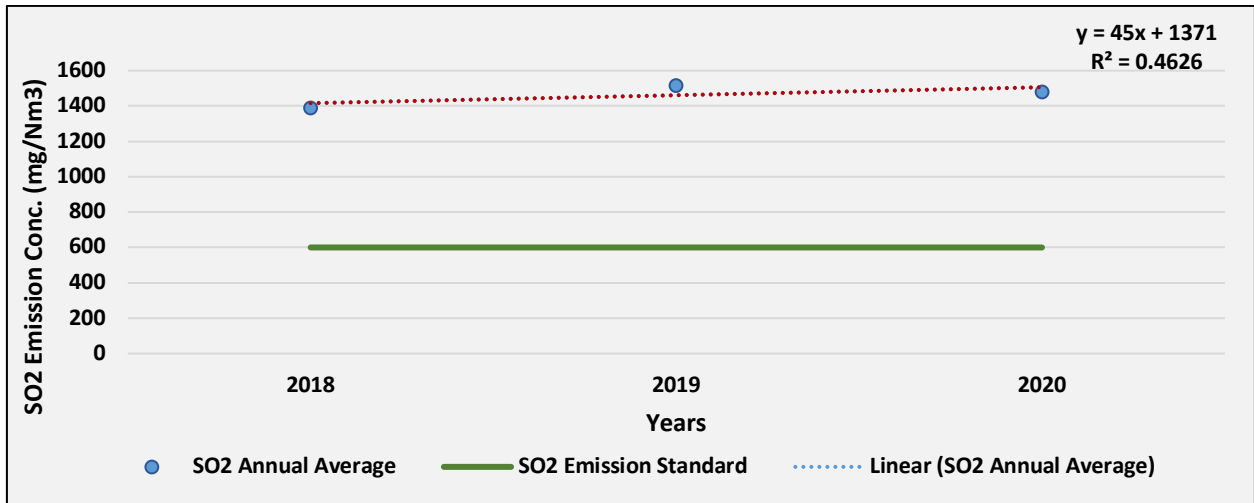


Fig. MAU17: Trend of annual mean SO₂ Emission air concentration in Mauda TPP (Unit 3)

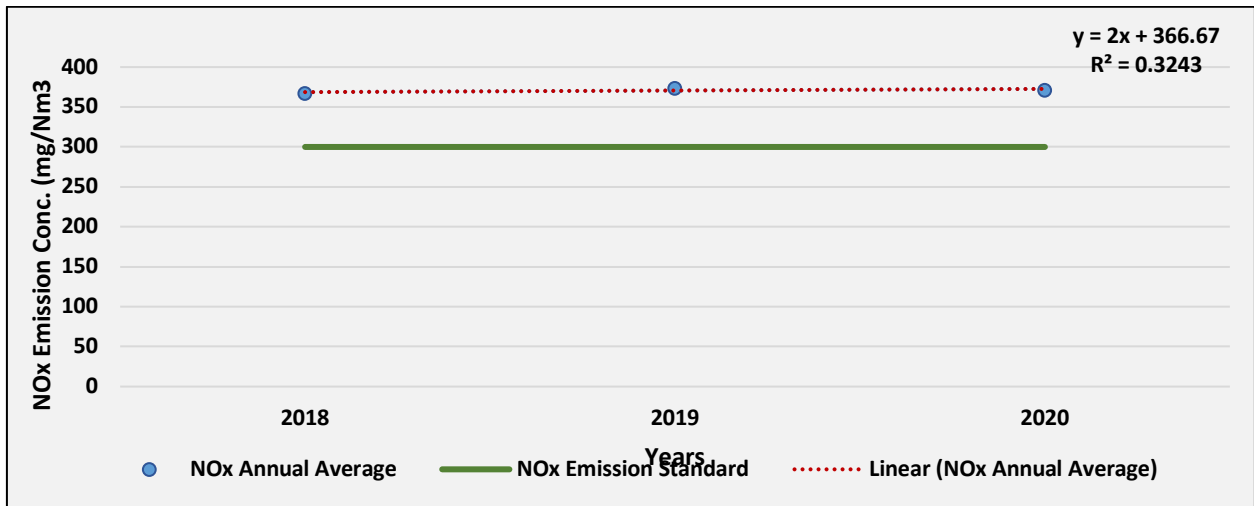


Fig. MAU18: Trend of annual mean NO_x Emission air concentration in Mauda TPP (Unit 3)

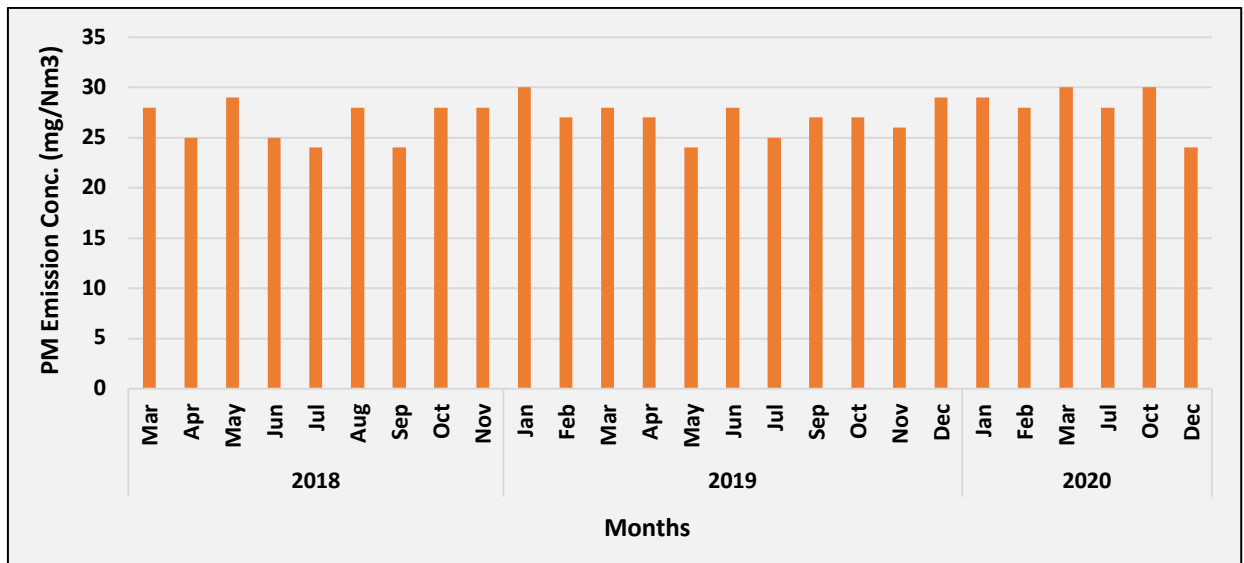


Fig. MAU19: Time series of monthly average PM Emission concentration in Mauda TPP (Unit 4)

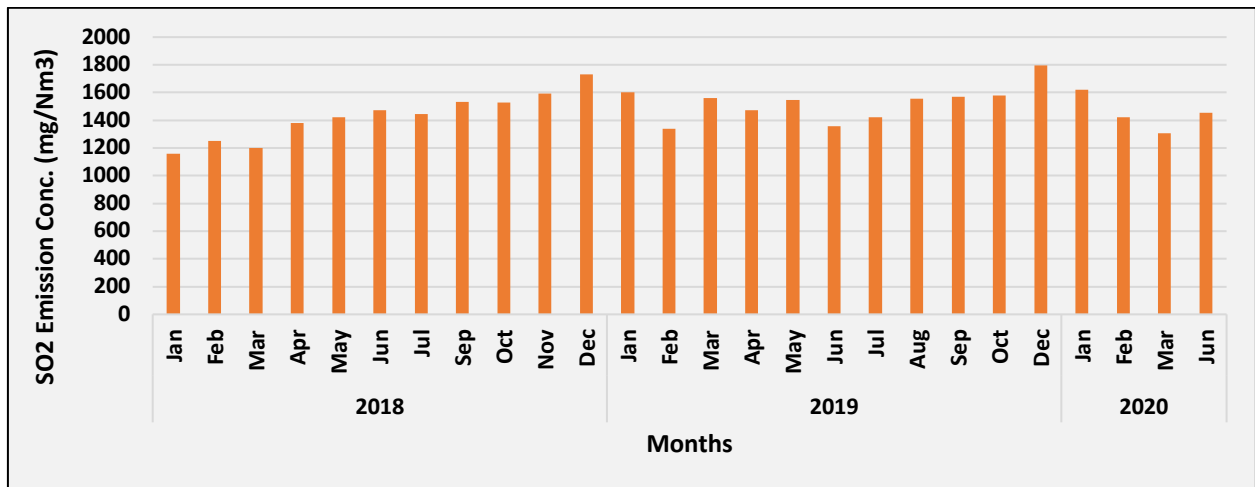


Fig. MAU20: Time series of monthly average SO₂ Emission concentration in Mauda TPP (Unit 4)

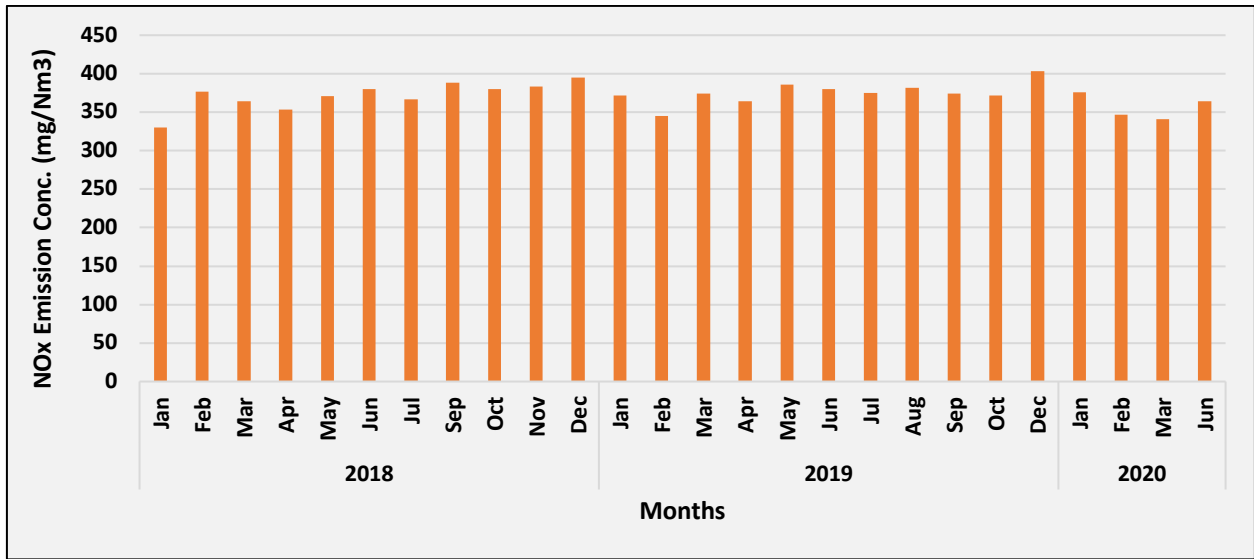


Fig. MAU21: Time series of monthly average NO_x Emission concentration in Mauda TPP (Unit 4)

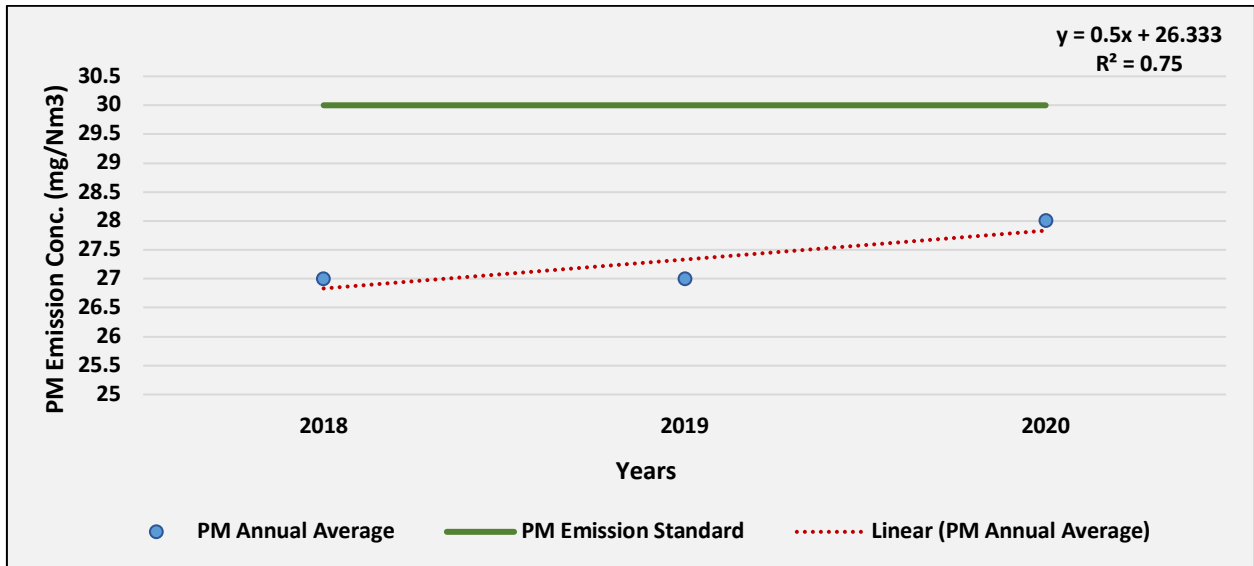


Fig. MAU22: Trend of annual mean PM Emission air concentration in Mauda TPP (Unit 4)

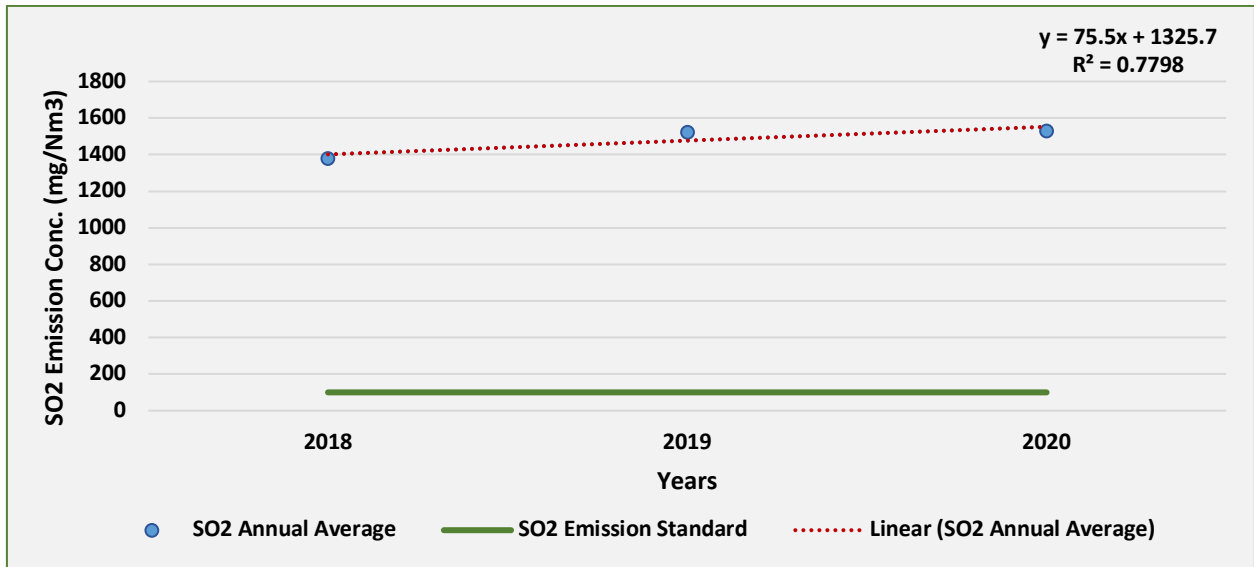


Fig. MAU23: Trend of annual mean SO₂ Emission air concentration in Mauda TPP (Unit 4)

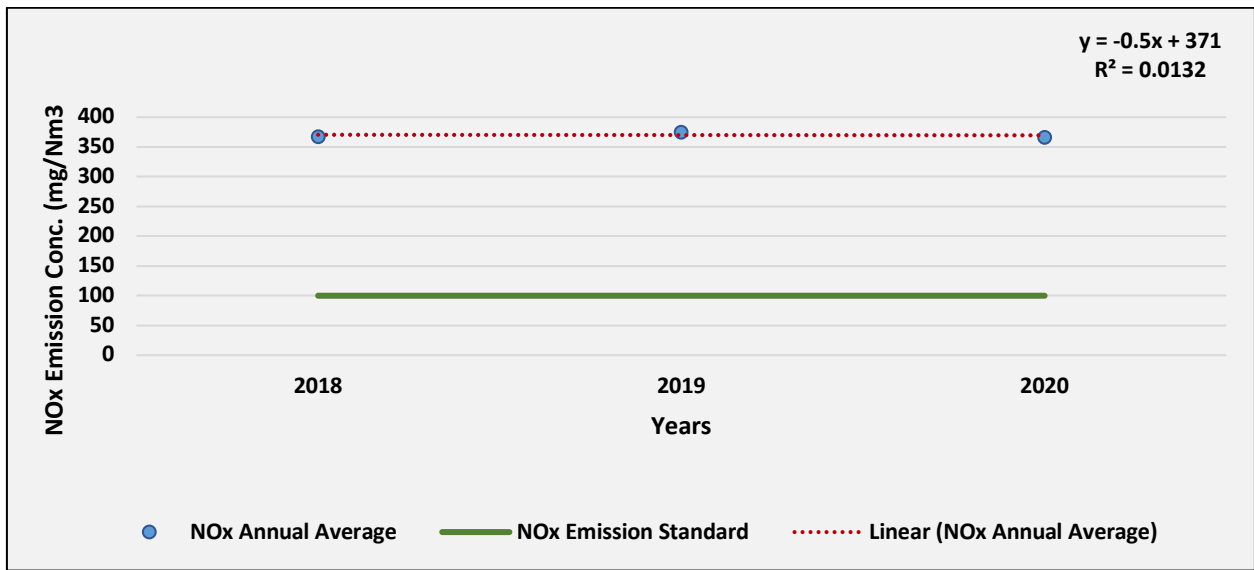


Fig. MAU24: Trend of annual mean NO_x Emission air concentration in Mauda TPP (Unit 4)

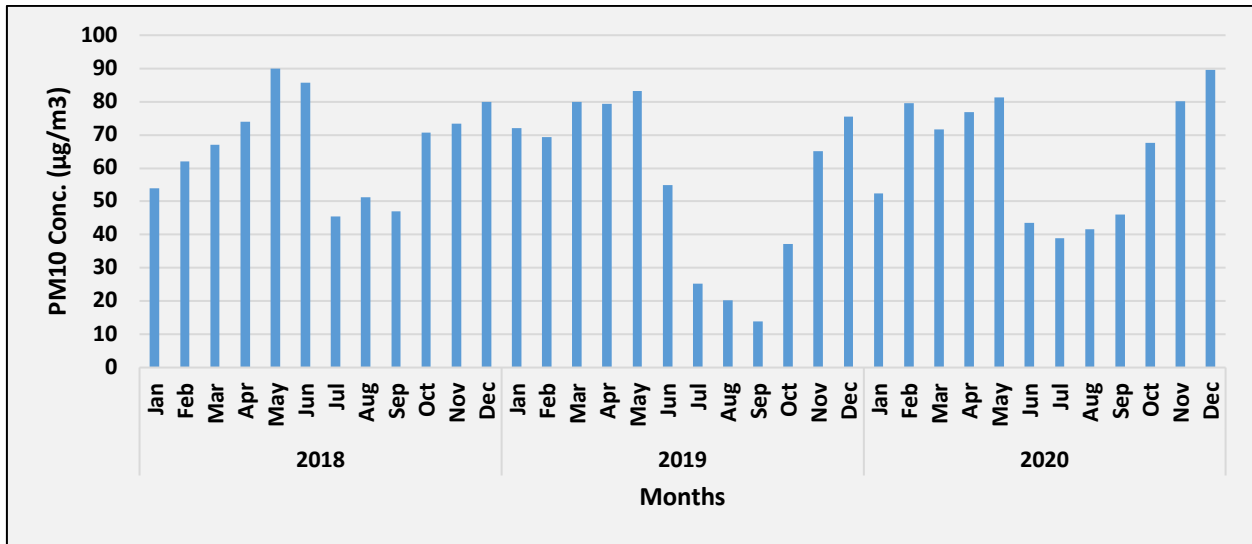


Fig. MAU25: Time series of monthly average PM₁₀ ambient air concentration in Mauda TPP (Ambient)

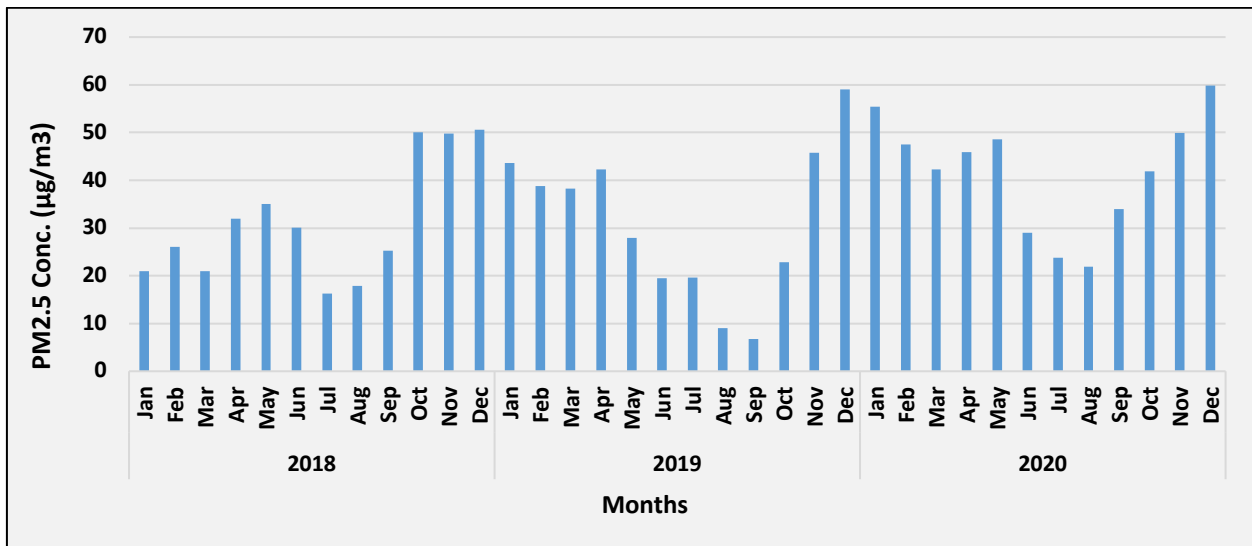


Fig. MAU26: Time series of monthly average PM_{2.5} ambient air concentration in Mauda TPP (Ambient)

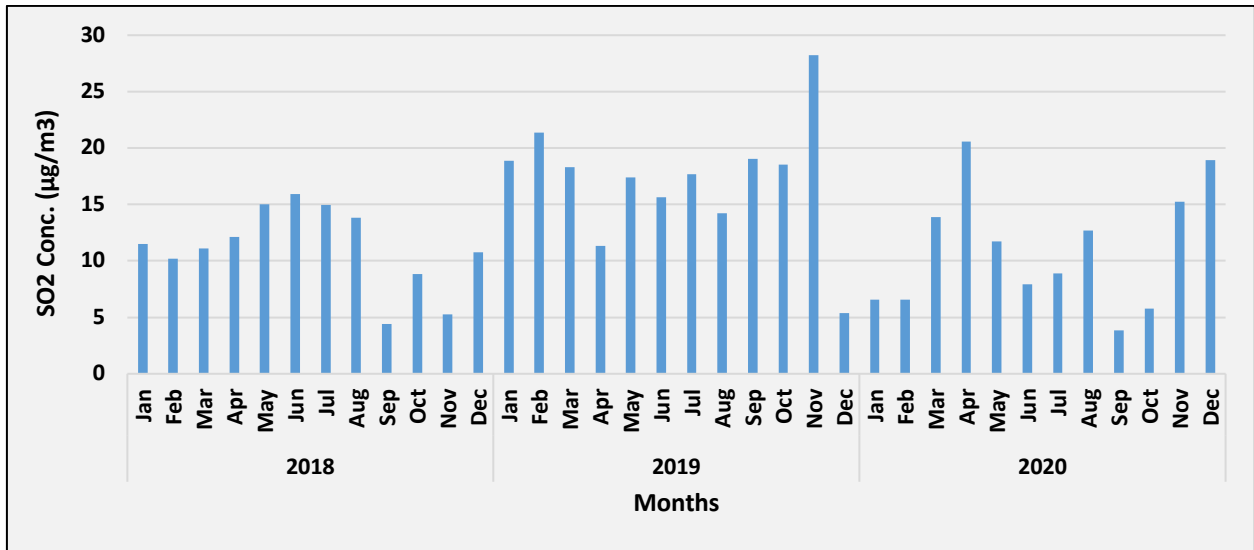


Fig. MAU27: Time series of monthly average SO_2 ambient air concentration in Mauda TPP (Ambient)

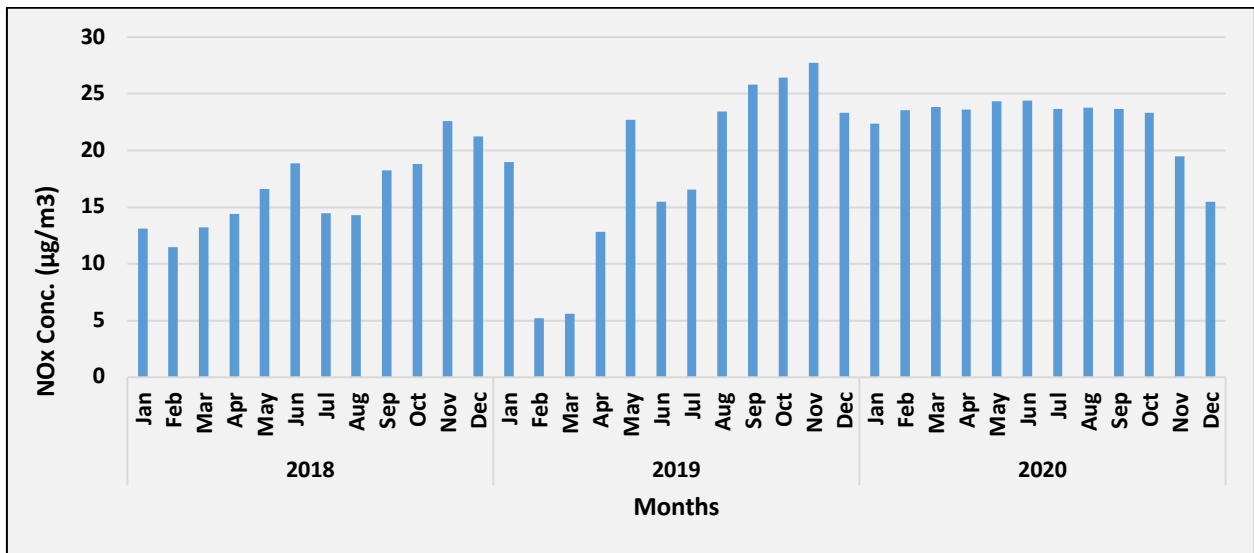


Fig. MAU28: Time series of monthly average NO_x ambient air concentration in Mauda TPP (Ambient)

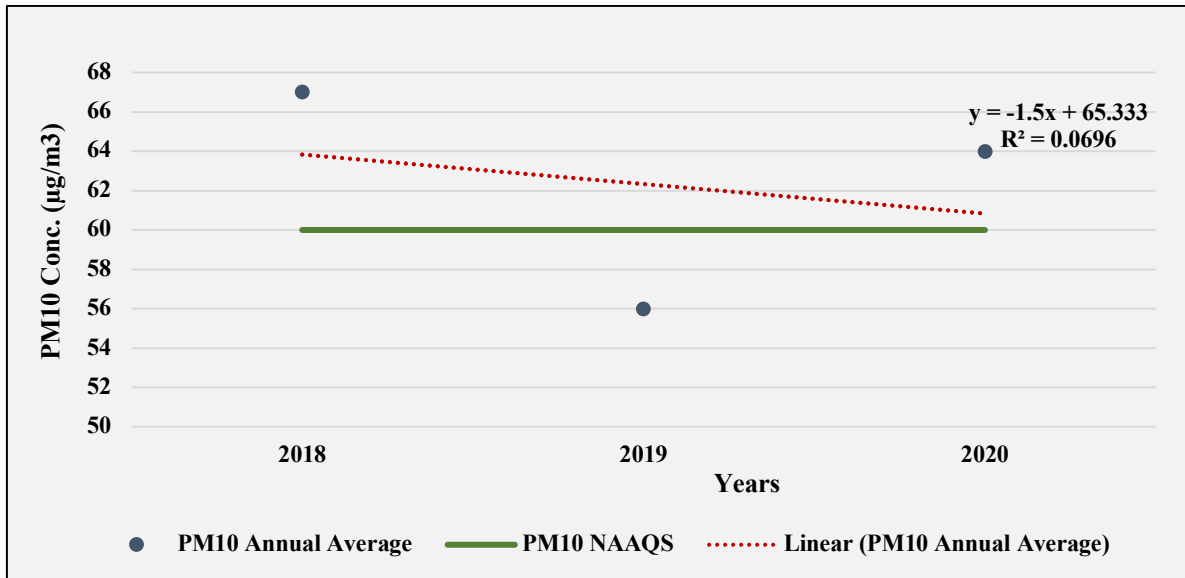


Fig. MAU29: Trend of annual mean PM₁₀ ambient air concentration in Mauda TPP (Ambient)

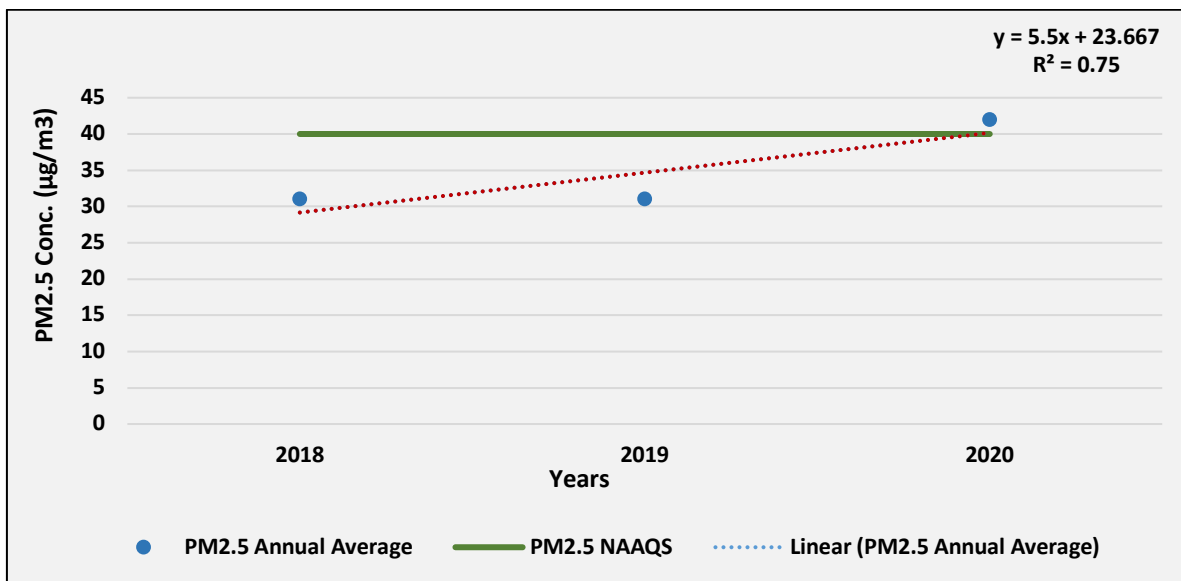


Fig. MAU30: Trend of annual mean PM_{2.5} ambient air concentration in Mauda TPP (Ambient)

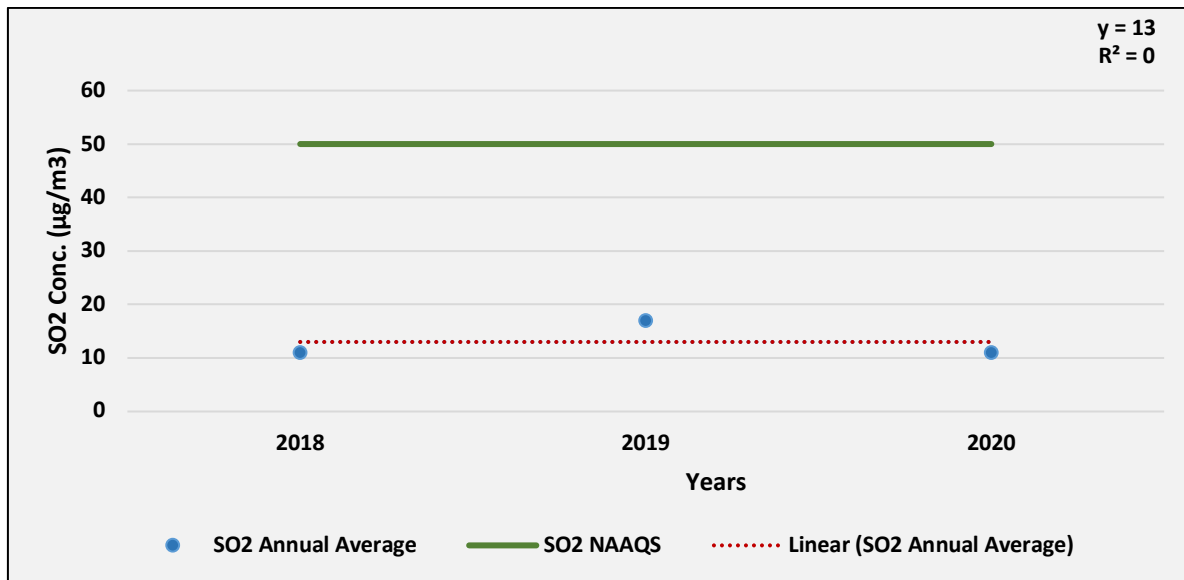


Fig. MAU31: Trend of annual mean SO₂ ambient air concentration in Mauda TPP (Ambient)

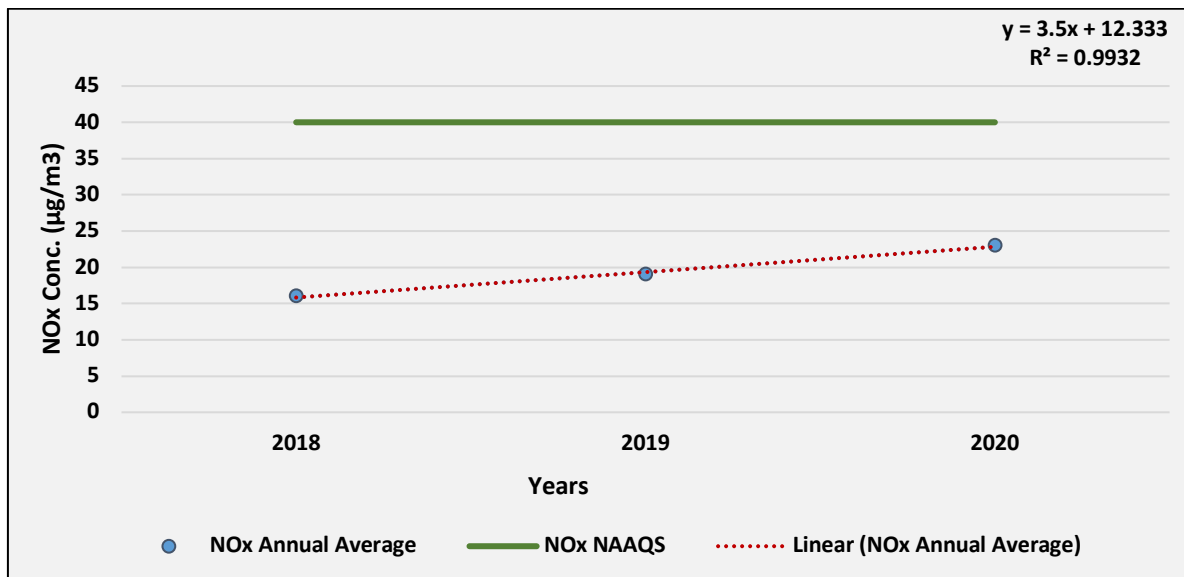


Fig. MAU32: Trend of annual mean NO_x ambient air concentration in Mauda TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀ is exceeding for the year 2018 and 2020. Whereas the SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

DADRI THERMAL POWER PLANT

NTPC Dadri power plant, also known as National Capital Power Station (NCPS), is a coal and gas-fired thermal power plant located in Uttar Pradesh, India. National Thermal Power Corporation (NTPC) is the project owner.

With a total installed capacity of 2.63GW, the Dadri power plant is one of the biggest thermal power plants in India and the only coal and gas-fired power plant in the country. Of the total power generated, 1,820MW comes from the coal-fired plant and the remaining 817MW from the gas-fired plant.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed for the last three years (2018-2020) using data provided by NTPC developer for Dadri Power plant, Uttar Pradesh, India.

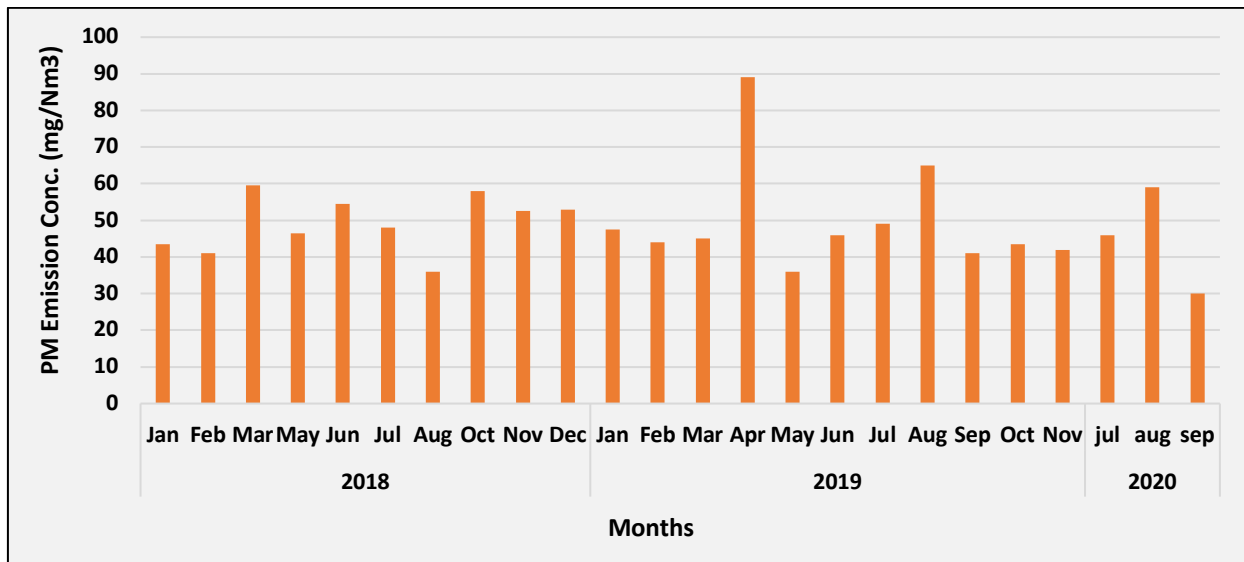


Fig. DA1: Time series of monthly average PM Emission concentration in Dadri TPP (Unit 1)

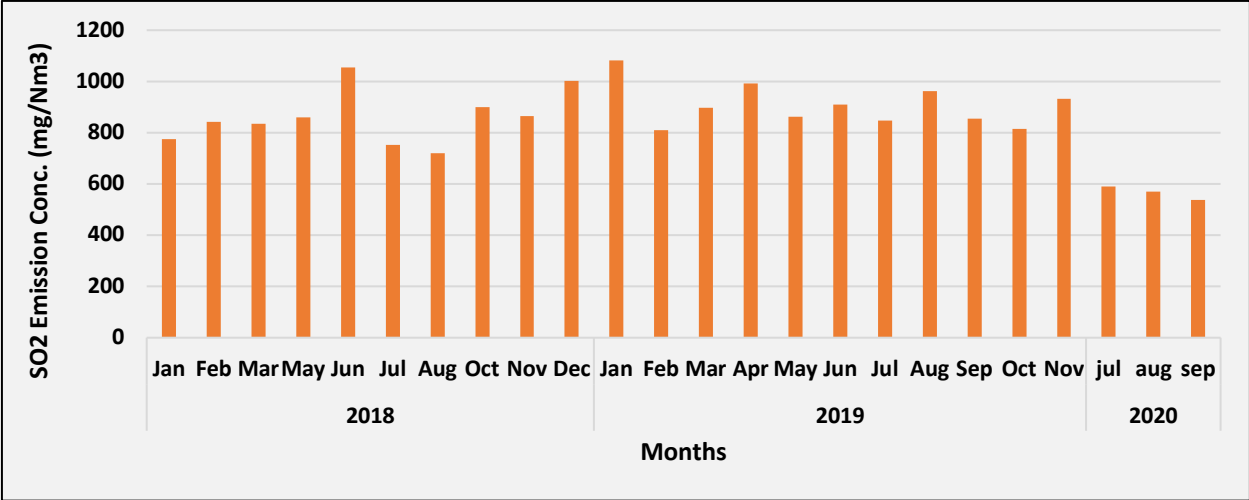


Fig. DA2: Time series of monthly average SO₂ Emission concentration in Dadri TPP (Unit 1)

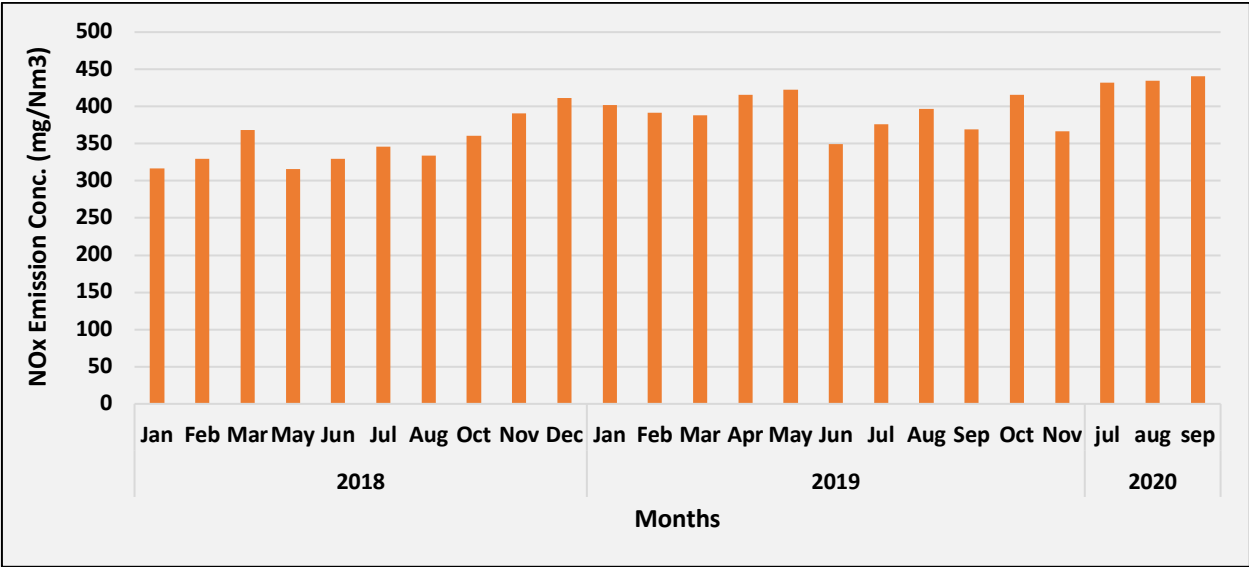


Fig. DA3: Time series of monthly average NO_x Emission concentration in Dadri TPP (Unit 1)

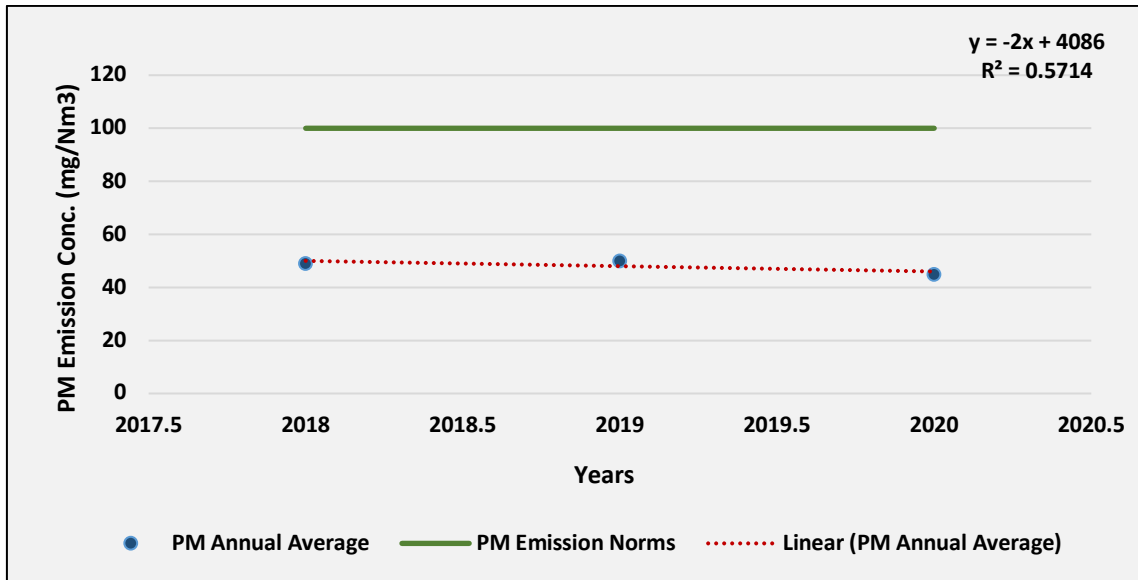


Fig. DA4: Trend of annual mean PM Emission air concentration in Dadri TPP (Unit 1)

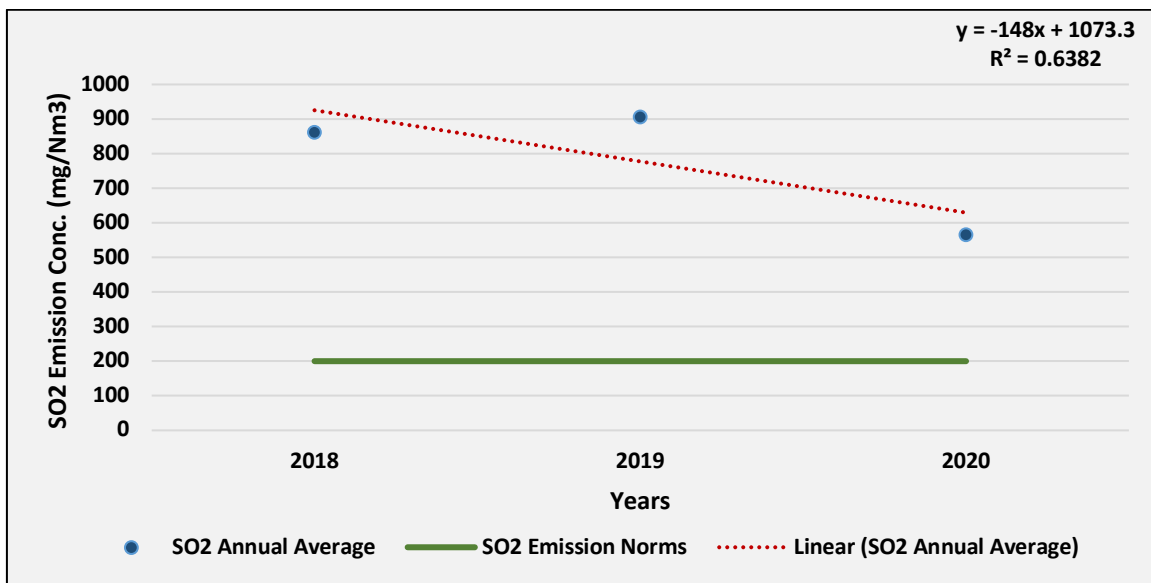


Fig. DA5: Trend of annual mean SO₂ Emission air concentration in Dadri TPP (Unit 1)

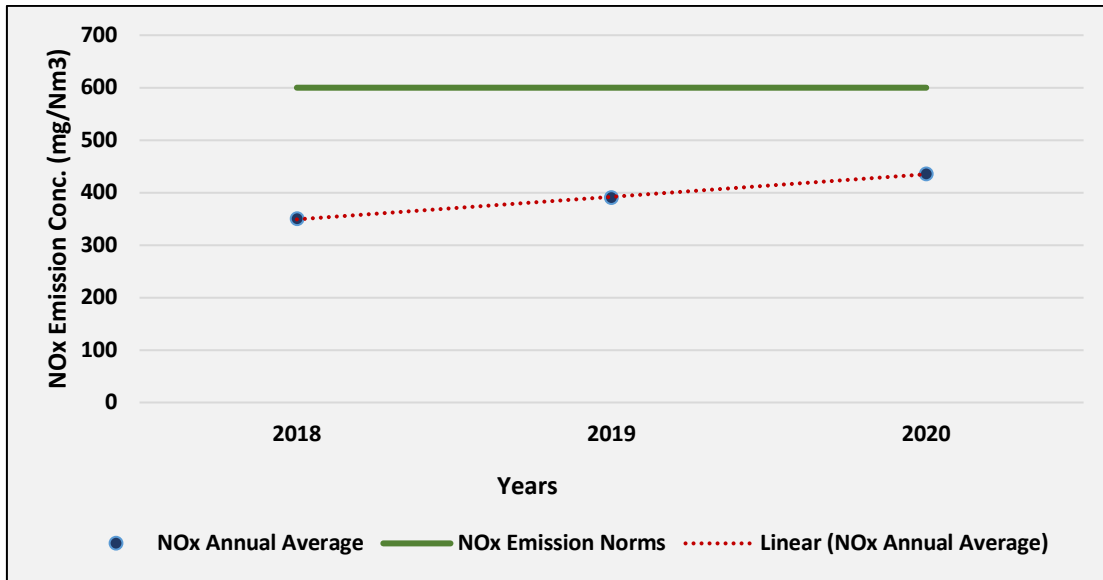


Fig. DA6: Trend of annual mean NO_x Emission air concentration in Dadri TPP (Unit 1)

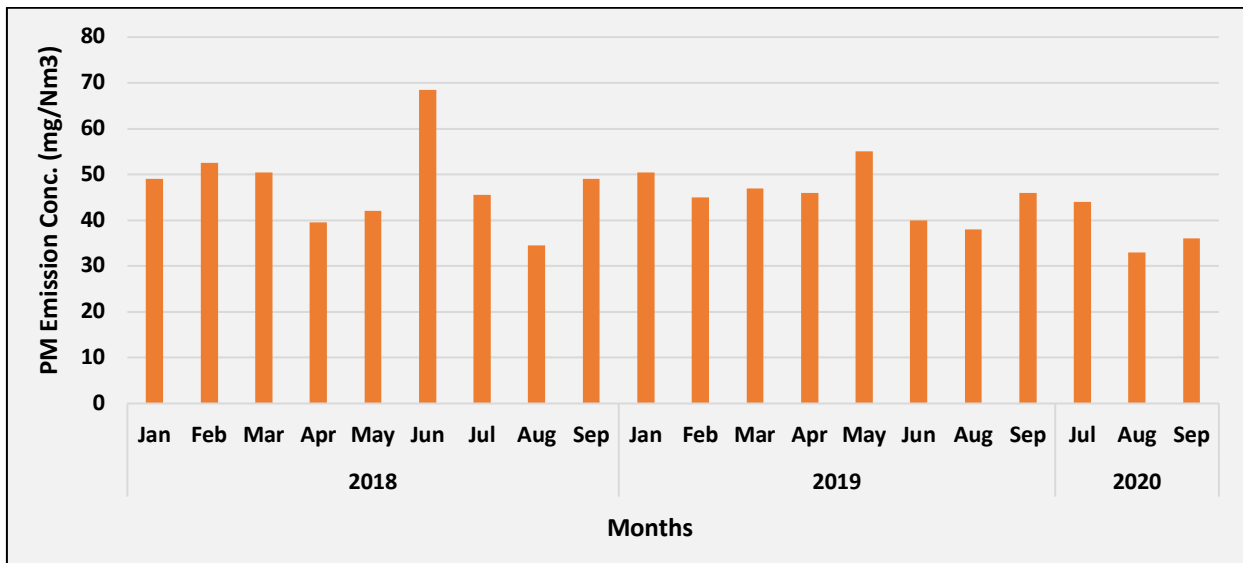


Fig. DA7: Time series of monthly average PM Emission concentration in Dadri TPP (Unit 2)

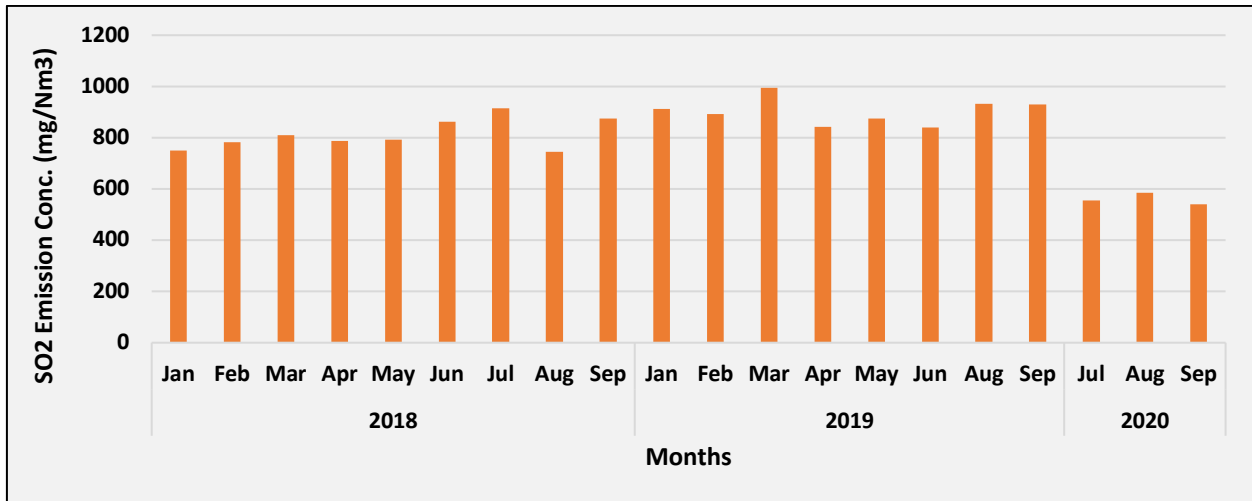


Fig. DA8: Time series of monthly average SO₂ Emission concentration in Dadri TPP (Unit 2)

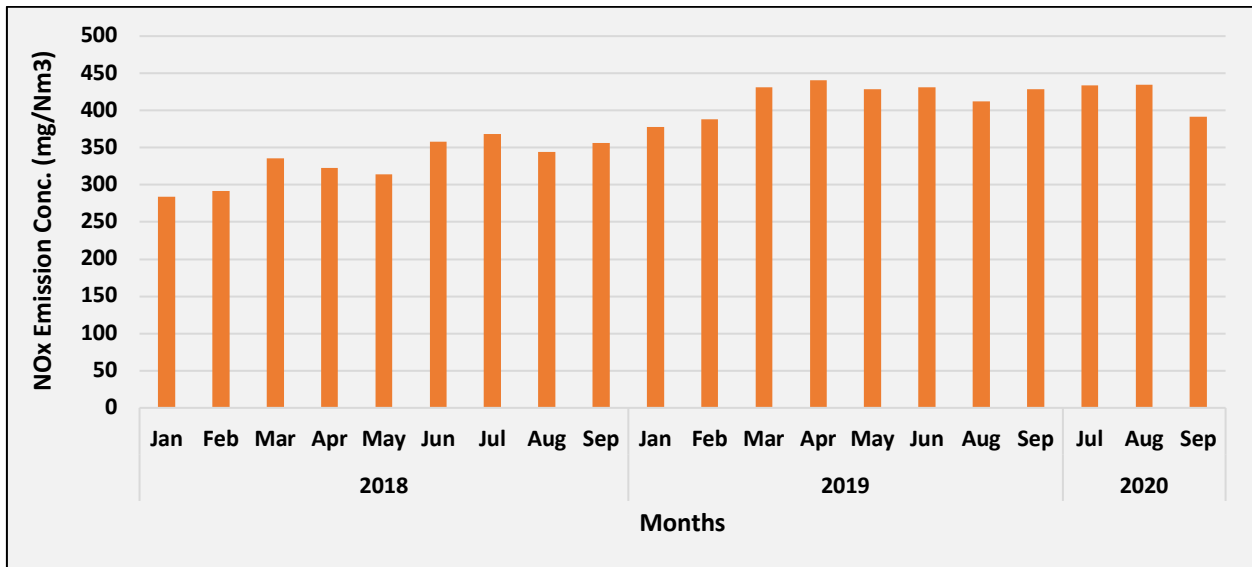


Fig. DA9: Time series of monthly average NO_x Emission concentration in Dadri TPP (Unit 2)

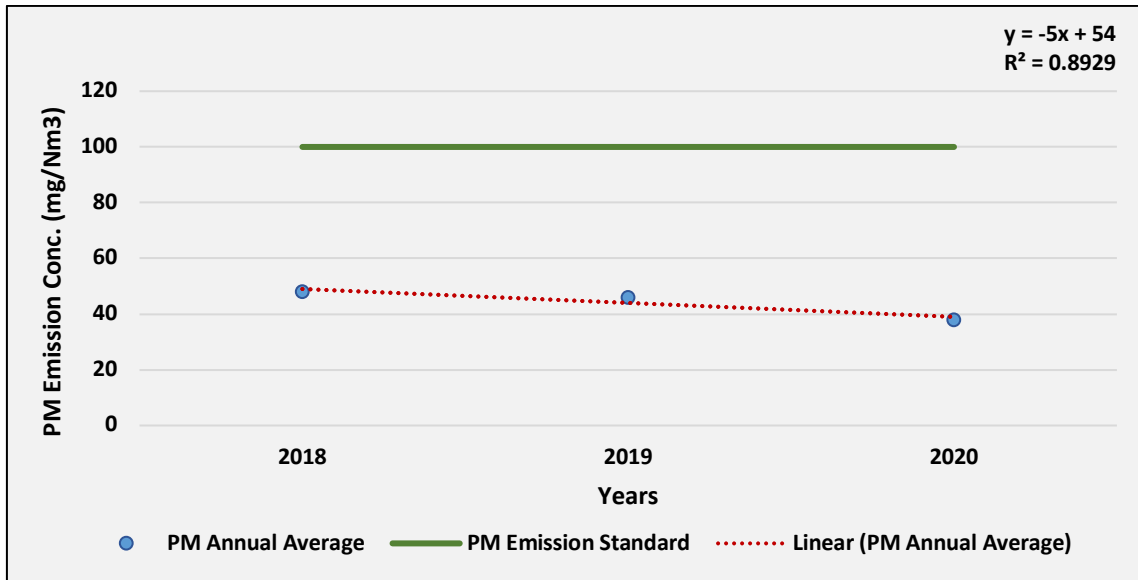


Fig. DA10: Trend of annual mean PM Emission air concentration in Dadri TPP (Unit 2)

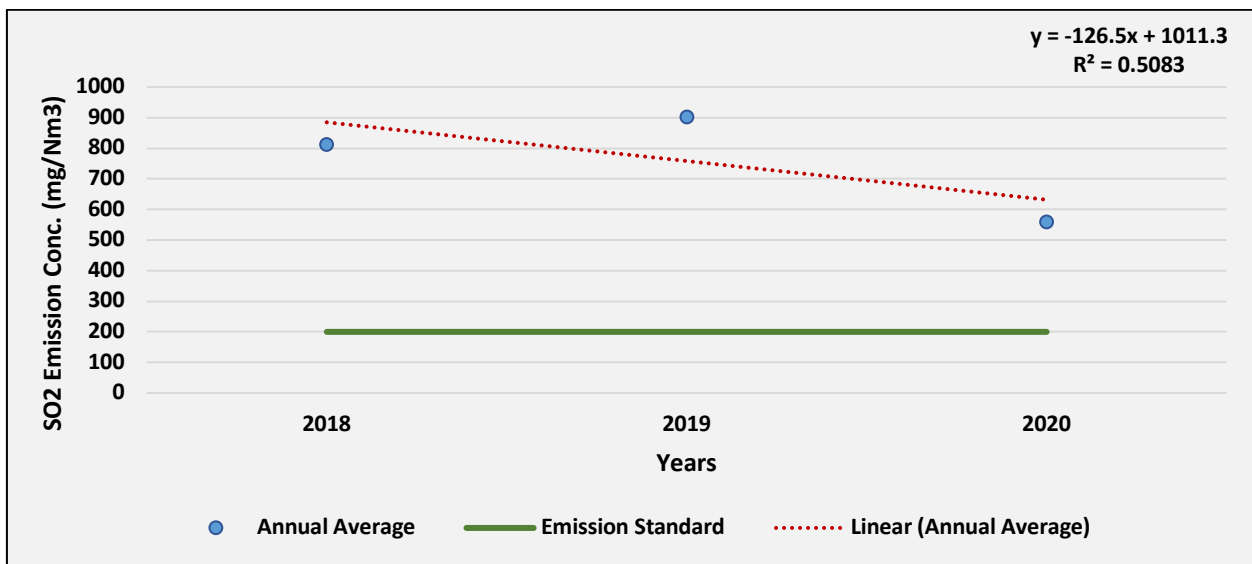


Fig. DA11: Trend of annual mean SO₂ Emission air concentration in Dadri TPP (Unit 2)

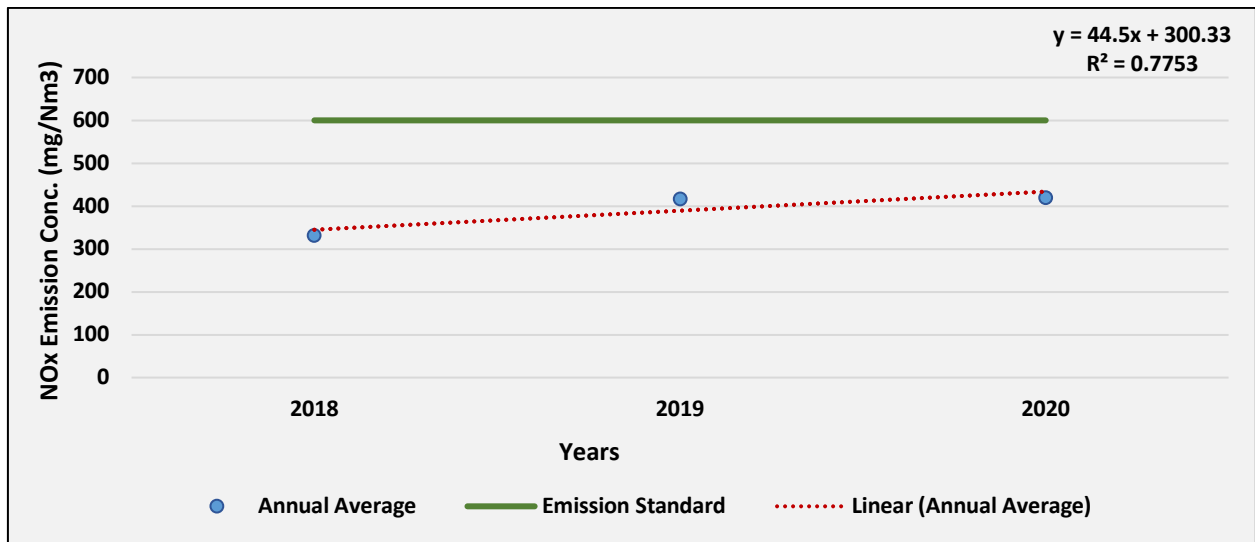


Fig. DA12: Trend of annual mean NO_x Emission air concentration in Dadri TPP (Unit 2)

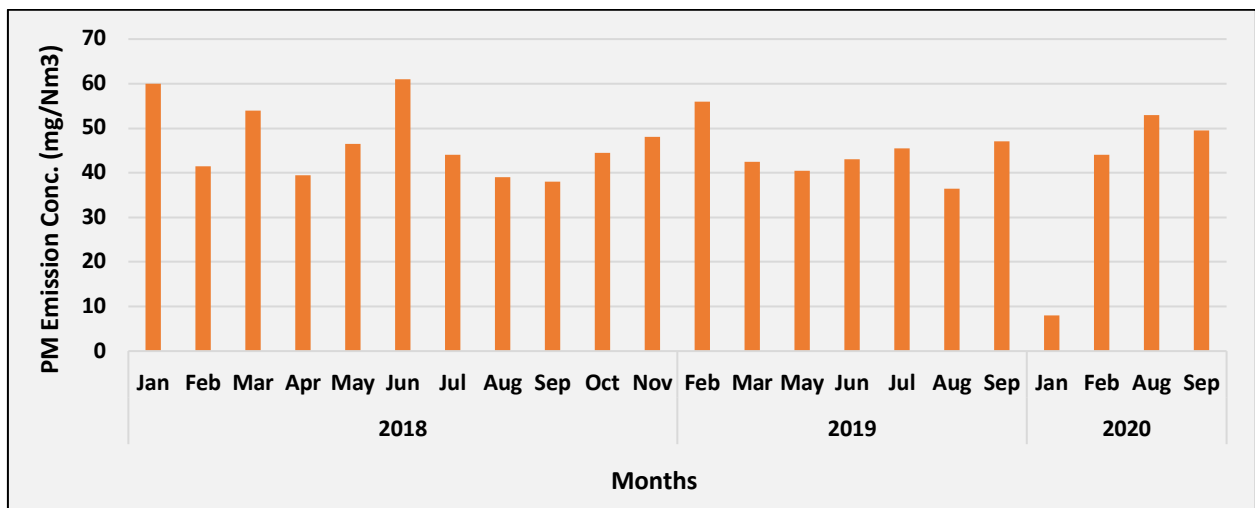


Fig. DA13: Time series of monthly average PM Emission concentration in Dadri TPP (Unit 3)

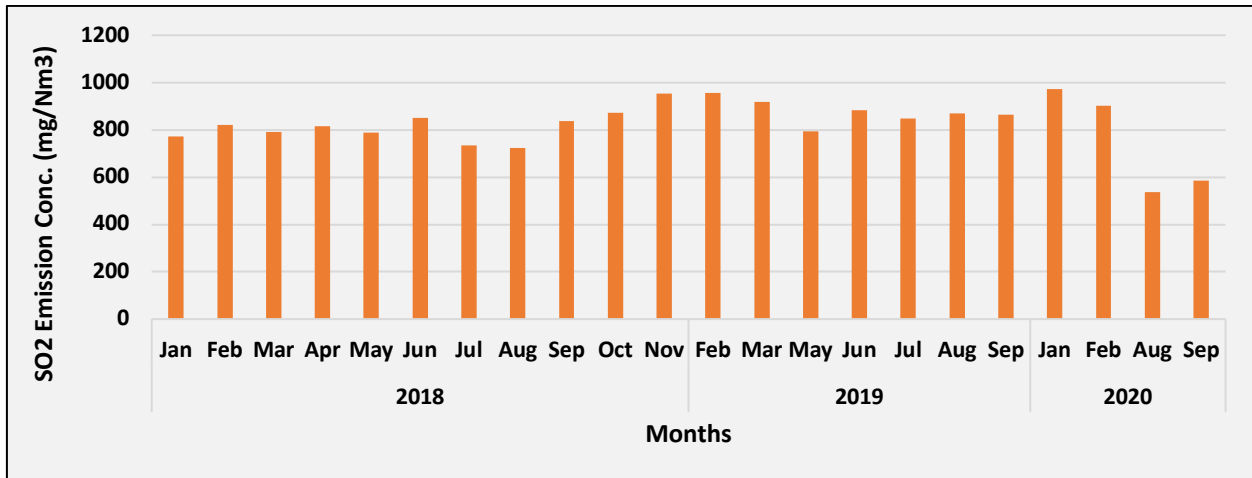


Fig. DA14: Time series of monthly average SO₂ Emission concentration in Dadri TPP (Unit 3)

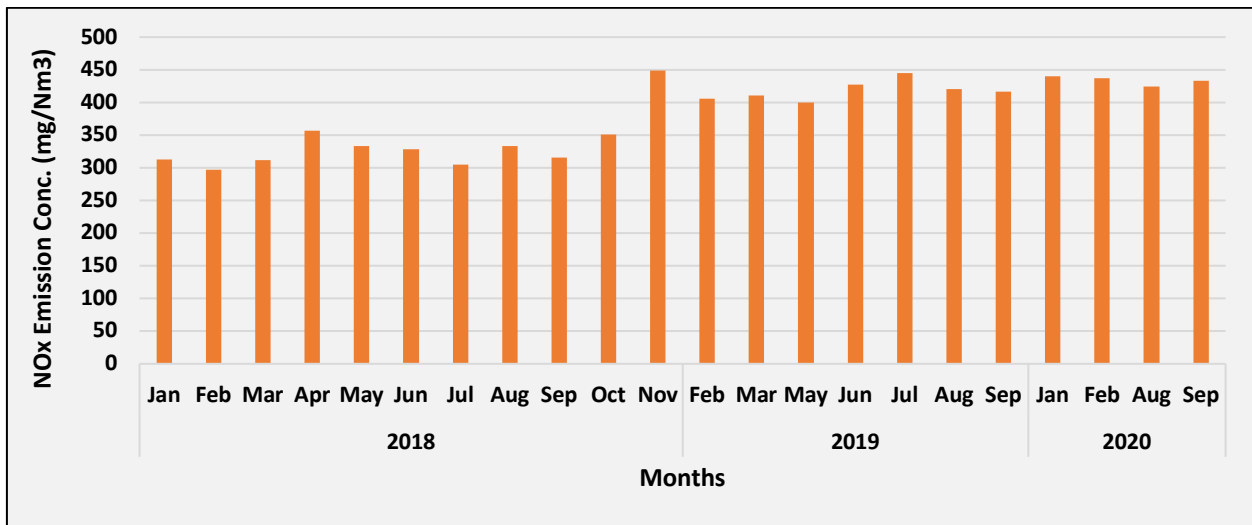


Fig. DA15: Time series of monthly average NO_x Emission concentration in Dadri TPP (Unit 3)

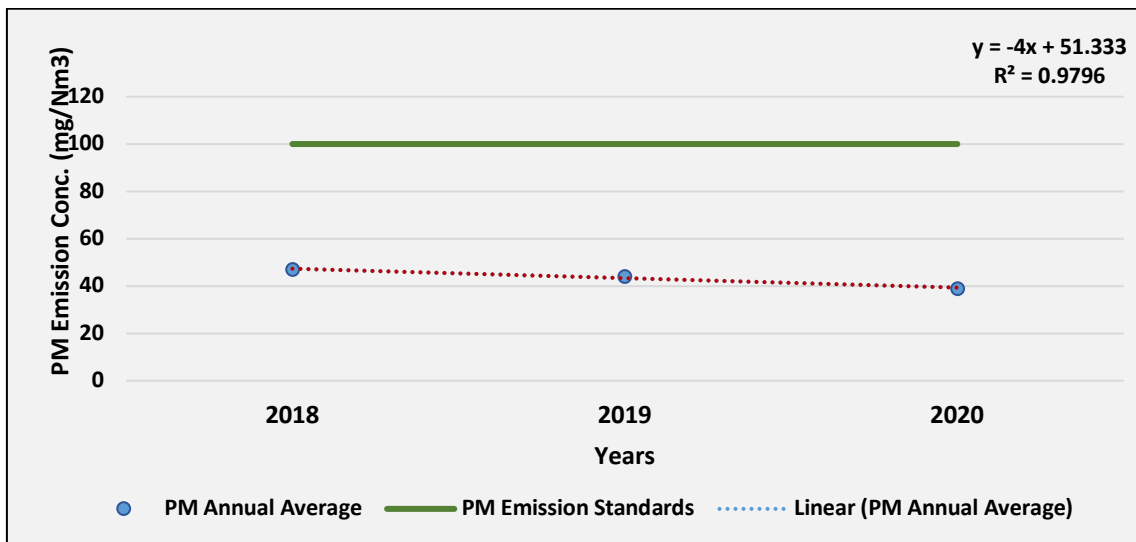


Fig. DA16: Trend of annual mean PM Emission air concentration in Dadri TPP (Unit 3)

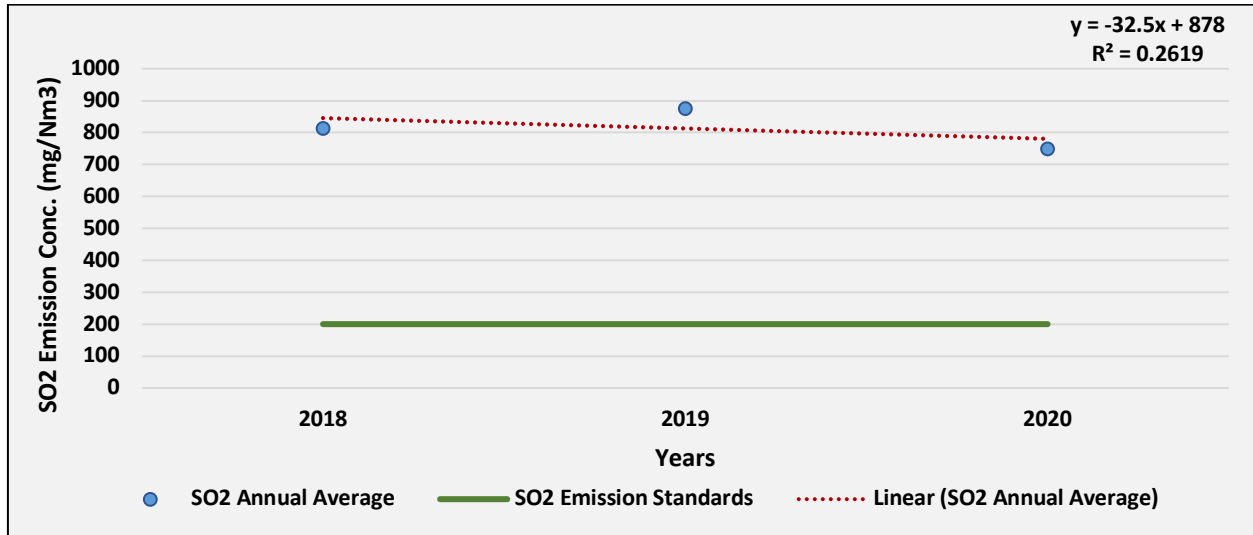


Fig. DA17: Trend of annual mean SO₂ Emission air concentration in Dadri TPP (Unit 3)

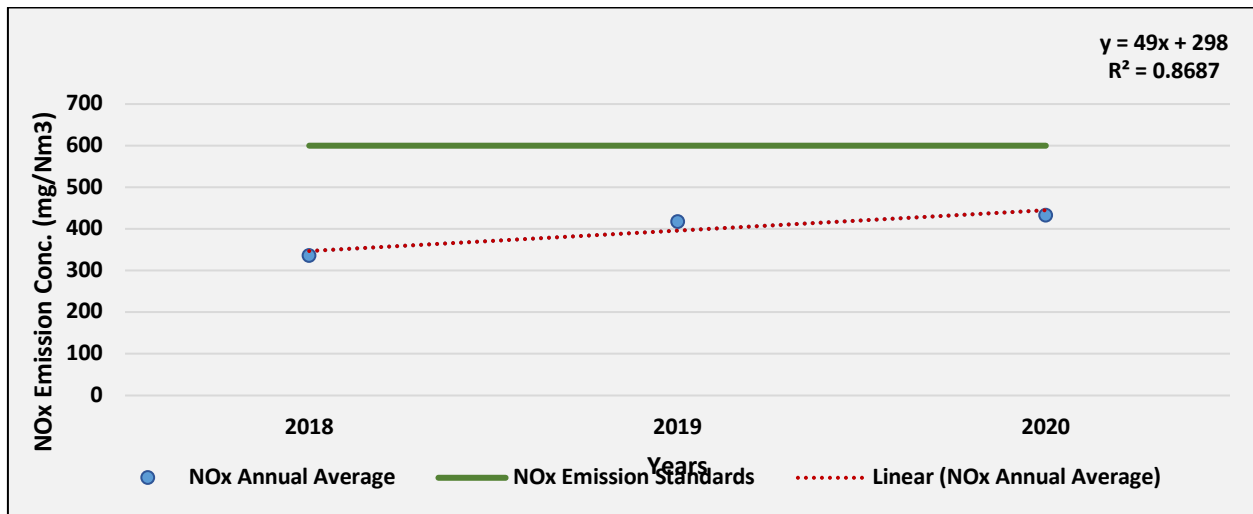


Fig. DA18: Trend of annual mean NO_x Emission air concentration in Dadri TPP (Unit 3)

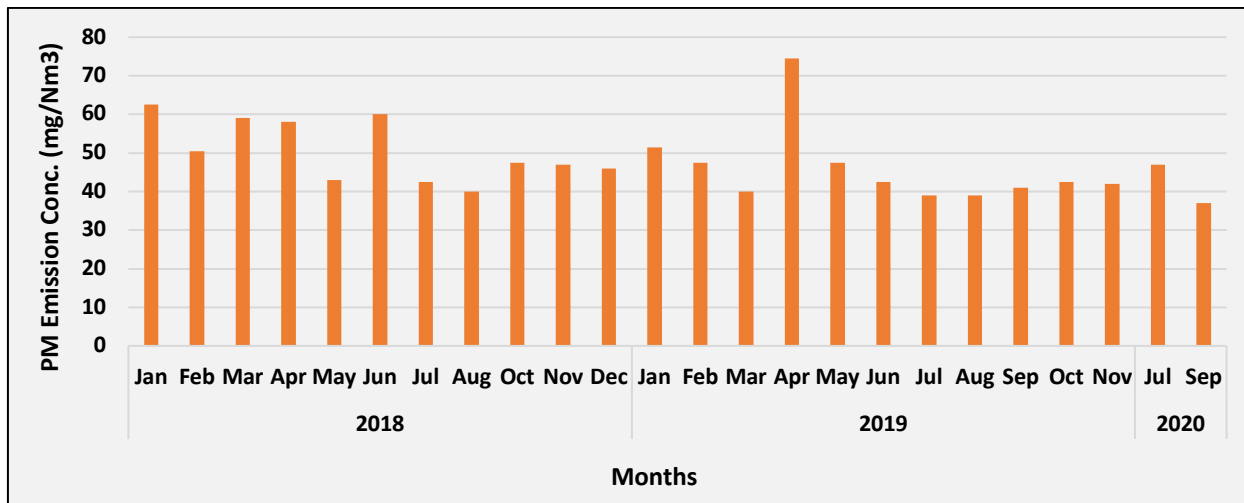


Fig. DA19: Time series of monthly average PM Emission concentration in Dadri TPP (Unit 4)

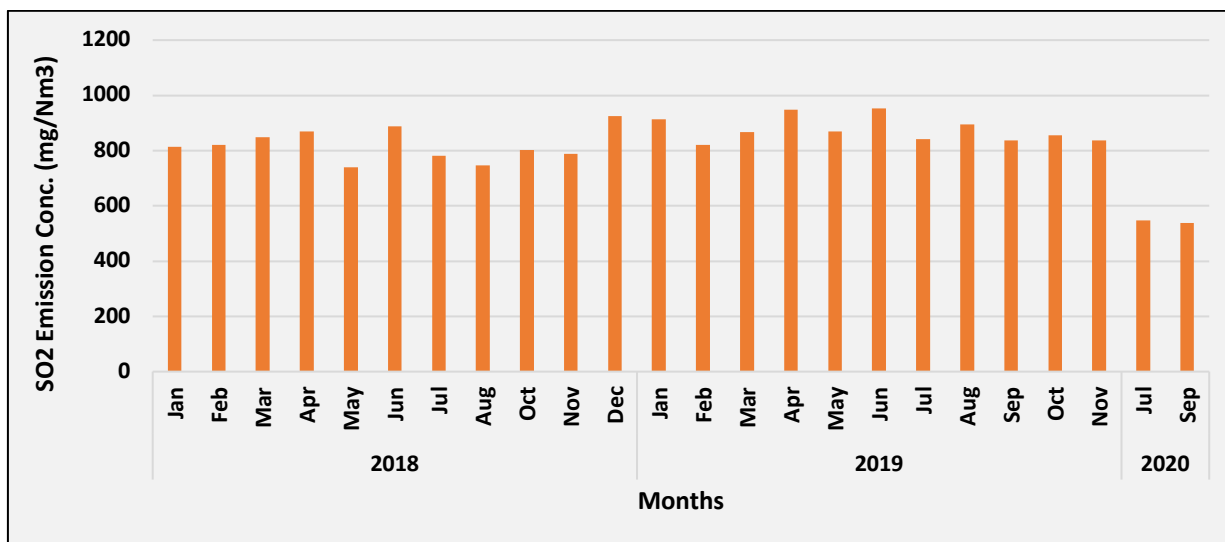


Fig. DA20: Time series of monthly average SO₂ Emission concentration in Dadri TPP (Unit 4)

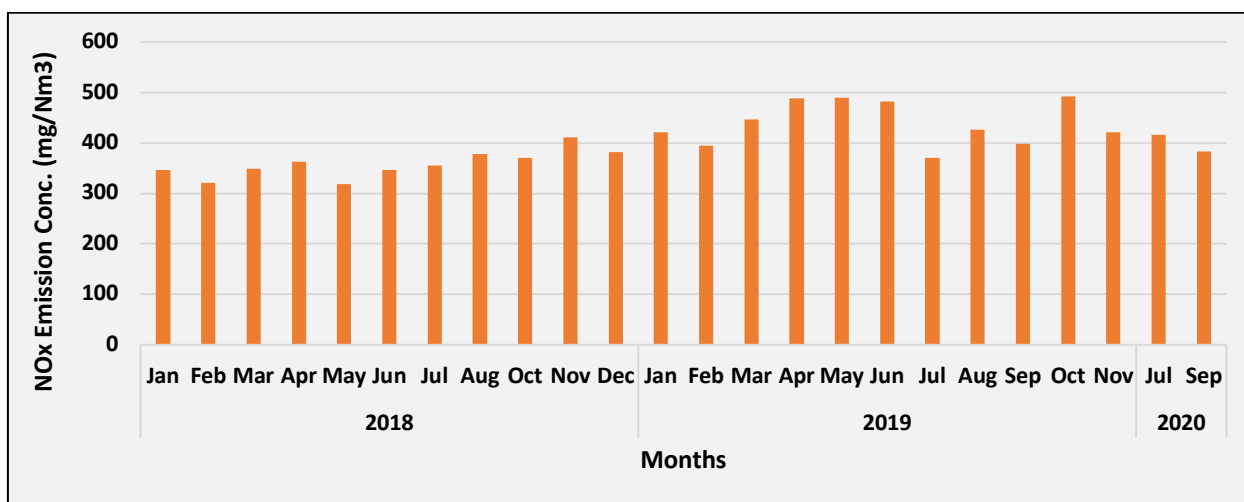


Fig. DA21: Time series of monthly average NO_x Emission concentration in Dadri TPP (Unit 4)

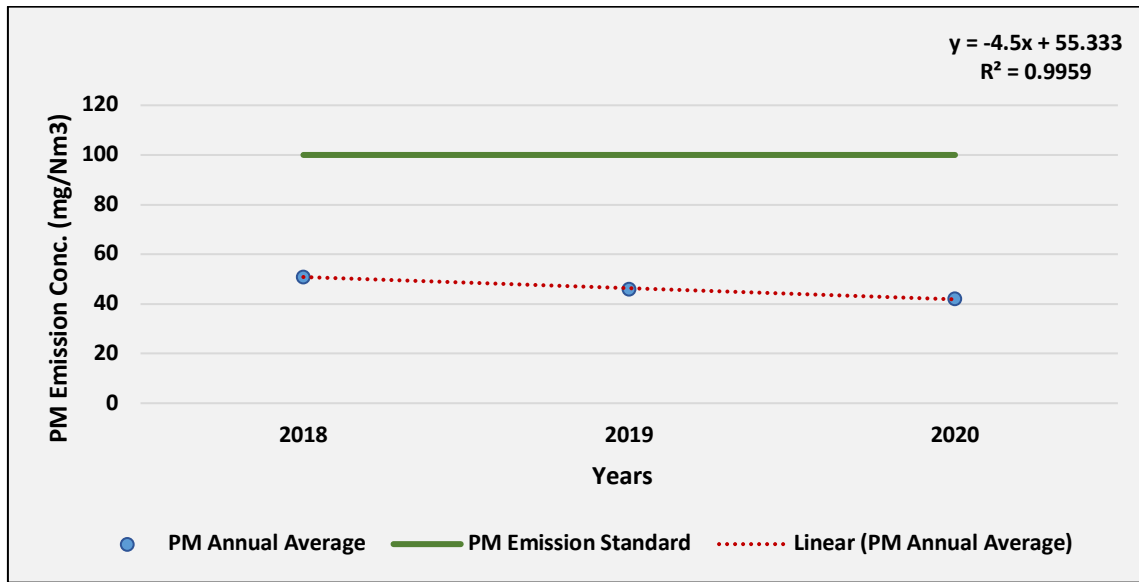


Fig. DA22: Trend of annual mean PM Emission air concentration in Dadri TPP (Unit 4)

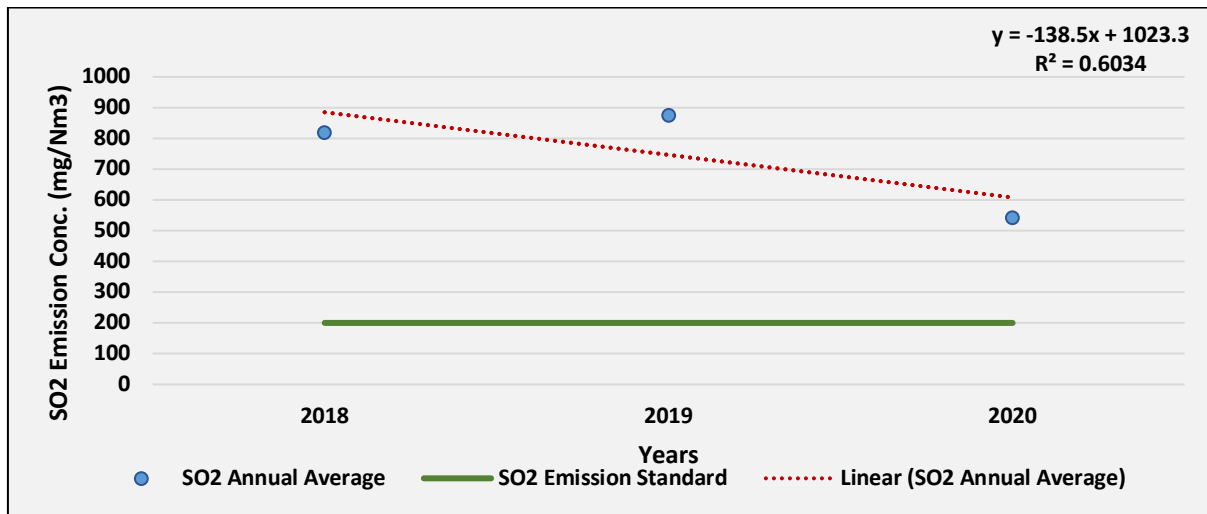


Fig. DA23: Trend of annual mean SO₂ Emission air concentration in Dadri TPP (Unit 4)

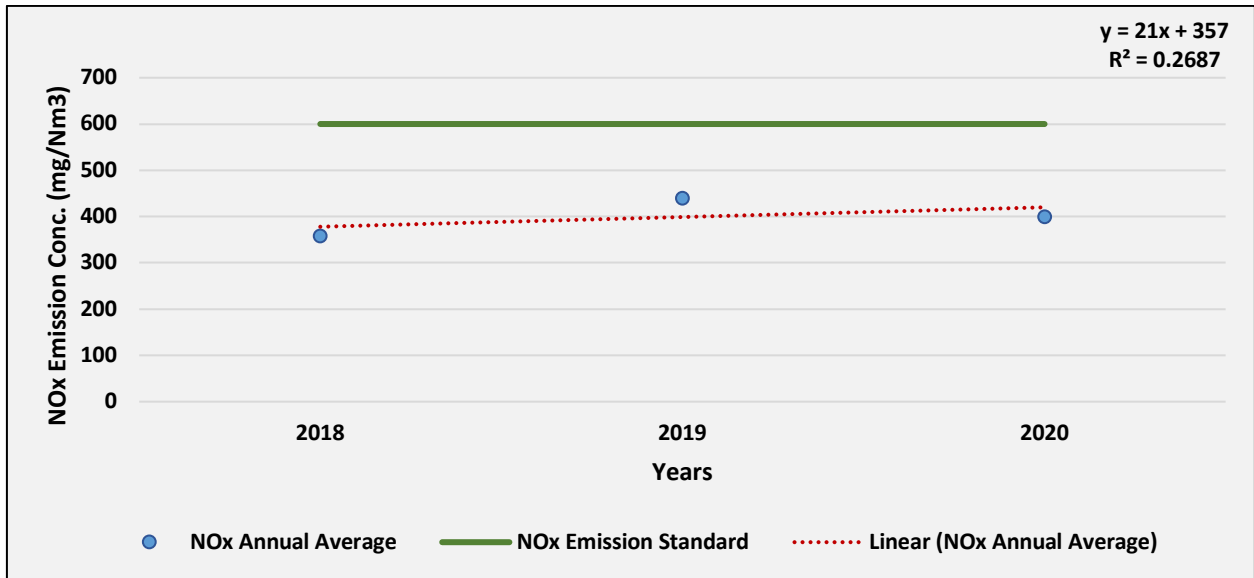


Fig. DA24: Trend of annual mean NO_x Emission air concentration in Dadri TPP (Unit 4)

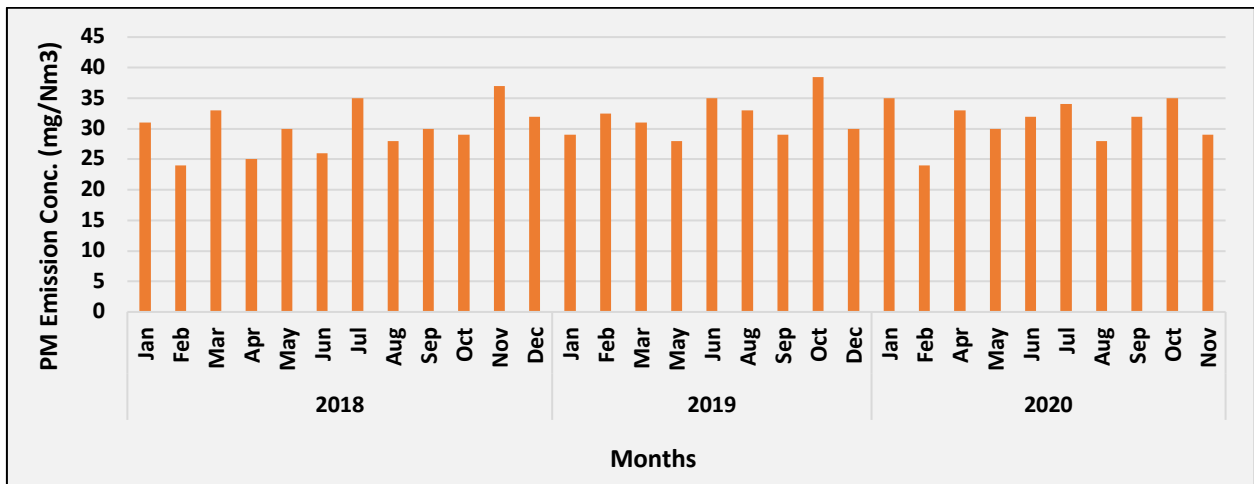


Fig. DA25: Time series of monthly average PM Emission concentration in Dadri TPP (Unit 5)

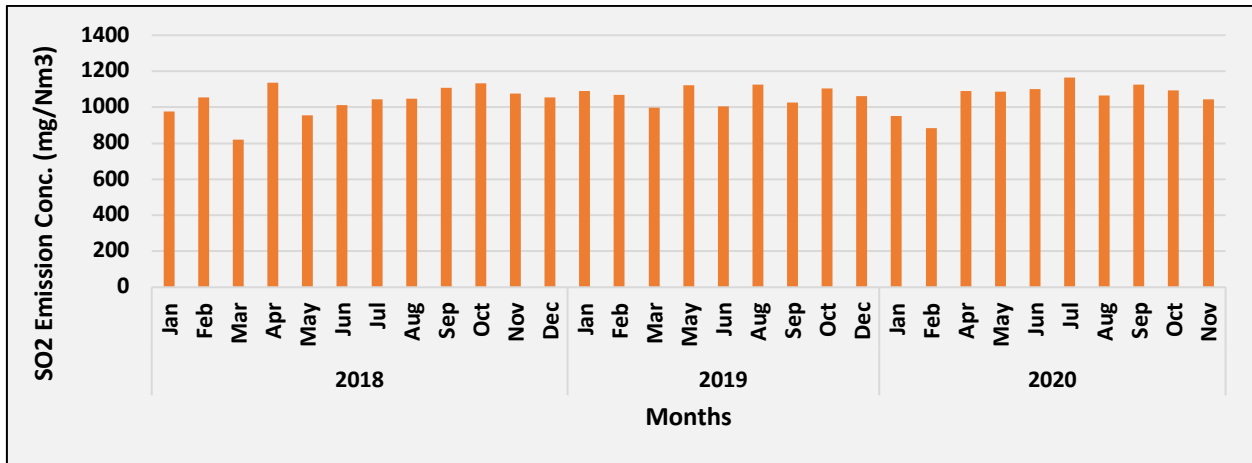


Fig. DA26: Time series of monthly average SO₂ Emission concentration in Dadri TPP (Unit 5)

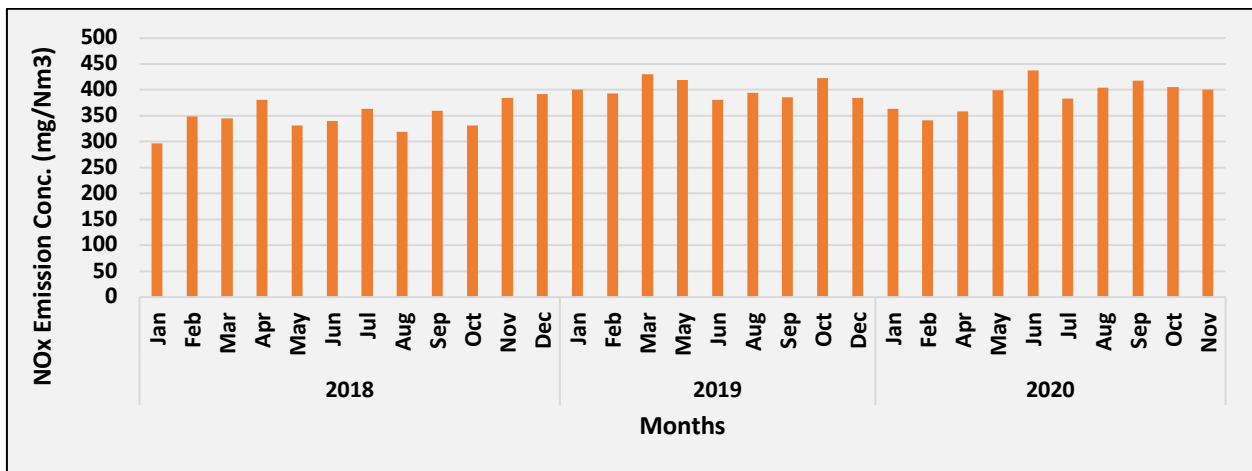


Fig. DA27: Time series of monthly average NO_x Emission concentration in Dadri TPP (Unit 5)

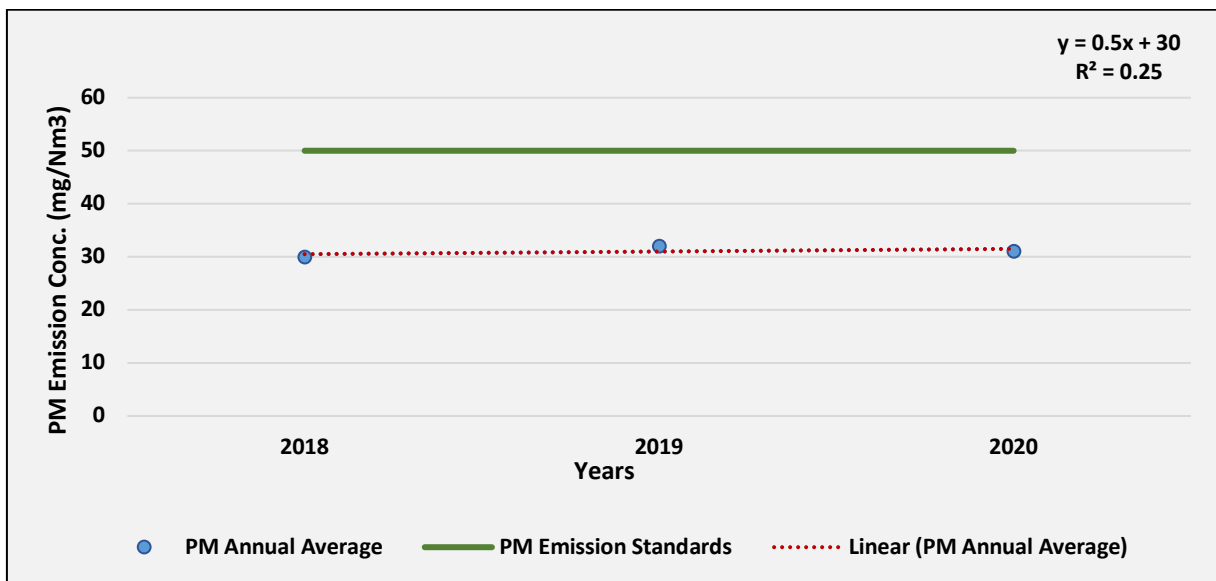


Fig. DA28: Trend of annual mean PM Emission air concentration in Dadri TPP (Unit 5)

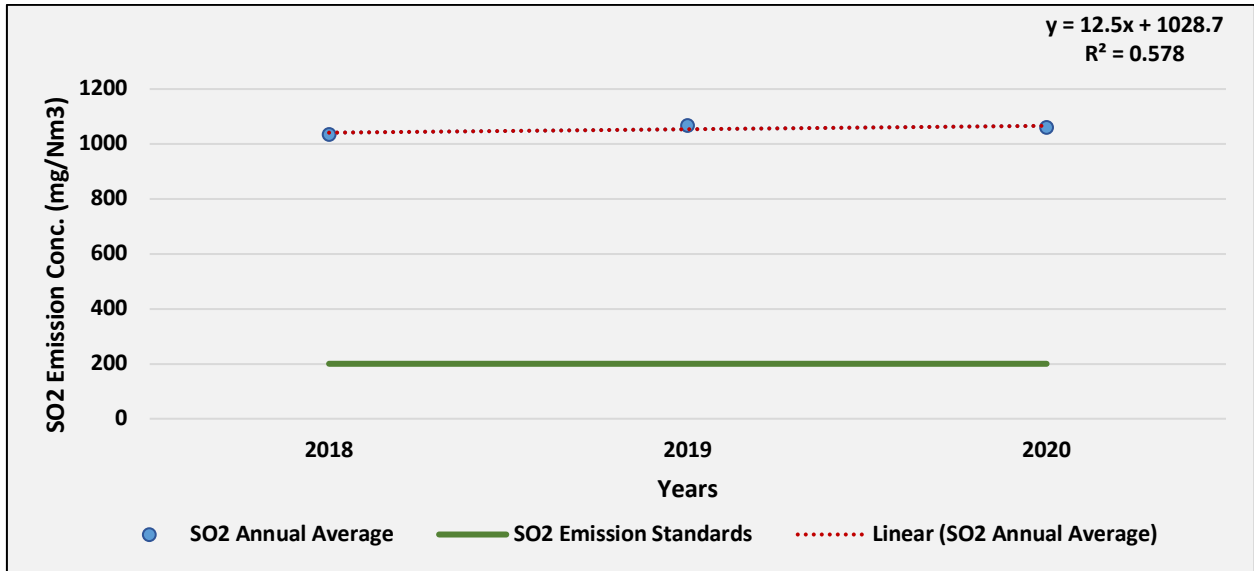


Fig. DA29: Trend of annual mean SO₂ Emission air concentration in Dadri TPP (Unit 5)

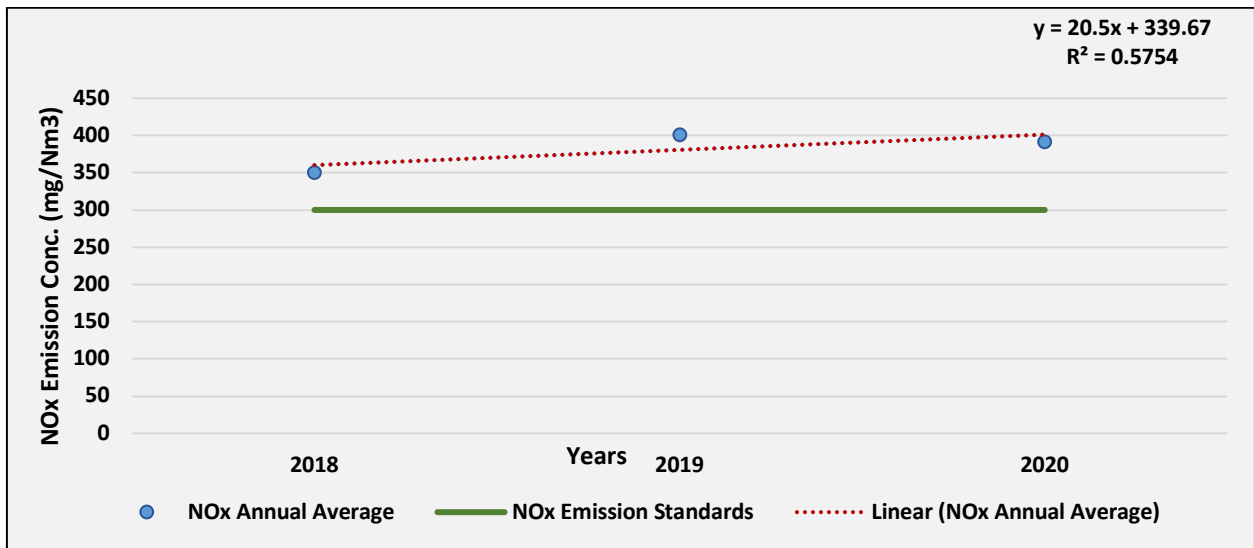


Fig. DA30: Trend of annual mean NO_x Emission air concentration in Dadri TPP (Unit 5)

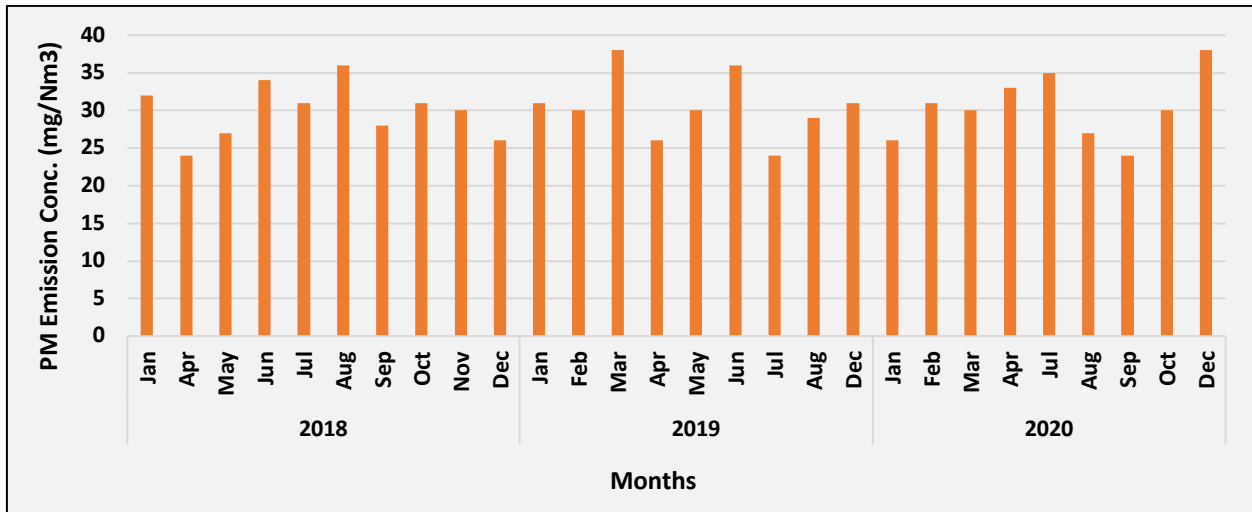


Fig. DA31: Time series of monthly average PM Emission concentration in Dadri TPP (Unit 6)

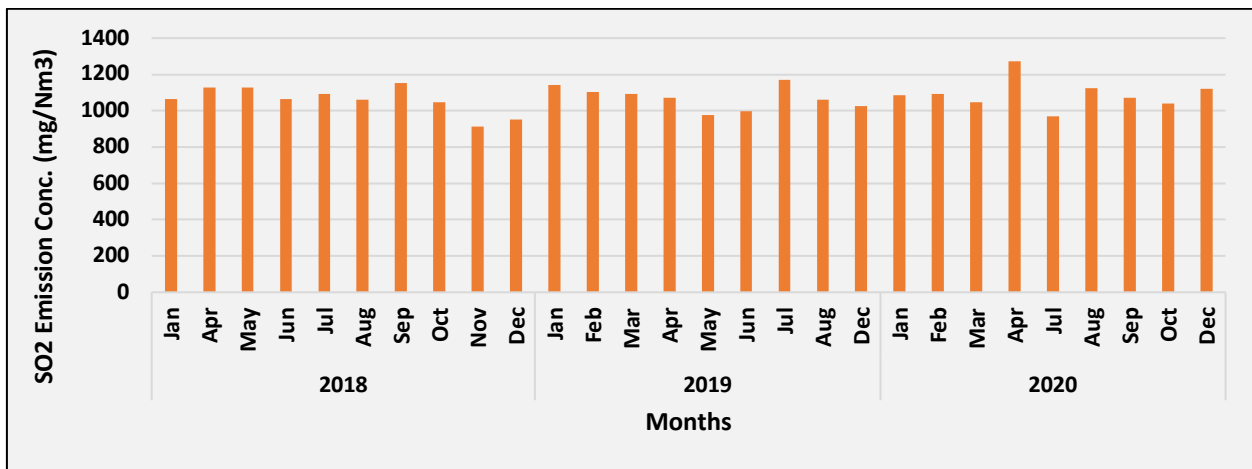


Fig. DA32: Time series of monthly average SO₂ Emission concentration in Dadri TPP (Unit 6)

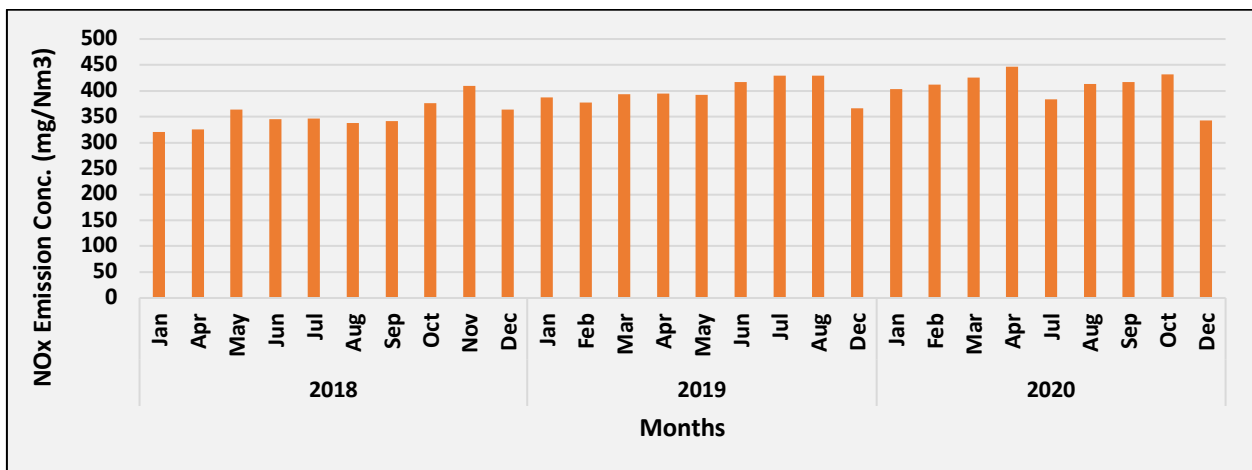


Fig. DA33: Time series of monthly average NO_x Emission concentration in Dadri TPP (Unit 6)

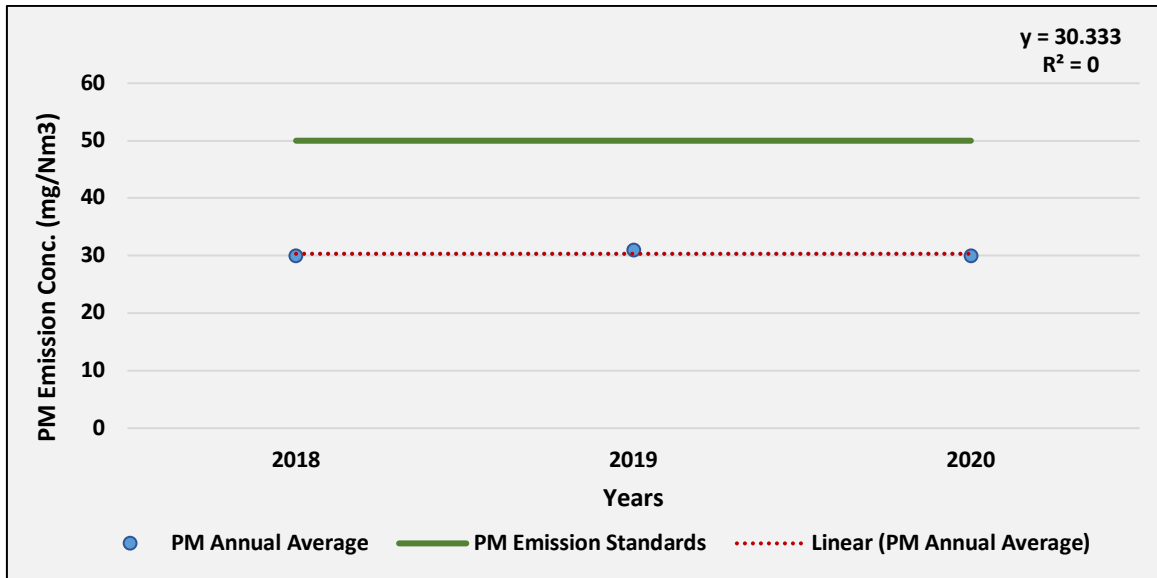


Fig. DA34: Trend of annual mean PM Emission air concentration in Dadri TPP (Unit 6)

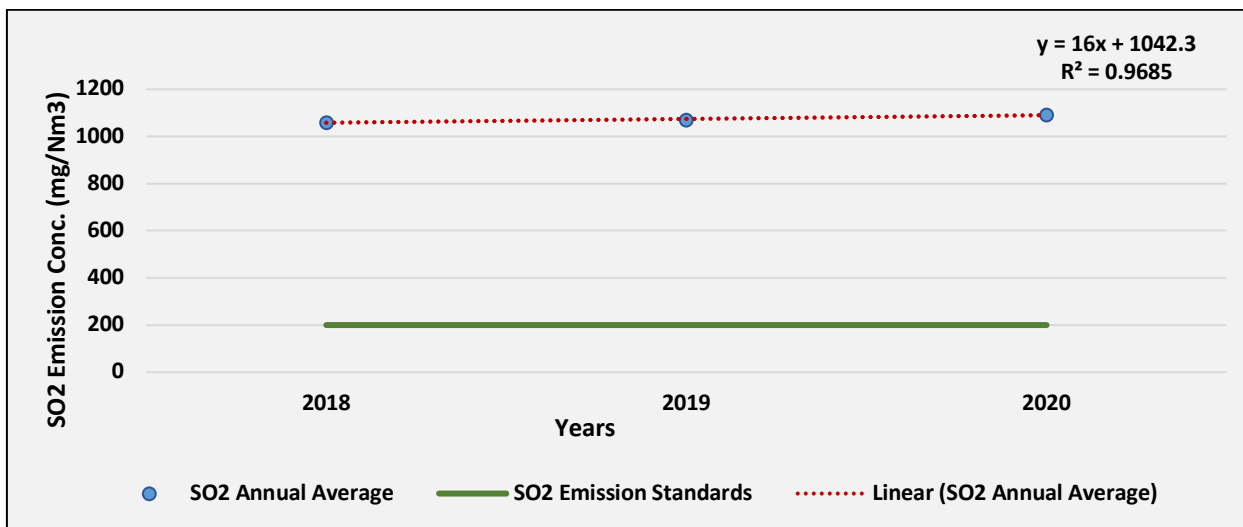


Fig. DA35: Trend of annual mean SO₂ Emission air concentration in Dadri TPP (Unit 6)

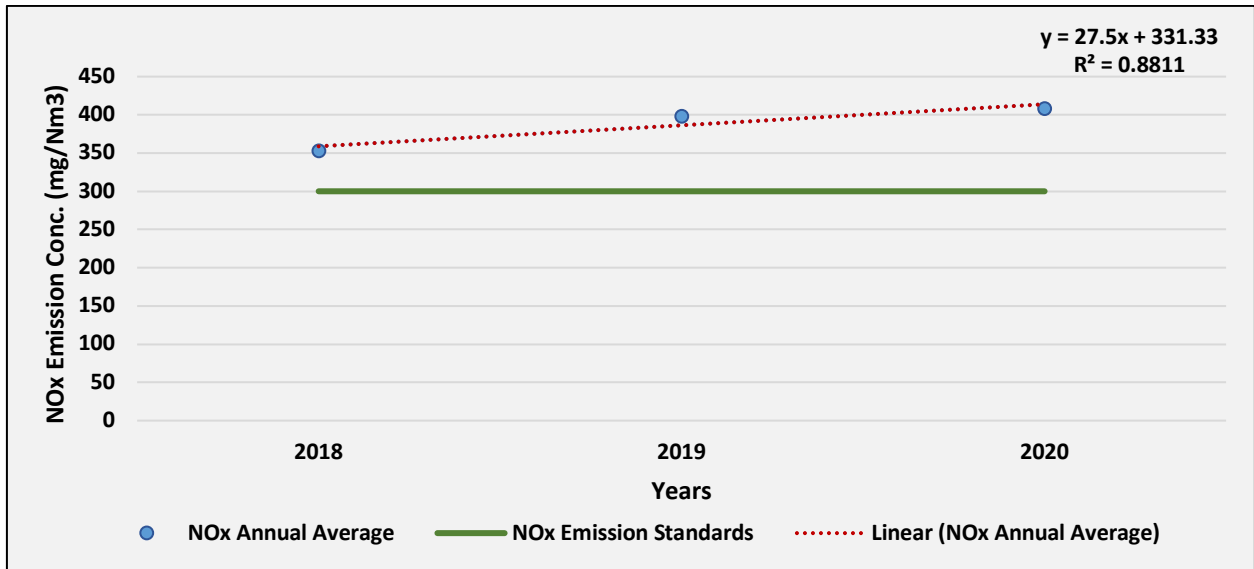


Fig. DA36: Trend of annual mean NO_x Emission air concentration in Dadri TPP (Unit 6)

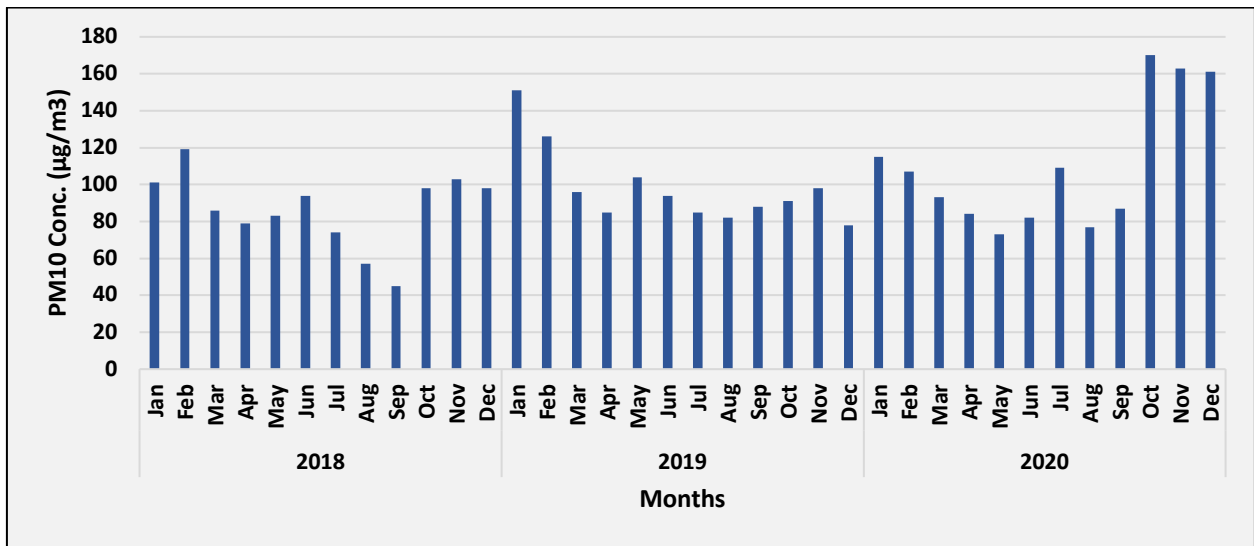


Fig. DA37: Time series of monthly average PM₁₀ ambient air concentration in Dadri TPP (Ambient)

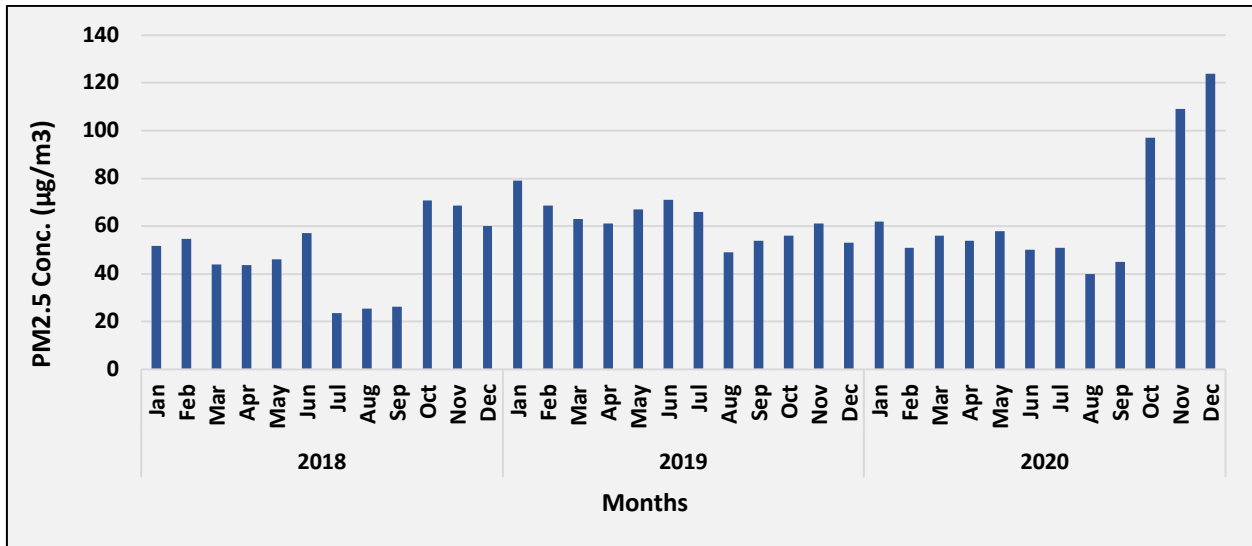


Fig. DA38: Time series of monthly average PM_{2.5} ambient air concentration in Dadri TPP (Ambient)

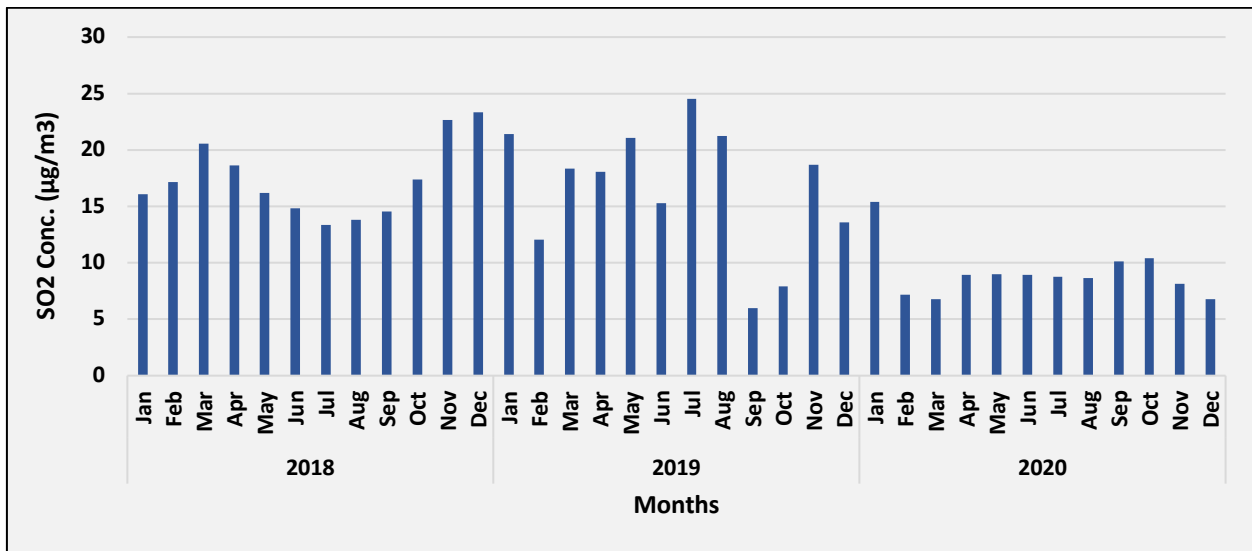


Fig. DA39: Time series of monthly average SO₂ ambient air concentration in Dadri TPP (Ambient)

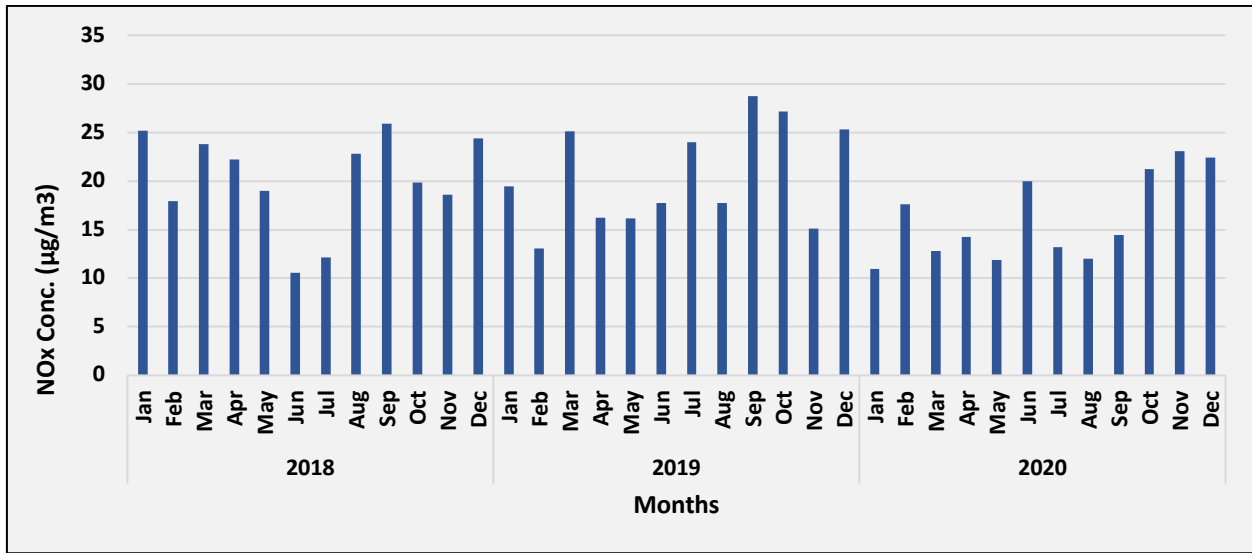


Fig. DA40: Time series of monthly average NO_x ambient air concentration in Dadri TPP (Ambient)

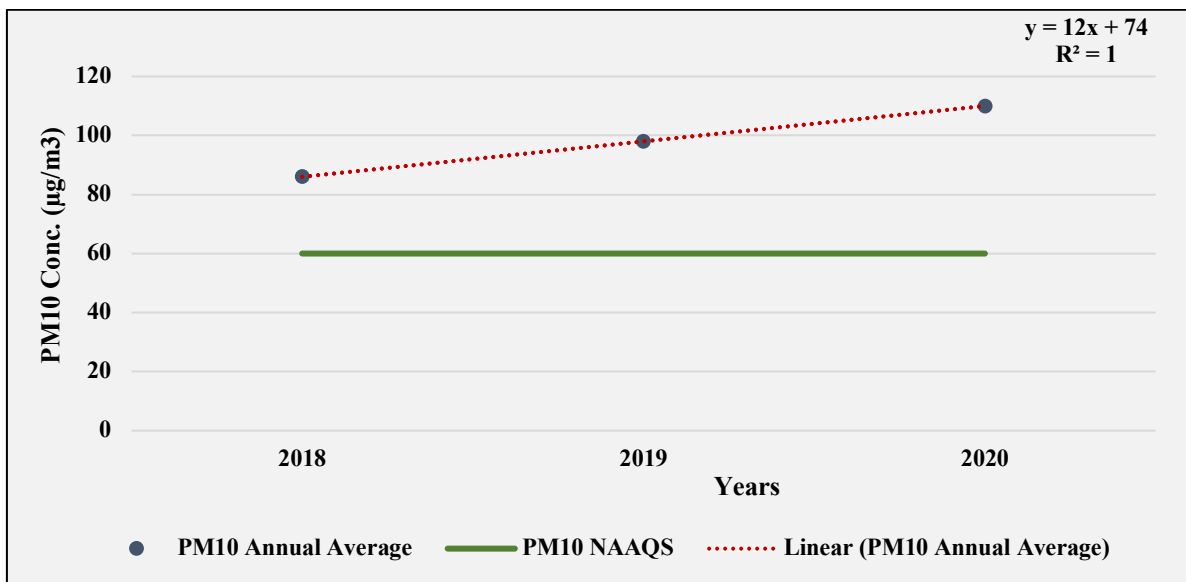


Fig. DA41: Trend of annual mean PM₁₀ ambient air concentration in Dadri TPP (Ambient)

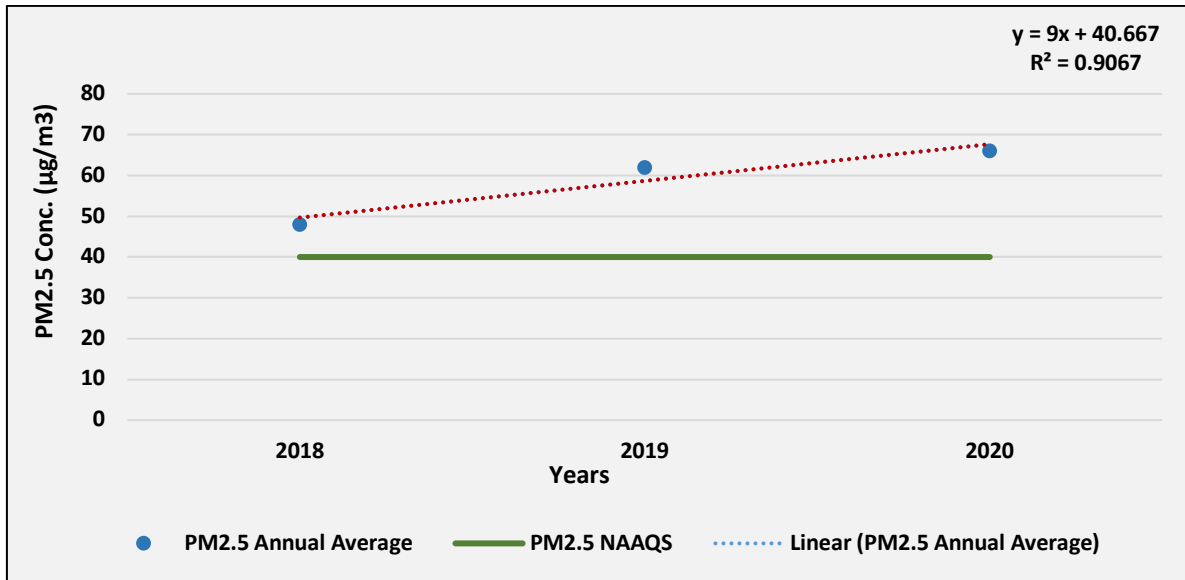


Fig. DA42: Trend of annual mean PM_{2.5} ambient air concentration in Dadri TPP (Ambient)

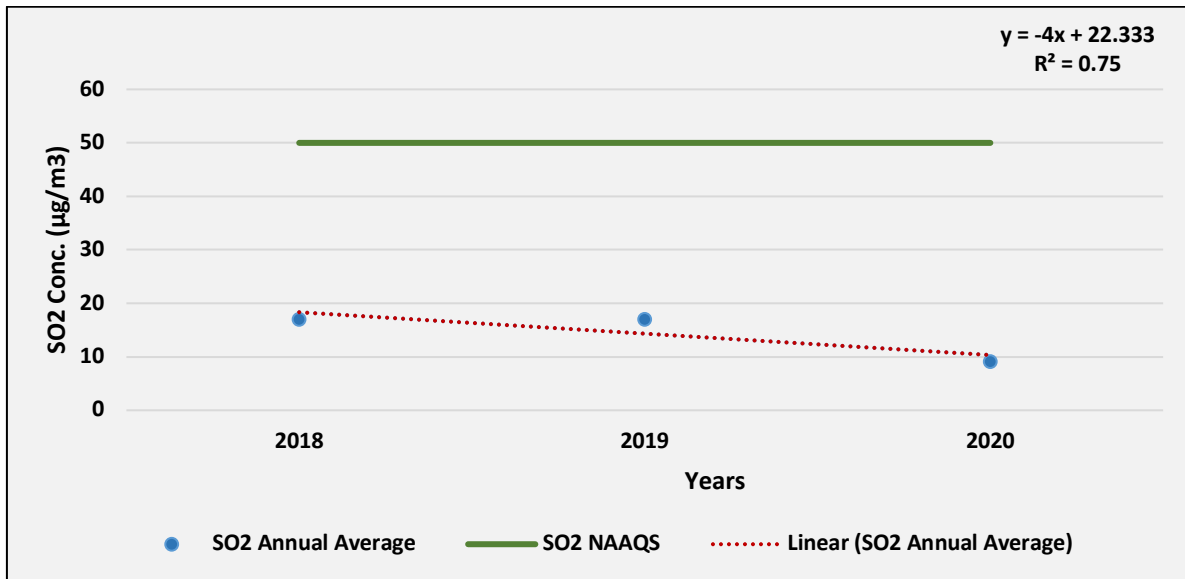


Fig. DA43: Trend of annual mean SO₂ ambient air concentration in Dadri TPP (Ambient)

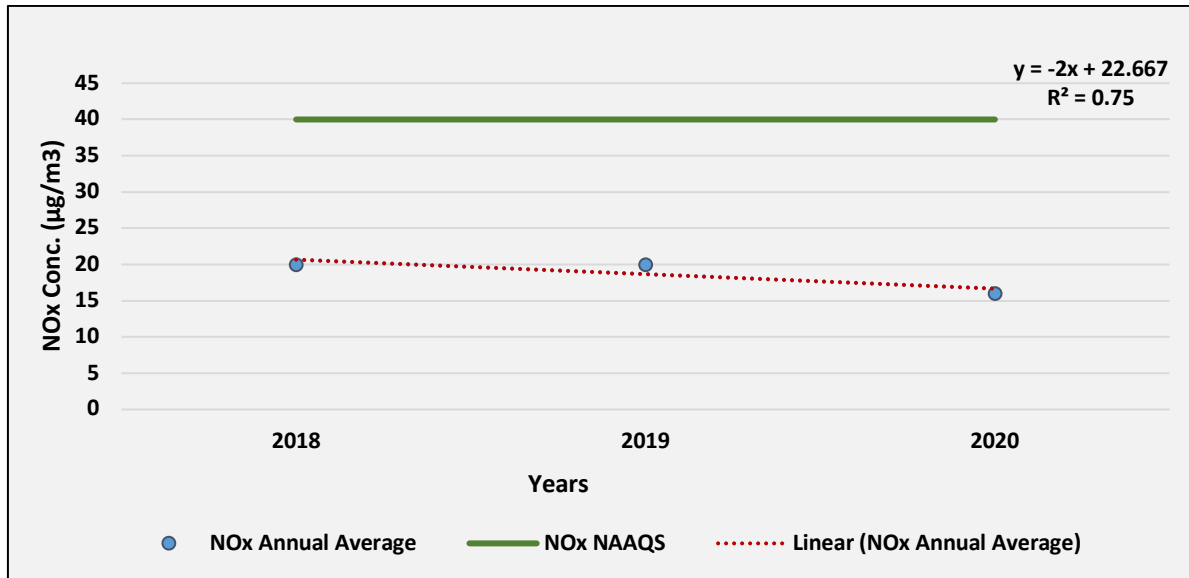


Fig. DA44: Trend of annual mean NO_x ambient air concentration in Dadri TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, Pm_{2.5} are exceeding whereas the SO₂ &NO_x levels are mostly within a range, which is good as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and two stacks for NO_x parameter are higher than the emission norms.

RAMAGUNDAM THERMAL POWER PLANT

Ramagundam power station is a 2,600-megawatt (MW) coal-fired power station in Telangana, India. An additional 1,600 MW has been proposed to be added at the same location, known as Ramagundam Stage IV or as the Telangana super thermal power project. Ramagundam power station is owned and operated by the National Thermal Power Corporation.

The ambient air quality concentrations of PM₁₀, PM_{2.5} SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. RAM1 – Fig. RAM50) for the last three years (2018-2020) using data provided by NTPC developer for Ramagundam Power plant, Telangana, India.

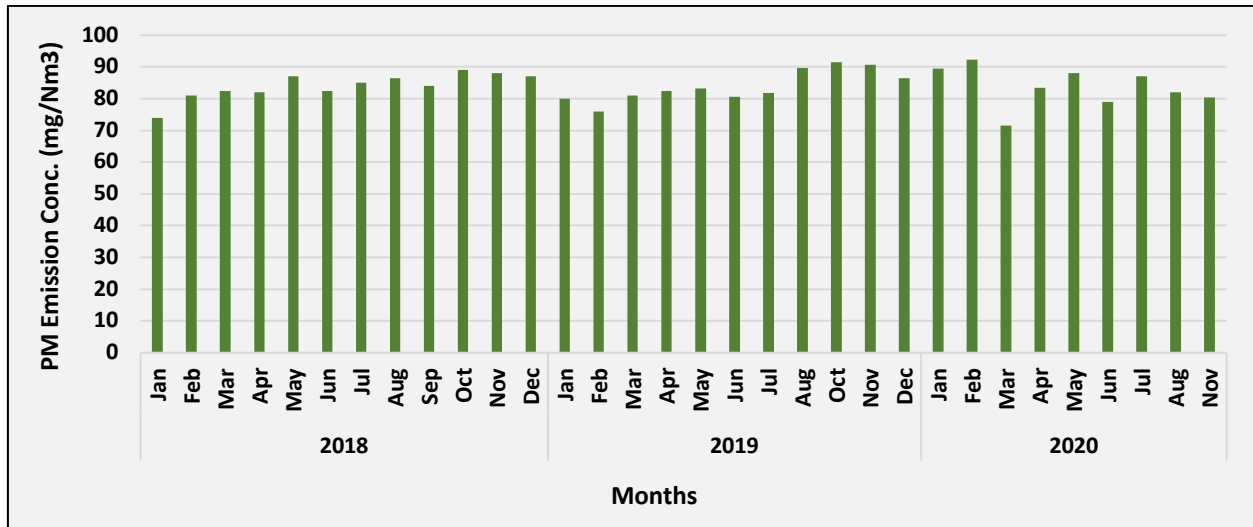


Fig. RAM1: Time series of monthly average PM Emission concentration in Ramagundam TPP (Unit 1)

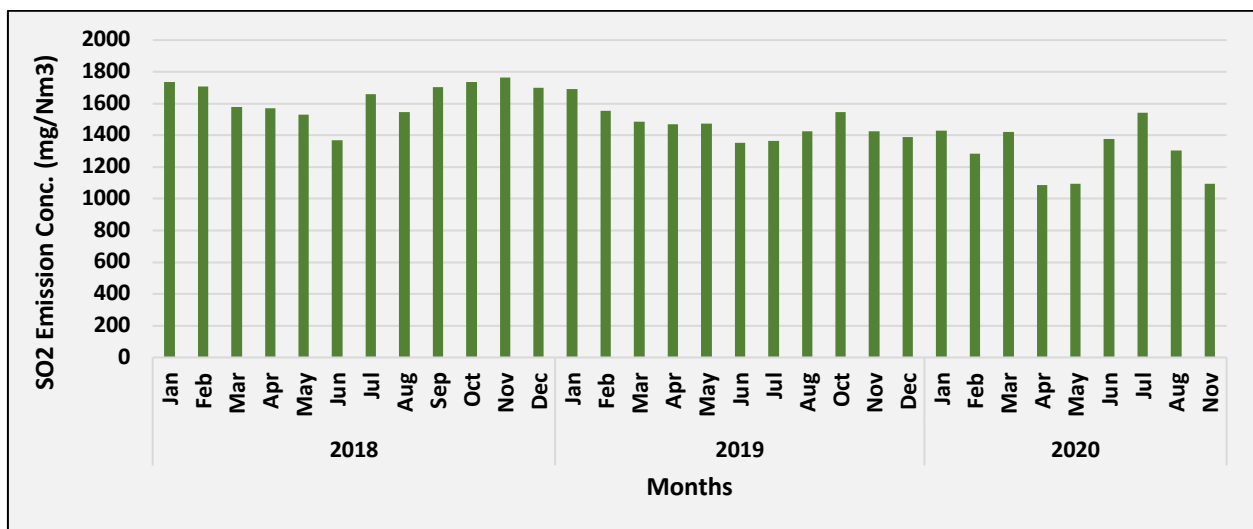


Fig. RAM2: Time series of monthly average SO₂ Emission concentration in Ramagundam TPP (Unit 1)

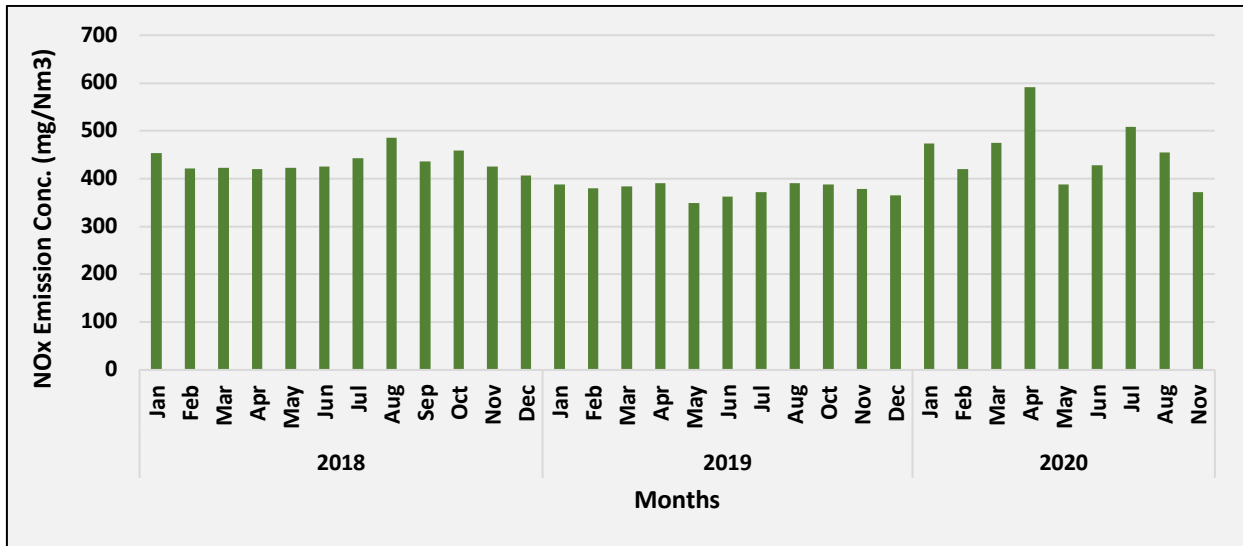


Fig. RAM3: Time series of monthly average NO_x Emission concentration in Ramagundam TPP (Unit 1)

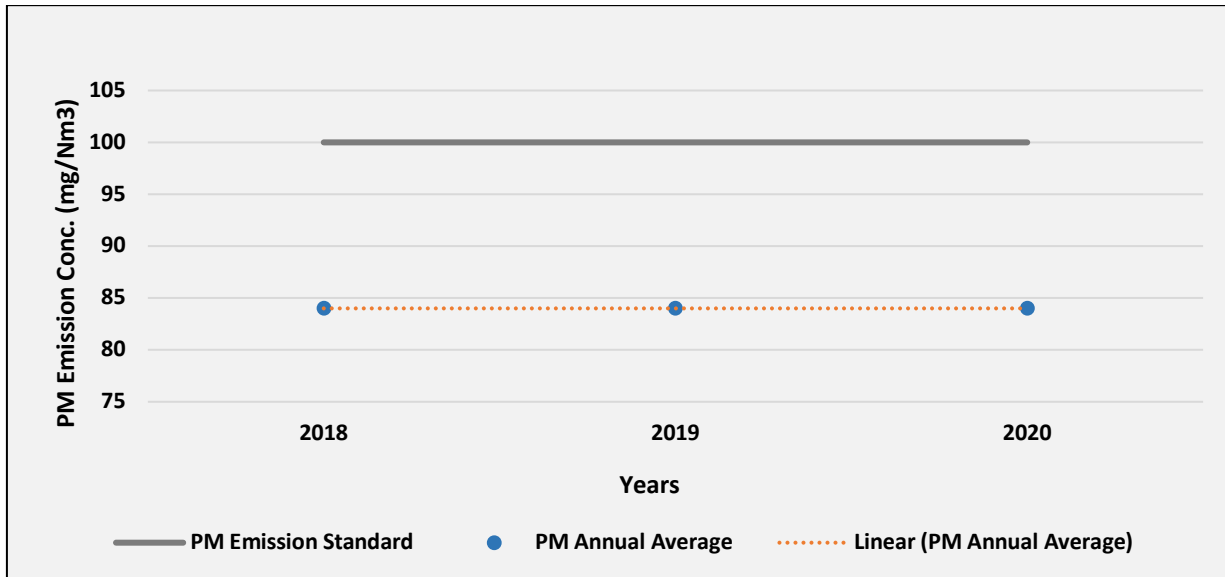


Fig. RAM4: Trend of annual mean PM Emission air concentration in Ramagundam TPP (Unit 1)

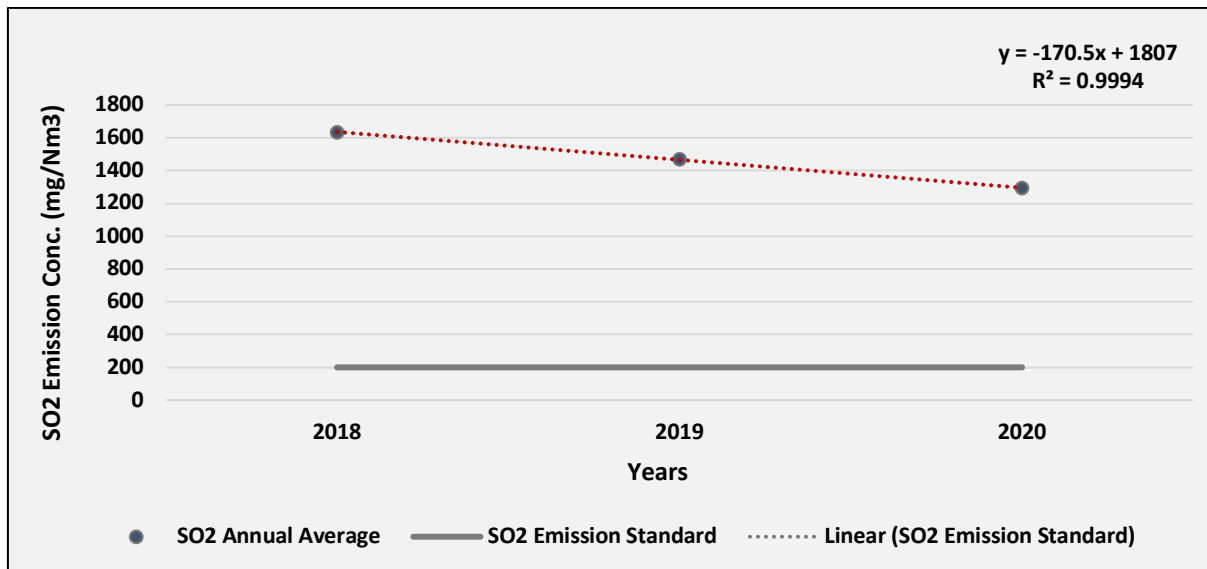


Fig. RAM5: Trend of annual mean SO₂ Emission air concentration in Ramagundam TPP (Unit 1)

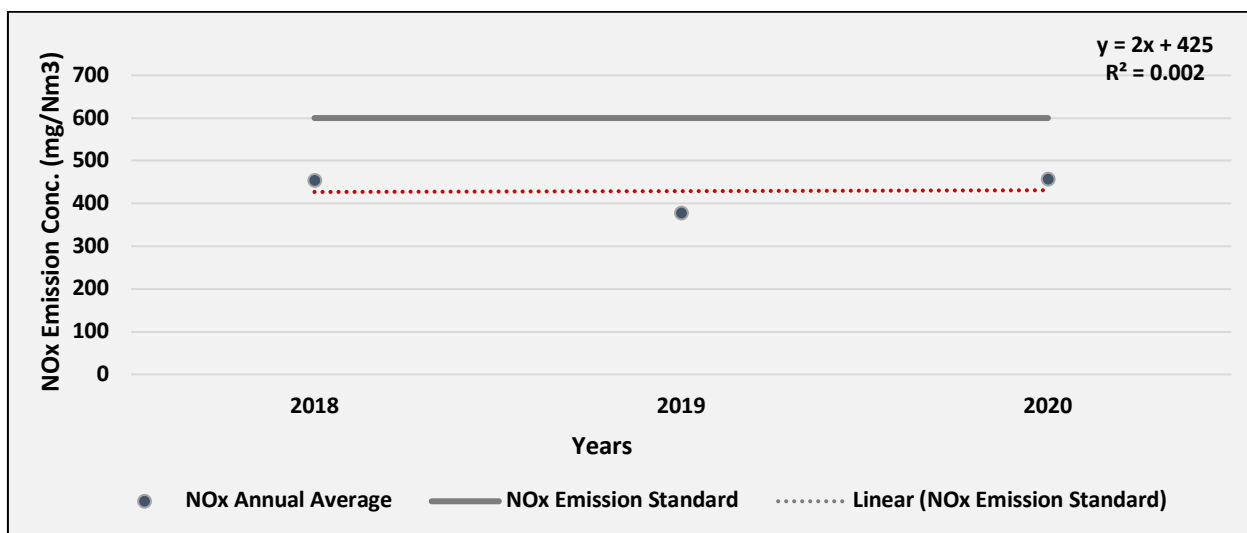


Fig. RAM6: Trend of annual mean NO_x Emission air concentration in Ramagundam TPP (Unit 1)

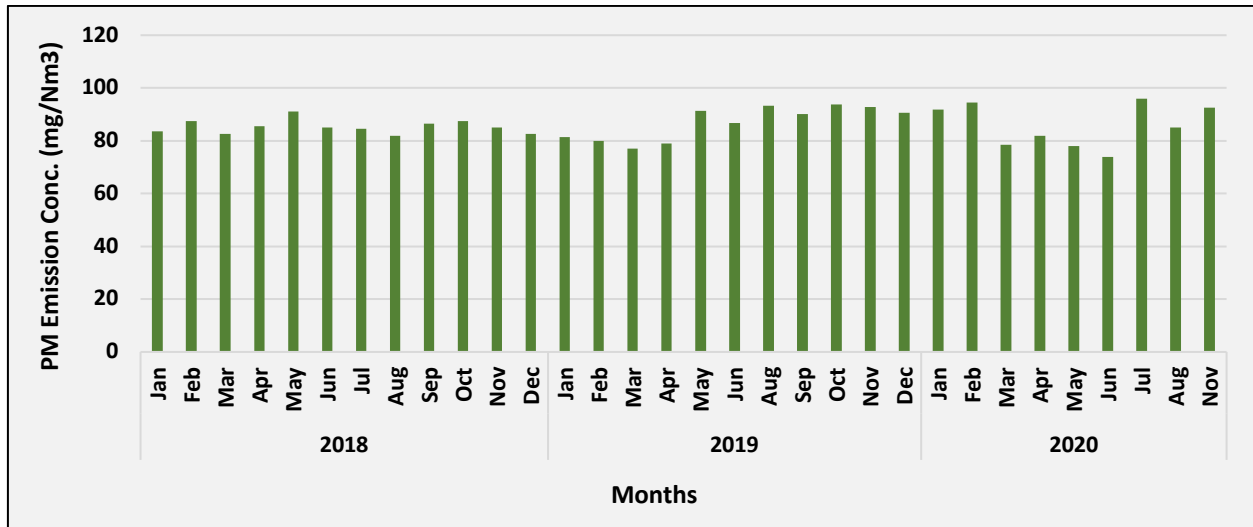


Fig. RAM7: Time series of monthly average PM Emission concentration in Ramagundam TPP (Unit 2)

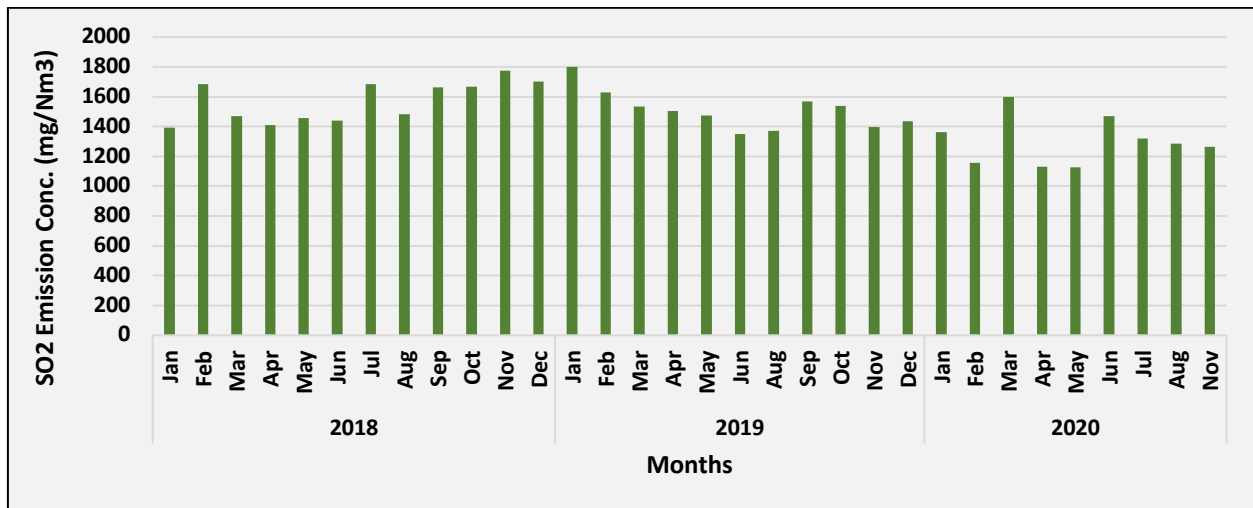


Fig. RAM8: Time series of monthly average SO₂ Emission concentration in Ramagundam TPP (Unit 2)

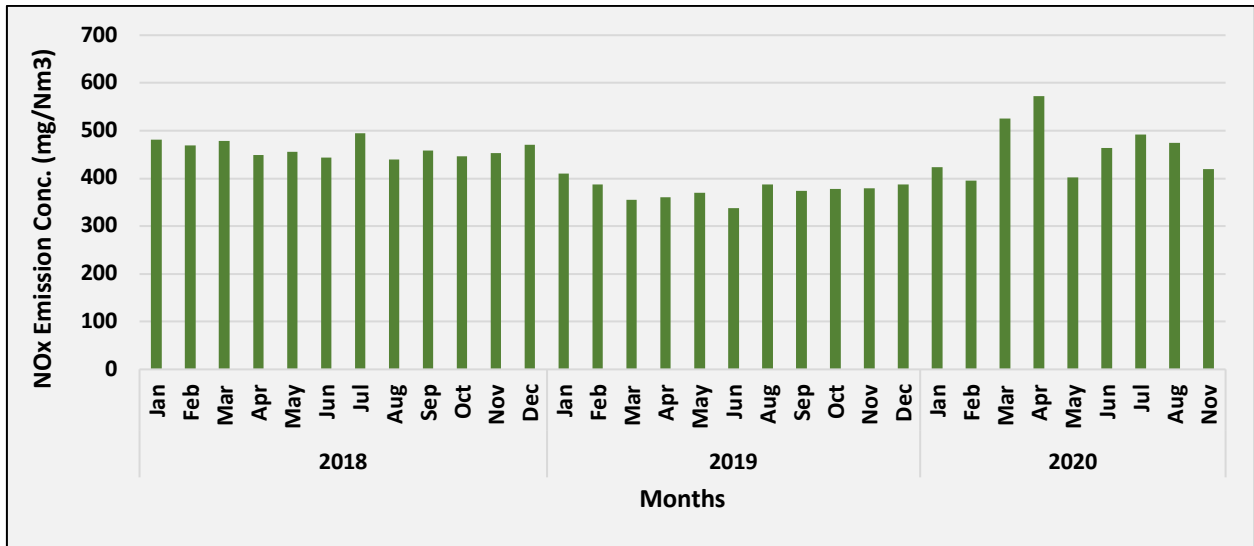


Fig. RAM9: Time series of monthly average NO_x Emission concentration in Ramagundam TPP (Unit 2)

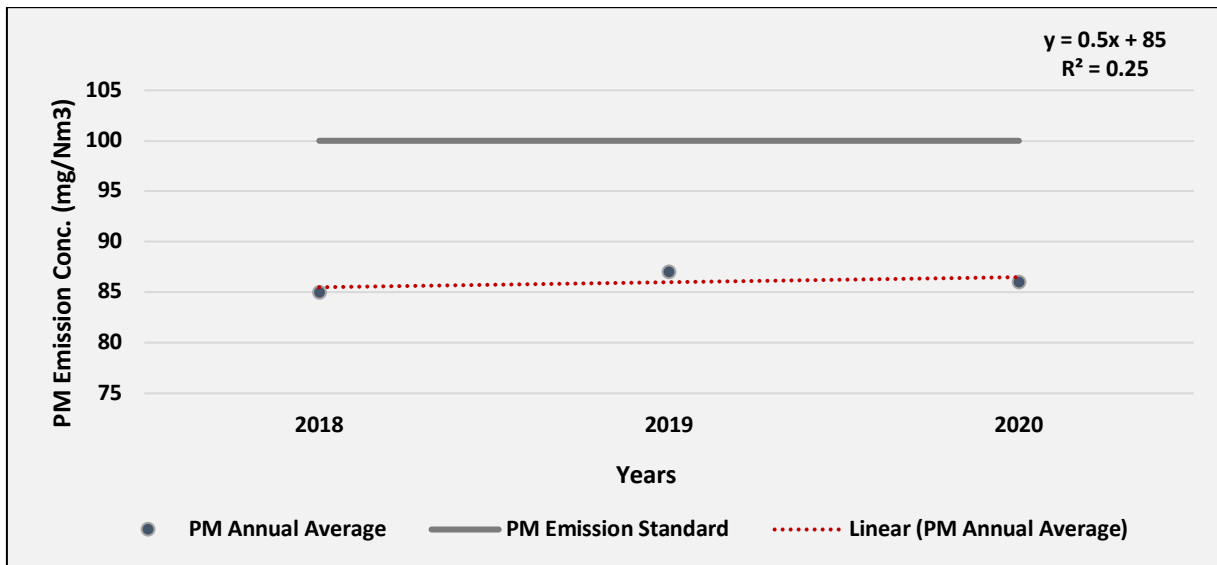


Fig. RAM10: Trend of annual mean PM Emission air concentration in Ramagundam TPP (Unit 2)

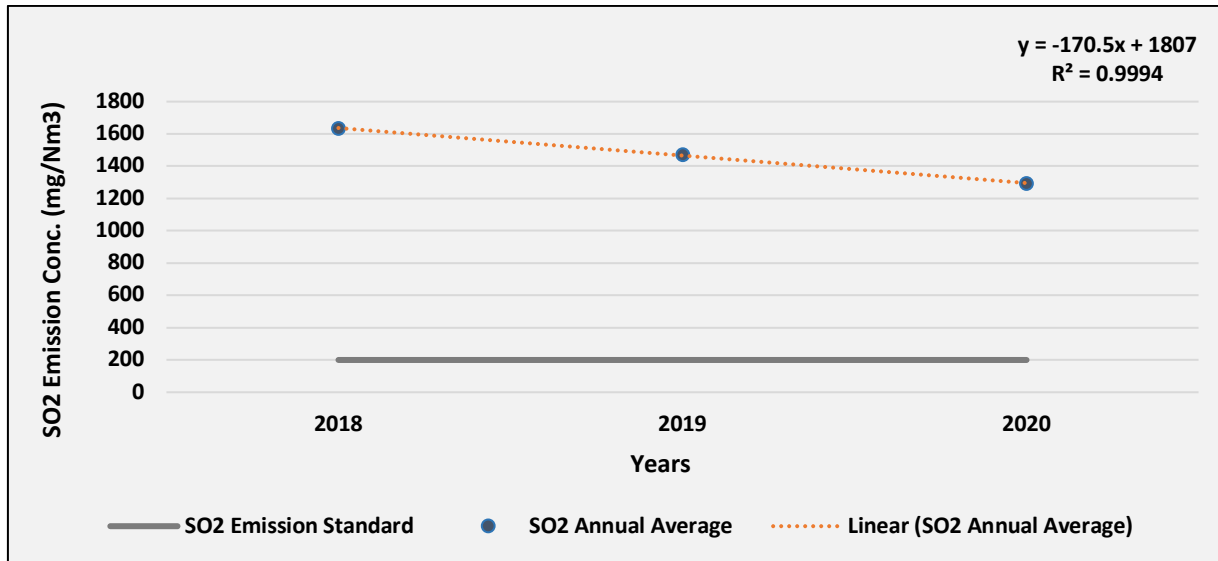


Fig. RAM11: Trend of annual mean SO₂ Emission air concentration in Ramagundam TPP (Unit 2)

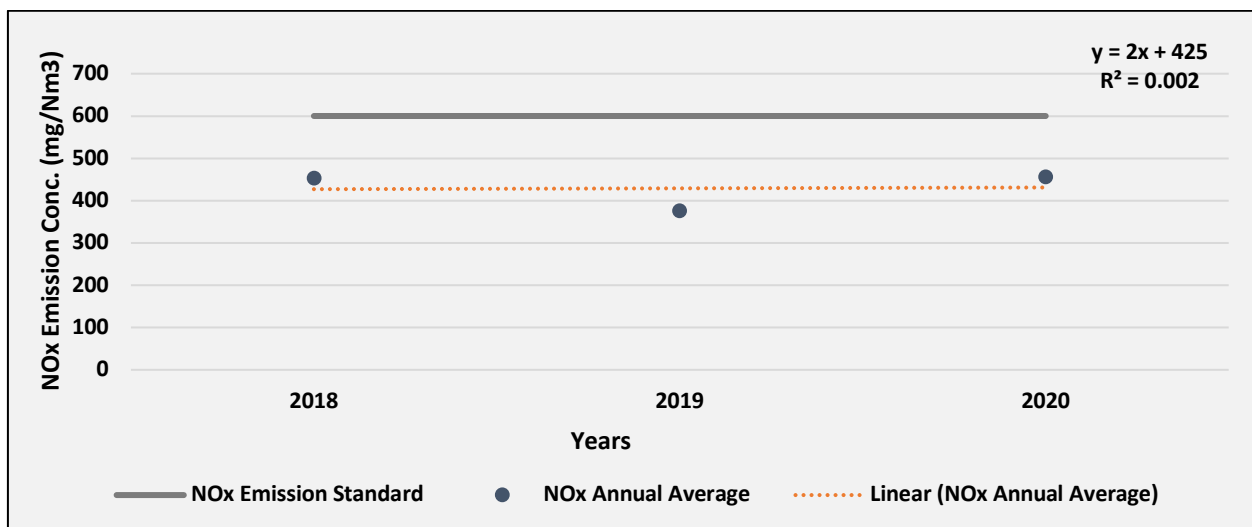


Fig. RAM12: Trend of annual mean NO_x Emission air concentration in Ramagundam TPP (Unit 2)

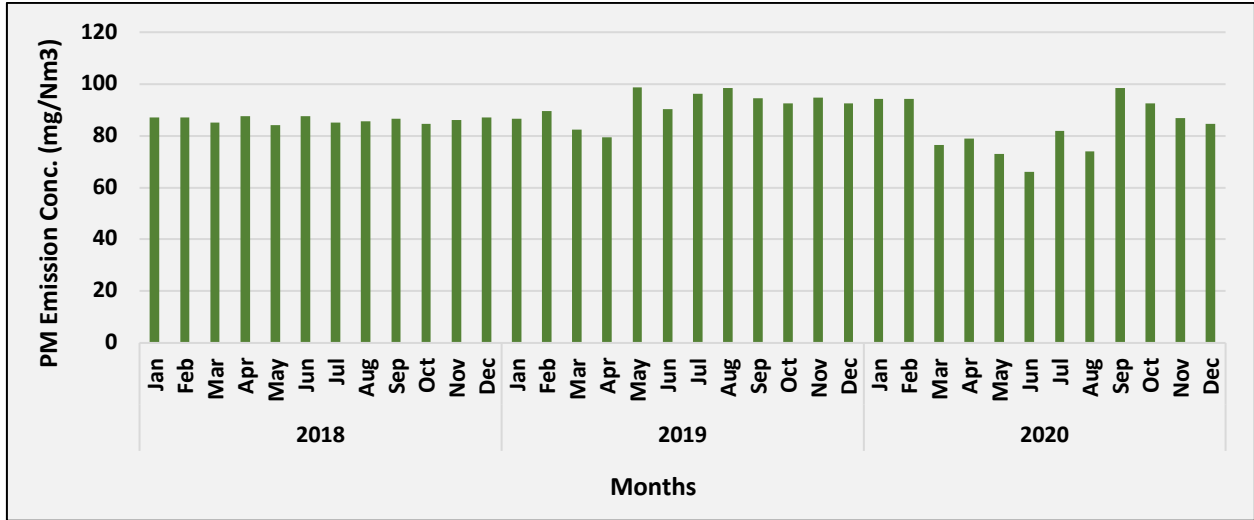


Fig. RAM13: Time series of monthly average PM Emission concentration in Ramagundam TPP (Unit 3)

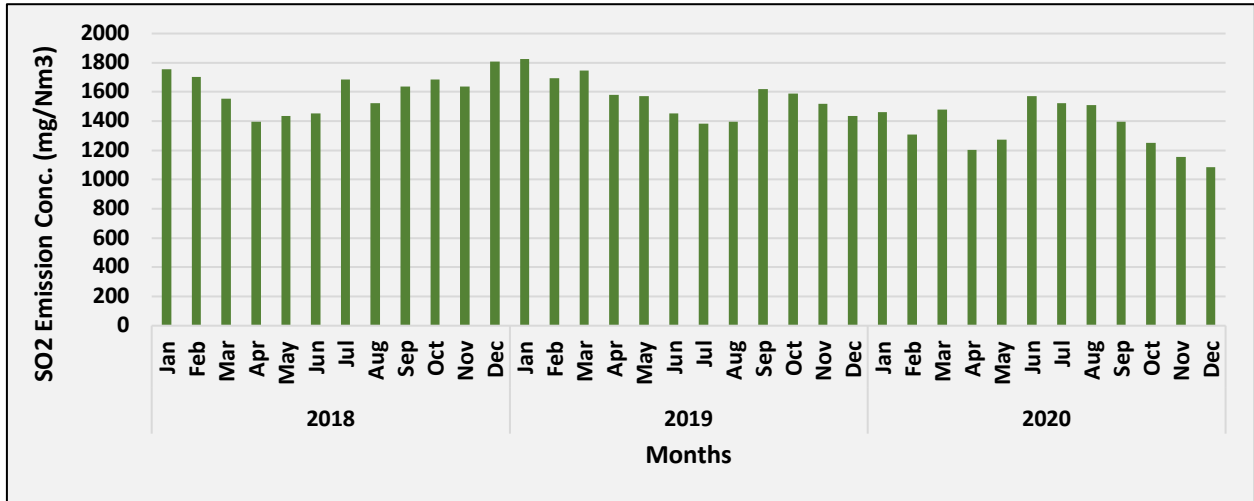


Fig. RAM14: Time series of monthly average SO₂ Emission concentration in Ramagundam TPP (Unit 3)

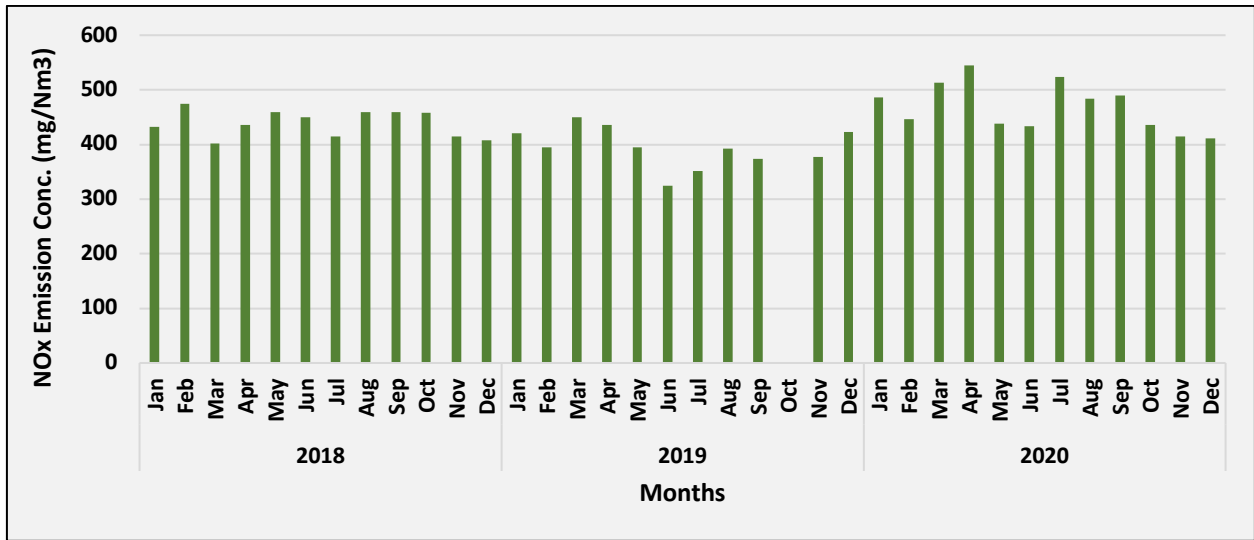


Fig. RAM15: Time series of monthly average NO_x Emission concentration in Ramagundam TPP (Unit 3)

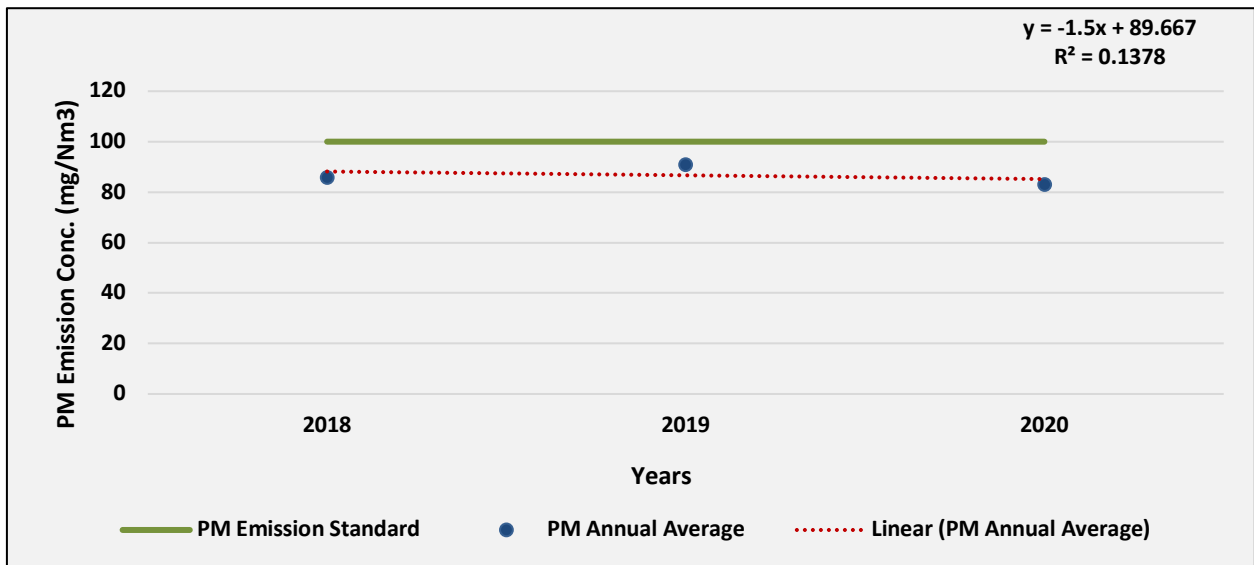


Fig. RAM16: Trend of annual mean PM Emission air concentration in Ramagundam TPP (Unit 3)

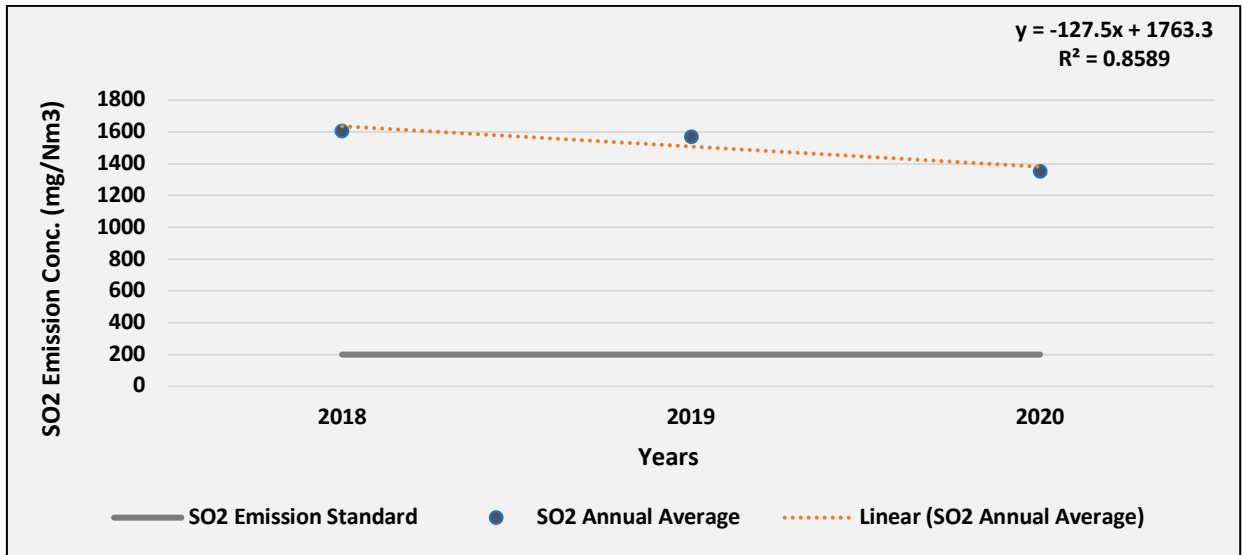


Fig. RAM17: Trend of annual mean SO₂ Emission air concentration in Ramagundam TPP (Unit 3)

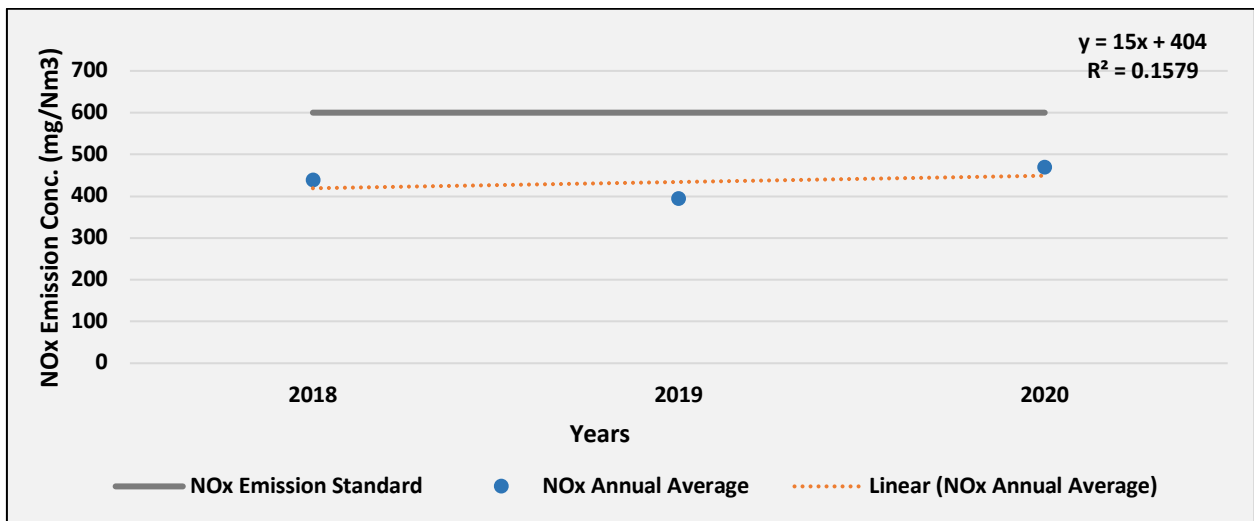


Fig. RAM18: Trend of annual mean NO_x Emission air concentration in Ramagundam TPP (Unit 3)

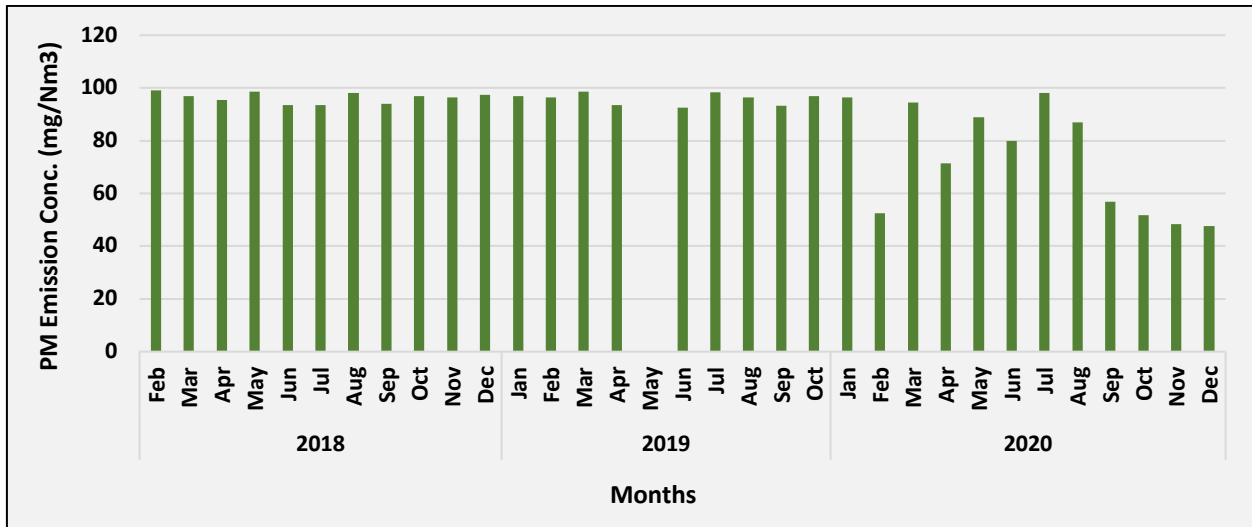


Fig. RAM19: Time series of monthly average PM Emission concentration in Ramagundam TPP (Unit 4)

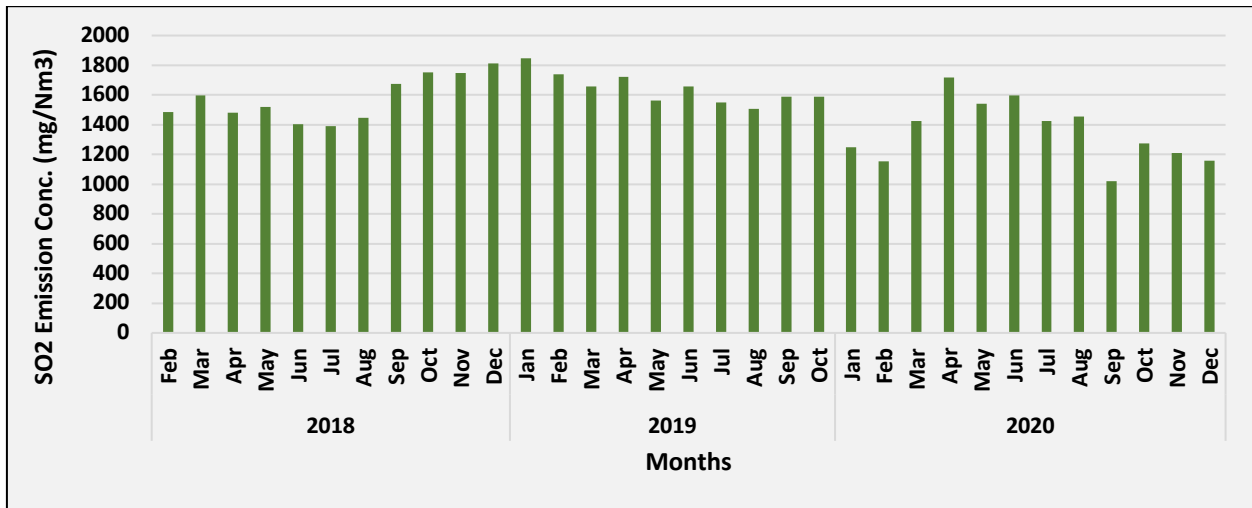


Fig. RAM20: Time series of monthly average SO₂ Emission concentration in Ramagundam TPP (Unit 4)

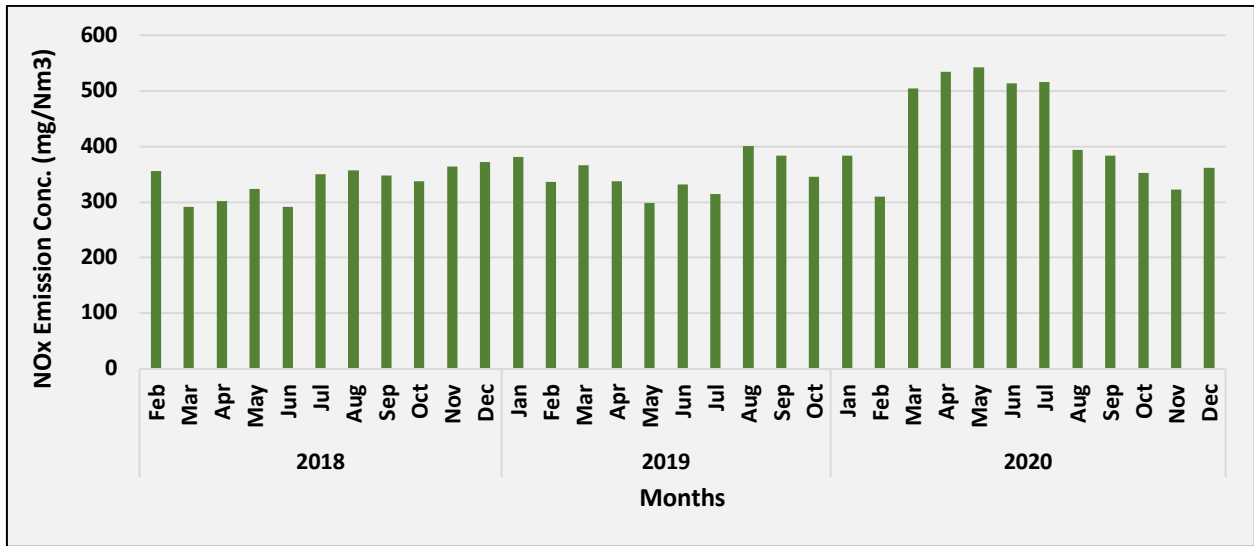


Fig. RAM21: Time series of monthly average NO_x Emission concentration in Ramagundam TPP (Unit 4)

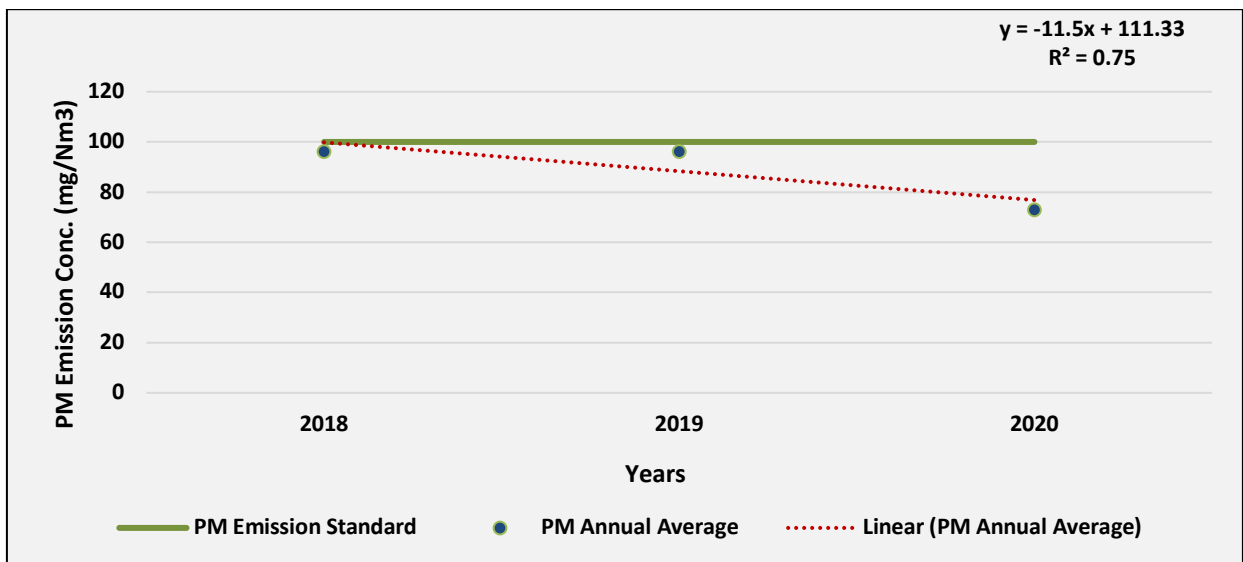


Fig. RAM22: Trend of annual mean PM Emission air concentration in Ramagundam TPP (Unit 4)

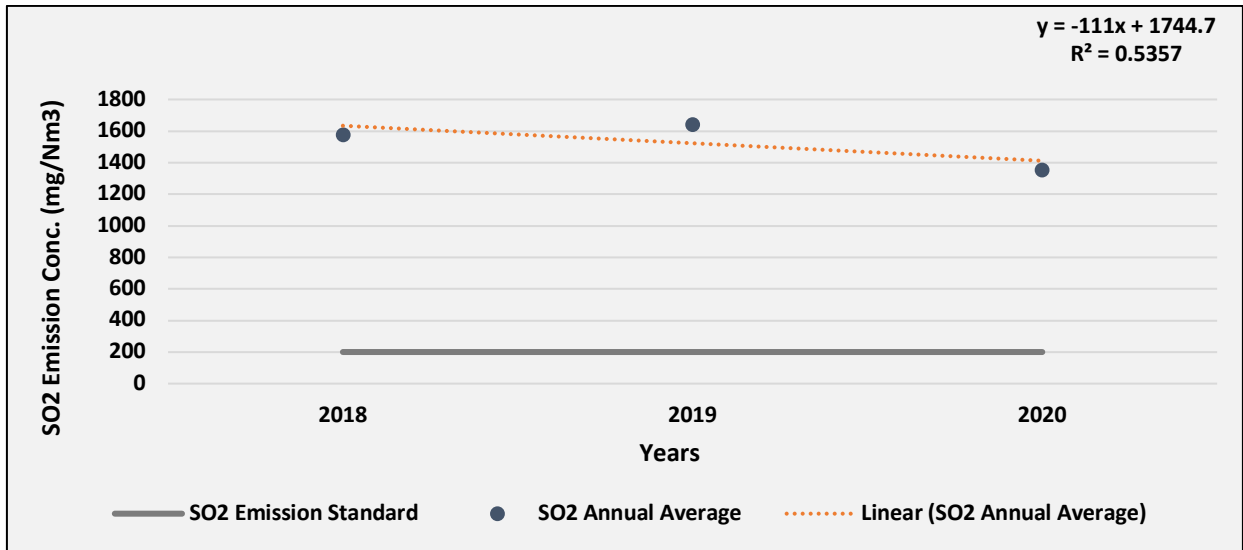


Fig. RAM23: Trend of annual mean SO₂ Emission air concentration in Ramagundam TPP (Unit 4)

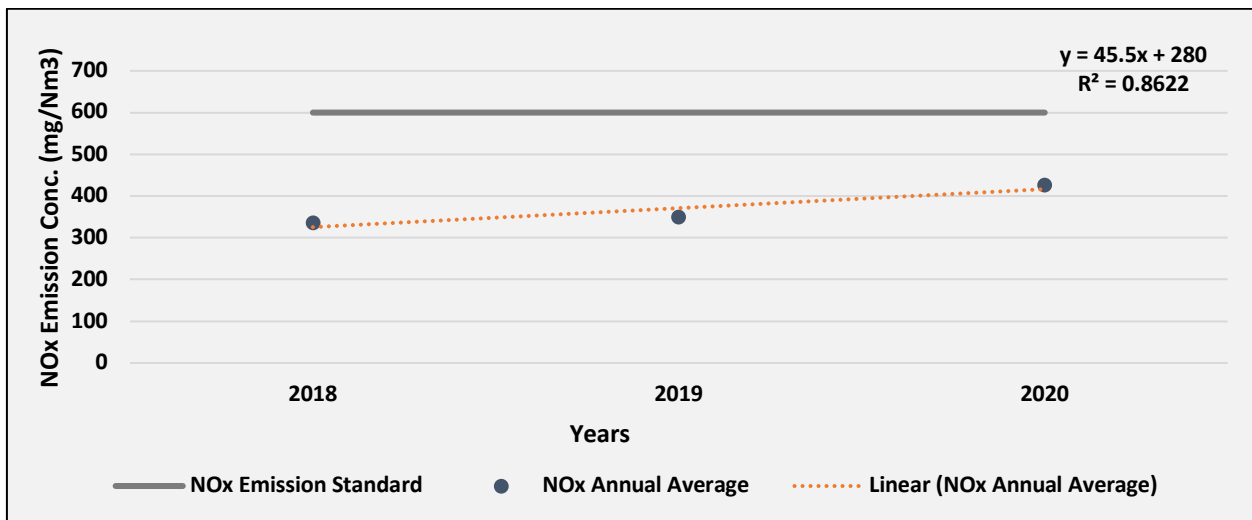


Fig. RAM24: Trend of annual mean NO_x Emission air concentration in Ramagundam TPP (Unit 4)

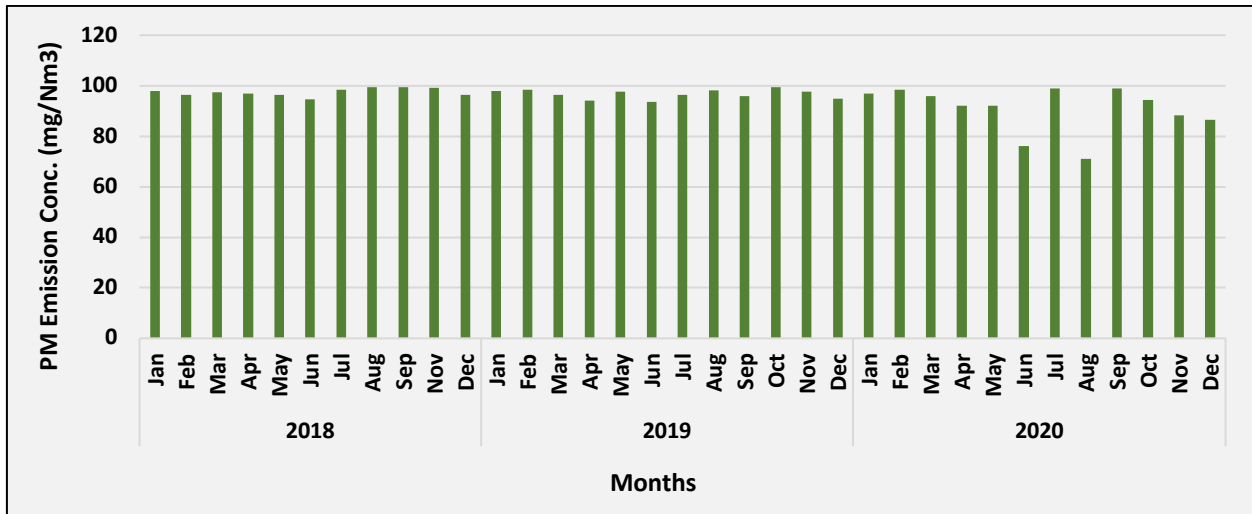


Fig. RAM25: Time series of monthly average PM Emission concentration in Ramagundam TPP (Unit 5)

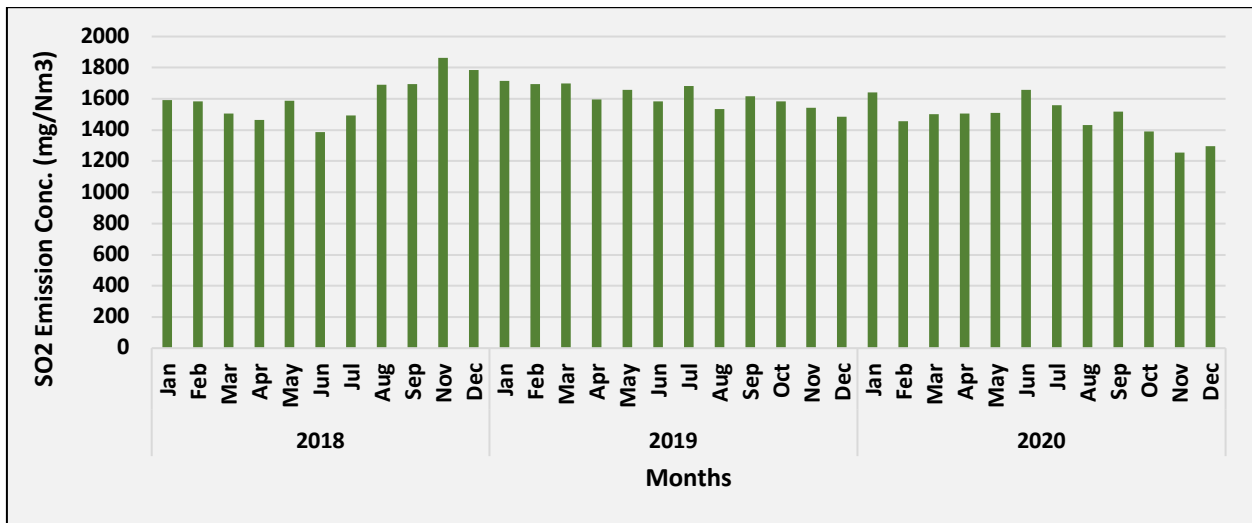


Fig. RAM26: Time series of monthly average SO₂ Emission concentration in Ramagundam TPP (Unit 5)

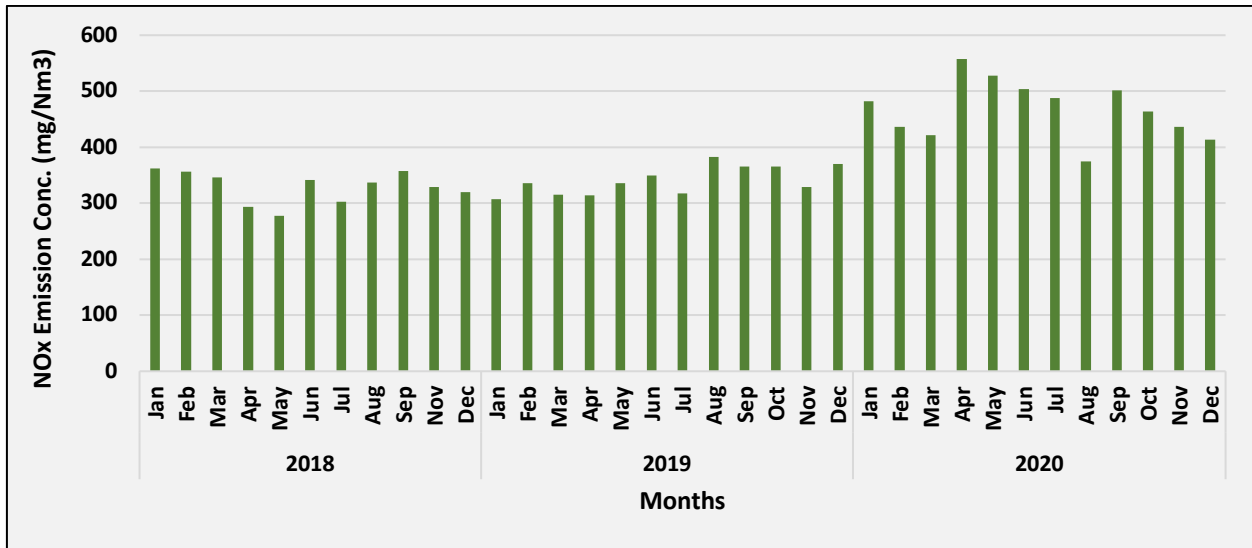


Fig. RAM27: Time series of monthly average NO_x Emission concentration in Ramagundam TPP (Unit 5)

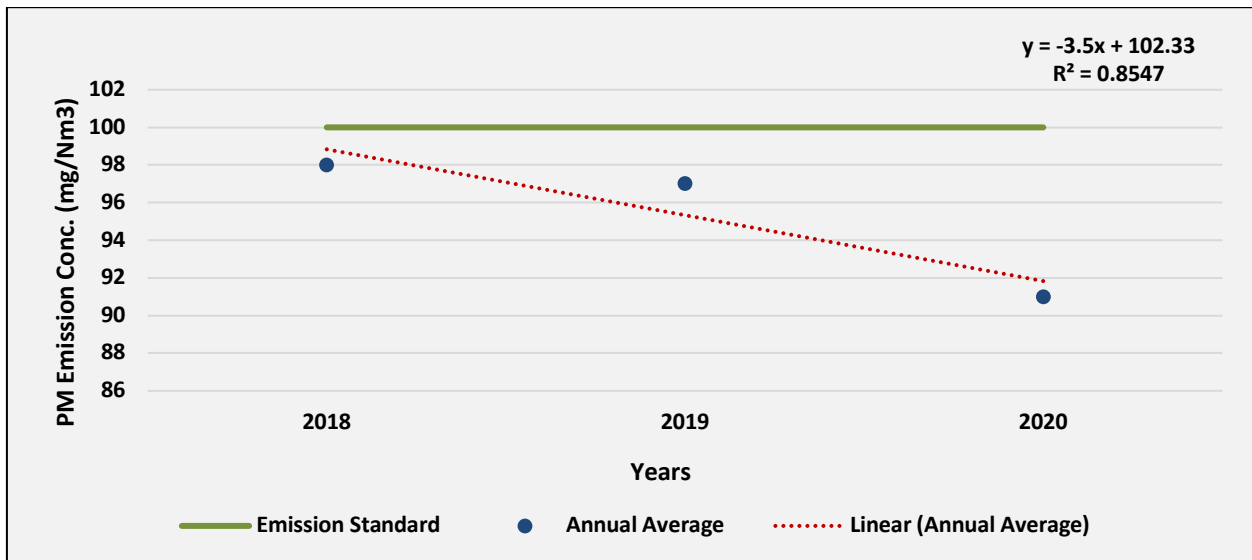


Fig. RAM28: Trend of annual mean PM Emission air concentration in Ramagundam TPP (Unit 5)

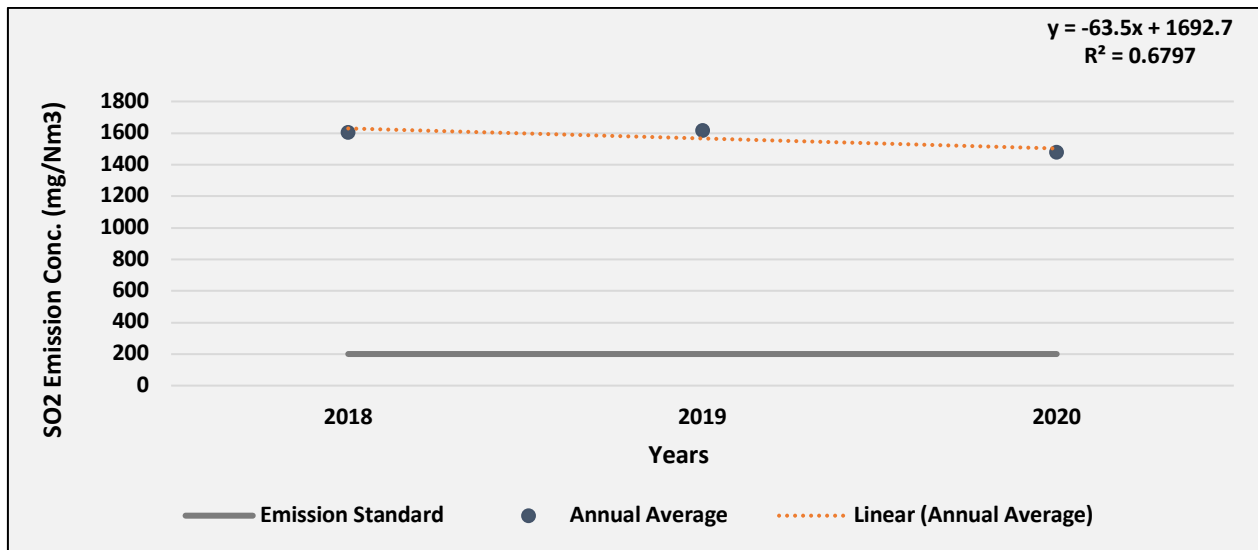


Fig. RAM29: Trend of annual mean SO₂ Emission air concentration in Ramagundam TPP (Unit 5)

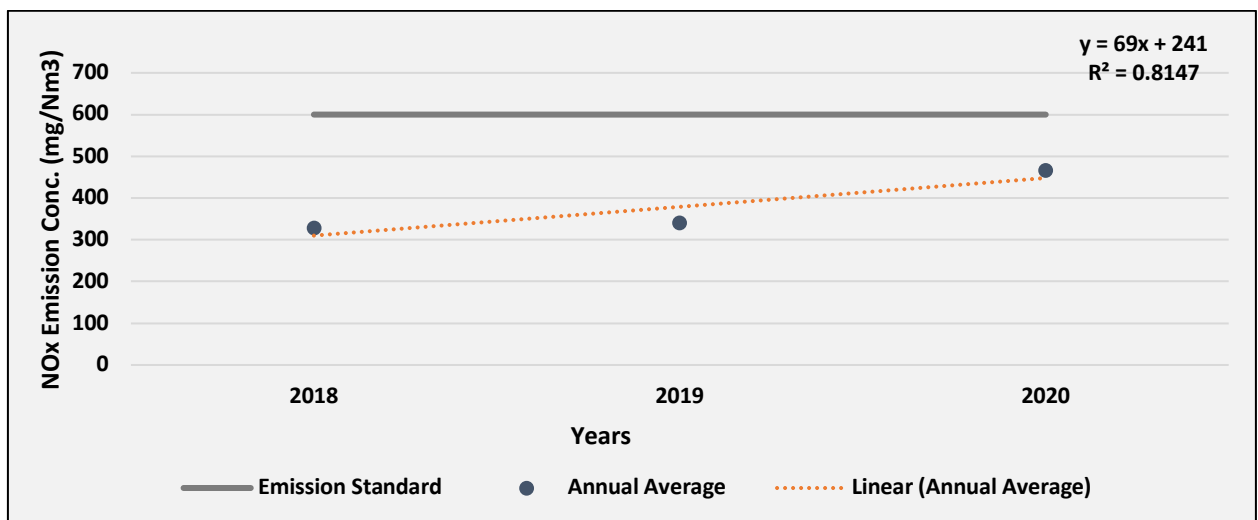


Fig. RAM30: Trend of annual mean NO_x Emission air concentration in Ramagundam TPP (Unit 5)

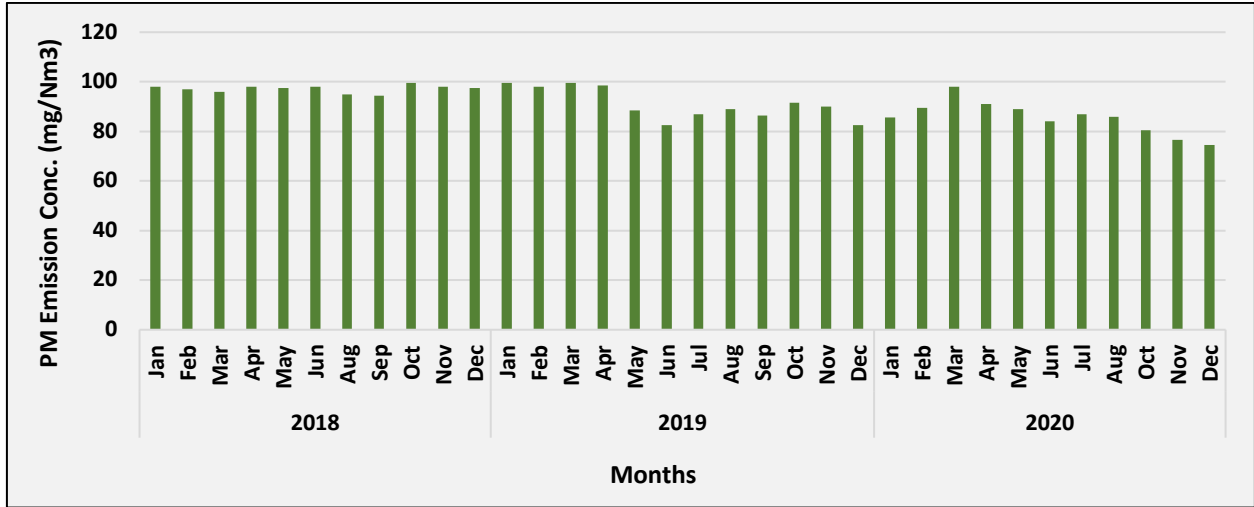


Fig. RAM31: Time series of monthly average PM Emission concentration in Ramagundam TPP (Unit 6)

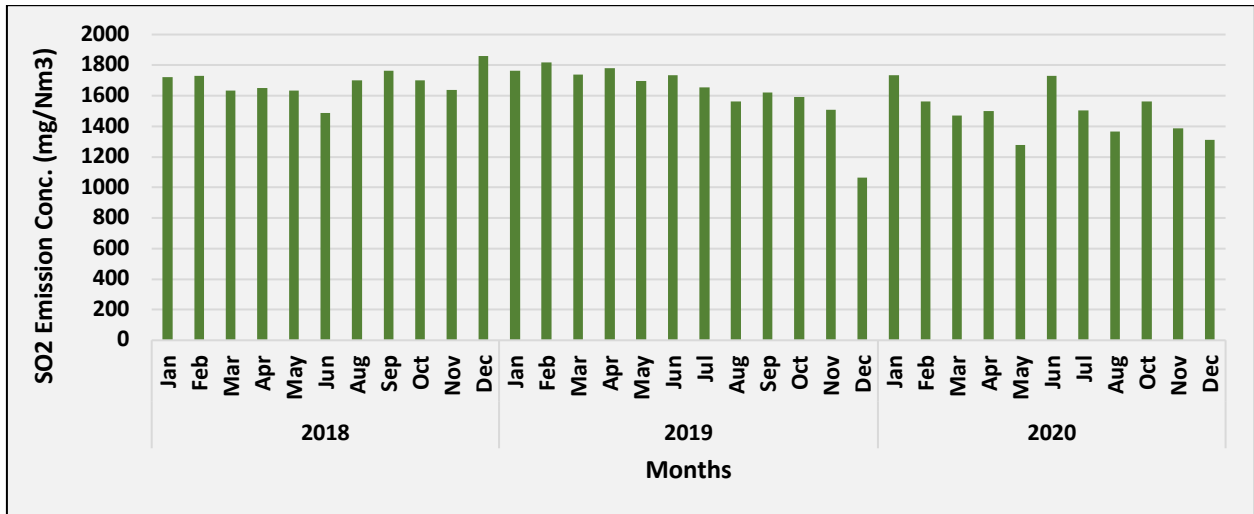


Fig. RAM32: Time series of monthly average SO₂ Emission concentration in Ramagundam TPP (Unit 6)

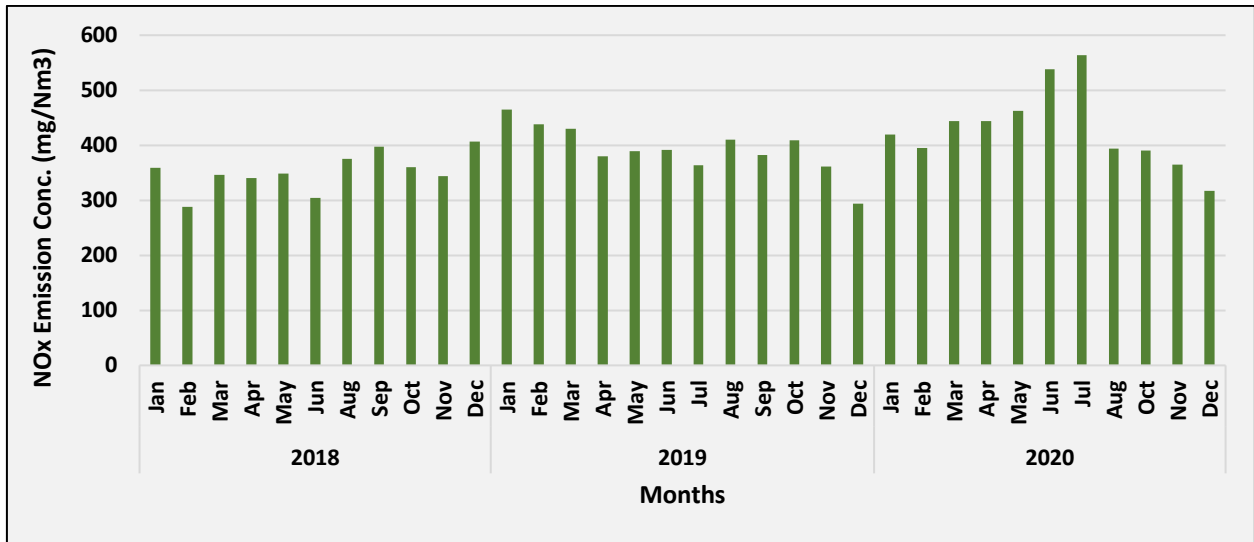


Fig. RAM33: Time series of monthly average NO_x Emission concentration in Ramagundam TPP (Unit 6)

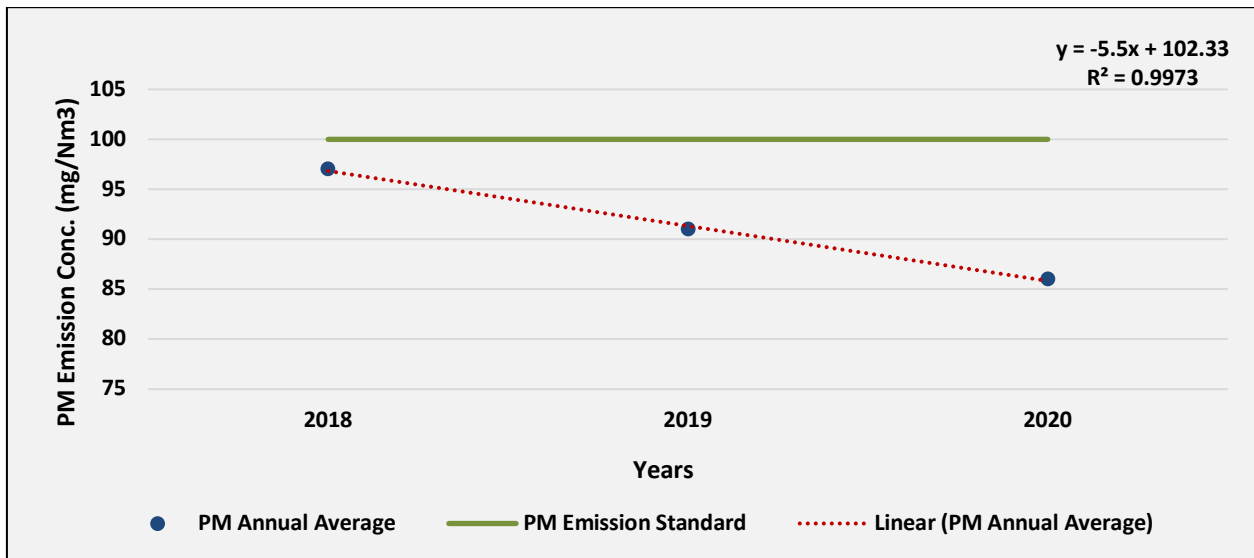


Fig. RAM34: Trend of annual mean PM Emission air concentration in Ramagundam TPP (Unit 6)

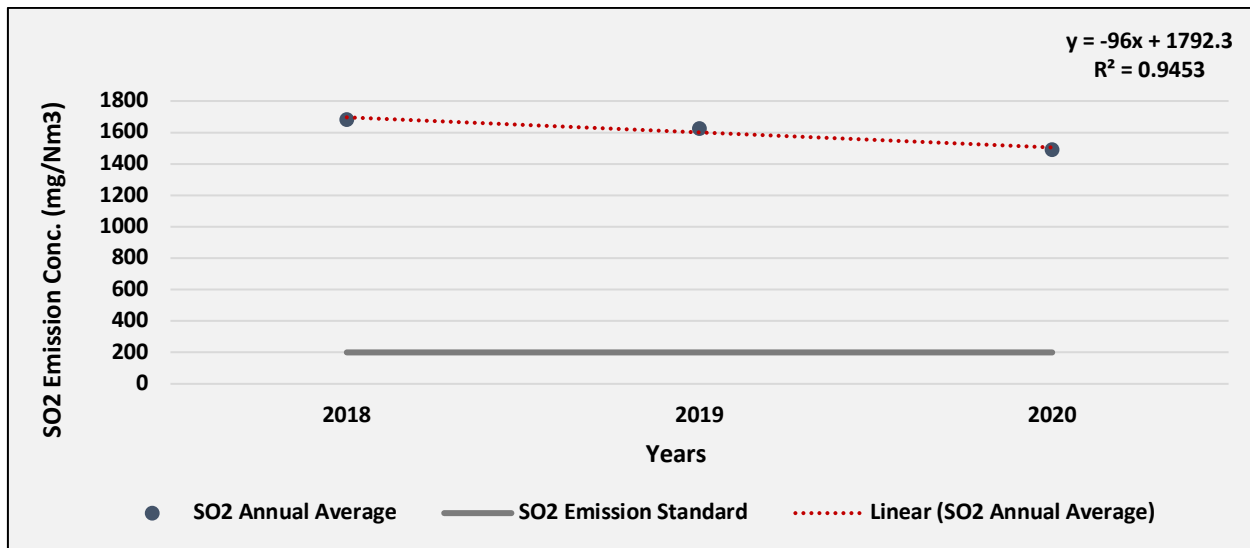


Fig. RAM35: Trend of annual mean SO₂ Emission air concentration in Ramagundam TPP (Unit 6)

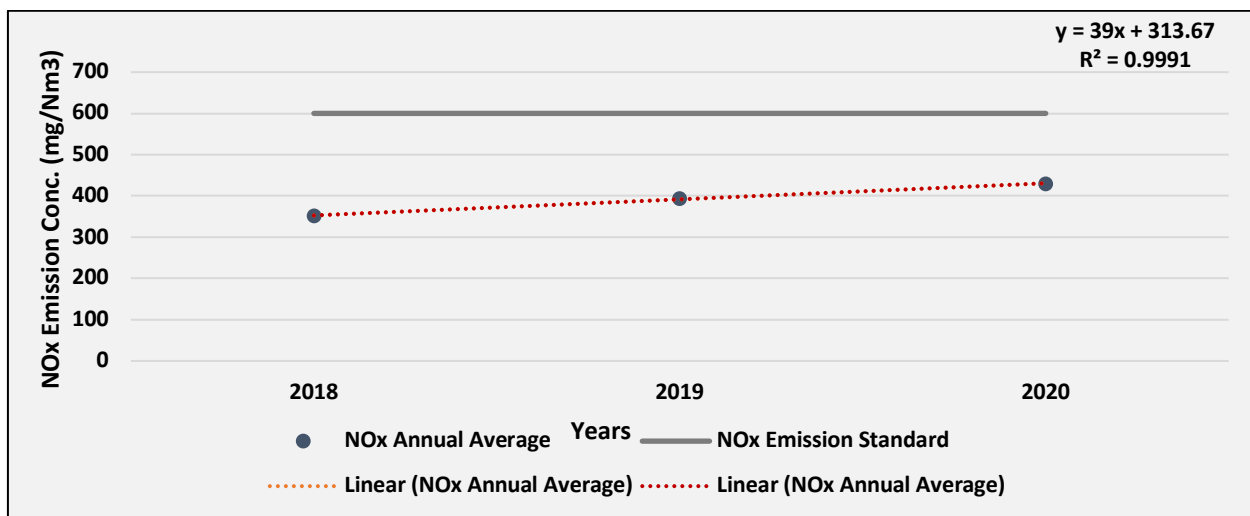


Fig. RAM36: Trend of annual mean NO_x Emission air concentration in Ramagundam TPP (Unit 6)

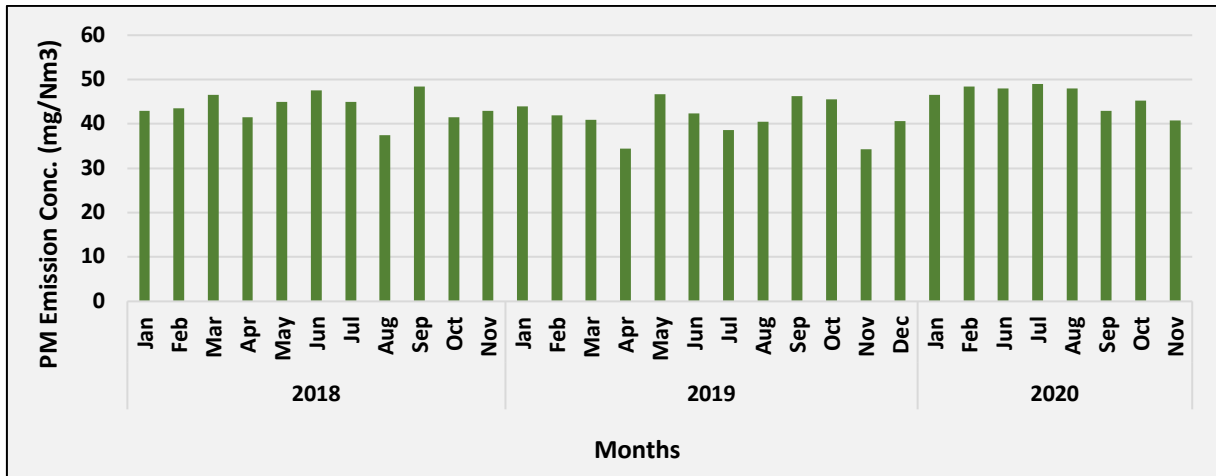


Fig. RAM37: Time series of monthly average PM Emission concentration in Ramagundam TPP (Unit 7)

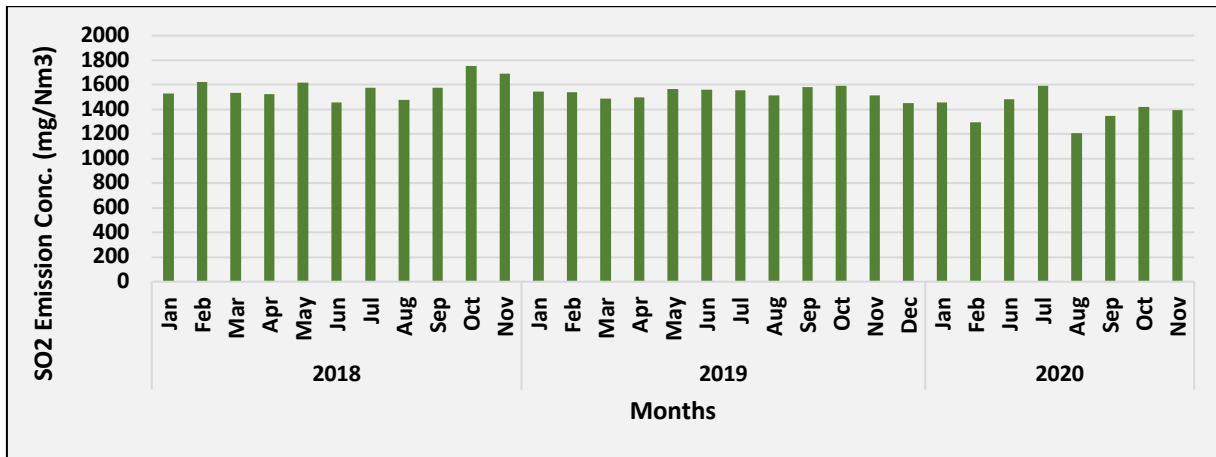


Fig. RAM38: Time series of monthly average SO₂ Emission concentration in Ramagundam TPP (Unit 7)

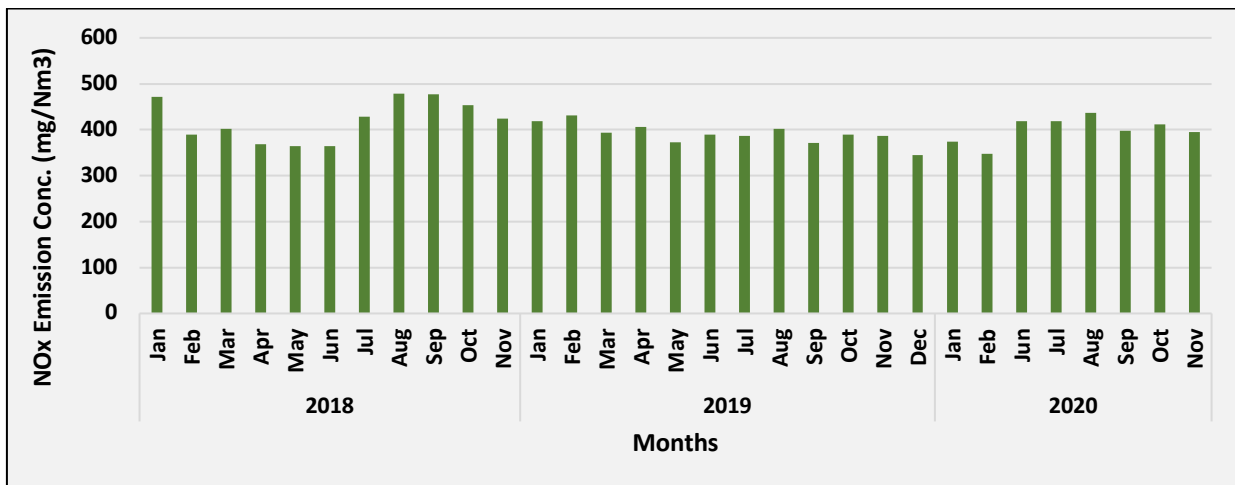


Fig. RAM39: Time series of monthly average NO_x Emission concentration in Ramagundam TPP (Unit 7)

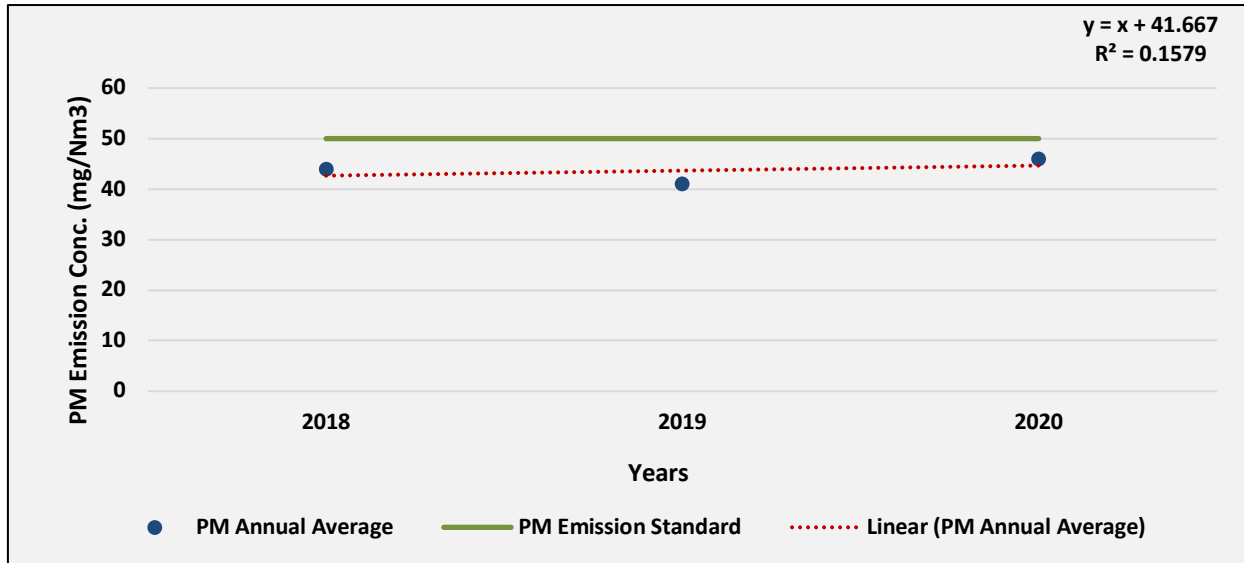


Fig. RAM40: Trend of annual mean PM Emission air concentration in Ramagundam TPP (Unit 7)

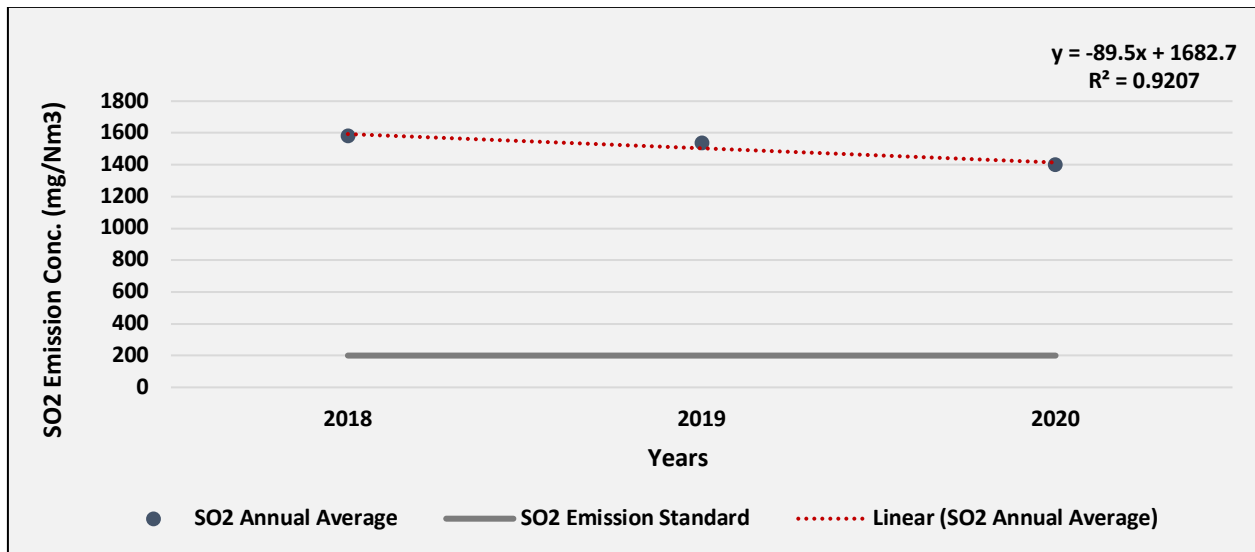


Fig. RAM41: Trend of annual mean SO_2 Emission air concentration in Ramagundam TPP (Unit 7)

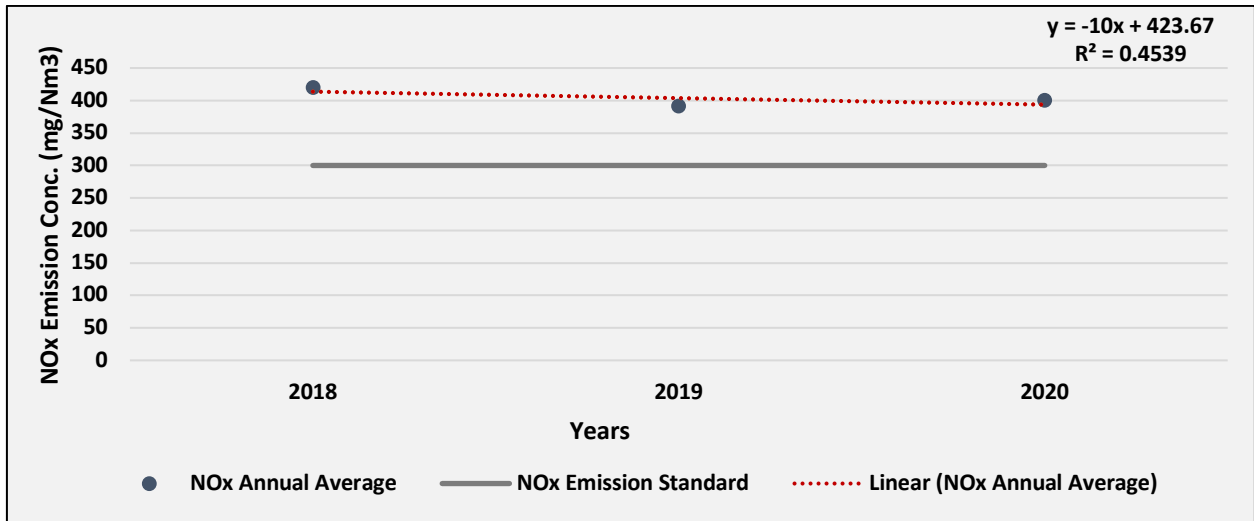


Fig. RAM42: Trend of annual mean NO_x Emission air concentration in Ramagundam TPP (Unit 7)

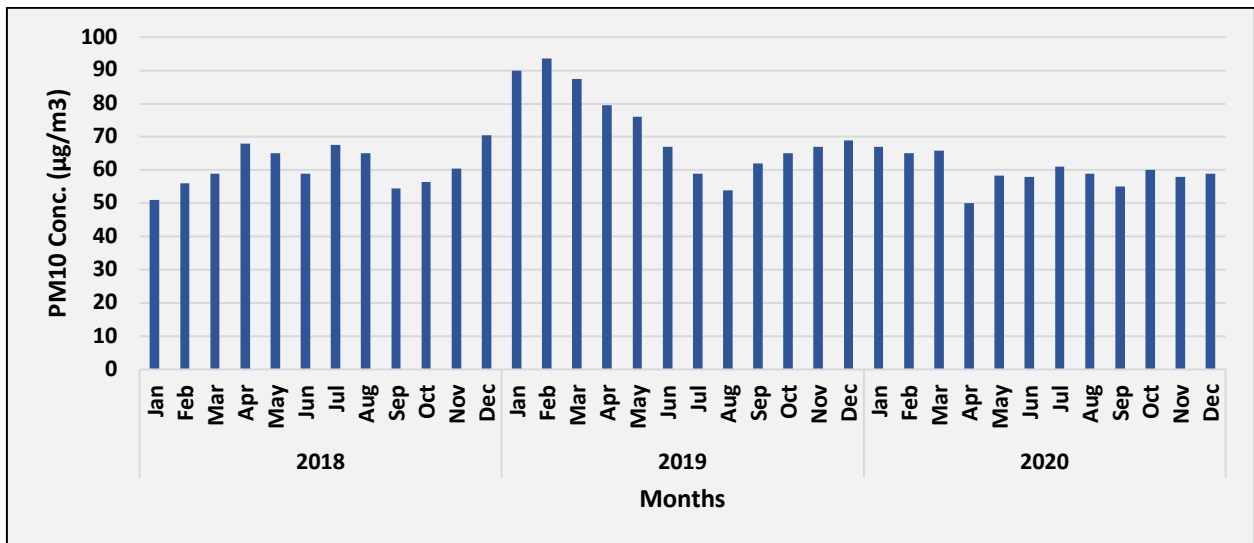


Fig. RAM43: Time series of monthly average PM₁₀ ambient air concentration in Ramagundam TPP (Ambient)

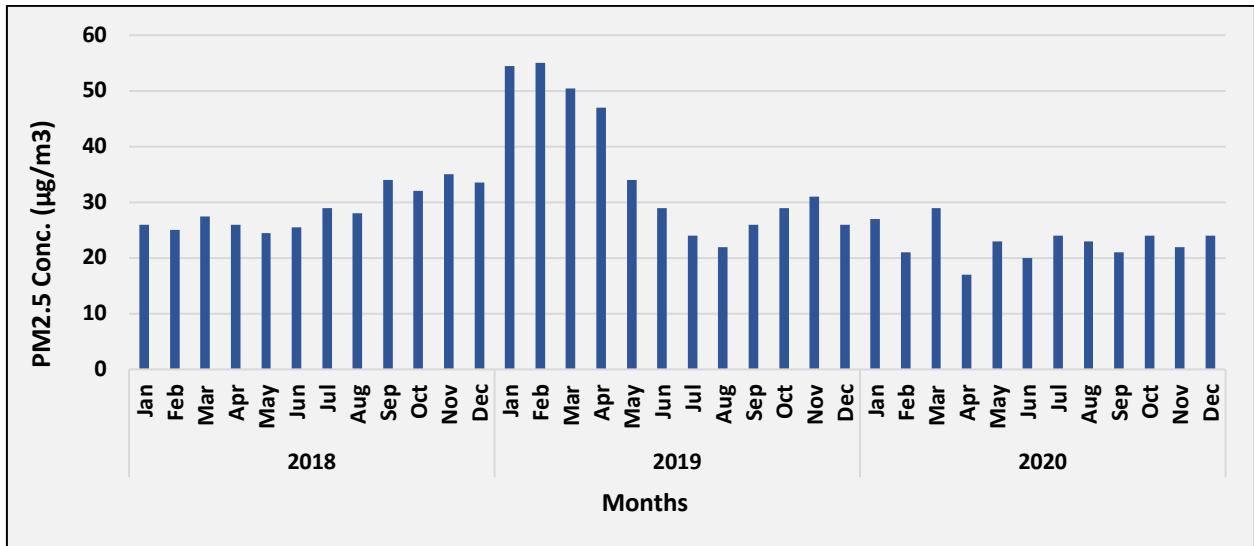


Fig. RAM44: Time series of monthly average PM_{2.5} ambient air concentration in Ramagundam TPP (Ambient)

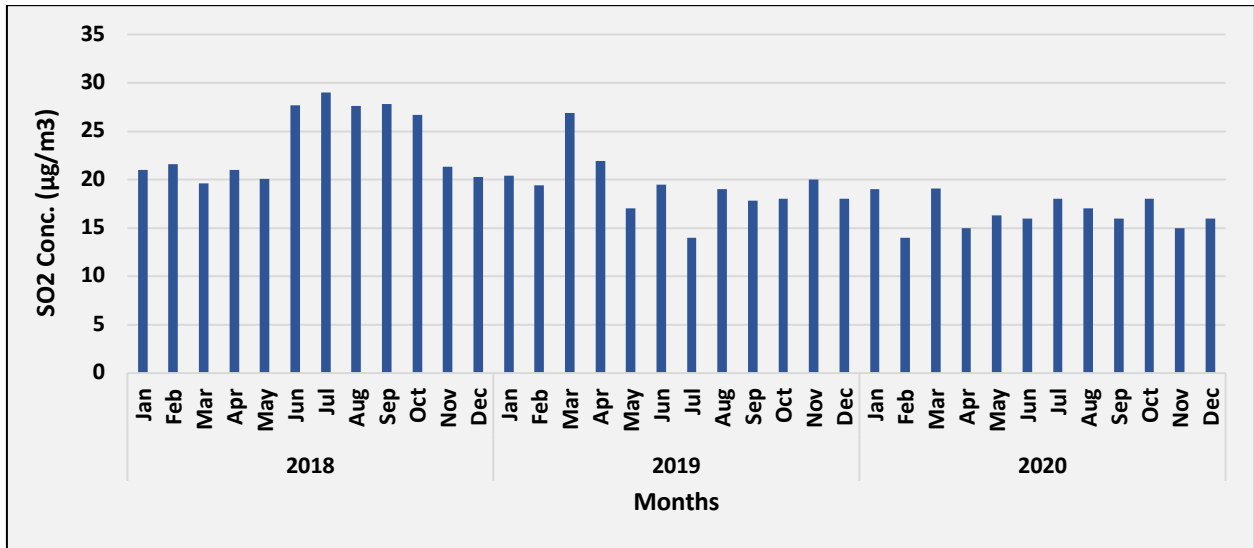


Fig. RAM45: Time series of monthly average So₂ ambient air concentration in Ramagundam TPP (Ambient)

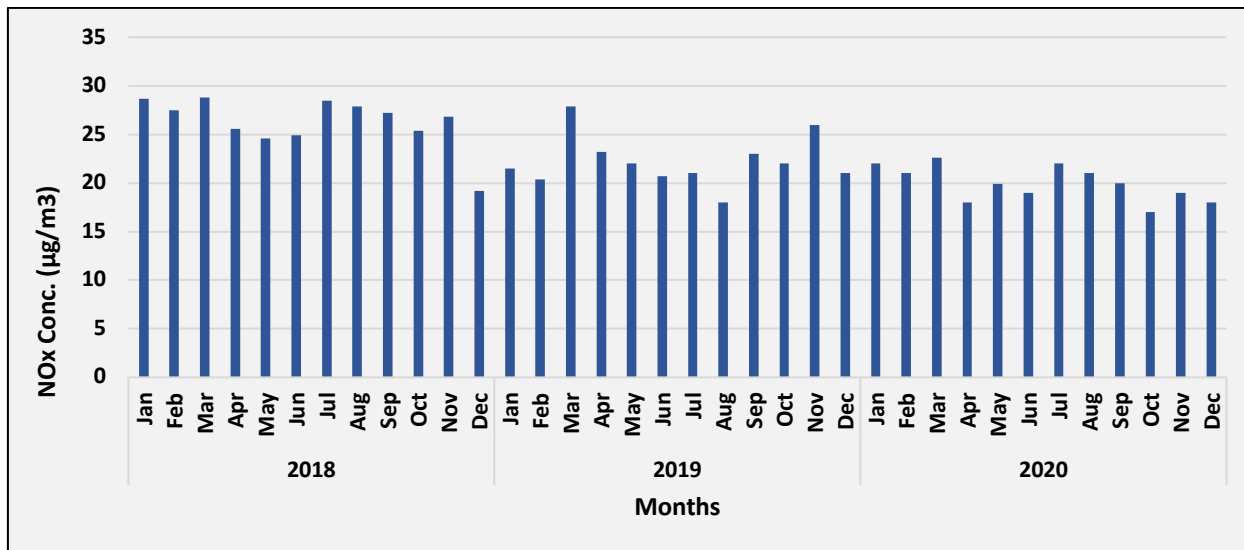


Fig. RAM46: Time series of monthly average NO_x ambient air concentration in Ramagundam TPP (Ambient)

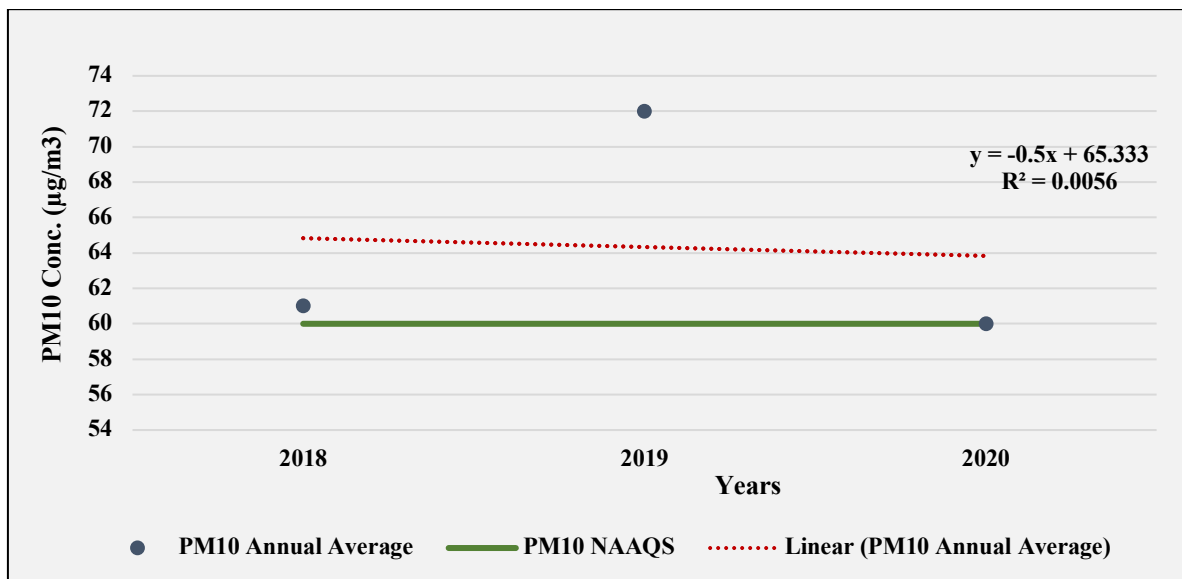


Fig. RAM47: Trend of annual mean PM₁₀ ambient air concentration in Ramagundam TPP (Ambient)

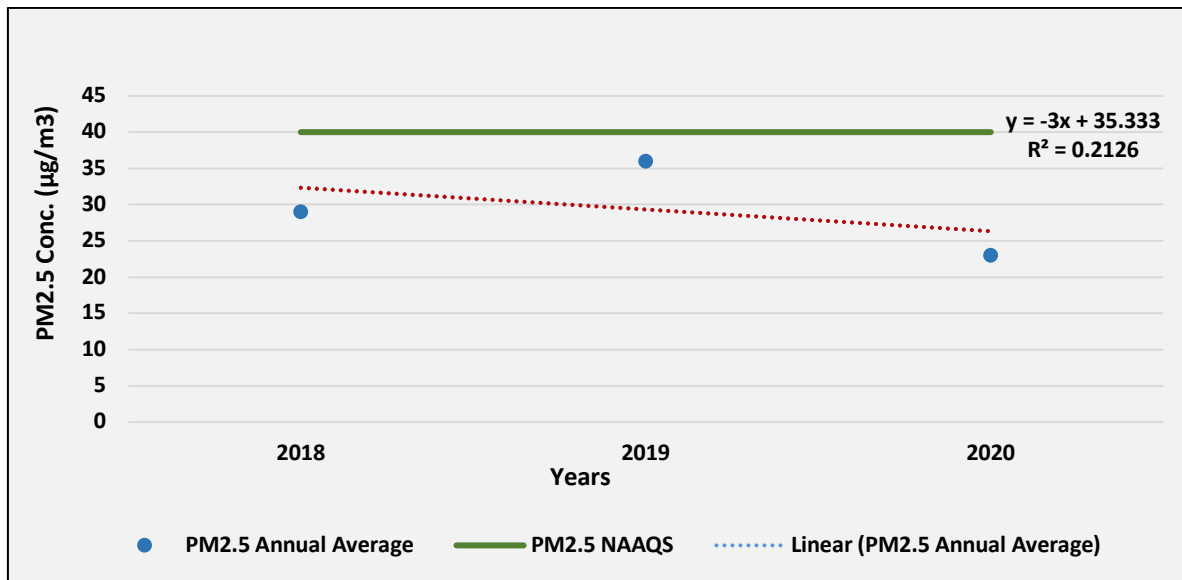


Fig. RAM48: Trend of annual mean PM_{2.5} ambient air concentration in Ramagundam TPP (Ambient)

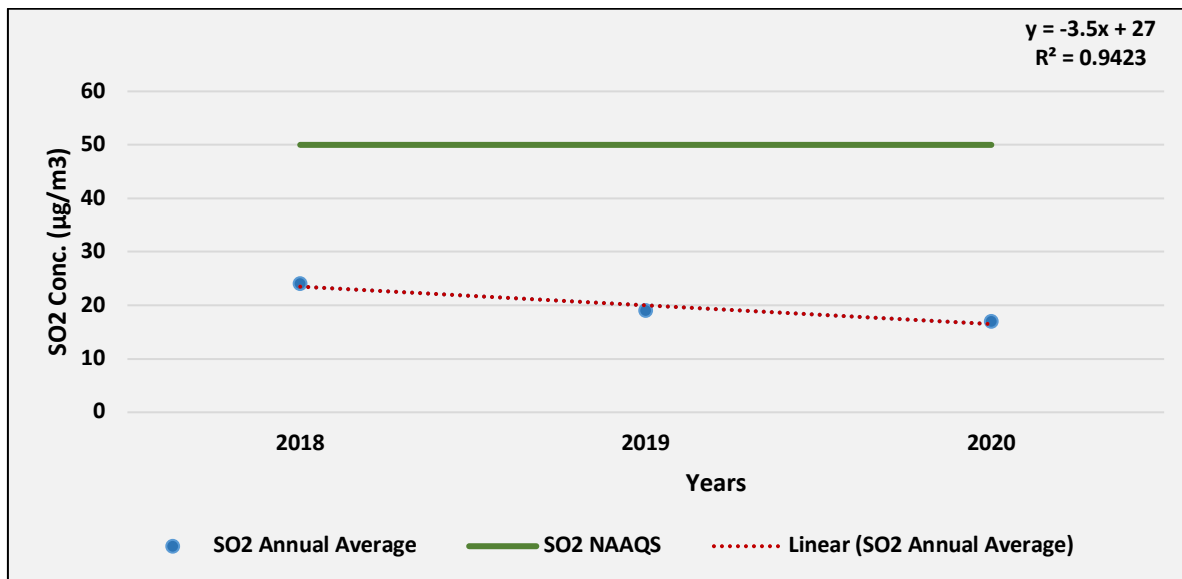


Fig. RAM49: Trend of annual mean SO₂ ambient air concentration in Ramagundam TPP (Ambient)

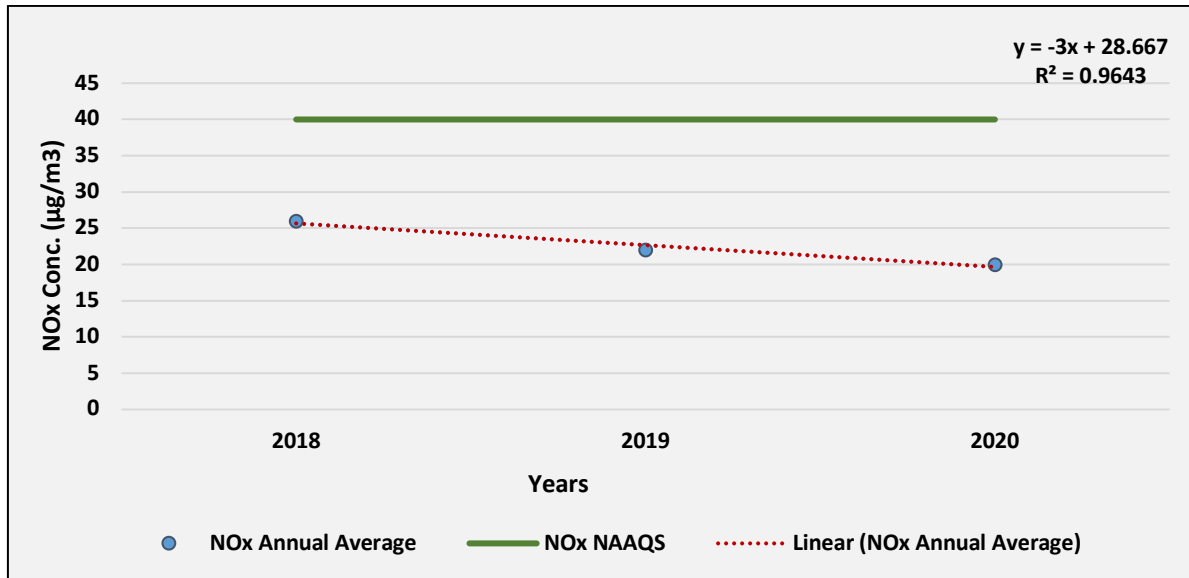


Fig. RAM50: Trend of annual mean NO_x ambient air concentration in Ramagundam TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀ is exceeding for the year 2018 and 2019 whereas the PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

SINGRAULI THERMAL POWER PLANT

This power station was set up in 1977. It is a pit head Thermal Power Station having an installed capacity of 2000 MW with five units of 200 MW each and two units of 500 MW each. Water supply for the purpose is drawn from the Rihand reservoir. Several States like U.P. Jammu & Kashmir, Himachal Pradesh, Rajasthan, Haryana, Punjab, Delhi etc. have benefited from the electricity generated by the project.

The ambient air quality concentrations of PM₁₀, PM_{2.5} SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. SIN1 – Fig. SIN50) for the last three years (2018-2020) using data provided by NTPC developer for Singrauli Power plant, Uttar Pradesh, India.

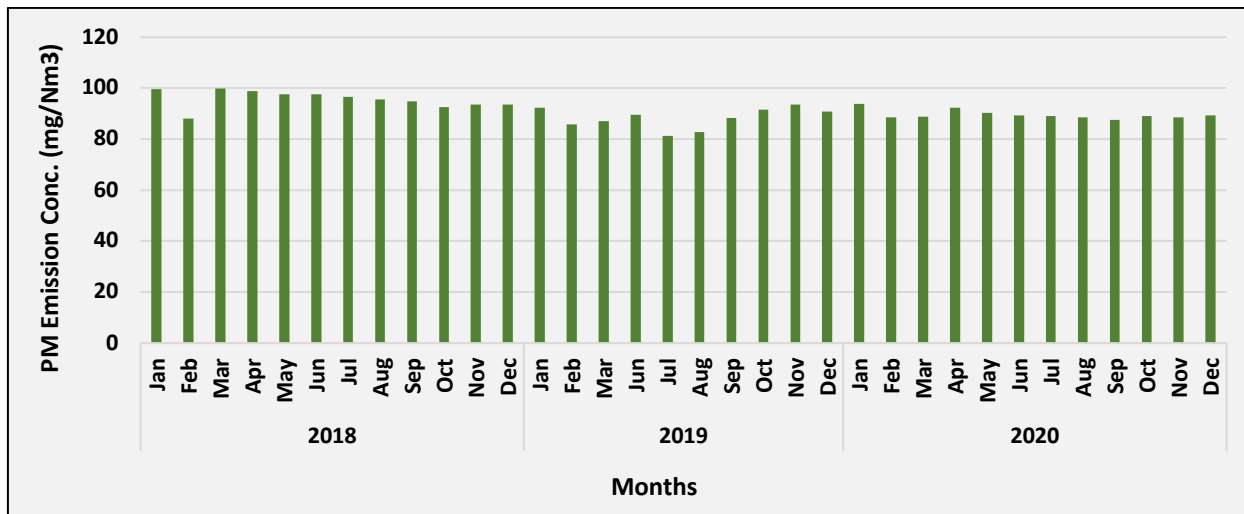


Fig. SIN1: Time series of monthly average PM Emission concentration in Singrauli TPP (Unit 1)

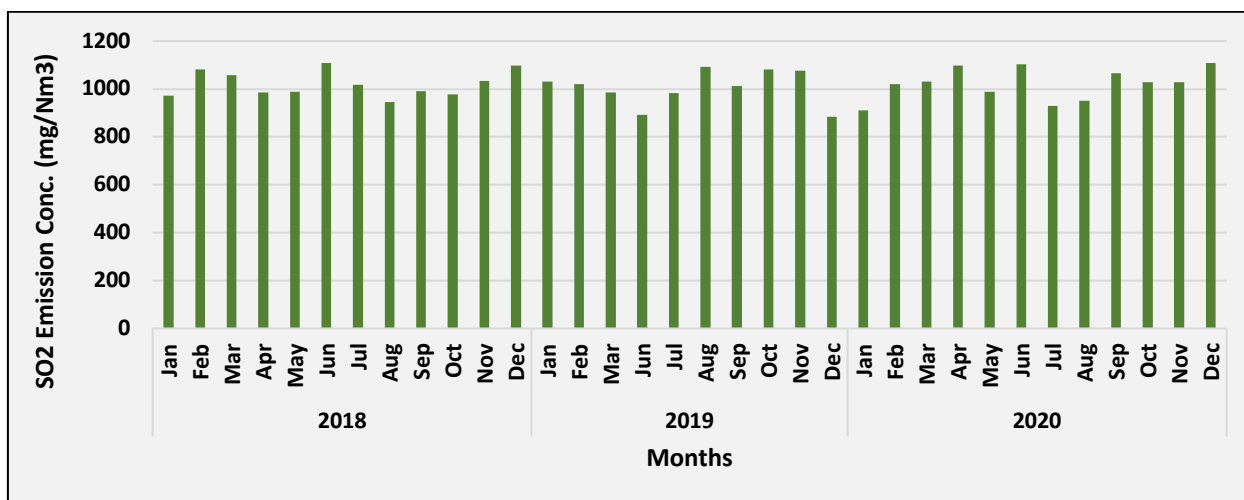


Fig. SIN2: Time series of monthly average SO₂ Emission concentration in Singrauli TPP (Unit 1)

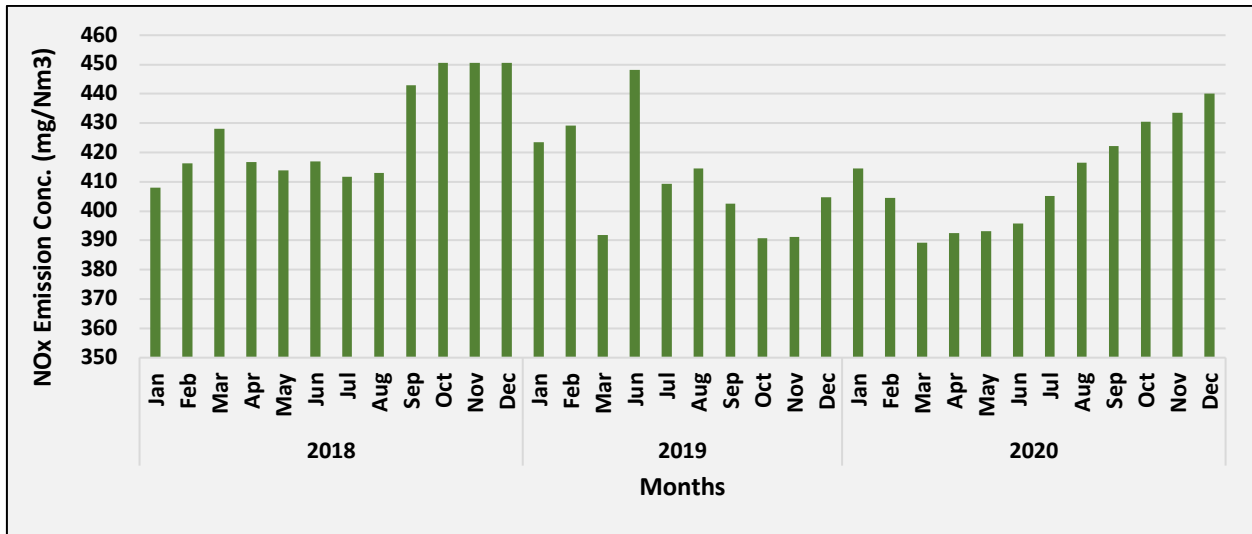


Fig. SIN3: Time series of monthly average NO_x Emission concentration in Singrauli TPP (Unit 1)

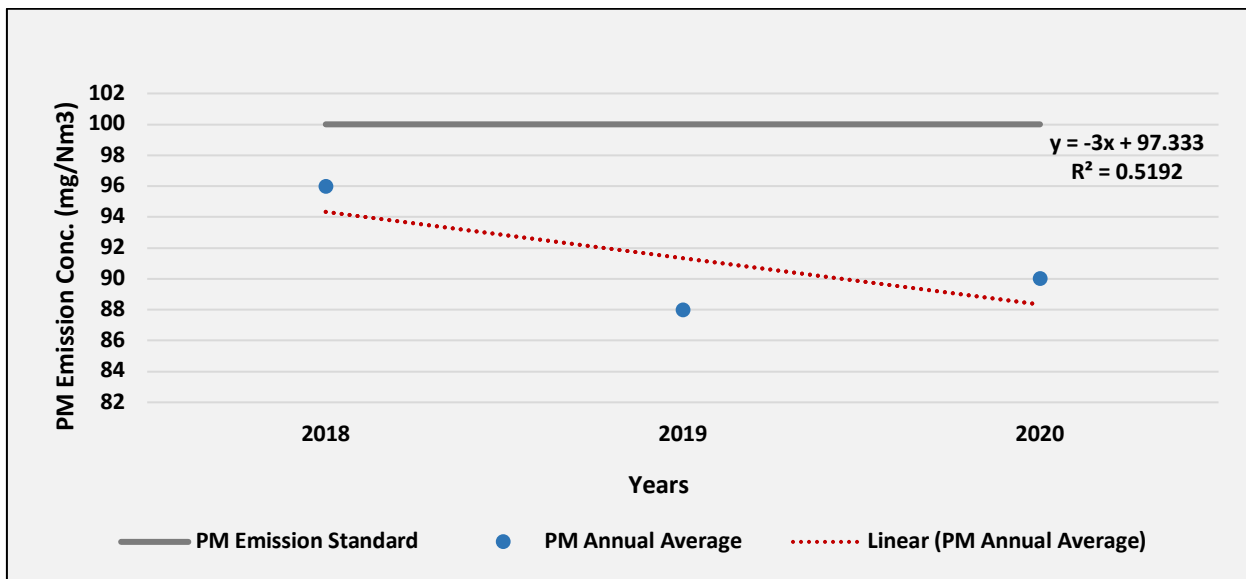


Fig. SIN4: Trend of annual mean PM Emission air concentration in Singrauli TPP (Unit 1)

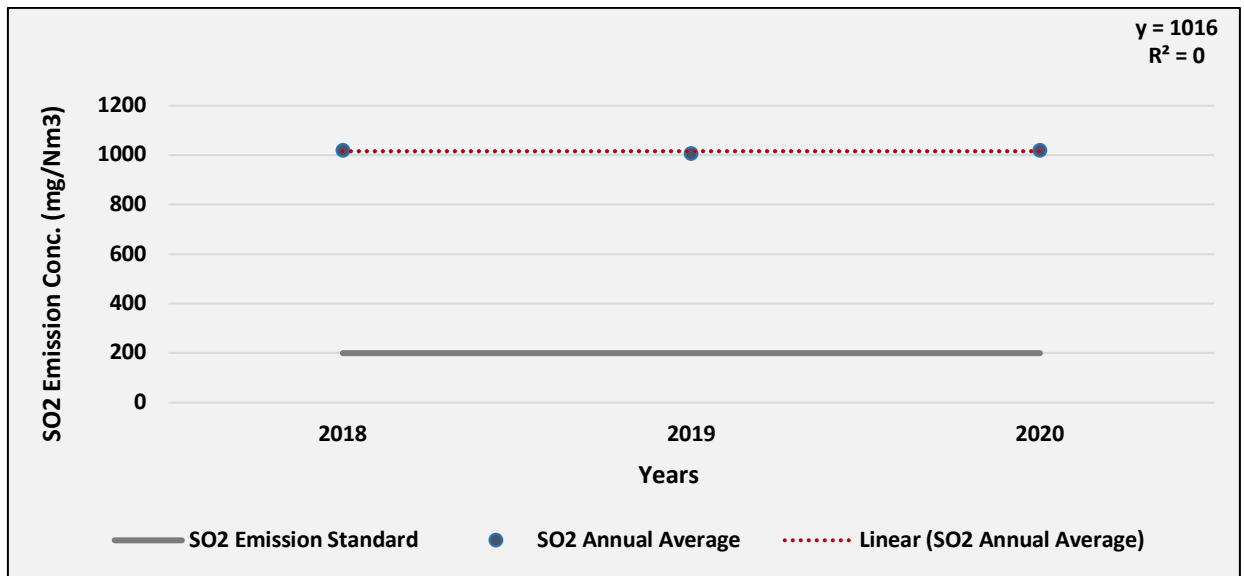


Fig. SIN5: Trend of annual mean SO₂ Emission air concentration in Singrauli TPP (Unit 1)

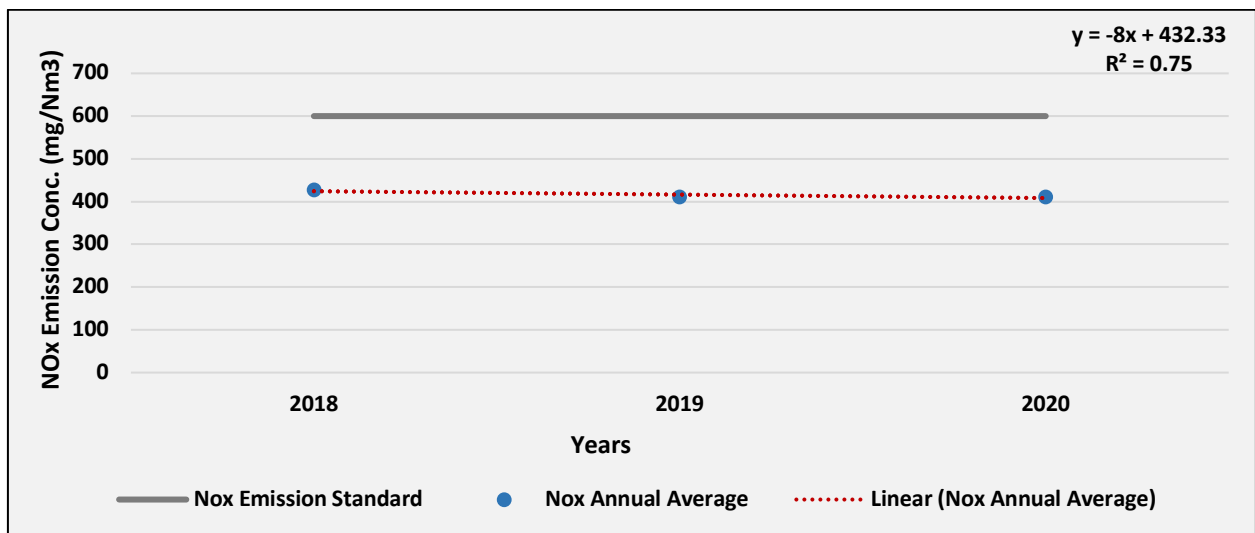


Fig. SIN6: Trend of annual mean NO_x Emission air concentration in Singrauli TPP (Unit 1)

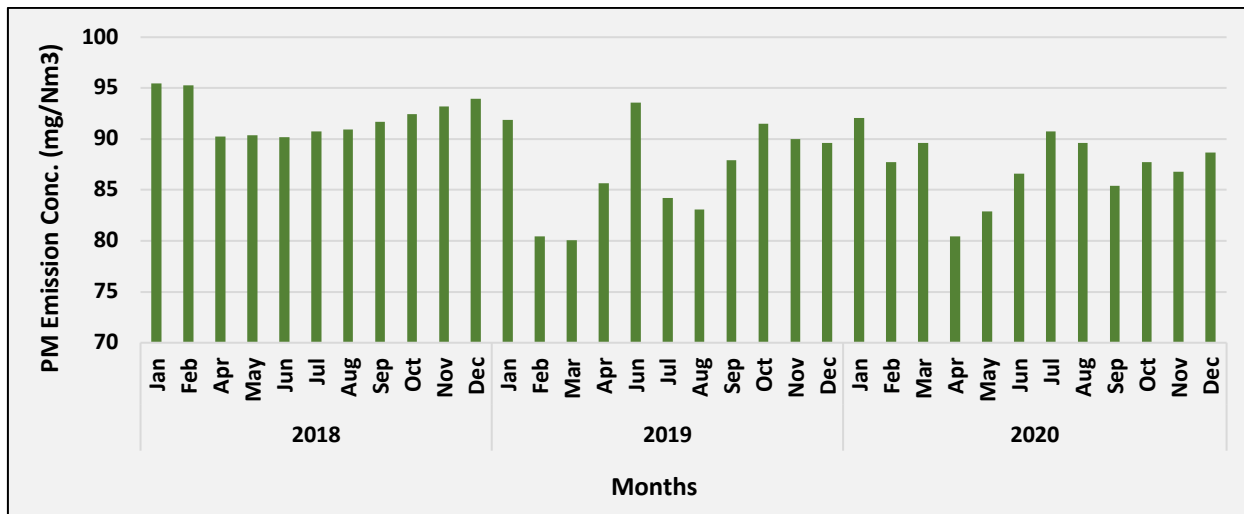


Fig. SIN7: Time series of monthly average PM Emission concentration in Singrauli TPP (Unit 2)

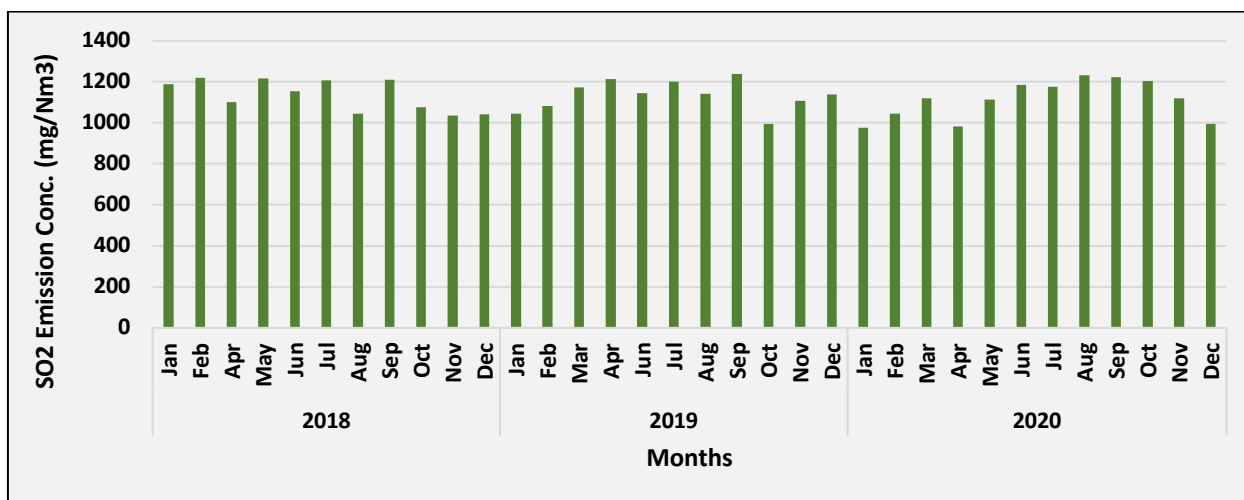


Fig. SIN8: Time series of monthly average SO₂ Emission concentration in Singrauli TPP (Unit 2)

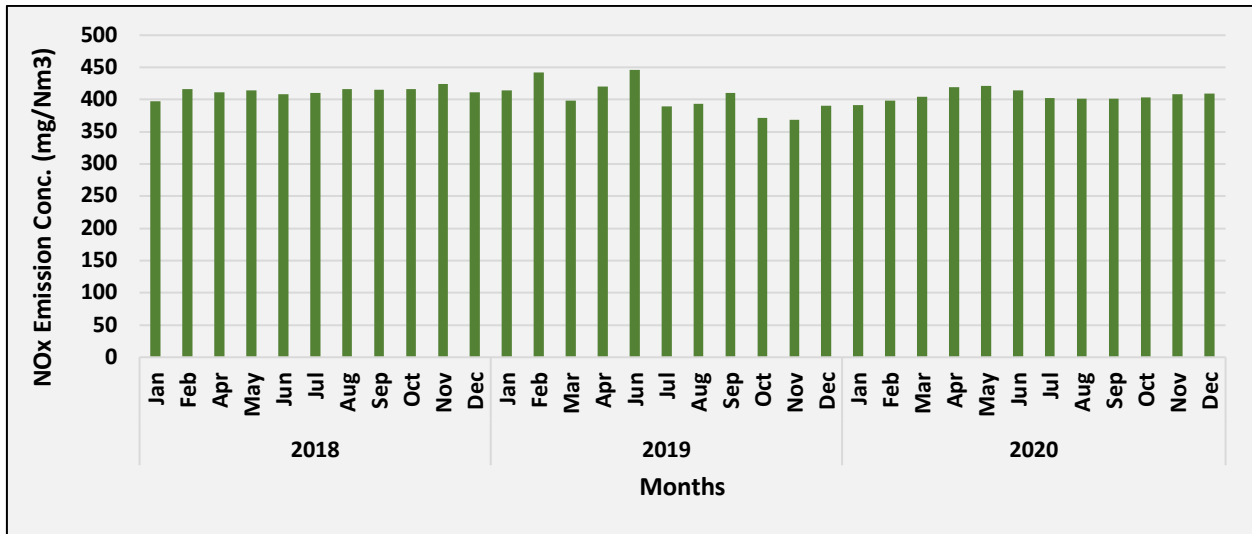


Fig. SIN9: Time series of monthly average NO_x Emission concentration in Singrauli TPP (Unit 2)

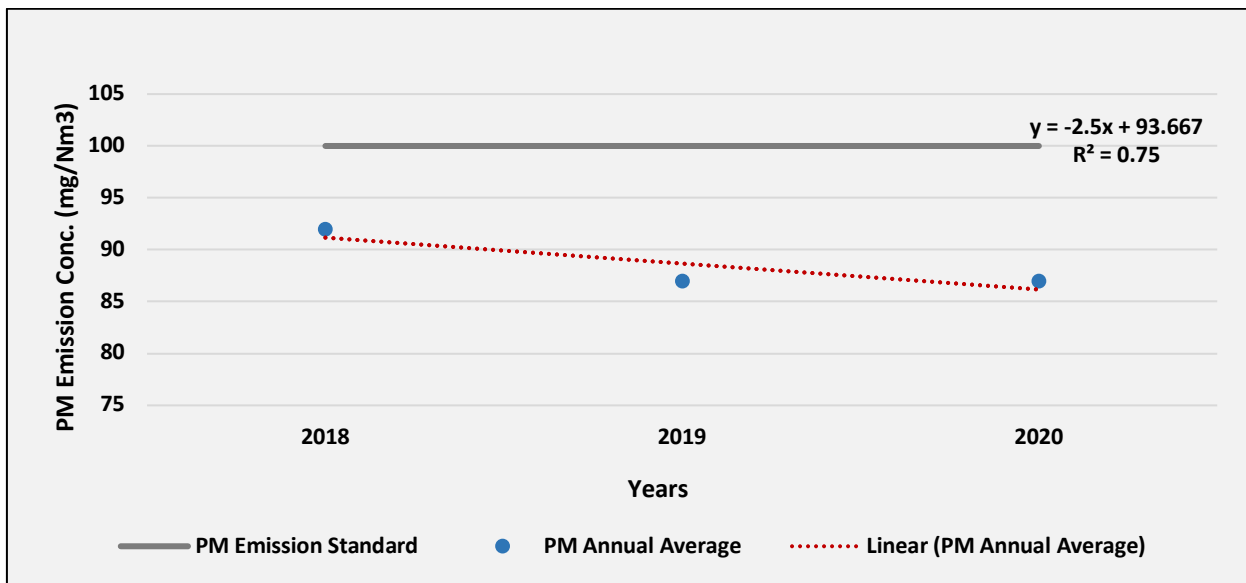


Fig. SIN10: Trend of annual mean PM Emission air concentration in Singrauli TPP (Unit 2)

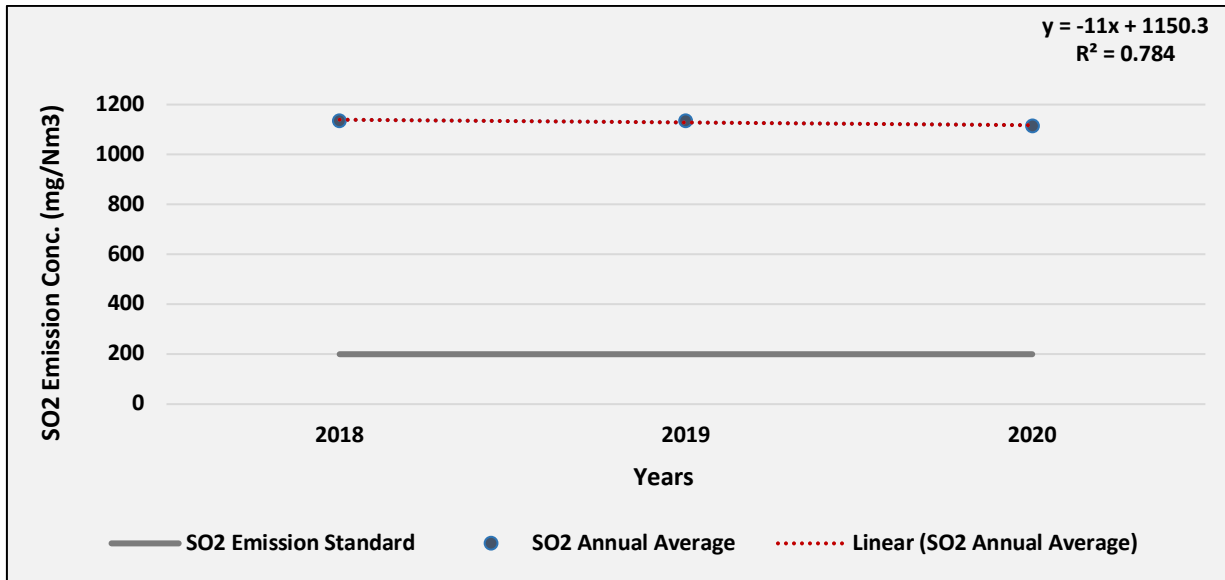


Fig. SIN11: Trend of annual mean SO₂ Emission air concentration in Singrauli TPP (Unit 2)

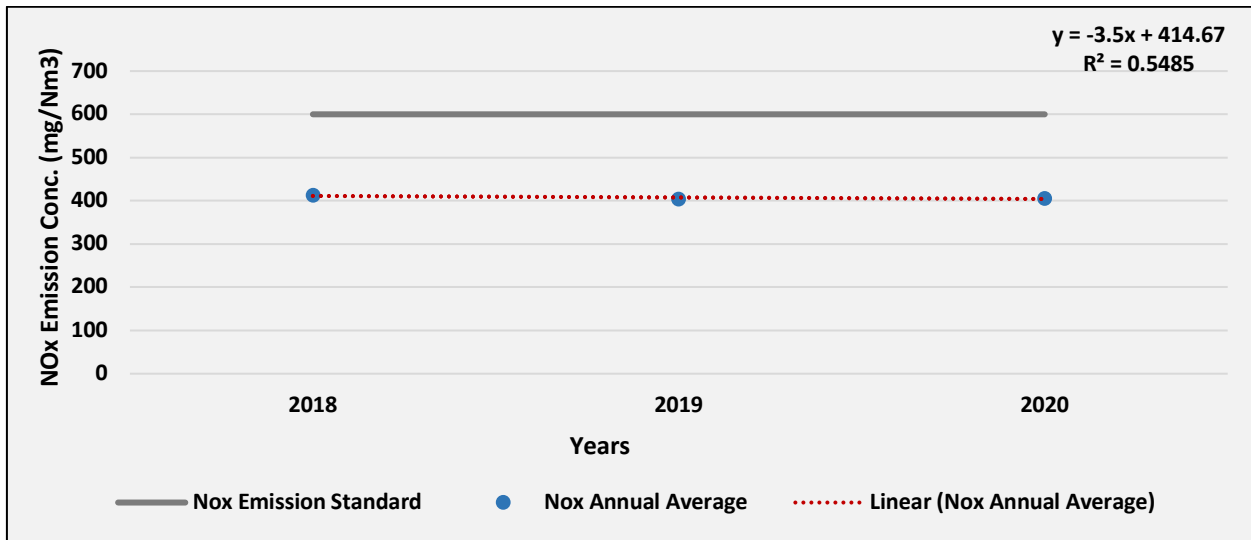


Fig. SIN12: Trend of annual mean NO_x Emission air concentration in Singrauli TPP (Unit 2)

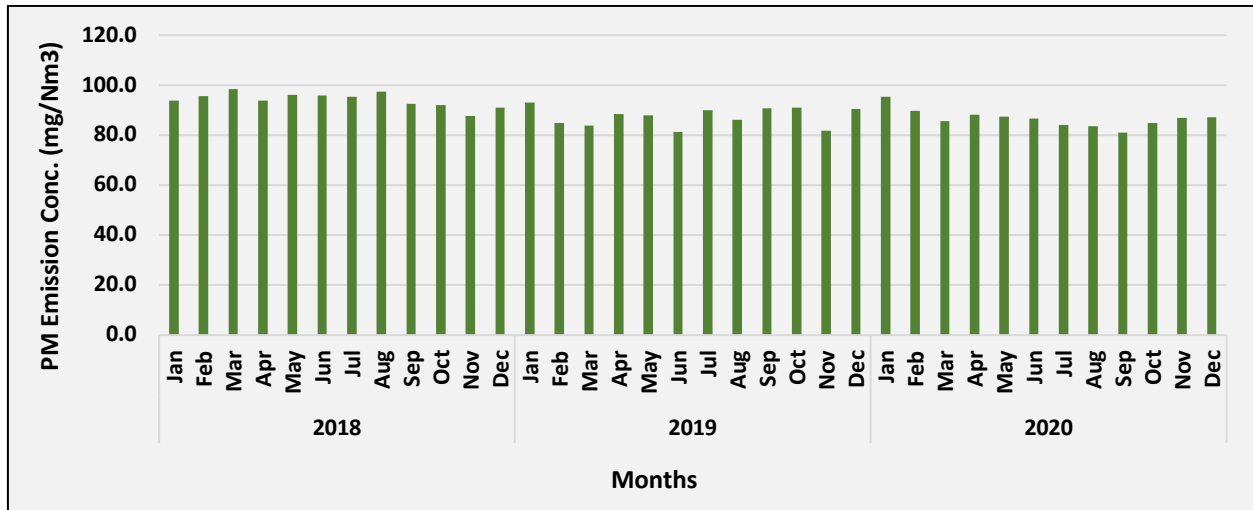


Fig. SIN13: Time series of monthly average PM Emission concentration in Singrauli TPP (Unit 3)

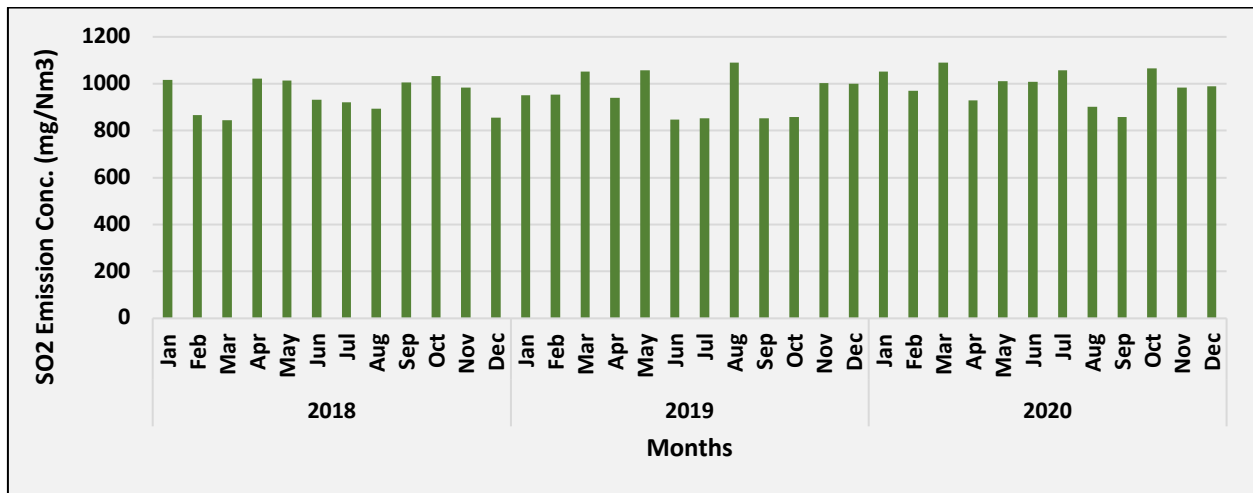


Fig. SIN14: Time series of monthly average SO₂ Emission concentration in Singrauli TPP (Unit 3)

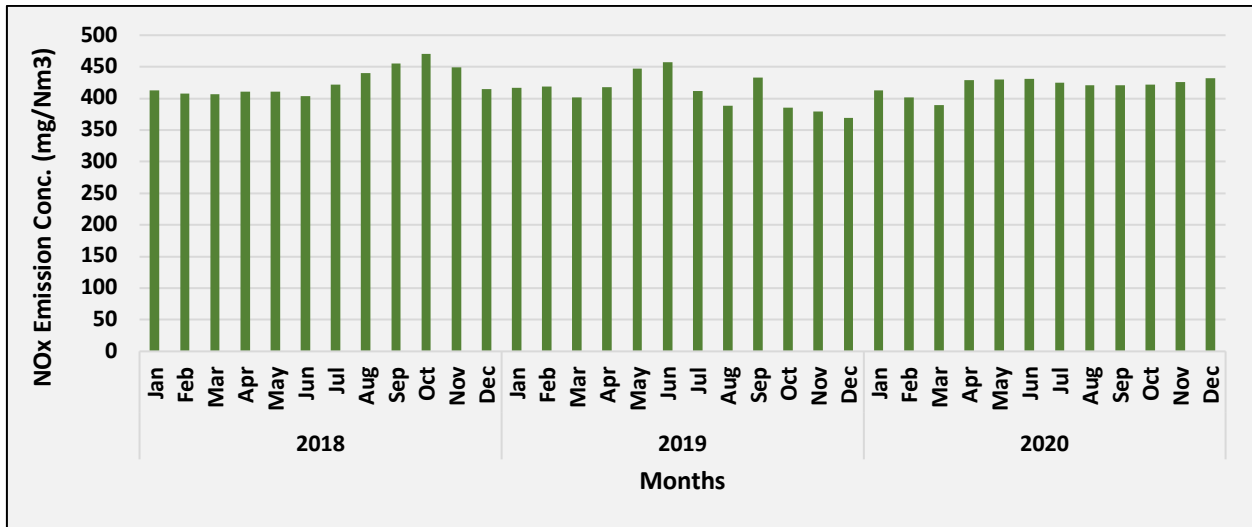


Fig. SIN15: Time series of monthly average NO_x Emission concentration in Singrauli TPP (Unit 3)

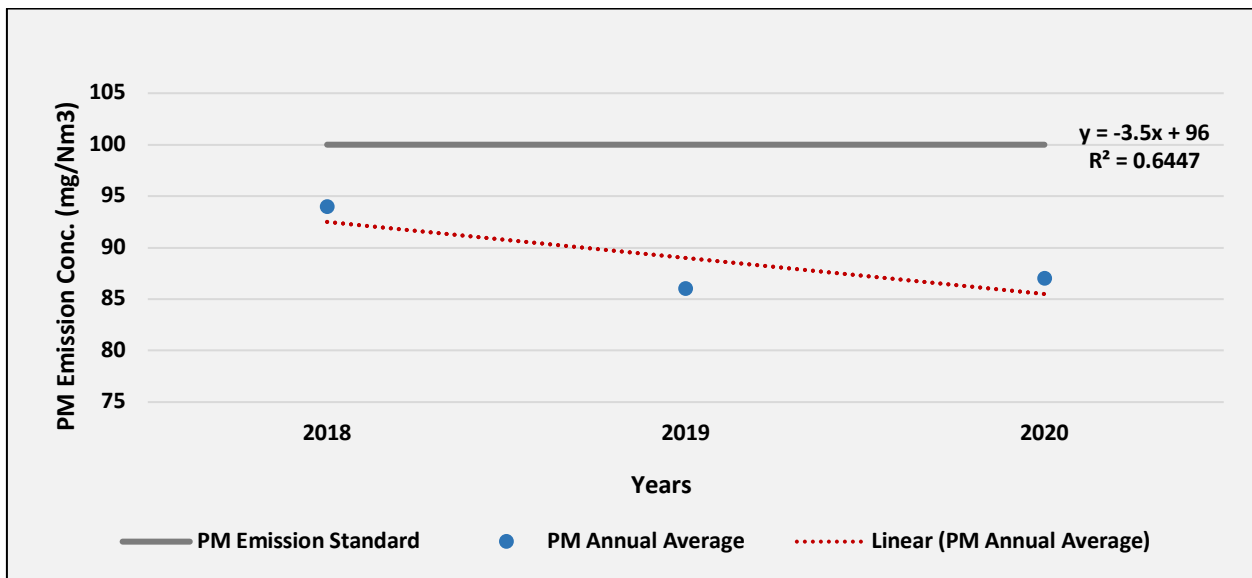


Fig. SIN16: Trend of annual mean PM Emission air concentration in Singrauli TPP (Unit 3)

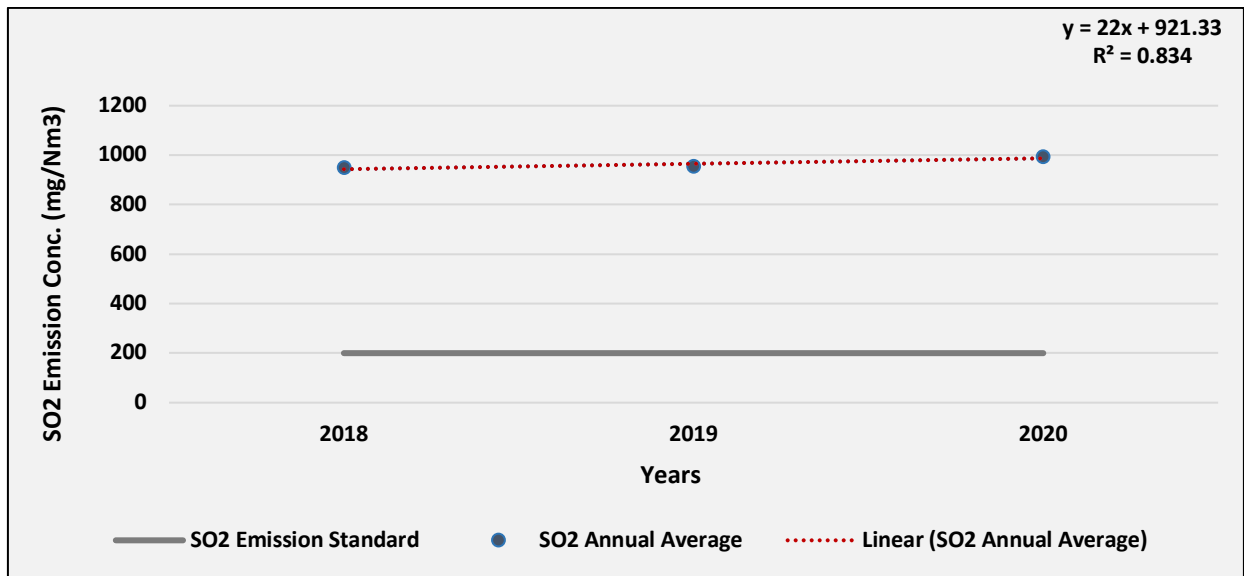


Fig. SIN17: Trend of annual mean SO₂ Emission air concentration in Singrauli TPP (Unit 3)

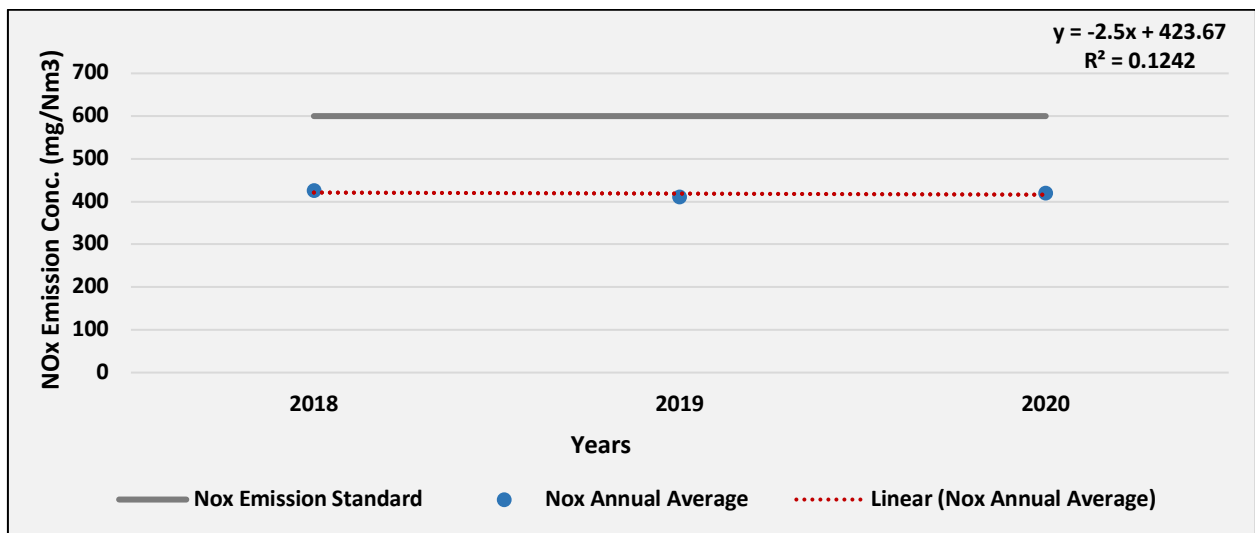


Fig. SIN18: Trend of annual mean NO_x Emission air concentration in Singrauli TPP (Unit 3)

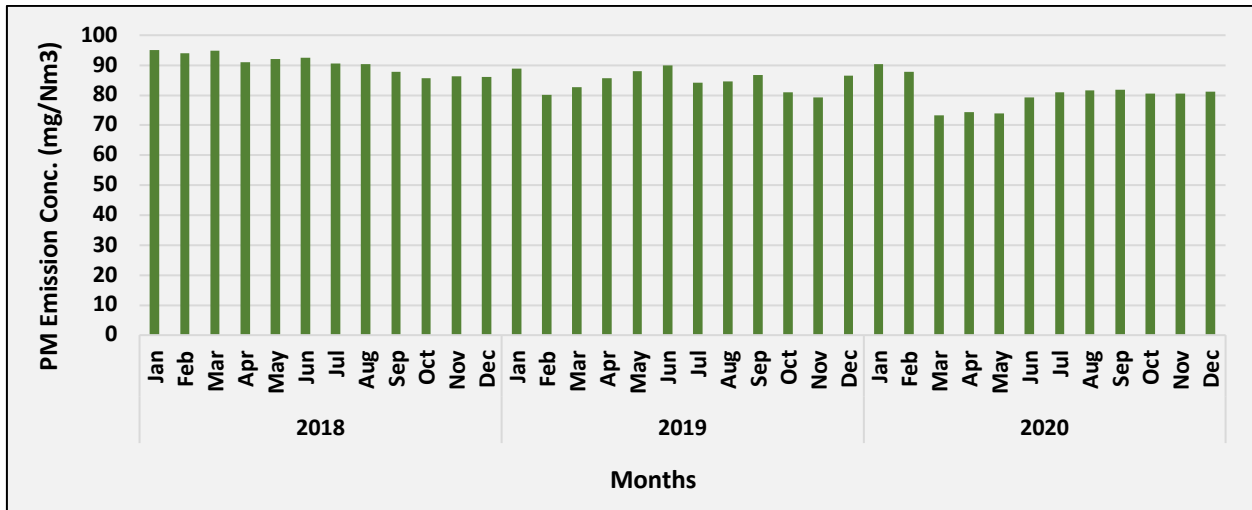


Fig. SIN19: Time series of monthly average PM Emission concentration in Singrauli TPP (Unit 4)

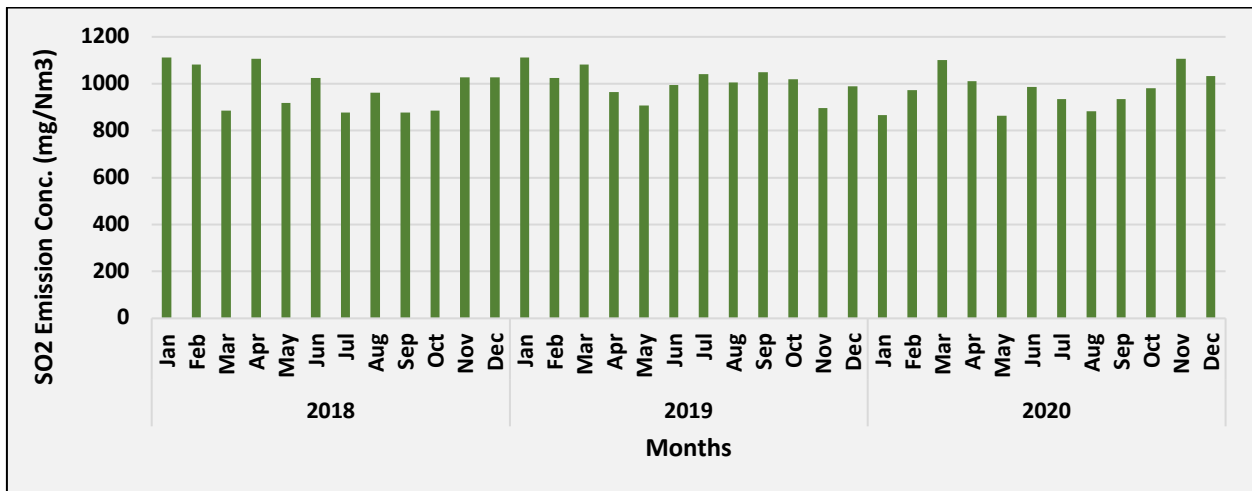


Fig. SIN20: Time series of monthly average SO₂ Emission concentration in Singrauli TPP (Unit 4)

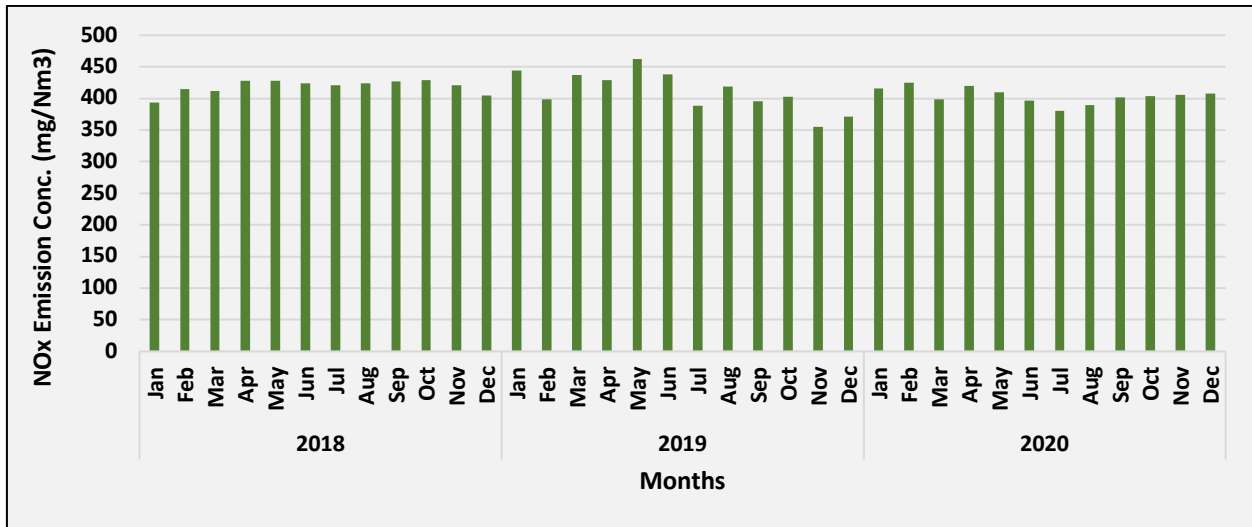


Fig. SIN21: Time series of monthly average NO_x Emission concentration in Singrauli TPP (Unit 4)

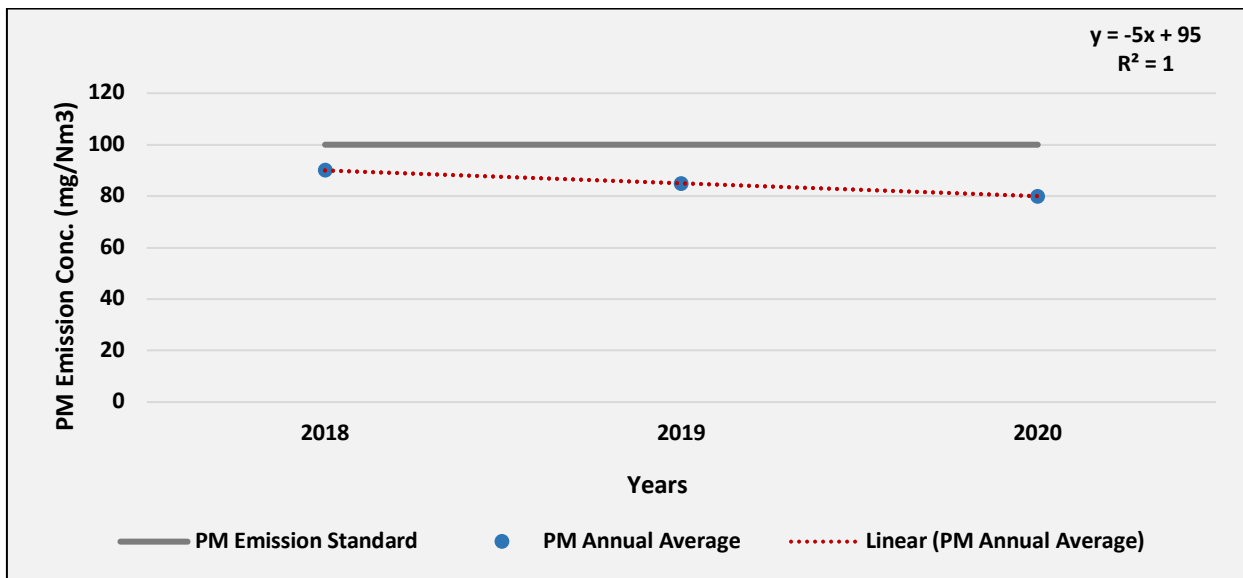


Fig. SIN22: Trend of annual mean PM Emission air concentration in Singrauli TPP (Unit 4)

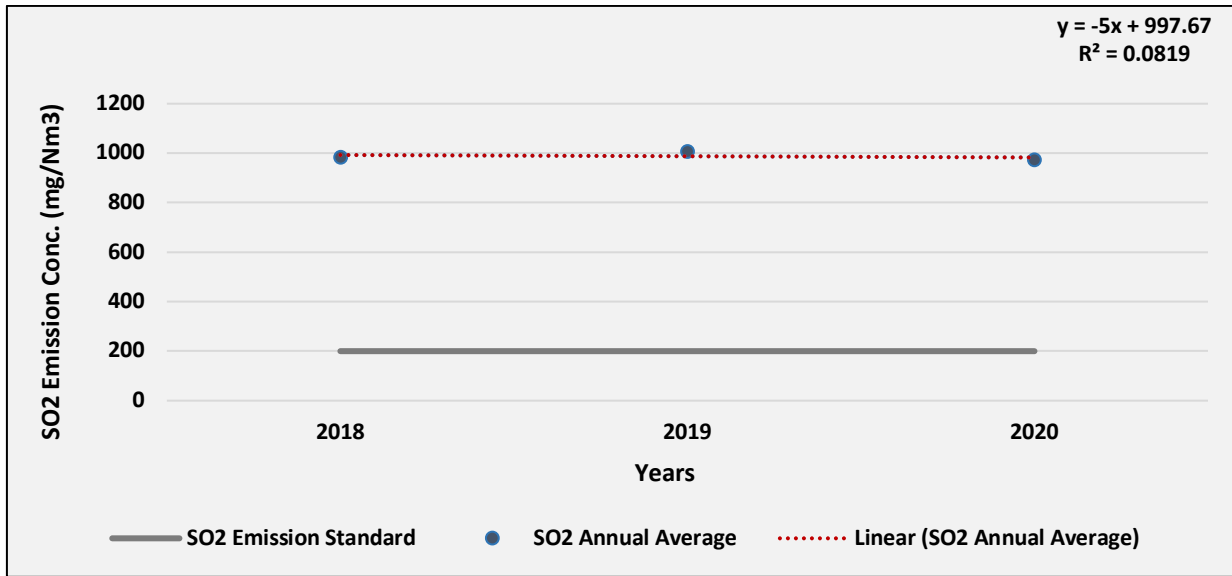


Fig. SIN23: Trend of annual mean SO₂ Emission air concentration in Singrauli TPP (Unit 4)

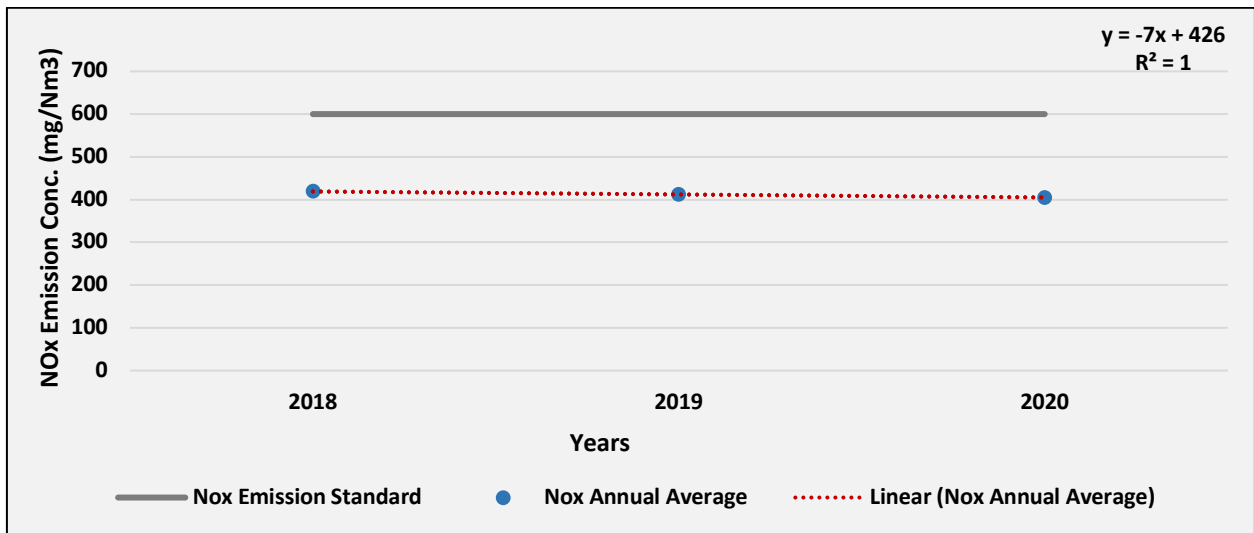


Fig. SIN24: Trend of annual mean NO_x Emission air concentration in Singrauli TPP (Unit 4)

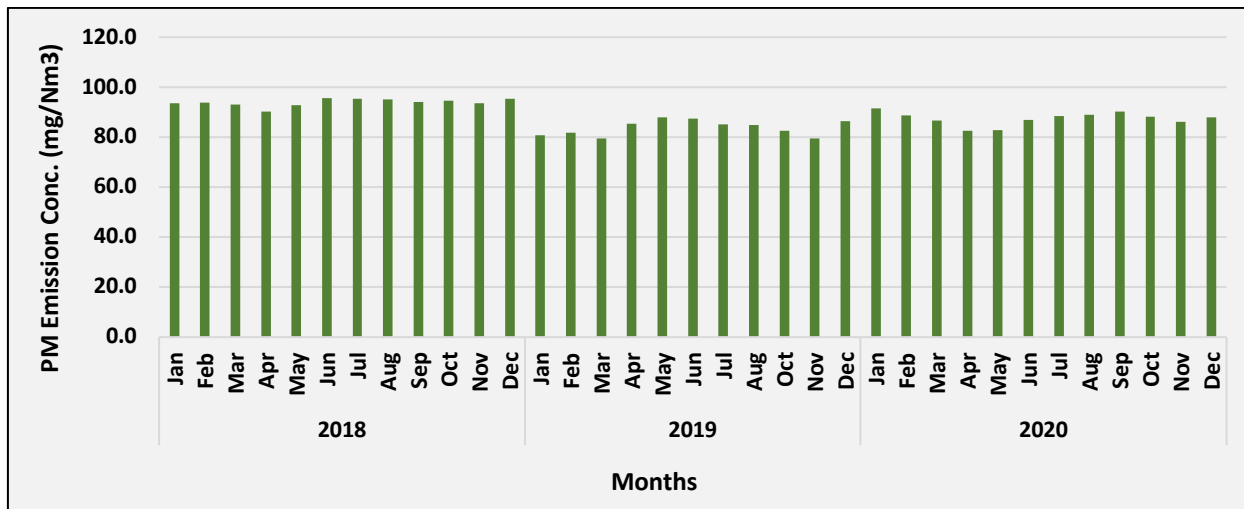


Fig. SIN25: Time series of monthly average PM Emission concentration in Singrauli TPP (Unit 5)

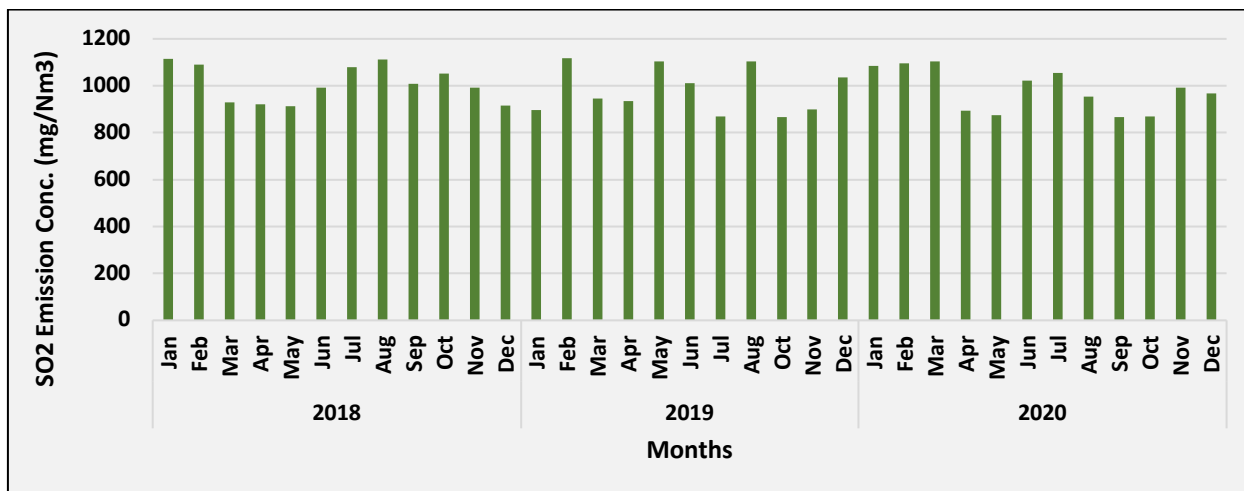


Fig. SIN26: Time series of monthly average SO₂ Emission concentration in Singrauli TPP (Unit 5)

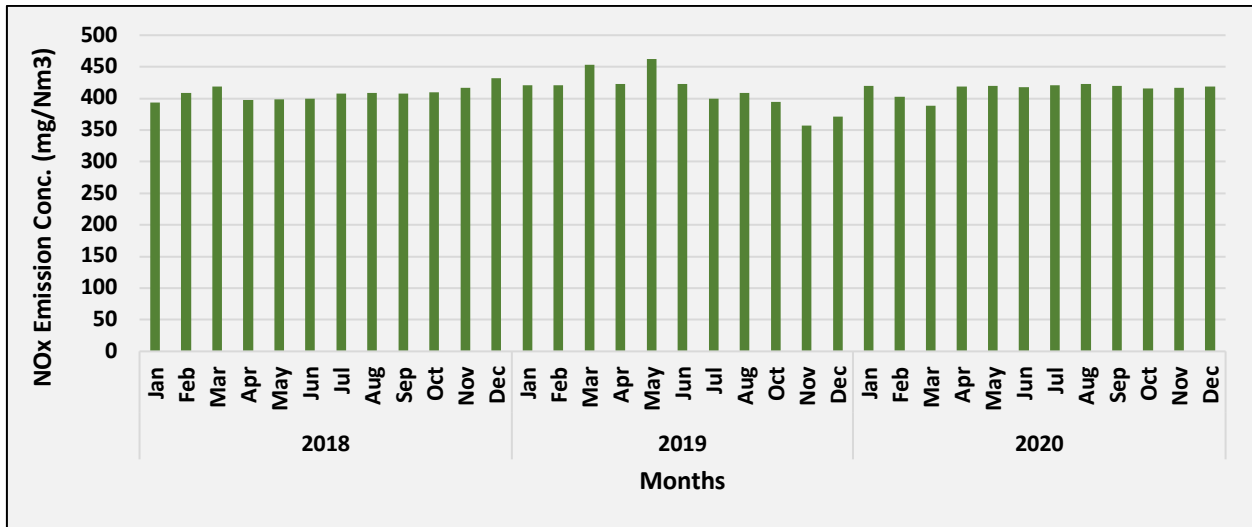


Fig. SIN27: Time series of monthly average NO_x Emission concentration in Singrauli TPP (Unit 5)

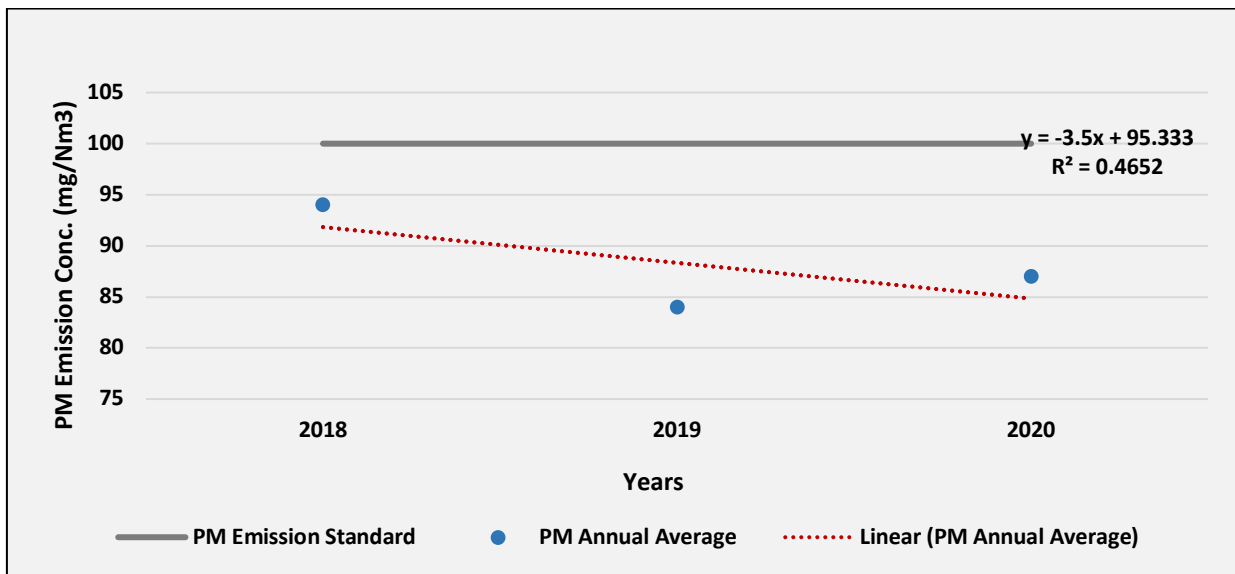


Fig. SIN28: Trend of annual mean PM Emission air concentration in Singrauli TPP (Unit 5)

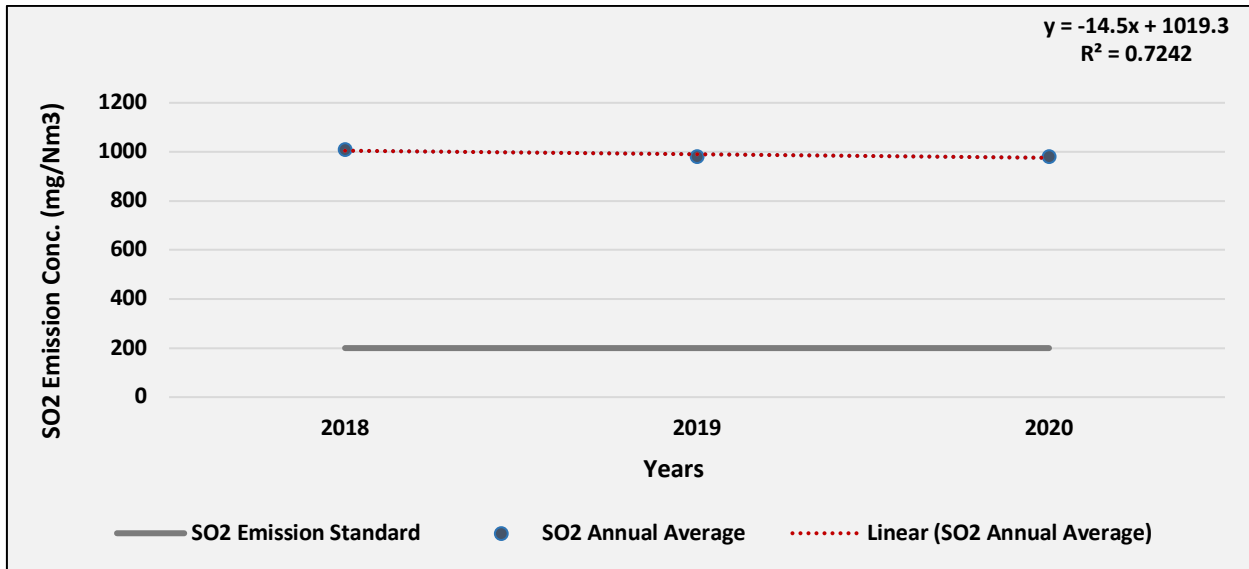


Fig. SIN29: Trend of annual mean SO₂ Emission air concentration in Singrauli TPP (Unit 5)

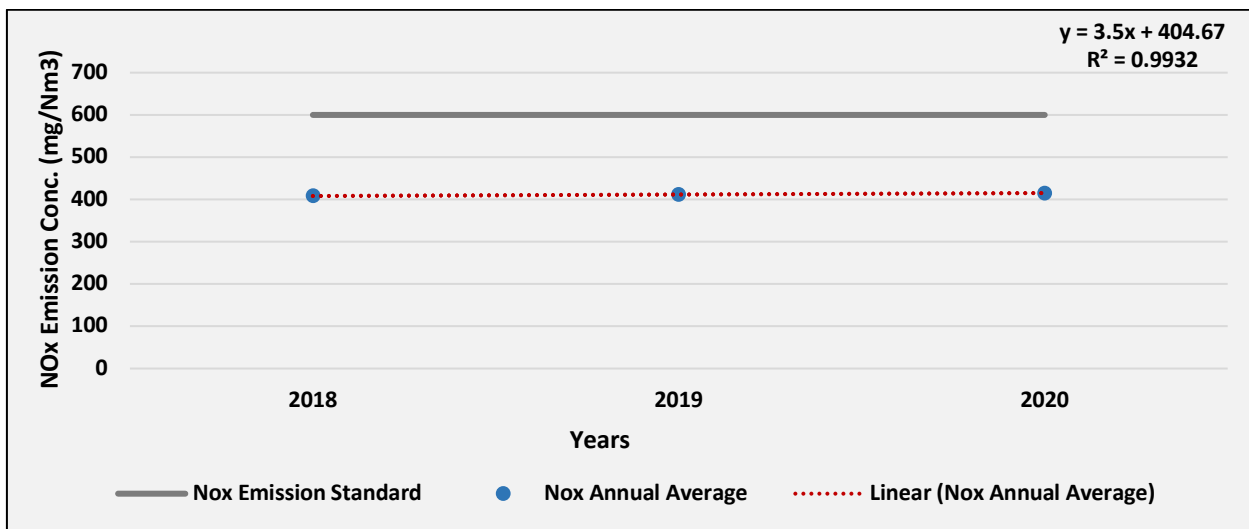


Fig. SIN30: Trend of annual mean NO_x Emission air concentration in Singrauli TPP (Unit 5)

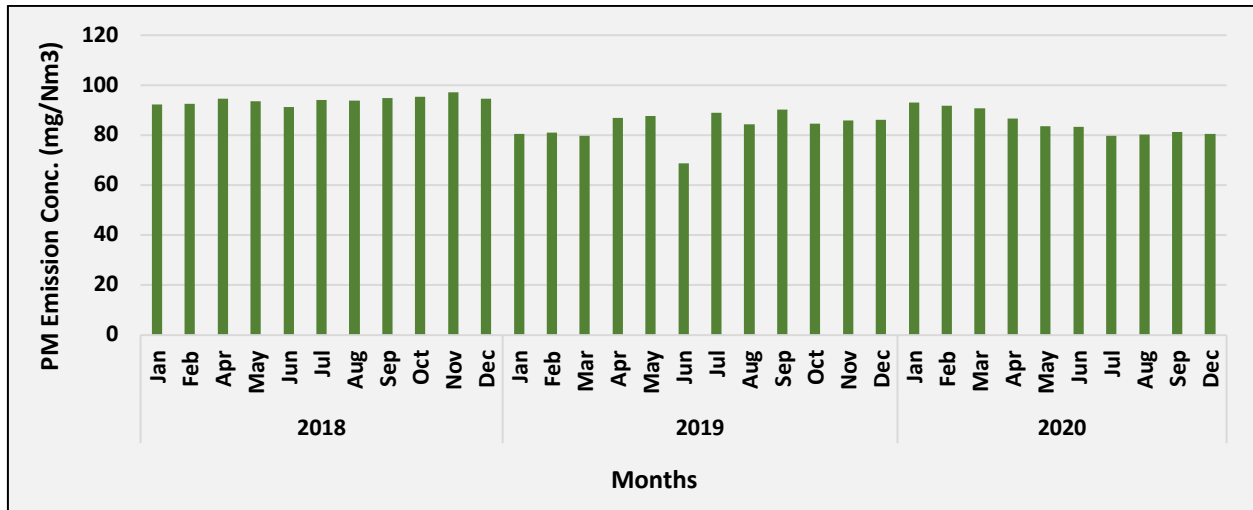


Fig. SIN31: Time series of monthly average PM Emission concentration in Singrauli TPP (Unit 6)

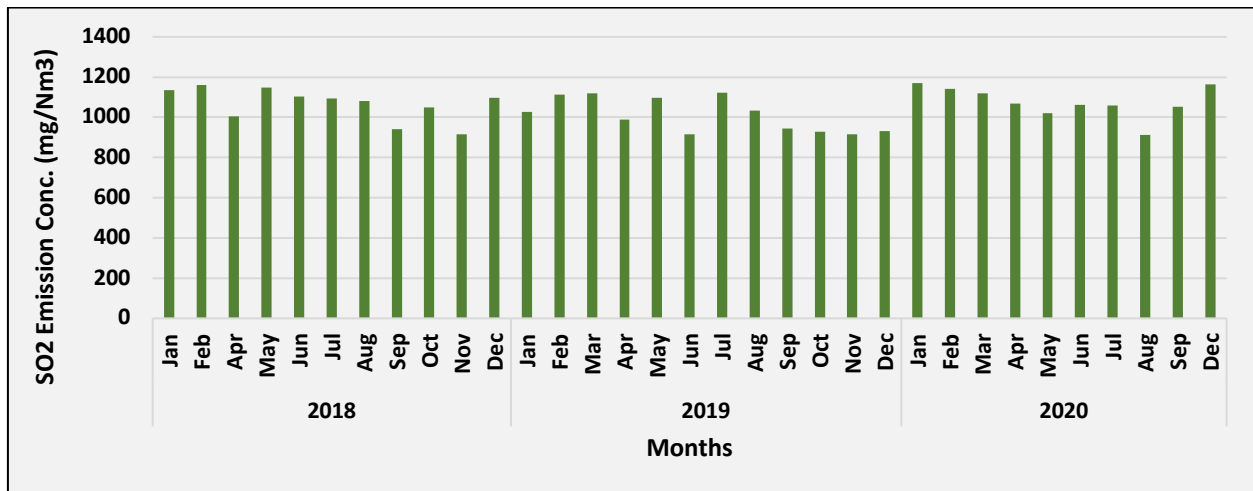


Fig. SIN32: Time series of monthly average SO₂ Emission concentration in Singrauli TPP (Unit 6)

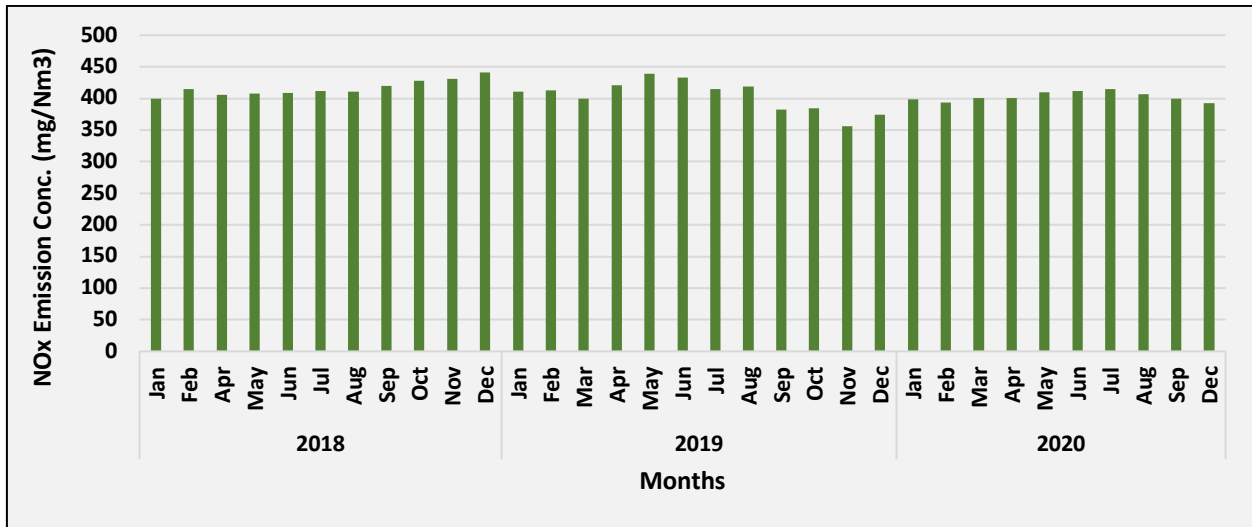


Fig. SIN33: Time series of monthly average NO_x Emission concentration in Singrauli TPP (Unit 6)

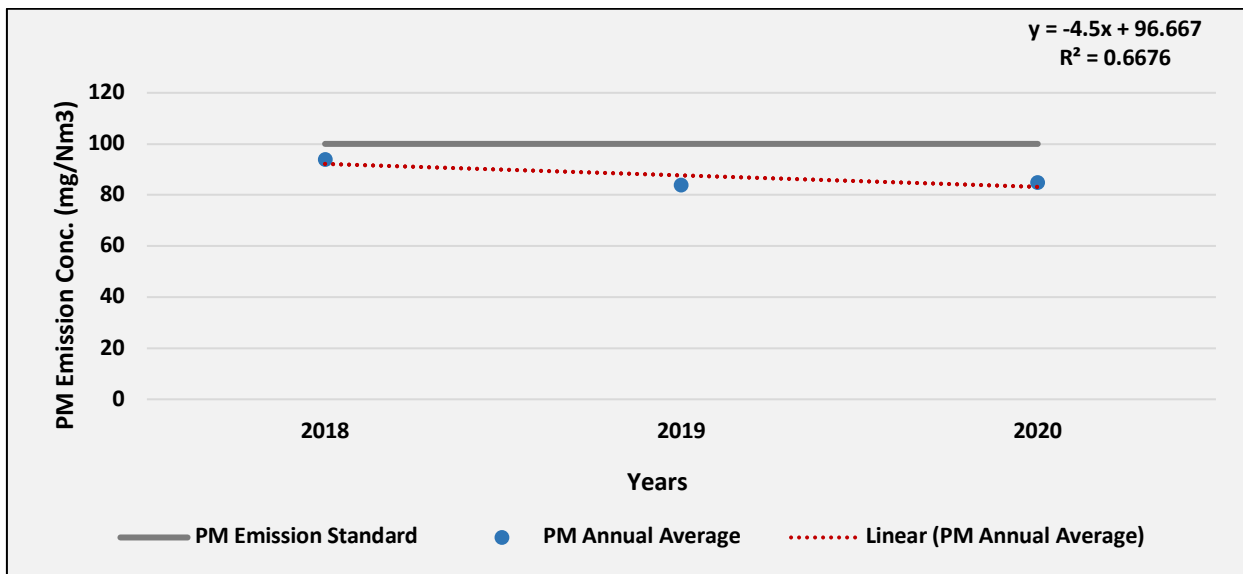


Fig. SIN34: Trend of annual mean PM Emission air concentration in Singrauli TPP (Unit 6)

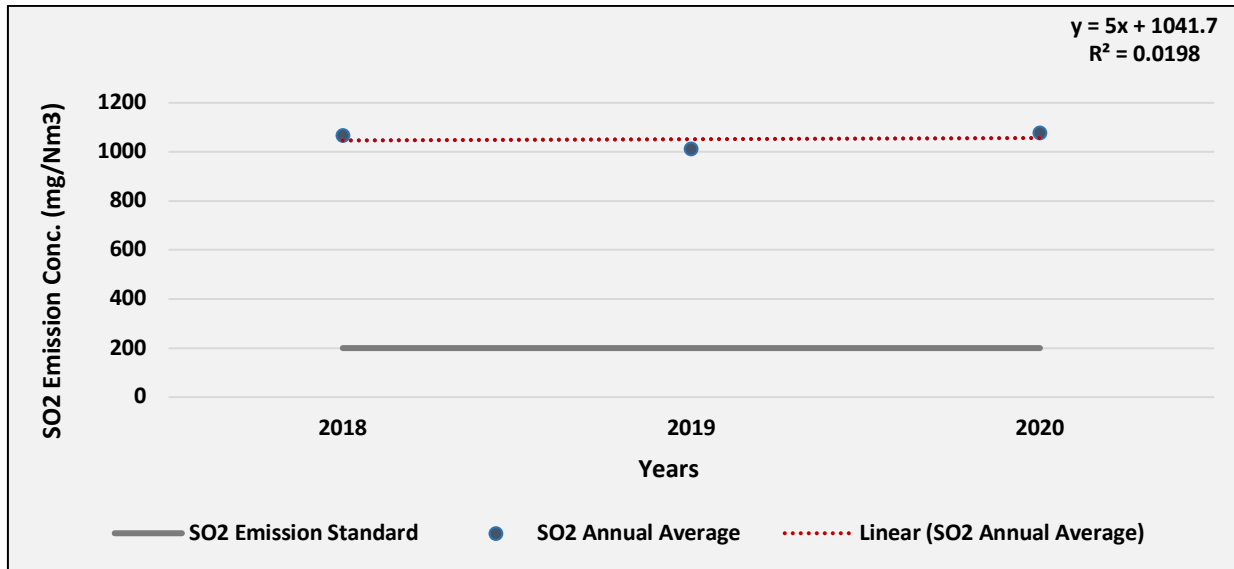


Fig. SIN35: Trend of annual mean SO₂ Emission air concentration in Singrauli TPP (Unit 6)

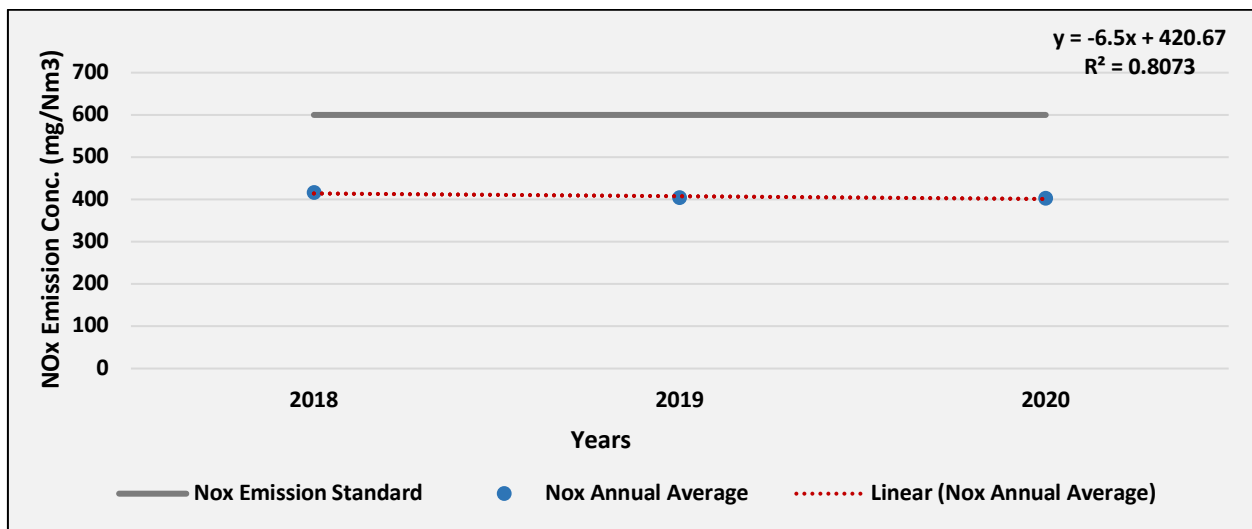


Fig. SIN36: Trend of annual mean NO_x Emission air concentration in Singrauli TPP (Unit 6)

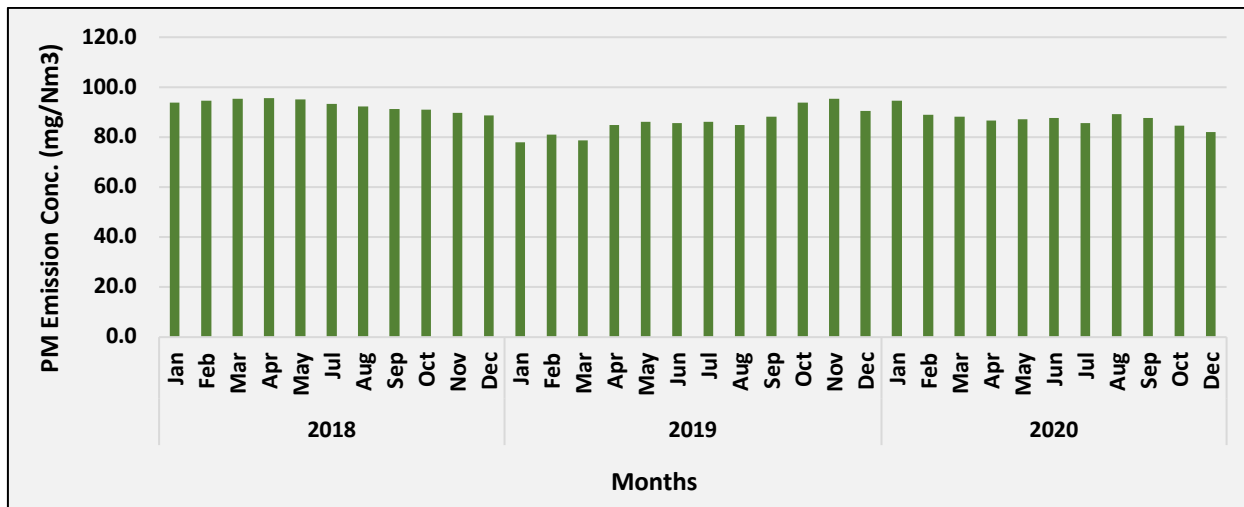


Fig. SIN37: Time series of monthly average PM Emission concentration in Singrauli TPP (Unit 7)

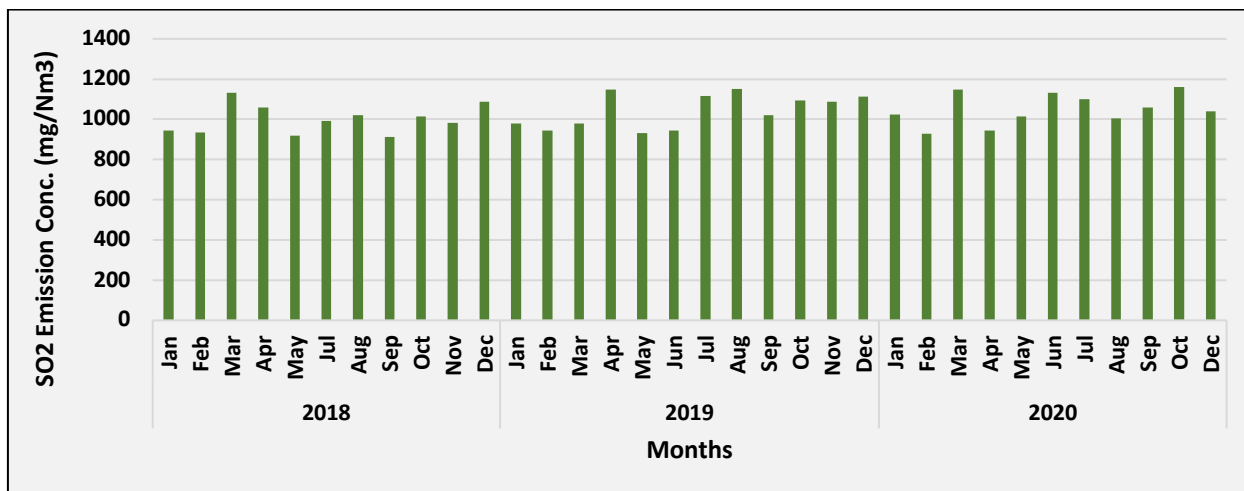


Fig. SIN38: Time series of monthly average SO₂ Emission concentration in Singrauli TPP (Unit 7)

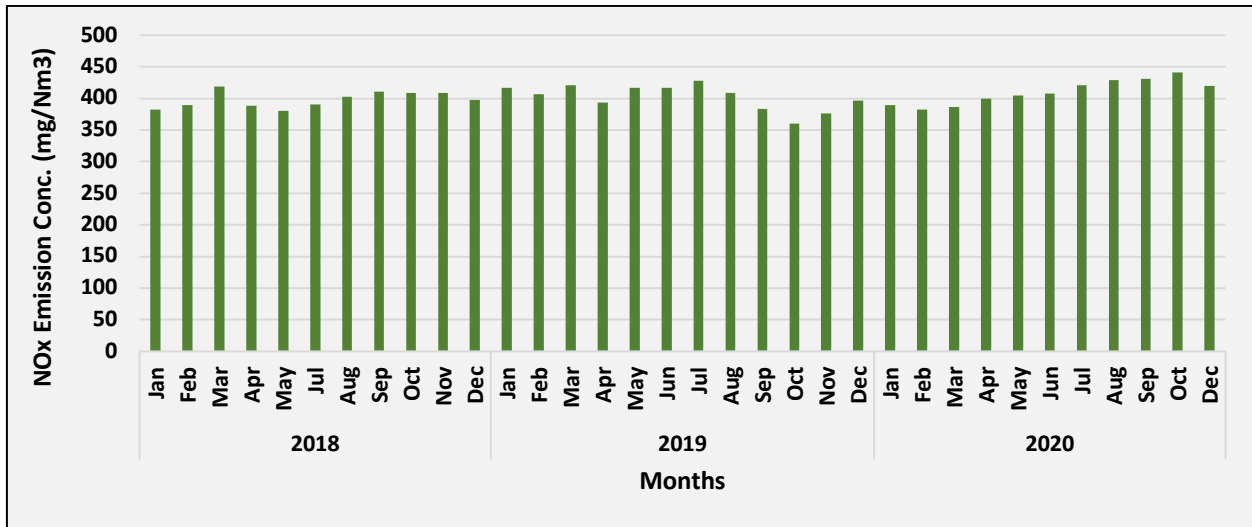


Fig. SIN39: Time series of monthly average NO_x Emission concentration in Singrauli TPP (Unit 7)

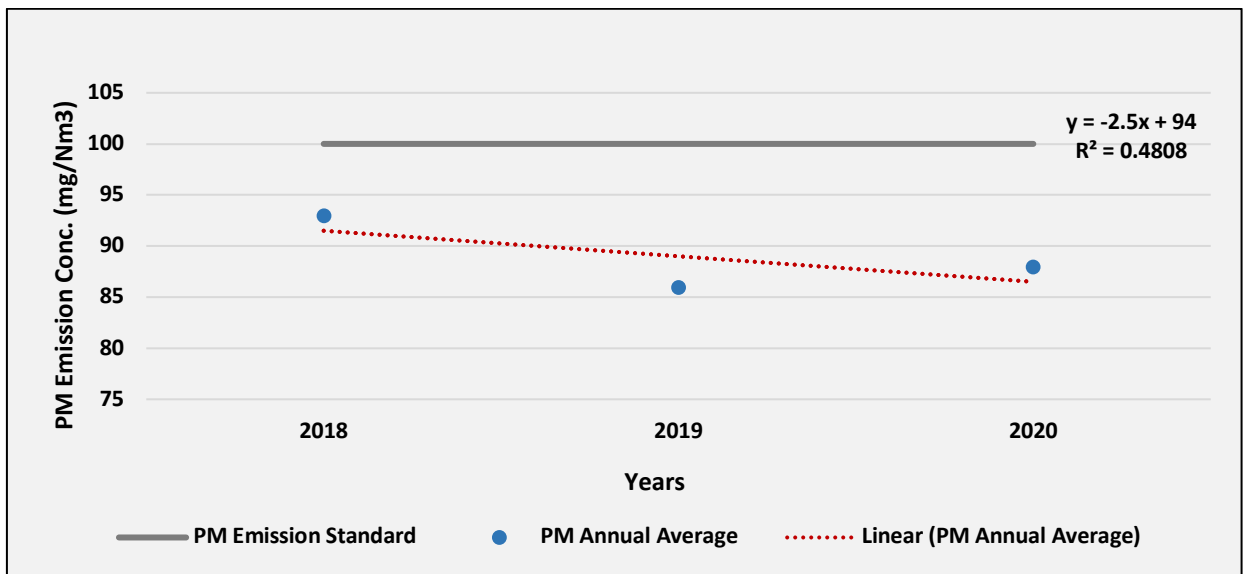


Fig. SIN40: Trend of annual mean PM Emission air concentration in Singrauli TPP (Unit 7)

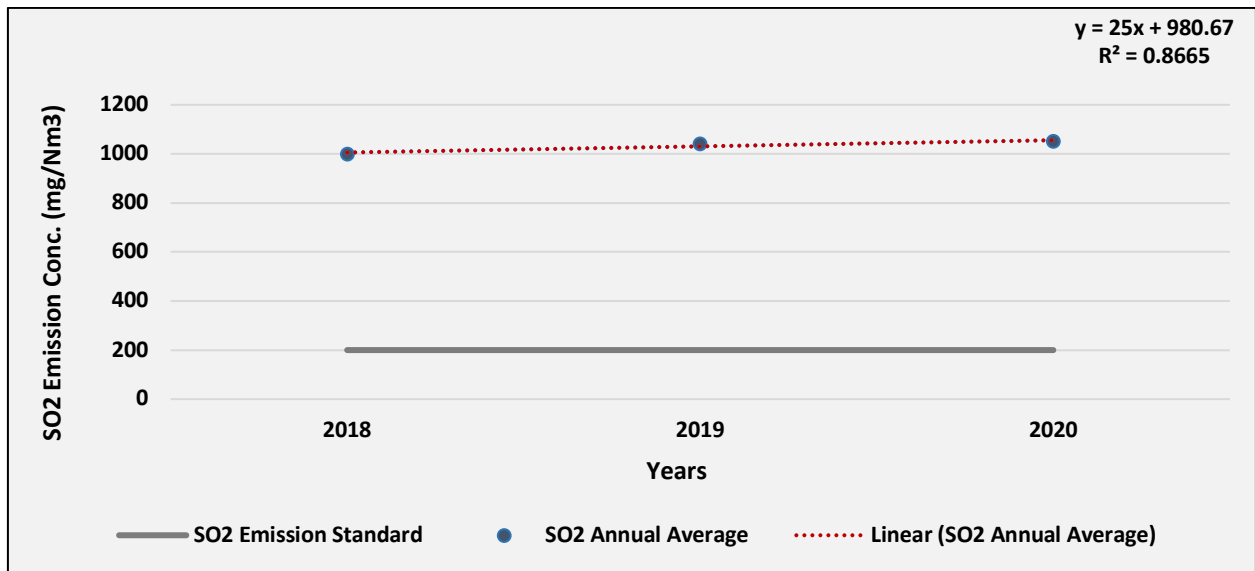


Fig. SIN41: Trend of annual mean SO₂ Emission air concentration in Singrauli TPP (Unit 7)

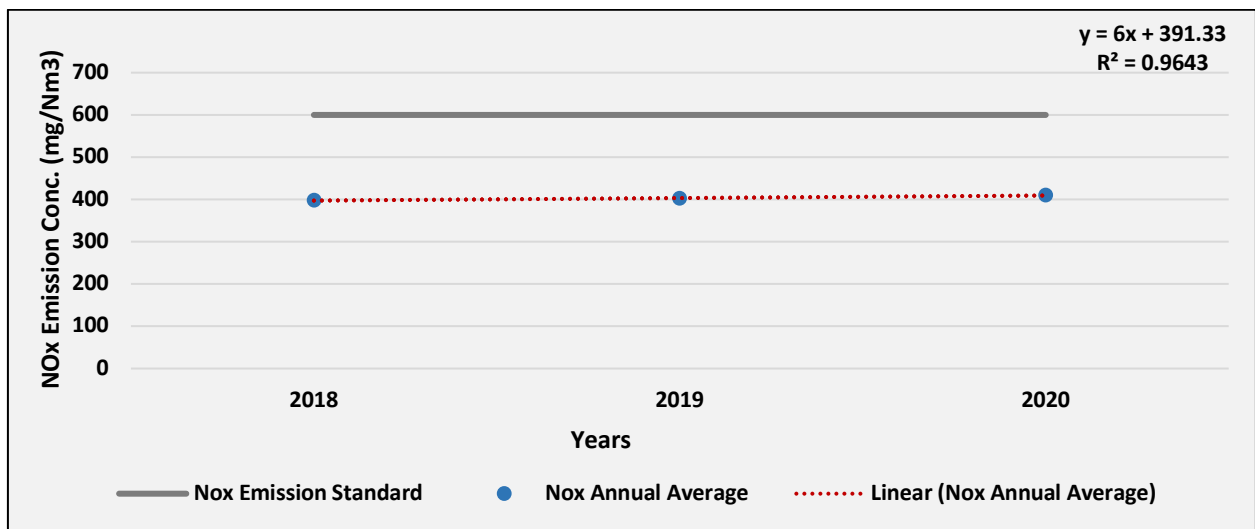


Fig. SIN42: Trend of annual mean NO_x Emission air concentration in Singrauli TPP (Unit 7)

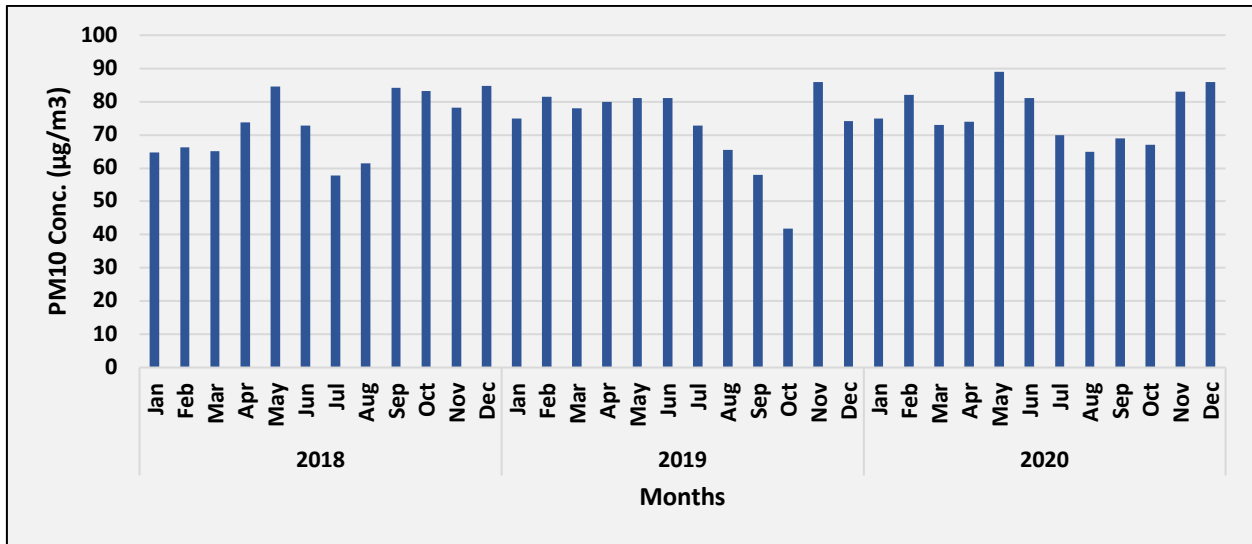


Fig. SIN43: Time series of monthly average PM₁₀ ambient air concentration in Singrauli TPP (Ambient)

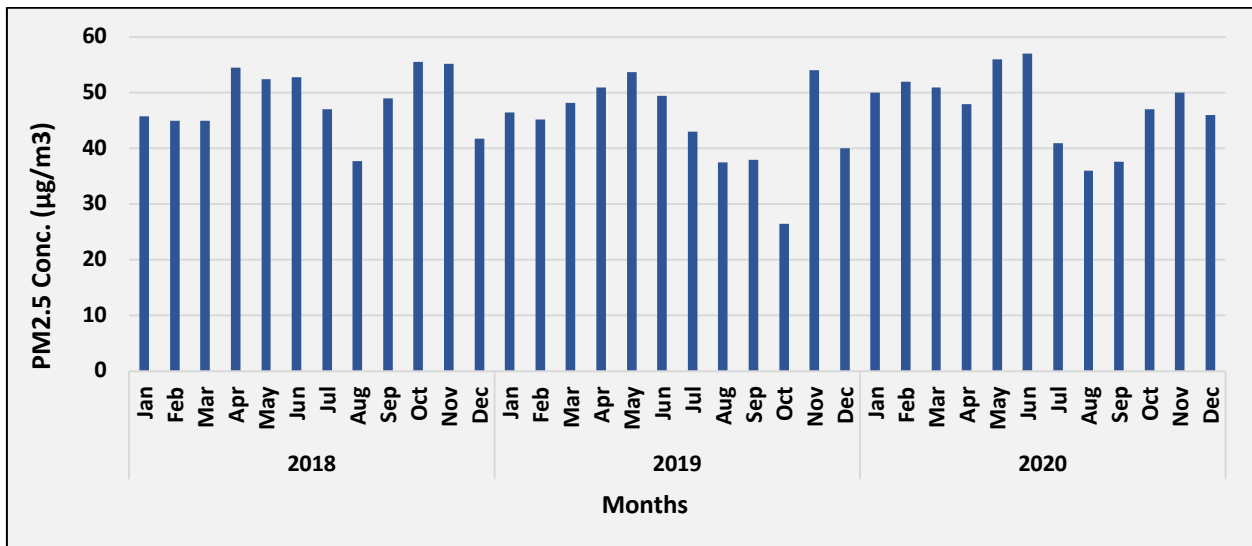


Fig. SIN44: Time series of monthly average PM_{2.5} ambient air concentration in Singrauli TPP (Ambient)

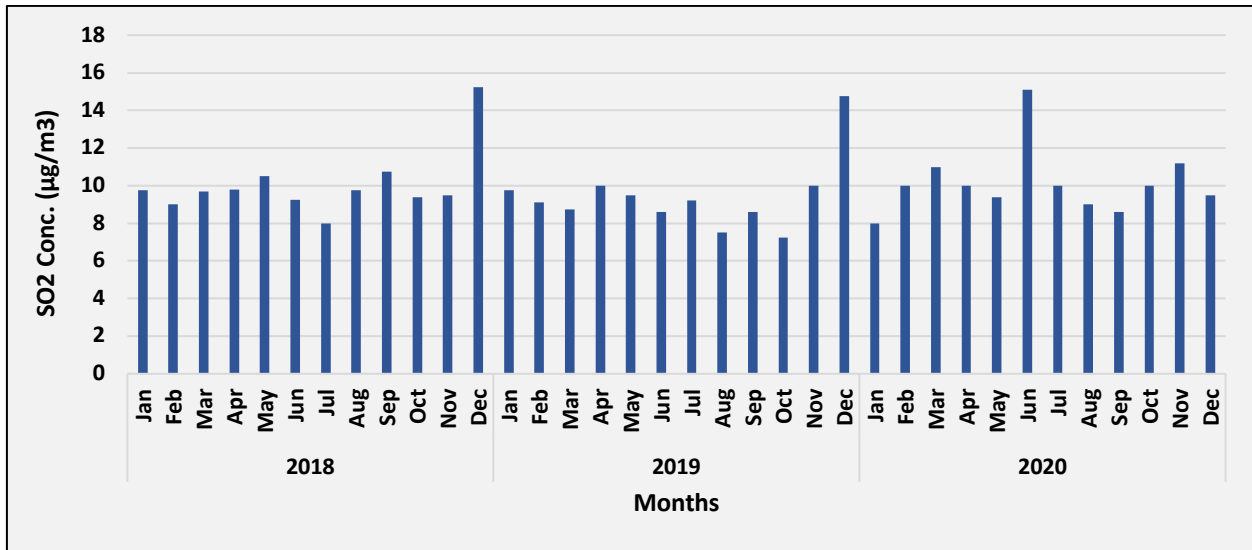


Fig. SIN445: Time series of monthly average SO_2 ambient air concentration in Singrauli TPP (Ambient)

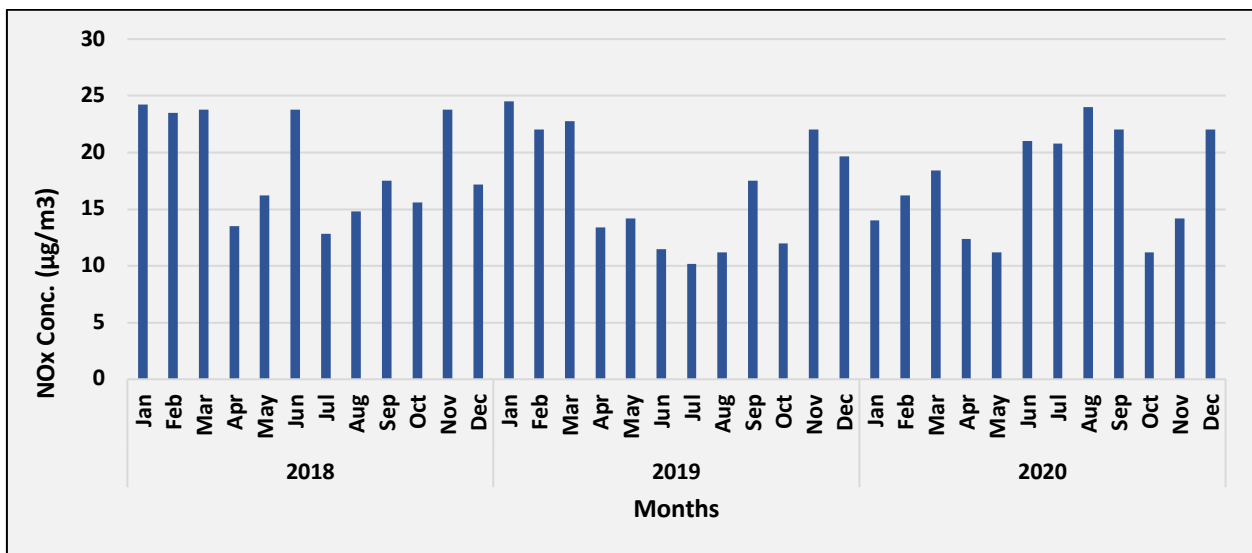


Fig. SIN46: Time series of monthly average NO_x ambient air concentration in Singrauli TPP (Ambient)

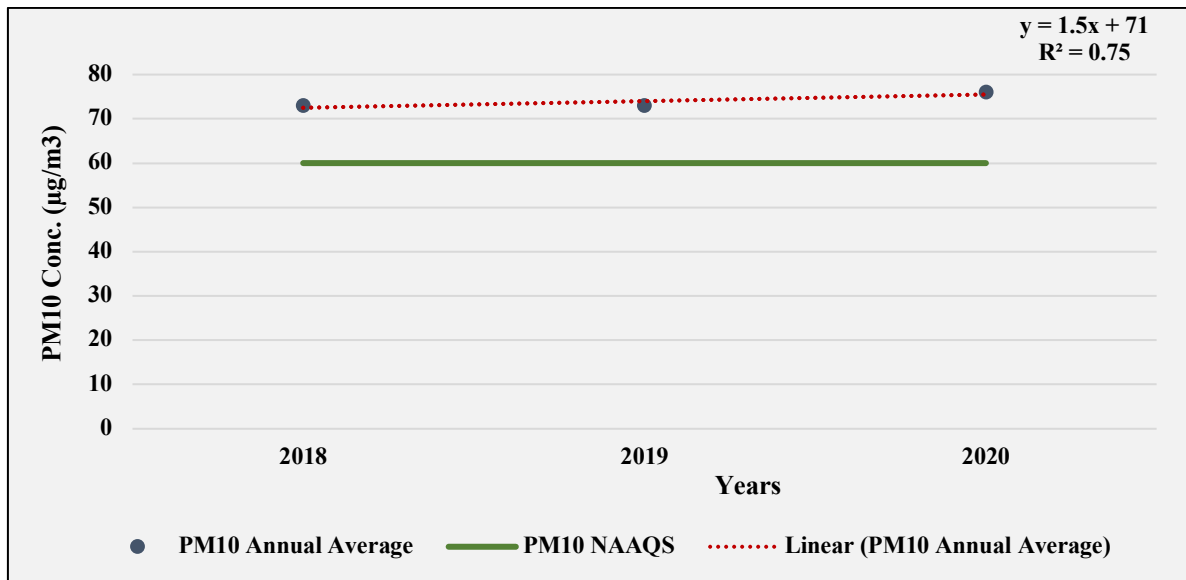


Fig. SIN47: Trend of annual mean PM₁₀ ambient air concentration in Singrauli TPP (Ambient)

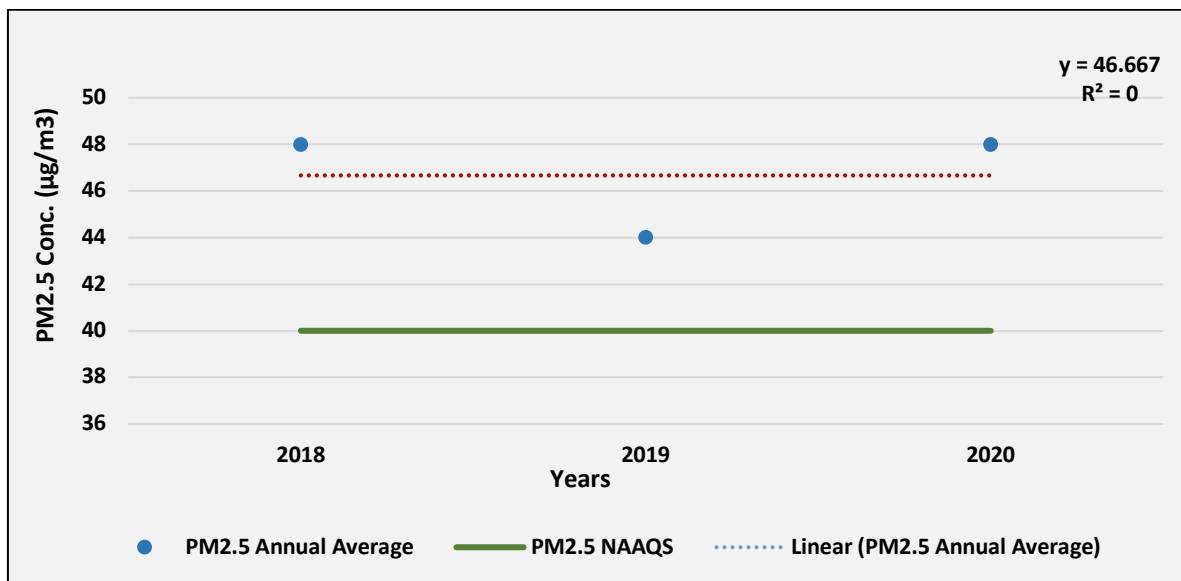


Fig. SIN48: Trend of annual mean PM_{2.5} ambient air concentration in Singrauli TPP (Ambient)

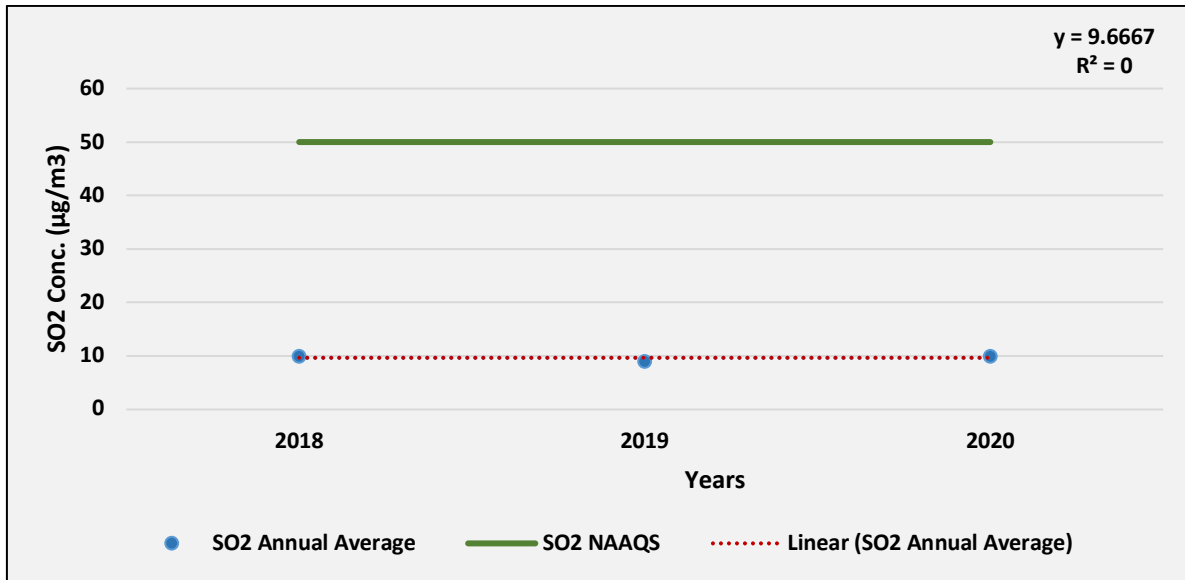


Fig. SIN49: Trend of annual mean SO₂ ambient air concentration in Singrauli TPP (Ambient)

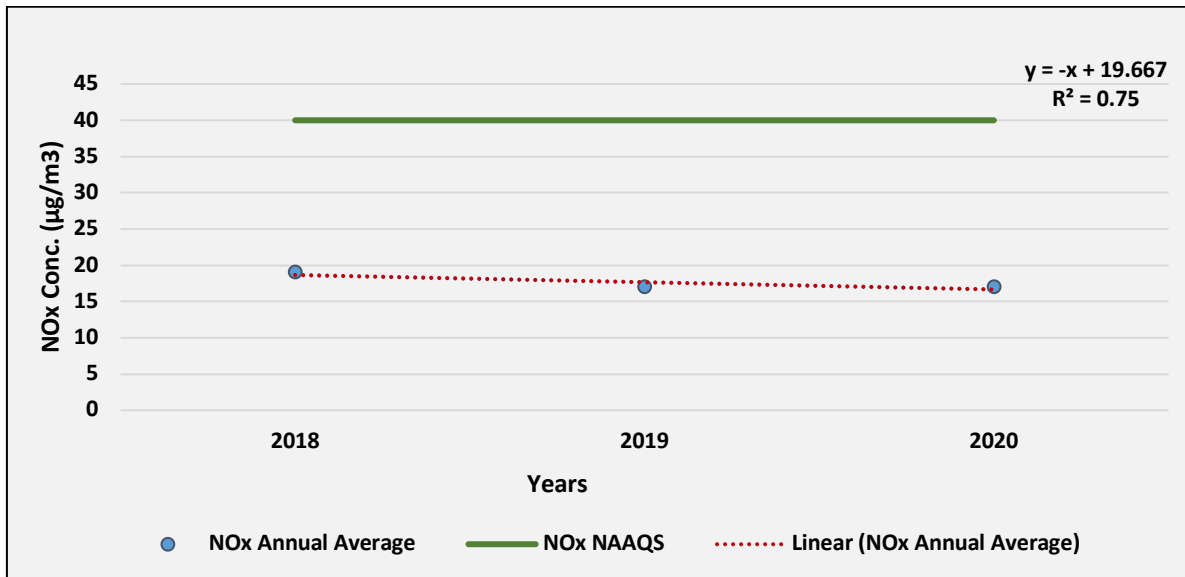


Fig. SIN50: Trend of annual mean NO_x ambient air concentration in Singrauli TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, PM_{2.5} are exceeding whereas the SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for units shows that SO₂ parameter is much higher than the emission norms. Emission of particulate matter and NO_x is within the limit range.

KUDGI THERMAL POWER PLANT

Kudgi Super Thermal Power Station is a power station located at Kudgi village of Basavana Bagewadi Taluq in Bijapur district, Karnataka in Indian state of Karnataka. This is one of the coal based thermal power plants of NTPC Limited. Kudgi Super Thermal Power Project has an installed capacity of 4000 MW.

The air quality concentrations of PM emission, SO₂ emission, and NO_x emission, data analyzed (Fig. KUD1 – Fig. KUD26) for the last three years (2018-2020) using data provided by NTPC developer for Kudgi Power plant, Karnataka, India.

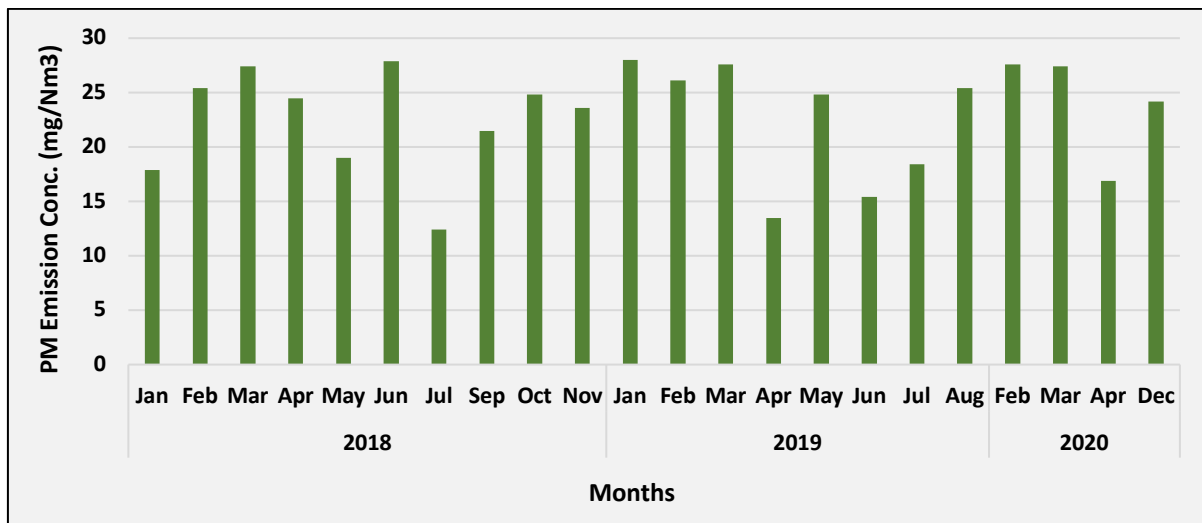


Fig. KUD1: Time series of monthly average PM Emission concentration in Kudgi TPP (Unit 1)

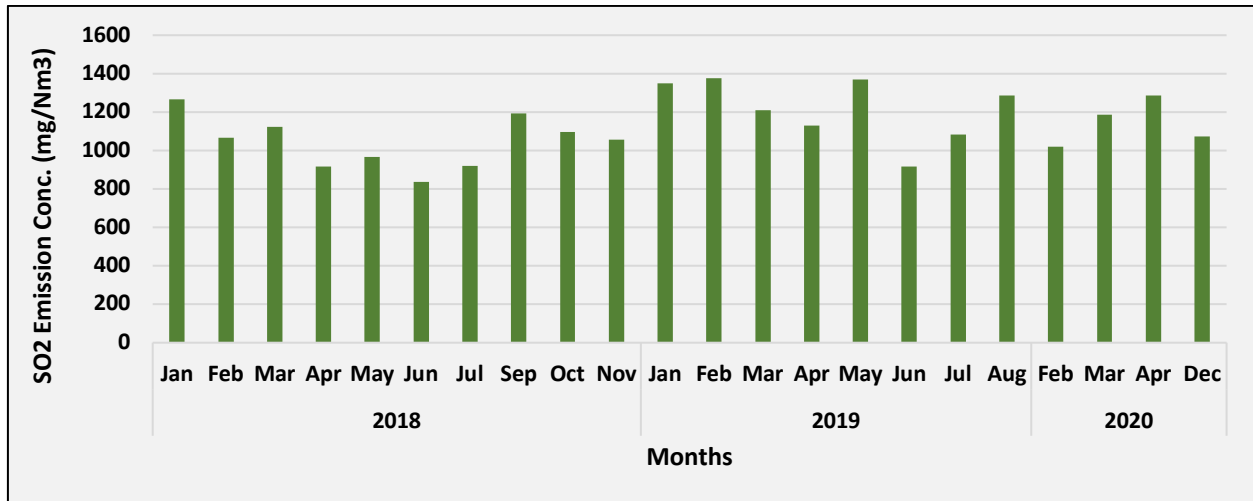


Fig. KUD2: Time series of monthly average SO₂ Emission concentration in Kudgi TPP (Unit 1)

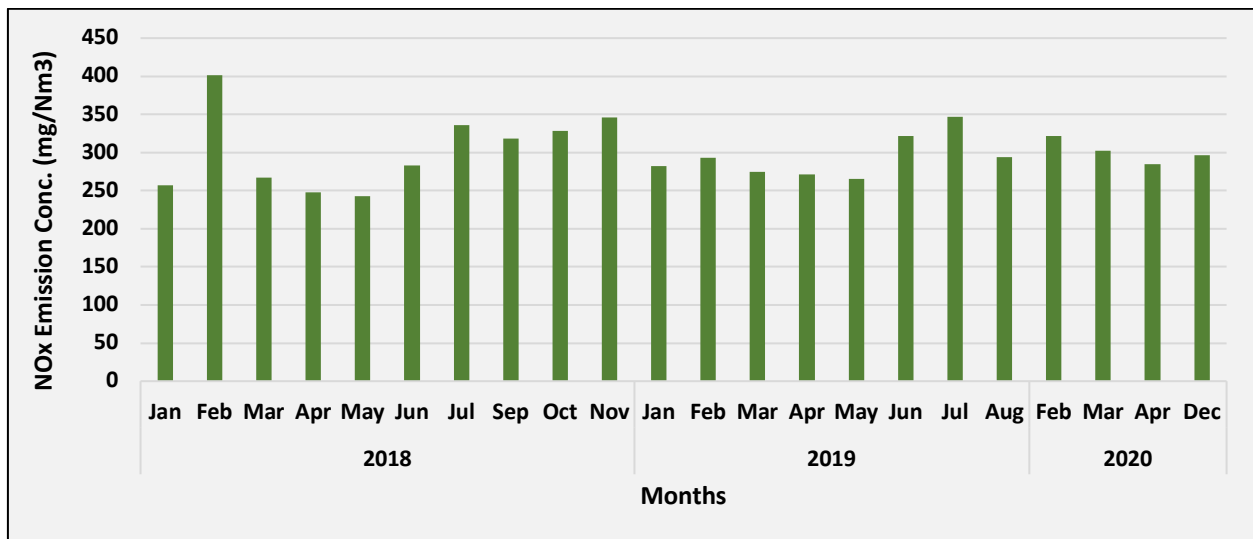


Fig. KUD3: Time series of monthly average NO_x Emission concentration in Kudgi TPP (Unit 1)

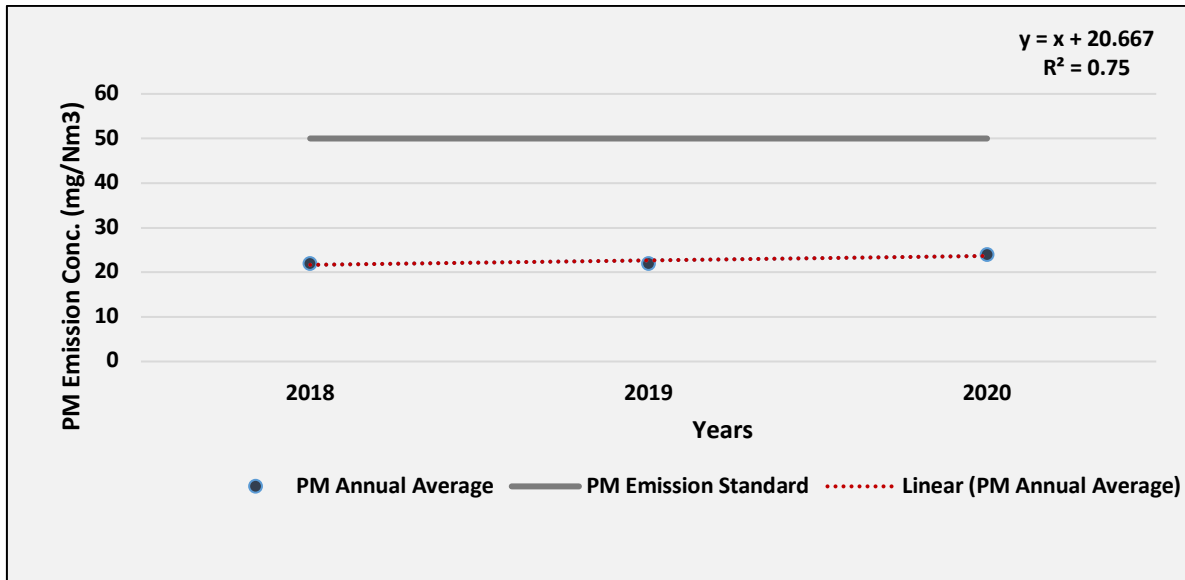


Fig. KUD4: Trend of annual mean PM Emission air concentration in Kudgi TPP (Unit 1)

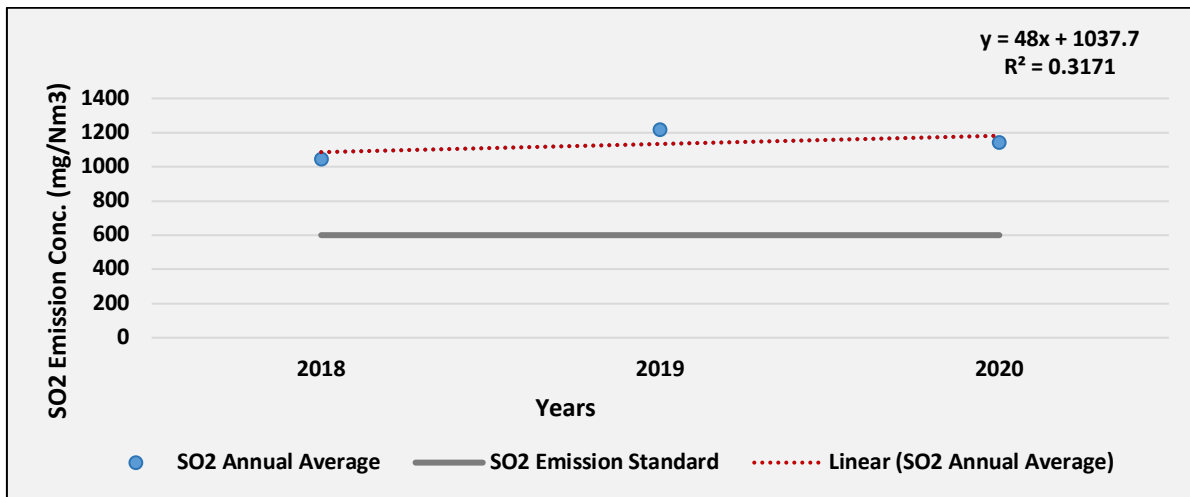


Fig. KUD5: Trend of annual mean SO₂ Emission air concentration in Kudgi TPP (Unit 1)

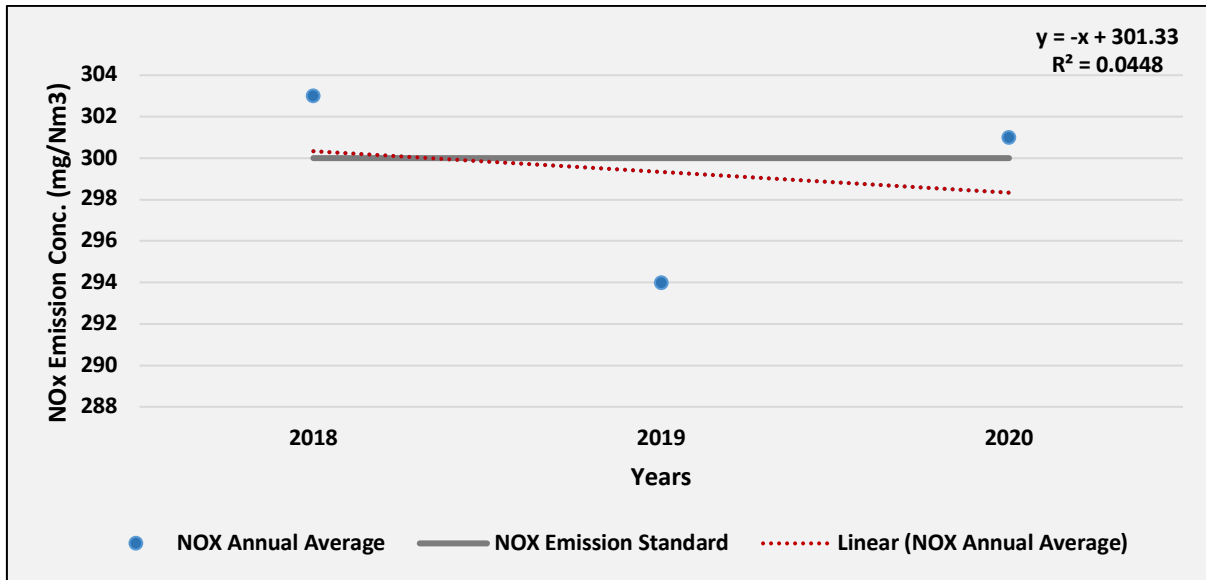


Fig. KUD6: Trend of annual mean NO_x Emission air concentration in Kudgi TPP (Unit 1)

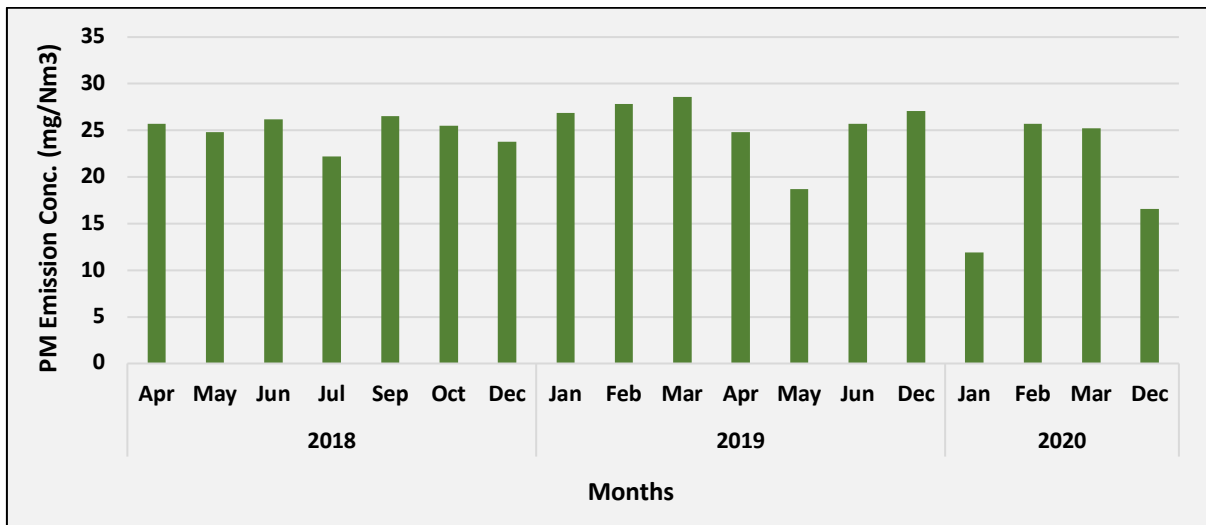


Fig. KUD7: Time series of monthly average PM Emission concentration in Kudgi TPP (Unit 2)

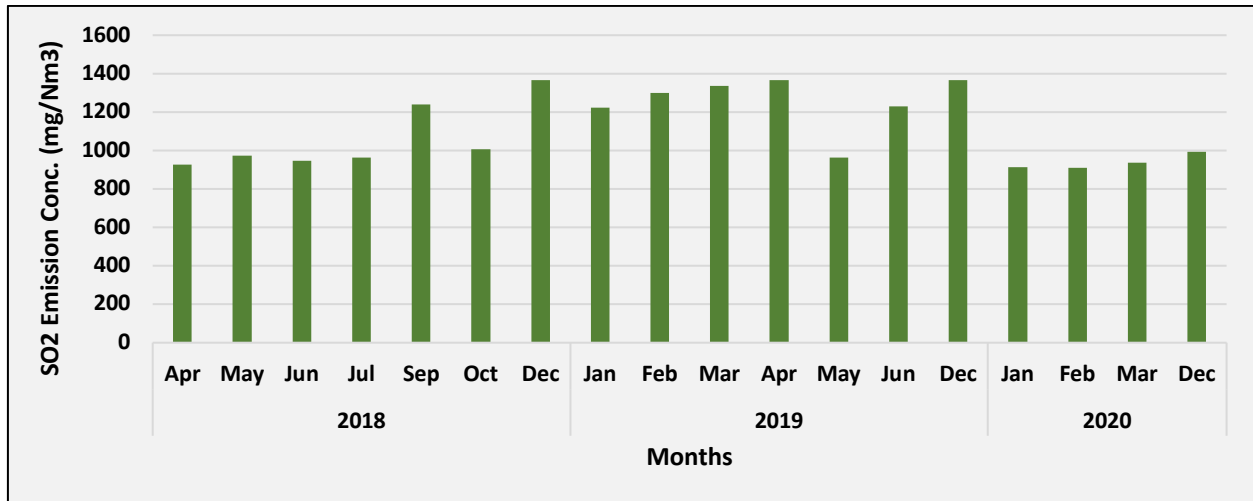


Fig. KUD8: Time series of monthly average SO₂ Emission concentration in Kudgi TPP (Unit 2)

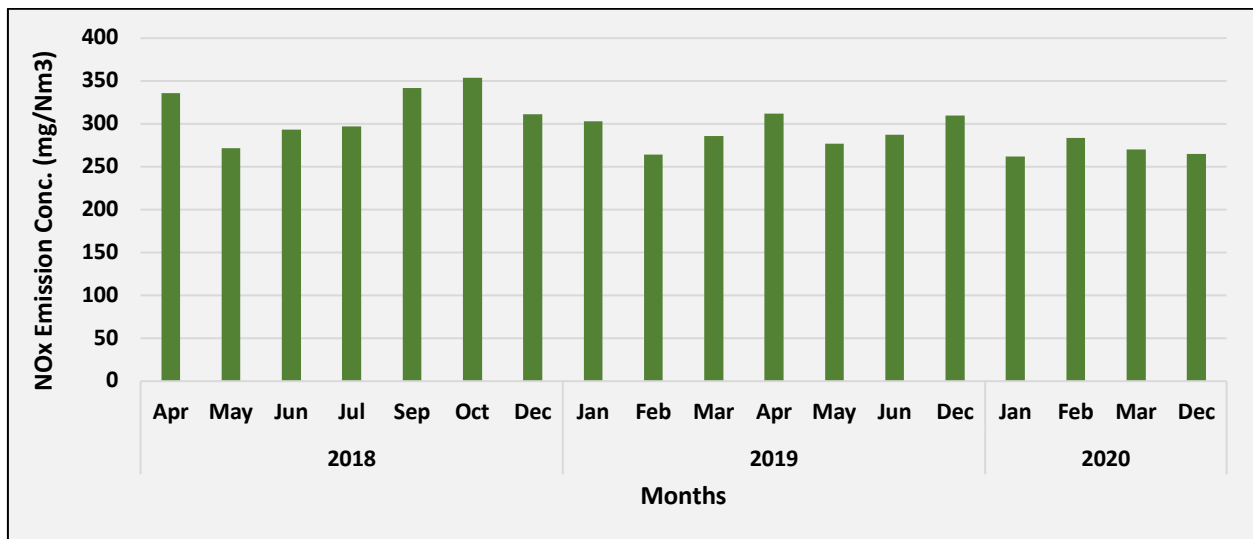


Fig. KUD9: Time series of monthly average NO_x Emission concentration in Kudgi TPP (Unit 2)

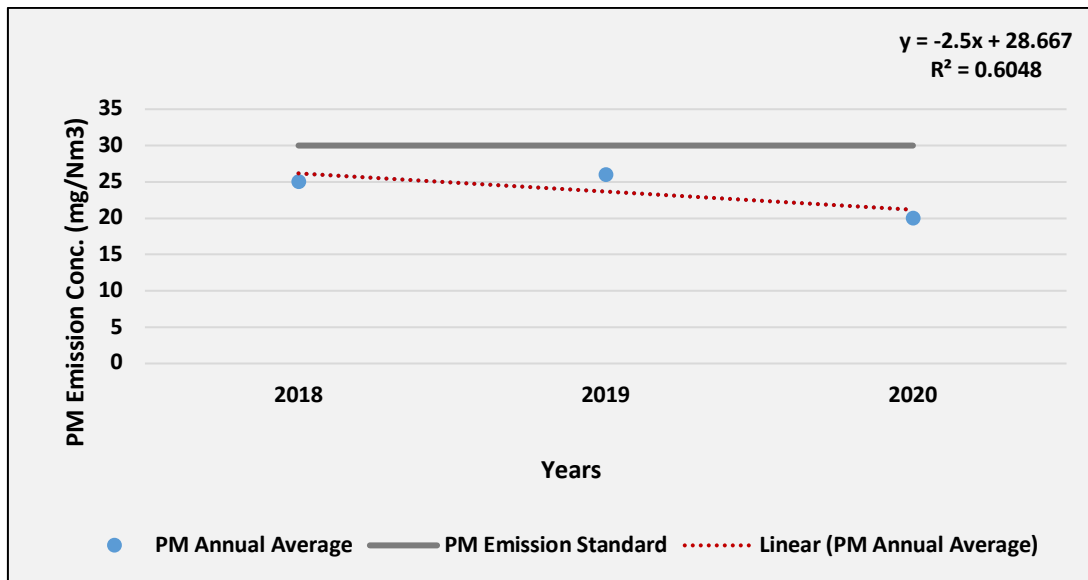


Fig. KUD10: Trend of annual mean PM Emission air concentration in Kudgi TPP (Unit 2)

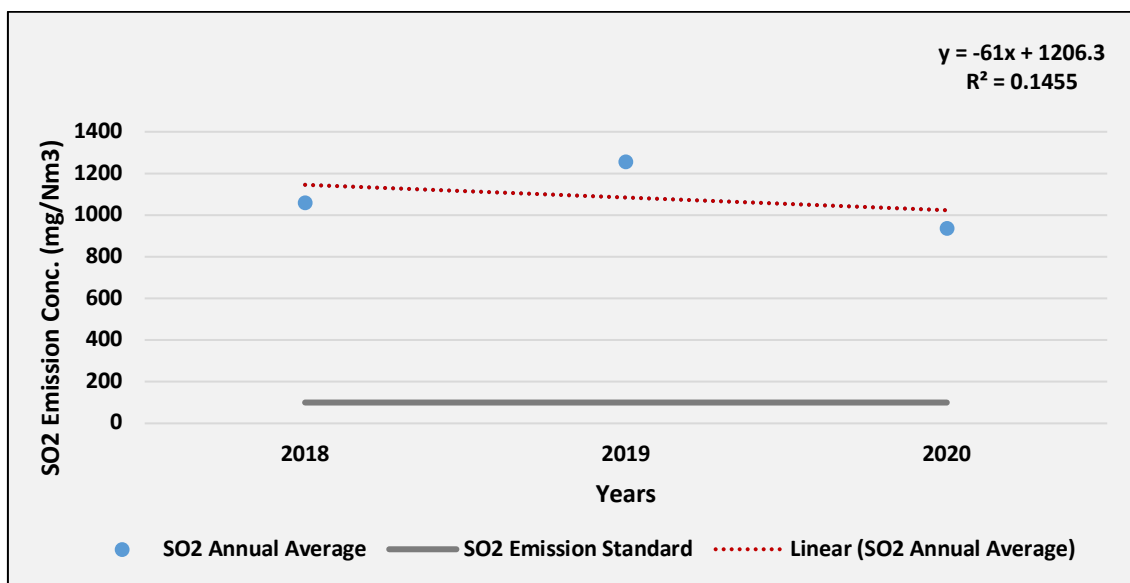


Fig. KUD11: Trend of annual mean SO₂ Emission air concentration in Kudgi TPP (Unit 2)

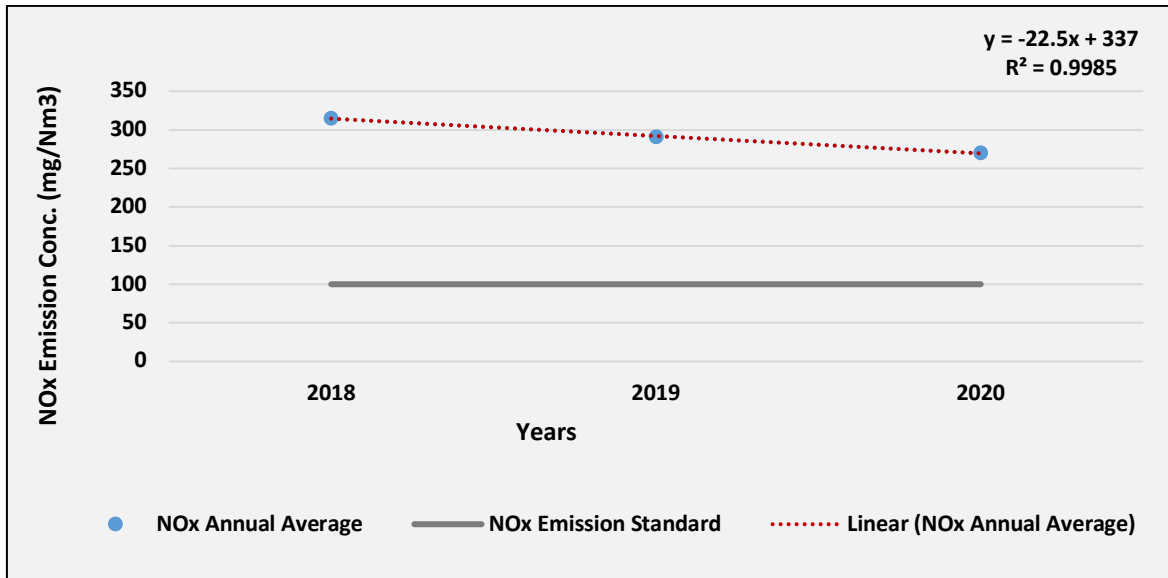


Fig. KUD12: Trend of annual mean NO_x Emission air concentration in Kudgi TPP (Unit 2)

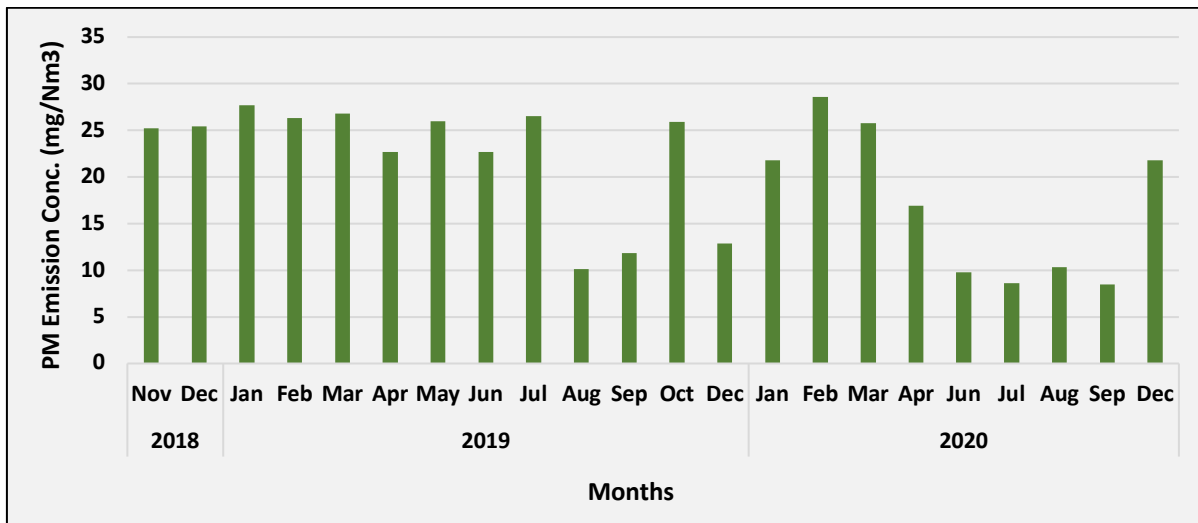


Fig. KUD13: Time series of monthly average PM Emission concentration in Kudgi TPP (Unit 3)

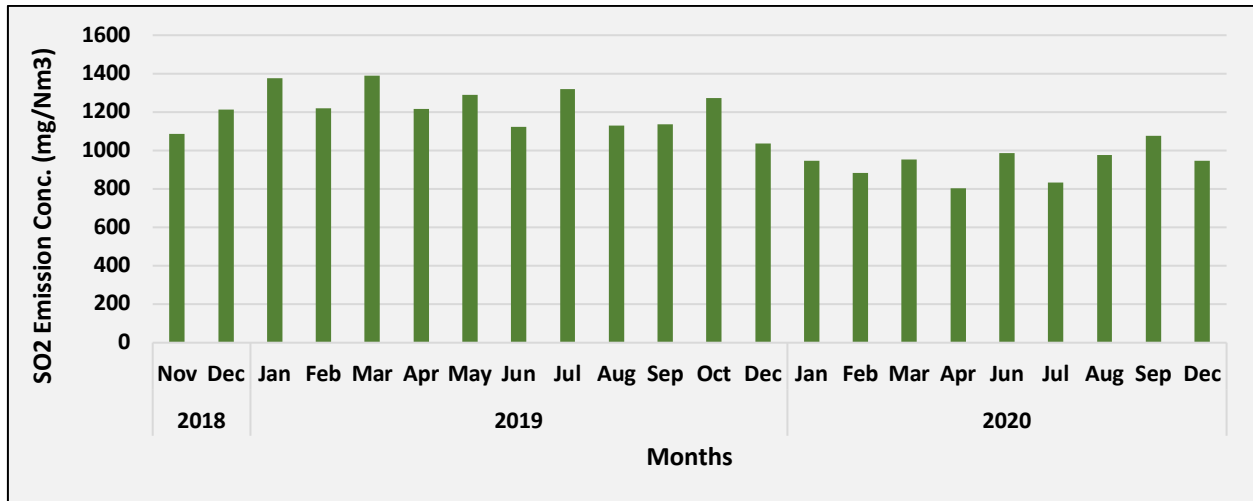


Fig. KUD14: Time series of monthly average SO₂ Emission concentration in Kudgi TPP (Unit 3)

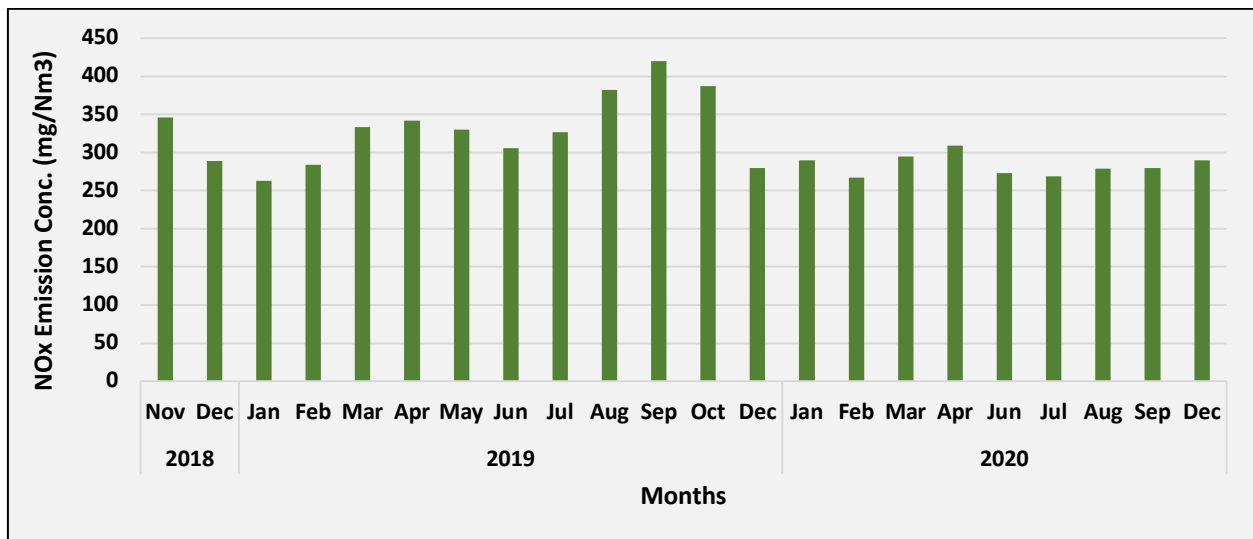


Fig. KUD15: Time series of monthly average NO_x Emission concentration in Kudgi TPP (Unit 3)

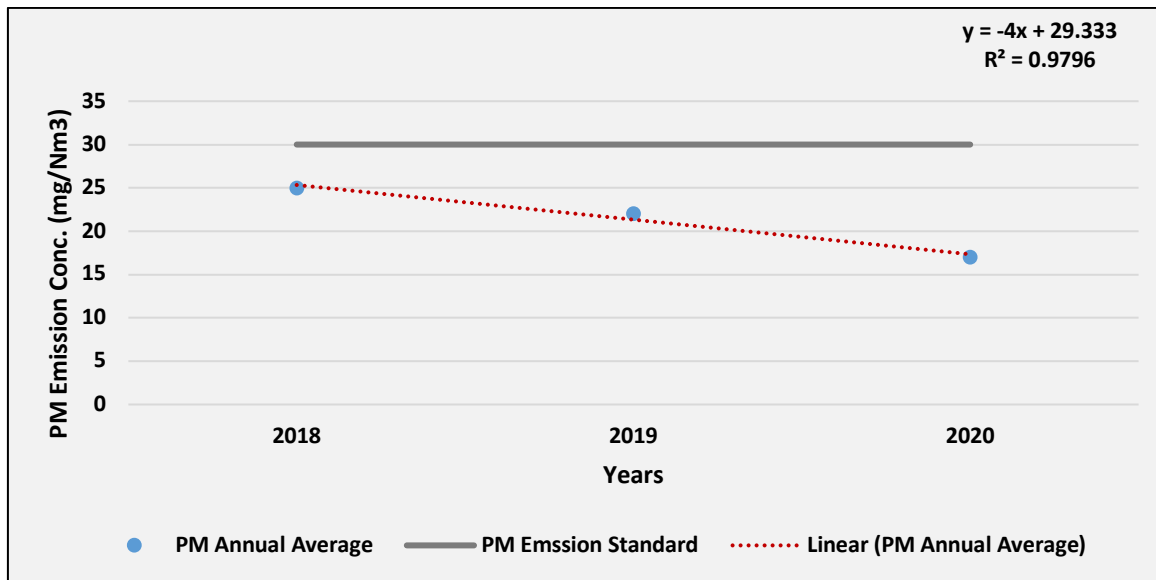


Fig. KUD16: Trend of annual mean PM Emission air concentration in Kudgi TPP (Unit 3)

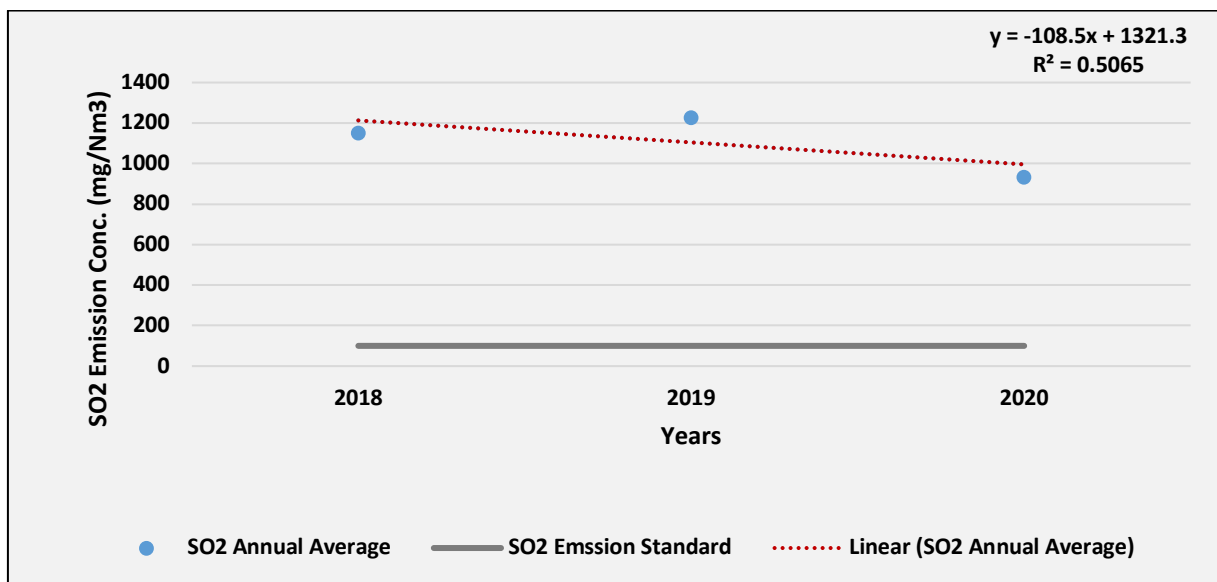


Fig. KUD17: Trend of annual mean SO₂ Emission air concentration in Kudgi TPP (Unit 3)

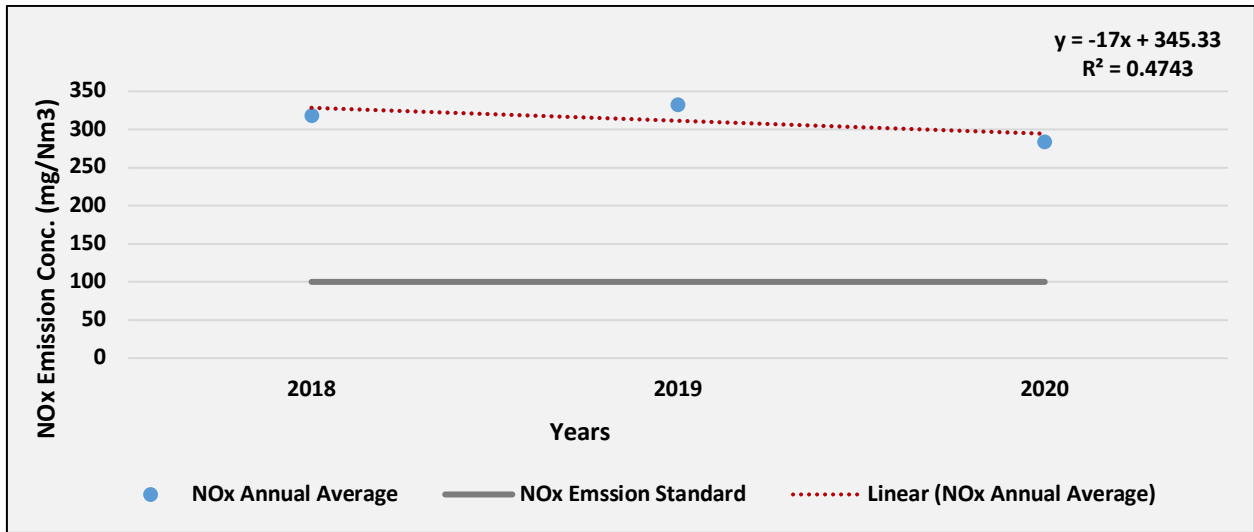


Fig. KUD18: Trend of annual mean NO_x Emission air concentration in Kudgi TPP (Unit 3)

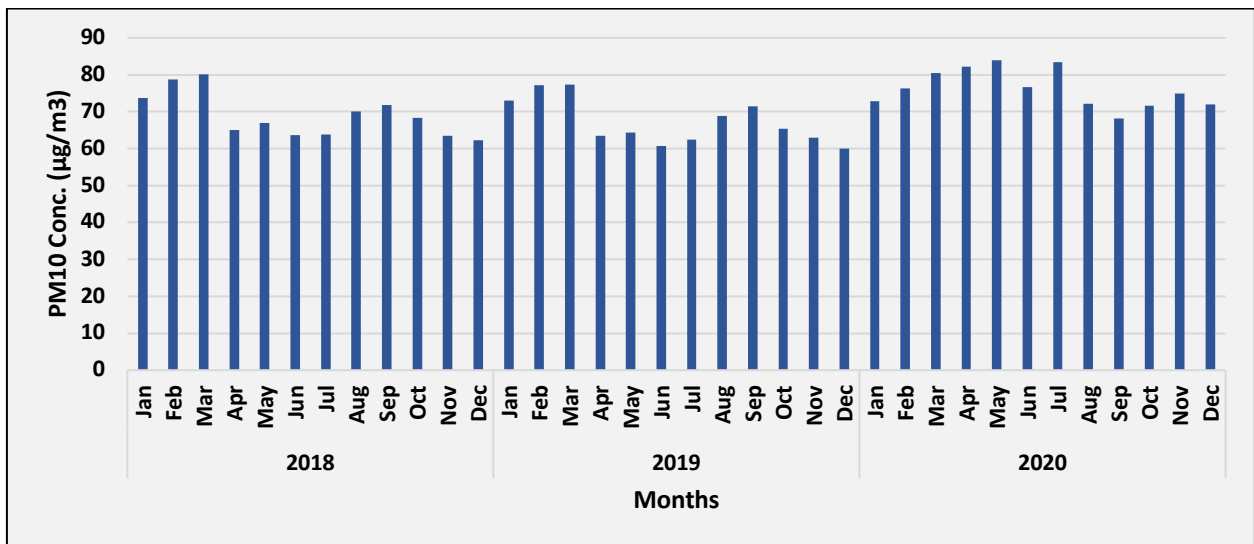


Fig. KUD19: Time series of monthly average PM₁₀ ambient air concentration in Kudgi TPP (Ambient)

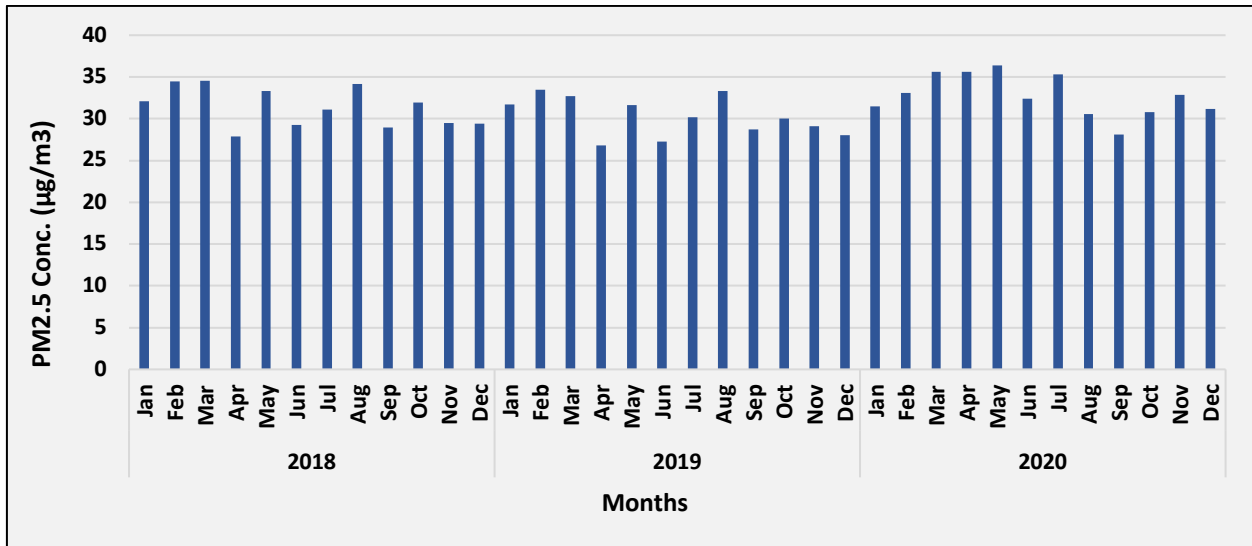


Fig. KUD20: Time series of monthly average PM_{2.5} ambient air concentration in Kudgi TPP (Ambient)

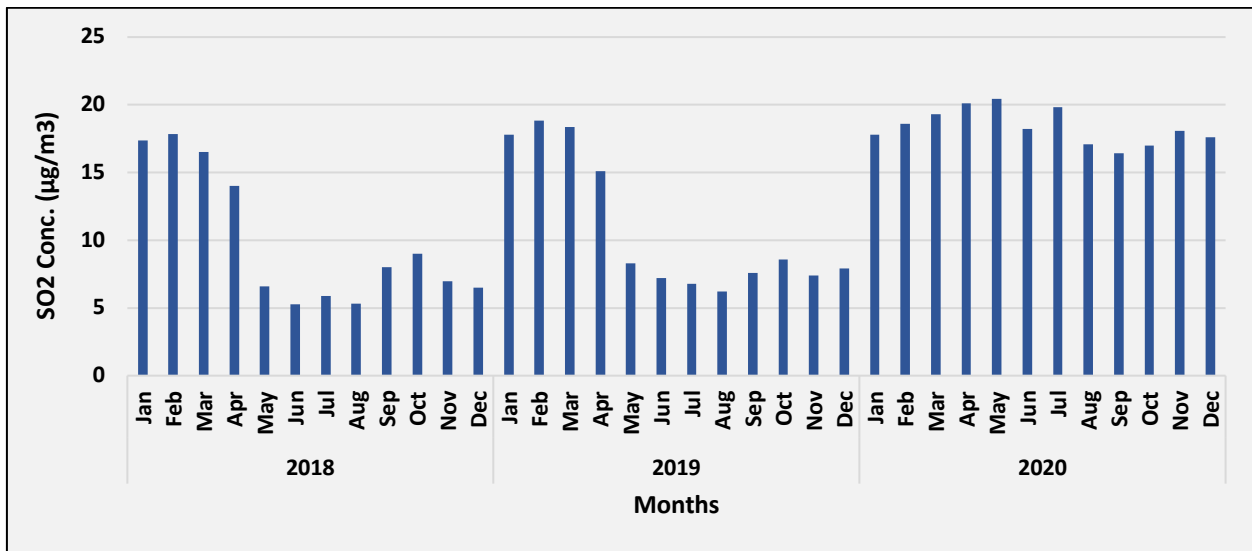


Fig. KUD21: Time series of monthly average SO₂ ambient air concentration in Kudgi TPP (Ambient)

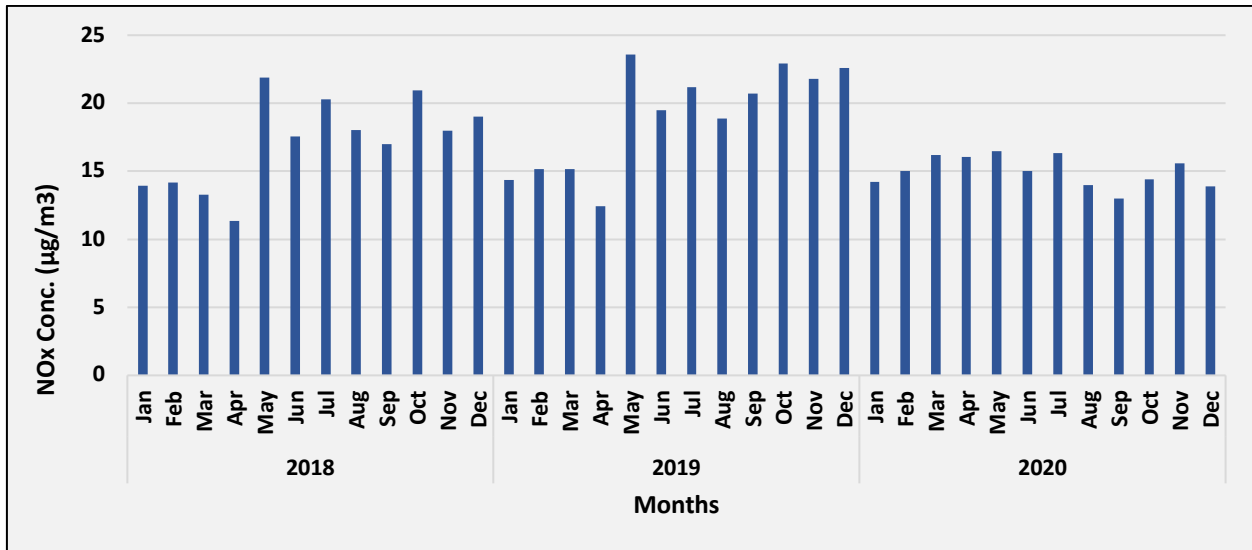


Fig. KUD22: Time series of monthly average NO_x ambient air concentration in Kudgi TPP (Ambient)

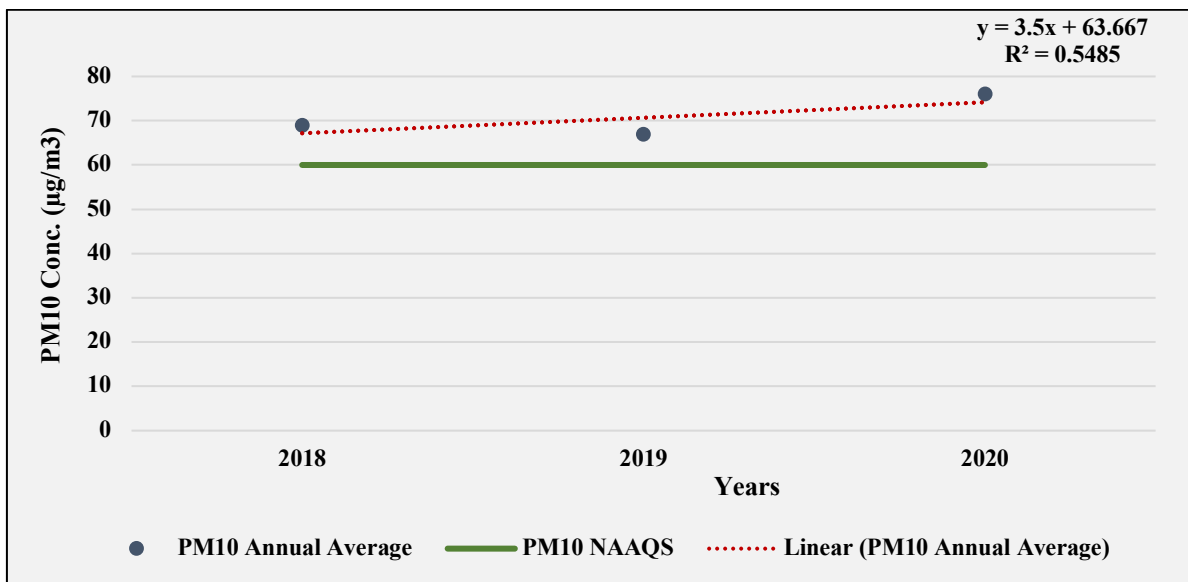


Fig. KUD23: Trend of annual mean PM_{10} ambient air concentration in Kudgi TPP (Ambient)

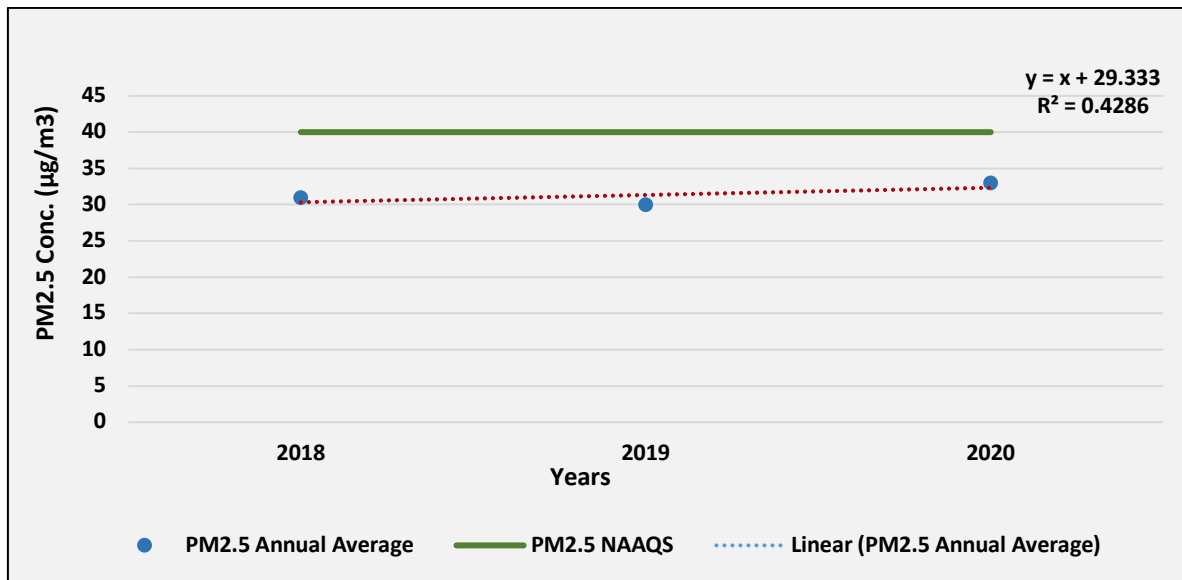


Fig. KUD24: Trend of annual mean PM_{2.5} ambient air concentration in Kudgi TPP (Ambient)

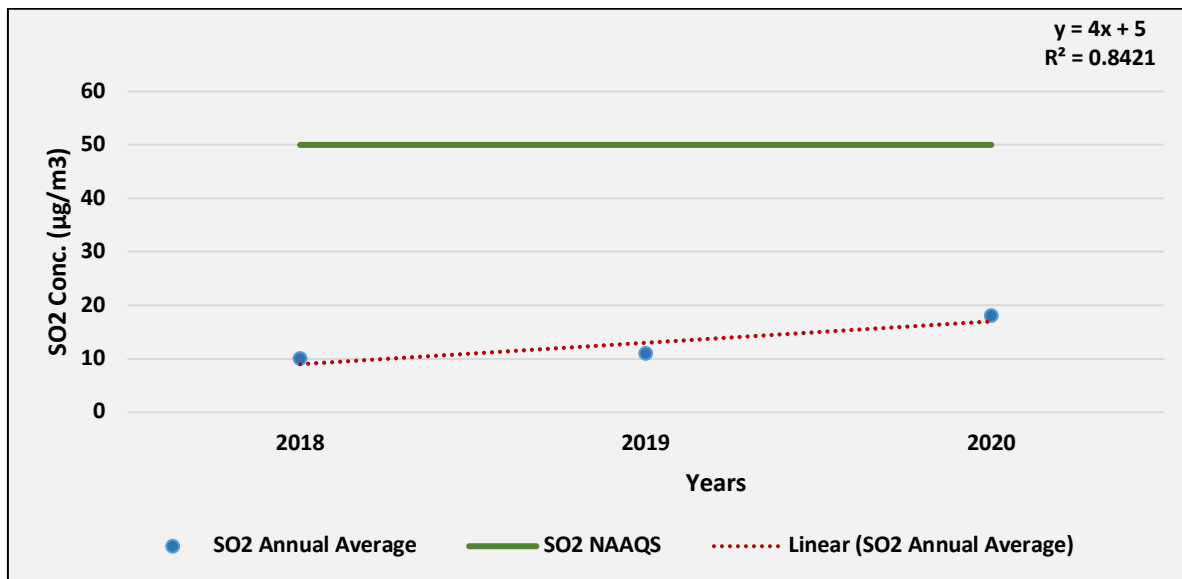


Fig. KUD25: Trend of annual mean SO₂ ambient air concentration in Kudgi TPP (Ambient)

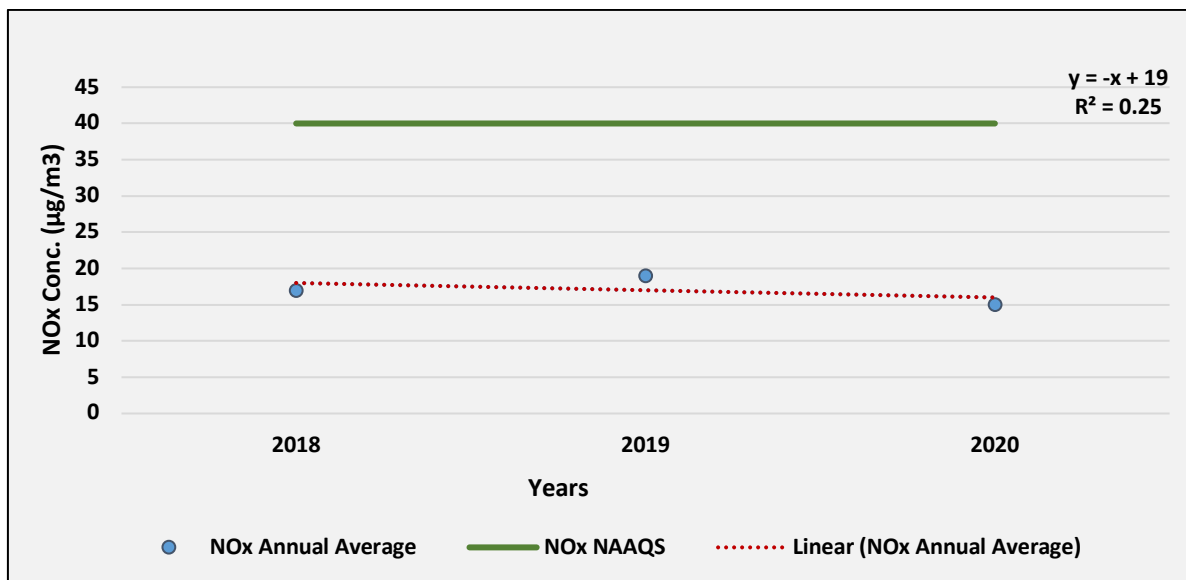


Fig. KUD26: Trend of annual mean NO_x ambient air concentration in Kudgi TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀ is exceeding whereas the PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

SIMHADRI THERMAL POWER PLANT

Simhadri Super Thermal Power Plant is a coal-fired power plant located in the outskirts of Visakhapatnam city in the Indian state of Andhra Pradesh. The power plant is one of the coal fired power plants of NTPC, a Government of India enterprise. The coal for the power plant is sourced from Kalinga Block of Talcher Coal fields in Odisha. The plant is a national asset, and power generated is shared between multiple states, as the operator is national.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. SIM1 – Fig. SIM32) for the last three years (2018-2020) using data provided by NTPC developer for Simhadri Power plant, Andhra Pradesh, India.

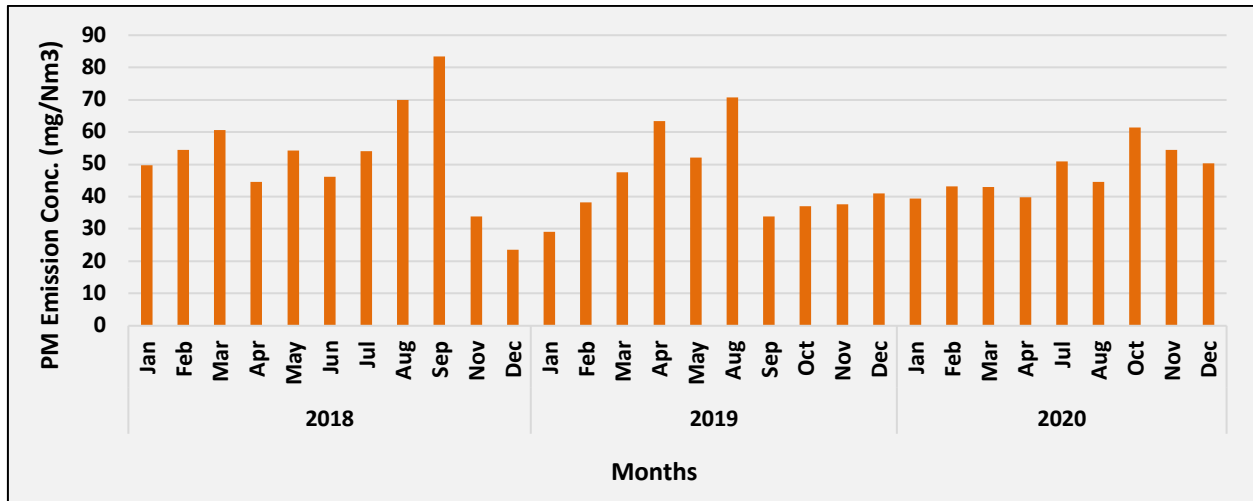


Fig. SIM1: Time series of monthly average PM Emission concentration in Simhadri TPP (Stack 1)

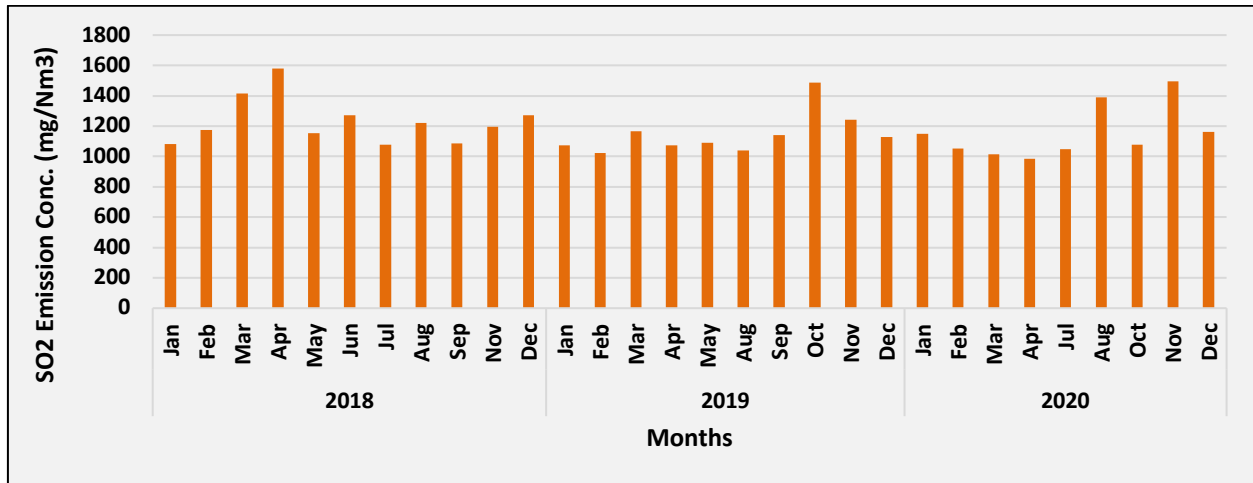


Fig. SIM2: Time series of monthly average SO₂ Emission concentration in Simhadri TPP (Stack 1)

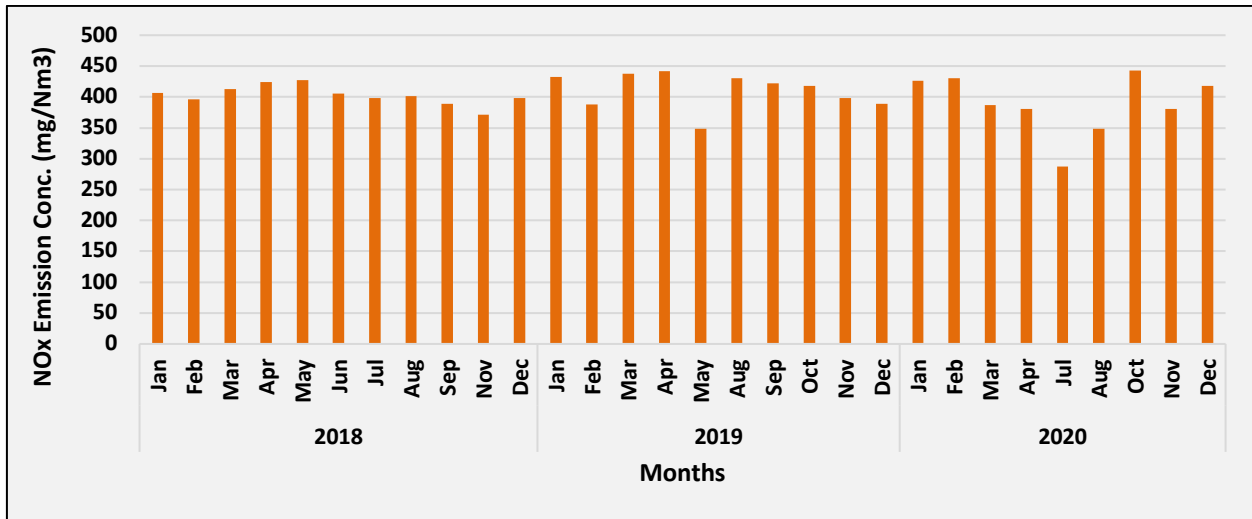


Fig. SIM3: Time series of monthly average NO_x Emission concentration in Simhadri TPP (Stack 1)

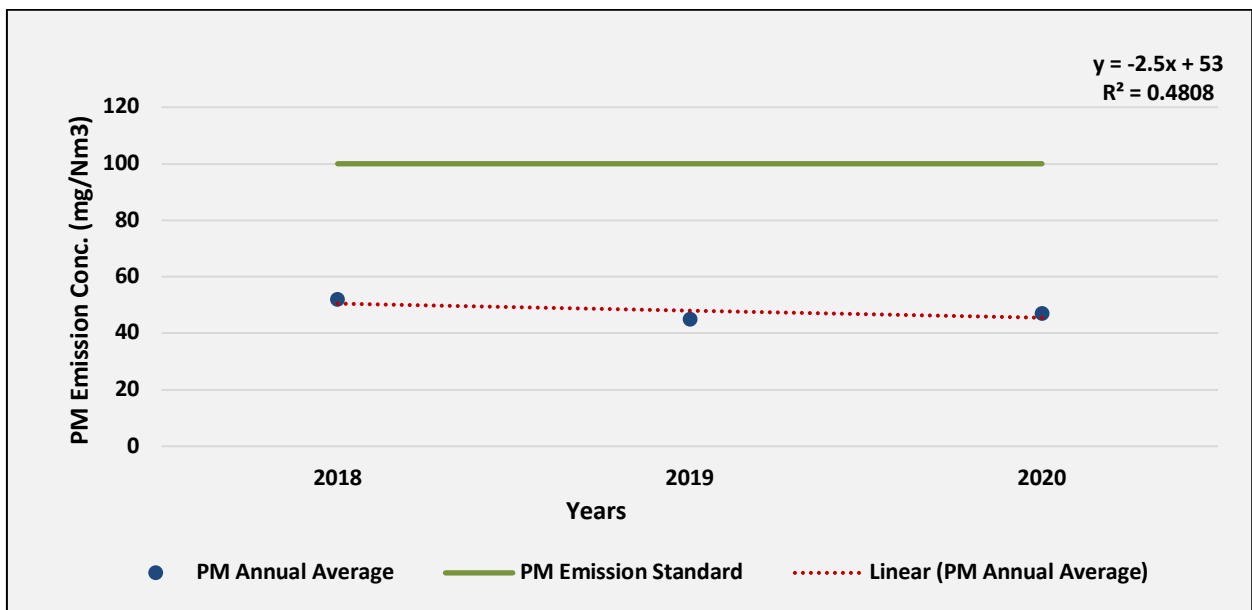


Fig. SIM4: Trend of annual mean PM Emission air concentration in Simhadri TPP (Stack 1)

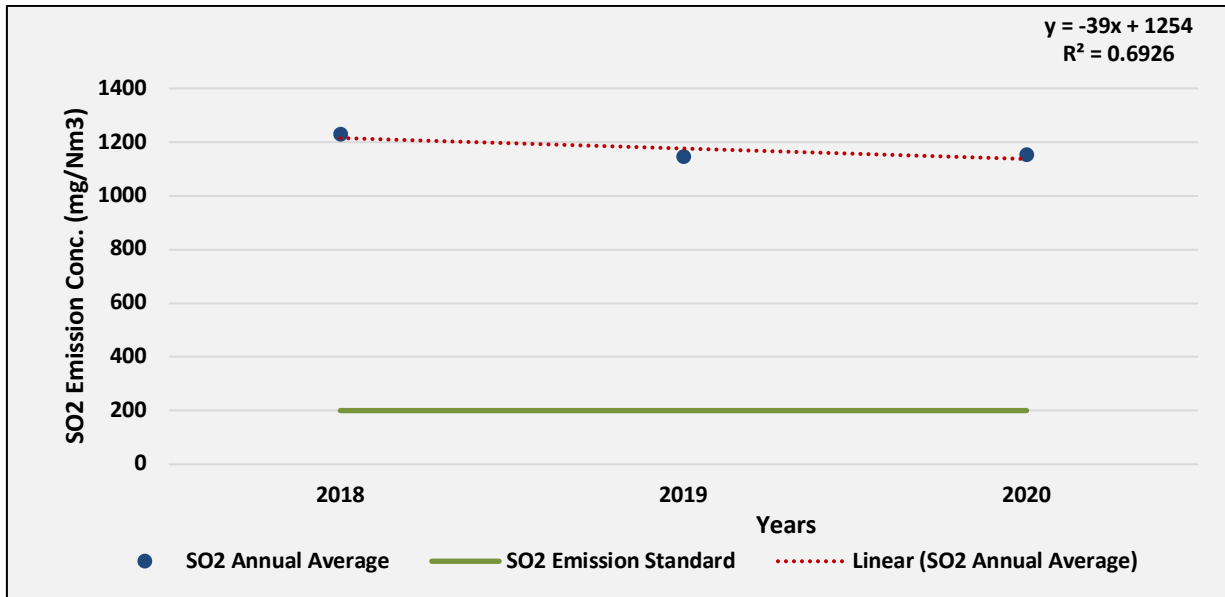


Fig. SIM5: Trend of annual mean SO₂ Emission air concentration in Simhadri TPP (Stack 1)

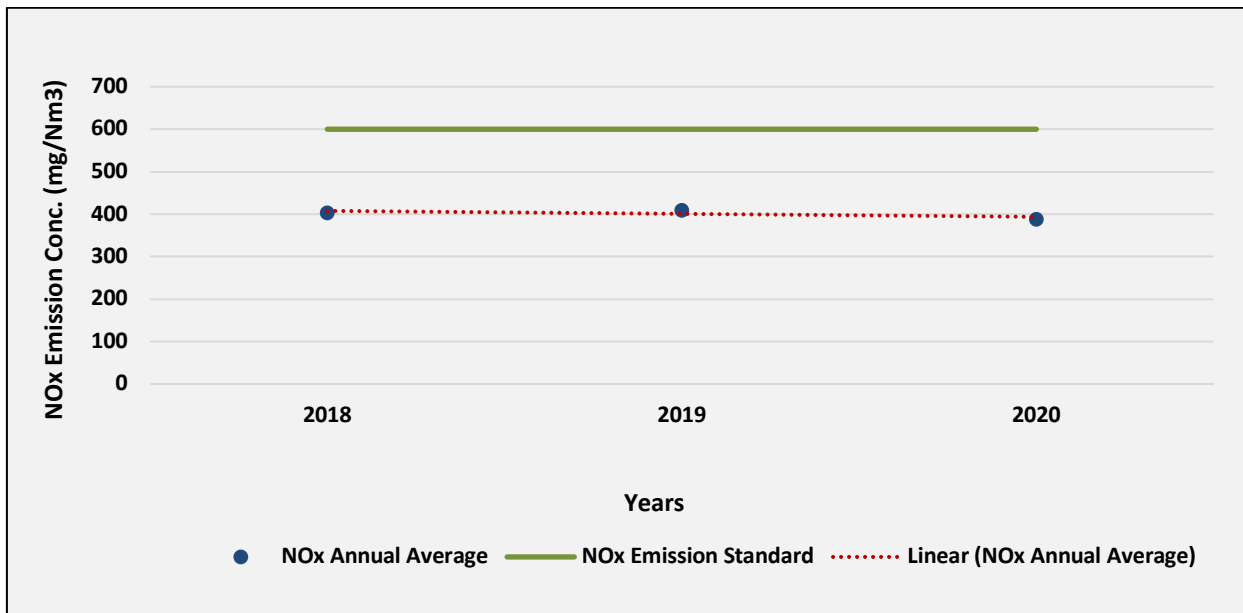


Fig. SIM6: Trend of annual mean NO_x Emission air concentration in Simhadri TPP (Stack 1)

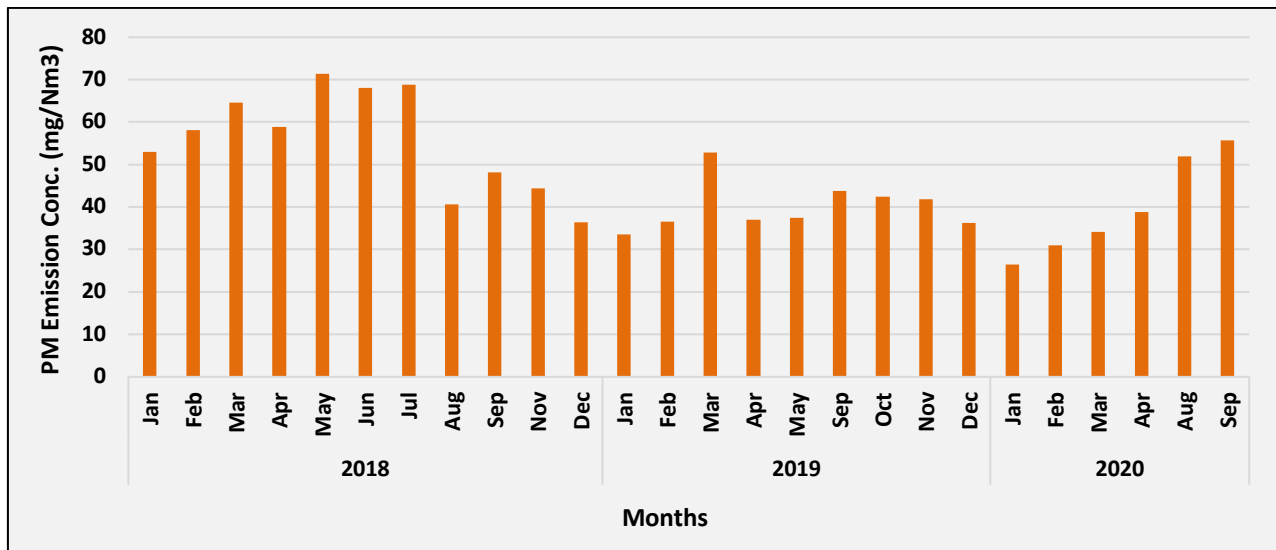


Fig. SIM7: Time series of monthly average PM Emission concentration in Simhadri TPP (Stack 2)

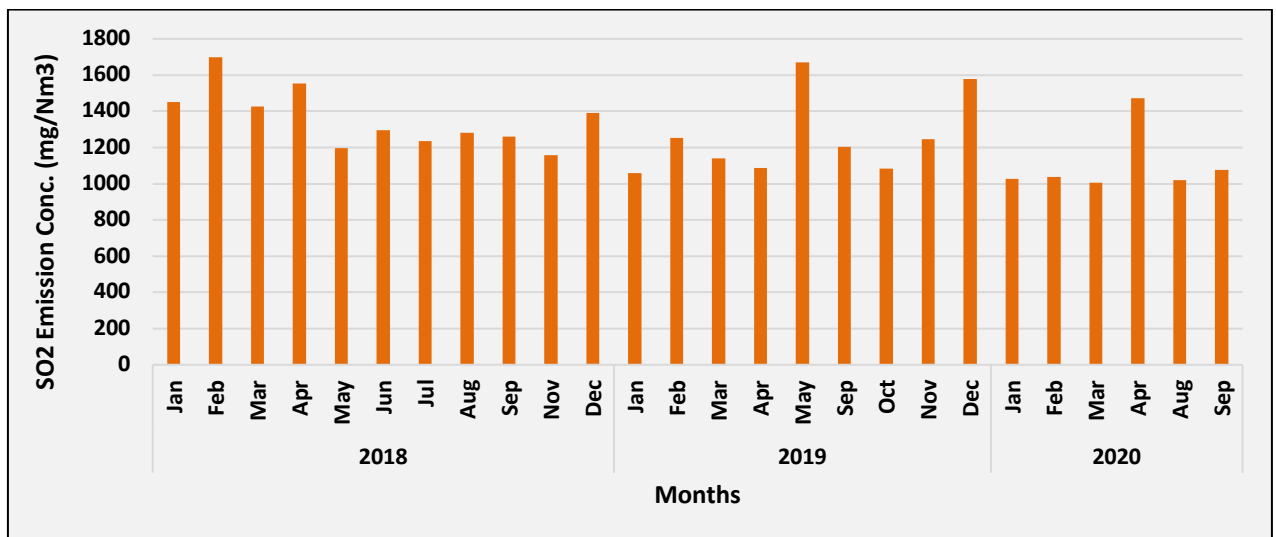


Fig. SIM8: Time series of monthly average SO₂ Emission concentration in Simhadri TPP (Stack 2)

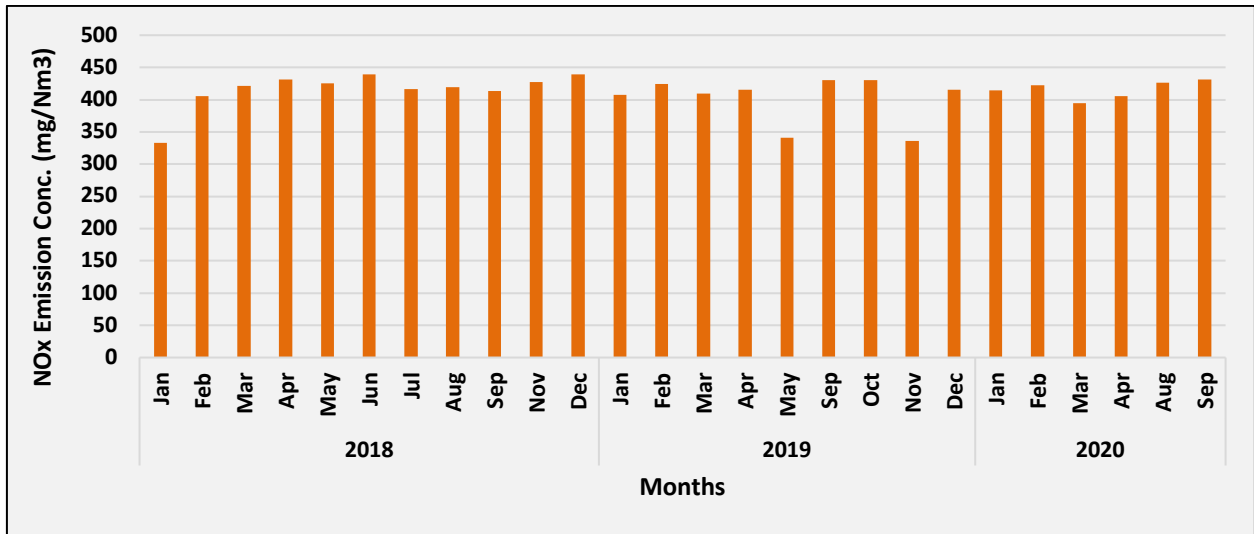


Fig. SIM9: Time series of monthly average NO_x Emission concentration in Simhadri TPP (Stack 2)

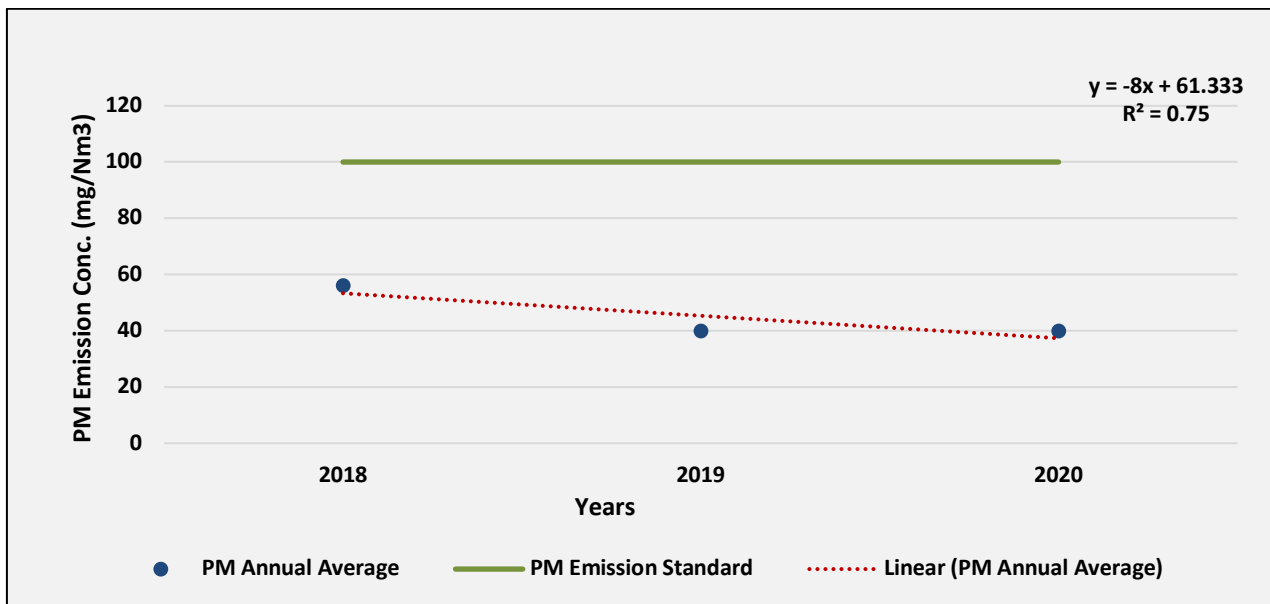


Fig. SIM10: Trend of annual mean PM Emission air concentration in Simhadri TPP (Stack 2)

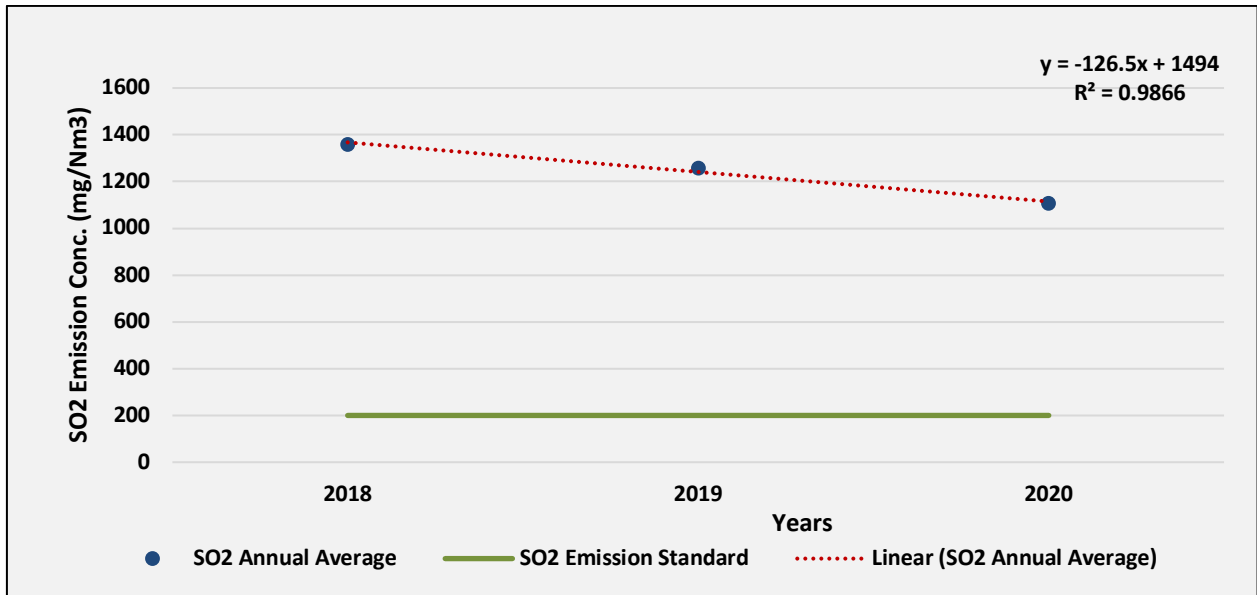


Fig. SIM11: Trend of annual mean SO₂ Emission air concentration in Simhadri TPP (Stack 2)

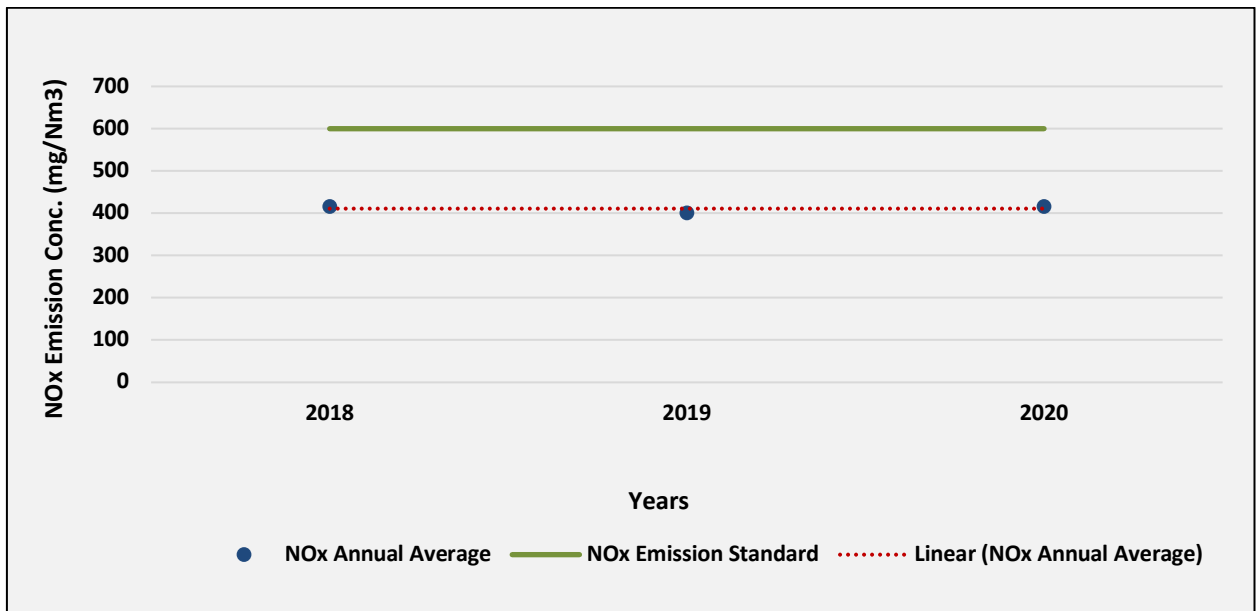


Fig. SIM12: Trend of annual mean NO_x Emission air concentration in Simhadri TPP (Stack 2)

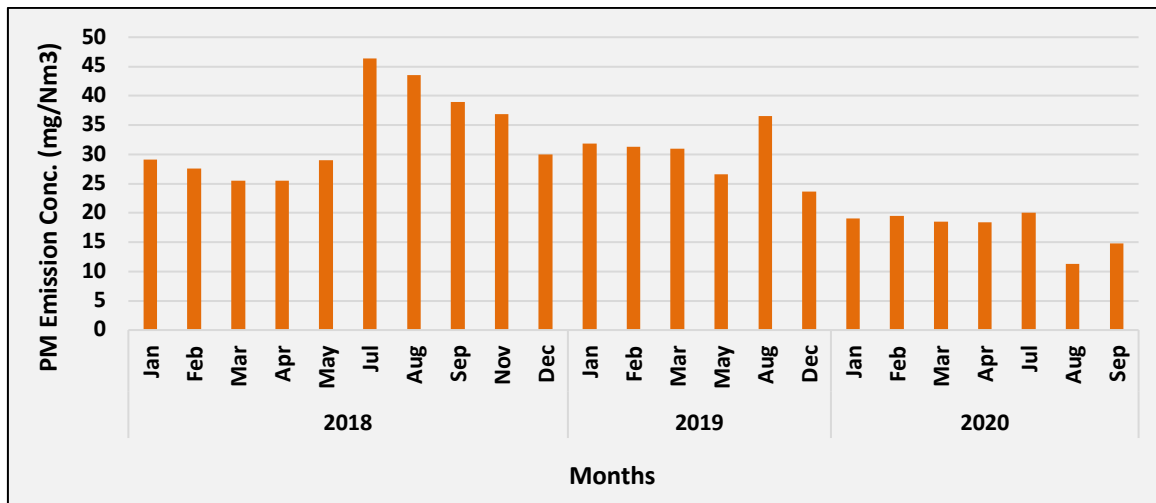


Fig. SIM13: Time series of monthly average PM Emission concentration in Simhadri TPP (Stack 3)

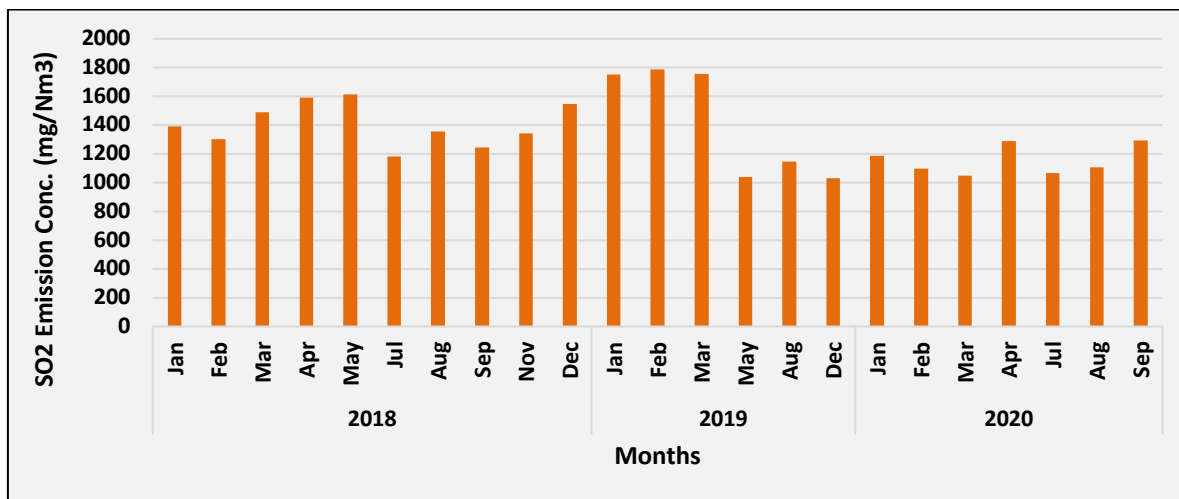


Fig. SIM14: Time series of monthly average SO₂ Emission concentration in Simhadri TPP (Stack 3)

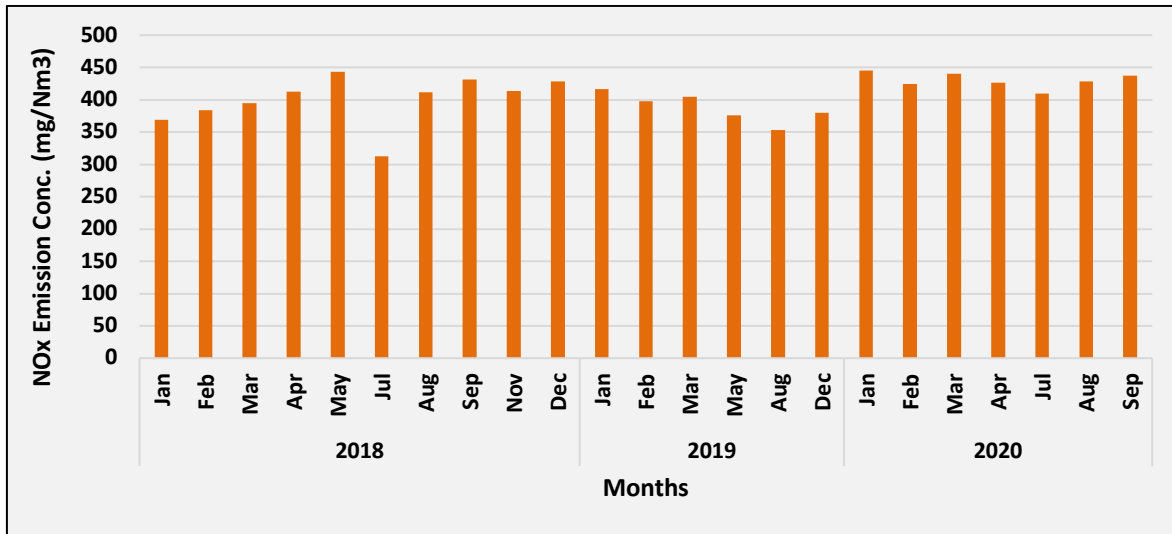


Fig. SIM15: Time series of monthly average NO_x Emission concentration in Simhadri TPP (Stack 3)

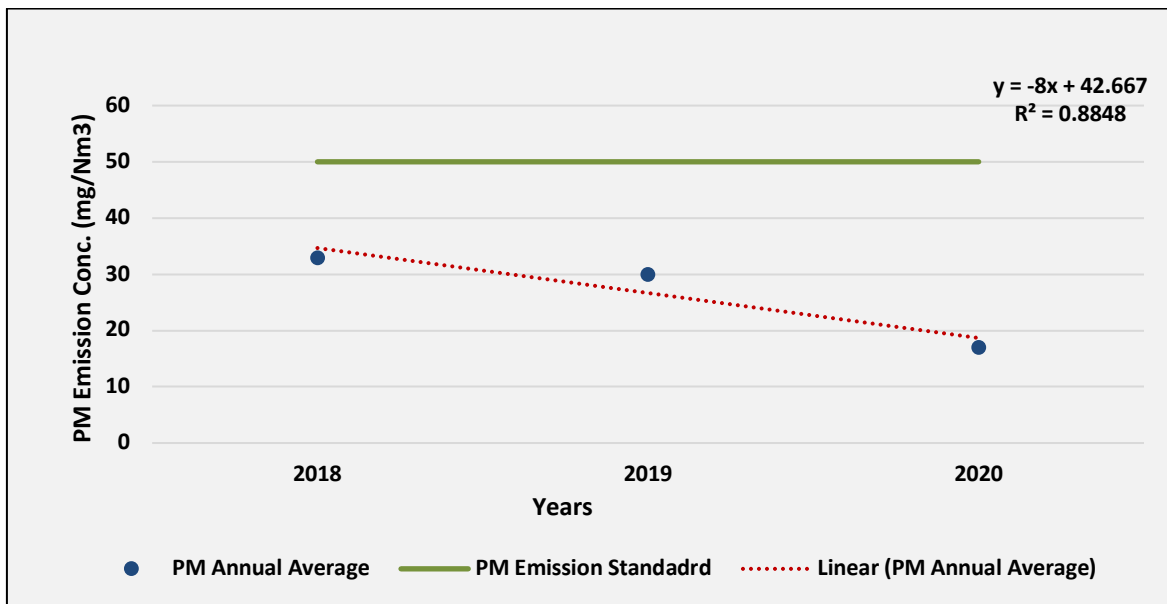


Fig. SIM16: Trend of annual mean PM Emission air concentration in Simhadri TPP (Stack 3)

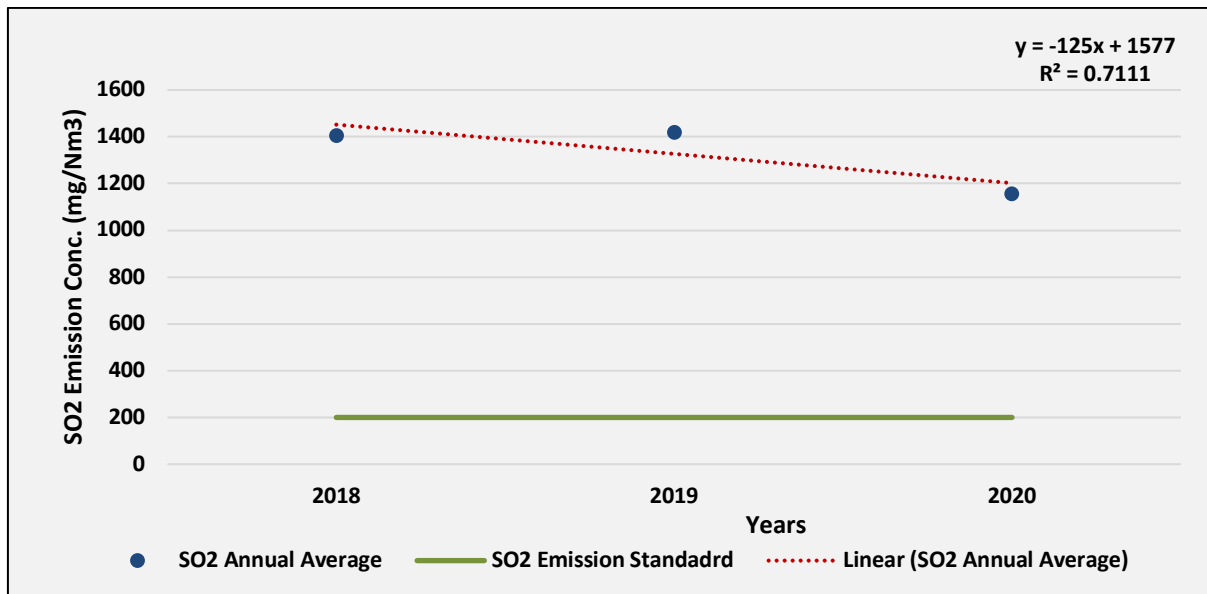


Fig. SIM17: Trend of annual mean SO₂ Emission air concentration in Simhadri TPP (Stack 3)

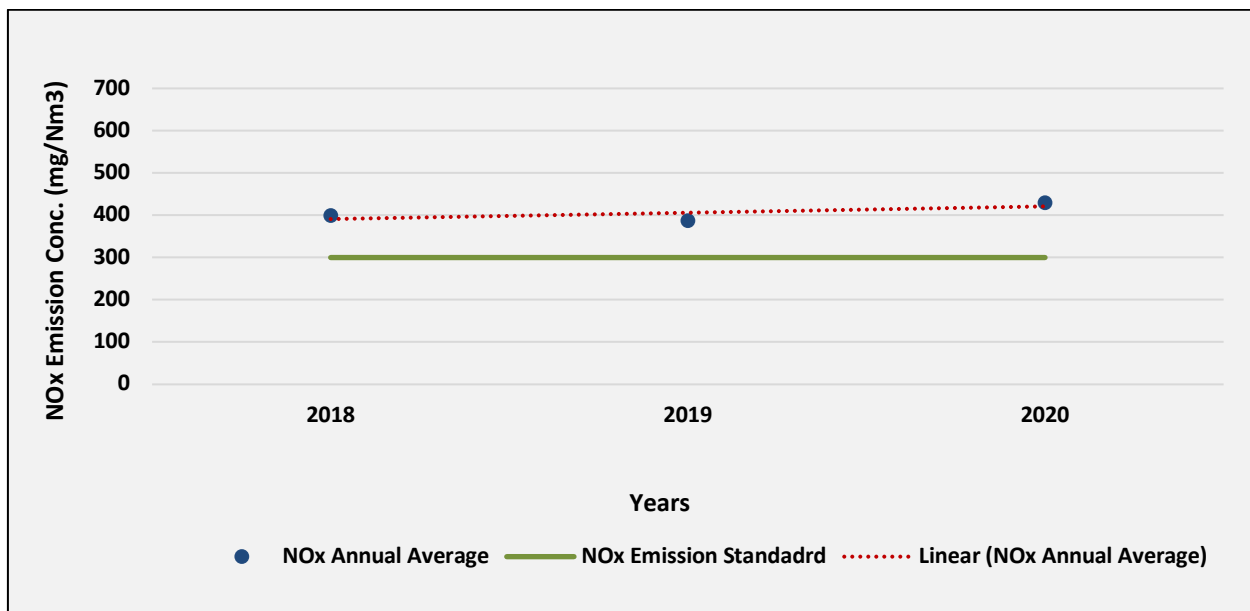


Fig. SIM18: Trend of annual mean NO_x Emission air concentration in Simhadri TPP (Stack 3)

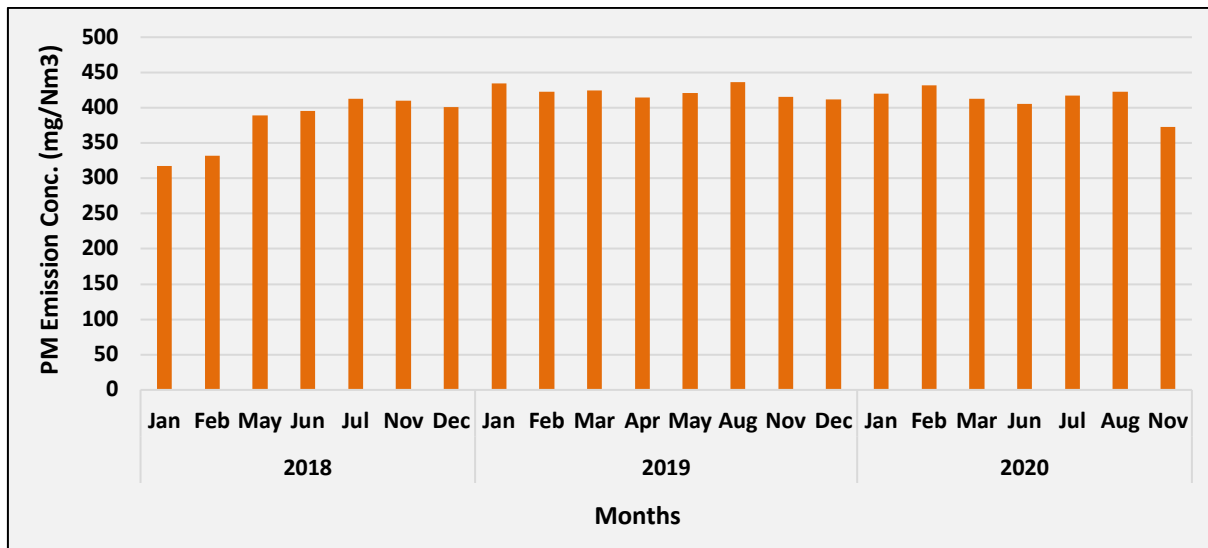


Fig. SIM19: Time series of monthly average PM Emission concentration in Simhadri TPP (Stack 4)

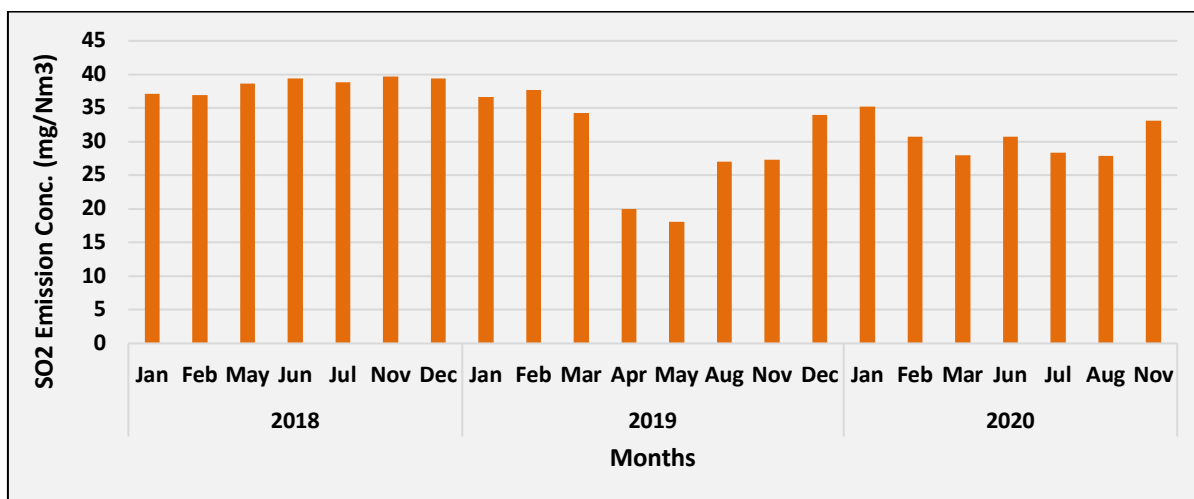


Fig. SIM20: Time series of monthly average SO₂ Emission concentration in Simhadri TPP (Stack 4)

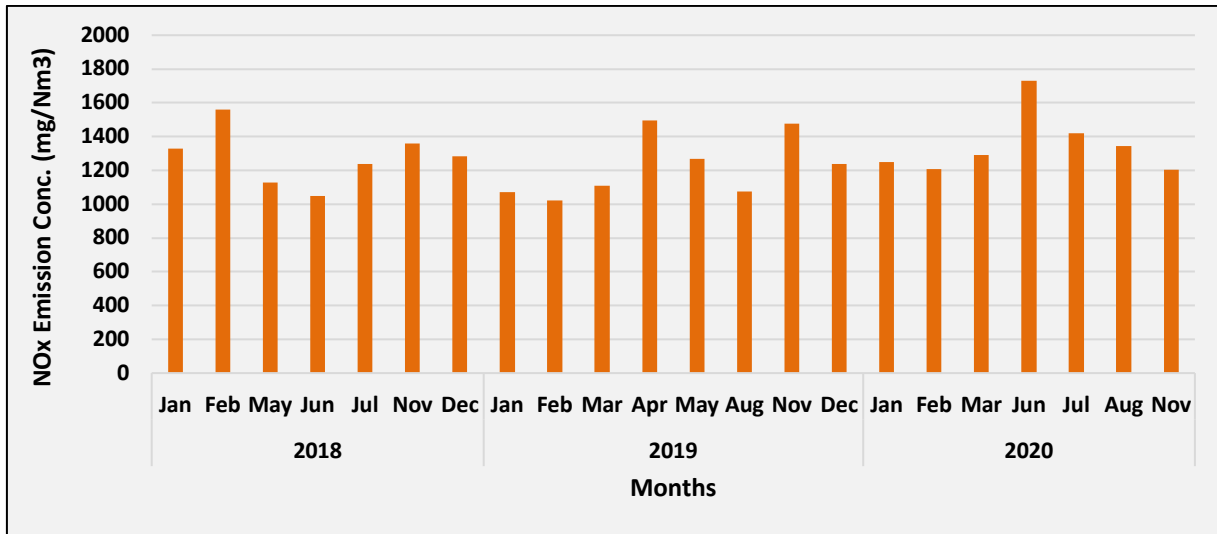


Fig. SIM21: Time series of monthly average NO_x Emission concentration in Simhadri TPP (Stack 4)

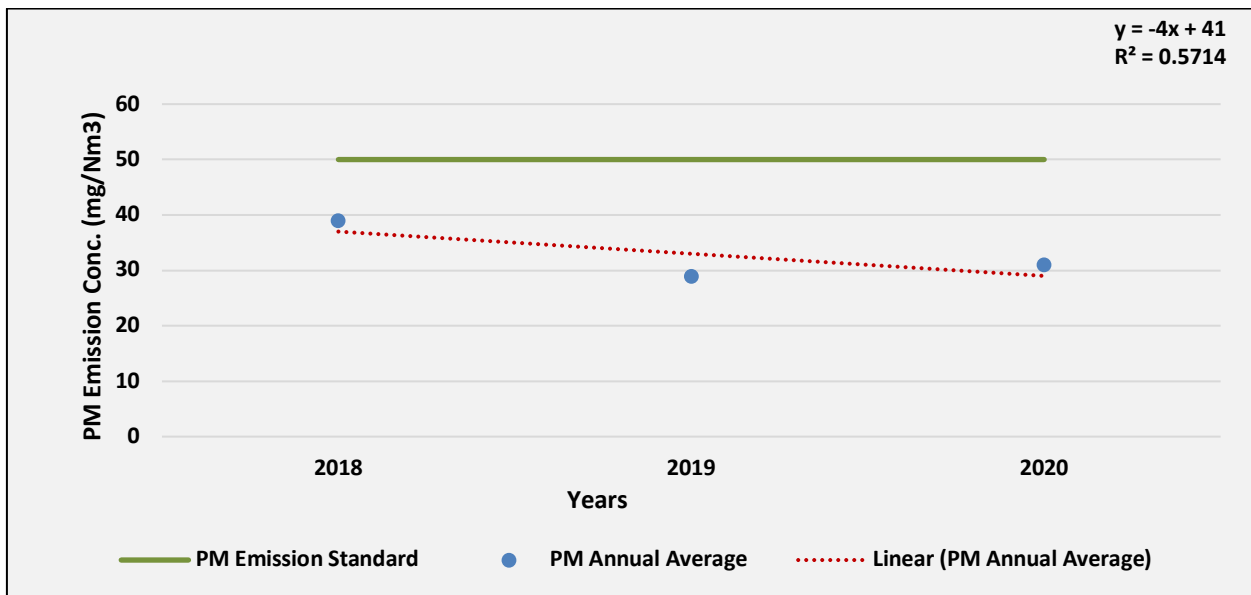


Fig. SIM22: Trend of annual mean PM Emission air concentration in Simhadri TPP (Stack 4)

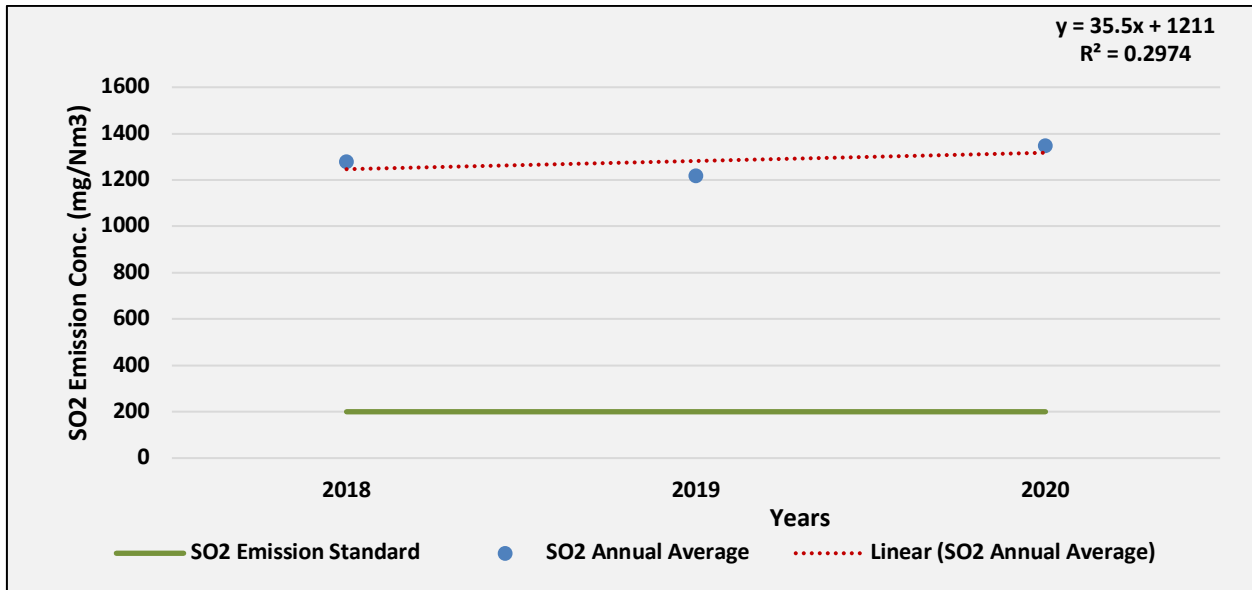


Fig. SIM23: Trend of annual mean SO₂ Emission air concentration in Simhadri TPP (Stack 4)

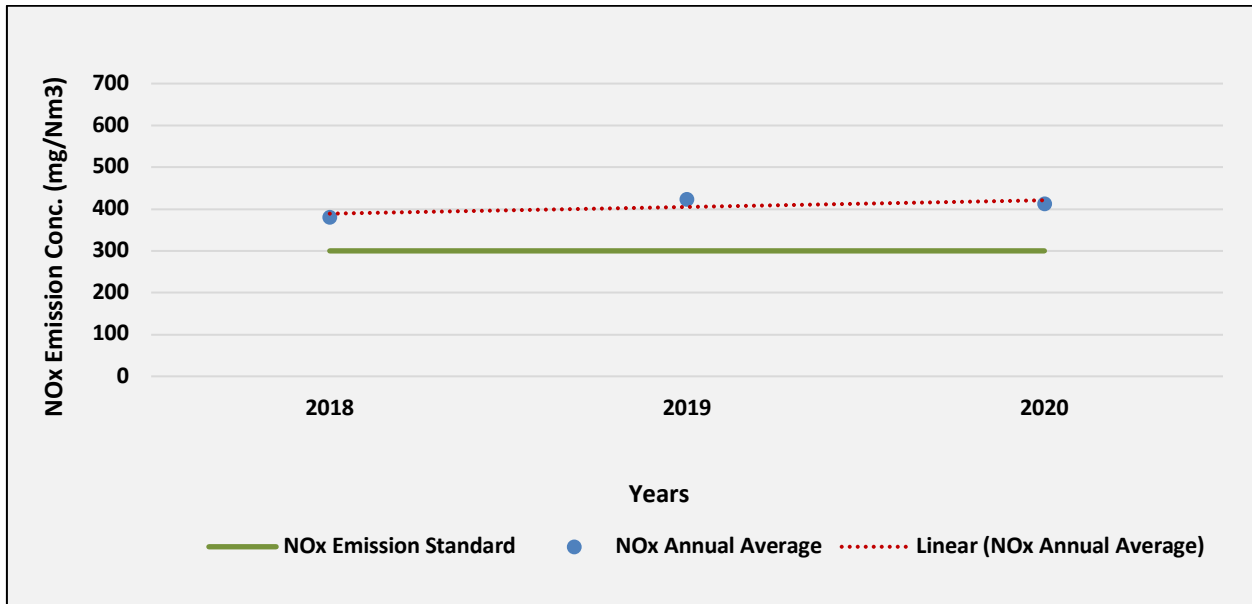


Fig. SIM24: Trend of annual mean NO_x Emission air concentration in Simhadri TPP (Stack 4)

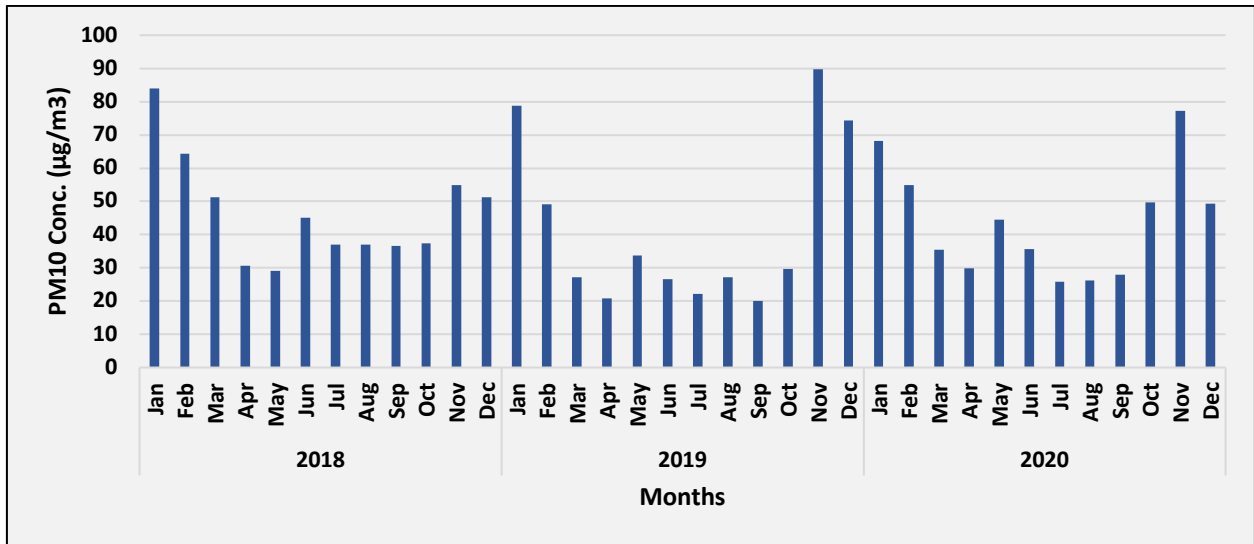


Fig. SIM25: Time series of monthly average PM₁₀ ambient air concentration in Simhadri TPP (Ambient)

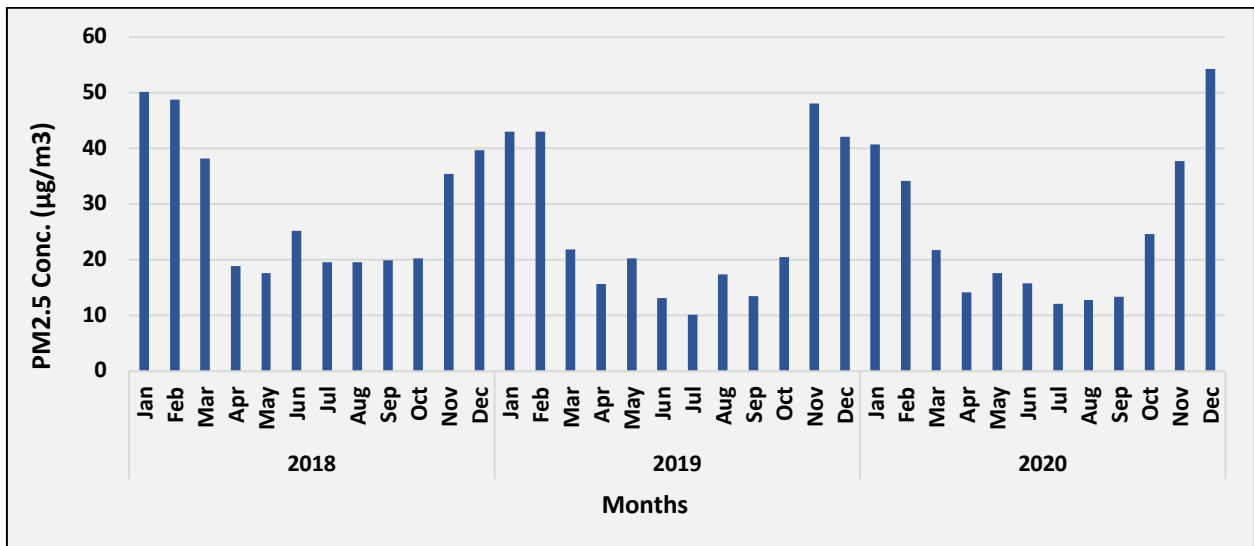


Fig. SIM26: Time series of monthly average PM_{2.5} ambient air concentration in Simhadri TPP (Ambient)

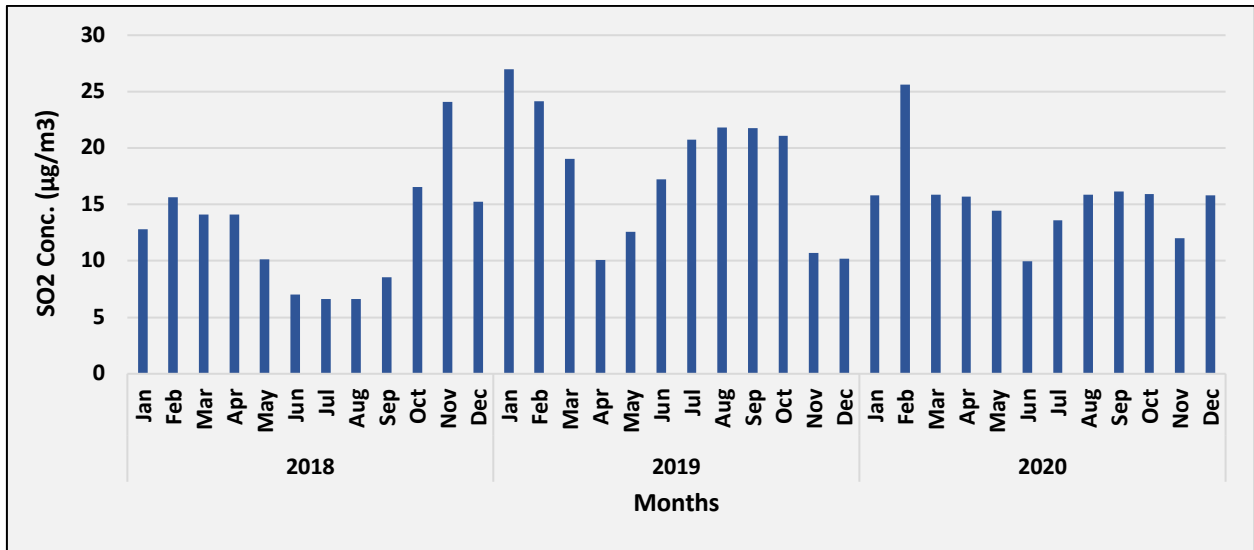


Fig. SIM27: Time series of monthly average SO_2 ambient air concentration in Simhadri TPP (Ambient)

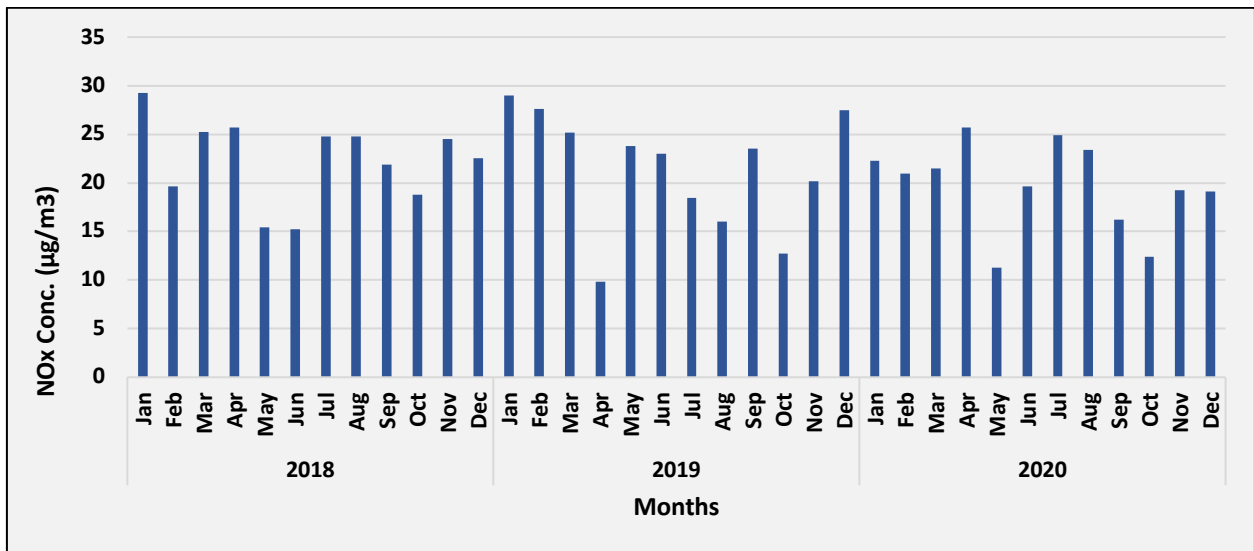


Fig. SIM28: Time series of monthly average NO_x ambient air concentration in Simhadri TPP (Ambient)

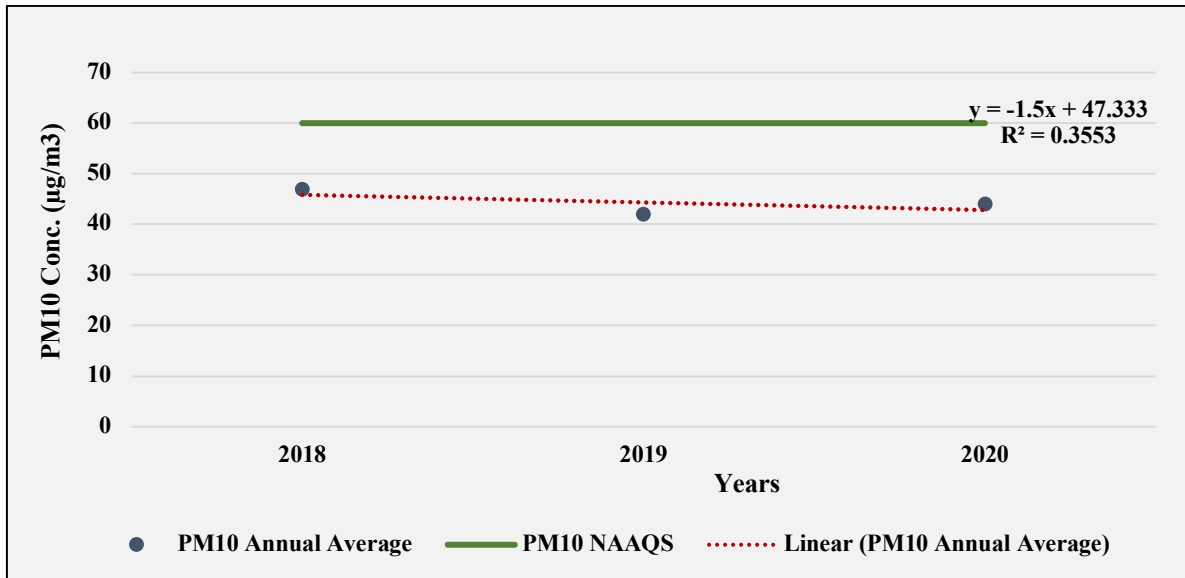


Fig. SIM29: Trend of annual mean PM_{10} ambient air concentration in Simhadri TPP (Ambient)

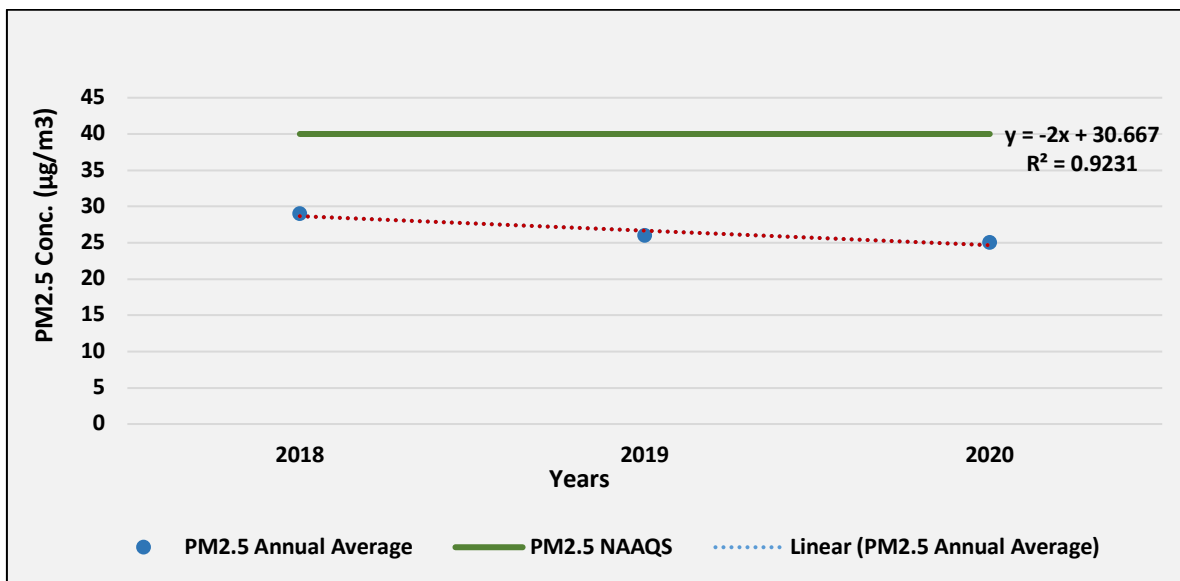


Fig. SIM30: Trend of annual mean $PM_{2.5}$ ambient air concentration in Simhadri TPP (Ambient)

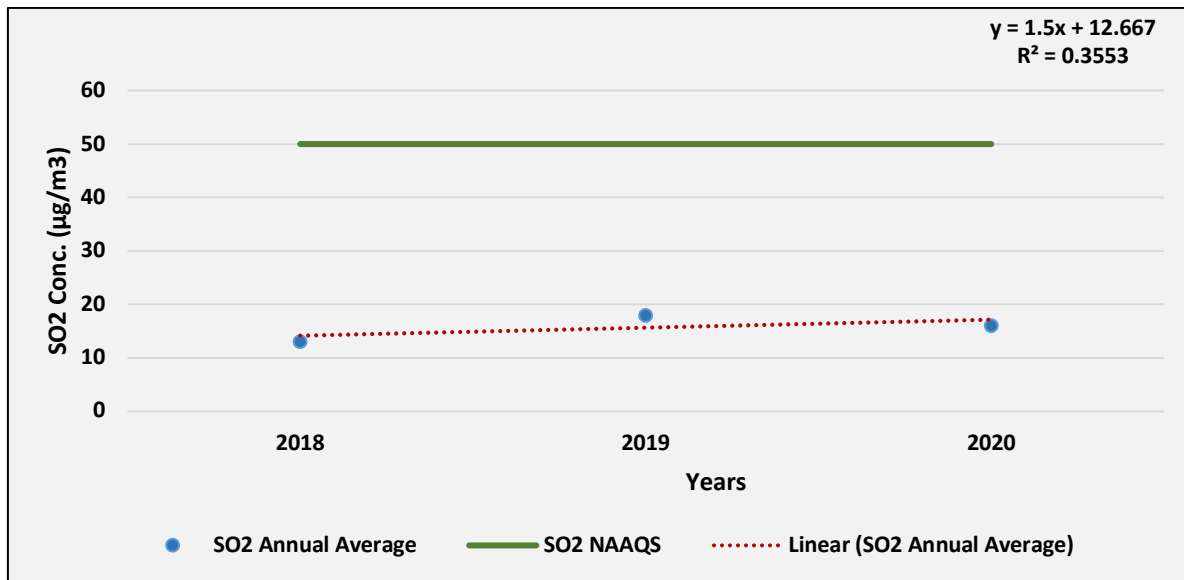


Fig. SIM31: Trend of annual mean SO₂ ambient air concentration in Simhadri TPP (Ambient)

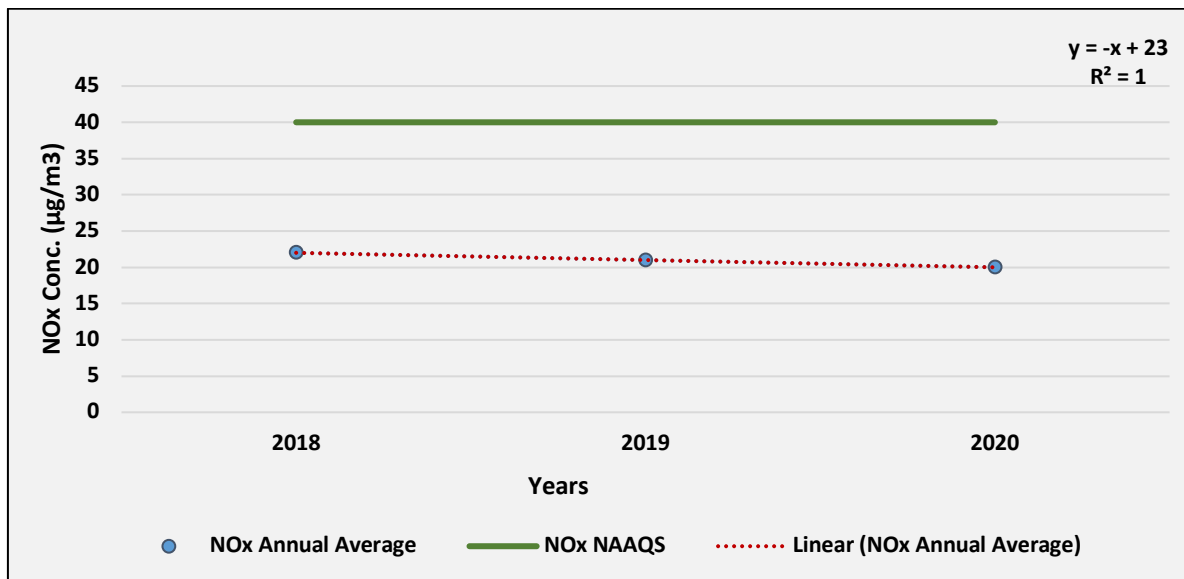


Fig. SIM32: Trend of annual mean NO_x ambient air concentration in Simhadri TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of the parameters PM₁₀, PM_{2.5} SO₂ &NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and NO_x (stack 3 and 4) parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

TANDA THERMAL POWER PLANT

Tanda Thermal Power Station is located in Ambedkar Nagar district in the Indian state of Uttar Pradesh. The power plant is one of the coal-based power plants of NTPC. The coal for the power plant is sourced from North Karnpura Coal Fields. Source of water for the power plant is from Tanda Pump Canal on Saryu River. In the year 2000, Uttar Pradesh State Electricity Board (U.P.S.E.B.) transferred Tanda Thermal Power Plant to NTPC Limited

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. TAN1 – Fig. TAN38) for the last three years (2018-2020) using data provided by NTPC developer for Tanda Power plant, Uttar Pradesh, India.

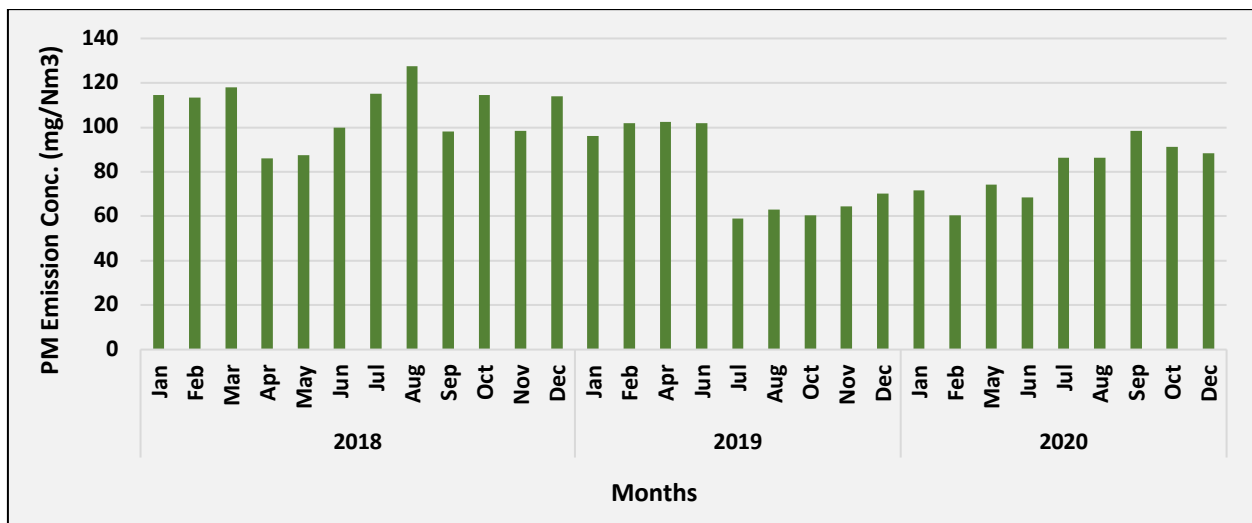


Fig. TAN1: Time series of monthly average PM Emission concentration in Tanda TPP (Stack 1)

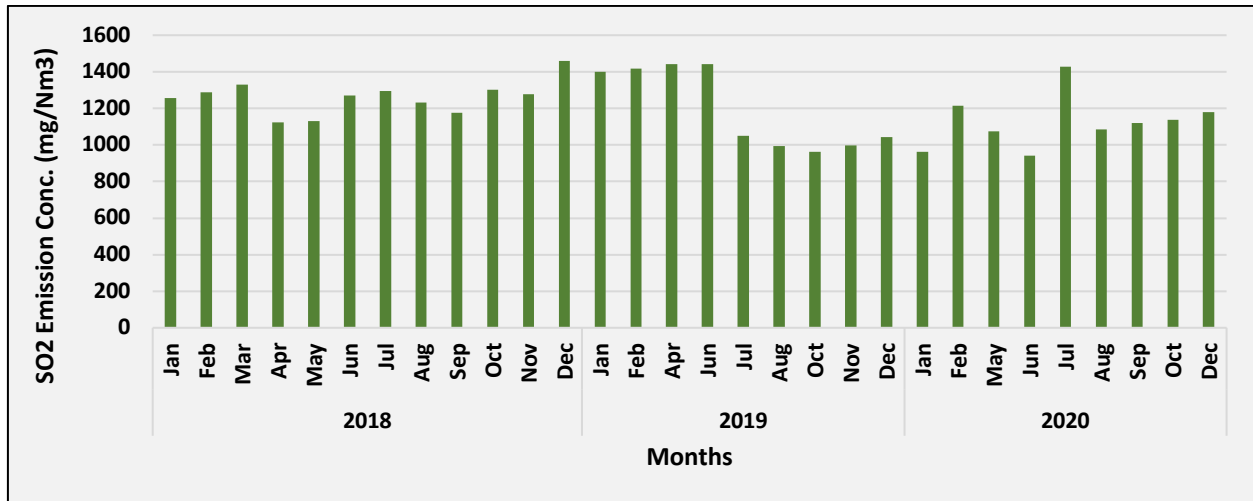


Fig. TAN2: Time series of monthly average SO₂ Emission concentration in Tanda TPP (Stack 1)

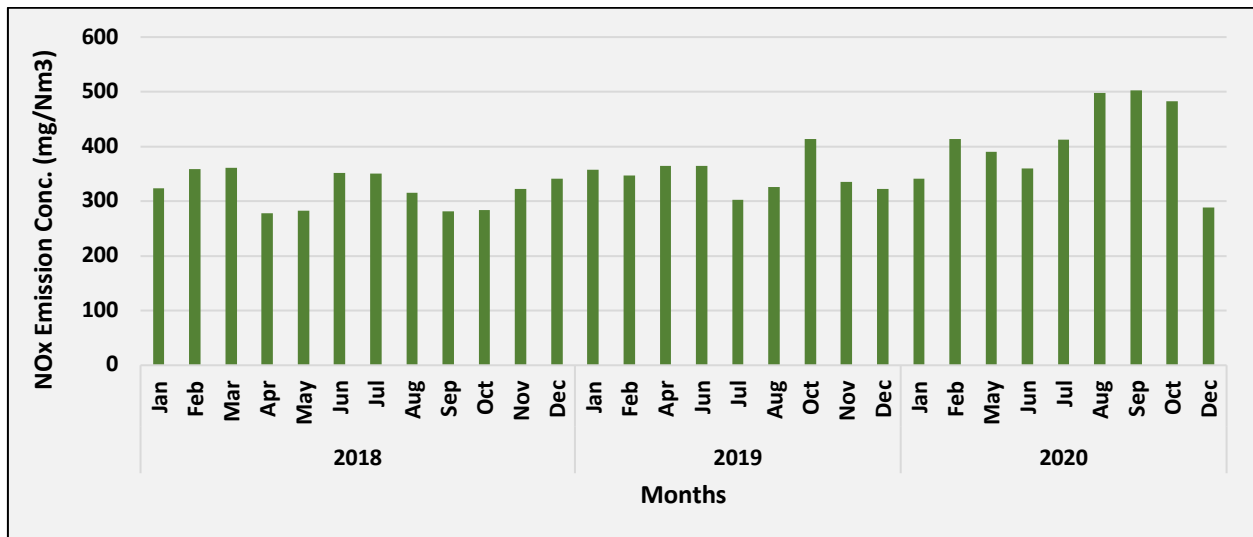


Fig. TAN3: Time series of monthly average NO_x Emission concentration in Tanda TPP (Stack 1)

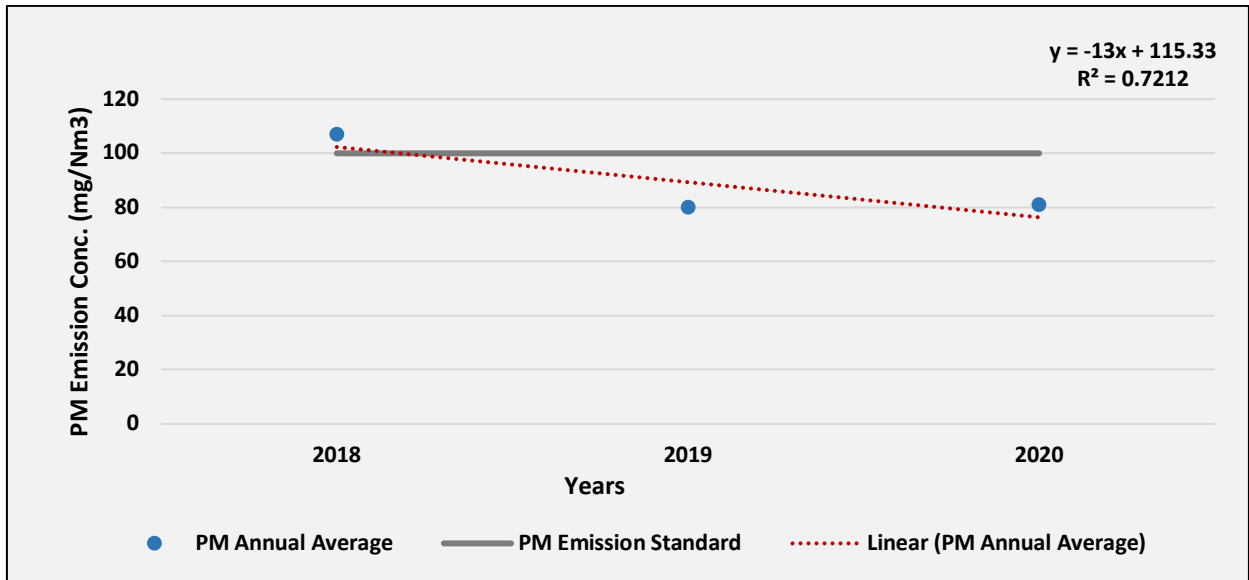


Fig. TAN4: Trend of annual mean PM Emission air concentration in Tanda TPP (Stack 1)

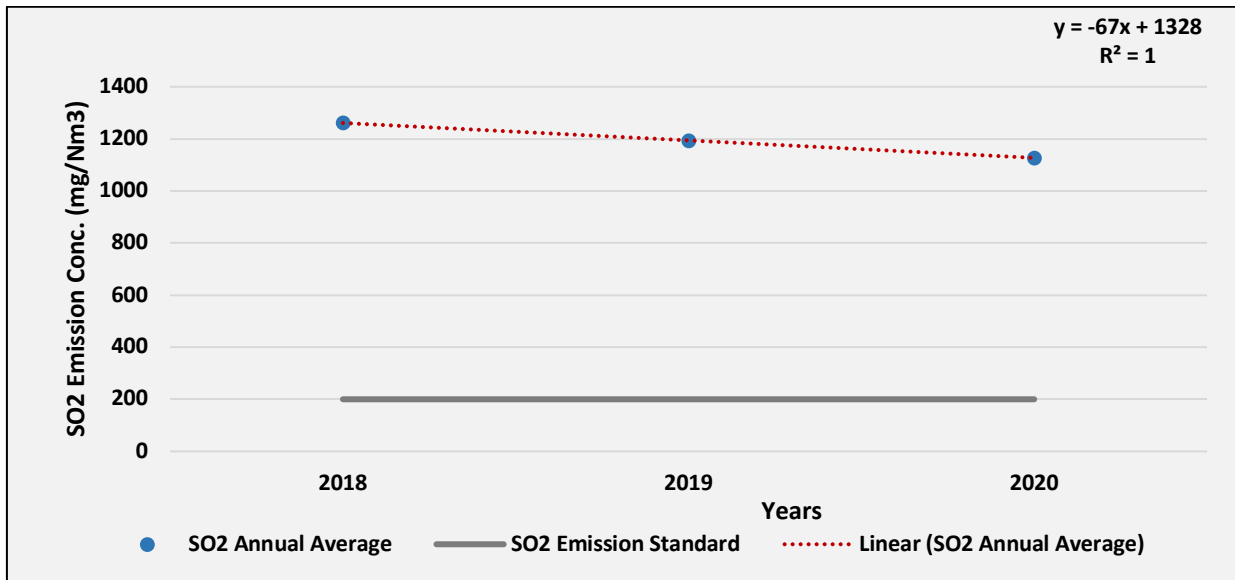


Fig. TAN5: Trend of annual mean SO₂ Emission air concentration in Tanda TPP (Stack 1)

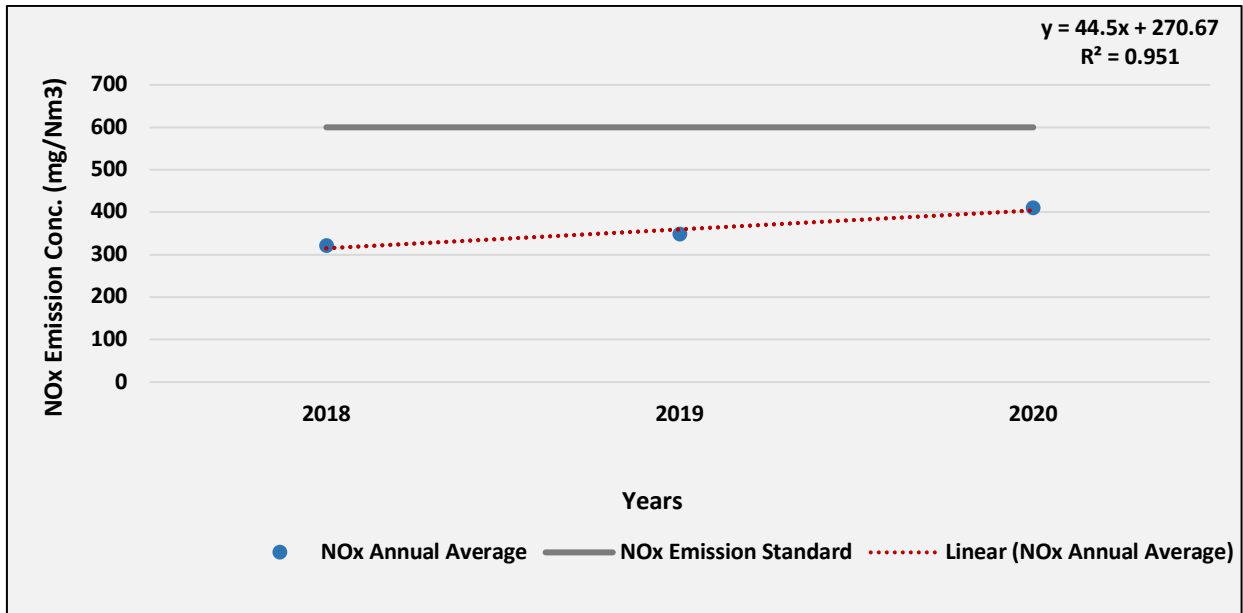


Fig. TAN6: Trend of annual mean NO_x Emission air concentration in Tanda TPP (Stack 1)

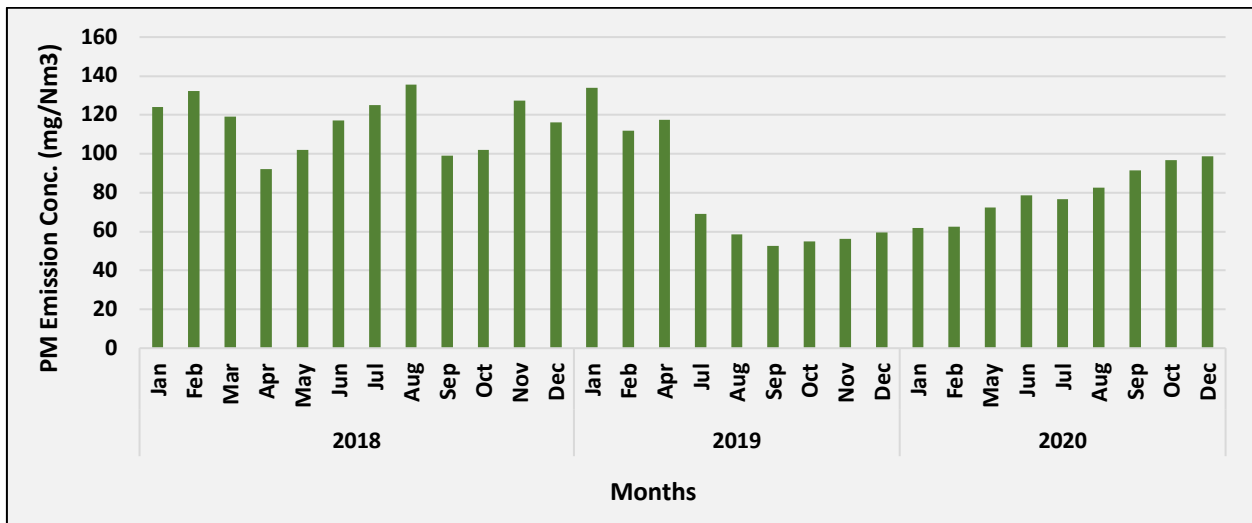


Fig. TAN7: Time series of monthly average PM Emission concentration in Tanda TPP (Stack 2)

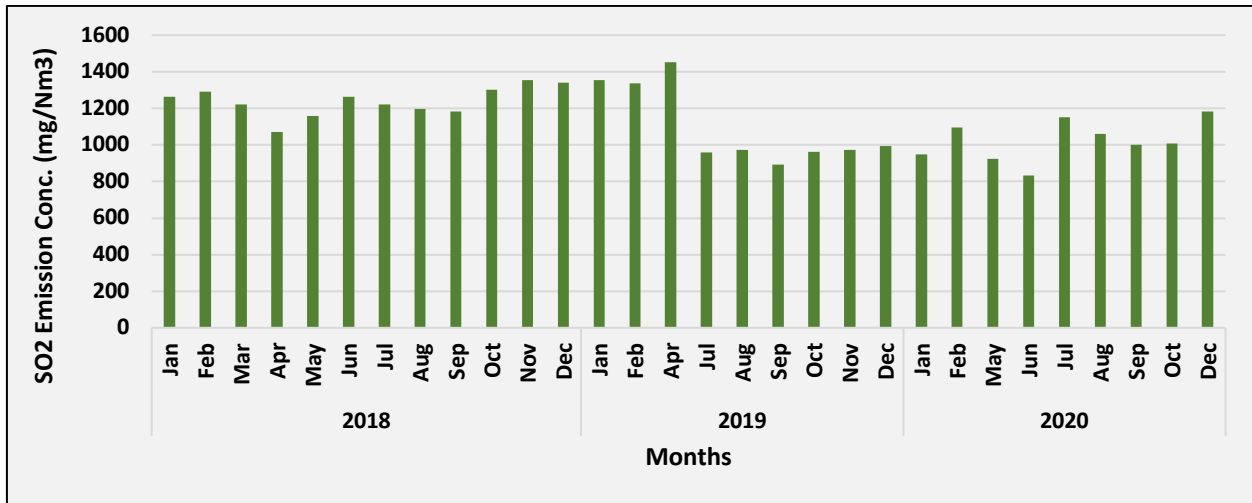


Fig. TAN8: Time series of monthly average SO₂ Emission concentration in Tanda TPP (Stack 2)

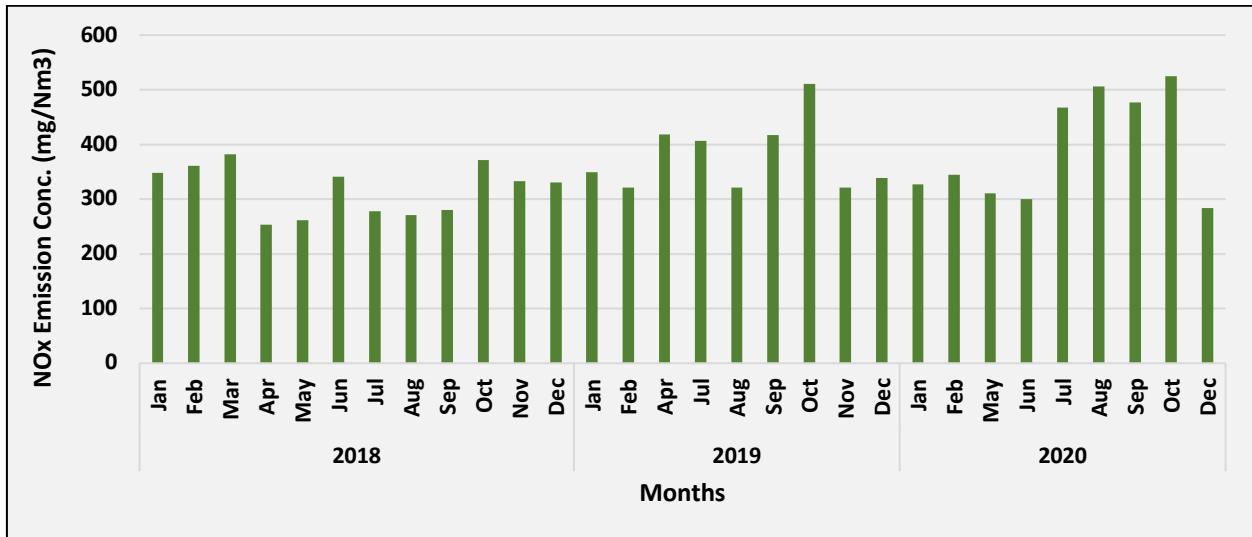


Fig. TAN9: Time series of monthly average NO_x Emission concentration in Tanda TPP (Stack 2)

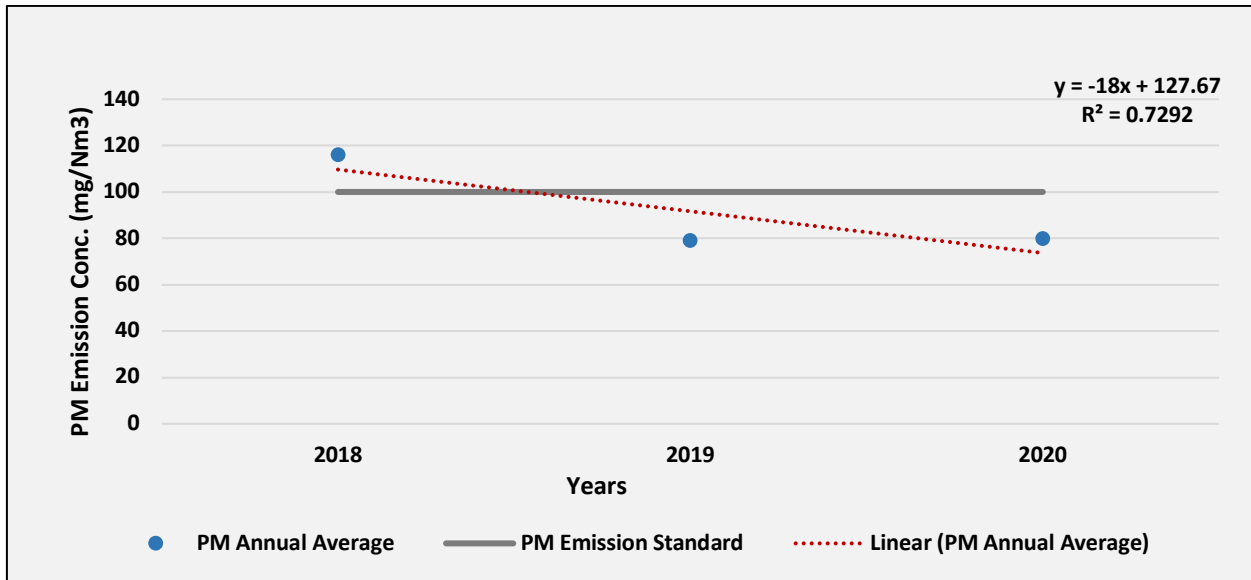


Fig. TAN10: Trend of annual mean PM Emission air concentration in Tanda TPP (Stack 2)

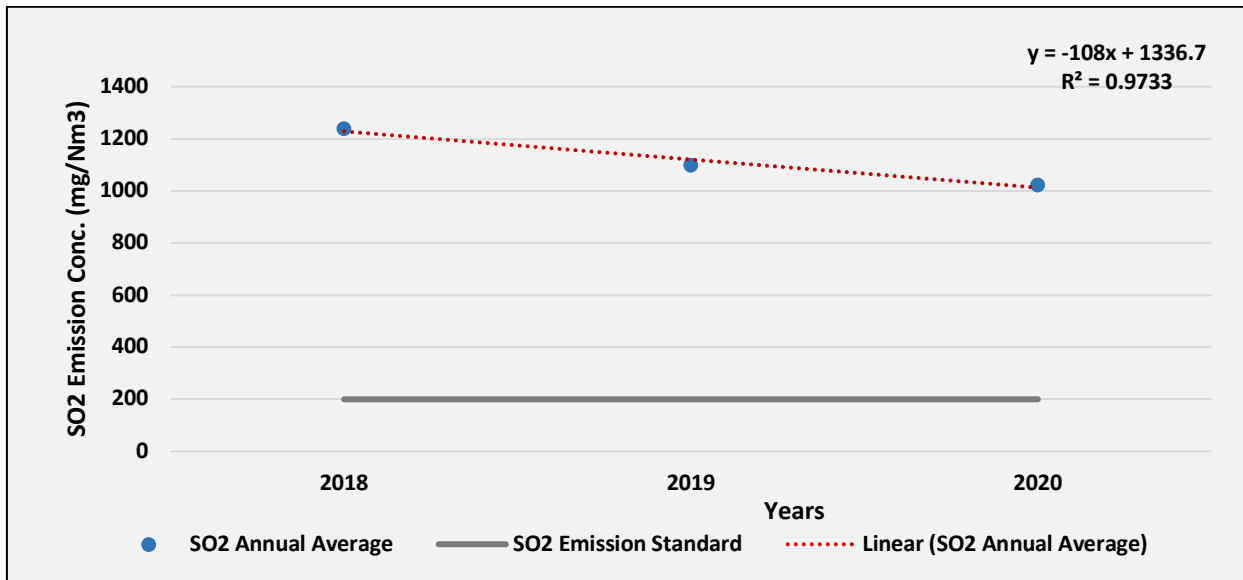


Fig. TAN11: Trend of annual mean SO₂ Emission air concentration in Tanda TPP (Stack 2)

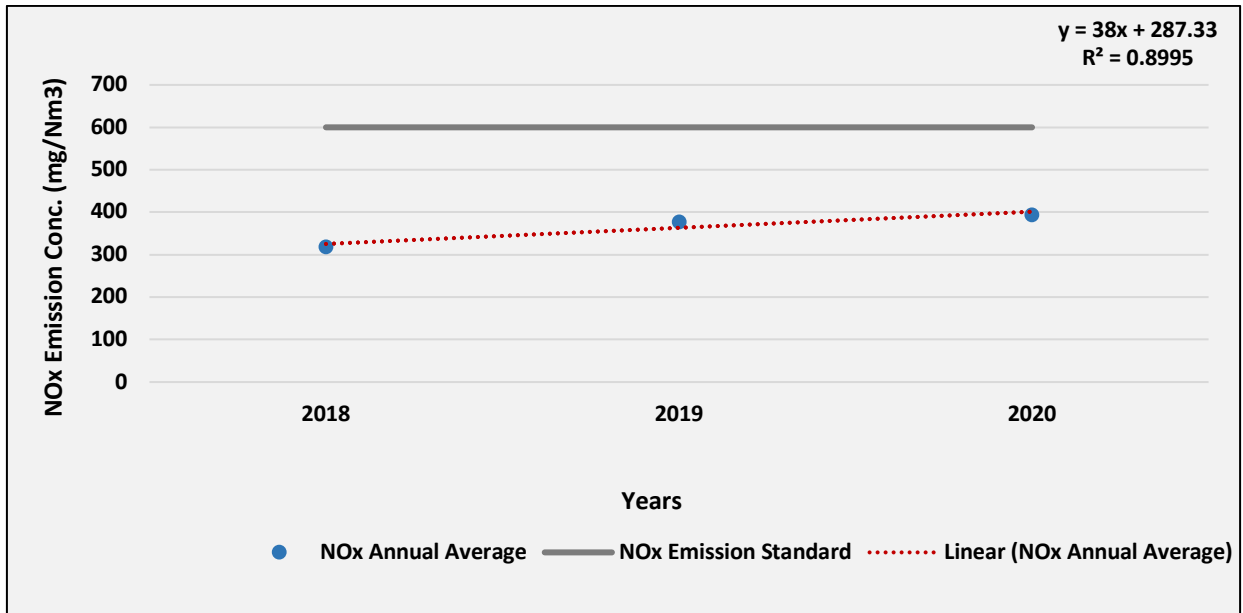


Fig. TAN12: Trend of annual mean NO_x Emission air concentration in Tanda TPP (Stack 2)

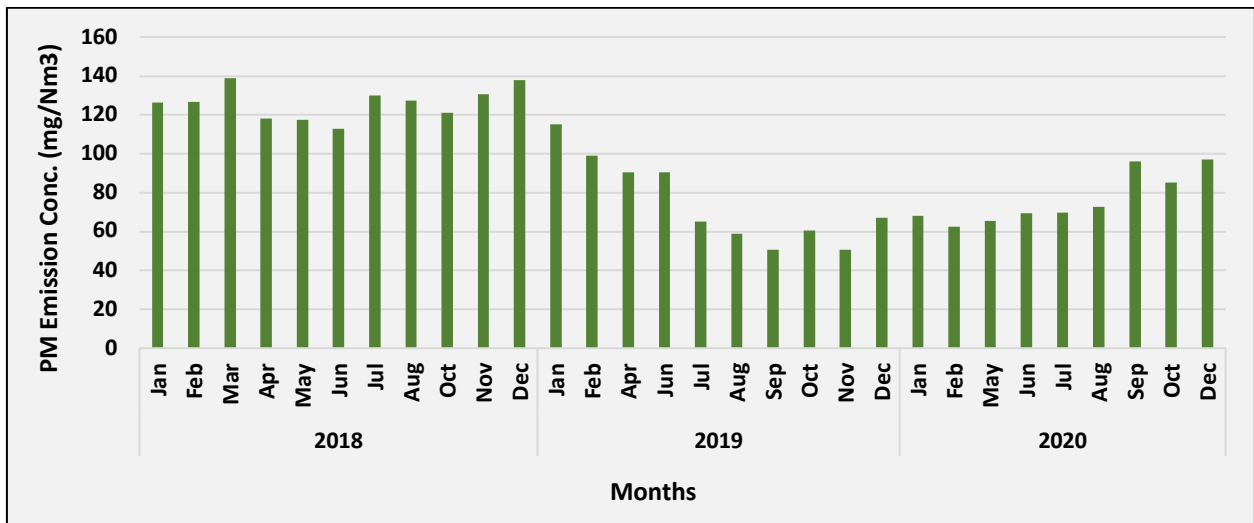


Fig. TAN13: Time series of monthly average PM Emission concentration in Tanda TPP (Stack 3)

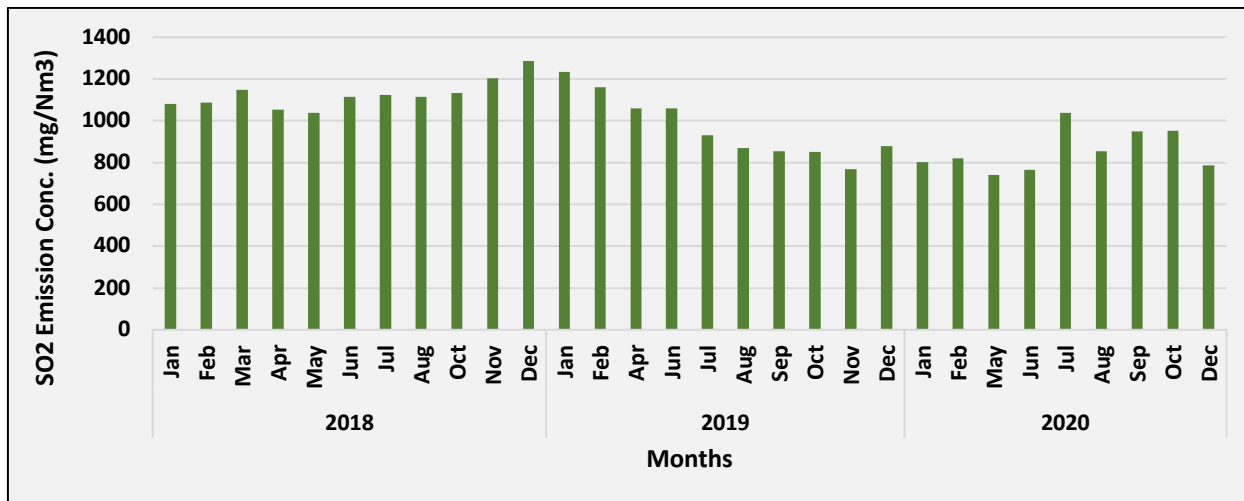


Fig. TAN14: Time series of monthly average SO₂ Emission concentration in Tanda TPP (Stack 3)

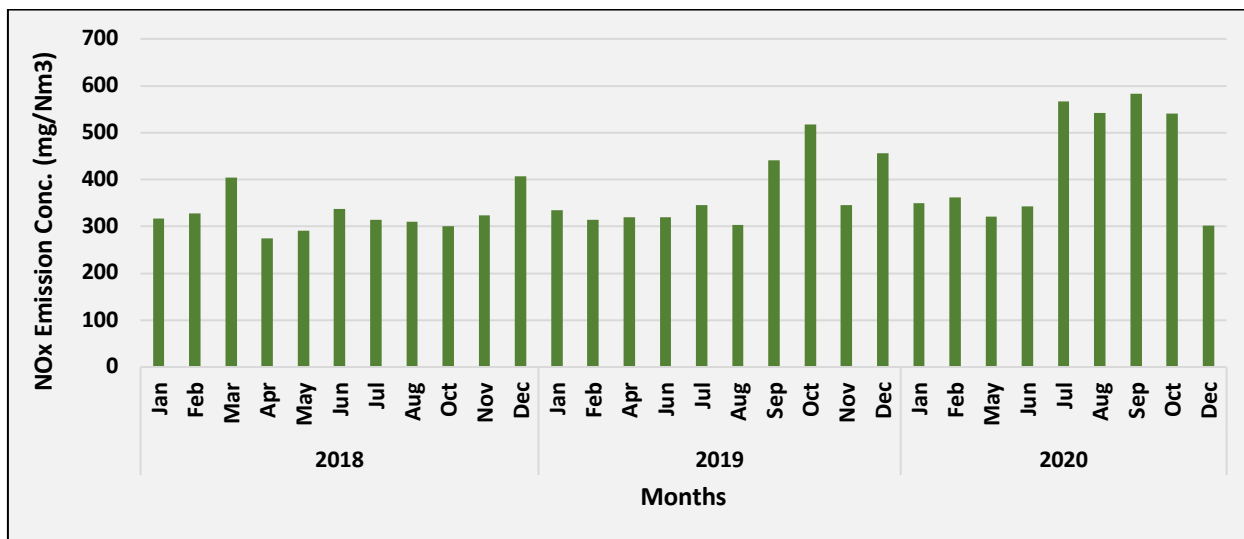


Fig. TAN15: Time series of monthly average NO_x Emission concentration in Tanda TPP (Stack 3)

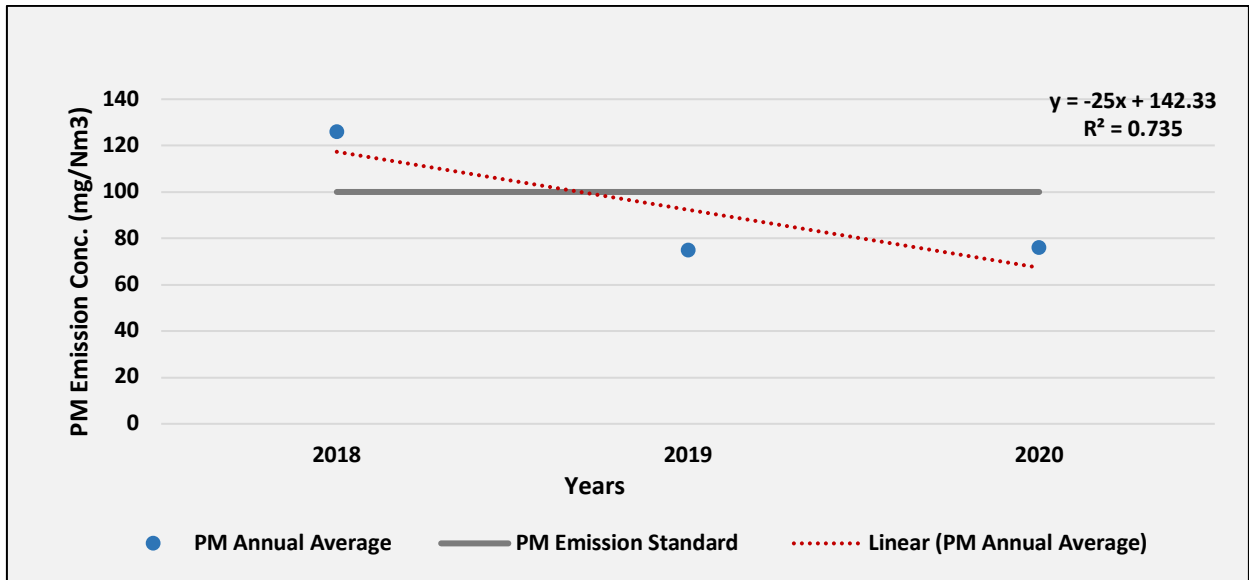


Fig. TANI16: Trend of annual mean PM Emission air concentration in Tanda TPP (Stack 3)

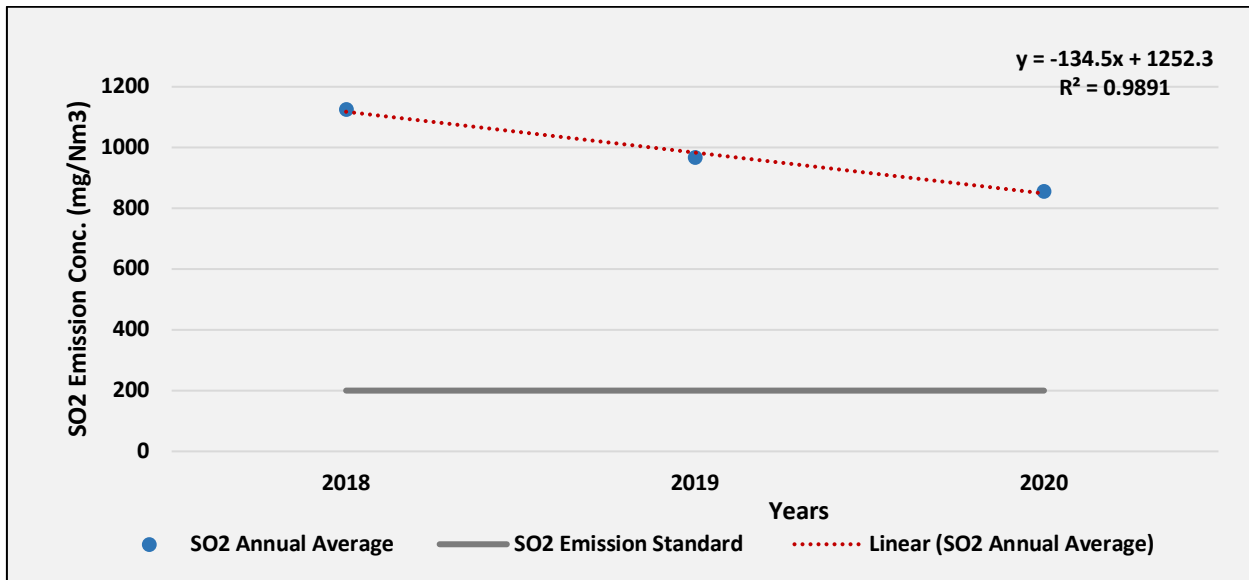


Fig. TANI17: Trend of annual mean SO₂ Emission air concentration in Tanda TPP (Stack 3)

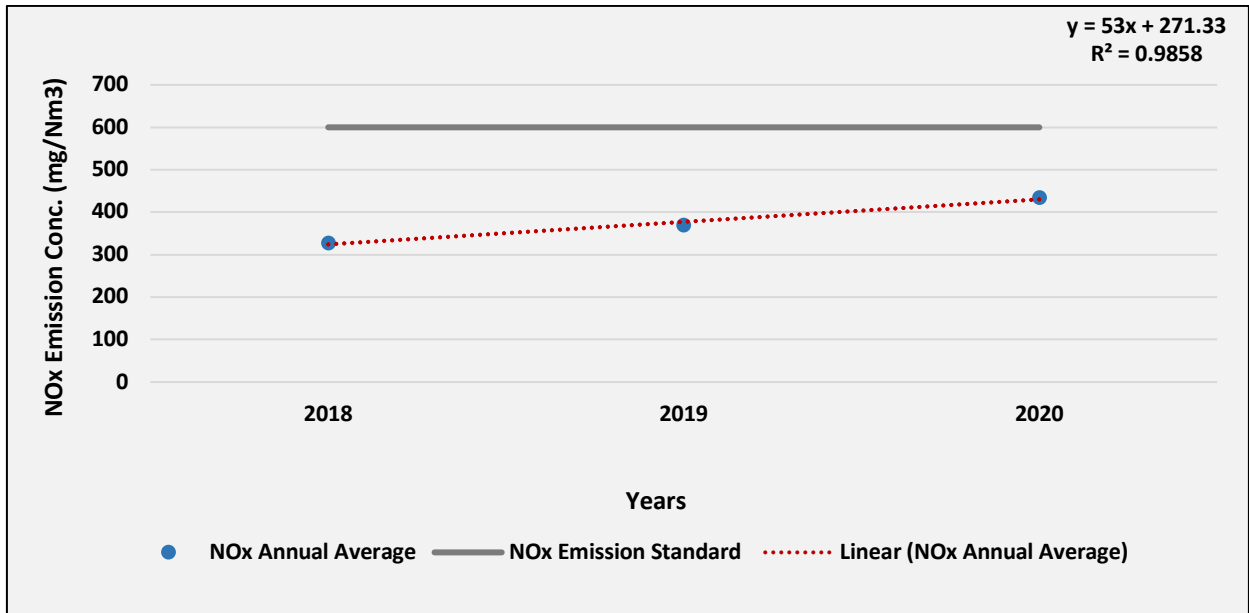


Fig. TAN18: Trend of annual mean NO_x Emission air concentration in Tanda TPP (Stack 3)

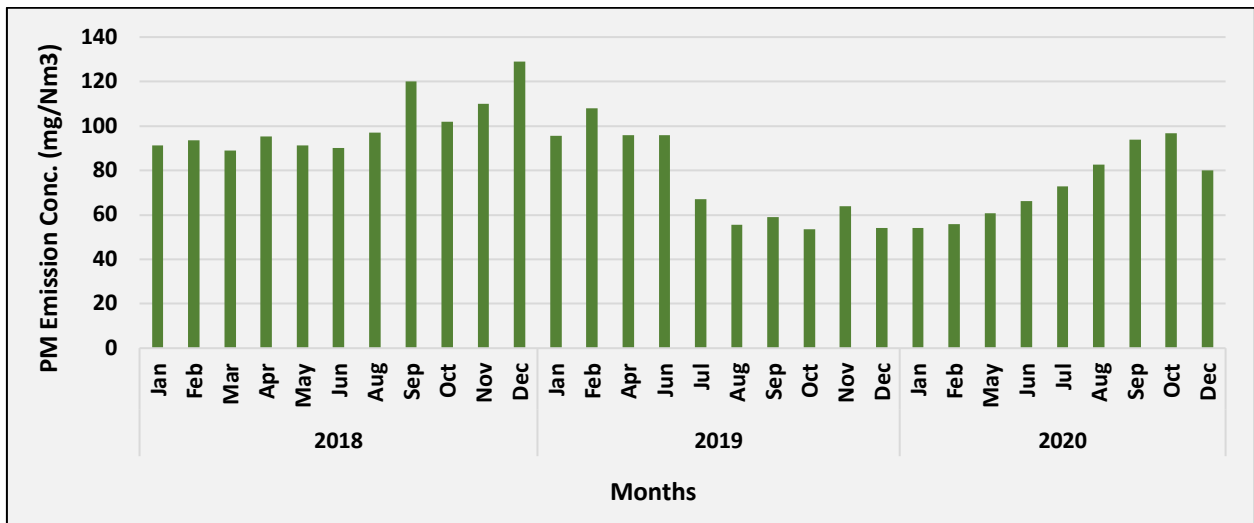


Fig. TAN19: Time series of monthly average PM Emission concentration in Tanda TPP (Stack 4)

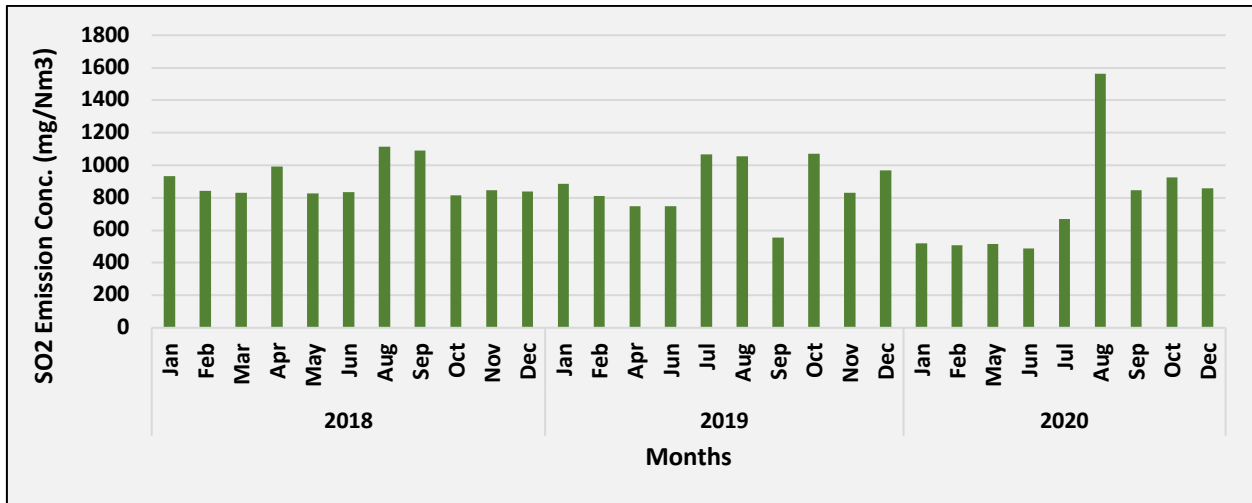


Fig. TAN20: Time series of monthly average SO₂ Emission concentration in Tanda TPP (Stack 4)

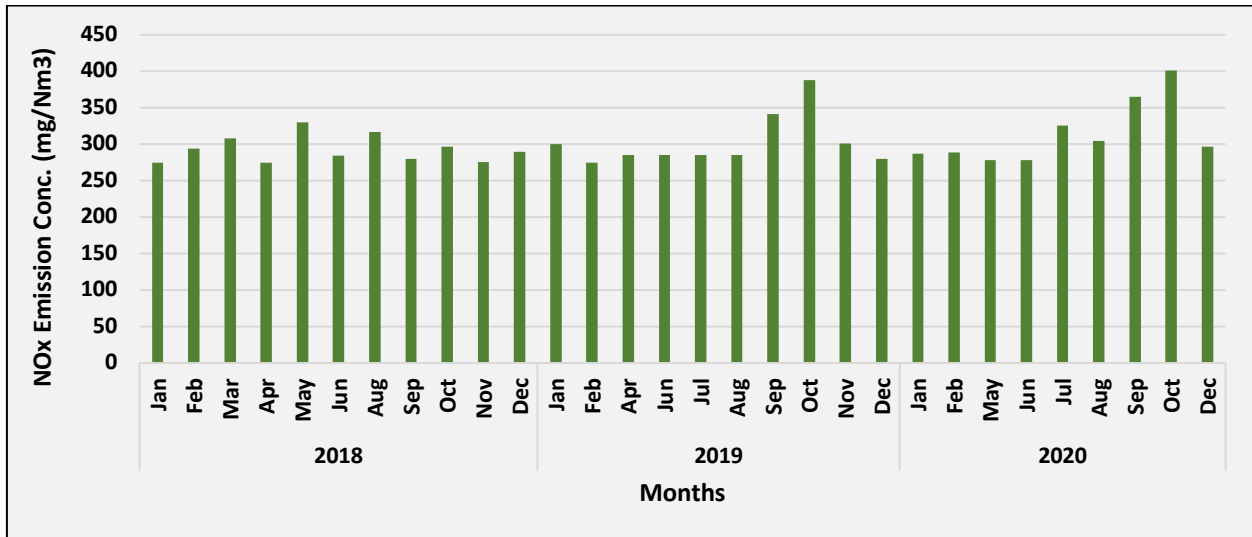


Fig. TAN21: Time series of monthly average NO_x Emission concentration in Tanda TPP (Stack 4)

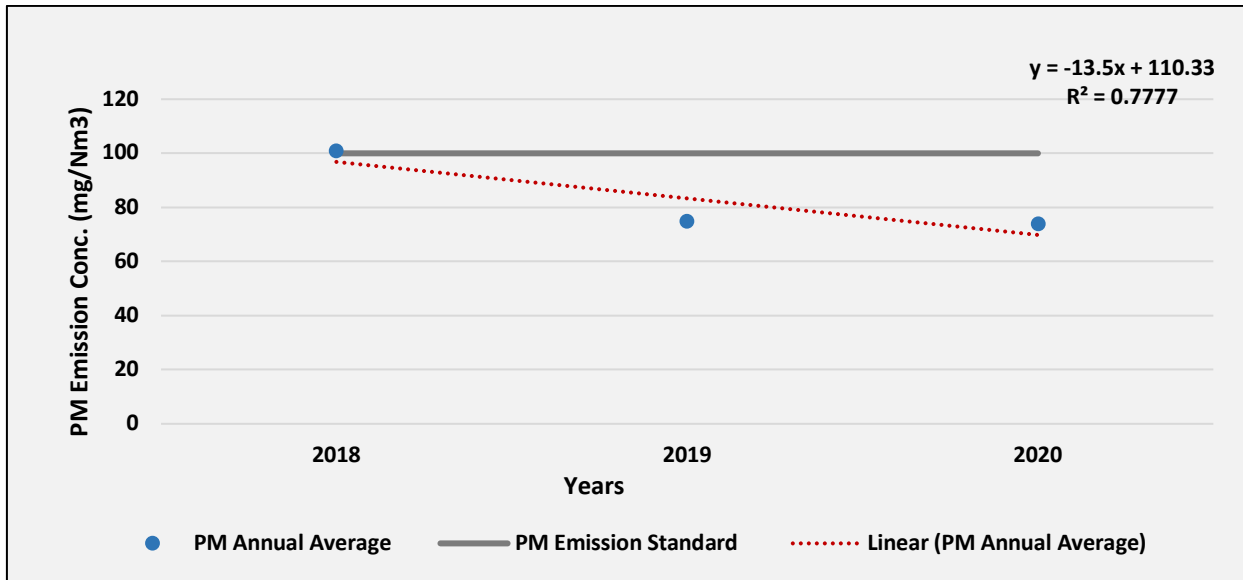


Fig. TAN22: Trend of annual mean PM Emission air concentration in Tanda TPP (Stack 4)

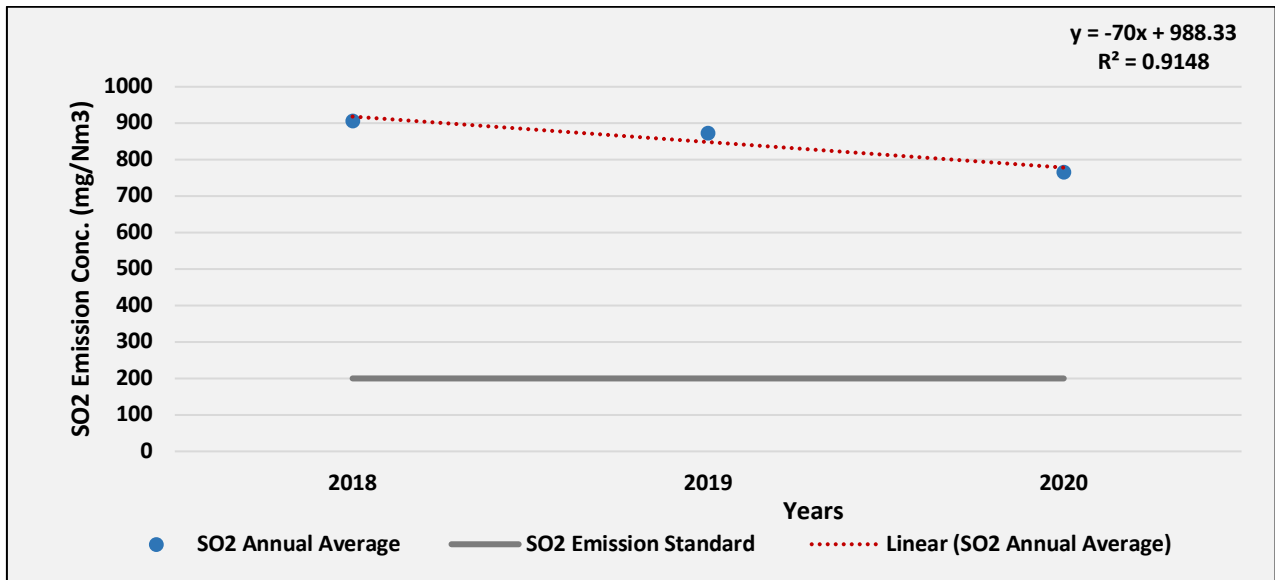


Fig. TAN23: Trend of annual mean SO₂ Emission air concentration in Tanda TPP (Stack 4)

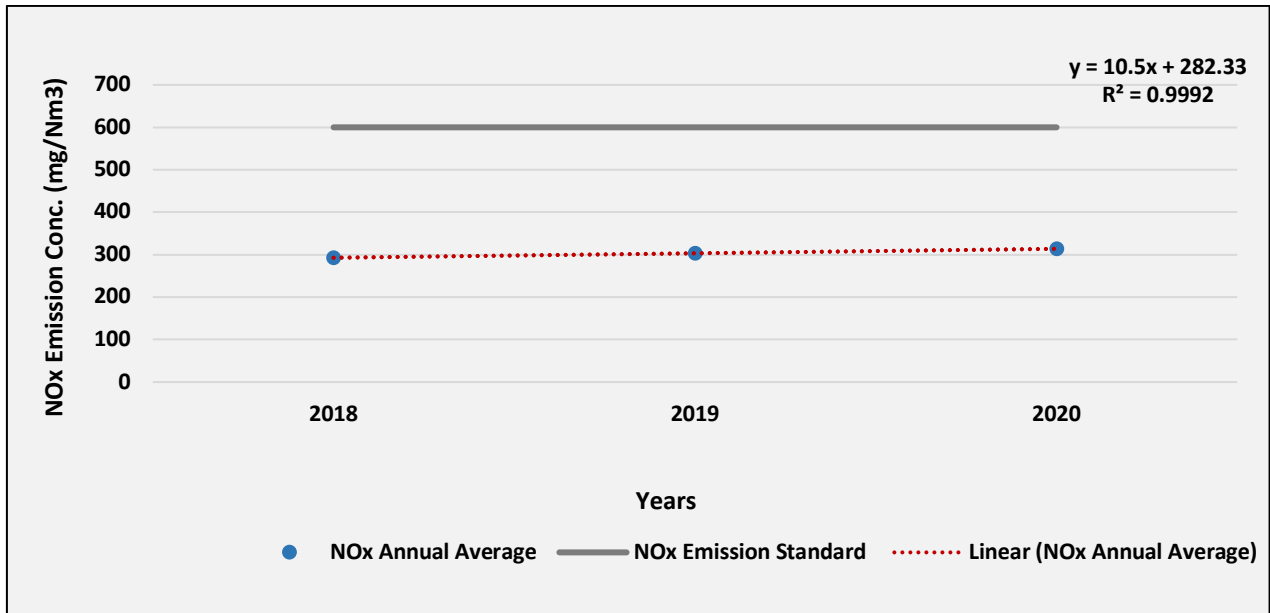


Fig. TAN24: Trend of annual mean NO_x Emission air concentration in Tanda TPP (Stack 4)

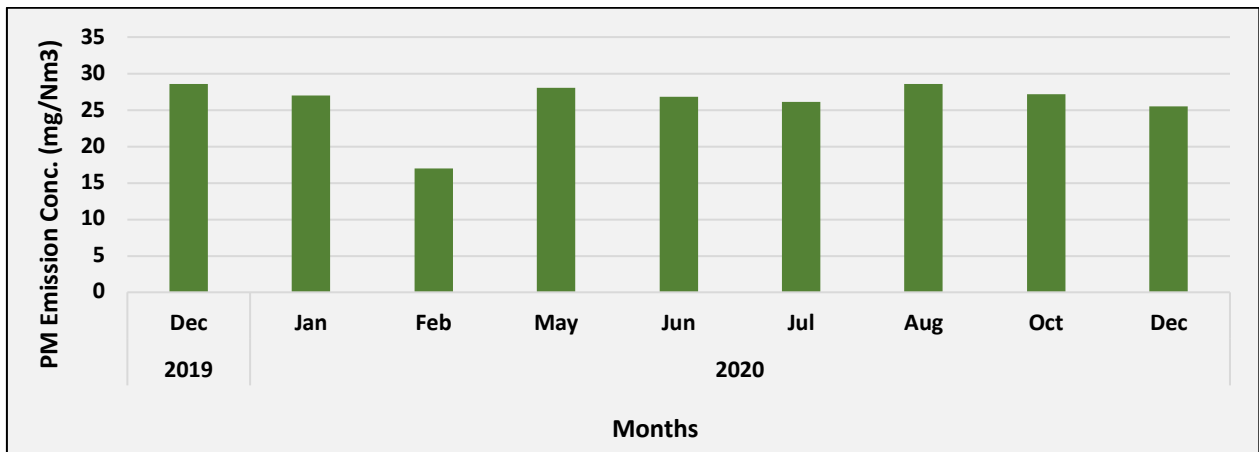


Fig. TAN25: Time series of monthly average PM Emission concentration in Tanda TPP (Stack 5)

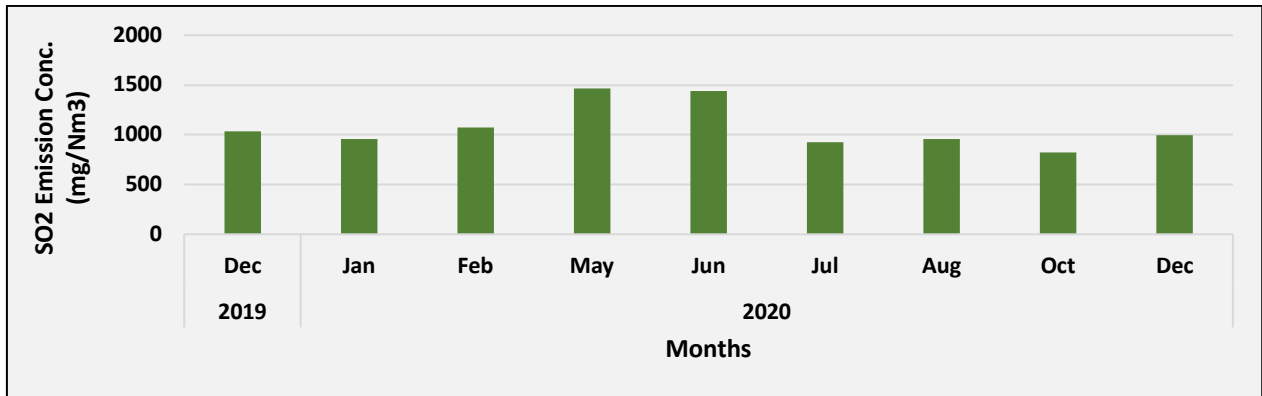


Fig. TAN26: Time series of monthly average SO₂ Emission concentration in Tanda TPP (Stack 5)

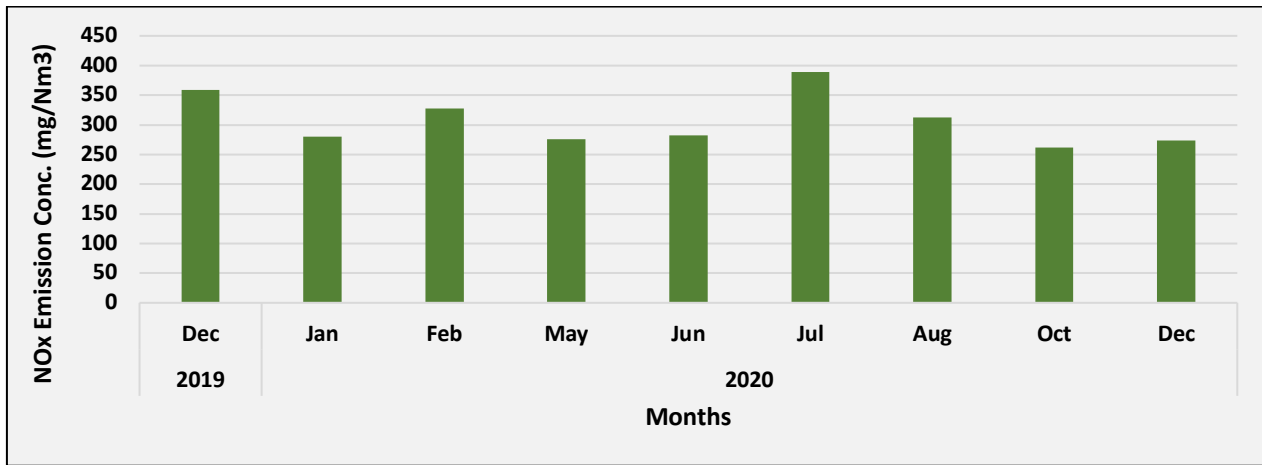


Fig. TAN27: Time series of monthly average NO_x Emission concentration in Tanda TPP (Stack 5)

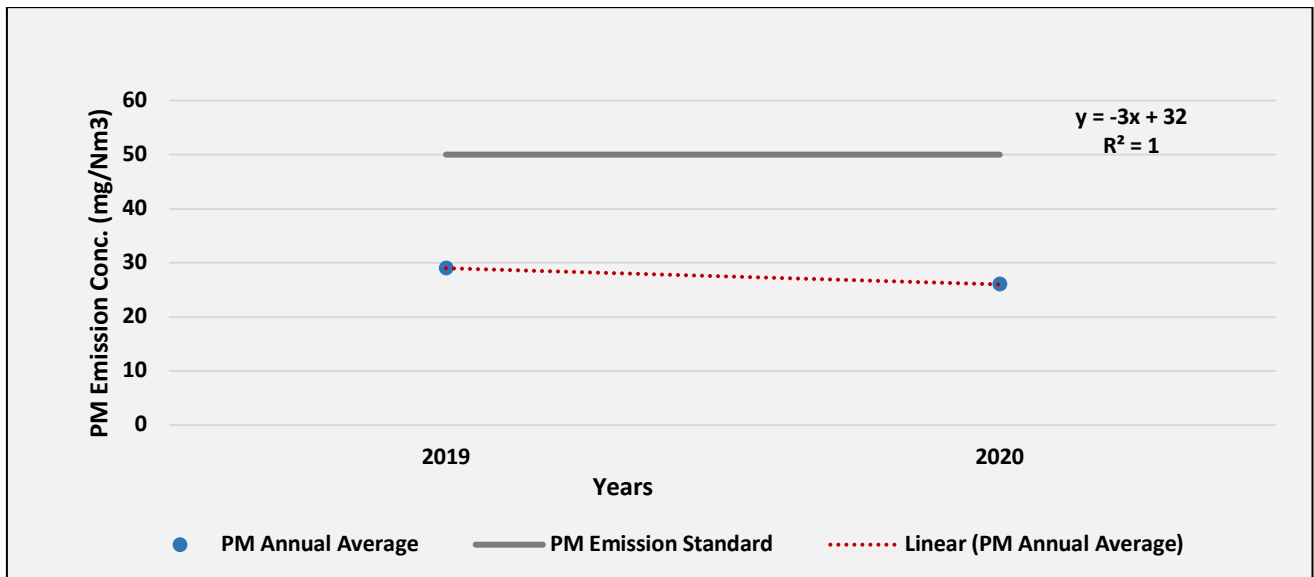


Fig. TAN28: Trend of annual mean PM Emission air concentration in Tanda TPP (Stack 5)

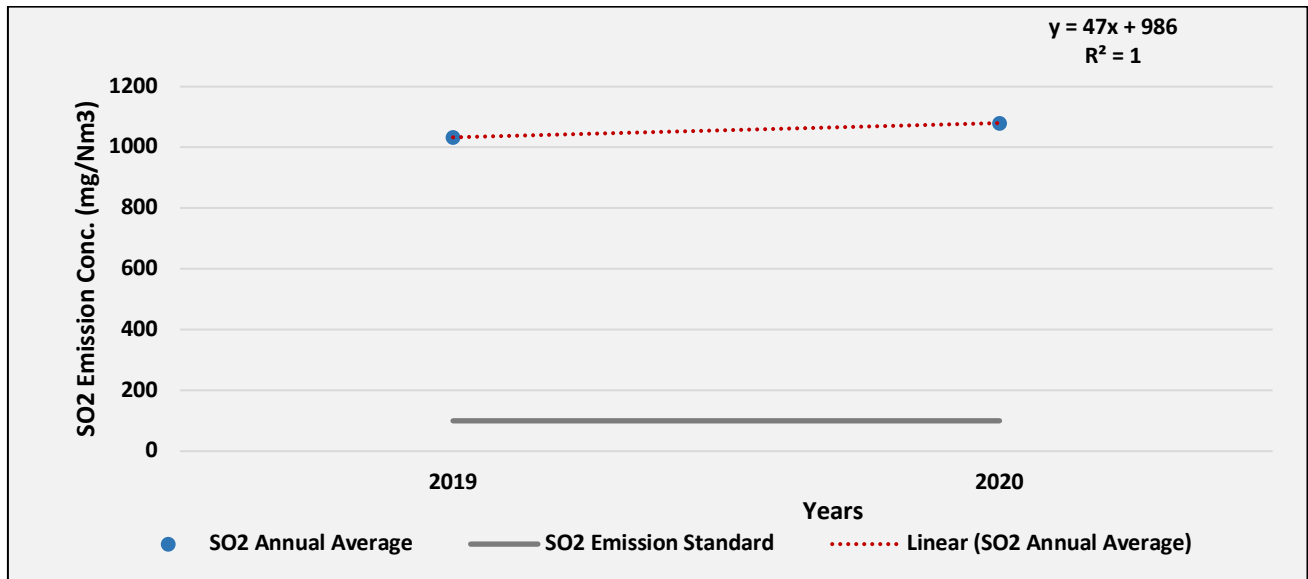


Fig. TAN29: Trend of annual mean SO₂ Emission air concentration in Tanda TPP (Stack 5)

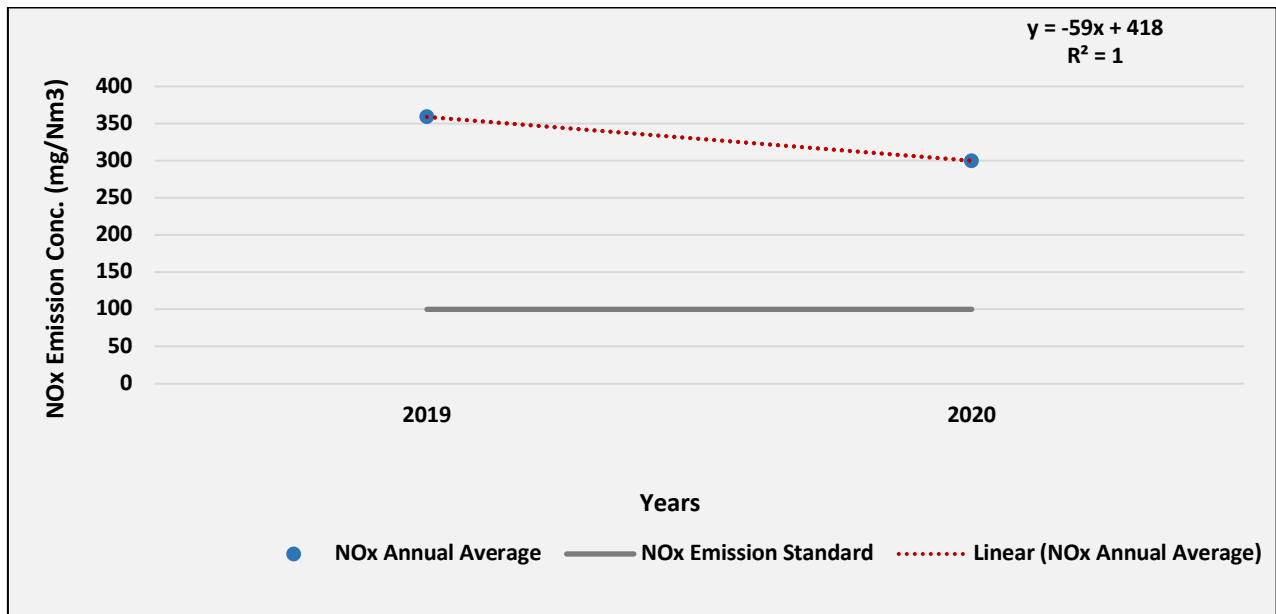


Fig. TAN30: Trend of annual mean NO_x Emission air concentration in Tanda TPP (Stack 5)

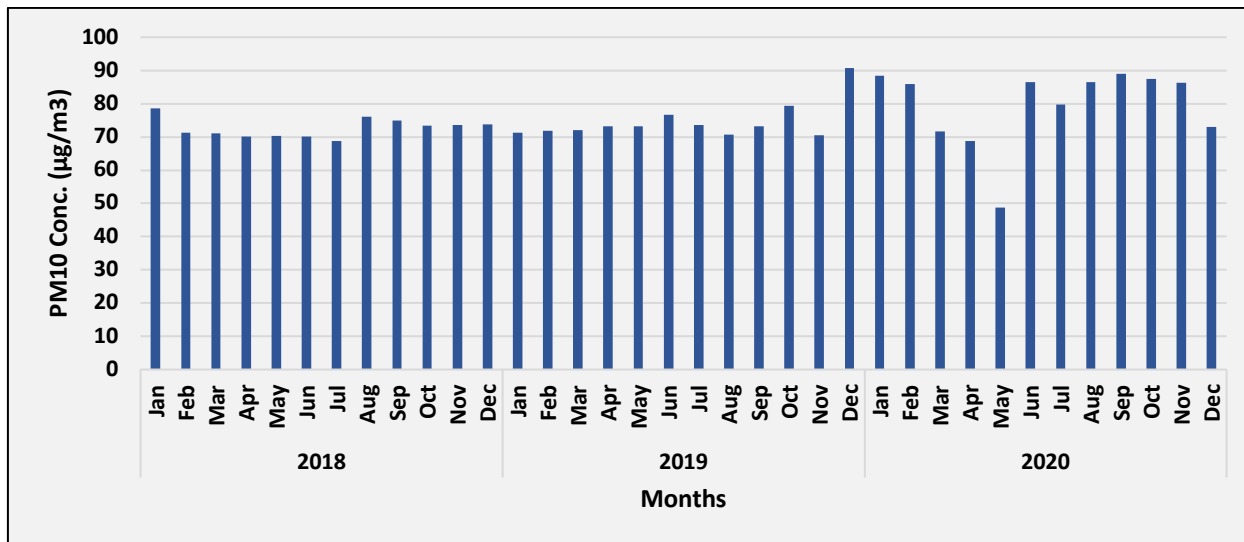


Fig. TAN31: Time series of monthly average PM_{10} ambient air concentration in Tanda TPP (Ambient)

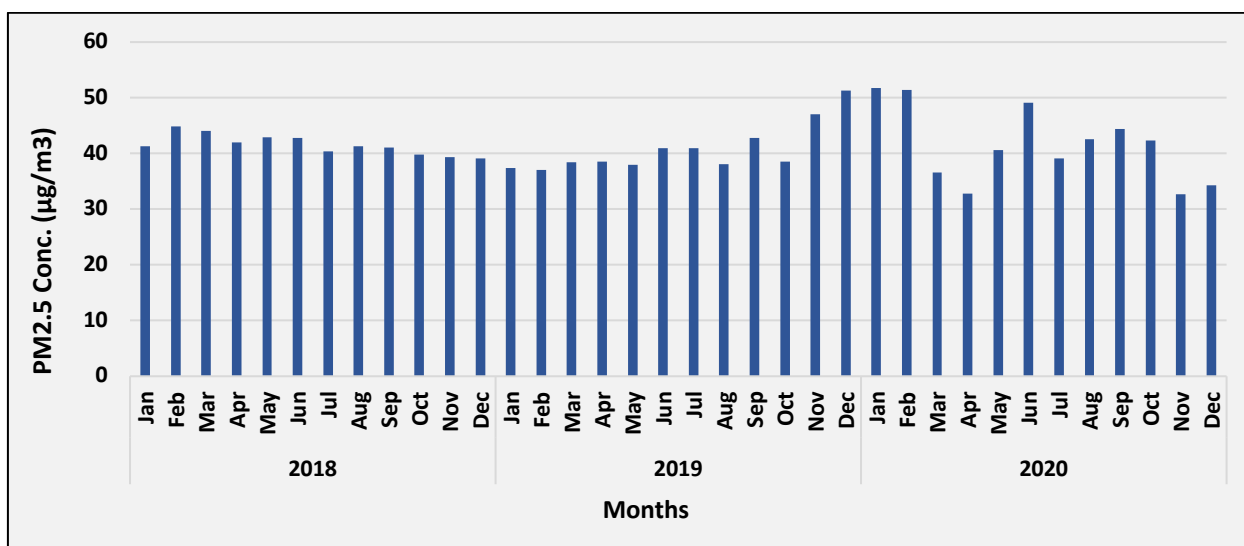


Fig. TAN32: Time series of monthly average $PM_{2.5}$ ambient air concentration in Tanda TPP (Ambient)

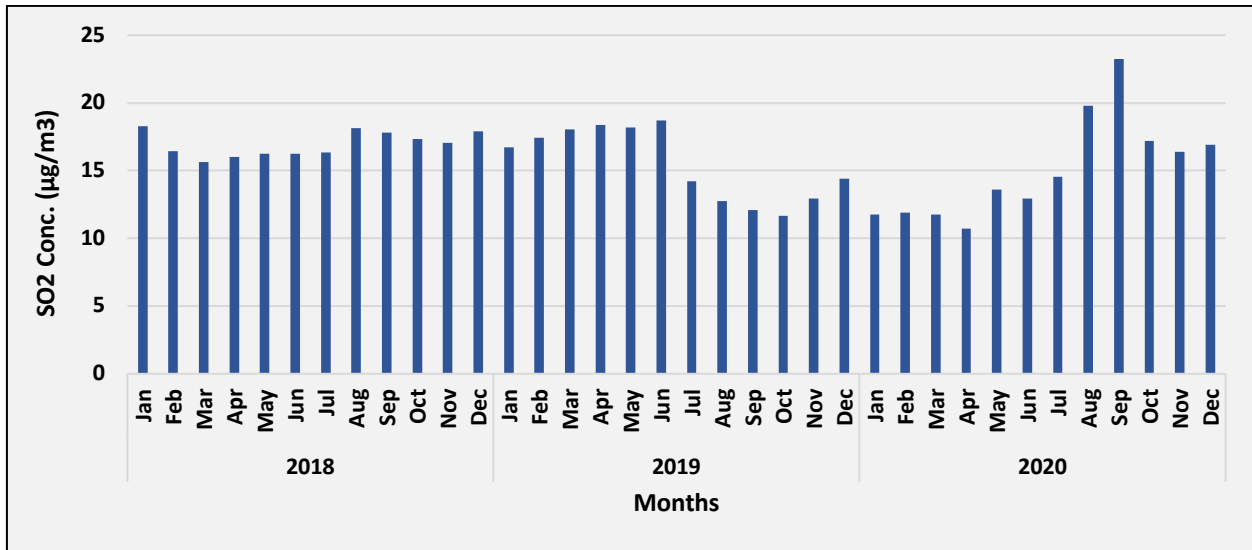


Fig. TAN33: Time series of monthly average SO_2 ambient air concentration in Tanda TPP (Ambient)

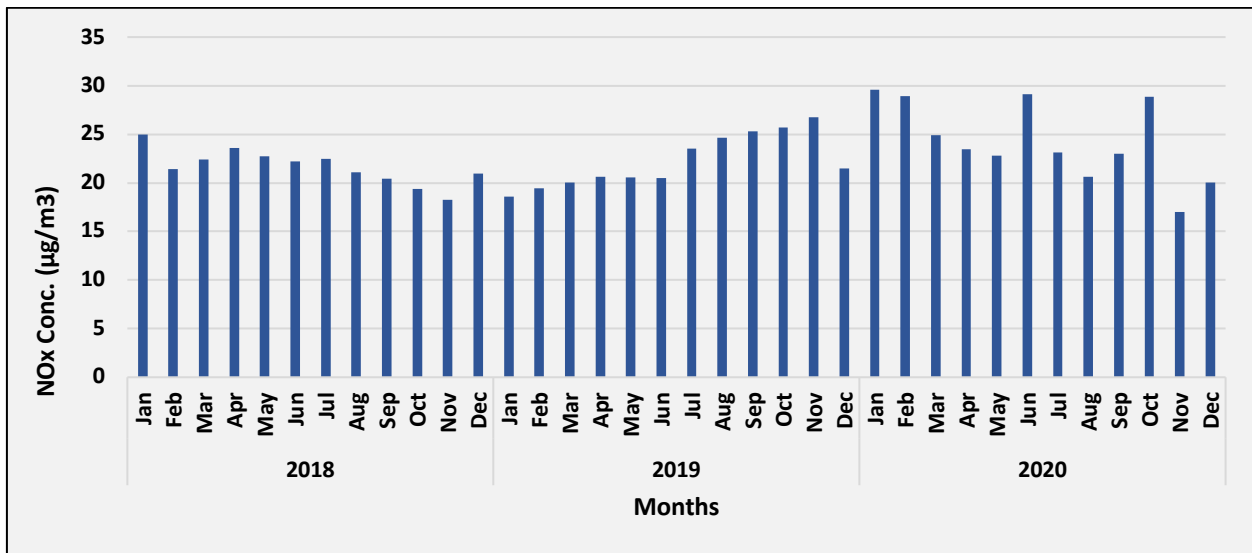


Fig. TAN34: Time series of monthly average NO_x ambient air concentration in Tanda TPP (Ambient)

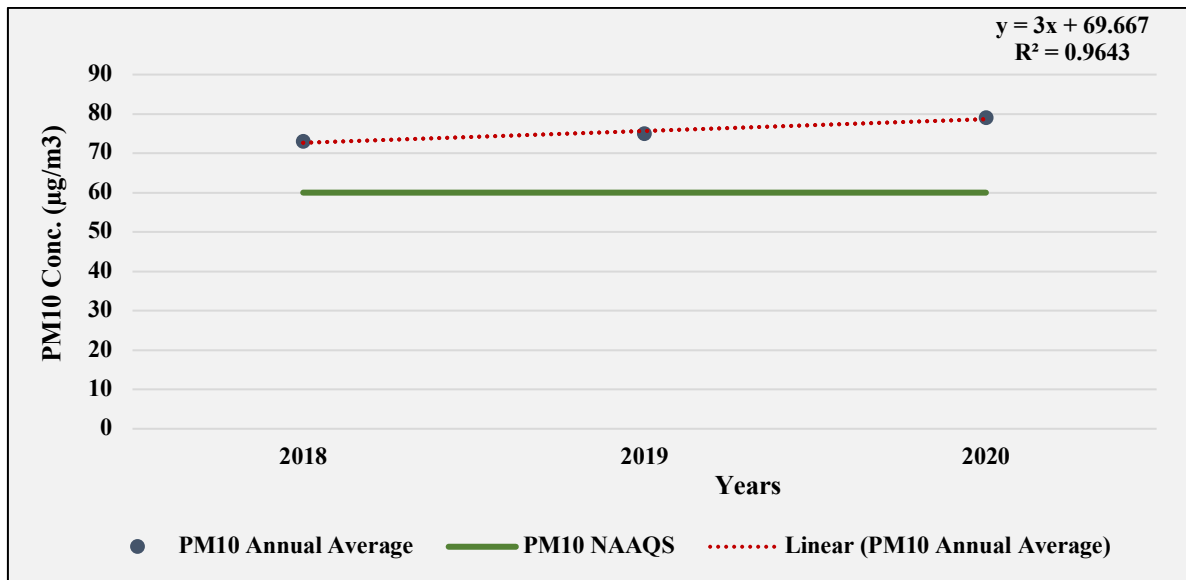


Fig. TAN35: Trend of annual mean PM_{10} ambient air concentration in Tanda TPP (Ambient)

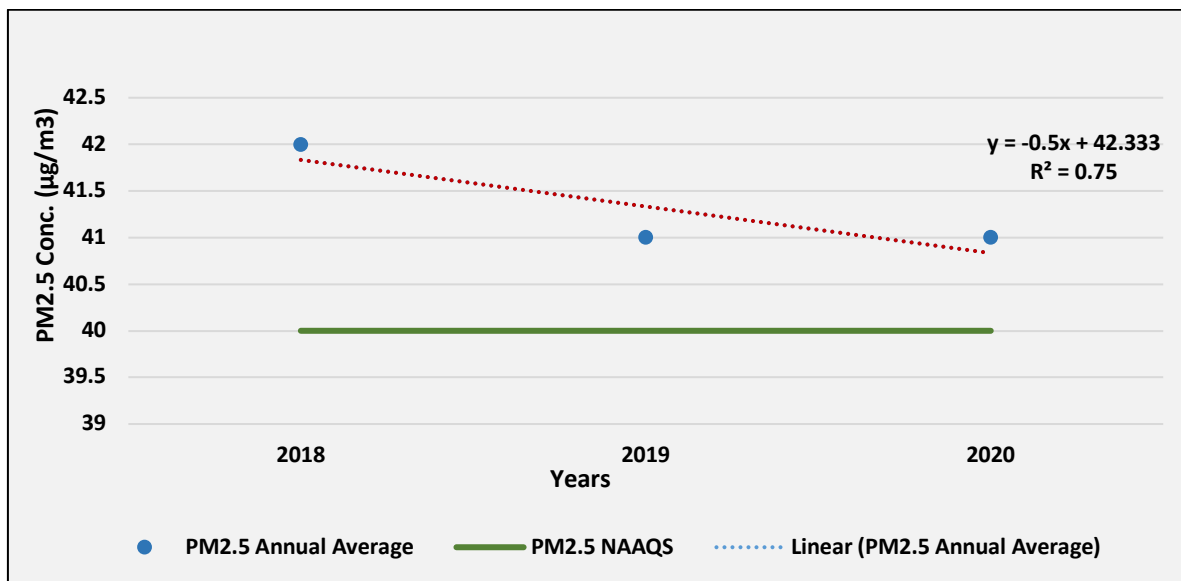


Fig. TAN36: Trend of annual mean $PM_{2.5}$ ambient air concentration in Tanda TPP (Ambient)

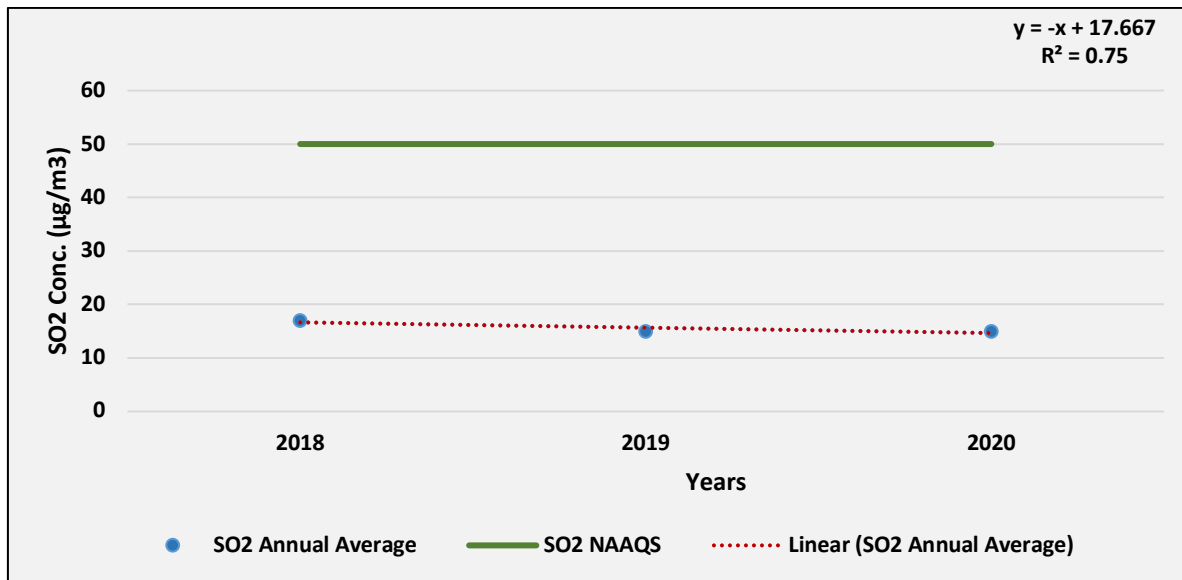


Fig. TAN37: Trend of annual mean SO₂ ambient air concentration in Tanda TPP (Ambient)

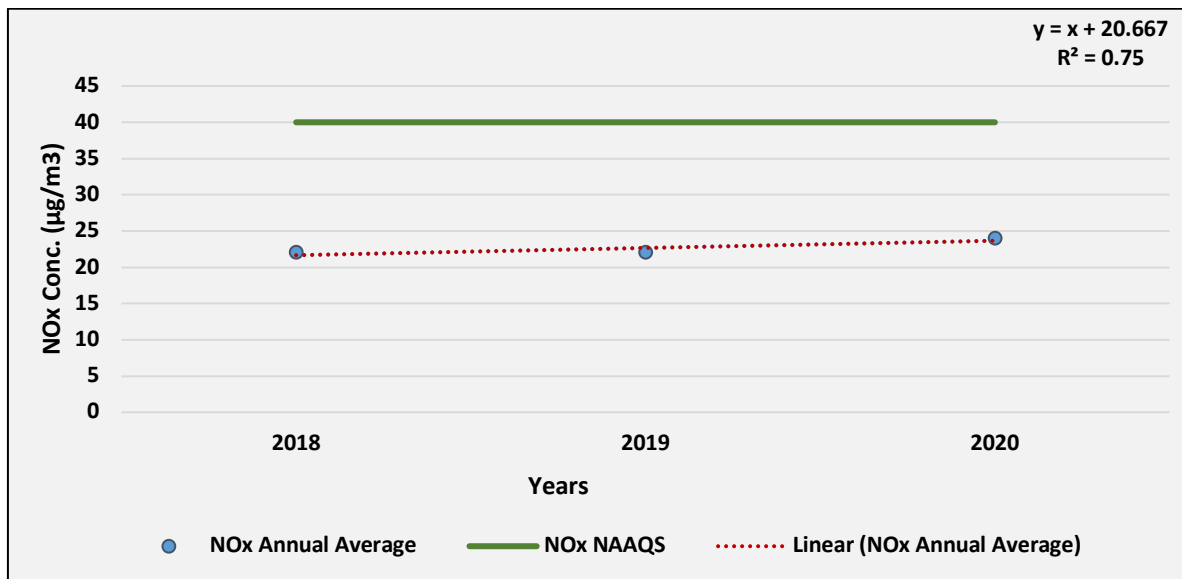


Fig. TAN38: Trend of annual mean NO_x ambient air concentration in Tanda TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, PM_{2.5} are exceeding whereas the SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that PM, SO₂ and NO_x parameter are ceding their emission limit.

VINDHYACHAL THERMAL POWER PLANT

The Vindhyachal Thermal Power Station is located in Singrauli district in the Indian state of Madhya Pradesh. One of the coal-fired power stations of NTPC, it is the largest power station in India, and the 9th largest coal-fired power station in the world, with an installed capacity of 4,760 MW.[1] The coal for the power plant is sourced from Nigahi mines, and the water is sourced from the discharge canal of Singrauli Super Thermal Power Station.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. V1 – Fig. V86) for the last three years (2018-2020) using data provided by NTPC developer for Vindhyachal Power plant, Madhya Pradesh, India.

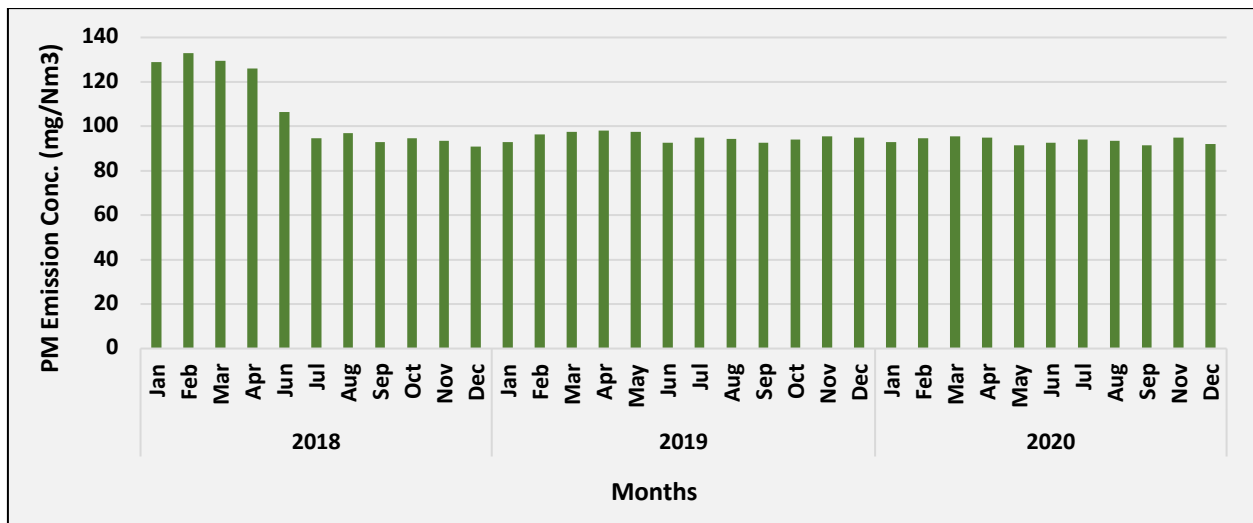


Fig. V1: Time series of monthly average PM Emission concentration in Vindhyachal TPP (Stack 1)

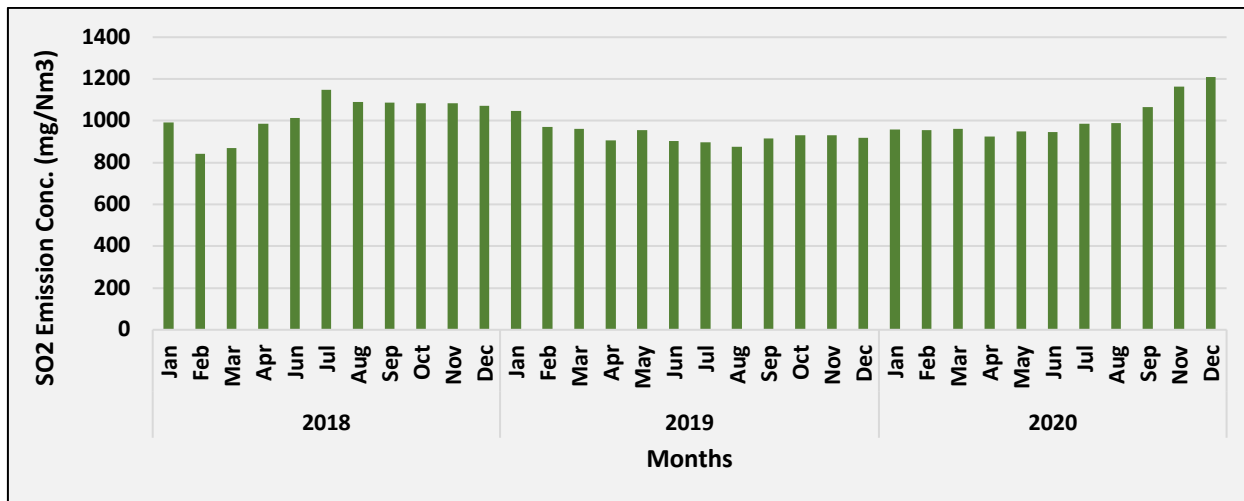


Fig. V2: Time series of monthly average SO₂ Emission concentration in Vindhyachal TPP (Stack 1)

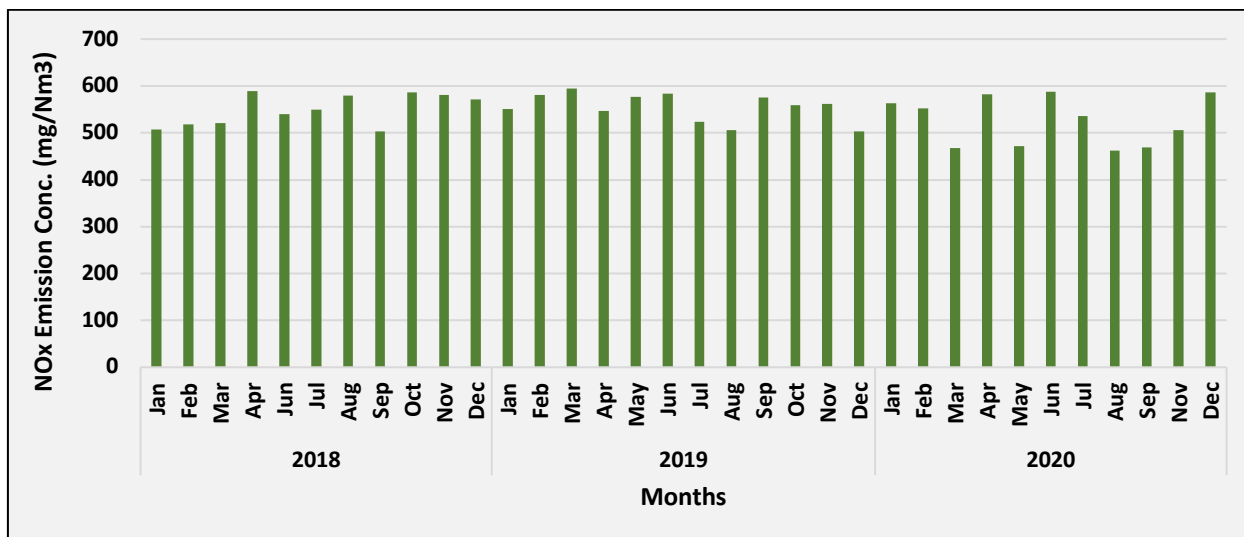


Fig. V3: Time series of monthly average NO_x Emission concentration in Vindhyachal TPP (Stack 1)

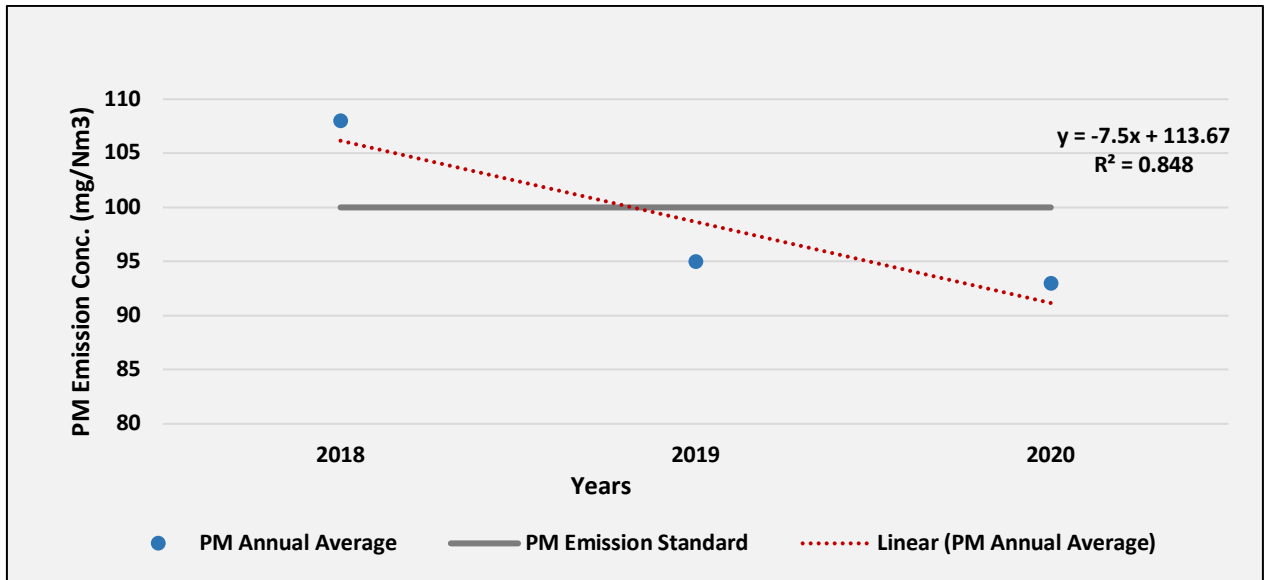


Fig. V4: Trend of annual mean PM Emission air concentration in Vindhyachal TPP (Stack 1)

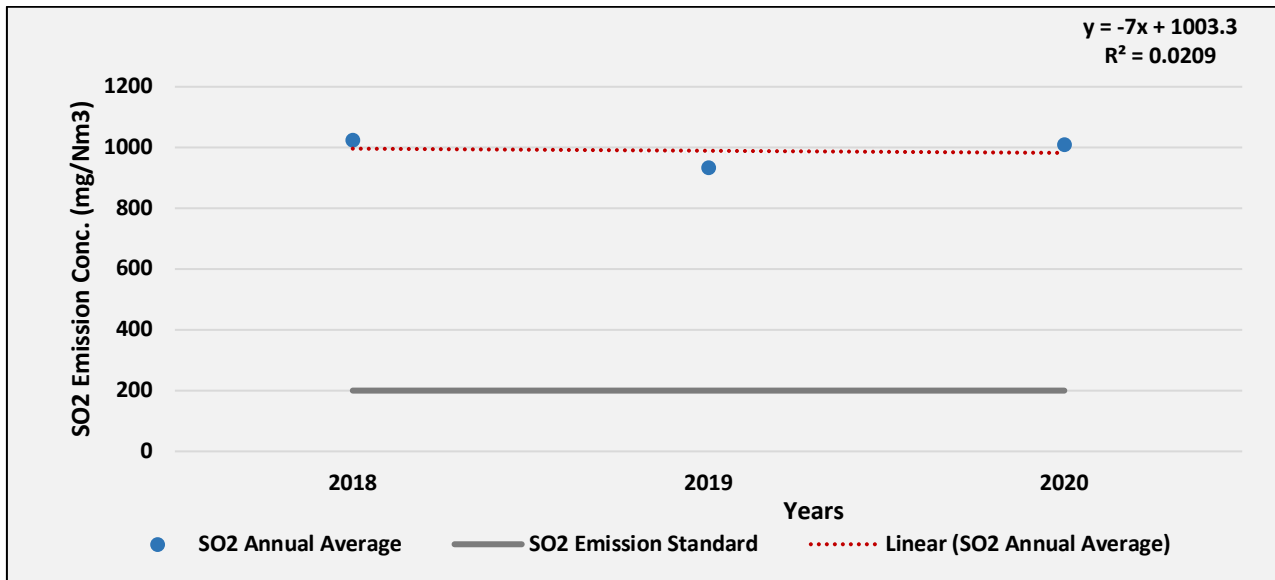


Fig. V5: Trend of annual mean SO₂ Emission air concentration in Vindhyachal TPP (Stack 1)

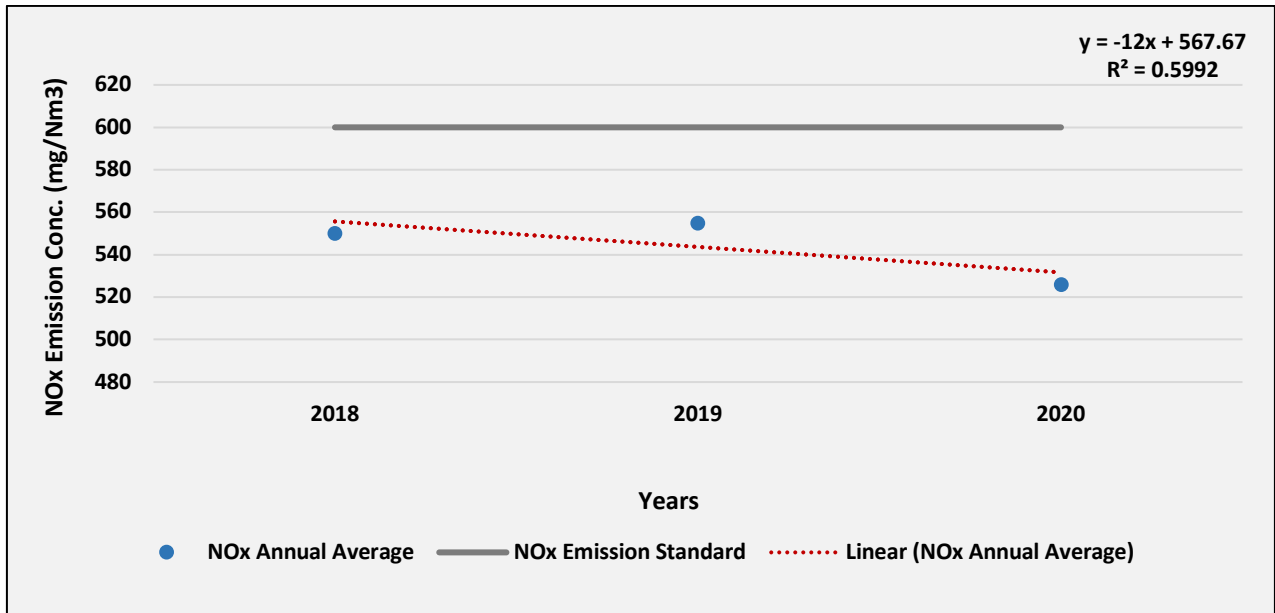


Fig. V6: Trend of annual mean NO_x Emission air concentration in Vindhyachal TPP (Stack 1)

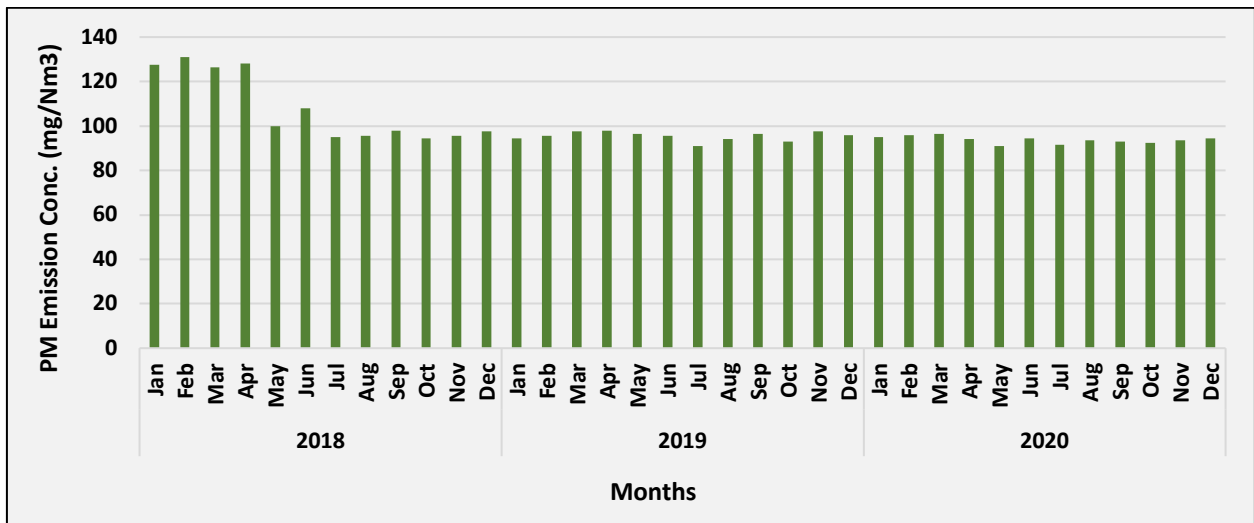


Fig. V7: Time series of monthly average PM Emission concentration in Vindhyachal TPP (Stack 2)

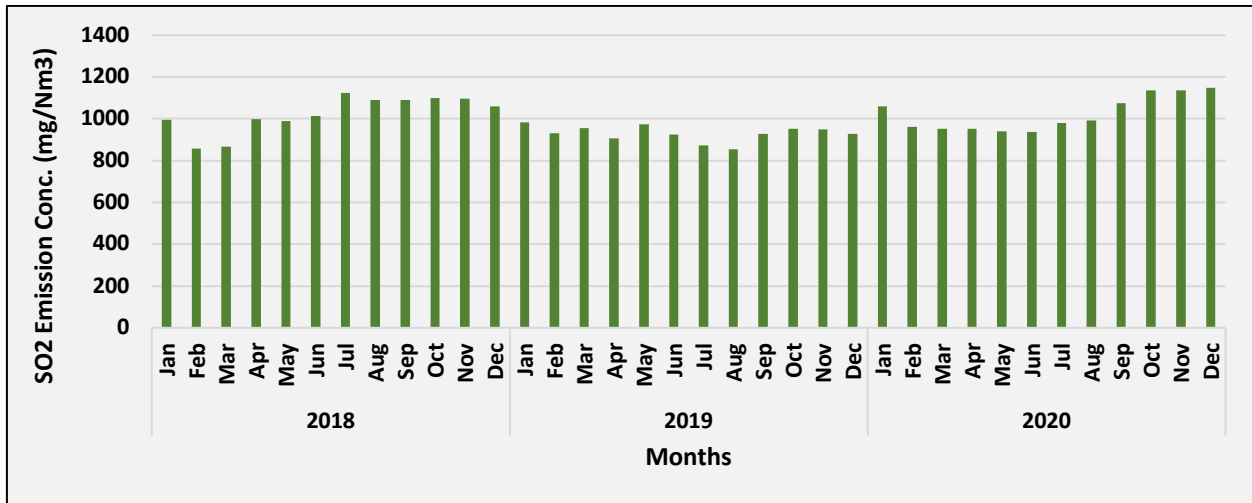


Fig. V8: Time series of monthly average SO₂ Emission concentration in Vindhyachal TPP (Stack 2)

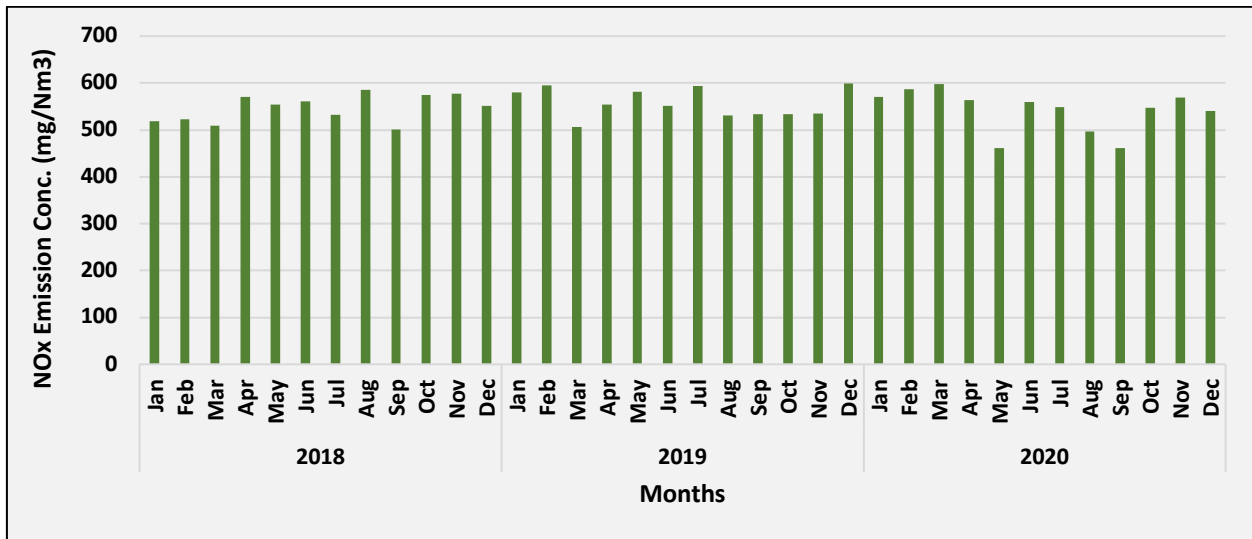


Fig. V9: Time series of monthly average NO_x Emission concentration in Vindhyachal TPP (Stack 2)

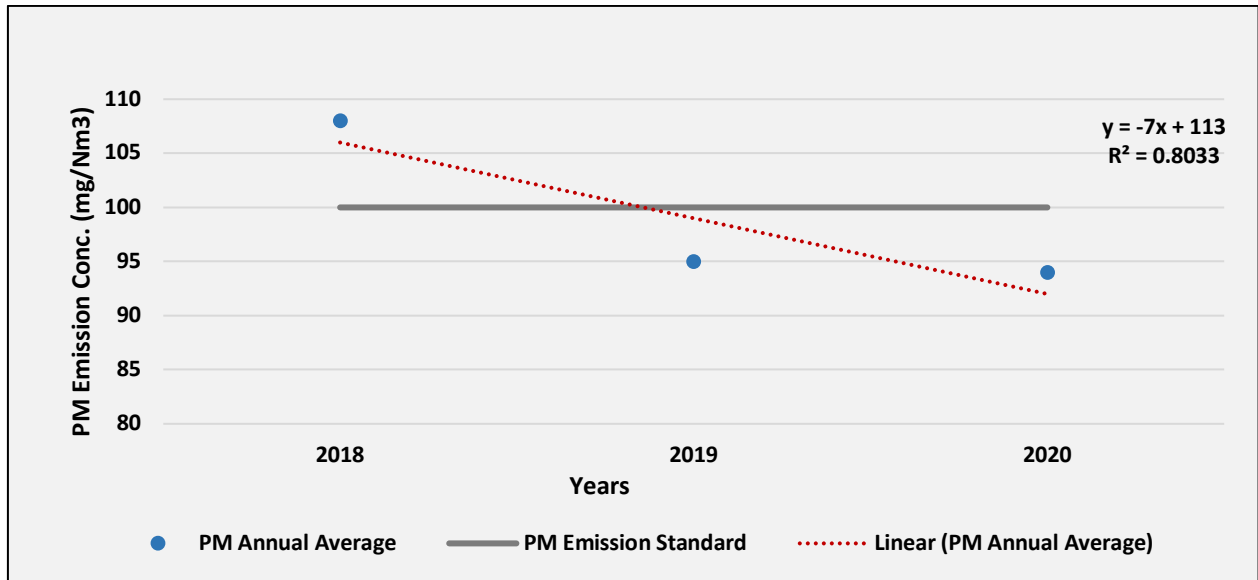


Fig. V10: Trend of annual mean PM Emission air concentration in Vindhyachal TPP (Stack 2)

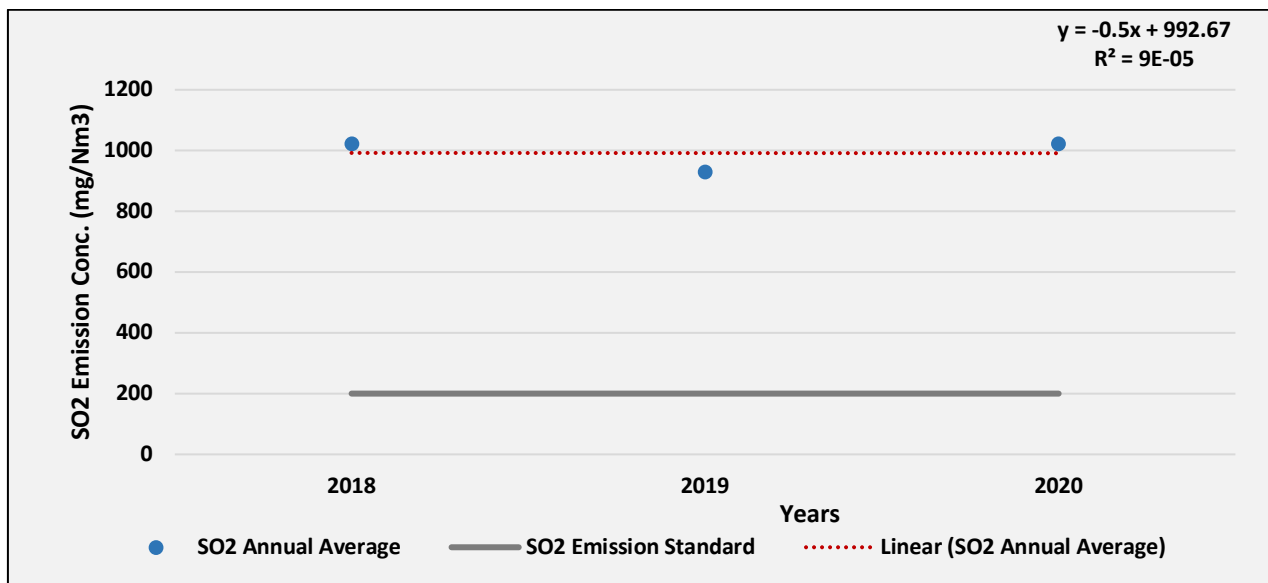


Fig. V11: Trend of annual mean SO₂ Emission air concentration in Vindhyachal TPP (Stack 2)

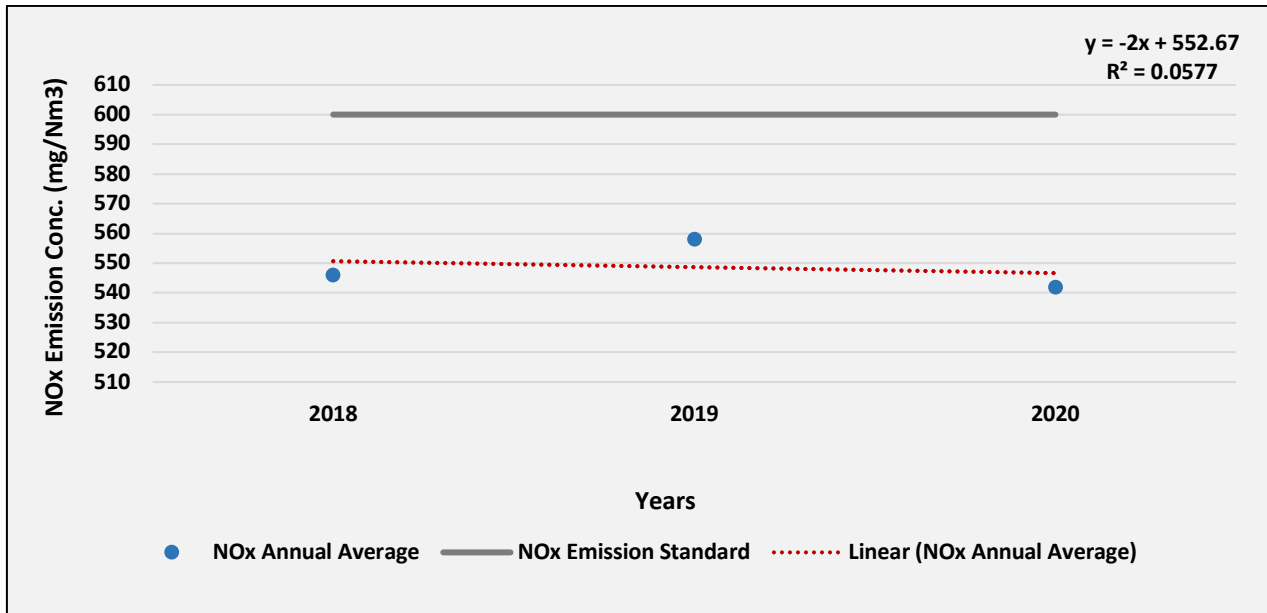


Fig. V12: Trend of annual mean NO_x Emission air concentration in Vindhyachal TPP (Stack 2)

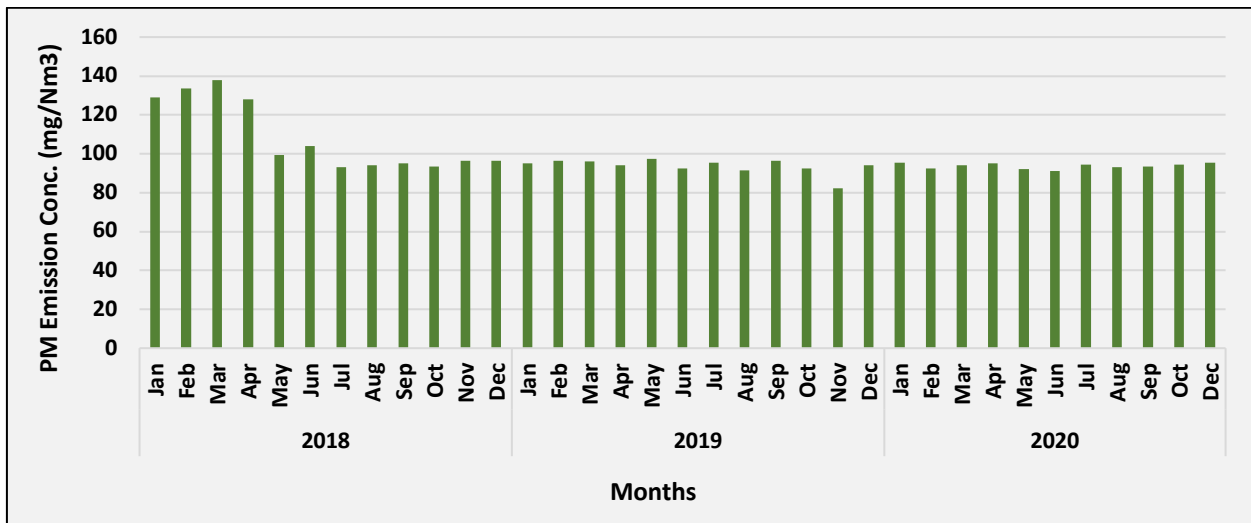


Fig. V13: Time series of monthly average PM Emission concentration in Vindhyachal TPP (Stack 3)

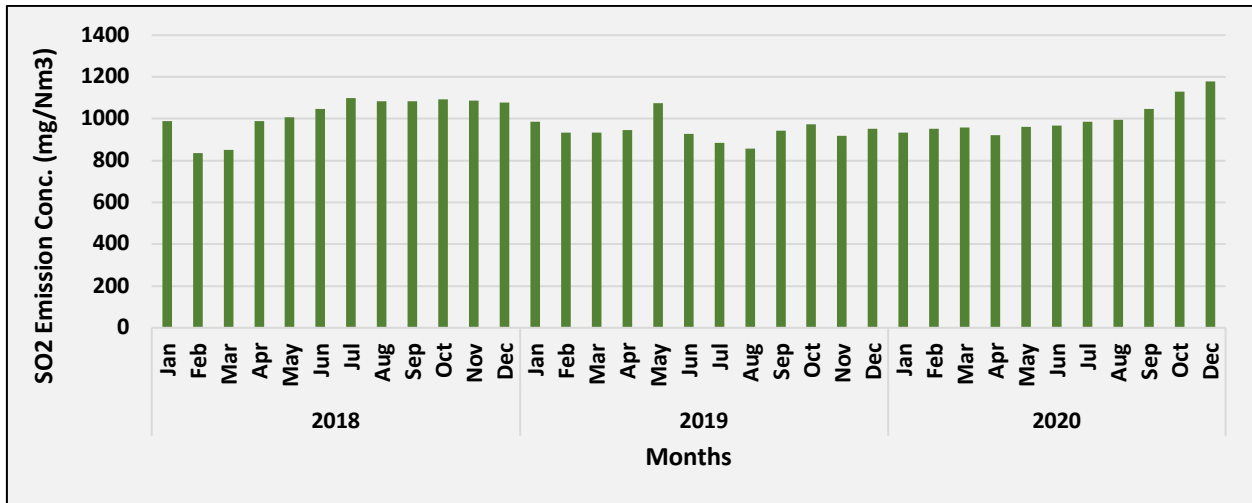


Fig. V14: Time series of monthly average SO₂ Emission concentration in Vindhyachal TPP (Stack 3)

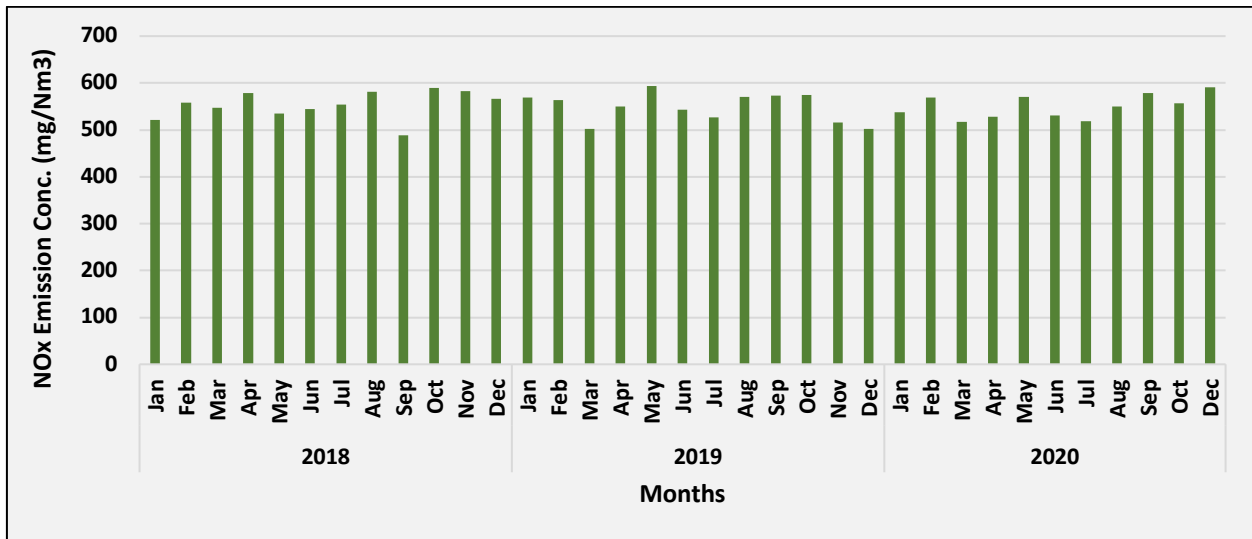


Fig. V15: Time series of monthly average NO_x Emission concentration in Vindhyachal TPP (Stack 3)

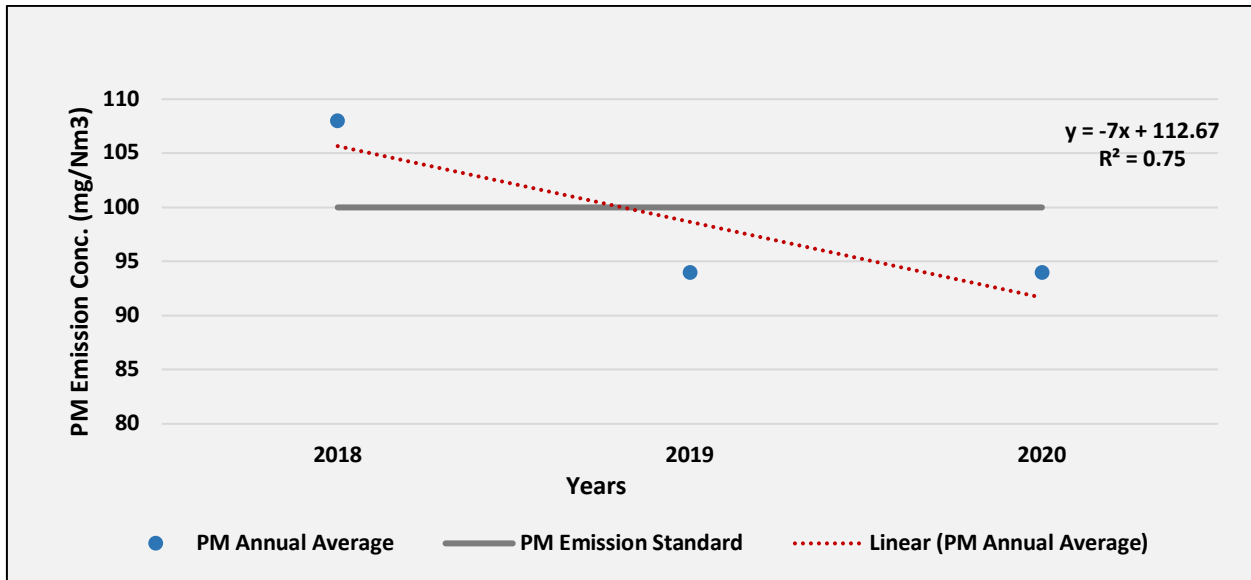


Fig. V16: Trend of annual mean PM Emission air concentration in Vindhyachal TPP (Stack 3)

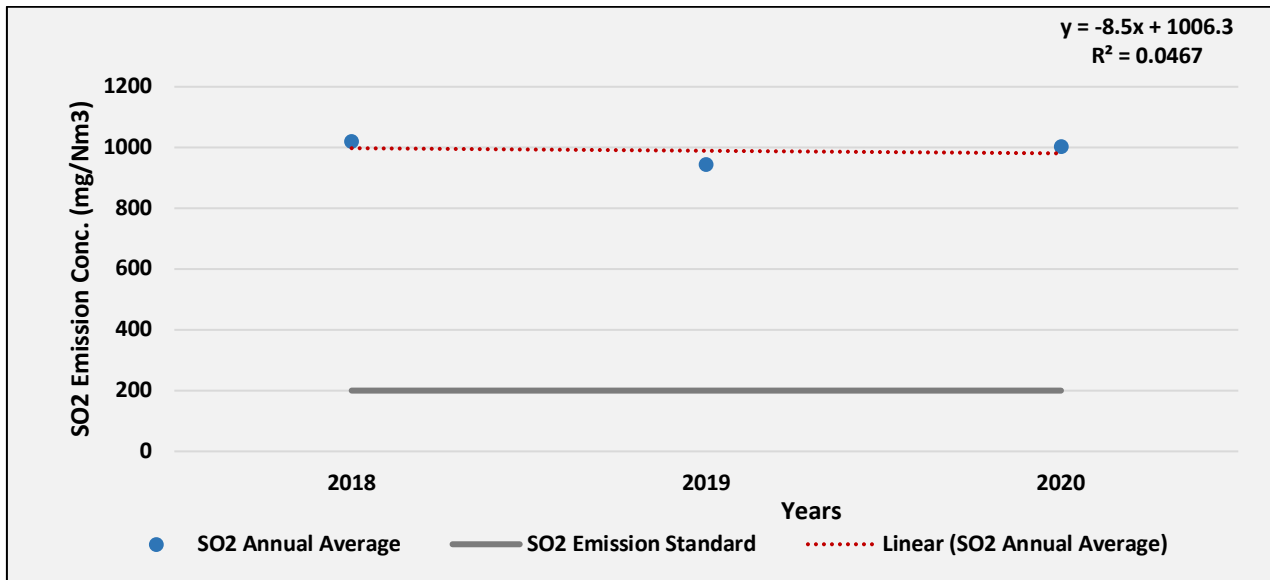


Fig. V17: Trend of annual mean SO₂ Emission air concentration in Vindhyachal TPP (Stack 3)

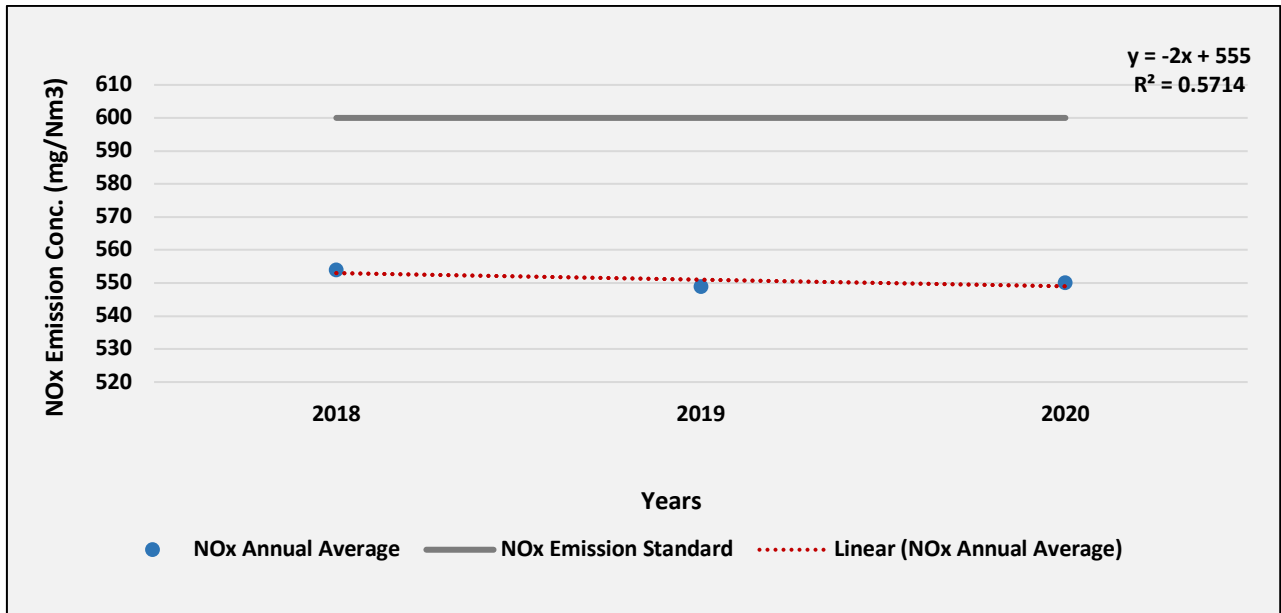


Fig. V18: Trend of annual mean NO_x Emission air concentration in Vindhyachal TPP (Stack 3)

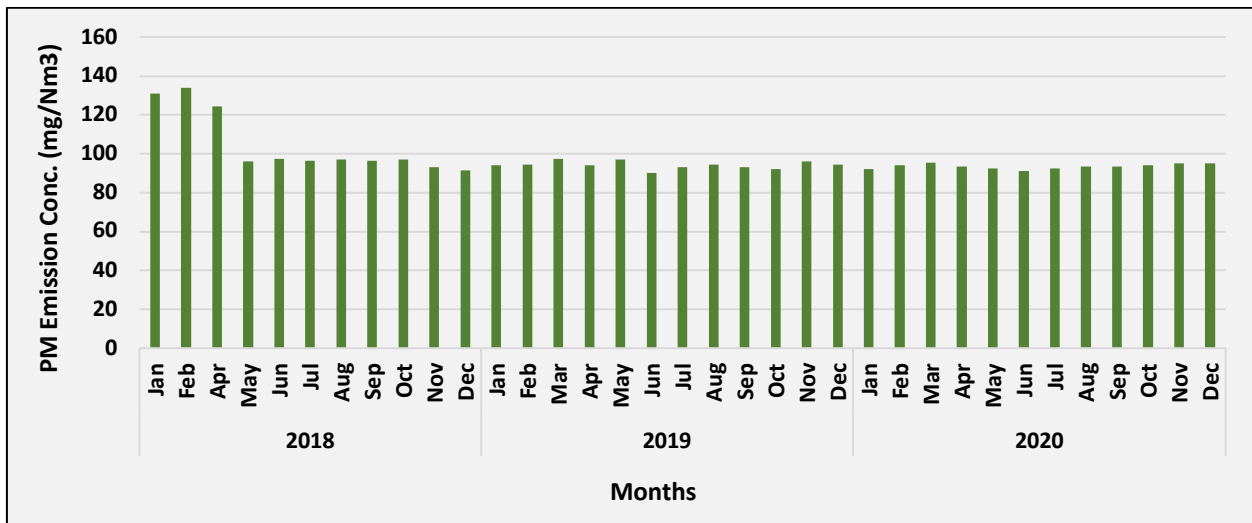


Fig. V19: Time series of monthly average PM Emission concentration in Vindhyachal TPP (Stack 4)

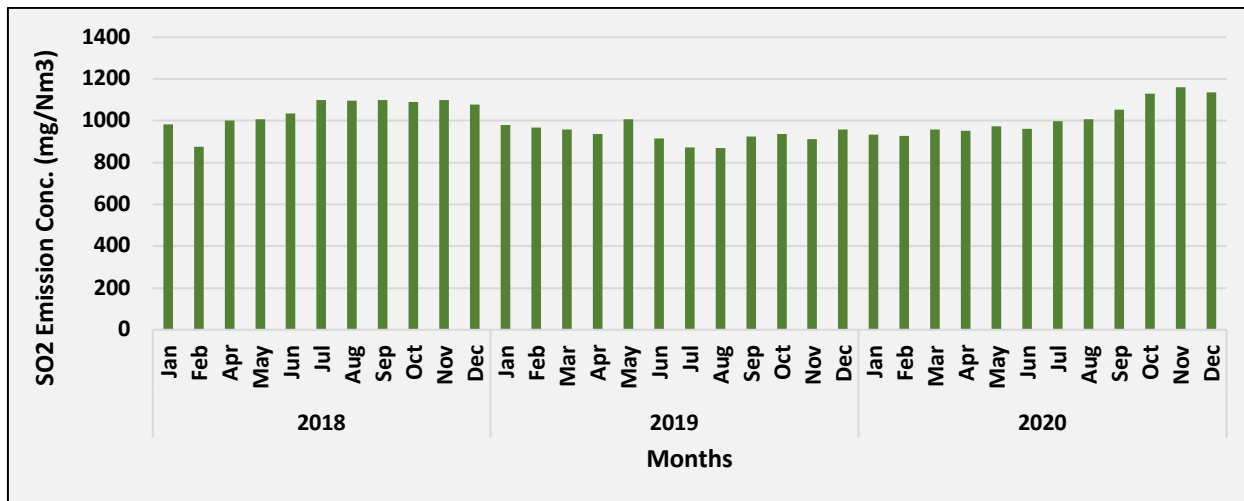


Fig. V20: Time series of monthly average SO₂ Emission concentration in Vindhyachal TPP (Stack 4)

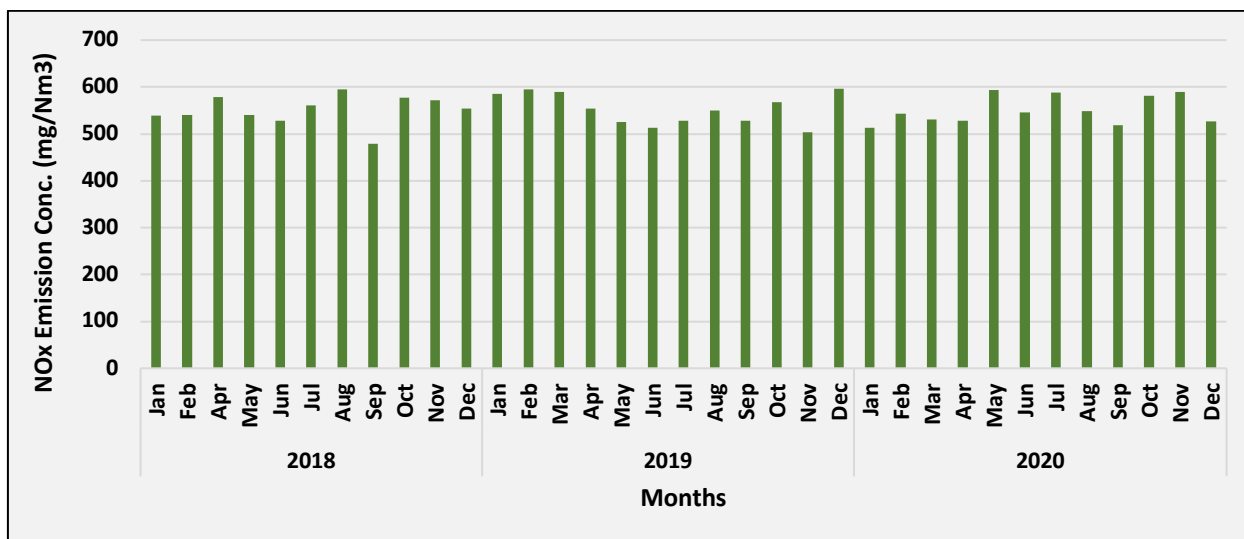


Fig. V21: Time series of monthly average NO_x Emission concentration in Vindhyachal TPP (Stack 4)

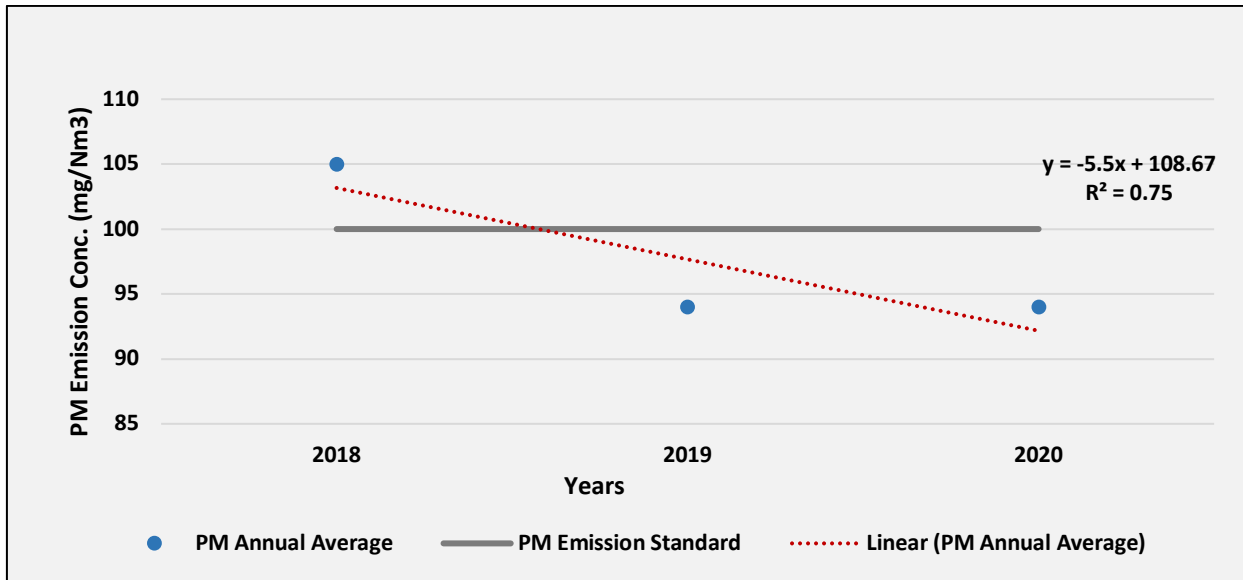


Fig. V22: Trend of annual mean PM Emission air concentration in Vindhyachal TPP (Stack 4)

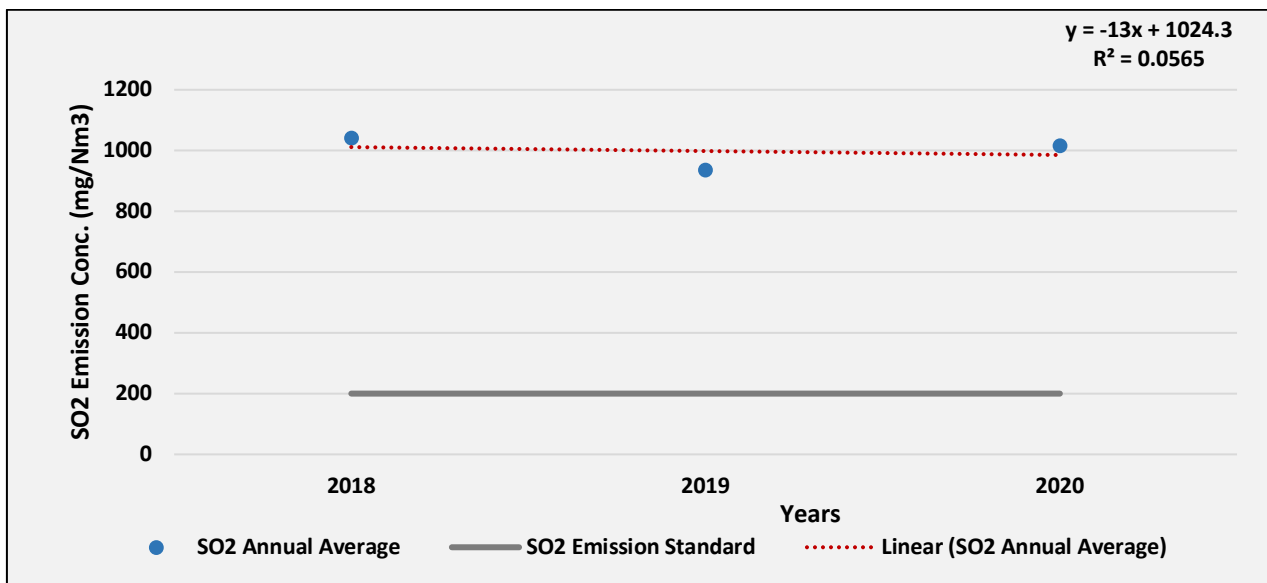


Fig. V23: Trend of annual mean SO₂ Emission air concentration in Vindhyachal TPP (Stack 4)

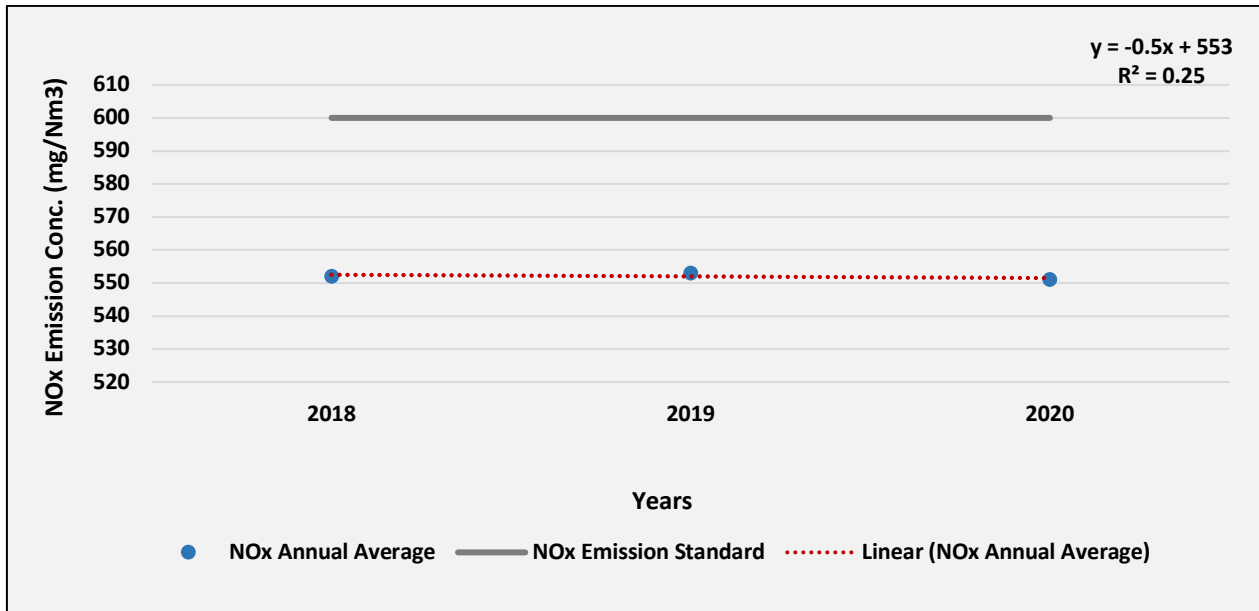


Fig. V24: Trend of annual mean NO_x Emission air concentration in Vindhyachal TPP (Stack 4)

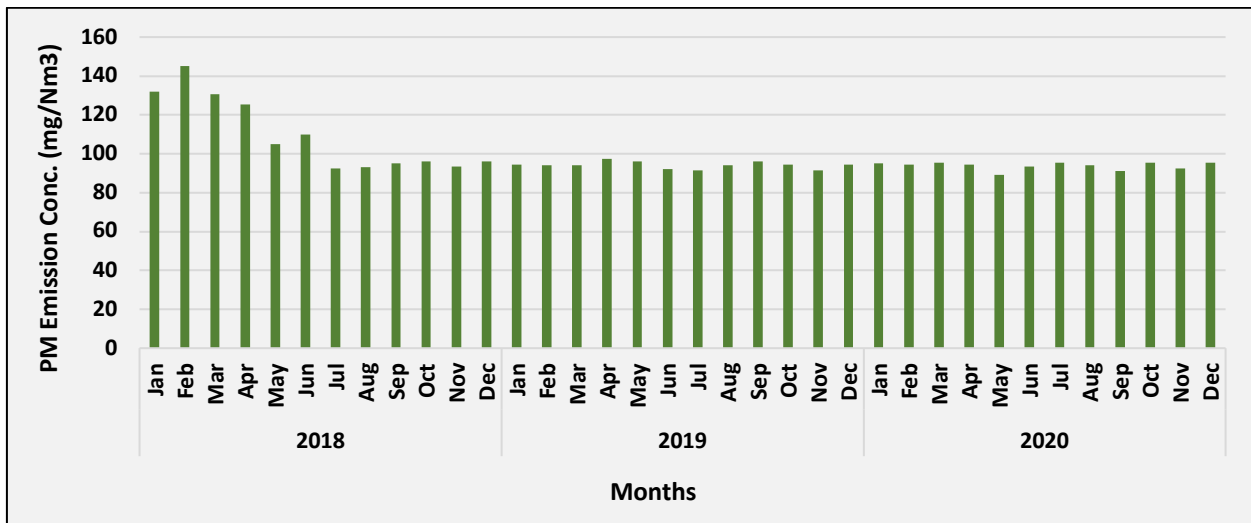


Fig. V25: Time series of monthly average PM Emission concentration in Vindhyachal TPP (Stack 5)

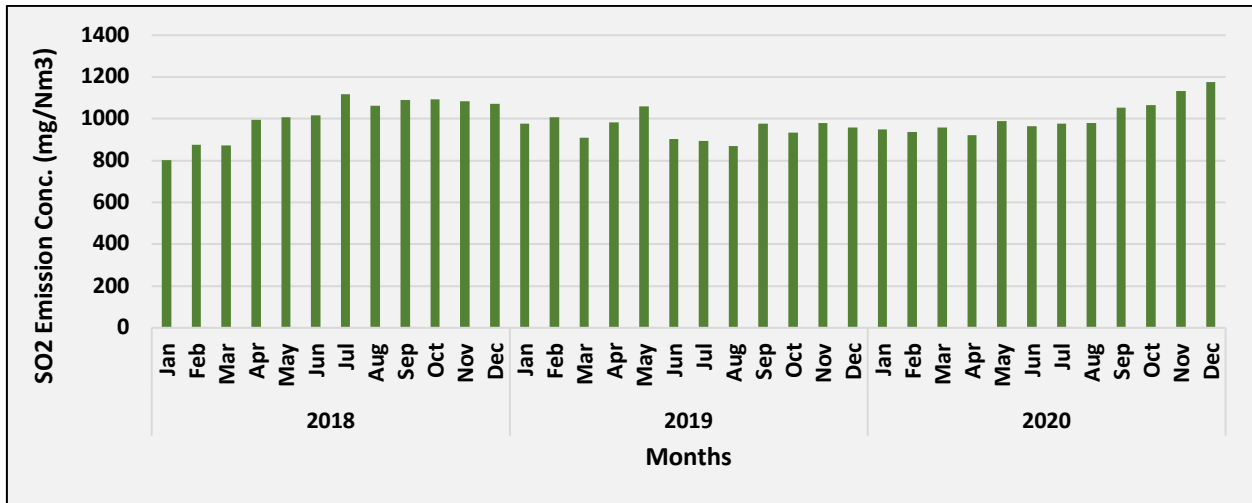


Fig. V26: Time series of monthly average SO₂ Emission concentration in Vindhyachal TPP (Stack 5)

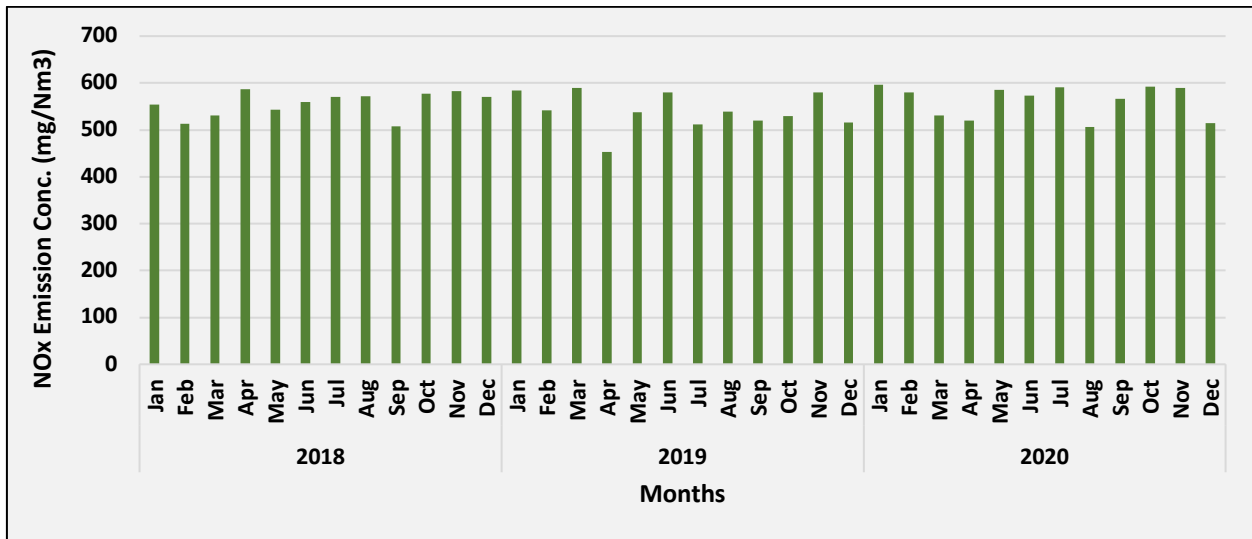


Fig. V27: Time series of monthly average NO_x Emission concentration in Vindhyachal TPP (Stack 5)

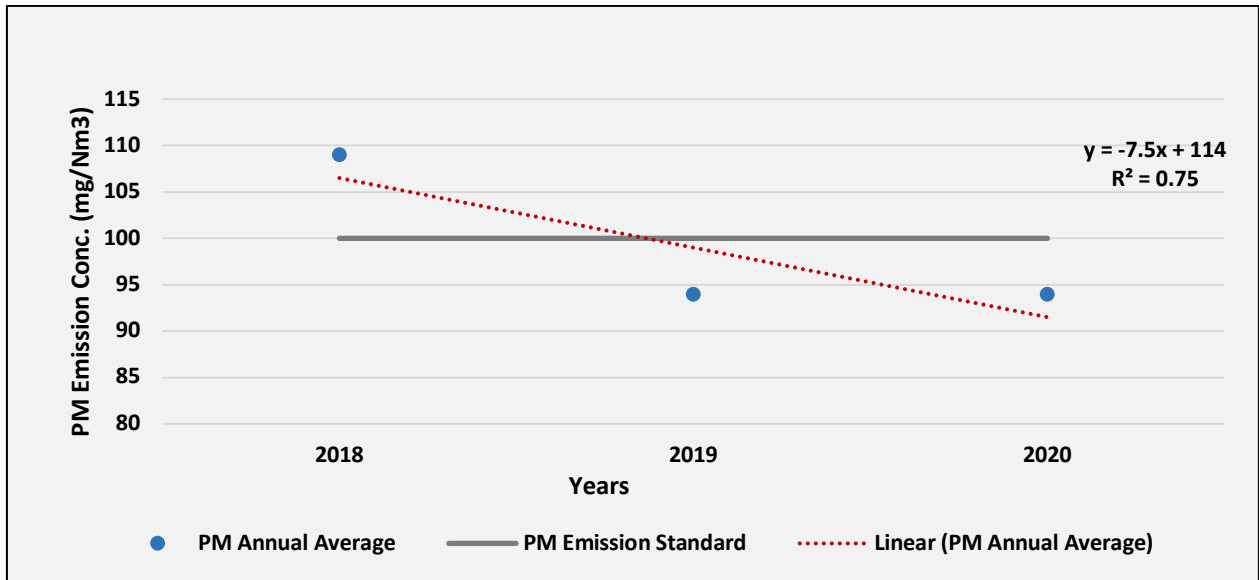


Fig. V28: Trend of annual mean PM Emission air concentration in Vindhyachal TPP (Stack 5)

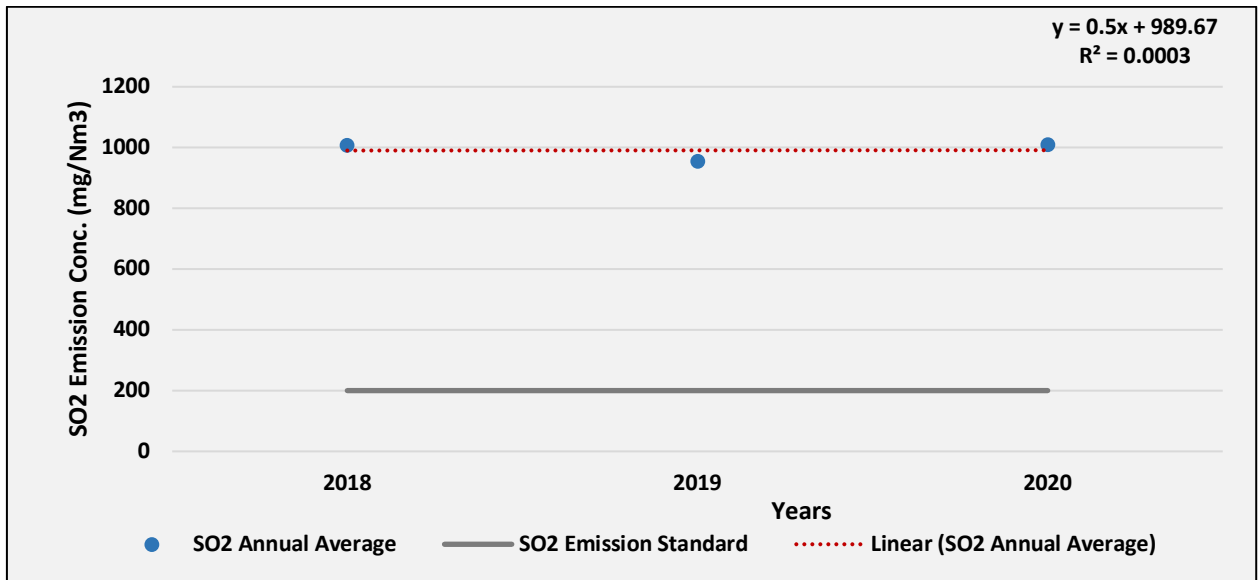


Fig. V29: Trend of annual mean SO₂ Emission air concentration in Vindhyachal TPP (Stack 5)

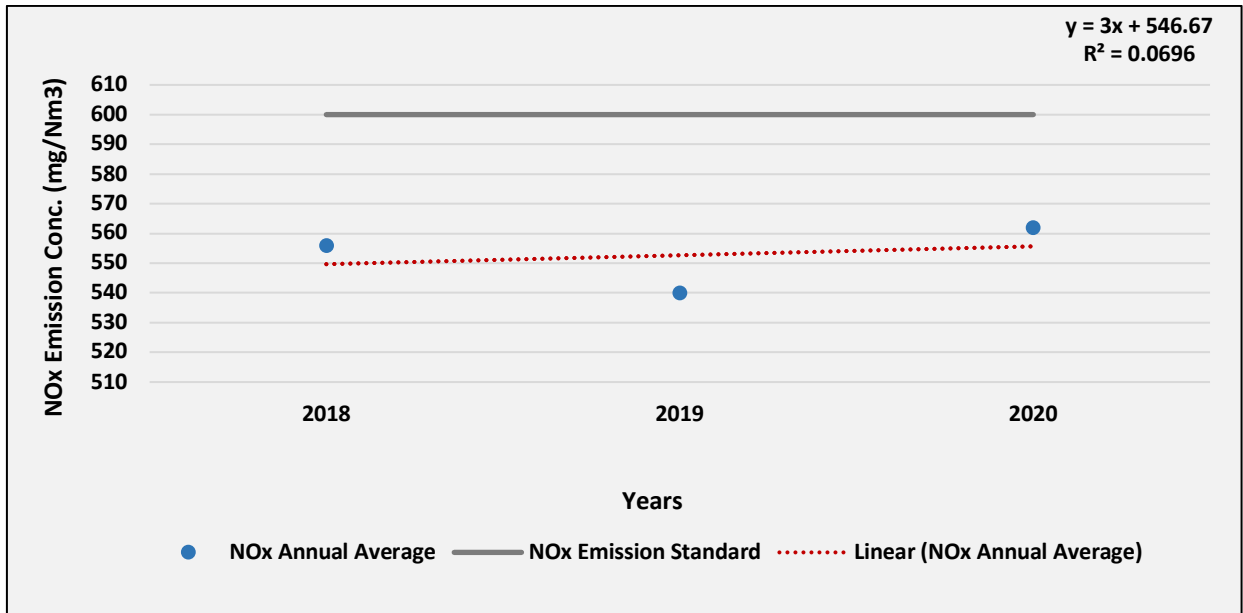


Fig. V30: Trend of annual mean NO_x Emission air concentration in Vindhyachal TPP (Stack 5)

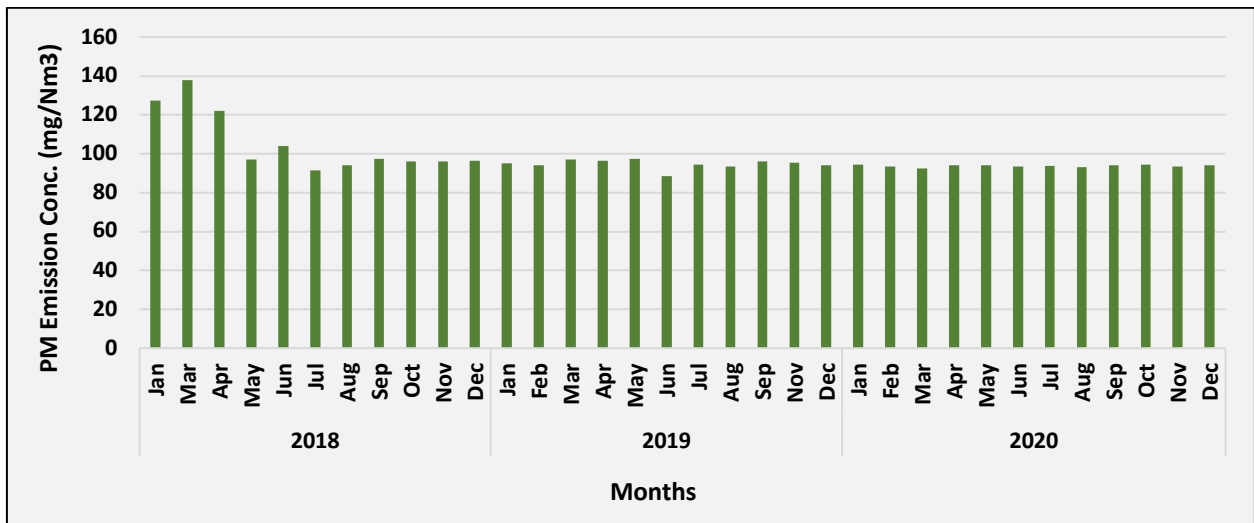


Fig. V31: Time series of monthly average PM Emission concentration in Vindhyachal TPP (Stack 6)

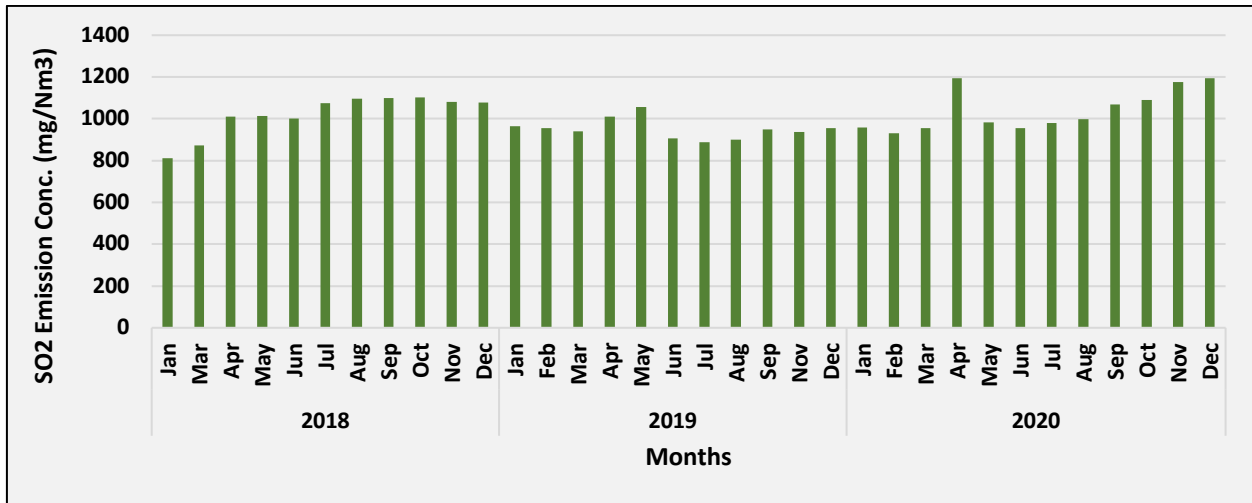


Fig. V32: Time series of monthly average SO₂ Emission concentration in Vindhyachal TPP (Stack 6)

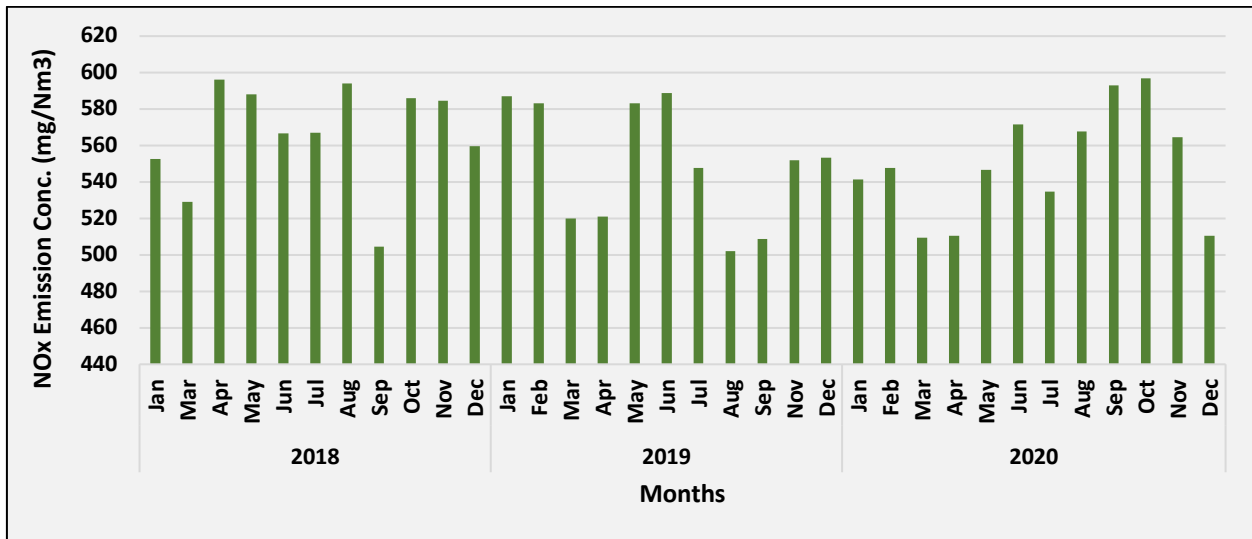


Fig. V33: Time series of monthly average NO_x Emission concentration in Vindhyachal TPP (Stack 6)

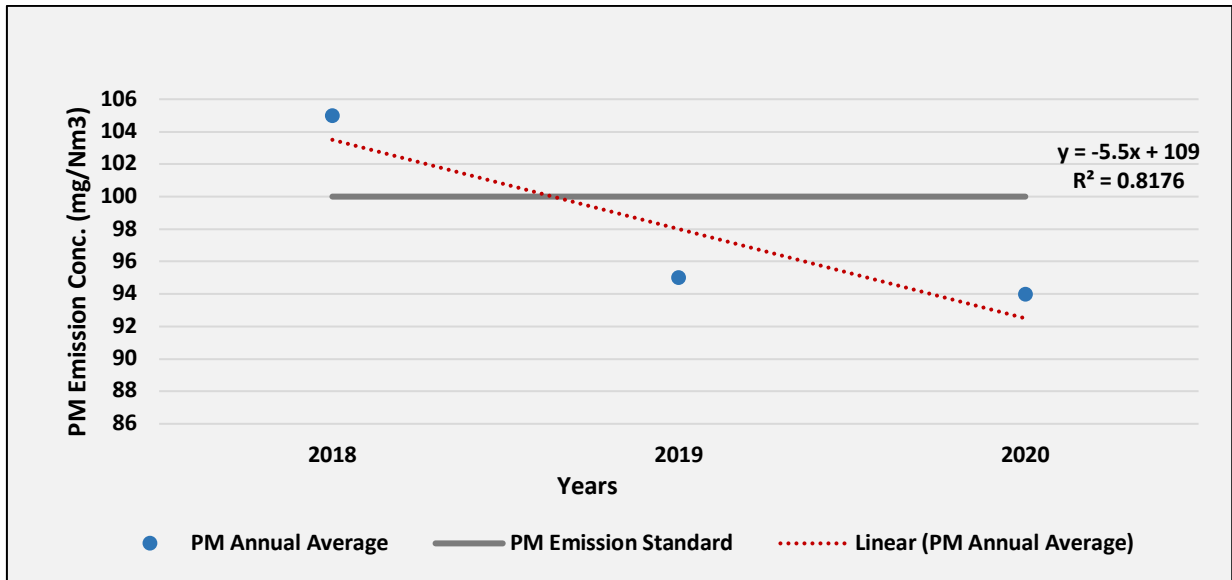


Fig. V34: Trend of annual mean PM Emission air concentration in Vindhyachal TPP (Stack 6)

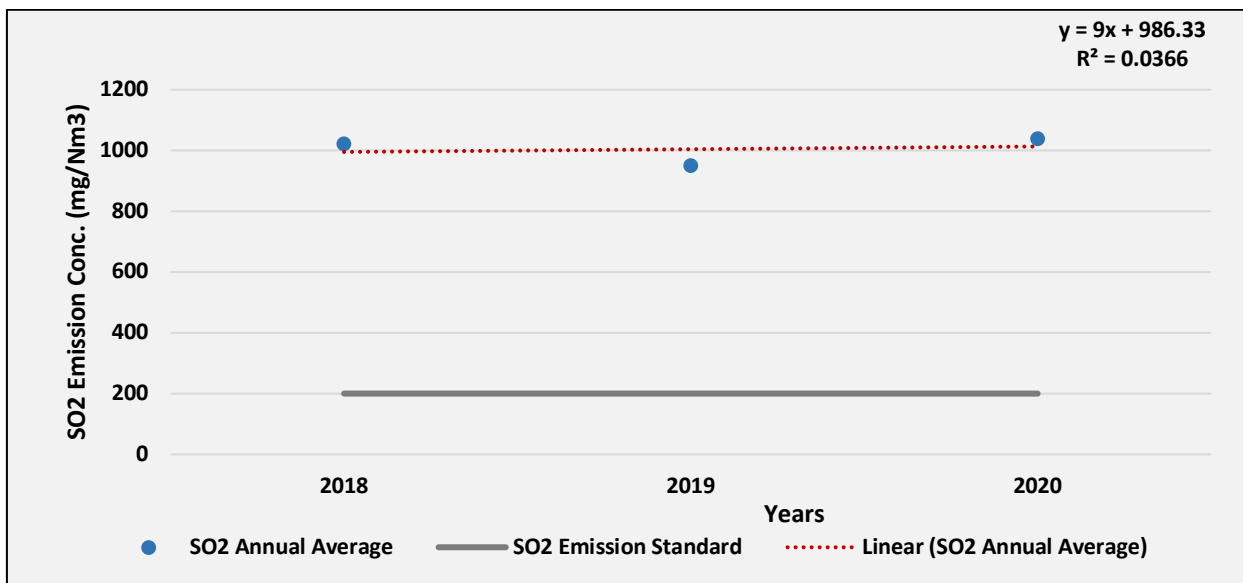


Fig. V35: Trend of annual mean SO₂ Emission air concentration in Vindhyachal TPP (Stack 6)

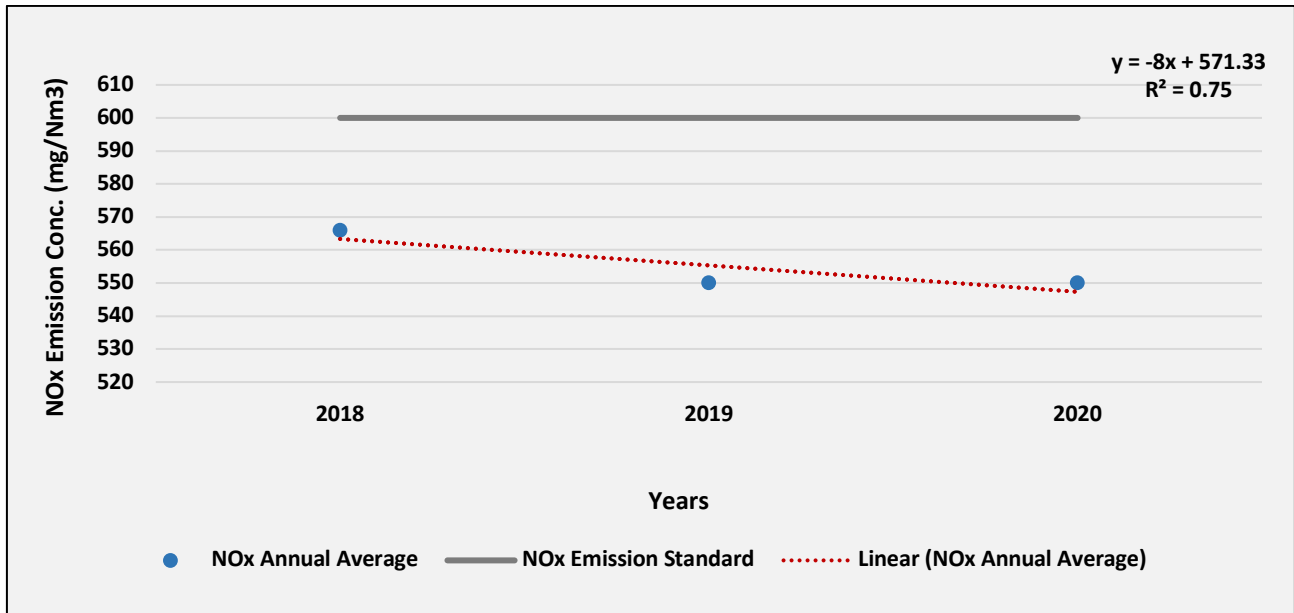


Fig. V36: Trend of annual mean NO_x Emission air concentration in Vindhyachal TPP (Stack 6)

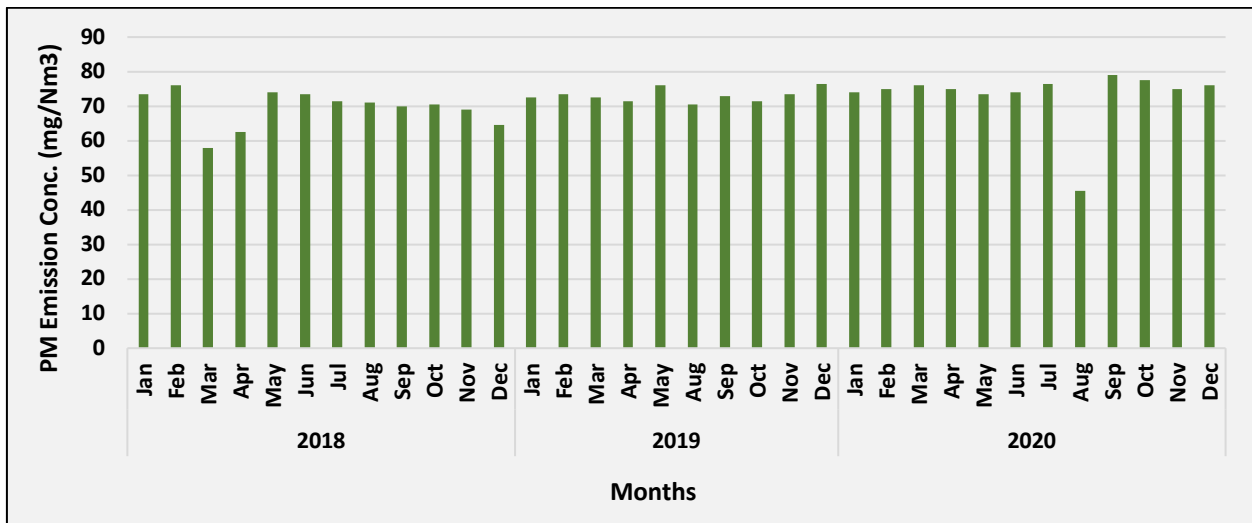


Fig. V37: Time series of monthly average PM Emission concentration in Vindhyachal TPP (Stack 7)

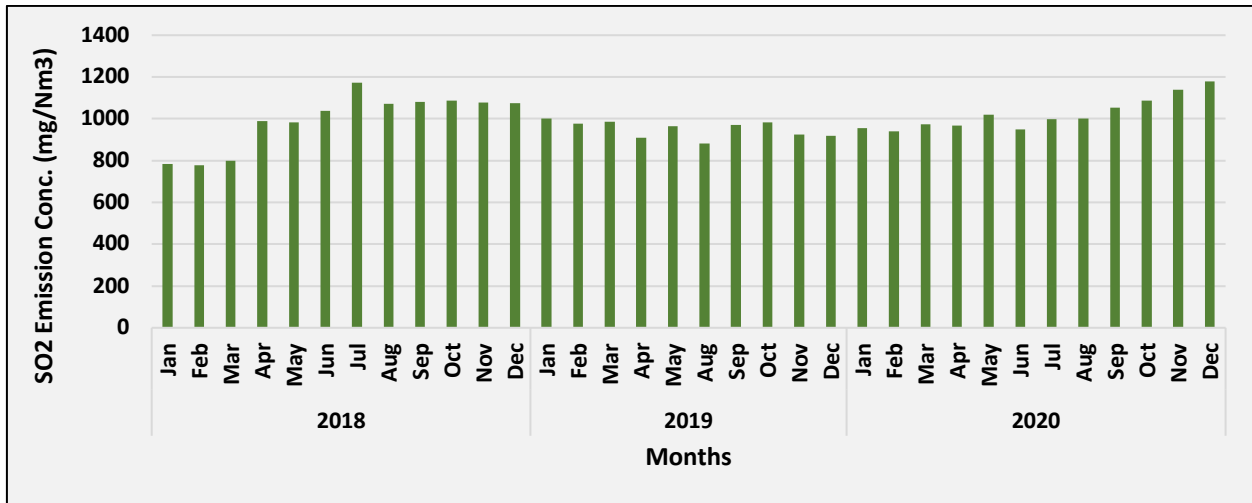


Fig. V38: Time series of monthly average SO₂ Emission concentration in Vindhyachal TPP (Stack 7)

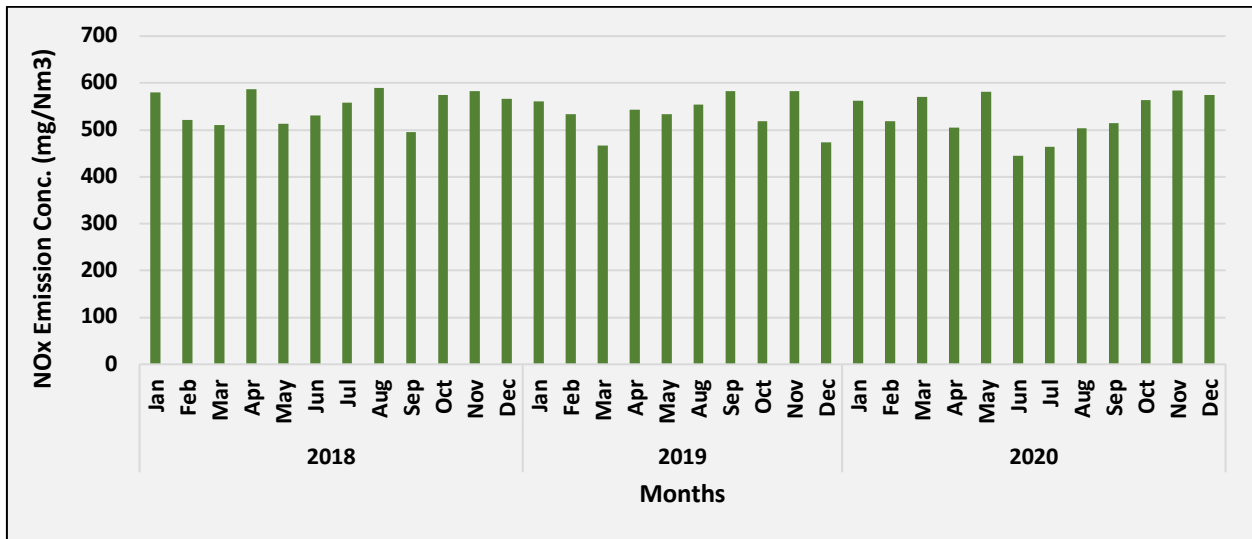


Fig. V39: Time series of monthly average NO_x Emission concentration in Vindhyachal TPP (Stack 7)

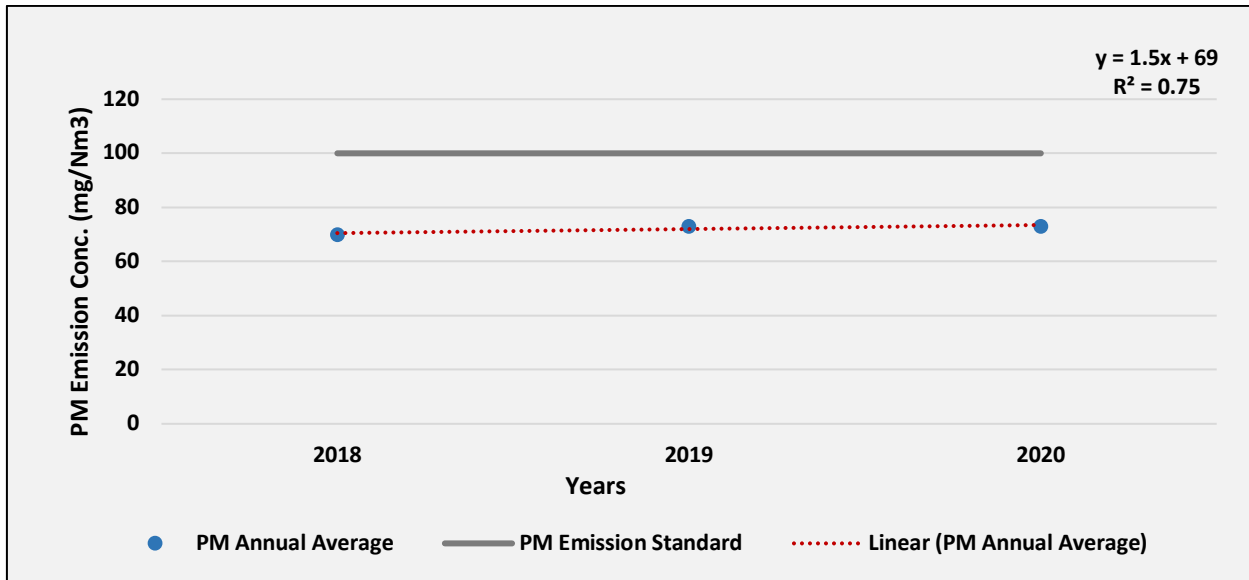


Fig. V40: Trend of annual mean PM Emission air concentration in Vindhyachal TPP (Stack 7)

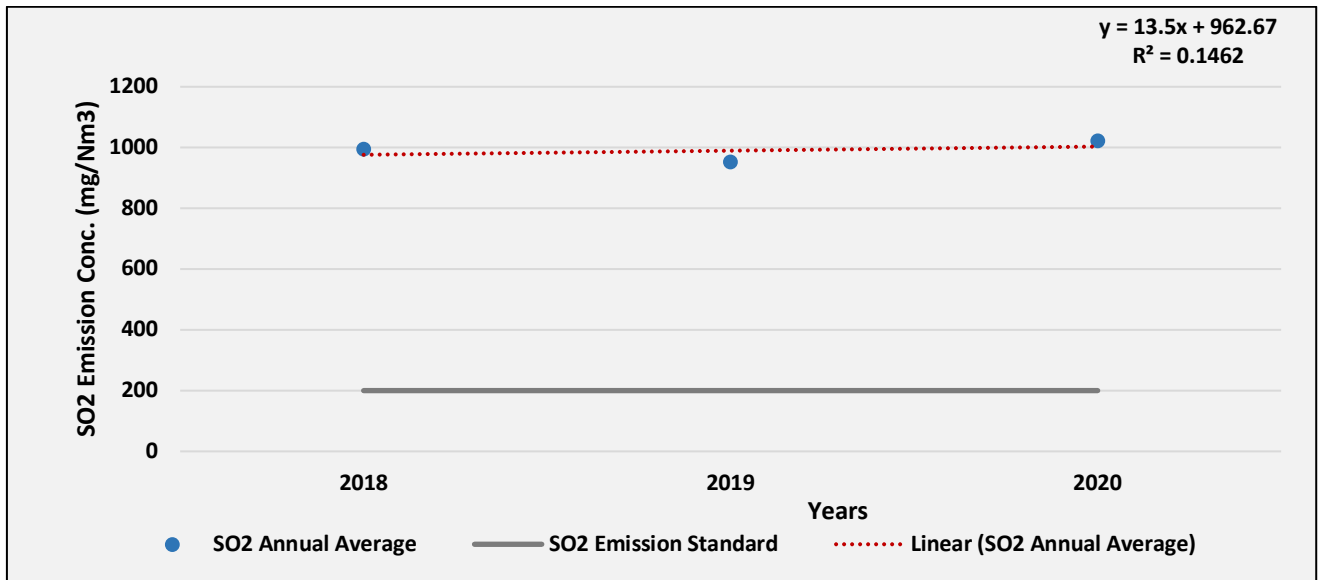


Fig. V41: Trend of annual mean SO₂ Emission air concentration in Vindhyachal TPP (Stack 7)

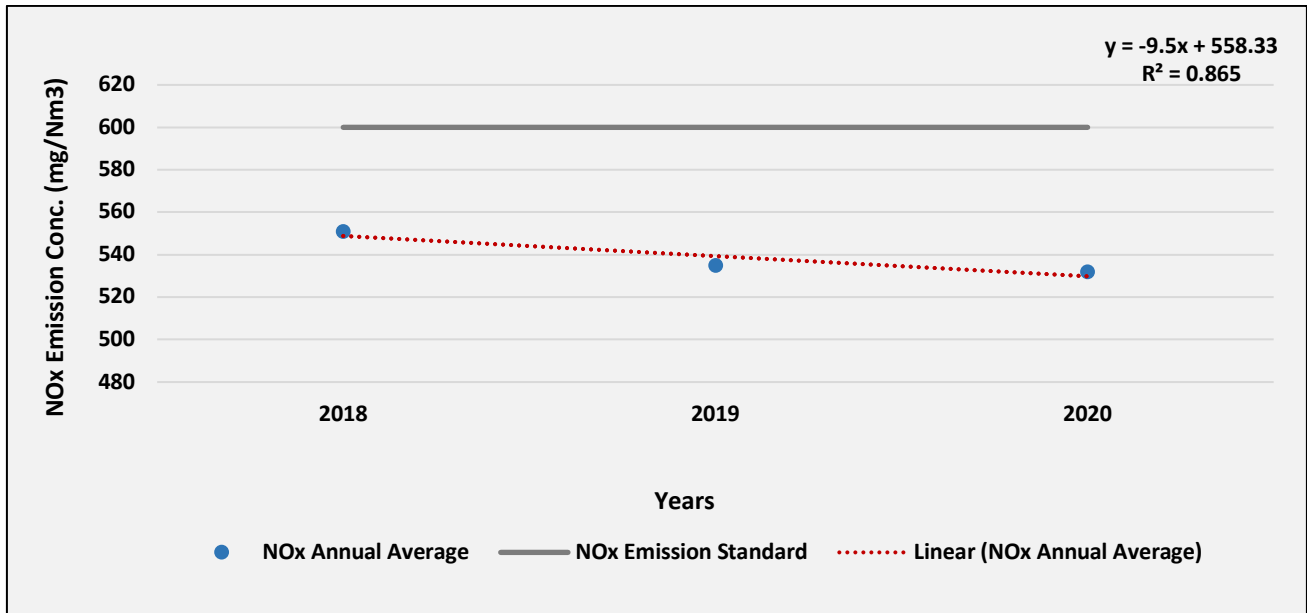


Fig. V42: Trend of annual mean NO_x Emission air concentration in Vindhyachal TPP (Stack 7)

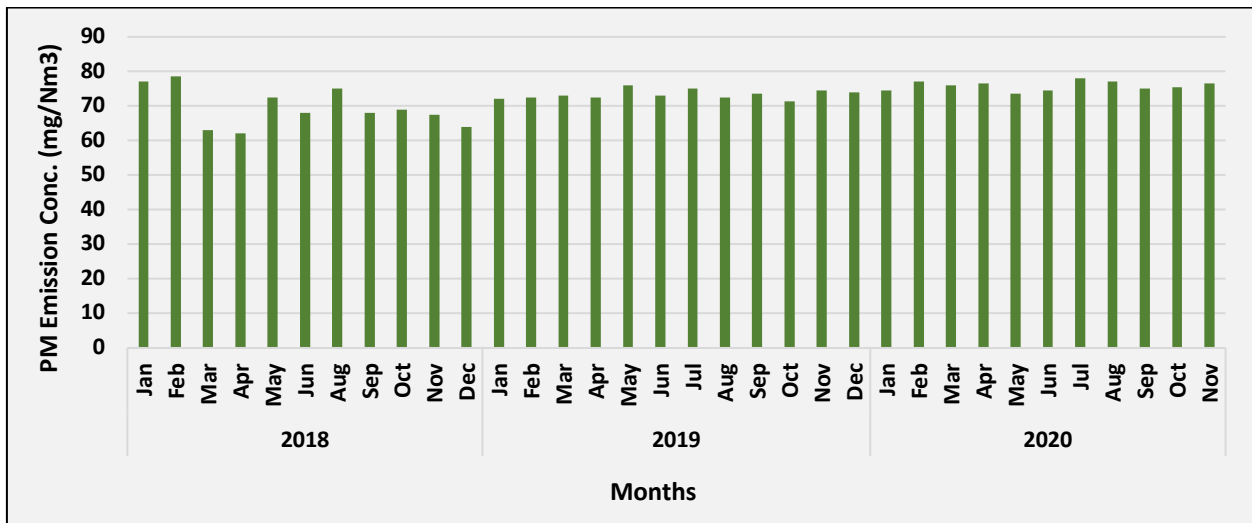


Fig. V43: Time series of monthly average PM Emission concentration in Vindhyachal TPP (Stack 8)

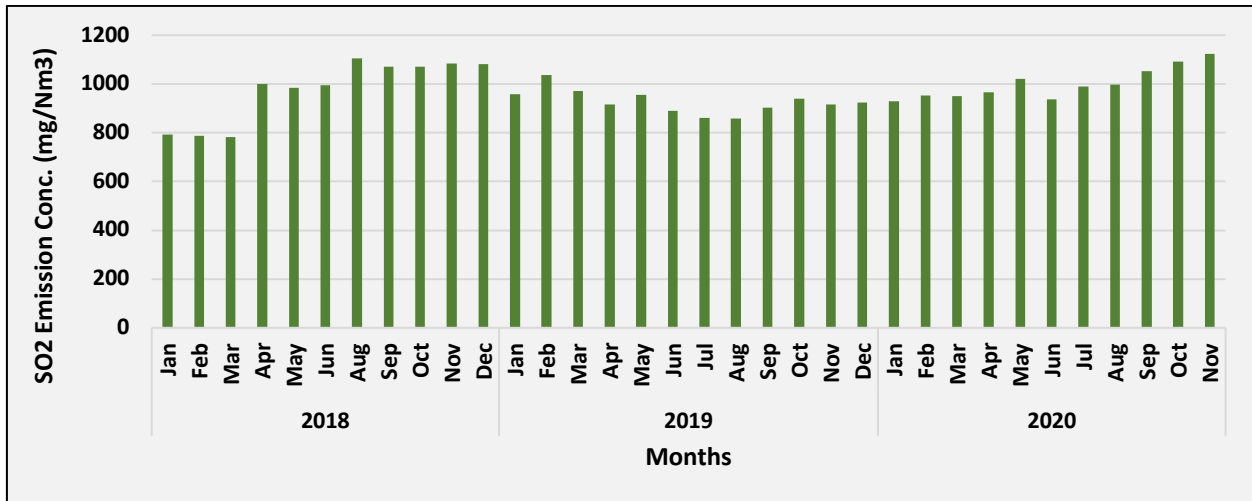


Fig. V44: Time series of monthly average SO₂ Emission concentration in Vindhyachal TPP (Stack 8)

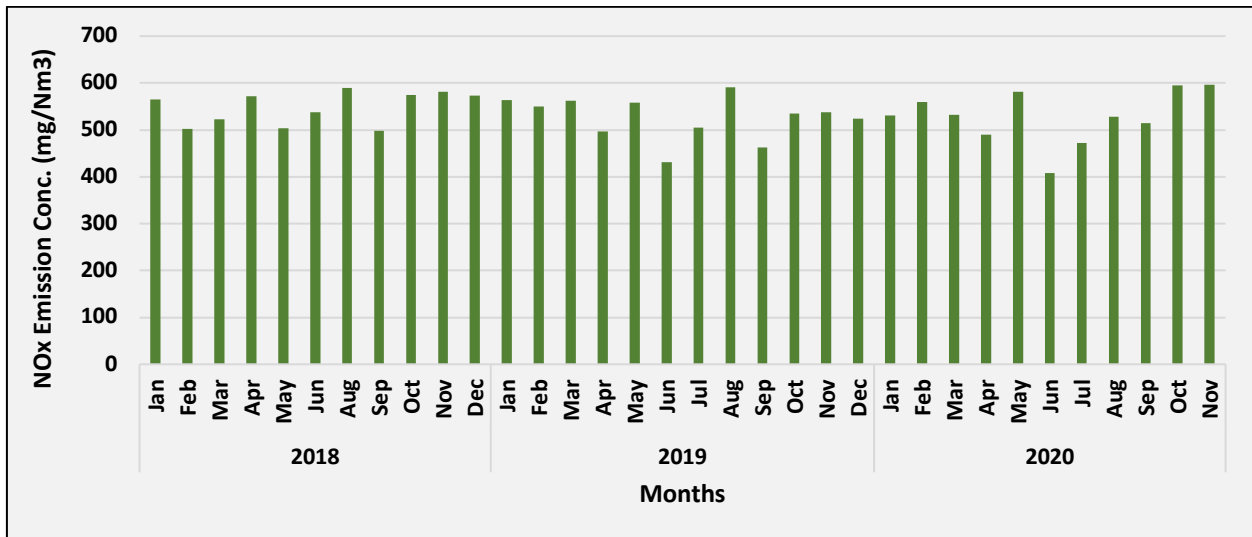


Fig. V45: Time series of monthly average NO_x Emission concentration in Vindhyachal TPP (Stack 8)

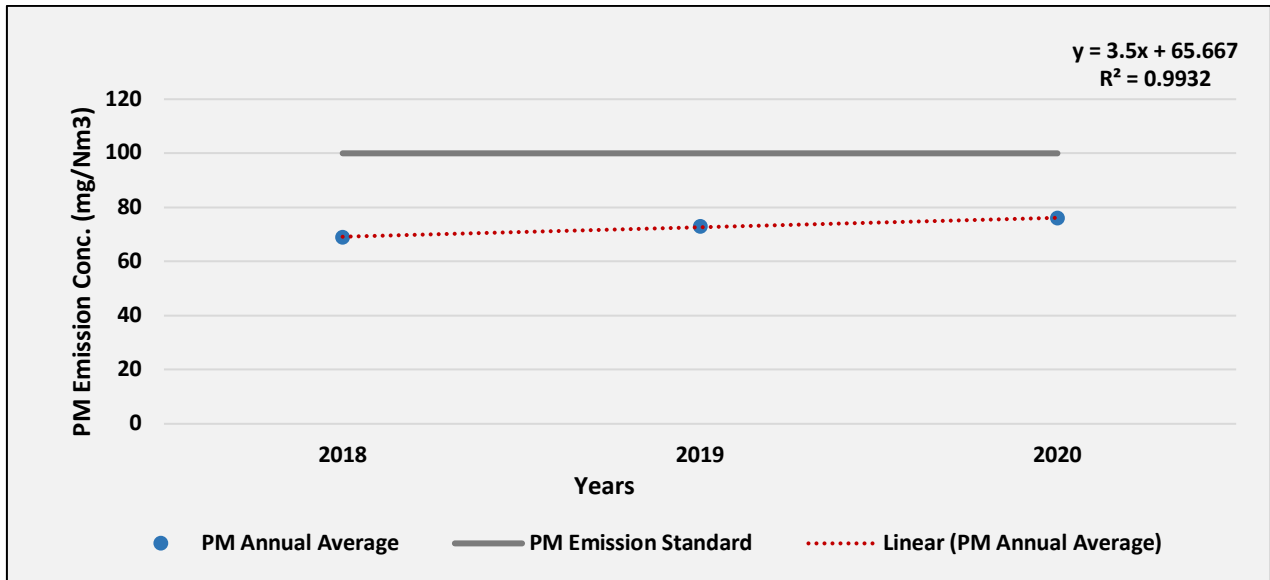


Fig. V46: Trend of annual mean PM Emission air concentration in Vindhyachal TPP (Stack 8)

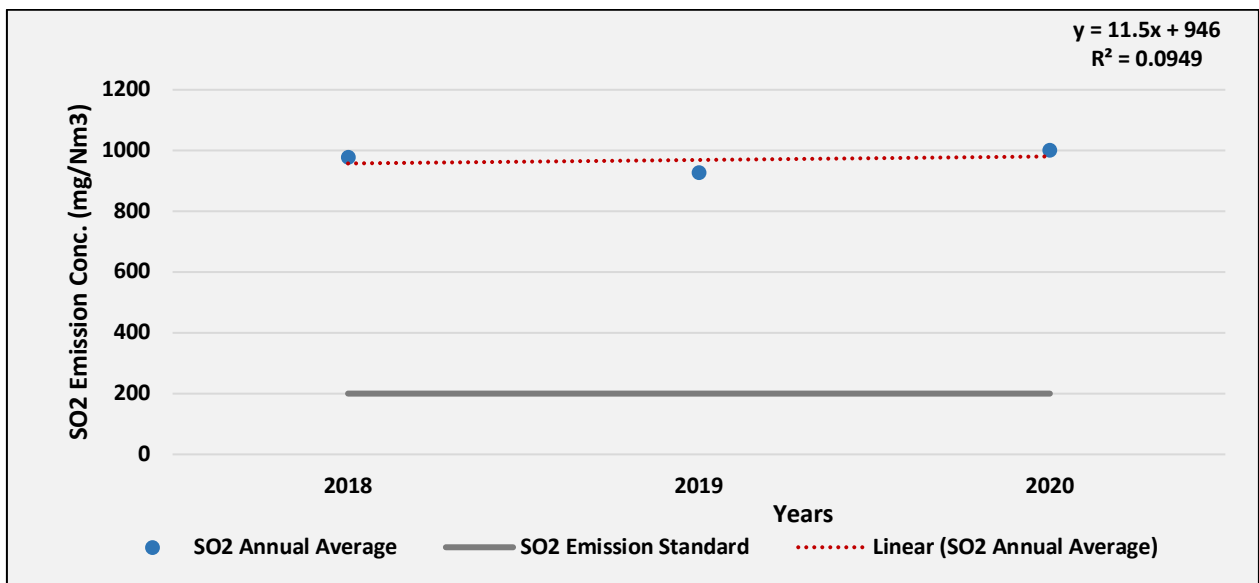


Fig. V47: Trend of annual mean SO₂ Emission air concentration in Vindhyachal TPP (Stack 8)

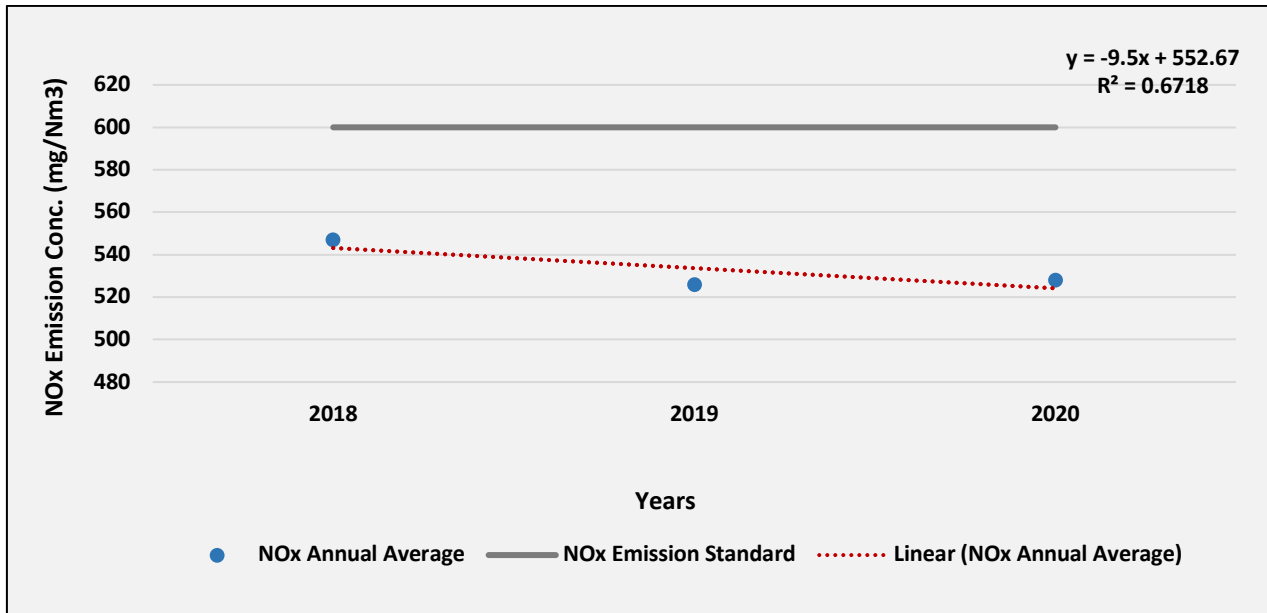


Fig. V48: Trend of annual mean NO_x Emission air concentration in Vindhyachal TPP (Stack 8)

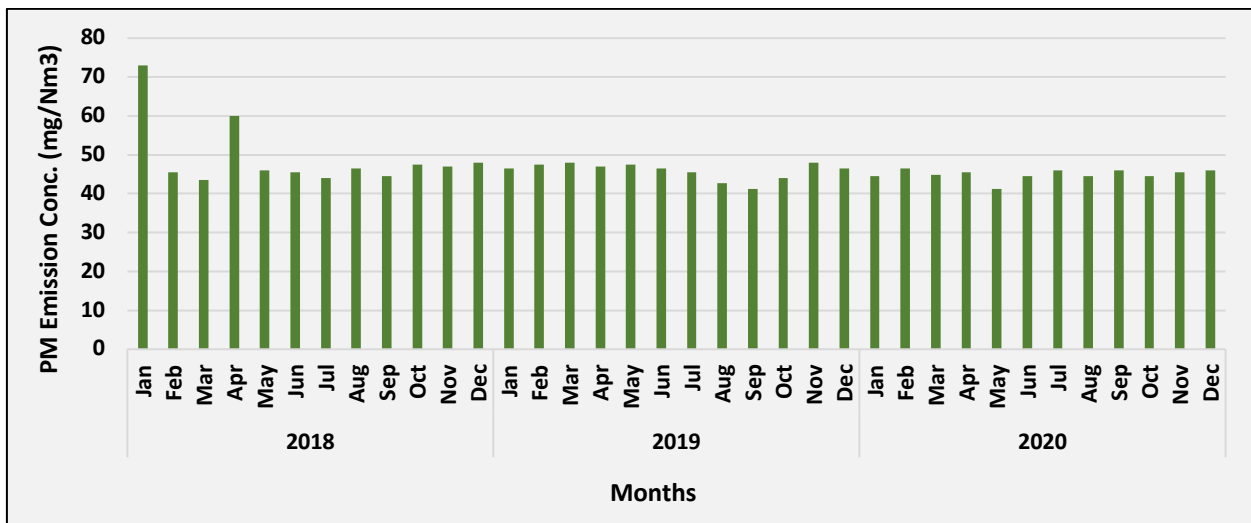


Fig. V49: Time series of monthly average PM Emission concentration in Vindhyachal TPP (Stack 9)

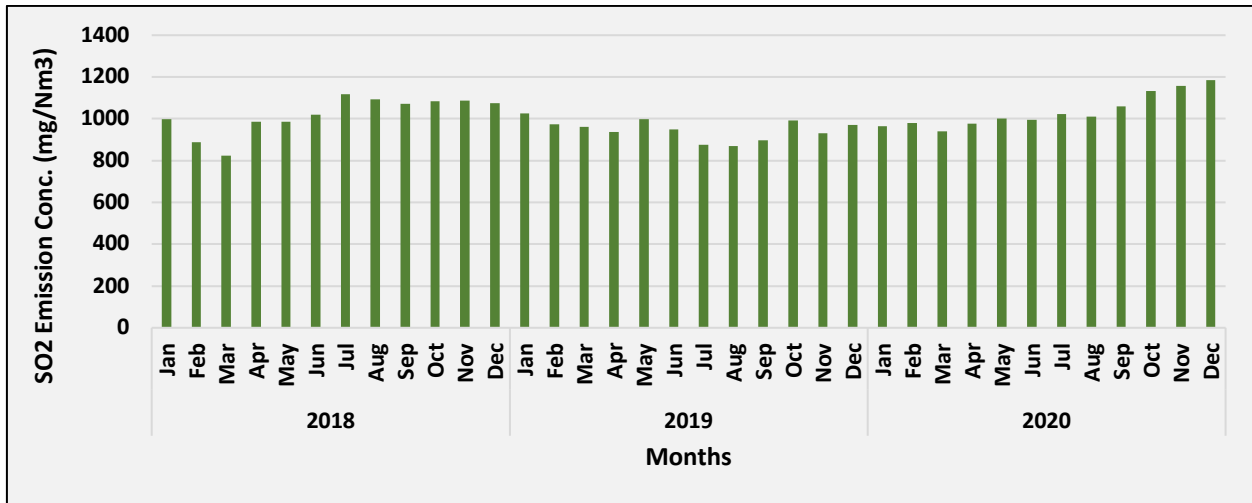


Fig. V50: Time series of monthly average SO₂ Emission concentration in Vindhyachal TPP (Stack 9)

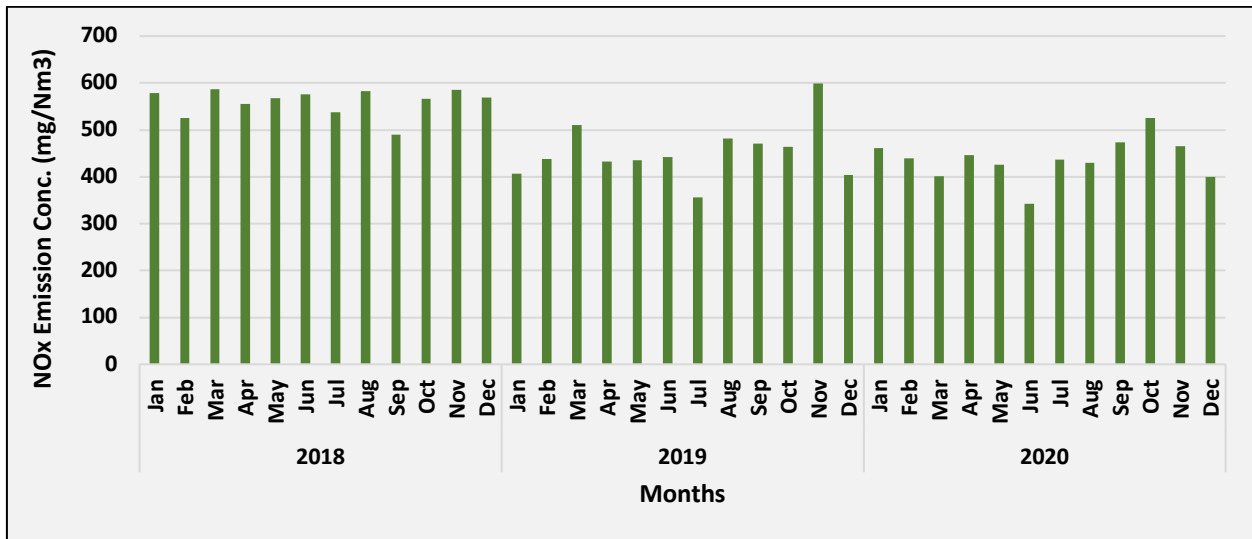


Fig. V51: Time series of monthly average NO_x Emission concentration in Vindhyachal TPP (Stack 9)

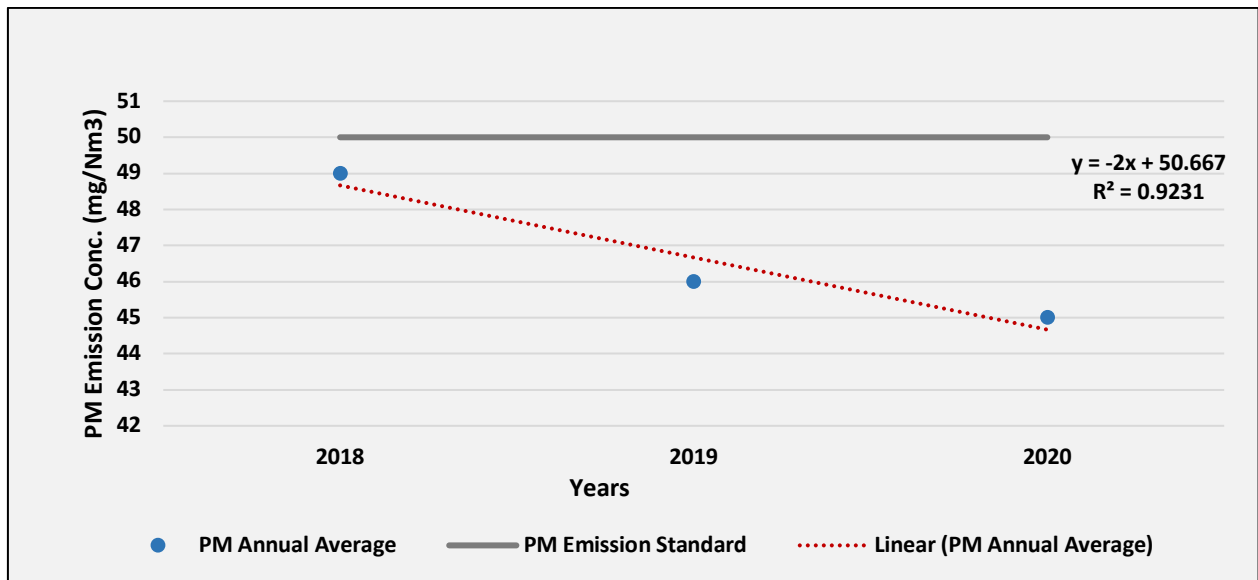


Fig. V52: Trend of annual mean PM Emission air concentration in Vindhyachal TPP (Stack 9)

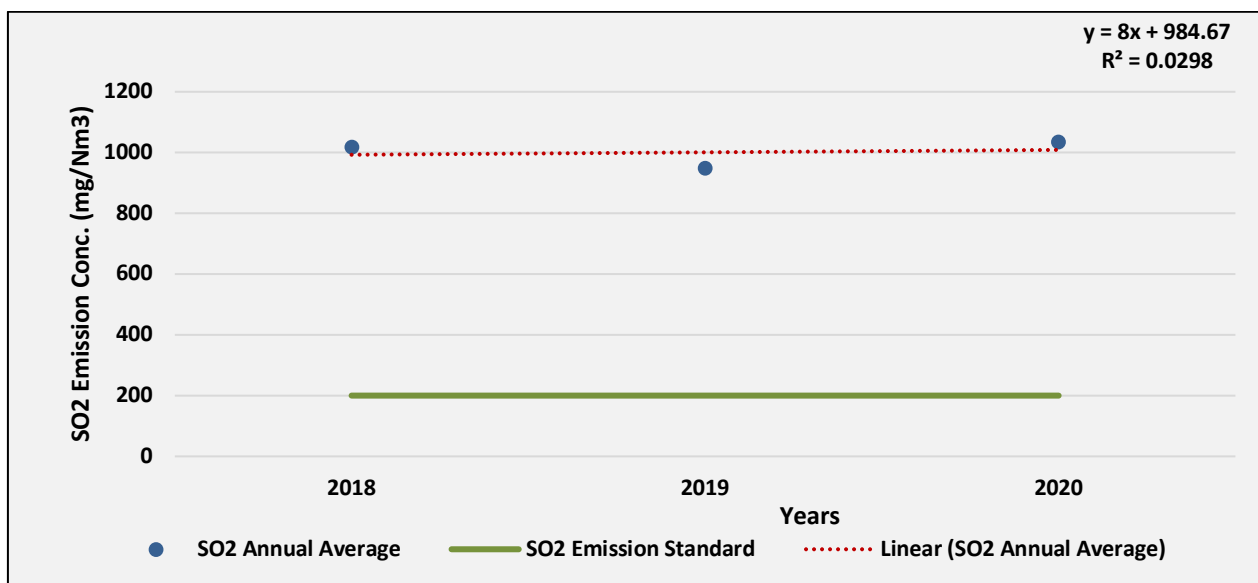


Fig. V53: Trend of annual mean SO₂ Emission air concentration in Vindhyachal TPP (Stack 9)

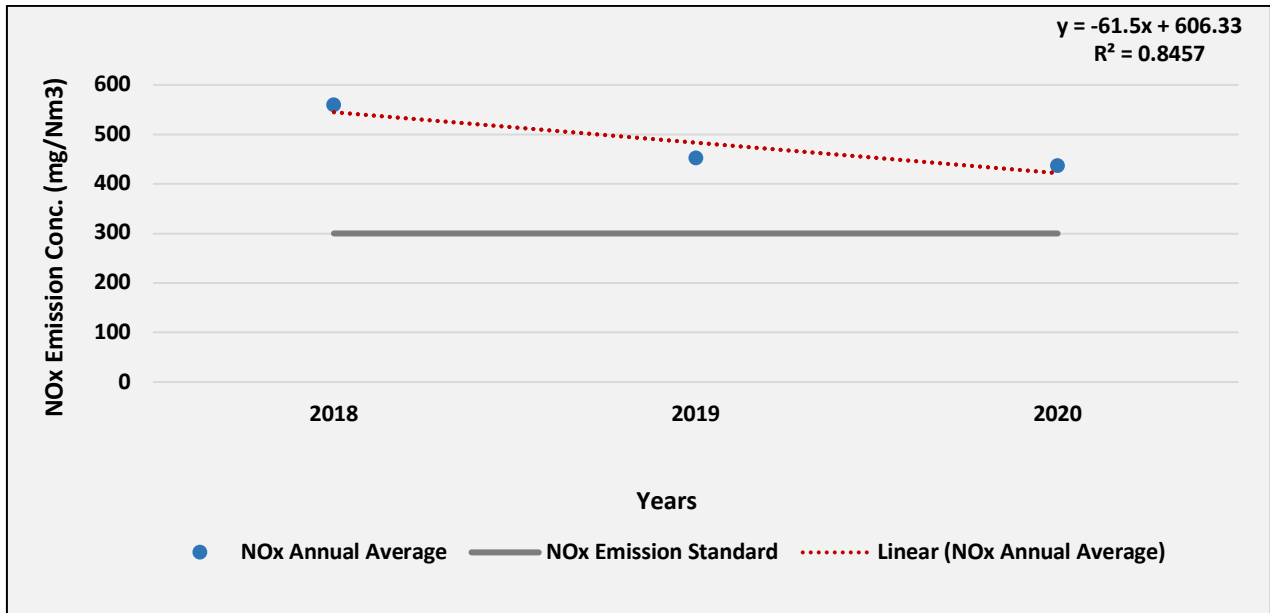


Fig. V54: Trend of annual mean NO_x Emission air concentration in Vindhyachal TPP (Stack 9)

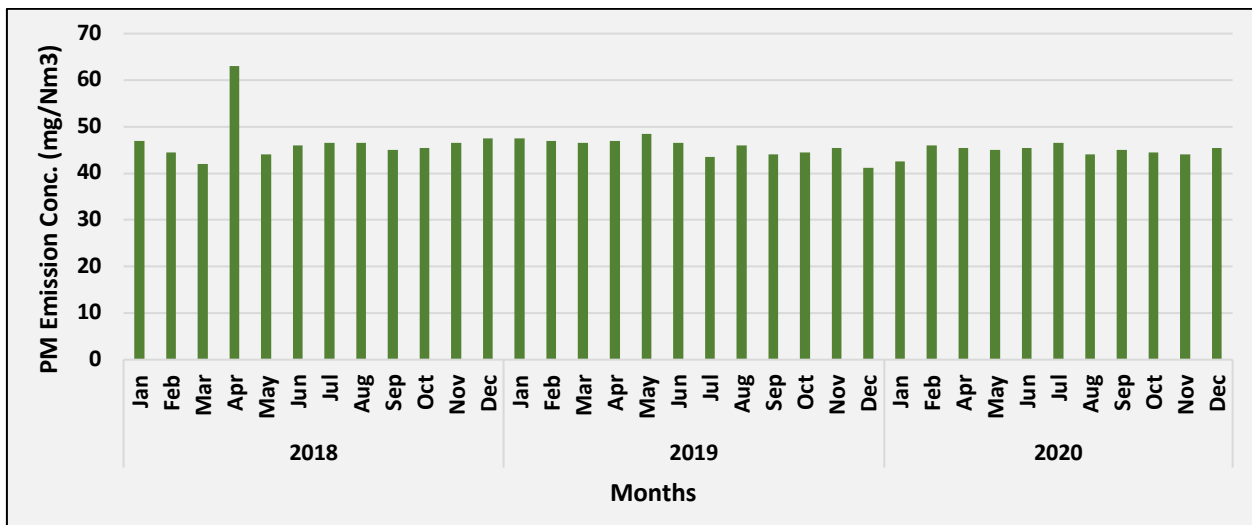


Fig. V55: Time series of monthly average PM Emission concentration in Vindhyachal TPP (Stack 10)

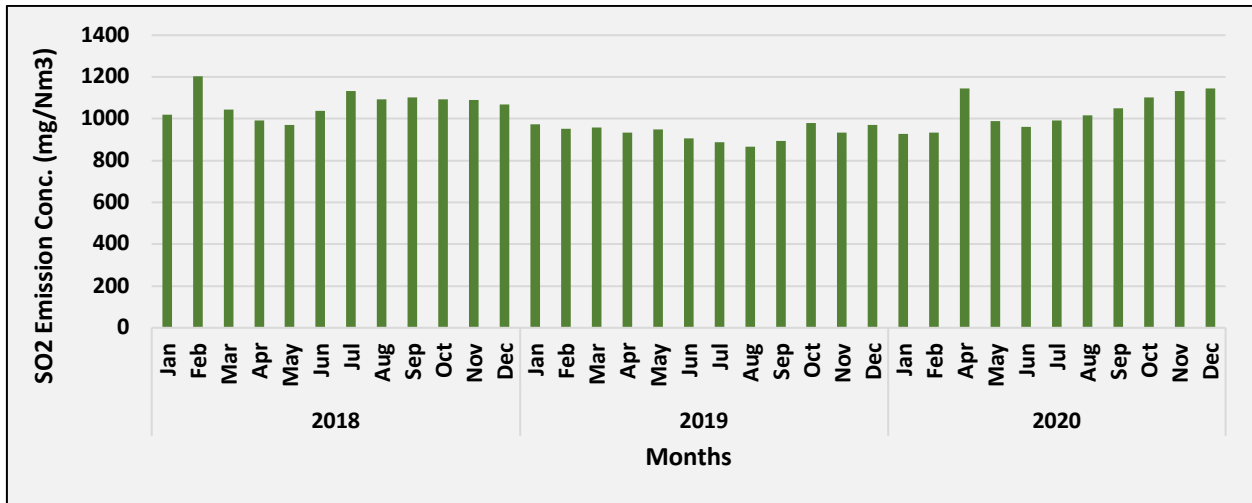


Fig. V56: Time series of monthly average SO₂ Emission concentration in Vindhyachal TPP (Stack 10)

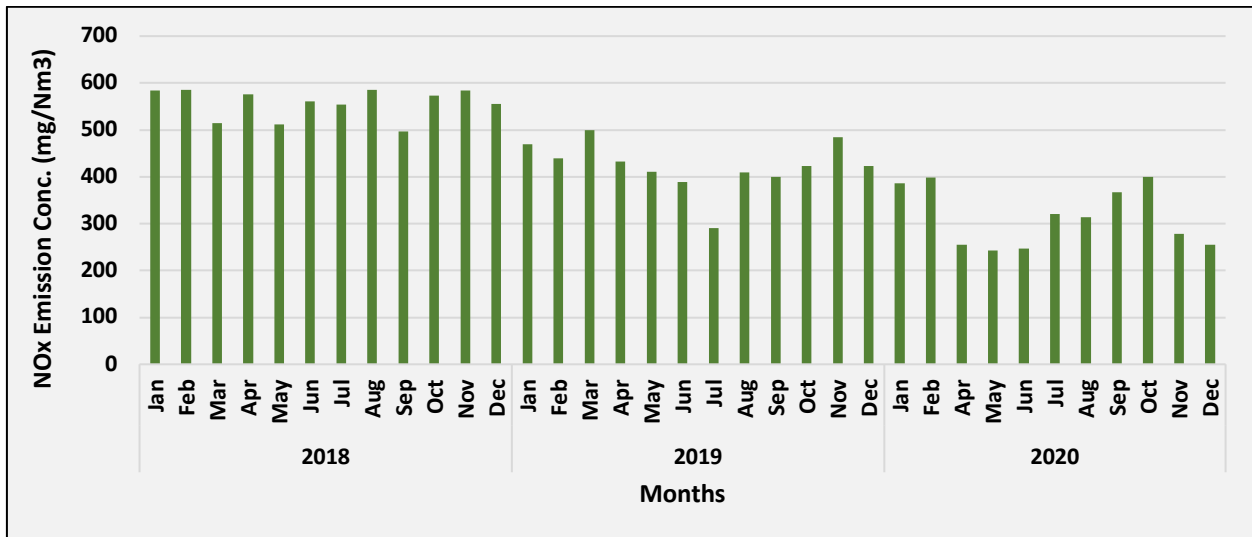


Fig. V57: Time series of monthly average NO_x Emission concentration in Vindhyachal TPP (Stack 10)

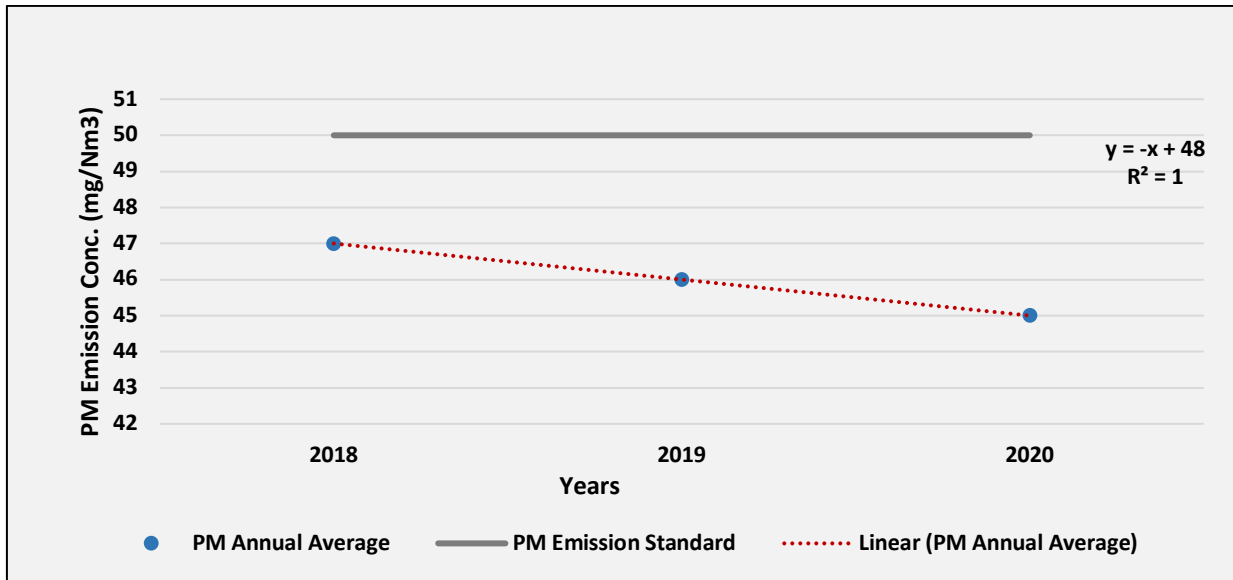


Fig. V58: Trend of annual mean PM Emission air concentration in Vindhyachal TPP (Stack 10)

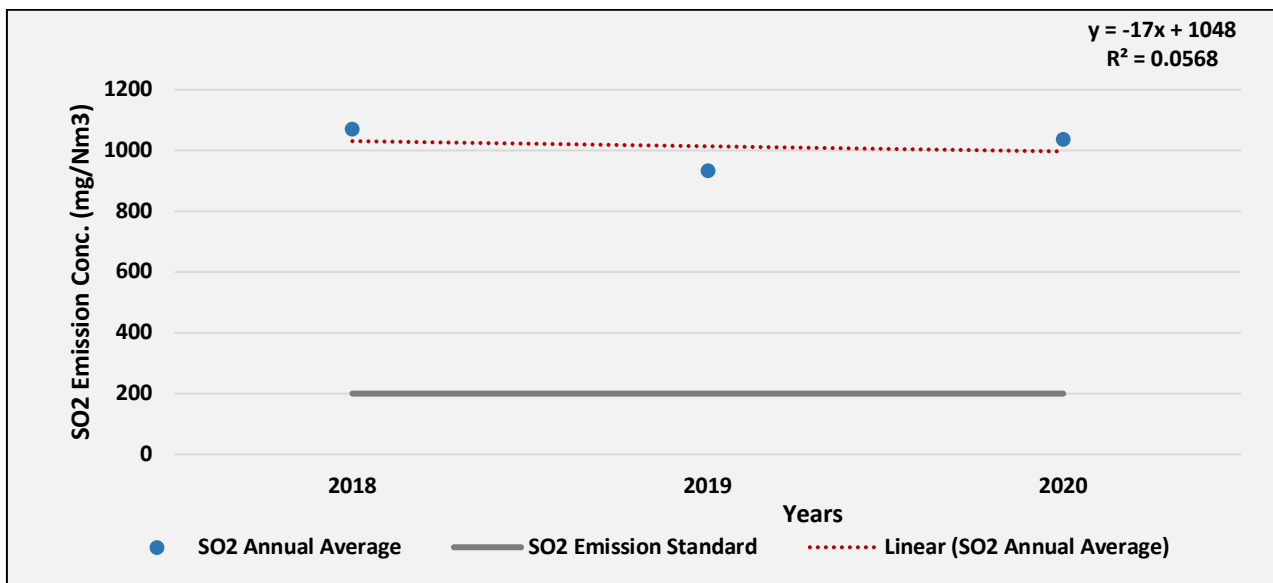


Fig. V59: Trend of annual mean SO₂ Emission air concentration in Vindhyachal TPP (Stack 10)

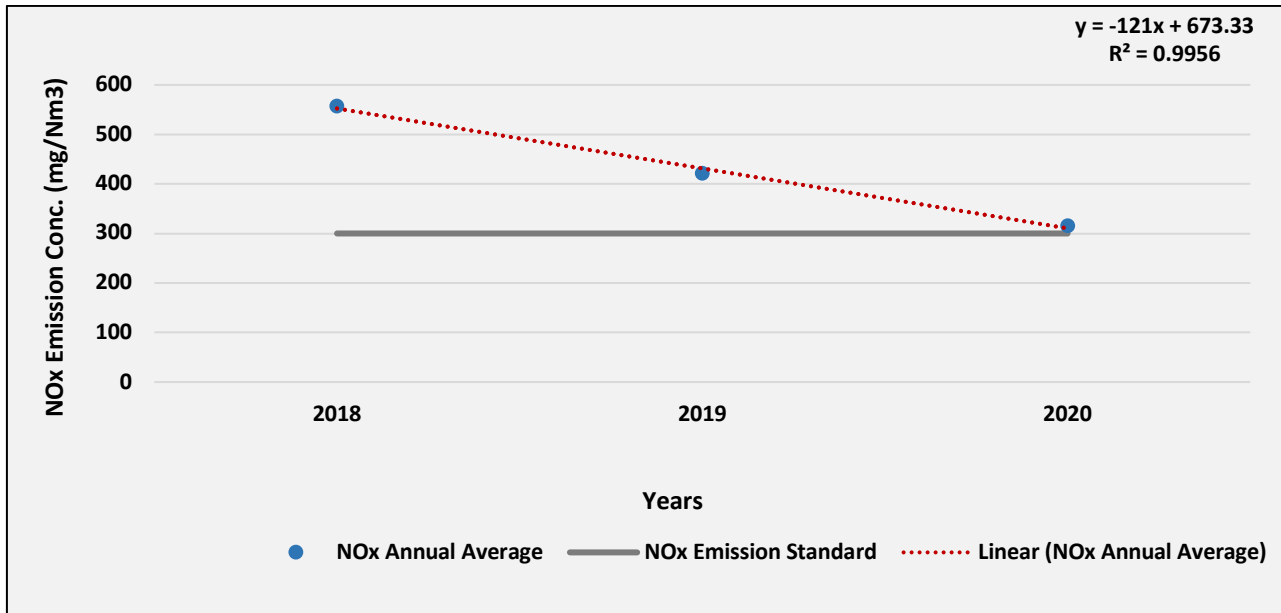


Fig. V60: Trend of annual mean NO_x Emission air concentration in Vindhyachal TPP (Stack 10)

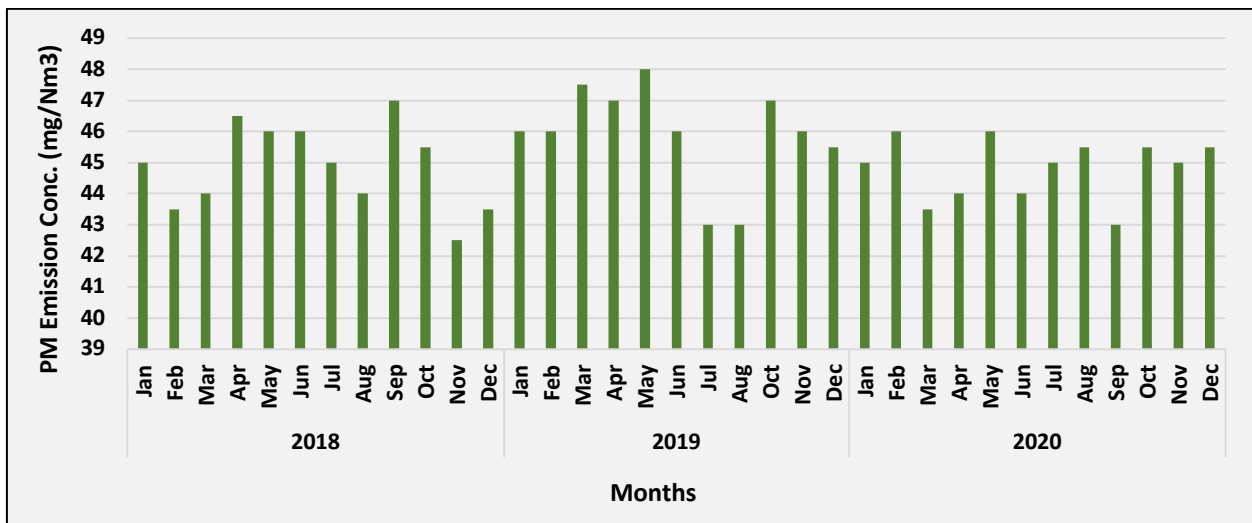


Fig. V61: Time series of monthly average PM Emission concentration in Vindhyachal TPP (Stack 11)

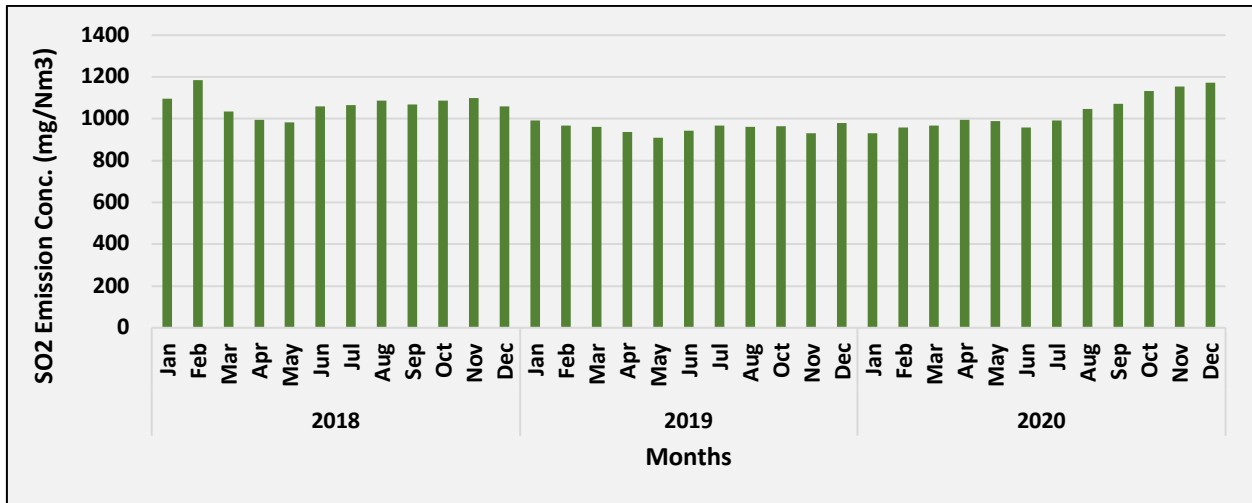


Fig. V62: Time series of monthly average SO₂ Emission concentration in Vindhyachal TPP (Stack 11)

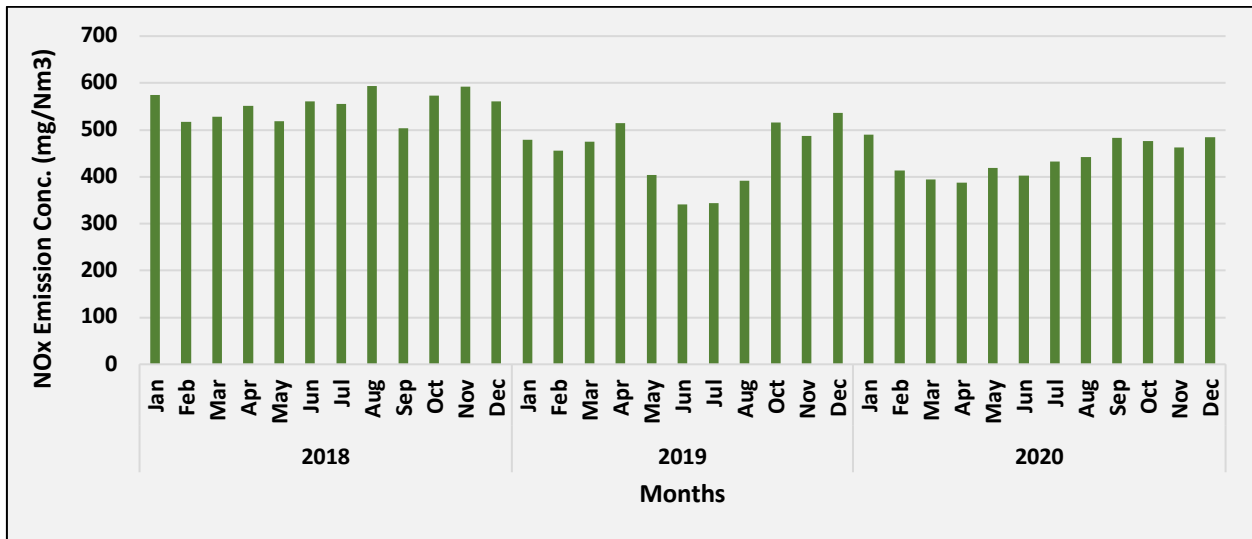


Fig. V63: Time series of monthly average NO_x Emission concentration in Vindhyachal TPP (Stack 11)

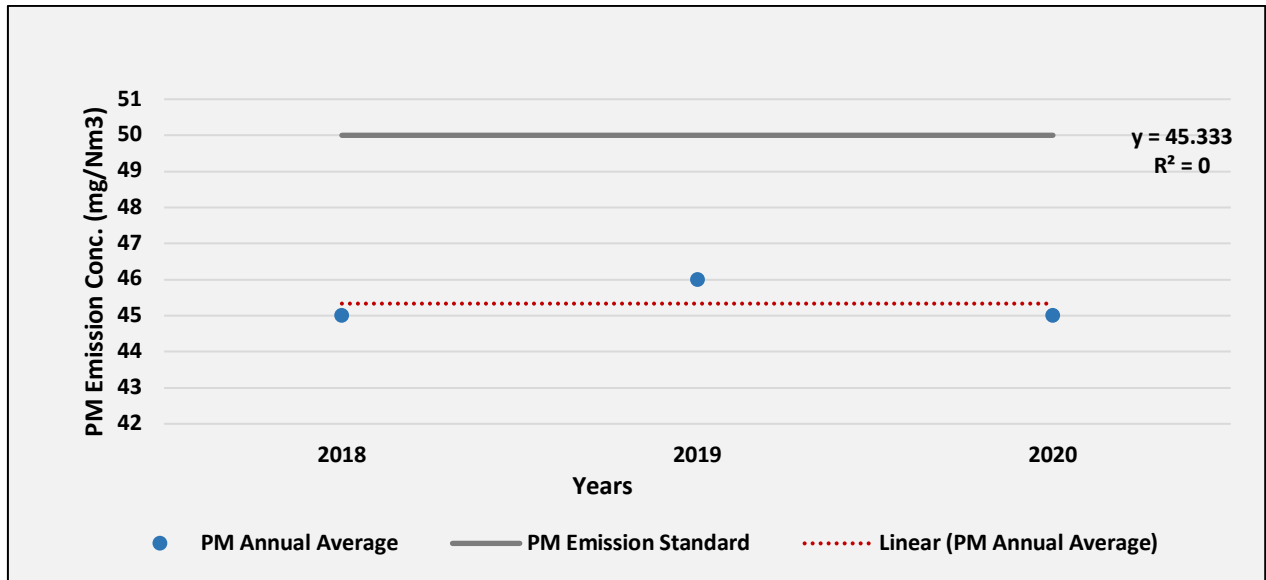


Fig. V:64 Trend of annual mean PM Emission air concentration in Vindhyachal TPP (Stack 11)

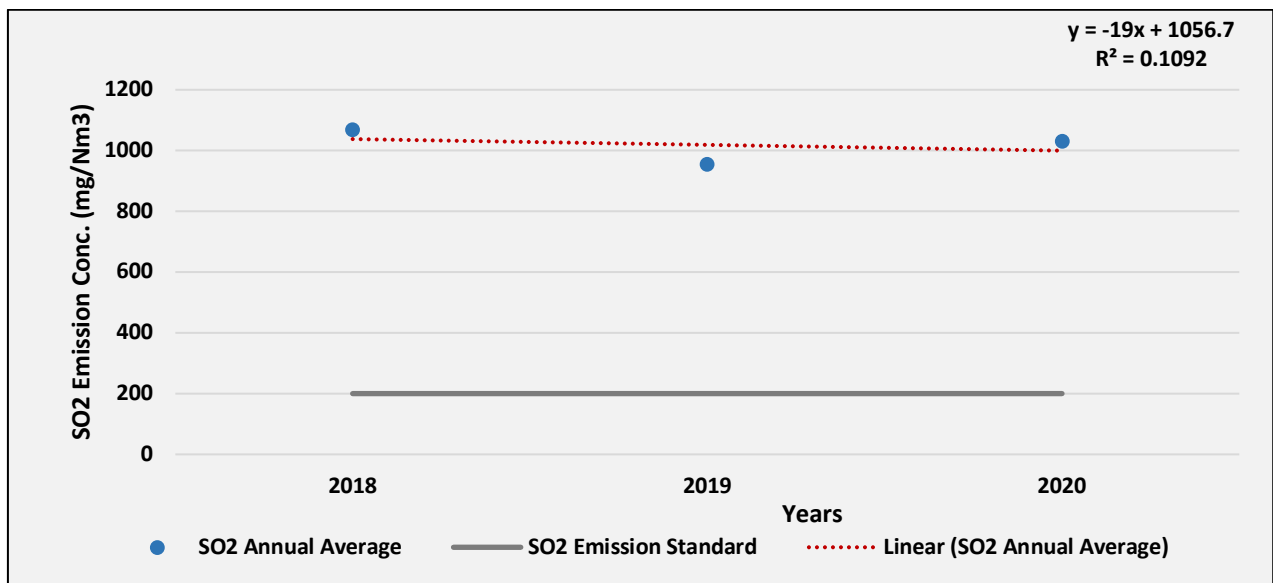


Fig. V65: Trend of annual mean SO₂ Emission air concentration in Vindhyachal TPP (Stack 11)

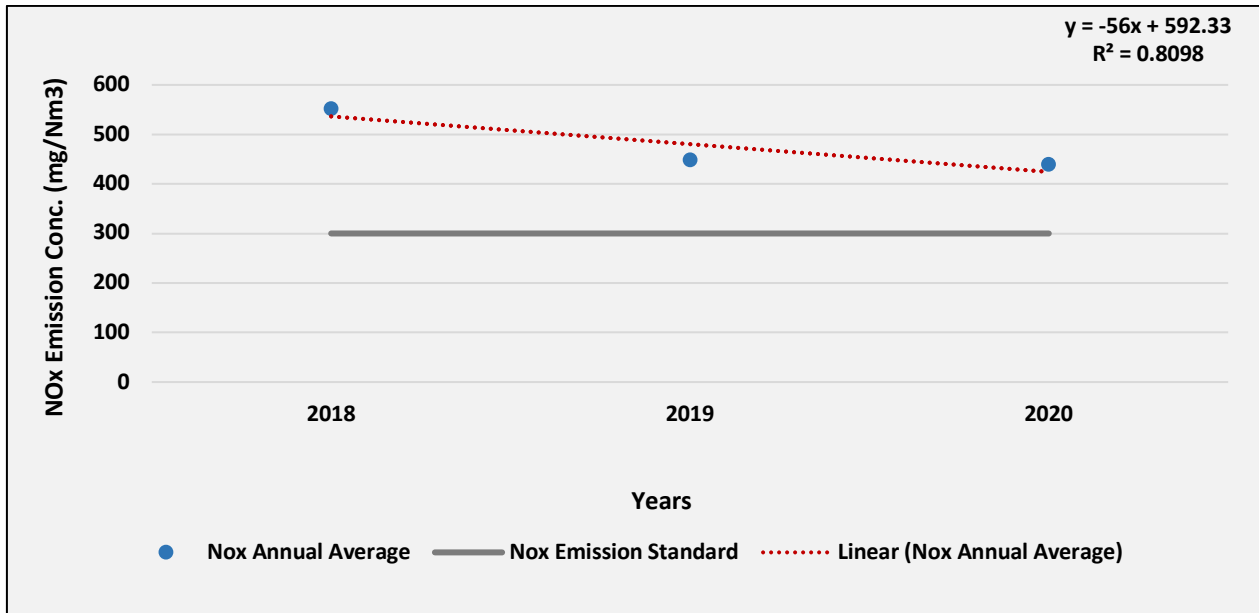


Fig. V66: Trend of annual mean NO_x Emission air concentration in Vindhyachal TPP (Stack 11)

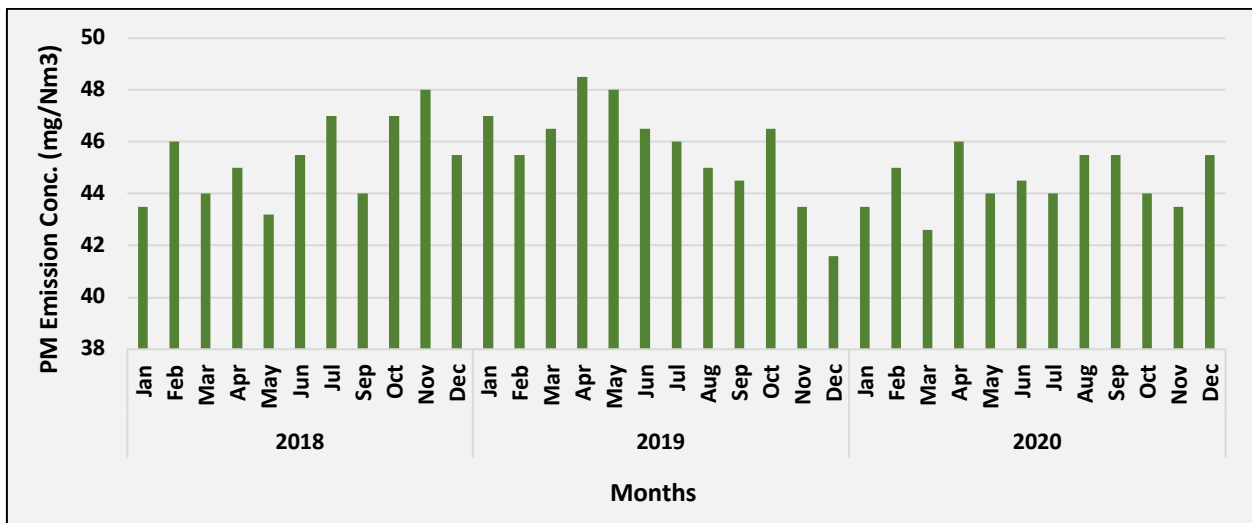


Fig. V67: Time series of monthly average PM Emission concentration in Vindhyachal TPP (Stack 12)

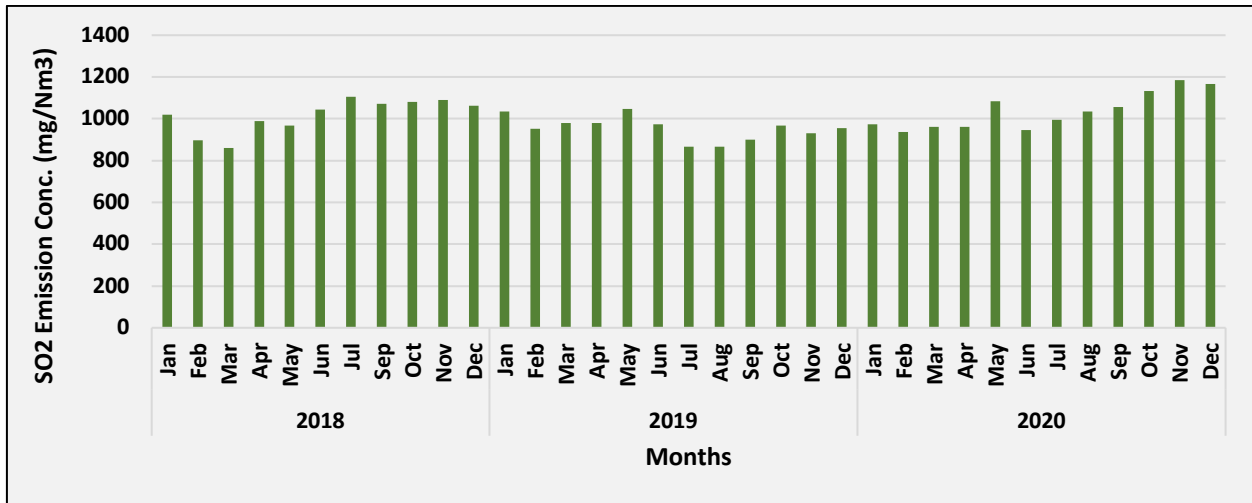


Fig. V68: Time series of monthly average SO₂ Emission concentration in Vindhyachal TPP (Stack 12)

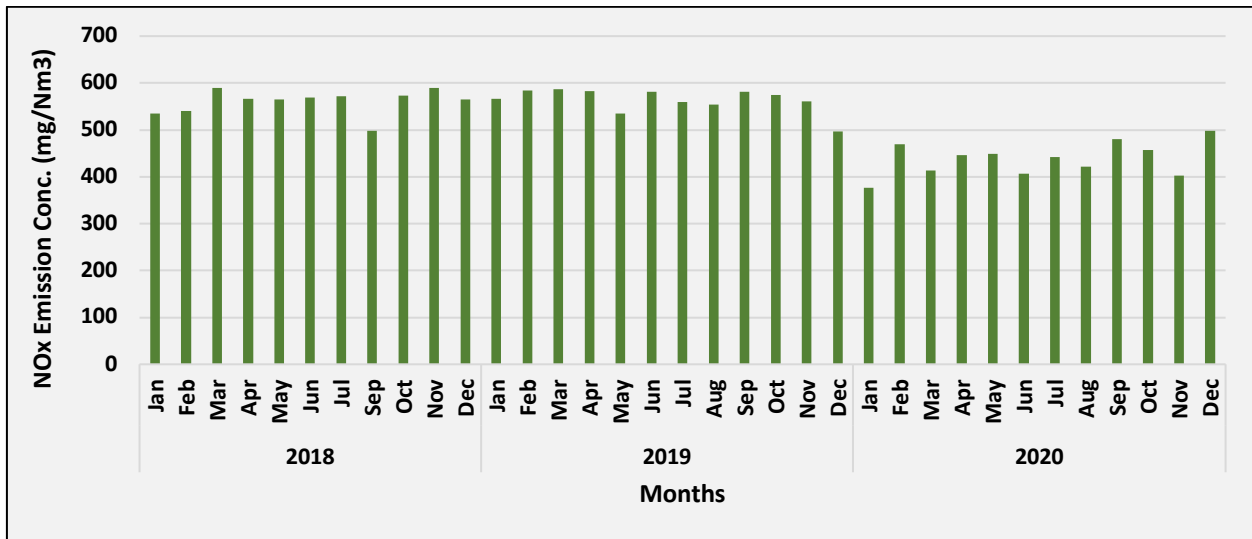


Fig. V69: Time series of monthly average NO_x Emission concentration in Vindhyachal TPP (Stack 12)

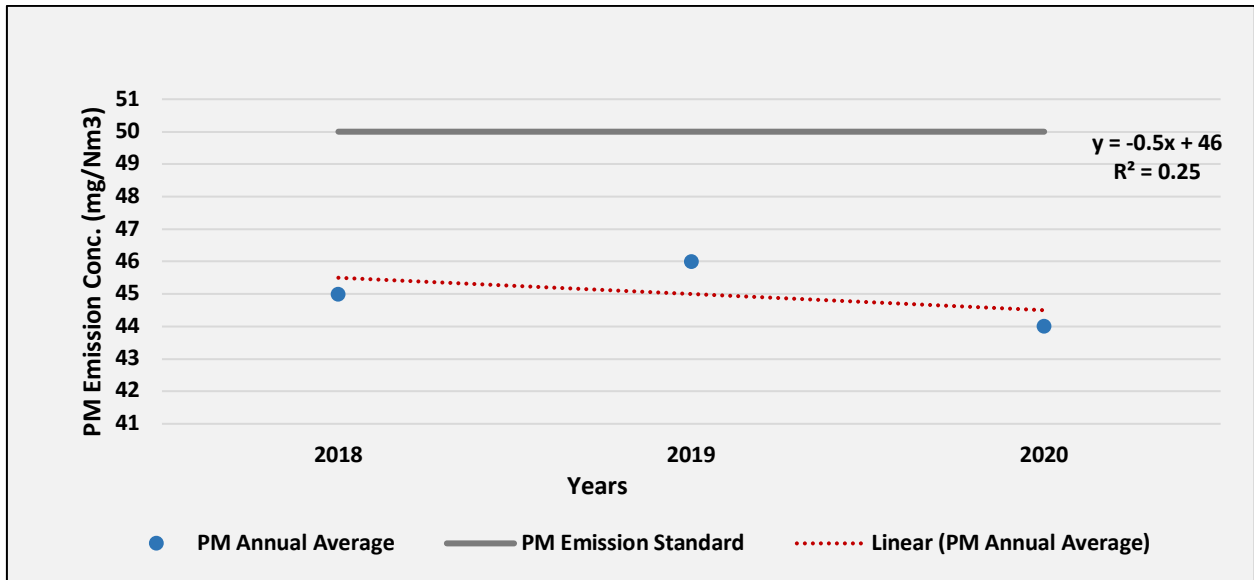


Fig. V70: Trend of annual mean PM Emission air concentration in Vindhyachal TPP (Stack 12)

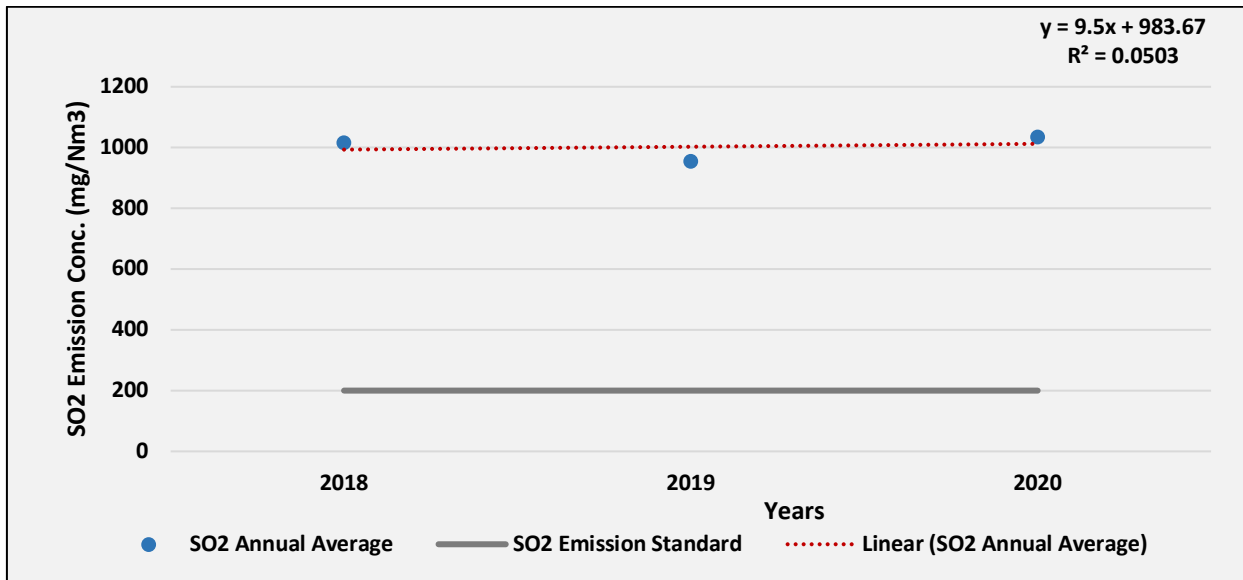


Fig. V71: Trend of annual mean SO₂ Emission air concentration in Vindhyachal TPP (Stack 12)

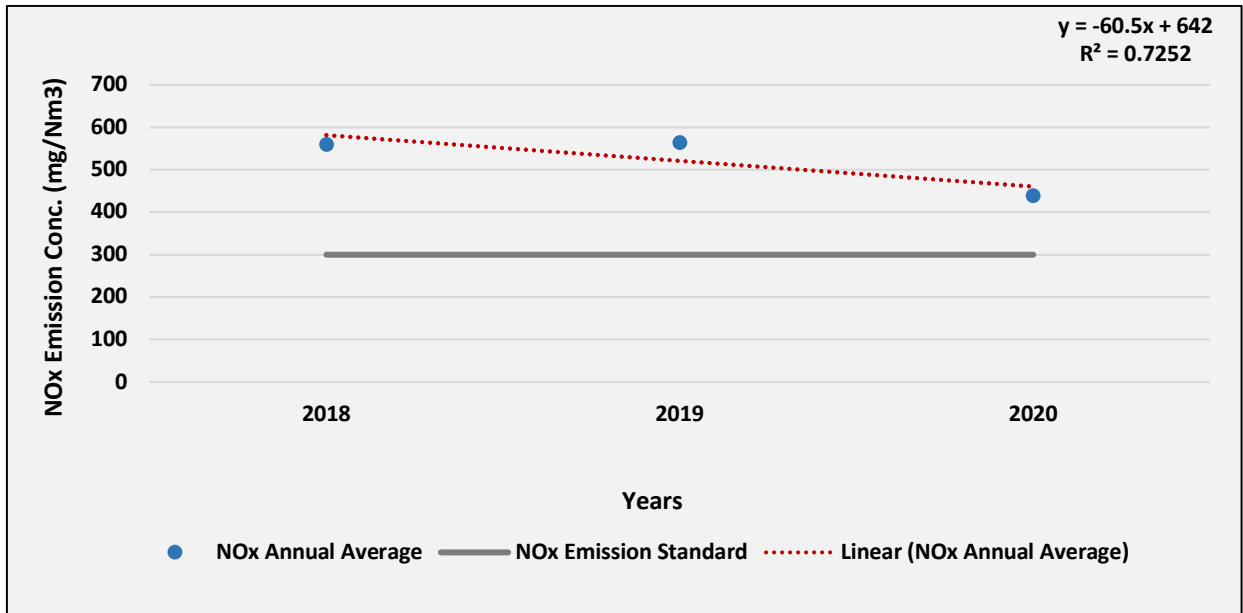


Fig. V72: Trend of annual mean NO_x Emission air concentration in Vindhyachal TPP (Stack 12)

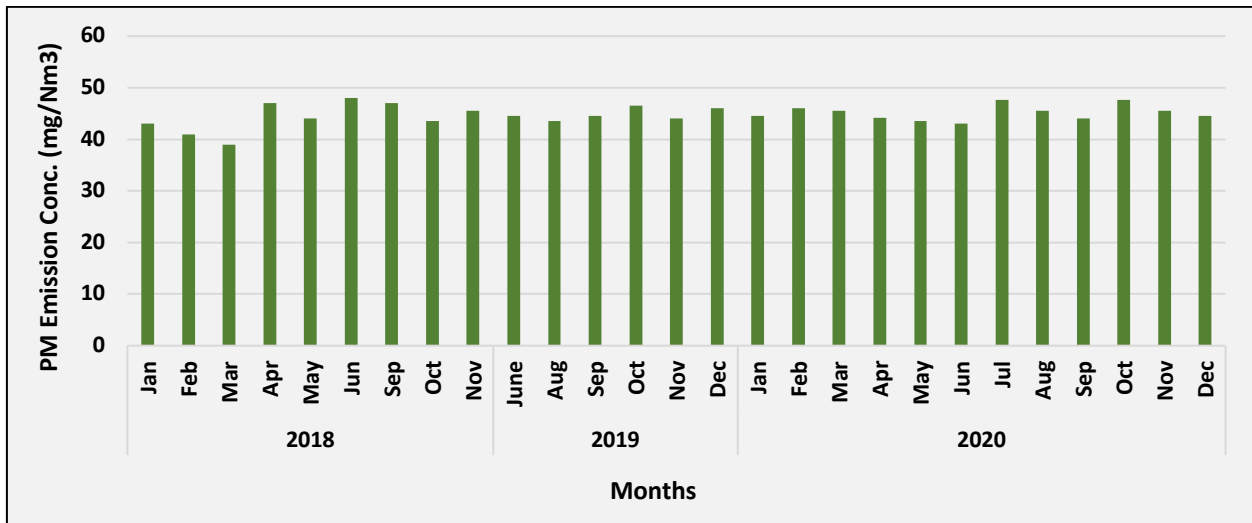


Fig. V73: Time series of monthly average PM Emission concentration in Vindhyachal TPP (Stack 13)

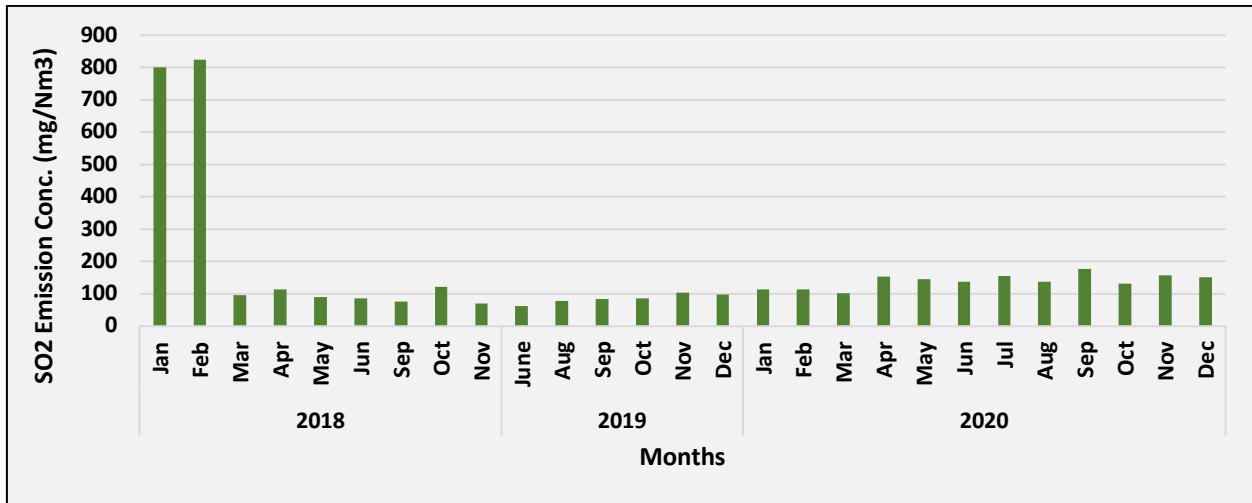


Fig. V74: Time series of monthly average SO₂ Emission concentration in Vindhyachal TPP (Stack 13)

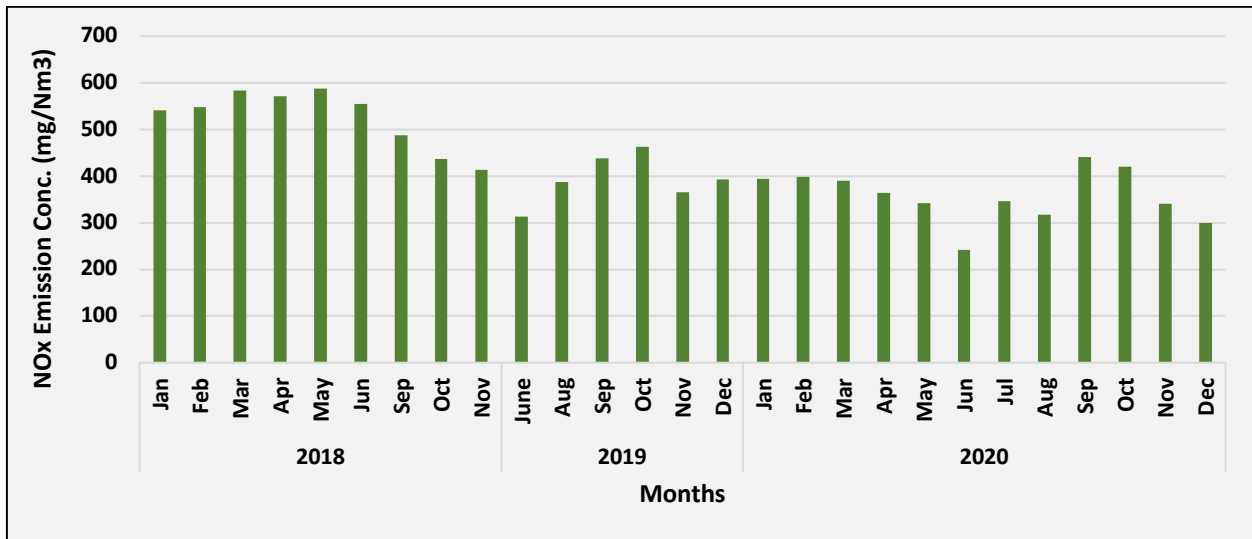


Fig. V75: Time series of monthly average NO_x Emission concentration in Vindhyachal TPP (Stack 13)

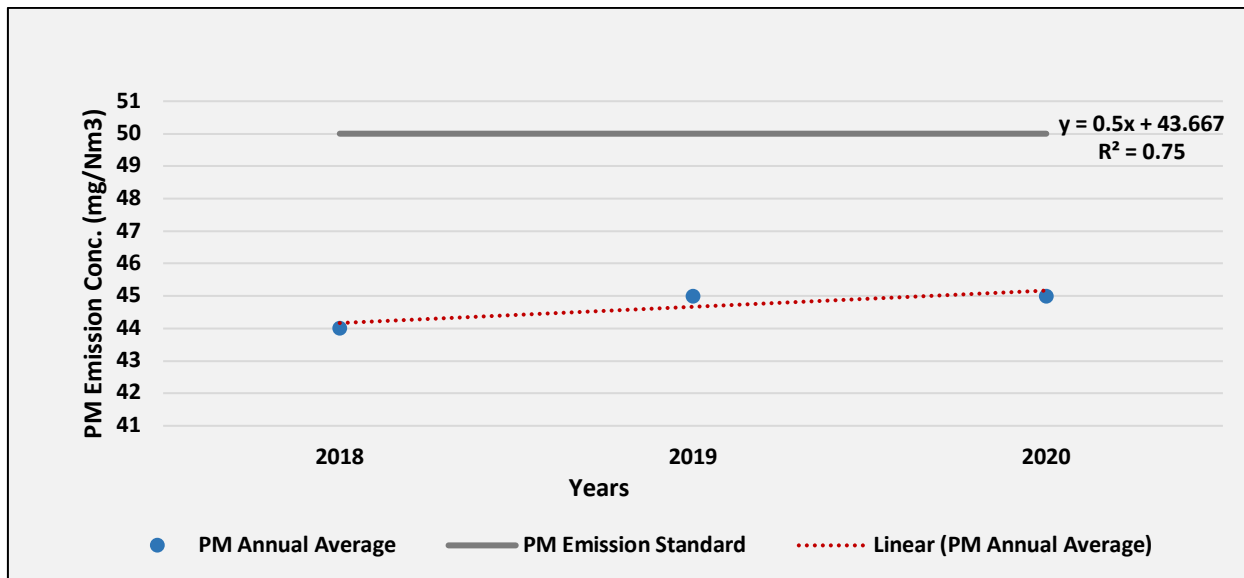


Fig. V76: Trend of annual mean PM Emission air concentration in Vindhyachal TPP (Stack 13)

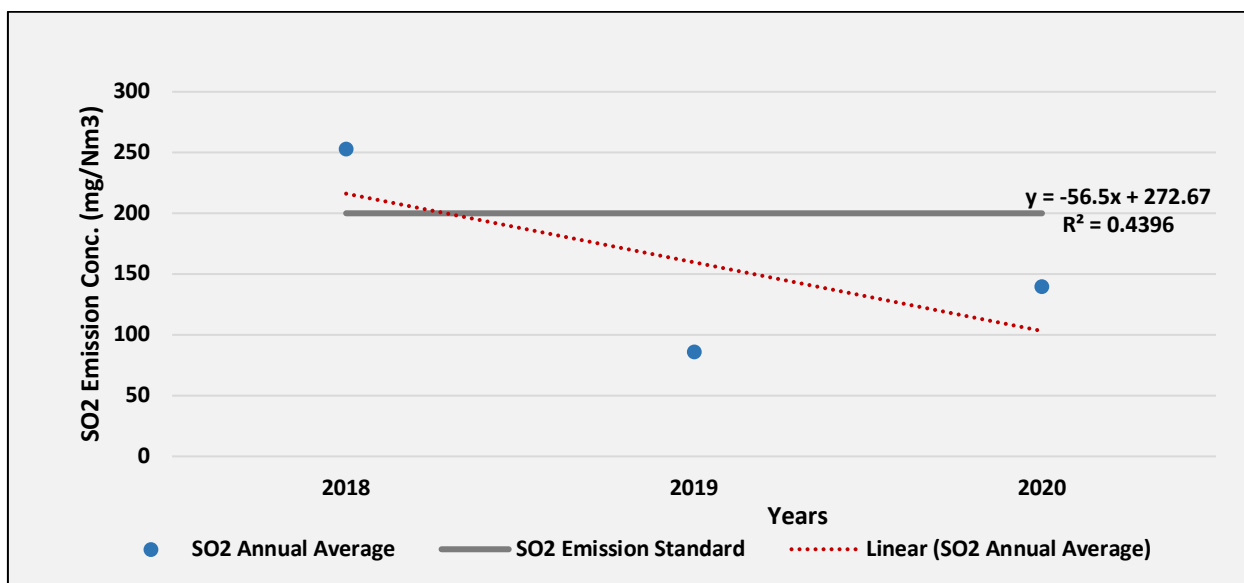


Fig. V77: Trend of annual mean SO₂ Emission air concentration in Vindhyachal TPP (Stack 13)

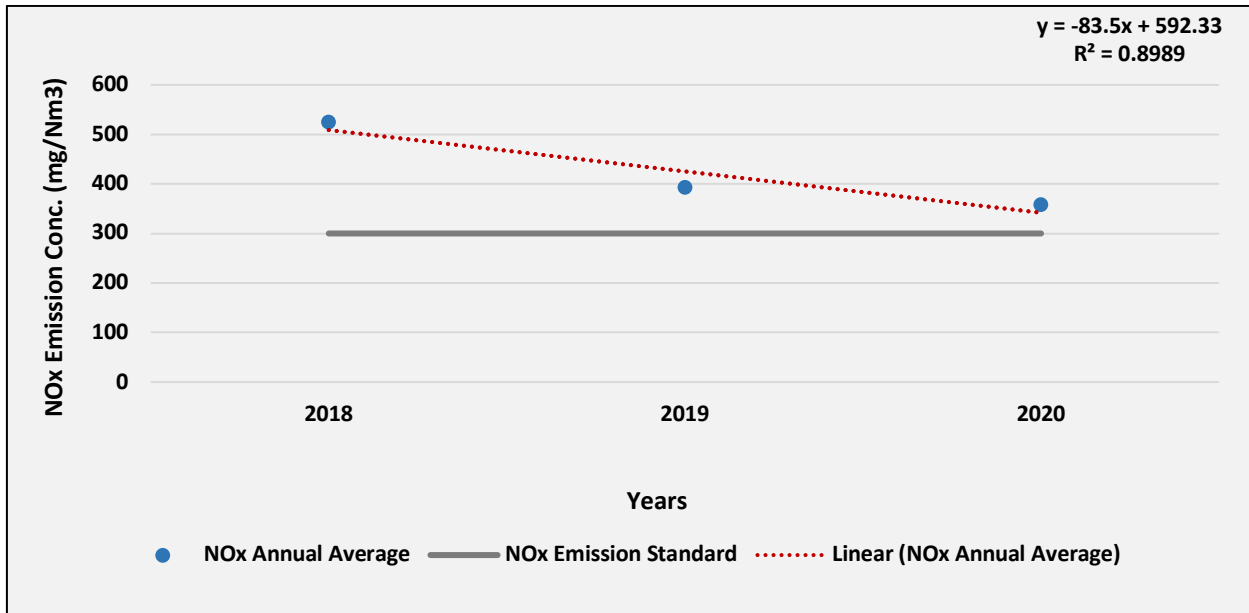


Fig. V78: Trend of annual mean NO_x Emission air concentration in Vindhyachal TPP (Stack 13)

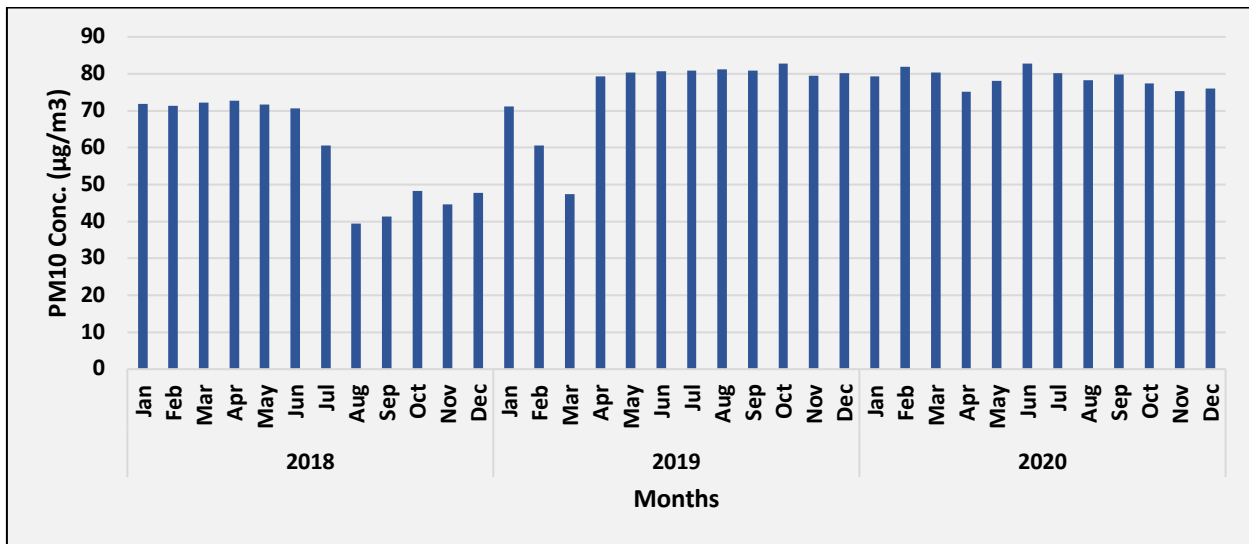


Fig. V79: Time series of monthly average PM₁₀ ambient air concentration in Vindhyachal TPP (Ambient)

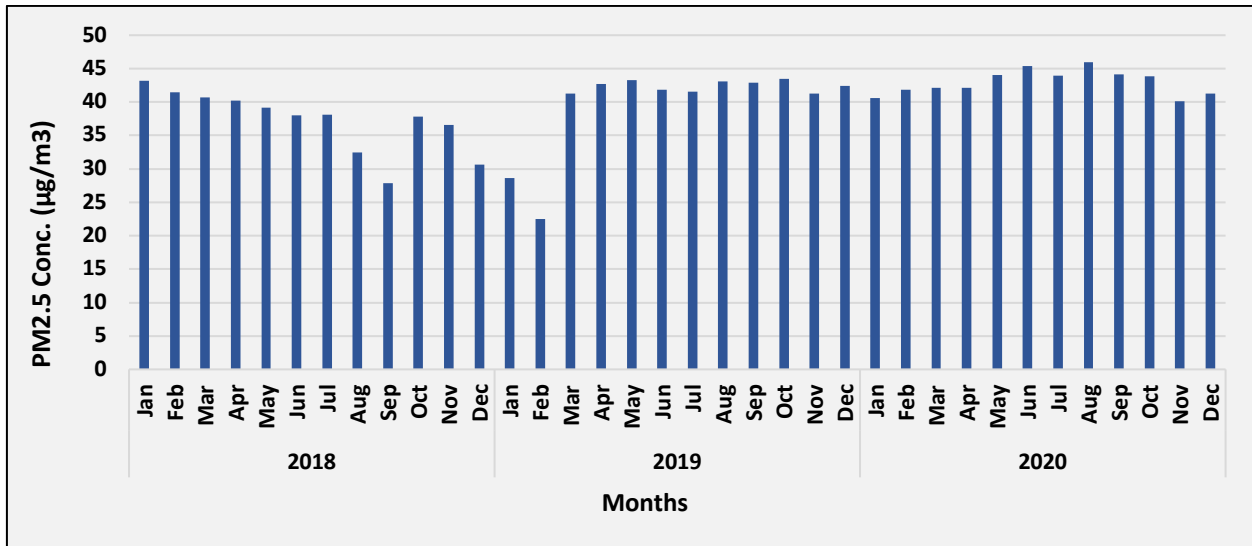


Fig. V80: Time series of monthly average PM_{2.5} ambient air concentration in Vindhyachal TPP (Ambient)

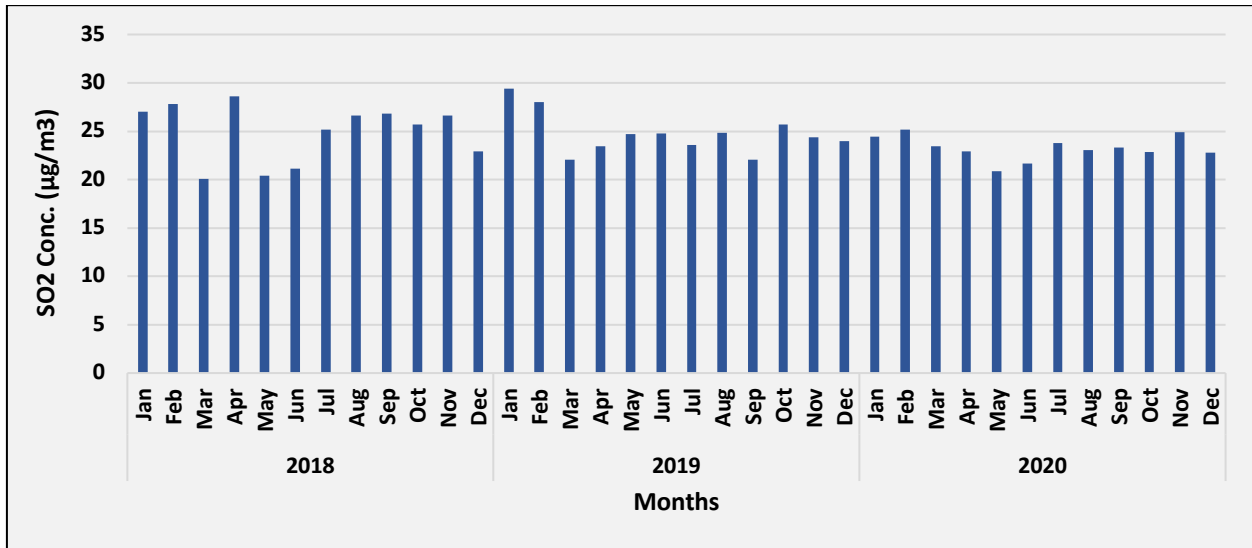


Fig. V81: Time series of monthly average SO₂ ambient air concentration in Vindhyachal TPP (Ambient)

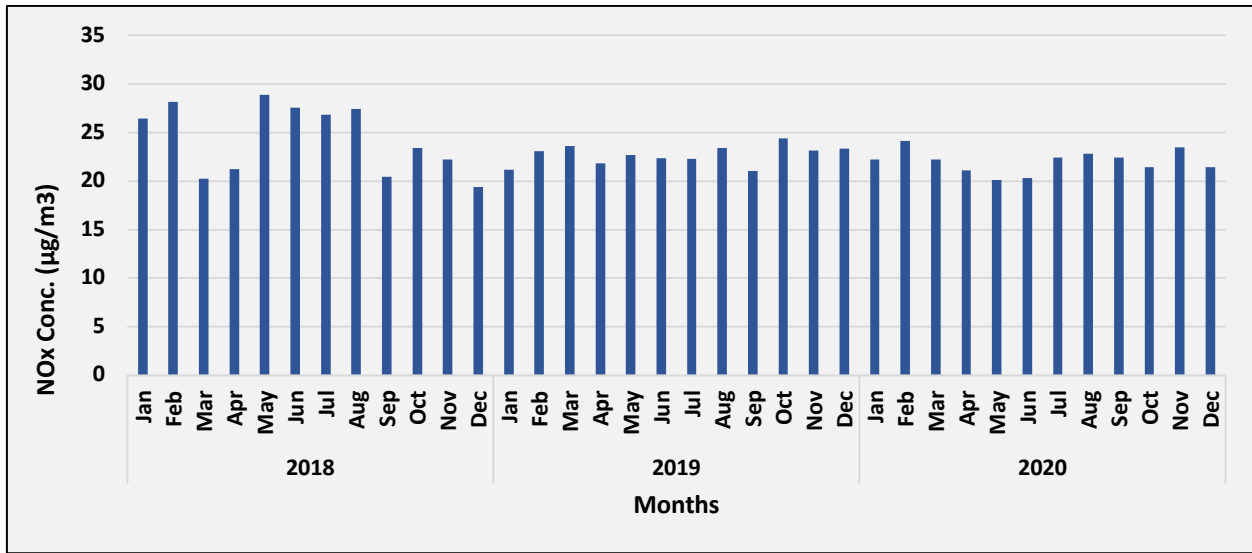


Fig. V82: Time series of monthly average NO_x ambient air concentration in Vindhyachal TPP (Ambient)

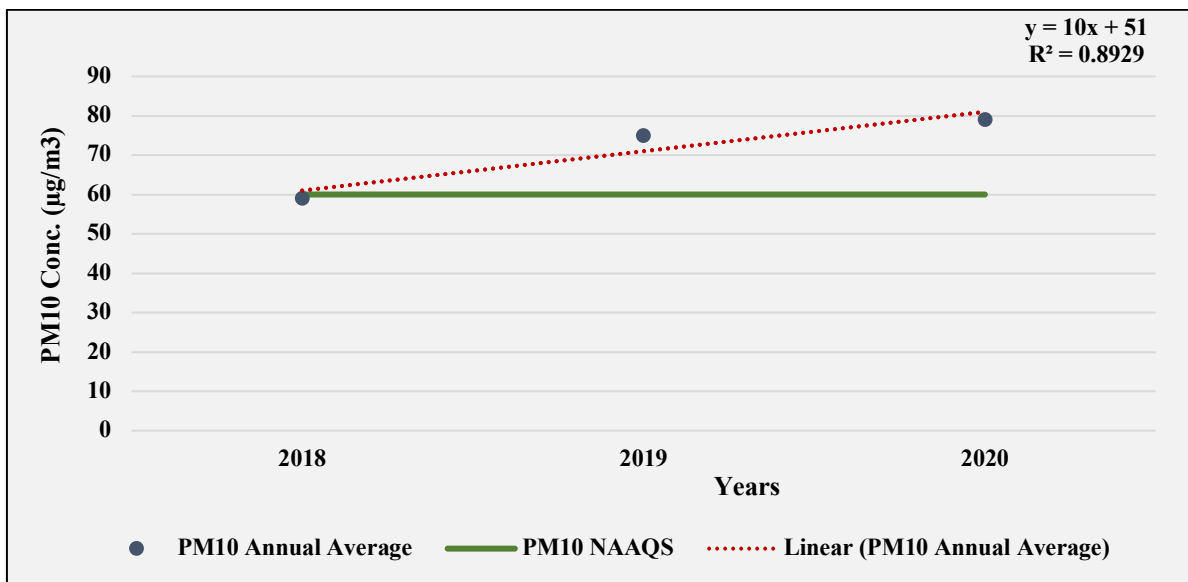


Fig. V83: Trend of annual mean PM₁₀ ambient air concentration in Vindhyachal TPP (Ambient)

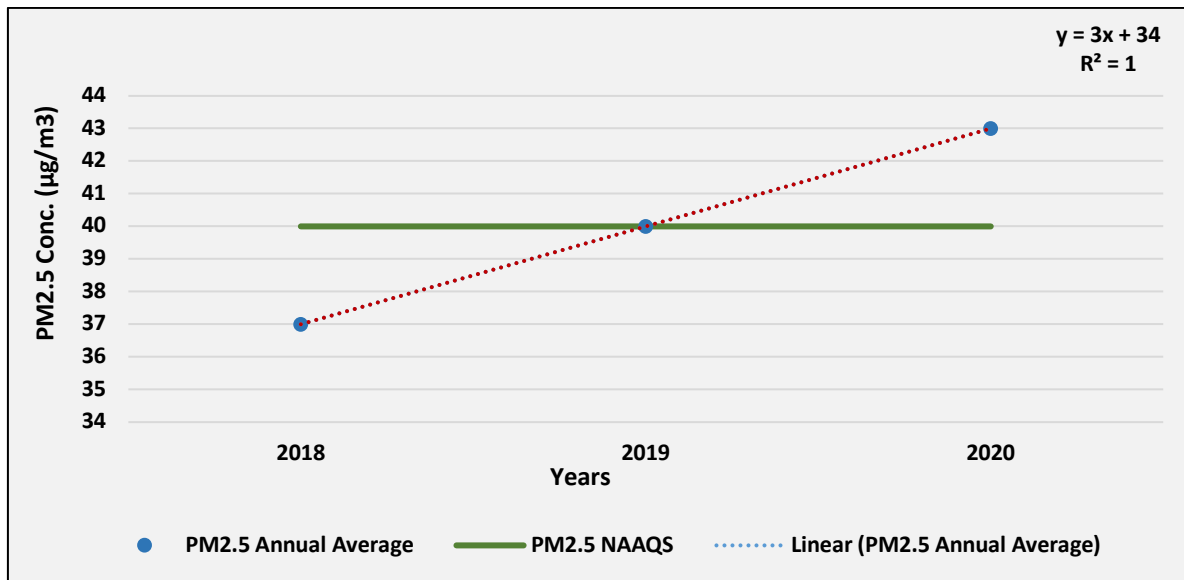


Fig. V84: Trend of annual mean PM_{2.5} ambient air concentration in Vindhyachal TPP (Ambient)

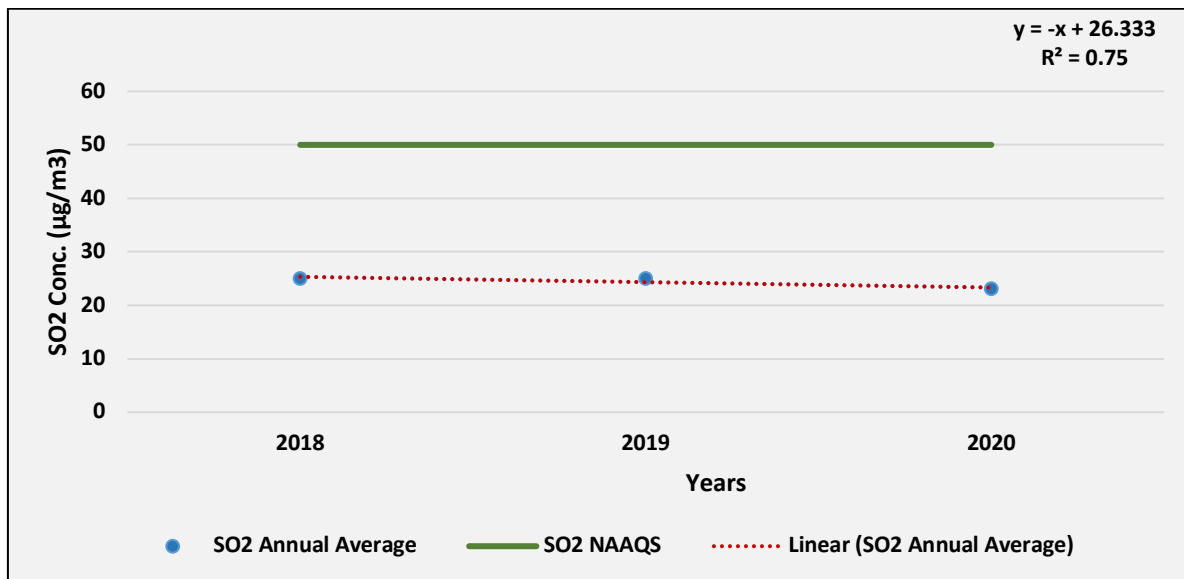


Fig. V85: Trend of annual mean SO₂ ambient air concentration in Vindhyachal TPP (Ambient)

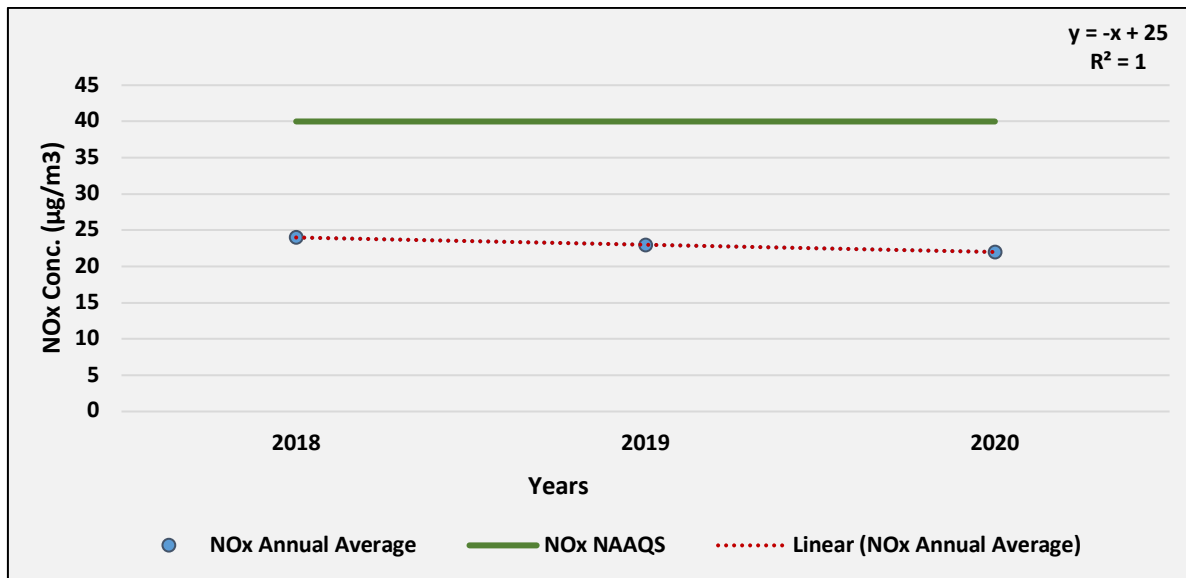


Fig. V86: Trend of annual mean NO_x ambient air concentration in Vindhyachal TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, PM_{2.5} are exceeding whereas the SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that PM, SO₂ and NO_x parameter are exceeding their remission limits as per the emission norms.

RIHAND THERMAL POWER PLANT

Rihand Super Thermal Power Project is located at Renukut, Sonbhadra in Sonbhadra district in Indian state of Uttar Pradesh. The power plant is one of the coal-based power plants of NTPC Limited. Rihand Super Thermal Power Station has an installed capacity of 3000 MW. The First unit was commissioned in March 1988. The coal for the plant is derived from Amlori and Dudhichua mines.

The ambient air quality concentrations of PM₁₀, PM_{2.5} SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. RI1 – Fig. RI44) for the last three years (2018-2020) using data provided by NTPC developer for Rihand Power plant, Uttar Pradesh, India.

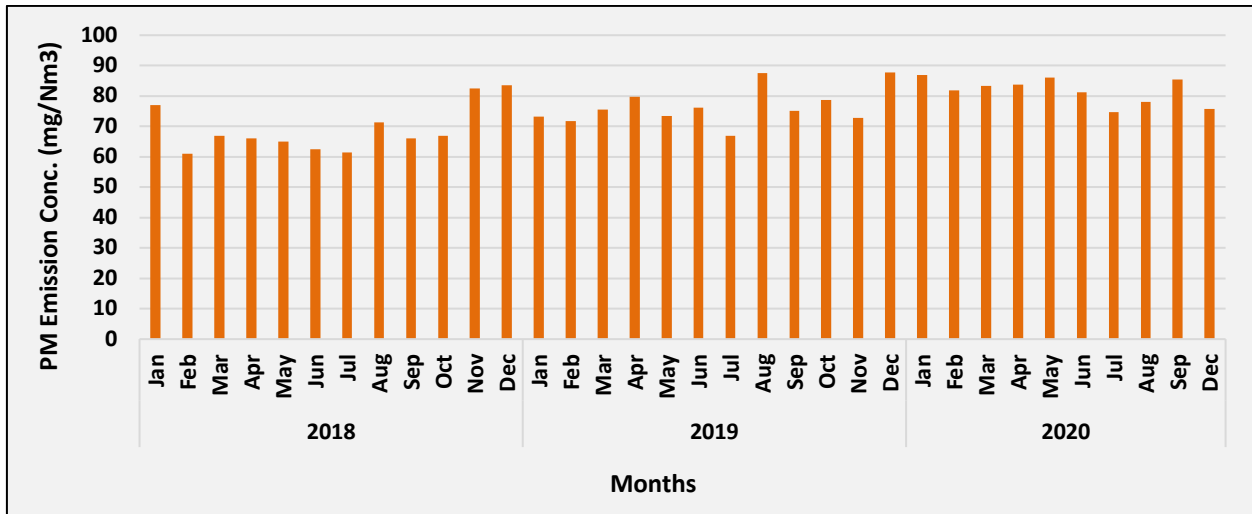


Fig. R11: Time series of monthly average PM Emission concentration in Rihand TPP (Stack 1)

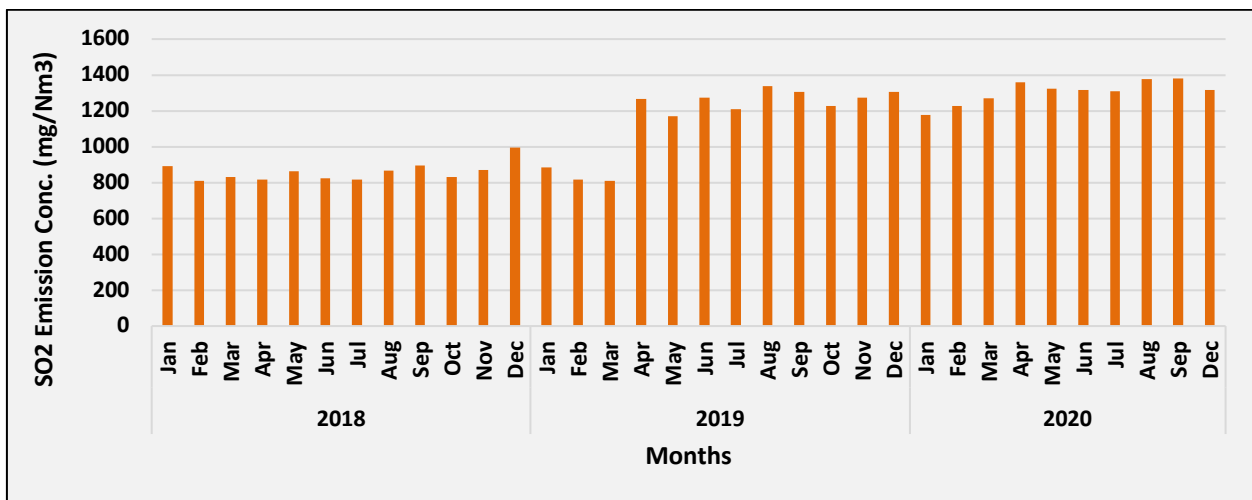


Fig. R12: Time series of monthly average SO₂ Emission concentration in Rihand TPP (Stack 1)

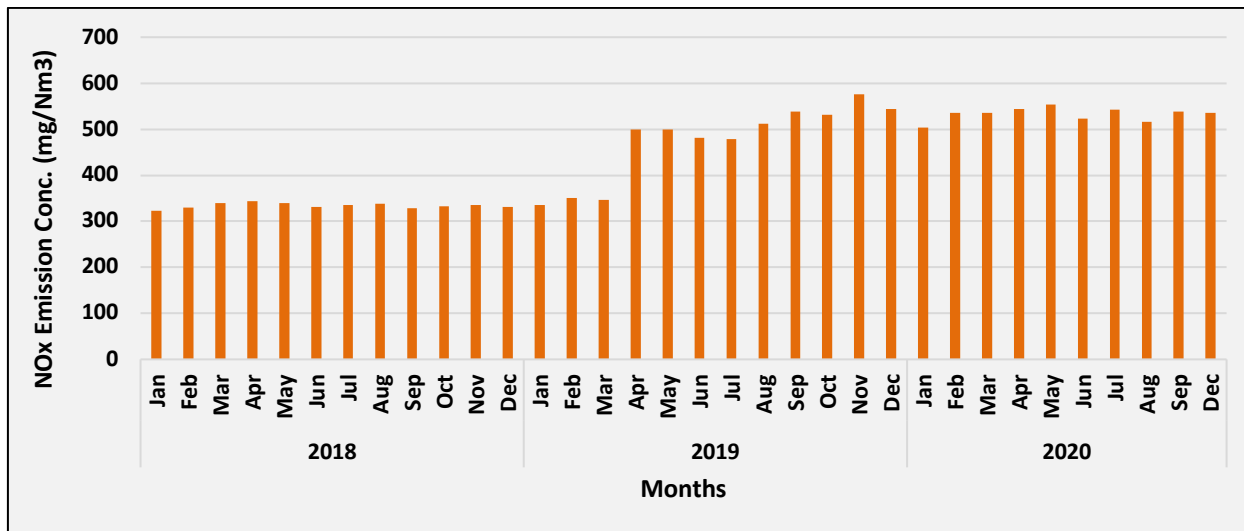


Fig. RI3: Time series of monthly average NO_x Emission concentration in Rihand TPP (Stack 1)

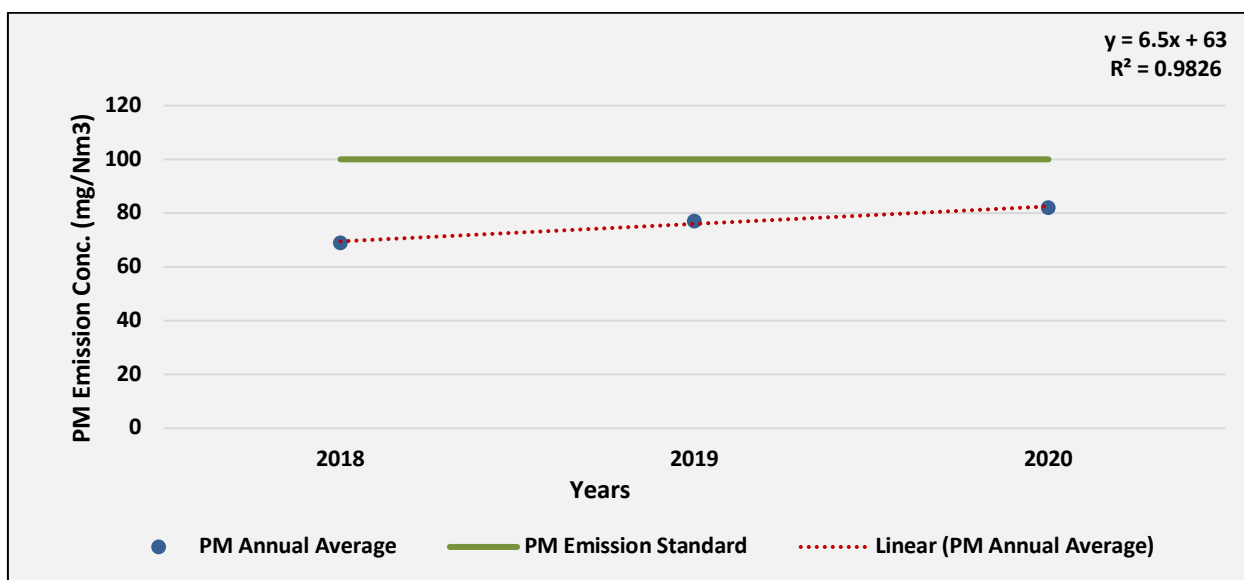


Fig. RI4: Trend of annual mean PM Emission air concentration in Rihand TPP (Stack 1)

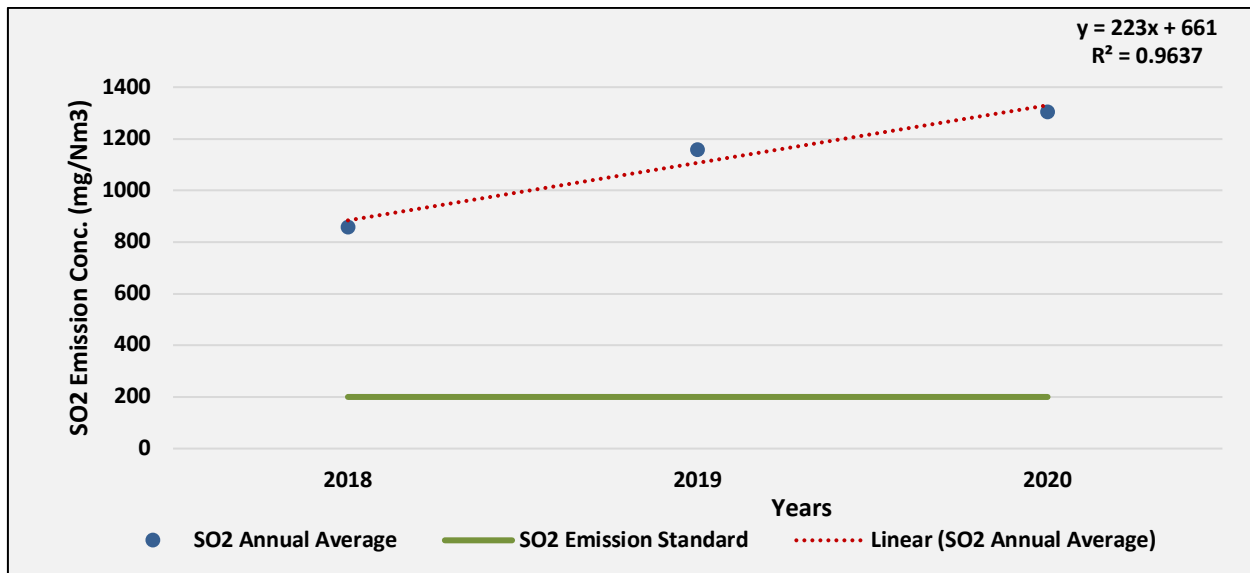


Fig. RI5: Trend of annual mean SO₂ Emission air concentration in Rihand TPP (Stack 1)

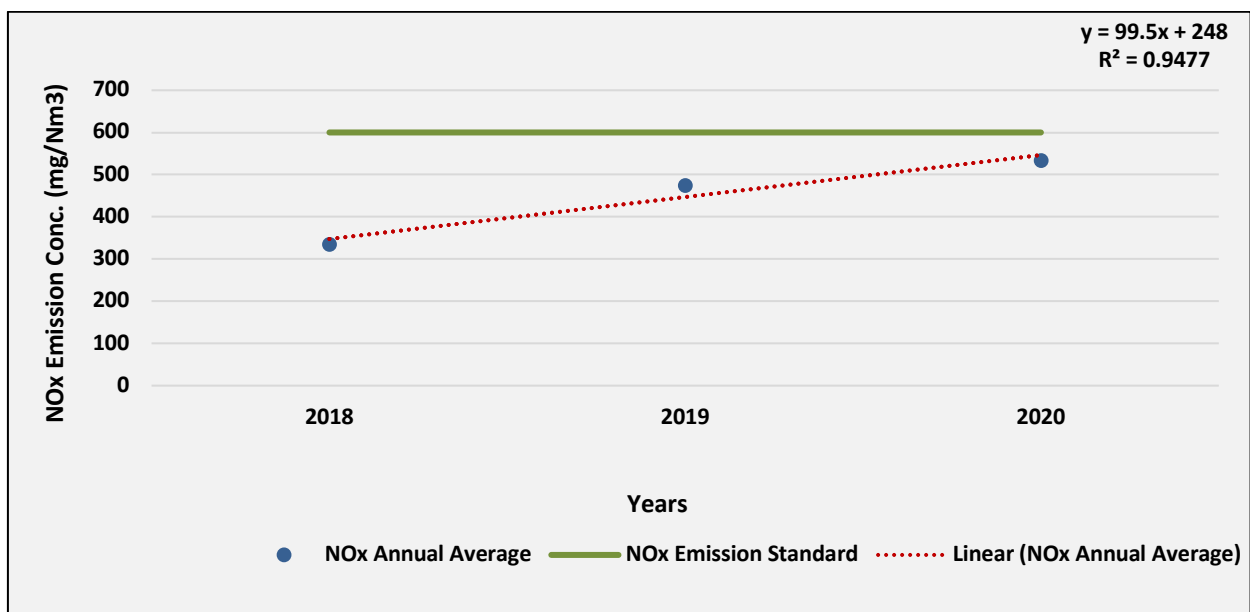


Fig. RI6: Trend of annual mean NO_x Emission air concentration in Rihand TPP (Stack 1)

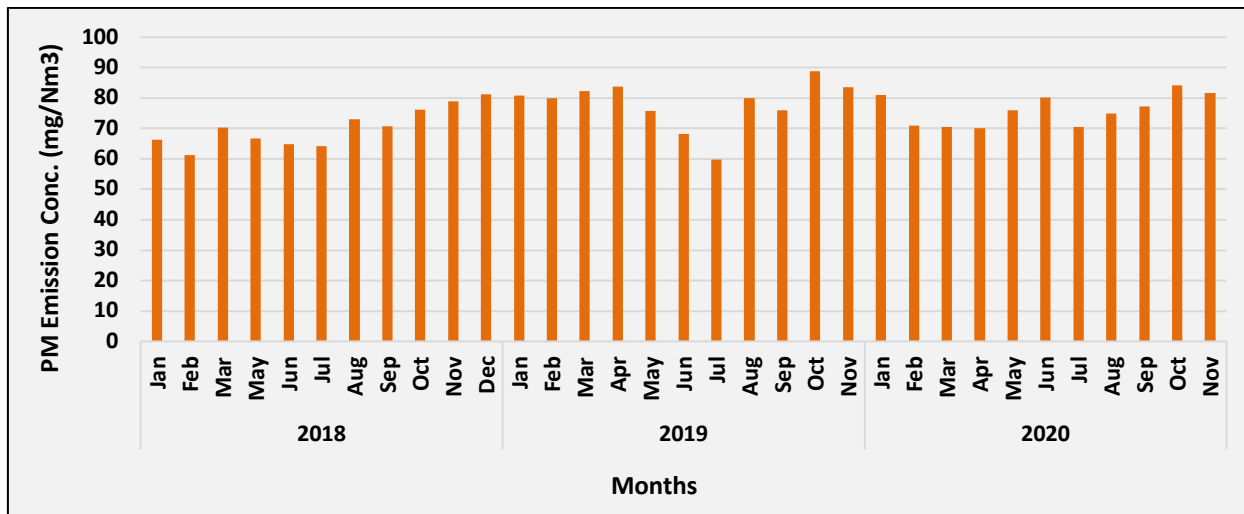


Fig. RI7: Time series of monthly average PM Emission concentration in Rihand TPP (Stack 2)

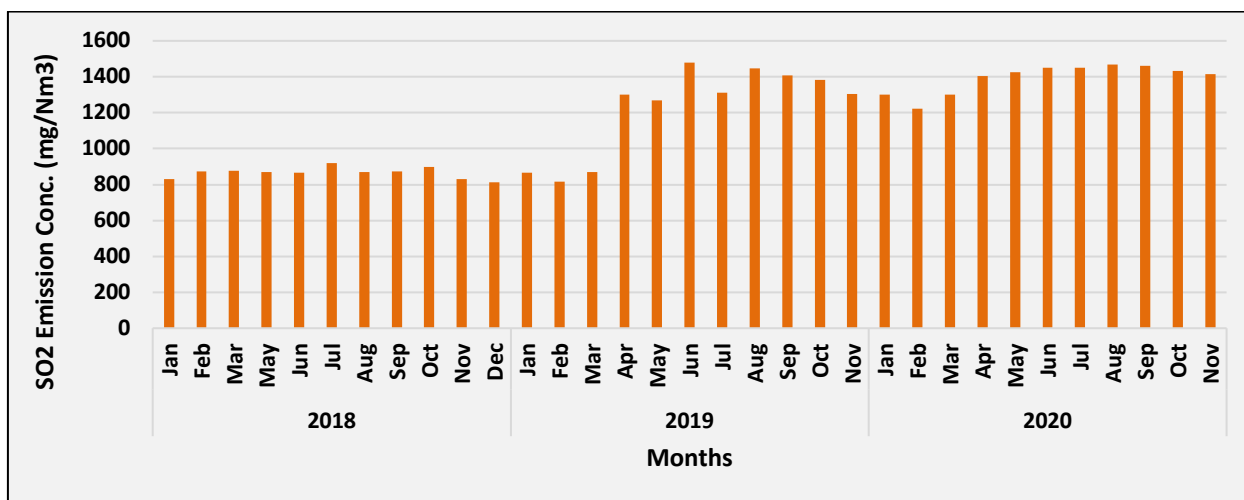


Fig. RI8: Time series of monthly average SO₂ Emission concentration in Rihand TPP (Stack 2)

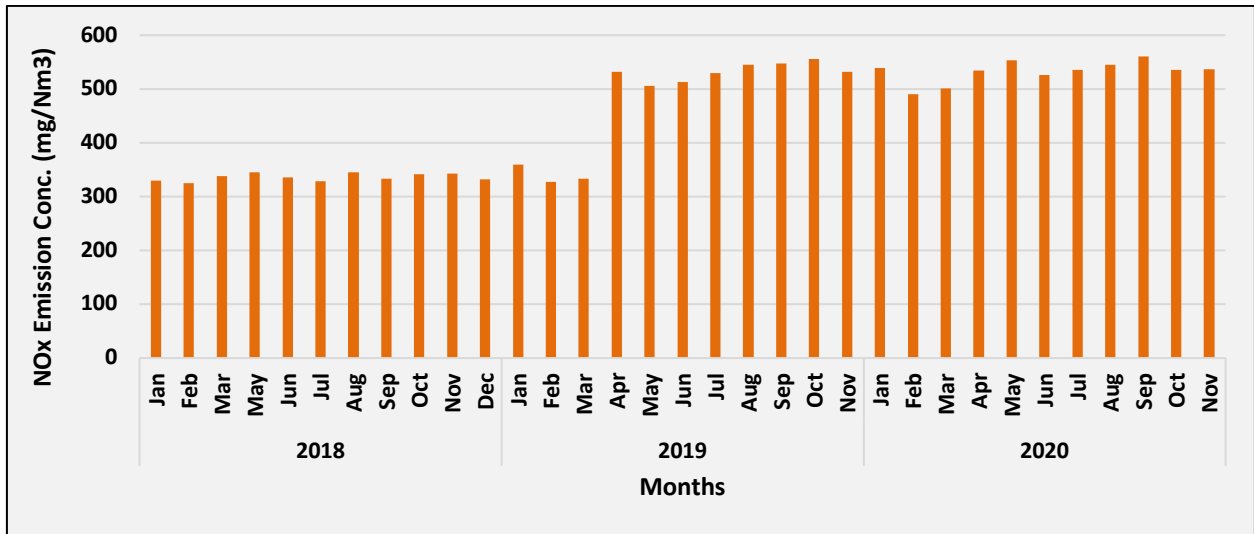


Fig. RI9: Time series of monthly average NO_x Emission concentration in Rihand TPP (Stack 2)

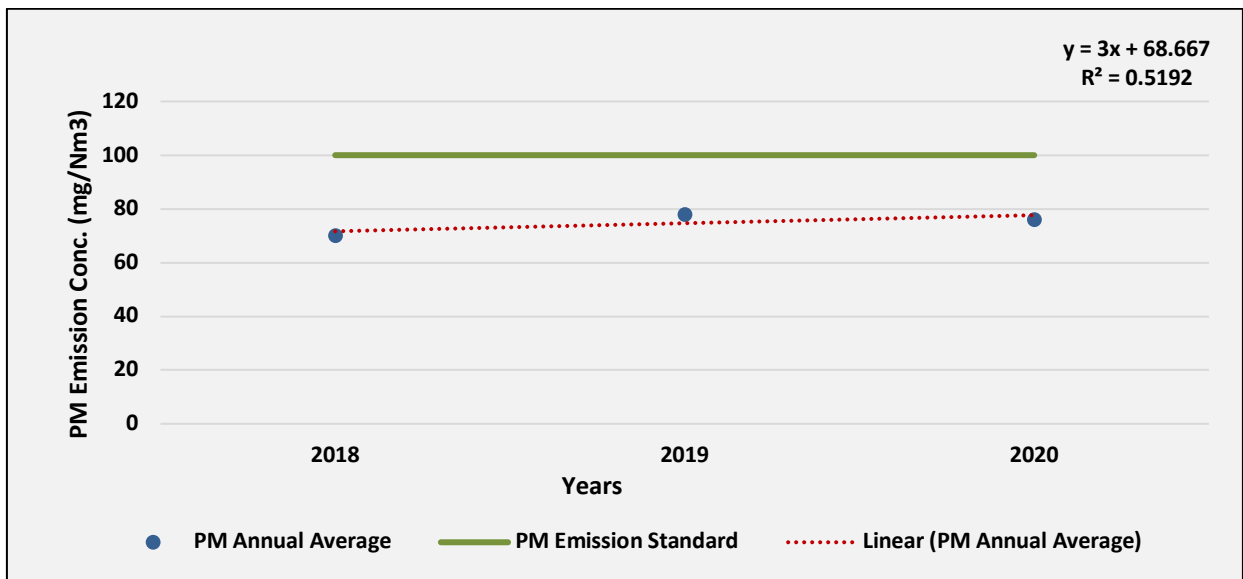


Fig. RI10: Trend of annual mean PM Emission air concentration in Rihand TPP (Stack 2)

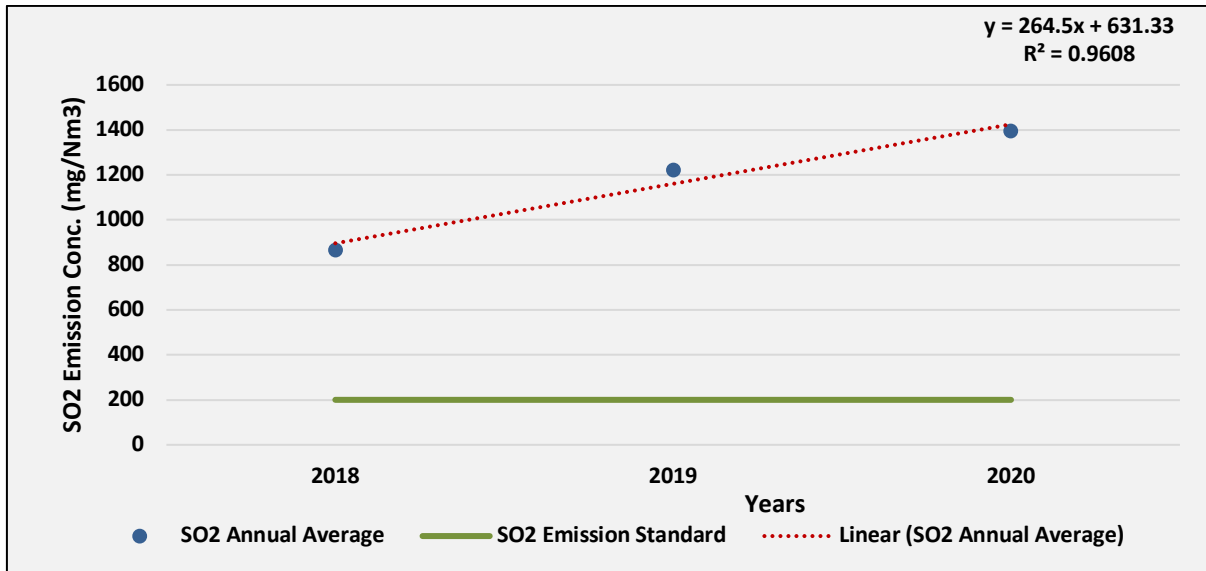


Fig. RI11: Trend of annual mean SO₂ Emission air concentration in Rihand TPP (Stack 2)

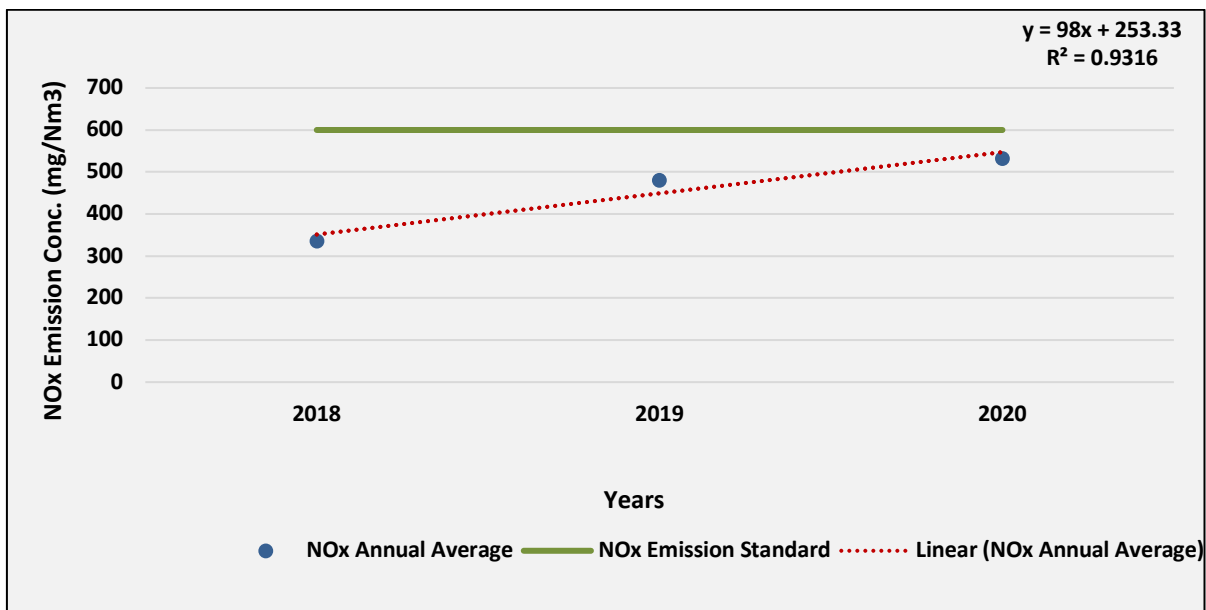


Fig. RI12: Trend of annual mean NO_x Emission air concentration in Rihand TPP (Stack 2)

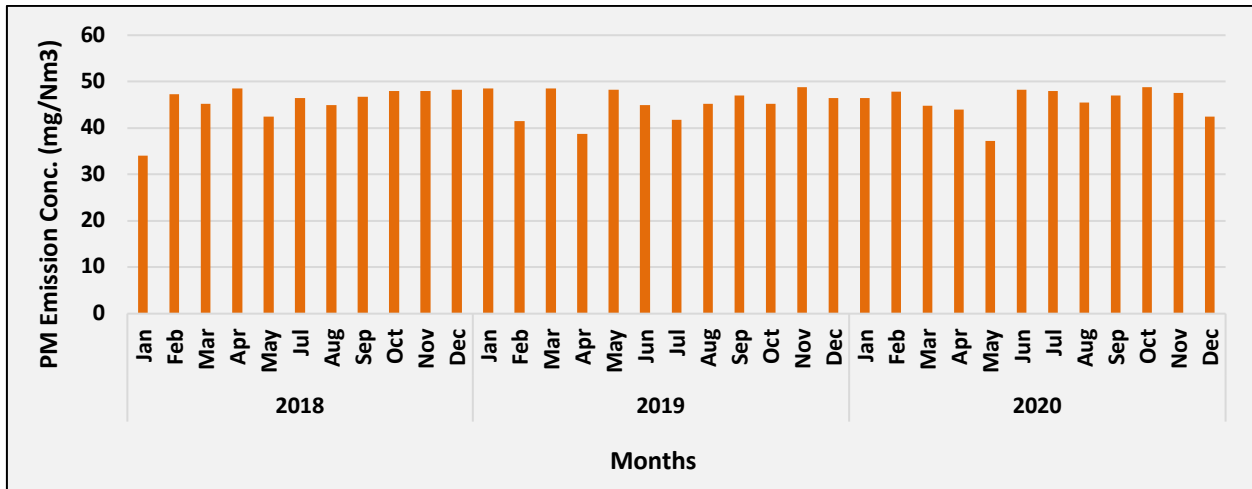


Fig. RI13: Time series of monthly average PM Emission concentration in Rihand TPP (Stack 3)

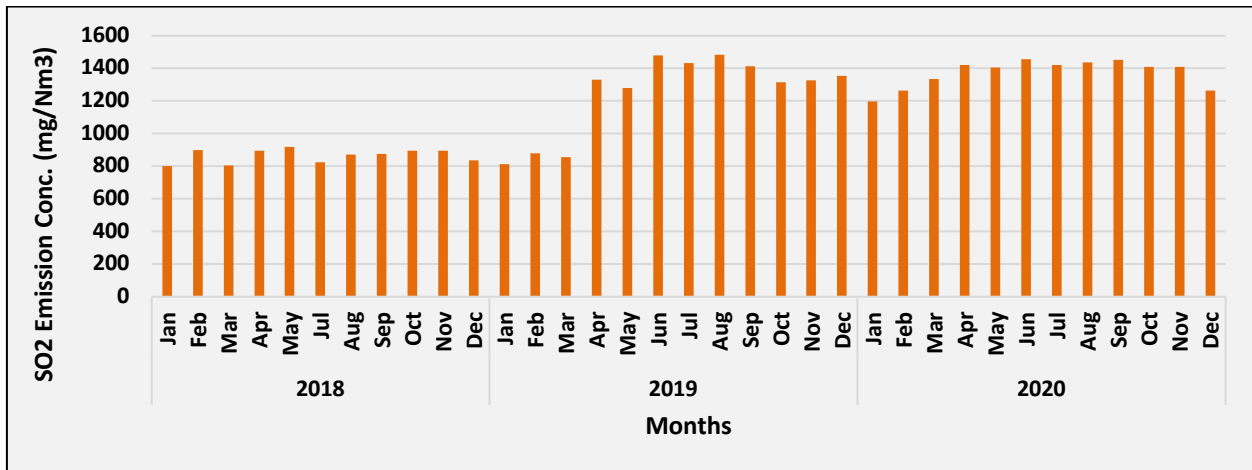


Fig. RI14: Time series of monthly average SO₂ Emission concentration in Rihand TPP (Stack 3)

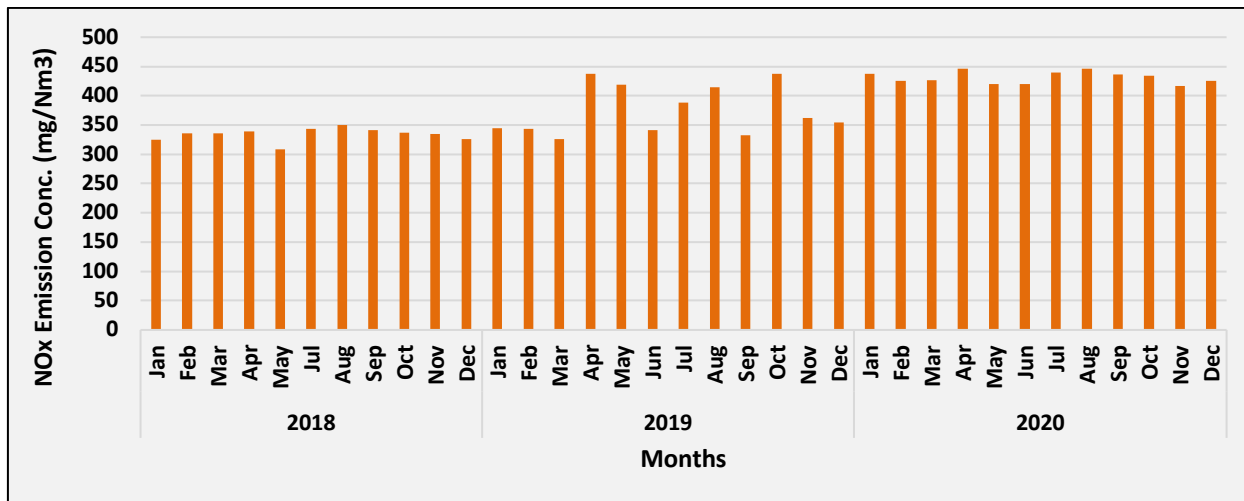


Fig. RI15: Time series of monthly average NO_x Emission concentration in Rihand TPP (Stack 3)

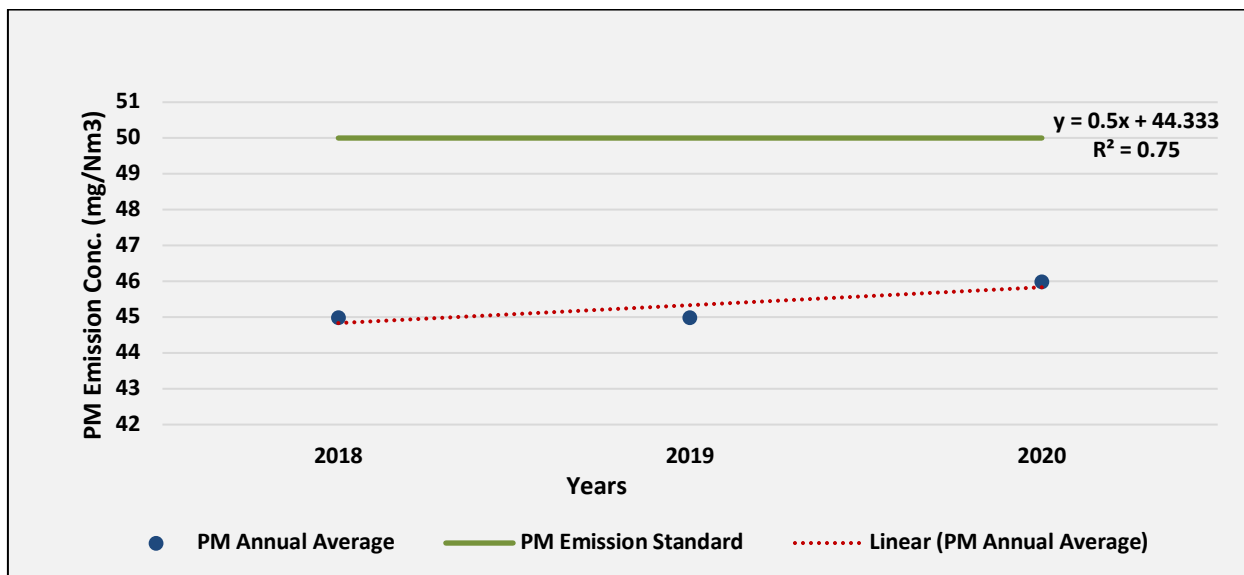


Fig. RI16: Trend of annual mean PM Emission air concentration in Rihand TPP (Stack 3)

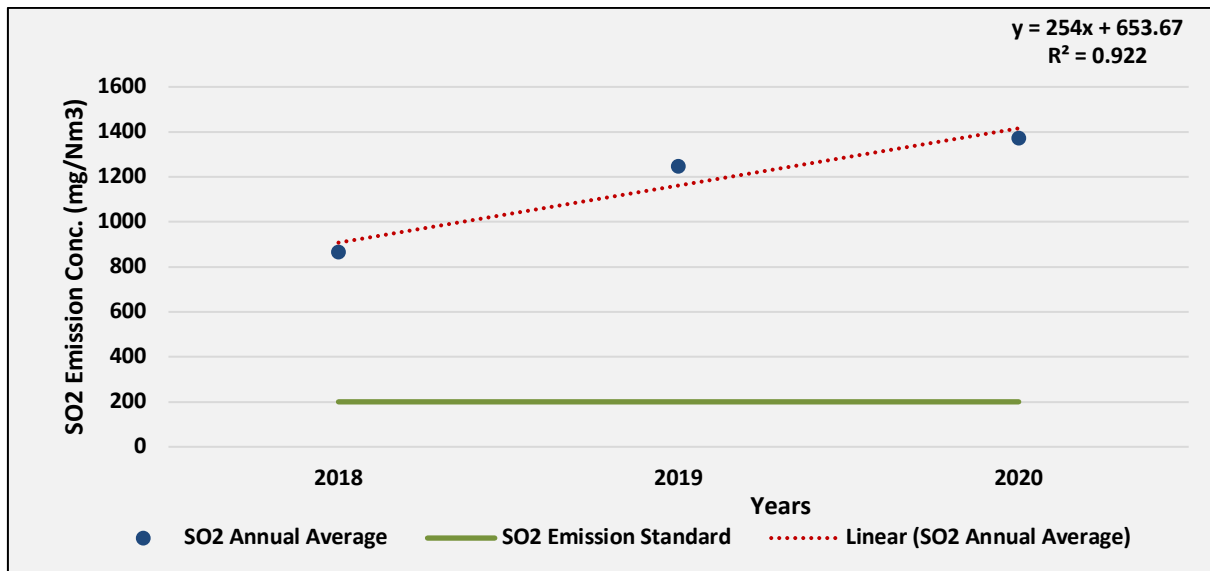


Fig. RI17: Trend of annual mean SO₂ Emission air concentration in Rihand TPP (Stack 3)

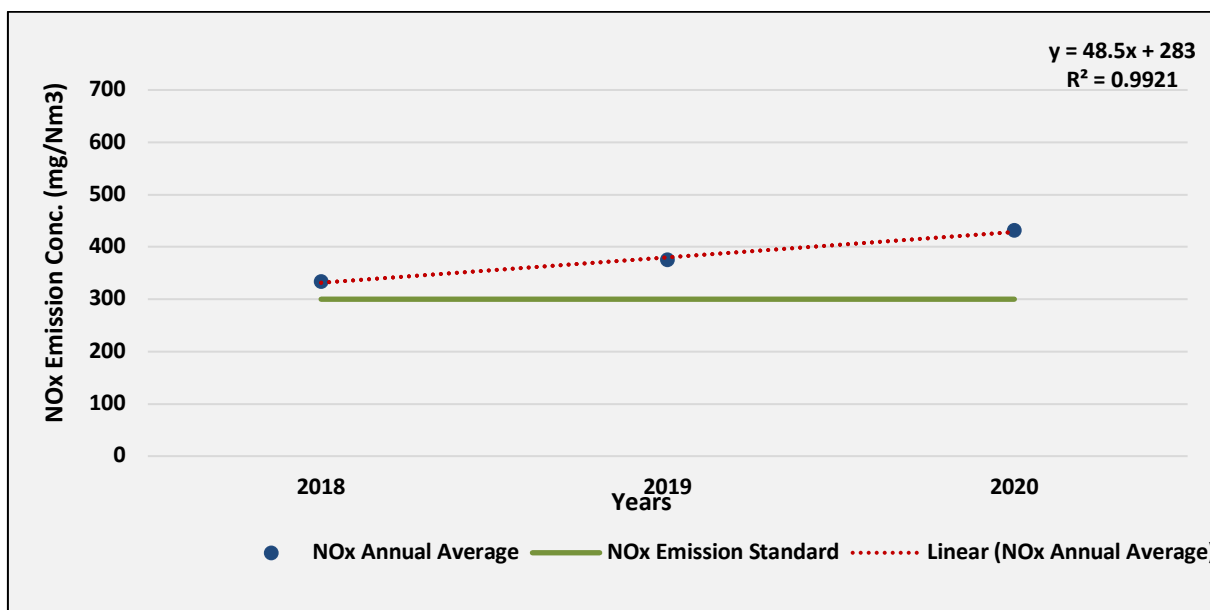


Fig. RI18: Trend of annual mean NO_x Emission air concentration in Rihand TPP (Stack 3)

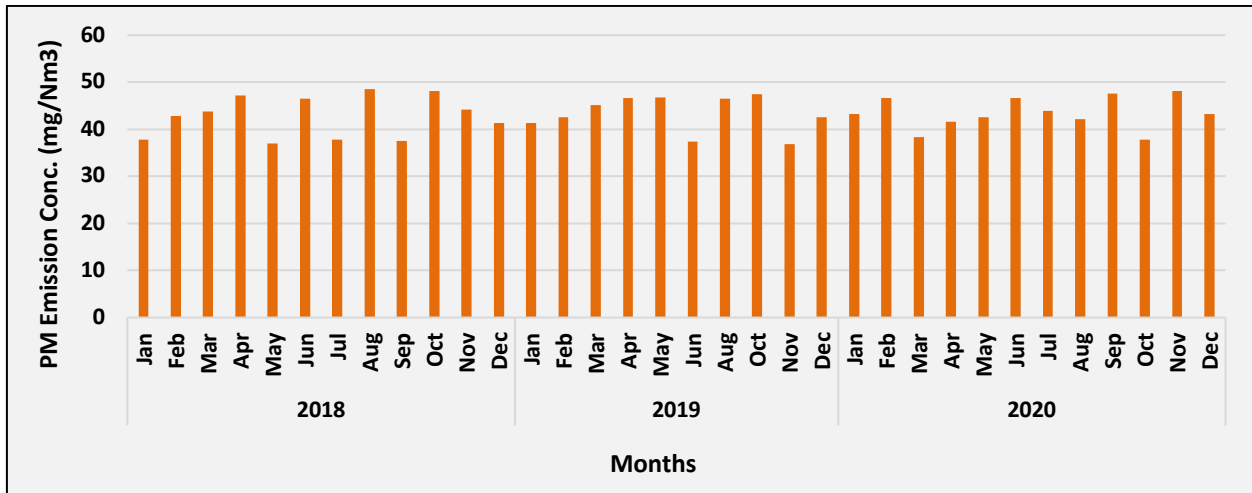


Fig. RI19: Time series of monthly average PM Emission concentration in Rihand TPP (Stack 4)

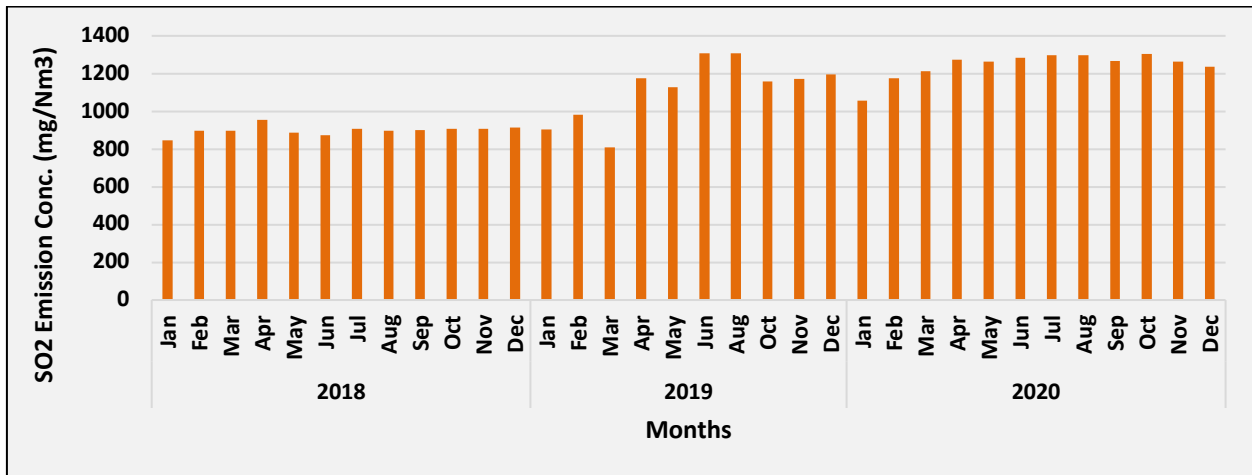


Fig. RI20: Time series of monthly average SO₂ Emission concentration in Rihand TPP (Stack 4)

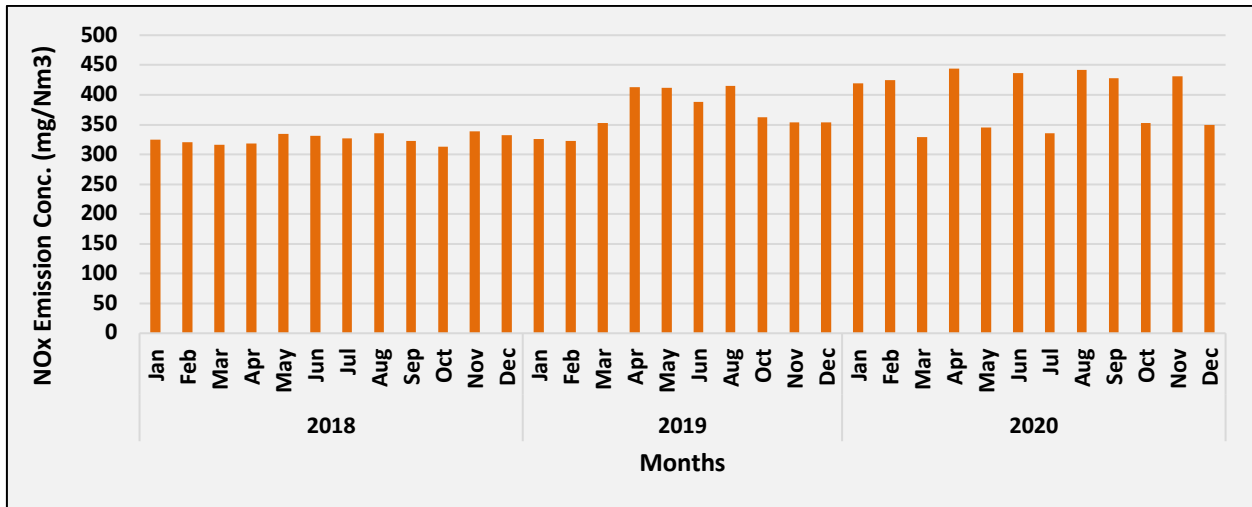


Fig. RI21: Time series of monthly average NO_x Emission concentration in Rihand TPP (Stack 4)

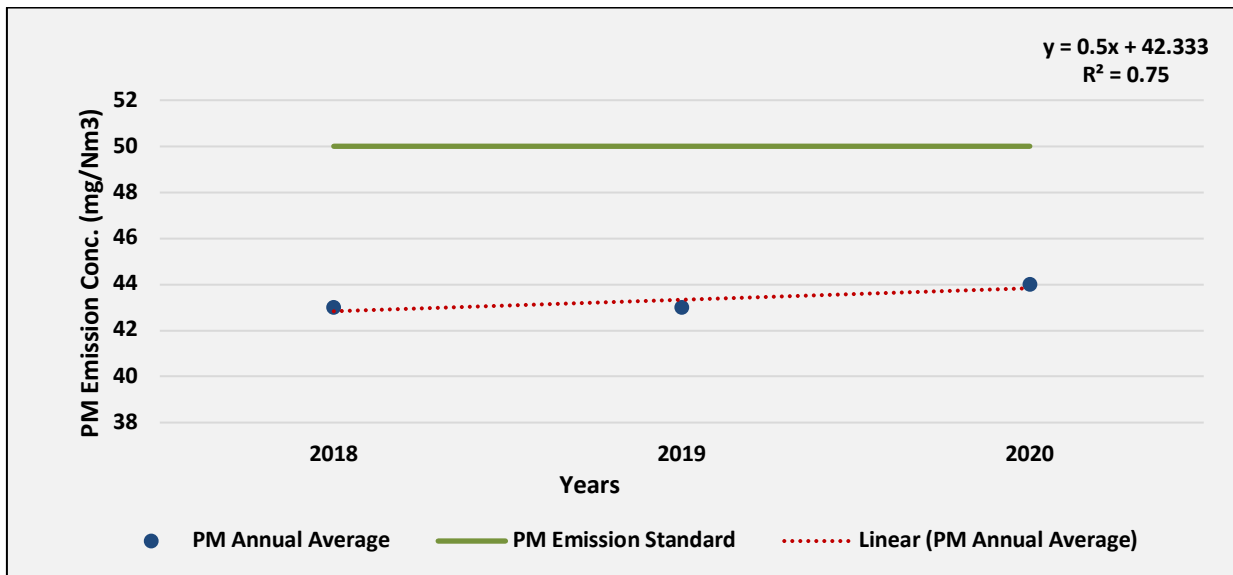


Fig. RI22: Trend of annual mean PM Emission air concentration in Rihand TPP (Stack 4)

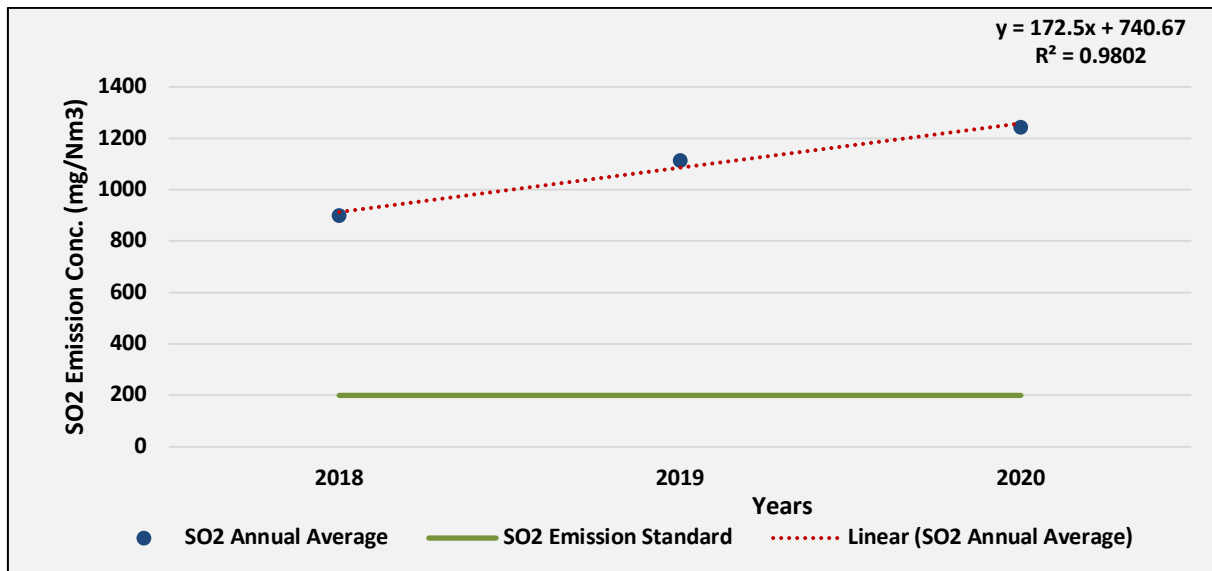


Fig. RI23: Trend of annual mean SO₂ Emission air concentration in Rihand TPP (Stack 4)

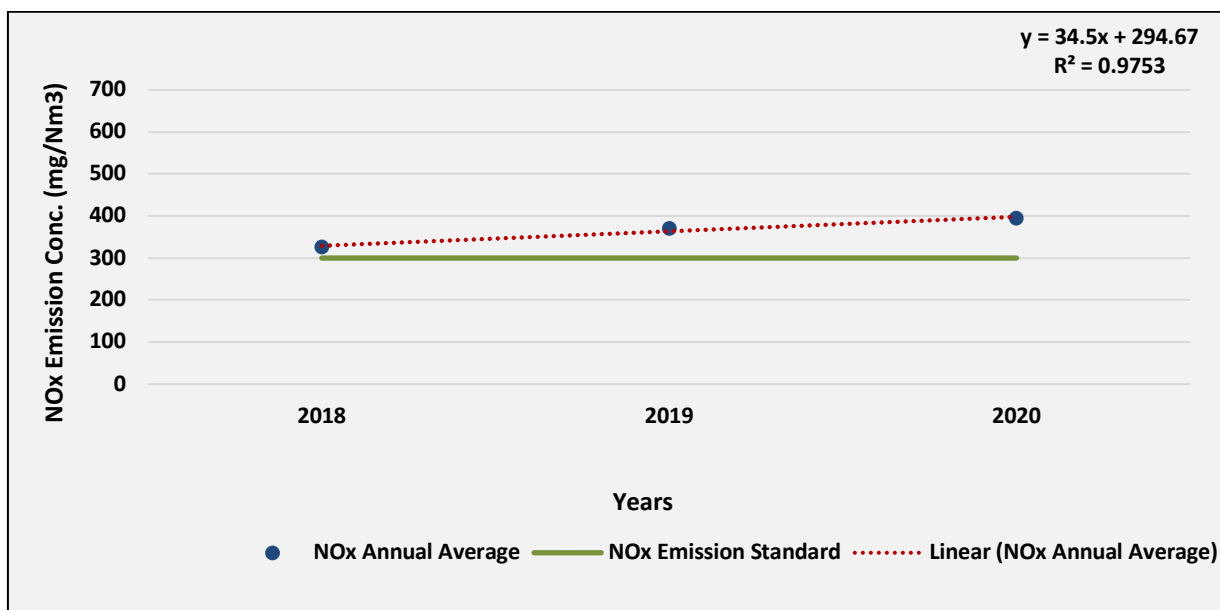


Fig. RI24: Trend of annual mean NO_x Emission air concentration in Rihand TPP (Stack 4)

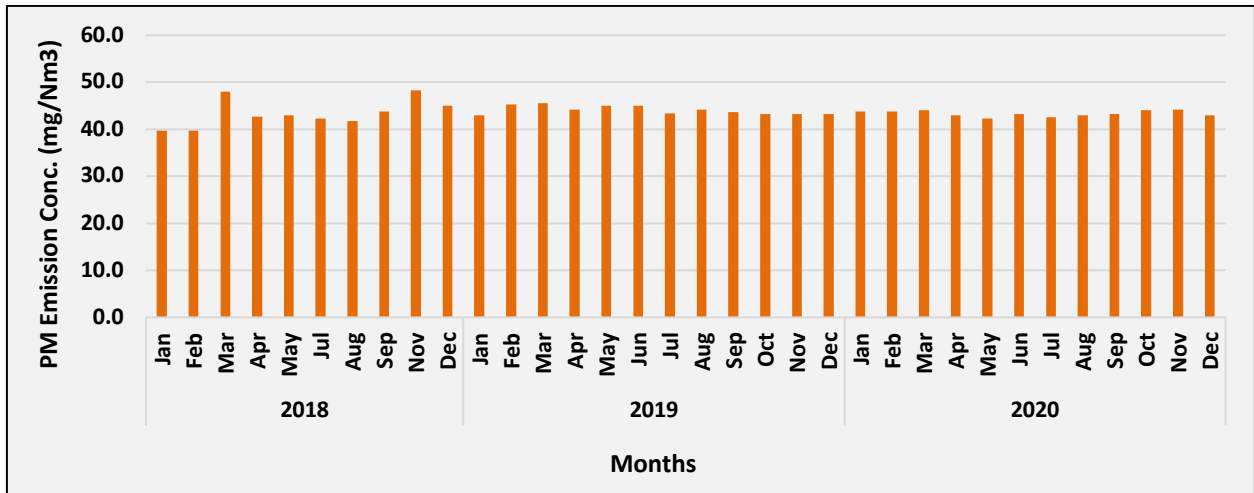


Fig. RI25: Time series of monthly average PM Emission concentration in Rihand TPP (Stack 5)

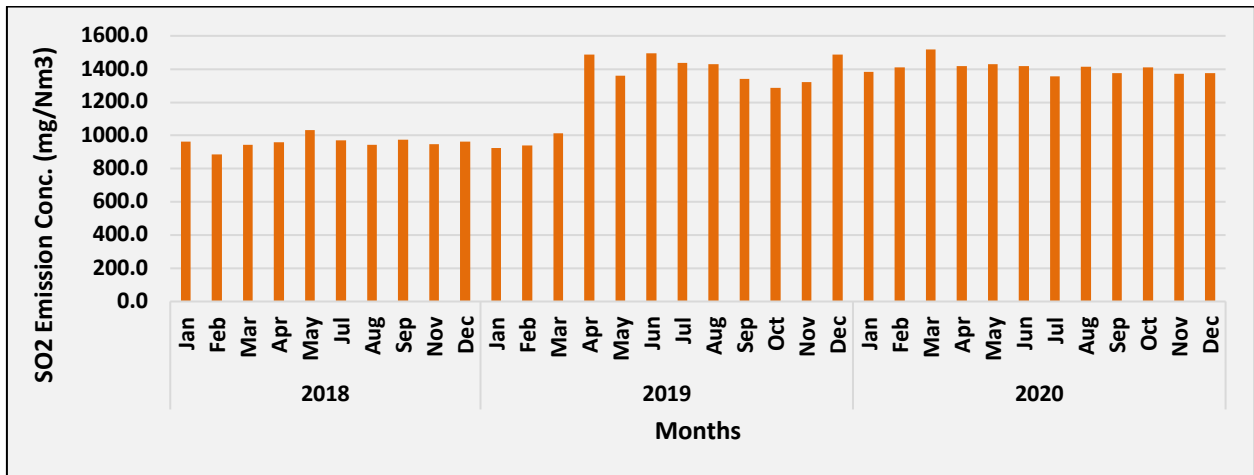


Fig. RI26: Time series of monthly average SO₂ Emission concentration in Rihand TPP (Stack 5)

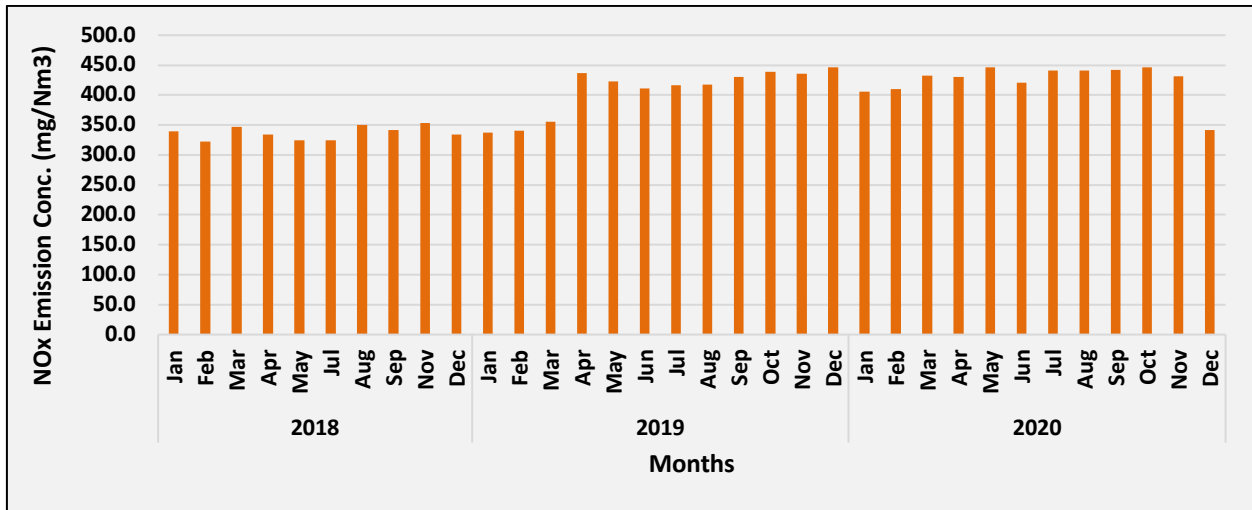


Fig. RI27: Time series of monthly average NO_x Emission concentration in Rihand TPP (Stack 5)

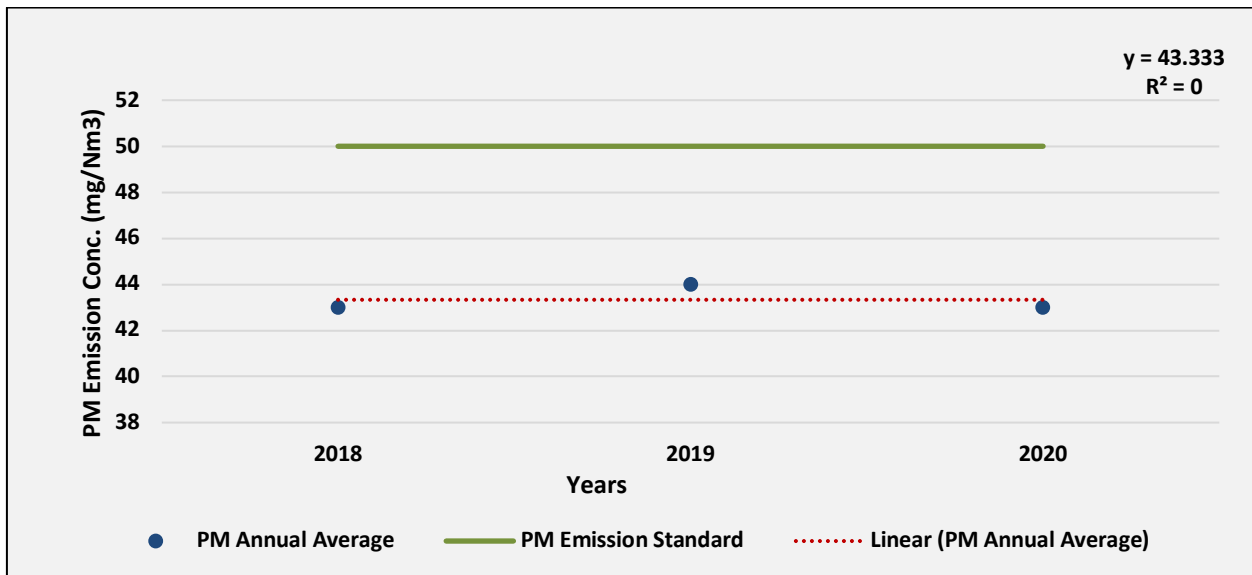


Fig. RI28: Trend of annual mean PM Emission air concentration in Rihand TPP (Stack 5)

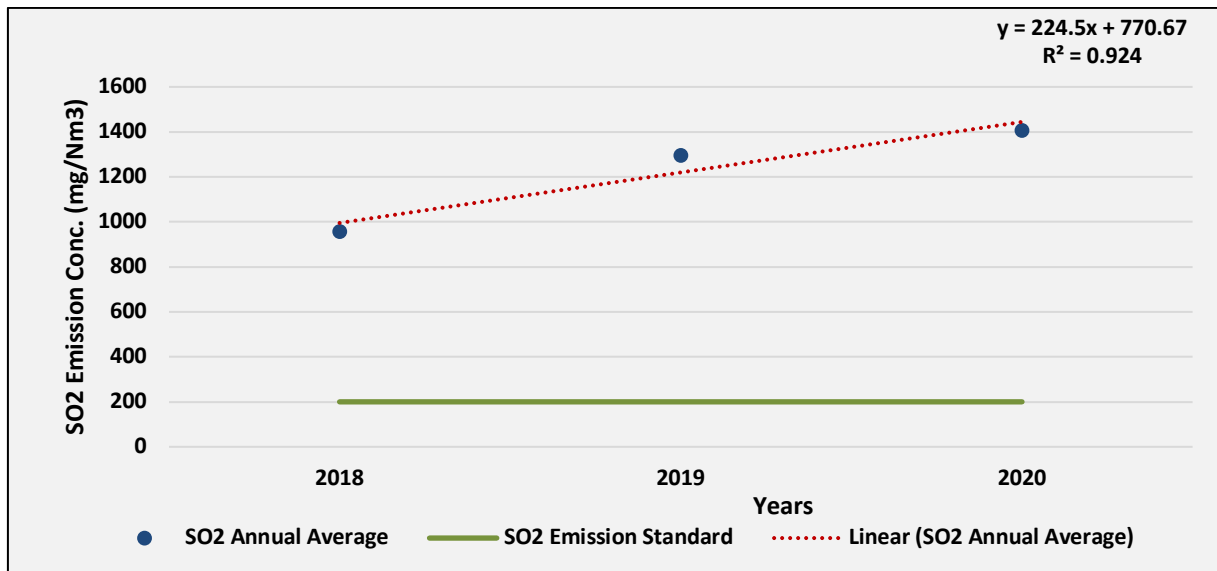


Fig. RI29: Trend of annual mean SO₂ Emission air concentration in Rihand TPP (Stack 5)

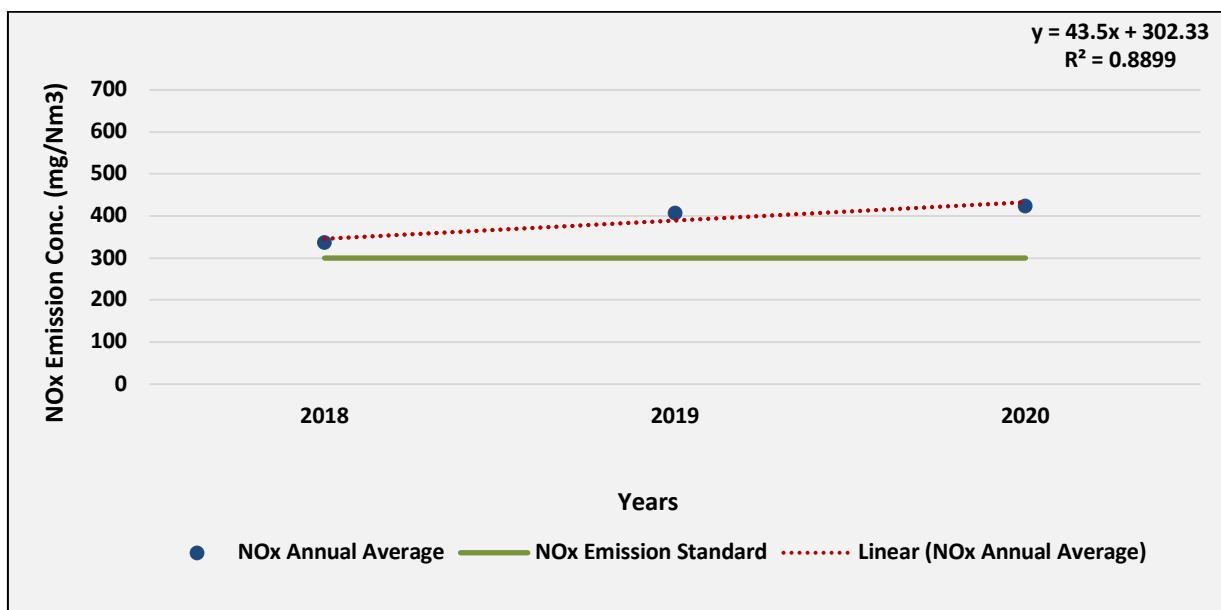


Fig. RI30: Trend of annual mean NO_x Emission air concentration in Rihand TPP (Stack 5)

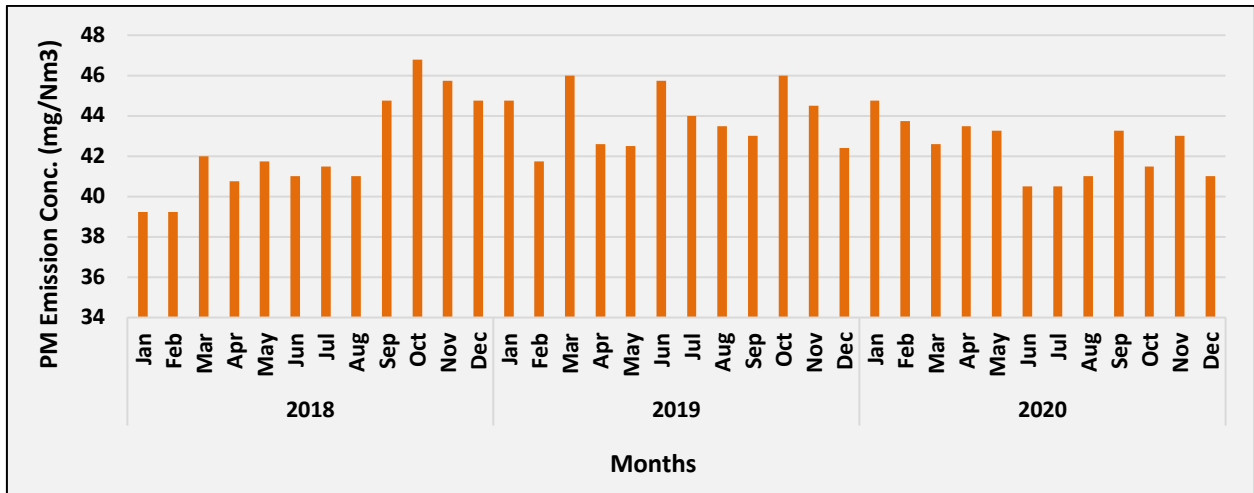


Fig. RI31: Time series of monthly average PM Emission concentration in Rihand TPP (Stack 6)

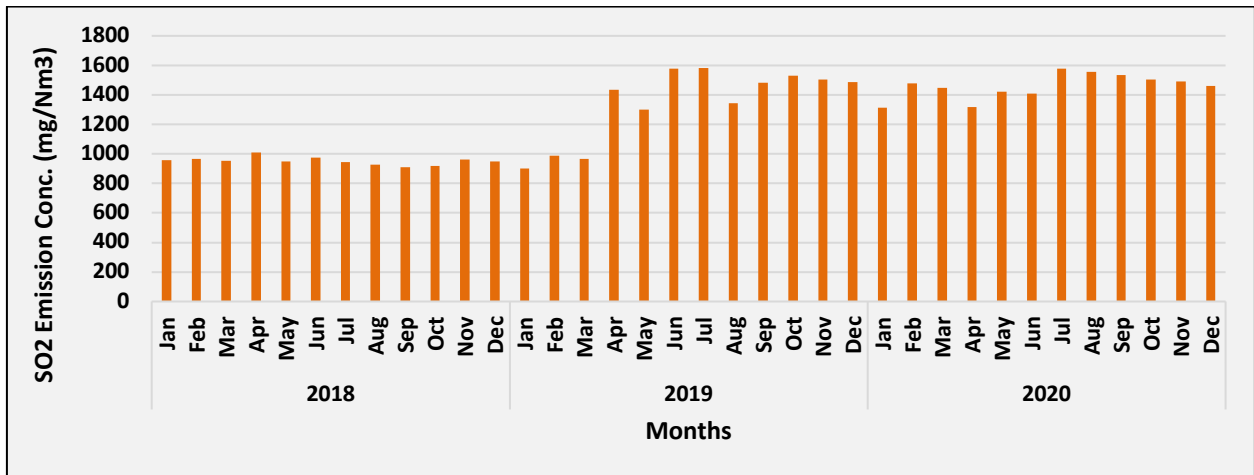


Fig. RI32: Time series of monthly average SO₂ Emission concentration in Rihand TPP (Stack 6)

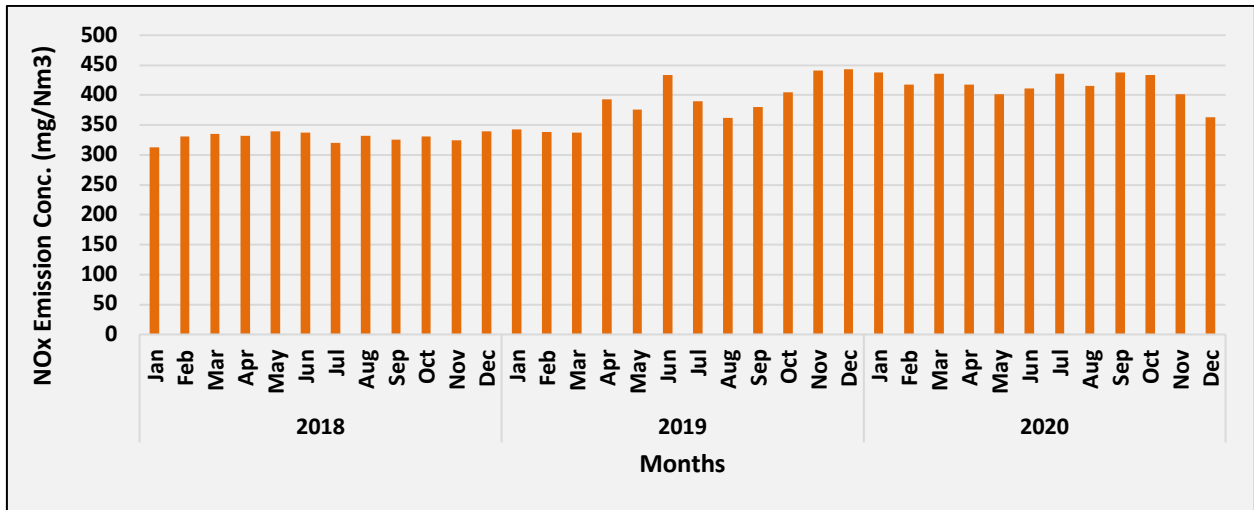


Fig. RI33: Time series of monthly average NO_x Emission concentration in Rihand TPP (Stack 6)

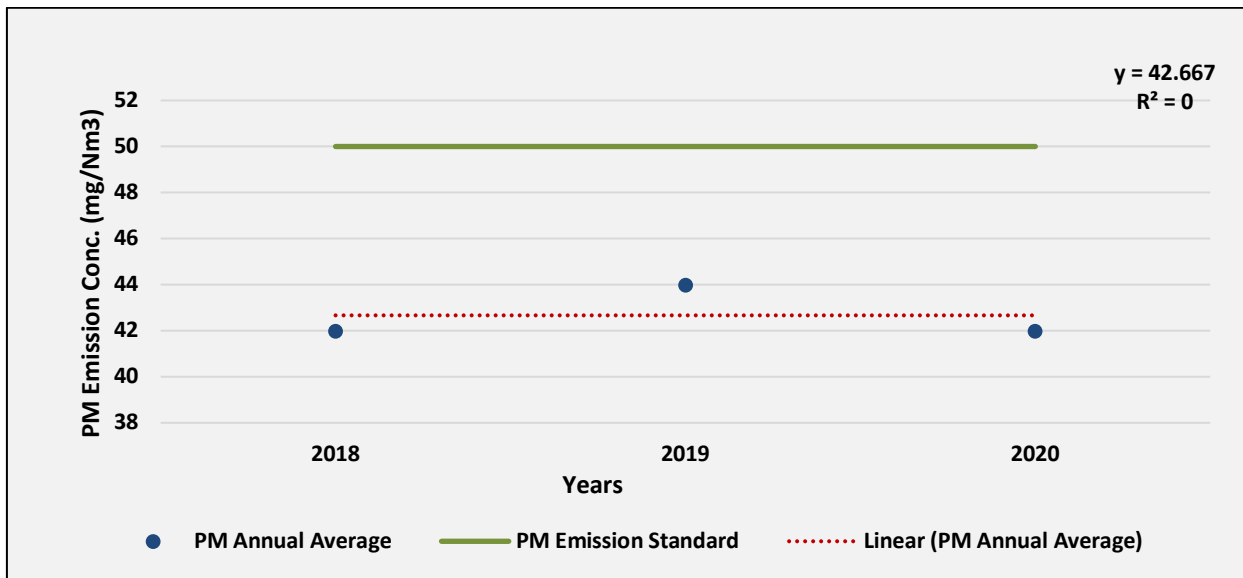


Fig. RI34: Trend of annual mean PM Emission air concentration in Rihand TPP (Stack 6)

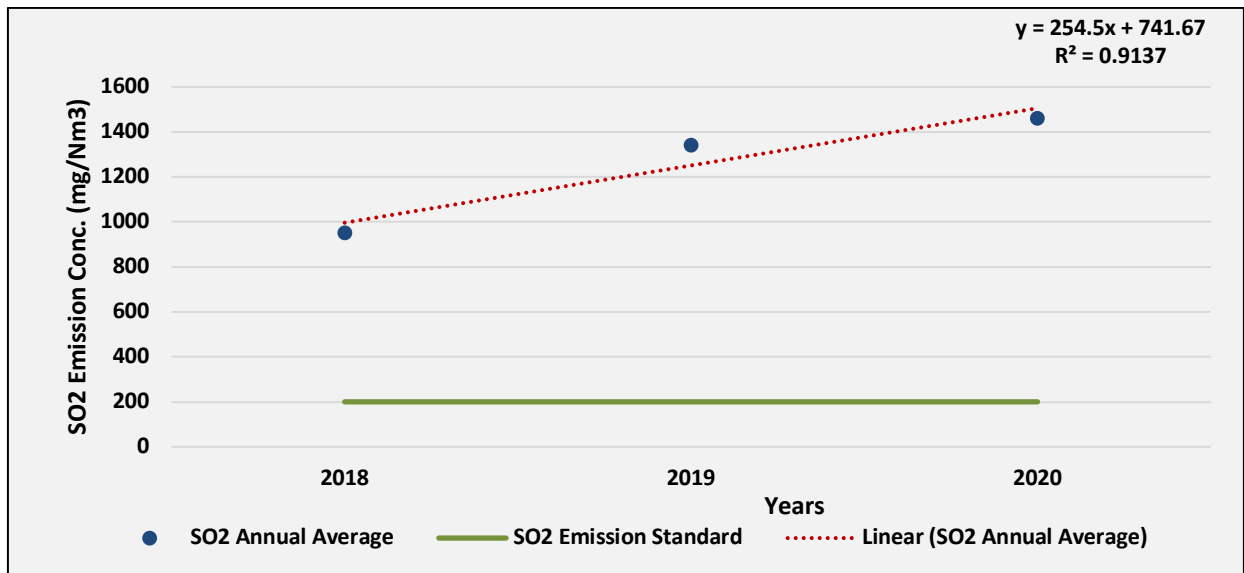


Fig. RI35: Trend of annual mean SO₂ Emission air concentration in Rihand TPP (Stack 6)

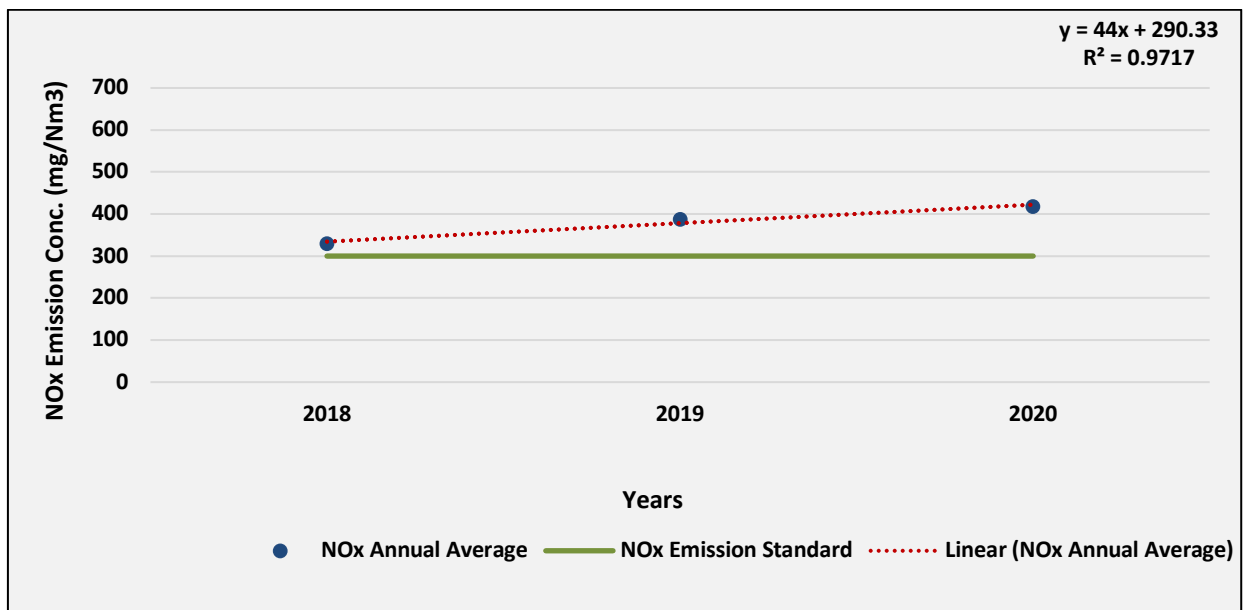


Fig. RI36: Trend of annual mean NO_x Emission air concentration in Rihand TPP (Stack 6)

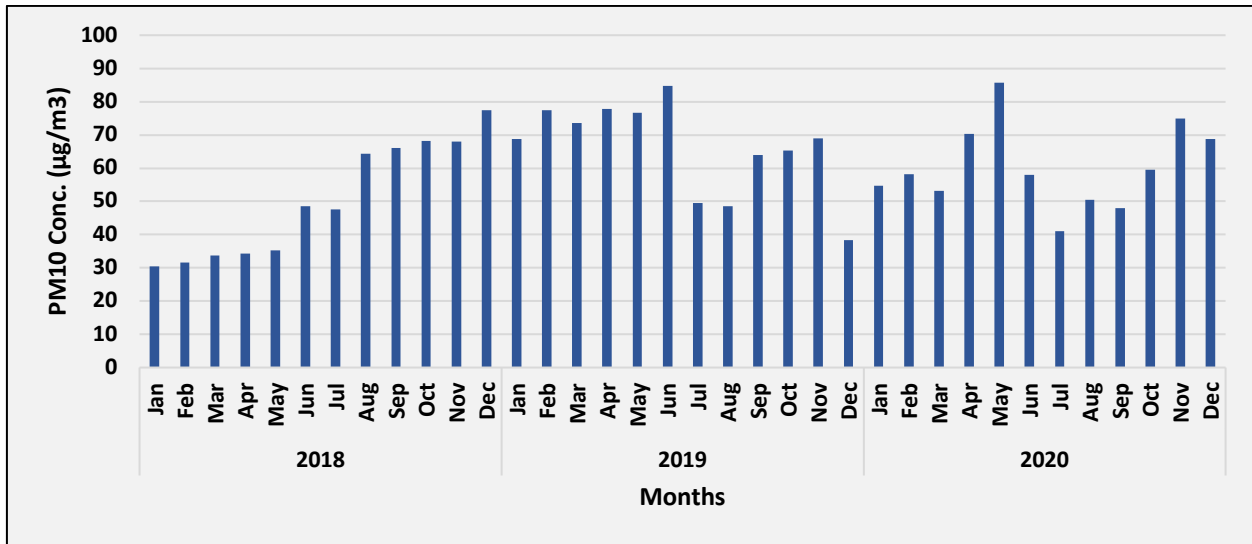


Fig. RI37: Time series of monthly average PM₁₀ ambient air concentration in Rihand TPP (Ambient)

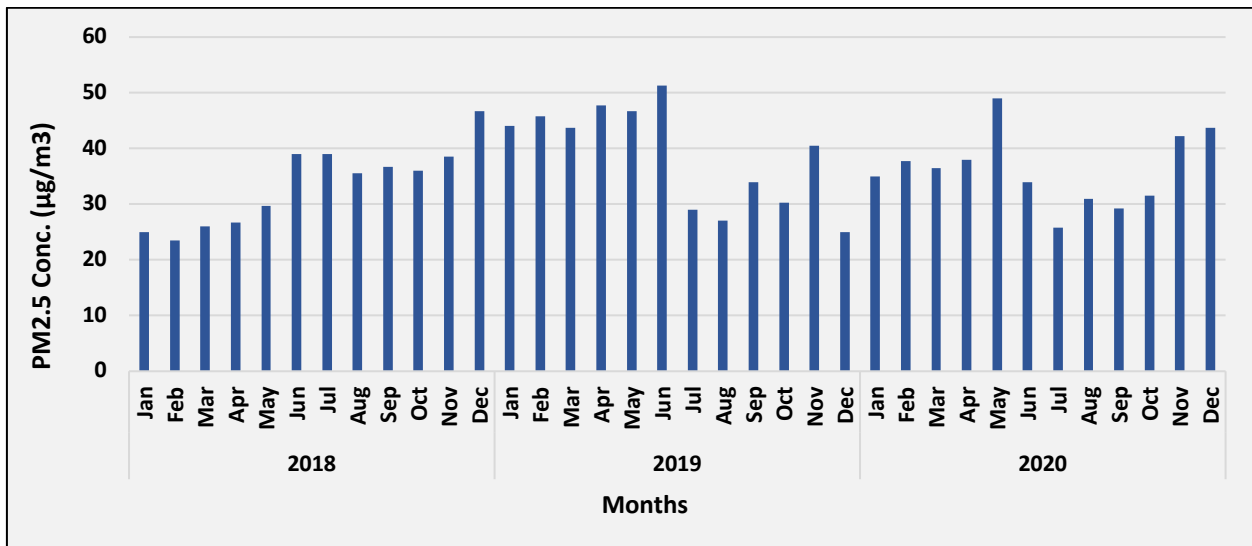


Fig. RI38: Time series of monthly average PM_{2.5} ambient air concentration in Rihand TPP (Ambient)

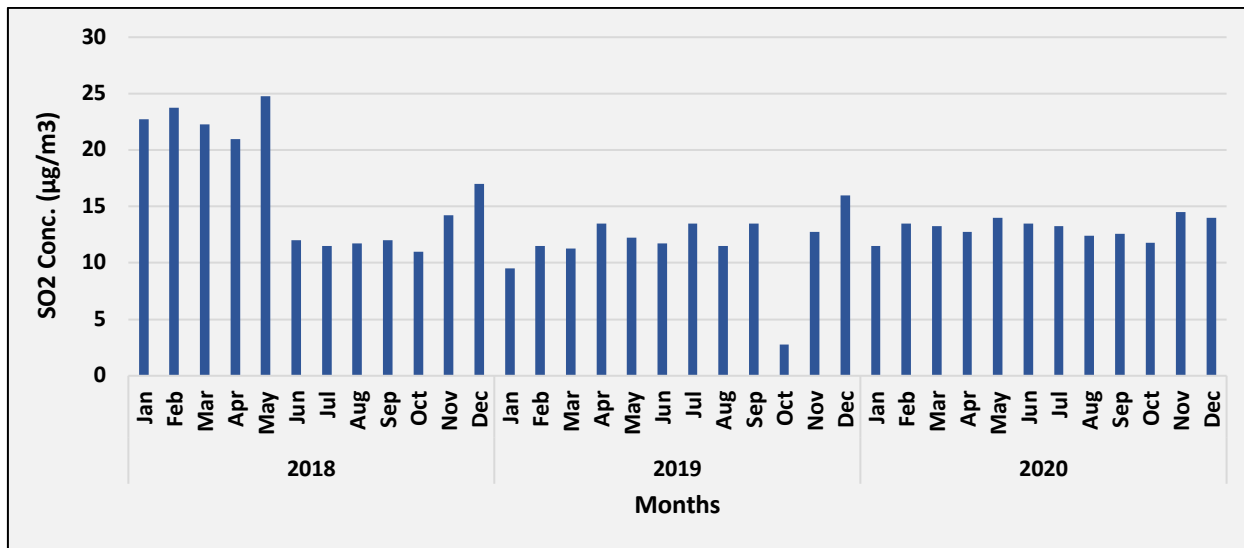


Fig. RI39: Time series of monthly average SO_2 ambient air concentration in Rihand TPP (Ambient)

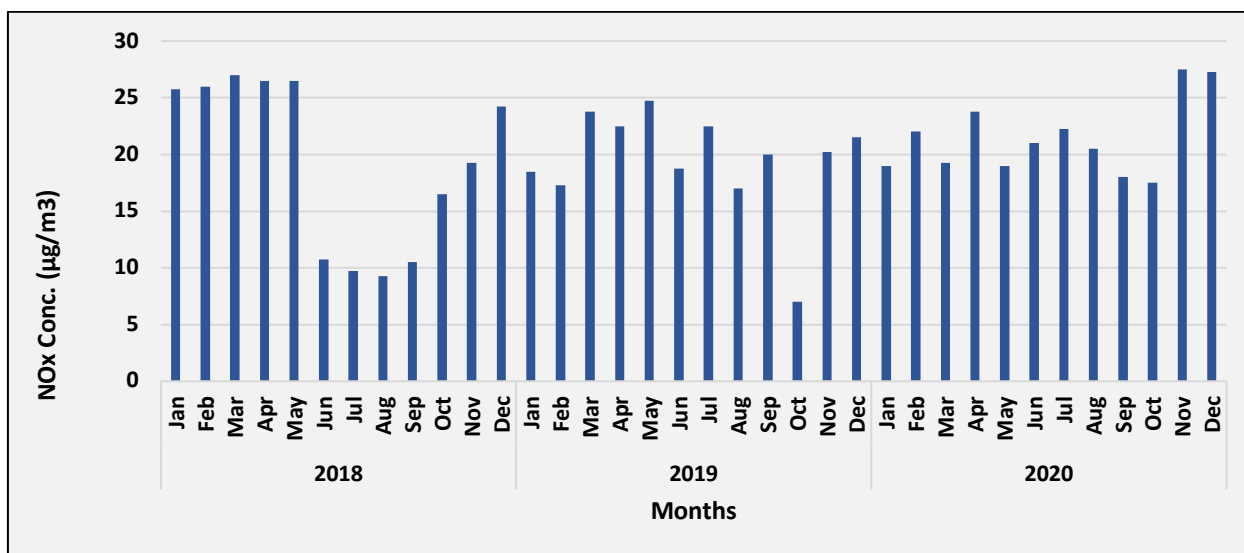


Fig. RI40: Time series of monthly average NO_x ambient air concentration in Rihand TPP (Ambient)

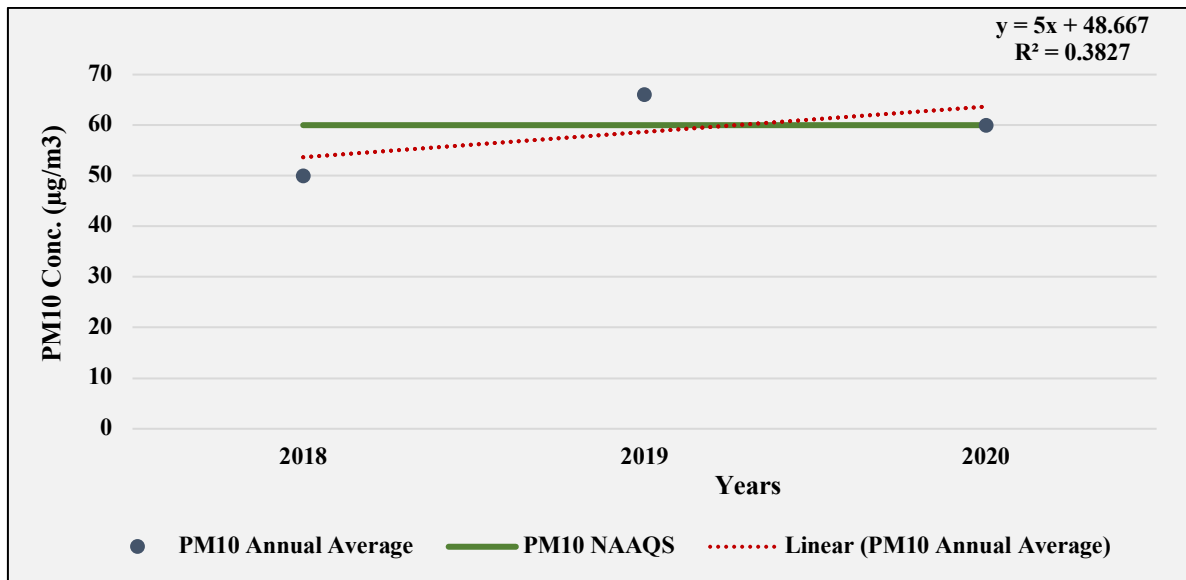


Fig. RI41: Trend of annual mean PM₁₀ ambient air concentration in Rihand TPP (Ambient)

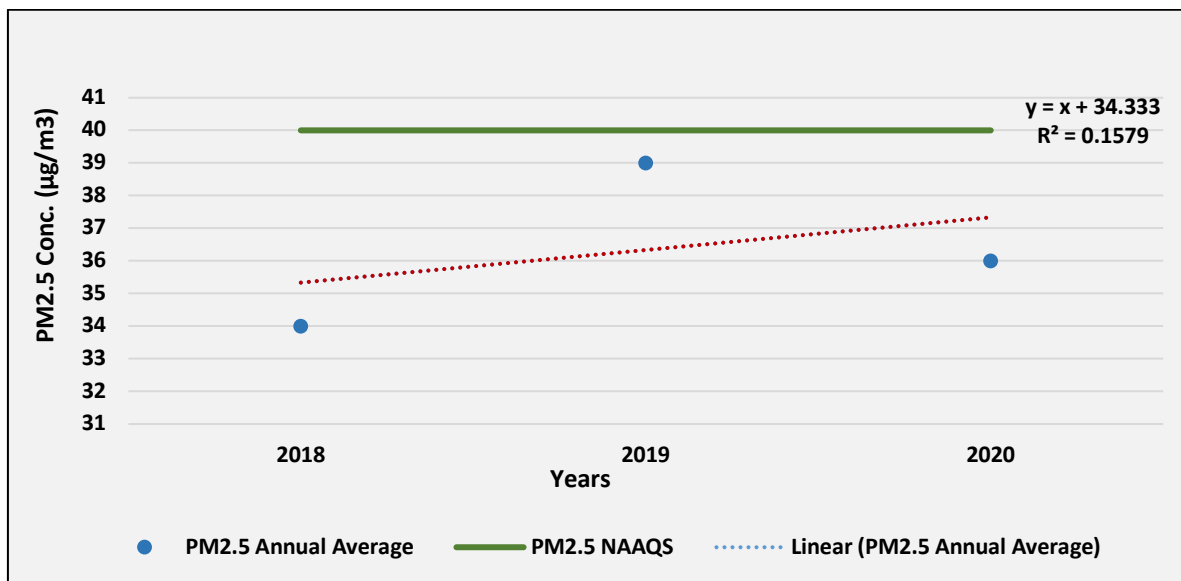


Fig. RI42: Trend of annual mean PM_{2.5} ambient air concentration in Rihand TPP (Ambient)

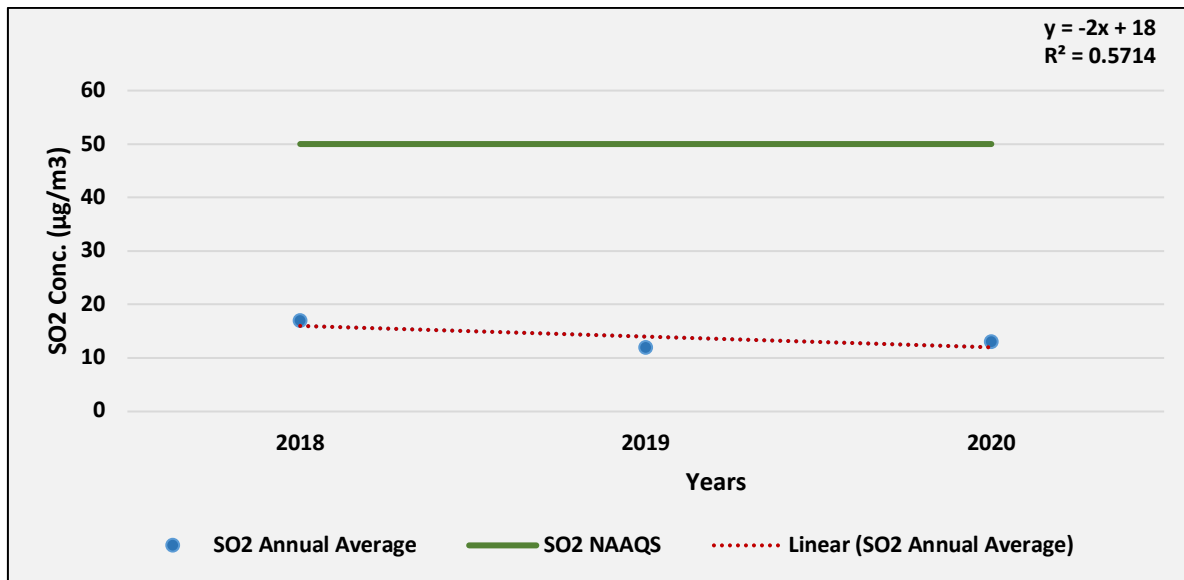


Fig. RI43: Trend of annual mean SO₂ ambient air concentration in Rihand TPP (Ambient)

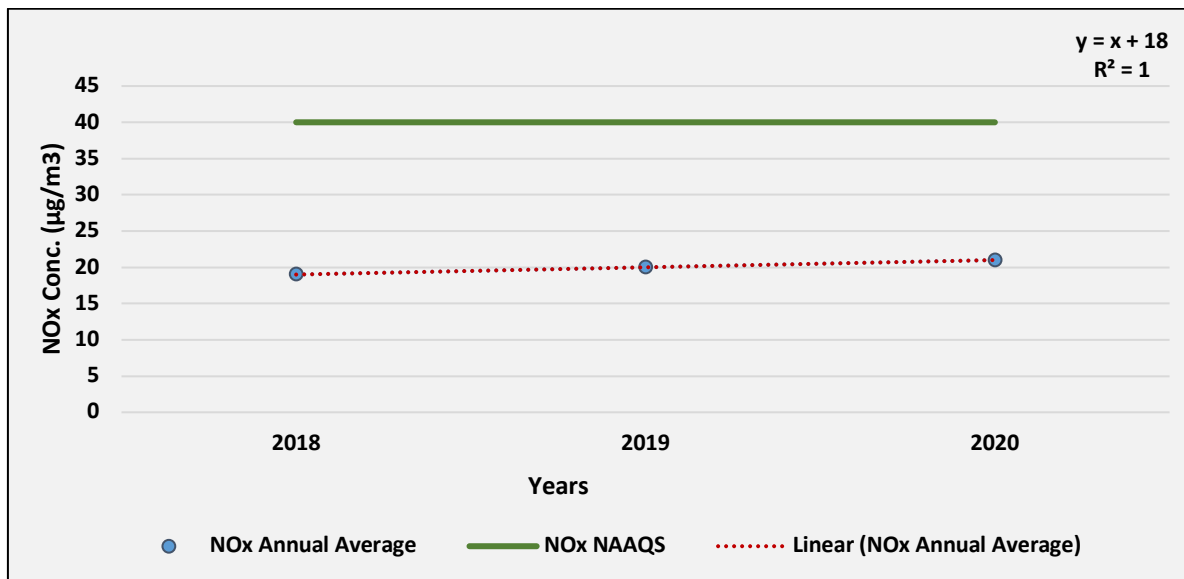


Fig. RI44: Trend of annual mean NO_x ambient air concentration in Rihand TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, is exceeding in the year 2019, whereas the PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for the parameter SO₂ and NO_x (for stack 3 to 6) are much higher than the emission norms. Emission of particulate matter is within the limit range.

UNCHAHAR THERMAL POWER PLANT

Feroze Gandhi Unchahar Thermal Power Plant is located at Unchahar in Raebareli district in Indian state of Uttar Pradesh.[1] The power plant is one of the coal based power plants of NTPC Limited.[2] In the year 1992, Uttar Pradesh State Electricity Board (U.P.S.E.B.) transferred Unchahar Thermal Power Station to NTPC Limited

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. UN1 – Fig. UN44) for the last three years (2018-2020) using data provided by NTPC developer for Unchahar Power plant, Uttar Pradesh, India.

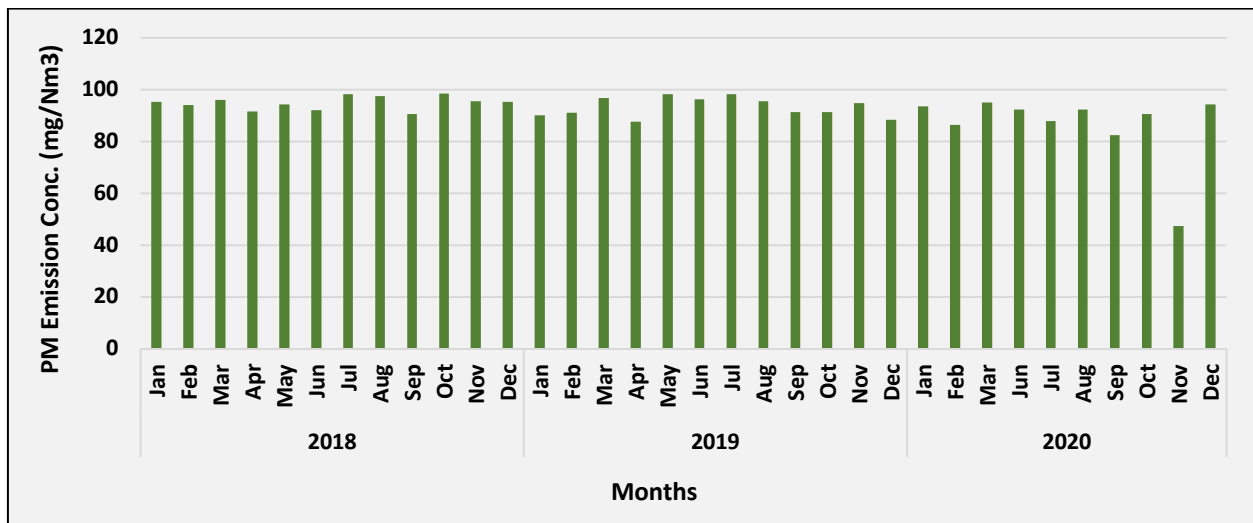


Fig. UN1: Time series of monthly average PM Emission concentration in Unchahar TPP (Unit 1)

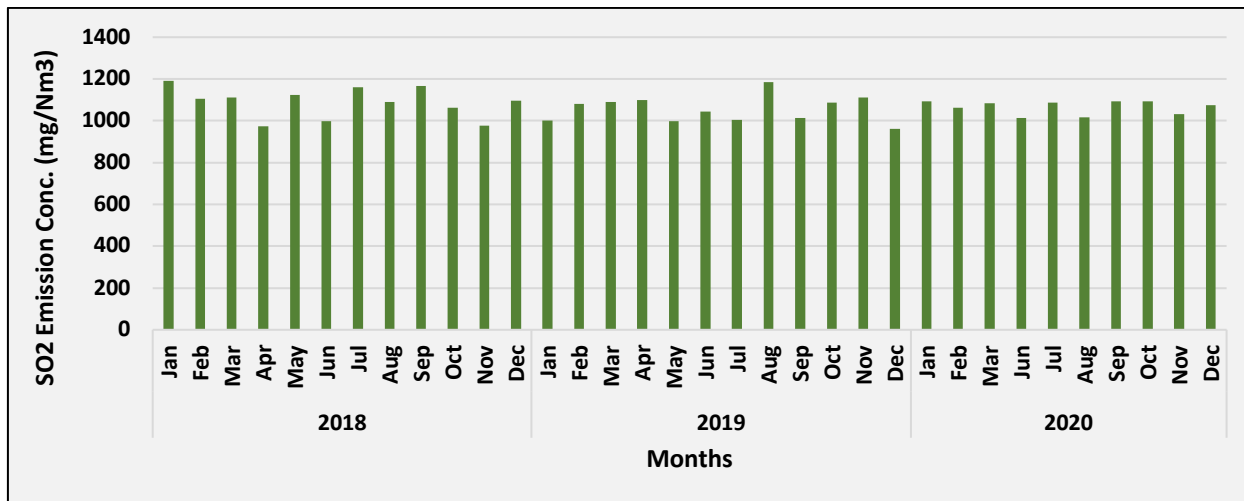


Fig. UN2: Time series of monthly average SO₂ Emission concentration in Unchahar TPP (Unit 1)

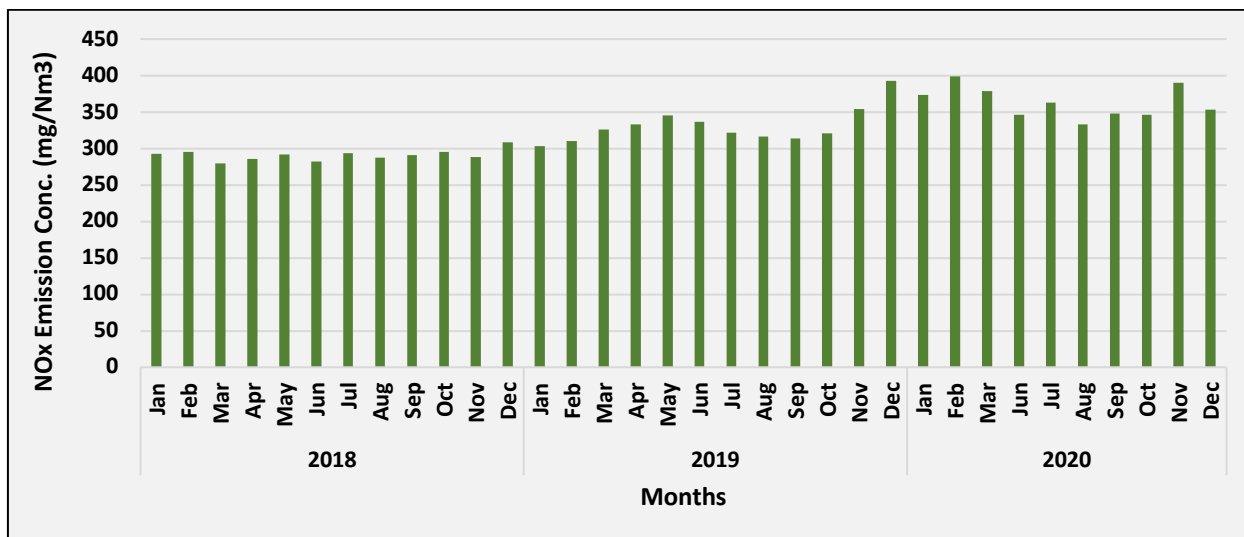


Fig. UN3: Time series of monthly average NO_x Emission concentration in Unchahar TPP (Unit 1)

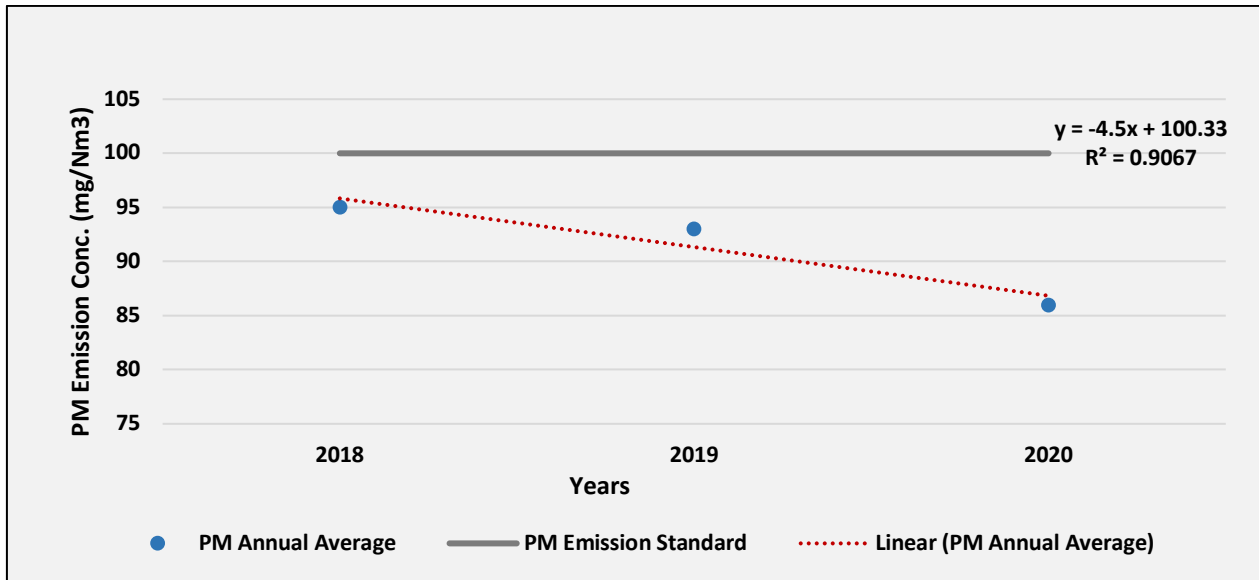


Fig. UN4: Trend of annual mean PM Emission air concentration in Unchahar TPP (Unit 1)

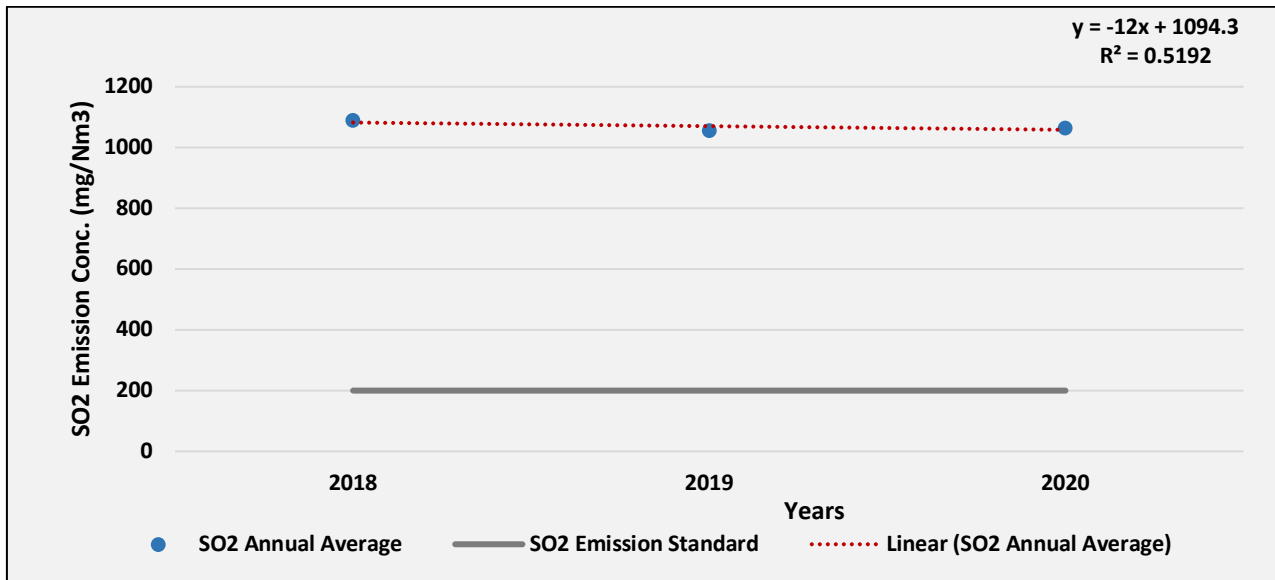


Fig. UN5: Trend of annual mean SO₂ Emission air concentration in Unchahar TPP (Unit 1)

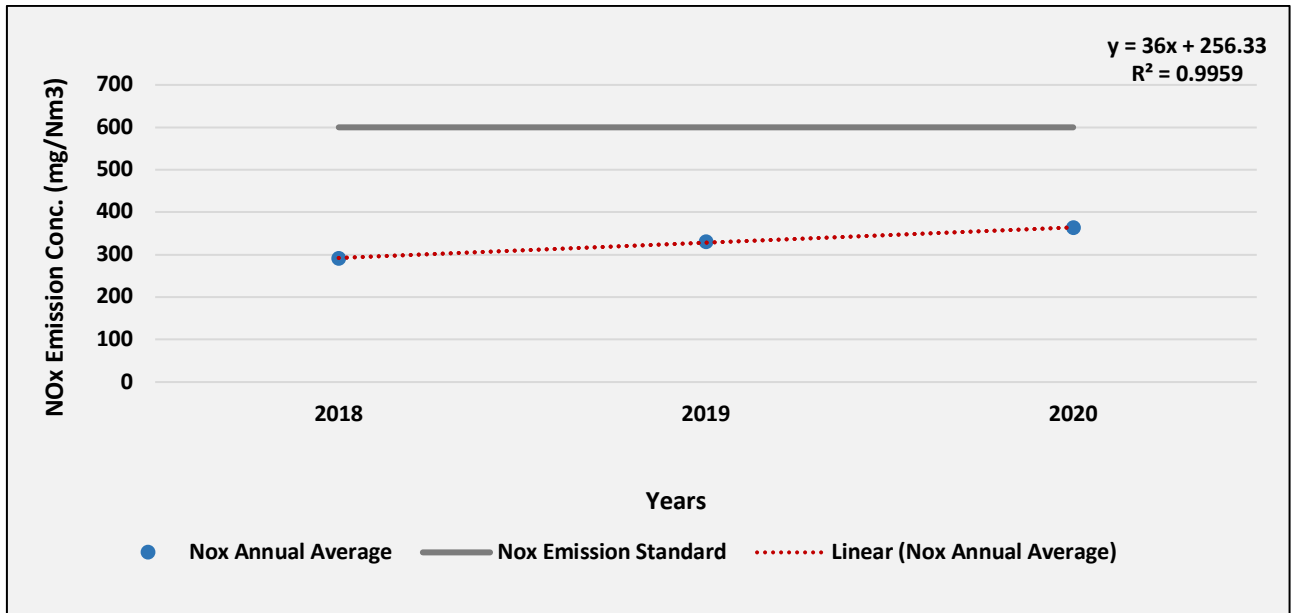


Fig. UN6: Trend of annual mean NO_x Emission air concentration in Unchahar TPP (Unit 1)

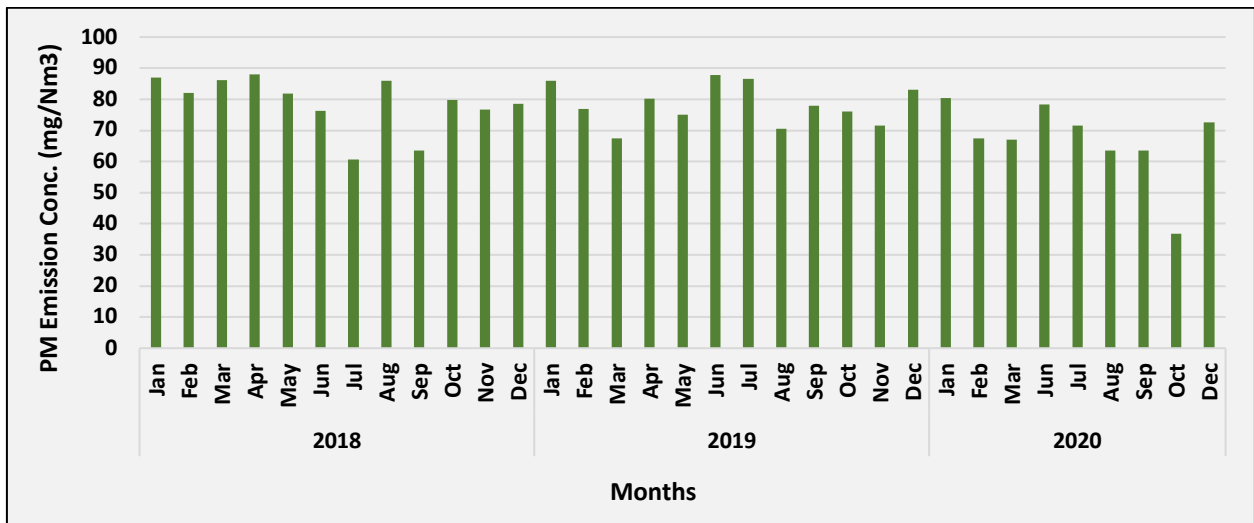


Fig. UN7: Time series of monthly average PM Emission concentration in Unchahar TPP (Unit 2)

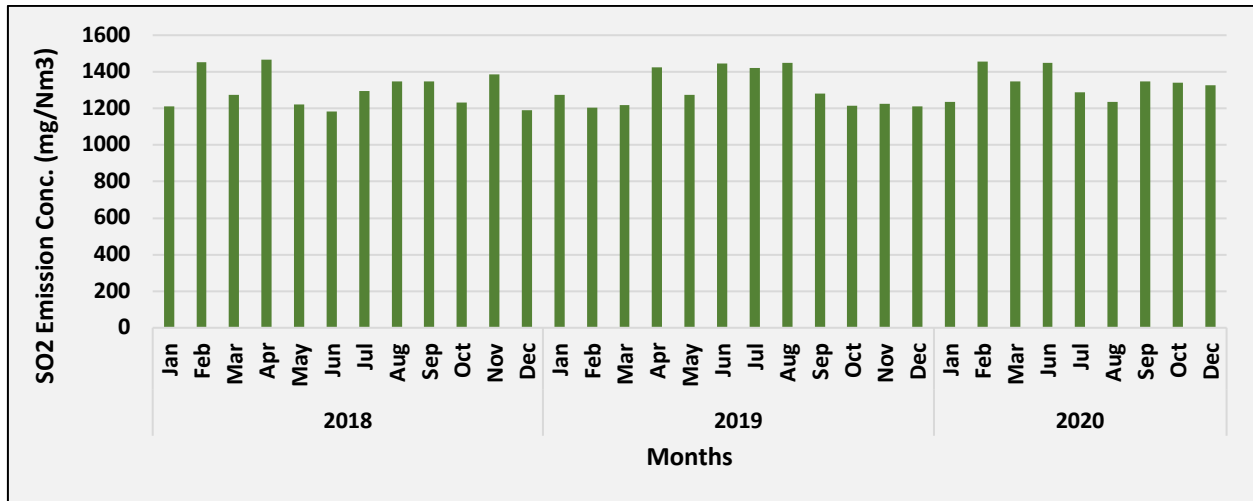


Fig. UN8: Time series of monthly average SO₂ Emission concentration in Unchahar TPP (Unit 2)

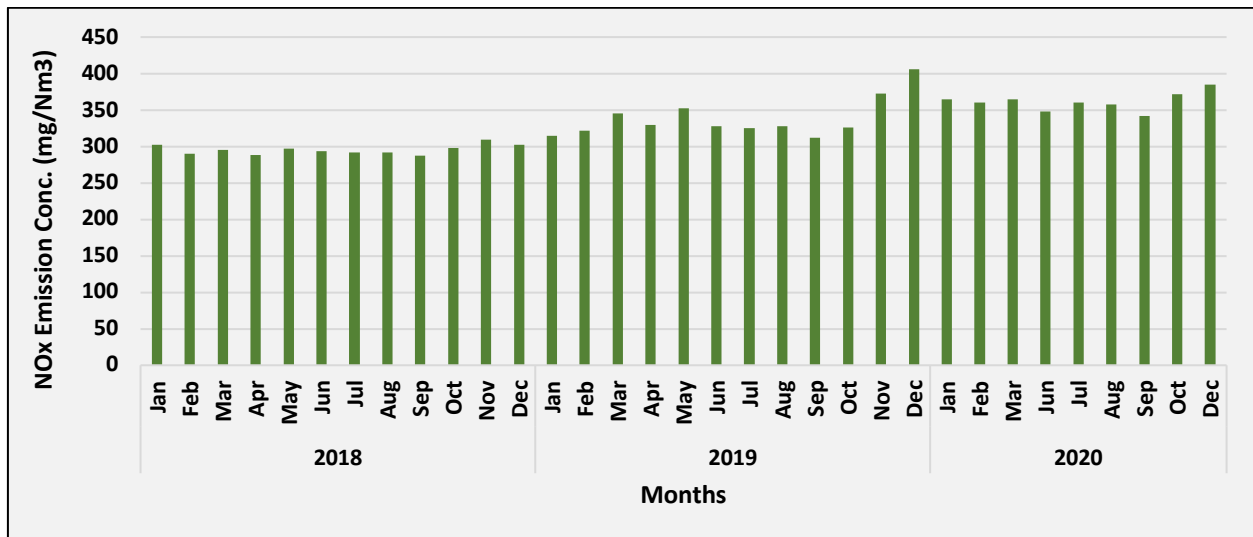


Fig. UN9: Time series of monthly average NO_x Emission concentration in Unchahar TPP (Unit 2)

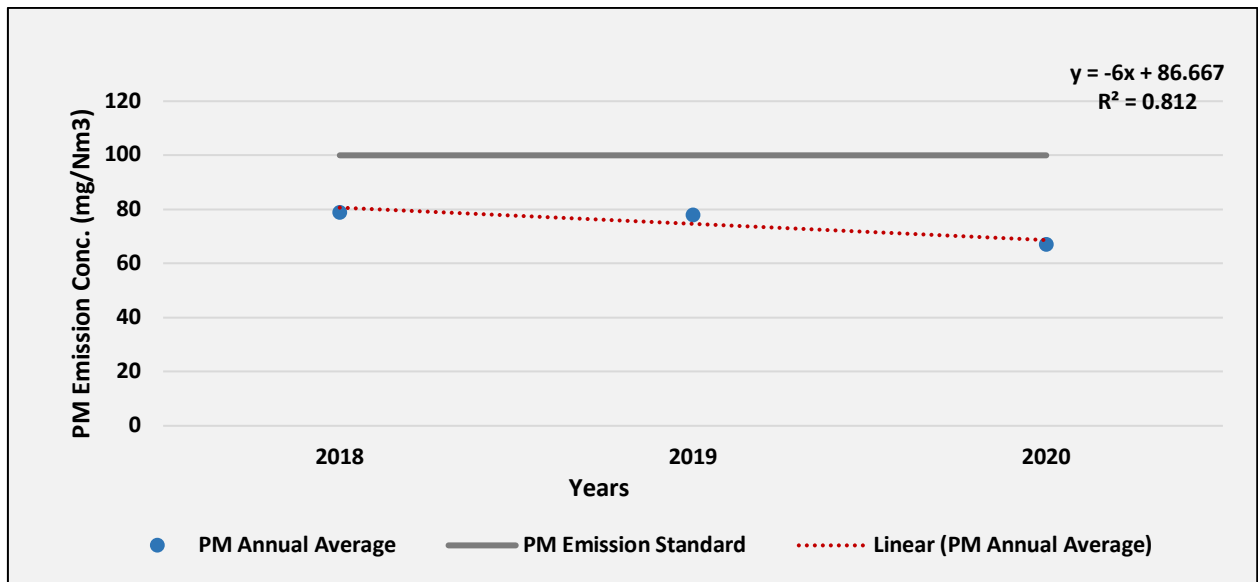


Fig. UN10: Trend of annual mean PM Emission air concentration in Unchahar TPP (Unit 2)

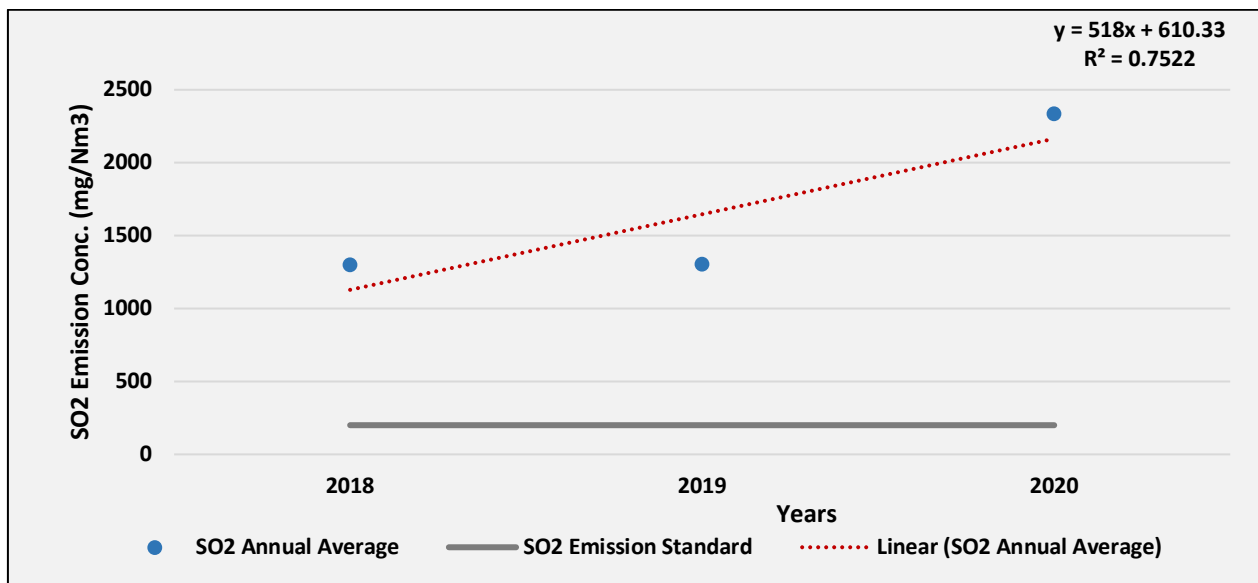


Fig. UN11: Trend of annual mean SO₂ Emission air concentration in Unchahar TPP (Unit 2)

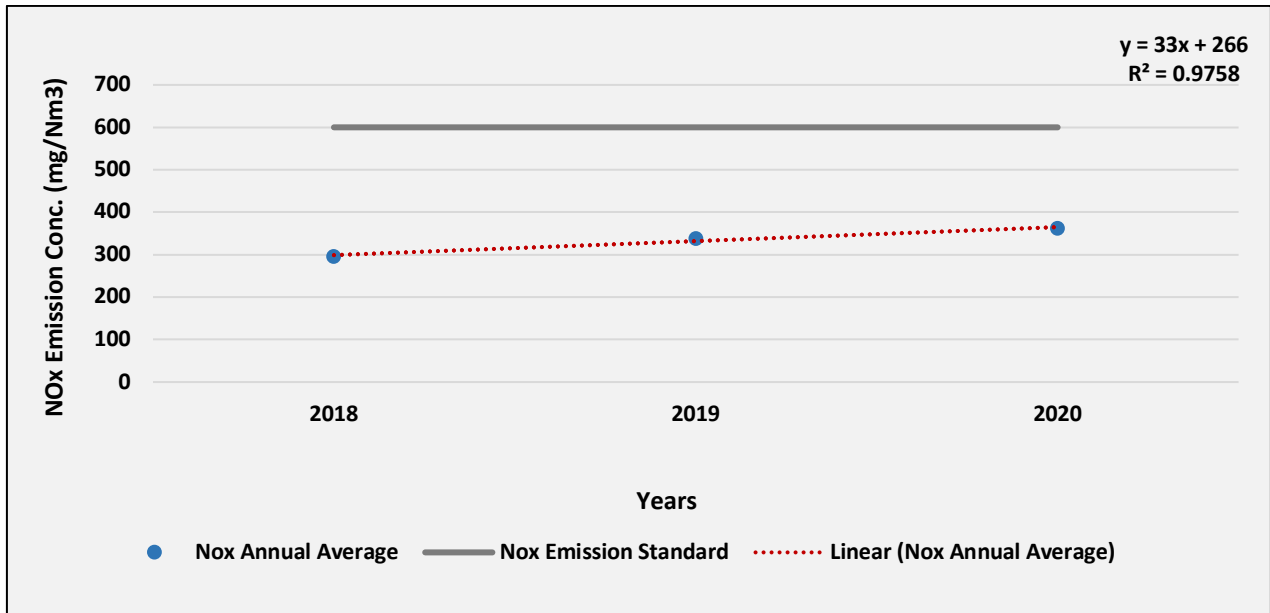


Fig. UN12: Trend of annual mean NO_x Emission air concentration in Unchahar TPP (Unit 2)

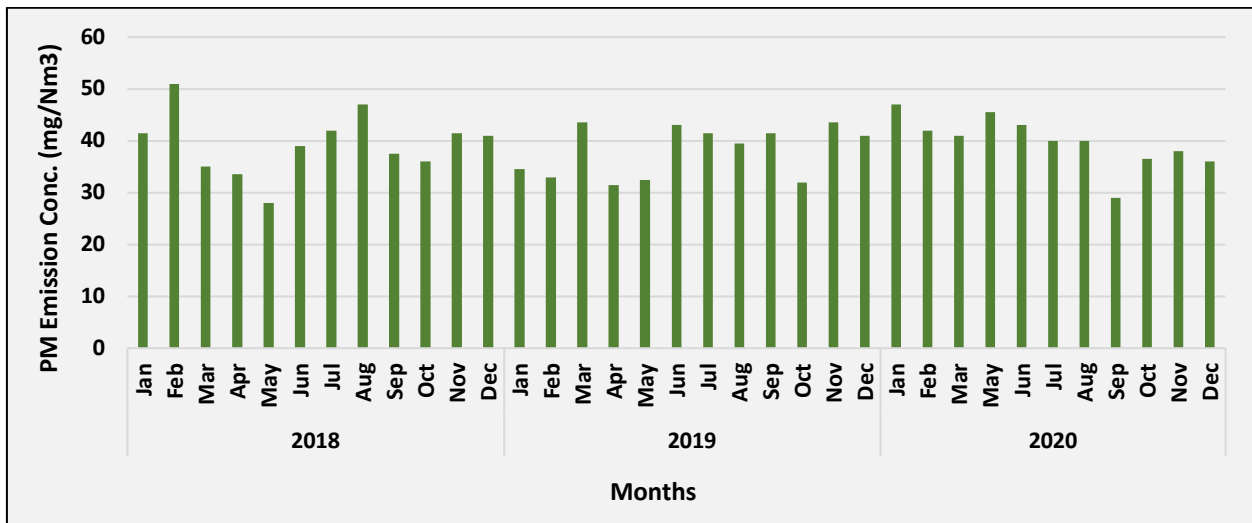


Fig. UN13: Time series of monthly average PM Emission concentration in Unchahar TPP (Unit 3)

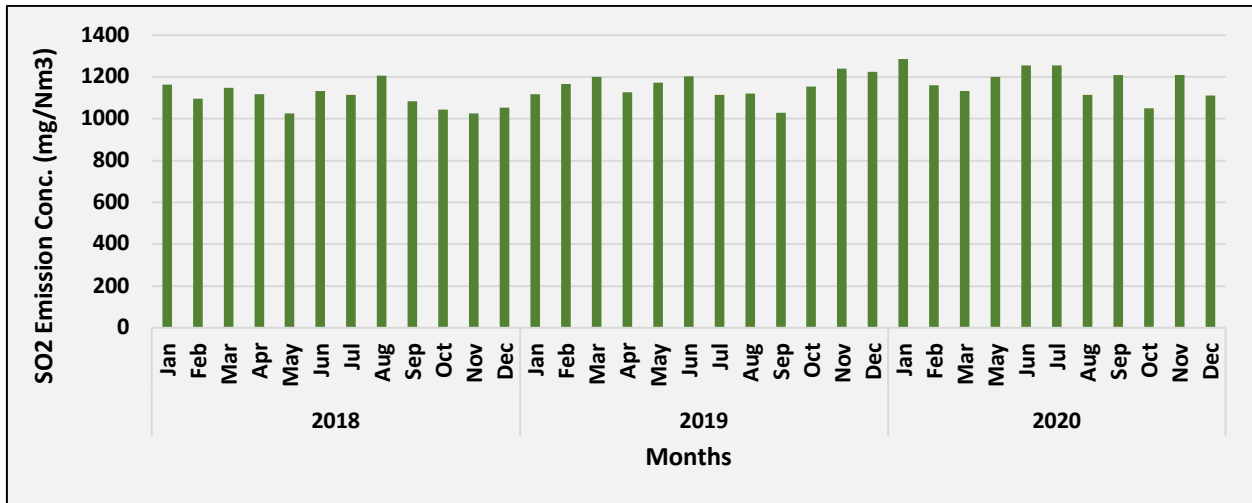


Fig. UN14: Time series of monthly average SO₂ Emission concentration in Unchahar TPP (Unit 3)

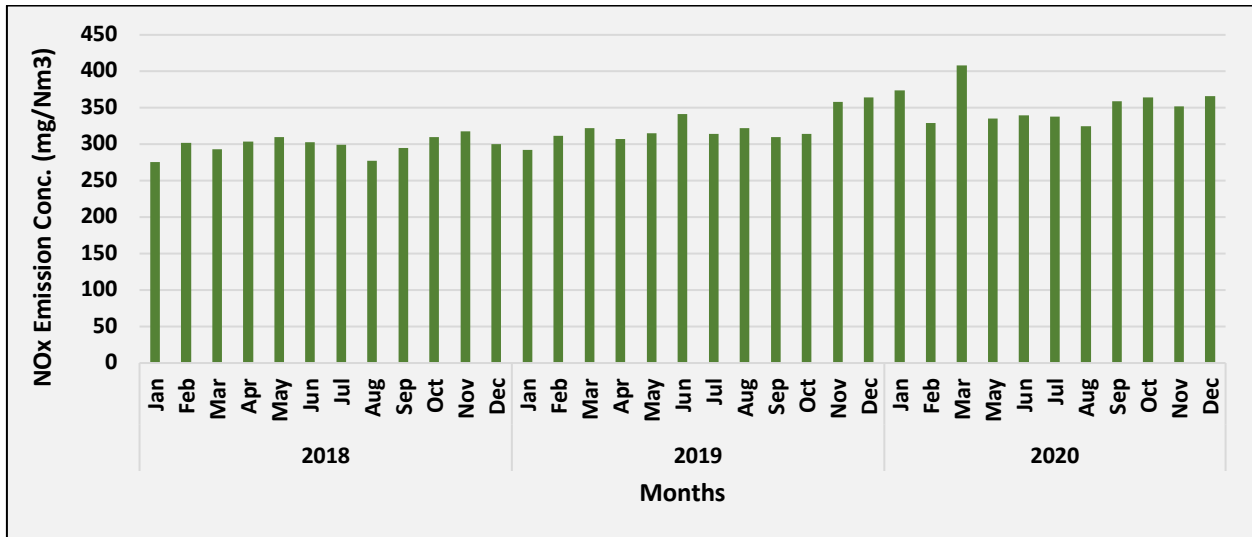


Fig. UN15: Time series of monthly average NO_x Emission concentration in Unchahar TPP (Unit 3)

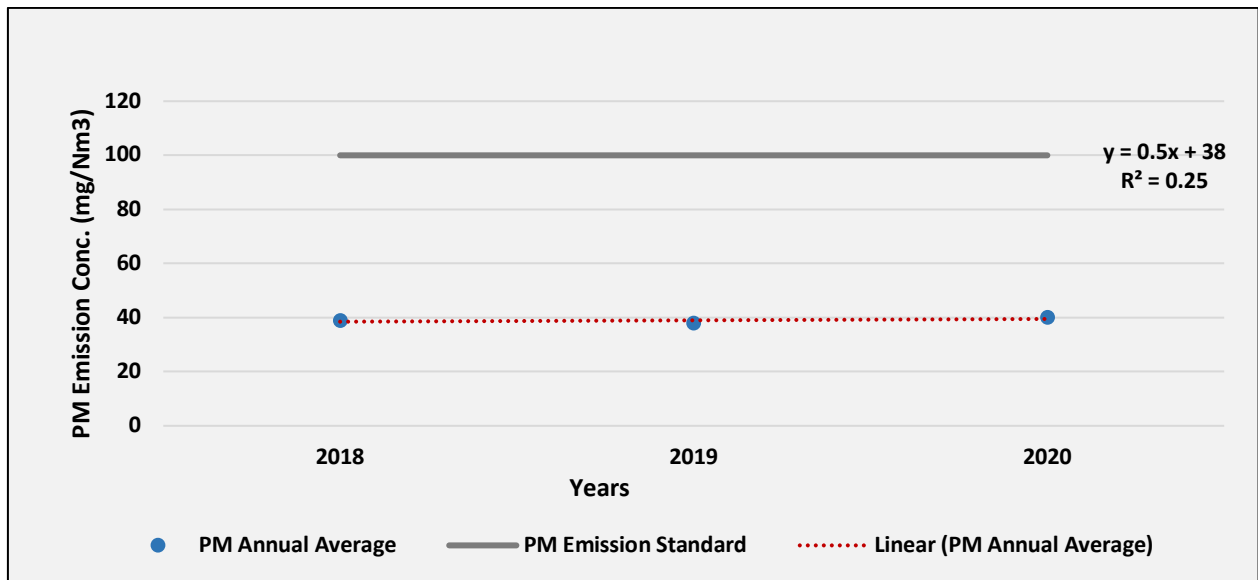


Fig. UN16: Trend of annual mean PM Emission air concentration in Unchahar TPP (Unit 3)

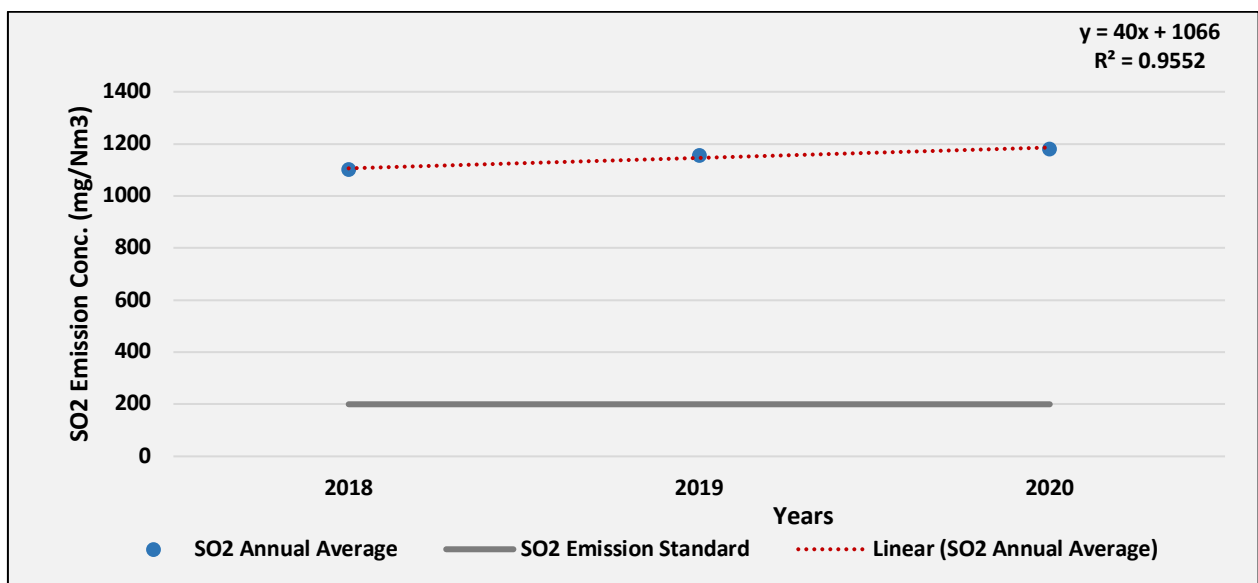


Fig. UN17: Trend of annual mean SO₂ Emission air concentration in Unchahar TPP (Unit 3)

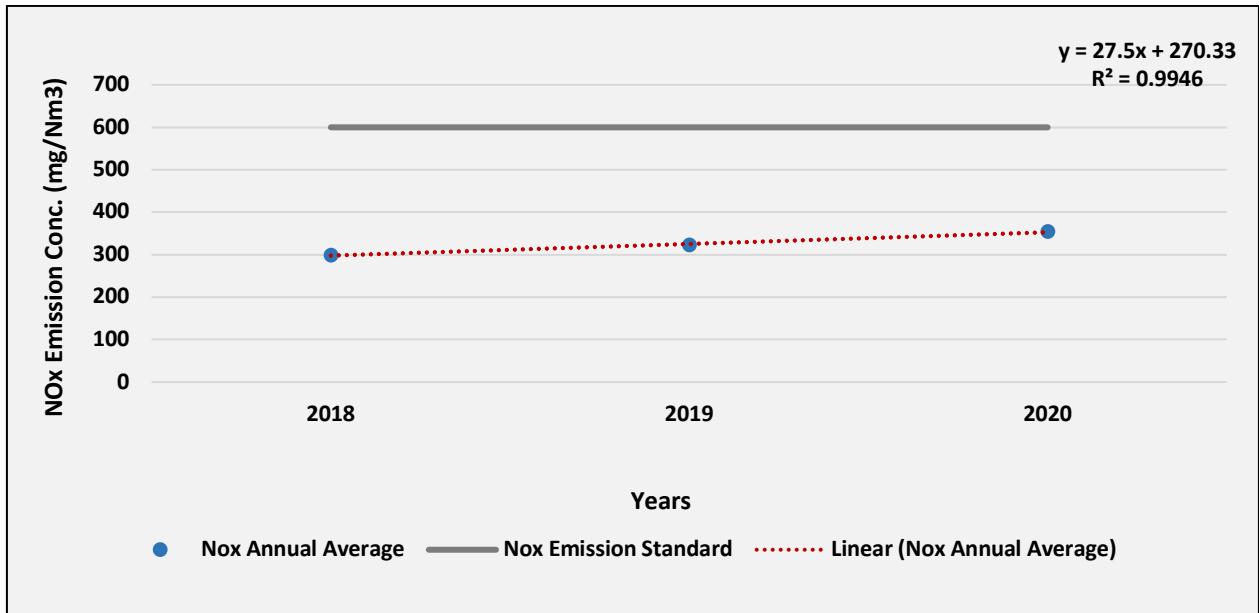


Fig. UN18: Trend of annual mean NO_x Emission air concentration in Unchahar TPP (Unit 3)

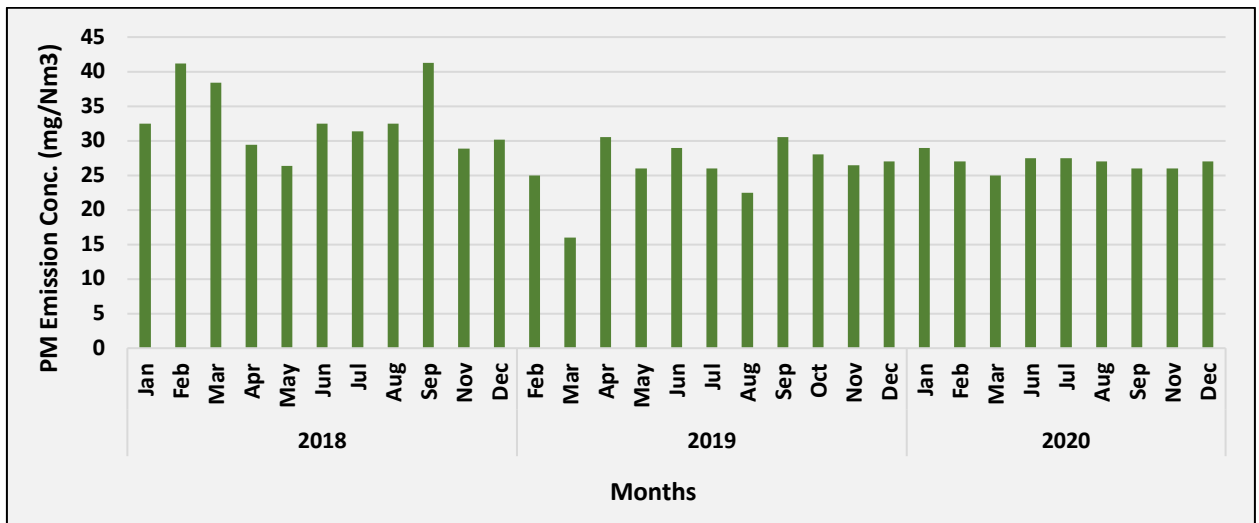


Fig. UN19: Time series of monthly average PM Emission concentration in Unchahar TPP (Unit 4)

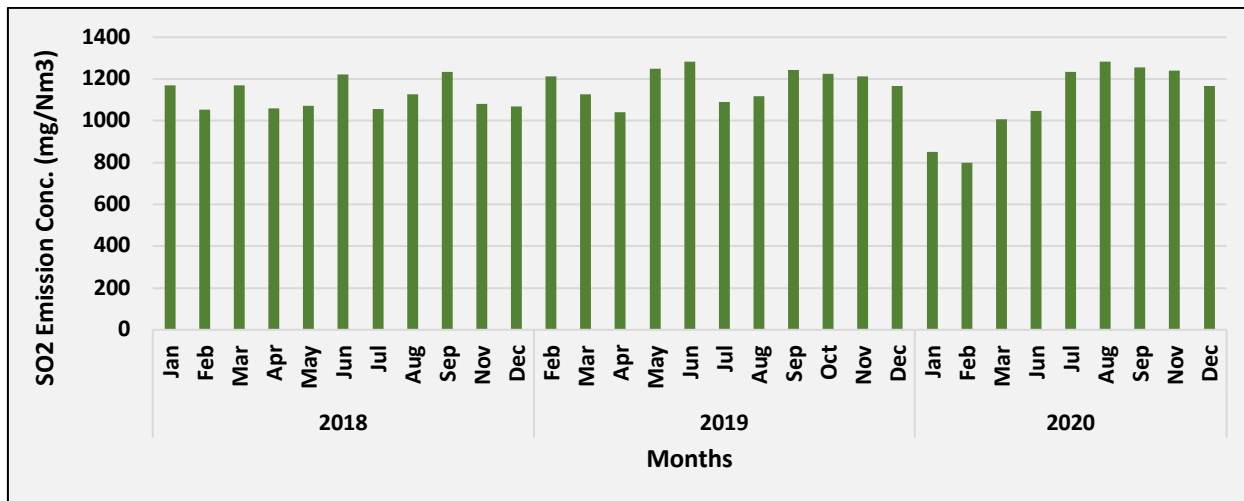


Fig. UN20: Time series of monthly average SO₂ Emission concentration in Unchahar TPP (Unit 4)

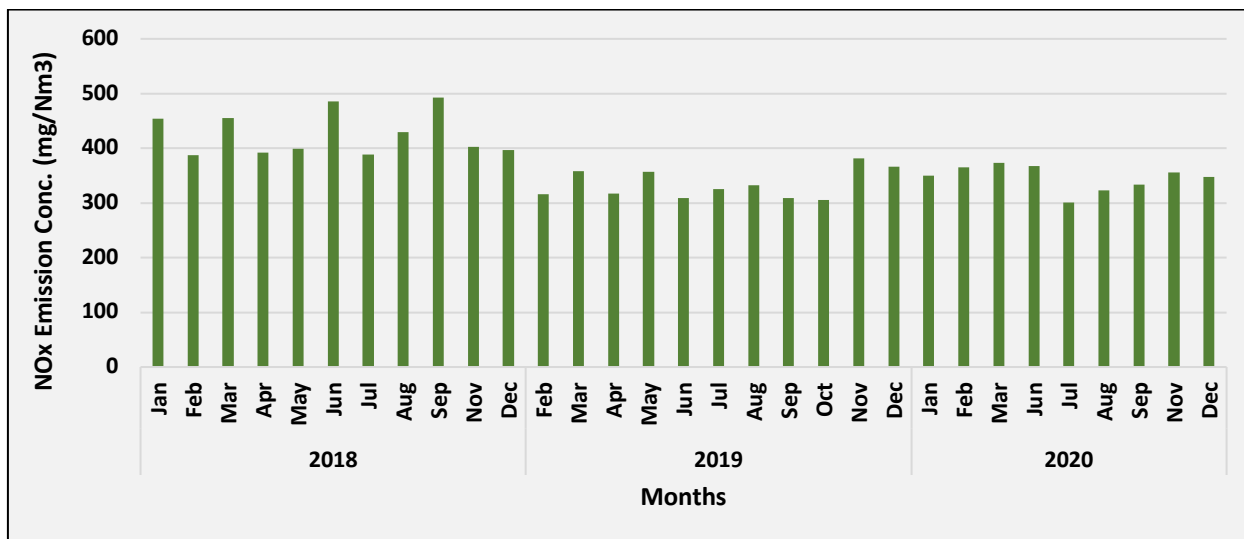


Fig. UN21: Time series of monthly average NO_x Emission concentration in Unchahar TPP (Unit 4)

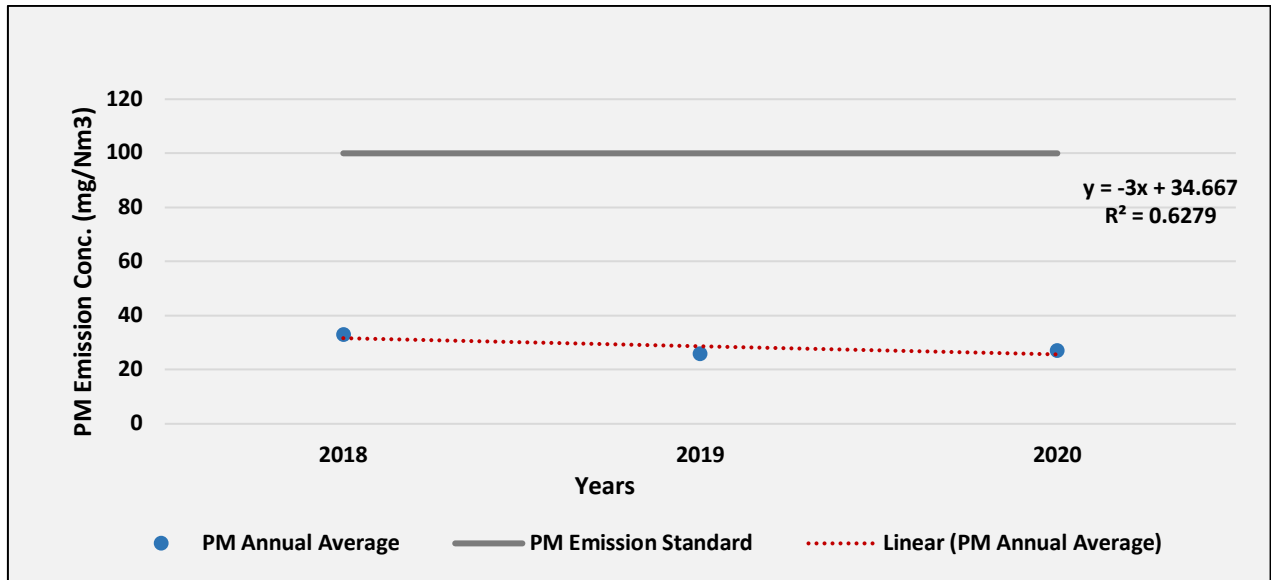


Fig. UN22: Trend of annual mean PM Emission air concentration in Unchahar TPP (Unit 4)

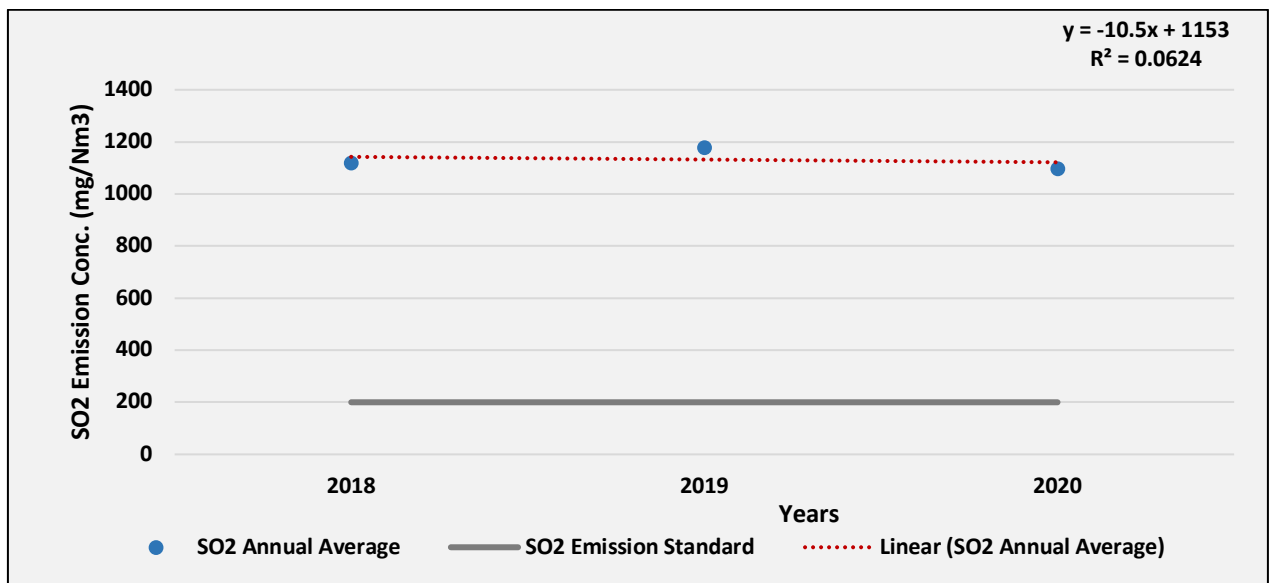


Fig. UN23: Trend of annual mean SO₂ Emission air concentration in Unchahar TPP (Unit 4)

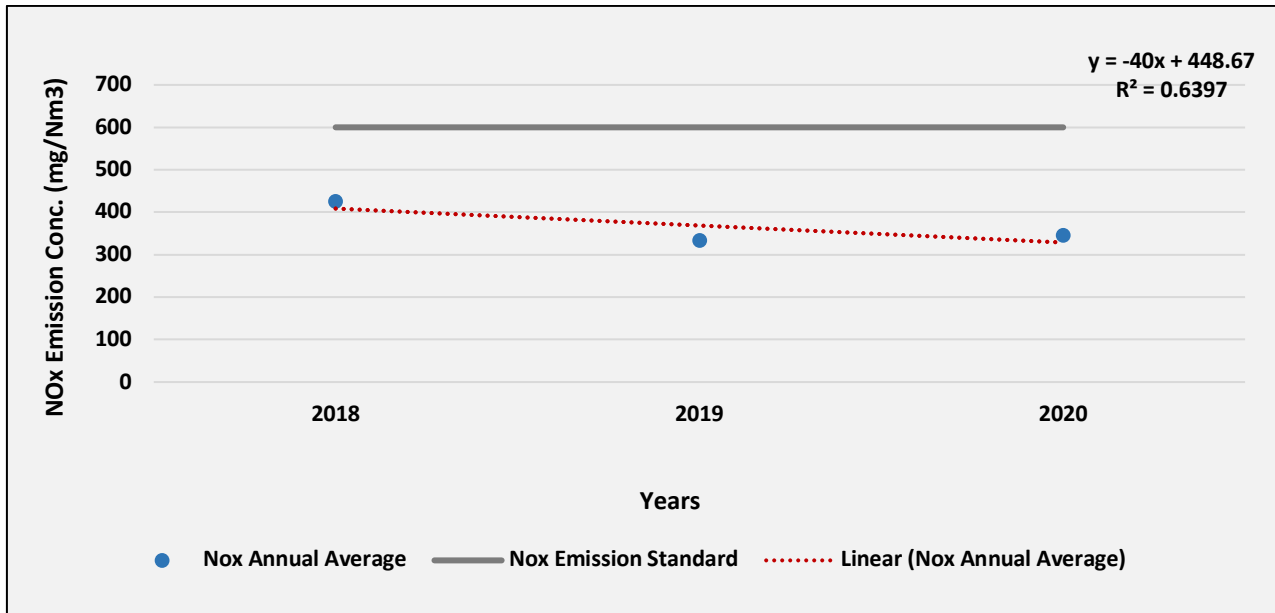


Fig. UN24: Trend of annual mean NO_x Emission air concentration in Unchahar TPP (Unit 4)

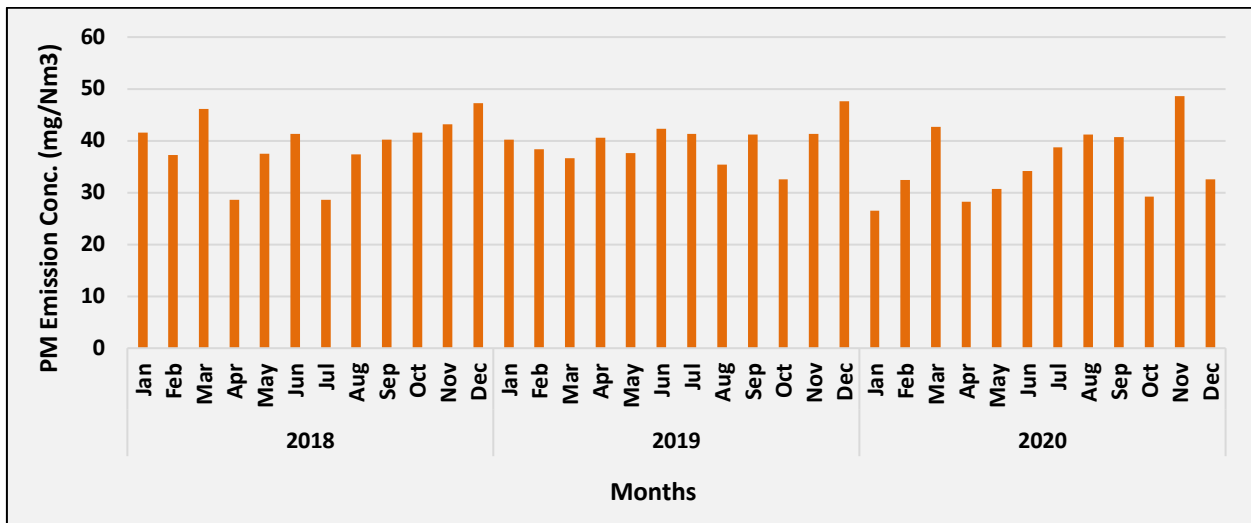


Fig. UN25: Time series of monthly average PM Emission concentration in Unchahar TPP (Unit 5)

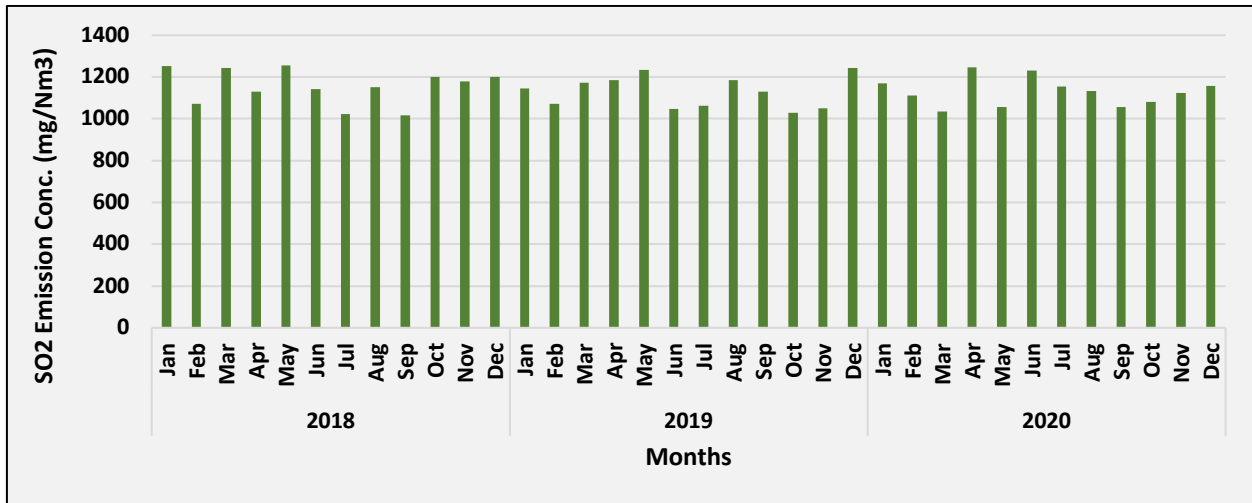


Fig. UN26: Time series of monthly average SO₂ Emission concentration in Unchahar TPP (Unit 5)

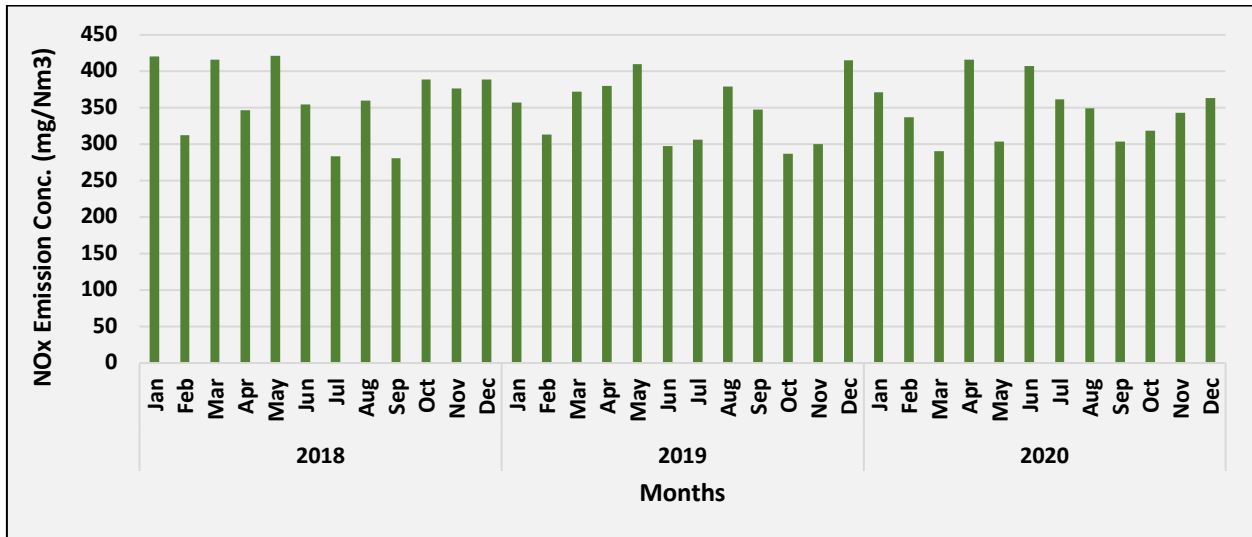


Fig. UN27: Time series of monthly average NO_x Emission concentration in Unchahar TPP (Unit 5)

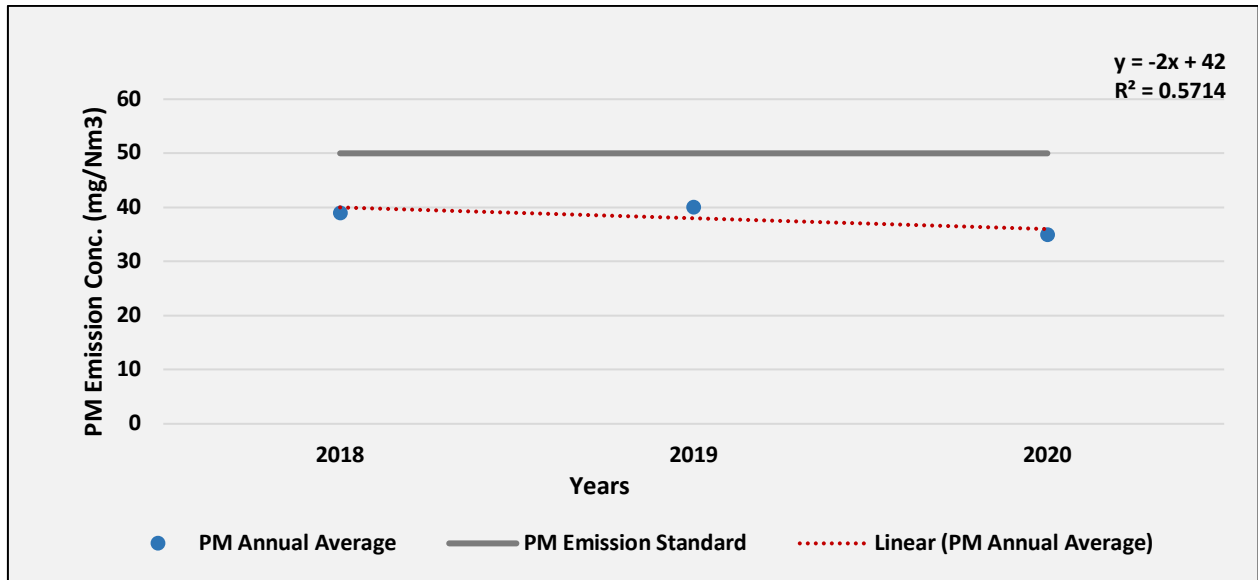


Fig. UN28: Trend of annual mean PM Emission air concentration in Unchahar TPP (Unit 5)

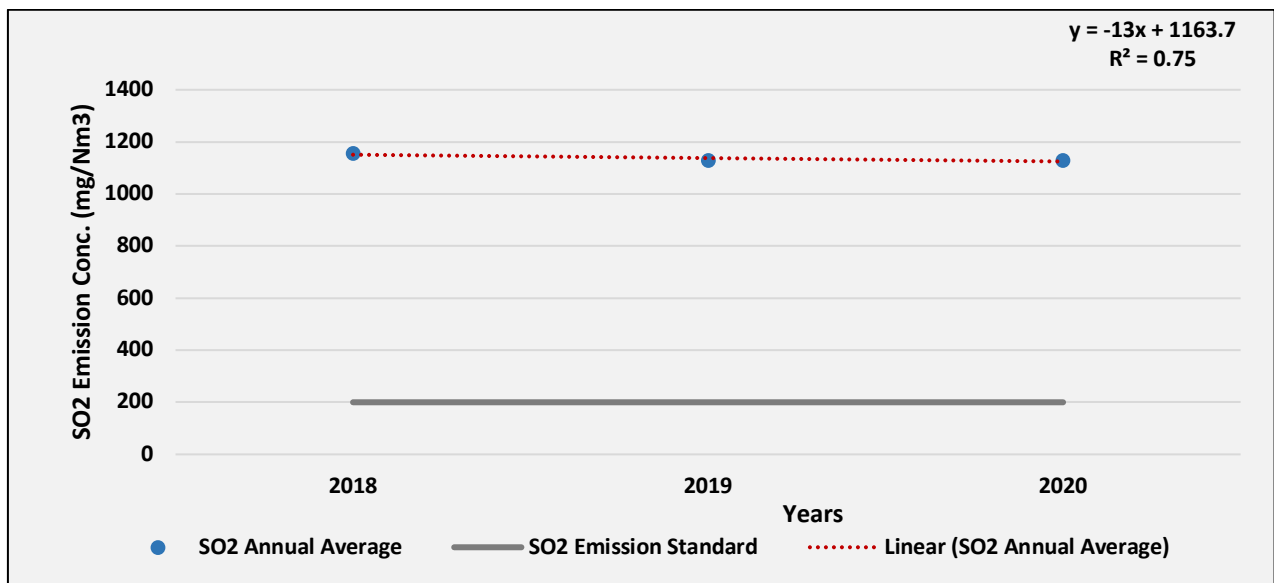


Fig. UN29: Trend of annual mean SO₂ Emission air concentration in Unchahar TPP (Unit 5)

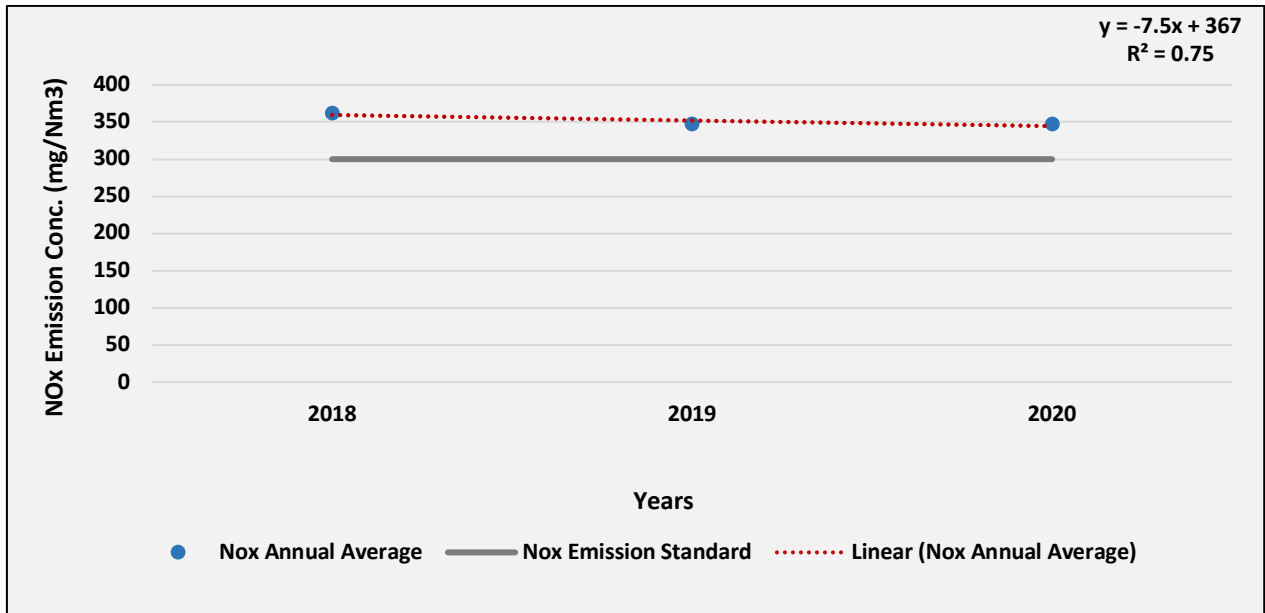


Fig. UN30: Trend of annual mean NO_x Emission air concentration in Unchahar TPP (Unit 5)

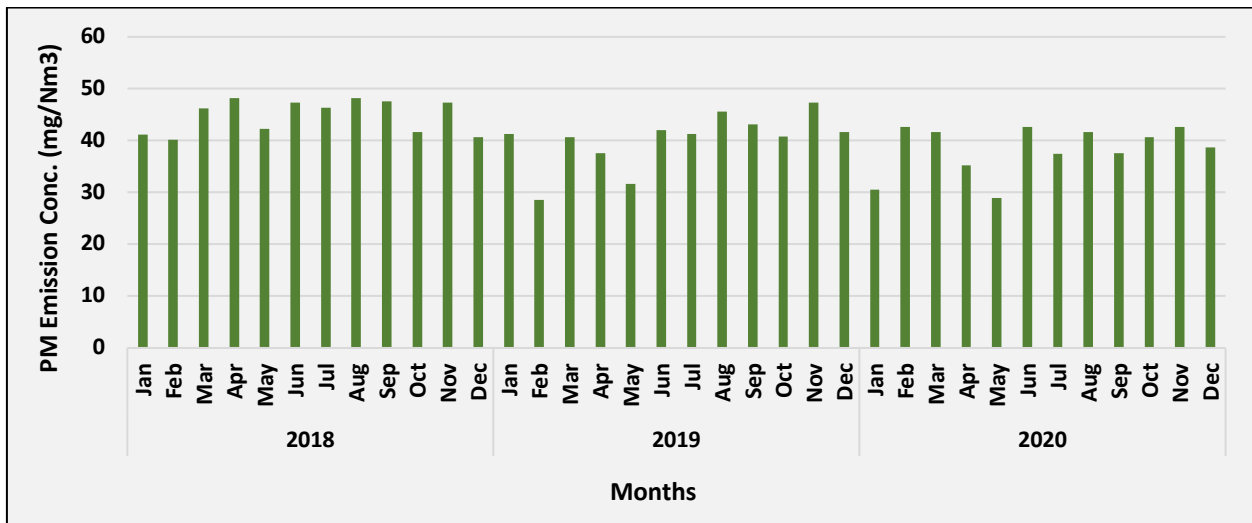


Fig. UN31: Time series of monthly average PM Emission concentration in Unchahar TPP (Unit 6)

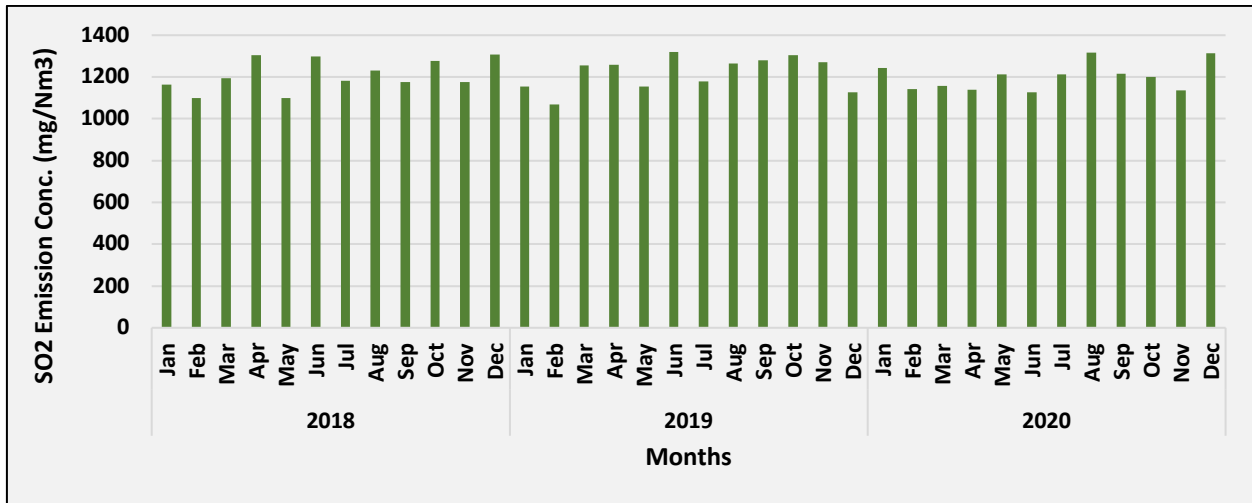


Fig. UN32: Time series of monthly average SO₂ Emission concentration in Unchahar TPP (Unit 6)

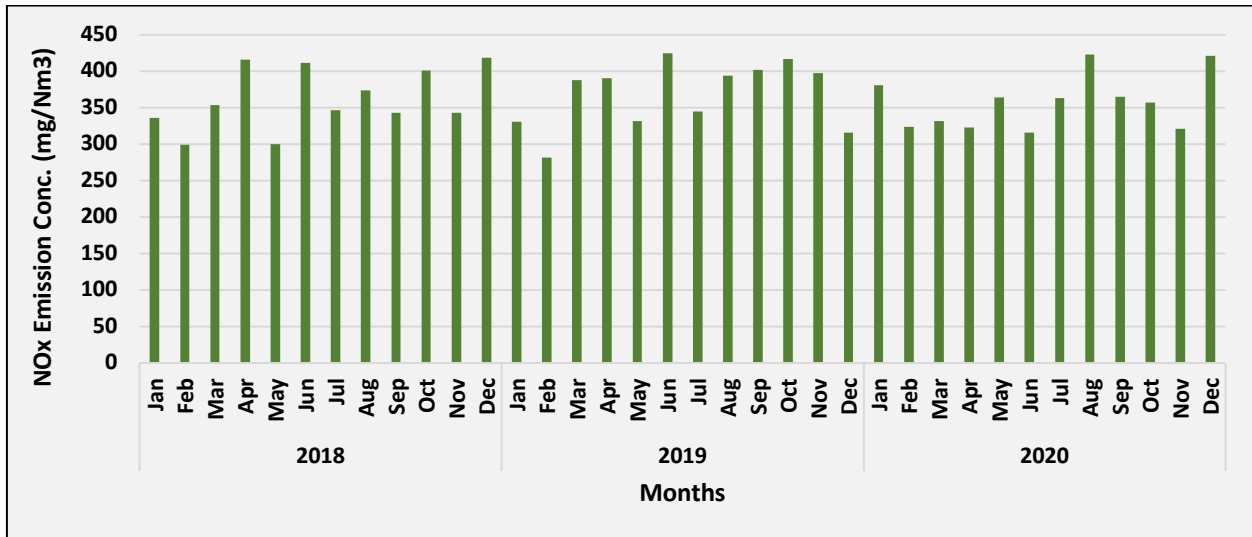


Fig. UN33: Time series of monthly average NO_x Emission concentration in Unchahar TPP (Unit 6)

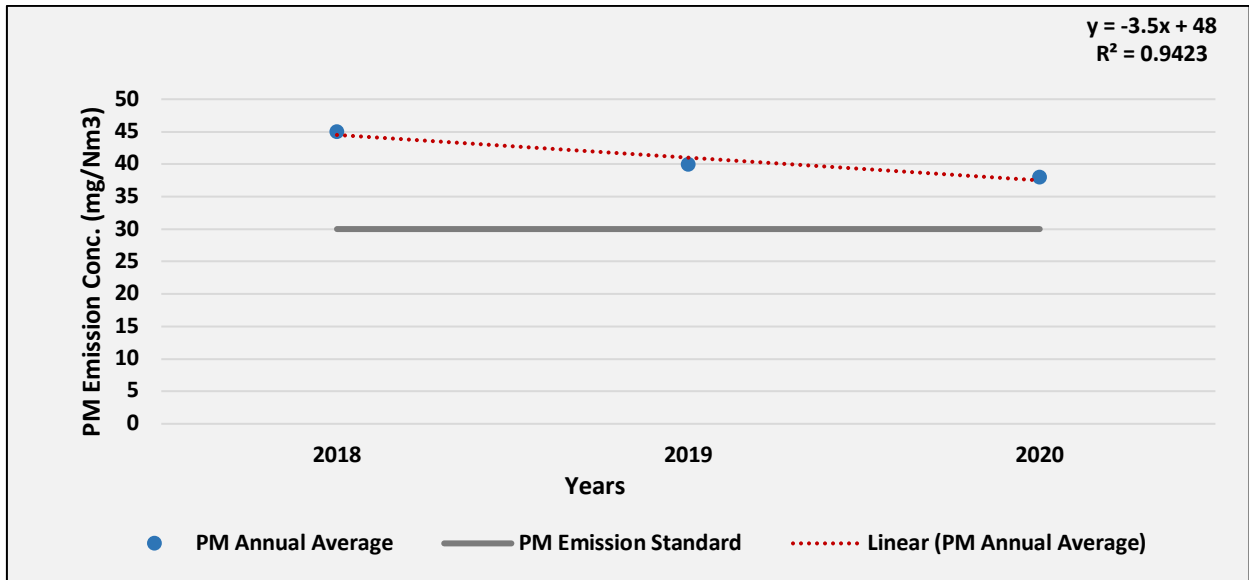


Fig. UN34: Trend of annual mean PM Emission air concentration in Unchahar TPP (Unit 6)

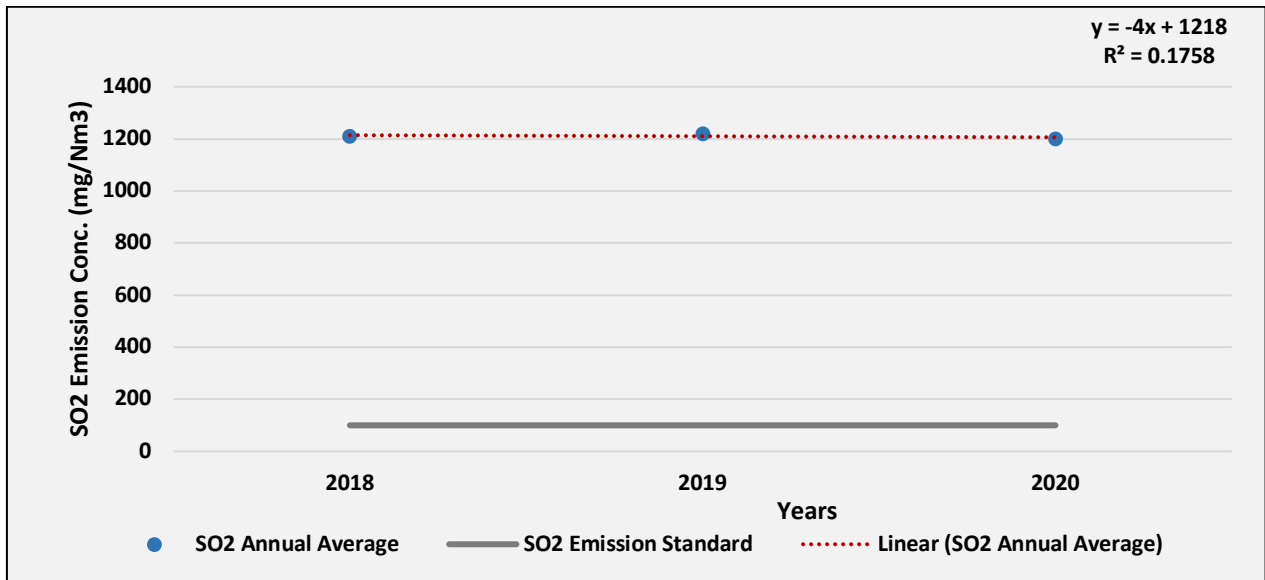


Fig. UN35: Trend of annual mean SO₂ Emission air concentration in Unchahar TPP (Unit 6)

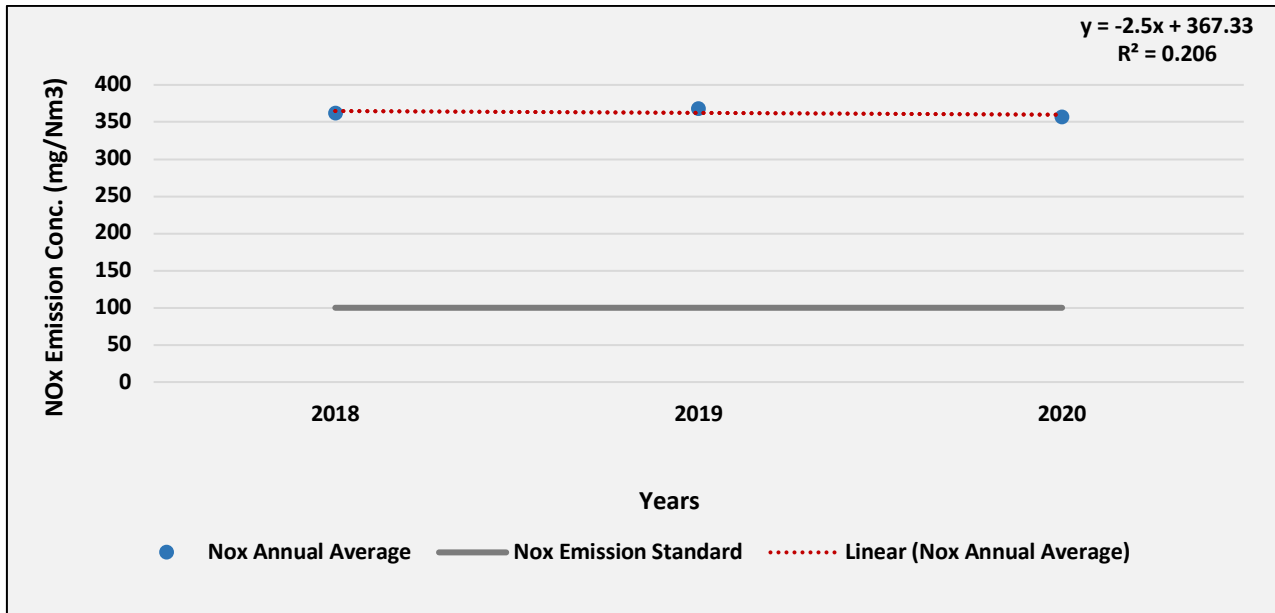


Fig. UN36: Trend of annual mean NO_x Emission air concentration in Unchahar TPP (Unit 6)

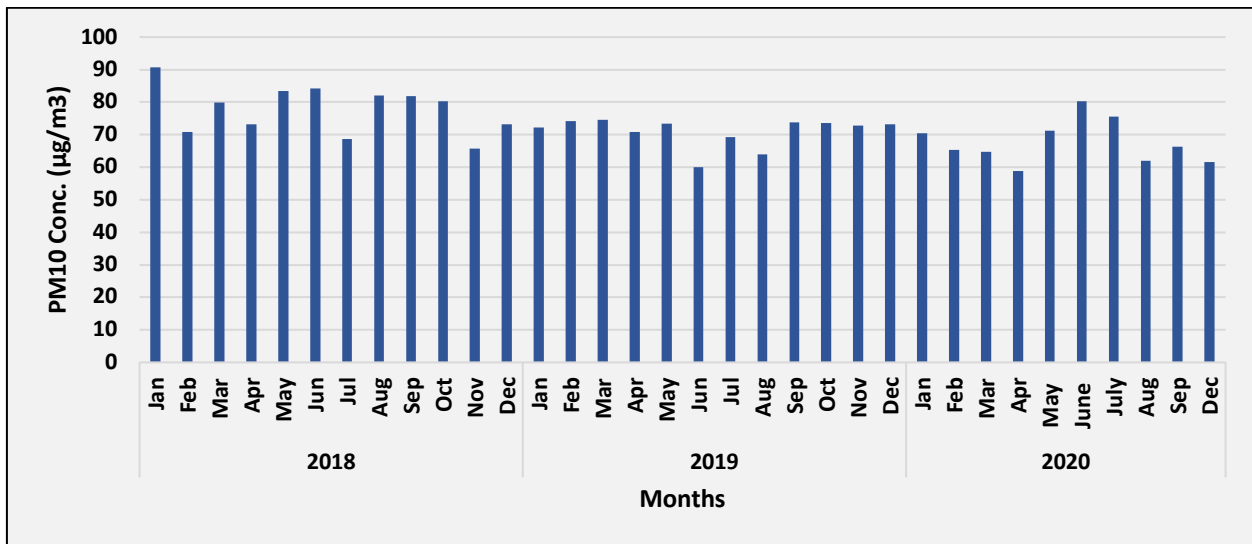


Fig. UN37: Time series of monthly average PM₁₀ ambient air concentration in Unchahar TPP (Ambient)

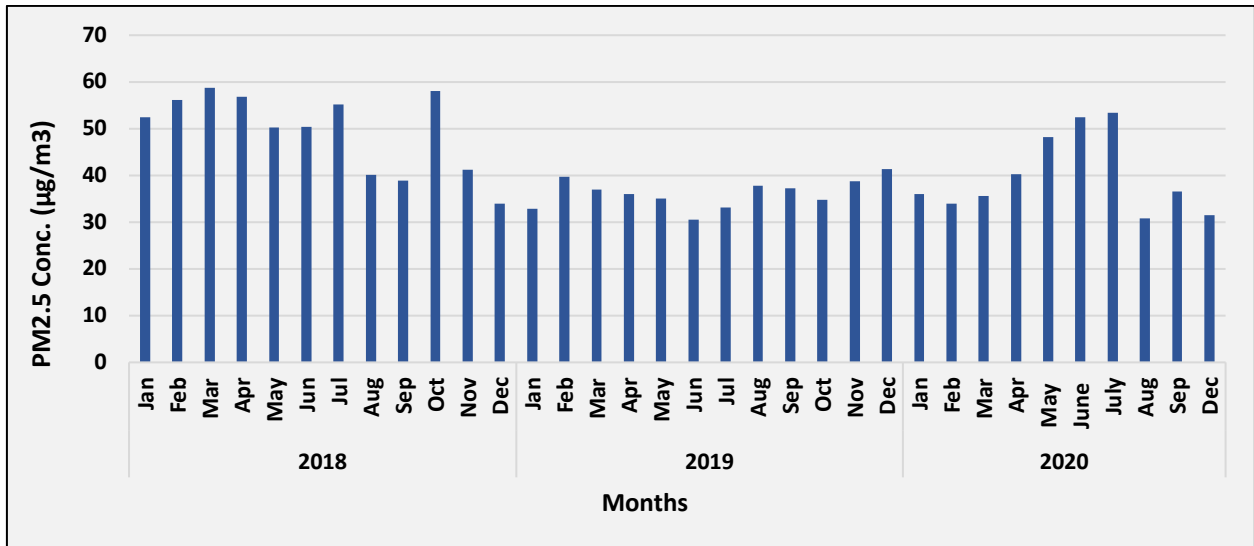


Fig. UN38: Time series of monthly average PM_{2.5} ambient air concentration in Unchahar TPP (Ambient)

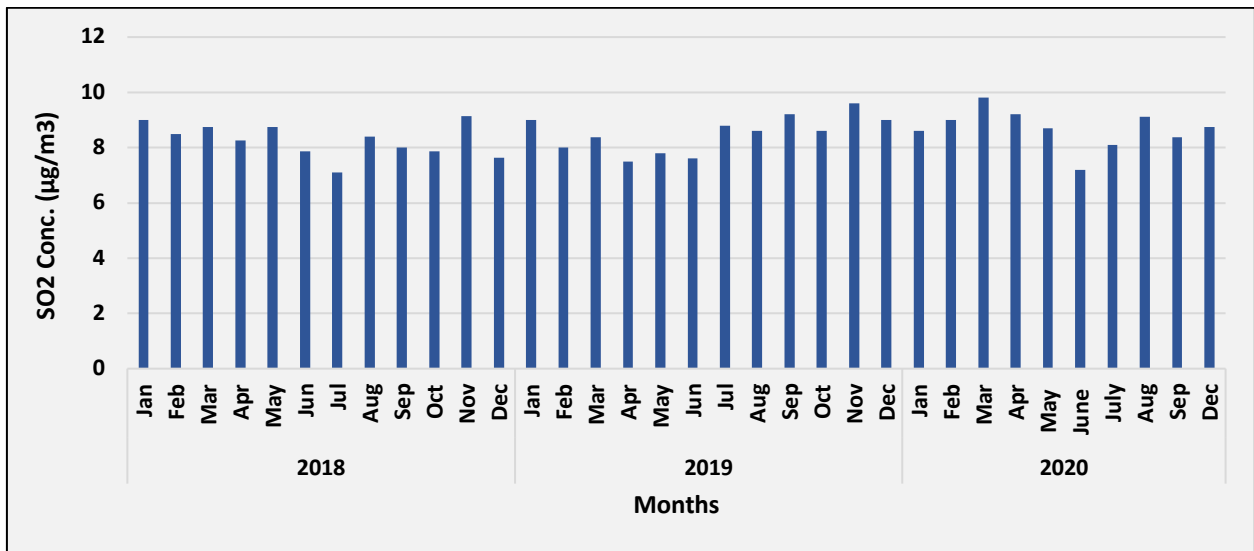


Fig. UN39: Time series of monthly average SO₂ ambient air concentration in Unchahar TPP (Ambient)

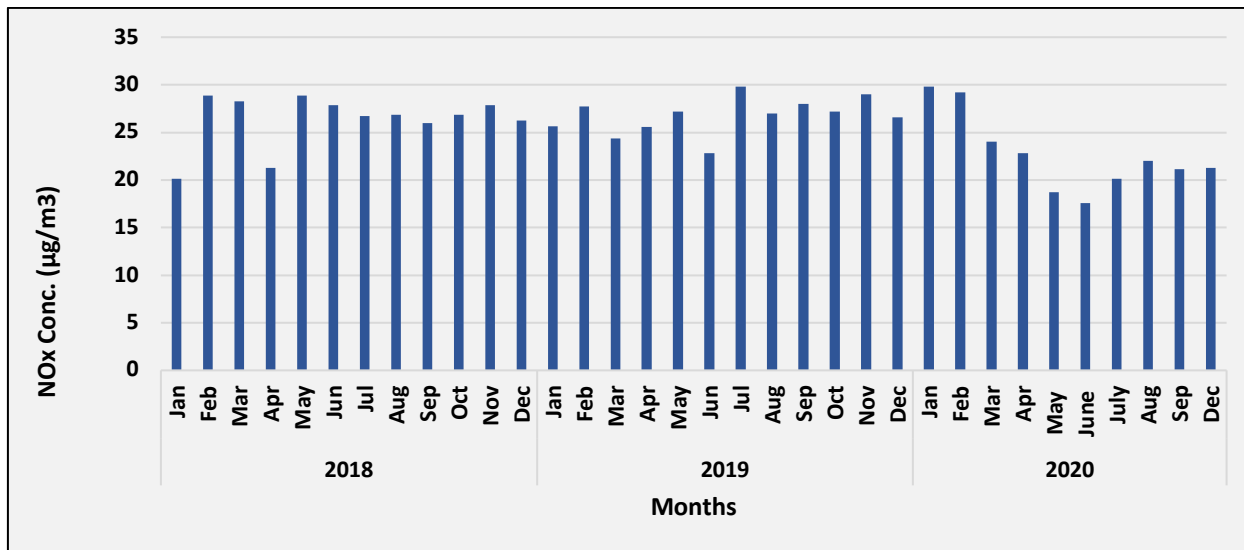


Fig. UN40: Time series of monthly average NO_x ambient air concentration in Unchahar TPP (Ambient)

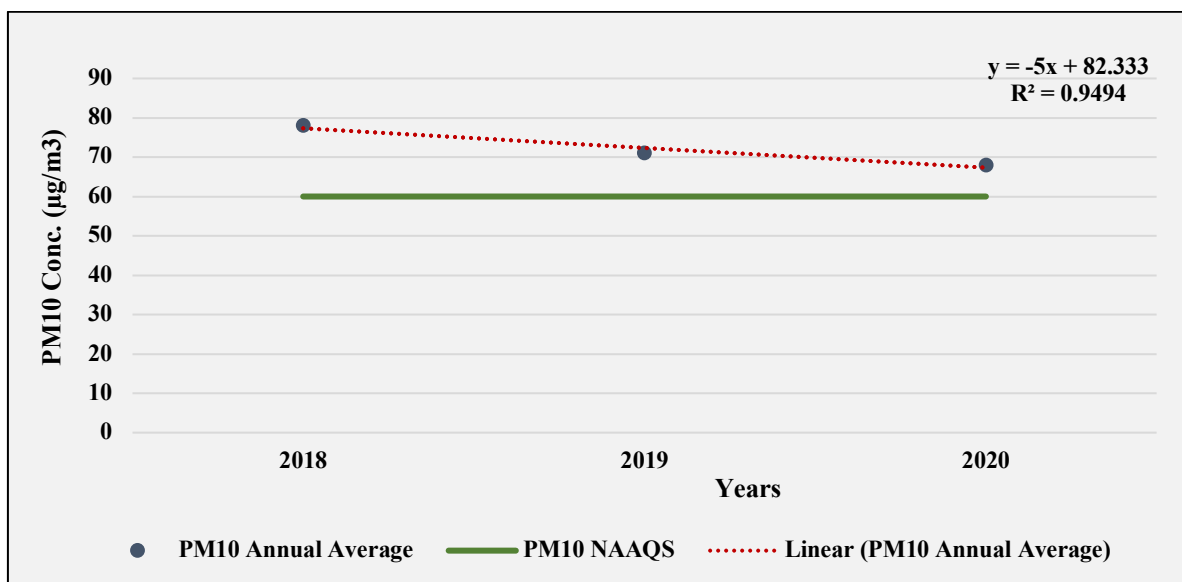


Fig. UN41: Trend of annual mean PM₁₀ ambient air concentration in Unchahar TPP (Ambient)

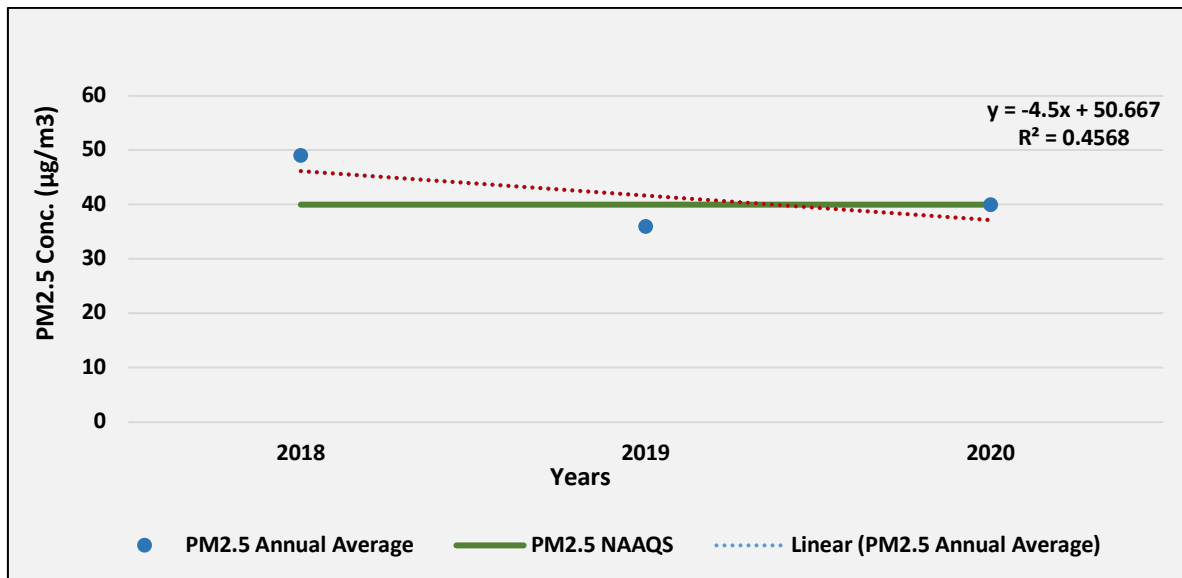


Fig. UN42: Trend of annual mean $PM_{2.5}$ ambient air concentration in Unchahar TPP (Ambient)

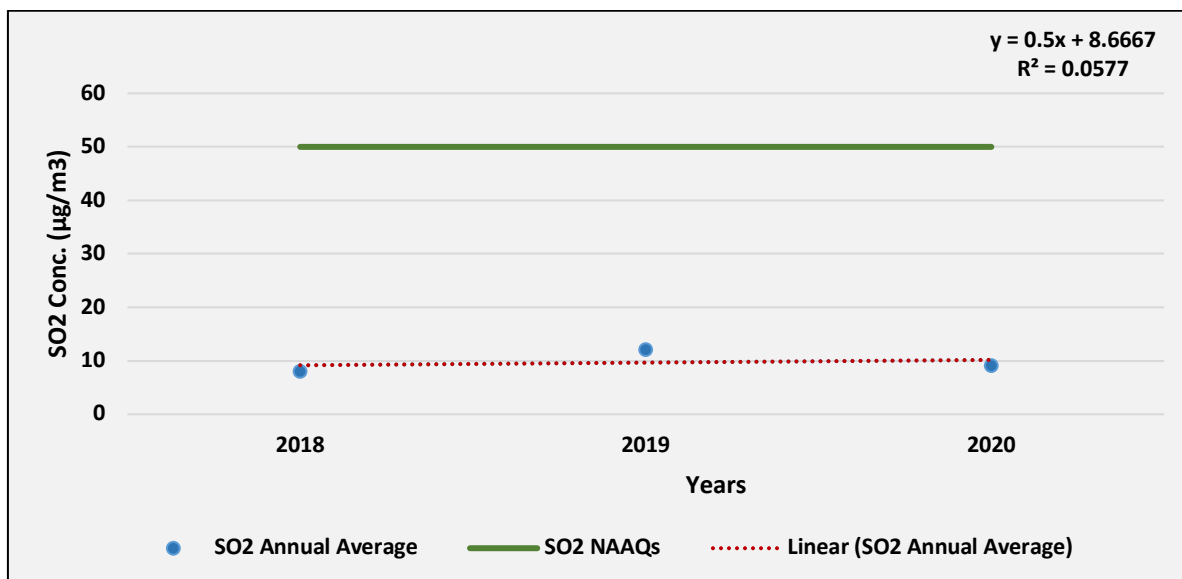


Fig. UN43: Trend of annual mean SO_2 ambient air concentration in Unchahar TPP (Ambient)

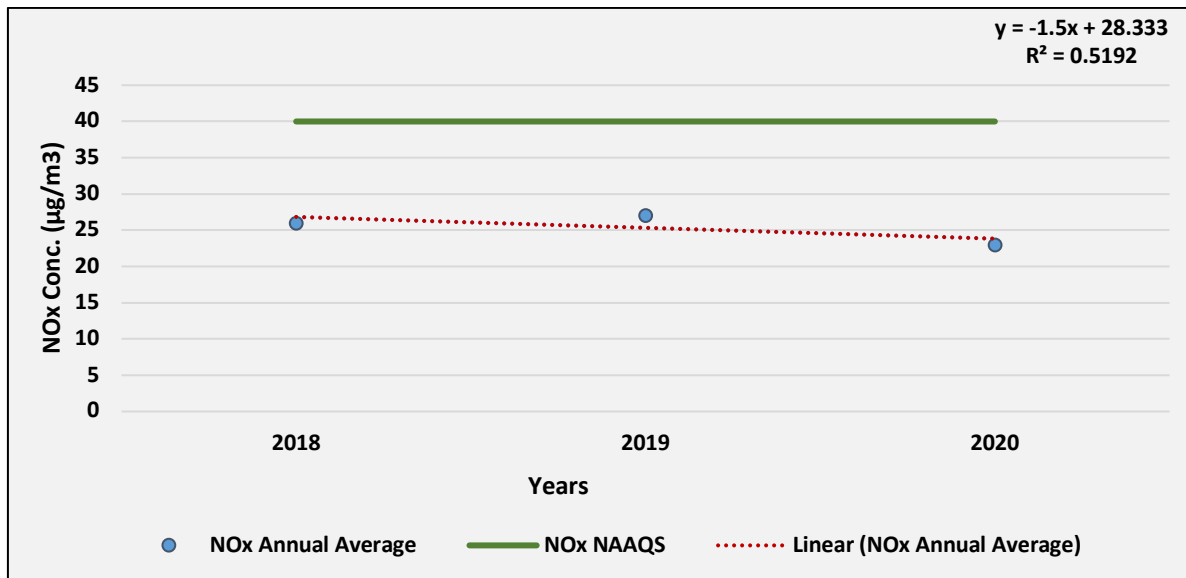


Fig. UN44: Trend of annual mean NO_x ambient air concentration in Unchahar TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, PM_{2.5} are exceeding whereas the SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that SO₂ parameter are much higher than the emission norms. Emission of particulate matter and NO_x is exceeding for the stack 5, stack 5-6 respectively.

KAHALGAON THERMAL POWER PLANT

Kahalgaon Super Thermal Power Station (KhSTPP) is located in Kahalgaon in Bhagalpur district of Bihar. The power plant is one of the coal-based power plants of NTPC. The coal for the power plant is sourced from Rajmahal coalfield of Eastern Coalfields Limited. Source of water for the power plant is Ganga River. The work of NTPC Super Thermal Power Plant in Kahalgaon started in 1985. In March 1992, the first unit of 210 MW capacity was commissioned. Gradually, its capacity was increased. The total installed capacity of the plant is 2340 MW.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed for the last three years (2018-2020) using data provided by NTPC developer for Kahalgaon Power plant, Bihar, India.

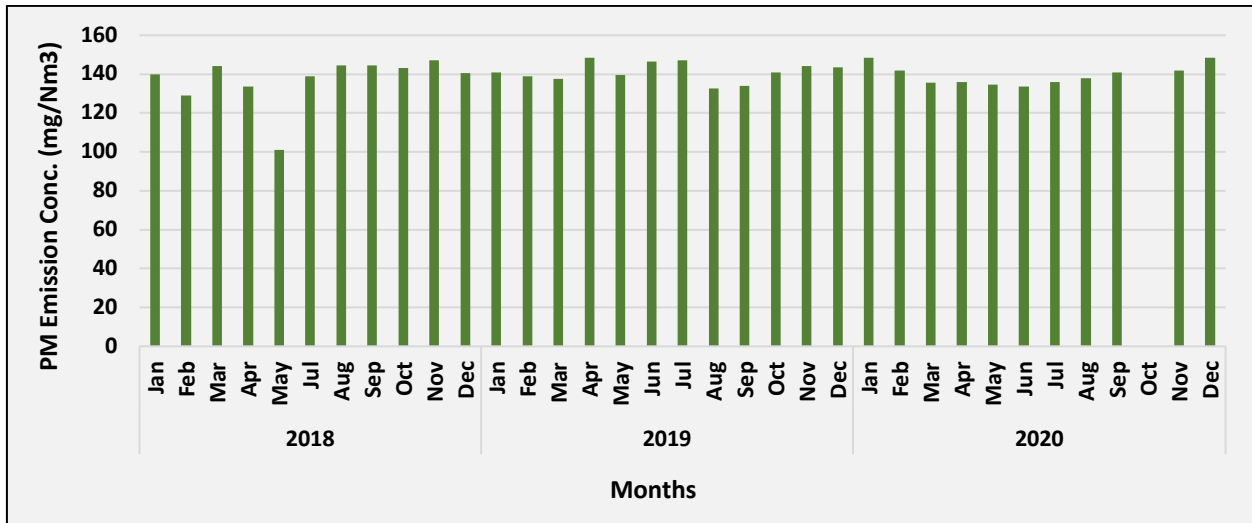


Fig. KA1: Time series of monthly average PM Emission concentration in Kahalgaon TPP (Unit 1)

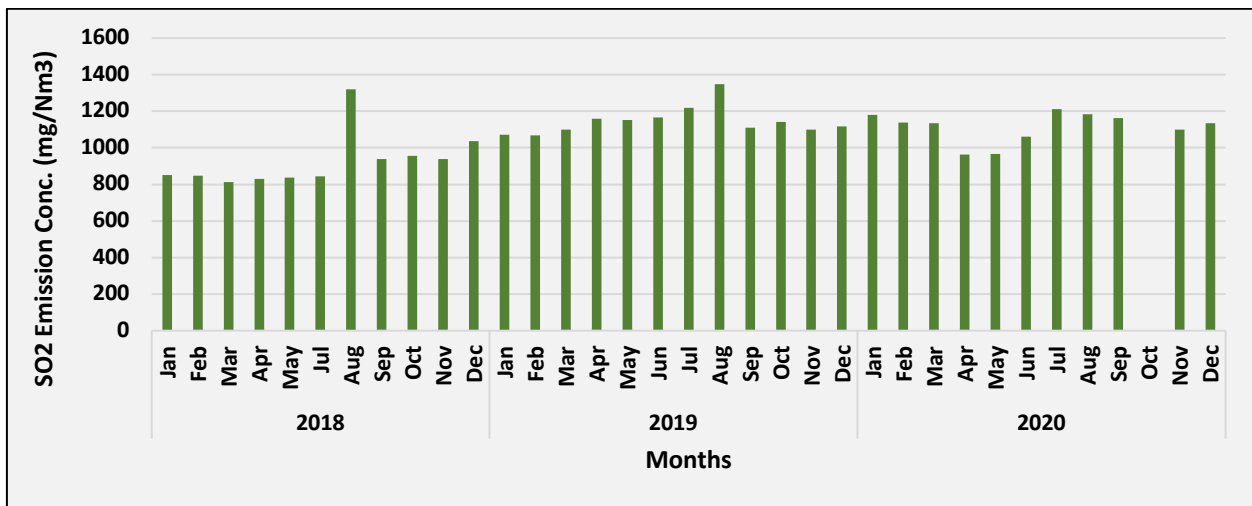


Fig. KA2: Time series of monthly average SO₂ Emission concentration in Kahalgaon TPP (Unit 1)

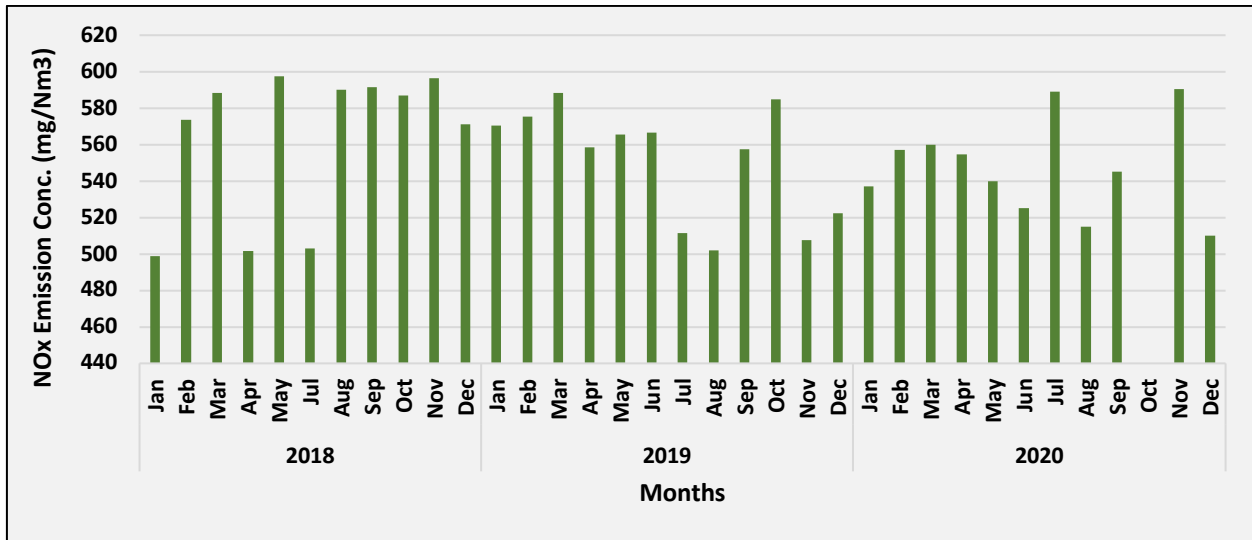


Fig. KA3: Time series of monthly average NO_x Emission concentration in Kahalgaon TPP (Unit 1)

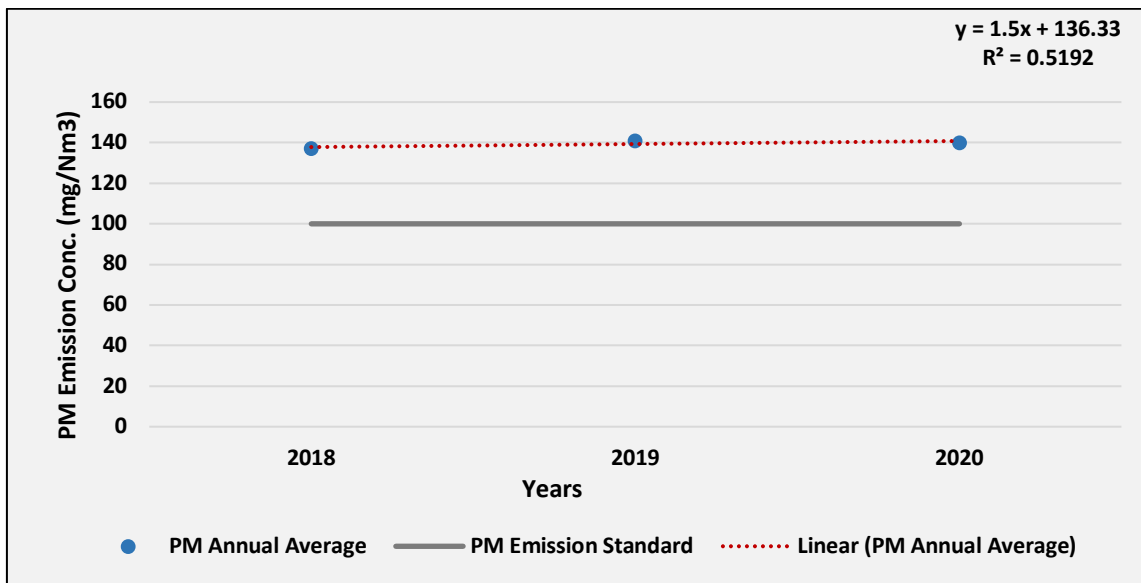


Fig. KA4: Trend of annual mean PM Emission air concentration in Kahalgaon TPP (Unit 1)

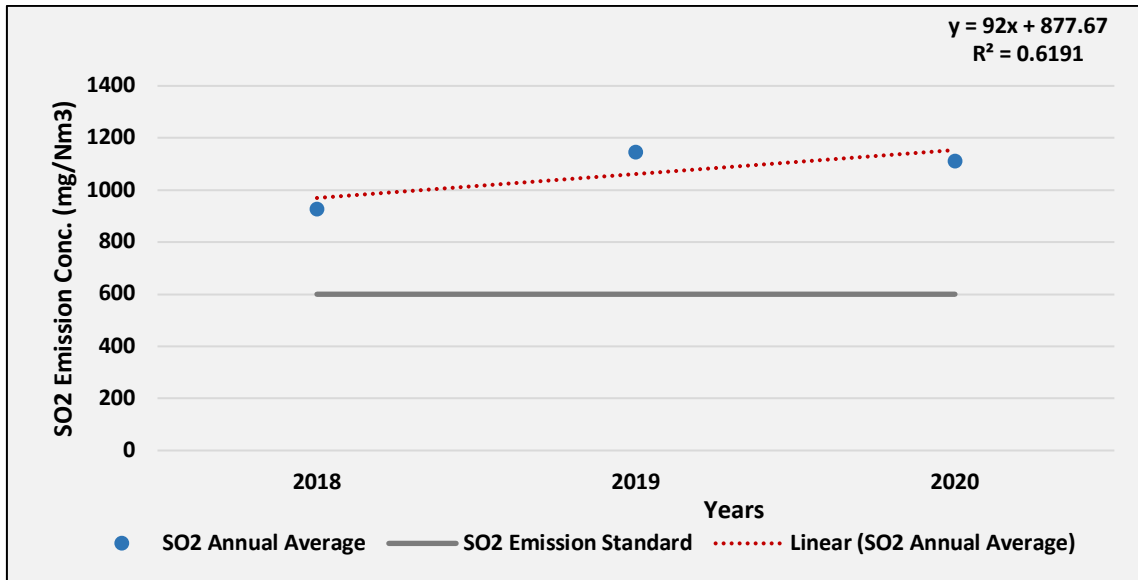


Fig. KA5: Trend of annual mean SO₂ Emission air concentration in Kahalgaon TPP (Unit 1)

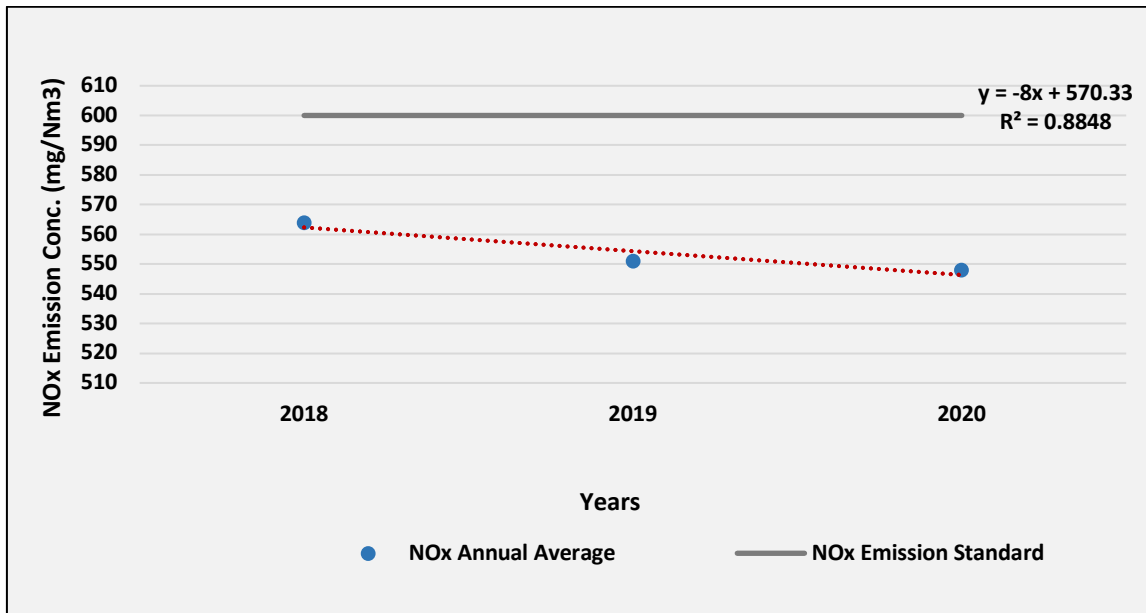


Fig. KA6: Trend of annual mean NO_x Emission air concentration in Kahalgaon TPP (Unit 1)

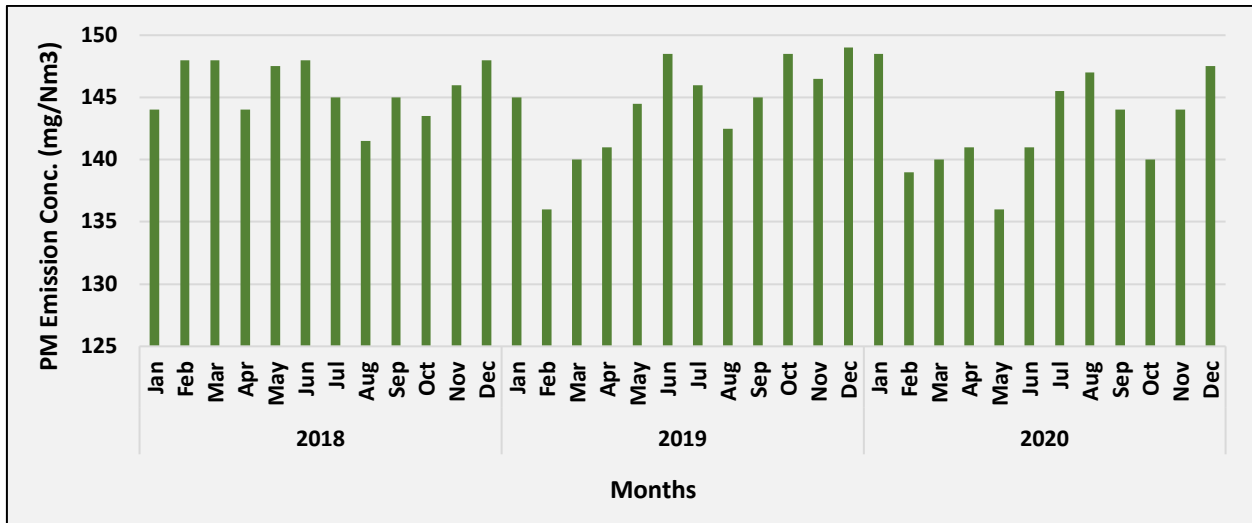


Fig. KA7: Time series of monthly average PM Emission concentration in Kahalgaon TPP (Unit 2)

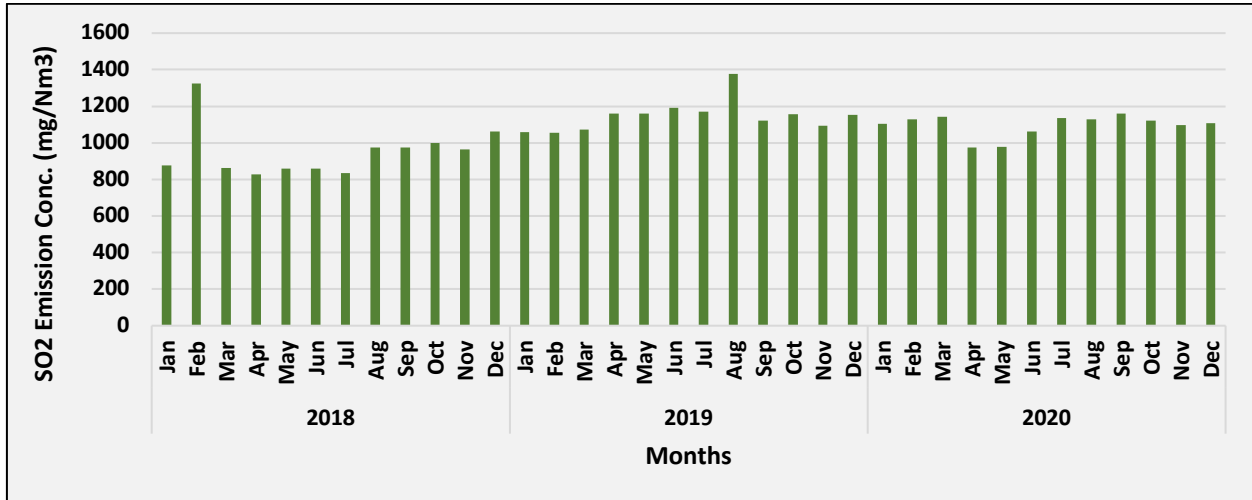


Fig. KA8: Time series of monthly average SO₂ Emission concentration in Kahalgaon TPP (Unit 2)

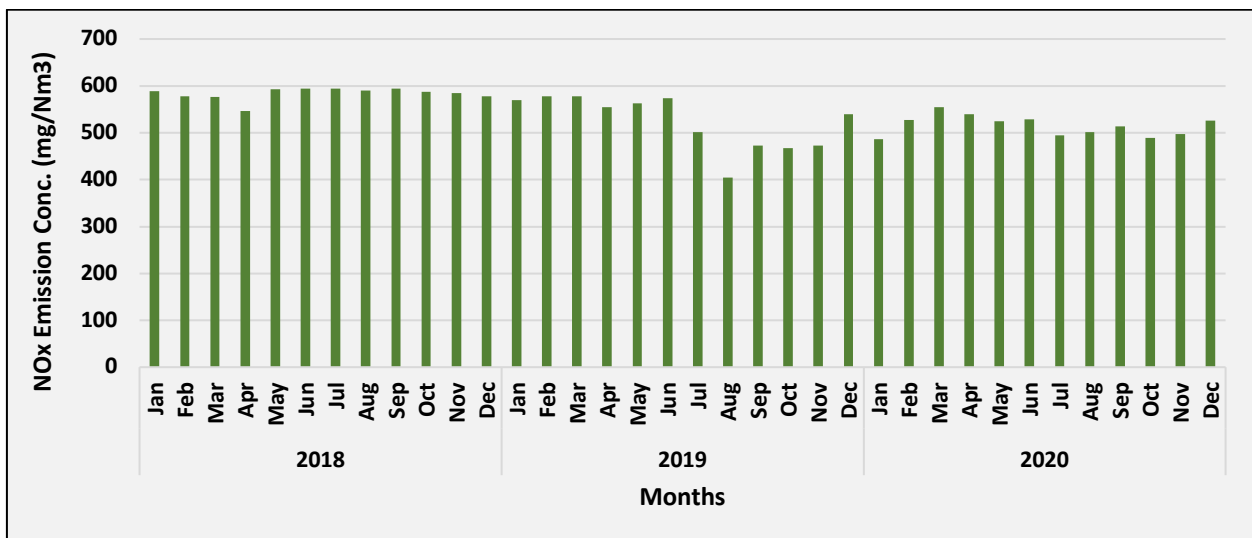


Fig. KA9: Time series of monthly average NO_x Emission concentration in Kahalgaon TPP (Unit 2)

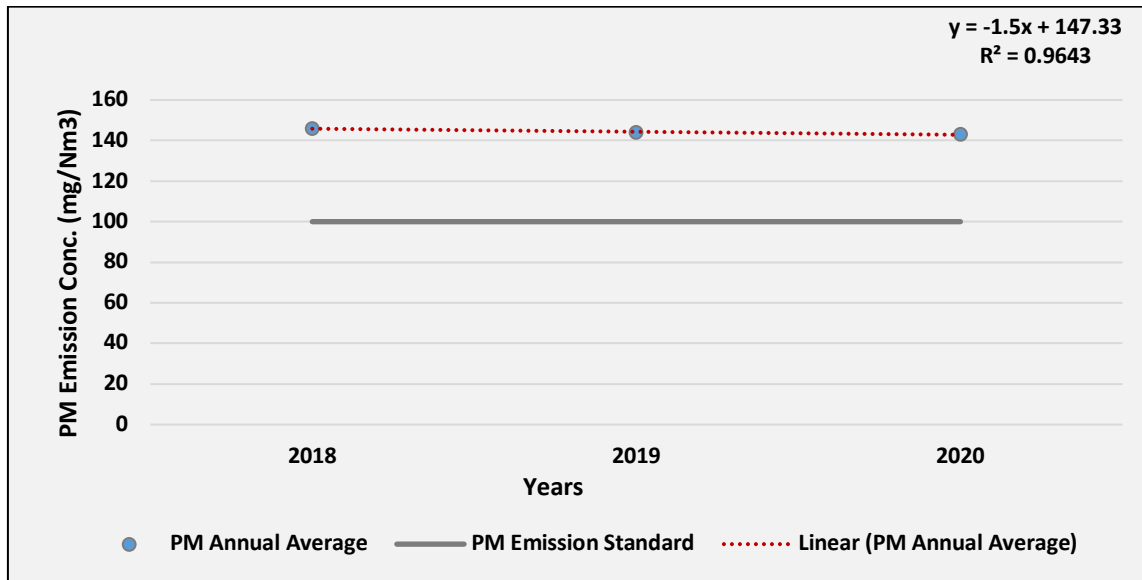


Fig. KA10: Trend of annual mean PM Emission air concentration in Kahalgaon TPP (Unit 2)

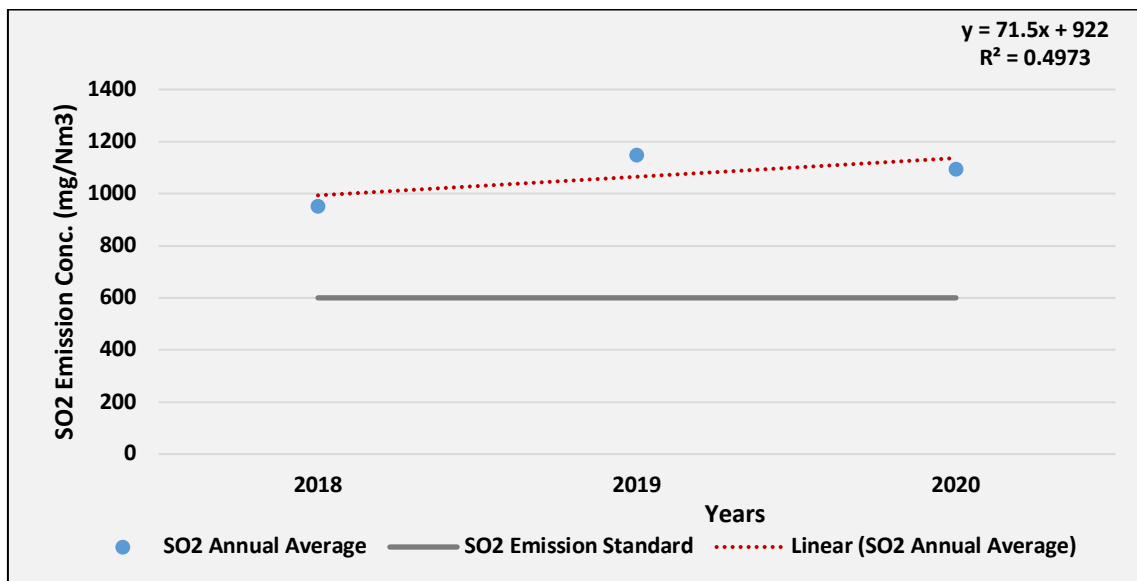


Fig. KA11: Trend of annual mean SO₂ Emission air concentration in Kahalgaon TPP (Unit 2)

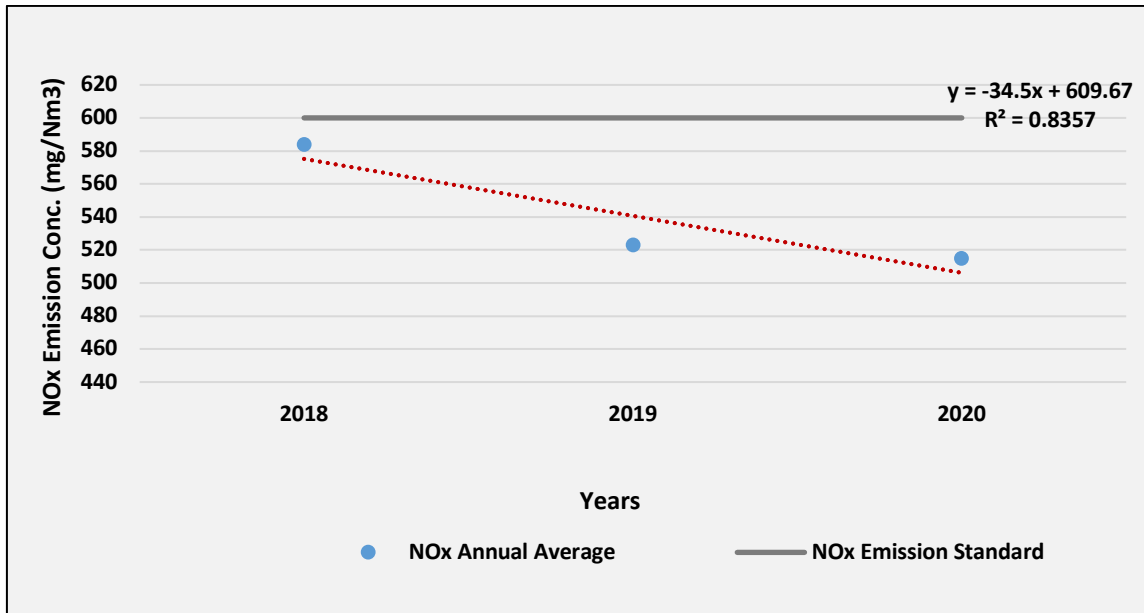


Fig. KA12: Trend of annual mean NO_x Emission air concentration in Kahalgaon TPP (Unit 2)

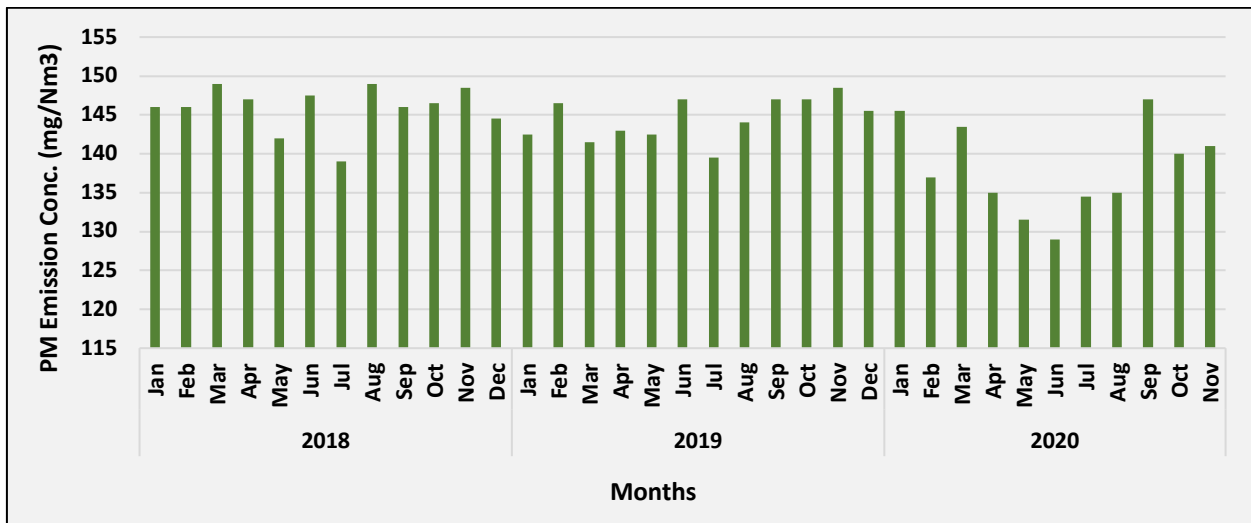


Fig. KA13: Time series of monthly average PM Emission concentration in Kahalgaon TPP (Unit 3)

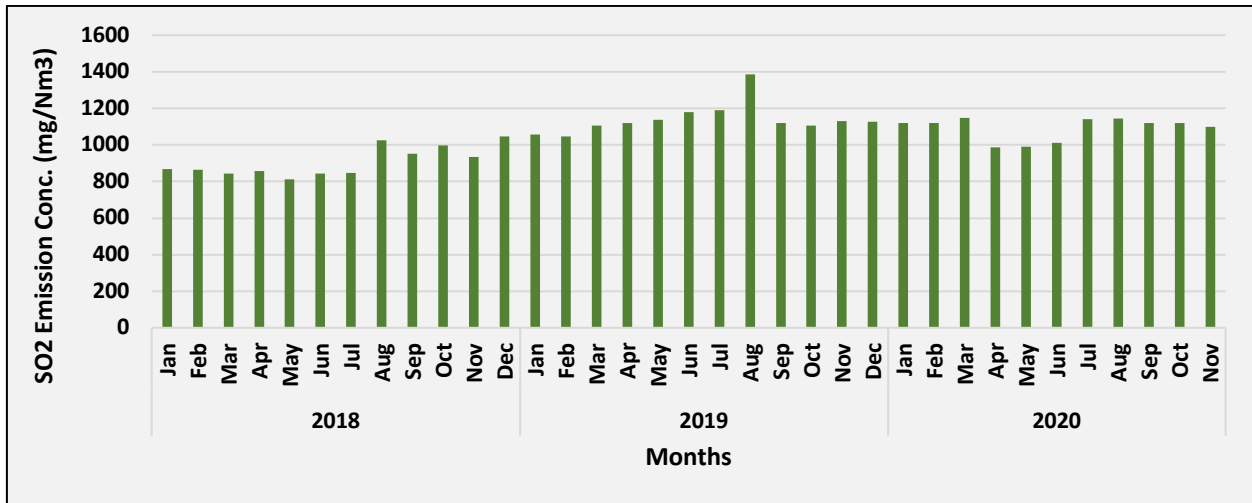


Fig. KA14: Time series of monthly average SO₂ Emission concentration in Kahalgaon TPP (Unit 3)

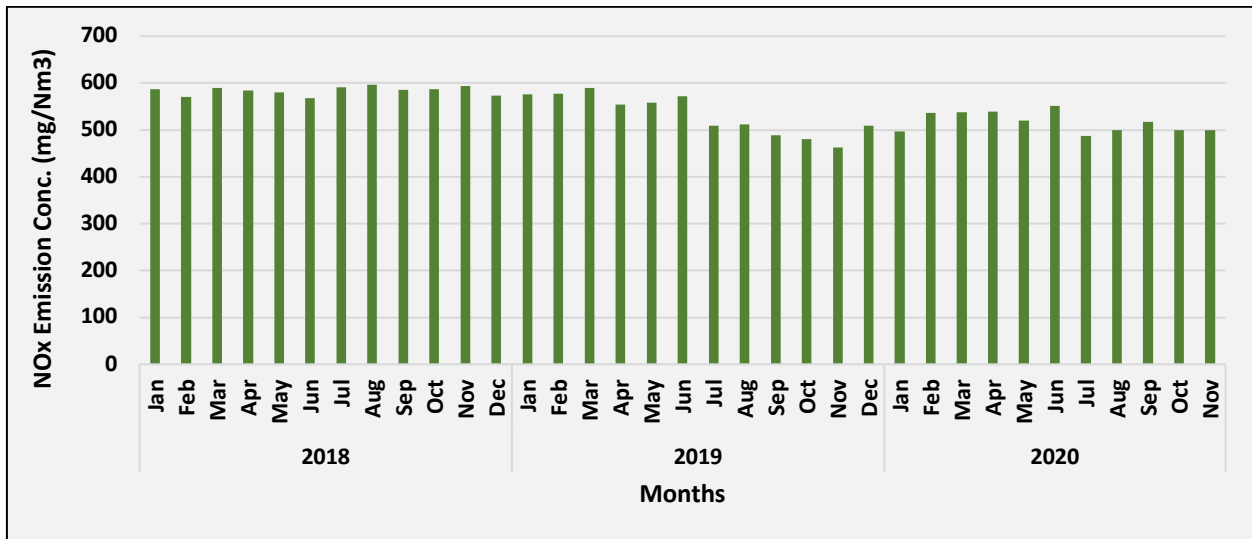


Fig. KA15: Time series of monthly average NO_x Emission concentration in Kahalgaon TPP (Unit 3)

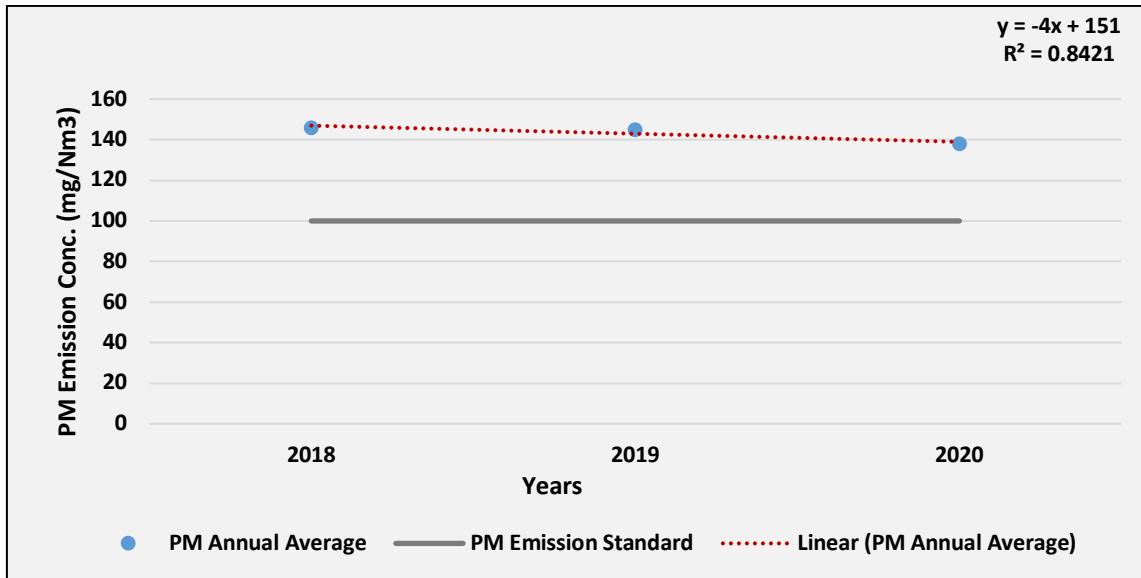


Fig. KA16: Trend of annual mean PM Emission air concentration in Kahalgaon TPP (Unit 3)

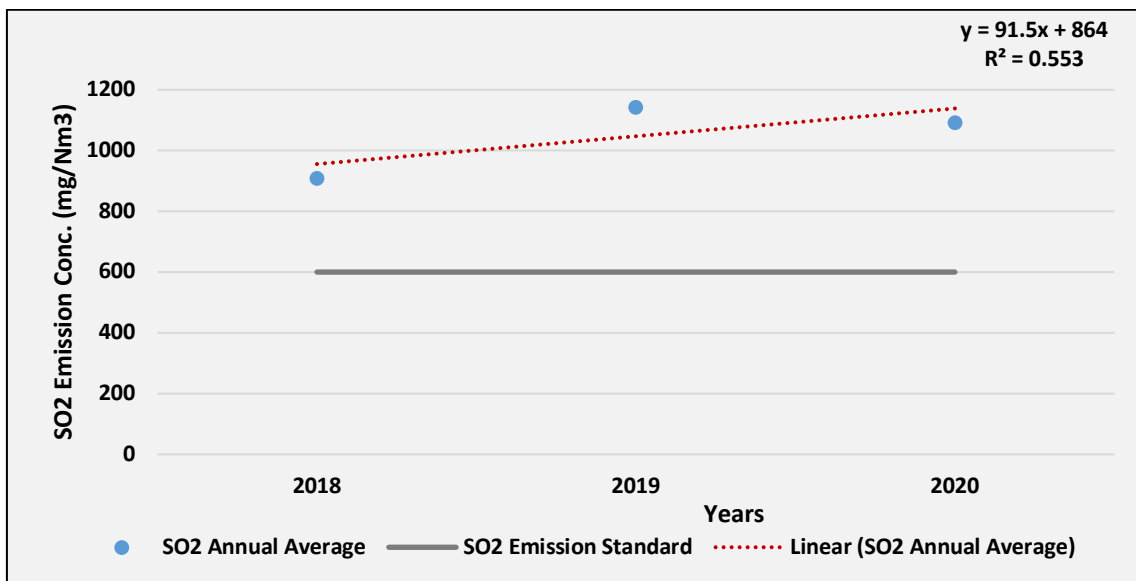


Fig. KA17: Trend of annual mean SO₂ Emission air concentration in Kahalgaon TPP (Unit 3)

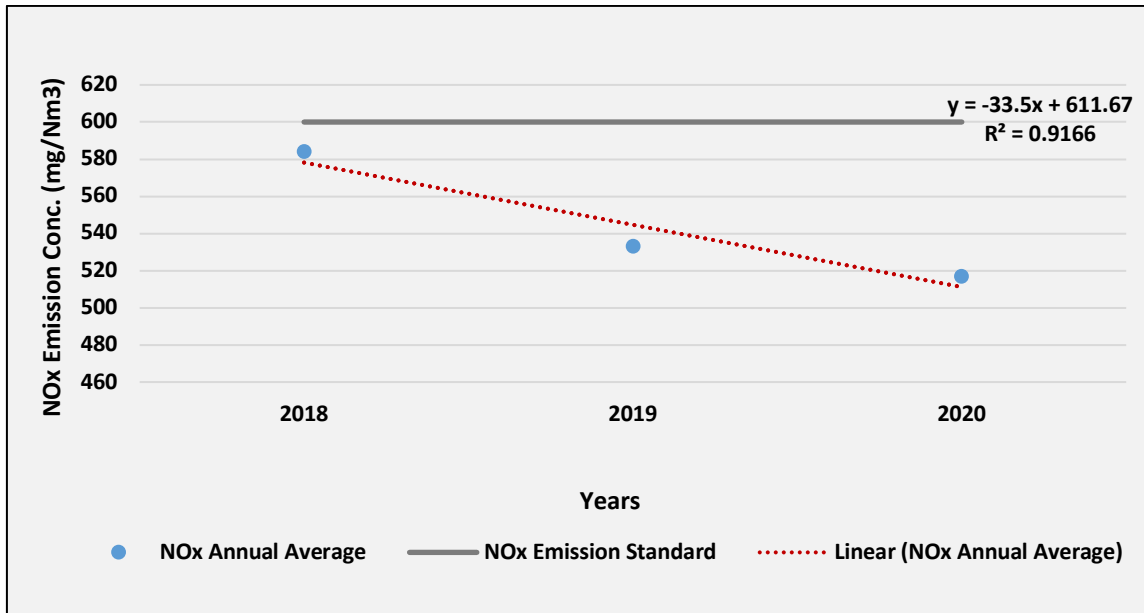


Fig. KA18: Trend of annual mean NO_x Emission air concentration in Kahalgaon TPP (Unit 3)

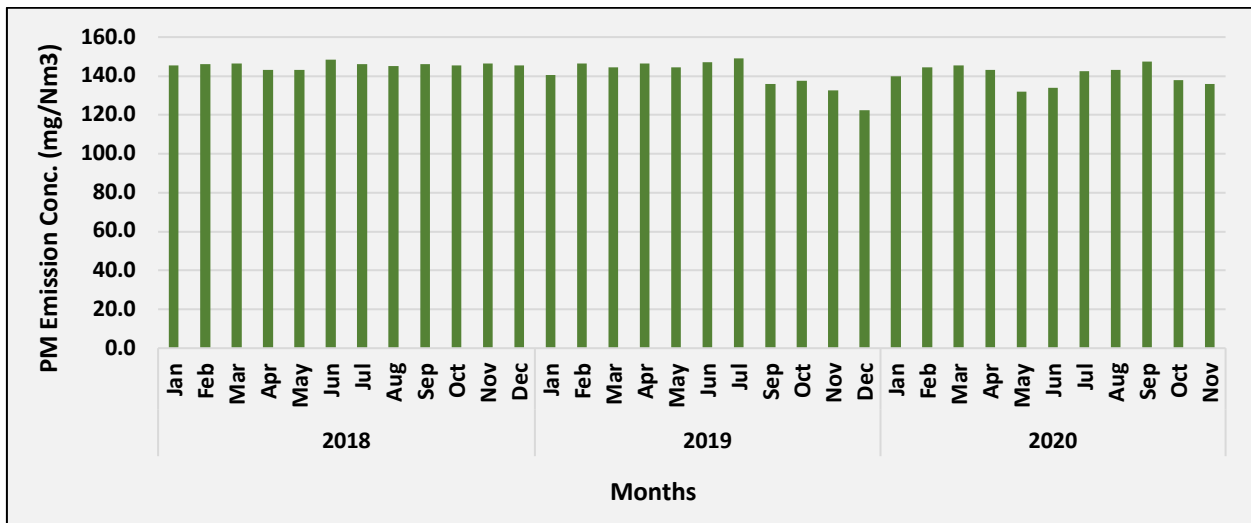


Fig. KA19: Time series of monthly average PM Emission concentration in Kahalgaon TPP (Unit 4)

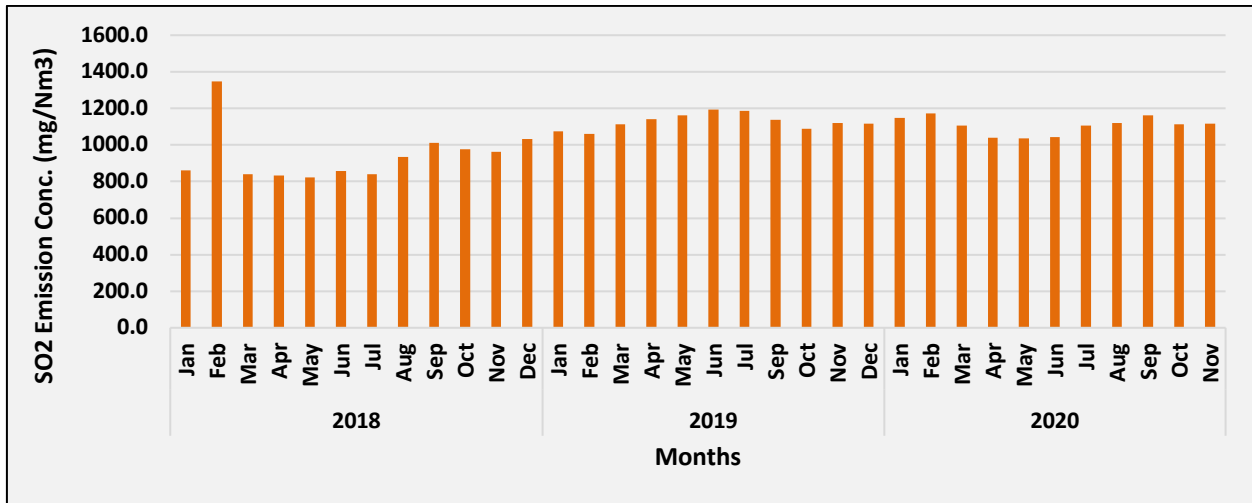


Fig. KA20: Time series of monthly average SO₂ Emission concentration in Kahalgaon TPP (Unit 4)

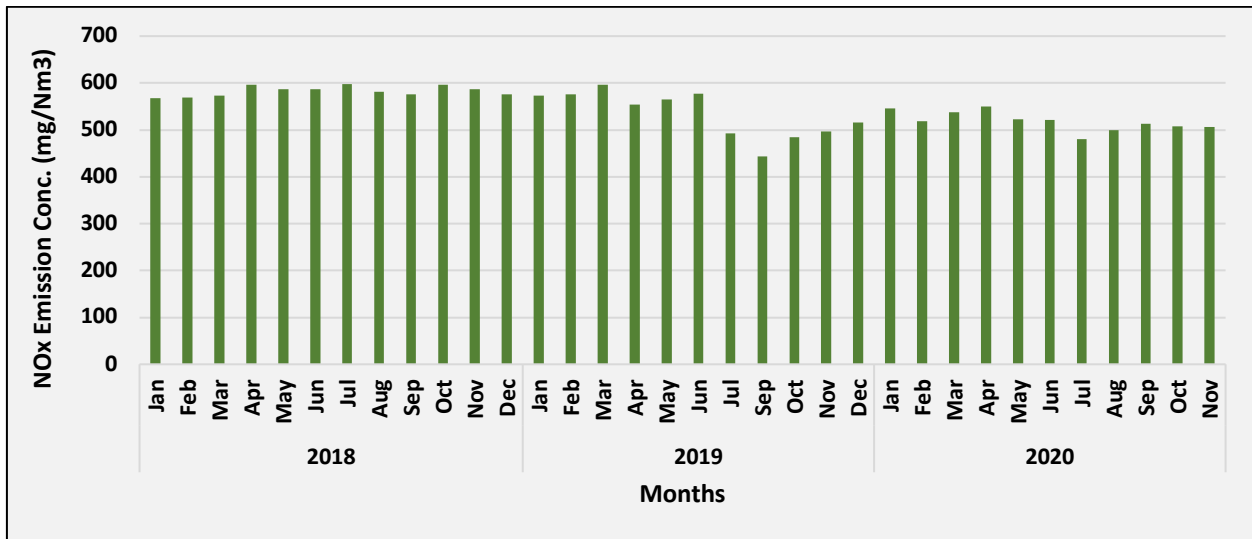


Fig. KA21: Time series of monthly average NO_x Emission concentration in Kahalgaon TPP (Unit 4)

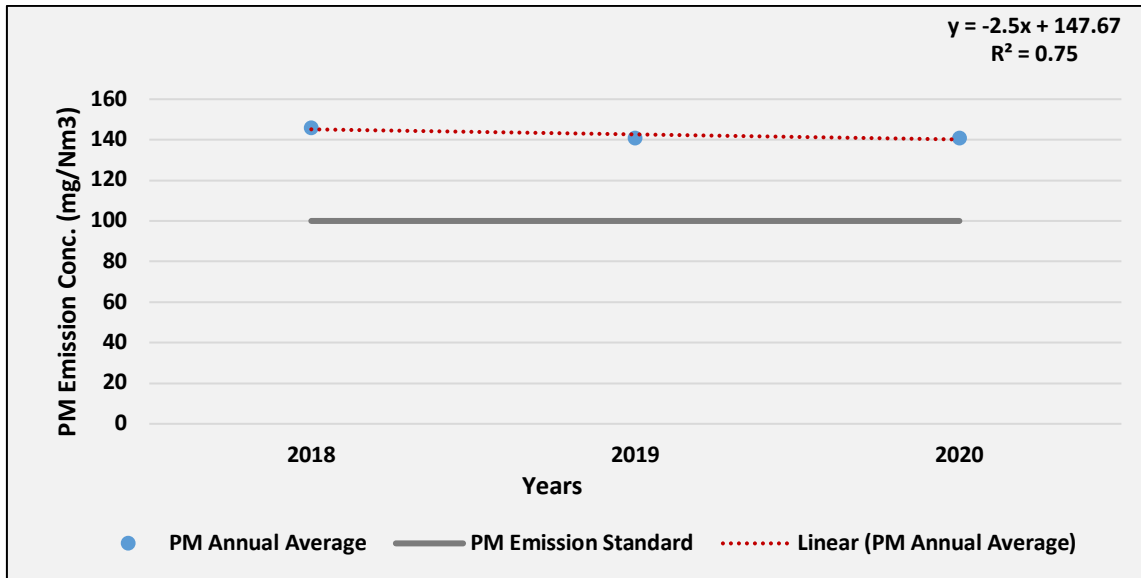


Fig. KA22: Trend of annual mean PM Emission air concentration in Kahalgaon TPP (Unit 4)

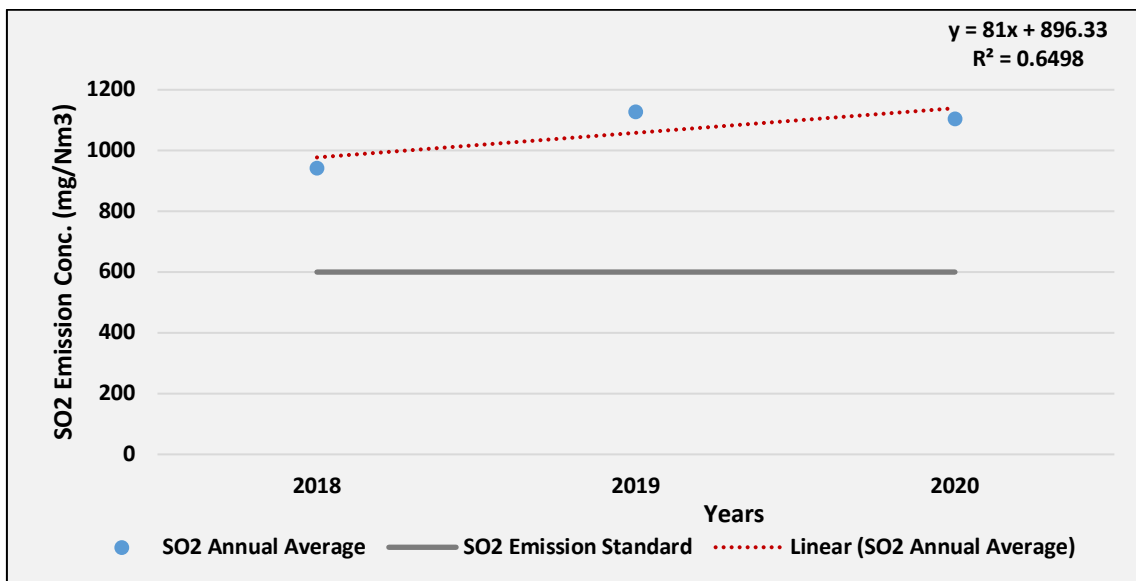


Fig. KA23: Trend of annual mean SO₂ Emission air concentration in Kahalgaon TPP (Unit 4)

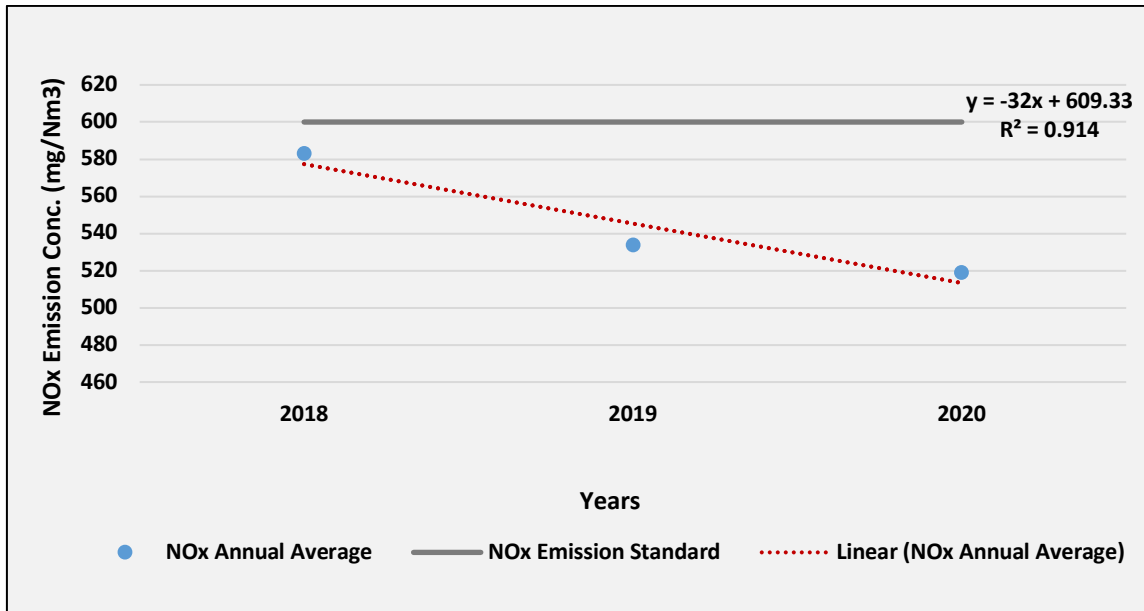


Fig. KA24: Trend of annual mean NO_x Emission air concentration in Kahalgaon TPP (Unit 4)

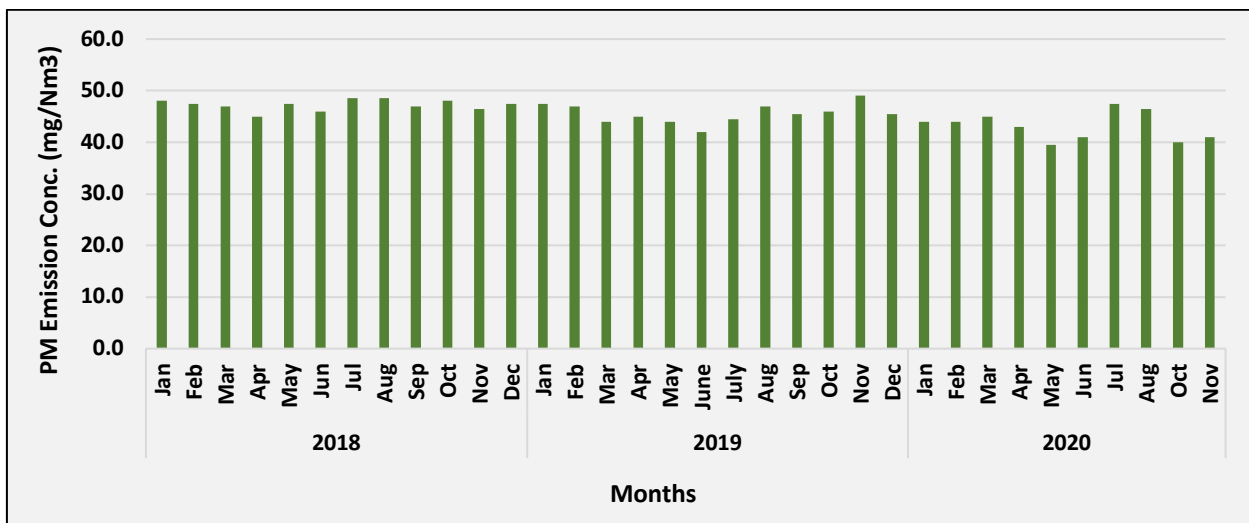


Fig. KA25: Time series of monthly average PM Emission concentration in Kahalgaon TPP (Unit 5)

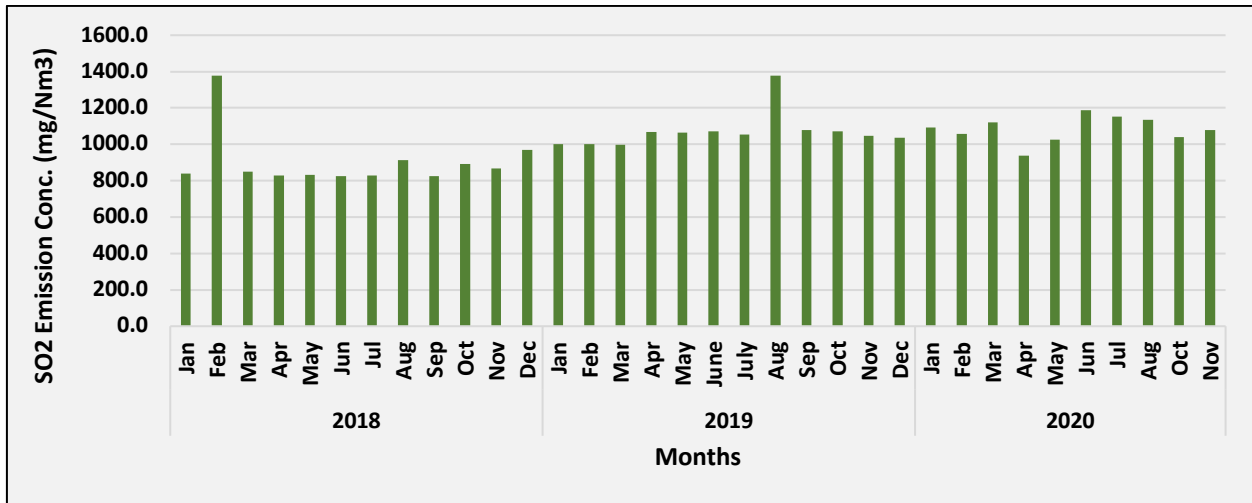


Fig. KA26: Time series of monthly average SO₂ Emission concentration in Kahalgaon TPP (Unit 5)

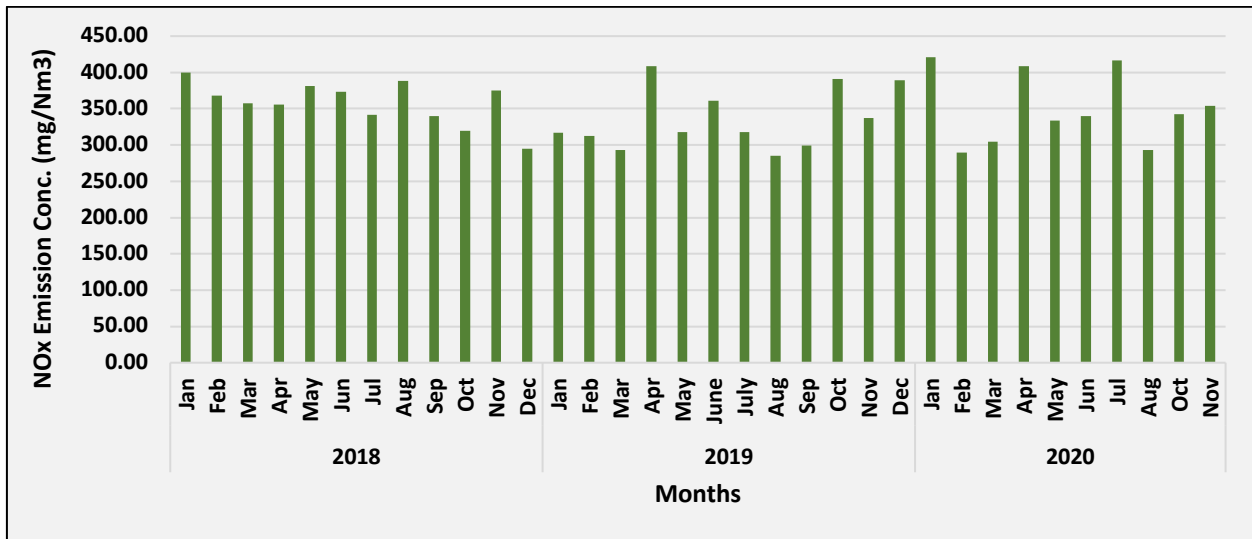


Fig. KA27: Time series of monthly average NO_x Emission concentration in Kahalgaon TPP (Unit 5)

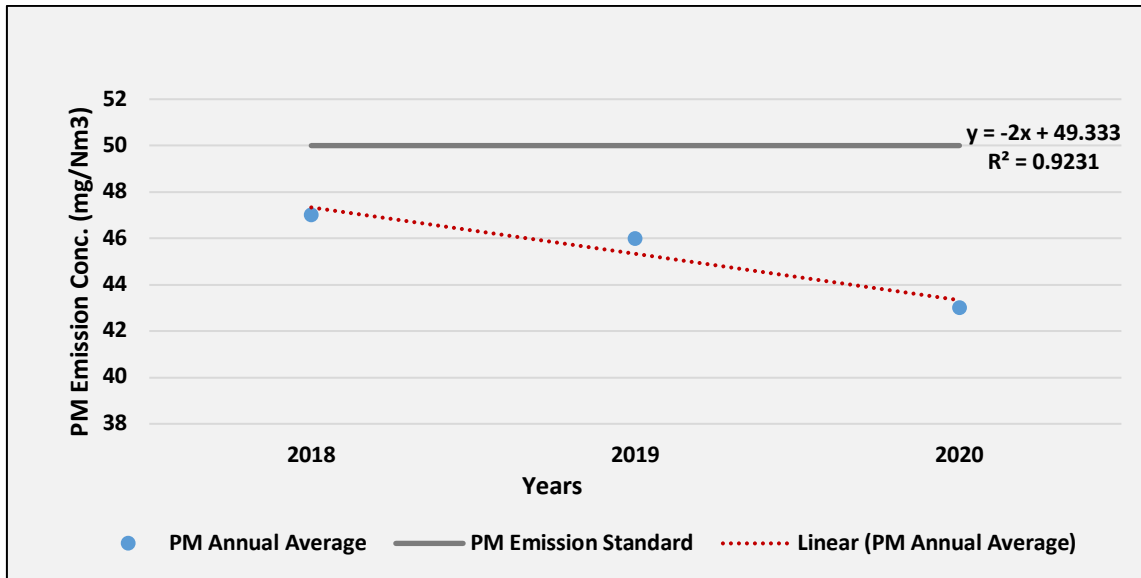


Fig. KA28: Trend of annual mean PM Emission air concentration in Kahalgaon TPP (Unit 5)

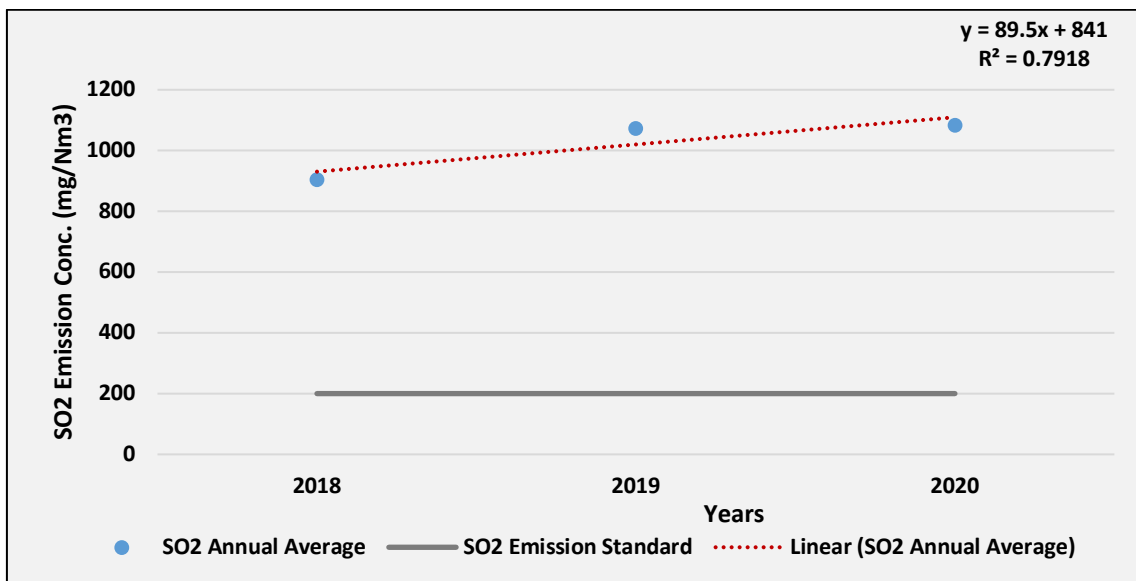


Fig. KA29: Trend of annual mean SO₂ Emission air concentration in Kahalgaon TPP (Unit 5)

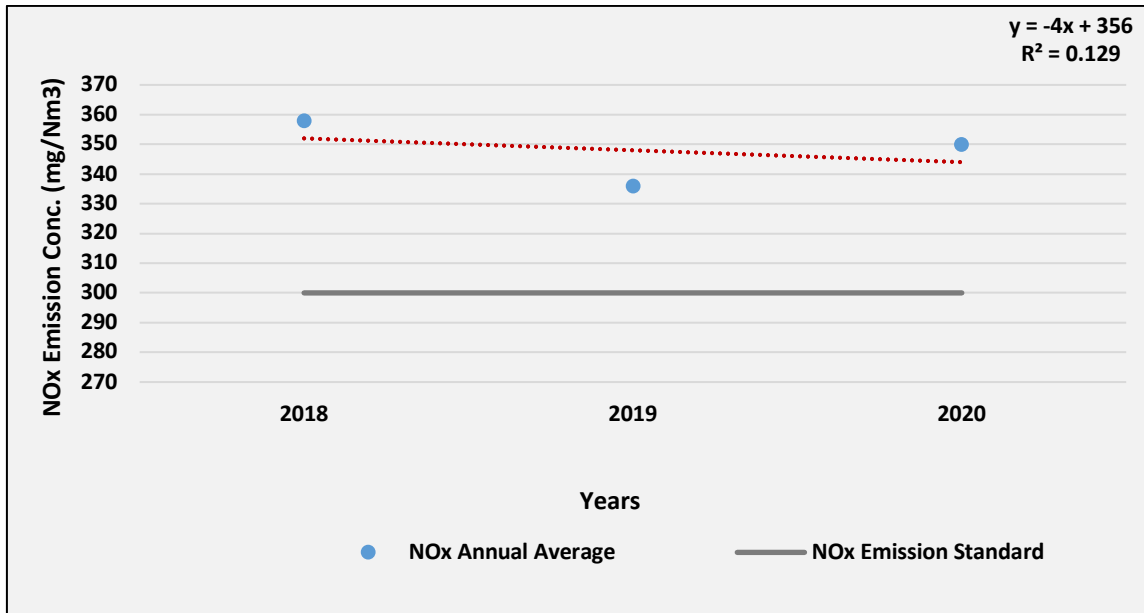


Fig. KA30: Trend of annual mean NO_x Emission air concentration in Kahalgaon TPP (Unit 5)

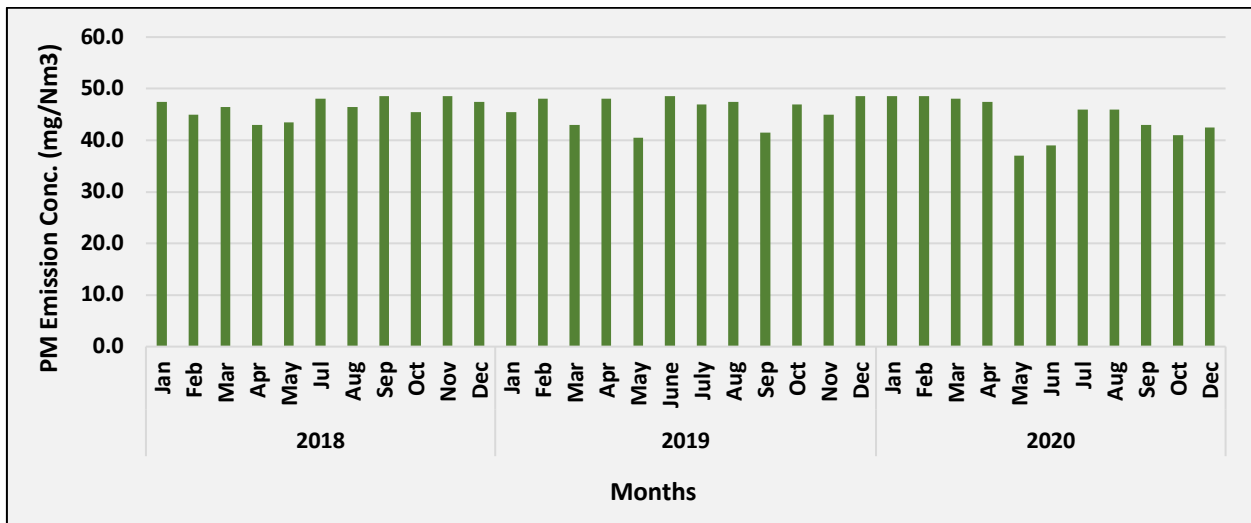


Fig. KA31: Time series of monthly average PM Emission concentration in Kahalgaon TPP (Unit 6)

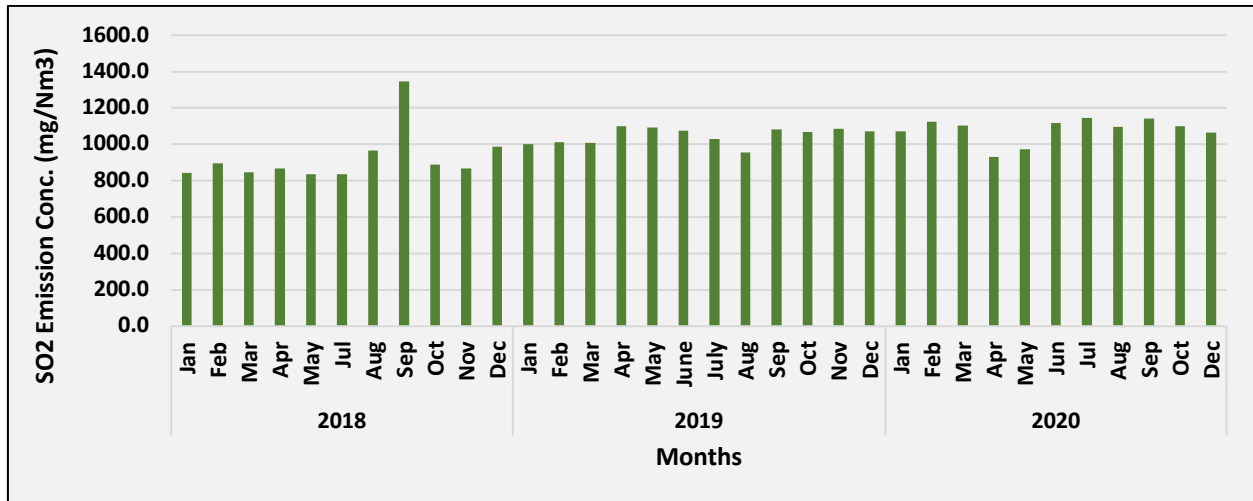


Fig. KA32: Time series of monthly average SO₂ Emission concentration in Kahalgaon TPP (Unit 6)

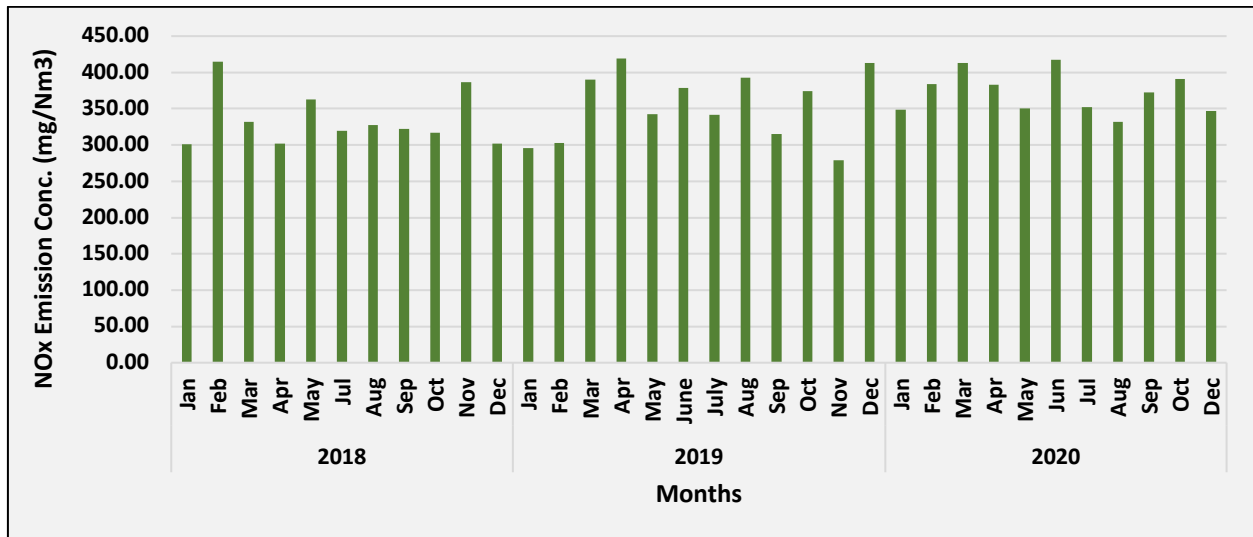


Fig. KA33: Time series of monthly average NO_x Emission concentration in Kahalgaon TPP (Unit 6)

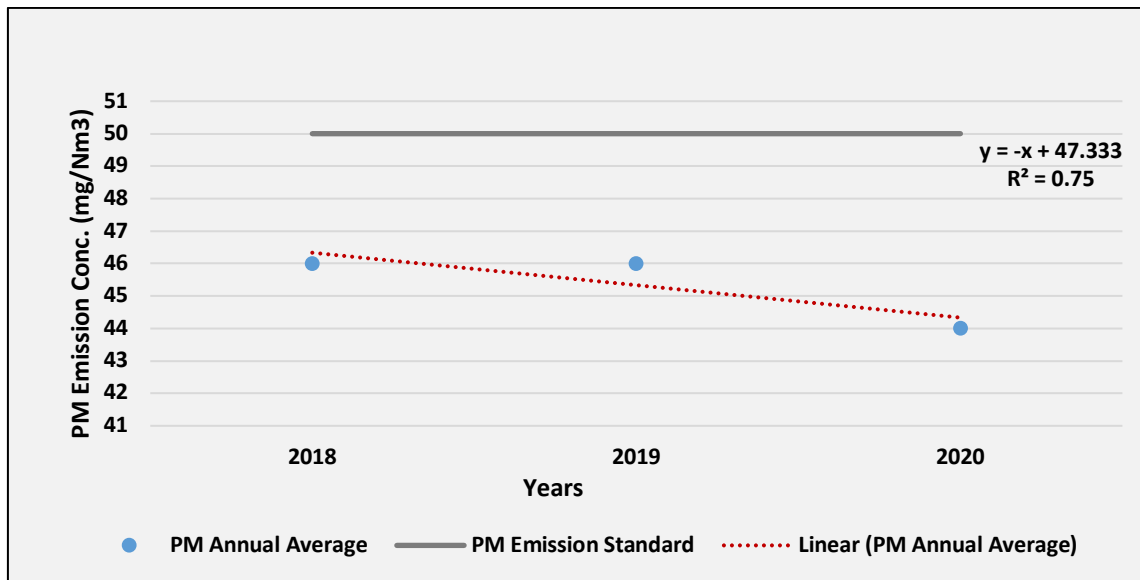


Fig. KA34: Trend of annual mean PM Emission air concentration in Kahalgaon TPP (Unit 6)

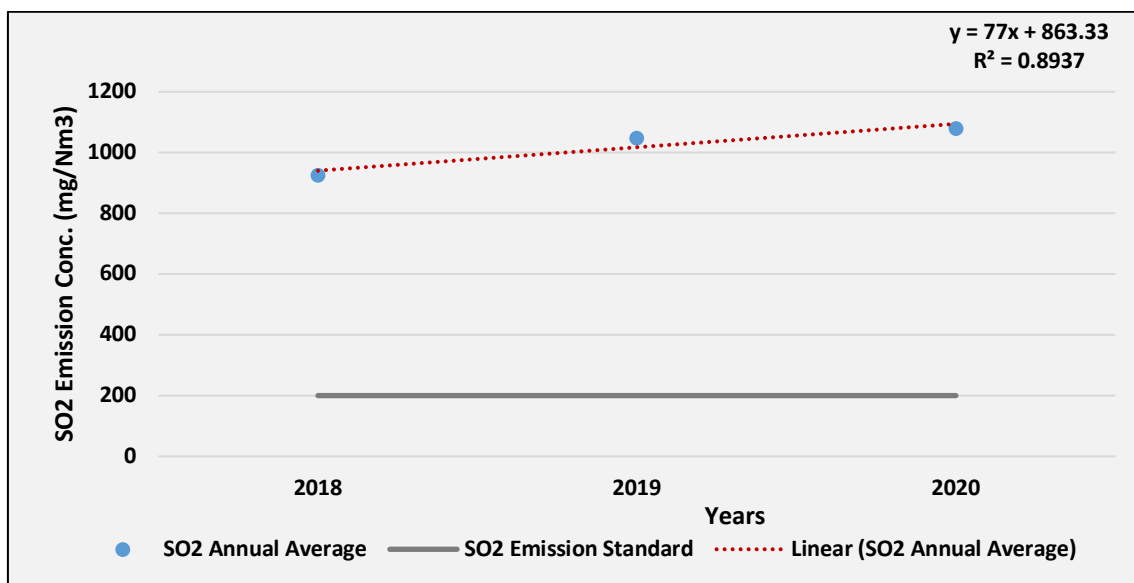


Fig. KA35: Trend of annual mean SO₂ Emission air concentration in Kahalgaon TPP (Unit 6)

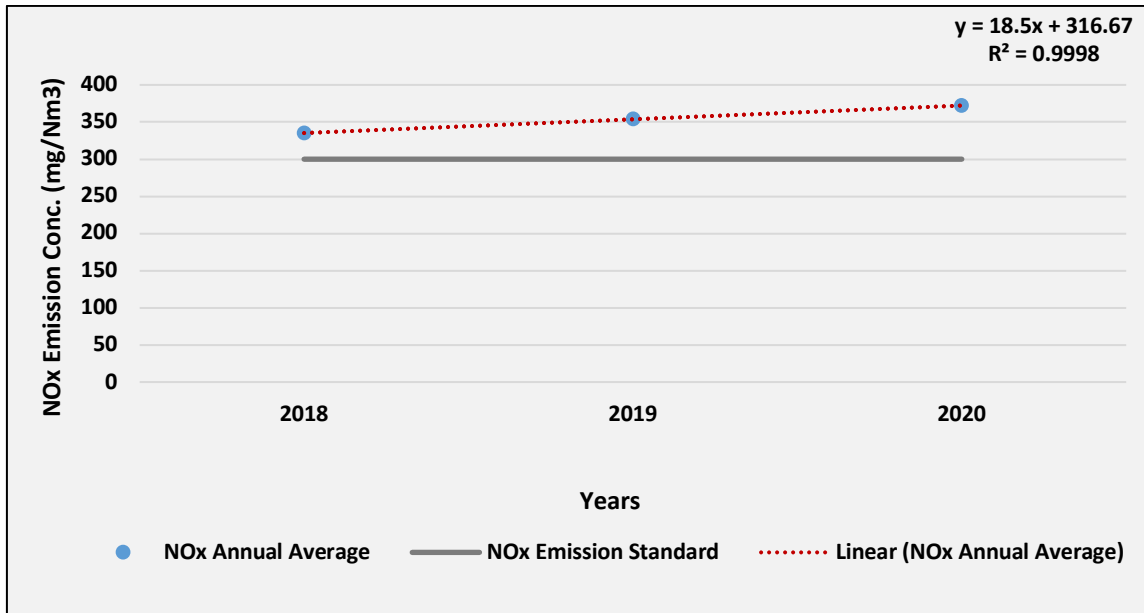


Fig. KA36: Trend of annual mean NO_x Emission air concentration in Kahalgaon TPP (Unit 6)

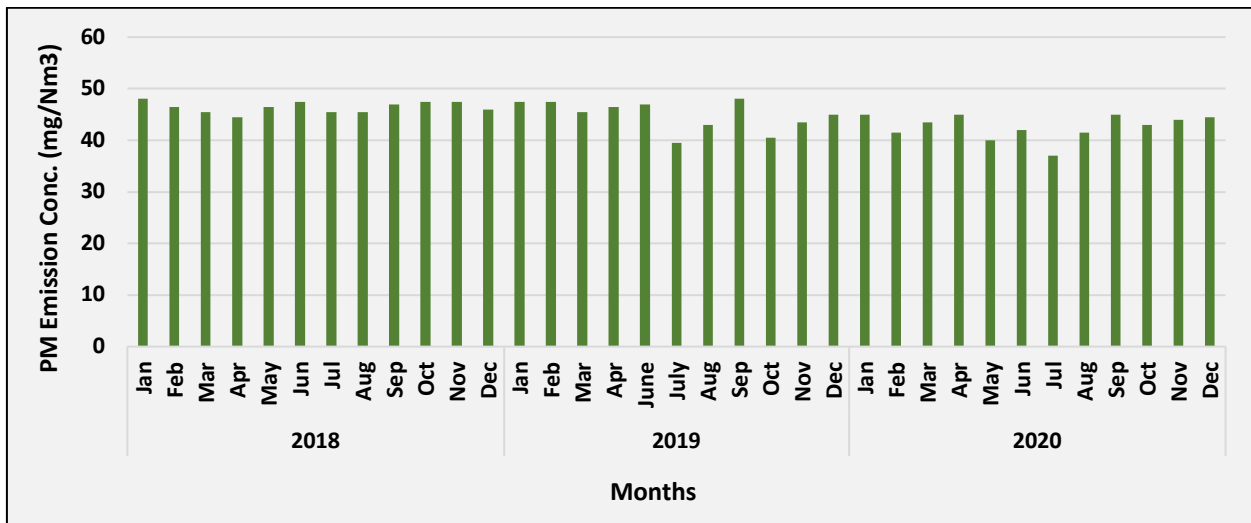


Fig. KA37: Time series of monthly average PM Emission concentration in Kahalgaon TPP (Unit 7)

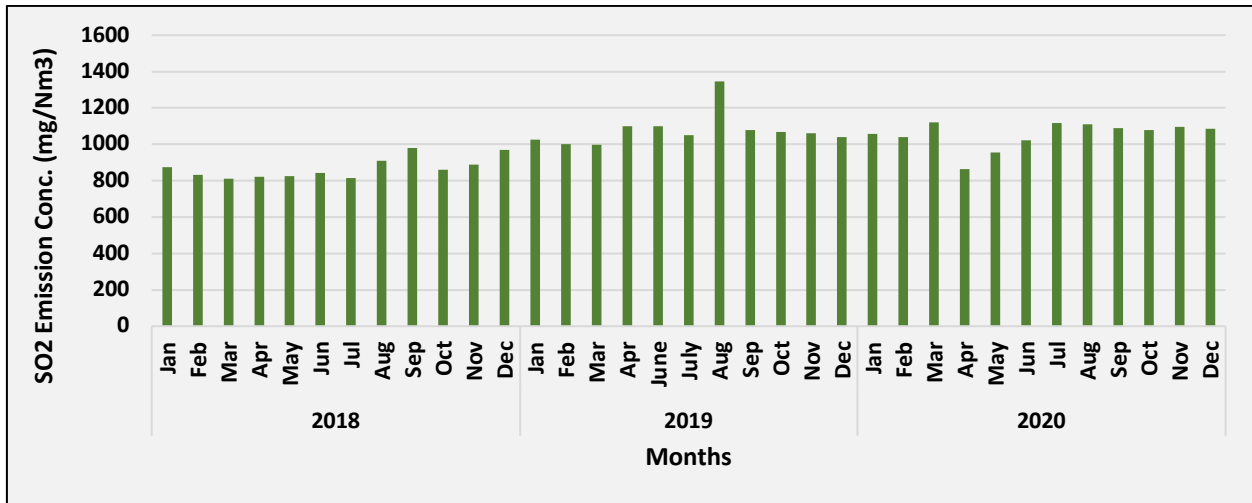


Fig. KA38: Time series of monthly average SO₂ Emission concentration in Kahalgaon TPP (Unit 7)

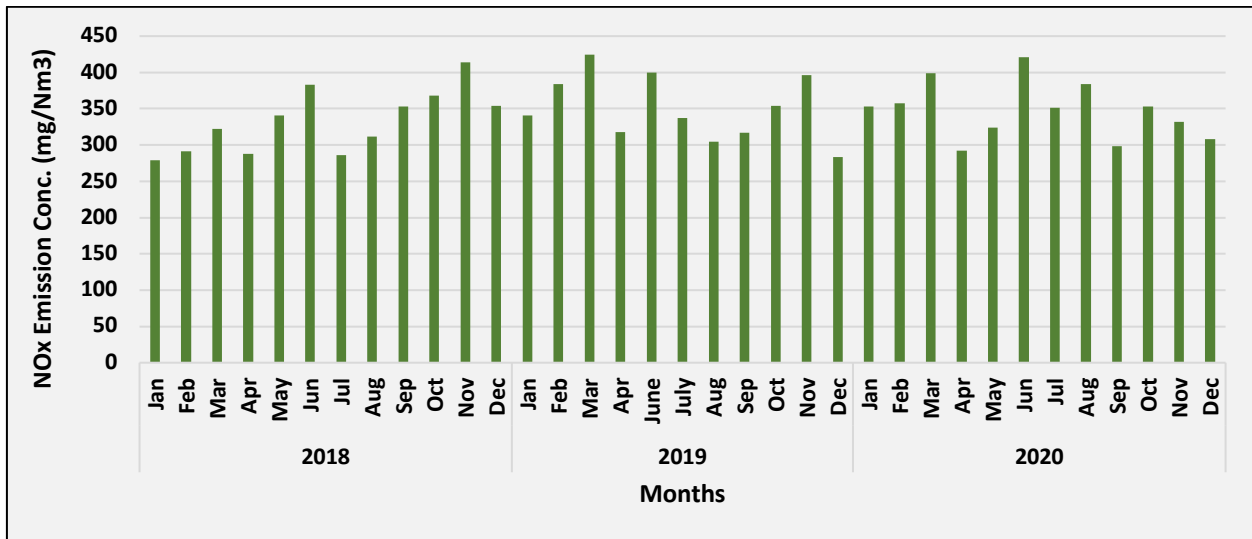


Fig. KA39: Time series of monthly average NO_x Emission concentration in Kahalgaon TPP (Unit 7)

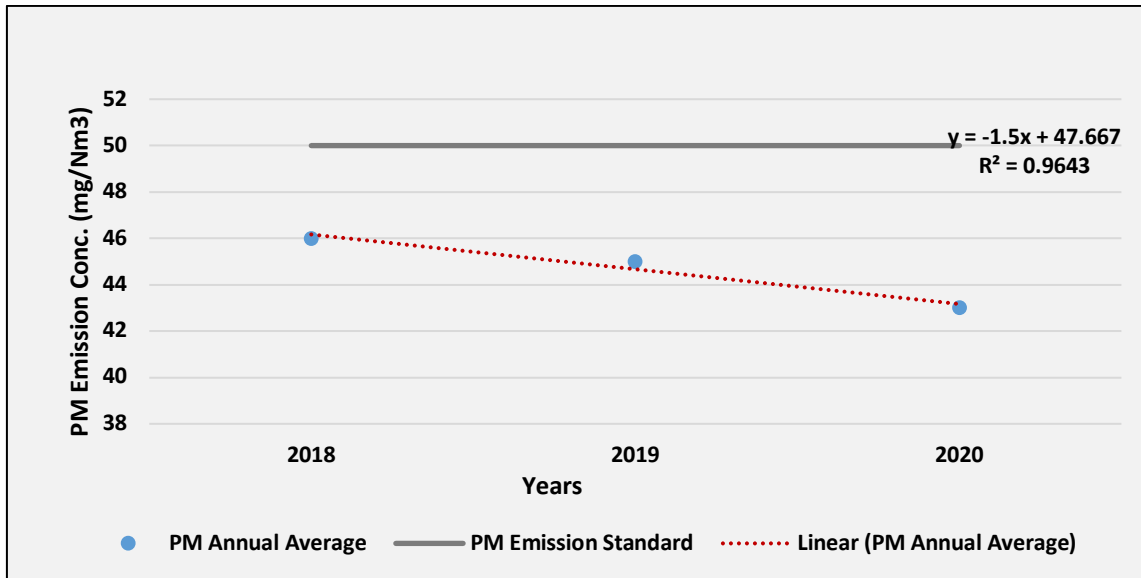


Fig. KA40: Trend of annual mean PM Emission air concentration in Kahalgaon TPP (Unit 7)

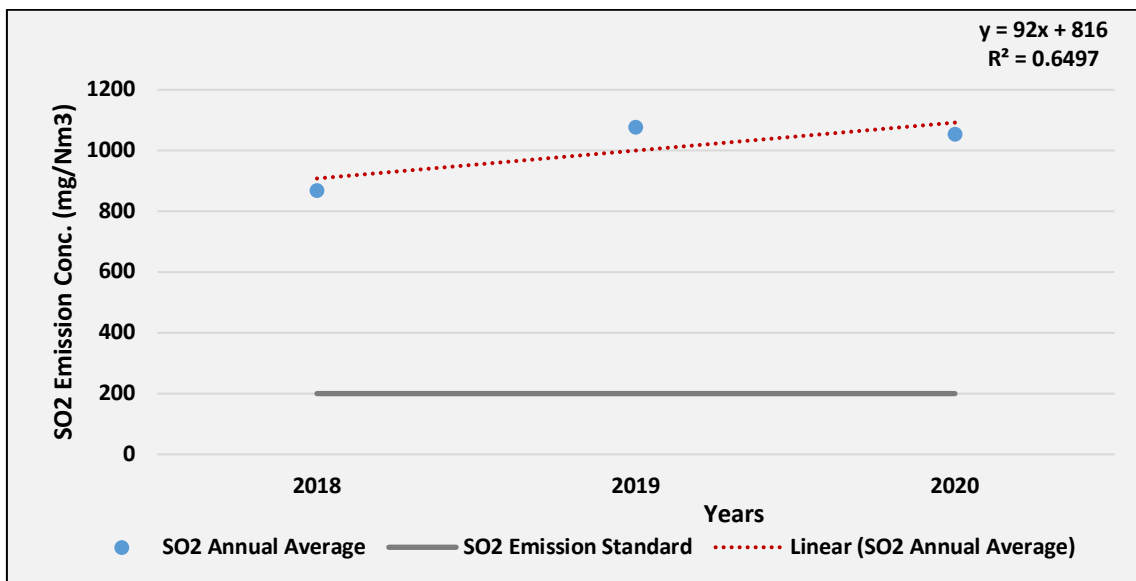


Fig. KA41: Trend of annual mean SO₂ Emission air concentration in Kahalgaon TPP (Unit 7)

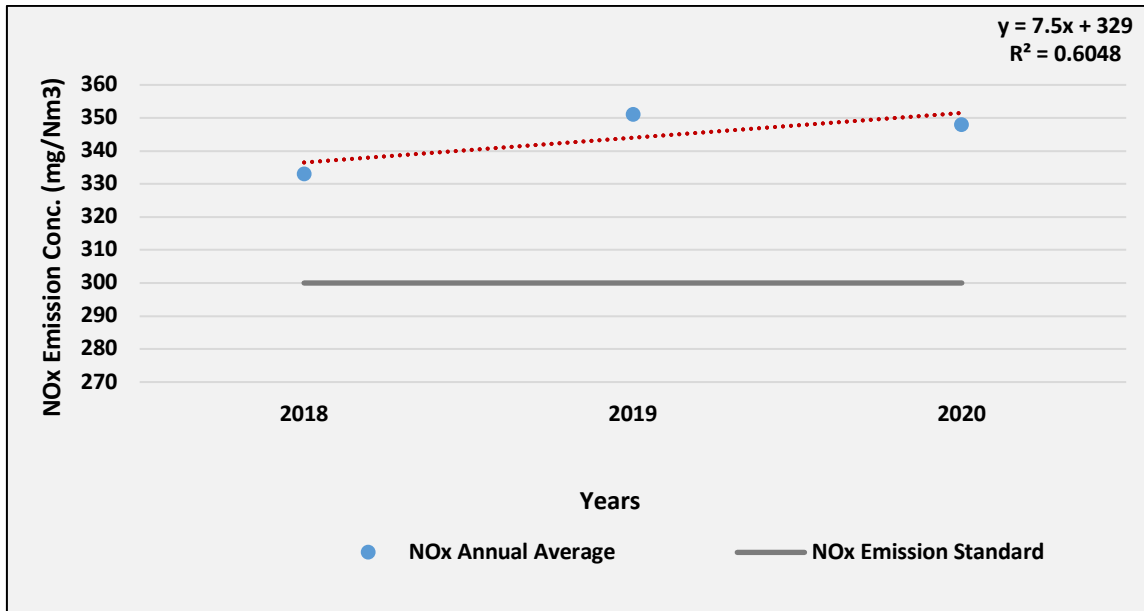


Fig. KA42: Trend of annual mean NO_x Emission air concentration in Kahalgaon TPP (Unit 7)

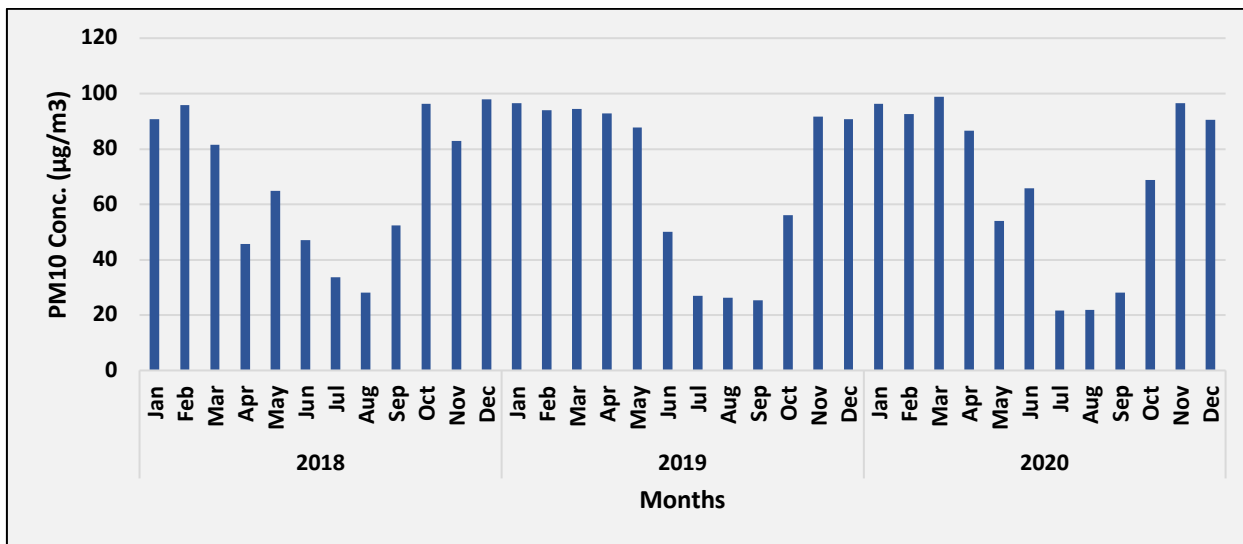


Fig. KA43: Time series of monthly average PM₁₀ ambient air concentration in Kahalgaon TPP (Ambient)

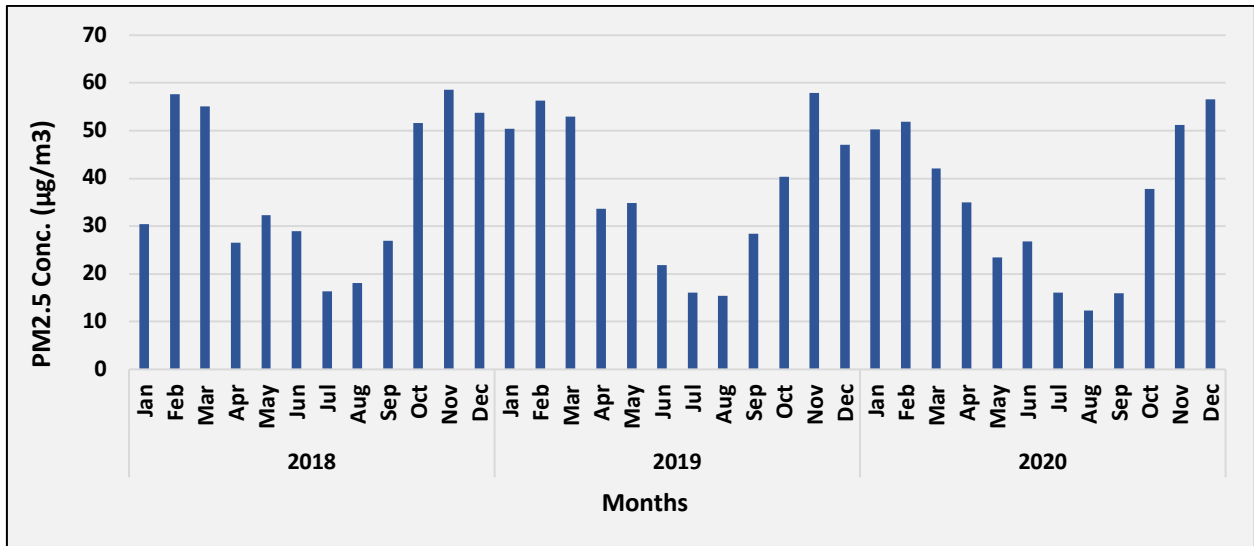


Fig. KA44: Time series of monthly average PM_{2.5} ambient air concentration in Kahalgaon TPP (Ambient)

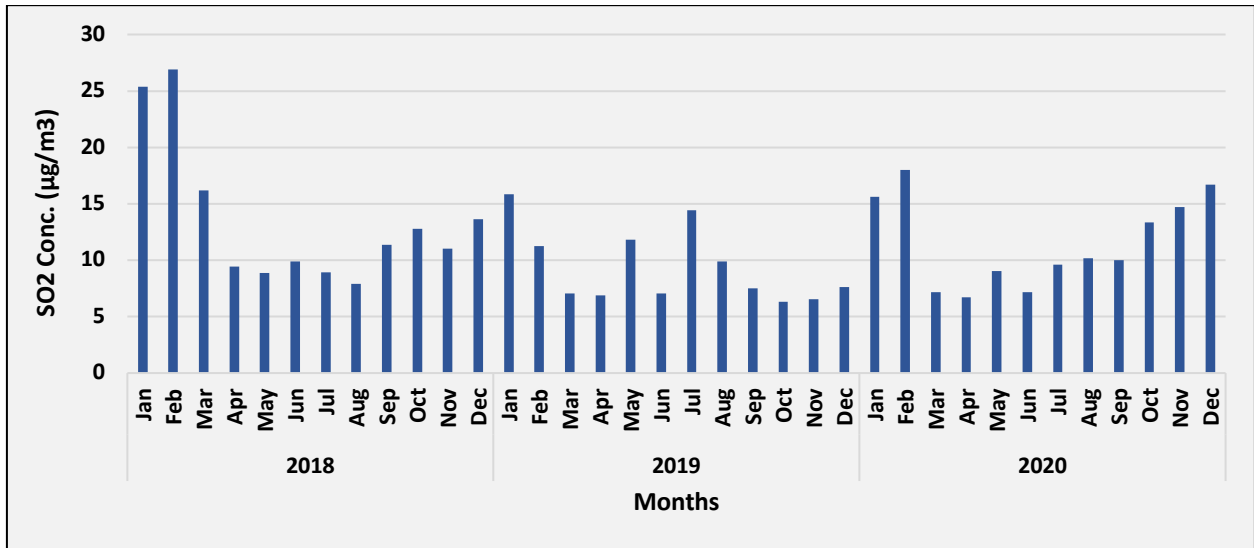


Fig. KA45: Time series of monthly average So₂ ambient air concentration in Kahalgaon TPP (Ambient)

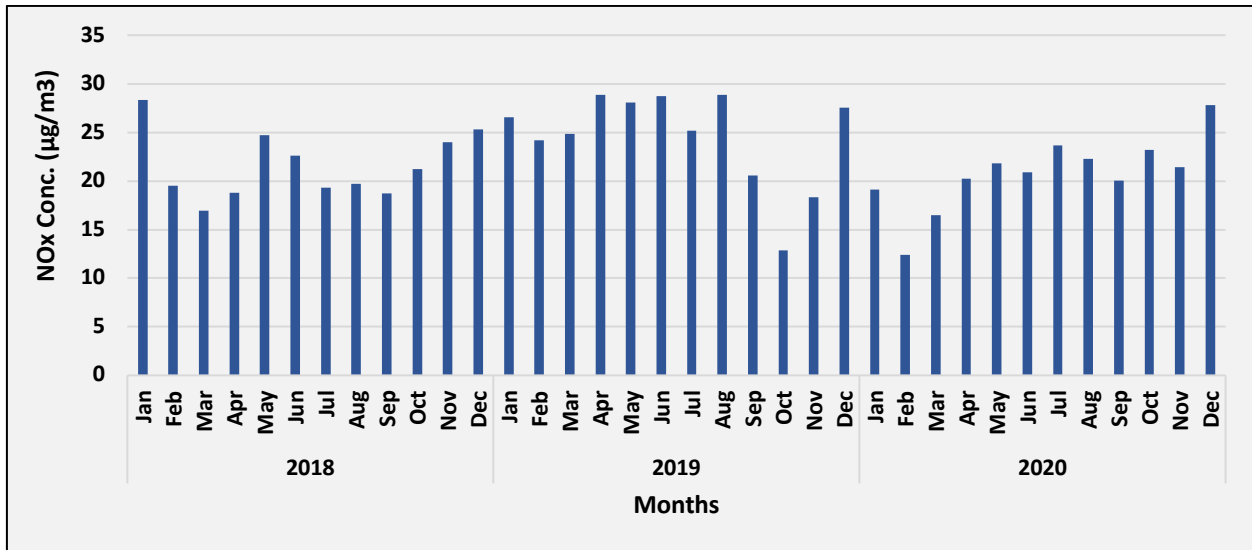


Fig. KA46: Time series of monthly average NO_x ambient air concentration in Kahalgaon TPP (Ambient)

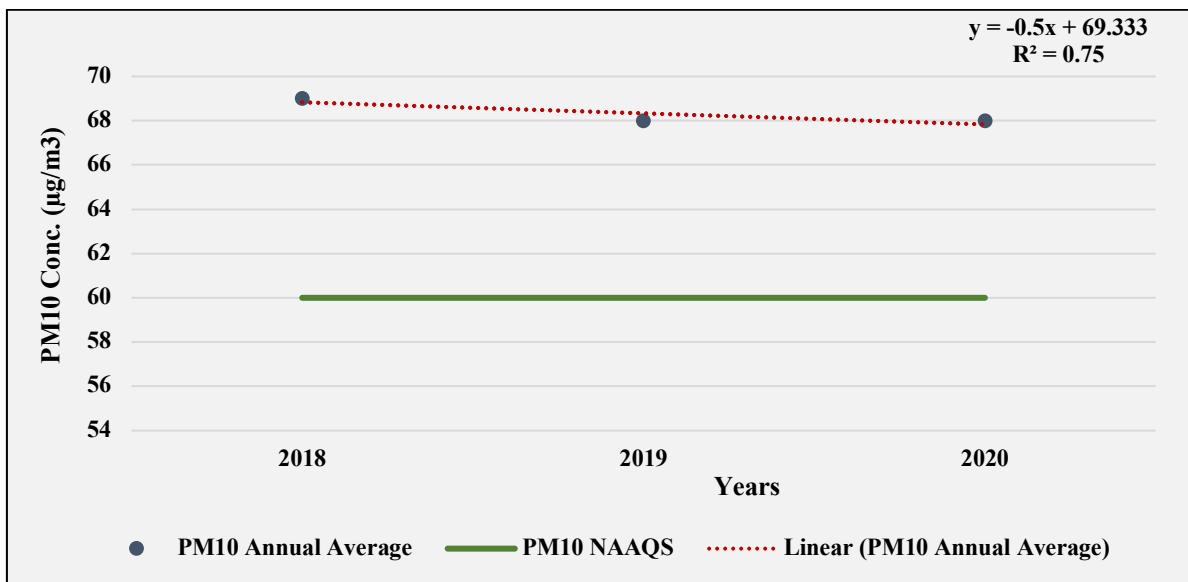


Fig. KA47: Trend of annual mean PM₁₀ ambient air concentration in Kahalgaon TPP (Ambient)

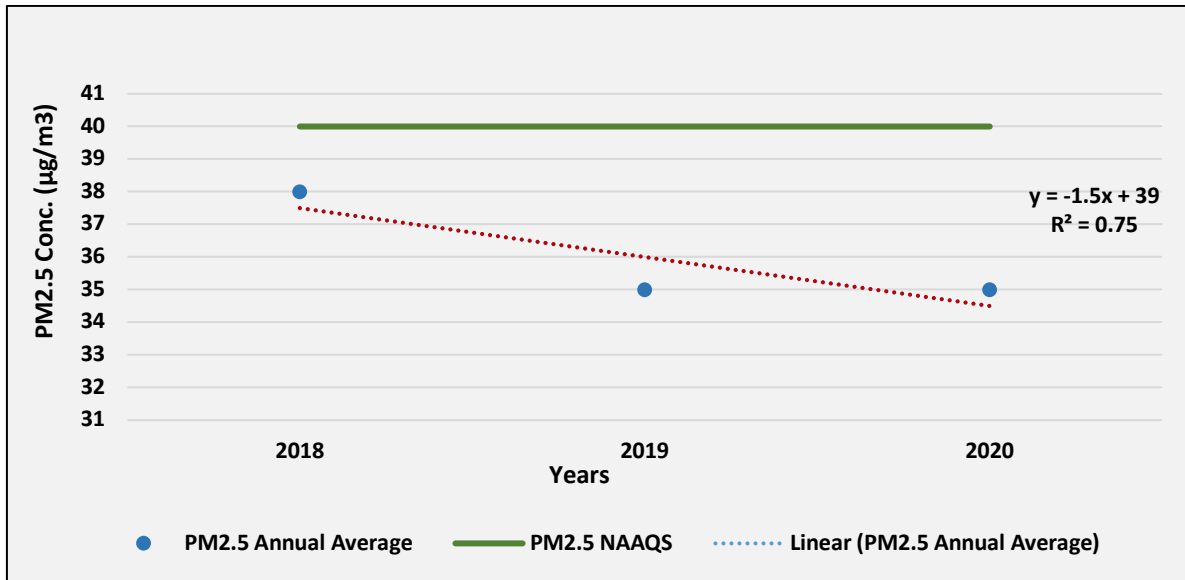


Fig. KA48: Trend of annual mean PM_{2.5} ambient air concentration in Kahalgaon TPP (Ambient)

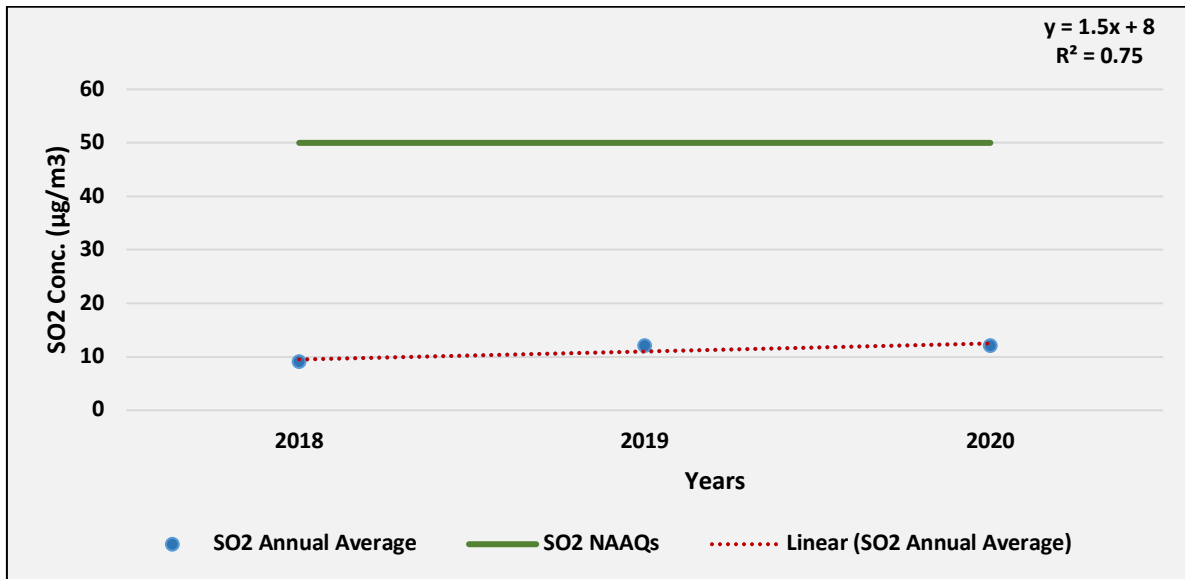


Fig. KA49: Trend of annual mean SO₂ ambient air concentration in Kahalgaon TPP (Ambient)

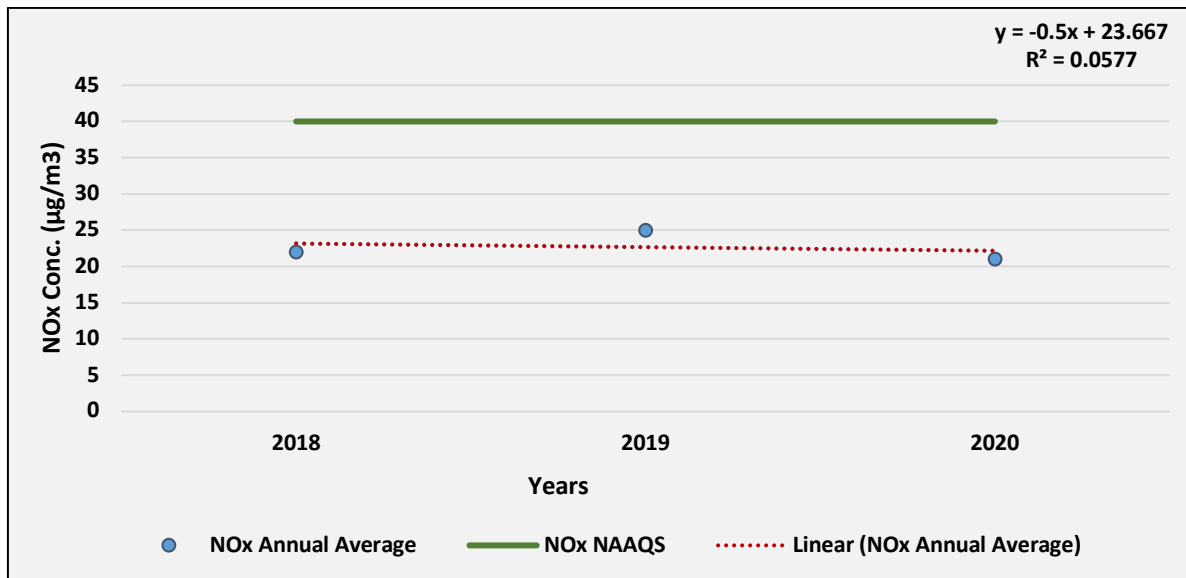


Fig. KA50: Trend of annual mean NO_x ambient air concentration in Kahalgaon TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM10 is exceeding whereas the PM2.5, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for units 1 to 4 of shows that PM emissions are higher than limit whereas the emissions for the units 5 to 7 are within limit.

SO₂ emissions for all the stack are much higher than the emission norms. NO_x parameter are much higher for the stacks 5 to 7 than the emission norms.

FARAKKA THERMAL POWER PLANT

Farakka Super Thermal Power Plant is located at Nabarun in Murshidabad district in Indian state of West Bengal. The power plant is one of the coal based power plants of NTPC.

It consist of the following units:

- Unit 1 - 200 MW - 1986
- Unit 2 - 200 MW - 1986
- Unit 3 - 200 MW - 1987
- Unit 4 - 500 MW - 1992
- Unit 5 - 500 MW - 1994
- Unit 6 - 500 MW - 2011 (Farakka III power station)

The air quality concentrations of PM emission, SO₂ emission, and NO_x emission, data analyzed (Fig. FA1 – Fig. FA44) for the last three years (2018-2020) using data provided by NTPC developer for Farakka Power plant, West Bengal, India.

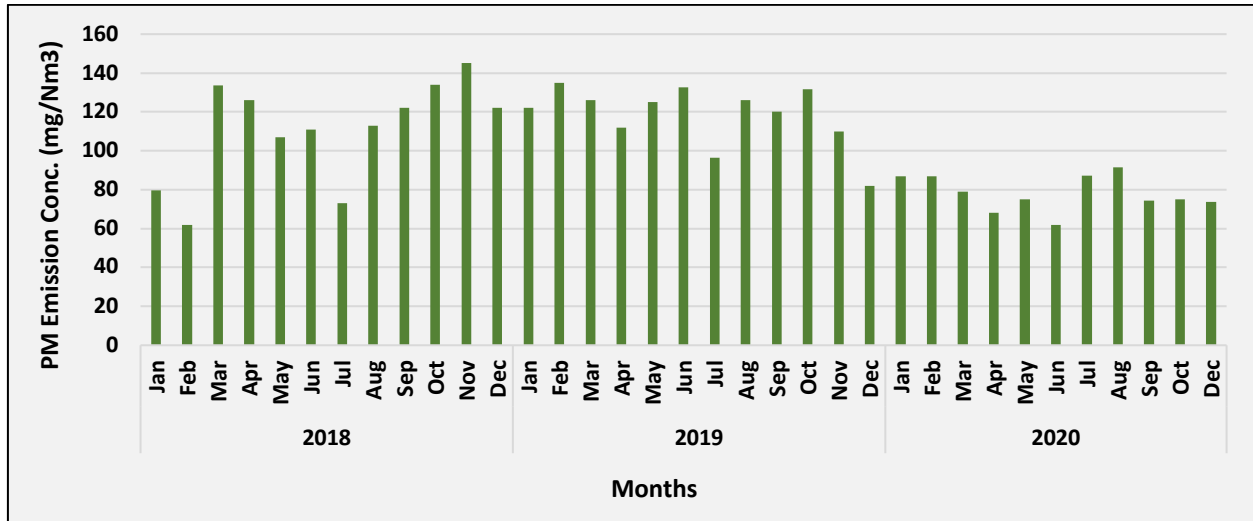


Fig. FA1: Time series of monthly average PM Emission concentration in Farakka TPP (Unit 1)

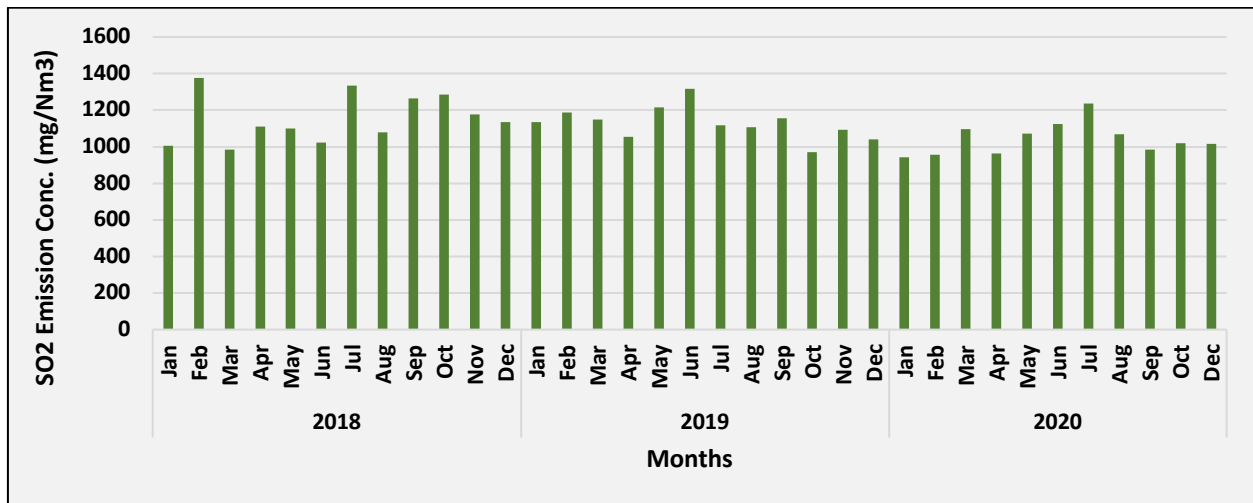


Fig. FA2: Time series of monthly average SO₂ Emission concentration in Farakka TPP (Unit 1)

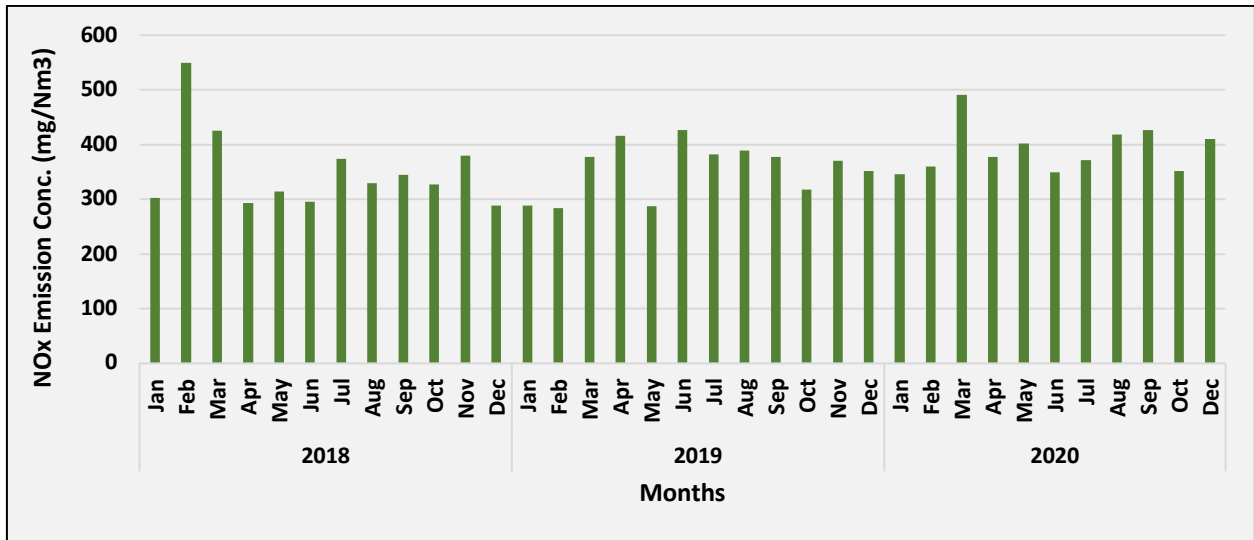


Fig. FA3: Time series of monthly average NO_x Emission concentration in Farakka TPP (Unit 1)

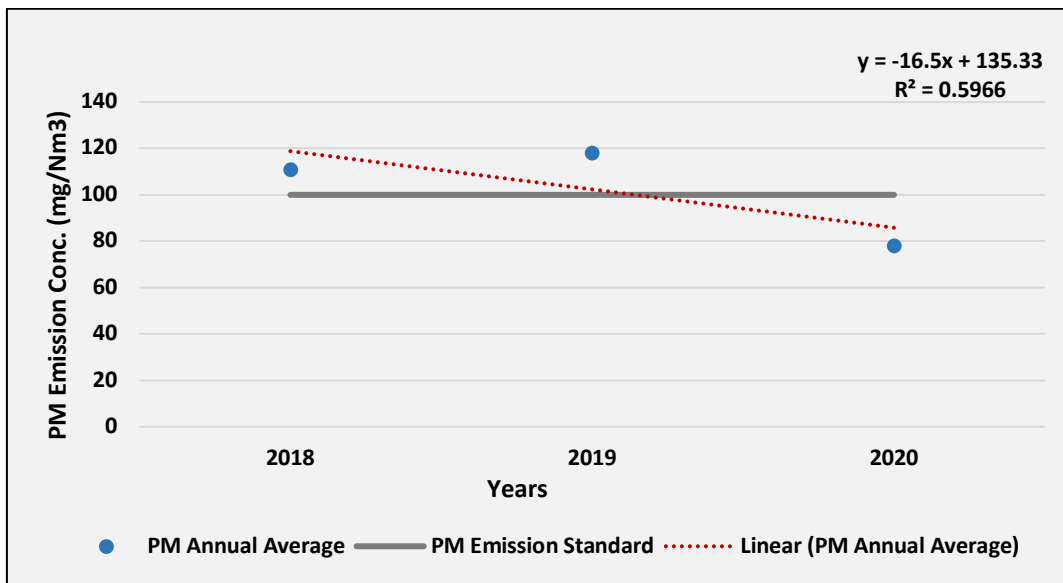


Fig. FA4: Trend of annual mean PM Emission air concentration in Farakka TPP (Unit 1)

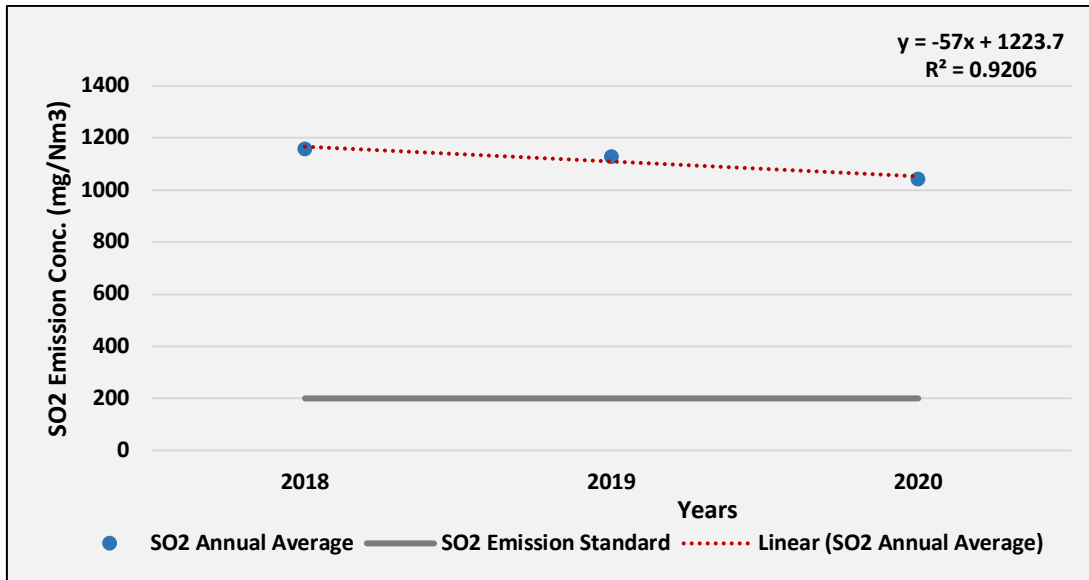


Fig. FA5: Trend of annual mean SO₂ Emission air concentration in Farakka TPP (Unit 1)

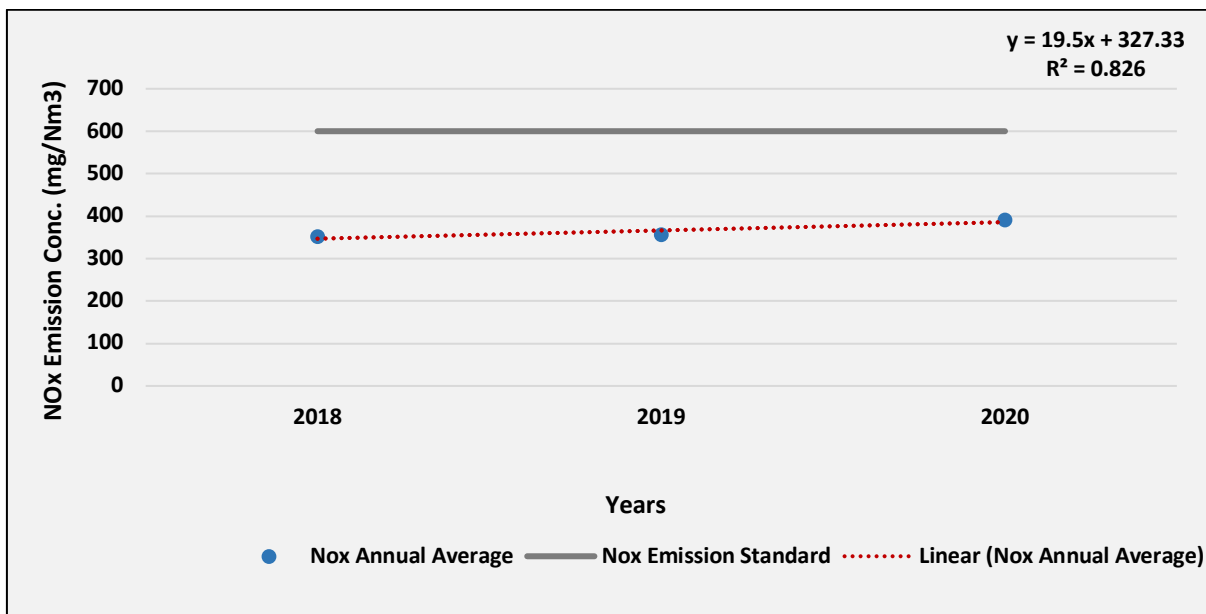


Fig. FA6: Trend of annual mean NO_x Emission air concentration in Farakka TPP (Unit 1)

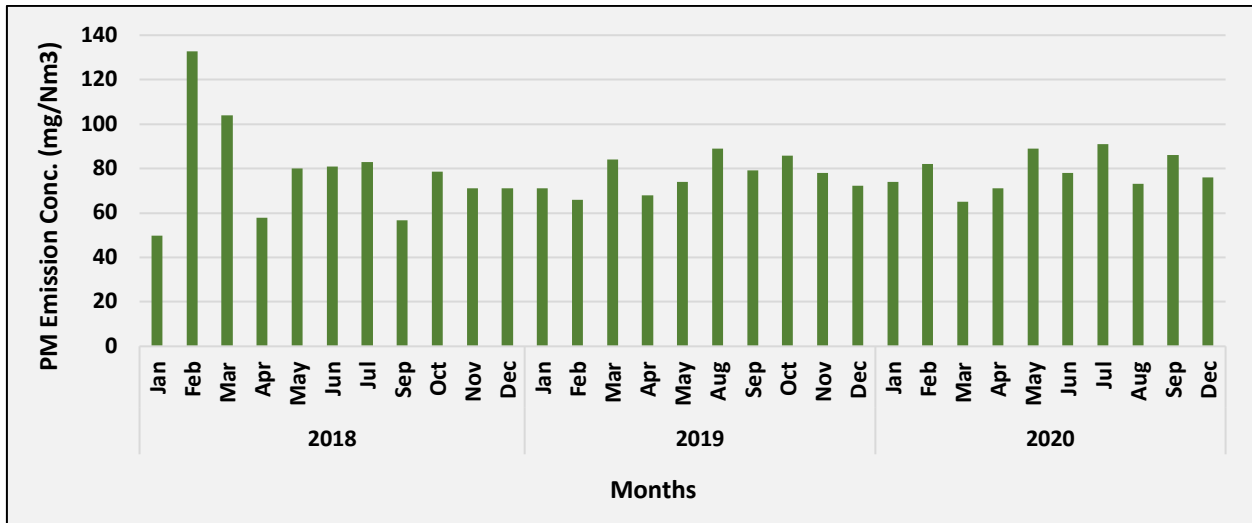


Fig. FA7: Time series of monthly average PM Emission concentration in Farakka TPP (Unit 2)

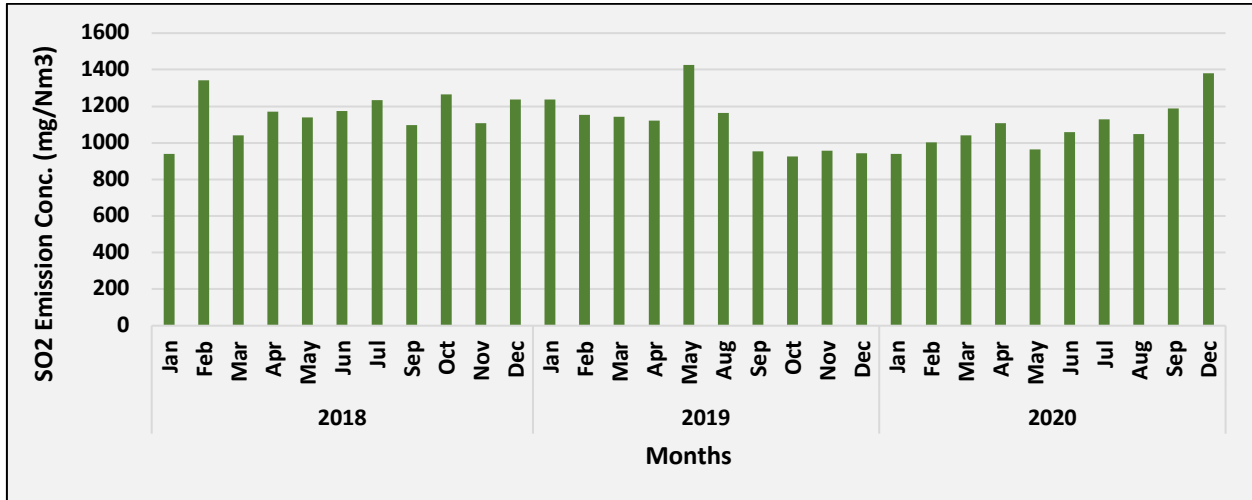


Fig. FA8: Time series of monthly average SO₂ Emission concentration in Farakka TPP (Unit 2)

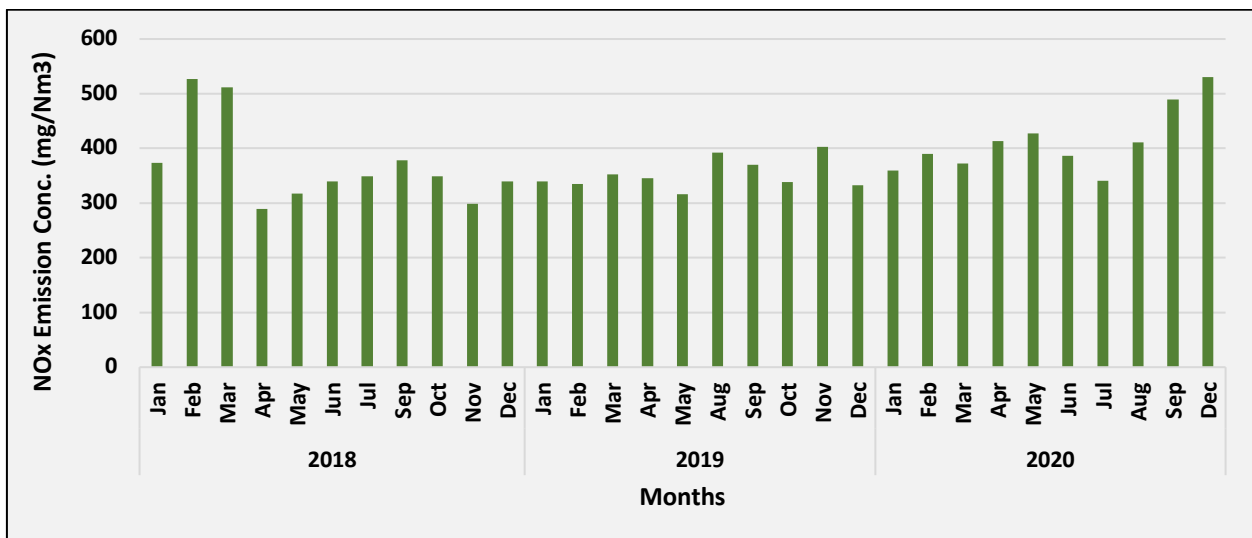


Fig. FA9: Time series of monthly average NO_x Emission concentration in Farakka TPP (Unit 2)

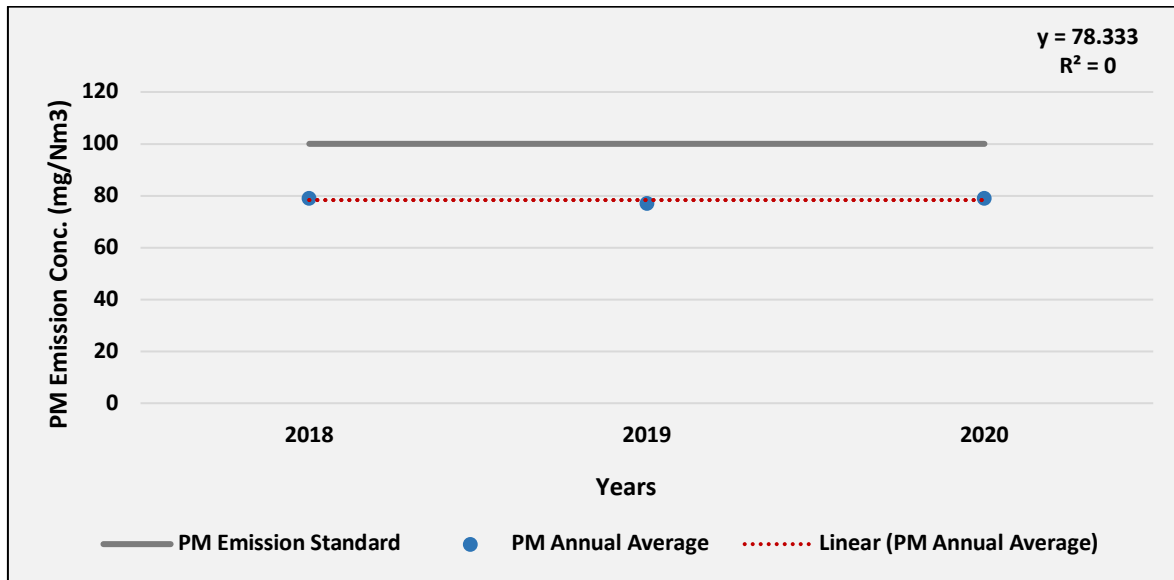


Fig. FA10: Trend of annual mean PM Emission air concentration in Farakka TPP (Unit 2)

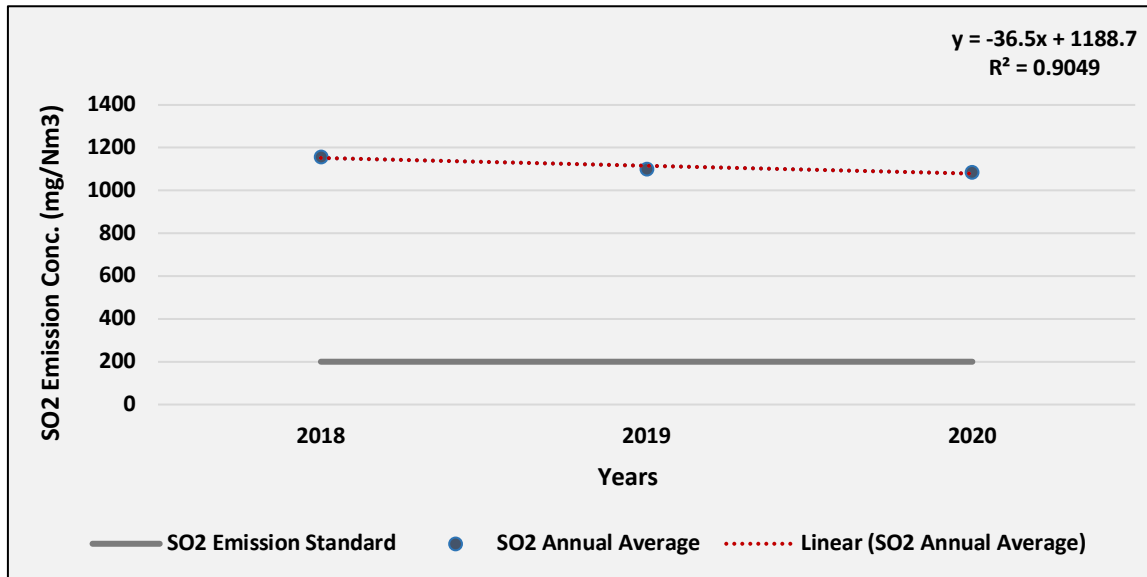


Fig. FA11: Trend of annual mean SO₂ Emission air concentration in Farakka TPP (Unit 2)

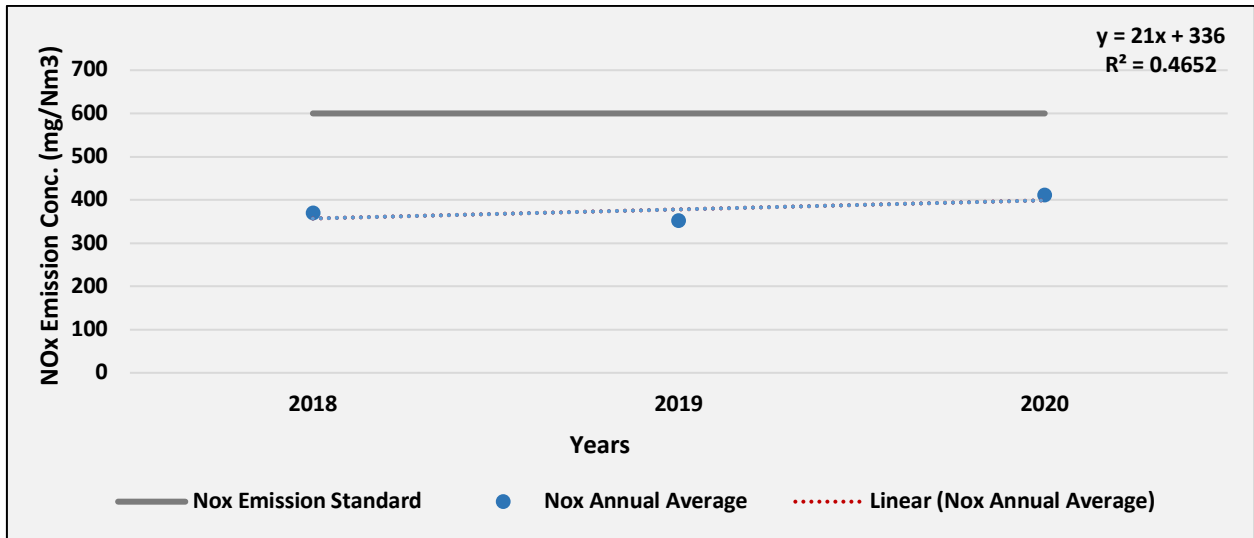


Fig. FA12: Trend of annual mean NO_x Emission air concentration in Farakka TPP (Unit 2)

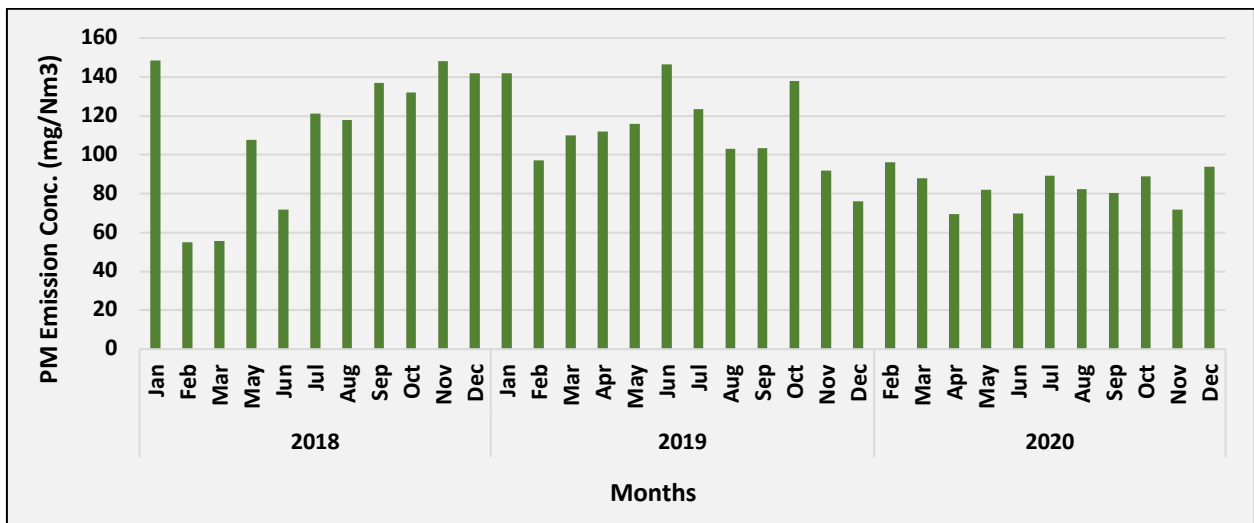


Fig. FA13: Time series of monthly average PM Emission concentration in Farakka TPP (Unit 3)

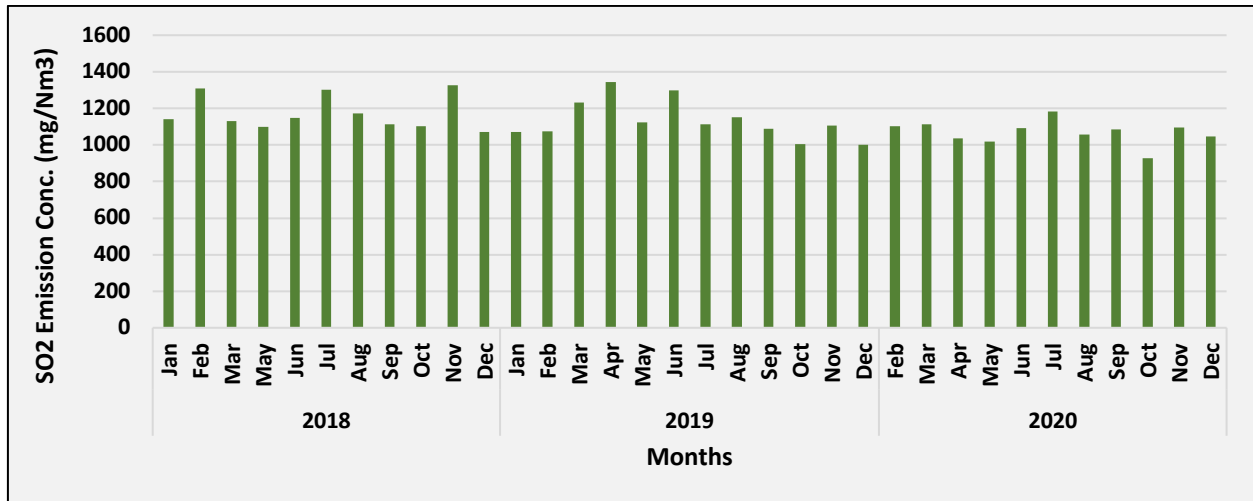


Fig. FA14: Time series of monthly average SO₂ Emission concentration in Farakka TPP (Unit 3)

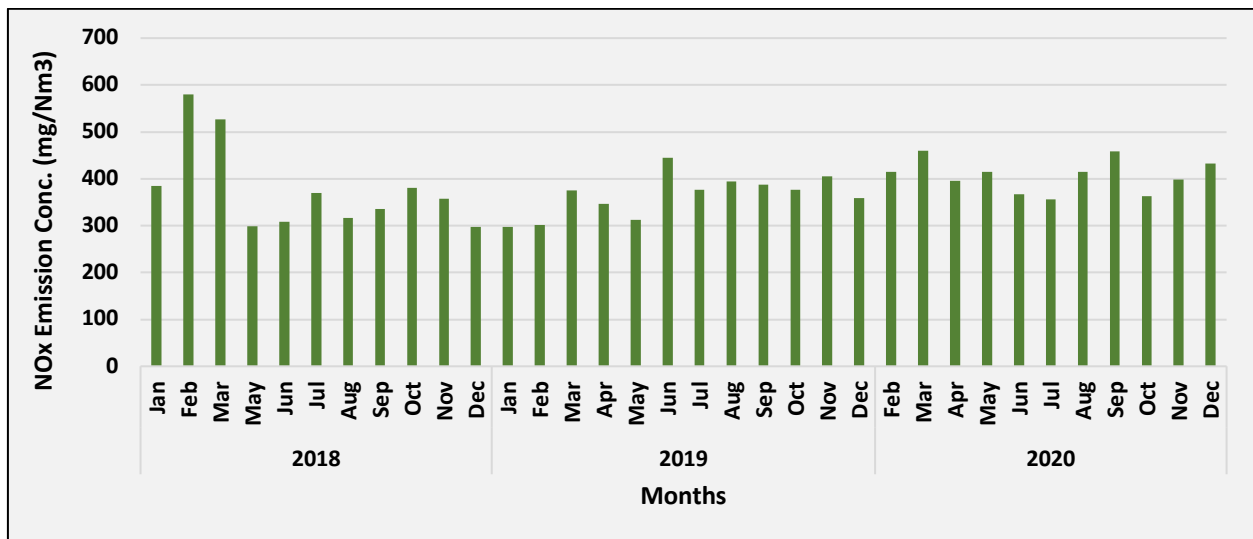


Fig. FA15: Time series of monthly average NO_x Emission concentration in Farakka TPP (Unit 3)

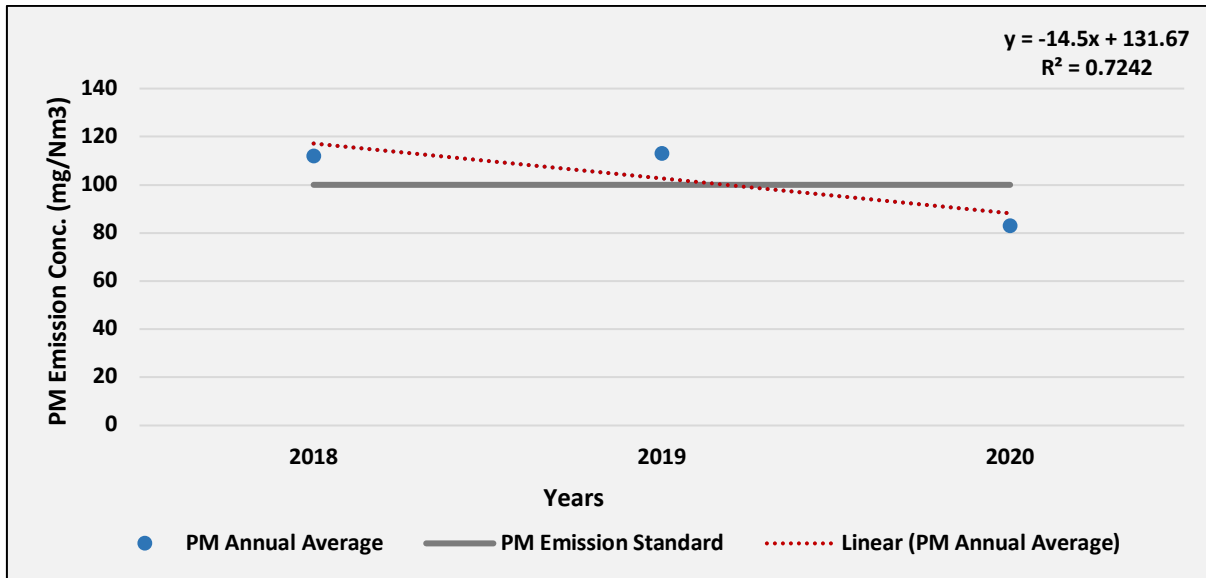


Fig. FA16: Trend of annual mean PM Emission air concentration in Farakka TPP (Unit 3)

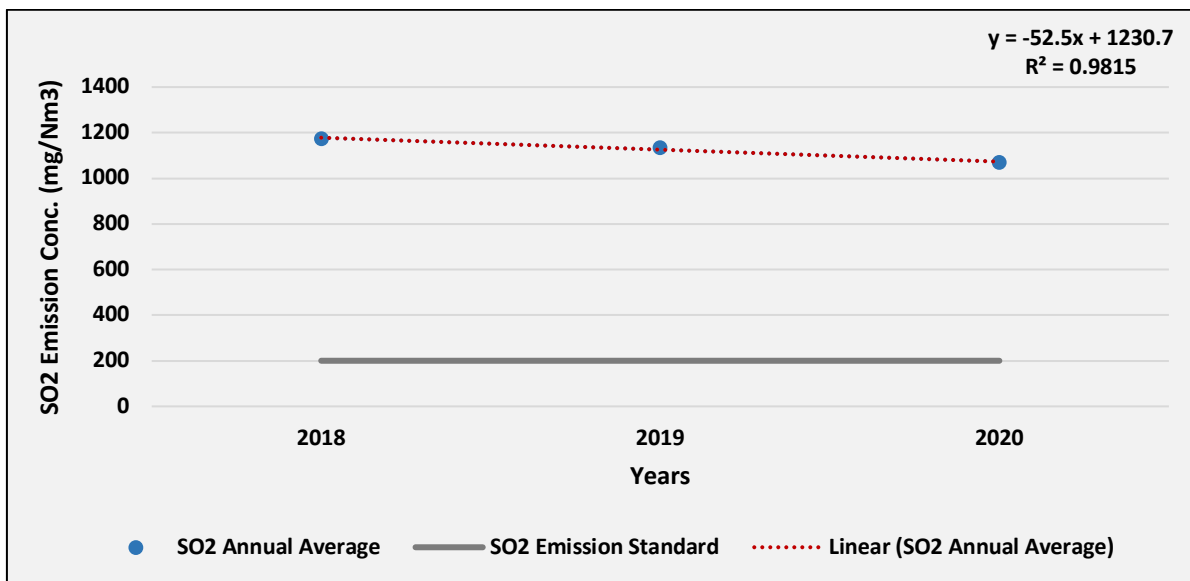


Fig. FA17: Trend of annual mean SO₂ Emission air concentration in Farakka TPP (Unit 3)

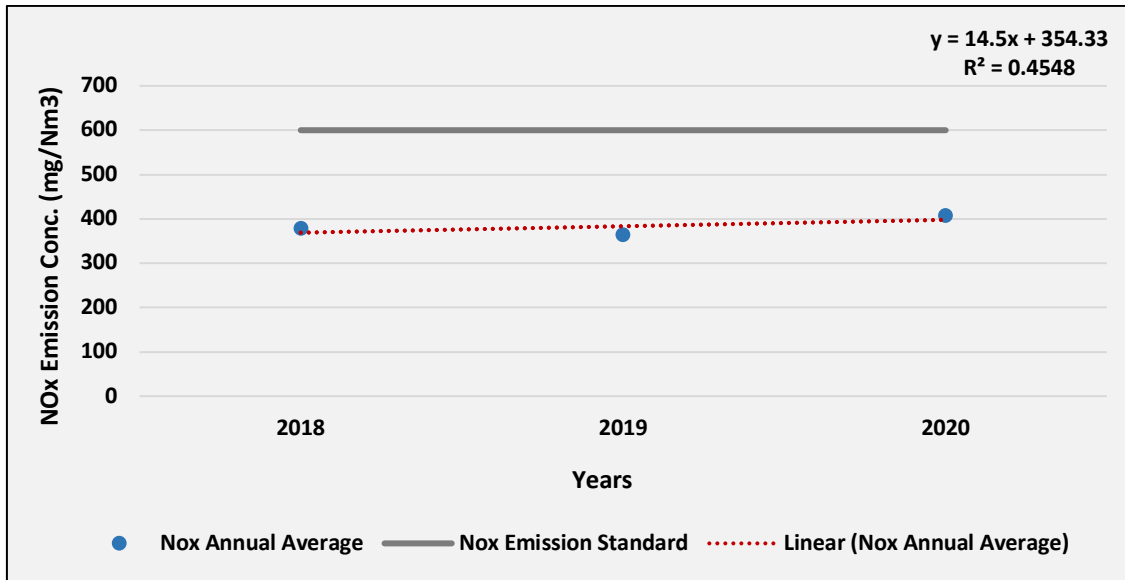


Fig. FA18: Trend of annual mean NO_x Emission air concentration in Farakka TPP (Unit 3)

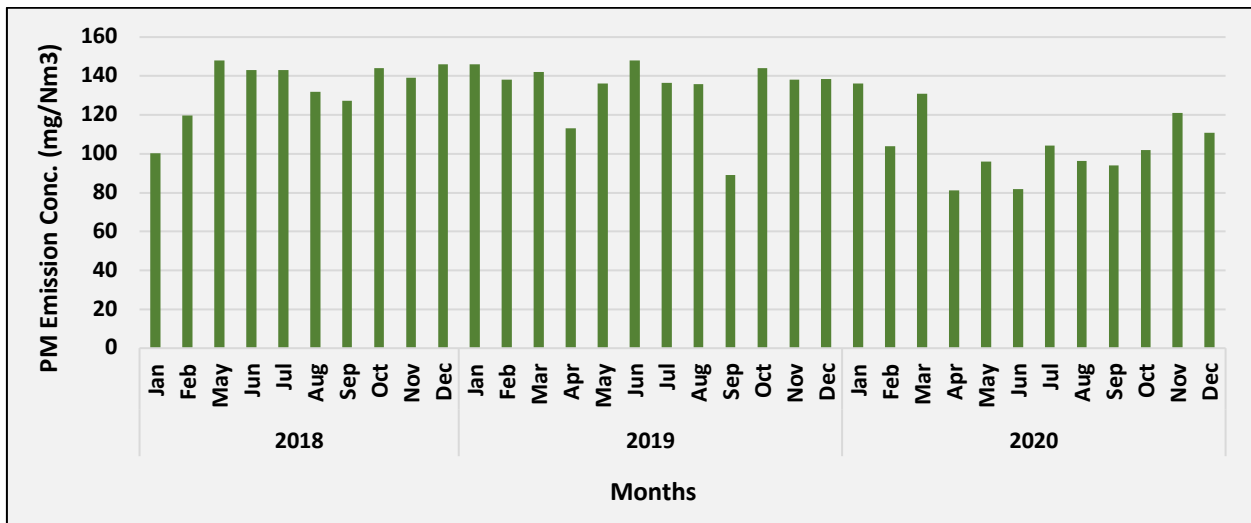


Fig. FA19: Time series of monthly average PM Emission concentration in Farakka TPP (Unit 4)

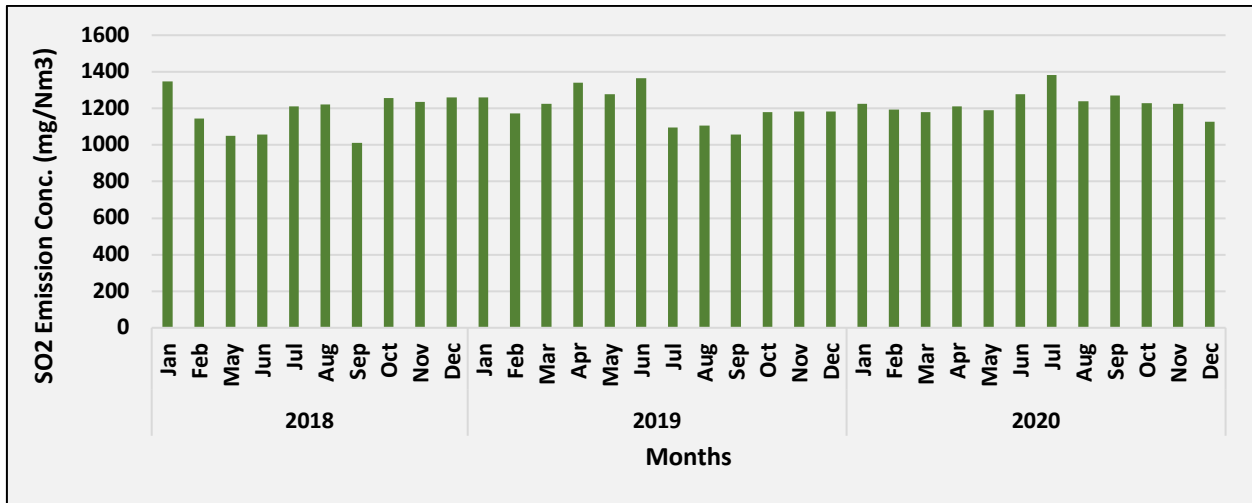


Fig. FA20: Time series of monthly average SO₂ Emission concentration in Farakka TPP (Unit 4)

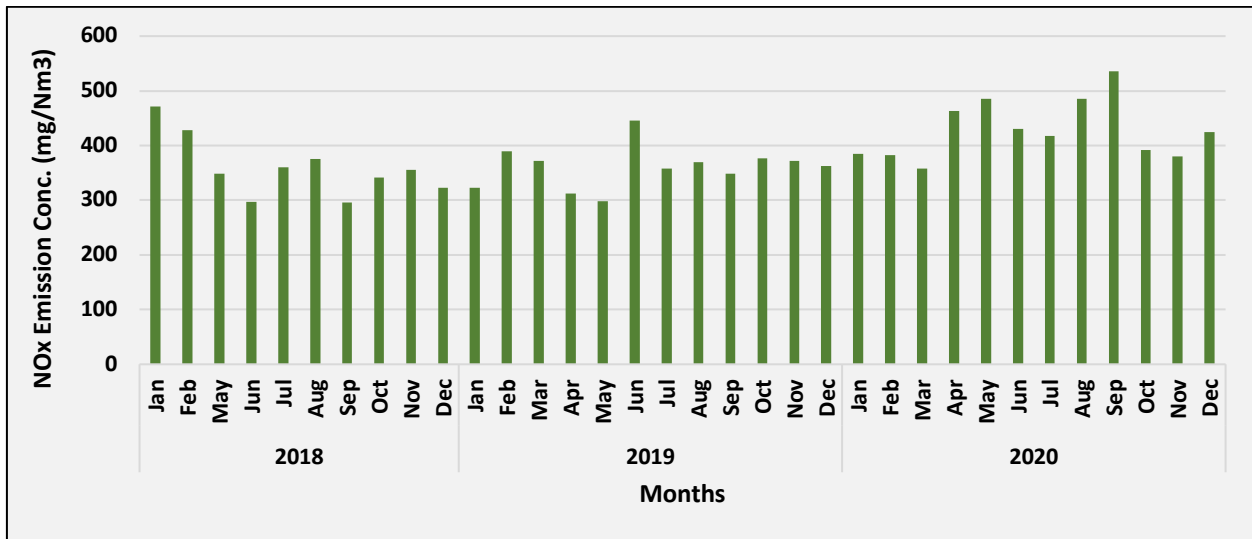


Fig. FA21: Time series of monthly average NO_x Emission concentration in Farakka TPP (Unit 4)

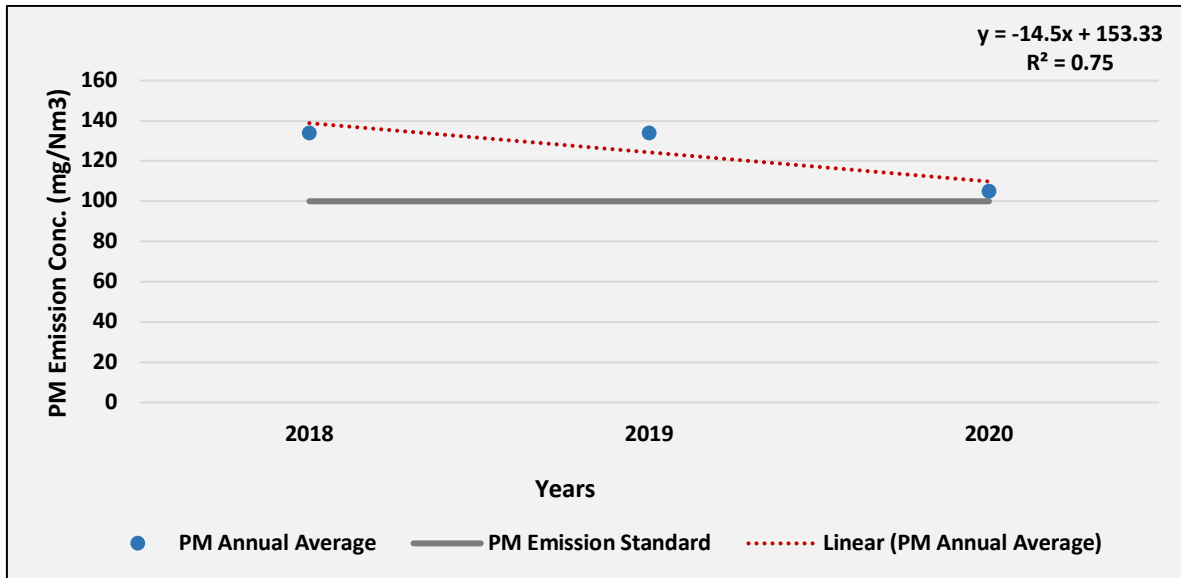


Fig. FA22: Trend of annual mean PM Emission air concentration in Farakka TPP (Unit 4)

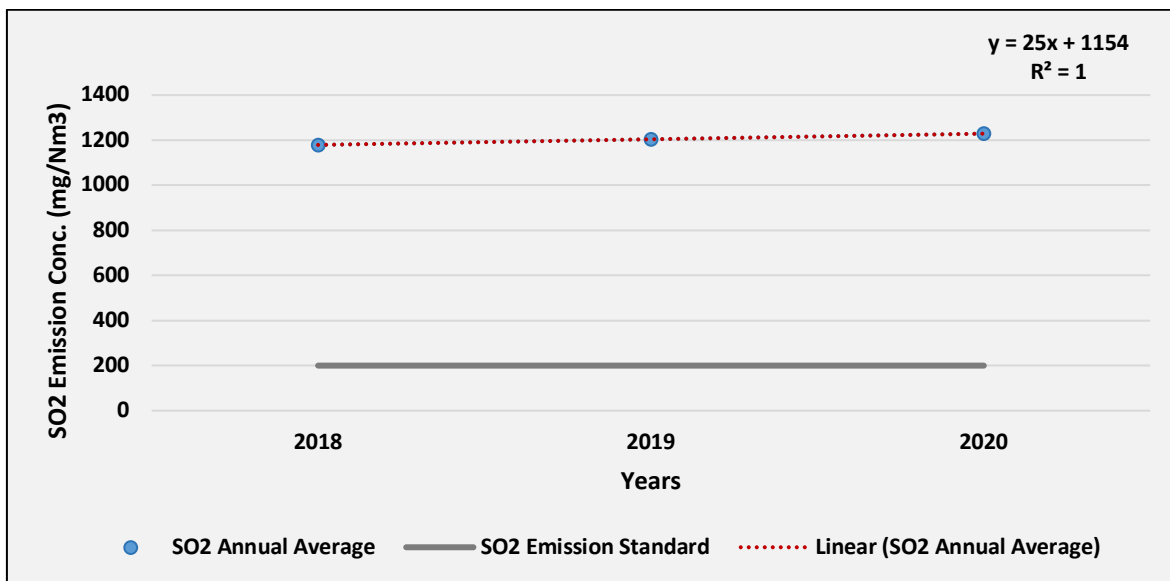


Fig. FA23: Trend of annual mean SO₂ Emission air concentration in Farakka TPP (Unit 4)

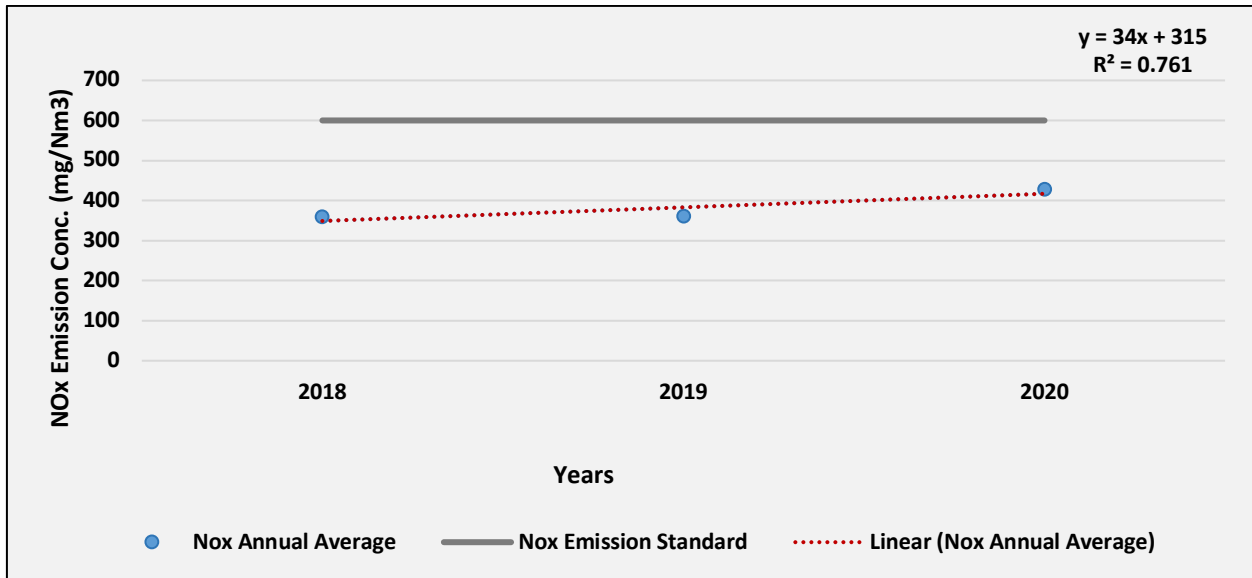


Fig. FA24: Trend of annual mean NO_x Emission air concentration in Farakka TPP (Unit 4)

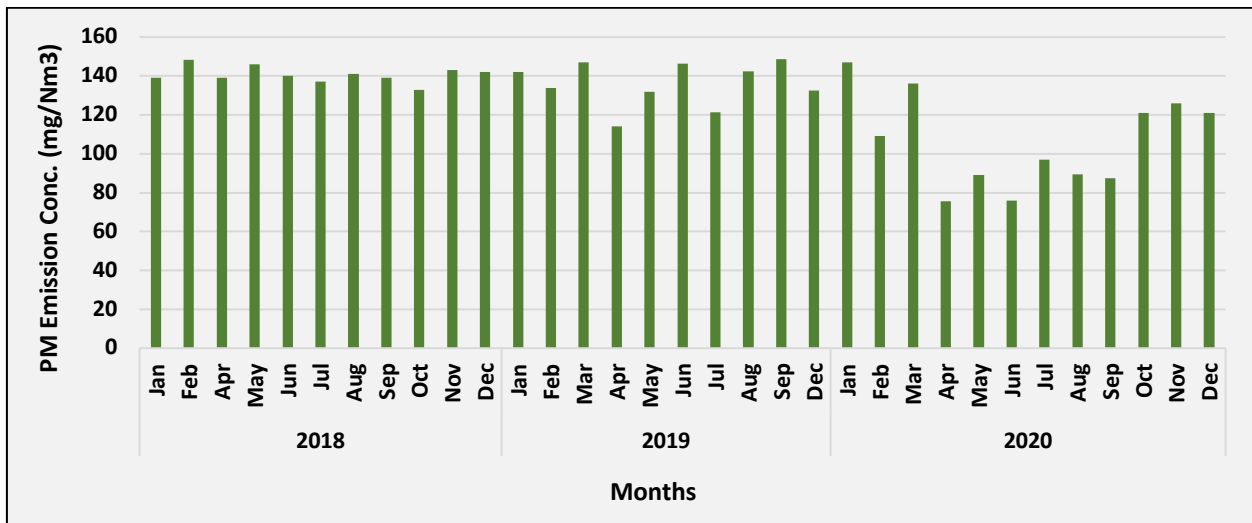


Fig. FA25: Time series of monthly average PM Emission concentration in Farakka TPP (Unit 5)

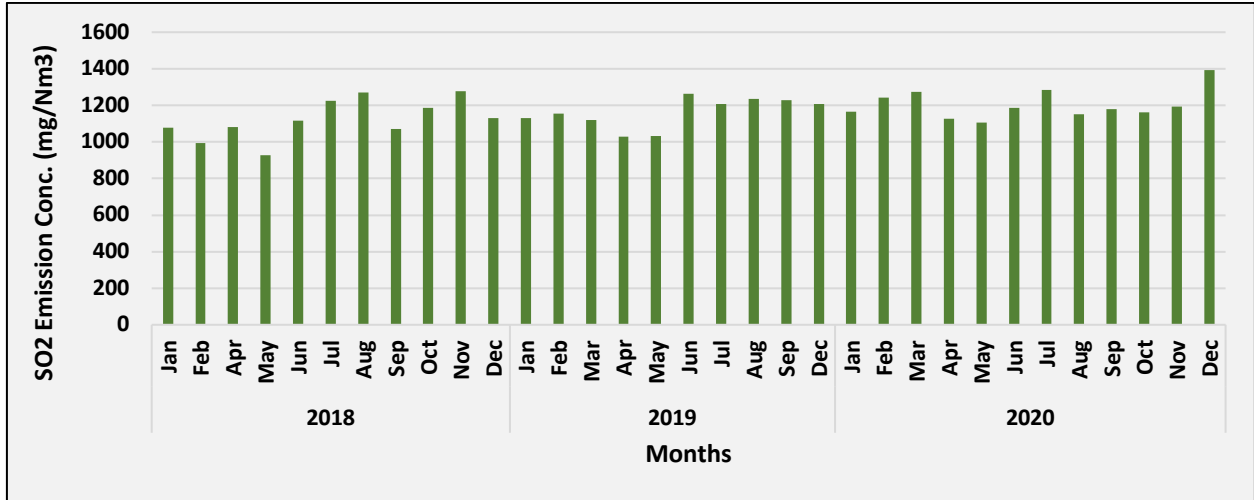


Fig. FA26: Time series of monthly average SO₂ Emission concentration in Farakka TPP (Unit 5)

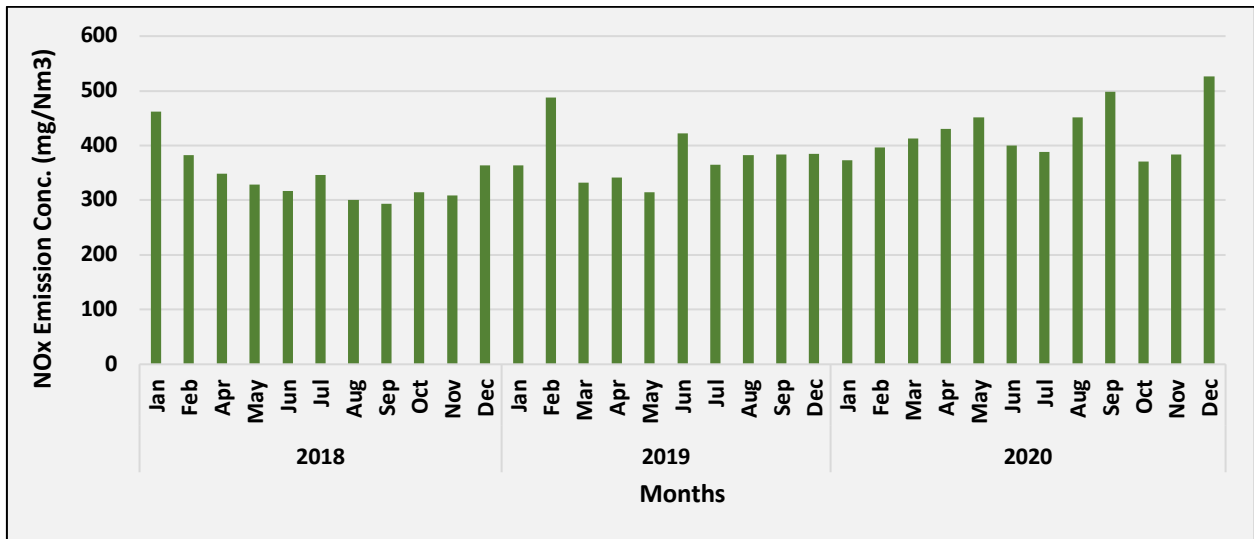


Fig. FA27: Time series of monthly average NO_x Emission concentration in Farakka TPP (Unit 5)

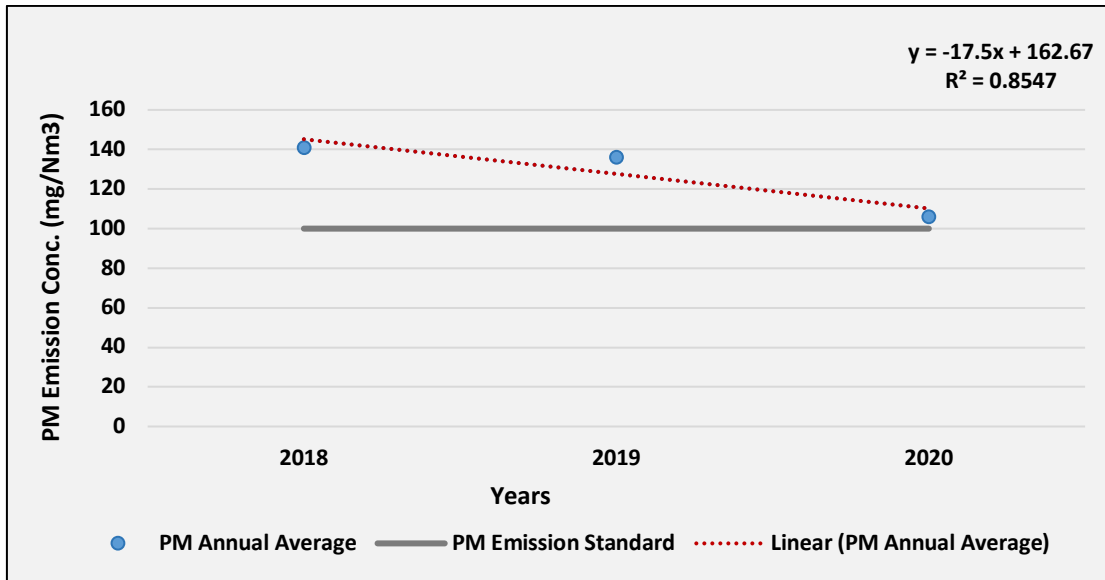


Fig. FA28: Trend of annual mean PM Emission air concentration in Farakka TPP (Unit 5)

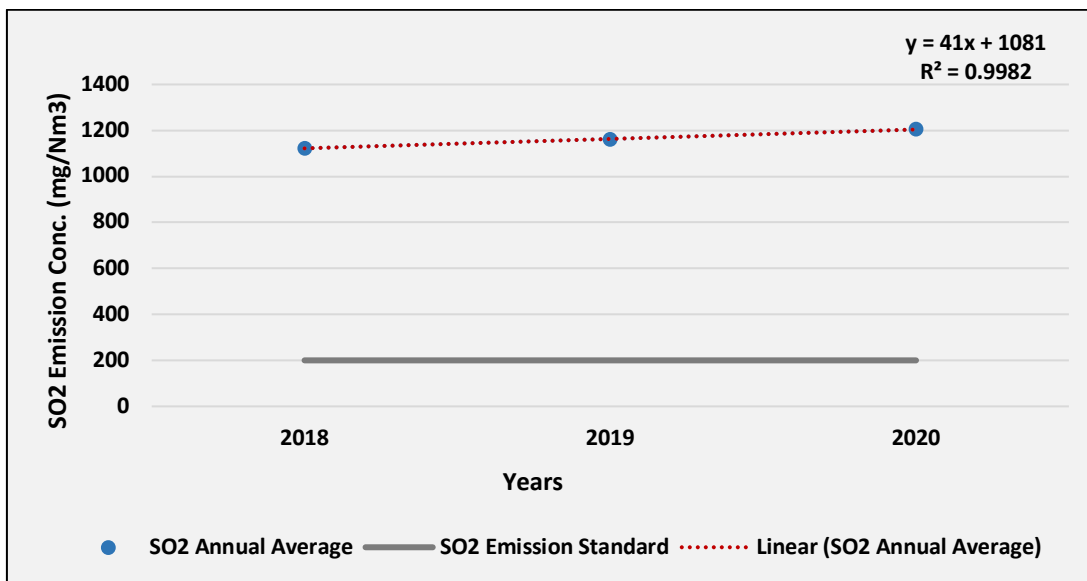


Fig. FA29: Trend of annual mean SO₂ Emission air concentration in Farakka TPP (Unit 5)

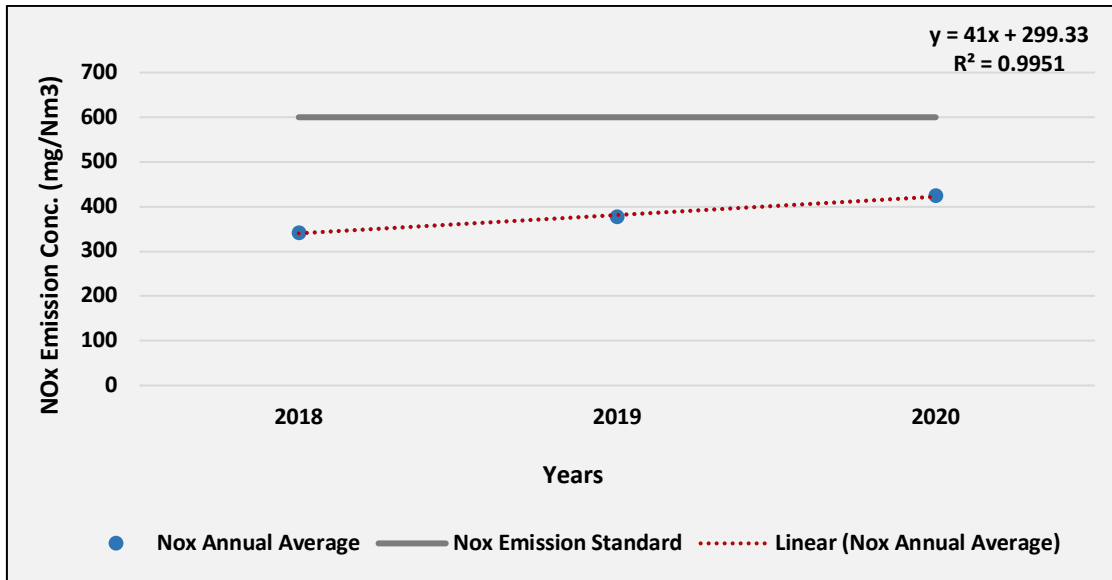


Fig. FA30: Trend of annual mean NO_x Emission air concentration in Farakka TPP (Unit 5)

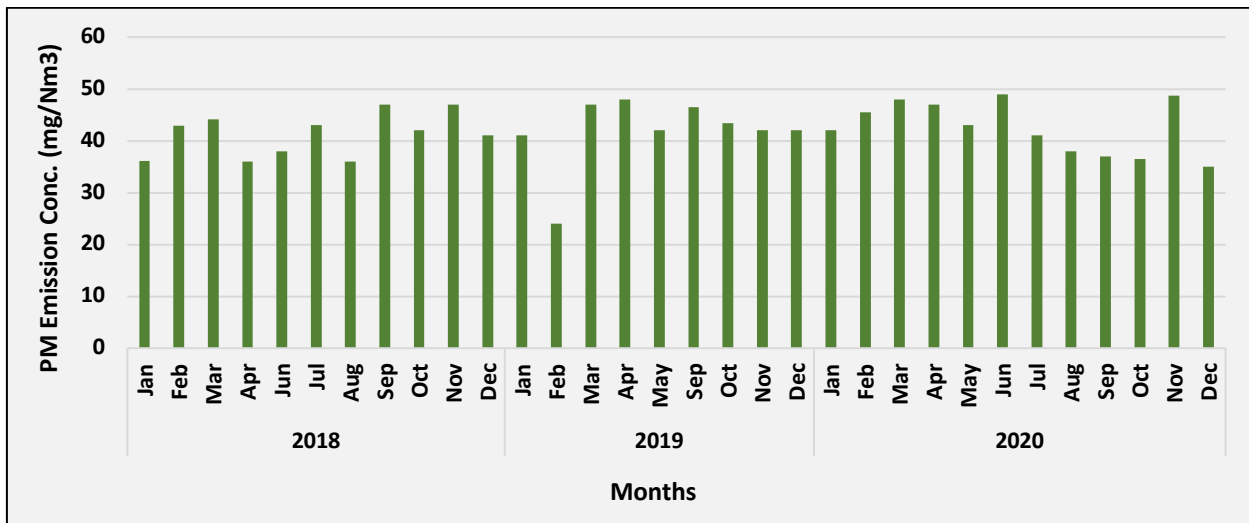


Fig. FA31: Time series of monthly average PM Emission concentration in Farakka TPP (Unit 6)

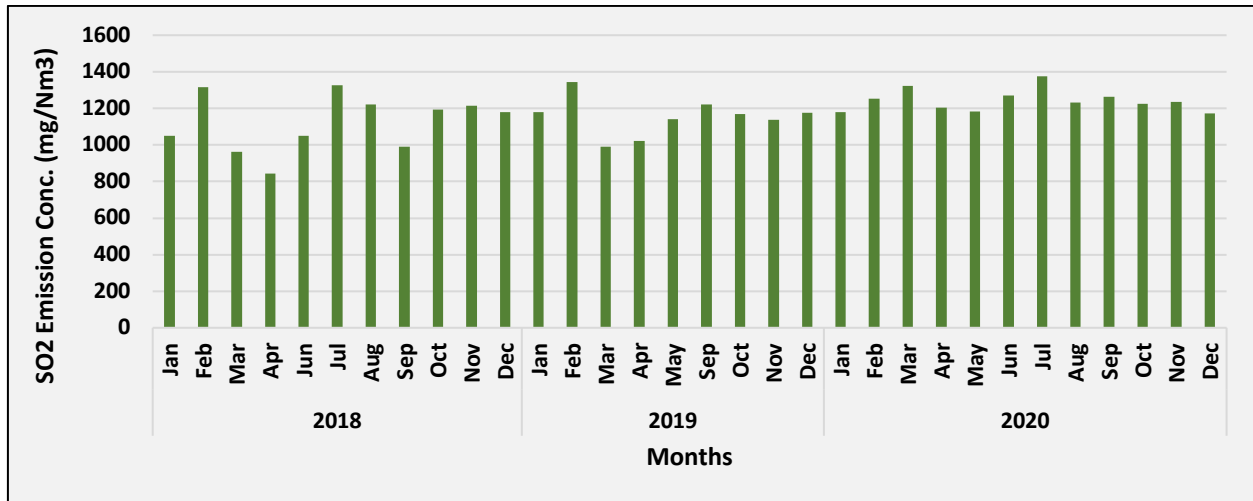


Fig. FA32: Time series of monthly average SO₂ Emission concentration in Farakka TPP (Unit 6)

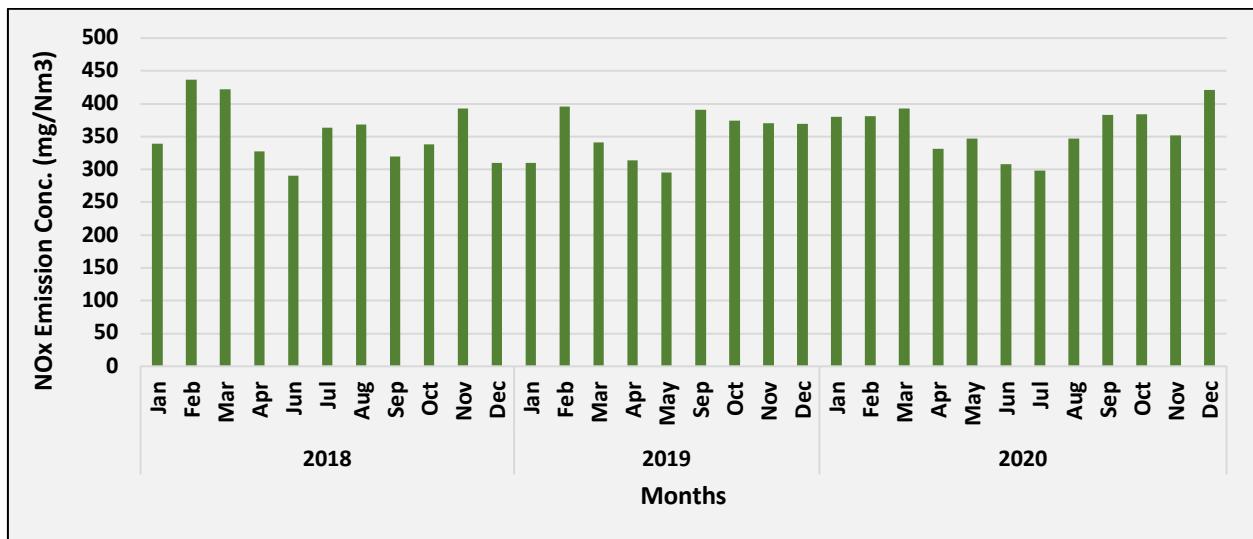


Fig. FA33: Time series of monthly average NO_x Emission concentration in Farakka TPP (Unit 6)

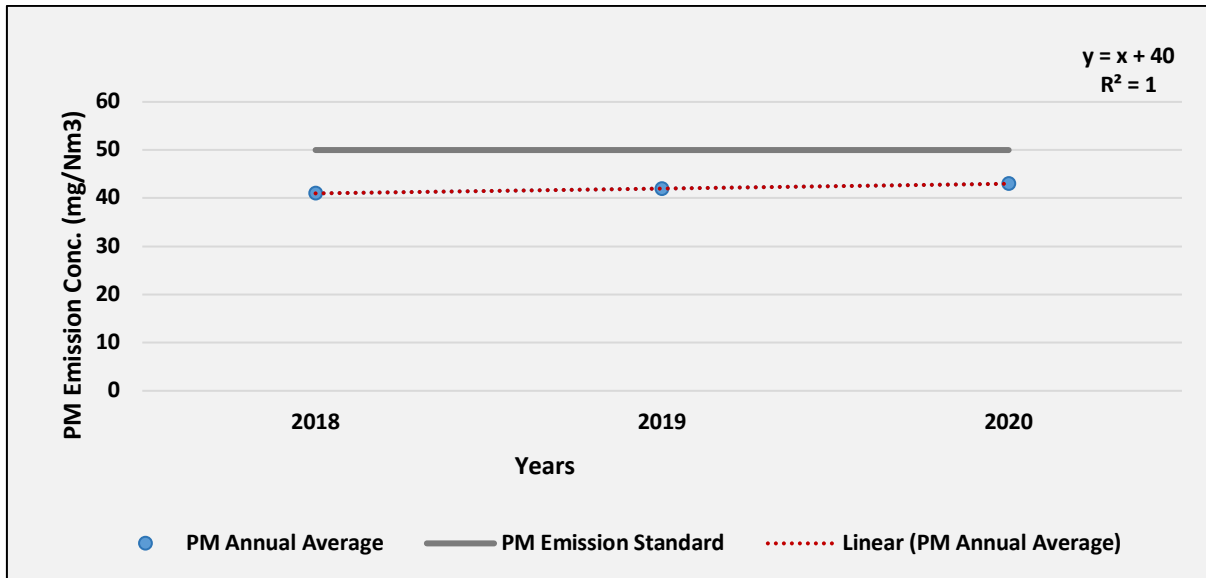


Fig. FA34: Trend of annual mean PM Emission air concentration in Farakka TPP (Unit 6)

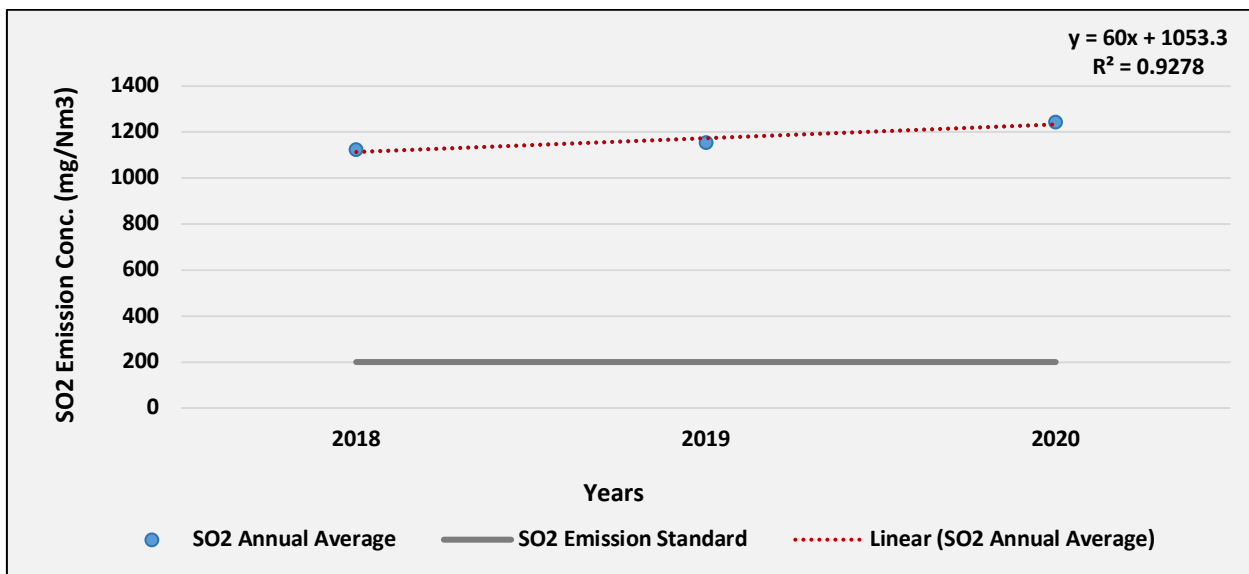


Fig. FA35: Trend of annual mean SO₂ Emission air concentration in Farakka TPP (Unit 6)

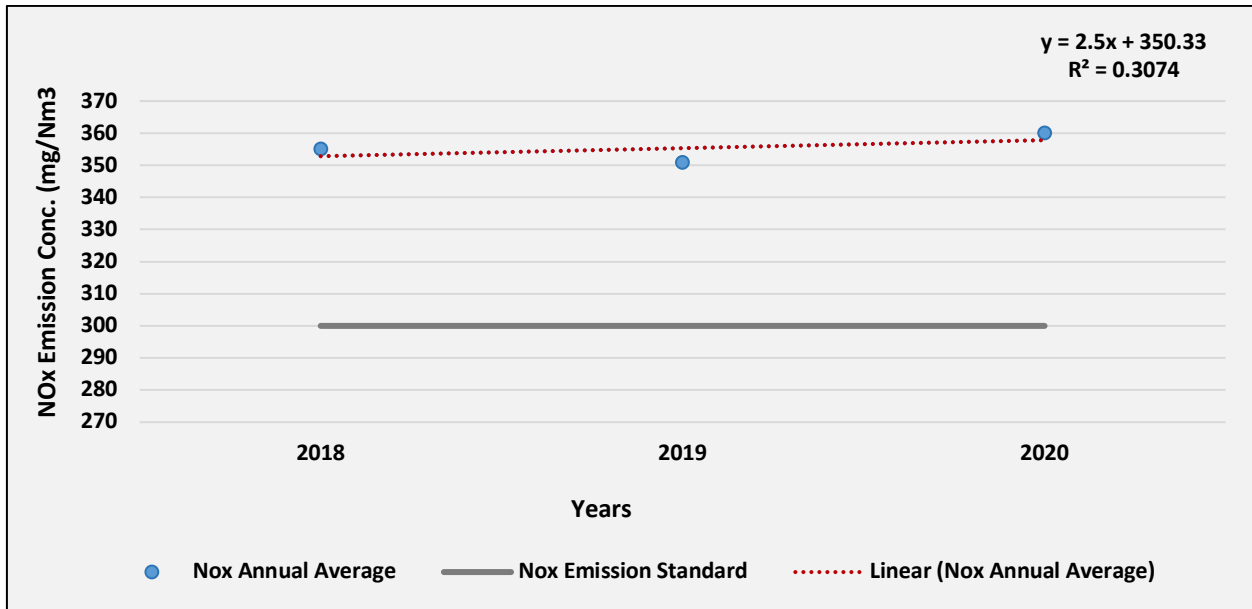


Fig. FA36: Trend of annual mean NO_x Emission air concentration in Farakka TPP (Unit 6)

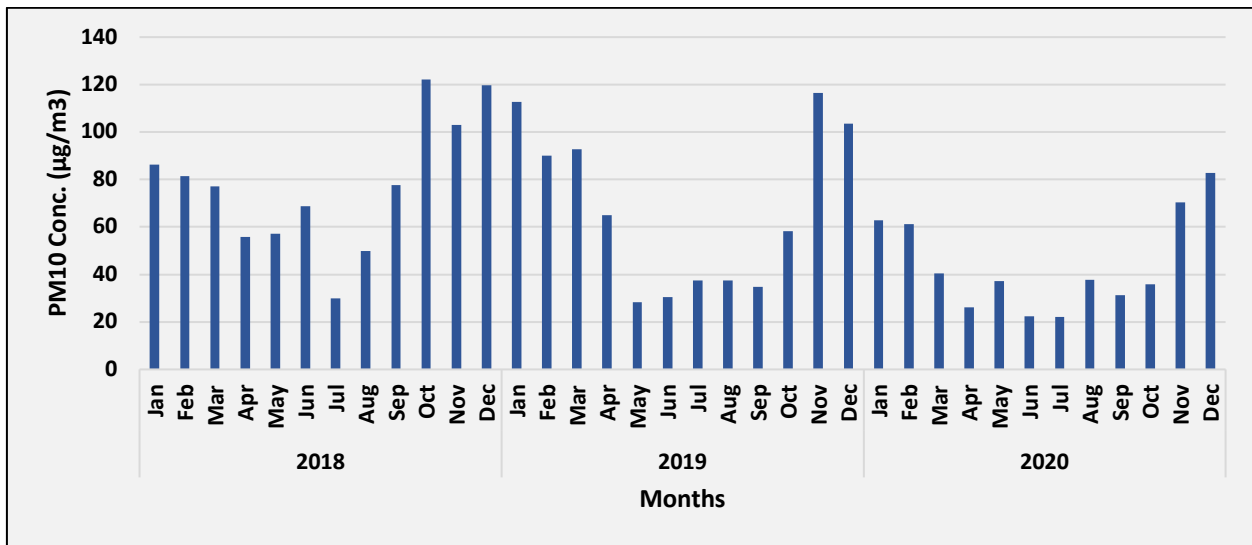


Fig. FA37: Time series of monthly average PM₁₀ ambient air concentration in Farakka TPP (Ambient)

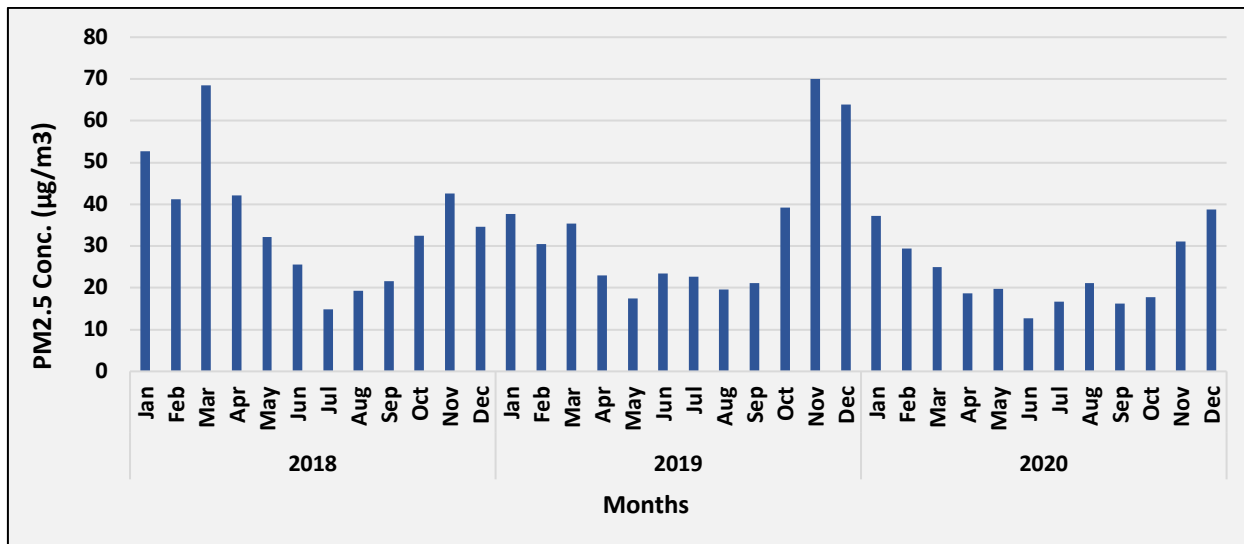


Fig. FA38: Time series of monthly average PM_{2.5} ambient air concentration in Farakka TPP (Ambient)

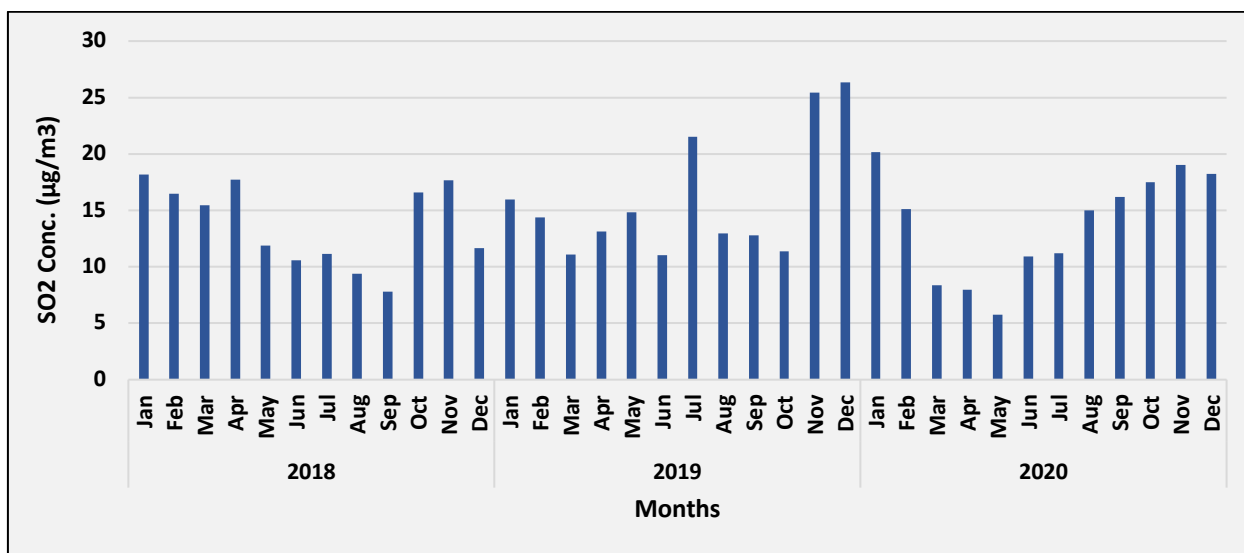


Fig. FA39: Time series of monthly average SO₂ ambient air concentration in Farakka TPP (Ambient)

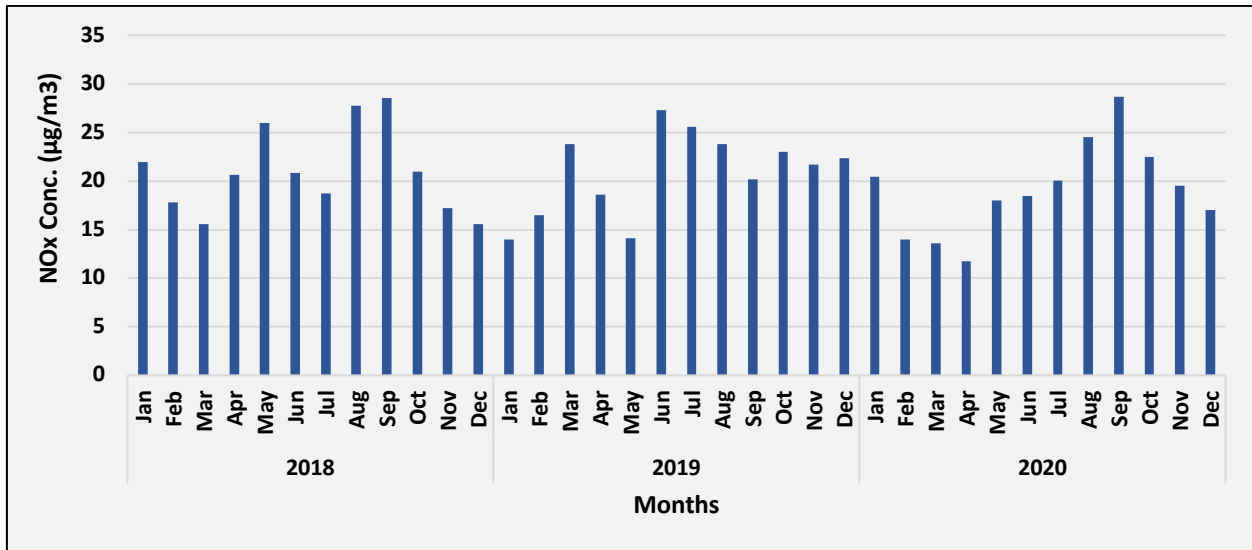


Fig. FA40: Time series of monthly average NO_x ambient air concentration in Farakka TPP (Ambient)

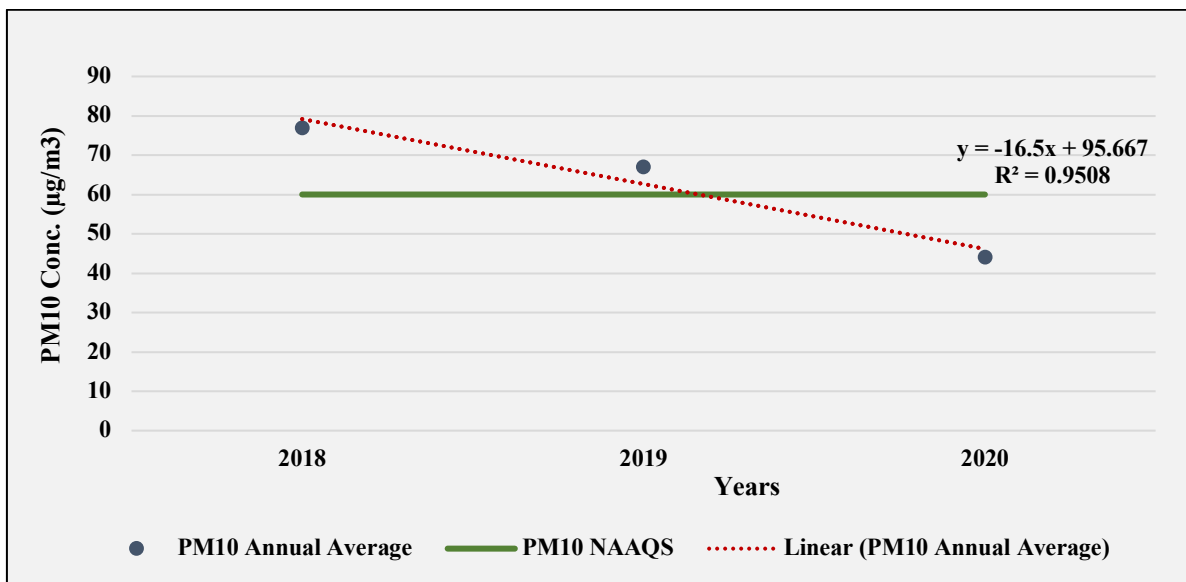


Fig. FA41: Trend of annual mean PM₁₀ ambient air concentration in Farakka TPP (Ambient)

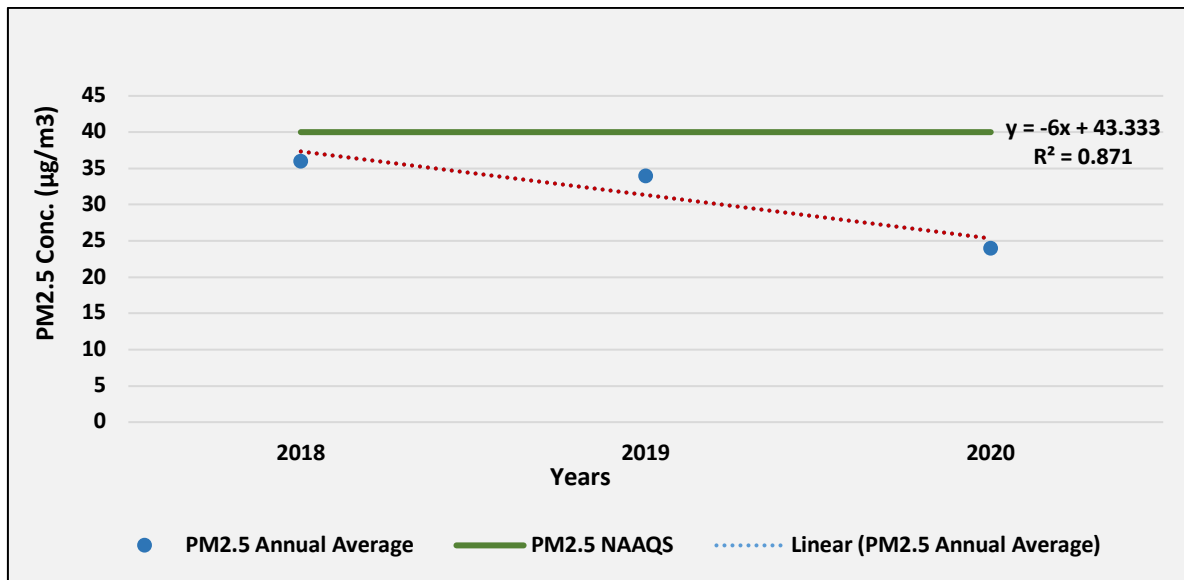


Fig. FA42: Trend of annual mean PM_{2.5} ambient air concentration in Farakka TPP (Ambient)

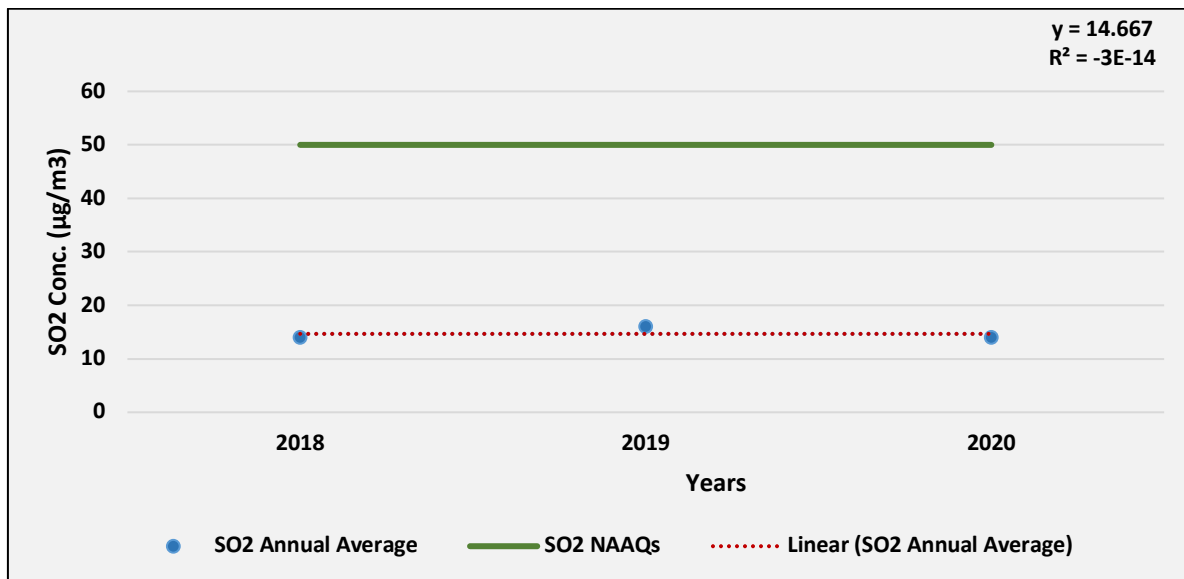


Fig. FA43: Trend of annual mean SO₂ ambient air concentration in Farakka TPP (Ambient)

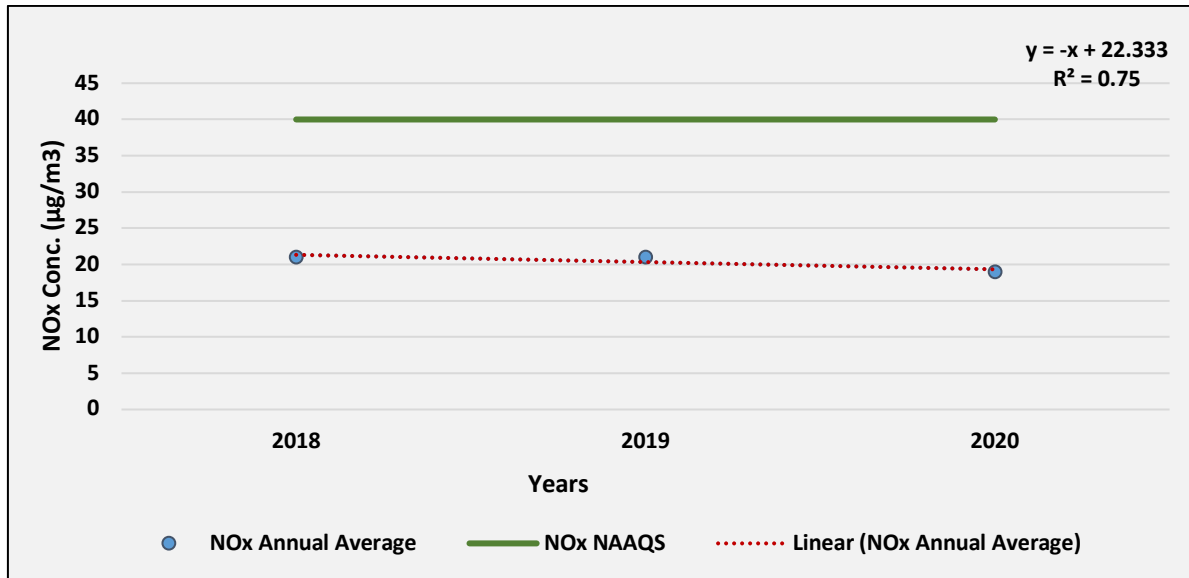


Fig. FA44: Trend of annual mean NO_x ambient air concentration in Farakka TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀ is exceeding for the year 2018 and 2019 whereas the PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ parameter are much higher than the emission norms. Emission of particulate matter and NO_x is mostly within the limit range.

DARLIPALI THERMAL POWER PLANT

The Darlipali power plant is a 1.6GW coal-fired, super thermal power generating facility located in Sundargarh, Odisha, India. Nation’s state-owned National Thermal Power Corporation (NTPC) is the owner and developer of the project.

The first unit of the Darlipali power plant started commercial operations in March 2020, while trial operations of the second unit were completed in July 2021.

The ambient air quality concentrations of PM₁₀, PM_{2.5} SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed for the last one year (2020) using data provided by NTPC developer for Darlipali Power plant, Odisha, India. Fig. DAR1 – Fig. DAR14)

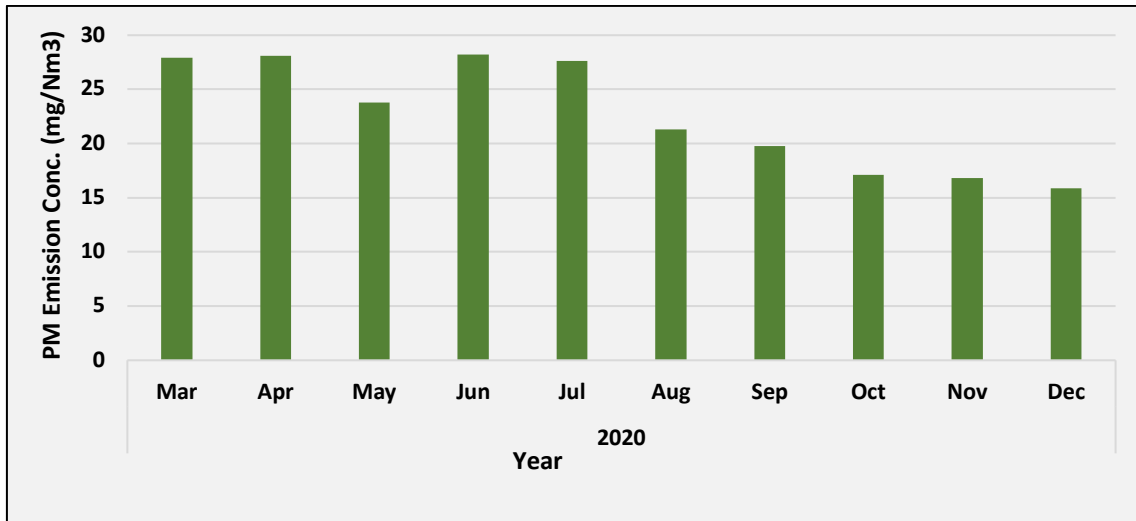


Fig. DAR1: Time series of monthly average PM Emission concentration in Darlipali TPP (Unit 1)

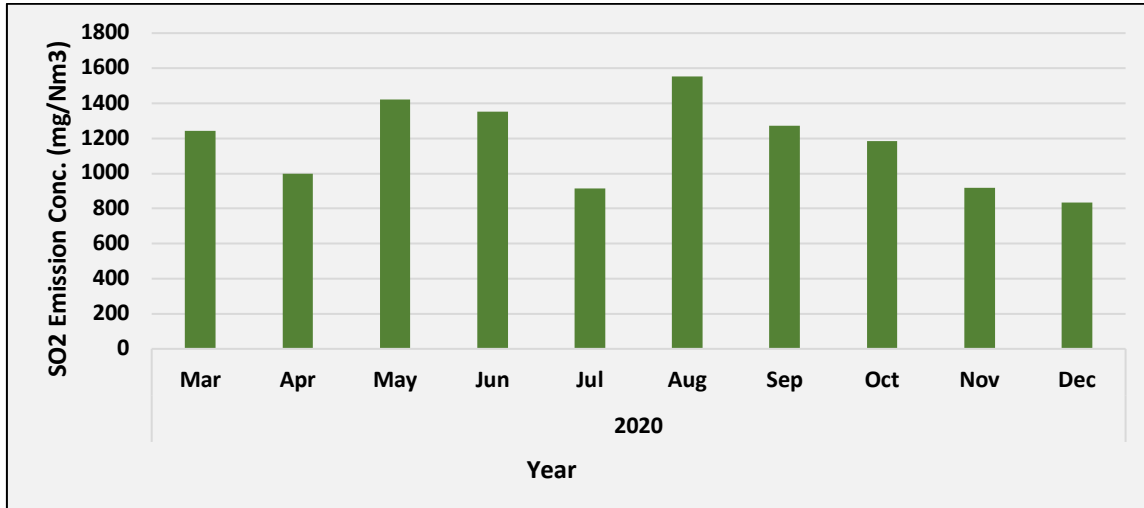


Fig. DAR2: Time series of monthly average SO₂ Emission concentration in Darlipali TPP (Unit 1)

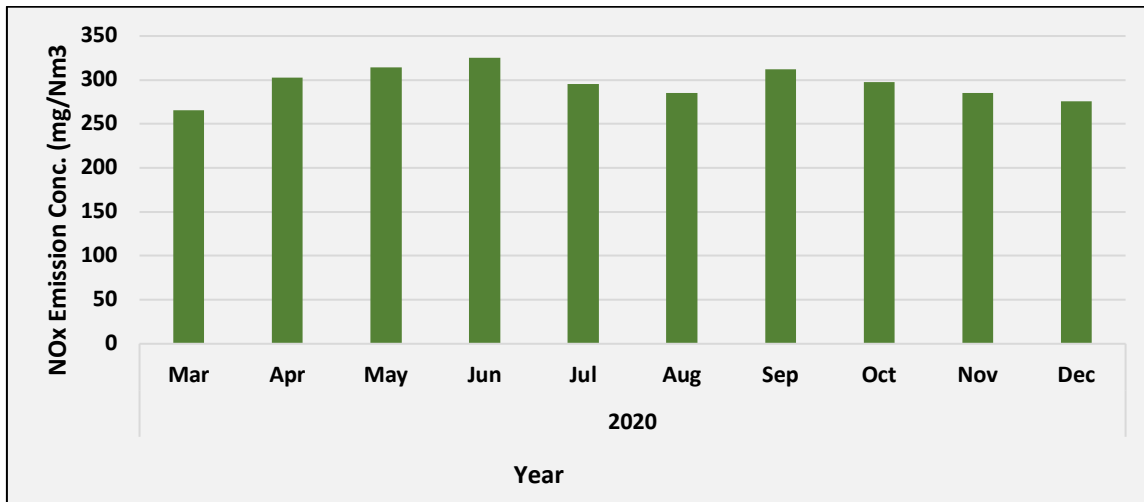


Fig. DAR3: Time series of monthly average NO_x Emission concentration in Darlipali TPP (Unit 1)

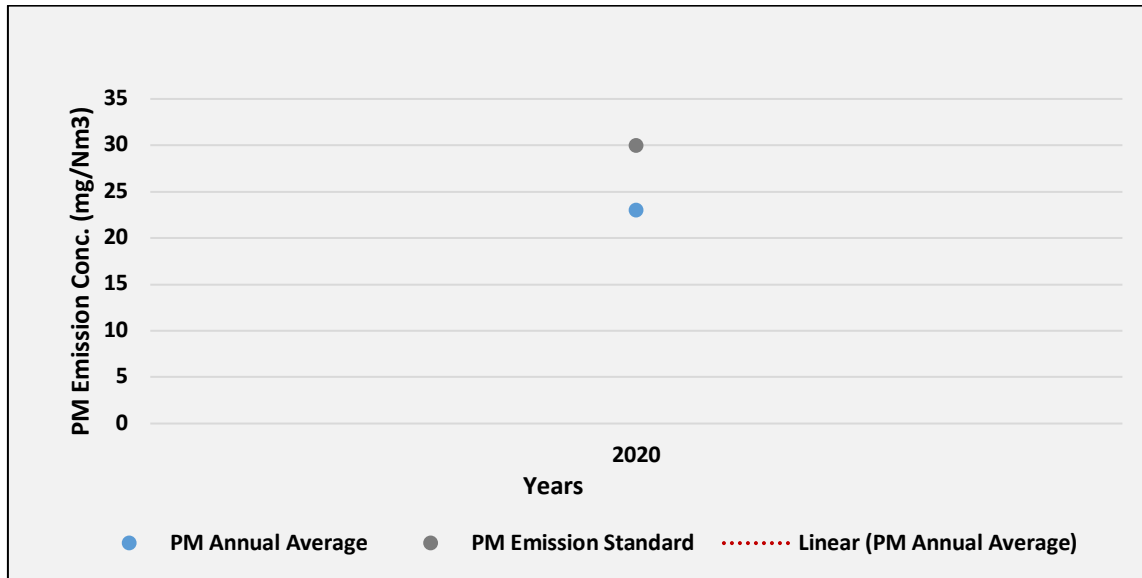


Fig. DAR4: Trend of annual mean PM Emission air concentration in Darlipali TPP (Unit 1)

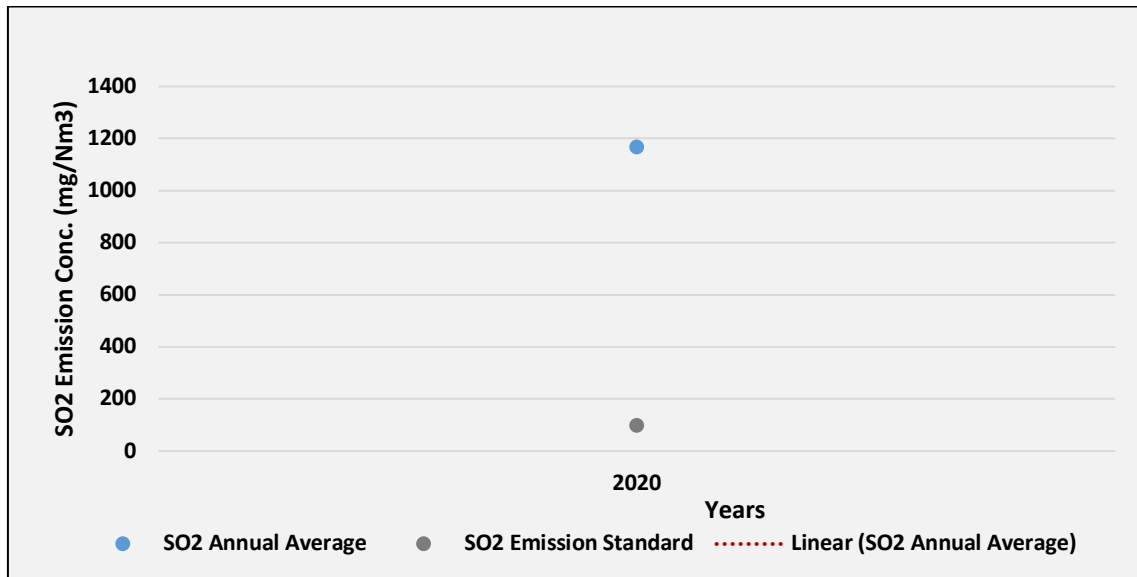


Fig. DAR5: Trend of annual mean SO₂ Emission air concentration in Darlipali TPP (Unit 1)

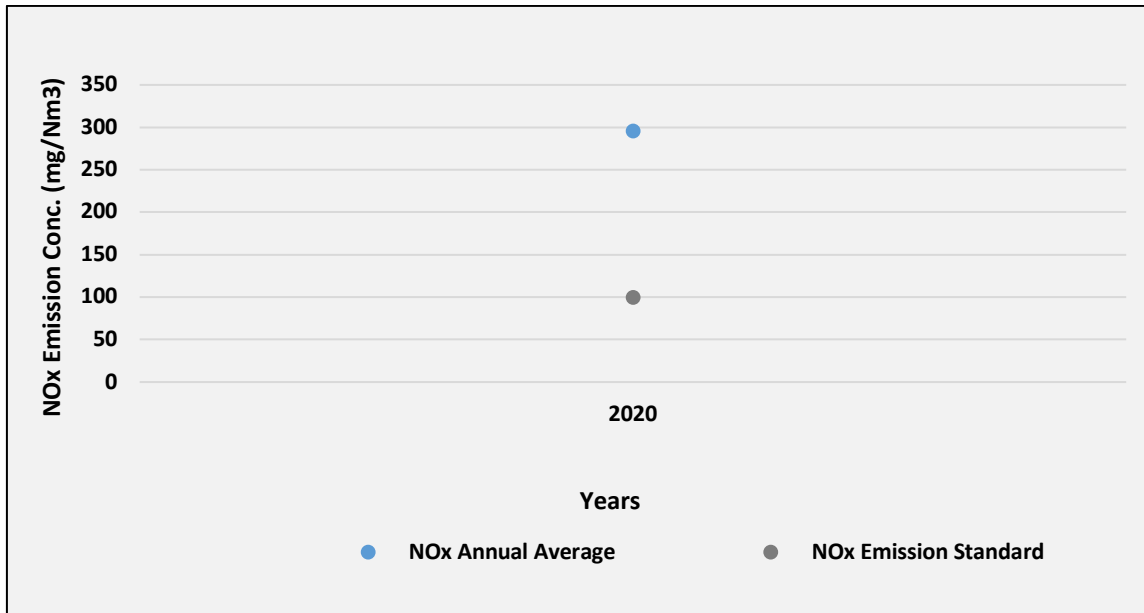


Fig. DAR6: Trend of annual mean NO_x Emission air concentration in Darlipali TPP (Unit 1)

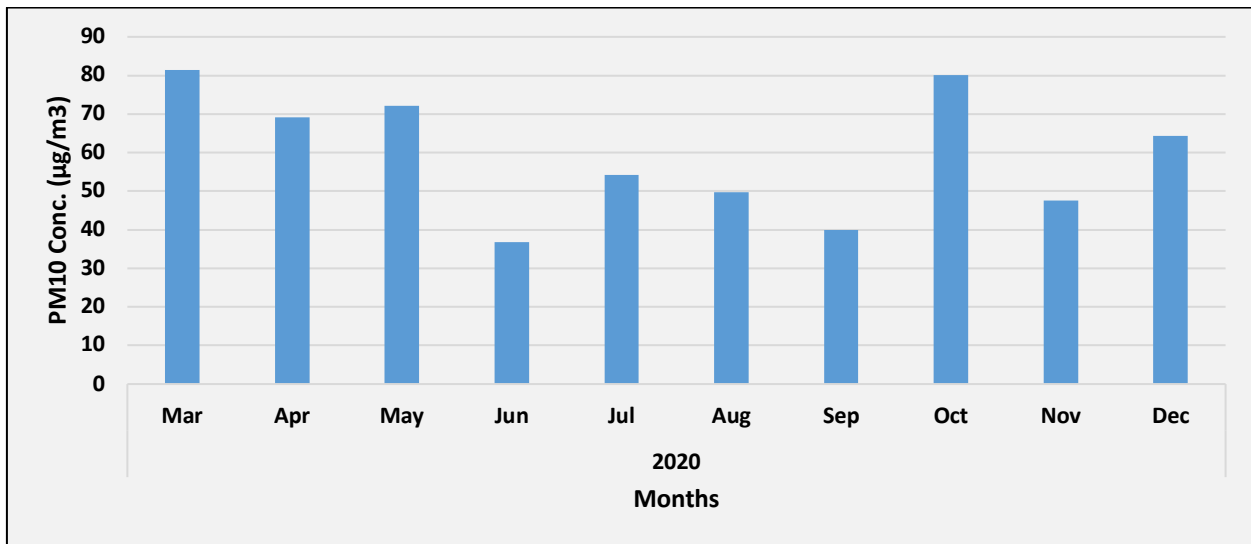


Fig. DAR7: Time series of monthly average PM₁₀ ambient air concentration in Darlipali TPP (Ambient)

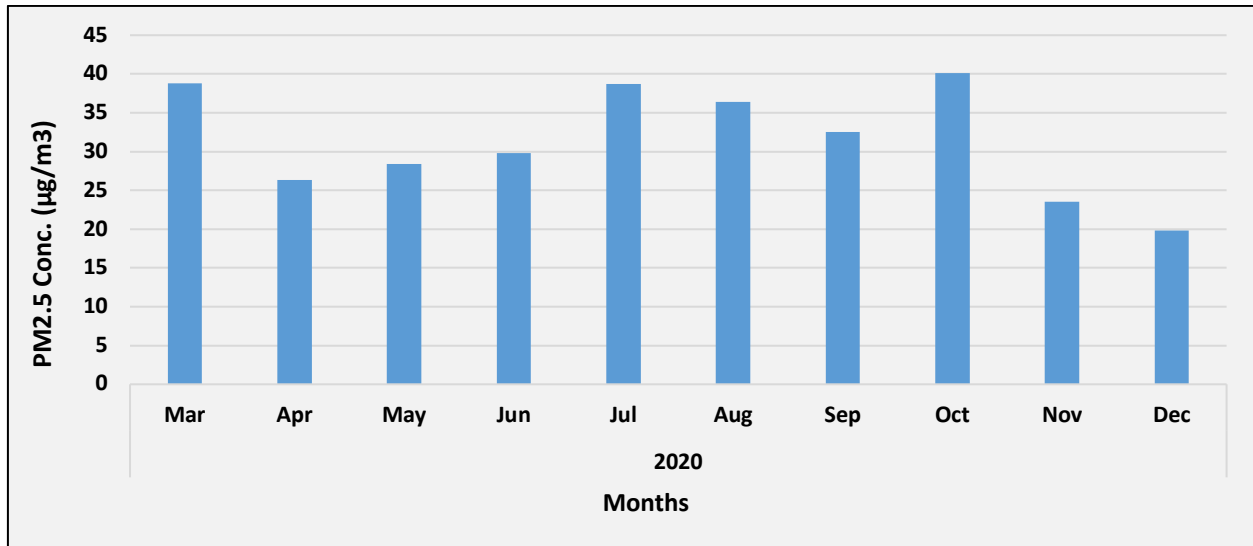


Fig. DAR8: Time series of monthly average PM_{2.5} ambient air concentration in Darlipali TPP (Ambient)

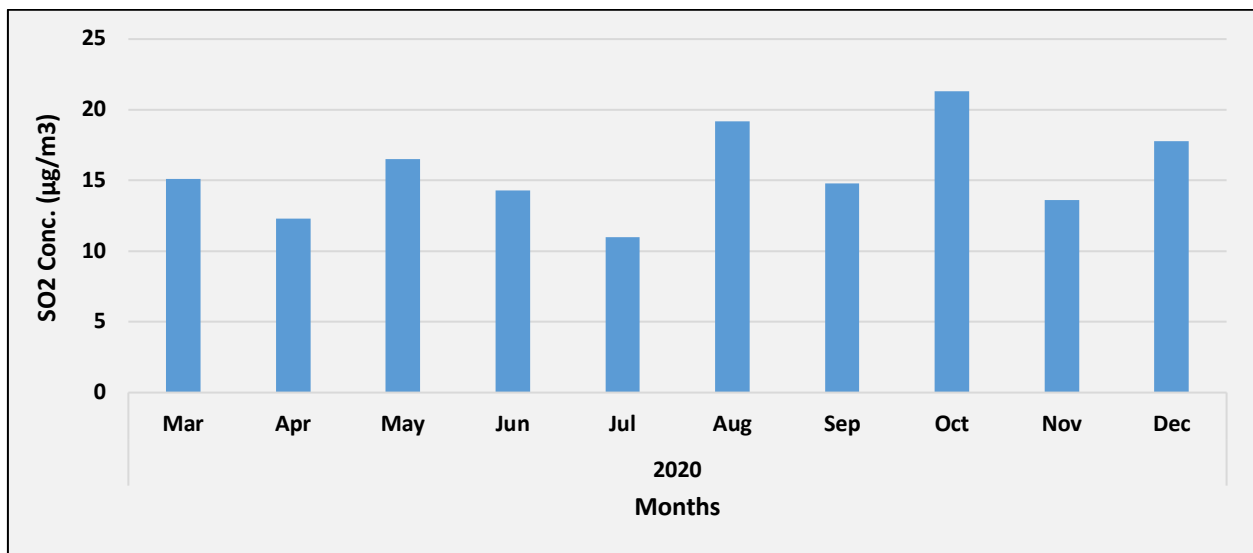


Fig. DAR9: Time series of monthly average SO₂ ambient air concentration in Darlipali TPP (Ambient)

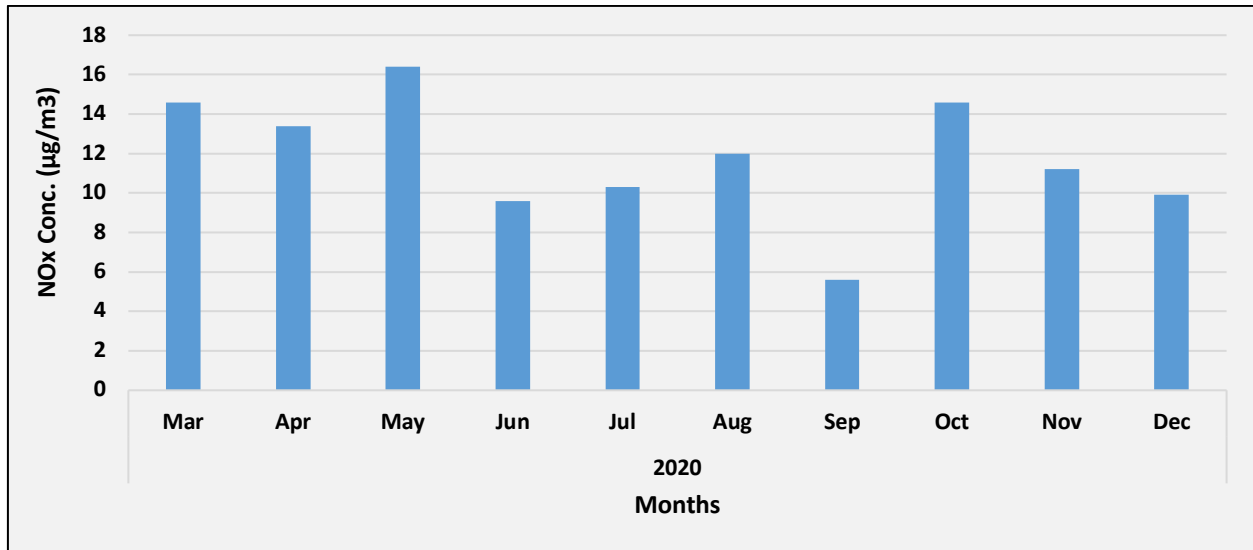


Fig. DAR10: Time series of monthly average NO_x ambient air concentration in Darlipali TPP (Ambient)

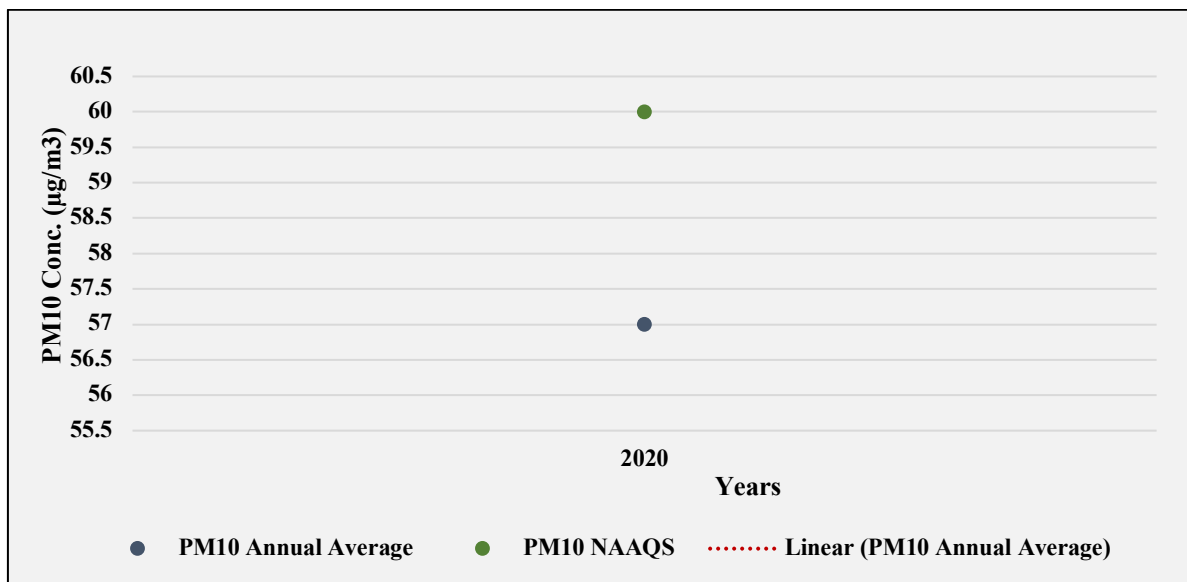


Fig. DAR11: Trend of annual mean PM₁₀ ambient air concentration in Darlipali TPP (Ambient)

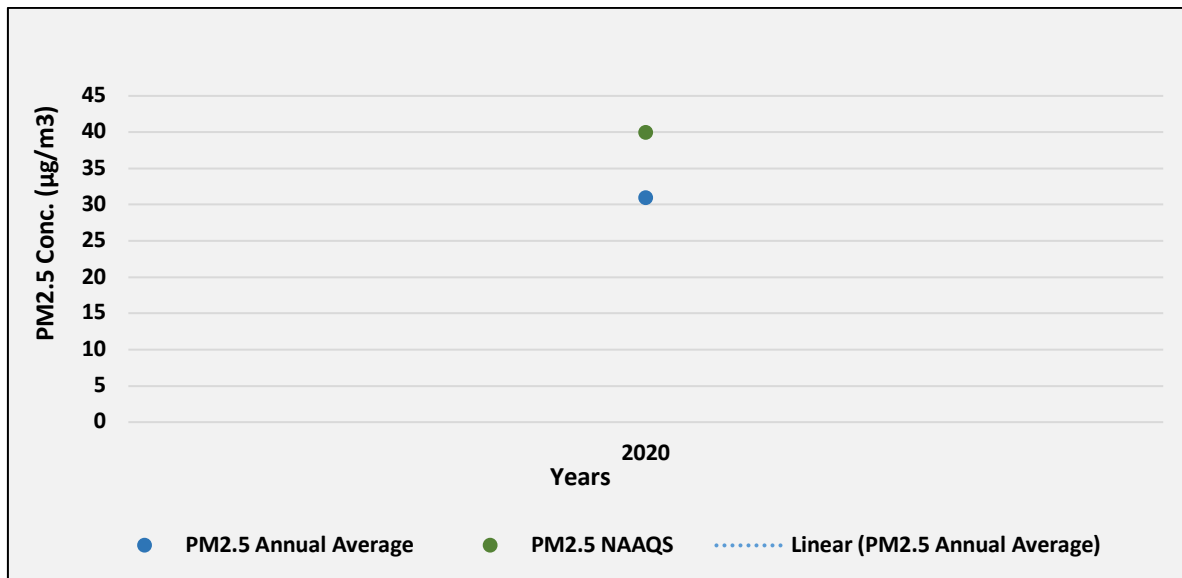


Fig. DAR12: Trend of annual mean $PM_{2.5}$ ambient air concentration in Darlipali TPP (Ambient)

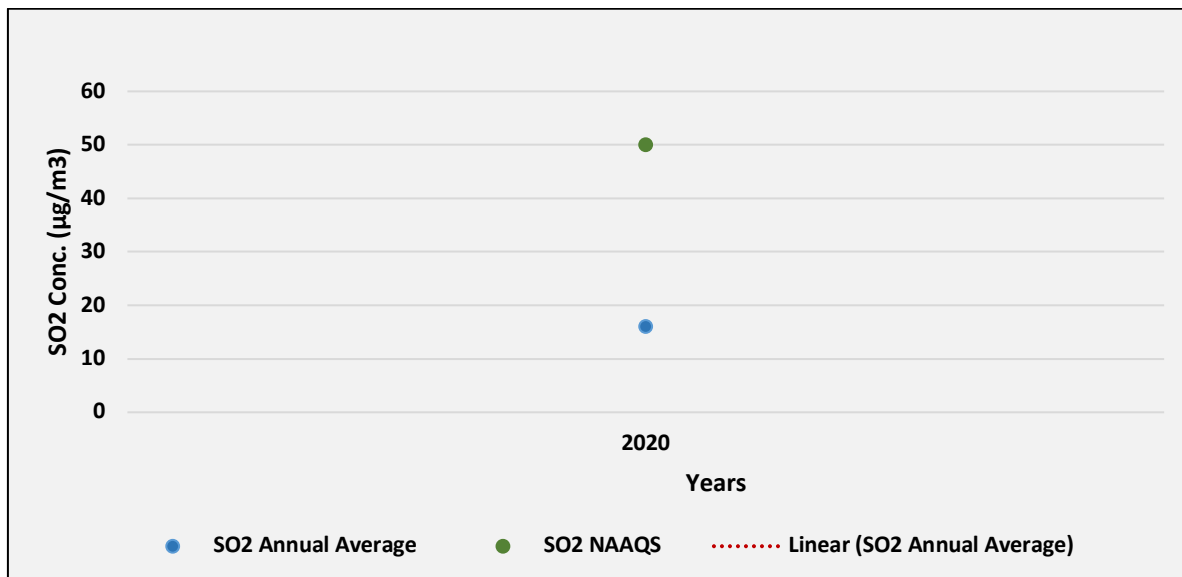


Fig. DAR13: Trend of annual mean SO_2 ambient air concentration in Darlipali TPP (Ambient)

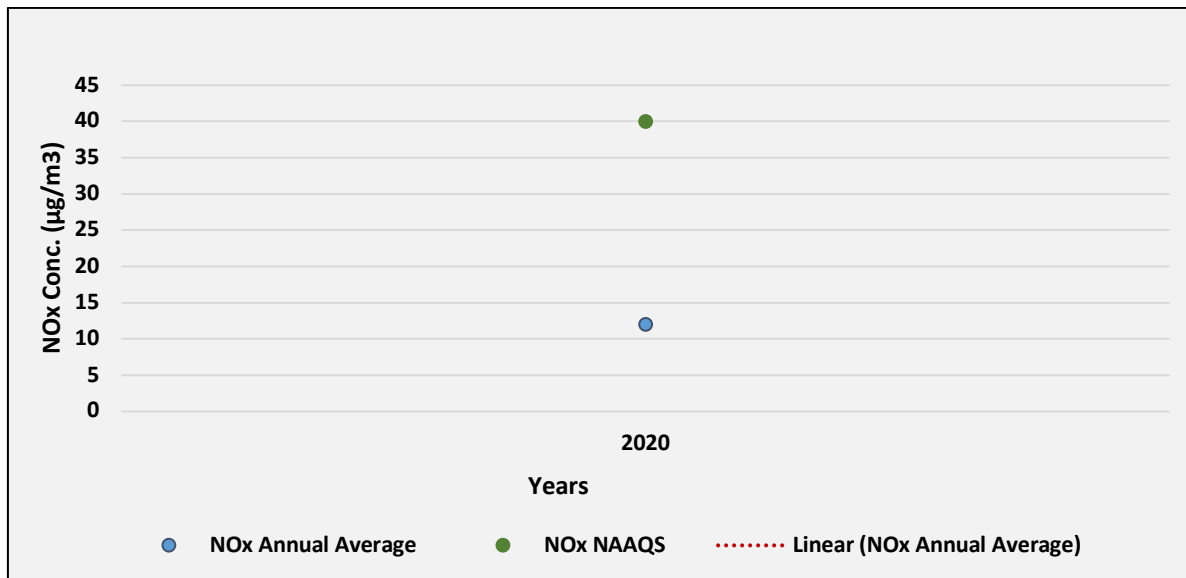


Fig. DAR14: Trend of annual mean NO_x ambient air concentration in Darlipali TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, Pm_{2.5}, SO₂ &NO_x levels are all within a range, which is good as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and NO_x parameter are much higher than the emission norms. Particulate matter emissions are within the limit.

BARH SUPER THERMAL POWER PLANT

Barh Super Thermal Power Station or NTPC Barh is located in Barh in the Indian state of Bihar.NTPC Barh is located barely four kilometres (2.5 mi) east of the Barh sub-division on National Highway-31 in Patna district. The project has been named a mega power project, and is owned by Indian energy company National Thermal Power Corporation.

The mega power project is being developed in two stages, with stage one comprising three units for a total installed capacity of 1,980MW and stage two involving two units for a total capacity of 1,320MW.

The ambient air quality concentrations of PM₁₀, PM_{2.5} SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed for the last three years (2020) using data provided by NTPC for Barh Super Thermal Power Station, India.

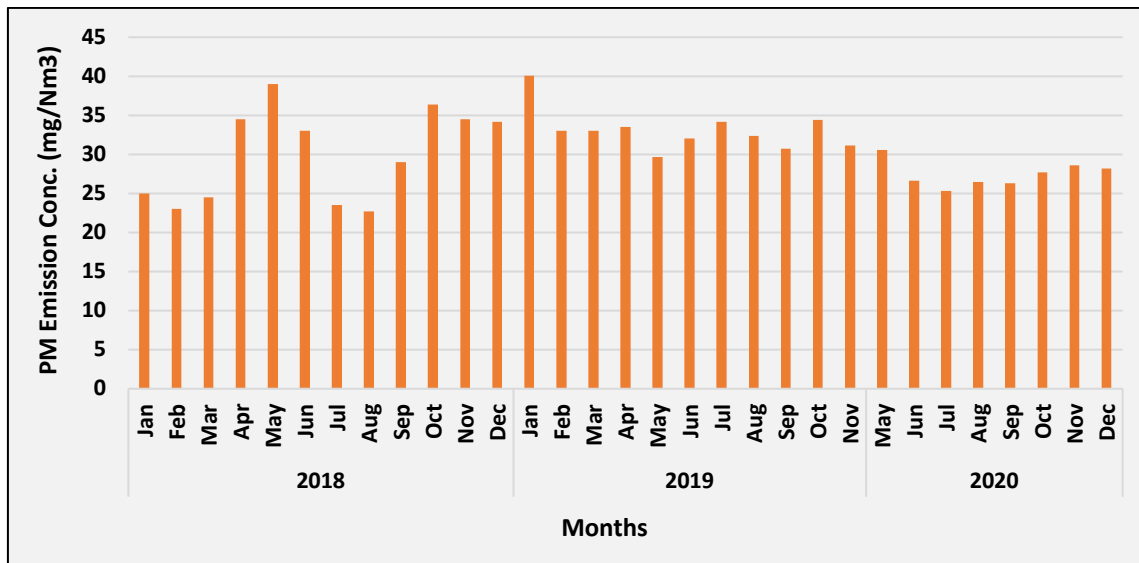


Fig. BA1: Time series of monthly average PM Emission concentration in Barh TPP (Stack 1)

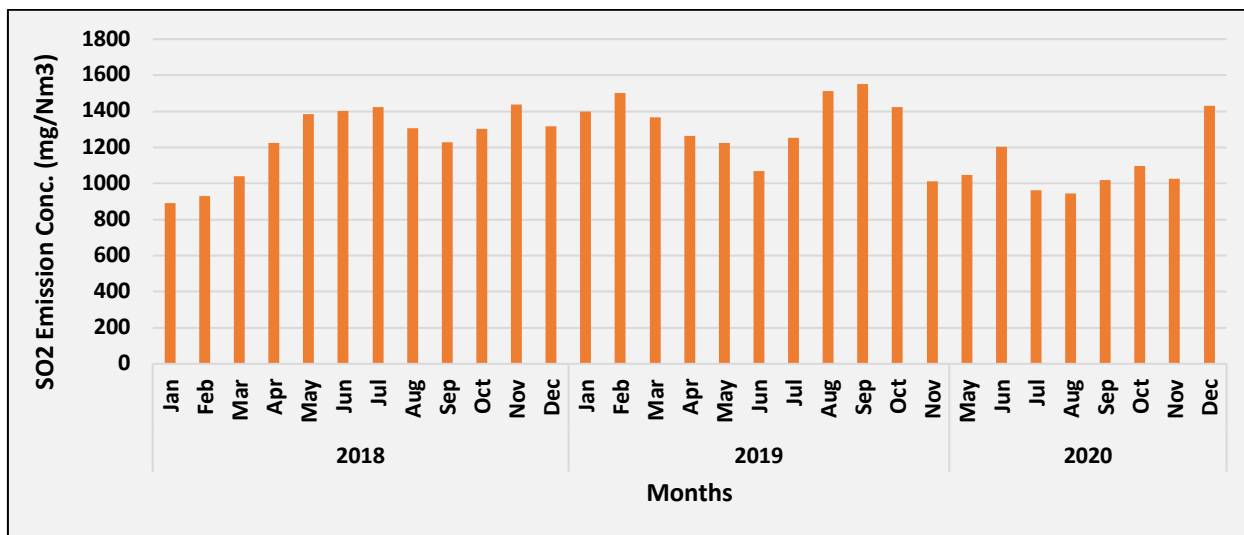


Fig. BA2: Time series of monthly average SO₂ Emission concentration in Barh TPP (Stack 1)

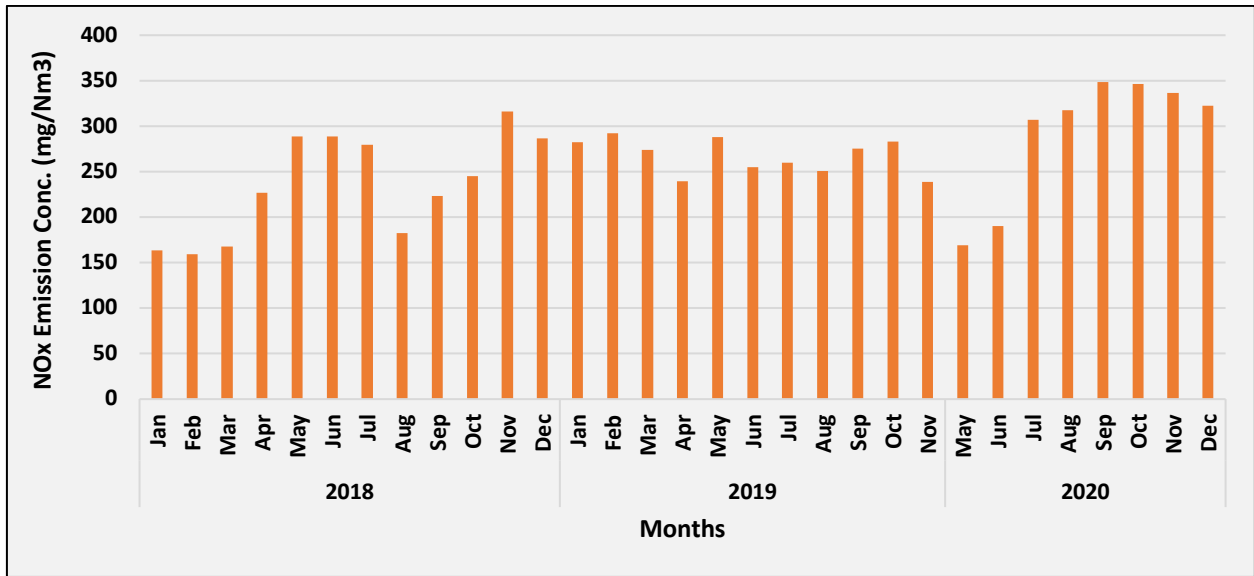


Fig. BA3: Time series of monthly average NO_x Emission concentration in Barh TPP (Stack 1)

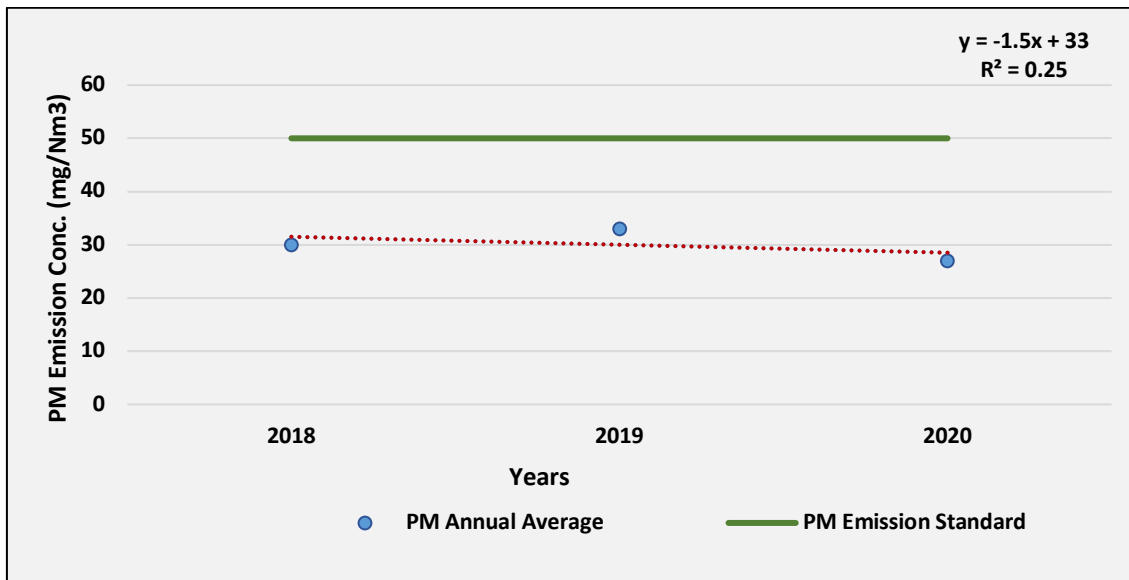


Fig. BA4: Trend of annual mean PM Emission air concentration in Barh TPP (Stack 1)

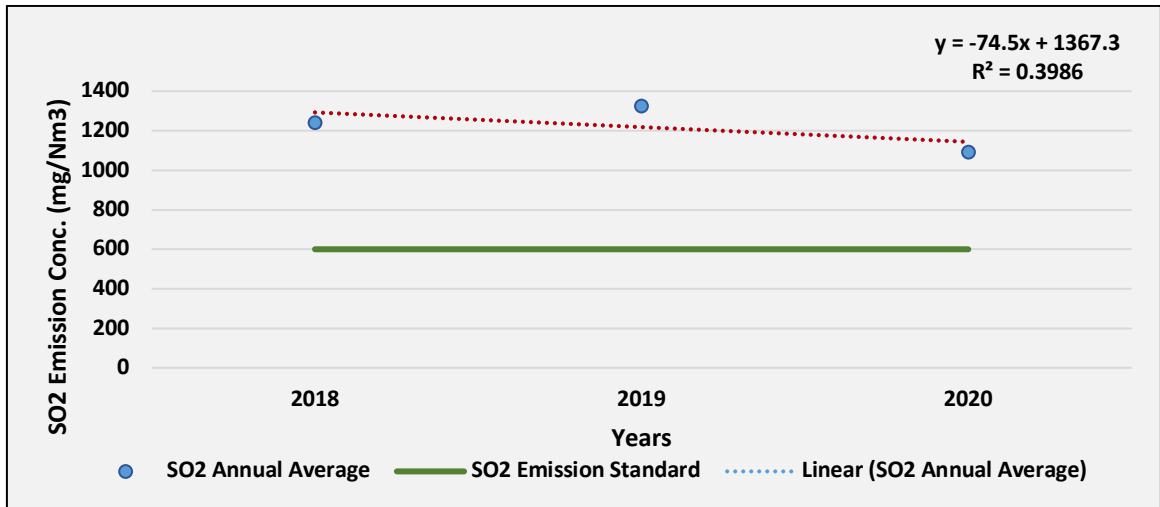


Fig. BA5: Trend of annual mean SO₂ Emission air concentration in Barh TPP (Stack 1)

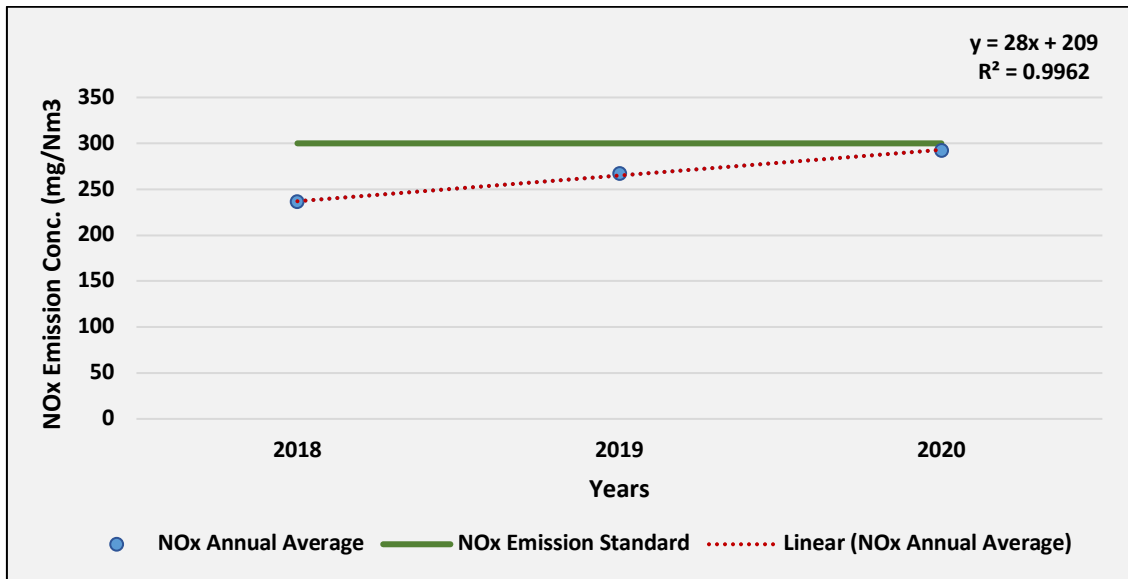


Fig. BA6: Trend of annual mean NO_x Emission air concentration in Barh TPP (Stack 1)

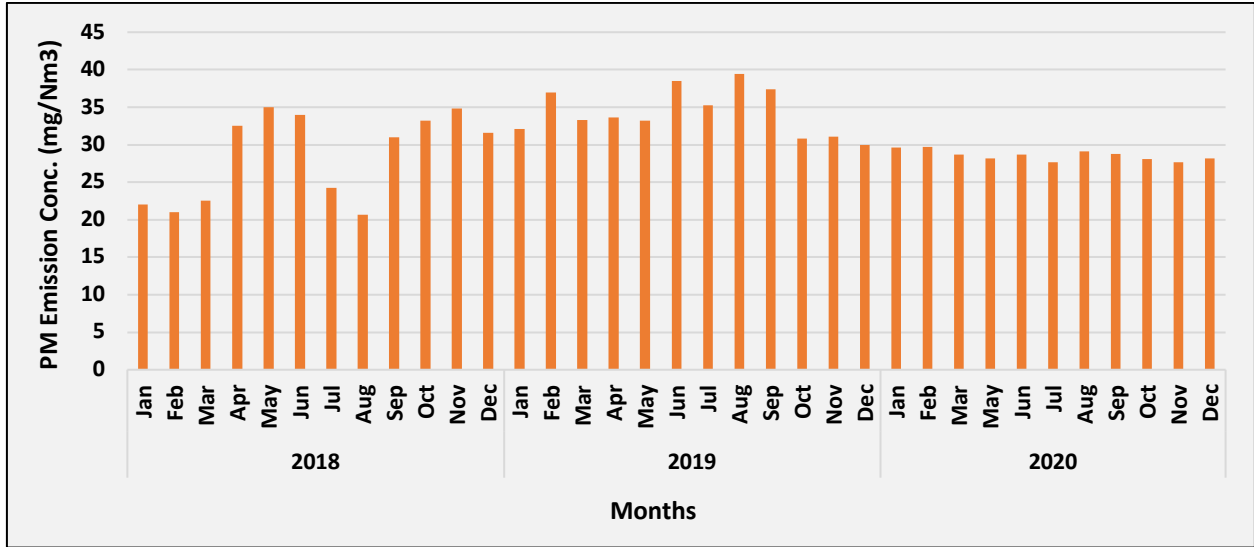


Fig. BA7: Time series of monthly average PM Emission concentration in Barh TPP (Stack 2)

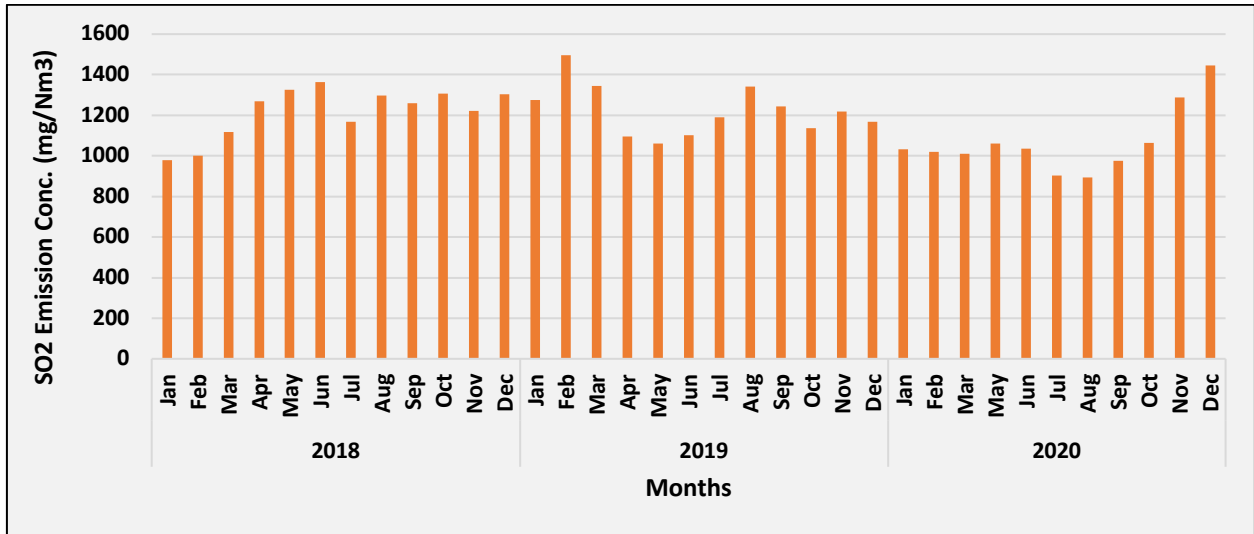


Fig. BA8: Time series of monthly average SO₂ Emission concentration in Barh TPP (Stack 2)

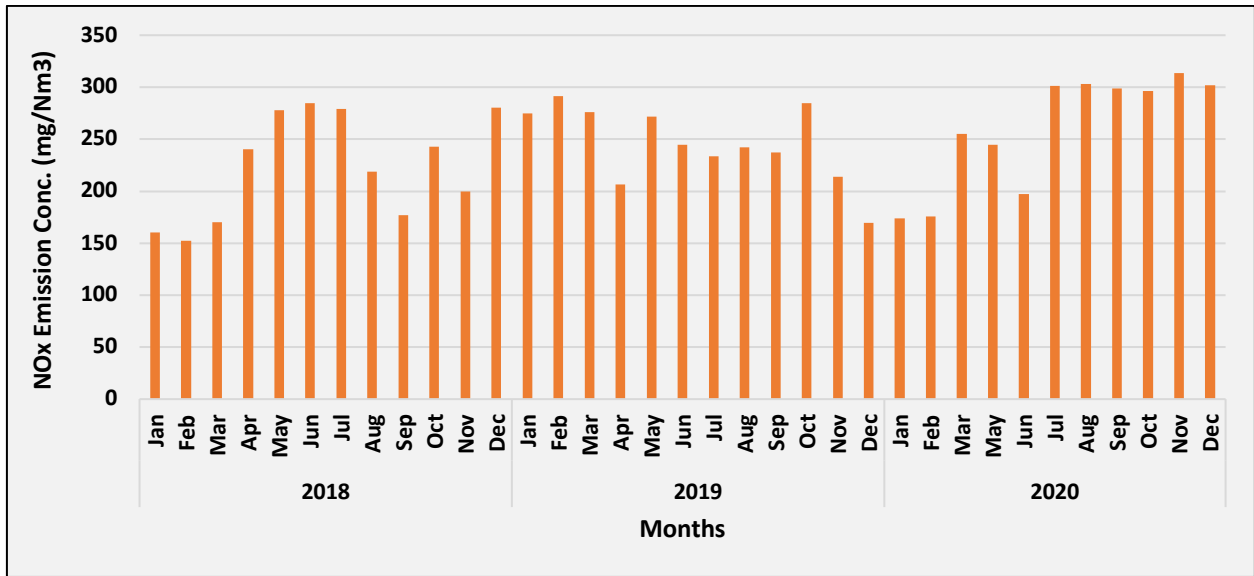


Fig. BA9: Time series of monthly average NO_x Emission concentration in Barh TPP (Stack 2)

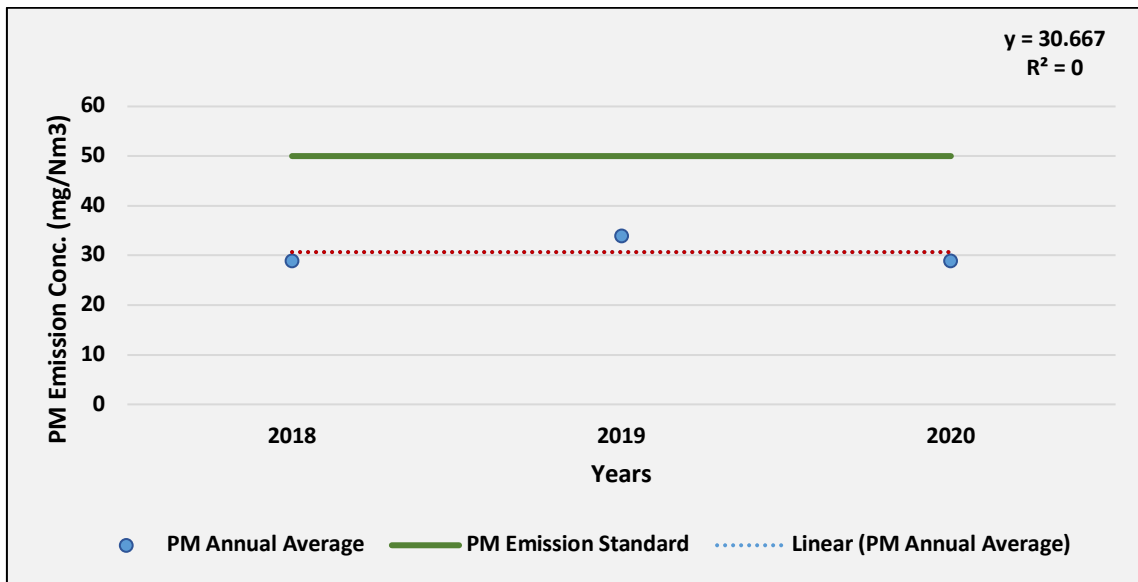


Fig. BA10: Trend of annual mean PM Emission air concentration in Barh TPP (Stack 2)

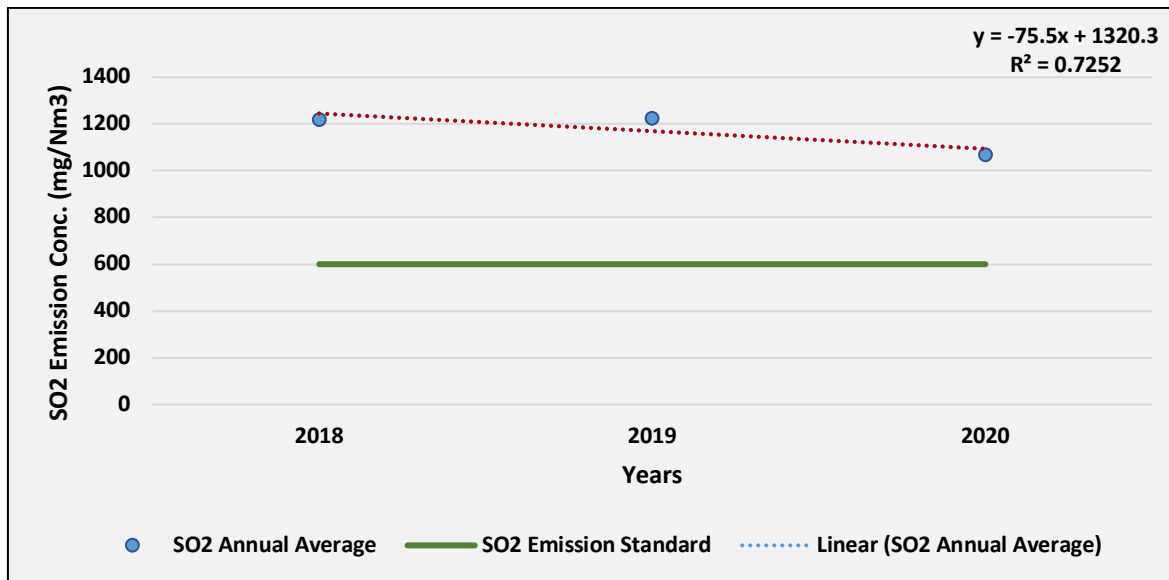


Fig. BA11: Trend of annual mean SO₂ Emission air concentration in Barh TPP (Stack 2)

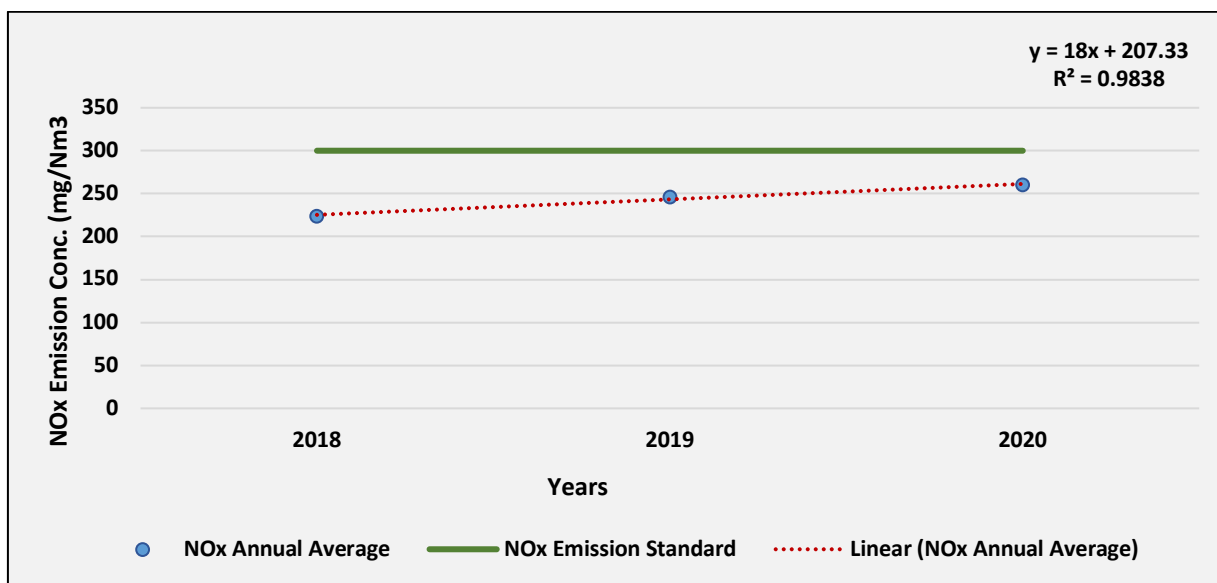


Fig. BA12: Trend of annual mean NO_x Emission air concentration in Barh TPP (Stack 2)

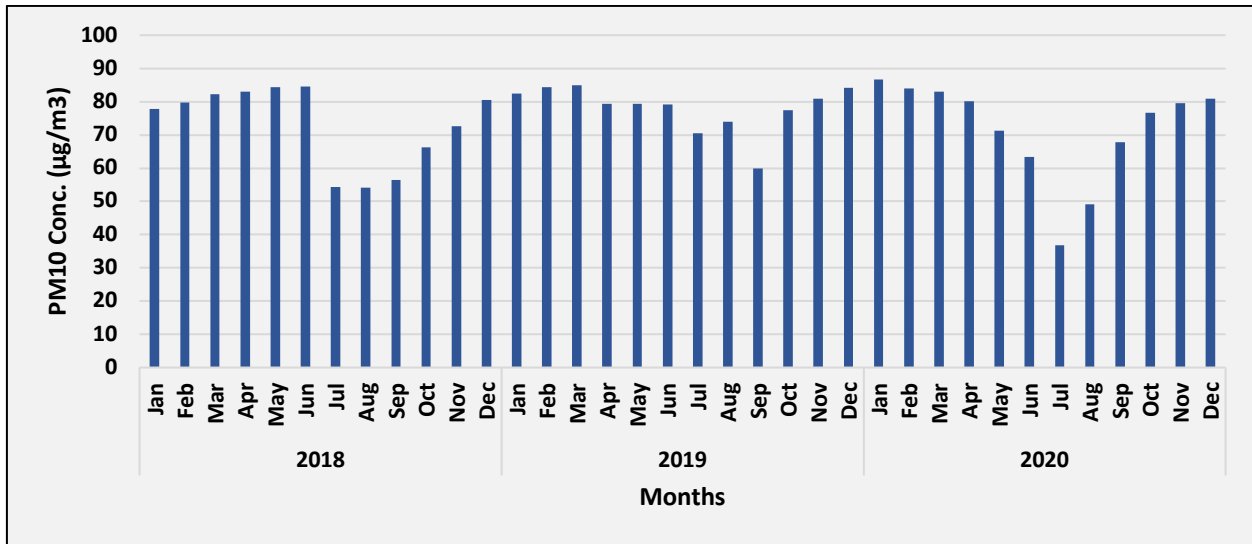


Fig. BA13: Time series of monthly average PM₁₀ ambient air concentration in Barh TPP (Ambient)

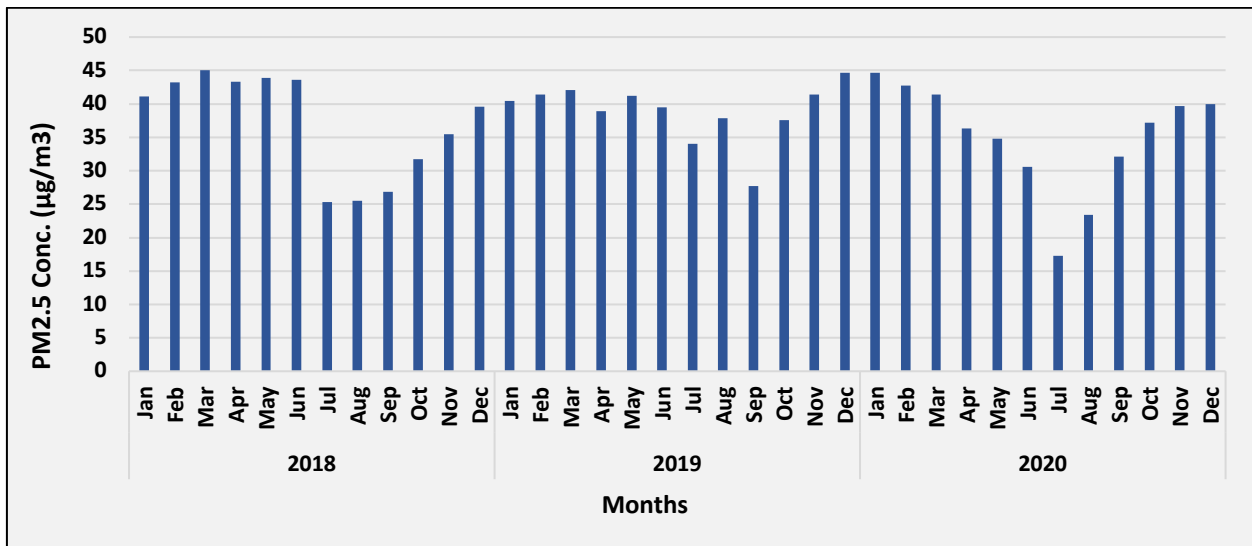


Fig. BA14: Time series of monthly average PM_{2.5} ambient air concentration in Barh TPP (Ambient)

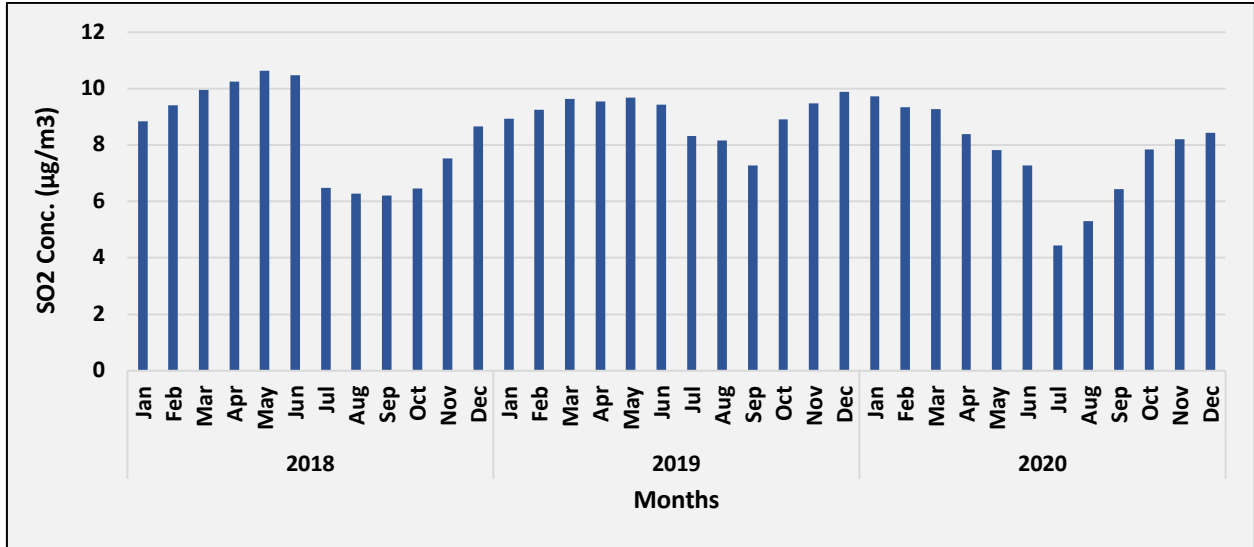


Fig. BA15: Time series of monthly average SO_2 ambient air concentration in Barh TPP (Ambient)

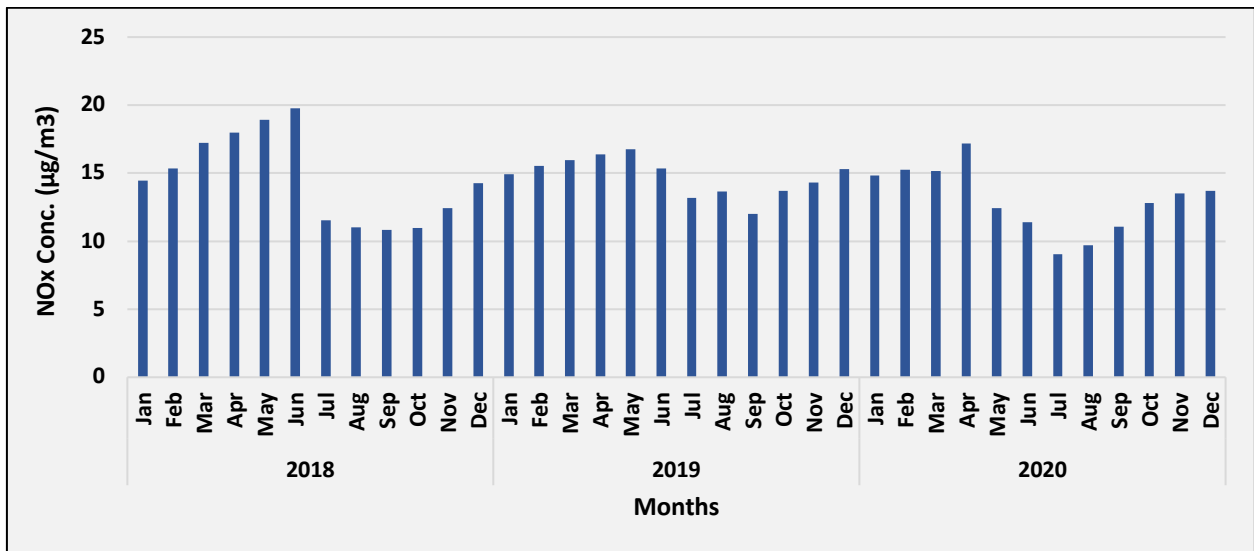


Fig. BA16: Time series of monthly average NO_x ambient air concentration in Barh TPP (Ambient)

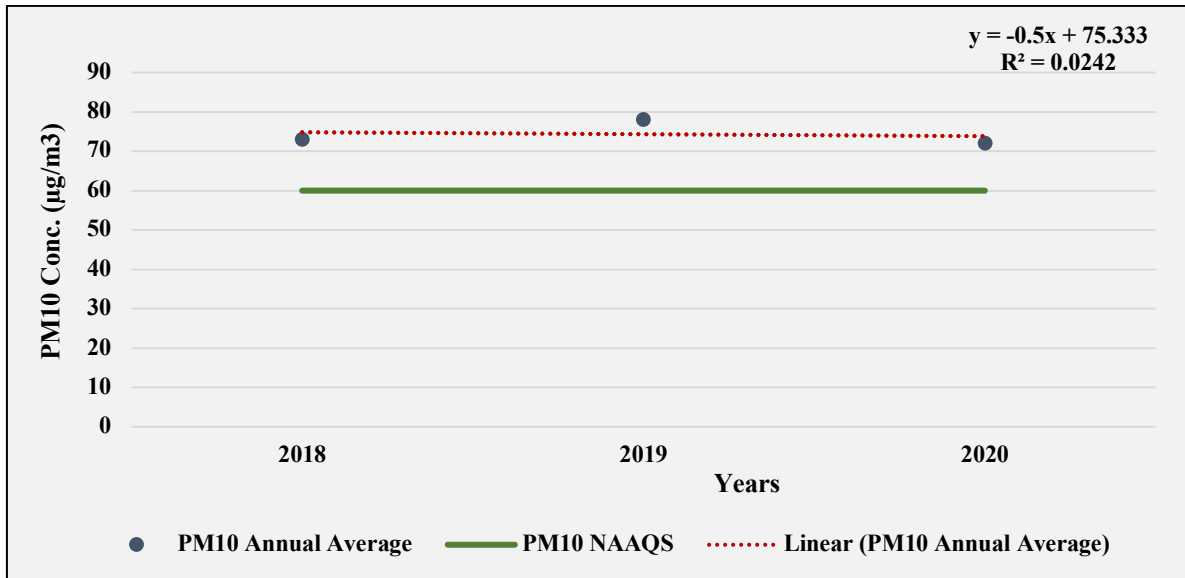


Fig. BA17: Trend of annual mean PM_{10} ambient air concentration in Barh TPP (Ambient)

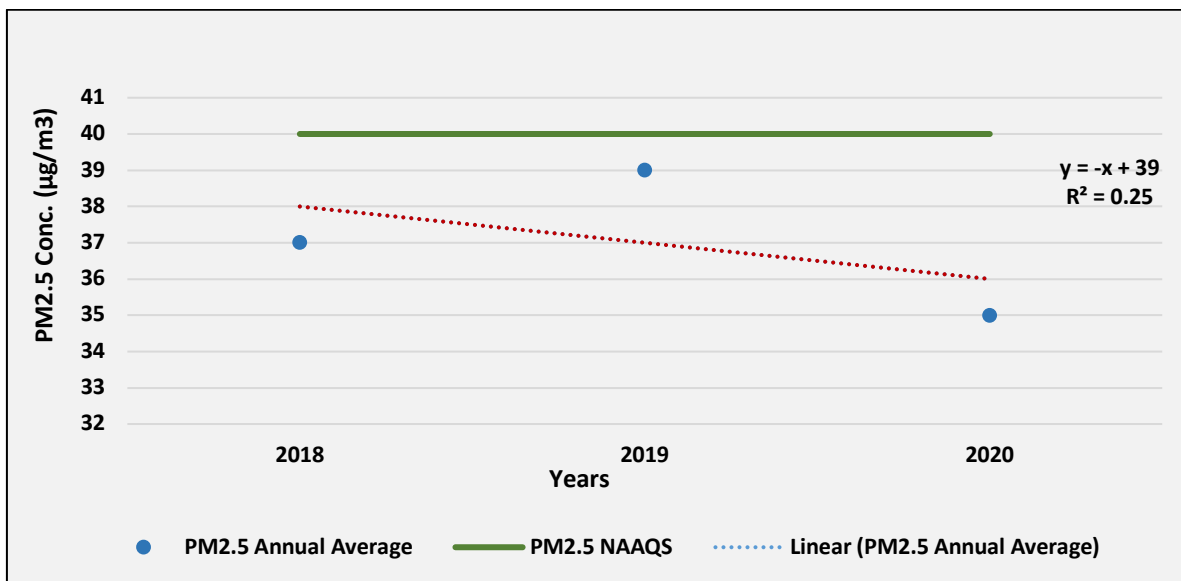


Fig. BA18: Trend of annual mean $PM_{2.5}$ ambient air concentration in Barh TPP (Ambient)

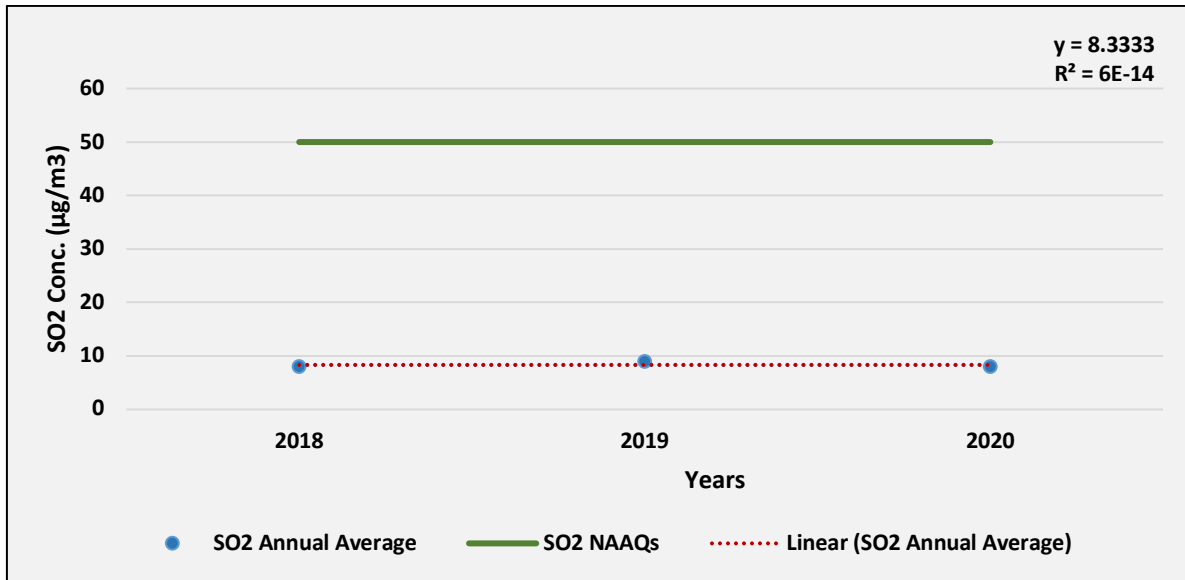


Fig. BA19: Trend of annual mean SO₂ ambient air concentration in Barh TPP (Ambient)

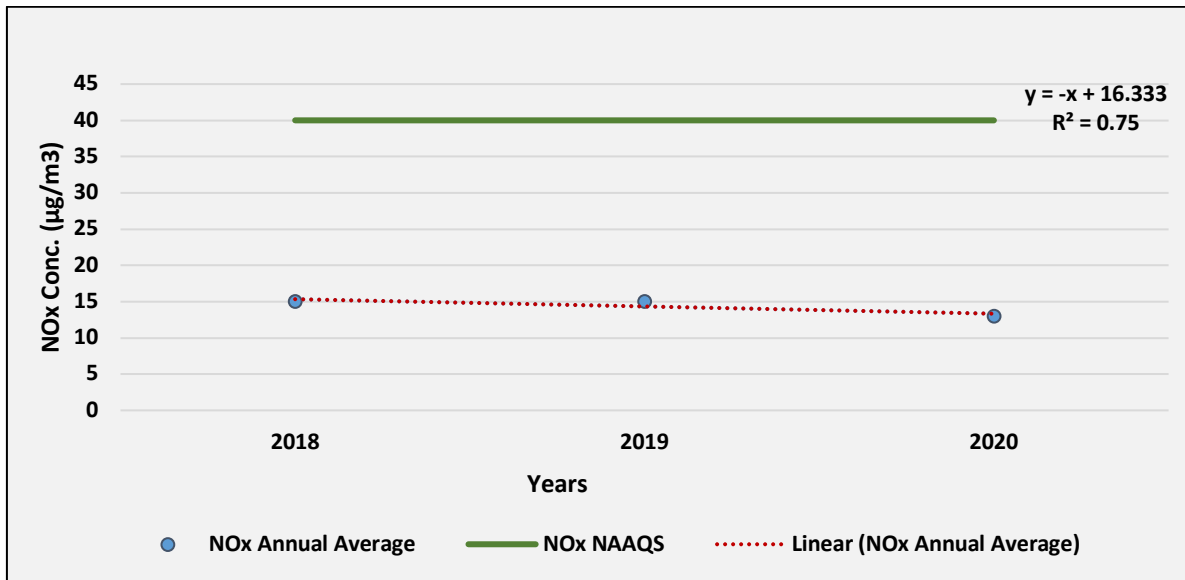


Fig. BA20: Trend of annual mean NO_x ambient air concentration in Barh TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM10 is exceeding whereas the PM2.5, SO₂ & NO_x levels are mostly within a range, which is good as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ parameter is much higher than the emission norms.

KHARGONE THERMAL POWER PLANT

Khargone Super Thermal Power Station is a coal-based thermal power project, located at village Selda and Dalchi in Khargone district in Indian State of Madhya Pradesh. It is the country's first ultra-super critical thermal power plant. The Khargone plant operates at an efficiency of 41.5 per cent, which is 3.3 per cent higher than the conventional super-critical ones, with steam parameters of 600 degree Celsius temperatures and 270 kg per centimeter square pressure.

The air quality concentrations of PM emission, SO₂ emission, and NO_x emission, data analyzed (Fig. KHA1 – Fig. KHA20) for the last one year (2020) using data provided by NTPC developer for Khargone Power plant, Madhya Pradesh, India.

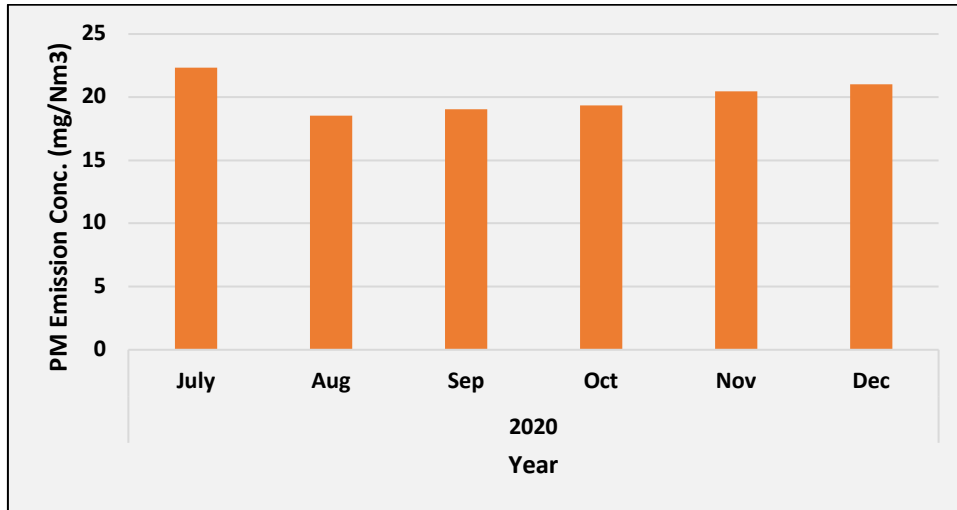


Fig. KHA1: Time series of monthly average PM Emission concentration in Khargone TPP (Stack 1)

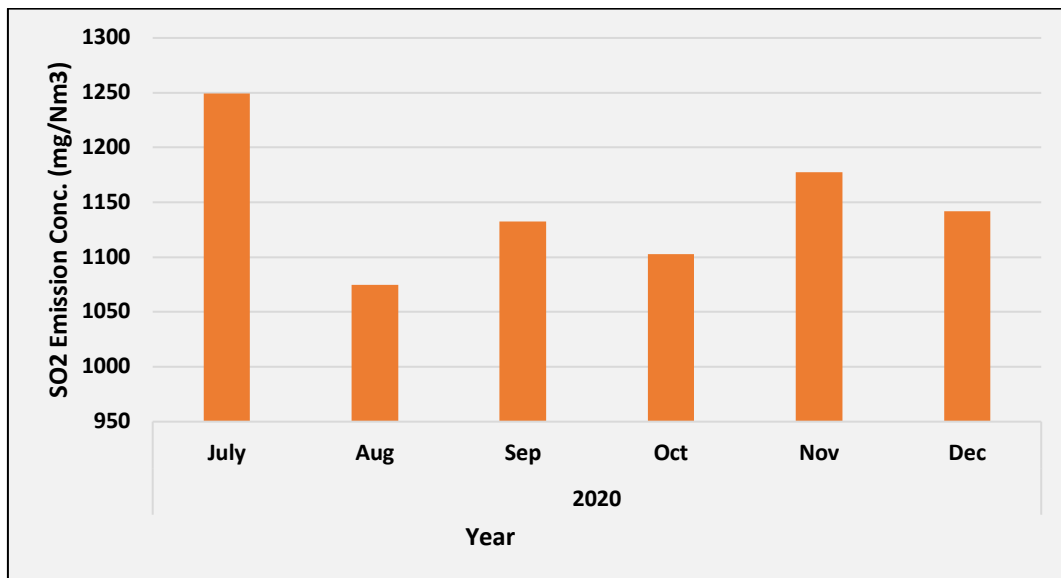


Fig. KHA2: Time series of monthly average SO₂ Emission concentration in Khargone TPP (Stack 1)

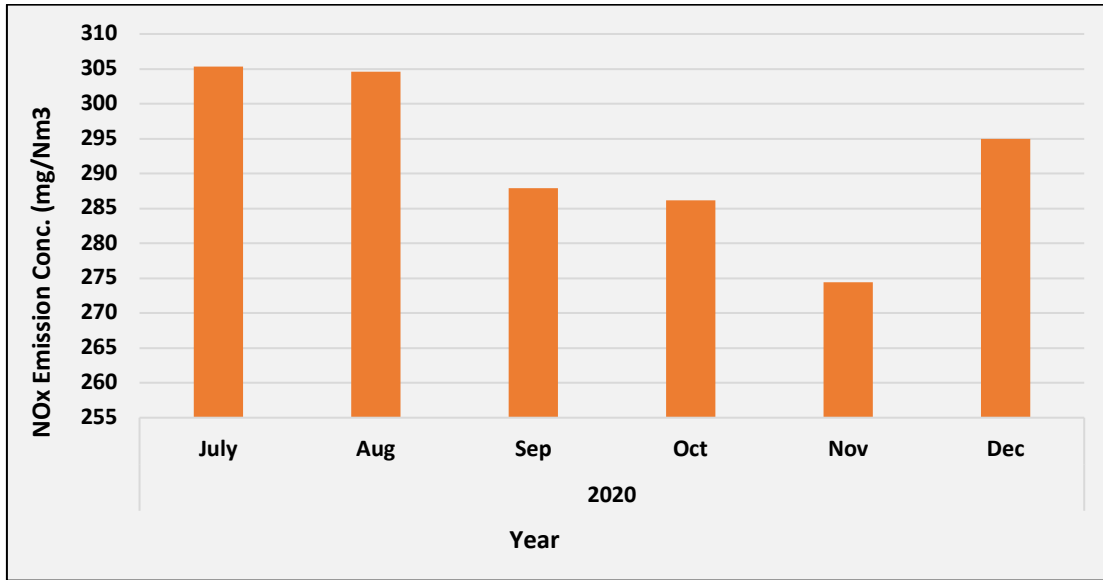


Fig. KHA3: Time series of monthly average NO_x Emission concentration in Khargone TPP (Stack 1)

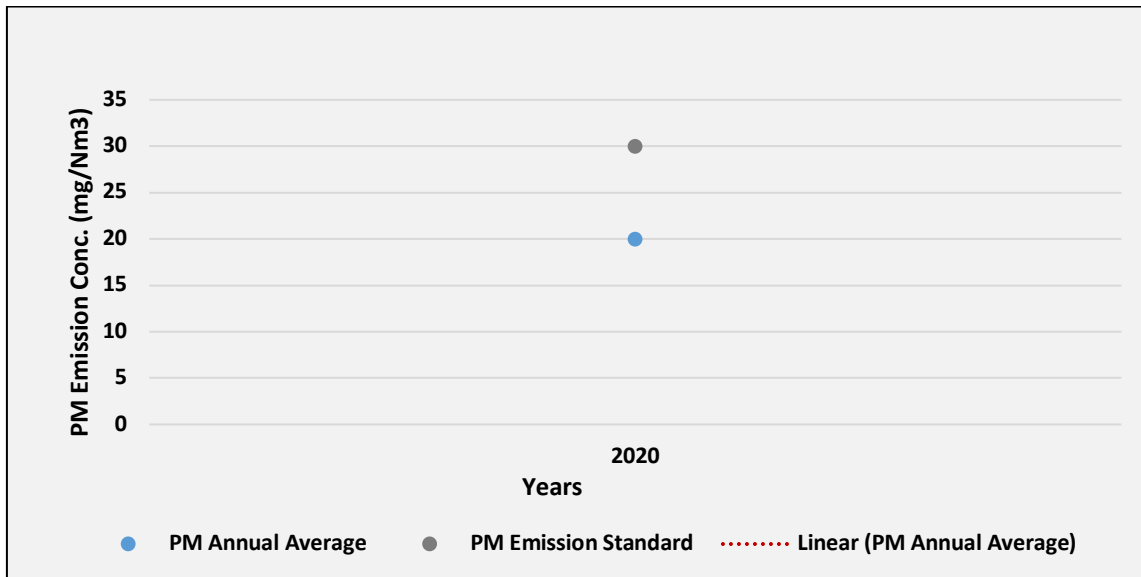


Fig. KHA4: Trend of annual mean PM Emission air concentration in Khargone TPP (Stack 1)

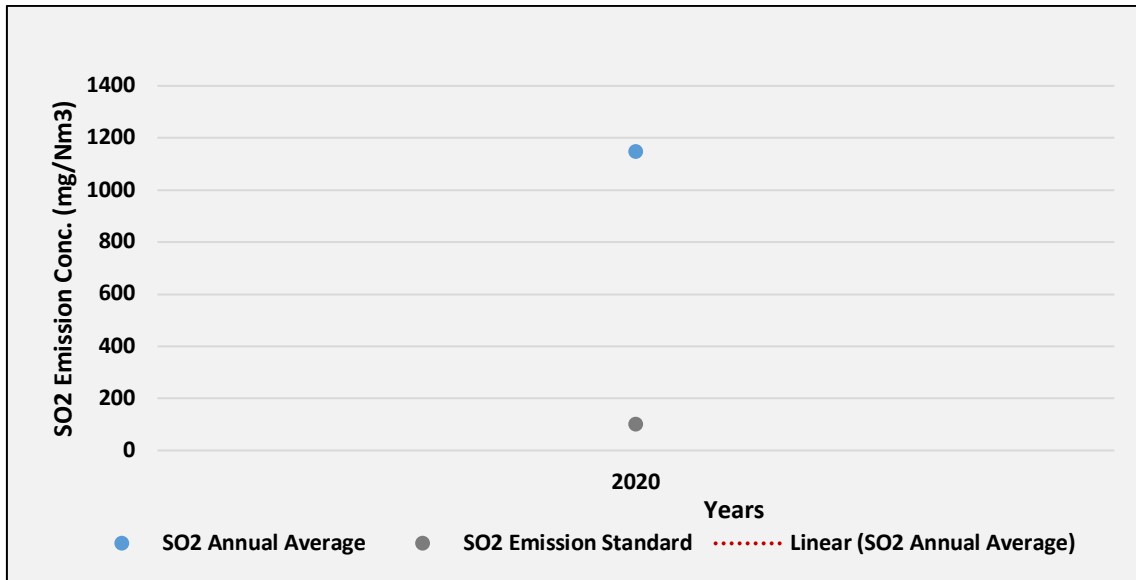


Fig. KHA5: Trend of annual mean SO₂ Emission air concentration in Khargone TPP (Stack 1)

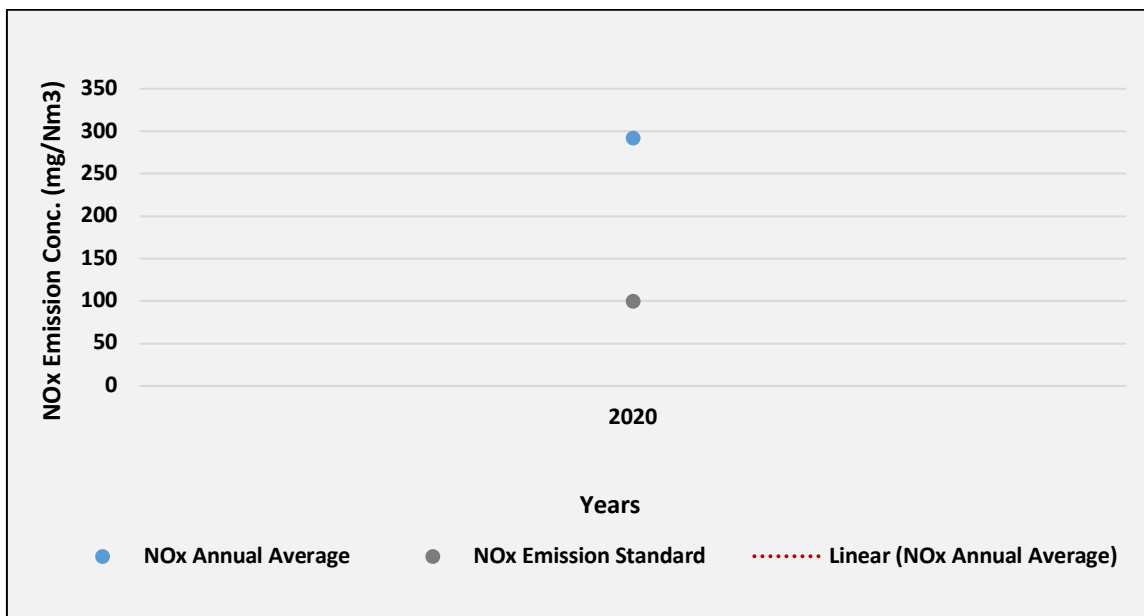


Fig. KHA6: Trend of annual mean NO_x Emission air concentration in Khargone TPP (Stack 1)

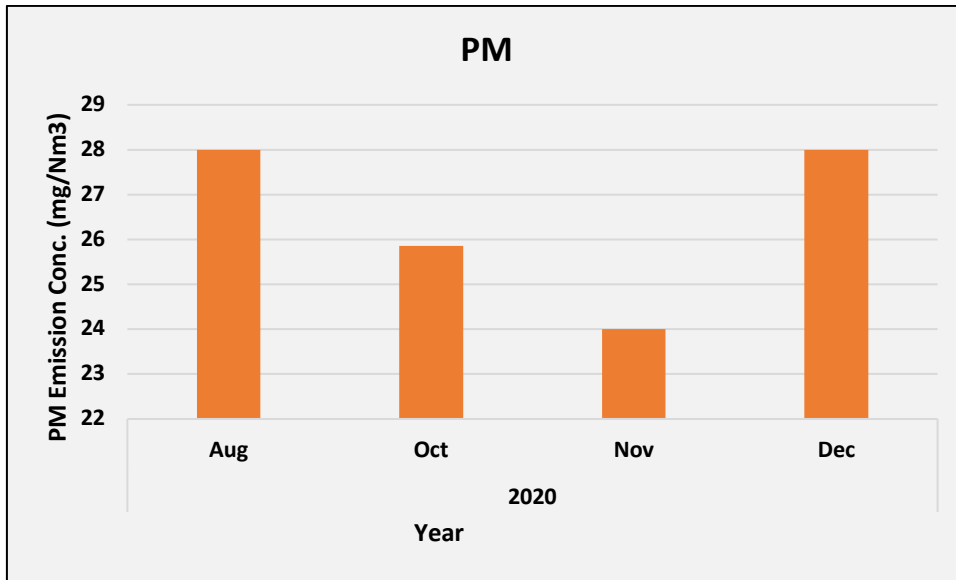


Fig. KHA7: Time series of monthly average PM Emission concentration in Khargone TPP (Stack 2)

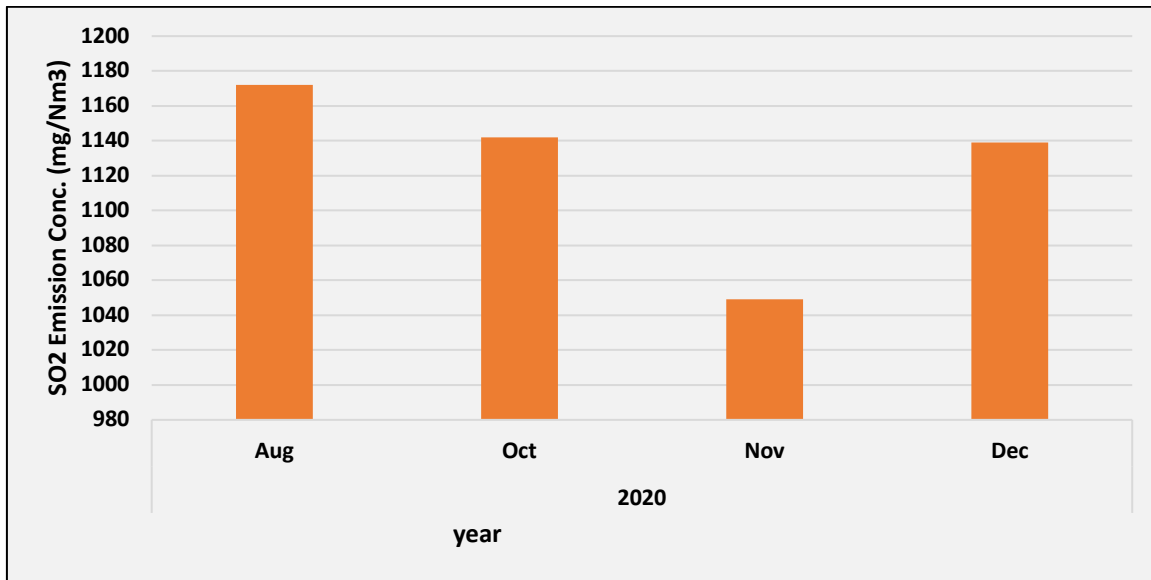


Fig. KHA8: Time series of monthly average SO₂ Emission concentration in Khargone TPP (Stack 2)

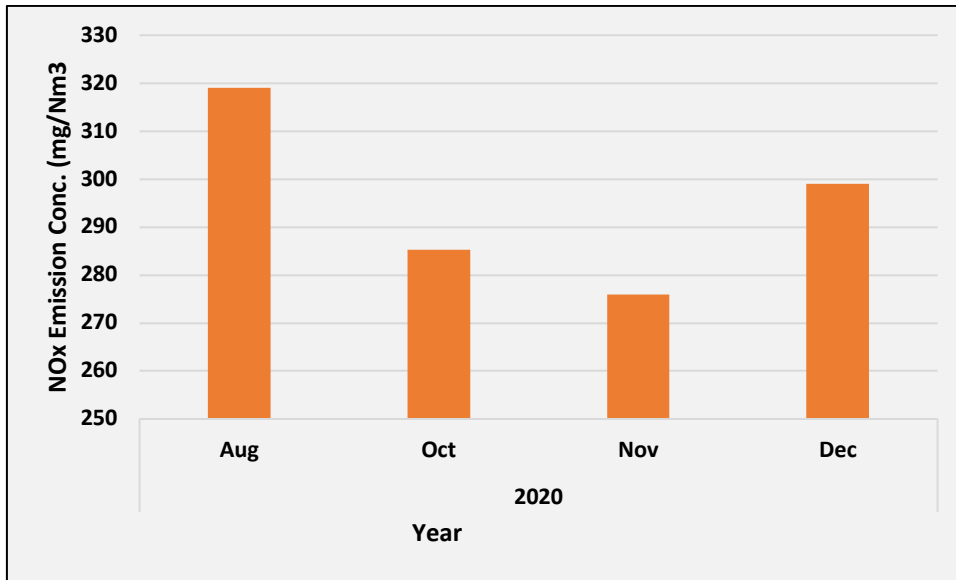


Fig. KHA9: Time series of monthly average NO_x Emission concentration in Khargone TPP (Stack 2)

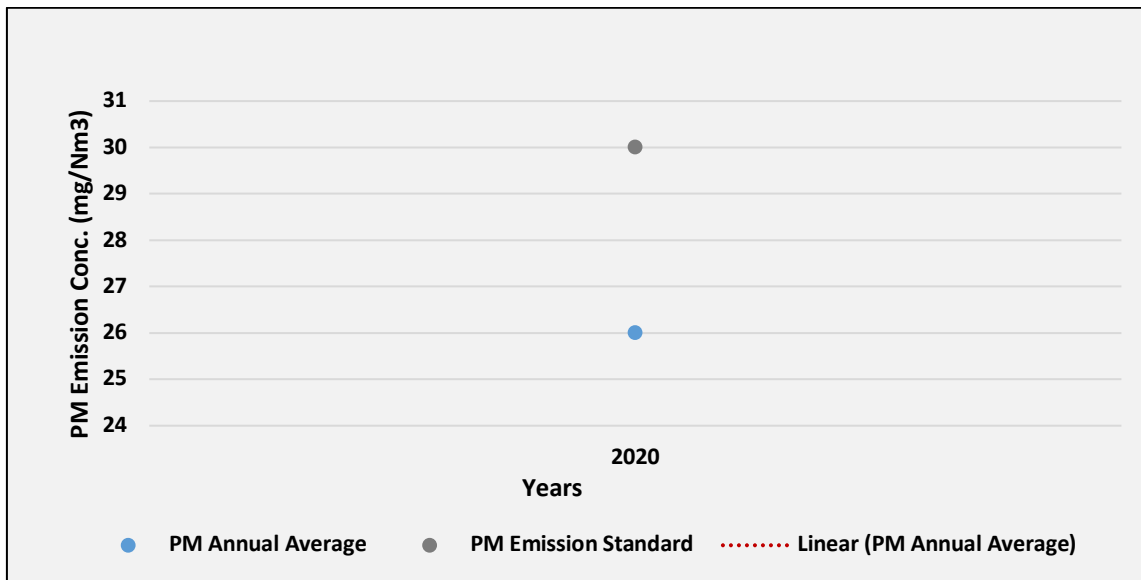


Fig. KHA10: Trend of annual mean PM Emission air concentration in Khargone TPP (Stack 2)

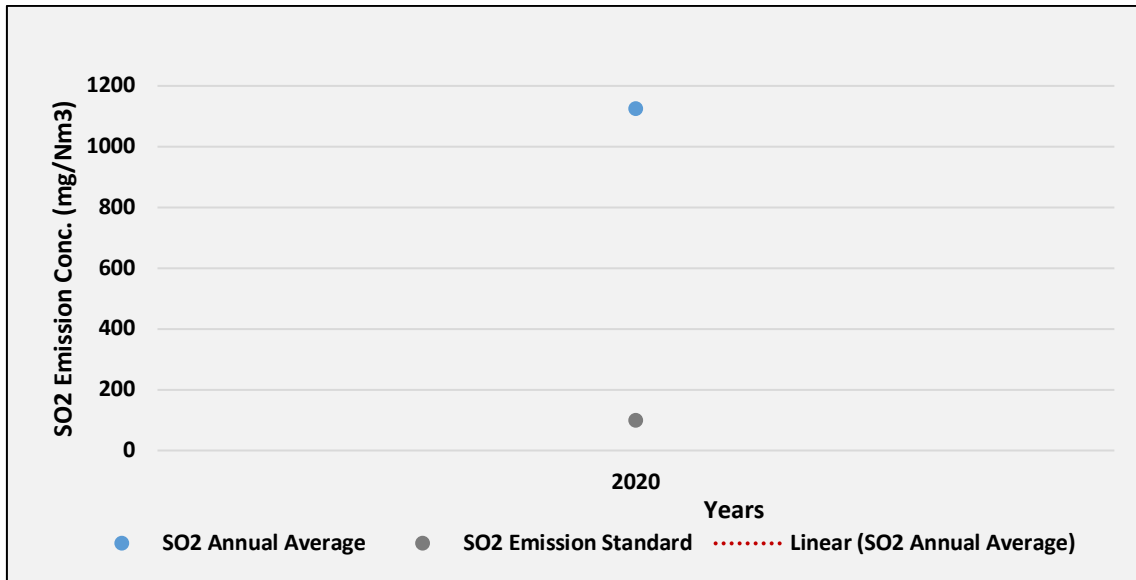


Fig. KHA11: Trend of annual mean SO₂ Emission air concentration in Khargone TPP (Stack 2)

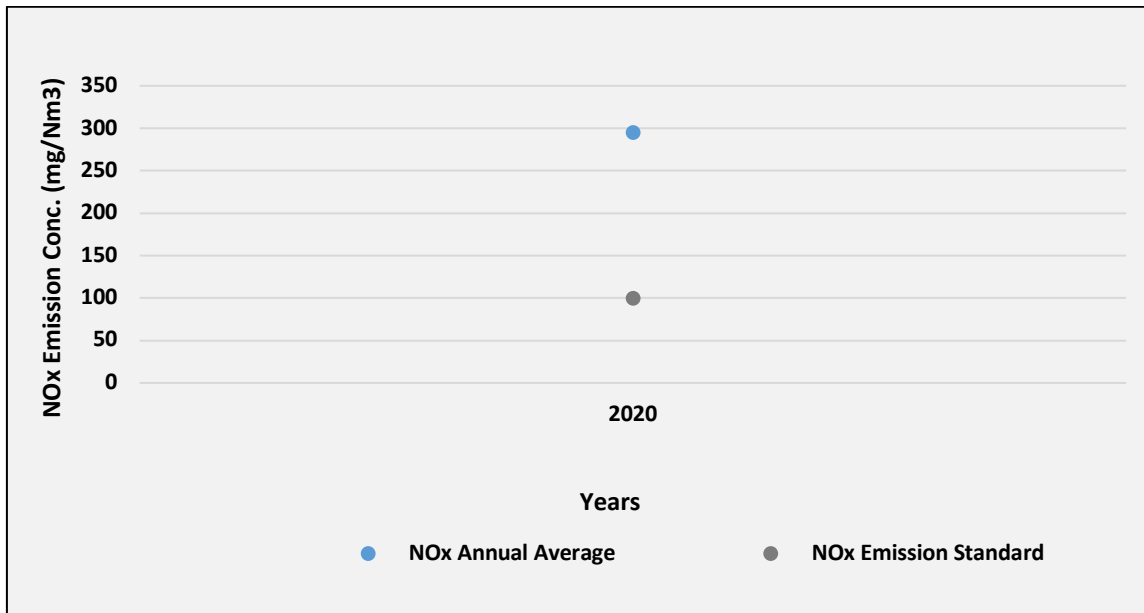


Fig. KHA12: Trend of annual mean NO_x Emission air concentration in Khargone TPP (Stack 2)

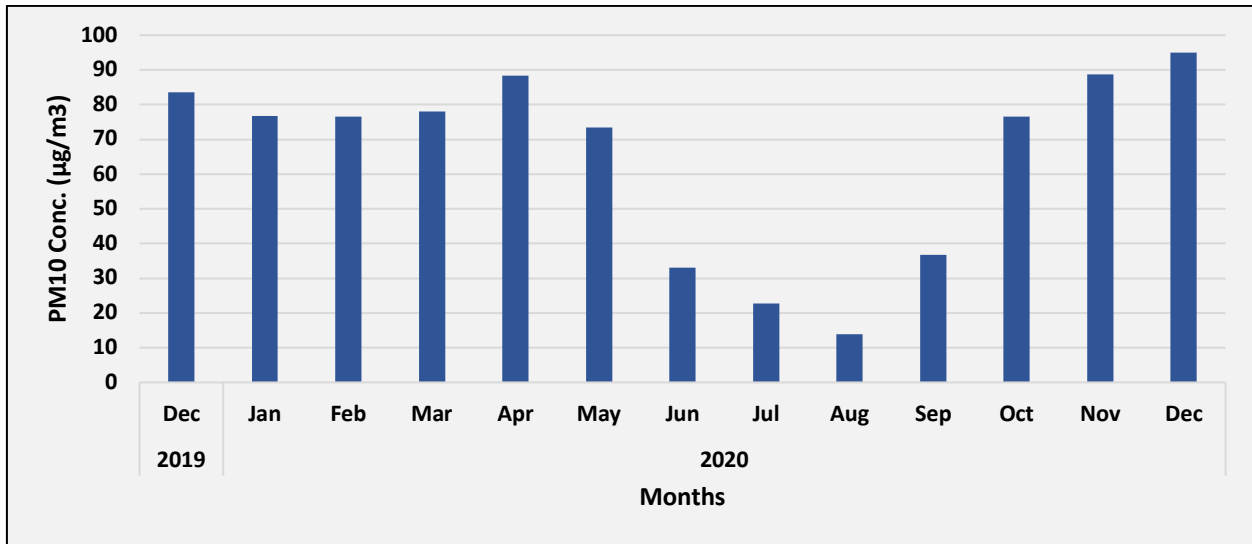


Fig. KHA13: Time series of monthly average PM_{10} ambient air concentration in Khargone TPP (Ambient)

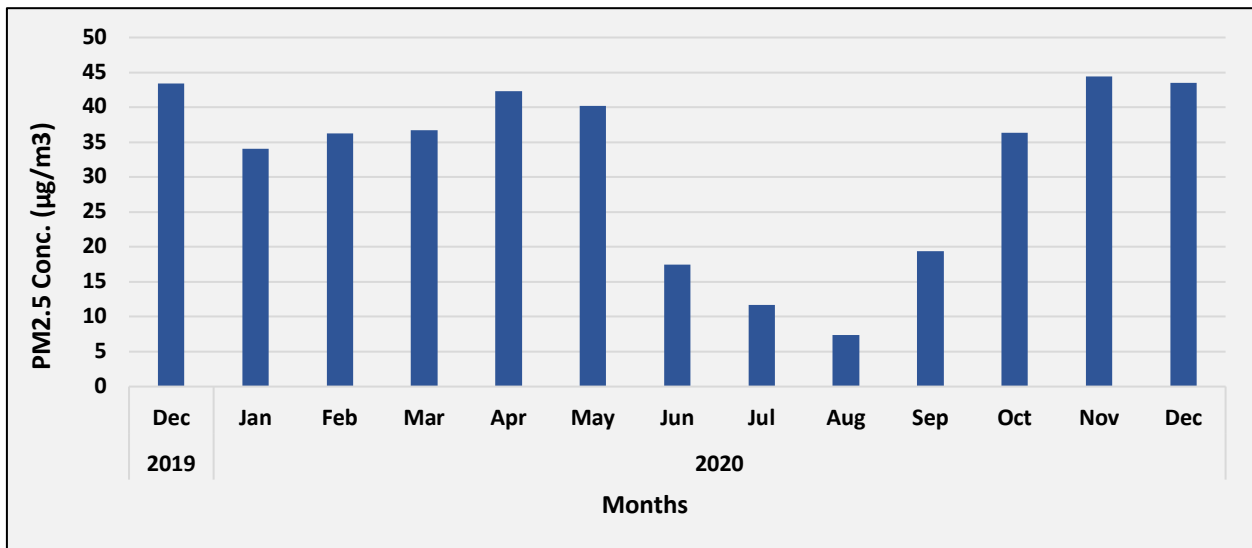


Fig. KHA14: Time series of monthly average $PM_{2.5}$ ambient air concentration in Khargone TPP (Ambient)

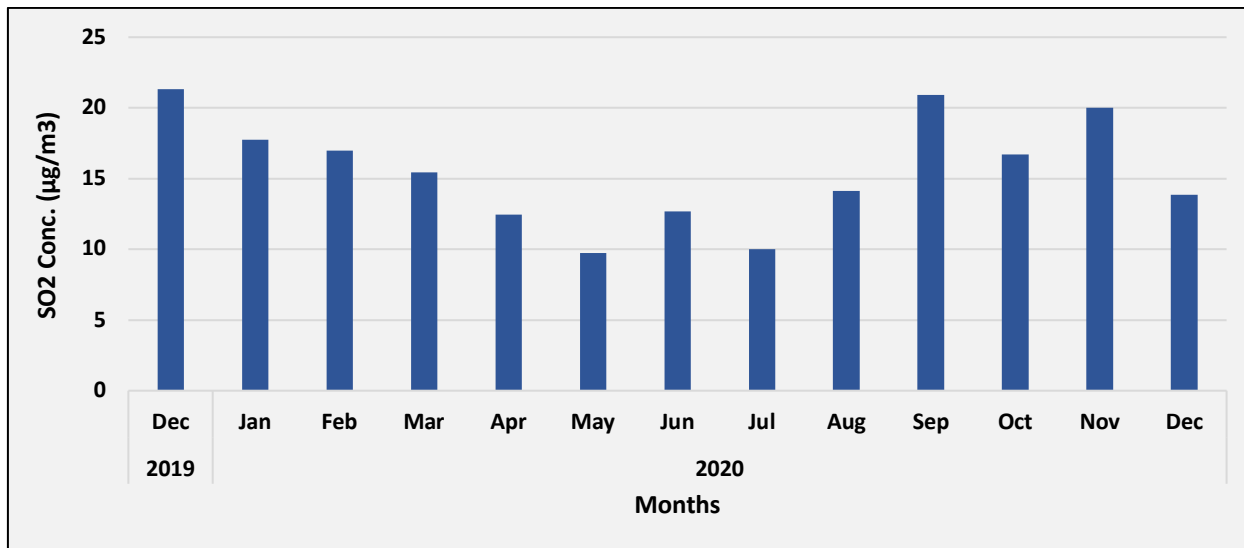


Fig. KHA15: Time series of monthly average SO_2 ambient air concentration in Khargone TPP (Ambient)

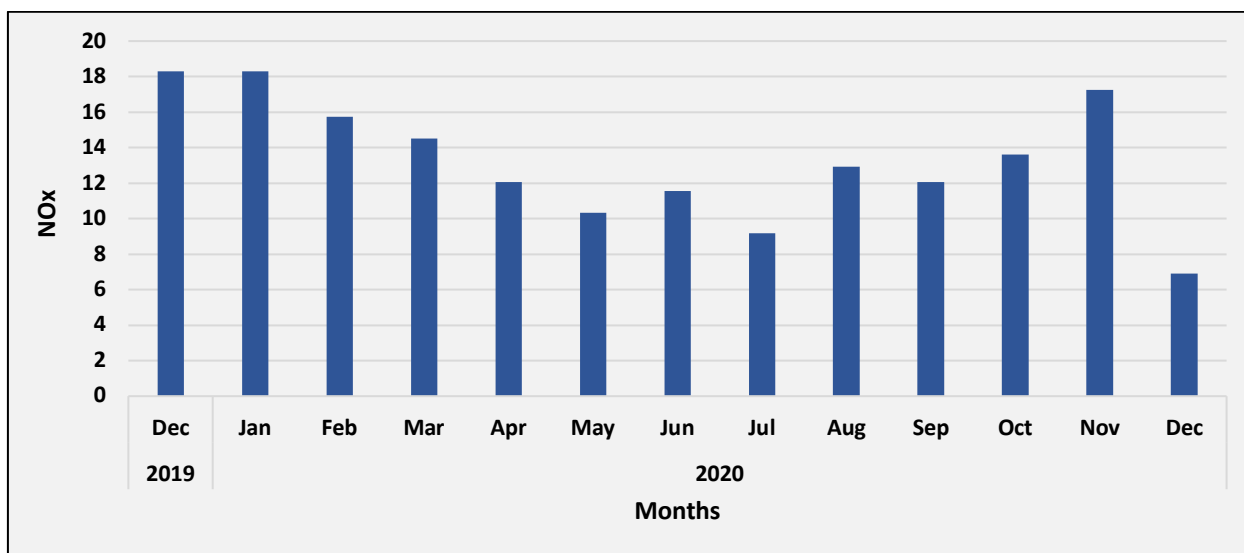


Fig. KHA16: Time series of monthly average NO_x ambient air concentration in Khargone TPP (Ambient)

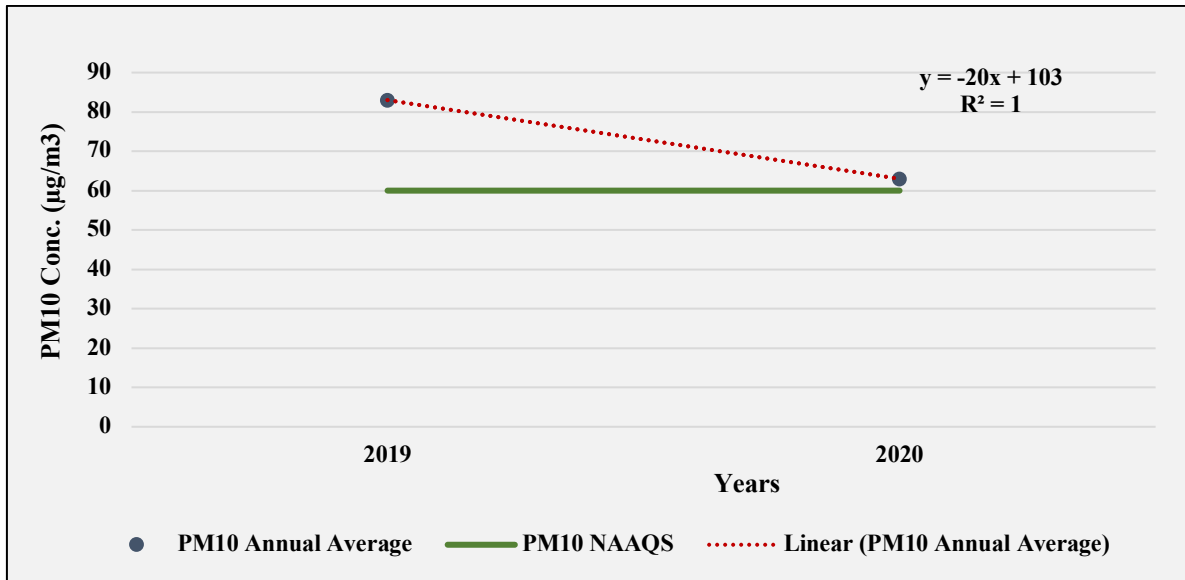


Fig. KHA17: Trend of annual mean PM_{10} ambient air concentration in Khargone TPP (Ambient)

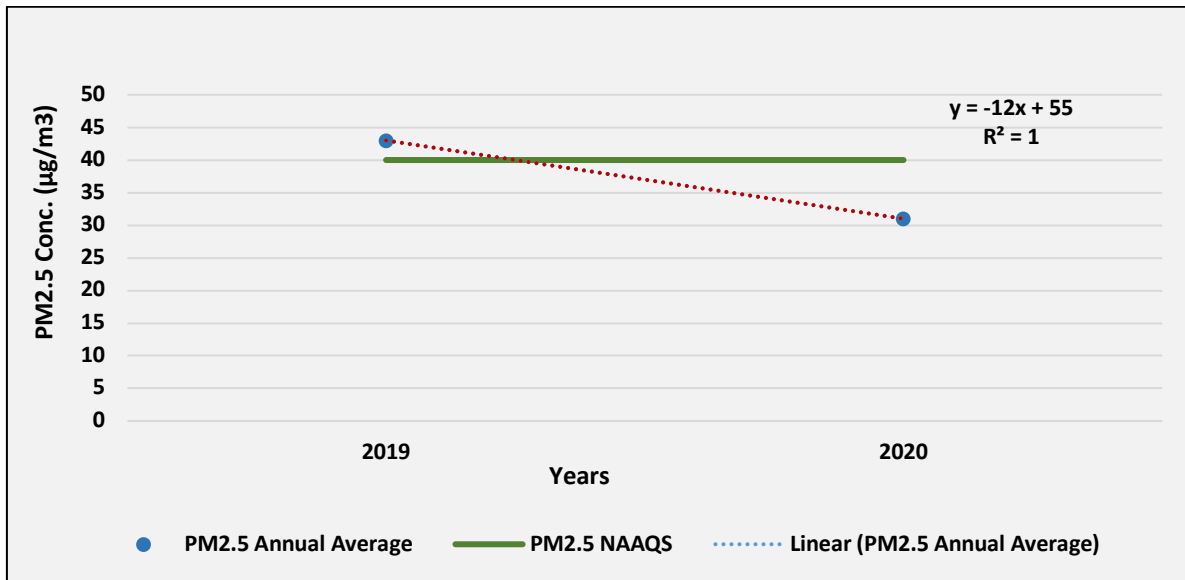


Fig. KHA18: Trend of annual mean $PM_{2.5}$ ambient air concentration in Khargone TPP (Ambient)

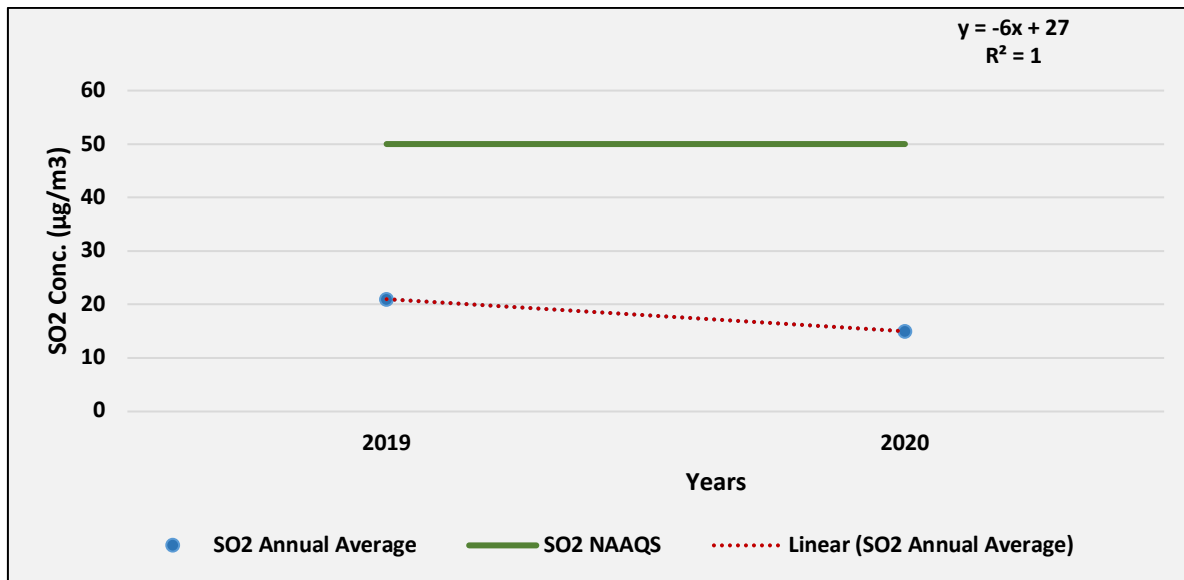


Fig. KHA19: Trend of annual mean SO₂ ambient air concentration in Khargone TPP (Ambient)

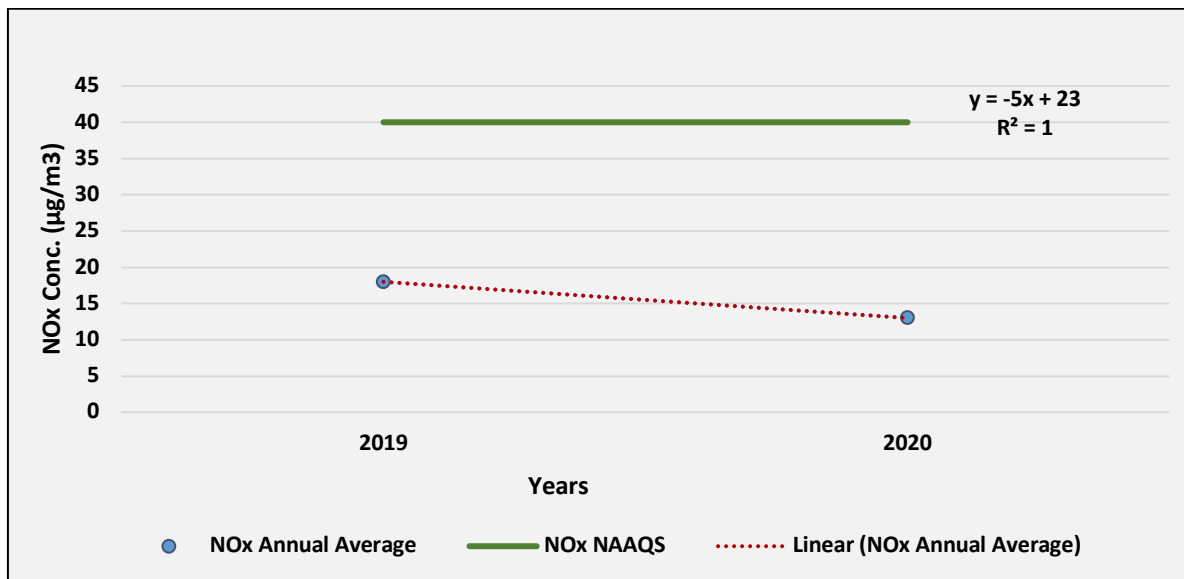


Fig. KHA20: Trend of annual mean NO_x ambient air concentration in Khargone TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, PM_{2.5} for the year 2019 are exceeding whereas the SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

SOLAPUR THERMAL POWER PLANT

Solapur power station is a 1,320-megawatt (MW) coal plant in Maharashtra, India. Unit 1 was commissioned in April 2017.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. SO1 – Fig. SO20) for the last three years (2018-2020) using data provided by NTPC developer for Solapur Power plant, Maharashtra, India.

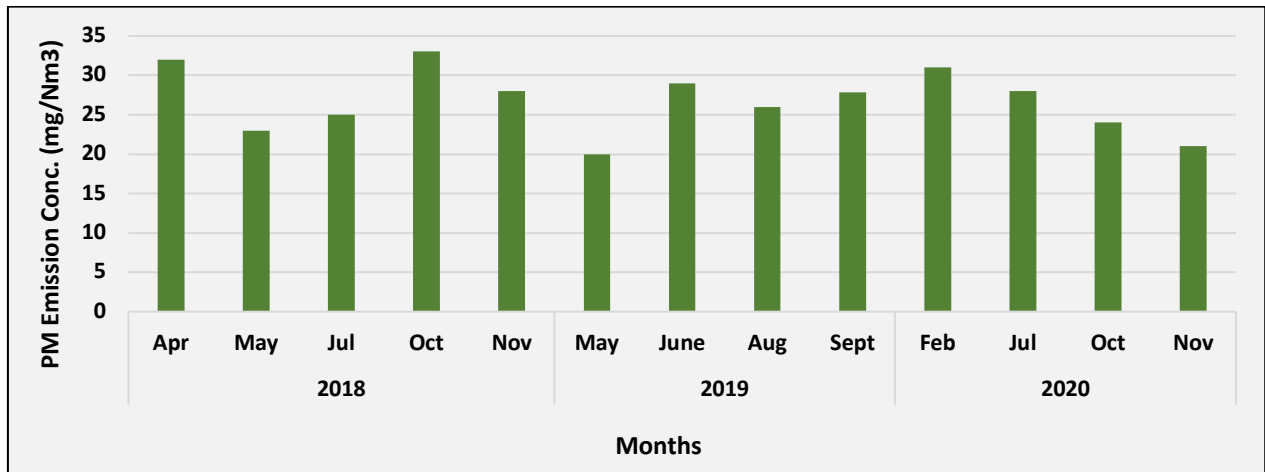


Fig. SO1: Time series of monthly average PM Emission concentration in Solapur TPP (Stack 1)

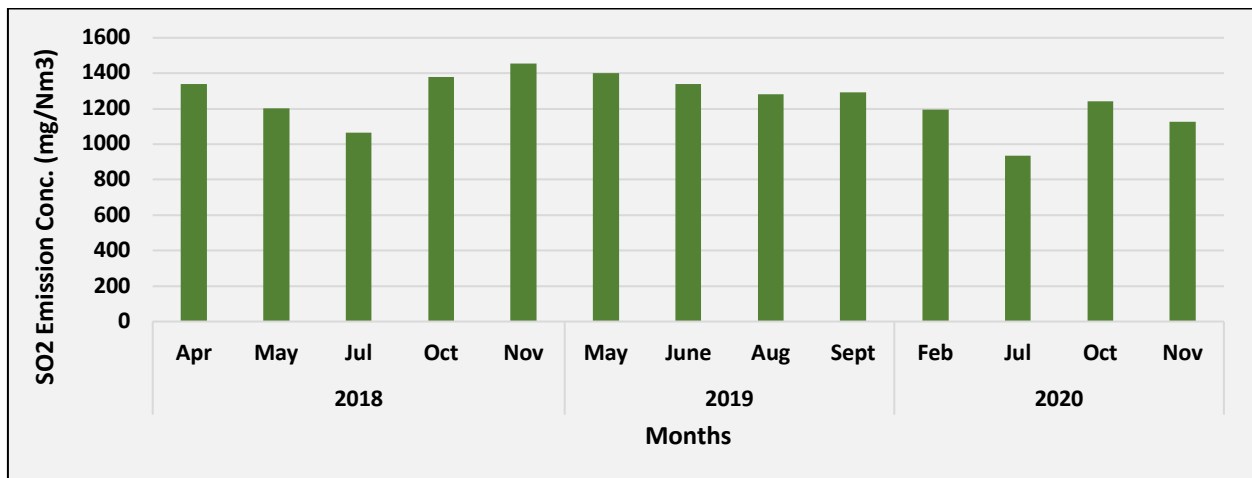


Fig. SO2: Time series of monthly average SO₂ Emission concentration in Solapur TPP (Stack 1)

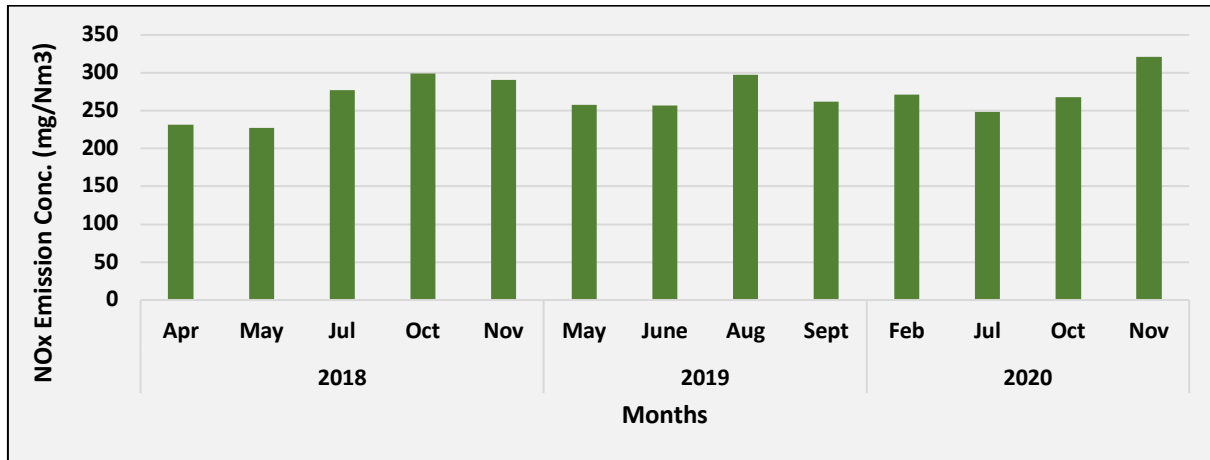


Fig. SO3: Time series of monthly average NO_x Emission concentration in Solapur TPP (Stack 1)

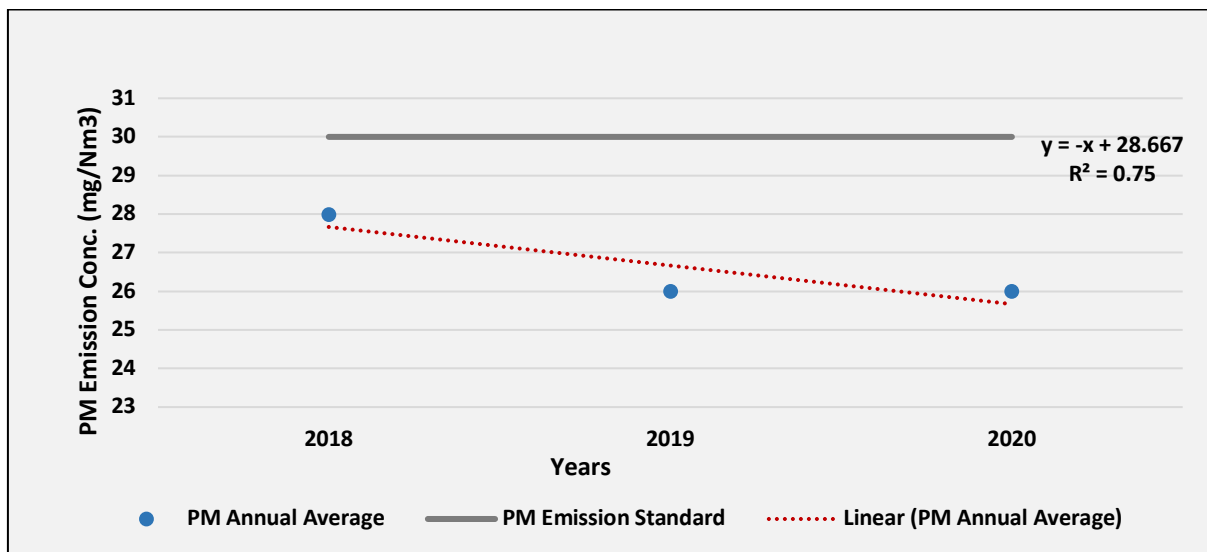


Fig. SO4: Trend of annual mean PM Emission air concentration in Solapur TPP (Stack 1)

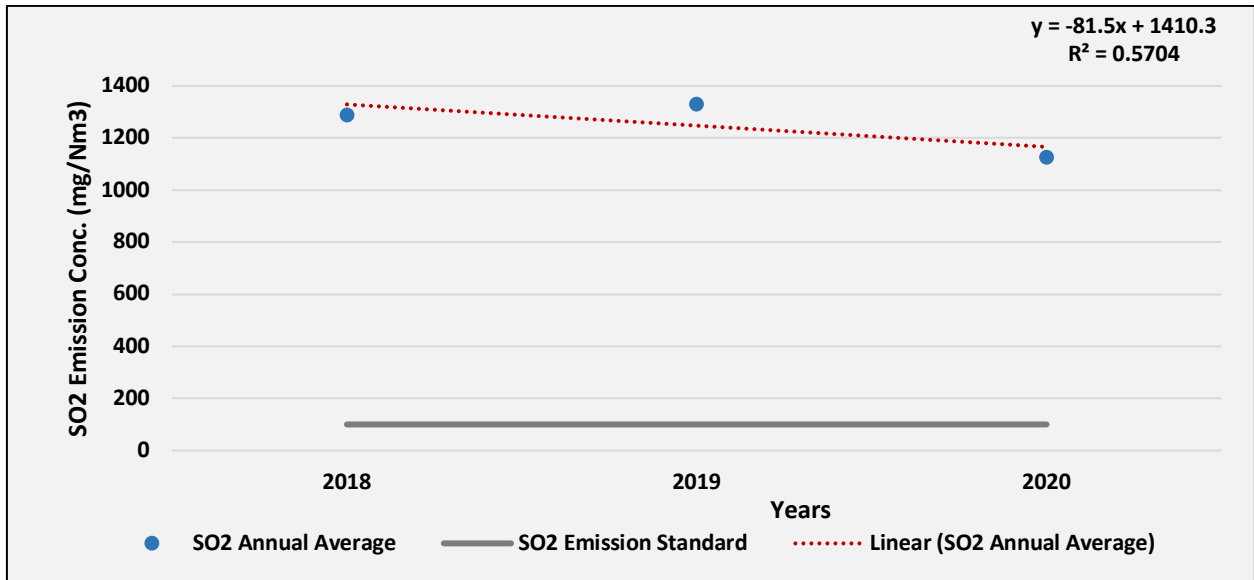


Fig. SO5: Trend of annual mean SO₂ Emission air concentration in Solapur TPP (Stack 1)

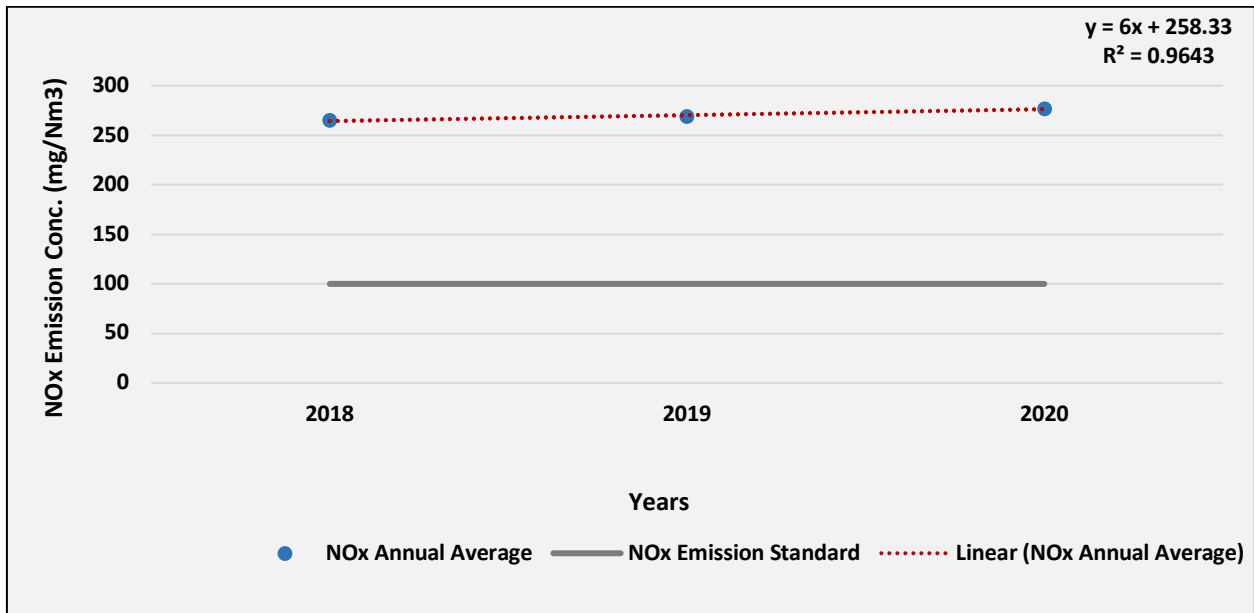


Fig. SO6: Trend of annual mean NO_x Emission air concentration in Solapur TPP (Stack 1)

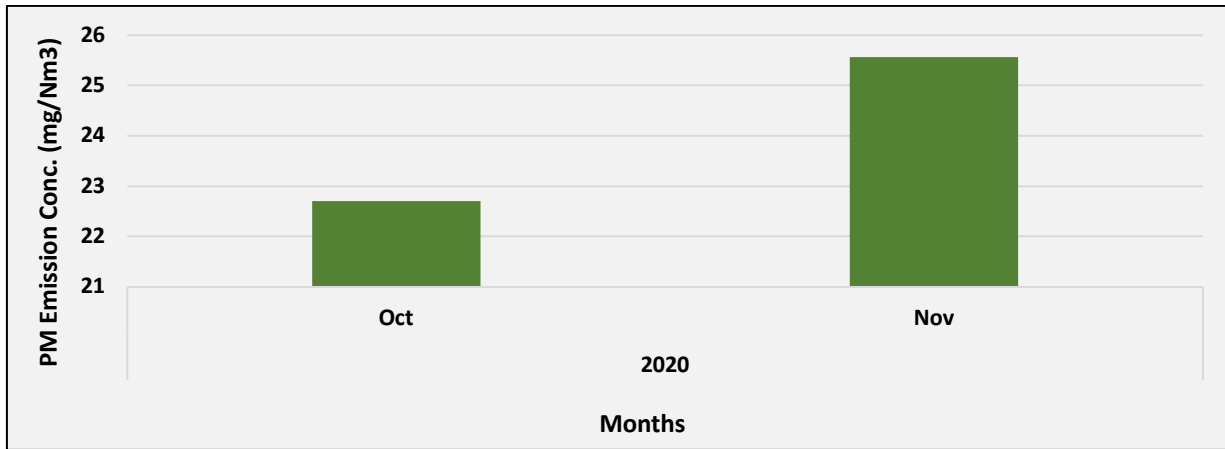


Fig. SO7: Time series of monthly average PM Emission concentration in Solapur TPP (Stack 2)

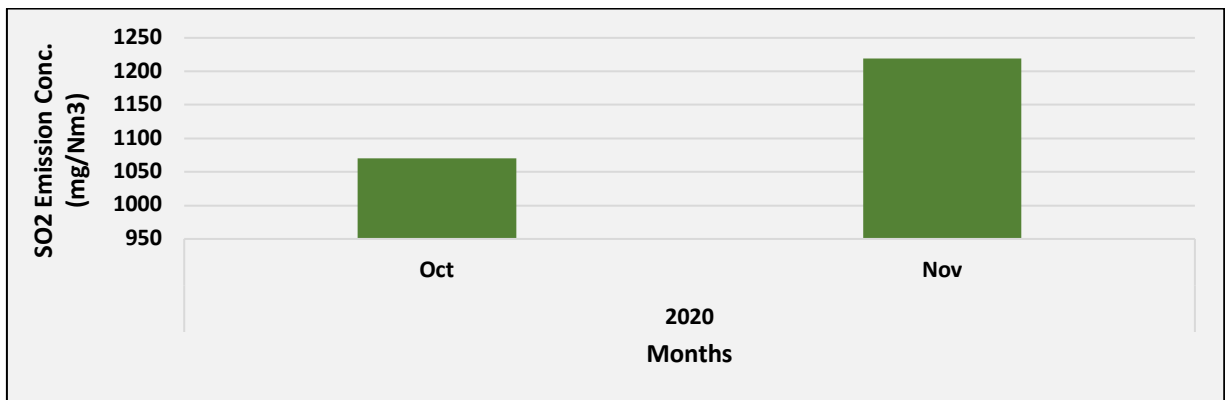


Fig. SO8: Time series of monthly average SO₂ Emission concentration in Solapur TPP (Stack 2)

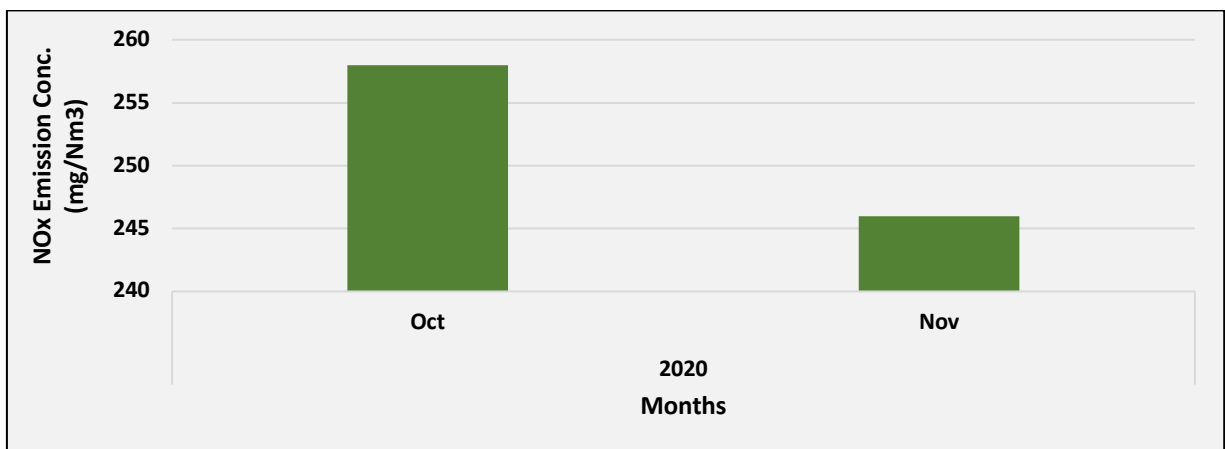


Fig. SO9: Time series of monthly average NO_x Emission concentration in Solapur TPP (Stack 2)

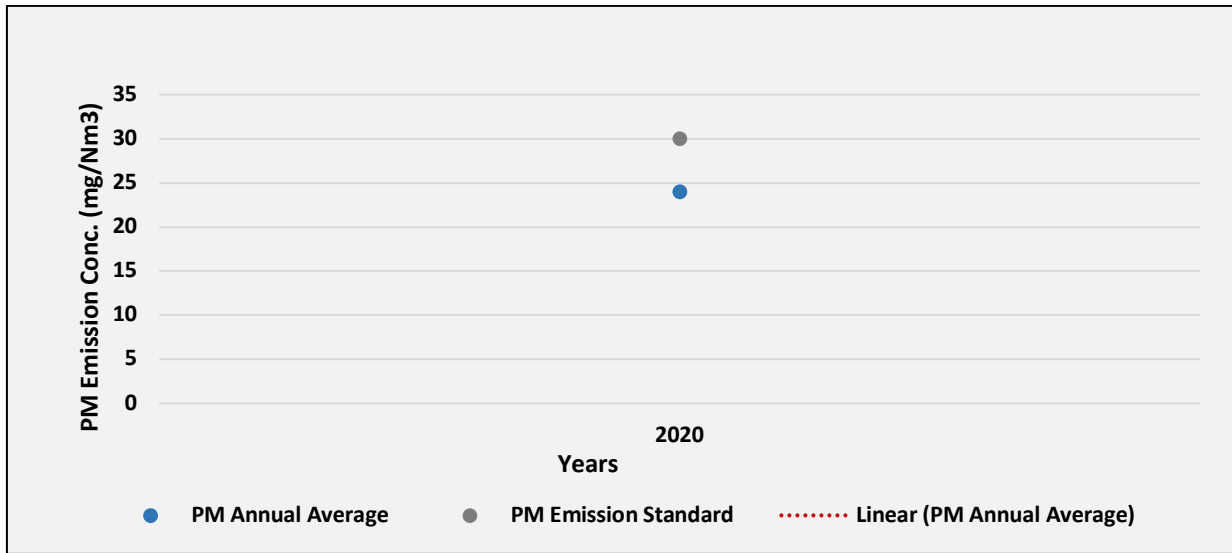


Fig. SO10: Trend of annual mean PM Emission air concentration in Solapur TPP (Stack 2)

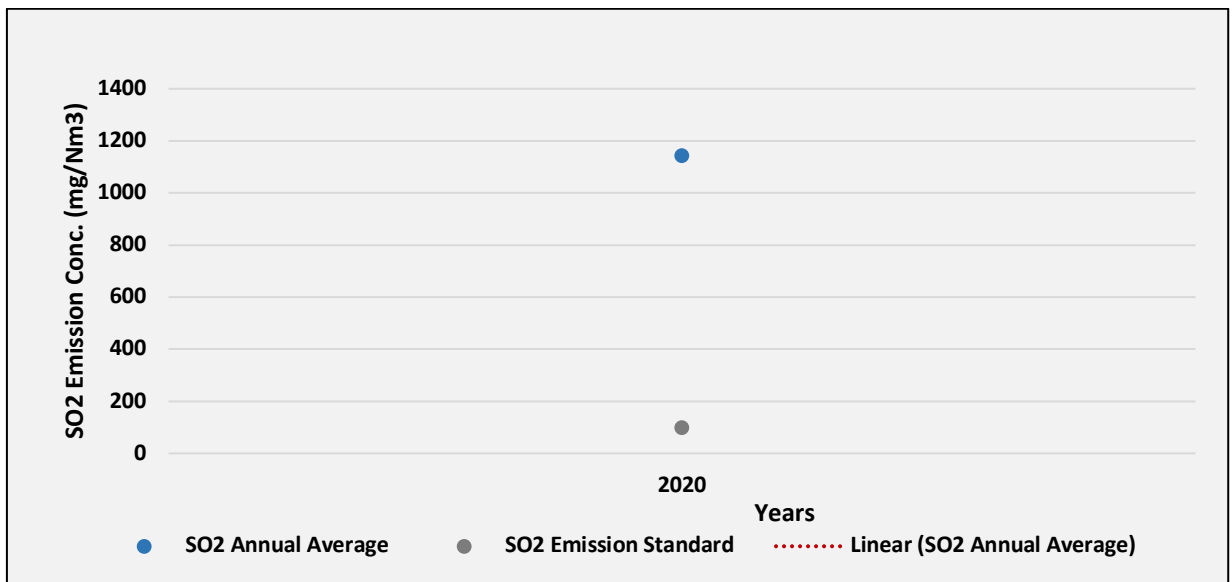


Fig. SO11: Trend of annual mean SO₂ Emission air concentration in Solapur TPP (Stack 2)

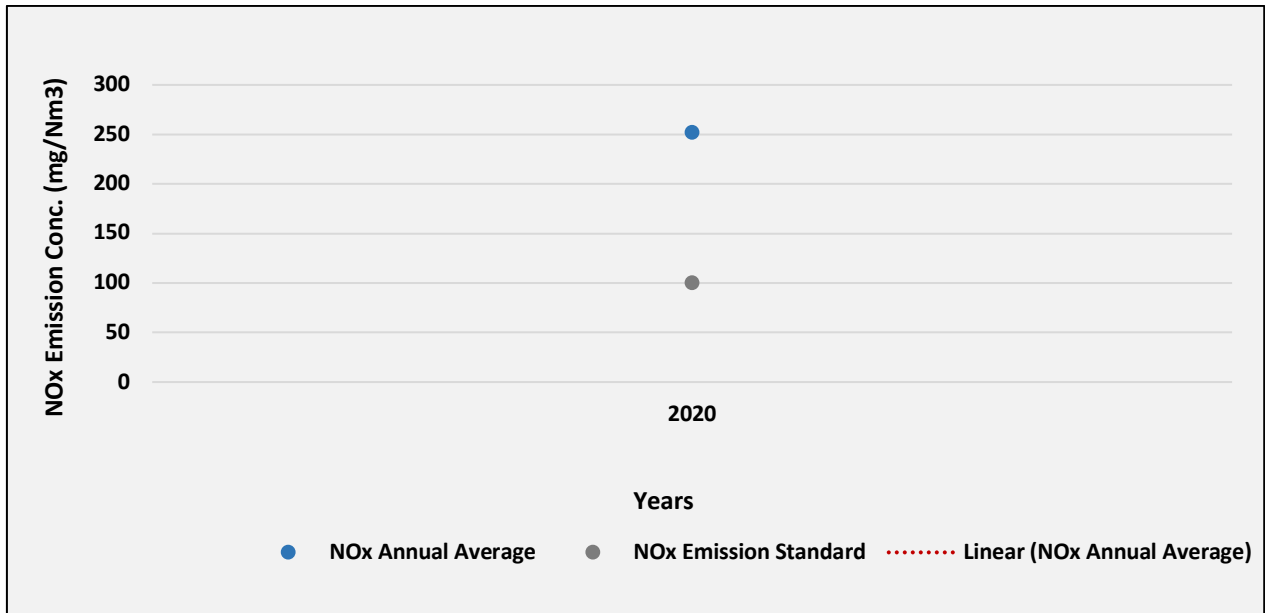


Fig. SO12: Trend of annual mean NO_x Emission air concentration in Solapur TPP (Stack 2)

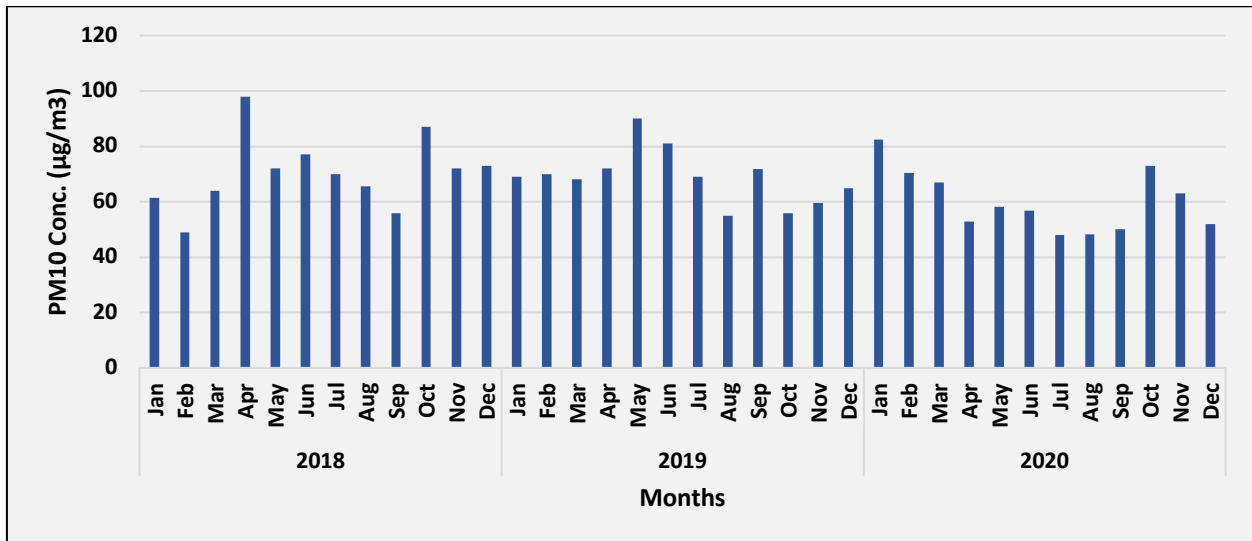


Fig. SO13: Time series of monthly average PM₁₀ ambient air concentration in Solapur TPP (Ambient)

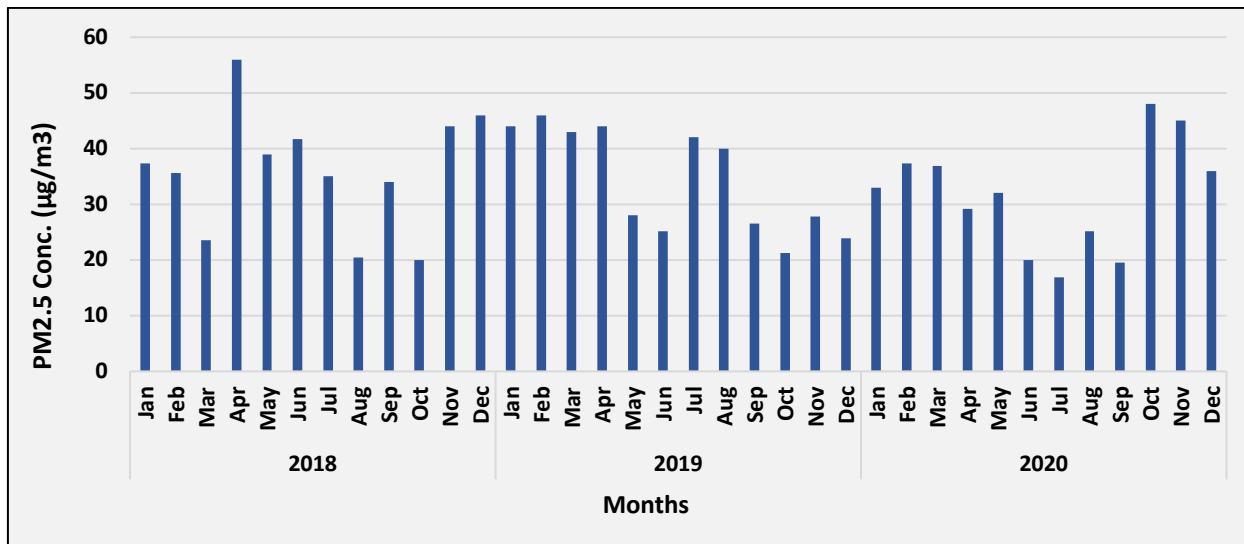


Fig. SO14: Time series of monthly average PM_{2.5} ambient air concentration in Solapur TPP (Ambient)

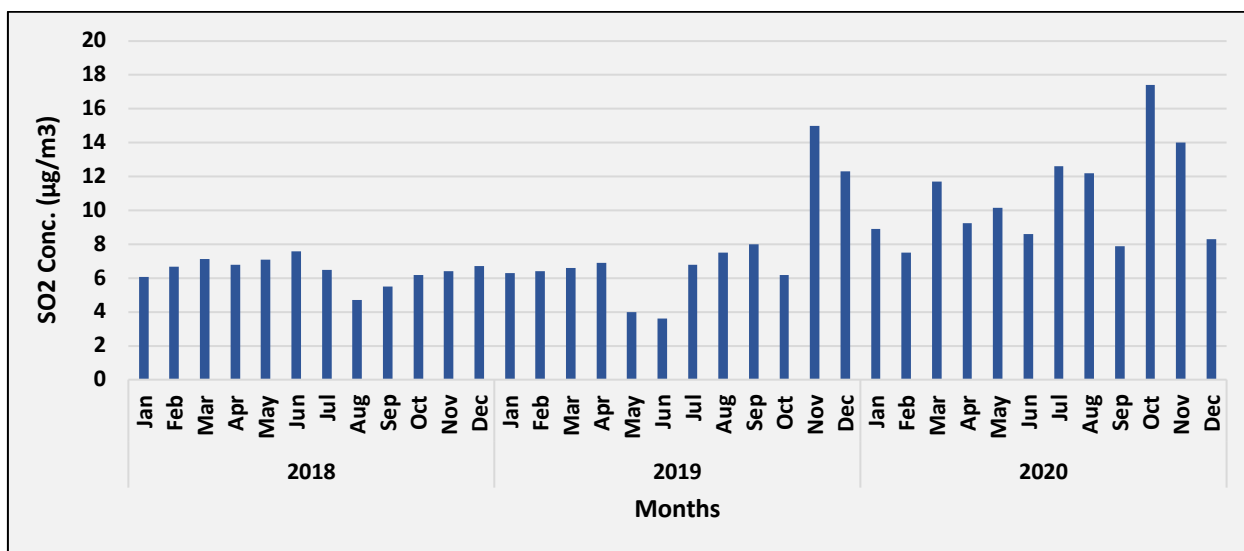


Fig. SO15: Time series of monthly average So₂ ambient air concentration in Solapur TPP (Ambient)

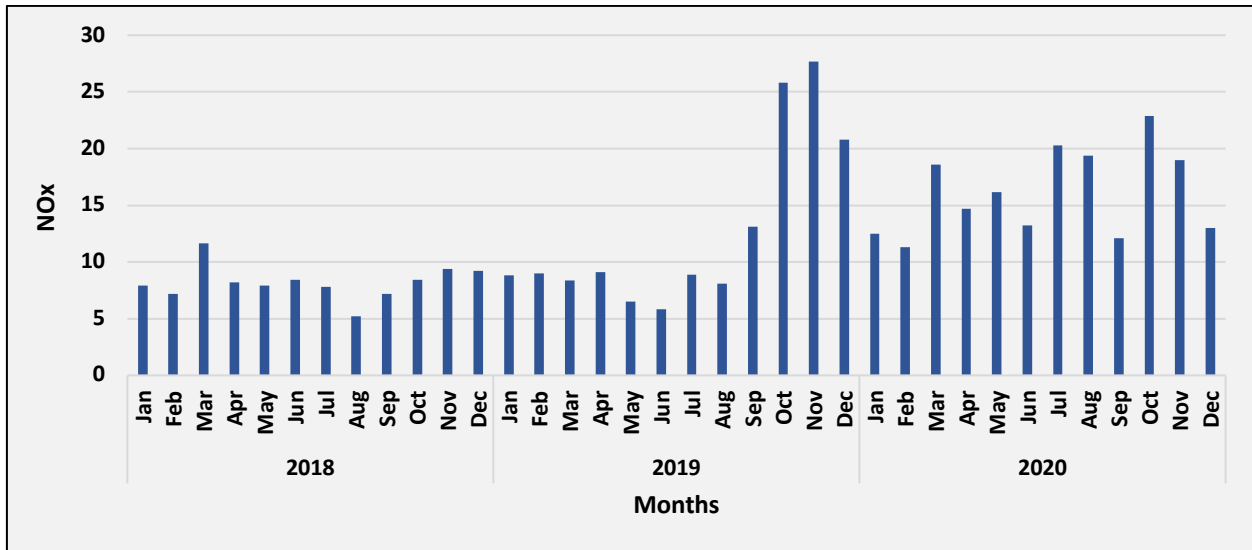


Fig. SO16: Time series of monthly average NO_x ambient air concentration in Solapur TPP (Ambient)

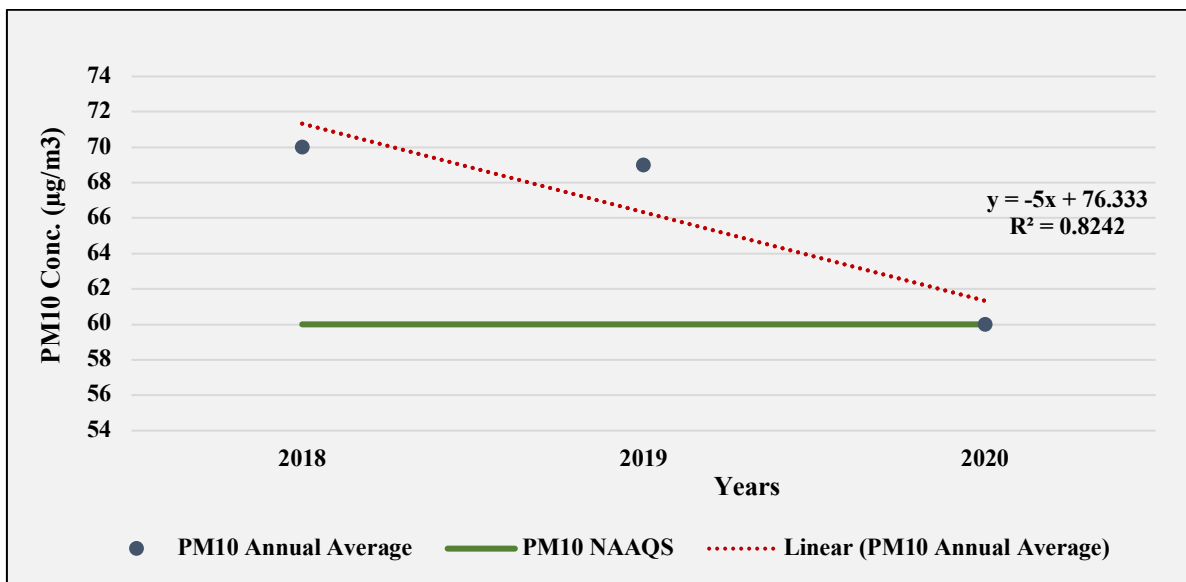


Fig. SO17: Trend of annual mean PM₁₀ ambient air concentration in Solapur TPP (Ambient)

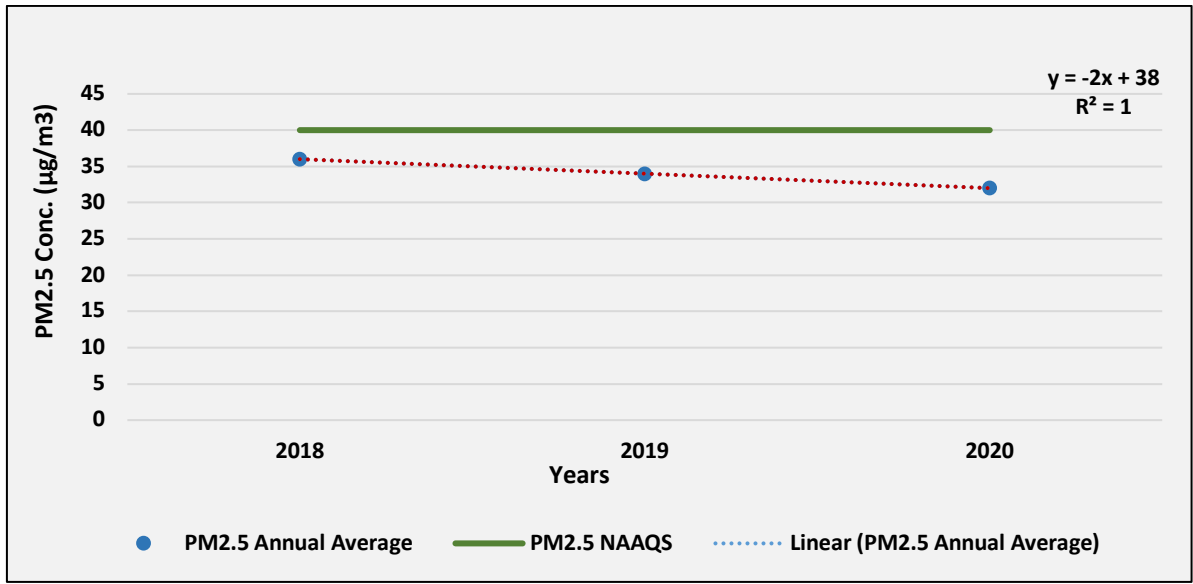


Fig. SO18: Trend of annual mean PM_{2.5} ambient air concentration in Solapur TPP (Ambient)

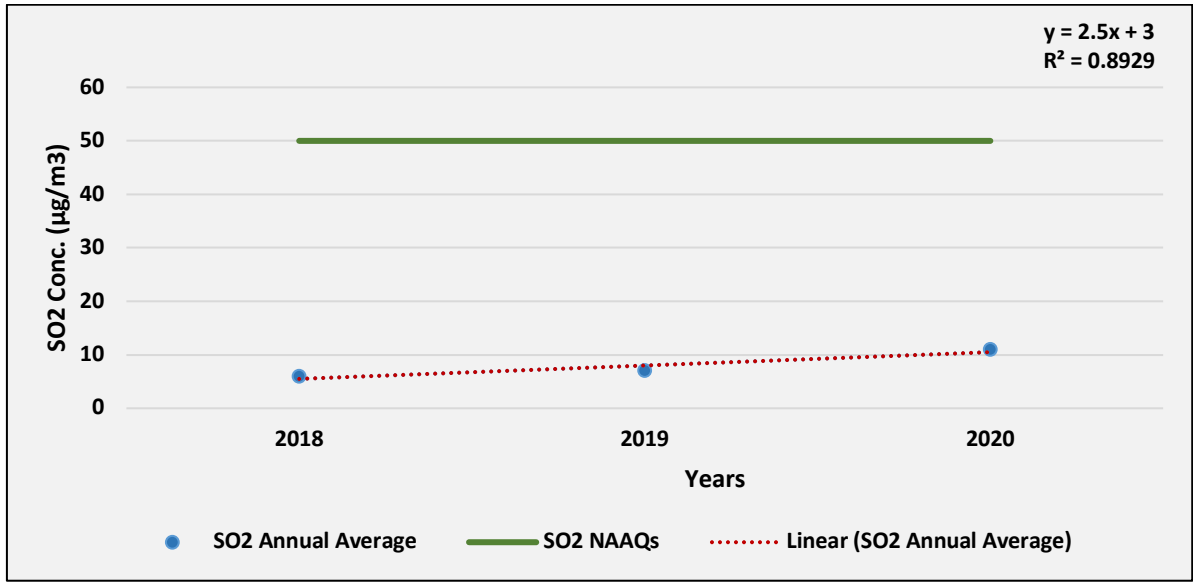


Fig. SO19: Trend of annual mean SO₂ ambient air concentration in Solapur TPP (Ambient)

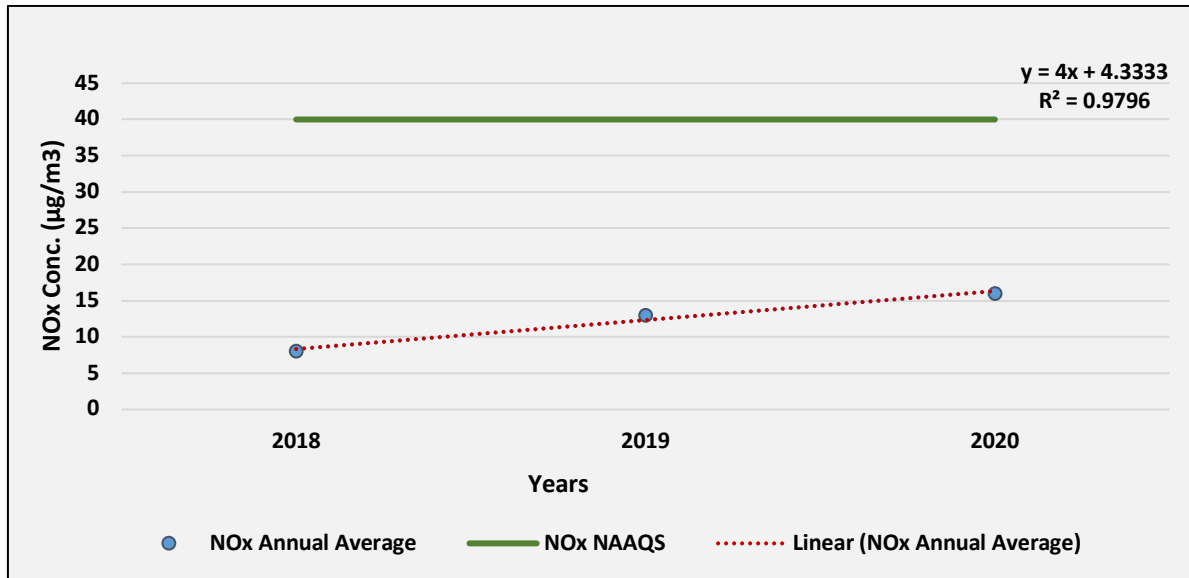


Fig. SO20: Trend of annual mean NO_x ambient air concentration in Solapur TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀ for the year 2018 and 2019 are exceeding whereas the PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

GADARWARA THERMAL POWER PLANT

Gadarwara Super Thermal Power Station is a coal based thermal power project located at nearby Gangai village in Gadarwara Tehsil in Narsinghpur District in Indian state of Madhya Pradesh. The power plant is one of the coal-based power plants of NTPC Limited. The exact coordinates for the power plant is 22.8617522, 78.8661289.

The air quality concentrations of PM emission, SO₂ emission, and NO_x emission, data analyzed (Fig. GAD1 – Fig. GAD14) for the last one year (2020) using data provided by NTPC developer for Gadarwara Power plant, Madhya Pradesh, India.

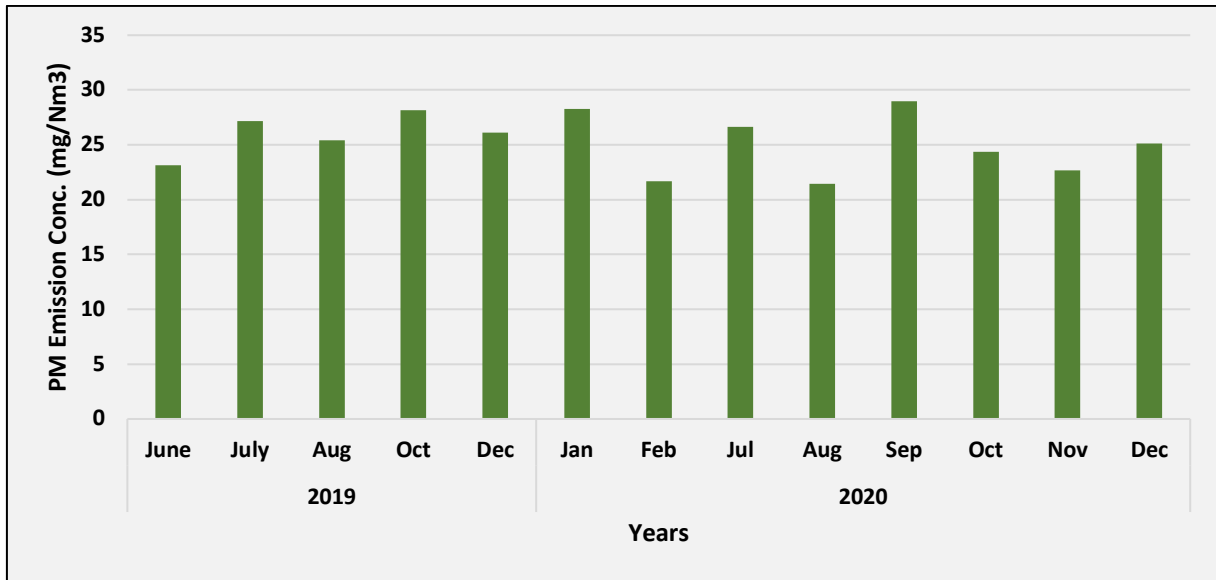


Fig. GAD1: Time series of monthly average PM Emission concentration in Gadarwara TPP (Unit 1)

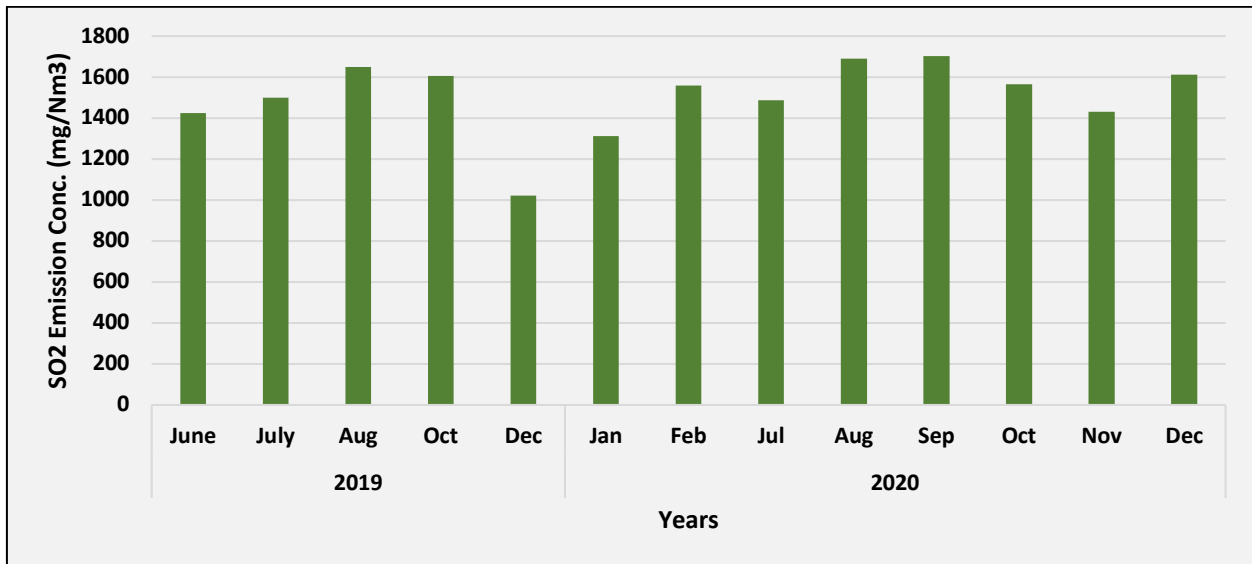


Fig. GAD2: Time series of monthly average SO₂ Emission concentration in Gadarwara TPP (Unit 1)

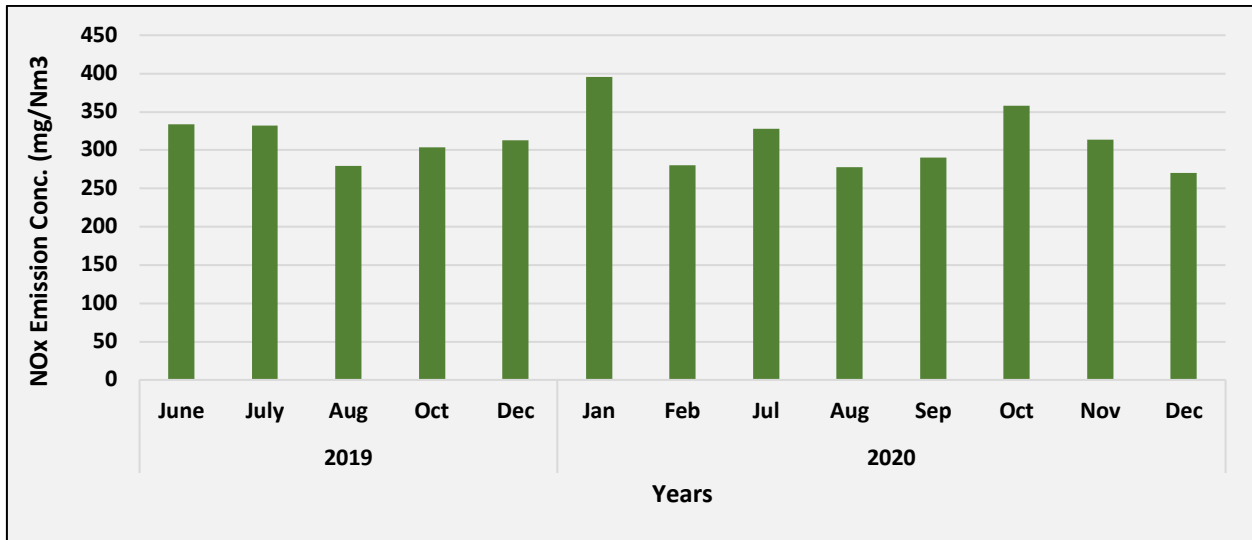


Fig. GAD3: Time series of monthly average NO_x Emission concentration in Gadarwara TPP (Unit 1)

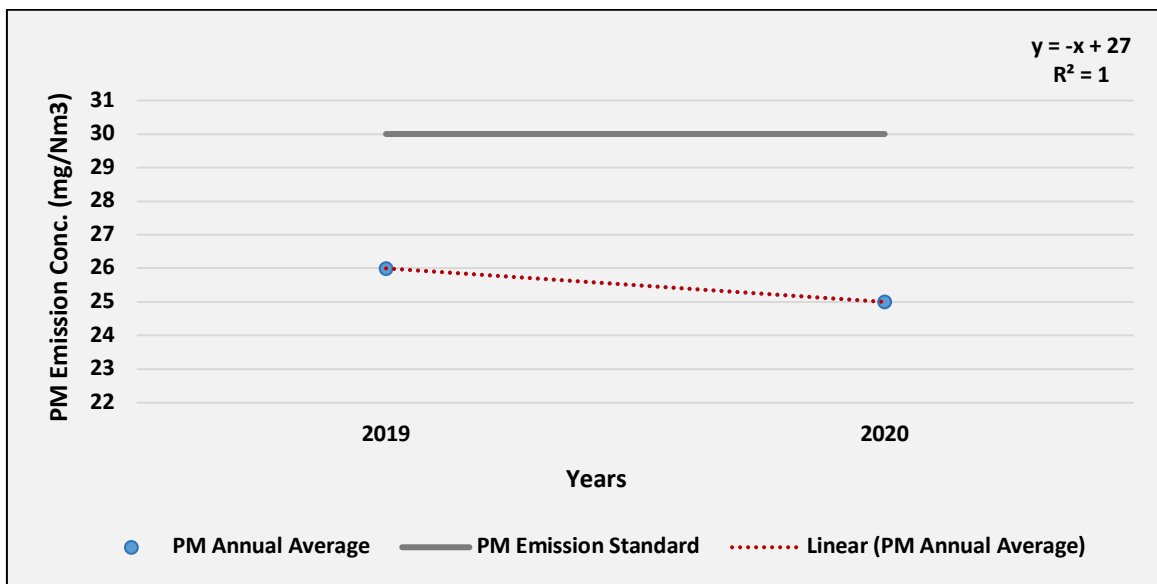


Fig. GAD4: Trend of annual mean PM Emission air concentration in Gadarwara TPP (Unit 1)

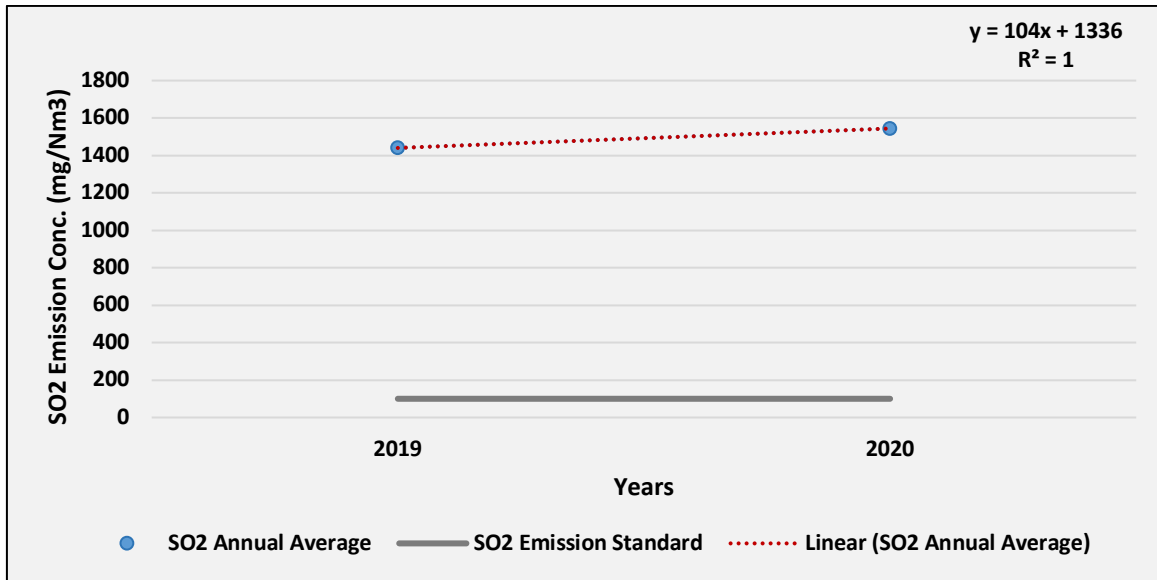


Fig. GAD5: Trend of annual mean SO₂ Emission air concentration in Gadarwara TPP (Unit 1)

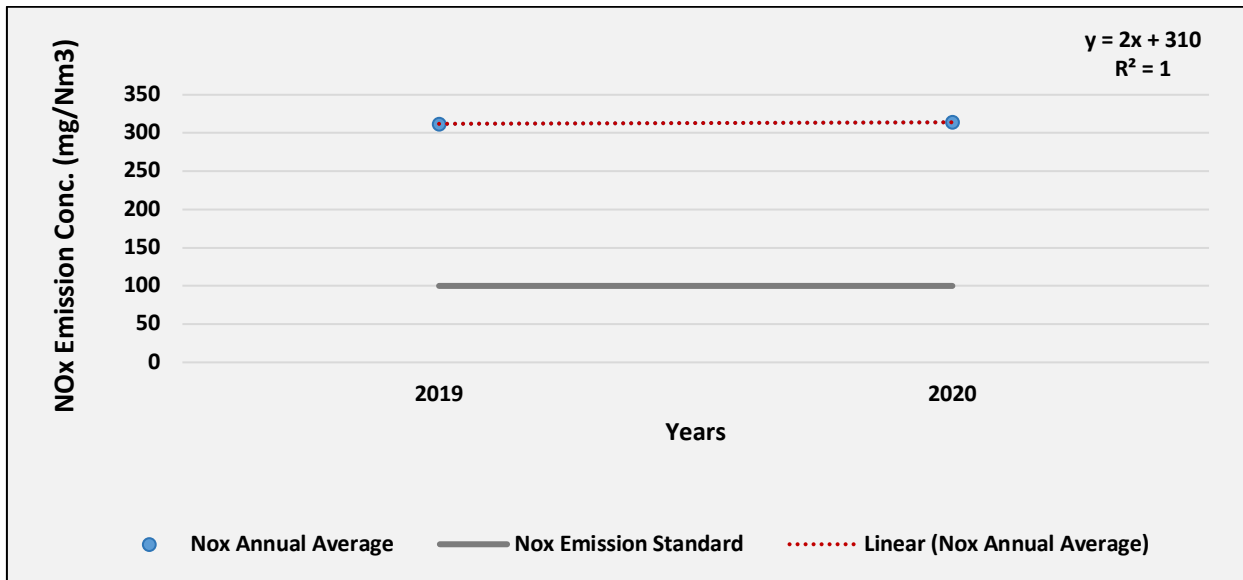


Fig. GAD6: Trend of annual mean NO_x Emission air concentration in Gadarwara TPP (Unit 1)

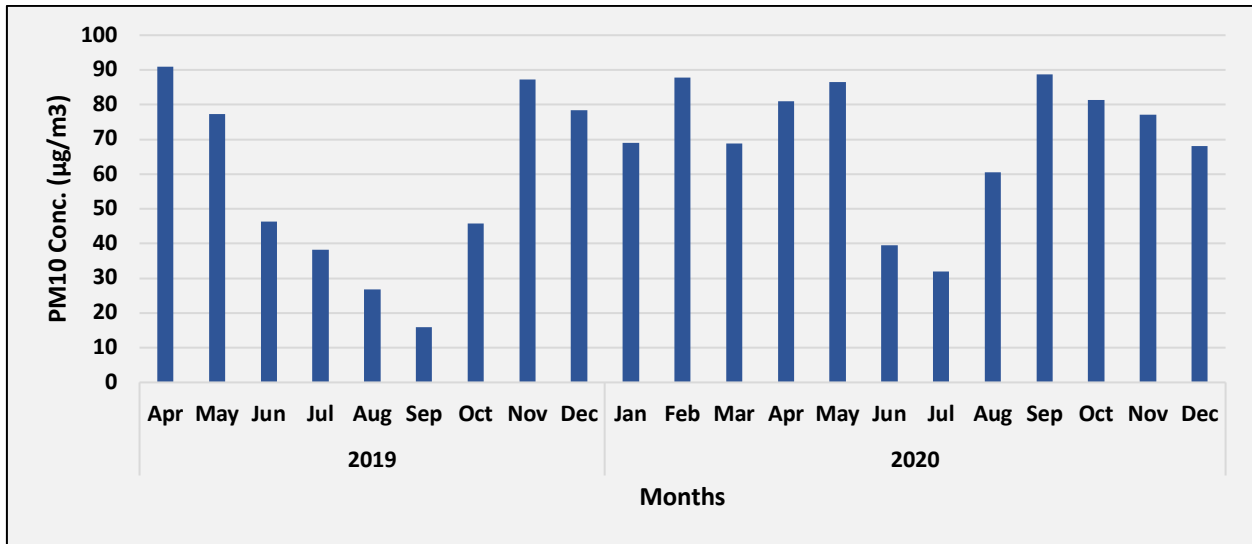


Fig. GAD7: Time series of monthly average PM_{10} ambient air concentration in Gadarwara TPP (Ambient)

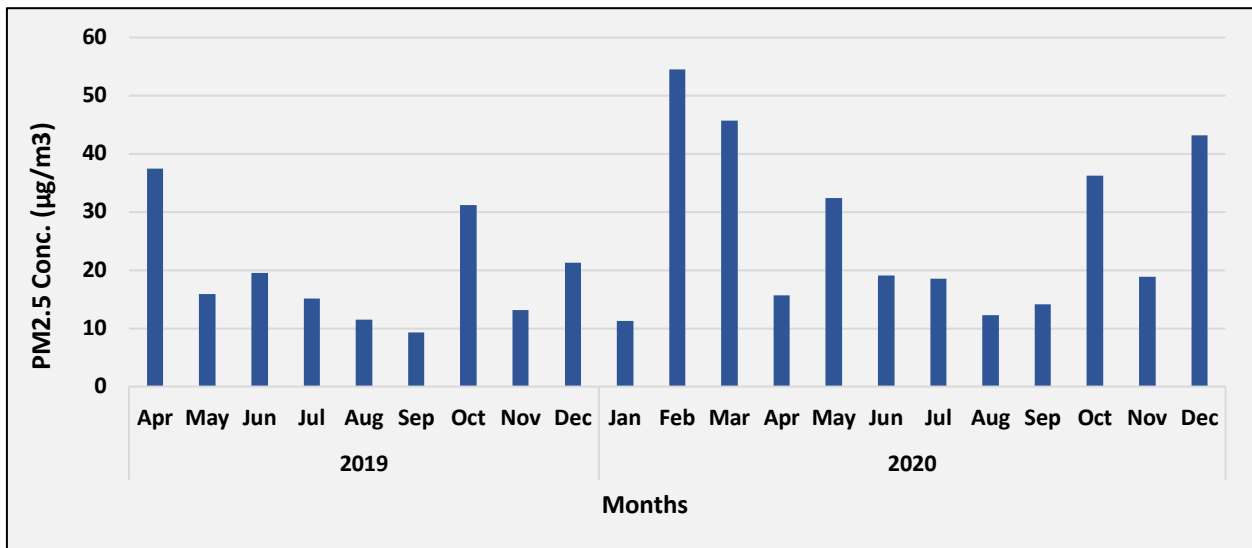


Fig. GAD8: Time series of monthly average $PM_{2.5}$ ambient air concentration in Gadarwara TPP (Ambient)

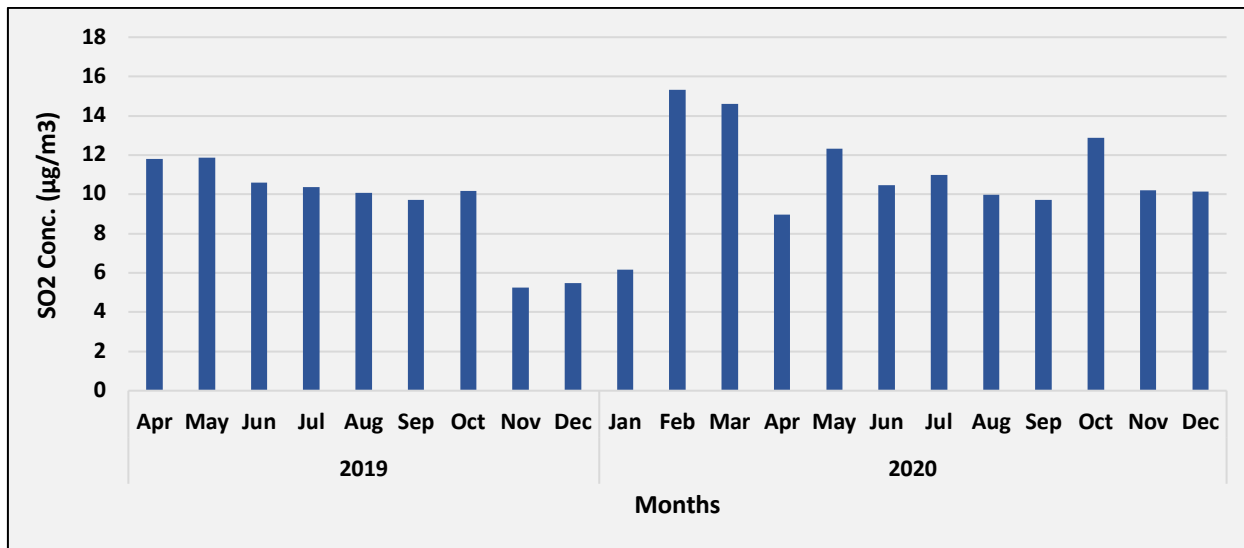


Fig. GAD9: Time series of monthly average SO_2 ambient air concentration in Gadarwara TPP (Ambient)

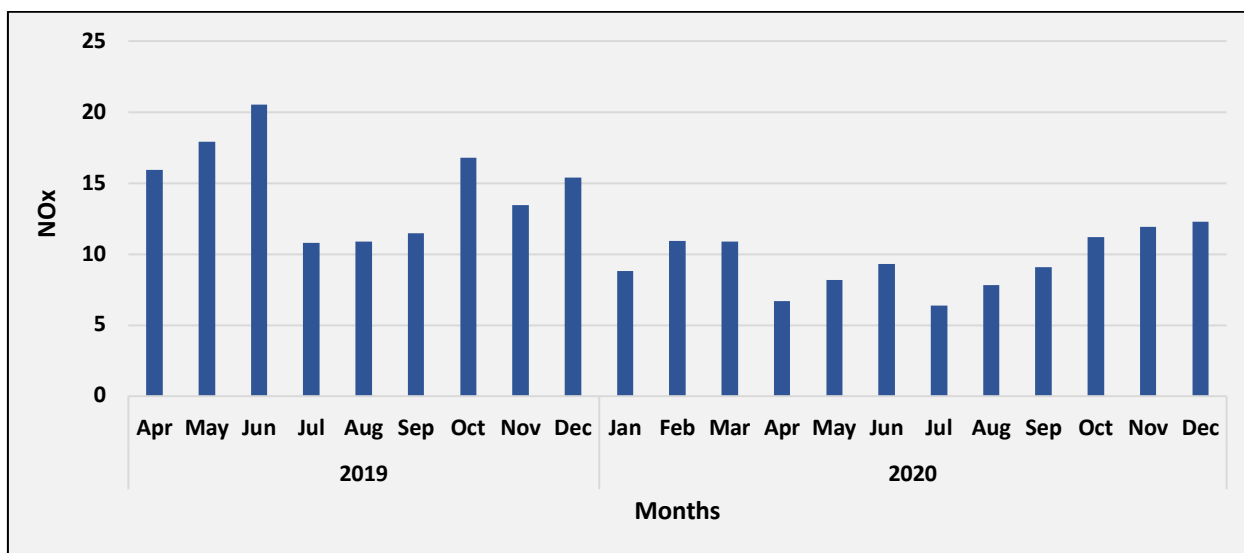


Fig. GAD10: Time series of monthly average NO_x ambient air concentration in Gadarwara TPP (Ambient)

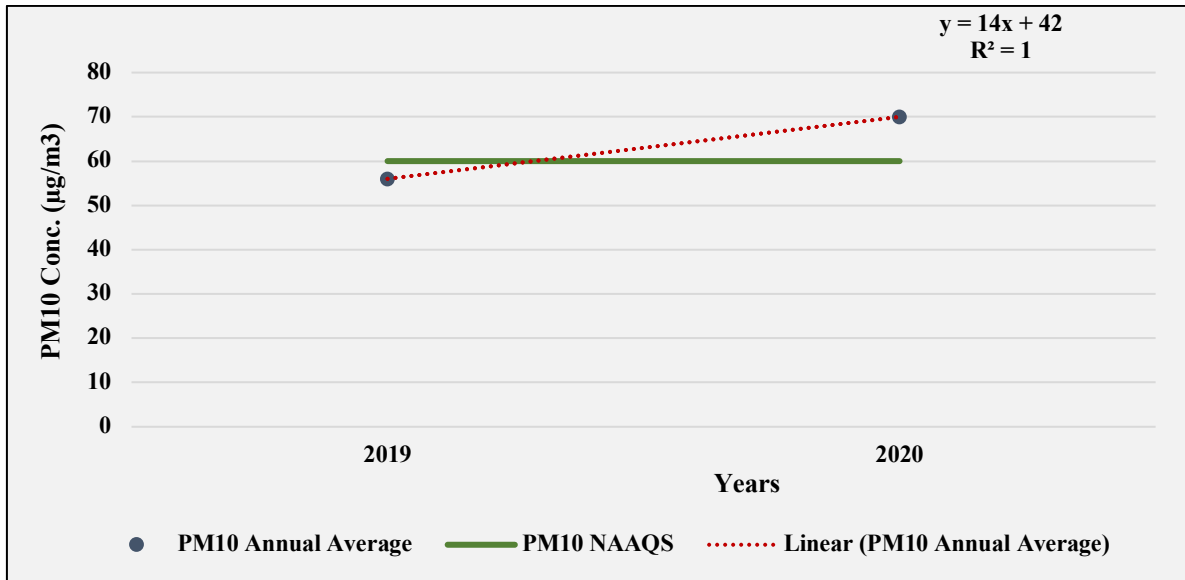


Fig. GAD11: Trend of annual mean PM₁₀ ambient air concentration in Gadarwara TPP (Ambient)

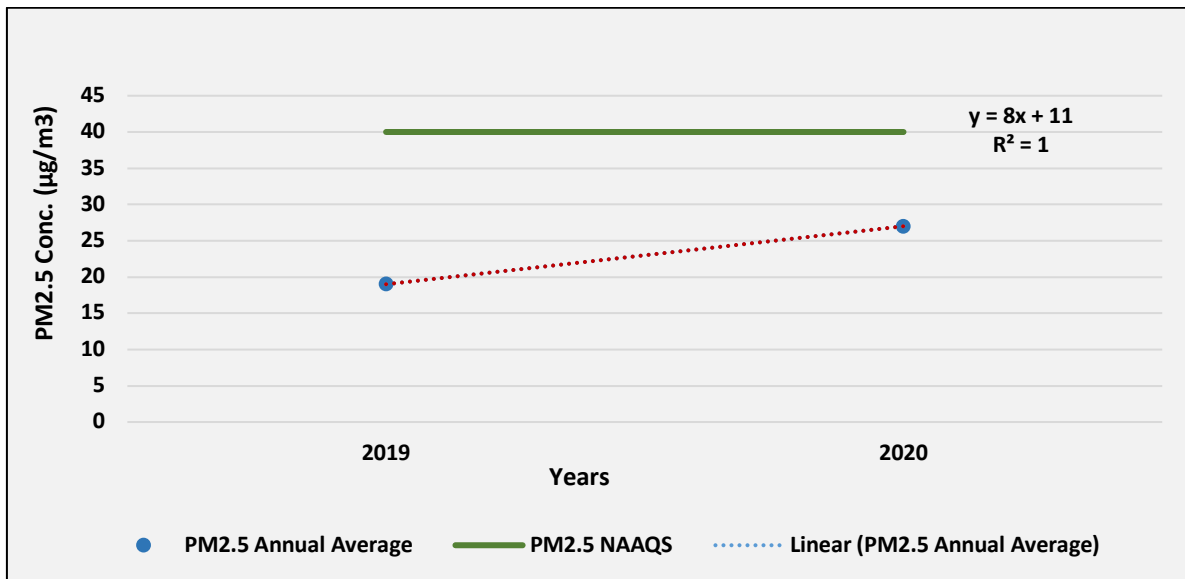


Fig. GAD12: Trend of annual mean PM_{2.5} ambient air concentration in Gadarwara TPP (Ambient)

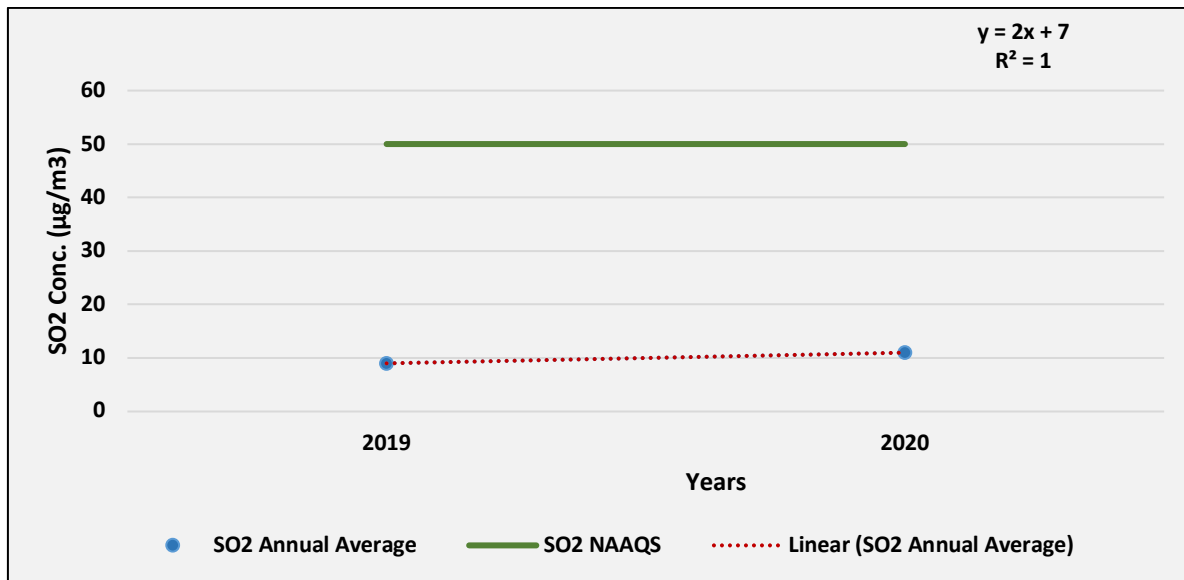


Fig. GAD13: Trend of annual mean SO₂ ambient air concentration in Gadarwara TPP (Ambient)

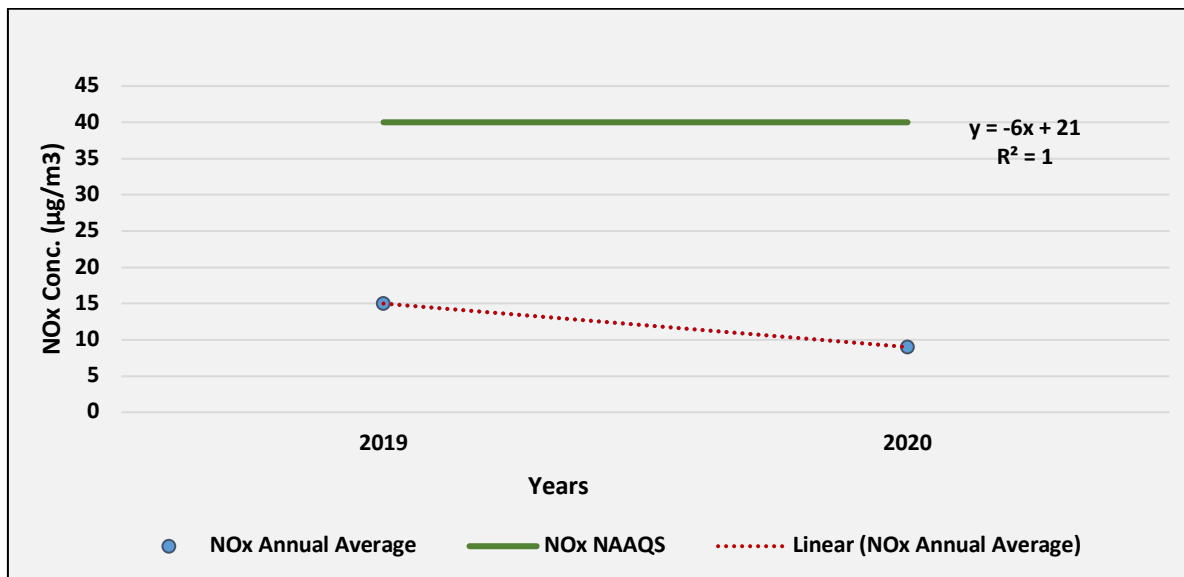


Fig. GAD14: Trend of annual mean NO_x ambient air concentration in Gadarwara TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM10 is exceeding in year 2020 whereas the PM2.5, SO₂ & NO_x levels are within a range as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

LARA SUPER THERMAL POWER PLANT

Lara Super Thermal Power Station is a coal-fired power project located near village Lara, Taluk Pussore, Raigarh district in Indian state of Chhattisgarh. The power plant is one of the coal-based power plants of NTPC.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. LAR1 – Fig. LAR20) for the last three years (2018 - 2020) using data provided by NTPC developer for Lara Power plant, Chhattisgarh, India.

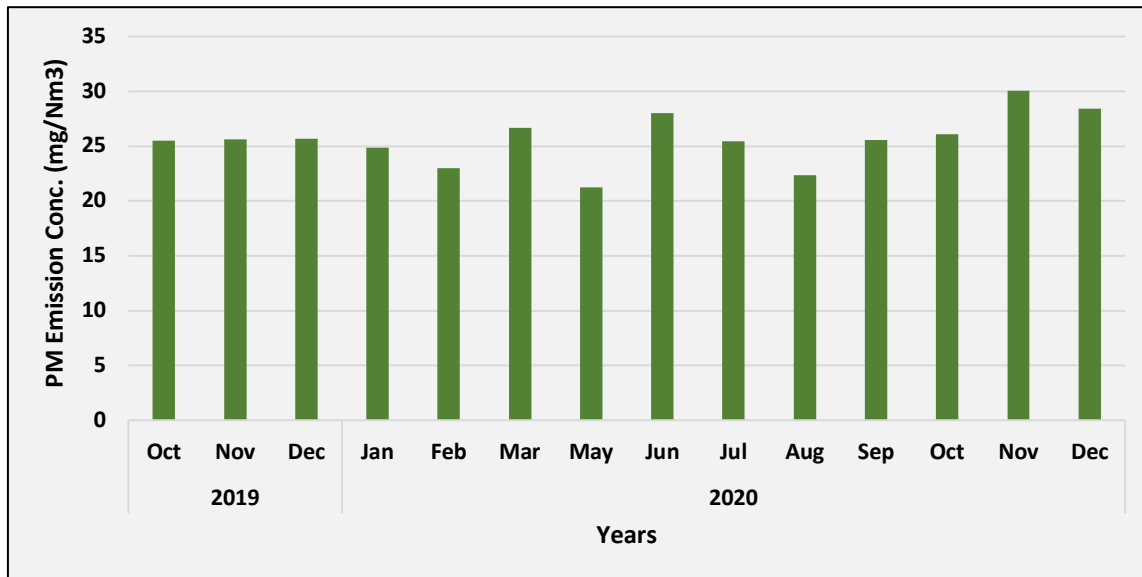


Fig. LAR1: Time series of monthly average PM Emission concentration in Lara TPP (Unit 1)

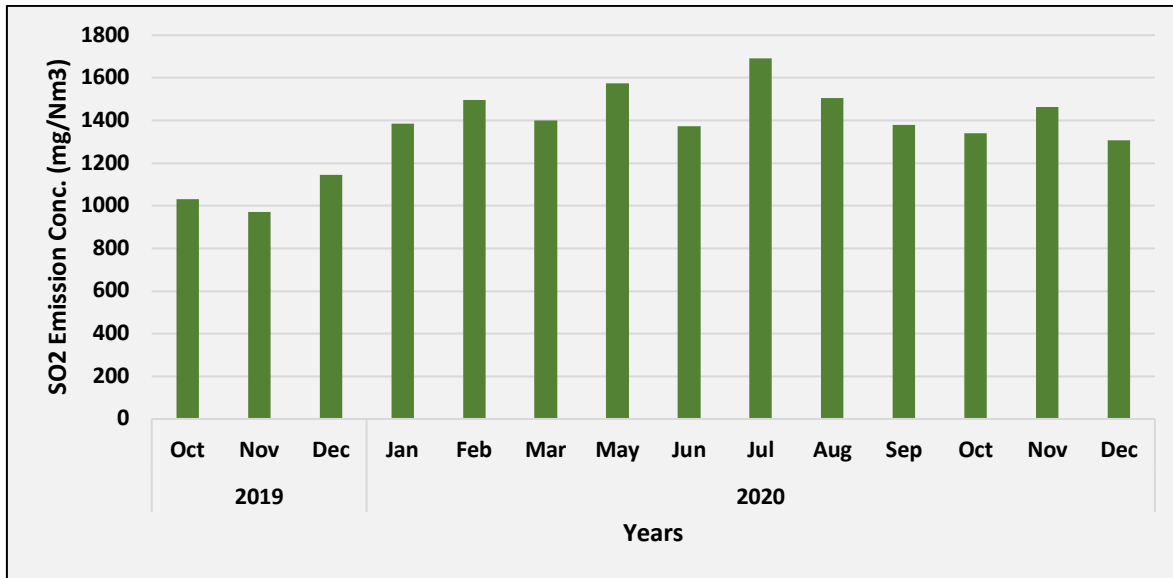


Fig. LAR2: Time series of monthly average SO₂ Emission concentration in Lara TPP (Unit 1)

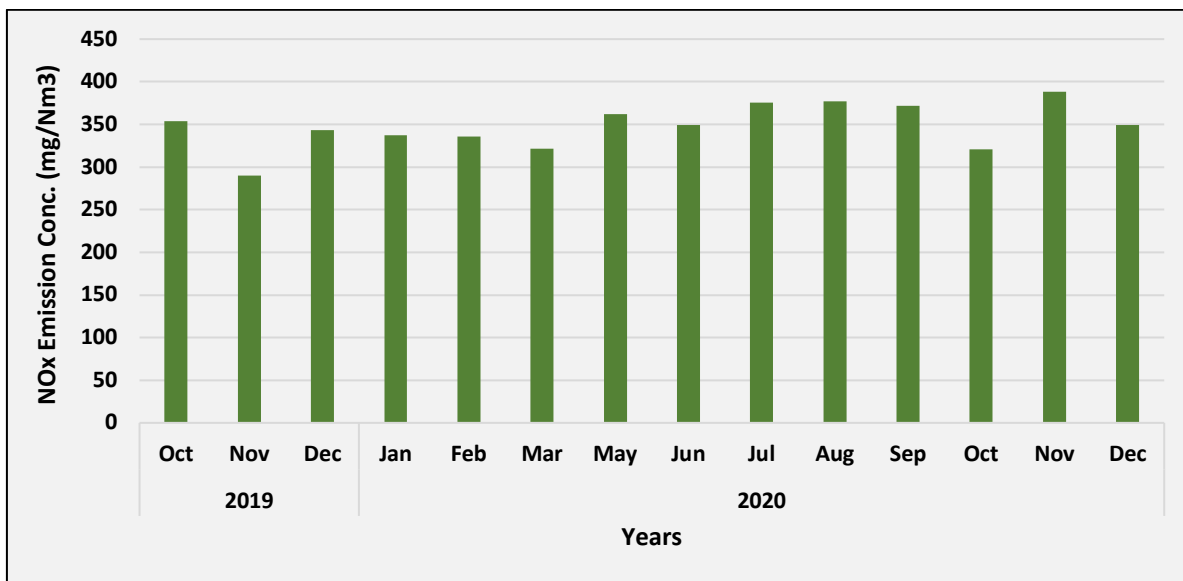


Fig. LAR3: Time series of monthly average NO_x Emission concentration in Lara TPP (Unit 1)

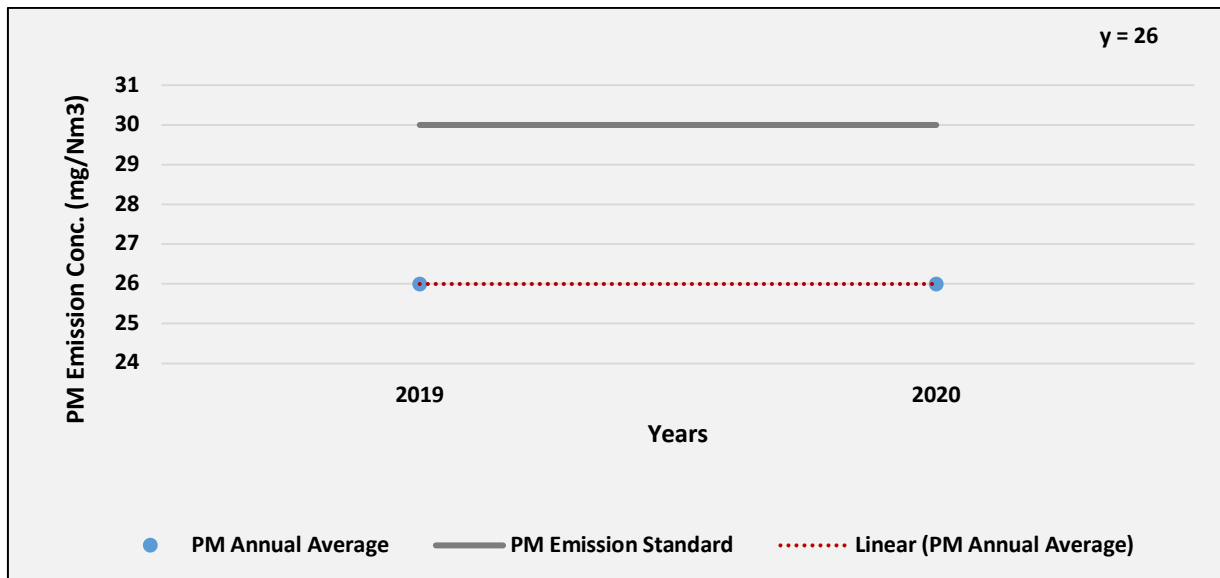


Fig. LAR4: Trend of annual mean PM Emission air concentration in Lara TPP (Unit 1)

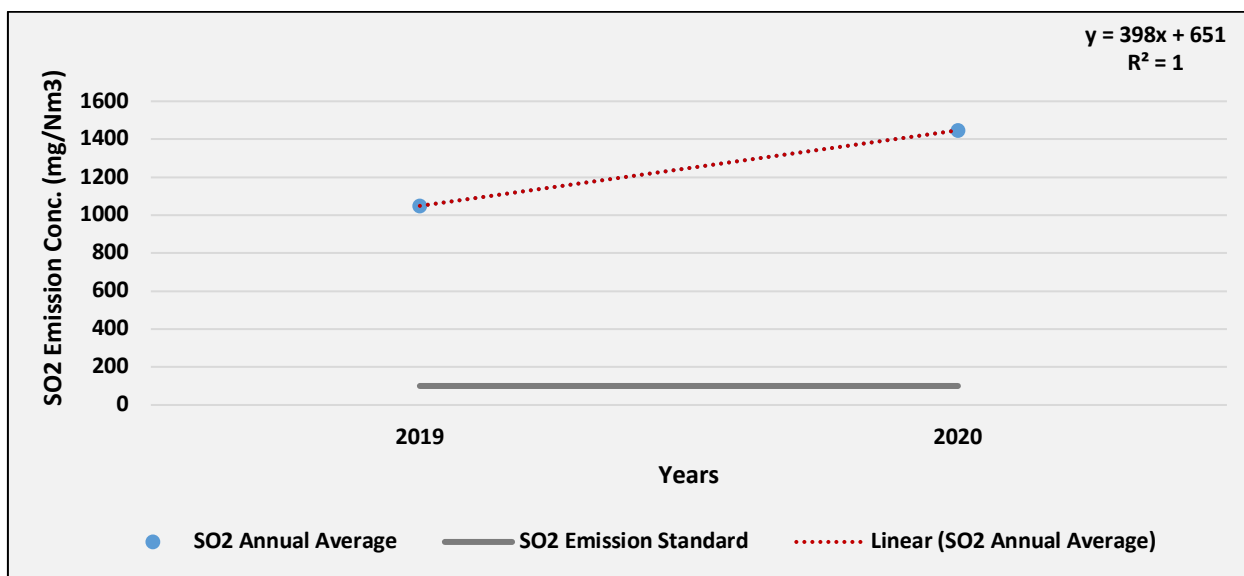


Fig. LAR5: Trend of annual mean SO₂ Emission air concentration in Lara TPP (Unit 1)

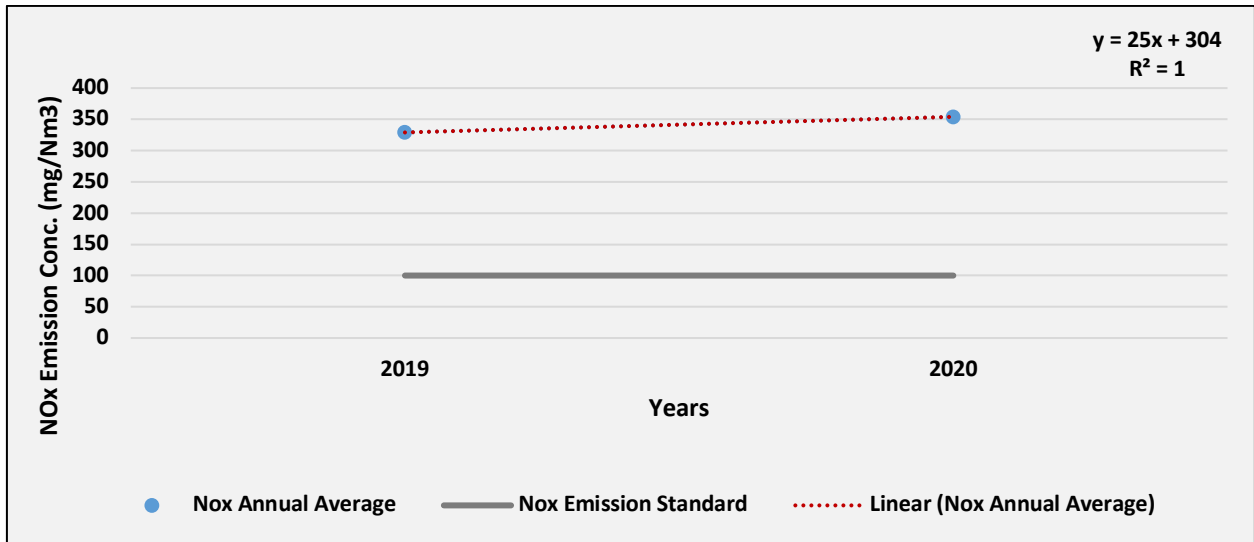


Fig. LAR6: Trend of annual mean NO_x Emission air concentration in Lara TPP (Unit 1)

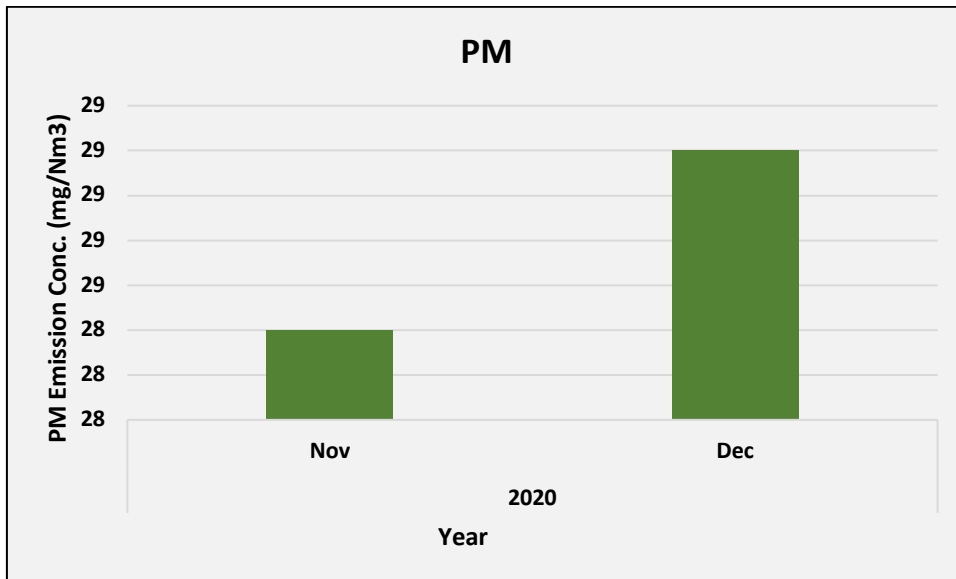


Fig. LAR7: Time series of monthly average PM Emission concentration in Lara TPP (Unit 2)

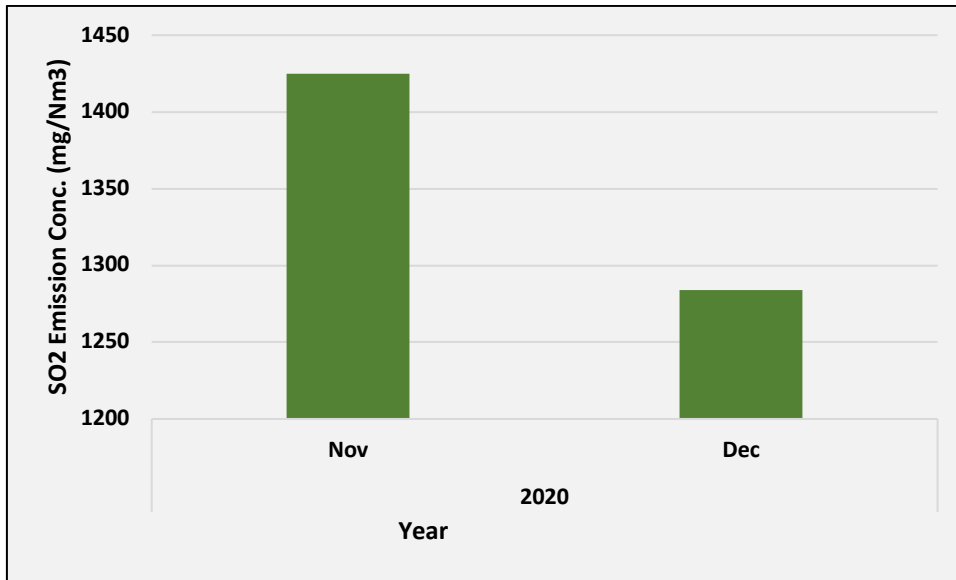


Fig. LAR8: Time series of monthly average SO₂ Emission concentration in Lara TPP (Unit 2)

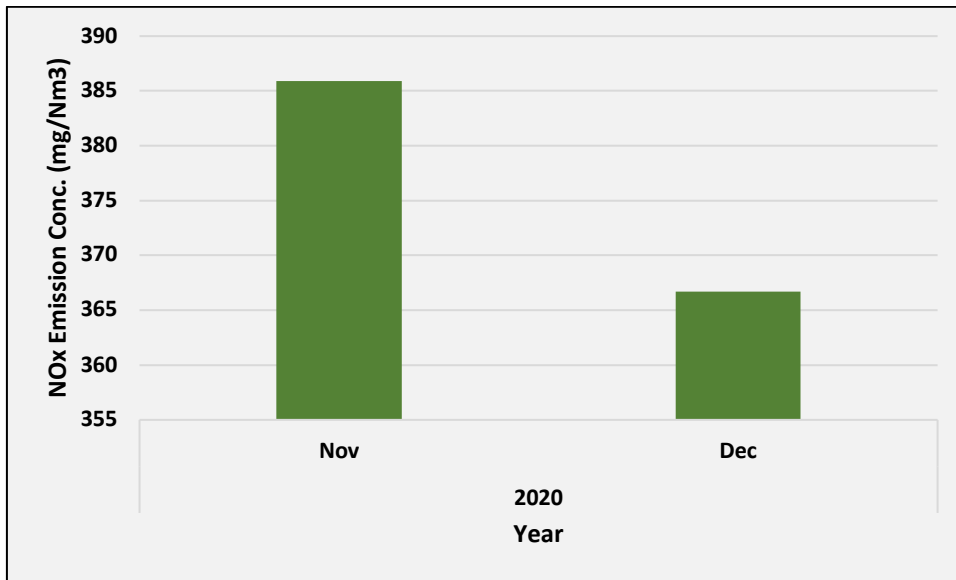


Fig. LAR9: Time series of monthly average NO_x Emission concentration in Lara TPP (Unit 2)

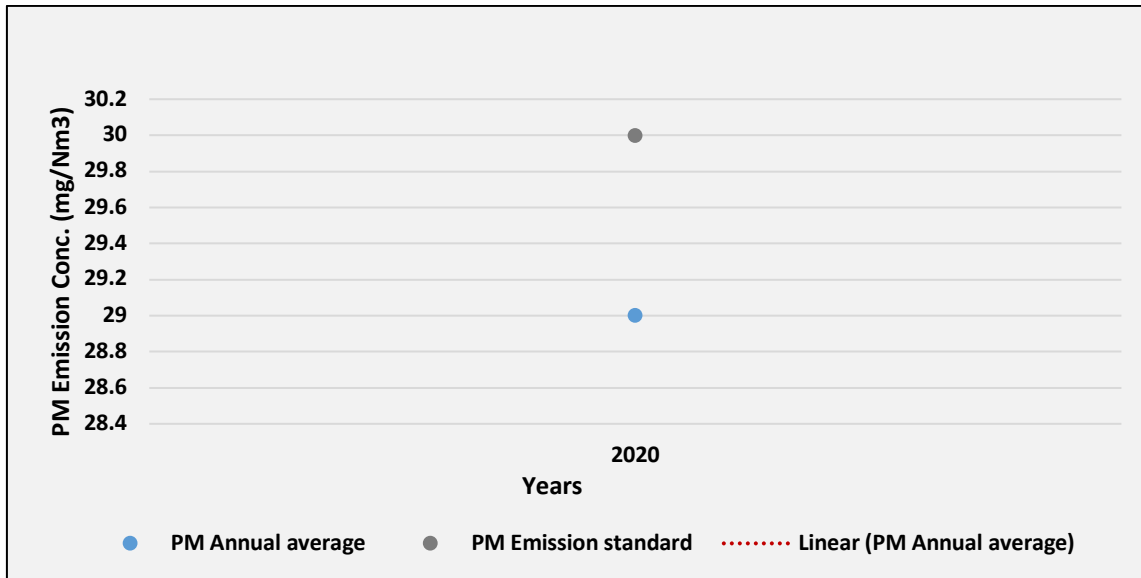


Fig. LAR10: Trend of annual mean PM Emission air concentration in Lara TPP (Unit 2)

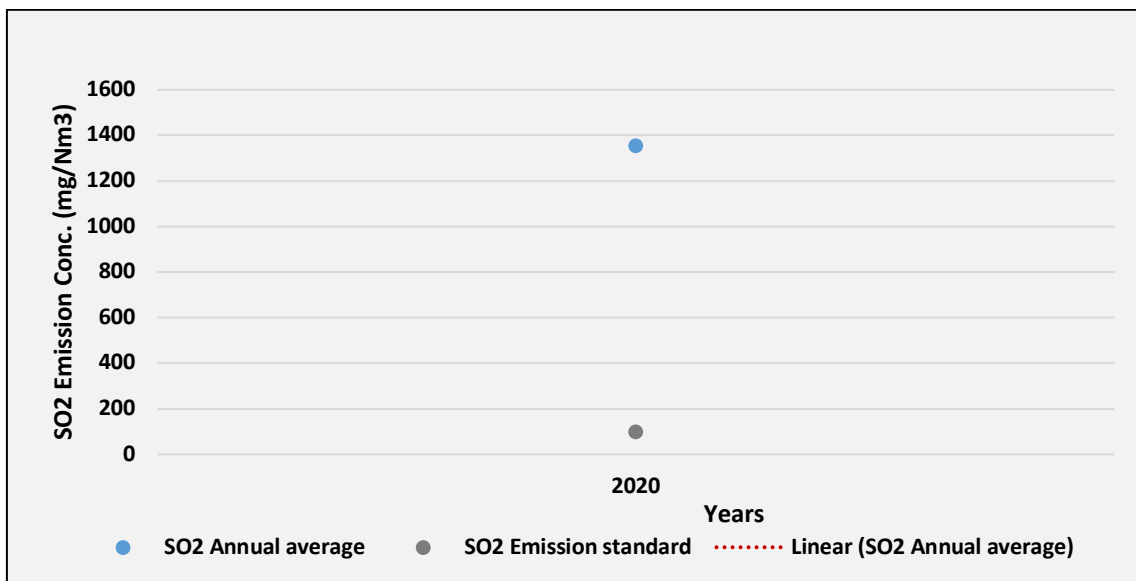


Fig. LAR11: Trend of annual mean SO₂ Emission air concentration in Lara TPP (Unit 2)

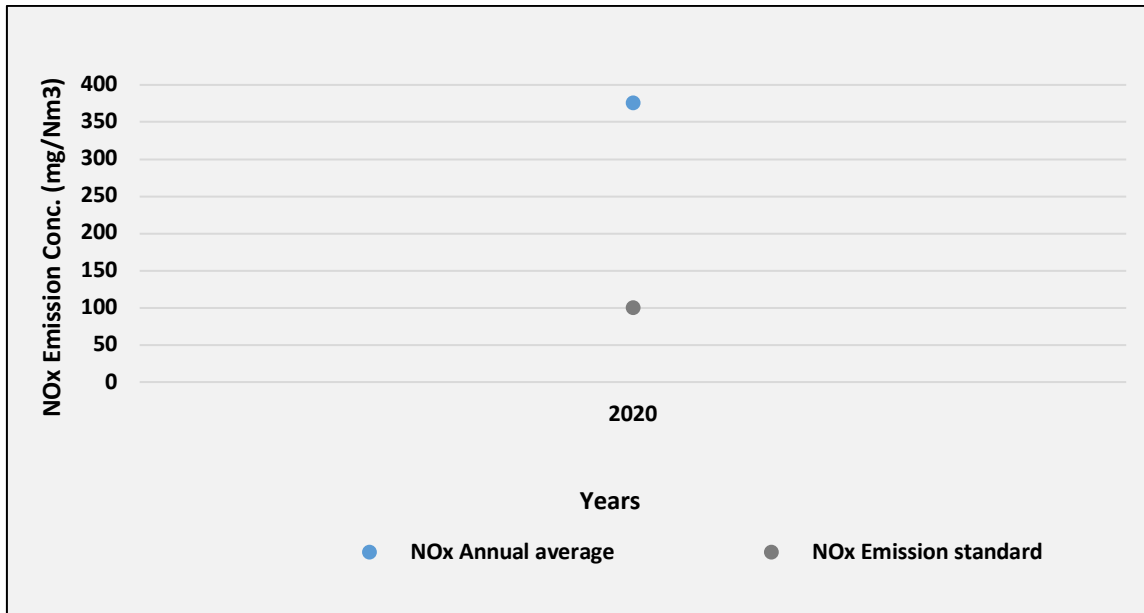


Fig. LAR12: Trend of annual mean NO_x Emission air concentration in Lara TPP (Unit 2)

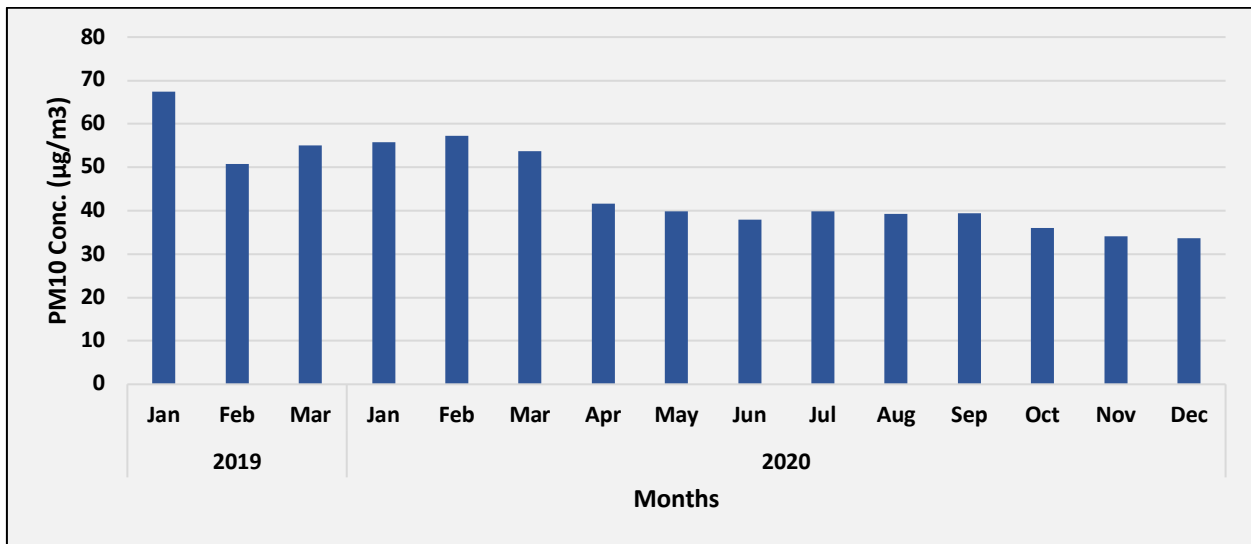


Fig. LAR13: Time series of monthly average PM₁₀ ambient air concentration in Lara TPP (Ambient)

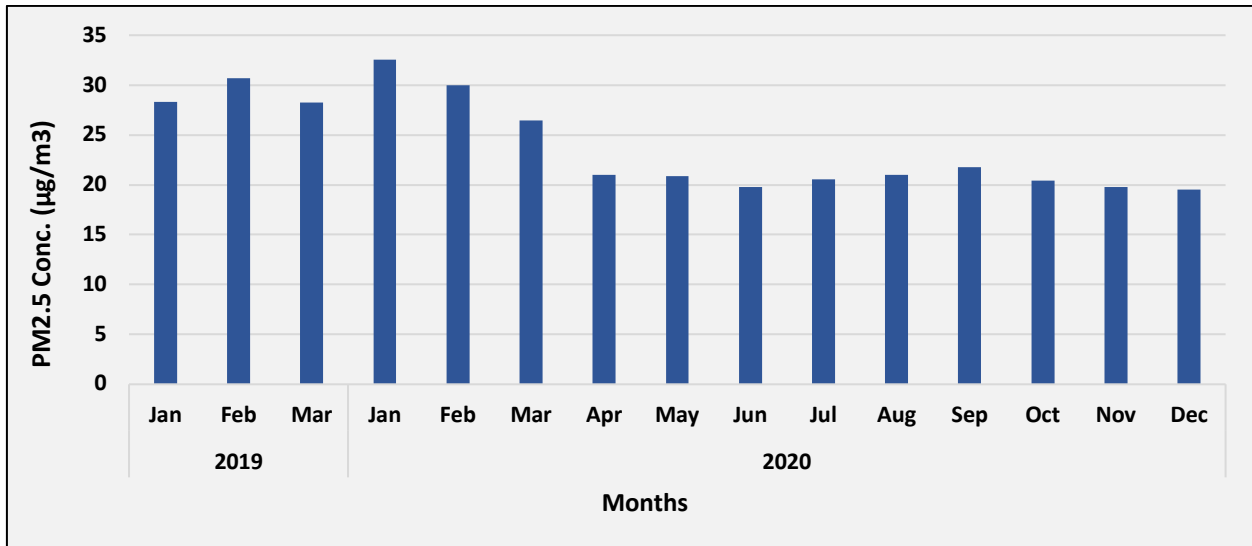


Fig. LAR14: Time series of monthly average PM_{2.5} ambient air concentration in Lara TPP (Ambient)

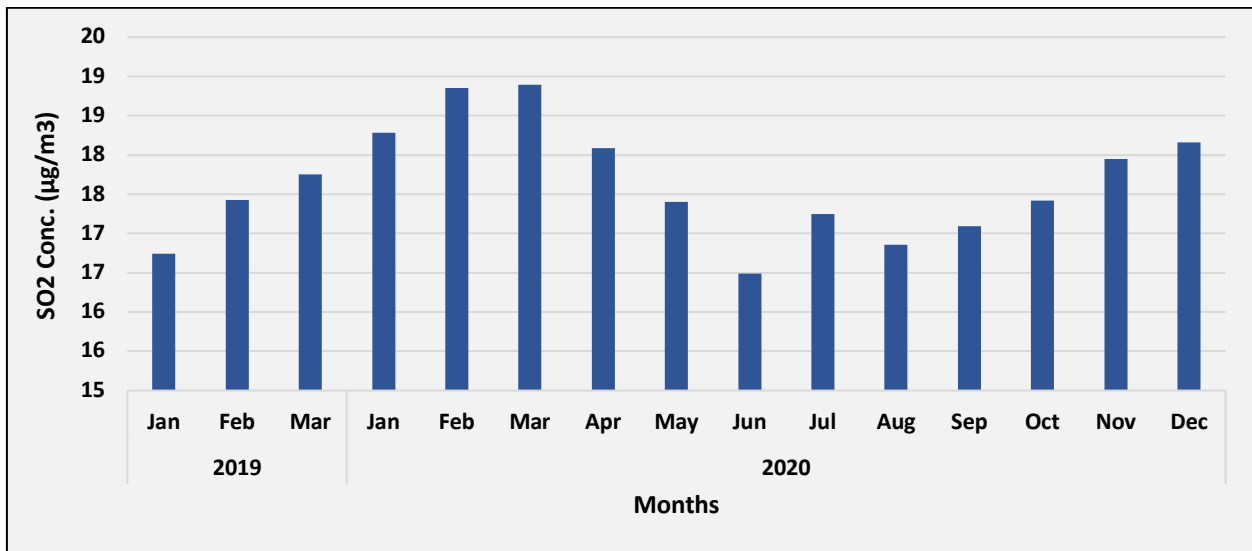


Fig. LAR15: Time series of monthly average SO₂ ambient air concentration in Lara TPP (Ambient)

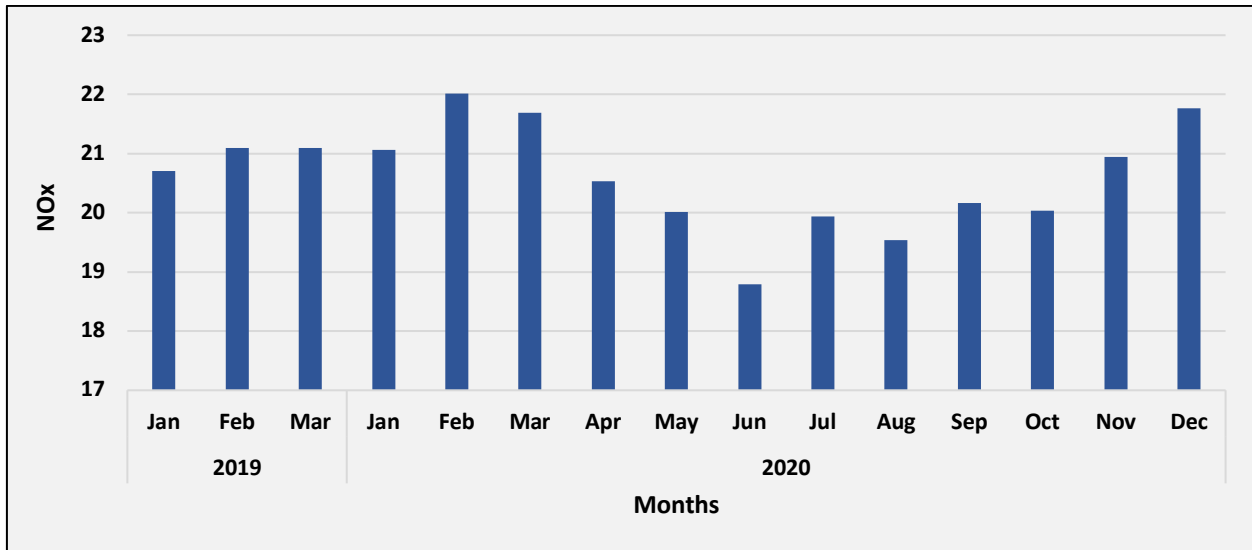


Fig. LAR16: Time series of monthly average NO_x ambient air concentration in Lara TPP (Ambient)

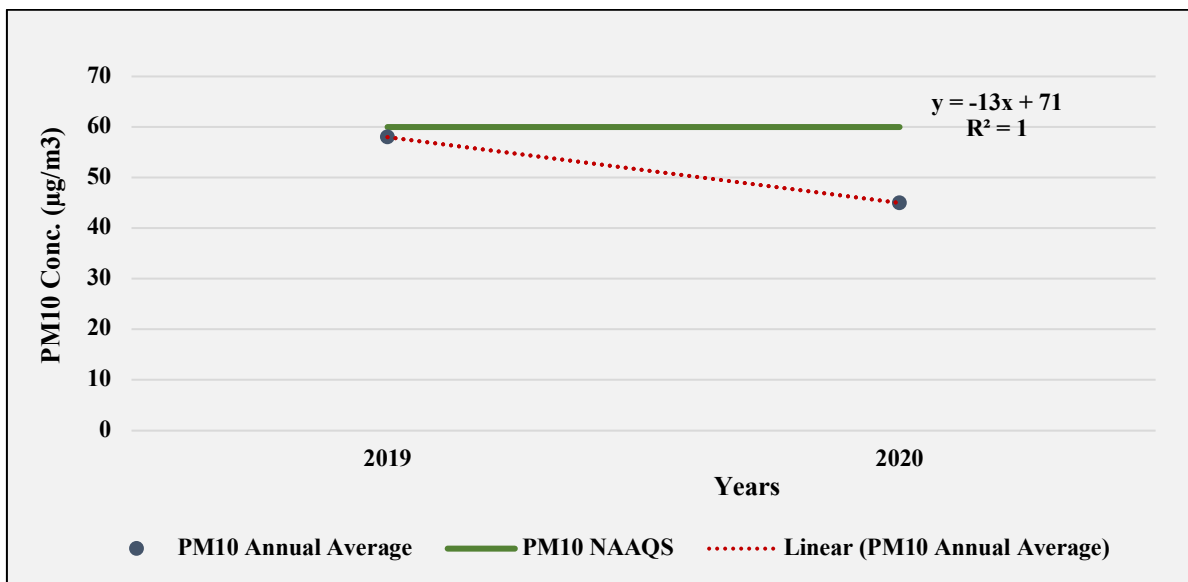


Fig. LAR17: Trend of annual mean PM₁₀ ambient air concentration in Lara TPP (Ambient)

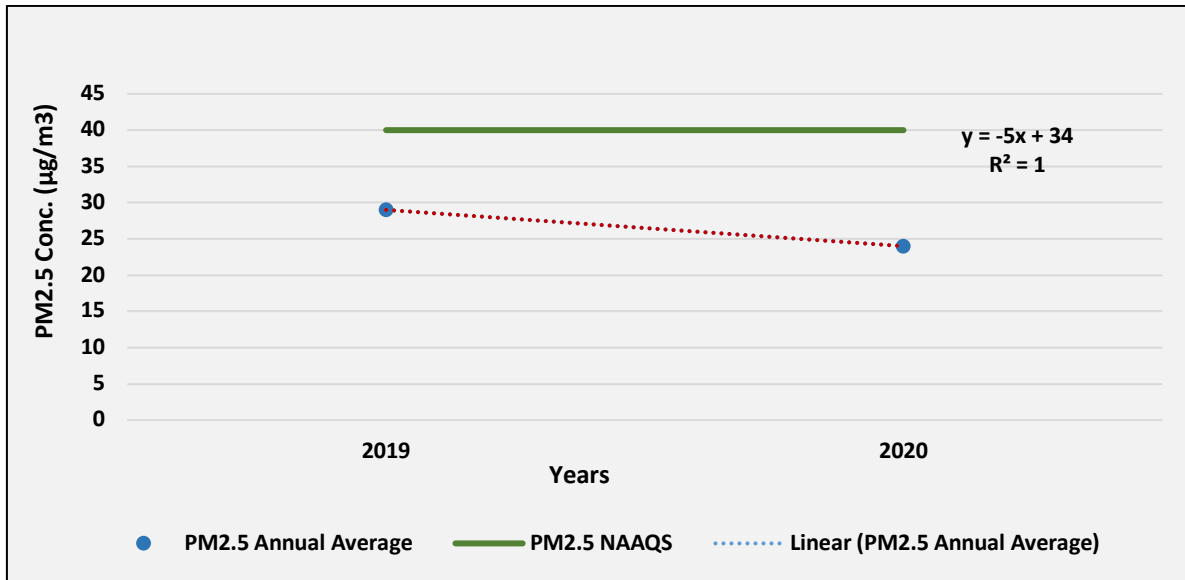


Fig. LAR18: Trend of annual mean $PM_{2.5}$ ambient air concentration in Lara TPP (Ambient)

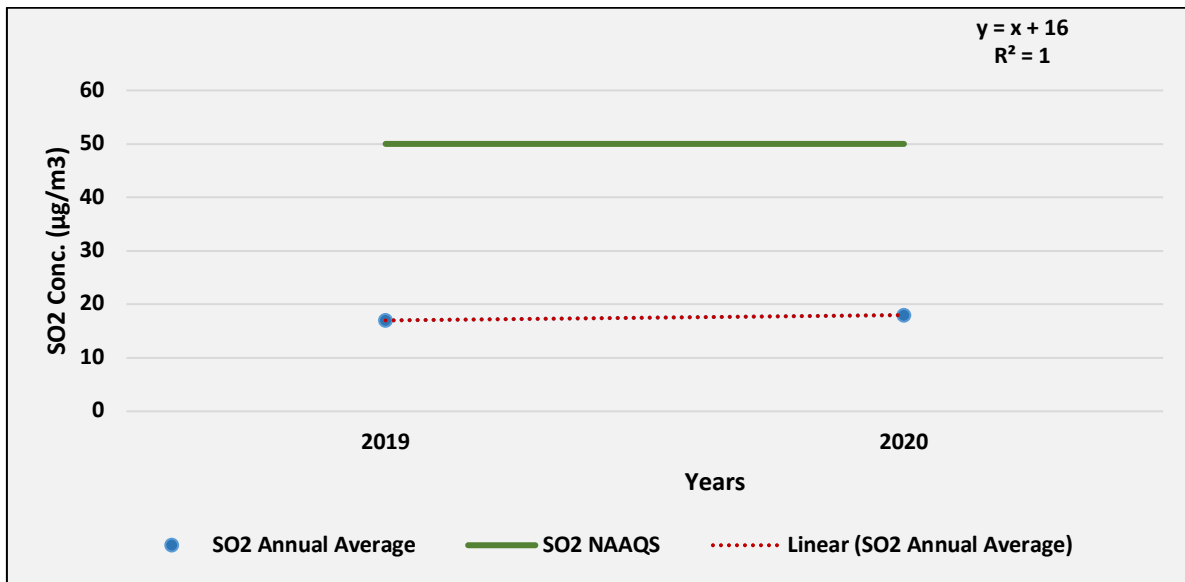


Fig. LAR19: Trend of annual mean SO_2 ambient air concentration in Lara TPP (Ambient)

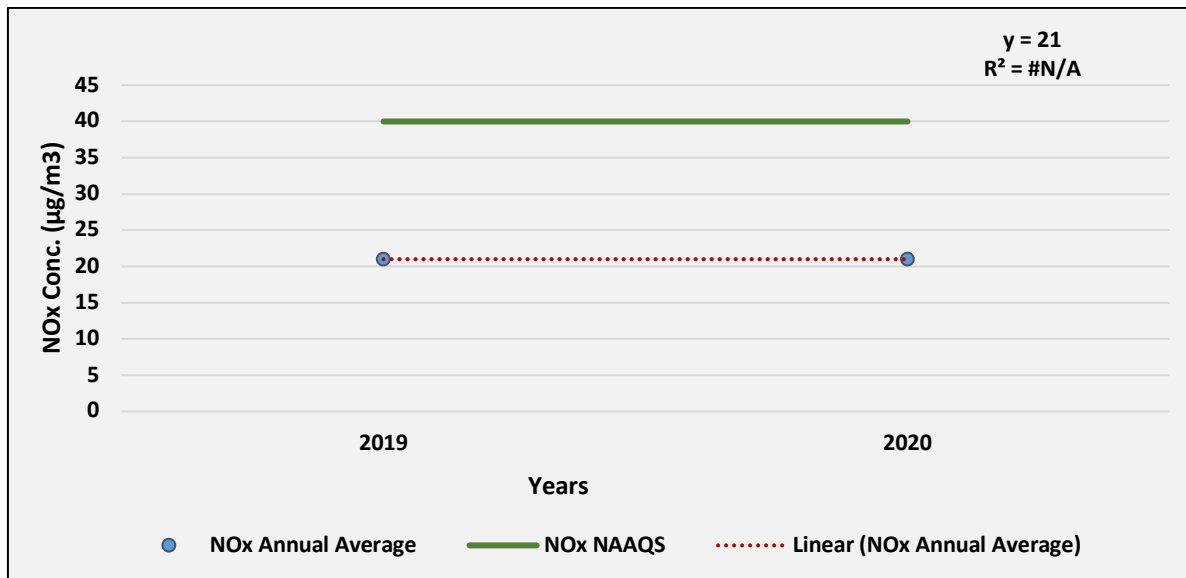


Fig. LAR20: Trend of annual mean NO_x ambient air concentration in Lara TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

BARAUNI THERMAL POWER PLANT

Barauni Thermal Power Station is an existing 470-megawatt coal-fired power station earlier owned by Bihar State Electricity Board (BSEB). The power station is located at Barauni in Begusarai district, Bihar, India. Barauni thermal power station in Bihar came into existence in association with the Russian collaboration and came into operation in the year 1962. On 17 April 2018, Bihar state cabinet gave its nod to handing over of Barauni Thermal Power Station to National Thermal Power Corporation.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed for the last one year (2020) using data provided by NTPC for Barauni Power plant, Bihar, India.

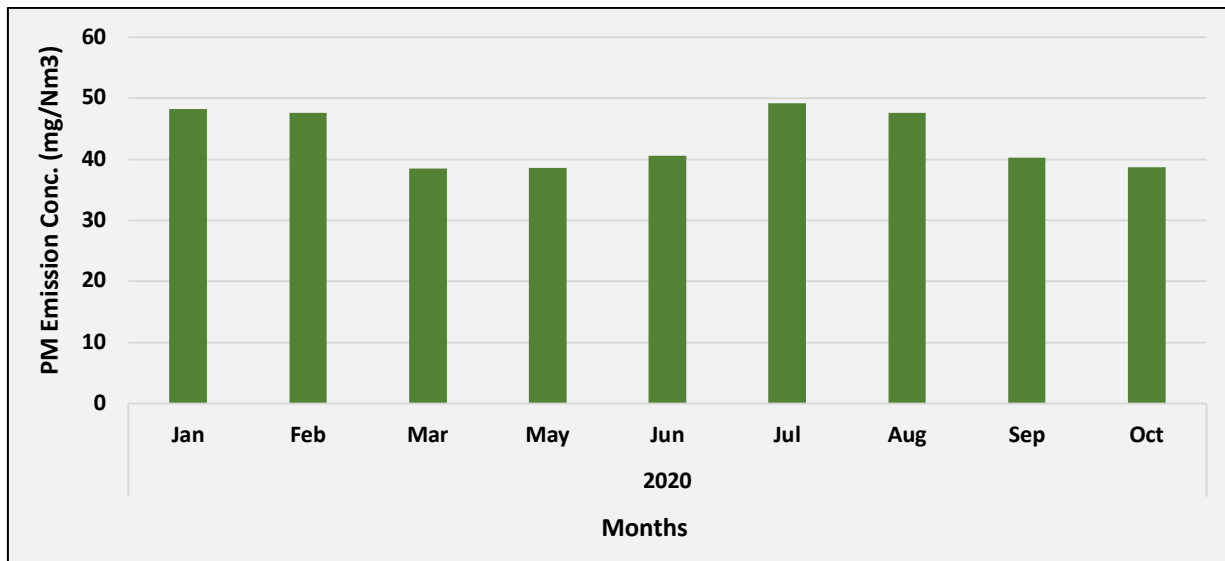


Fig. BAR1: Time series of monthly average PM Emission concentration in Barauni TPP (Unit 1)

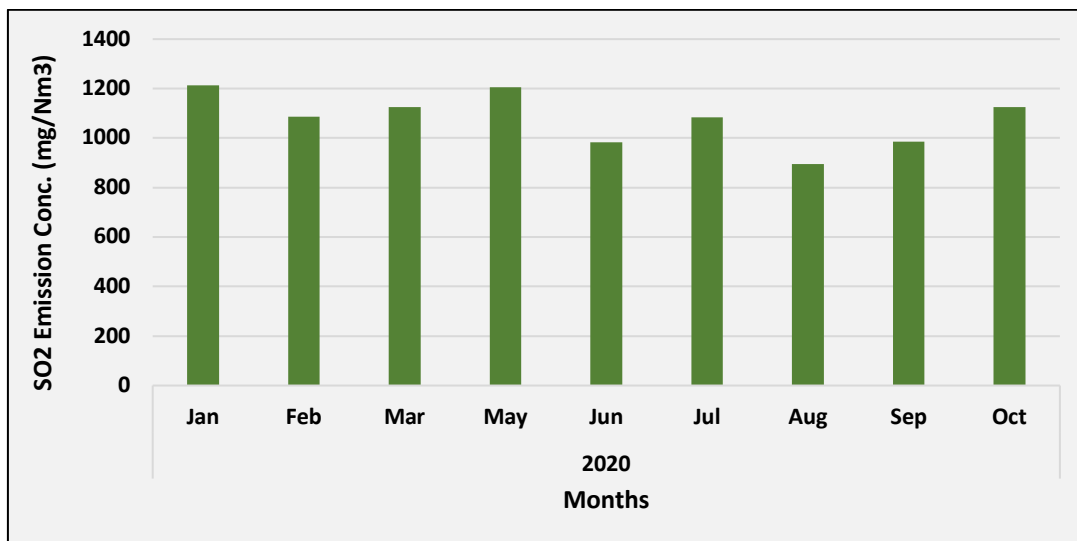


Fig. BAR2: Time series of monthly average SO₂ Emission concentration in Barauni TPP (Unit 1)

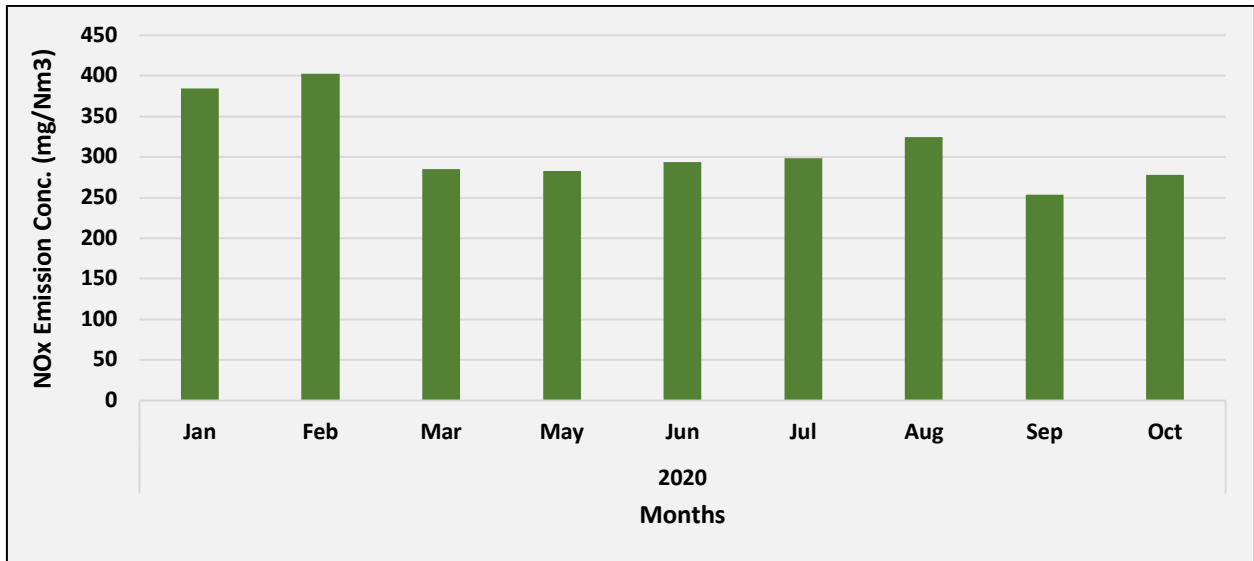


Fig. BAR3: Time series of monthly average NO_x Emission concentration in Barauni TPP (Unit 1)

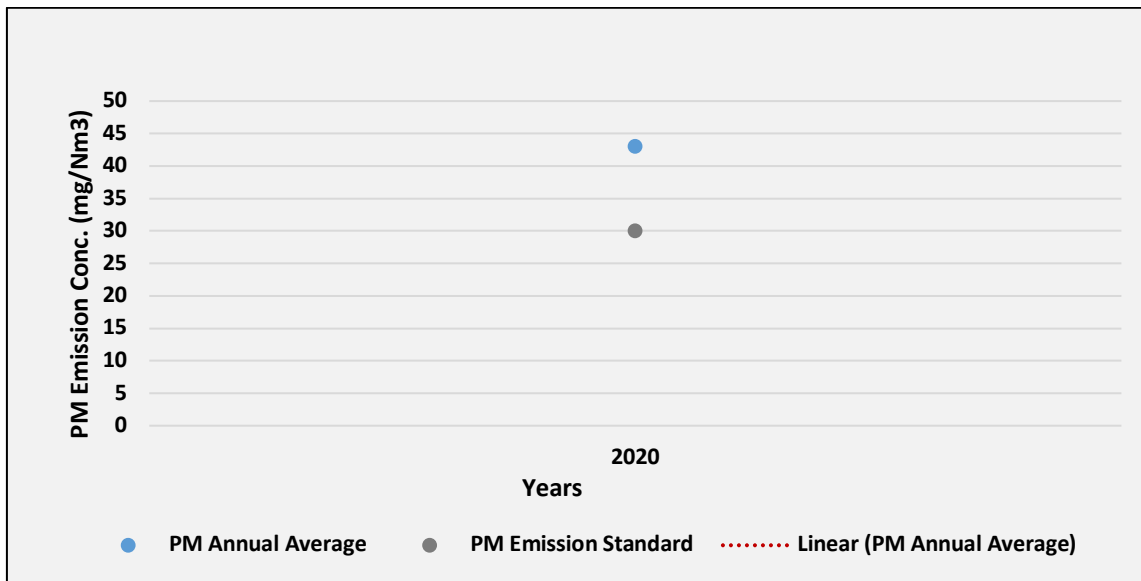


Fig. BAR4: Trend of annual mean PM Emission air concentration in Barauni TPP (Unit 1)

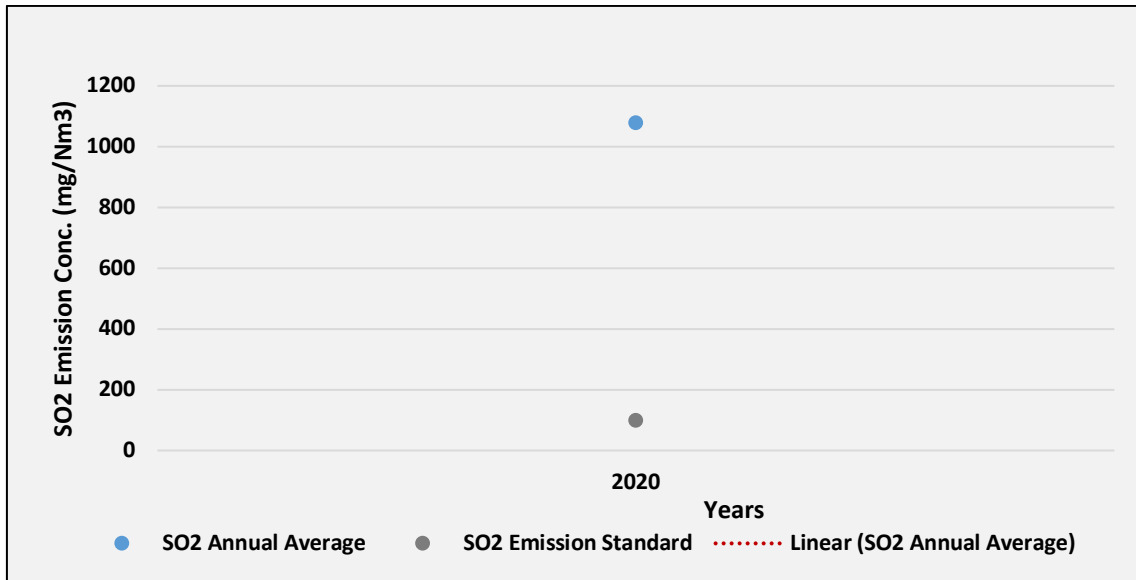


Fig. BAR5: Trend of annual mean SO₂ Emission air concentration in Barauni TPP (Unit 1)

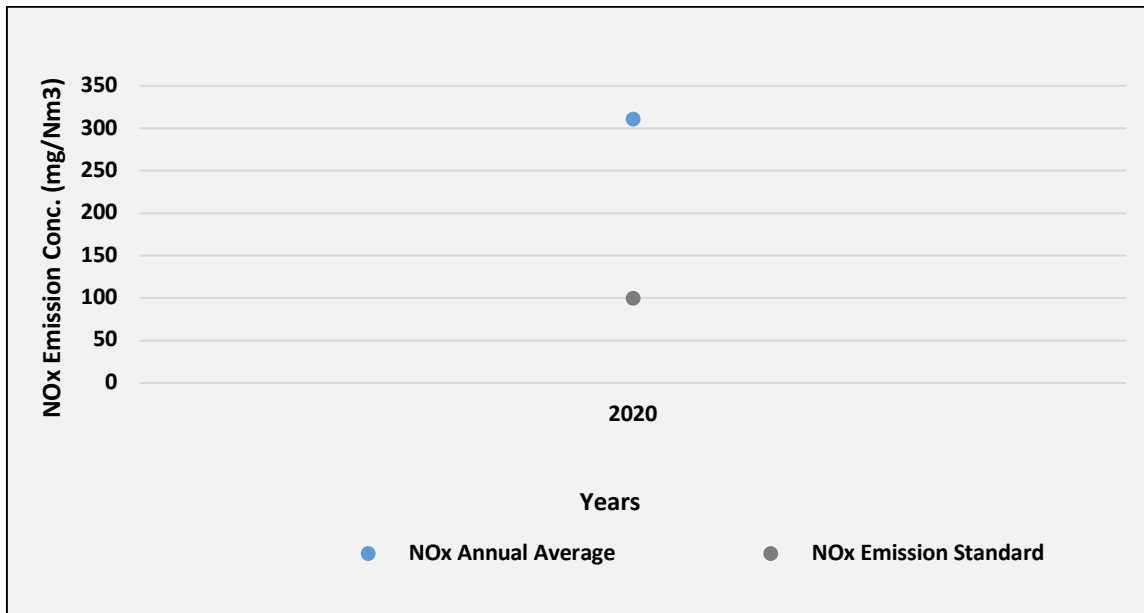


Fig. BAR6: Trend of annual mean NO_x Emission air concentration in Barauni TPP (Unit 1)

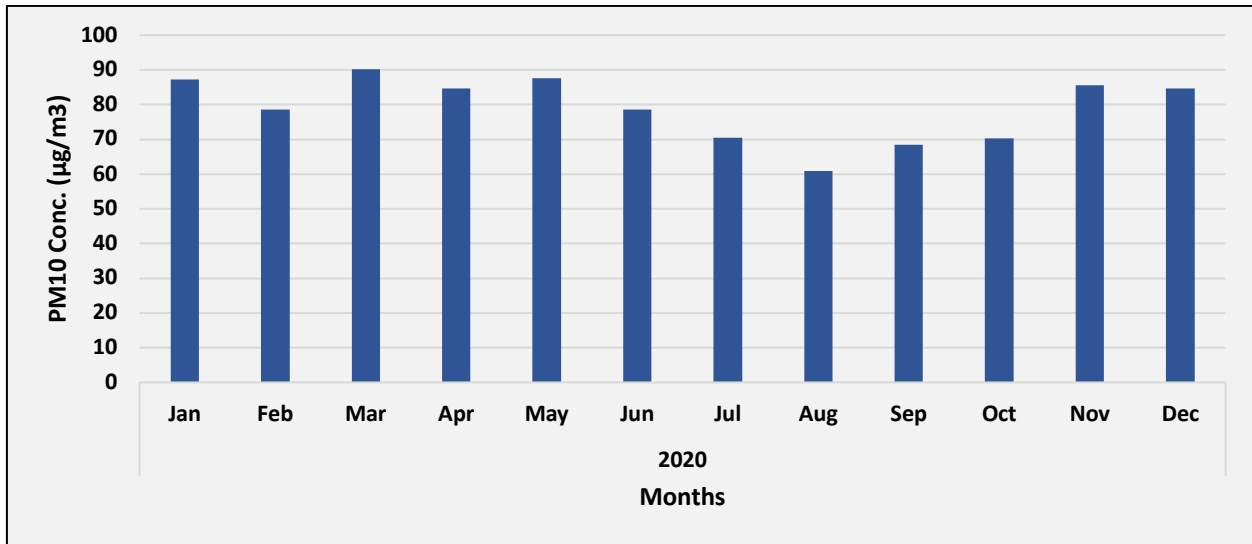


Fig. BAR7: Time series of monthly average PM_{10} ambient air concentration in Barauni TPP (Ambient)

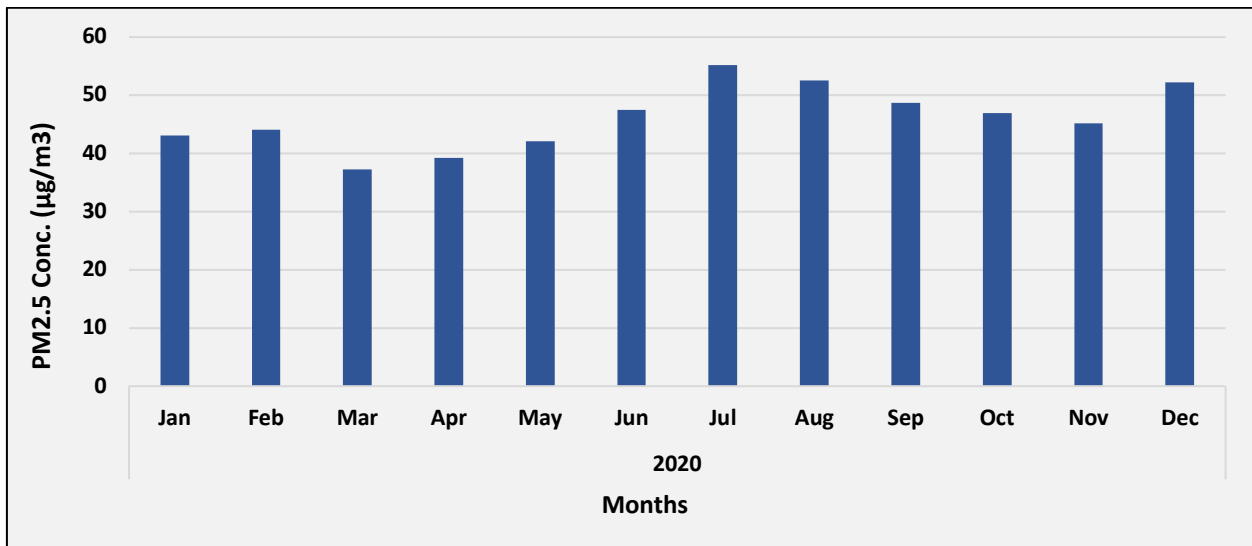


Fig. BAR8: Time series of monthly average $PM_{2.5}$ ambient air concentration in Barauni TPP (Ambient)

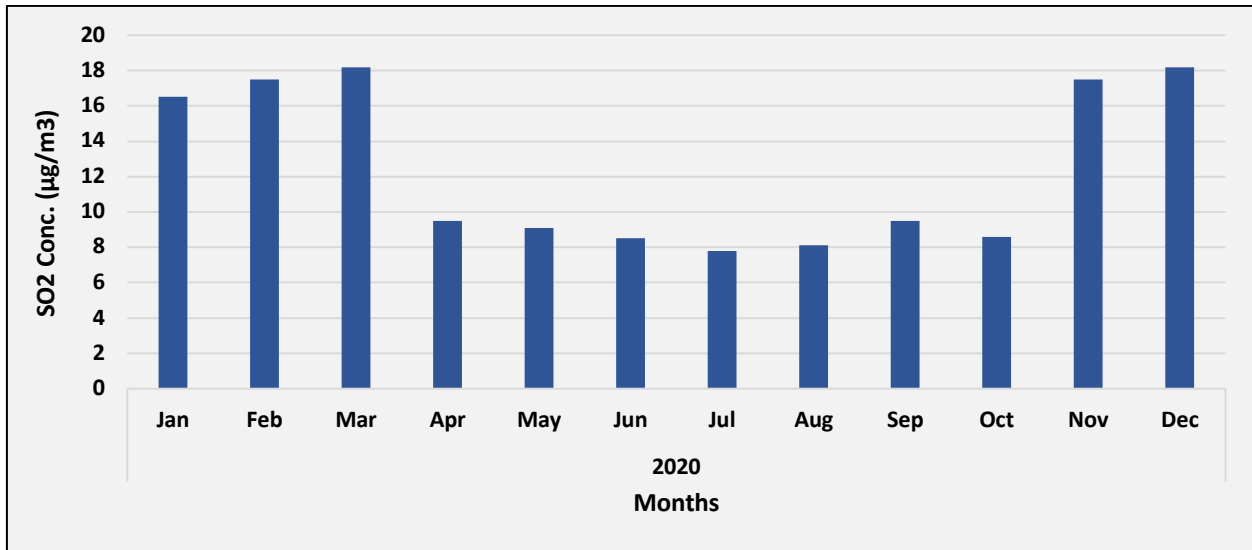


Fig. BAR9: Time series of monthly average SO_2 ambient air concentration in Barauni TPP (Ambient)

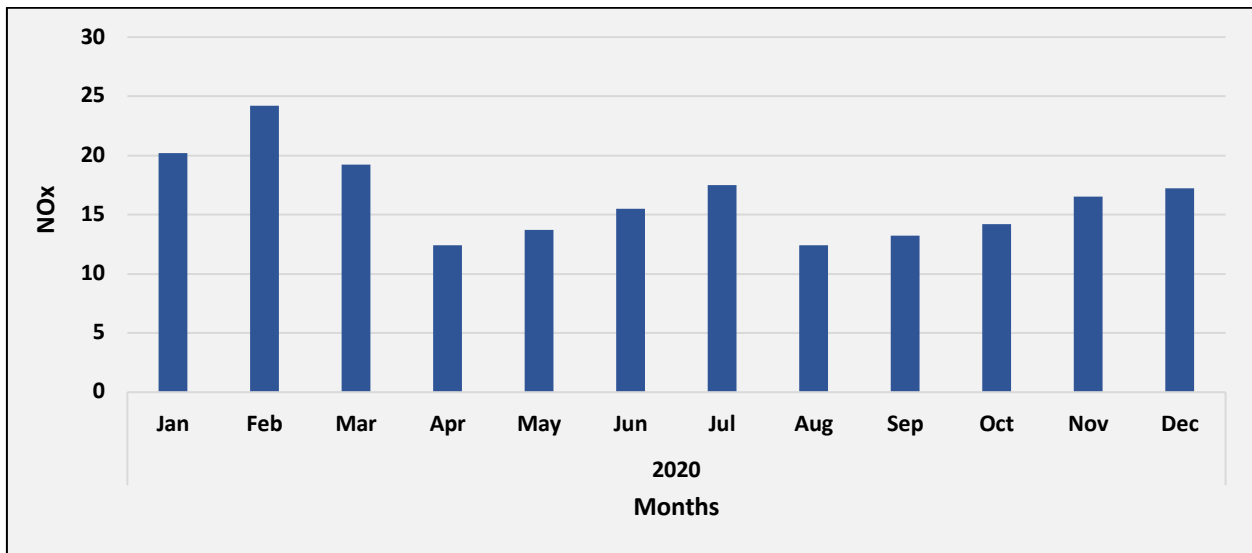


Fig. BAR10: Time series of monthly average NO_x ambient air concentration in Barauni TPP (Ambient)

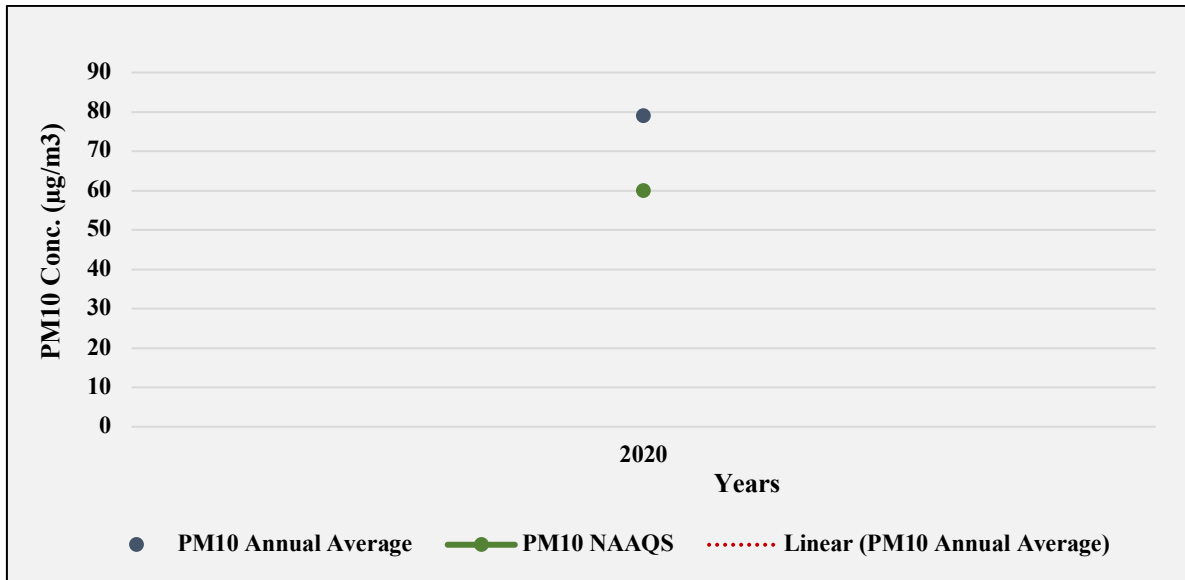


Fig. BAR11: Trend of annual mean PM_{10} ambient air concentration in Barauni TPP (Ambient)

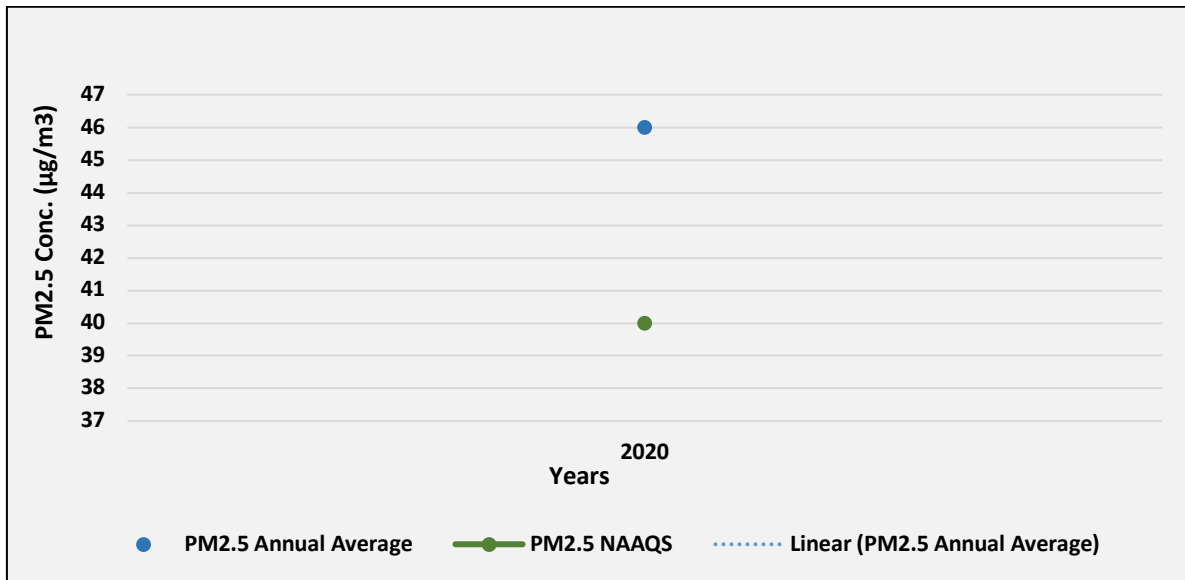


Fig. BAR12: Trend of annual mean $PM_{2.5}$ ambient air concentration in Barauni TPP (Ambient)

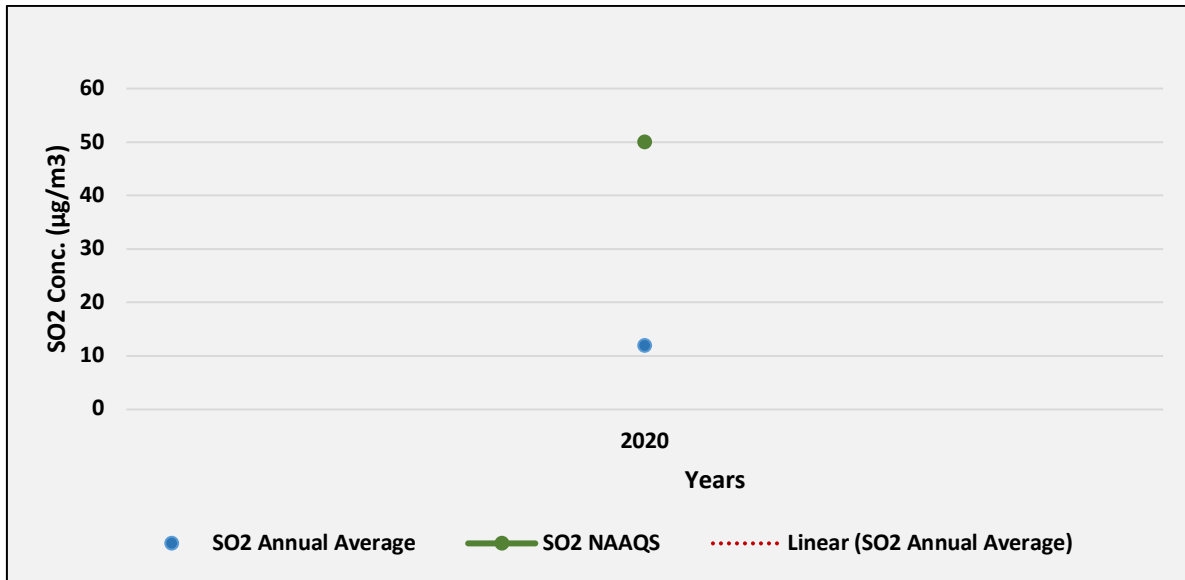


Fig. BAR13: Trend of annual mean SO₂ ambient air concentration in Barauni TPP (Ambient)

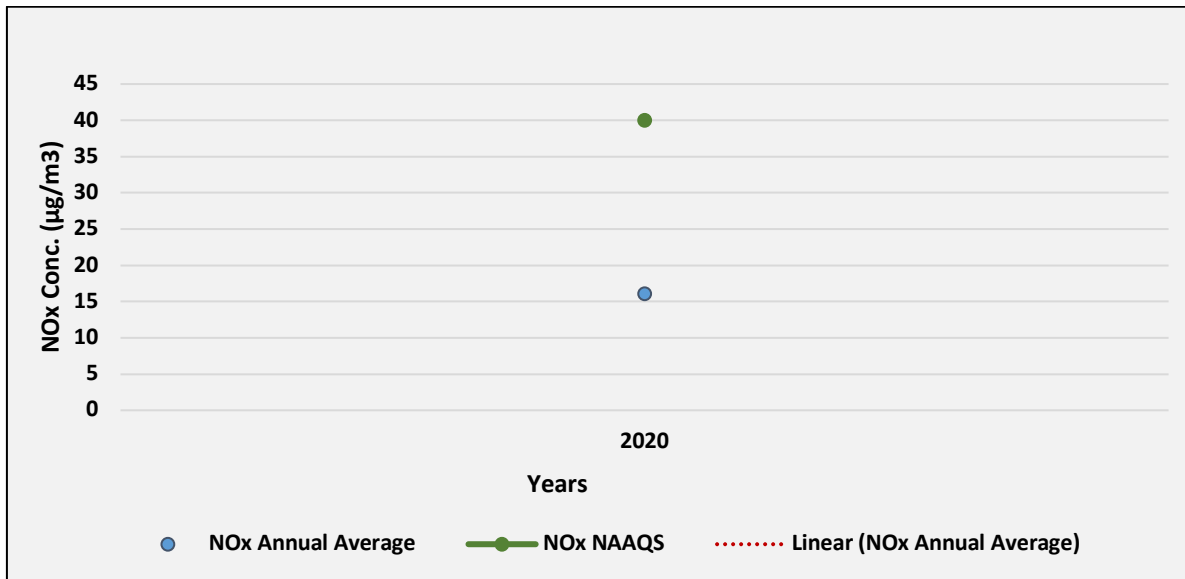


Fig. BAR14: Trend of annual mean NO_x ambient air concentration in Barauni TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀ is exceeding whereas the PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

BONGAIGAON THERMAL POWER STATION

The air quality concentrations of PM emission, SO₂ emission, and NO_x emission, data analyzed (Fig. BO1 – Fig. BO26) for the last three years (2018-2020) using data provided by **GMR developer** for Bongaigaon Power plant, Assam, India.

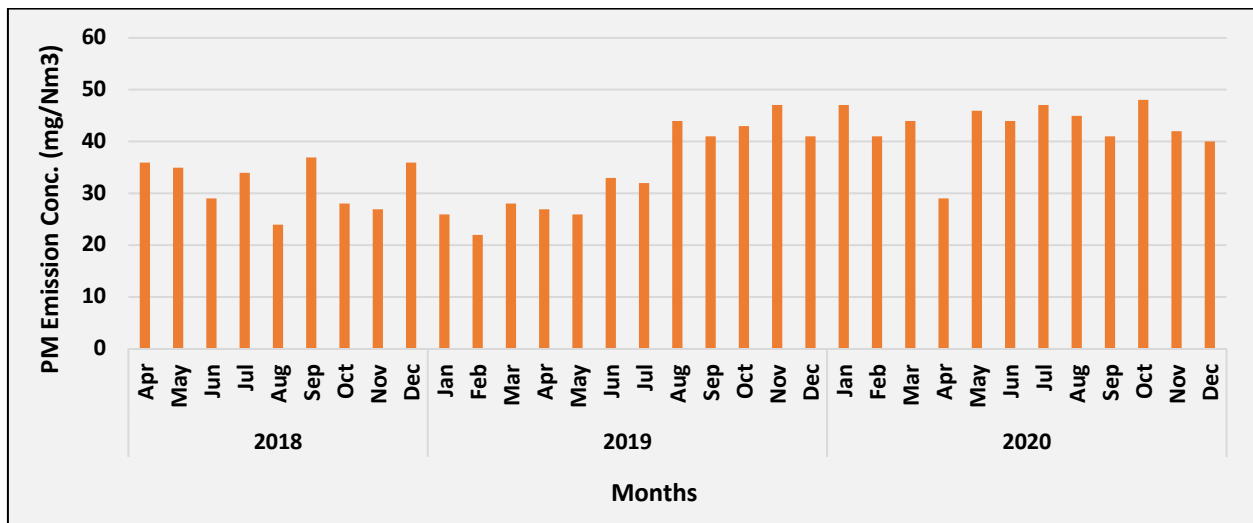


Fig. BO1: Time series of monthly average PM Emission concentration in Bongaigaon TPP (Stack 1)

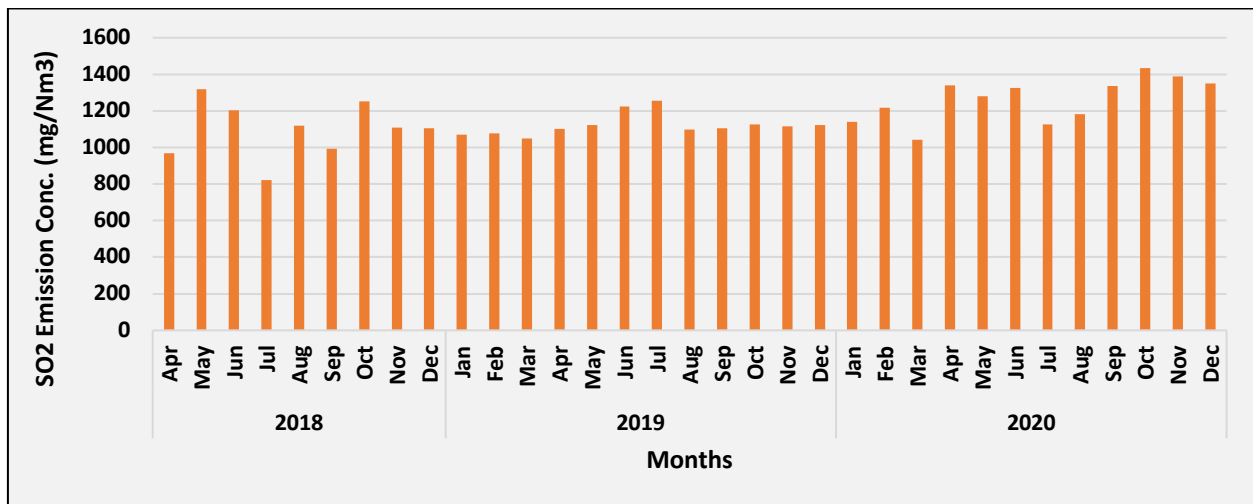


Fig. BO2: Time series of monthly average SO₂ Emission concentration in Bongaigaon TPP (Stack 1)

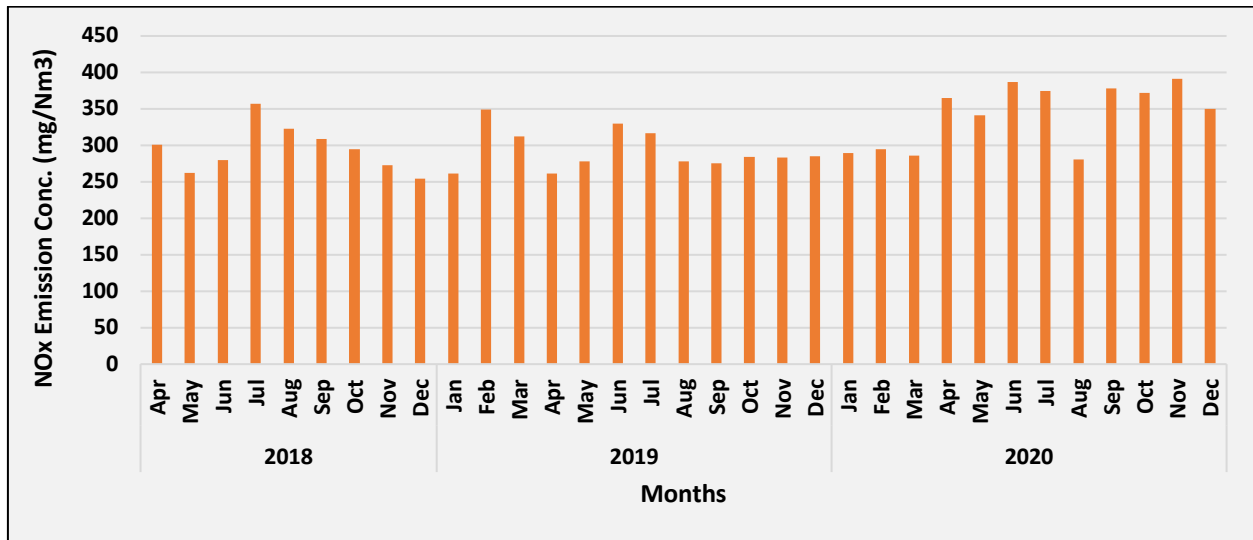


Fig. BO3: Time series of monthly average NO_x Emission concentration in Bongaigaon TPP (Stack 1)

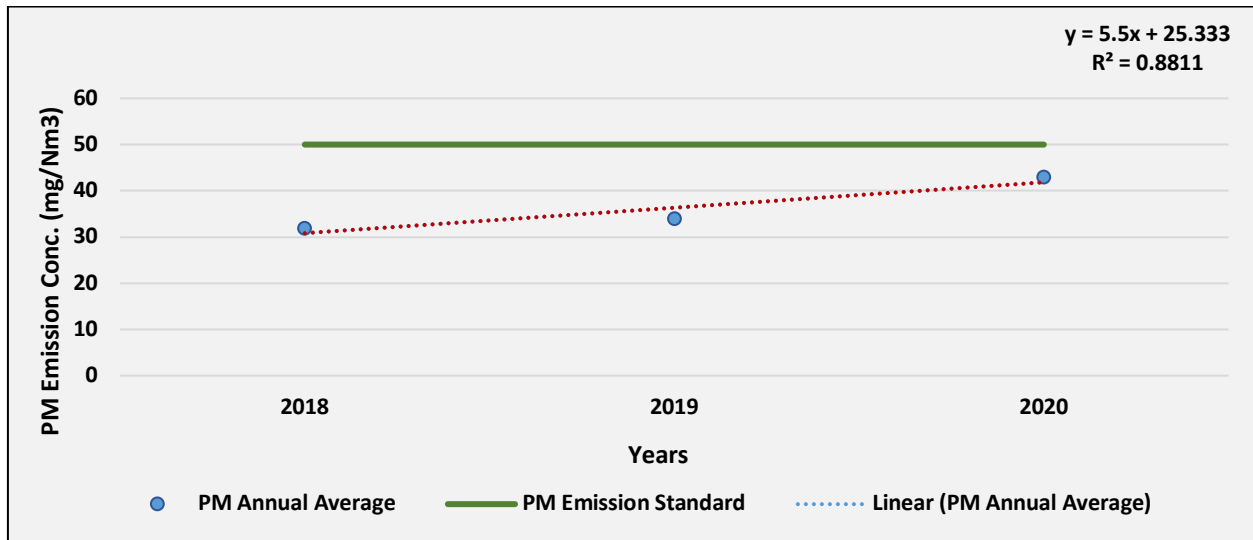


Fig. BO4: Trend of annual mean PM Emission air concentration in Bongaigaon TPP (Stack 1)

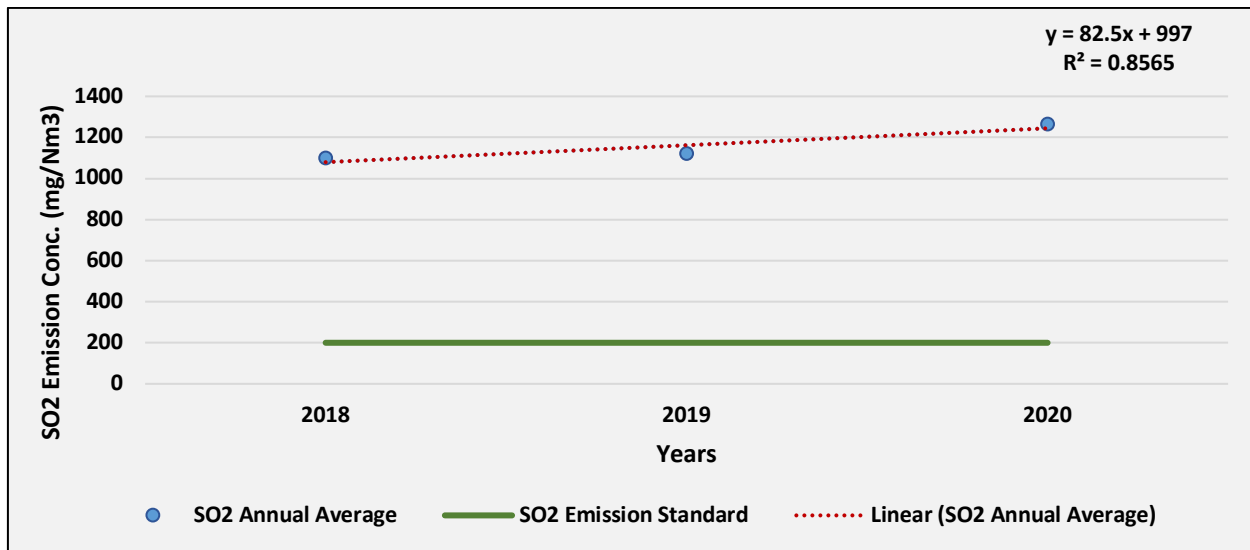


Fig. BO5: Trend of annual mean SO₂ Emission air concentration in Bongaigaon TPP (Stack 1)

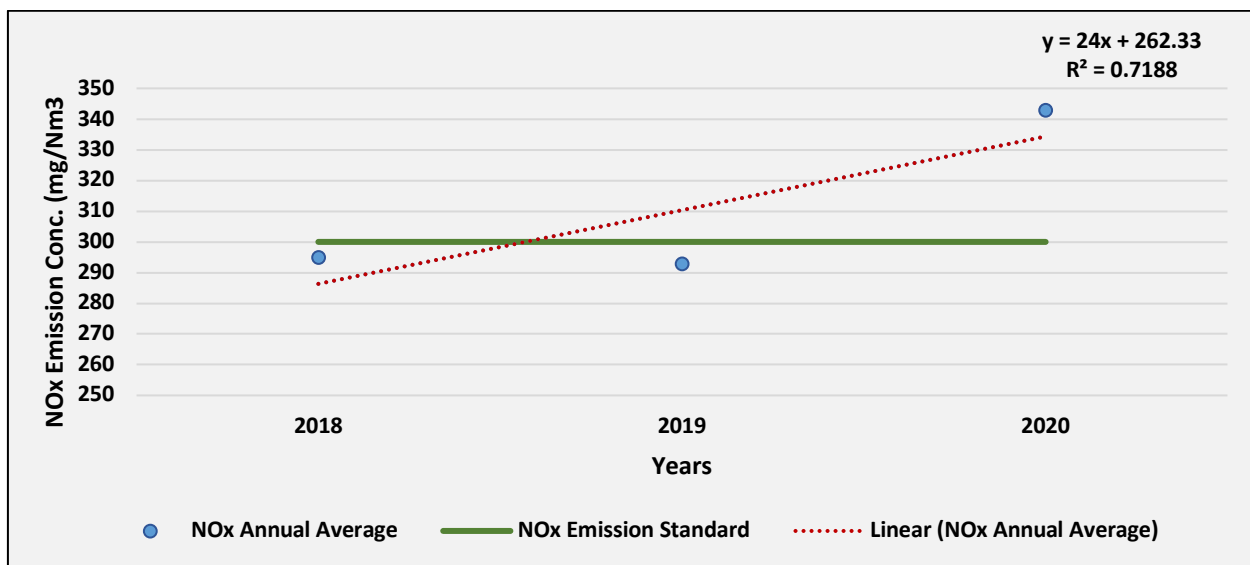


Fig. BO6: Trend of annual mean NO_x Emission air concentration in Bongaigaon TPP (Stack 1)

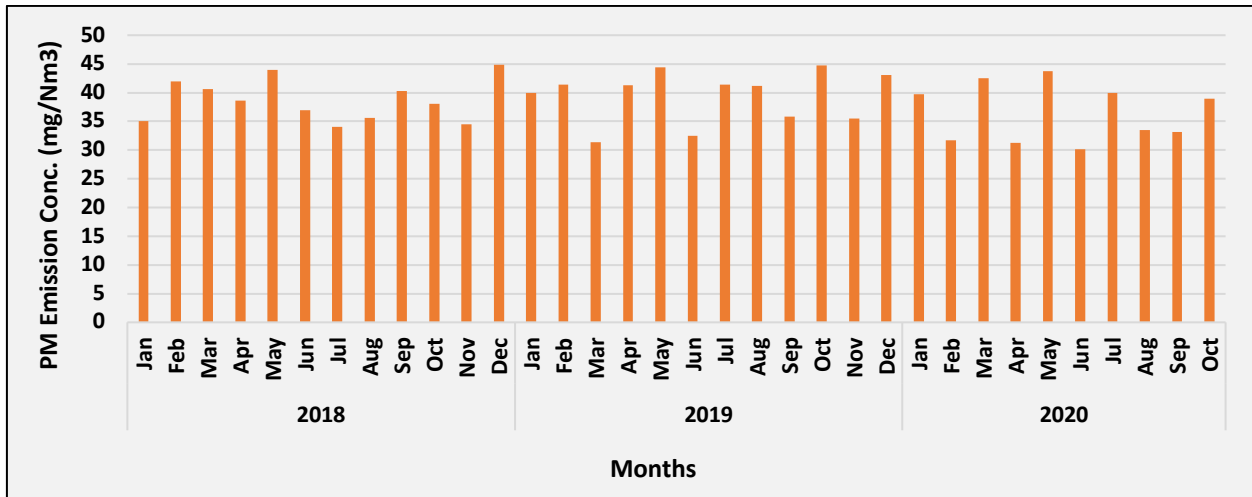


Fig. BO7: Time series of monthly average PM Emission concentration in Bongaigaon TPP (Stack 2)

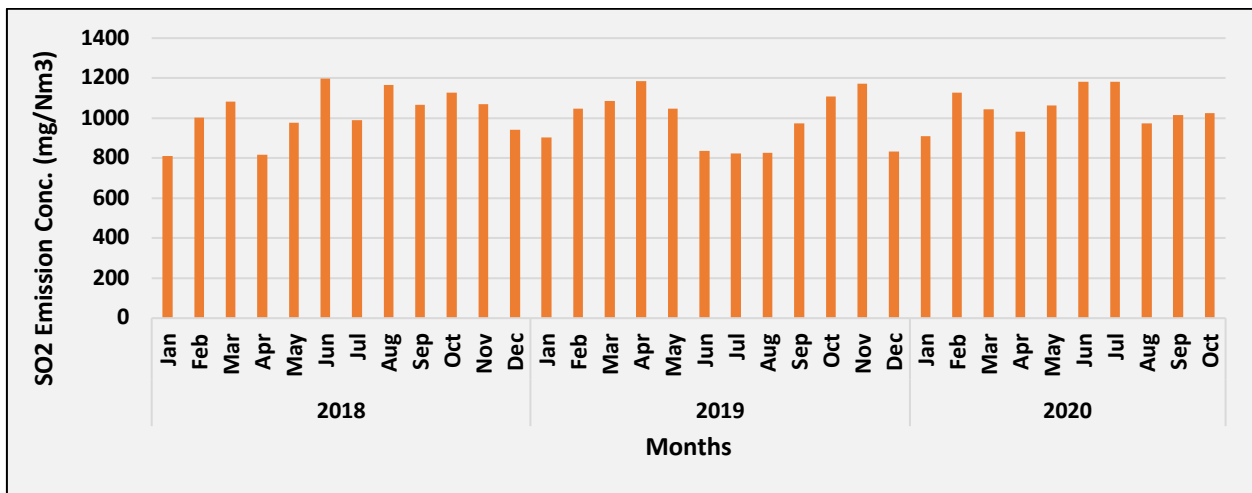


Fig. BO8: Time series of monthly average SO₂ Emission concentration in Bongaigaon TPP (Stack 2)

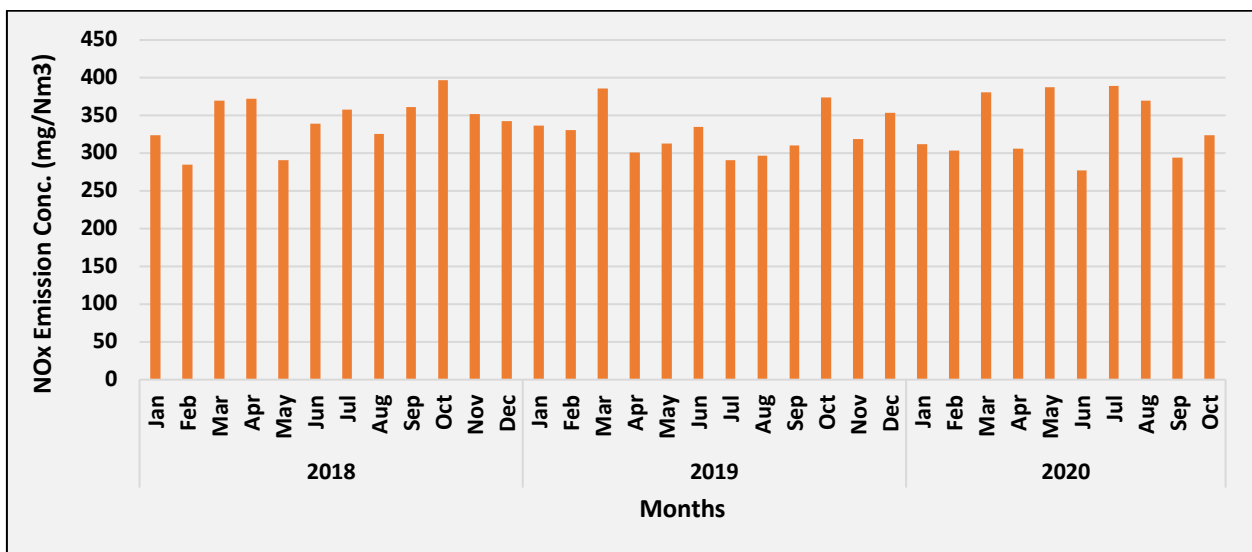


Fig. BO9: Time series of monthly average NO_x Emission concentration in Bongaigaon TPP (Stack 2)

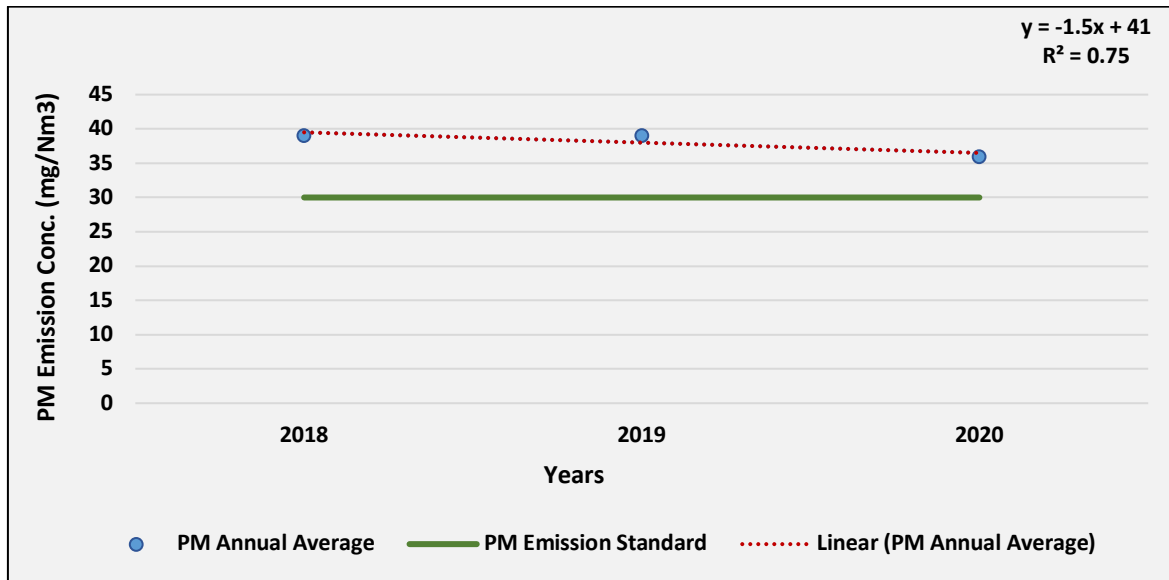


Fig. BO10: Trend of annual mean PM Emission air concentration in Bongaigaon TPP (Stack 2)

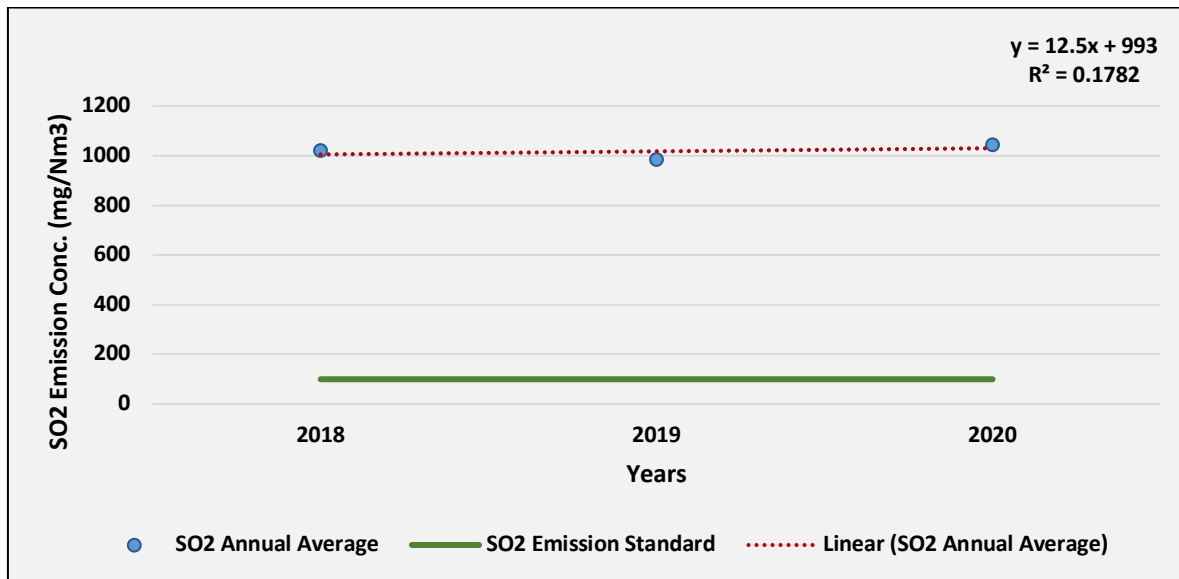


Fig. BO11: Trend of annual mean SO₂ Emission air concentration in Bongaigaon TPP (Stack 2)

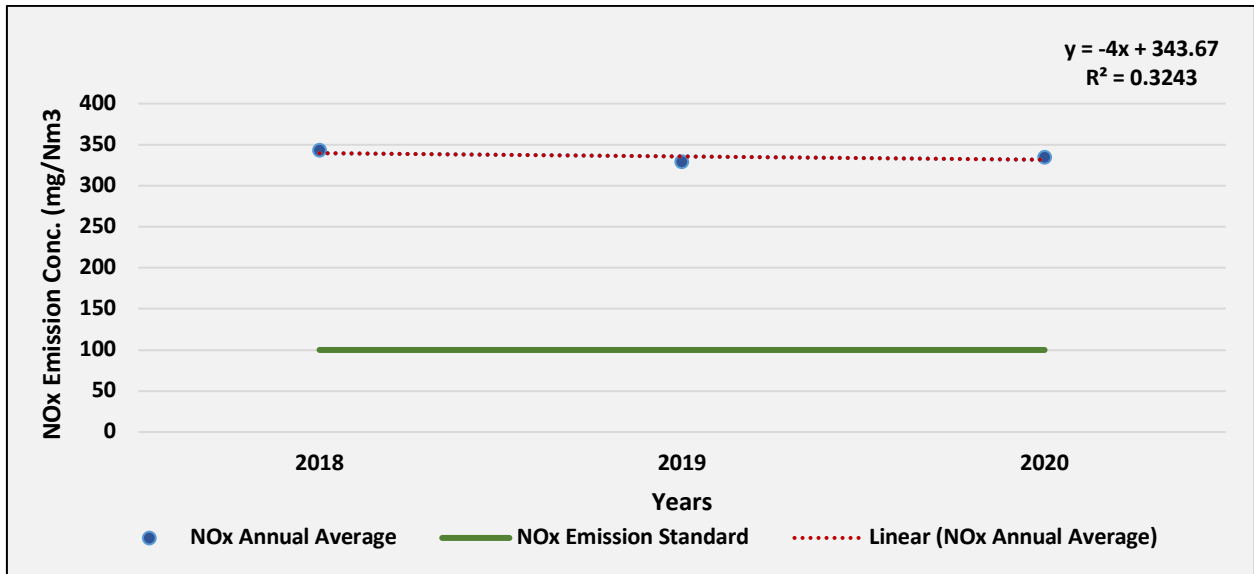


Fig. BO12: Trend of annual mean NO_x Emission air concentration in Bongaigaon TPP (Stack 2)

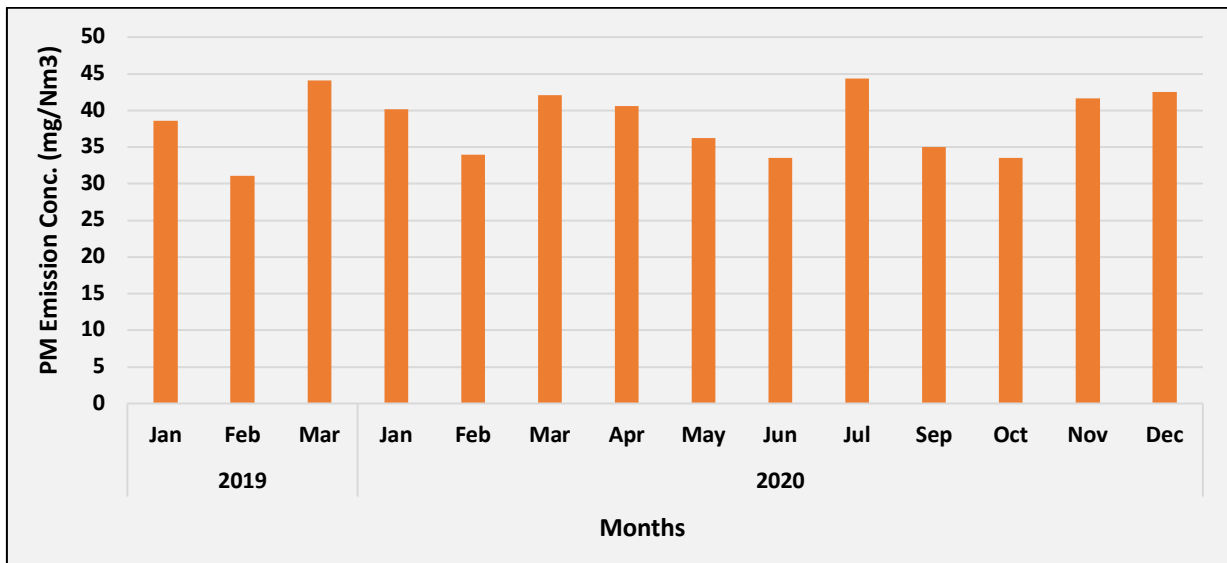


Fig. BO13: Time series of monthly average PM Emission concentration in Bongaigaon TPP (Stack 3)

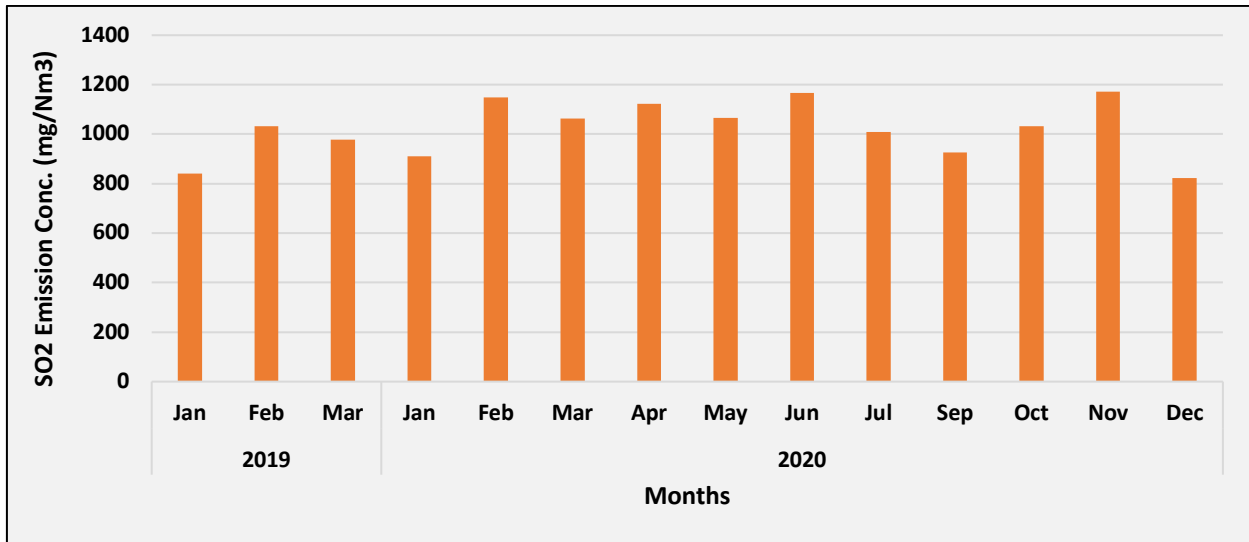


Fig. BO14: Time series of monthly average SO₂ Emission concentration in Bongaigaon TPP (Stack 3)

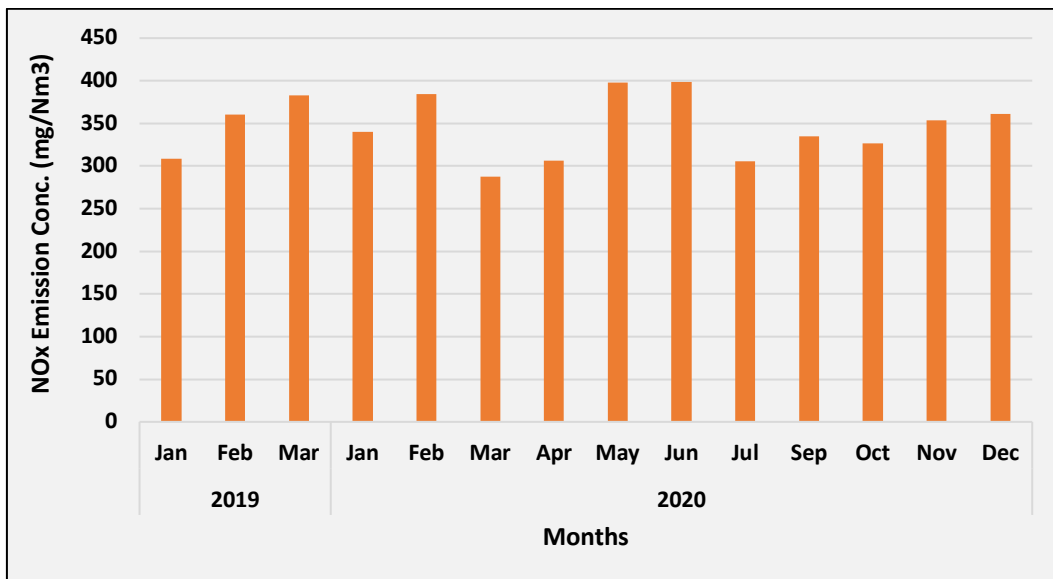


Fig. BO15: Time series of monthly average NO_x Emission concentration in Bongaigaon TPP (Stack 3)

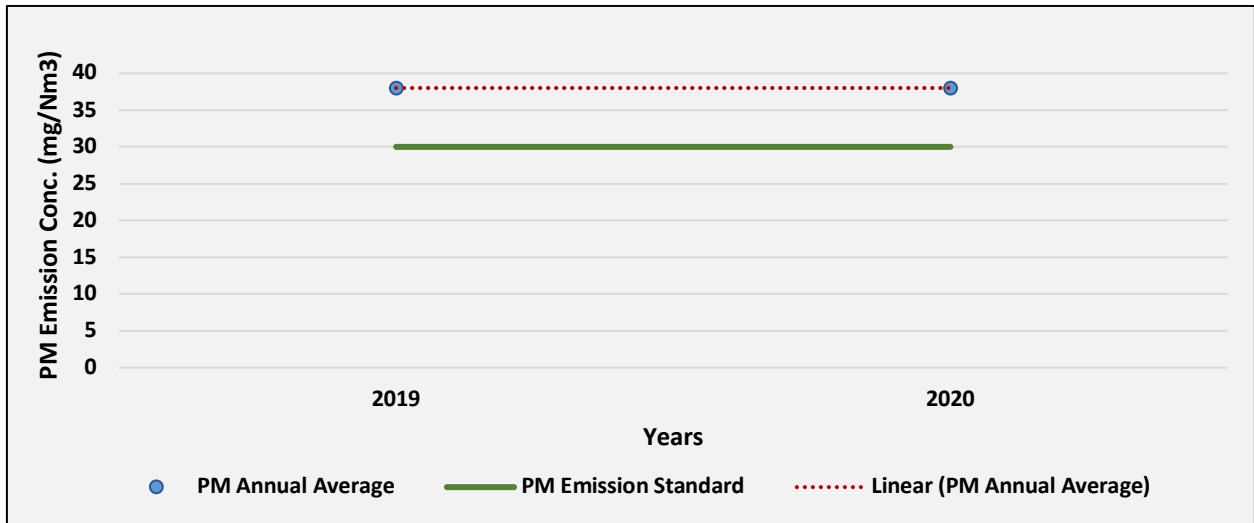


Fig. BO16: Trend of annual mean PM Emission air concentration in Bongaigaon TPP (Stack 3)

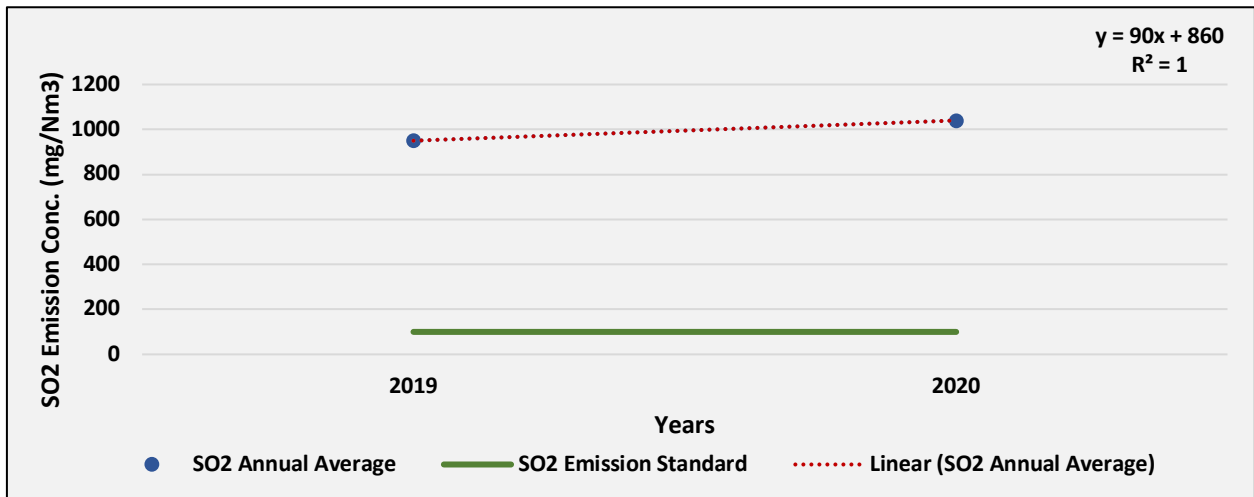


Fig. BO17: Trend of annual mean SO₂ Emission air concentration in Bongaigaon TPP (Stack 3)

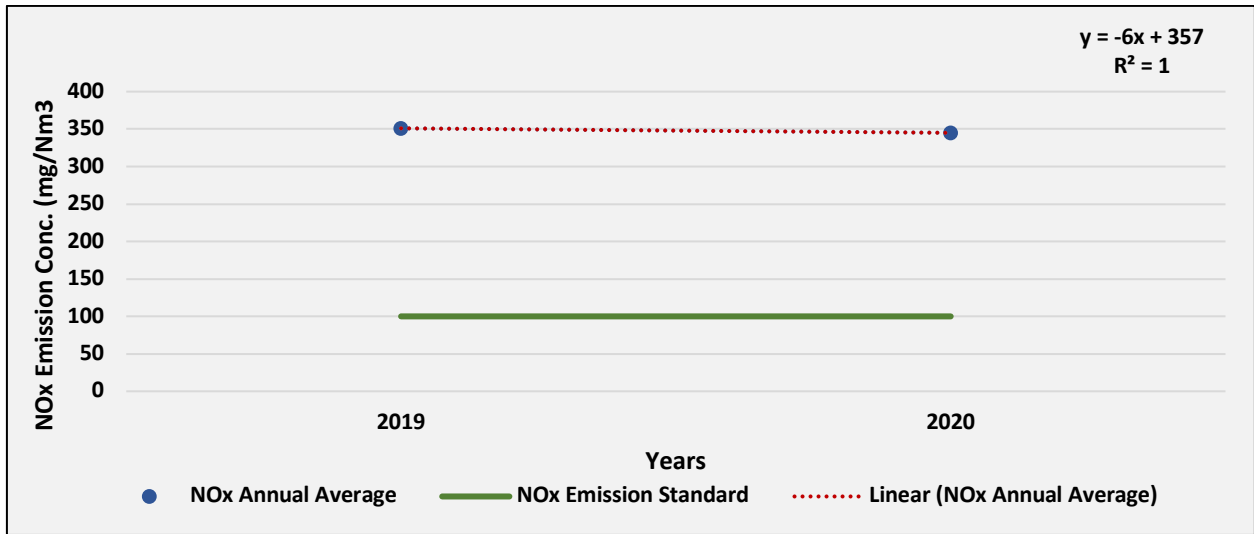


Fig. BO18: Trend of annual mean NO_x Emission air concentration in Bongaigaon TPP (Stack 3)

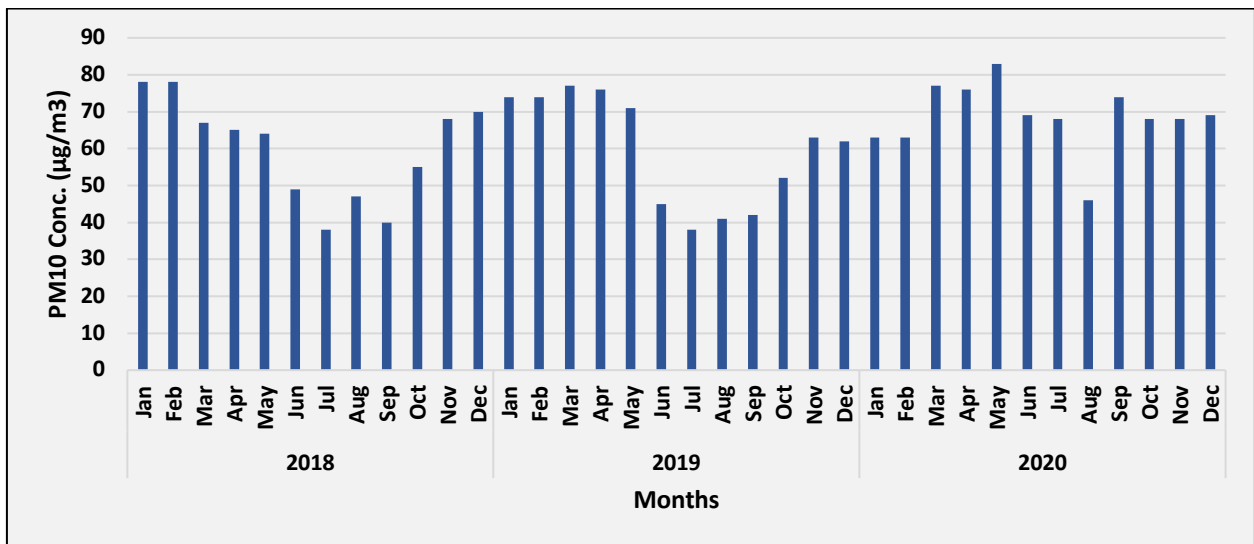


Fig. BO19: Time series of monthly average PM₁₀ ambient air concentration in Bongaigaon TPP (Ambient)

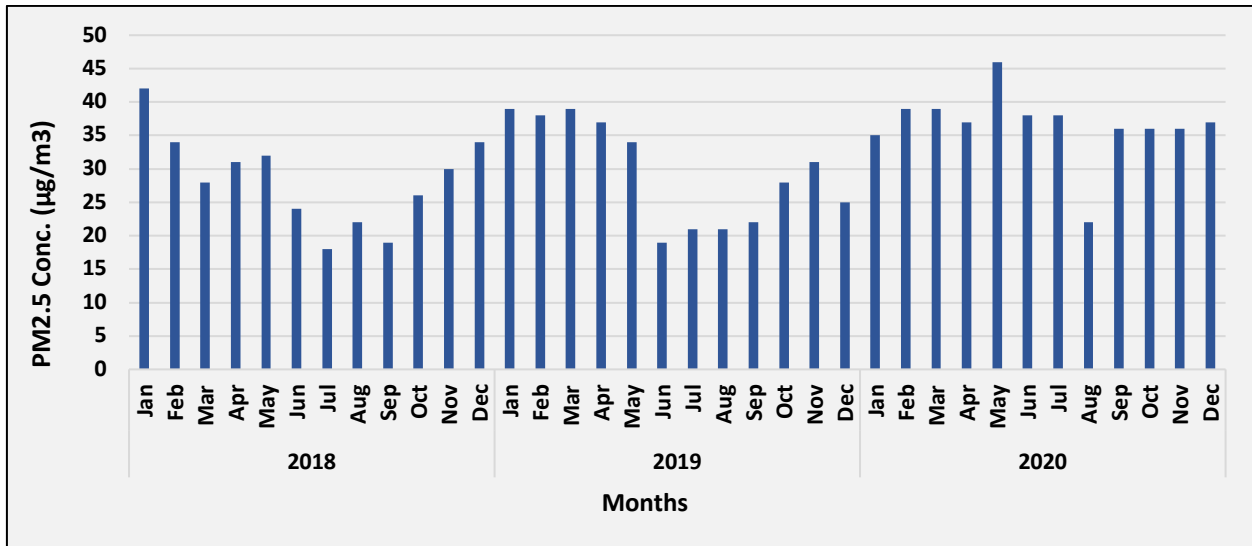


Fig. BO20: Time series of monthly average PM_{2.5} ambient air concentration in Bongaigaon TPP (Ambient)

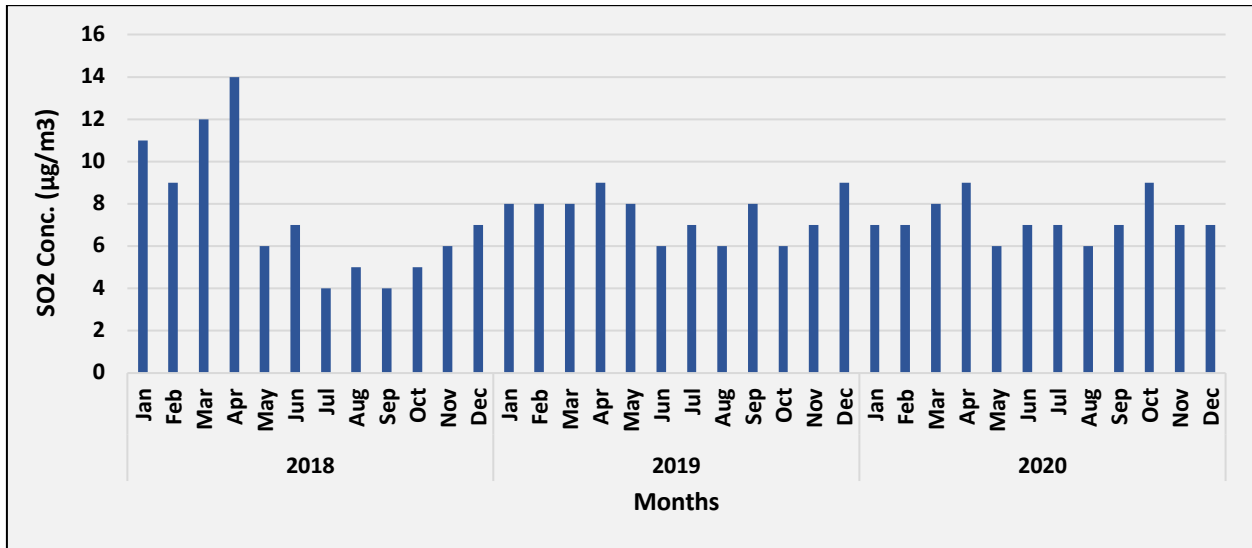


Fig. BO21: Time series of monthly average SO₂ ambient air concentration in Bongaigaon TPP (Ambient)

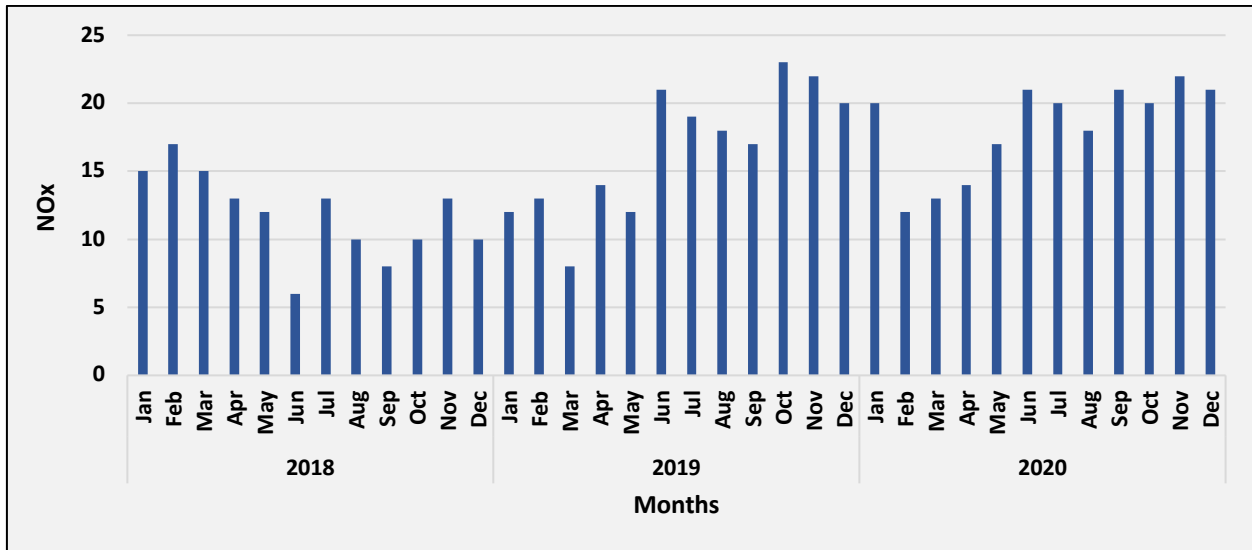


Fig. BO22: Time series of monthly average NO_x ambient air concentration in Bongaigaon TPP (Ambient)

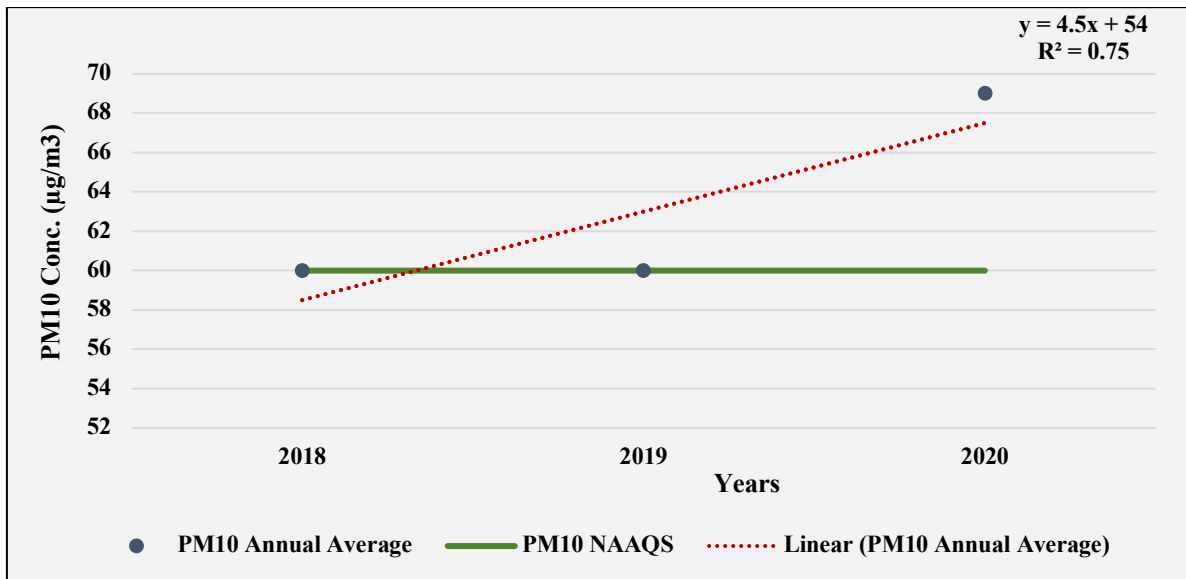


Fig. BO23: Trend of annual mean PM₁₀ ambient air concentration in Bongaigaon TPP (Ambient)

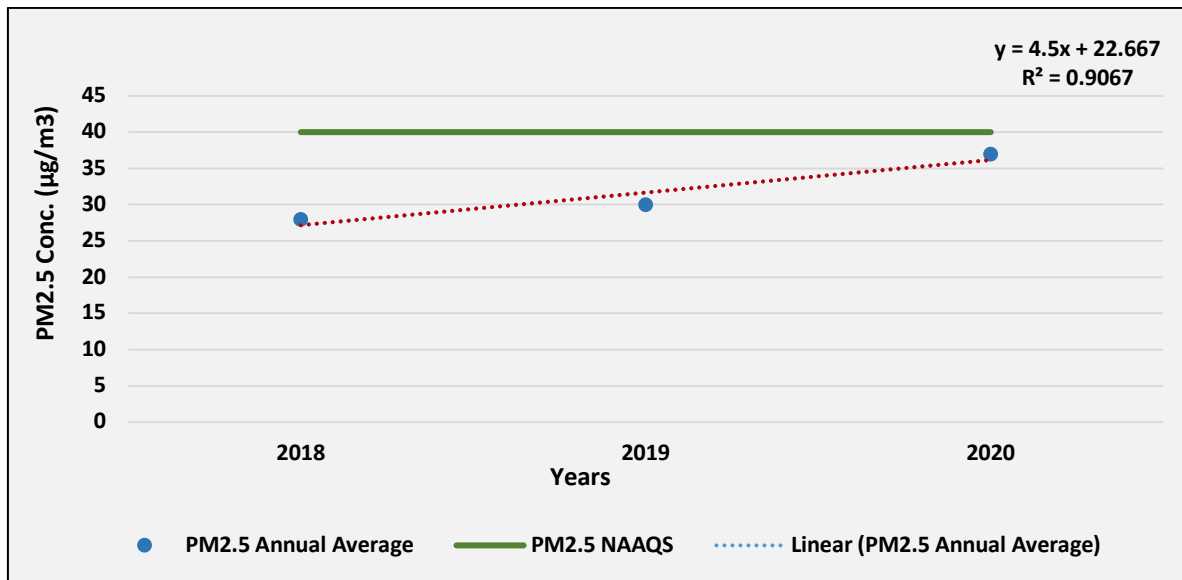


Fig. BO24: Trend of annual mean PM_{2.5} ambient air concentration in Bongaigaon TPP (Ambient)

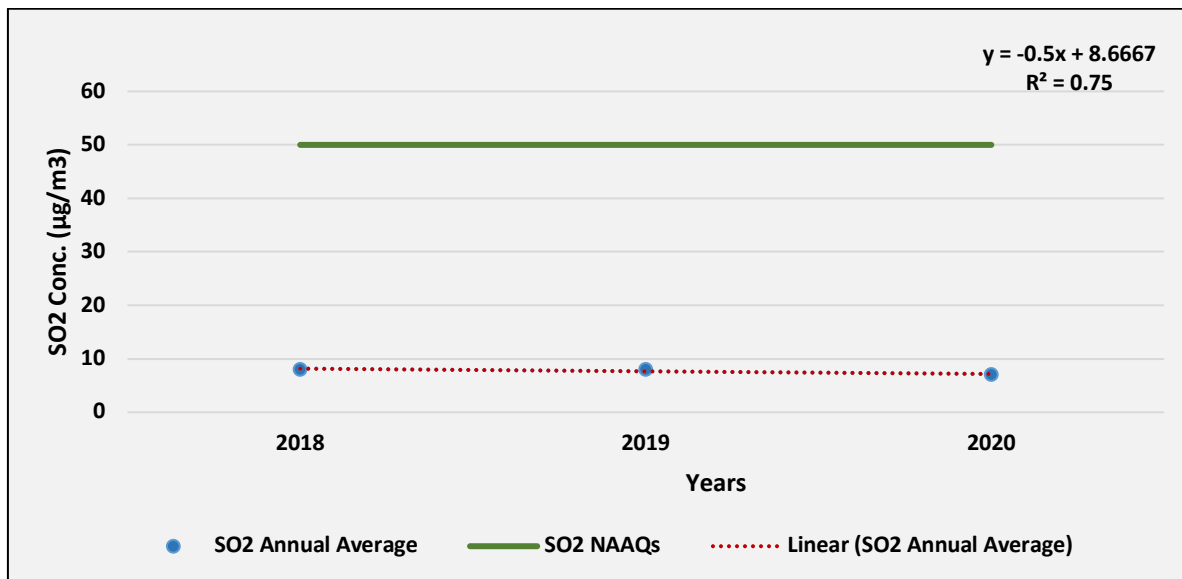


Fig. BO25: Trend of annual mean SO₂ ambient air concentration in Bongaigaon TPP (Ambient)

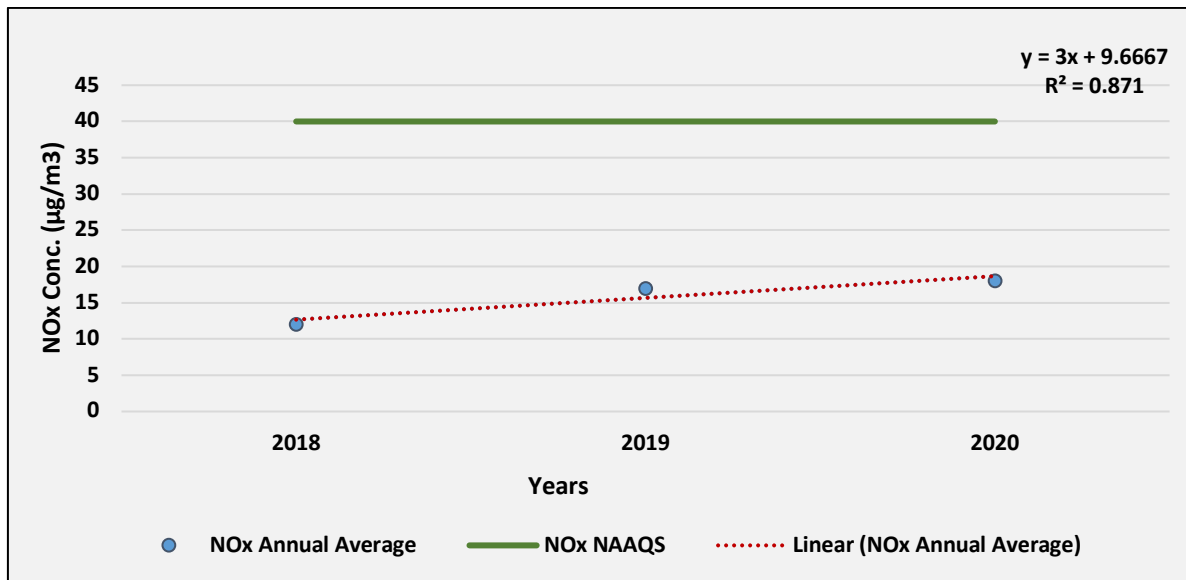


Fig. BO26: Trend of annual mean NO_x ambient air concentration in Bongaigaon TPP (Ambient)

TALCHER SUPER THERMAL POWER PLANT

Talcher Thermal Power station is located in Talcher sub-division of Angul district in the Indian state of Odisha Pin.759101. The existing plant was closed on 31 March 2021 with the plans to set up a new plant still in discussion phase. The power plant is one of the coal-based plants of NTPC. The coal for the power plant is sourced from Jagannath Mines of Mahanadi Coalfields Limited. Source of water for the plant is from Brahmani River.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. TAL1 – Fig. TAL44) for the last three years (2018-2020) using data provided by NTPC developer for Talcher Power plant, Odisha, India.

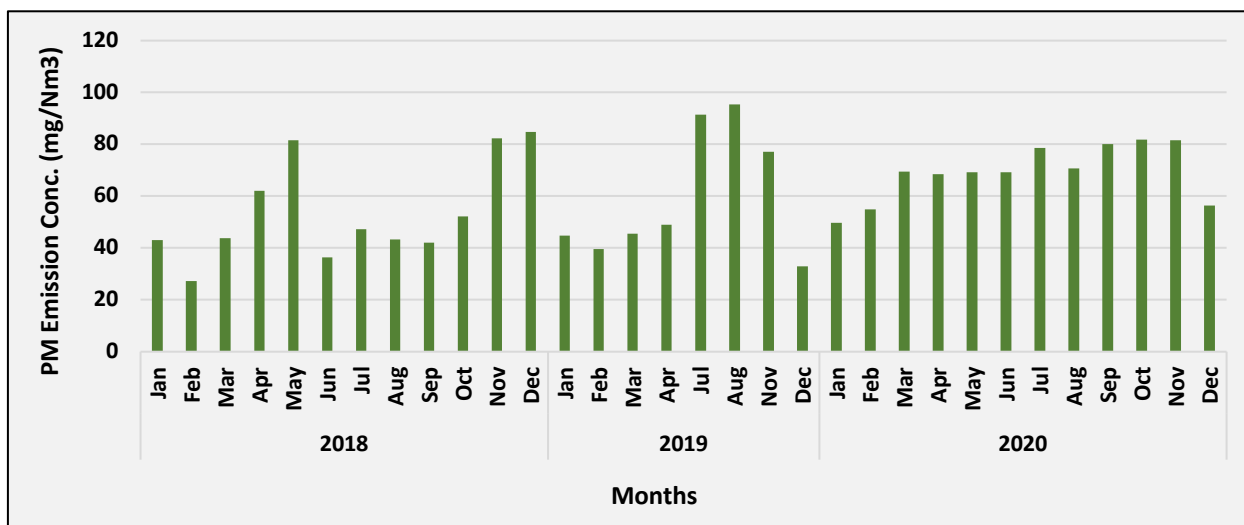


Fig. TAL1: Time series of monthly average PM Emission concentration in Talcher TPP (Stack 1)

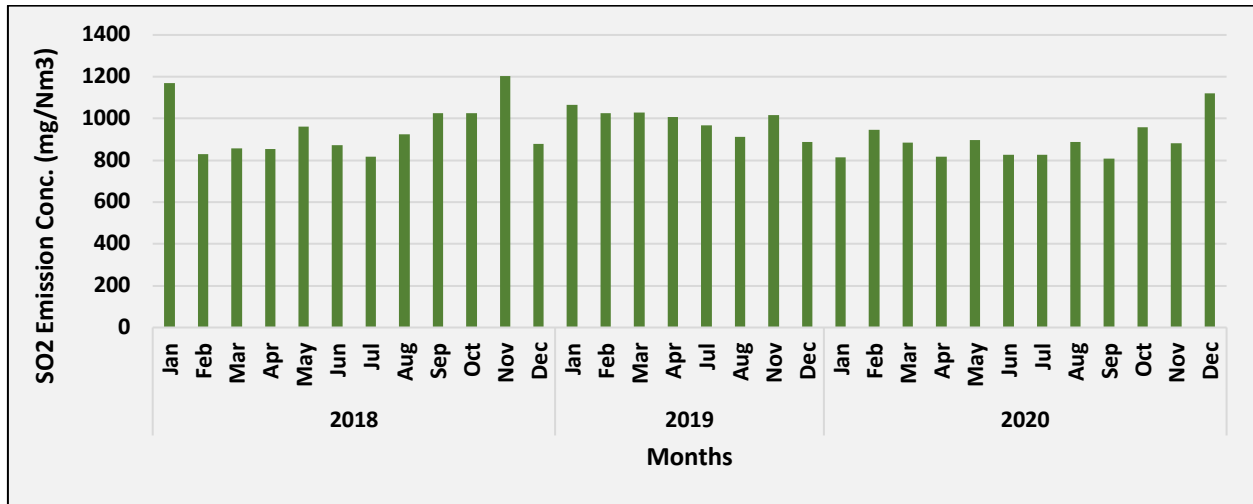


Fig. TAL2: Time series of monthly average SO₂ Emission concentration in Talcher TPP (Stack 1)

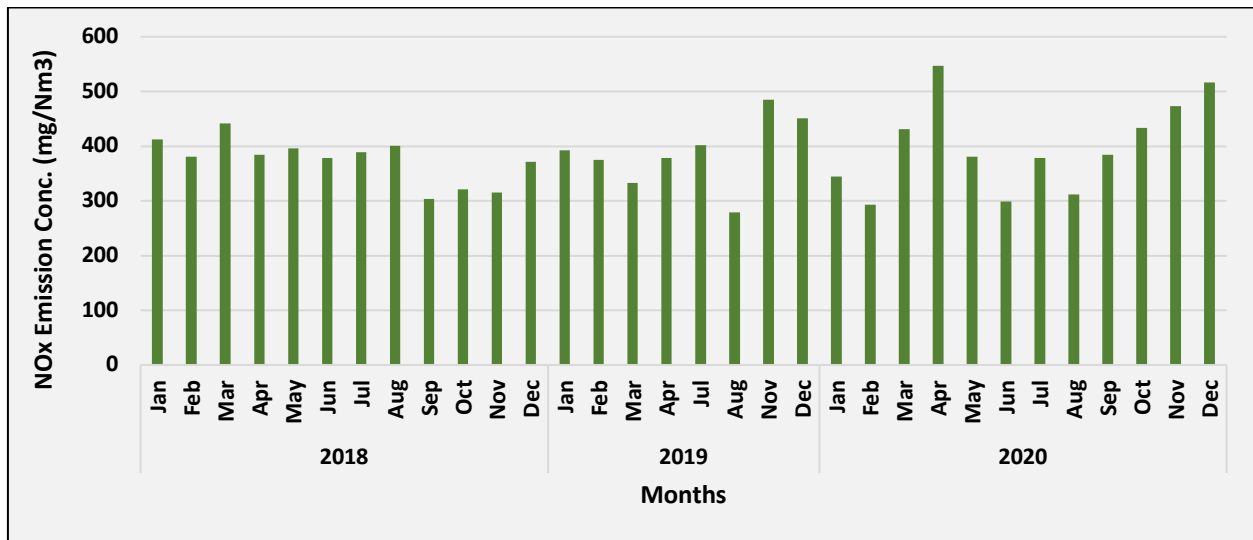


Fig. TAL3: Time series of monthly average NO_x Emission concentration in Talcher TPP (Stack 1)

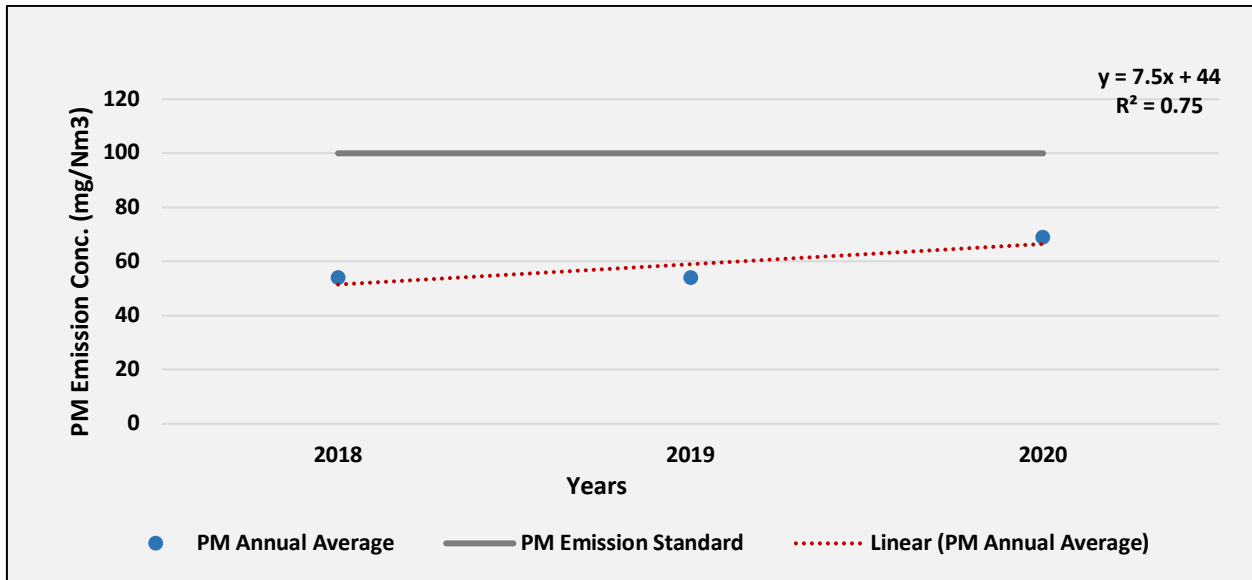


Fig. TAL4: Trend of annual mean PM Emission air concentration in Talcher TPP (Stack 1)

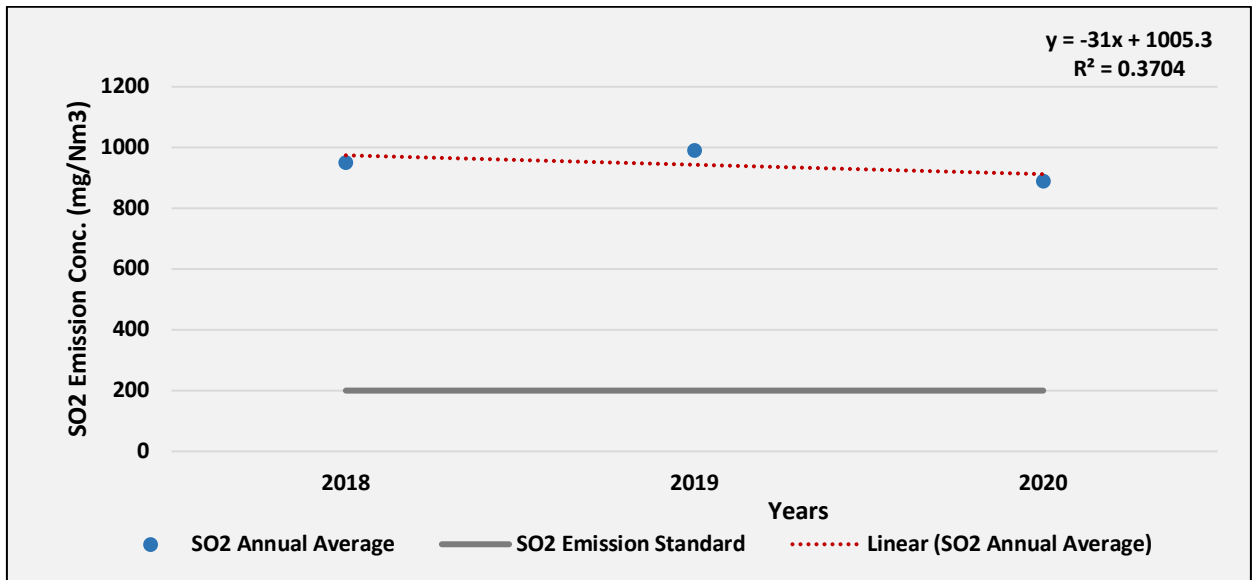


Fig. TAL5: Trend of annual mean SO₂ Emission air concentration in Talcher TPP (Stack 1)

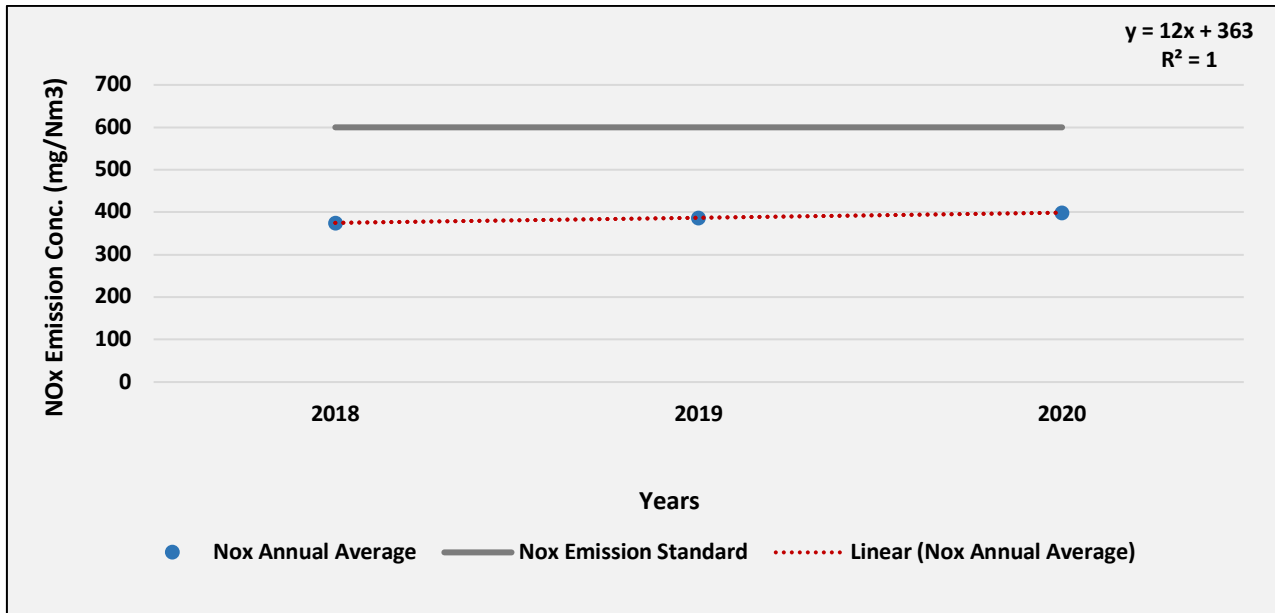


Fig. TAL6: Trend of annual mean NO_x Emission air concentration in Talcher TPP (Stack 1)

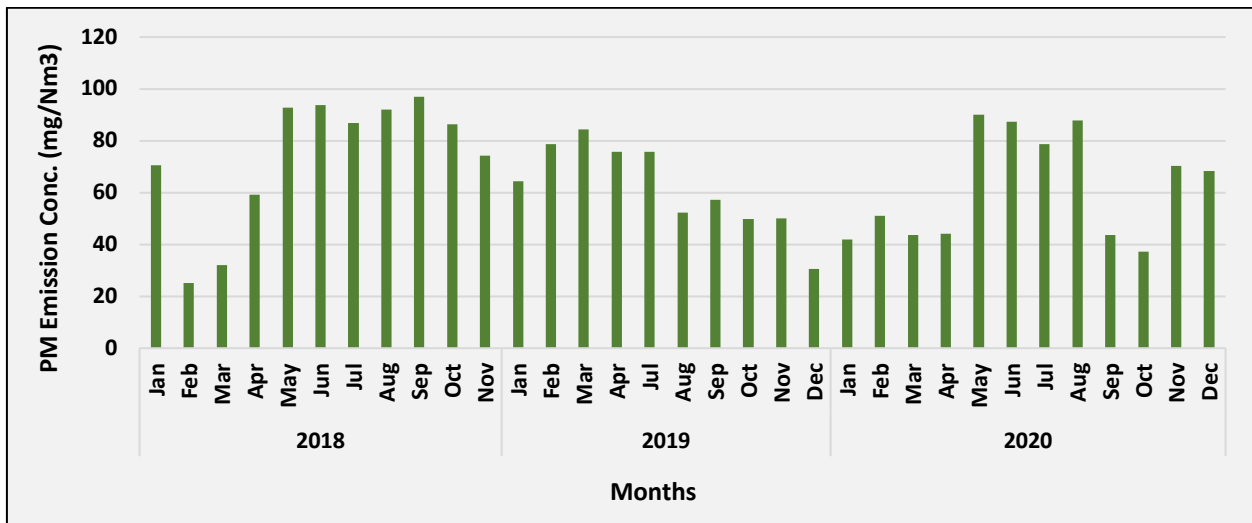


Fig. TAL7: Time series of monthly average PM Emission concentration in Talcher TPP (Stack 2)

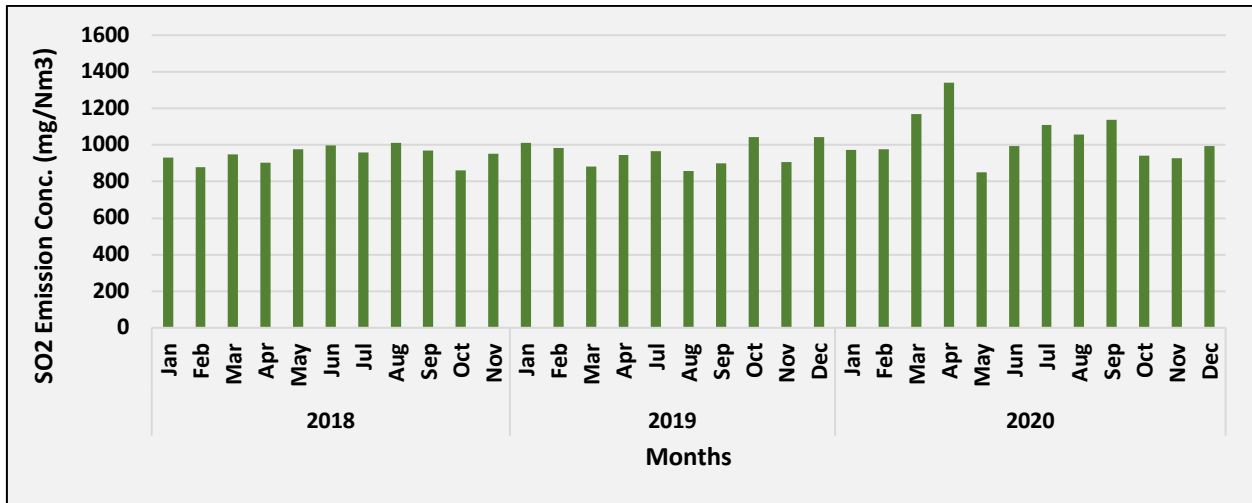


Fig. TAL8: Time series of monthly average SO₂ Emission concentration in Talcher TPP (Stack 2)

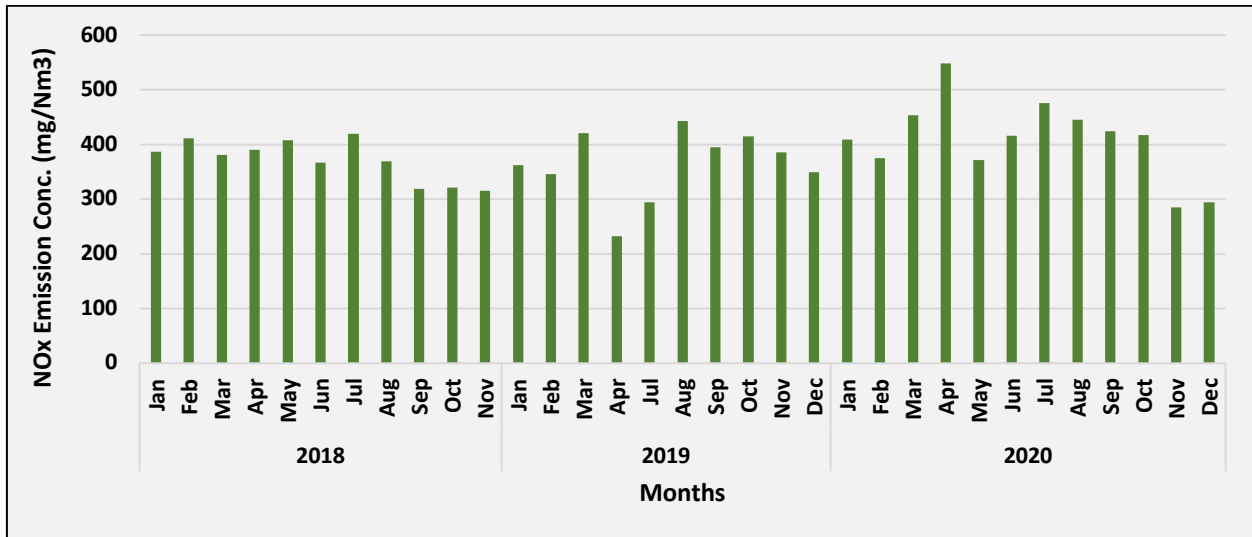


Fig. TAL9: Time series of monthly average NO_x Emission concentration in Talcher TPP (Stack 2)

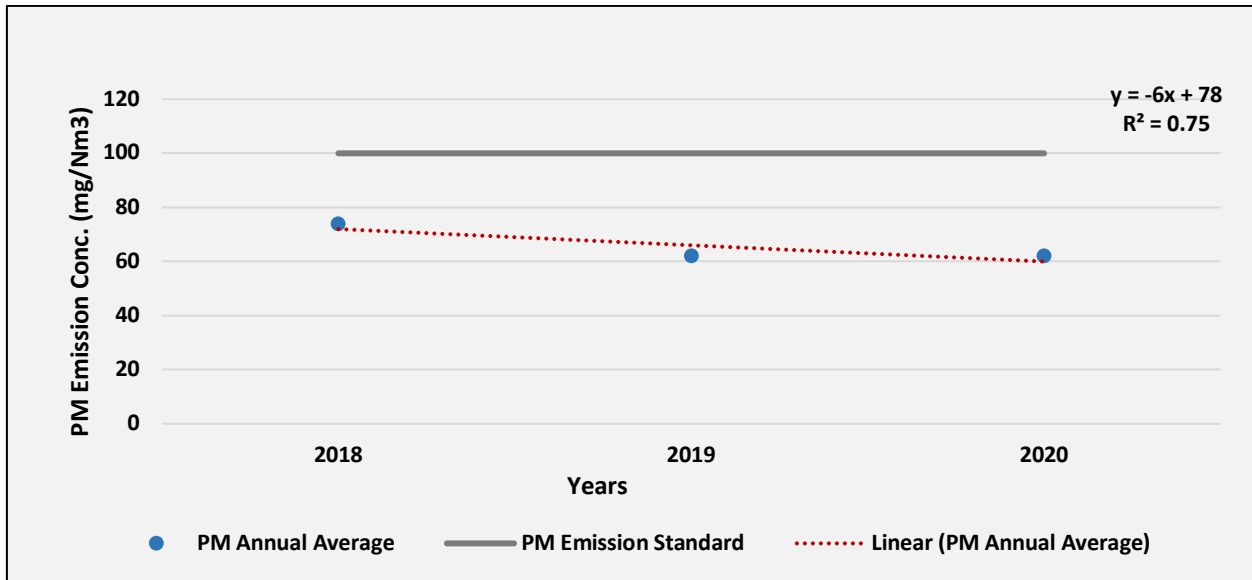


Fig. TAL10: Trend of annual mean PM Emission air concentration in Talcher TPP (Stack 2)

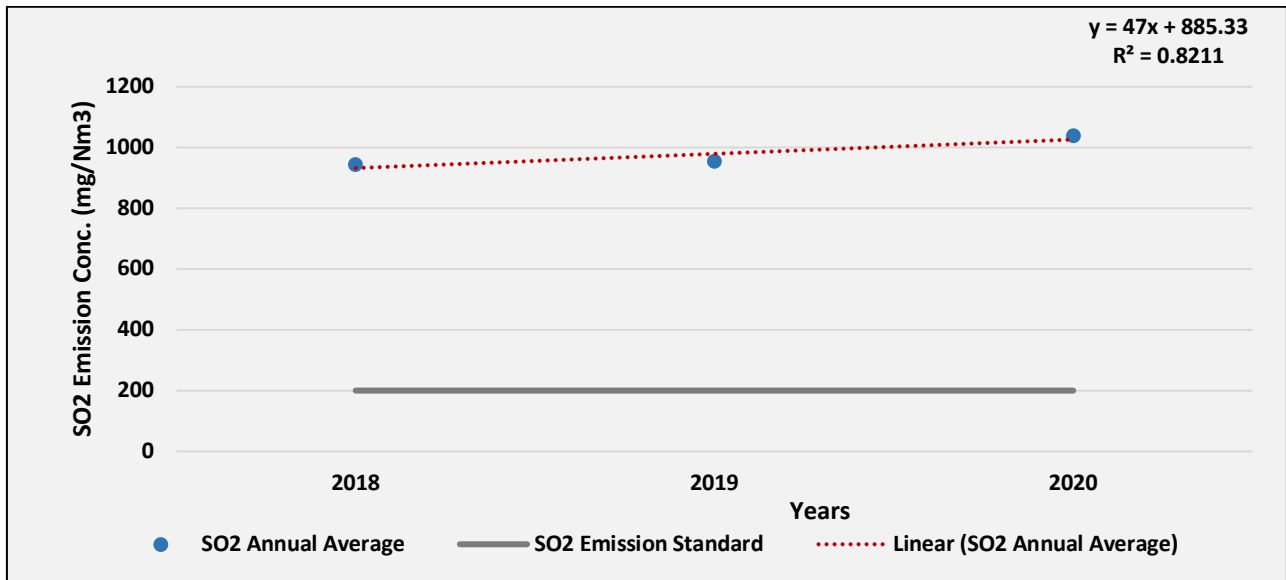


Fig. TAL11: Trend of annual mean SO₂ Emission air concentration in Talcher TPP (Stack 2)

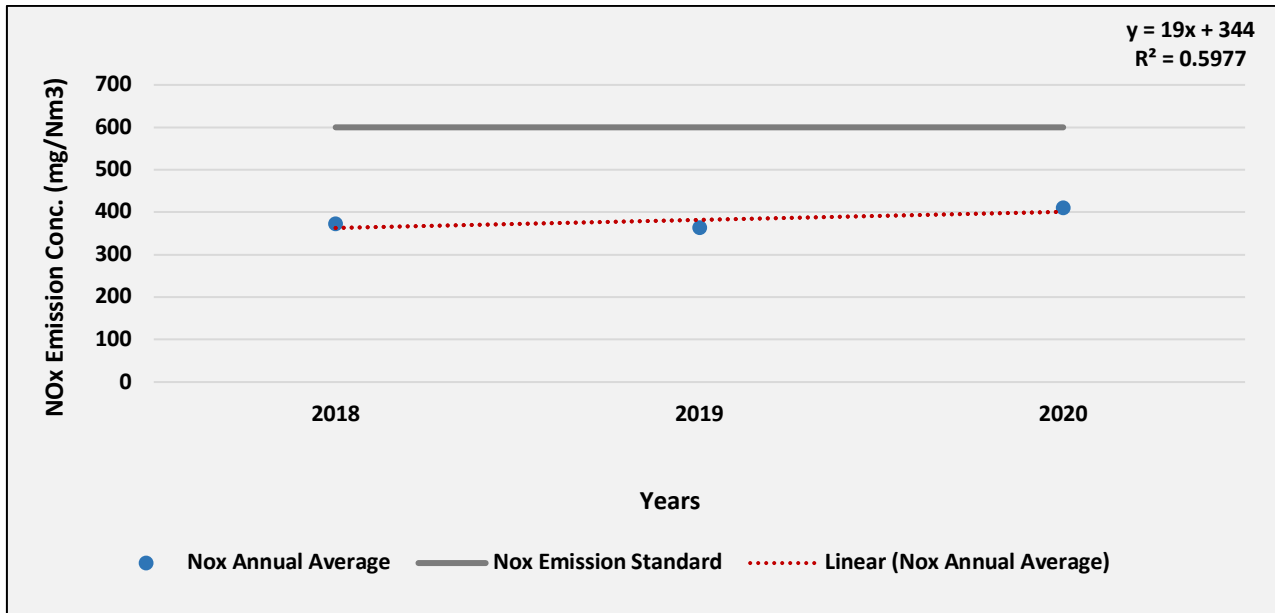


Fig. TAL12: Trend of annual mean NO_x Emission air concentration in Talcher TPP (Stack 2)

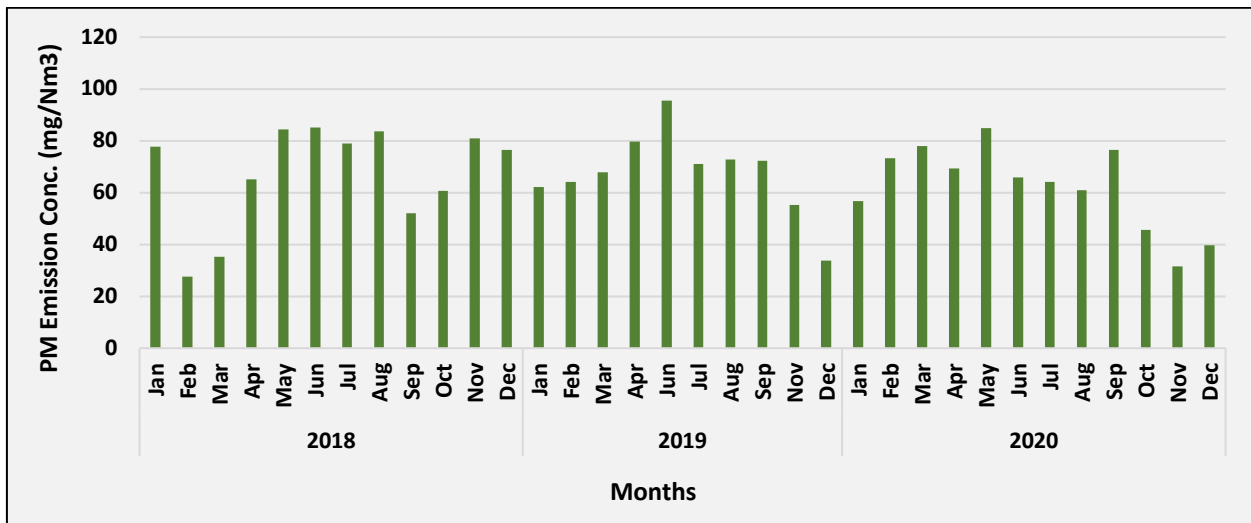


Fig. TAL13: Time series of monthly average PM Emission concentration in Talcher TPP (Stack 3)

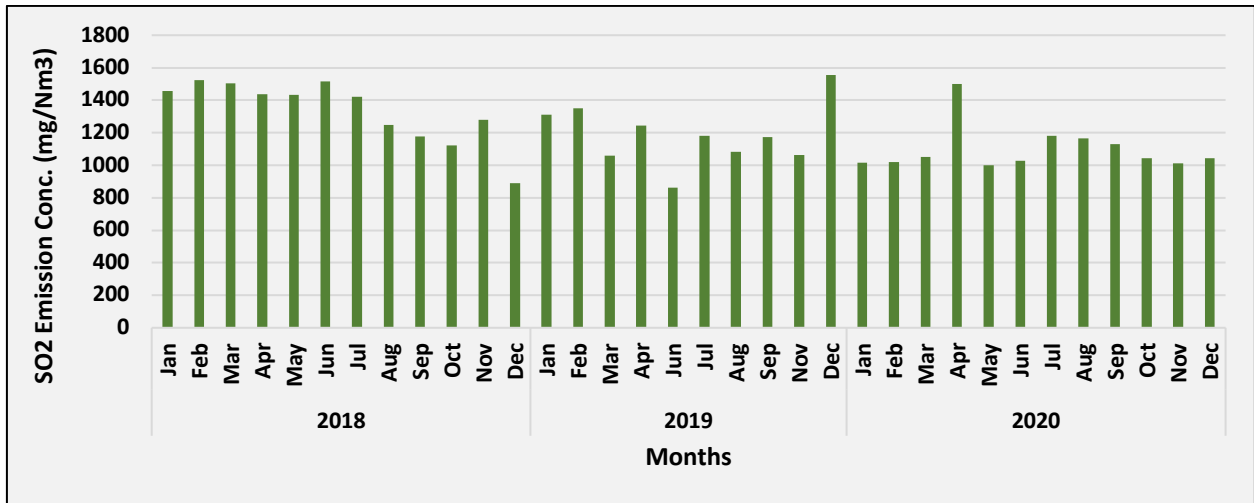


Fig. TAL14: Time series of monthly average SO₂ Emission concentration in Talcher TPP (Stack 3)

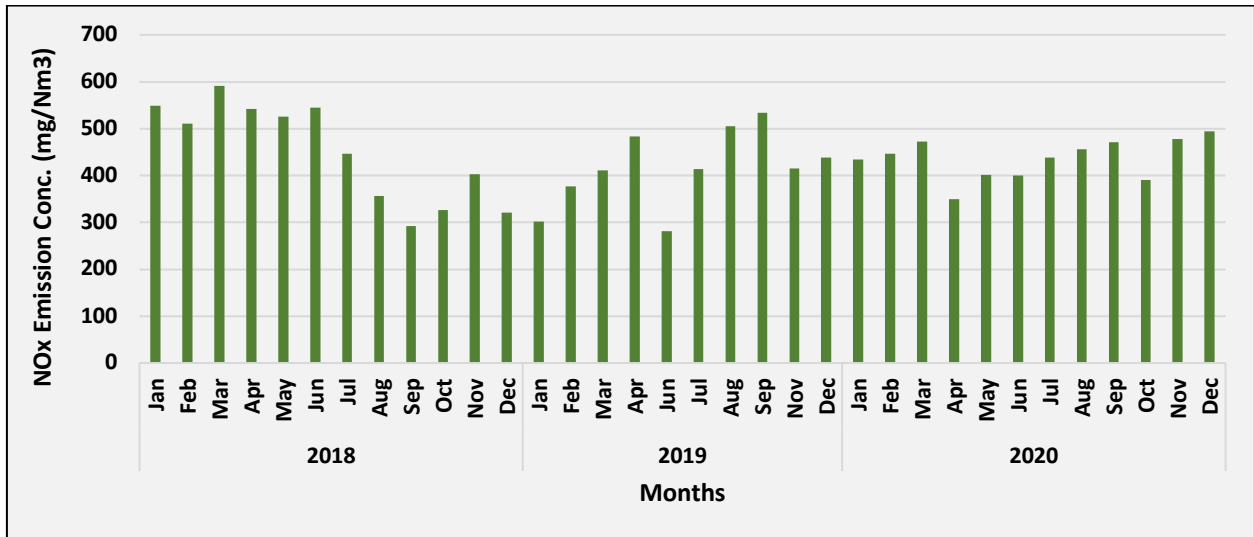


Fig. TAL15: Time series of monthly average NO_x Emission concentration in Talcher TPP (Stack 3)

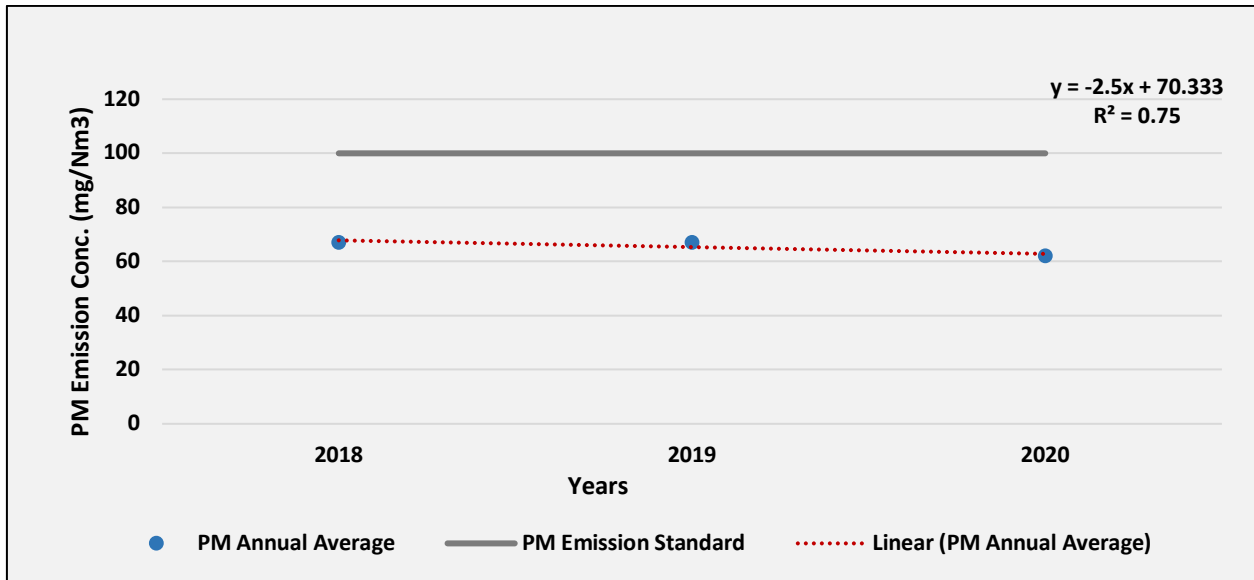


Fig. TAL16: Trend of annual mean PM Emission air concentration in Talcher TPP (Stack 3)

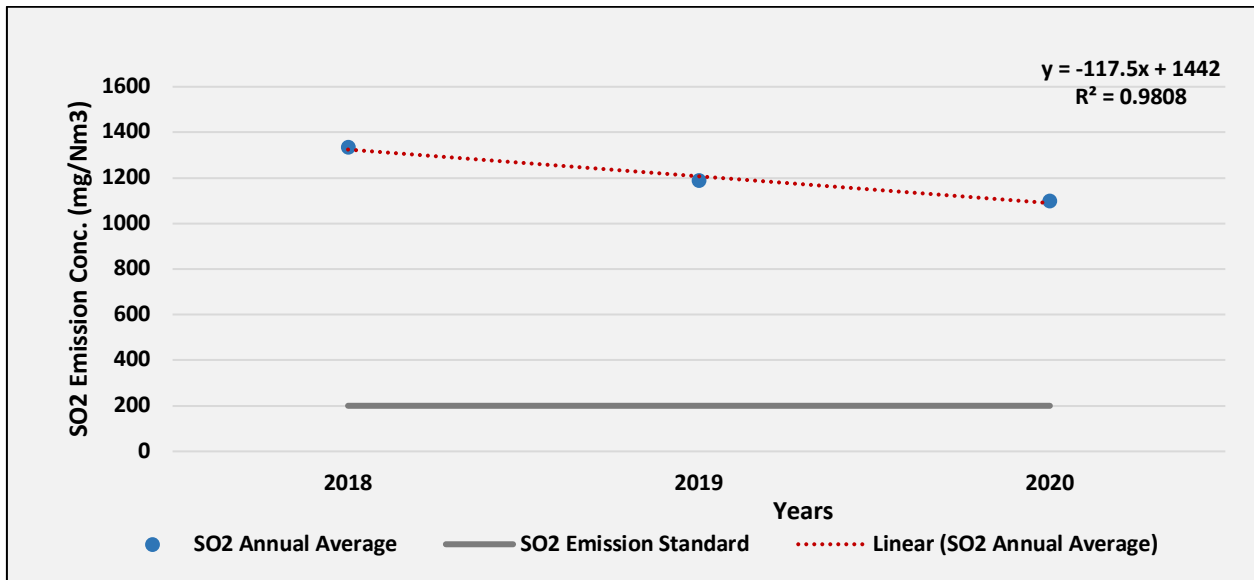


Fig. TAL17: Trend of annual mean SO₂ Emission air concentration in Talcher TPP (Stack 3)

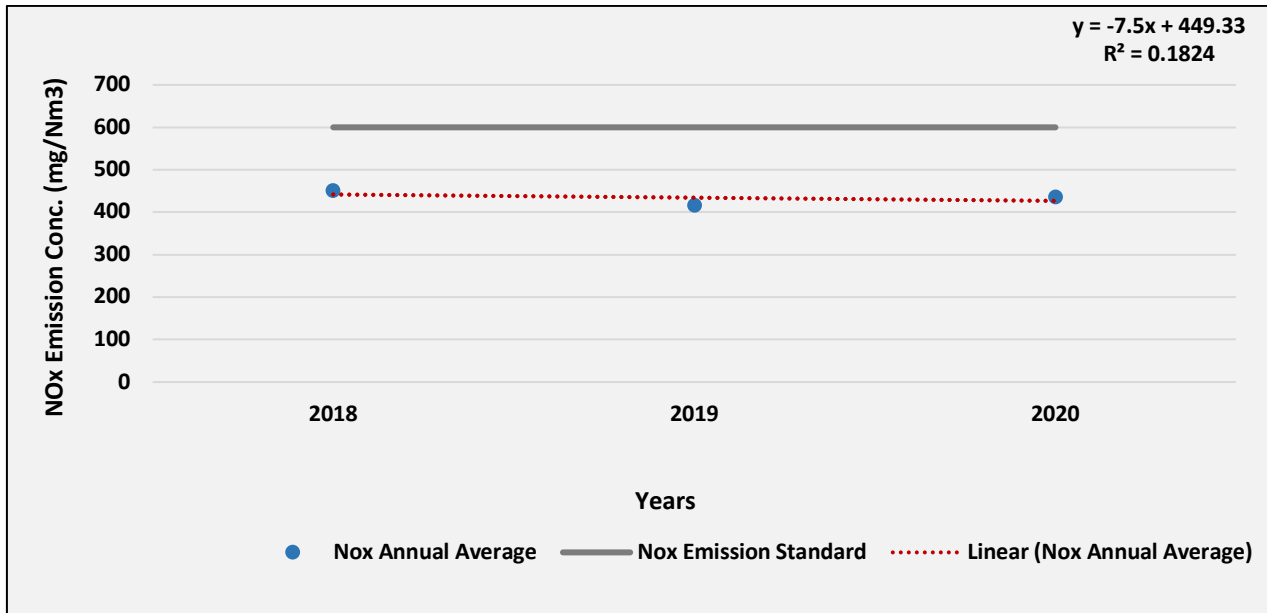


Fig. TAL18: Trend of annual mean NO_x Emission air concentration in Talcher TPP (Stack 3)

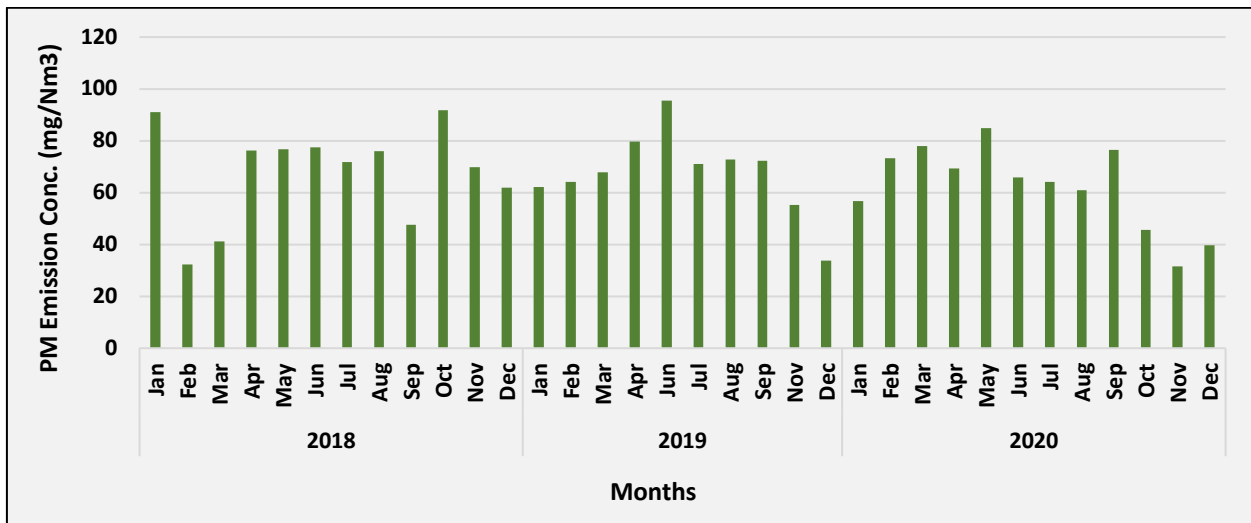


Fig. TAL19: Time series of monthly average PM Emission concentration in Talcher TPP (Stack 4)

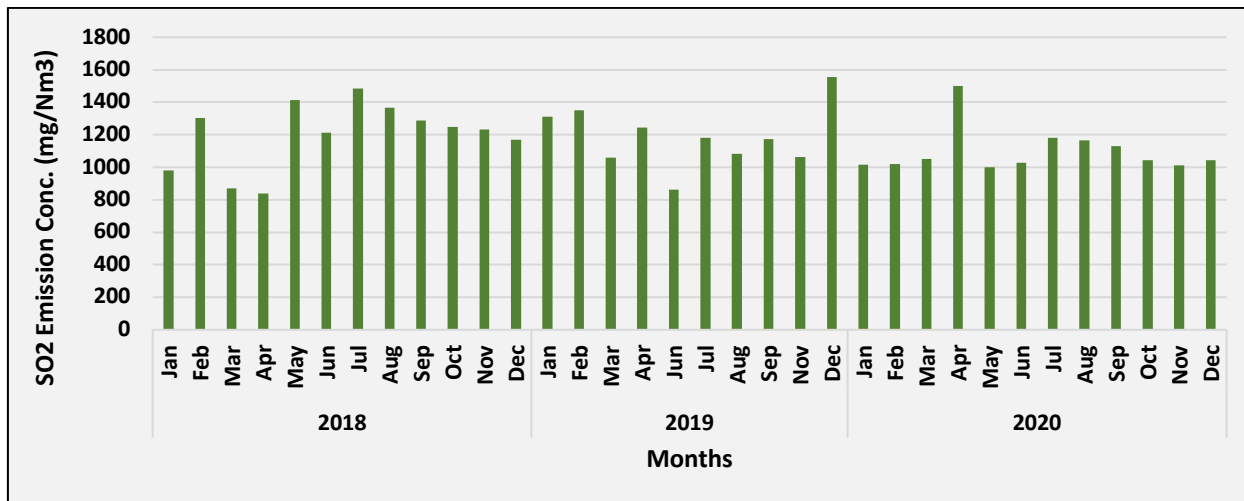


Fig. TAL20: Time series of monthly average SO₂ Emission concentration in Talcher TPP (Stack 4)

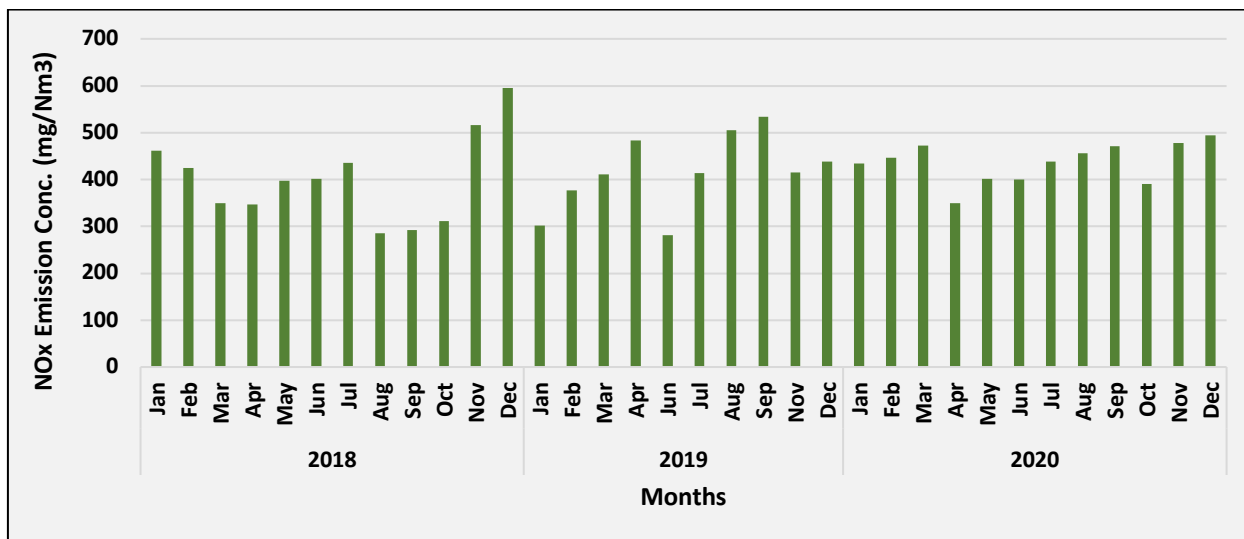


Fig. TAL21: Time series of monthly average NO_x Emission concentration in Talcher TPP (Stack 4)

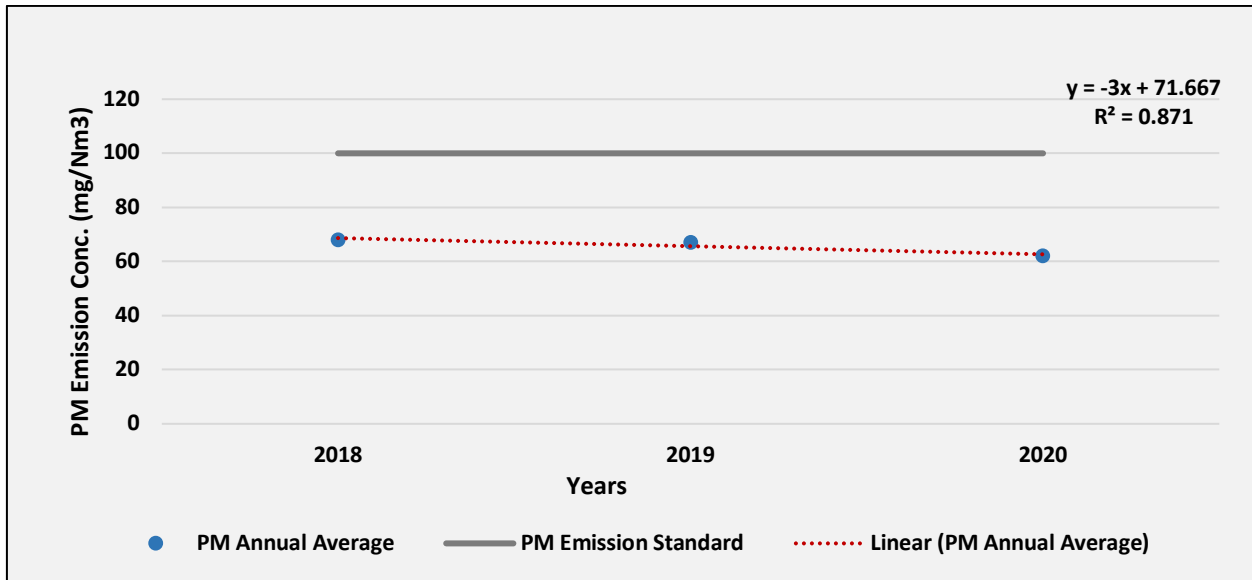


Fig. TAL22: Trend of annual mean PM Emission air concentration in Talcher TPP (Stack 4)

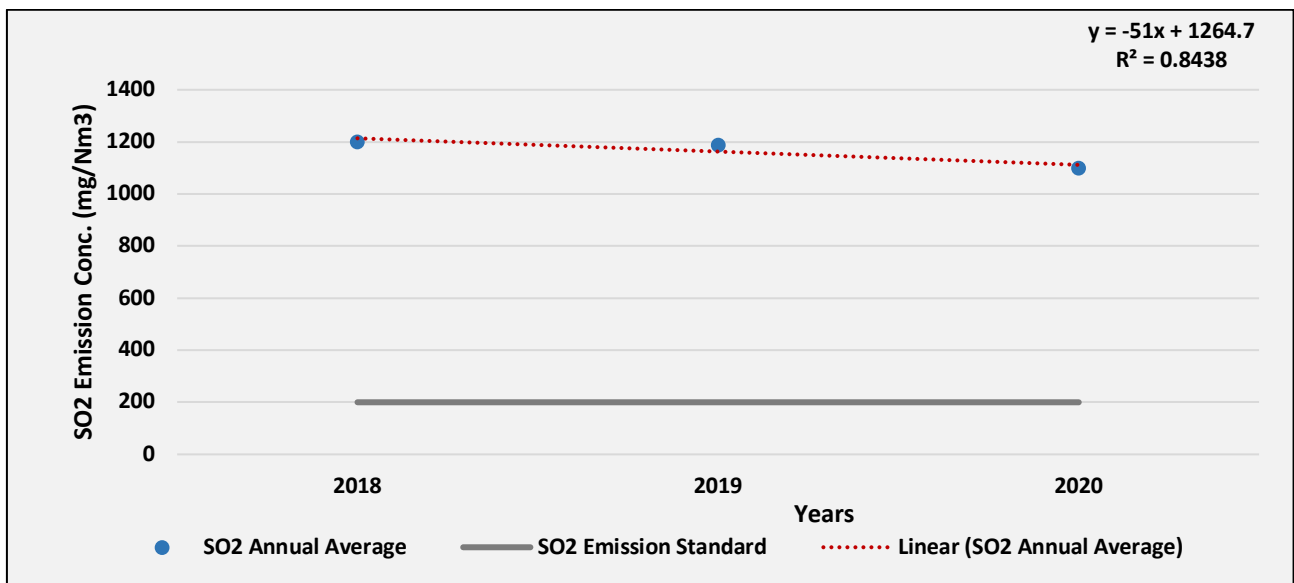


Fig. TAL23: Trend of annual mean SO₂ Emission air concentration in Talcher TPP (Stack 4)

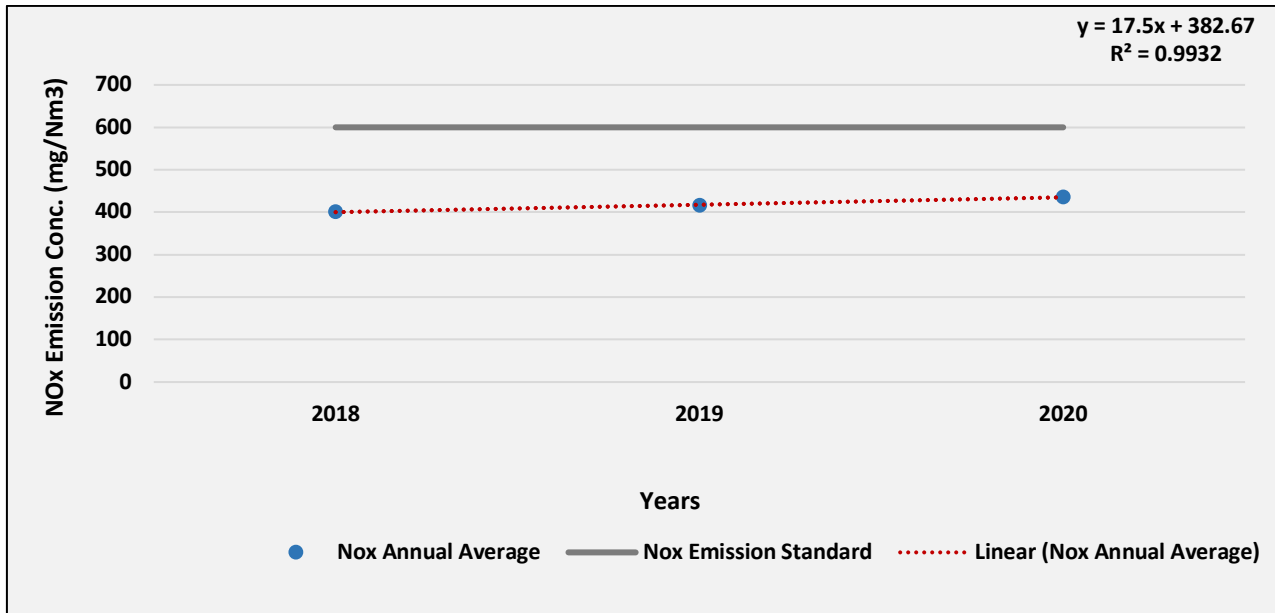


Fig. TAL24: Trend of annual mean NO_x Emission air concentration in Talcher TPP (Stack 4)

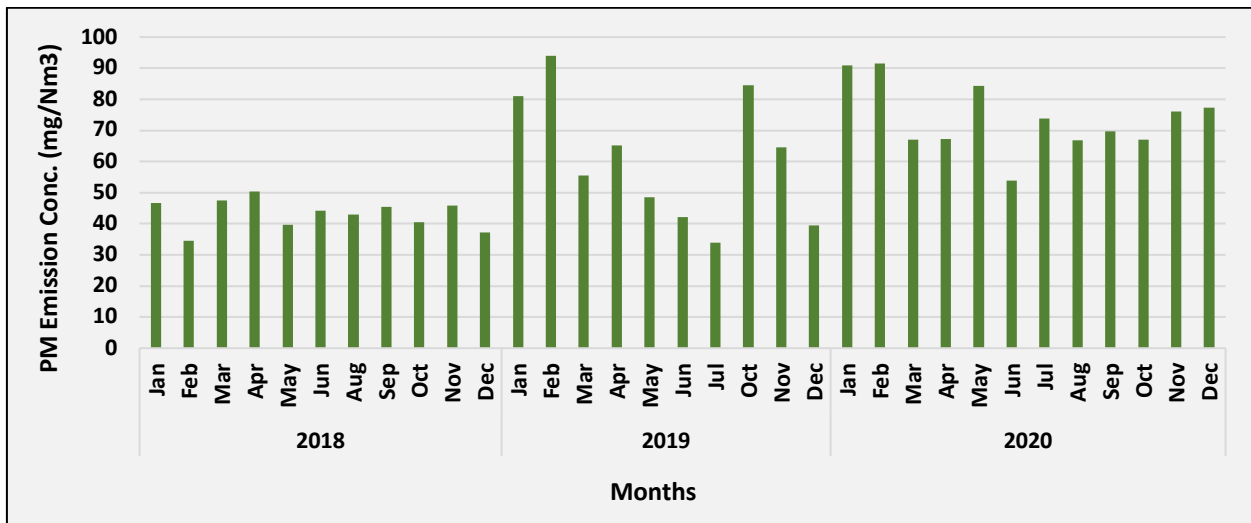


Fig. TAL25: Time series of monthly average PM Emission concentration in Talcher TPP (Stack 5)

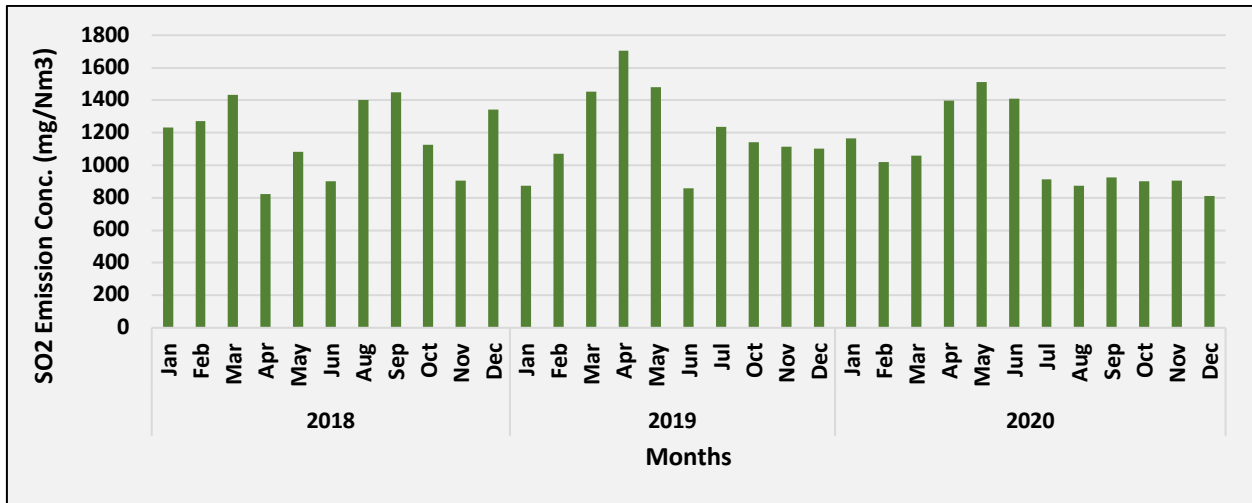


Fig. TAL26: Time series of monthly average SO₂ Emission concentration in Talcher TPP (Stack 5)

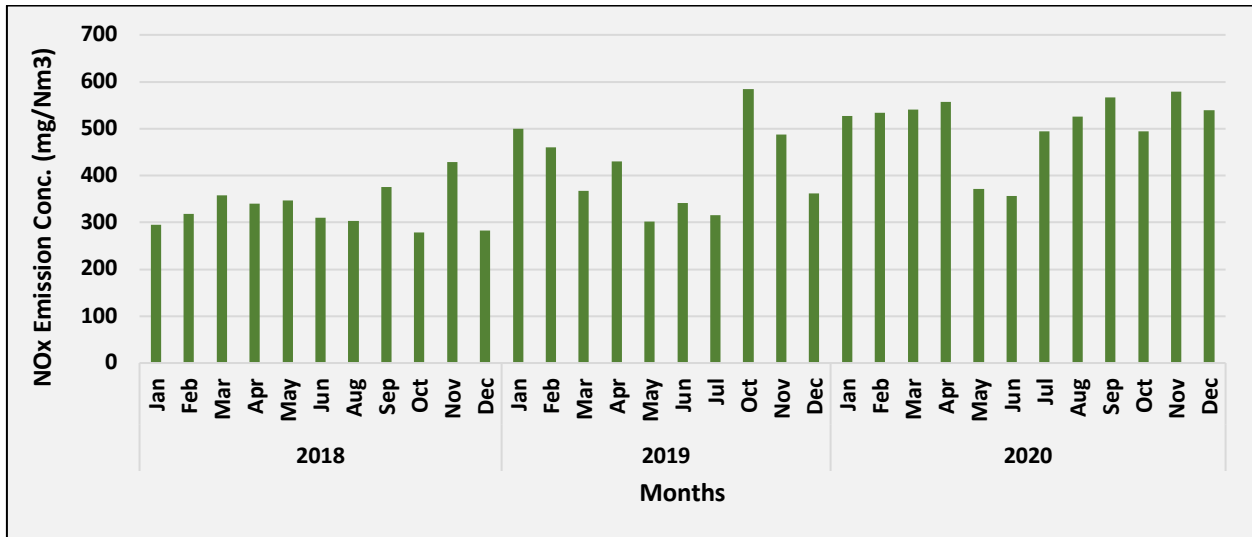


Fig. TAL27: Time series of monthly average NO_x Emission concentration in Talcher TPP (Stack 5)

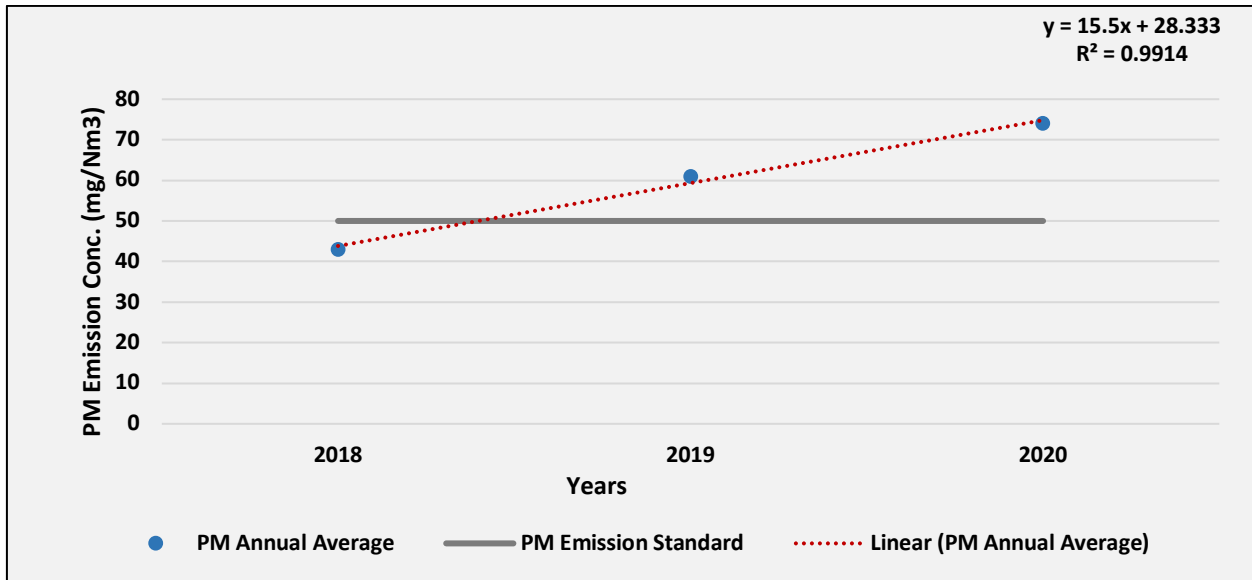


Fig. TAL28: Trend of annual mean PM Emission air concentration in Talcher TPP (Stack 5)

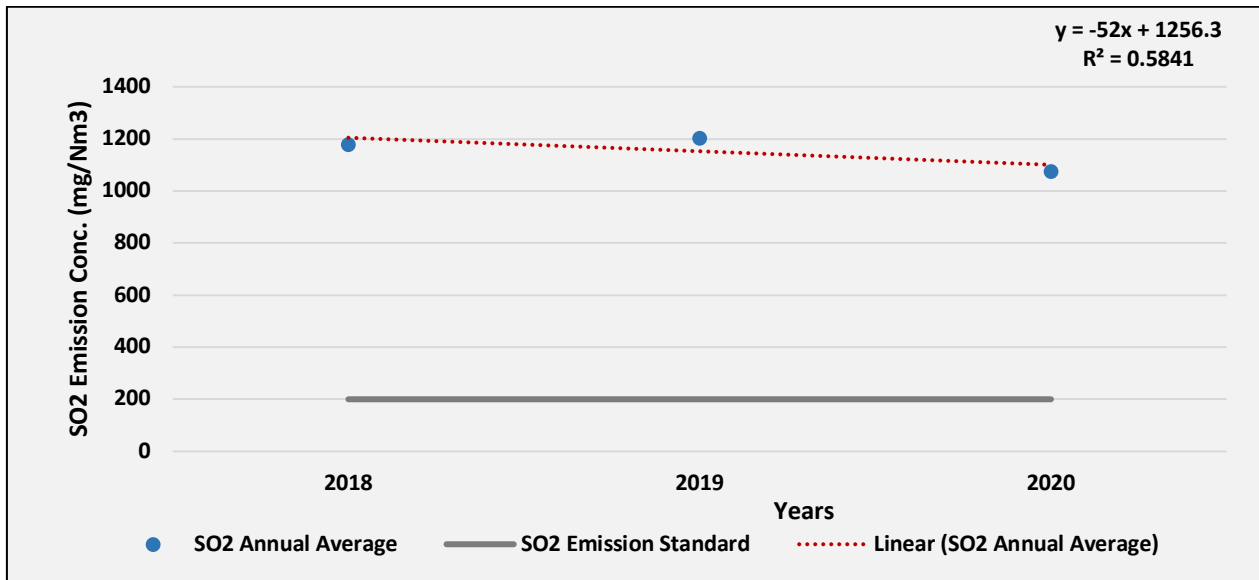


Fig. TAL29: Trend of annual mean SO₂ Emission air concentration in Talcher TPP (Stack 5)

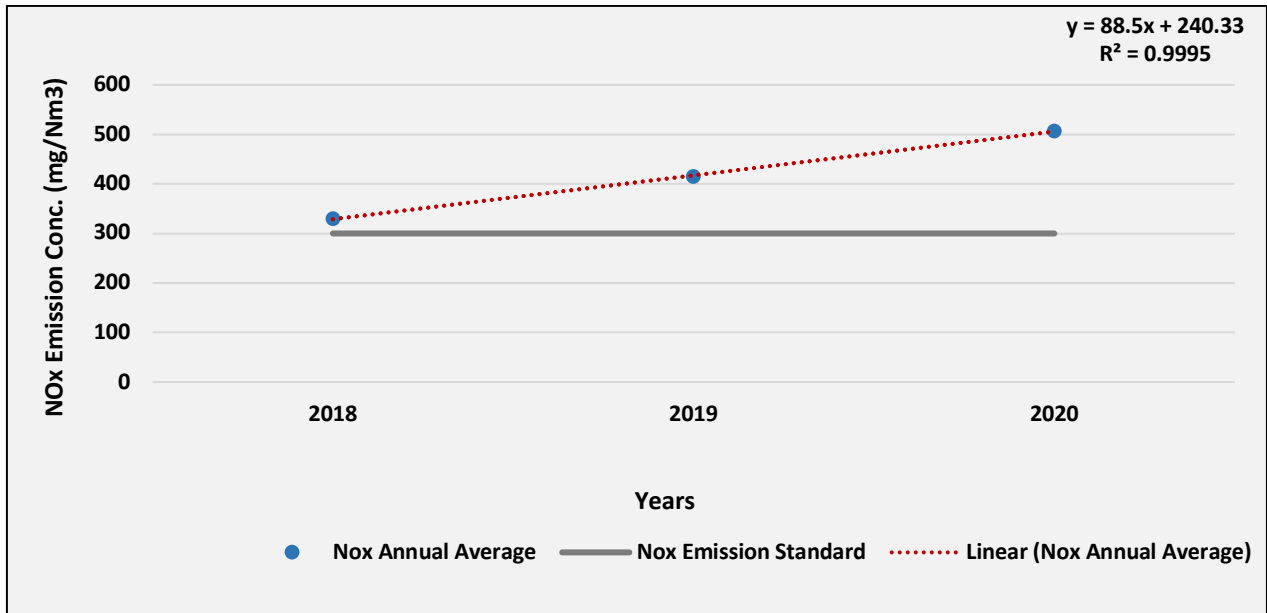


Fig. TAL30: Trend of annual mean NO_x Emission air concentration in Talcher TPP (Stack 5)

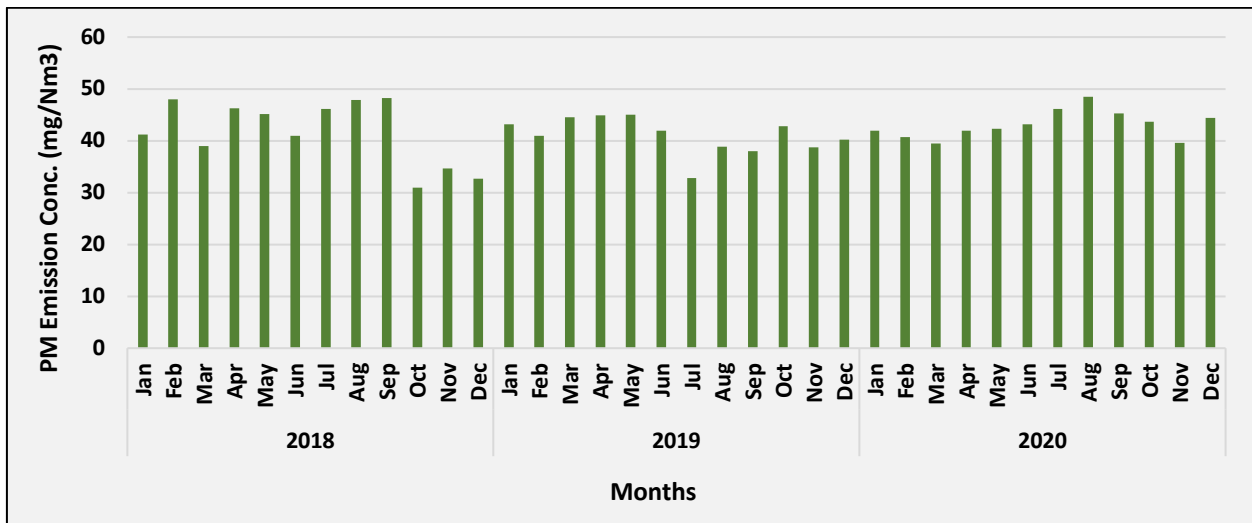


Fig. TAL31: Time series of monthly average PM Emission concentration in Talcher TPP (Stack 6)

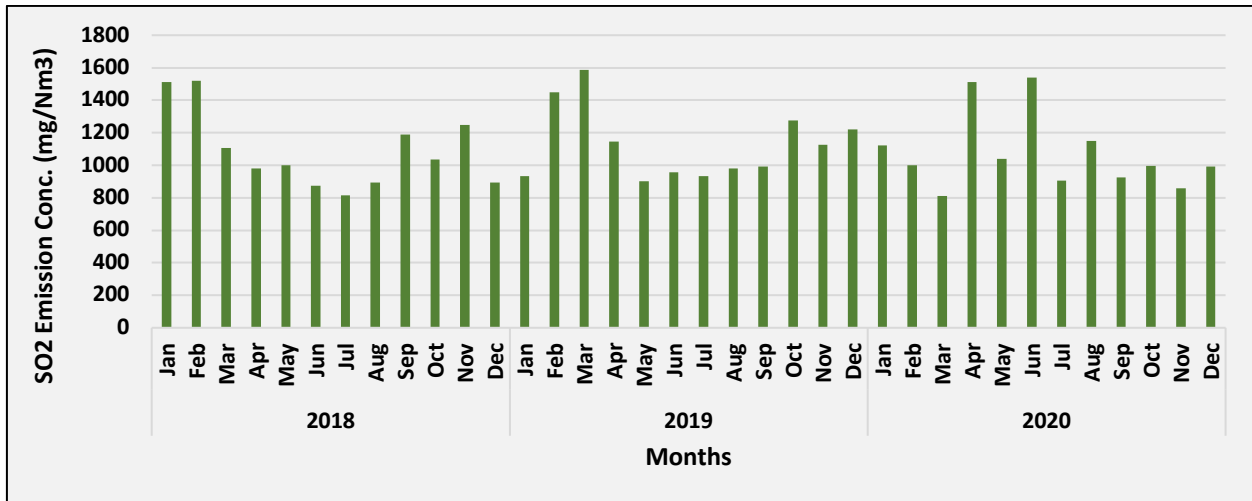


Fig. TAL32: Time series of monthly average SO₂ Emission concentration in Talcher TPP (Stack 6)

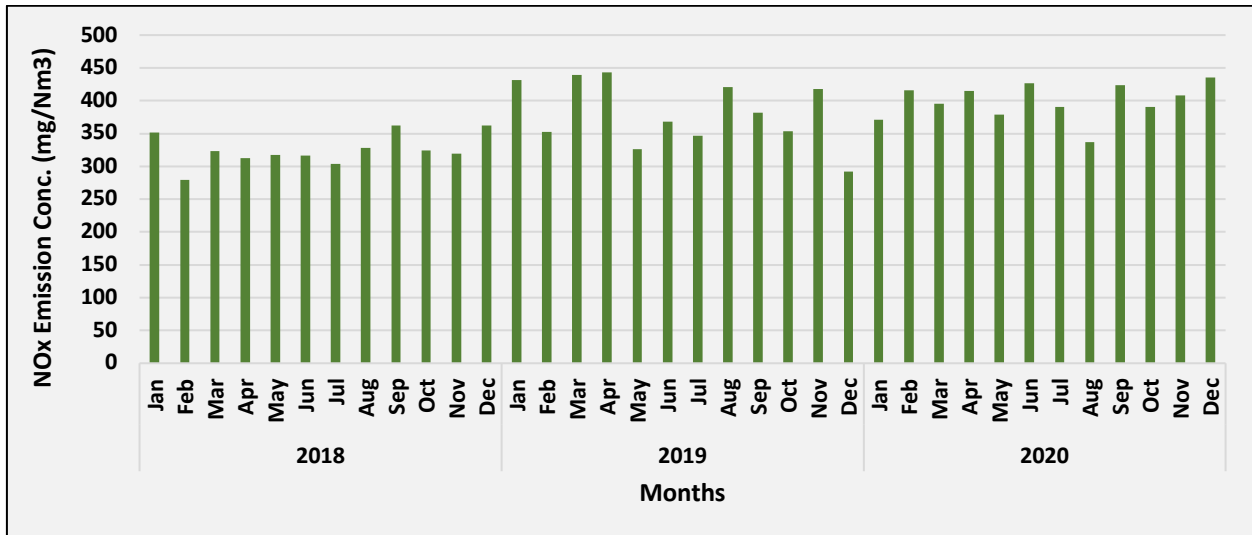


Fig. TAL33: Time series of monthly average NO_x Emission concentration in Talcher TPP (Stack 6)

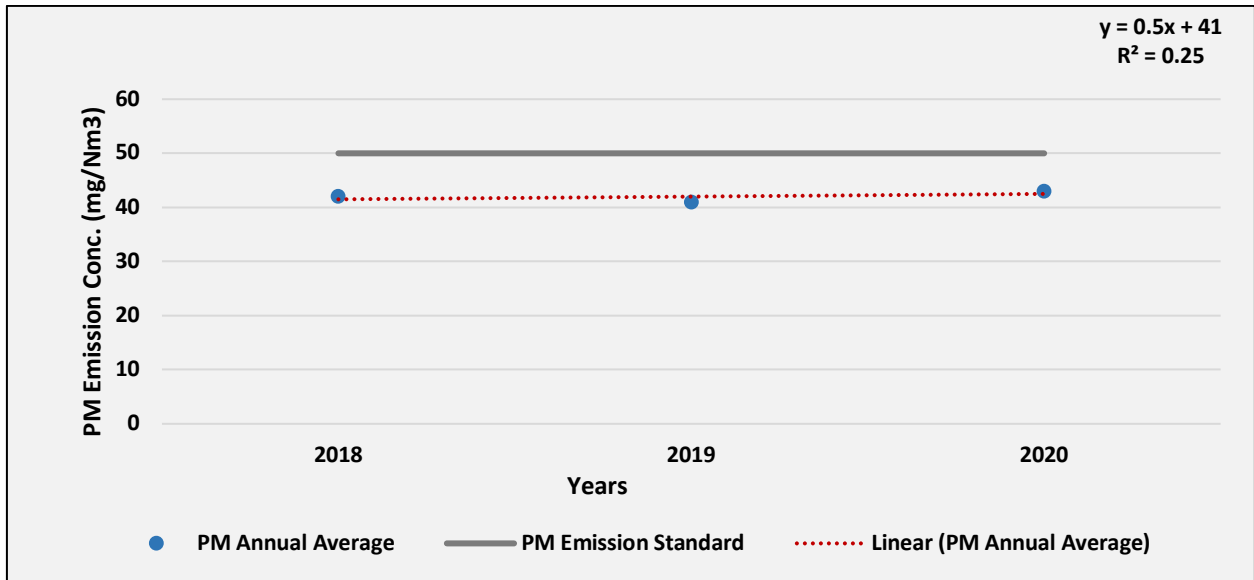


Fig. TAL34: Trend of annual mean PM Emission air concentration in Talcher TPP (Stack 6)

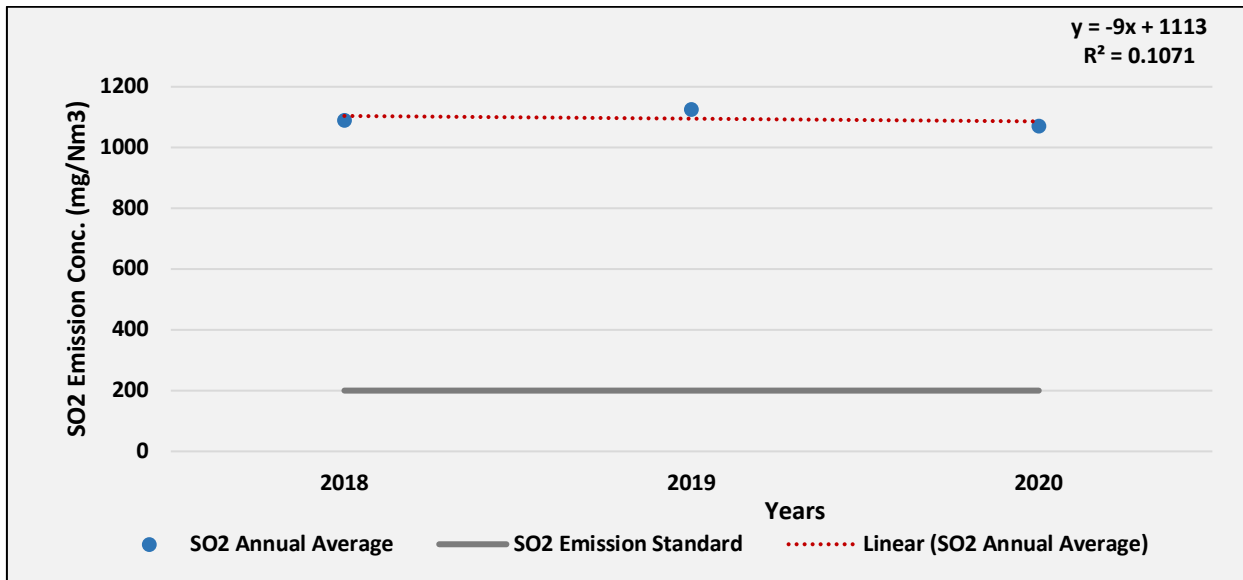


Fig. TAL35: Trend of annual mean SO₂ Emission air concentration in Talcher TPP (Stack 6)

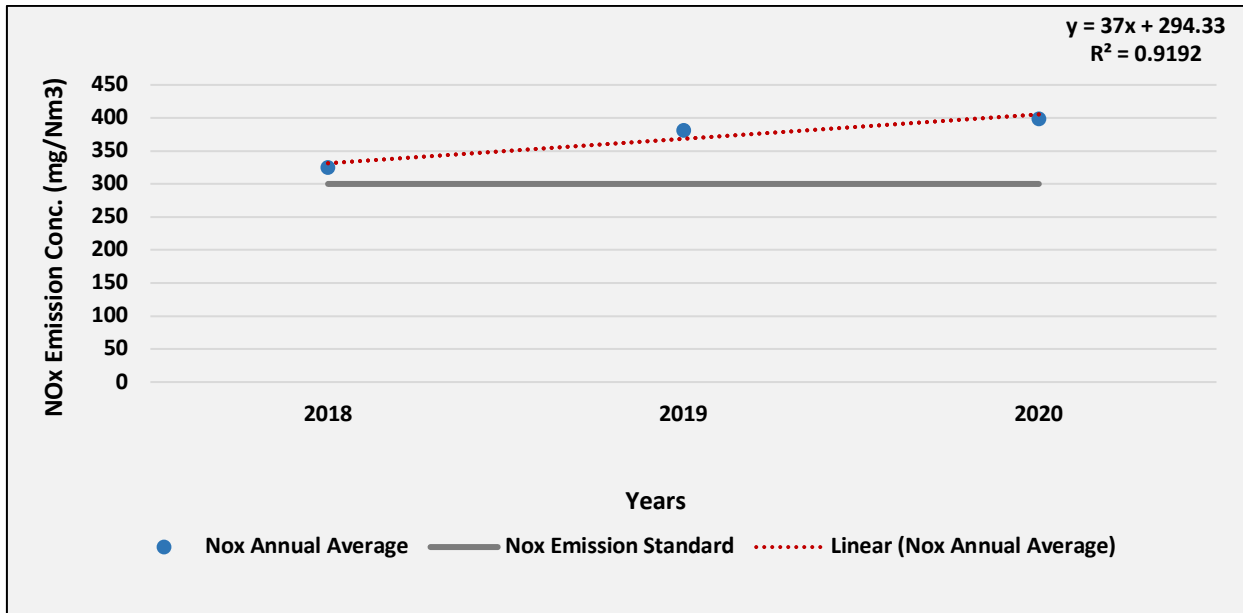


Fig. TAL36: Trend of annual mean NO_x Emission air concentration in Talcher TPP (Stack 6)

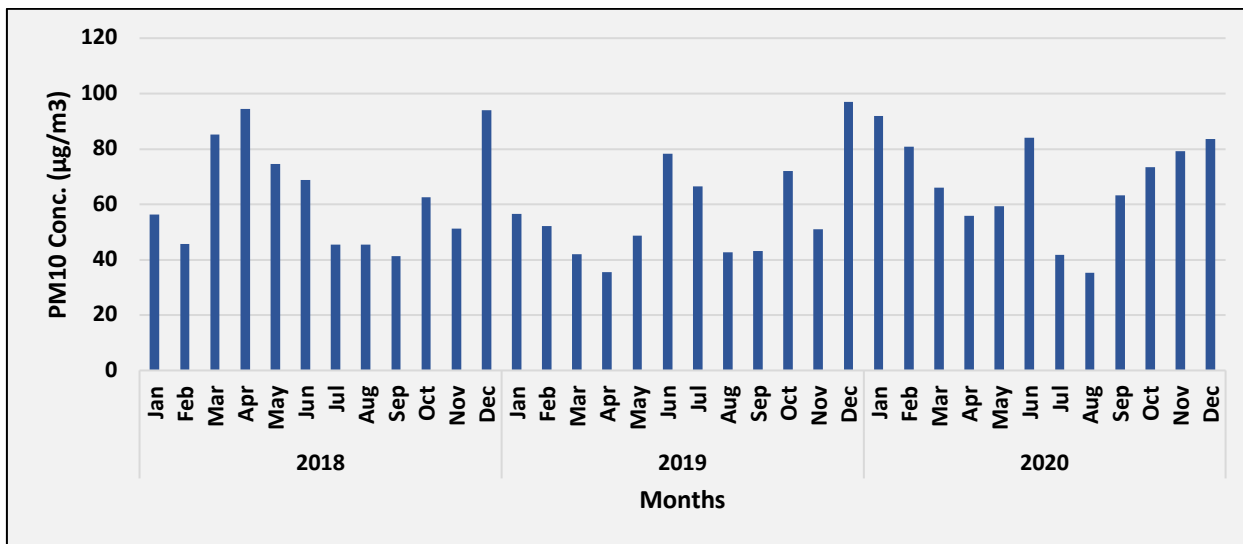


Fig. TAL37: Time series of monthly average PM₁₀ ambient air concentration in Talcher TPP (Ambient)

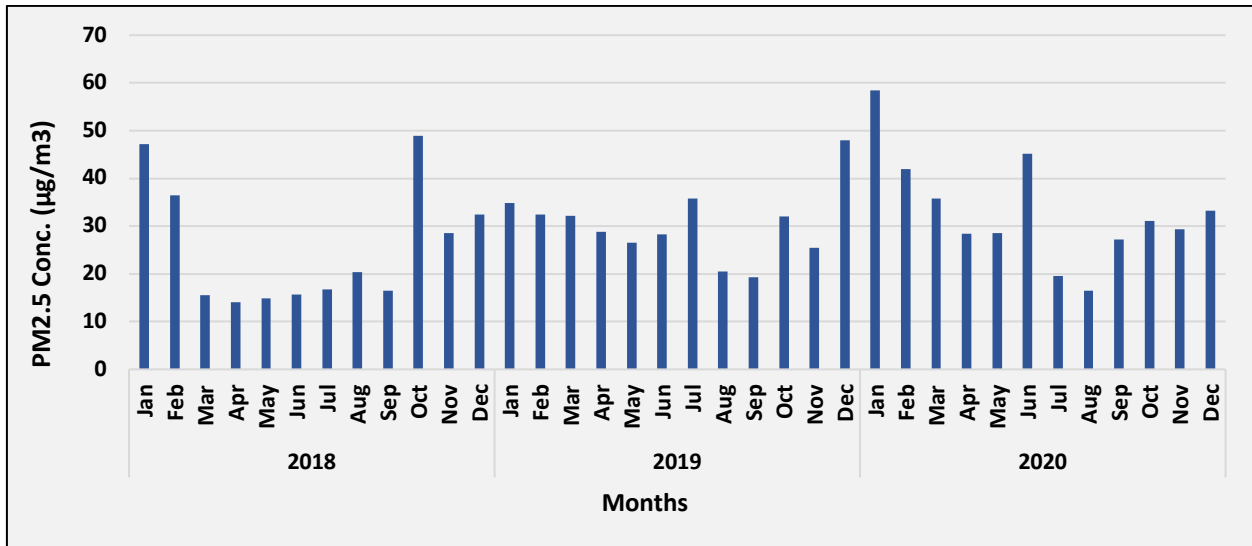


Fig. TAL38: Time series of monthly average PM_{2.5} ambient air concentration in Talcher TPP (Ambient)

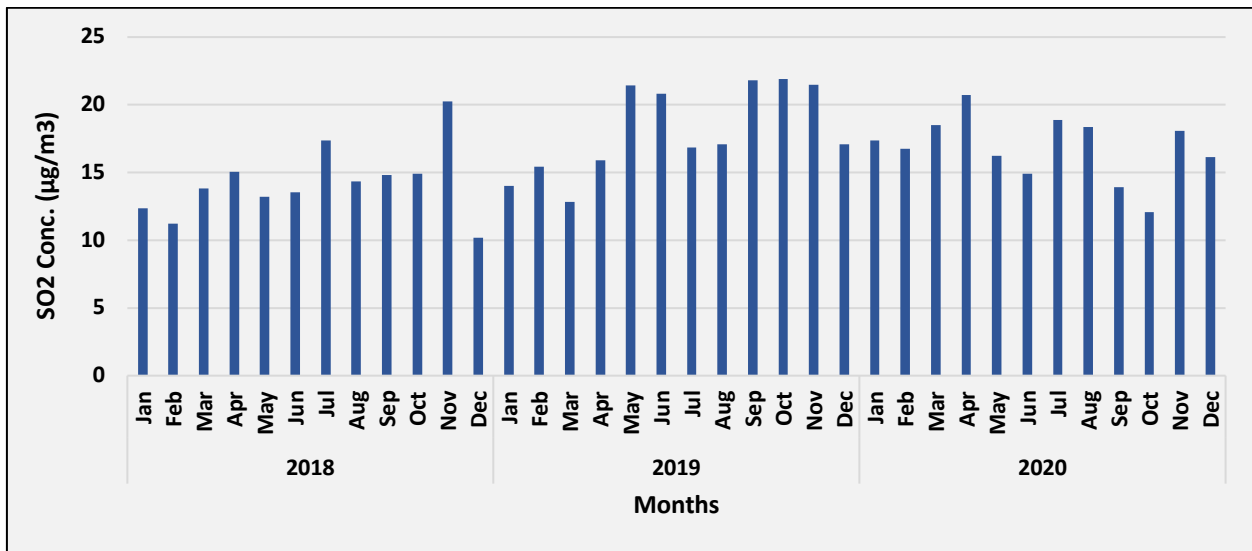


Fig. TAL39: Time series of monthly average SO₂ ambient air concentration in Talcher TPP (Ambient)

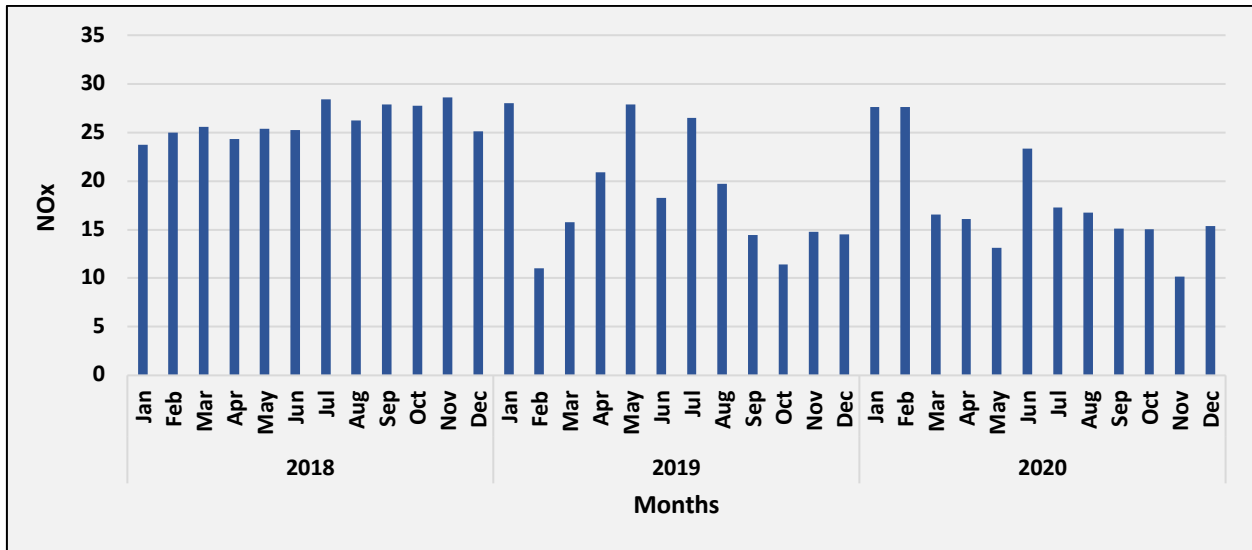


Fig. TAL40: Time series of monthly average NO_x ambient air concentration in Talcher TPP (Ambient)

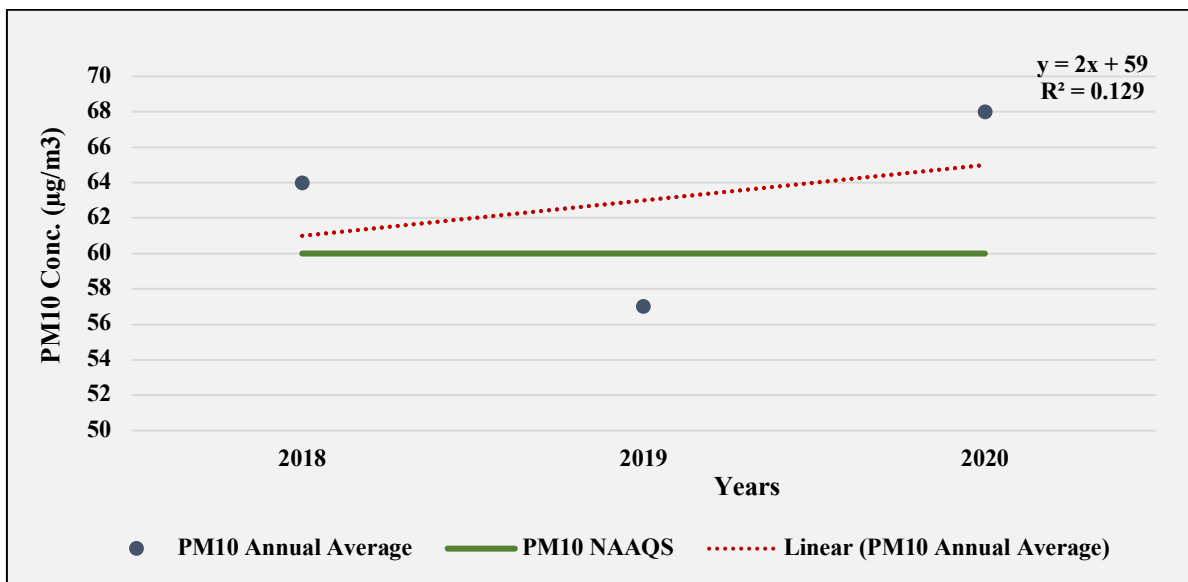


Fig. TAL41: Trend of annual mean PM₁₀ ambient air concentration in Talcher TPP (Ambient)

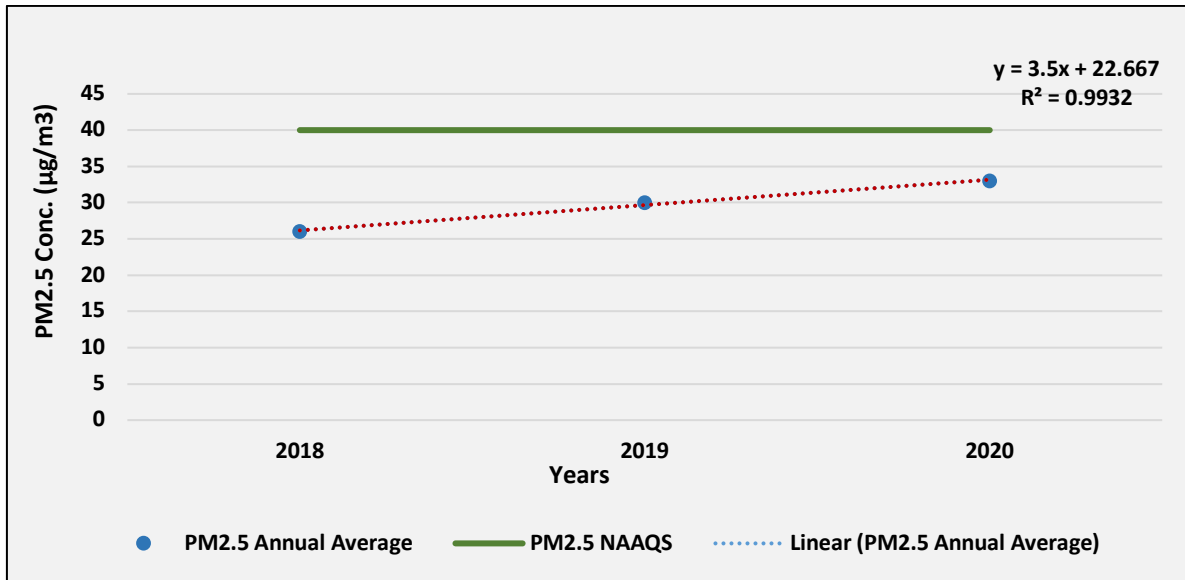


Fig. TAL42: Trend of annual mean PM_{2.5} ambient air concentration in Talcher TPP (Ambient)

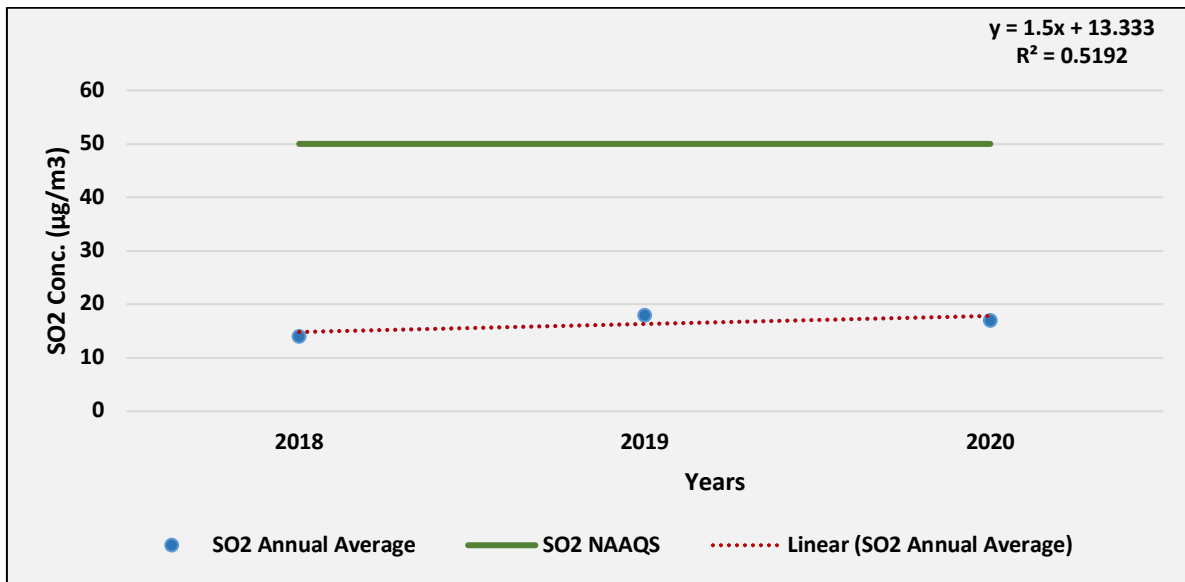


Fig. TAL43: Trend of annual mean SO₂ ambient air concentration in Talcher TPP (Ambient)

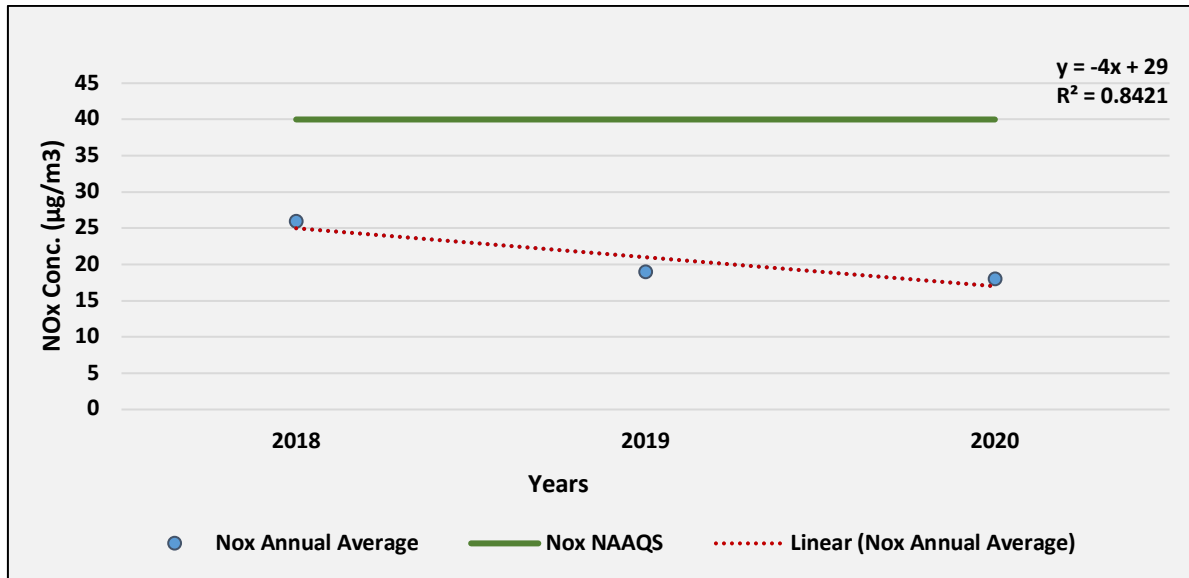


Fig. TAL44: Trend of annual mean NO_x ambient air concentration in Talcher TPP (Ambient)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀ for the year 2018 and 2020 are exceeding whereas the PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

WANAKBORI GSECL THERMAL POWER PLANT

Wanakbori Thermal Power Station is a coal-fired power station in Gujarat, India. It is located on the bank of Mahi River in Mahisagar district. There are eight units at this location, seven of each 210 MW and one of 800 MW capacity.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. WA1-Fig. WA82) for the last four years (2016-2020) using data provided by GSECL developer for Wanakbori GSECL Power plant, Gujarat, India.

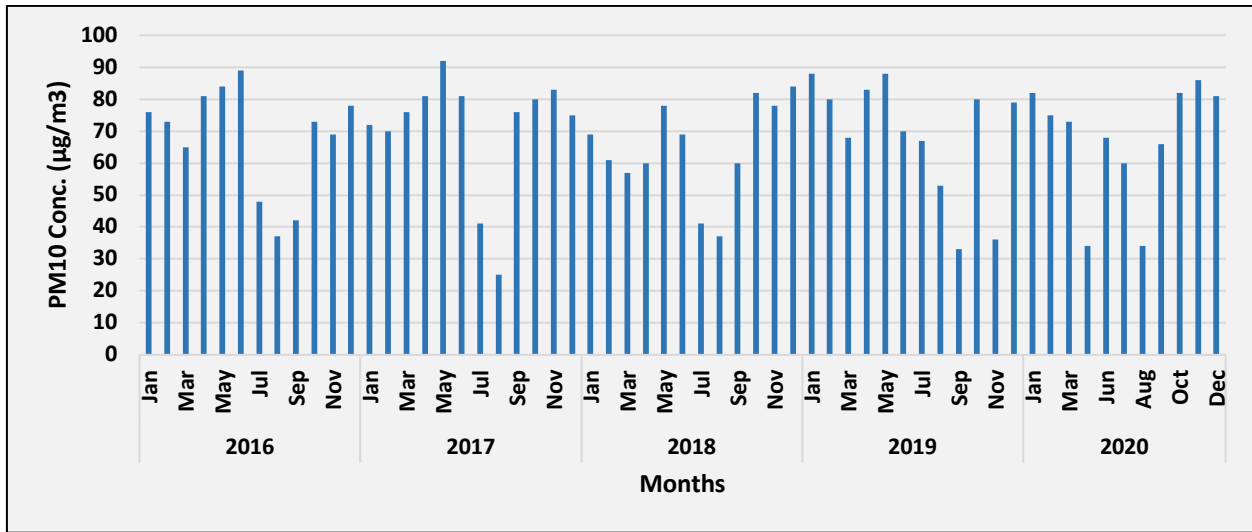


Fig. WA1: Time series of monthly average PM_{10} ambient air concentration in Wanakbori TPP (Ambient 1)

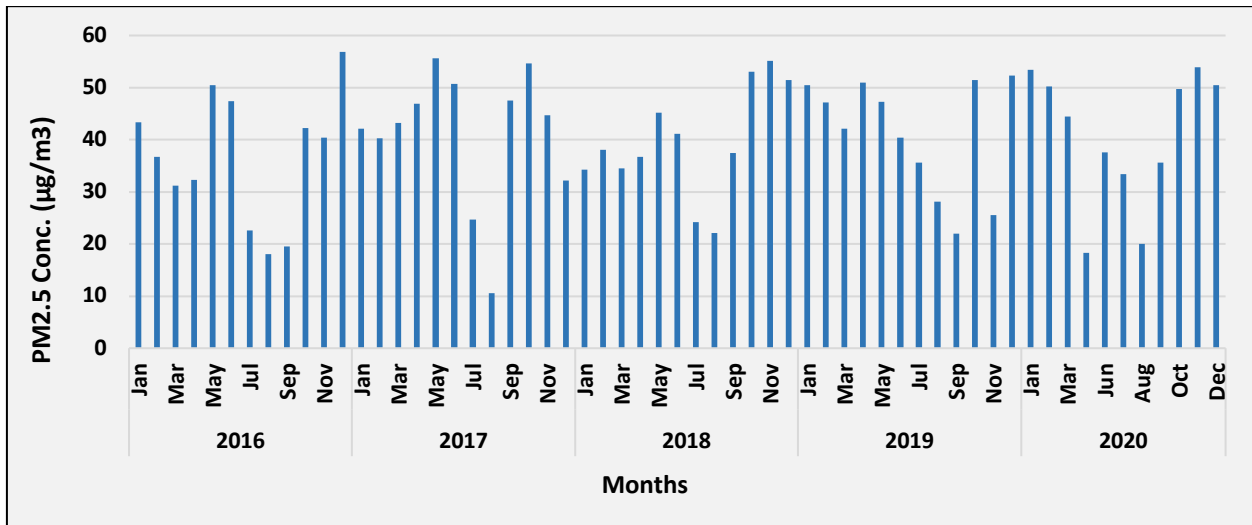


Fig. WA2: Time series of monthly average $PM_{2.5}$ ambient air concentration in Wanakbori TPP (Ambient 1)

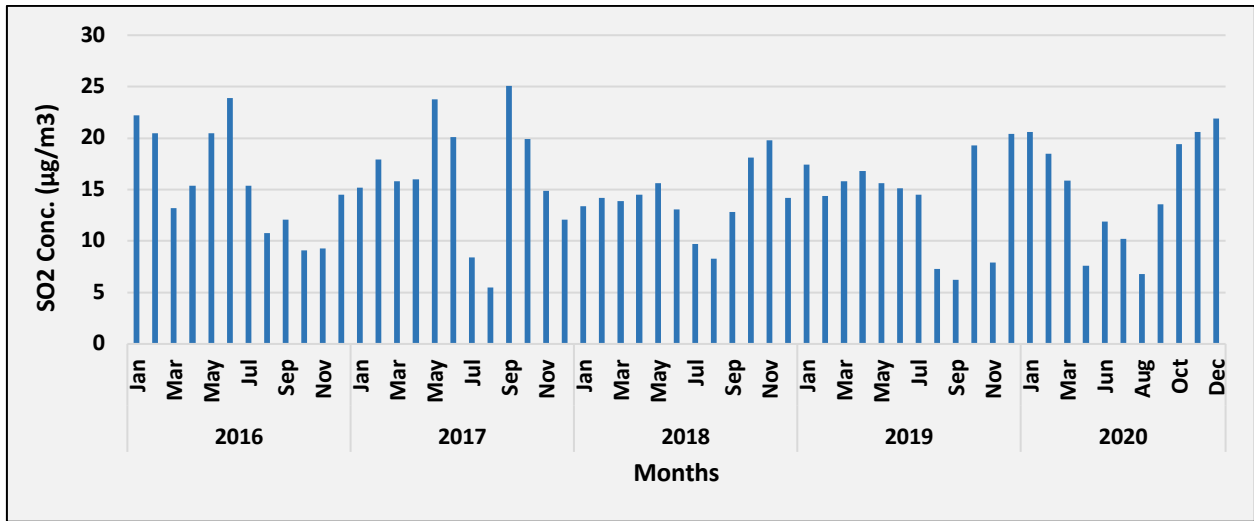


Fig. WA3: Time series of monthly average SO_2 ambient air concentration in Wanakbori TPP (Ambient 1)

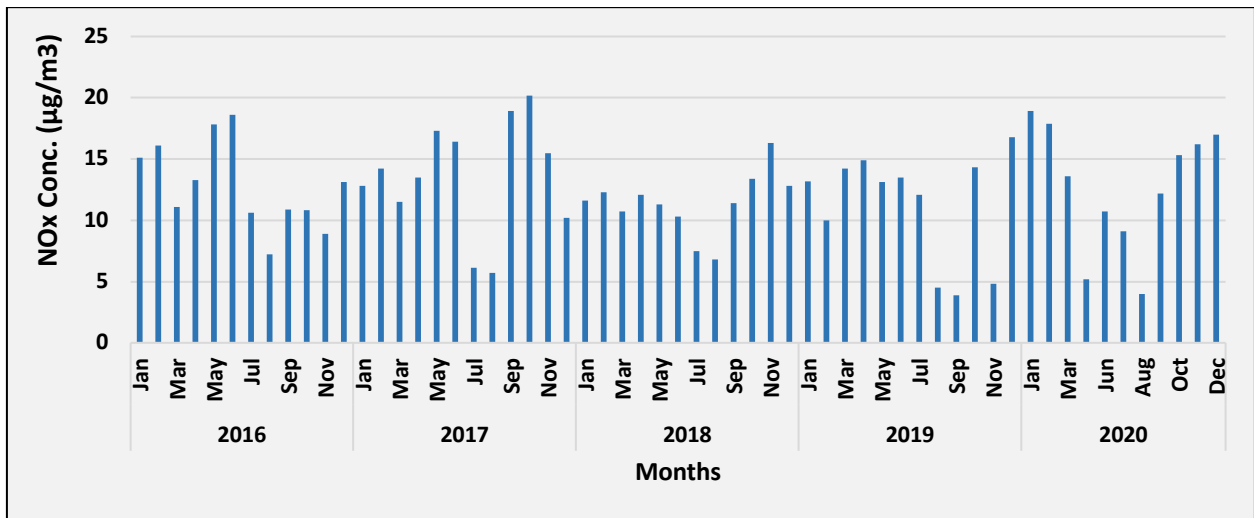


Fig. WA4: Time series of monthly average NO_x ambient air concentration in Wanakbori TPP (Ambient 1)

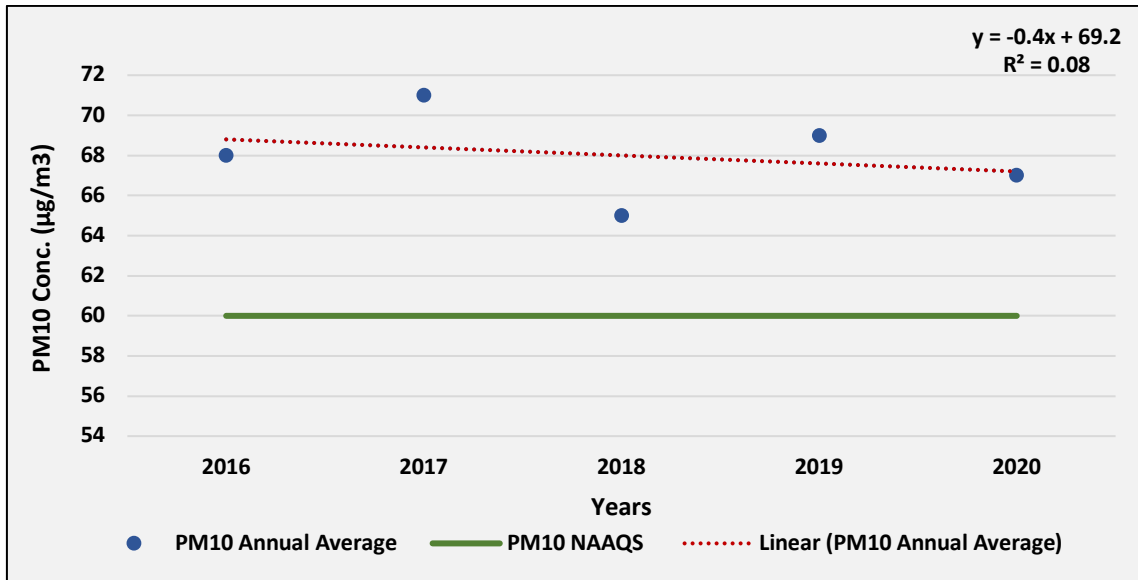


Fig. WA5: Trend of annual mean PM_{10} ambient air concentration in Wanakbori TPP (Ambient 1)

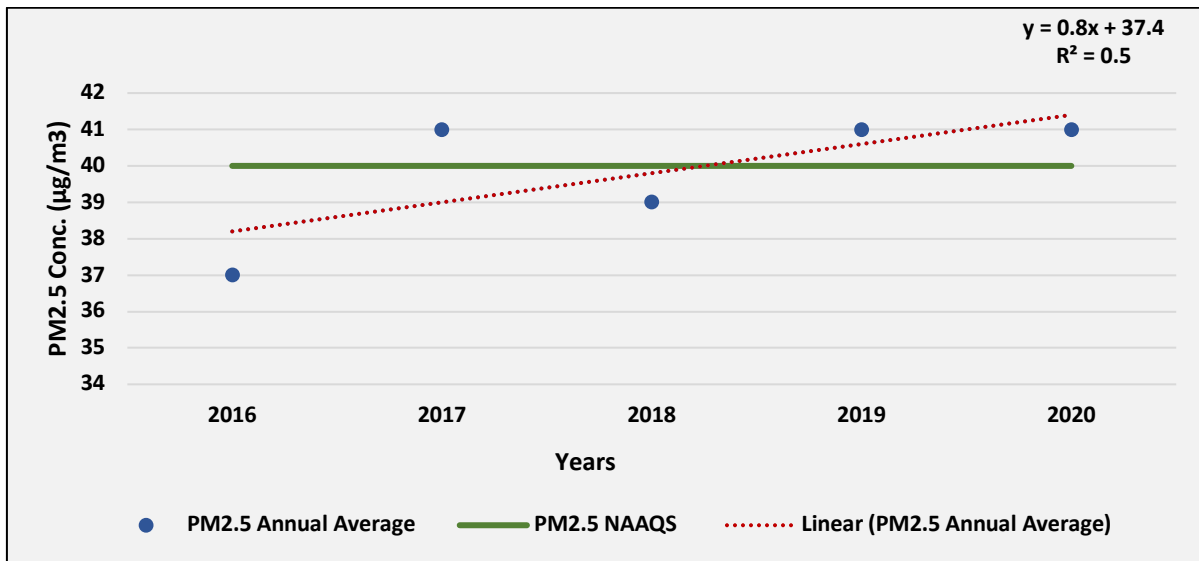


Fig. WA6: Trend of annual mean $PM_{2.5}$ ambient air concentration in Wanakbori TPP (Ambient 1)

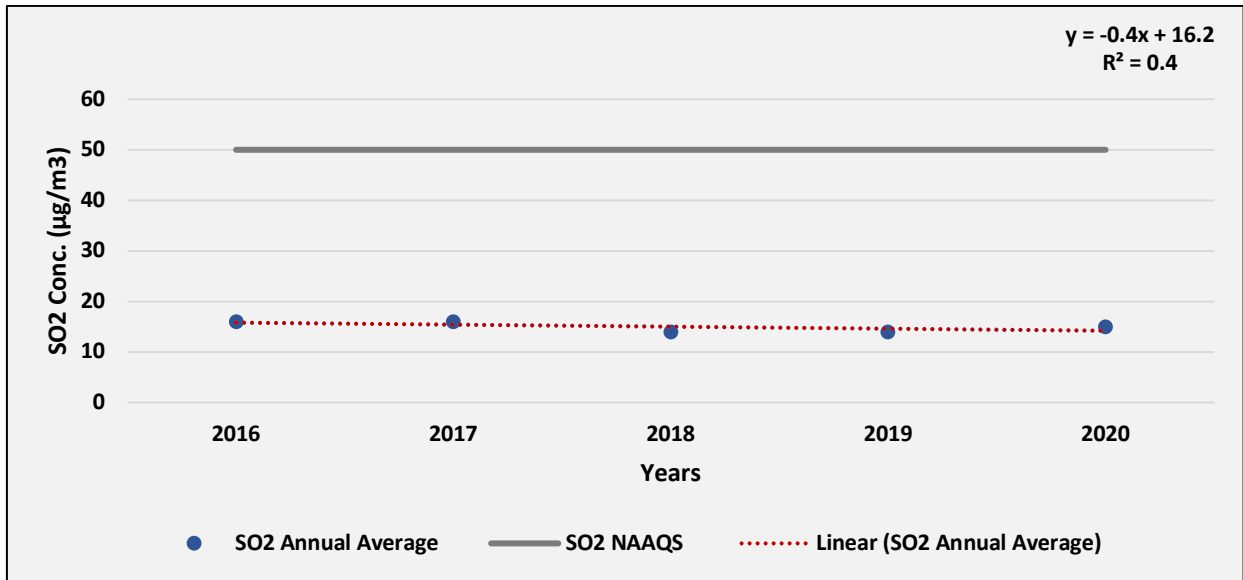


Fig. WA7: Trend of annual mean SO₂ ambient air concentration in Wanakbori TPP (Ambient 1)

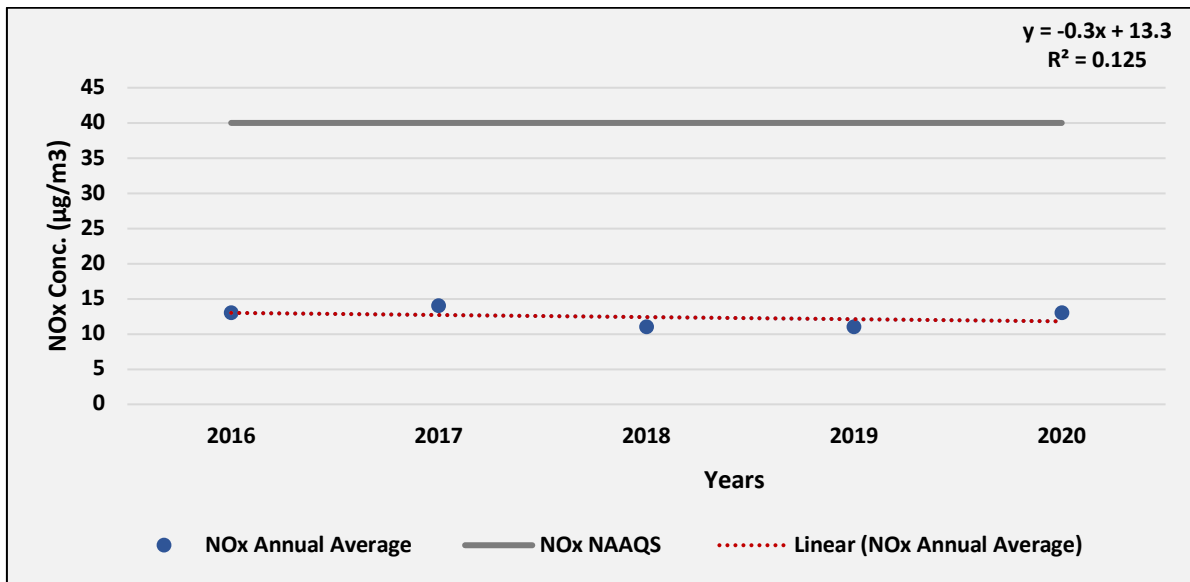


Fig. WA8: Trend of annual mean NO_x ambient air concentration in Wanakbori TPP (Ambient 1)

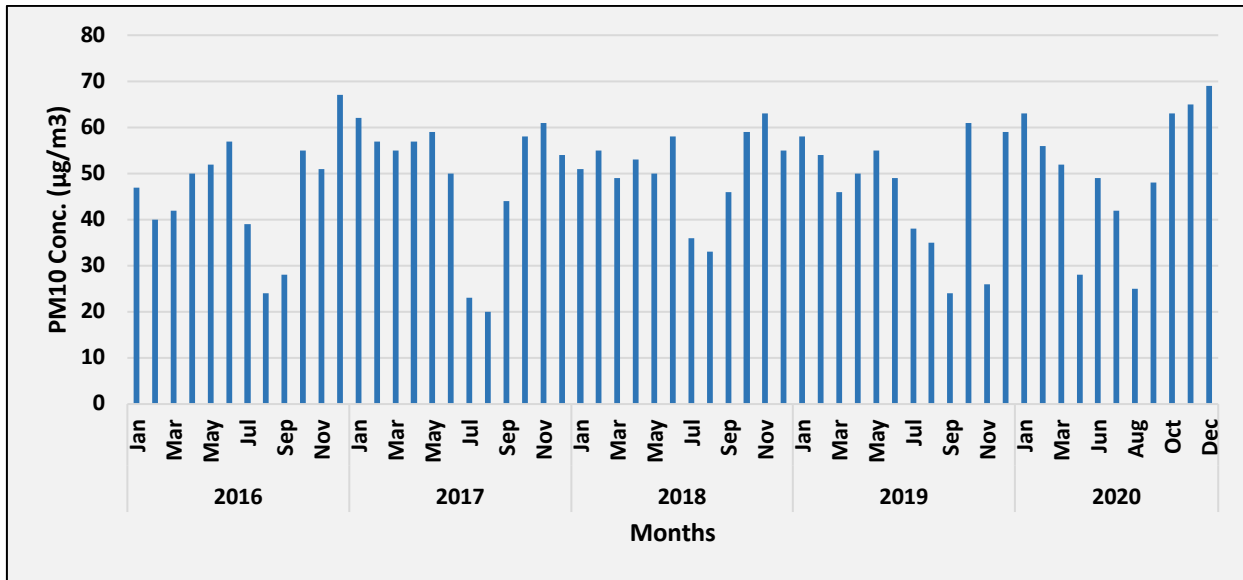


Fig. WA9: Time series of monthly average PM_{10} ambient air concentration in Wanakbori TPP (Ambient 2)

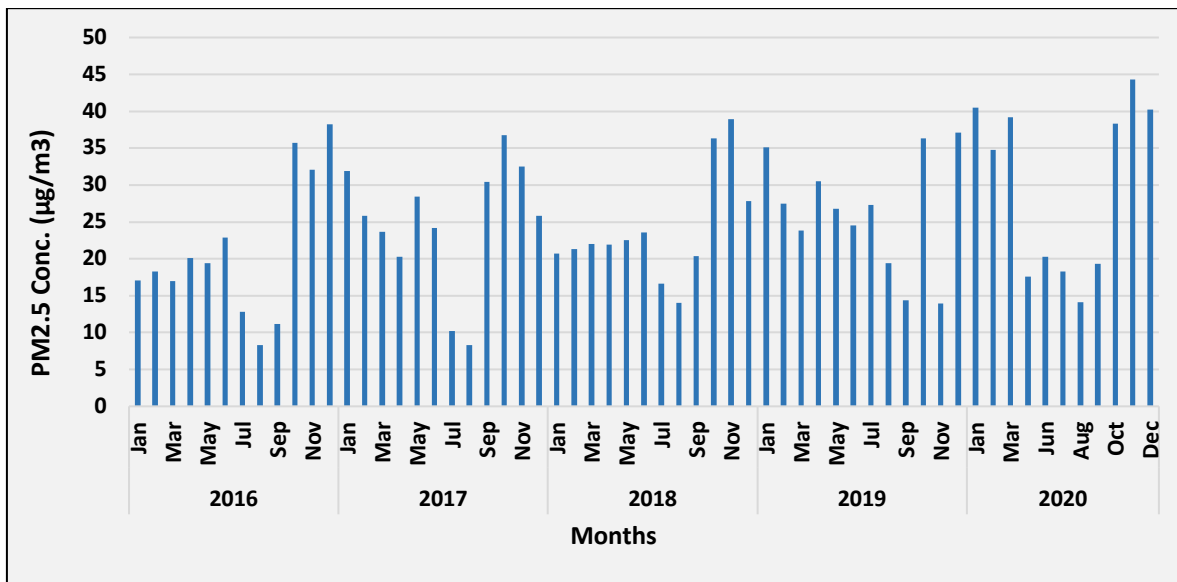


Fig. WA10: Time series of monthly average $PM_{2.5}$ ambient air concentration in Wanakbori TPP (Ambient 2)

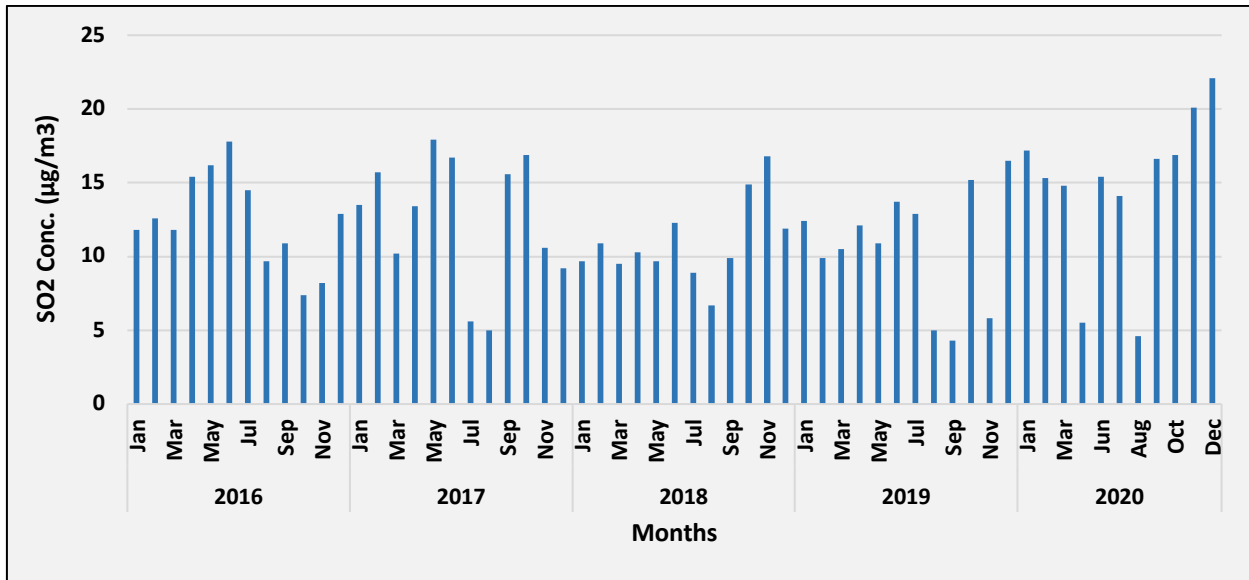


Fig. WA11: Time series of monthly average SO_2 ambient air concentration in Wanakbori TPP (Ambient 2)

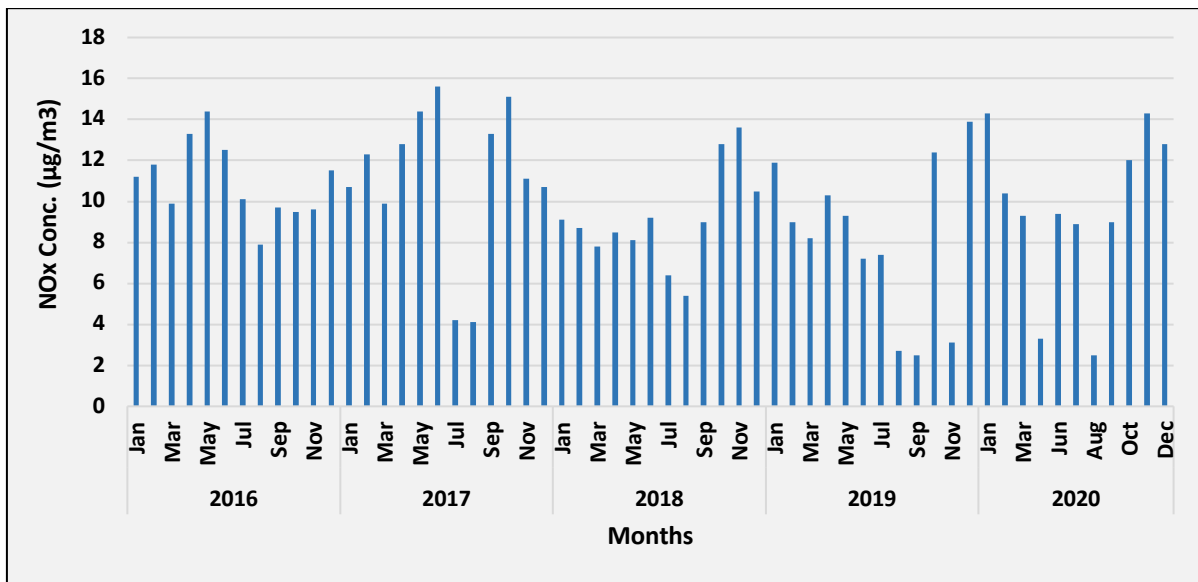


Fig. WA12: Time series of monthly average NO_x ambient air concentration in Wanakbori TPP (Ambient 2)

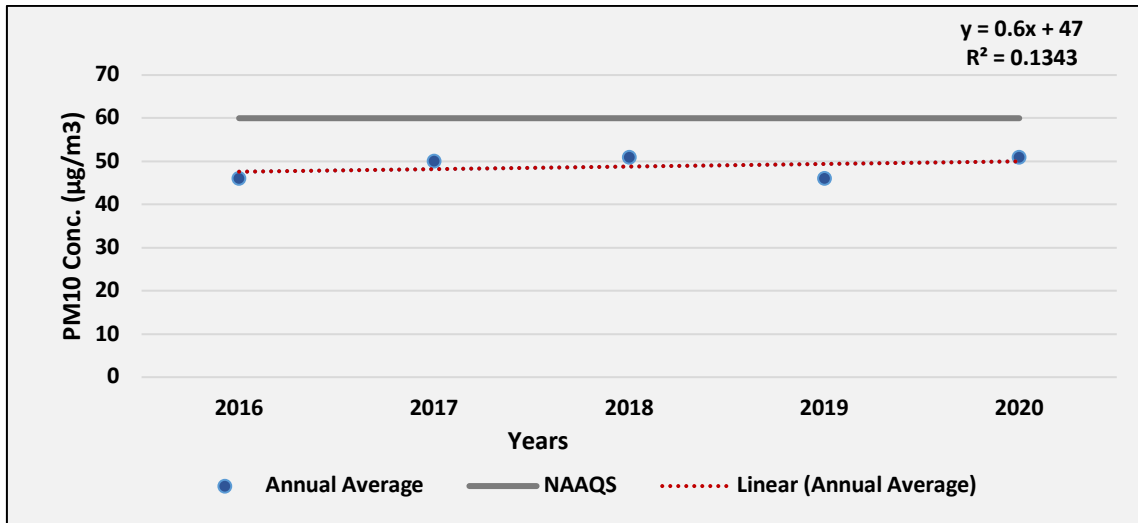


Fig. WA13: Trend of annual mean PM₁₀ ambient air concentration in Wanakbori TPP (Ambient 2)

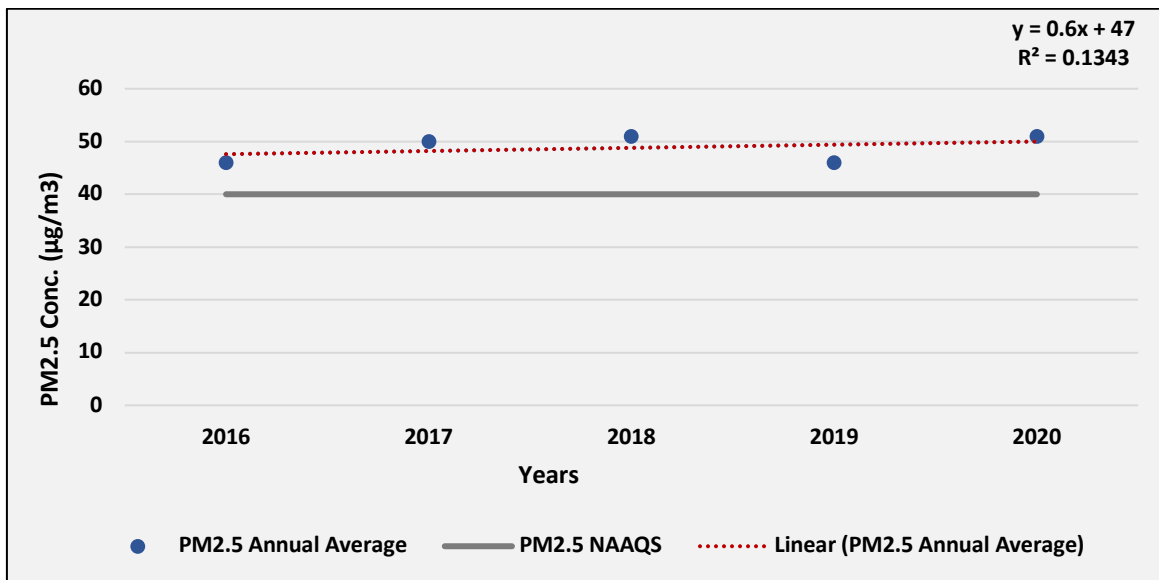


Fig. WA14: Trend of annual mean PM_{2.5} ambient air concentration in Wanakbori TPP (Ambient 2)

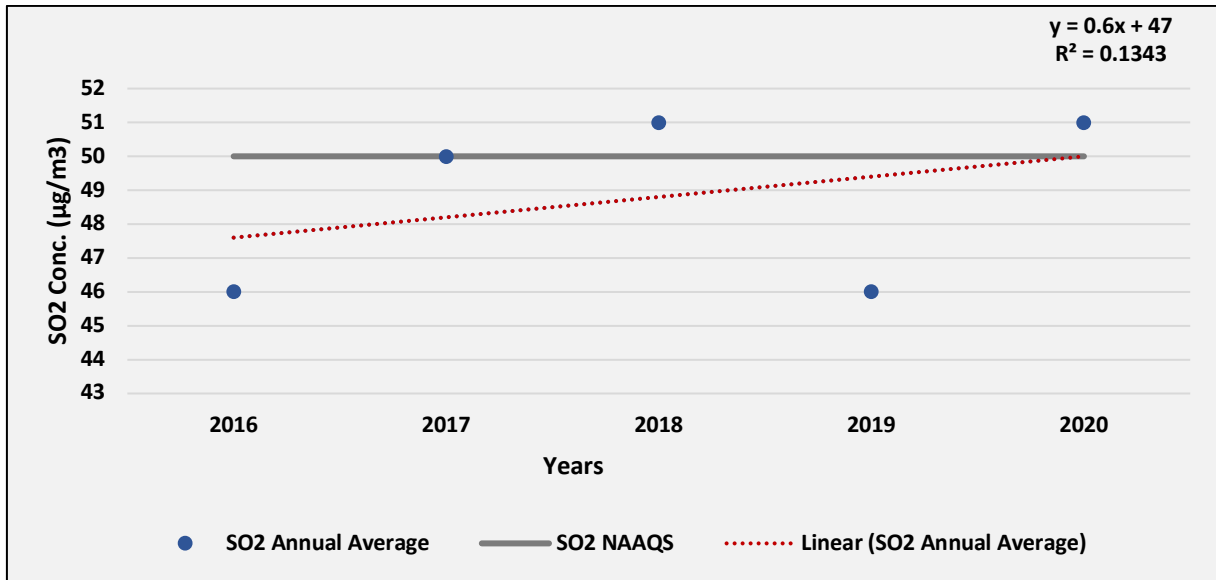


Fig. WA15: Trend of annual mean SO₂ ambient air concentration in Wanakbori TPP (Ambient 2)

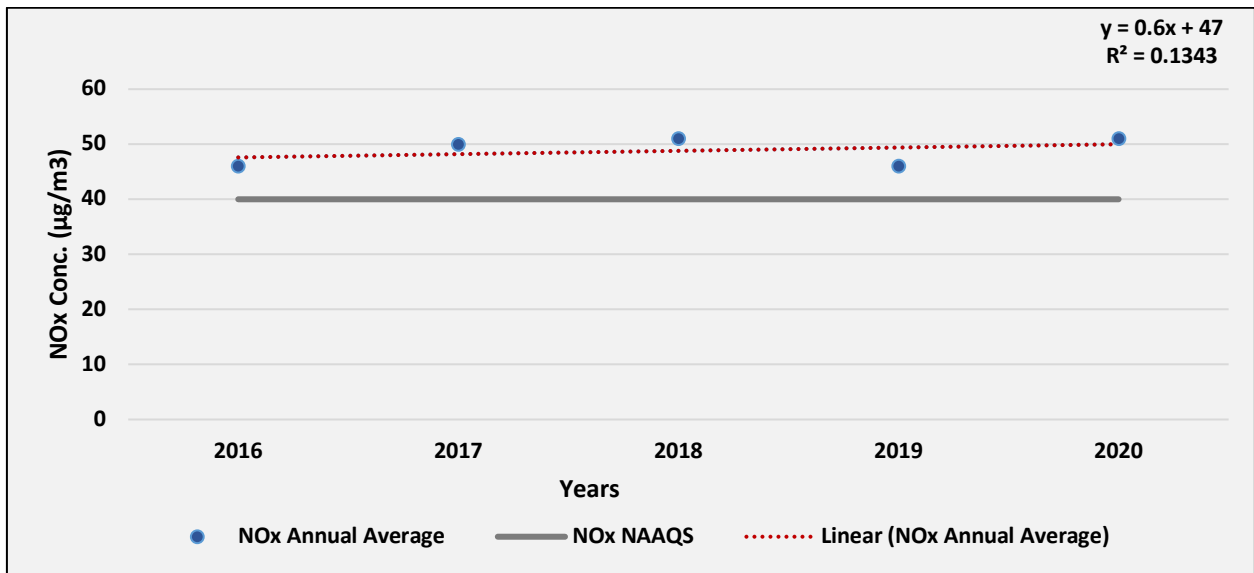


Fig. WA16: Trend of annual mean NO_x ambient air concentration in Wanakbori TPP (Ambient 2)

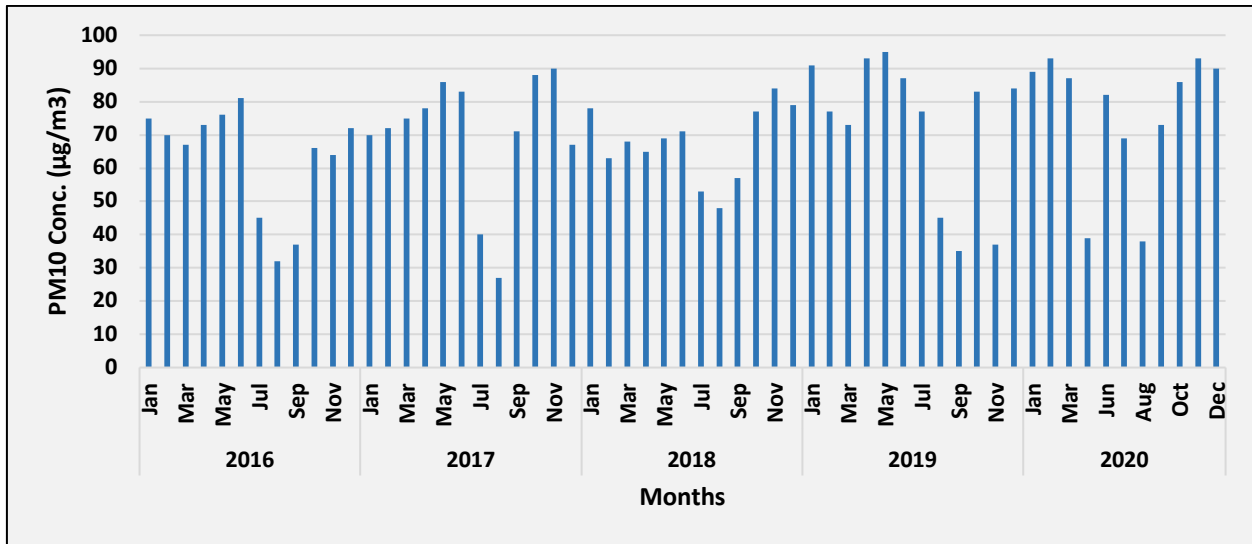


Fig. WA17: Time series of monthly average PM_{10} ambient air concentration in Wanakbori TPP (Ambient 3)

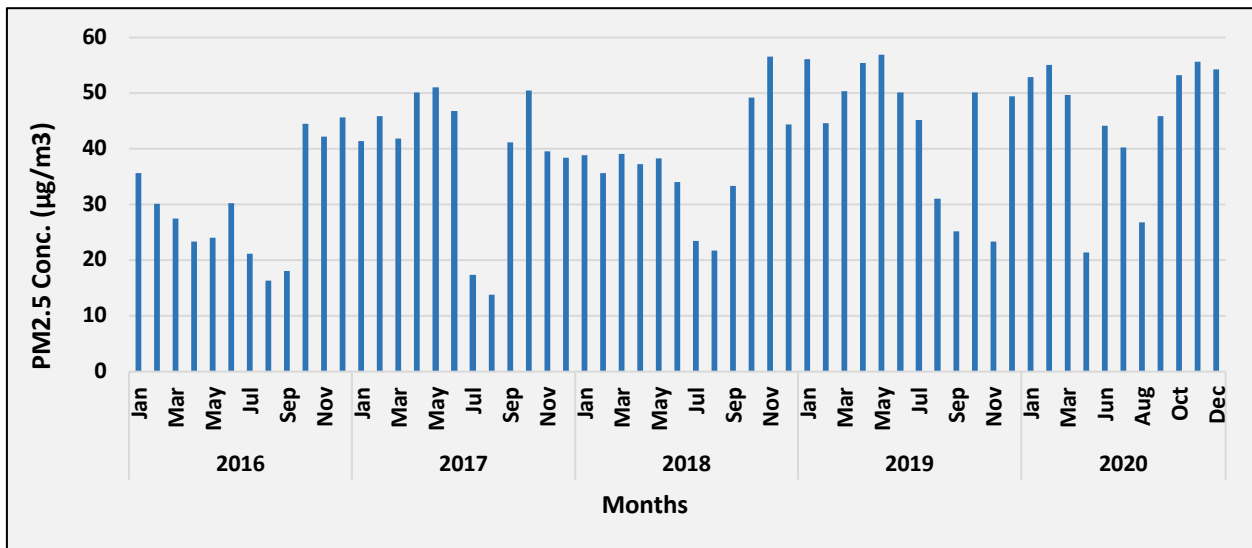


Fig. WA18: Time series of monthly average $PM_{2.5}$ ambient air concentration in Wanakbori TPP (Ambient 3)

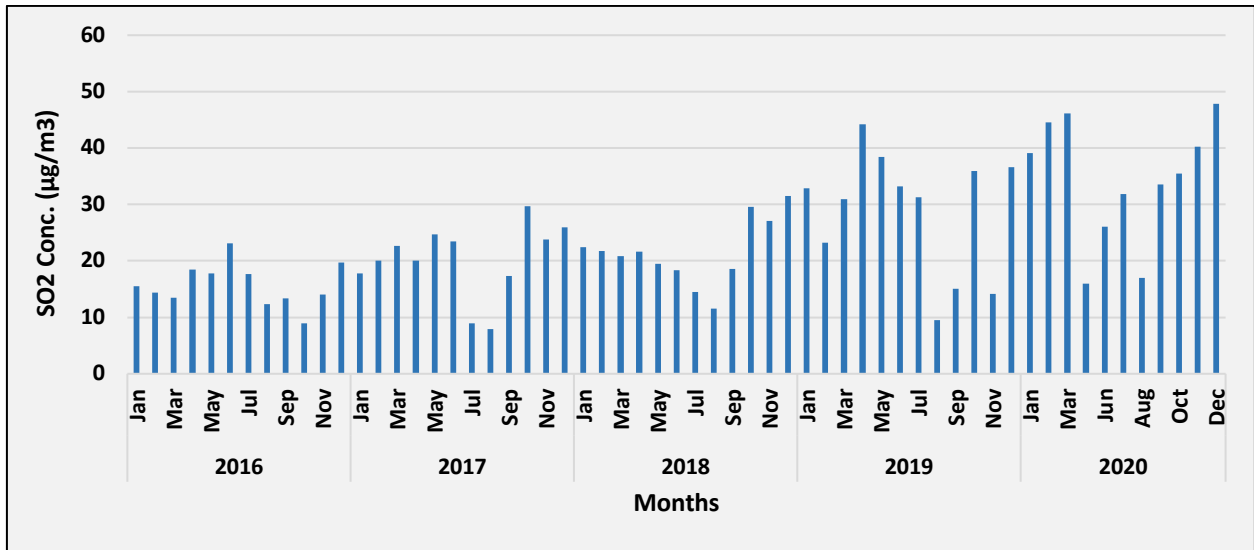


Fig. WA19: Time series of monthly average SO_2 ambient air concentration in Wanakbori TPP (Ambient 3)

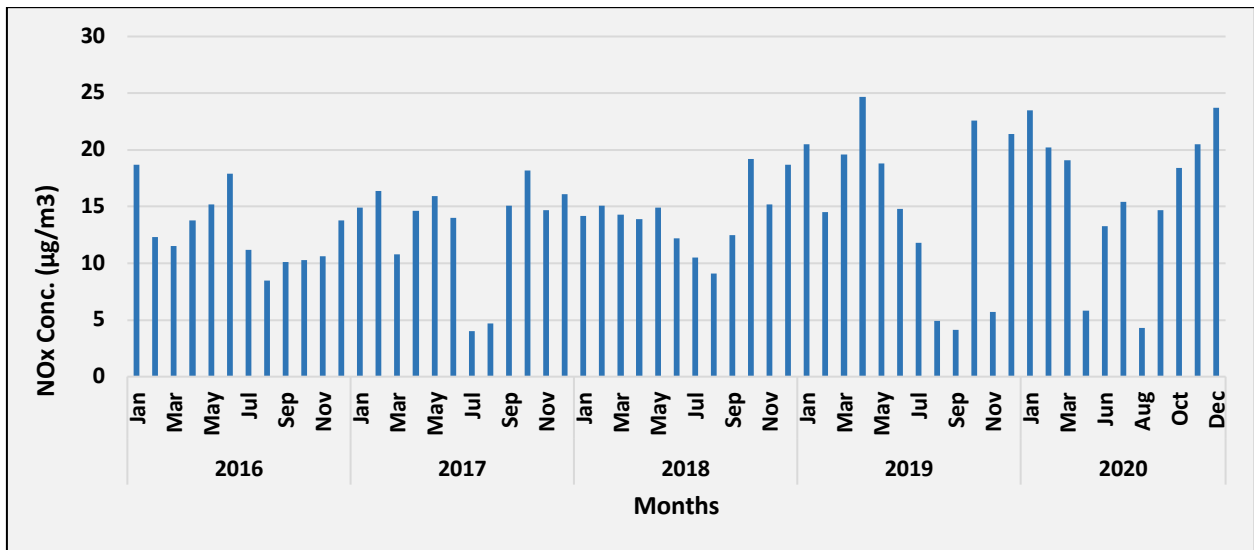


Fig. WA20: Time series of monthly average NO_x ambient air concentration in Wanakbori TPP (Ambient 3)

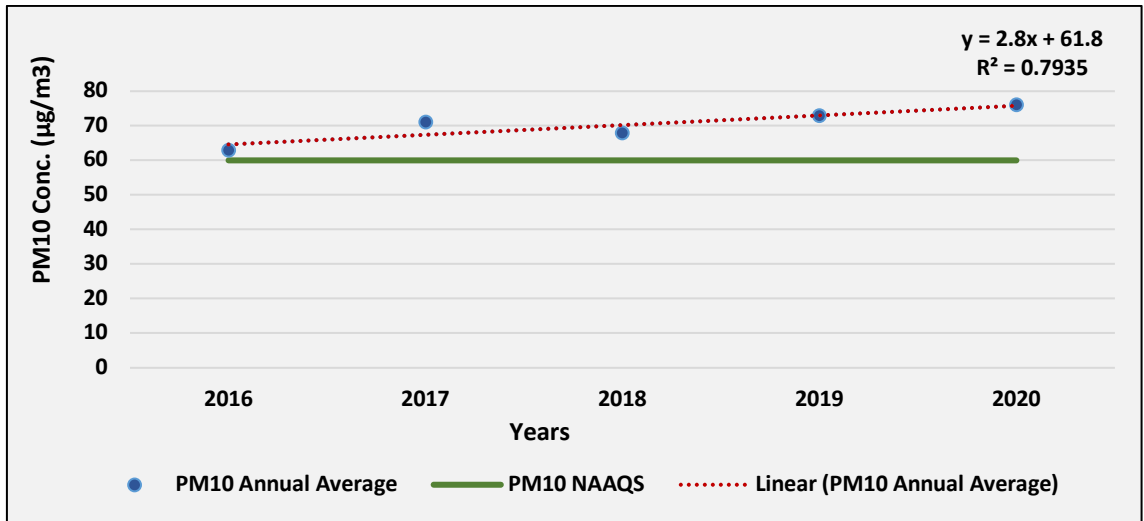


Fig. WA21: Trend of annual mean PM₁₀ ambient air concentration in Wanakbori TPP (Ambient 3)

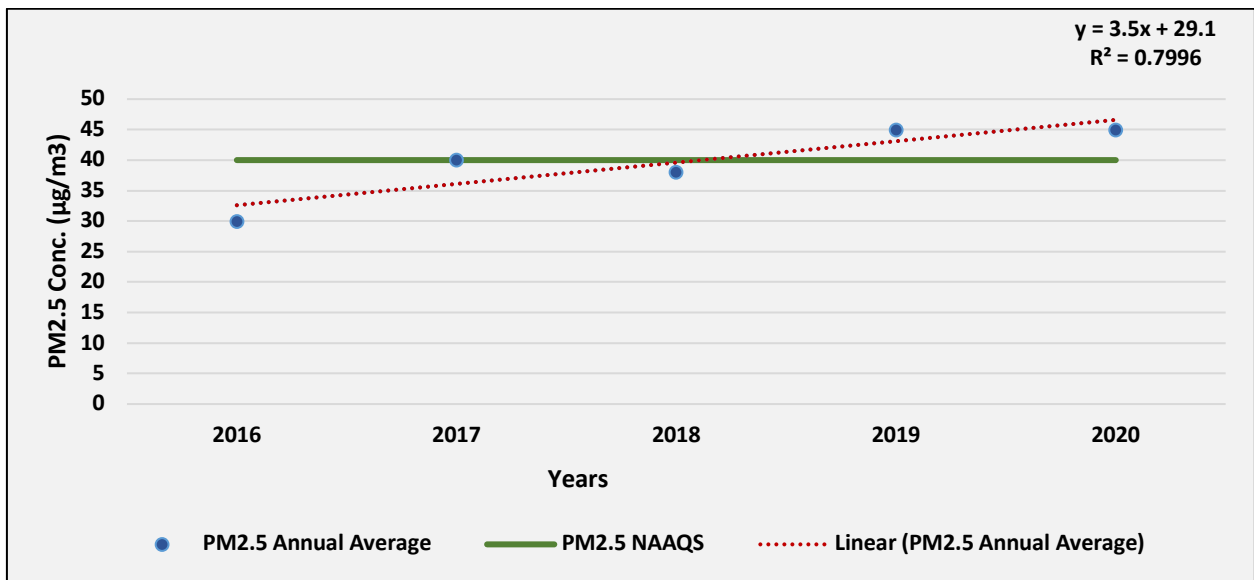


Fig. WA22: Trend of annual mean PM_{2.5} ambient air concentration in Wanakbori TPP (Ambient 3)

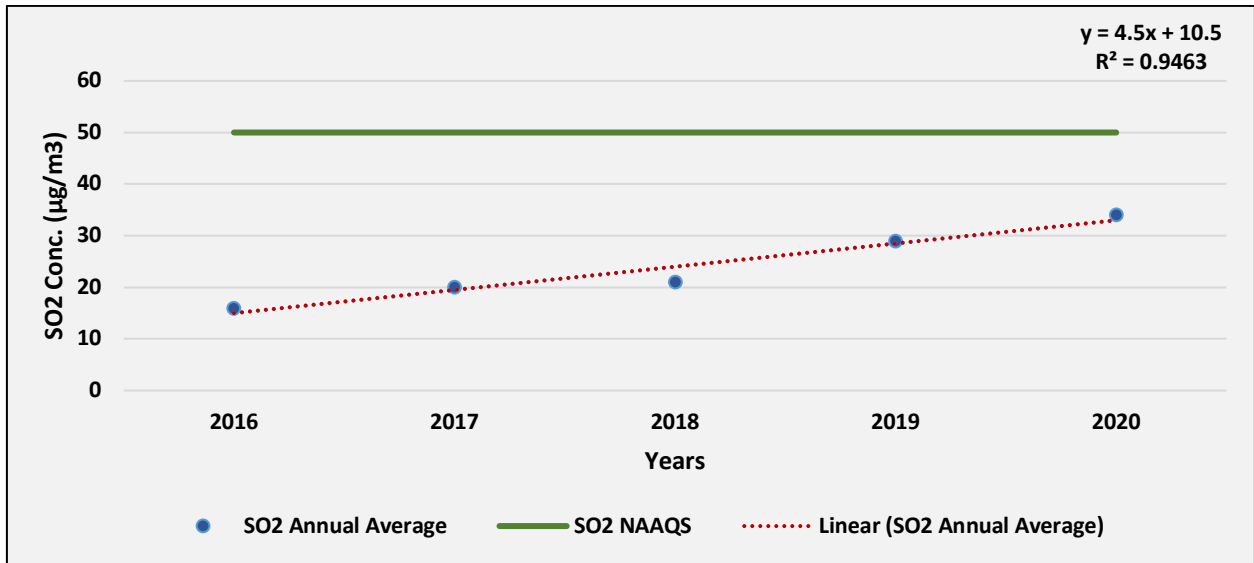


Fig. WA23: Trend of annual mean SO₂ ambient air concentration in Wanakbori TPP (Ambient 3)

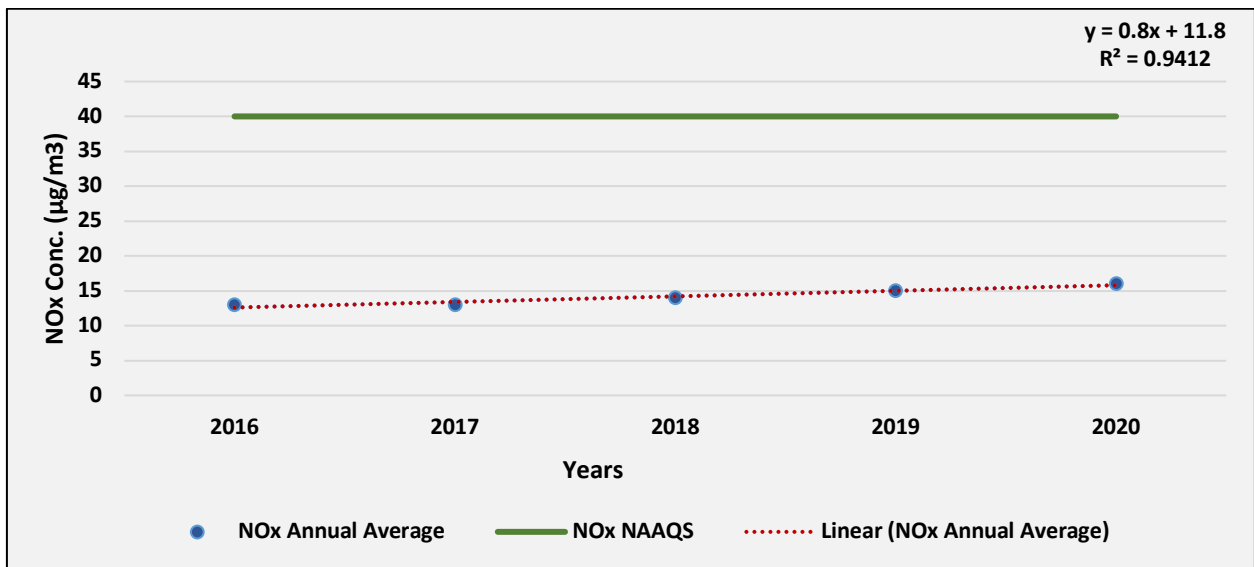


Fig. WA24: Trend of annual mean NO_x ambient air concentration in Wanakbori TPP (Ambient 3)

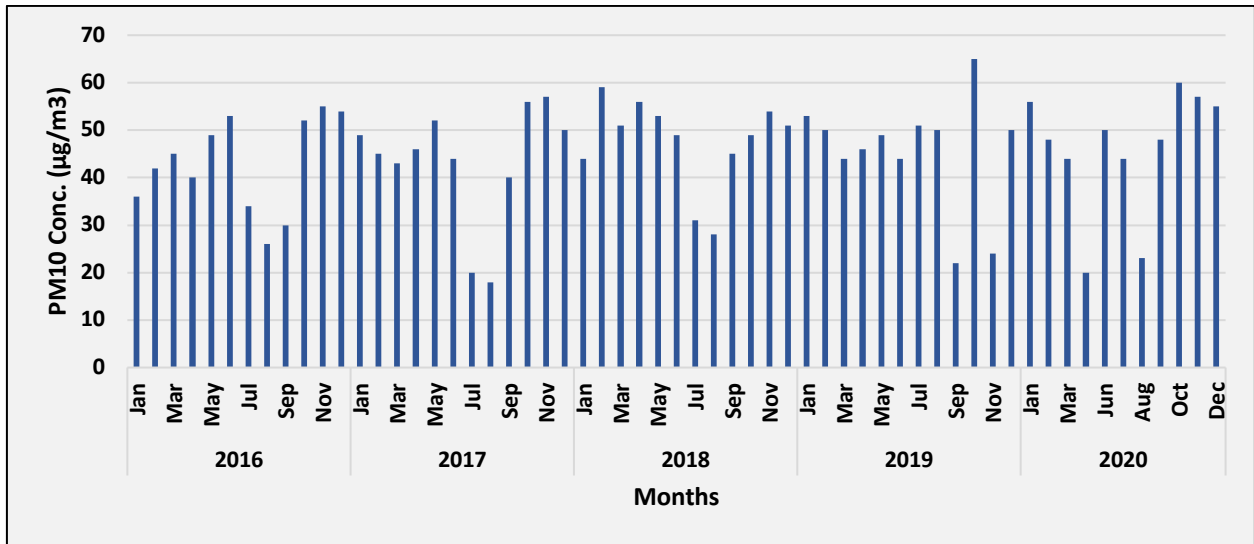


Fig. WA25: Time series of monthly average PM_{10} ambient air concentration in Wanakbori TPP (Ambient 4)

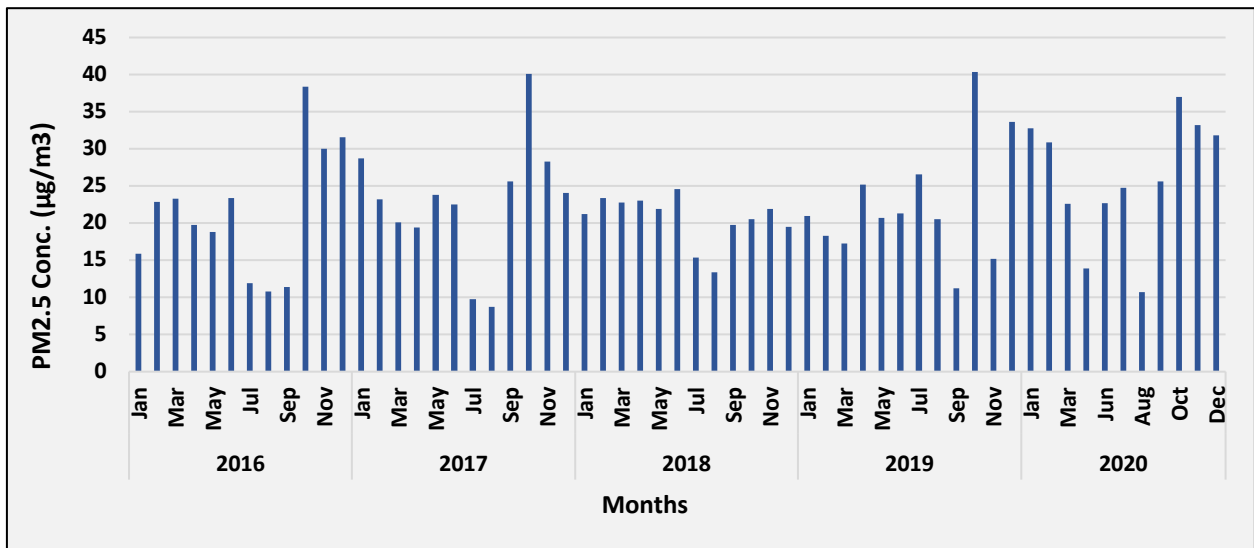


Fig. WA26: Time series of monthly average $PM_{2.5}$ ambient air concentration in Wanakbori TPP (Ambient 4)

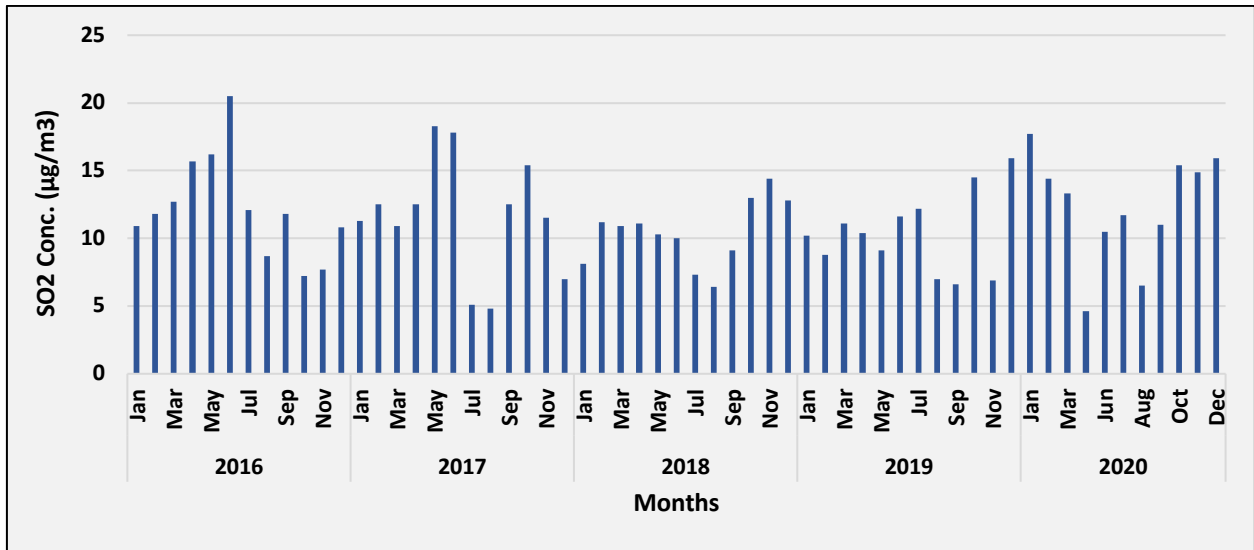


Fig. WA27: Time series of monthly average SO_2 ambient air concentration in Wanakbori TPP (Ambient 4)

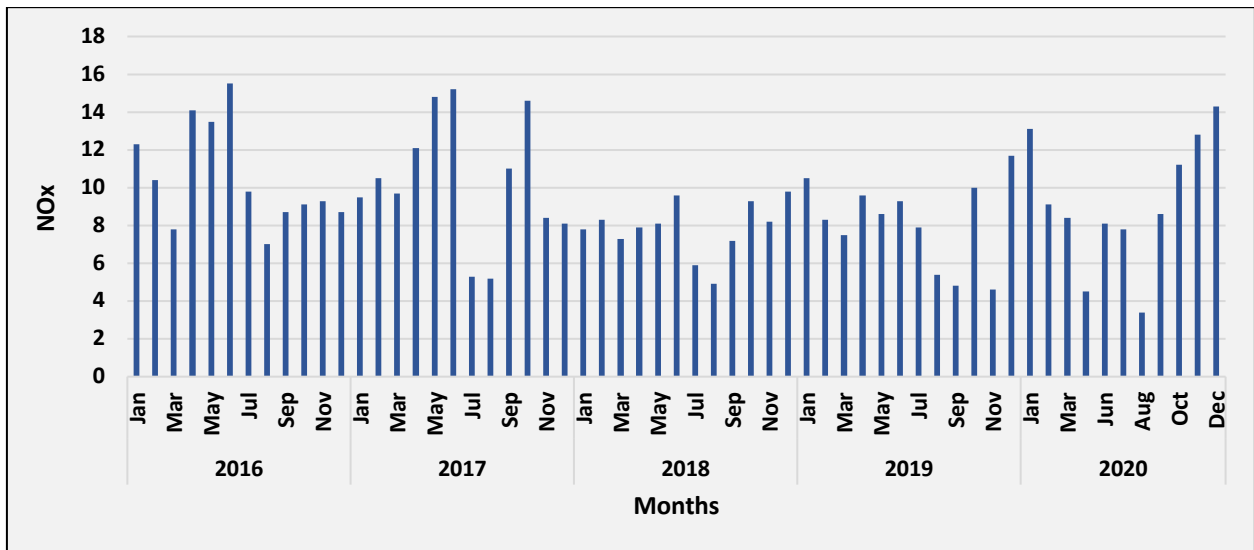


Fig. WA28: Time series of monthly average NO_x ambient air concentration in Wanakbori TPP (Ambient 4)

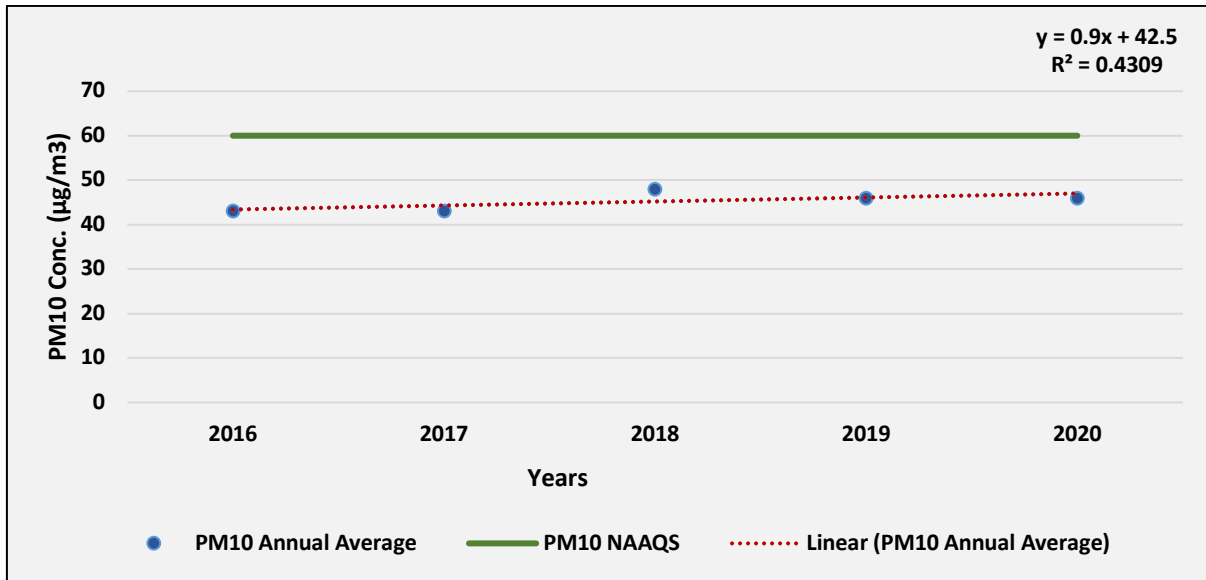


Fig. WA29: Trend of annual mean PM_{10} ambient air concentration in Wanakbori TPP (Ambient 4)

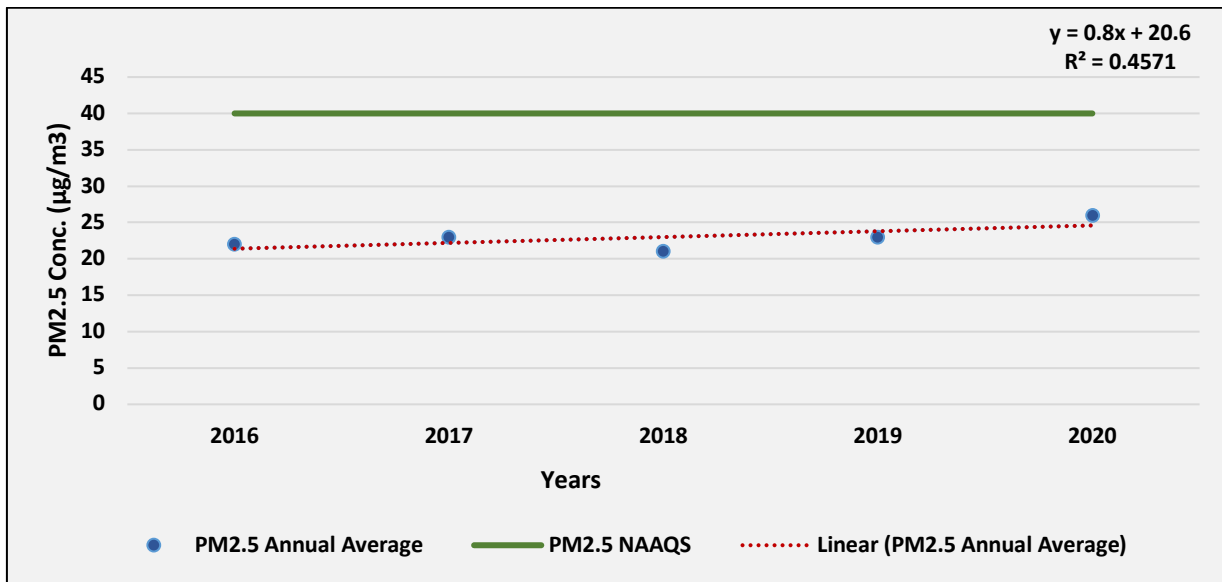


Fig. WA30: Trend of annual mean $PM_{2.5}$ ambient air concentration in Wanakbori TPP (Ambient 4)

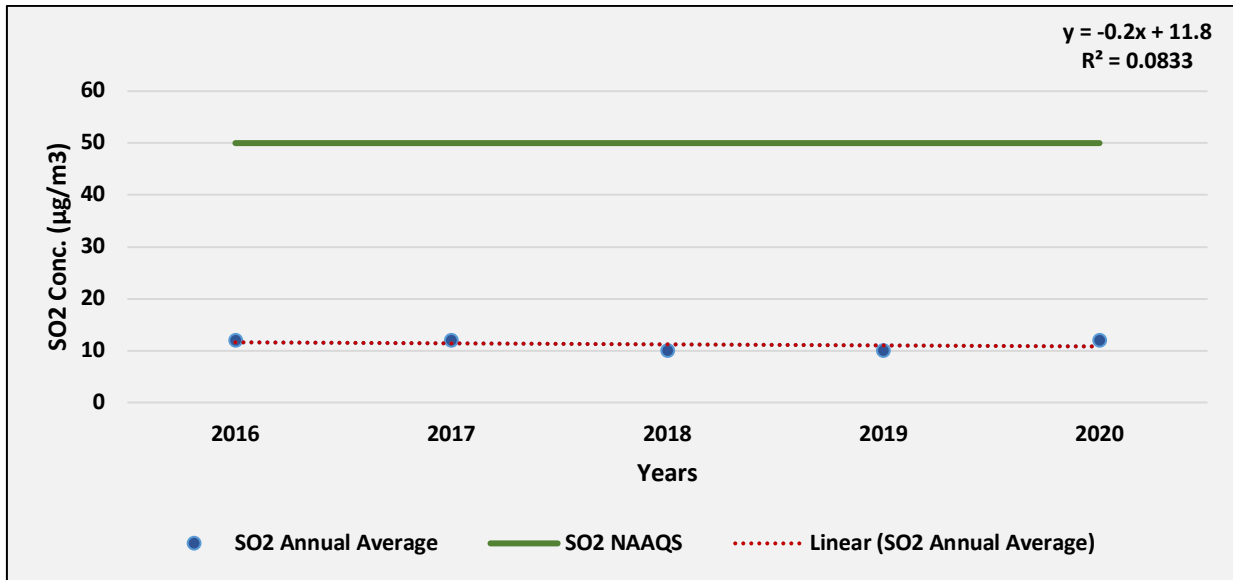


Fig. WA31: Trend of annual mean SO₂ ambient air concentration in Wanakbori TPP (Ambient 4)

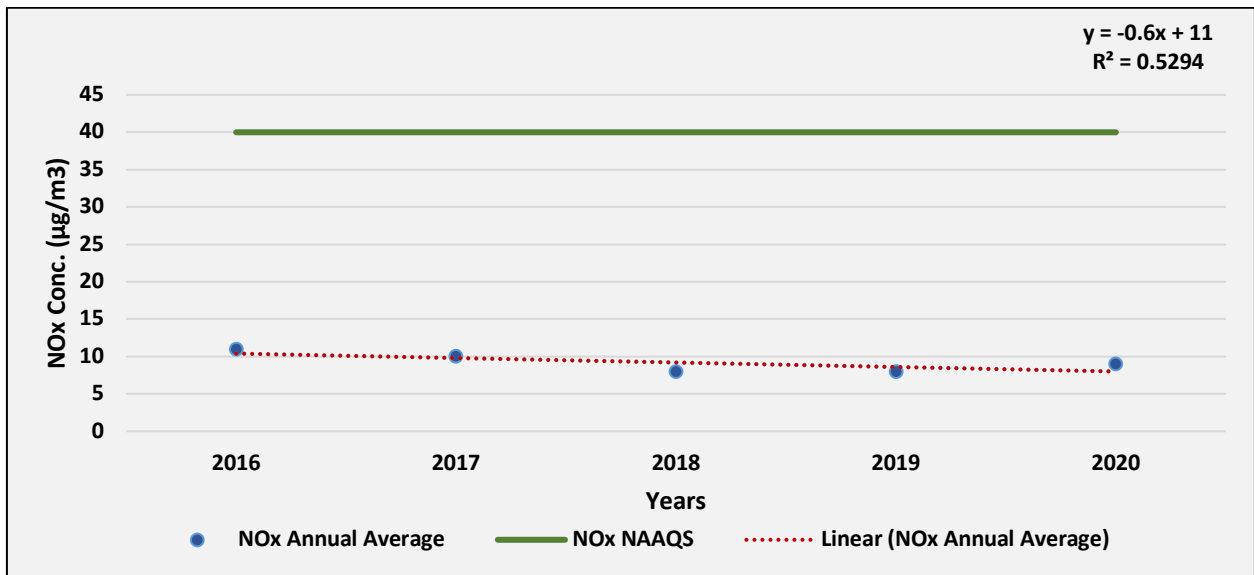


Fig. WA32: Trend of annual mean NO_x ambient air concentration in Wanakbori TPP (Ambient 4)

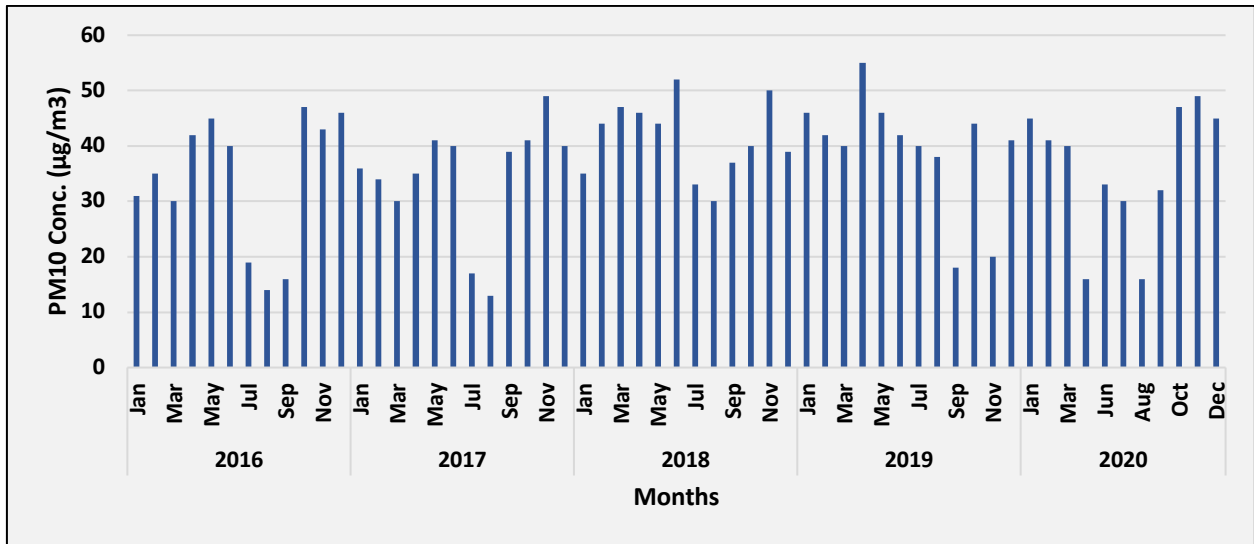


Fig. WA33: Time series of monthly average PM_{10} ambient air concentration in Wanakbori TPP (Ambient 5)

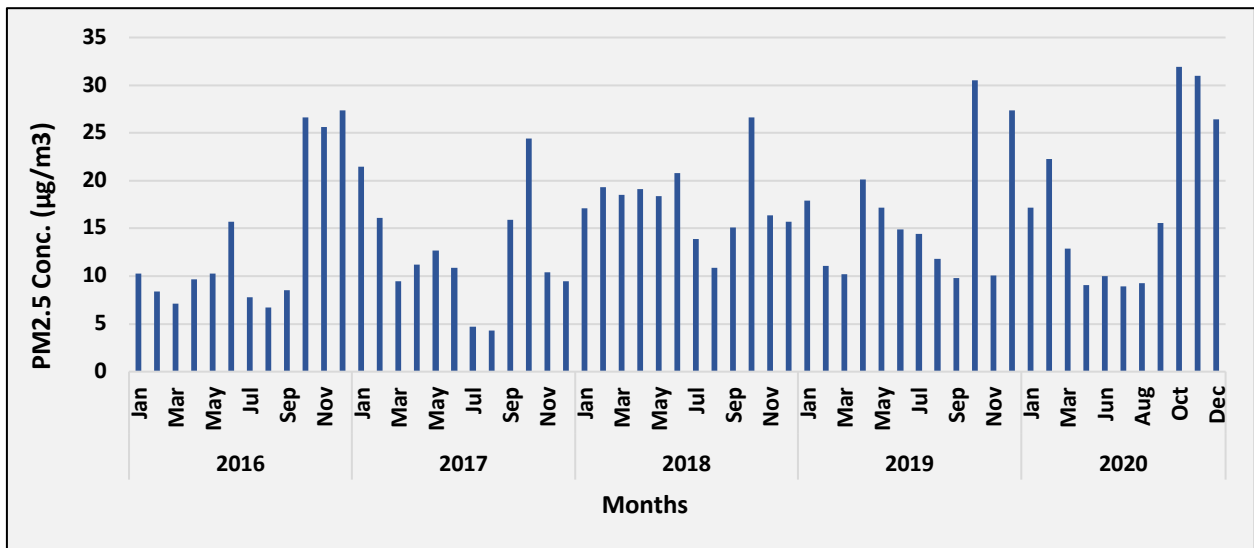


Fig. WA34: Time series of monthly average $PM_{2.5}$ ambient air concentration in Wanakbori TPP (Ambient 5)

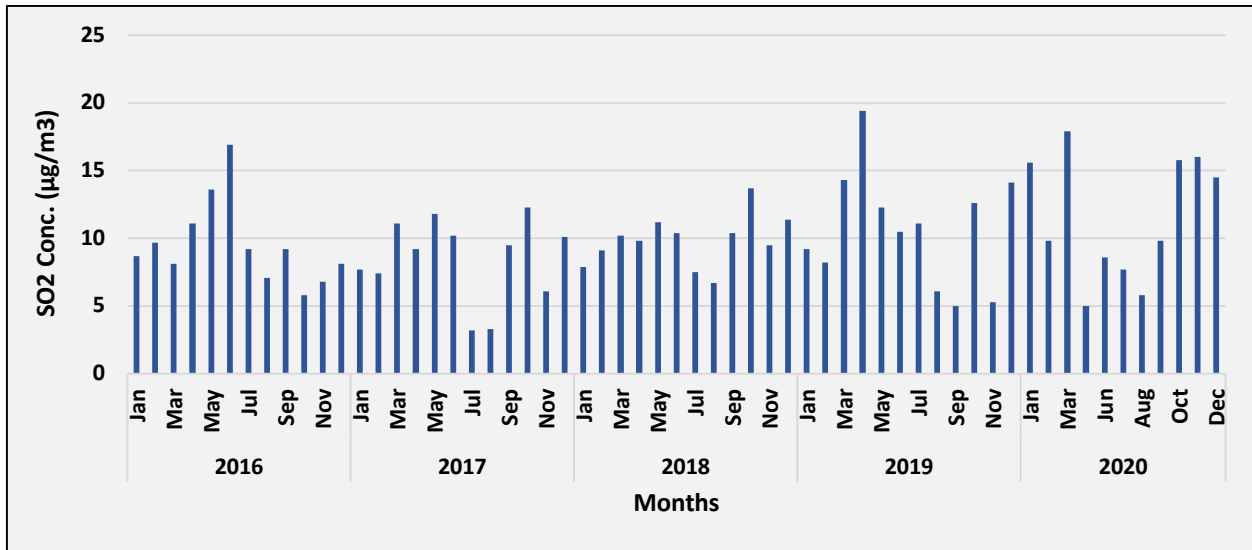


Fig. WA35: Time series of monthly average SO_2 ambient air concentration in Wanakbori TPP (Ambient 5)

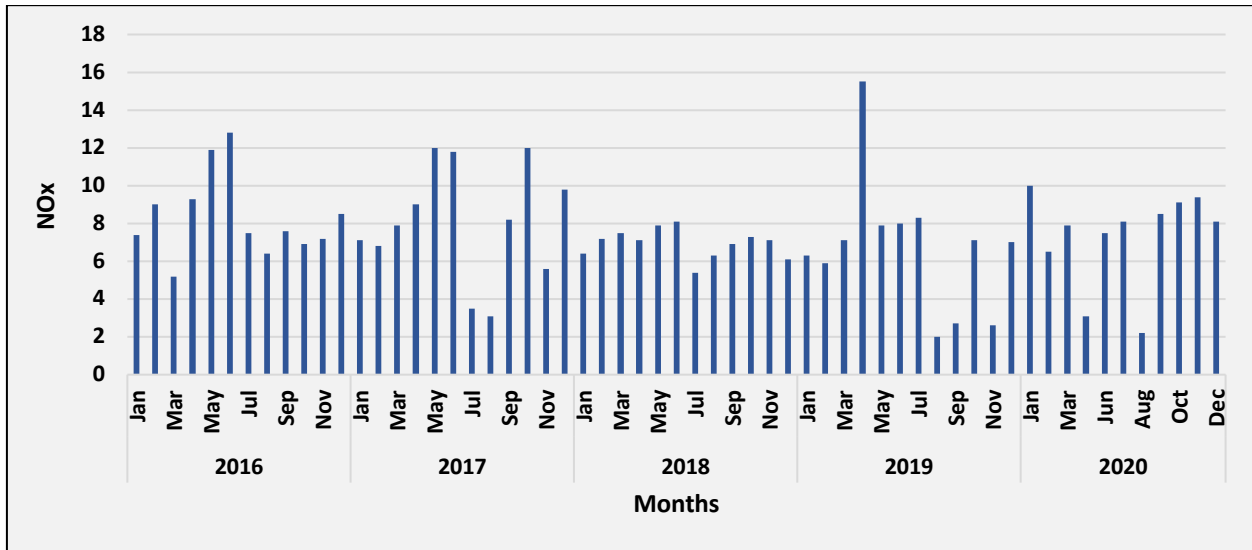


Fig. WA36: Time series of monthly average NO_x ambient air concentration in Wanakbori TPP (Ambient 5)

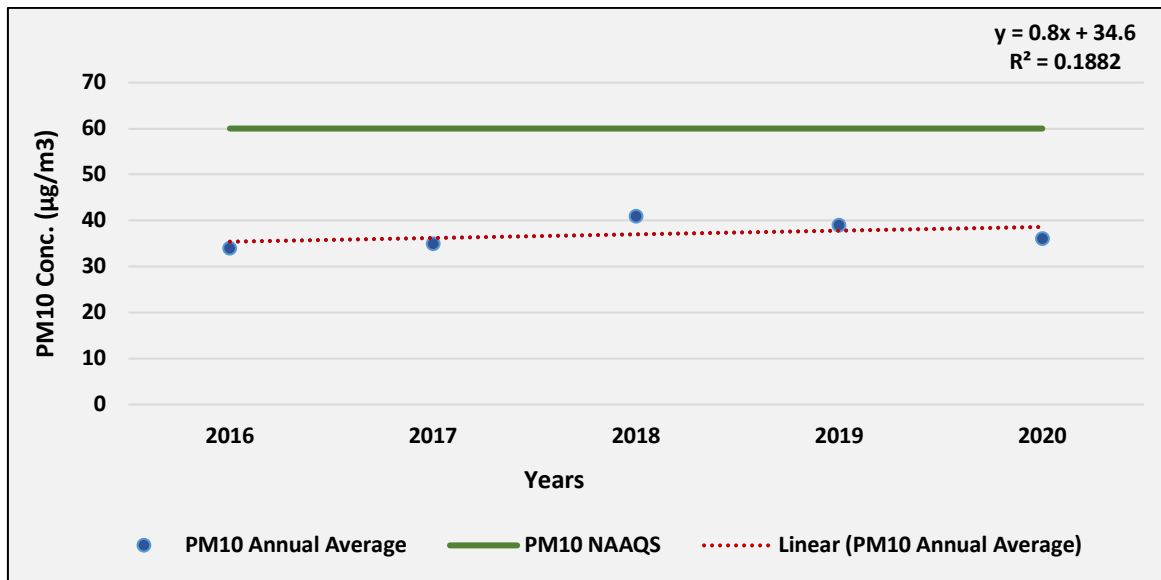


Fig. WA37: Trend of annual mean PM_{10} ambient air concentration in Wanakbori TPP (Ambient 5)

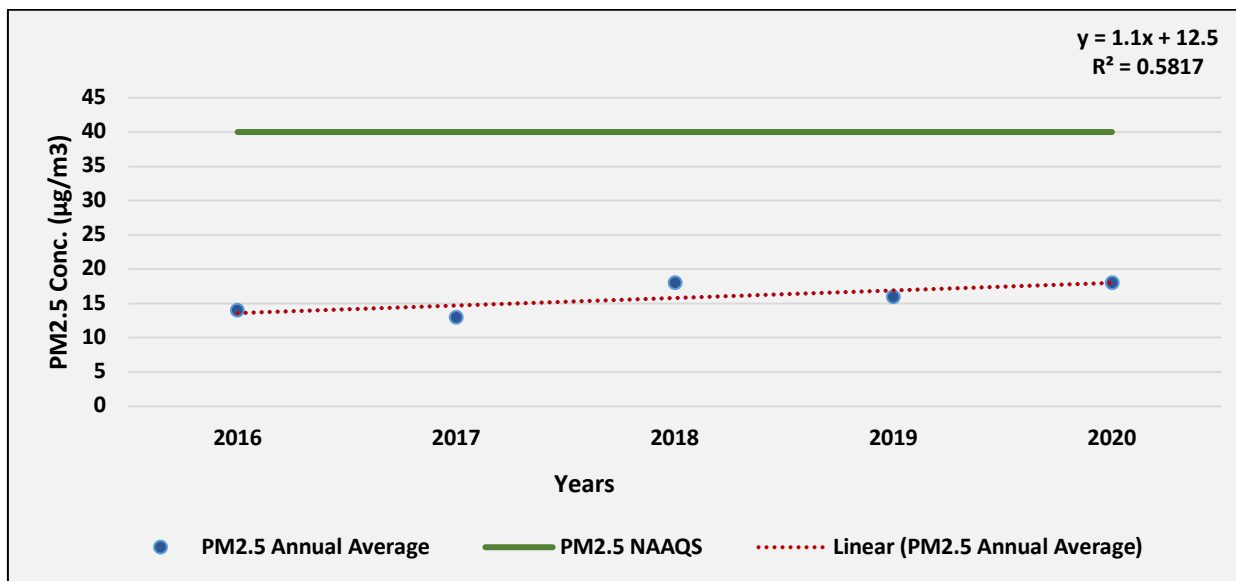


Fig. WA38: Trend of annual mean $PM_{2.5}$ ambient air concentration in Wanakbori TPP (Ambient 5)

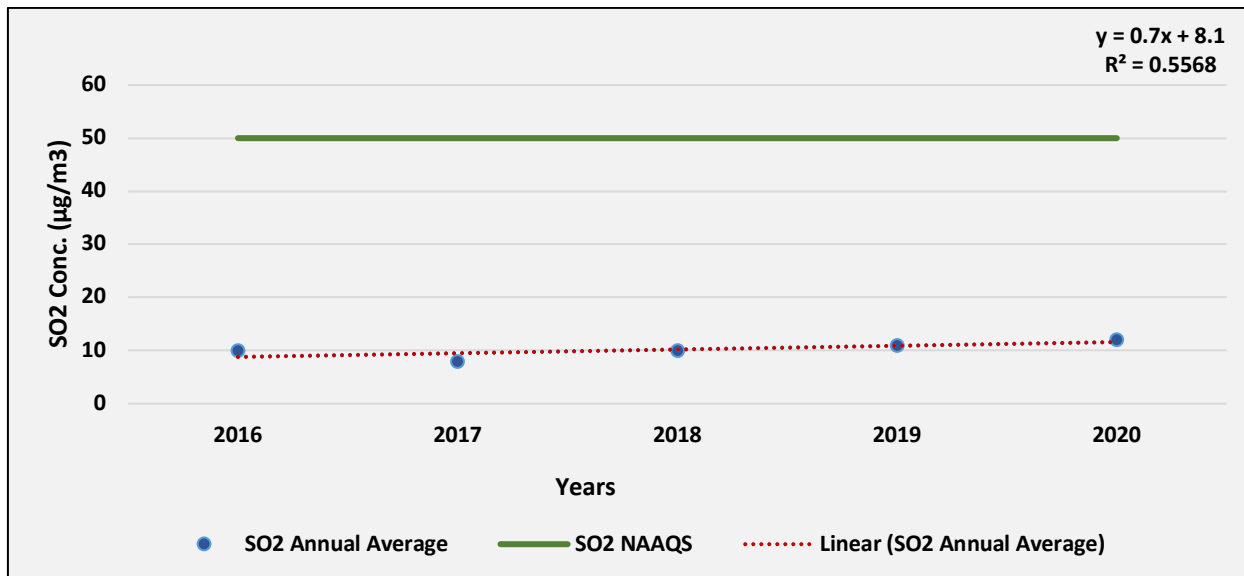


Fig. WA39: Trend of annual mean SO₂ ambient air concentration in Wanakbori TPP (Ambient 5)

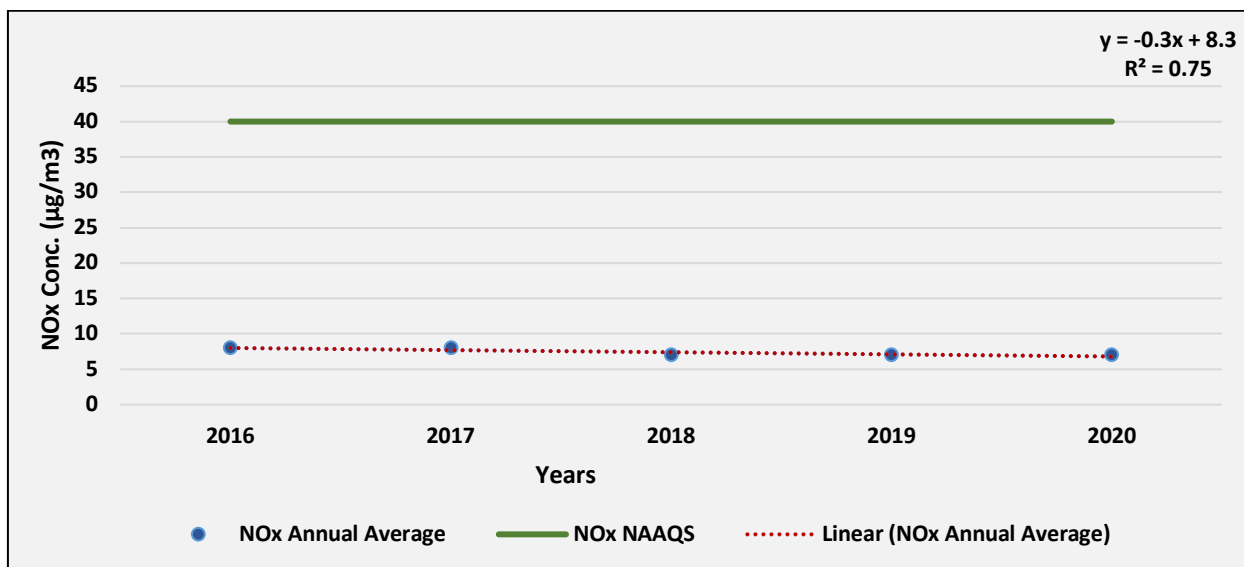


Fig. WA40: Trend of annual mean NO_x ambient air concentration in Wanakbori TPP (Ambient 5)

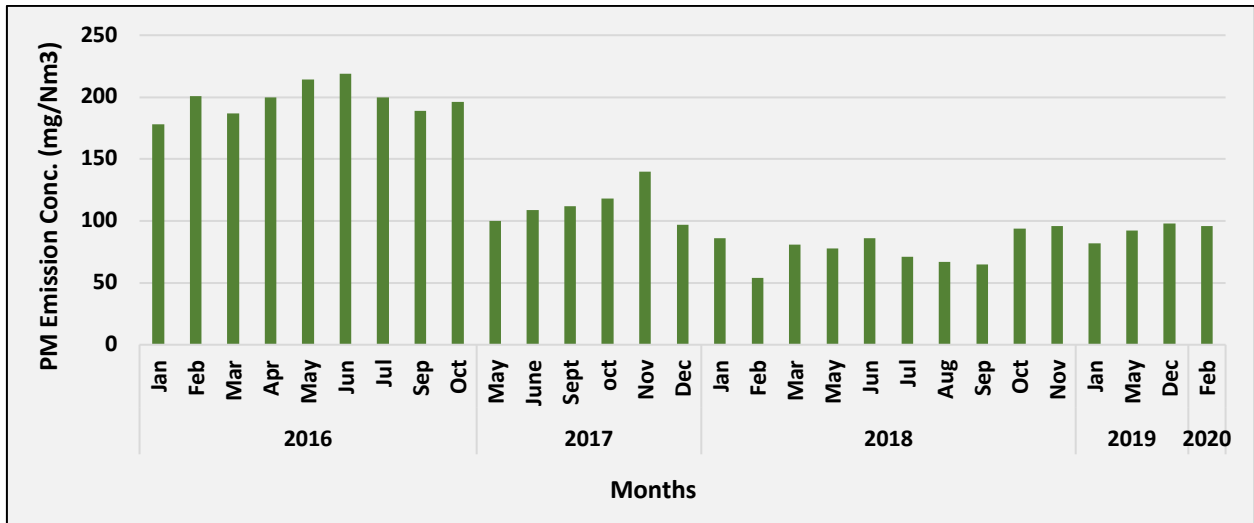


Fig. WA41: Time series of monthly average PM Emission concentration in Wanakbori TPP (Unit 1)

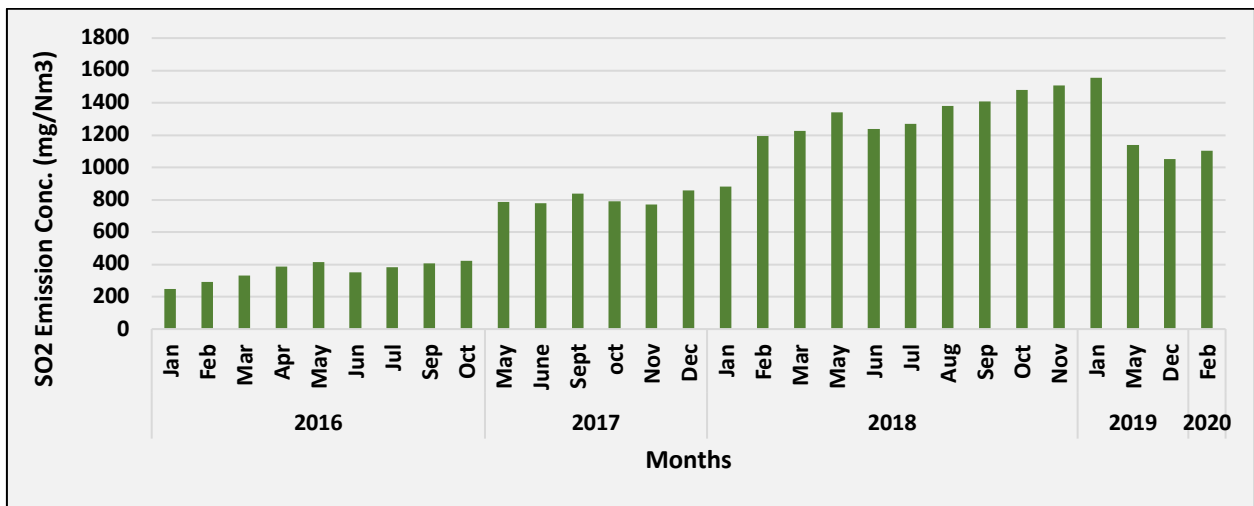


Fig. WA42: Time series of monthly average SO₂ Emission concentration in Wanakbori TPP (Unit 1)

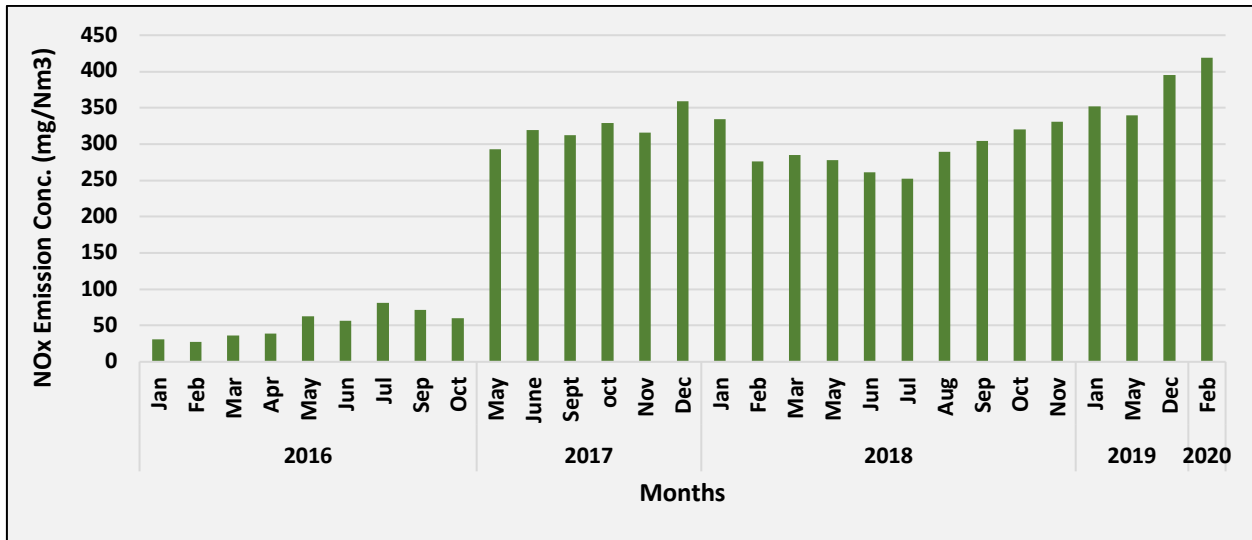


Fig. WA43: Time series of monthly average NO_x Emission concentration in Wanakbori TPP (Unit 1)

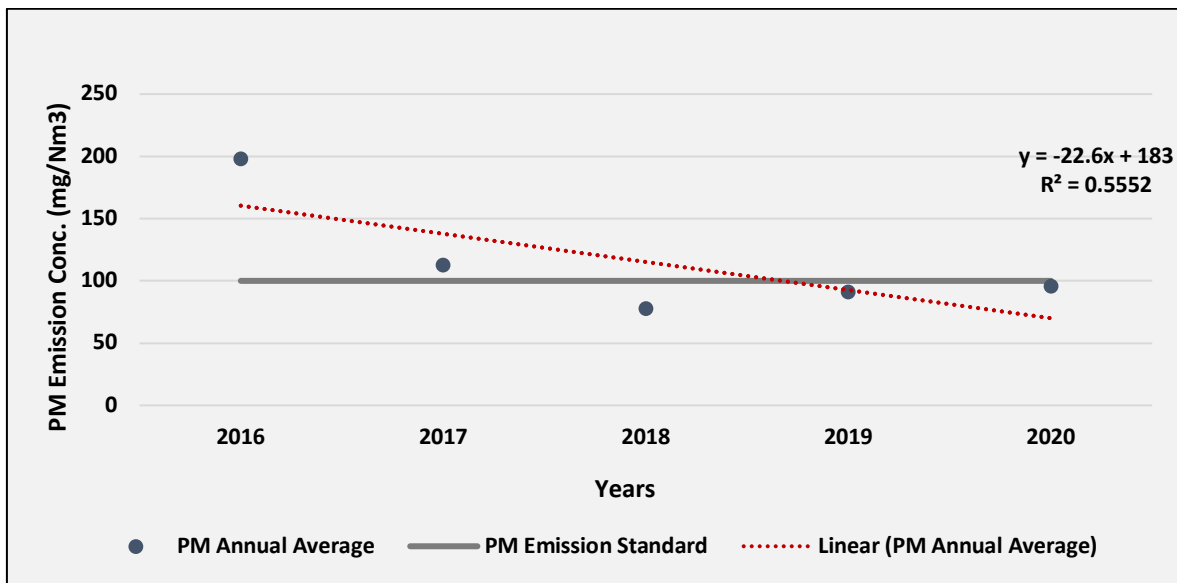


Fig. WA44: Trend of annual mean PM Emission air concentration in Wanakbori TPP (Unit 1)

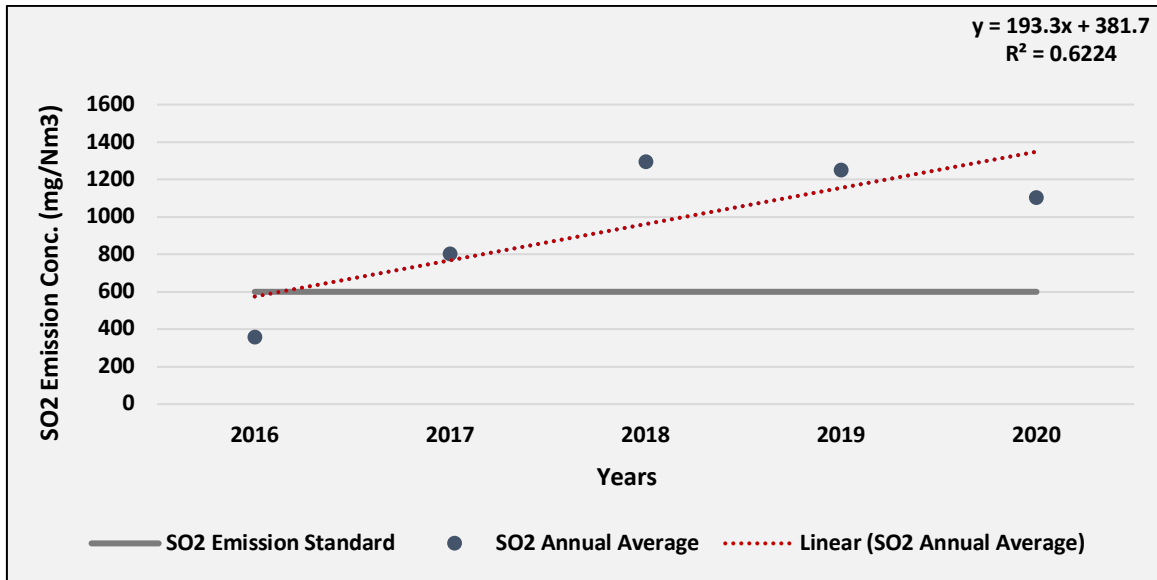


Fig. WA45: Trend of annual mean SO₂ Emission air concentration in Wanakbori TPP (Unit 1)

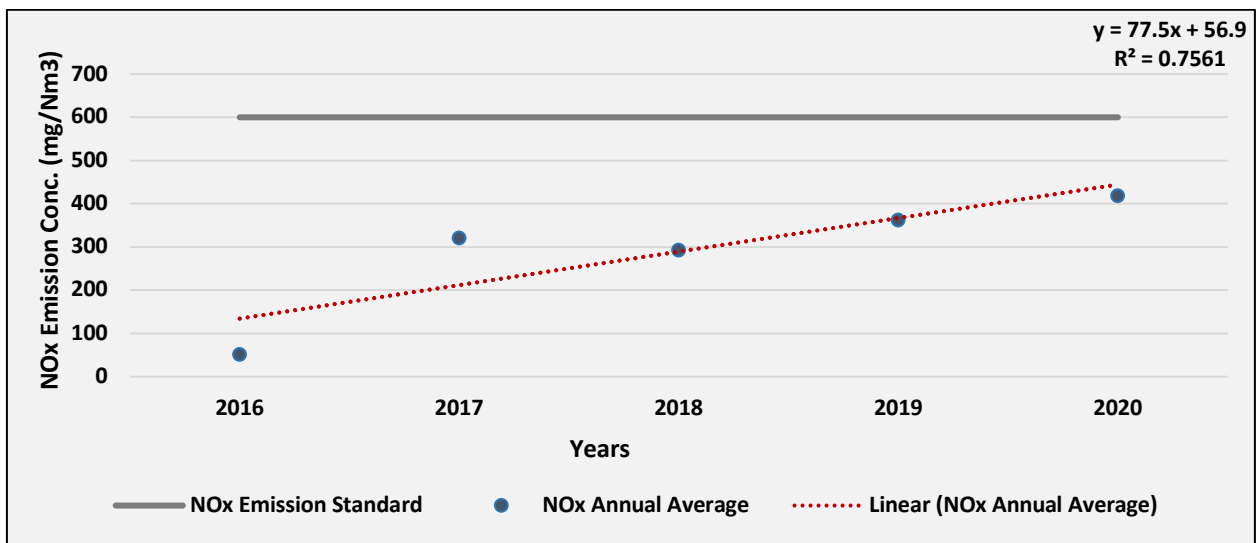


Fig. WA46: Trend of annual mean NO_x Emission air concentration in Wanakbori TPP (Unit 1)

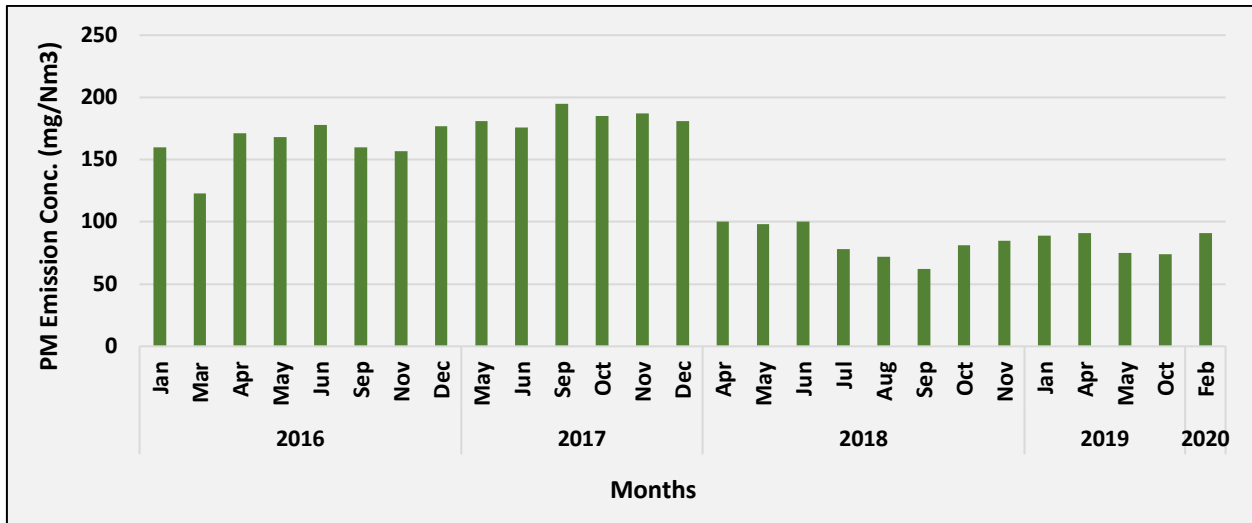


Fig. WA47: Time series of monthly average PM Emission concentration in Wanakbori TPP (Unit 2)

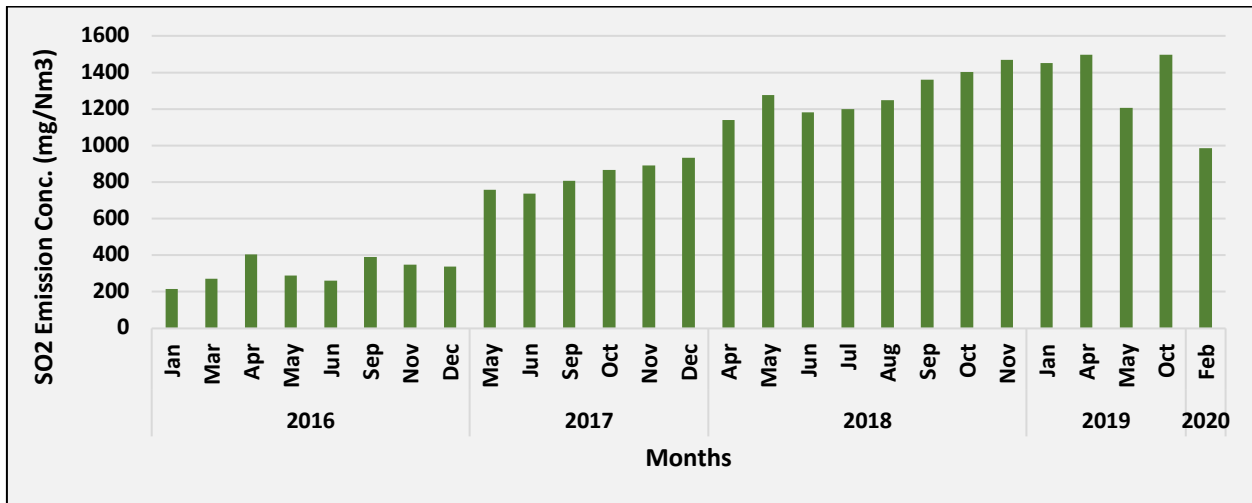


Fig. WA48: Time series of monthly average SO₂ Emission concentration in Wanakbori TPP (Unit 2)

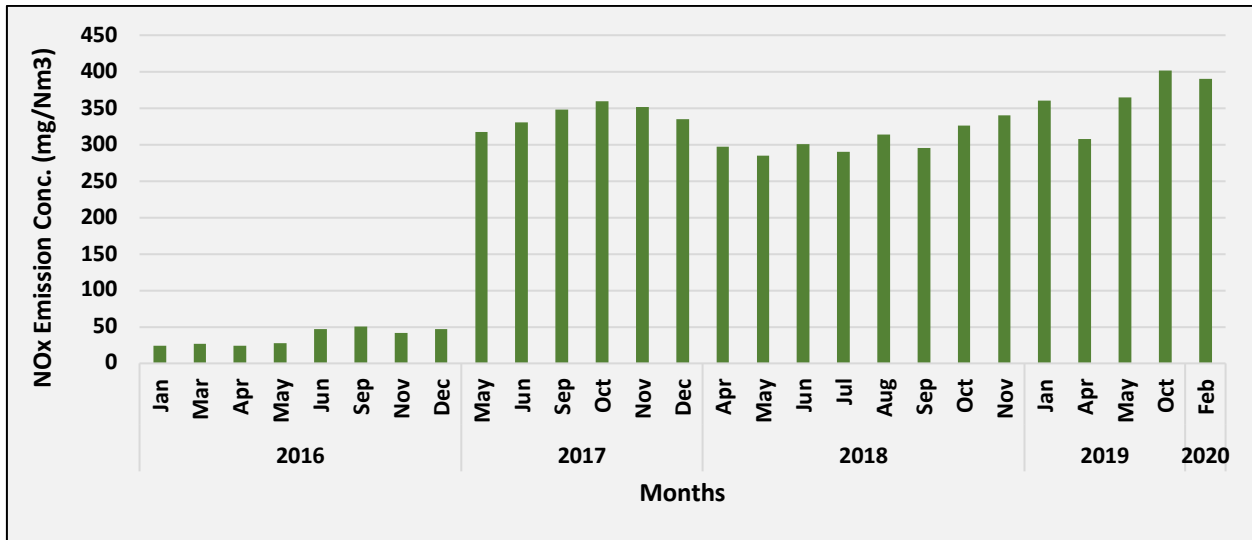


Fig. WA49: Time series of monthly average NO_x Emission concentration in Wanakbori TPP (Unit 2)

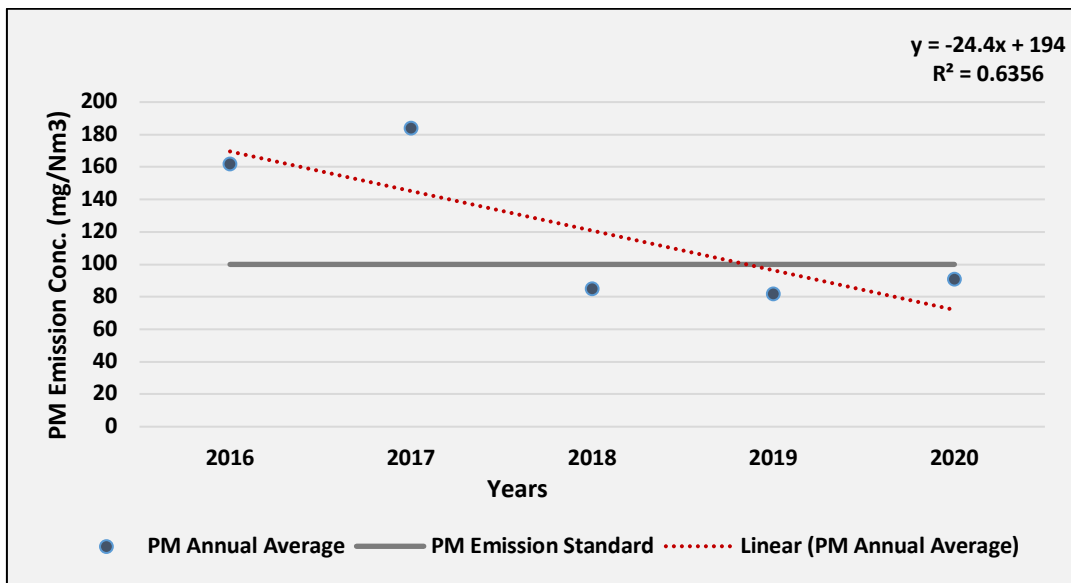


Fig. WA50: Trend of annual mean PM Emission air concentration in Wanakbori TPP (Unit 2)

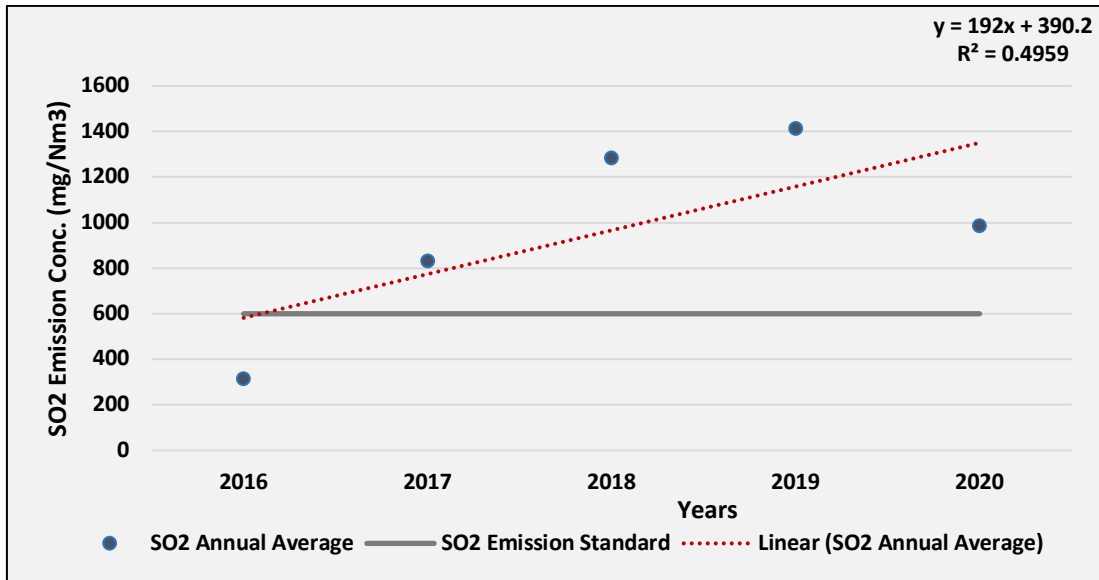


Fig. WA51: Trend of annual mean SO₂ Emission air concentration in Wanakbori TPP (Unit 2)

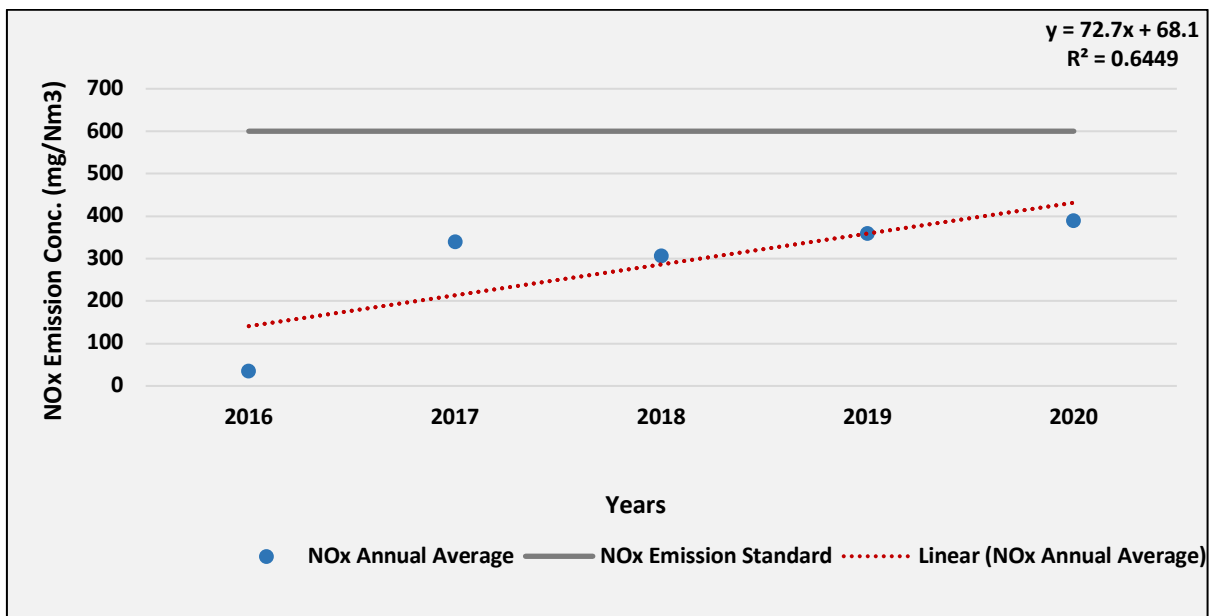


Fig. WA52: Trend of annual mean NO_x Emission air concentration in Wanakbori TPP (Unit 2)

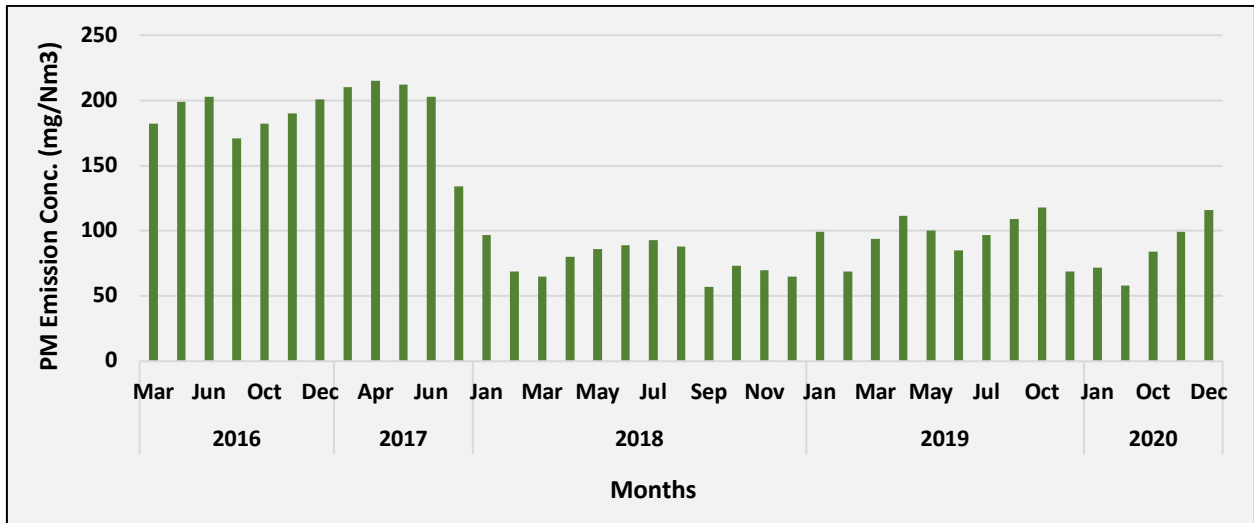


Fig. WA53: Time series of monthly average PM Emission concentration in Wanakbori TPP (Unit 3)

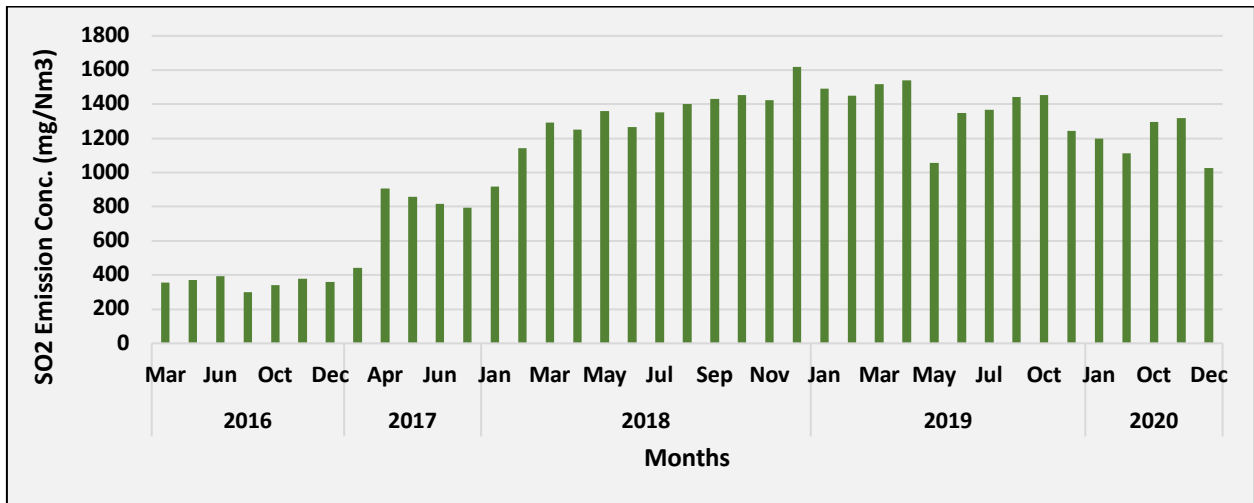


Fig. WA54: Time series of monthly average SO₂ Emission concentration in Wanakbori TPP (Unit 3)

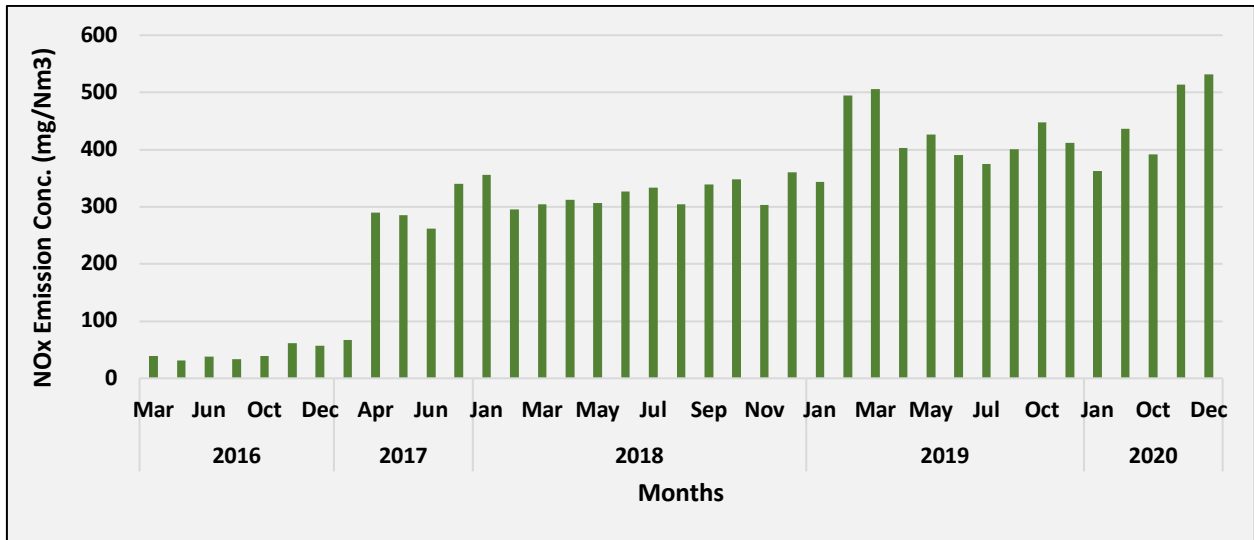


Fig. WA55: Time series of monthly average NO_x Emission concentration in Wanakbori TPP (Unit 3)

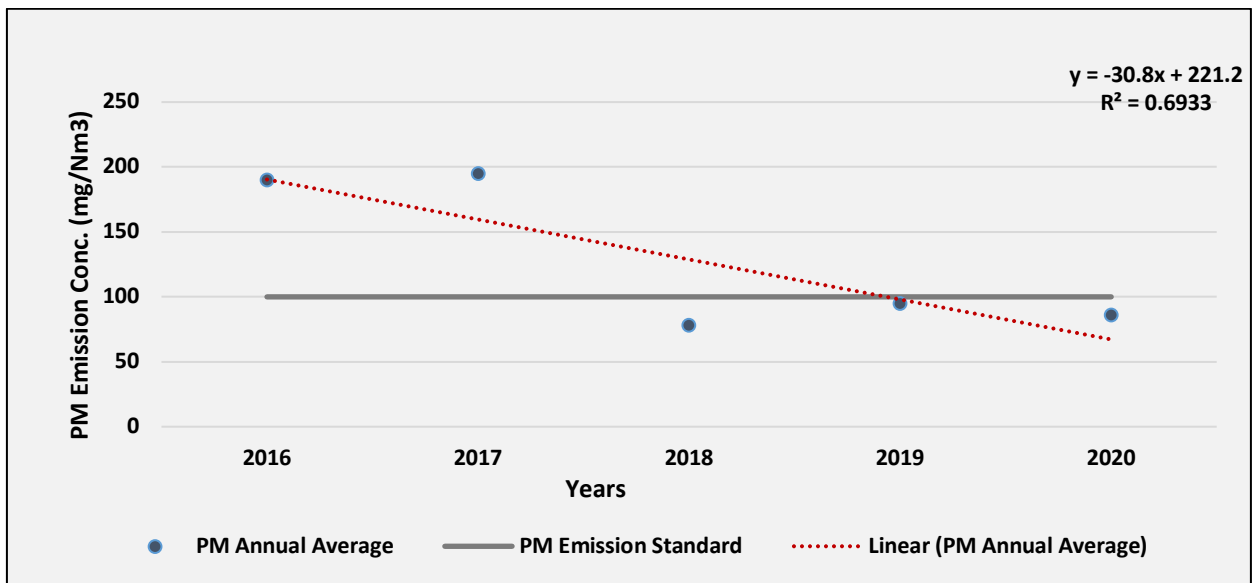


Fig. WA56: Trend of annual mean PM Emission air concentration in Wanakbori TPP (Unit 3)

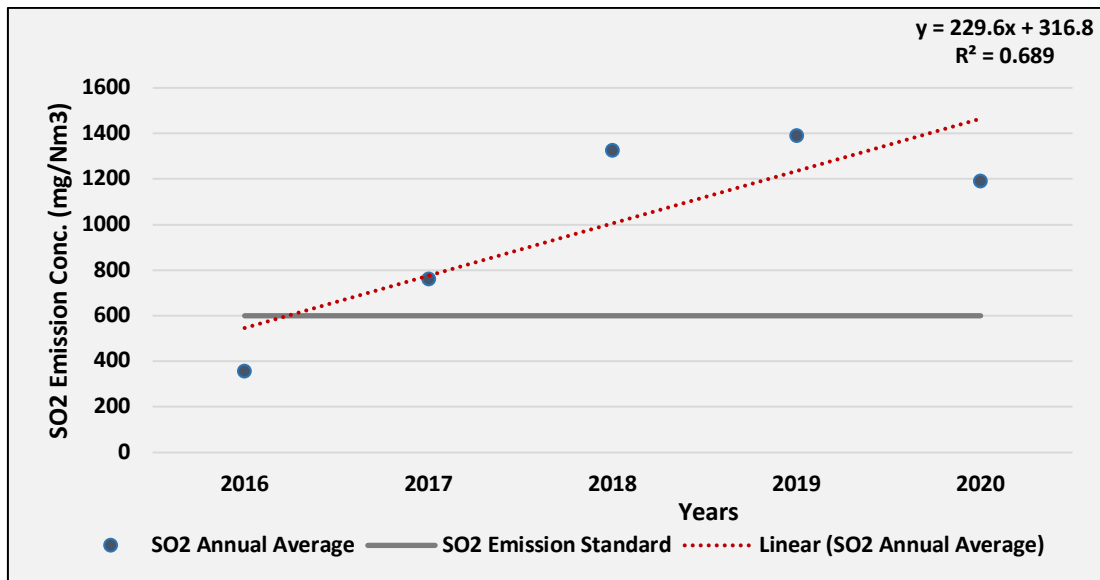


Fig. WA57: Trend of annual mean SO₂ Emission air concentration in Wanakbori TPP (Unit 3)

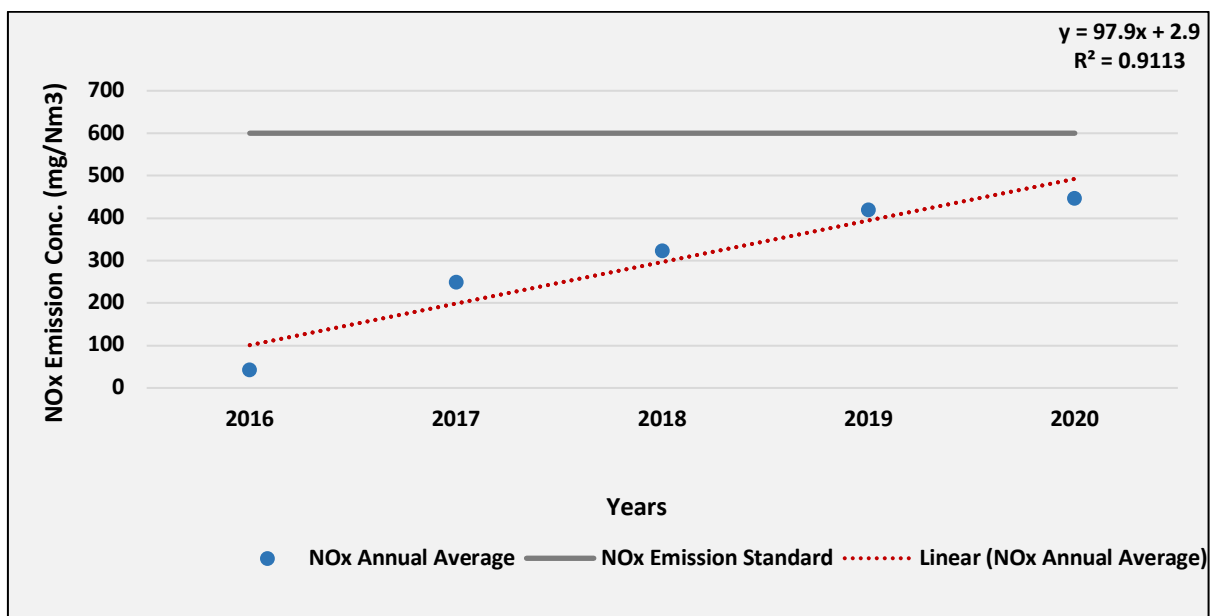


Fig. WA58: Trend of annual mean NO_x Emission air concentration in Wanakbori TPP (Unit 3)

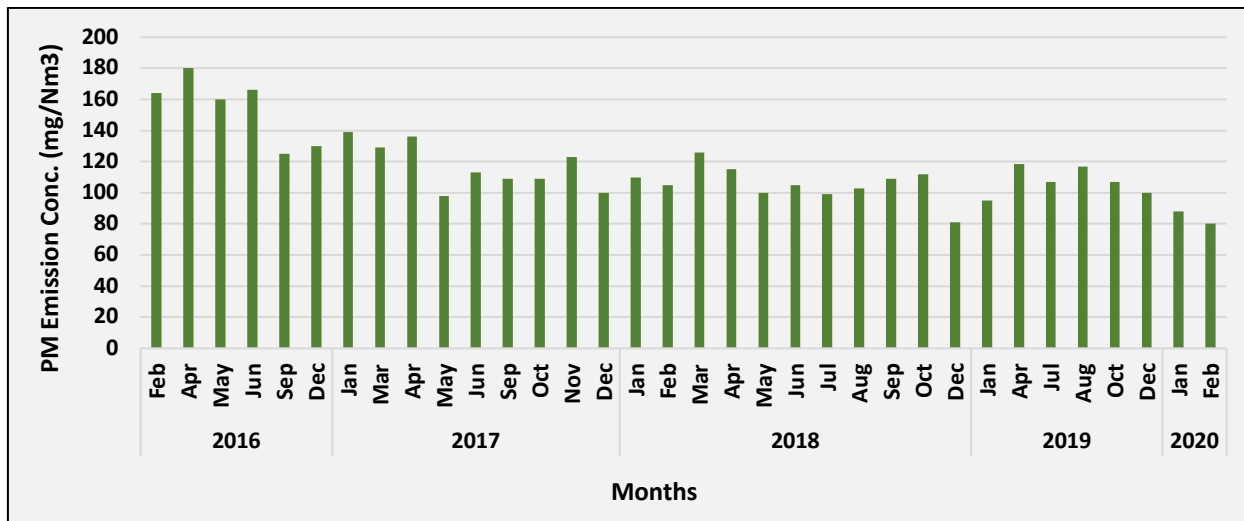


Fig. WA59: Time series of monthly average PM Emission concentration in Wanakbori TPP (Unit 4)

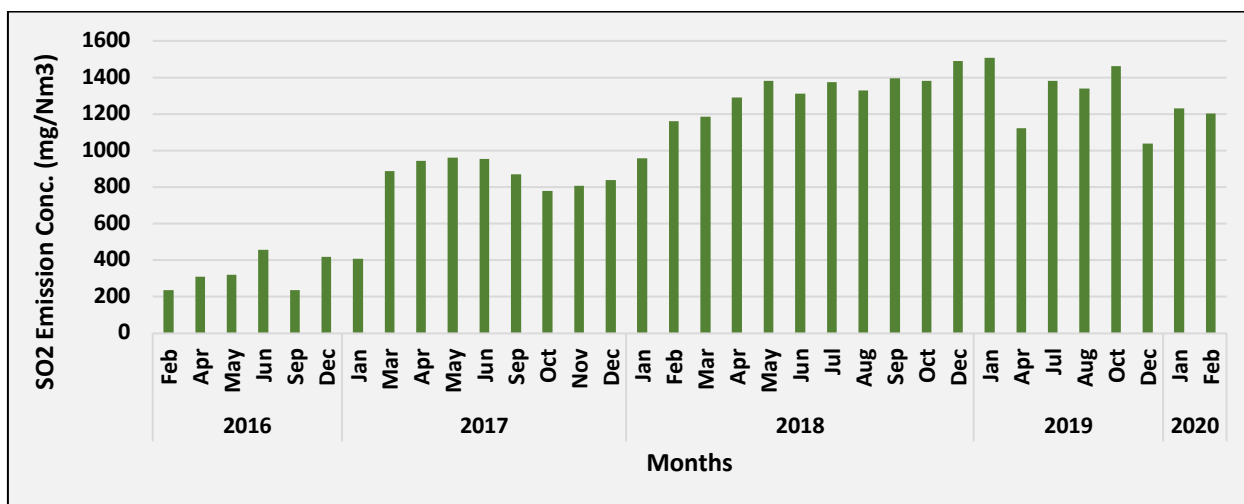


Fig. WA60: Time series of monthly average SO₂ Emission concentration in Wanakbori TPP (Unit 4)

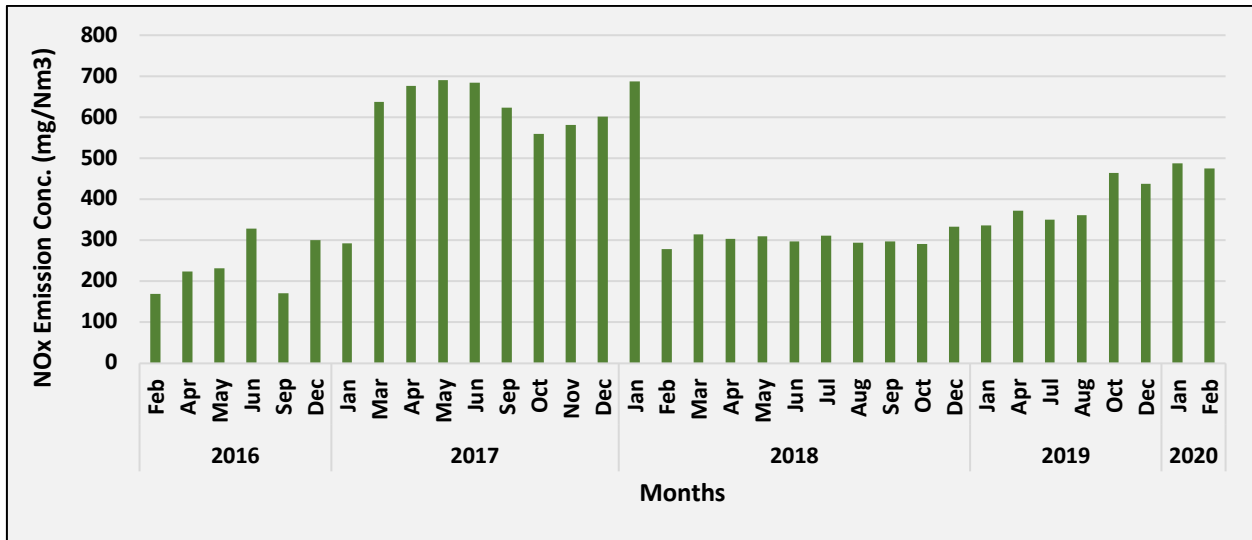


Fig. WA61: Time series of monthly average NO_x Emission concentration in Wanakbori TPP (Unit 4)

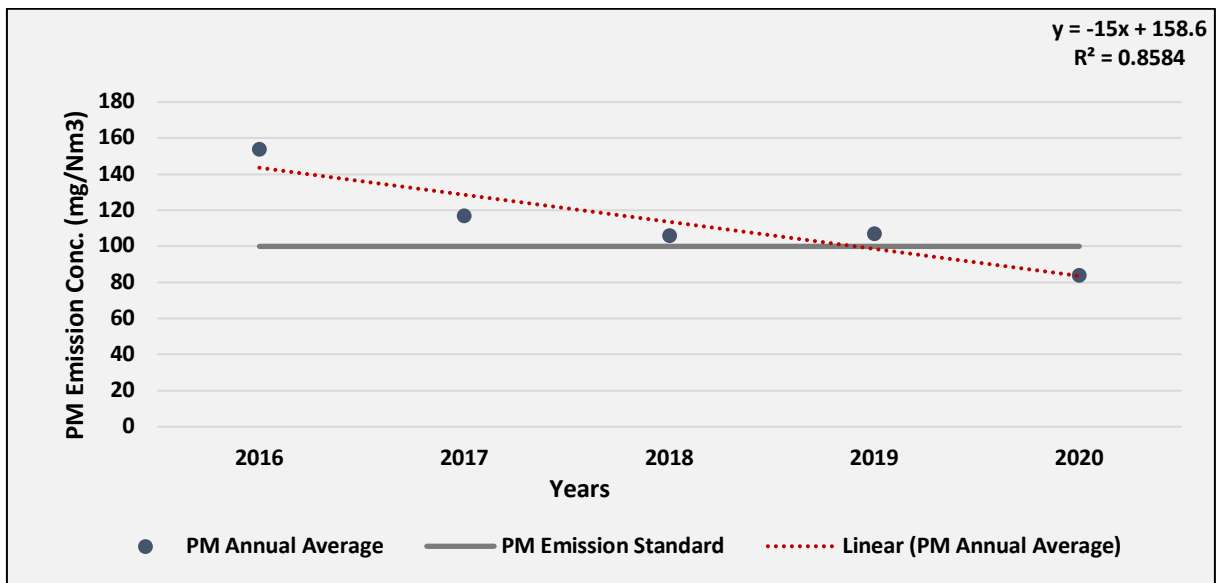


Fig. WA62: Trend of annual mean PM Emission air concentration in Wanakbori TPP (Unit 4)

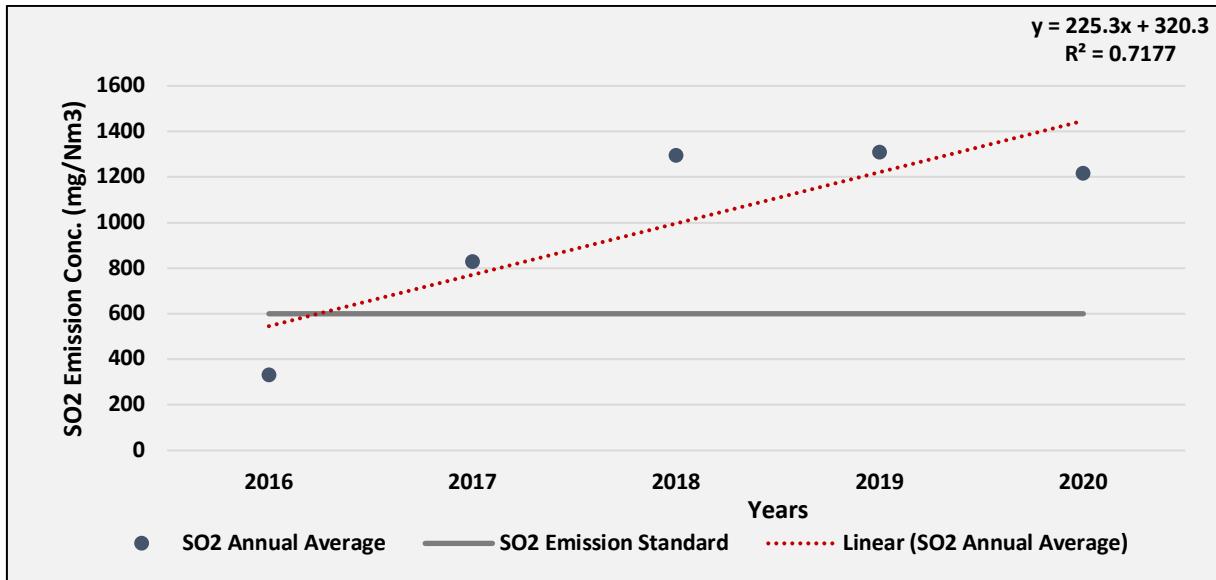


Fig. WA63: Trend of annual mean SO₂ Emission air concentration in Wanakbori TPP (Unit 4)

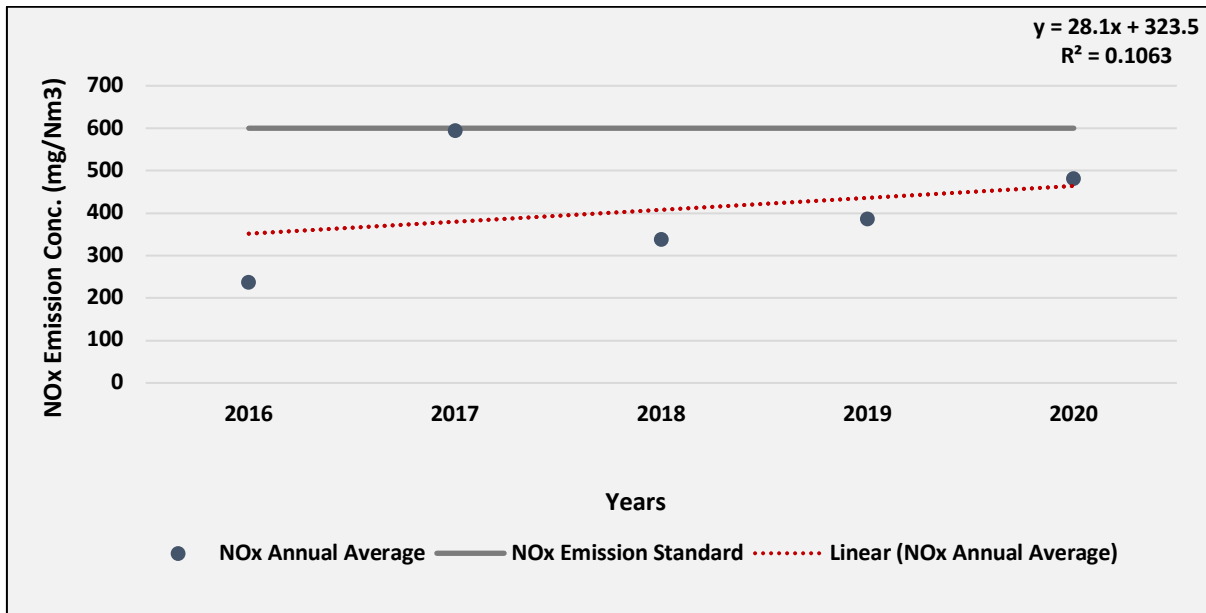


Fig. WA64: Trend of annual mean NO_x Emission air concentration in Wanakbori TPP (Unit 4)

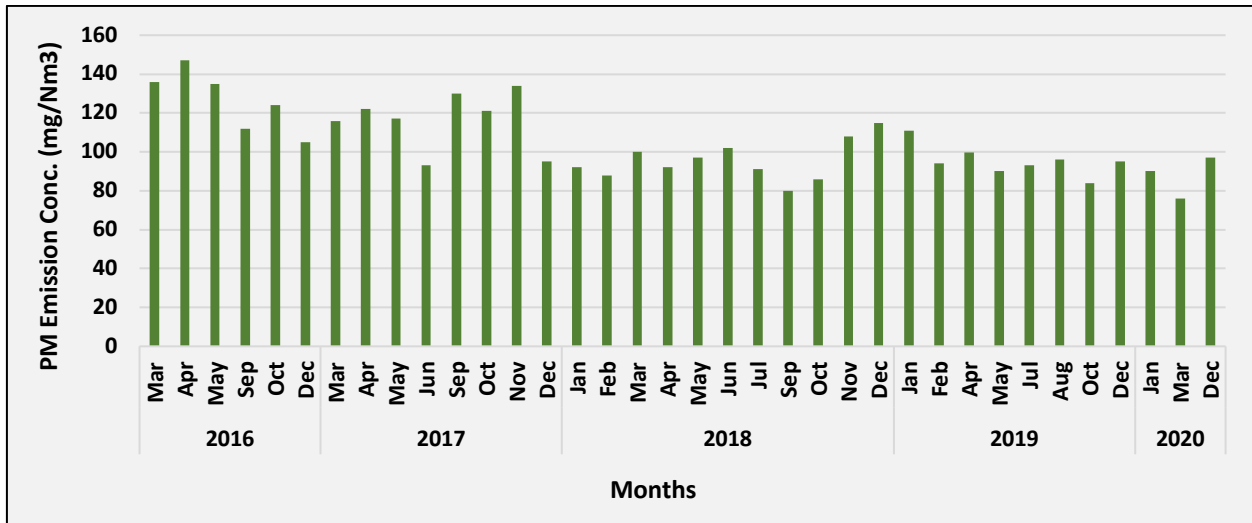


Fig. WA65: Time series of monthly average PM Emission concentration in Wanakbori TPP (Unit 5)

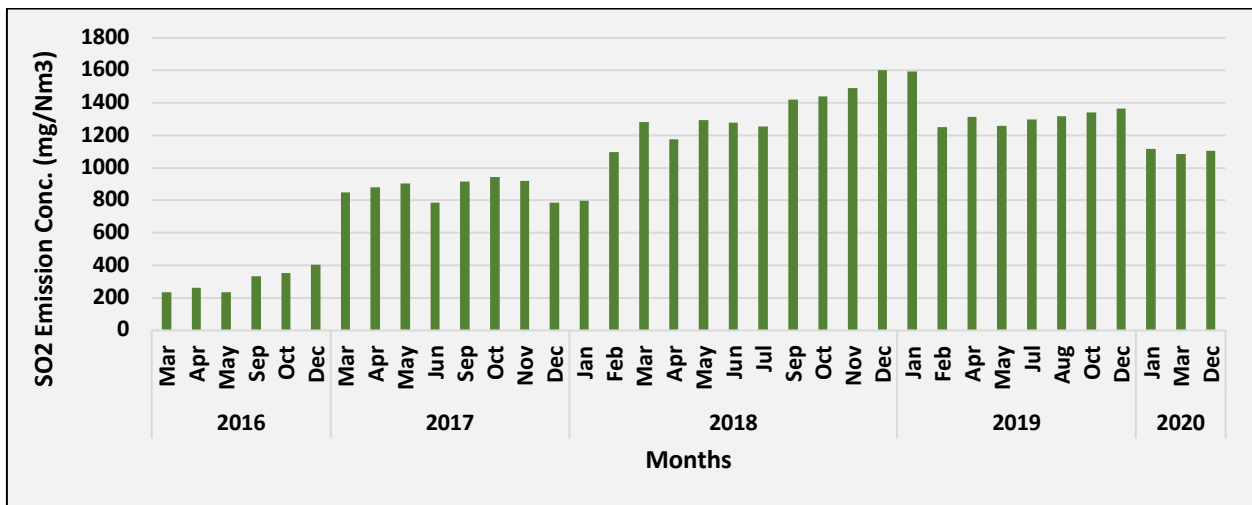


Fig. WA66: Time series of monthly average SO₂ Emission concentration in Wanakbori TPP (Unit 5)

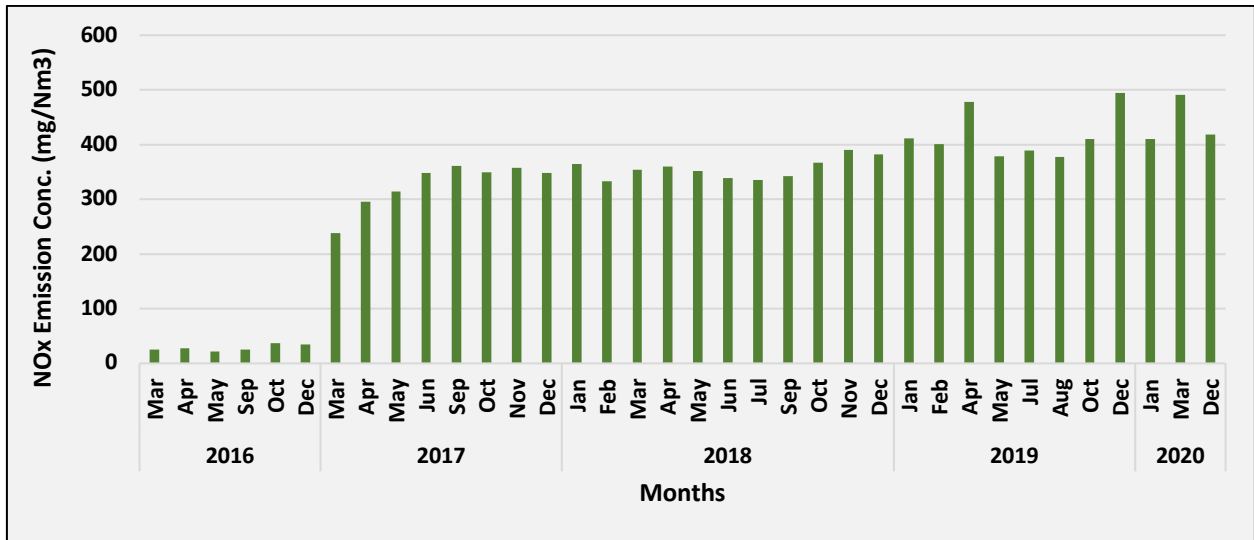


Fig. WA67: Time series of monthly average NO_x Emission concentration in Wanakbori TPP (Unit 5)

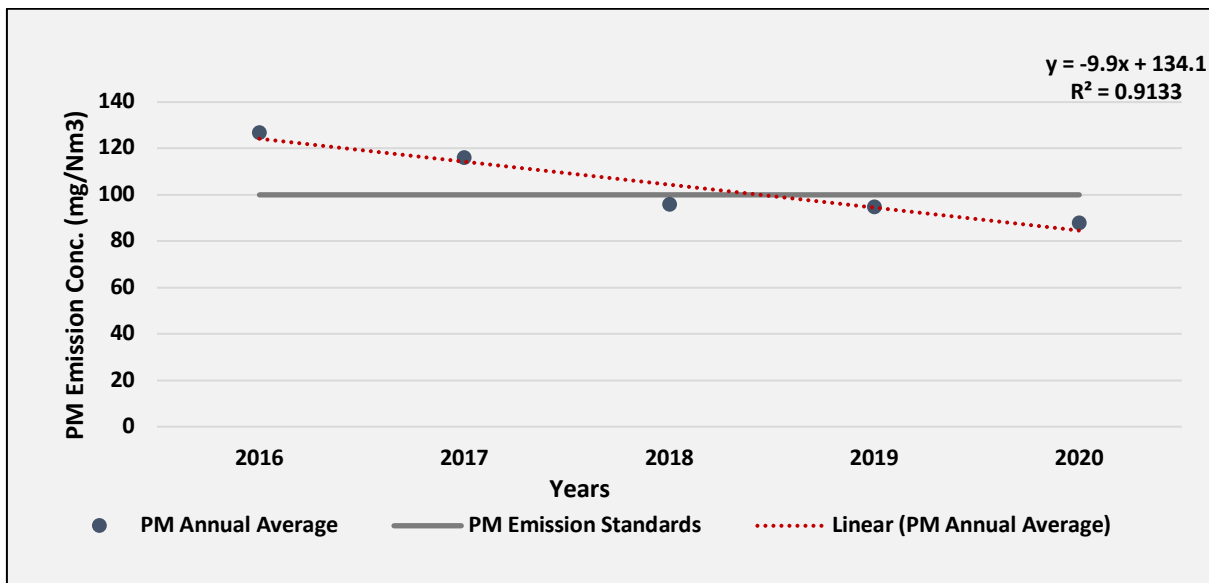


Fig. WA68: Trend of annual mean PM Emission air concentration in Wanakbori TPP (Unit 5)

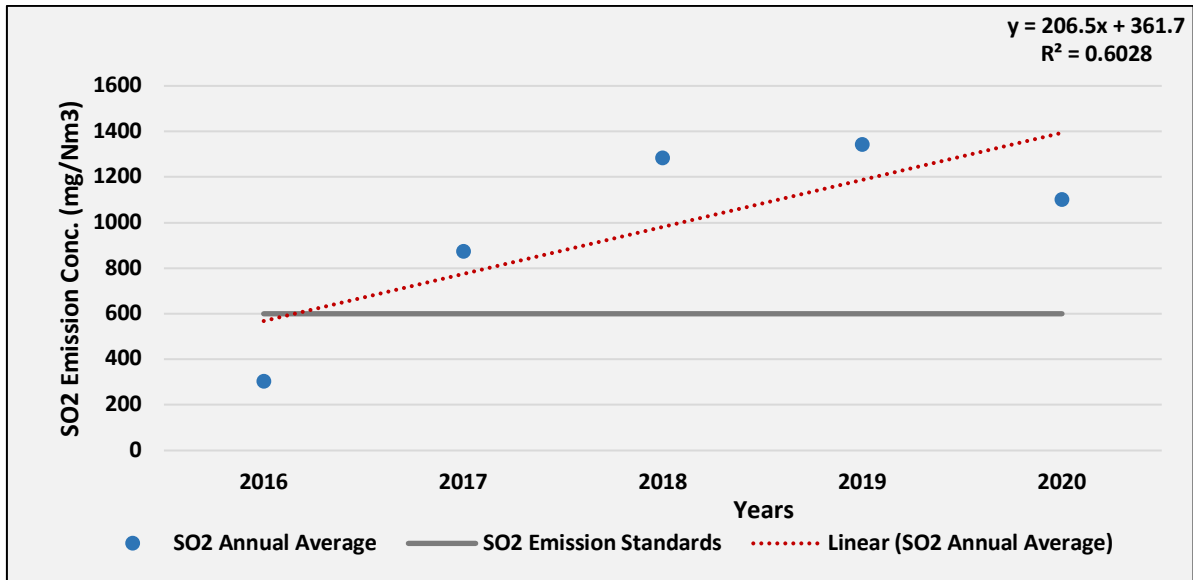


Fig. WA69: Trend of annual mean SO₂ Emission air concentration in Wanakbori TPP (Unit 5)

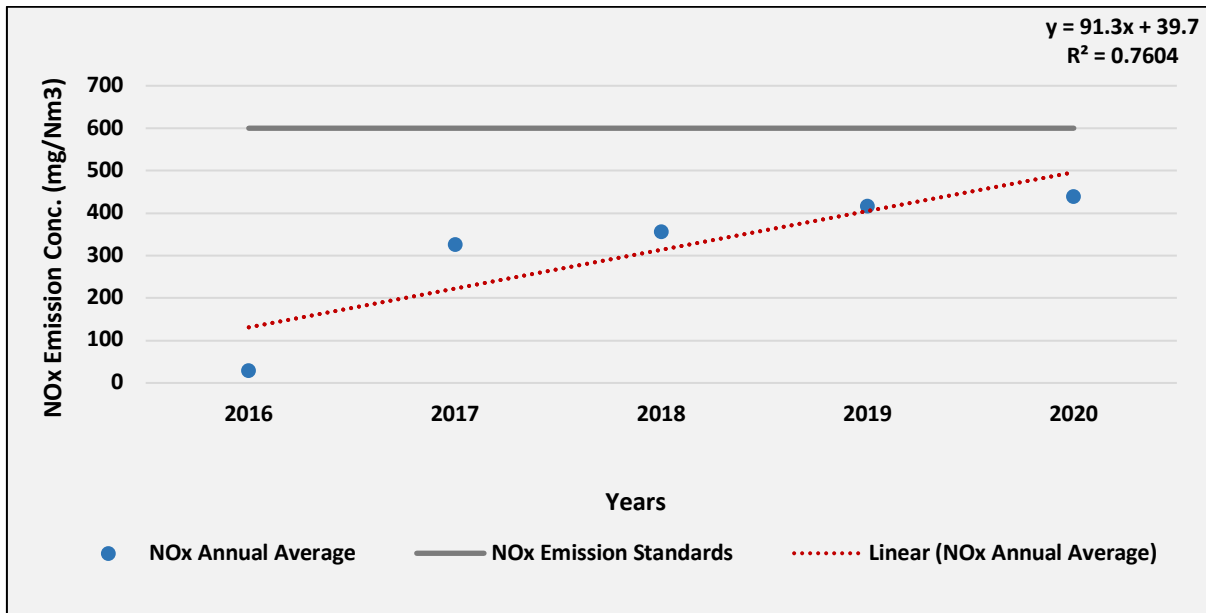


Fig. WA70: Trend of annual mean NO_x Emission air concentration in Wanakbori TPP (Unit 5)

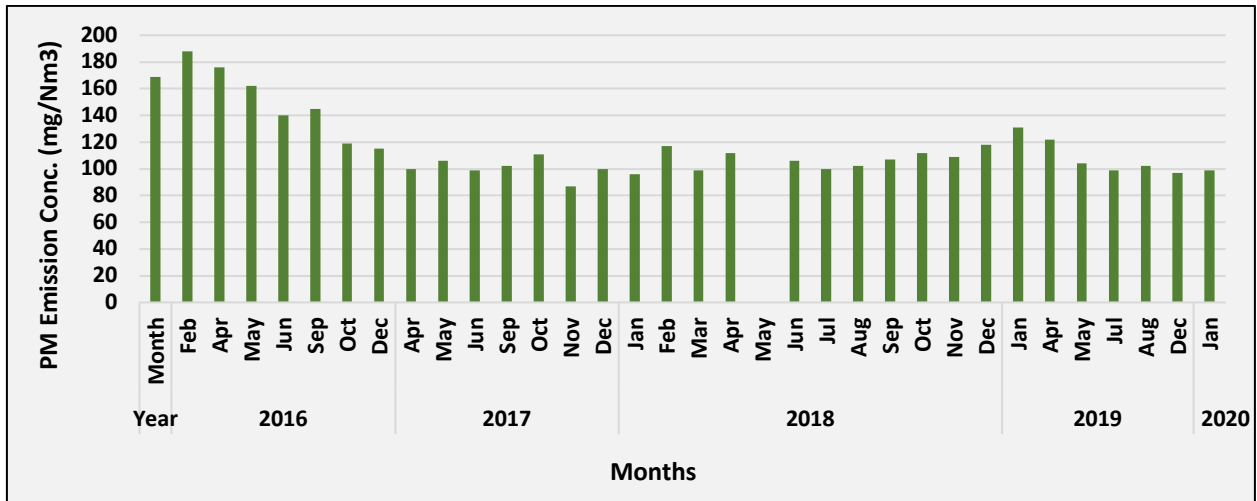


Fig. WA71: Time series of monthly average PM Emission concentration in Wanakbori TPP (Unit 6)

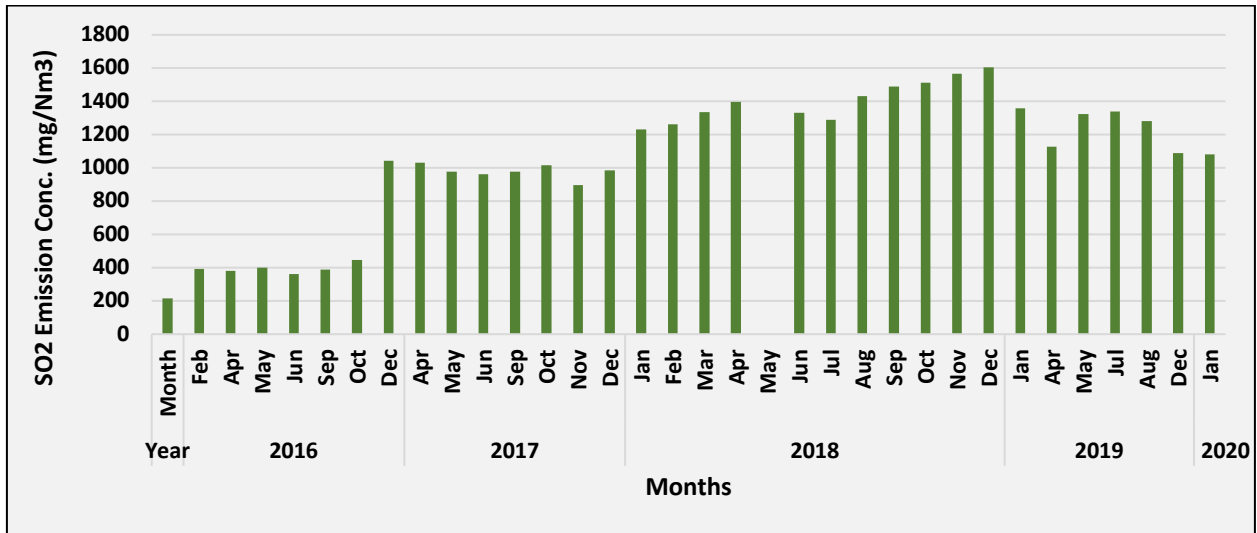


Fig. WA72: Time series of monthly average SO₂ Emission concentration in Wanakbori TPP (Unit 6)

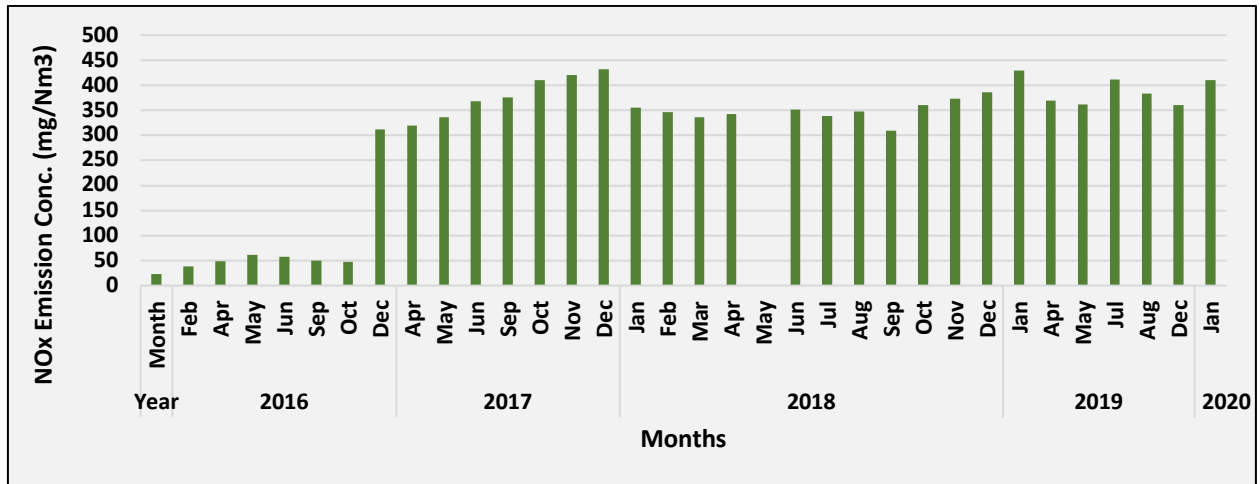


Fig. WA73: Time series of monthly average NO_x Emission concentration in Wanakbori TPP (Unit 6)

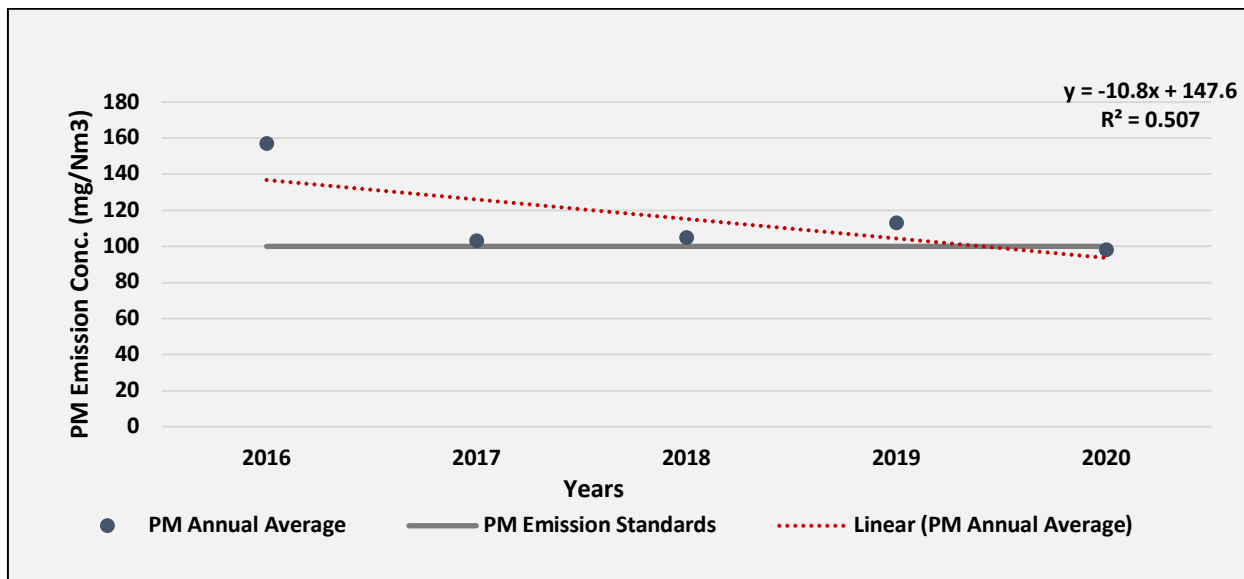


Fig. WA74: Trend of annual mean PM Emission air concentration in Wanakbori TPP (Unit 6)

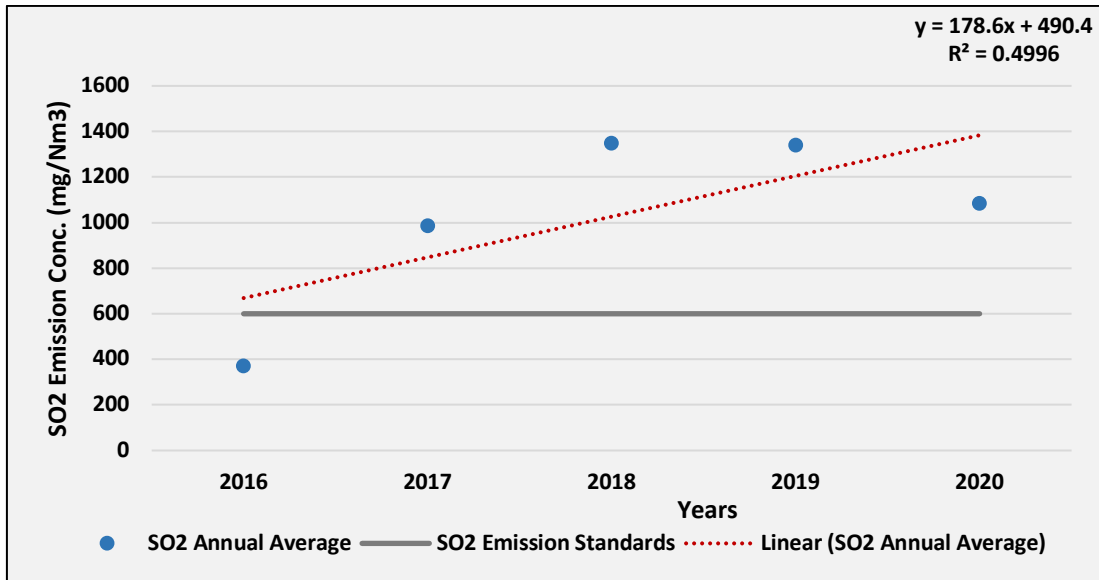


Fig. WA75: Trend of annual mean SO₂ Emission air concentration in Wanakbori TPP (Unit 6)

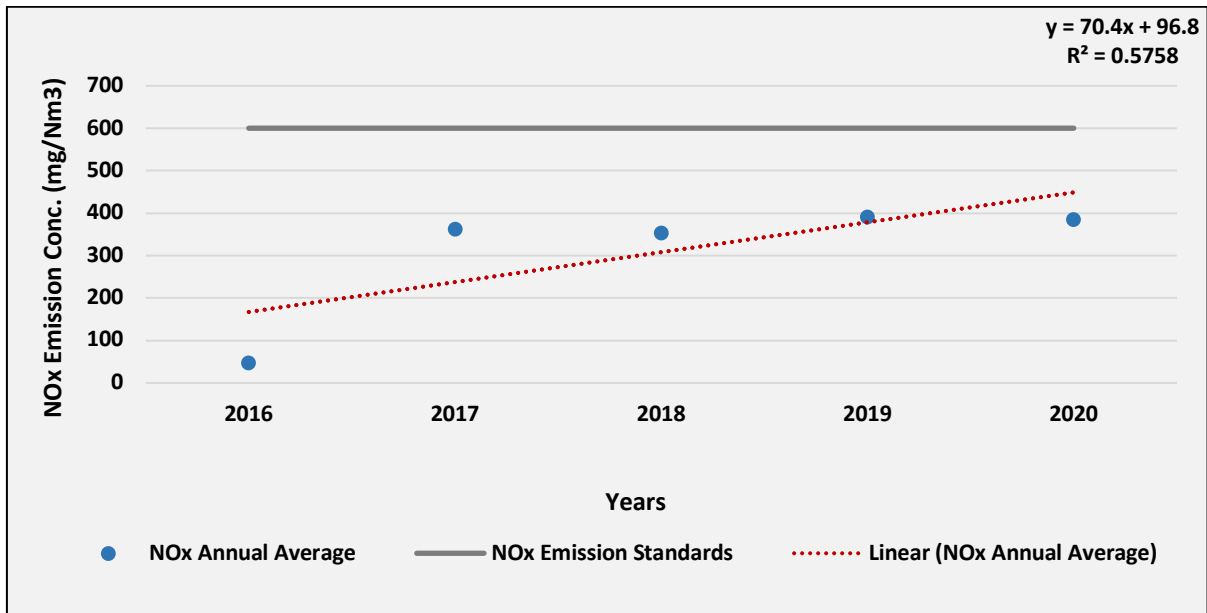


Fig. WA76: Trend of annual mean NO_x Emission air concentration in Wanakbori TPP (Unit 6)

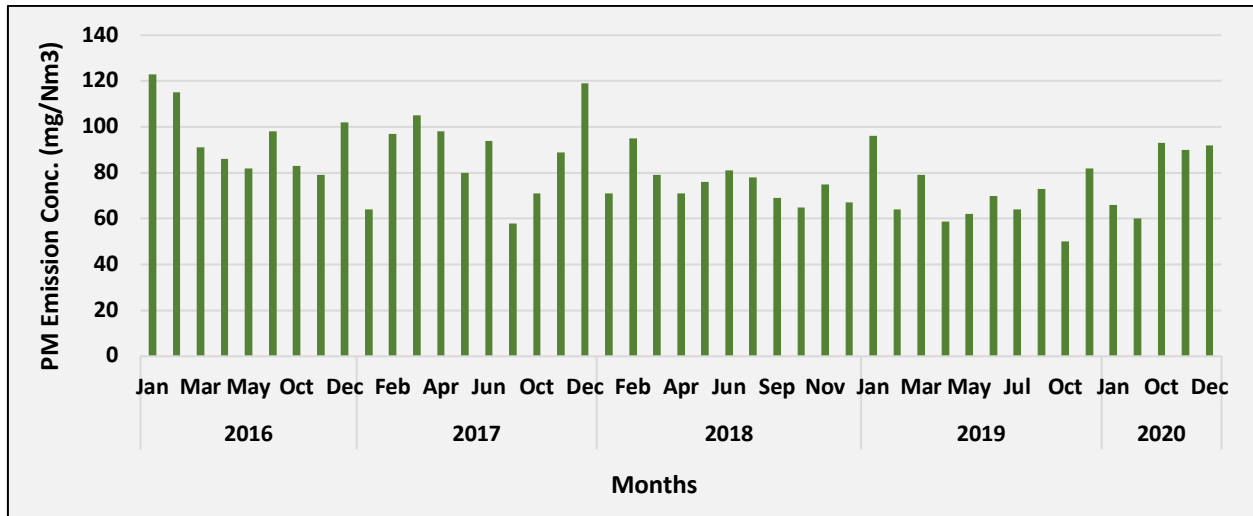


Fig. WA77: Time series of monthly average PM Emission concentration in Wanakbori TPP (Unit 7)

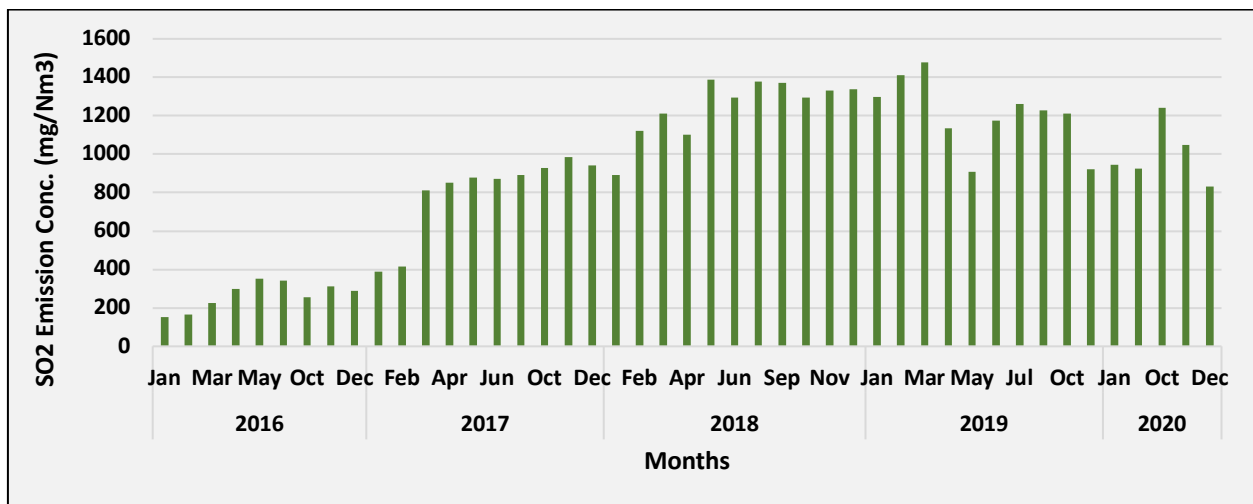


Fig. WA78: Time series of monthly average SO₂ Emission concentration in Wanakbori TPP (Unit 7)

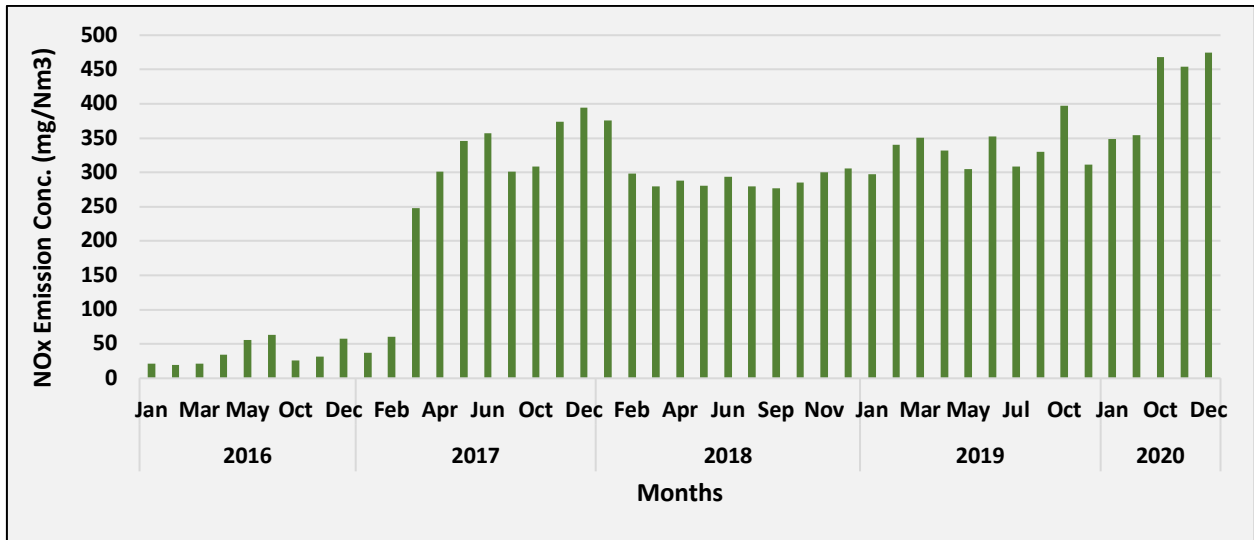


Fig. WA79: Time series of monthly average NO_x Emission concentration in Wanakbori TPP (Unit 7)

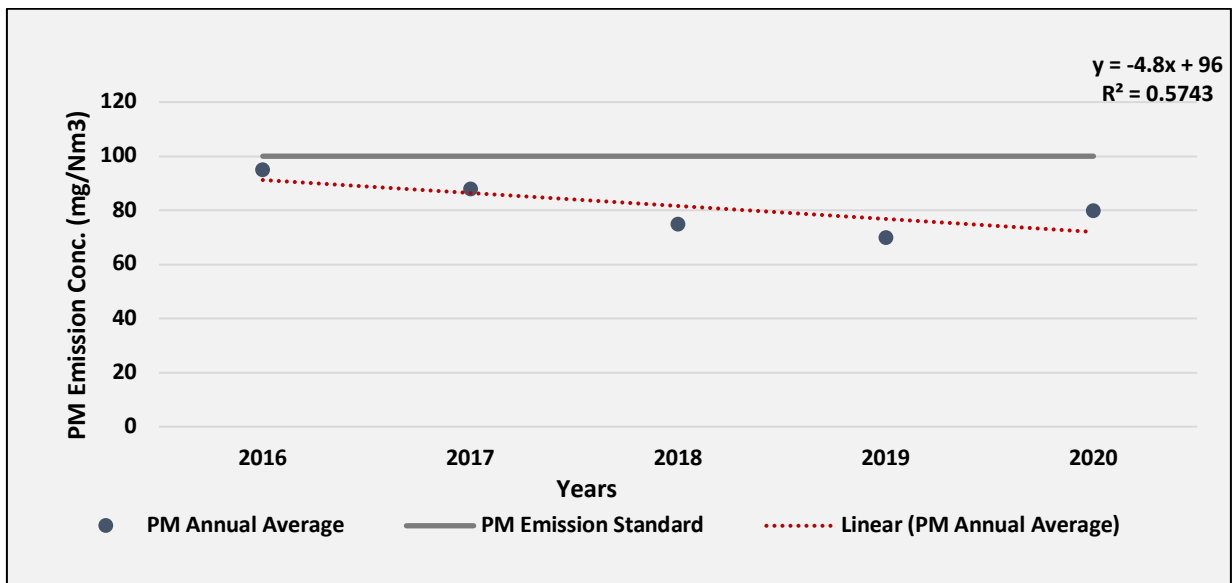


Fig. WA80: Trend of annual mean PM Emission air concentration in Wanakbori TPP (Unit 7)

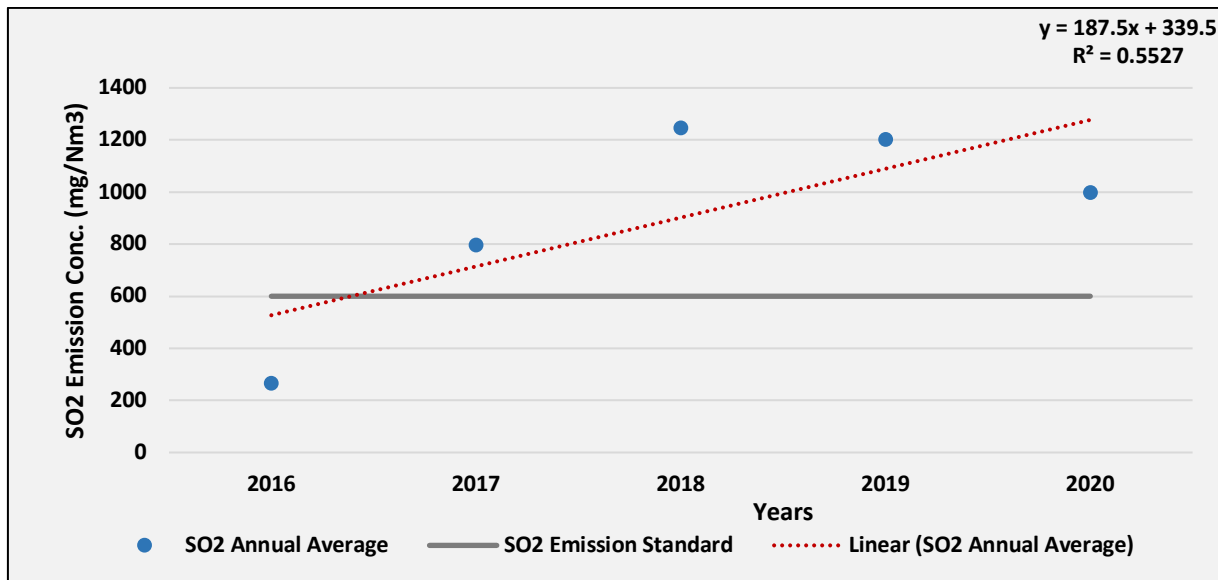


Fig. WA81: Trend of annual mean SO₂ Emission air concentration in Wanakbori TPP (Unit 7)

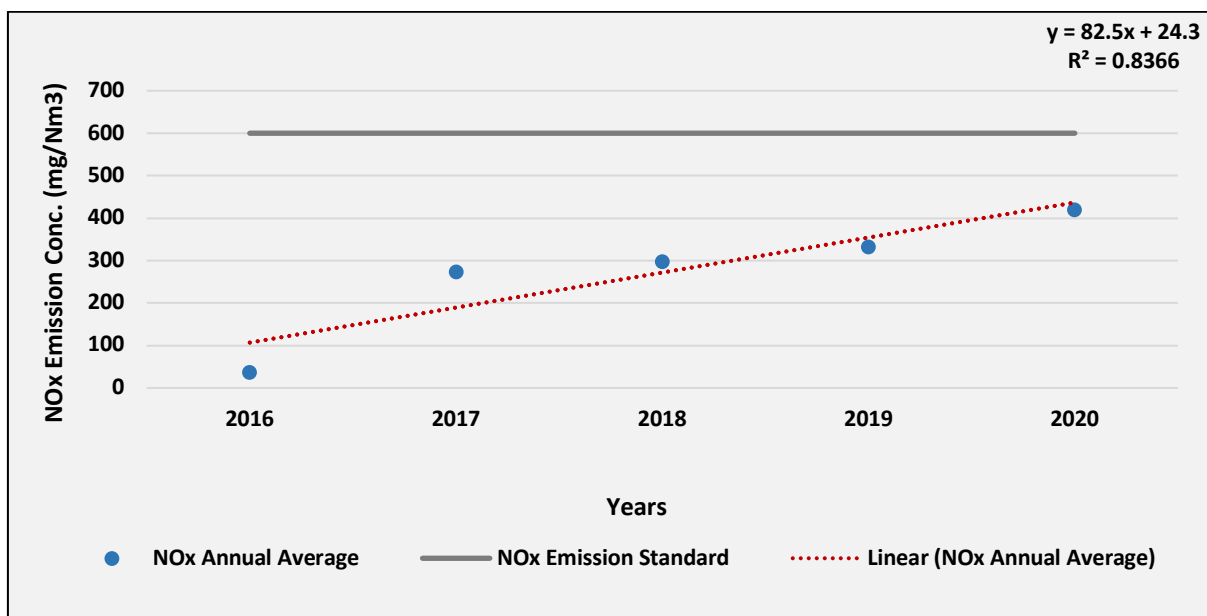


Fig. WA82: Trend of annual mean NO_x Emission air concentration in Wanakbori TPP (Unit 7)

Evidence based on ground level stations shows that the monthly average and annual average PM₁₀, PM_{2.5} are exceeding for ambient 1 data whereas the SO₂ & NO_x levels are within a range; PM_{2.5} SO₂ & NO_x limits are exceeding for ambient 2; PM₁₀ limits are exceeding for ambient 3 and all the parameters are within the limit for ambient 4 as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that SO₂ and PM parameter are much higher than the emission norms. Emission of NO_x is within the limit range.

GANDHINAGAR GSECL THERMAL POWER PLANT

Gandhinagar Thermal Power Station is a coal-fired power station in Gujarat, India. It is located on the bank of Sabarmati river near Gandhinagar.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, and NO_x, PM emission, SO₂ emission, and NO_x emission data analyzed (Fig. GA1-Fig. GA8) for the last four years (2016-2020) using data provided by GSECL developer for GSECL Power plant, Gandhinagar, Gujarat, India.

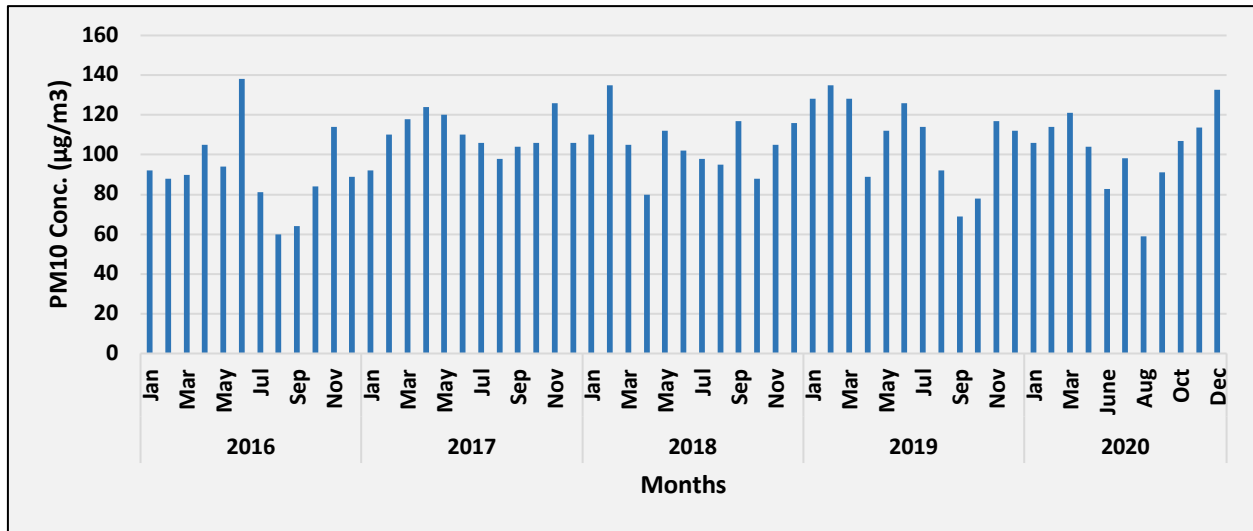


Fig. GA1: Time series of monthly average PM₁₀ ambient air concentration in Gandhinagar TPP (Ambient 1)

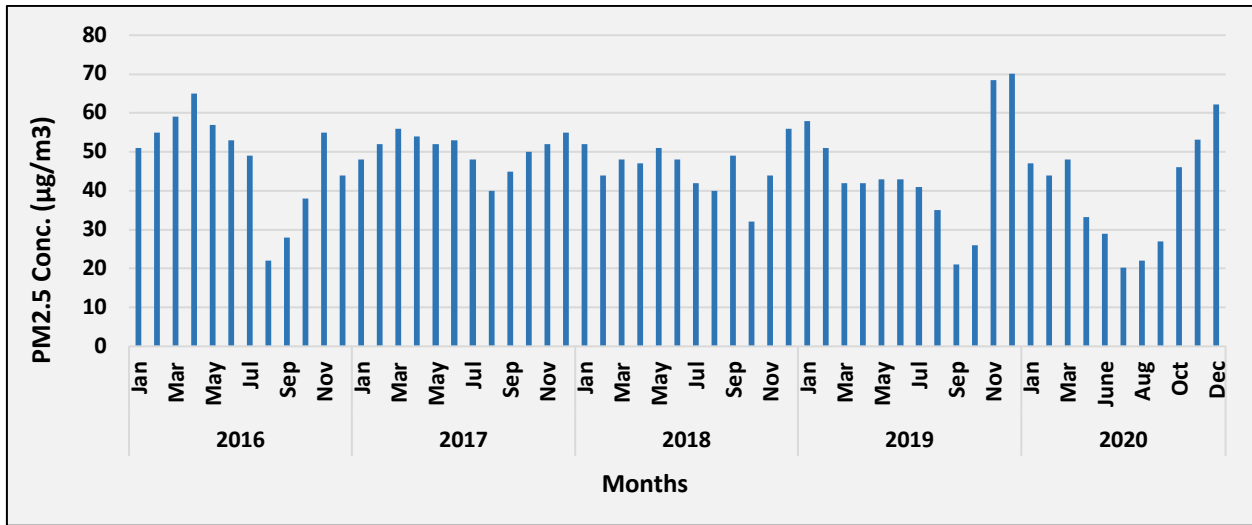


Fig. GA2: Time series of monthly average $PM_{2.5}$ ambient air concentration in Gandhinagar TPP (Ambient 1)

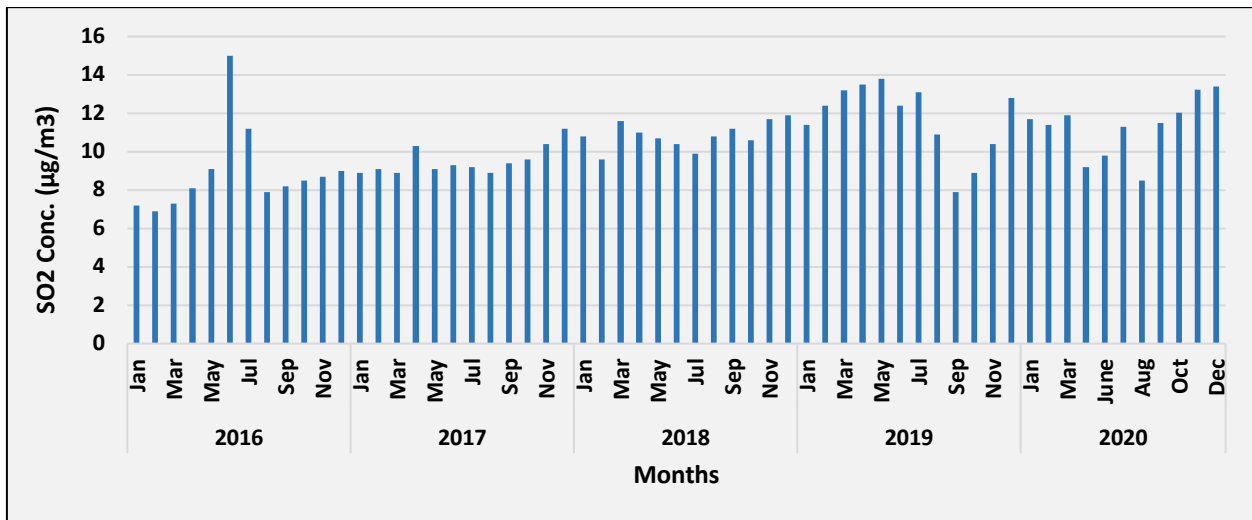


Fig. GA3: Time series of monthly average SO_2 ambient air concentration in Gandhinagar TPP (Ambient 1)

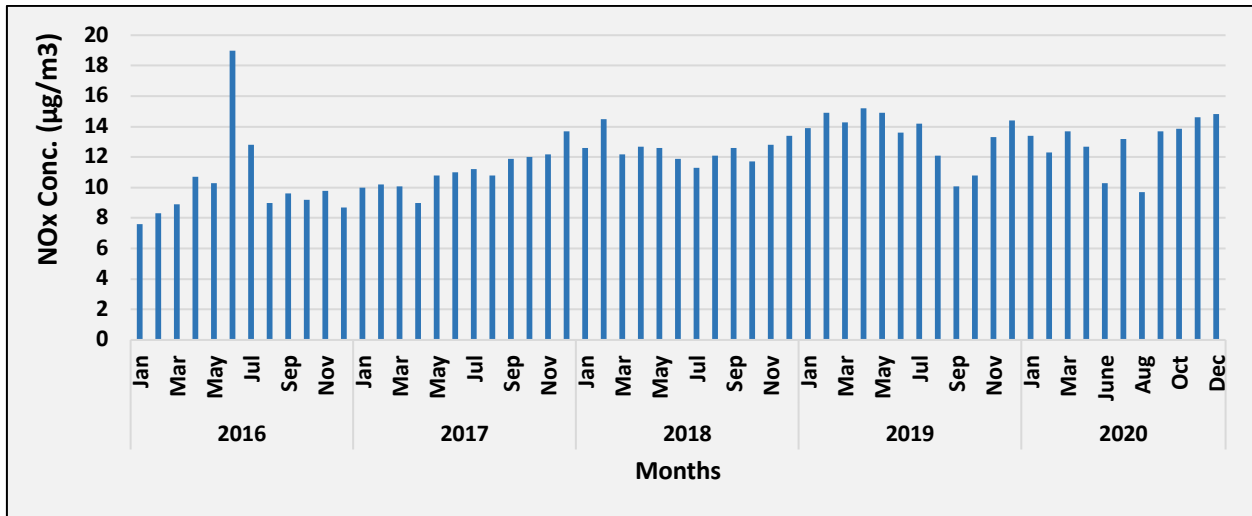


Fig. GA4: Time series of monthly average NO_x ambient air concentration in Gandhinagar TPP (Ambient 1)

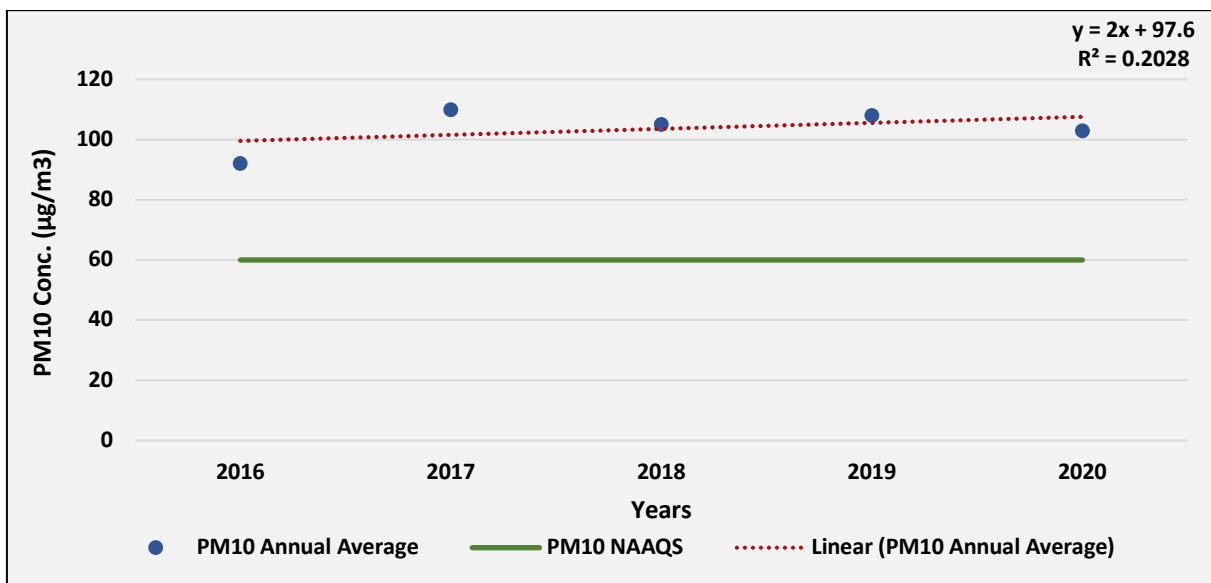


Fig. GA5: Trend of annual mean PM₁₀ ambient air concentration in Gandhinagar TPP (Ambient 1)

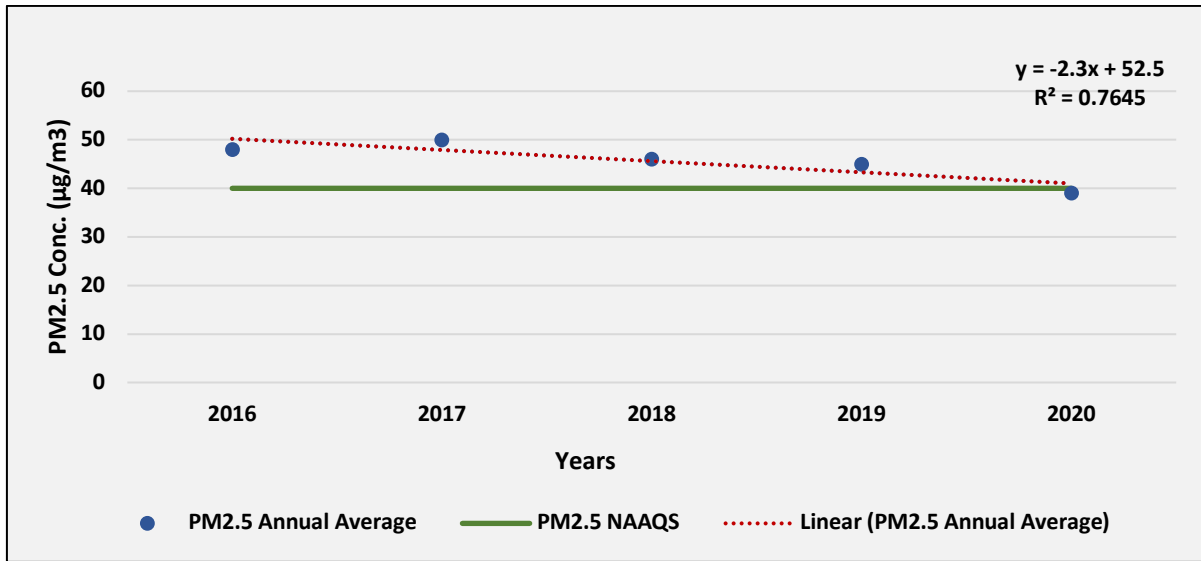


Fig. GA6: Trend of annual mean PM_{2.5} ambient air concentration in Gandhinagar TPP (Ambient 1)

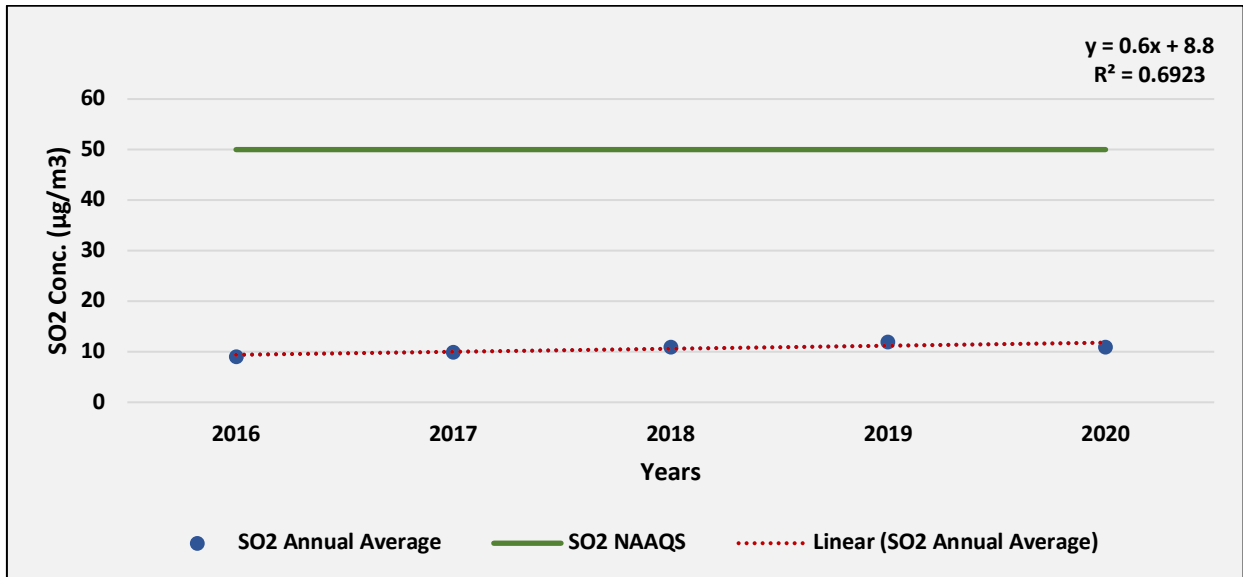


Fig. GA7: Trend of annual mean SO₂ ambient air concentration in Gandhinagar TPP (Ambient 1)

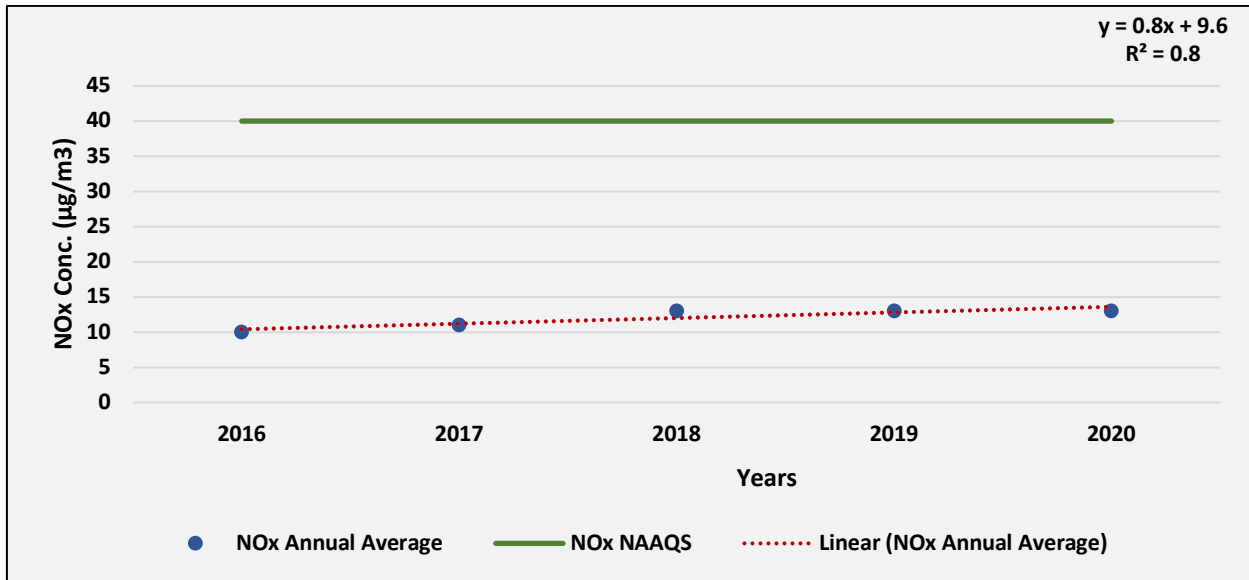


Fig. GA8: Trend of annual mean NO_x ambient air concentration in Gandhinagar TPP (Ambient 1)

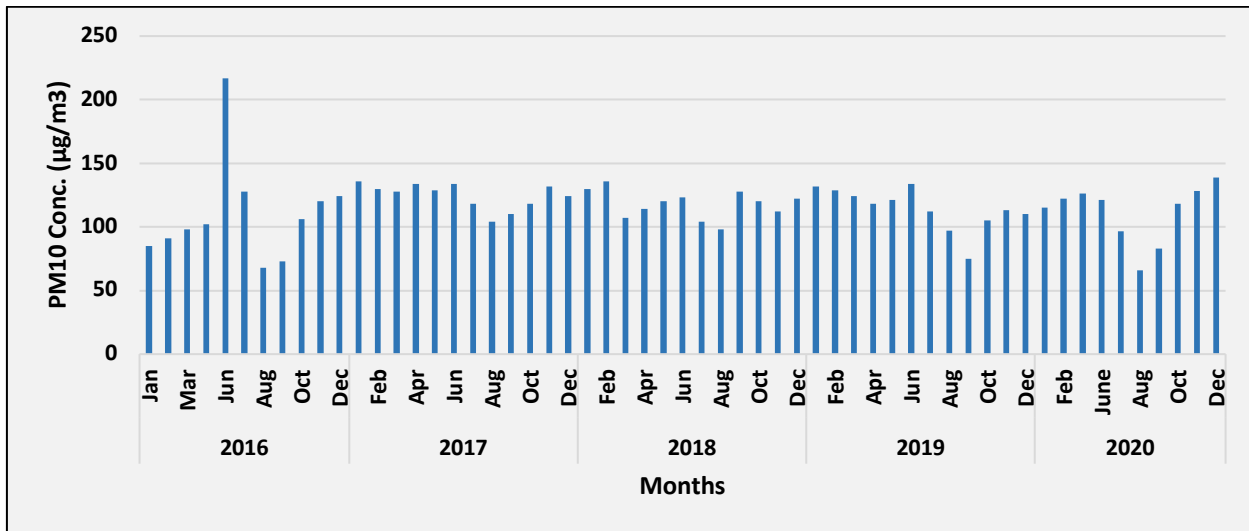


Fig. GA9: Time series of monthly average PM₁₀ ambient air concentration in Gandhinagar TPP (Ambient 2)

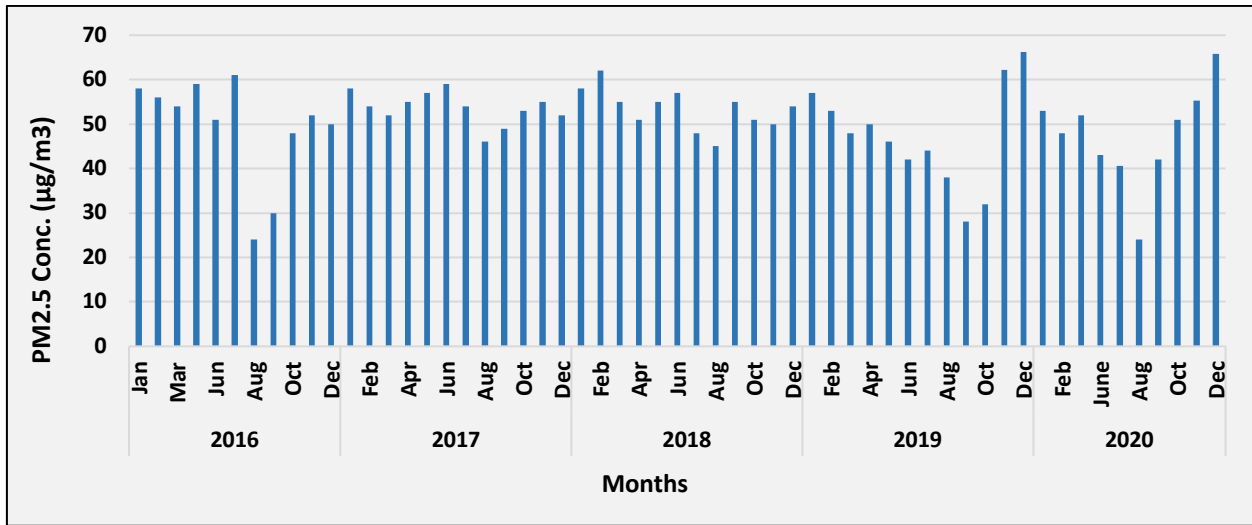


Fig. GA10: Time series of monthly average $PM_{2.5}$ ambient air concentration in Gandhinagar TPP (Ambient 2)

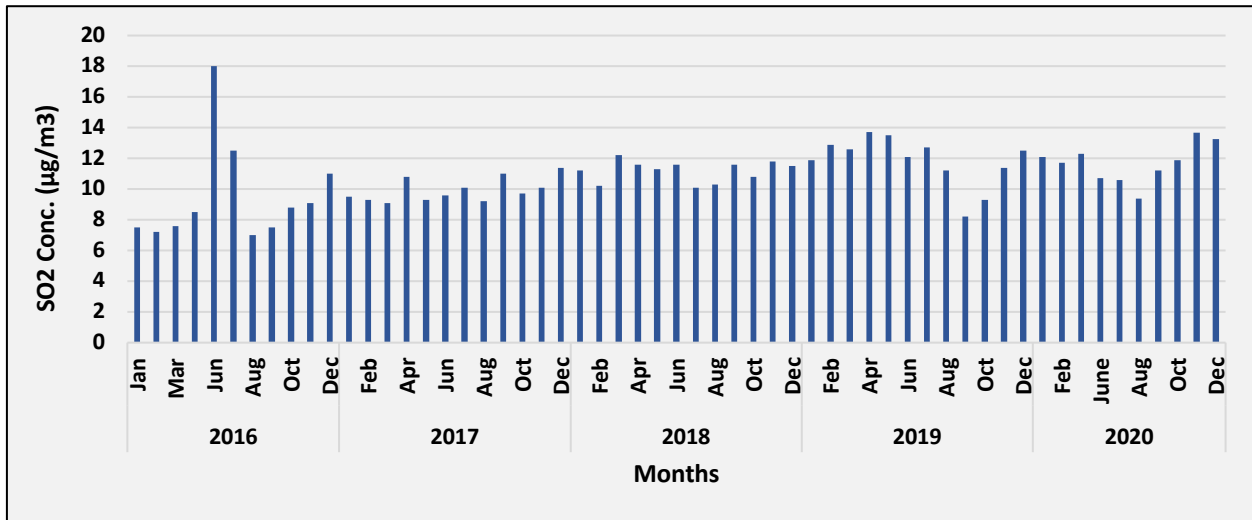


Fig. GA11: Time series of monthly average SO_2 ambient air concentration in Gandhinagar TPP (Ambient 2)

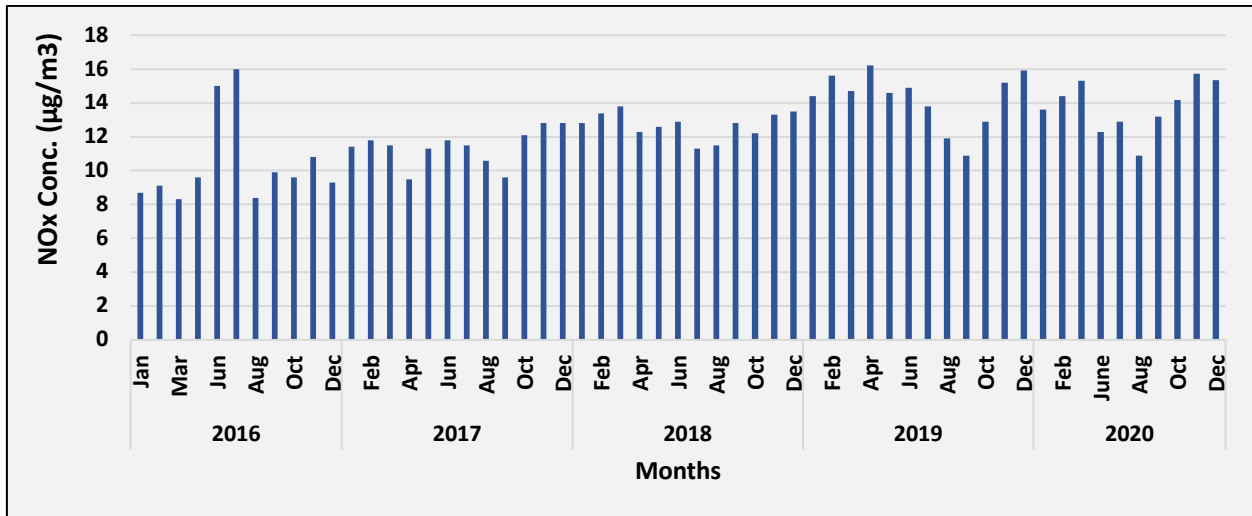


Fig. GA12: Time series of monthly average NO_x ambient air concentration in Gandhinagar TPP (Ambient 2)

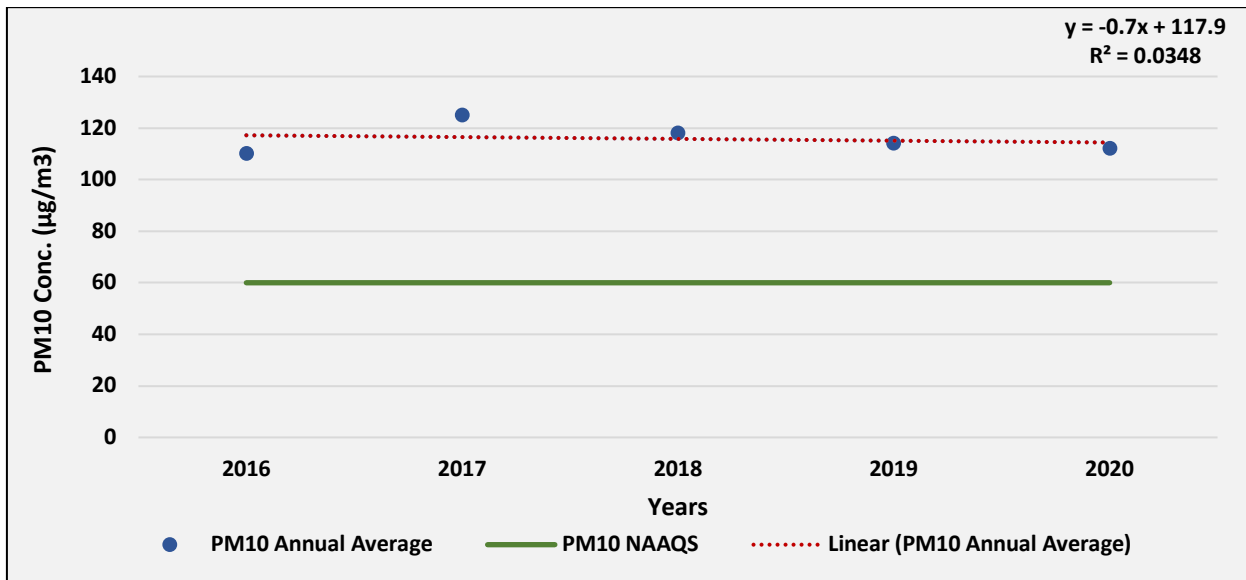


Fig. GA13: Trend of annual mean PM₁₀ ambient air concentration in Gandhinagar TPP (Ambient 2)

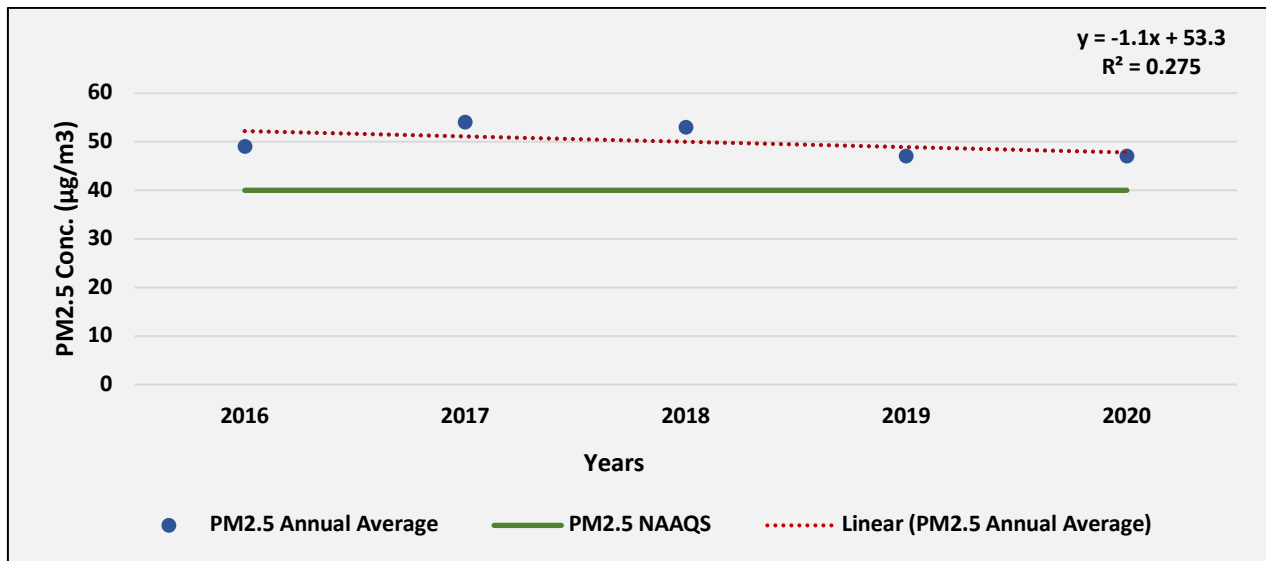


Fig. GA14: Trend of annual mean $PM_{2.5}$ ambient air concentration in Gandhinagar TPP (Ambient 2)

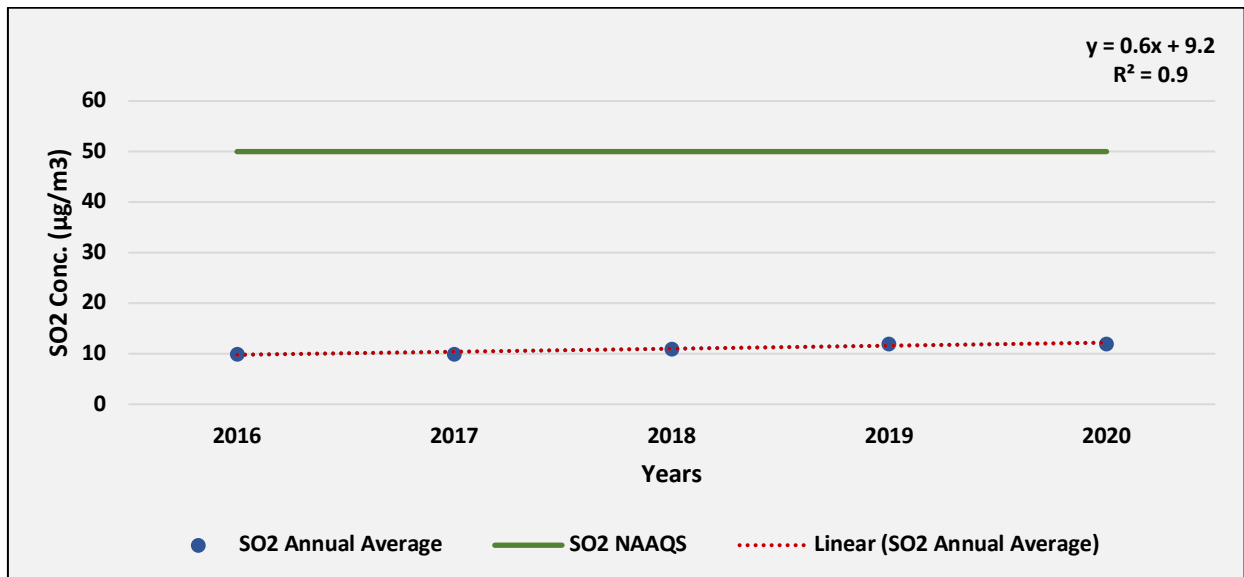


Fig. GA15: Trend of annual mean SO_2 ambient air concentration in Gandhinagar TPP (Ambient 2)

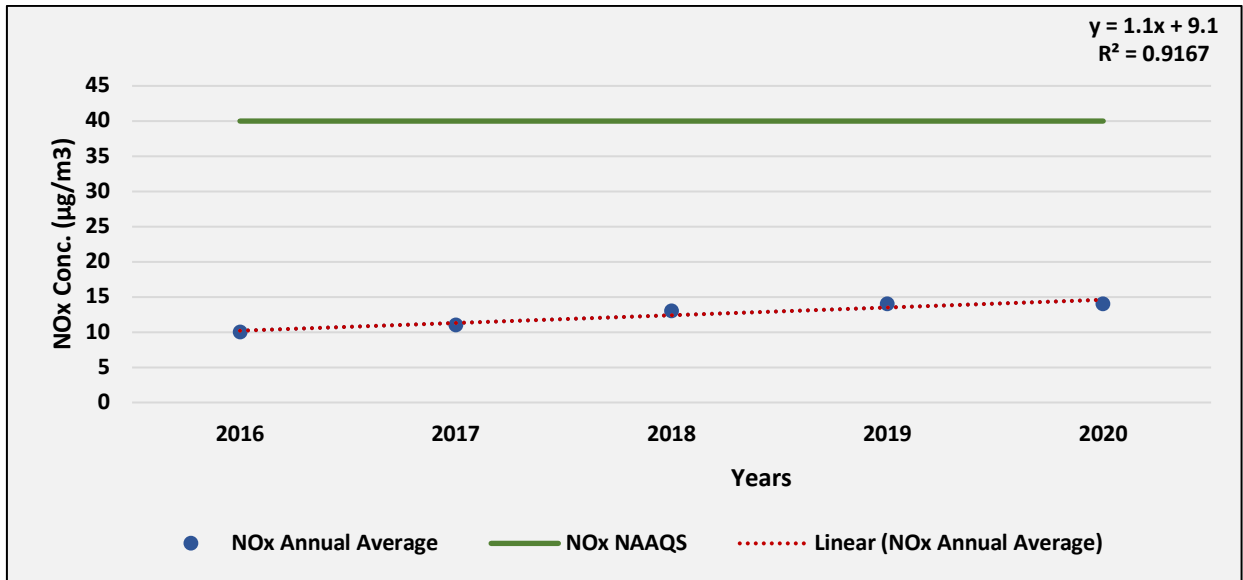


Fig. GA16: Trend of annual mean NO_x ambient air concentration in Gandhinagar TPP (Ambient 2)

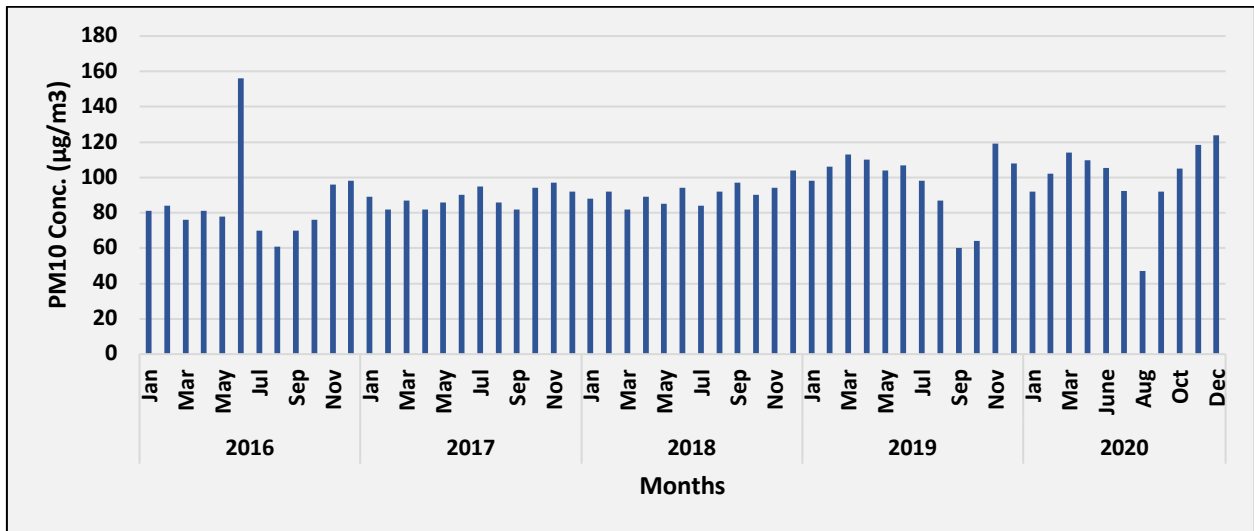


Fig. GA17: Time series of monthly average PM₁₀ ambient air concentration in Gandhinagar TPP (Ambient 3)

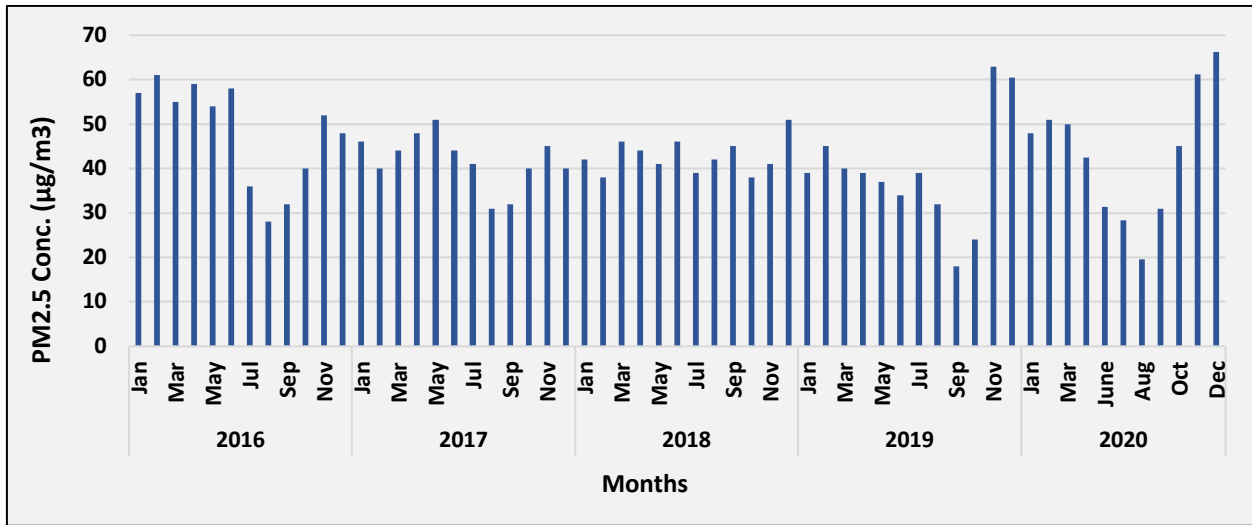


Fig. GA18: Time series of monthly average $PM_{2.5}$ ambient air concentration in Gandhinagar TPP (Ambient 3)

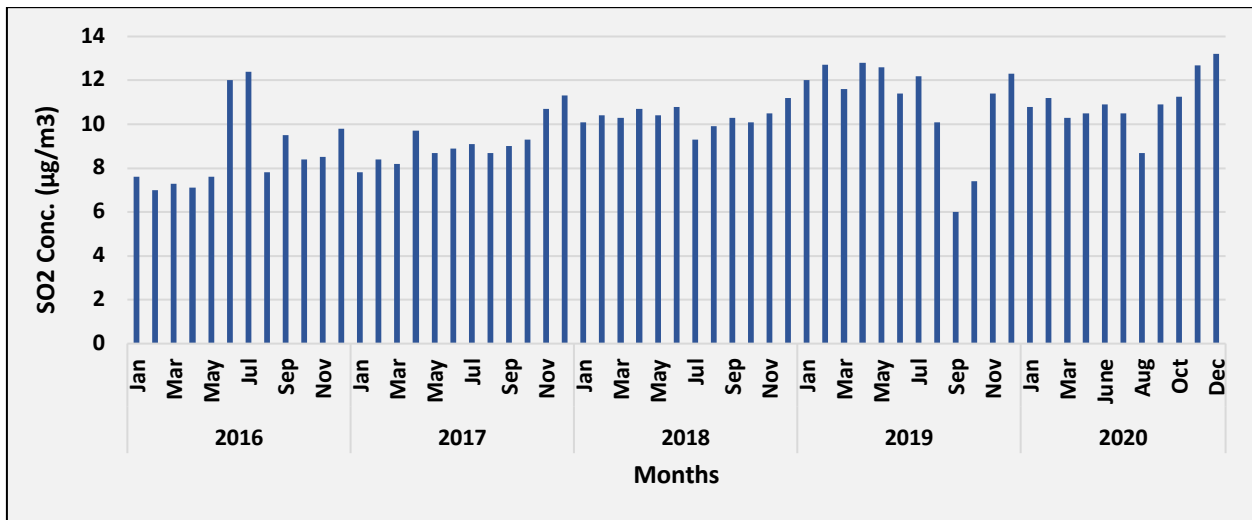


Fig. GA19: Time series of monthly average SO_2 ambient air concentration in Gandhinagar TPP (Ambient 3)

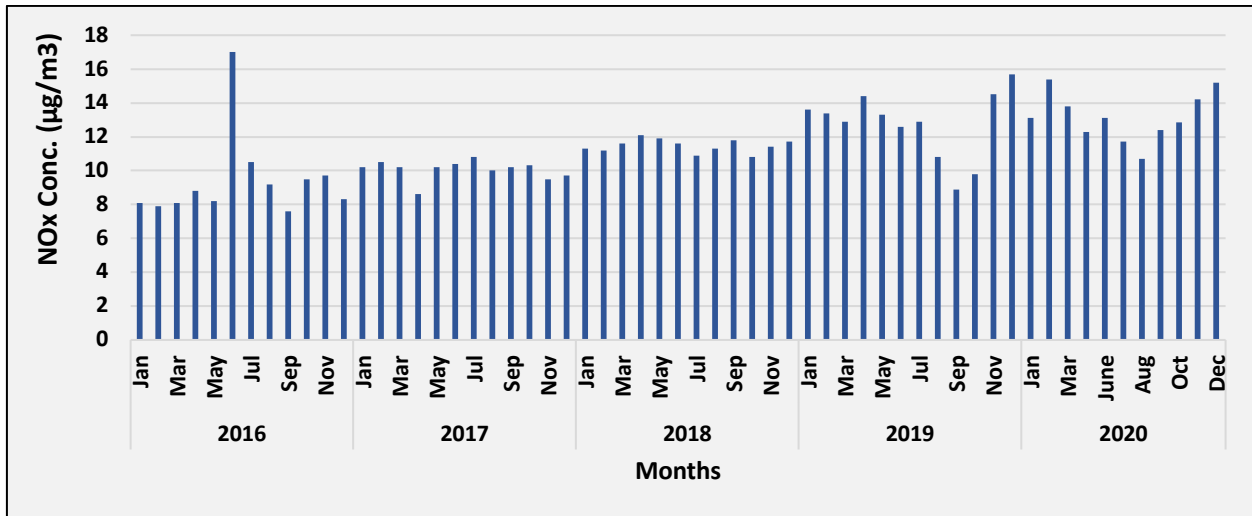


Fig. GA20: Time series of monthly average NO_x ambient air concentration in Gandhinagar TPP(Ambient 3)

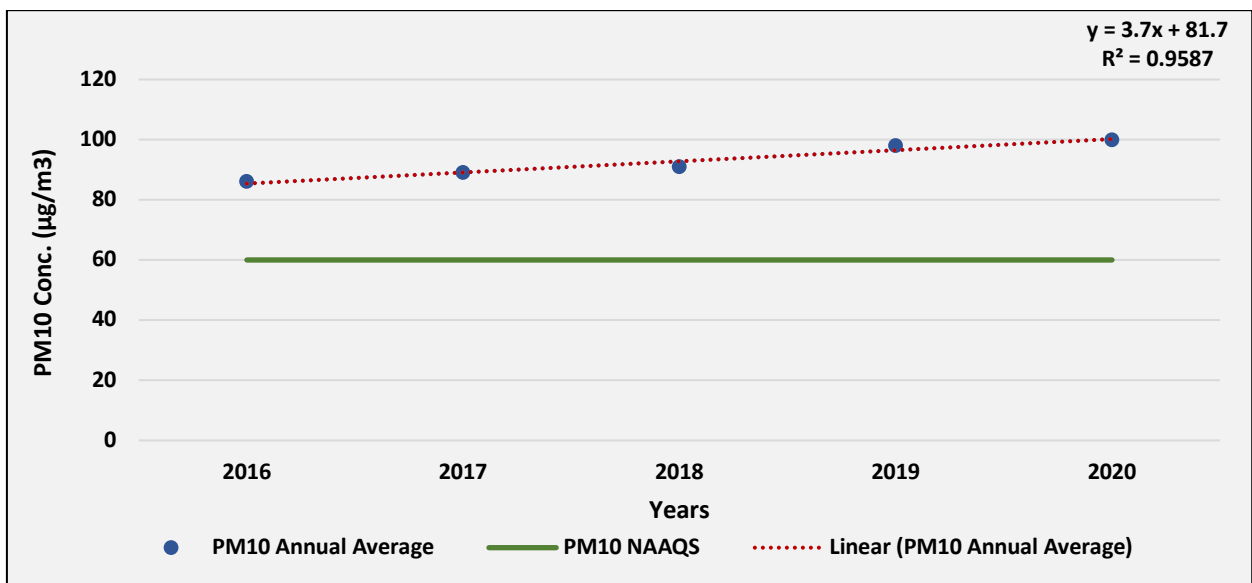


Fig. GA21: Trend of annual mean PM₁₀ ambient air concentration in Gandhinagar TPP (Ambient 3)

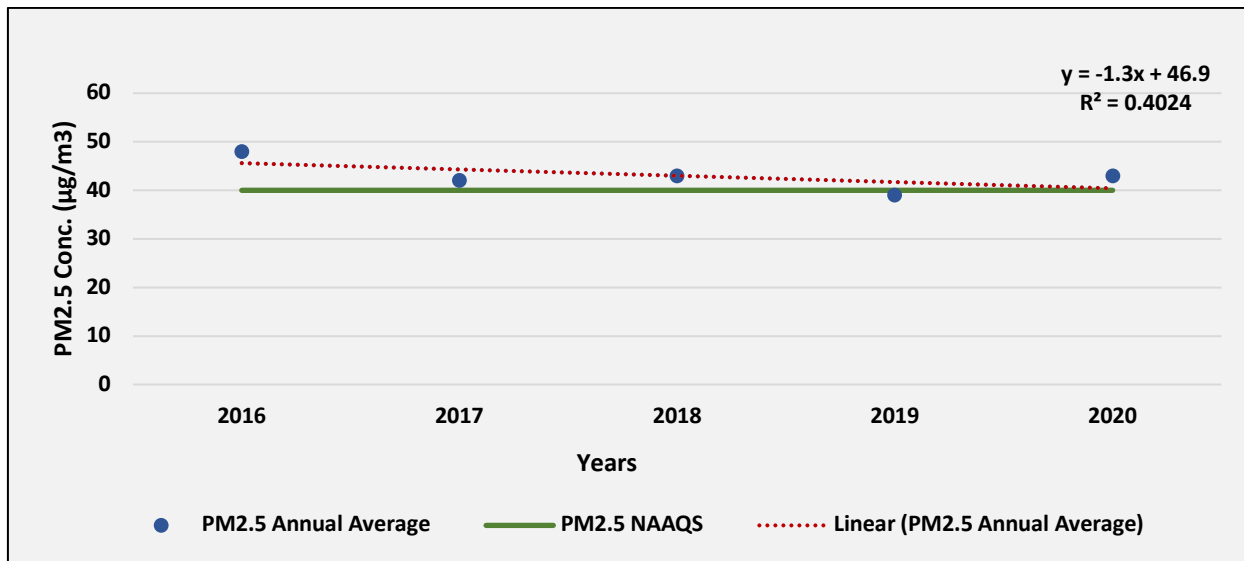


Fig. GA22: Trend of annual mean $PM_{2.5}$ ambient air concentration in Gandhinagar TPP (Ambient 3)

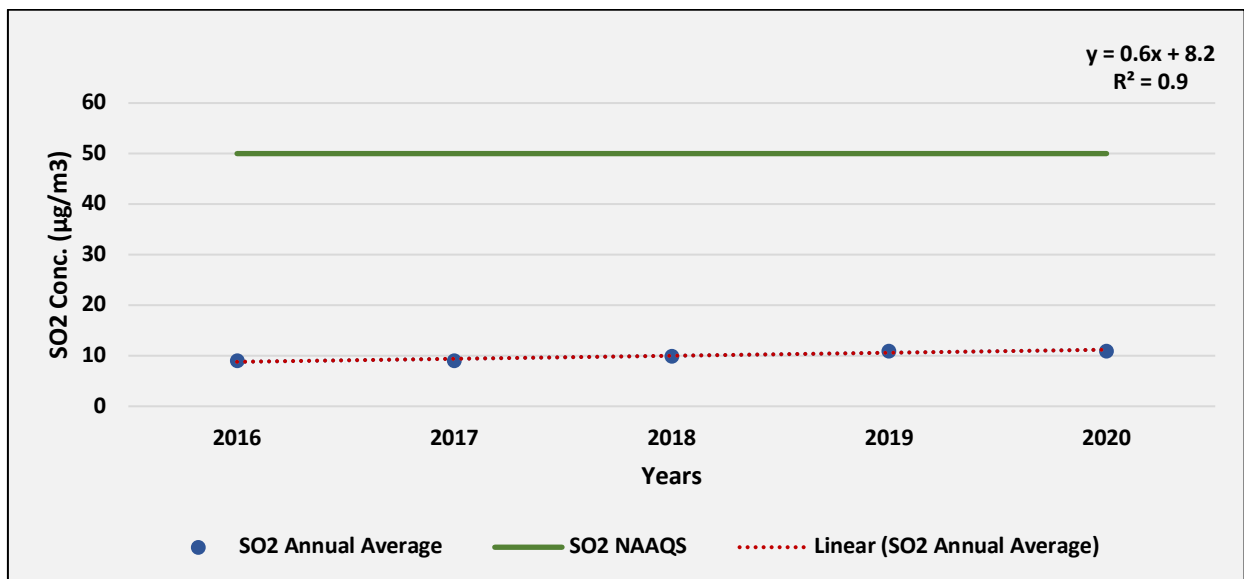


Fig. GA23: Trend of annual mean SO_2 ambient air concentration in Gandhinagar TPP (Ambient 3)

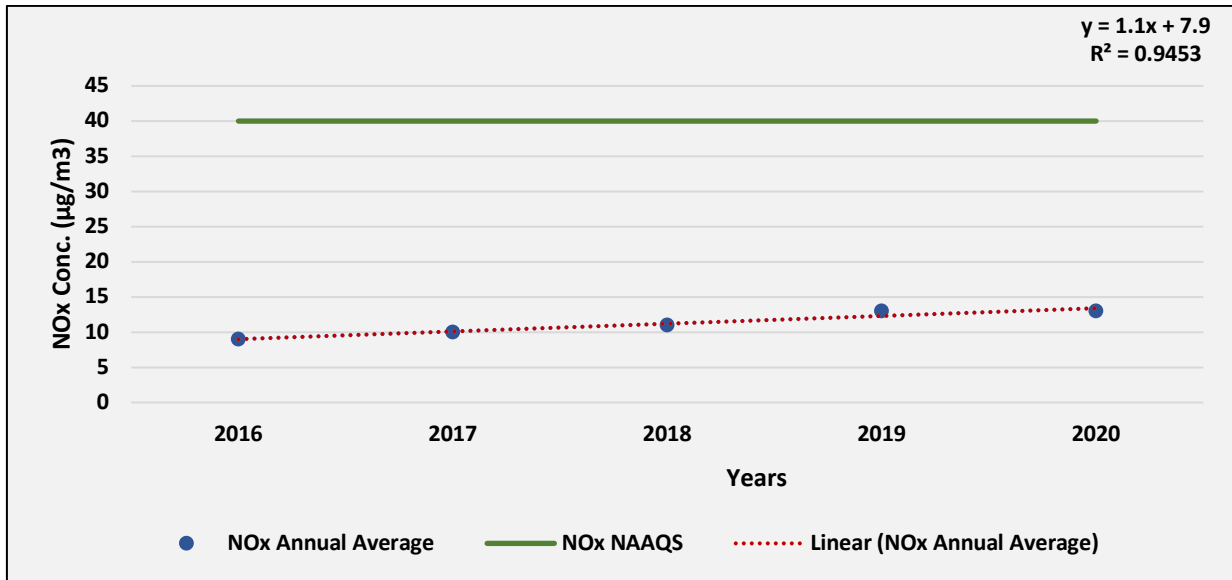


Fig. GA24: Trend of annual mean NO_x ambient air concentration in Gandhinagar TPP (Ambient 3)

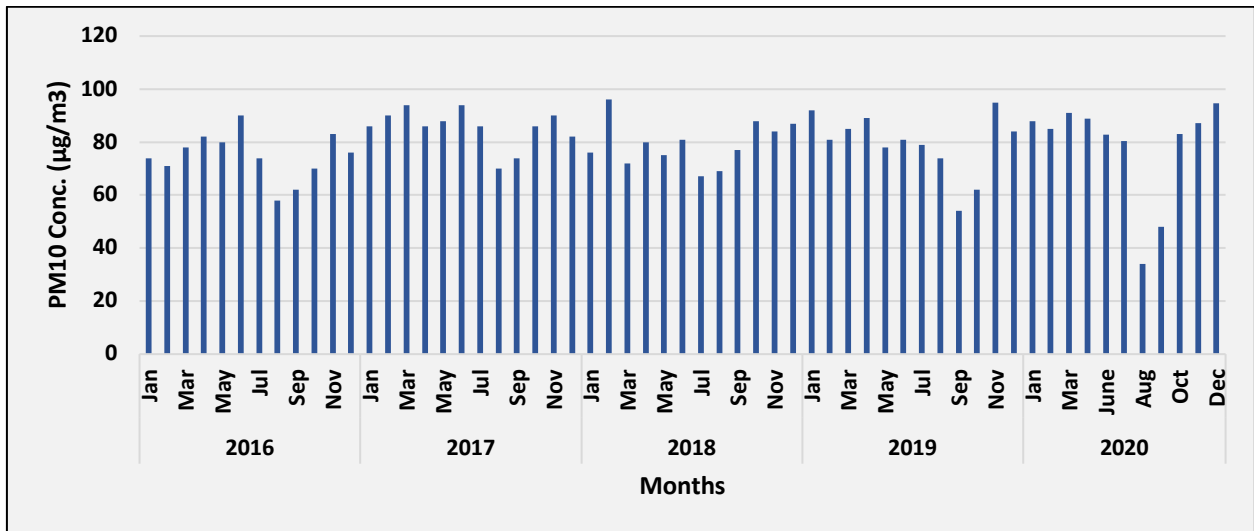


Fig. GA25: Time series of monthly average PM₁₀ ambient air concentration in Gandhinagar TPP (Ambient 4)

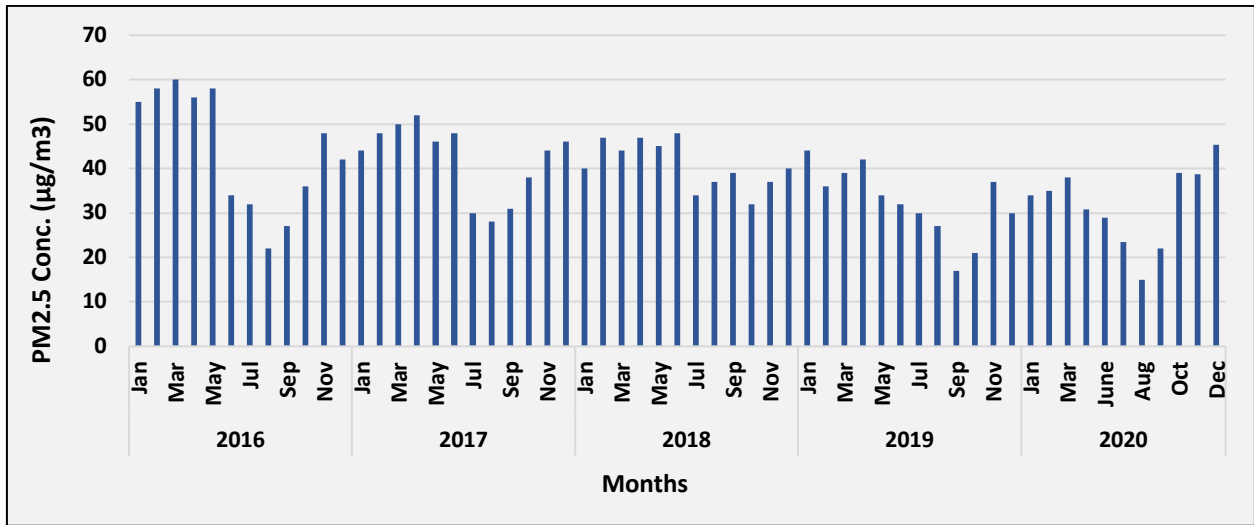


Fig. GA26: Time series of monthly average $PM_{2.5}$ ambient air concentration in Gandhinagar TPP (Ambient 4)

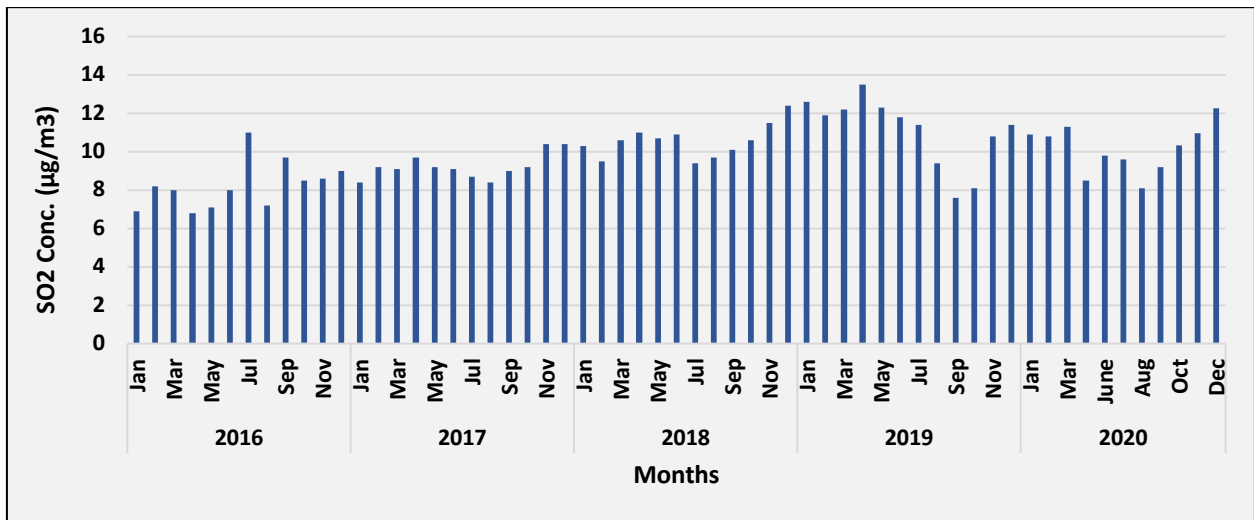


Fig. GA27: Time series of monthly average SO_2 ambient air concentration in Gandhinagar TPP (Ambient 4)

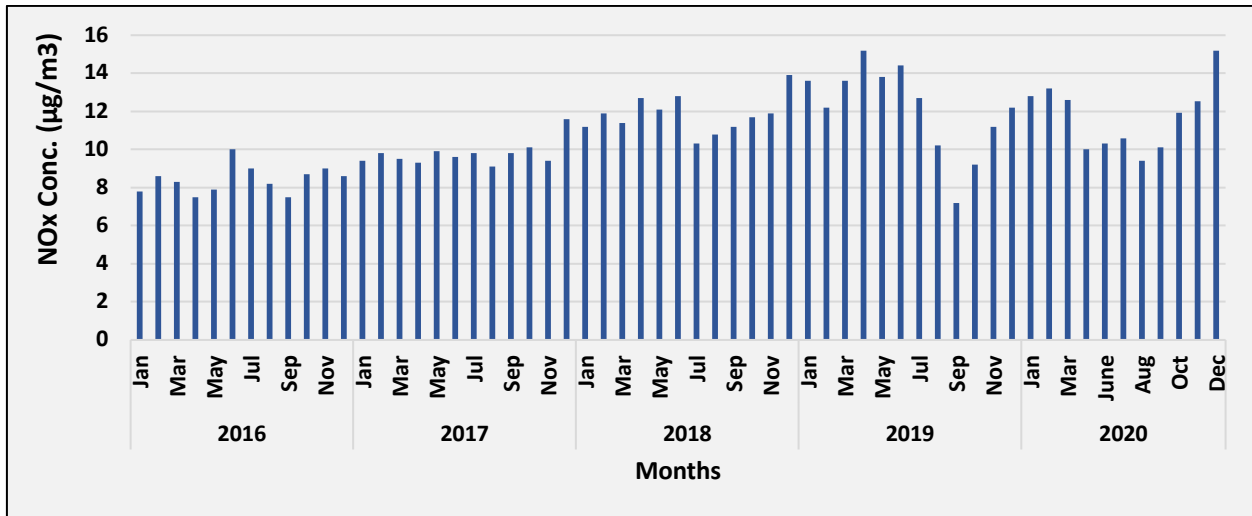


Fig. GA28: Time series of monthly average NO_x ambient air concentration in Gandhinagar TPP (Ambient 4)

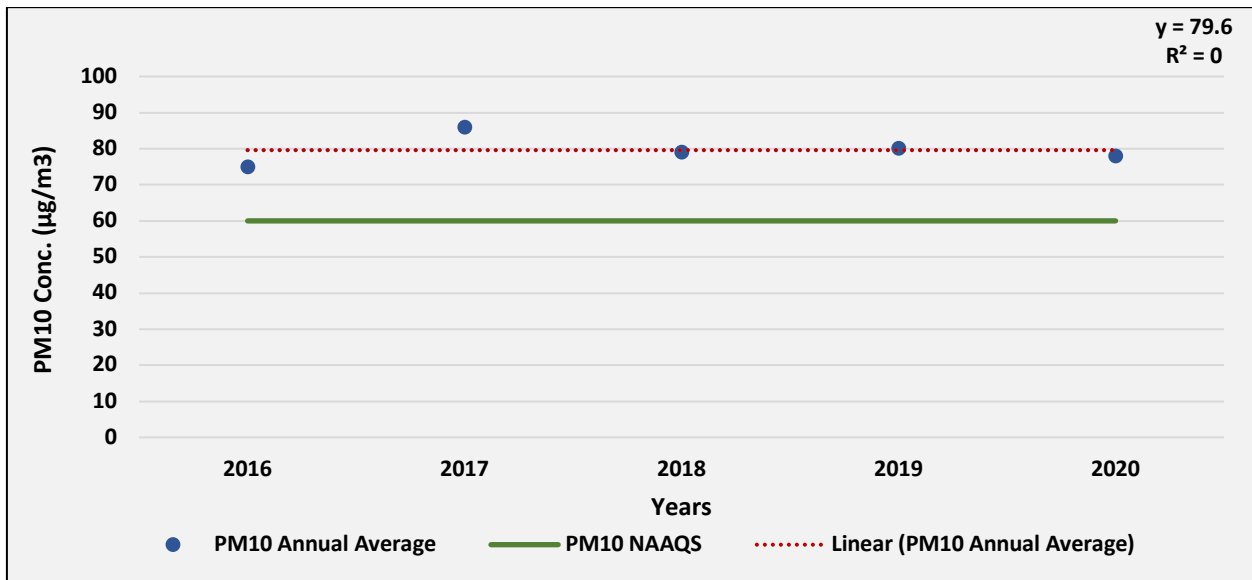


Fig. GA29: Trend of annual mean PM₁₀ ambient air concentration in Gandhinagar TPP (Ambient 4)

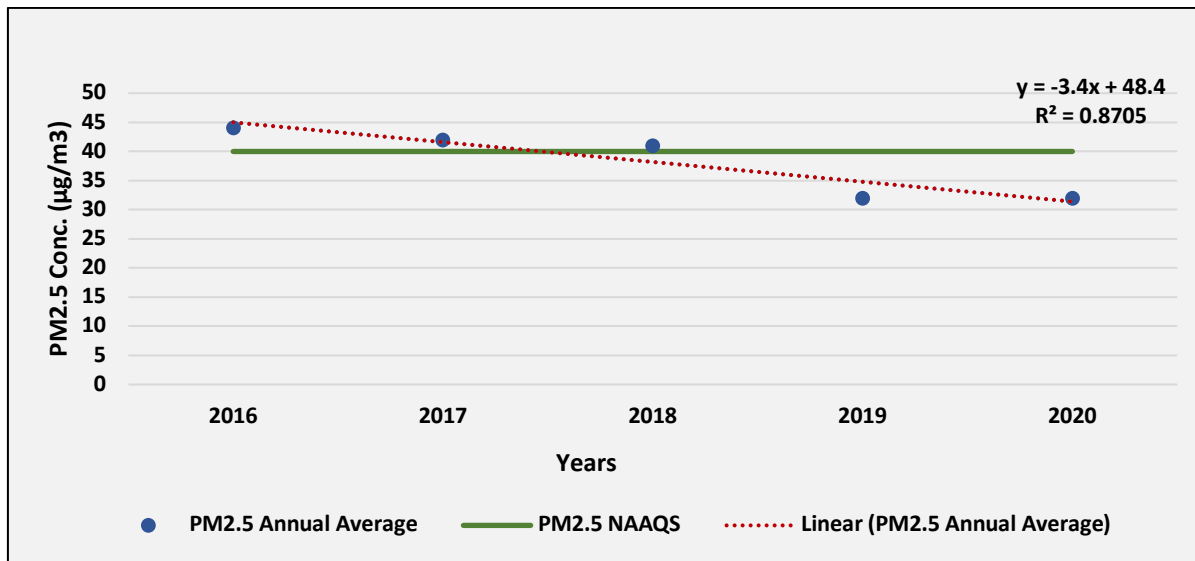


Fig. GA30: Trend of annual mean $PM_{2.5}$ ambient air concentration in Gandhinagar TPP (Ambient 4)

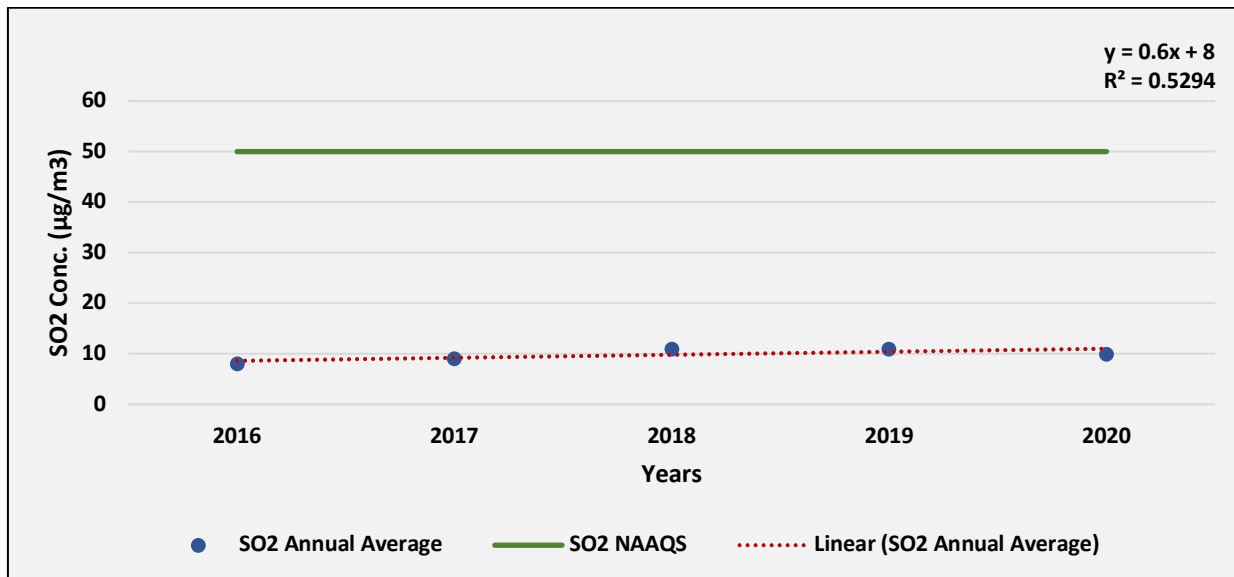


Fig. GA31: Trend of annual mean SO_2 ambient air concentration in Gandhinagar TPP (Ambient 4)

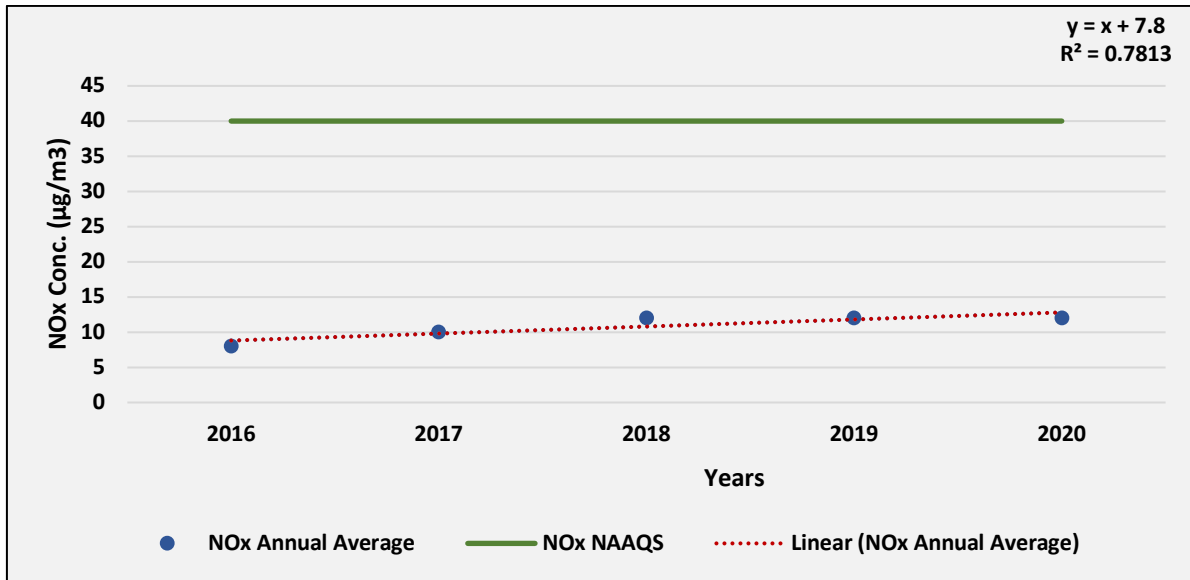


Fig. GA32: Trend of annual mean NO_x ambient air concentration in Gandhinagar TPP (Ambient 4)

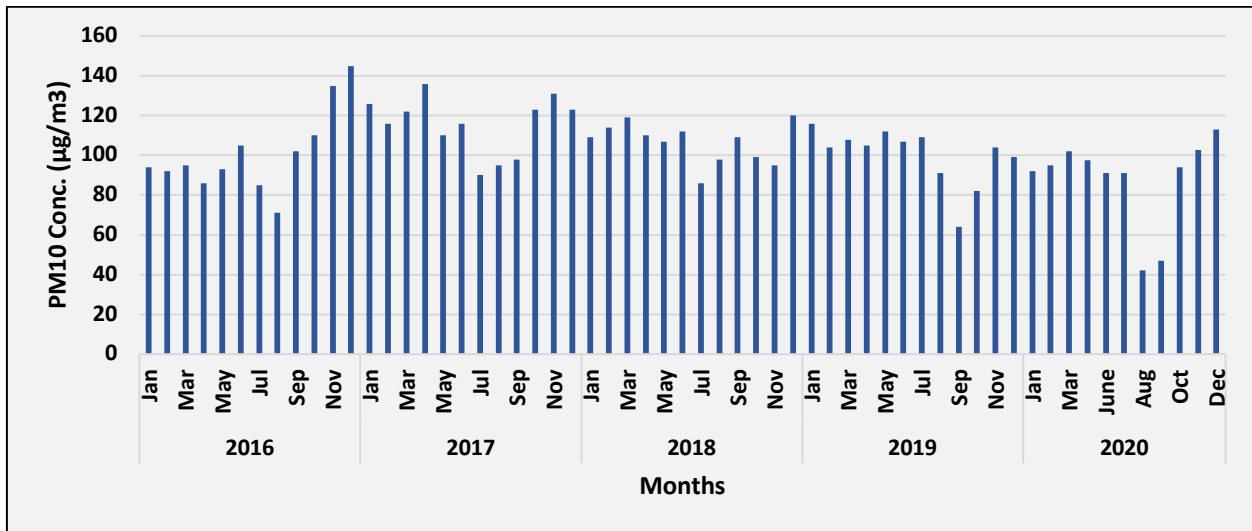


Fig. GA33: Time series of monthly average PM₁₀ ambient air concentration in Gandhinagar TPP (Ambient 5)

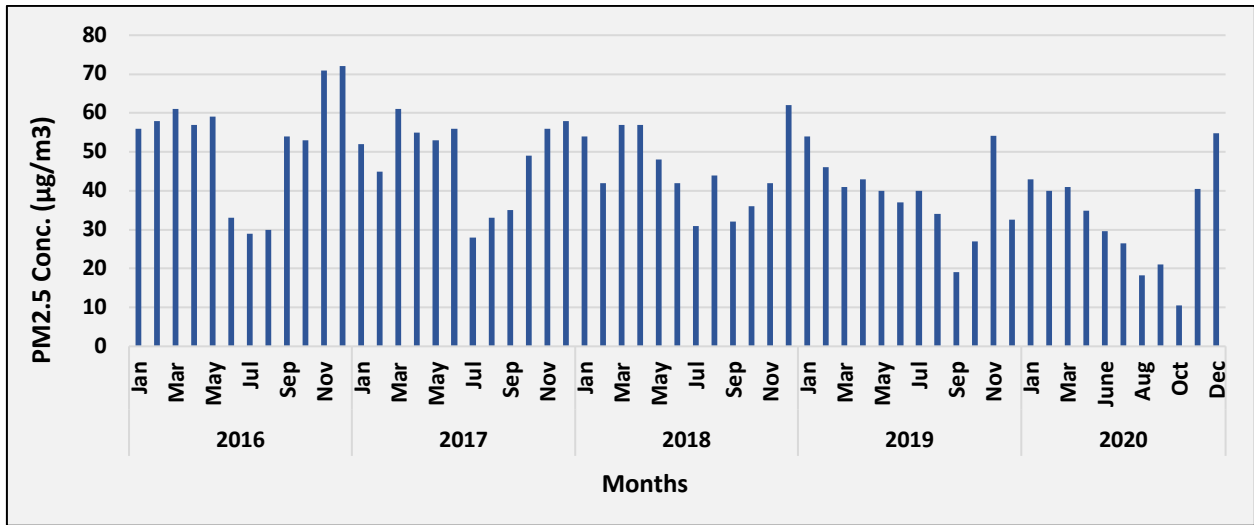


Fig. GA34: Time series of monthly average $PM_{2.5}$ ambient air concentration in Gandhinagar TPP (Ambient 5)

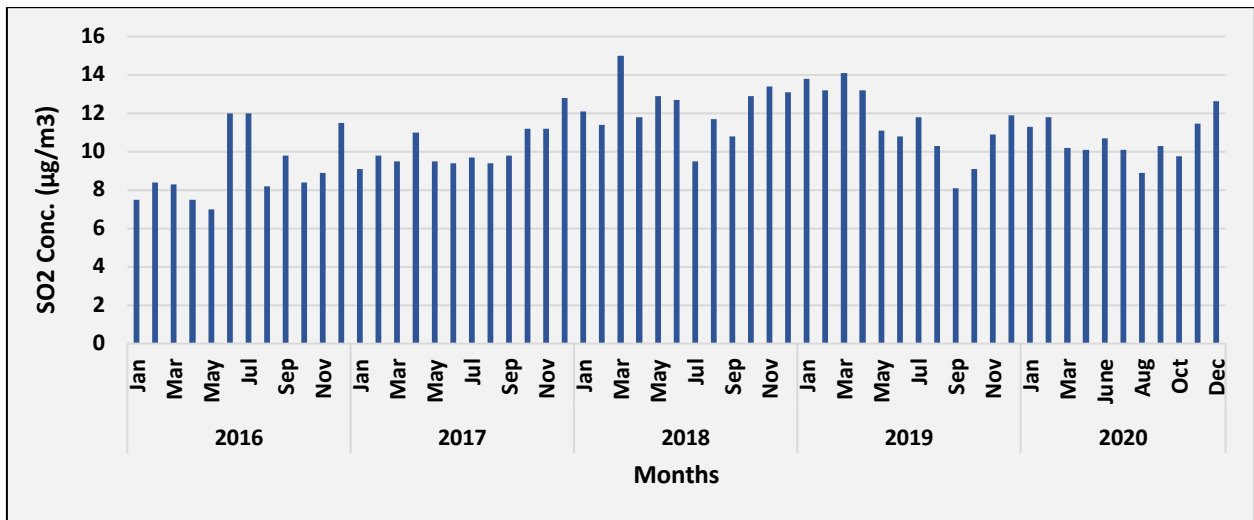


Fig. GA35: Time series of monthly average SO_2 ambient air concentration in Gandhinagar TPP (Ambient 5)

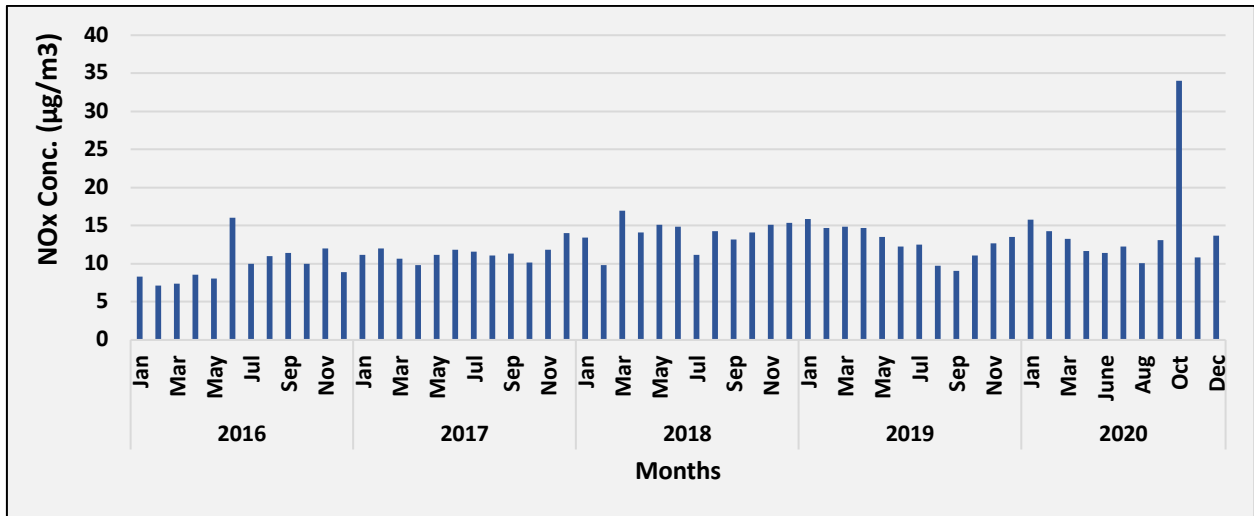


Fig. GA36: Time series of monthly average NO_x ambient air concentration in Gandhinagar TPP (Ambient 5)

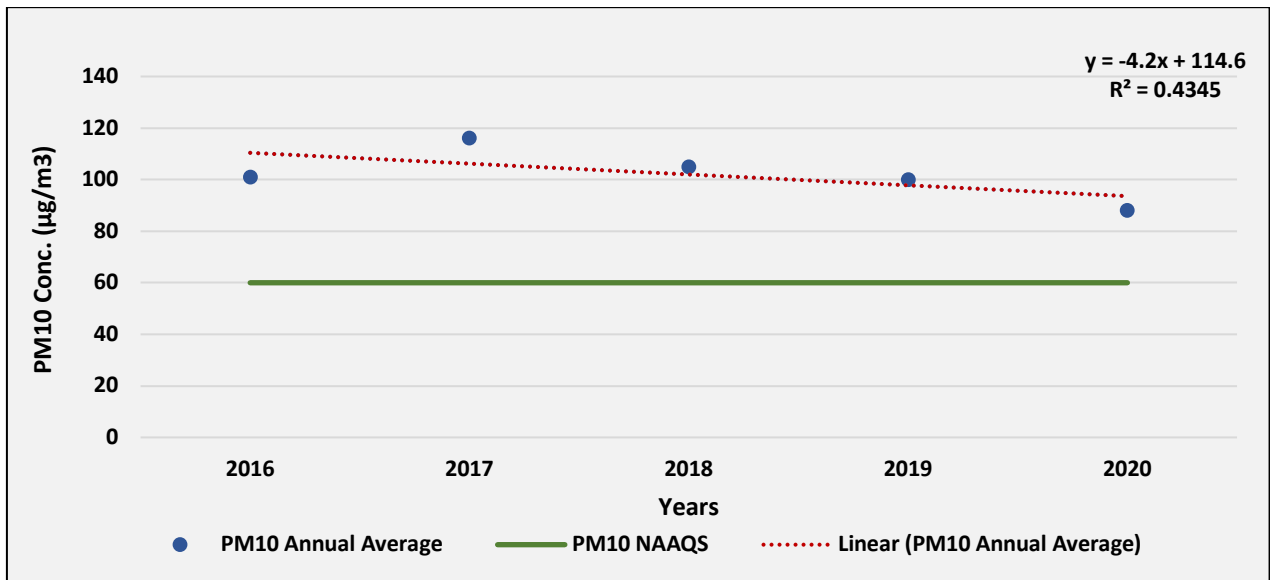


Fig. GA37: Trend of annual mean PM₁₀ ambient air concentration in Gandhinagar TPP (Ambient 5)

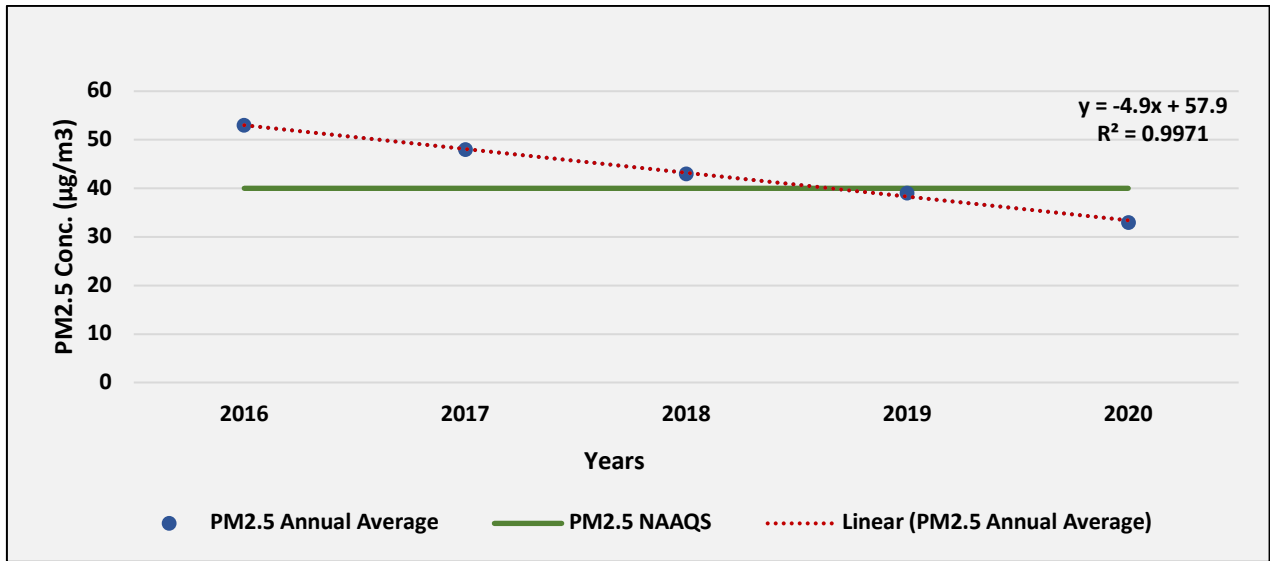


Fig. GA38: Trend of annual mean PM_{2.5} ambient air concentration in Gandhinagar TPP (Ambient 5)

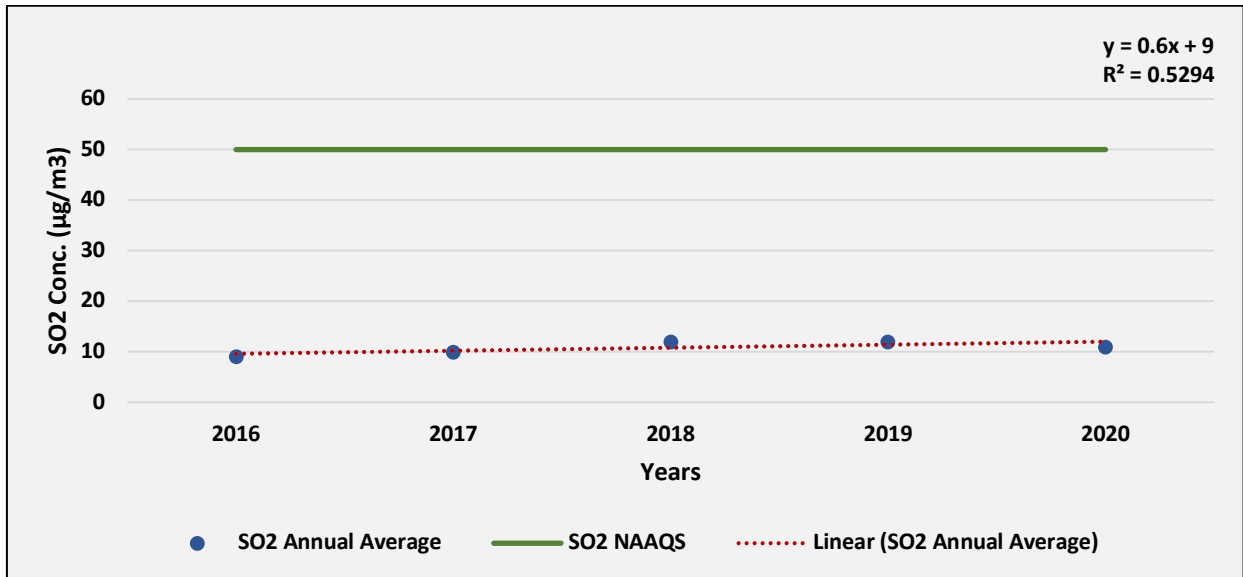


Fig. GA39: Trend of annual mean SO₂ ambient air concentration in Gandhinagar TPP (Ambient 5)

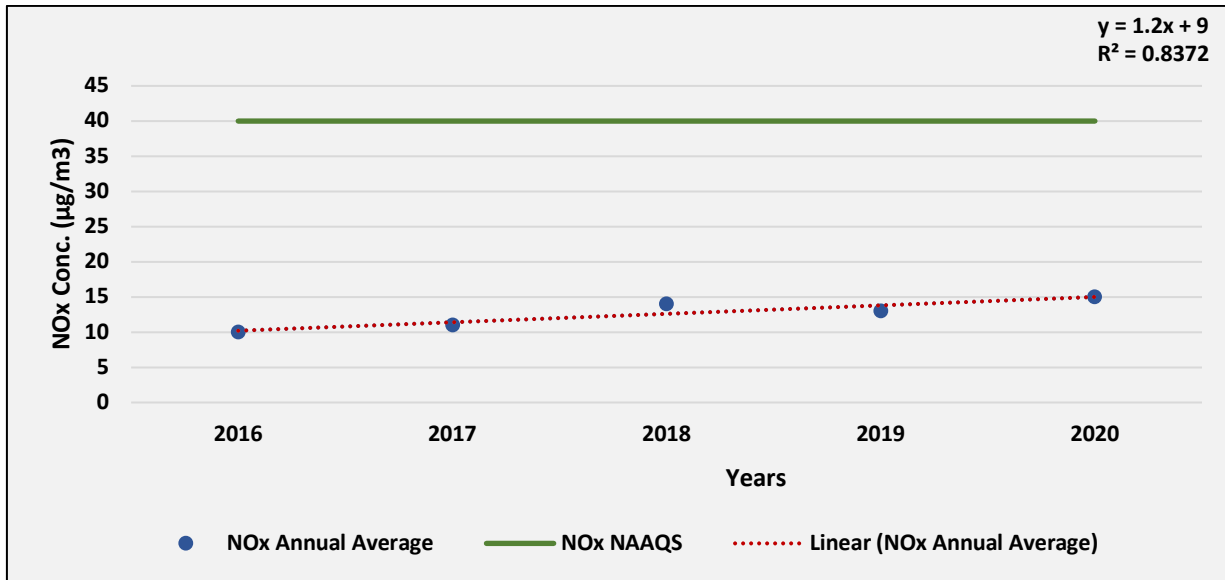


Fig. GA40: Trend of annual mean NO_x ambient air concentration in Gandhinagar TPP (Ambient 5)

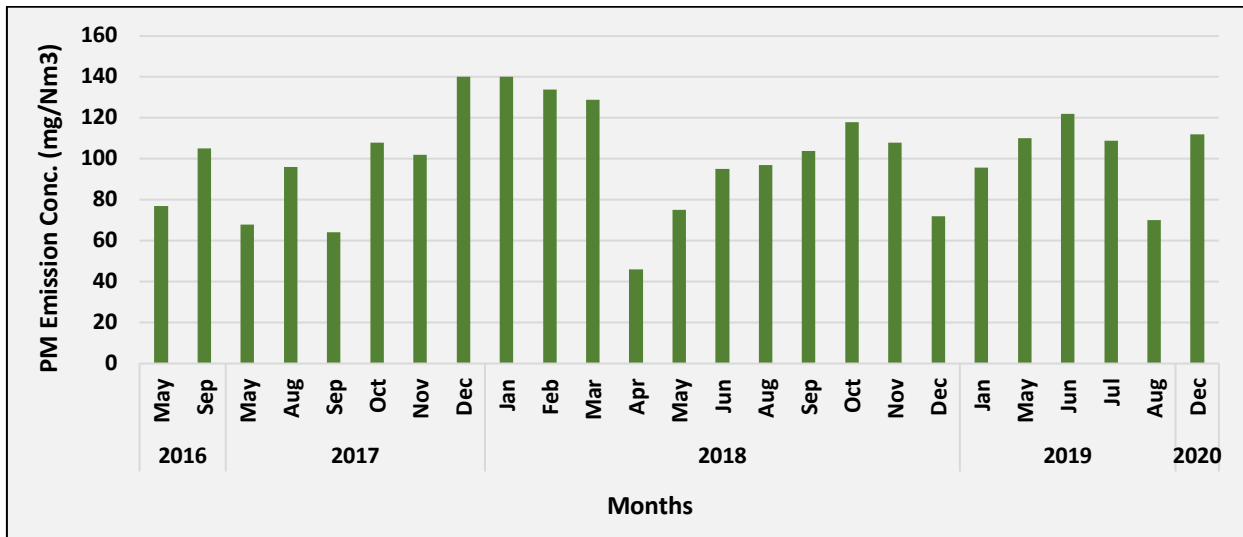


Fig. GA41: Time series of monthly average PM Emission concentration in Gandhinagar TPP (Stack 3)

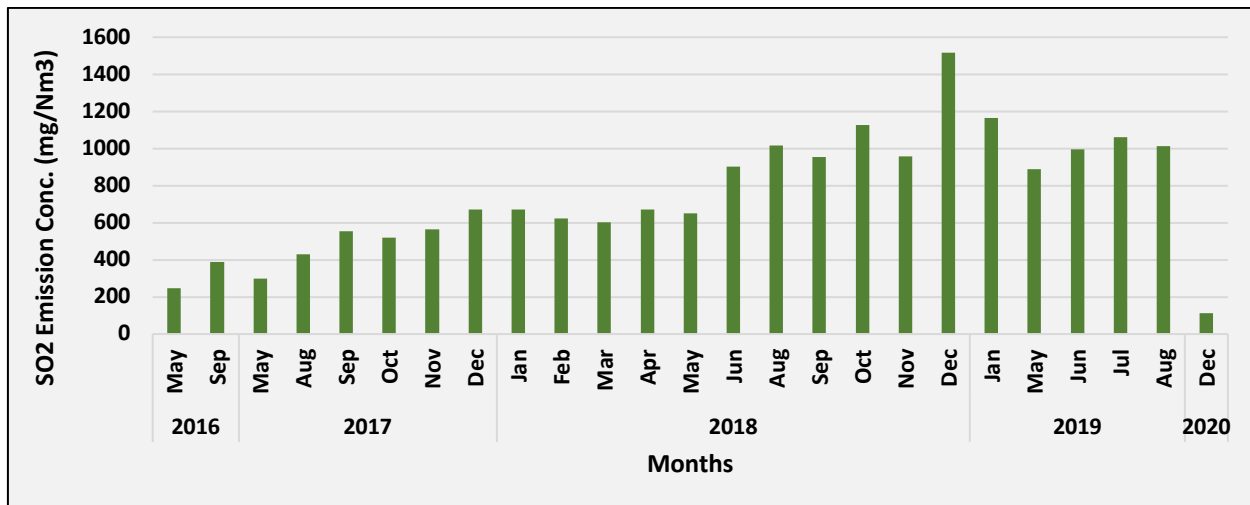


Fig. GA42: Time series of monthly average SO₂ Emission concentration in Gandhinagar TPP (Stack 3)

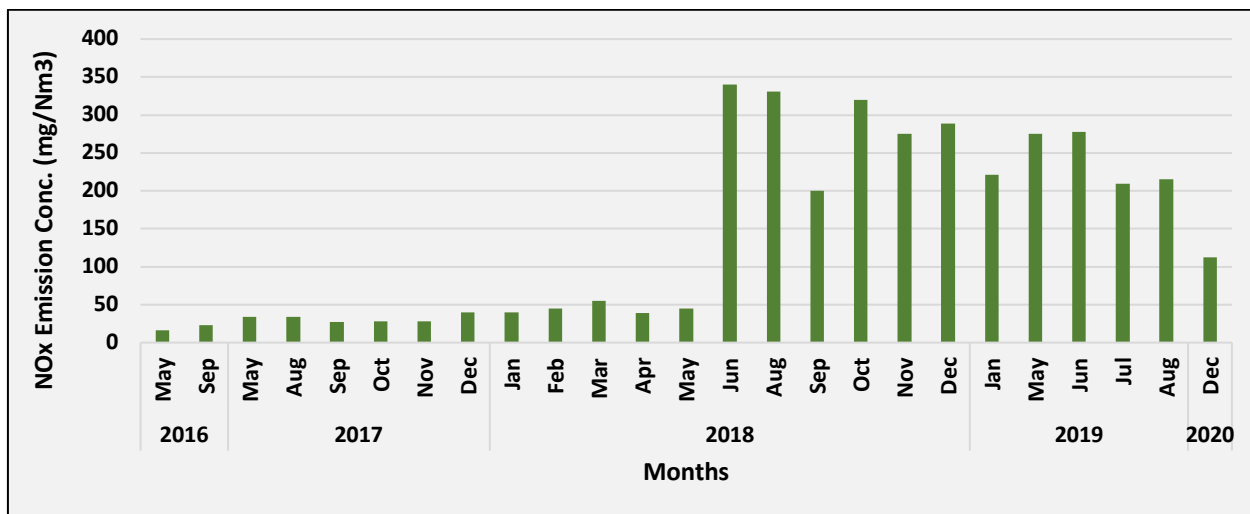


Fig. GA43: Time series of monthly average NO_x Emission concentration in Gandhinagar TPP (Stack 3)

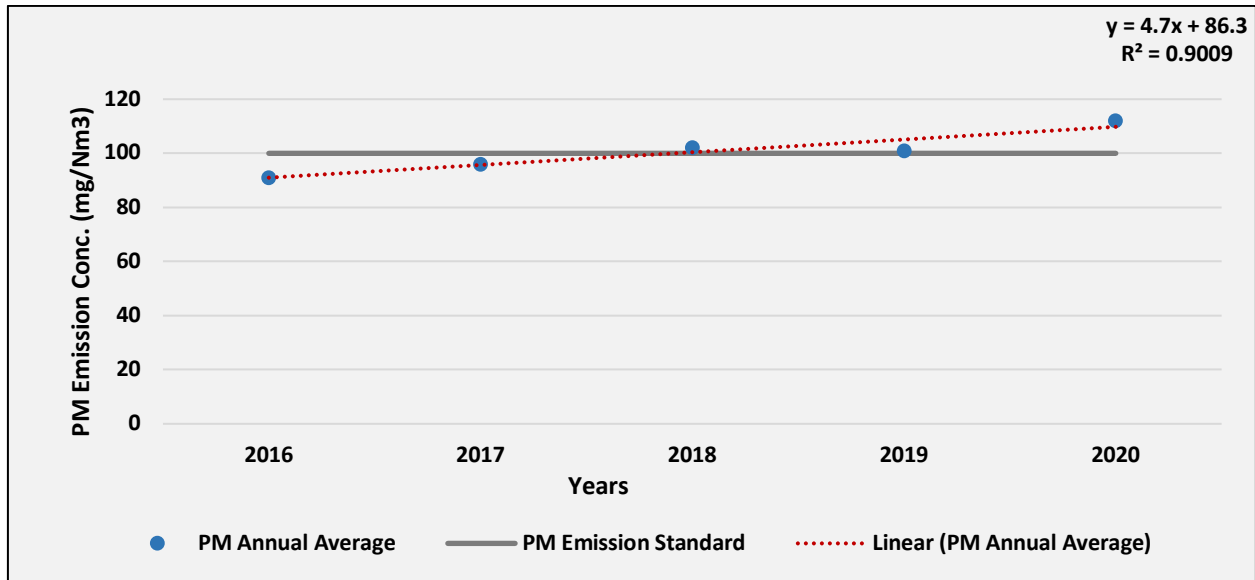


Fig. GA44: Trend of annual mean PM Emission air concentration in Gandhinagar TPP (Stack 3)

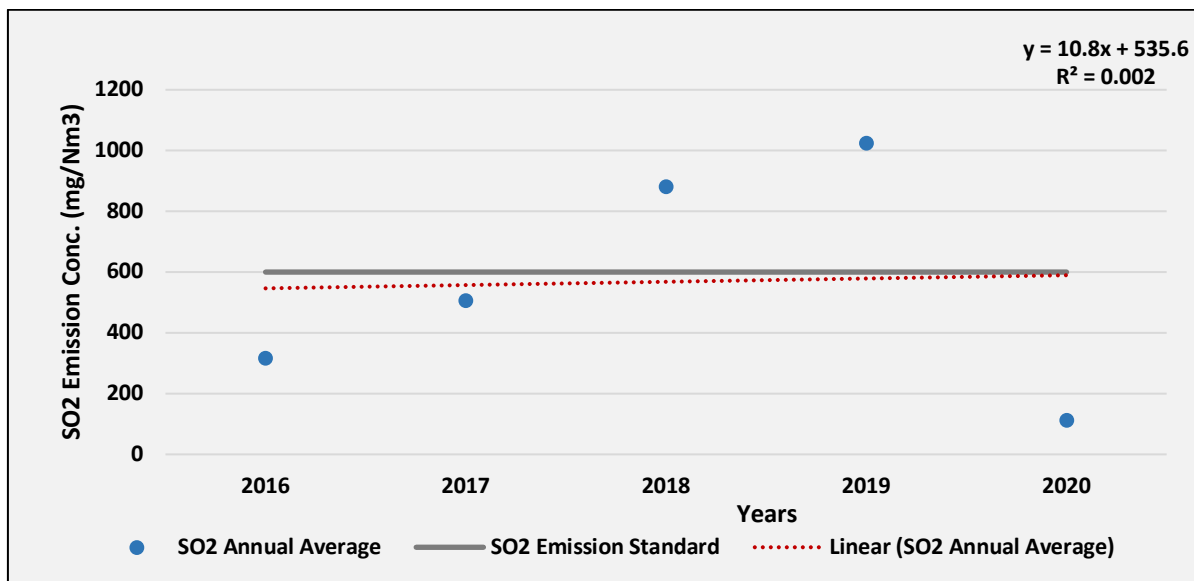


Fig. GA45: Trend of annual mean SO₂ Emission air concentration in Gandhinagar TPP (Stack 3)

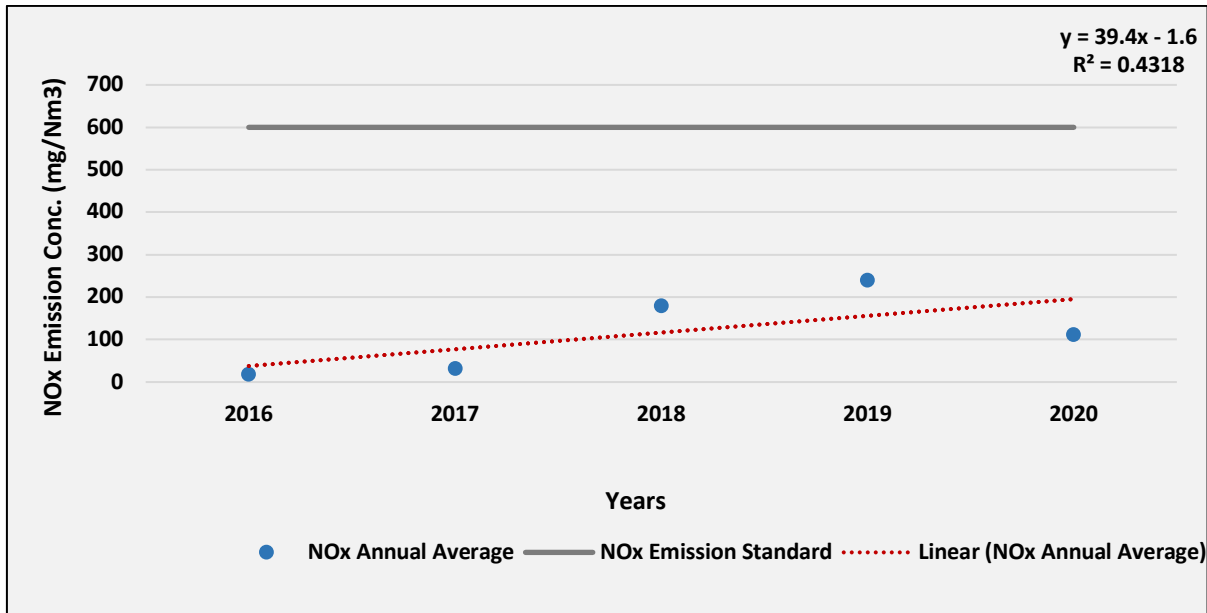


Fig. GA46: Trend of annual mean NO_x Emission air concentration in Gandhinagar TPP (Stack 3)

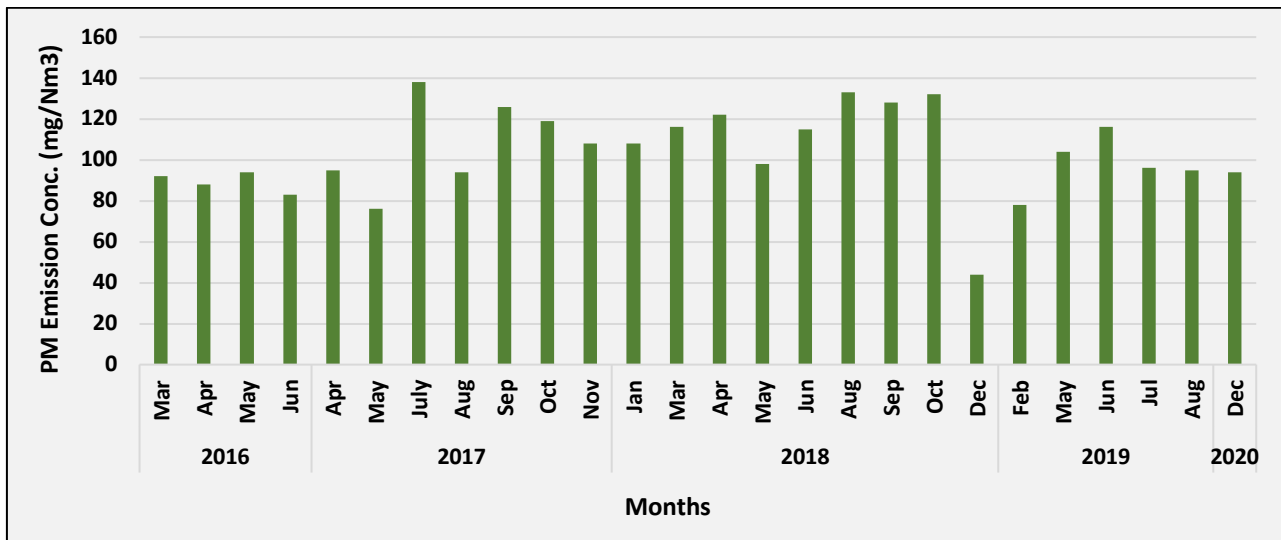


Fig. GA47: Time series of monthly average PM Emission concentration in Gandhinagar TPP (Stack 4)

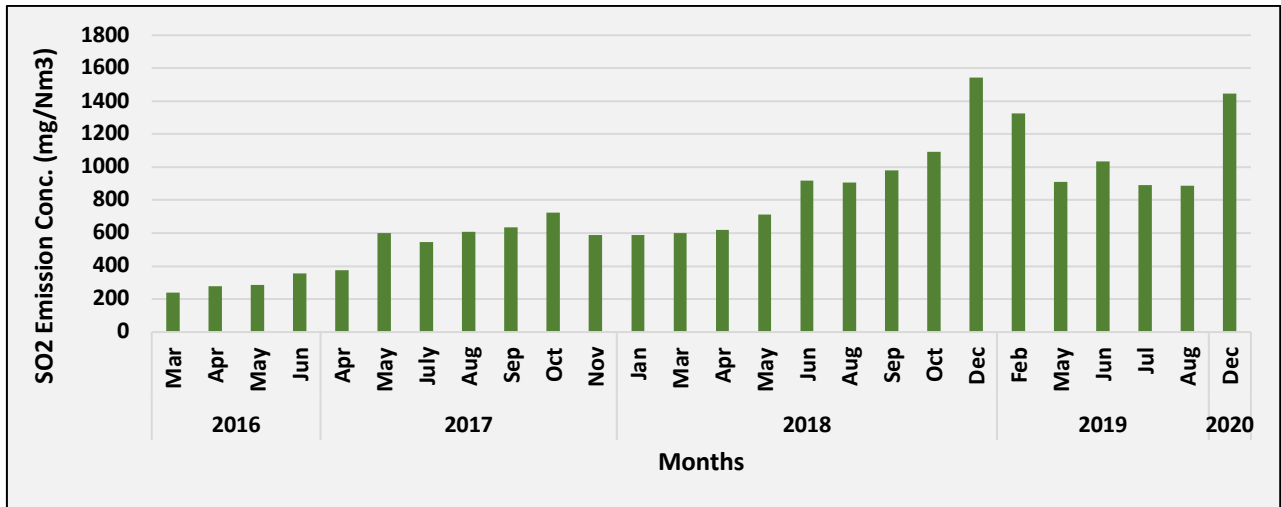


Fig. GA48: Time series of monthly average SO₂ Emission concentration in Gandhinagar TPP (Stack 4)

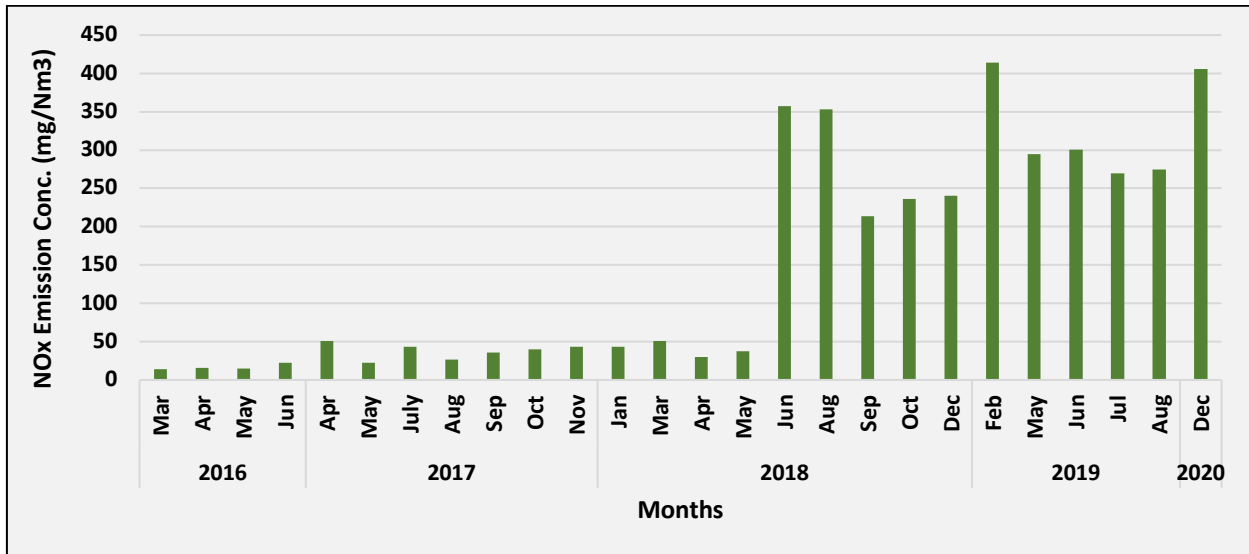


Fig. GA49: Time series of monthly average NO_x Emission concentration in Gandhinagar TPP (Stack 4)

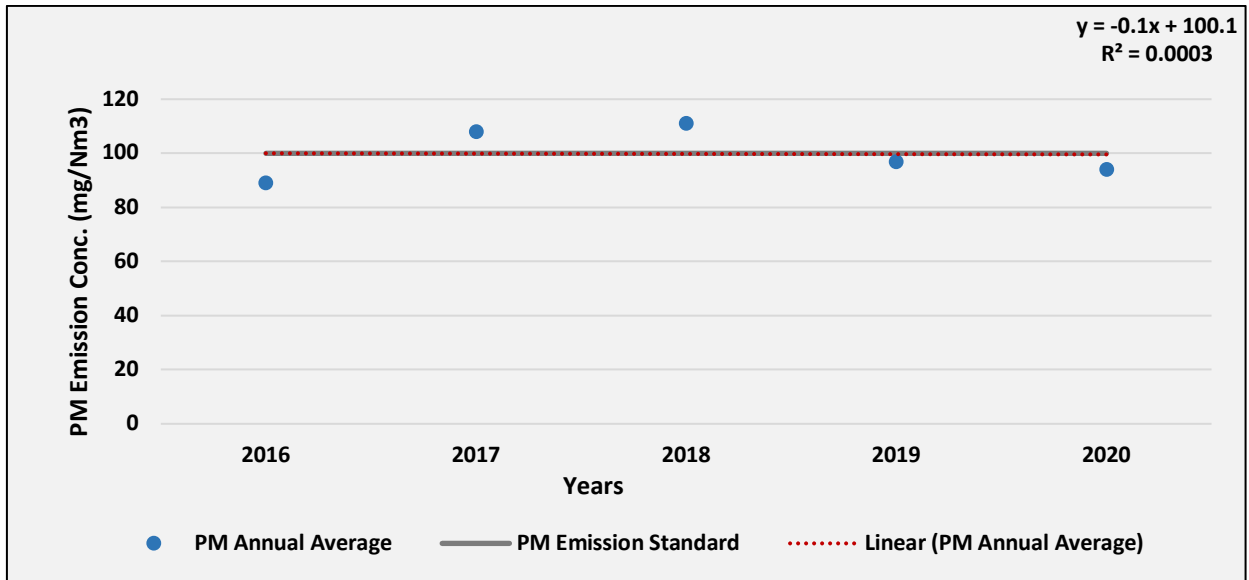


Fig. GA50: Trend of annual mean PM Emission air concentration in Gandhinagar TPP (Stack 4)

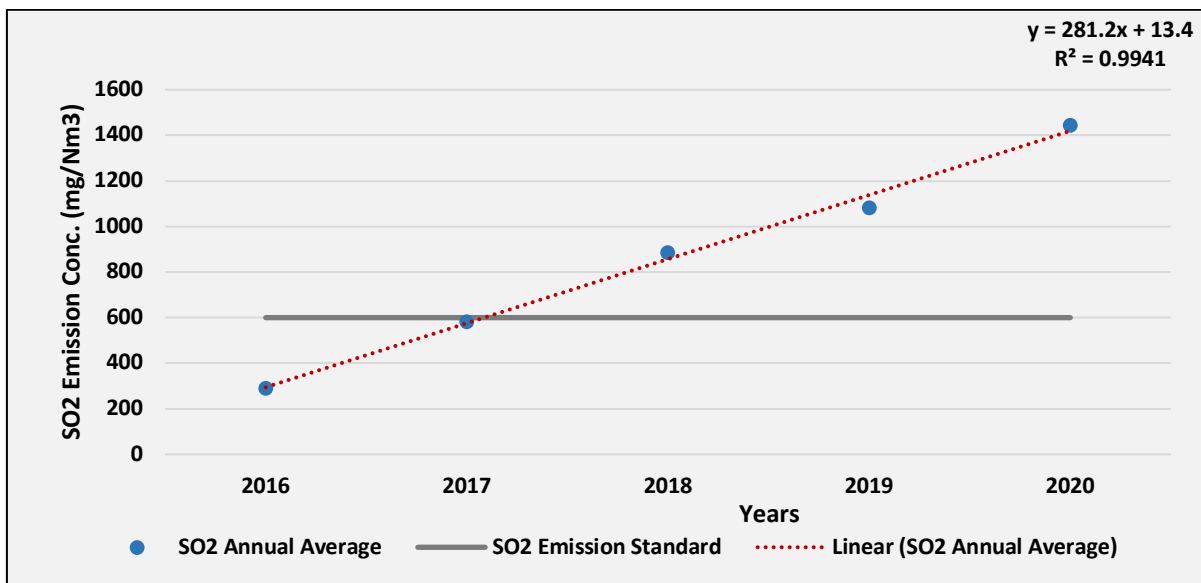


Fig. GA51: Trend of annual mean SO₂ Emission air concentration in Gandhinagar TPP (Stack 4)

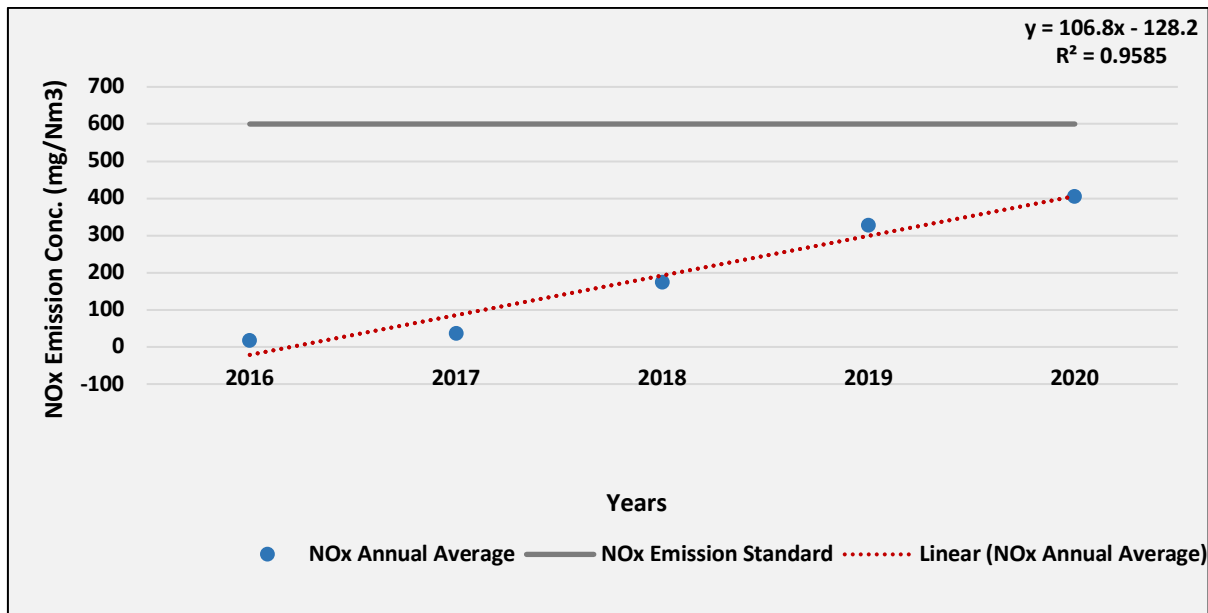


Fig. GA52: Trend of annual mean NO_x Emission air concentration in Gandhinagar TPP (Stack 4)

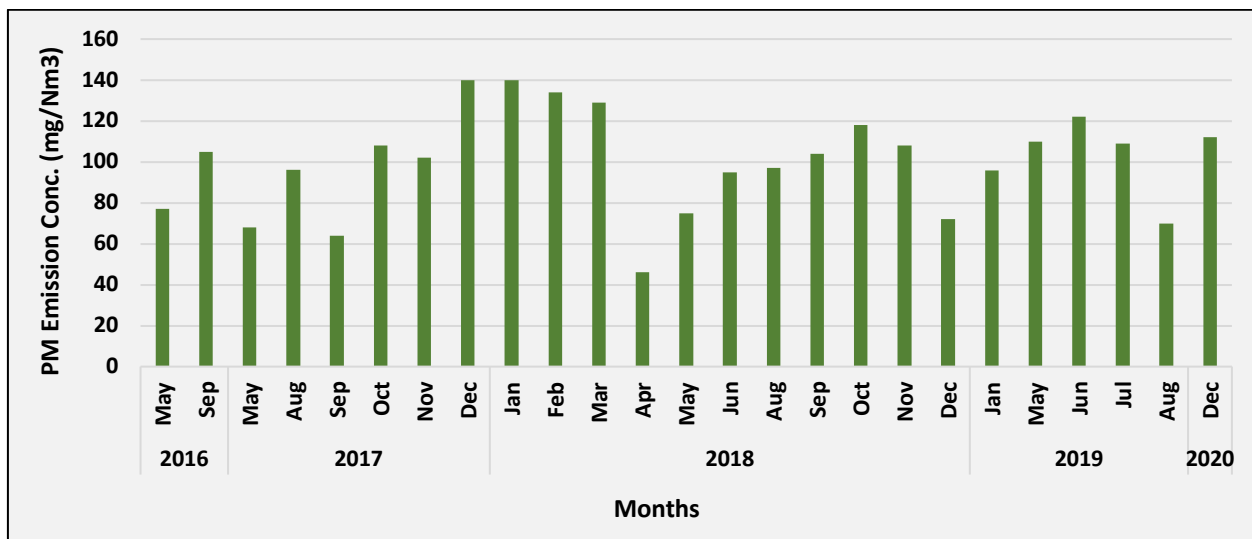


Fig. GA53: Time series of monthly average PM Emission concentration in Gandhinagar TPP (Stack 5)

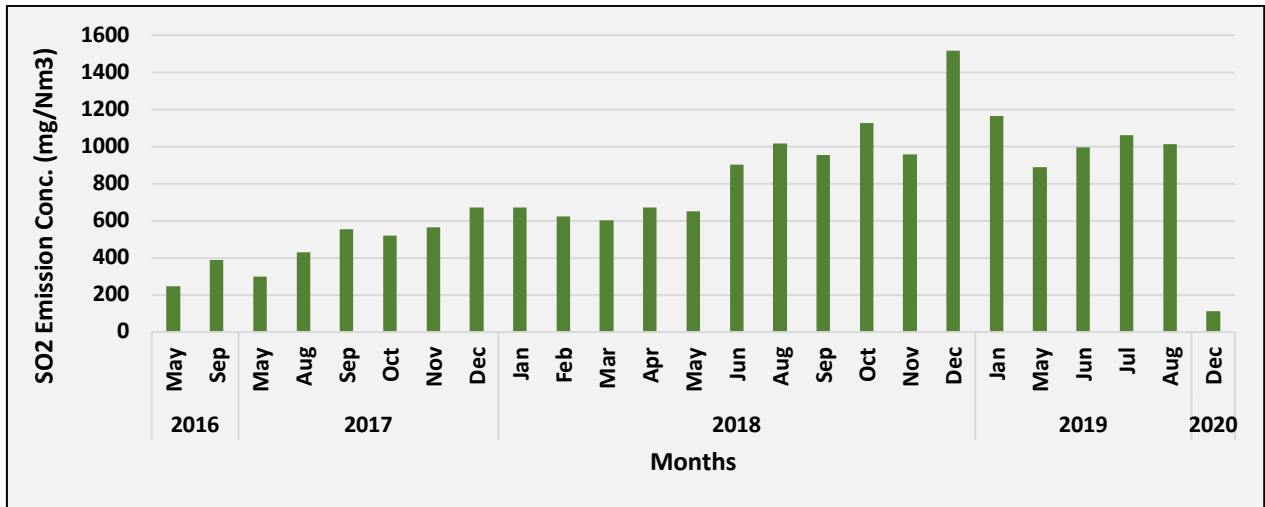


Fig. GA54: Time series of monthly average SO₂ Emission concentration in Gandhinagar TPP (Stack 5)

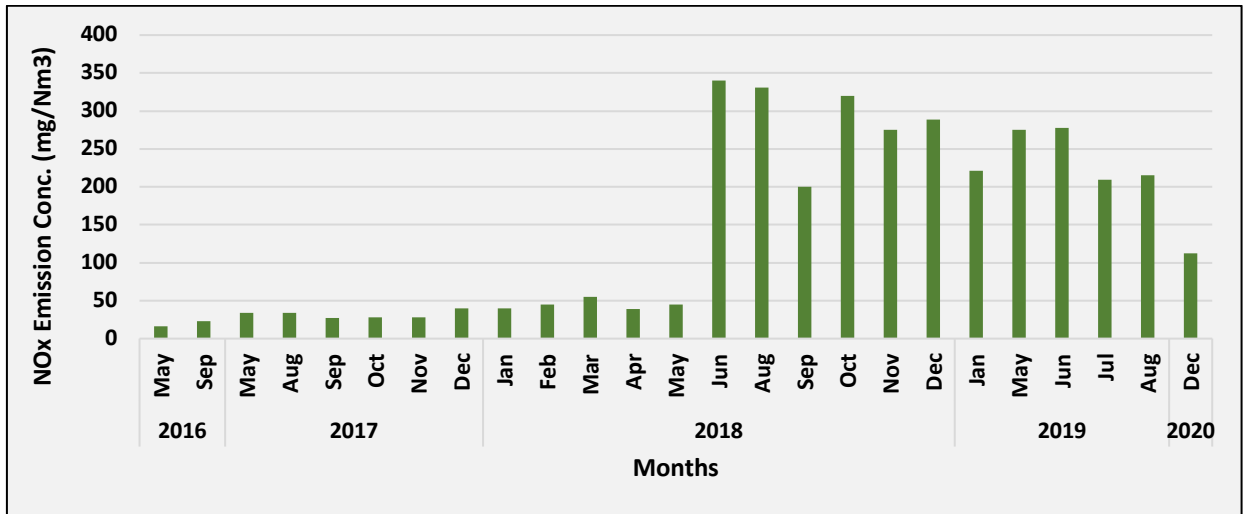


Fig. GA55: Time series of monthly average NO_x Emission concentration in Gandhinagar TPP (Stack 5)

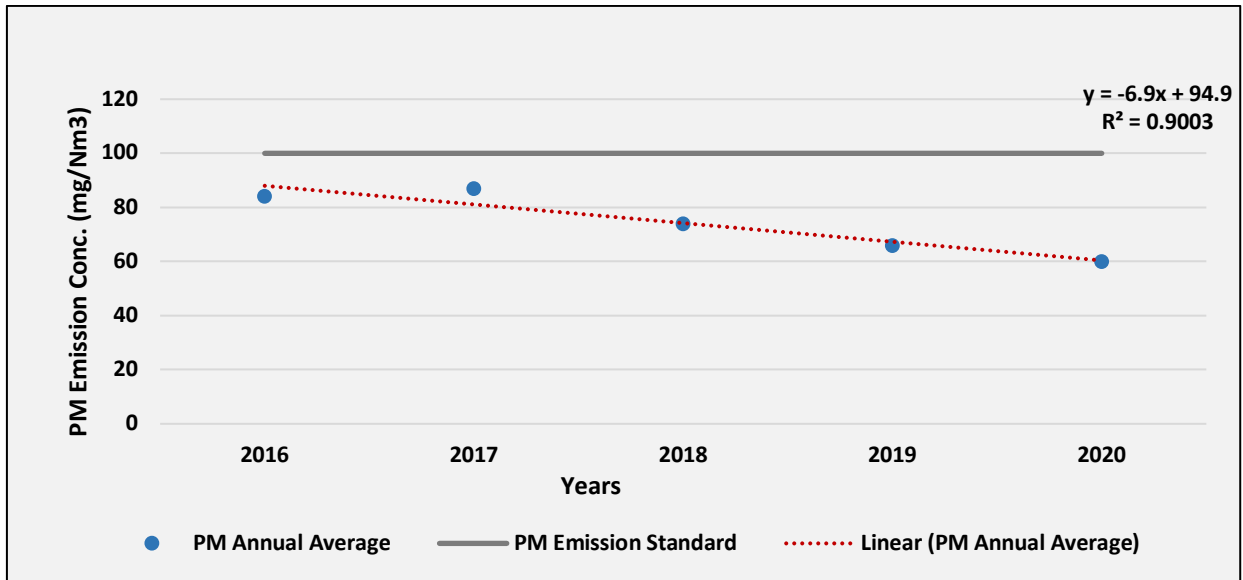


Fig. GA56: Trend of annual mean PM Emission air concentration in Gandhinagar TPP (Stack 5)

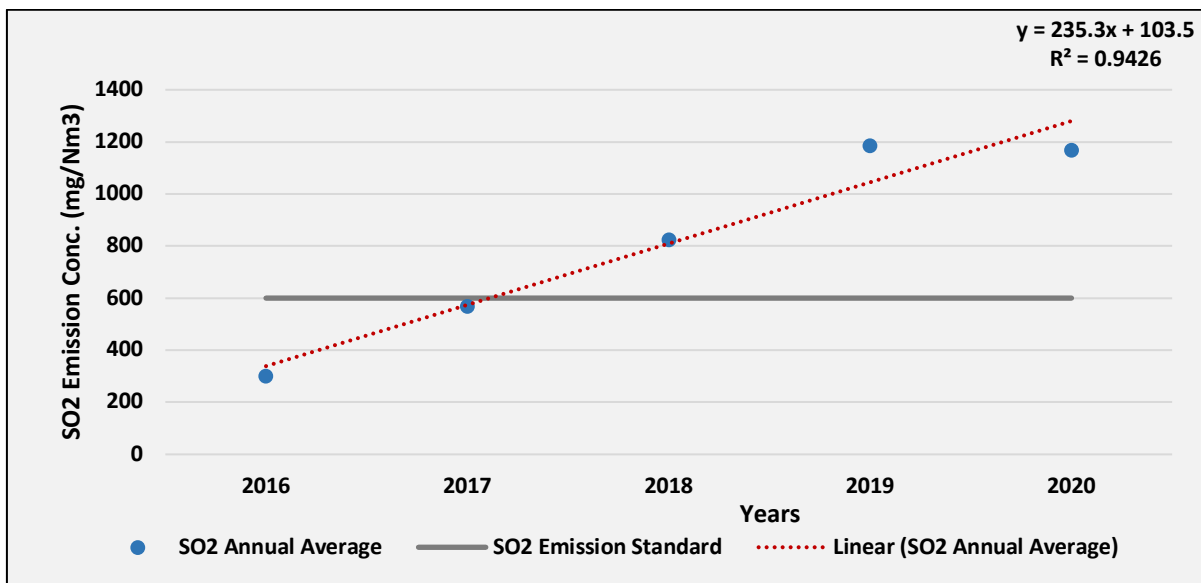


Fig. GA57: Trend of annual mean SO₂ Emission air concentration in Gandhinagar TPP (Stack 5)

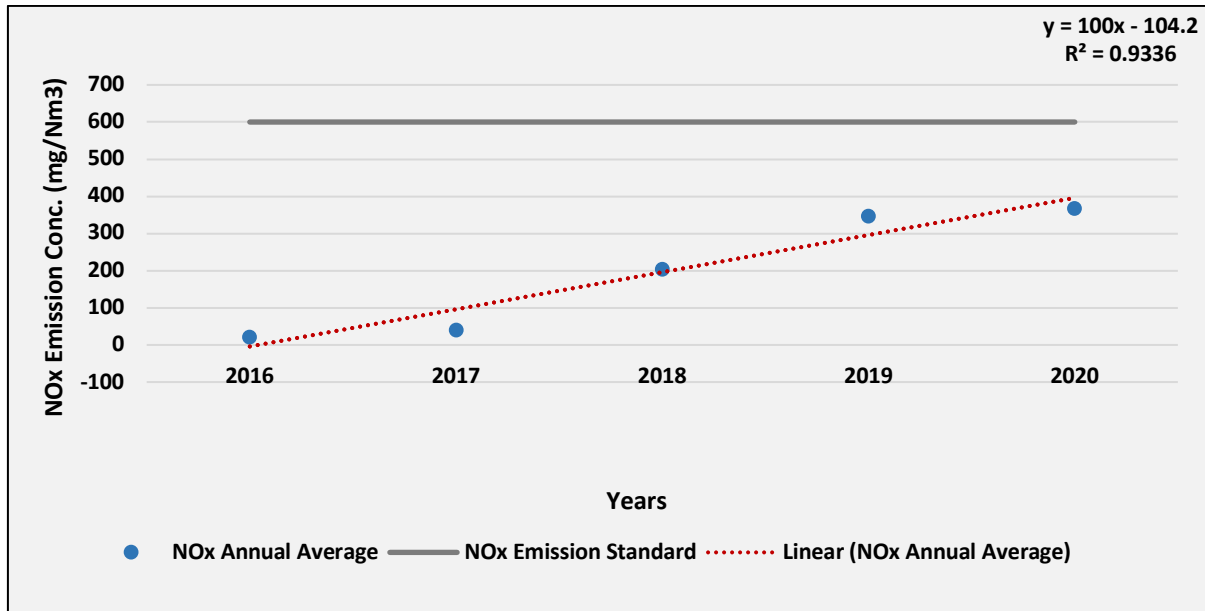


Fig. GA58: Trend of annual mean NO_x Emission air concentration in Gandhinagar TPP (Stack 5)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, is exceeding whereas the PM_{2.5}, SO₂ & NO_x levels are within a range for all the four ambient data as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that SO₂ and PM parameter are higher than the emission norms. Emission of NO_x is within the limit range.

SIKKA THERMAL POWER PLANT

Sikka Thermal Power Station is one of Gujarat's coal-fired power plants. It is located near Jamnagar, which is the major industrial town in Gujarat.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. SIK1-Fig. SIK60) for the last four years (2016-2020) using data provided by GSECL developer for Sikka Power plant, Gujarat, India.

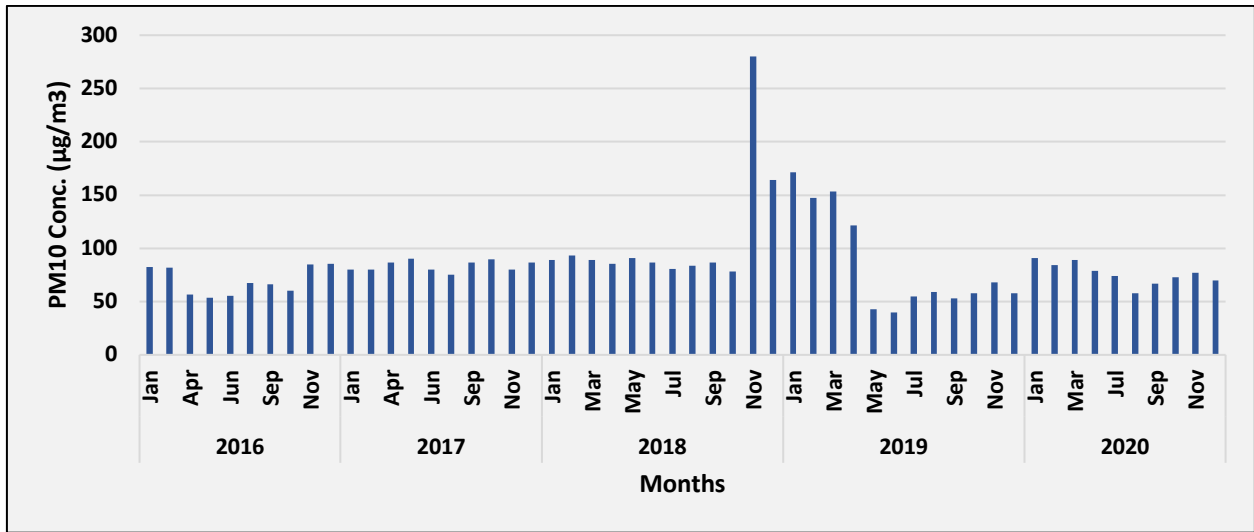


Fig. SIK1: Time series of monthly average PM_{10} ambient air concentration in Sikka TPP (Ambient 1)

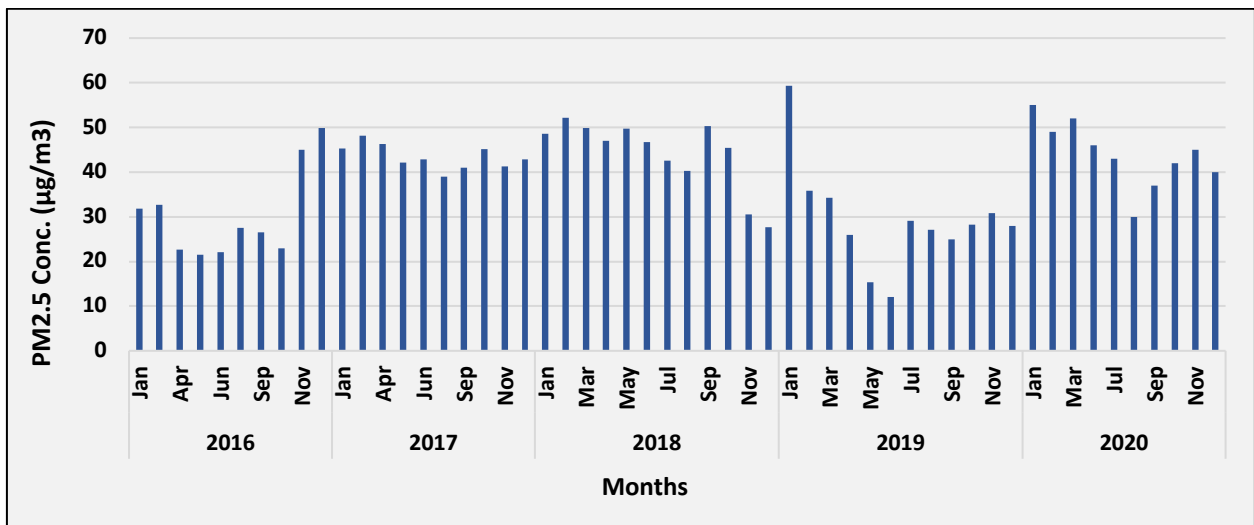


Fig. SIK2: Time series of monthly average $PM_{2.5}$ ambient air concentration in Sikka TPP (Ambient 1)

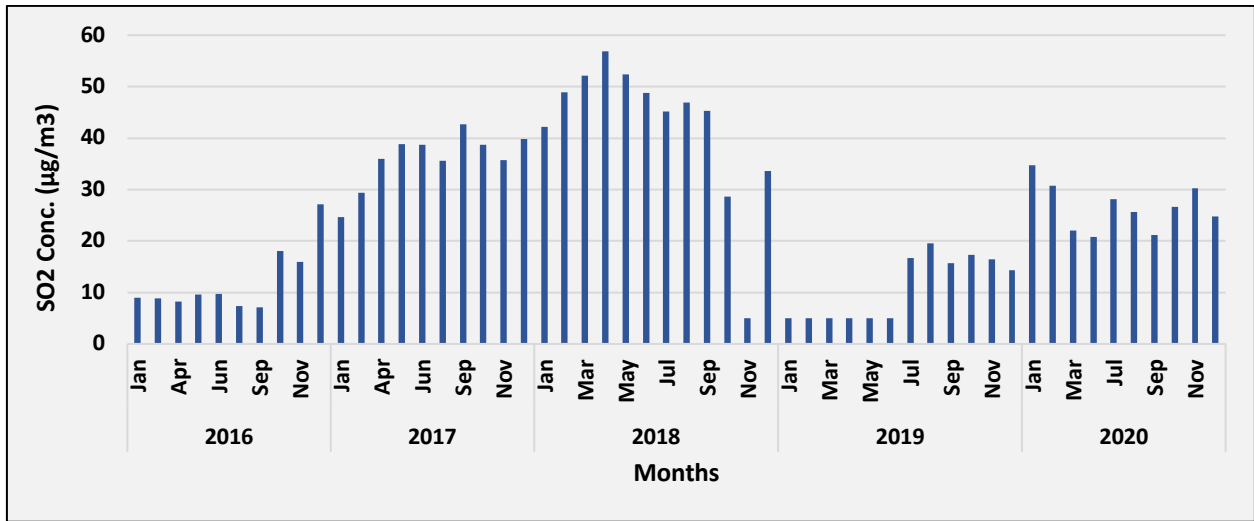


Fig. SIK3: Time series of monthly average SO_2 ambient air concentration in Sikka TPP (Ambient 1)

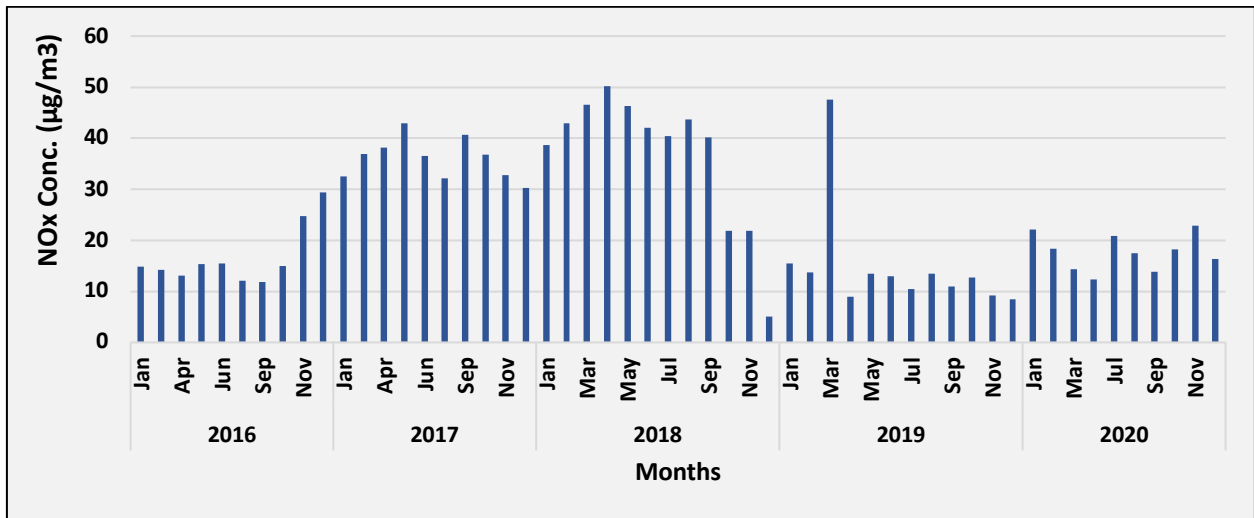


Fig. SIK4: Time series of monthly average NO_x ambient air concentration in Sikka TPP (Ambient 1)

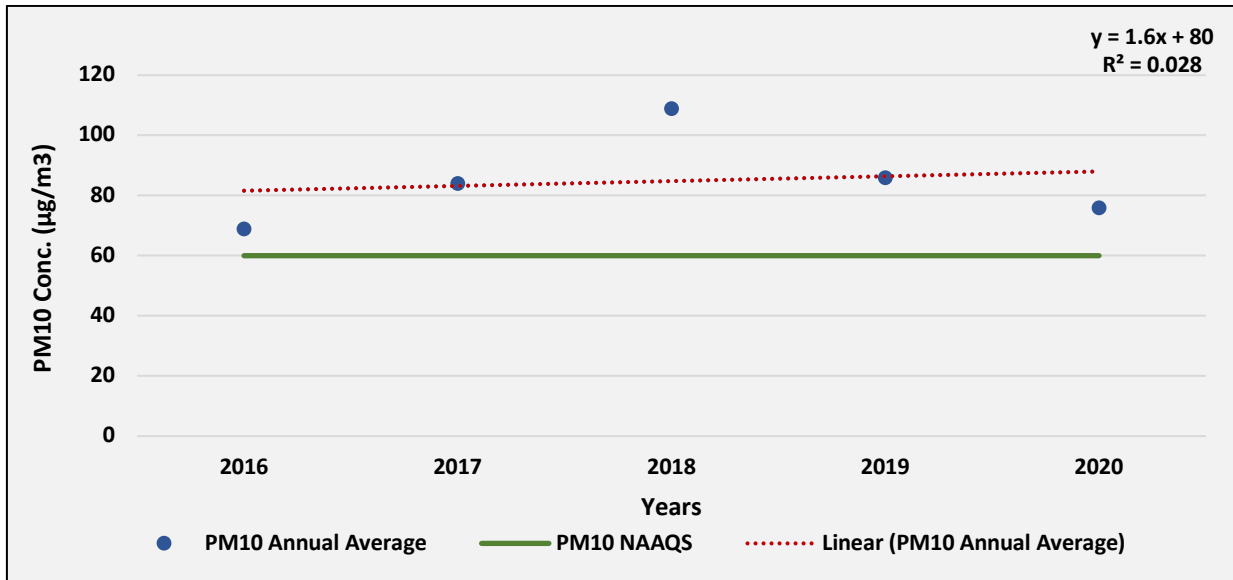


Fig. SIK5: Trend of annual mean PM₁₀ ambient air concentration in Sikka TPP (Ambient 1)

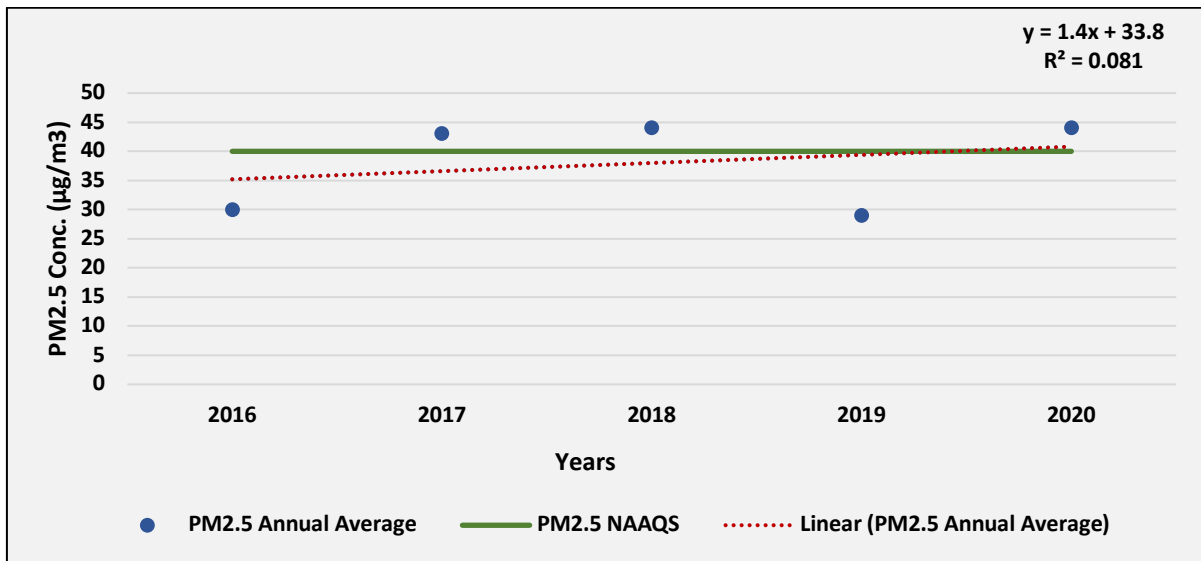


Fig. SIK6: Trend of annual mean PM_{2.5} ambient air concentration in Sikka TPP (Ambient 1)

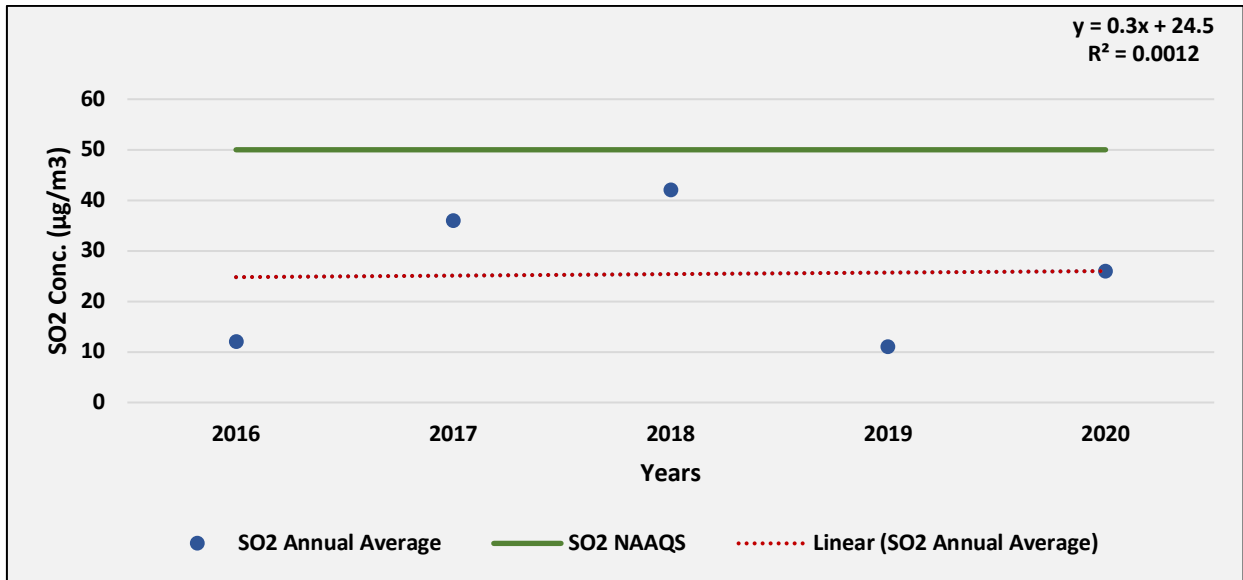


Fig. SIK7: Trend of annual mean SO₂ ambient air concentration in Sikka TPP (Ambient 1)

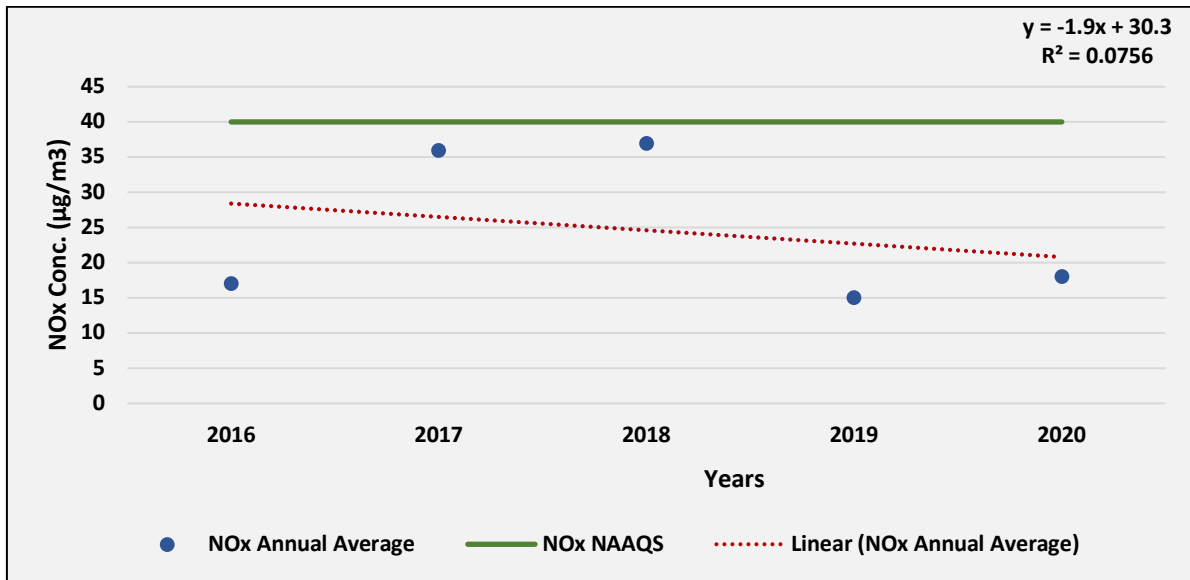


Fig. SIK8: Trend of annual mean NO_x ambient air concentration in Sikka TPP (Ambient 1)

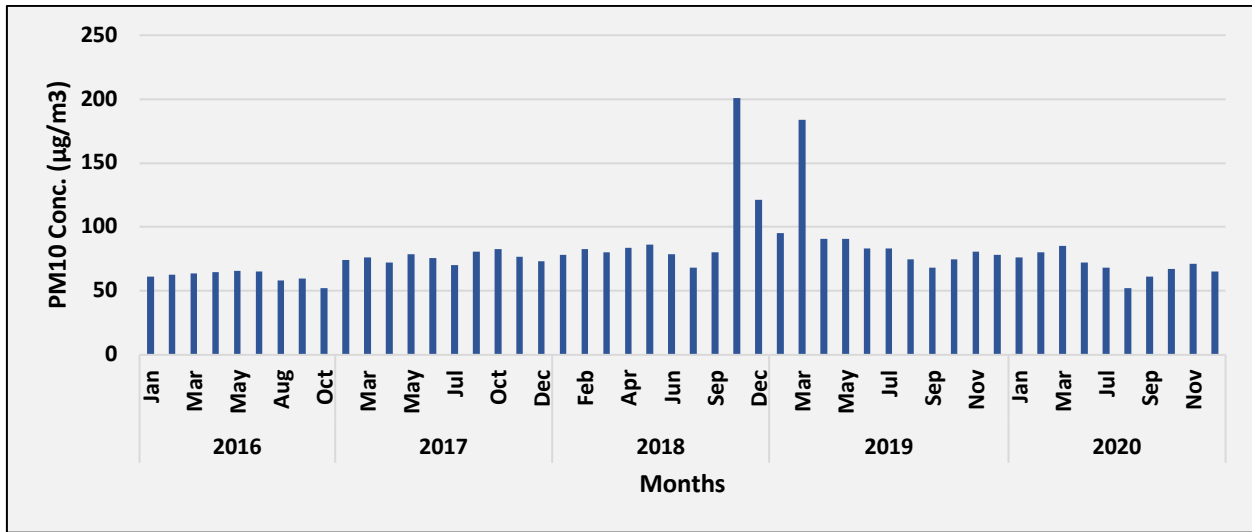


Fig. SIK9: Time series of monthly average PM_{10} ambient air concentration in Sikka TPP (Ambient 2)

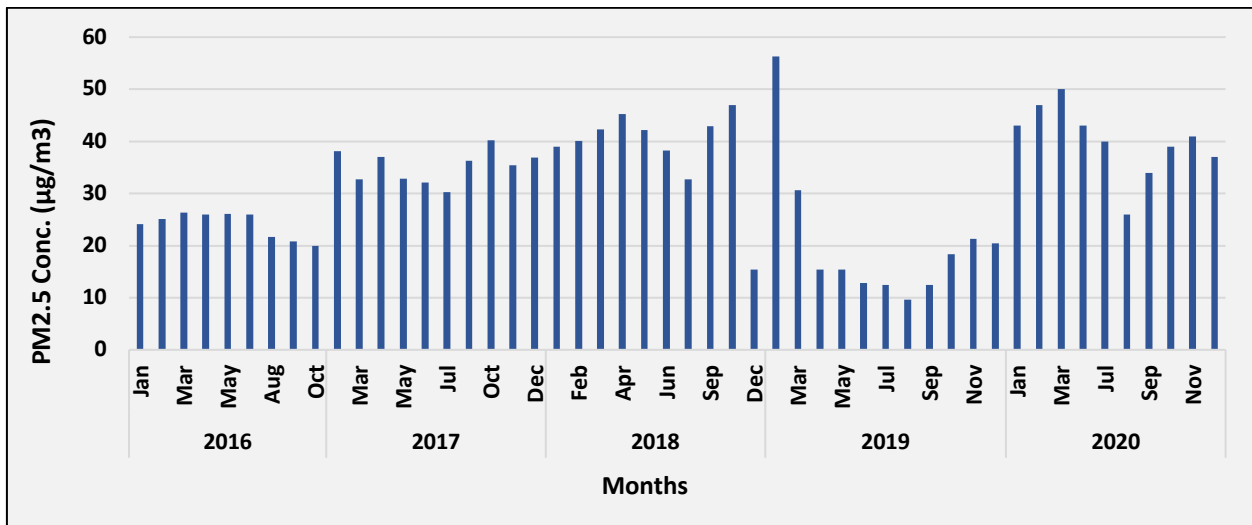


Fig. SIK10: Time series of monthly average $PM_{2.5}$ ambient air concentration in Sikka TPP (Ambient 2)

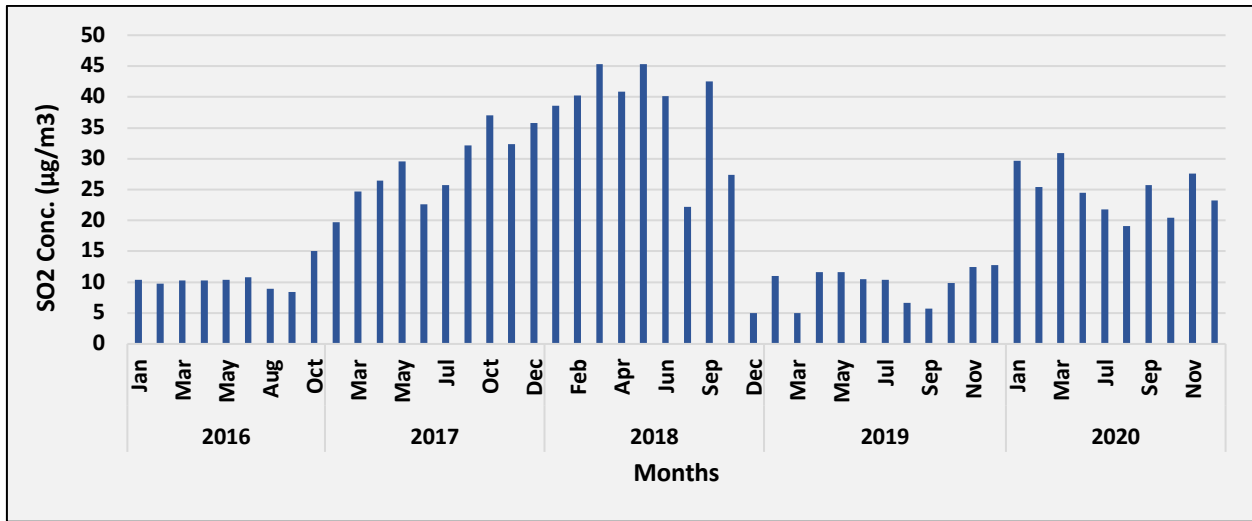


Fig. SIK11: Time series of monthly average SO_2 ambient air concentration in Sikka TPP (Ambient 2)

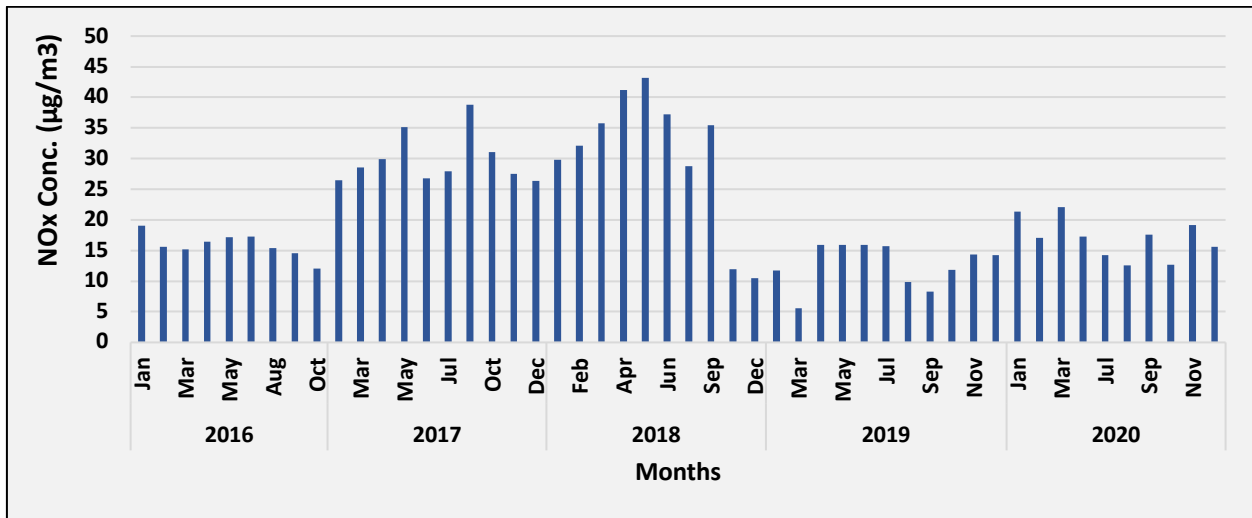


Fig. SIK12: Time series of monthly average NO_x ambient air concentration in Sikka TPP (Ambient 2)

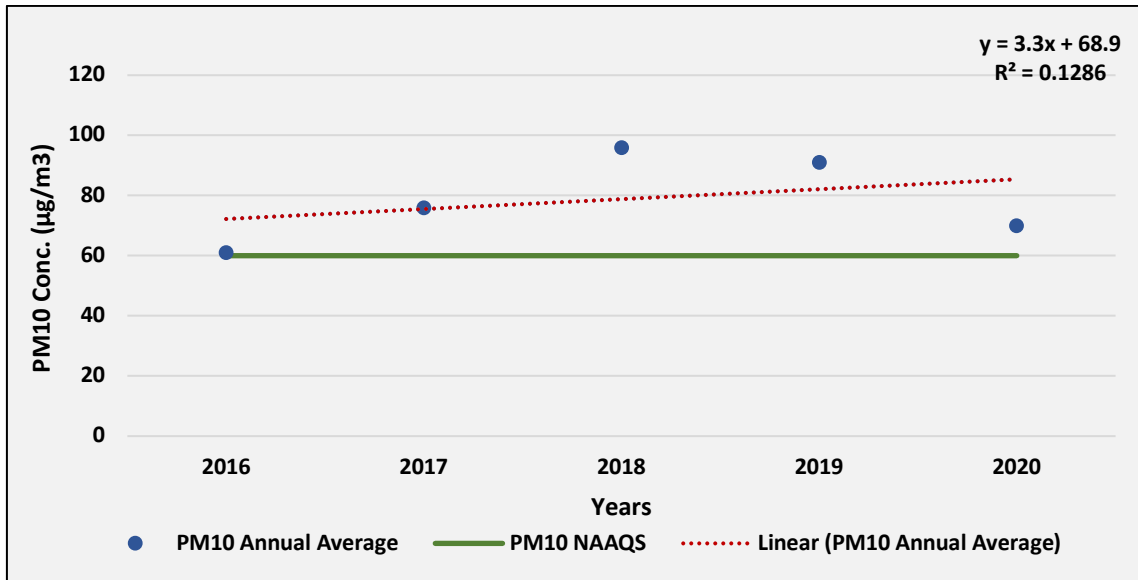


Fig. SIK13: Trend of annual mean PM_{10} ambient air concentration in Sikka TPP (Ambient 2)

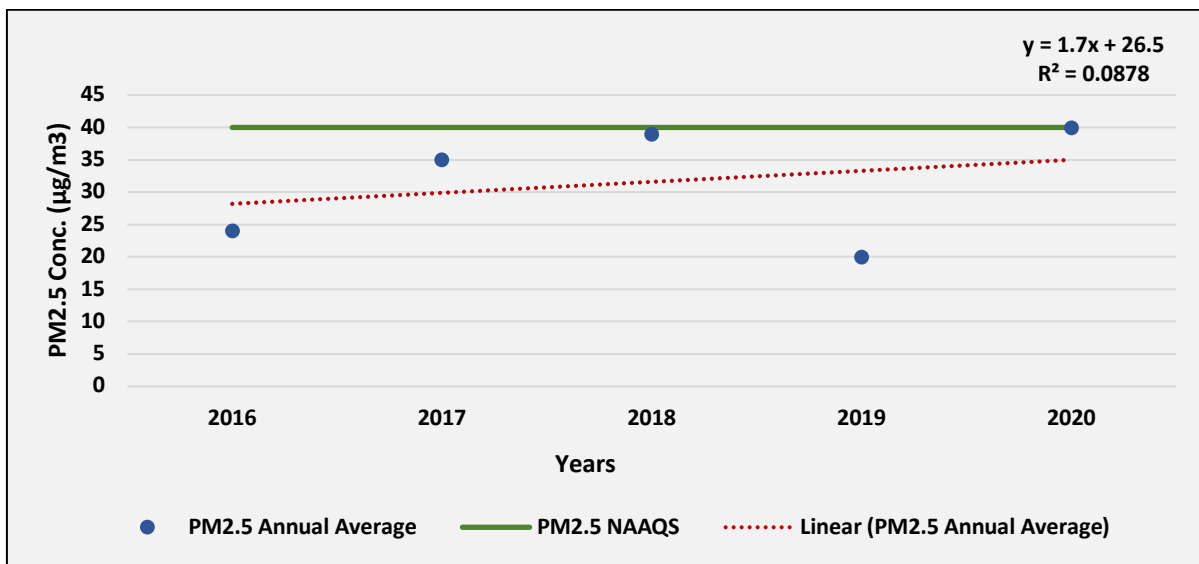


Fig. SIK14: Trend of annual mean $PM_{2.5}$ ambient air concentration in Sikka TPP (Ambient 2)

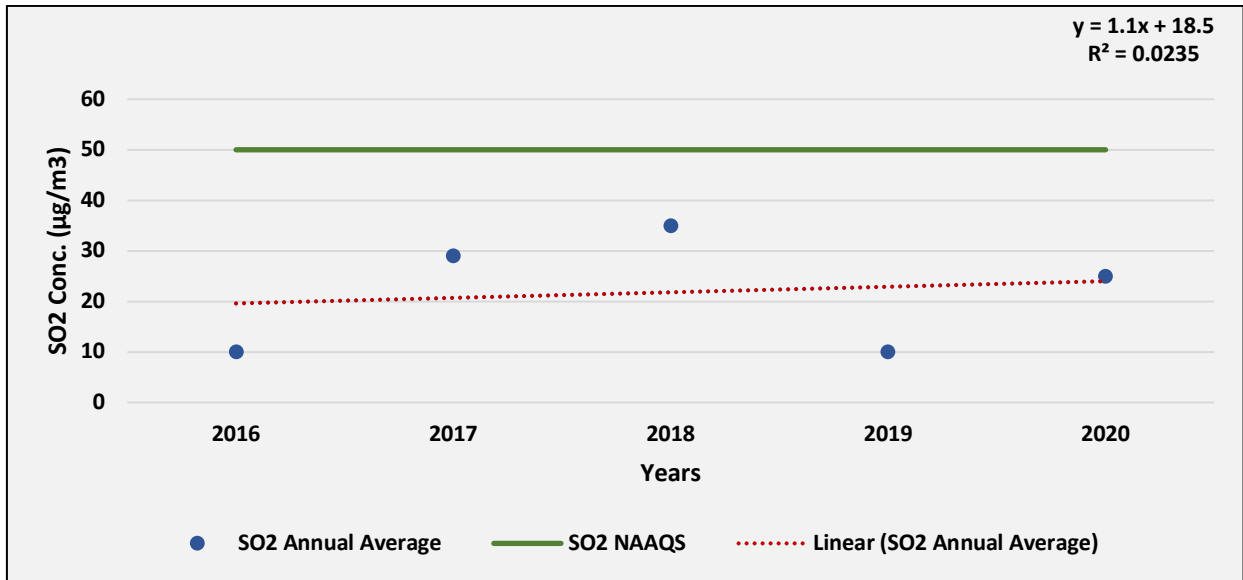


Fig. SIK15: Trend of annual mean SO₂ ambient air concentration in Sikka TPP (Ambient 2)

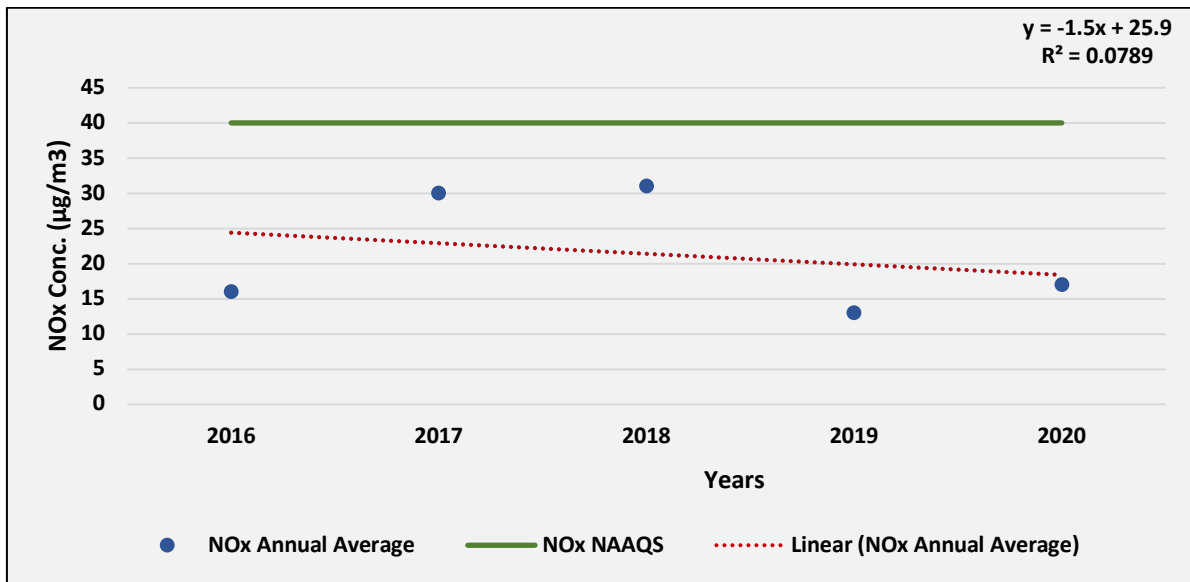


Fig. SIK16: Trend of annual mean NO_x ambient air concentration in Sikka TPP (Ambient 2)

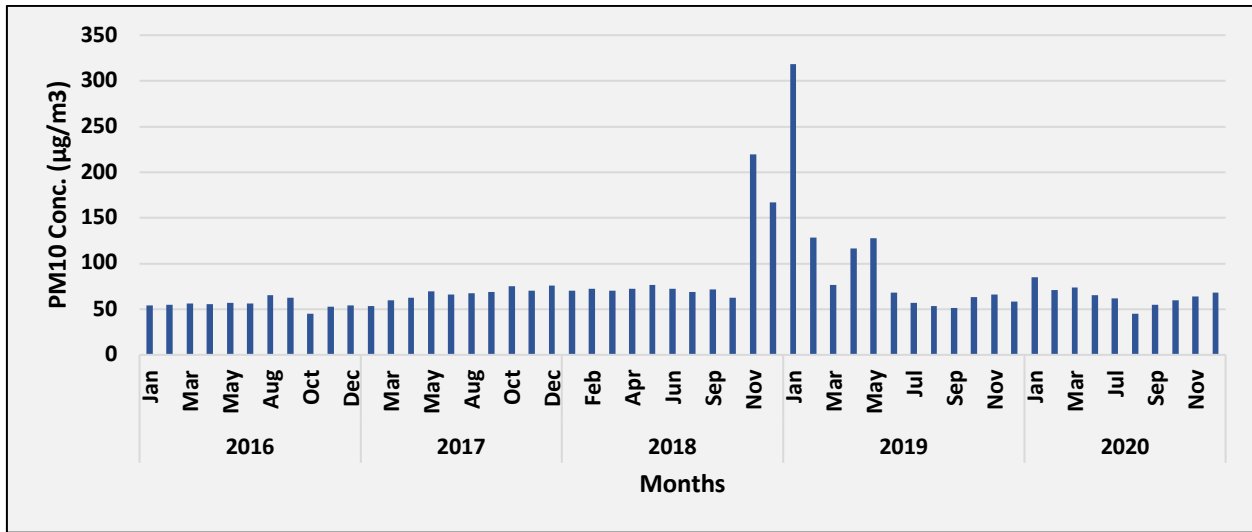


Fig. SIK17: Time series of monthly average PM_{10} ambient air concentration in Sikka TPP (Ambient 3)

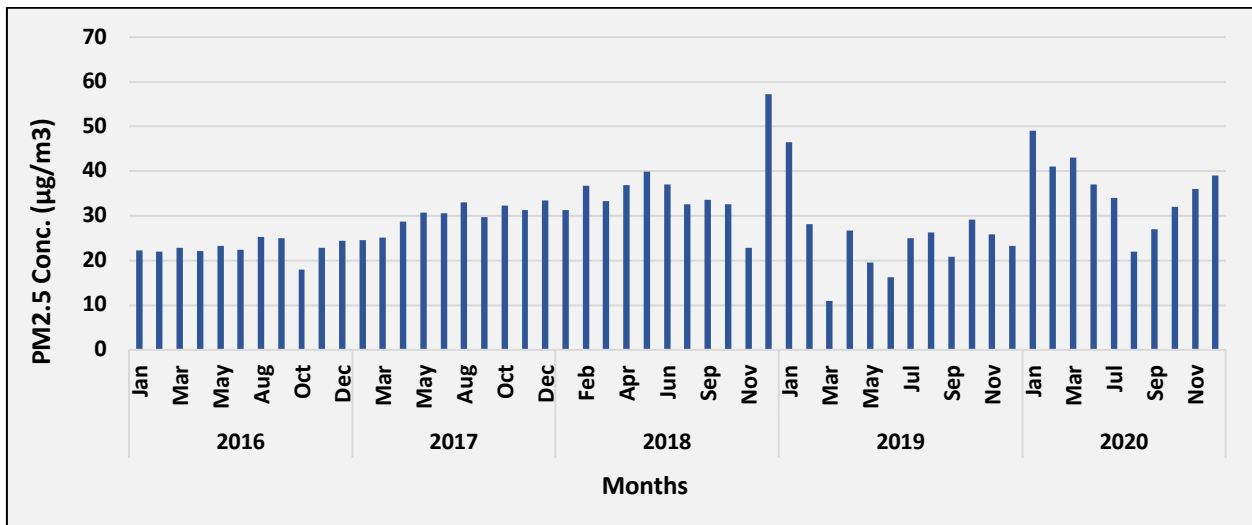


Fig. SIK18: Time series of monthly average $PM_{2.5}$ ambient air concentration in Sikka TPP (Ambient 3)

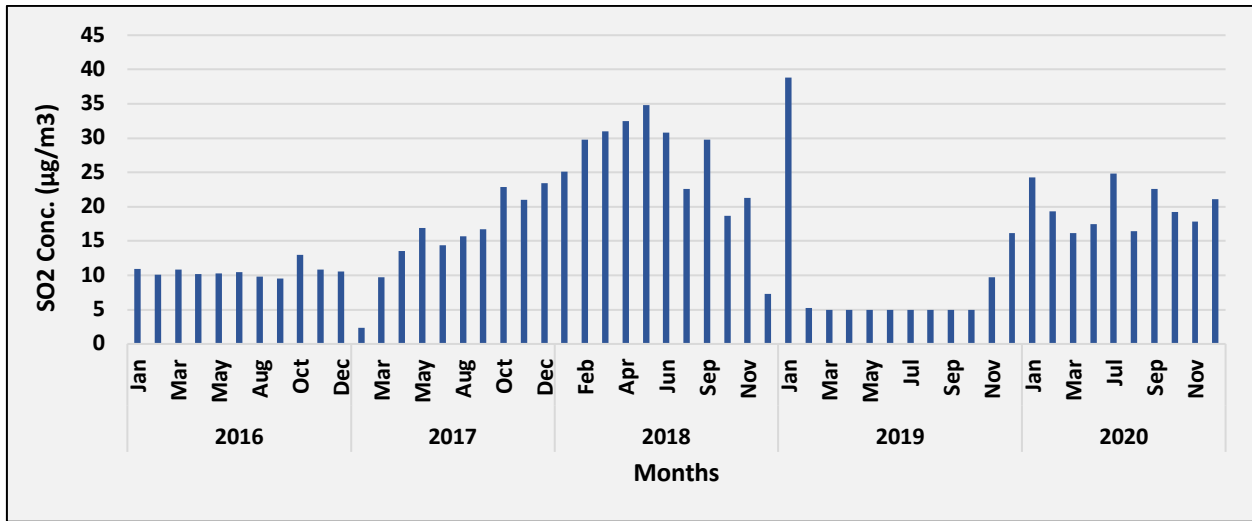


Fig. SIK19: Time series of monthly average SO_2 ambient air concentration in Sikka TPP (Ambient 3)

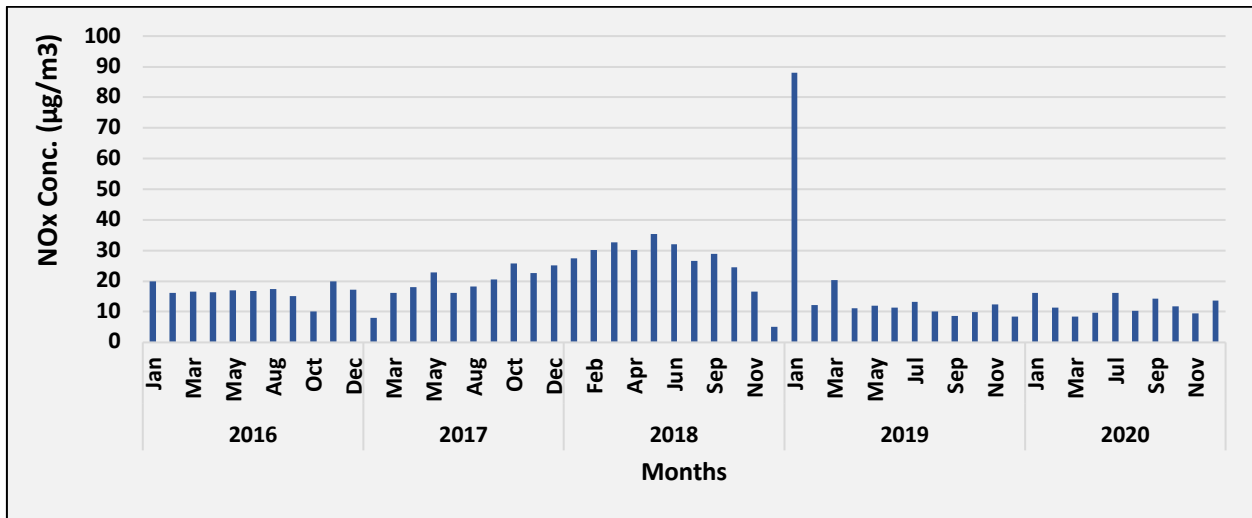


Fig. SIK20: Time series of monthly average NO_x ambient air concentration in Sikka TPP (Ambient 3)

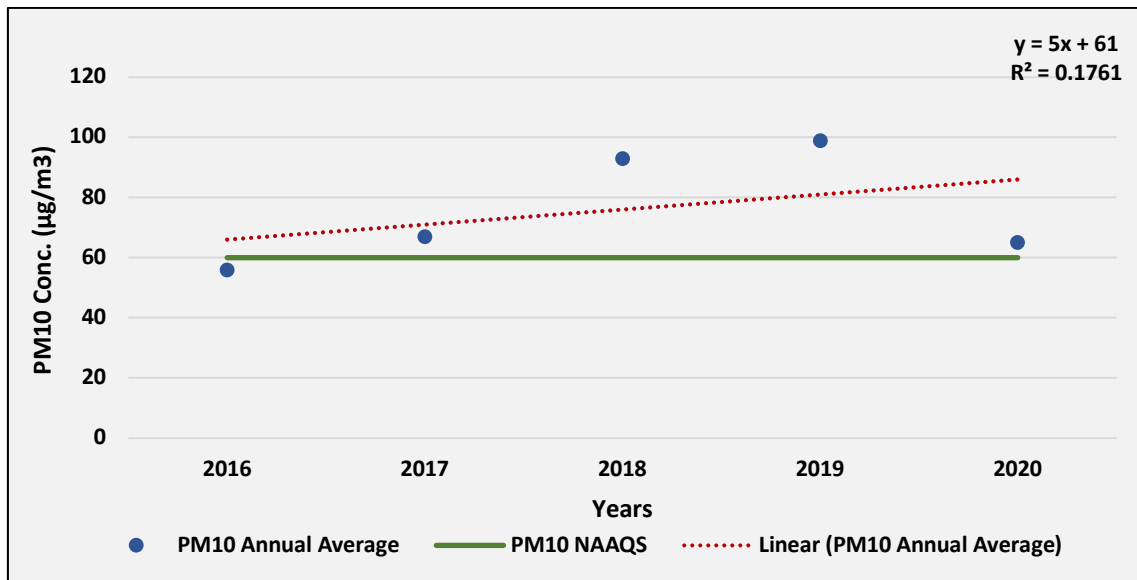


Fig. SIK21: Trend of annual mean PM_{10} ambient air concentration in Sikka TPP (Ambient 3)

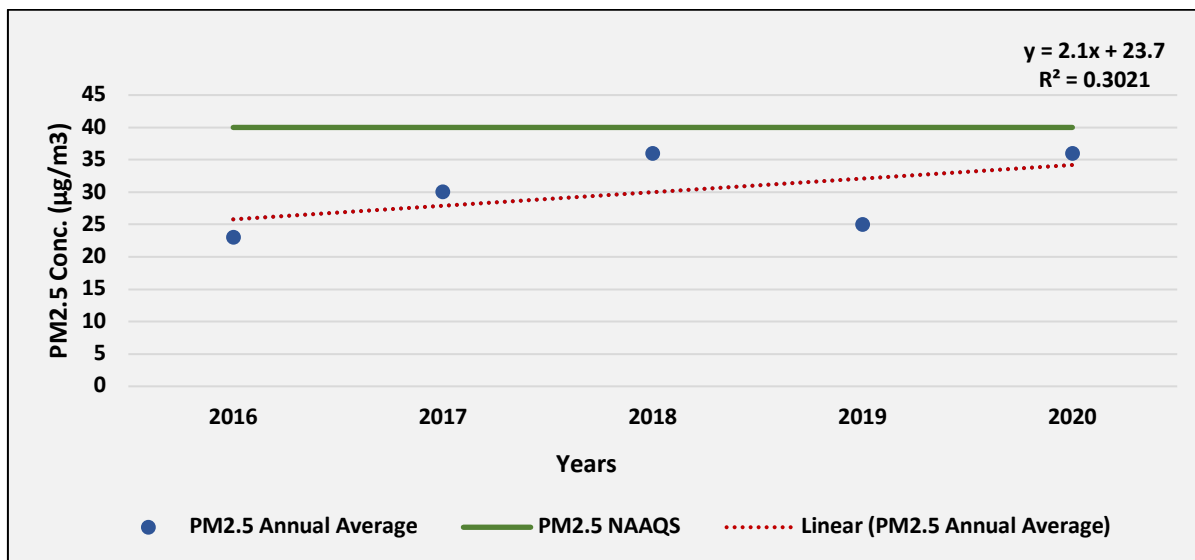


Fig. SIK22: Trend of annual mean $PM_{2.5}$ ambient air concentration in Sikka TPP (Ambient 3)

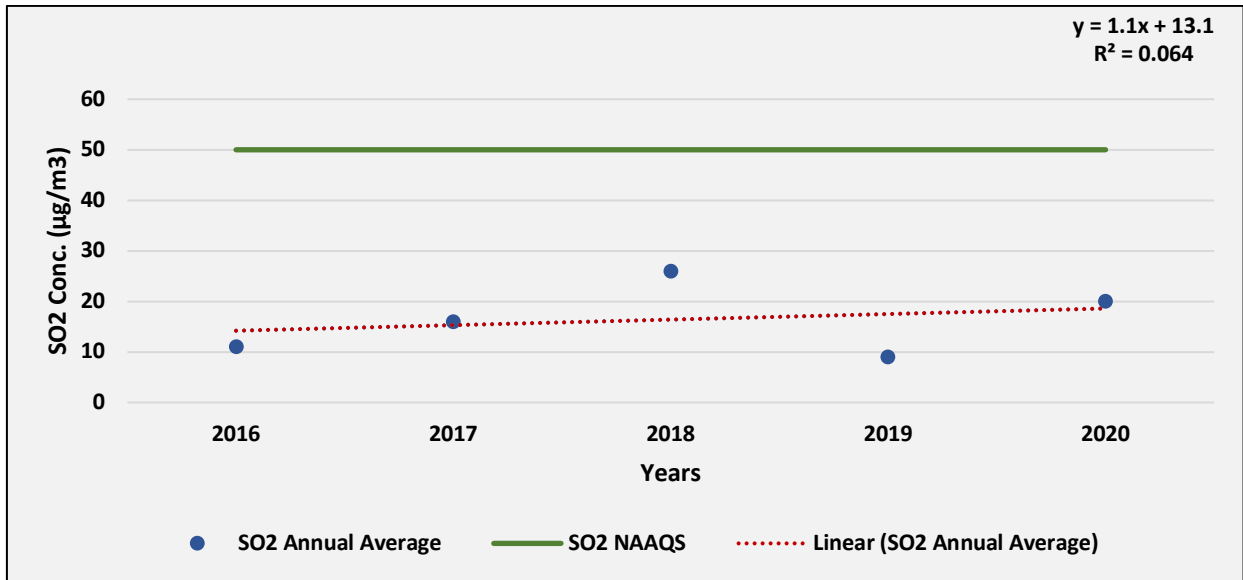


Fig. SIK23: Trend of annual mean SO₂ ambient air concentration in Sikka TPP (Ambient 3)

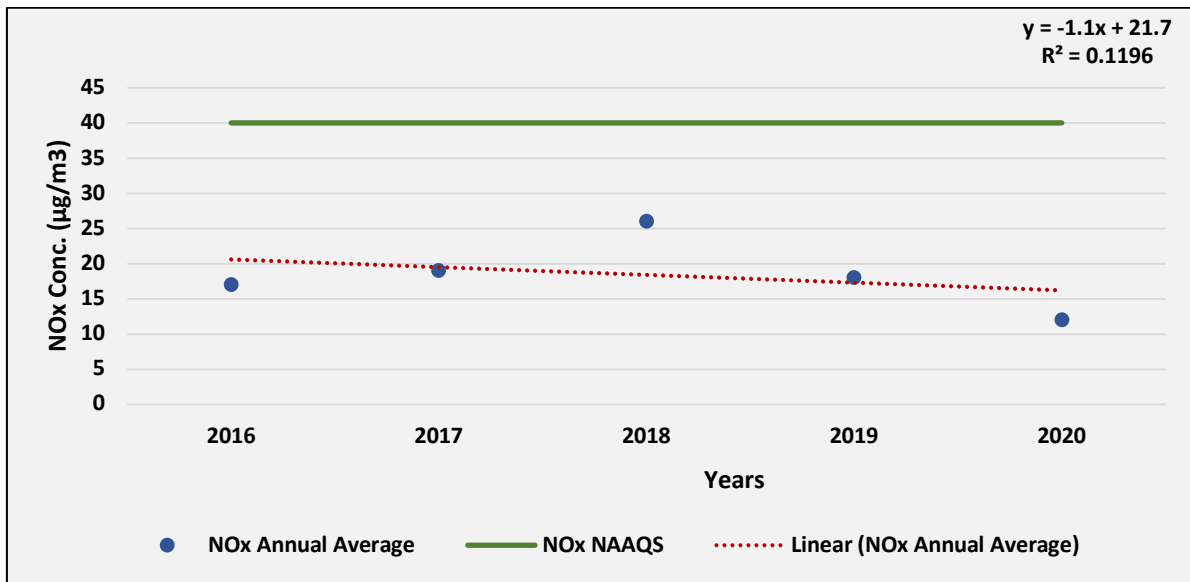


Fig. SIK24: Trend of annual mean NO_x ambient air concentration in Sikka TPP (Ambient 3)

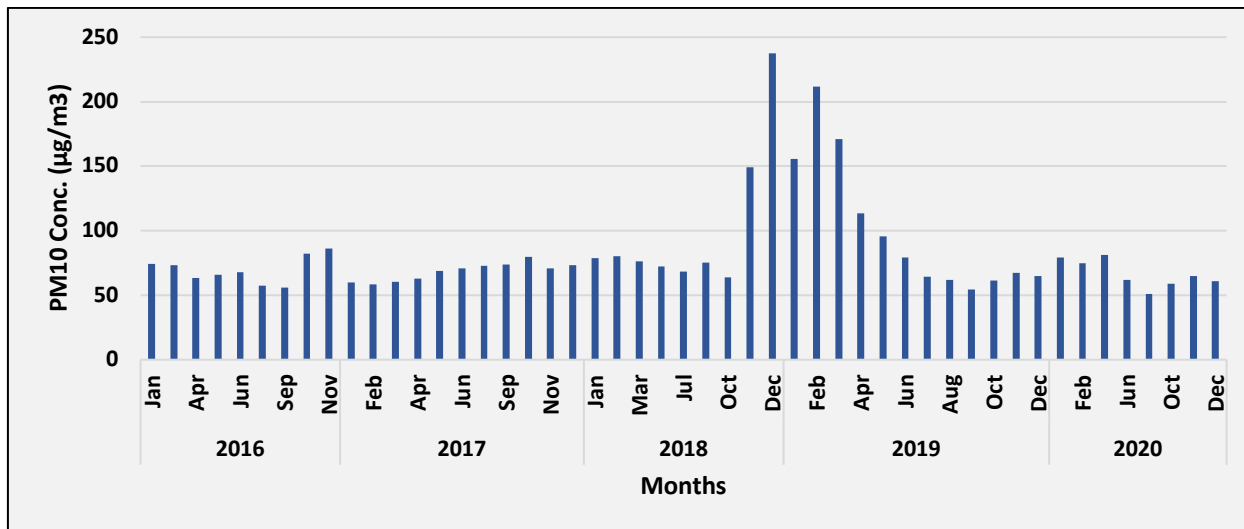


Fig. SIK25: Time series of monthly average PM_{10} ambient air concentration in Sikka TPP (Ambient 4)

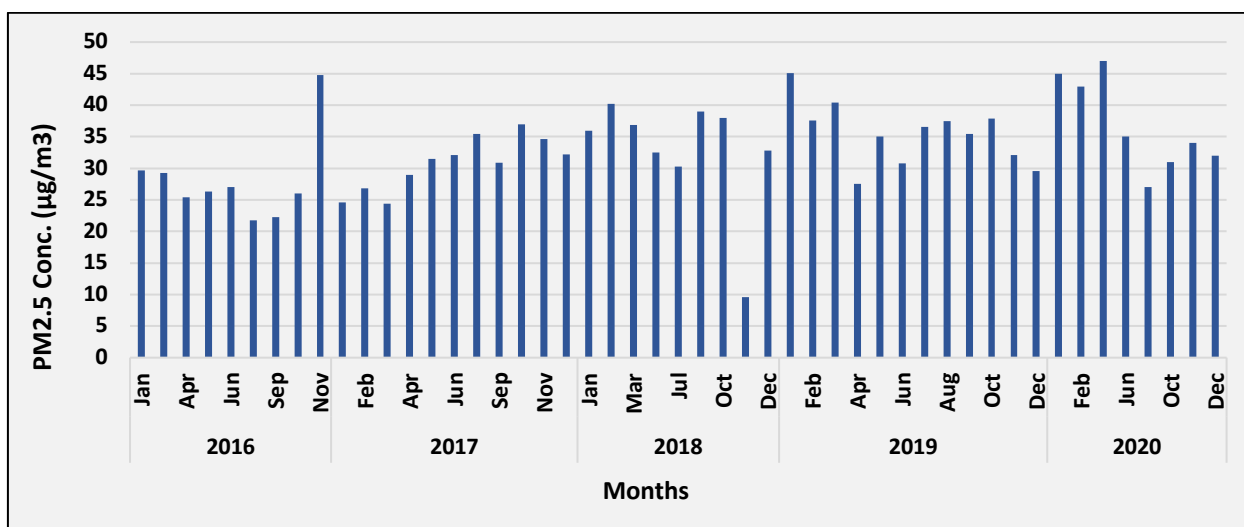


Fig. SIK26: Time series of monthly average $PM_{2.5}$ ambient air concentration in Sikka TPP (Ambient 4)

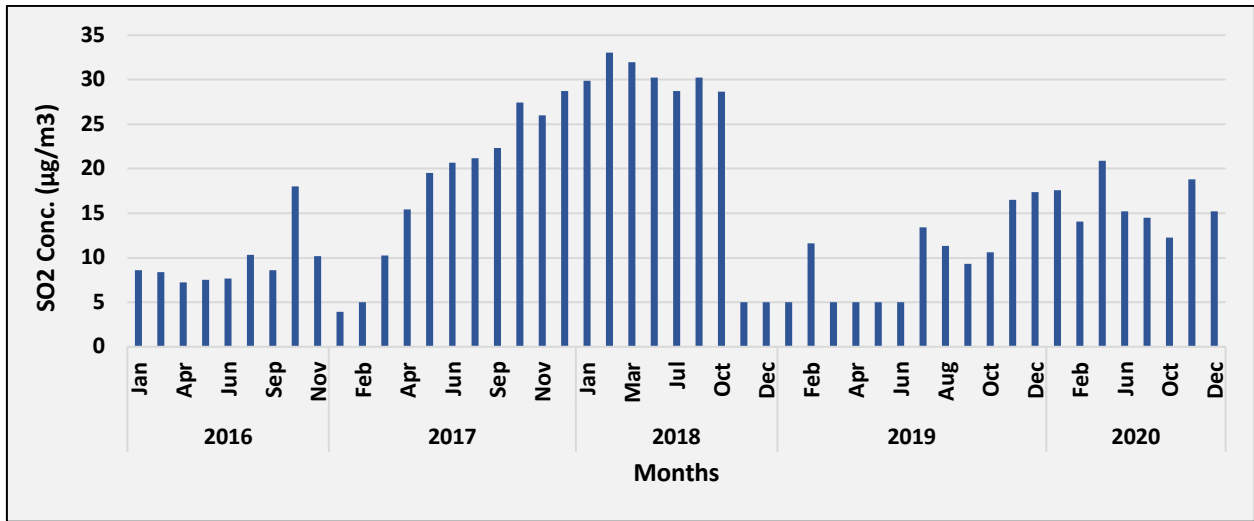


Fig. SIK27: Time series of monthly average SO_2 ambient air concentration in Sikka TPP (Ambient 4)

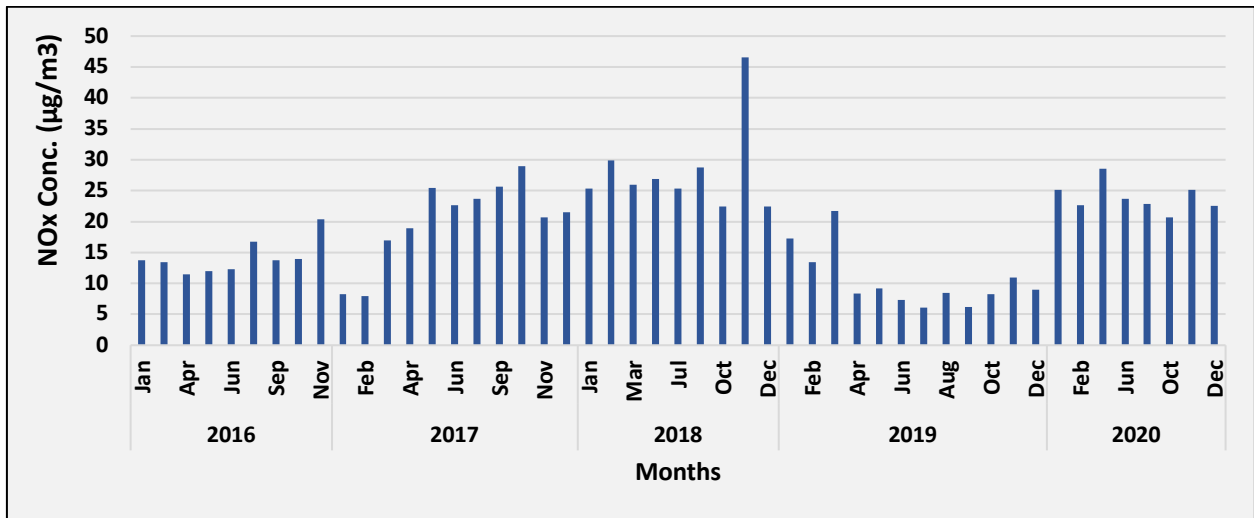


Fig. SIK28: Time series of monthly average NO_x ambient air concentration in Sikka TPP (Ambient 4)

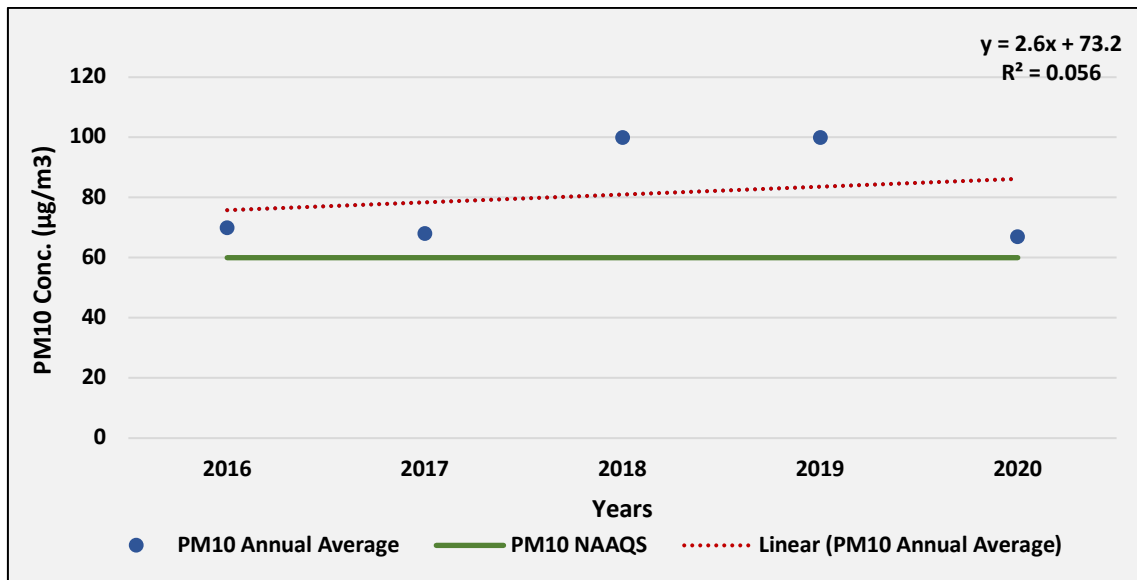


Fig. SIK29: Trend of annual mean PM_{10} ambient air concentration in Sikka TPP (Ambient 4)

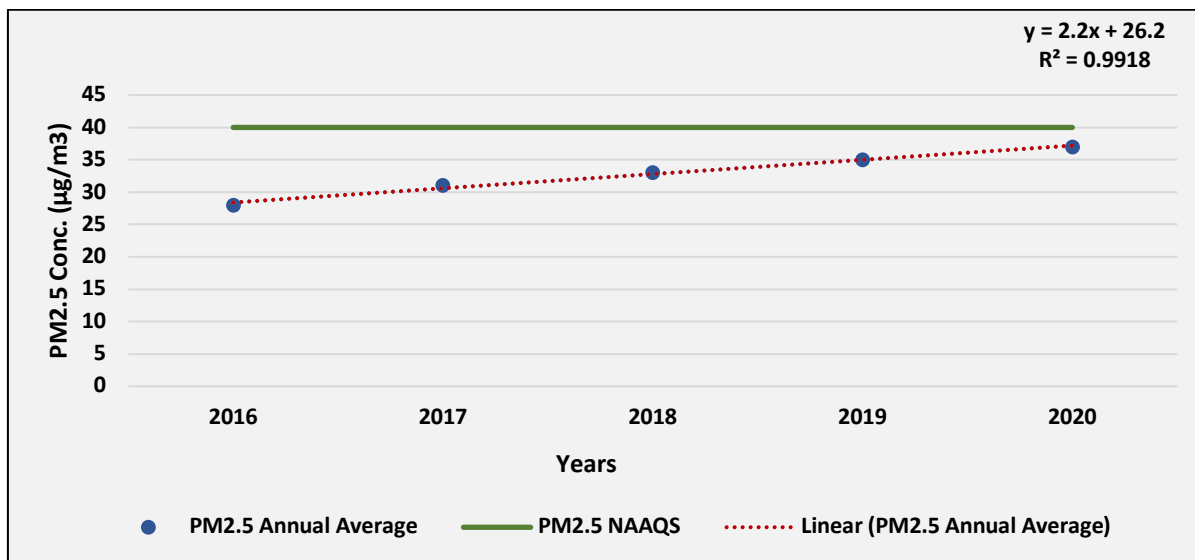


Fig. SIK30: Trend of annual mean $PM_{2.5}$ ambient air concentration in Sikka TPP (Ambient 4)

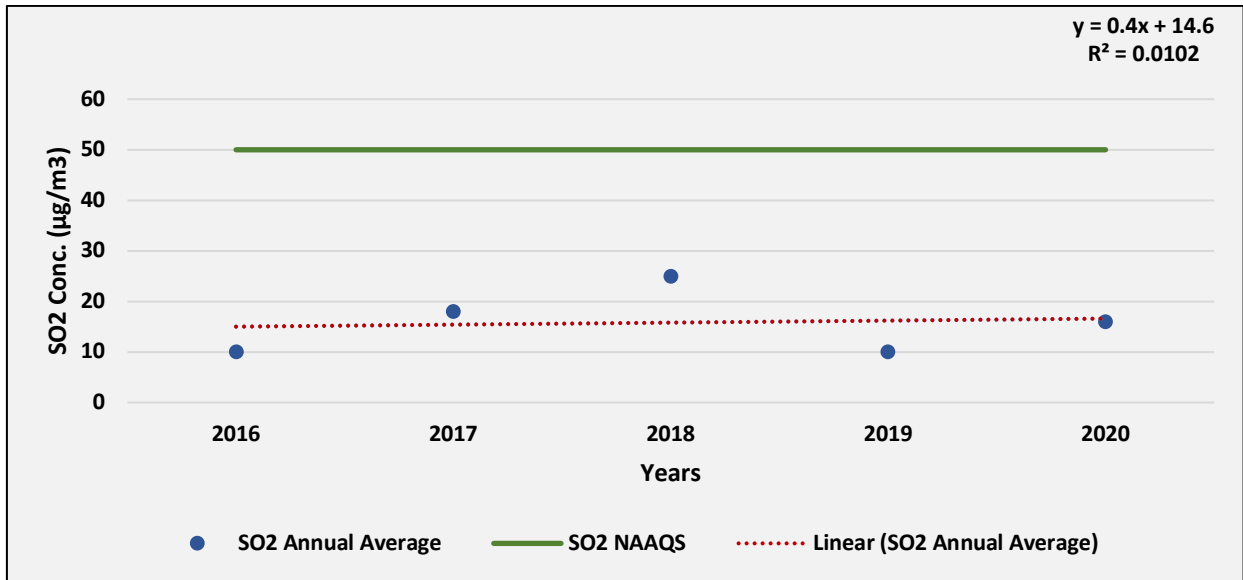


Fig. SIK31: Trend of annual mean SO₂ ambient air concentration in Sikka TPP (Ambient 4)

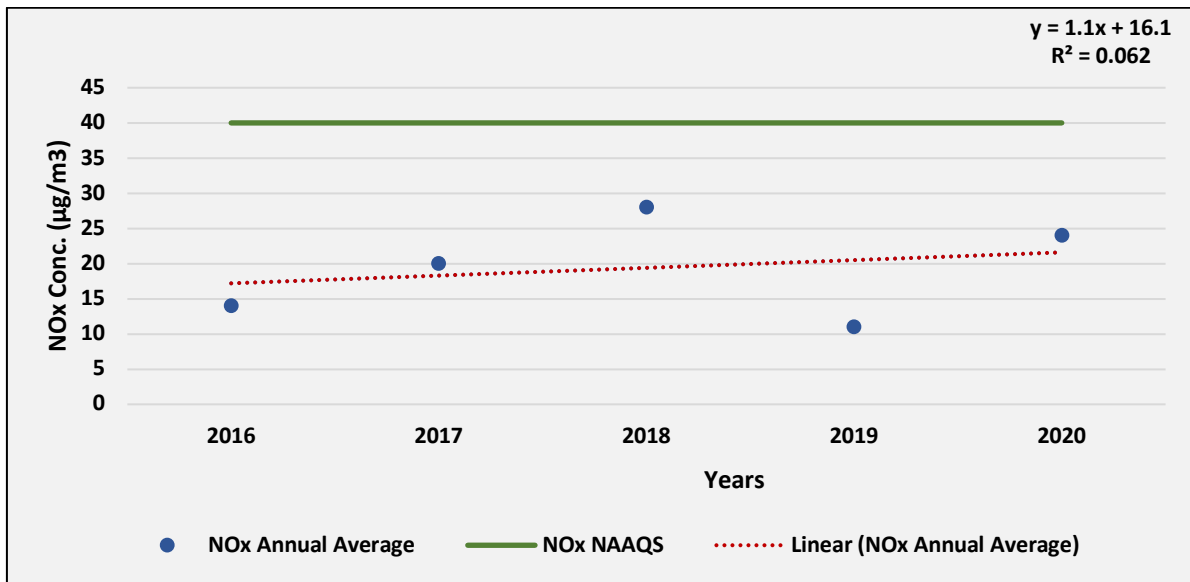


Fig. SIK32: Trend of annual mean NO_x ambient air concentration in Sikka TPP (Ambient 4)

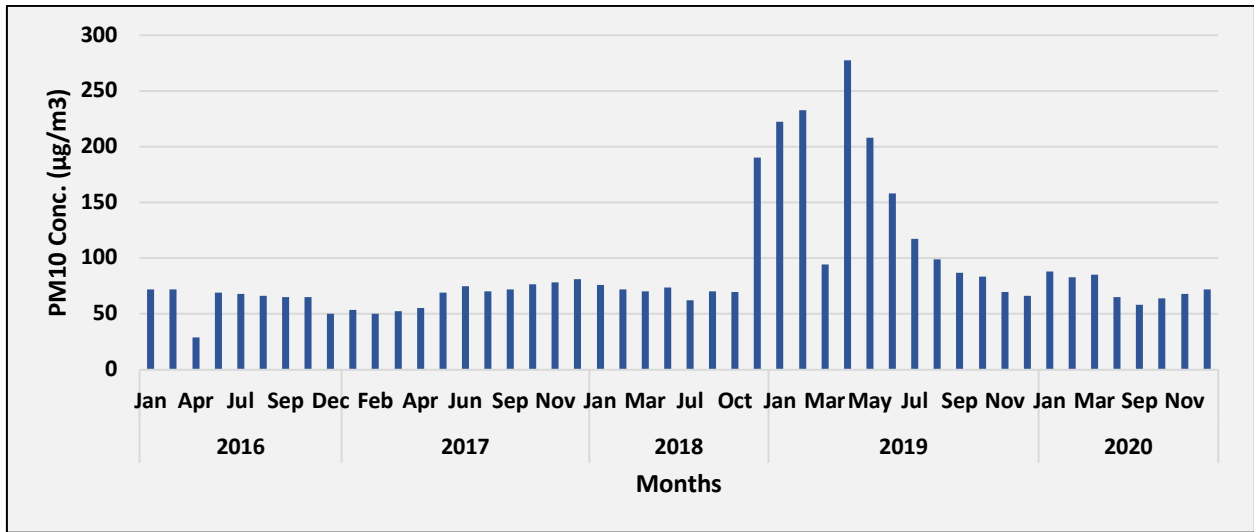


Fig. SIK33: Time series of monthly average PM₁₀ ambient air concentration in Sikka TPP (Ambient 5)

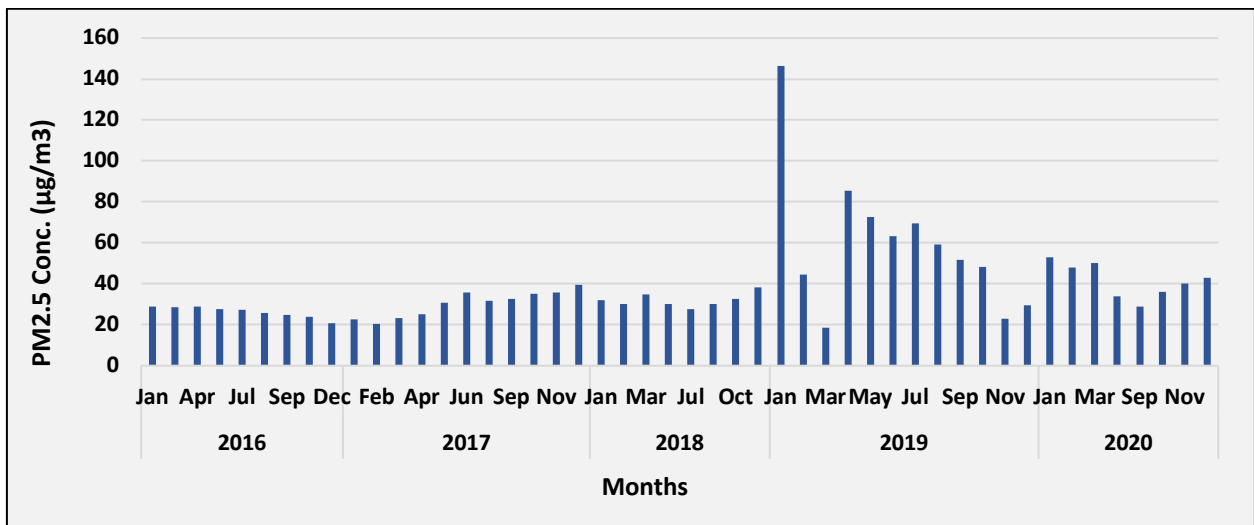


Fig. SIK34: Time series of monthly average PM_{2.5} ambient air concentration in Sikka TPP (Ambient 5)

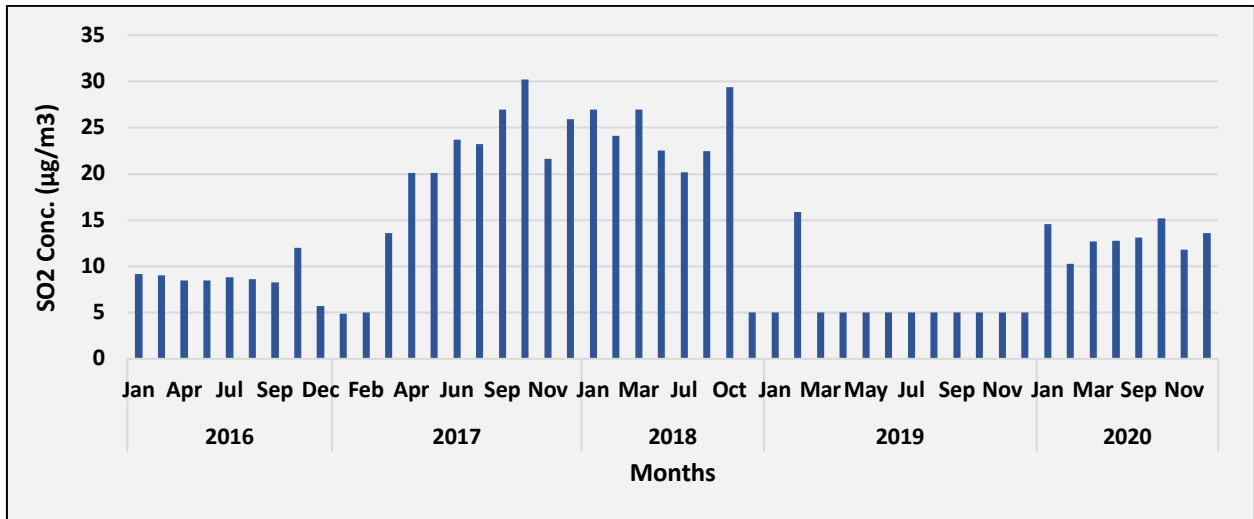


Fig. SIK35: Time series of monthly average SO_2 ambient air concentration in Sikka TPP (Ambient 5)

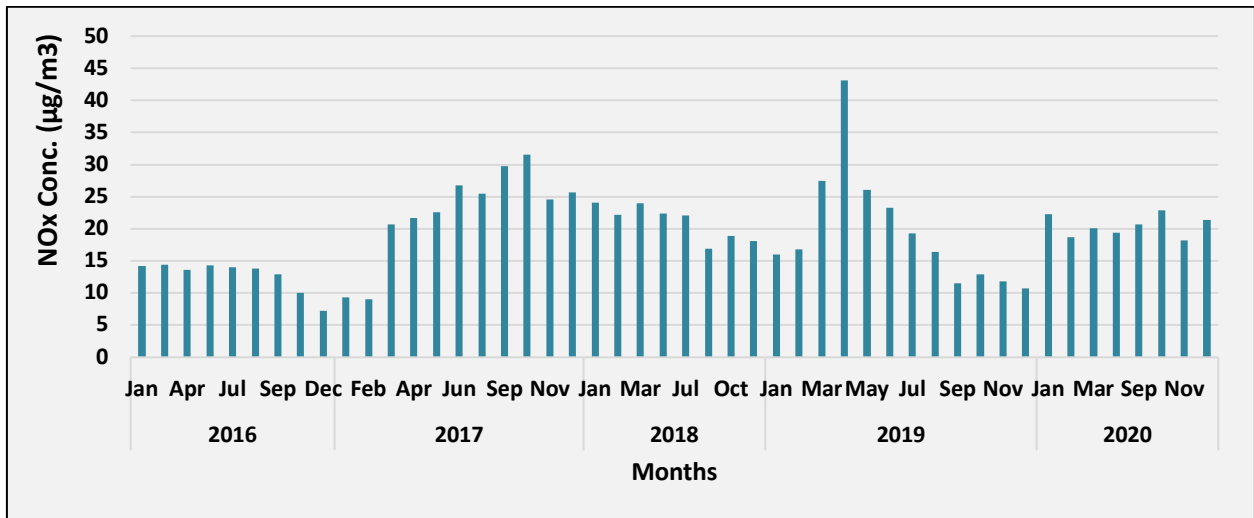


Fig. SIK36: Time series of monthly average NO_x ambient air concentration in Sikka TPP (Ambient 5)

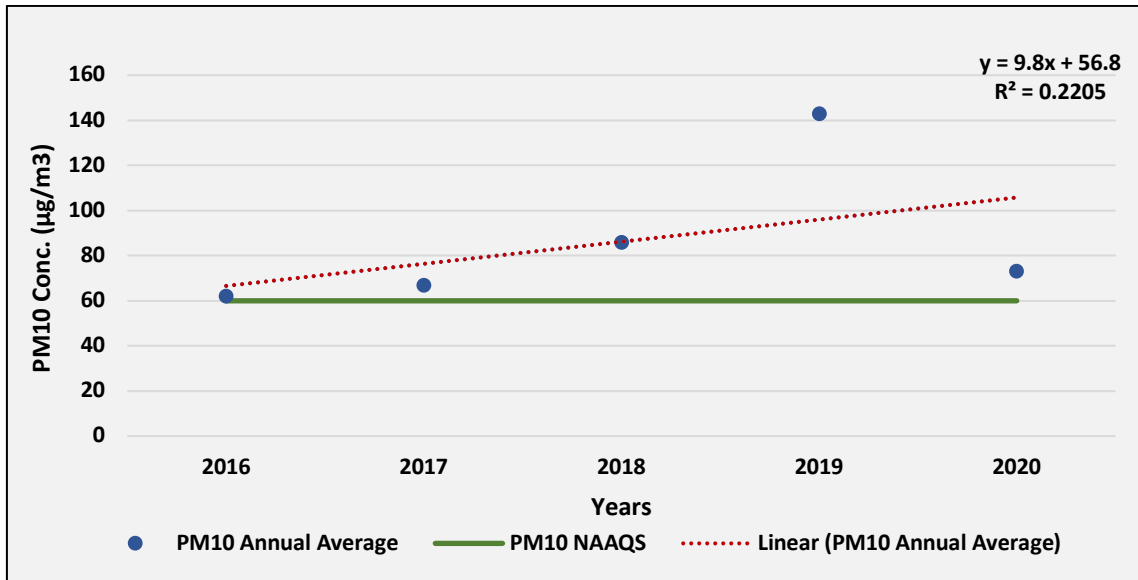


Fig. SIK37: Trend of annual mean PM_{10} ambient air concentration in Sikka TPP (Ambient 5)

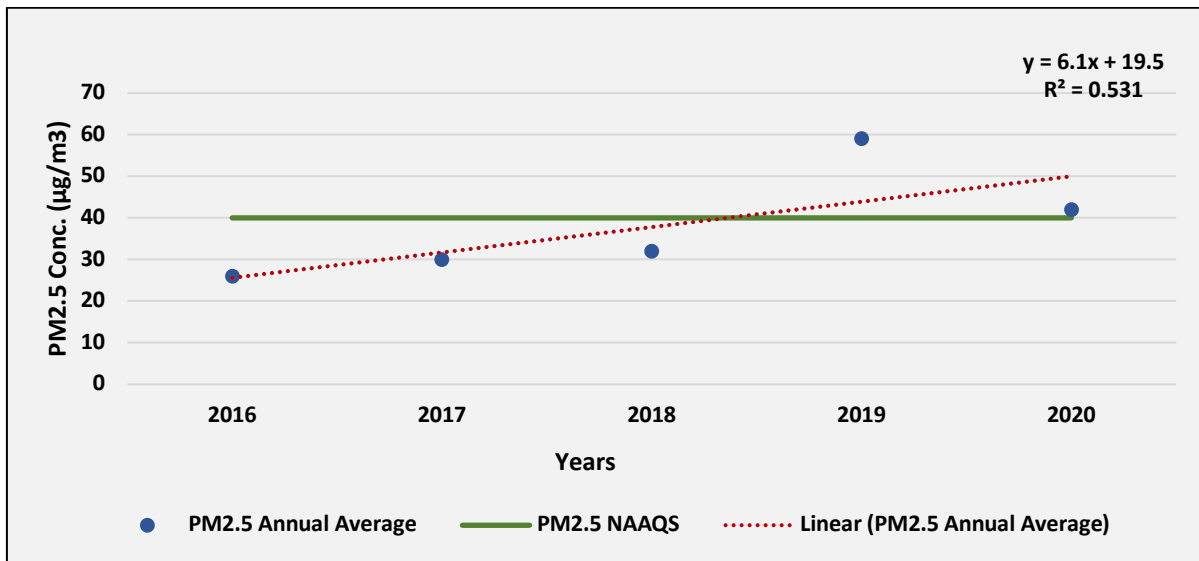


Fig. SIK38: Trend of annual mean $PM_{2.5}$ ambient air concentration in Sikka TPP (Ambient 5)

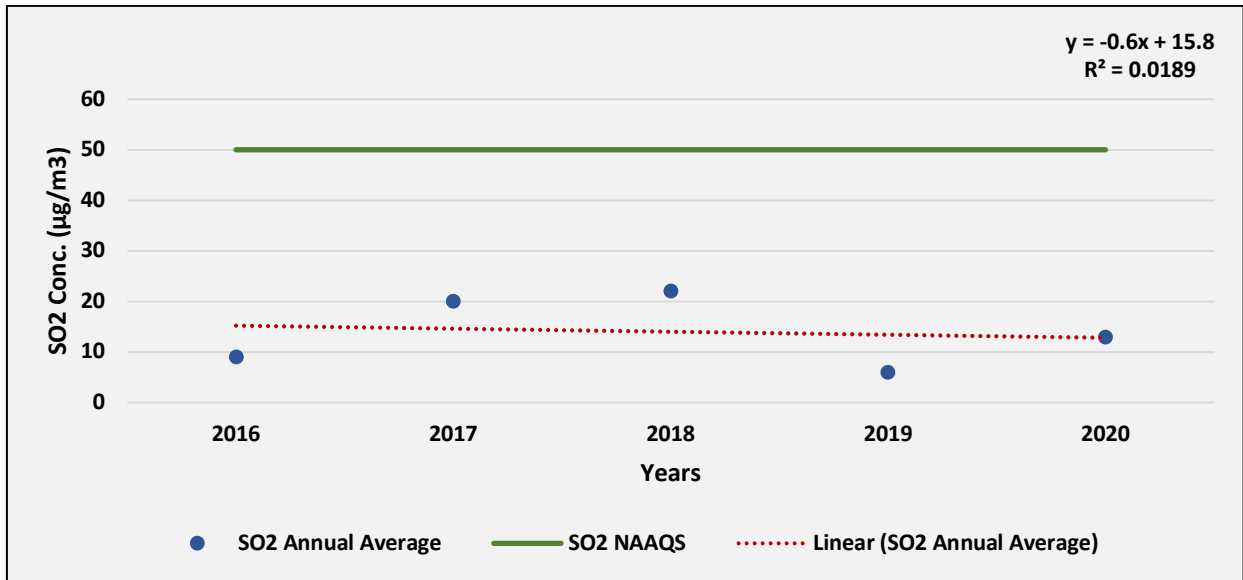


Fig. SIK39: Trend of annual mean SO₂ ambient air concentration in Sikka TPP (Ambient 5)

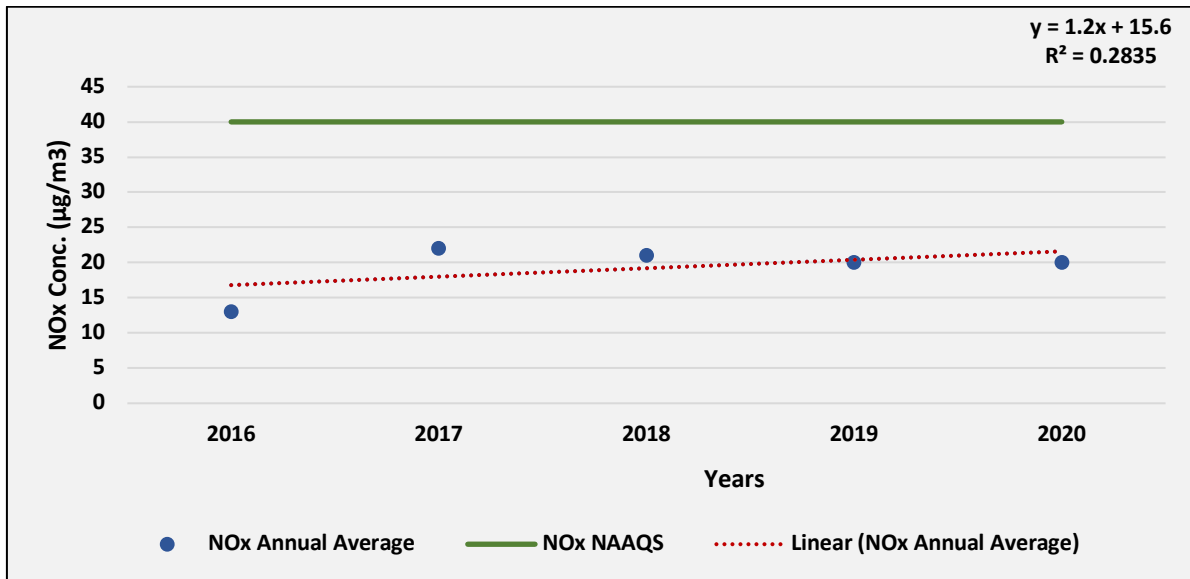


Fig. SIK40: Trend of annual mean NO_x ambient air concentration in Sikka TPP (Ambient 5)

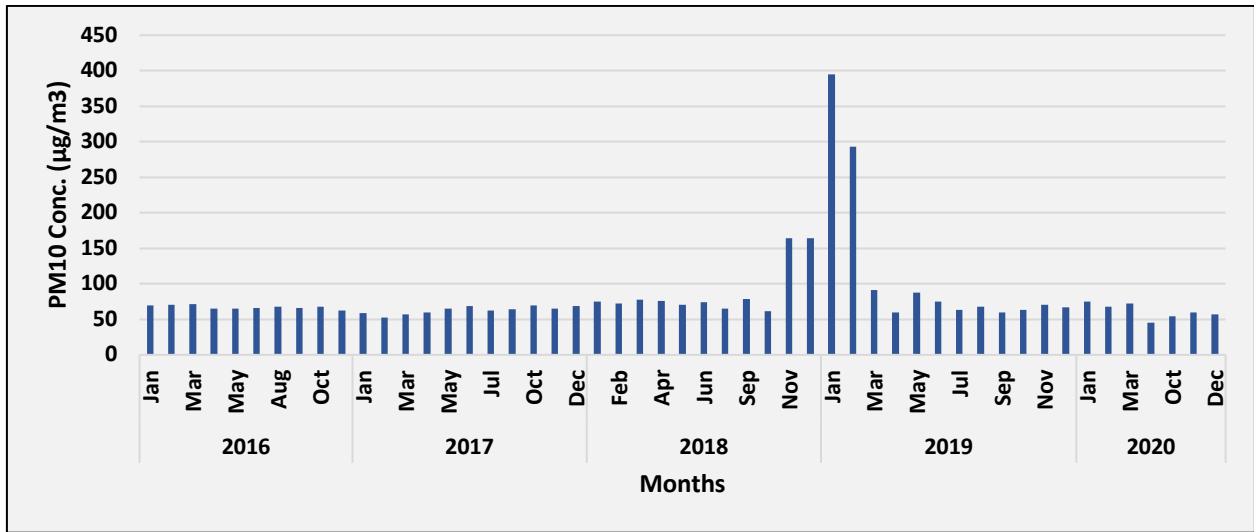


Fig. SIK41: Time series of monthly average PM_{10} ambient air concentration in Sikka TPP (Ambient 6)

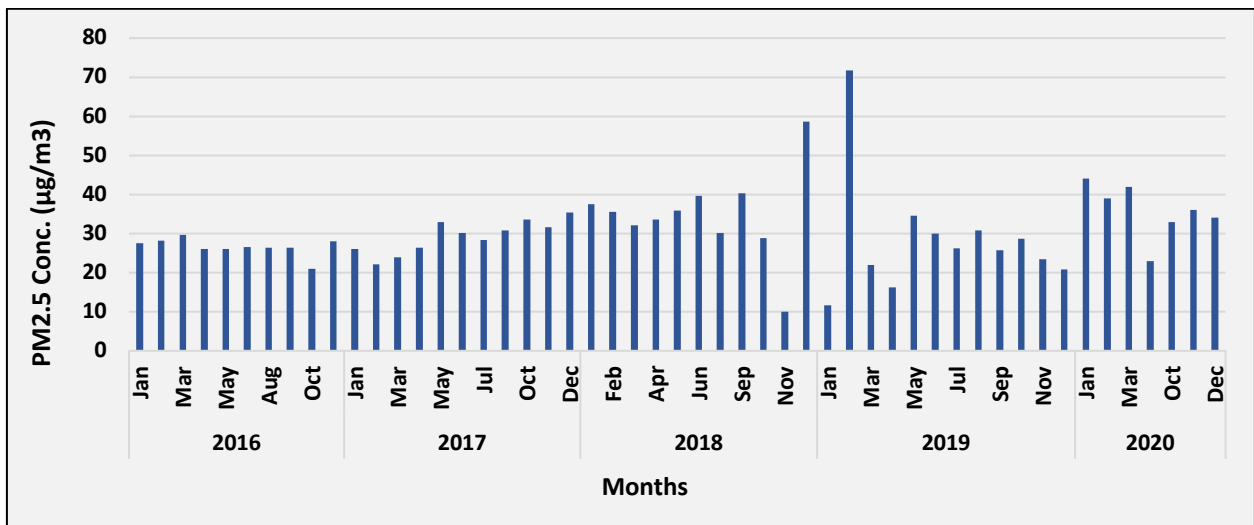


Fig. SIK42: Time series of monthly average $PM_{2.5}$ ambient air concentration in Sikka TPP (Ambient 6)

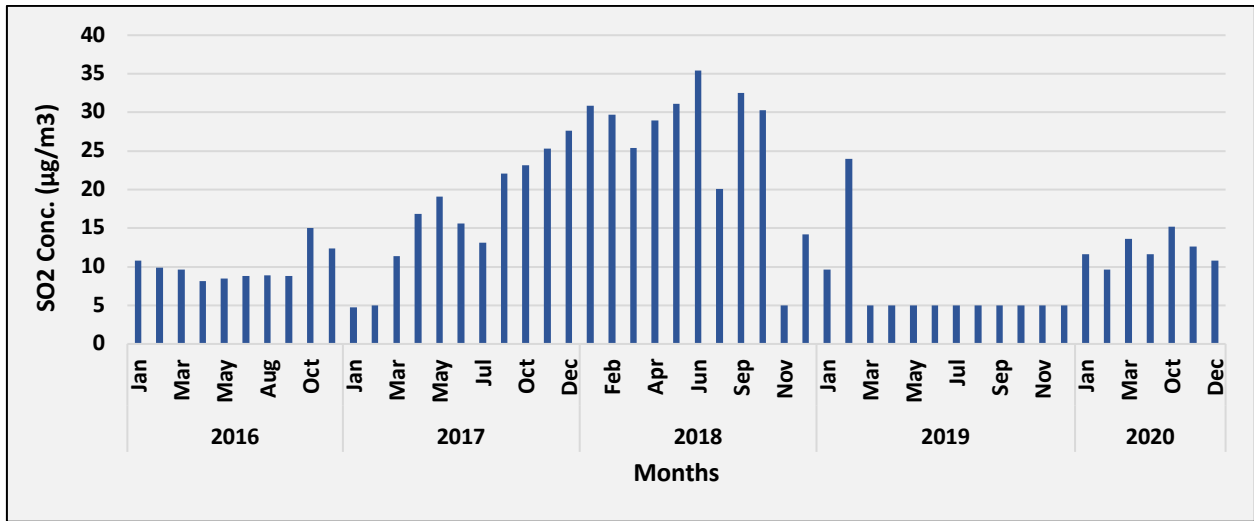


Fig. SIK43: Time series of monthly average SO_2 ambient air concentration in Sikka TPP (Ambient 6)

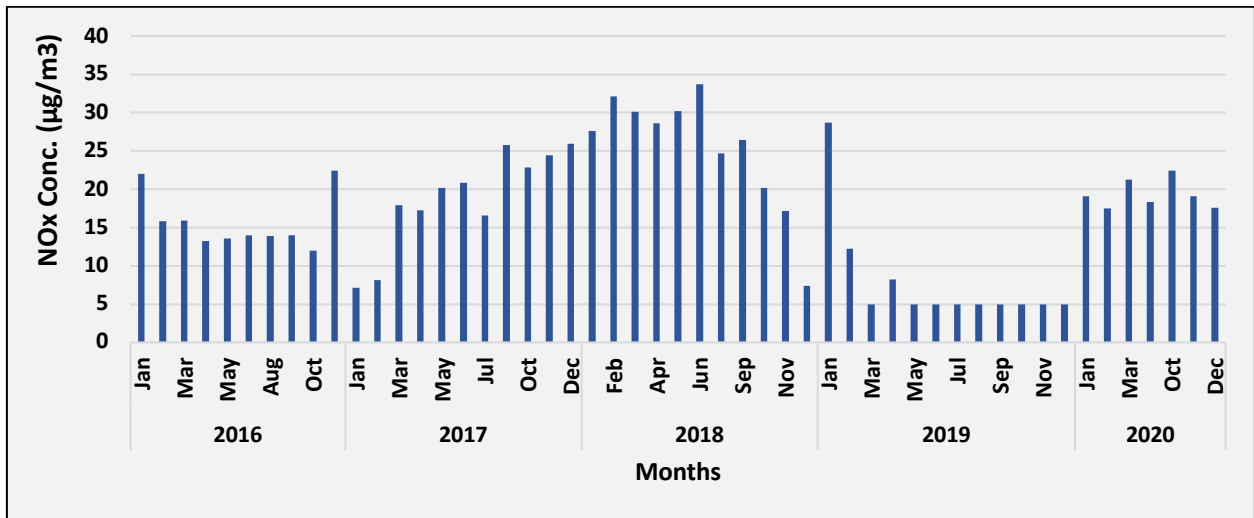


Fig. SIK44: Time series of monthly average NO_x ambient air concentration in Sikka TPP (Ambient 6)

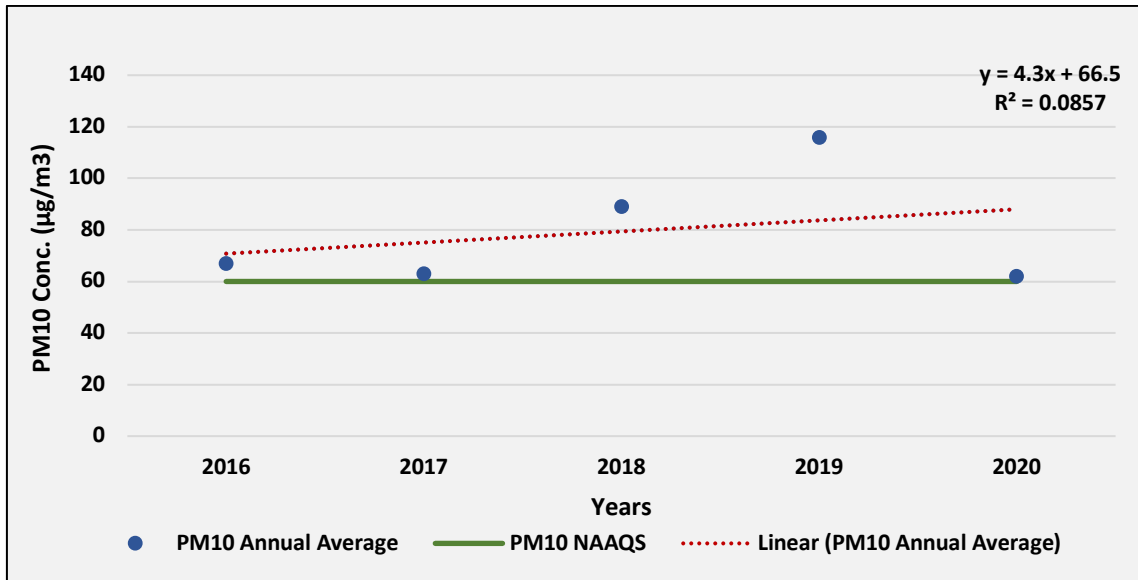


Fig. SIK45: Trend of annual mean PM_{10} ambient air concentration in Sikka TPP (Ambient 6)

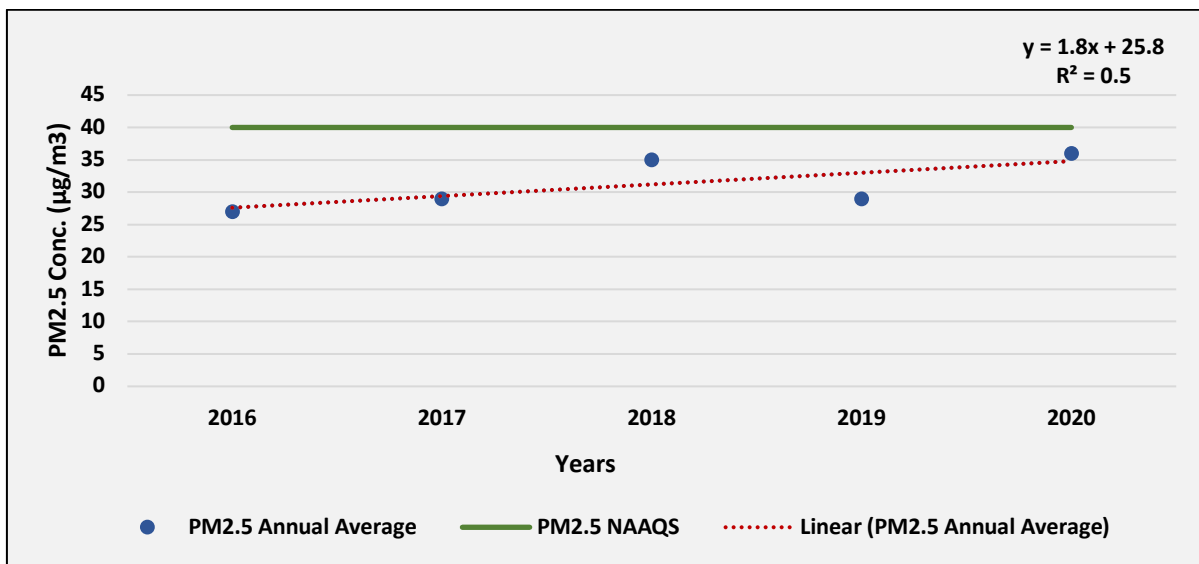


Fig. SIK46: Trend of annual mean $PM_{2.5}$ ambient air concentration in Sikka (Ambient 6)

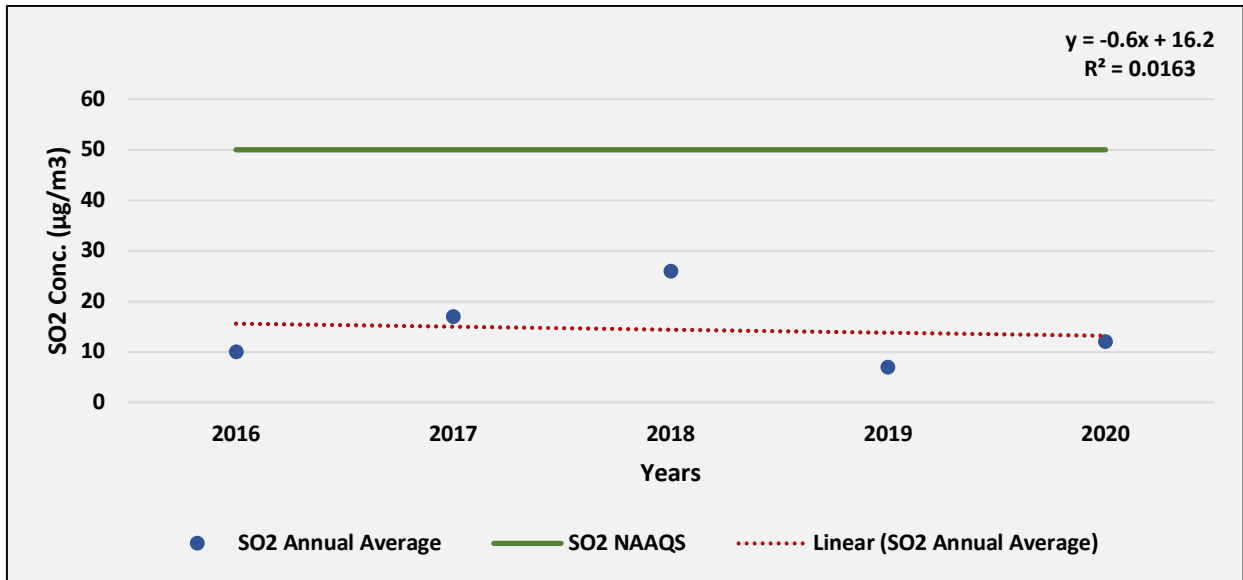


Fig. SIK47: Trend of annual mean SO₂ ambient air concentration in Sikka TPP (Ambient 6)

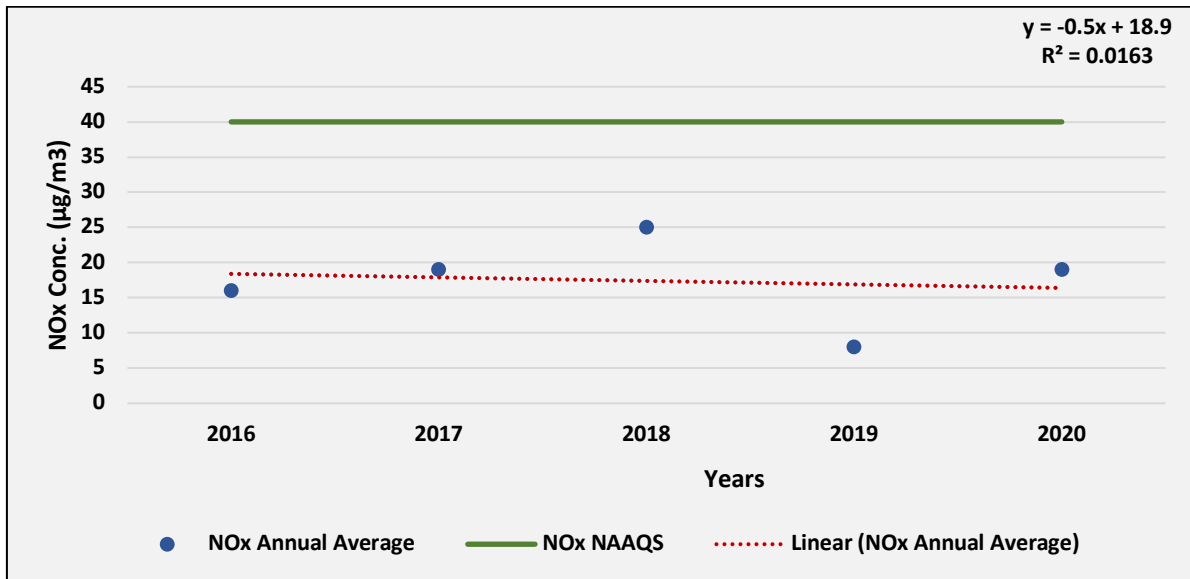


Fig. SIK48: Trend of annual mean NO_x ambient air concentration in Sikka TPP (Ambient 6)

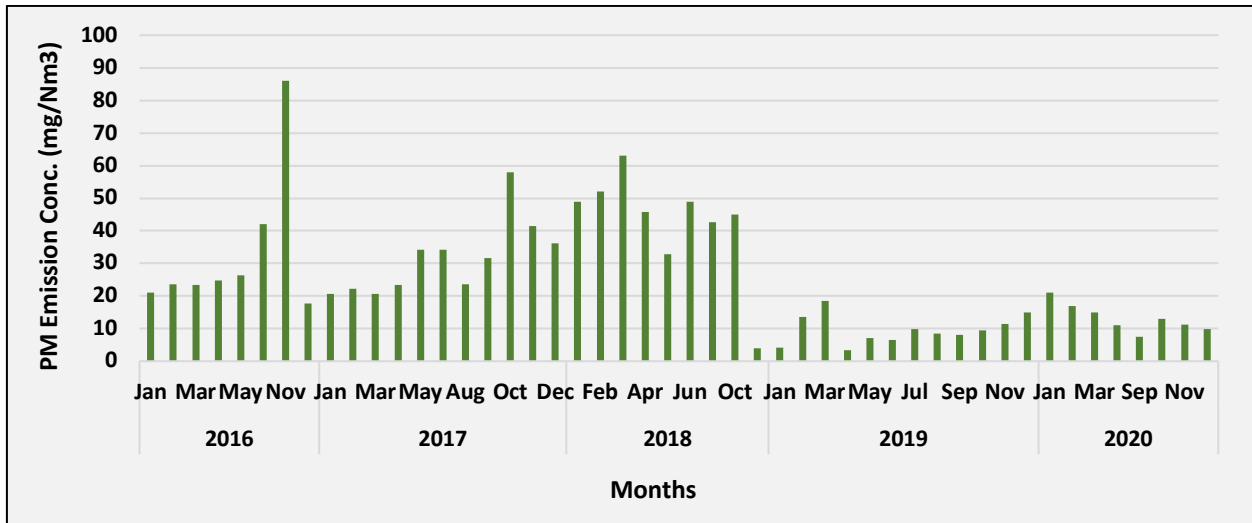


Fig. SIK49: Time series of monthly average PM Emission concentration in Sikka TPP (Unit 3)

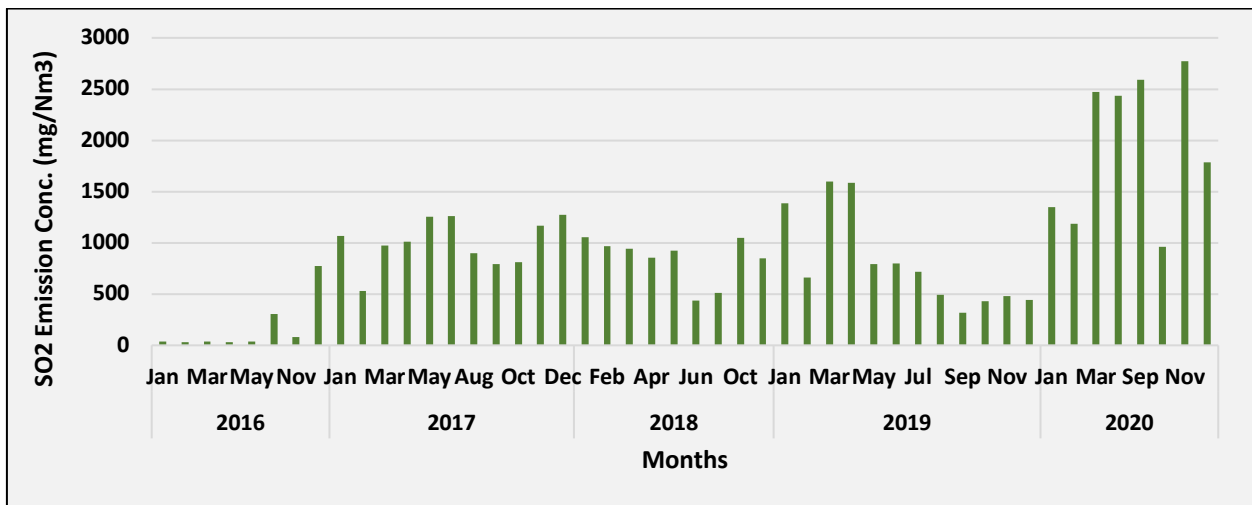


Fig. SIK50: Time series of monthly average SO₂ Emission concentration in Sikka TPP (Unit 3)

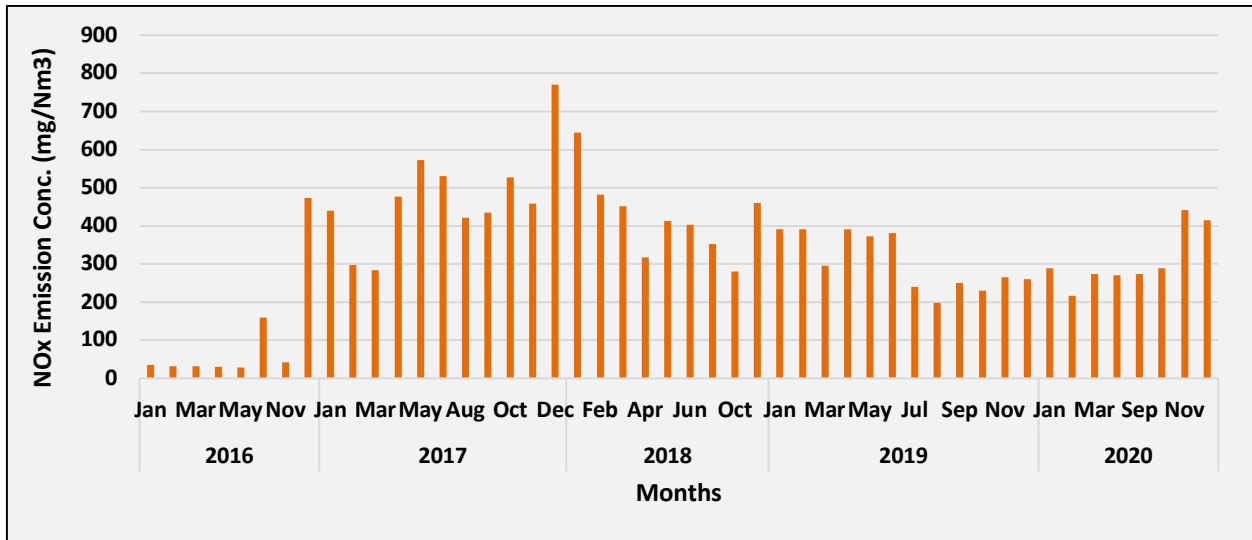


Fig. SIK51: Time series of monthly average NO_x Emission concentration in Sikka TPP (Unit 3)

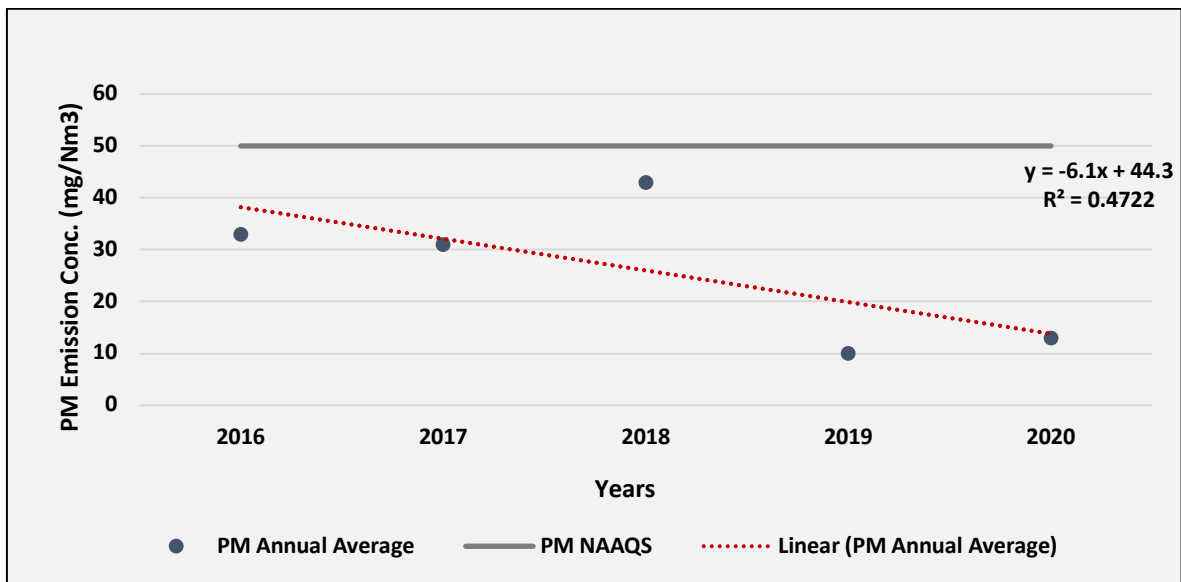


Fig. SIK52: Trend of annual mean PM Emission air concentration in Sikka TPP (Unit 3)

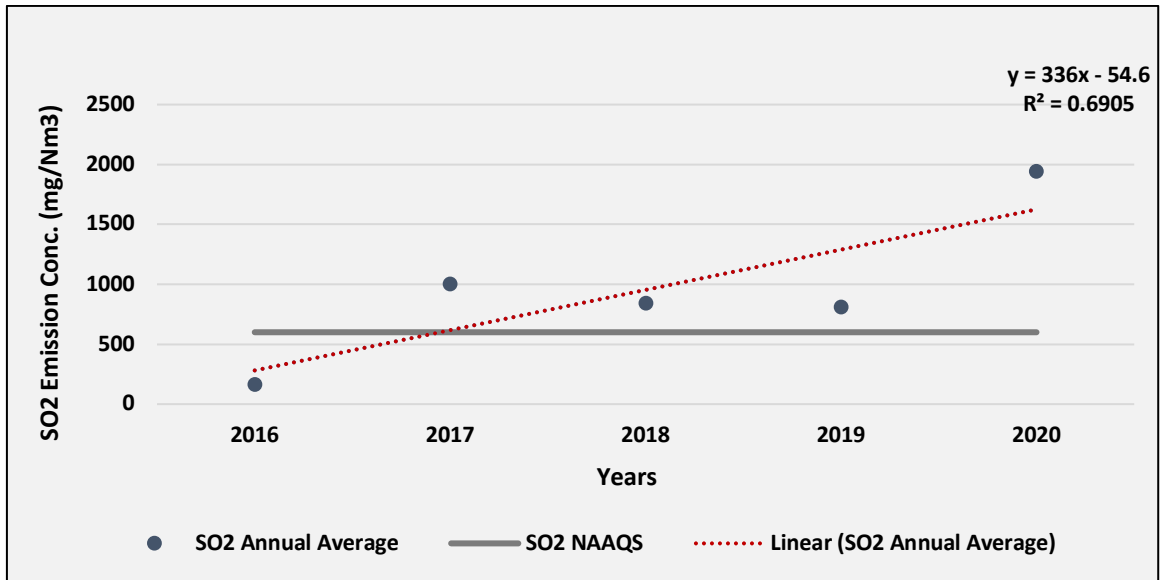


Fig. SIK52: Trend of annual mean SO₂ Emission air concentration in Sikka TPP (Unit 3)

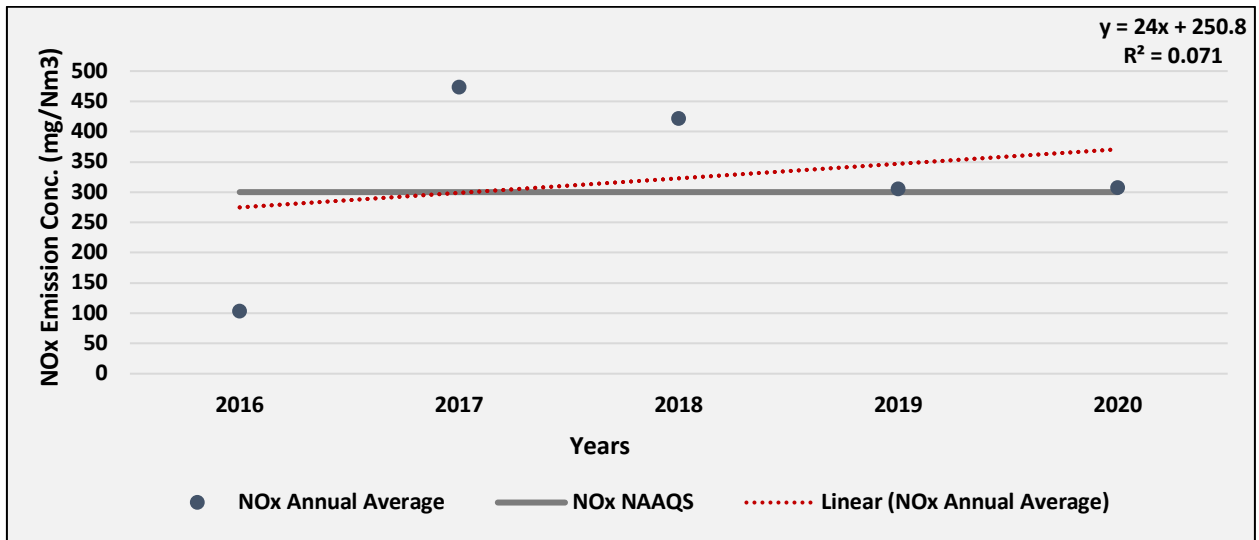


Fig. SIK54: Trend of annual mean NO_x Emission air concentration in Sikka TPP (Unit 3)

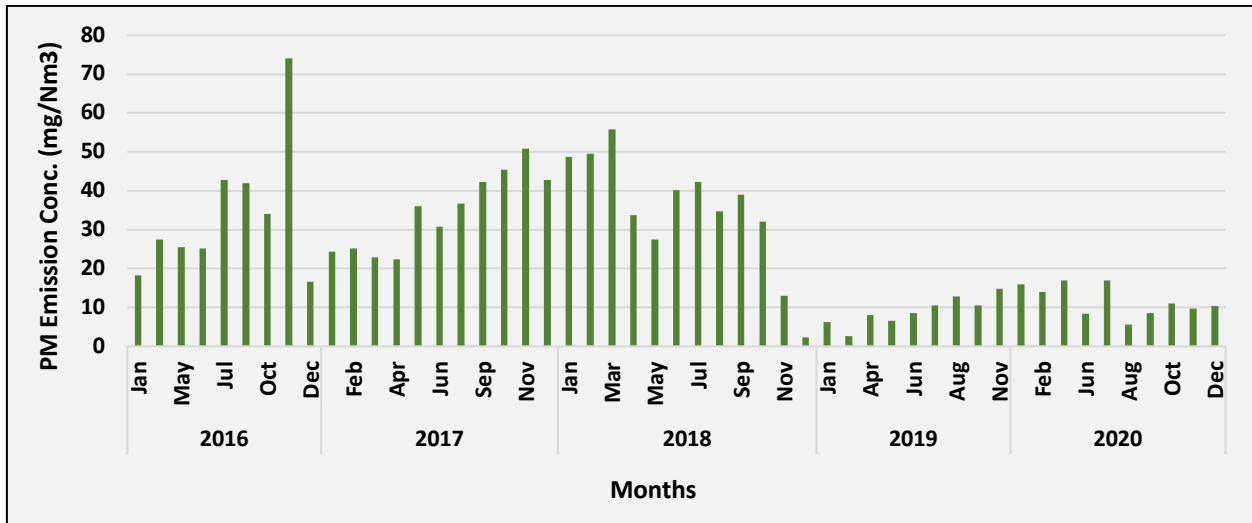


Fig. SIK55: Time series of monthly average PM Emission concentration in Sikka TPP (Unit 4)

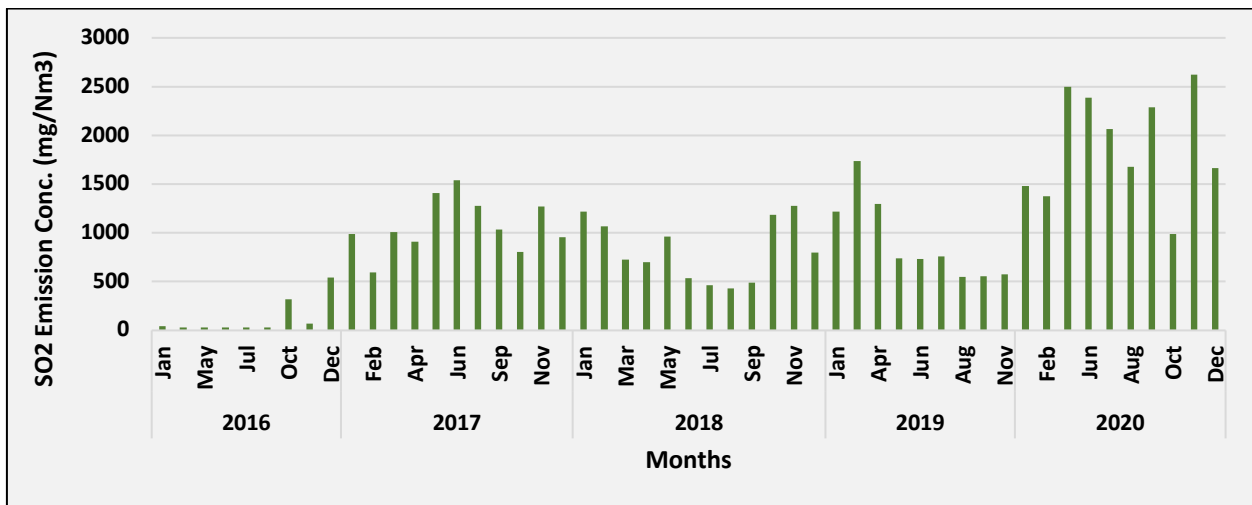


Fig. SIK56: Time series of monthly average SO₂ Emission concentration in Sikka TPP (Unit 4)

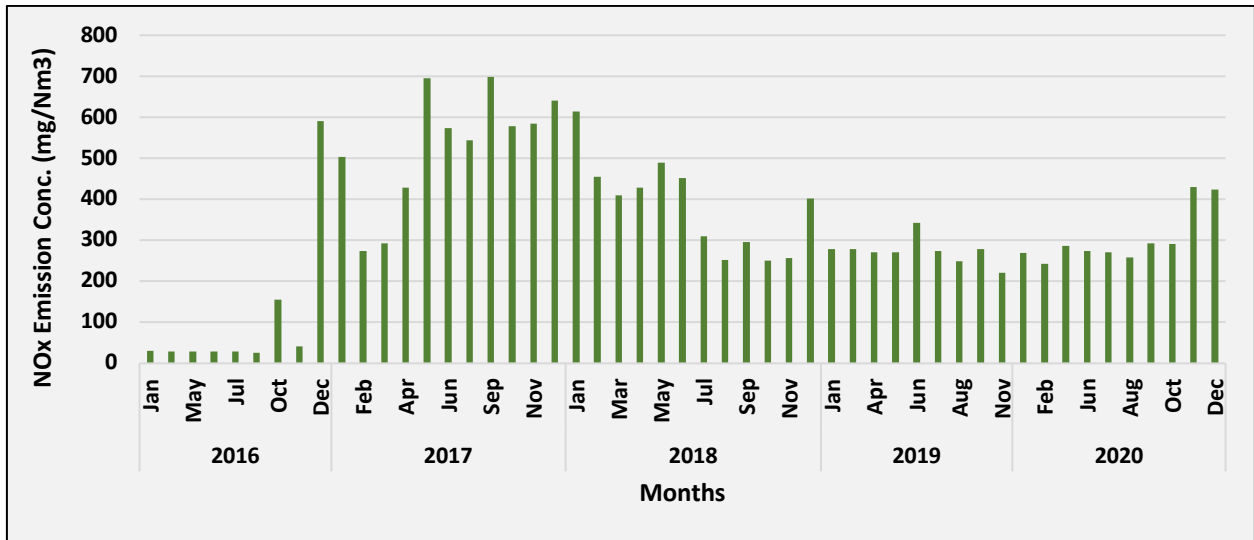


Fig. SIK57: Time series of monthly average NO_x Emission concentration in Sikka TPP (Unit 4)

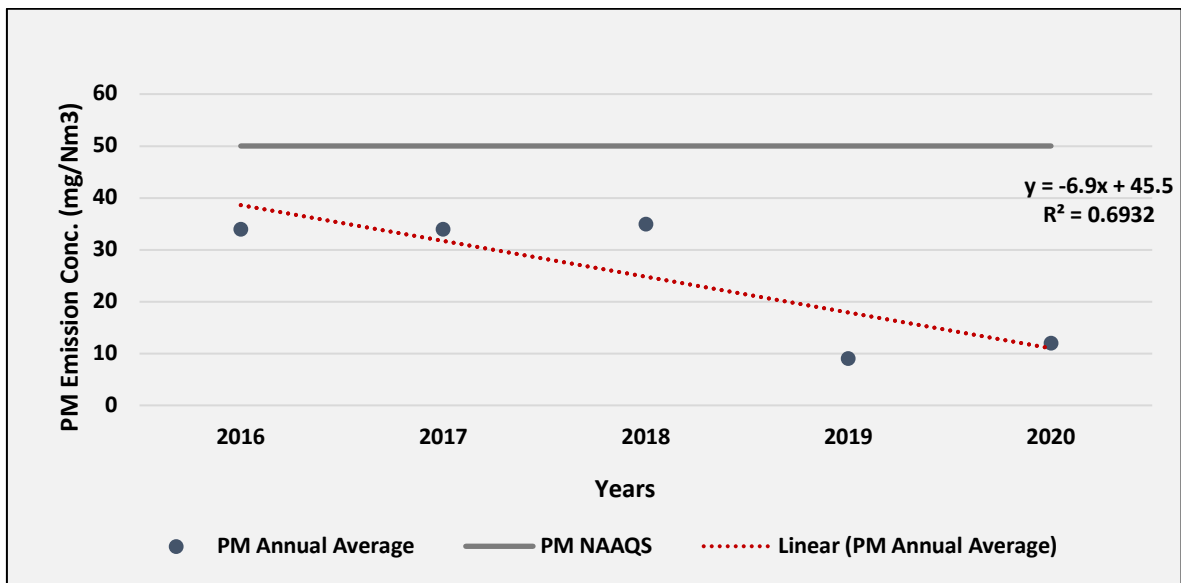


Fig. SIK58: Trend of annual mean PM Emission air concentration in Sikka TPP (Unit 4)

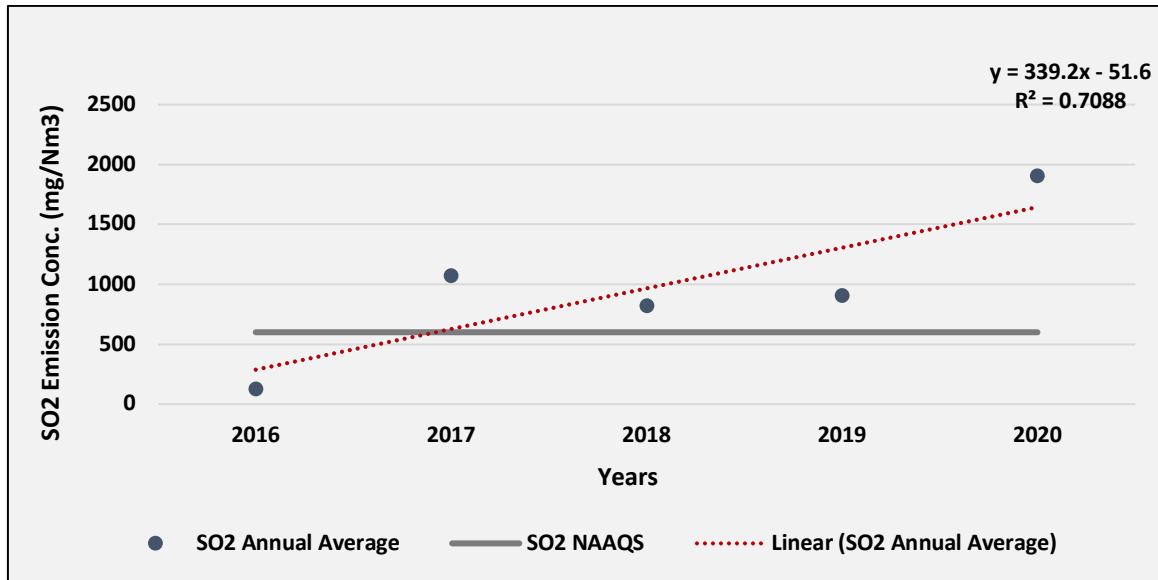


Fig. SIK59: Trend of annual mean SO₂ Emission air concentration in Sikka TPP (Unit 4)

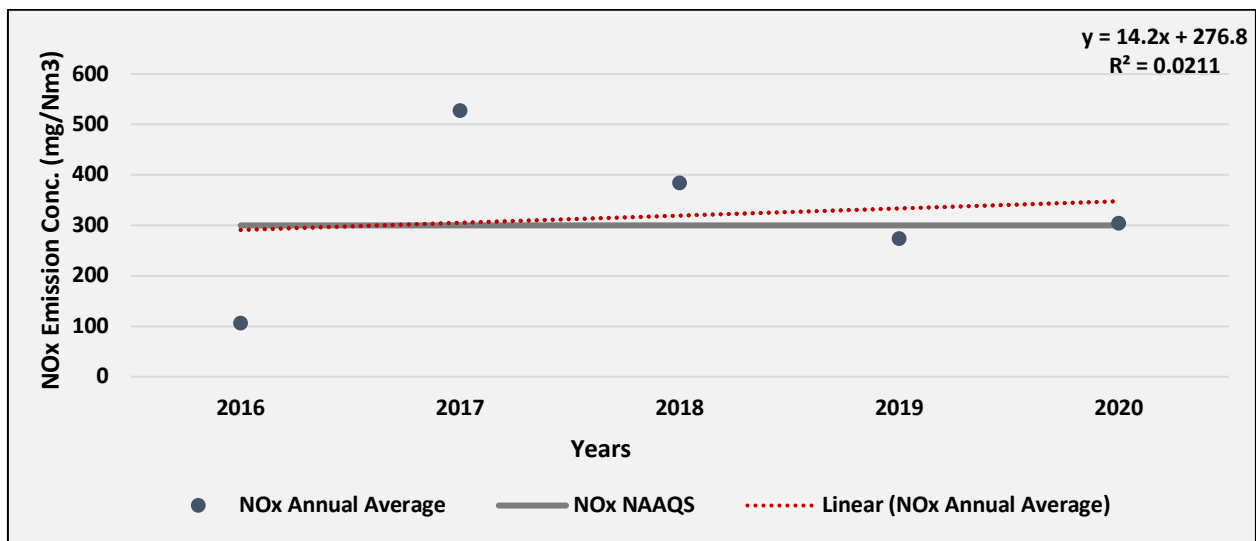


Fig. SIK60: Trend of annual mean NO_x Emission air concentration in Sikka TPP (Unit 4)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, is exceeding whereas the PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that SO₂ and NO_x parameter are higher than the emission norms. Emission of particulate matter is within the limit range.

UKAI THERMAL POWER PLANT

Ukai Thermal Power Station of the Gujarat State Electricity Corporation Limited, India, is a power station with an installed capacity of 1,110 MW. It is one of Gujarat's major coal-fired power plants, located on the bank of the Tapi River.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. UK1-Fig. UK56) for the last four years (2016-2020) using data provided by GSECL developer for Ukai Power plant, Gujarat, India.

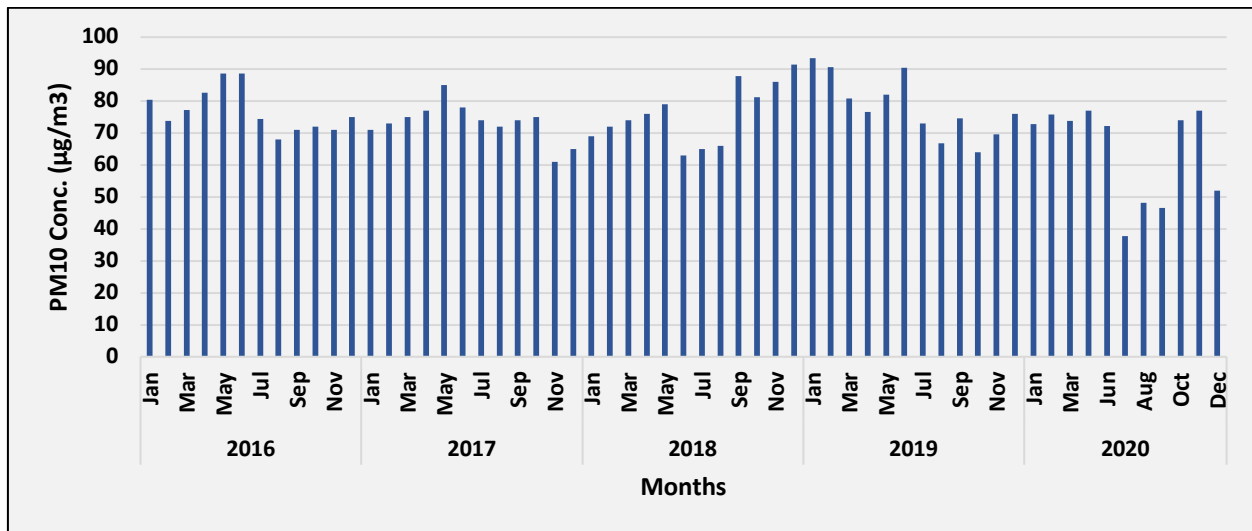


Fig. UK1: Time series of monthly average PM₁₀ ambient air concentration in Ukai TPP (Ambient 1)

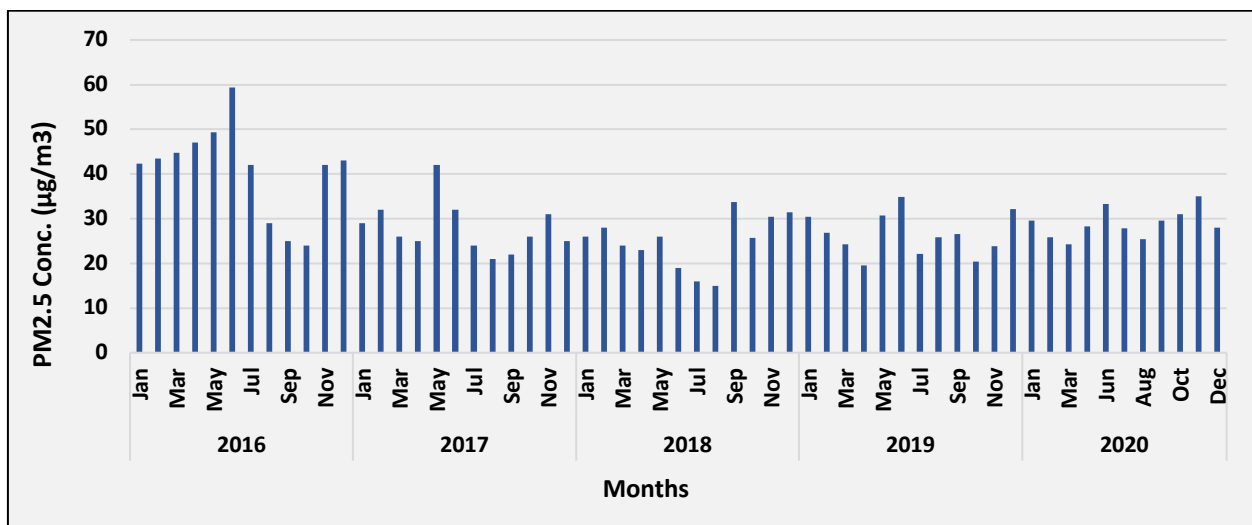


Fig. UK2: Time series of monthly average PM_{2.5} ambient air concentration in Ukai TPP (Ambient 1)

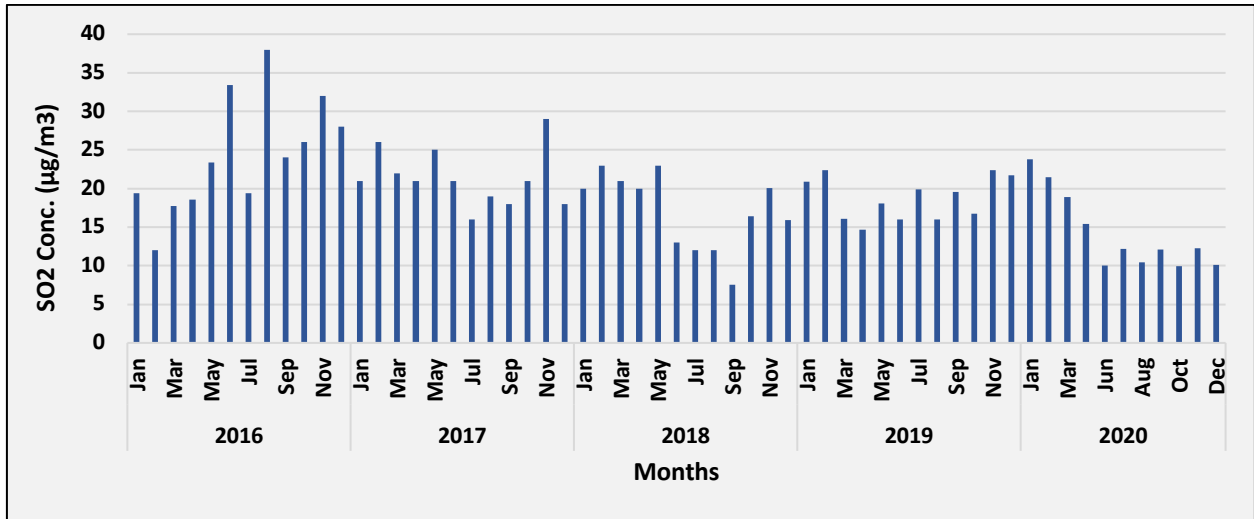


Fig. UK3: Time series of monthly average SO_2 ambient air concentration in Ukai TPP (Ambient 1)

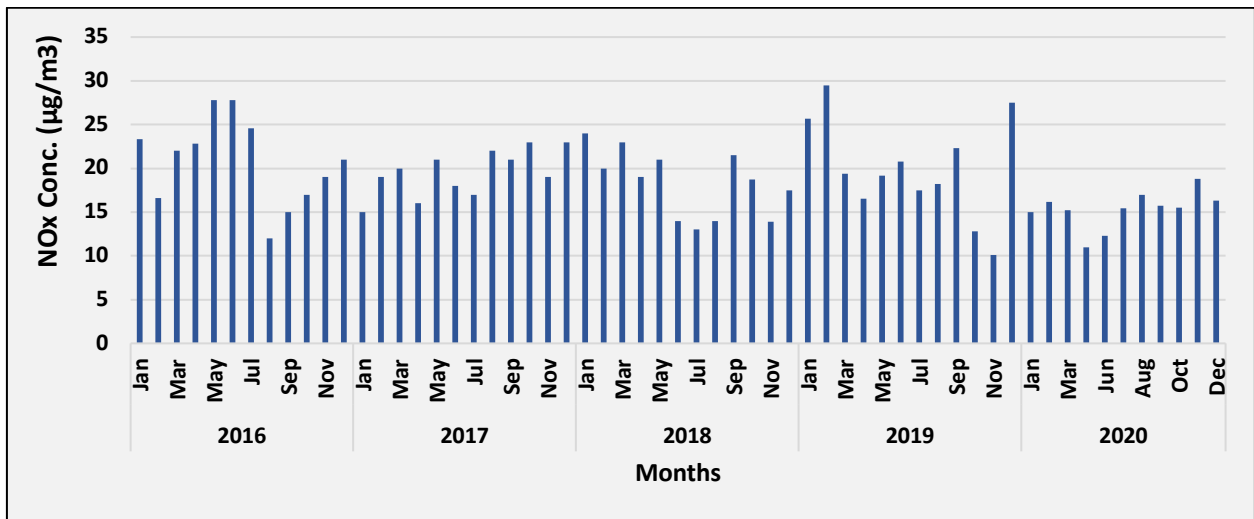


Fig. UK4: Time series of monthly average NO_x ambient air concentration in Ukai TPP (Ambient 1)

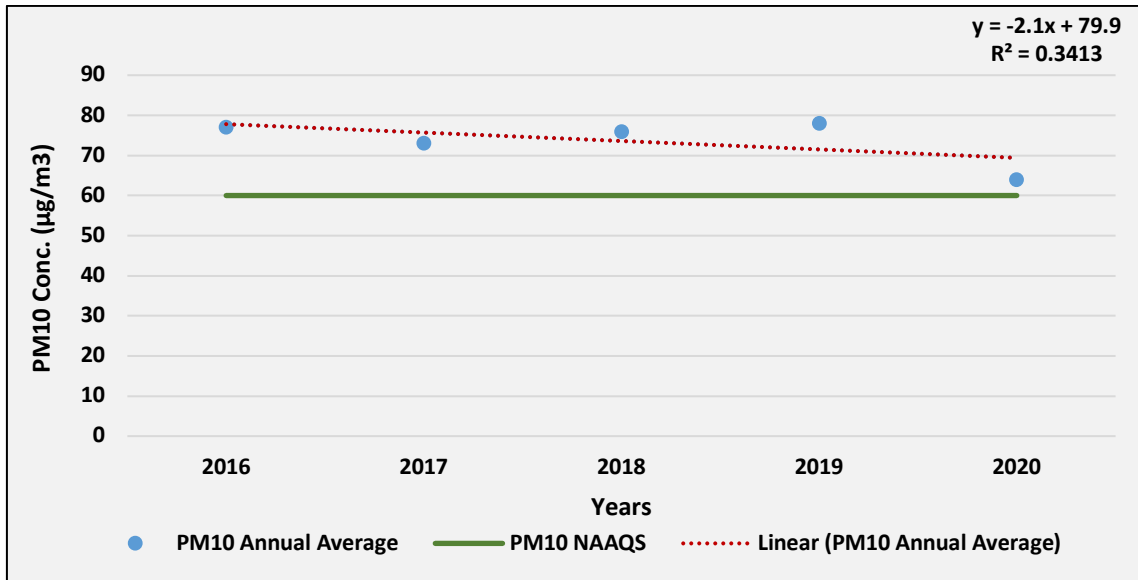


Fig. UK5: Trend of annual mean PM_{10} ambient air concentration in Ukai TPP (Ambient 1)

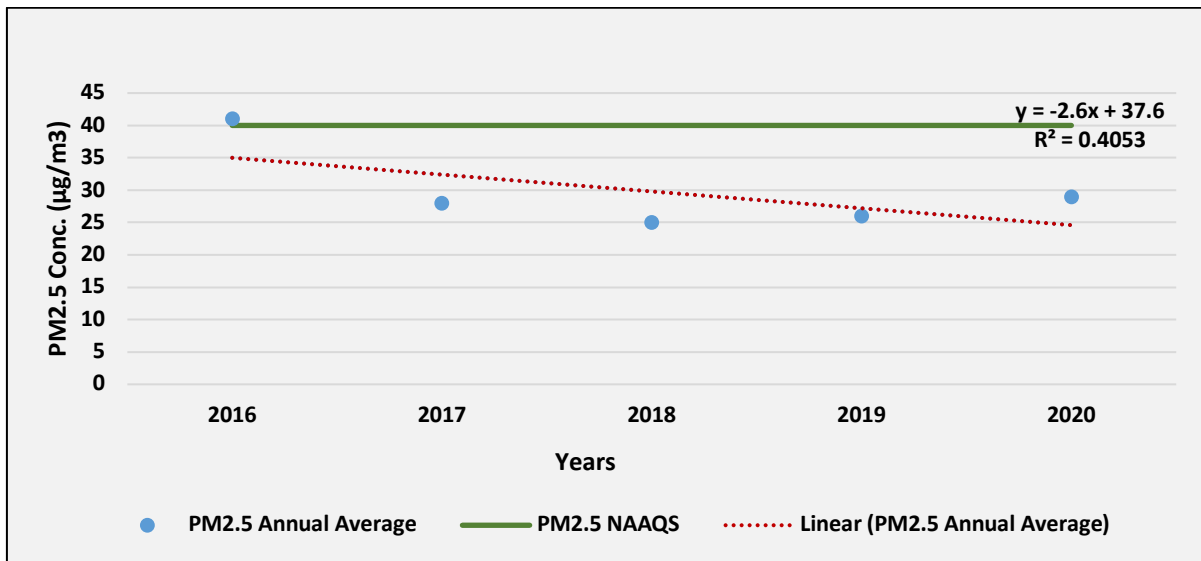


Fig. UK6: Trend of annual mean $PM_{2.5}$ ambient air concentration in Ukai TPP (Ambient 1)

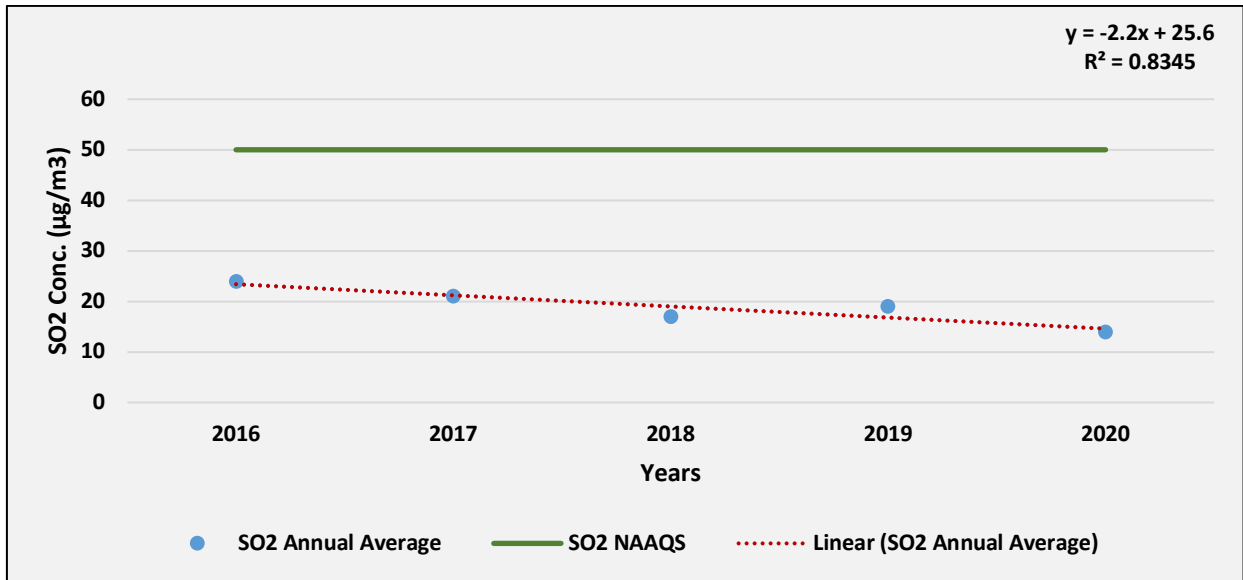


Fig. UK7: Trend of annual mean SO₂ ambient air concentration in Ukai TPP (Ambient 1)

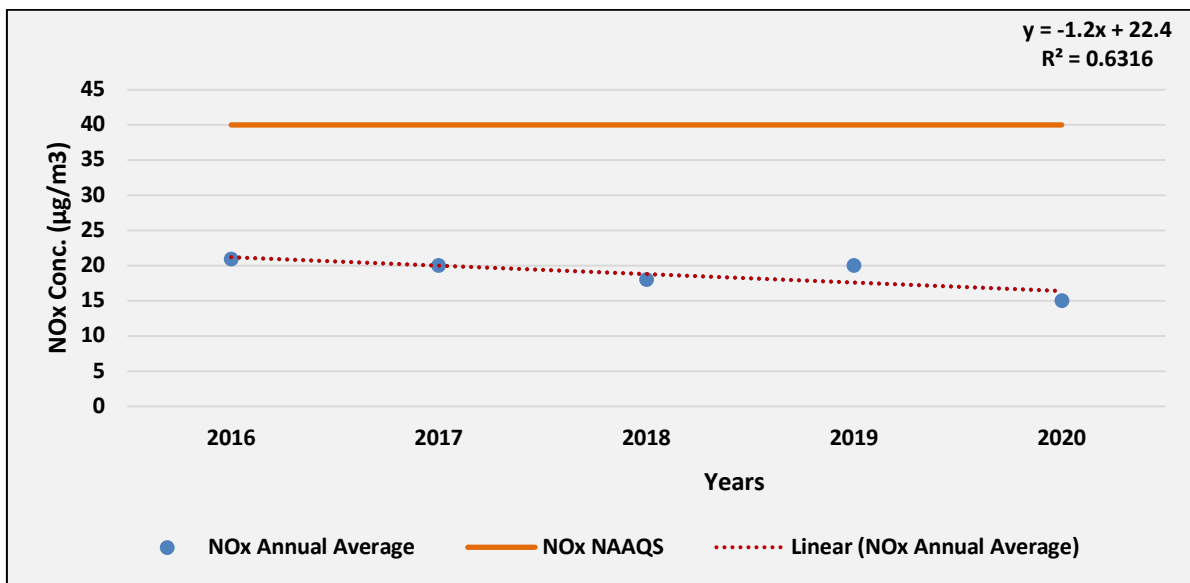


Fig. UK8: Trend of annual mean NO_x ambient air concentration in Ukai TPP (Ambient 1)

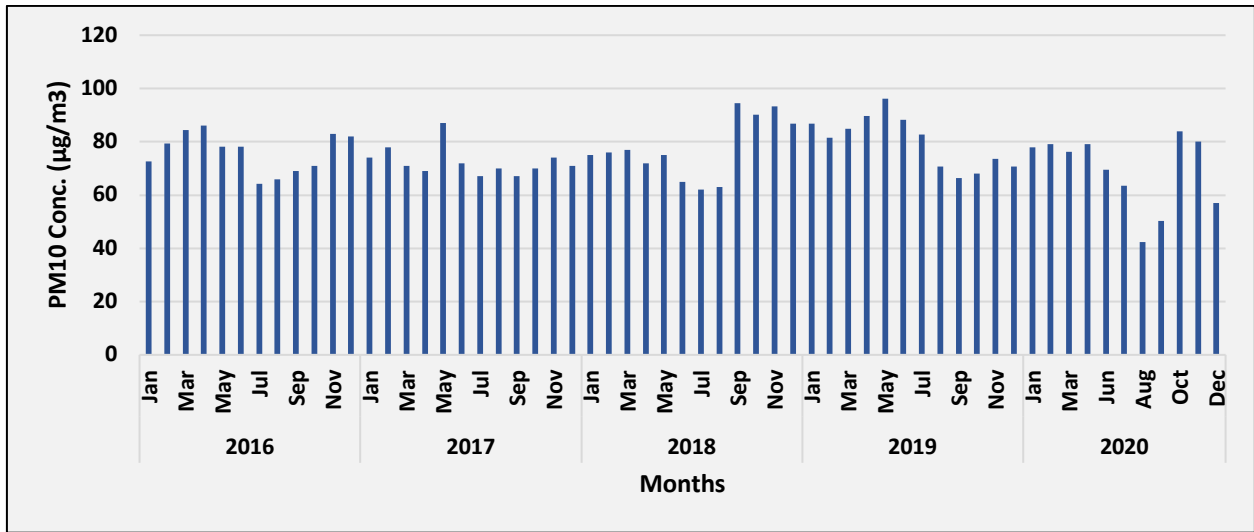


Fig. UK9: Time series of monthly average PM_{10} ambient air concentration in Ukai TPP (Ambient 2)

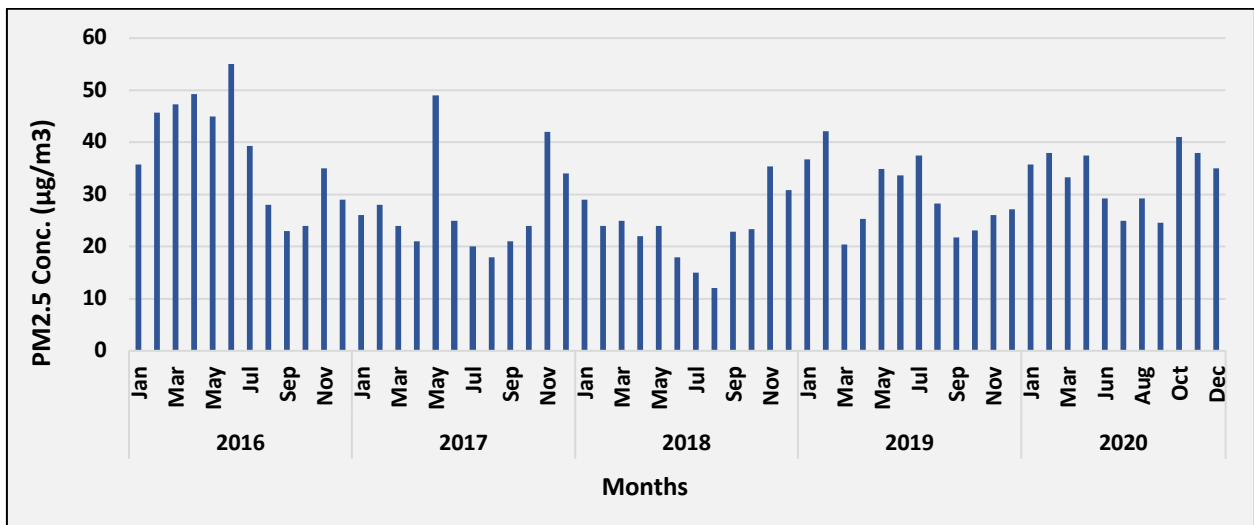


Fig. UK10: Time series of monthly average $PM_{2.5}$ ambient air concentration in Ukai TPP (Ambient 2)

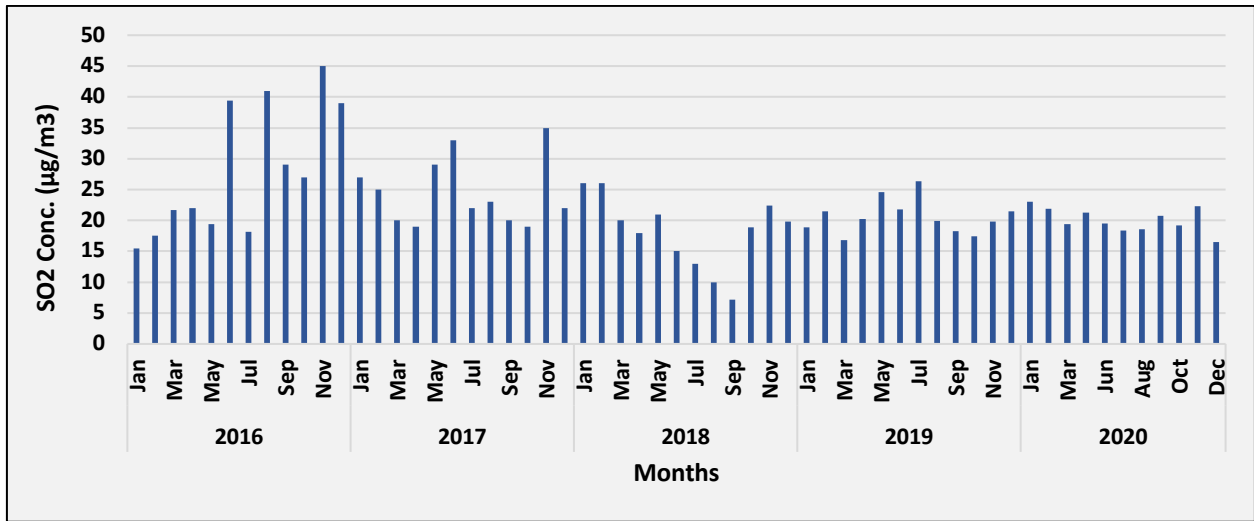


Fig. UK11: Time series of monthly average SO_2 ambient air concentration in Ukai TPP (Ambient 2)

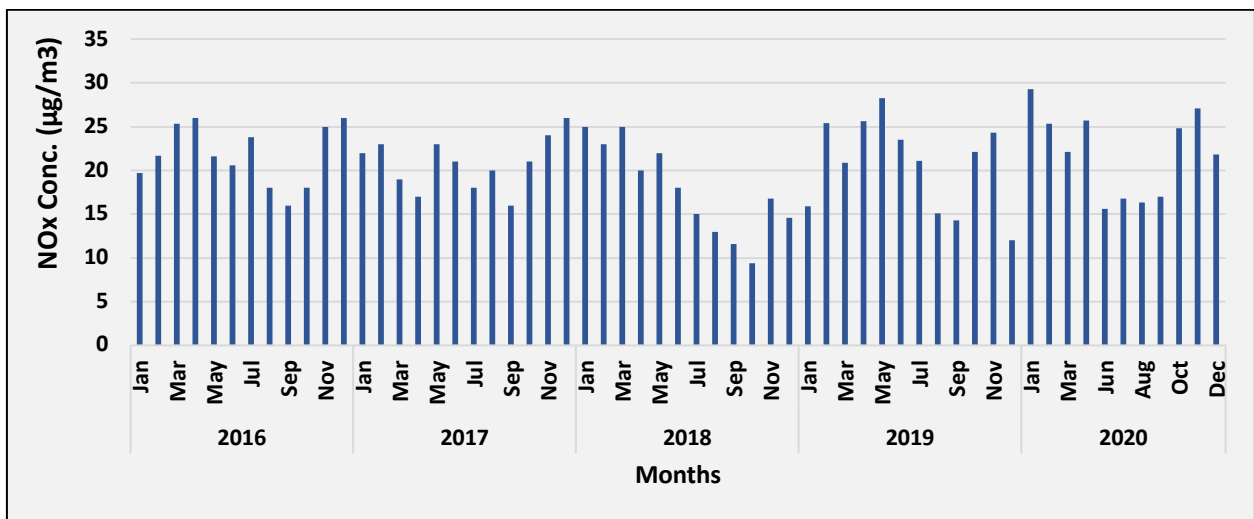


Fig. UK12: Time series of monthly average NO_x ambient air concentration in Ukai TPP (Ambient 2)

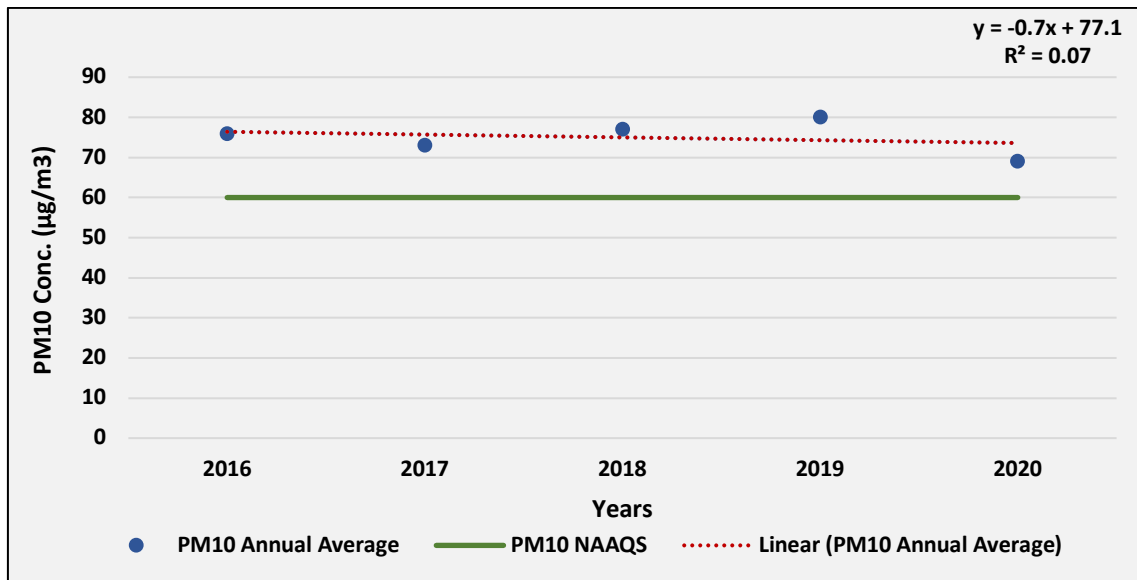


Fig. UK13: Trend of annual mean PM_{10} ambient air concentration in Ukai TPP (Ambient 2)

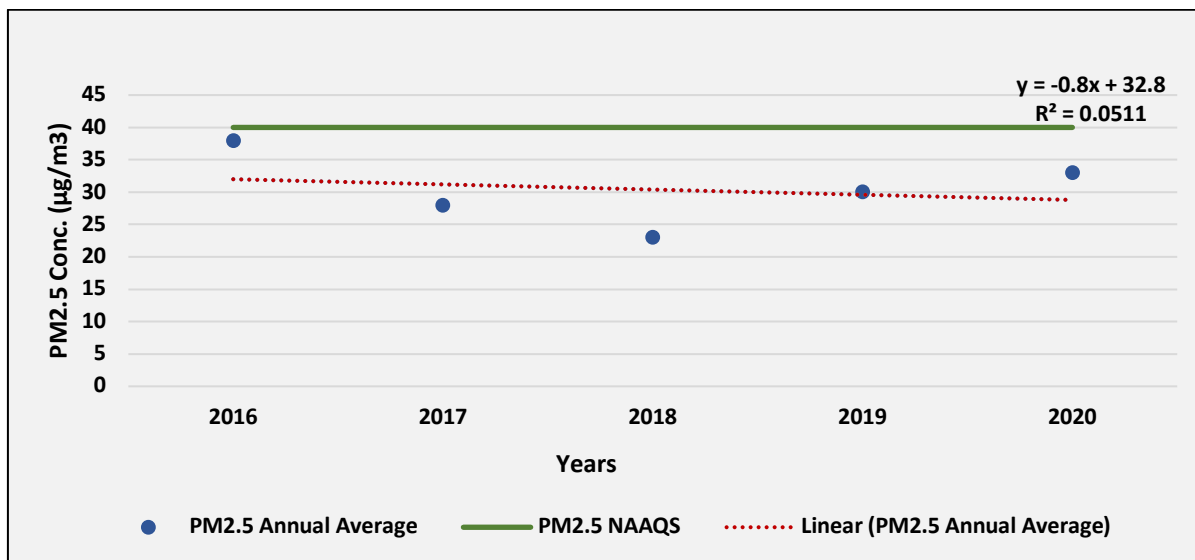


Fig. UK14: Trend of annual mean $PM_{2.5}$ ambient air concentration in Ukai TPP (Ambient 2)

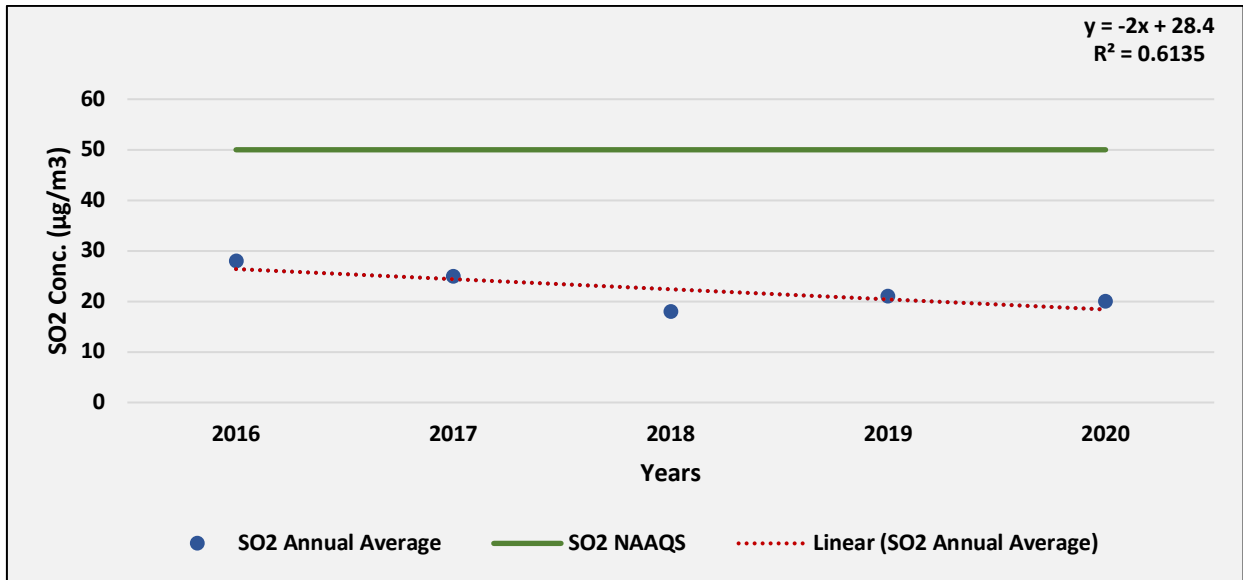


Fig. UK15: Trend of annual mean SO₂ ambient air concentration in Ukai TPP (Ambient 2)

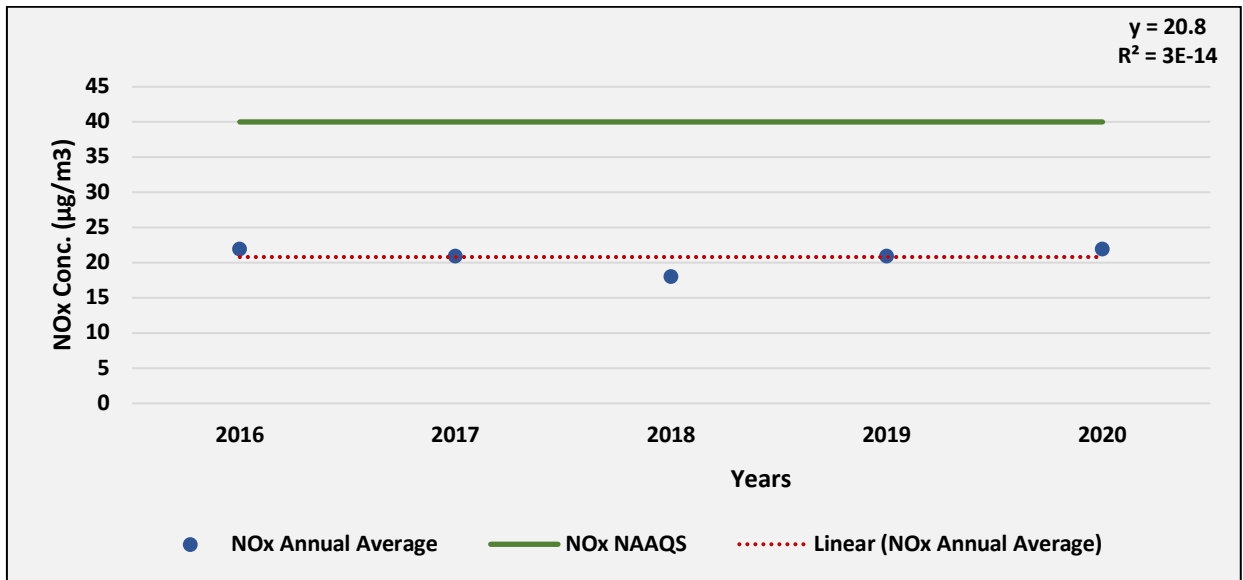


Fig. UK16: Trend of annual mean NO_x ambient air concentration in Ukai TPP (Ambient 2)

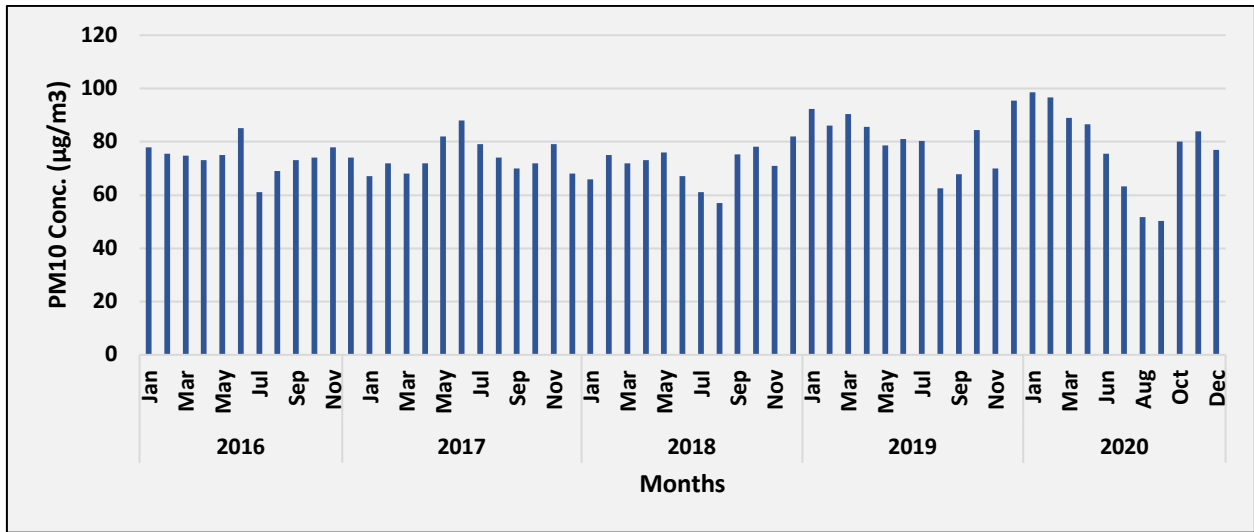


Fig. UK17: Time series of monthly average PM₁₀ ambient air concentration in Ukai TPP (Ambient 3)

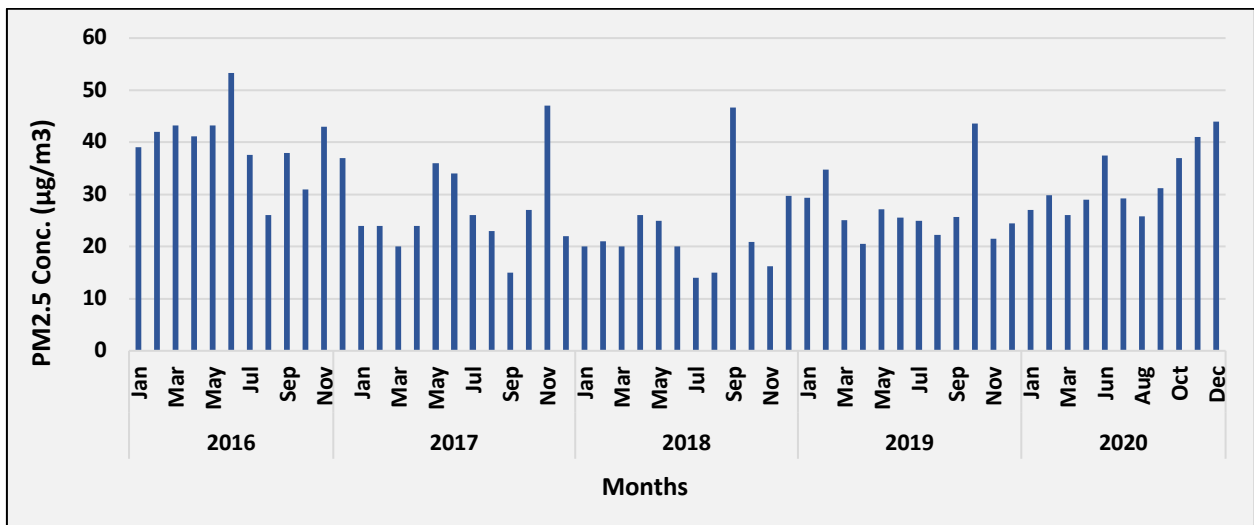


Fig. UK18: Time series of monthly average PM_{2.5} ambient air concentration in Ukai TPP (Ambient 3)

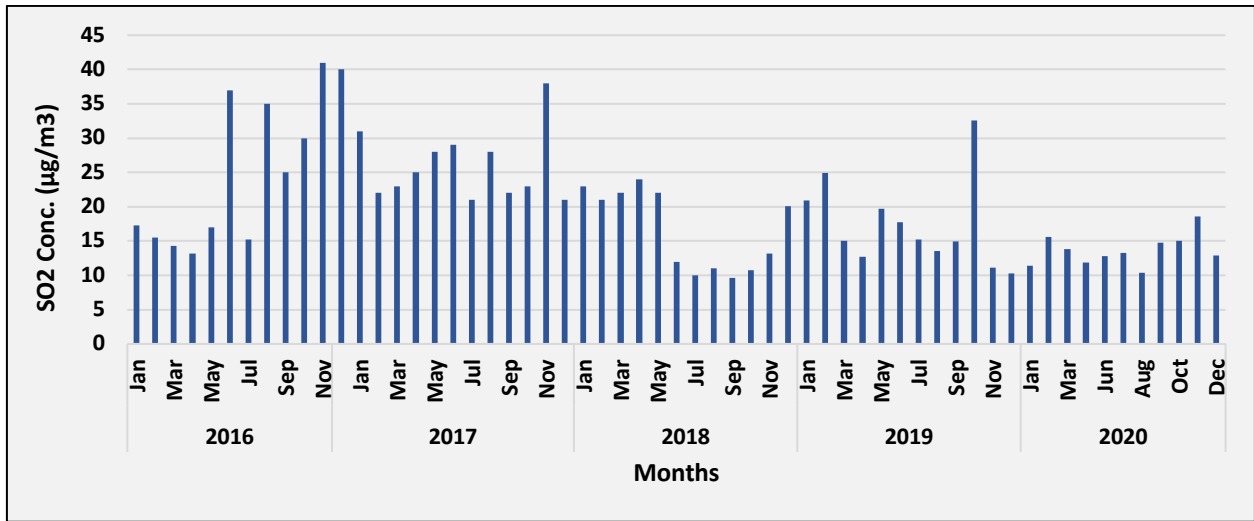


Fig. UK19: Time series of monthly average SO_2 ambient air concentration in Ukai TPP (Ambient 3)

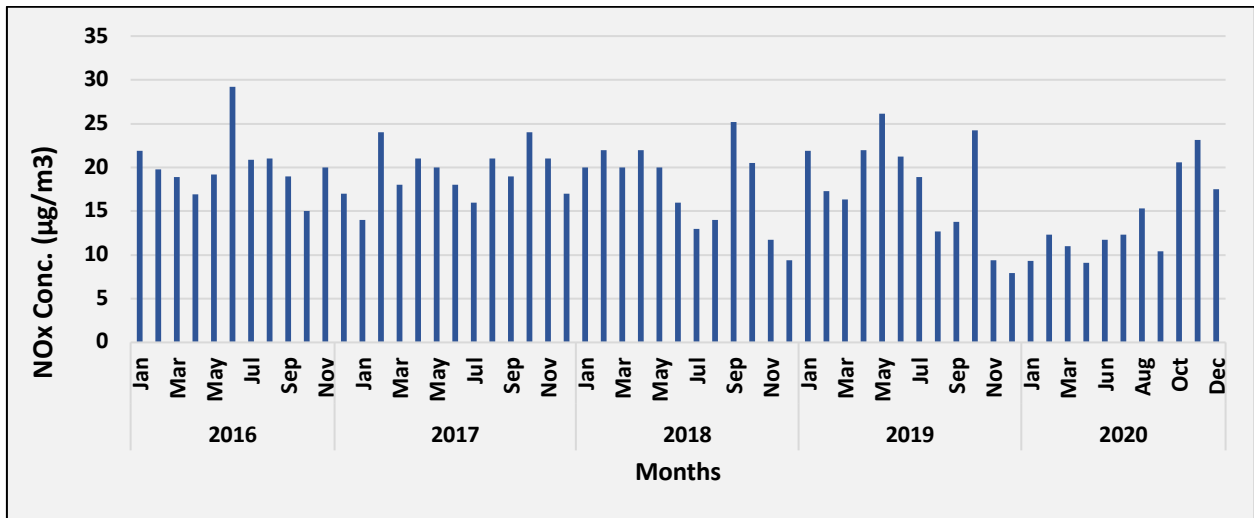


Fig. UK20: Time series of monthly average NO_x ambient air concentration in Ukai TPP (Ambient 3)

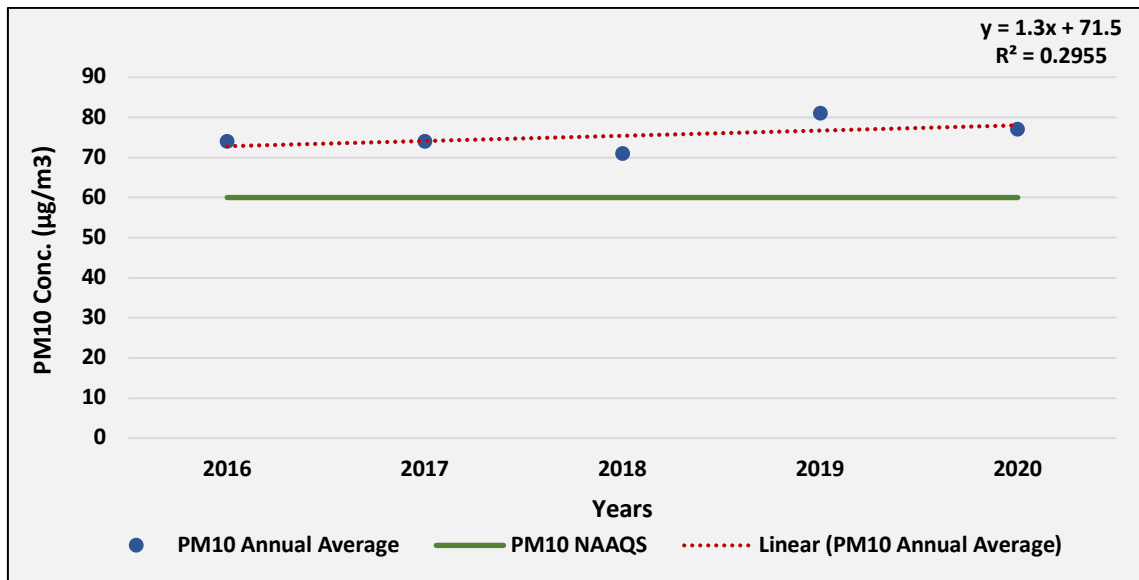


Fig. UK21: Trend of annual mean PM_{10} ambient air concentration in Ukai TPP (Ambient 3)

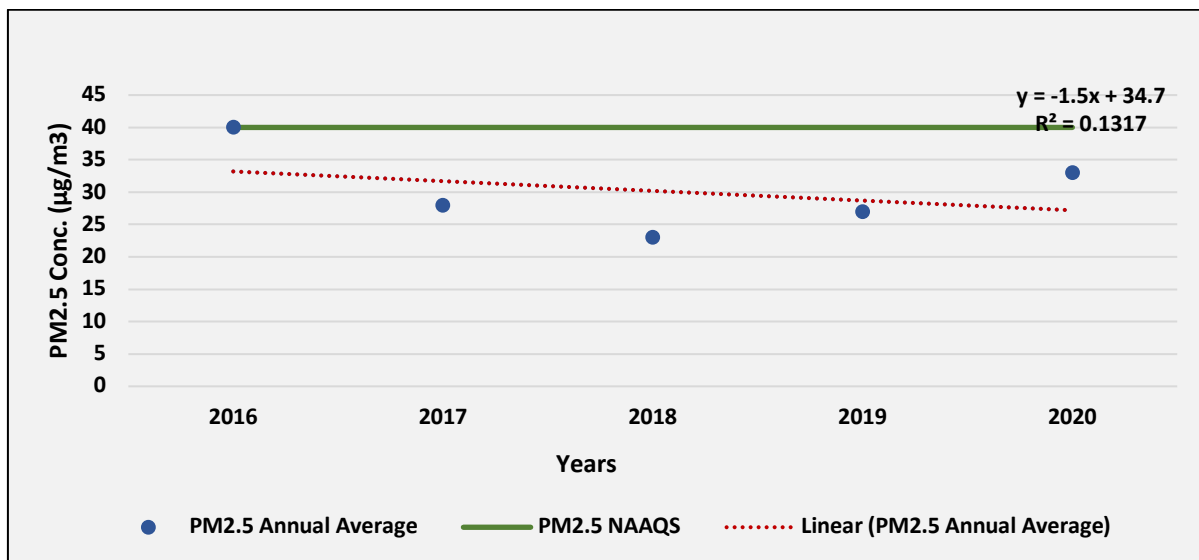


Fig. UK22: Trend of annual mean $PM_{2.5}$ ambient air concentration in Ukai TPP (Ambient 3)

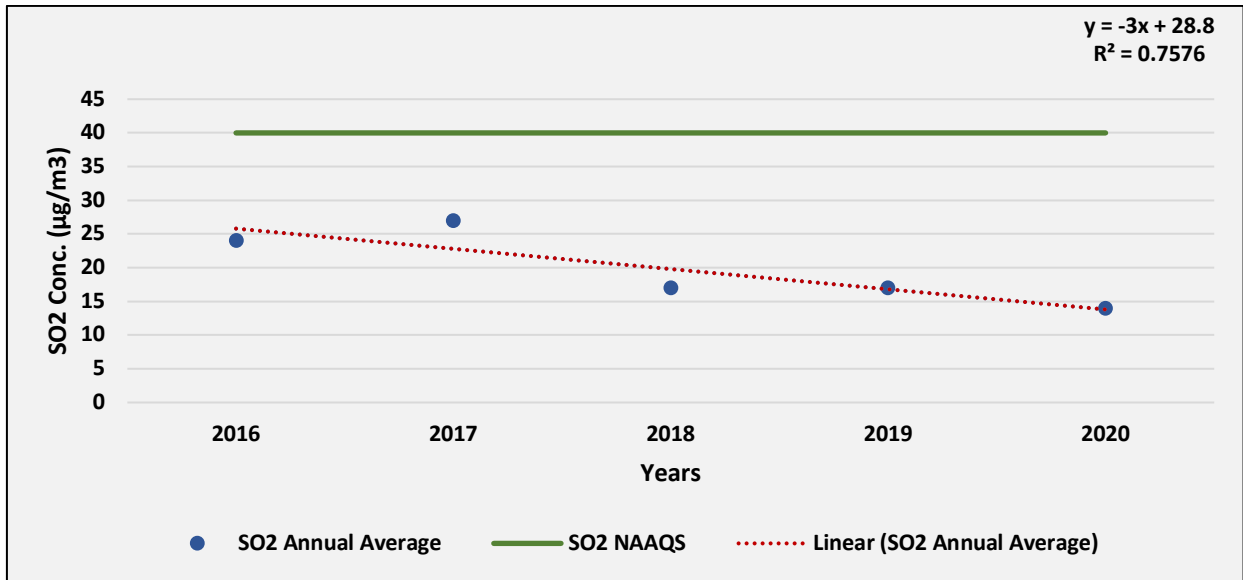


Fig. UK23: Trend of annual mean SO₂ ambient air concentration in Ukai TPP (Ambient 3)

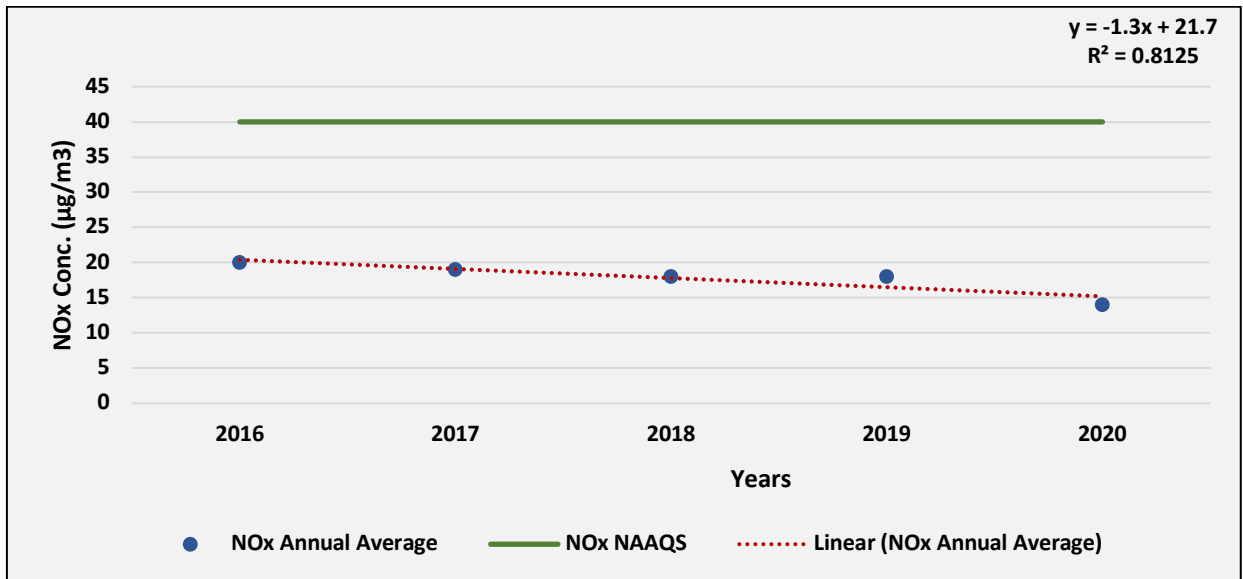


Fig. UK24: Trend of annual mean NO_x ambient air concentration in Ukai TPP (Ambient 3)

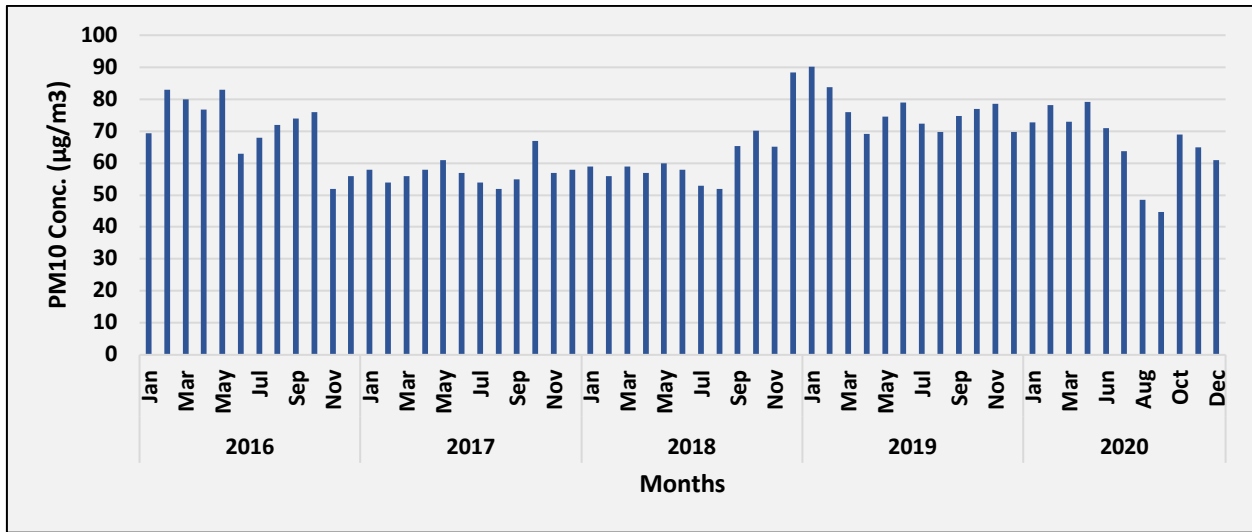


Fig. UK25: Time series of monthly average PM₁₀ ambient air concentration in Ukai TPP (Ambient 4)

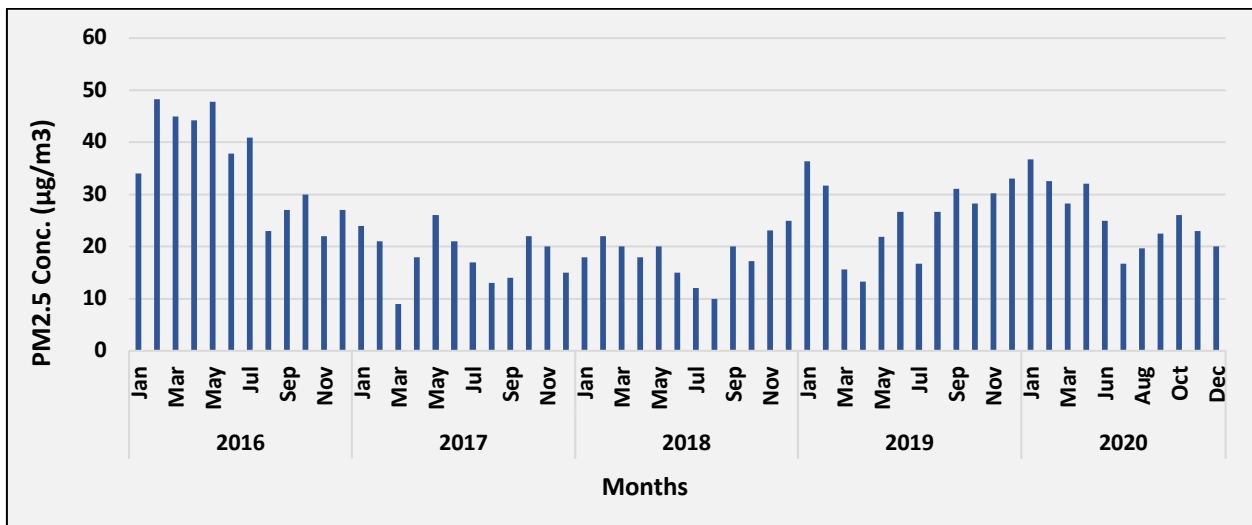


Fig. UK26: Time series of monthly average PM_{2.5} ambient air concentration in Ukai TPP (Ambient 4)

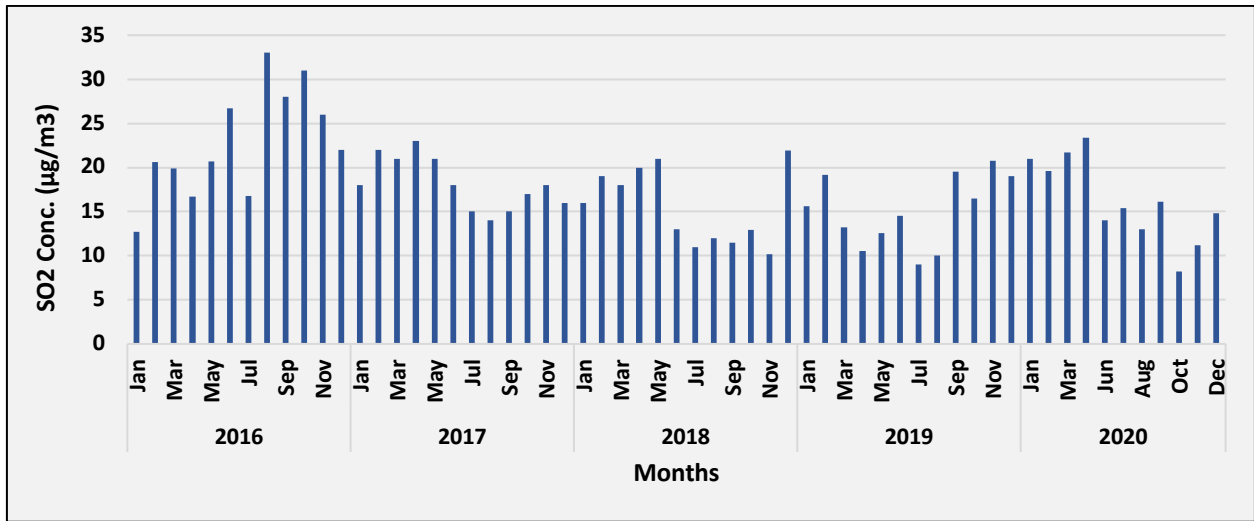


Fig. UK27: Time series of monthly average SO_2 ambient air concentration in Ukai TPP (Ambient 4)

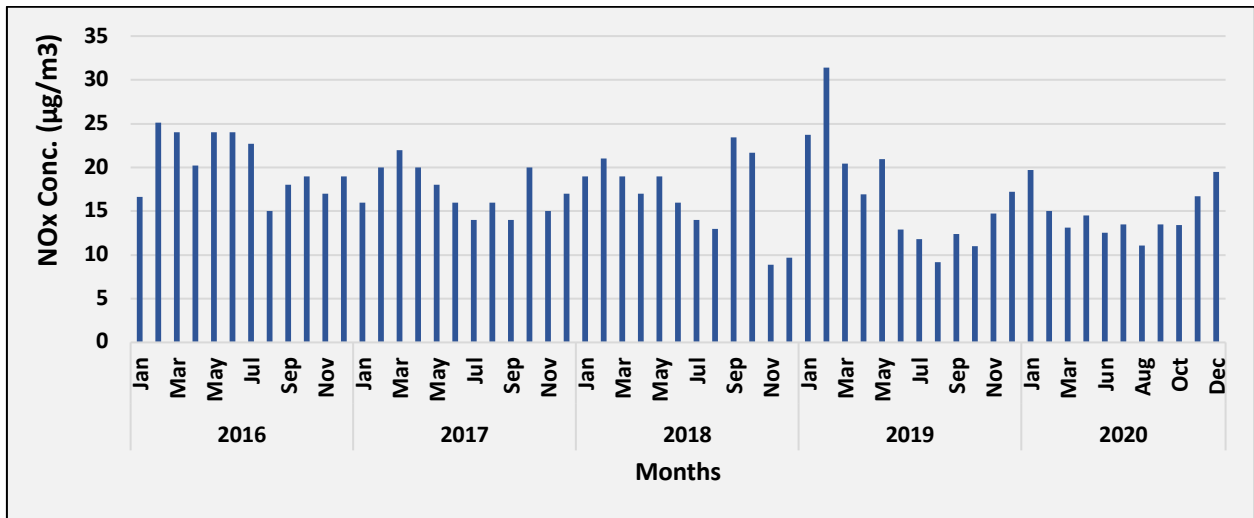


Fig. UK28: Time series of monthly average NO_x ambient air concentration in Ukai TPP (Ambient 4)

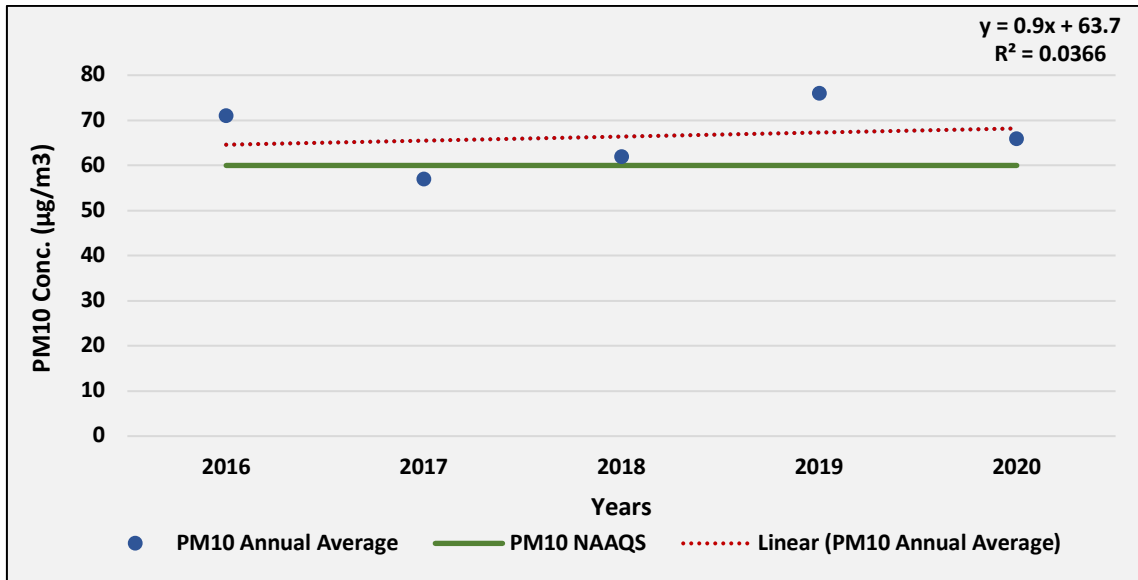


Fig. UK29: Trend of annual mean PM₁₀ ambient air concentration in Ukai TPP (Ambient 4)

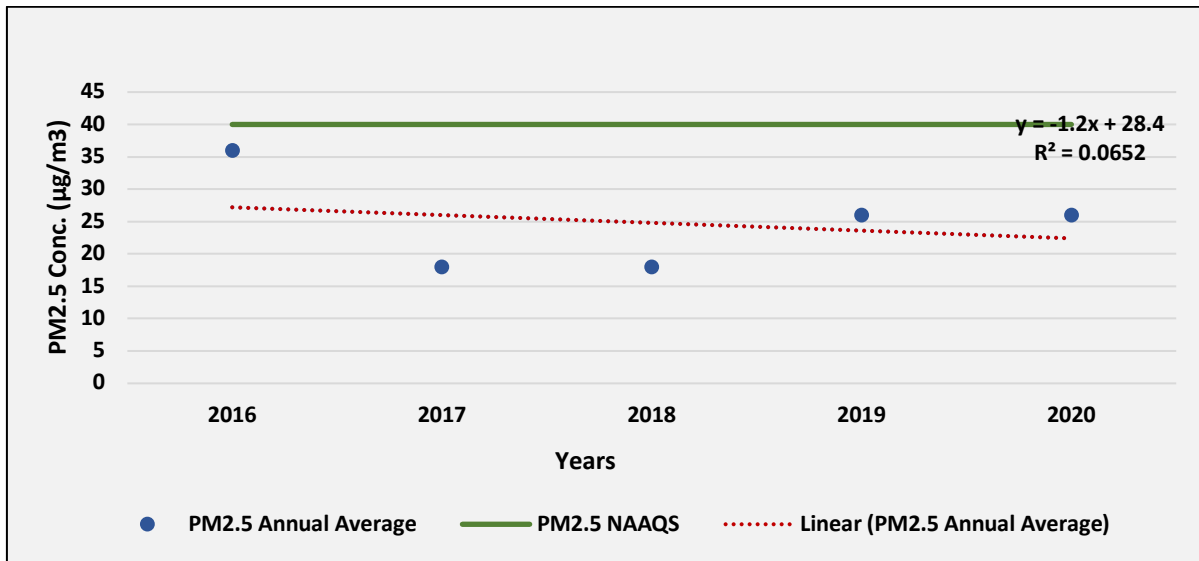


Fig. UK30: Trend of annual mean PM_{2.5} ambient air concentration in Ukai TPP (Ambient 4)

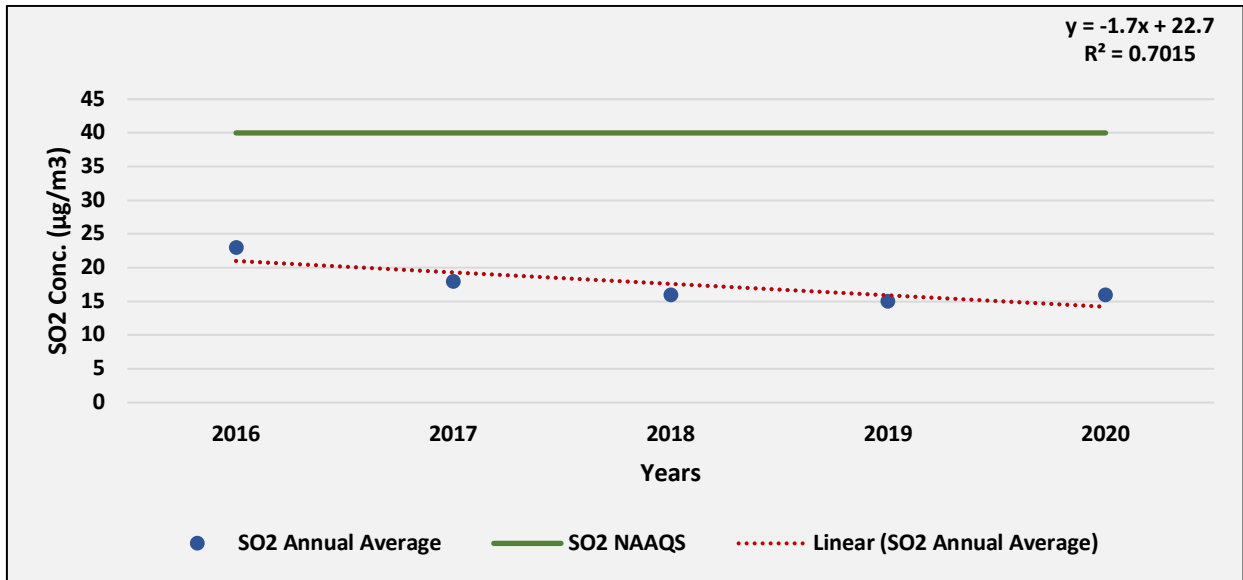


Fig. UK31: Trend of annual mean SO₂ ambient air concentration in Ukai TPP (Ambient 4)

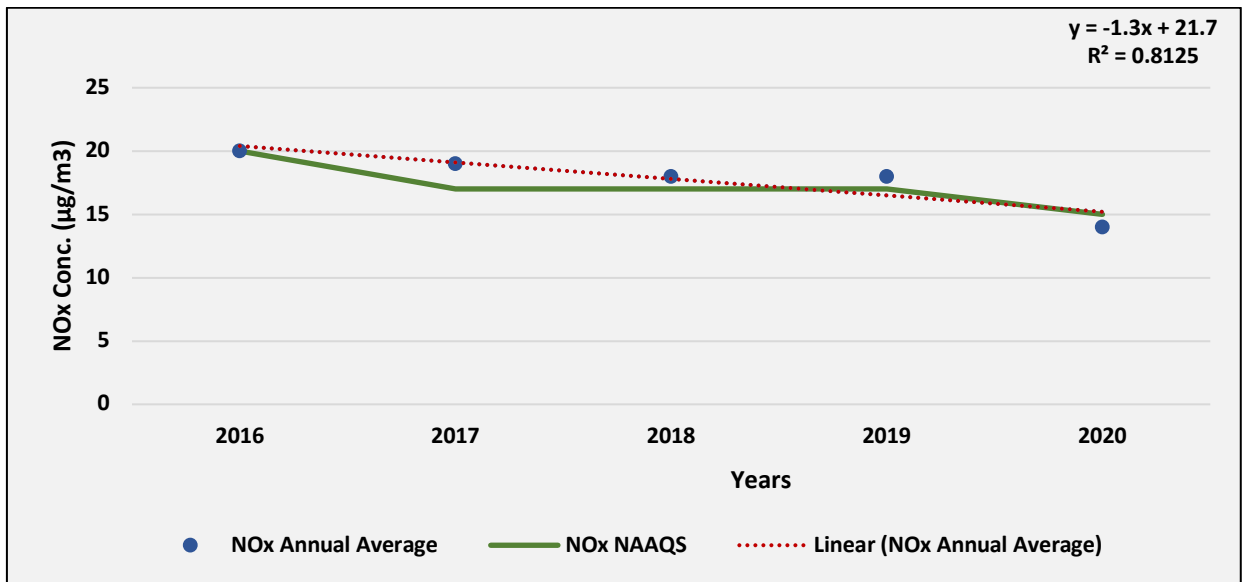


Fig. UK32: Trend of annual mean NO_x ambient air concentration in Ukai TPP (Ambient 4)

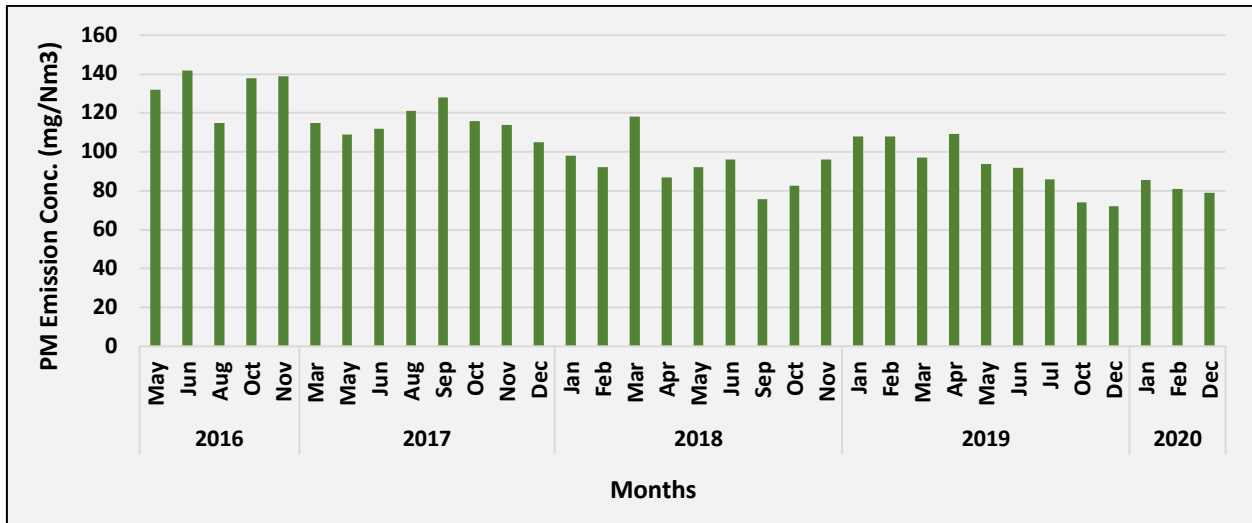


Fig. UK33: Time series of monthly average PM Emission air concentration in Ukai TPP (Unit 3)

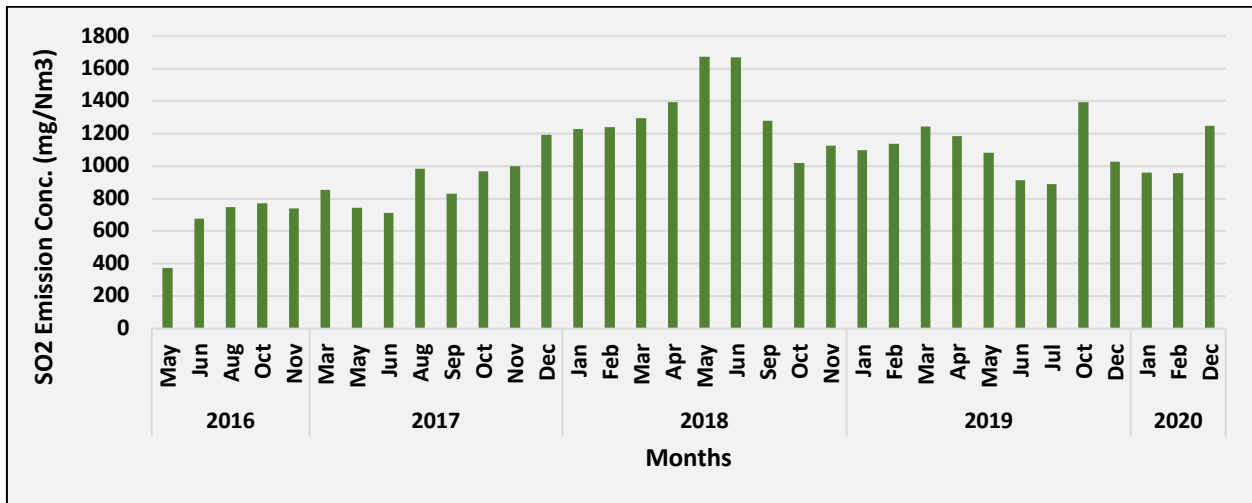


Fig. UK34: Time series of monthly average SO₂ Emission air concentration in Ukai TPP (Unit 3)

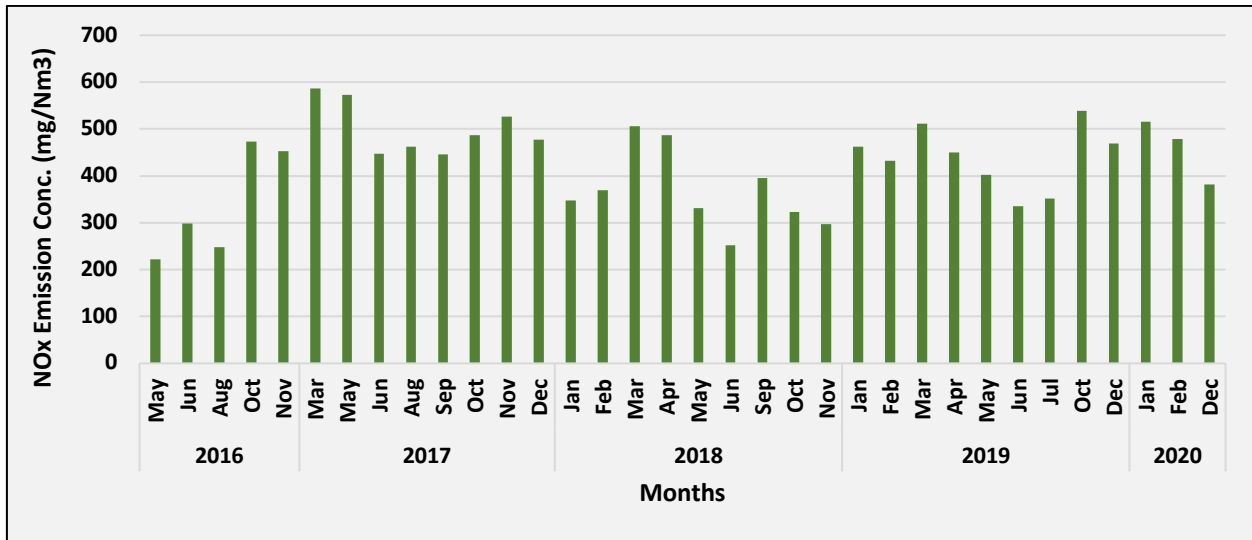


Fig. UK35: Time series of monthly average NO_x Emission air concentration in Ukai TPP (Unit 3)

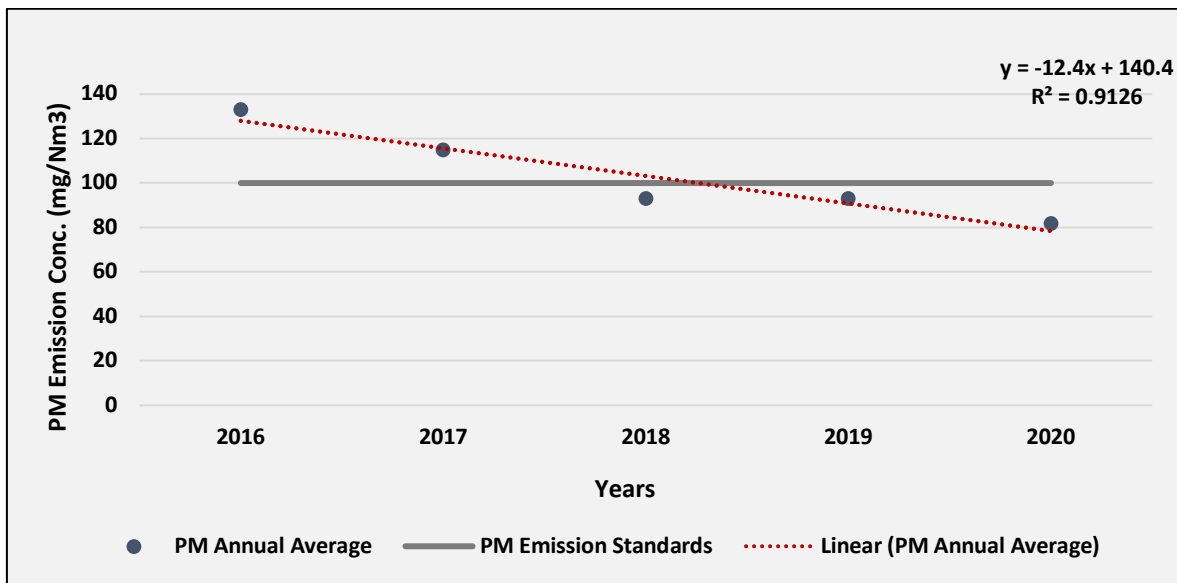


Fig. UK36: Trend of annual mean PM Emission air concentration in Ukai TPP (Unit 3)

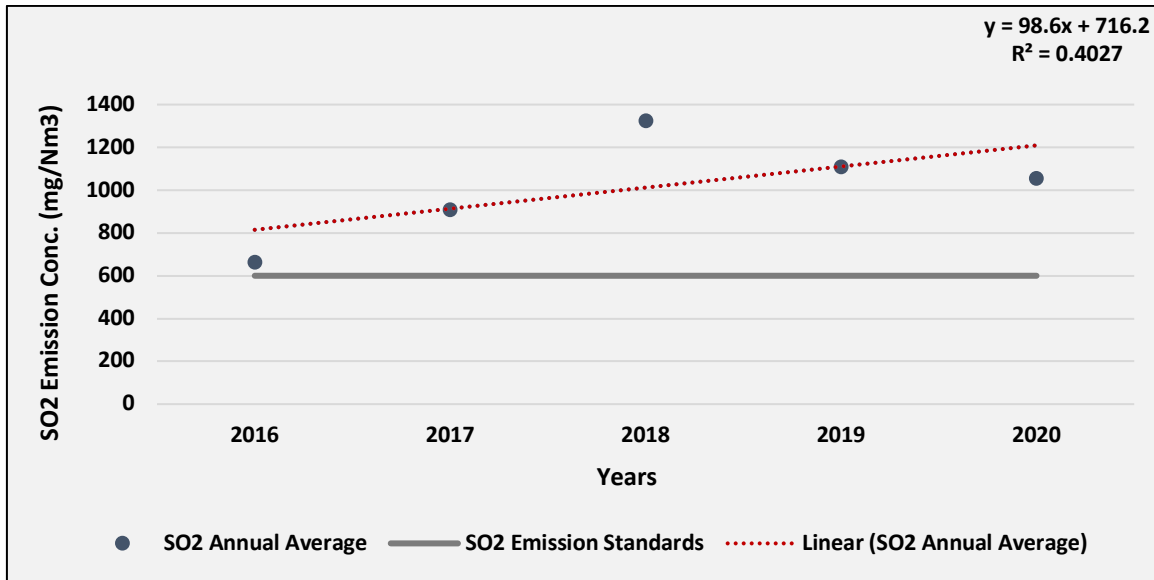


Fig. UK37: Trend of annual mean SO₂ Emission air concentration in Ukai TPP (Unit 3)

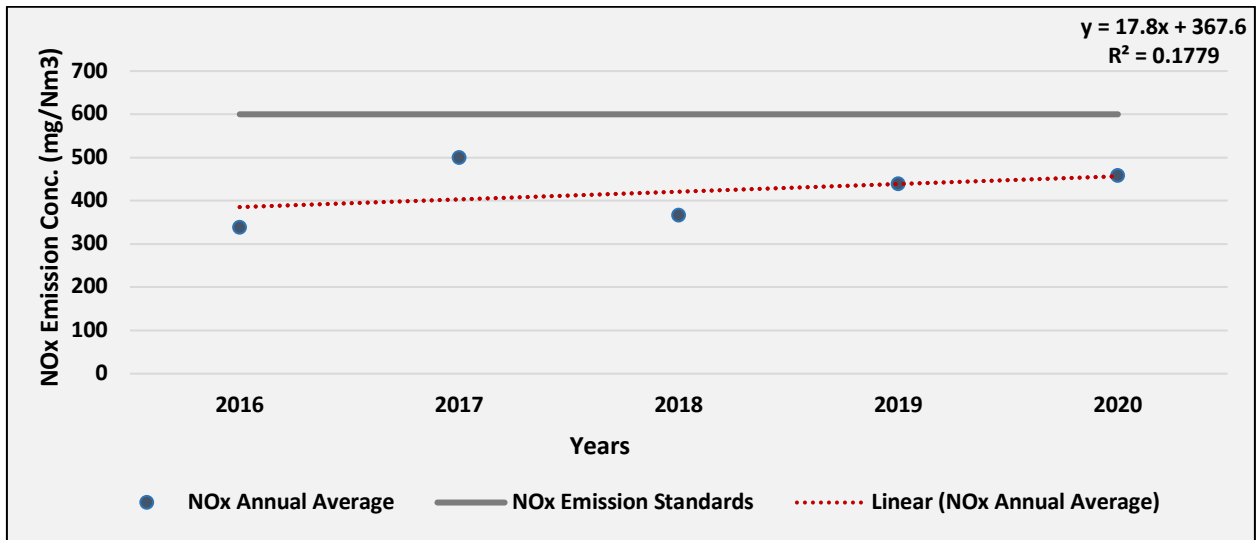


Fig. UK38: Trend of annual mean NO_x Emission air concentration in Ukai TPP (Unit 3)

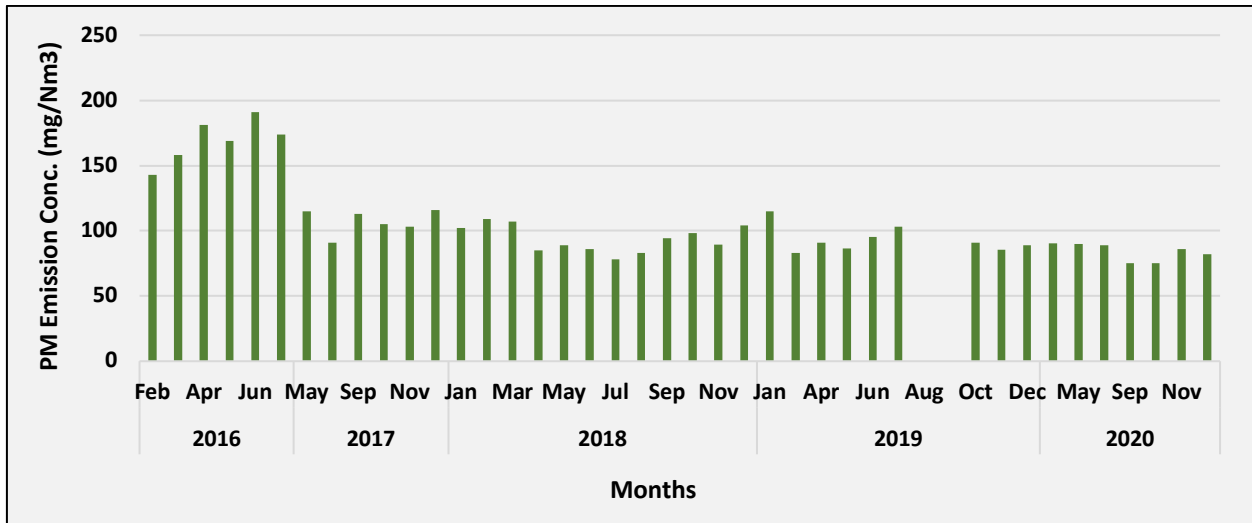


Fig. UK39: Time series of monthly average PM Emission concentration in Ukai TPP (Unit 4)

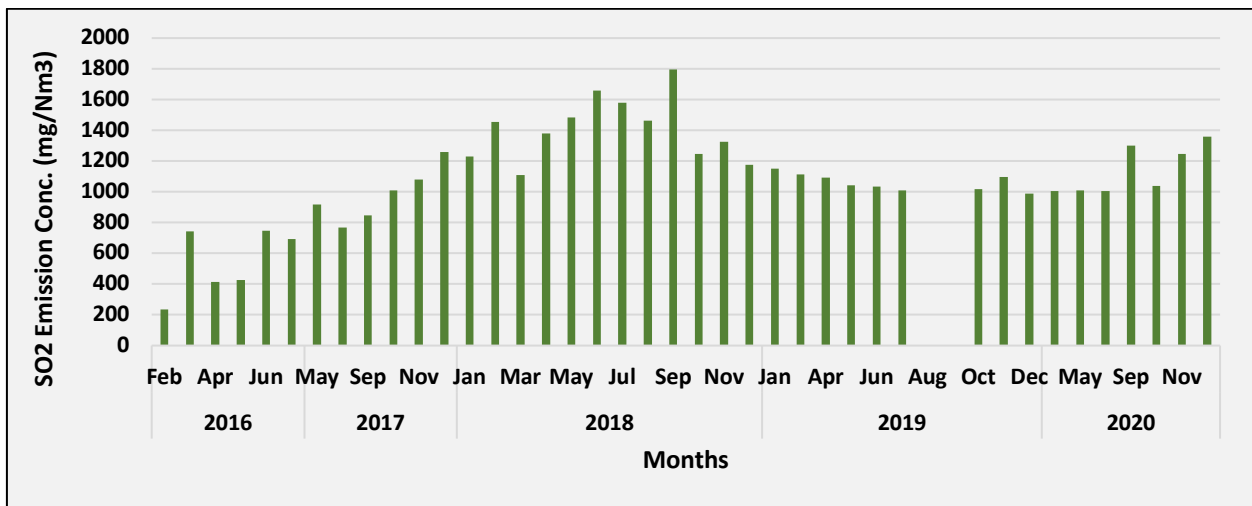


Fig. UK40: Time series of monthly average SO₂ Emission concentration in Ukai TPP (Unit 4)

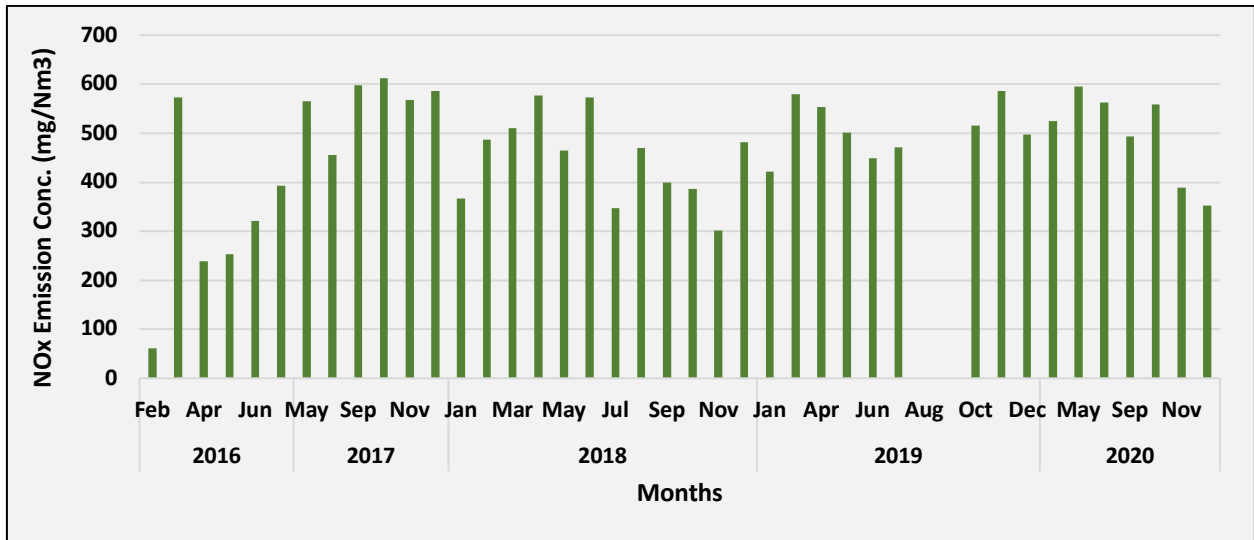


Fig. UK41: Time series of monthly average NO_x Emission concentration in Ukai TPP (Unit 4)

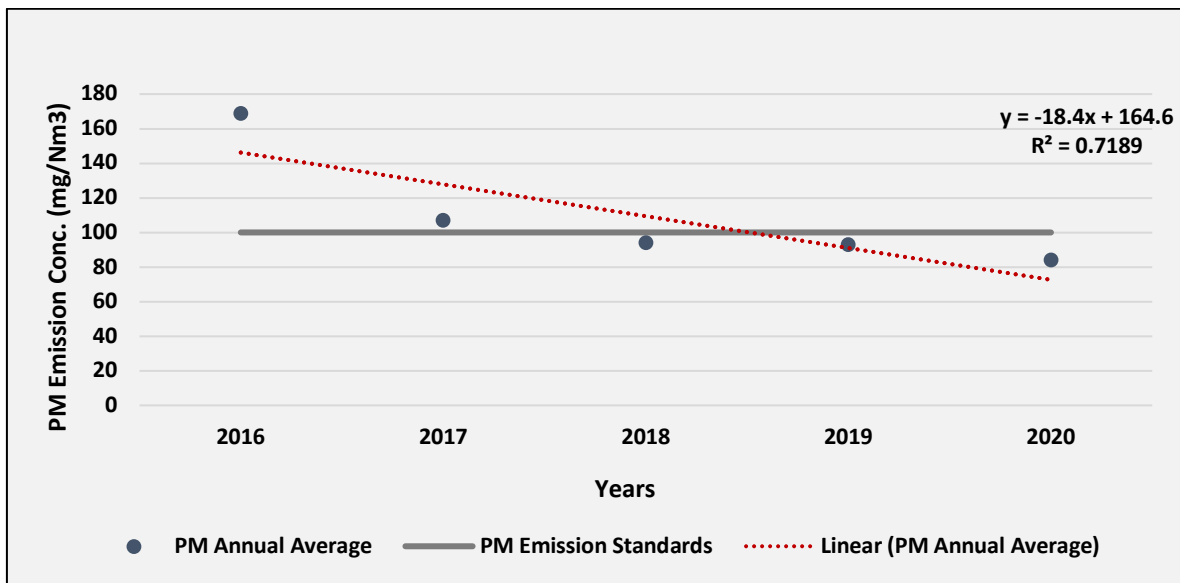


Fig. UK42: Trend of annual mean PM Emission air concentration in Ukai TPP (Unit 4)

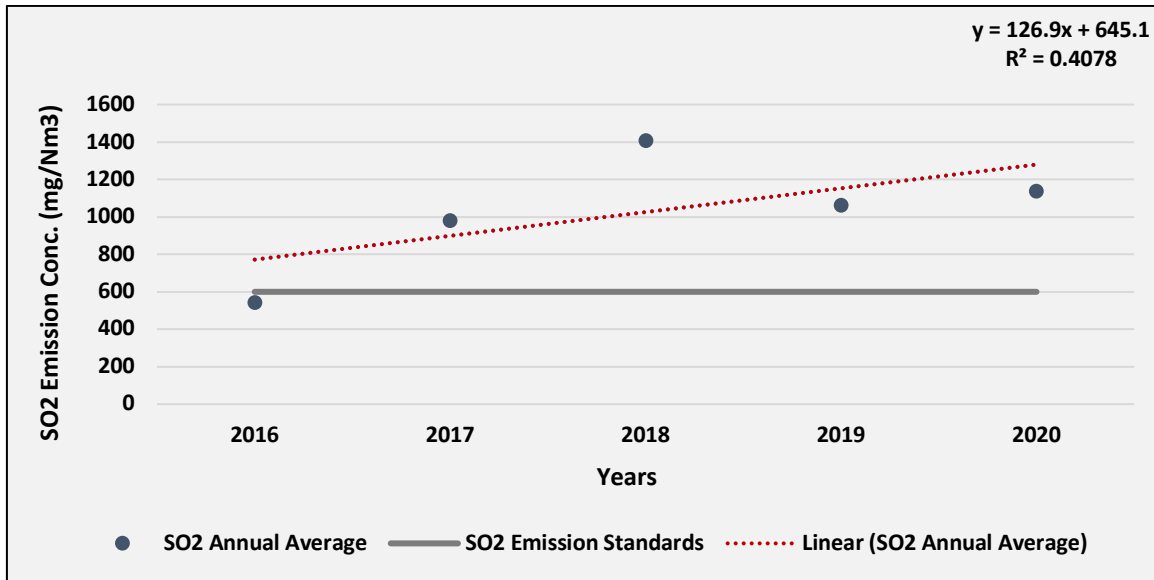


Fig. UK43: Trend of annual mean SO₂ Emission air concentration in Ukai TPP (Unit 4)

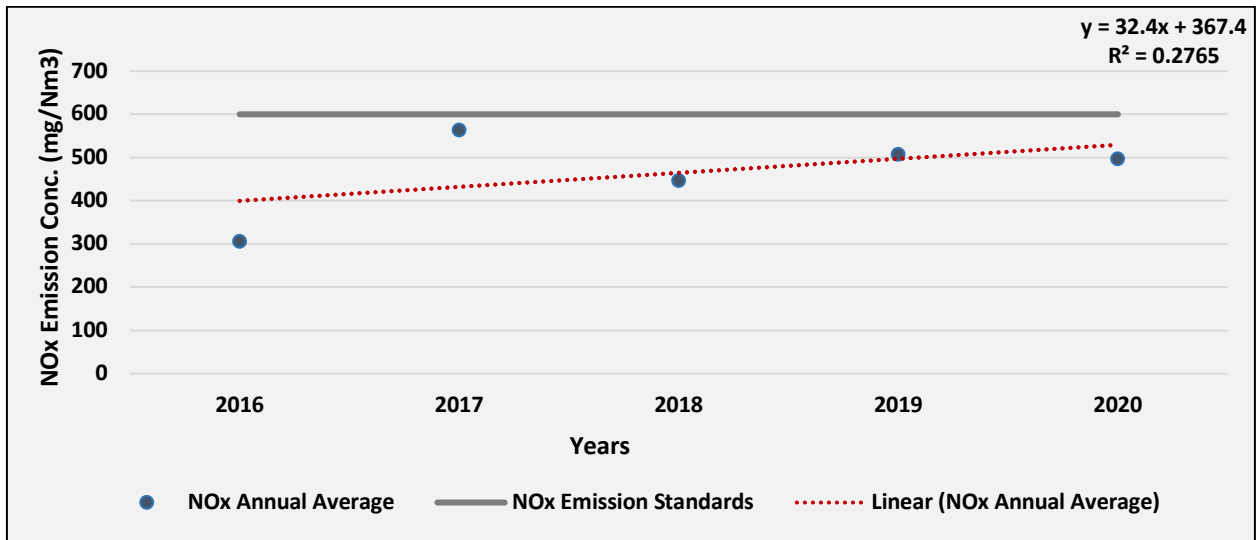


Fig. UK44: Trend of annual mean NO_x Emission air concentration in Ukai TPP (Unit 4)

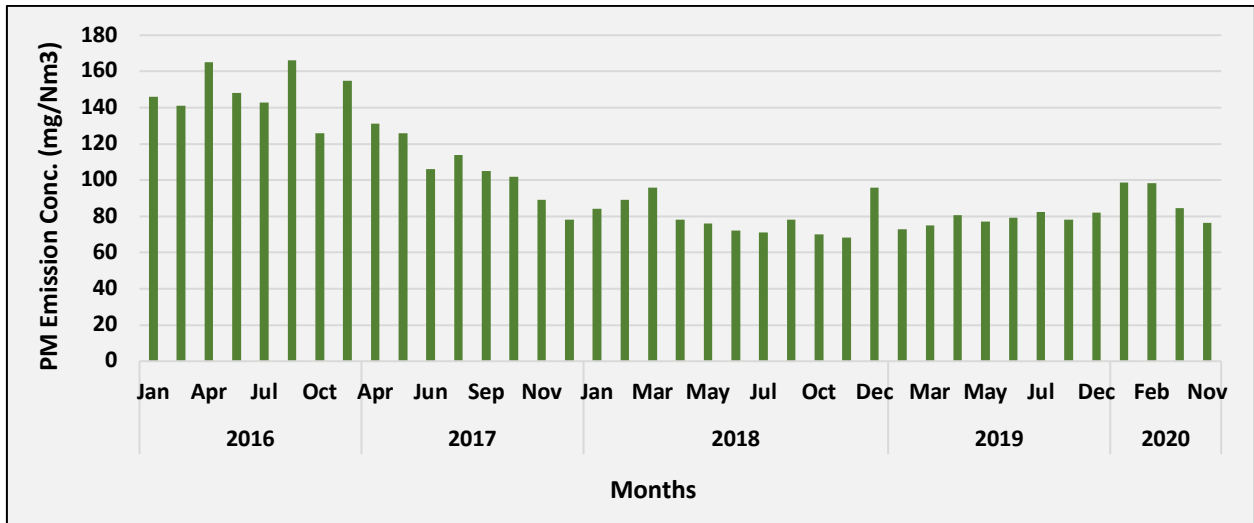


Fig. UK45: Time series of monthly average PM Emission concentration in Ukai TPP (Unit 5)

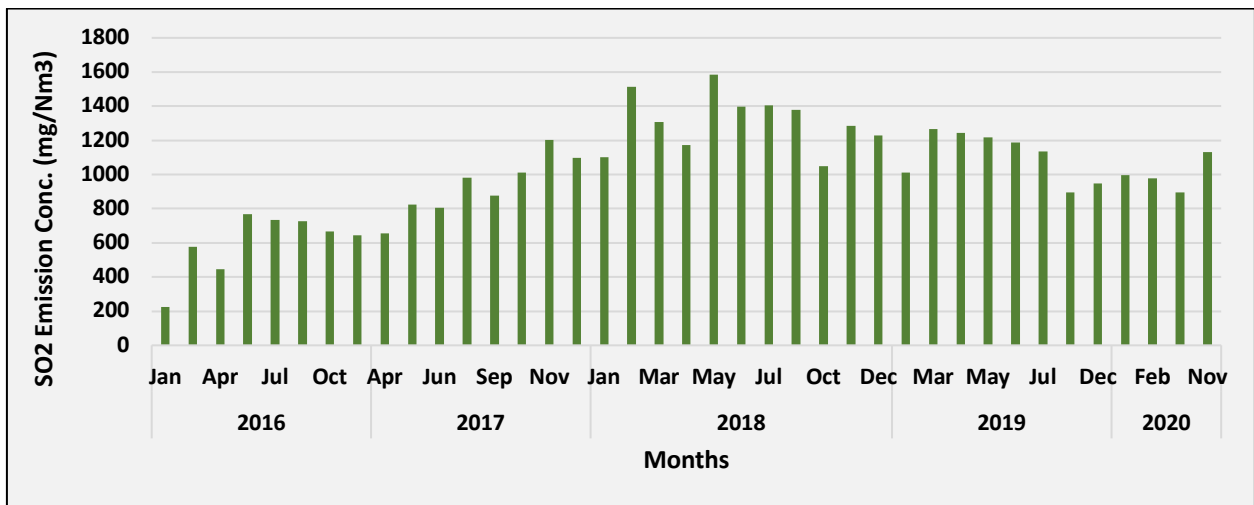


Fig. UK46: Time series of monthly average SO₂ Emission concentration in Ukai TPP (Unit 5)

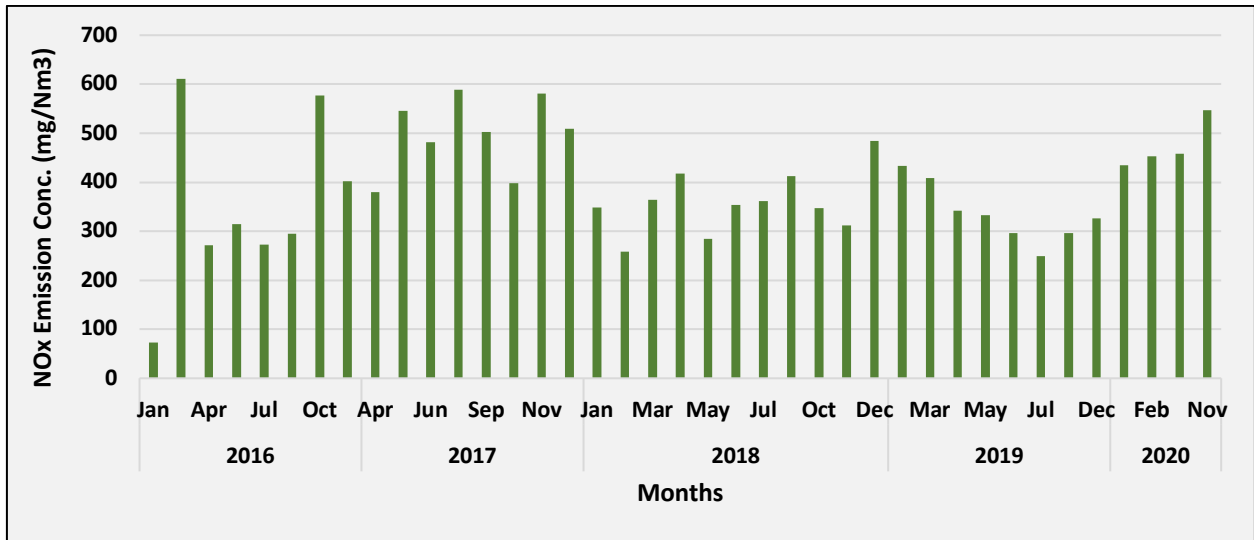


Fig. UK47: Time series of monthly average NO_x Emission concentration in Ukai TPP (Unit 5)

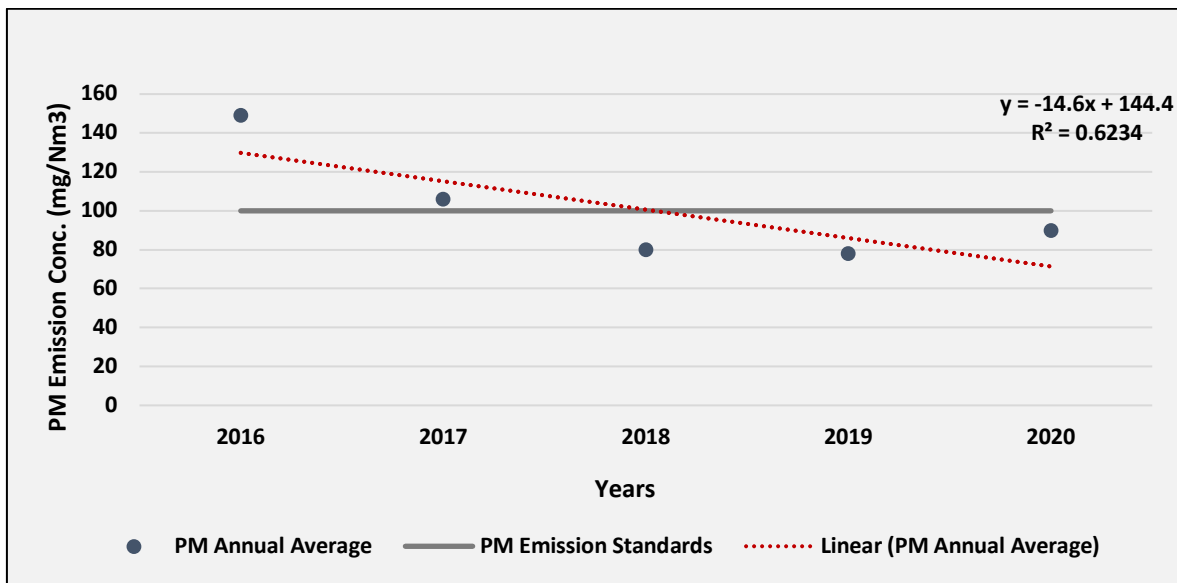


Fig. UK48: Trend of annual mean PM Emission air concentration in Ukai TPP (Unit 5)

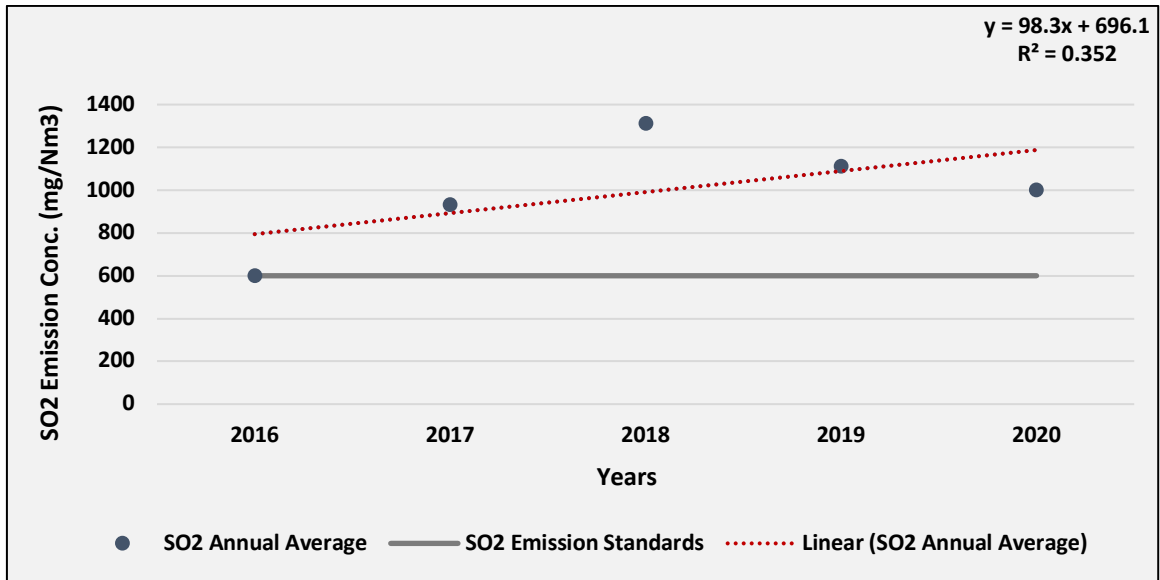


Fig. UK49: Trend of annual mean SO₂ Emission air concentration in Ukai TPP (Unit 5)

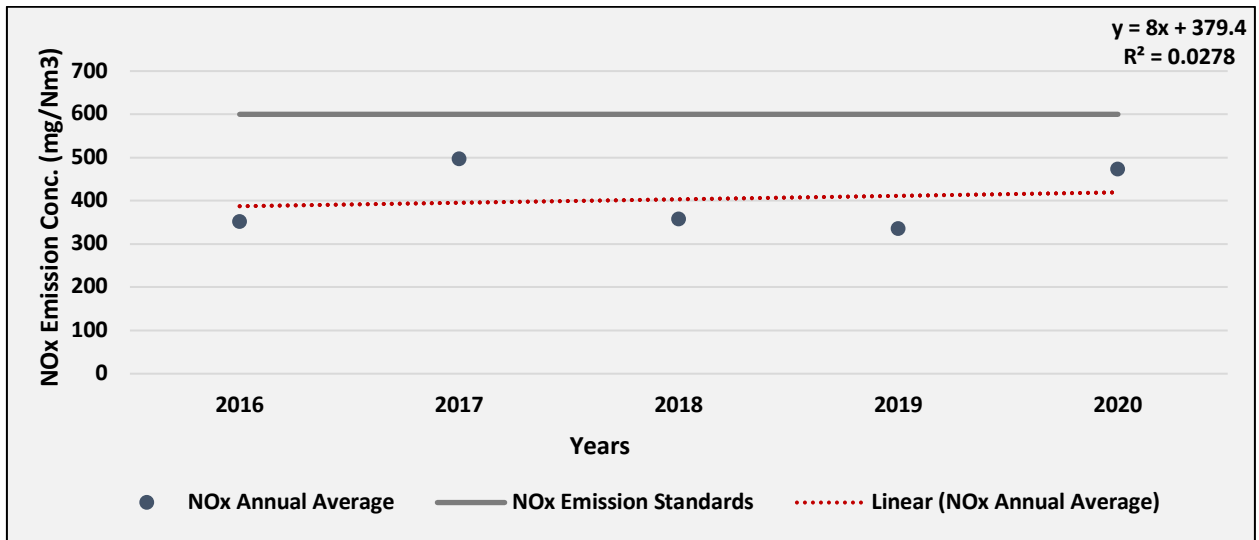


Fig. UK50: Trend of annual mean NO_x Emission air concentration in Ukai TPP (Unit 5)

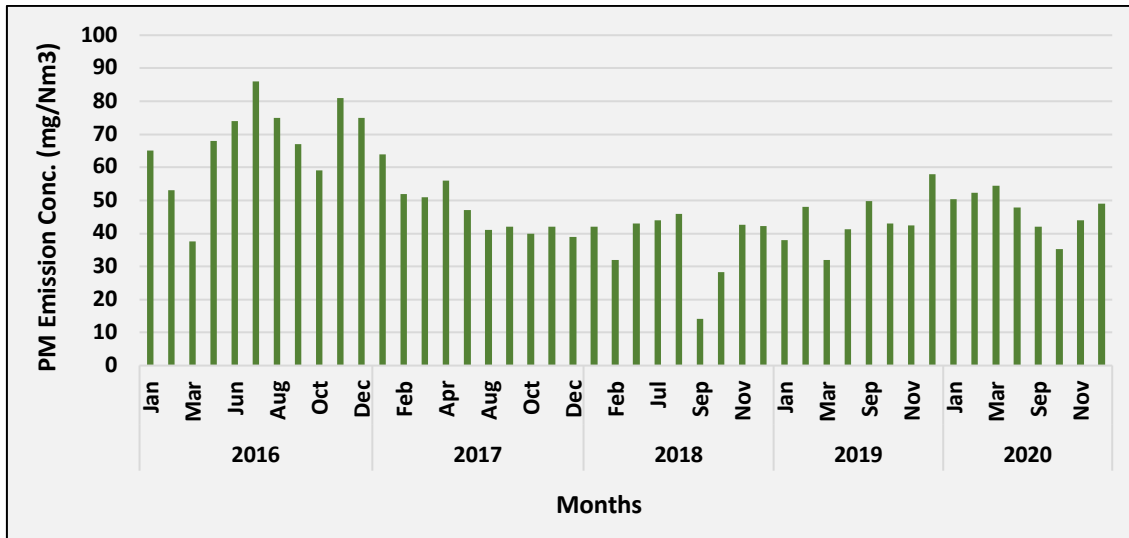


Fig. UK51: Time series of monthly average PM Emission concentration in Ukai TPP (Unit 6)

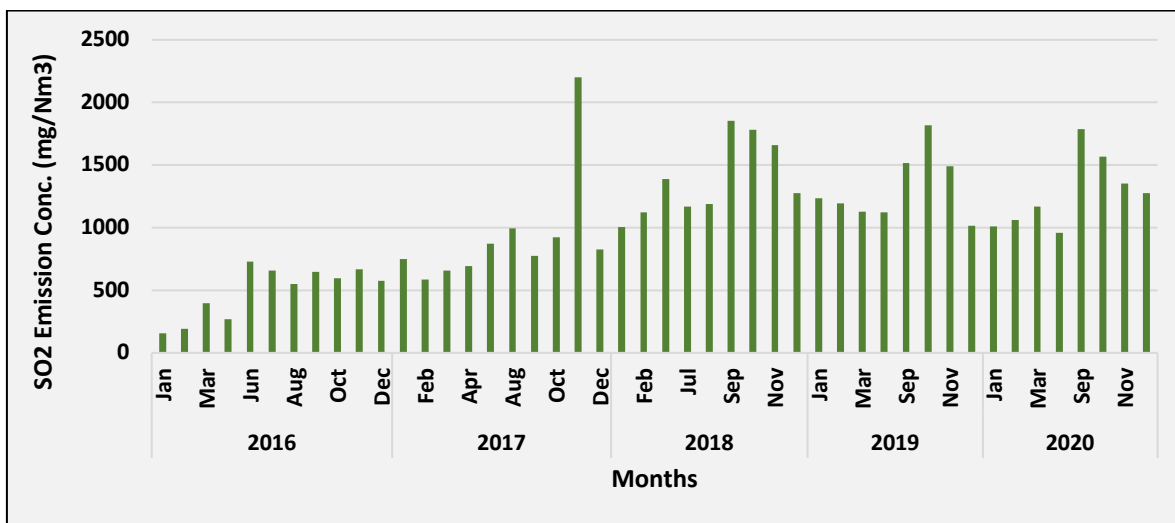


Fig. UK52: Time series of monthly average SO₂ Emission concentration in Ukai TPP (Unit 6)

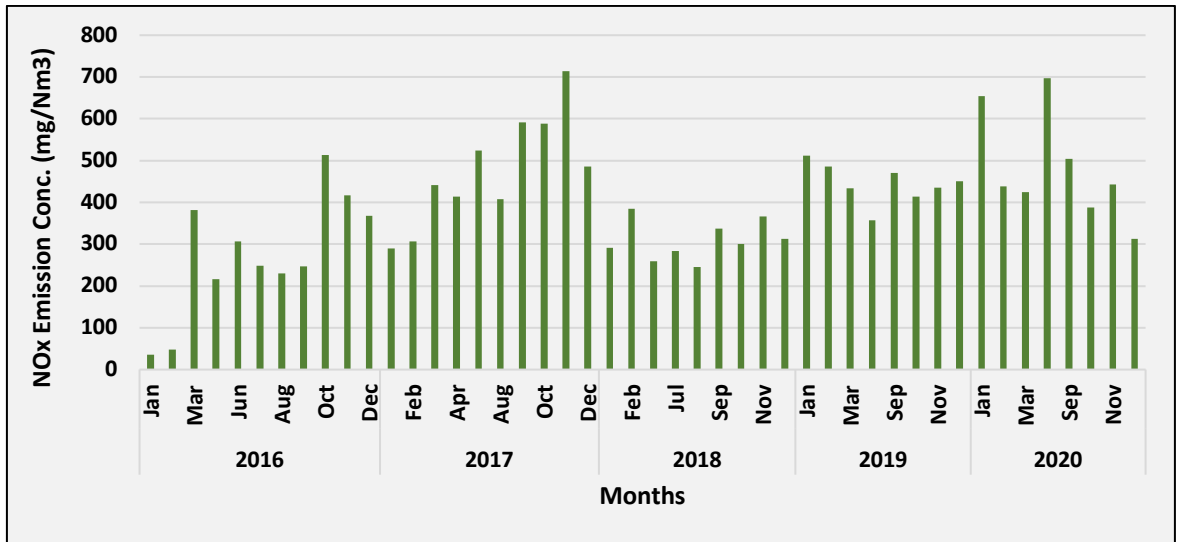


Fig. UK53: Time series of monthly average NO_x Emission concentration in Ukai TPP (Unit 6)

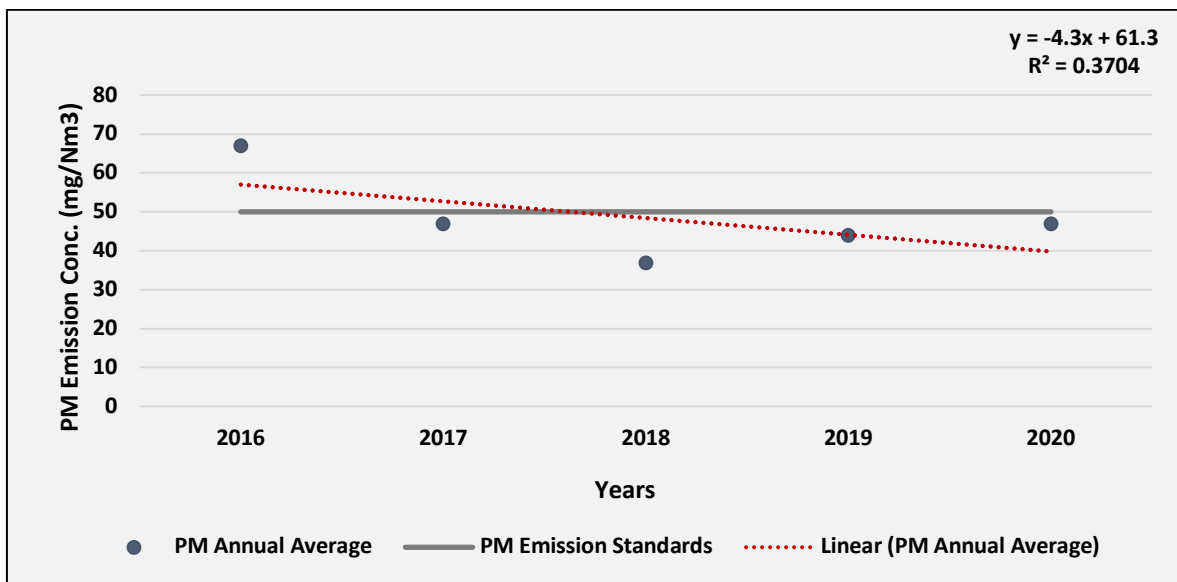


Fig. UK54: Trend of annual mean PM Emission air concentration in Ukai TPP (Unit 6)

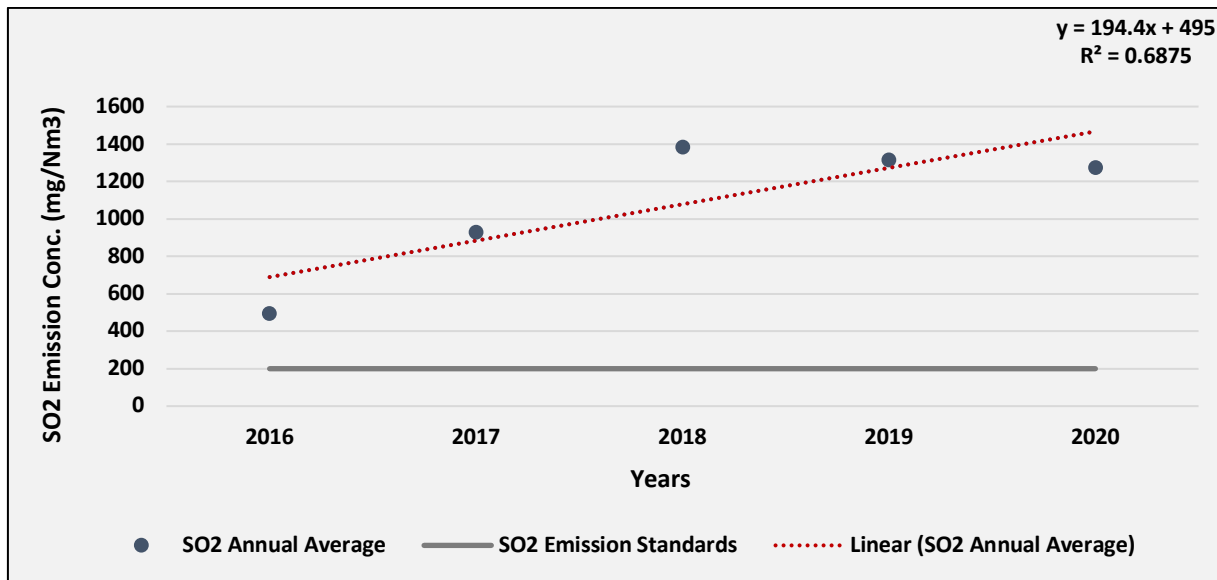


Fig. UK55: Trend of annual mean SO₂ Emission air concentration in Ukai TPP (Unit 6)

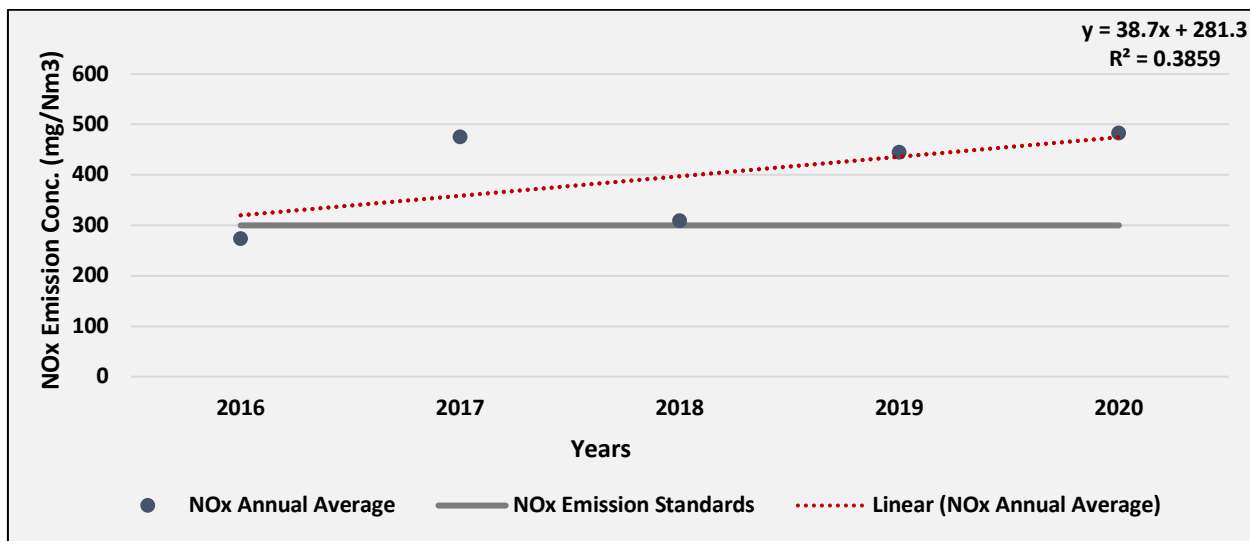


Fig. UK56: Trend of annual mean NO_x Emission air concentration in Ukai TPP (Unit 6)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, is exceeding whereas the PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that PM, SO₂ and NO_x parameter are exceeding their limits with respect to the emission norms.

KAWAI ADANI POWER PLANT

The Kawai Thermal Power Project is a 1320 megawatt (MW) coal-fired power station in Kawai, District Baran, Rajasthan, India. It was commissioned in 2014. The project was developed by Adani Power Rajasthan Limited (APRL), a subsidiary of Adani Power

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. KA1-Fig. KA20) for the last two years (2018-2020) using data provided by Adani developer for KAWAI Power plant, Rajasthan, India.

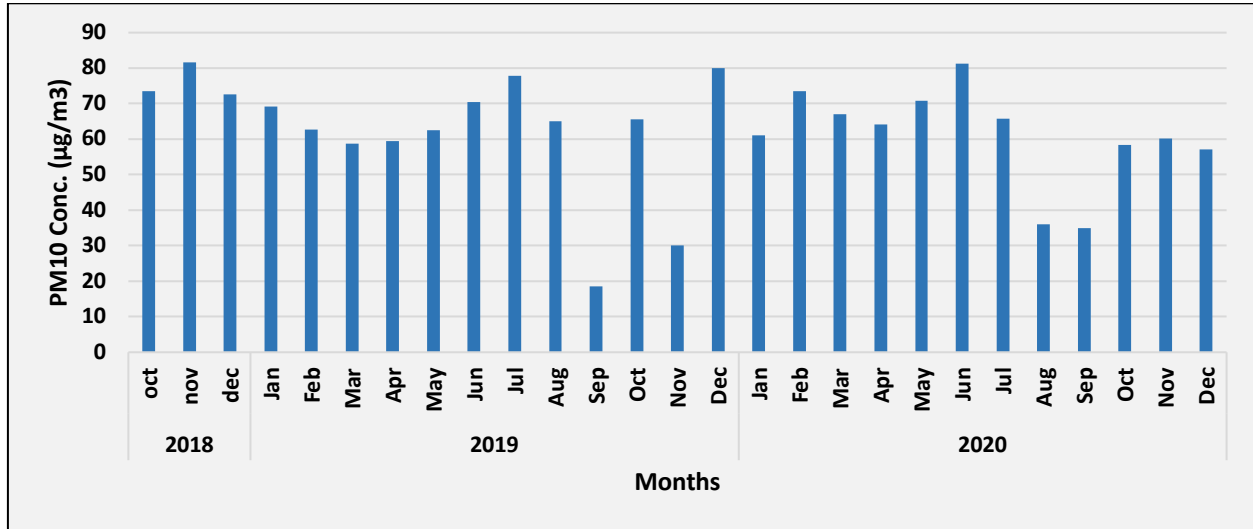


Fig. KA1: Time series of monthly average PM₁₀ ambient air concentration in Kawai TPP (Ambient 1)

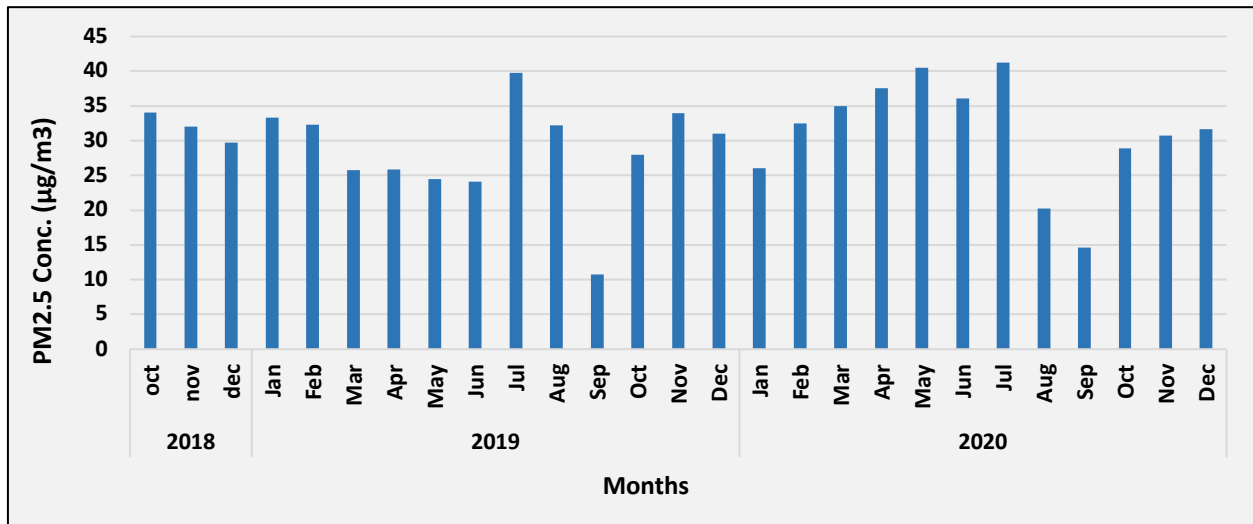


Fig. KA2: Time series of monthly average PM_{2.5} ambient air concentration in Kawai TPP (Ambient 1)

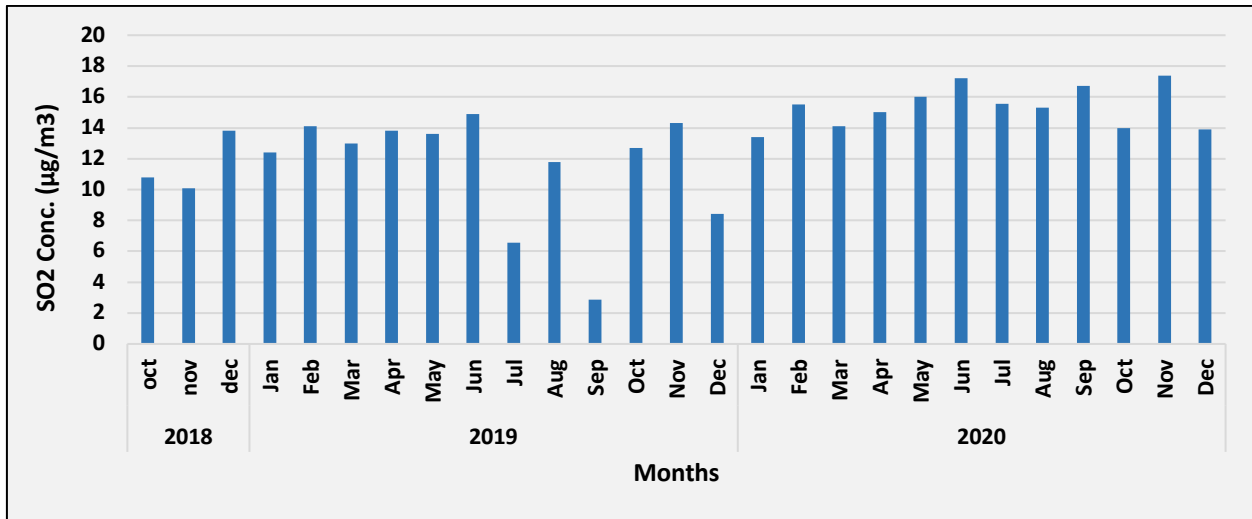


Fig. KA3: Time series of monthly average SO_2 ambient air concentration in Kawai TPP (Ambient 1)

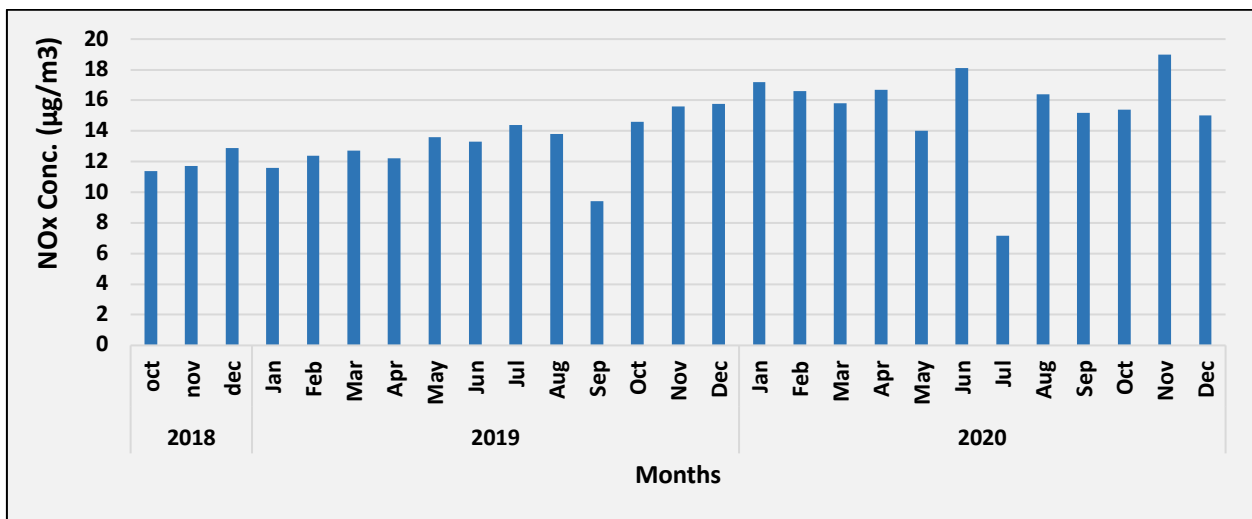


Fig. KA4: Time series of monthly average NO_x ambient air concentration in Kawai TPP (Ambient 1)

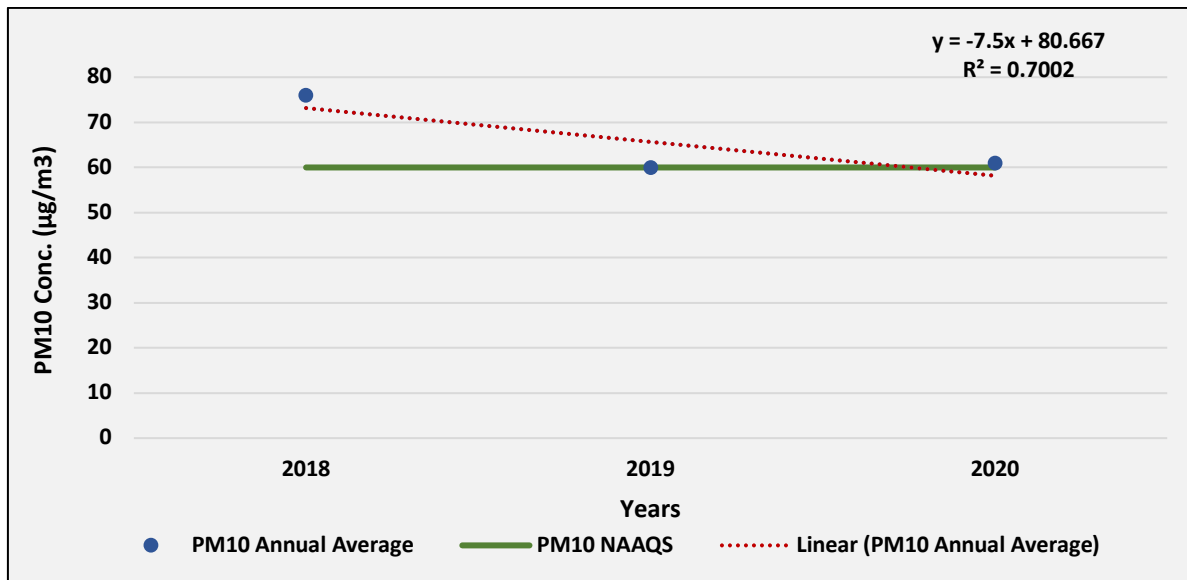


Fig. KA5: Trend of annual mean PM_{10} ambient air concentration in Kawai TPP (Ambient 1)

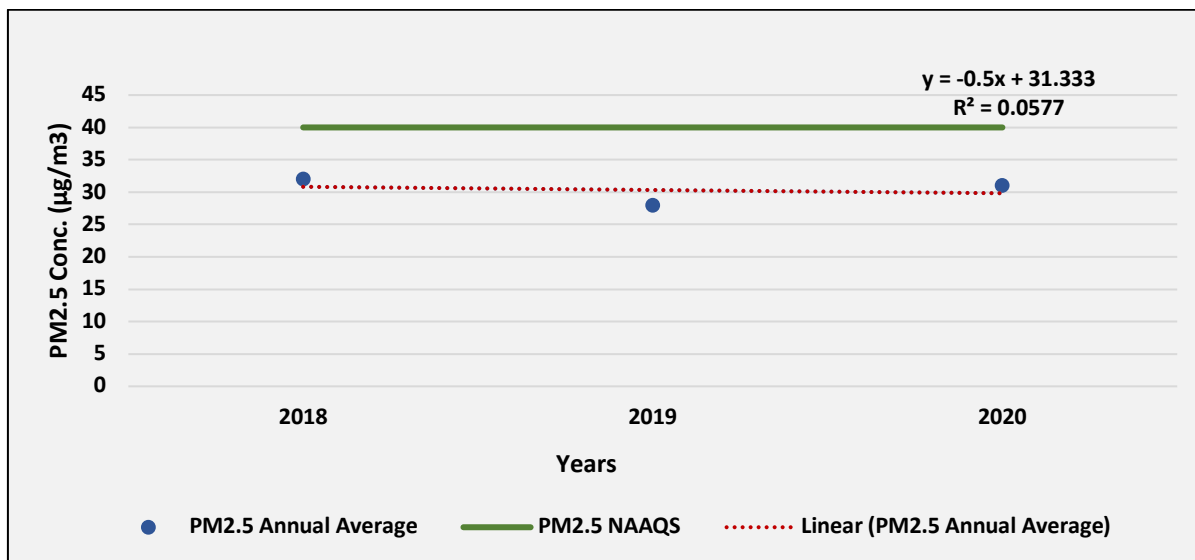


Fig. KA6: Trend of annual mean $PM_{2.5}$ ambient air concentration in Kawai TPP (Ambient 1)

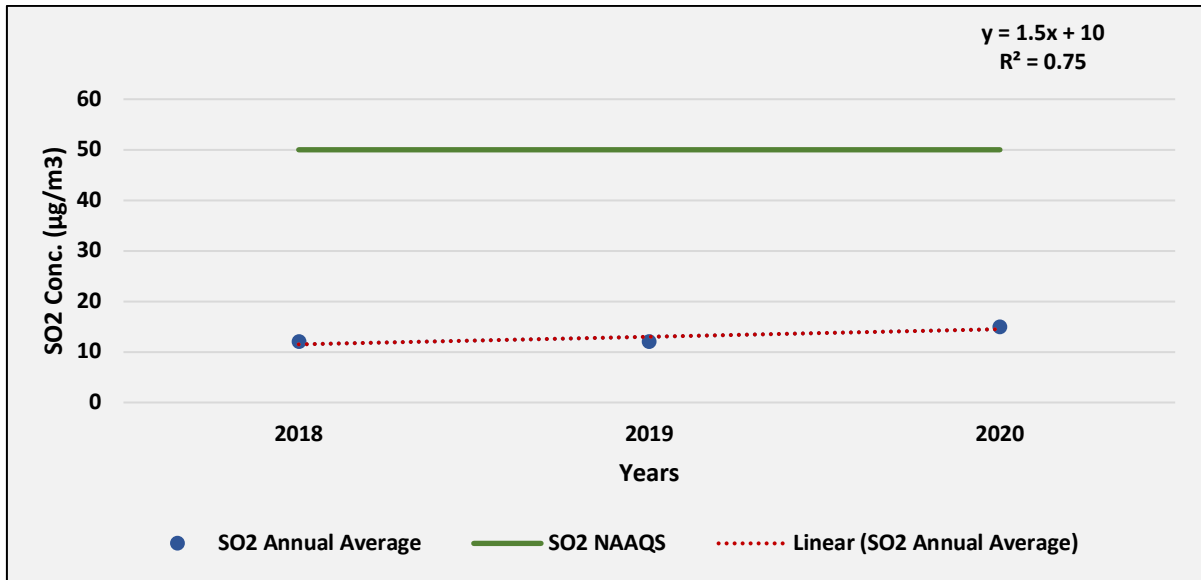


Fig. KA7: Trend of annual mean SO₂ ambient air concentration in Kawai TPP (Ambient 1)

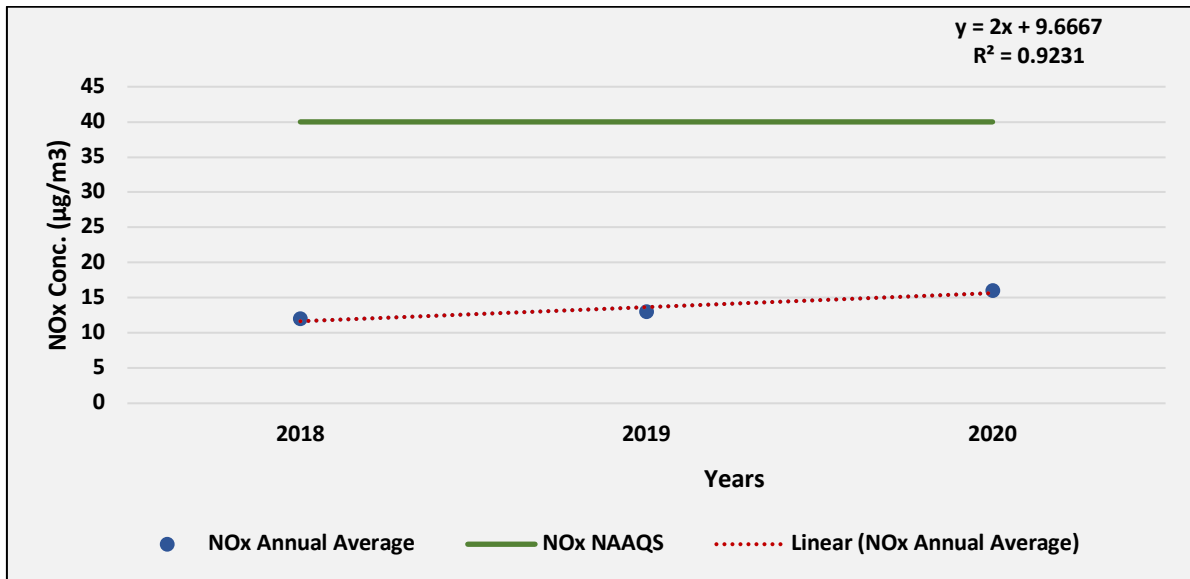


Fig. KA8: Trend of annual mean NO_x ambient air concentration in Kawai TPP (Ambient 1)

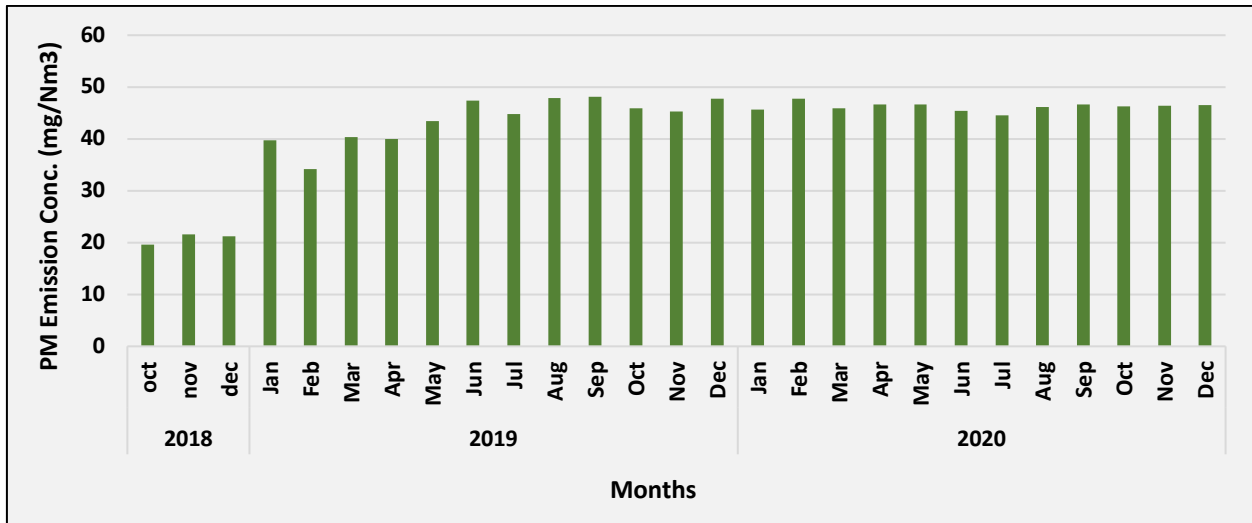


Fig. KA9: Time series of monthly average PM Emission concentration in Kawai TPP (Unit 1)

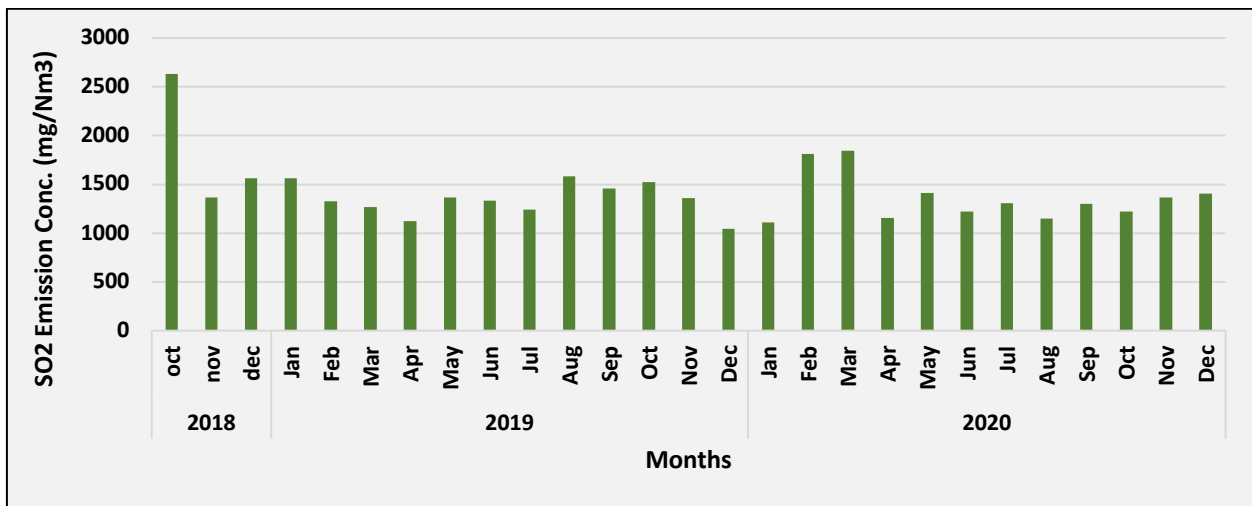


Fig. KA10: Time series of monthly average SO₂ Emission concentration in Kawai TPP (Unit 1)

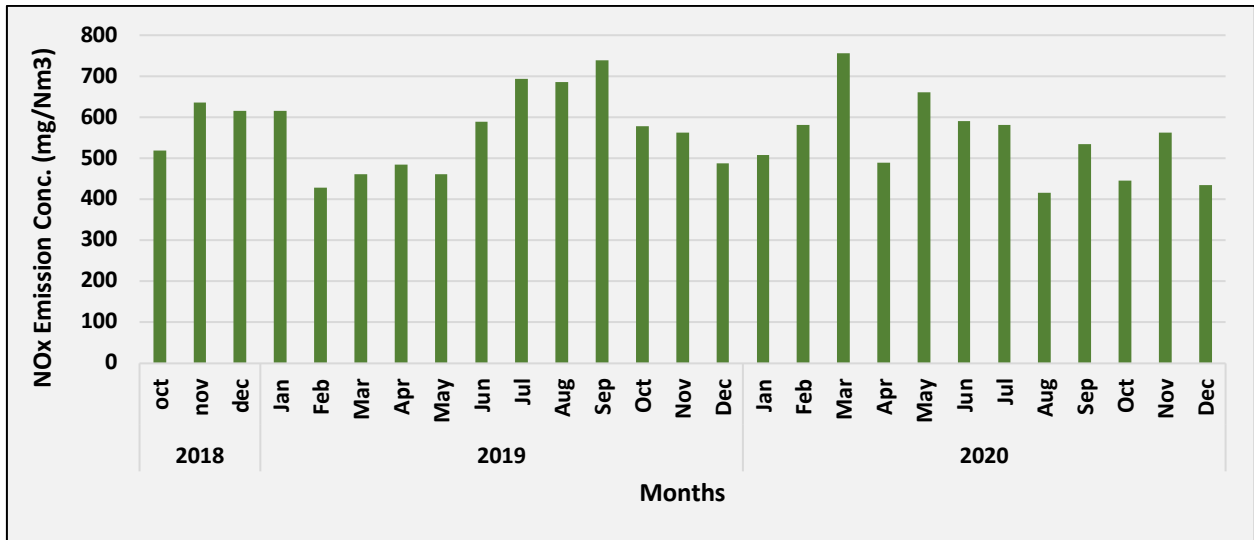


Fig. KA11: Time series of monthly average NO_x Emission concentration in Kawai TPP (Unit 1)

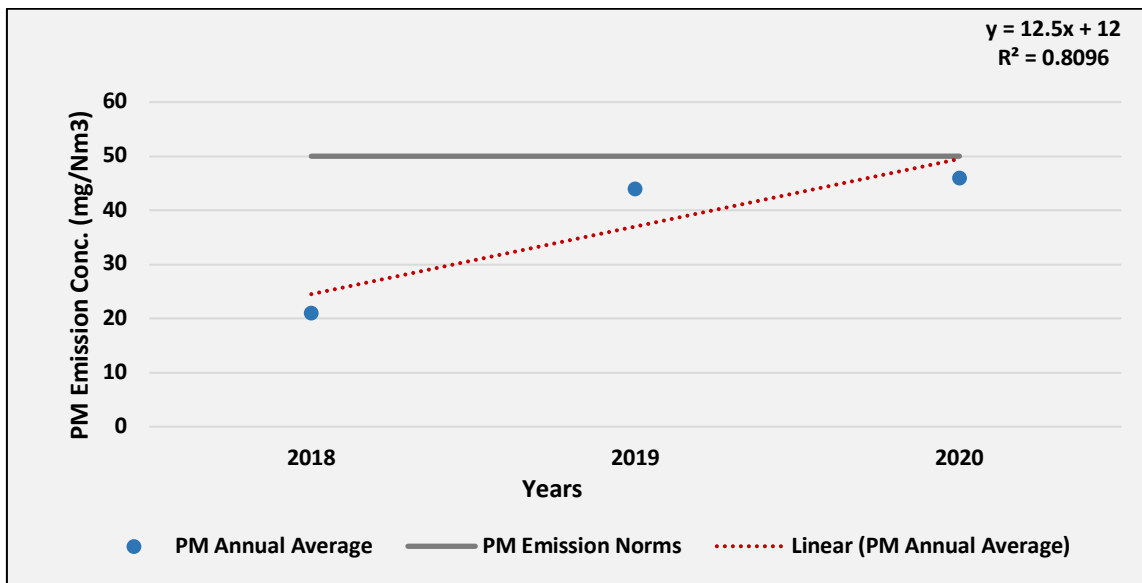


Fig. KA12: Trend of annual mean PM Emission air concentration in Kawai TPP (Unit 1)

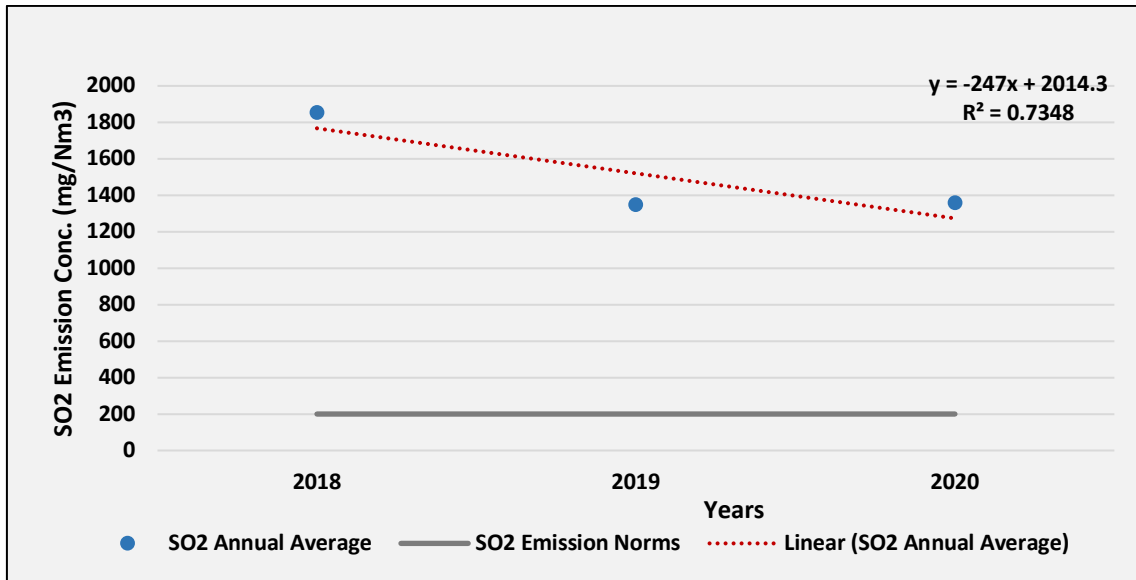


Fig. KA13: Trend of annual mean SO₂ Emission air concentration in Kawai TPP (Unit 1)

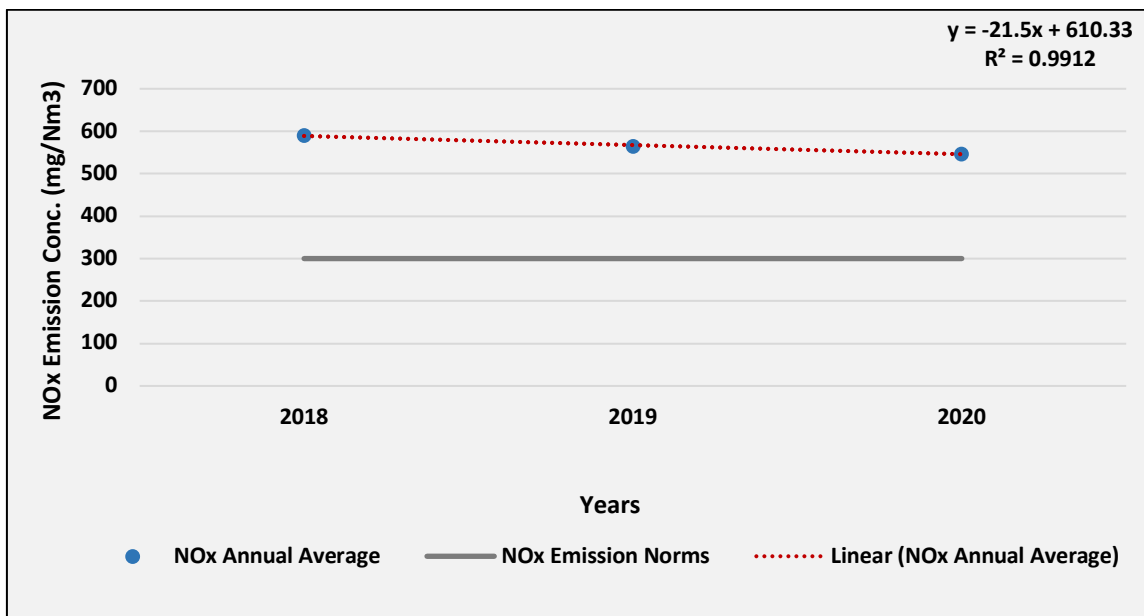


Fig. KA14: Trend of annual mean NO_x Emission air concentration in Kawai TPP (Unit 1)

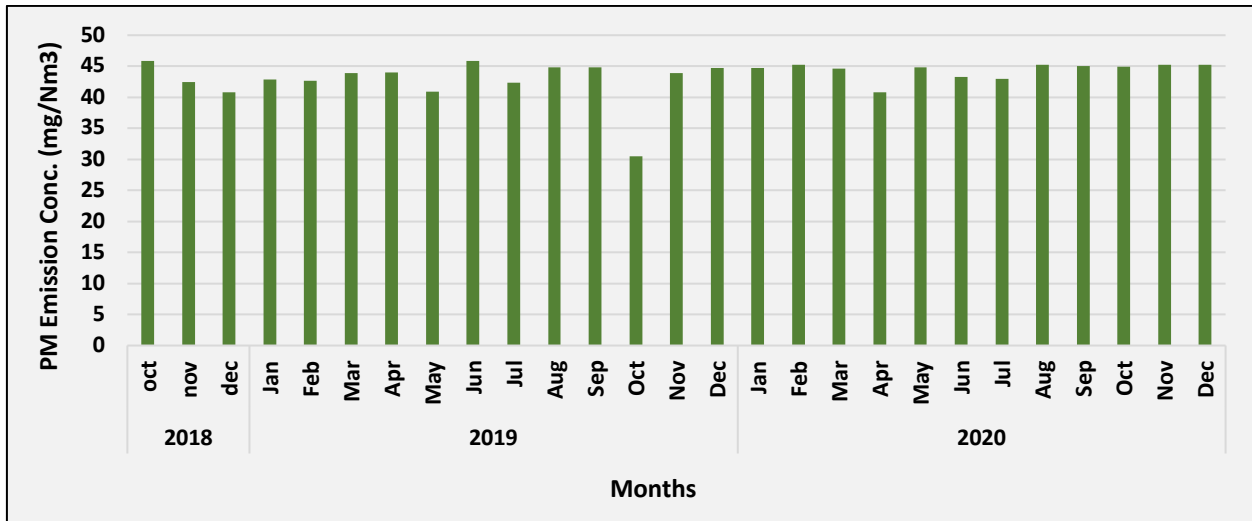


Fig. KA15: Time series of monthly average PM Emission concentration in Kawai TPP (Unit 2)

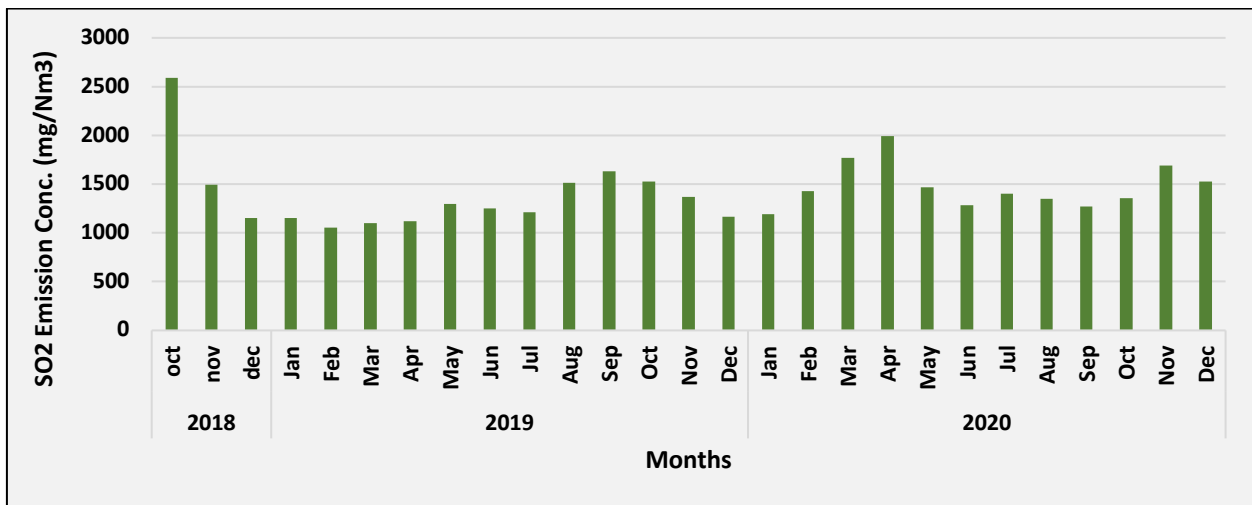


Fig. KA16: Time series of monthly average SO₂ Emission concentration in Kawai TPP (Unit 2)

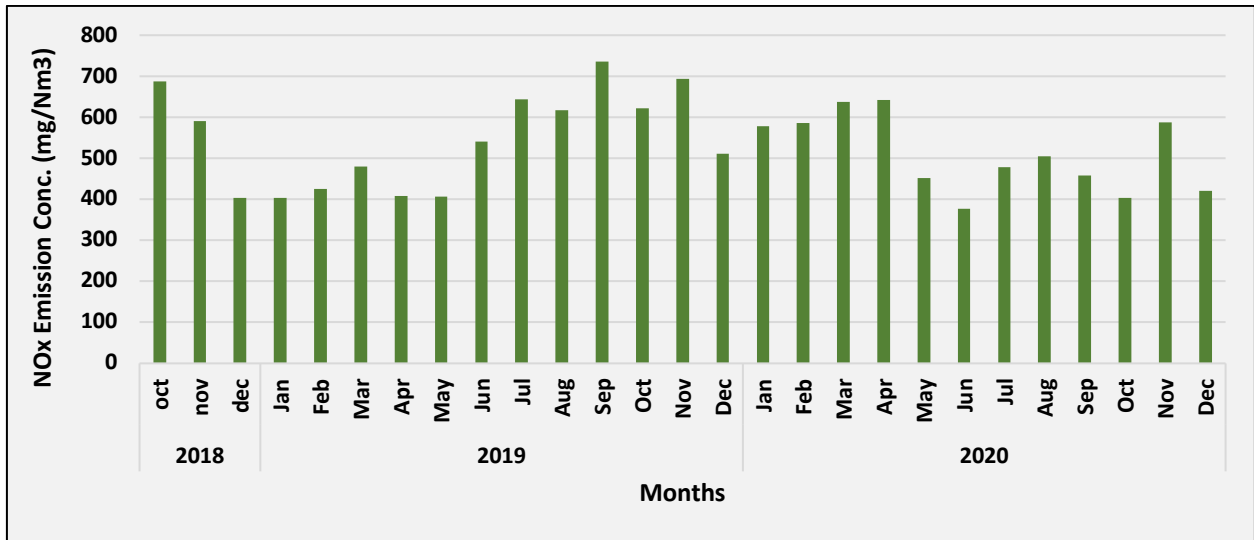


Fig. KA17: Time series of monthly average NO_x Emission concentration in Kawai TPP (Unit 2)

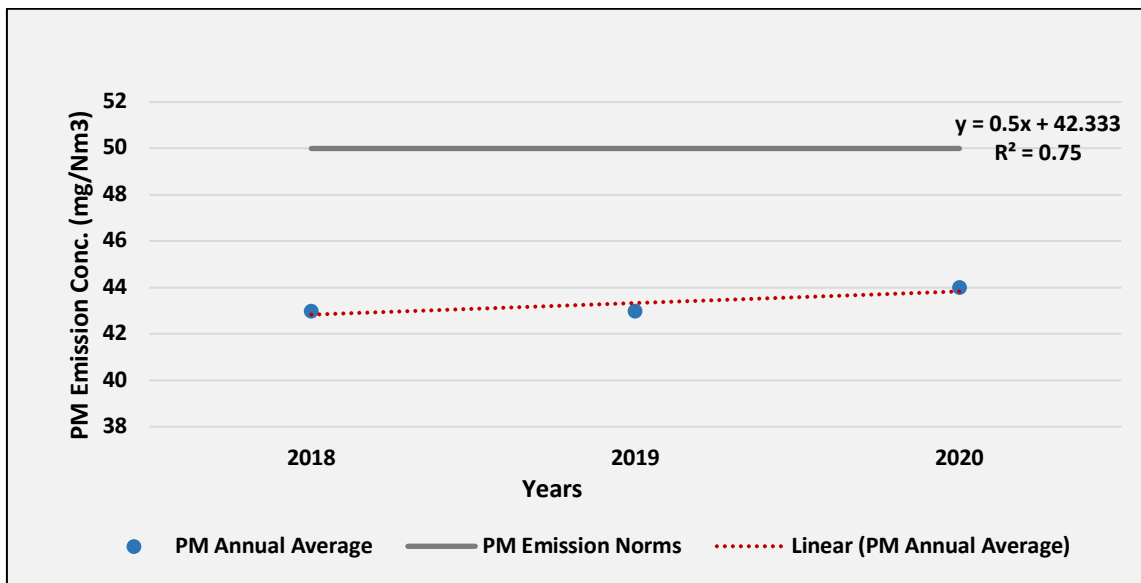


Fig. KA18: Trend of annual mean PM Emission air concentration in Kawai TPP (Unit 2)

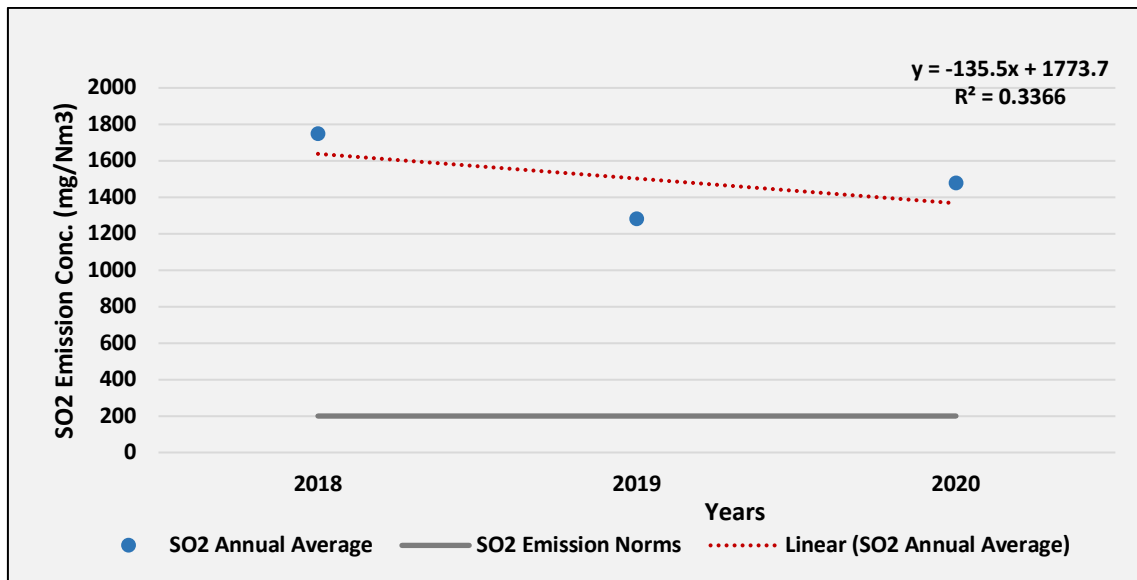


Fig. KA19: Trend of annual mean SO₂ Emission air concentration in Kawai TPP (Unit 2)

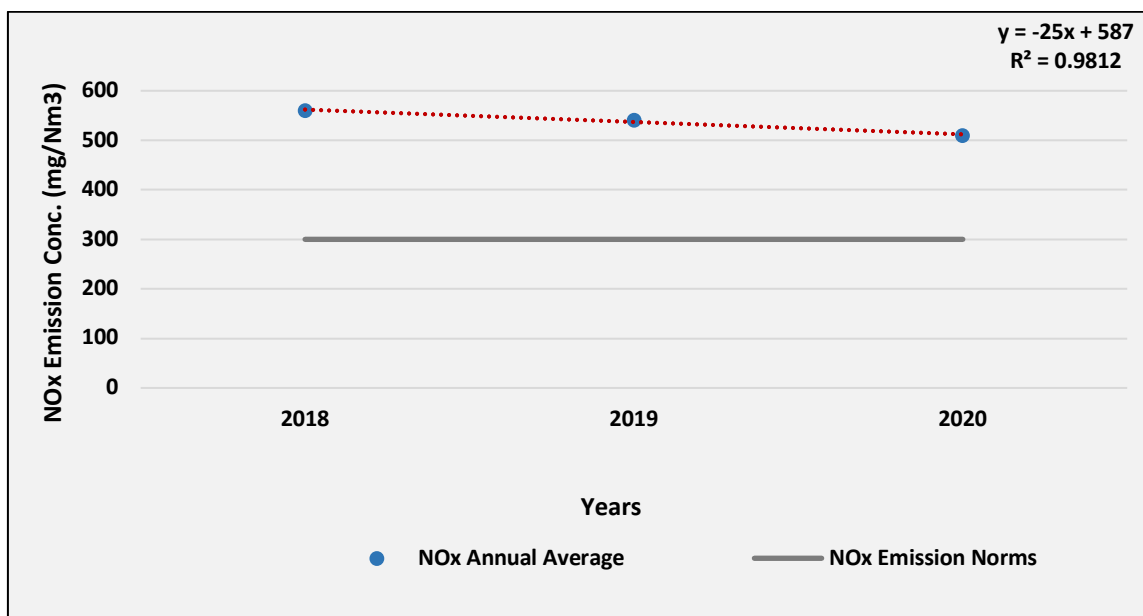


Fig. KA20: Trend of annual mean NO_x Emission air concentration in Kawai TPP (Unit 2)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, PM_{2.5} are exceeding whereas the SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

RAIGARH ADANI POWER PLANT

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. RAI1-Fig. RAI14) for the last one year (2020) using data provided by Adani developer for Raigarh Power plant, Chhattisgarh, India.

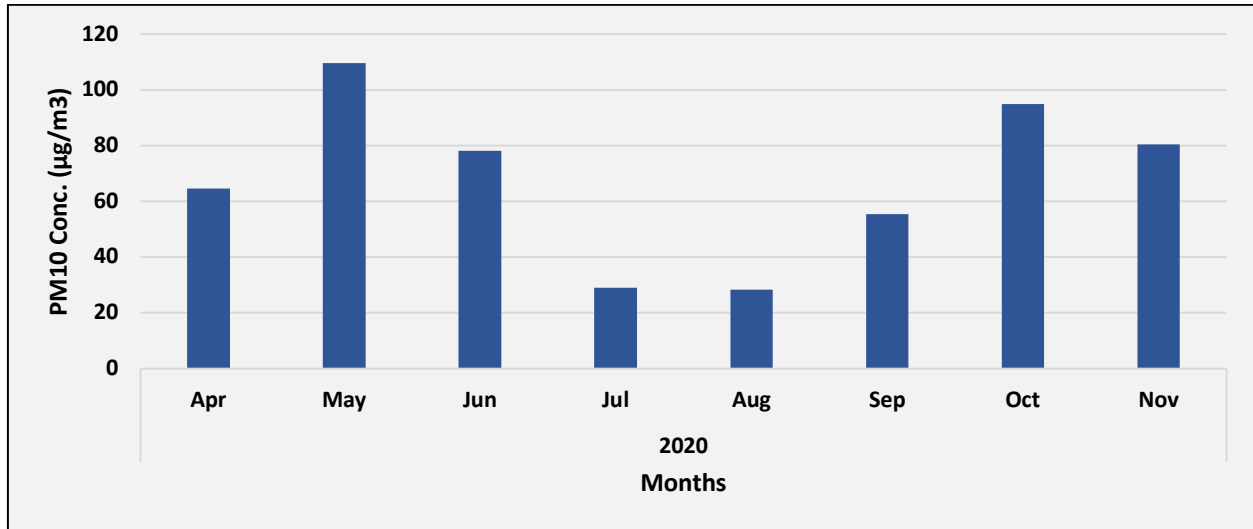


Fig. RAI1: Time series of monthly average PM₁₀ ambient air concentration in Raigarh TPP (Ambient)

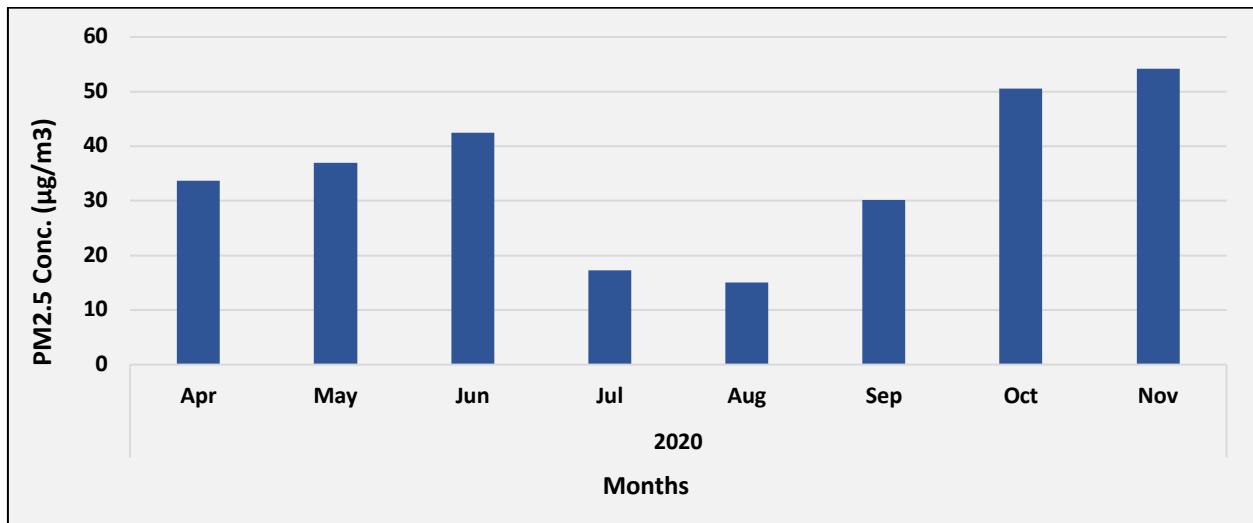


Fig. RAI2: Time series of monthly average PM_{2.5} ambient air concentration in Raigarh TPP (Ambient)

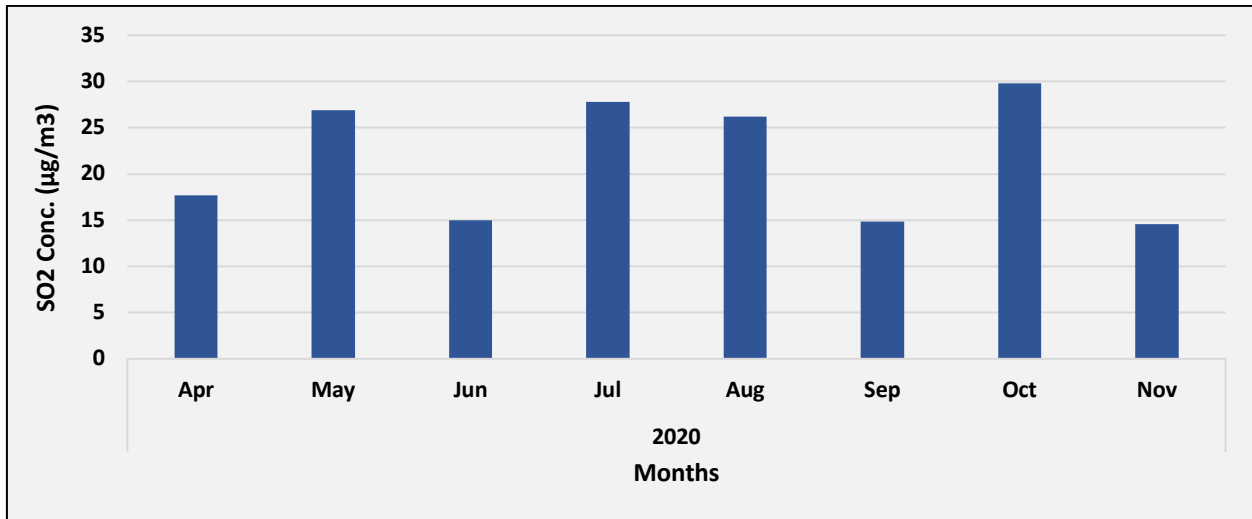


Fig. RAI3: Time series of monthly average So₂ ambient air concentration in Raigarh TPP (Ambient)

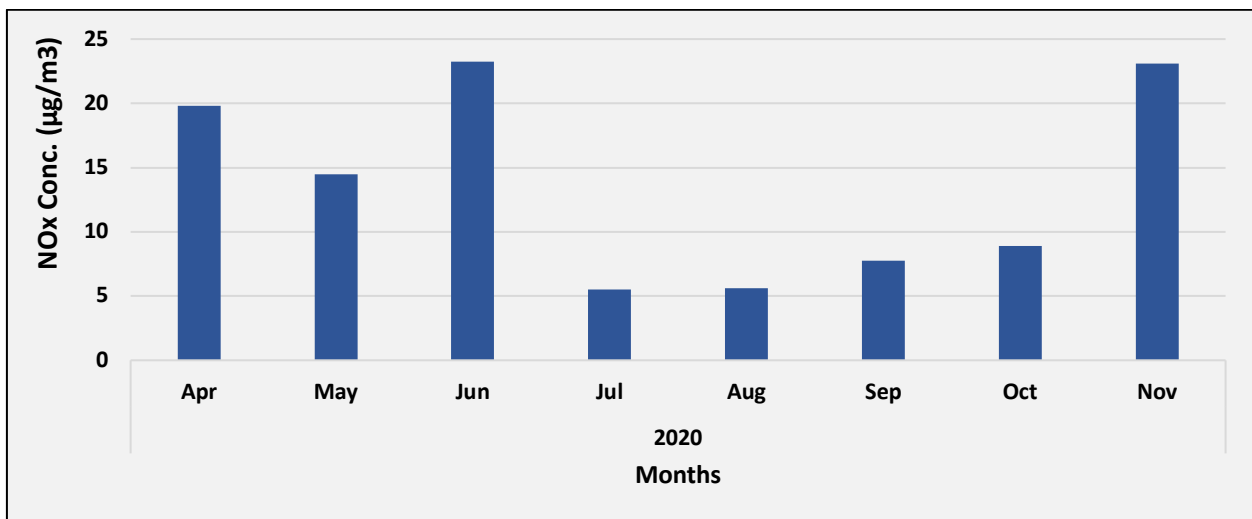


Fig. RAI4: Time series of monthly average NO_x ambient air concentration in Raigarh TPP (Ambient)

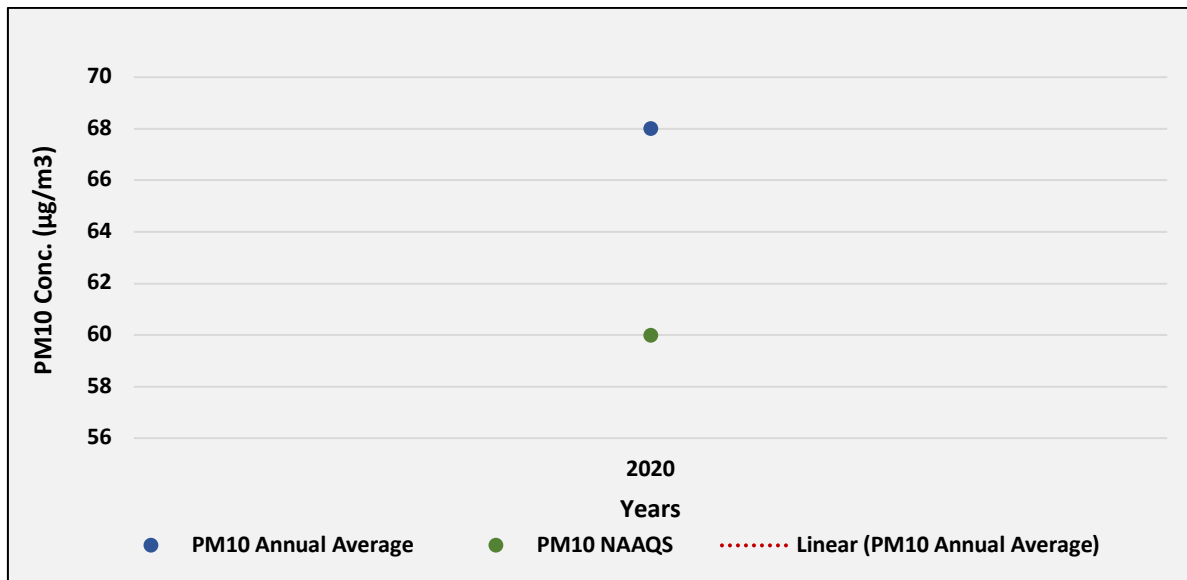


Fig. RAI5: Trend of annual mean PM_{10} ambient air concentration in Raigarh TPP (Ambient)

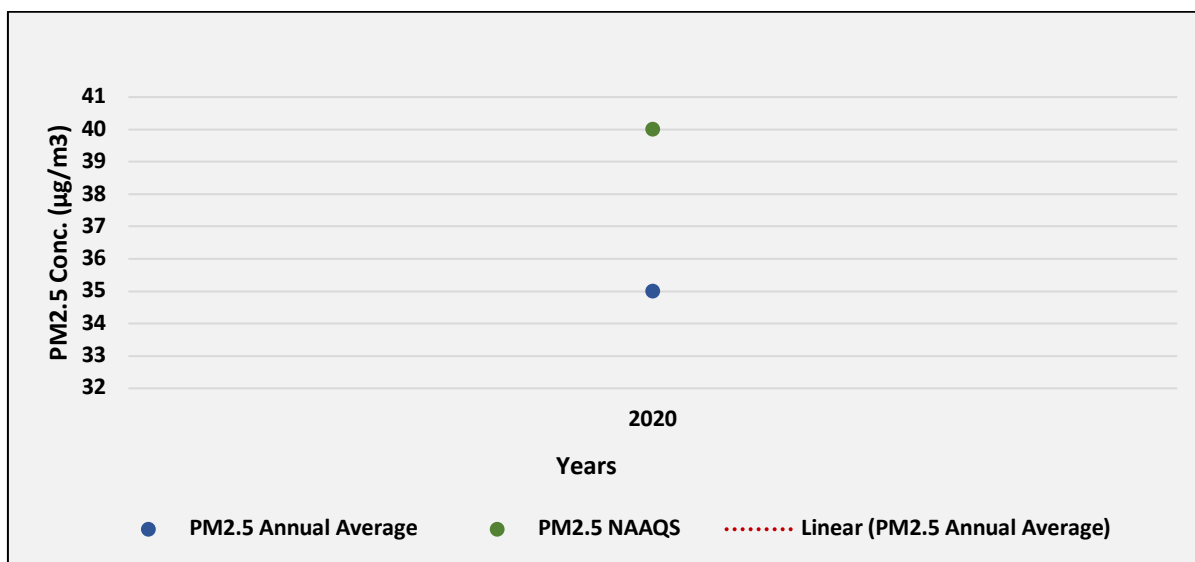


Fig. RAI6: Trend of annual mean $PM_{2.5}$ ambient air concentration in Raigarh TPP (Ambient)

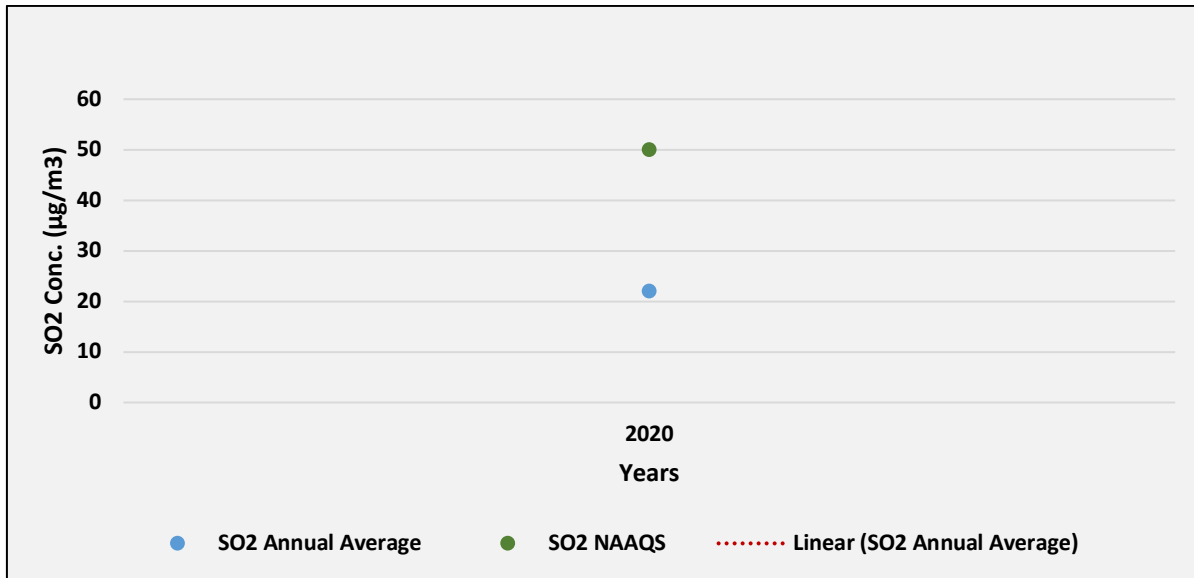


Fig. RAI7: Trend of annual mean SO₂ ambient air concentration in Raigarh TPP (Ambient)

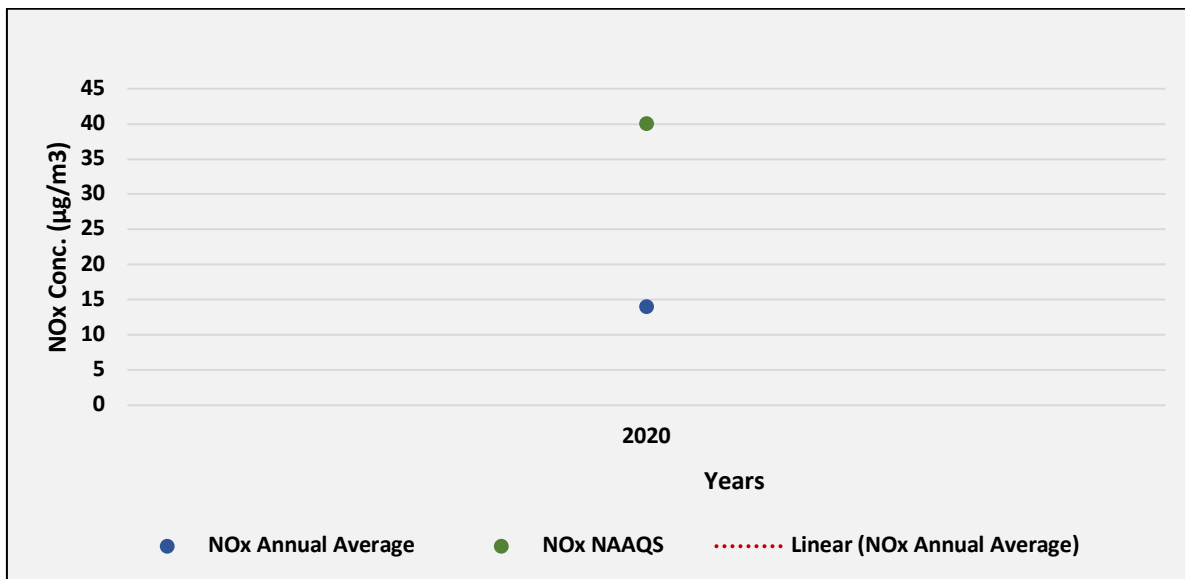


Fig. RAI8: Trend of annual mean NO_x ambient air concentration in Raigarh TPP (Ambient)

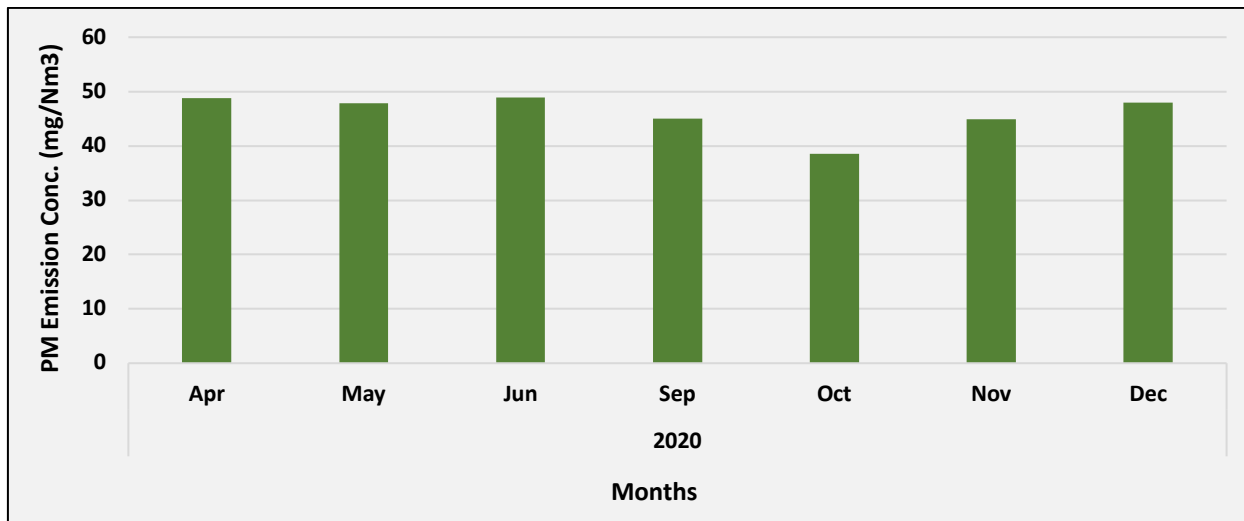


Fig. RAI9: Time series of monthly average PM Emission concentration in Raigarh TPP (Unit 1)

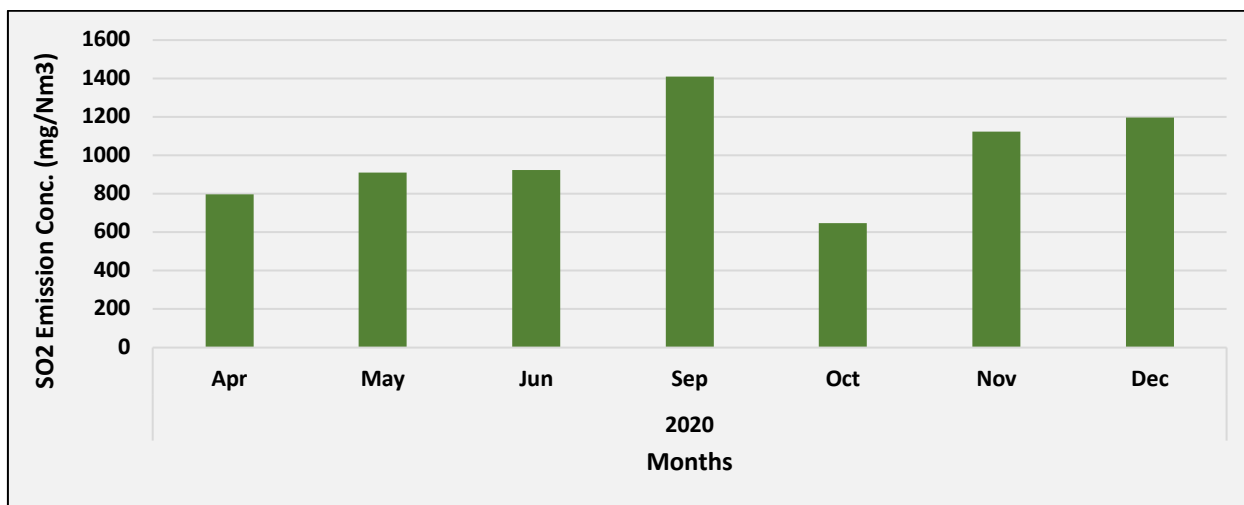


Fig. RAI10: Time series of monthly average SO₂ Emission concentration in Raigarh TPP (Unit 1)

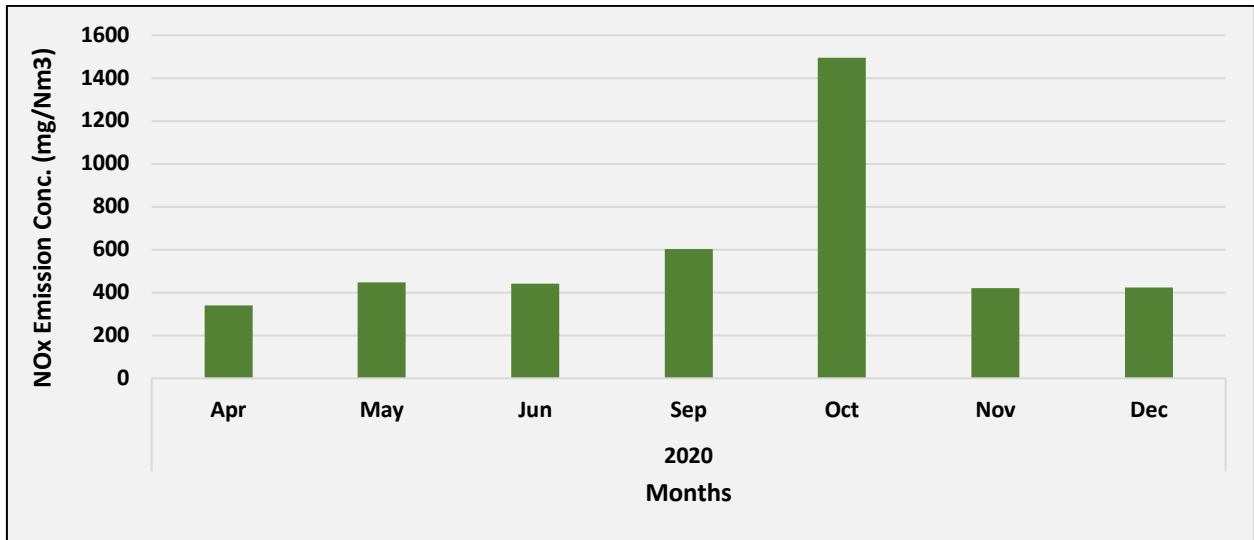


Fig. RAI11: Time series of monthly average NO_x Emission concentration in Raigarh TPP (Unit 1)

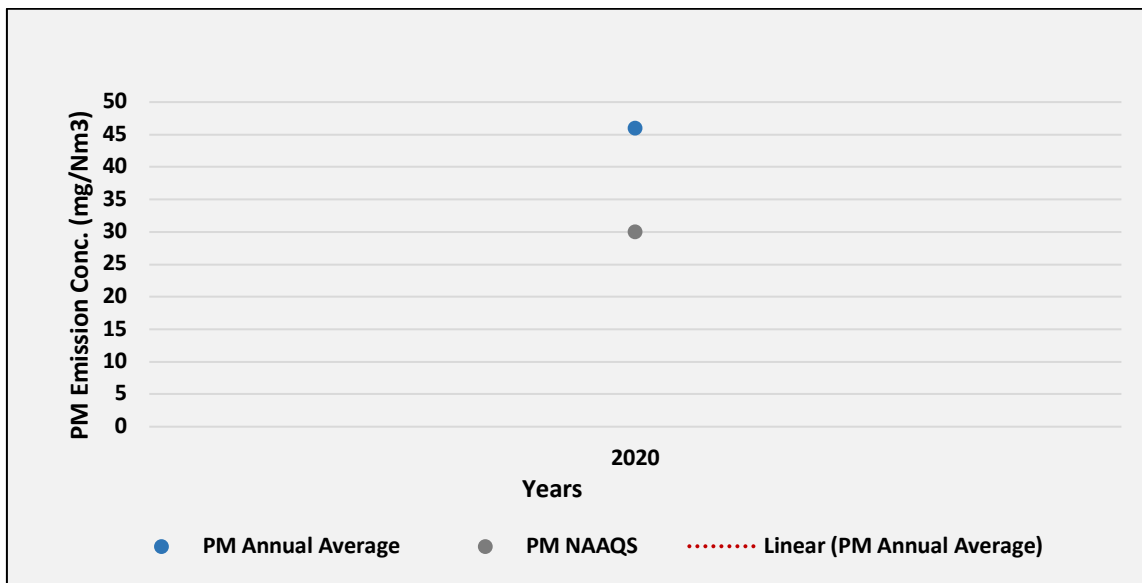


Fig. RAI12: Trend of annual mean PM Emission air concentration in Raigarh TPP (Unit 1)

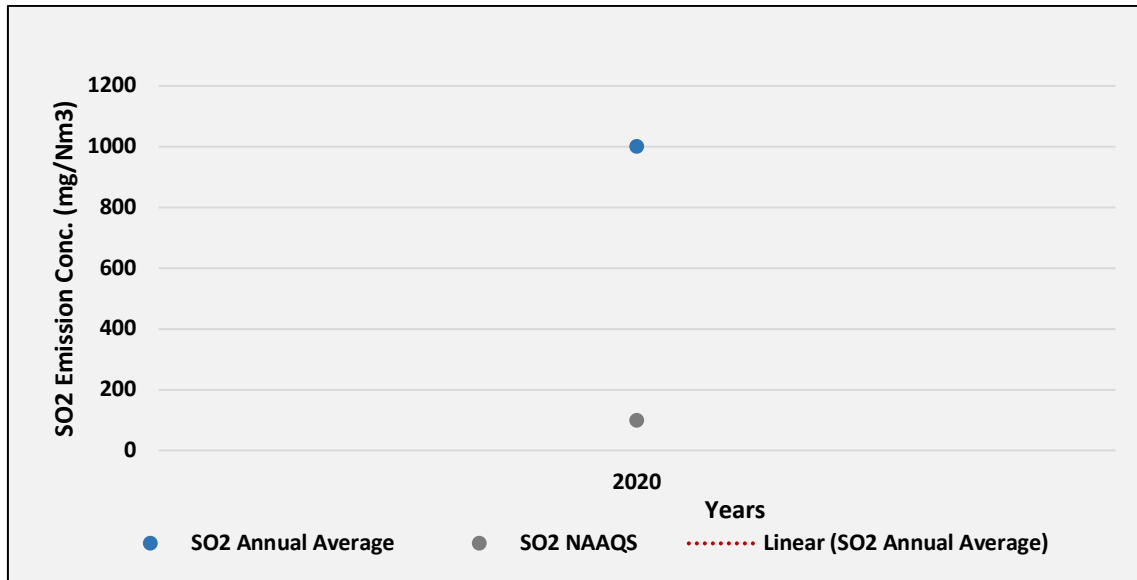


Fig. RAI13: Trend of annual mean SO₂ Emission air concentration in Raigarh TPP (Unit 1)

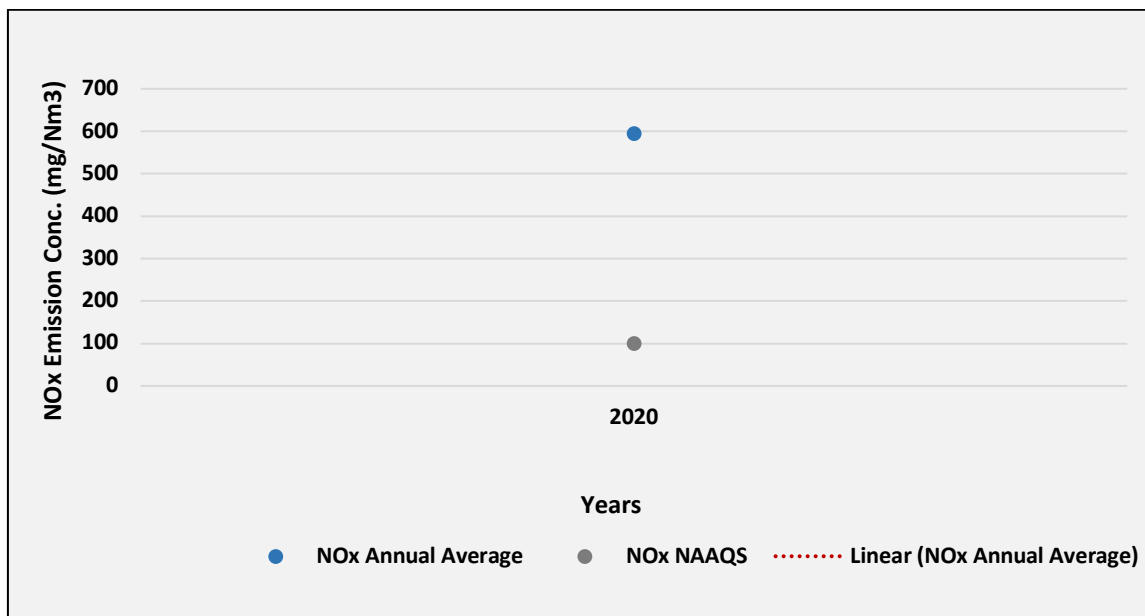


Fig. RAI14: Trend of annual mean NO_x Emission air concentration in Raigarh TPP (Unit 1)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀ is exceeding whereas the PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that PM, SO₂ and NO_x parameter are much higher than the emission norms.

RAIKHEDA ADANI THERMAL POWER PLANT

Raikheda Thermal Power Station is a coal-based thermal power plant located in Raikheda village in Tilda Tehsil in Raipur district in the Indian state of Chhattisgarh. On 3 August 2019, Adani Power Limited or Adani Group Chhattisgarh took over control of the power plant from GMR Chhattisgarh Energy Ltd.

The ambient air quality concentrations of PM_{10} , $PM_{2.5}$, SO_2 , and NO_x , data analyzed (Fig. RAK1-Fig. RAK36) for the last one years (2020) using data provided by Adani developer for Raikheda Power plant, Chhattisgarh, India.

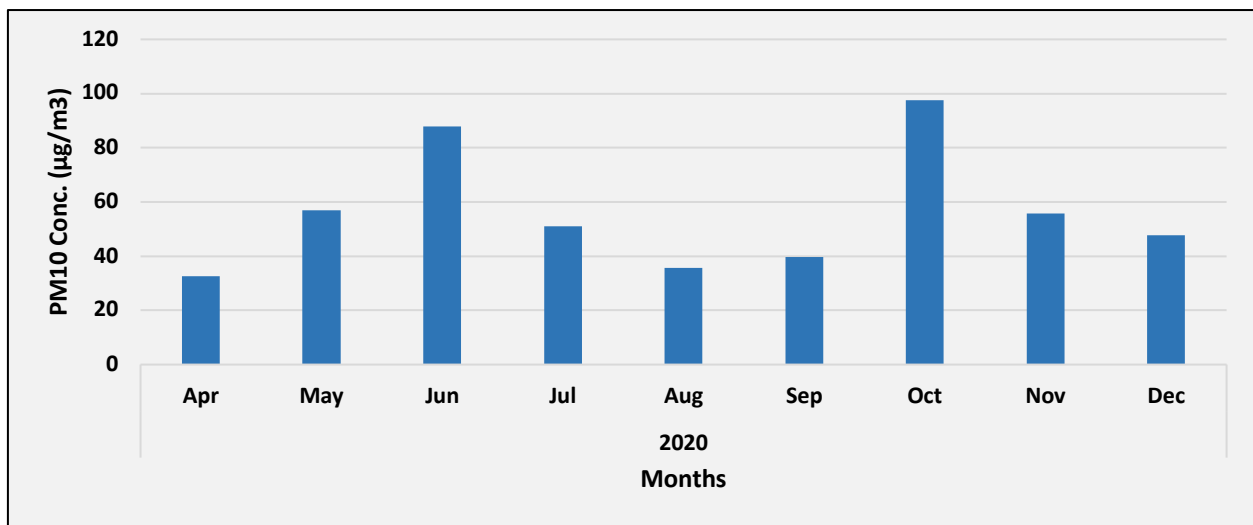


Fig. RAK1: Time series of monthly average PM_{10} ambient air concentration in Raikheda TPP (Ambient 1)

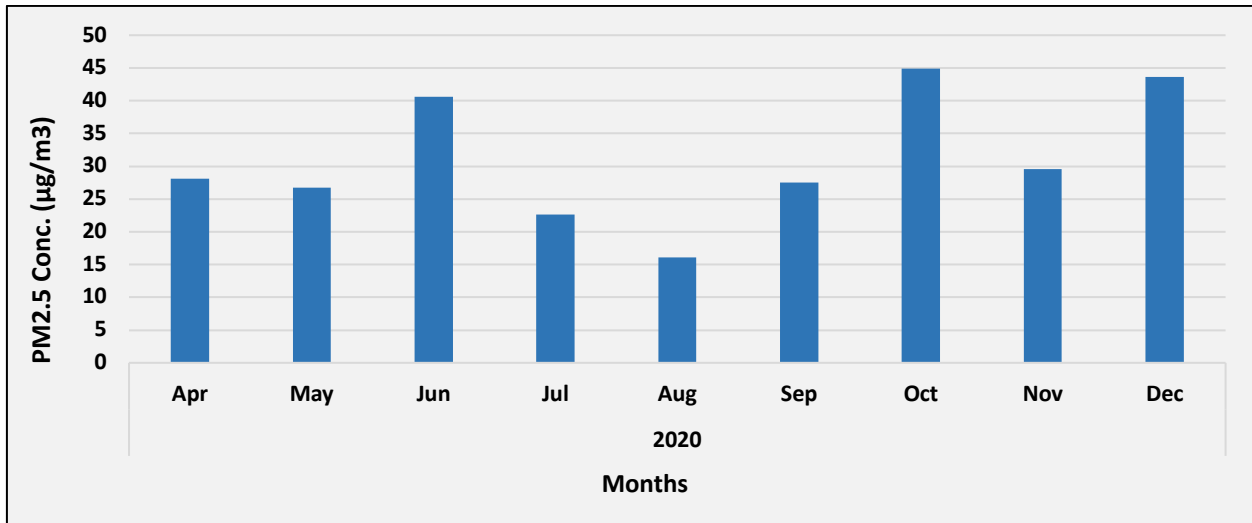


Fig. RAK2: Time series of monthly average $PM_{2.5}$ ambient air concentration in Raikheda TPP (Ambient 1)

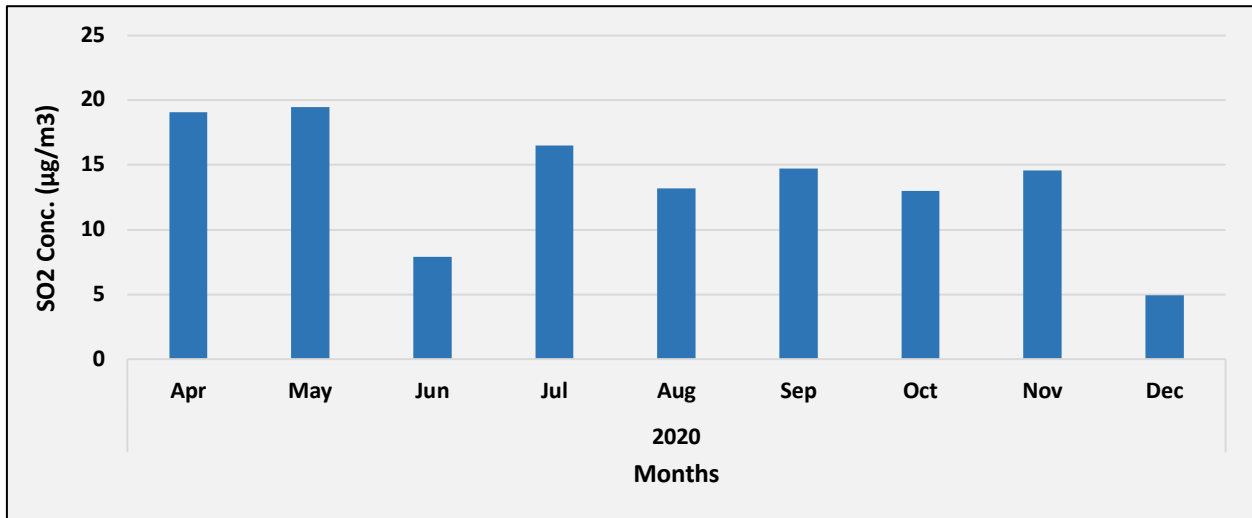


Fig. RAK3: Time series of monthly average SO_2 ambient air concentration in Raikheda TPP (Ambient 1)

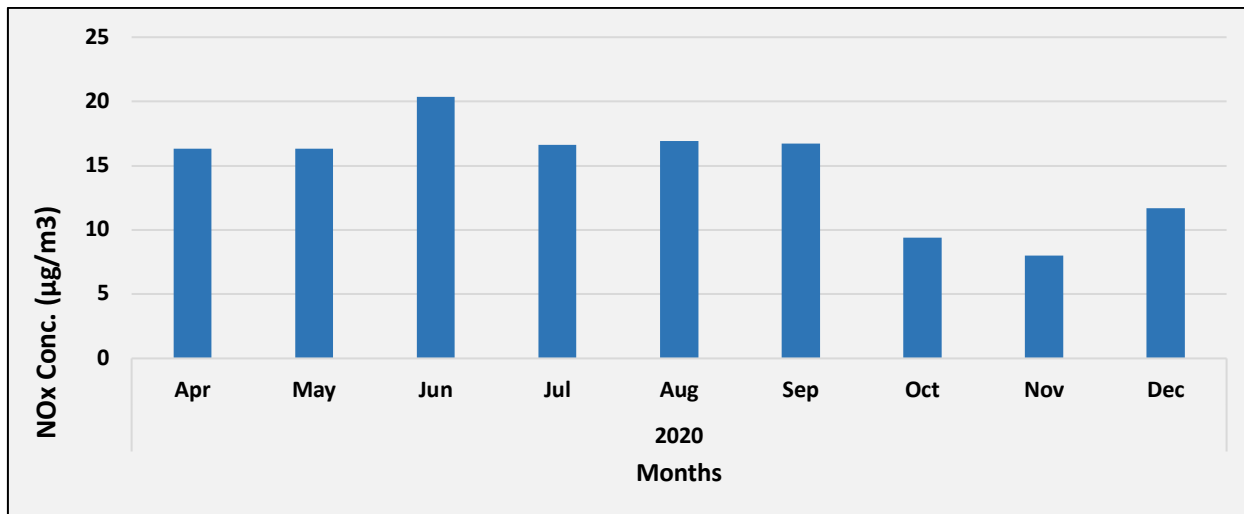


Fig. RAK4: Time series of monthly average NO_x ambient air concentration in Raikheda TPP (Ambient 1)

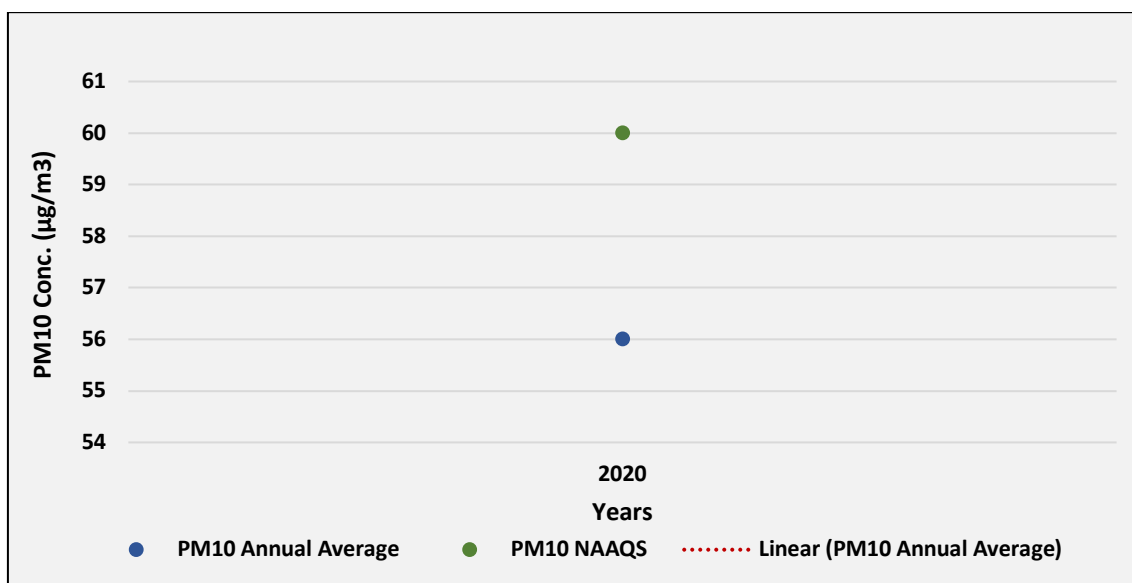


Fig. RAK5: Trend of annual mean PM₁₀ ambient air concentration in Raikheda TPP (Ambient 1)

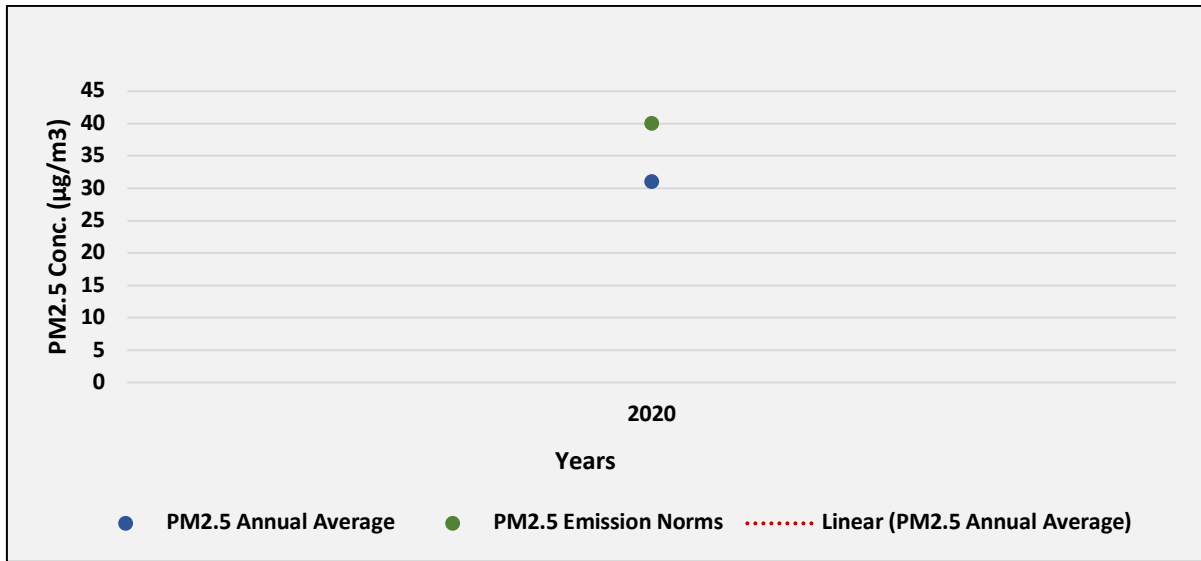


Fig. RAK6: Trend of annual mean $PM_{2.5}$ ambient air concentration in Raikheda TPP (Ambient 1)

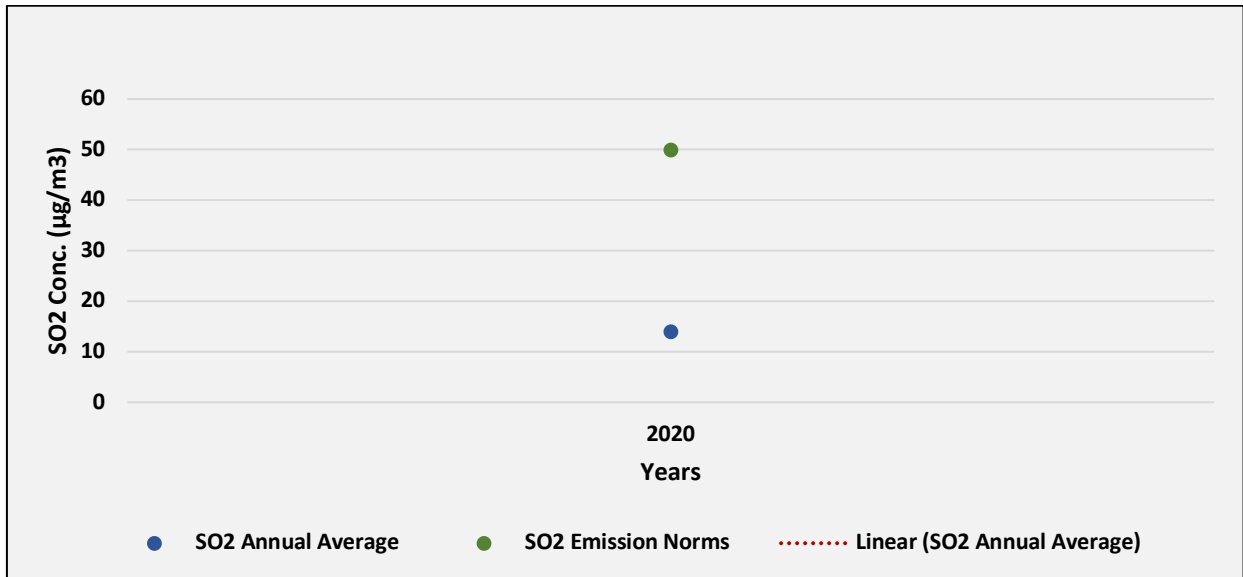


Fig. RAK7: Trend of annual mean SO_2 ambient air concentration in Raikheda TPP (Ambient 1)

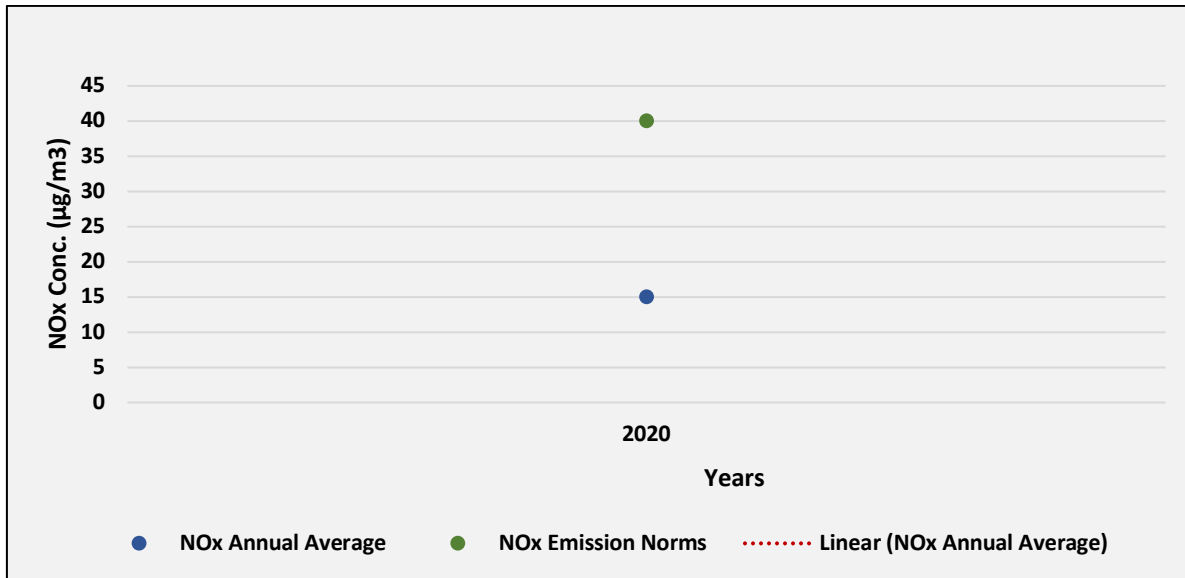


Fig. RAK8: Trend of annual mean NO_x ambient air concentration in Raikheda TPP (Ambient 1)

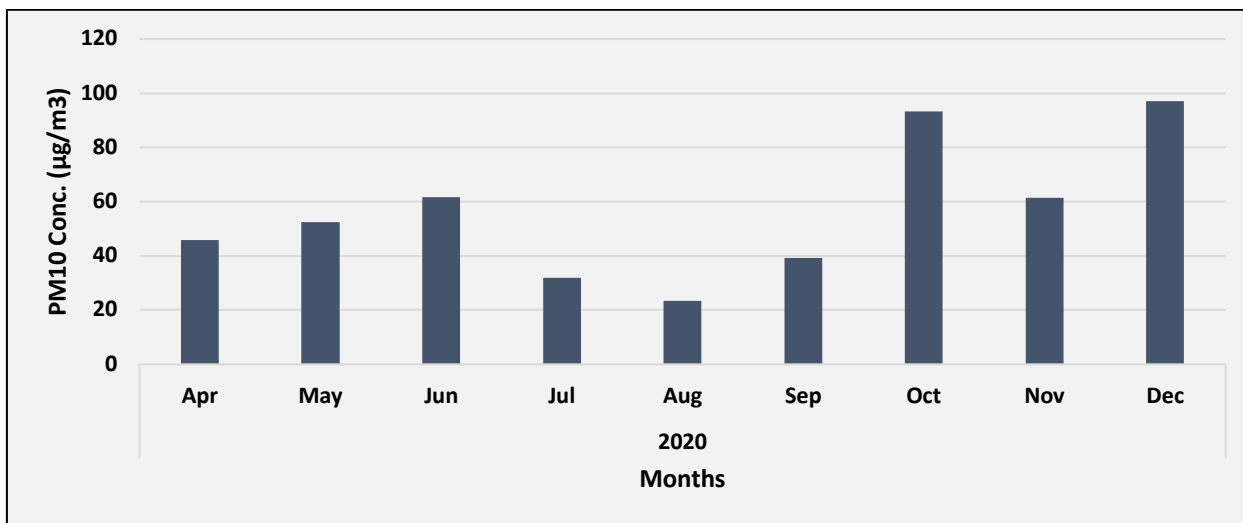


Fig. RAK9: Time series of monthly average PM₁₀ ambient air concentration in Raikheda TPP (Ambient 2)

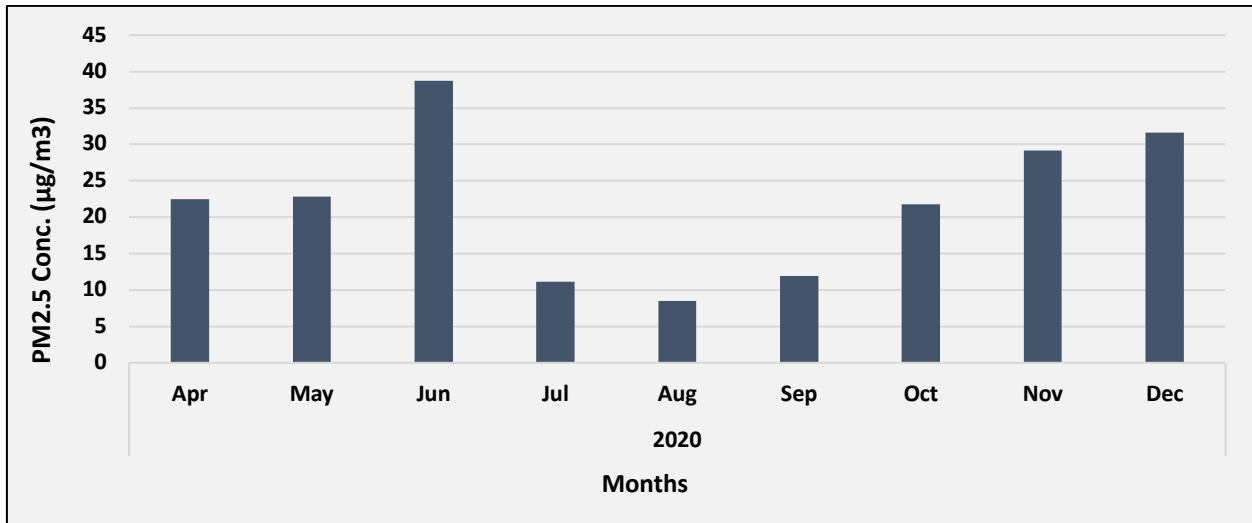


Fig. RAK10: Time series of monthly average $PM_{2.5}$ ambient air concentration in Raikheda TPP (Ambient 2)

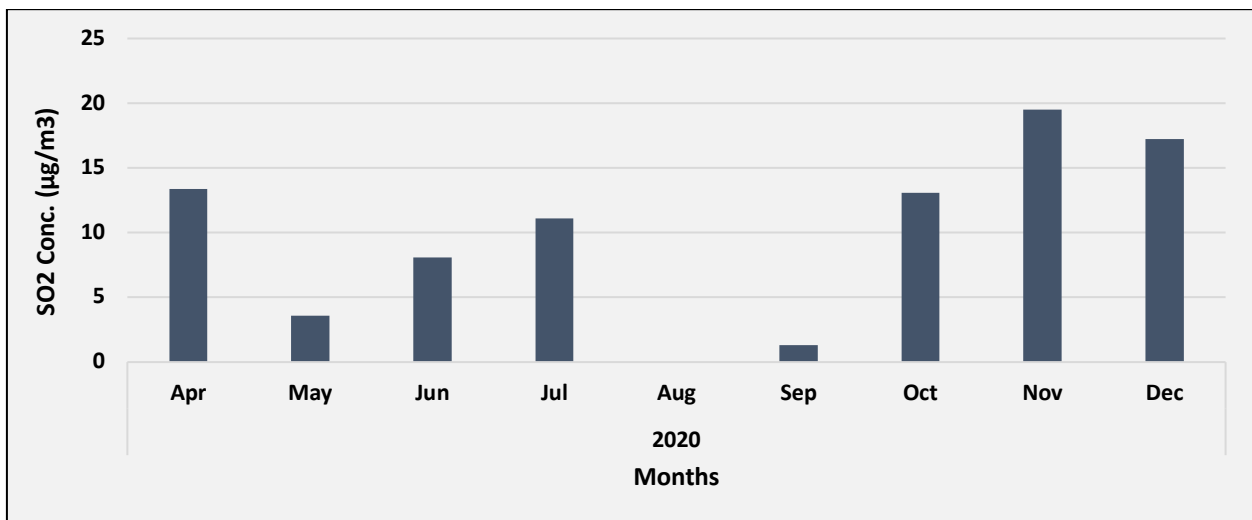


Fig. RAK11: Time series of monthly average SO_2 ambient air concentration in Raikheda TPP (Ambient 2)

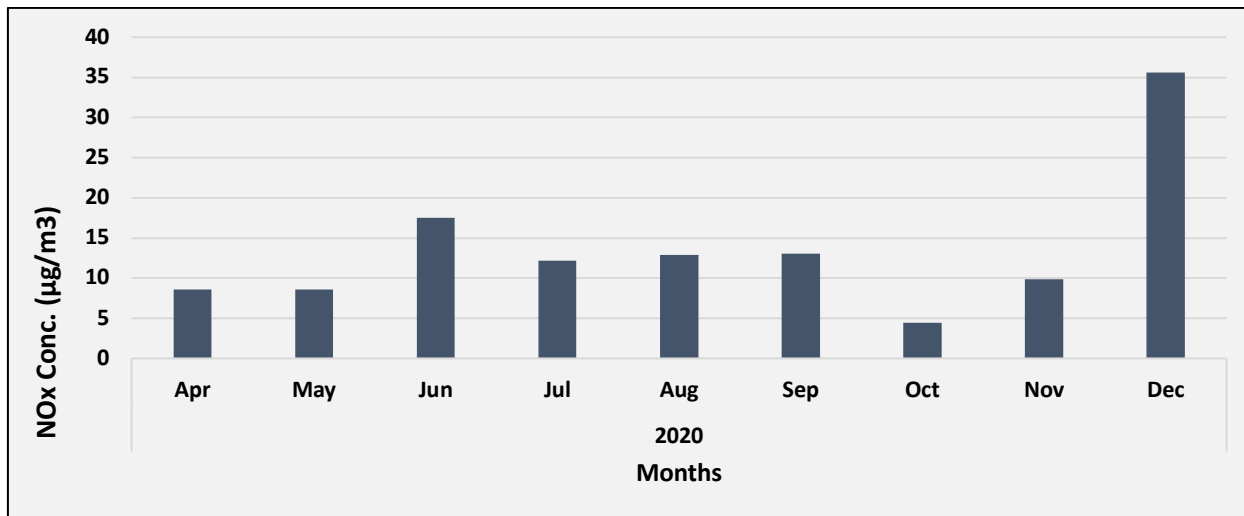


Fig. RAK12: Time series of monthly average NO_x ambient air concentration in Raikheda TPP (Ambient 2)

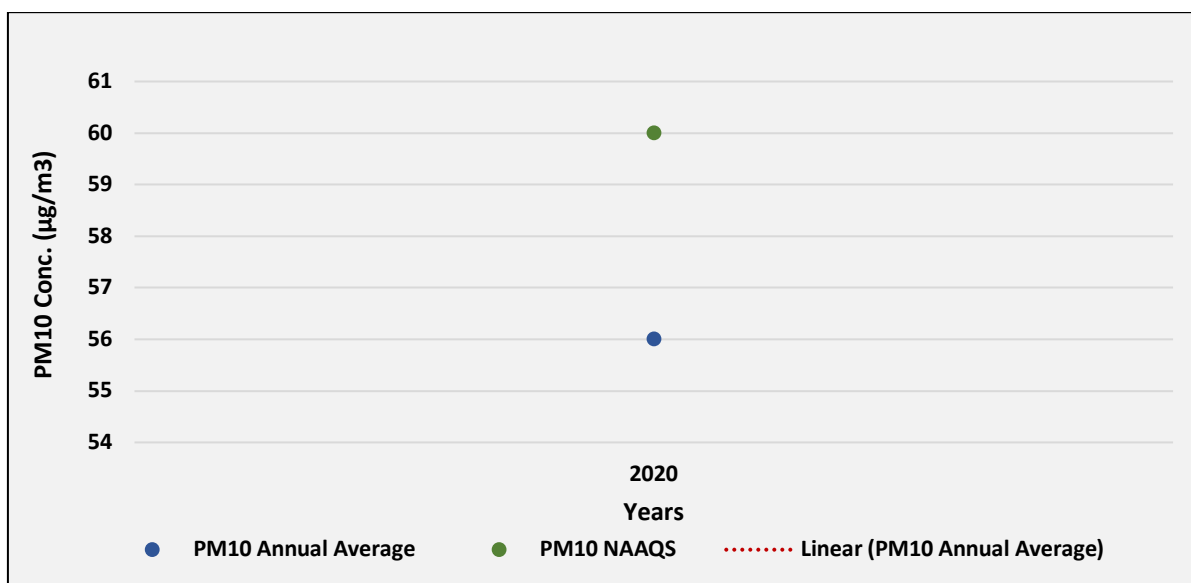


Fig. RAK13: Trend of annual mean PM_{10} ambient air concentration in Raikheda TPP (Ambient 2)

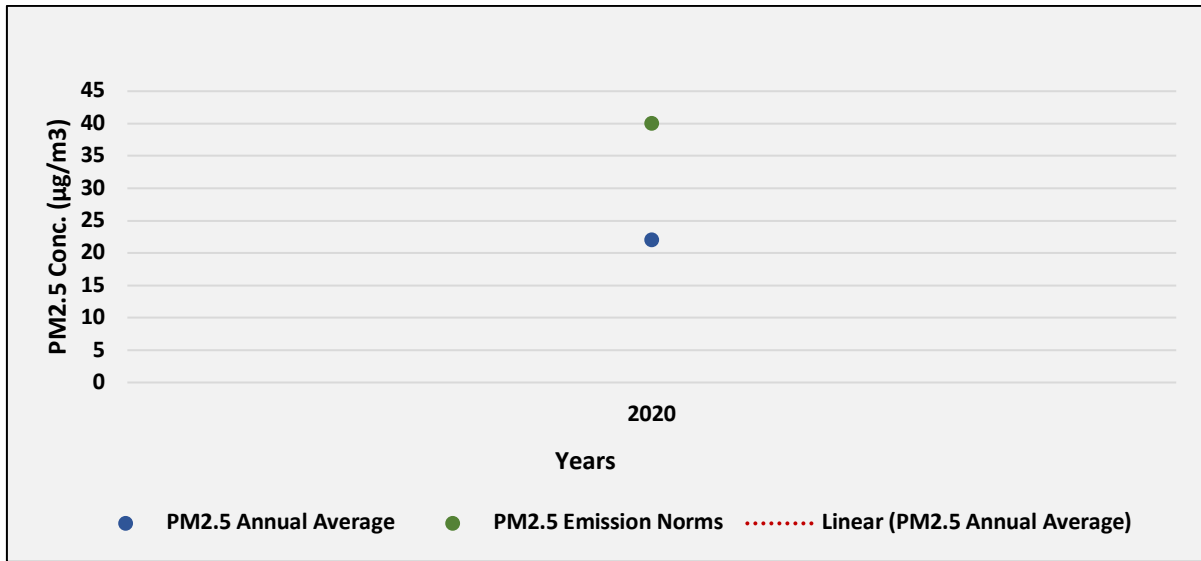


Fig. RAK14: Trend of annual mean PM_{2.5} ambient air concentration in Raikheda TPP (Ambient 2)

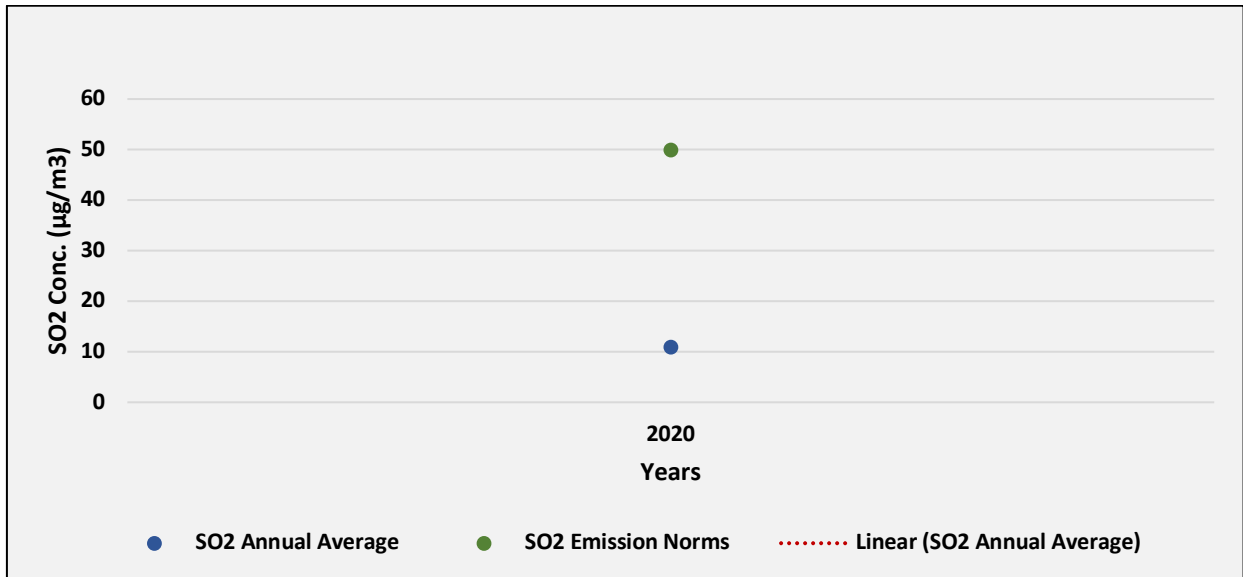


Fig. RAK15: Trend of annual mean SO₂ ambient air concentration in Raikheda TPP (Ambient 2)

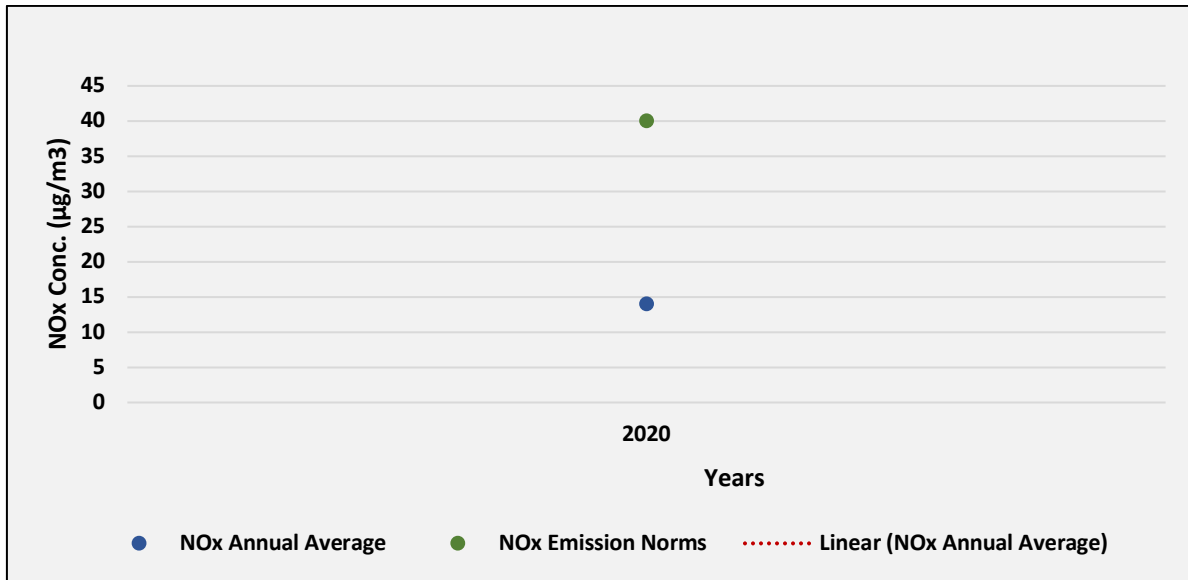


Fig. RAK16: Trend of annual mean NO_x ambient air concentration in Raikheda TPP (Ambient 2)

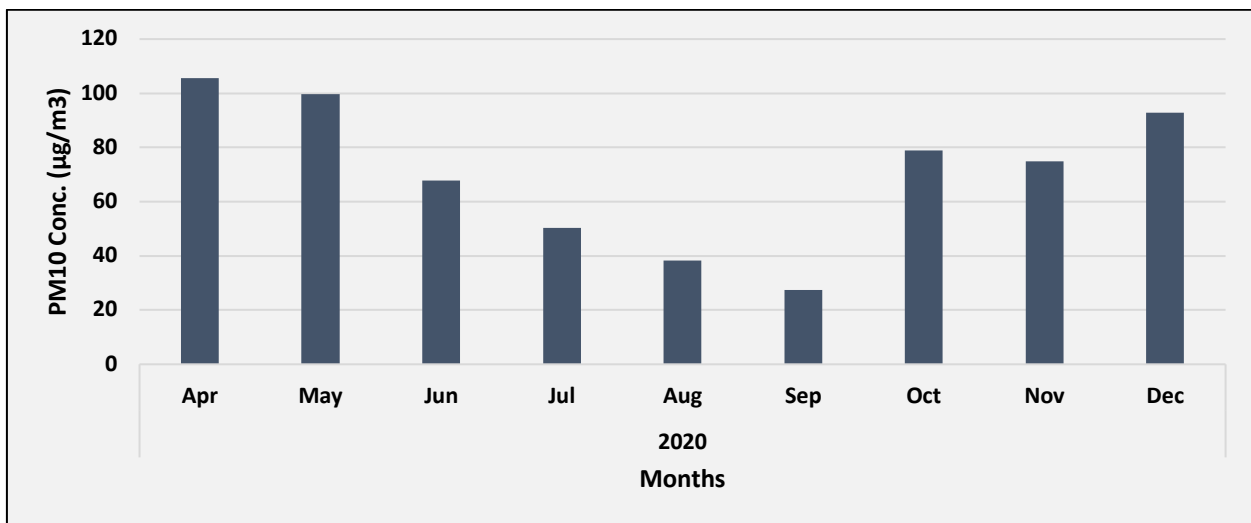


Fig. RAK17: Time series of monthly average PM₁₀ ambient air concentration in Raikheda TPP (Ambient 3)

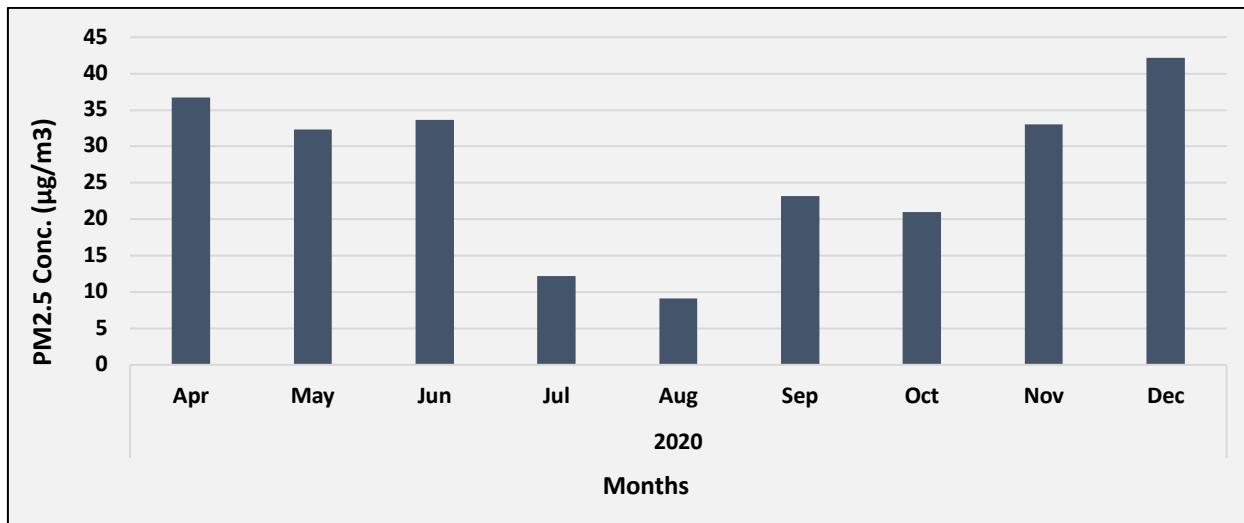


Fig. RAK18: Time series of monthly average $PM_{2.5}$ ambient air concentration in Raikheda TPP (Ambient 3)

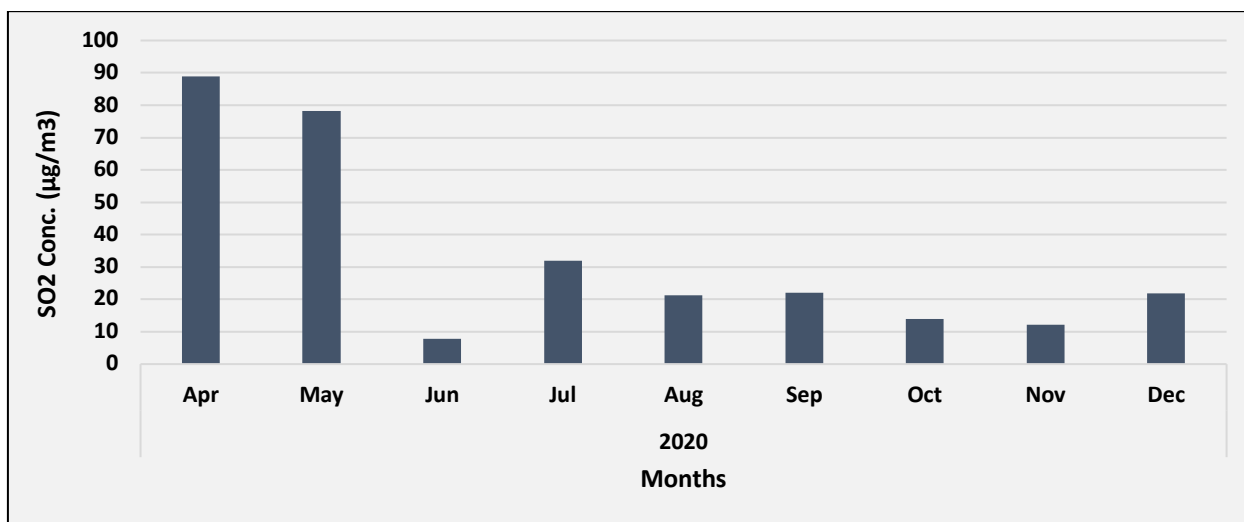


Fig. RAK19: Time series of monthly average SO_2 ambient air concentration in Raikheda TPP (Ambient 3)

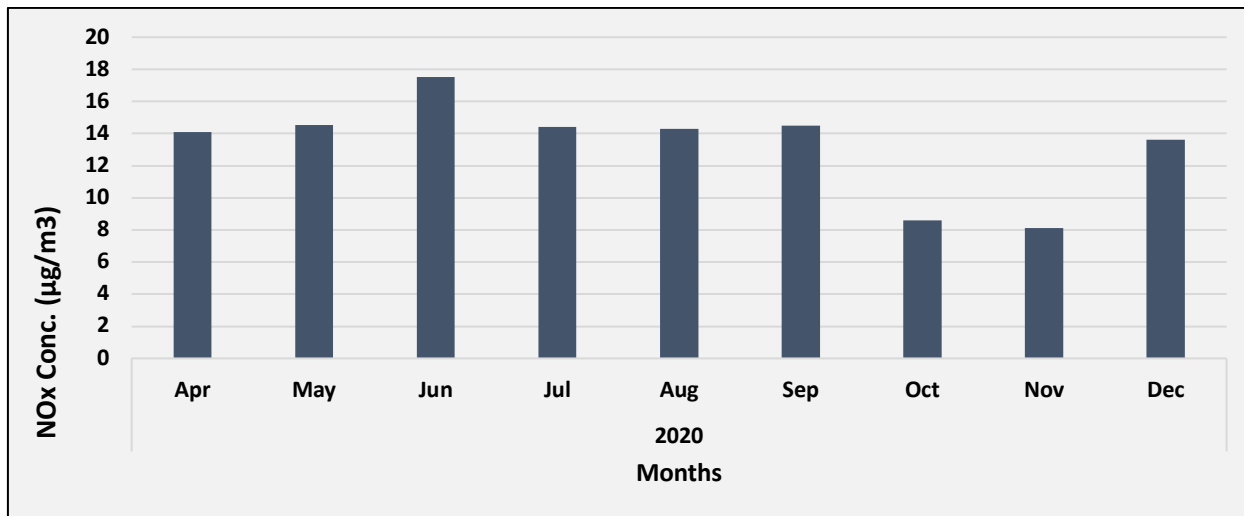


Fig. RAK20: Time series of monthly average NO_x ambient air concentration in Raikheda TPP(Ambient 3)

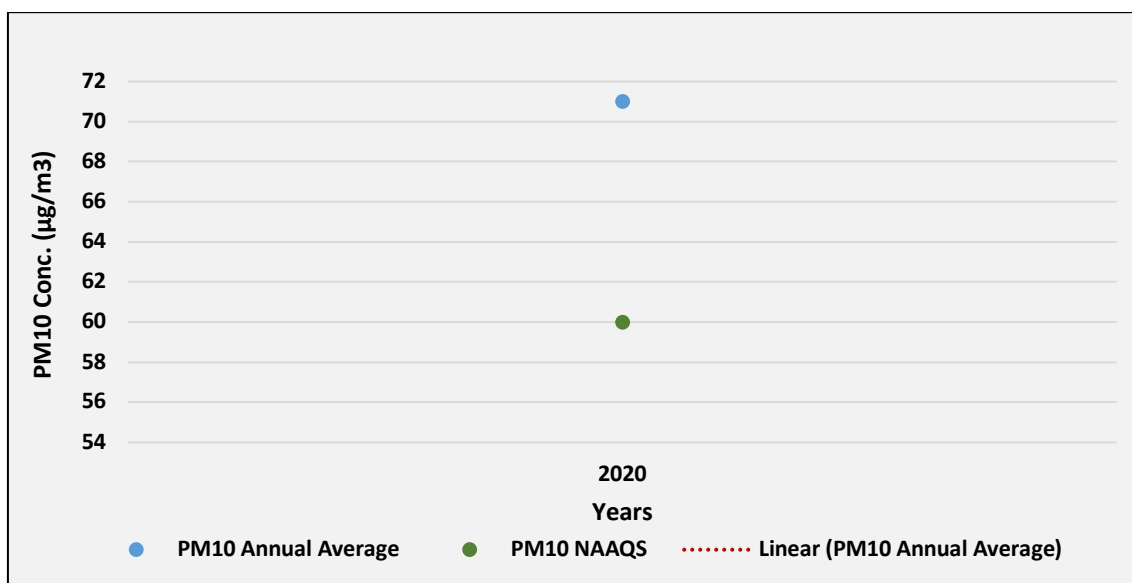


Fig. RAK21: Trend of annual mean PM₁₀ ambient air concentration in Raikheda TPP (Ambient 3)

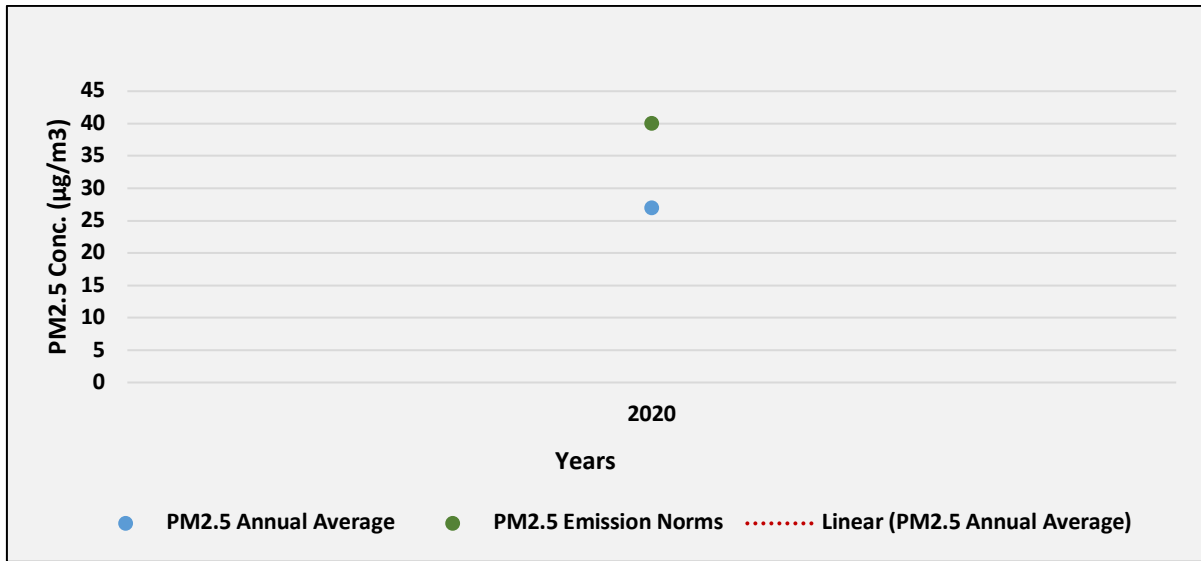


Fig. RAK22: Trend of annual mean $PM_{2.5}$ ambient air concentration in Raikheda TPP (Ambient 3)

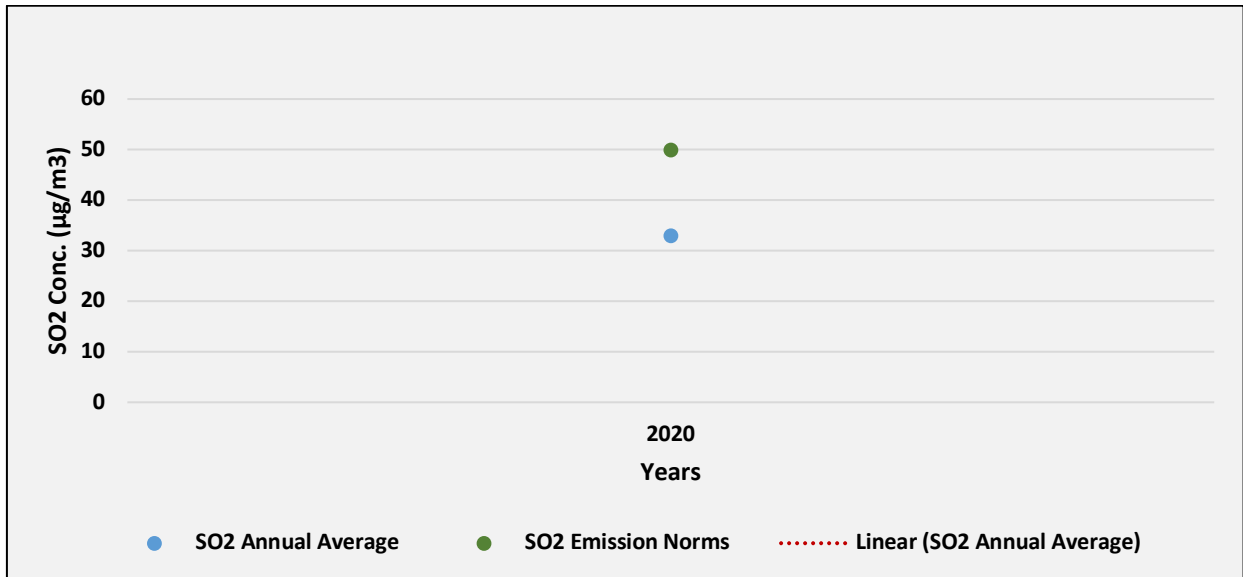


Fig. RAK23: Trend of annual mean SO_2 ambient air concentration in Raikheda TPP (Ambient 3)

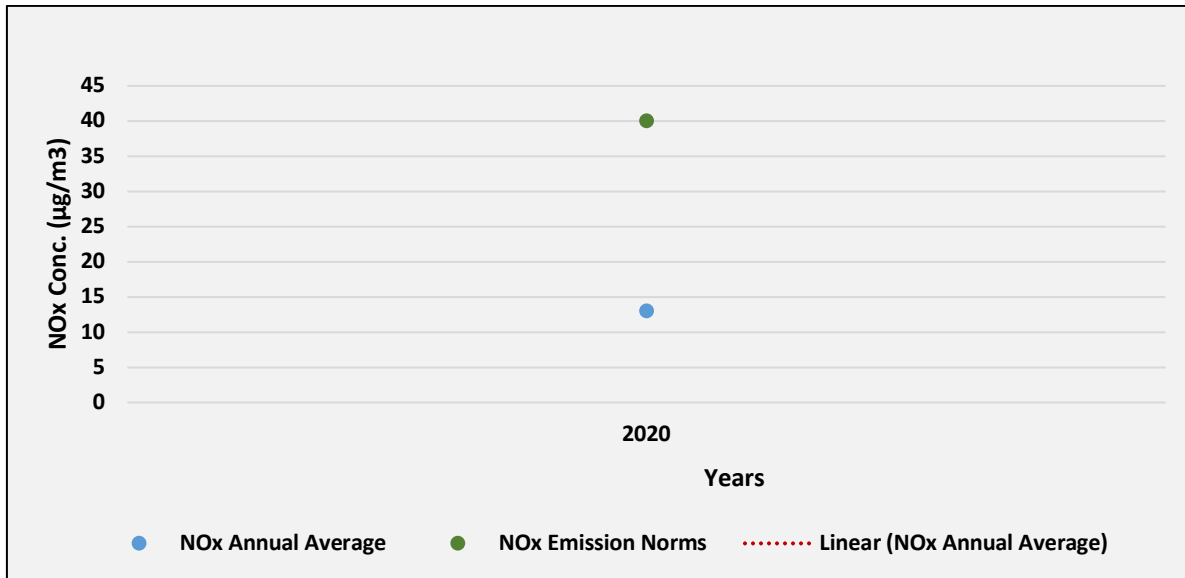


Fig. RAK24: Trend of annual mean NO_x ambient air concentration in Raikheda TPP (Ambient 3)

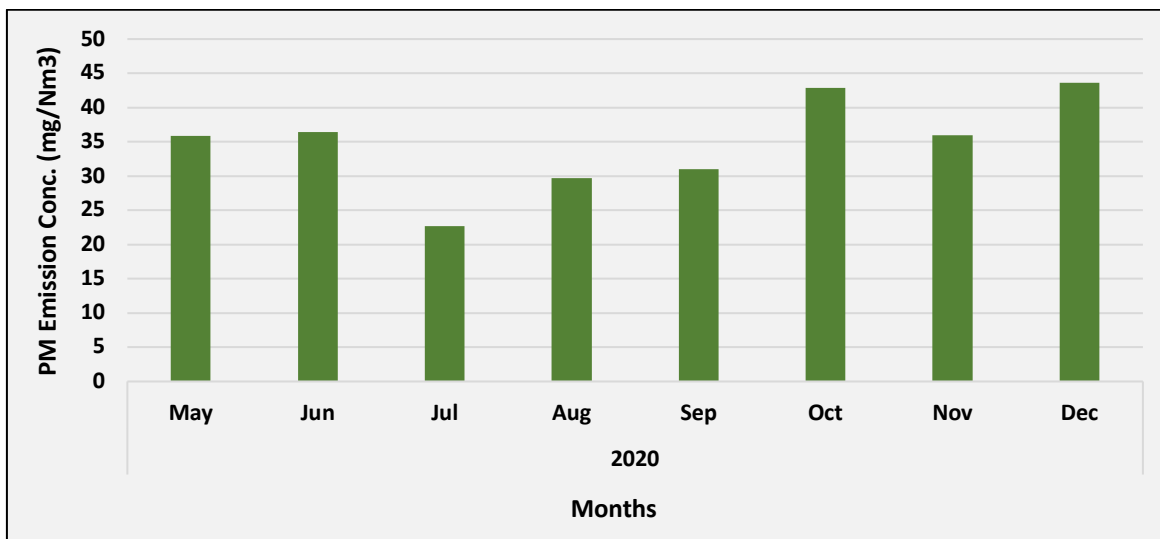


Fig. RAK25: Time series of monthly average PM Emission concentration in Raikheda TPP (Unit 1)

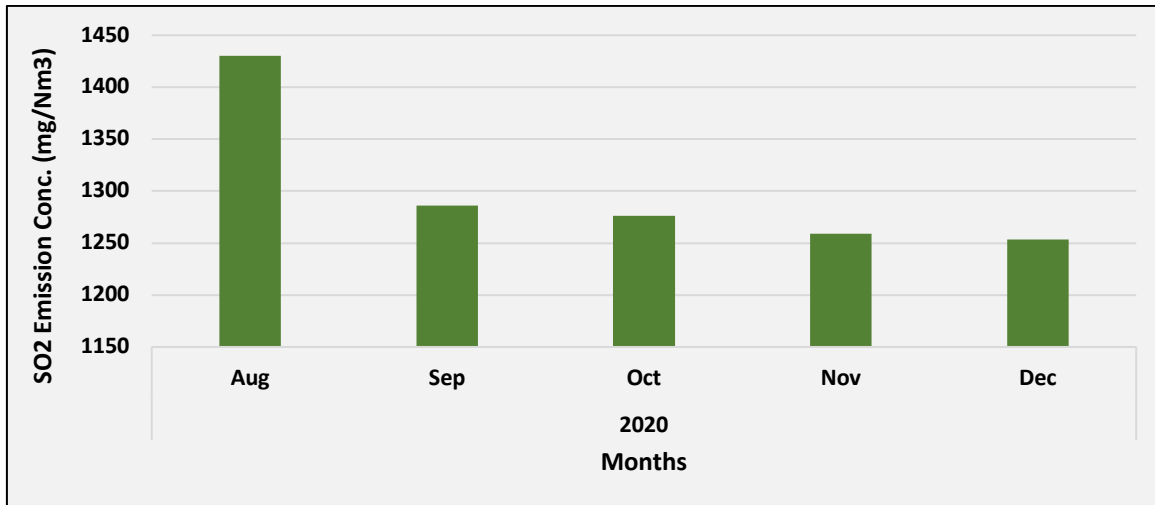


Fig. RAK26: Time series of monthly average SO₂ Emission concentration in Raikheda TPP (Unit 1)

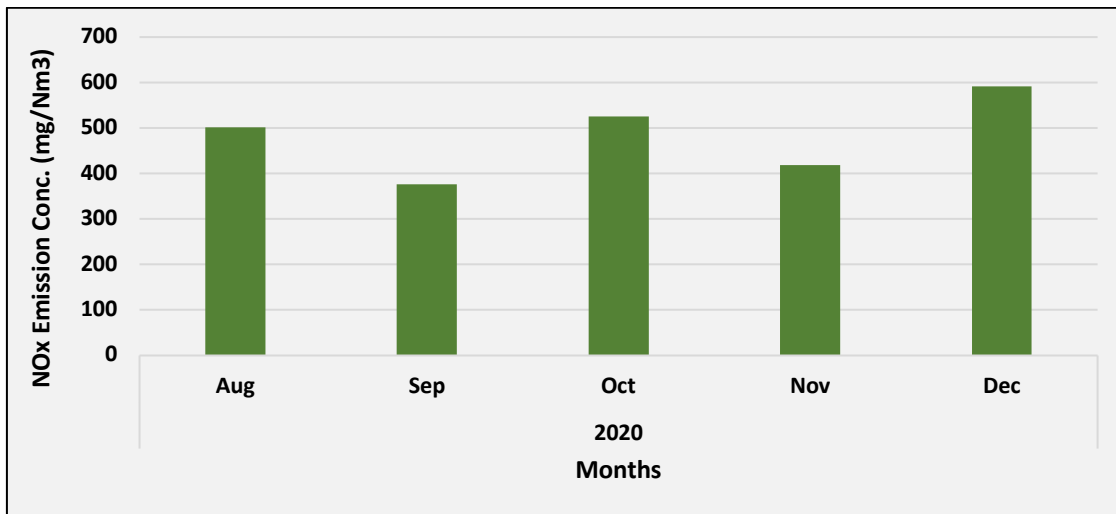


Fig. RAK27: Time series of monthly average NO_x Emission concentration in Raikheda TPP (Unit 1)

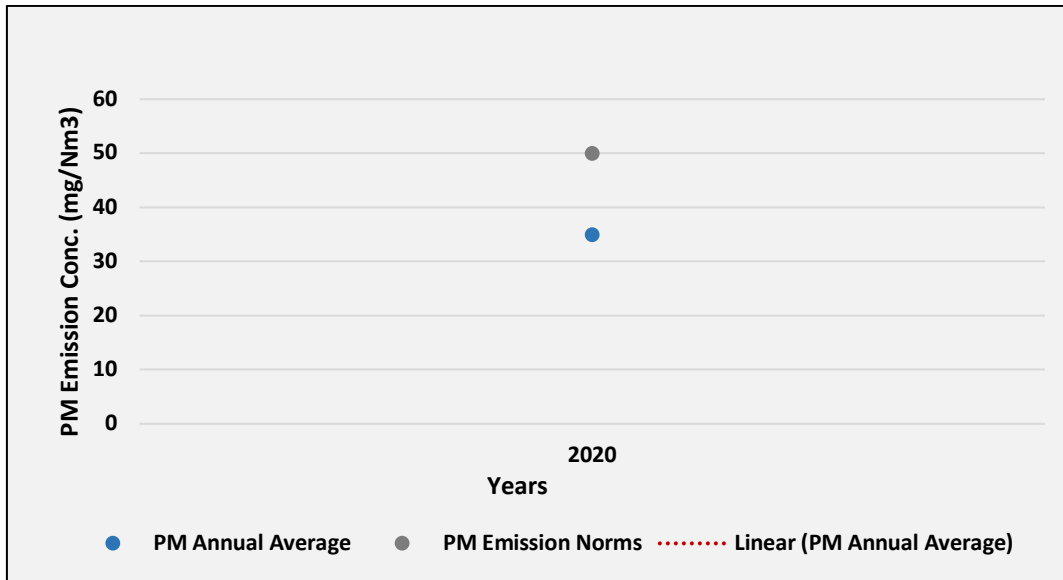


Fig. RAK28: Trend of annual mean PM Emission air concentration in Raikheda TPP (Unit 1)

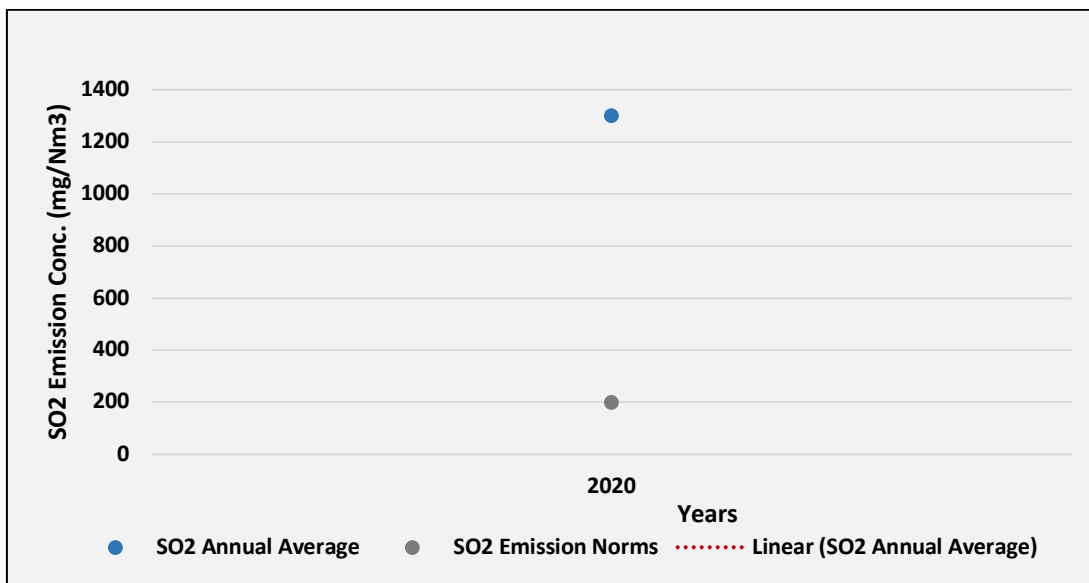


Fig. RAK29: Trend of annual mean SO₂ Emission air concentration in Raikheda TPP (Unit 1)

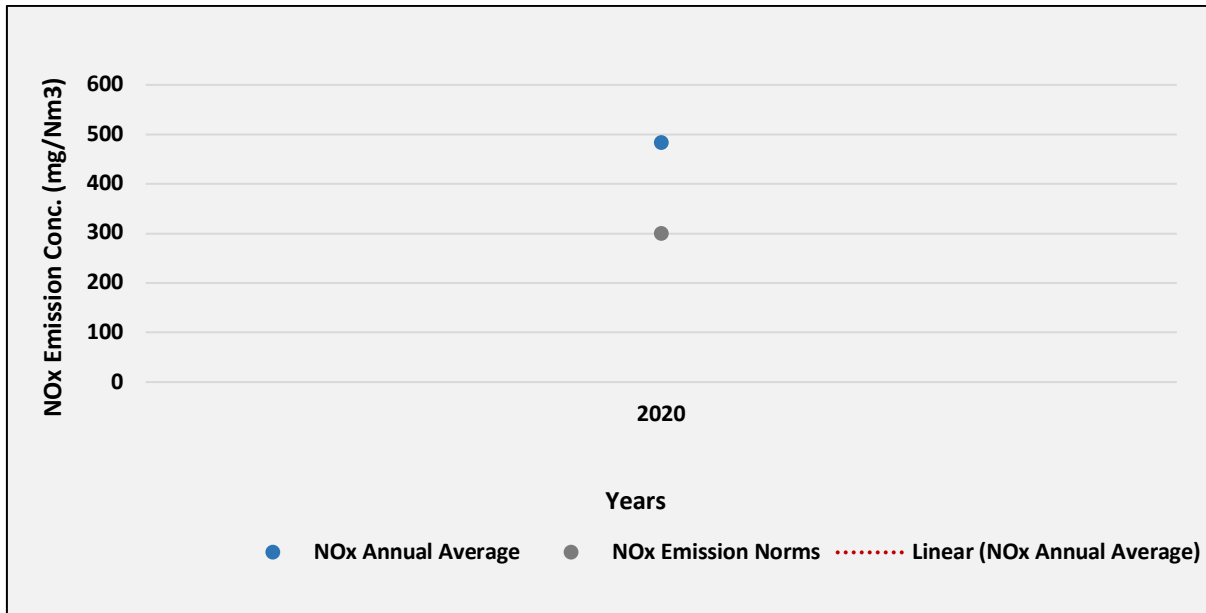


Fig. RAK30: Trend of annual mean NO_x Emission air concentration in Raikheda TPP (Unit 1)

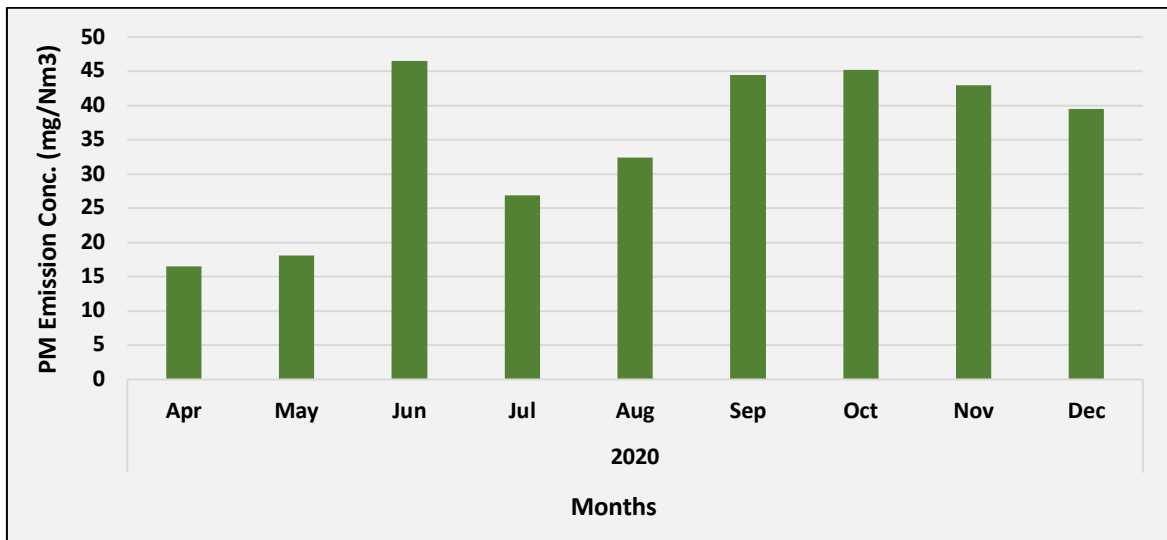


Fig. RAK31: Time series of monthly average PM Emission concentration in Raikheda TPP (Unit 2)

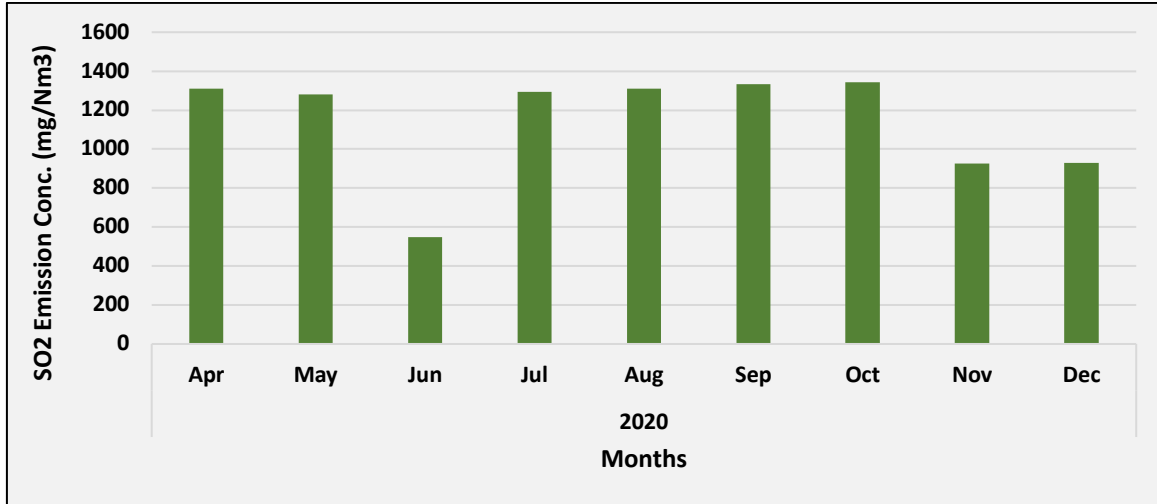


Fig. RAK32: Time series of monthly average SO₂ Emission concentration in Raikheda TPP (Unit 2)

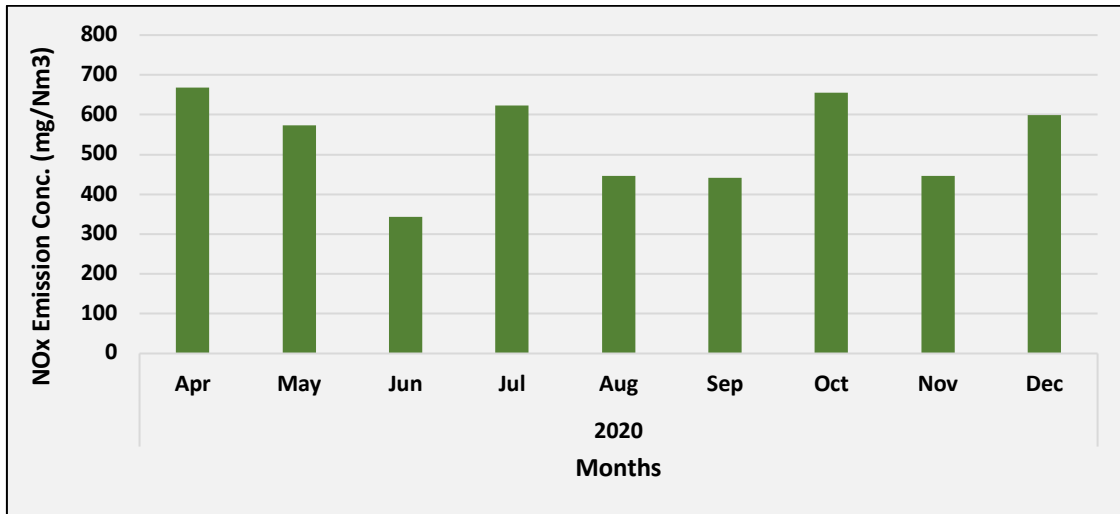


Fig. RAK33: Time series of monthly average NO_x Emission concentration in Raikheda TPP (Unit 2)

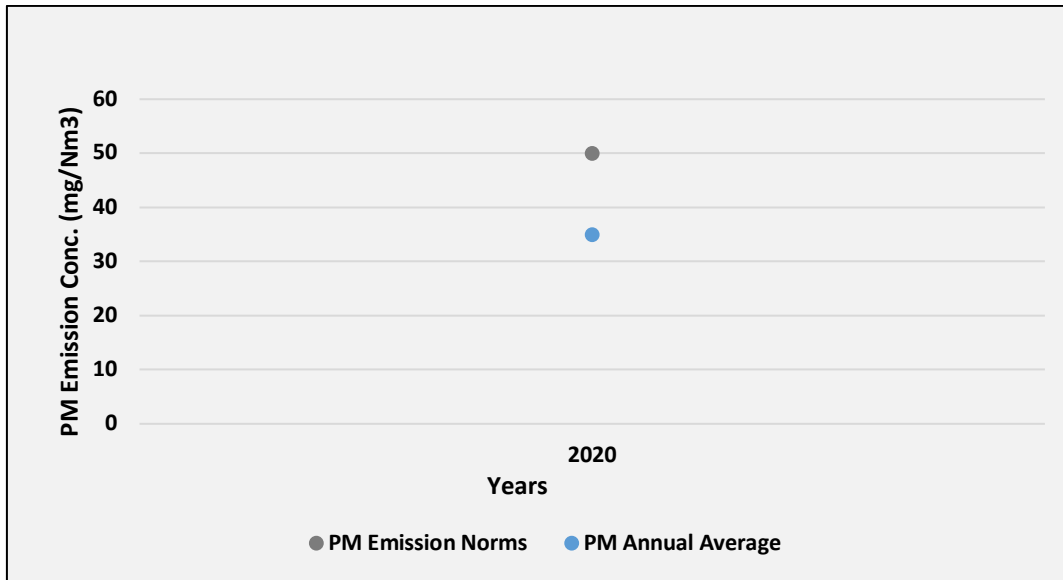


Fig. RAK34: Trend of annual mean PM Emission air concentration in Raikheda TPP (Unit 2)

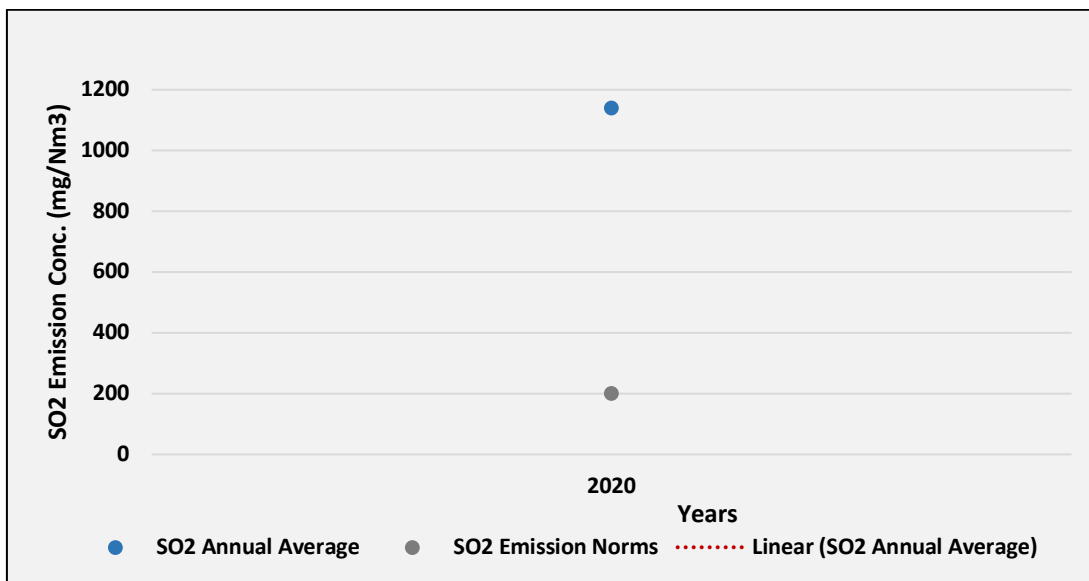


Fig. RAK35: Trend of annual mean SO₂ Emission air concentration in Raikheda TPP (Unit 2)

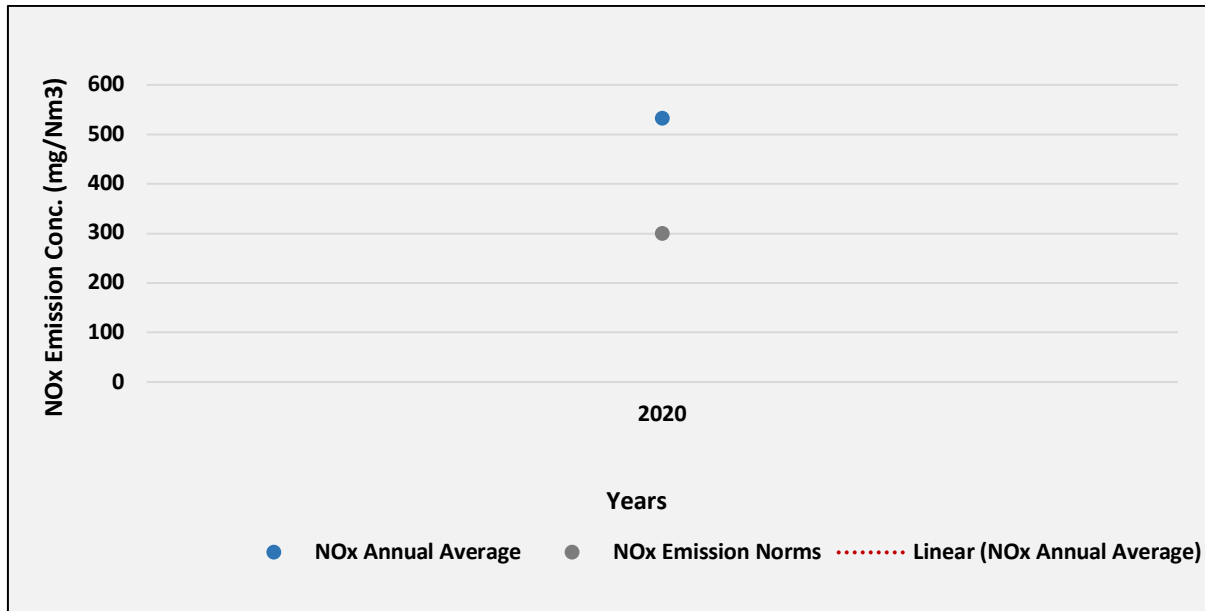


Fig. RAK36: Trend of annual mean NO_x Emission air concentration in Raikheda TPP (Unit 2)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

TIRODA ADANI THERMAL POWER PLANT

With its total capacity of 3300 MW, Tiroda comprises of 5x660 MW units. All units at this location are of Supercritical Technology, driving efficiency in coal based power generation. The power plant is operated by the Adani Power.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. TIR1-Fig. TIR54) for the last five years (2015-2020) using data provided by Adani developer for Tiroda Power plant, Maharashtra, India.

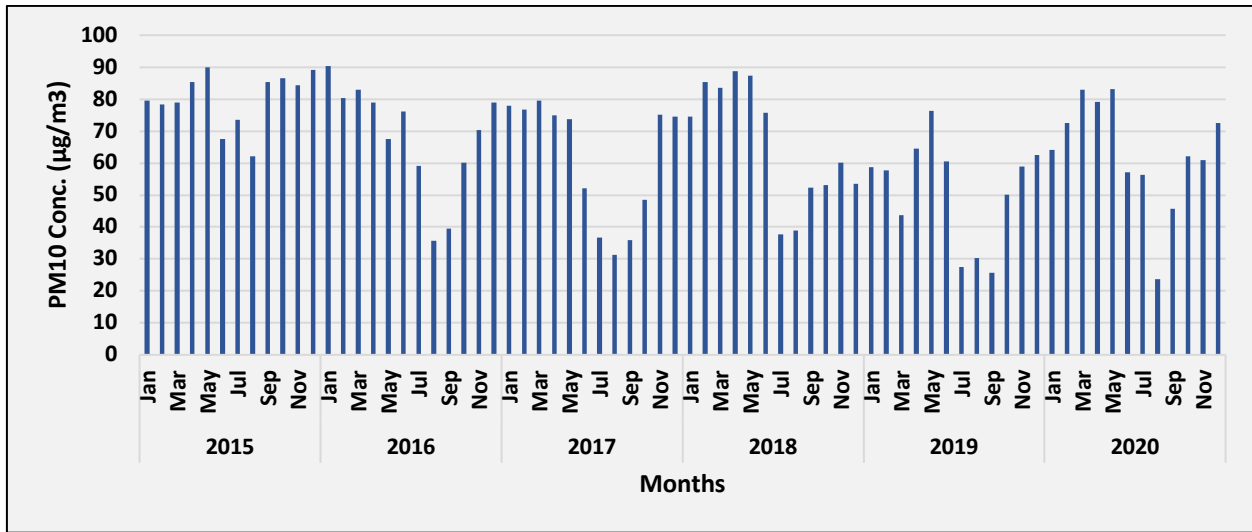


Fig. TIR1: Time series of monthly average PM_{10} ambient air concentration in Tiroda TPP (Ambient 1)

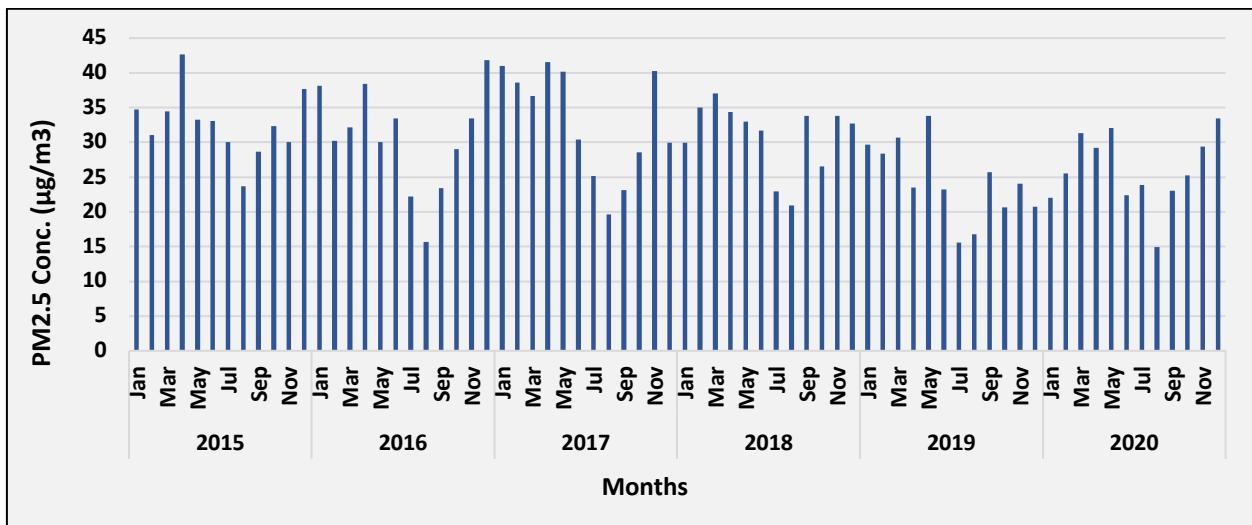


Fig. TIR2: Time series of monthly average $PM_{2.5}$ ambient air concentration in Tiroda TPP (Ambient 1)

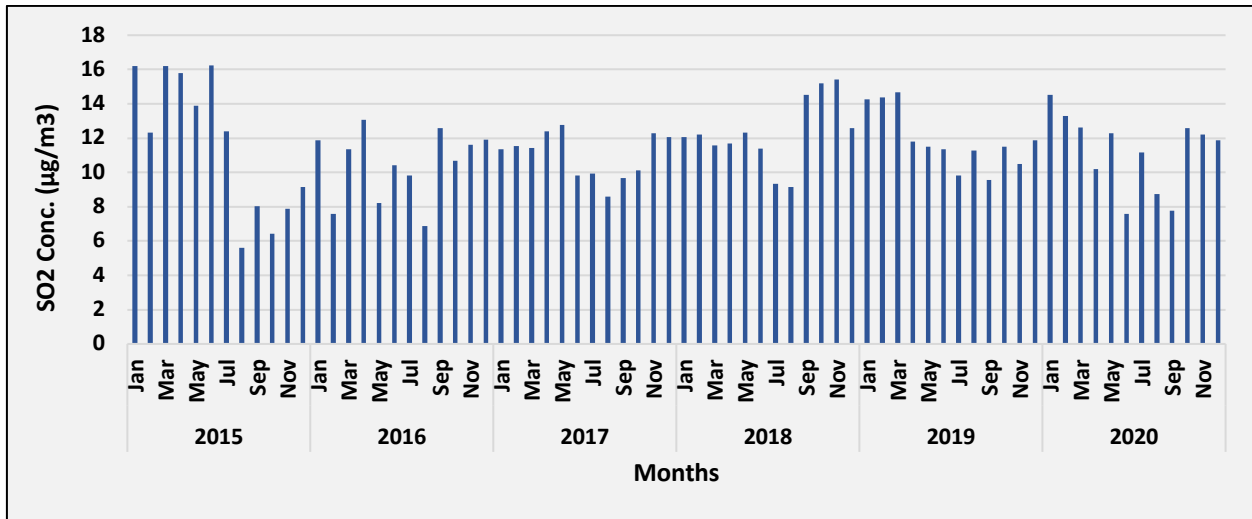


Fig. TIR3: Time series of monthly average SO_2 ambient air concentration in Tiroda TPP (Ambient 1)

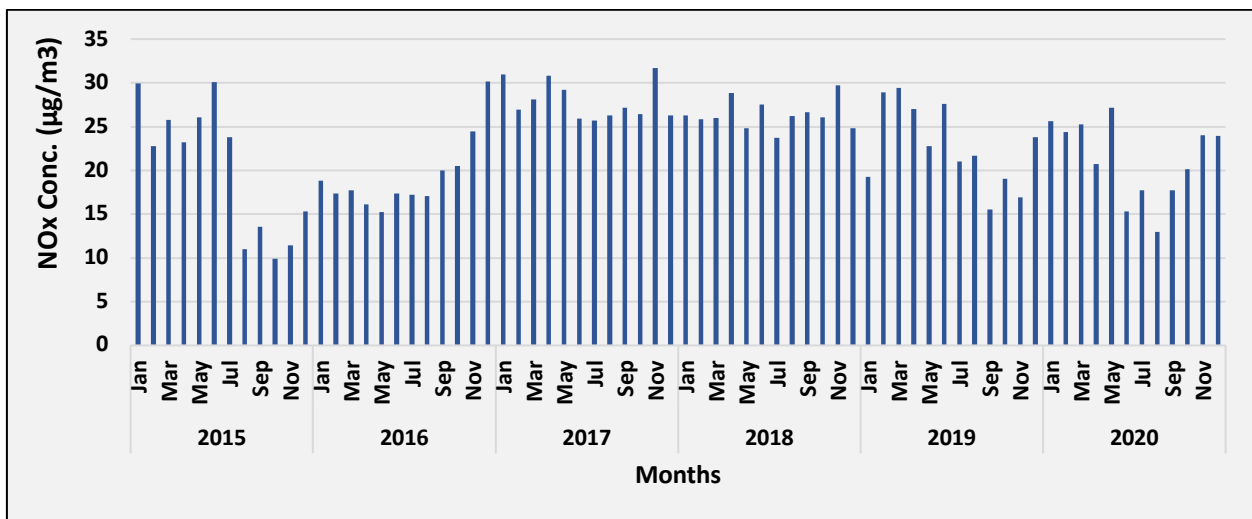


Fig. TIR4: Time series of monthly average NO_x ambient air concentration in Tiroda TPP (Ambient 1)

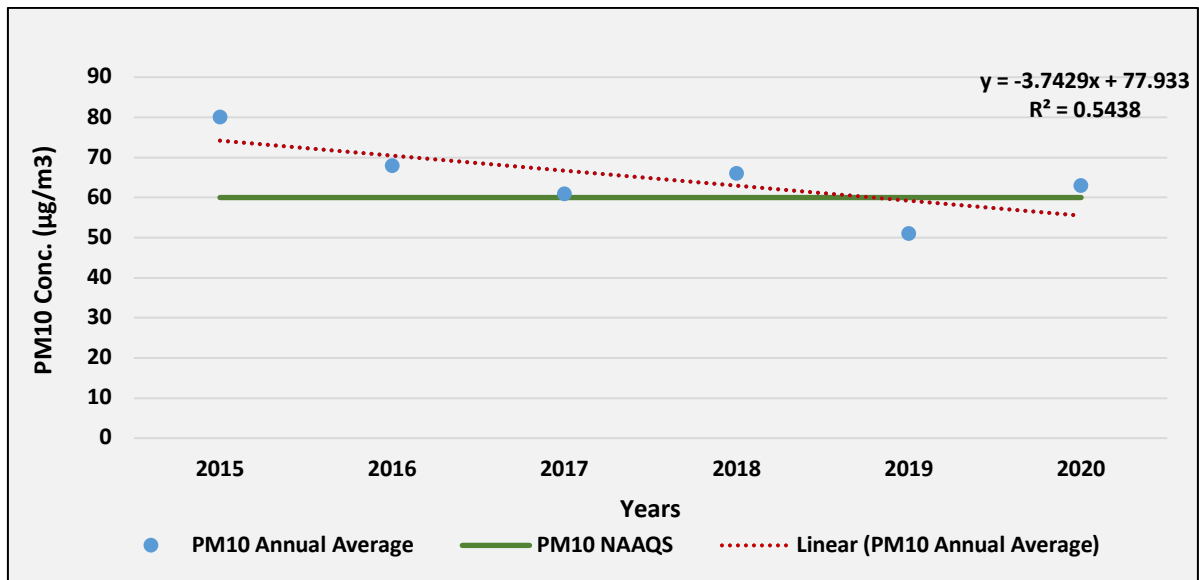


Fig. TIR5: Trend of annual mean PM₁₀ ambient air concentration in Tiroda TPP (Ambient 1)

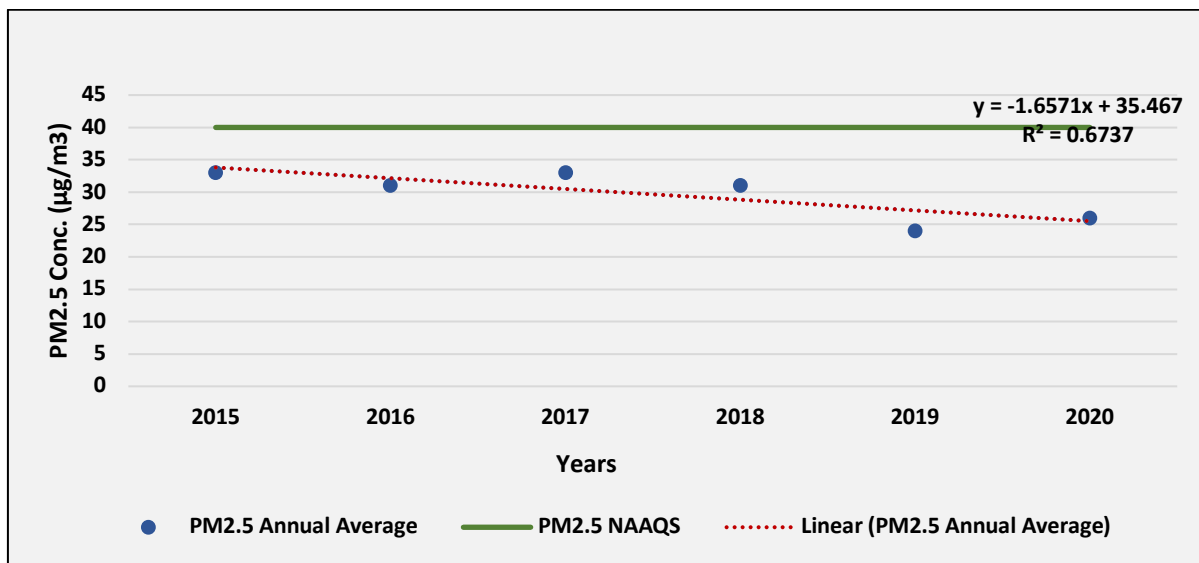


Fig. TIR6: Trend of annual mean PM_{2.5} ambient air concentration in Tiroda TPP (Ambient 1)

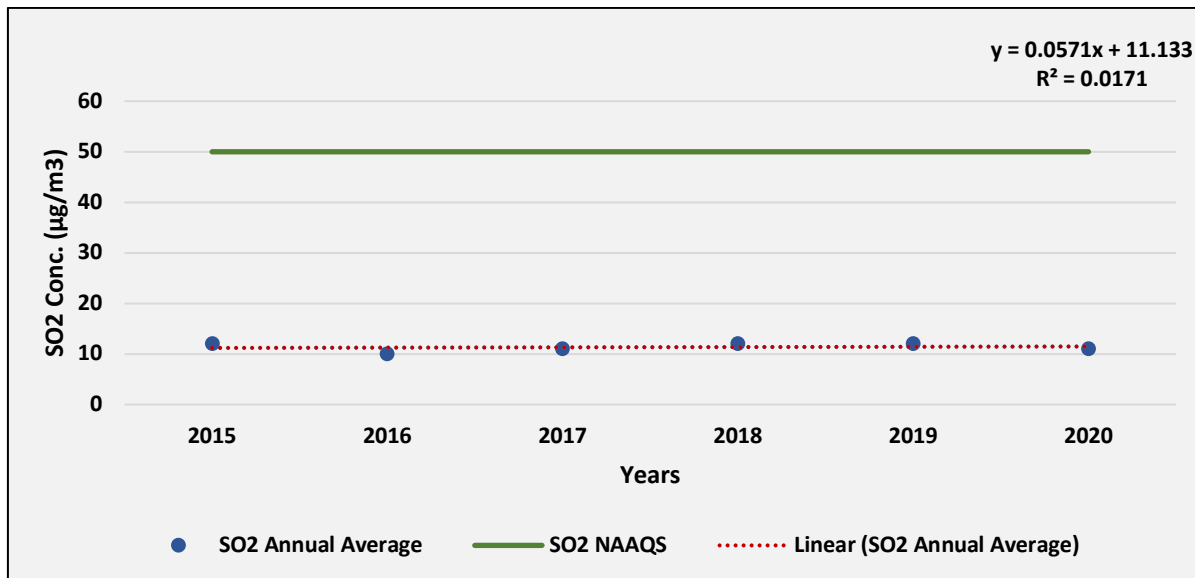


Fig. TIR7: Trend of annual mean SO₂ ambient air concentration in Tiroda TPP (Ambient 1)

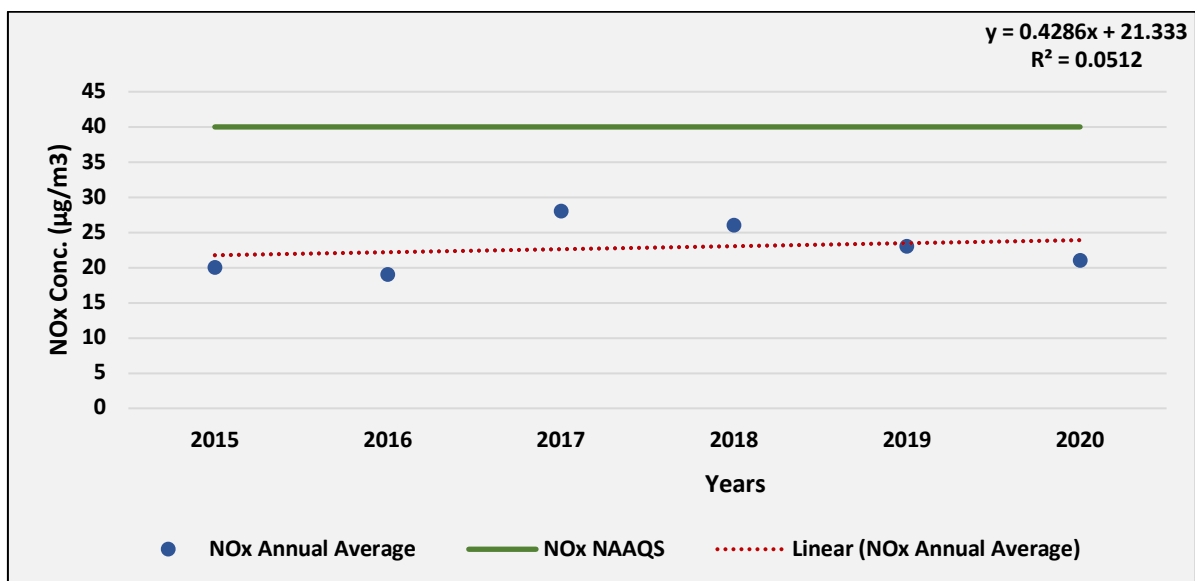


Fig. TIR8: Trend of annual mean NO_x ambient air concentration in Tiroda TPP (Ambient 1)

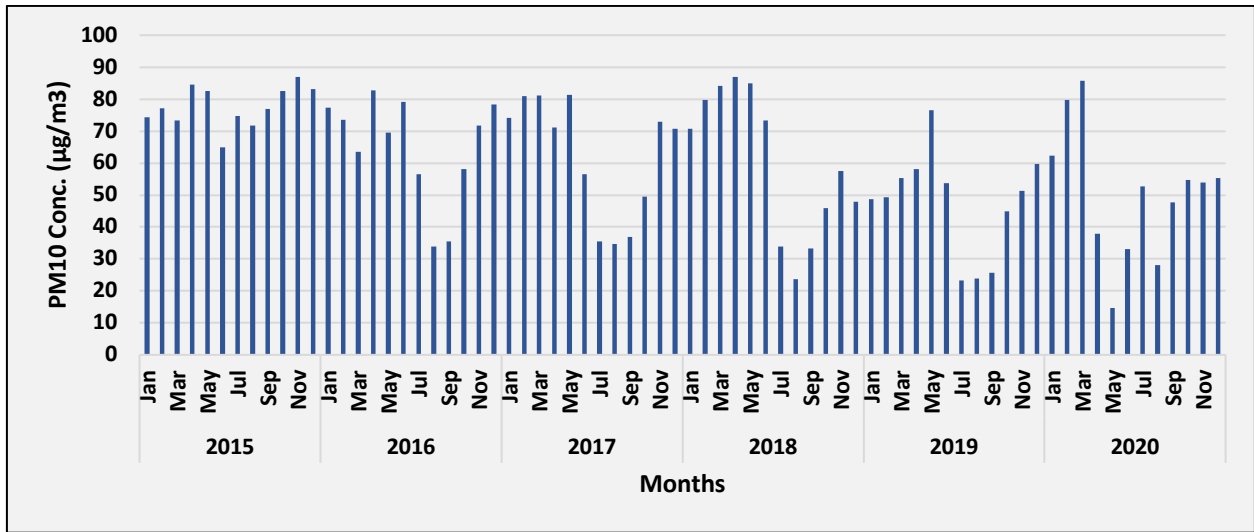


Fig. TIR9: Time series of monthly average PM_{10} ambient air concentration in Tiroda TPP (Ambient 2)

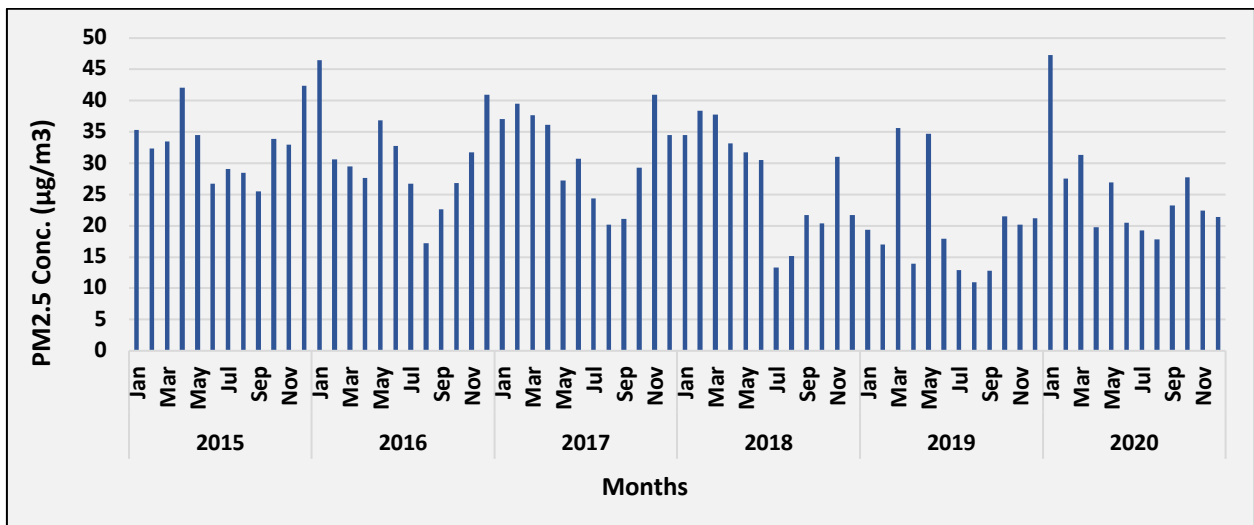


Fig. TIR10: Time series of monthly average $PM_{2.5}$ ambient air concentration in Tiroda TPP (Ambient 2)

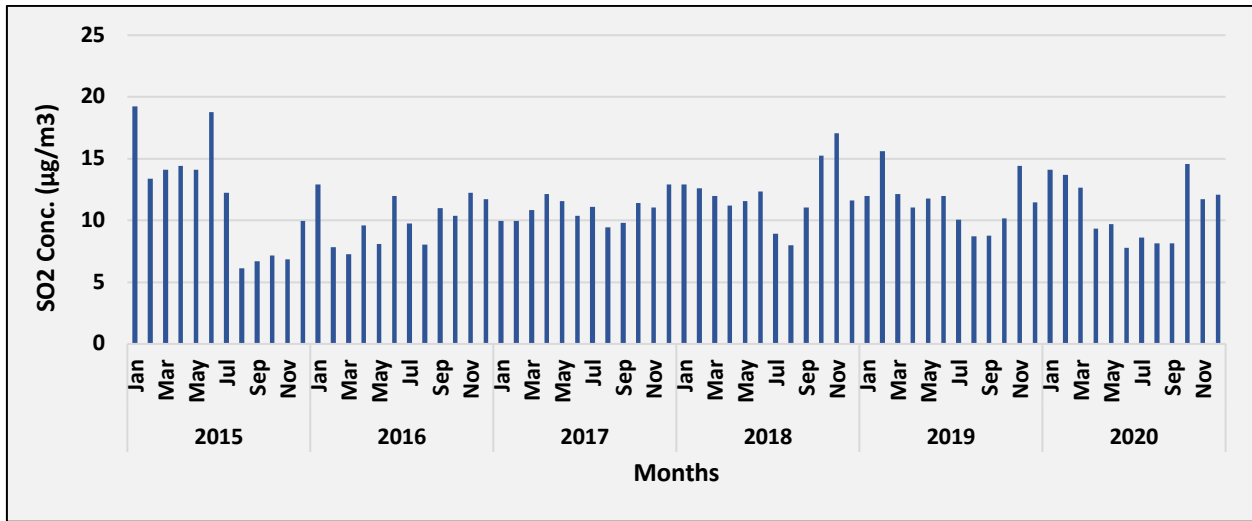


Fig. TIR11: Time series of monthly average SO_2 ambient air concentration in Tiroda TPP (Ambient 2)

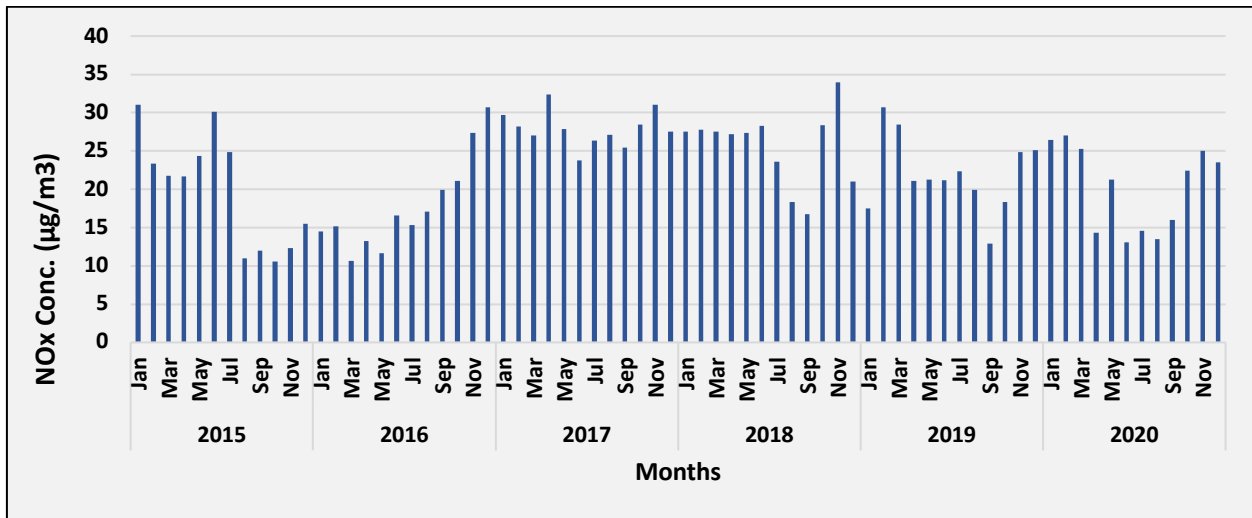


Fig. TIR12: Time series of monthly average NO_x ambient air concentration in Tiroda TPP (Ambient 2)

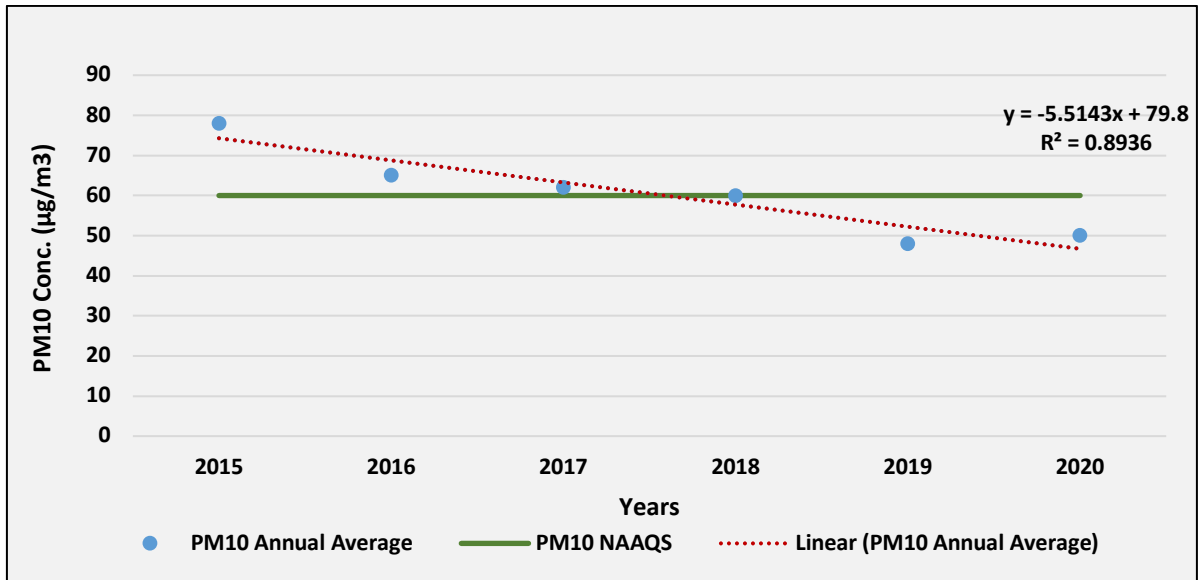


Fig. TIR13: Trend of annual mean PM₁₀ ambient air concentration in Tiroda TPP (Ambient 2)

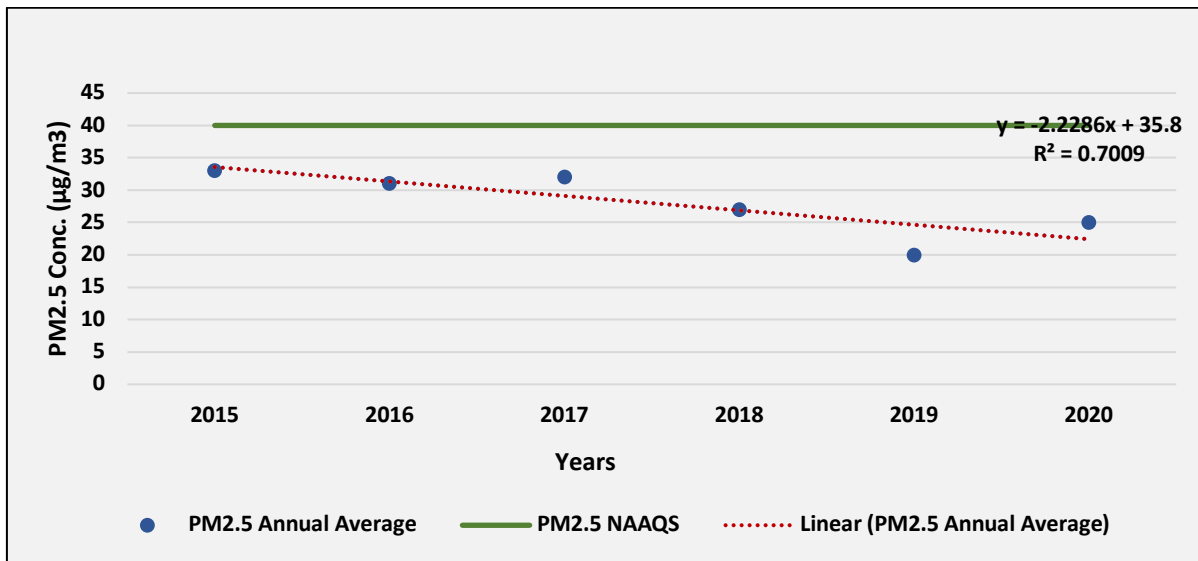


Fig. TIR14: Trend of annual mean PM_{2.5} ambient air concentration in Tiroda TPP (Ambient 2)

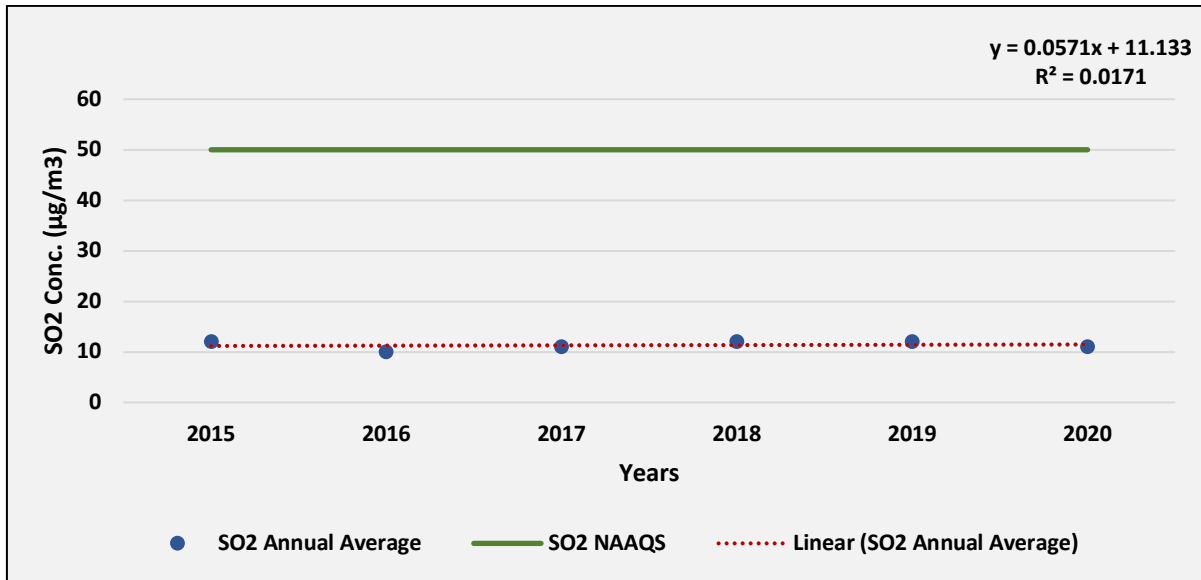


Fig. TIR15: Trend of annual mean SO₂ ambient air concentration in Tiroda TPP (Ambient 2)

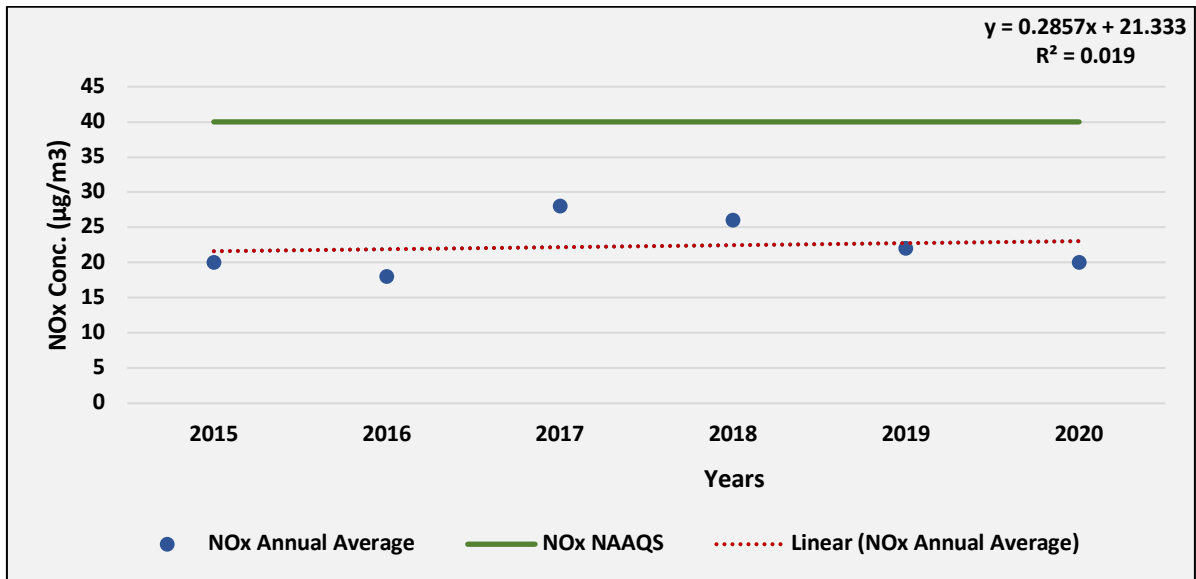


Fig. TIR16: Trend of annual mean NO_x ambient air concentration in Tiroda TPP (Ambient 2)

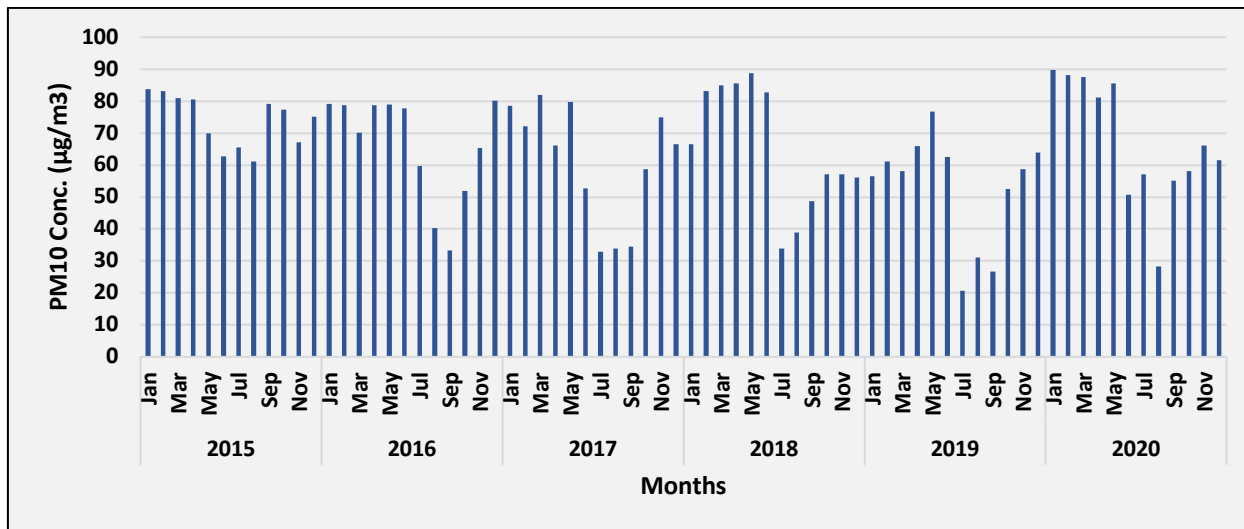


Fig. TIR17: Time series of monthly average PM_{10} ambient air concentration in Tiroda TPP (Ambient 3)

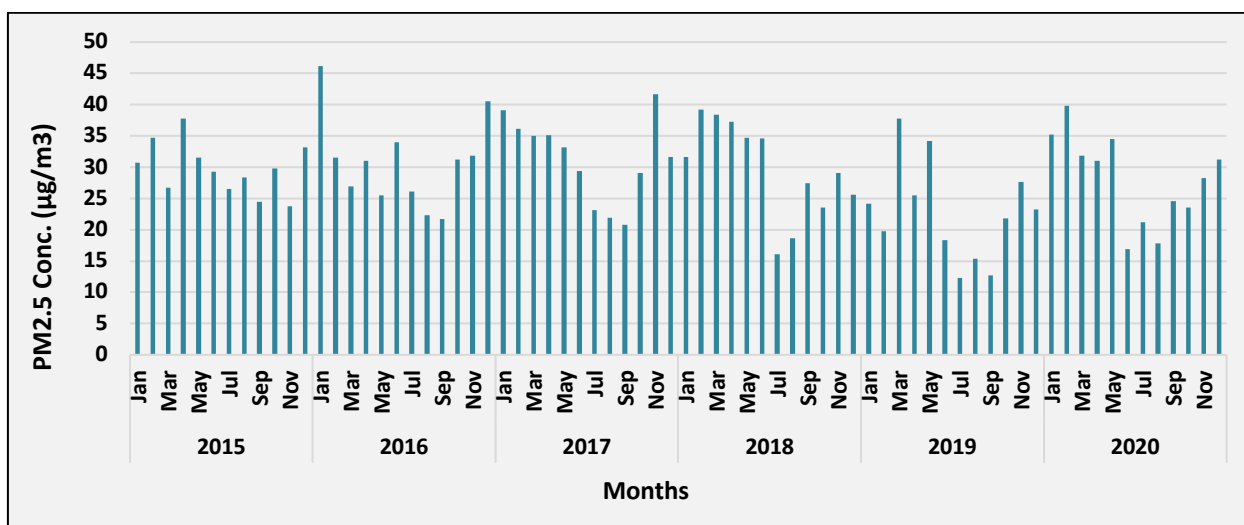


Fig. TIR18: Time series of monthly average $PM_{2.5}$ ambient air concentration in Tiroda TPP (Ambient 3)

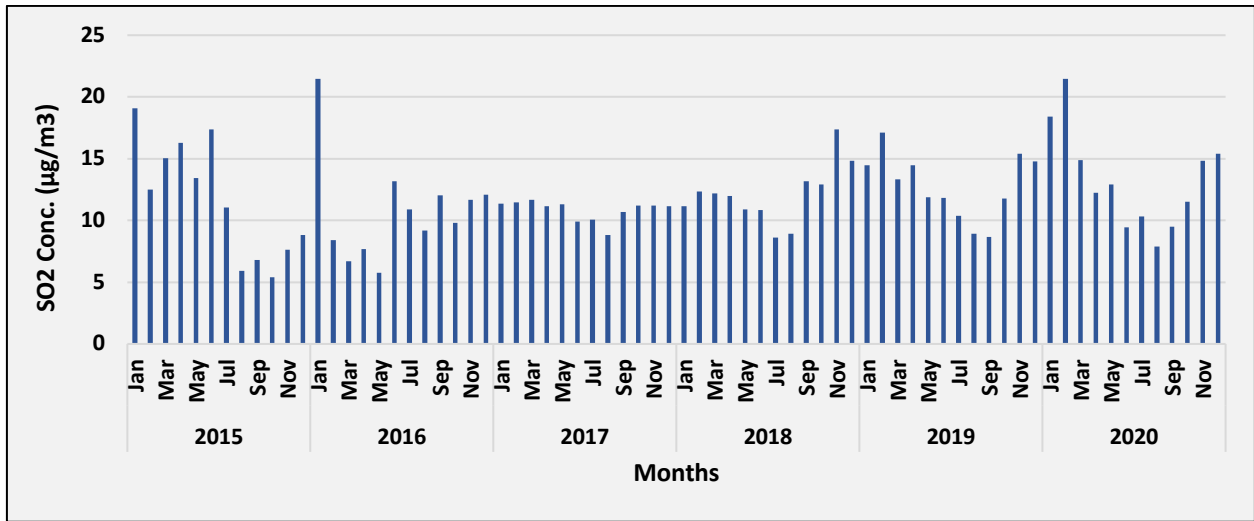


Fig. TIR19: Time series of monthly average SO_2 ambient air concentration in Tiroda TPP (Ambient 3)

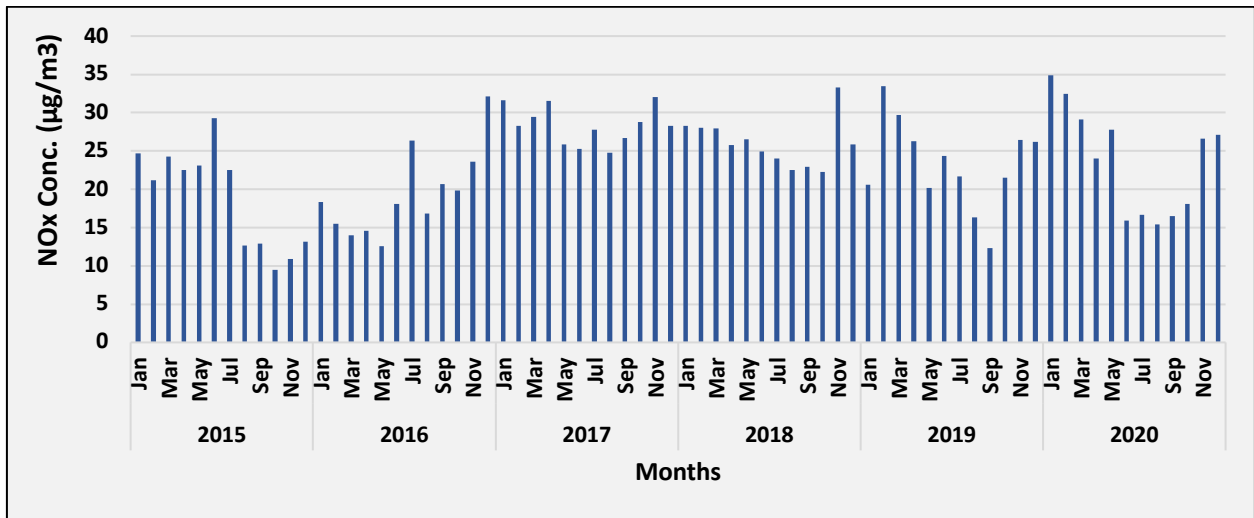


Fig. TIR20: Time series of monthly average NO_x ambient air concentration in Tiroda TPP (Ambient 3)

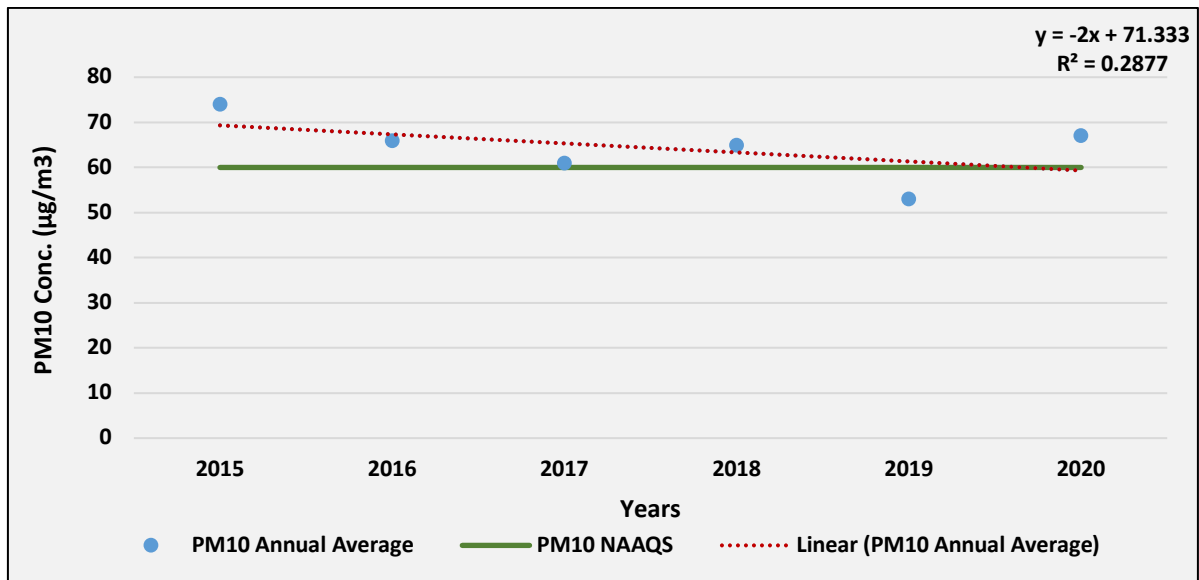


Fig. TIR21: Trend of annual mean PM₁₀ ambient air concentration in Tiroda TPP (Ambient 3)

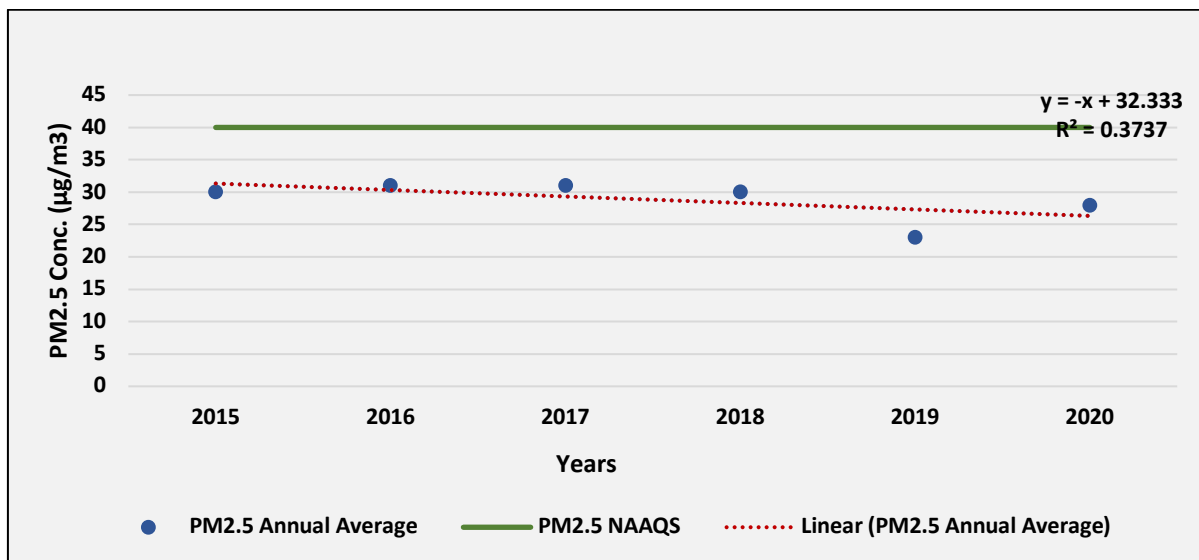


Fig. TIR22: Trend of annual mean PM_{2.5} ambient air concentration in Tiroda TPP (Ambient 3)

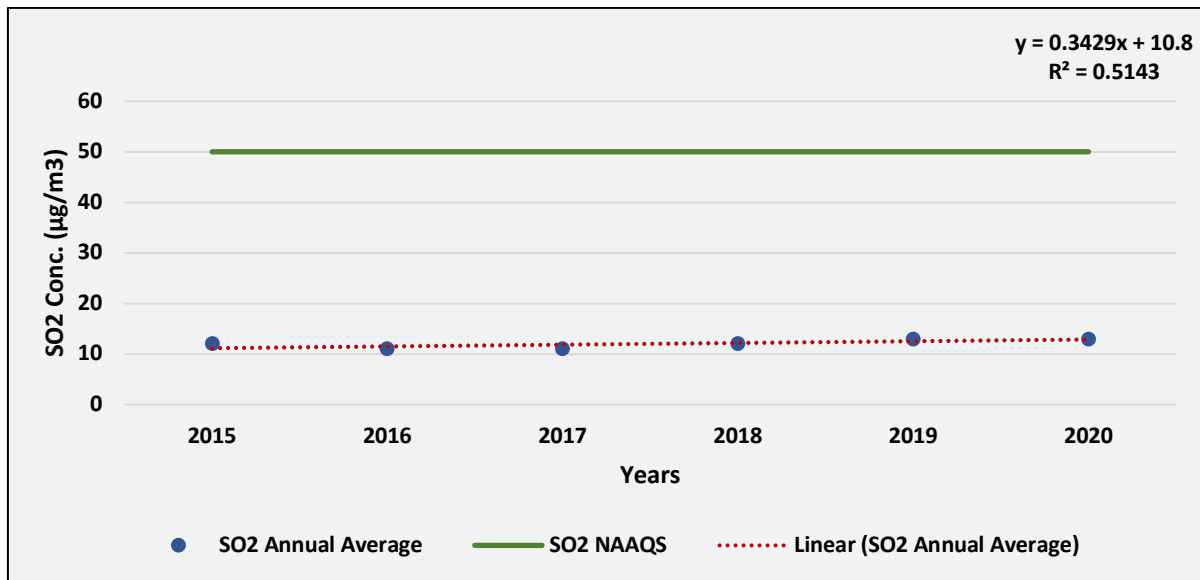


Fig. TIR23: Trend of annual mean SO₂ ambient air concentration in Tiroda TPP (Ambient 3)

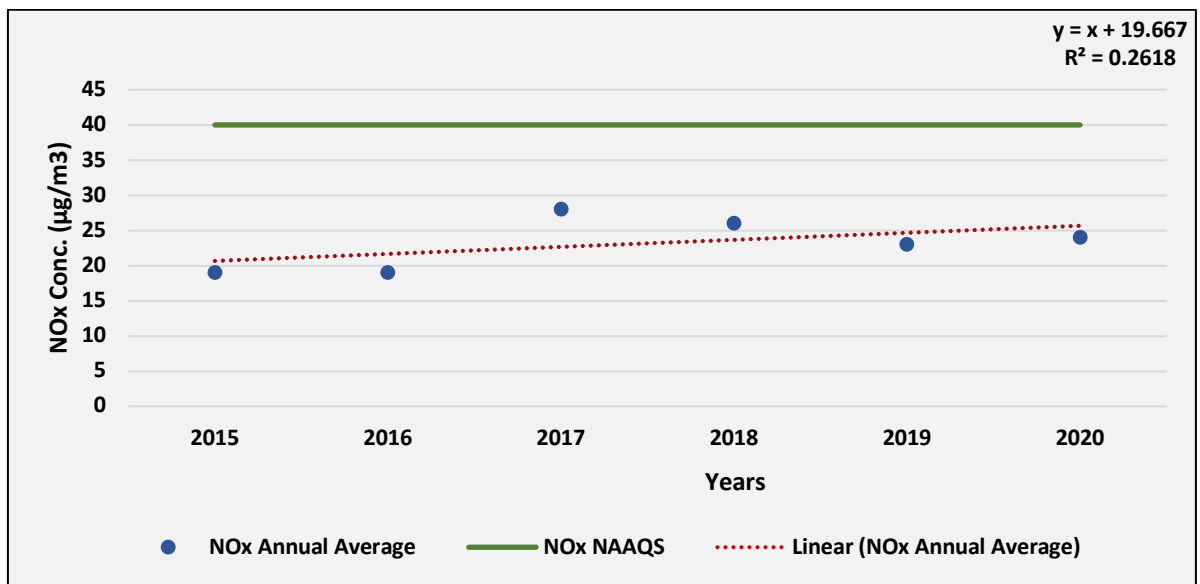


Fig. TIR24: Trend of annual mean NO_x ambient air concentration in Tiroda TPP (Ambient 3)

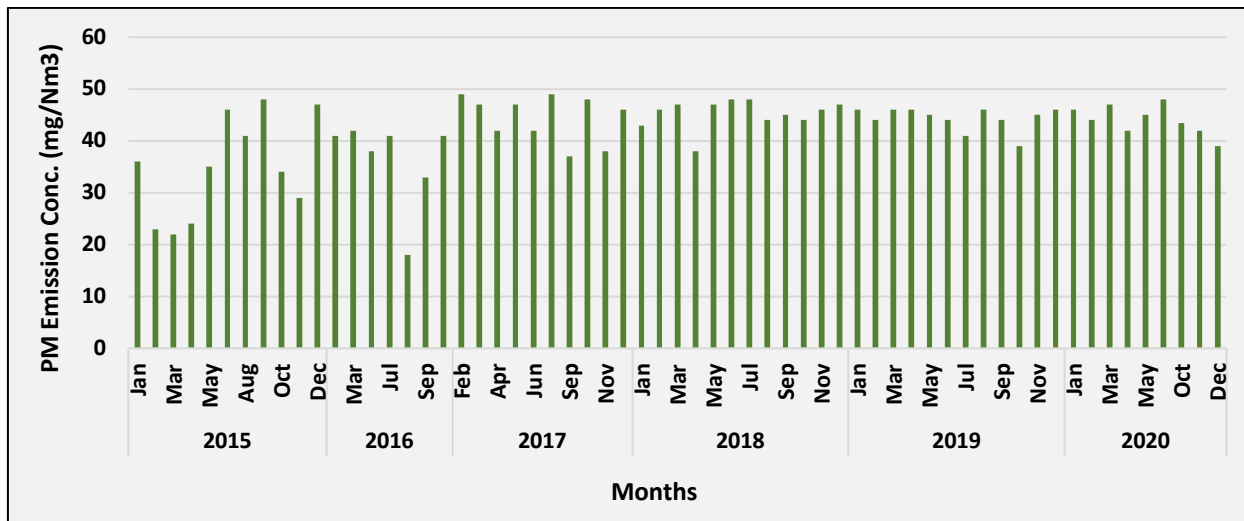


Fig. TIR25: Time series of monthly average PM Emission air concentration in Tiroda TPP (Unit 1)

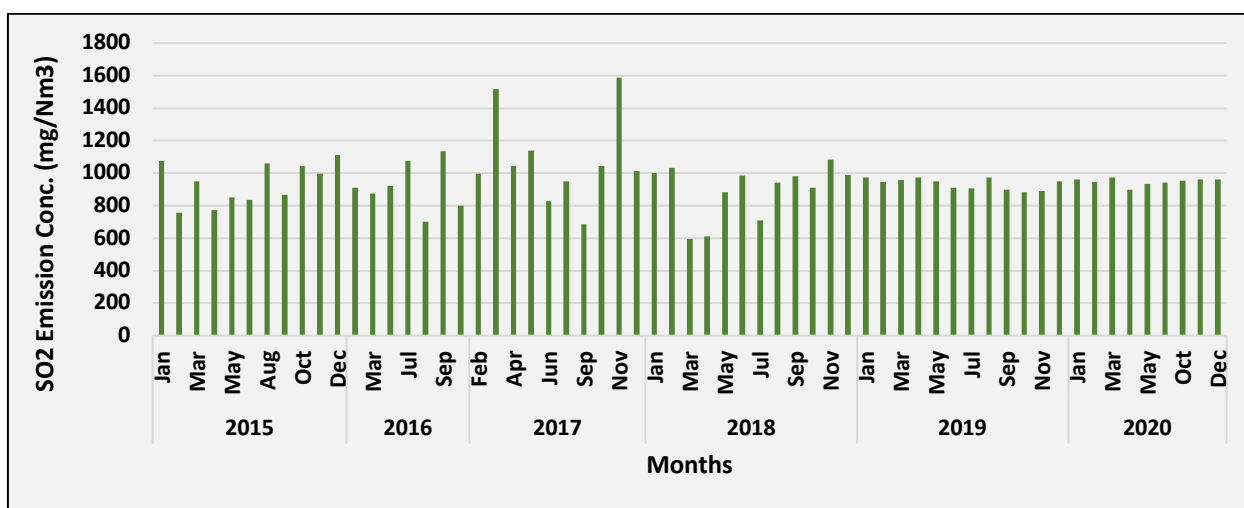


Fig. TIR26: Time series of monthly average So₂ Emission air concentration in Tiroda TPP (Unit 1)

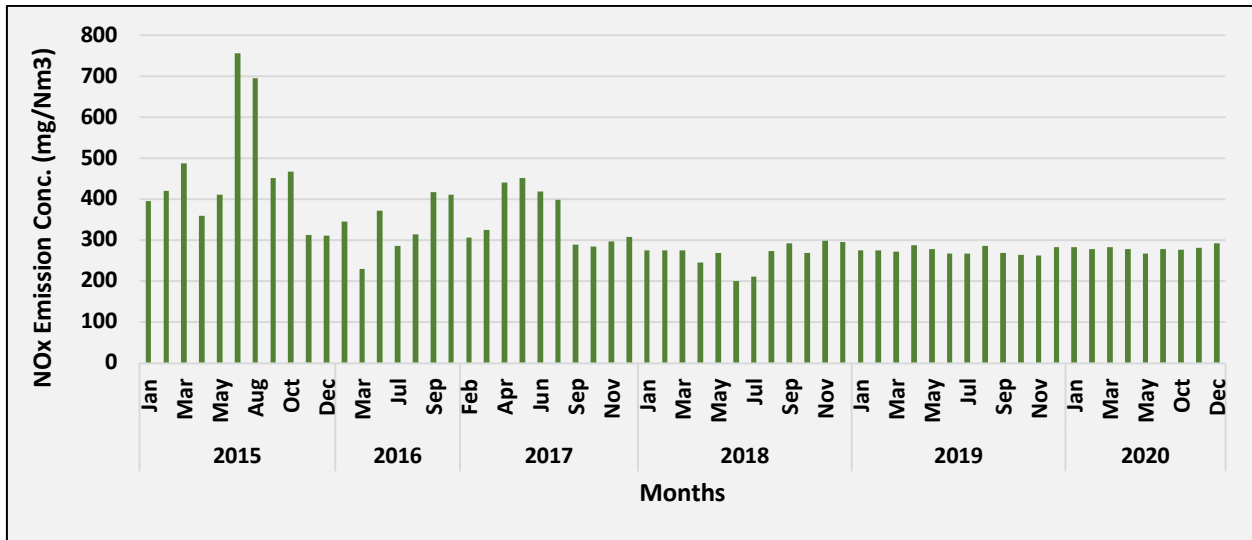


Fig. TIR27: Time series of monthly average NO_x Emission air concentration in Tiroda TPP (Unit 1)

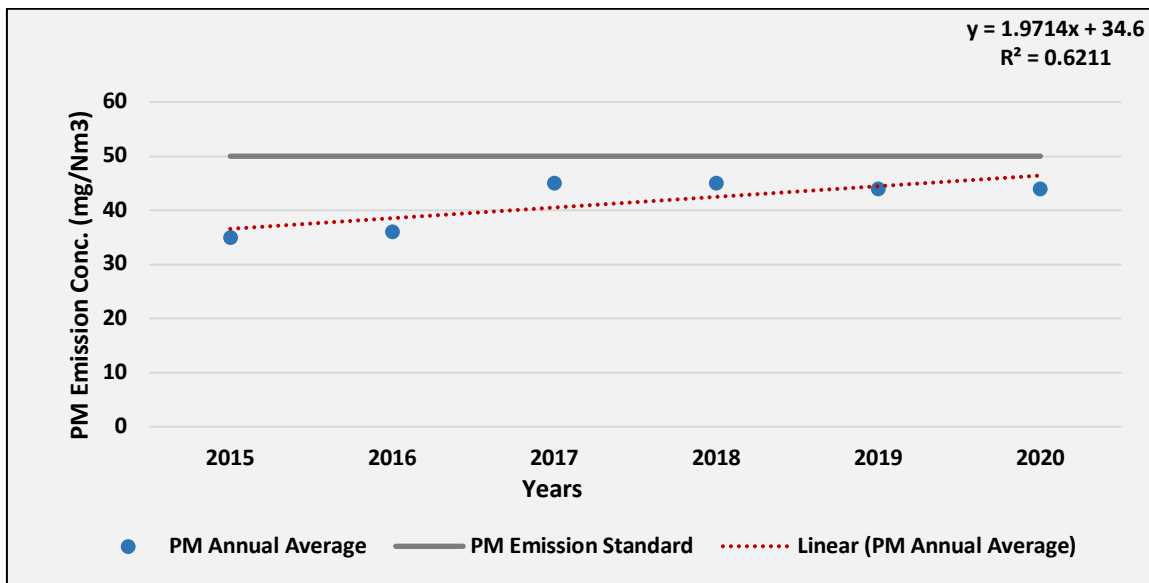


Fig. TIR28: Trend of annual mean PM Emission air concentration in Tiroda TPP (Unit 1)

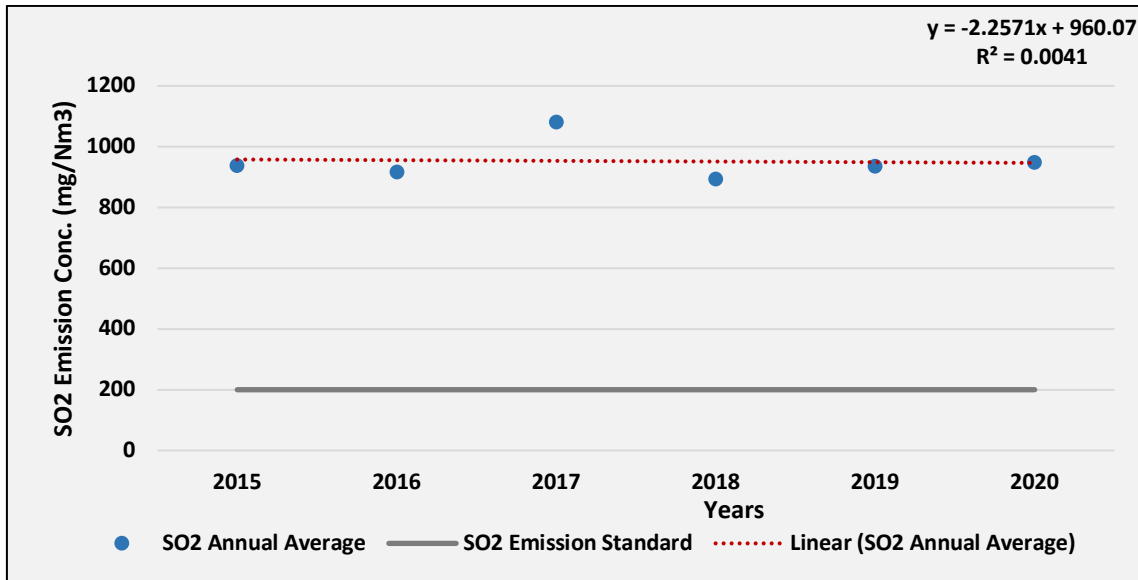


Fig. TIR29: Trend of annual mean SO₂ Emission air concentration in Tiroda TPP (Unit 1)

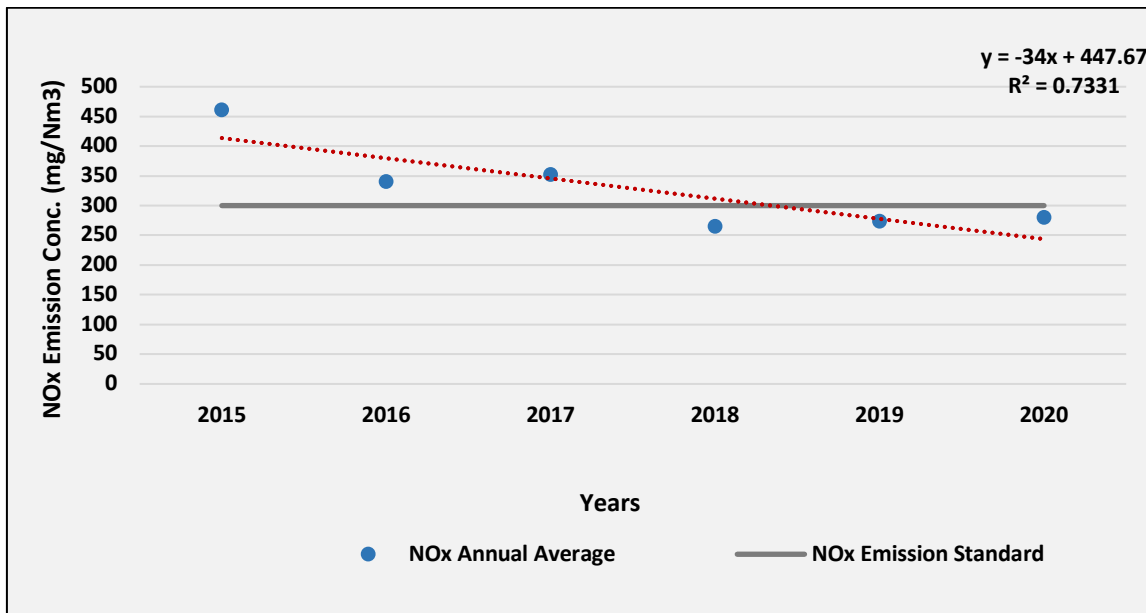


Fig. TIR30: Trend of annual mean NO_x Emission air concentration in Tiroda TPP (Unit 1)

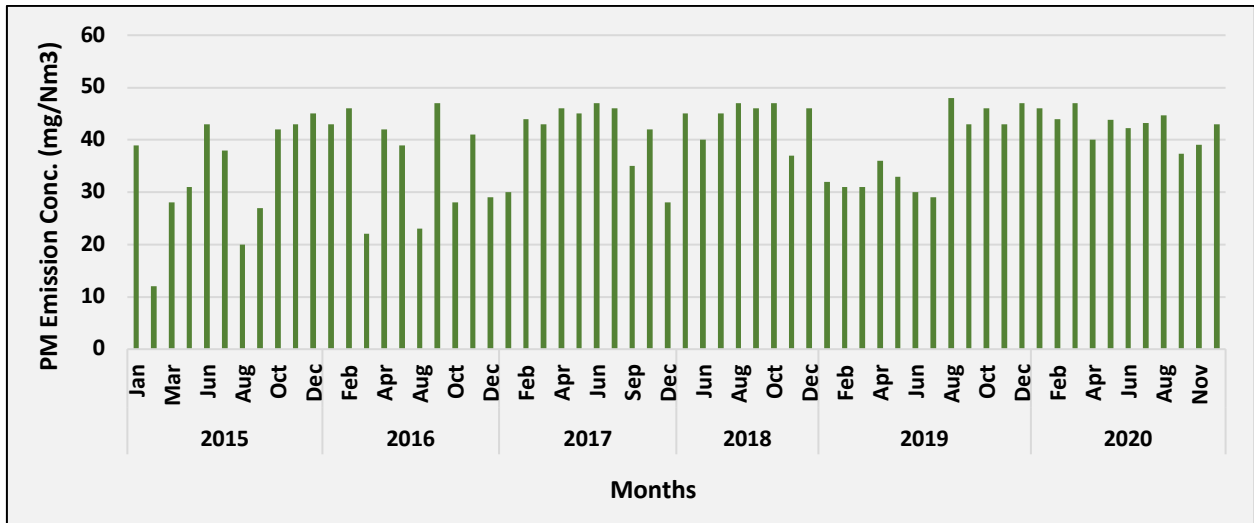


Fig. TIR31: Time series of monthly average PM Emission air concentration in Tiroda TPP (Unit 2)

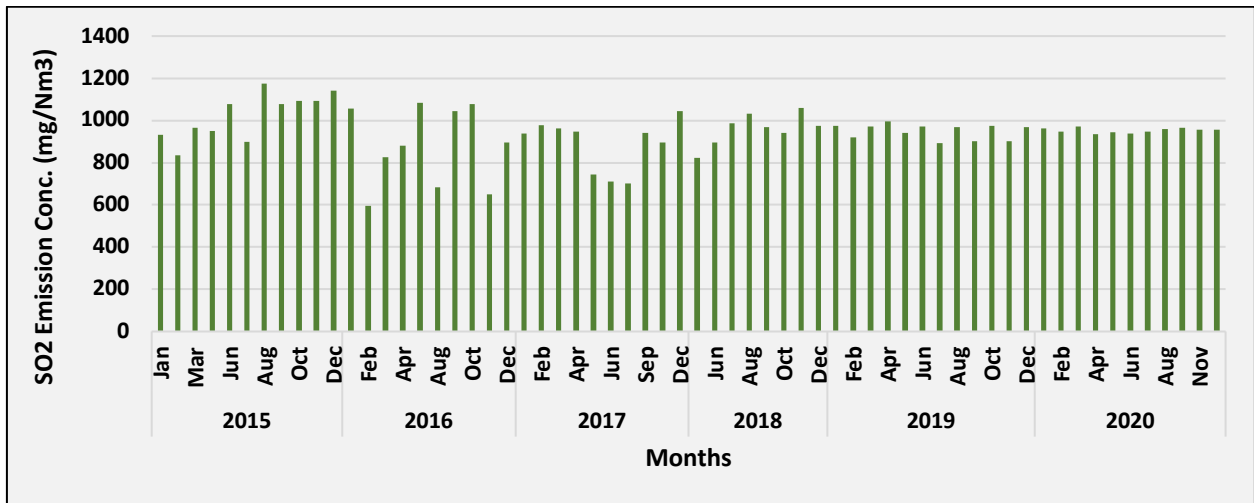


Fig. TIR32: Time series of monthly average SO₂ Emission air concentration in Tiroda TPP (Unit 2)

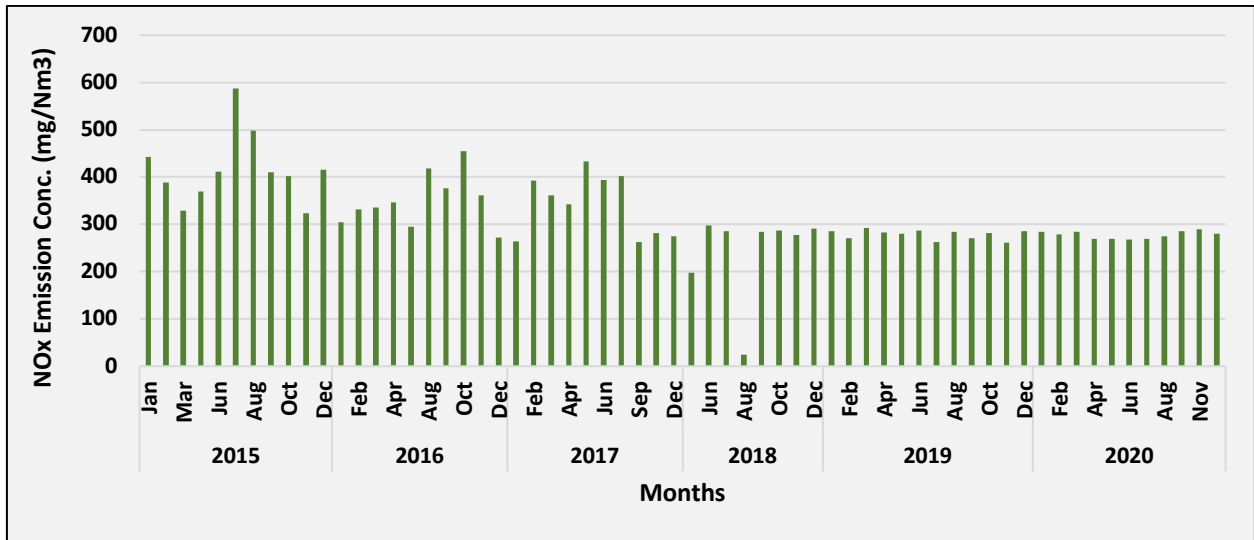


Fig. TIR33: Time series of monthly average NO_x Emission air concentration in Tiroda TPP (Unit 2)

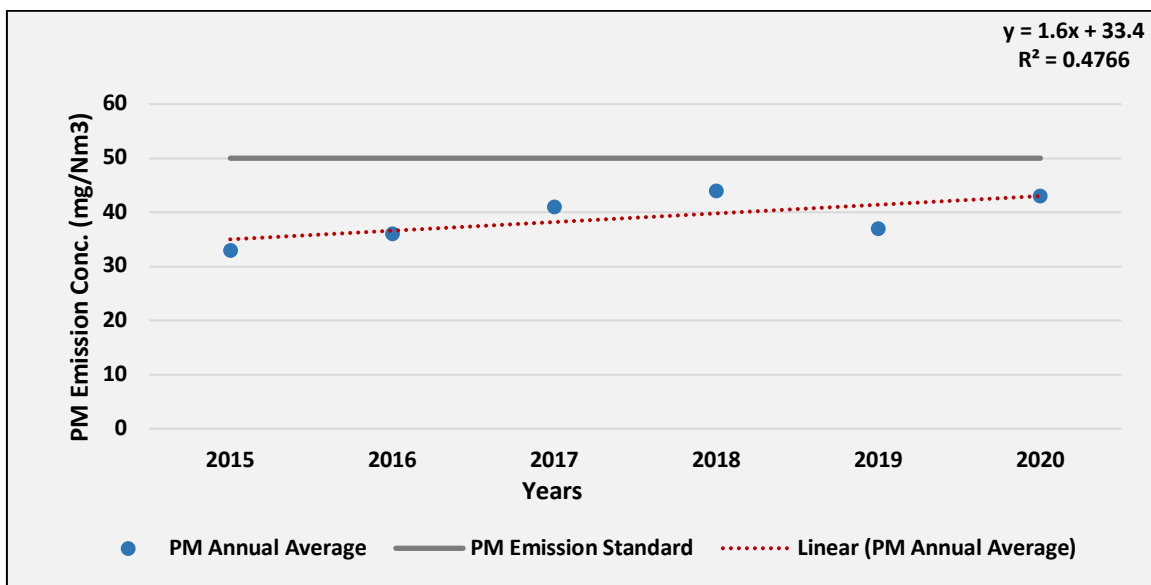


Fig. TIR34: Trend of annual mean PM Emission air concentration in Tiroda TPP (Unit 2)

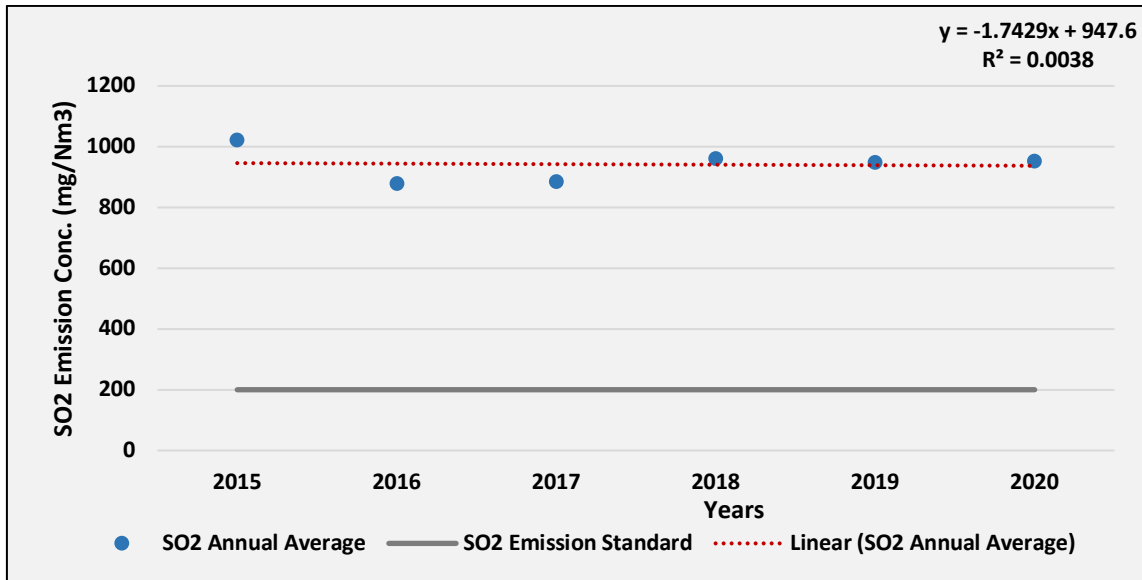


Fig. TIR35: Trend of annual mean SO₂ Emission air concentration in Tiroda TPP (Unit 2)

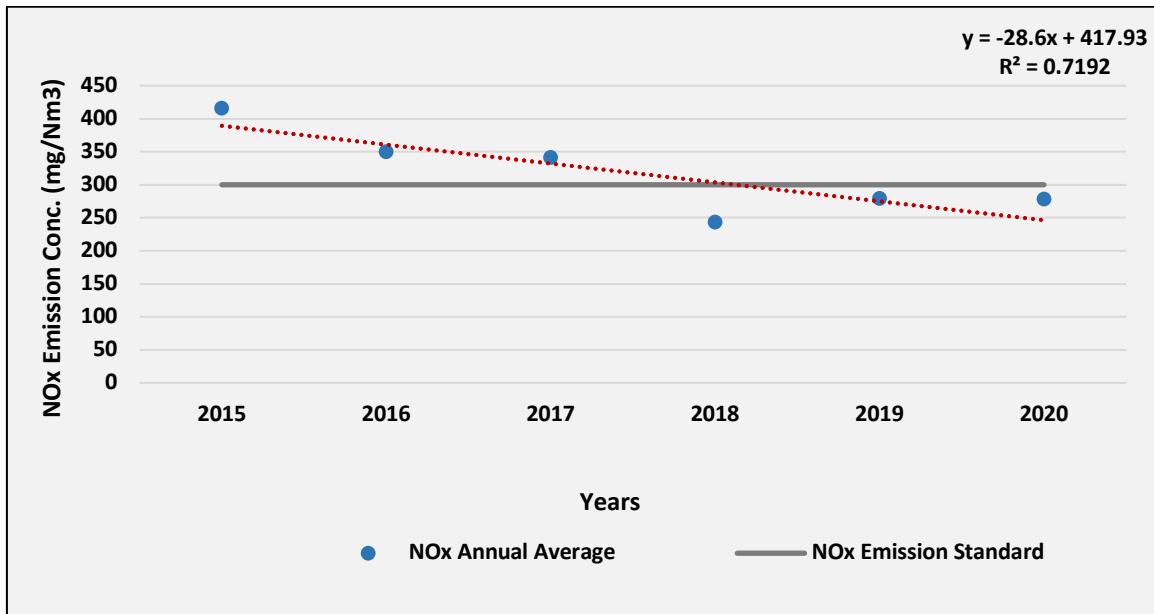


Fig. TIR36: Trend of annual mean NO_x Emission air concentration in Tiroda TPP (Unit 2)

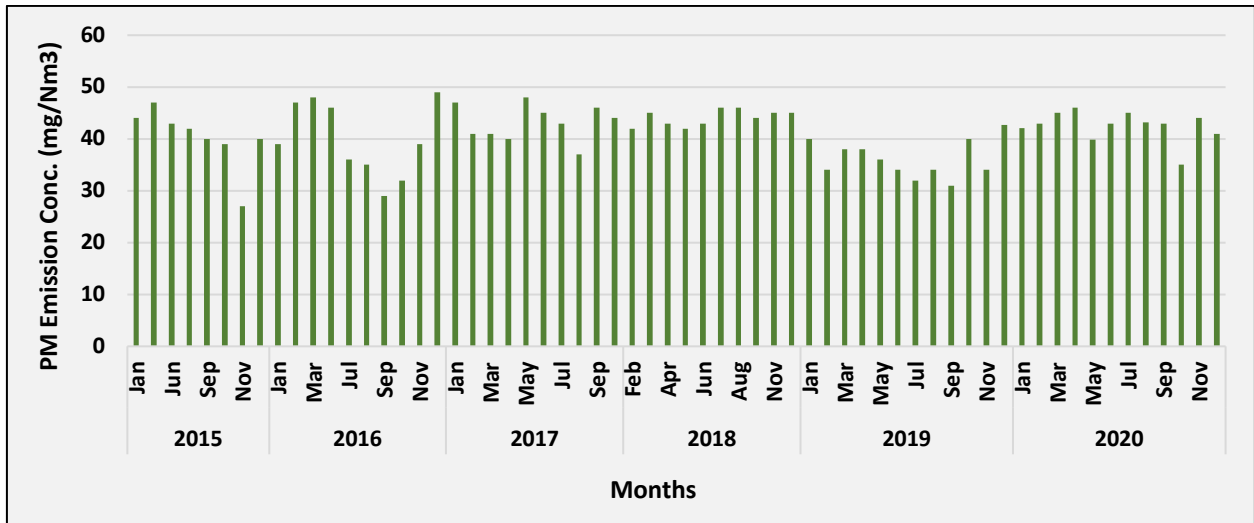


Fig. TIR37: Time series of monthly average PM Emission concentration in Tiroda TPP (Unit 3)

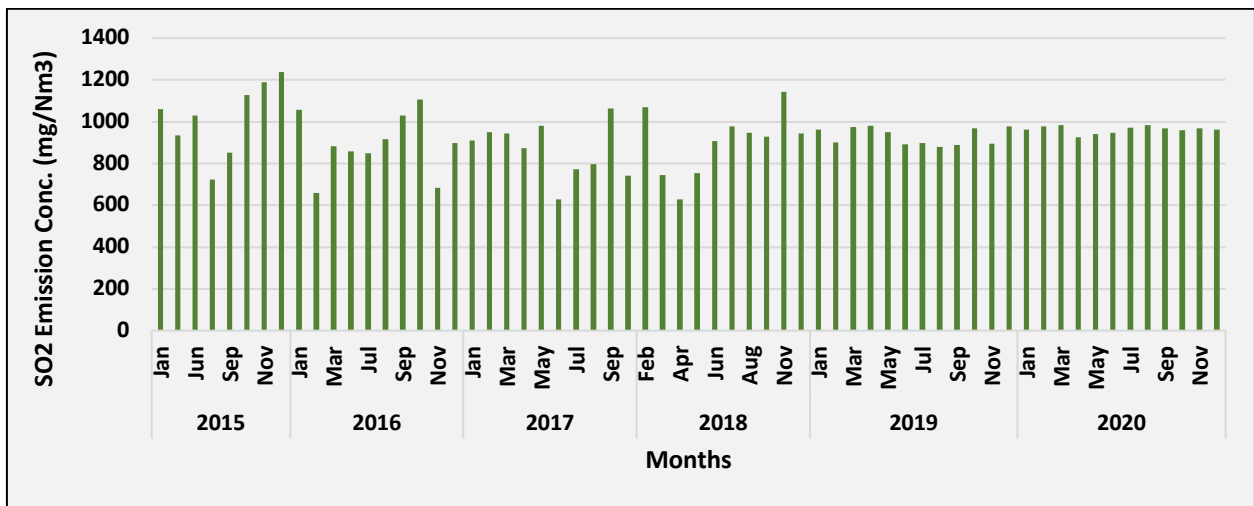


Fig. TIR38: Time series of monthly average SO₂ Emission concentration in Tiroda TPP (Unit 3)

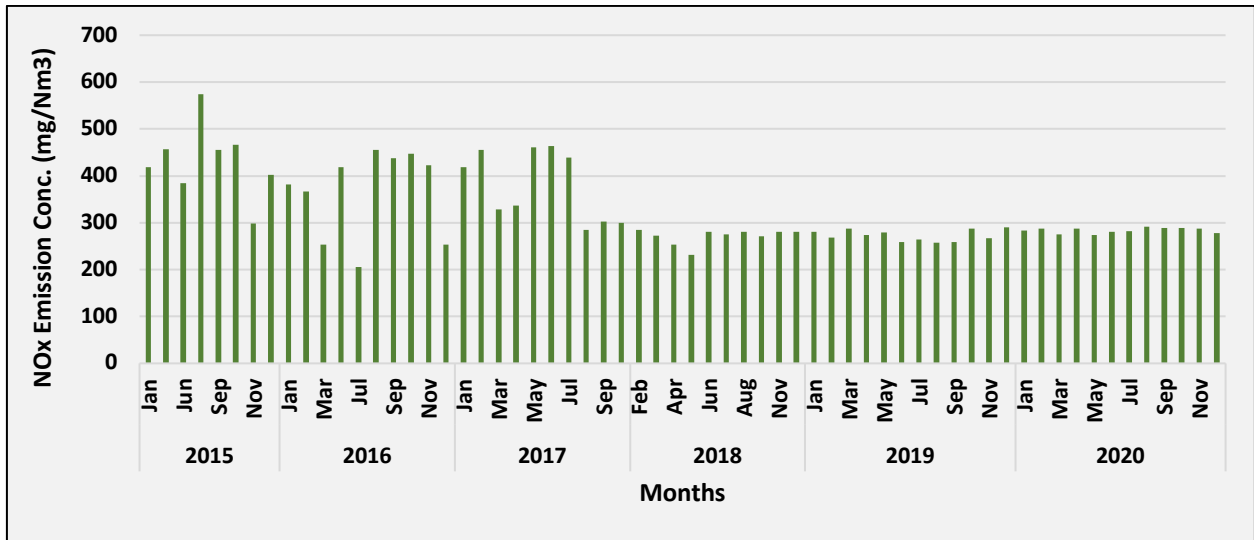


Fig. TIR39: Time series of monthly average NO_x Emission concentration in Tiroda TPP (Unit 3)

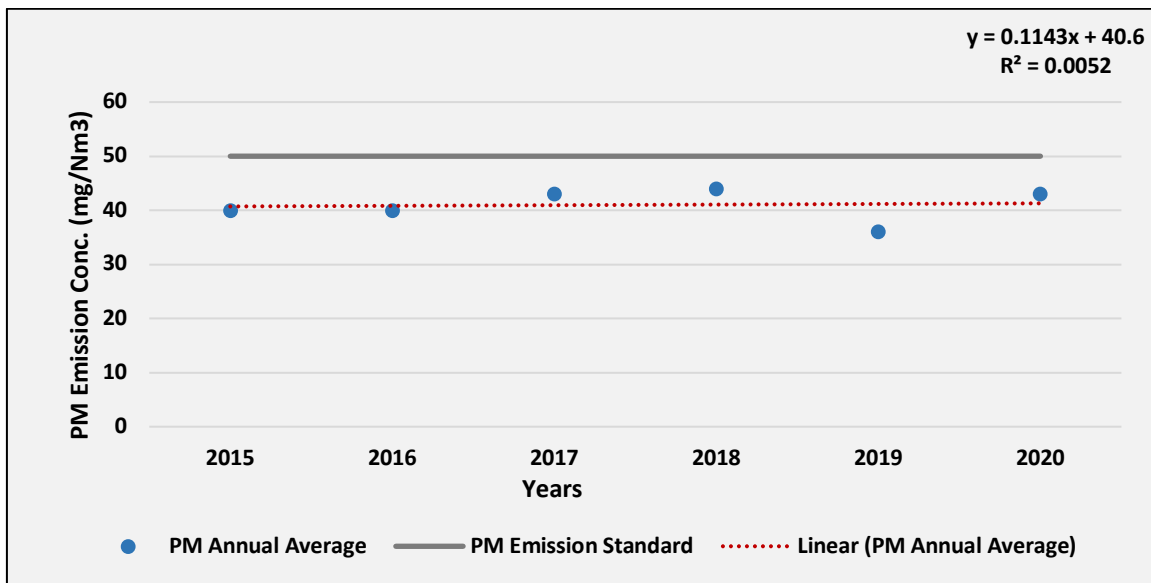


Fig. TIR40: Trend of annual mean PM Emission air concentration in Tiroda TPP (Unit 3)

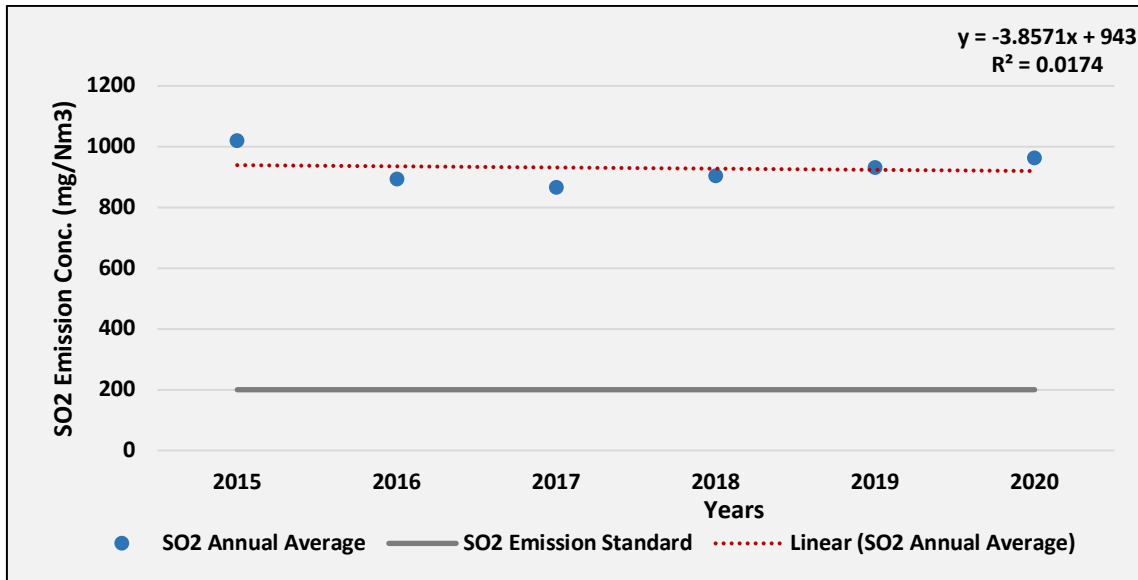


Fig. TIR41: Trend of annual mean SO₂ Emission air concentration in Tiroda TPP (Unit 3)

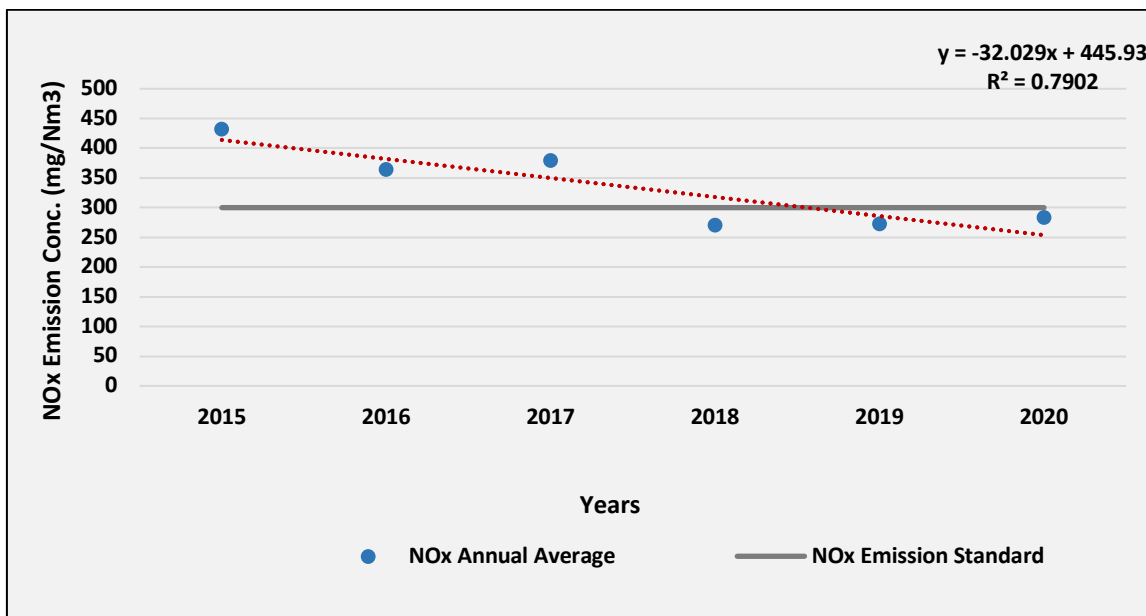


Fig. TIR42: Trend of annual mean NO_x Emission air concentration in Tiroda TPP (Unit 3)

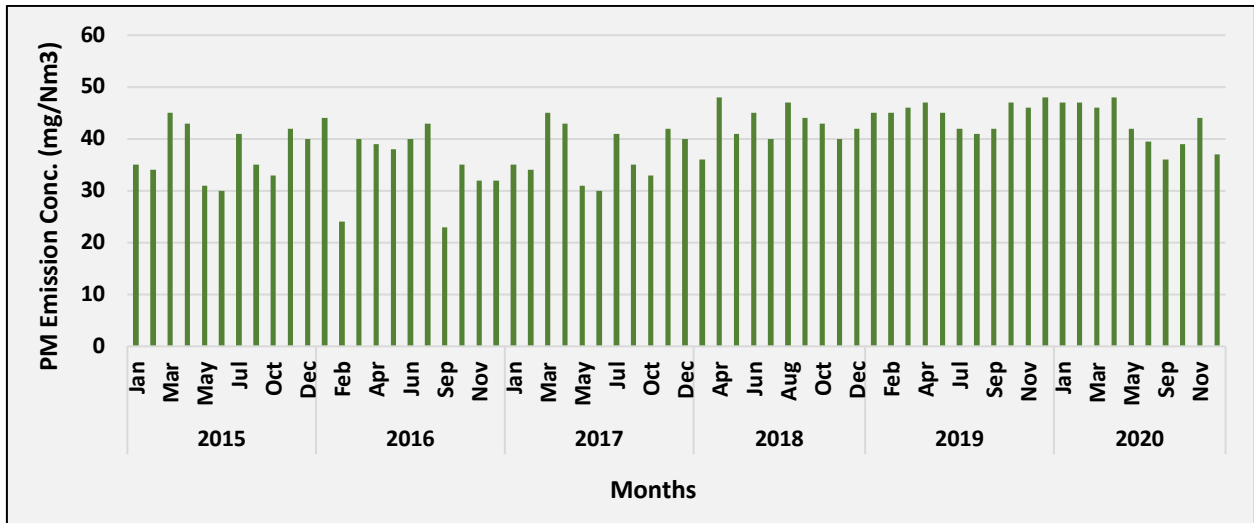


Fig. TIR43: Time series of monthly average PM Emission concentration in Tiroda TPP (Unit 4)

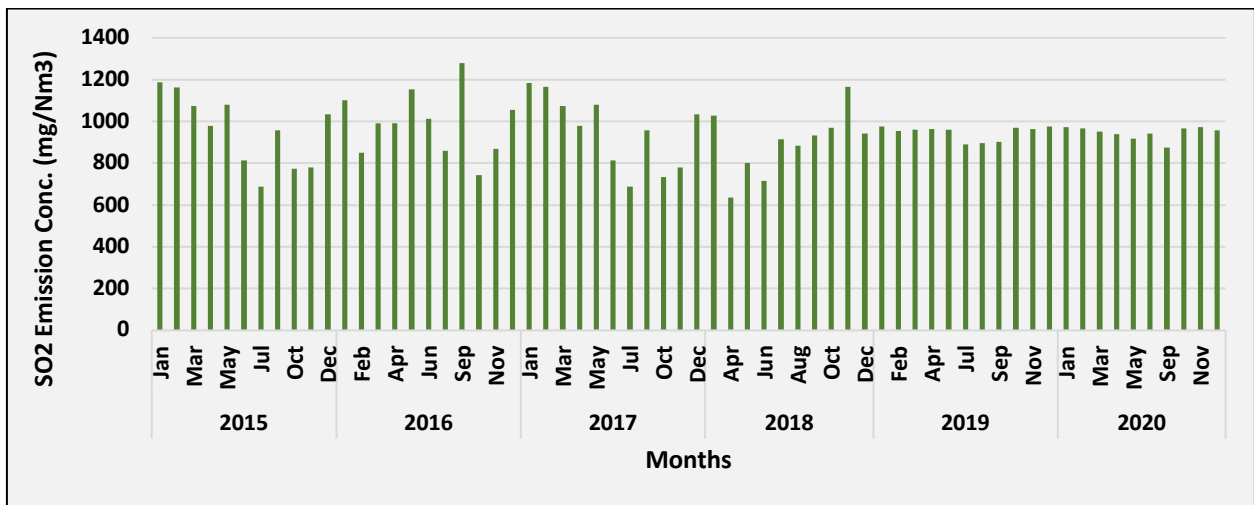


Fig. TIR44: Time series of monthly average SO₂ Emission concentration in Tiroda TPP (Unit 4)

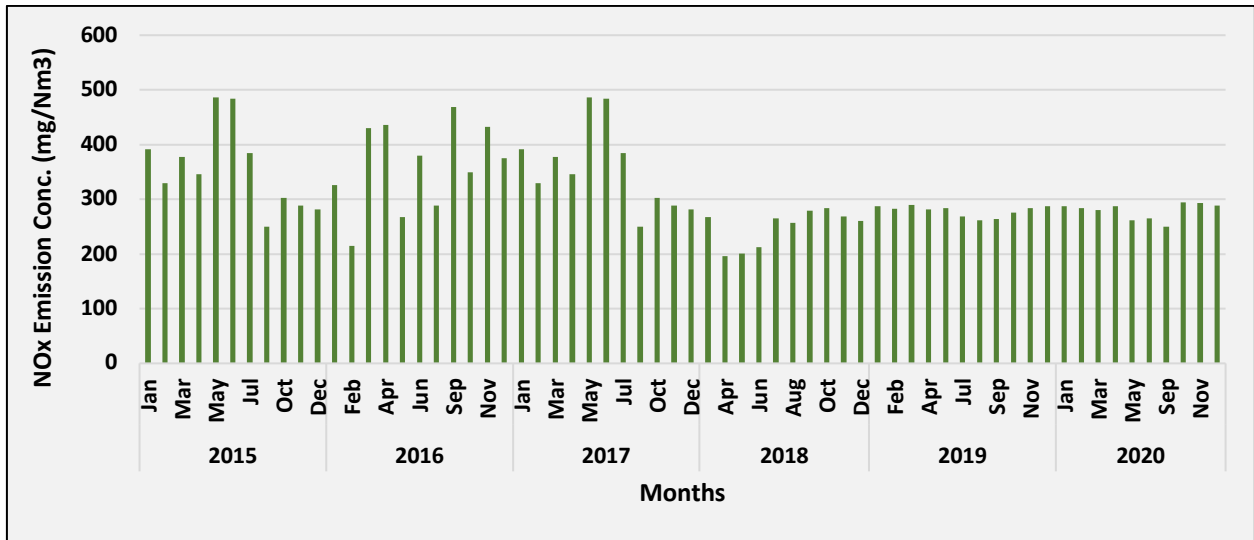


Fig. TIR45: Time series of monthly average NO_x Emission concentration in Tiroda TPP (Unit 4)

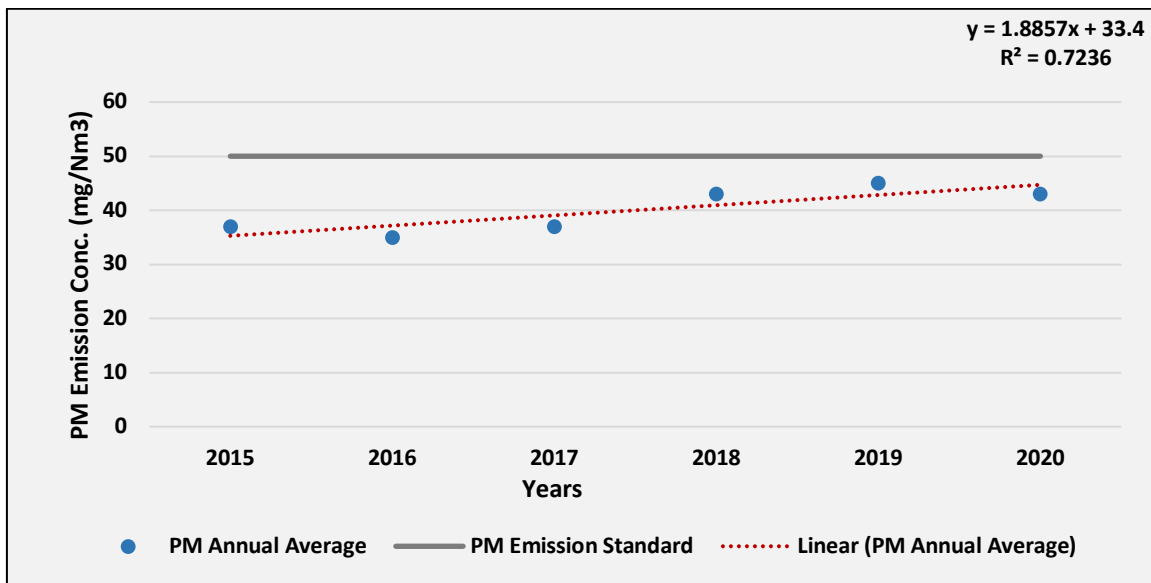


Fig. TIR46: Trend of annual mean PM Emission air concentration in Tiroda TPP (Unit 4)

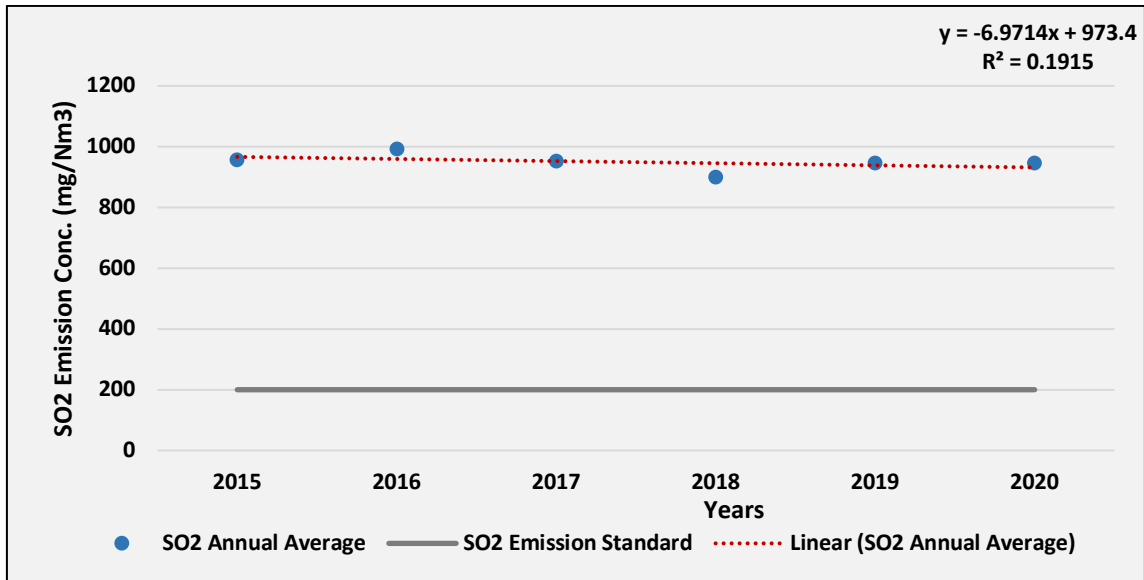


Fig. TIR47: Trend of annual mean SO₂ Emission air concentration in Tiroda TPP (Unit 4)

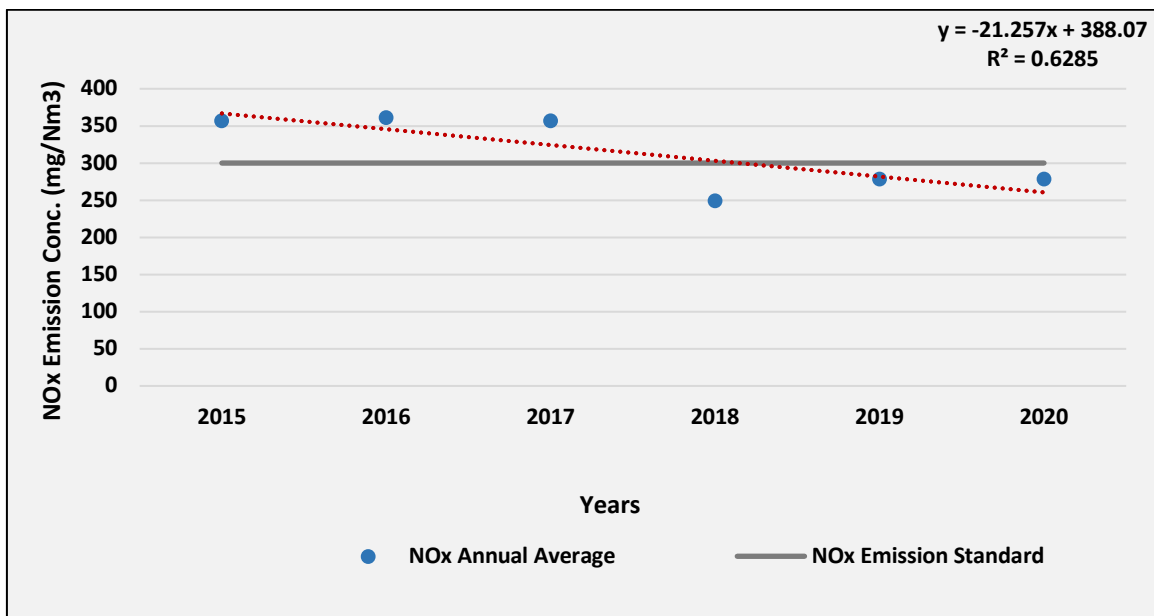


Fig. TIR48: Trend of annual mean NO_x Emission air concentration in Tiroda TPP (Unit 4)

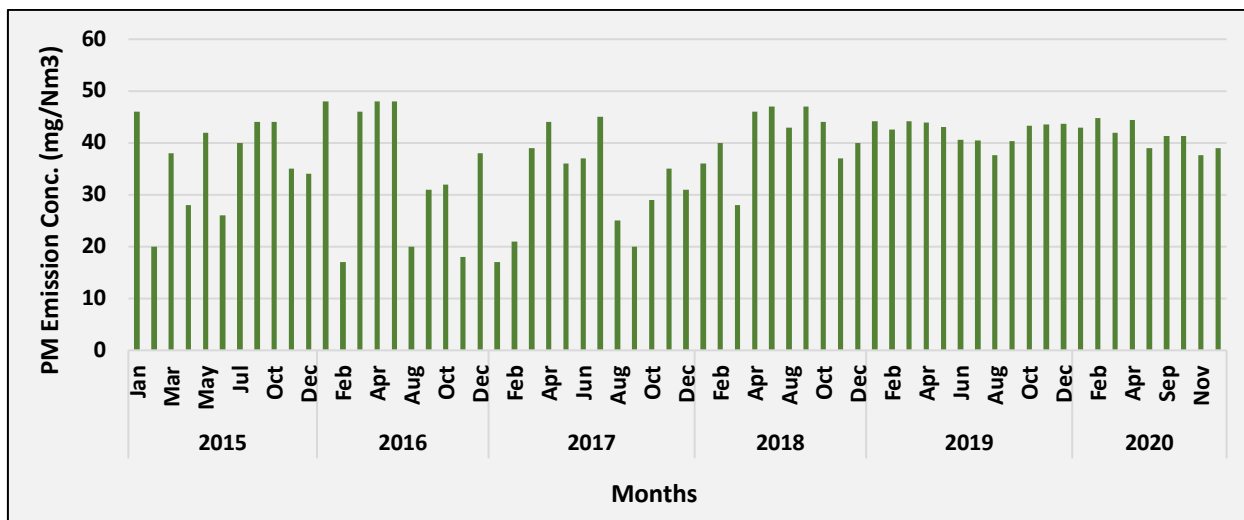


Fig. TIR49: Time series of monthly average PM Emission concentration in Tiroda TPP (Unit 5)

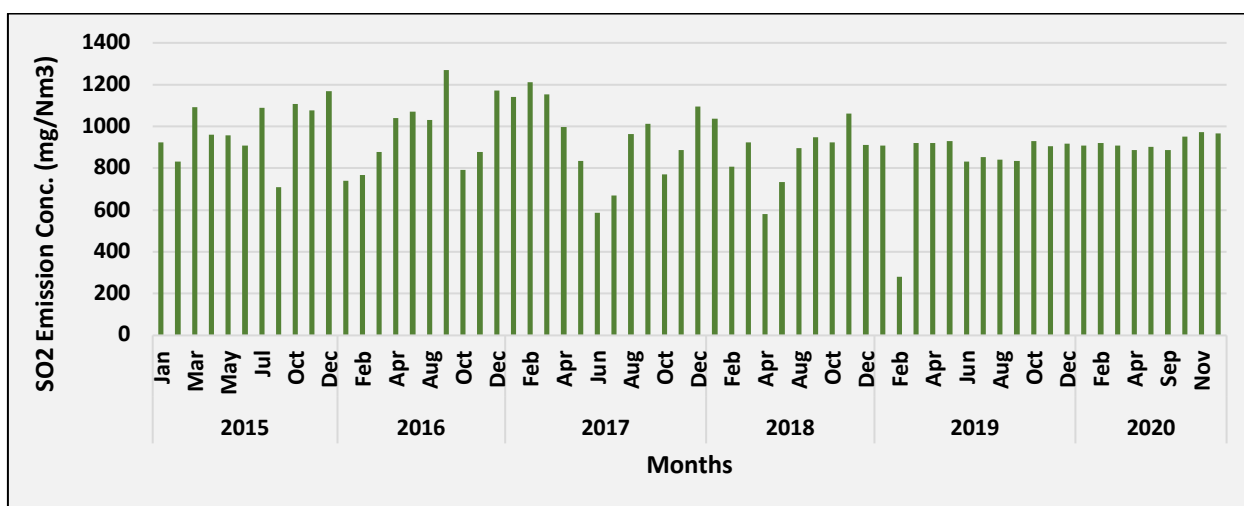


Fig. TIR50: Time series of monthly average SO₂ Emission concentration in Tiroda TPP (Unit 5)

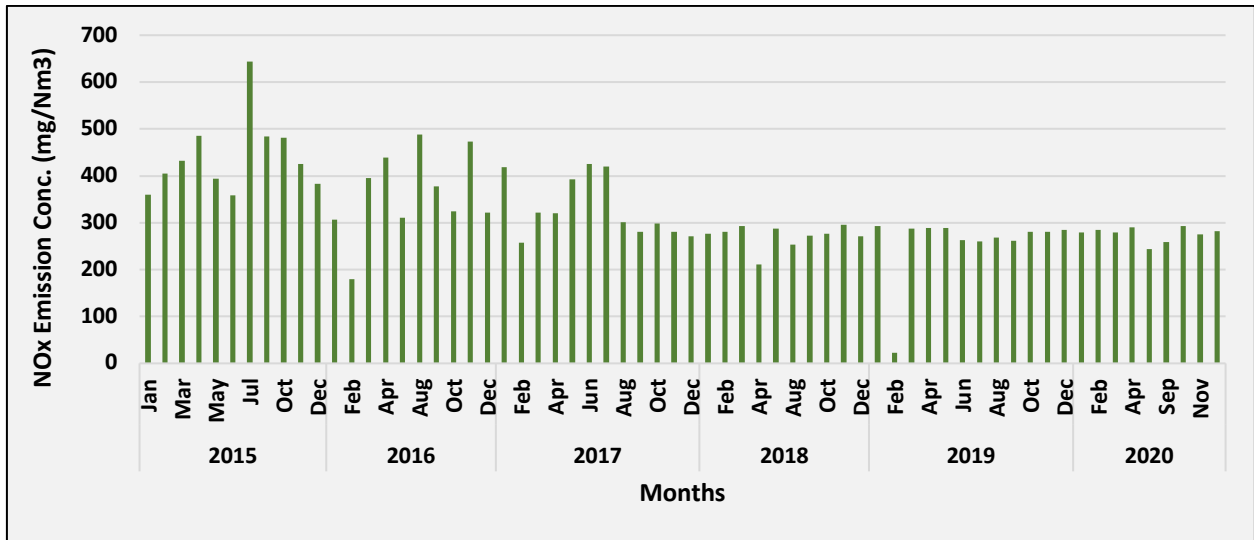


Fig. TIR51: Time series of monthly average NO_x Emission concentration in Tiroda TPP (Unit 5)

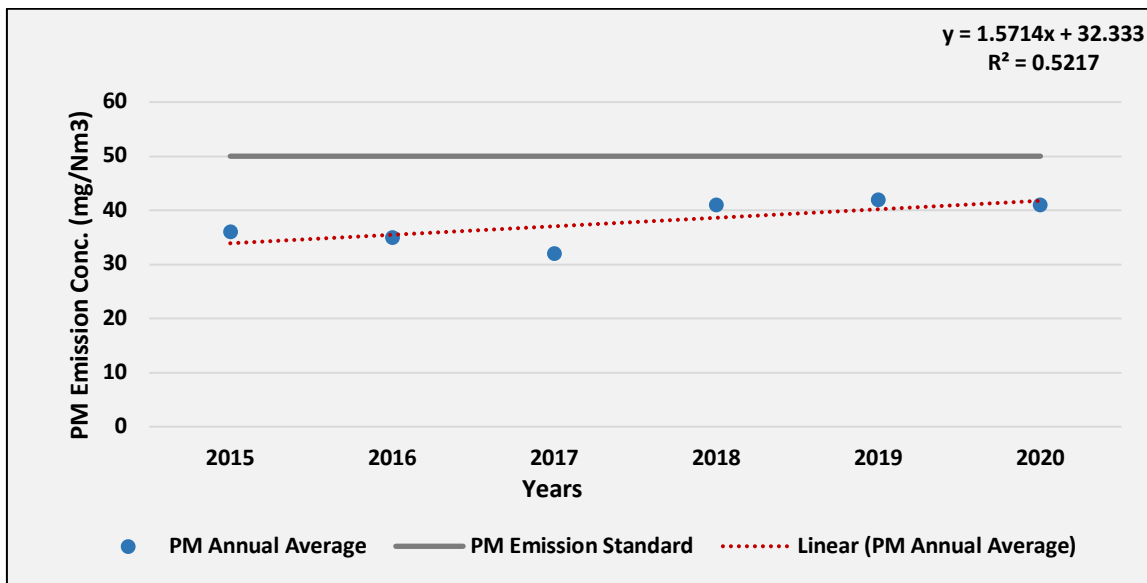


Fig. TIR52: Trend of annual mean PM Emission air concentration in Tiroda TPP (Unit 5)

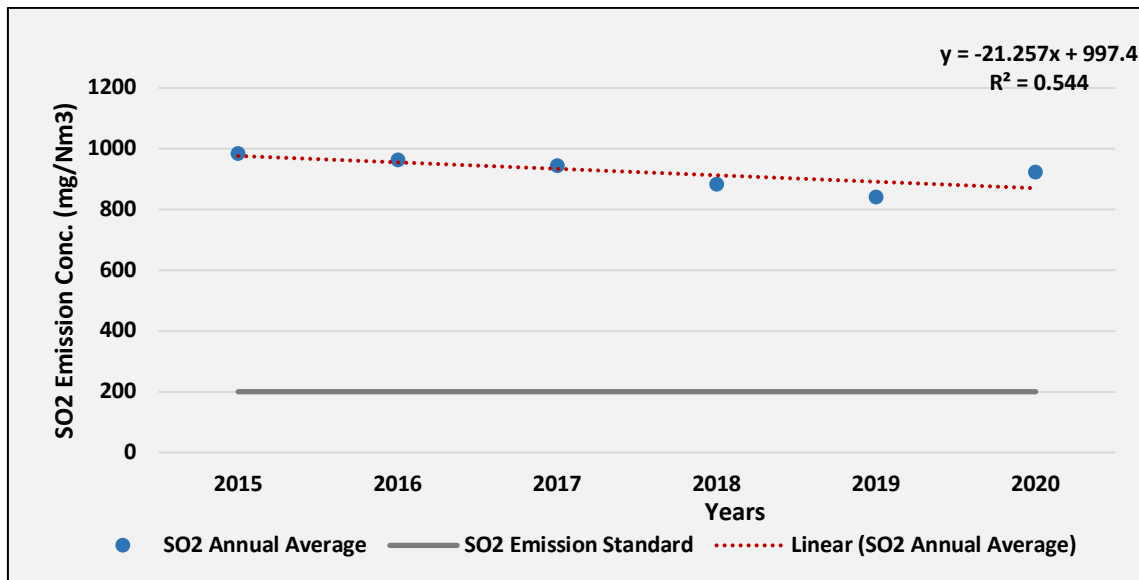


Fig. TIR53: Trend of annual mean SO₂ Emission air concentration in Tiroda TPP (Unit 5)

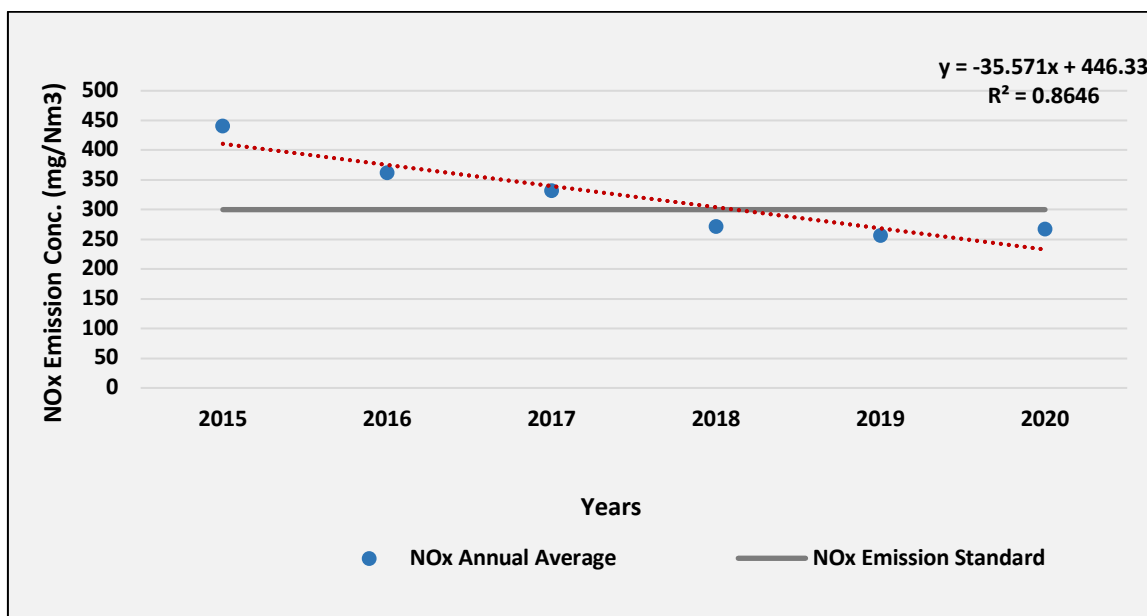


Fig. TIR54: Trend of annual mean NO_x Emission air concentration in Tiroda TPP (Unit 5)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀ is exceeding whereas the PM_{2.5}, SO₂ & NO_x levels are within a range for all the ambient as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that SO₂ parameter is higher than the emission norms. Emission of particulate matter is within the limit range whereas the emission of NO_x is within the limit for the year 2018 and 2019.

JOJOBERA THERMAL POWER PLANT

Jojobera Power Plant is a coal-based thermal power plant located at Jojobera, near Jamshedpur, East Singhbhum district in the Indian state of Jharkhand. The power plant is owned by Tata Power.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. JO1-Fig. JO62) for the last four years (2016-2020) using data provided by GSECL developer for Jojobera Power plant, Jharkhand, India.

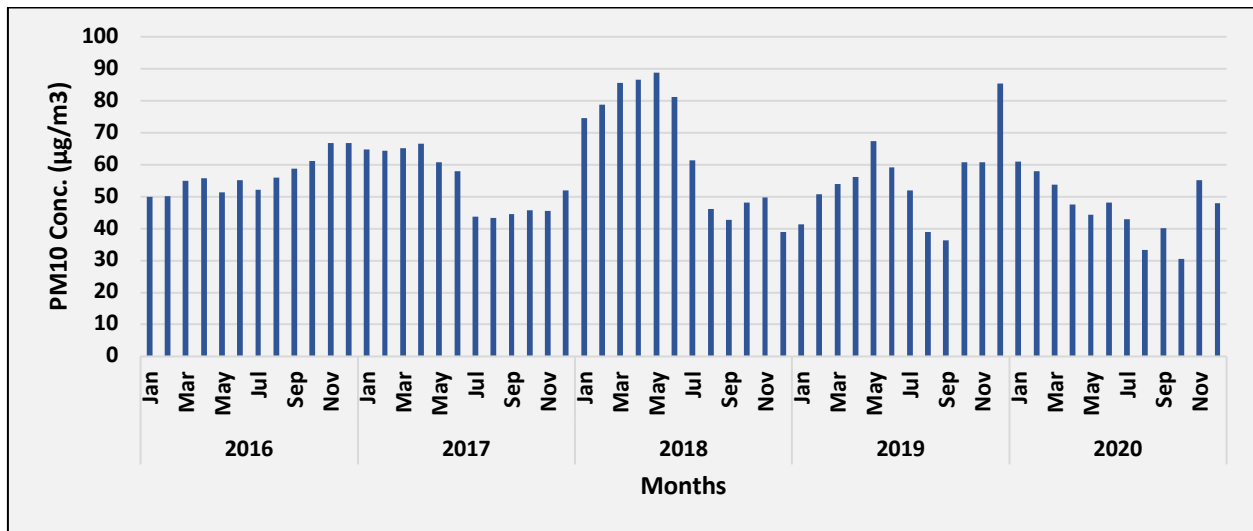


Fig. JO1: Time series of monthly average PM₁₀ ambient air concentration in Jojobera TPP (Ambient 1)

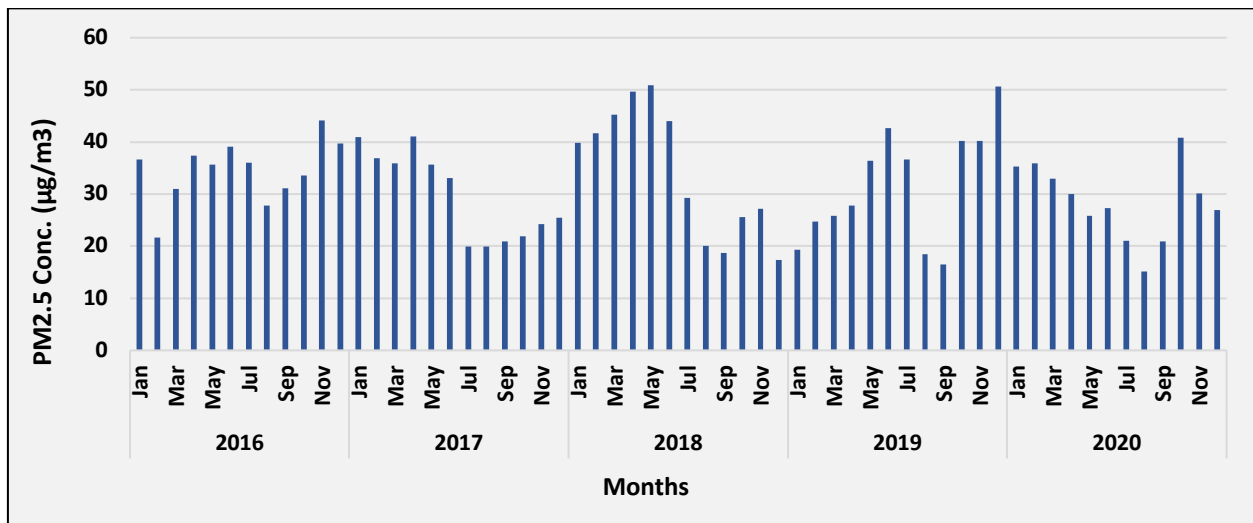


Fig. JO2: Time series of monthly average PM_{2.5} ambient air concentration in Jojobera TPP (Ambient 1)

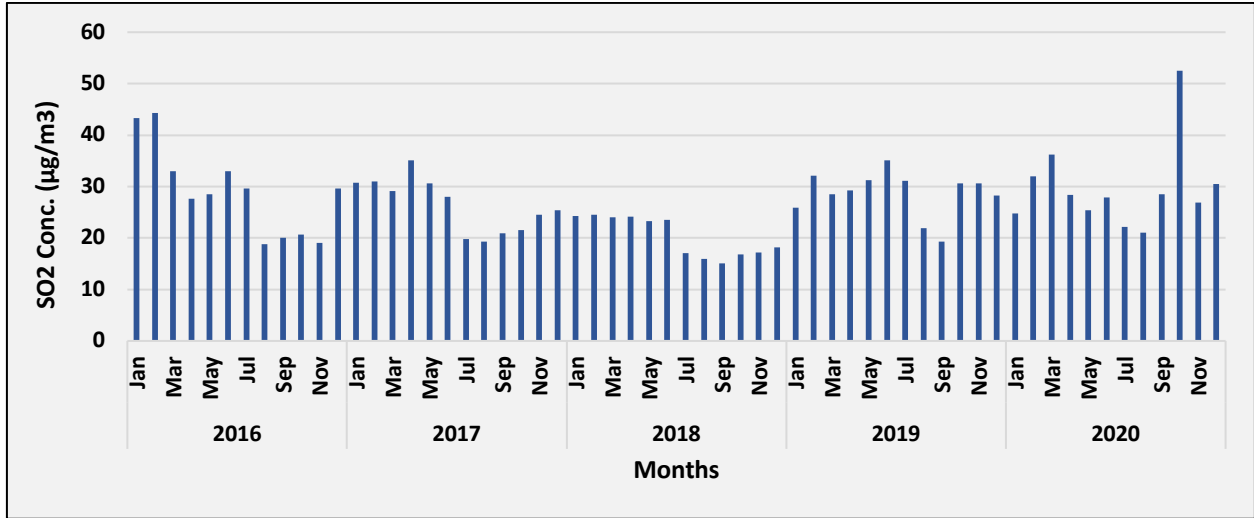


Fig. JO3: Time series of monthly average SO_2 ambient air concentration in Jojobera TPP (Ambient 1)

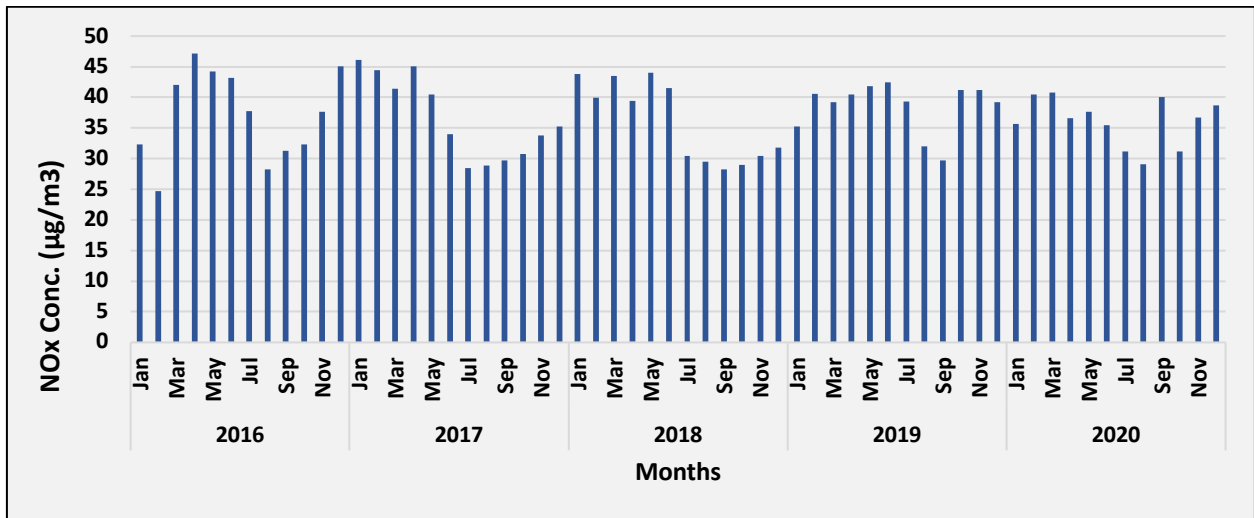


Fig. JO4: Time series of monthly average NO_x ambient air concentration in Jojobera TPP (Ambient 1)

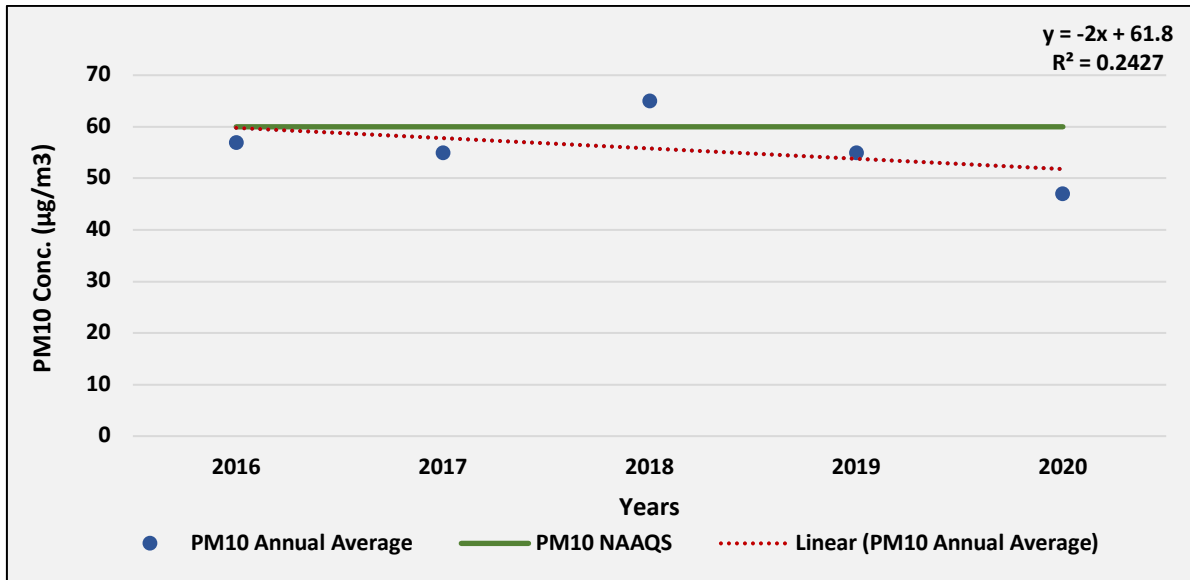


Fig. JO5: Trend of annual mean PM₁₀ ambient air concentration in Jojobera TPP (Ambient 1)

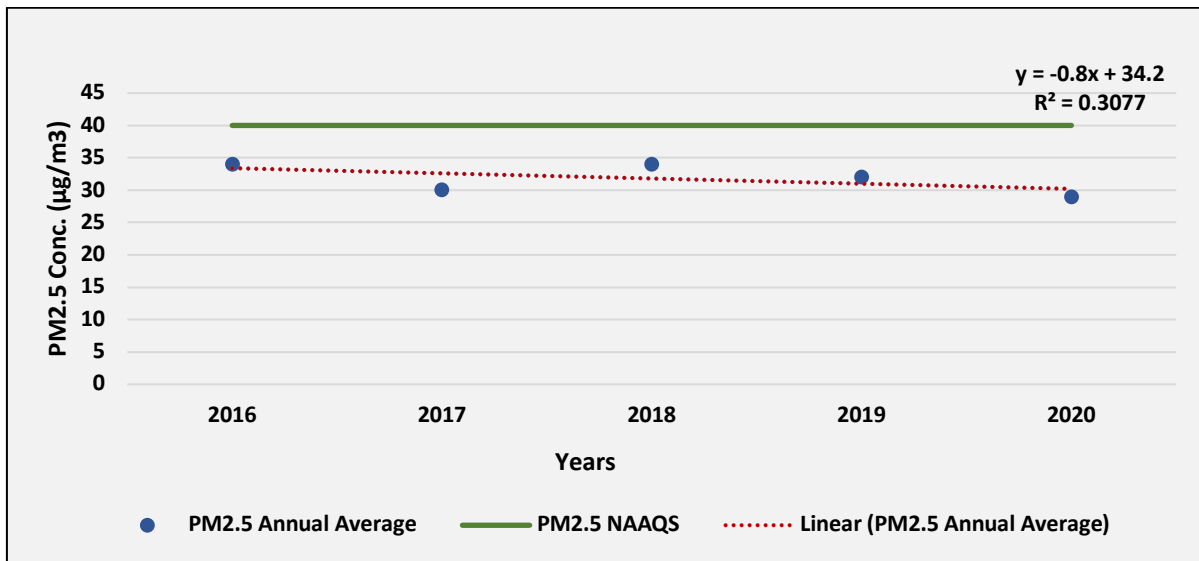


Fig. JO6: Trend of annual mean PM_{2.5} ambient air concentration in Jojobera TPP (Ambient 1)

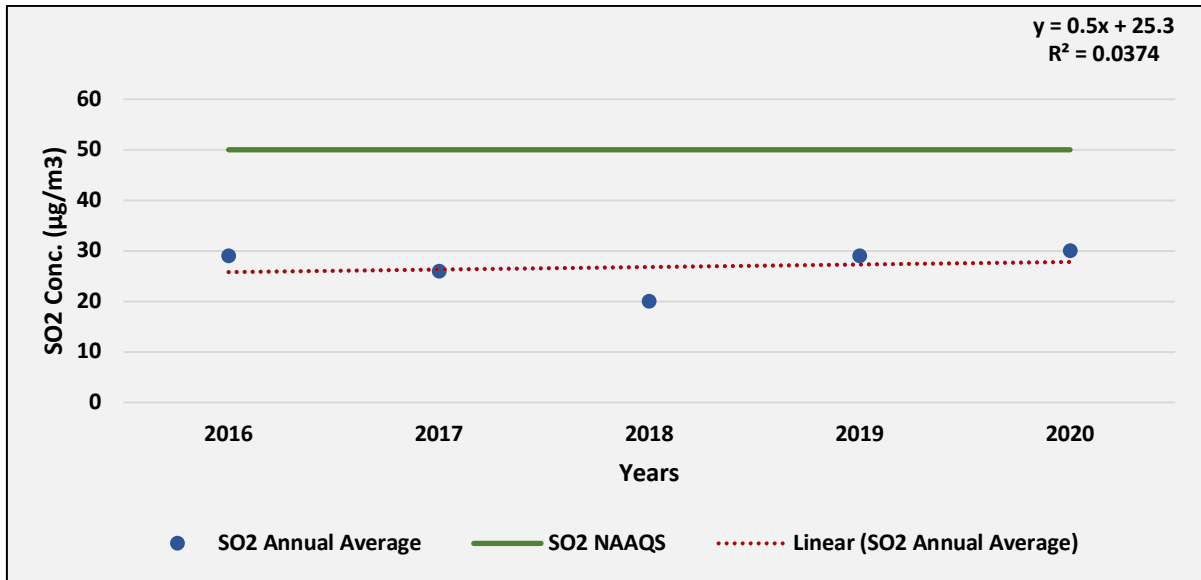


Fig. JO7: Trend of annual mean SO₂ ambient air concentration in Jojobera TPP (Ambient 1)

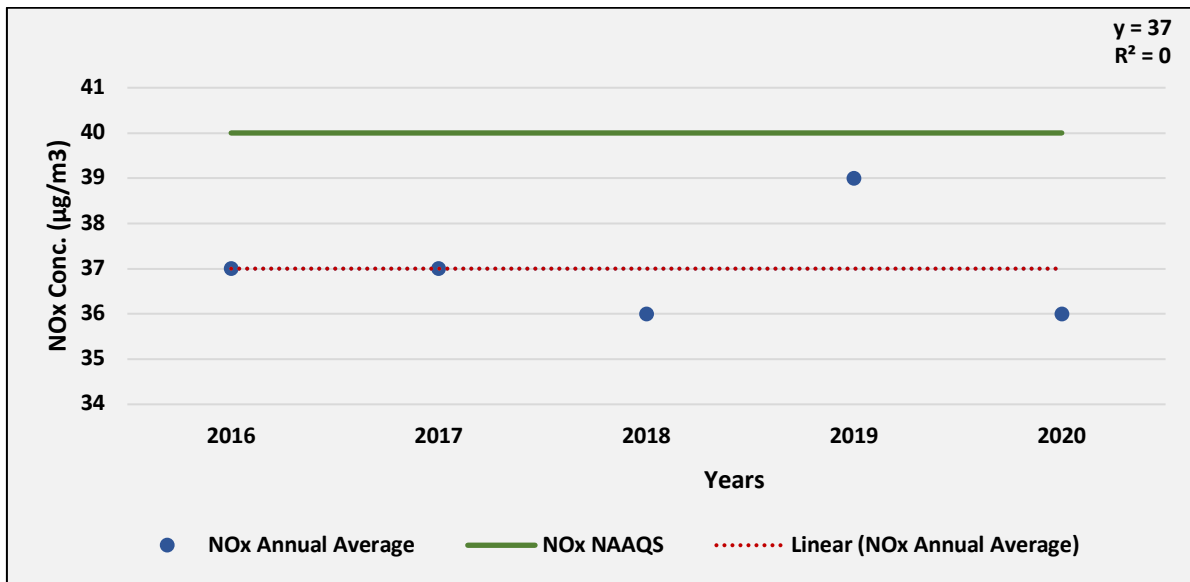


Fig. JO8: Trend of annual mean NO_x ambient air concentration in Jojobera TPP (Ambient 1)

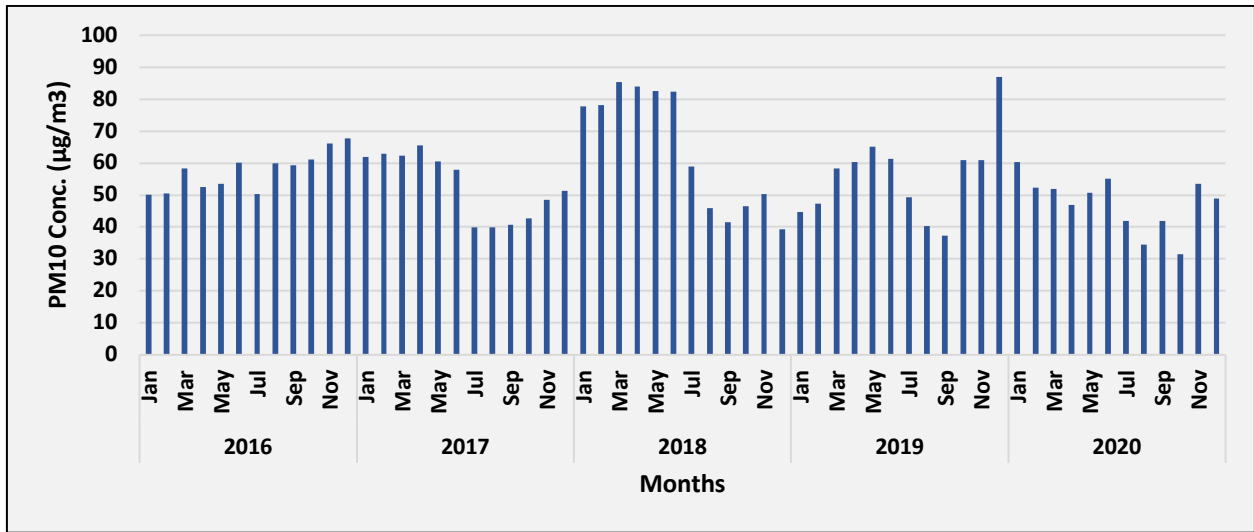


Fig. JO9: Time series of monthly average PM_{10} ambient air concentration in Jojobera TPP (Ambient 2)

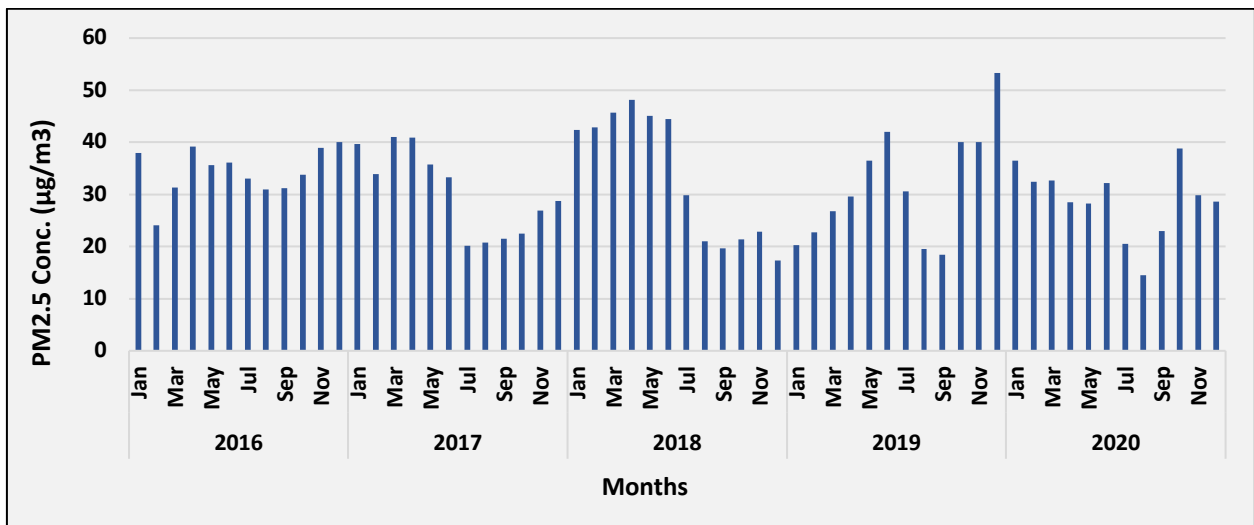


Fig. JO10: Time series of monthly average $PM_{2.5}$ ambient air concentration in Jojobera TPP (Ambient 2)

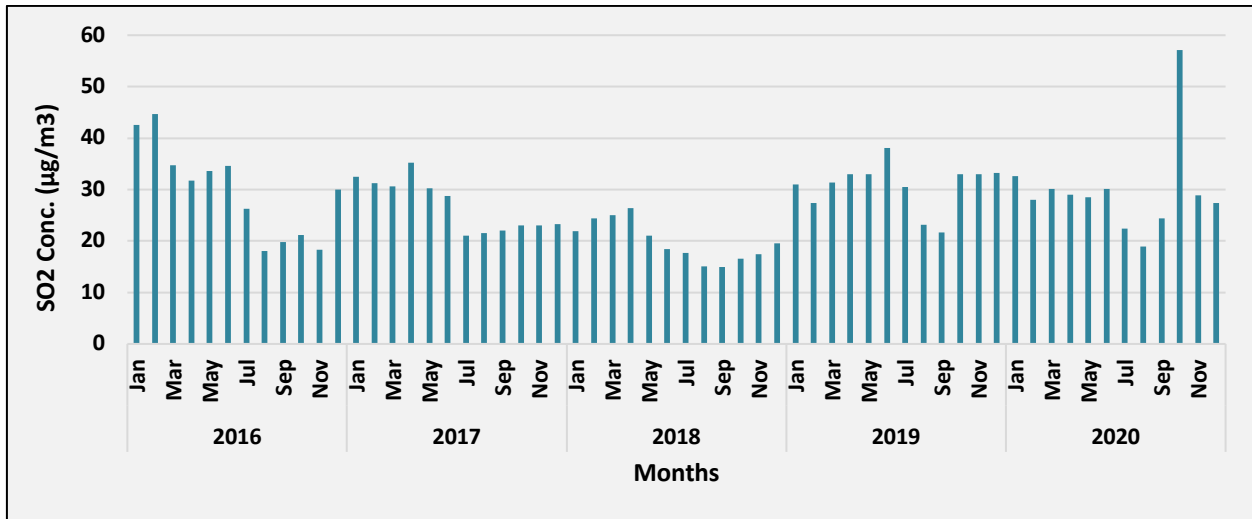


Fig. JO11: Time series of monthly average SO_2 ambient air concentration in Jojobera TPP (Ambient 2)

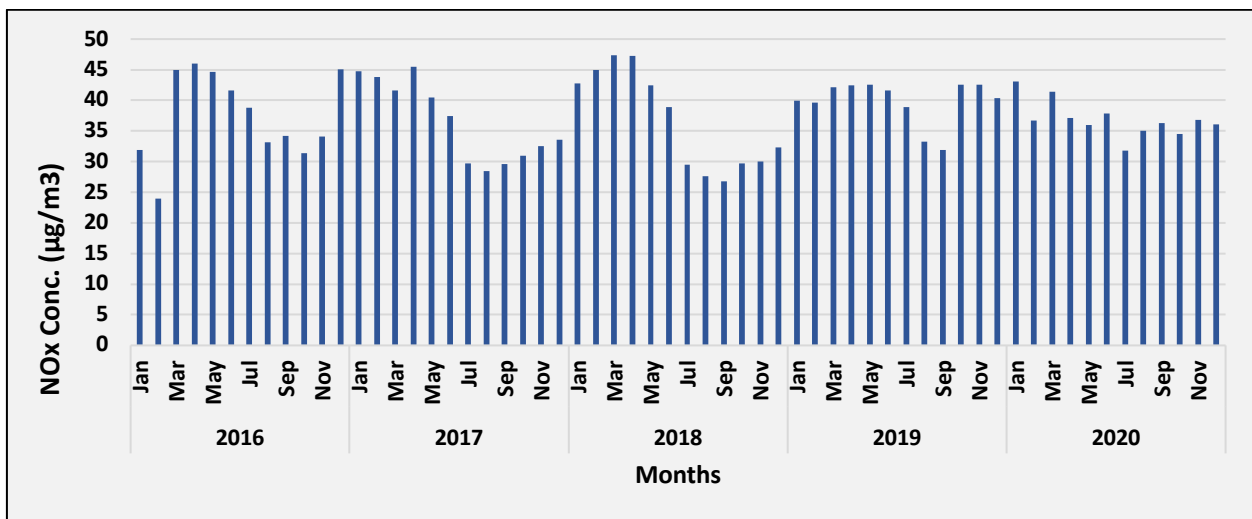


Fig. JO12: Time series of monthly average NO_x ambient air concentration in Jojobera TPP (Ambient 2)

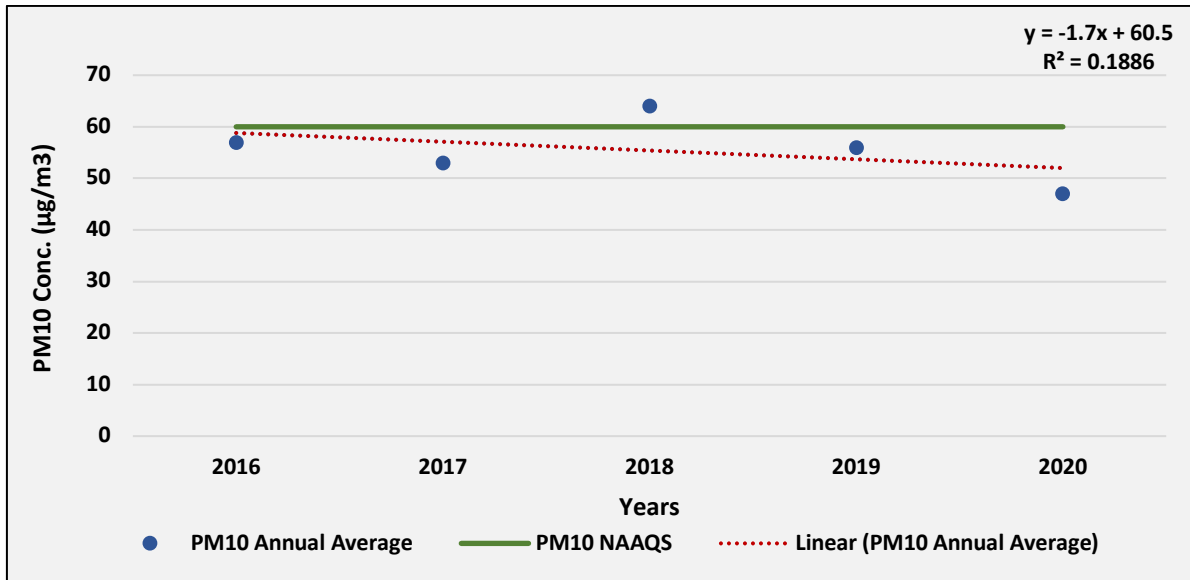


Fig. JO13: Trend of annual mean PM_{10} ambient air concentration in Jojobera TPP (Ambient 2)

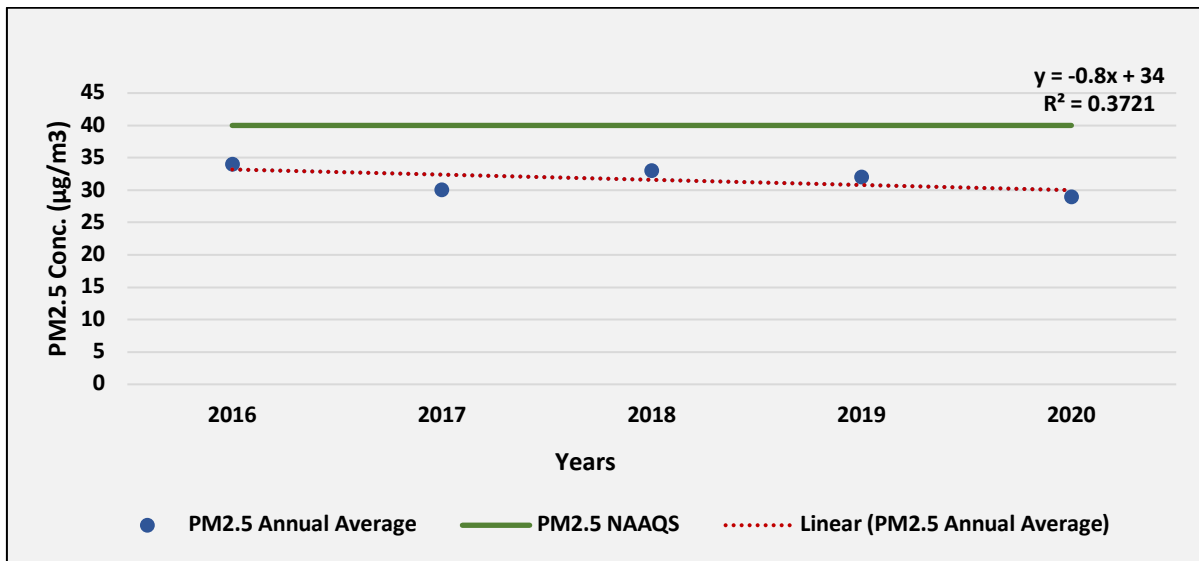


Fig. JO14: Trend of annual mean $PM_{2.5}$ ambient air concentration in Jojobera TPP (Ambient 2)

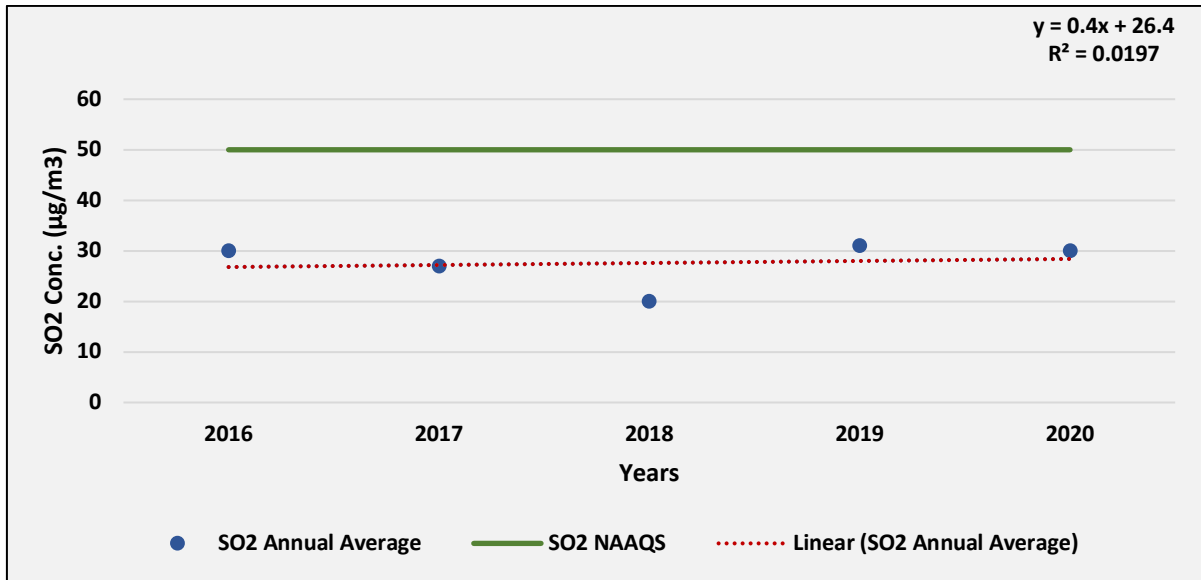


Fig. JO15: Trend of annual mean SO₂ ambient air concentration in Jojobera TPP (Ambient 2)

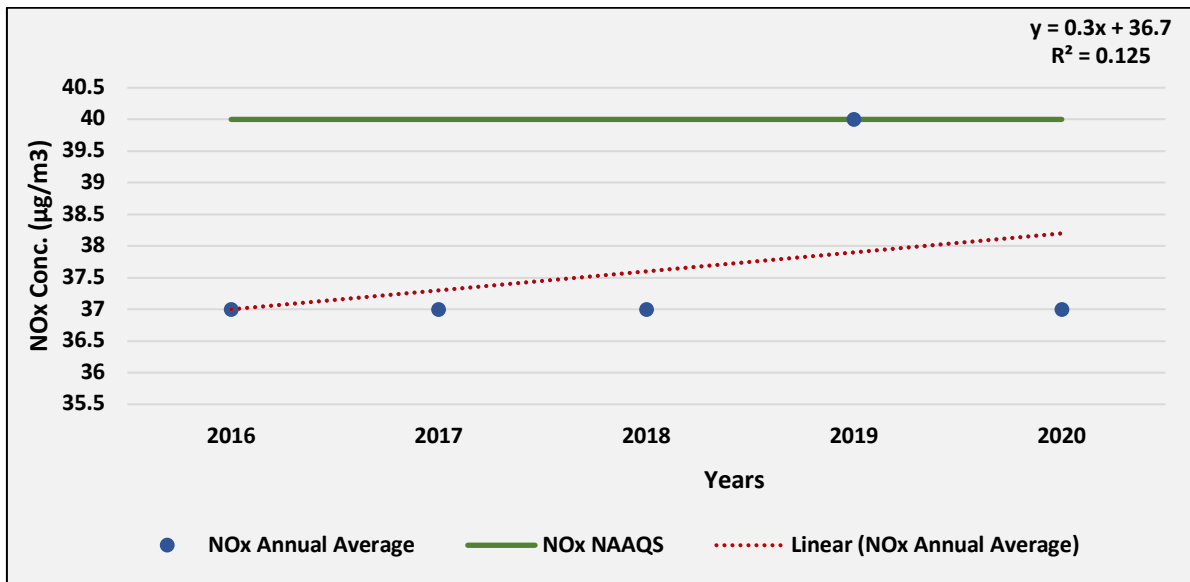


Fig. JO16: Trend of annual mean NO_x ambient air concentration in Jojobera TPP (Ambient 2)

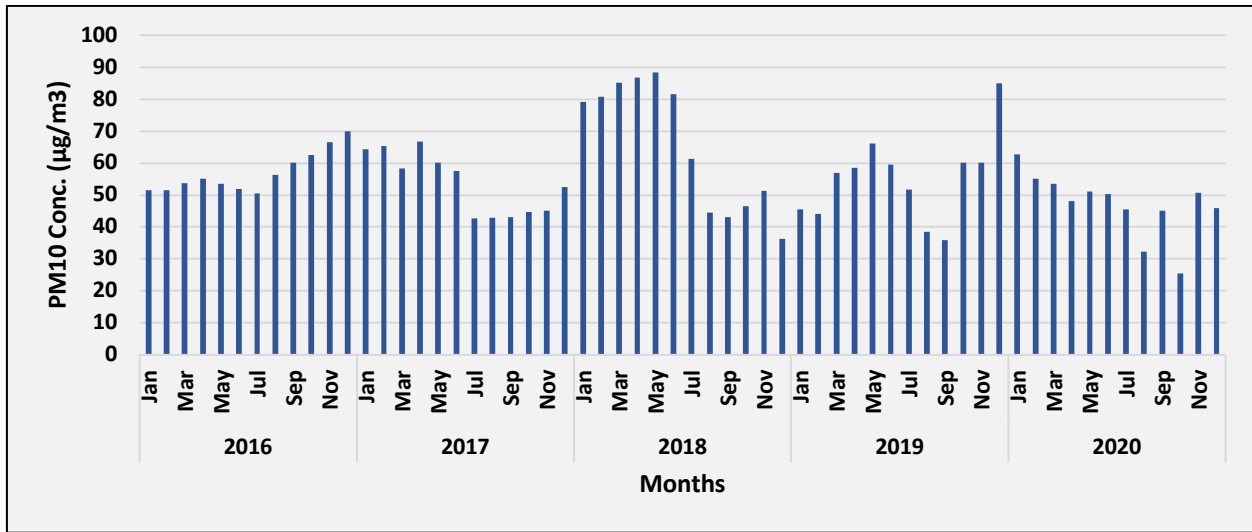


Fig. JO17: Time series of monthly average PM_{10} ambient air concentration in Jojobera TPP (Ambient 3)

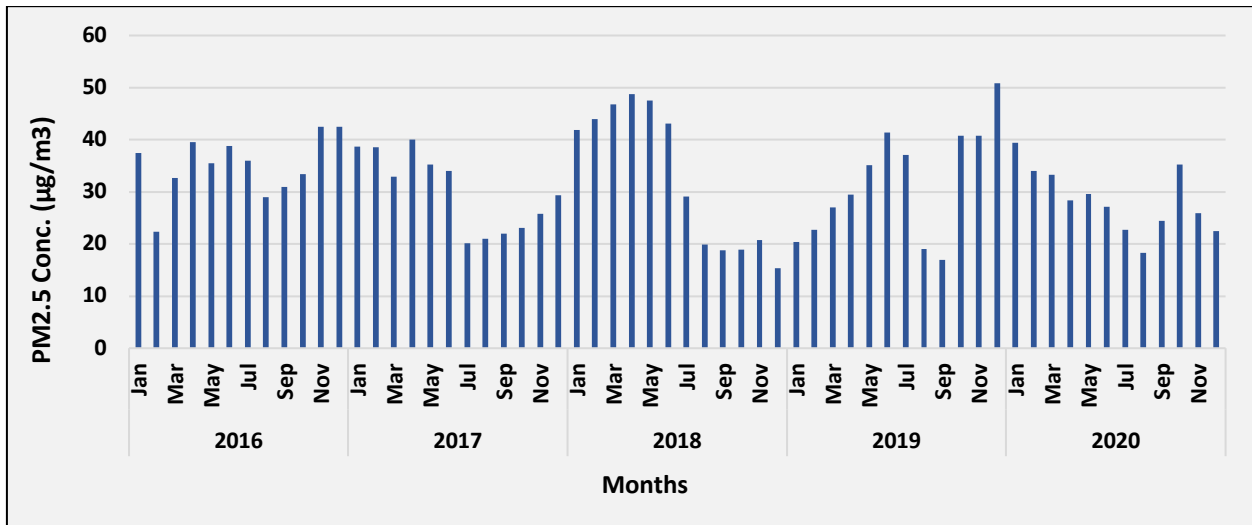


Fig. JO18: Time series of monthly average $PM_{2.5}$ ambient air concentration in Jojobera TPP (Ambient 3)



Fig. JO19: Time series of monthly average SO_2 ambient air concentration in Jojobera TPP (Ambient 3)

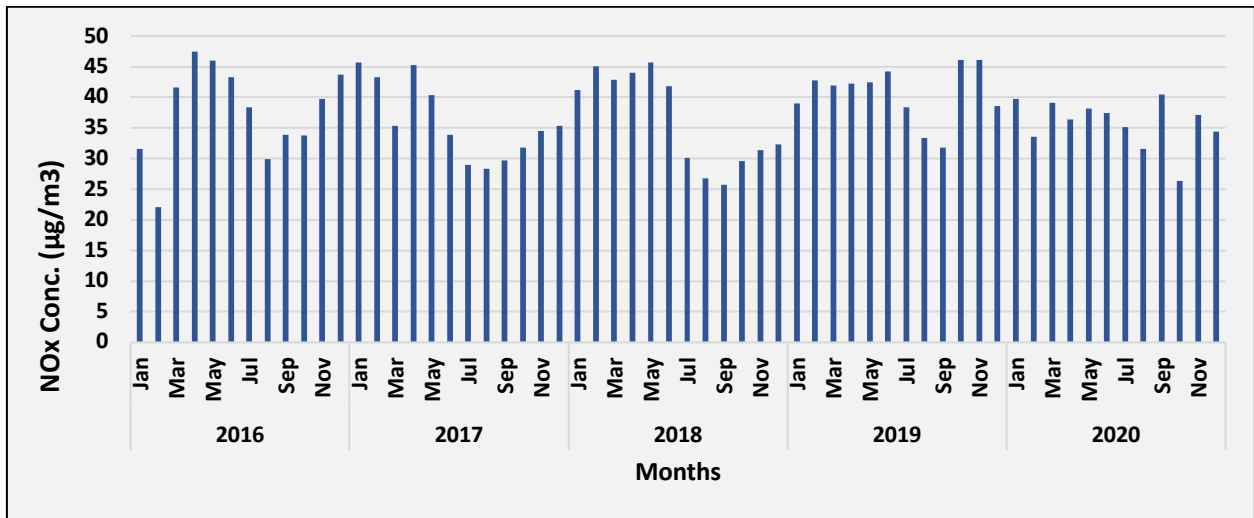


Fig. JO20: Time series of monthly average NO_x ambient air concentration in Jojobera TPP (Ambient 3)

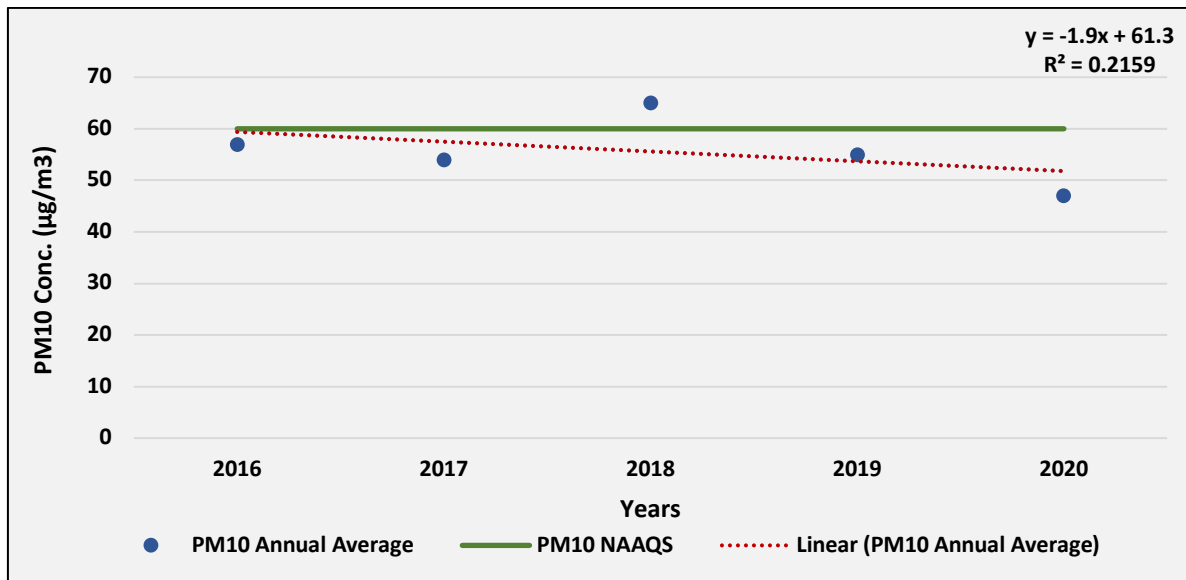


Fig. JO21: Trend of annual mean PM_{10} ambient air concentration in Jojobera TPP (Ambient 3)

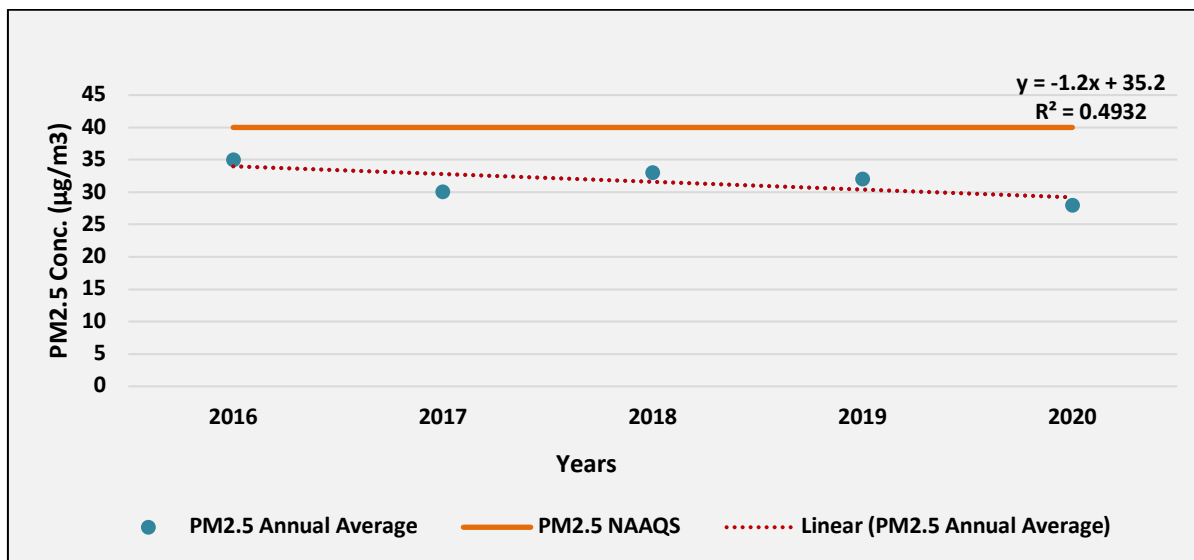


Fig. JO22: Trend of annual mean $PM_{2.5}$ ambient air concentration in Jojobera TPP (Ambient 3)

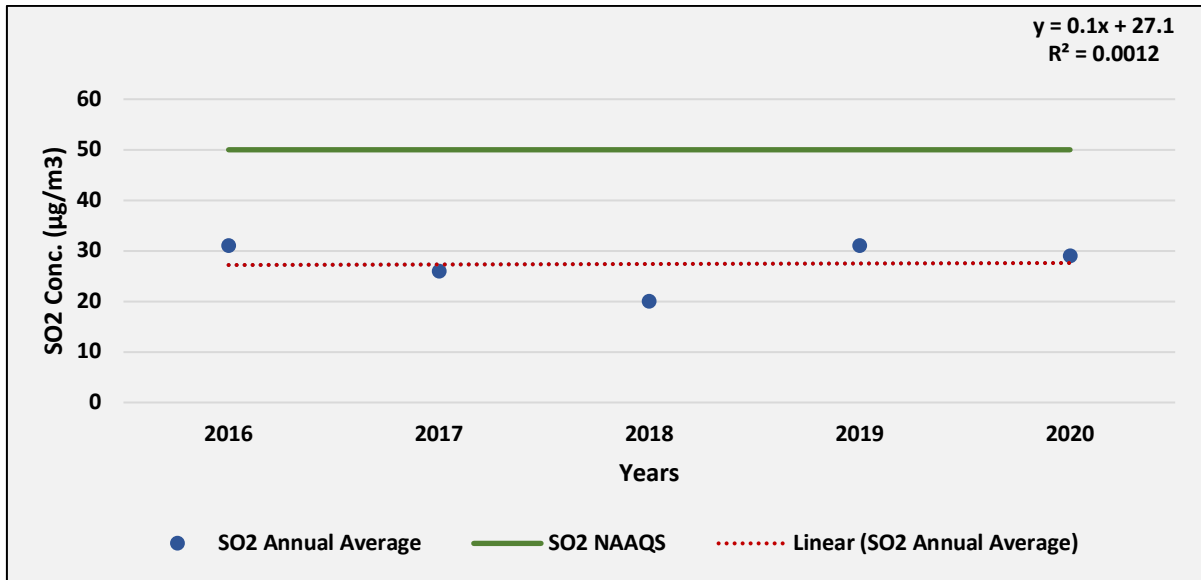


Fig. JO23: Trend of annual mean SO₂ ambient air concentration in Jojobera TPP (Ambient 3)

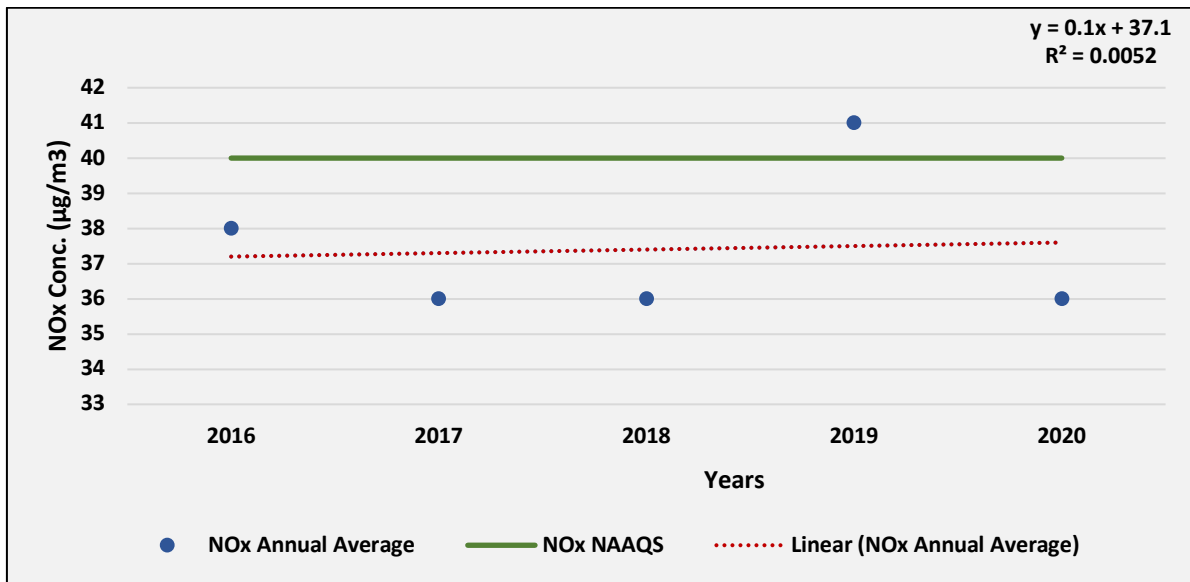


Fig. JO24: Trend of annual mean NO_x ambient air concentration in Jojobera TPP (Ambient 3)

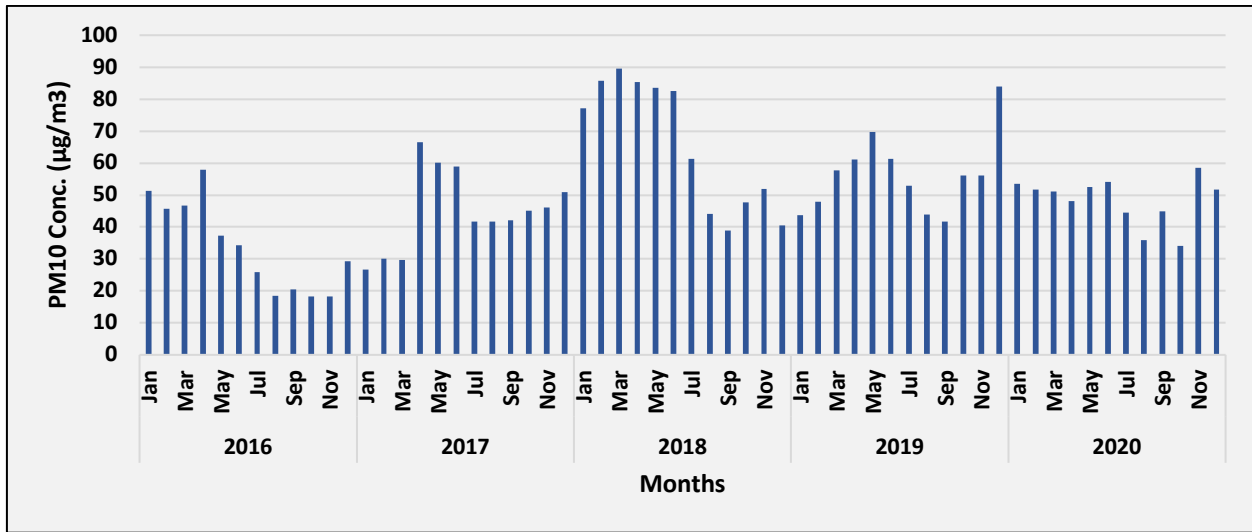


Fig. JO25: Time series of monthly average PM_{10} ambient air concentration in Jojobera TPP (Ambient 4)

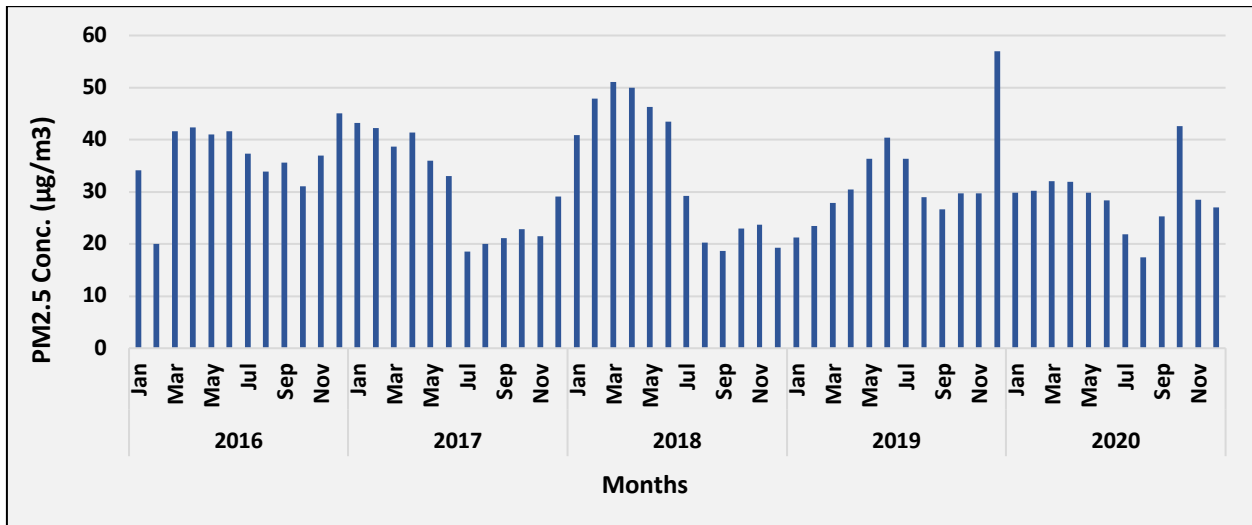


Fig. JO26: Time series of monthly average $PM_{2.5}$ ambient air concentration in Jojobera TPP (Ambient 4)

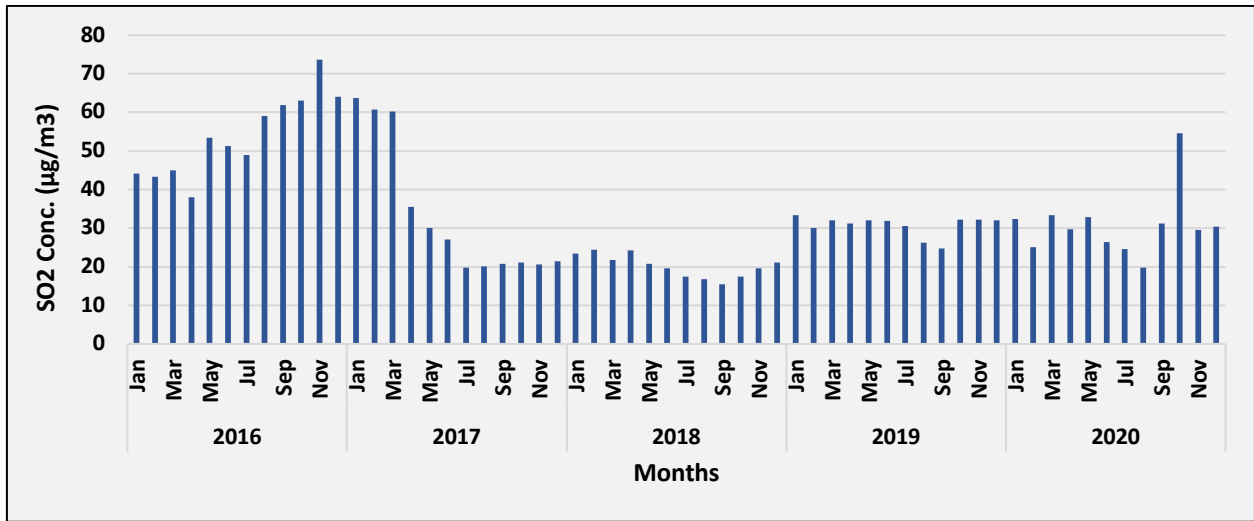


Fig. JO27: Time series of monthly average SO_2 ambient air concentration in Jojobera TPP (Ambient 4)

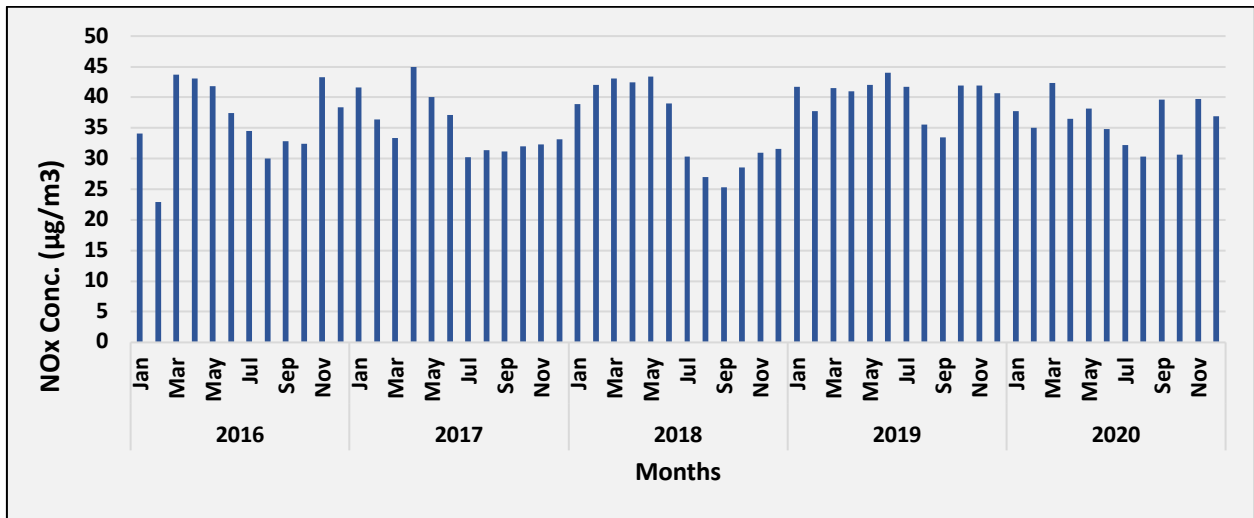


Fig. JO28: Time series of monthly average NO_x ambient air concentration in Jojobera TPP (Ambient 4)

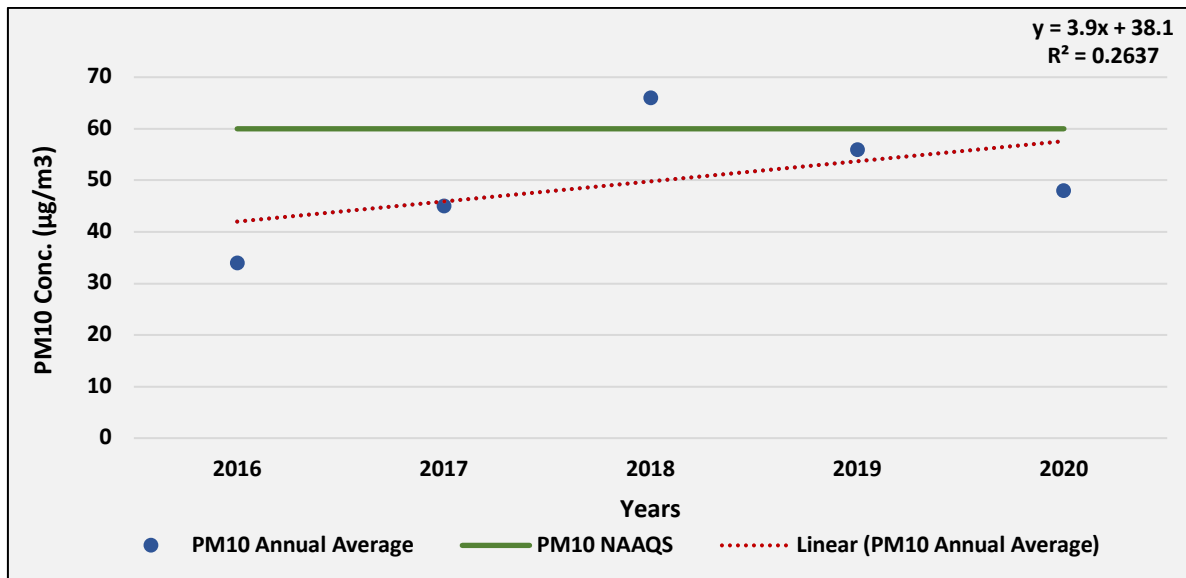


Fig. JO29: Trend of annual mean PM₁₀ ambient air concentration in Jojobera TPP (Ambient 4)

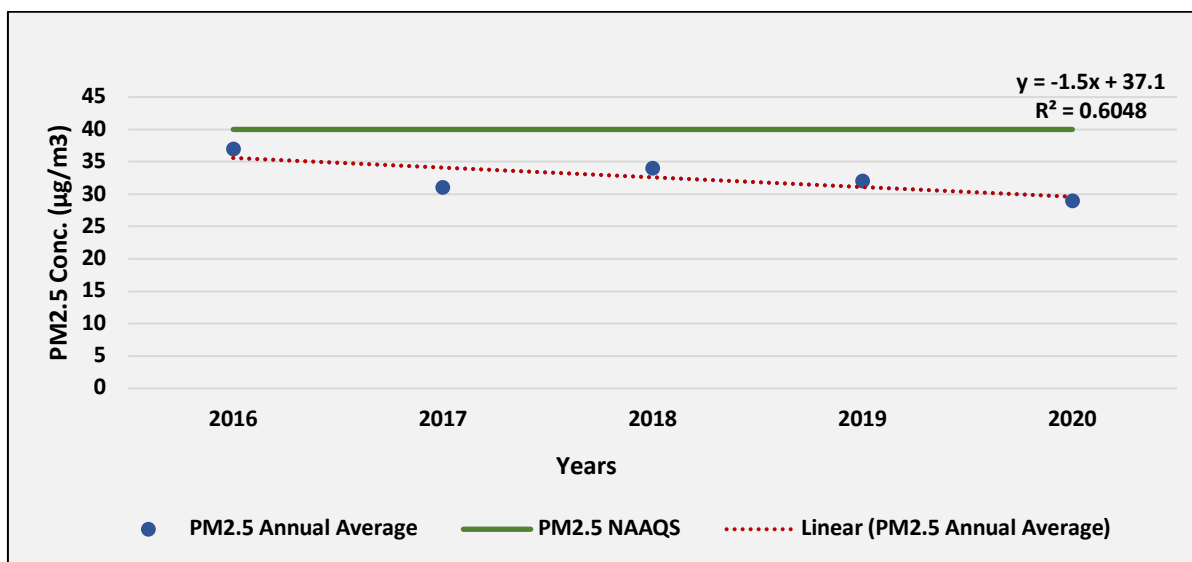


Fig. JO30: Trend of annual mean PM_{2.5} ambient air concentration in Jojobera TPP (Ambient 4)

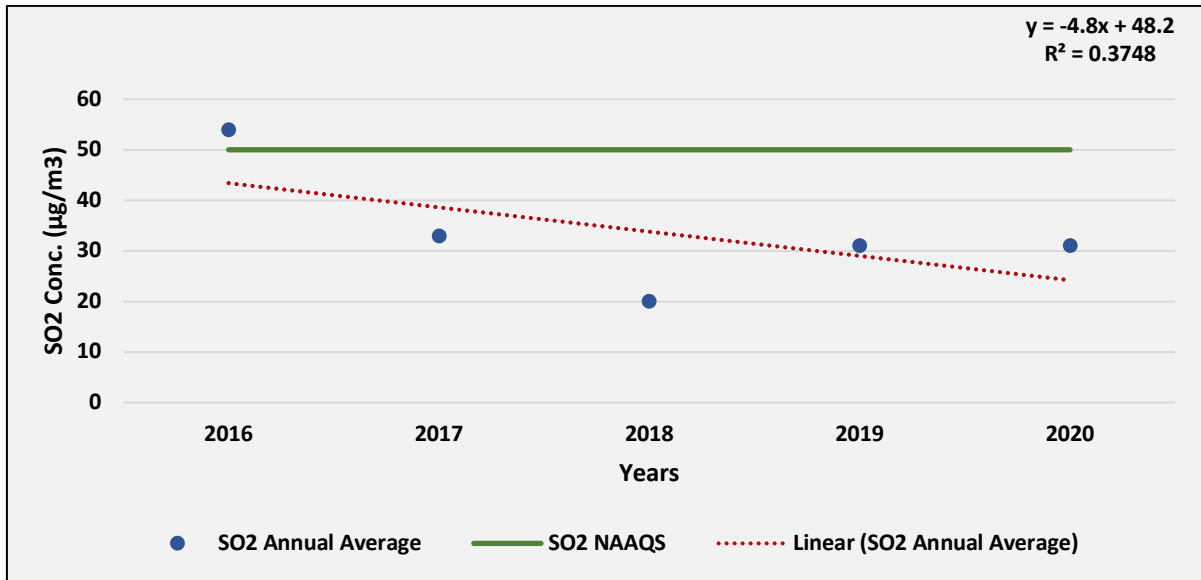


Fig. JO31: Trend of annual mean SO₂ ambient air concentration in Jojobera TPP (Ambient 4)

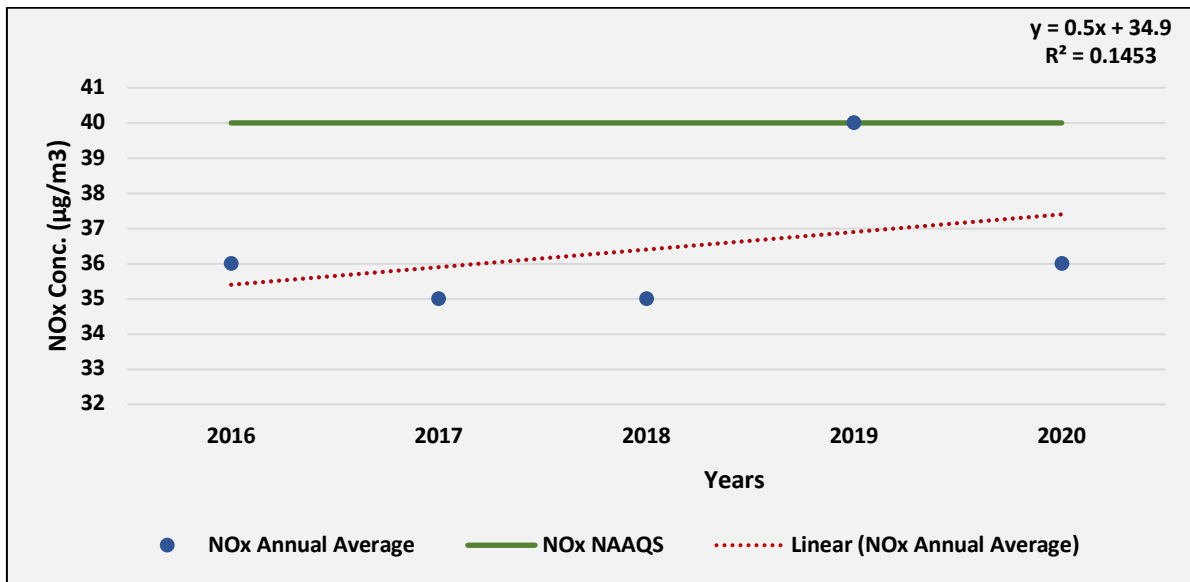


Fig. JO32: Trend of annual mean NO_x ambient air concentration in Jojobera TPP (Ambient 4)

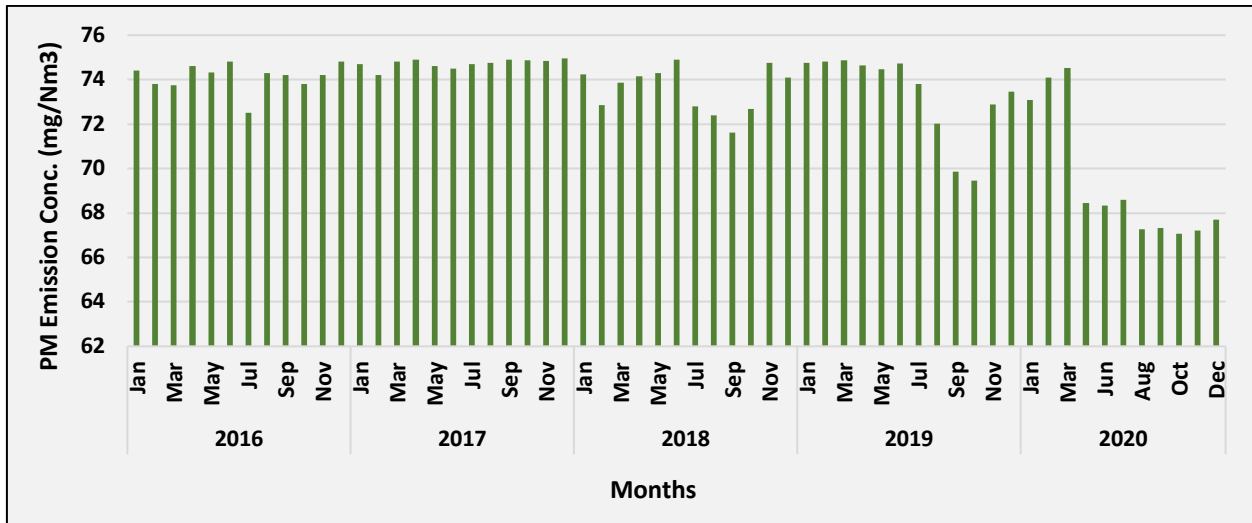


Fig. JO33: Time series of monthly average PM Emission concentration in Jojobera TPP (Stack 1)

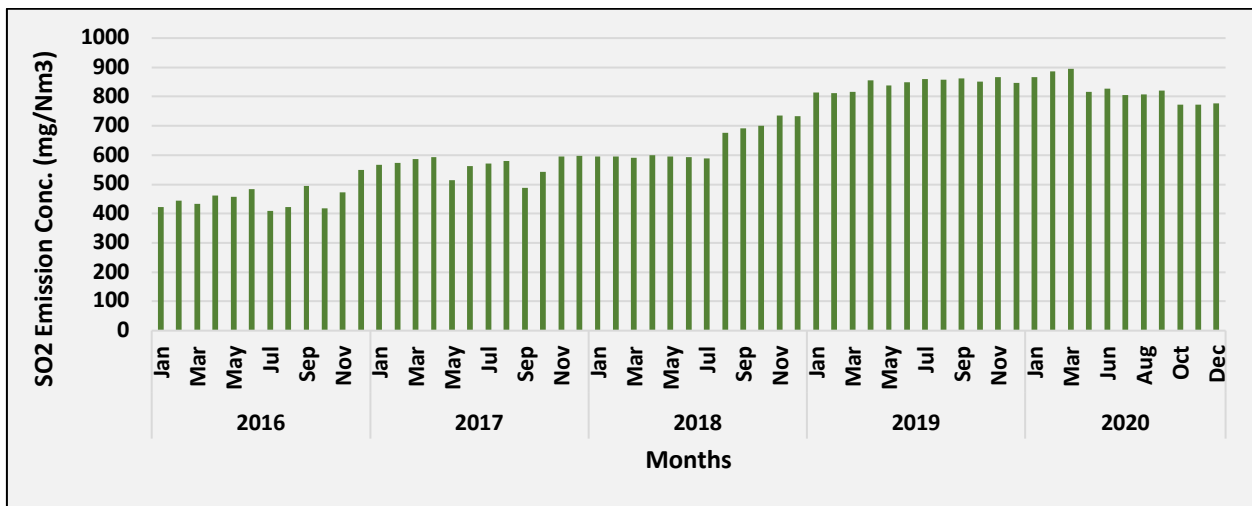


Fig. JO34: Time series of monthly average SO₂ Emission concentration in Jojobera TPP (Stack 1)

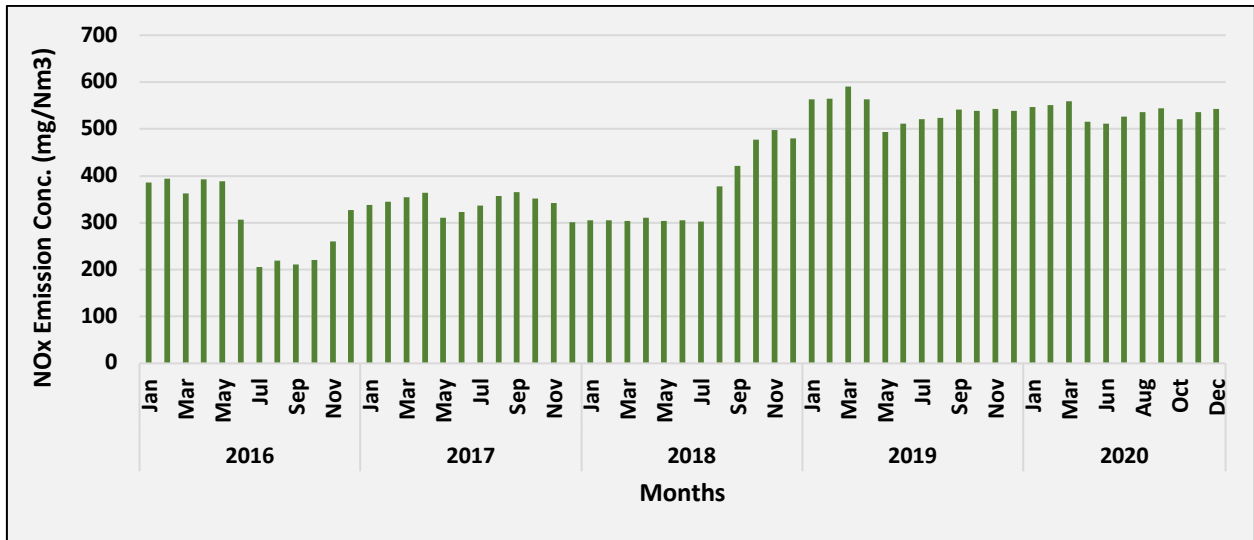


Fig. JO35: Time series of monthly average NO_x Emission concentration in Jojobera TPP (Stack 1)

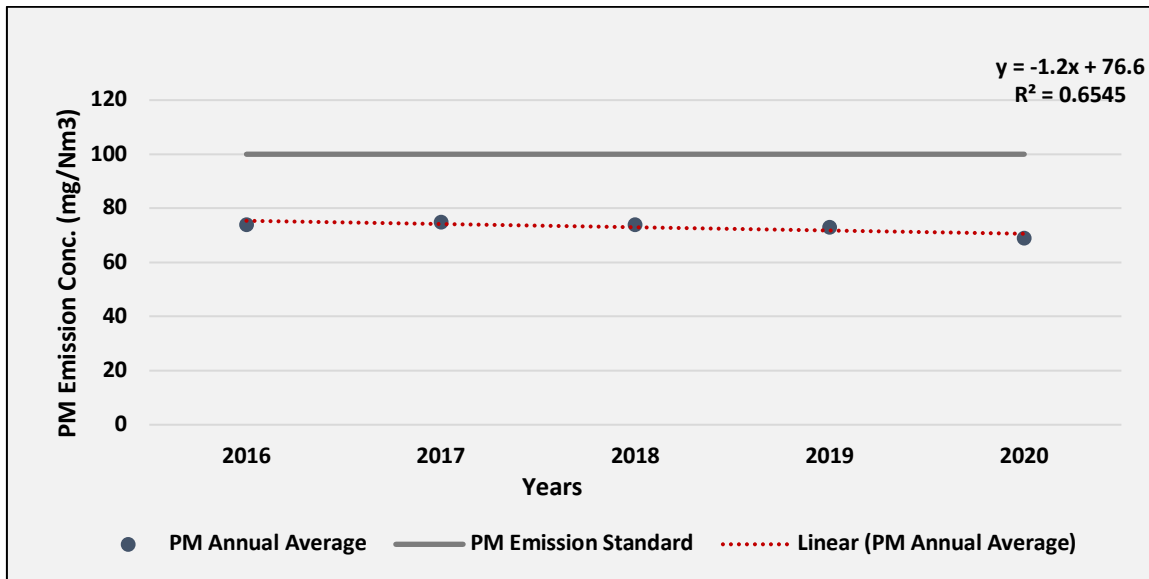


Fig. JO36: Trend of annual mean PM Emission air concentration in Jojobera TPP (Stack 1)

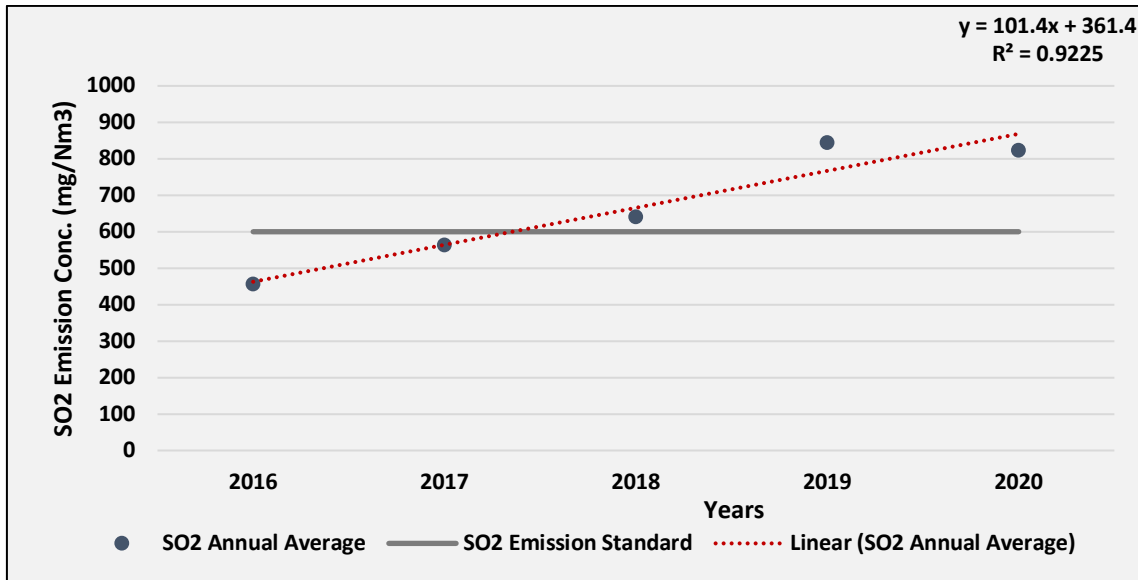


Fig. JO37: Trend of annual mean SO₂ Emission air concentration in Jojobera TPP (Stack 1)

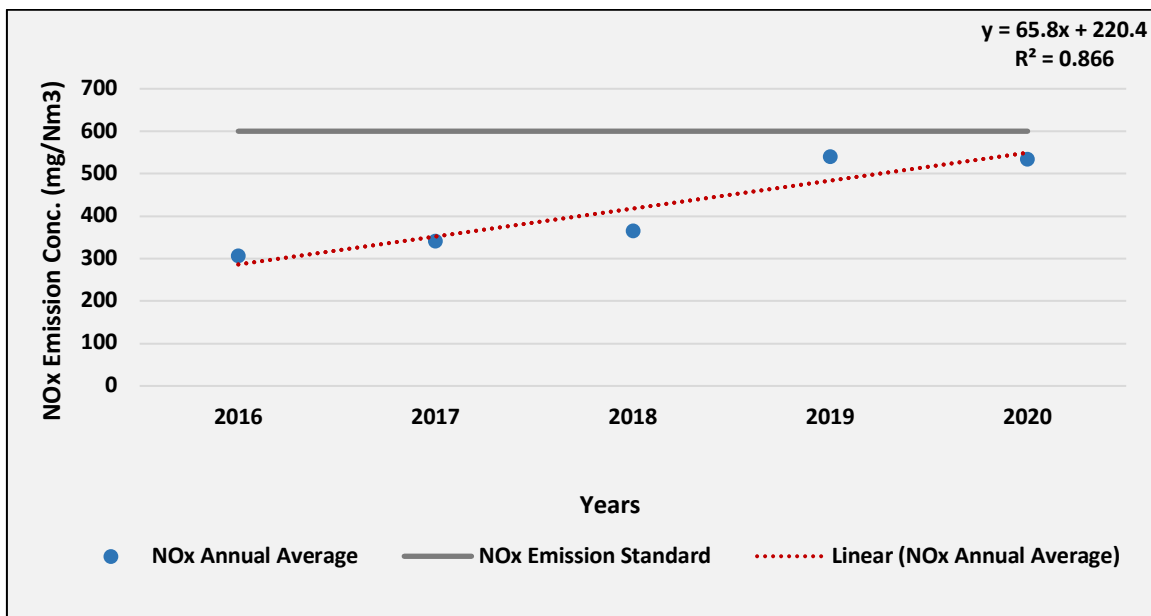


Fig. JO38: Trend of annual mean NO_x Emission air concentration in Jojobera TPP (Stack 1)

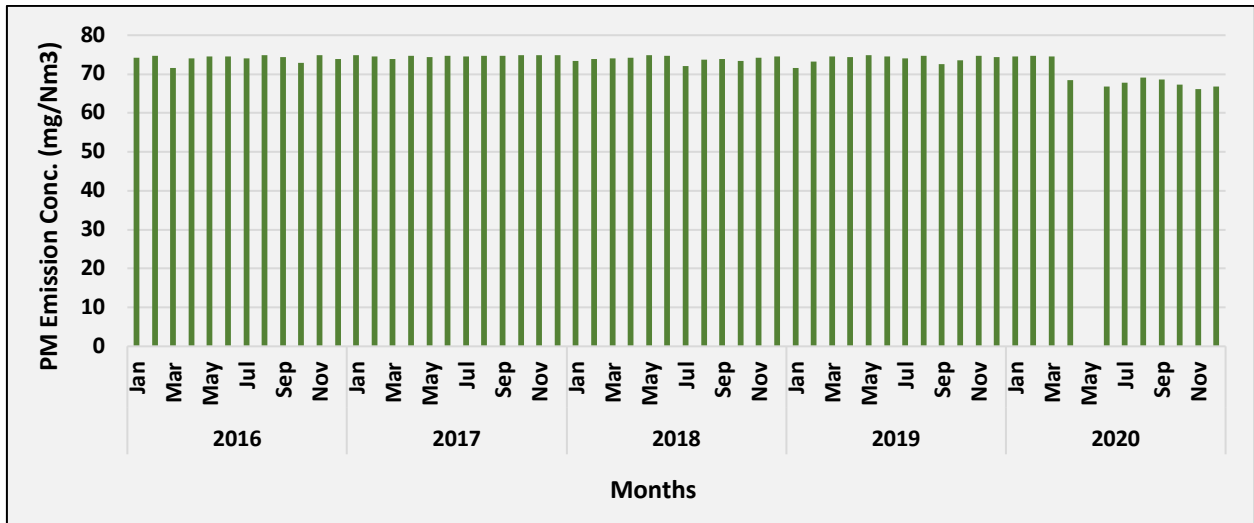


Fig. JO39: Time series of monthly average PM Emission concentration in Jojobera TPP (Stack 2)

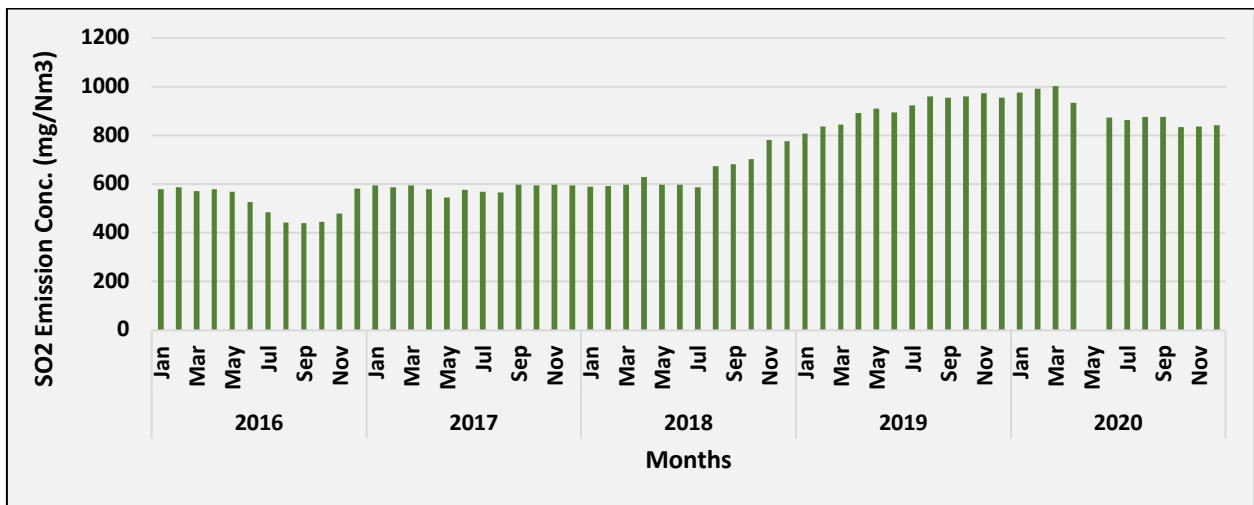


Fig. JO40: Time series of monthly average SO₂ Emission concentration in Jojobera TPP (Stack 2)

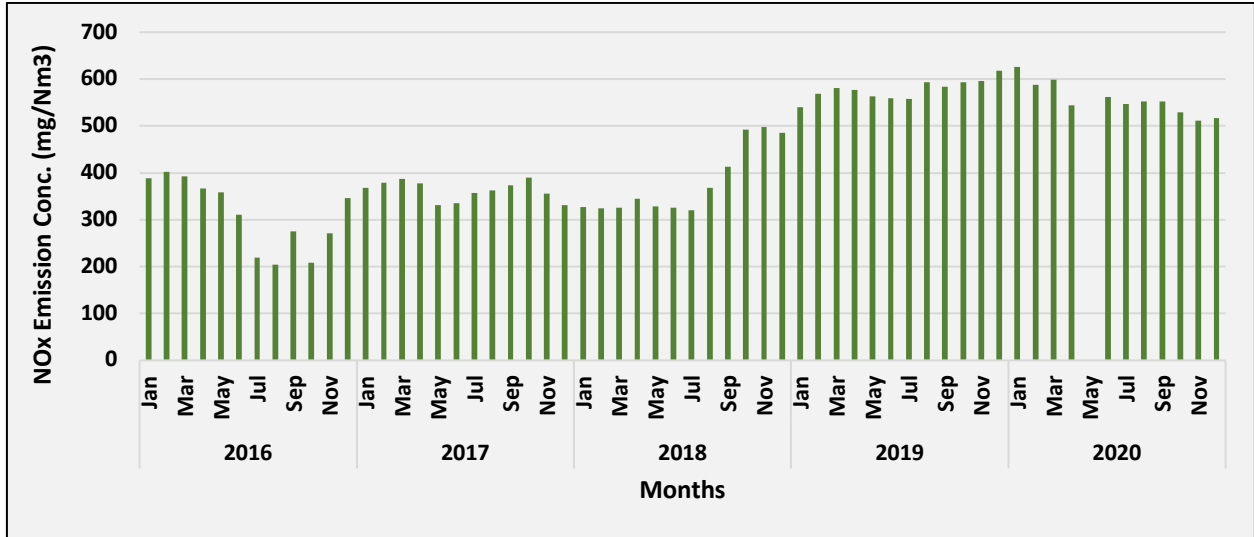


Fig. JO41: Time series of monthly average NO_x Emission concentration in Jojobera TPP (Stack 2)

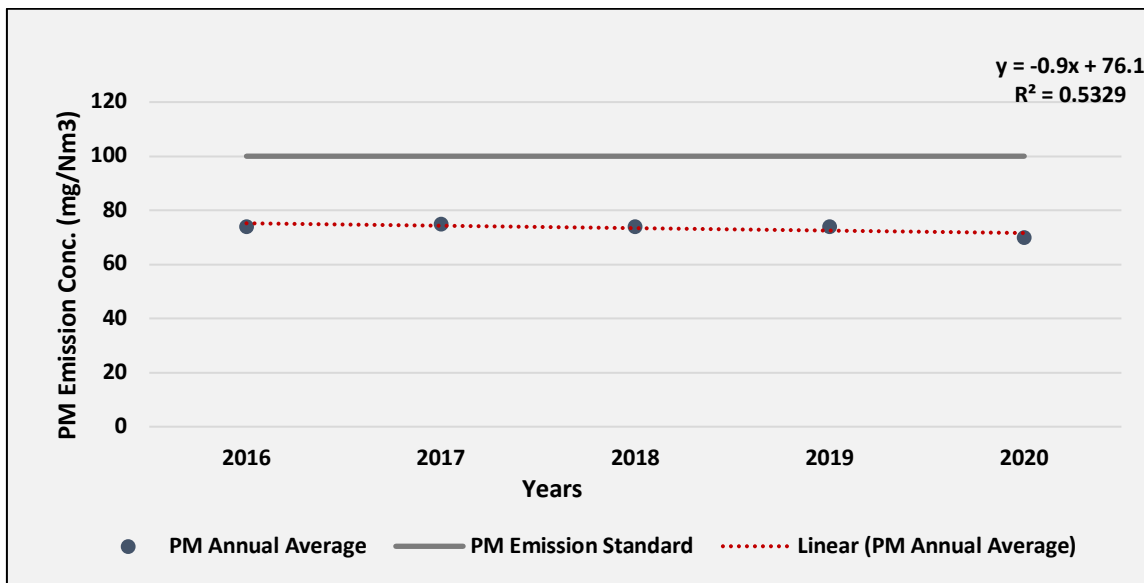


Fig. JO42: Trend of annual mean PM Emission air concentration in Jojobera TPP (Stack 2)

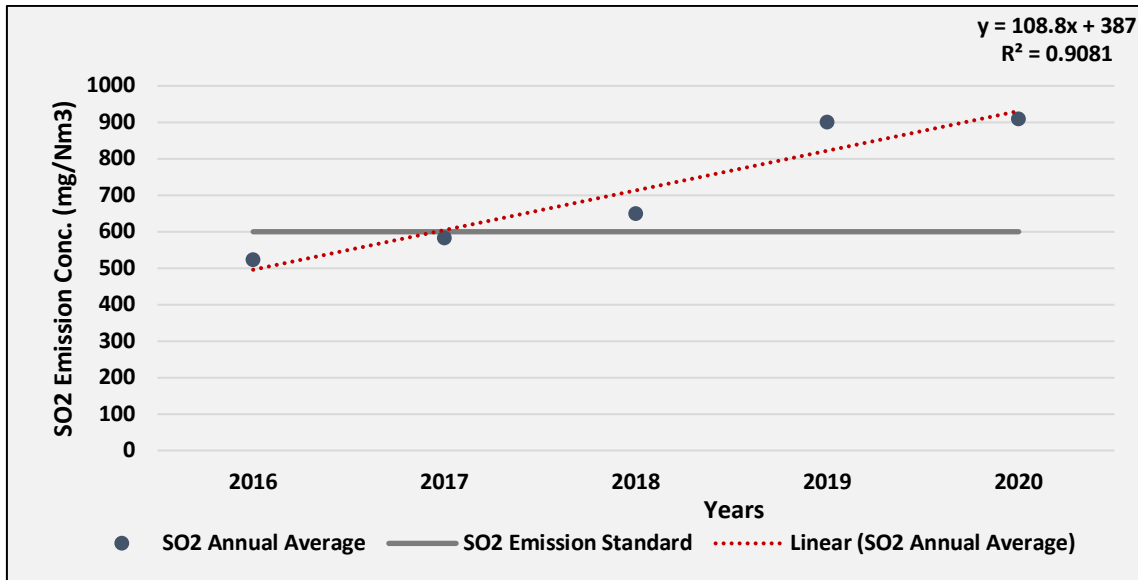


Fig. JO43: Trend of annual mean SO₂ Emission air concentration in Jojobera TPP (Stack 2)

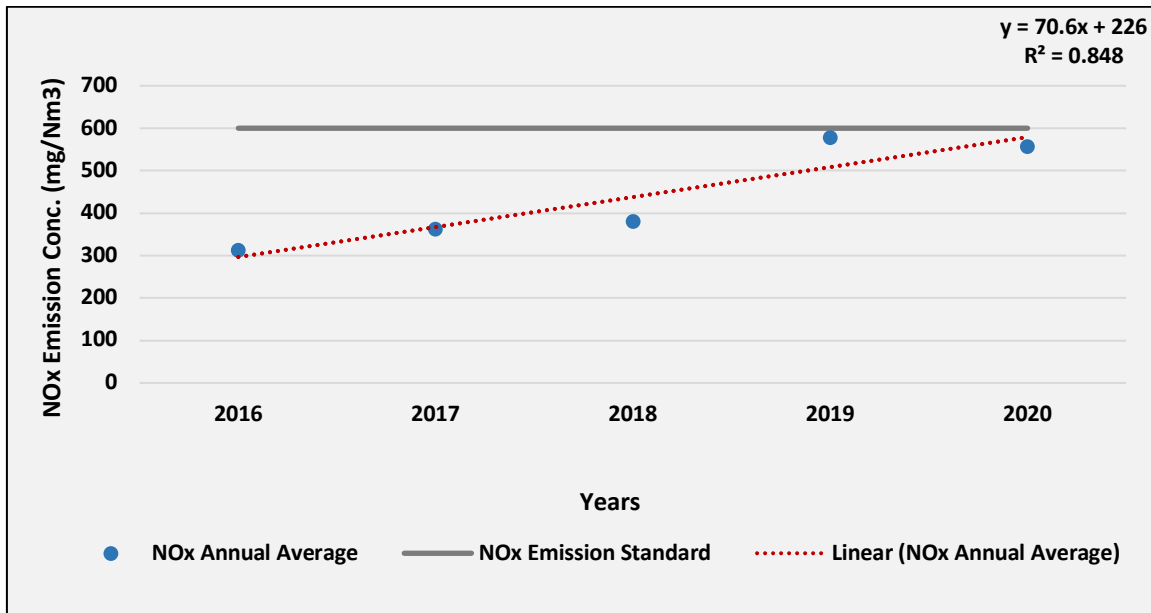


Fig. JO44: Trend of annual mean NO_x Emission air concentration in Jojobera TPP (Stack 2)

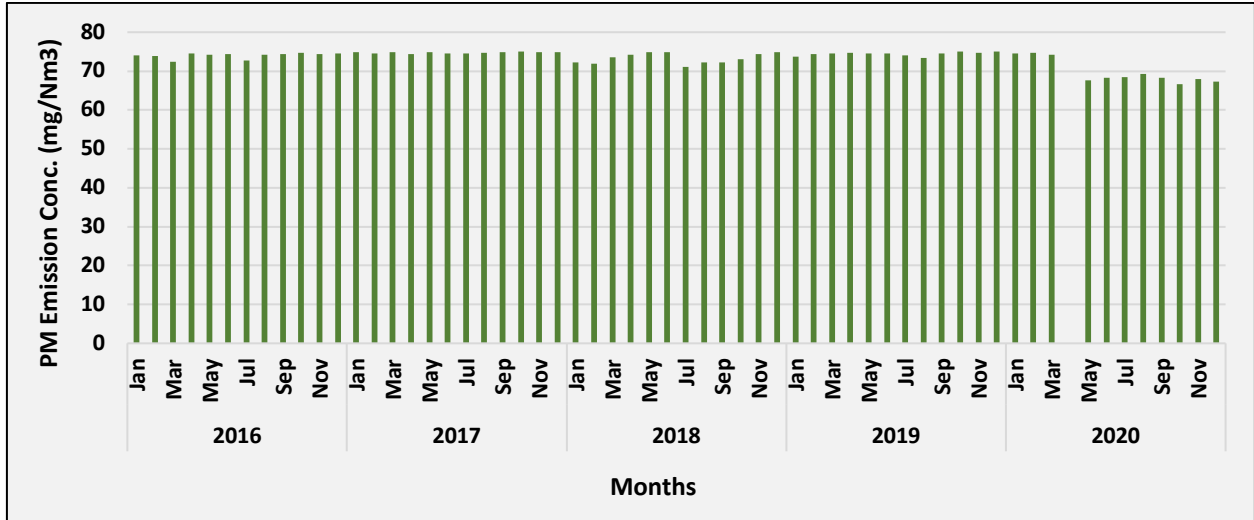


Fig. JO45: Time series of monthly average PM Emission concentration in Jojobera TPP (Stack 3)

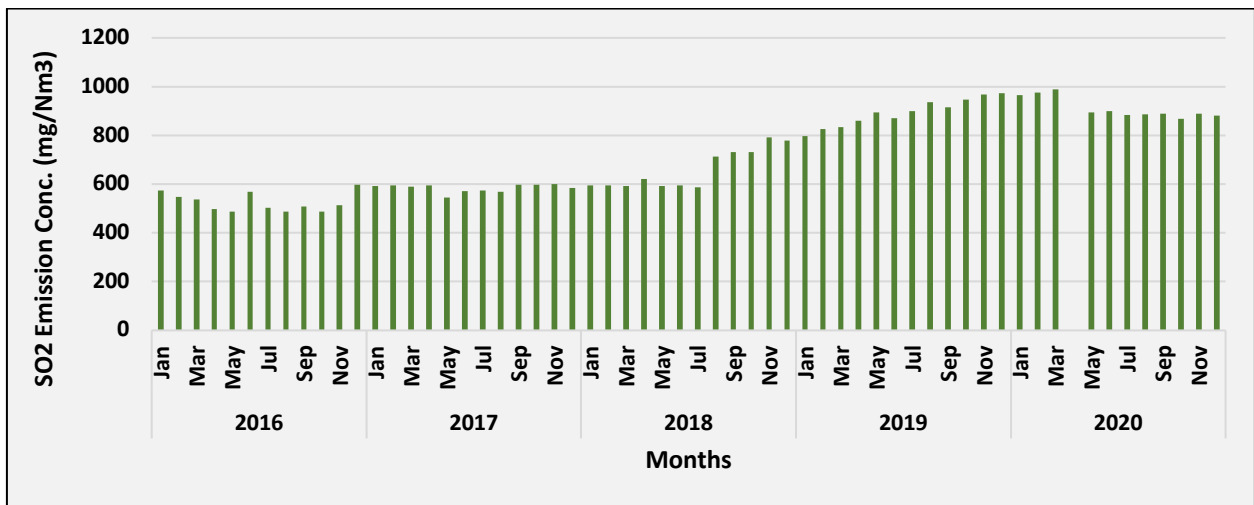


Fig. JO46: Time series of monthly average SO₂ Emission concentration in Jojobera TPP (Stack 3)

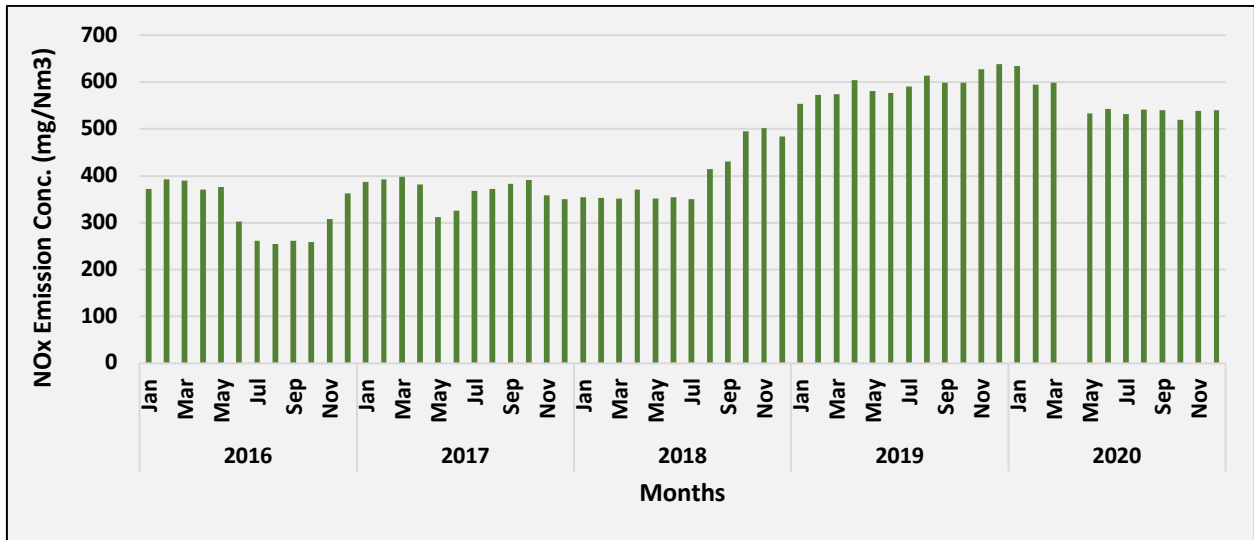


Fig. JO47: Time series of monthly average NO_x Emission concentration in Jojobera TPP (Stack 3)

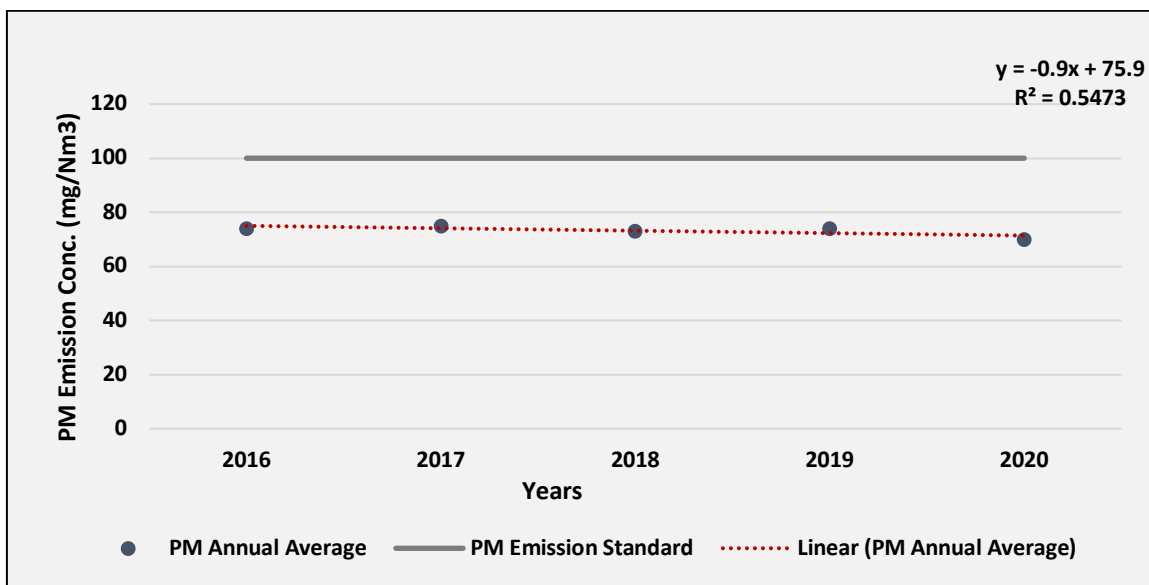


Fig. JO48: Trend of annual mean PM Emission air concentration in Jojobera TPP (Stack 3)

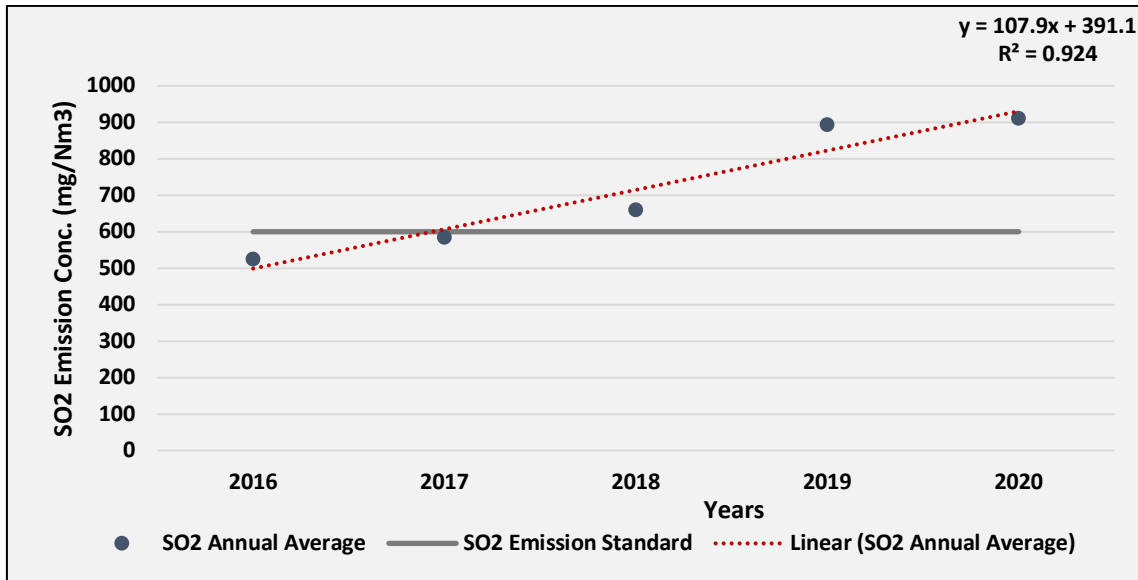


Fig. JO49: Trend of annual mean SO₂ Emission air concentration in Jojobera TPP (Stack 3)

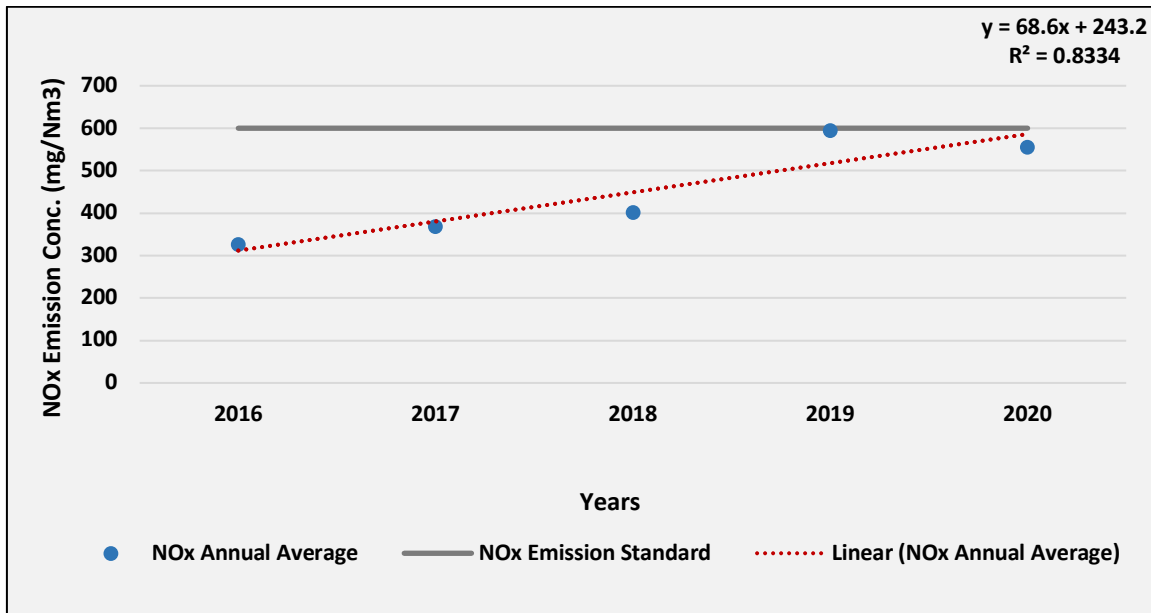


Fig. JO50: Trend of annual mean NO_x Emission air concentration in Jojobera TPP (Stack 3)

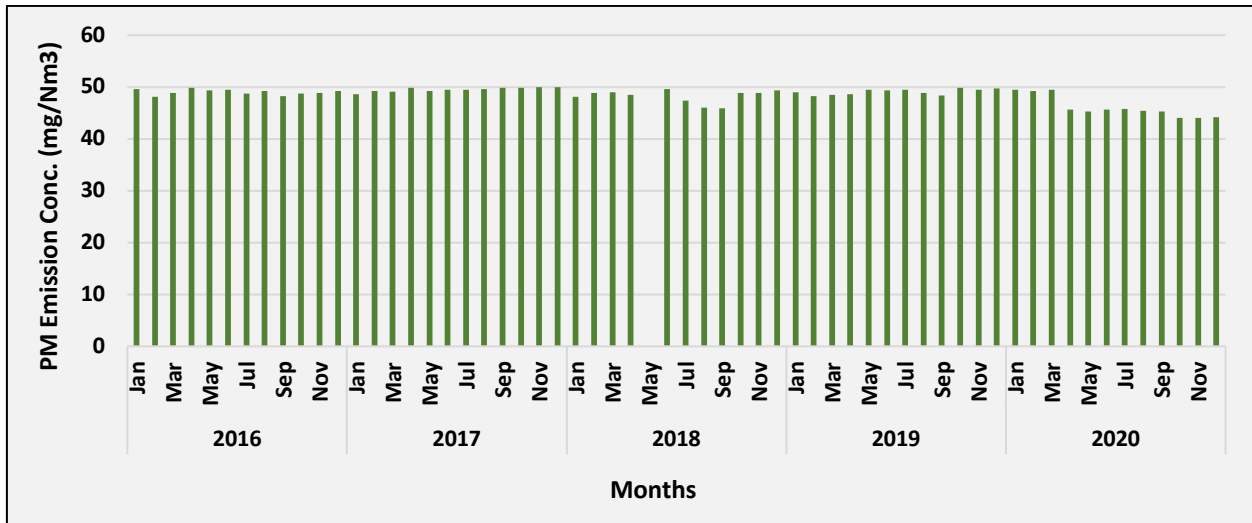


Fig. JO51: Time series of monthly average PM Emission concentration in Jojobera TPP (Stack 4)

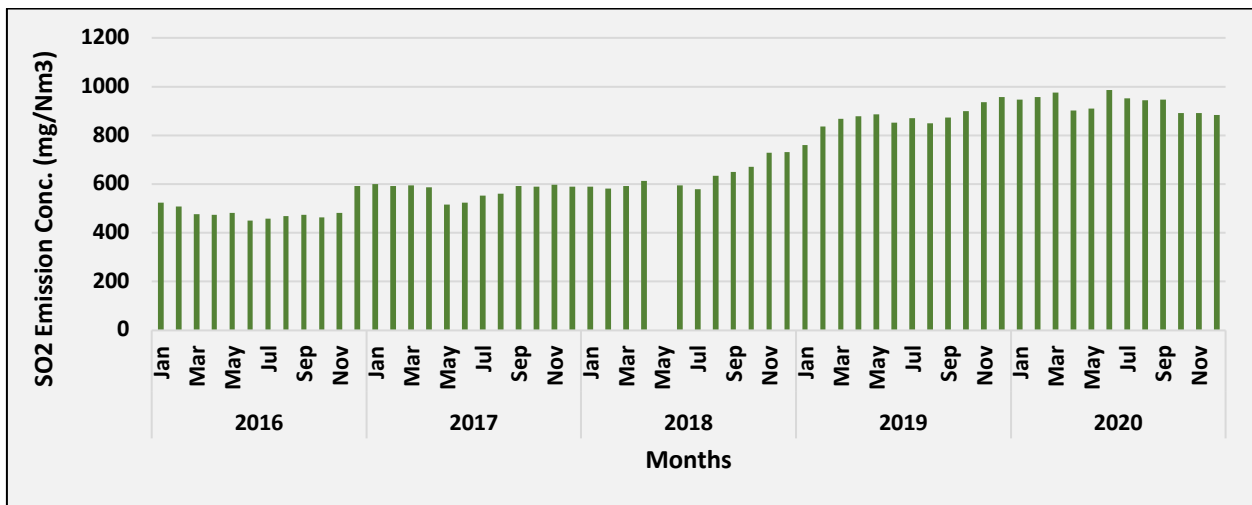


Fig. JO52: Time series of monthly average SO₂ Emission concentration in Jojobera TPP (Stack 4)

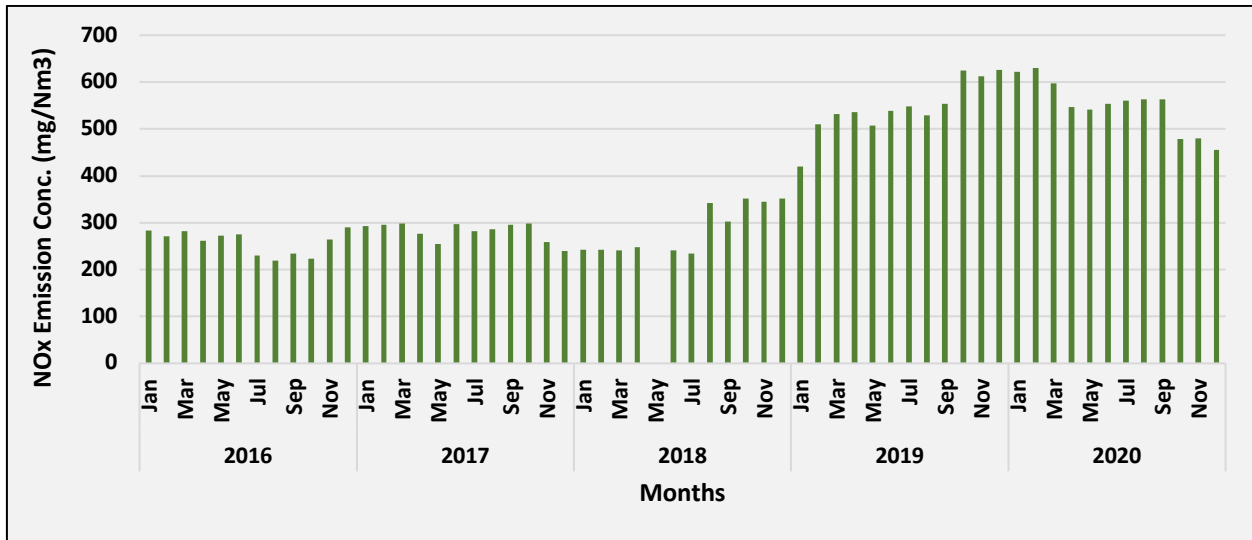


Fig. JO53: Time series of monthly average NO_x Emission concentration in Jojobera TPP (Stack 4)

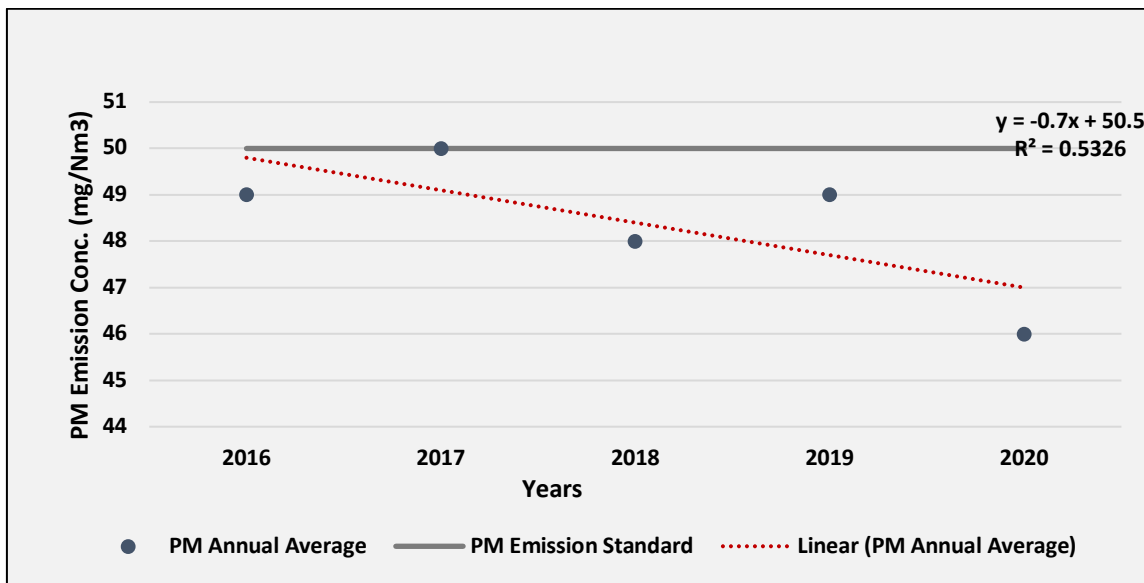


Fig. JO54: Trend of annual mean PM Emission air concentration in Jojobera TPP (Stack 4)

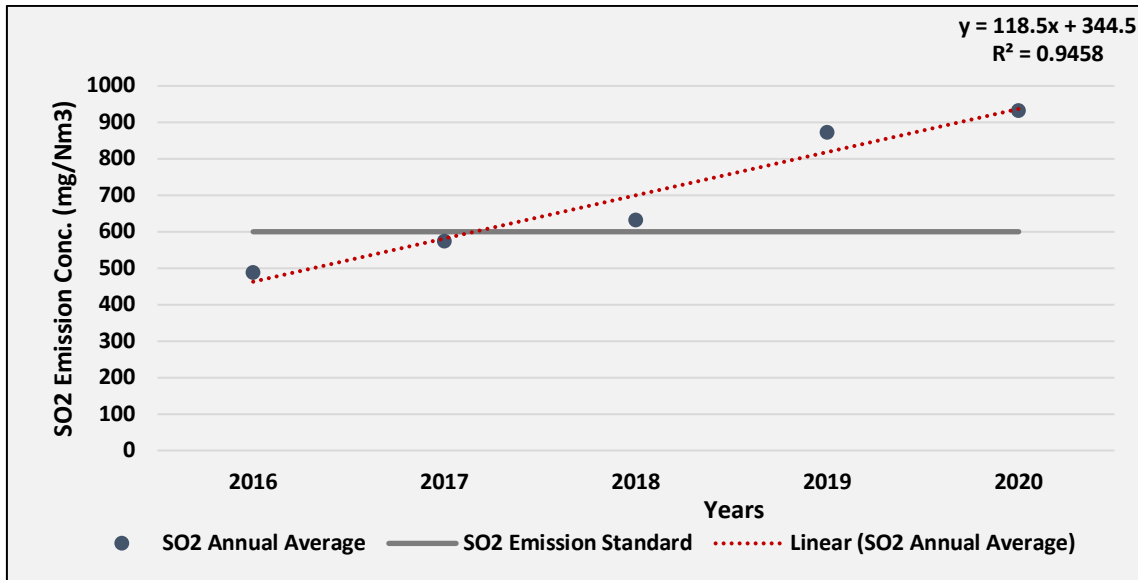


Fig. JO55: Trend of annual mean SO₂ Emission air concentration in Jojobera TPP (Stack 4)

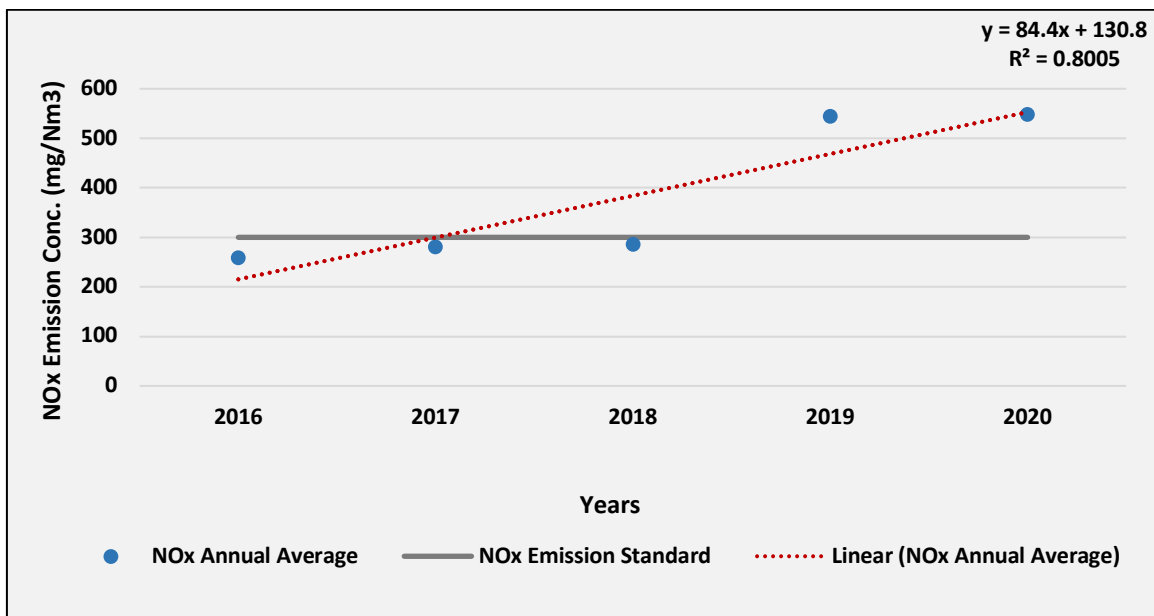


Fig. JO56: Trend of annual mean NO_x Emission air concentration in Jojobera TPP (Stack 4)

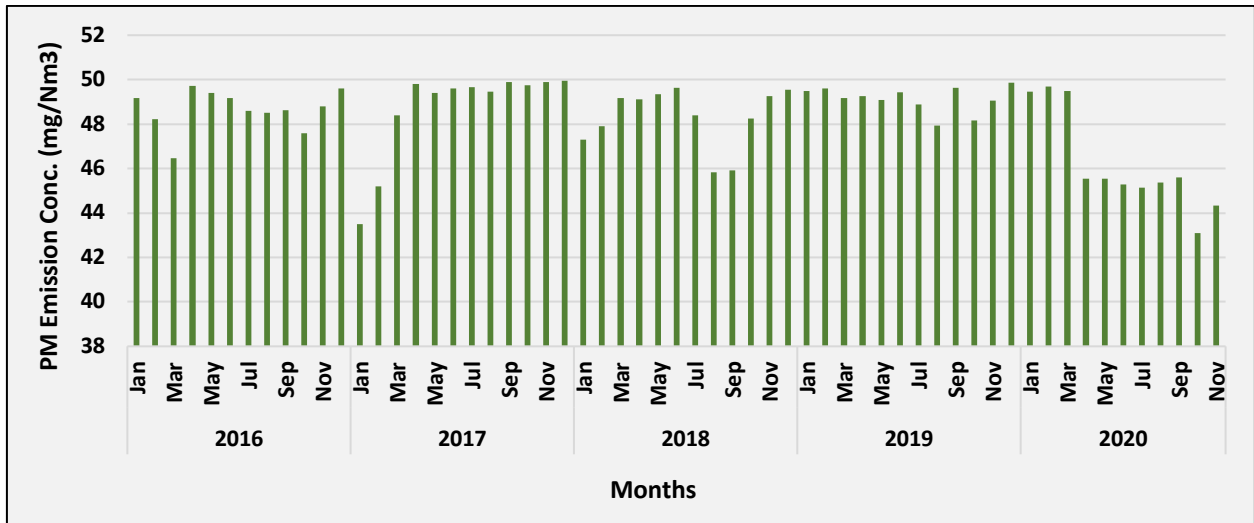


Fig. JO57: Time series of monthly average PM Emission concentration in Jojobera TPP (Stack 5)

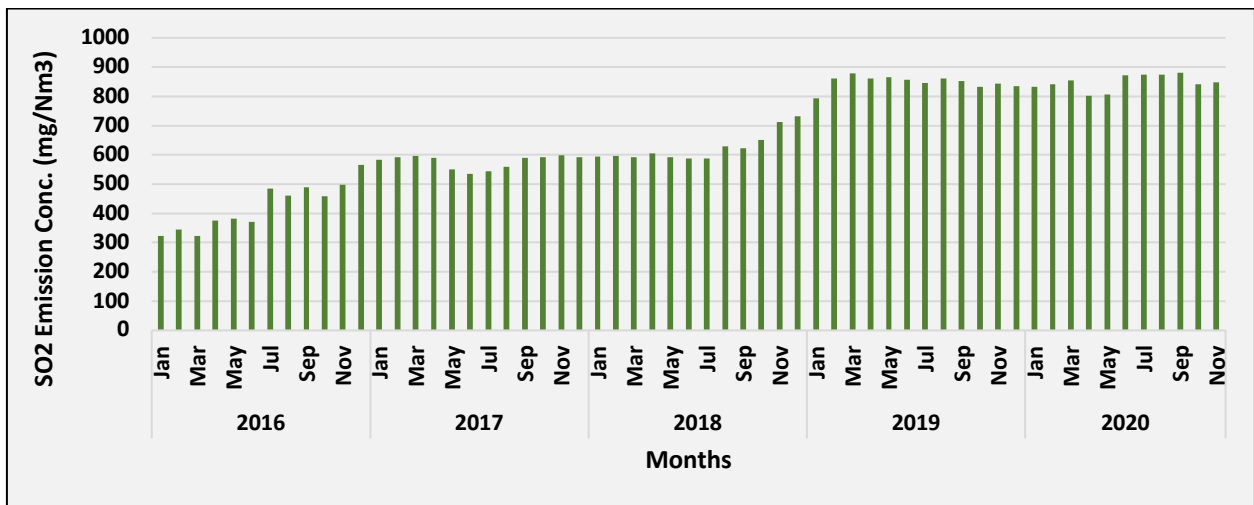


Fig. JO58: Time series of monthly average SO₂ Emission concentration in Jojobera TPP (Stack 5)

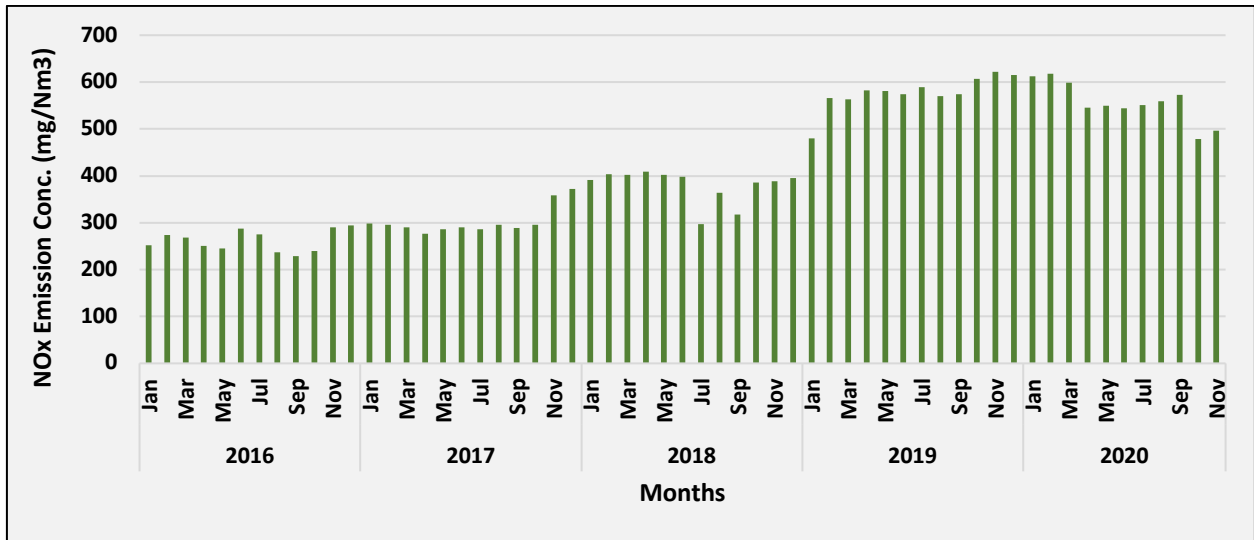


Fig. JO59: Time series of monthly average NO_x Emission concentration in Jojobera TPP (Stack 5)

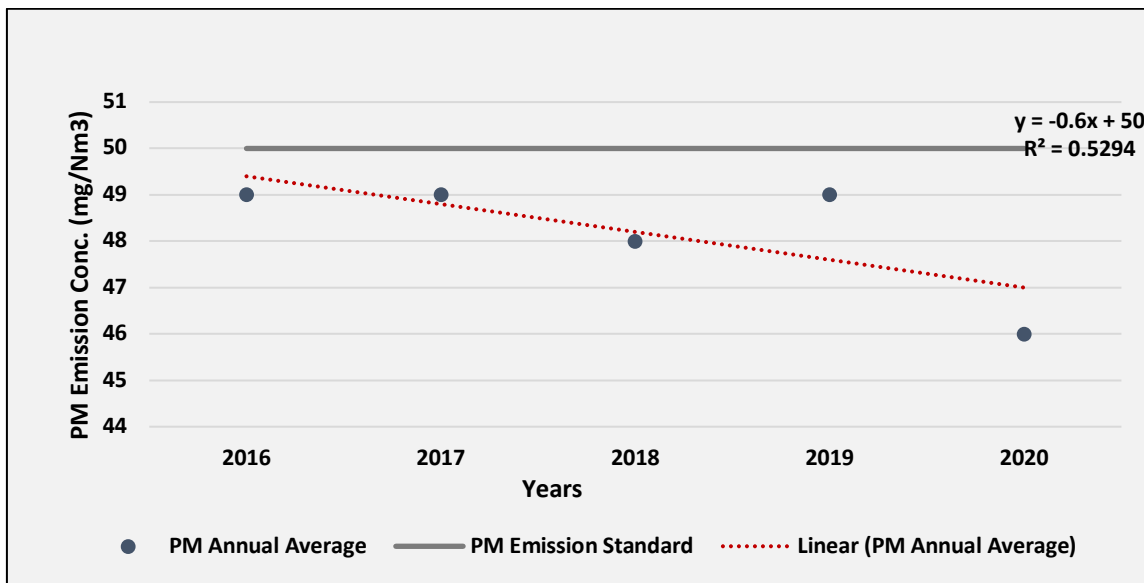


Fig. JO60: Trend of annual mean PM Emission air concentration in Jojobera TPP (Stack 5)

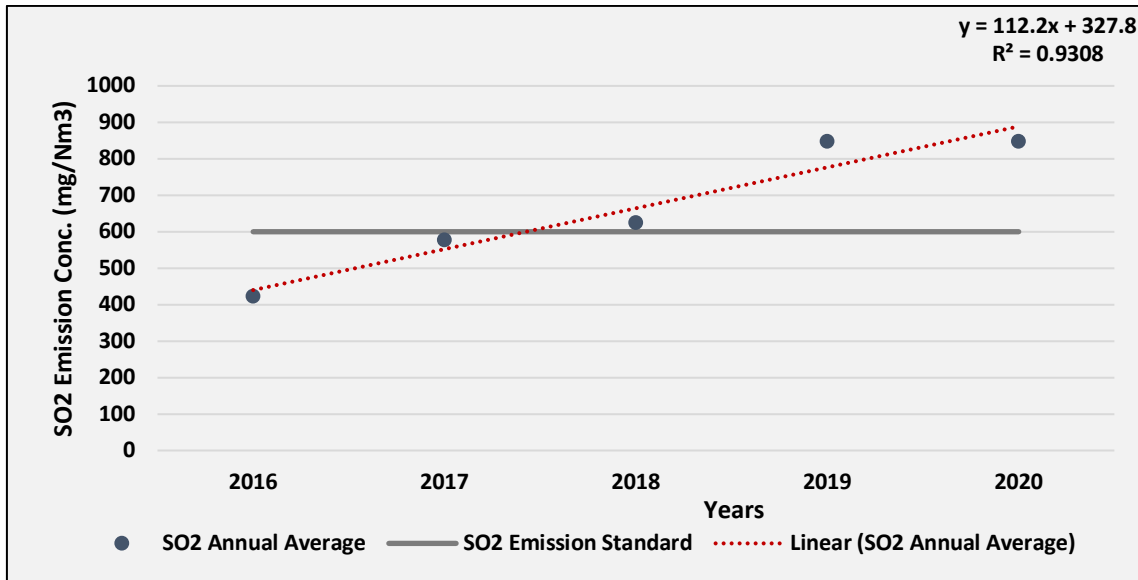


Fig. JO61: Trend of annual mean SO₂ Emission air concentration in Jojobera TPP (Stack 5)

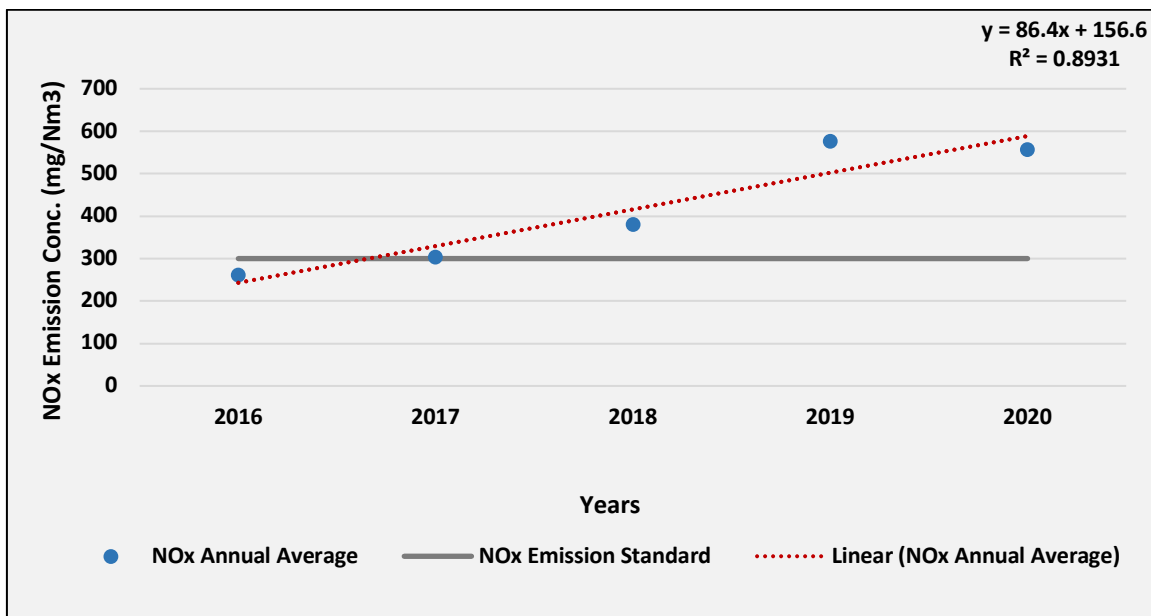


Fig. JO62: Trend of annual mean NO_x Emission air concentration in Jojobera TPP (Stack 5)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀ is exceeding whereas the PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

MAITHON ADANI POWER PLANT

Maithon Power Limited (MPL), a joint venture of Tata Power & Damodar Valley Corporation has implemented the 1050 MW (2X525 MW units) in Nirsa District Dhanbad in the state of Jharkhand in India. This project is India's first 525 MW unit thermal power plants using subcritical technology, coal-based thermal power plant in the country and the first PPP venture plant in the country. This project is India's first Public Private Power project.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. MA1-Fig. MA20) for the last two years (2018-2020) using data provided by GSECL developer for Maithon Power plant, Jharkhand, India.

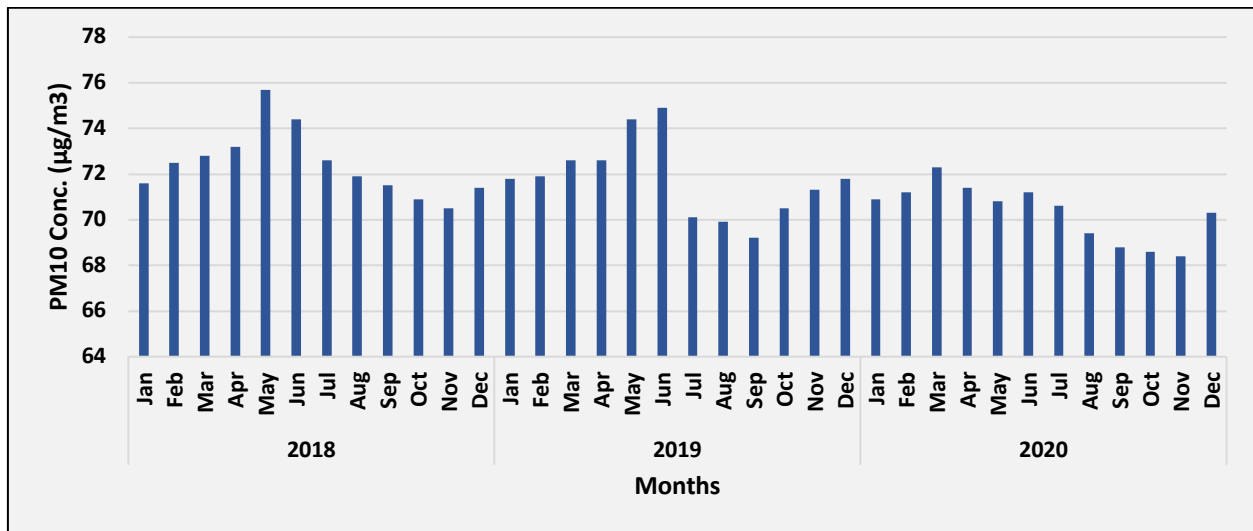


Fig. MA1: Time series of monthly average PM₁₀ ambient air concentration in Maithon TPP (Ambient)

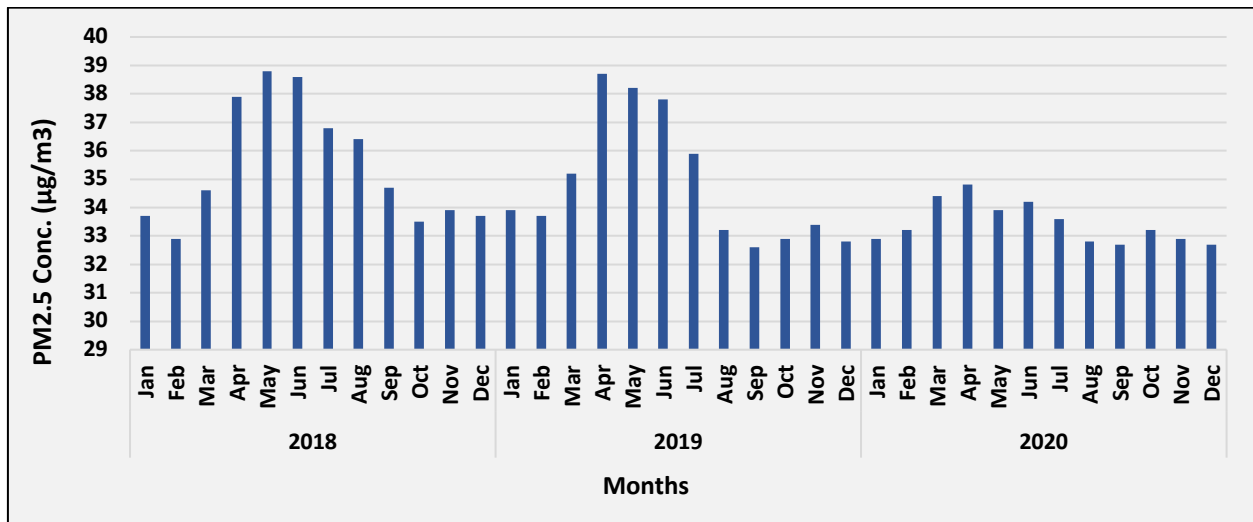


Fig. MA2: Time series of monthly average $PM_{2.5}$ ambient air concentration in Maithon TPP (Ambient)

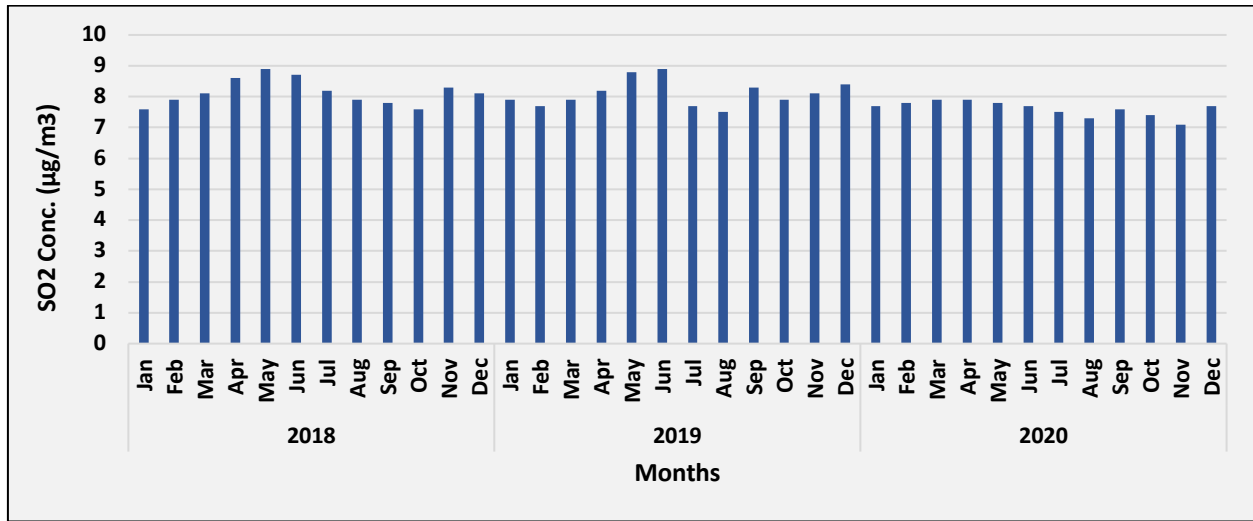


Fig. MA3: Time series of monthly average SO_2 ambient air concentration in Maithon TPP (Ambient)

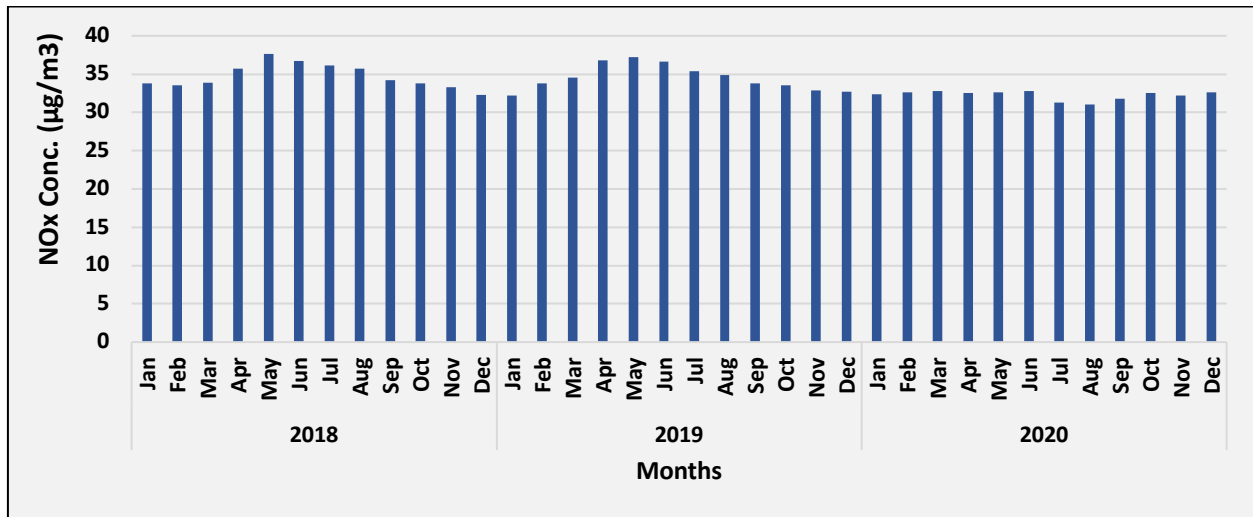


Fig. MA4: Time series of monthly average NO_x ambient air concentration in Maithon TPP (Ambient)

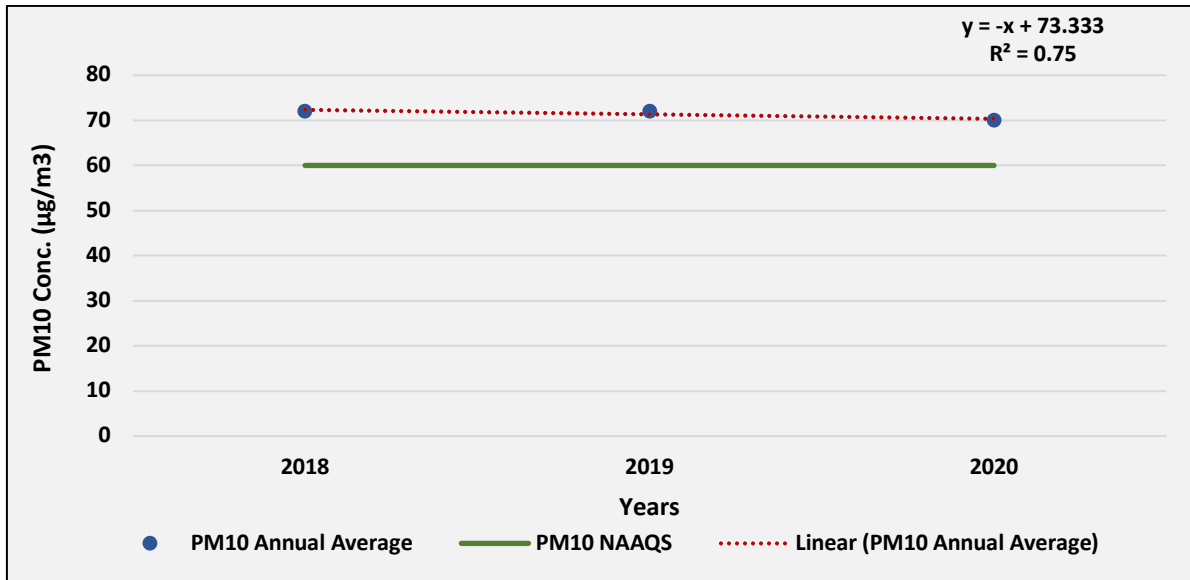


Fig. MA5: Trend of annual mean PM₁₀ ambient air concentration in Maithon TPP (Ambient)

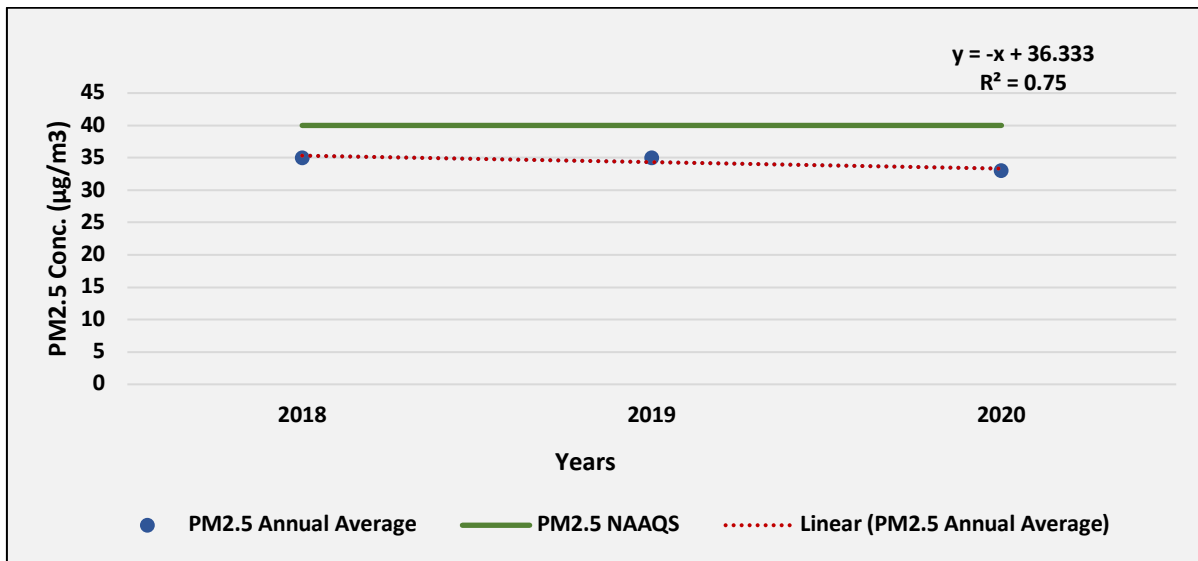


Fig. MA6: Trend of annual mean PM_{2.5} ambient air concentration in Maithon TPP (Ambient)

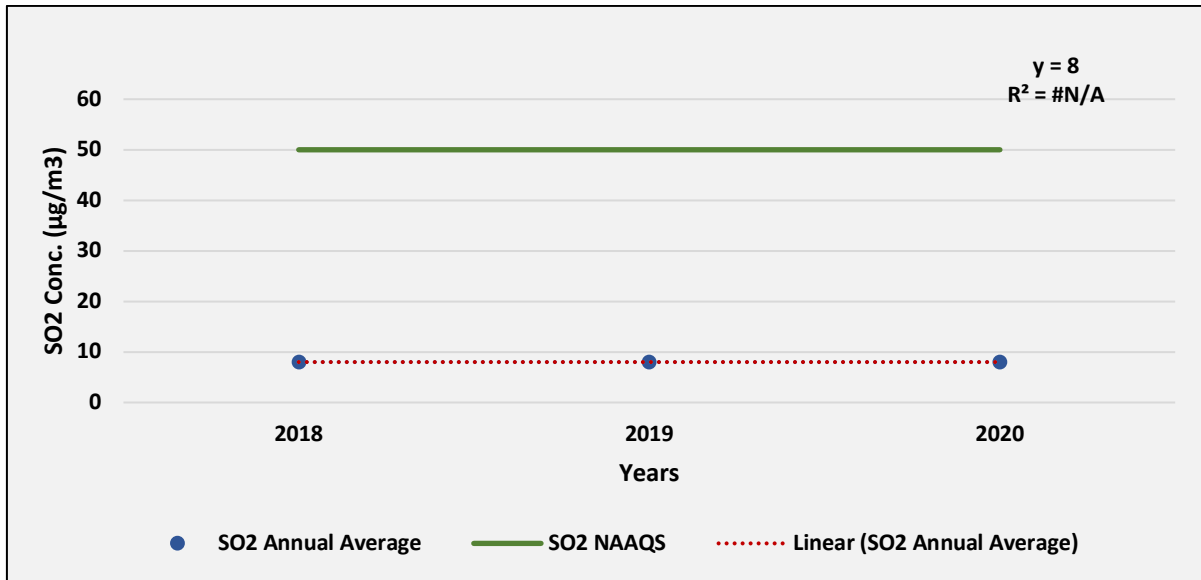


Fig. MA7: Trend of annual mean SO₂ ambient air concentration in Maithon TPP (Ambient)

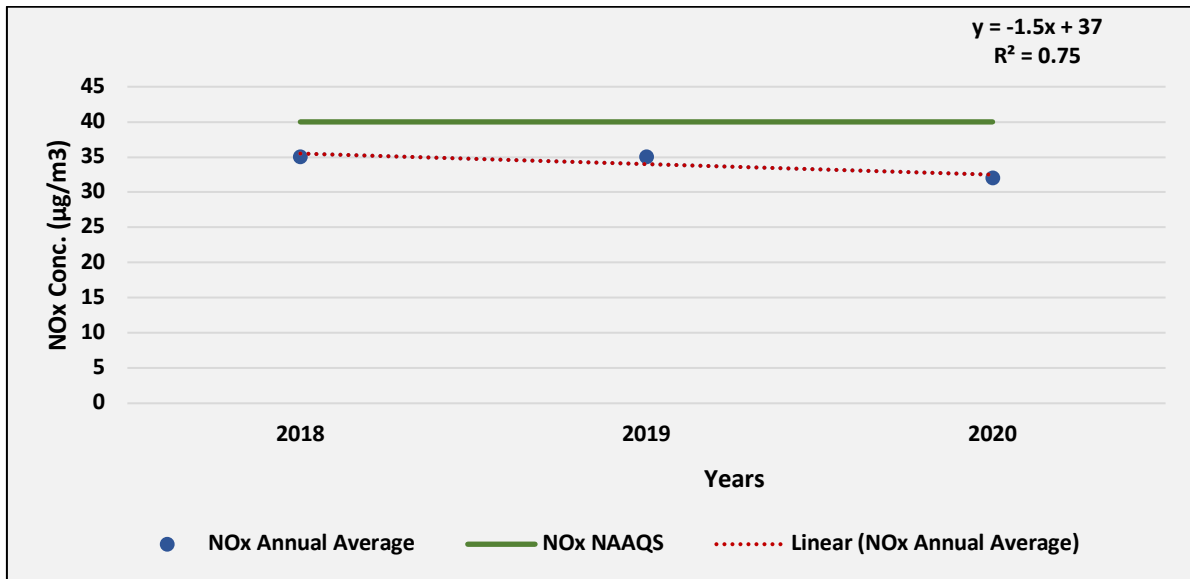


Fig. MA8: Trend of annual mean NO_x ambient air concentration in Maithon TPP (Ambient)

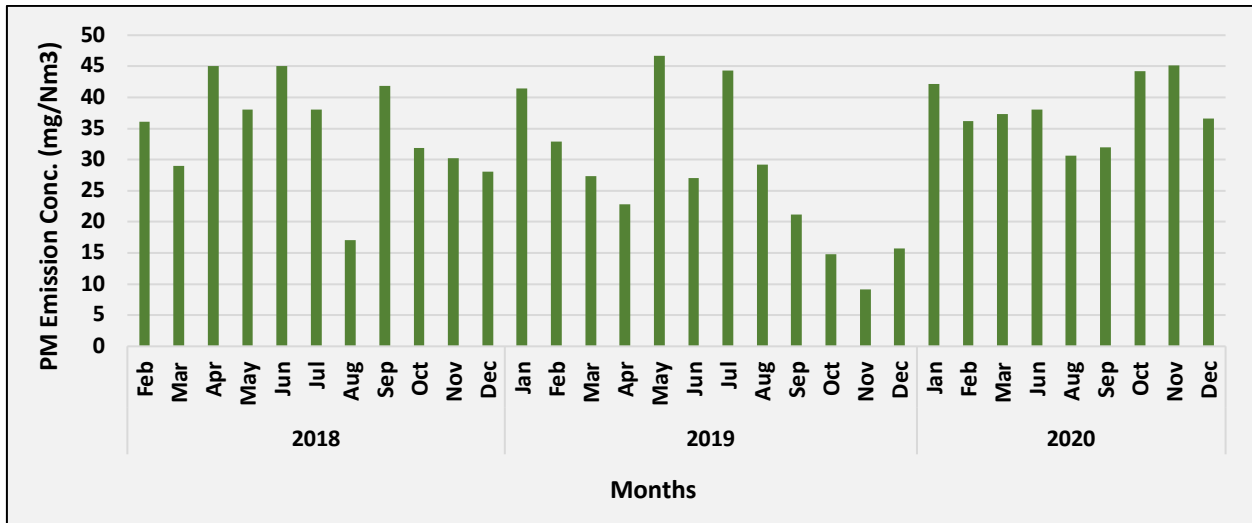


Fig. MA9: Time series of monthly average PM Emission concentration in Maithon TPP (Unit 1)

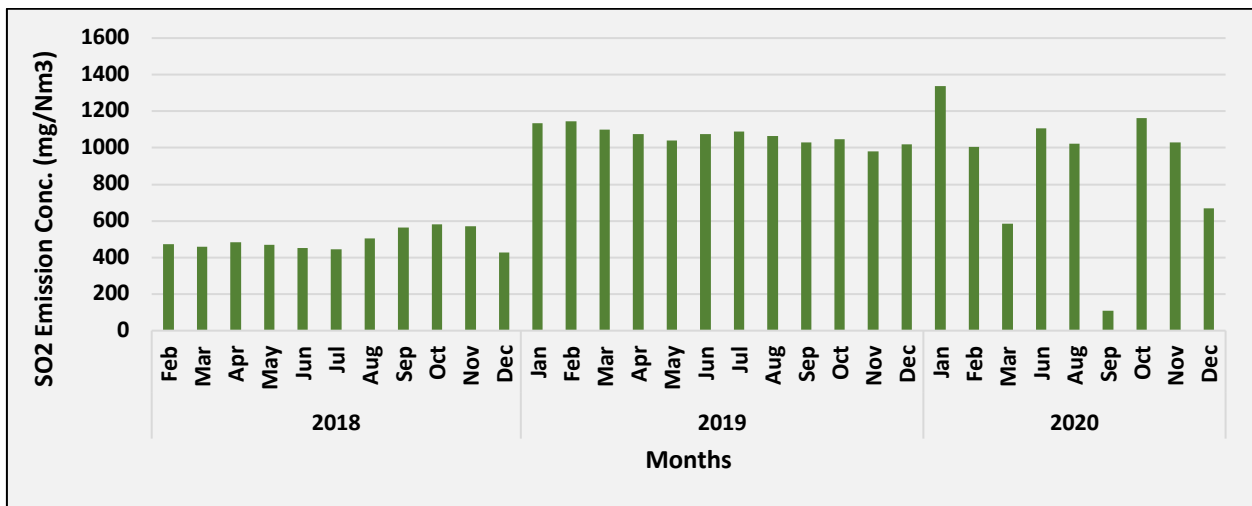


Fig. MA10: Time series of monthly average SO₂ Emission concentration in Maithon TPP (Unit 1)

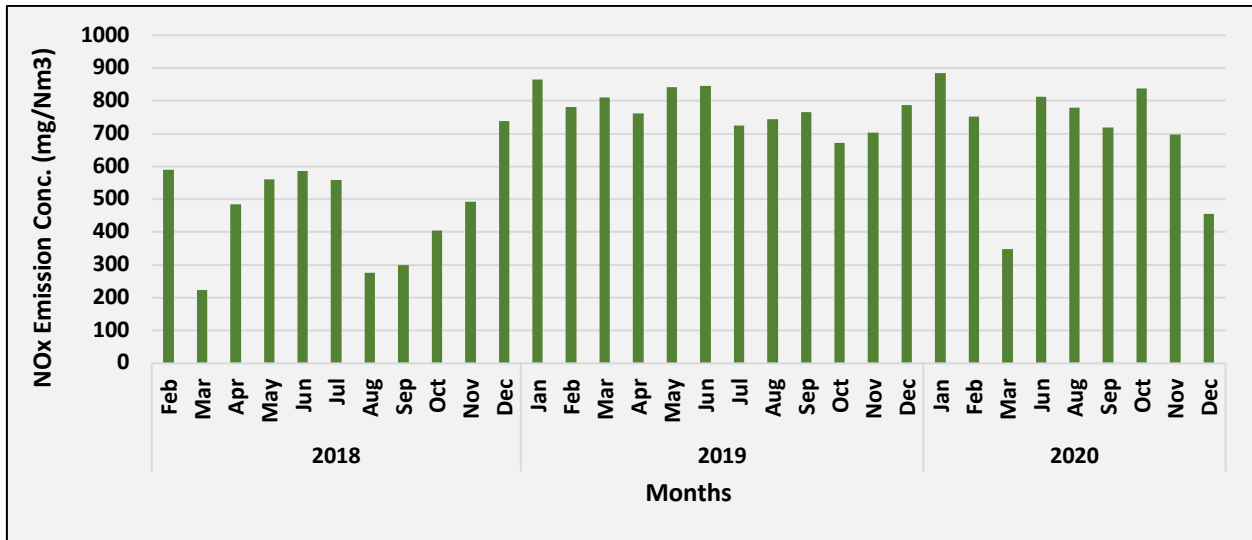


Fig. MA11: Time series of monthly average NO_x Emission concentration in Maithon TPP (Unit 1)

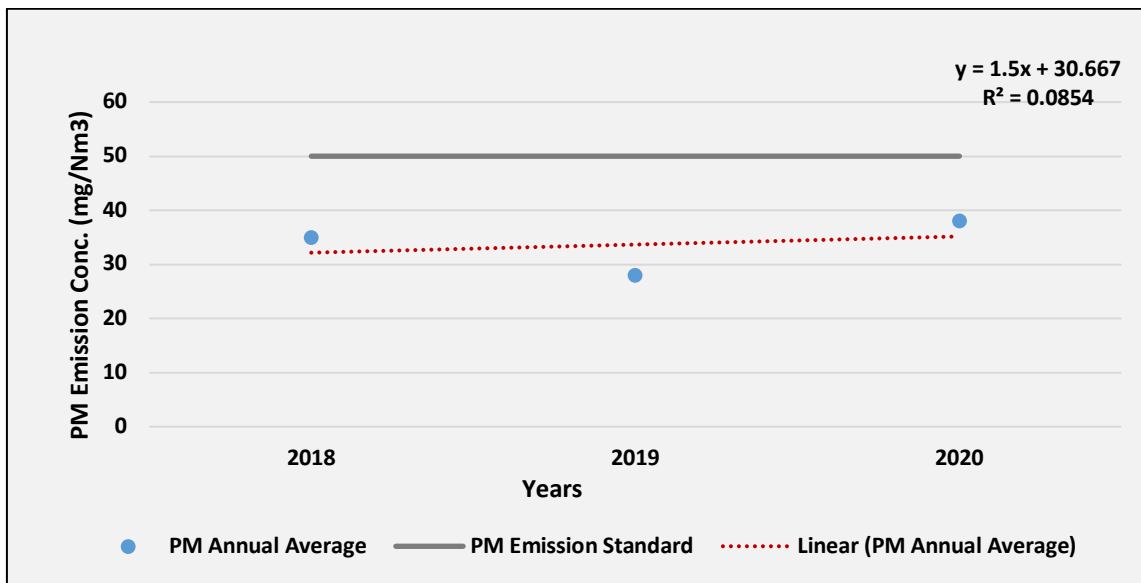


Fig. MA12: Trend of annual mean PM Emission air concentration in Maithon TPP (Unit 1)

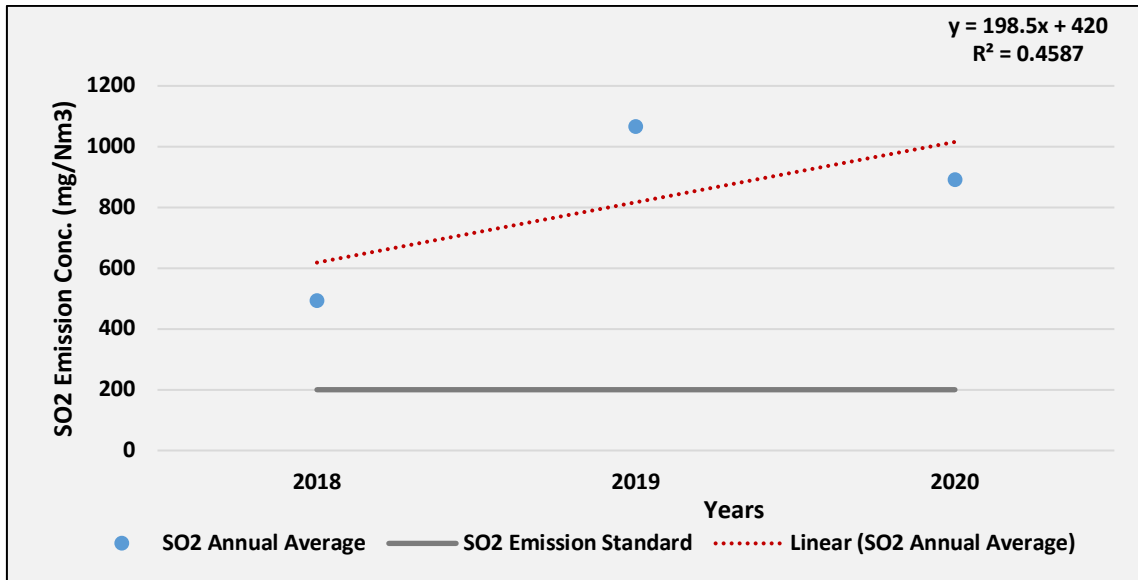


Fig. MA13: Trend of annual mean SO₂ Emission air concentration in Maithon TPP (Unit 1)

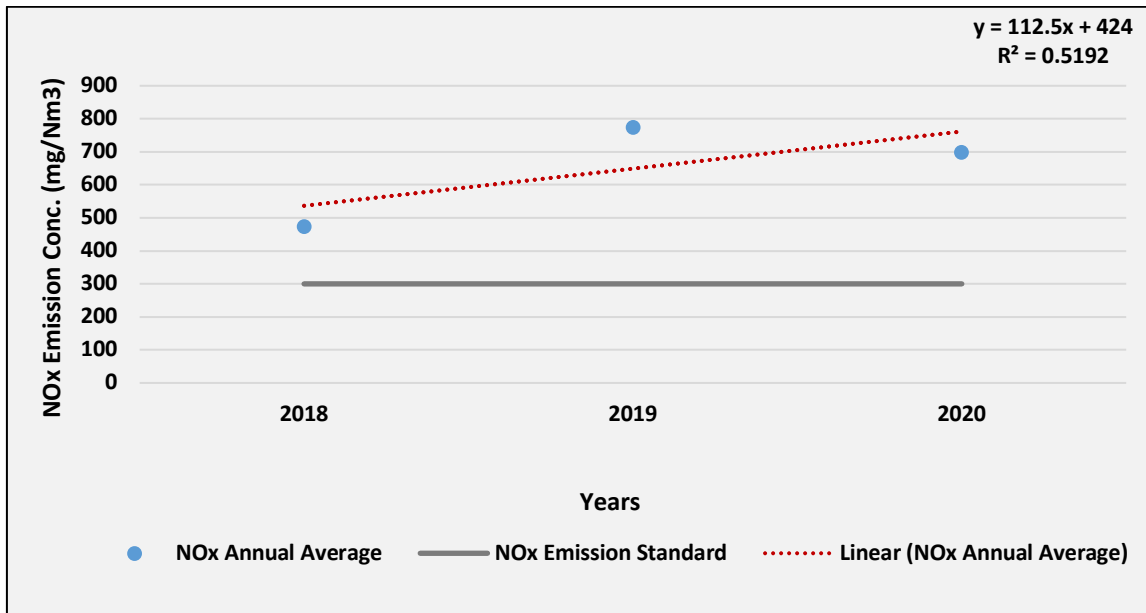


Fig. MA14: Trend of annual mean NO_x Emission air concentration in Maithon TPP (Unit 1)

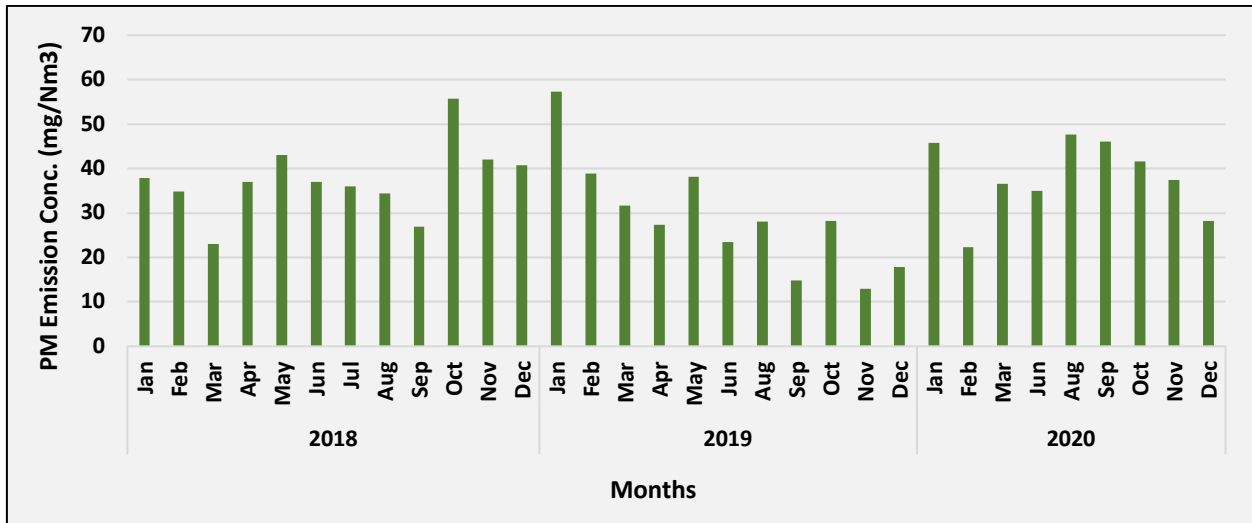


Fig. MA15: Time series of monthly average PM Emission concentration in Maithon TPP (Unit 2)

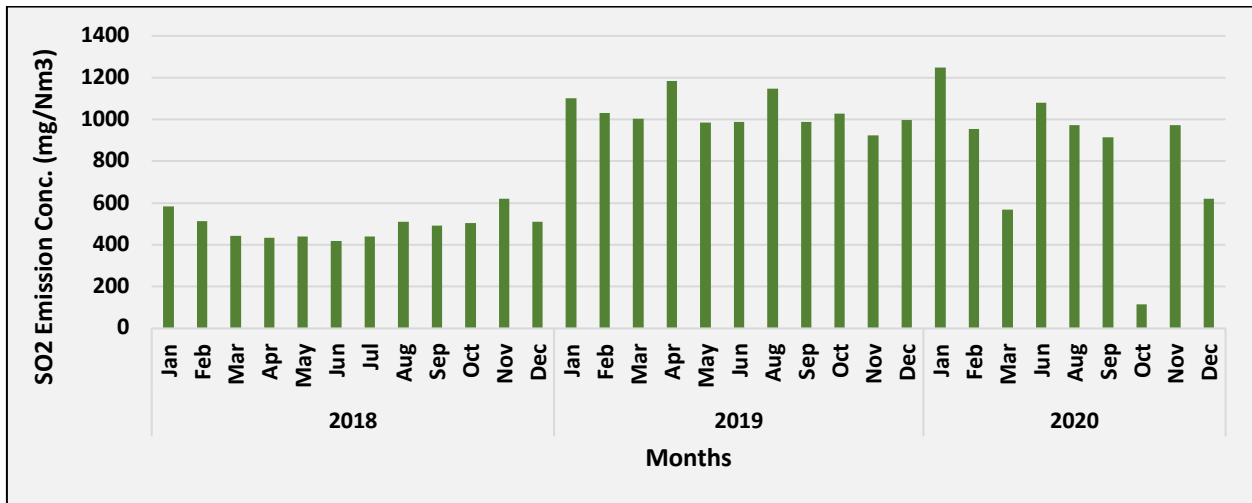


Fig. MA16: Time series of monthly average SO₂ Emission concentration in Maithon TPP (Unit 2)

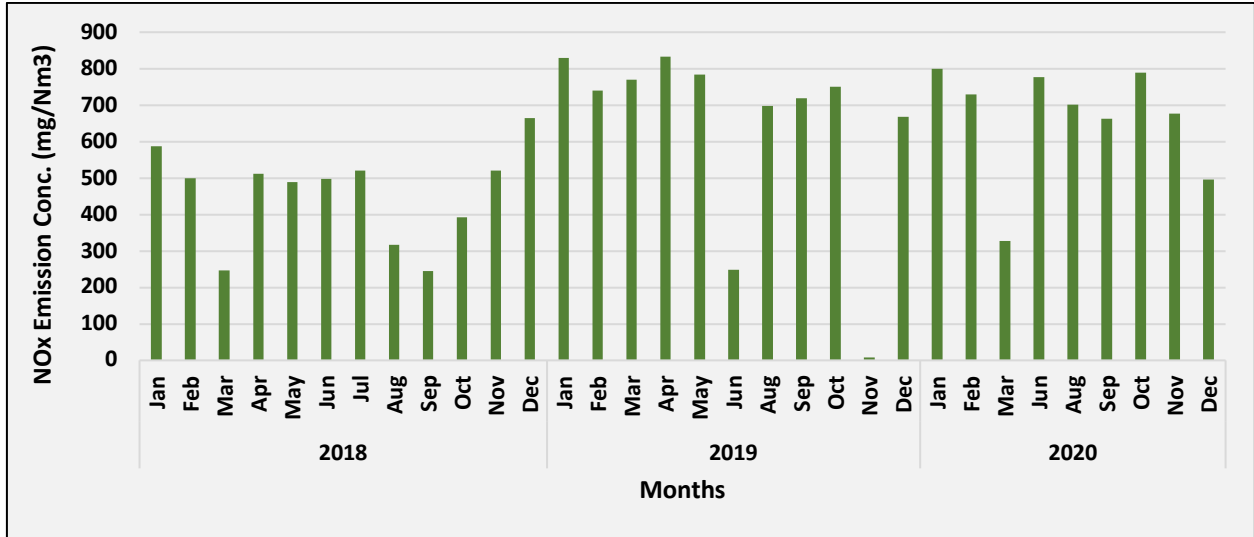


Fig. MA17: Time series of monthly average NO_x Emission concentration in Maithon TPP (Unit 2)

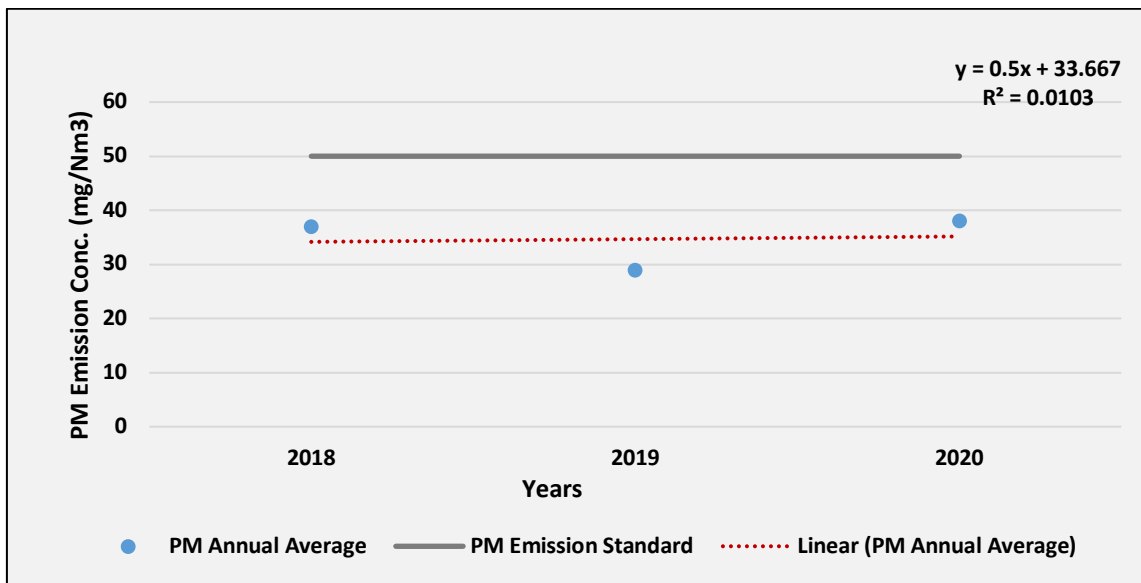


Fig. MA18: Trend of annual mean PM Emission air concentration in Maithon TPP (Unit 2)

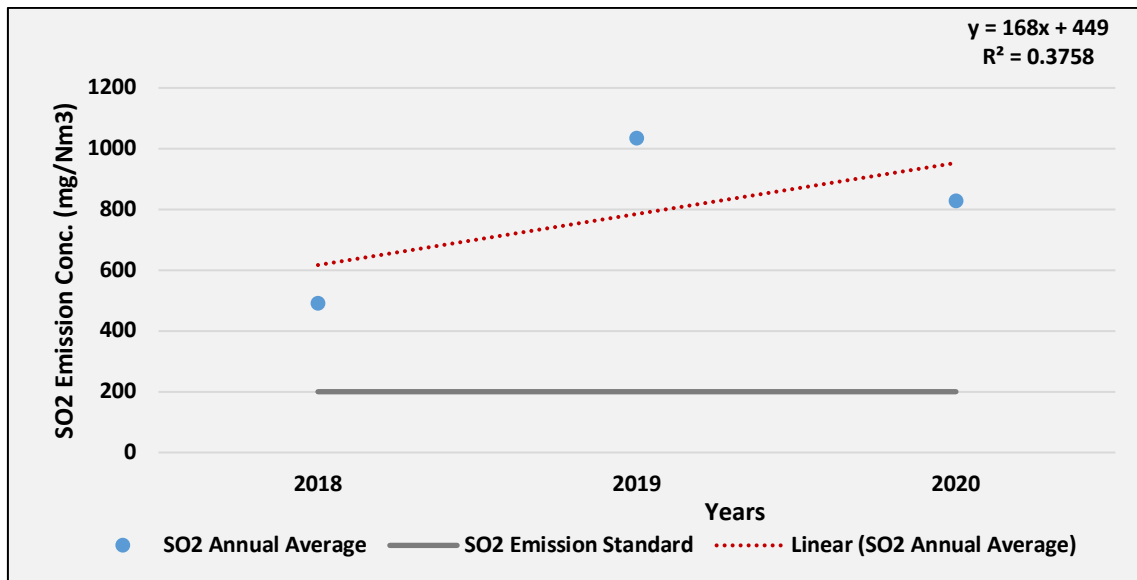


Fig. MA19: Trend of annual mean SO₂ Emission air concentration in Maithon TPP (Unit 2)

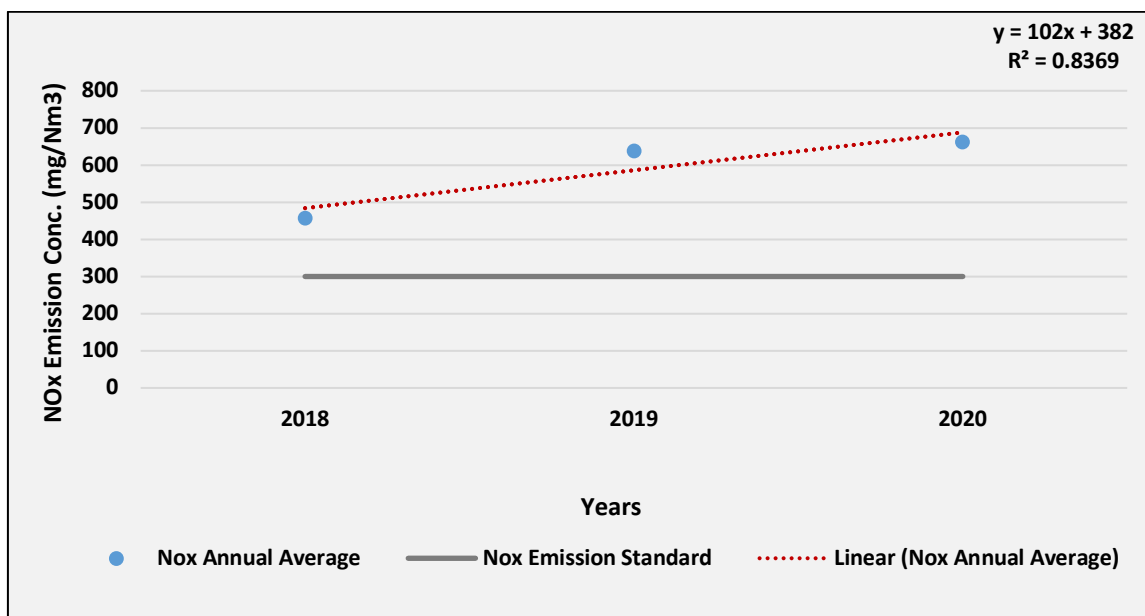


Fig. MA20: Trend of annual mean NO_x Emission air concentration in Maithon TPP (Unit 2)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀ is exceeding whereas the PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

TROMBAY POWER PLANT

Trombay Thermal Power Station is a coal-based thermal power plant located at Trombay near Mumbai in the Indian state of Maharashtra. The power plant is owned by Tata Power.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, and NO_x, data analyzed (Fig. THR1- Fig. THR20) for the last four years (2016-2020) using data provided by Tata Power for Trombay Power plant, Maharashtra, India.

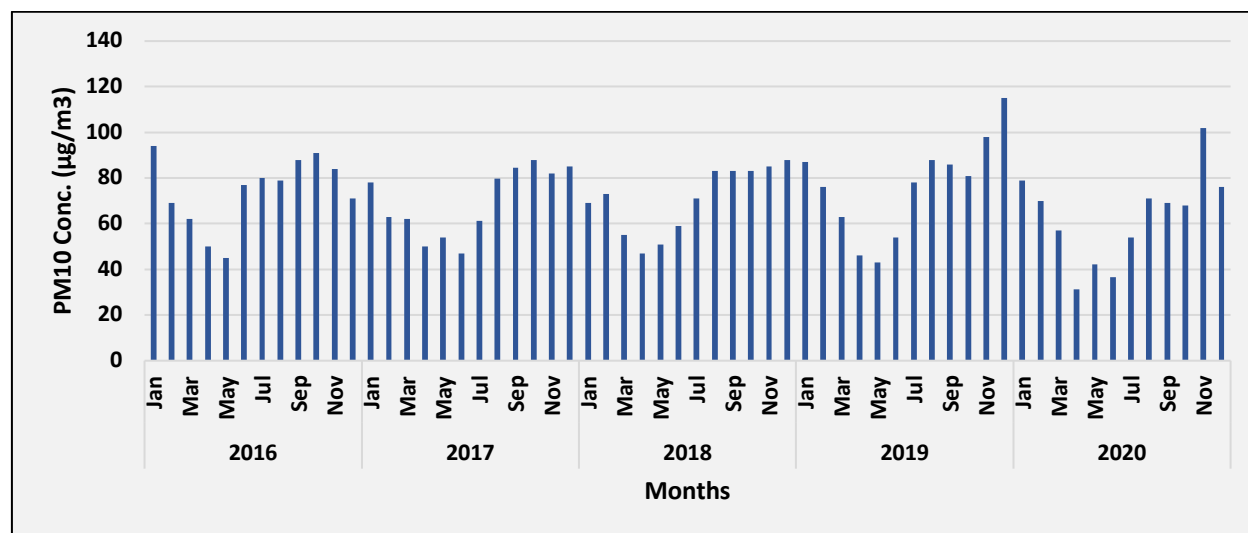


Fig. THR1: Time series of monthly average PM₁₀ ambient air concentration in Thrombay TPP (Ambient)

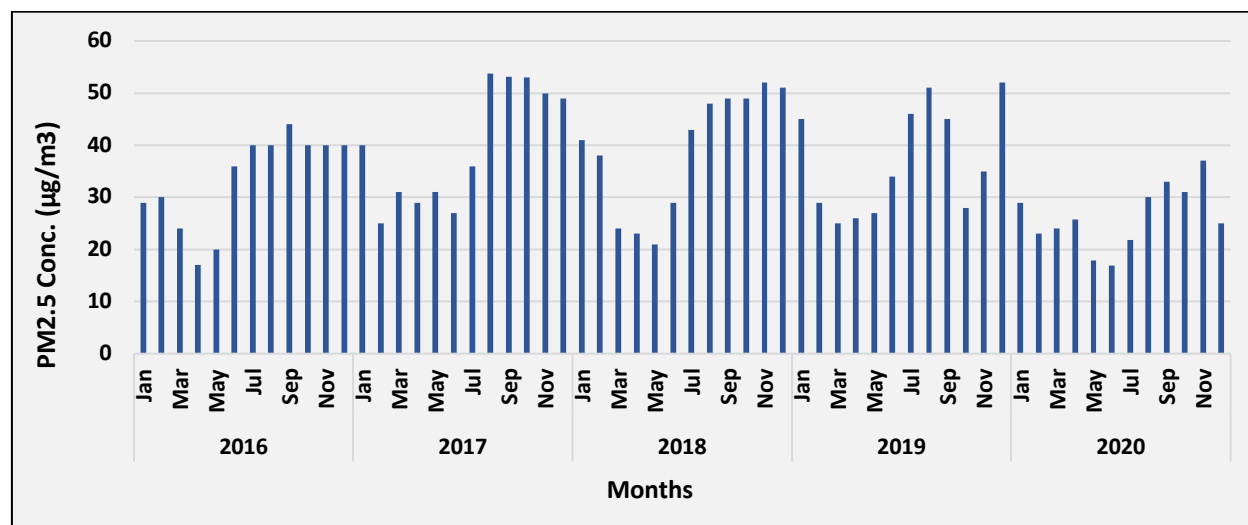


Fig. THR2: Time series of monthly average PM_{2.5} ambient air concentration in Thrombay TPP (Ambient)

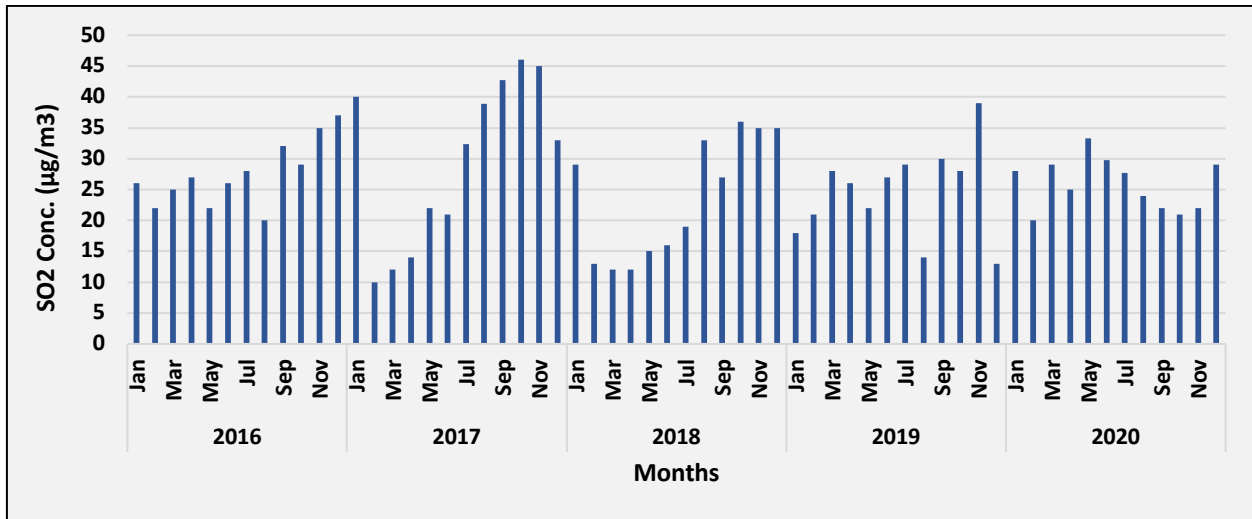


Fig. THR3: Time series of monthly average SO_2 ambient air concentration in Thrombay TPP (Ambient)

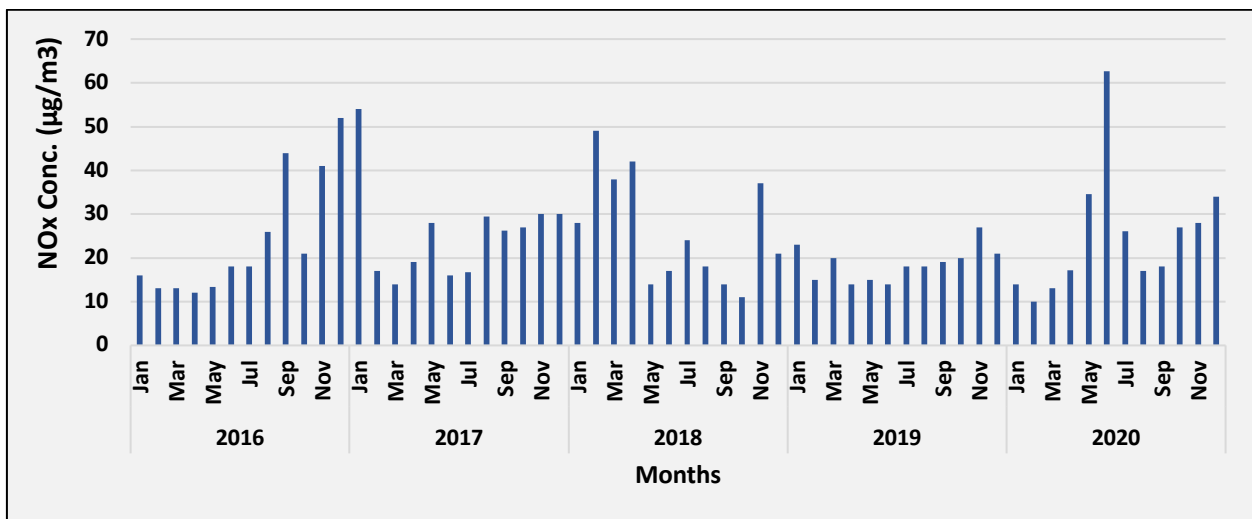


Fig. THR4: Time series of monthly average NO_x ambient air concentration in Thrombay TPP (Ambient)

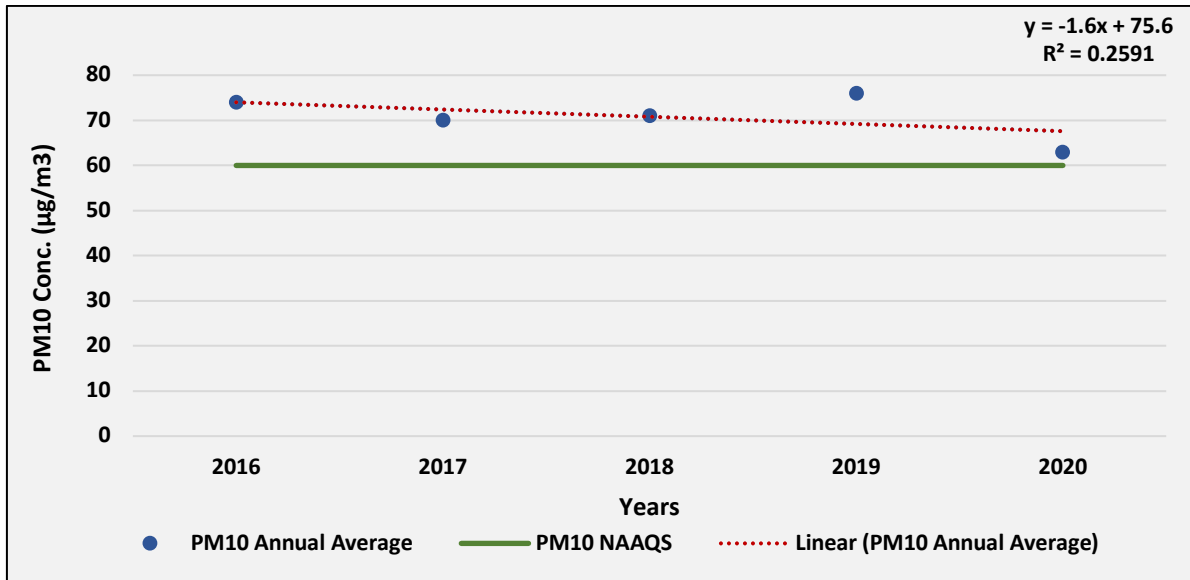


Fig. THR5: Trend of annual mean PM_{10} ambient air concentration in Thrombay TPP (Ambient)

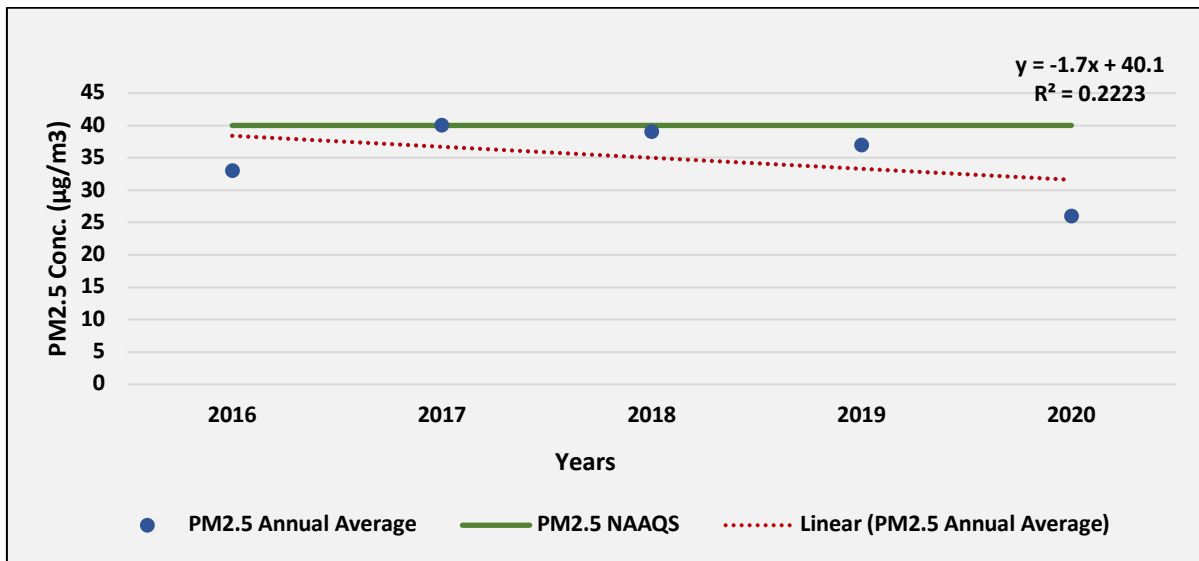


Fig. THR6: Trend of annual mean $PM_{2.5}$ ambient air concentration in Thrombay TPP (Ambient)

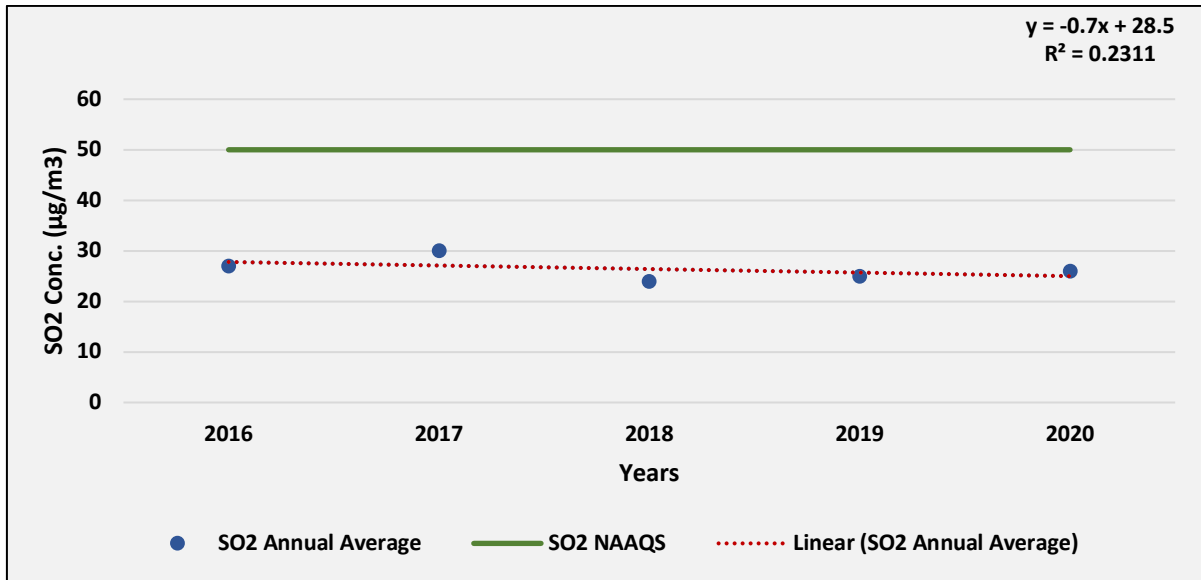


Fig. THR7: Trend of annual mean SO₂ ambient air concentration in Thrombay TPP (Ambient)

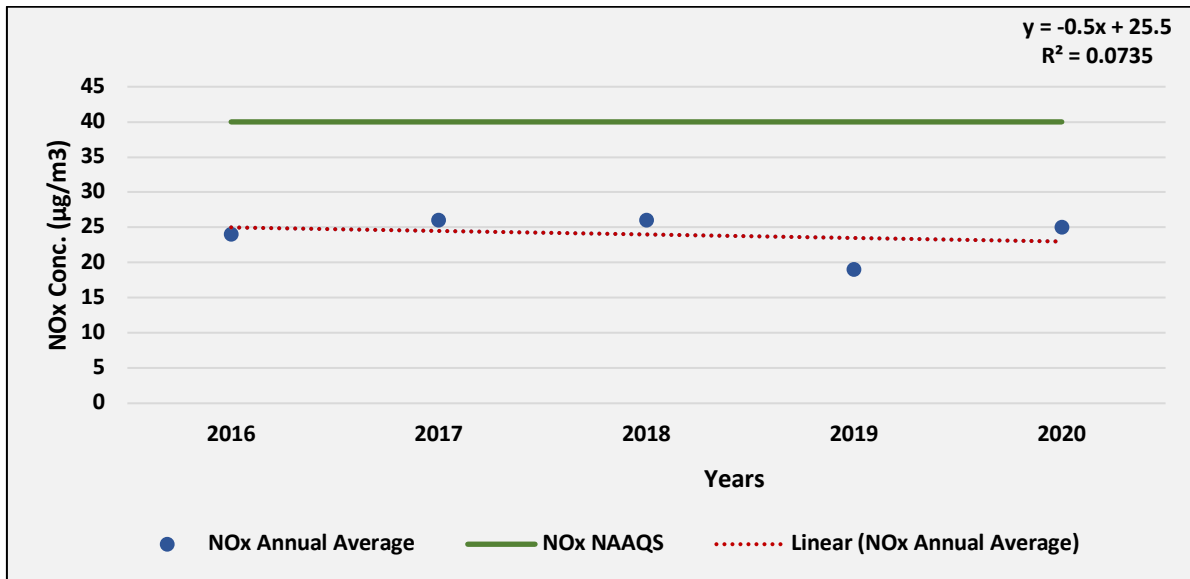


Fig. THR8: Trend of annual mean NO_x ambient air concentration in Thrombay TPP (Ambient)

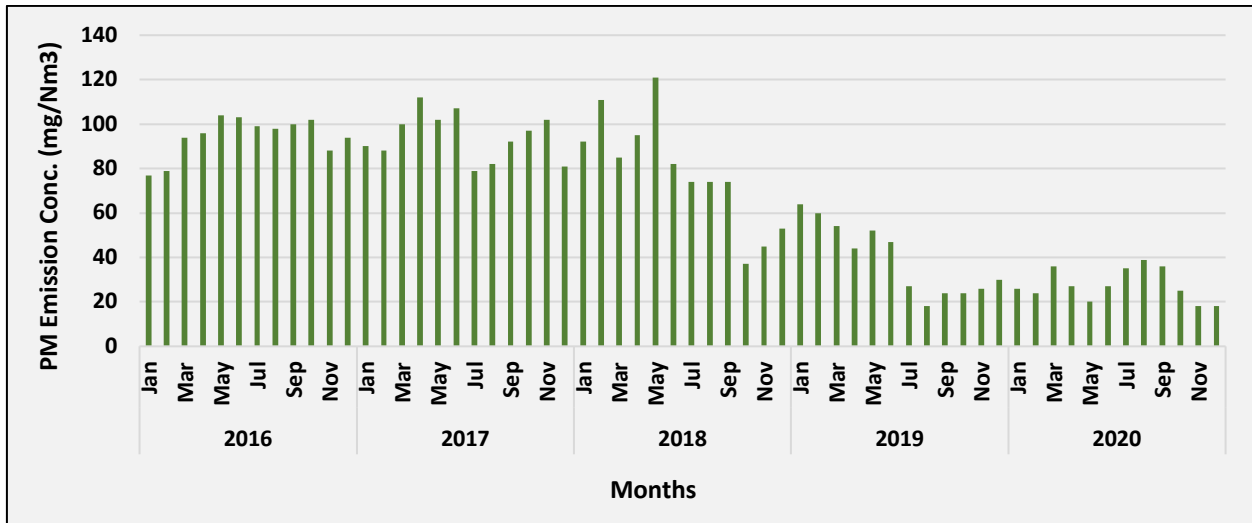


Fig. THR9: Time series of monthly average PM Emission concentration in Thrombay TPP (Unit 5)

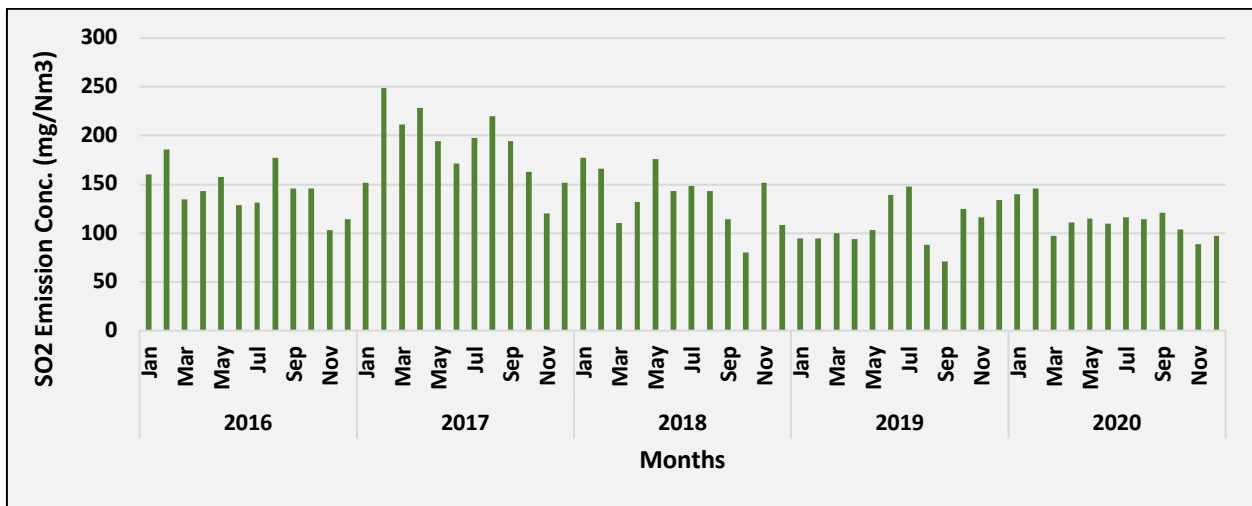


Fig. THR10: Time series of monthly average SO₂ Emission concentration in Thrombay TPP (Unit 5)

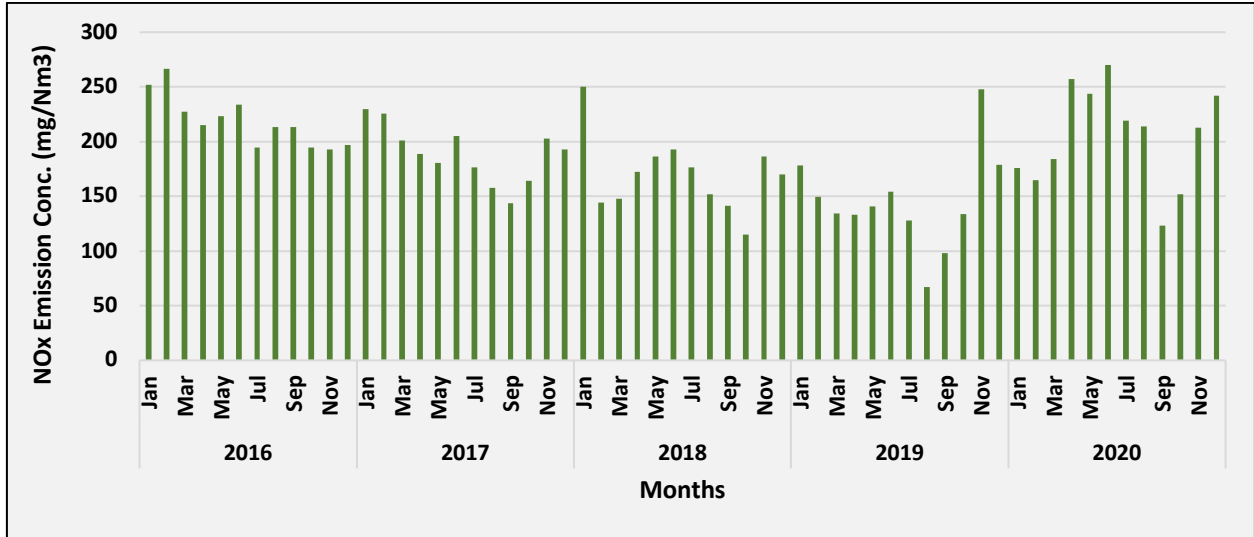


Fig. THR11: Time series of monthly average NO_x Emission concentration in Thrombay TPP (Unit 5)

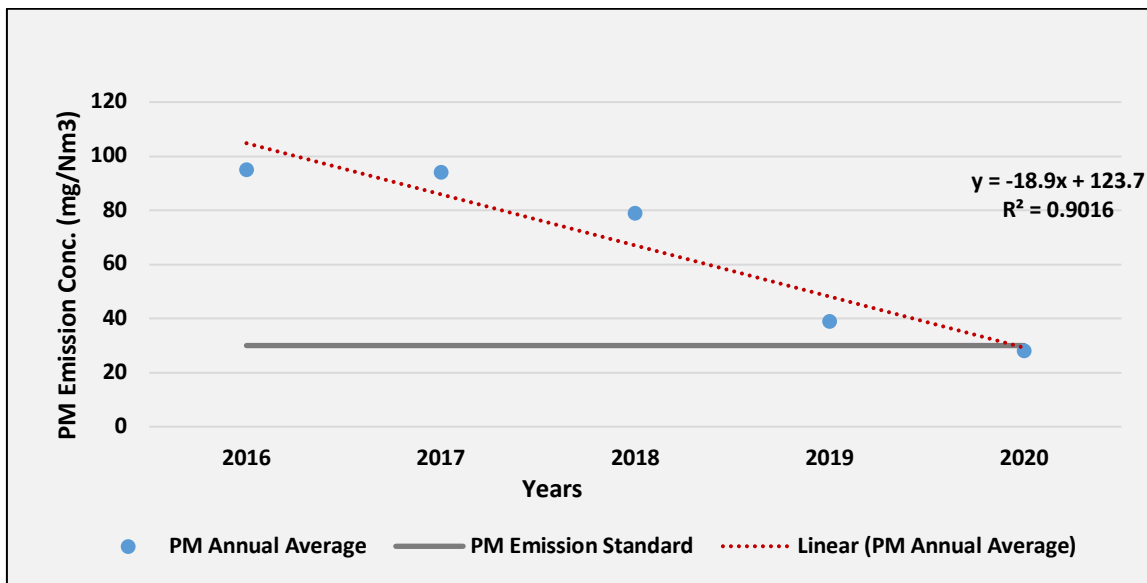


Fig. THR12: Trend of annual mean PM Emission air concentration in Thrombay TPP (Unit 5)

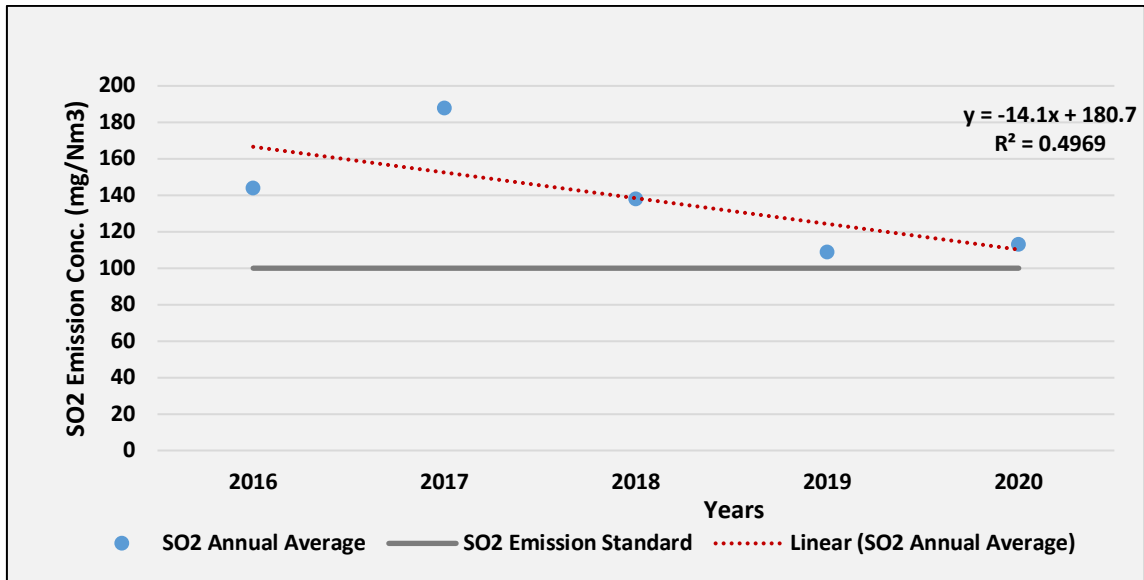


Fig. THR13: Trend of annual mean SO₂ Emission air concentration in Thrombay TPP (Unit 5)

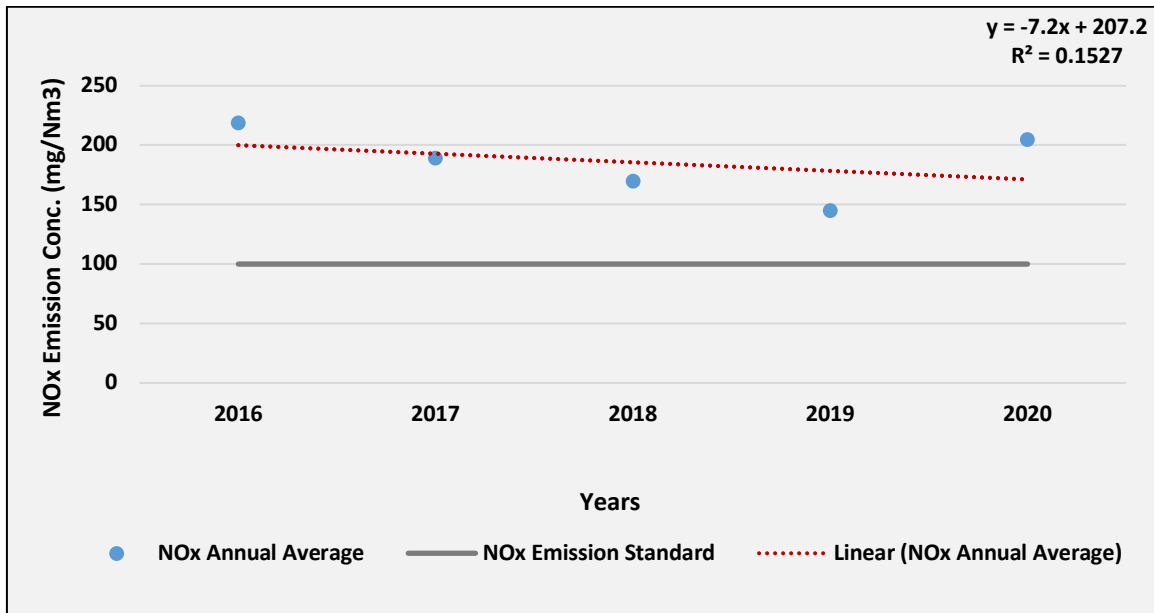


Fig. THR14: Trend of annual mean NO_x Emission air concentration in Thrombay TPP (Unit 5)

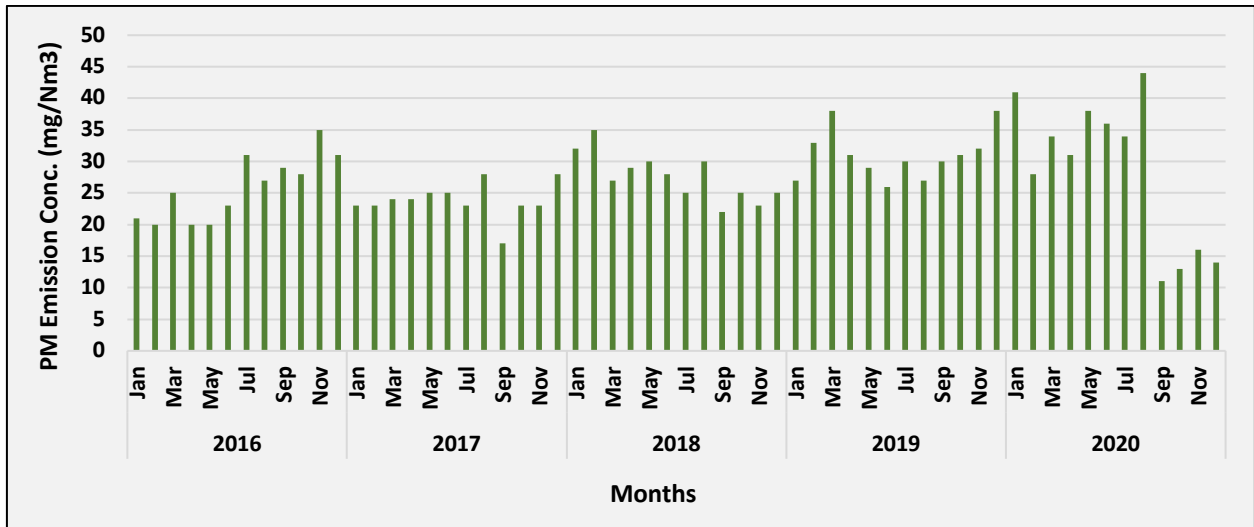


Fig. THR15: Time series of monthly average PM Emission concentration in Thrombay TPP (Unit 8)

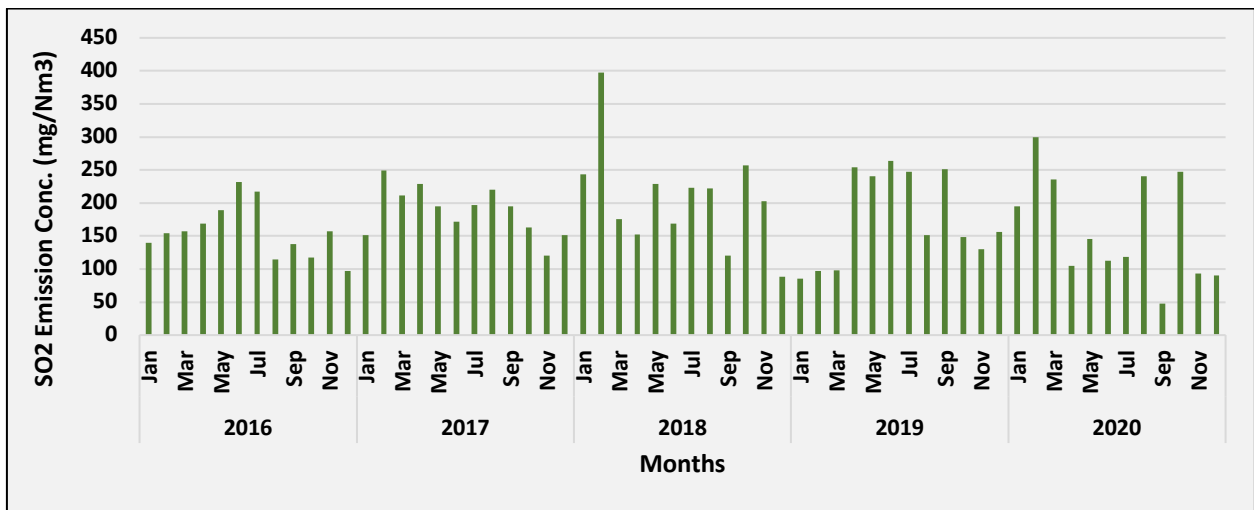


Fig. THR16: Time series of monthly average SO₂ Emission concentration in Thrombay TPP (Unit 8)

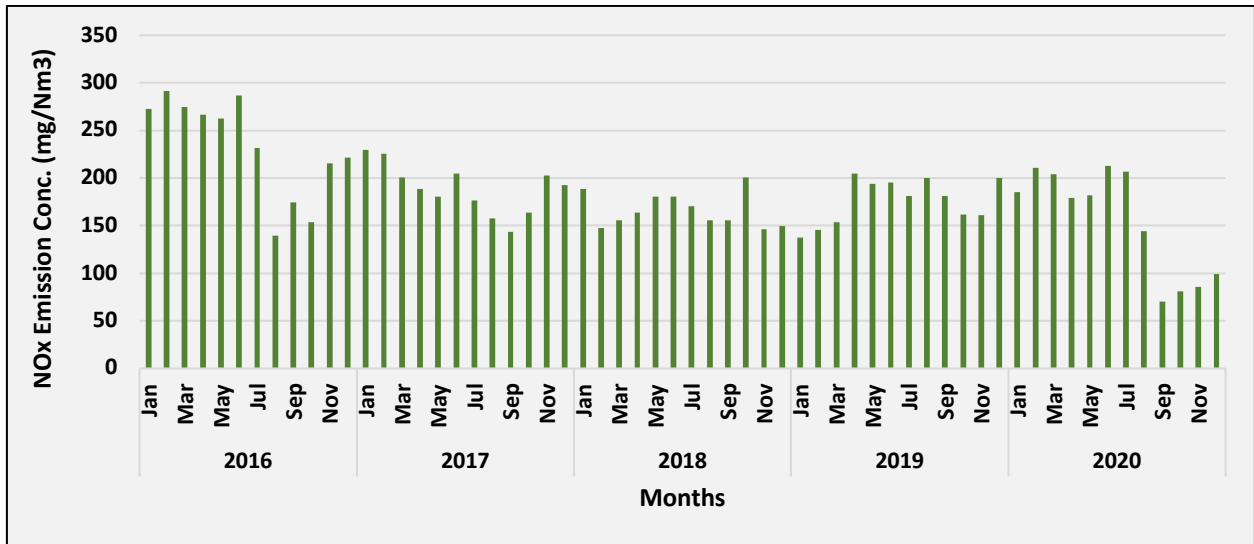


Fig. THR17: Time series of monthly average NO_x Emission concentration in Thrombay TPP (Unit 8)

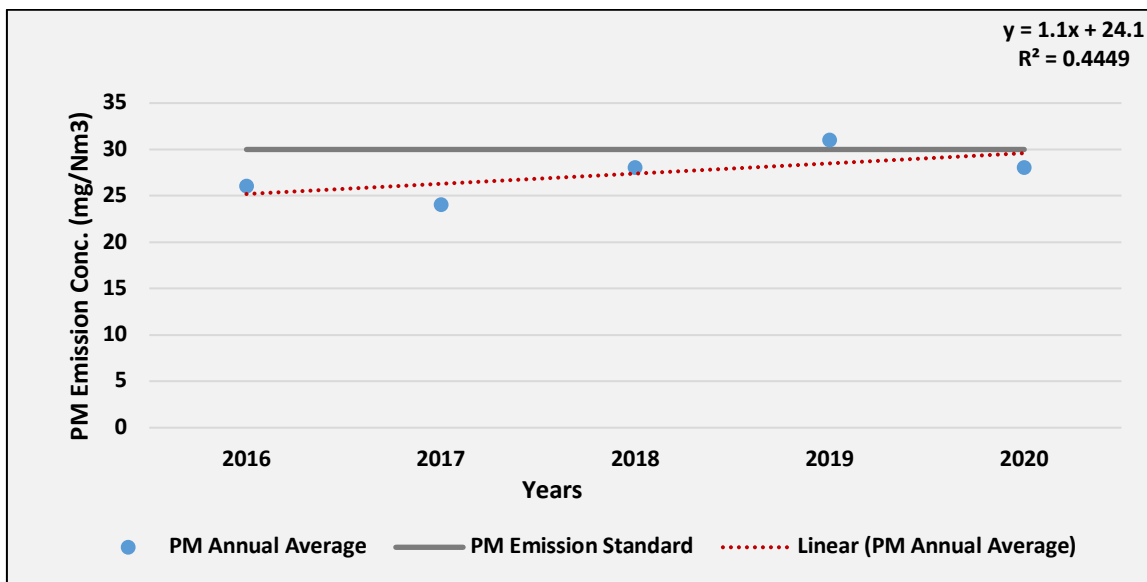


Fig. THR18: Trend of annual mean PM Emission air concentration in Thrombay TPP (Unit 8)

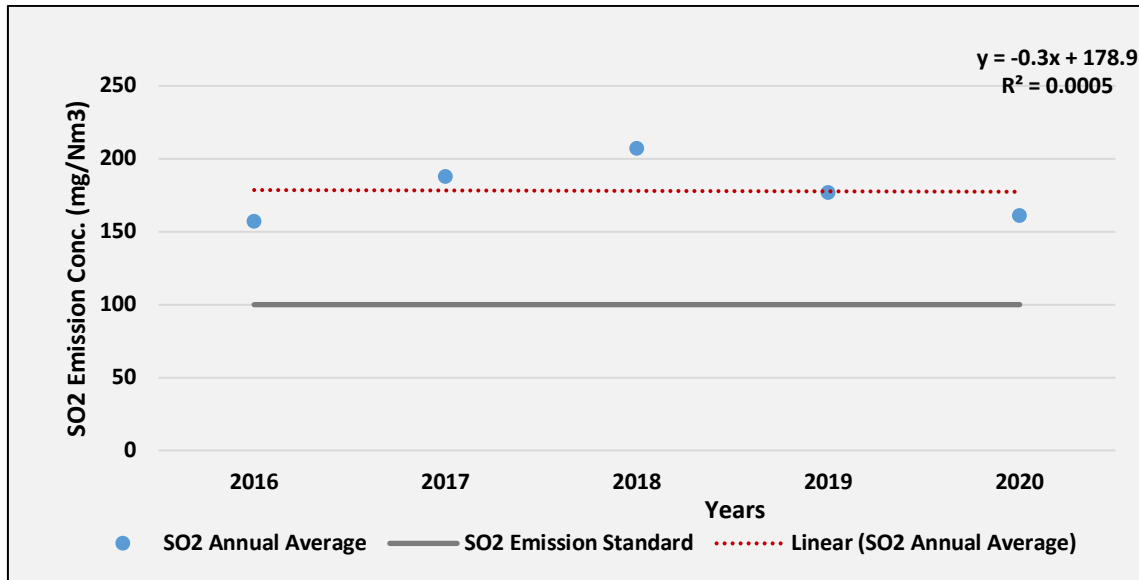


Fig. THR19: Trend of annual mean SO₂ Emission air concentration in Thrombay TPP (Unit 8)

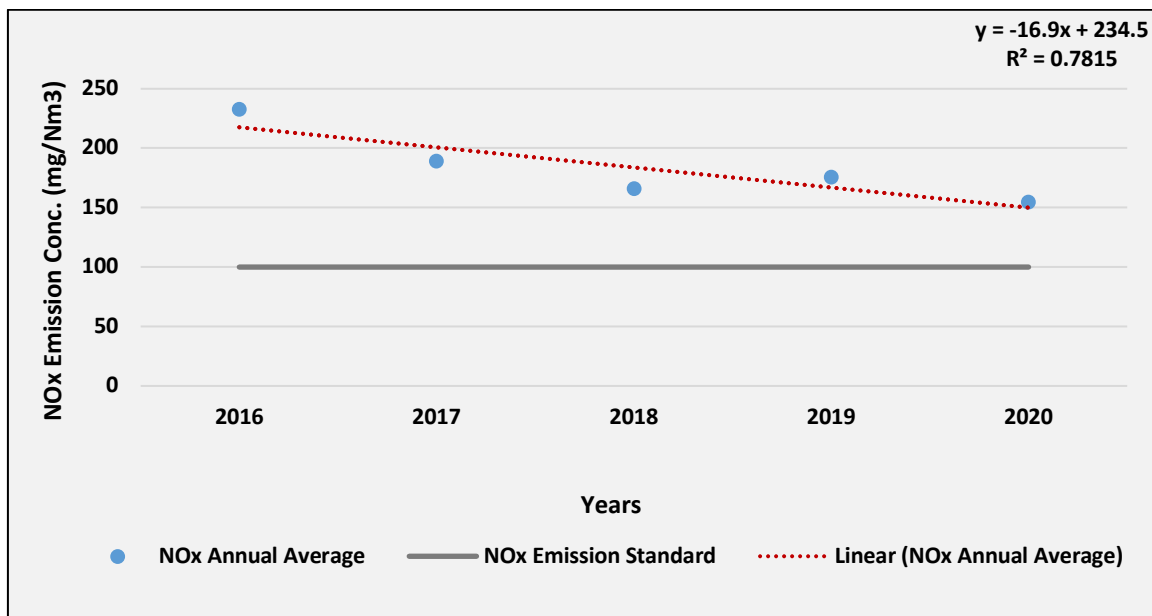


Fig. THR20: Trend of annual mean NO_x Emission air concentration in Thrombay TPP (Unit 8)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀ is exceeding whereas the PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

JINDAL THERMAL POWER PLANT

The O. P. Jindal Super Thermal Power Plant, which is also referred to as the Tamnar I Project, is a 1000 megawatt coal-fired power plant in Raigarh district, Chhattisgarh in India. The power station is owned and operated by Jindal Power, a subsidiary of Jindal Steel & Power. The first of the plant's four 250 megawatt unit of the plant was commissioned in December 2007 with the plant fully commissioned in September 2008.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, and NO_x, data analyzed (Fig. J1-Fig. J112) for the last eleven years (2010-2020) using data provided by Jindal Power for Jindal Power plant, India.

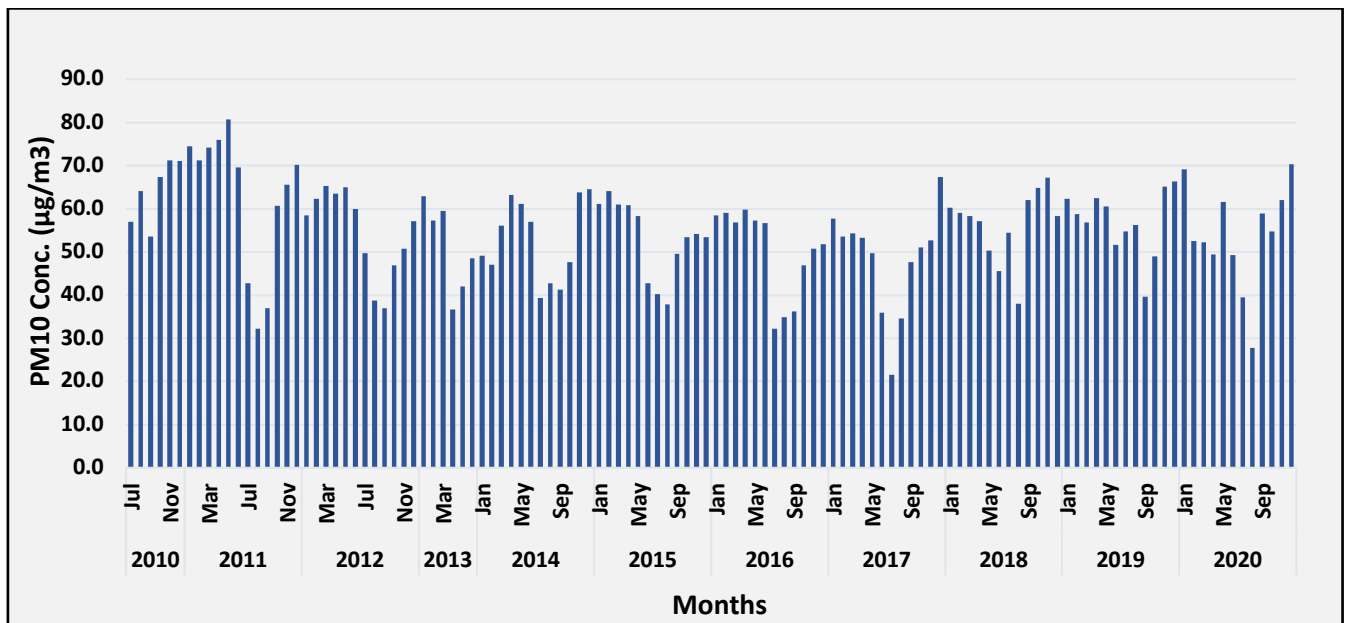


Fig. J1: Time series of monthly average PM₁₀ ambient air concentration in Jindal TPP (AM New switch yard)

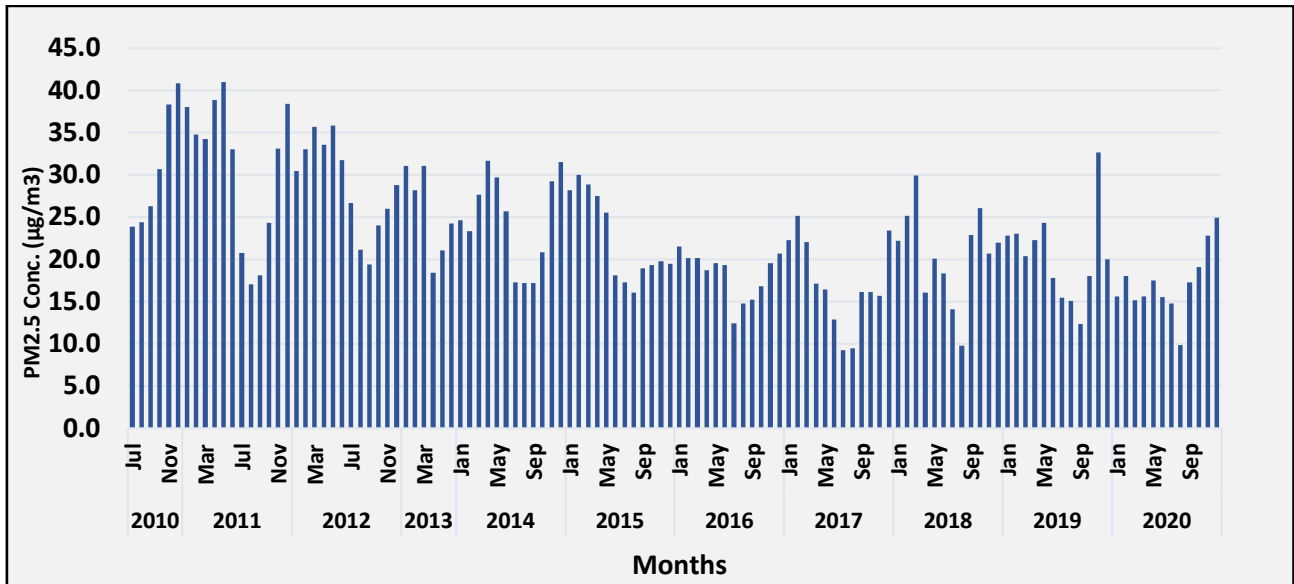


Fig. J2: Time series of monthly average PM_{2.5} ambient air concentration in Jindal TPP (AM New switch yard)

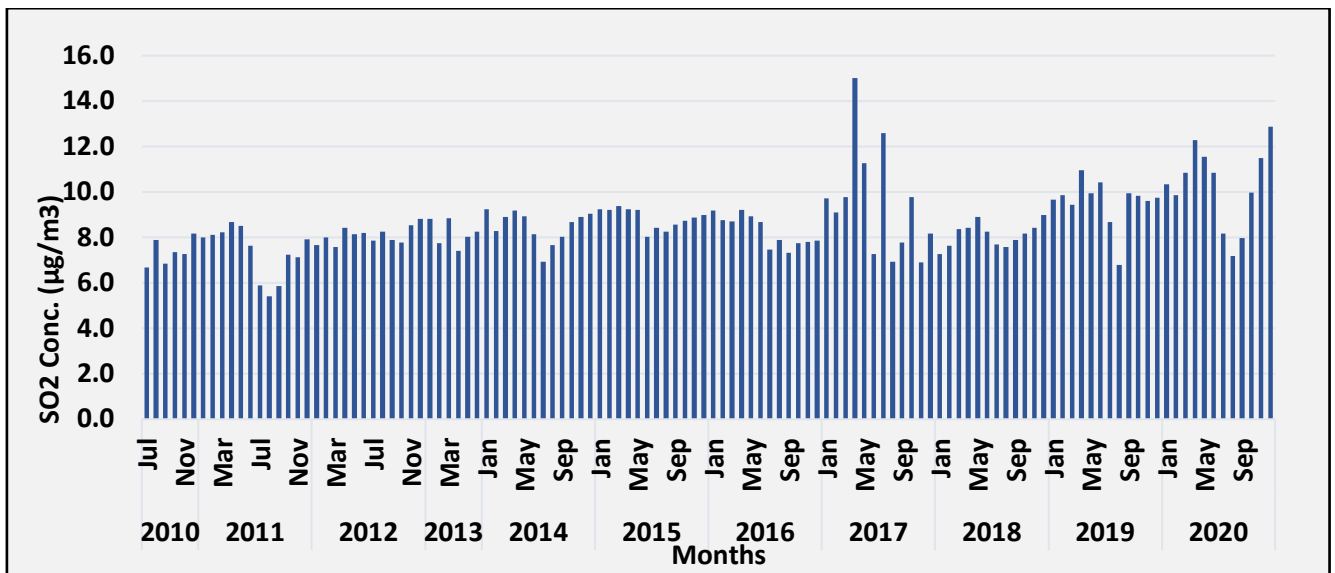


Fig. J3: Time series of monthly average SO₂ ambient air concentration in Jindal TPP (AM New switch yard)

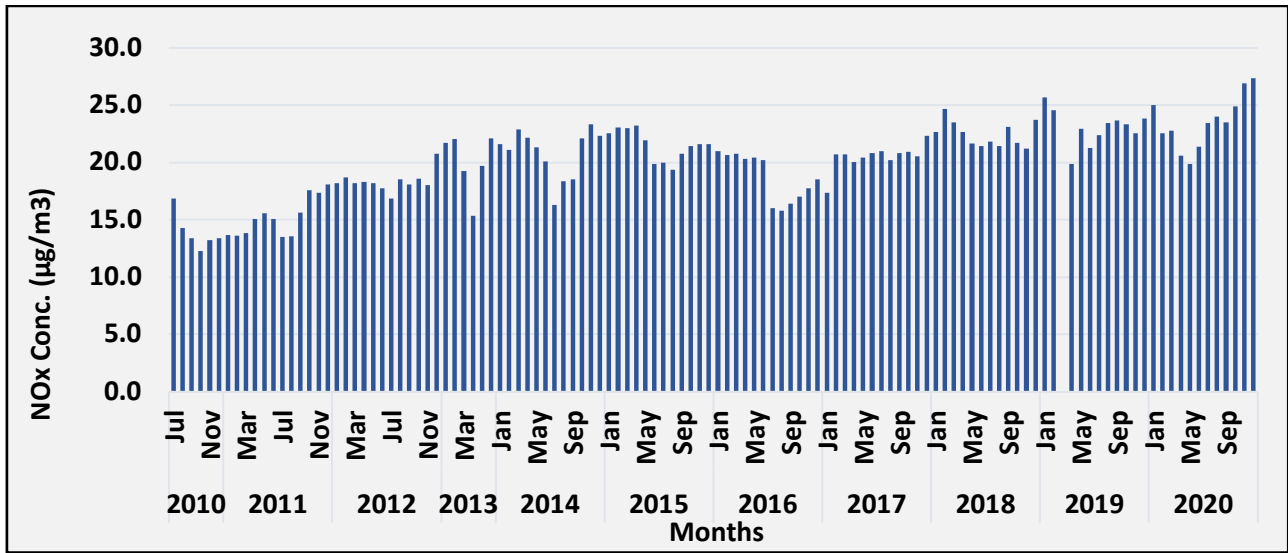


Fig. J4: Time series of monthly average NO_x ambient air concentration in Jindal TPP (AM New switch yard)

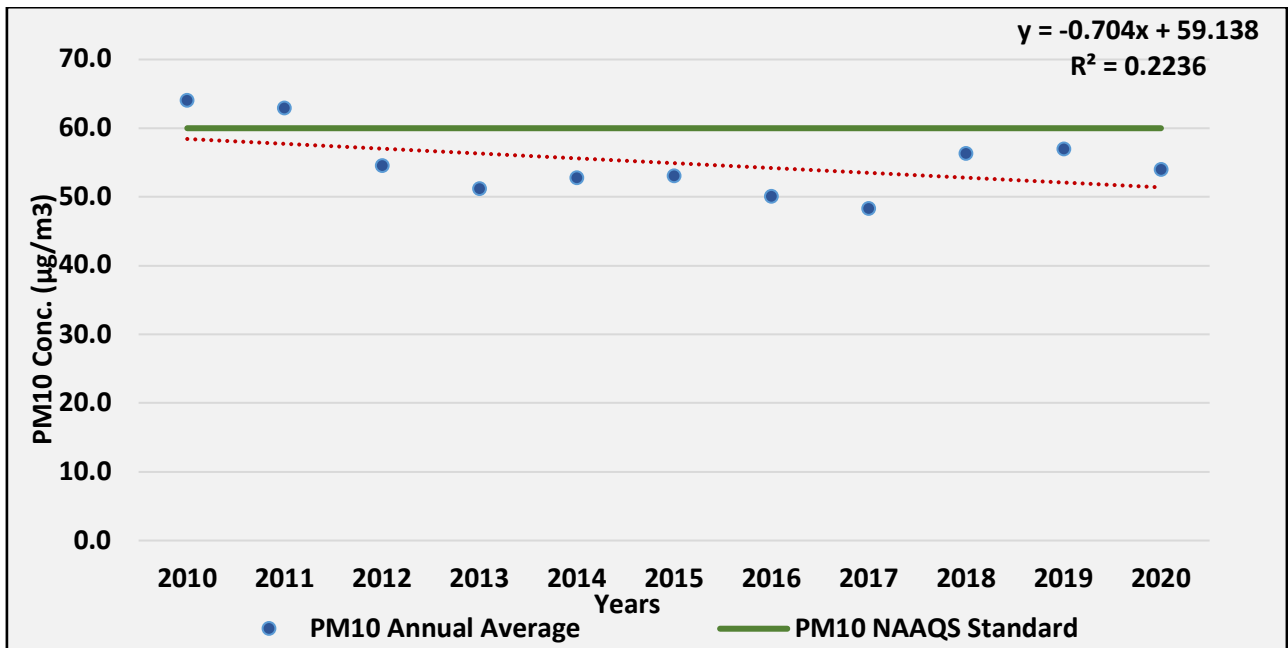


Fig. J5: Trend of annual mean PM₁₀ ambient air concentration in Jindal TPP (AM New switch yard)

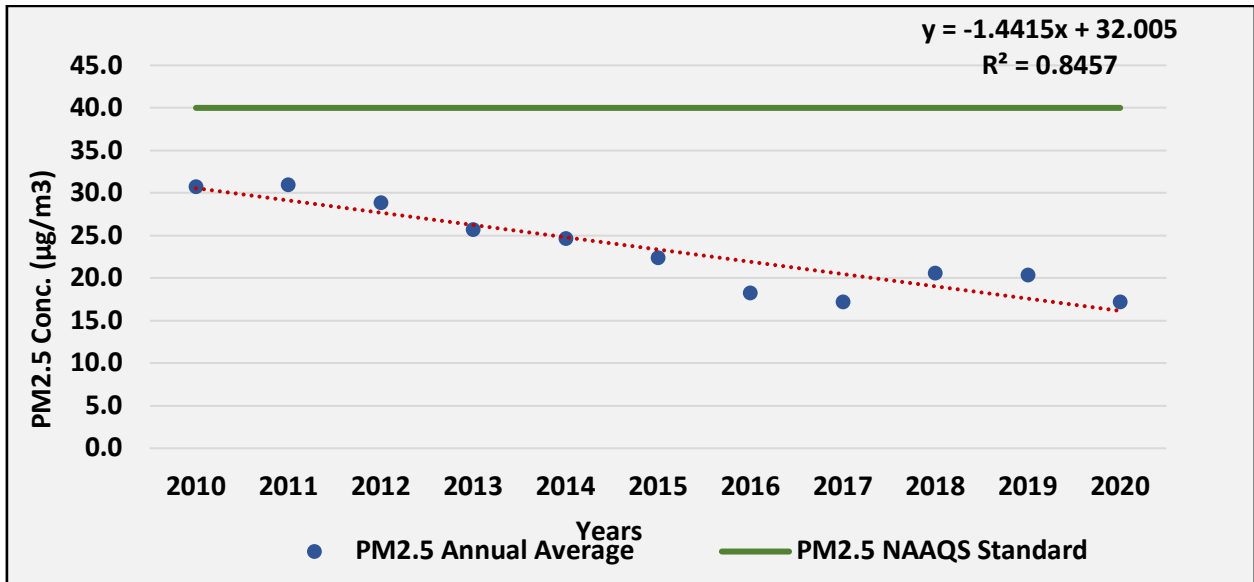


Fig. J6: Trend of annual mean PM_{2.5} ambient air concentration in Jindal TPP (AM New switch yard)

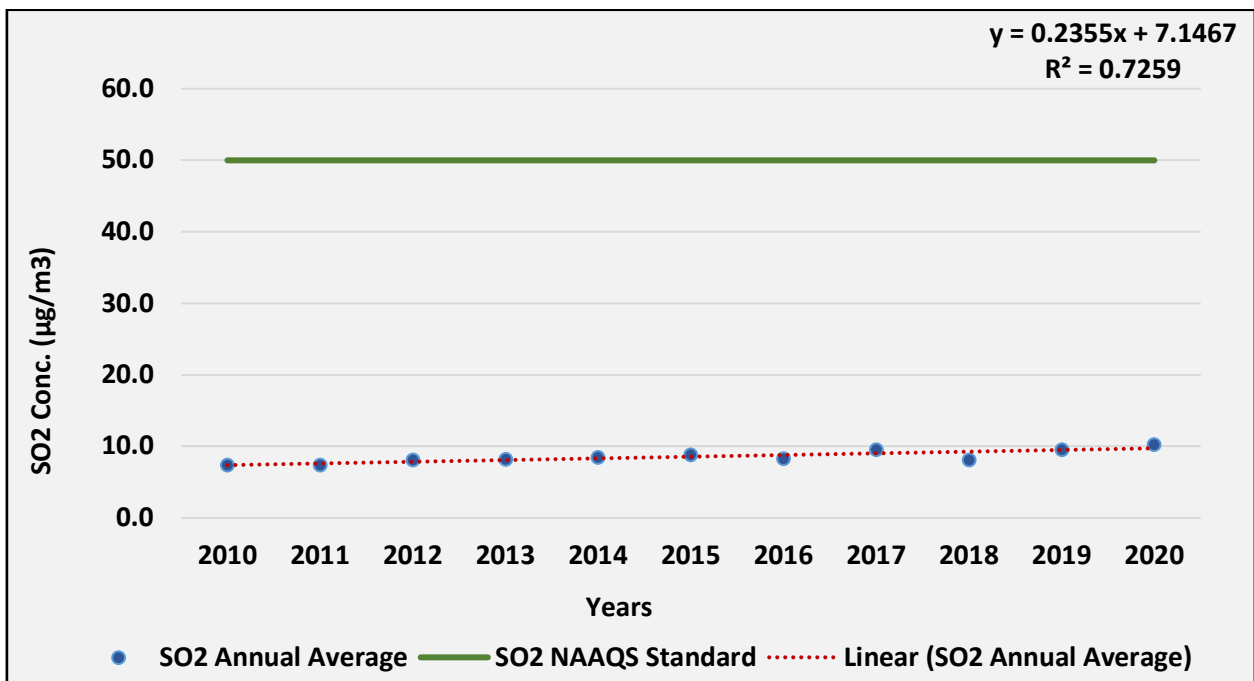


Fig. J7: Trend of annual mean SO₂ ambient air concentration in Jindal TPP (AM New switch yard)

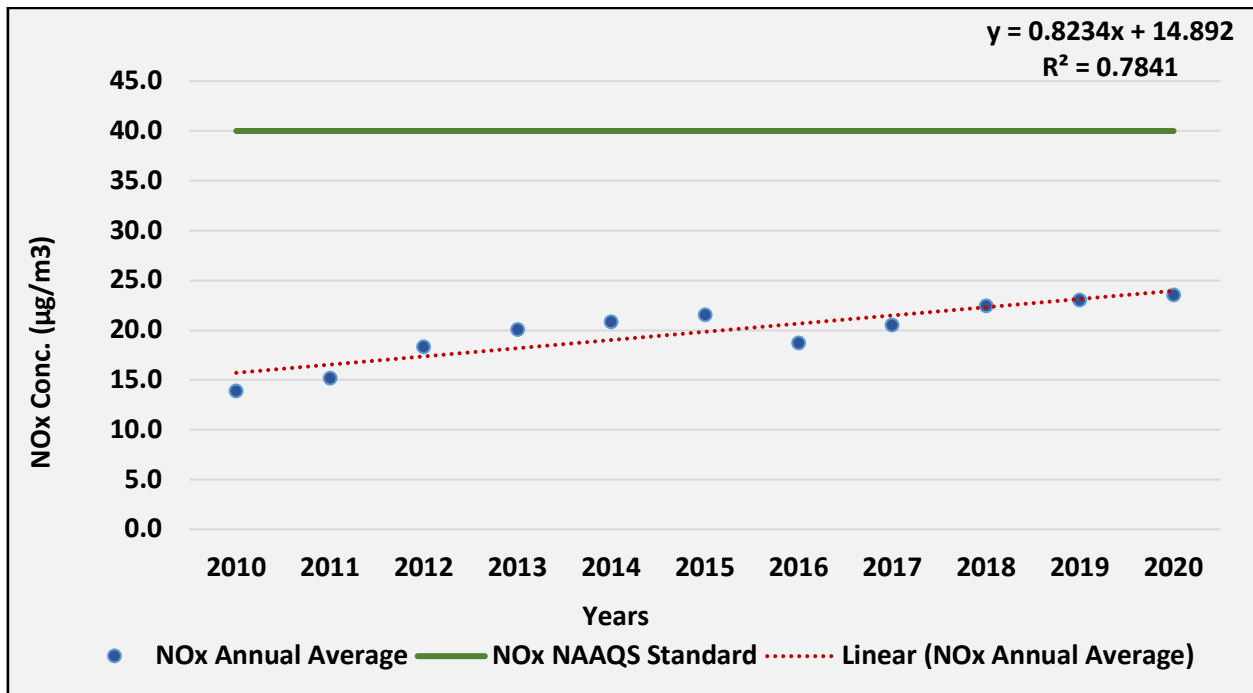


Fig. J8: Trend of annual mean NO_x ambient air concentration in Jindal TPP (AM New switch yard)

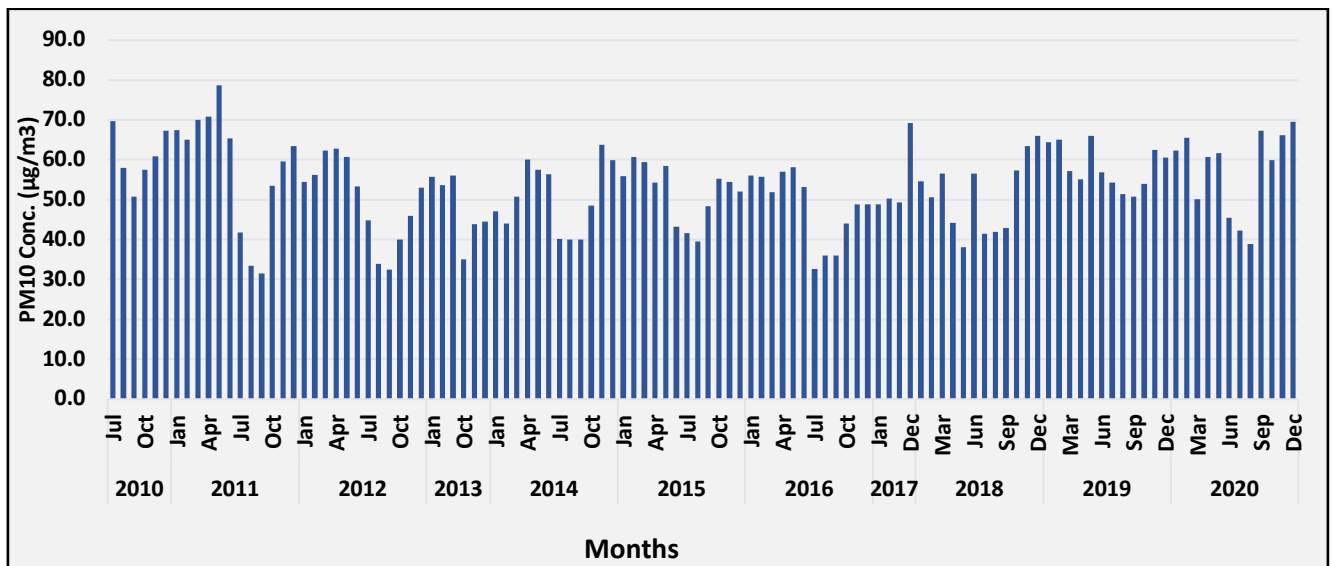


Fig. J9: Time series of monthly average PM₁₀ ambient air concentration in Jindal TPP (AM NEAR HOSTEL)

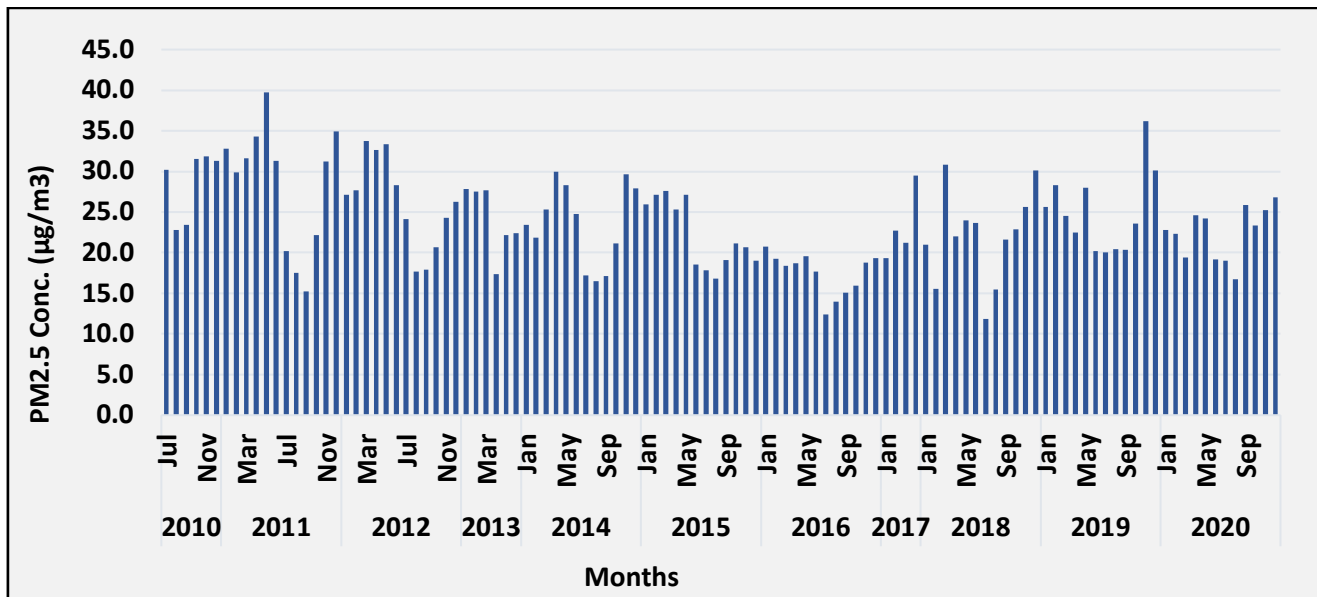


Fig. J10: Time series of monthly average PM_{2.5} ambient air concentration in Jindal TPP (AM NEAR HOSTEL)

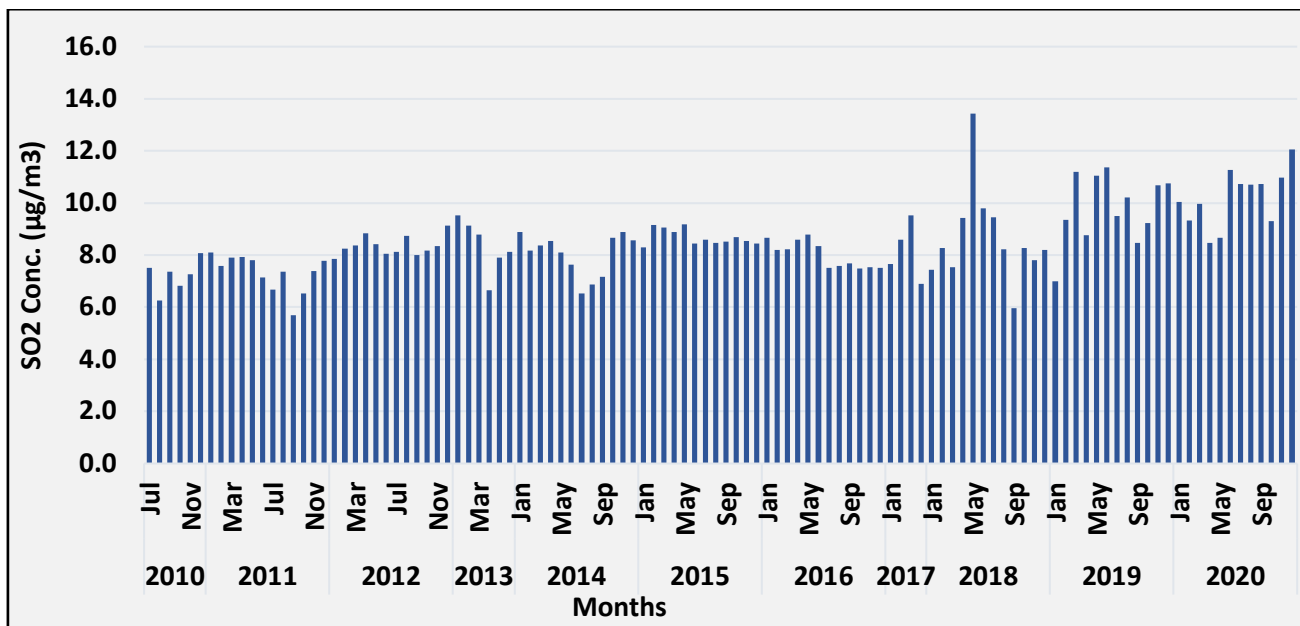


Fig. J11: Time series of monthly average SO₂ ambient air concentration in Jindal TPP (AM NEAR HOSTEL)

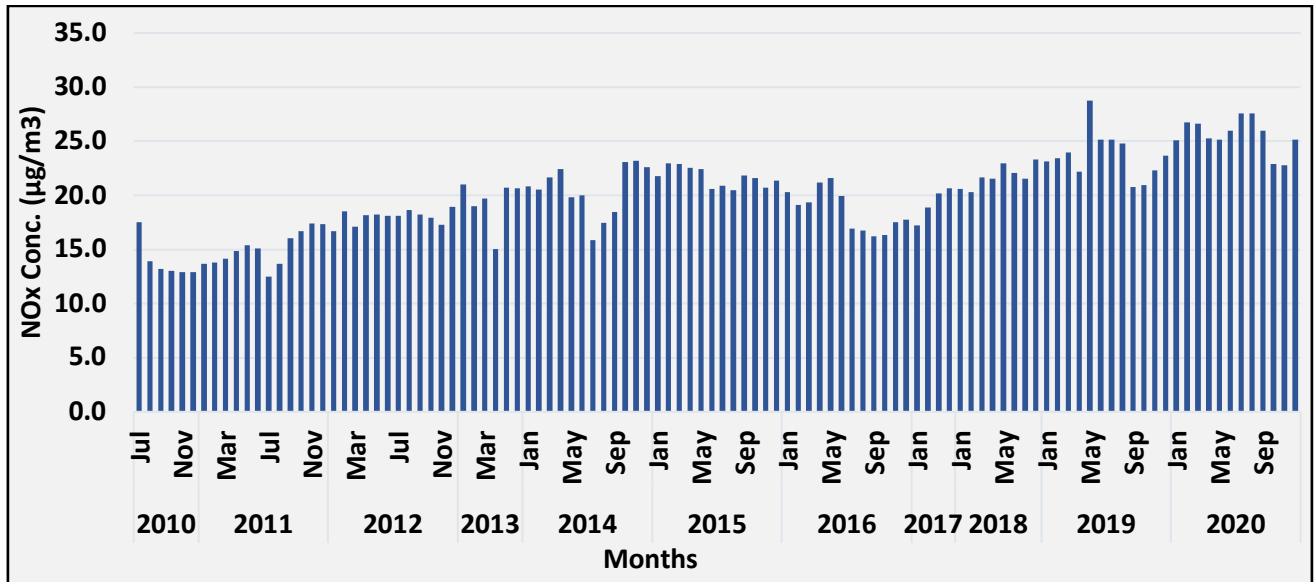


Fig. J12: Time series of monthly average NO_x ambient air concentration in Jindal TPP (AM NEAR HOSTEL)

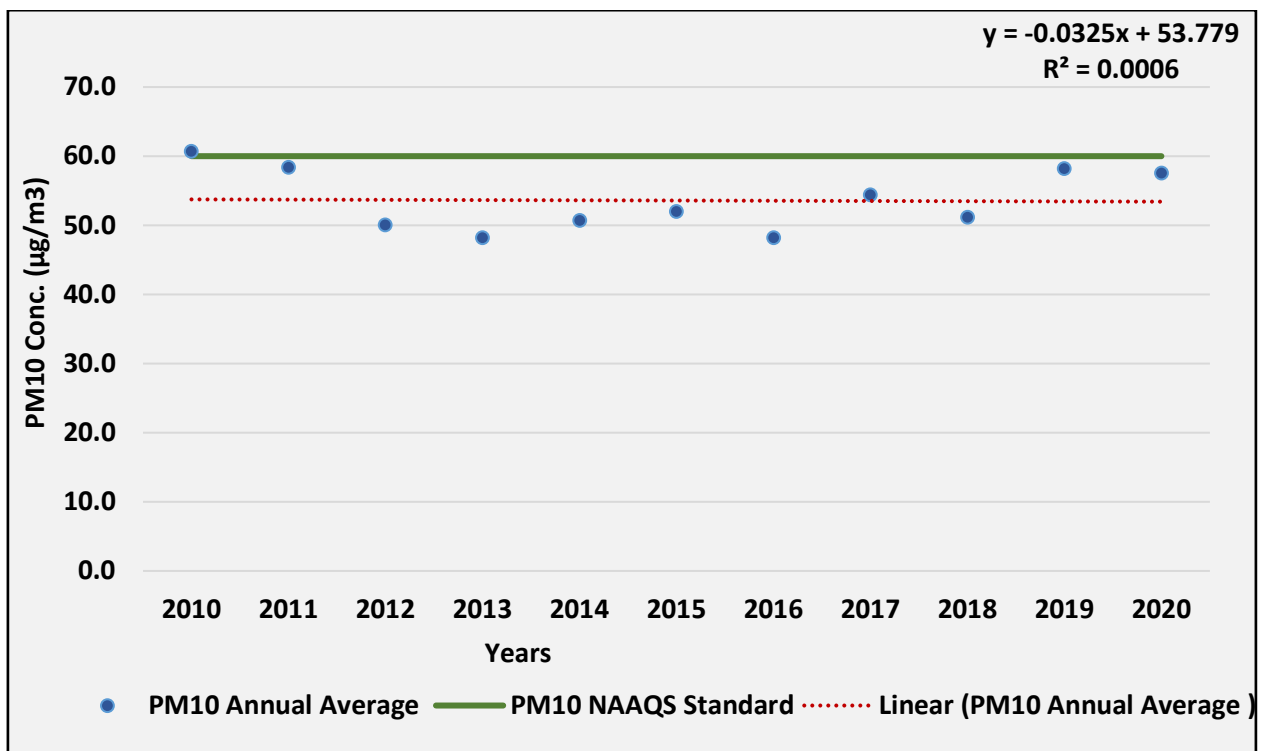


Fig. J13: Trend of annual mean PM₁₀ ambient air concentration in Jindal TPP (AM NEAR HOSTEL)

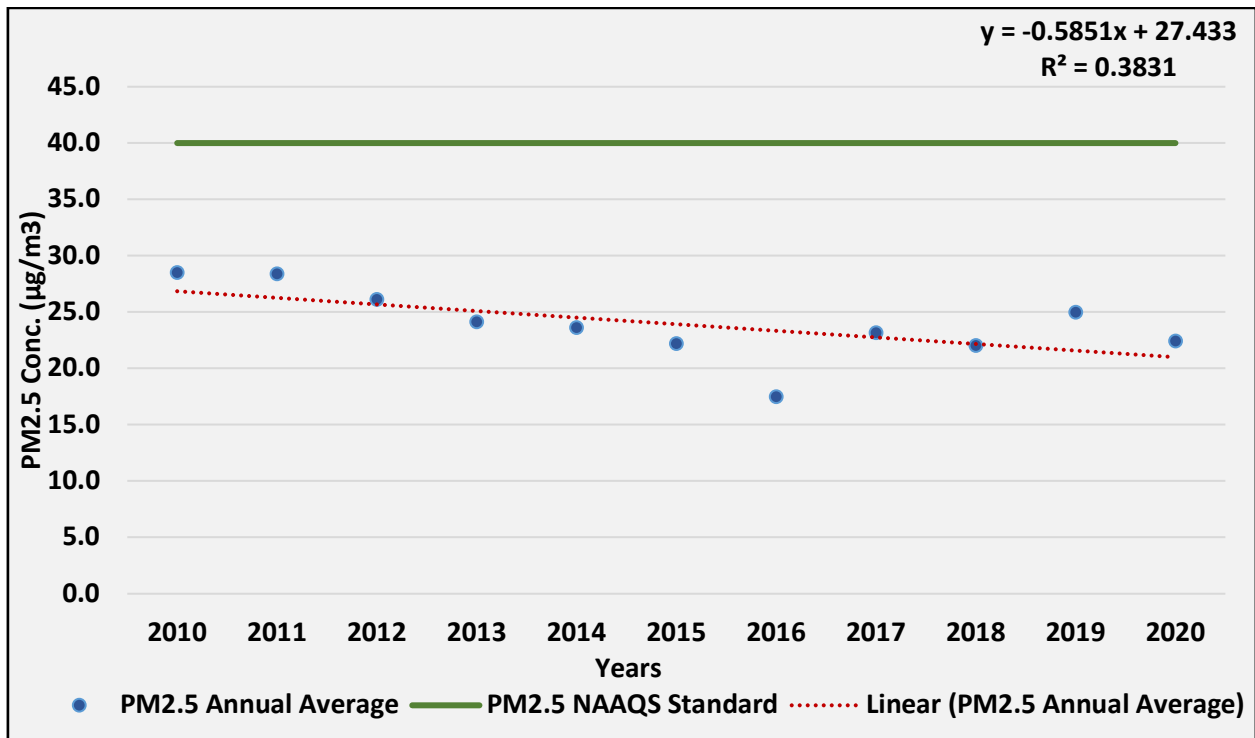


Fig. J14: Trend of annual mean $PM_{2.5}$ ambient air concentration in Jindal TPP (AM NEAR HOSTEL)

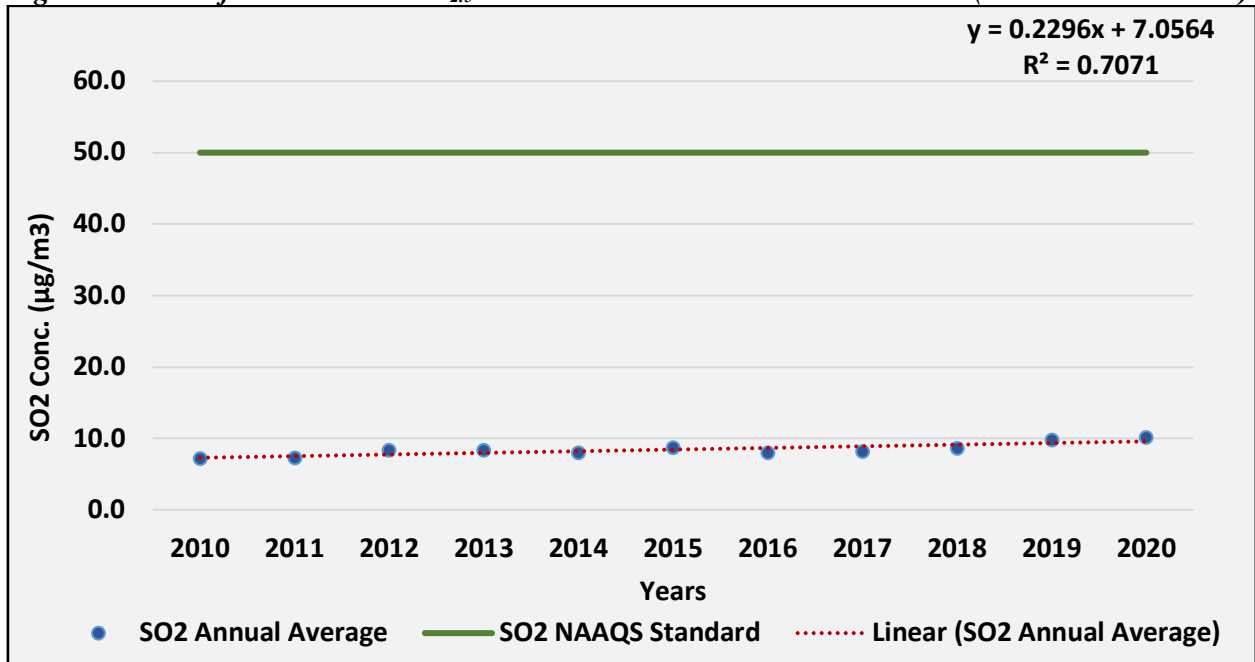


Fig. J15: Trend of annual mean SO_2 ambient air concentration in Jindal TPP (AM NEAR HOSTEL)

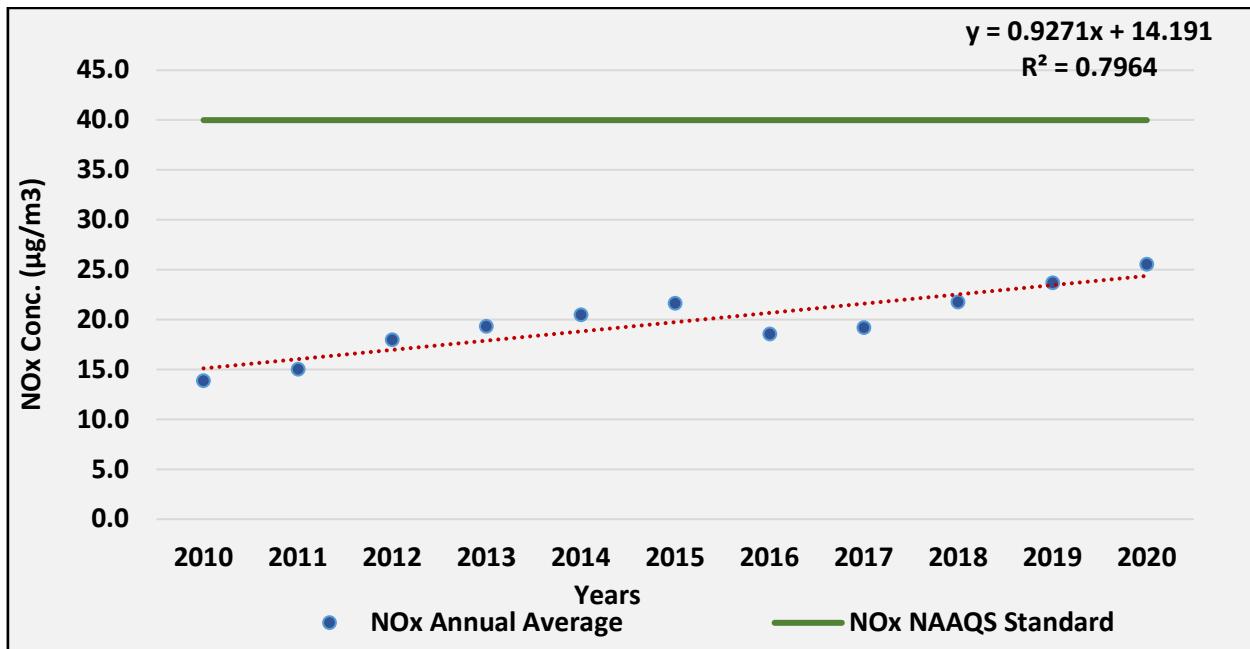


Fig. J16: Trend of annual mean NO_x ambient air concentration in Jindal TPP (AM NEAR HOSTEL)

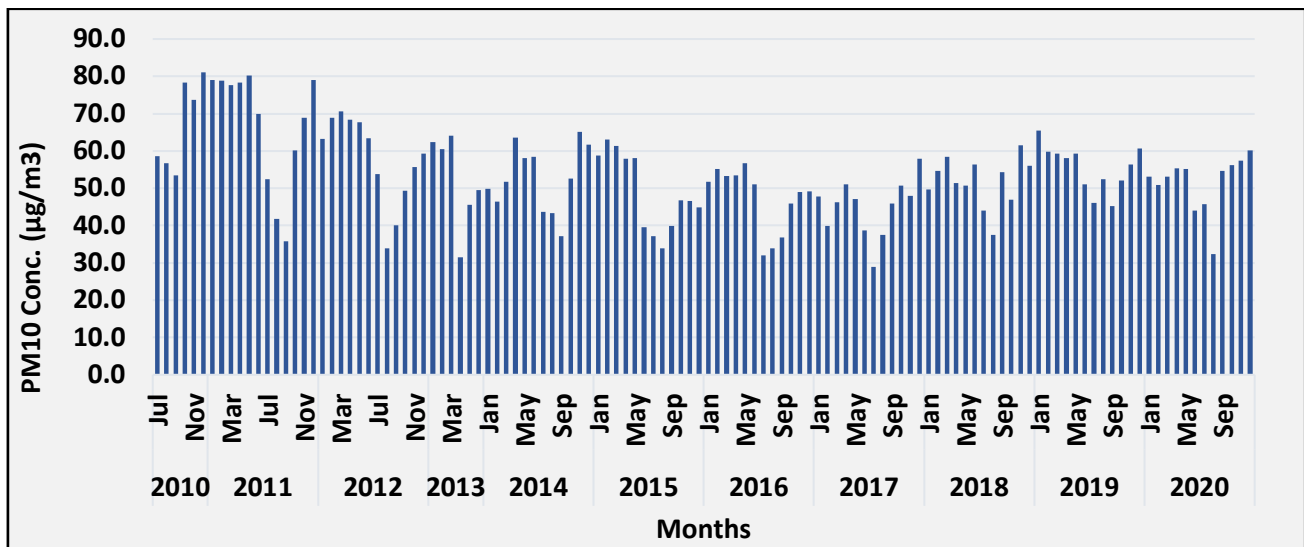


Fig. J17: Time series of monthly average PM₁₀ ambient air concentration in Jindal TPP (AM SAVITRINAGAR)

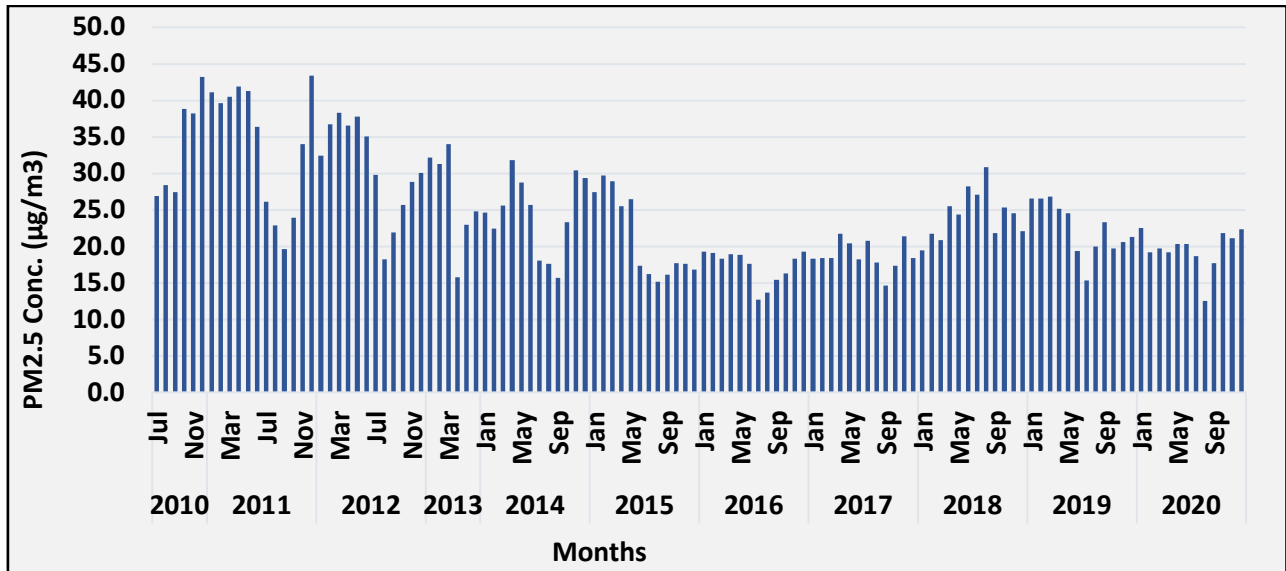


Fig. J18: Time series of monthly average $\text{PM}_{2.5}$ ambient air concentration in Jindal TPP (AM SAVITRINAGAR)

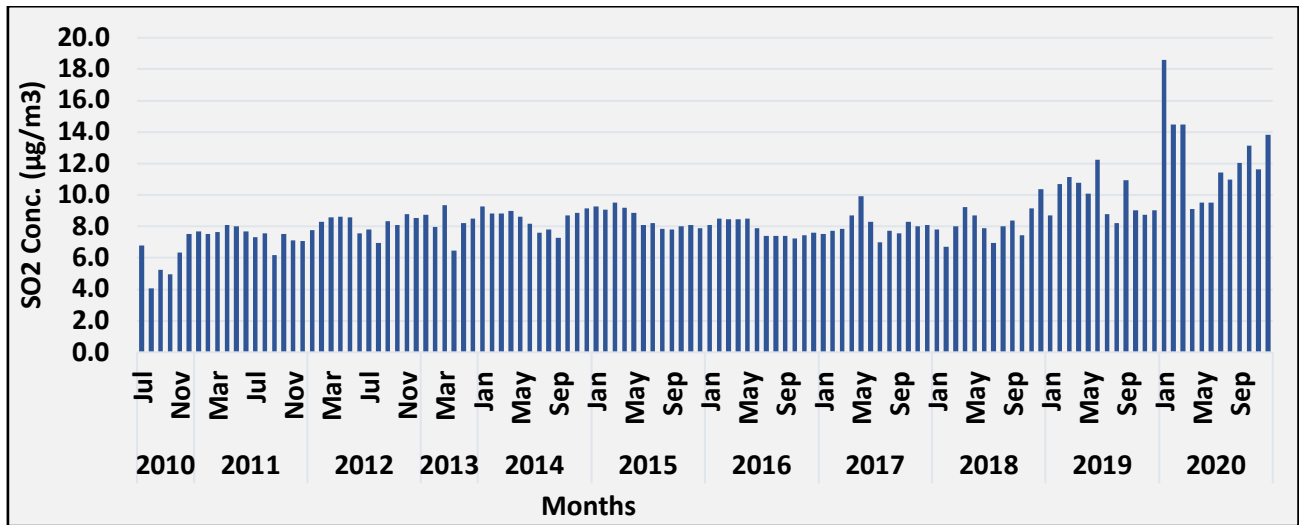


Fig. J19: Time series of monthly average SO_2 ambient air concentration in Jindal TPP (AM SAVITRINAGAR)

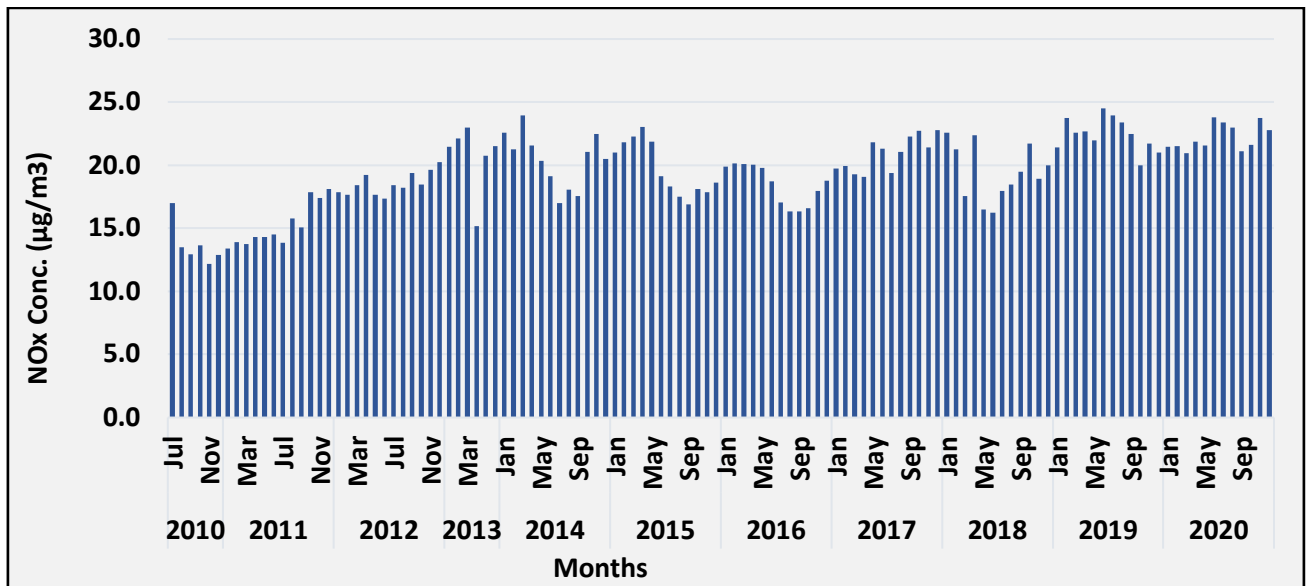


Fig. J20: Time series of monthly average NO_x ambient air concentration in Jindal TPP (AM SAVITRINAGAR)

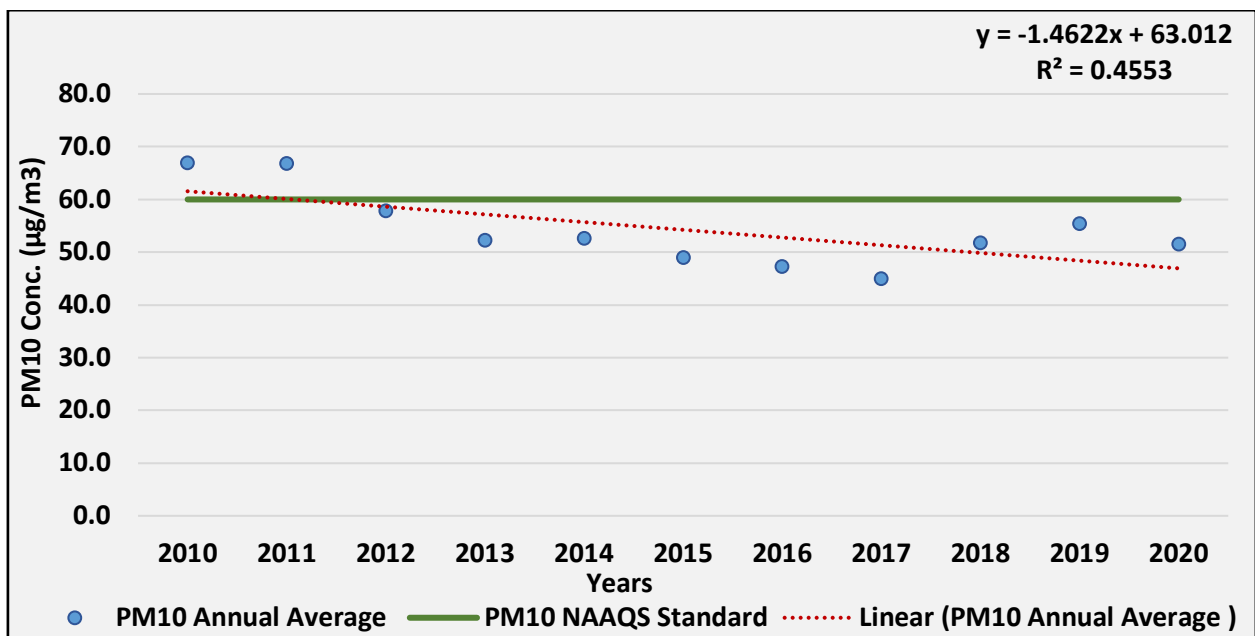


Fig. J21: Trend of annual mean PM₁₀ ambient air concentration in Jindal TPP (AM SAVITRINAGAR)

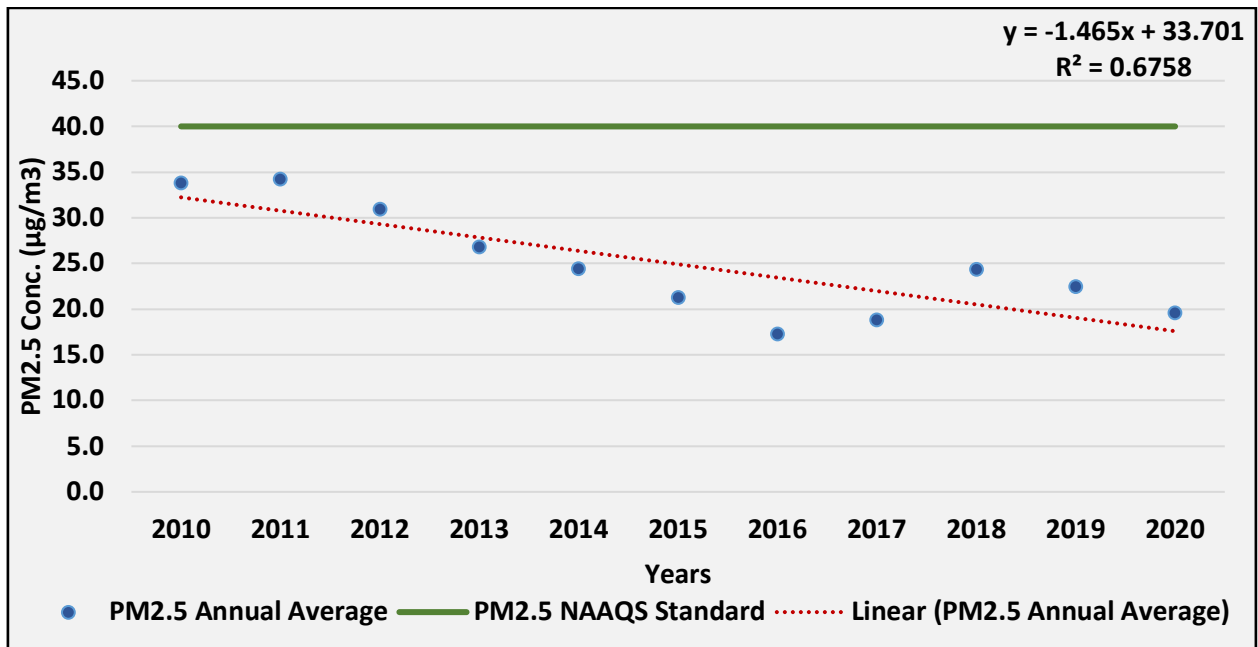


Fig. J22: Trend of annual mean $PM_{2.5}$ ambient air concentration in Jindal TPP (AM SAVITRINAGAR)

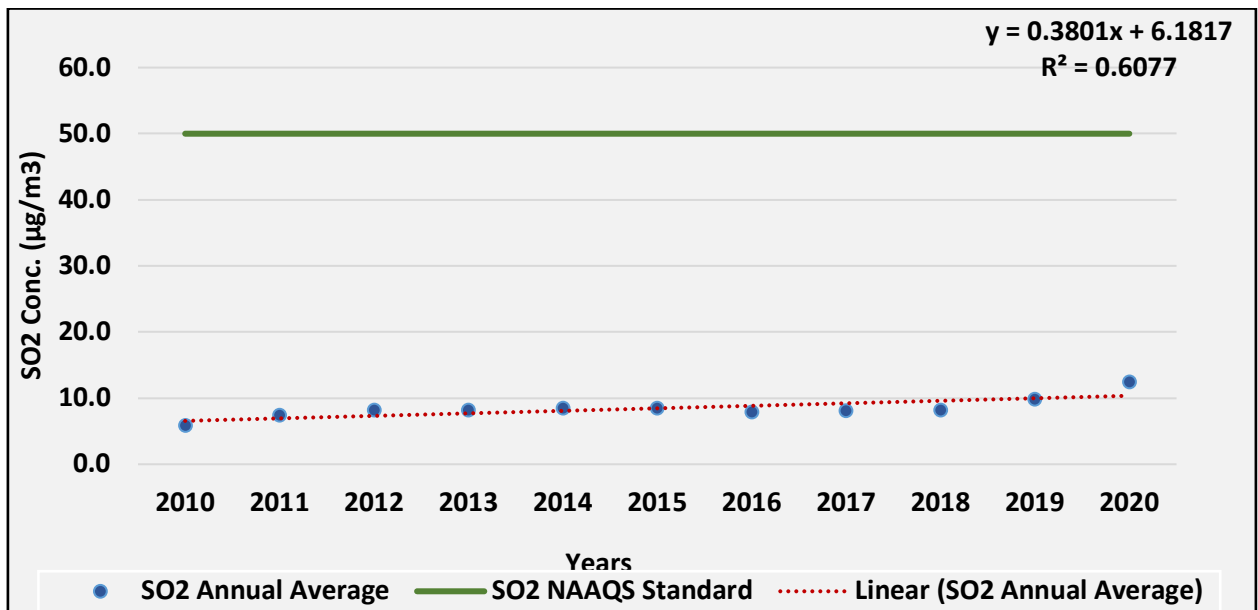


Fig. J23: Trend of annual mean SO_2 ambient air concentration in Jindal TPP (AM SAVITRINAGAR)

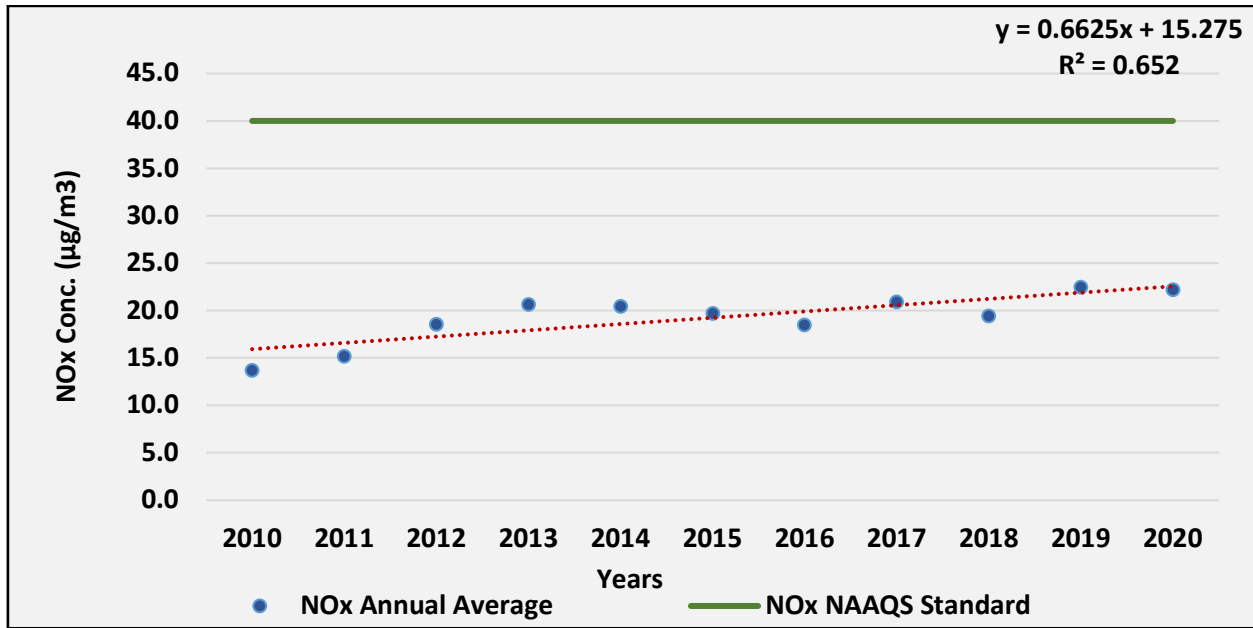


Fig. J24: Trend of annual mean NO_x ambient air concentration in Jindal TPP (AM SAVITRINAGAR)

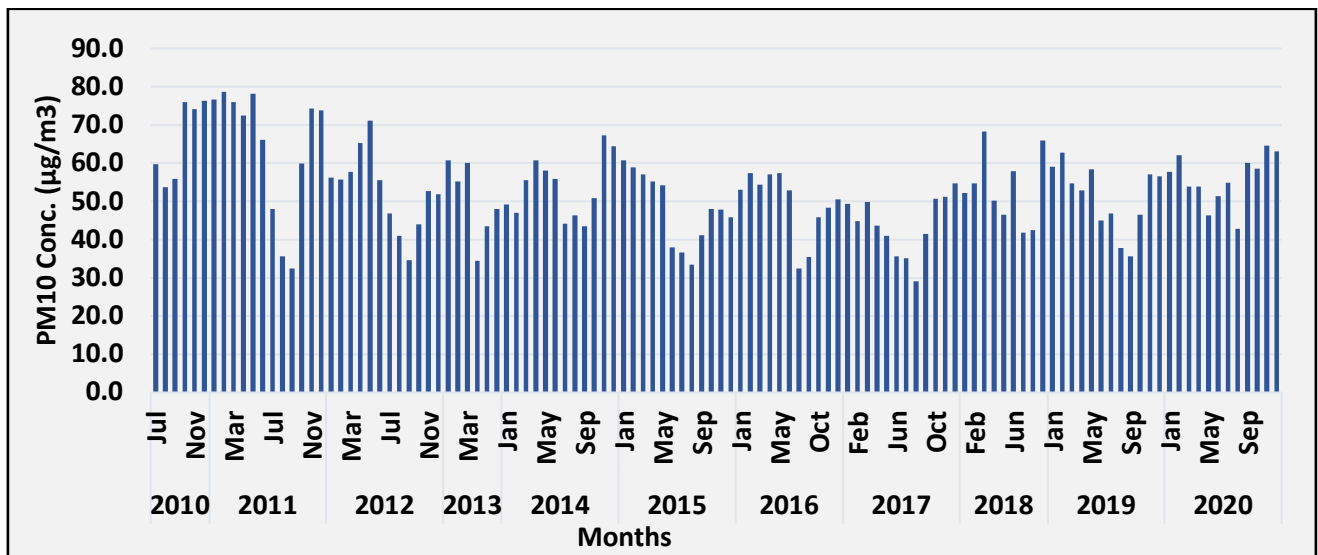


Fig. J25: Time series of monthly average PM₁₀ ambient air concentration in Jindal TPP (AM TAMNAR VILLAGE)

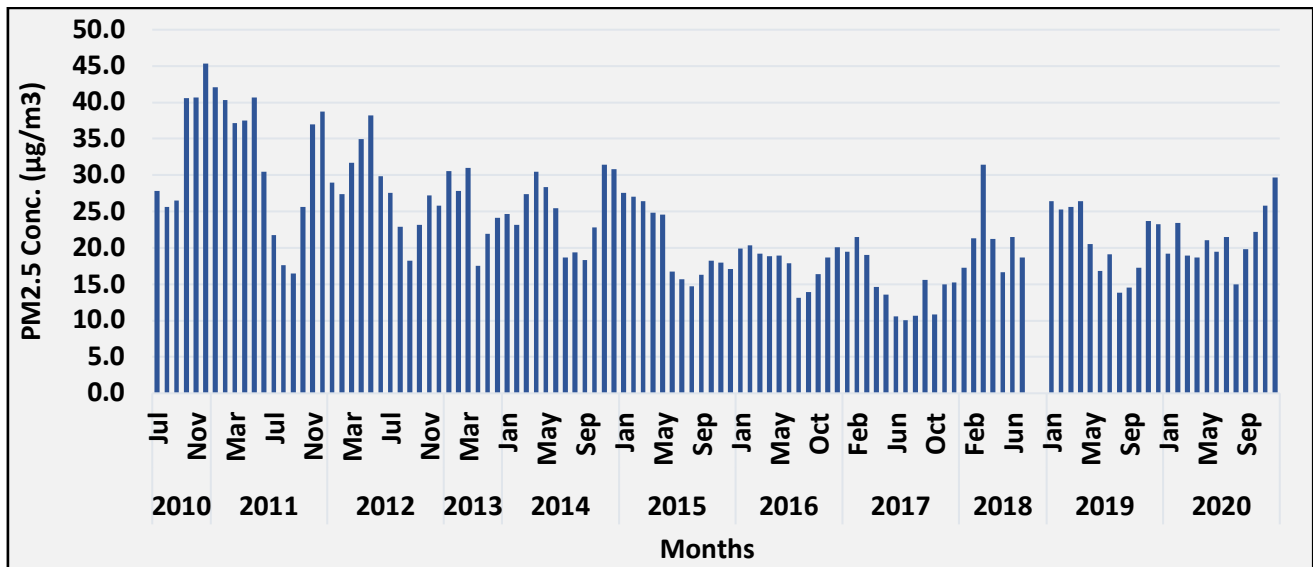


Fig. J26: Time series of monthly average PM_{2.5} ambient air concentration in Jindal TPP (AM TAMNAR VILLAGE)

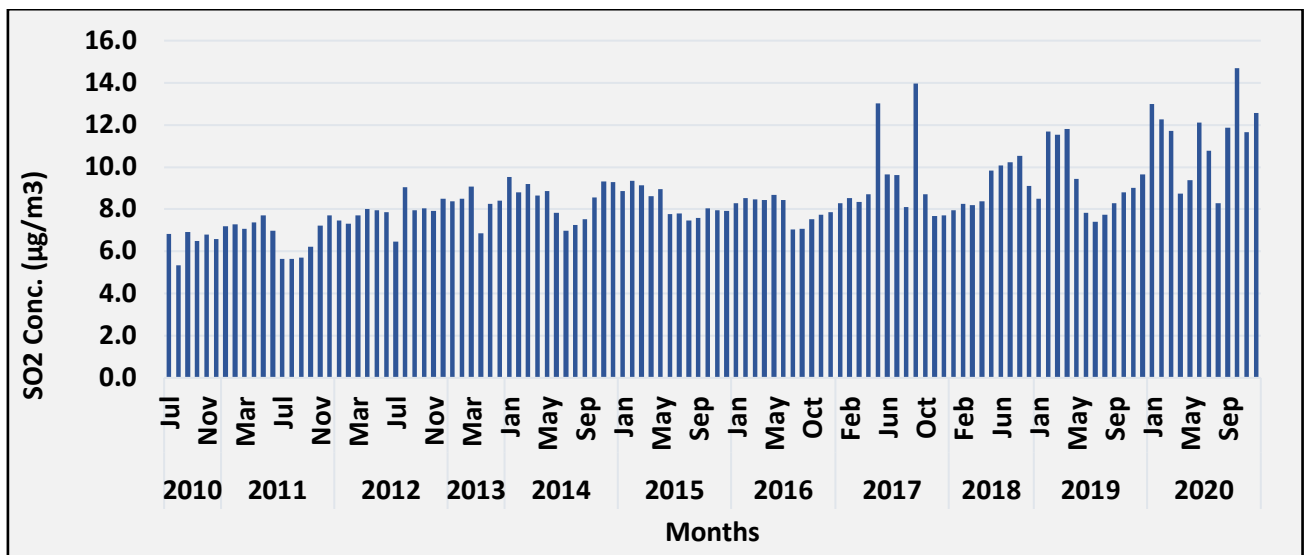


Fig. J27: Time series of monthly average So₂ ambient air concentration in Jindal TPP (AM TAMNAR VILLAGE)

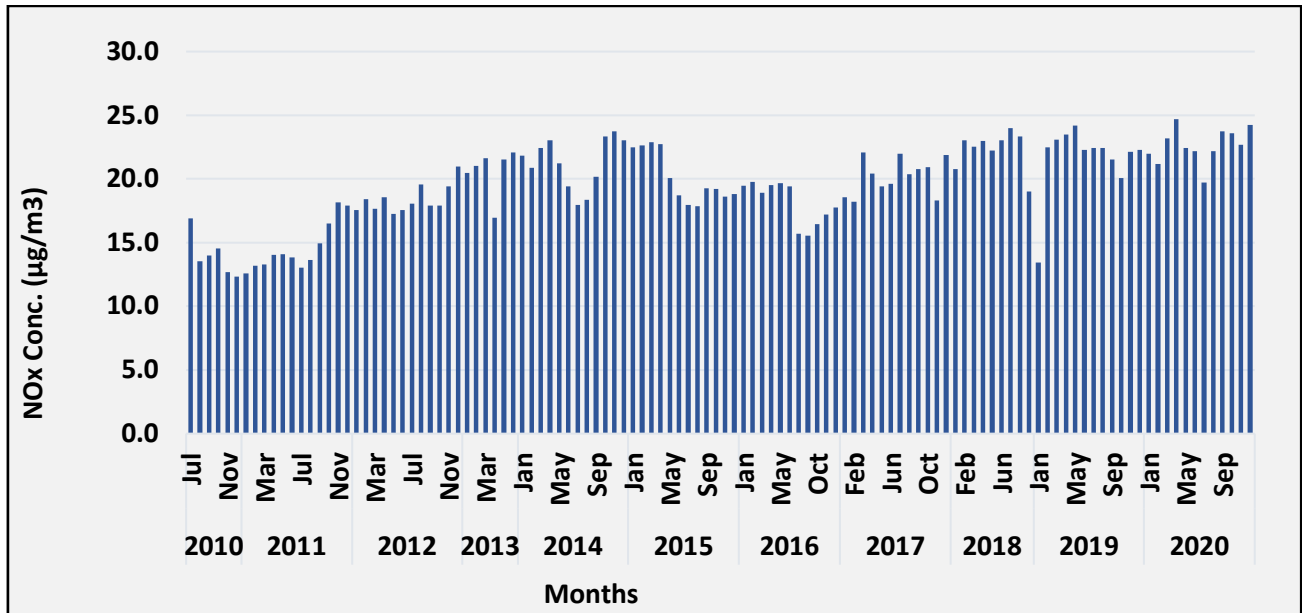


Fig. J28: Time series of monthly average NO_x ambient air concentration in Jindal TPP (AM TAMNAR VILLAGE)

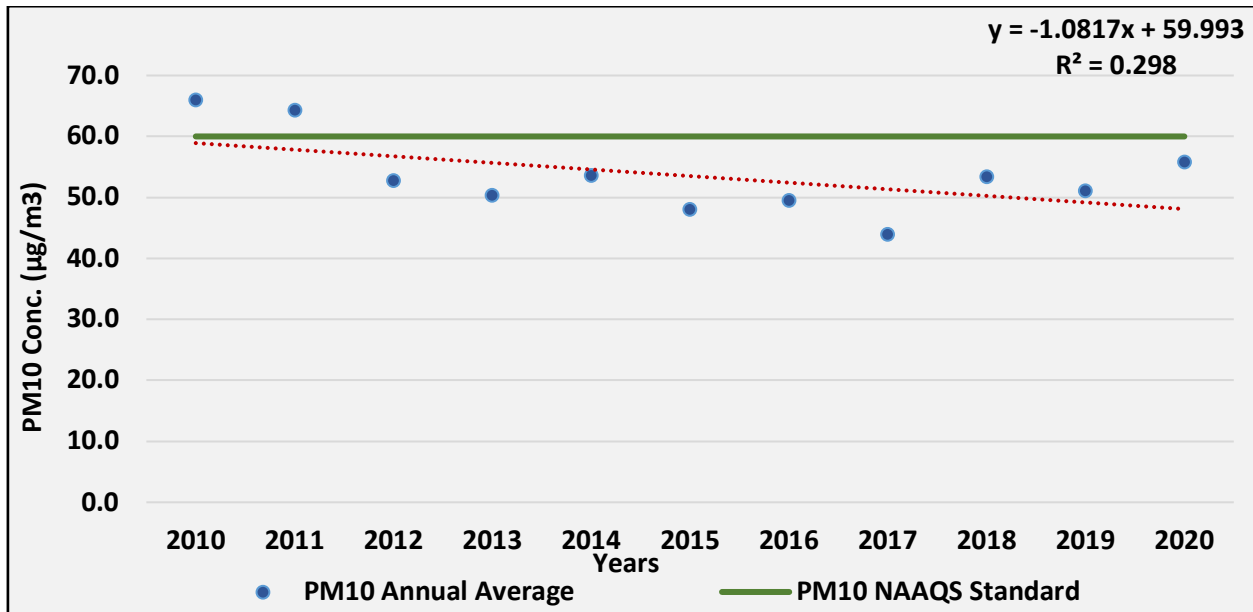


Fig. J29: Trend of annual mean PM₁₀ ambient air concentration in Jindal TPP (AM TAMNAR VILLAGE)

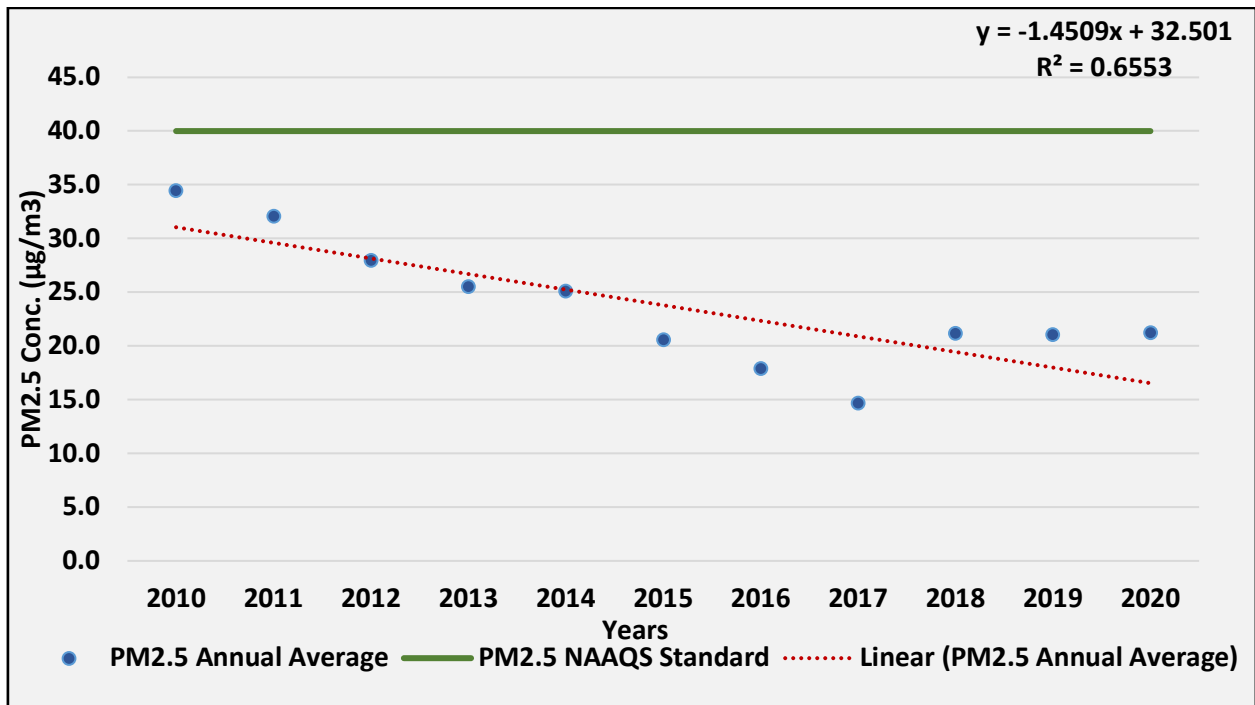


Fig. J30: Trend of annual mean $PM_{2.5}$ ambient air concentration in Jindal TPP (AM TAMNAR VILLAGE)

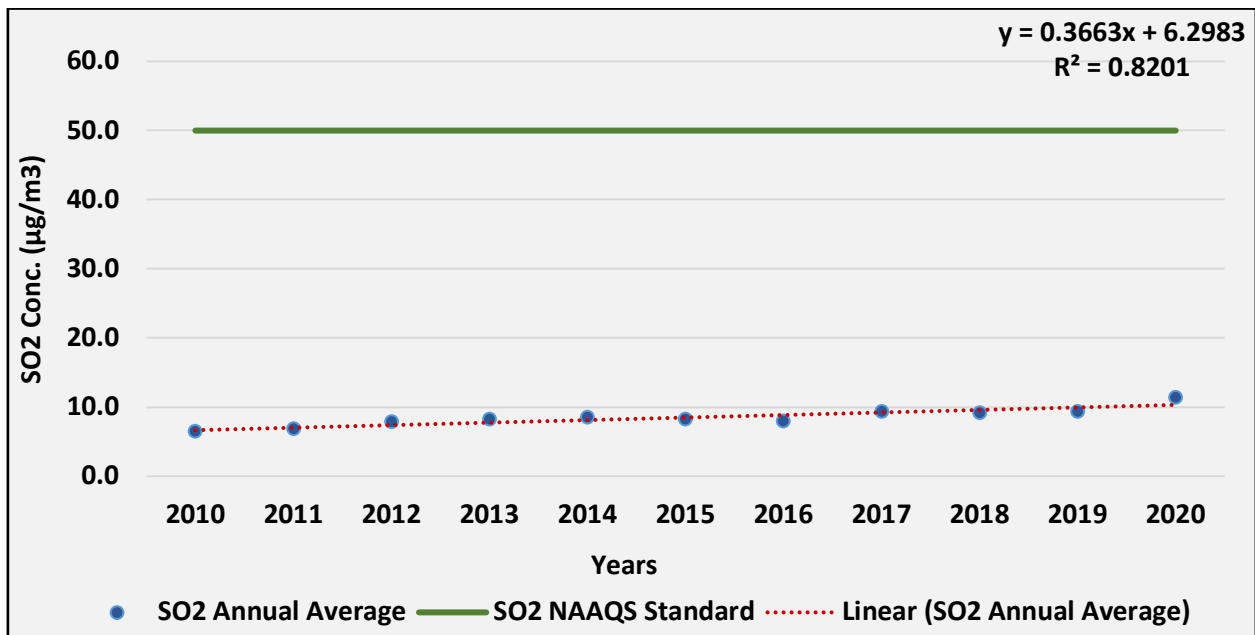


Fig. J31: Trend of annual mean SO_2 ambient air concentration in Jindal TPP (AM TAMNAR VILLAGE)

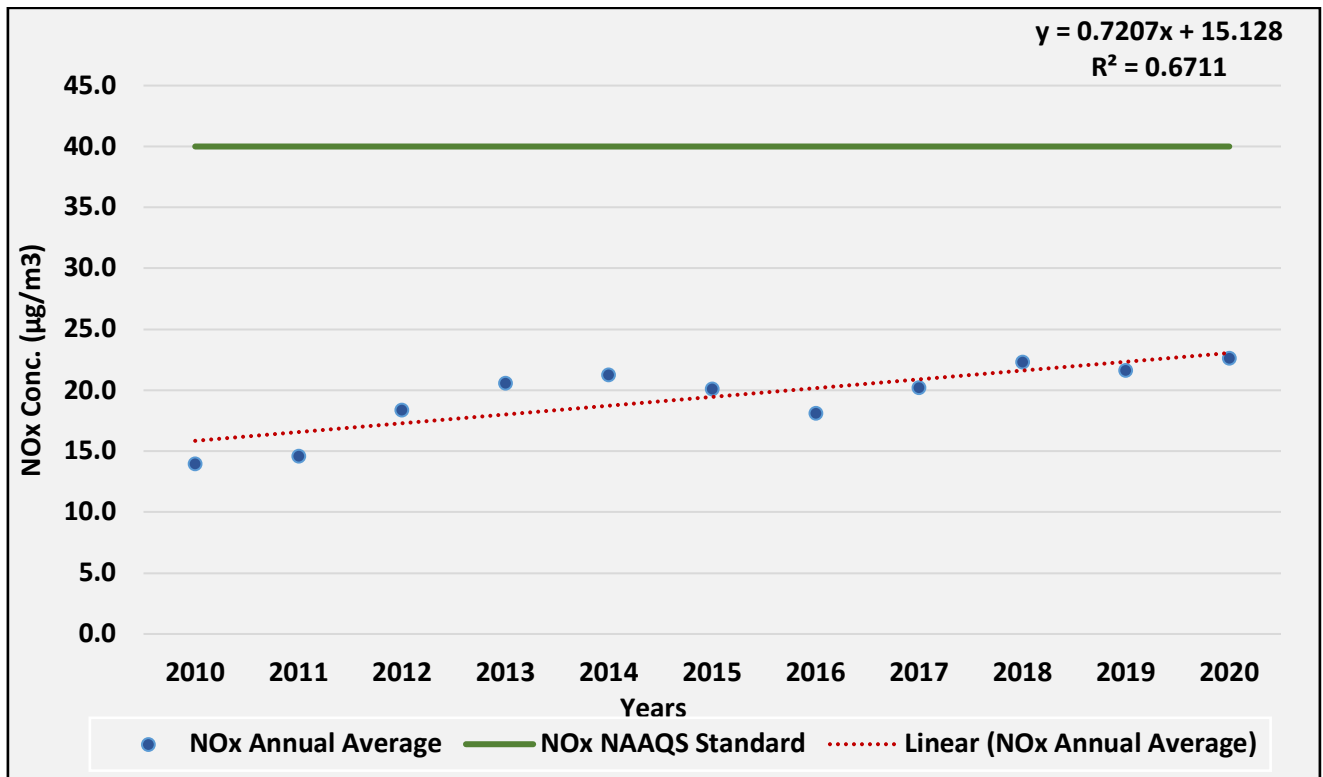


Fig. J32: Trend of annual mean NO_x ambient air concentration in Jindal TPP (AM TAMNAR VILLAGE)

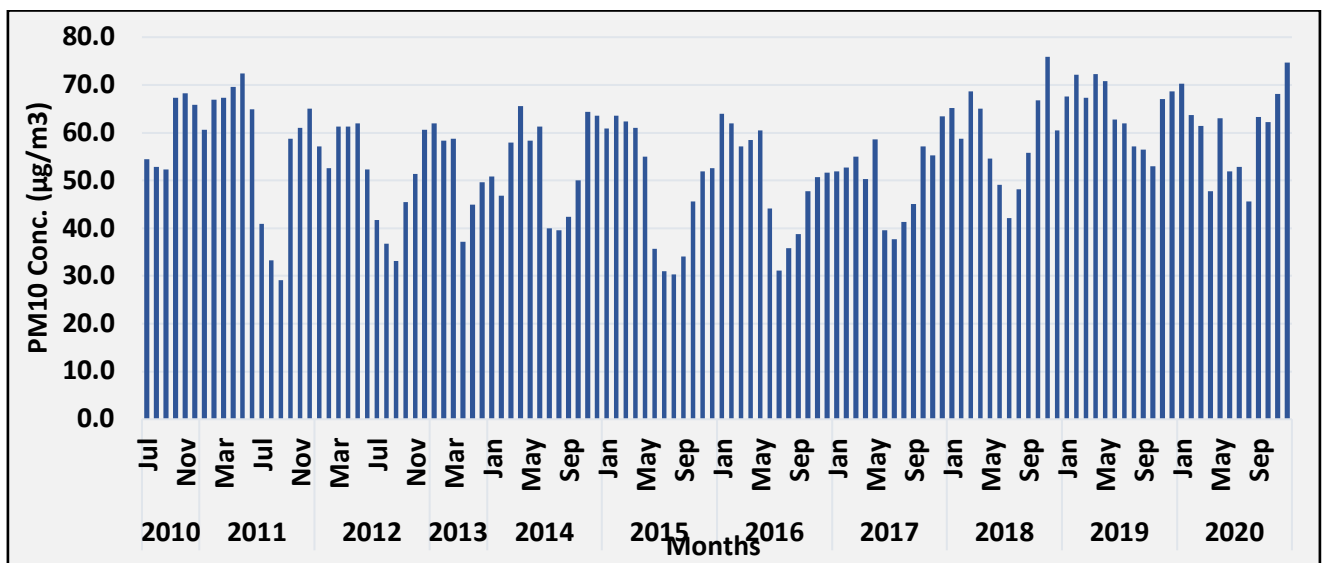


Fig. J33: Time series of monthly average PM₁₀ ambient air concentration in Jindal TPP (Ambient 1)

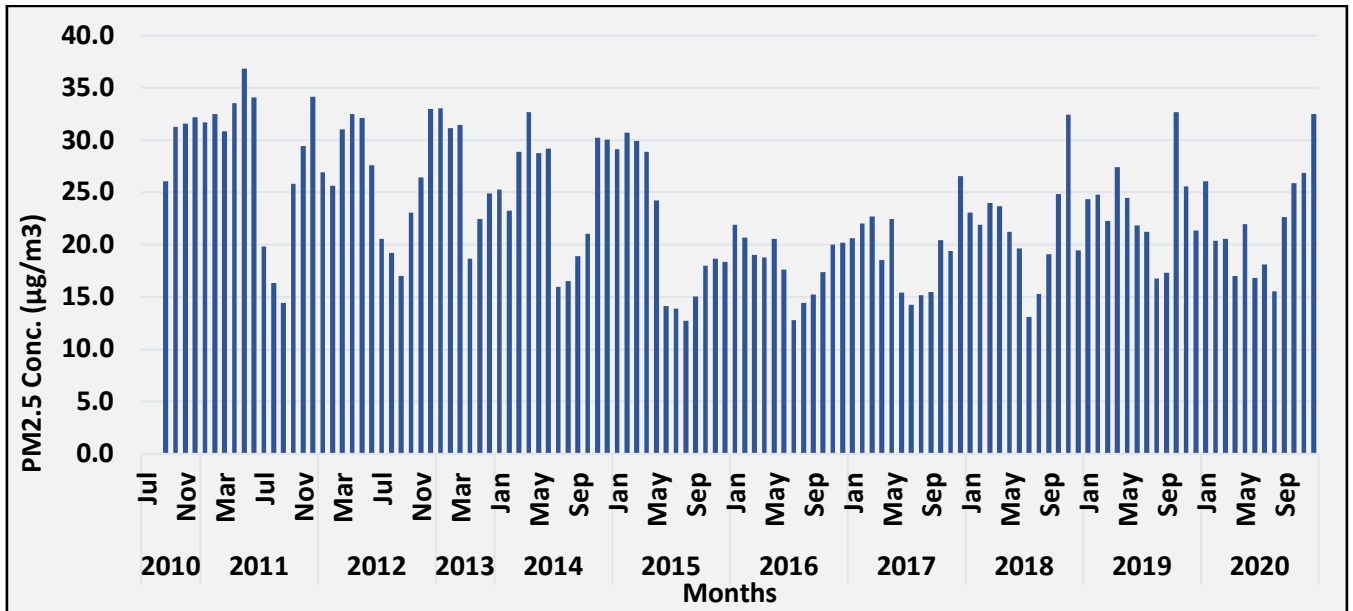


Fig. J34: Time series of monthly average PM_{2.5} ambient air concentration in Jindal TPP (Ambient 1)

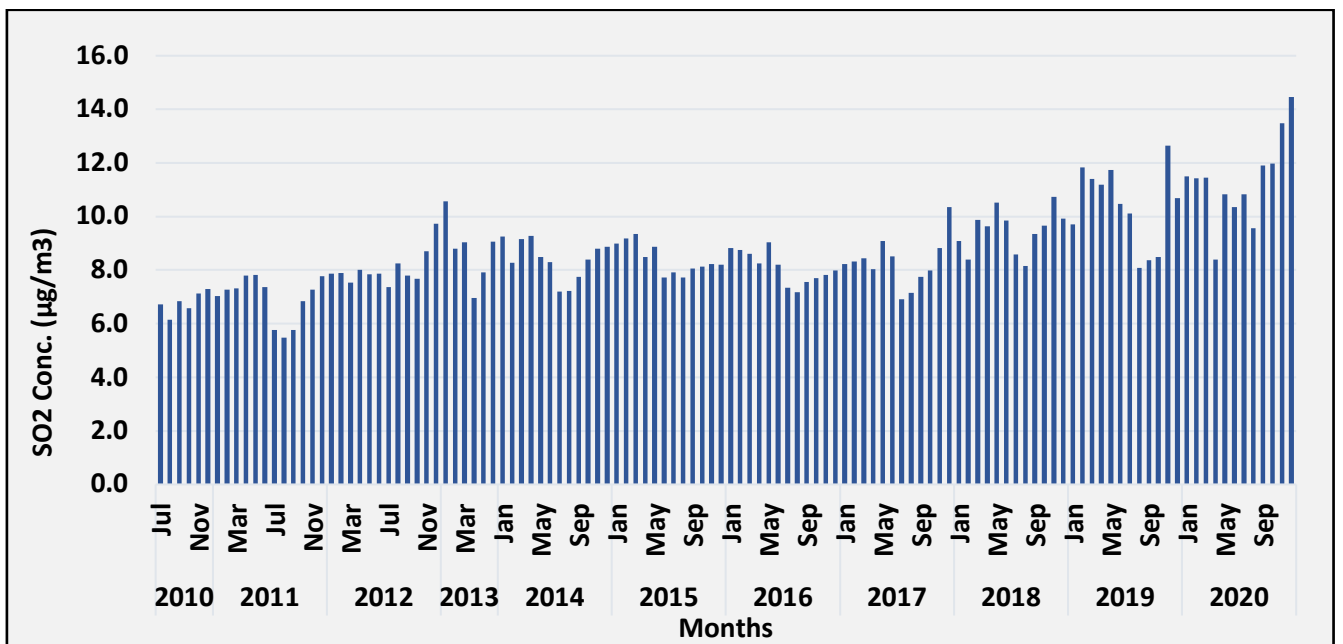


Fig. J35: Time series of monthly average SO₂ ambient air concentration in Jindal TPP (Ambient 1)

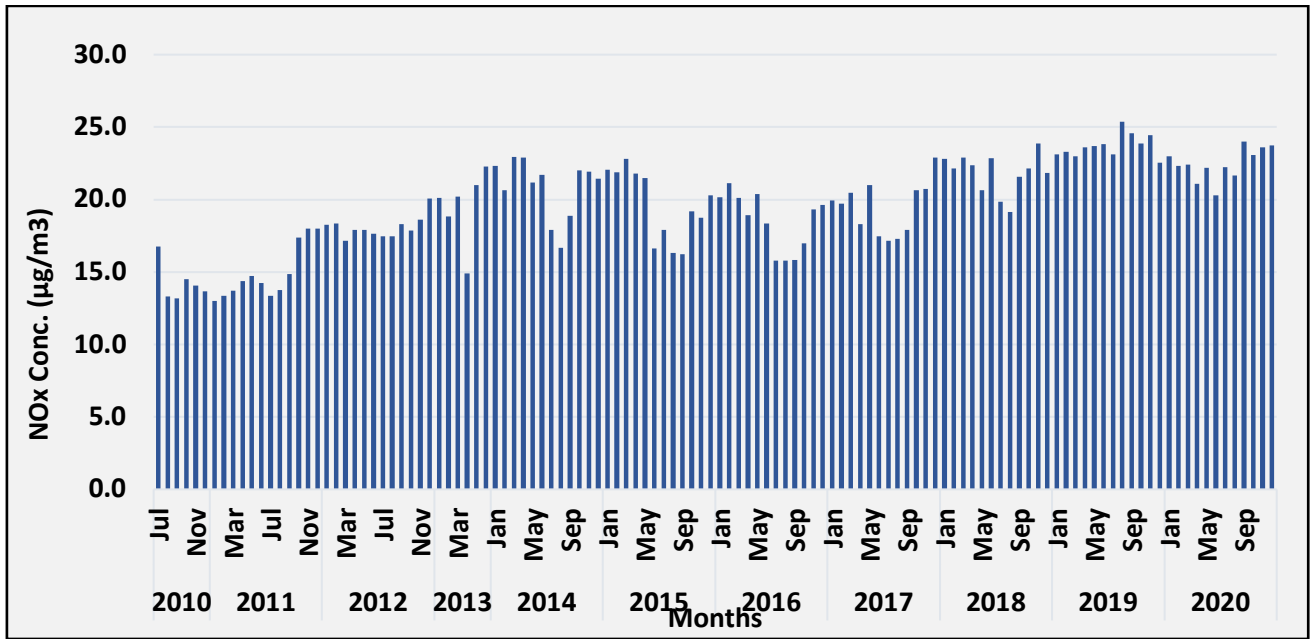


Fig. J36: Time series of monthly average NO_x ambient air concentration in Jindal TPP (Ambient 1)

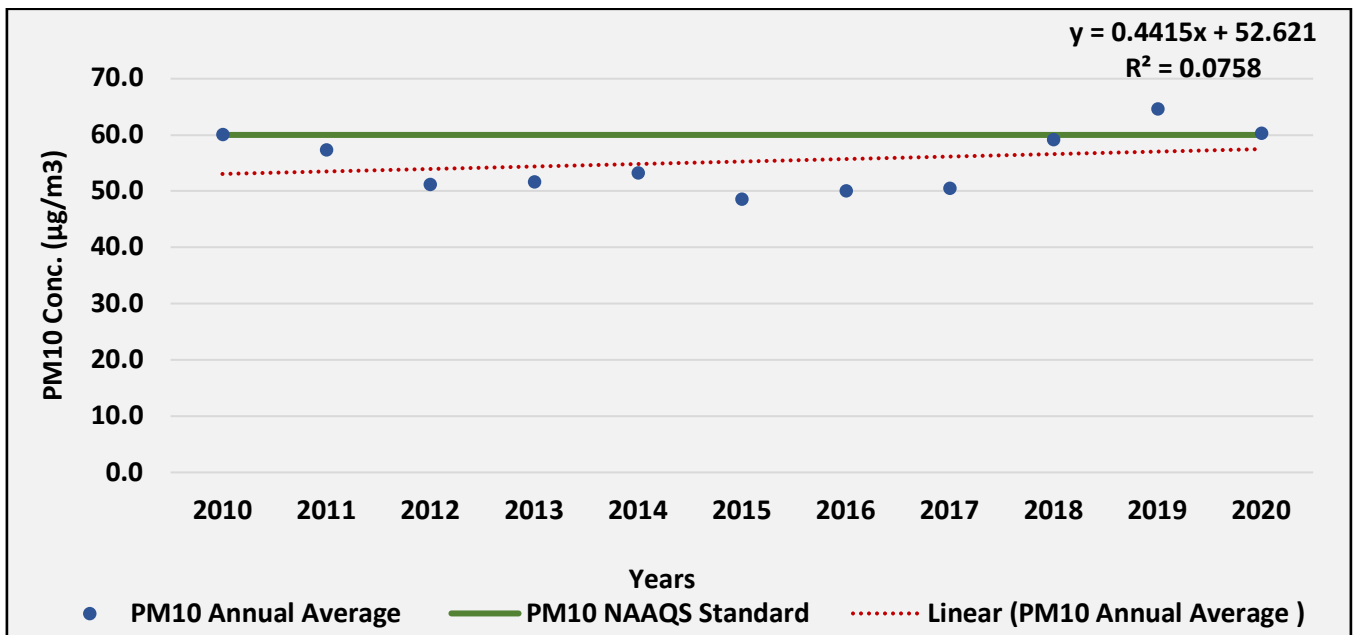


Fig. J37: Trend of annual mean PM₁₀ ambient air concentration in Jindal TPP (Ambient 1)

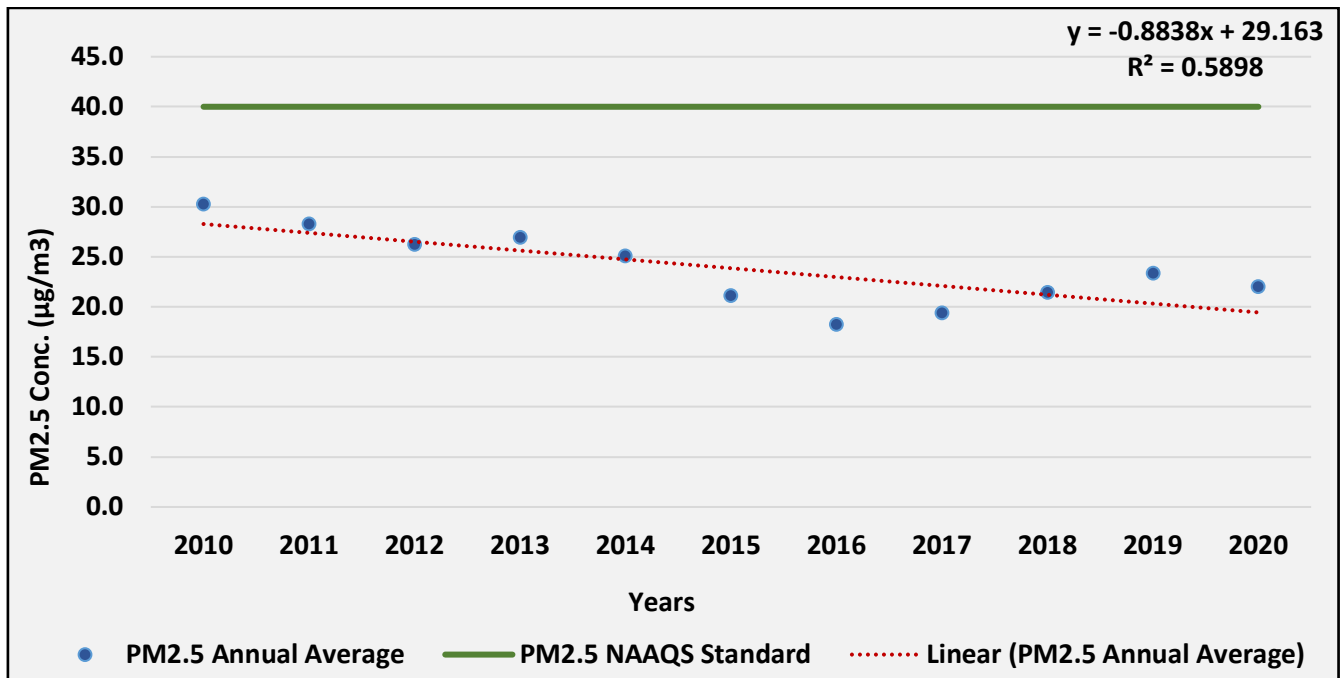


Fig. J38: Trend of annual mean PM_{2.5} ambient air concentration in Jindal TPP (Ambient 1)

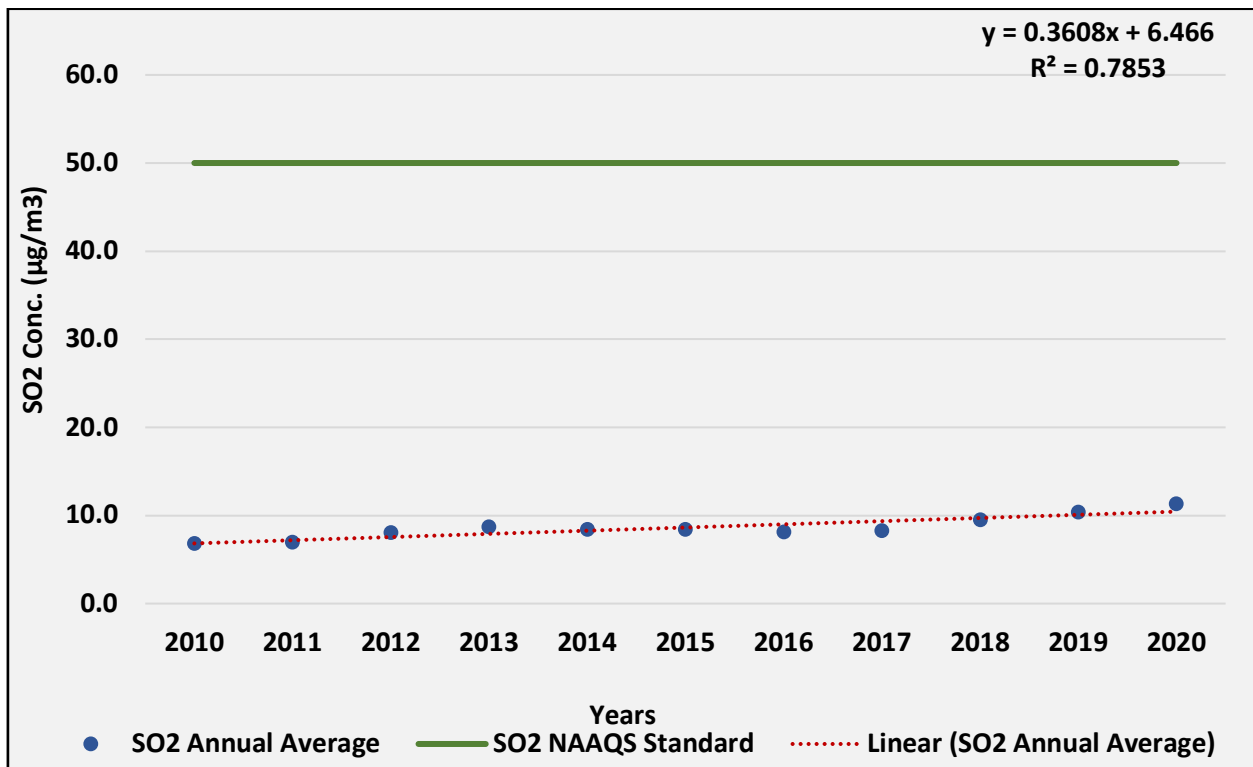


Fig. J39: Trend of annual mean SO₂ ambient air concentration in Jindal TPP (Ambient 1)

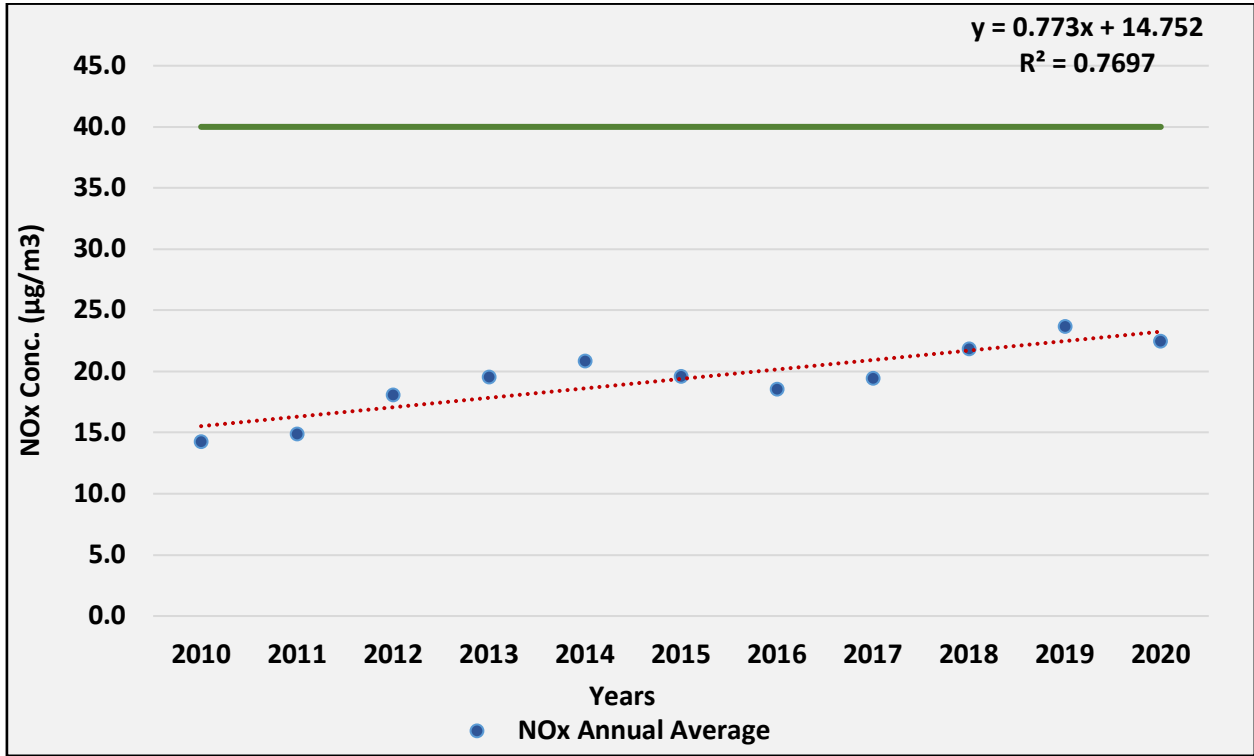


Fig. J40: Trend of annual mean NO_x ambient air concentration in Jindal TPP (Ambient 1)

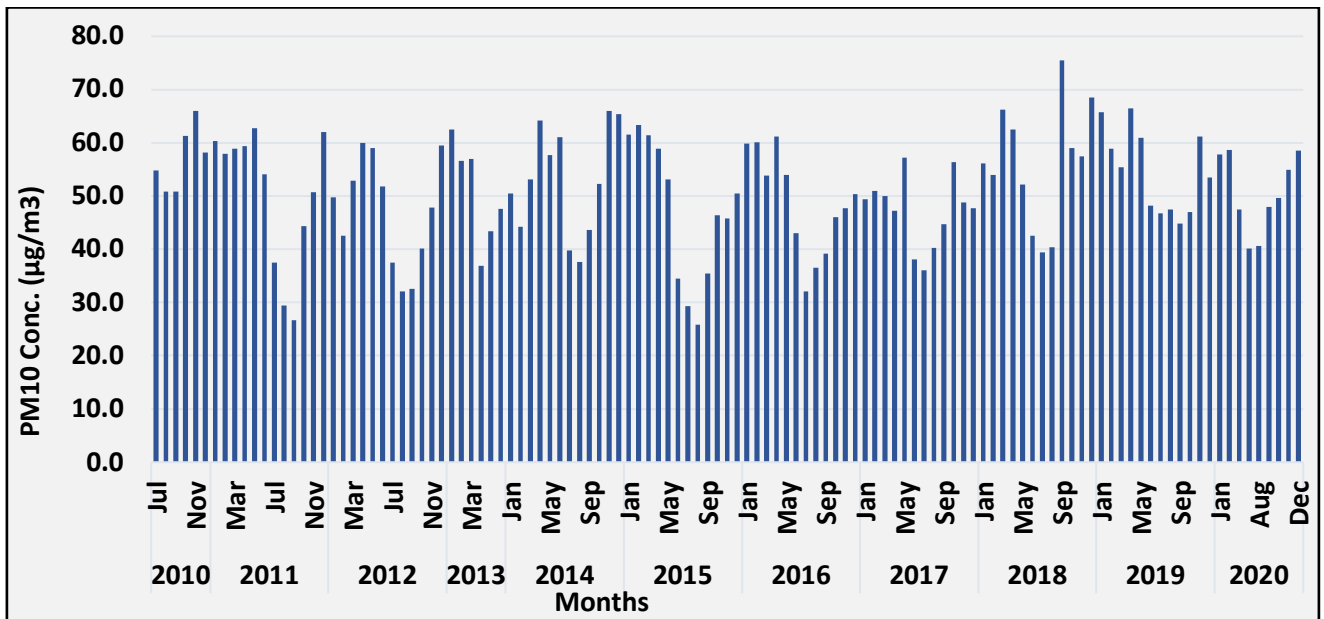


Fig. J41: Time series of monthly average PM₁₀ ambient air concentration in Jindal TPP (Ambient 2)

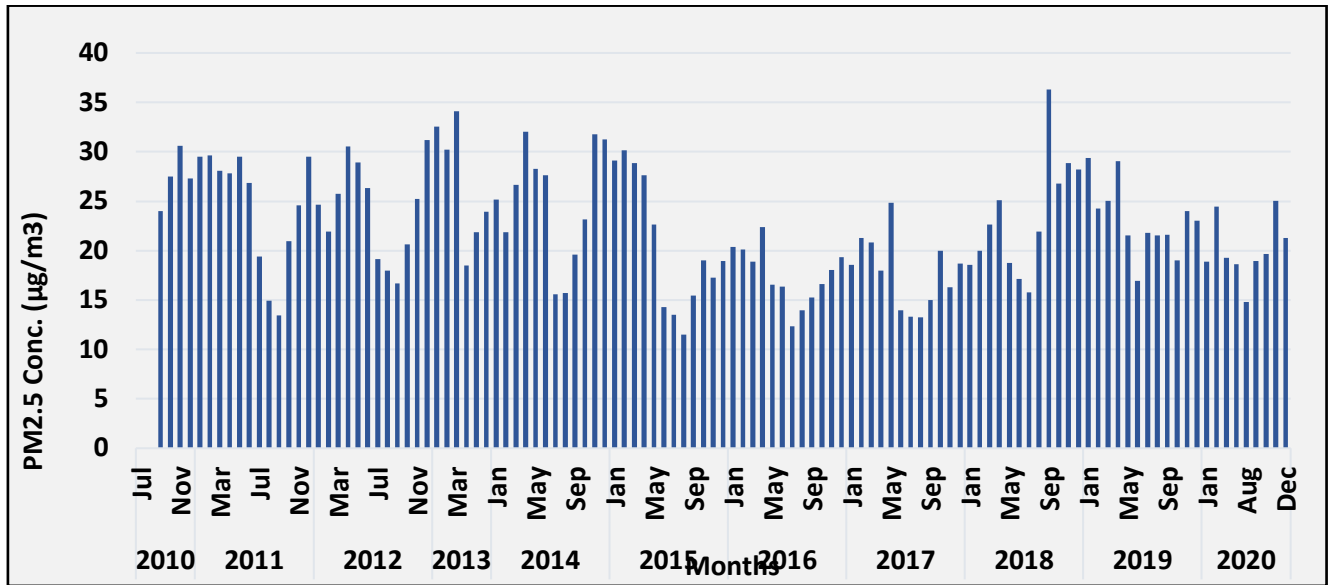


Fig. J42: Time series of monthly average PM_{2.5} ambient air concentration in Jindal TPP (Ambient 2)

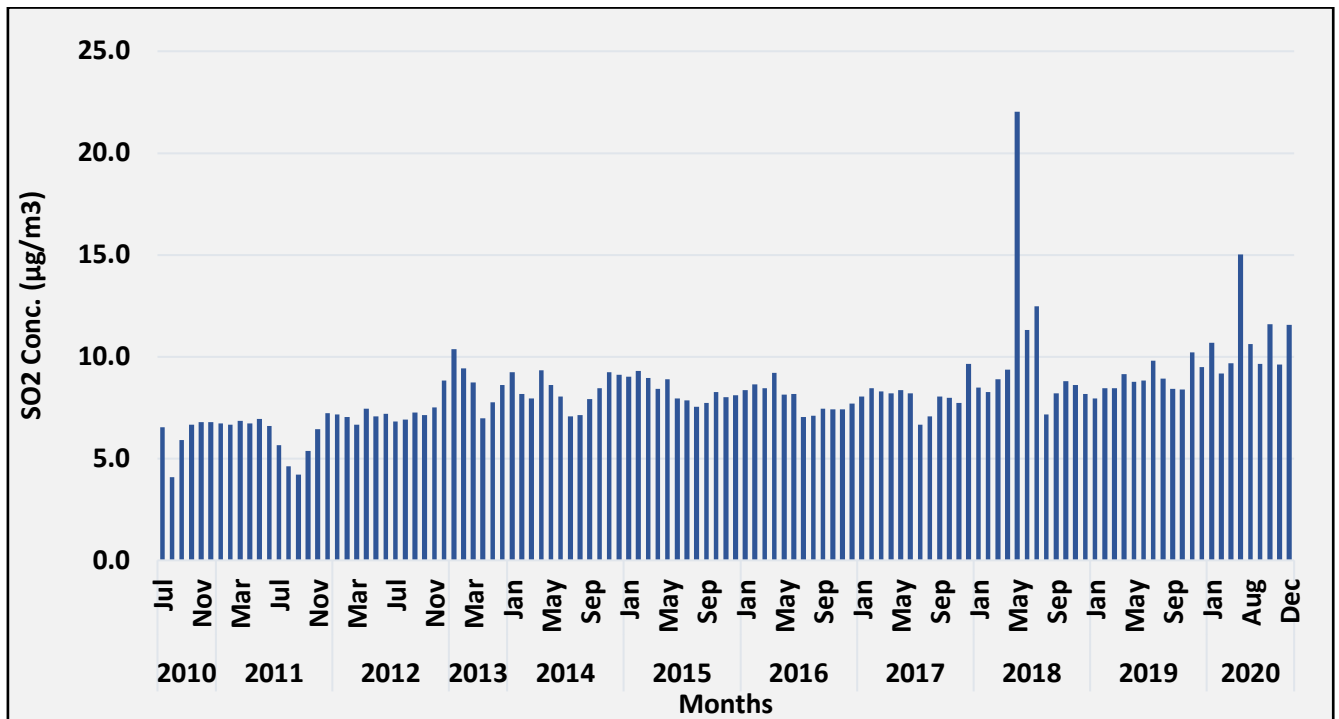


Fig. J43: Time series of monthly average So₂ ambient air concentration in Jindal TPP (Ambient 2)

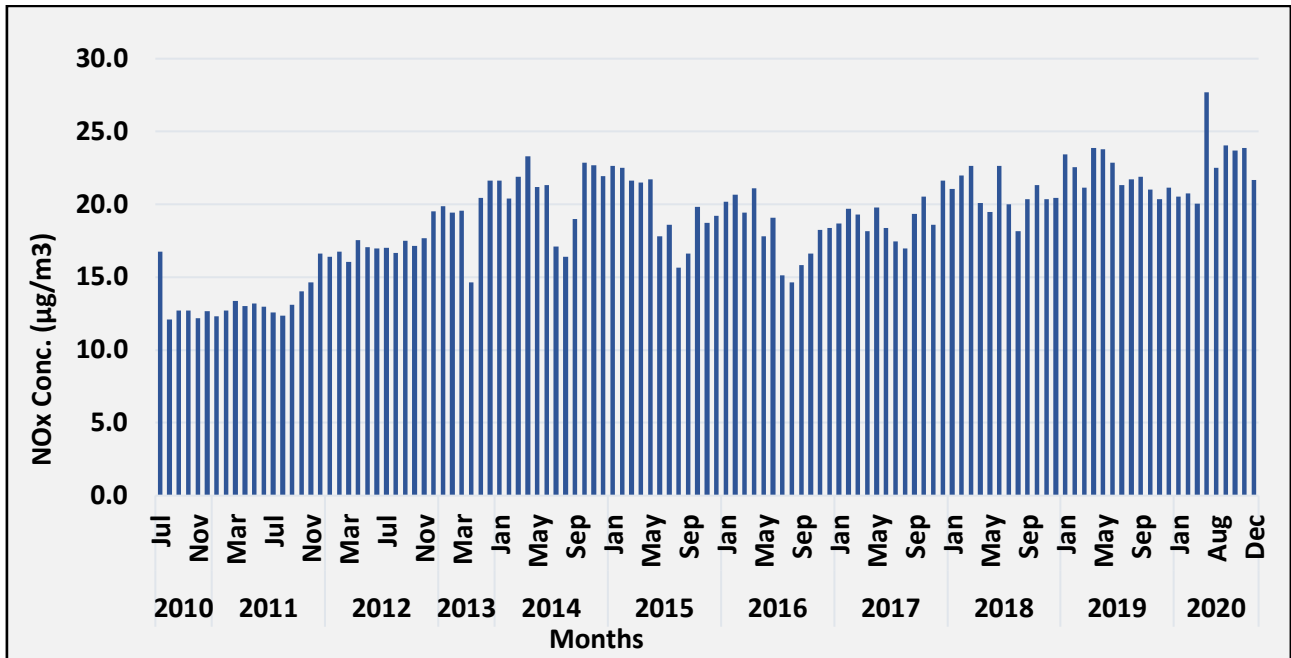


Fig. J44: Time series of monthly average NO_x ambient air concentration in Jindal TPP (Ambient 2)

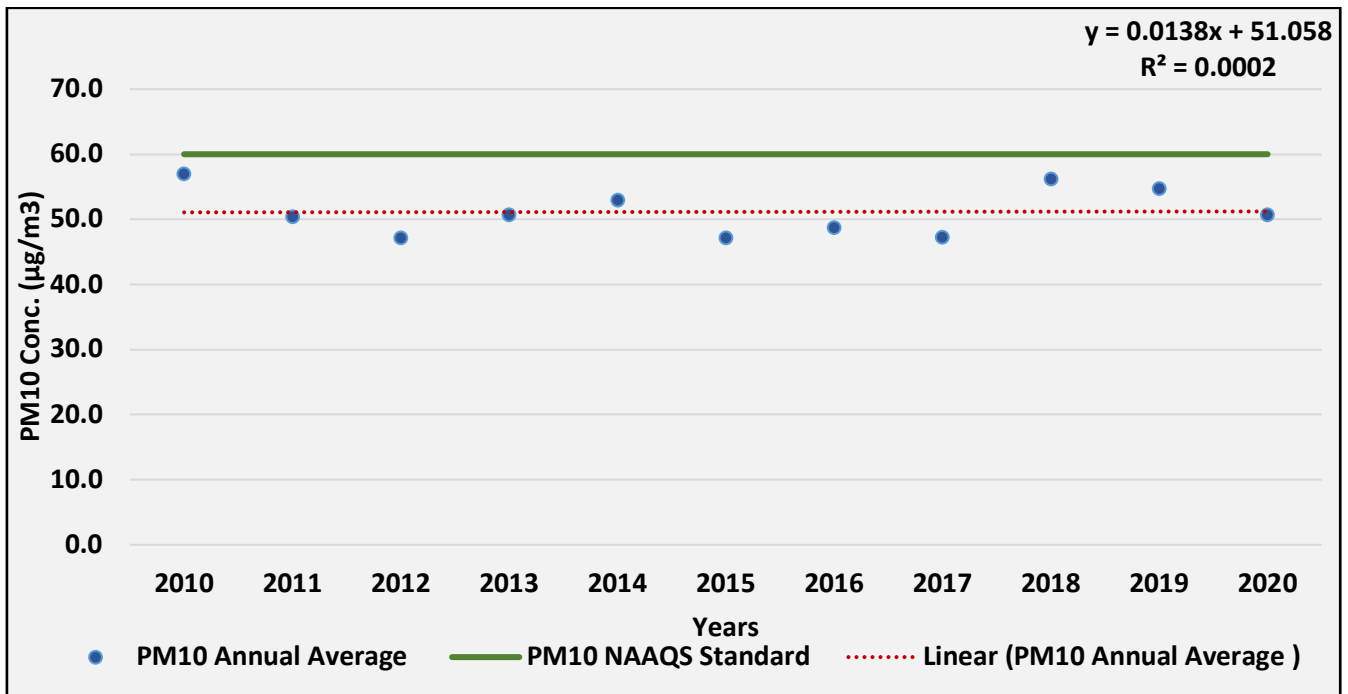


Fig. J45: Trend of annual mean PM₁₀ ambient air concentration in Jindal TPP (Ambient 2)

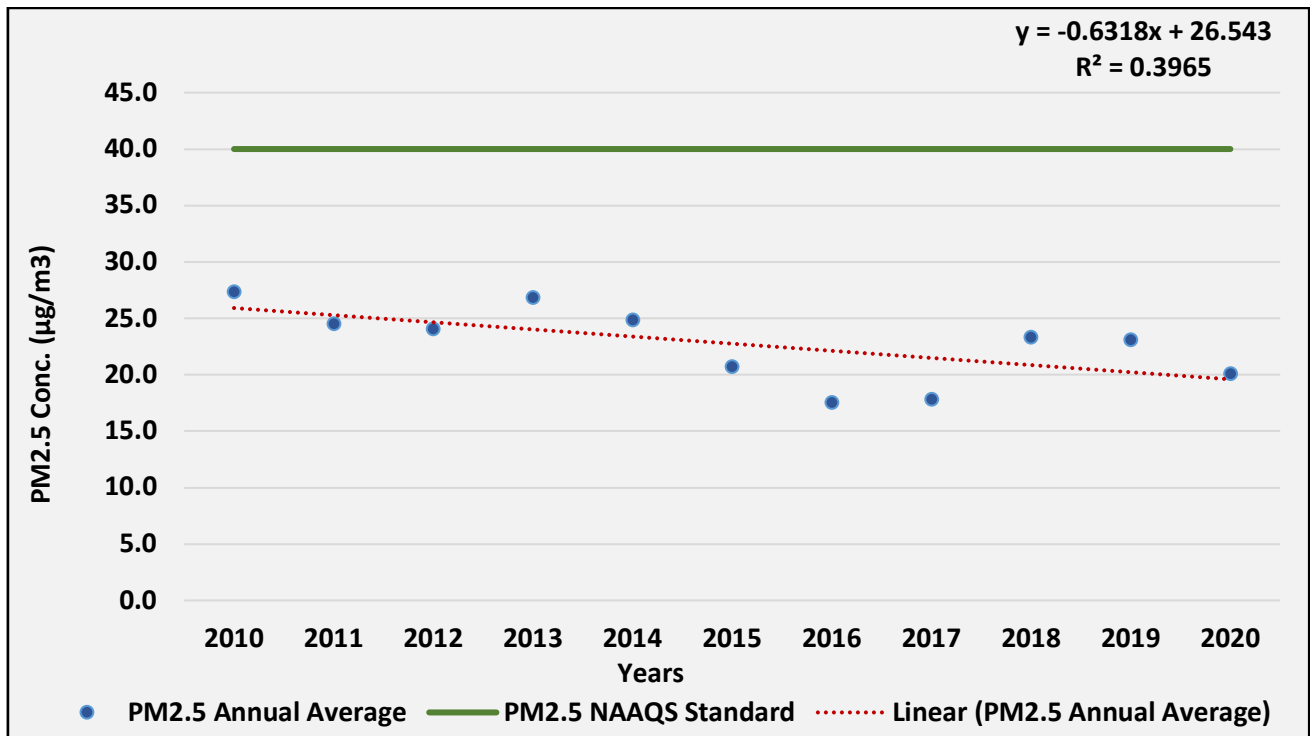


Fig. J46: Trend of annual mean $PM_{2.5}$ ambient air concentration in Jindal TPP (Ambient 2)

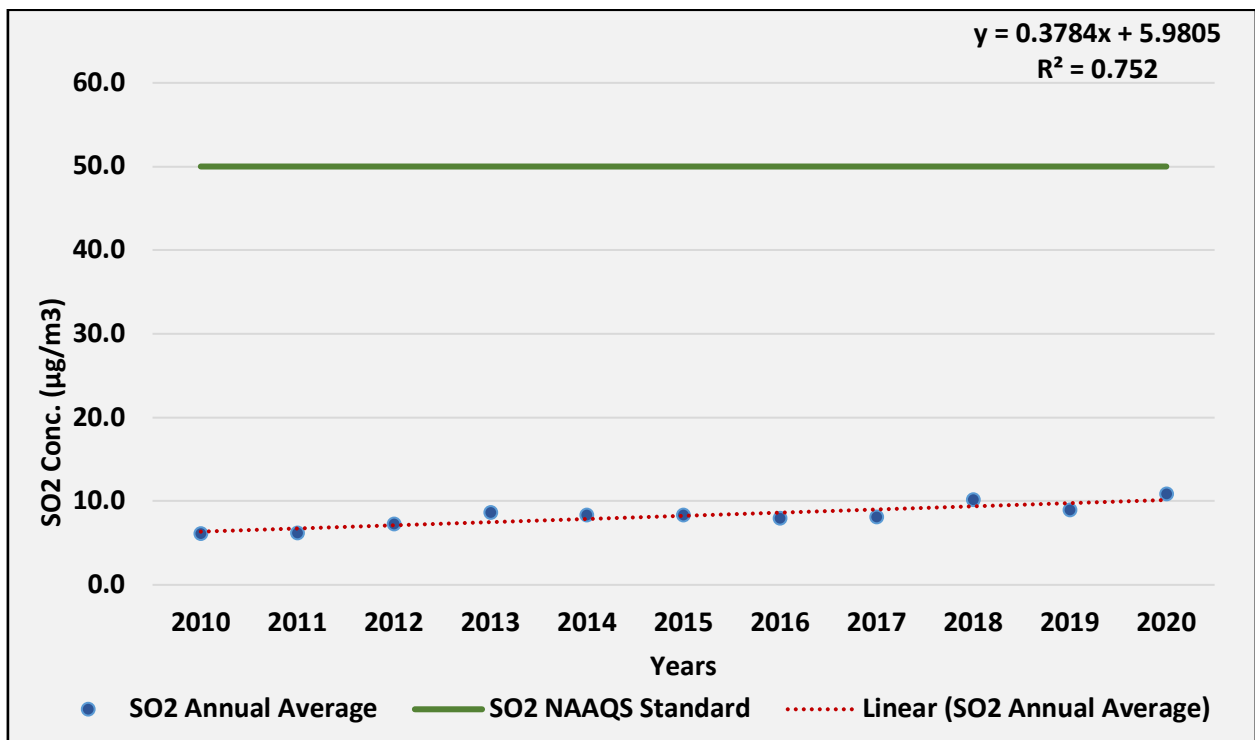


Fig. J47: Trend of annual mean SO_2 ambient air concentration in Jindal TPP (Ambient 2)

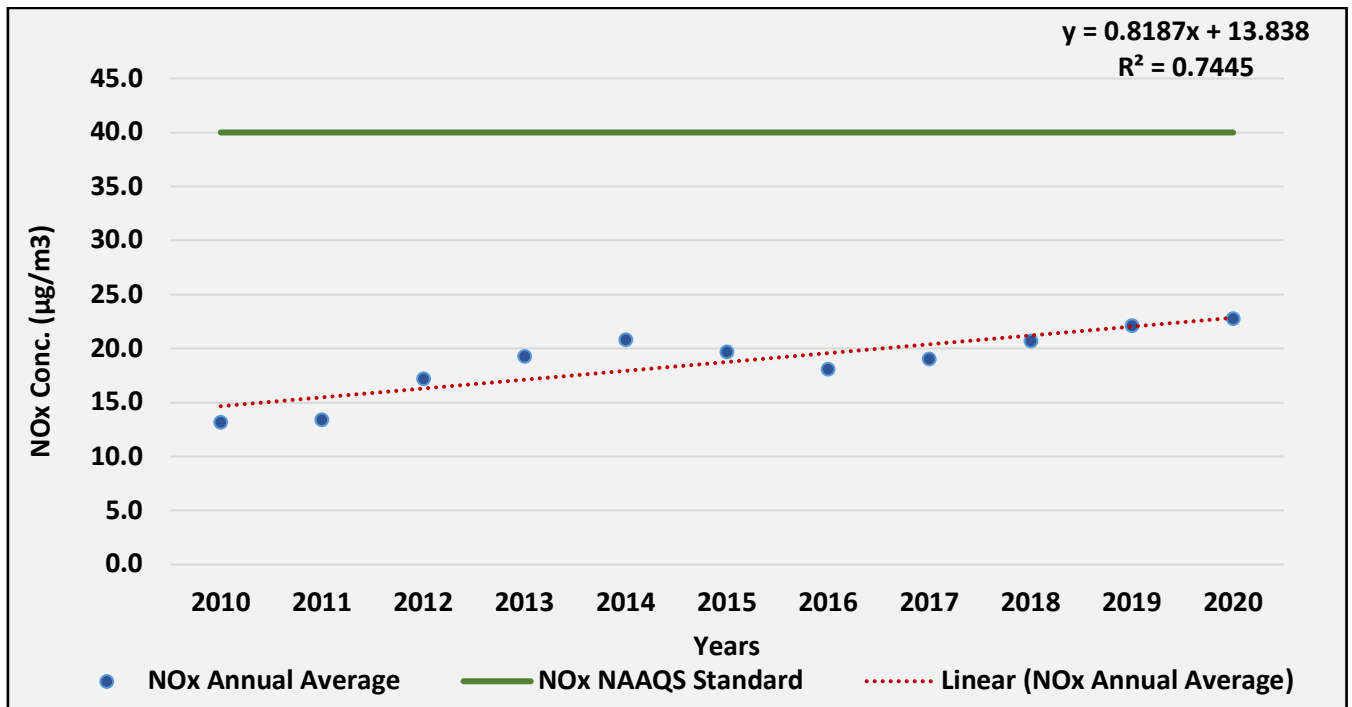


Fig. J48: Trend of annual mean NO_x ambient air concentration in Jindal TPP (Ambient 2)

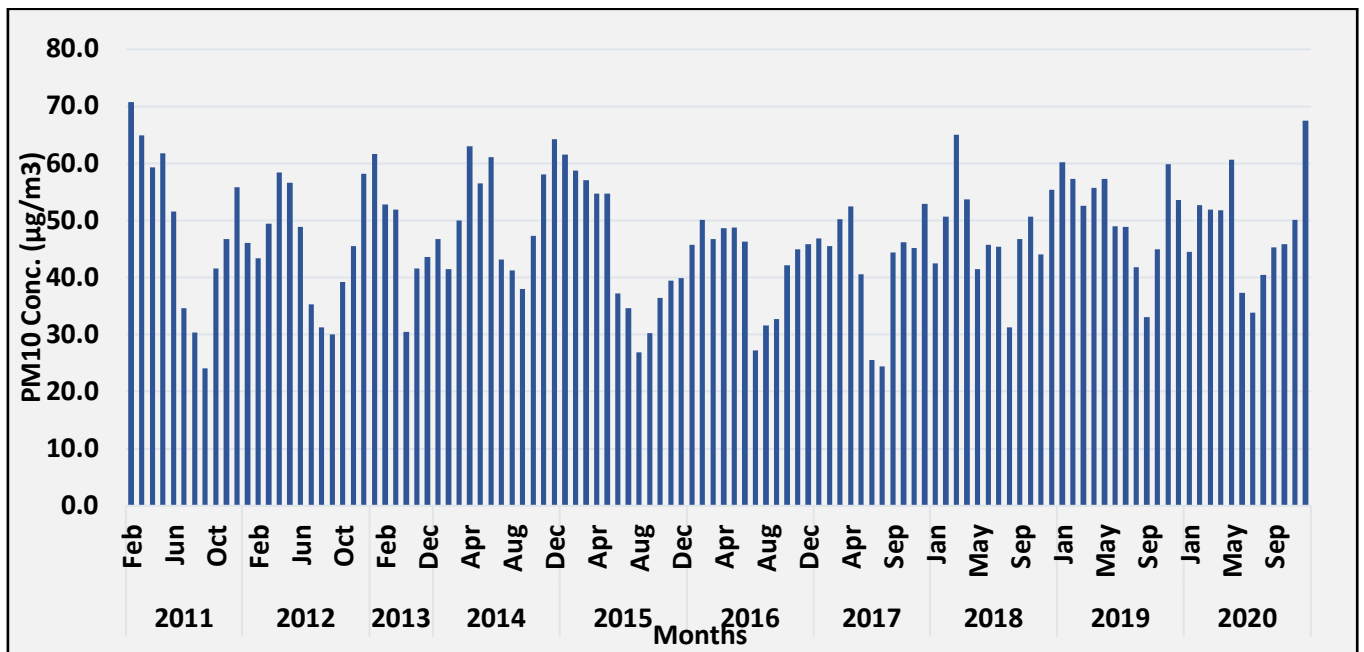


Fig. J49: Time series of monthly average PM₁₀ ambient air concentration in Jindal TPP (Ambient 3)

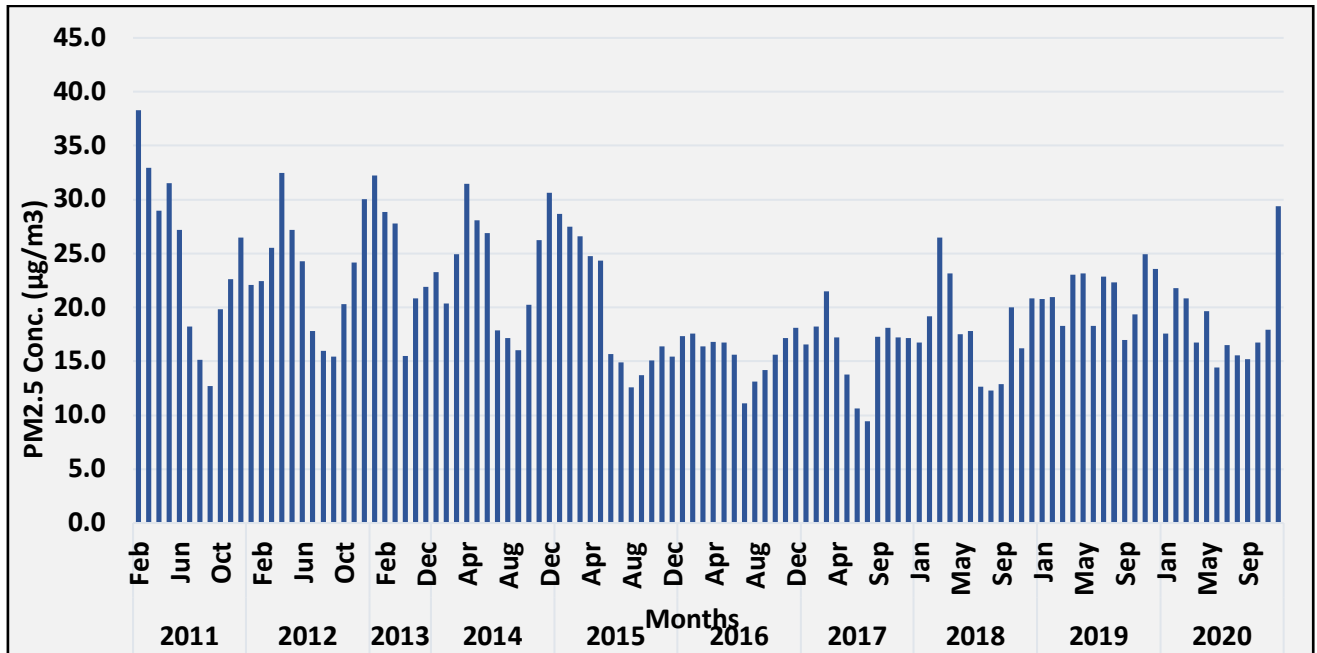


Fig. J50: Time series of monthly average PM_{2.5} ambient air concentration in Jindal TPP (Ambient 3)

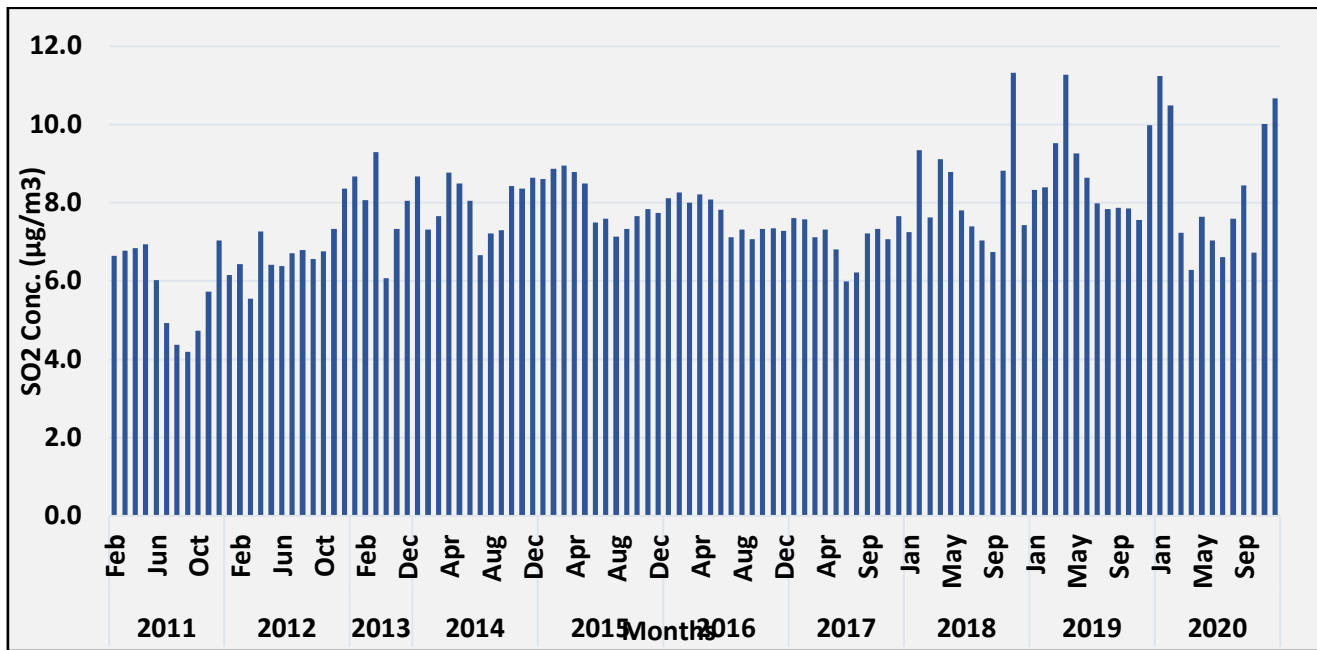


Fig. J51: Time series of monthly average SO₂ ambient air concentration in Jindal TPP (Ambient 3)

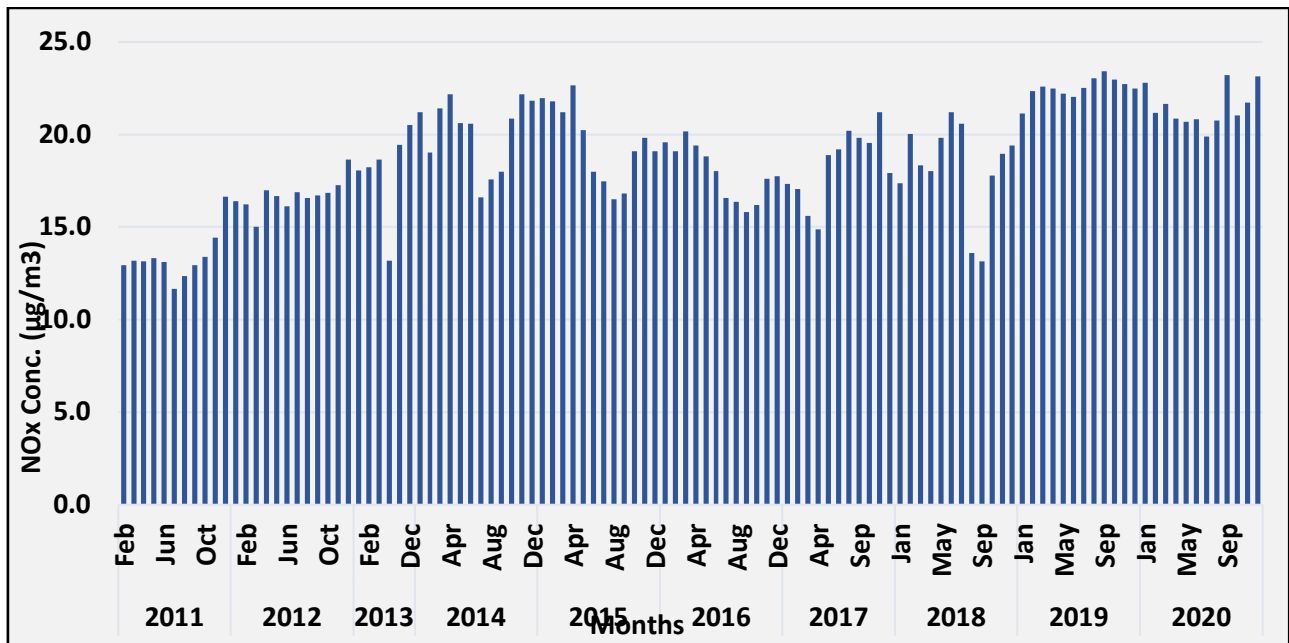


Fig. J52: Time series of monthly average NO_x ambient air concentration in Jindal TPP (Ambient 3)

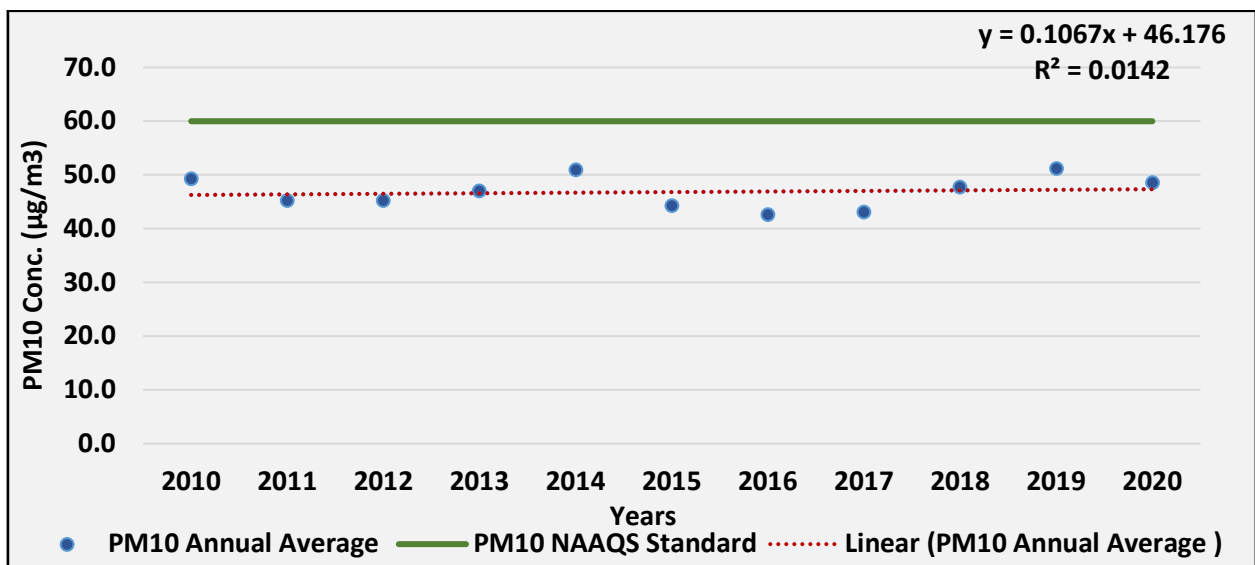


Fig. J53: Trend of annual mean PM₁₀ ambient air concentration in Jindal TPP (Ambient 3)

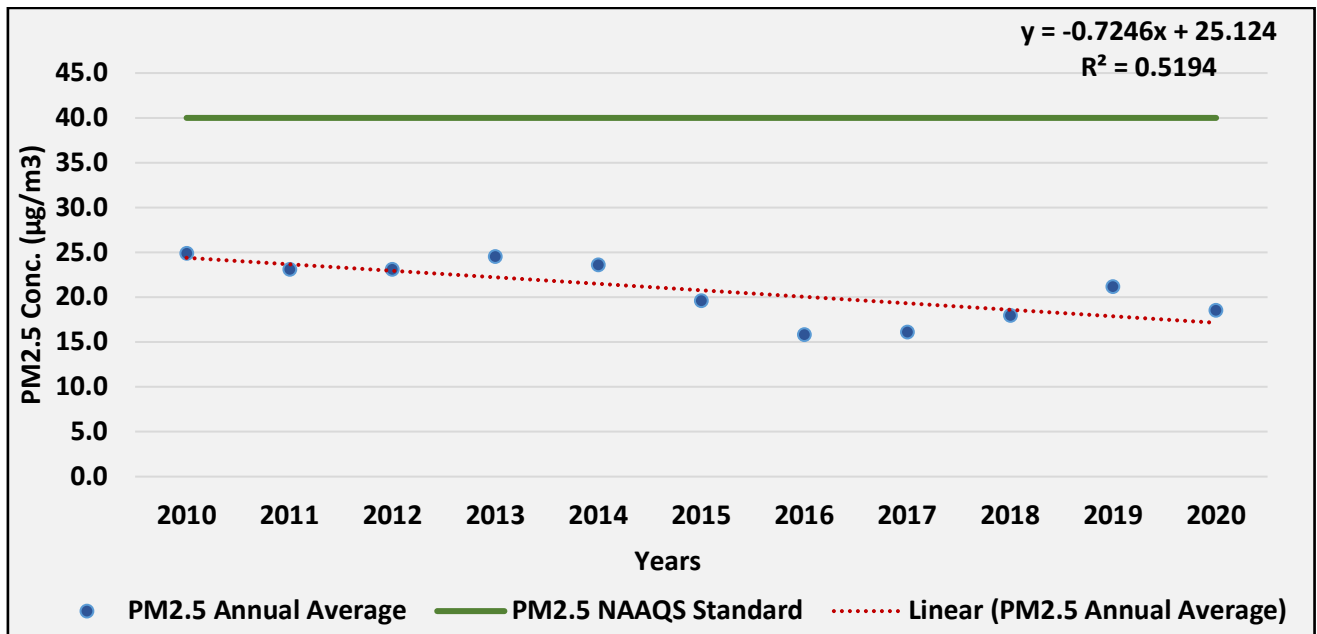


Fig. J54: Trend of annual mean PM_{2.5} ambient air concentration in Jindal TPP (Ambient 3)

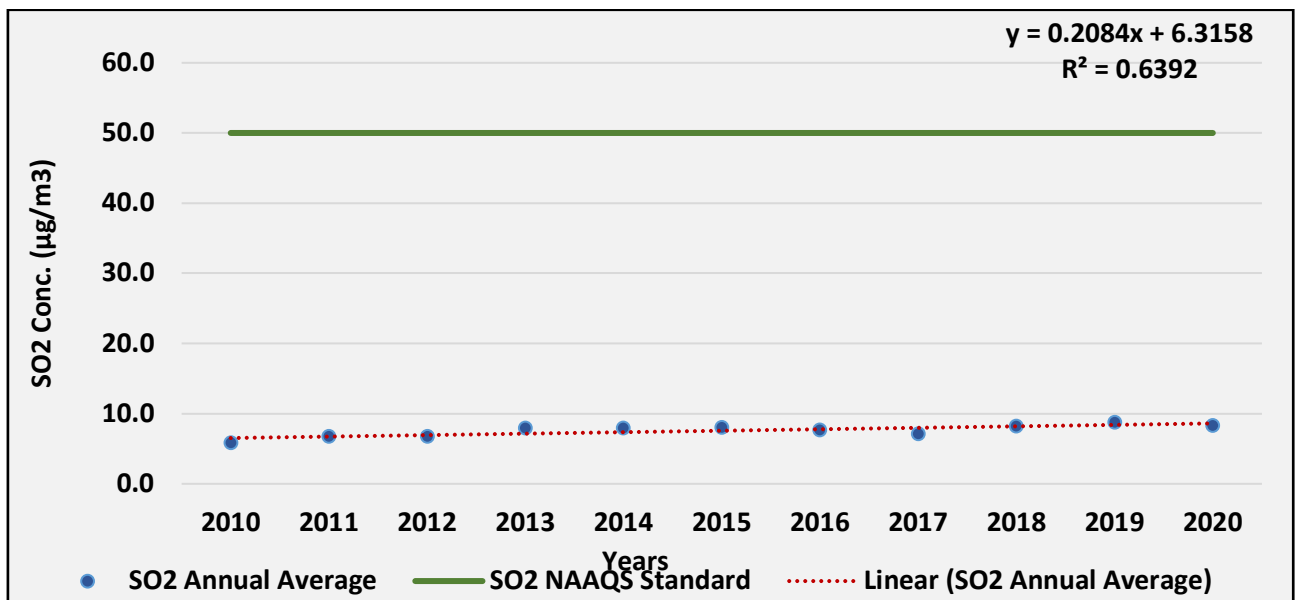


Fig. J55: Trend of annual mean SO₂ ambient air concentration in Jindal TPP (Ambient 3)

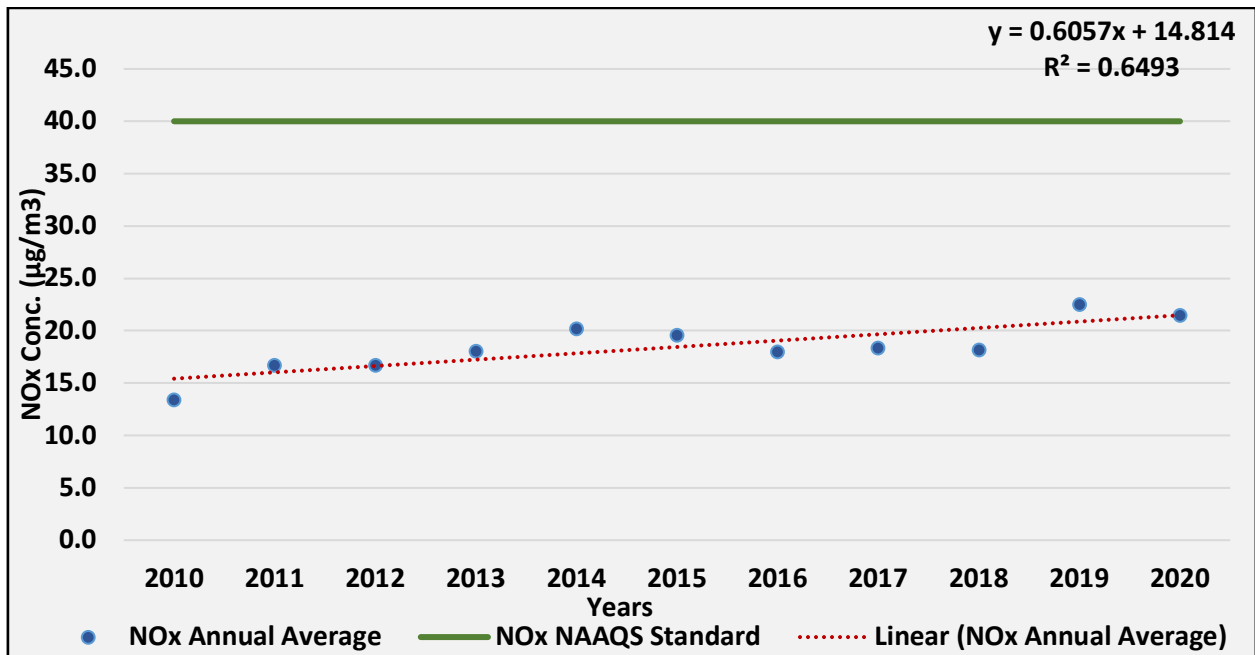


Fig. J56: Trend of annual mean NO_x ambient air concentration in Jindal TPP (Ambient 3)

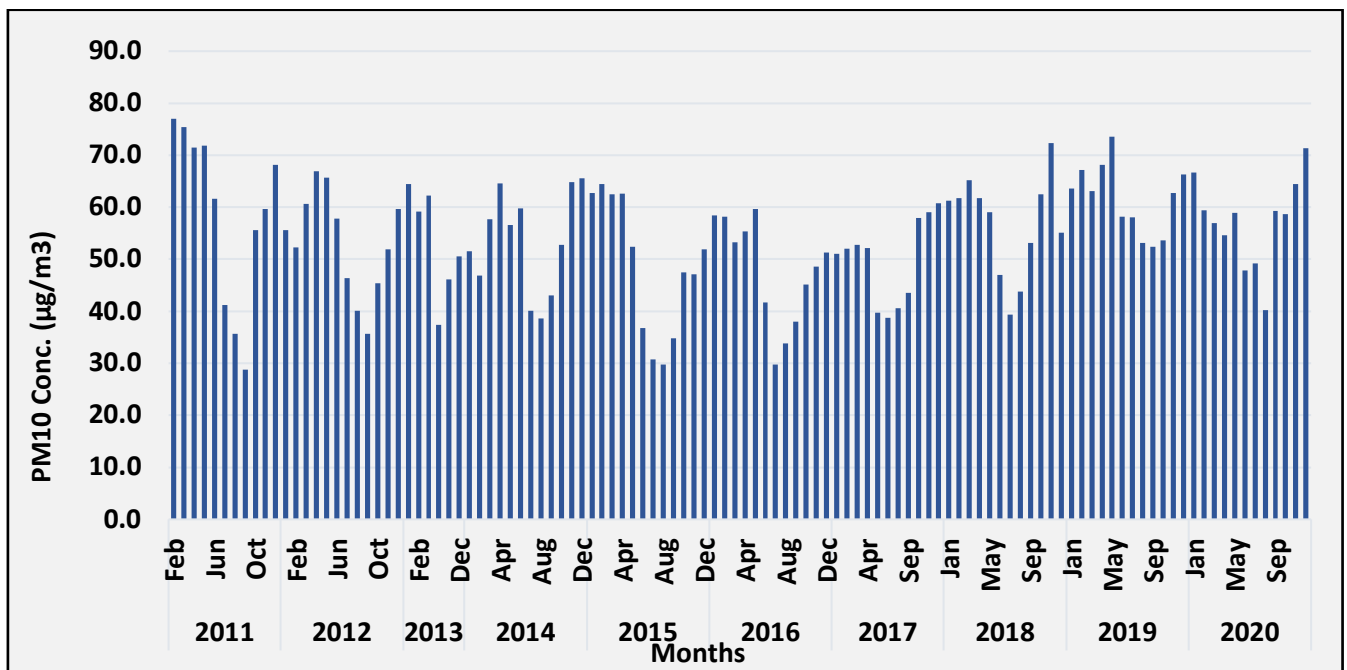


Fig. J57: Time series of monthly average PM₁₀ ambient air concentration in Jindal TPP (Ambient 4)

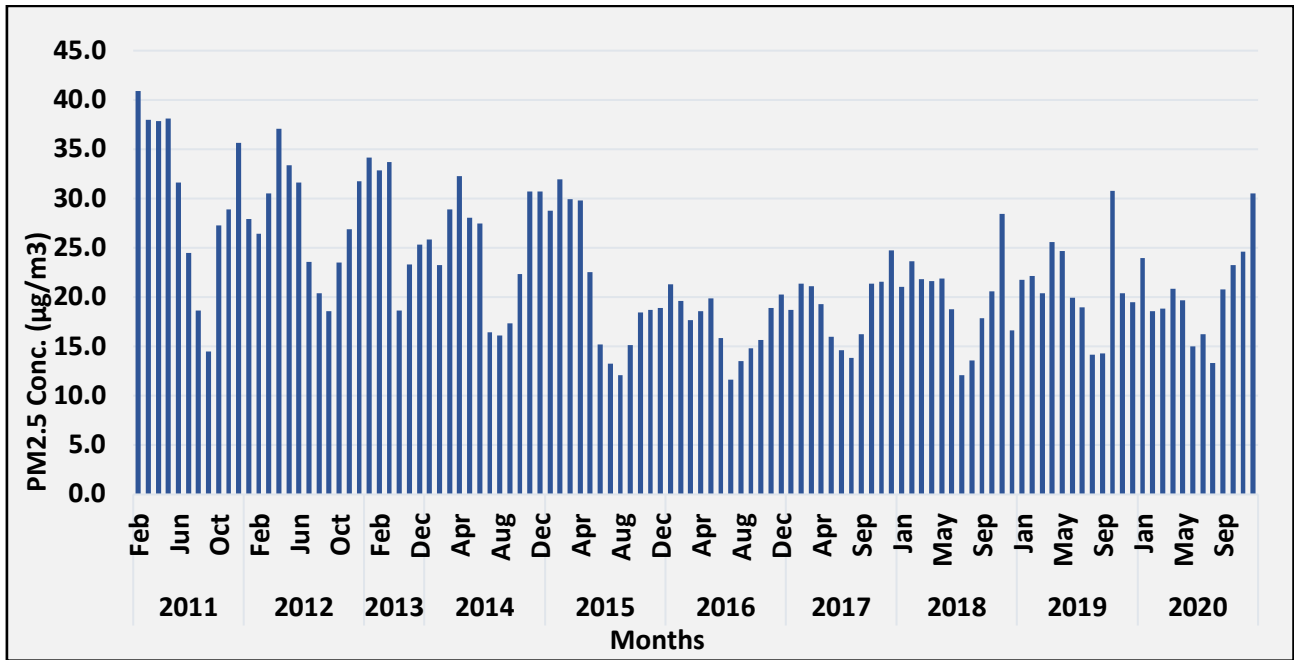


Fig. J58: Time series of monthly average PM_{2.5} ambient air concentration in Jindal TPP (Ambient 4)

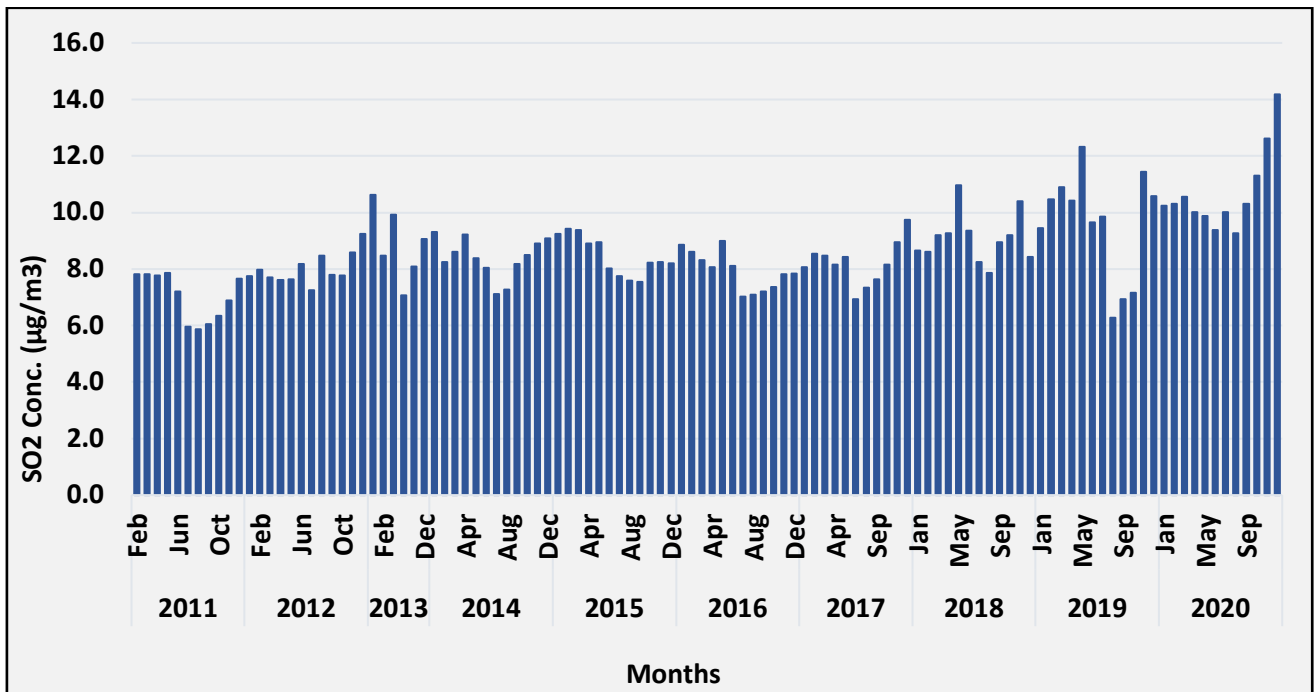


Fig. J59: Time series of monthly average SO₂ ambient air concentration in Jindal TPP (Ambient 4)

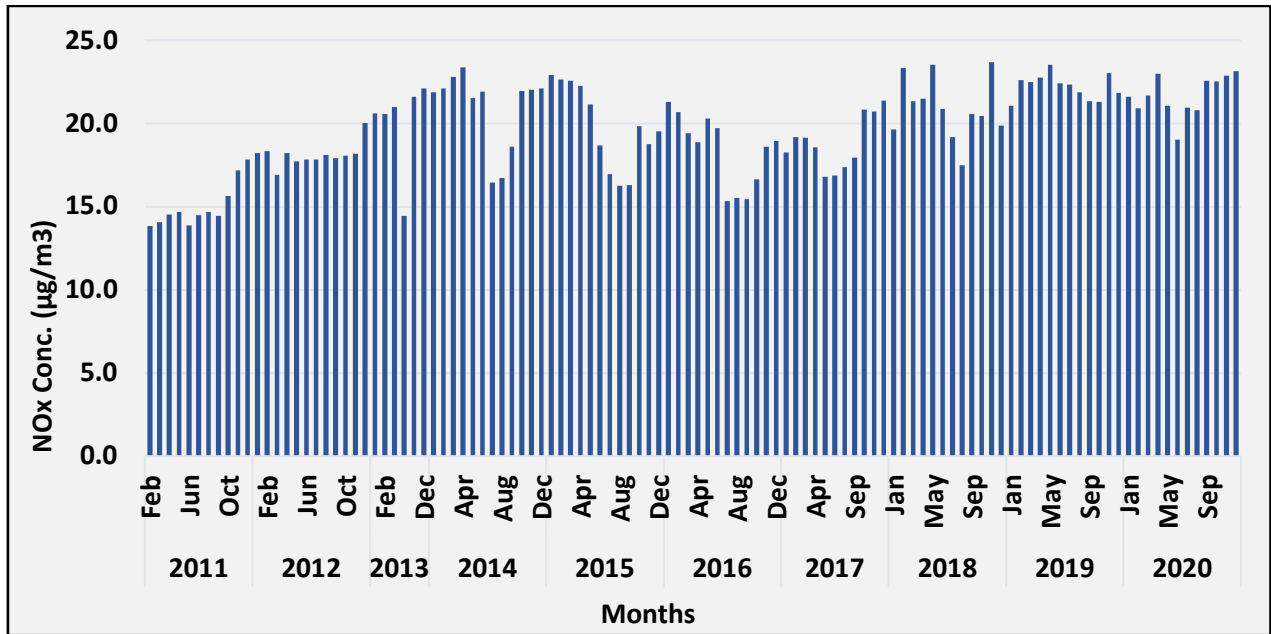


Fig. J60: Time series of monthly average NO_x ambient air concentration in Jindal TPP (Ambient 4)

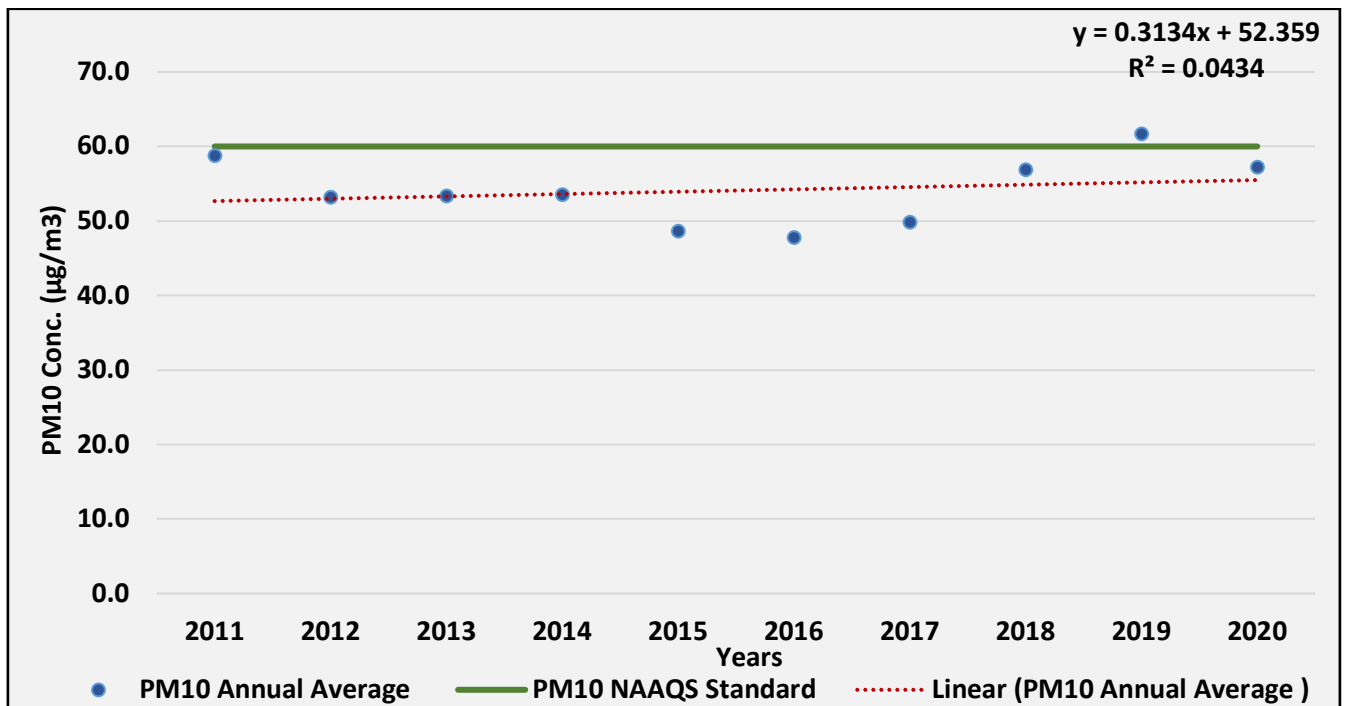


Fig. J61: Trend of annual mean PM₁₀ ambient air concentration in Jindal TPP (Ambient 4)

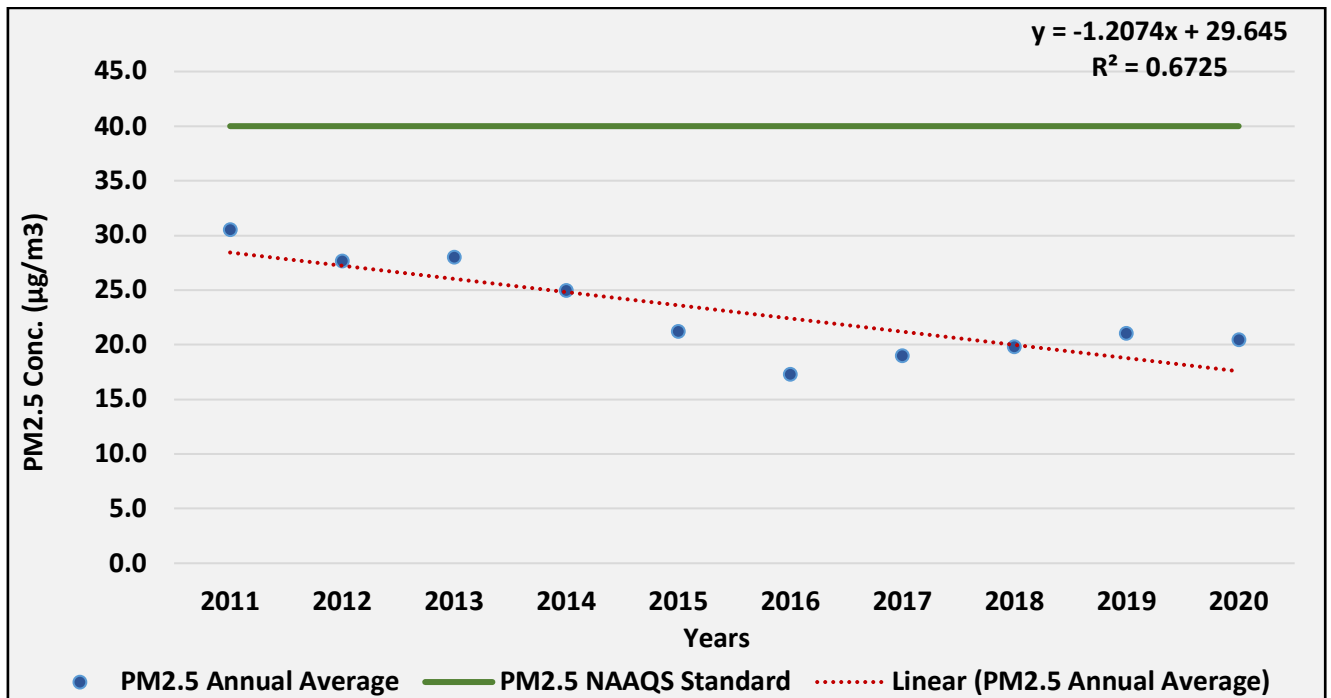


Fig. J62: Trend of annual mean $PM_{2.5}$ ambient air concentration in Jindal TPP (Ambient 4)

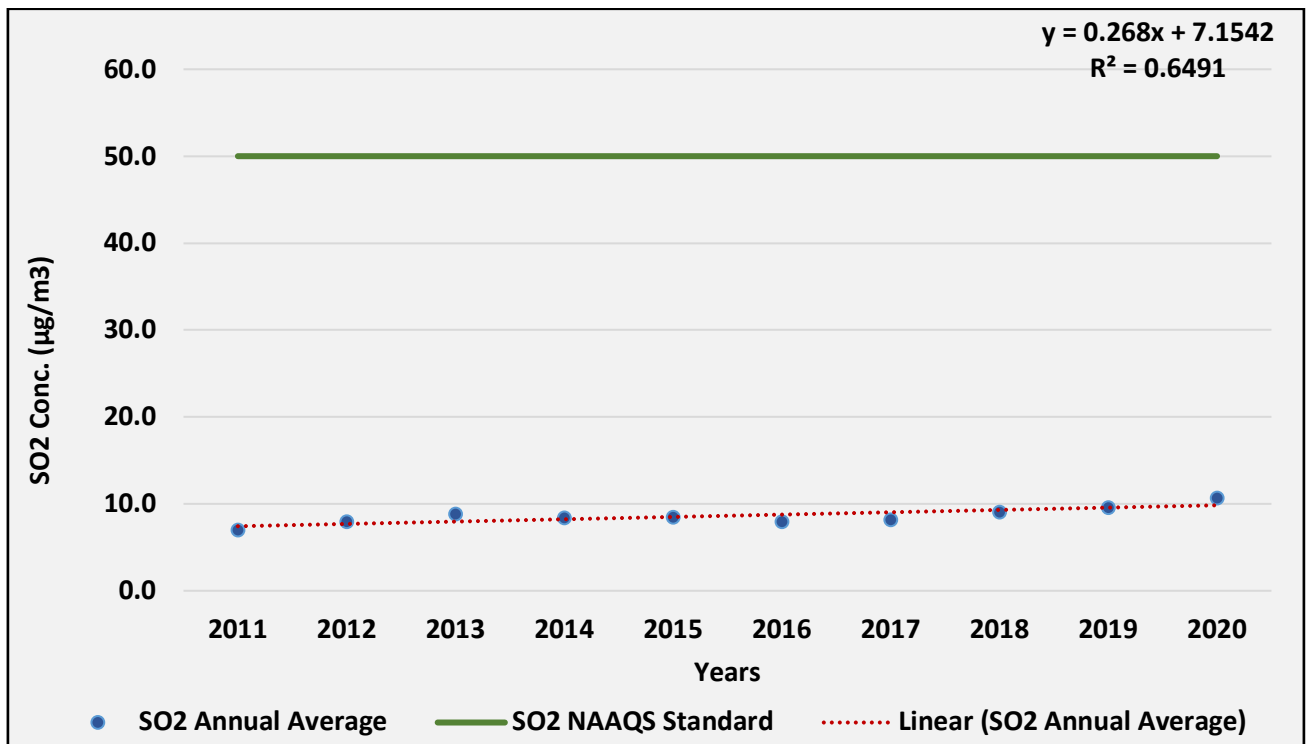


Fig. J63: Trend of annual mean SO_2 ambient air concentration in Jindal TPP (Ambient 4)

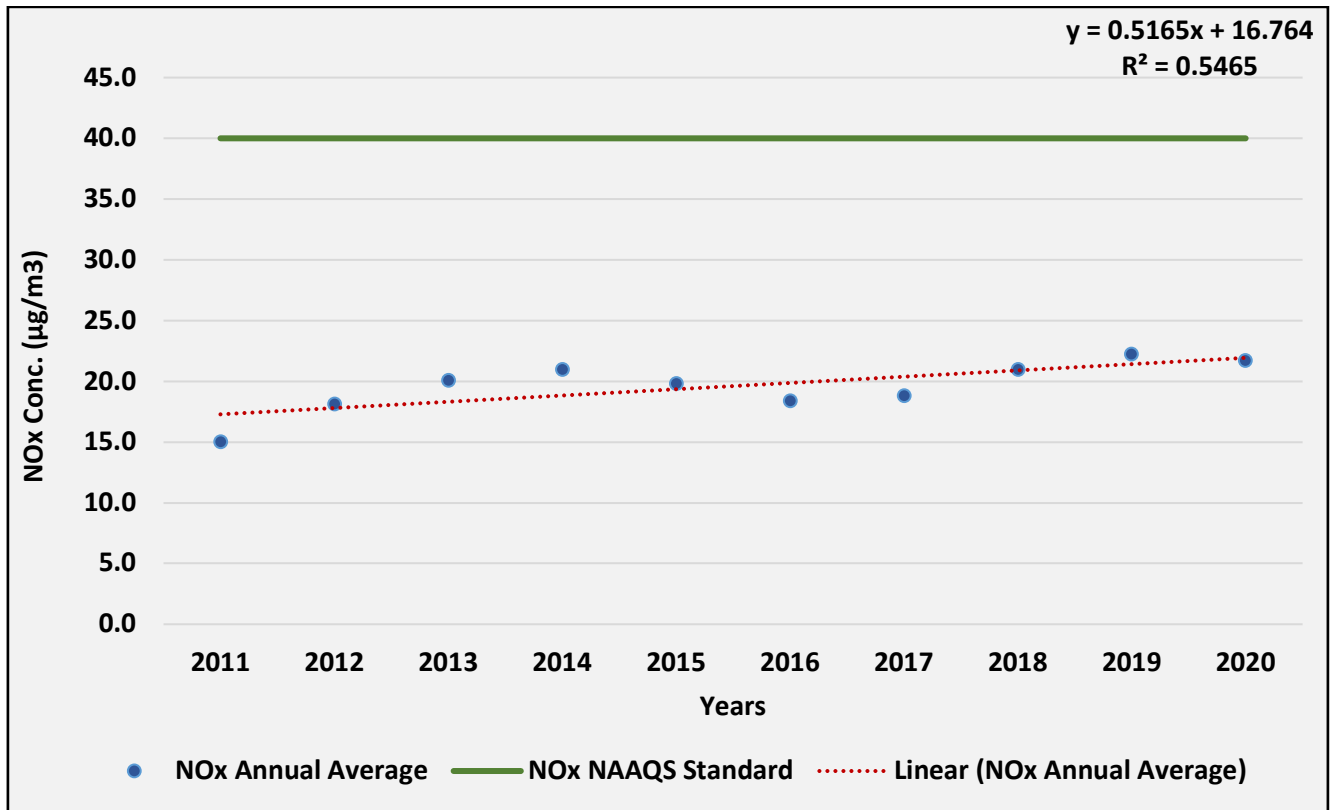


Fig. J64: Trend of annual mean NO_x ambient air concentration in Jindal TPP (Ambient 4)

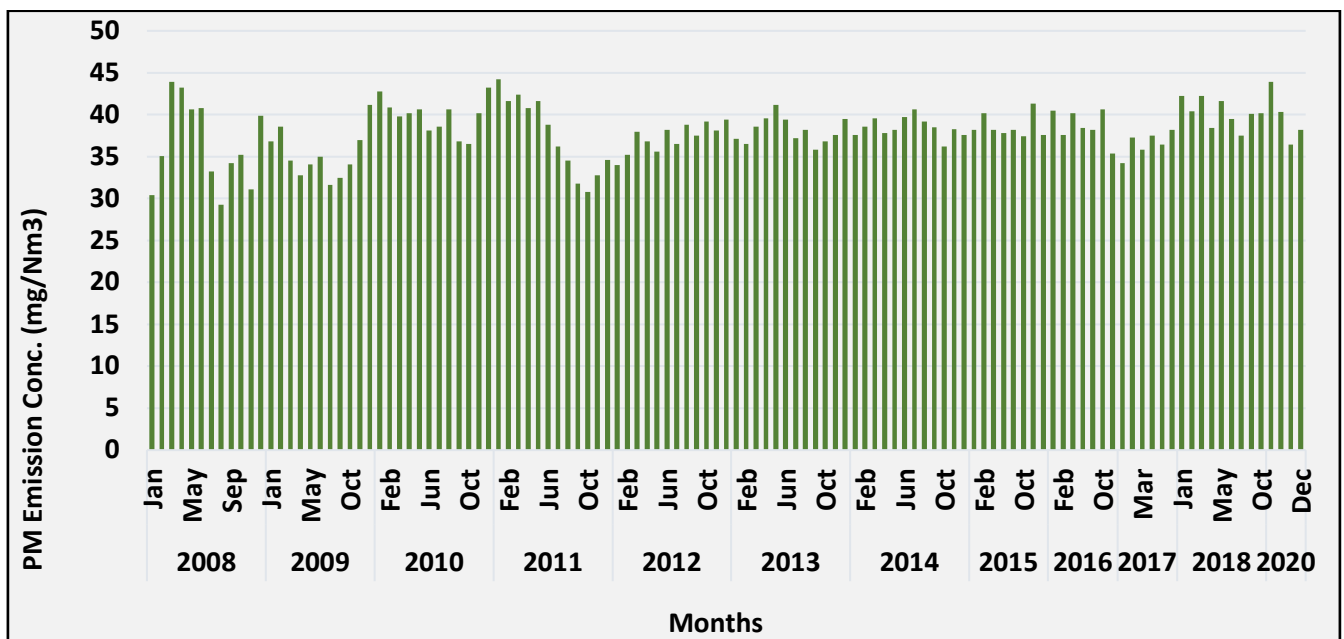


Fig. J65: Time series of monthly average PM Emission concentration in Jindal TPP (ST UNIT 250)

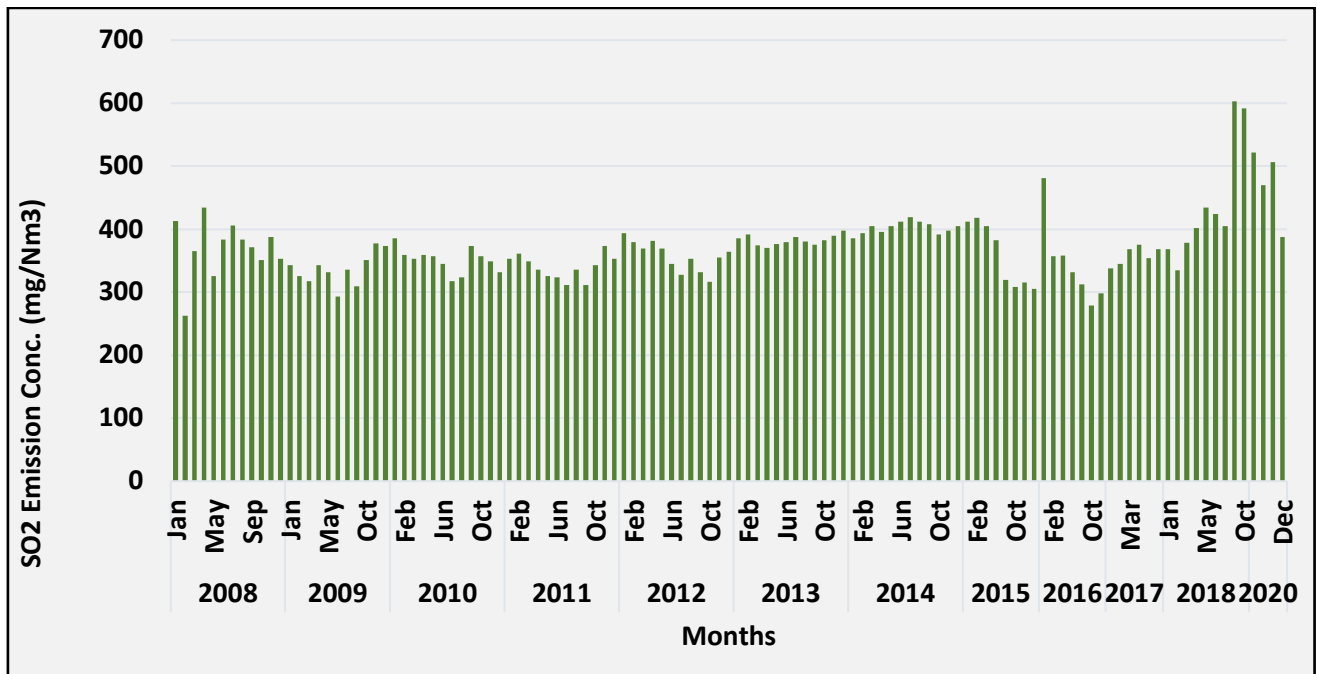


Fig. J66: Time series of monthly average SO₂ Emission concentration in Jindal TPP (ST UNIT 250)

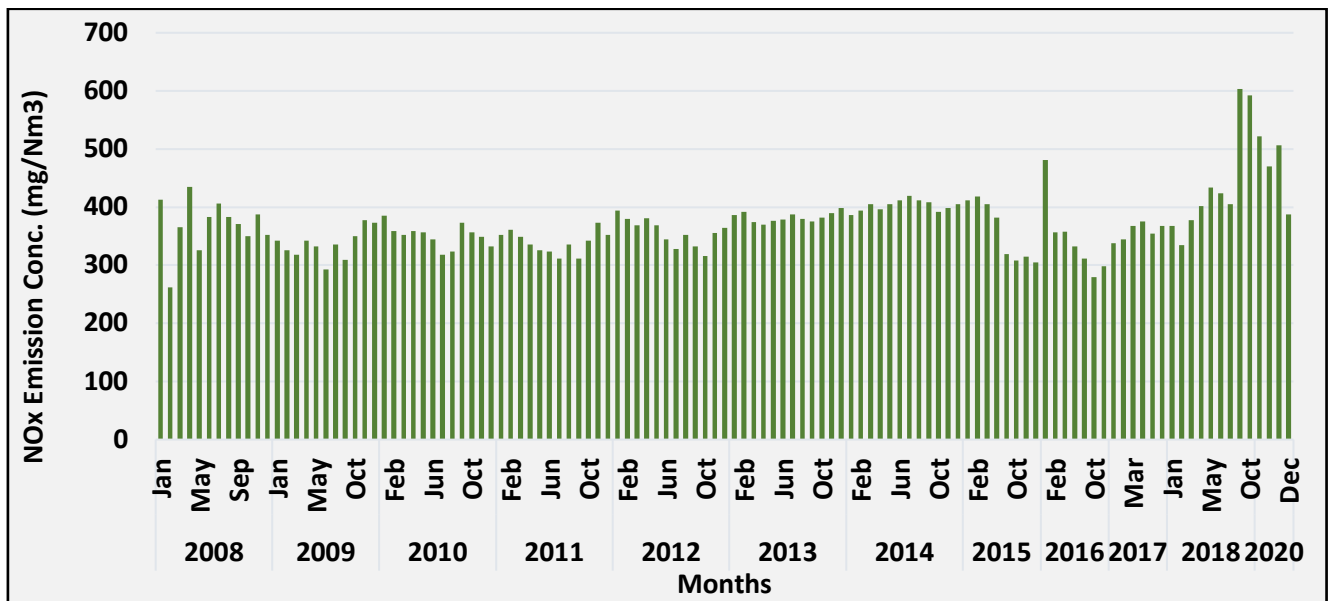


Fig. J67: Time series of monthly average NO_x Emission concentration in Jindal TPP (ST UNIT 250)

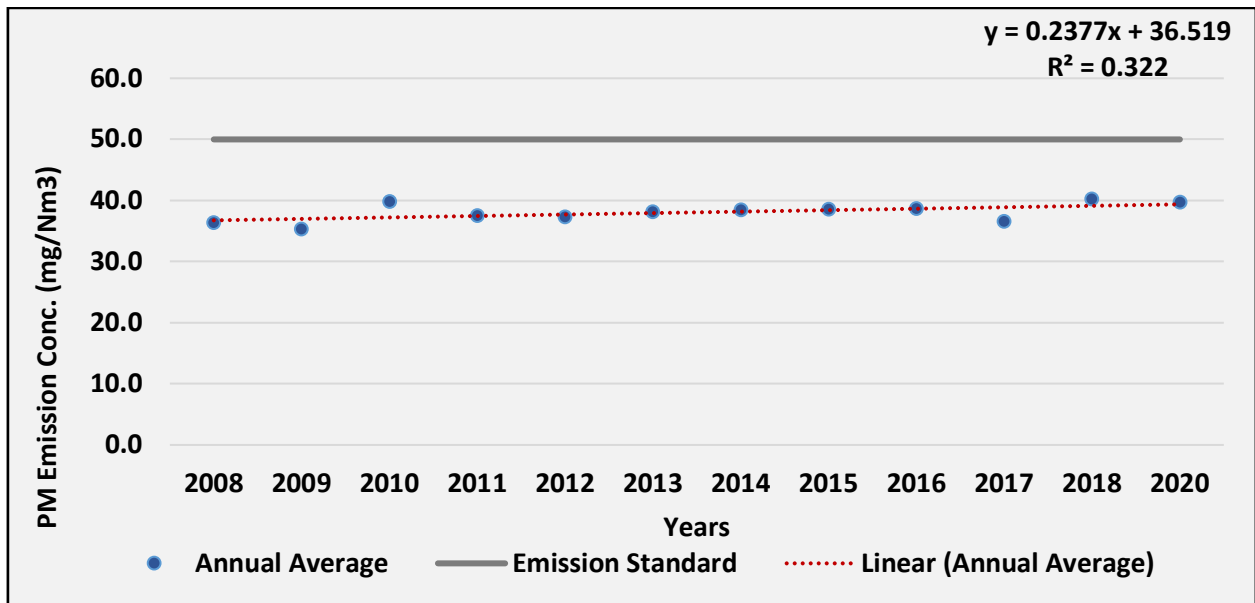


Fig. J68: Trend of annual mean PM Emission air concentration in Jindal TPP (ST UNIT 250)

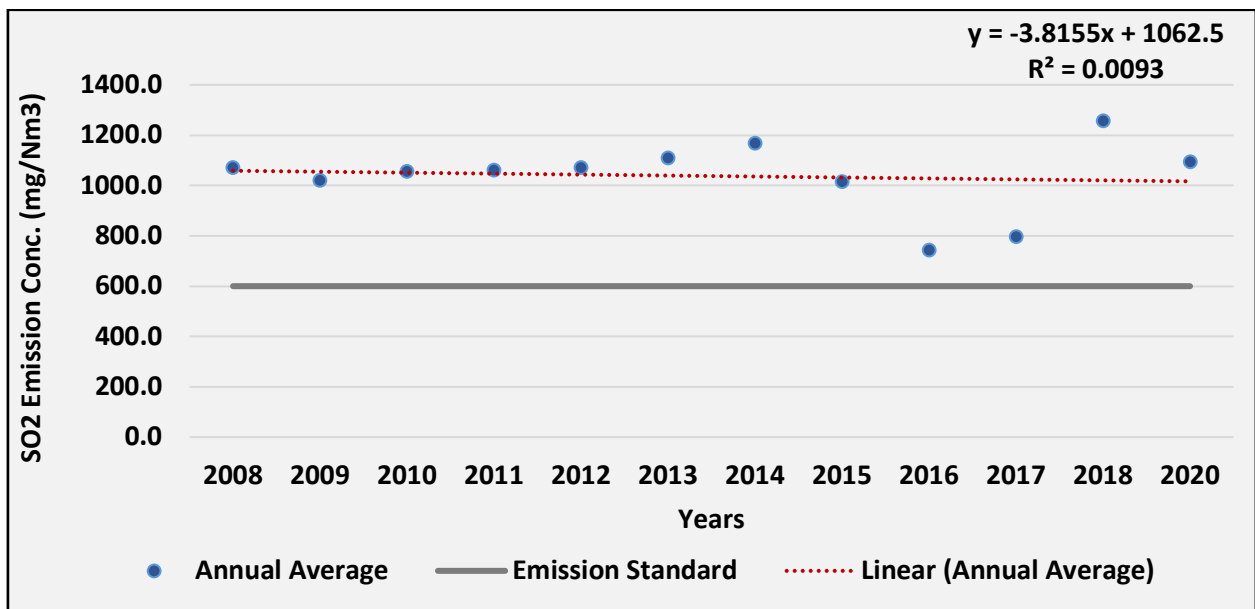


Fig. J69: Trend of annual mean SO₂ Emission air concentration in Jindal TPP (ST UNIT 250)

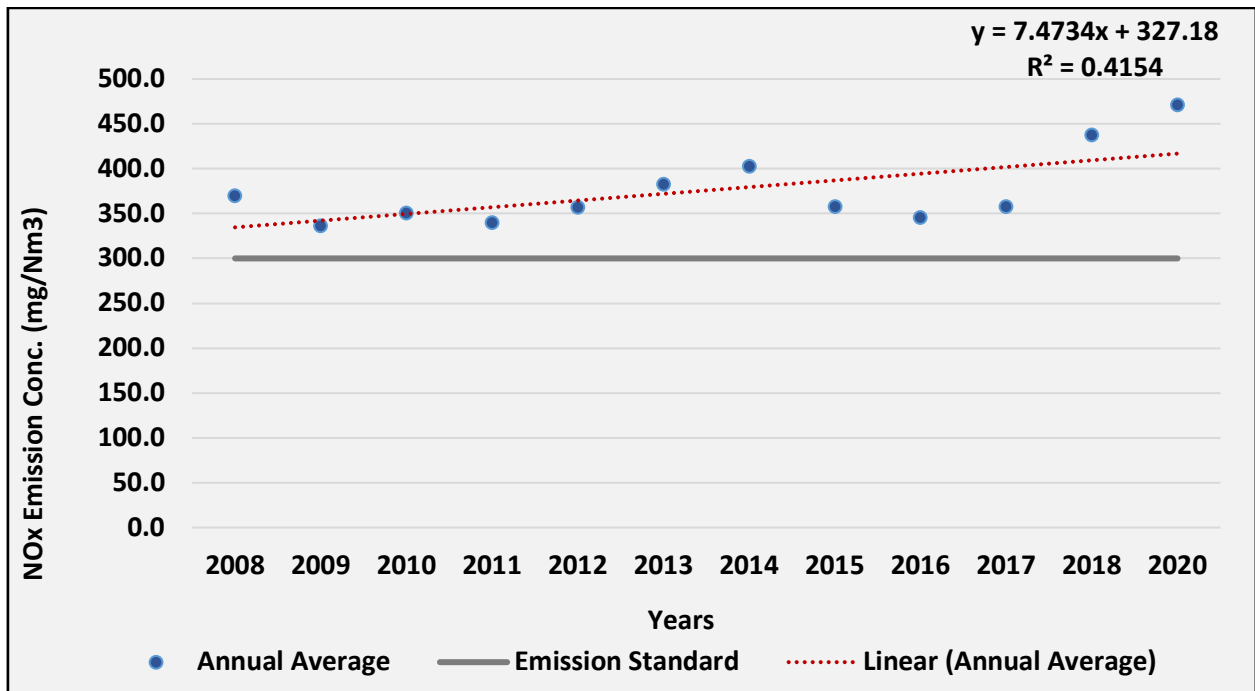


Fig. J70: Trend of annual mean NO_x Emission air concentration in Jindal TPP (ST UNIT 250)

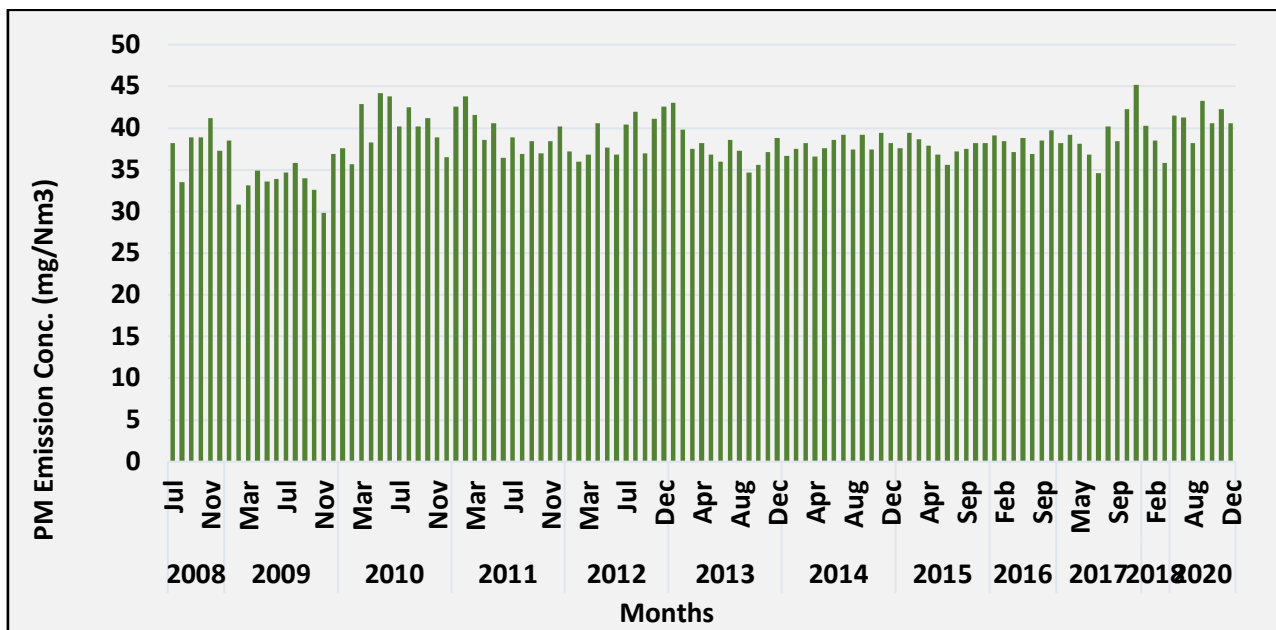


Fig. J71: Time series of monthly average PM Emission concentration in Jindal TPP (ST UNIT 250)



Fig. J72: Time series of monthly average SO₂ Emission concentration in Jindal TPP (ST UNIT2 250)

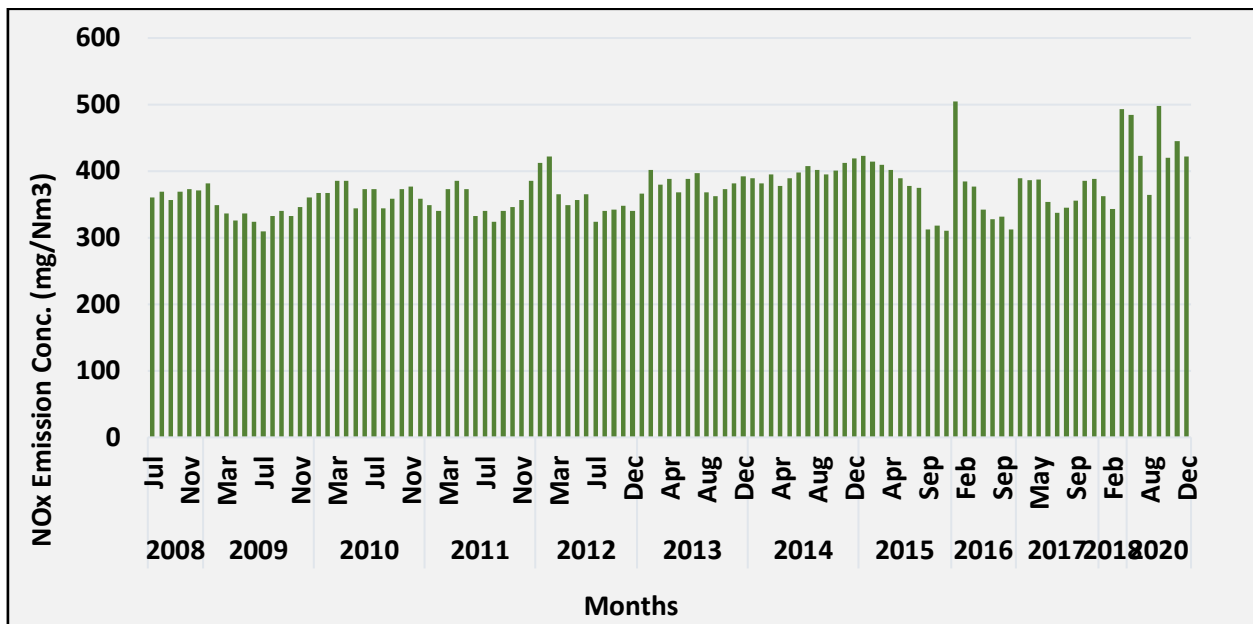


Fig. J73: Time series of monthly average NO_x Emission concentration in Jindal TPP (ST UNIT2 250)

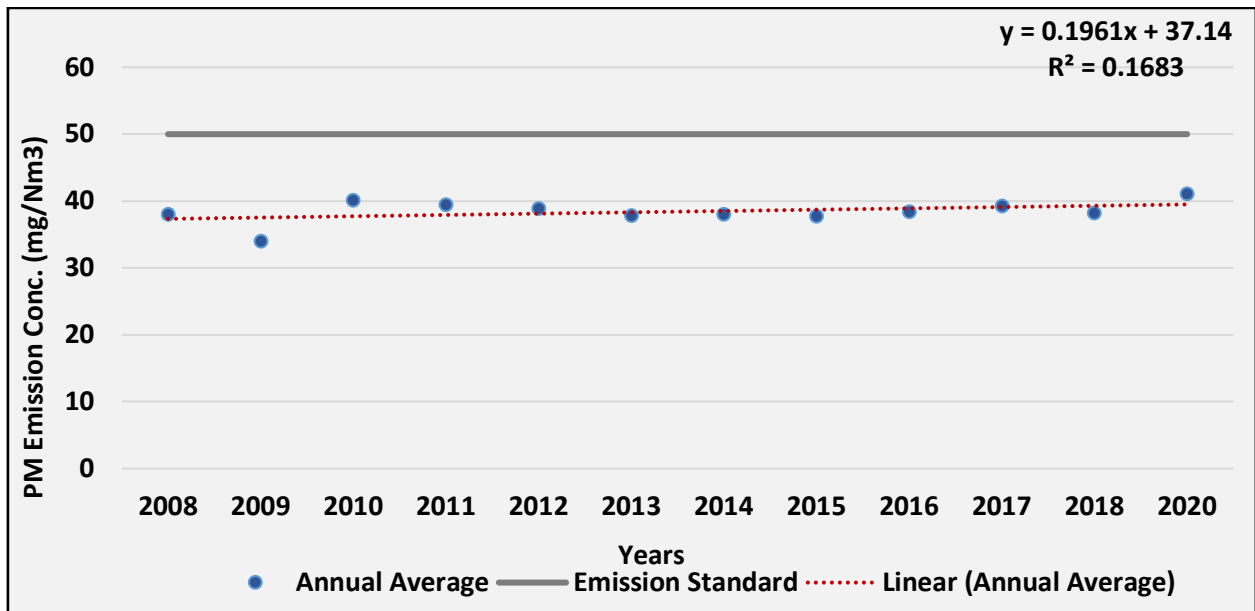


Fig. J74: Trend of annual mean PM Emission air concentration in Jindal TPP (ST UNIT2 250)

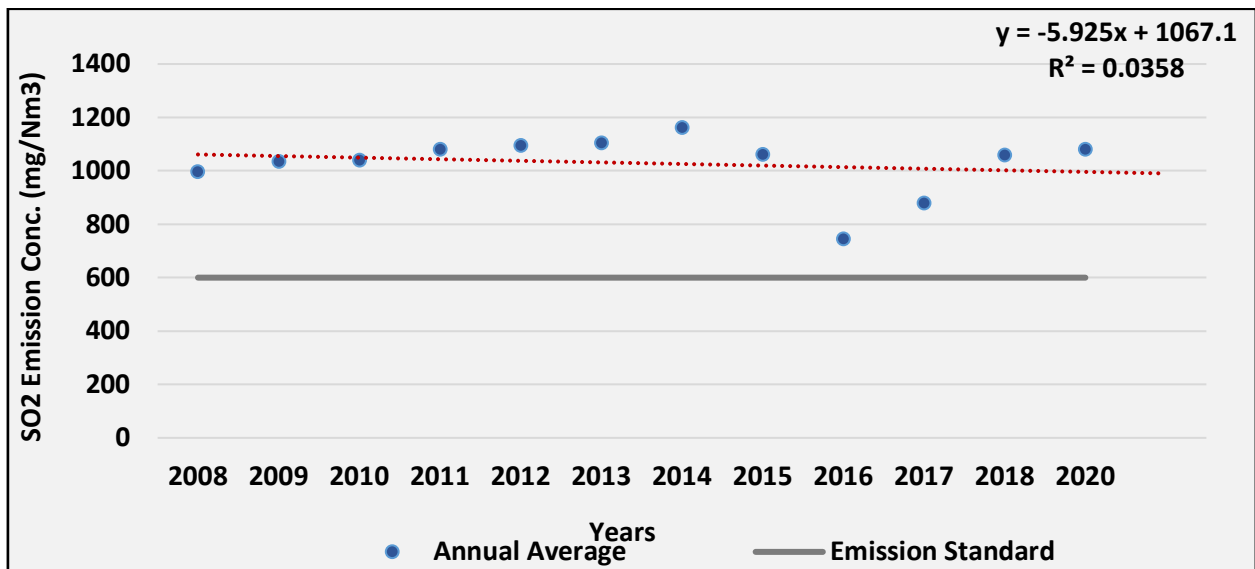


Fig. J75: Trend of annual mean SO₂ Emission air concentration in Jindal TPP (ST UNIT2 250)

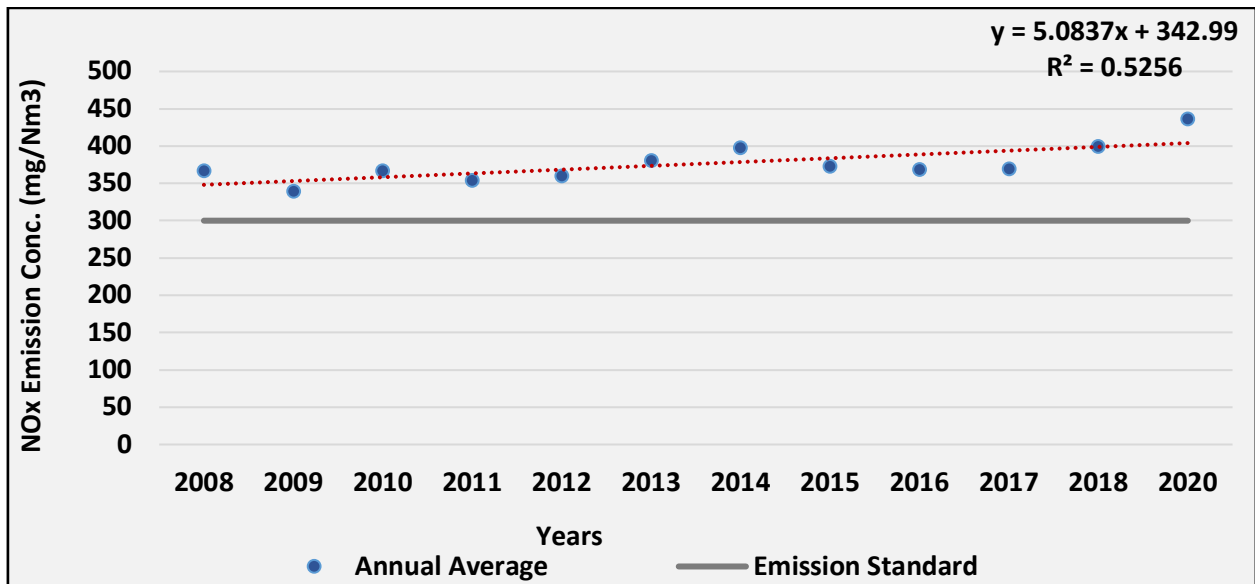


Fig. J76: Trend of annual mean NO_x Emission air concentration in Jindal TPP (ST UNIT2 250)

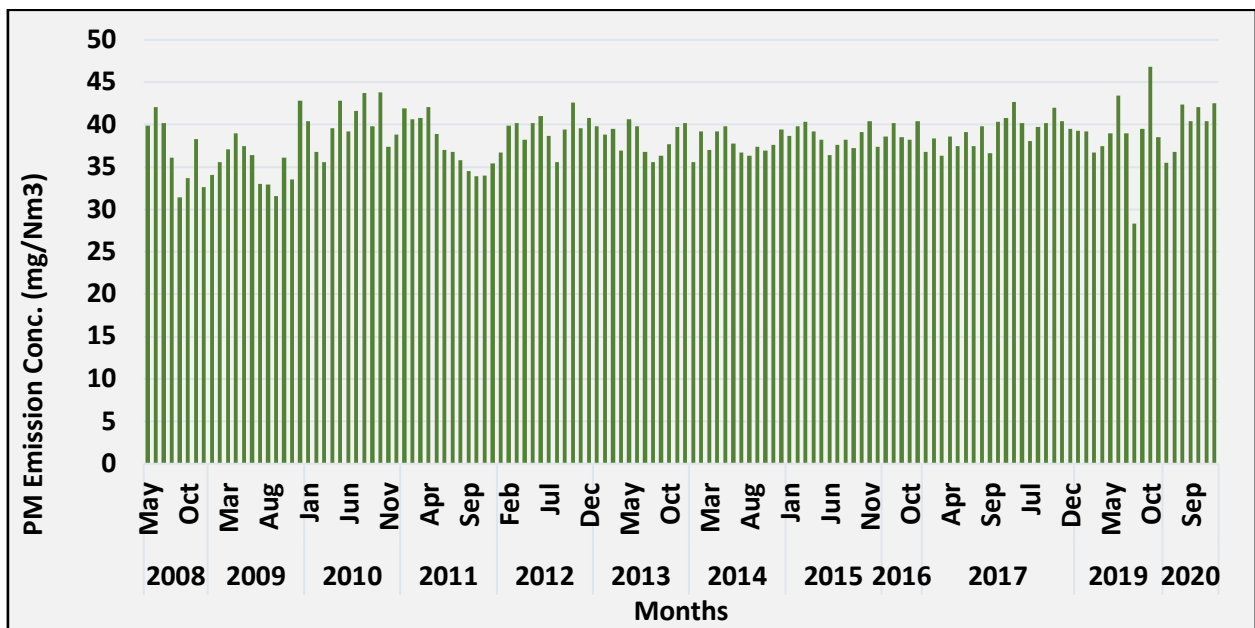


Fig. J77: Time series of monthly average PM Emission concentration in Jindal TPP (ST UNIT3 250)

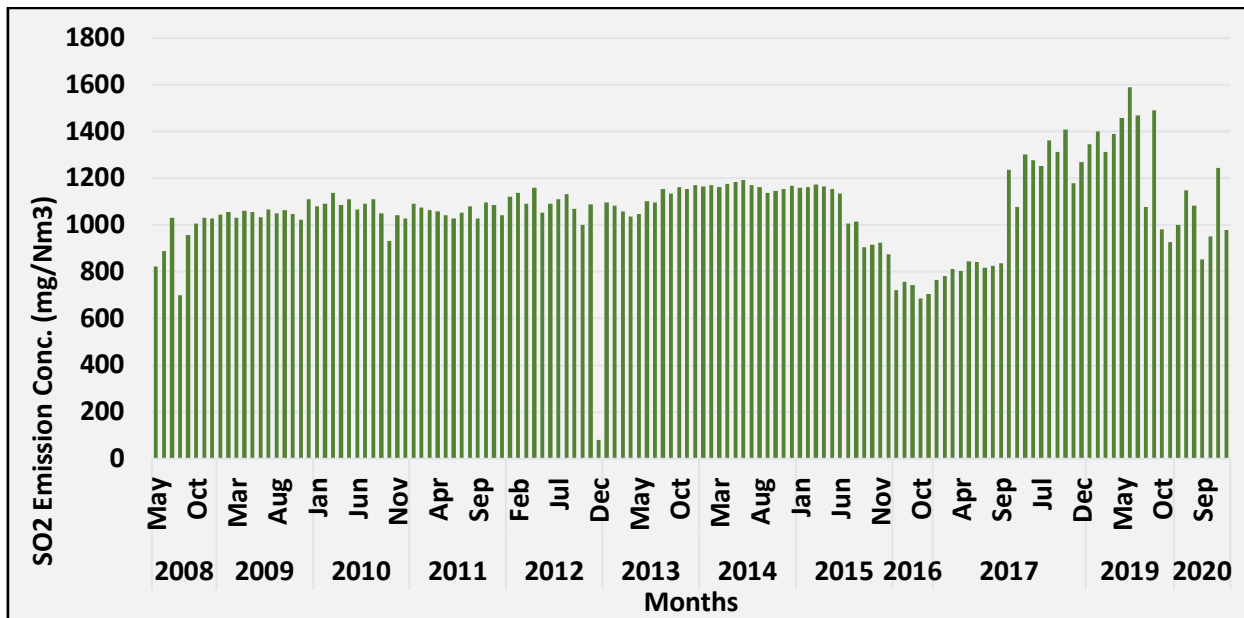


Fig. J78: Time series of monthly average SO₂ Emission concentration in Jindal TPP (ST UNIT3 250)

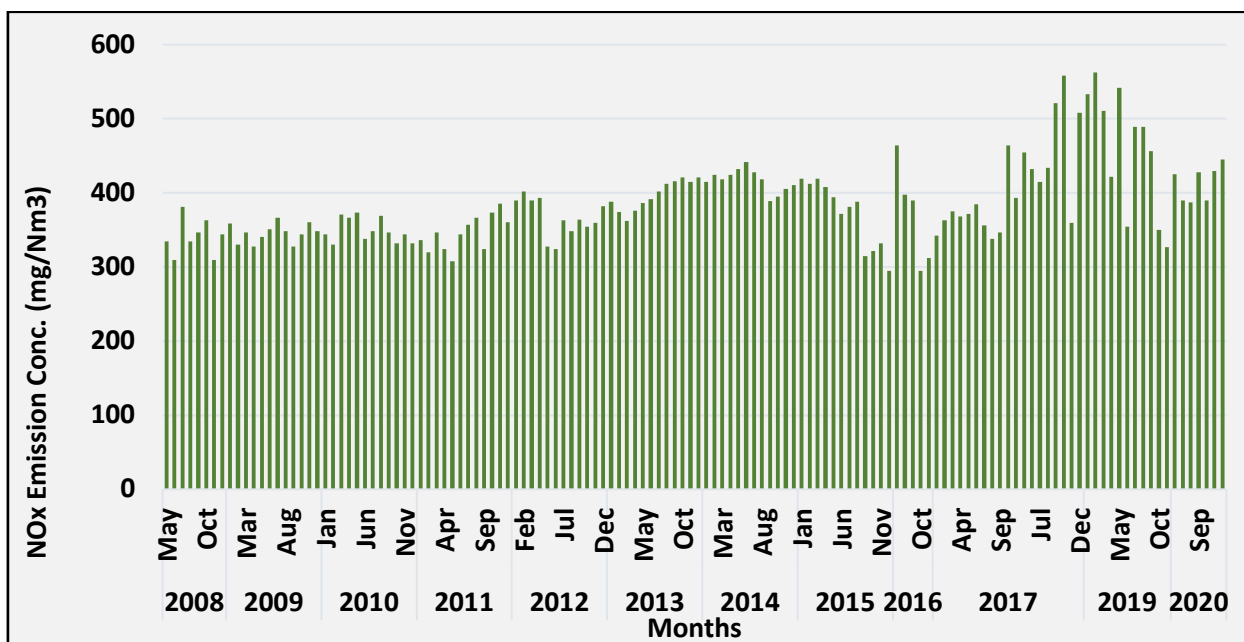


Fig. J79: Time series of monthly average NO_x Emission concentration in Jindal TPP (ST UNIT3 250)

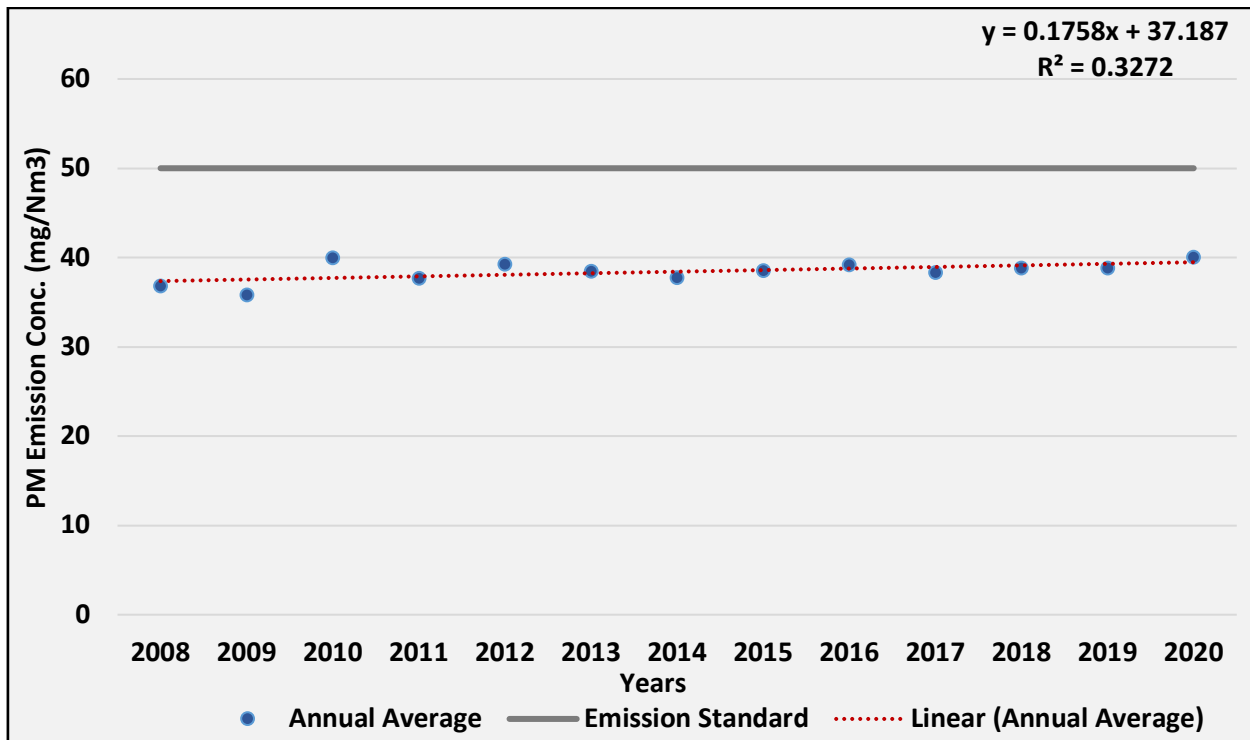


Fig. J80: Trend of annual mean PM Emission air concentration in Jindal TPP (ST UNIT3 250)

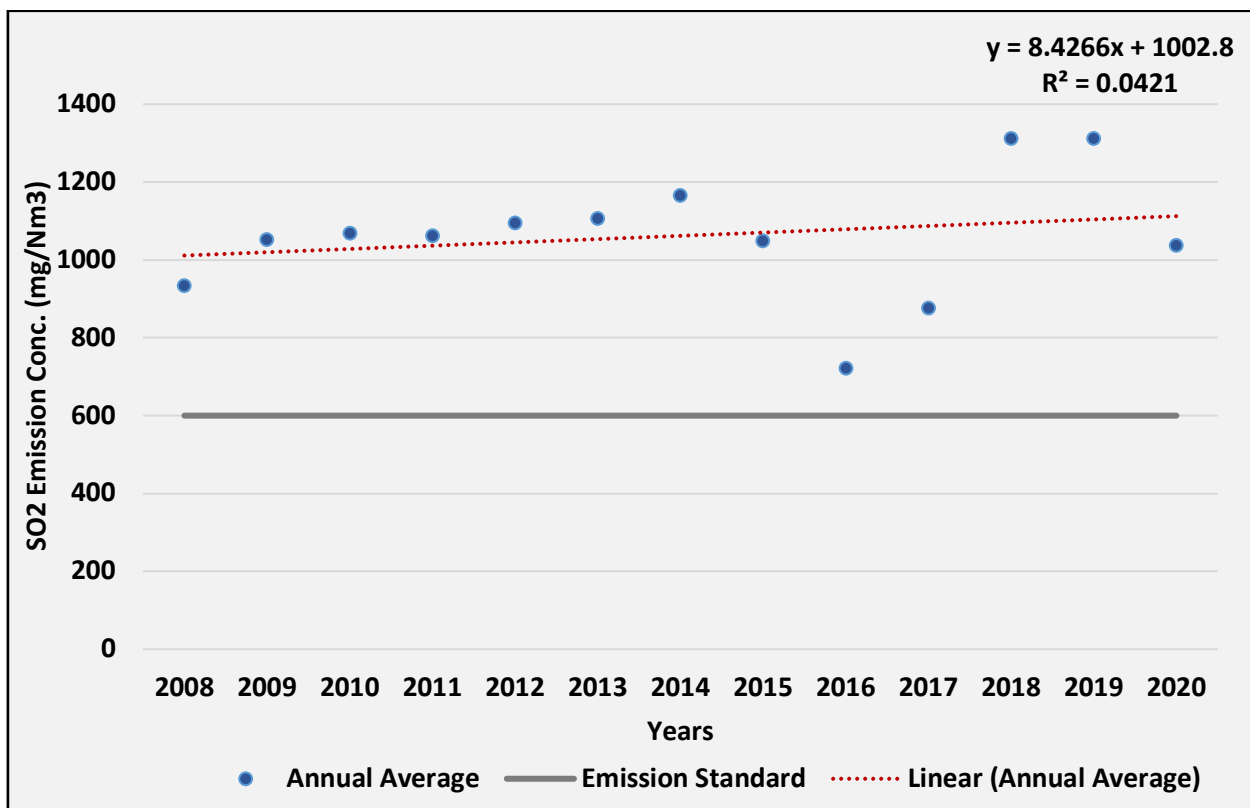


Fig. J81: Trend of annual mean SO₂ Emission air concentration in Jindal TPP (ST UNIT3 250)

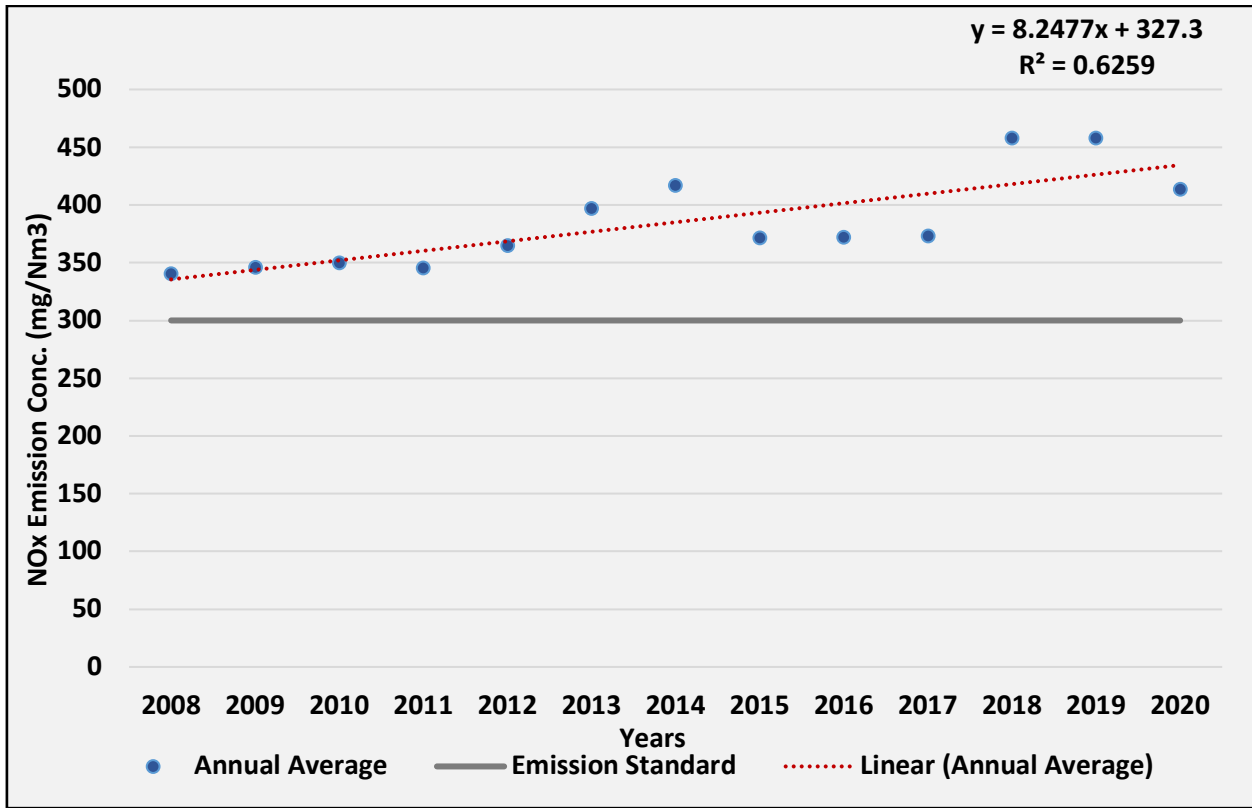


Fig. J82: Trend of annual mean NO_x Emission air concentration in Jindal TPP (ST UNIT3 250)

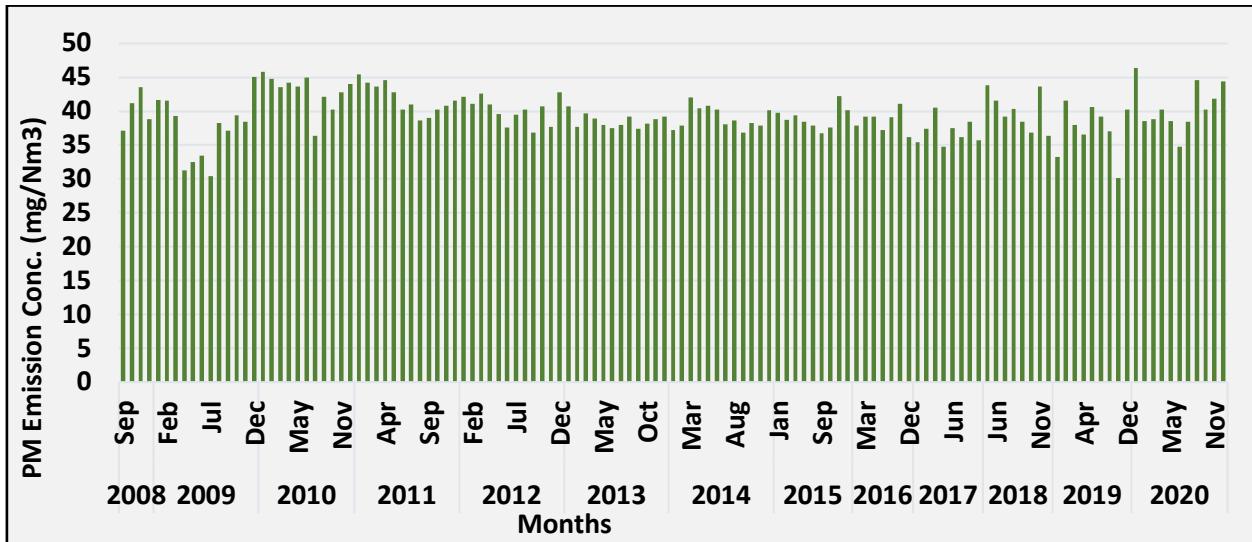


Fig. J83: Time series of monthly average PM Emission concentration in Jindal TPP (ST UNIT4 250)



Fig. J84: Time series of monthly average SO₂ Emission concentration in Jindal TPP (ST UNIT4 250)

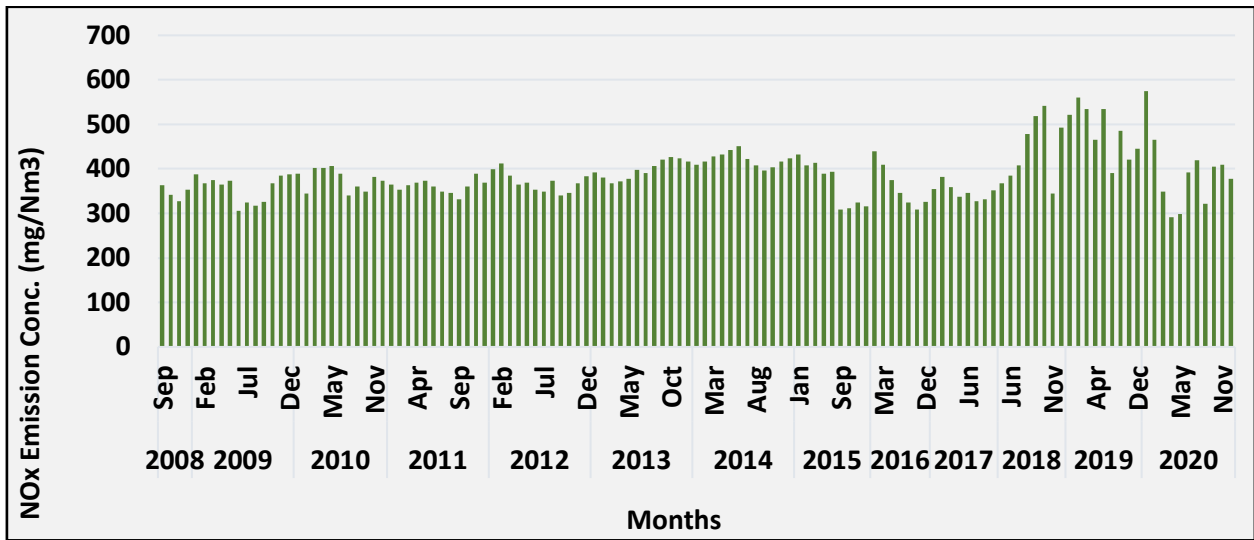


Fig. J85: Time series of monthly average NO_x Emission concentration in Jindal TPP (ST UNIT4 250)

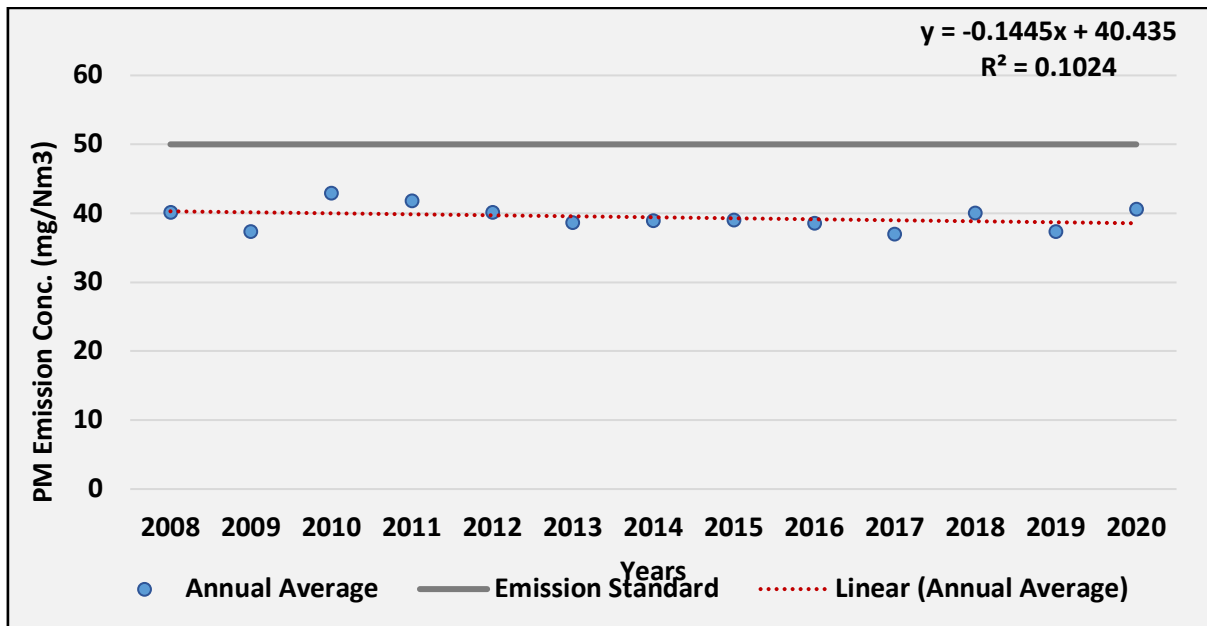


Fig. J86: Trend of annual mean PM Emission air concentration in Jindal TPP (ST UNIT4 250)

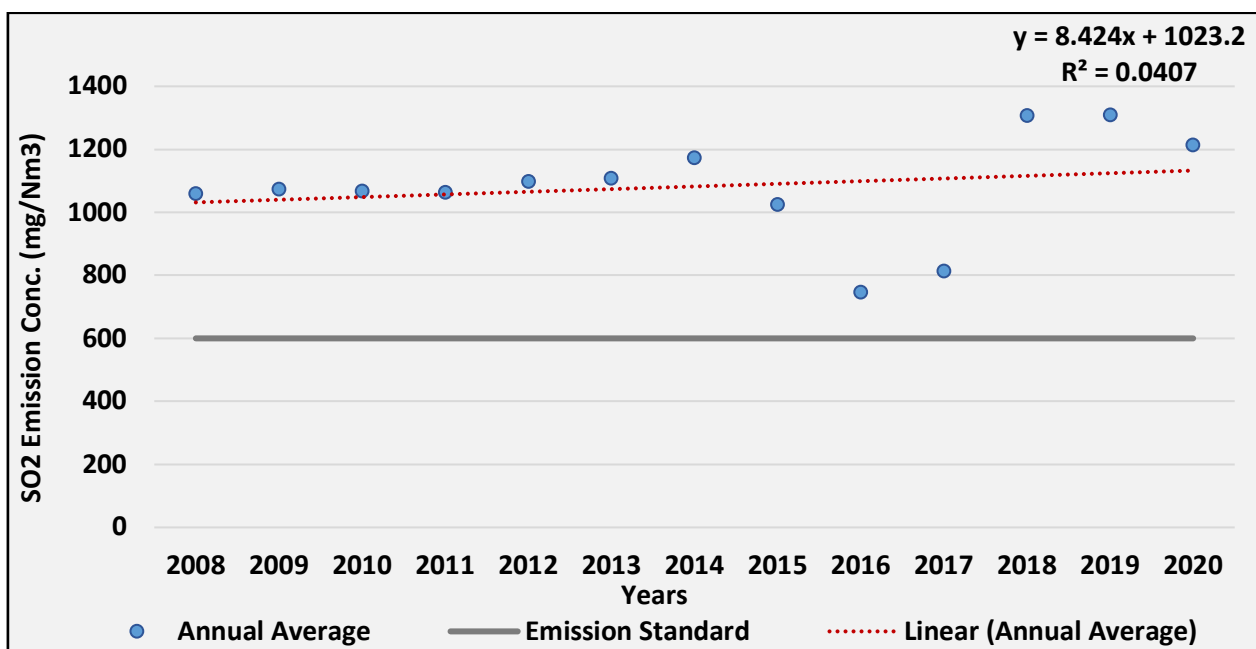


Fig. J87: Trend of annual mean SO₂ Emission air concentration in Jindal TPP (ST UNIT4 250)

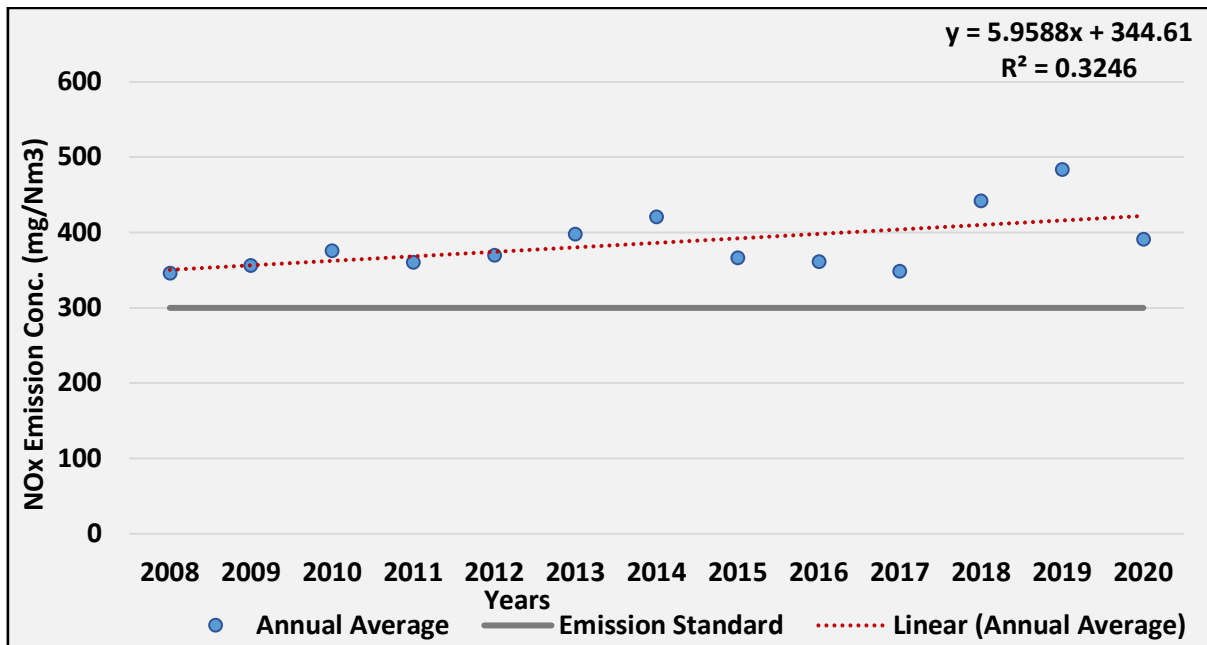


Fig. J88: Trend of annual mean NO_x Emission air concentration in Jindal TPP (ST UNIT4 250)

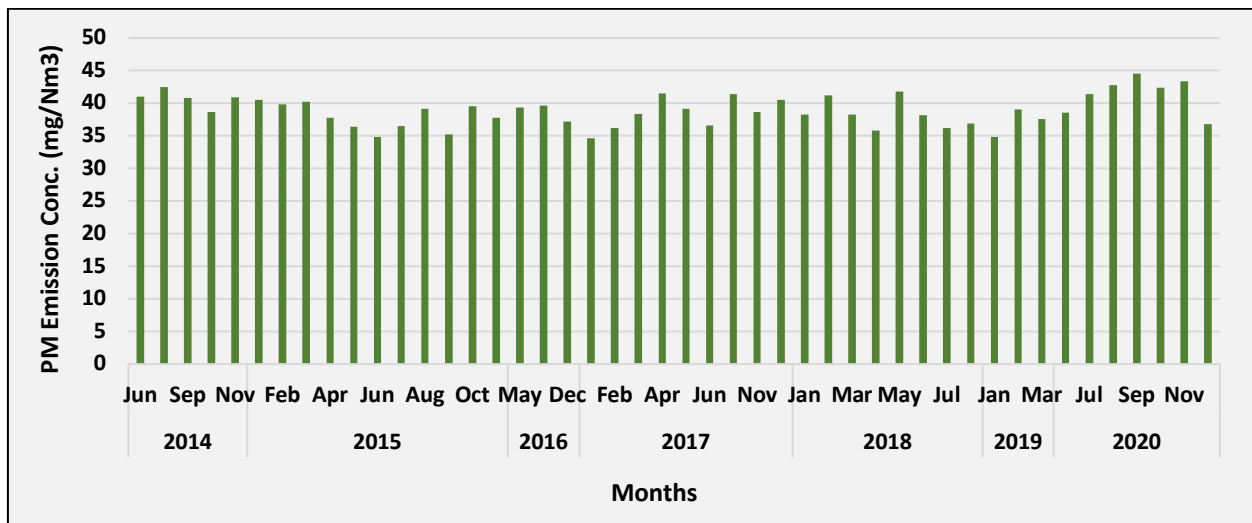


Fig. J89: Time series of monthly average PM Emission concentration in Jindal TPP (ST UNIT5 600)

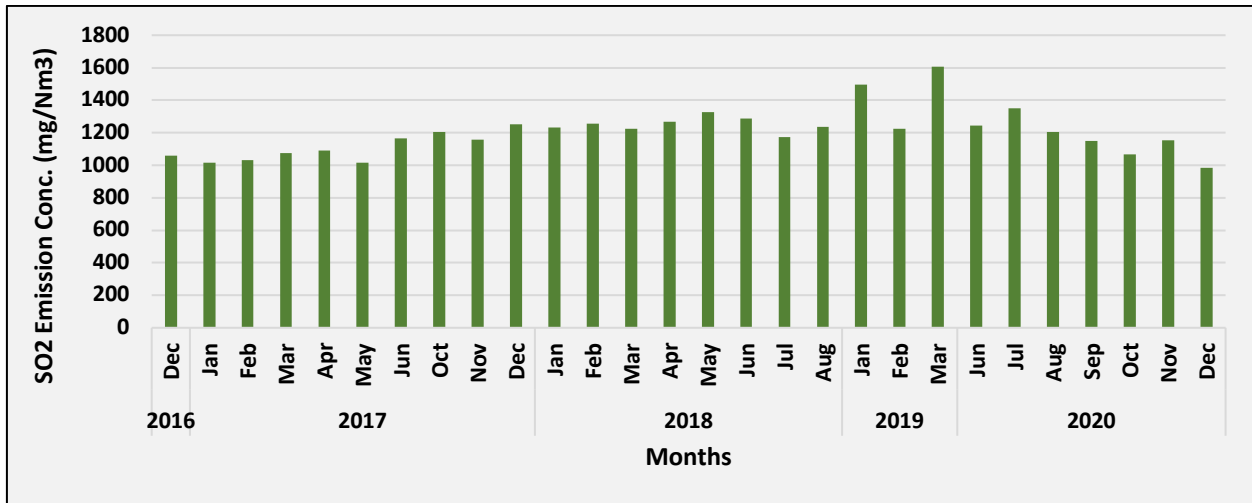


Fig. J90: Time series of monthly average SO₂ Emission concentration in Jindal TPP (ST UNIT5 600)

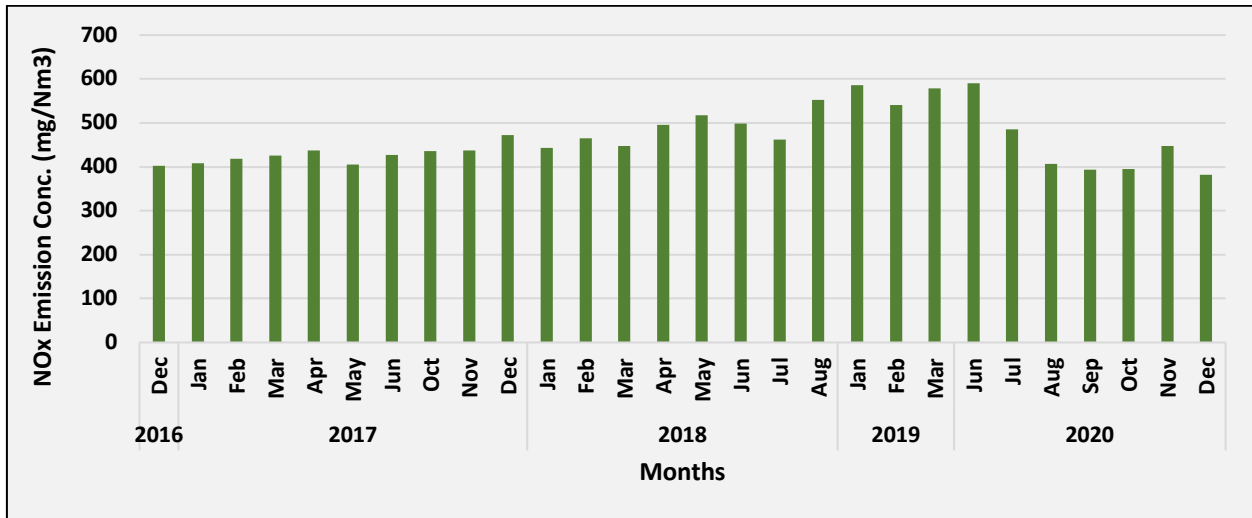


Fig. J91: Time series of monthly average NO_x Emission concentration in Jindal TPP (ST UNIT5 600)

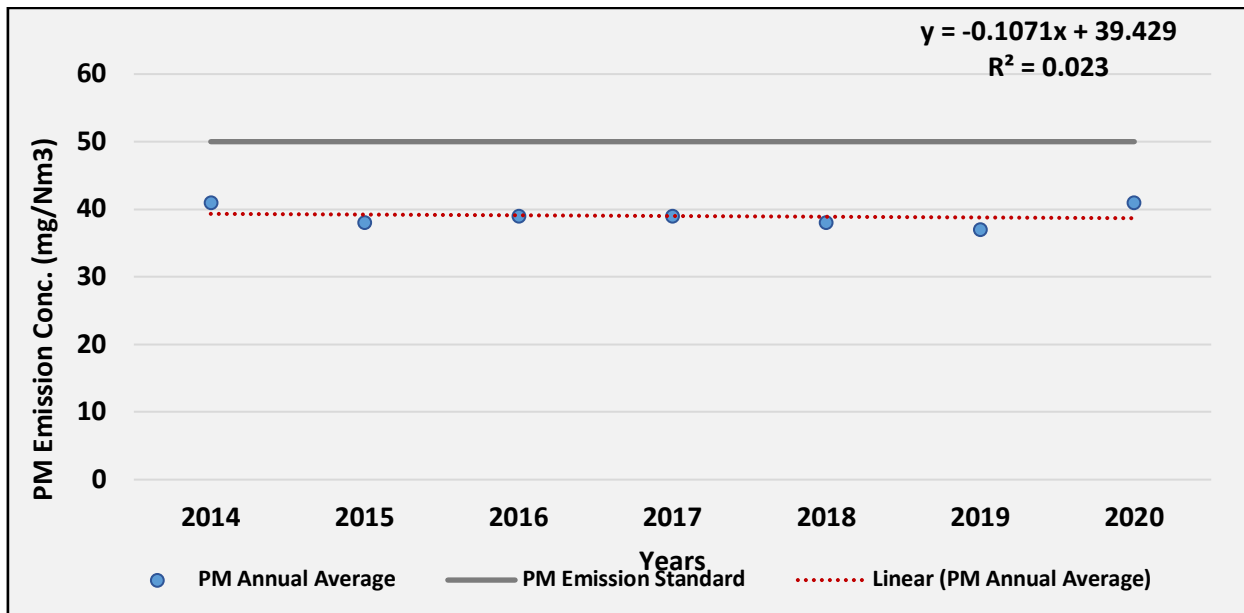


Fig. J92: Trend of annual mean PM Emission air concentration in Jindal TPP (ST UNIT5 600)

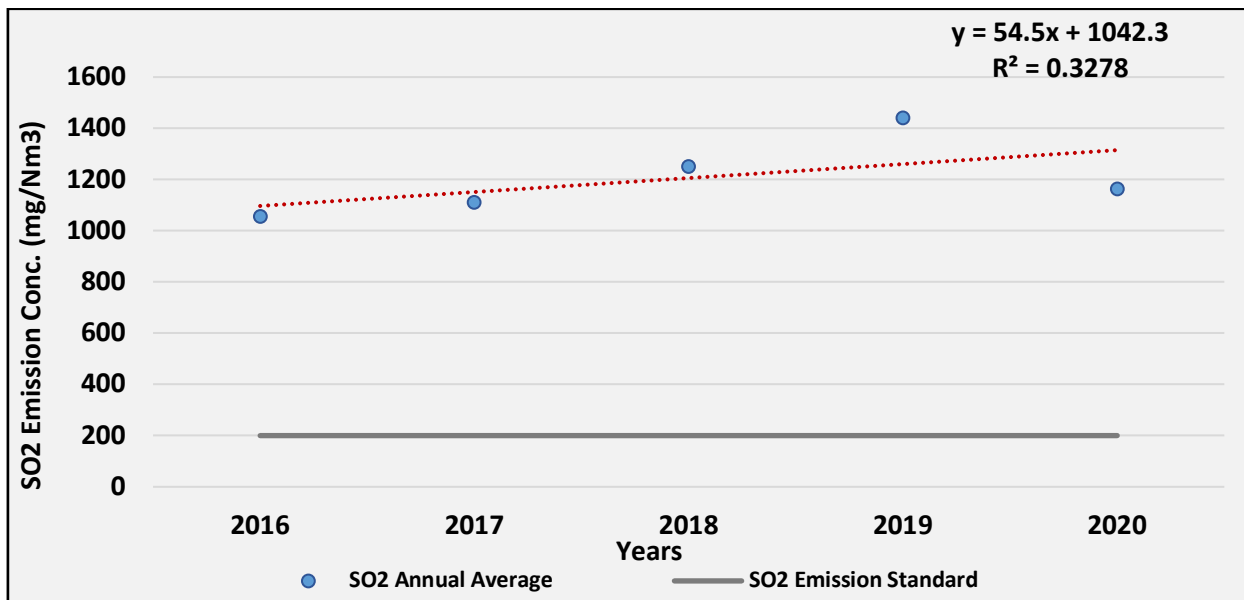


Fig. J93: Trend of annual mean SO₂ Emission air concentration in Jindal TPP (ST UNIT5 600)

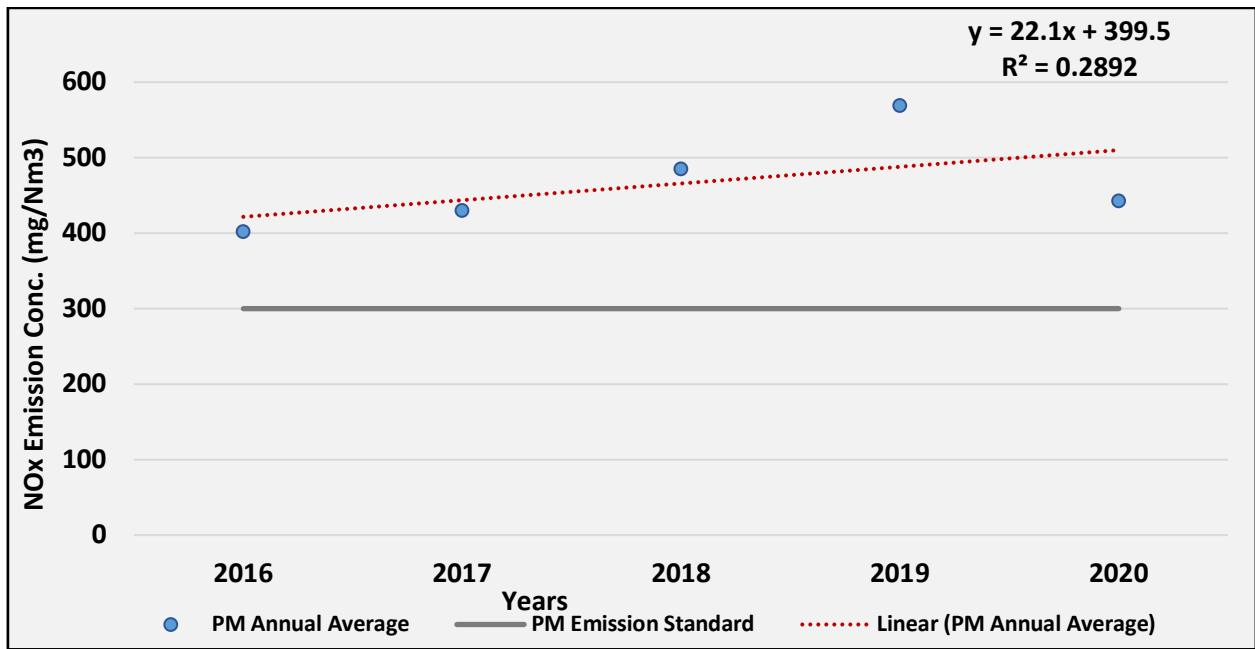


Fig. J94: Trend of annual mean NO_x Emission air concentration in Jindal TPP (ST UNIT5 600)

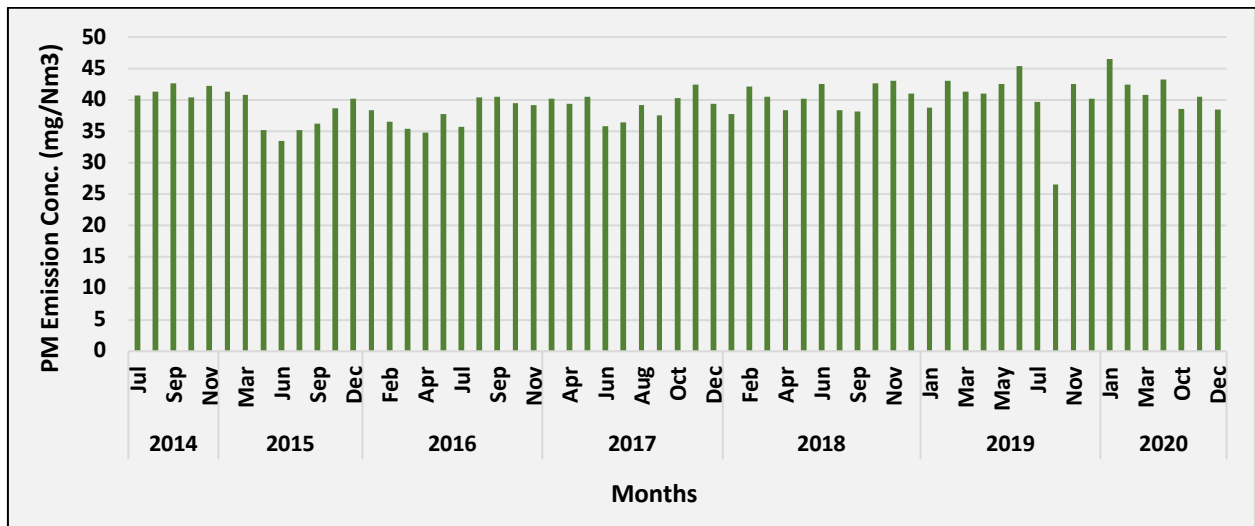


Fig. J95: Time series of monthly average PM Emission concentration in Jindal TPP (ST UNIT6 600)

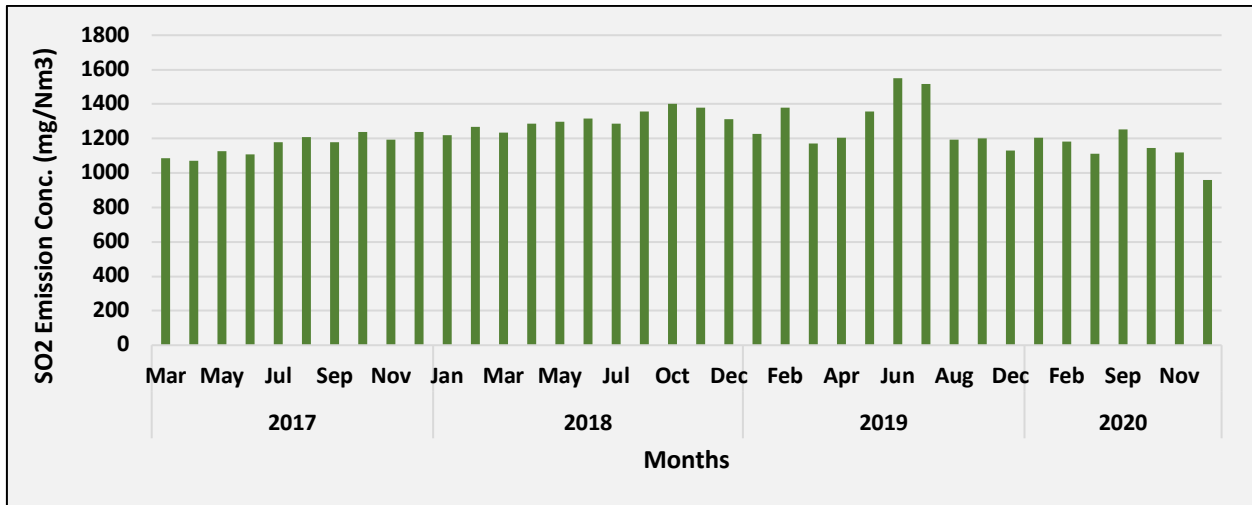


Fig. J96: Time series of monthly average SO₂ Emission concentration in Jindal TPP (ST UNIT6 600)

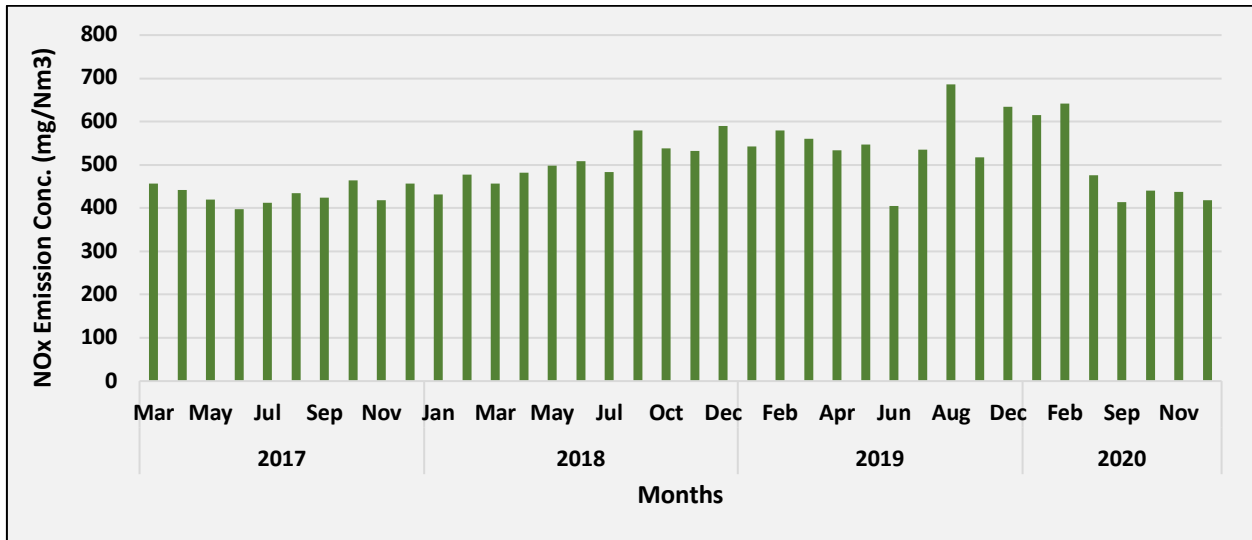


Fig. J97: Time series of monthly average NO_x Emission concentration in Jindal TPP (ST UNIT6 600)

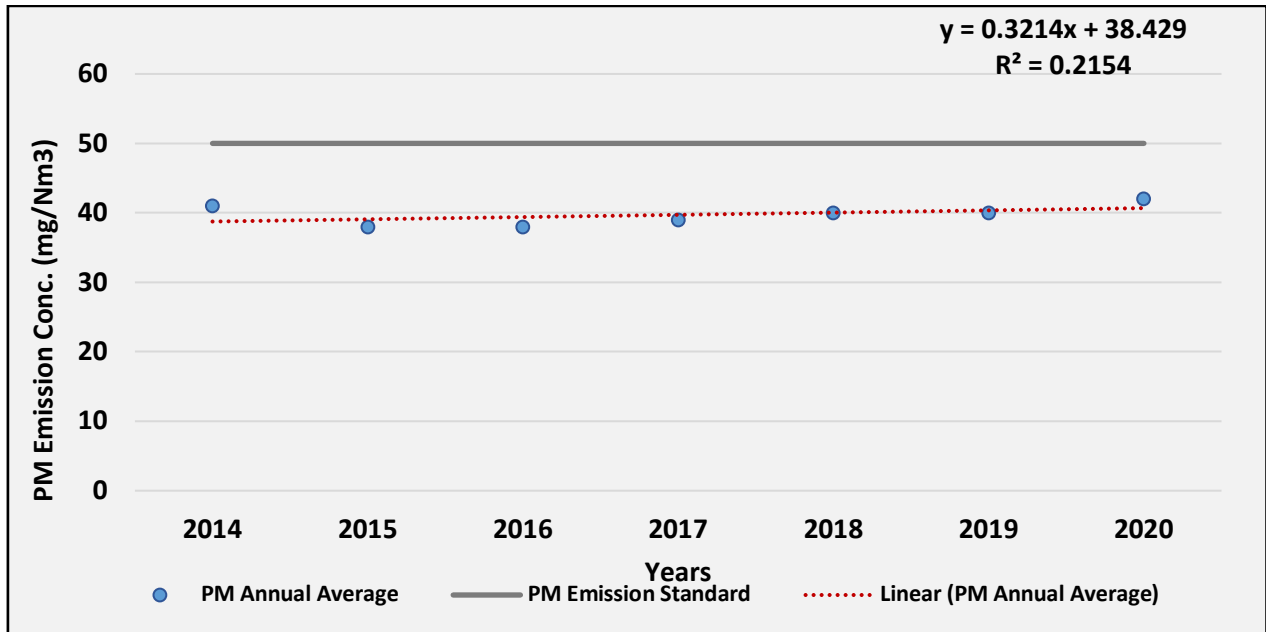


Fig. J98: Trend of annual mean PM Emission air concentration in Jindal TPP (ST UNIT6 600)

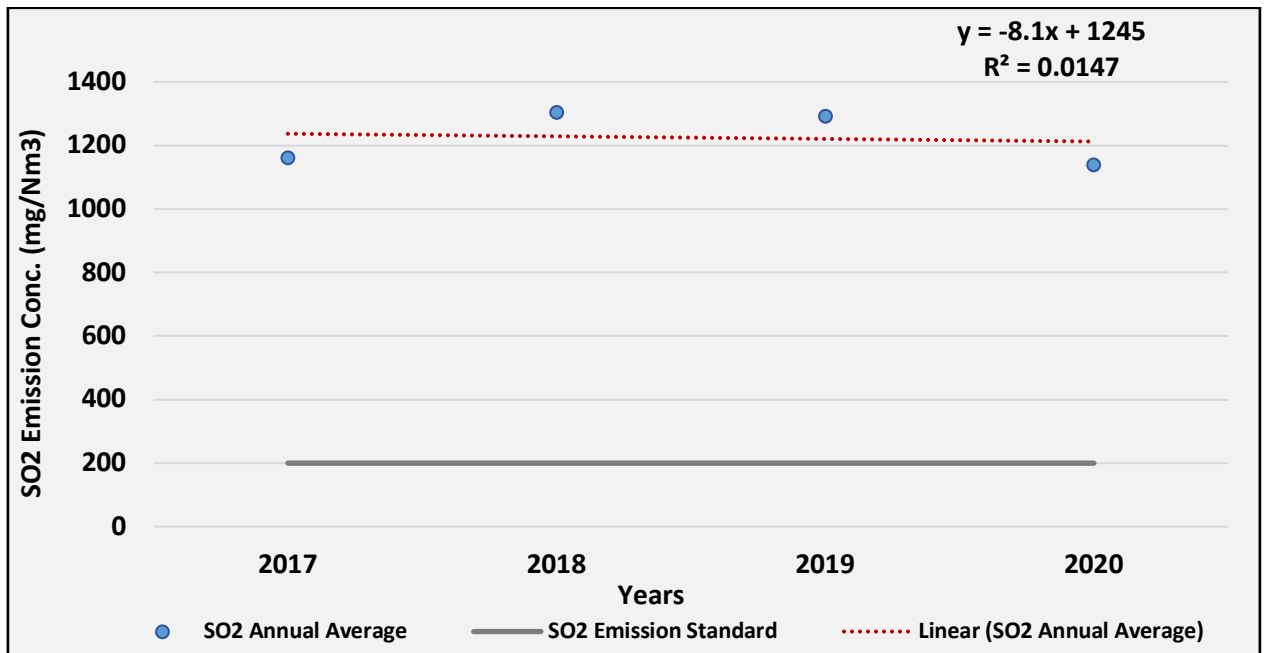


Fig. J99: Trend of annual mean SO₂ Emission air concentration in Jindal TPP (ST UNIT6 600)

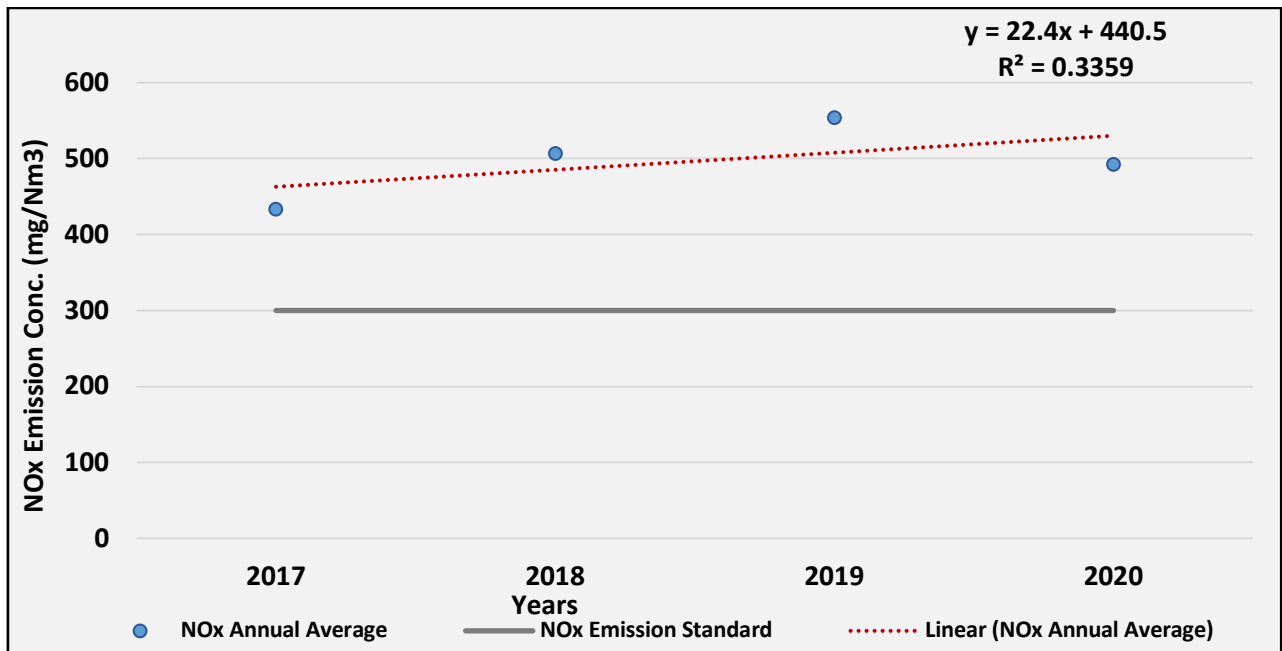


Fig. J100: Trend of annual mean NO_x Emission air concentration in Jindal TPP (ST UNIT6 600)

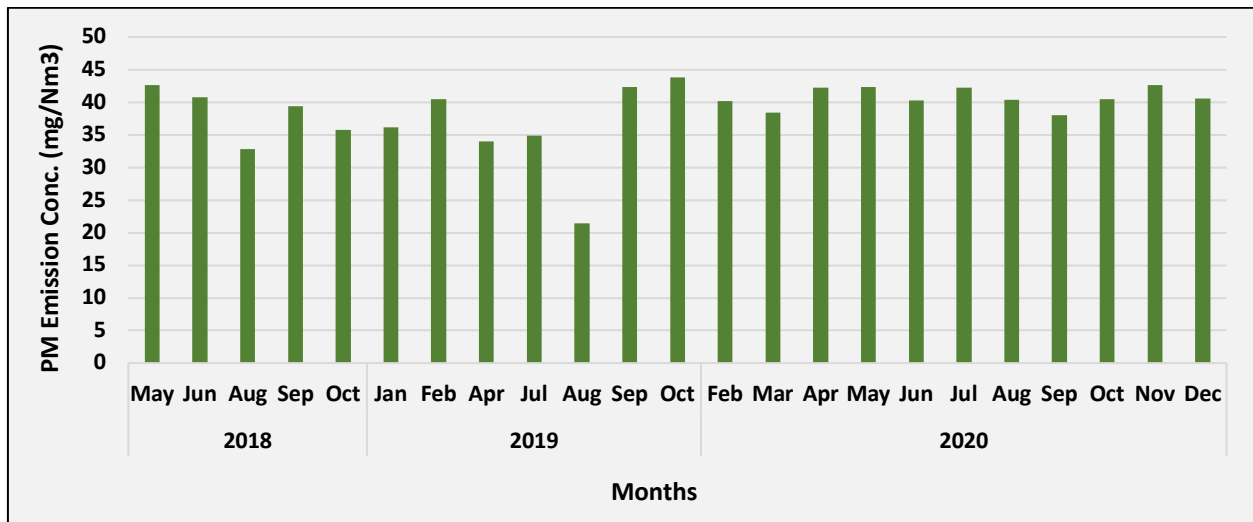


Fig. J101: Time series of monthly average PM Emission concentration in Jindal TPP (ST UNIT7 600)

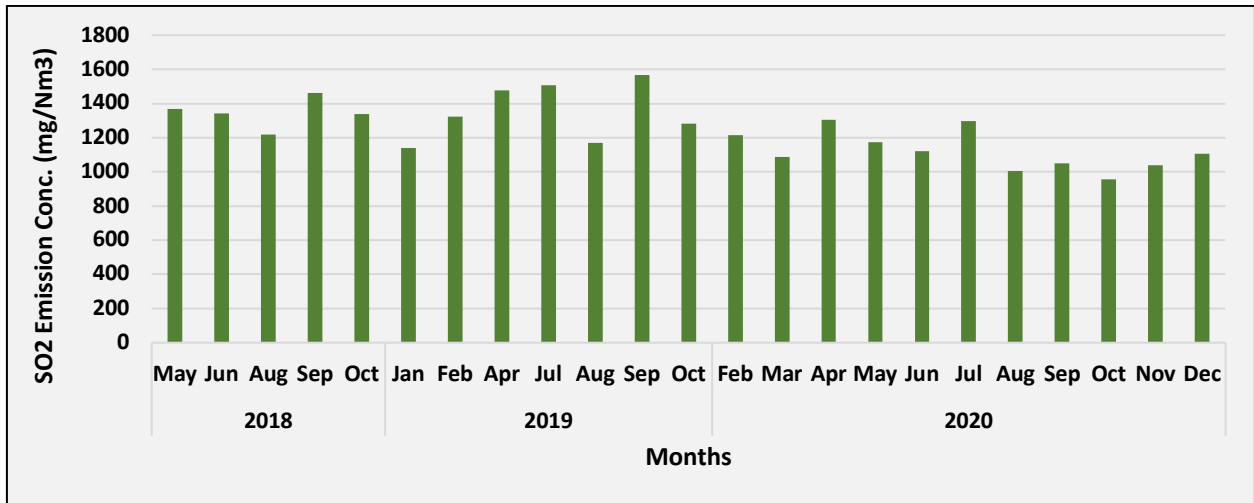


Fig. J102: Time series of monthly average SO₂ Emission concentration in Jindal TPP (ST UNIT7 600)

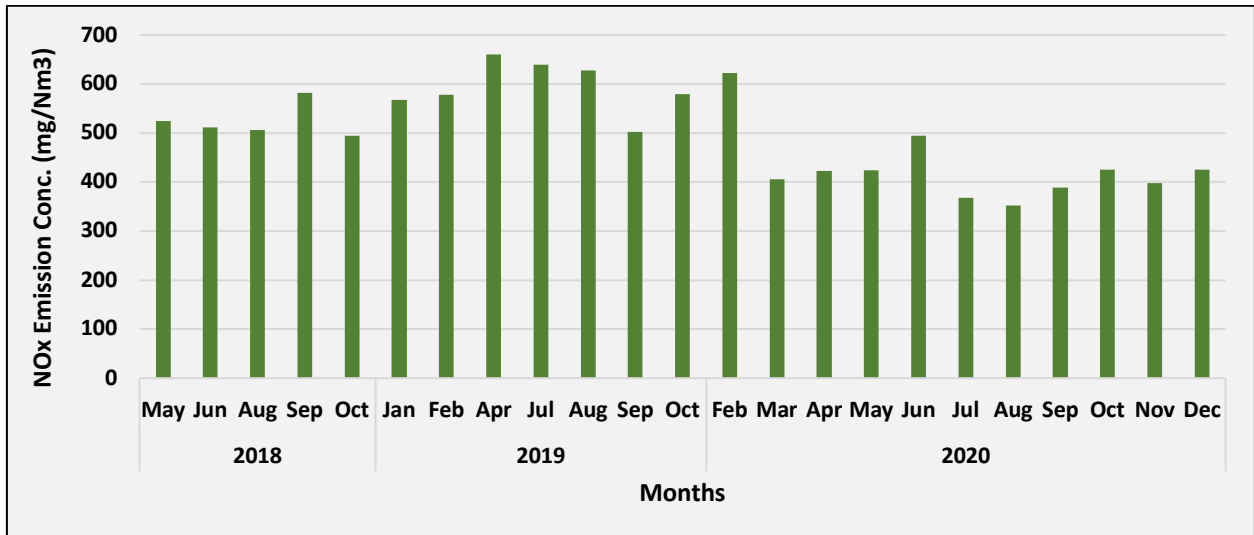


Fig. J103: Time series of monthly average NO_x Emission concentration in Jindal TPP (ST UNIT7 600)

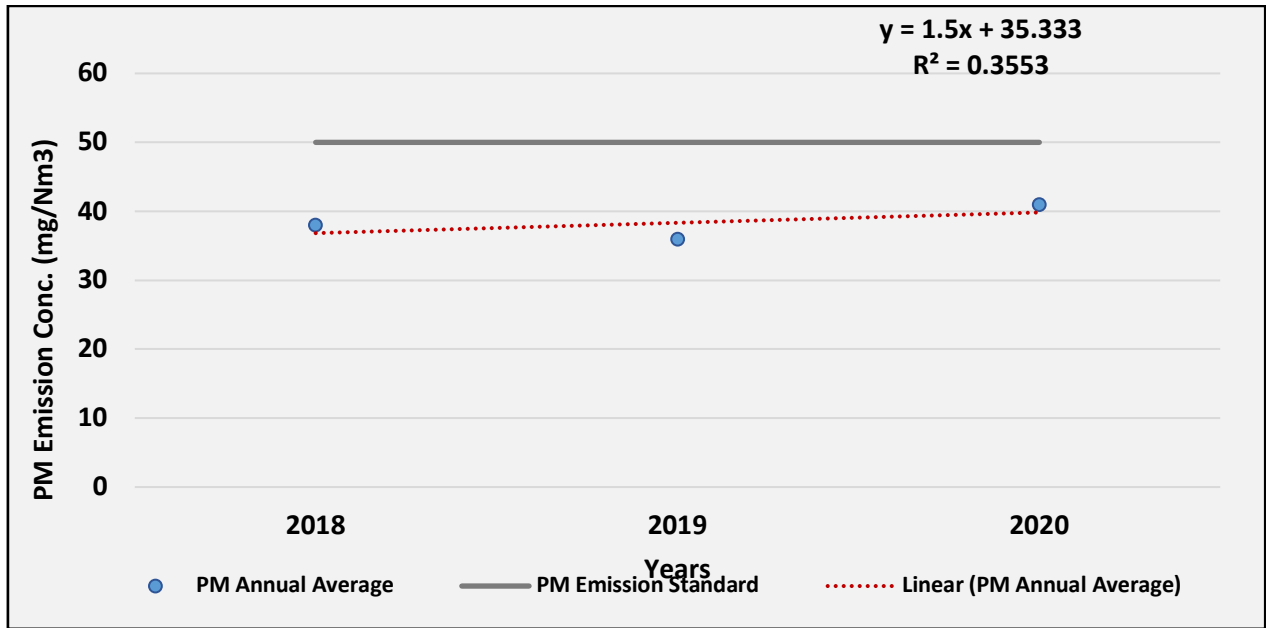


Fig. J104: Trend of annual mean PM Emission air concentration in Jindal TPP (ST UNIT7 600)

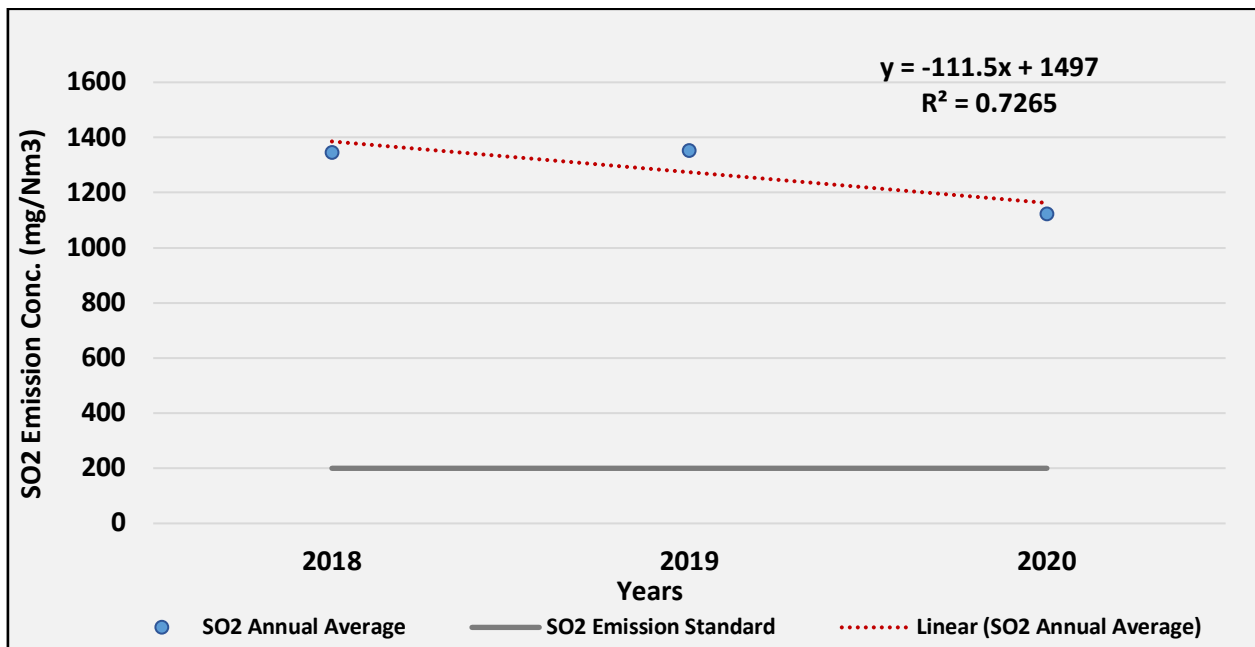


Fig. J105: Trend of annual mean SO₂ Emission air concentration in Jindal TPP (ST UNIT7 600)

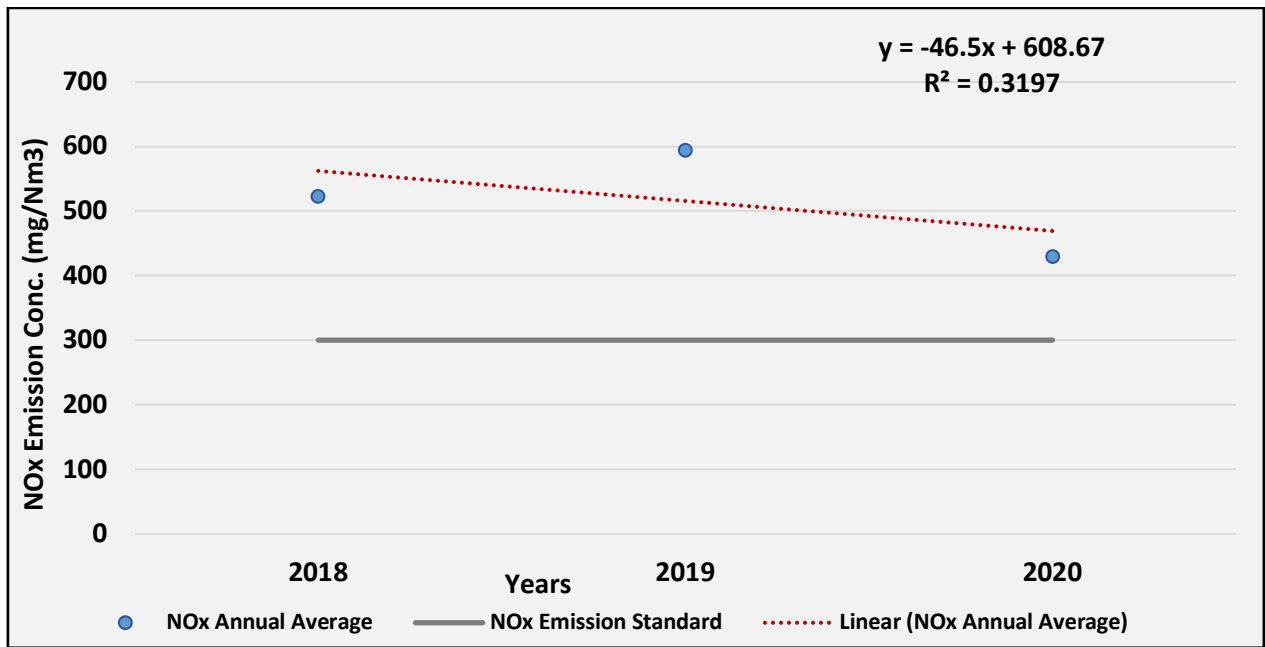


Fig. J106: Trend of annual mean NO_x Emission air concentration in Jindal TPP (ST UNIT7 600)

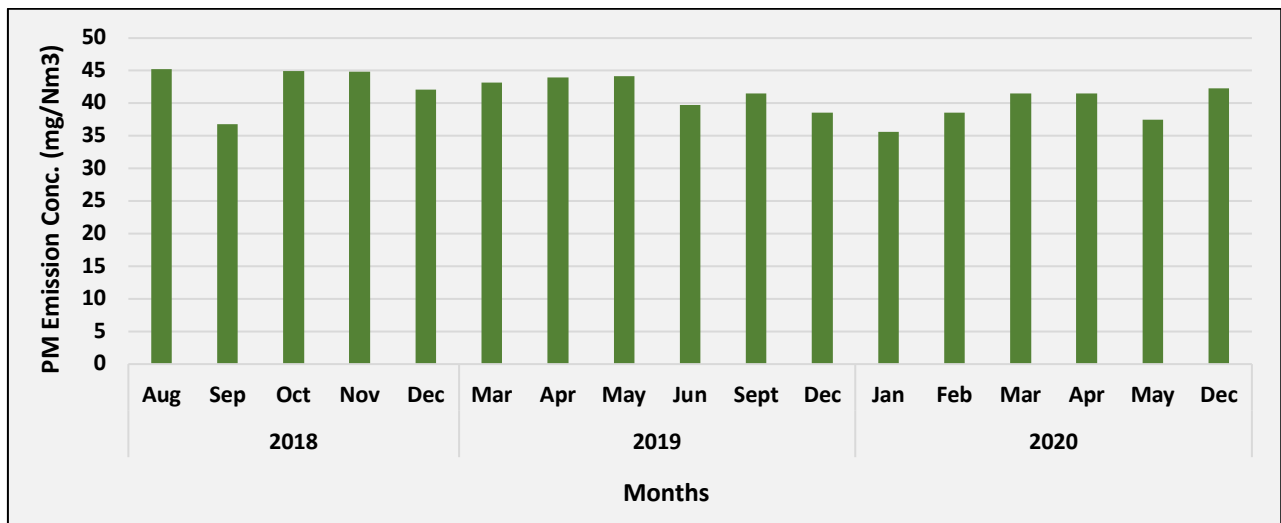


Fig. J107: Time series of monthly average PM Emission concentration in Jindal TPP (ST UNIT8 600)

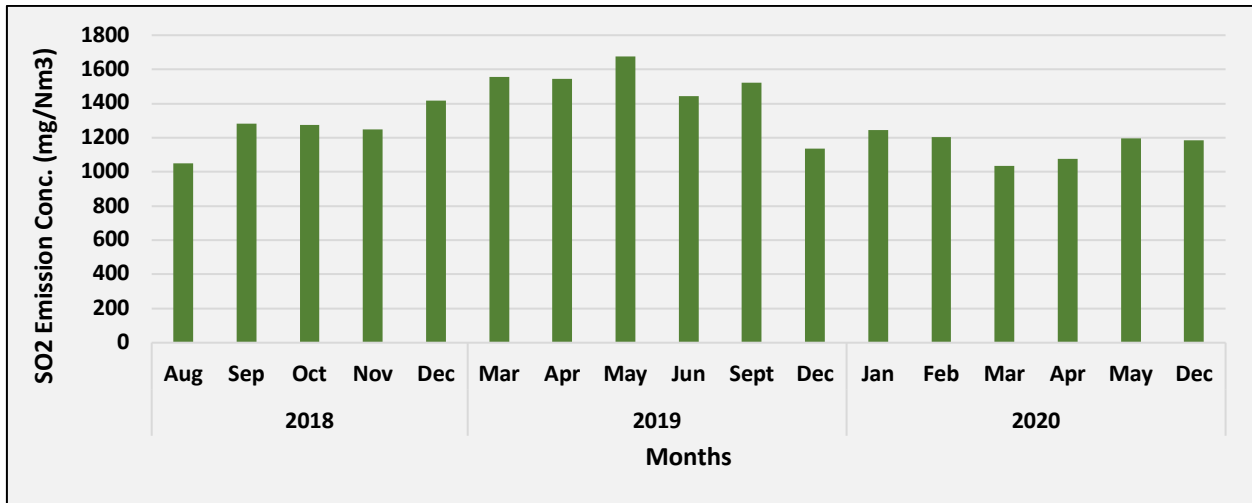


Fig. J108: Time series of monthly average SO₂ Emission concentration in Jindal TPP (ST UNIT8 600)

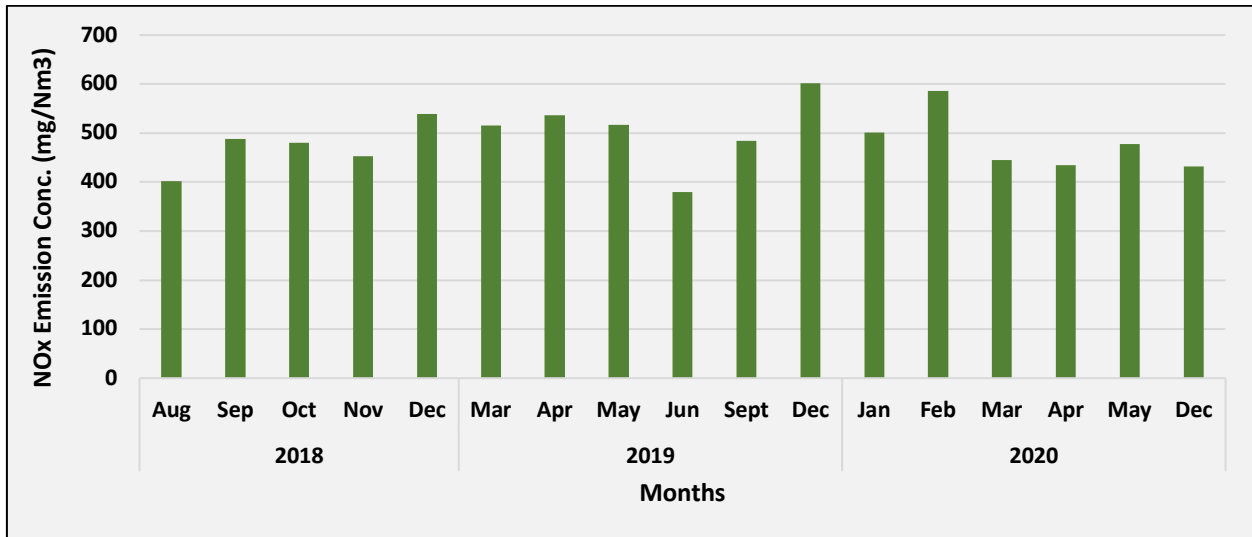


Fig. J109: Time series of monthly average NO_x Emission concentration in Jindal TPP (ST UNIT8 600)

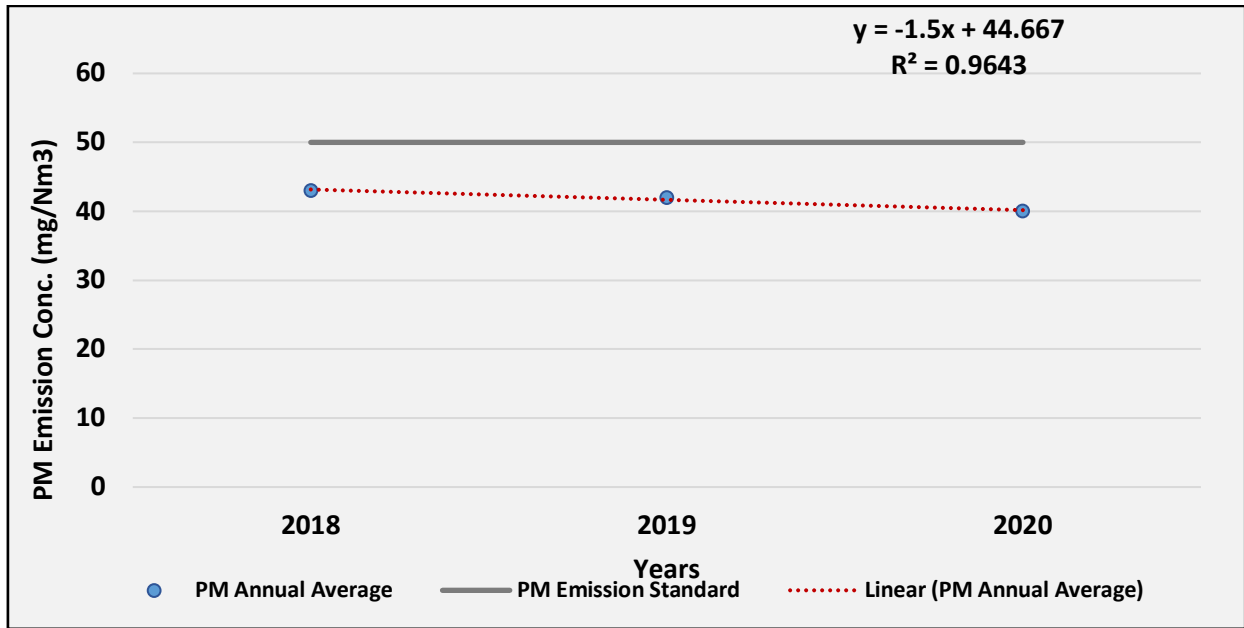


Fig. J110: Trend of annual mean PM Emission air concentration in Jindal TPP (ST UNIT8 600)

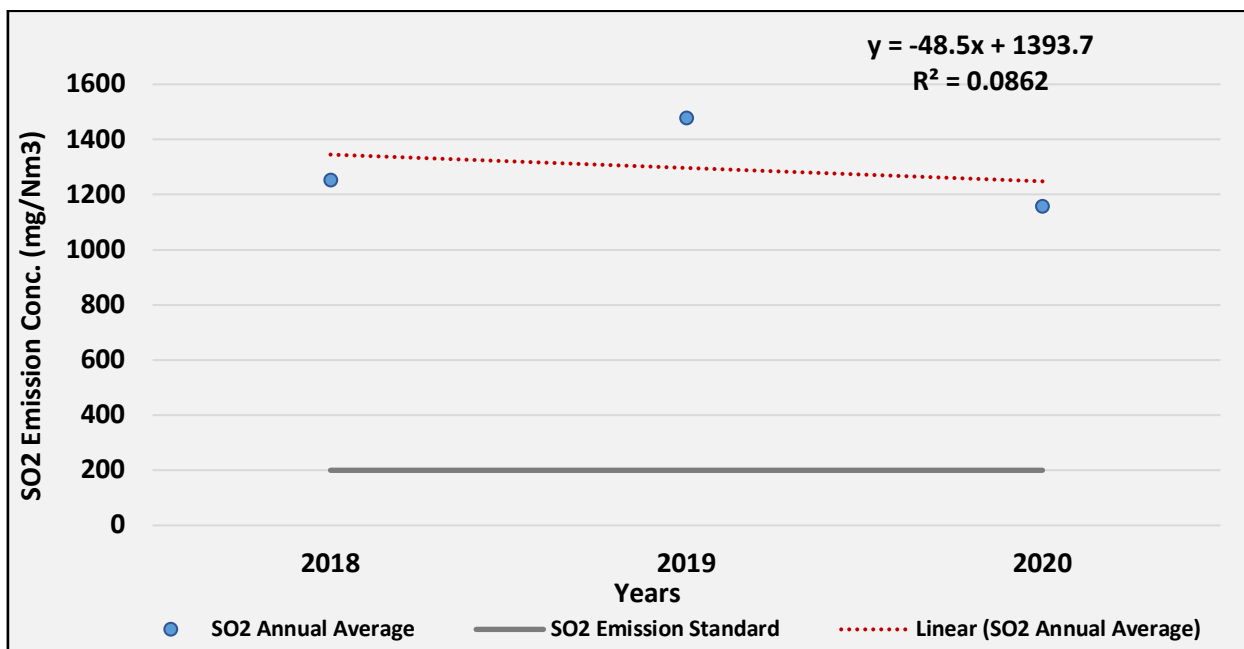


Fig. J111: Trend of annual mean SO₂ Emission air concentration in Jindal TPP (ST UNIT8 600)

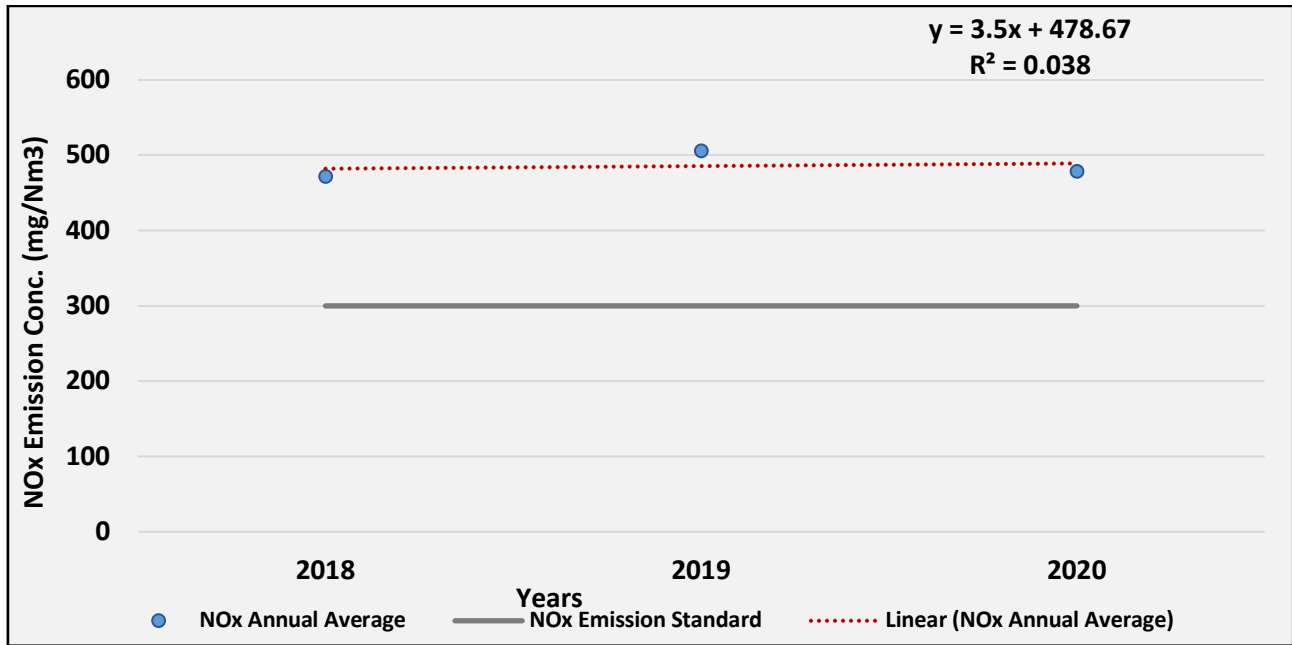


Fig. J112: Trend of annual mean NO_x Emission air concentration in Jindal TPP (ST UNIT8 600)

For Raigarh TPP and Tamnar TPP Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀ is exceeding whereas the PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

Durgapur Steel Thermal Power Station (DSTPS)

Durgapur Steel Thermal Power Station is a coal-based thermal power plant located near the city of Durgapur in Bardhaman district, West Bengal, India. The power plant is operated by the Damodar Valley Corporation (DVC). Location coordinates are Latitude-23.58N, Longitude= 87.2043E. This infrastructure is of TYPE Coal Power Plant with a design capacity of 1000 MWe. It has two unit(s). The first unit was commissioned in 2011 and the later one in 2012.

The ambient air quality concentrations of SO₂, NO_x, PM₁₀, and PM_{2.5} data analyzed for the five years using data provided by DVC developer for Durgapur Steel Power plant, West Bengal, India.

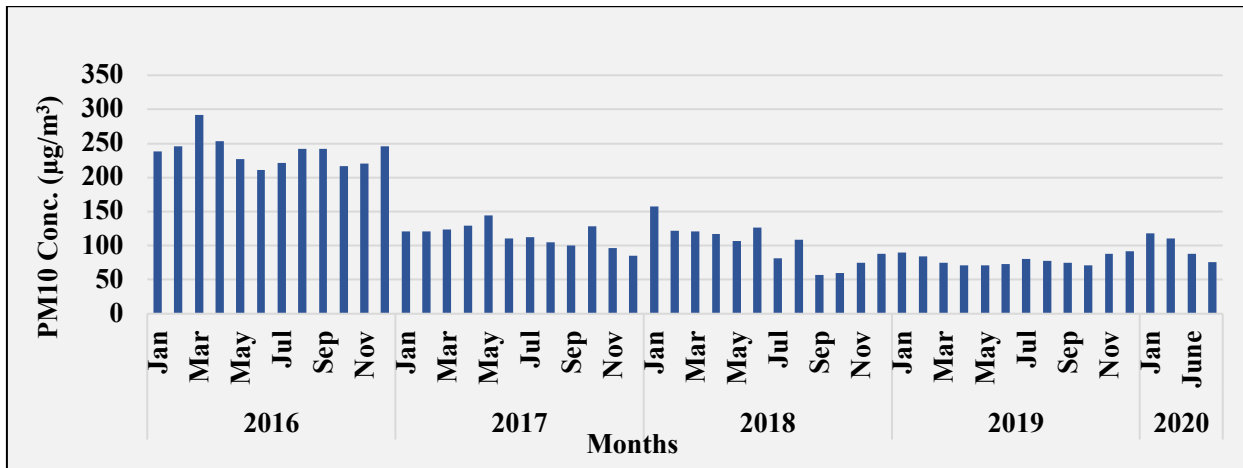


Fig. D1: Time series of monthly average PM₁₀ ambient air concentration in Durgapur TPP

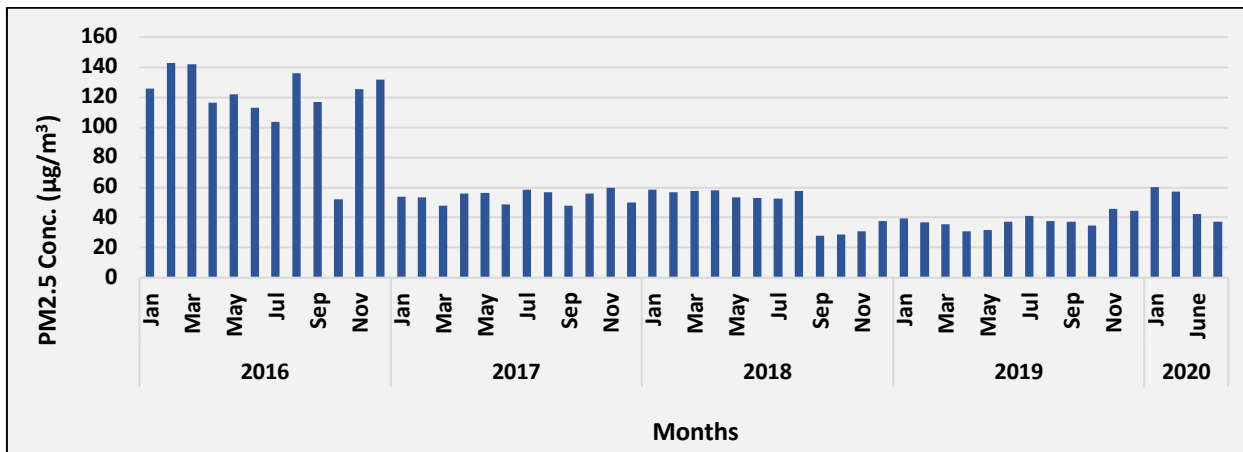


Fig. D2: Time Series of monthly average PM_{2.5} ambient air concentration in Durgapur TPP

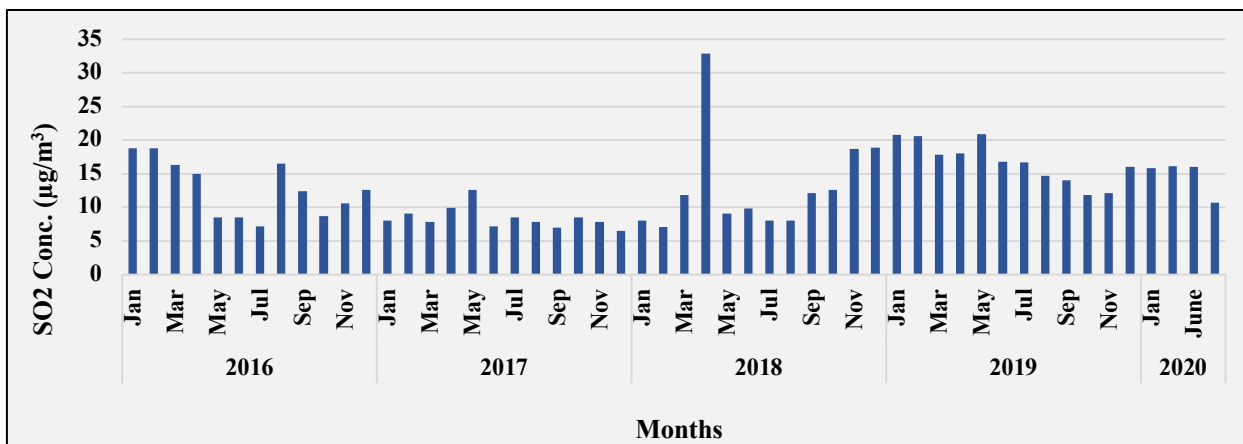


Fig. D3: Time Series of monthly average SO₂ ambient air concentration in Durgapur TPP

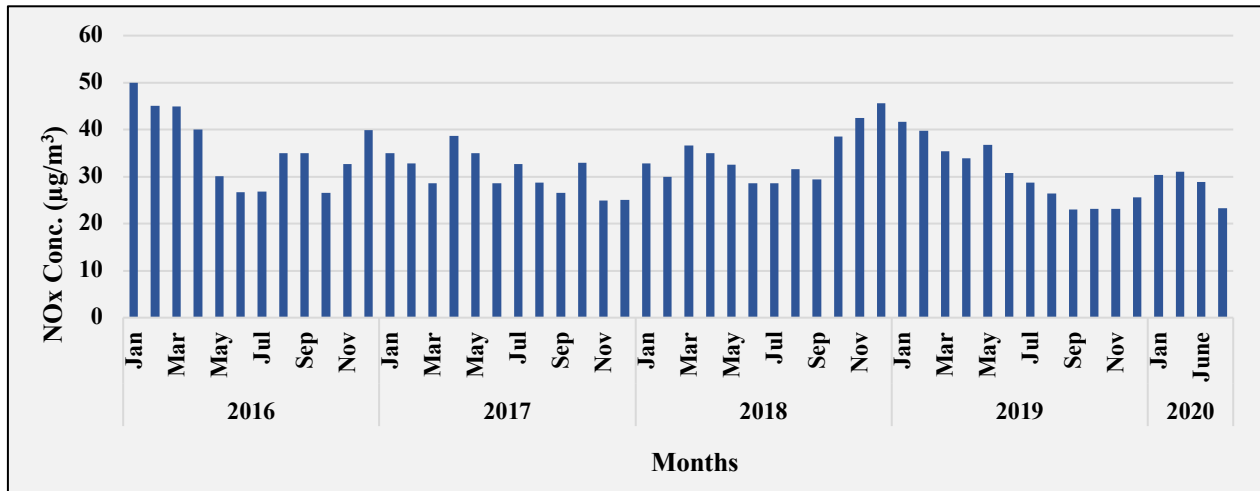


Fig. D4: Time series of monthly average NO_x ambient air concentration in Durgapur TPP

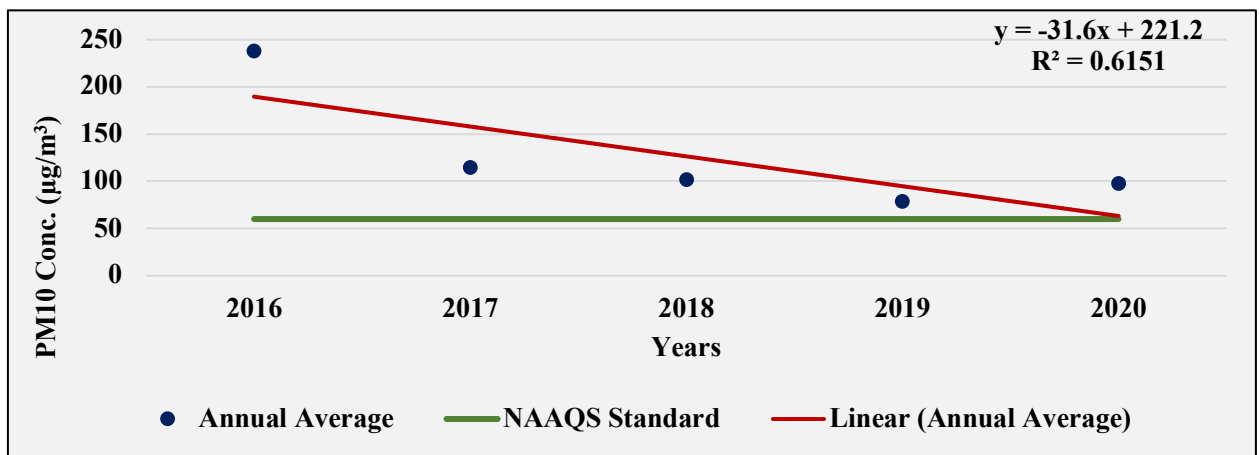


Fig. D5: Trend of annual mean PM₁₀ ambient air concentration in Durgapur TPP

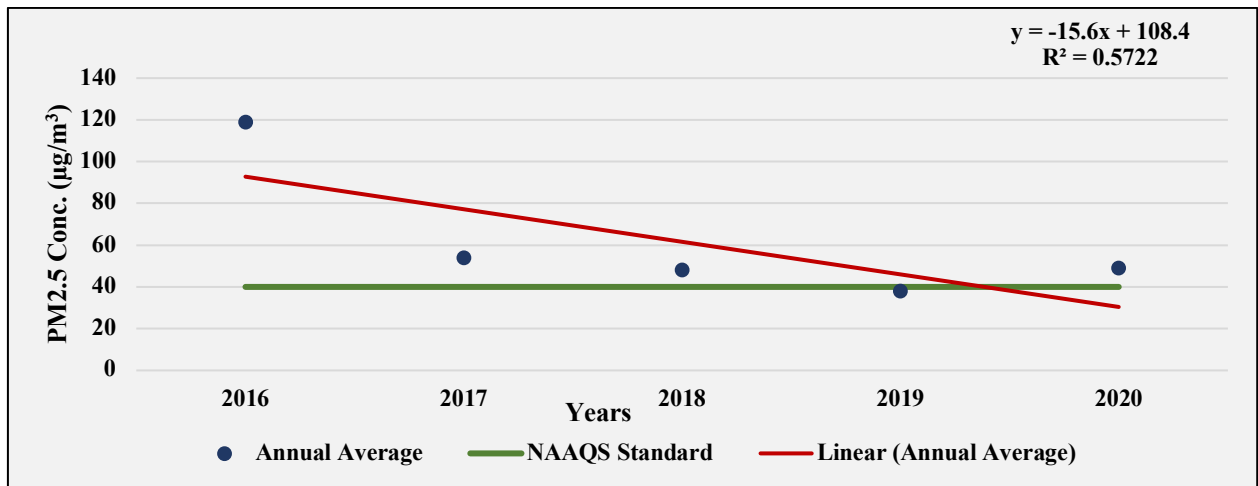


Fig. D6: Trend of annual mean PM_{2.5} ambient air concentration in Durgapur TPP

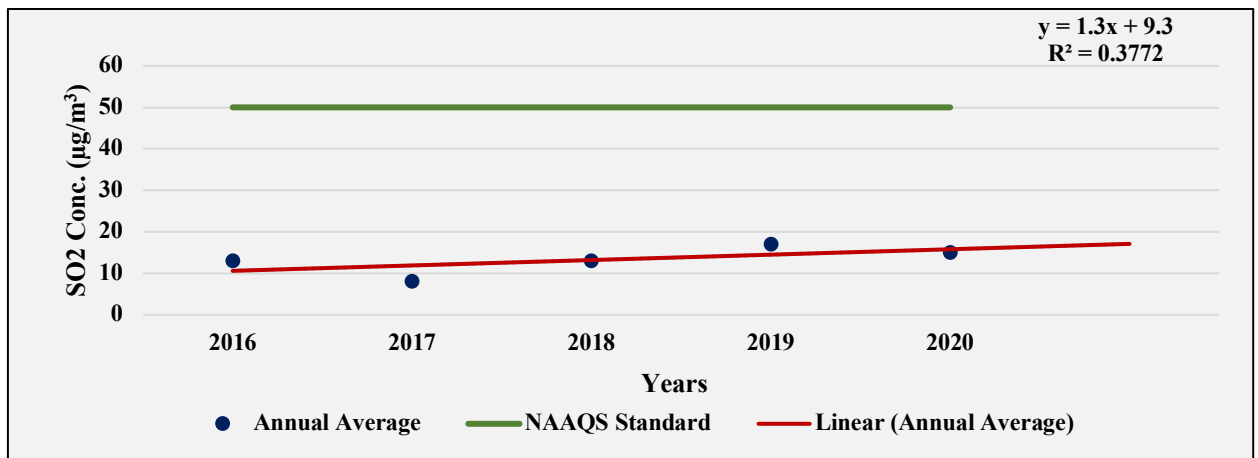


Fig. D7: Trend of annual mean SO₂ ambient air concentration in Durgapur TPP

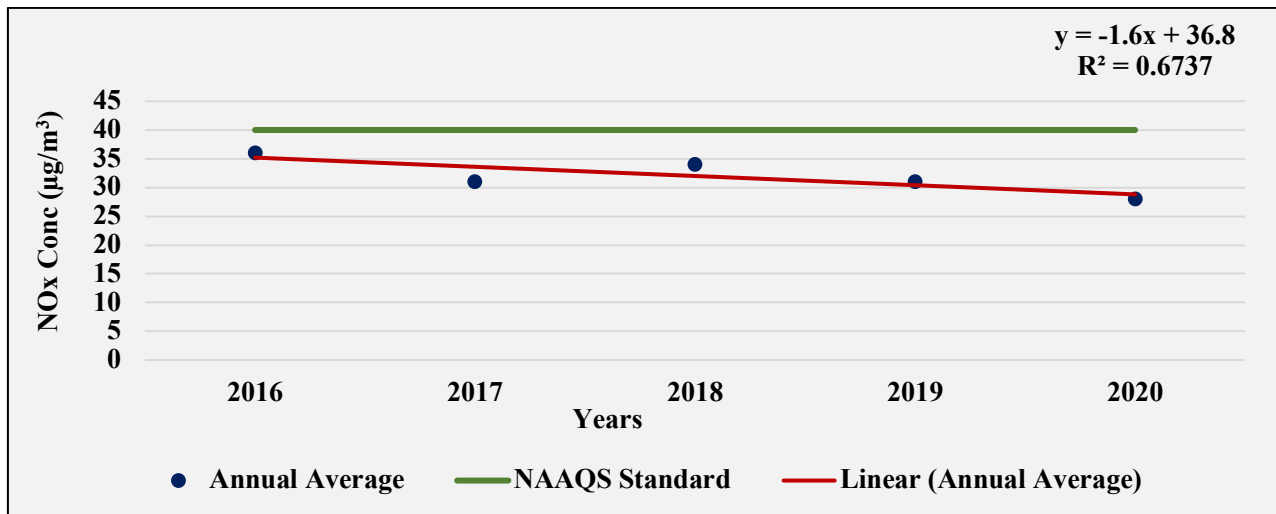


Fig. D8: Trend of annual mean NO_x ambient air concentration in Durgapur TPP

Evidence based on ground level stations shows that the monthly average (Fig. 4 & 5) and annual average (Fig. 8 & 9) of SO₂ & NO_x levels in five years are mostly within a range of 0-50 µg/m³ & 0-40 µg/m³ respectively, which is good as per the as per the National Ambient Air Quality Standards (NAAQS) notified by Central Pollution Control Board (CPCB) (Annexure I). However, the major cause of concern is the PM₁₀, PM_{2.5} levels that are relatively very high for both monthly (Fig 1 & 2) and annual average (Fig 6 & 7). This suggests that the particulate matter contribution by the DSTPS thermal power plant have to be controlled as per the NAAQS.

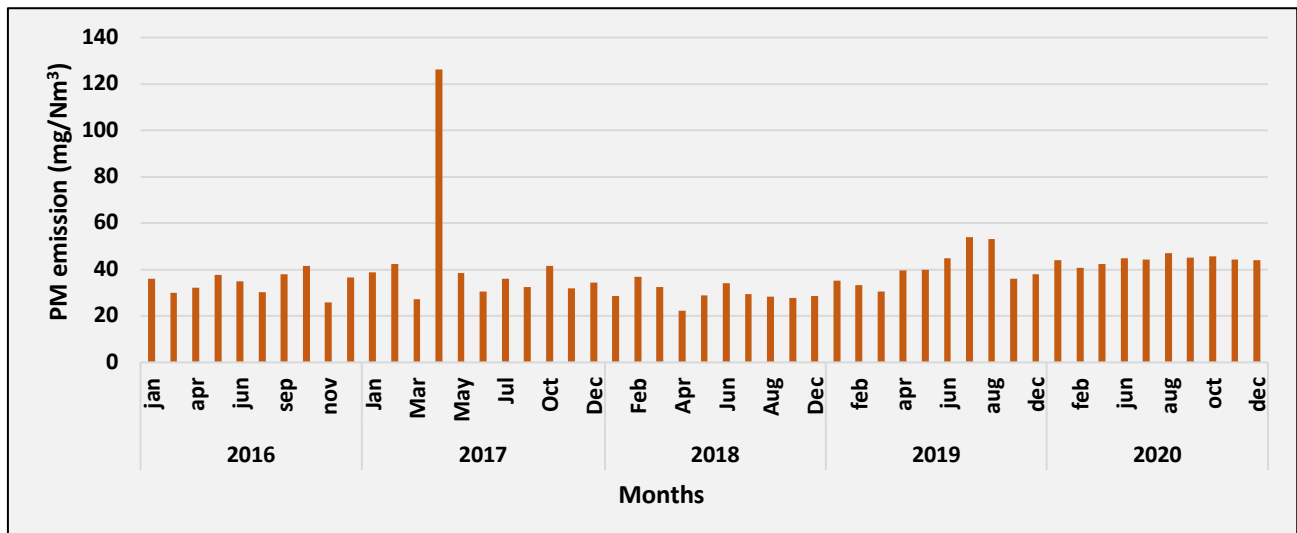


Fig. D9: Time series of monthly average emission of PM from stack 1 in Durgapur TPP

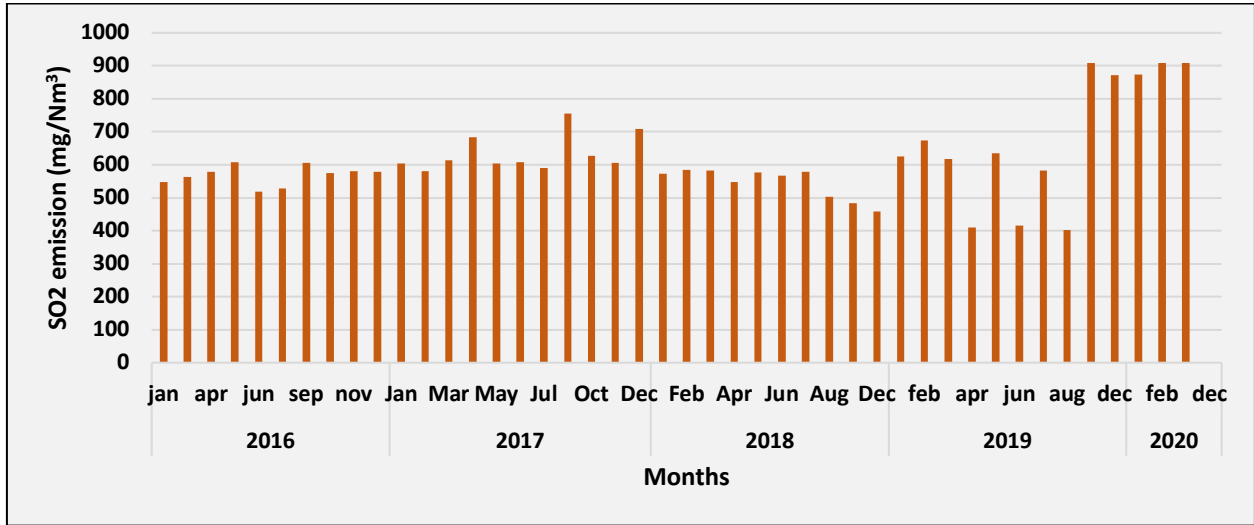


Fig. D10: Time series of monthly average emission of SO₂ from stack 1 in Durgapur TPP

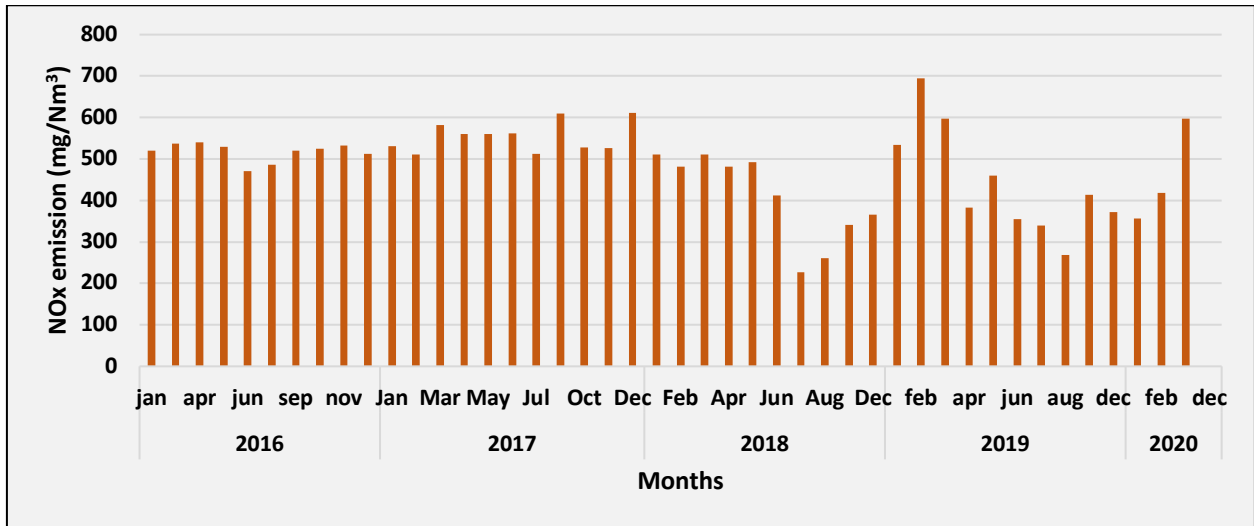


Fig. D11: Time series of monthly average emission of NO_x from stack 1 in Durgapur TPP

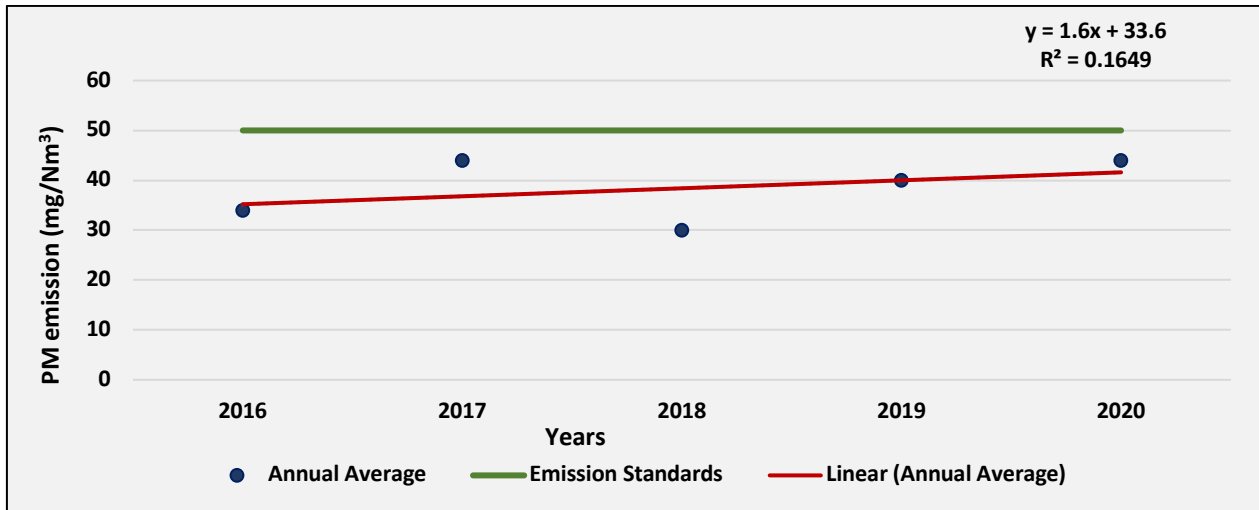


Fig.12: Trend of annual average PM emissions from stack 1 in Durgapur TPP

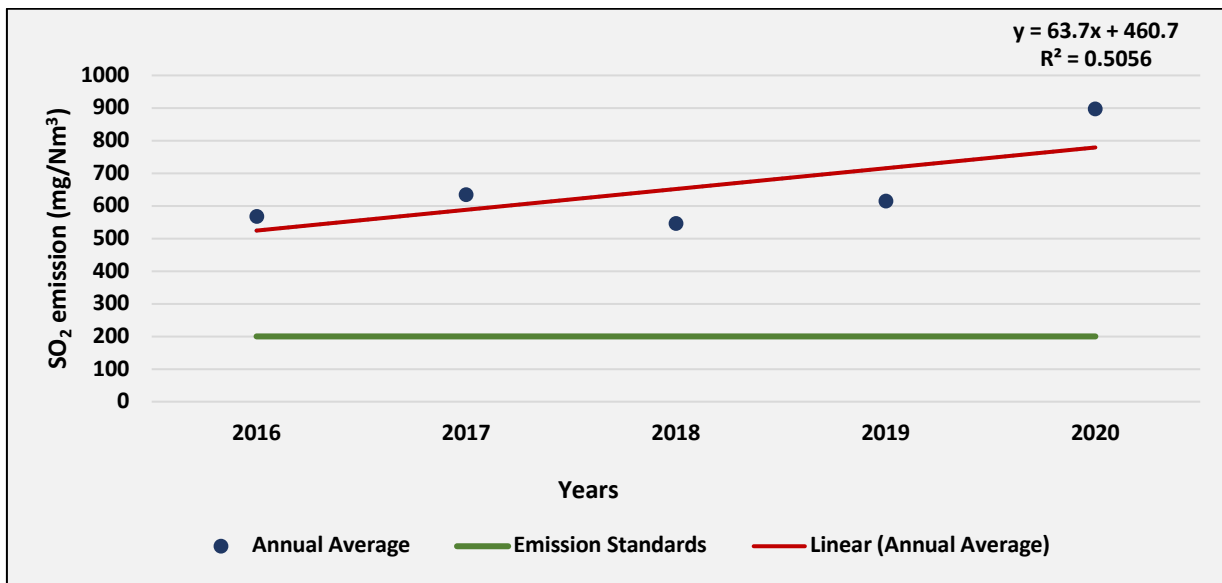


Fig.13: Trend of annual average emission of SO₂ from stack 1 in Durgapur TPP

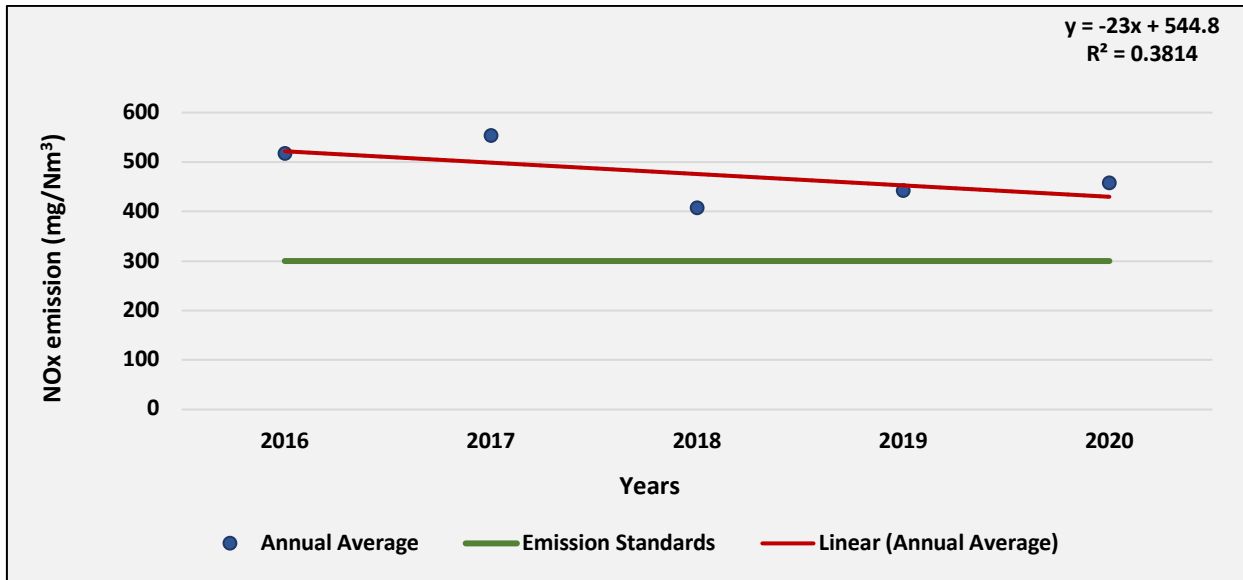


Fig.D14: Trend of annual average emission of NOx from stack 1 in Durgapur TPP

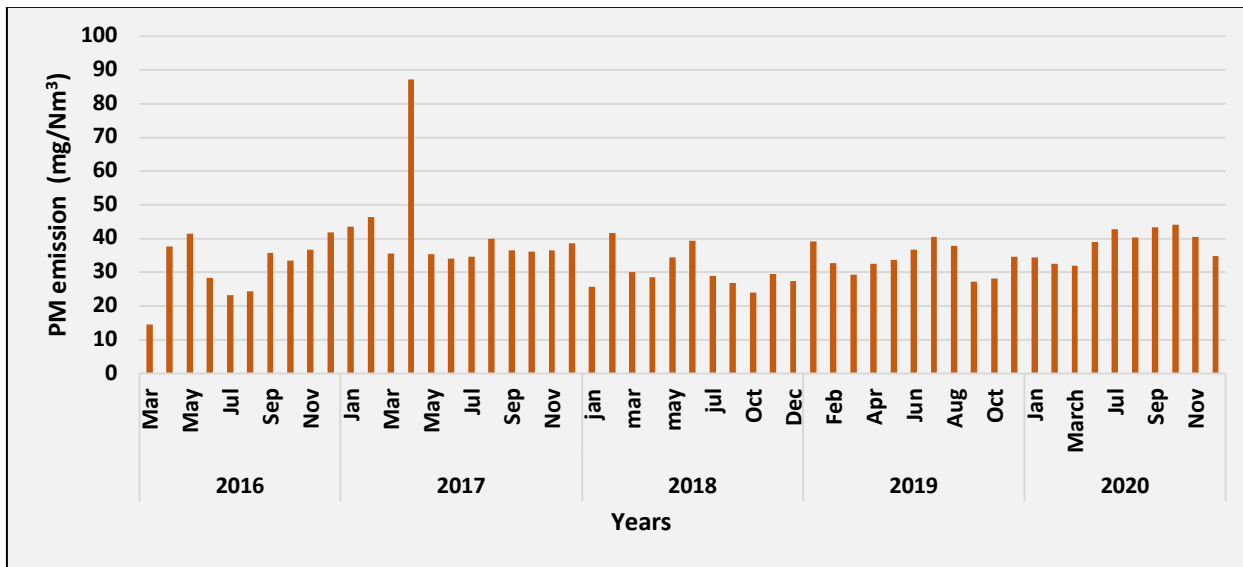


Fig. D15: Time series of monthly average PM emissions from stack 2 in Durgapur TPP

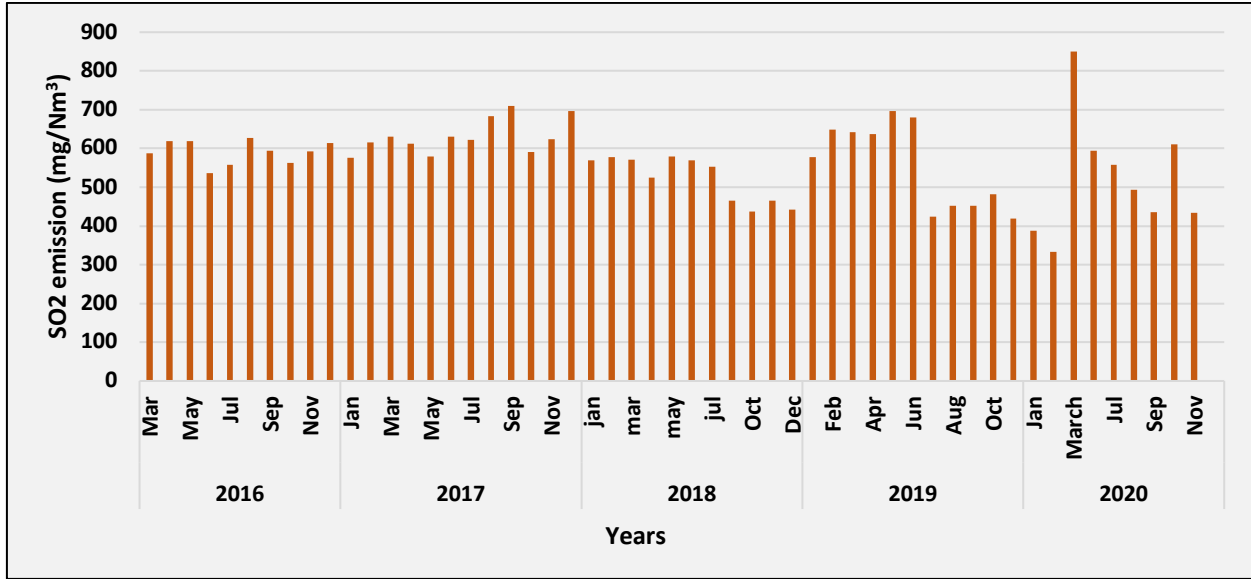


Fig. D16: Time series of monthly average SO2 emissions from stack 2 in Durgapur TPP

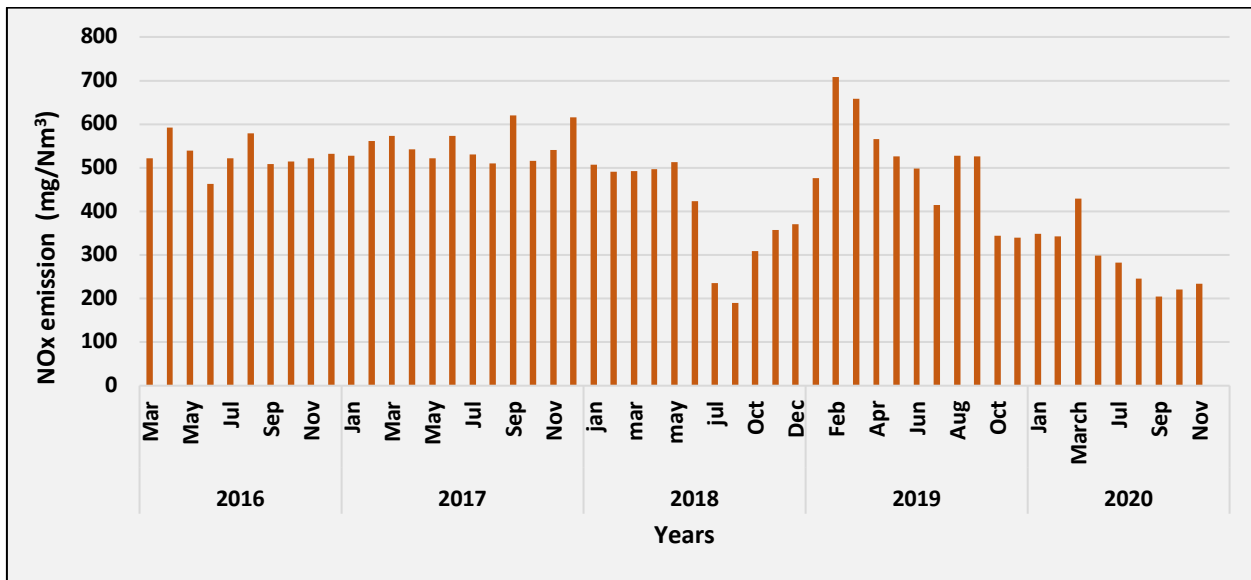


Fig. D17: Time series of monthly average emission of NOx from stack 2 in Durgapur TPP

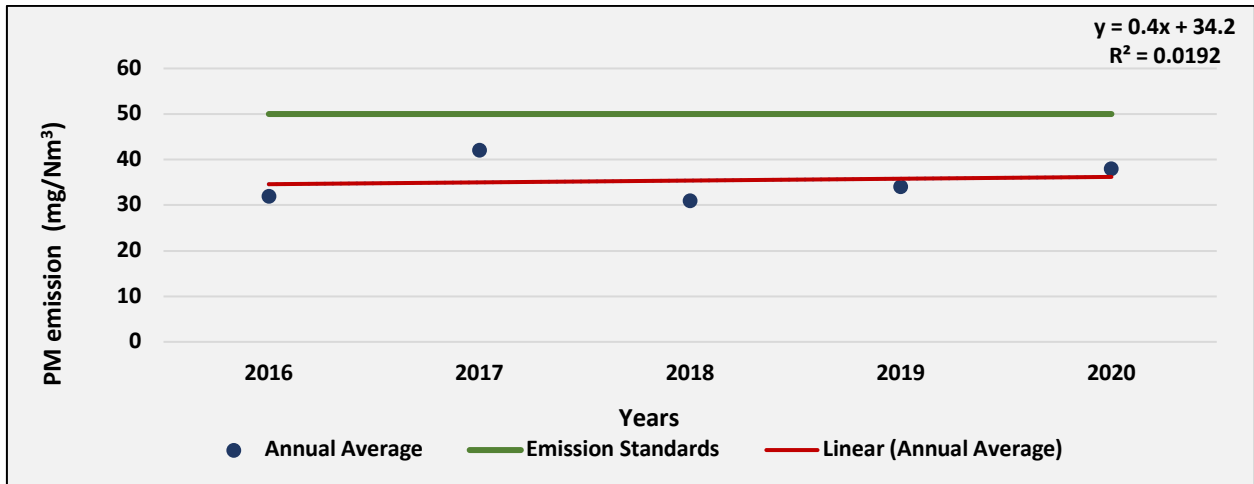


Fig.18: Trend of annual average PM emissions from stack 2 in Durgapur TPP

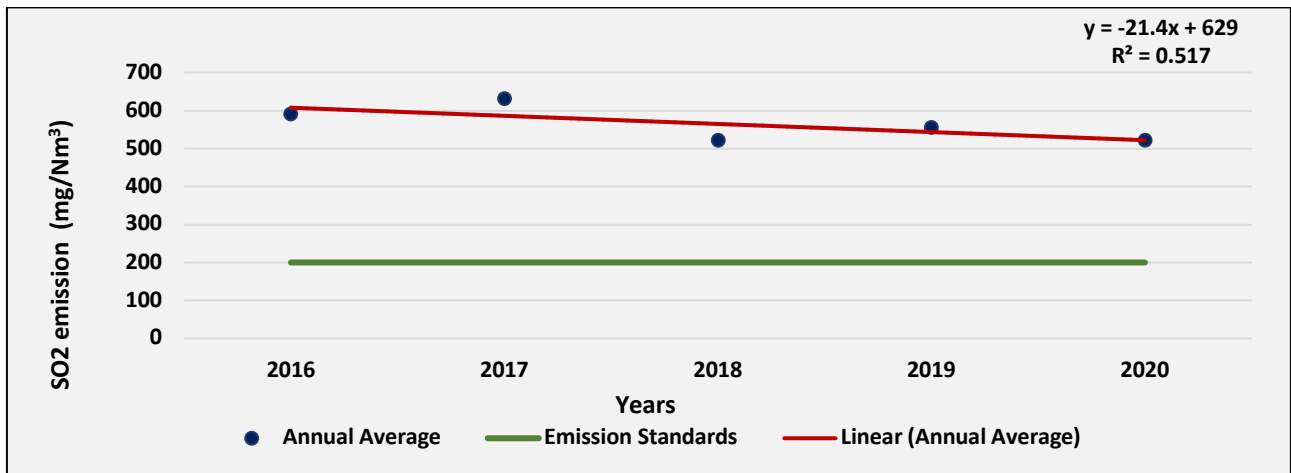


Fig.19: Trend of annual average emission of SO2 from stack 2 in Durgapur TPP

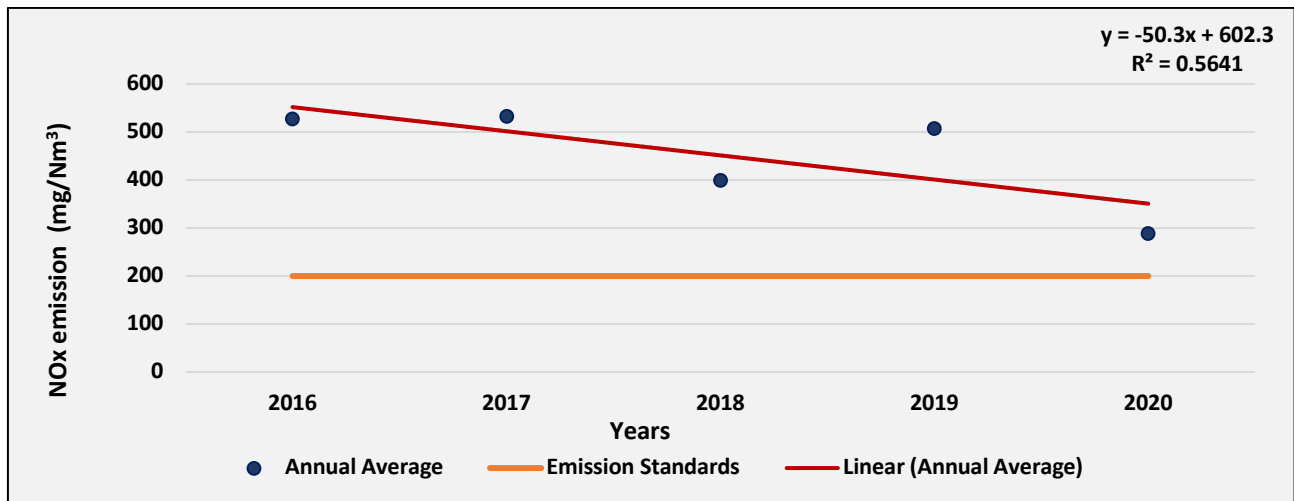


Fig.20: Time series of annual average emission of NOx from stack 2 in Durgapur TPP

The monthly and yearly ground level emission analysis for both the units of Durgapur Steel Thermal Power Plant shows that particulate matter is within the emission standards whereas the other two parameters i.e., SO₂ and NO_x are much higher than the norms. (Fig. 9-21).

Bokaro A Thermal Power Plant (BTPP)

Bokaro Thermal is a census town in Bermo CD block in the Bermo subdivision of the Bokaro district in the state of Jharkhand, India. Bokaro A Thermal Power Station is a 500-megawatt (MW) coal-fired power station located next to the 210 MW Bokaro B Thermal Power Station. The location coordinates for the plant are 23.7829444, 85.8833912.

The ambient air concentration for PM₁₀, PM_{2.5} and NO_x is slightly higher as per the ambient air quality standards whereas SO₂ is within the standards limit. (Fig 36-43)

It is observed that the emission of particulate matter from Bokaro A thermal plant is within the prescribed emission limit but the SO₂ and NO_x emissions are very high as per the standards. It is very important to install the emission control system as whenever necessary to control the emissions of SO₂ and NO_x (Fig 44-49).

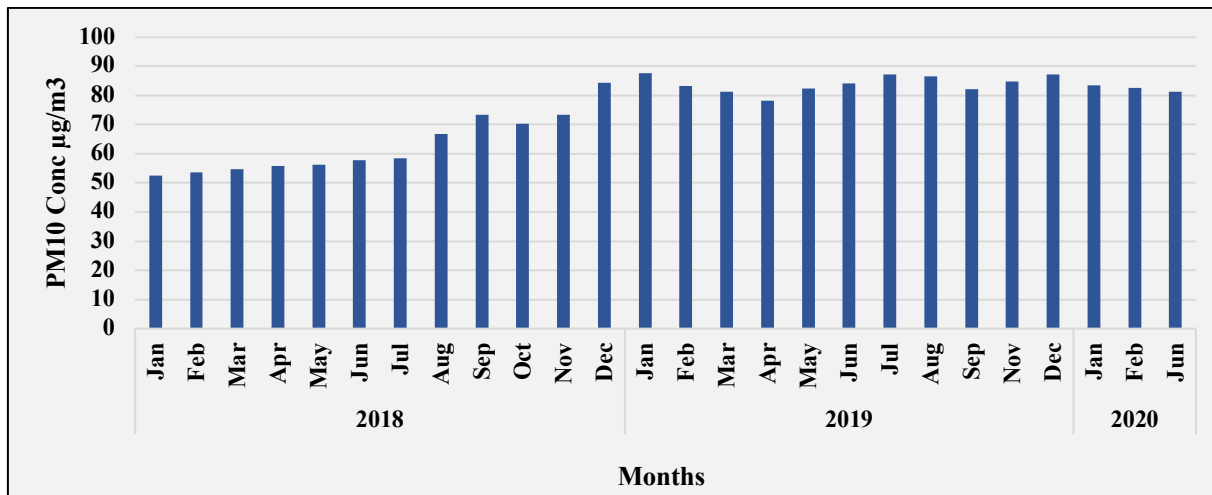


Fig. B1: Time series of monthly average PM₁₀ ambient air concentration in Bokaro A TPP

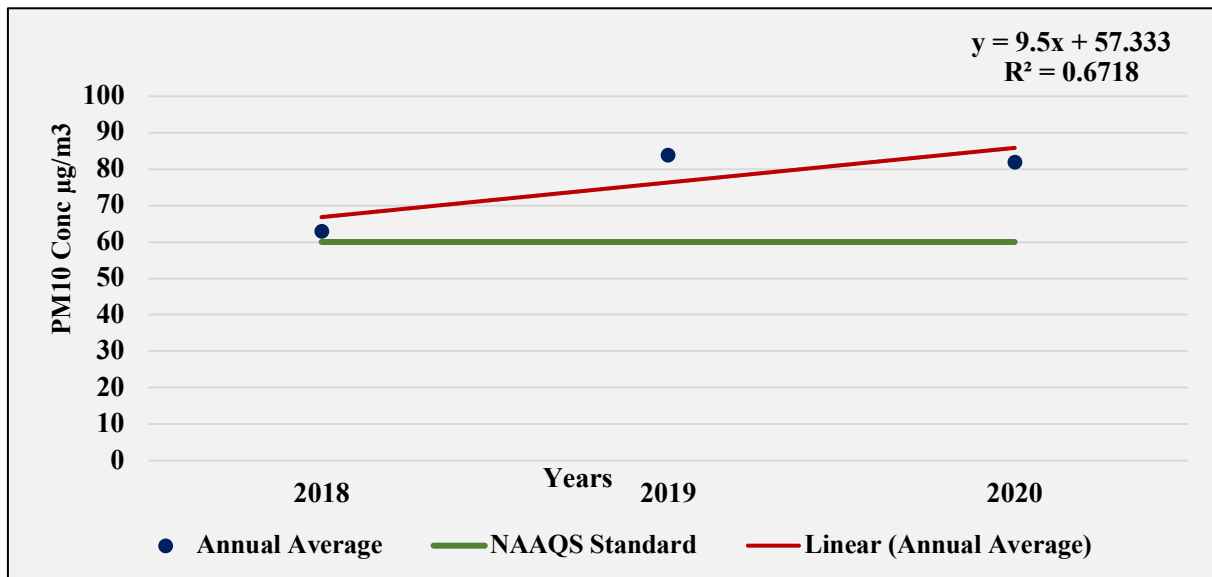


Fig. B2: Trend of annual mean PM₁₀ ambient air concentration in Bokaro A TPP

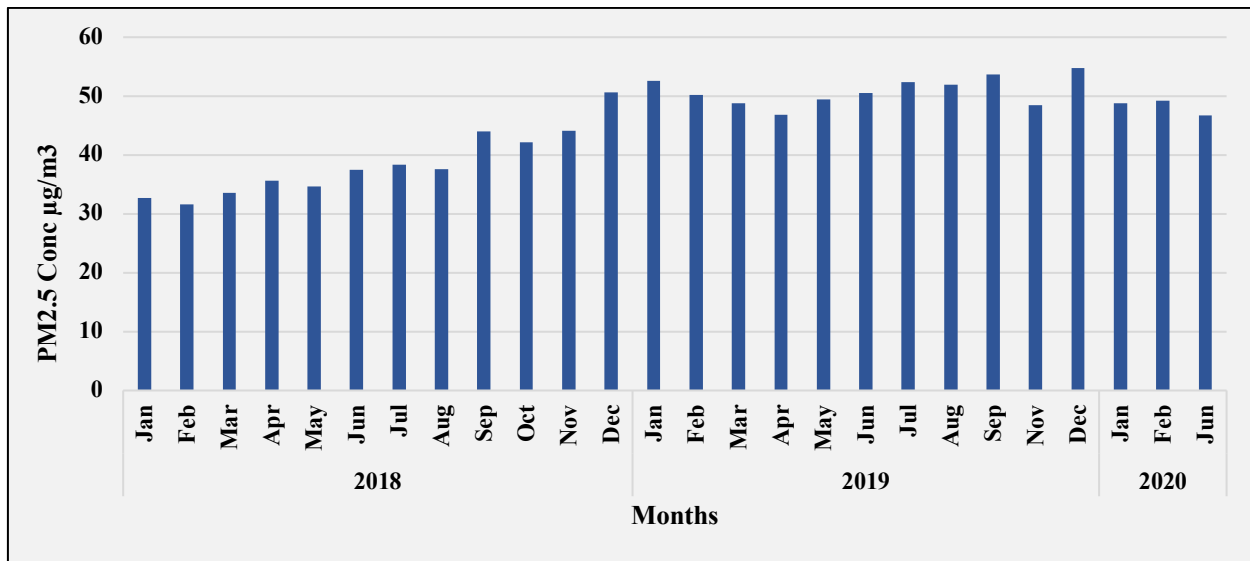


Fig. B3: Time series of monthly average PM_{2.5} ambient air concentration in Bokaro A TPP

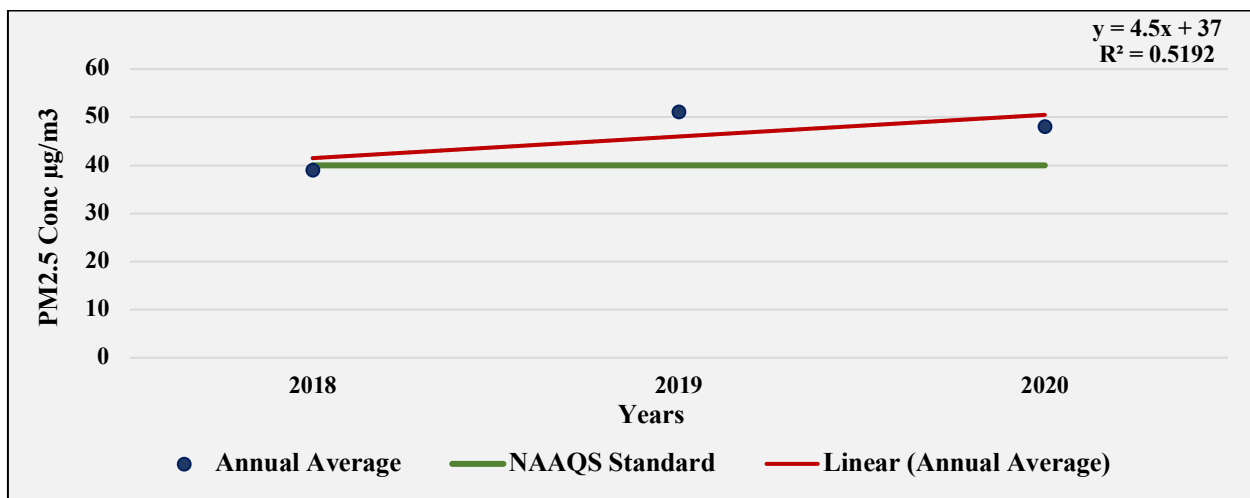


Fig. B4: Trend of annual mean PM_{2.5} ambient air concentration in Bokaro A TPP

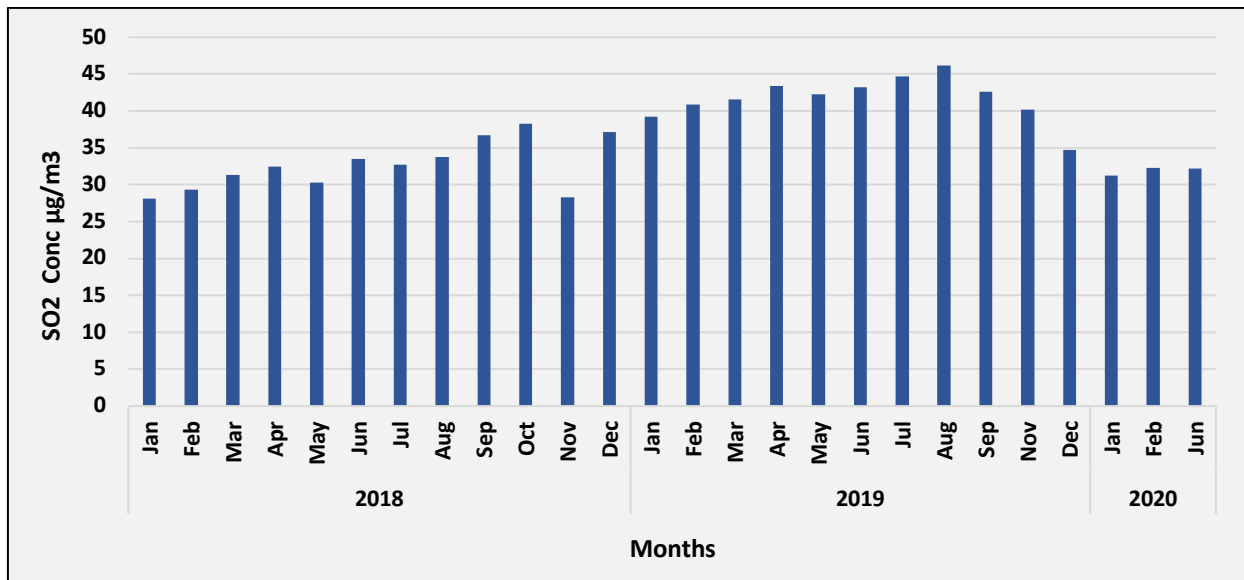


Fig. B5: Time series of monthly average SO₂ ambient air concentration in Bokaro A TPP

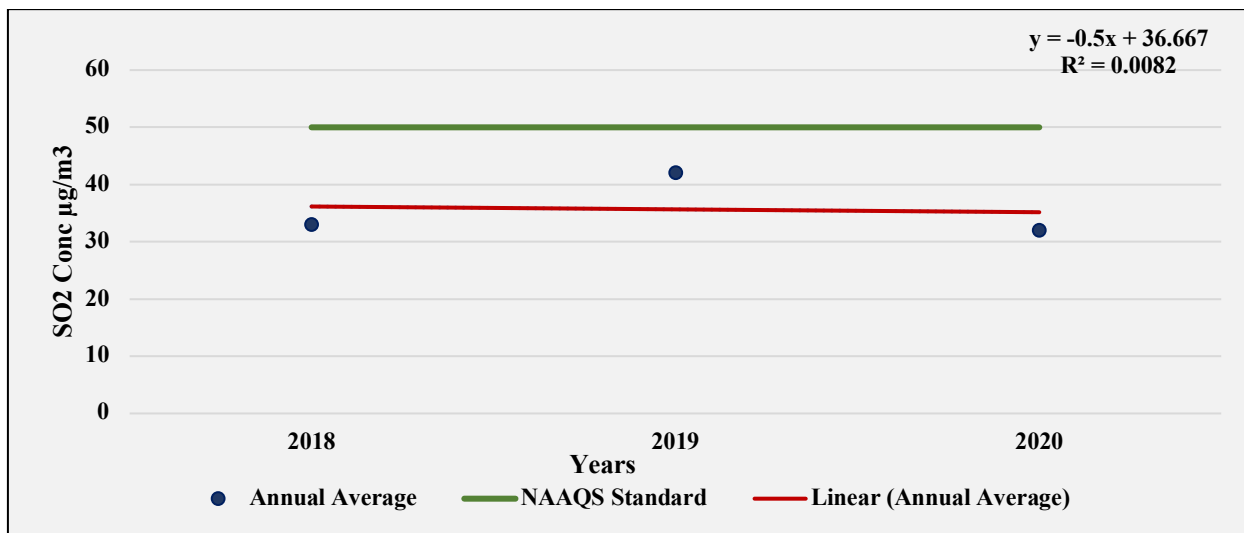


Fig. B6: Trend of annual mean SO₂ ambient air concentration in Bokaro A TPP

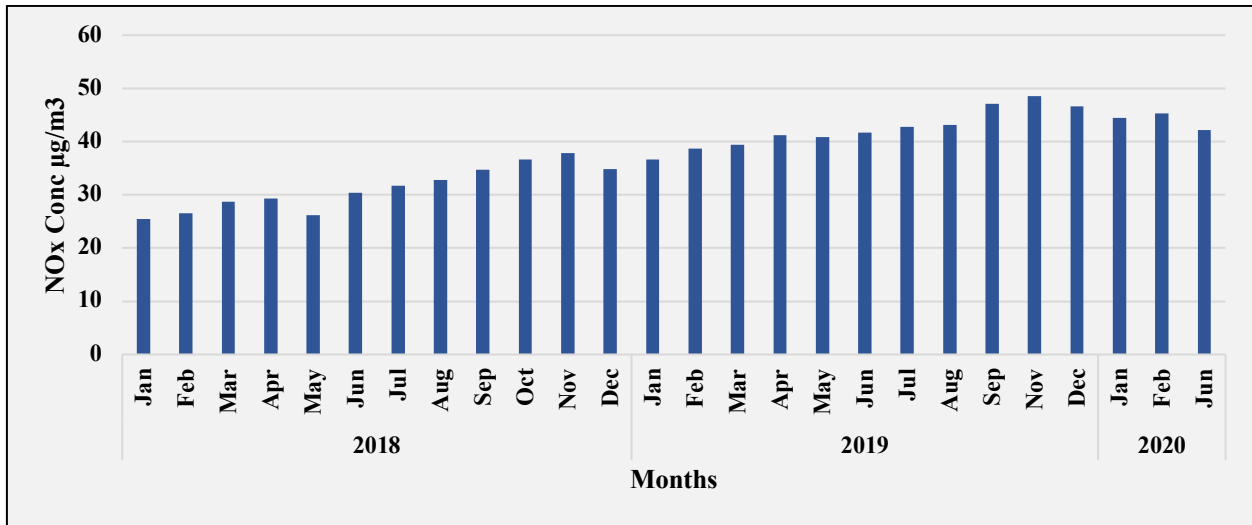


Fig. B7: Time series of monthly average NO_x ambient air concentration in Bokaro A TPP

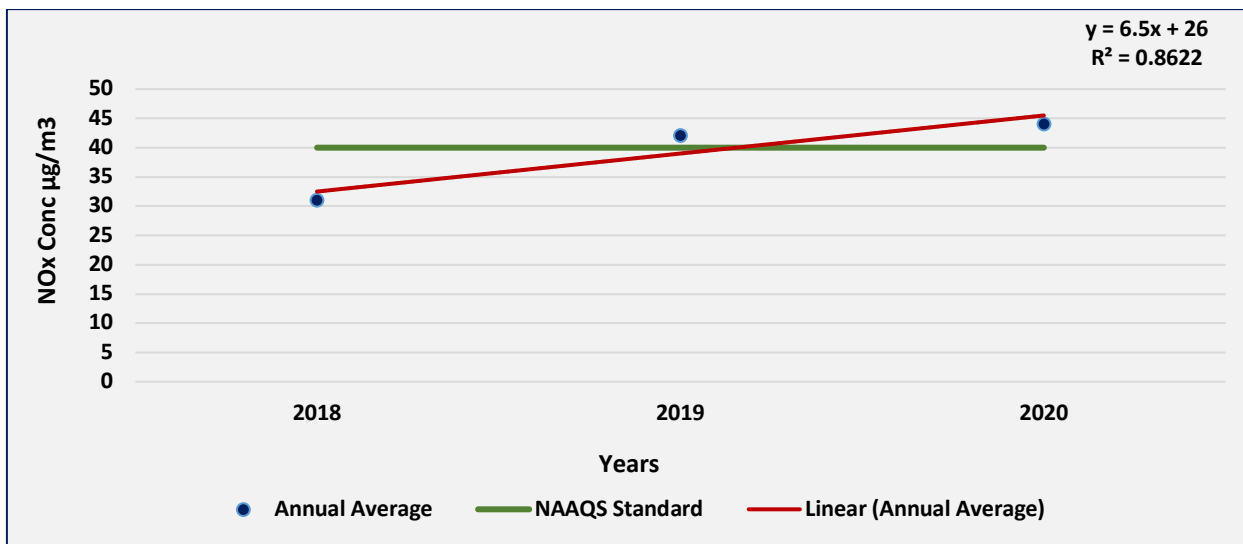


Fig. B8: Trend of annual mean NO_x ambient air concentration in Bokaro A TPP

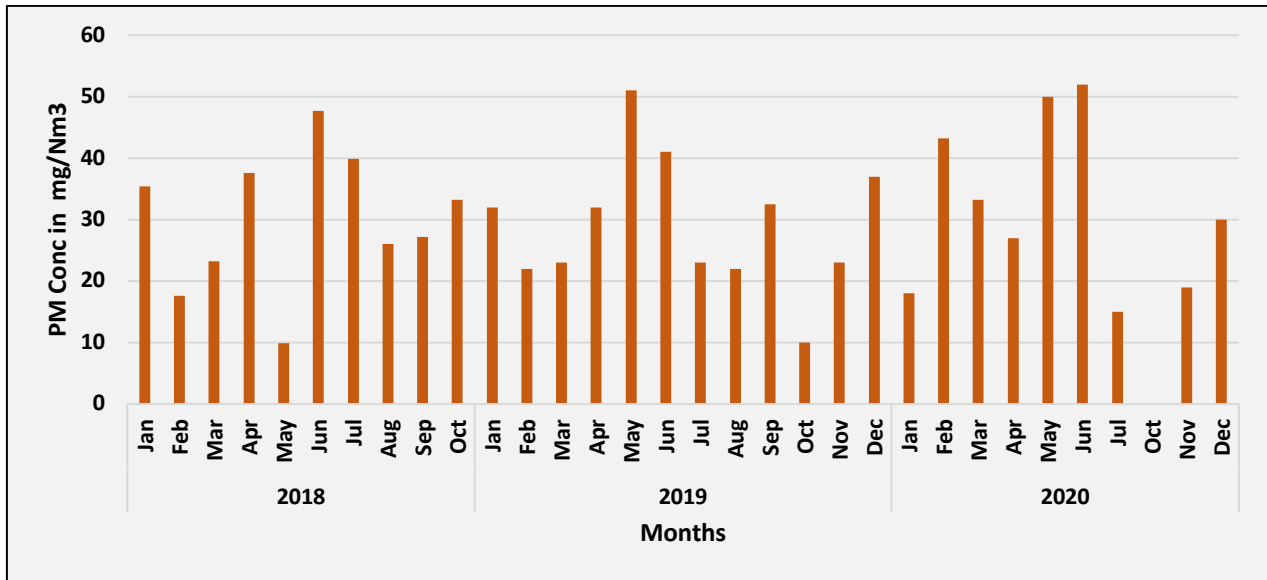


Fig. B9: Time series of monthly average emission of PM from Unit 1 in Bokaro TPP

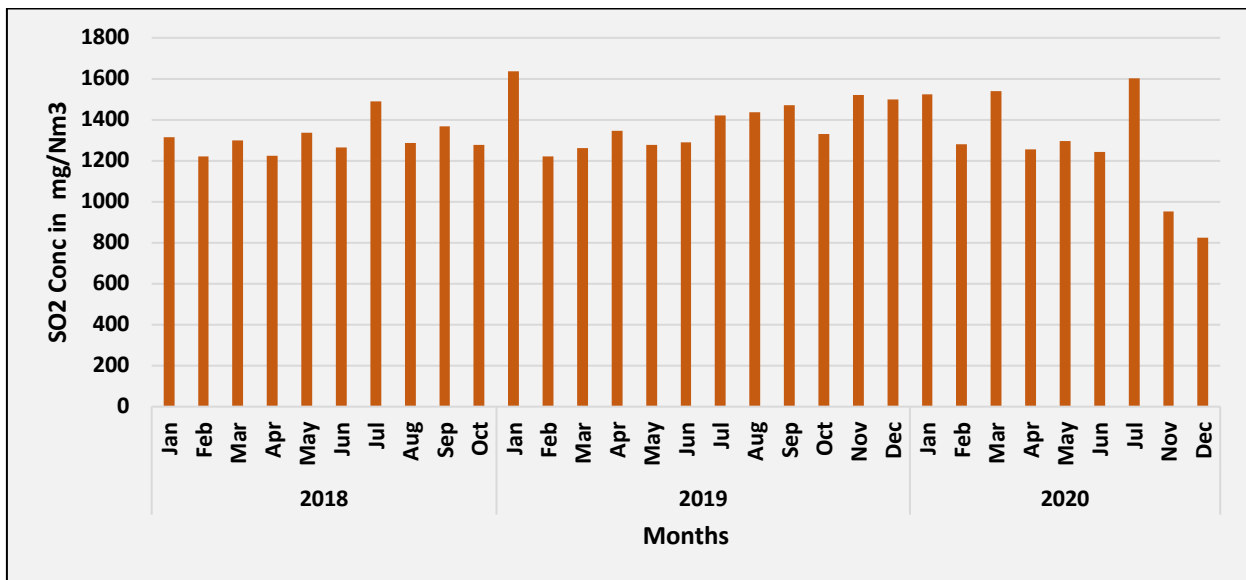


Fig. B10: Time series of monthly average emission of SO2 from Unit 1 in Bokaro TPP

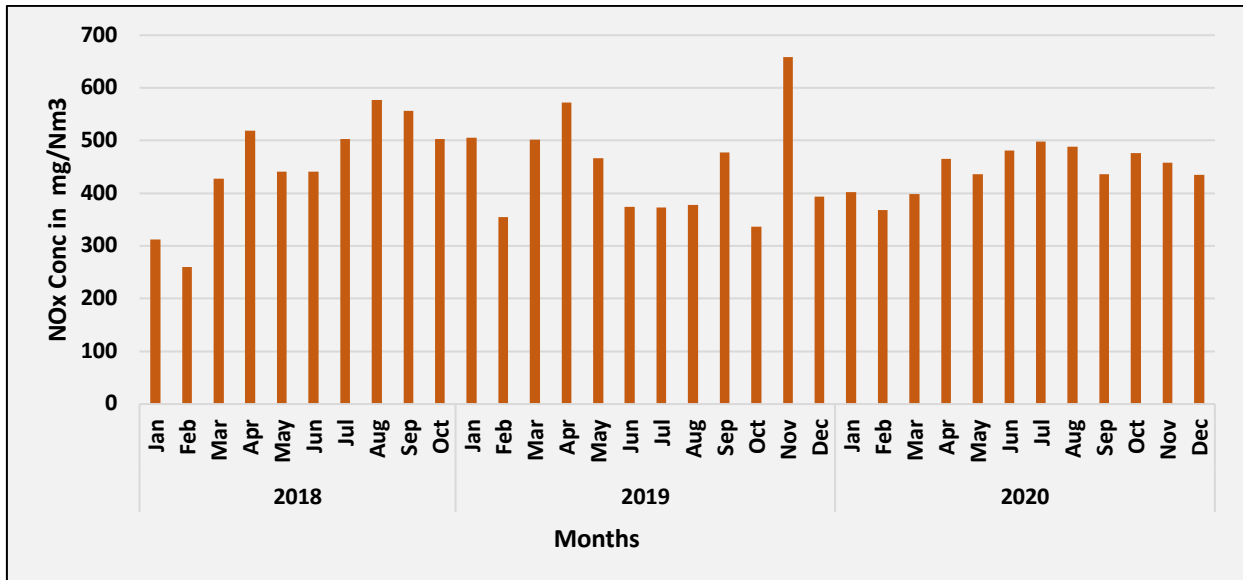


Fig. B11: Time series of monthly average emission of NOx from Unit 1 in Bokaro TPP

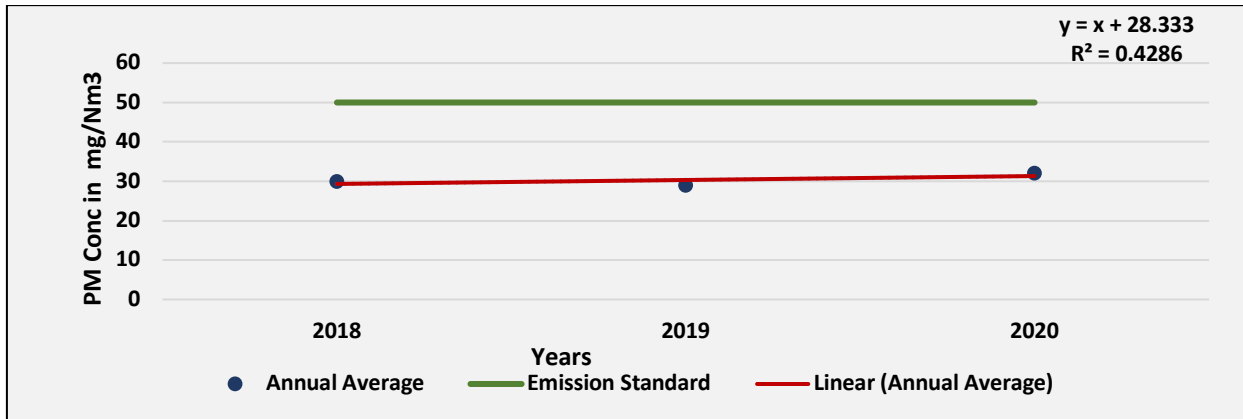


Fig. B12: Trend of annual average PM emissions from unit 1 in Bokaro A TPP

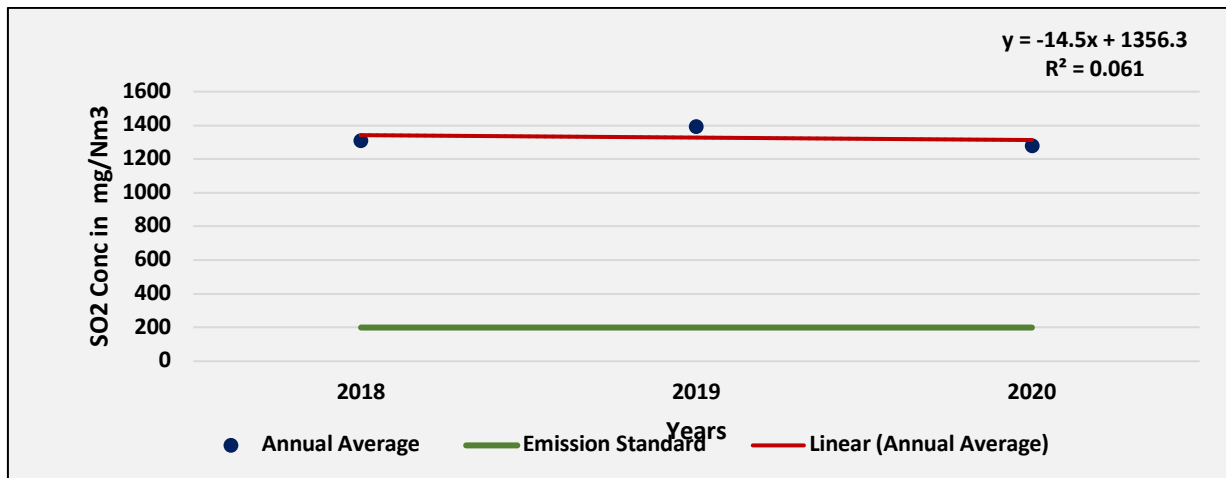


Fig. B12: Trend of annual average SO₂ emissions from unit 1 in Bokaro A TPP

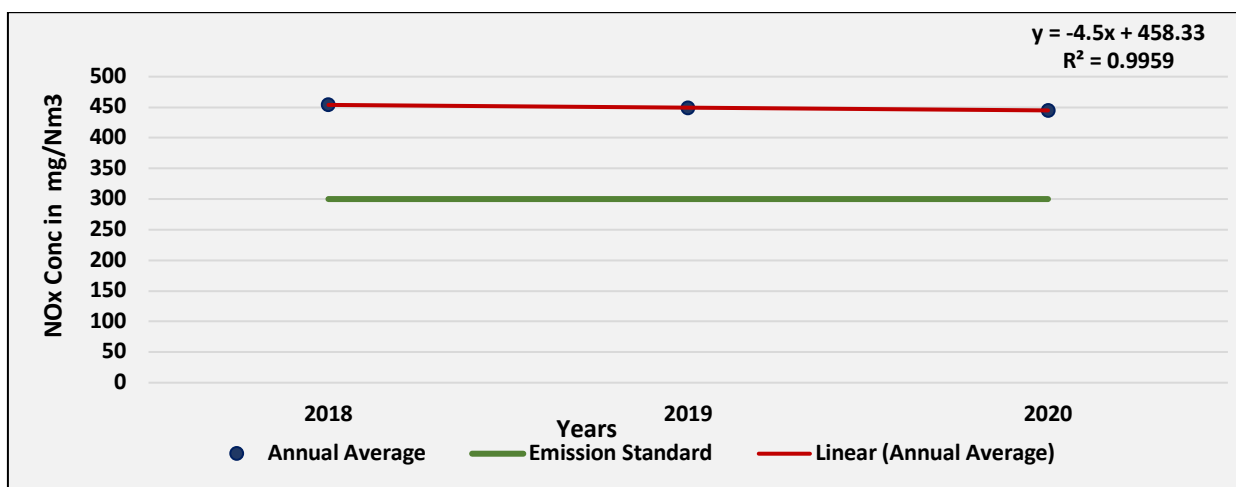


Fig. B13: Trend of annual average NO_x emissions from unit 1 in Bokaro A TPP

Chandrapur Thermal Power Plant (BTPP)

Chandrapur Super Thermal Power Station (often abbreviated as CSTPS) is a thermal power plant located in Chandrapur district in the Indian state of Maharashtra. The power plant is one of the coal-based power plants of MAHAGENCO. With the total capacity of 3340MW,^[3] the plant is the largest power plant in the Maharashtra. It accounts for more than 25% of Maharashtra's total needs. The coordinates for the power plant are 20.0063,79.29.

Evidence based on ground level stations shows that the monthly average and annual average (of SO₂ & NO_x levels in five years are mostly within a range, which is good as per the as per the National Ambient Air Quality Standards (NAAQS). However, the major cause of concern is the PM₁₀, PM_{2.5} levels that are relatively very high for both monthly and annual average (Fig 6 &

7). This suggests that the particulate matter contribution by the DSTPS thermal power plant have to be controlled as per the NAAQS. (Fig 50-57)

For both the stacks of Chandrapur thermal power plant, particulate matter emission is within the limit whereas the SO₂ and NO_x emissions are high as per the emission norms (Figure 58-63)

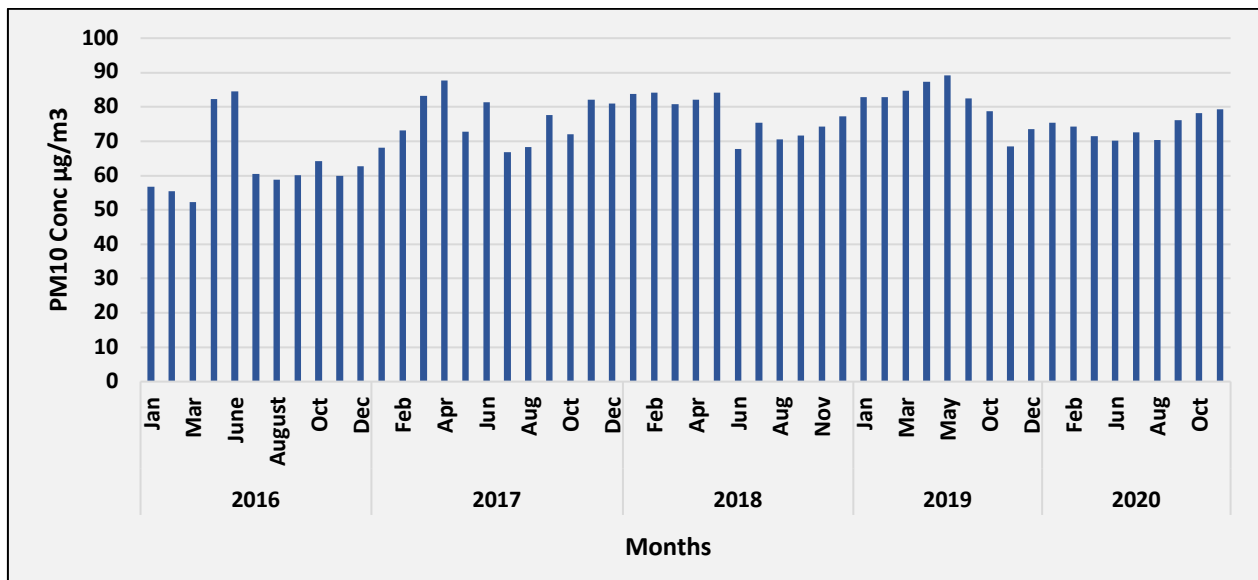


Fig. C1: Time series of monthly average PM₁₀ ambient air concentration in Chandrapur TPP

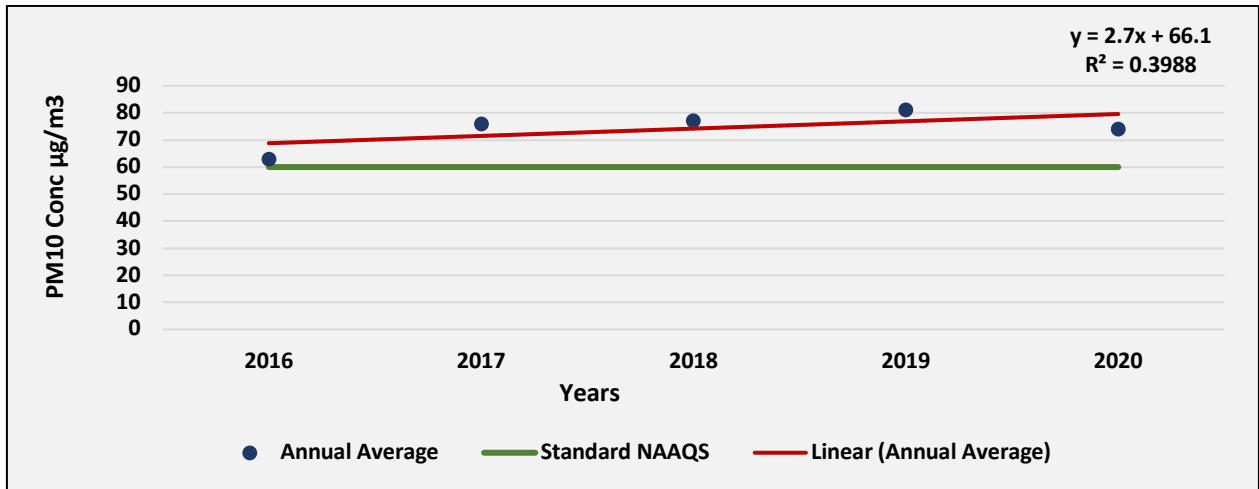


Fig. C2: Trend of annual mean PM₁₀ ambient air concentration in Chandrapur TPP

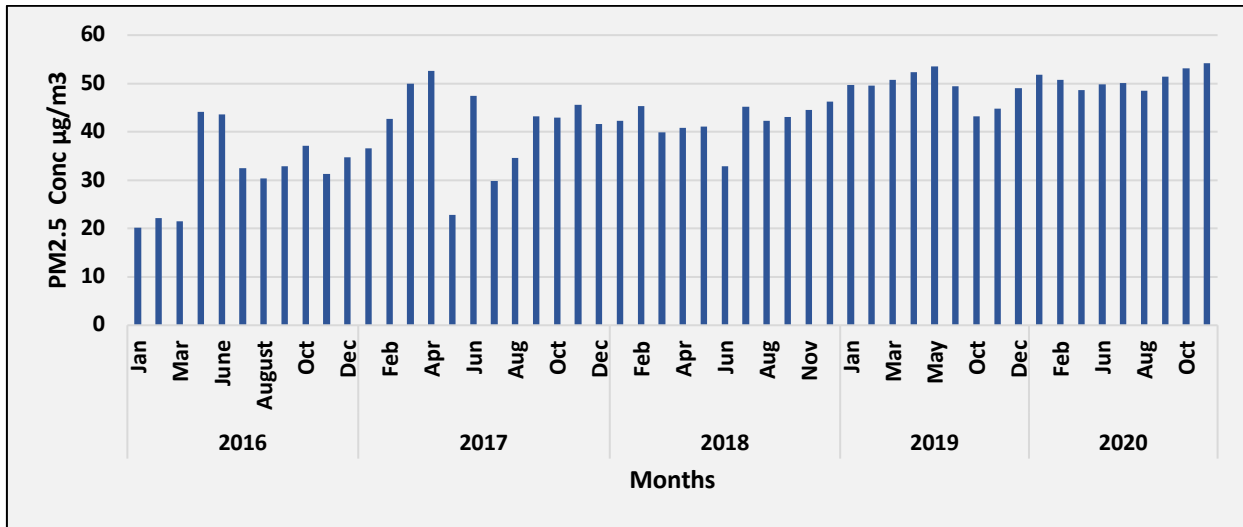


Fig. C3: Time series of monthly average PM_{2.5} ambient air concentration in Chandrapur TPP

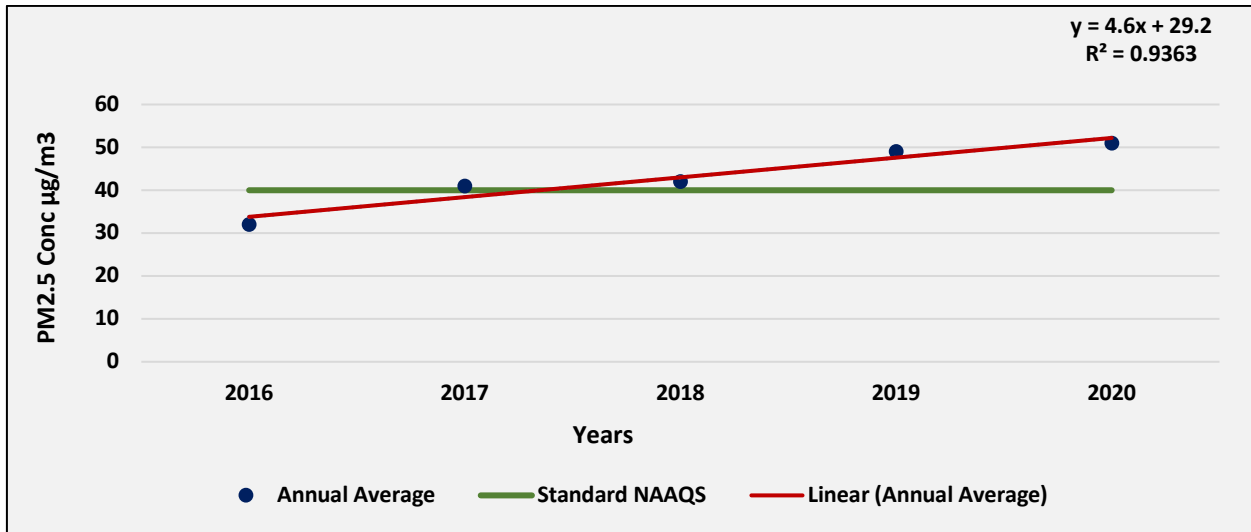


Fig. C4: Trend of annual mean PM_{2.5} ambient air concentration in Chandrapur TPP

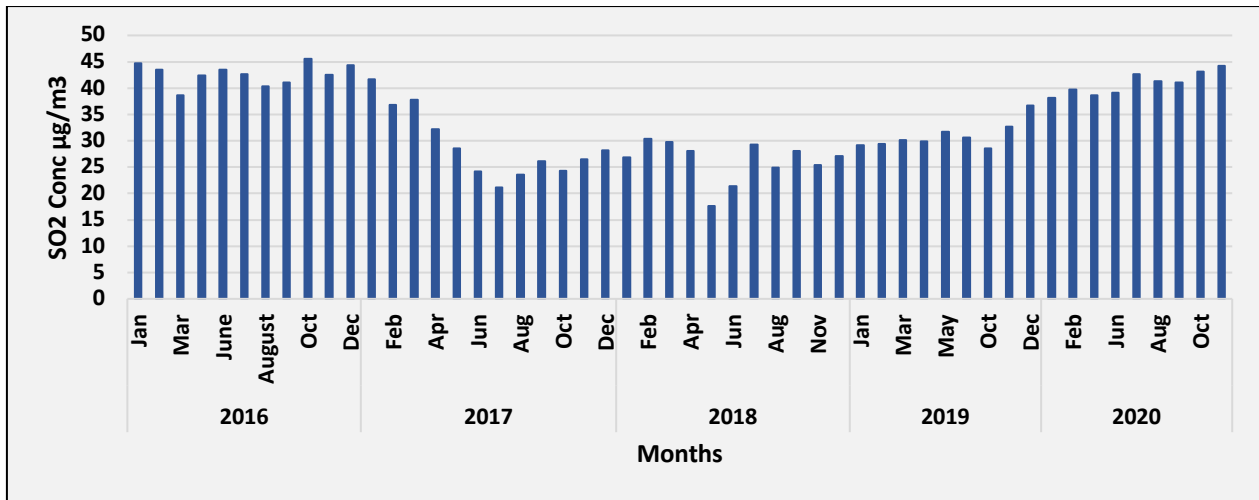


Fig. C5: Time series of monthly average SO₂ ambient air concentration in Chandrapur TPP

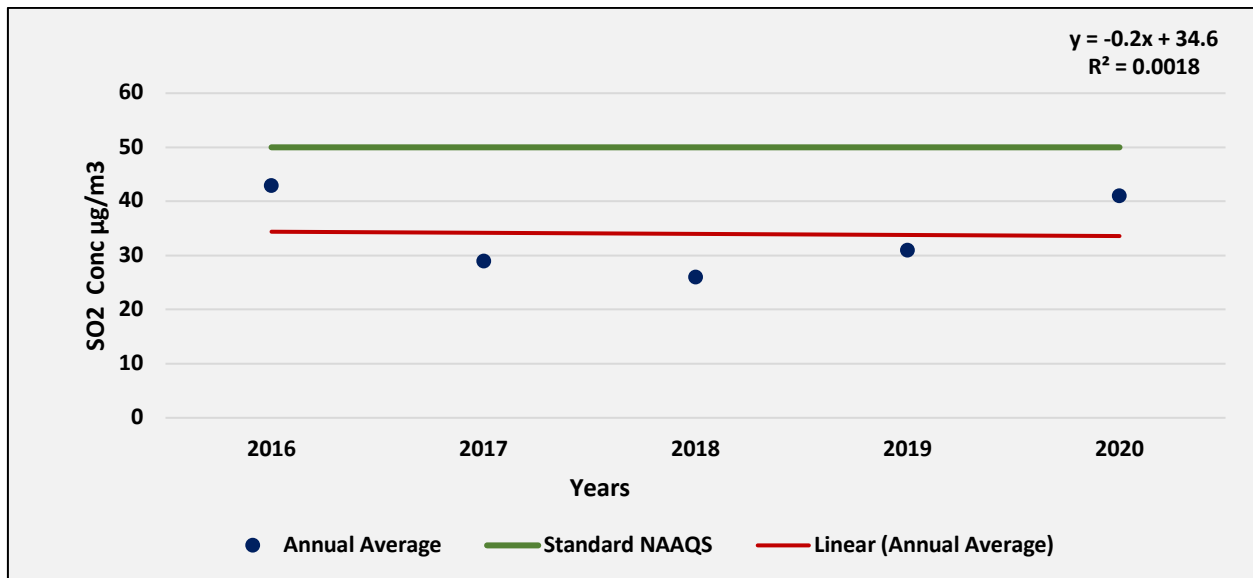


Fig. C6: Trend of annual mean SO₂ ambient air concentration in Chandrapur TPP

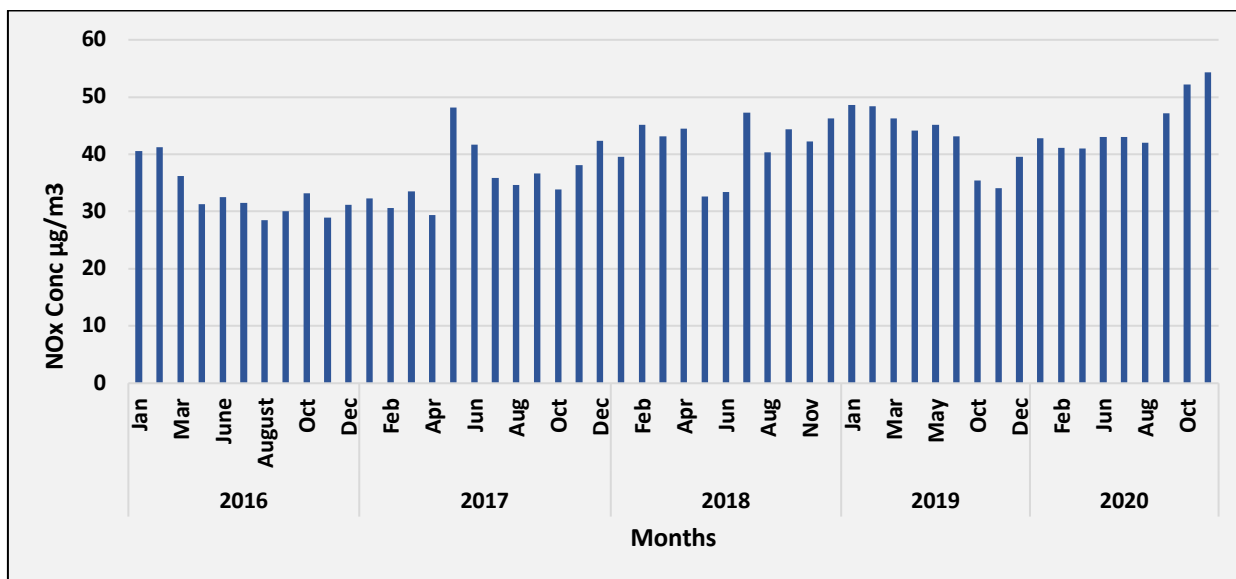


Fig. C7: Time series of monthly average NO_x ambient air concentration in Chandrapur TPP

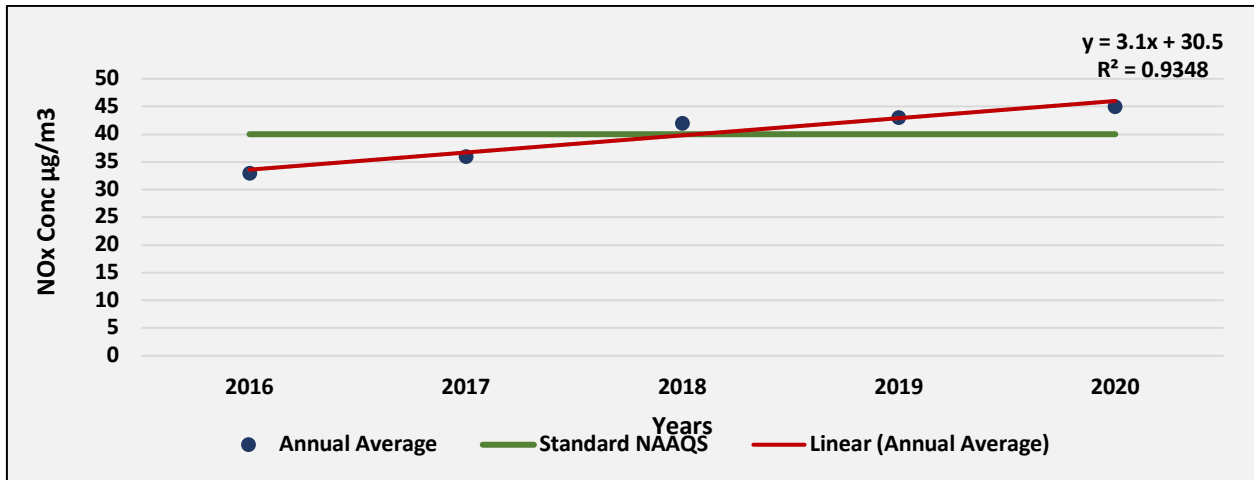


Fig. C8: Time series of monthly average NO_x ambient air concentration in Chandrapur TPP

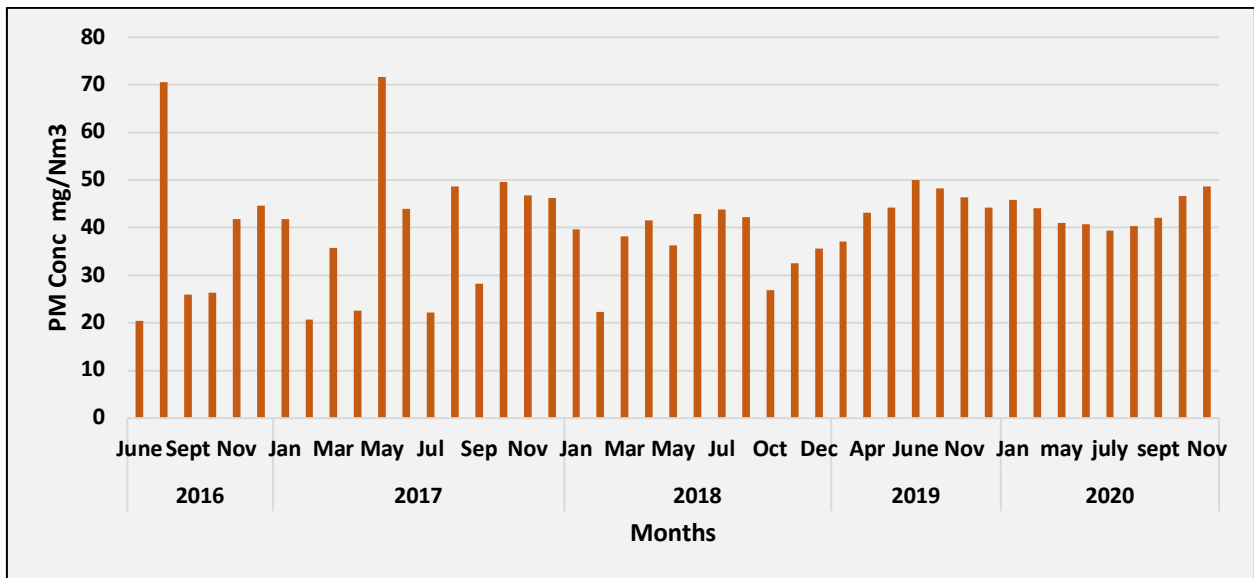


Fig. C9: Time series of monthly average PM emission in Chandrapur TPP

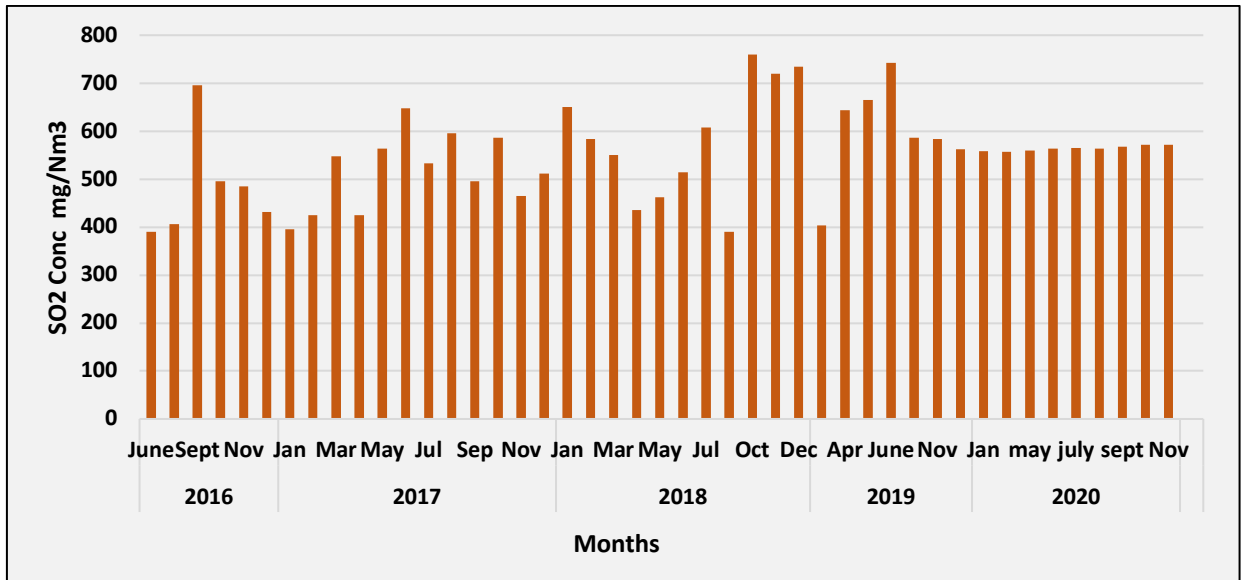


Fig. C10: Time series of monthly average SO2 emission in Chandrapur TPP

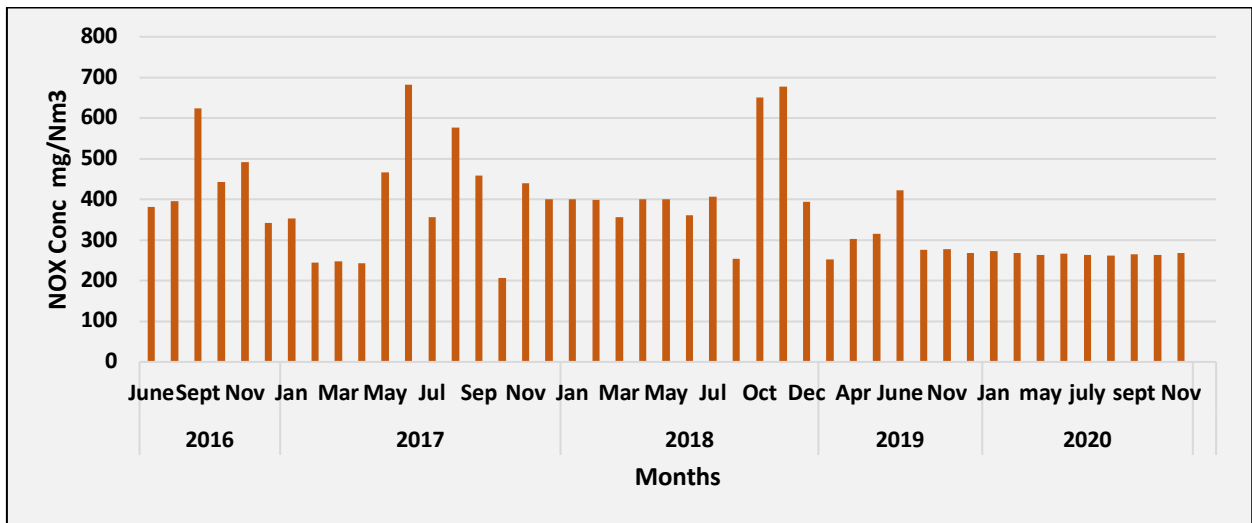


Fig. C11: Time series of monthly average NOx emission in Chandrapur TPP

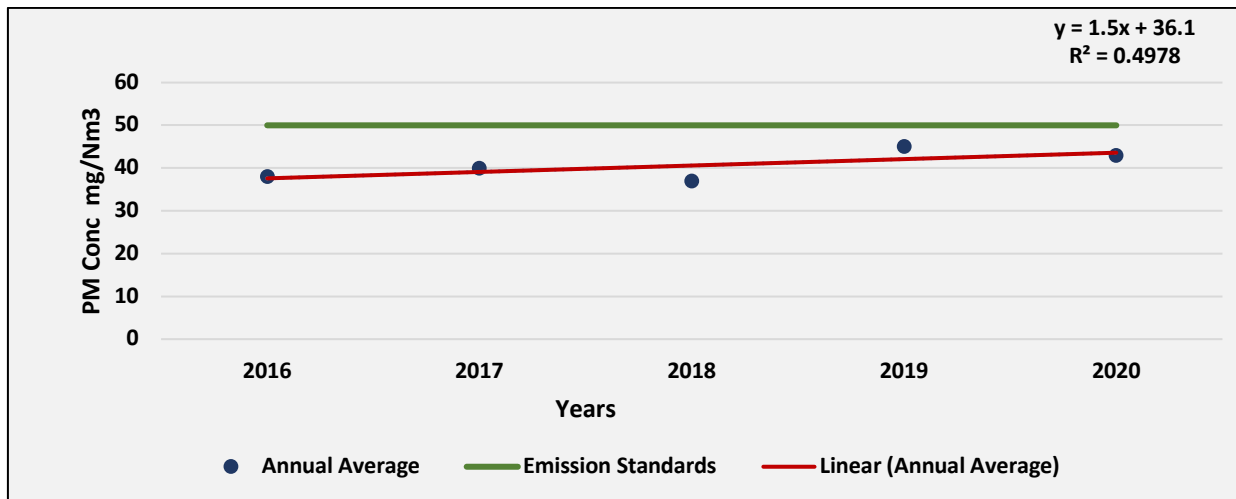


Fig. C12: Trend of annual average PM emissions from unit 1 in Chandrapur TPP

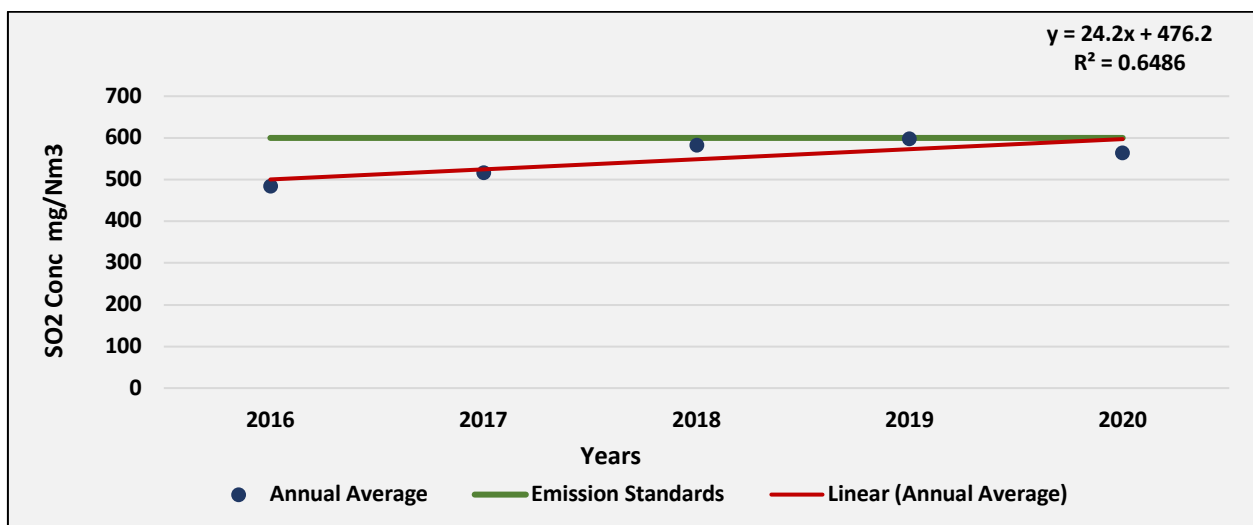


Fig. C13: Trend of annual average SO₂ emissions from unit 1 in Chandrapur TPP

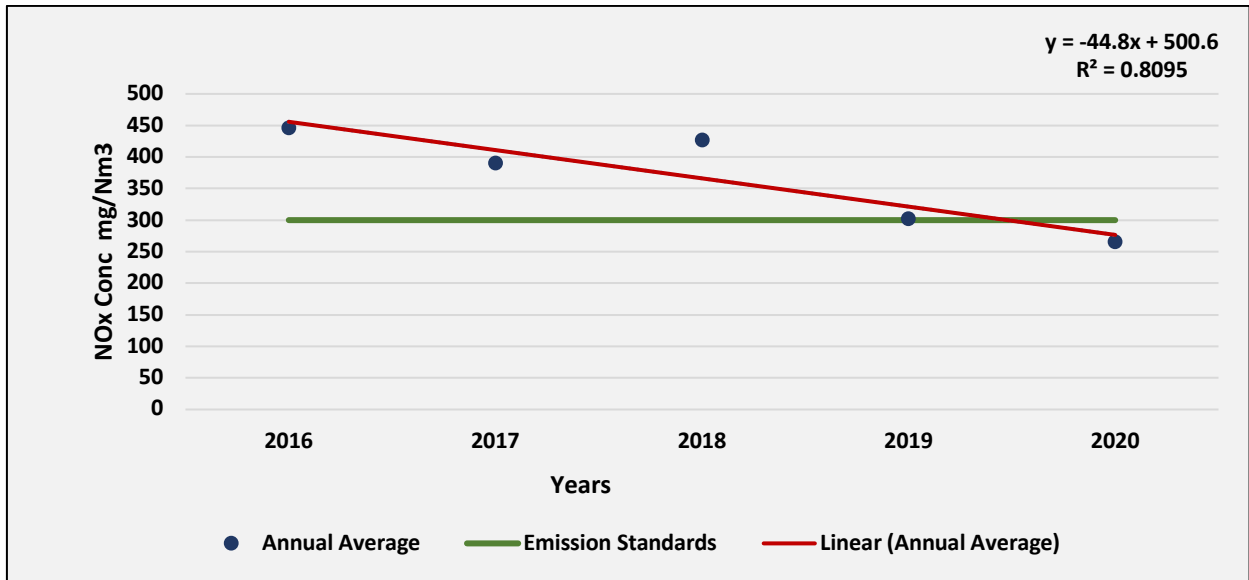


Fig. C14: Trend of annual average NOx emissions from unit 1 in Chandrapur TPP

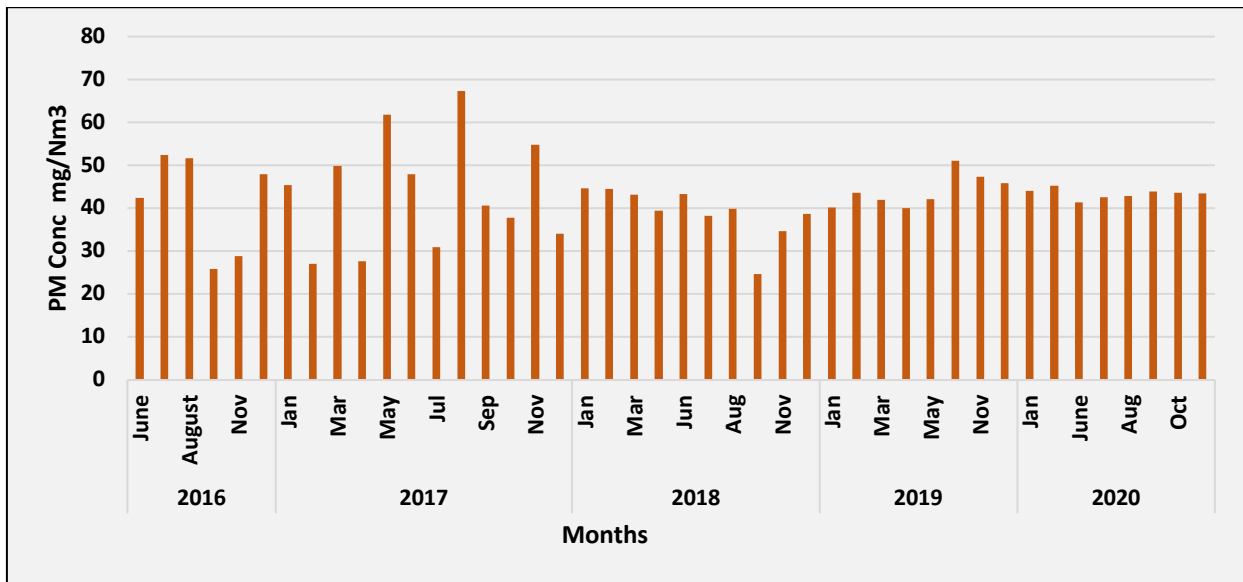


Fig. C15: Time series of monthly average emission of PM from Unit 2 in Chandrapur TPP

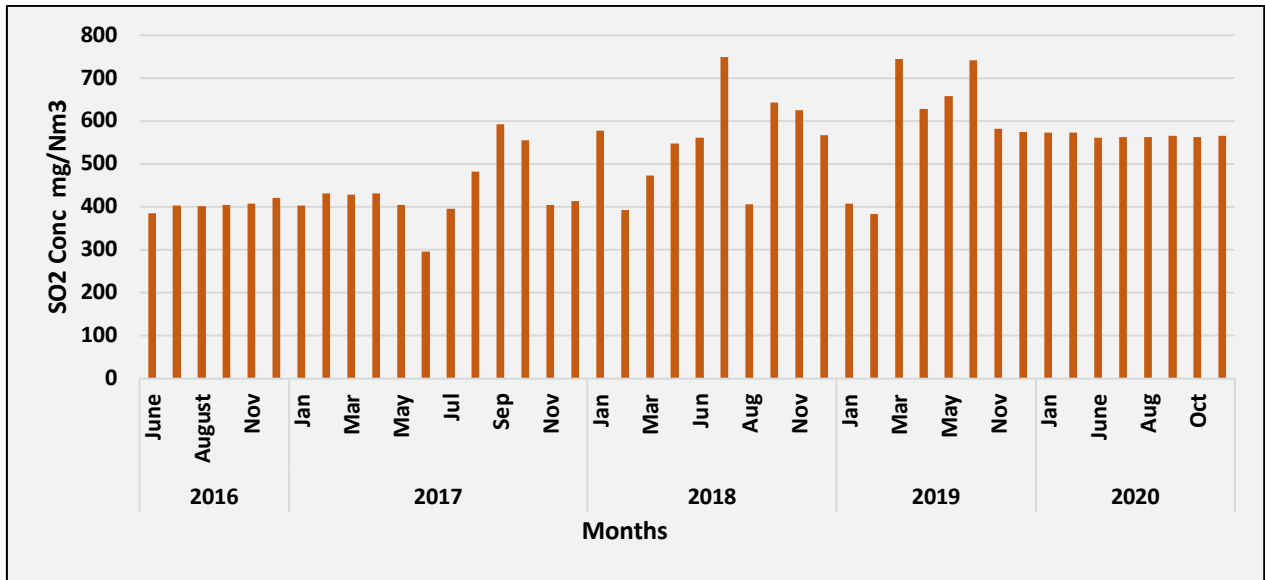


Fig. C16: Time series of monthly average emission of SO₂ from Unit 2 in Chandrapur TPP

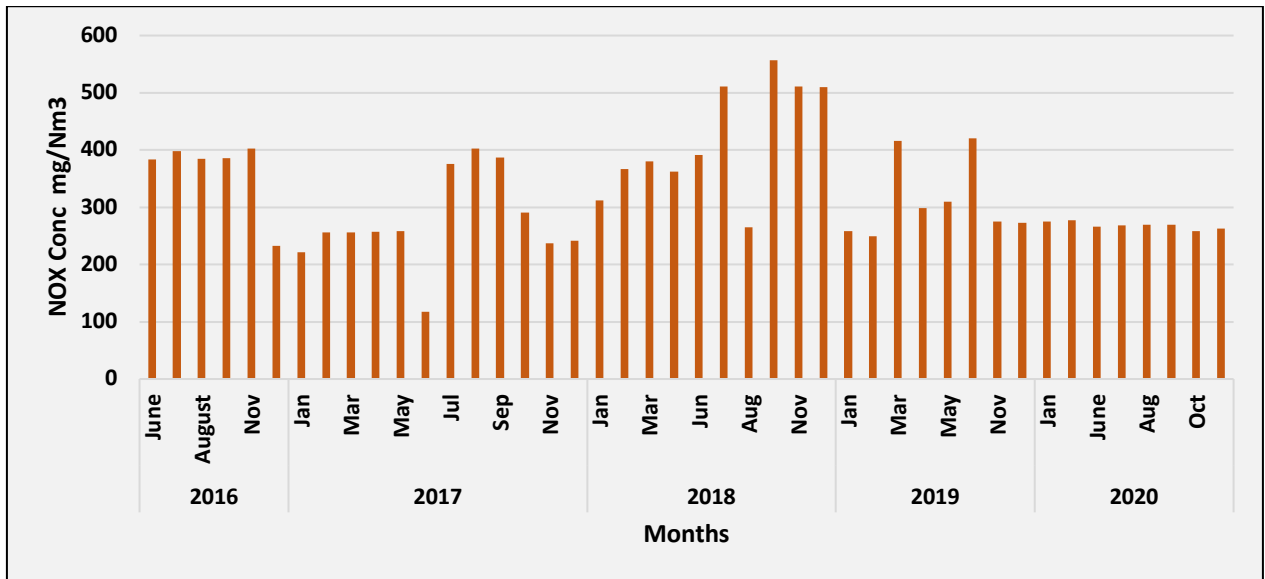


Fig. C17: Time series of monthly average emission of NO_x from Unit 2 in Chandrapur TPP

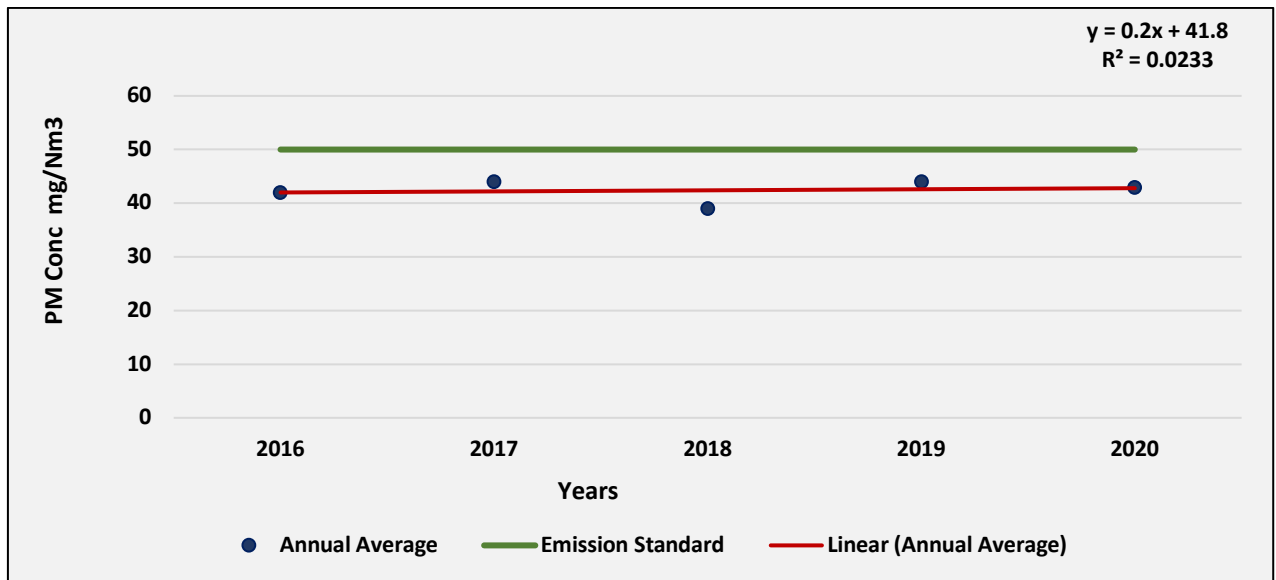


Fig. C18: Trend of annual average PM emissions from unit 2 in Chandrapur TPP

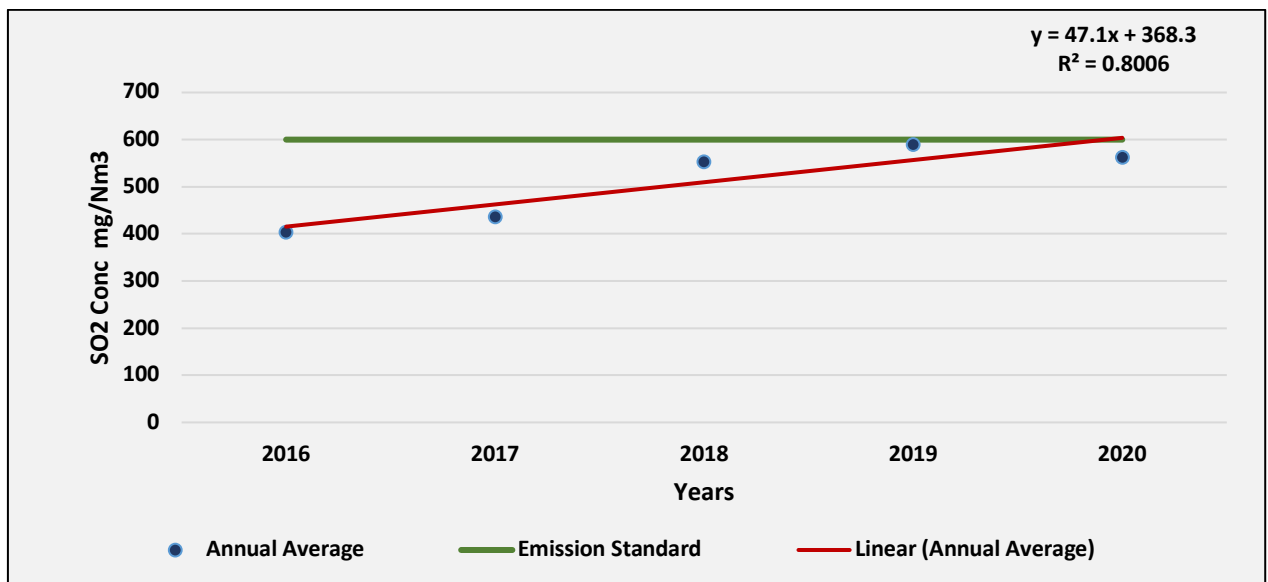


Fig. C19: Trend of annual average SO₂ emissions from unit 2 in Chandrapur TPP

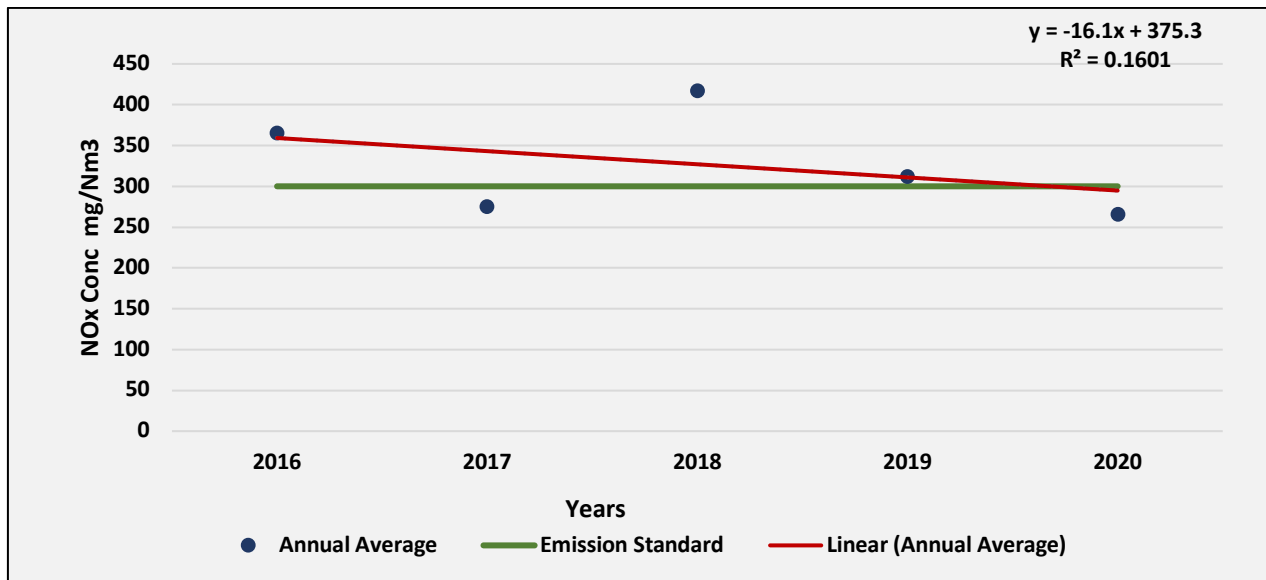


Fig. C20: Trend of annual average NO_x emissions from unit 2 in Chandrapur TPP

KODERMA THERMAL POWER PLANT

Koderma Thermal Power Station is a coal-based thermal power plant located in Banjhedih, Jainagar CD block, Koderma district in the Indian state of Jharkhand. The power plant is operated by the Damodar Valley Corporation, a publicly owned agency of the Indian government. It is a 1,000MW power station comprising two 500MW units. According to the India Central Electricity Authority, the first unit of the plant (500 MW) was "commissioned successfully (Full load)" on July 20, 2011, Unit 2 was commissioned in February 2013. The exact location coordinates for the power plant are 24.3915342N, 84.5618989E.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, and NO_x, data analyzed (Fig. K1-K8) for the five years (2016-2020) using data provided by DVC developer for Koderma Power plant, Jharkhand, India.

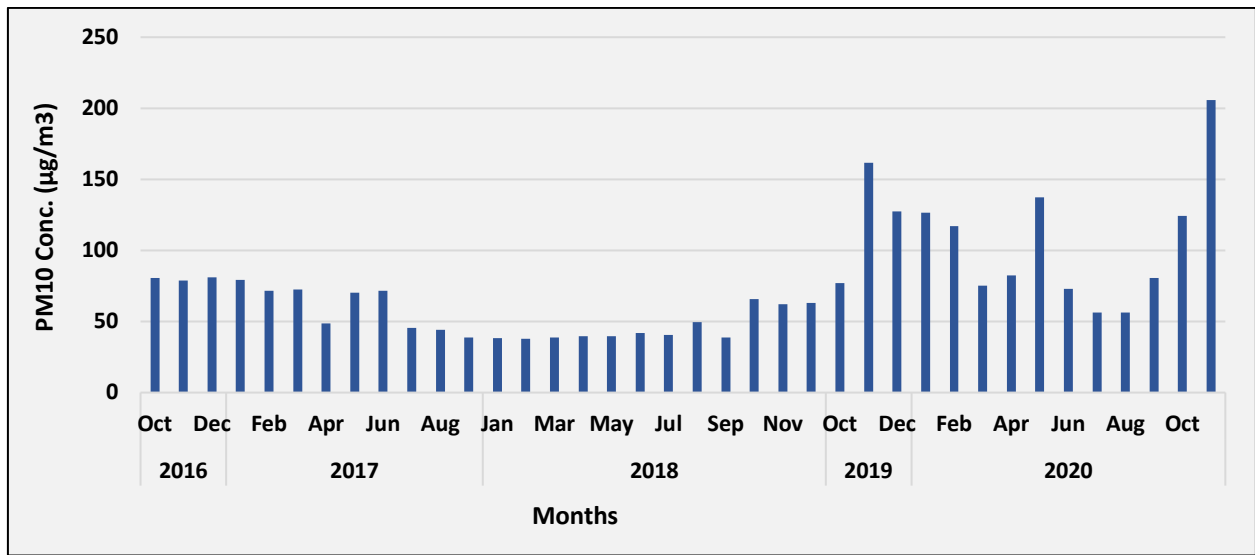


Fig. K1: Time series of monthly average PM₁₀ ambient air concentration in Koderma TPP

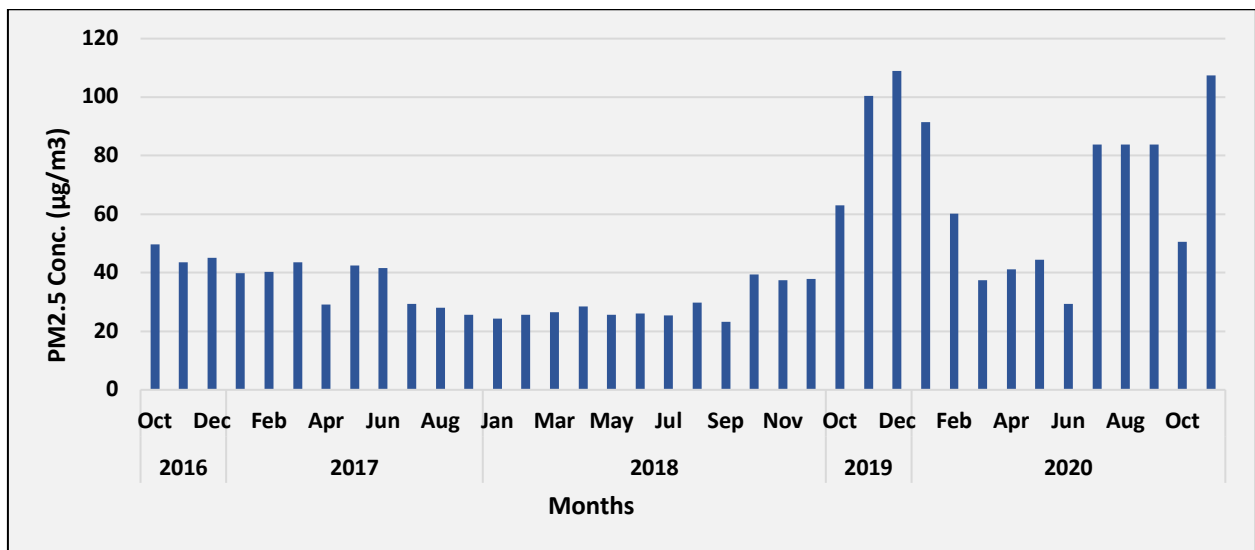


Fig. K2: Time series of monthly average PM_{2.5} ambient air concentration in Koderma TPP

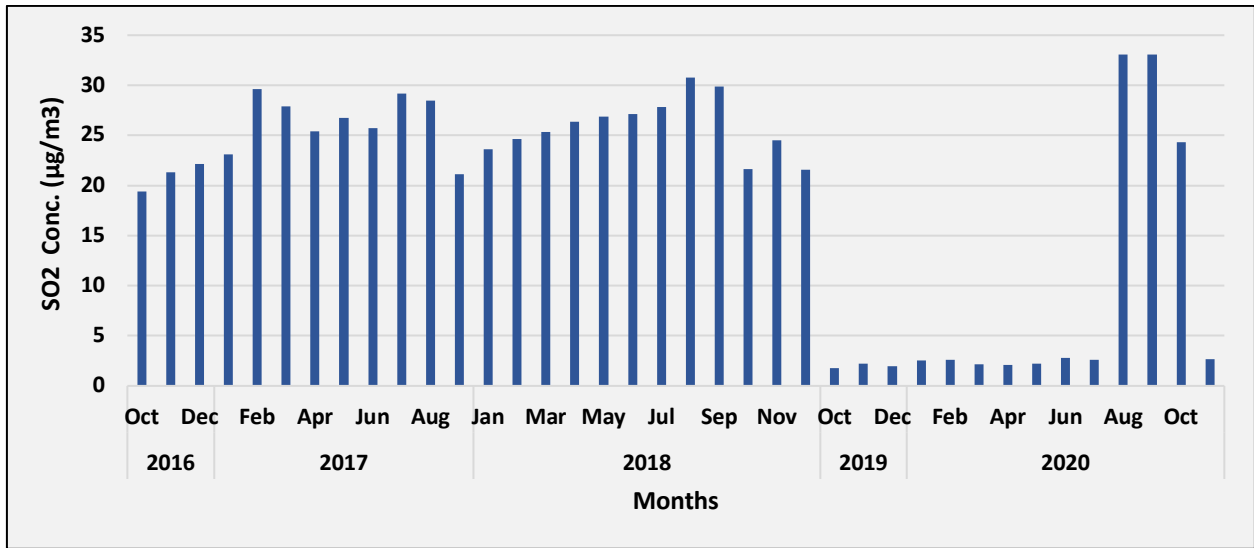


Fig. K3: Time series of monthly average SO₂ ambient air concentration in Koderma TPP

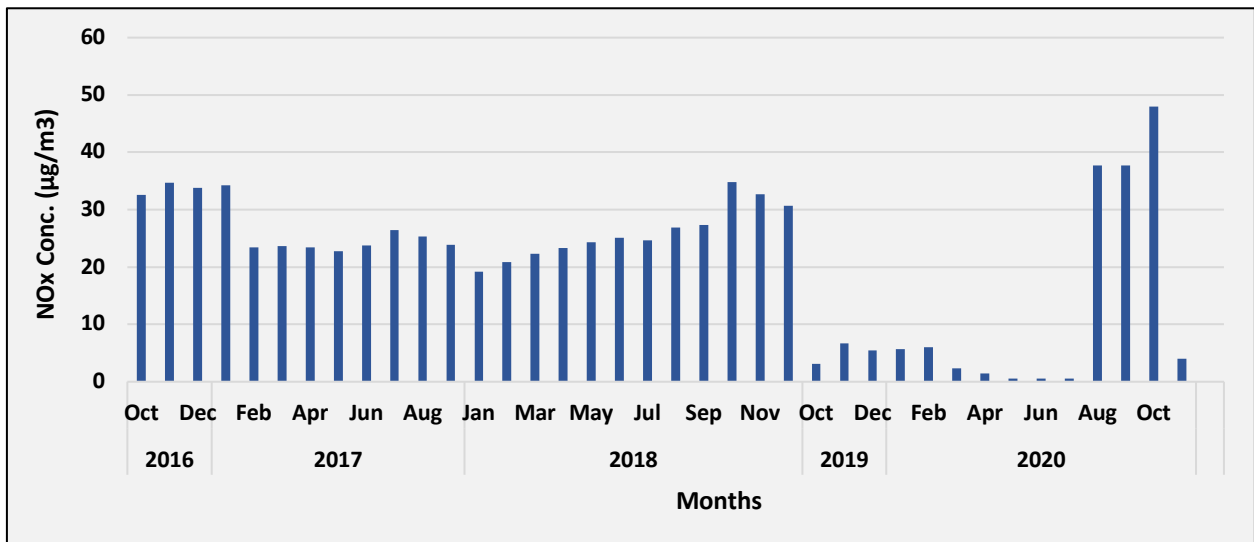


Fig. K4: Time series of monthly average NO_x ambient air concentration in Koderma TPP

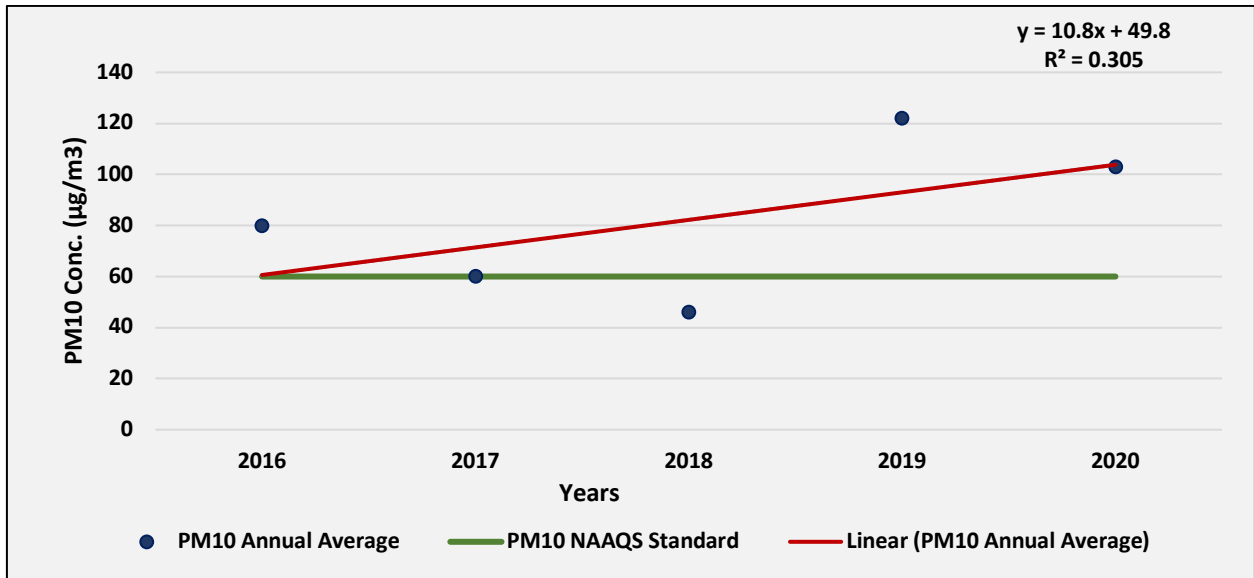


Fig. K5: Trend of annual mean PM₁₀ ambient air concentration in Koderma TPP

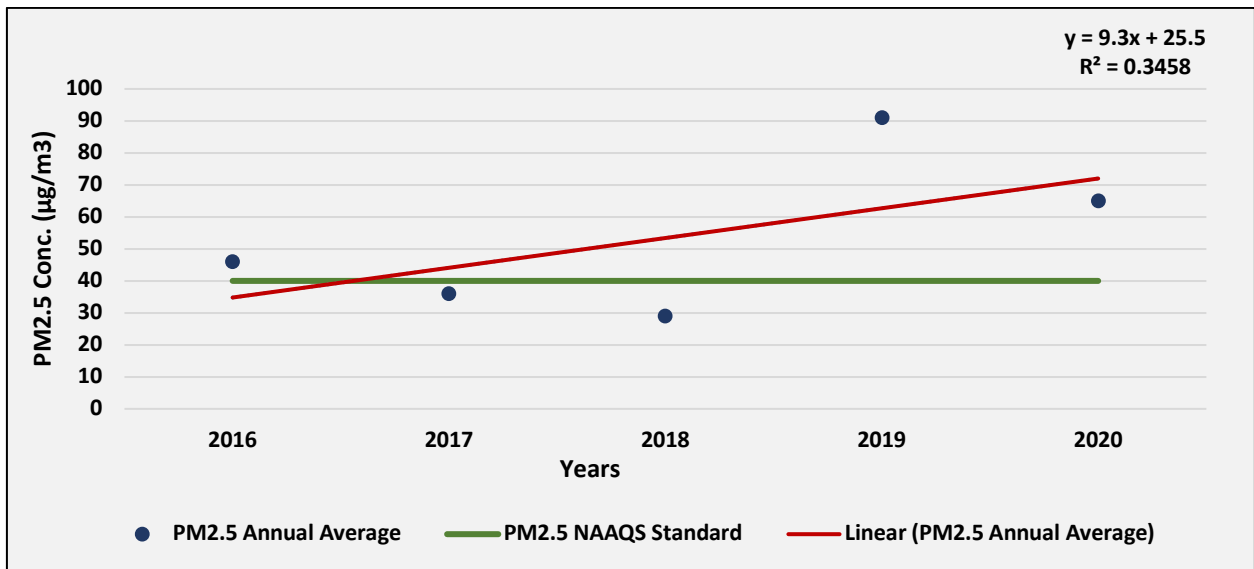


Fig. K6: Trend of annual mean PM_{2.5} ambient air concentration in Koderma TPP

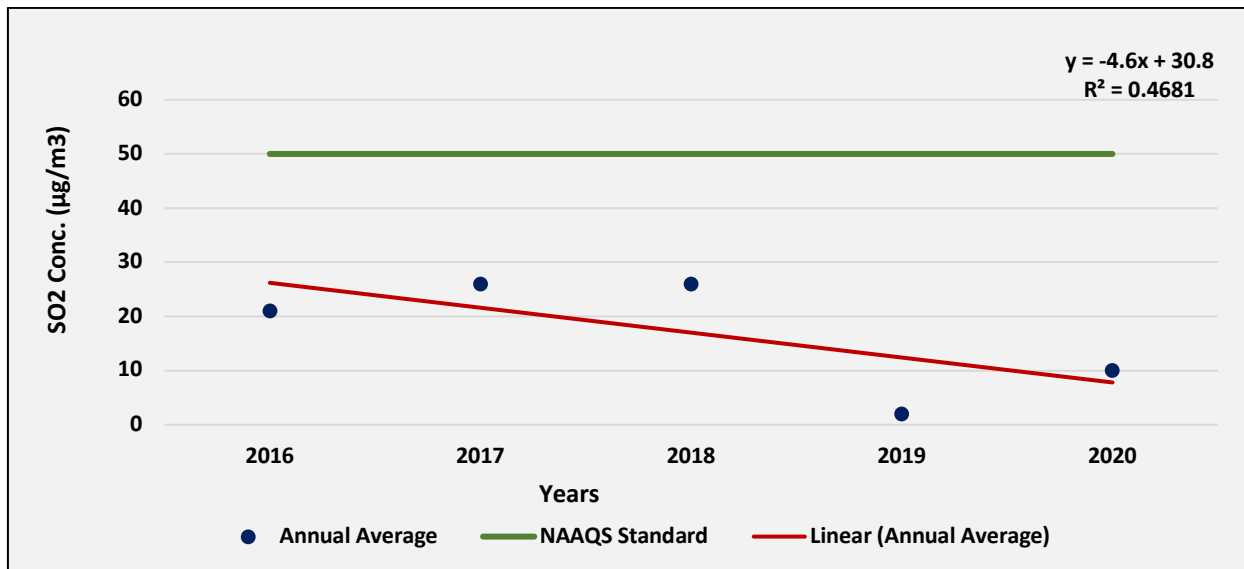


Fig. K7: Trend of annual mean SO₂ ambient air concentration in Koderma TPP

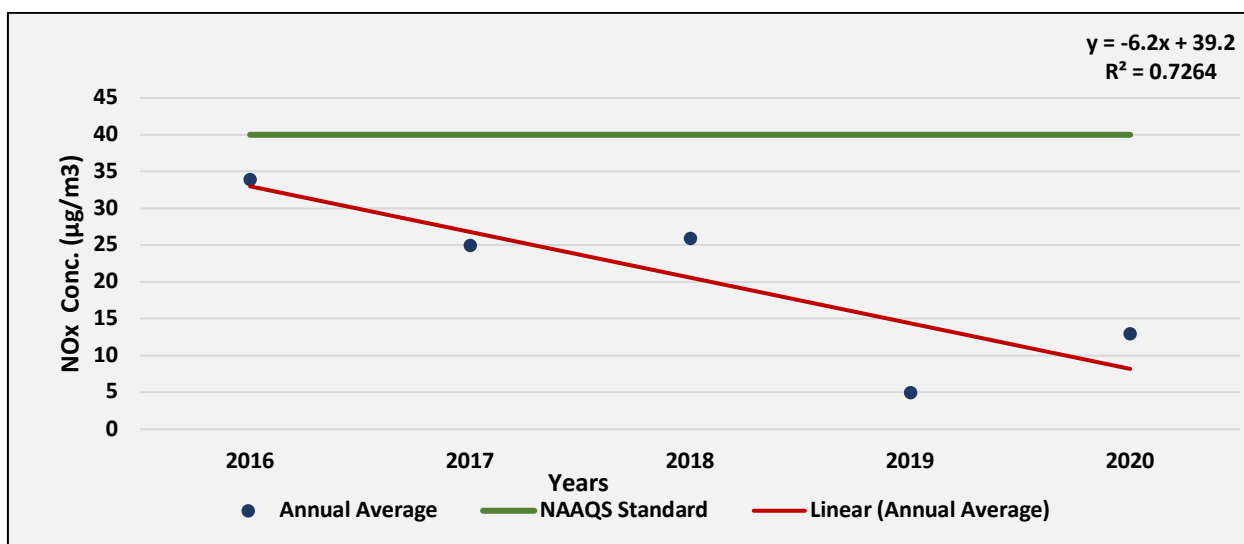


Fig. K8: Trend of annual mean NO_x ambient air concentration in Koderma TPP

Evidence based on ground level stations shows that the monthly average (Fig. K4 & K5) and annual average (Fig. K8 & K9) of SO₂ & NO_x levels in five years are mostly within a range of 0-50 µg/m³ & 0-40 µg/m³ respectively, which is good as per the as per the National Ambient Air Quality Standards (NAAQS). However, the major cause of concern is the PM₁₀, PM_{2.5} levels that are relatively high for both monthly (Fig K1 & K2) and annual average (Fig K6 & K7). This suggests that the particulate matter contribution by the DSTPS thermal power plant have to be controlled as per the NAAQS.

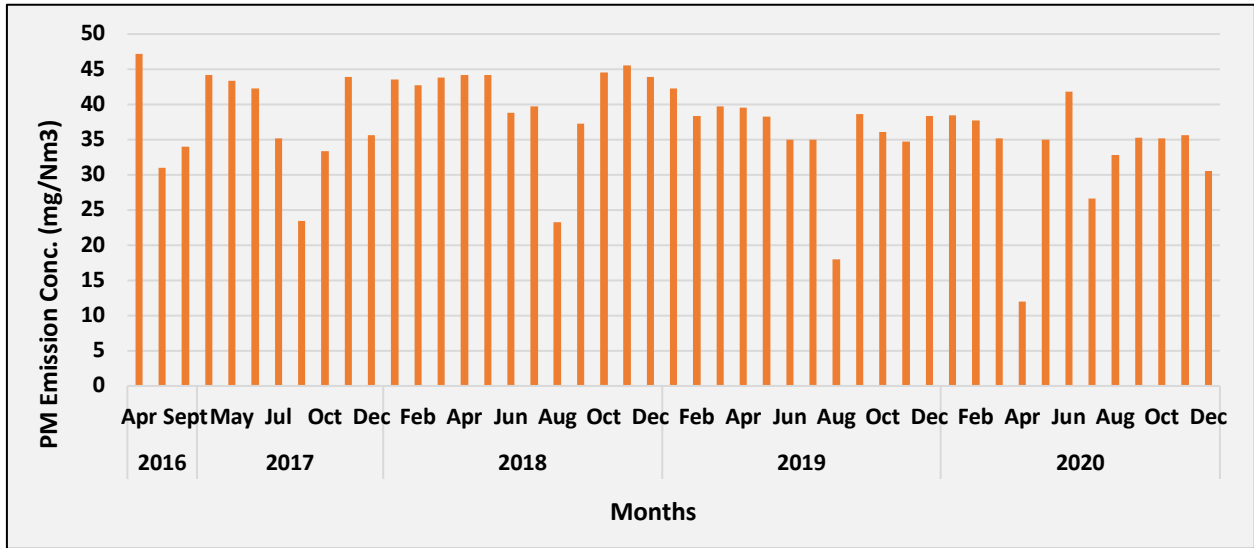


Fig. K9: Time series of monthly average emission of PM from Unit 1 in Koderma TPP

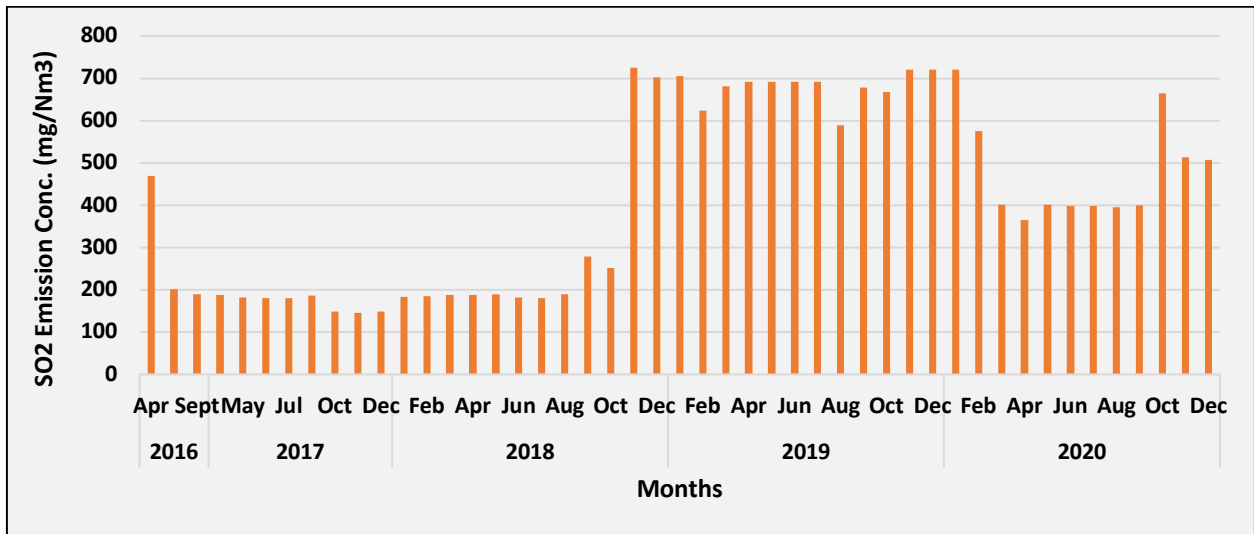


Fig. K10: Time series of monthly average emission of SO₂ from Unit 1 in Koderma TPP

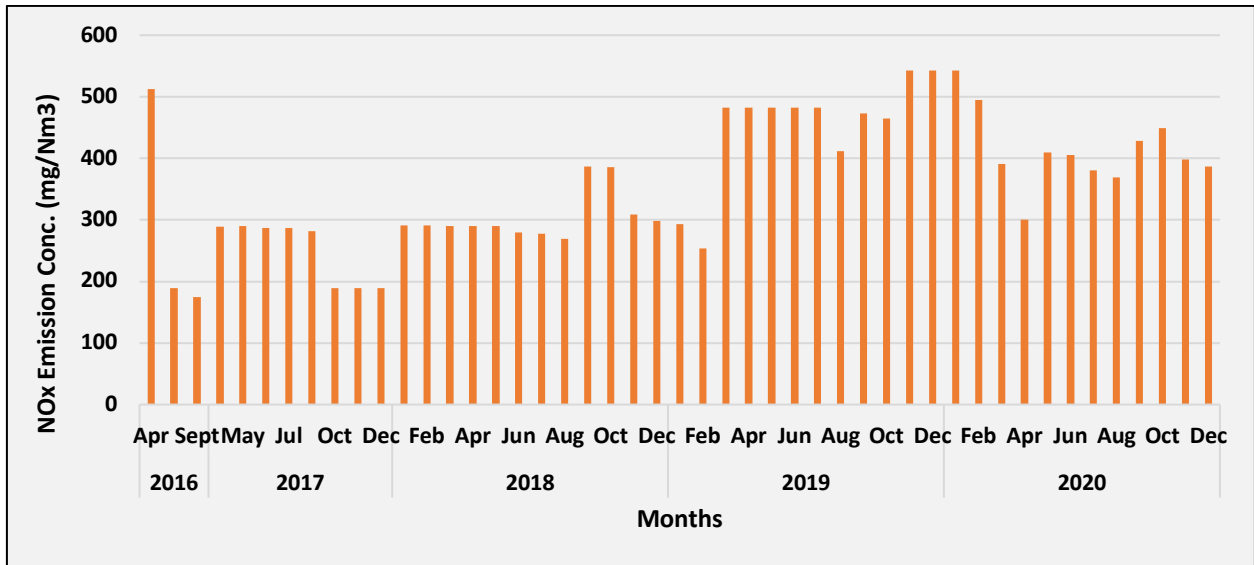


Fig. K11: Time series of monthly average emission of NO_x from Unit 1 in Koderma TPP

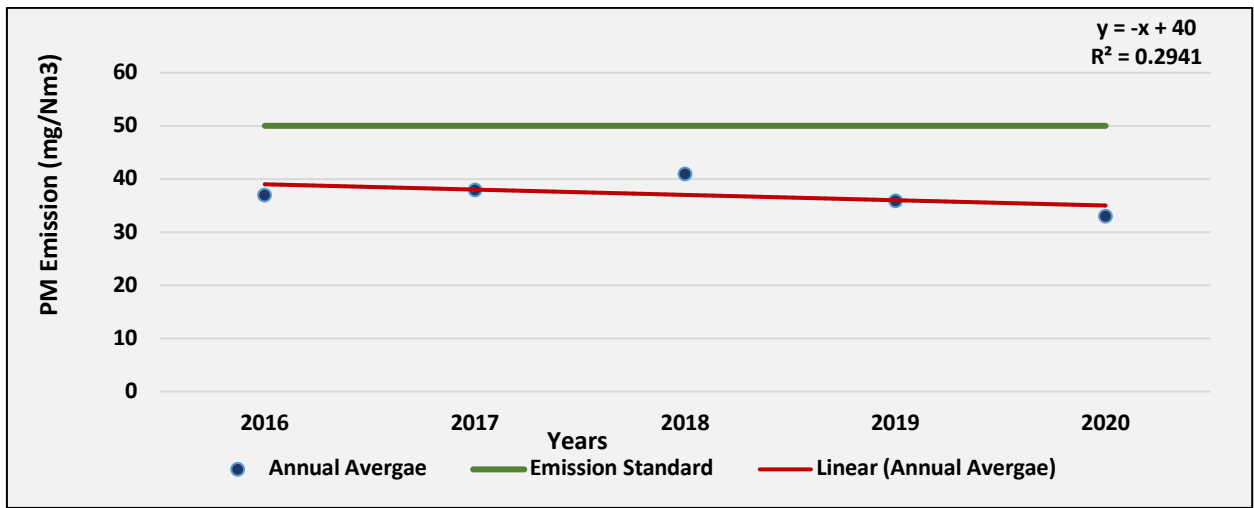


Fig. K12: Trend of annual average PM emissions from unit 1 in Koderma TPP

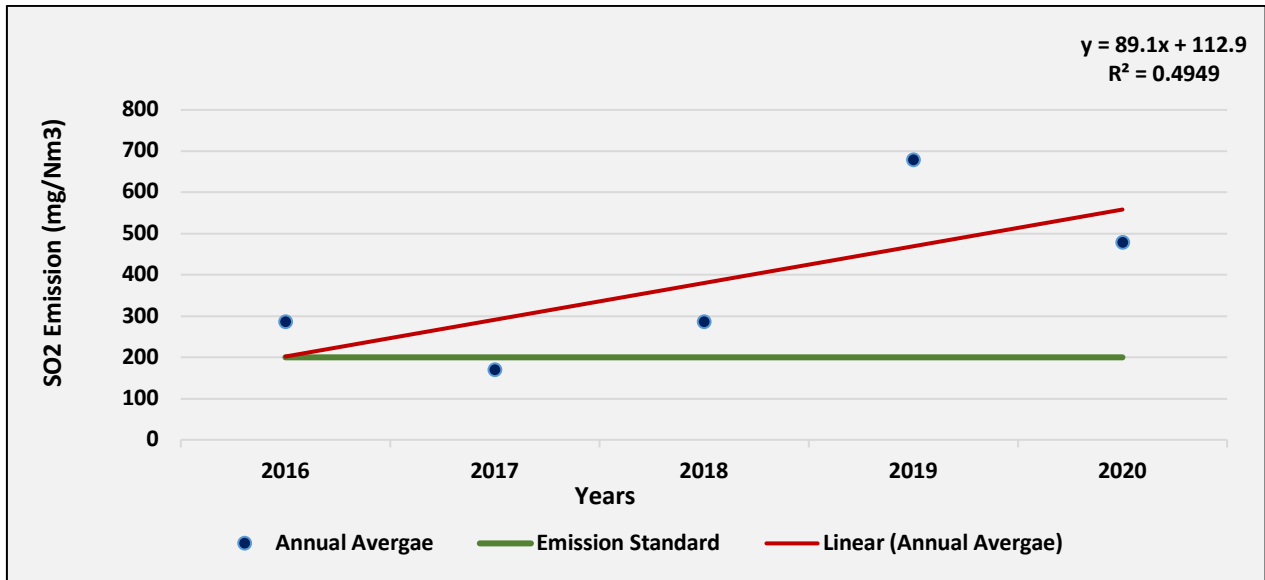


Fig. K13: Trend of annual average SO₂ emissions from unit 1 in Koderma TPP

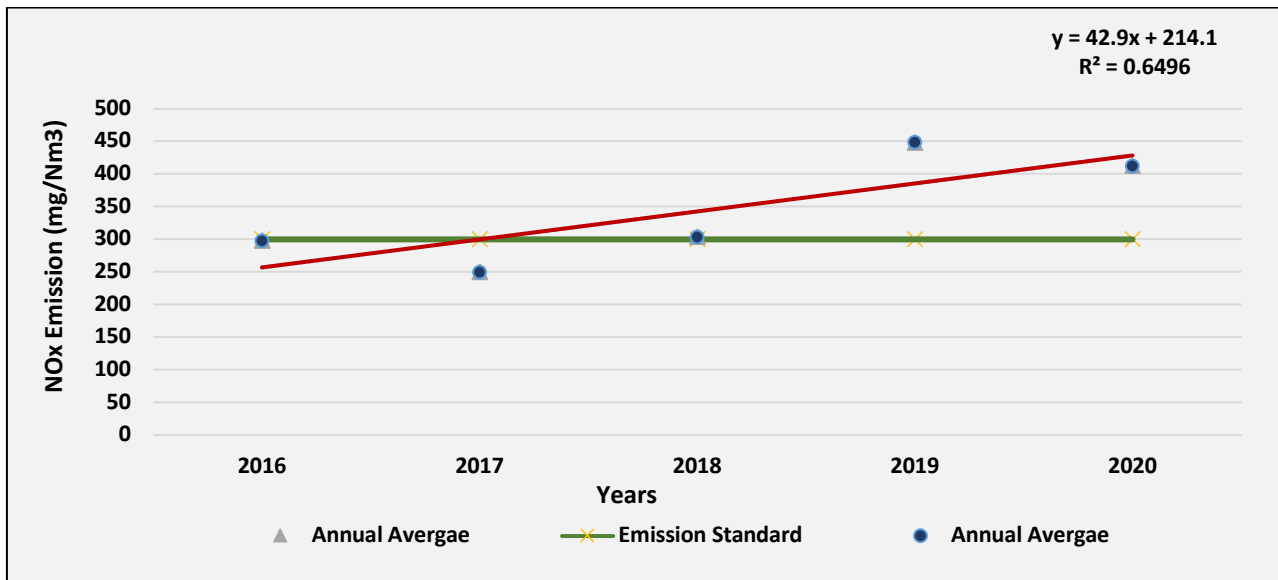


Fig. K14: Trend of annual average NO_x emissions from unit 1 in Koderma TPP

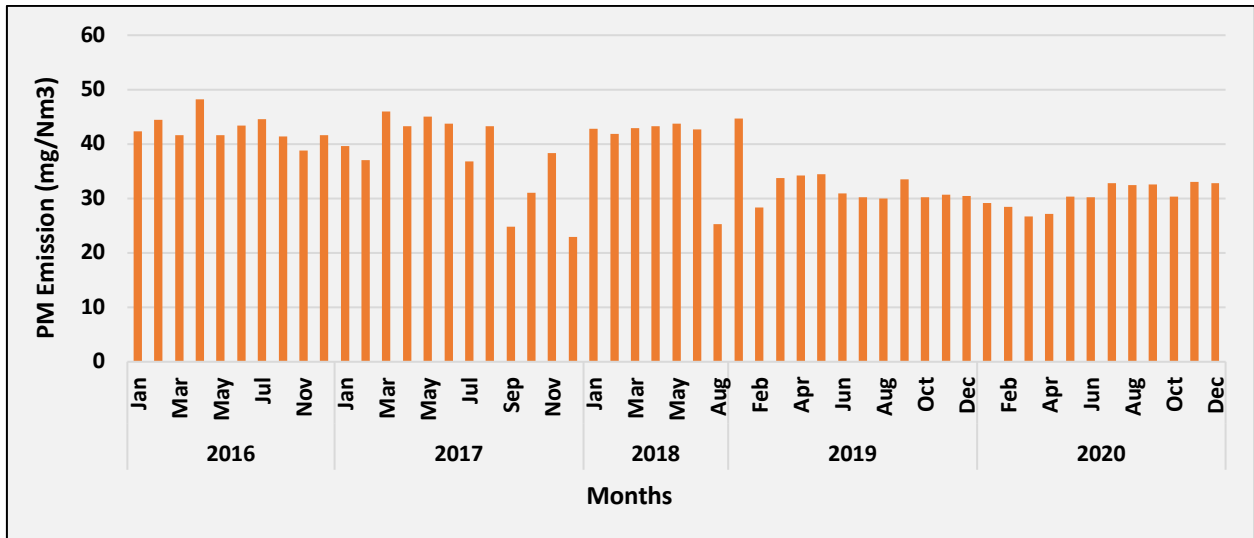


Fig. K15: Time series of monthly average emission of PM from Unit 2 in Koderma TPP

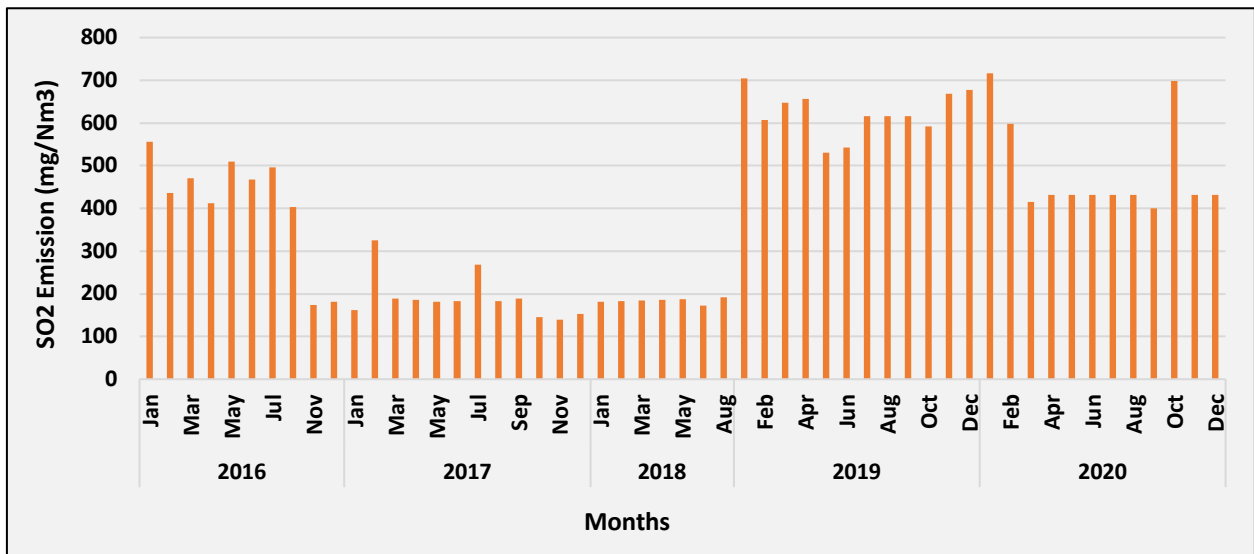


Fig. K16: Time series of monthly average emission of SO2 from Unit 2 in Koderma TPP

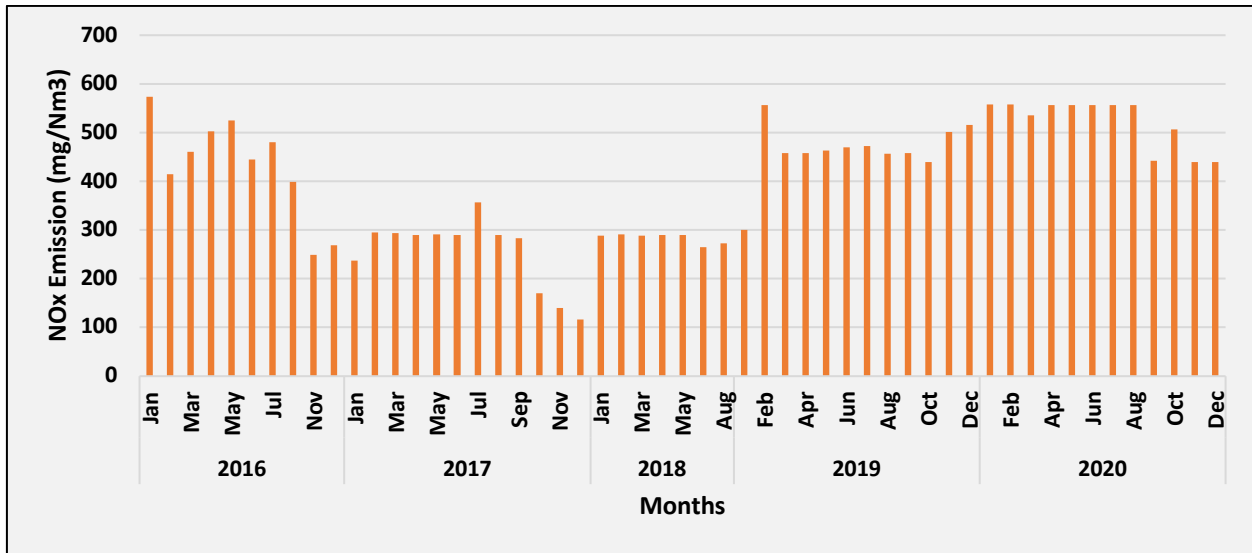


Fig. K17: Time series of monthly average emission of NOx from Unit 2 in Koderma TPP

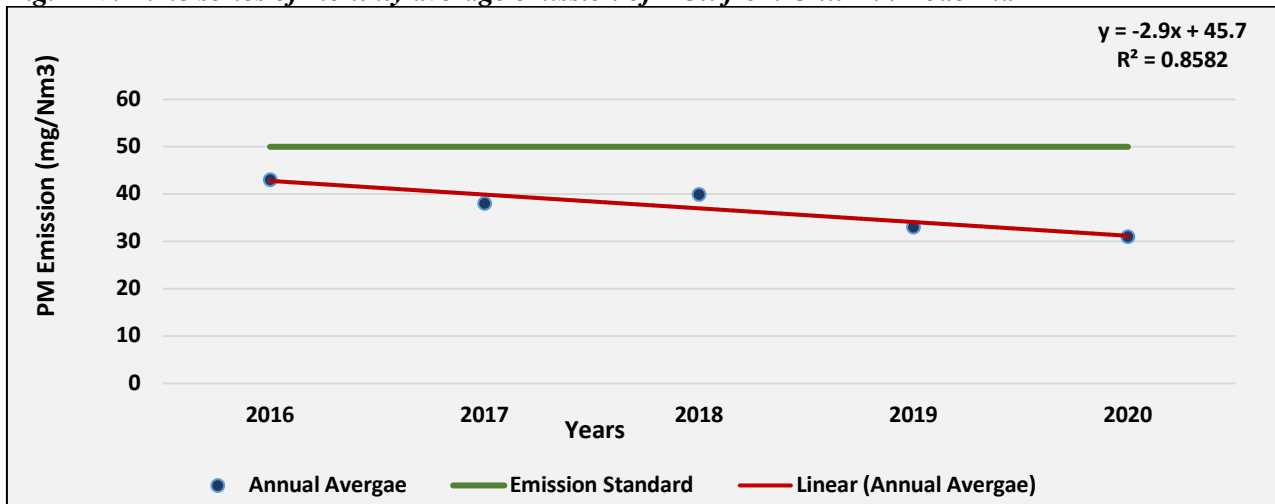


Fig. K18: Trend of annual average PM emissions from unit 2 in Koderma TPP

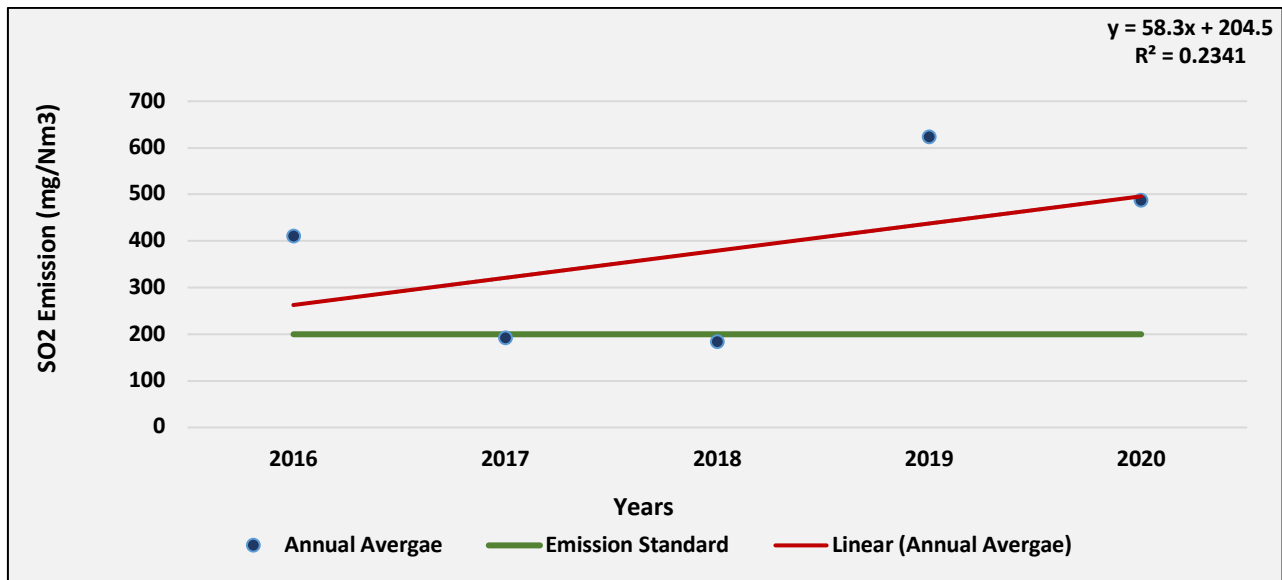


Fig. K19: Trend of annual average SO₂ emissions from unit 2 in Koderma TPP

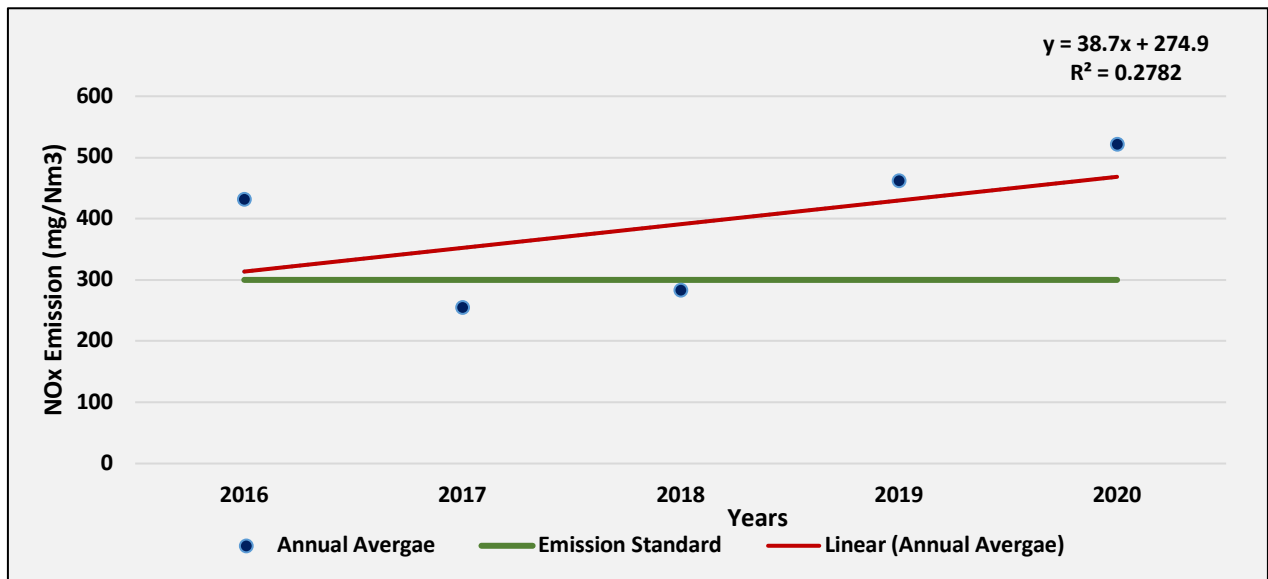


Fig. K20: Trend of annual average NO_x emissions from unit 2 in Koderma TPP

The monthly and yearly ground level emission analysis for both the units of Koderma Thermal Power Plant shows that particulate matter is within the emission standards. The SO₂ parameter is much higher than the norms whereas NO_x parameter is just within the emission standard for the year 2018 and 2019 but it is exceeding its standard limit in the year 2016, 2019 and 2020. (Fig. K9-K20).

MEJIA THERMAL POWER PLANT

Mejia Thermal Power Station is located at Durlabhpur, Bankura, 35 km from Durgapur city in West Bengal. The power plant is one of the coal based power plants of DVC. Commissioned on 1996, MTPS is the largest thermal power plant, in terms of generating capacity in the state of West Bengal as well as among other DVC power plants.

Mejia Thermal Power Station has an installed capacity of **2430 MW**. The plant has 8 units under operation. ^[1] The individual units has the generating capacity as follows:

The ambient air quality concentrations of PM_{10} , $PM_{2.5}$, SO_2 , and NO_x , data has been analyzed using the data provided by DVC developer.

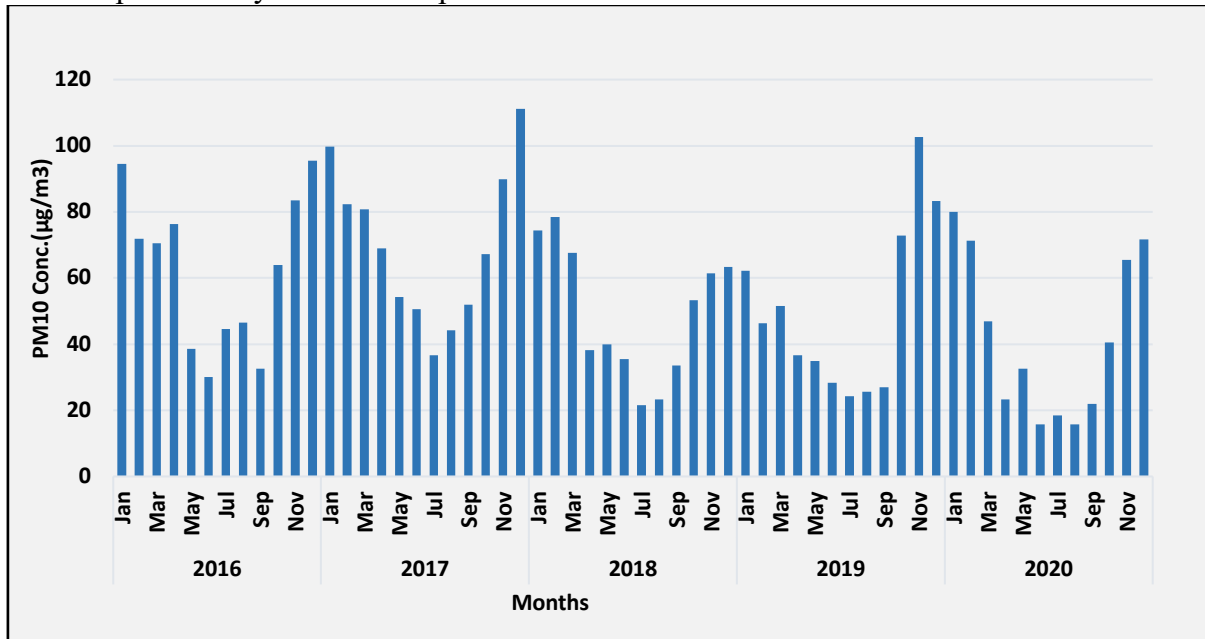


Fig. M1: Time series of monthly average PM_{10} ambient air concentration

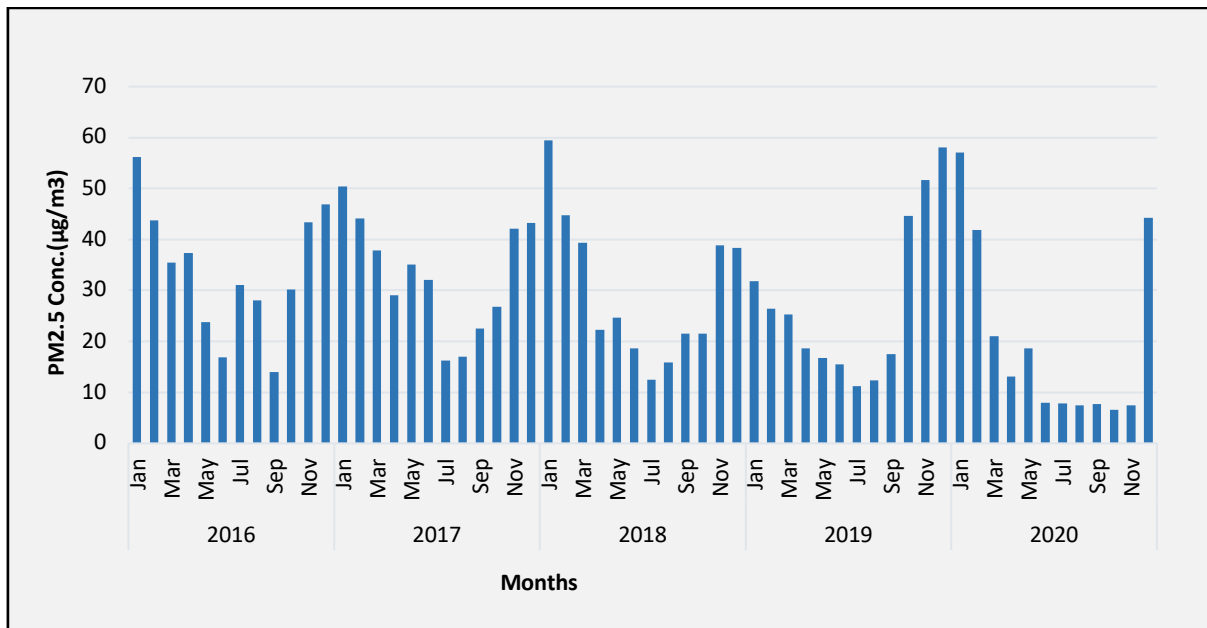


Fig. M2: Time series of monthly average $PM_{2.5}$ ambient air concentration

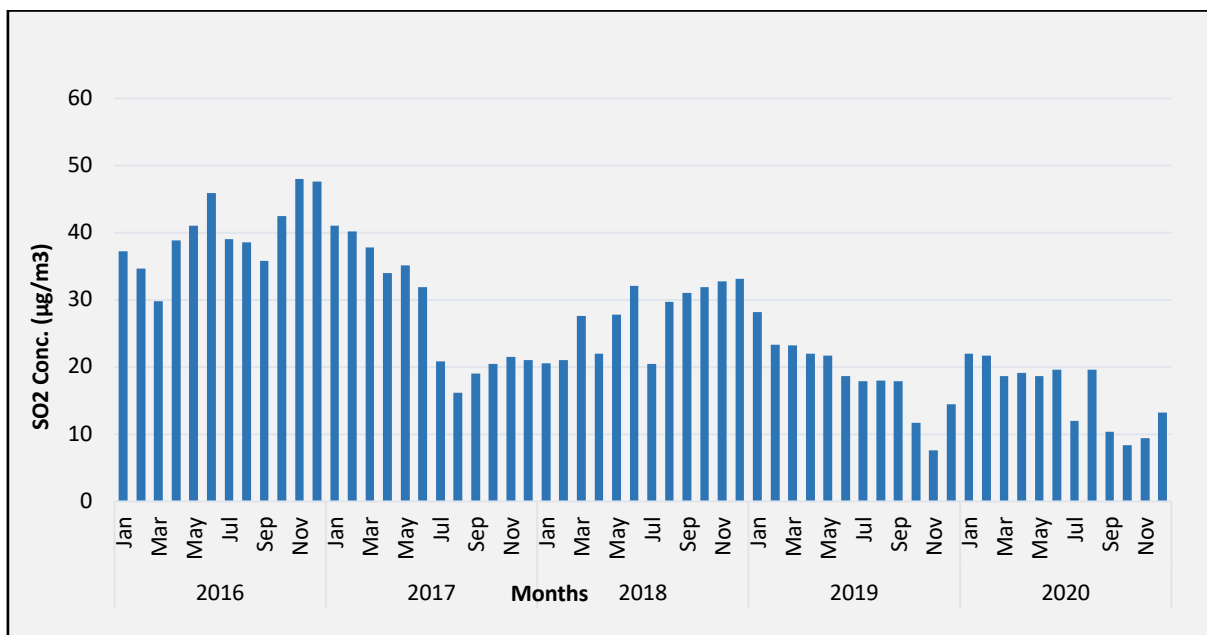


Fig. M3: Time series of monthly average SO_2 ambient air concentration

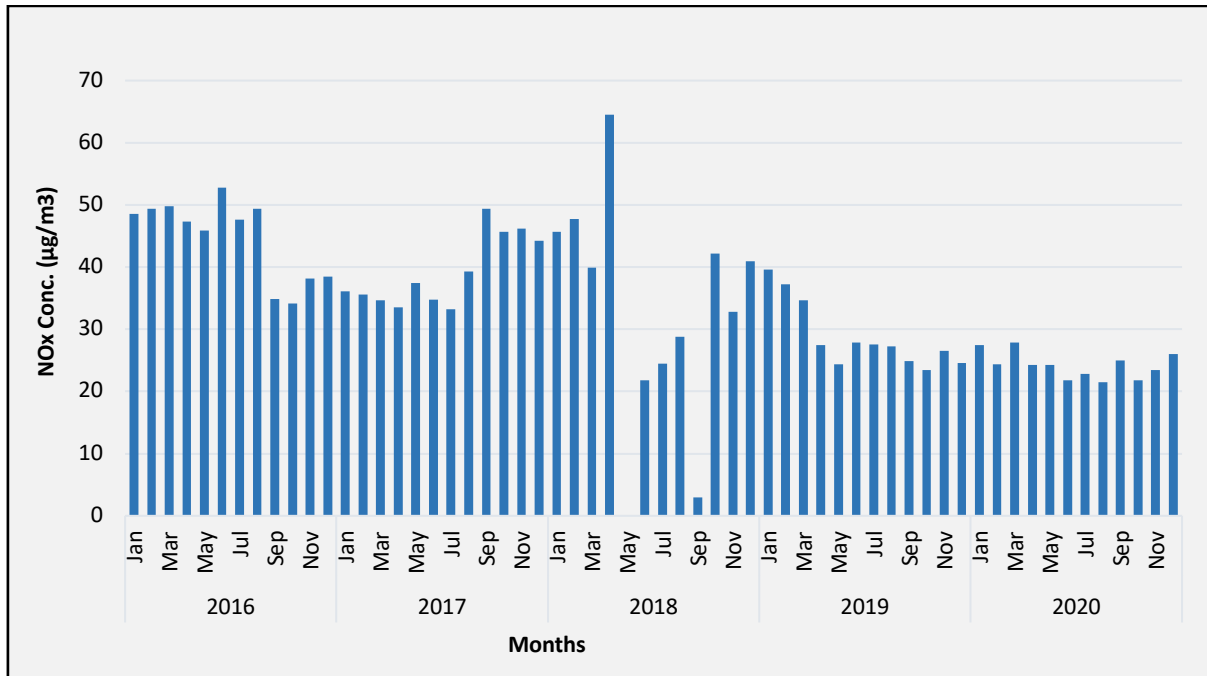


Fig.M4: Time series of monthly average NO_x ambient air concentration

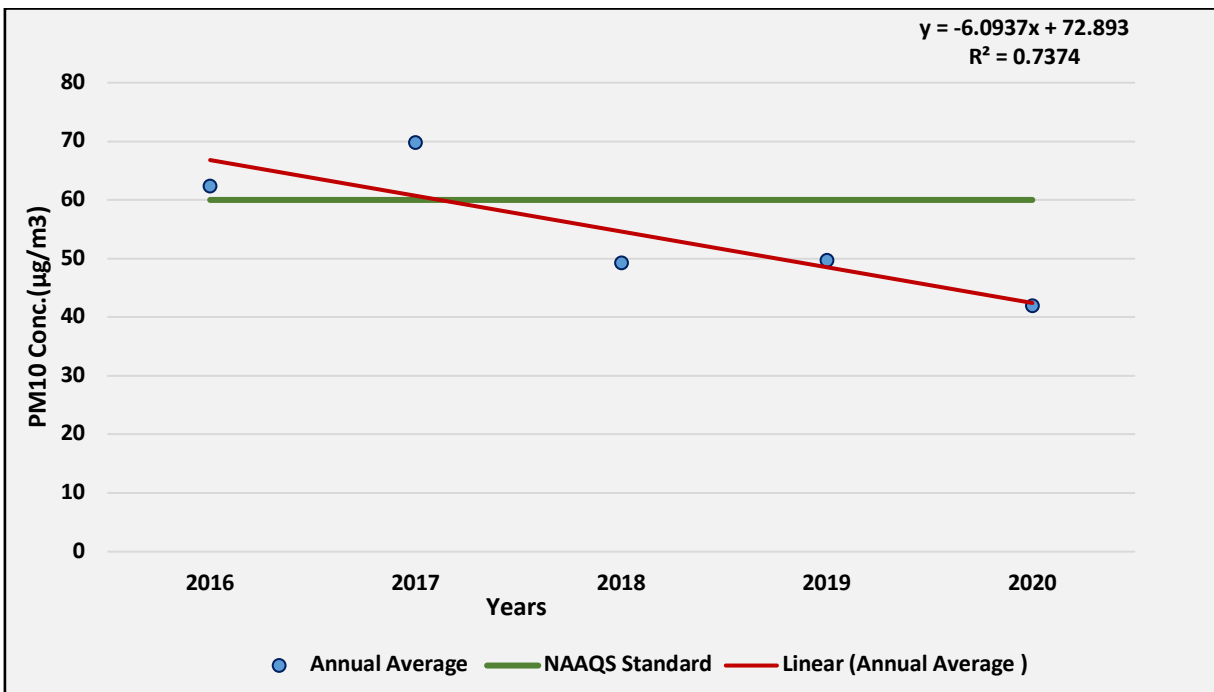


Fig. M5: Trend of annual mean PM₁₀ ambient air concentration

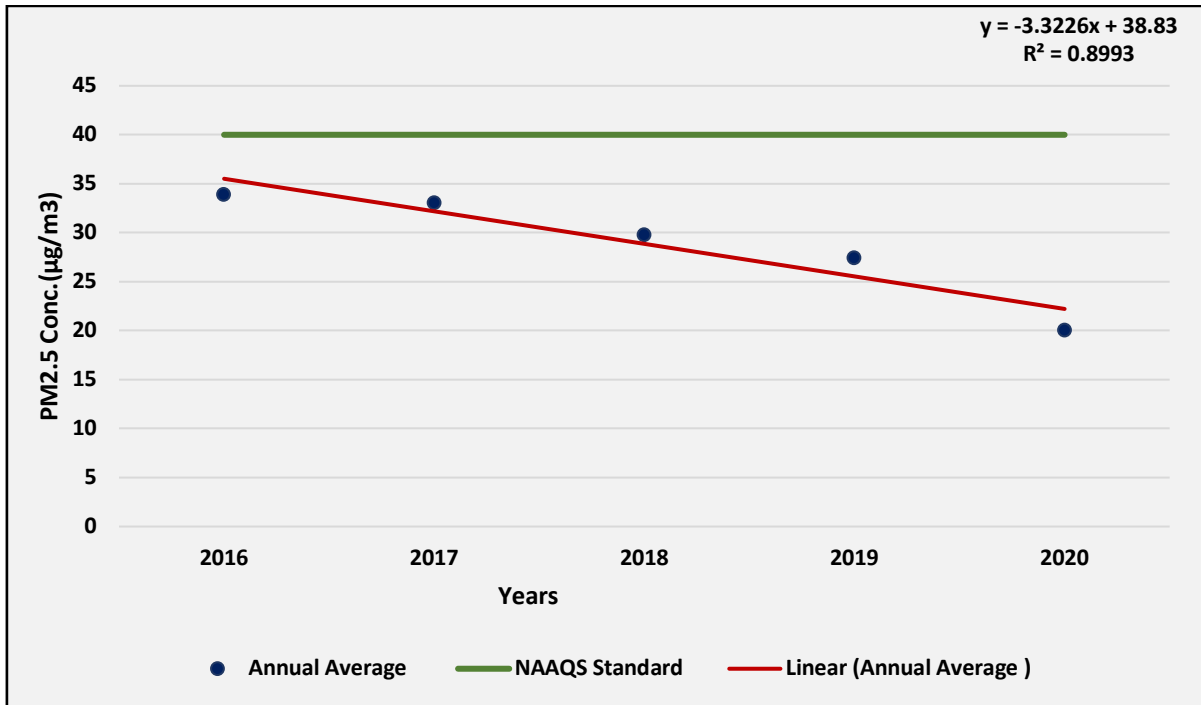


Fig. M6: Trend of annual mean PM_{2.5} ambient air concentration

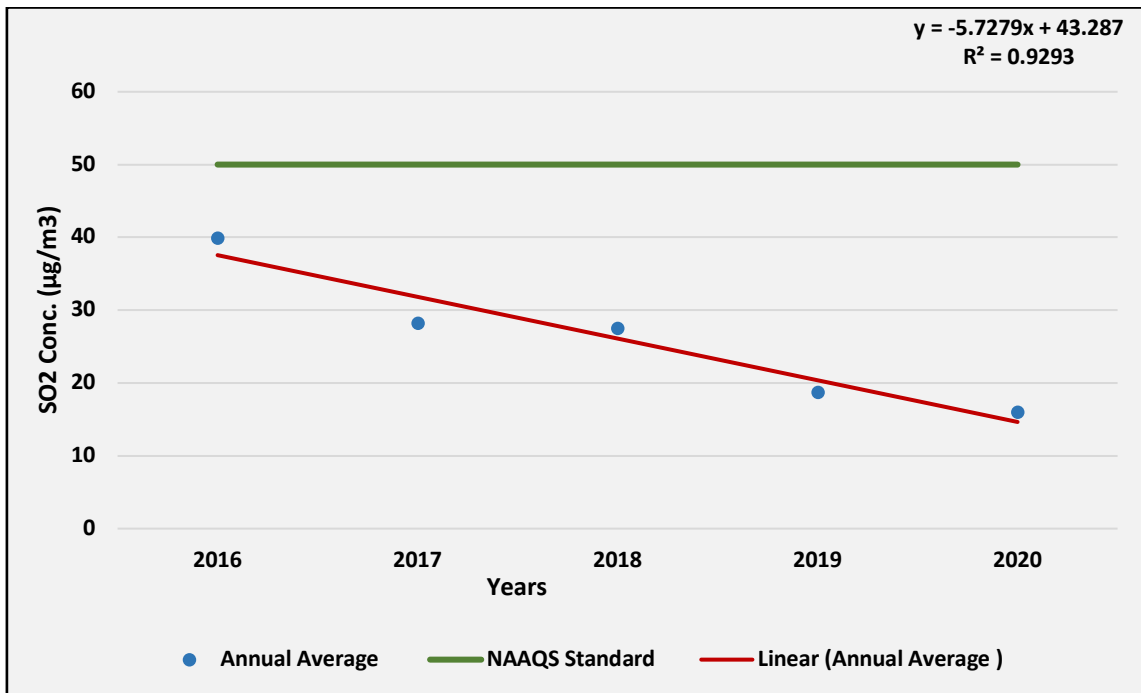


Fig. M7: Trend of annual mean SO₂ ambient air concentration

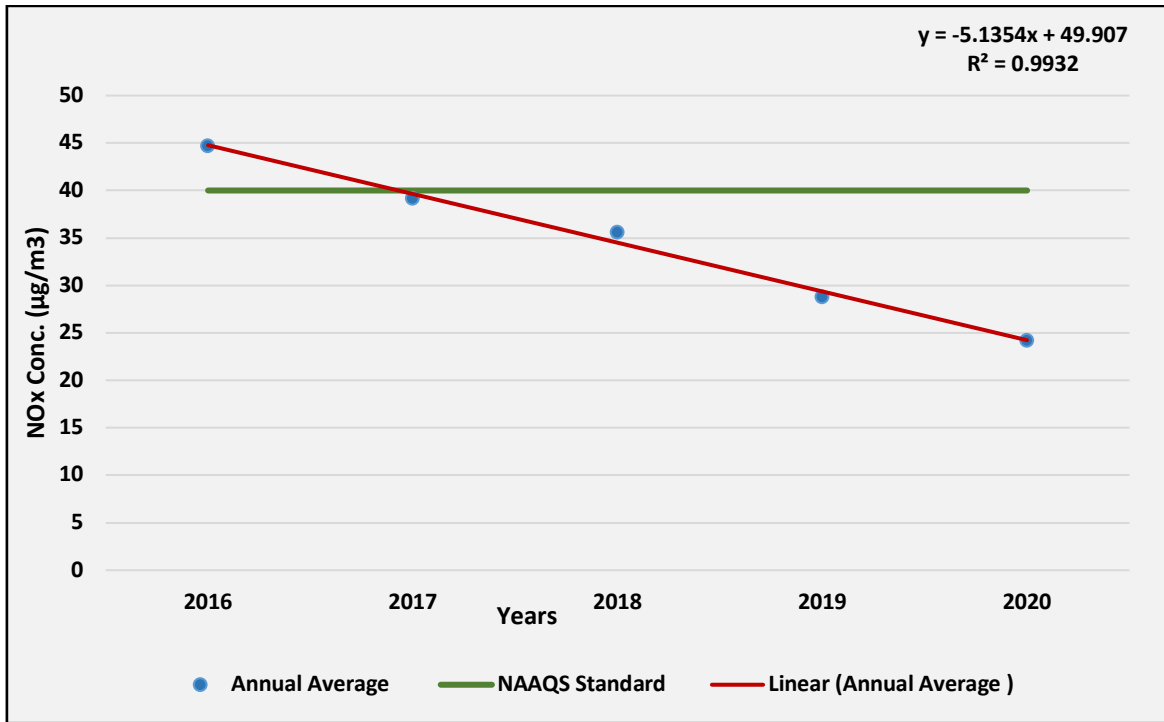


Fig. M8: Trend of annual mean NO_x ambient air concentration

Evidence based on ground level stations shows that the monthly average and annual average of SO₂ & NO_x levels in five years are mostly within a range of 0-50µg/m³ & 0-40 µg/m³ respectively, which is good as per the as per the National Ambient Air Quality Standards (NAAQS). However, the major cause of concern is the PM₁₀, PM_{2.5} levels that are relatively high for both monthly and annual average. This suggests that the particulate matter contribution by the thermal power plant have to be controlled as per the NAAQS.

UNIT-1

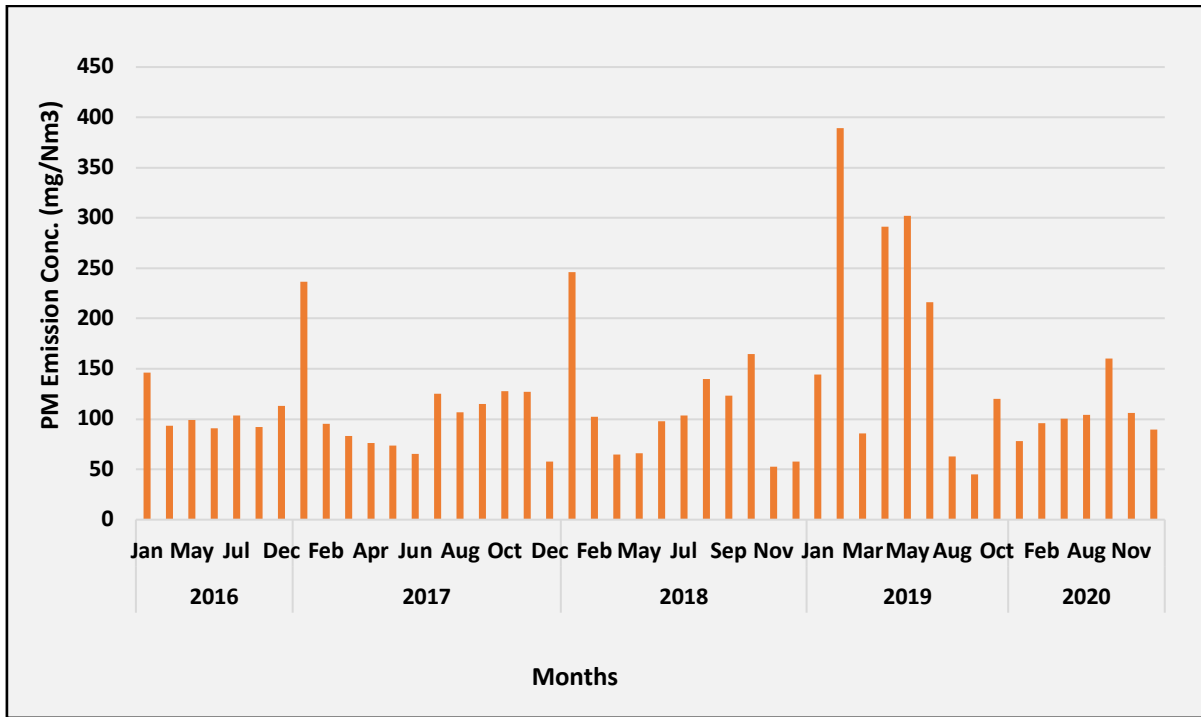


Fig. M9: Time series of monthly average PM ambient air concentration

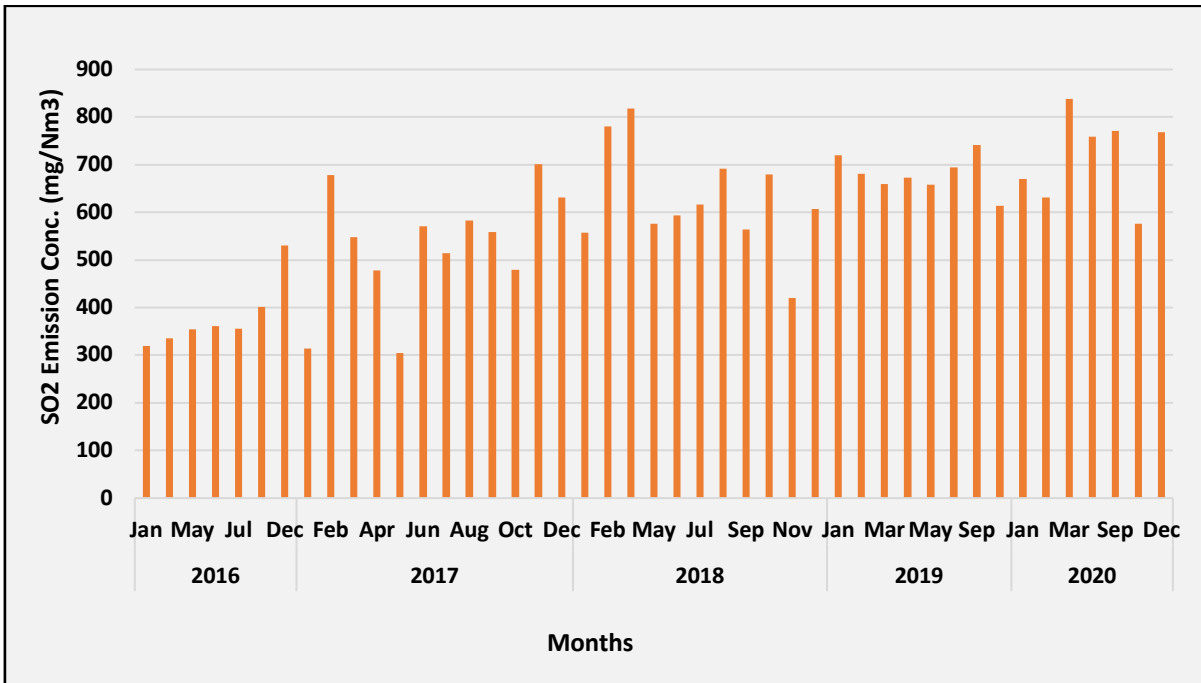


Fig. M10: Time series of monthly average SO₂ ambient air concentration

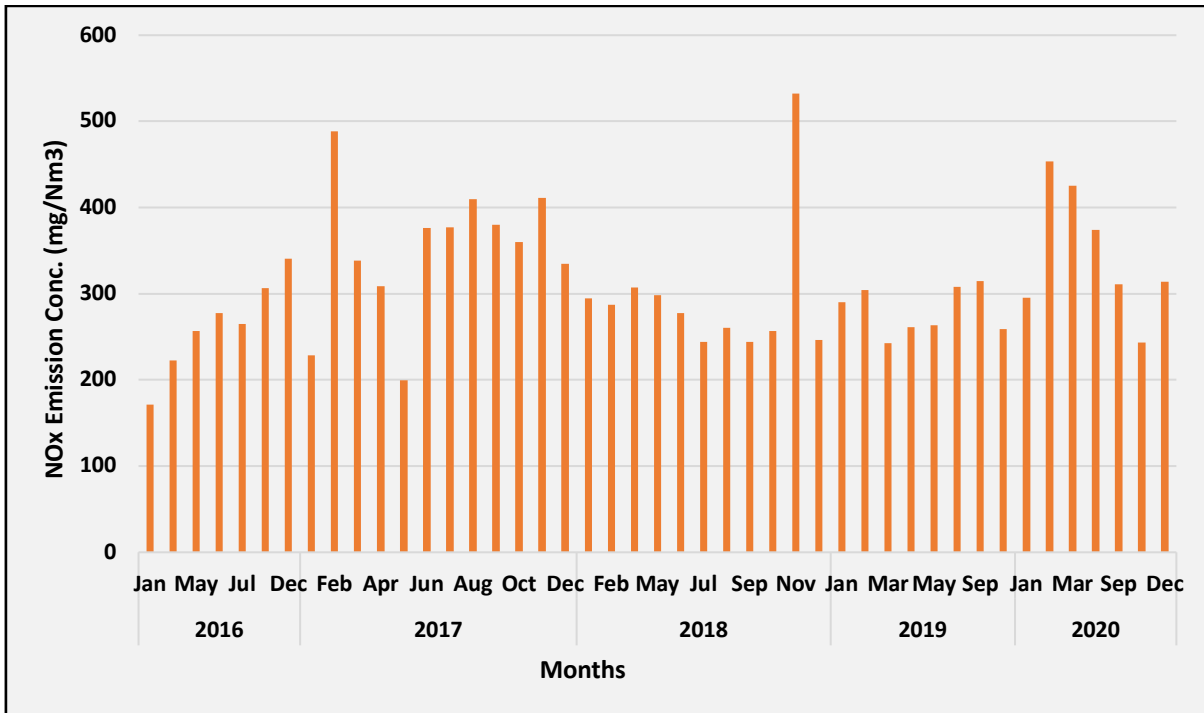


Fig.M11: Time series of monthly average NO_x ambient air concentration

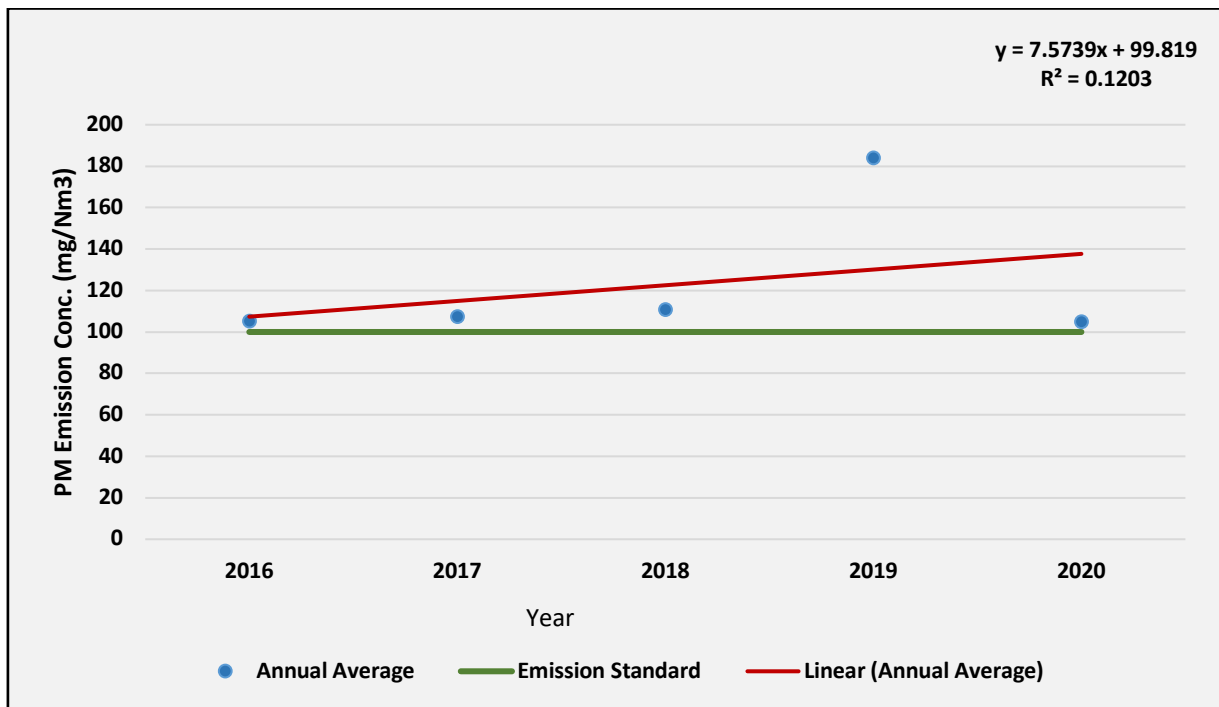


Fig. M12: Trend of annual mean PM ambient air concentration

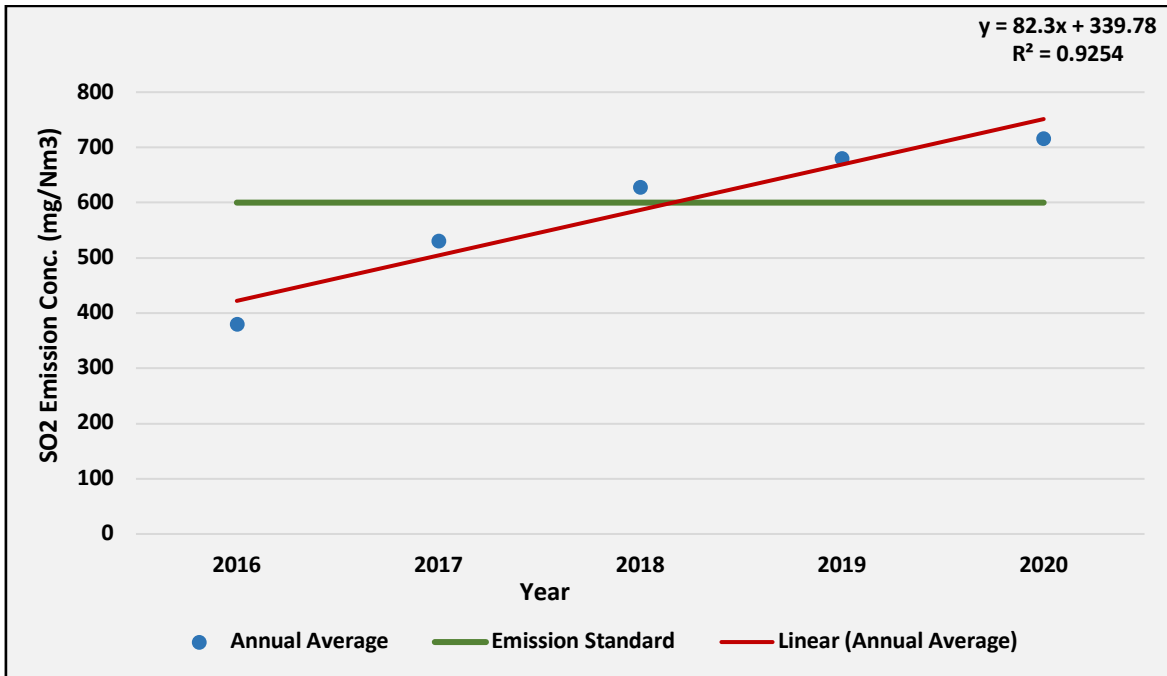


Fig. M13: Trend of annual mean SO₂ ambient air concentration

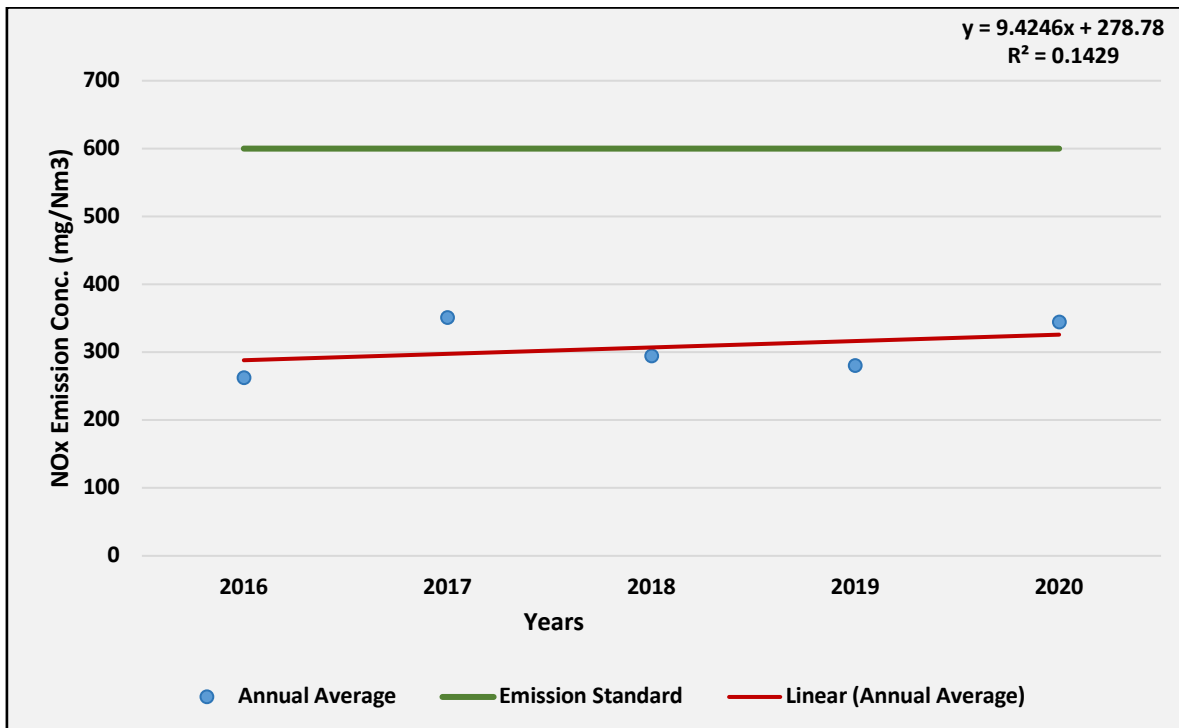


Fig. M14: Trend of annual mean NO_x ambient air concentration

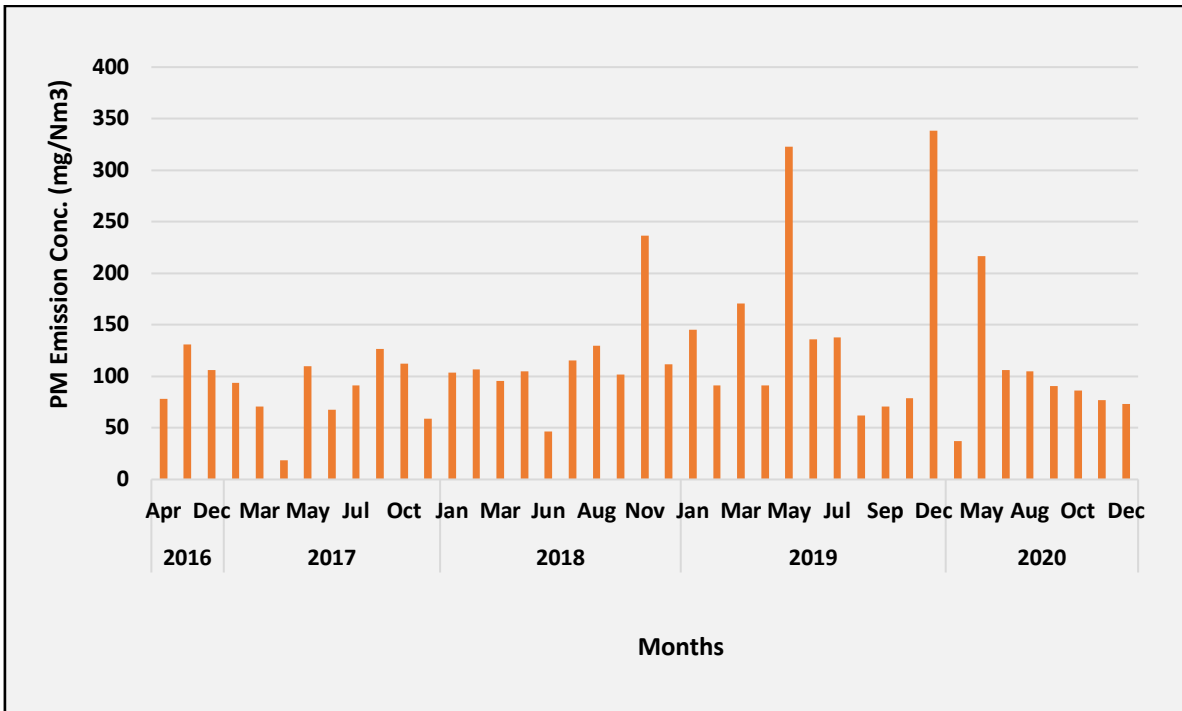


Fig. M15: Time series of monthly average PM ambient air concentration

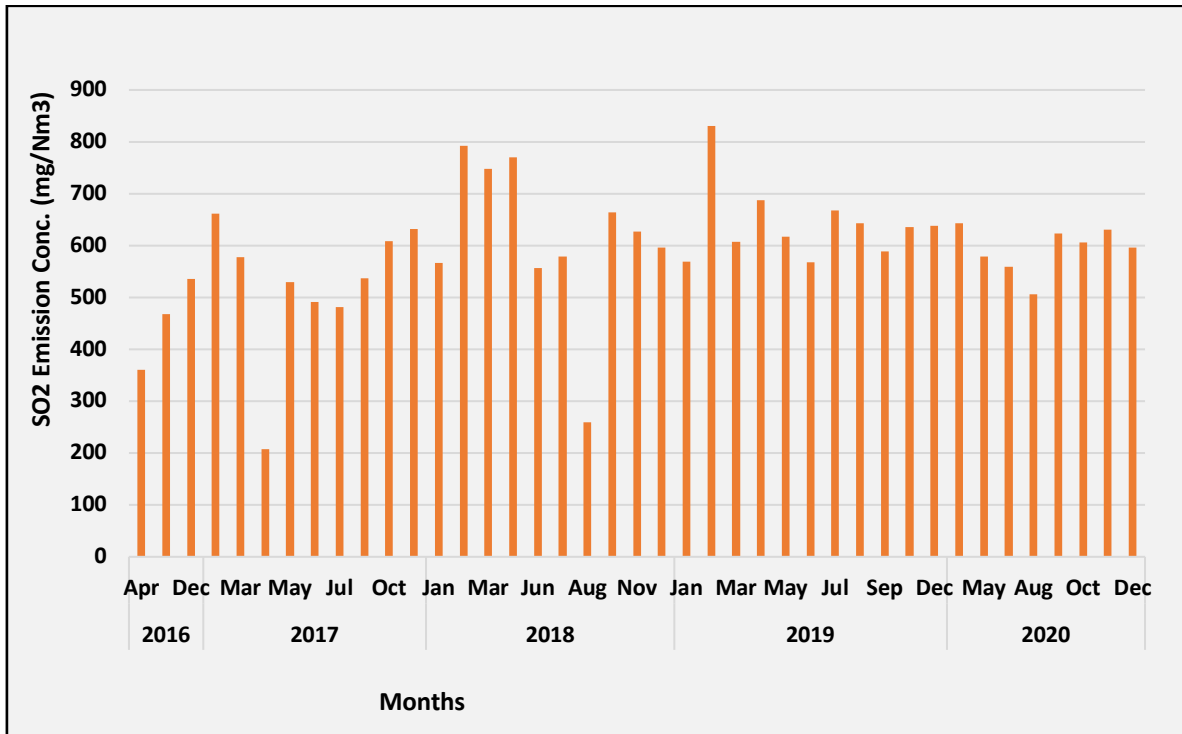


Fig. M16: Time series of monthly average SO₂ stack emissions

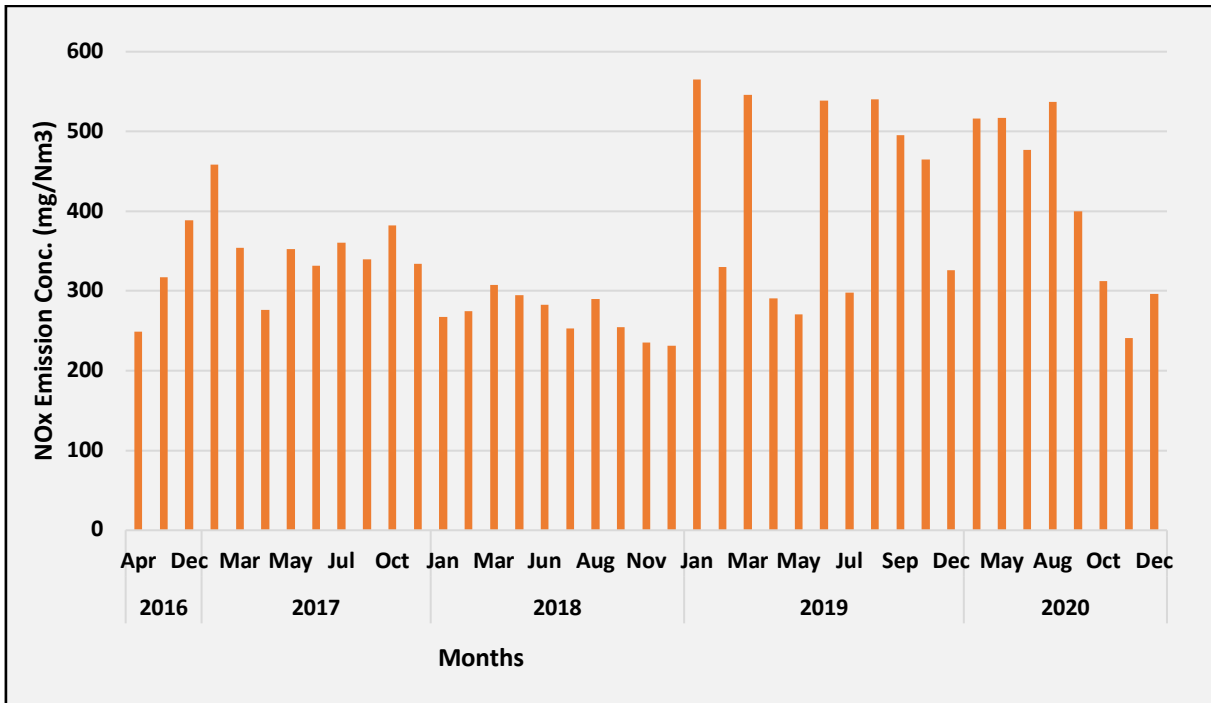


Fig.M17: Time series of monthly average NO_x ambient air concentration

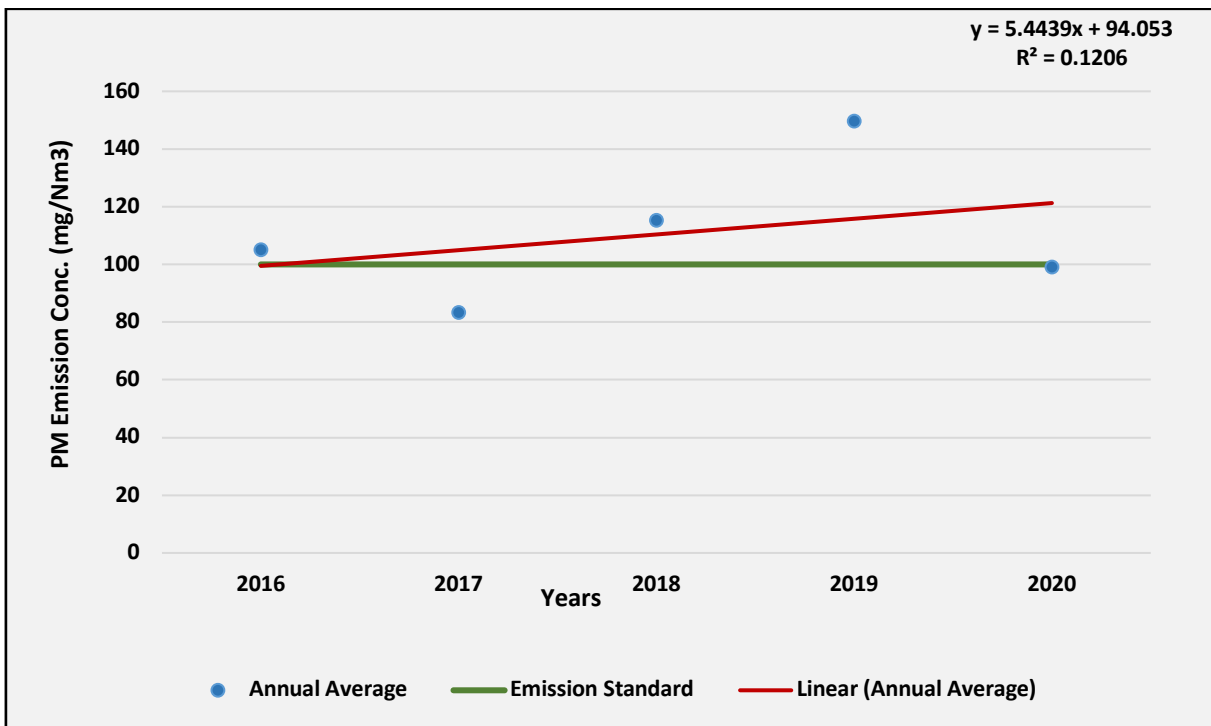


Fig. M18: Trend of annual mean PM ambient air concentration

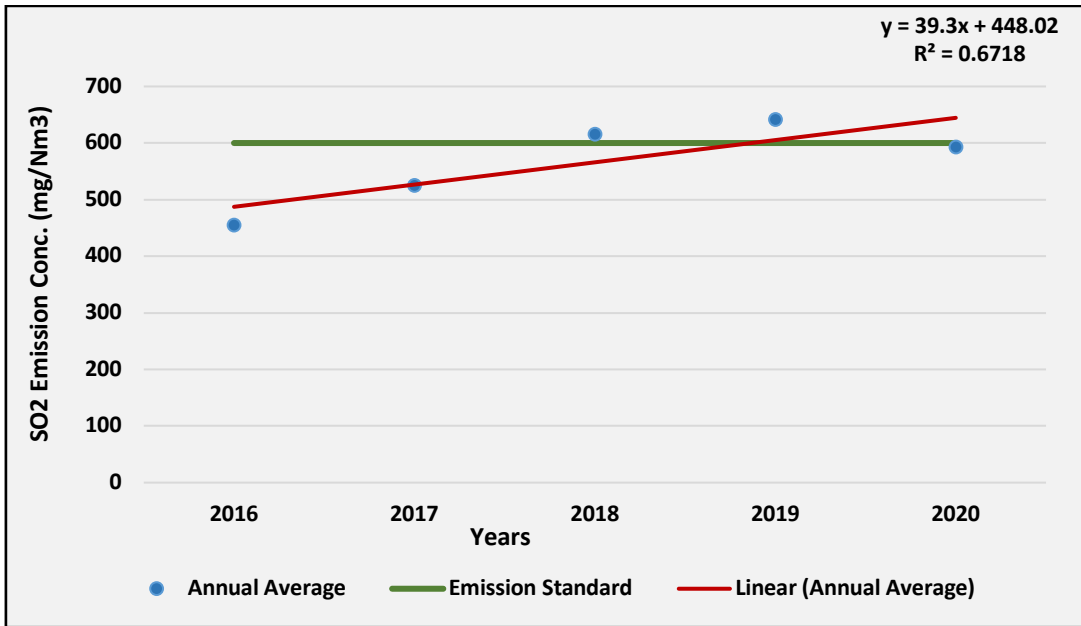


Fig. M19: Trend of annual mean SO₂ ambient air concentration

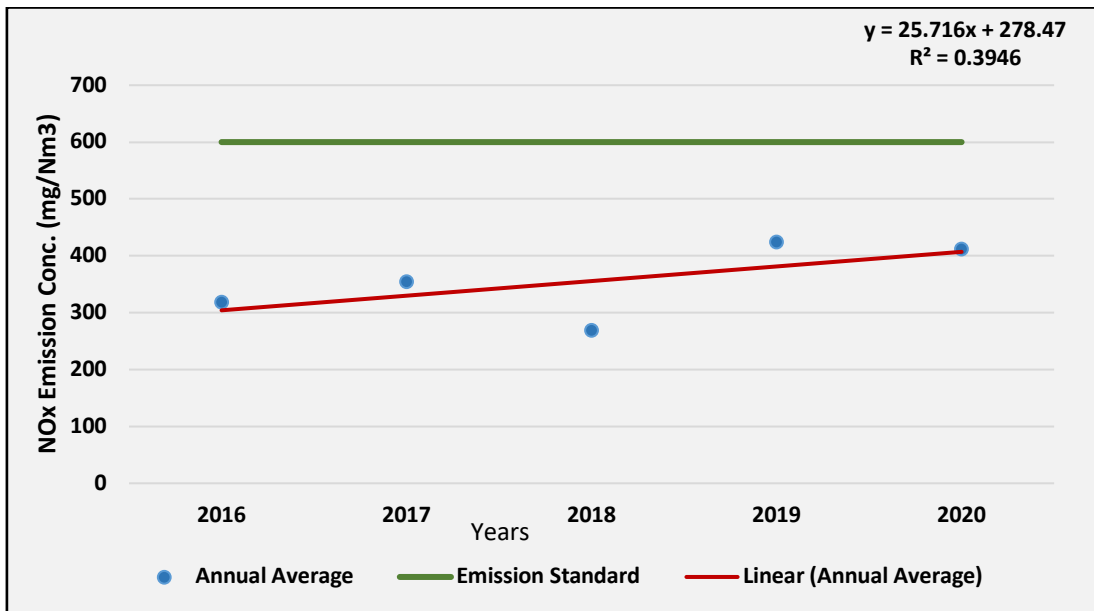


Fig. M20: Trend of annual mean NO_x ambient air concentration

UNIT-3

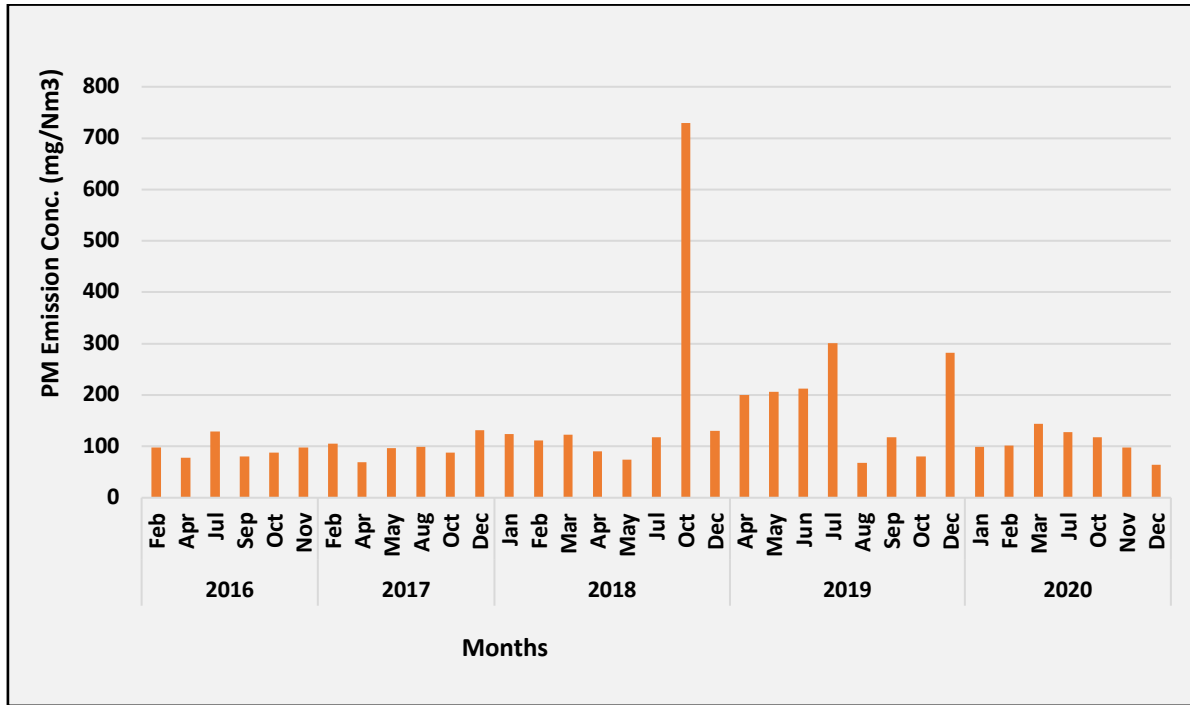


Fig. M21: Time series of monthly average PM ambient air concentration

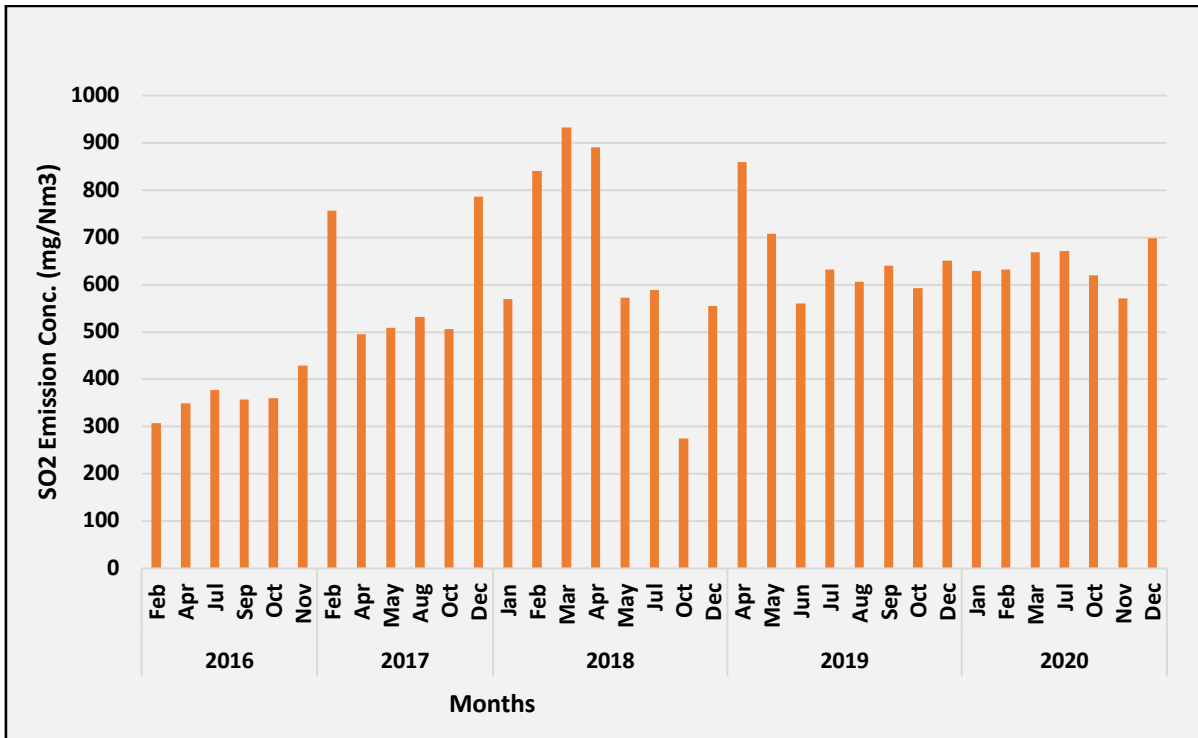


Fig. M22: Time series of monthly average SO₂ ambient air concentration

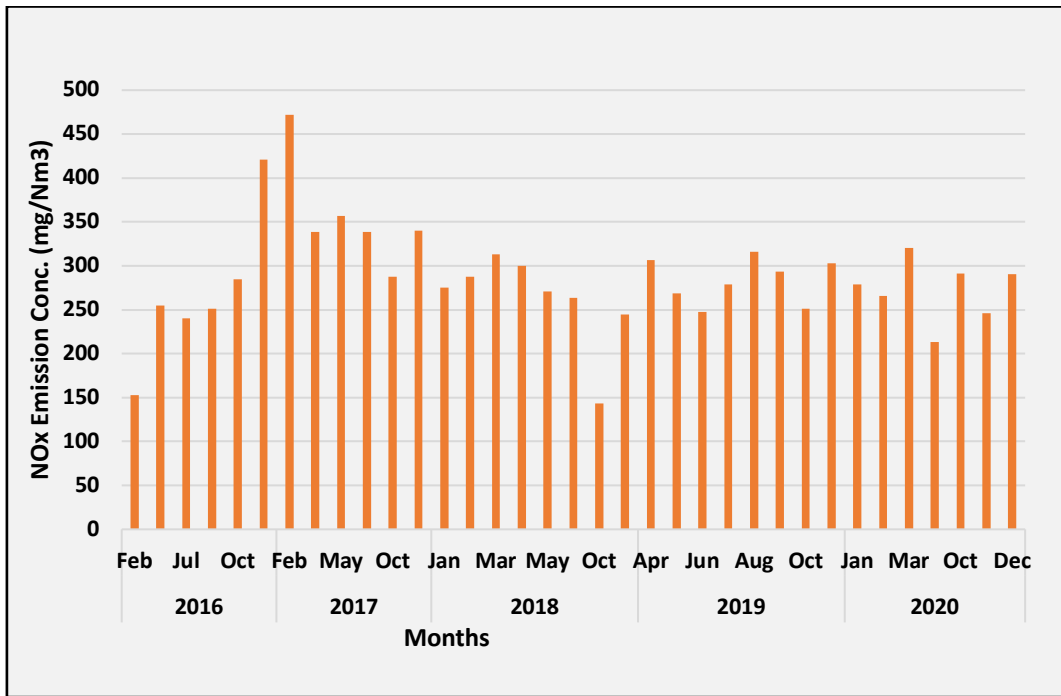


Fig.M23: Time series of monthly average NO_x ambient air concentration

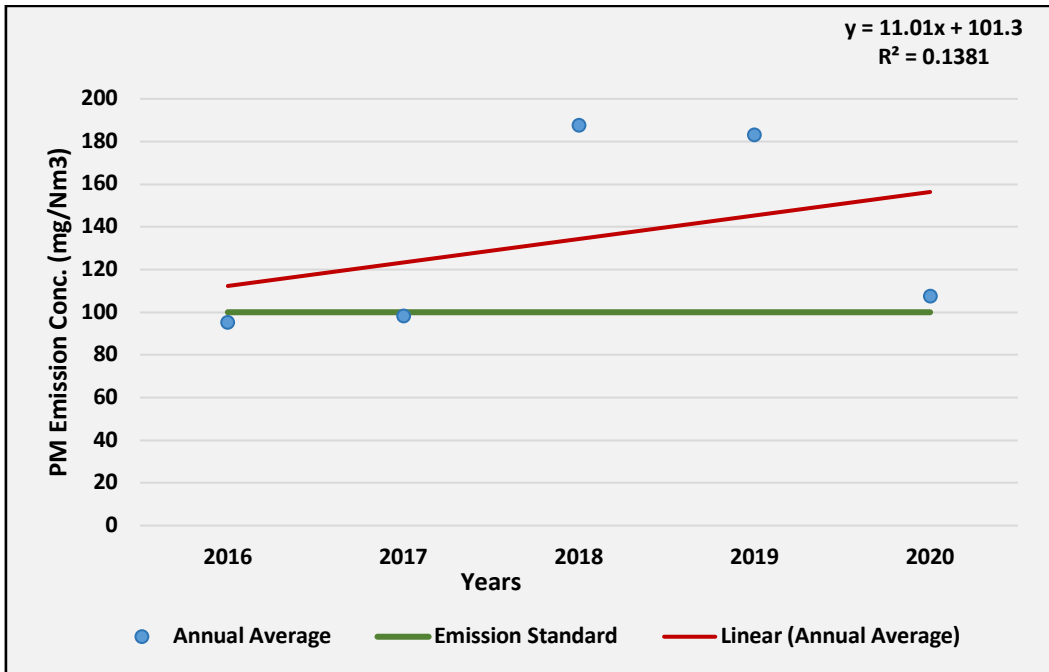


Fig. M24: Trend of annual mean PM ambient air concentration

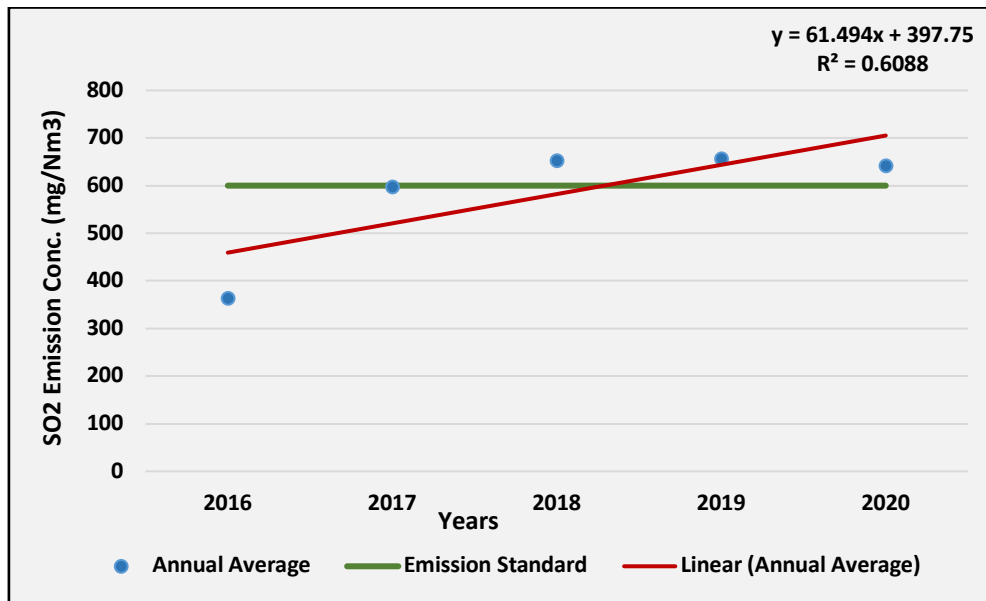


Fig. M25: Trend of annual mean SO₂ ambient air concentration

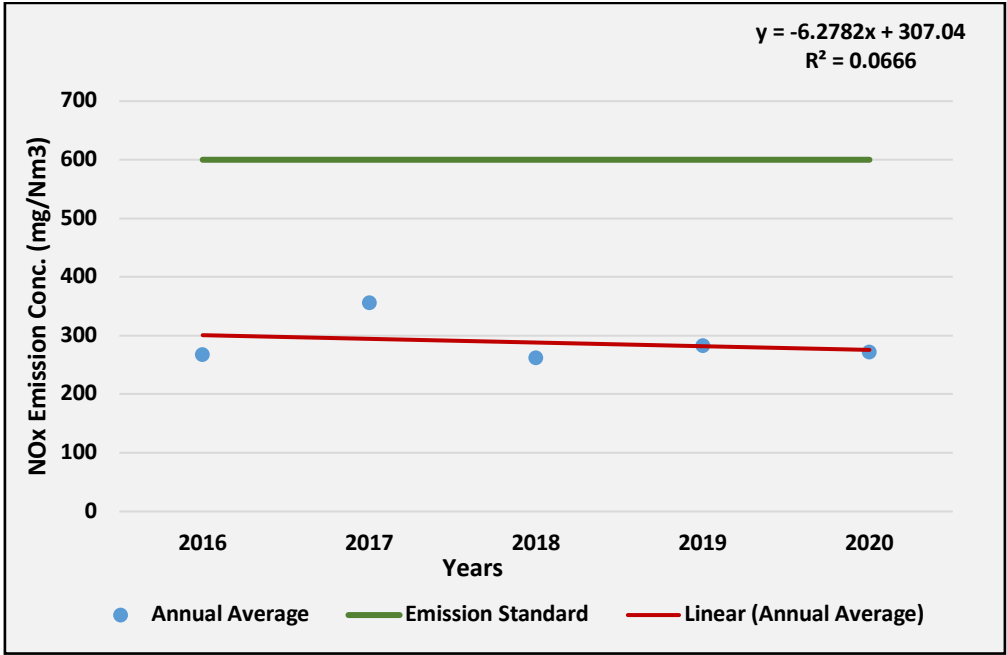


Fig. M26: Trend of annual mean NO_x ambient air concentration

UNIT-4

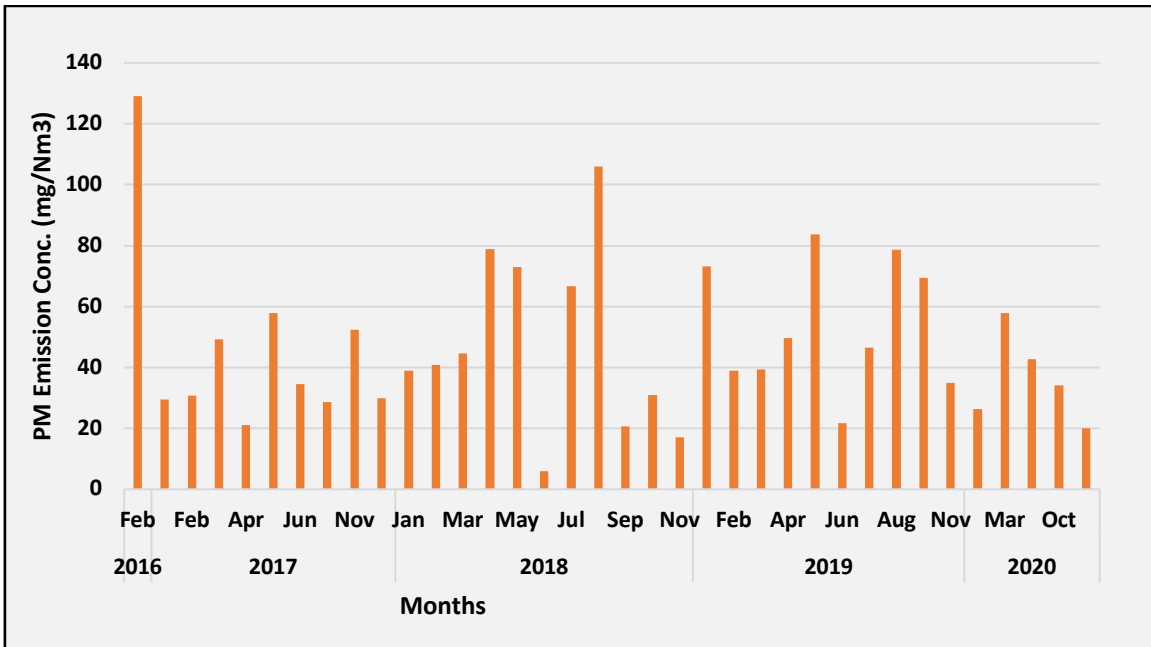


Fig. M27: Time series of monthly average PM ambient air concentration

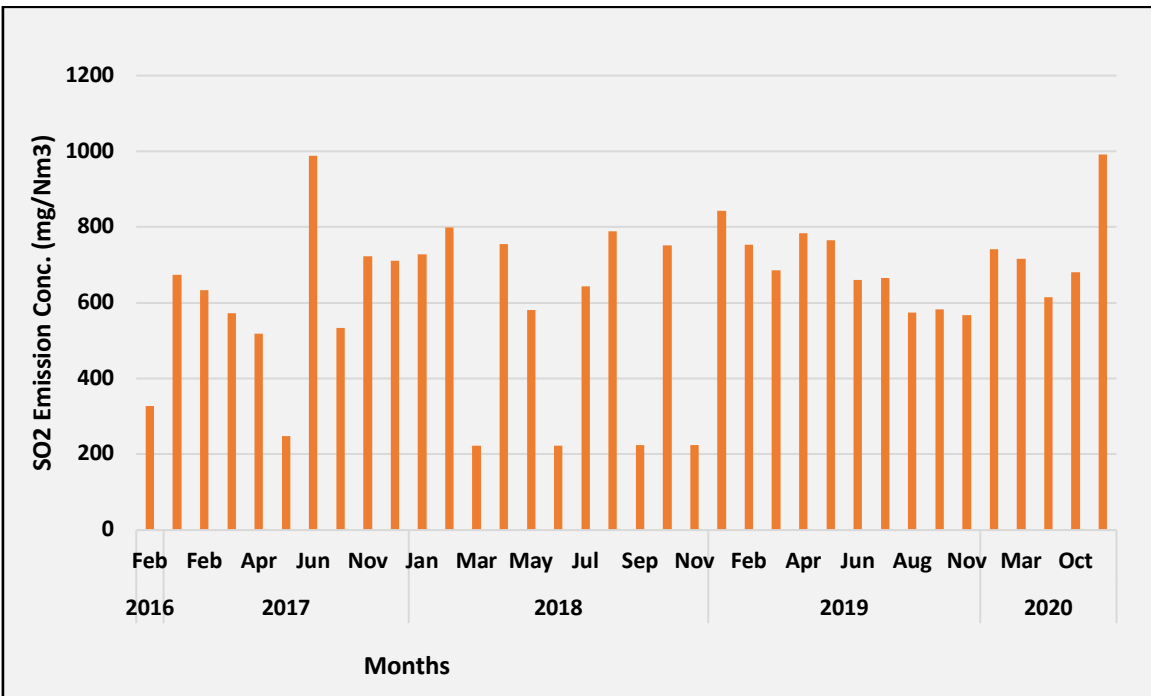


Fig. M28: Time series of monthly average SO₂ ambient air concentration

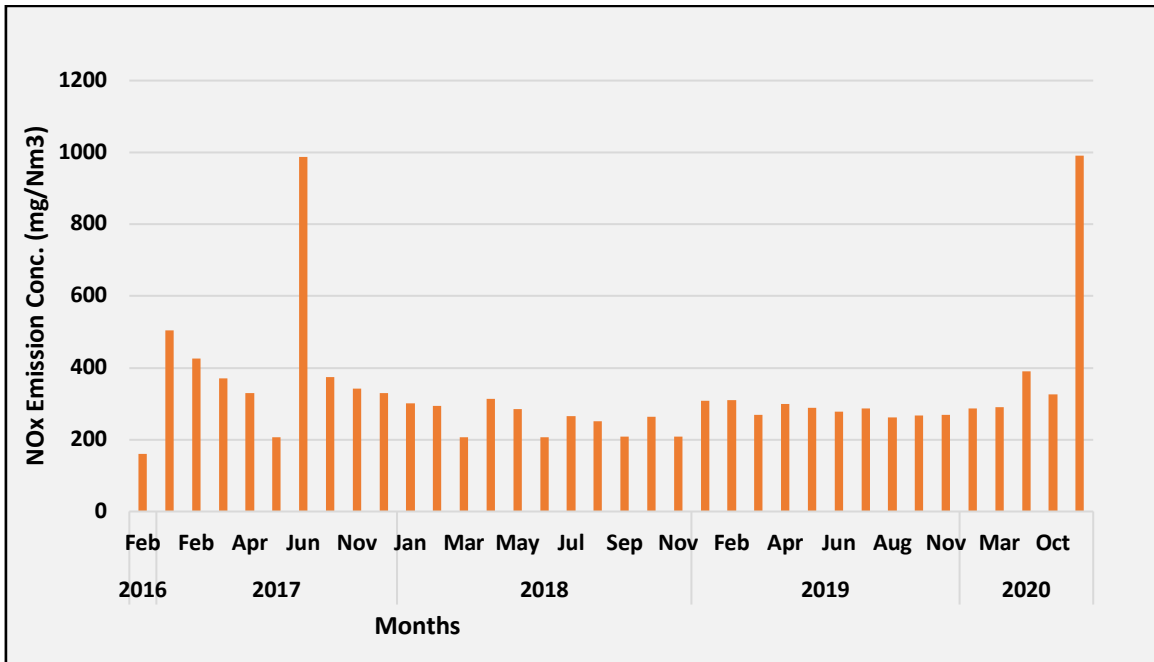


Fig.M29: Time series of monthly average NO_x ambient air concentration

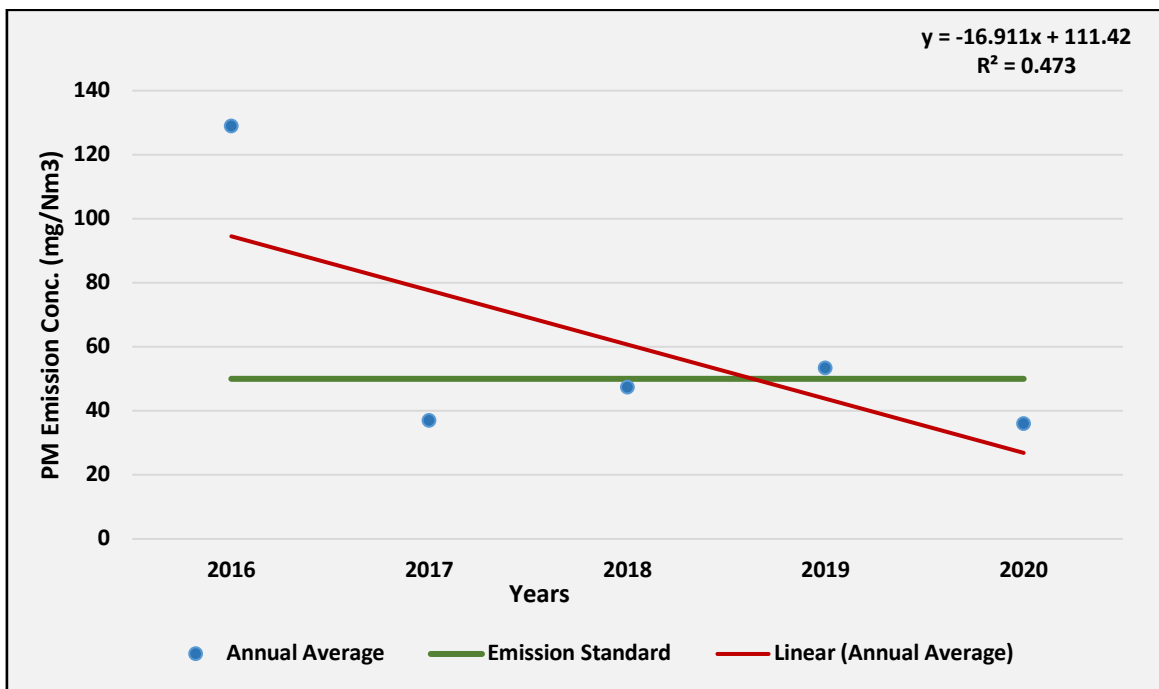


Fig. M30: Trend of annual mean PM ambient air concentration

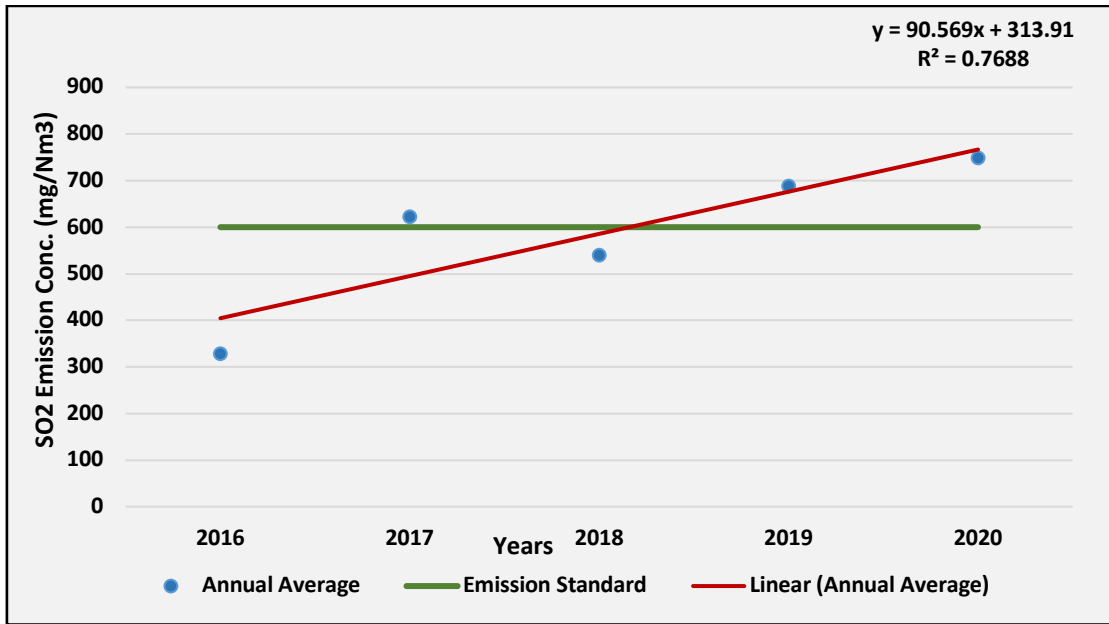


Fig. M31: Trend of annual mean SO₂ ambient air concentration

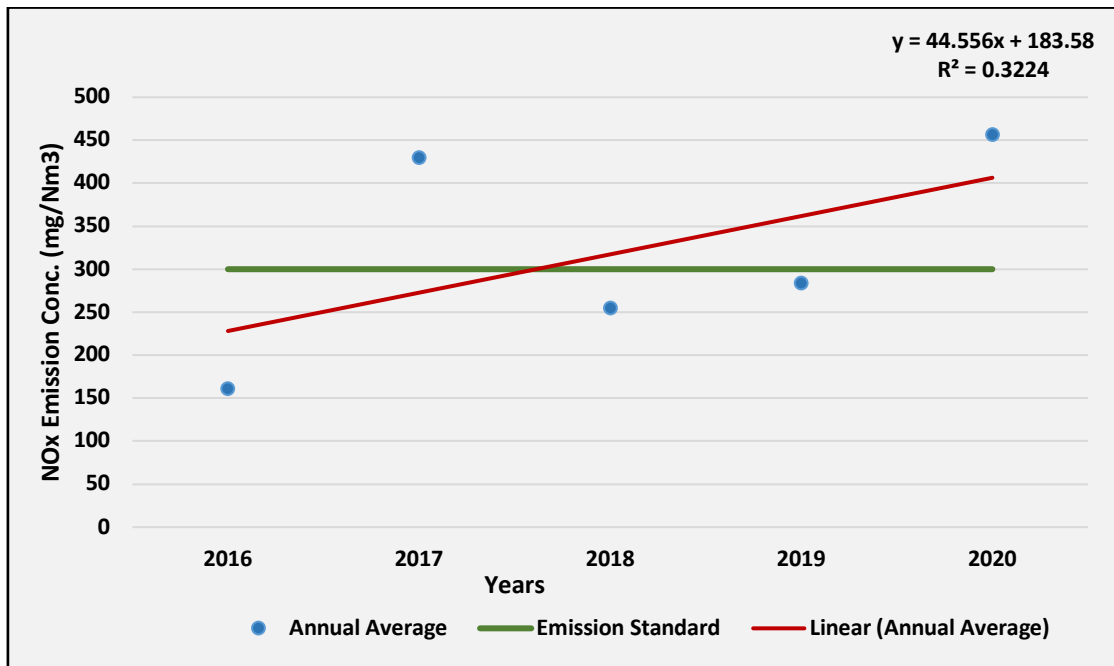


Fig. M32: Trend of annual mean NO_x ambient air concentration

UNIT-5

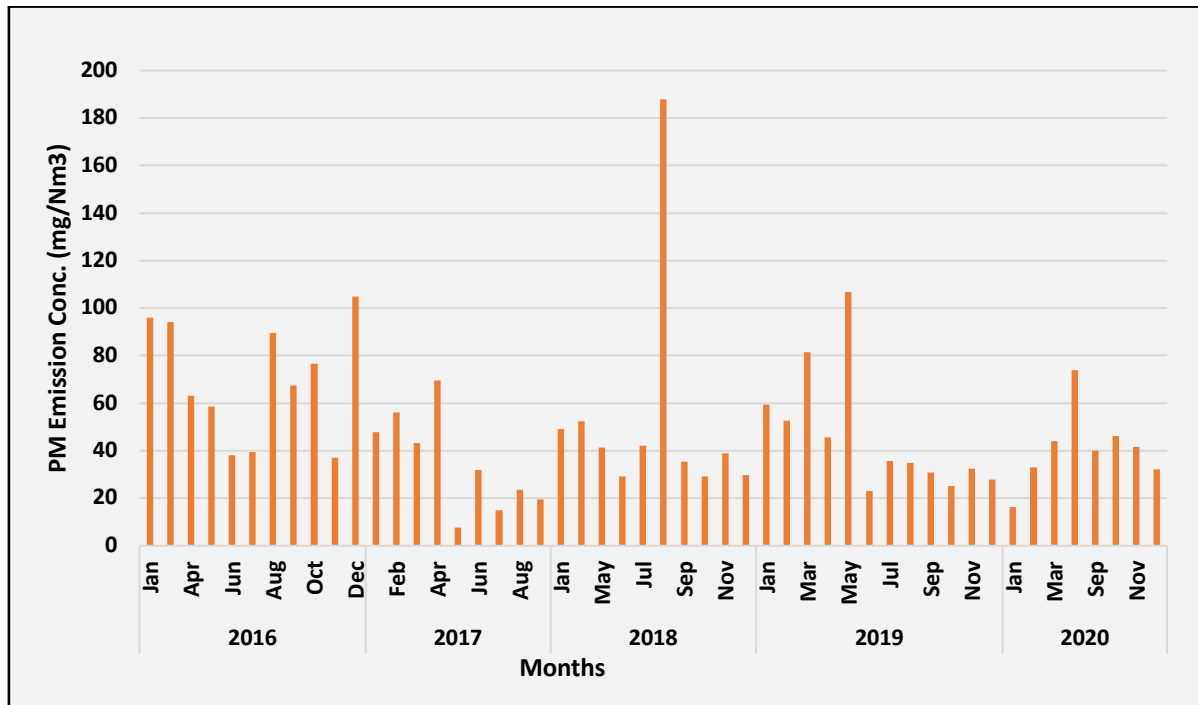


Fig. M33: Time series of monthly average PM ambient air concentration

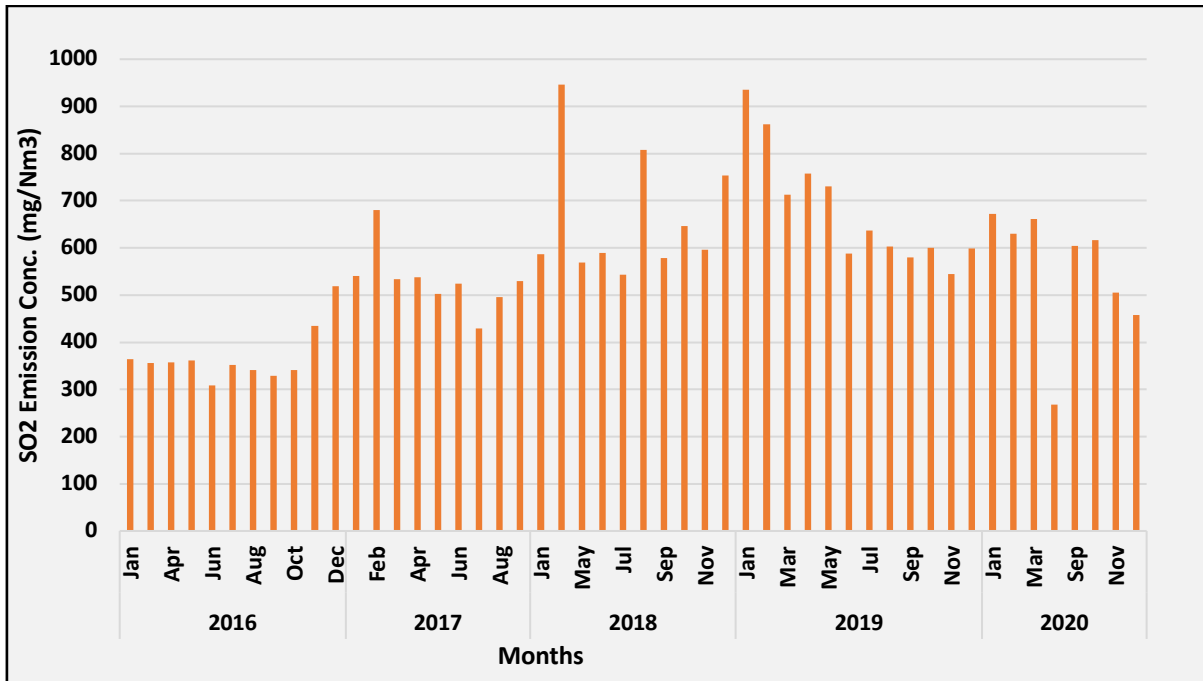


Fig. M34: Time series of monthly average SO₂ ambient air concentration

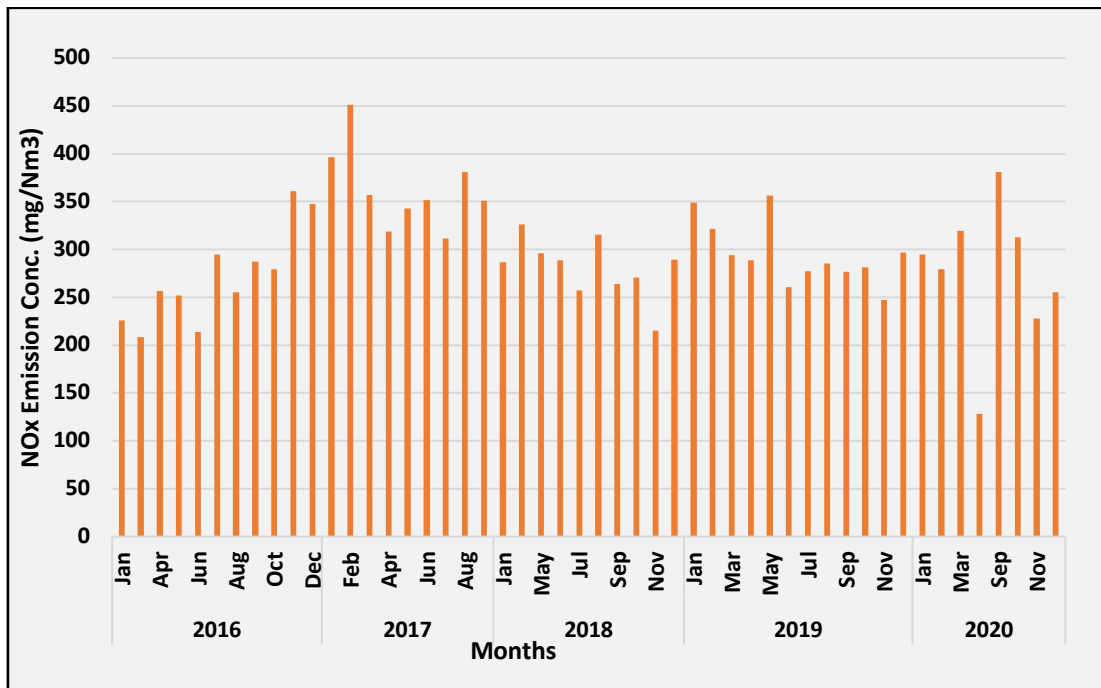


Fig.M35: Time series of monthly average NO_x ambient air concentration

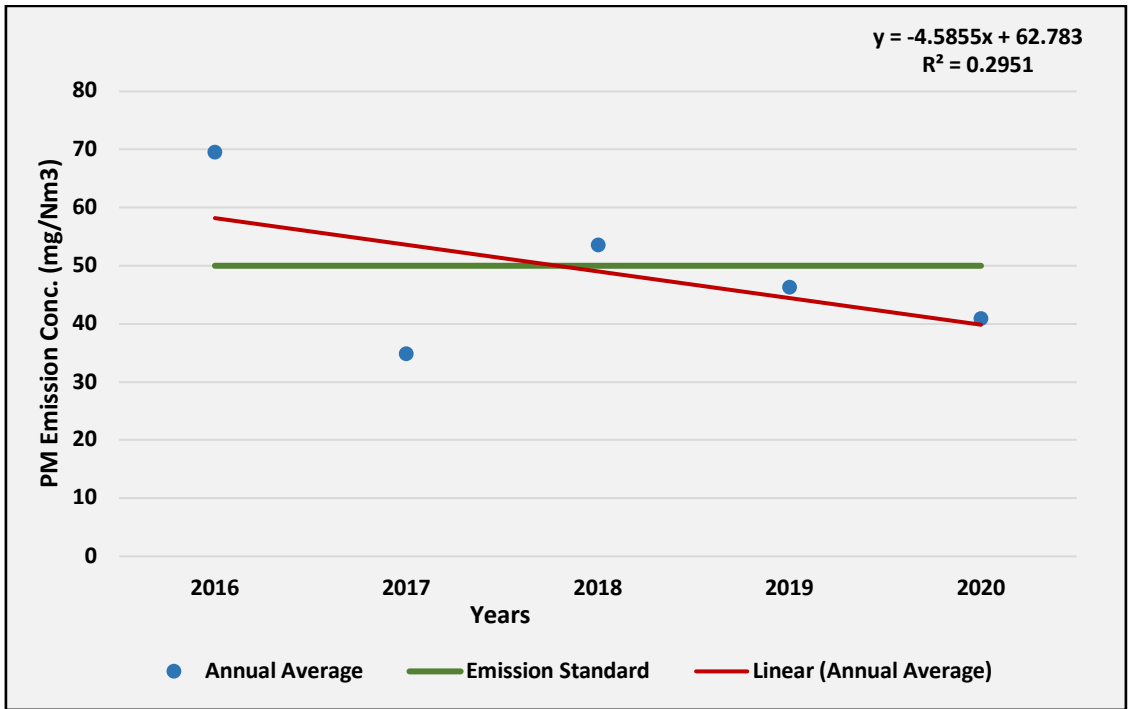


Fig. M36: Trend of annual mean PM ambient air concentration

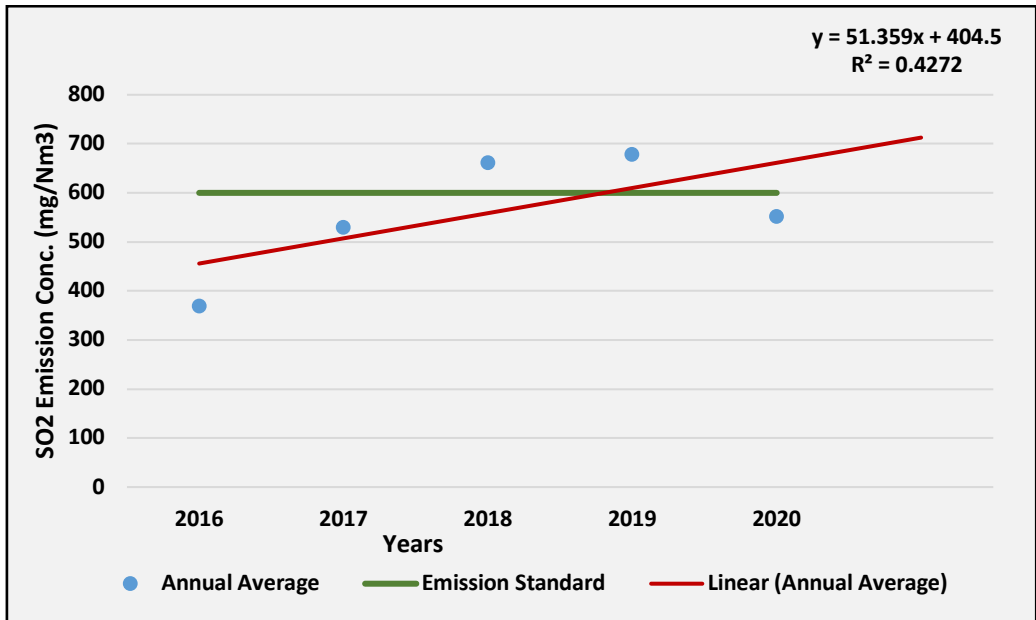


Fig. M37: Trend of annual mean SO₂ ambient air concentration

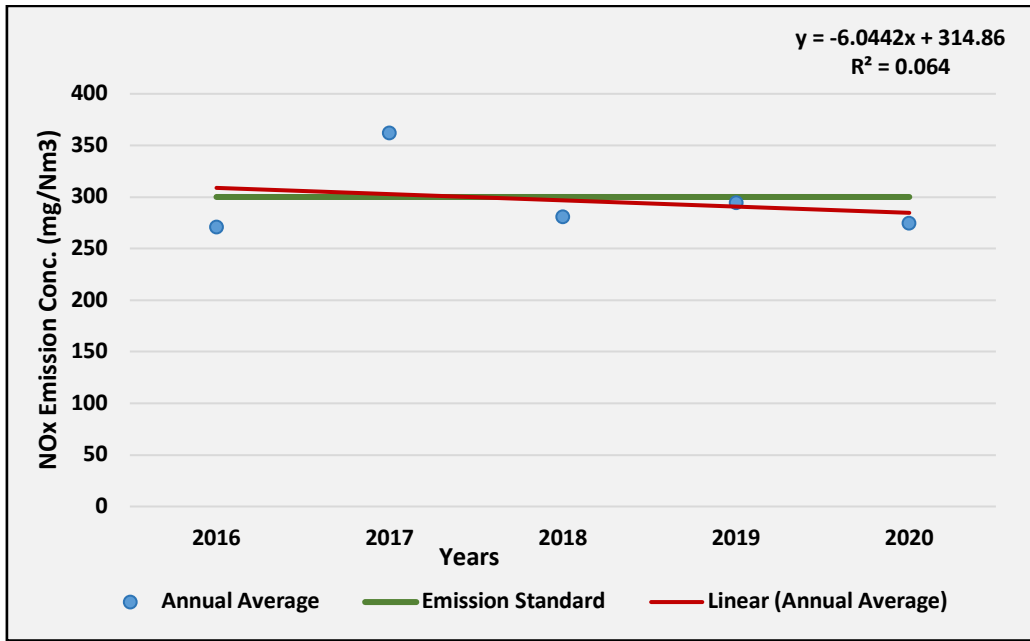


Fig. M38: Trend of annual mean NO_x ambient air concentration

UNIT-6

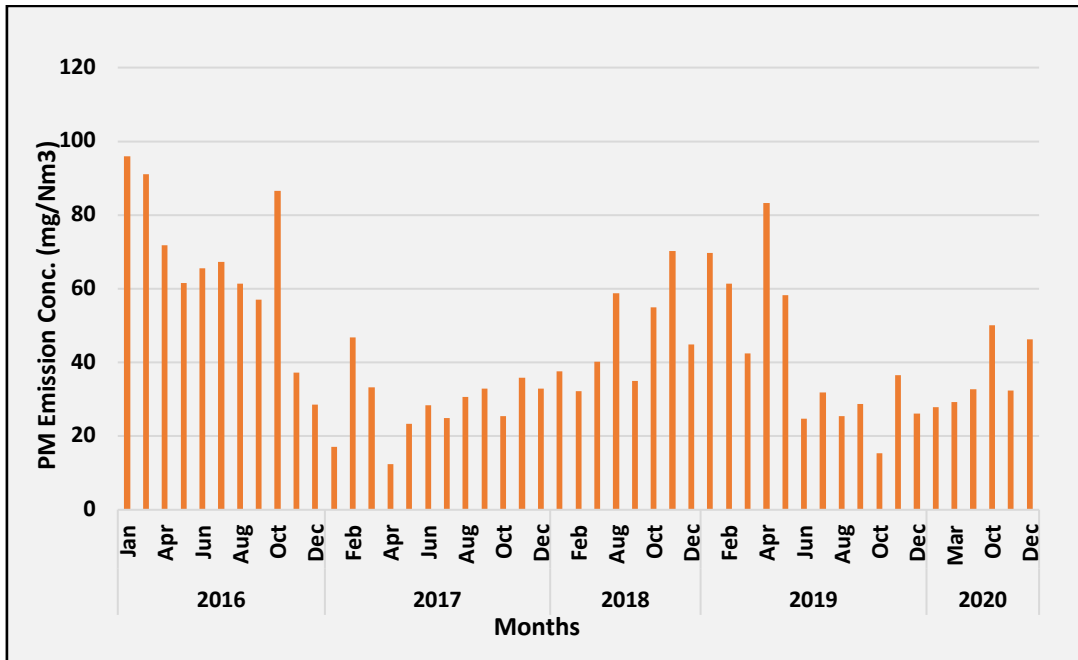


Fig. M39: Time series of monthly average PM ambient air concentration

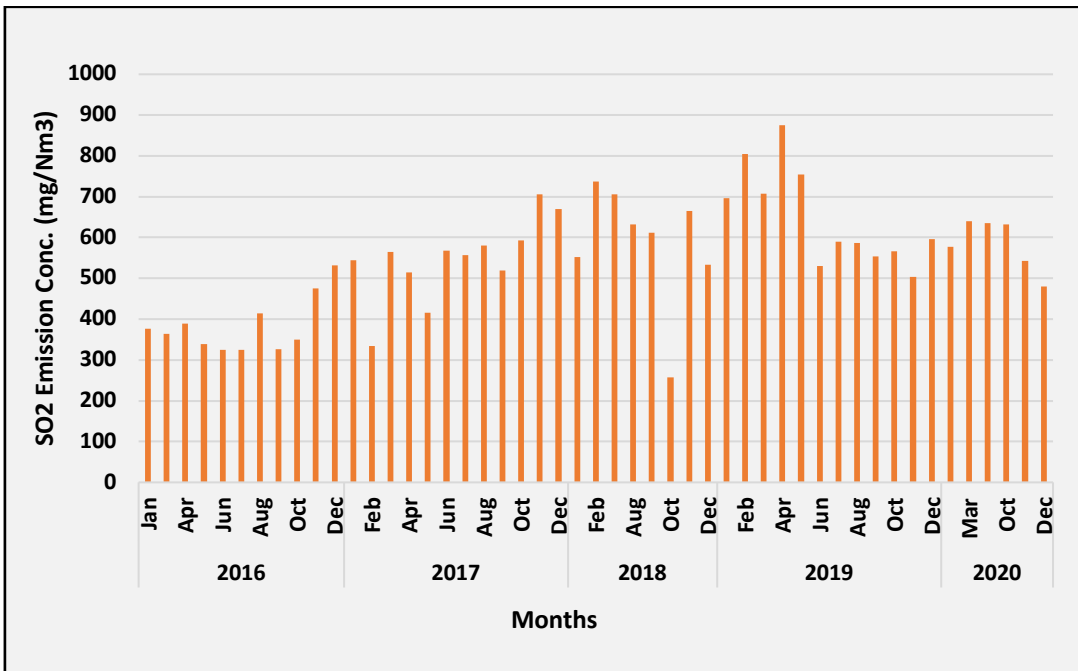


Fig. M40: Time series of monthly average SO₂ ambient air concentration

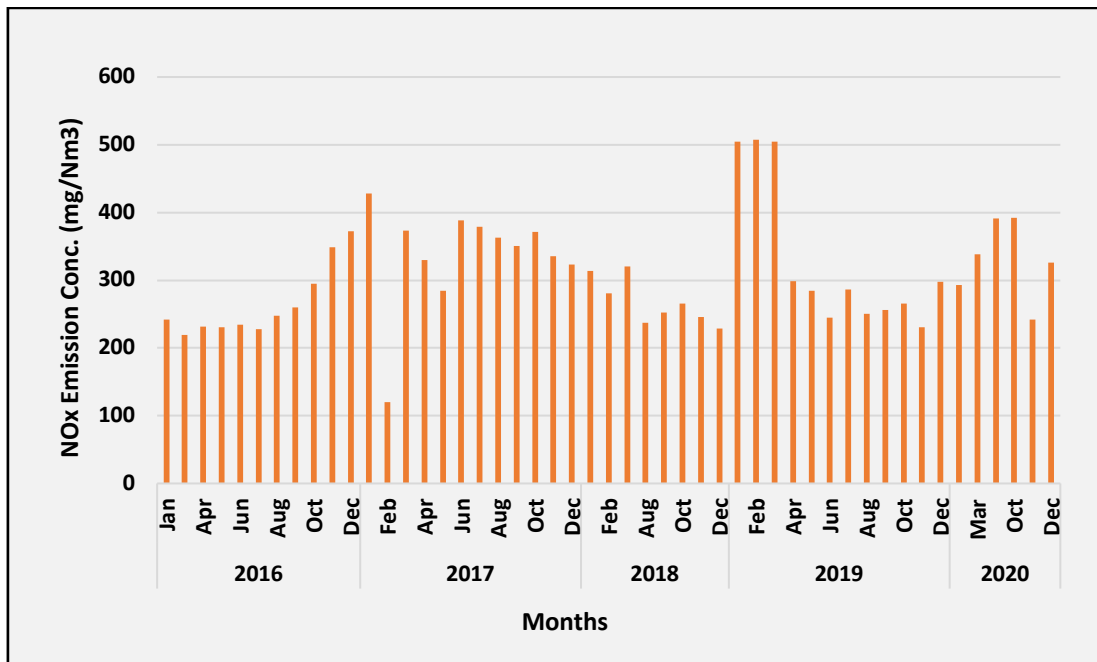


Fig.M41: Time series of monthly average NO_x ambient air concentration

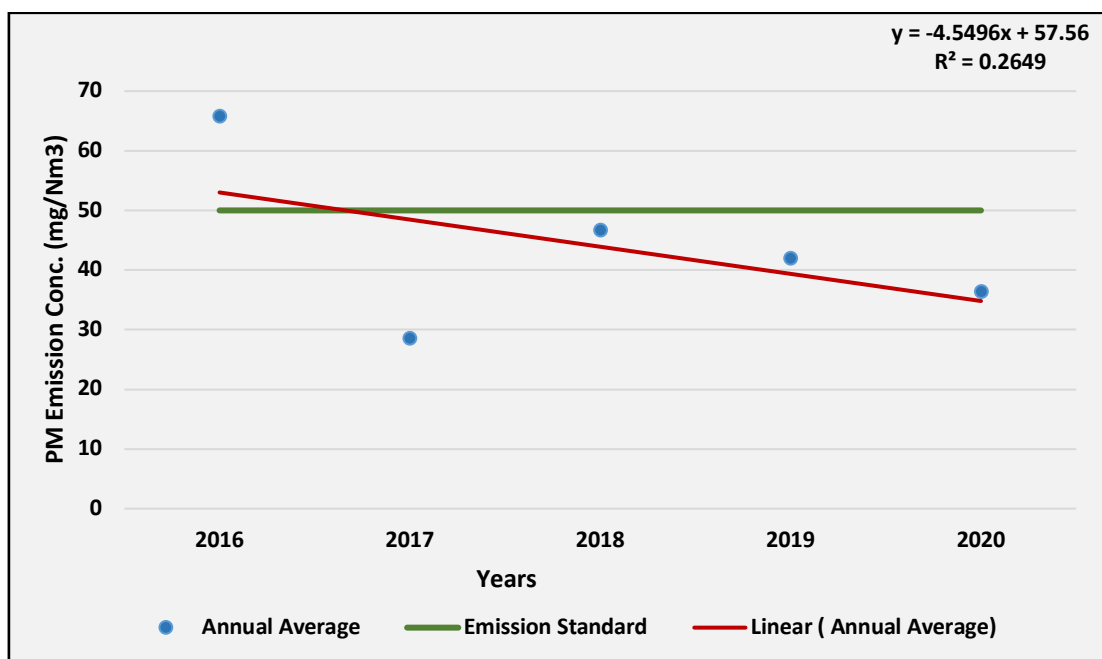


Fig. M42: Trend of annual mean PM ambient air concentration

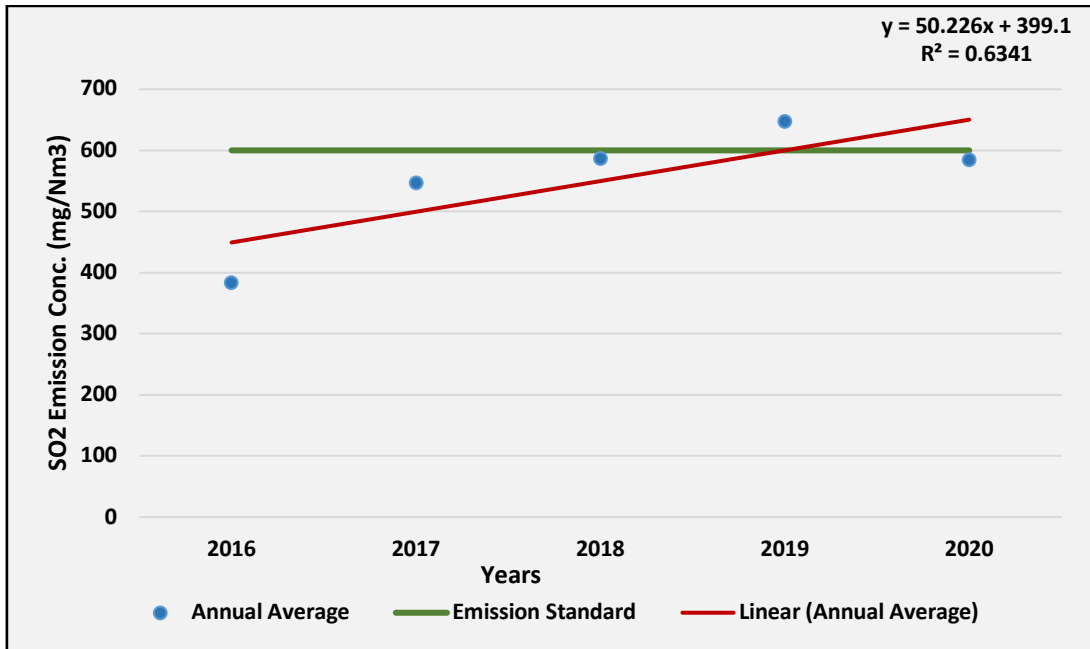


Fig. M43: Trend of annual mean SO₂ ambient air concentration

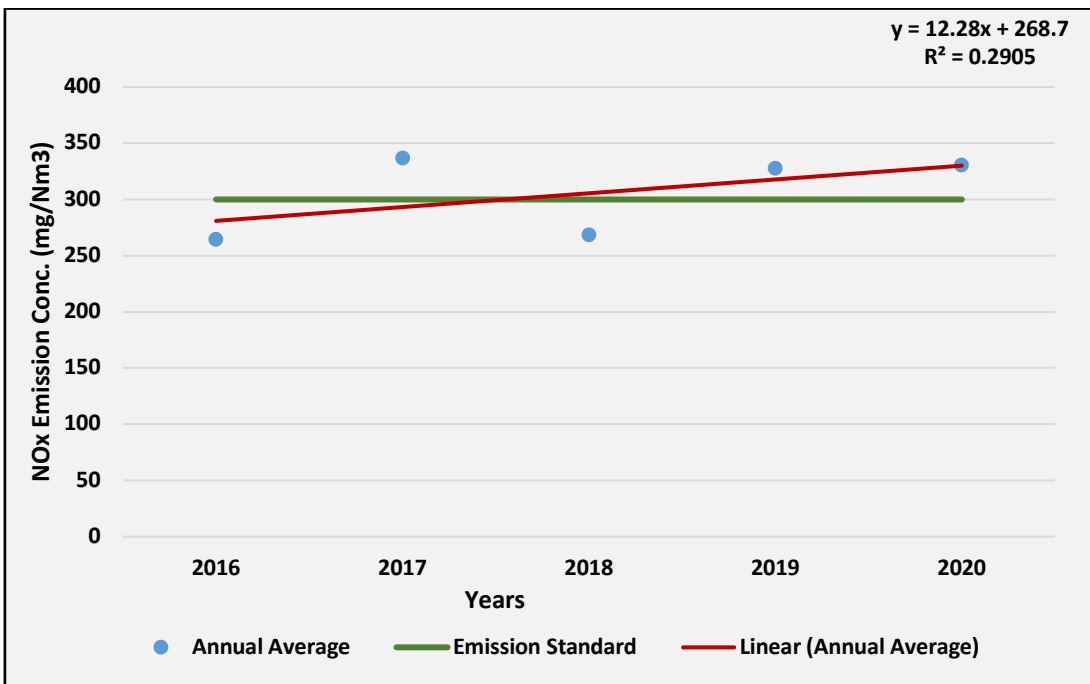


Fig. M44: Trend of annual mean NO_x ambient air concentration

UNIT-7

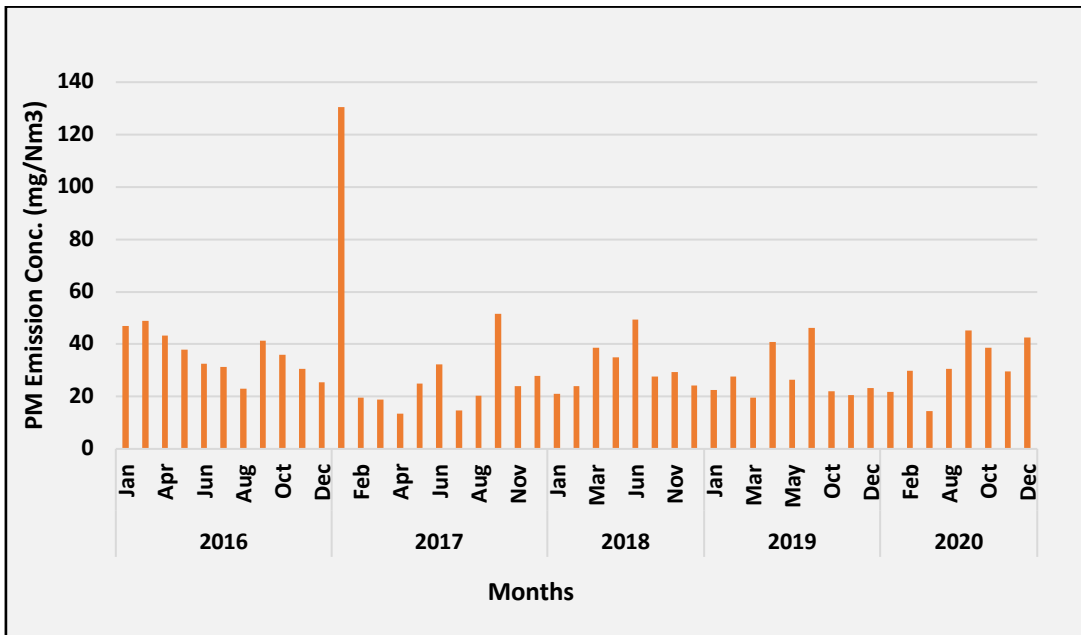


Fig. M45: Time series of monthly average PM ambient air concentration

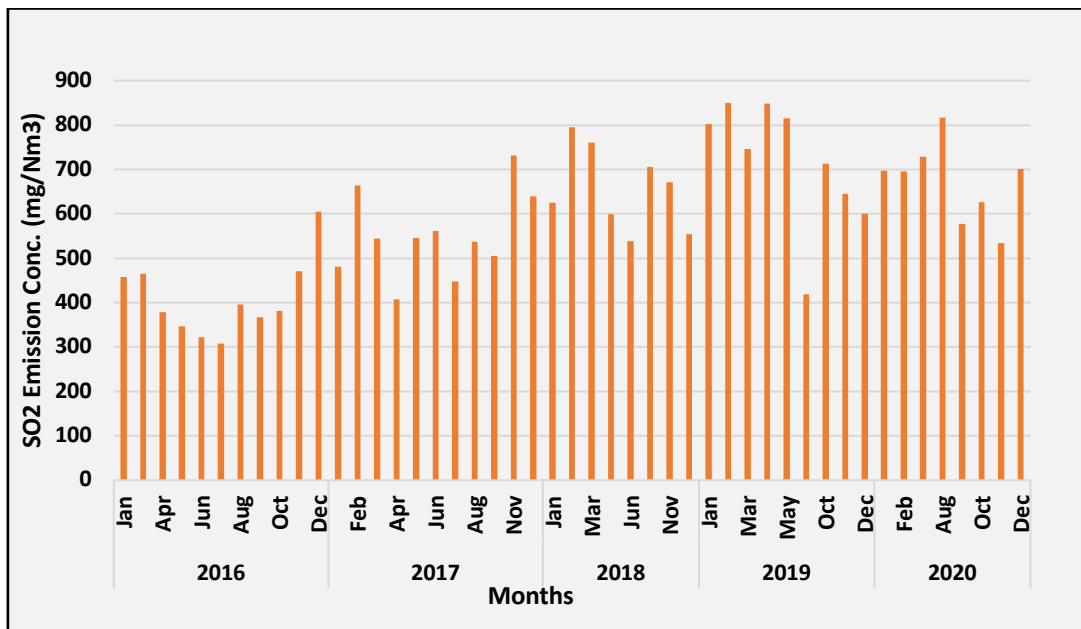


Fig. M46: Time series of monthly average SO₂ ambient air concentration

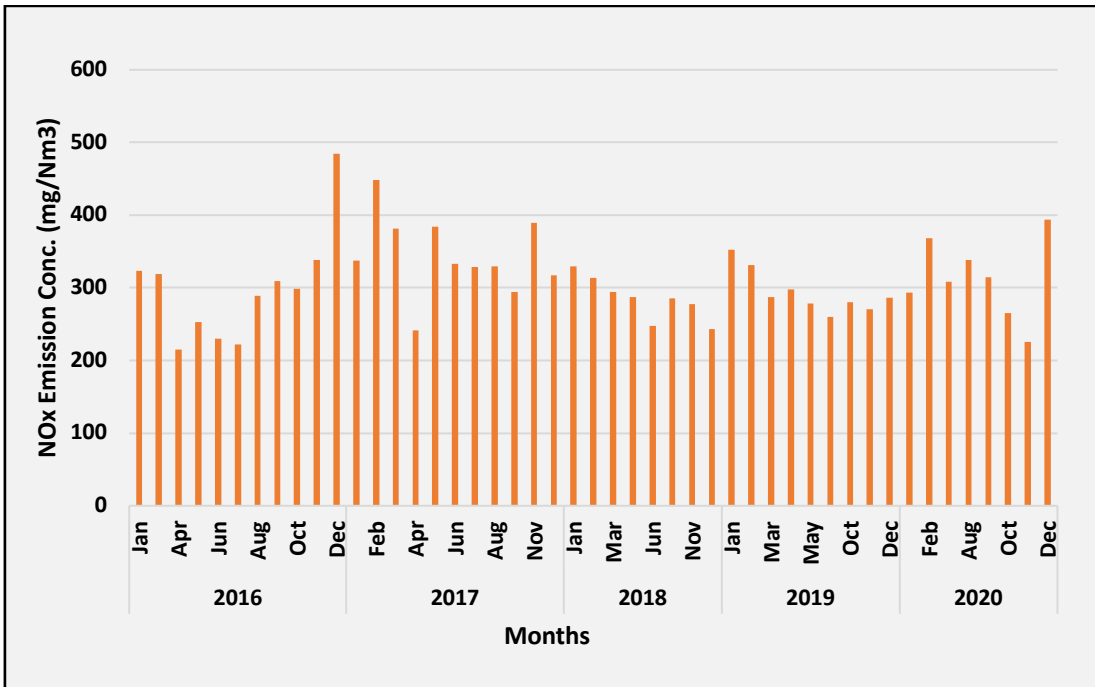


Fig.M47: Time series of monthly average NO_x ambient air concentration

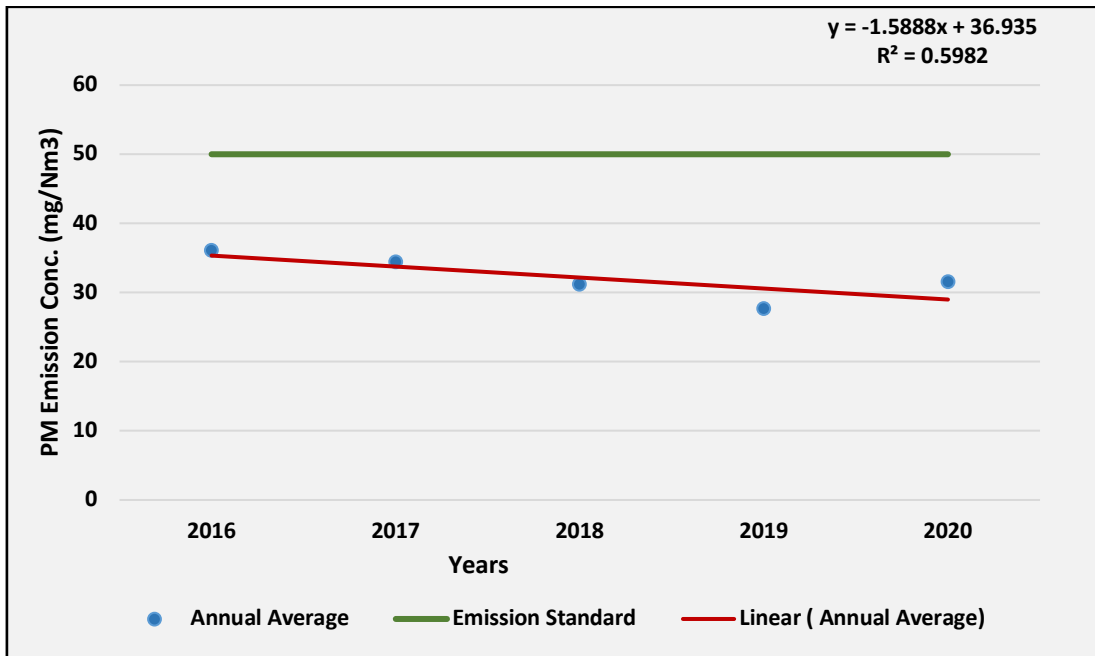


Fig. M48: Trend of annual mean PM ambient air concentration

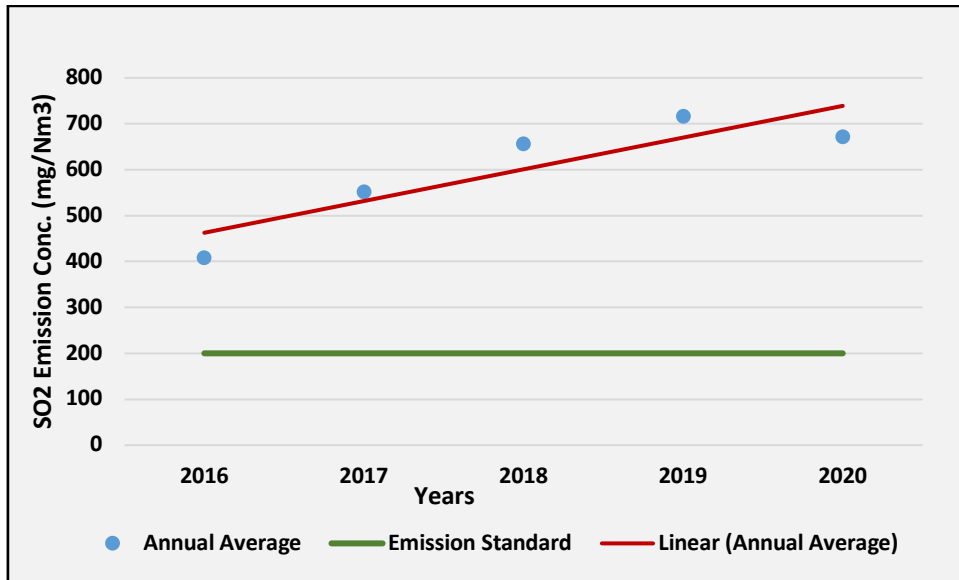


Fig. M49: Trend of annual mean SO₂ ambient air concentration

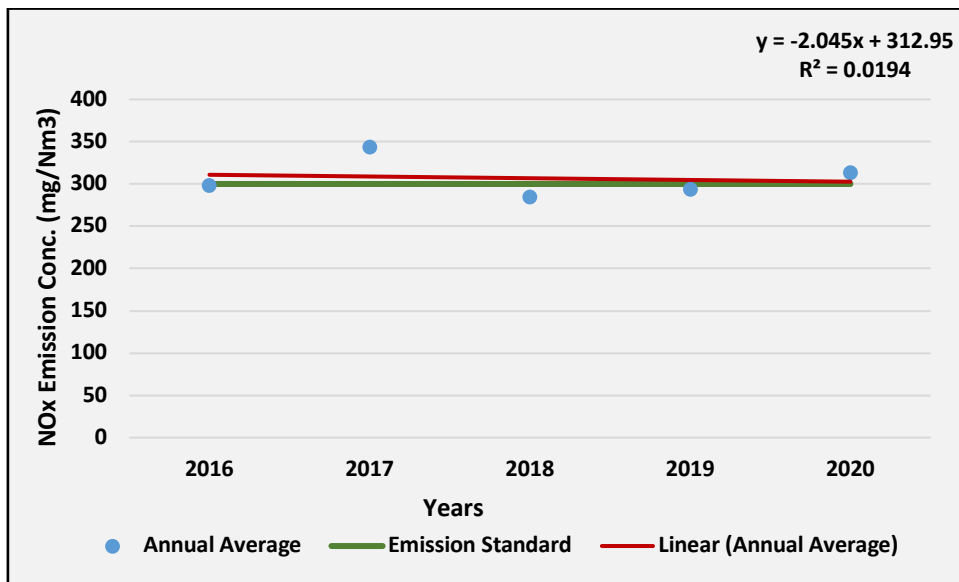


Fig. M50: Trend of annual mean NO_x ambient air concentration

UNIT-8

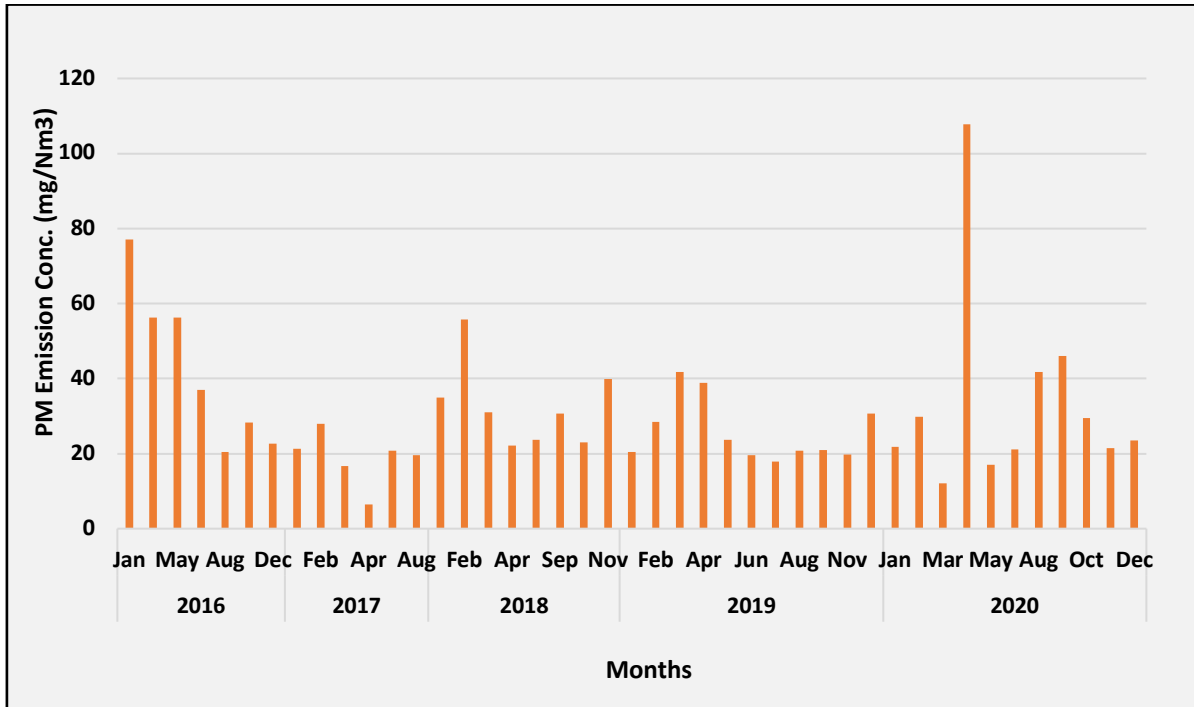


Fig. M51: Time series of monthly average PM ambient air concentration

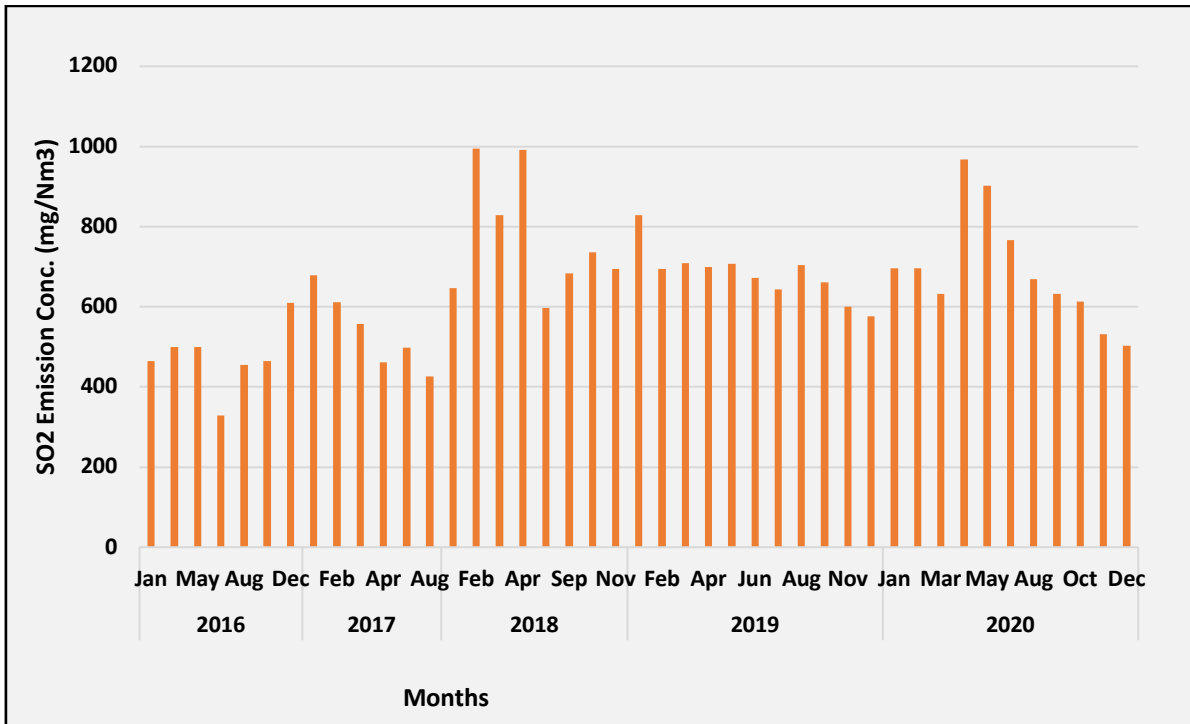


Fig. M52: Time series of monthly average SO₂ ambient air concentration

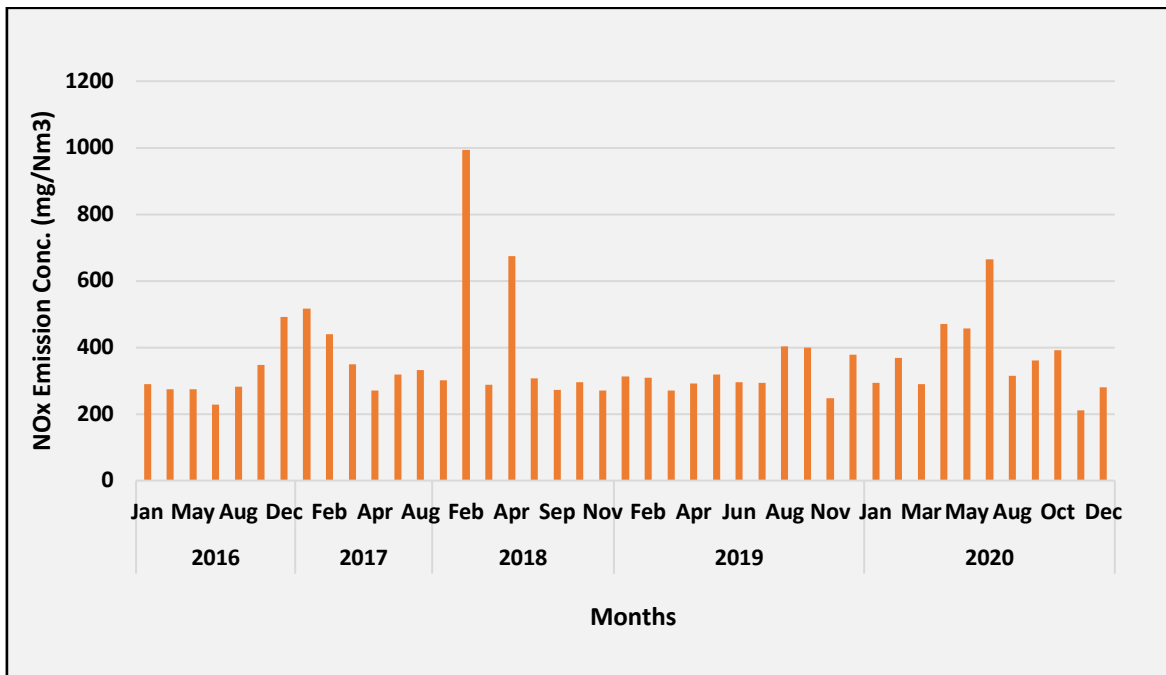


Fig. M53: Time series of monthly average NO_x ambient air concentration

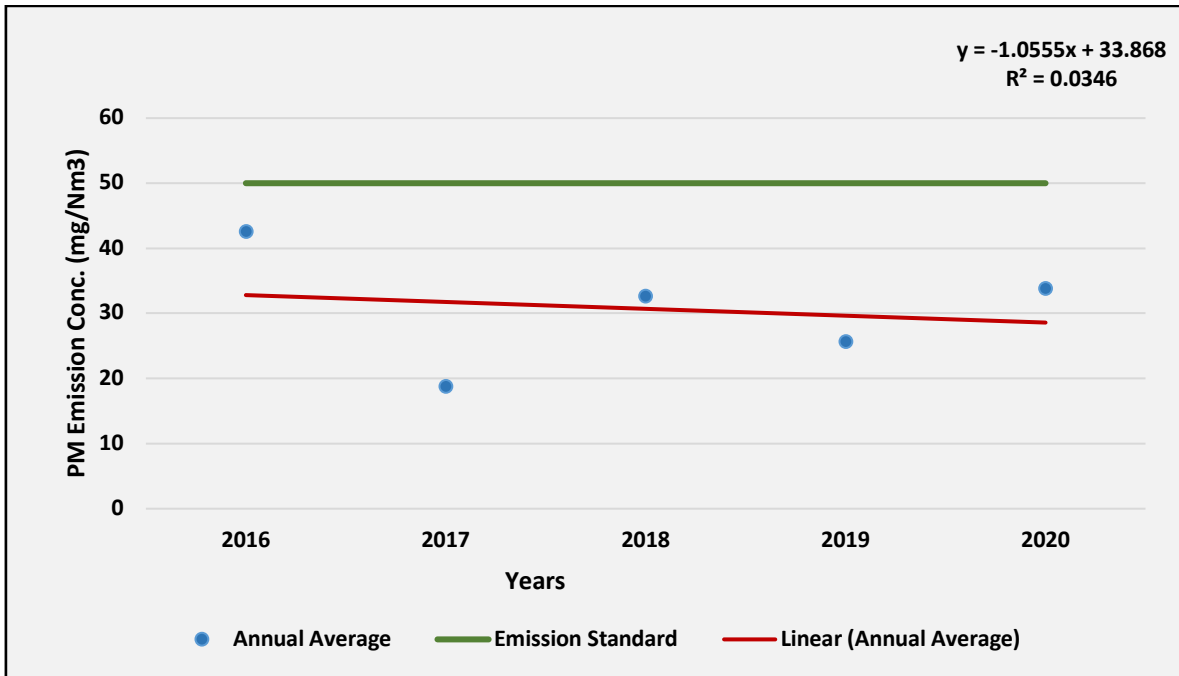


Fig. M54: Trend of annual mean PM ambient air concentration

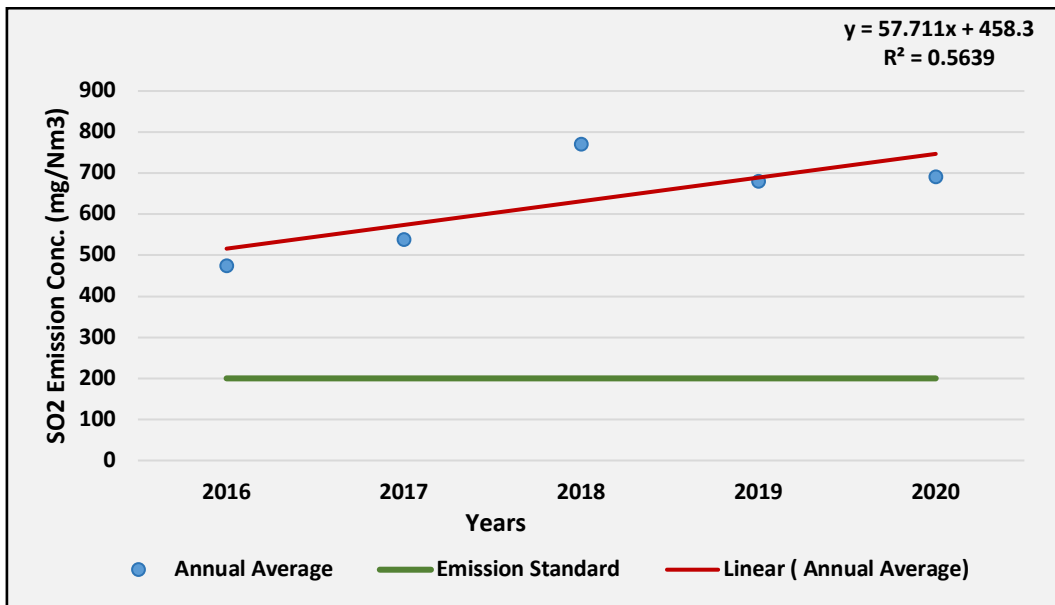


Fig. M55: Trend of annual mean SO₂ ambient air concentration

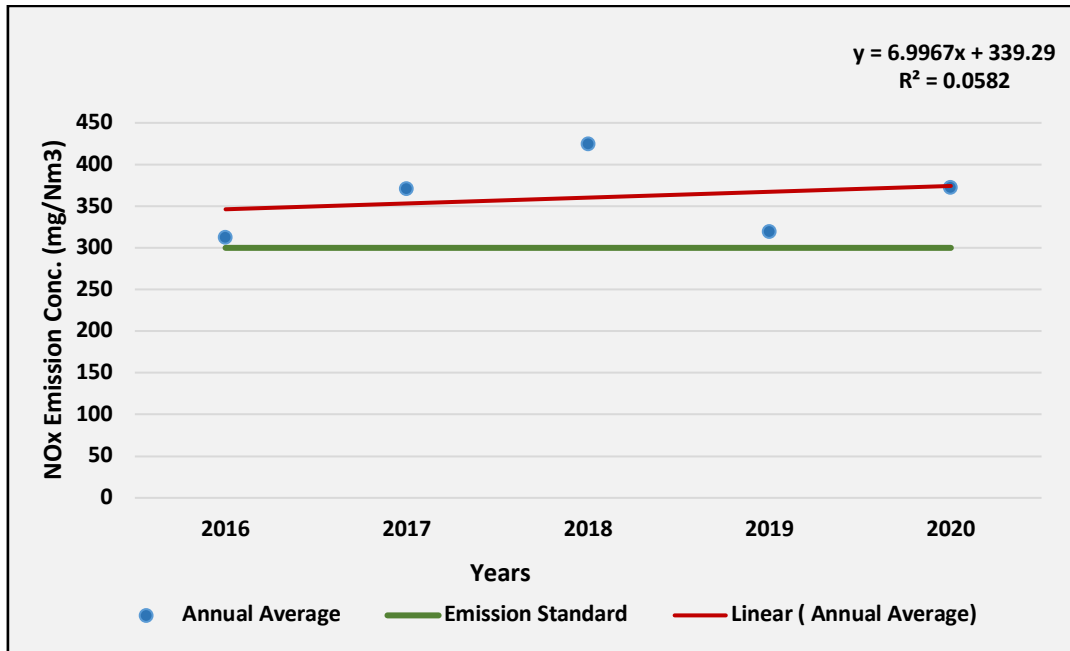


Fig. M16: Trend of annual mean NO_x ambient air concentration

The monthly and yearly ground level emission analysis for both the units of Nabha Thermal Power Plant shows that particulate matter is within the emission standards. The SO₂ parameter is much higher than the norms whereas NO_x parameter is just within the emission standard for the year 2018 and 2019 but it is exceeding its standard limit in the year 2016, 2019 and 2020.

RAGHUNATHPUR THERMAL POWER PLANT

Raghunathpur Thermal Power Station is a 1200 MW coal-based thermal power plant located at Raghunathpur in Purulia district in the Indian state of West Bengal. The power station was proposed by Damodar Valley Corporation and would comprise two 600 MW units slated to be commissioned in 2013. Unit 1 was commissioned in August 2014.[4] Unit 2 was commissioned in January 2016. The exact location coordinates for the power plant are 23.6219101, 86.6607034.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, and NO_x, data analyzed (Fig. R1-R8) for the four years (2017-2020) using data provided by DVC developer for Raghunathpur Power plant, West Bengal, India.

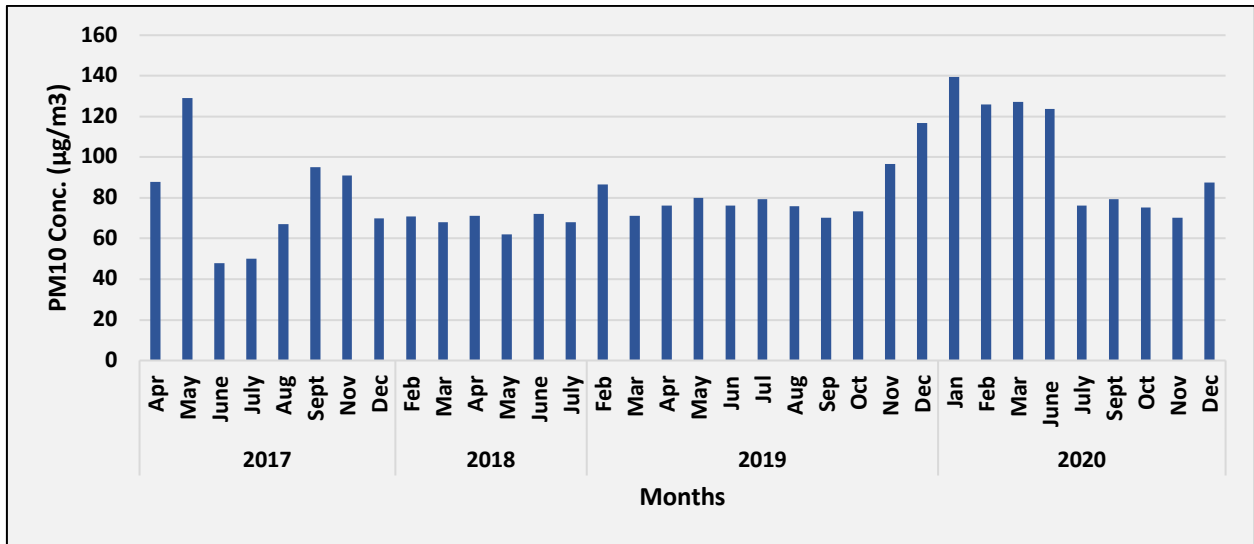


Fig. R1: Time series of monthly average PM_{10} ambient air concentration in Raghunathpur TPP

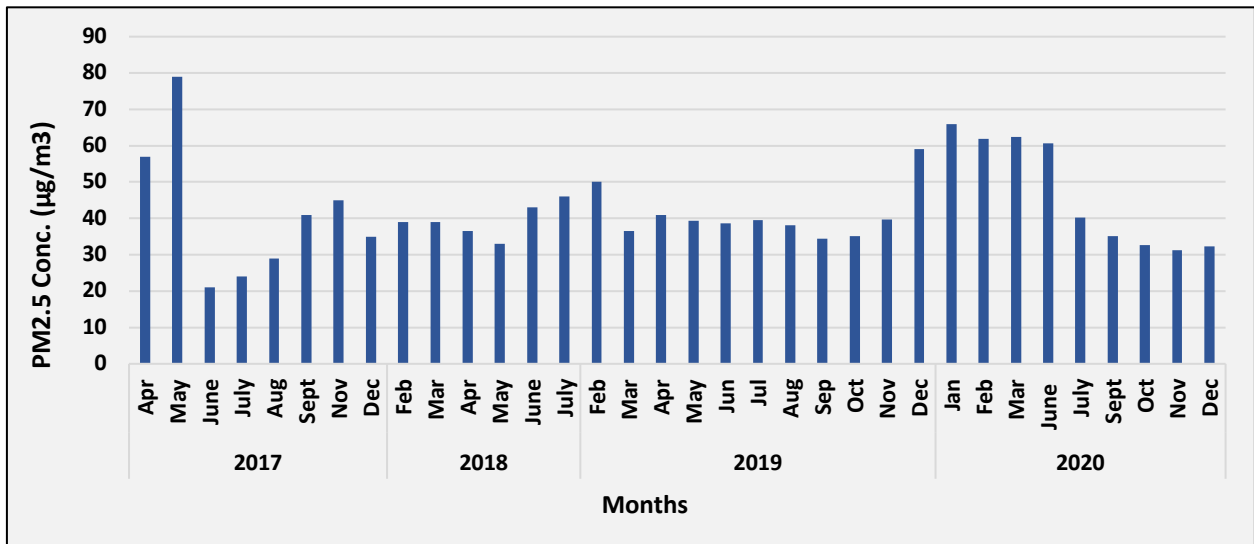


Fig. R2: Time series of monthly average $PM_{2.5}$ ambient air concentration in Raghunathpur TPP

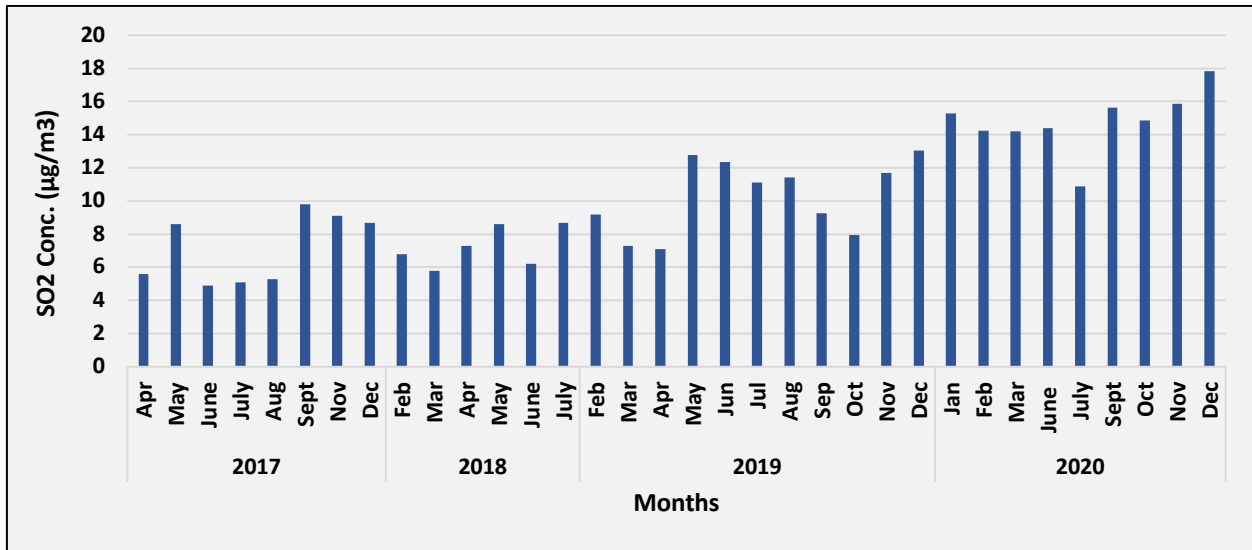


Fig. R3: Time series of monthly average SO₂ ambient air concentration in Raghunathpur TPP

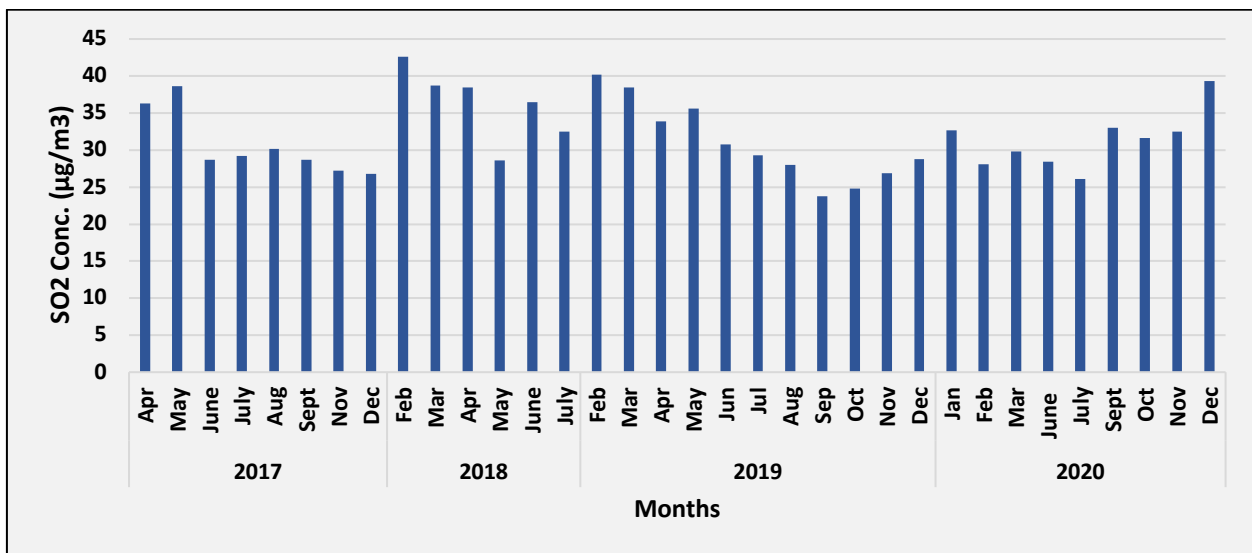


Fig. R4: Time series of monthly average NO_x ambient air concentration in Raghunathpur TPP

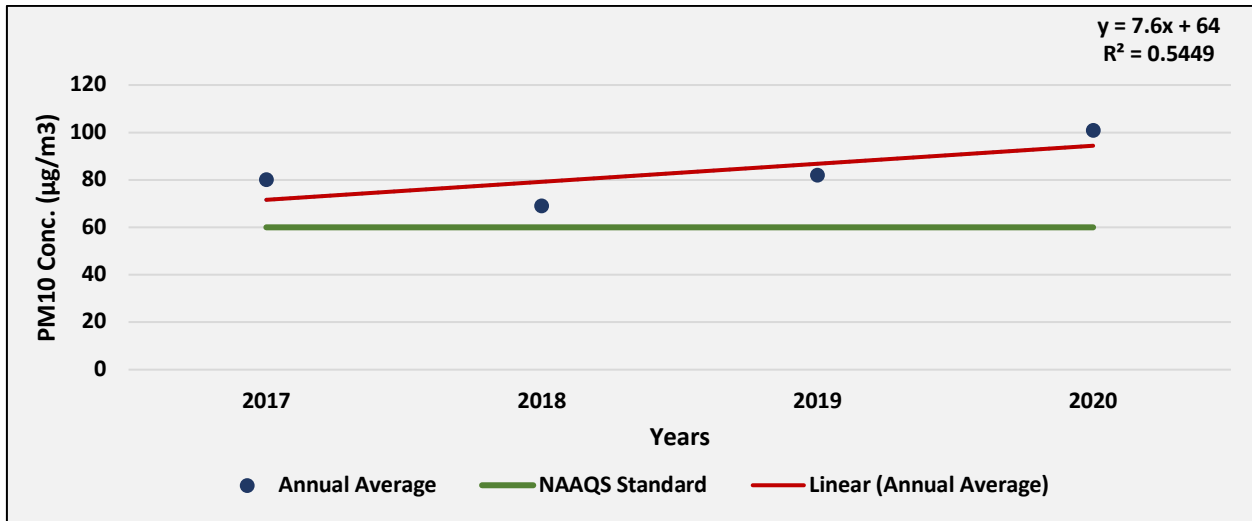


Fig. R5: Trend of annual mean PM_{10} ambient air concentration in Raghunathpur TPP

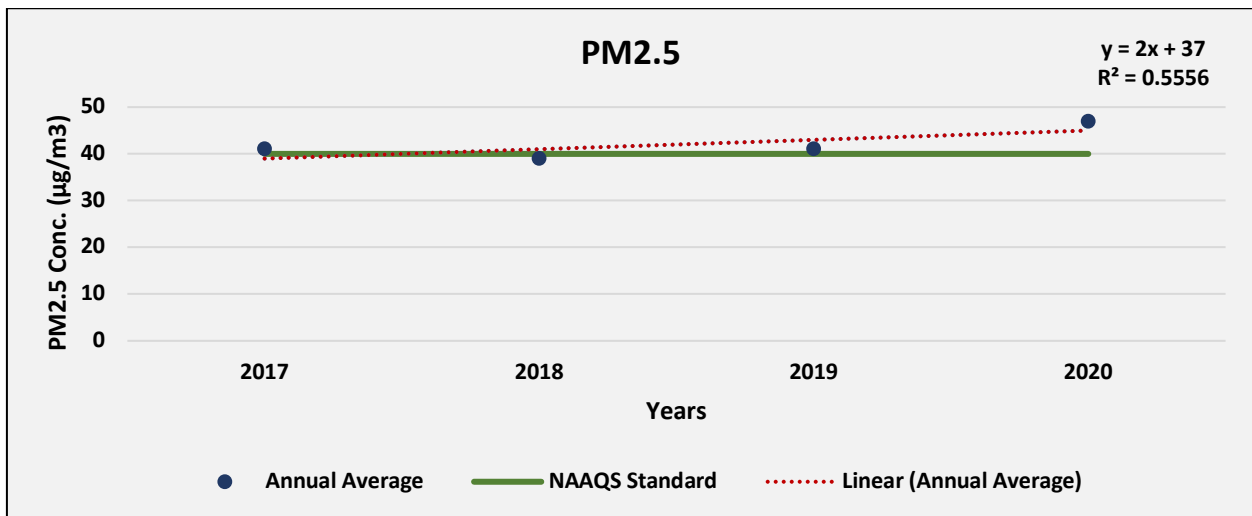


Fig. R6: Trend of annual mean $PM_{2.5}$ ambient air concentration in Raghunathpur TPP

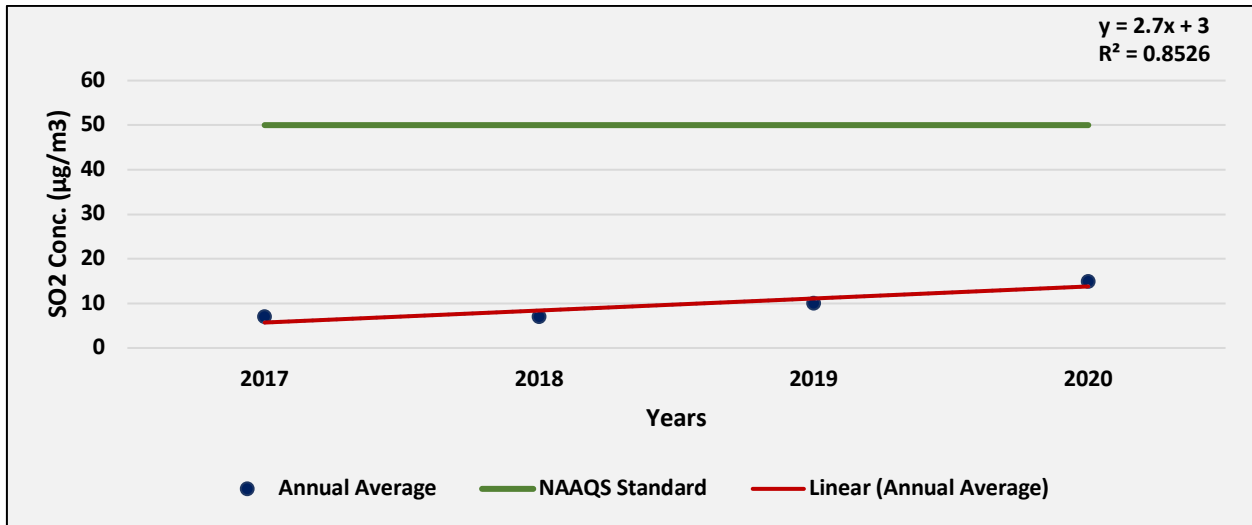


Fig. R7: Trend of annual mean SO₂ ambient air concentration in Raghunathpur TPP

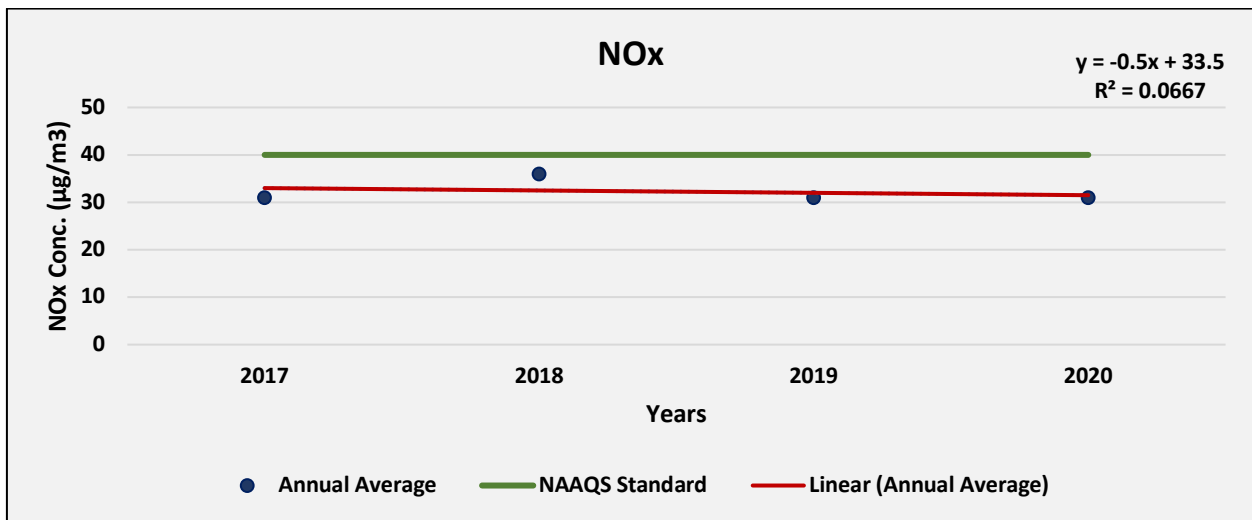


Fig. R8: Trend of annual mean NO_x ambient air concentration in Raghunathpur TPP

As per the analysis, the monthly average and annual average of PM₁₀ is much higher than the ambient air concentrations in all four years (Fig R1 & R5). Whereas, PM_{2.5} is just above the standard limit (Fig R2 & R6). SO₂ & NO_x levels in four years are mostly within a range of 0-50µg/m³ & 0-40 µg/m³ respectively, which is good as per the as per the National Ambient Air Quality Standards (NAAQS).

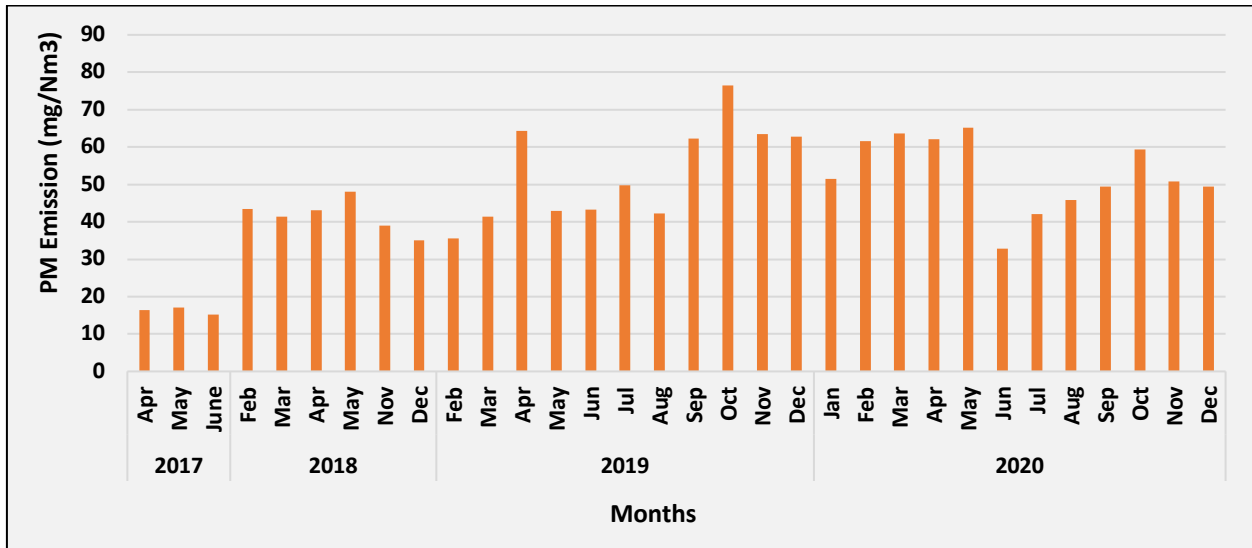


Fig. R9: Time series of monthly average emission of PM from Unit 1 in Raghunathpur TPP

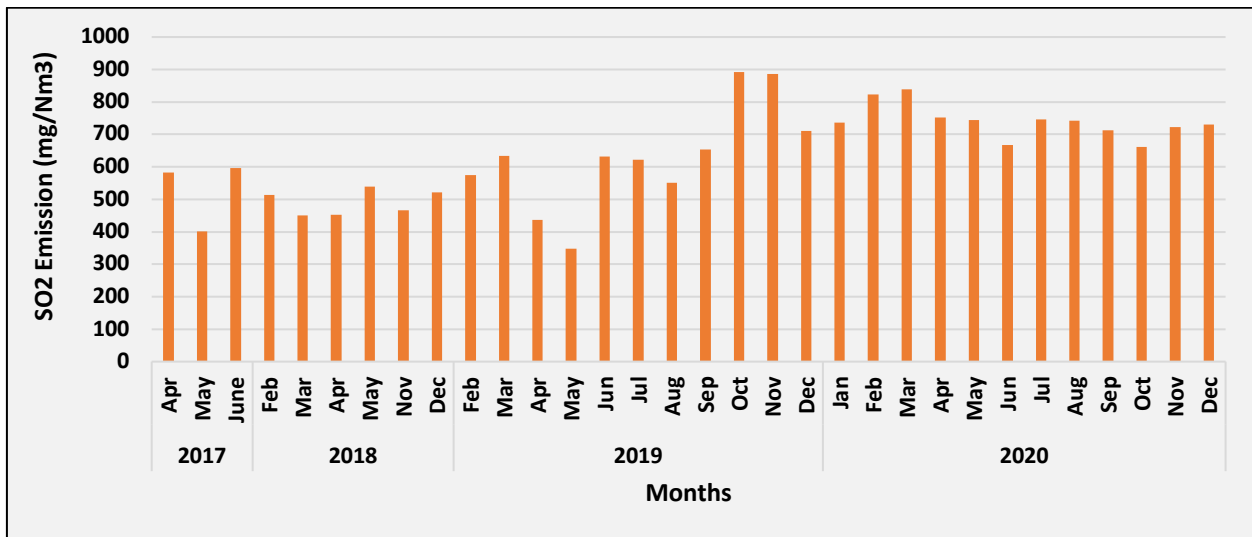


Fig. R10: Time series of monthly average emission of SO2 from Unit 1 in Raghunathpur TPP

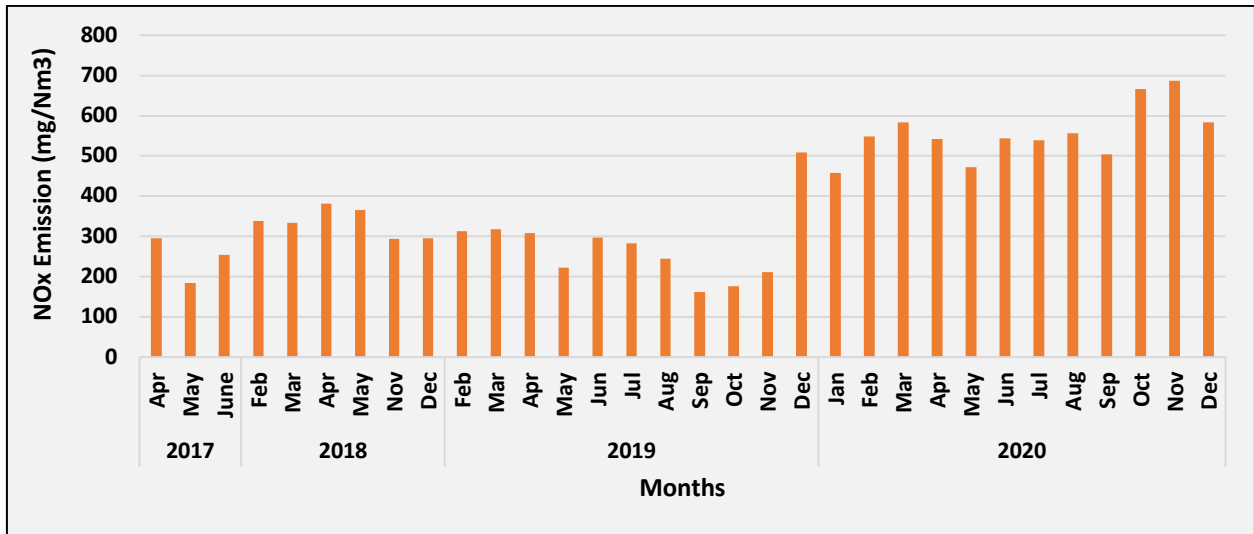


Fig. R11: Time series of monthly average emission of NOx from Unit 1 in Raghunathpur TPP

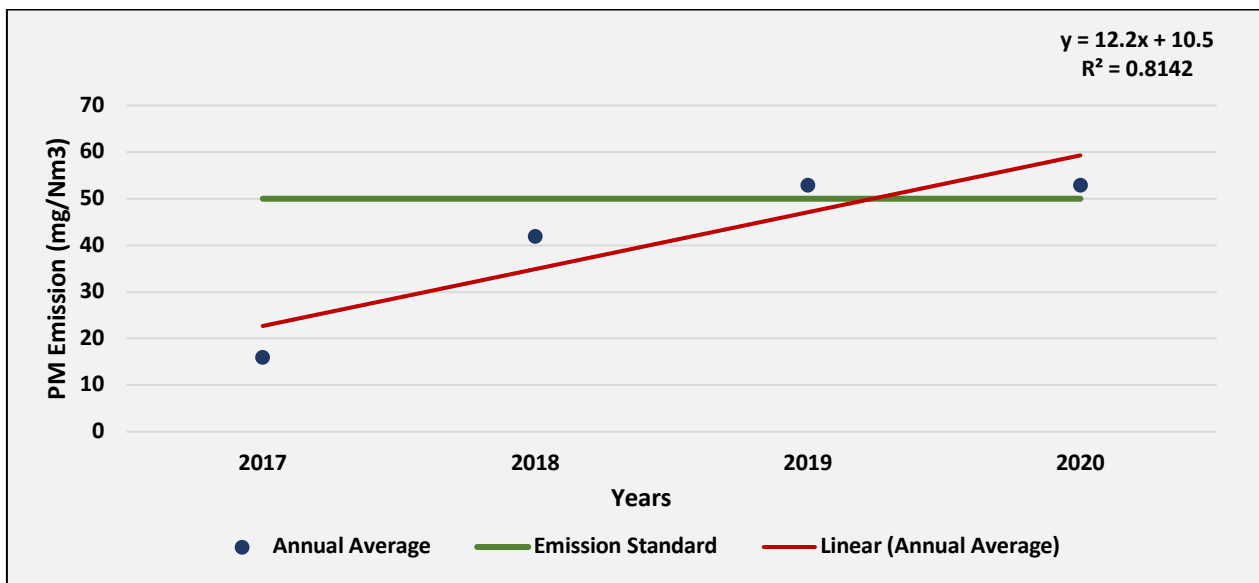


Fig. R12: Trend of annual average PM emissions from unit 1 in Raghunathpur TPP

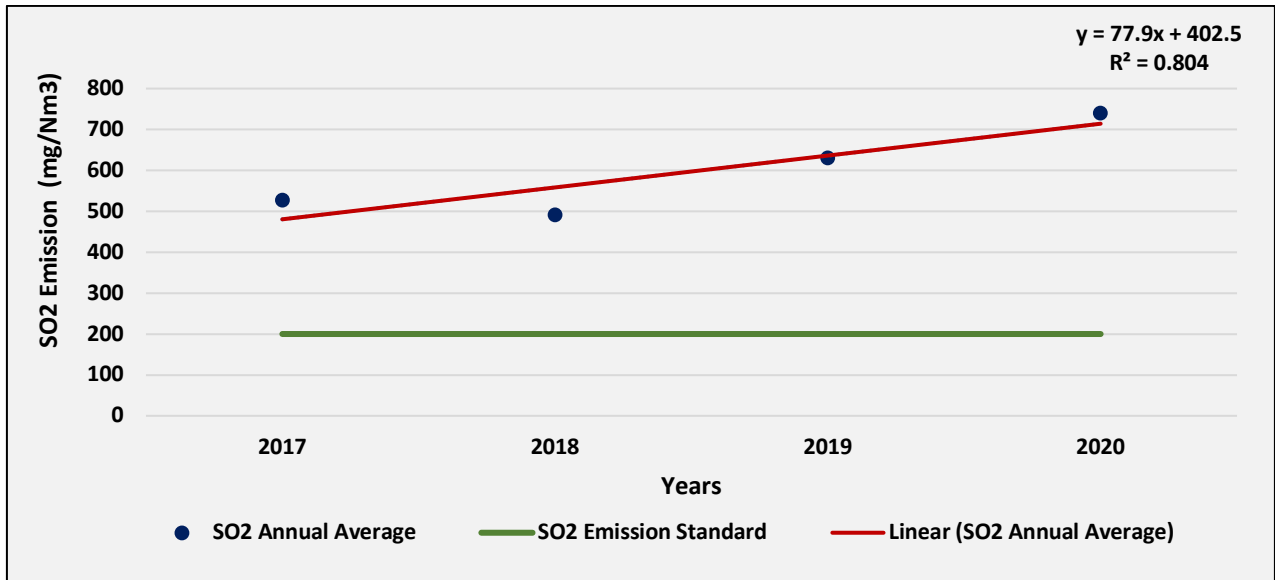


Fig. R13: Trend of annual average SO2 emissions from unit 1 in Raghunathpur TPP

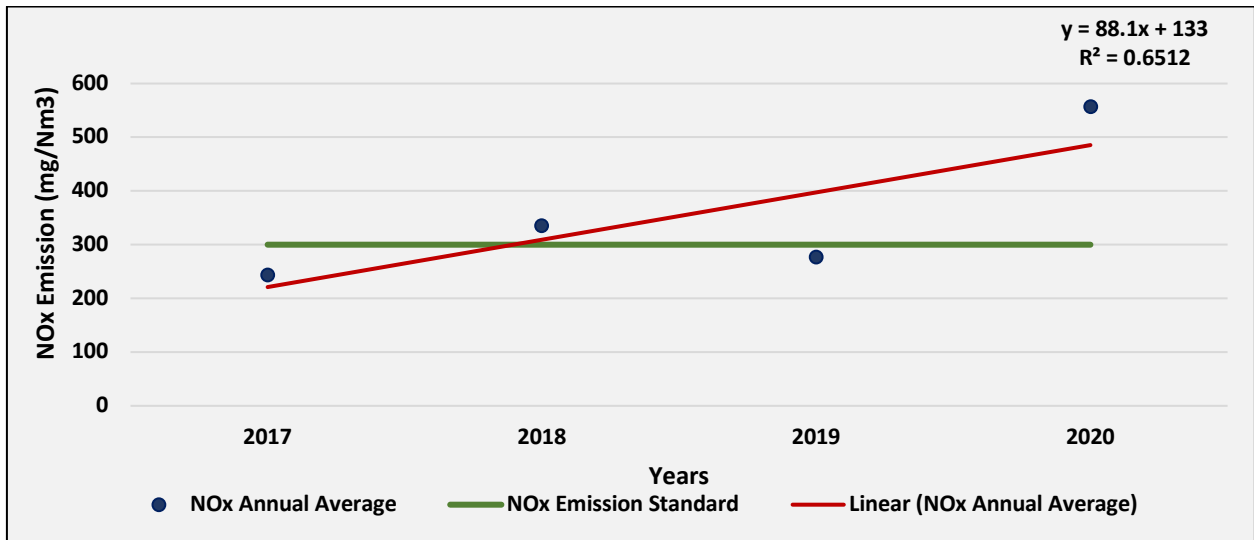


Fig. R14: Trend of annual average NOx emissions from unit 1 in Raghunathpur TPP

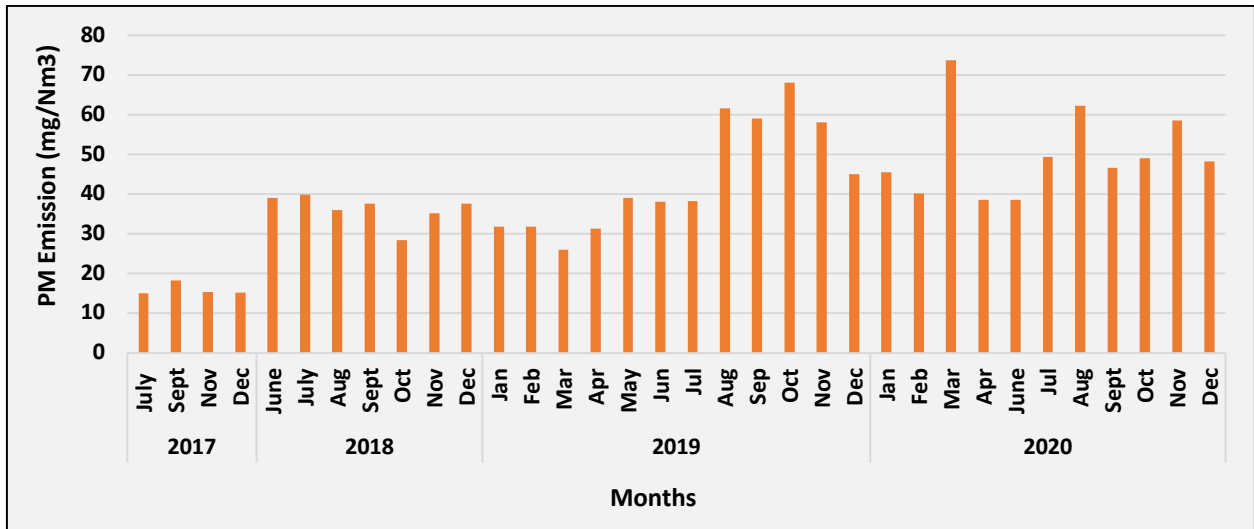


Fig. R15: Time series of monthly average emission of PM from Unit 2 in Raghunathpur TPP

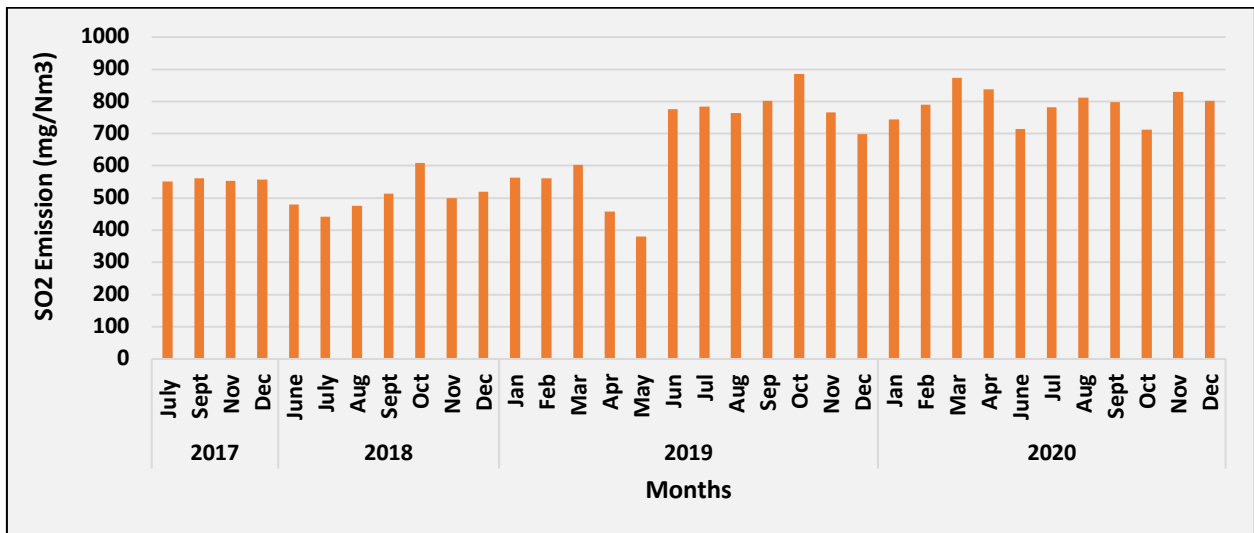


Fig. R16: Time series of monthly average emission of SO2 from Unit 2 in Raghunathpur TPP

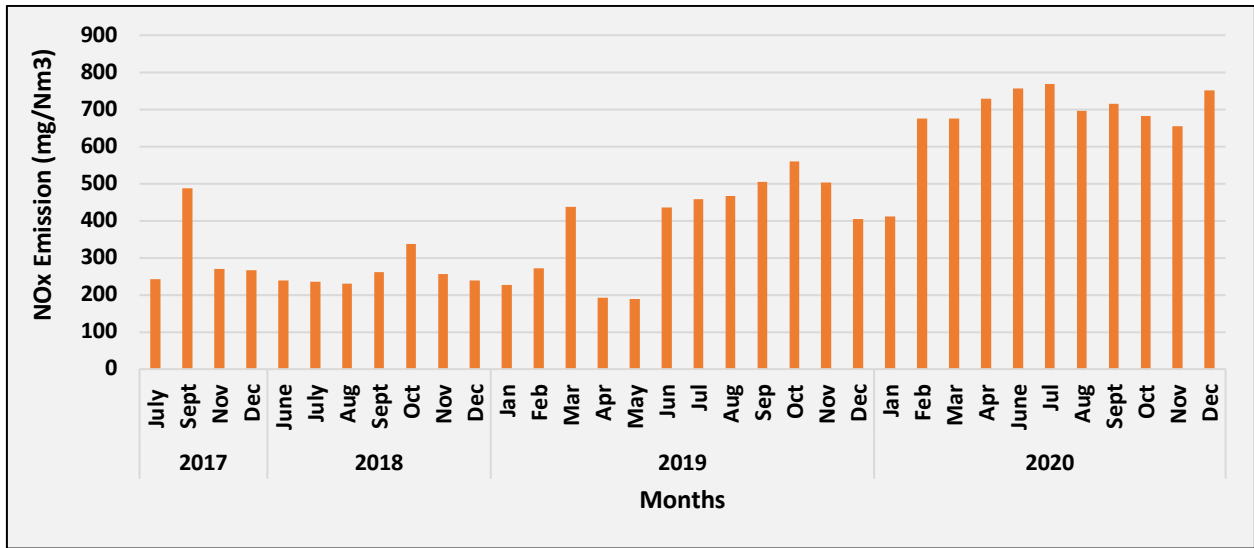


Fig. R17: Time series of monthly average emission of PM from Unit 2 in Raghunathpur TPP

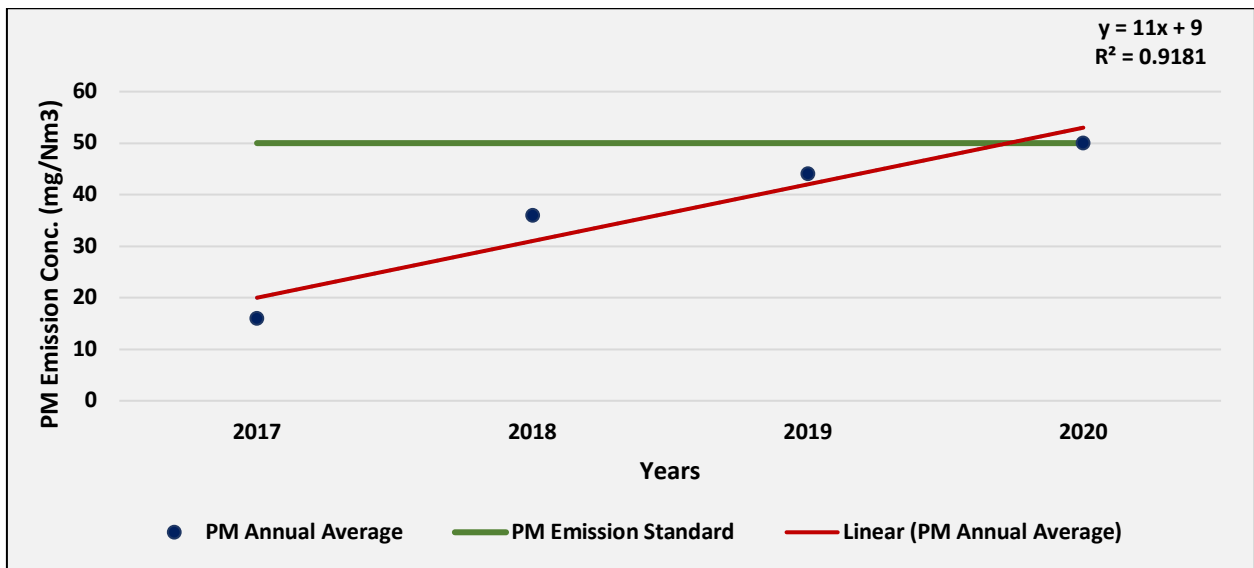


Fig. R18: Trend of annual average PM emissions from unit 2 in Raghunathpur TPP

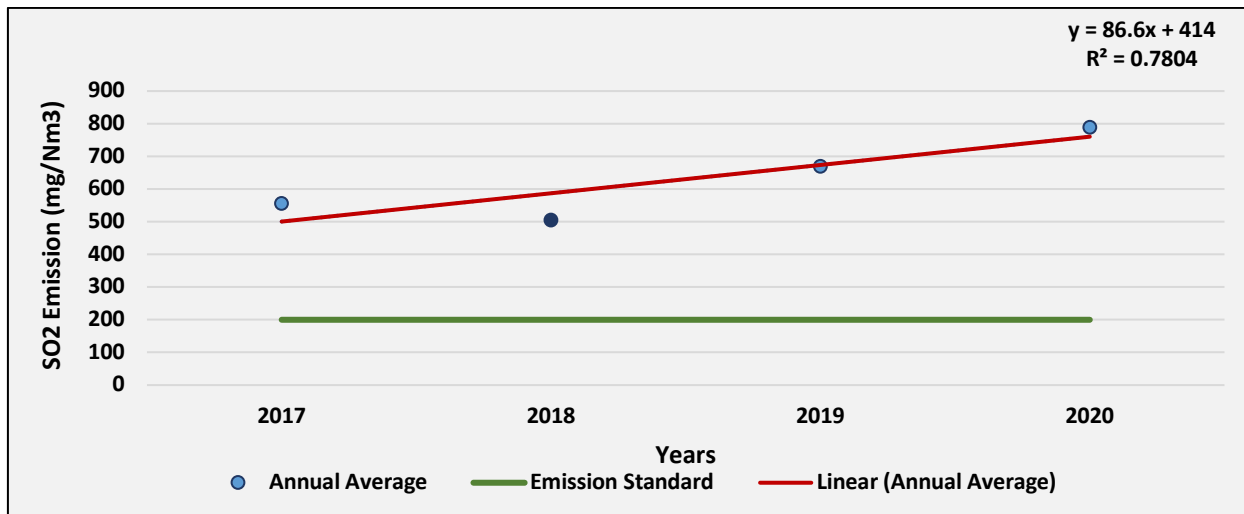


Fig. R19: Trend of annual average SO2 emissions from unit 2 in Raghunathpur TPP

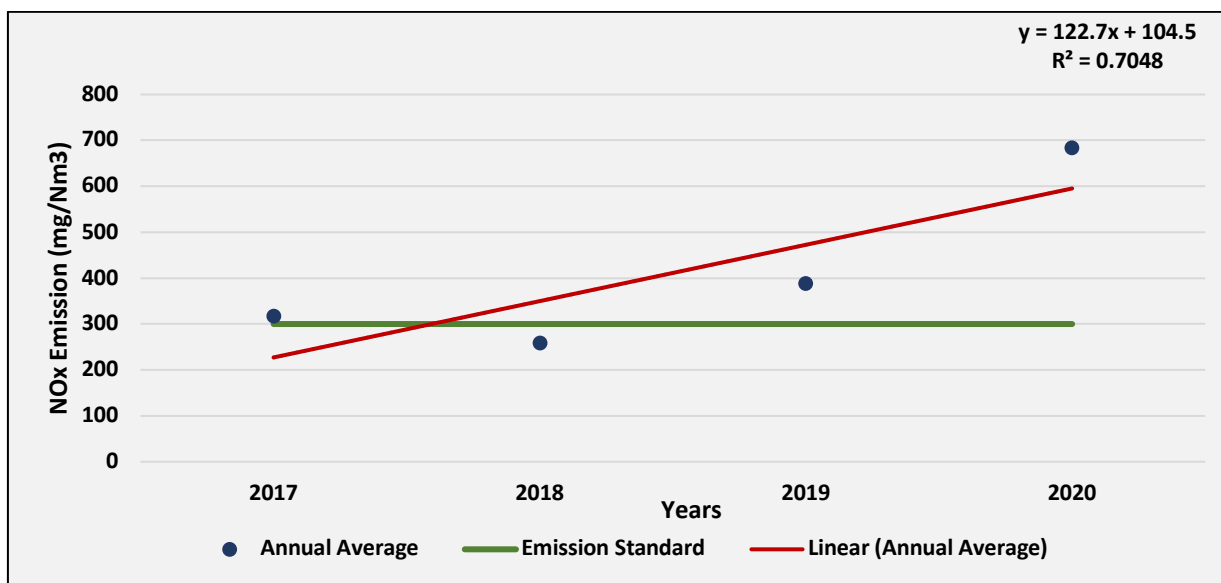


Fig. R20: Trend of annual average NOx emissions from unit 2 in Raghunathpur TPP

The monthly and yearly ground level emission analysis for both the units of Raghunathpur Thermal Power Plant shows that particulate matter is within the emission standards. Whereas, the SO2 and NOx emissions are much higher than the emission norms for Raghunathpur TPP units (Fig R9- R20).

PANIPAT THERMAL POWER STATION

Panipat Thermal Power Station II is located at Panipat in Haryana. The power plant is one of the coal based power plants of Haryana Power Generation Corporation (HPGCL). Panipat Thermal Power Station has an installed capacity of 500 MW comprising of two units (7&8) are 250 MW each and commissioned in 2004-2005. The exact location coordinates for the power plant are 29.397505867074, 76.876316070557.

The ambient air quality concentrations of SO₂, NO_x, PM₁₀, and PM_{2.5} data analyzed for the ten (2011-2020) years using data provided by HPGCL developer for Panipat Power Plant, Haryana, India.

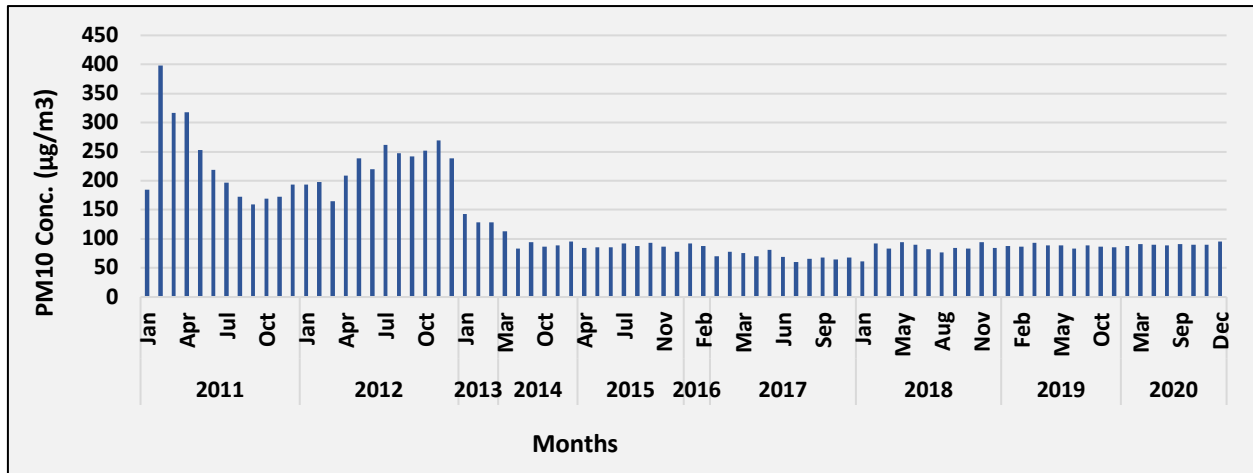


Fig. P1: Time series of monthly average PM₁₀ ambient air concentration in Panipat TPP

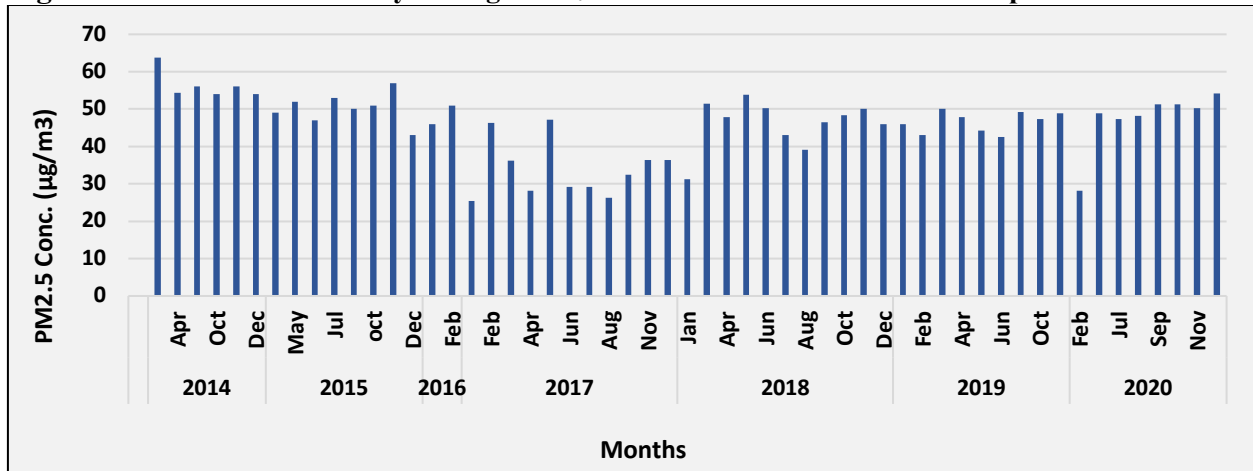


Fig. P2: Time series of monthly average PM_{2.5} ambient air concentration in Panipat TPP

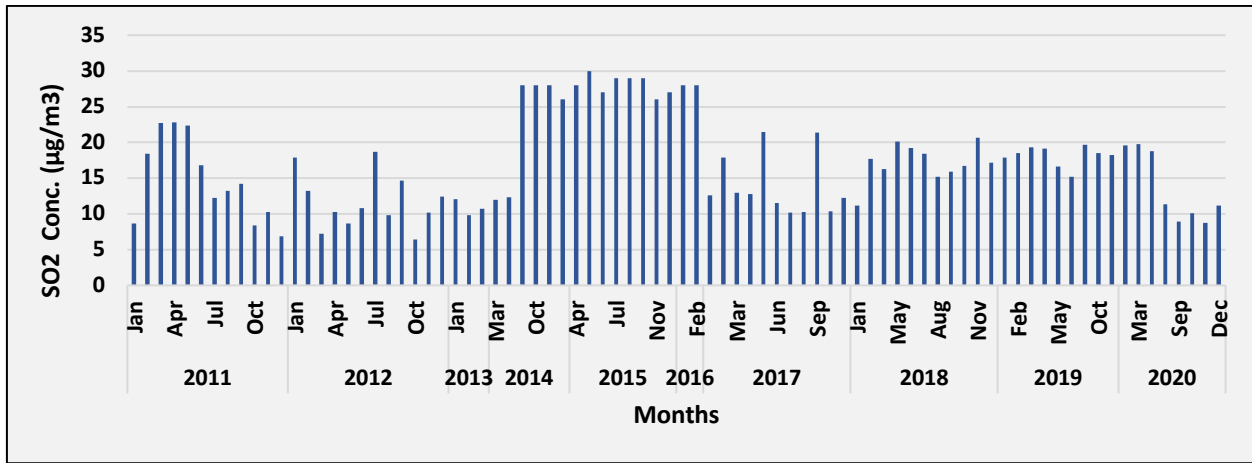


Fig. P3: Time series of monthly average SO₂ ambient air concentration in Panipat TPP

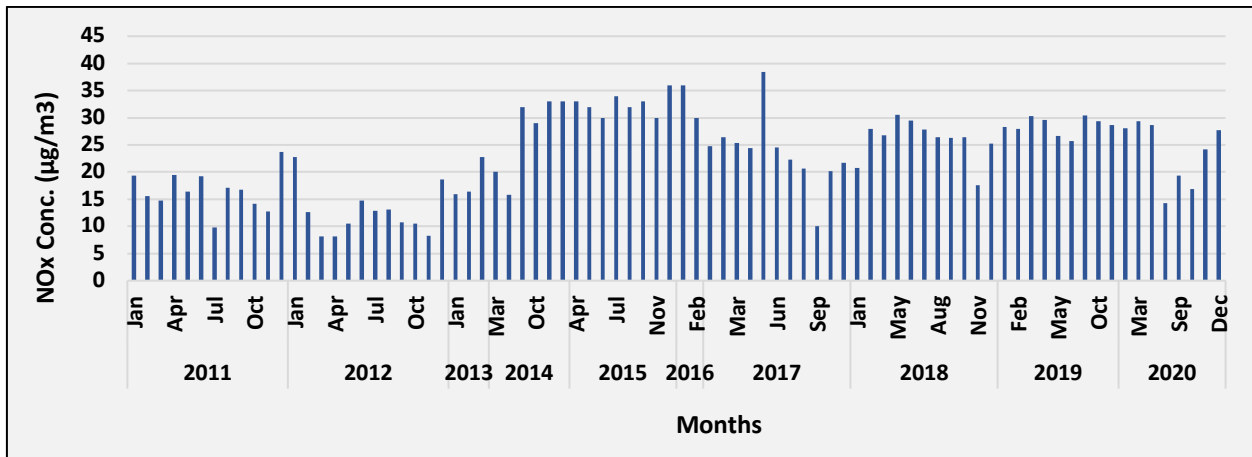


Fig. P4: Time series of monthly average NO_x ambient air concentration in Panipat TPP

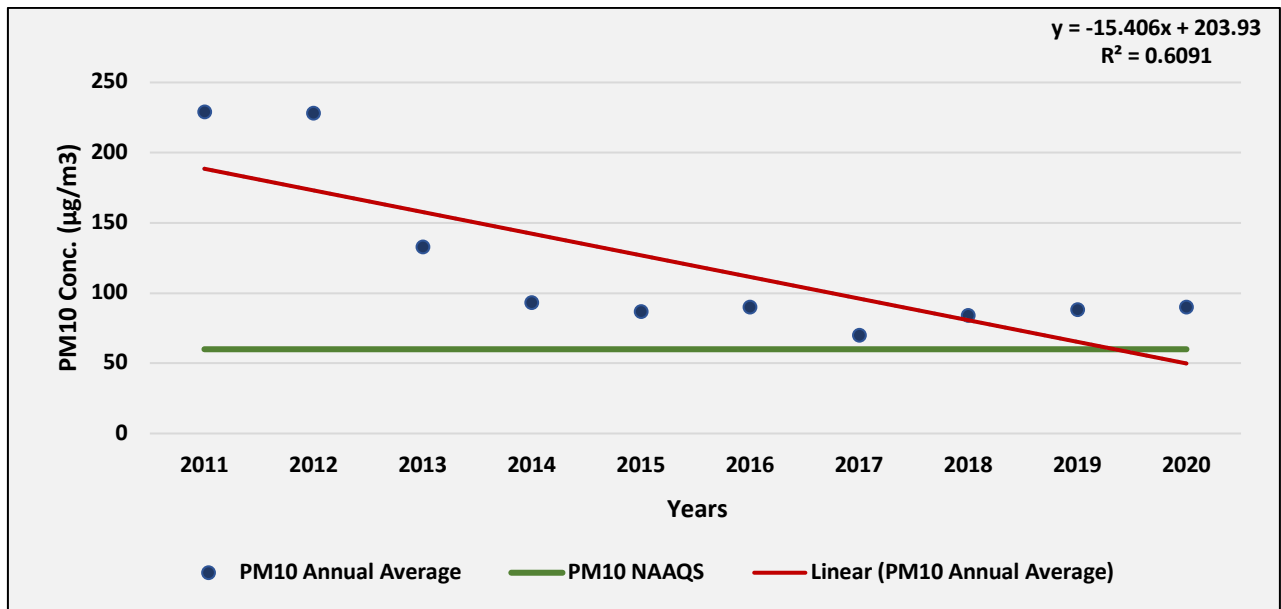


Fig. P5: Trend of annual mean PM₁₀ ambient air concentration in Panipat TPP

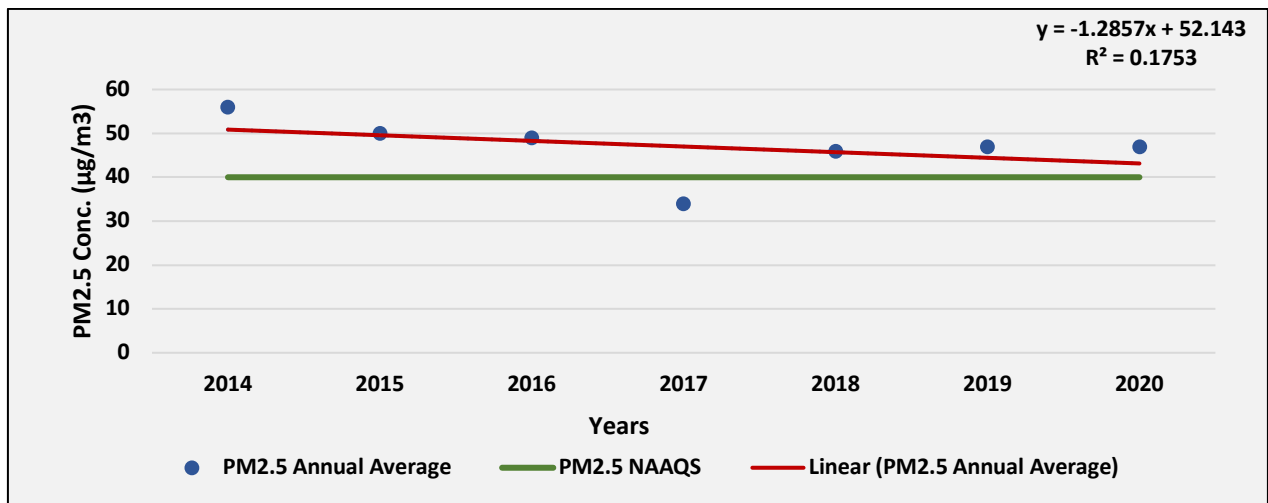


Fig. P6: Trend of annual mean PM_{2.5} ambient air concentration in Panipat TPP

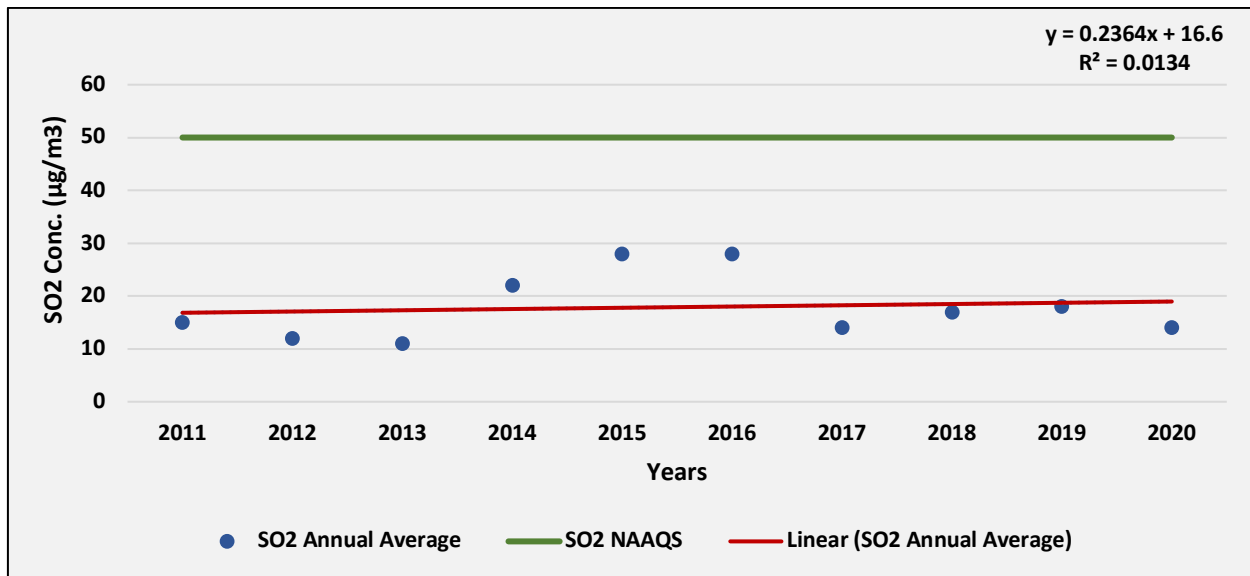


Fig. P7: Trend of annual mean SO₂ ambient air concentration in Panipat TPP

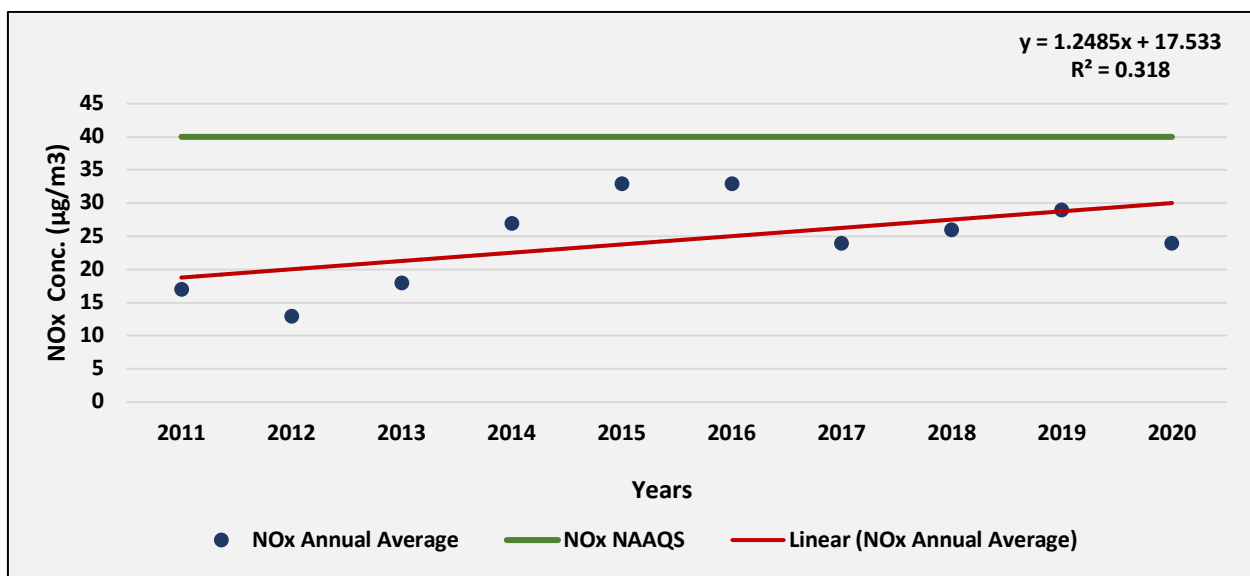


Fig. P8: Trend of annual mean NO_x ambient air concentration in Panipat TPP

Evidence based on ground level stations shows that the monthly average and annual average of SO₂ & NO_x levels in last eleven years are mostly within a range, which is good as per the as per the National Ambient Air Quality Standards (NAAQS). However, the major cause of concern is the PM₁₀ levels that are relatively high for both monthly and annual average and Pm_{2.5} levels which are slightly high w.r.t NAAQS.(Fig P1 & P8).

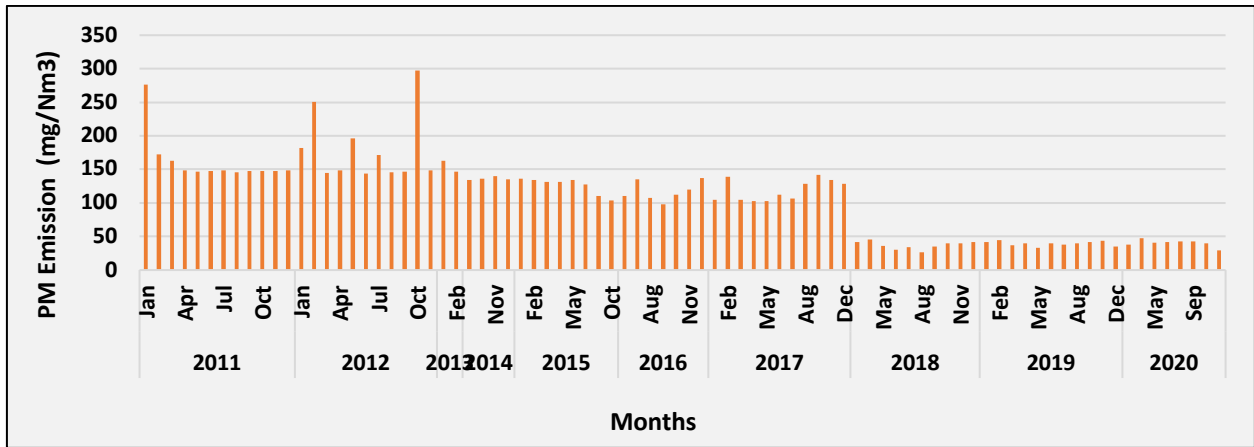


Fig. P9: Time series of monthly average emission of PM from Unit 1 in Panipat TPP

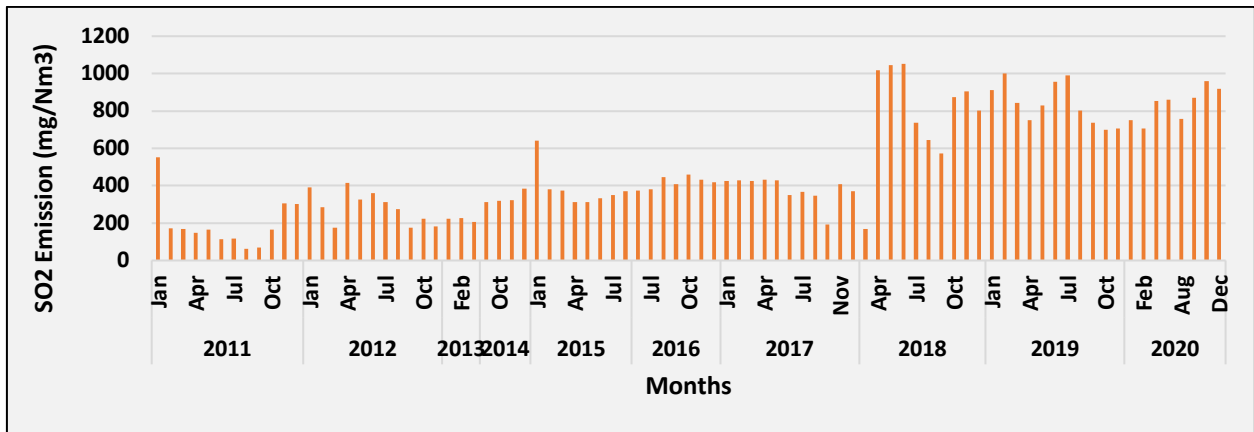


Fig. P10: Time series of monthly average emission of SO2 from Unit 1 in Panipat TPP

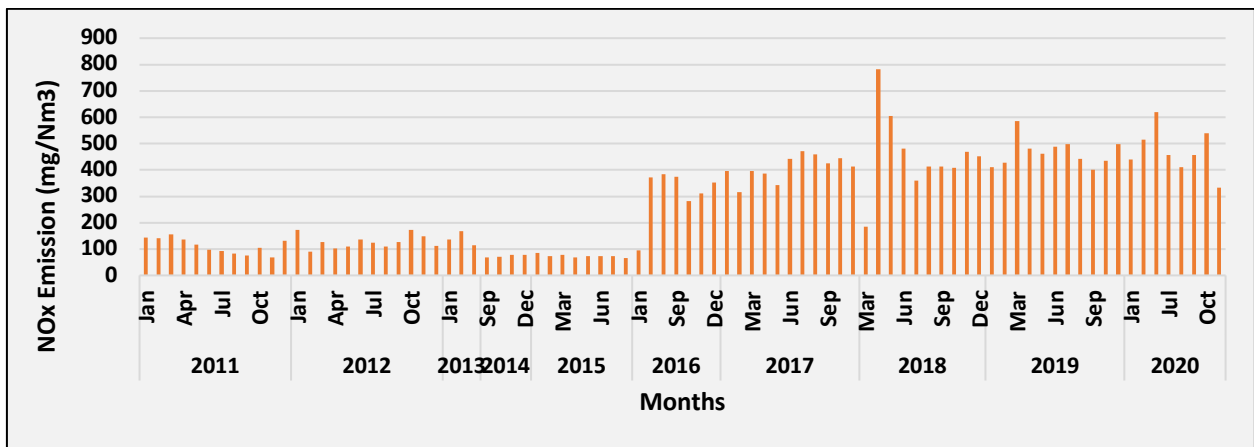


Fig. P11: Time series of monthly average emission of NOx from Unit 1 in Panipat TPP

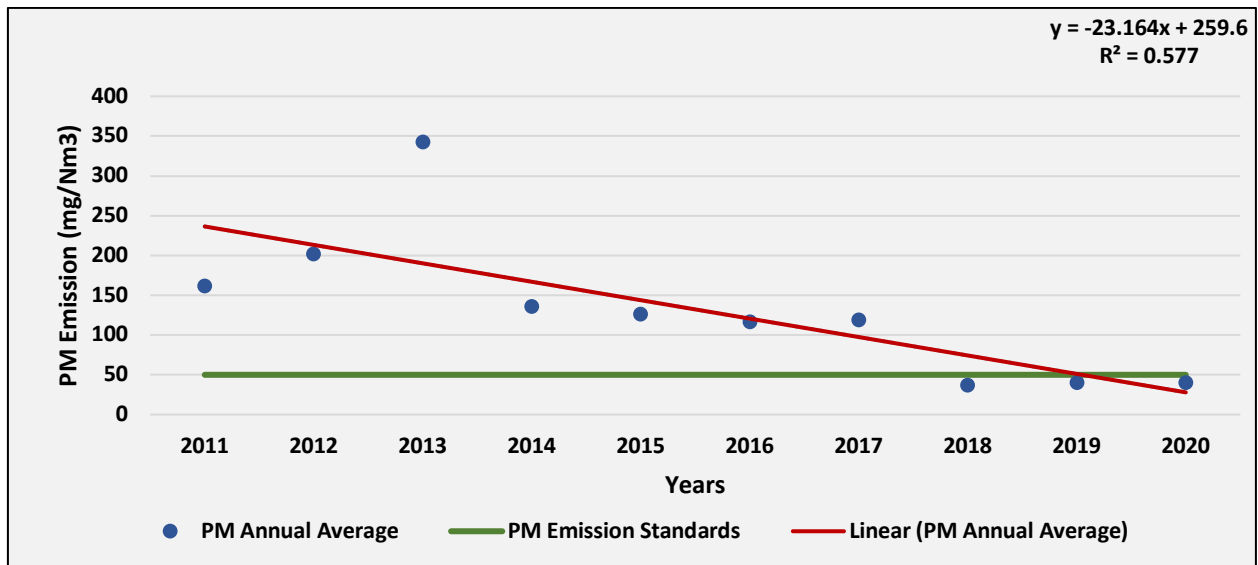


Fig. P12: Trend of annual average PM emissions from unit 1 in Panipat TPP

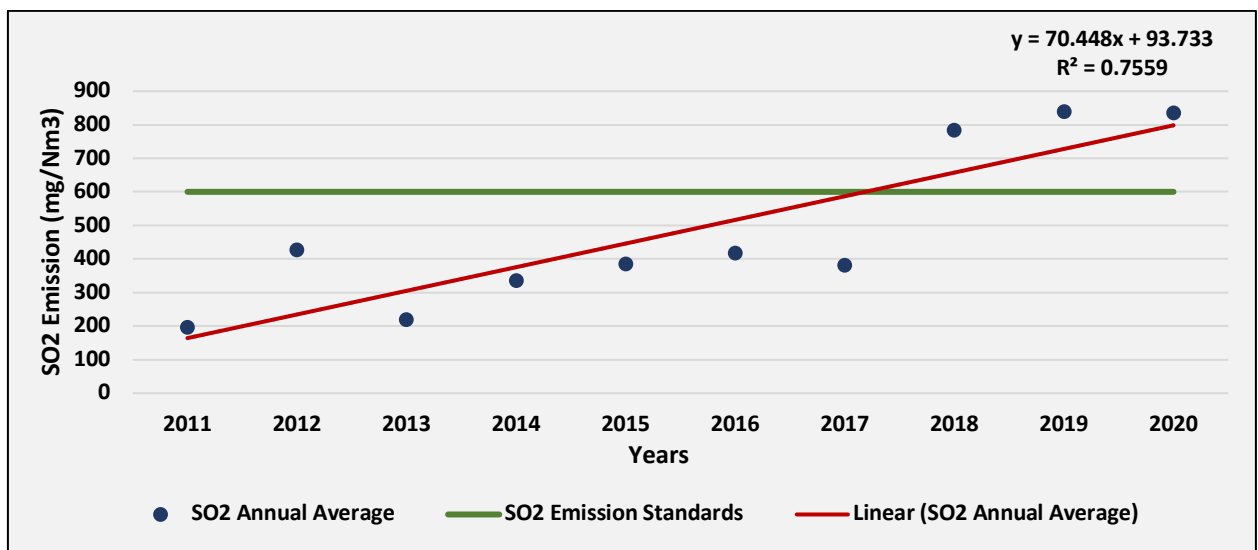


Fig. P13: Trend of annual average SO2 emissions from unit 1 in Panipat TPP

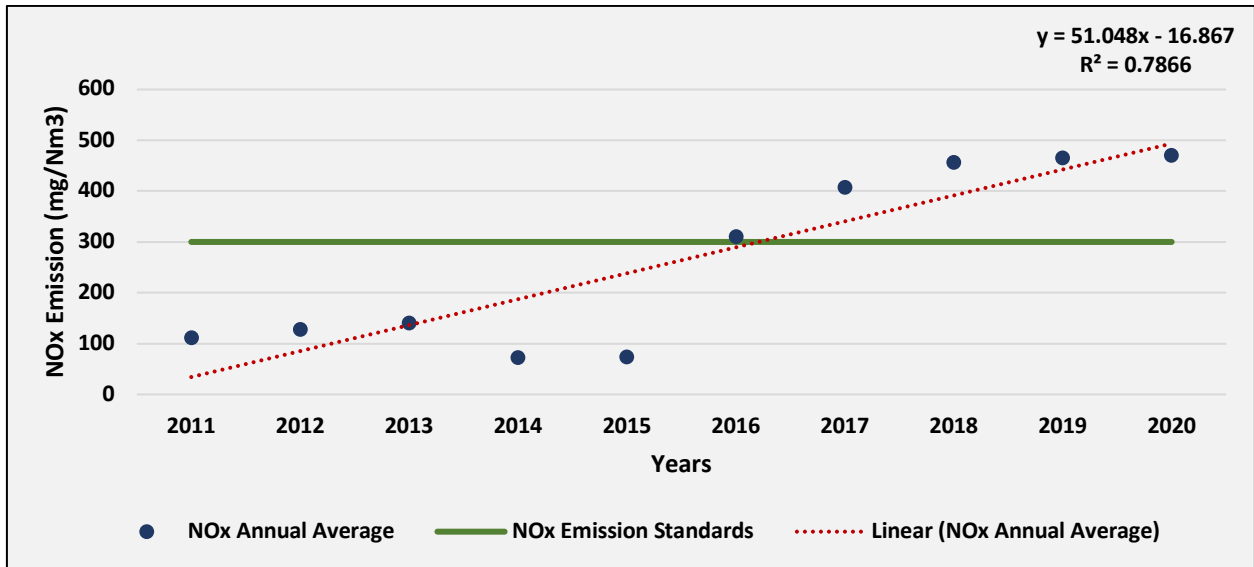


Fig. P14: Trend of annual average NOx emissions from unit 1 in Panipat TPP

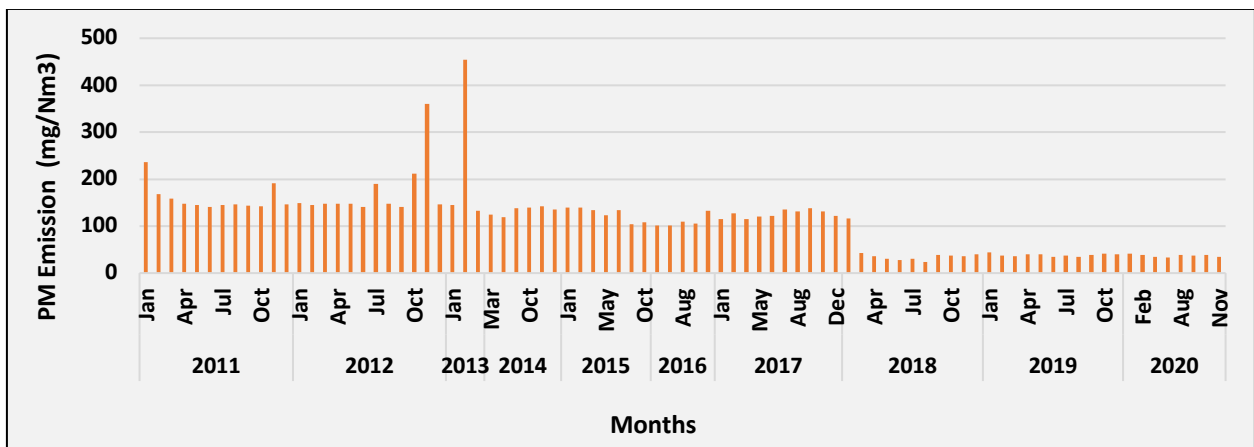


Fig. P15: Time series of monthly average emission of PM from Unit 2 in Panipat TPP

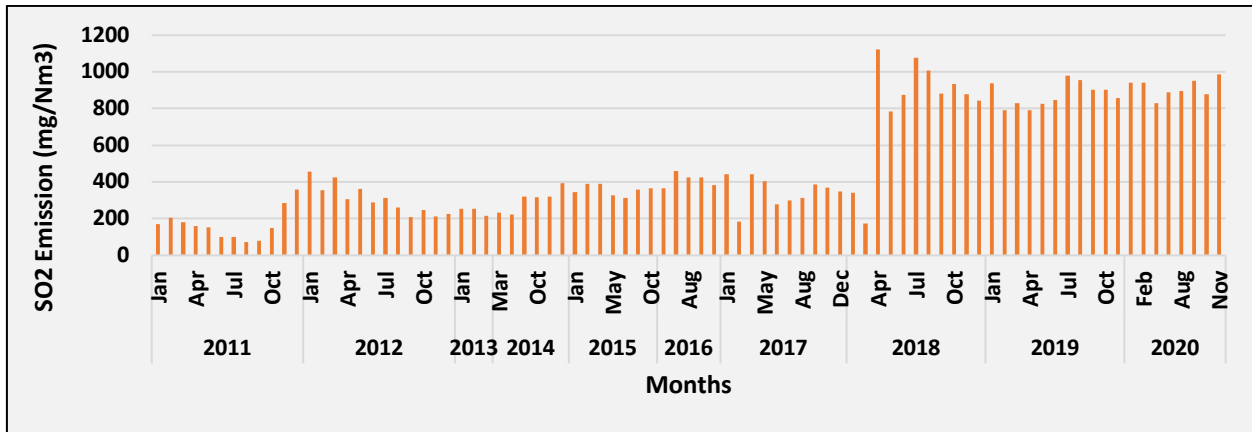


Fig. P16: Time series of monthly average emission of SO2 from Unit 2 in Panipat TPP

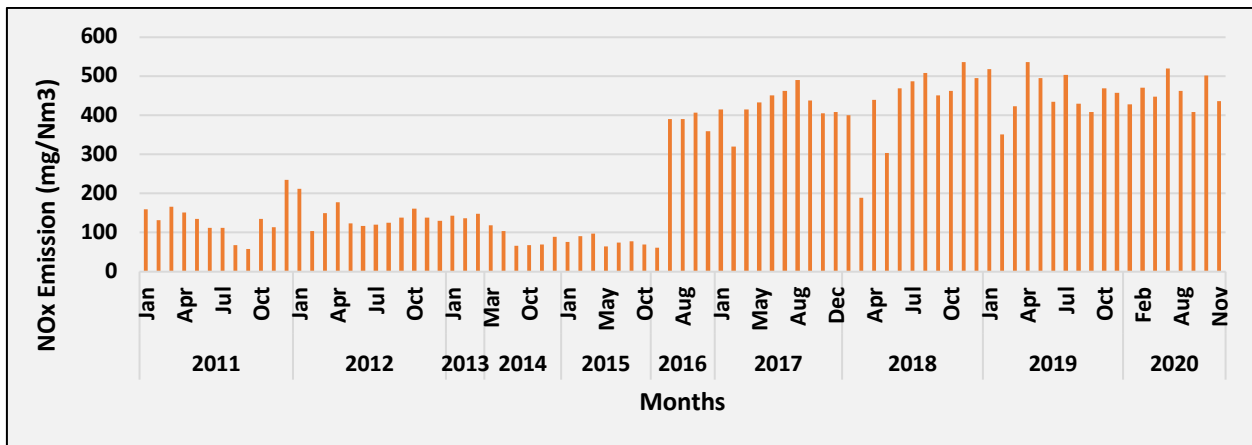


Fig. P17: Time series of monthly average emission of NOx from Unit 2 in Panipat TPP

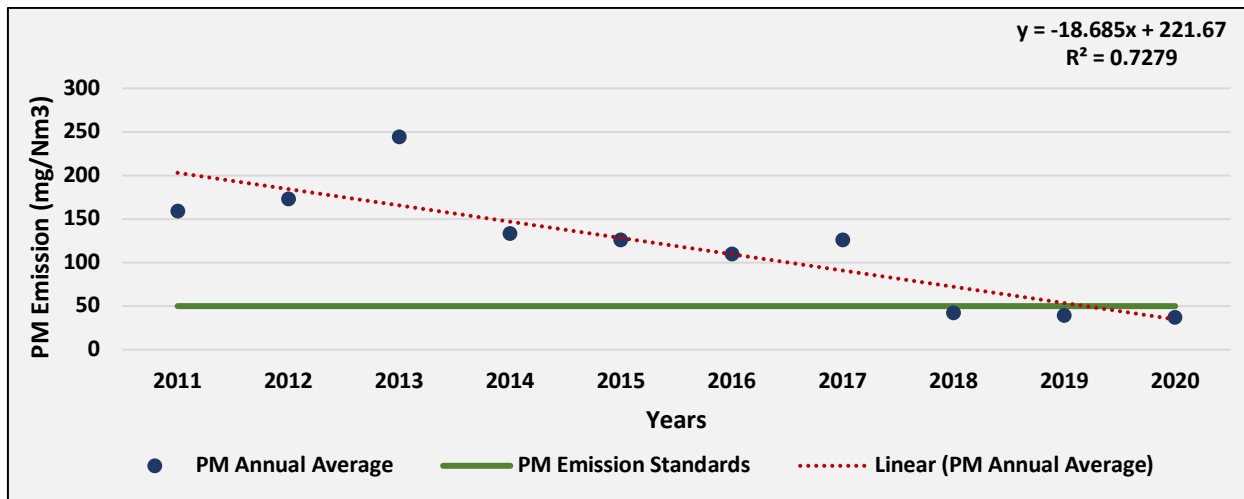


Fig. P18: Trend of annual average PM emissions from unit 2 in Panipat TPP

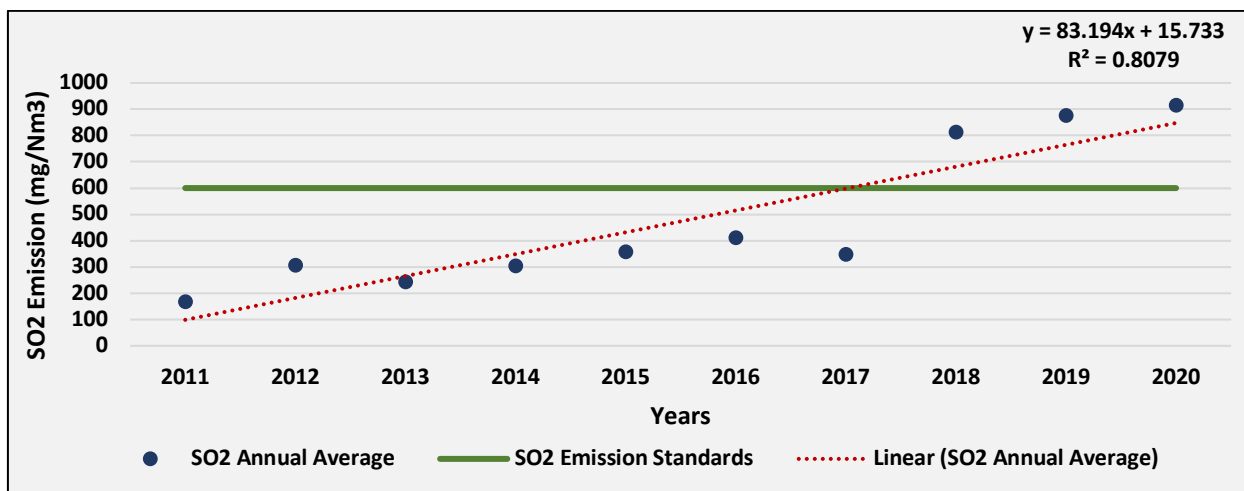


Fig. P19: Trend of annual average SO2 emissions from unit 2 in Panipat TPP

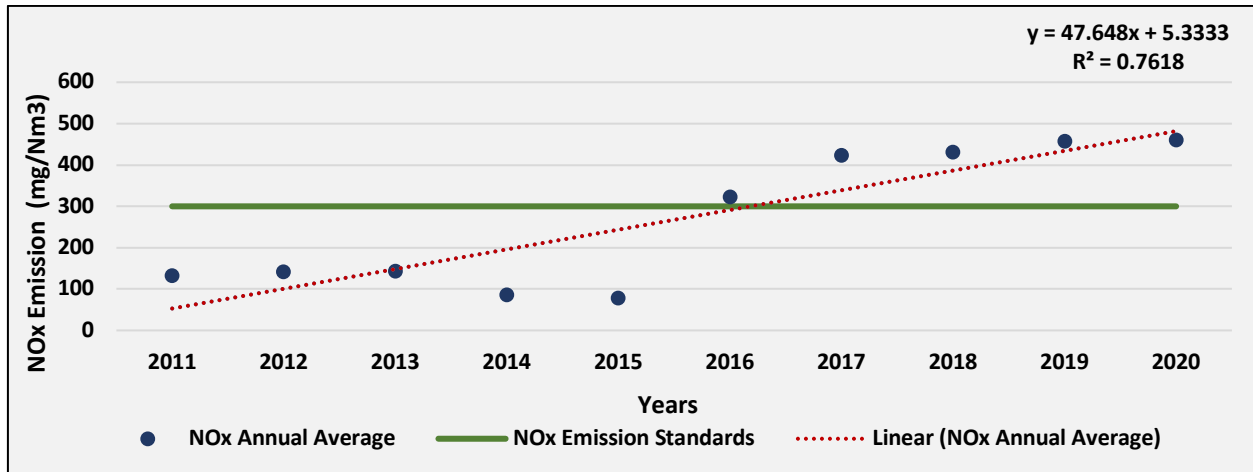


Fig. P20: Trend of annual average NOx emissions from unit 2 in Panipat TPP

For Unit 1 and Unit 2 of Panipat TPP, The emission of particulate matter and SO₂ were higher than emission limit until 2017 and are within limit standards from 2018 onwards. Similarly, for NO_x, the emission were higher from 2011 until 2016. (Fig P9-P20).

MEJIA THERMAL POWER PLANT (4X210 MW + 2X250 MW+ 2X500 MW)

Mejia Thermal Power Station is located at Durlabhpur, Bankura, 35 km from Durgapur city in West Bengal. The power plant is one of the coal based power plants of DVC. Commissioned on 1996, MTPS is the largest thermal power plant, in terms of generating capacity in the state of West Bengal as well as among other DVC power plants.

Mejia Thermal Power Station has an installed capacity of **2430 MW**. The plant has 8 units under operation.^[1] The individual units has the generating capacity as follows:

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, and NO_x, data has been analyzed using the data provided by DVC developer.

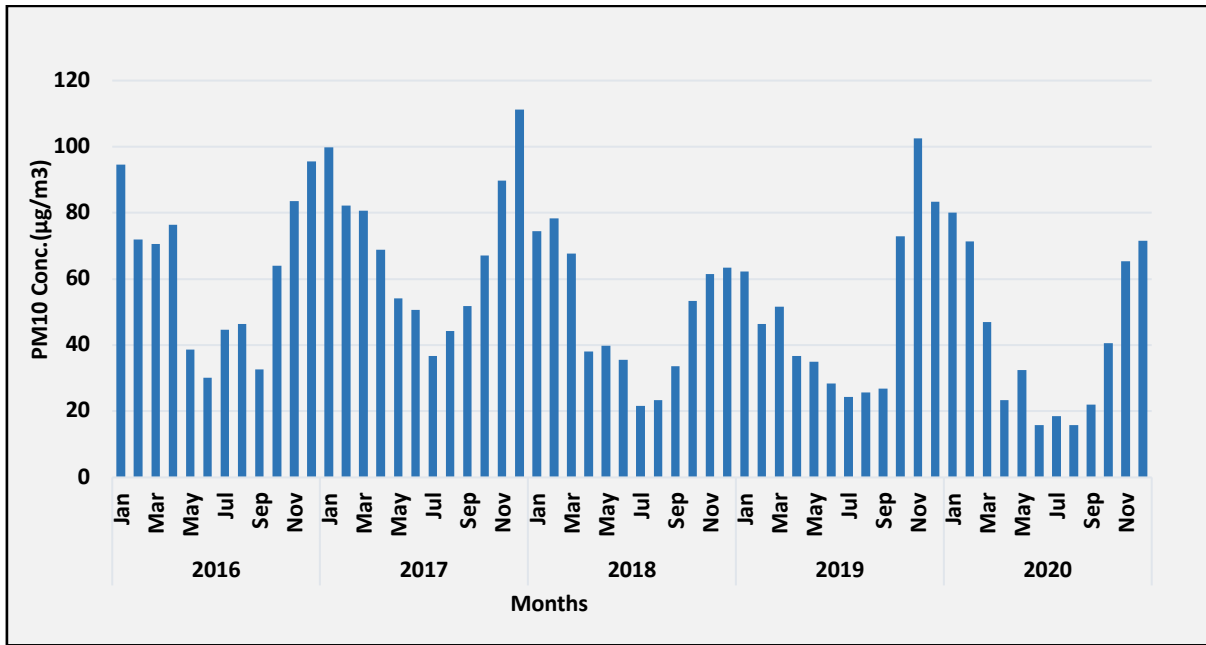


Fig. R1: Time series of monthly average PM₁₀ ambient air concentration

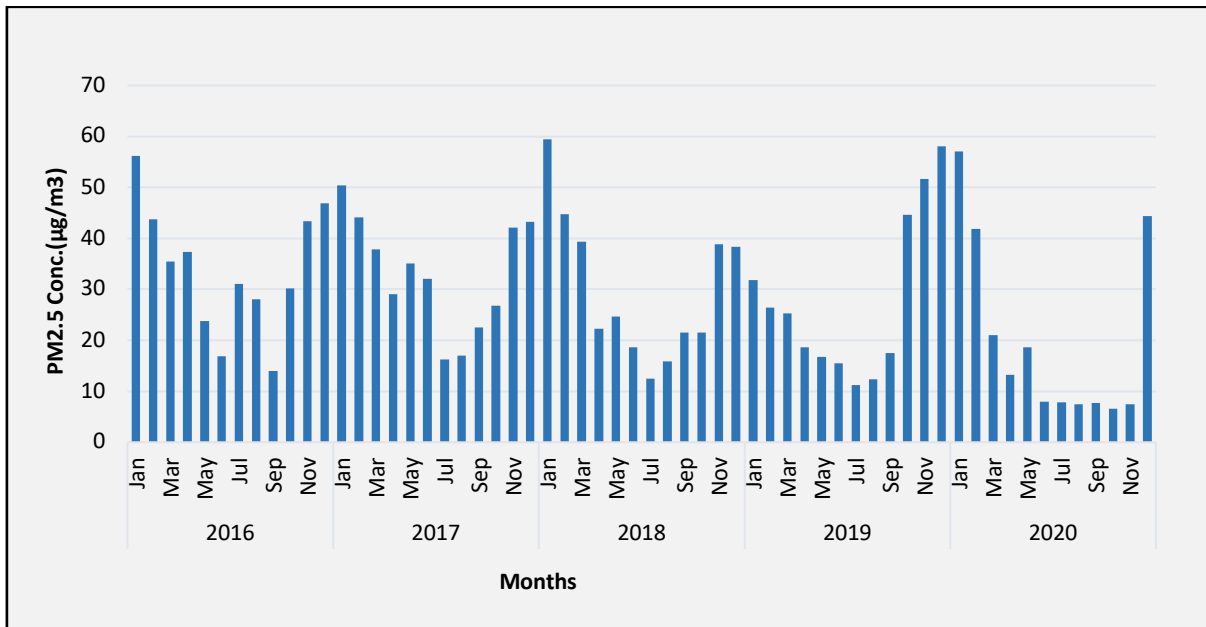


Fig. R2: Time series of monthly average PM_{2.5} ambient air concentration

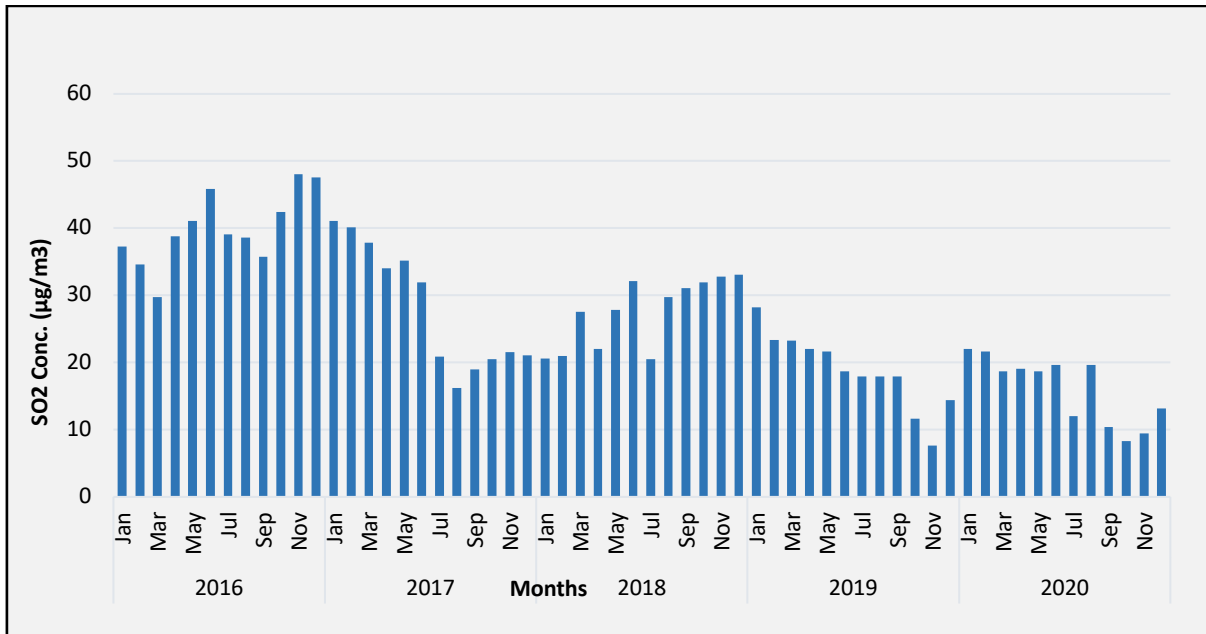


Fig. R3: Time series of monthly average SO₂ ambient air concentration

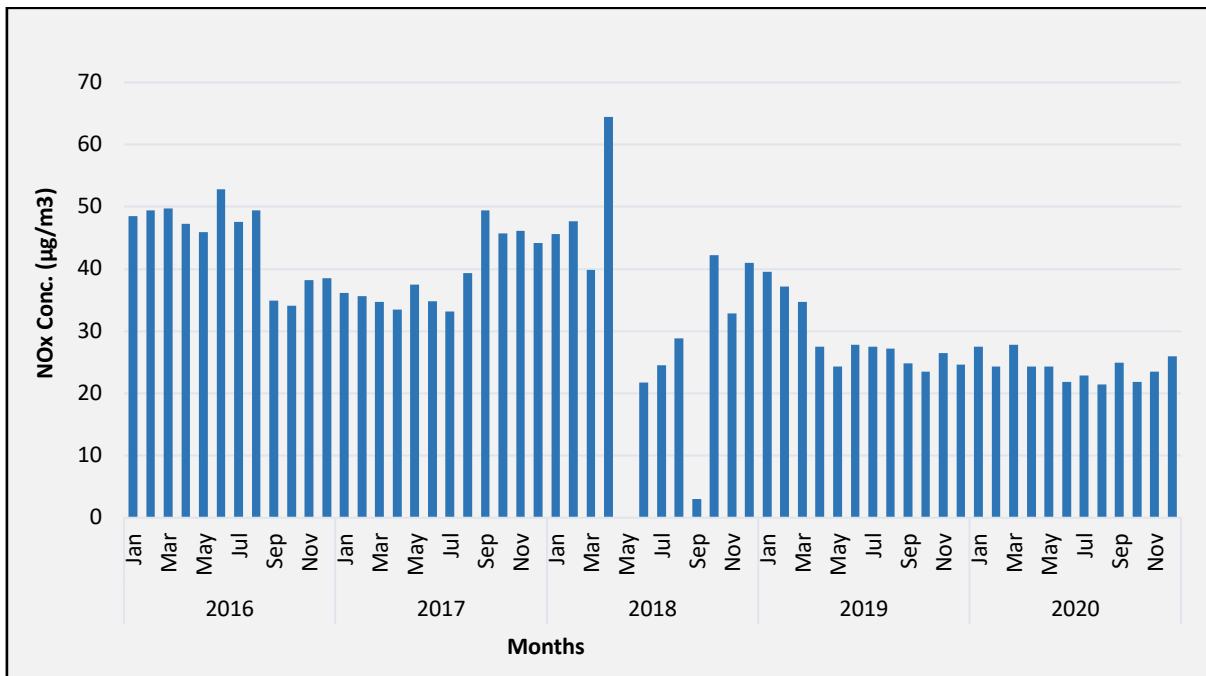


Fig.R4: Time series of monthly average NO_x ambient air concentration

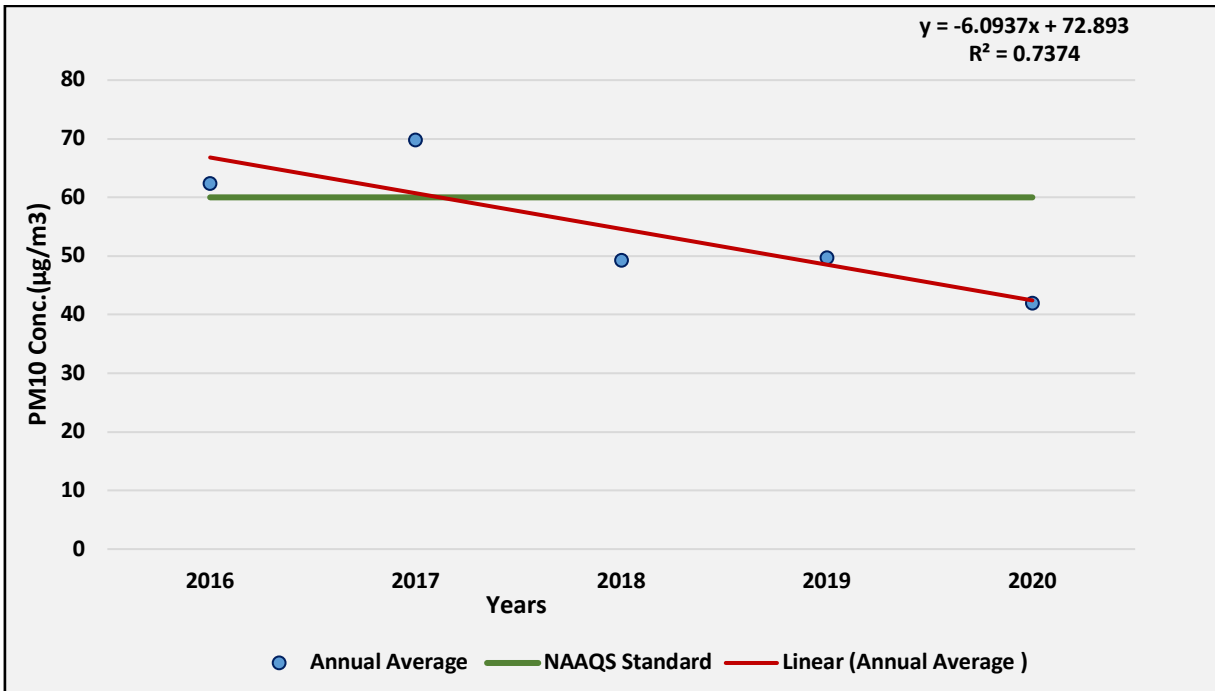


Fig. R5: Trend of annual mean PM_{10} ambient air concentration

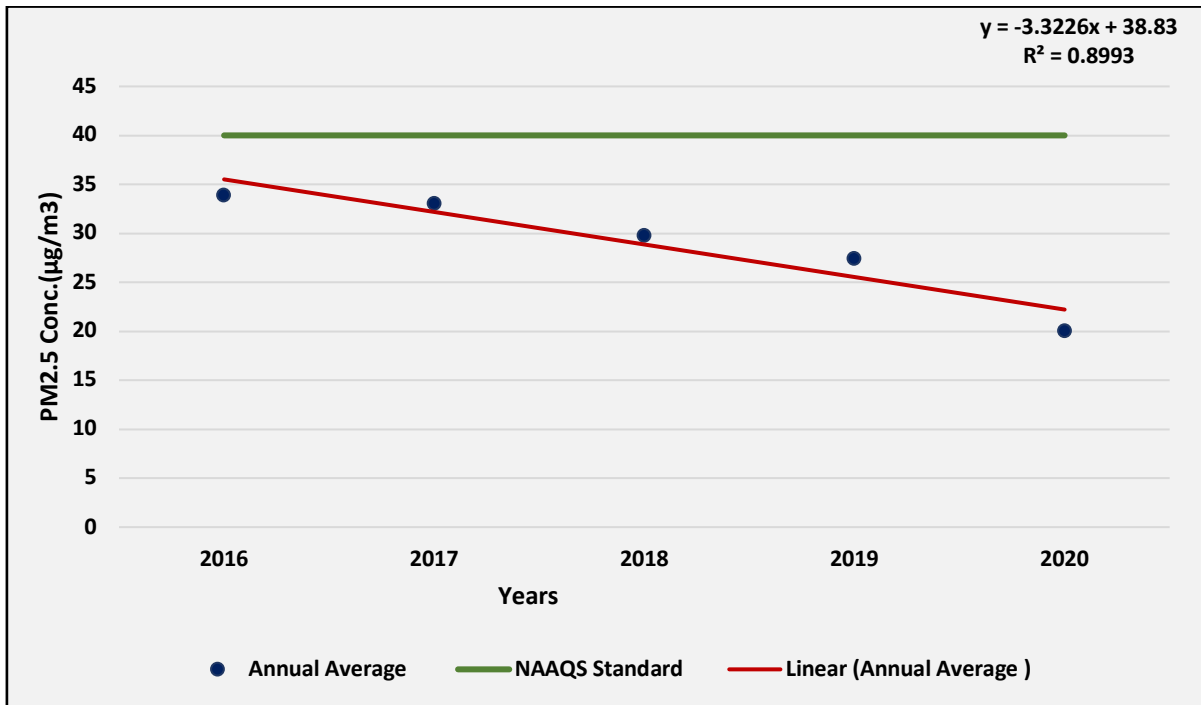


Fig. R6: Trend of annual mean $PM_{2.5}$ ambient air concentration

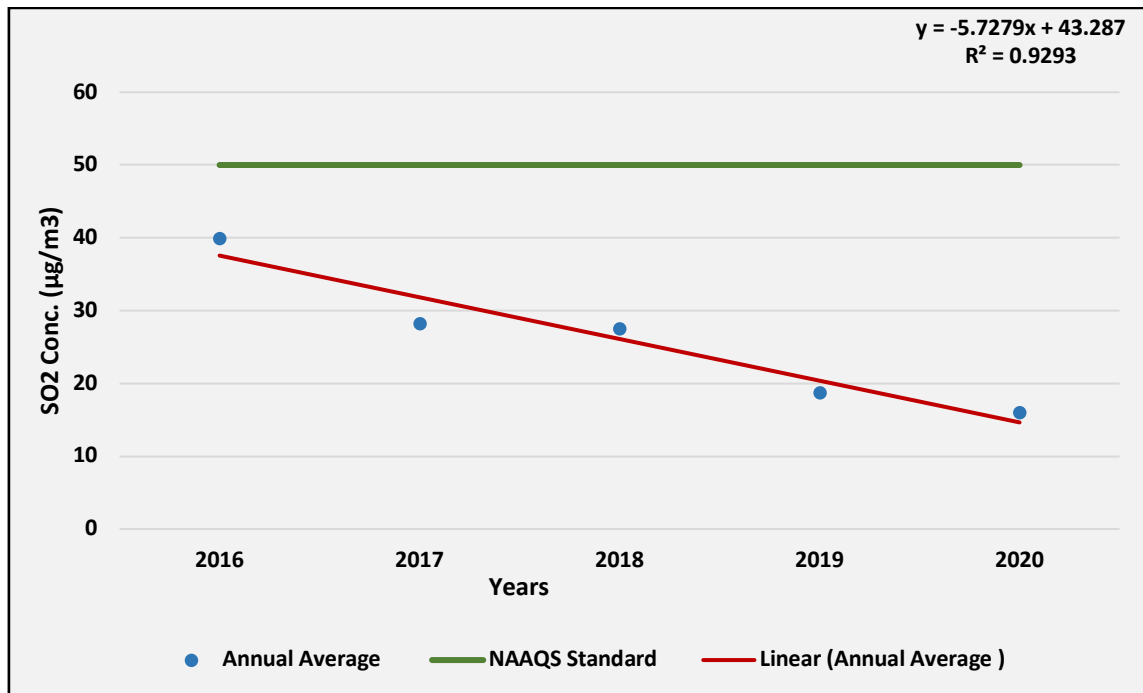


Fig. R7: Trend of annual mean SO₂ ambient air concentration

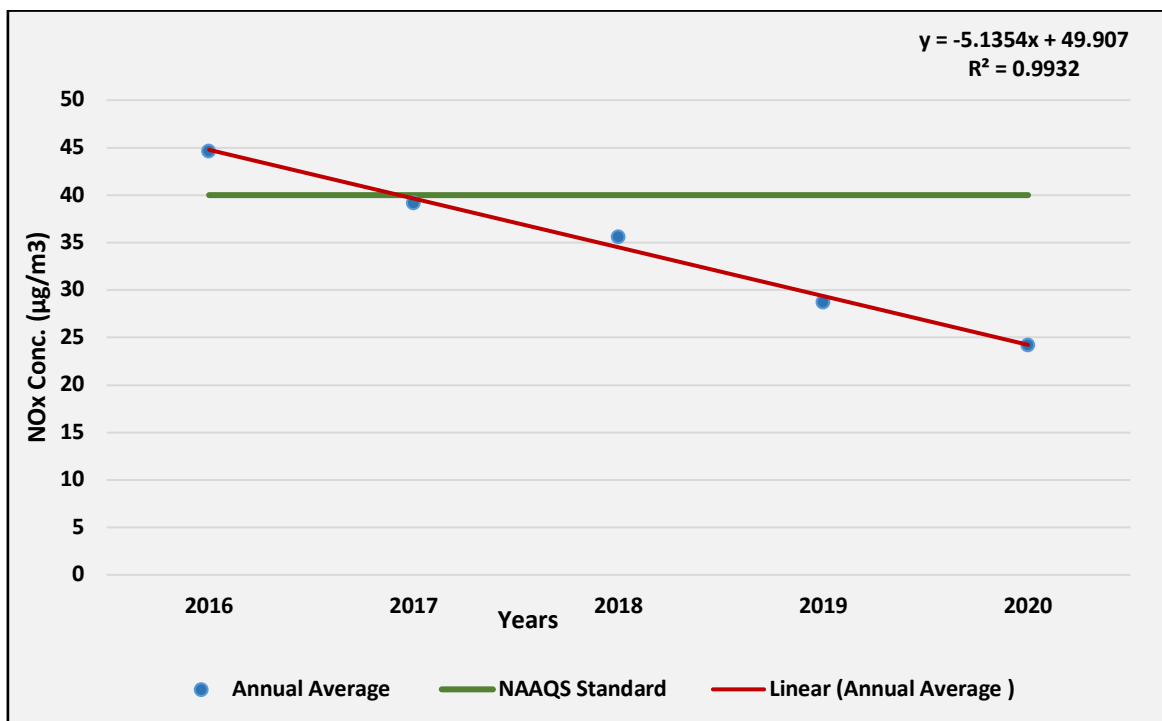


Fig. R8: Trend of annual mean NO_x ambient air concentration

Evidence based on ground level stations shows that the monthly average and annual average of SO₂ & NO_x levels in five years are mostly within a range of 0-50µg/m³ & 0-40 µg/m³ respectively, which is good as per the as per the National Ambient Air Quality Standards (NAAQS). However,

the major cause of concern is the PM10, PM2.5 levels that are relatively high for both monthly and annual average. This suggests that the particulate matter contribution by the thermal power plant have to be controlled as per the NAAQS.

UNIT-1

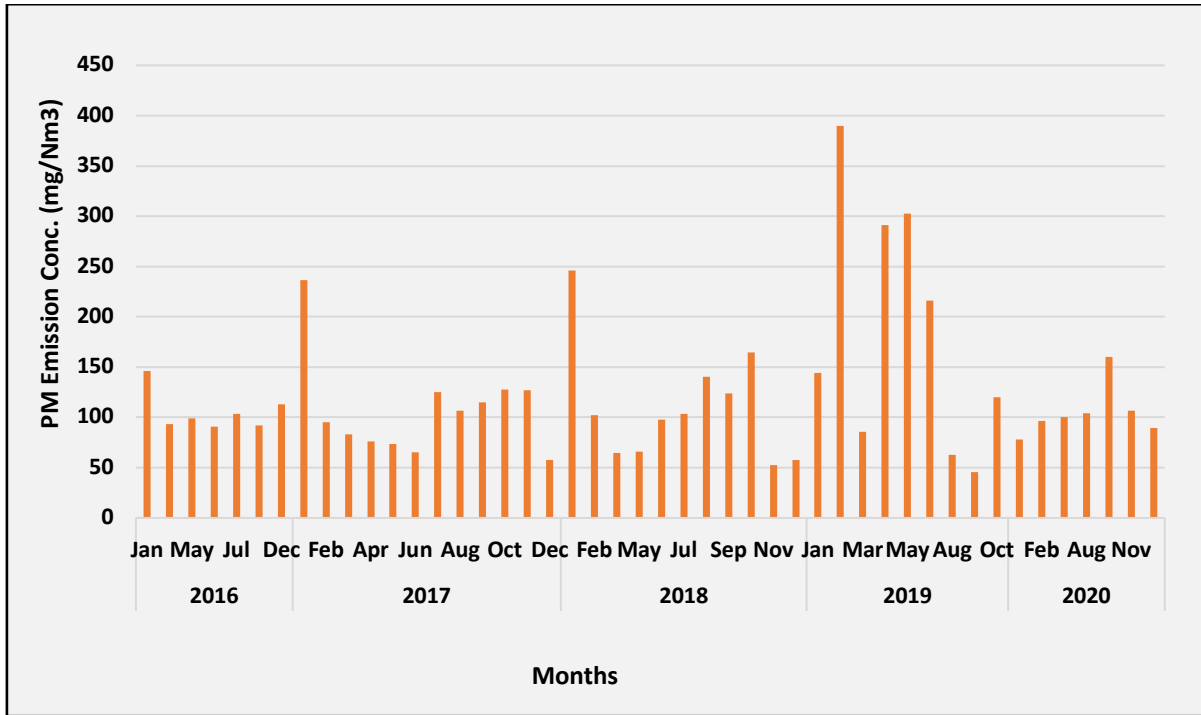


Fig. R9: Time series of monthly average PM ambient air concentration

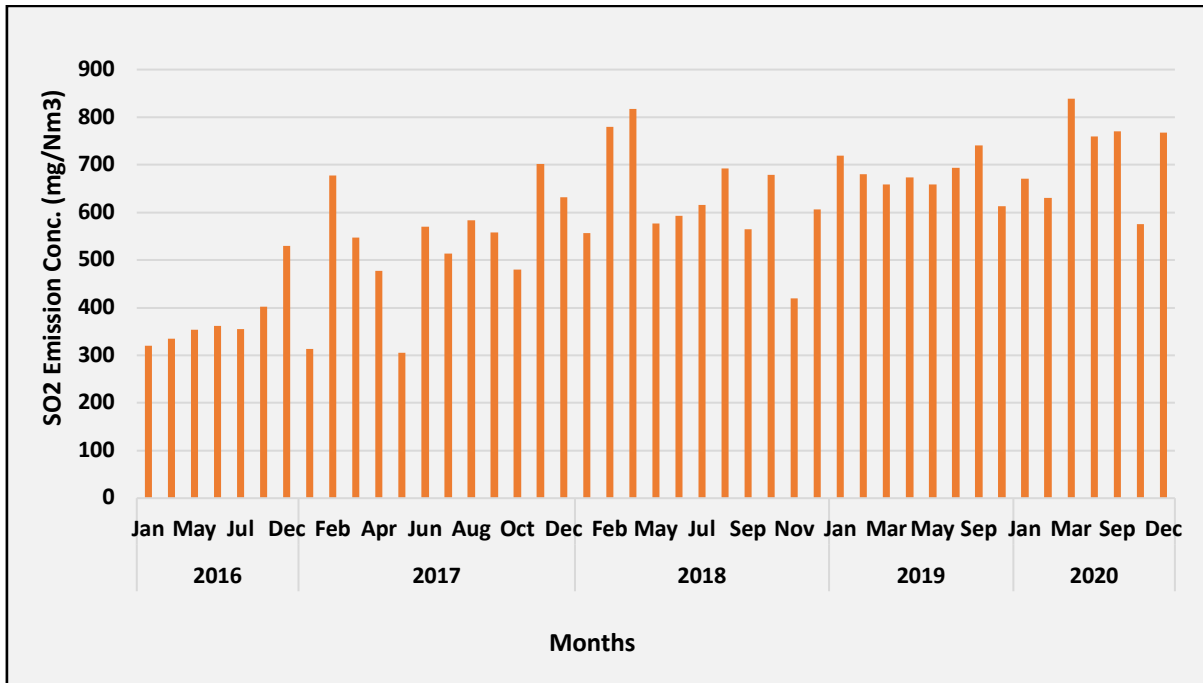


Fig. R10: Time series of monthly average SO₂ ambient air concentration

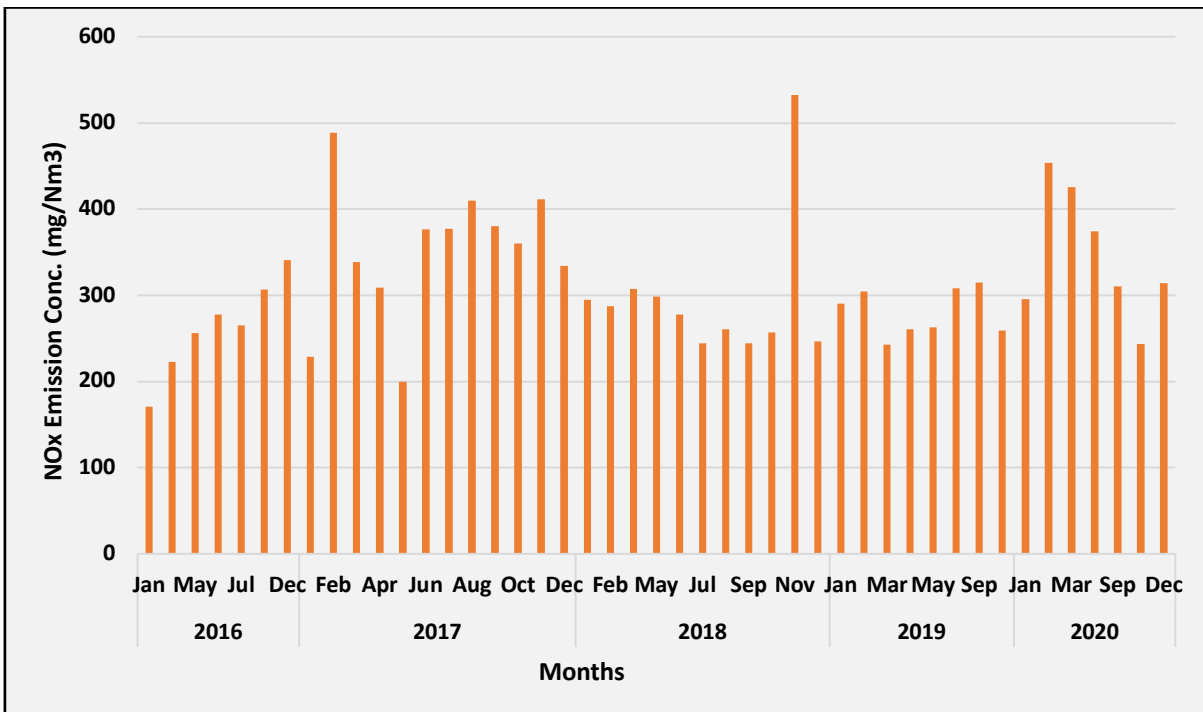


Fig. R11: Time series of monthly average NO_x ambient air concentration

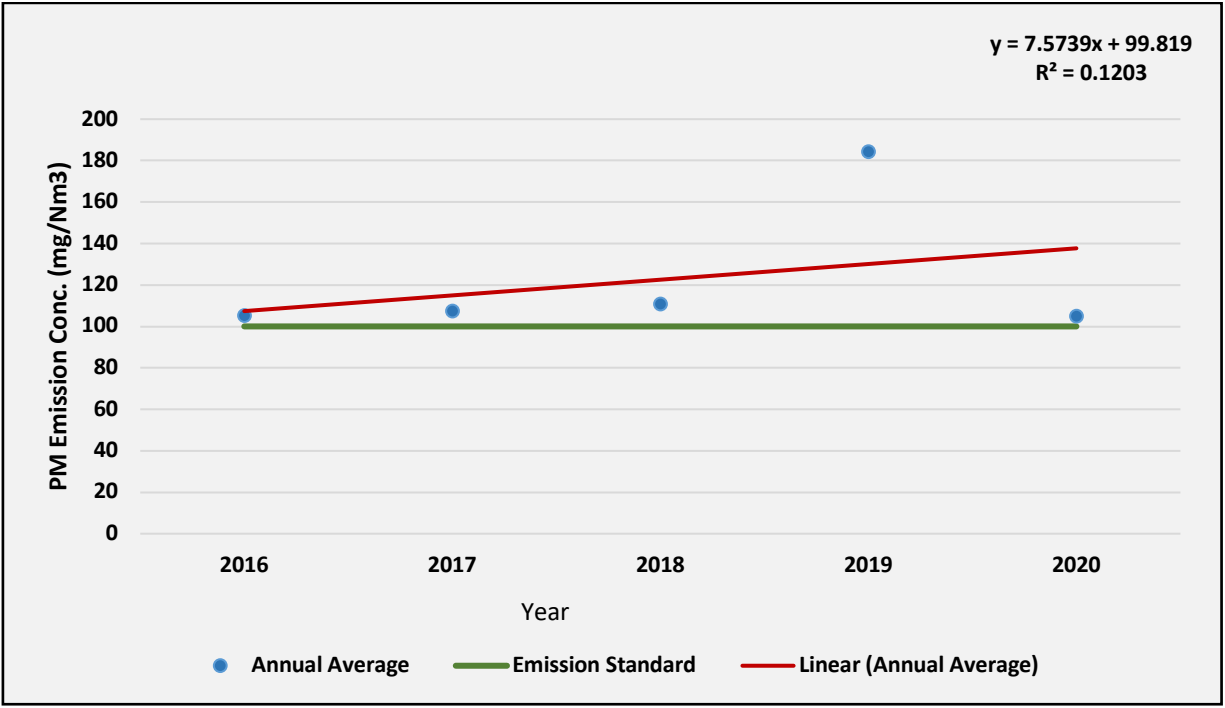


Fig. R12: Trend of annual mean PM ambient air concentration

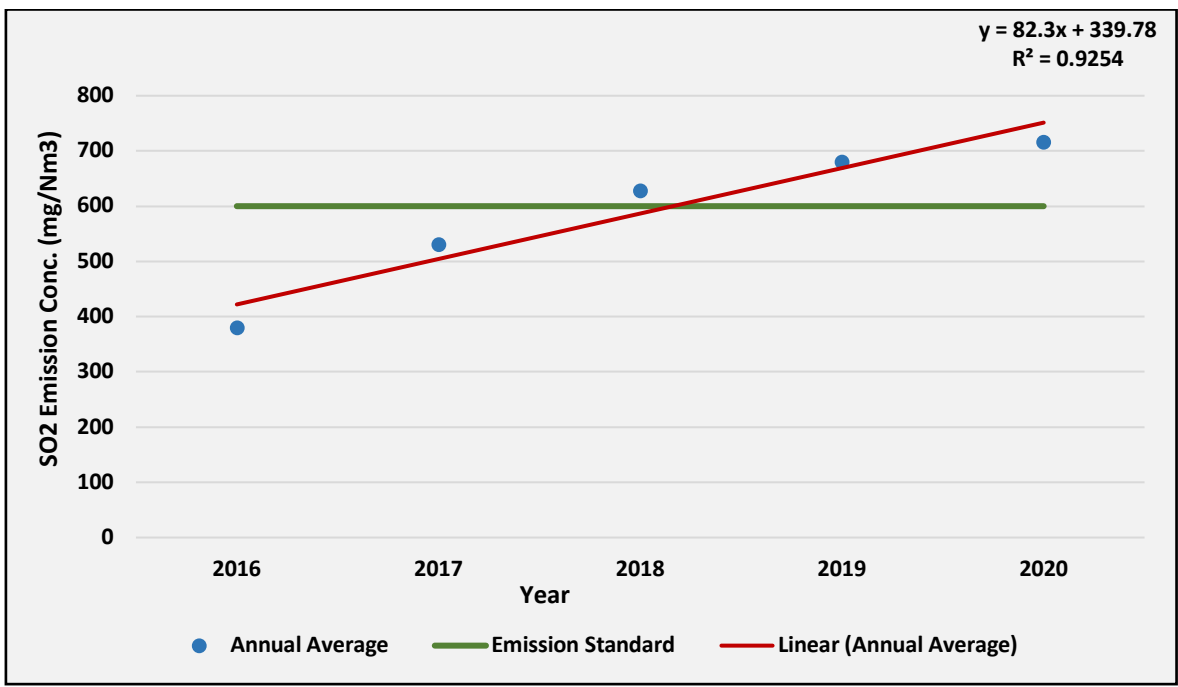


Fig. R13: Trend of annual mean SO₂ ambient air concentration

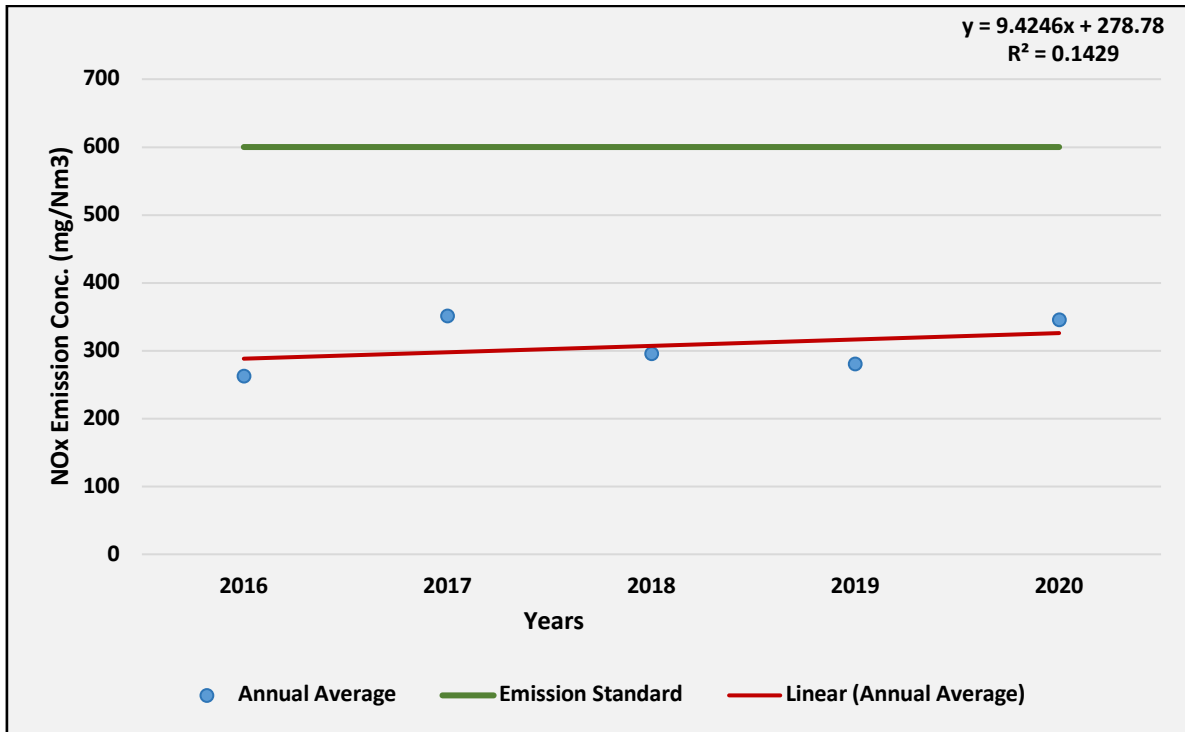


Fig. R14: Trend of annual mean NO_x ambient air concentration

UNIT-2

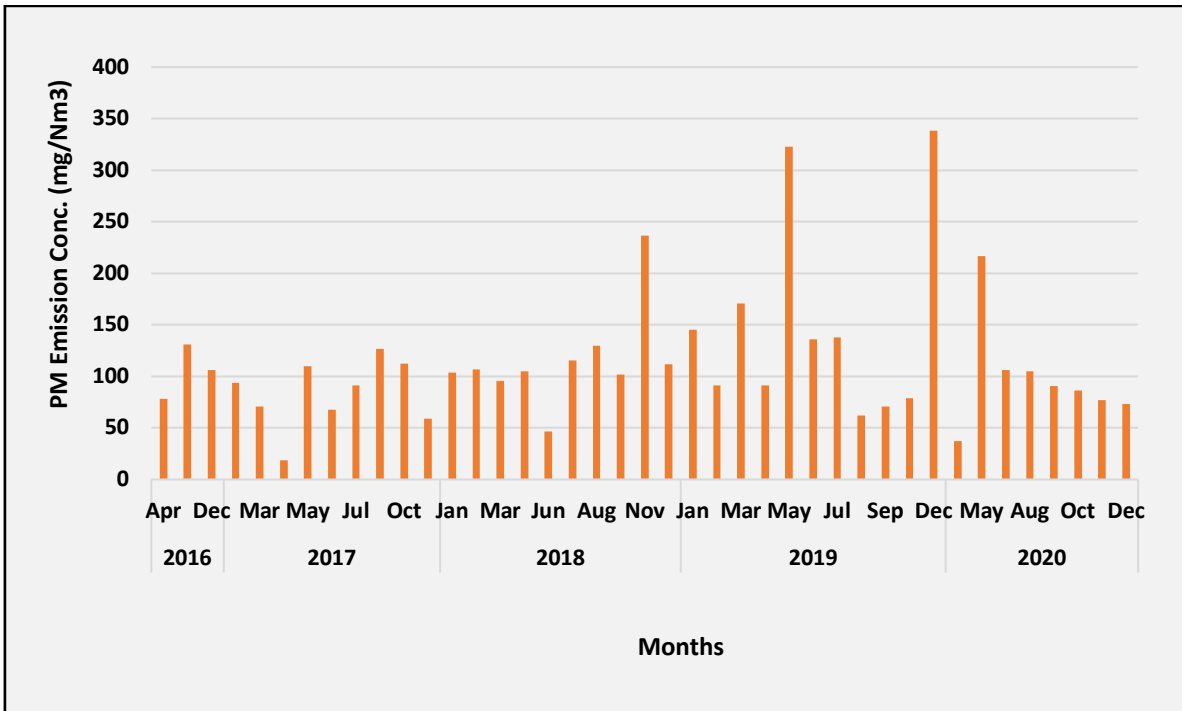


Fig. R15: Time series of monthly average PM ambient air concentration

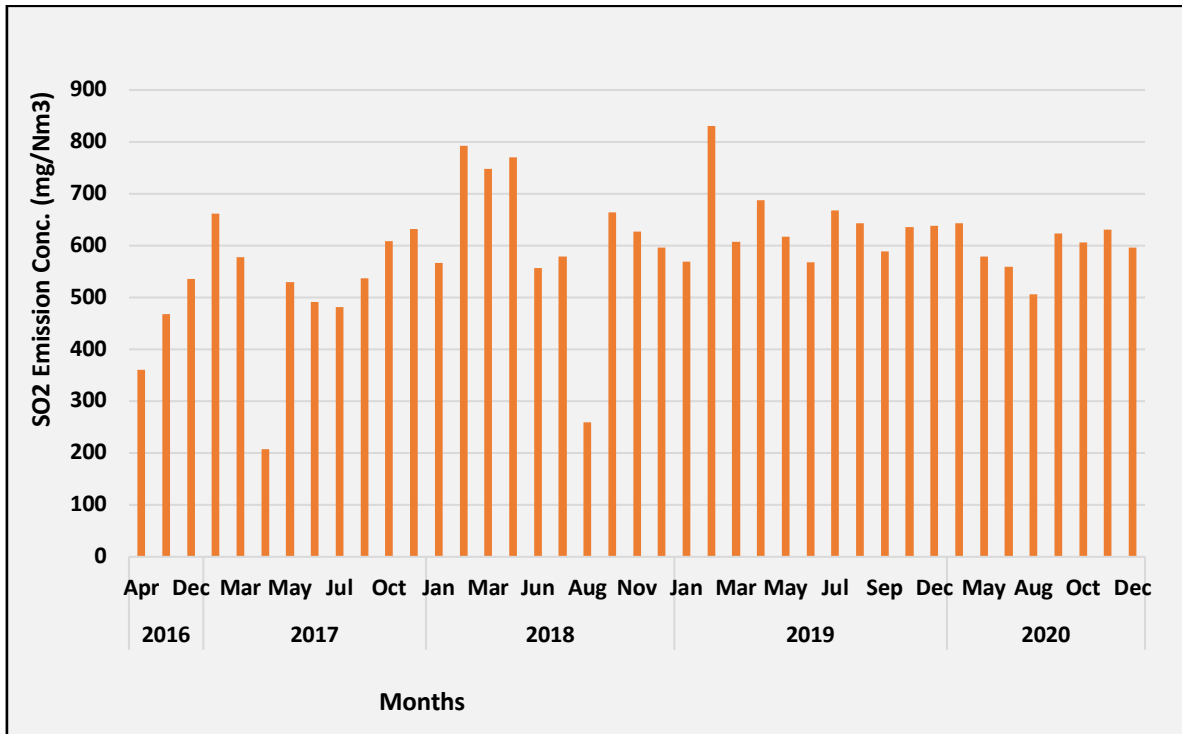


Fig. R16: Time series of monthly average SO₂ ambient air concentration

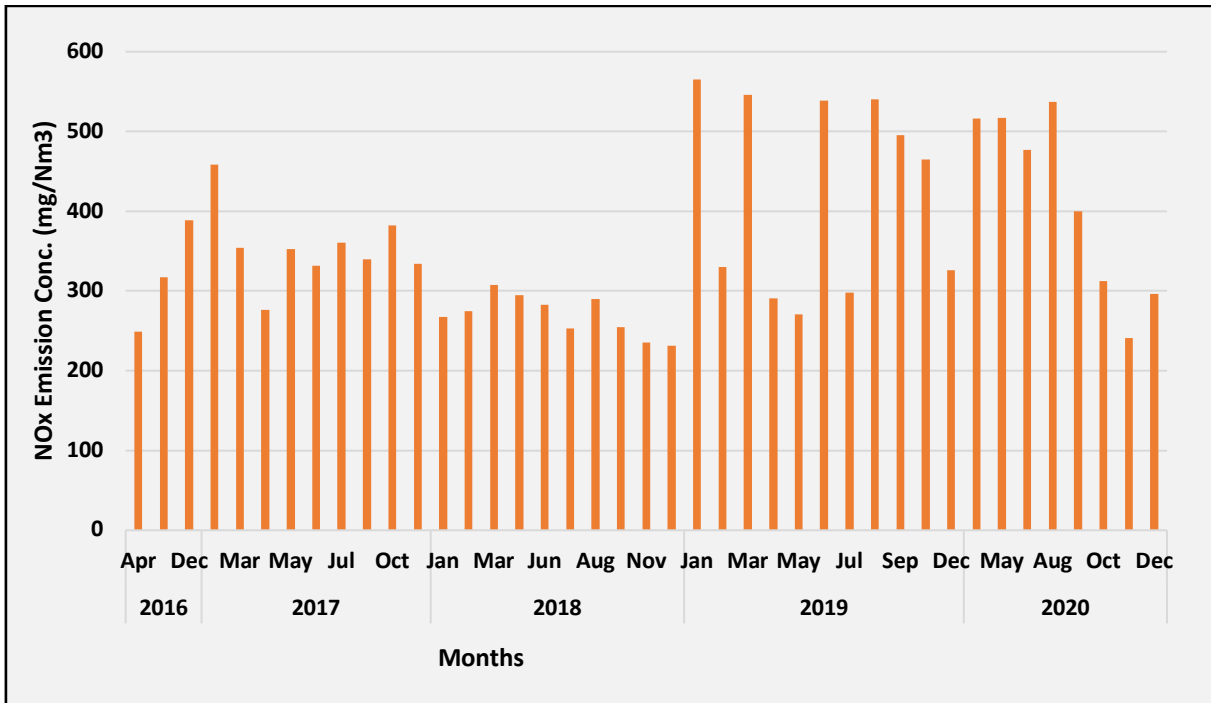


Fig.R17: Time series of monthly average NO_x ambient air concentration

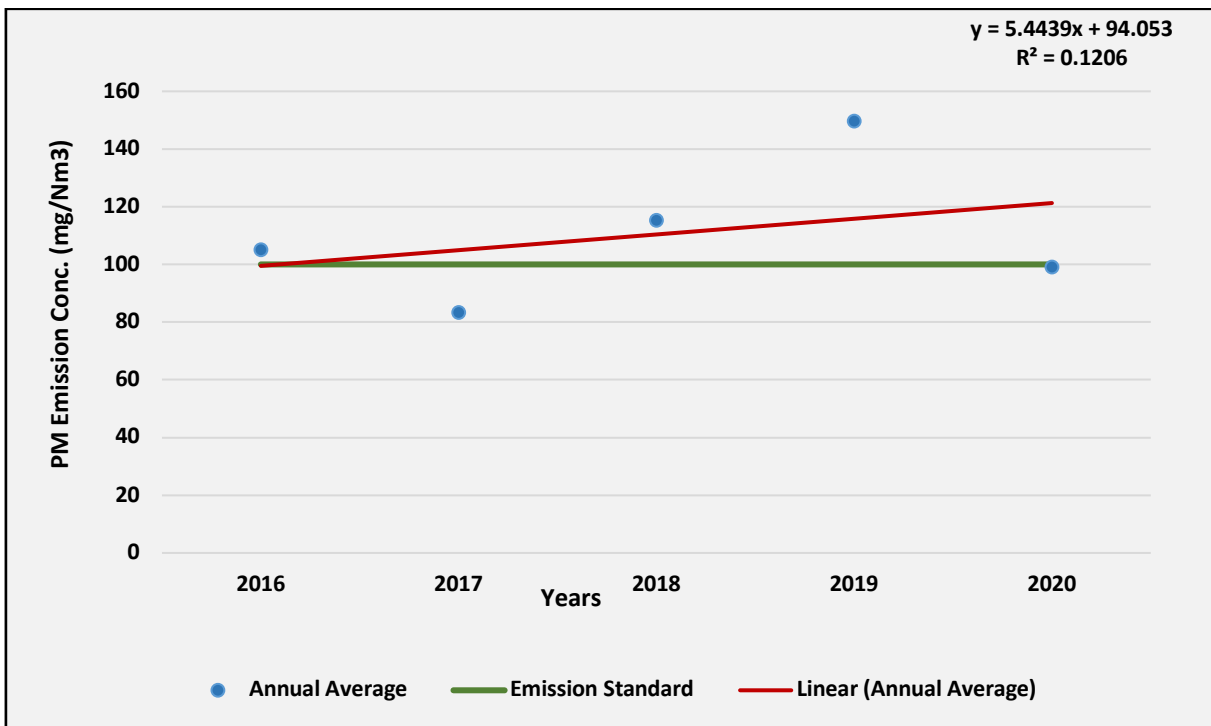


Fig. R18: Trend of annual mean PM ambient air concentration

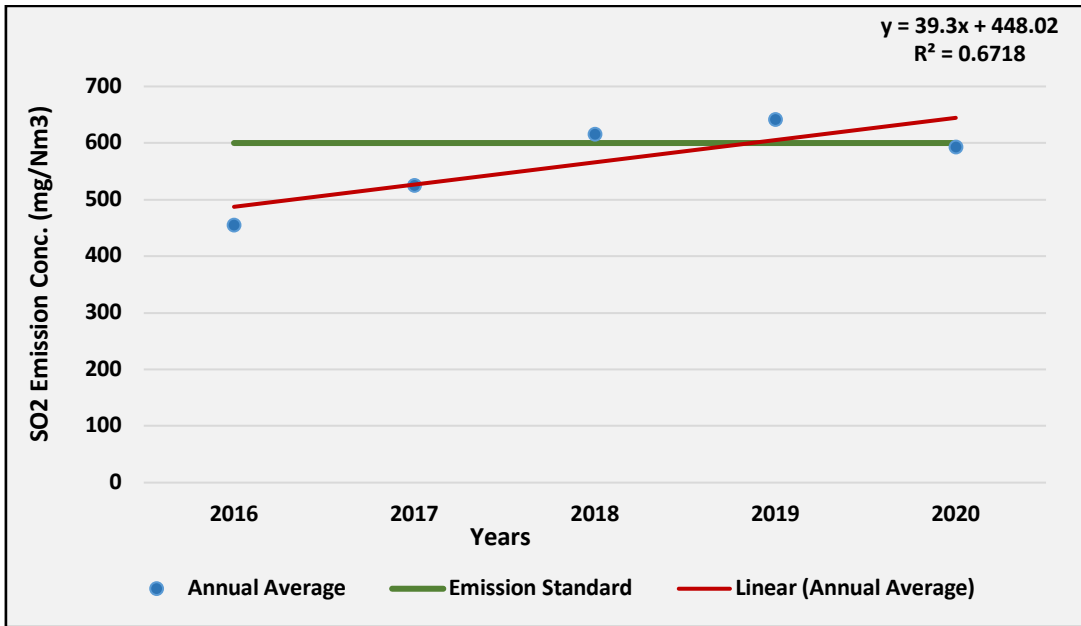


Fig. R19: Trend of annual mean SO₂ ambient air concentration

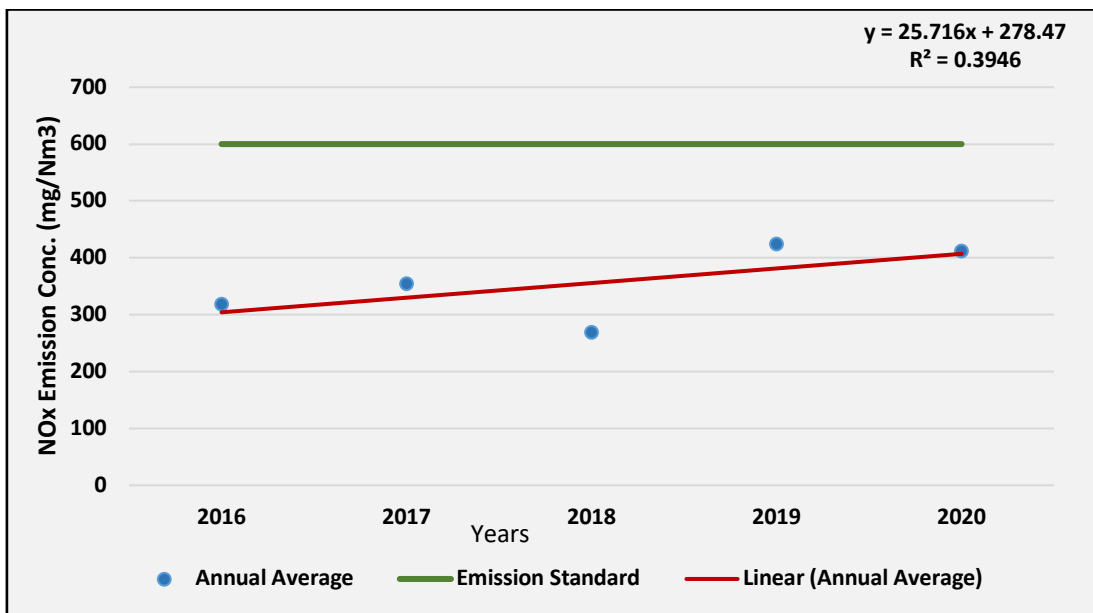


Fig. R20: Trend of annual mean NO_x ambient air concentration

UNIT-3

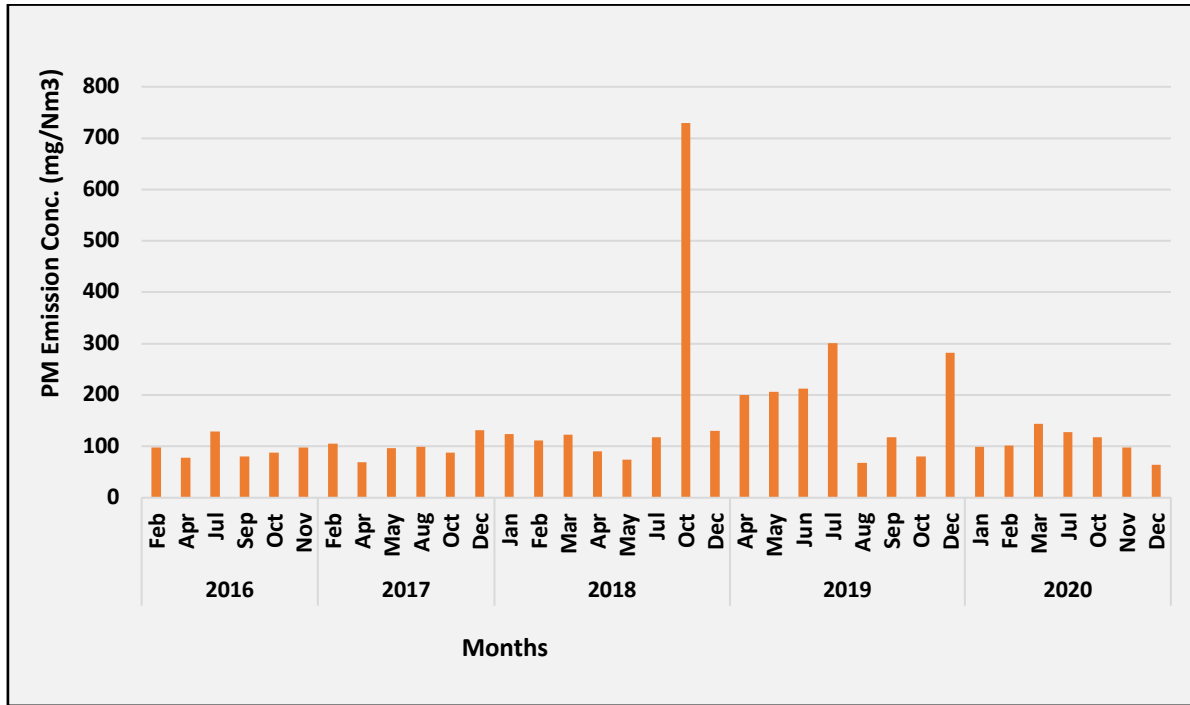


Fig. R21: Time series of monthly average PM ambient air concentration

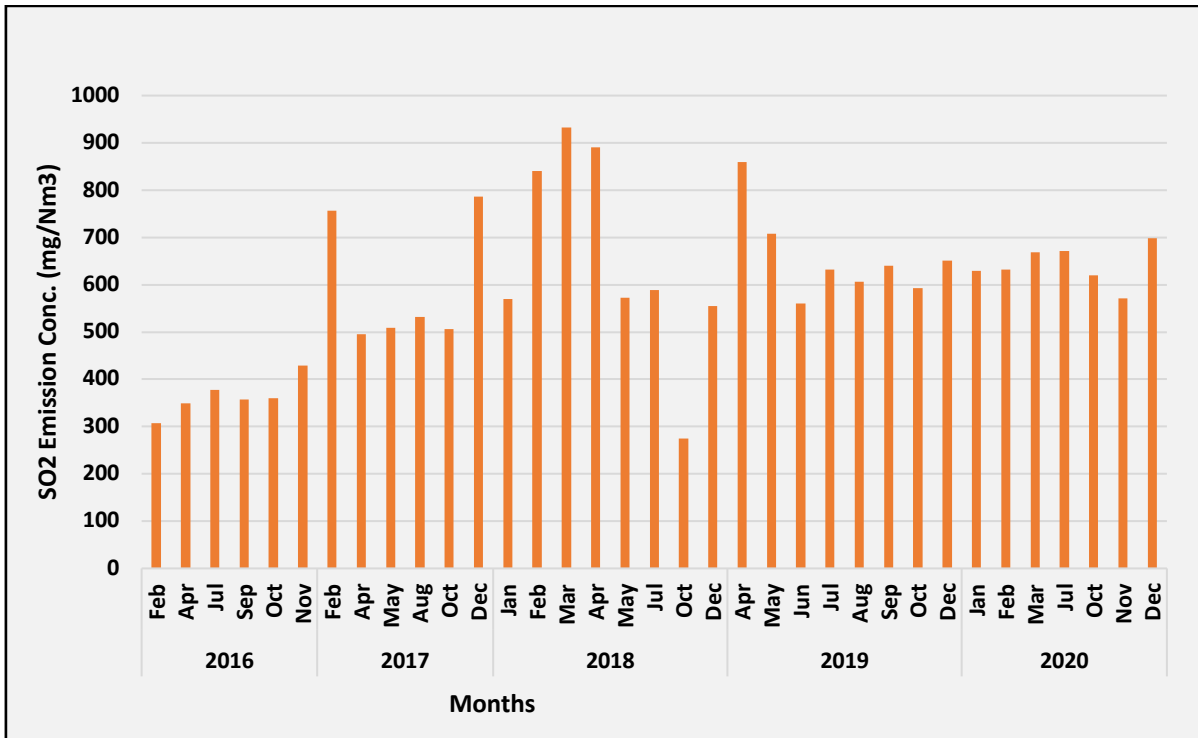


Fig. R22: Time series of monthly average SO₂ ambient air concentration

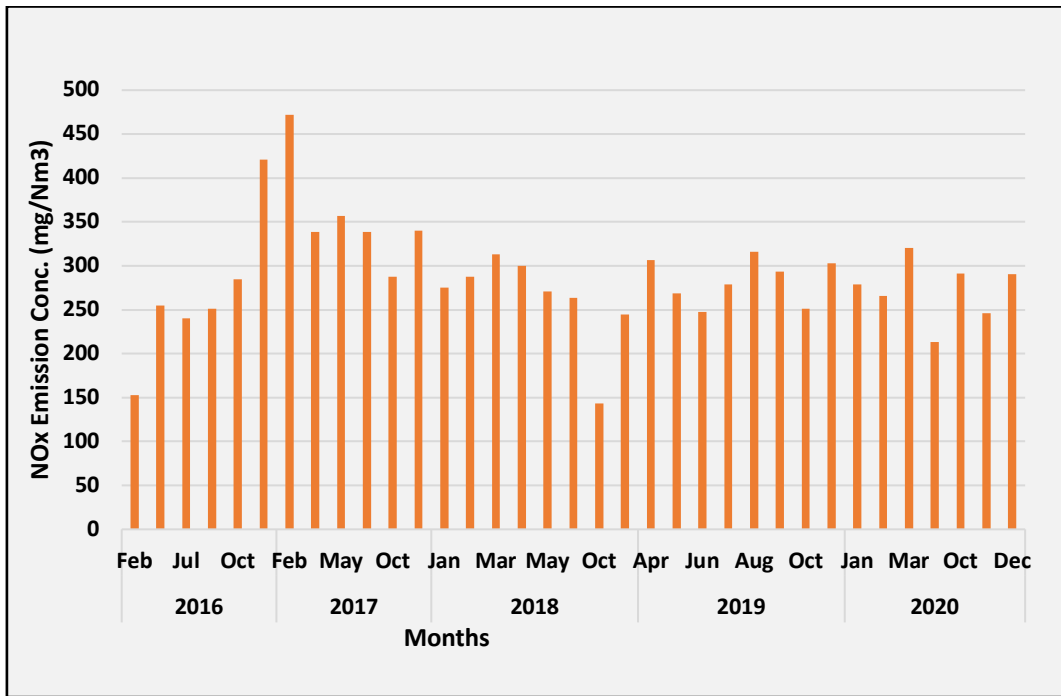


Fig.R23: Time series of monthly average NO_x ambient air concentration

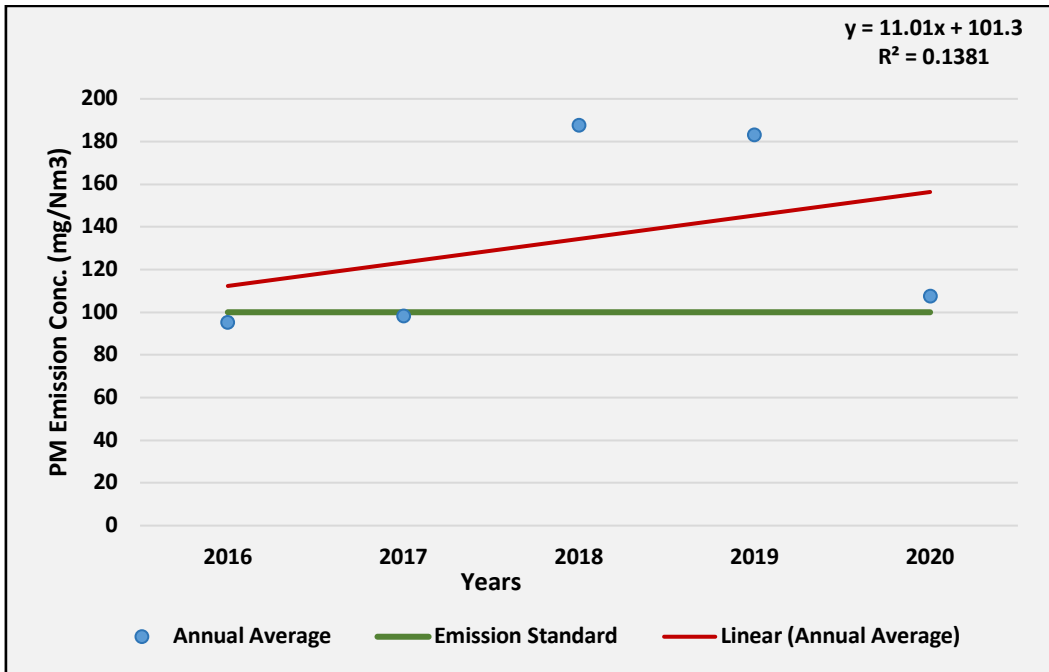


Fig. R24: Trend of annual mean PM ambient air concentration

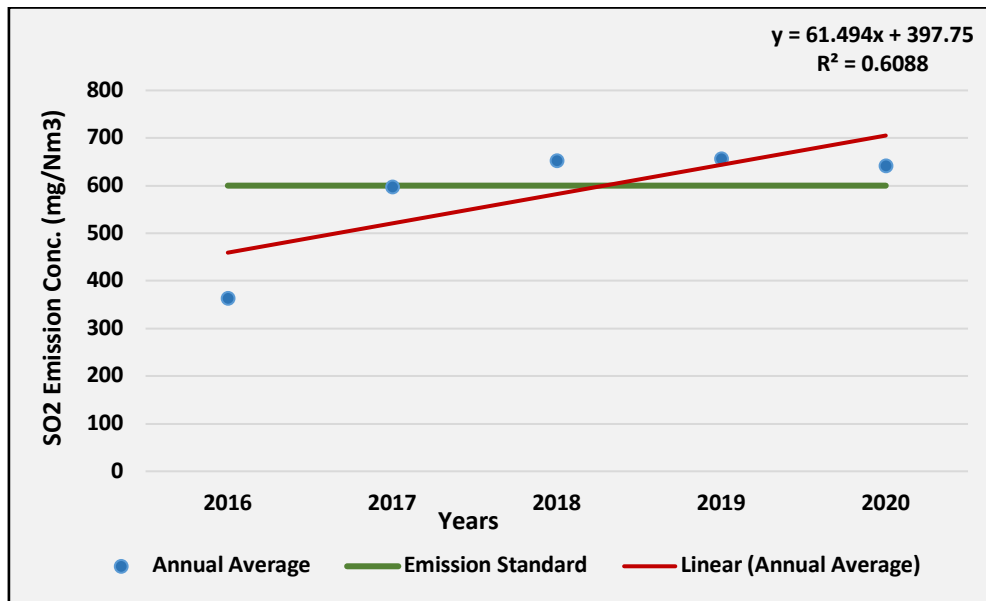


Fig. R25: Trend of annual mean SO₂ ambient air concentration

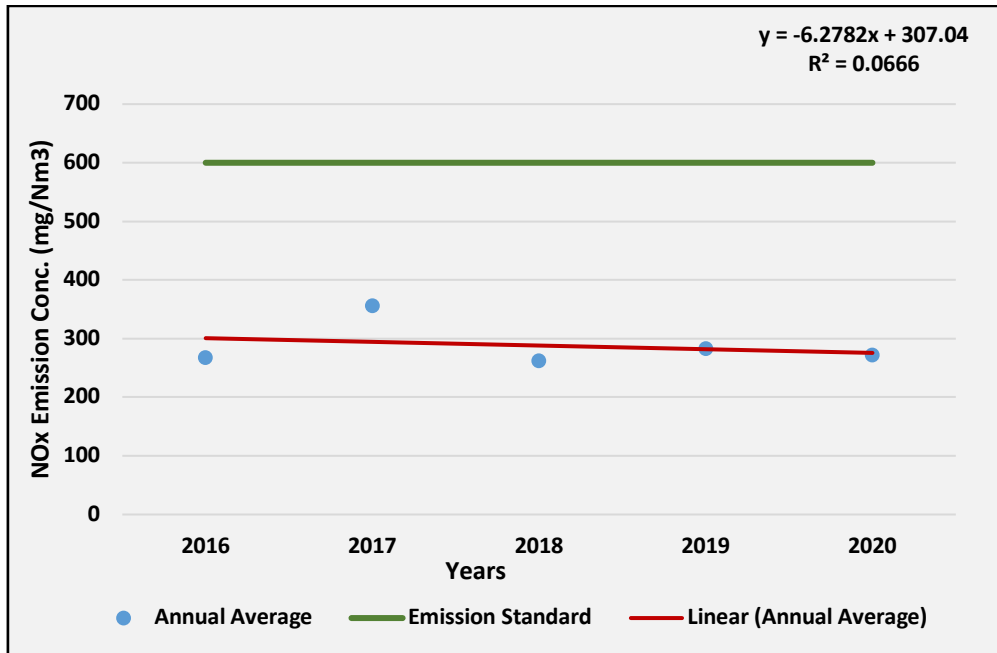


Fig. R26: Trend of annual mean NO_x ambient air concentration

UNIT-4

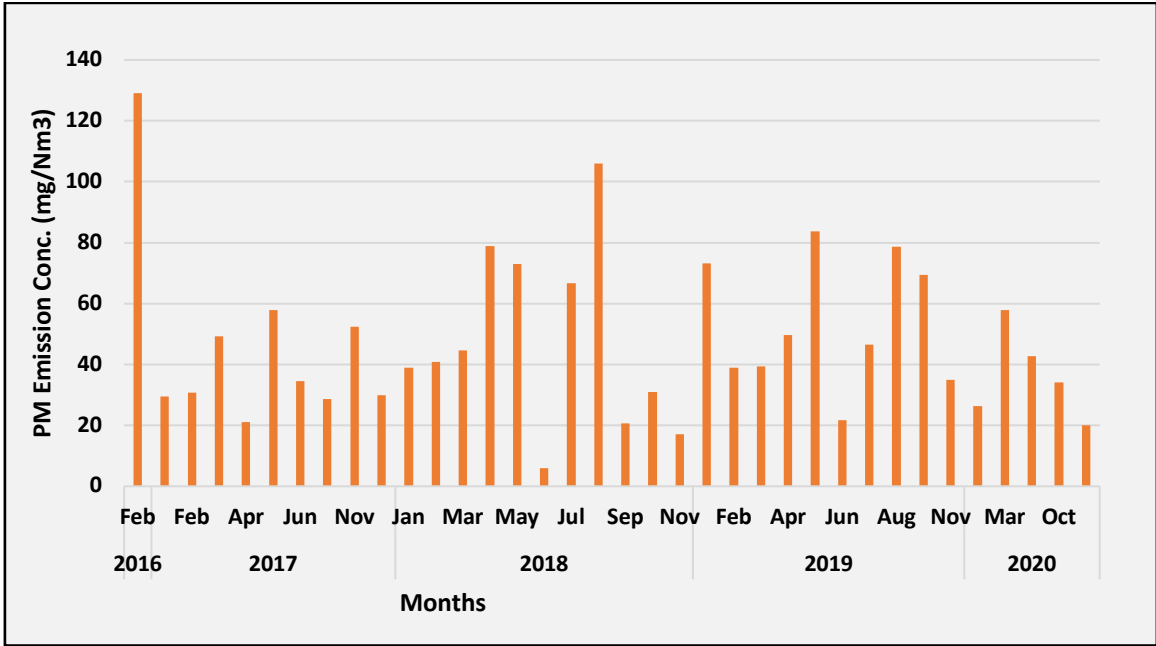


Fig. R27: Time series of monthly average PM ambient air concentration

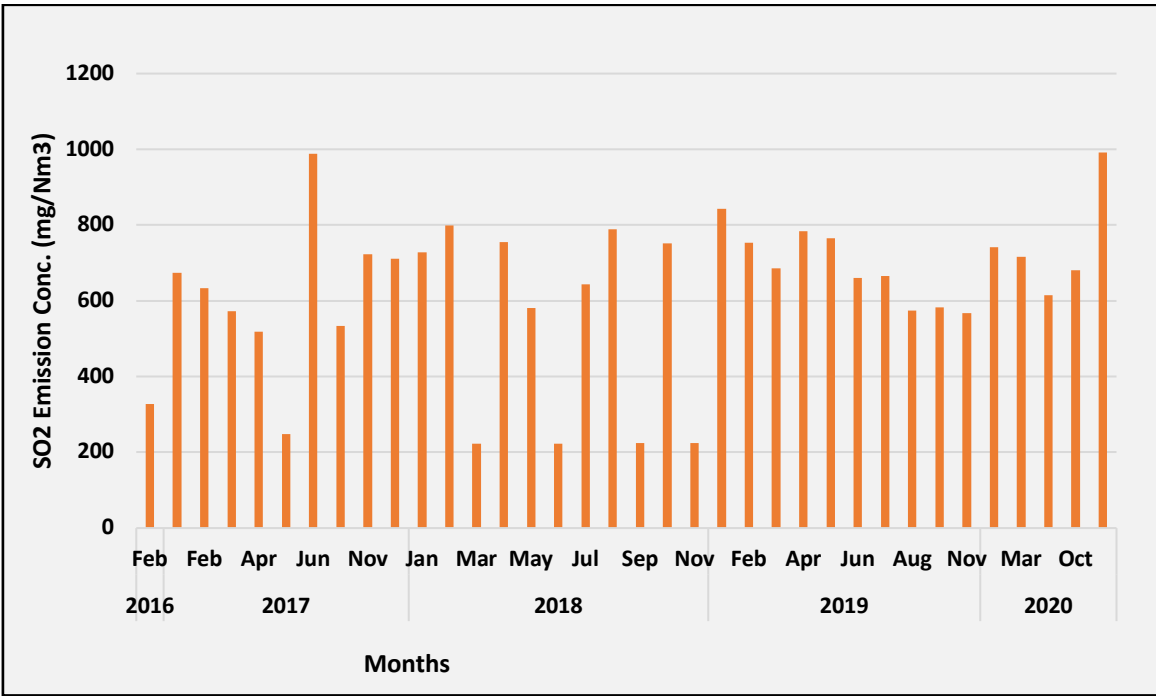


Fig. R28: Time series of monthly average SO₂ ambient air concentration

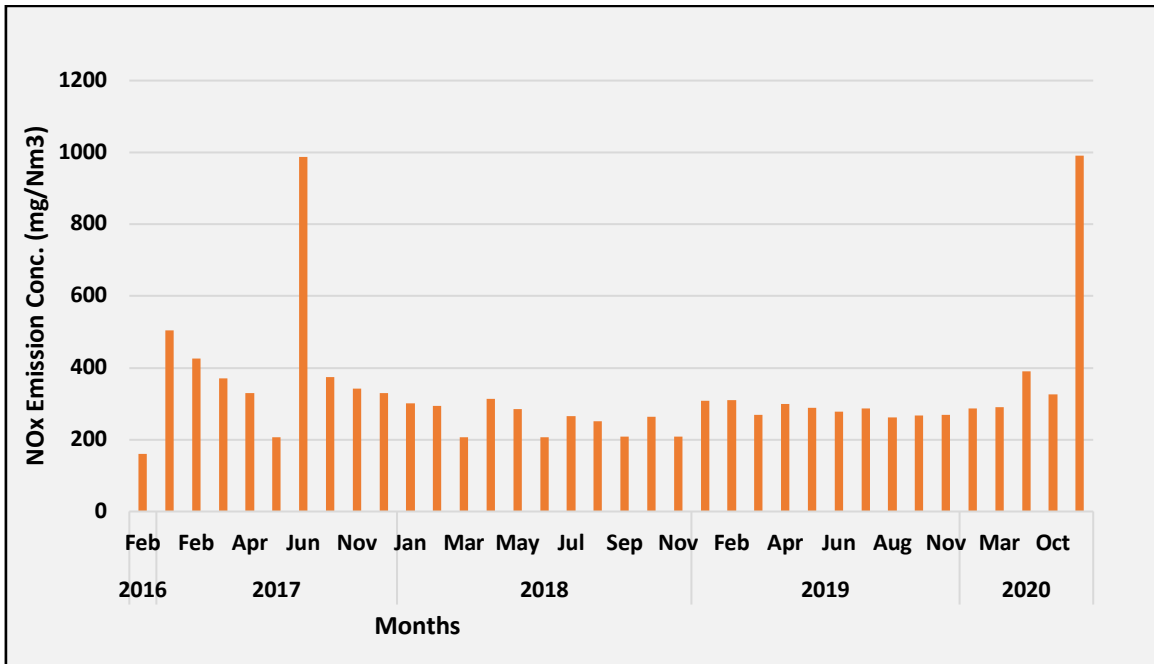


Fig.R29: Time series of monthly average NO_x ambient air concentration

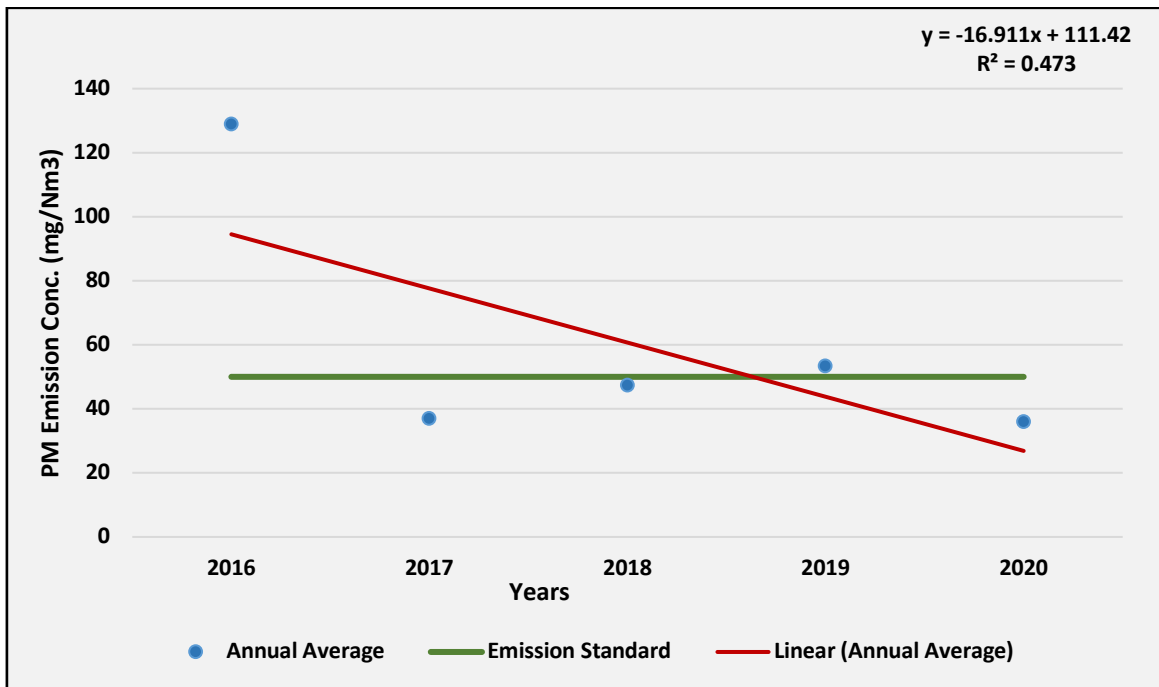


Fig. R30: Trend of annual mean PM ambient air concentration

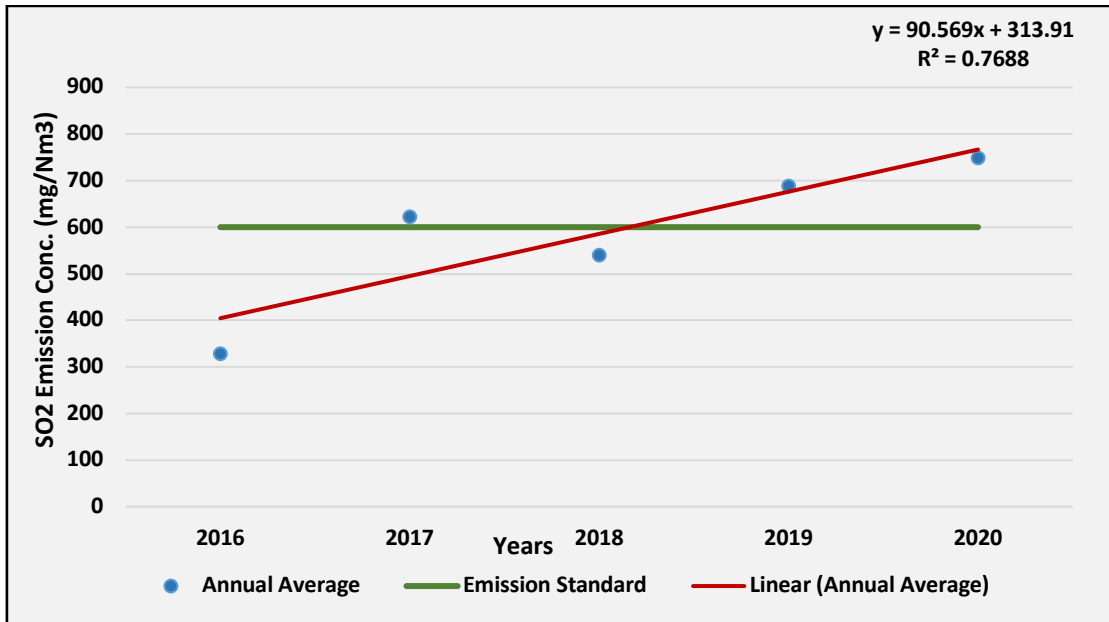


Fig. R31: Trend of annual mean SO₂ ambient air concentration

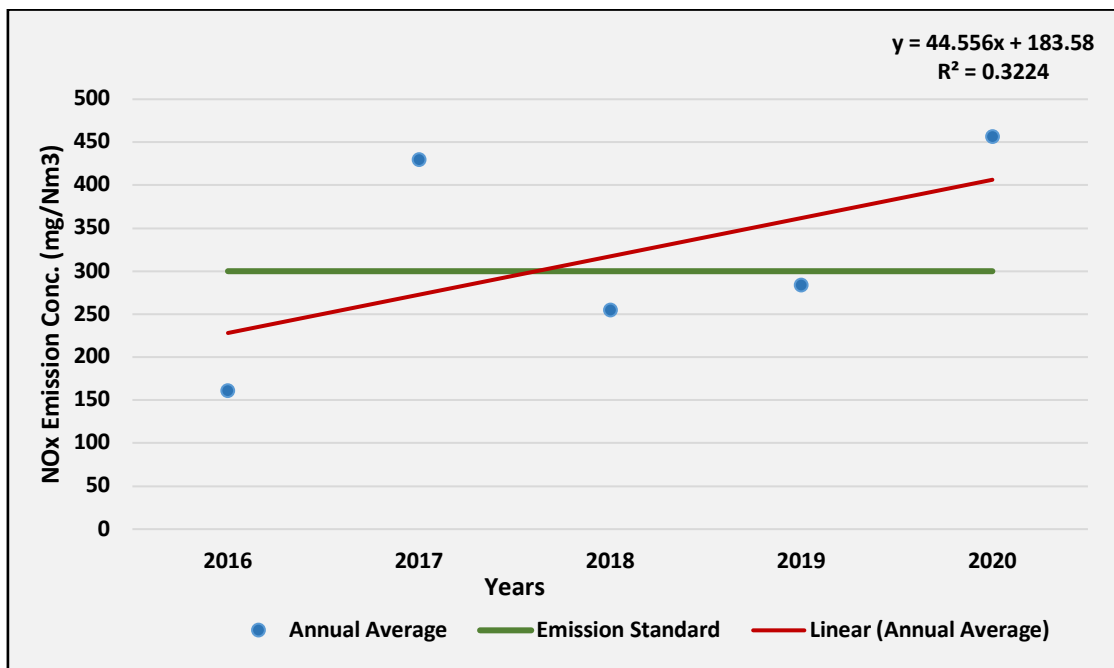


Fig. R32: Trend of annual mean NO_x ambient air concentration

UNIT-5

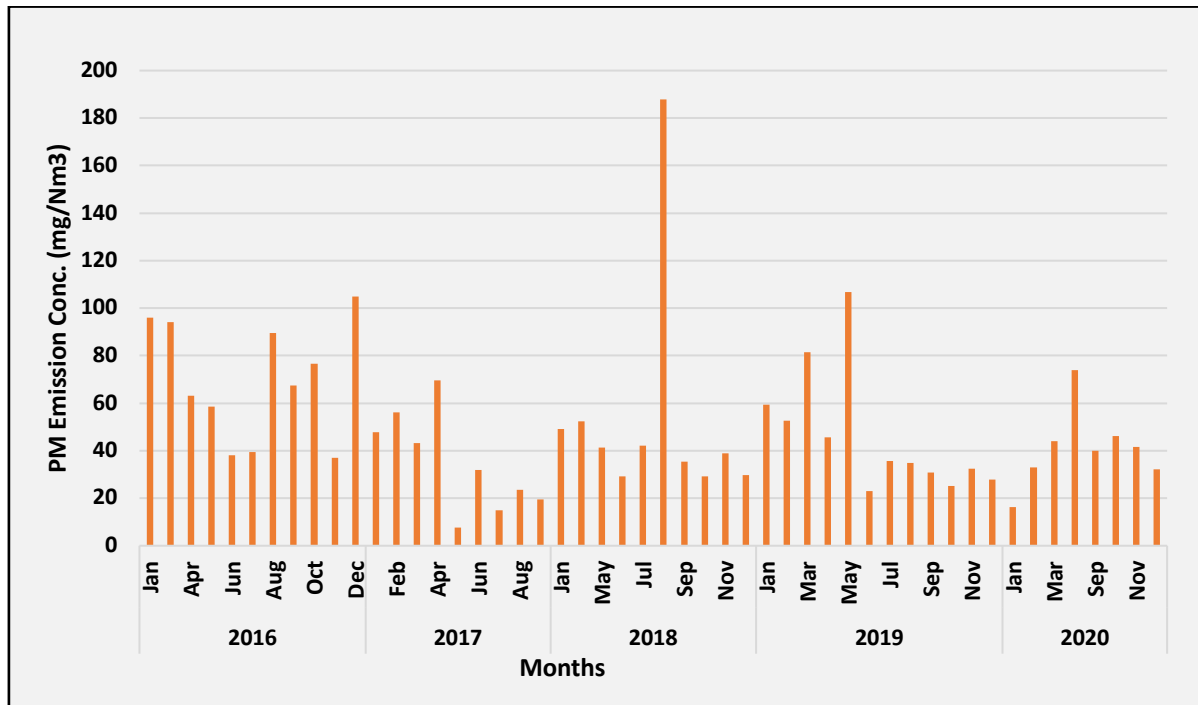


Fig. R33: Time series of monthly average PM ambient air concentration

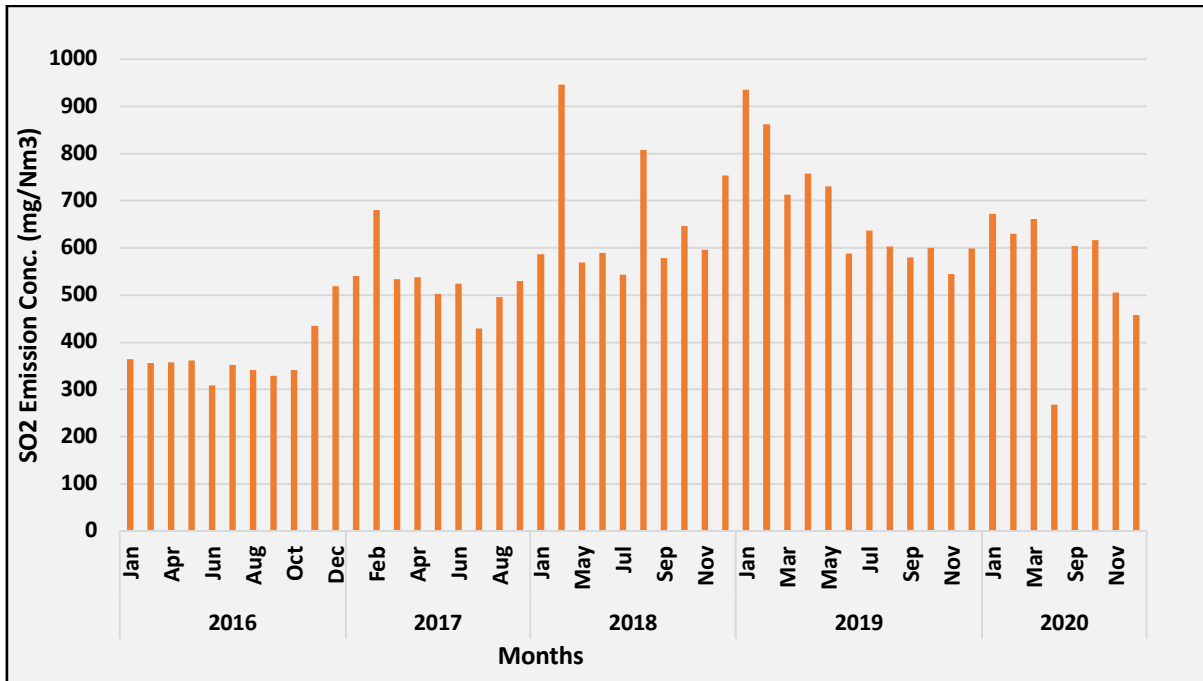


Fig. R34: Time series of monthly average SO₂ ambient air concentration

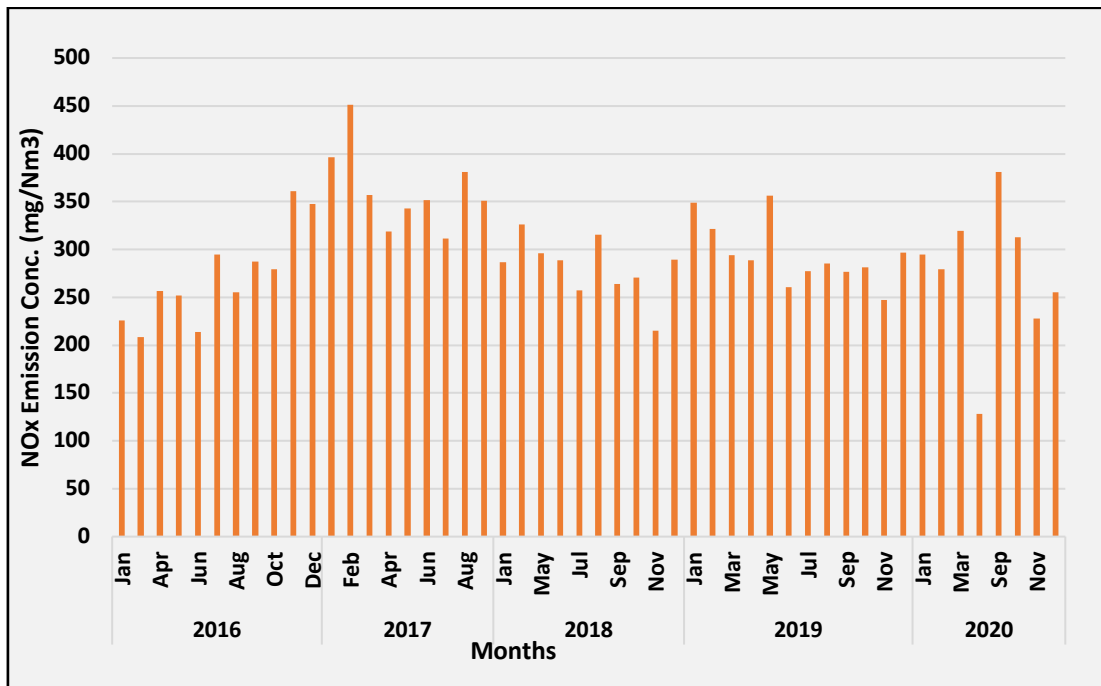


Fig.R35: Time series of monthly average NO_x ambient air concentration

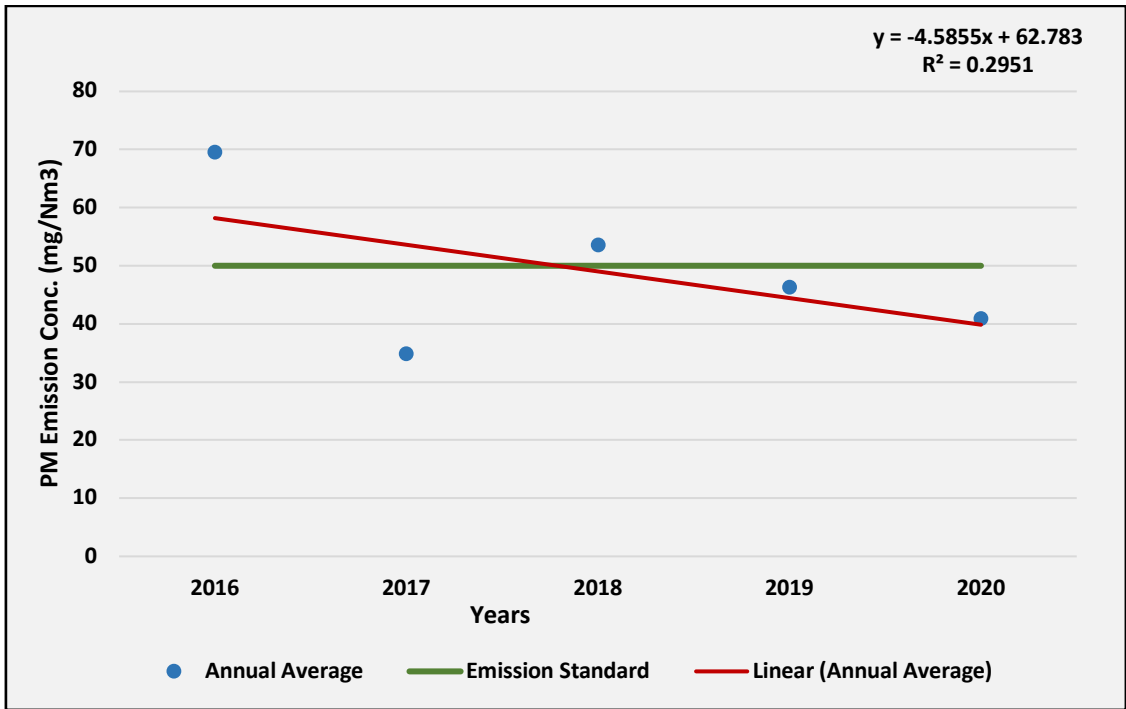


Fig. R36: Trend of annual mean PM ambient air concentration

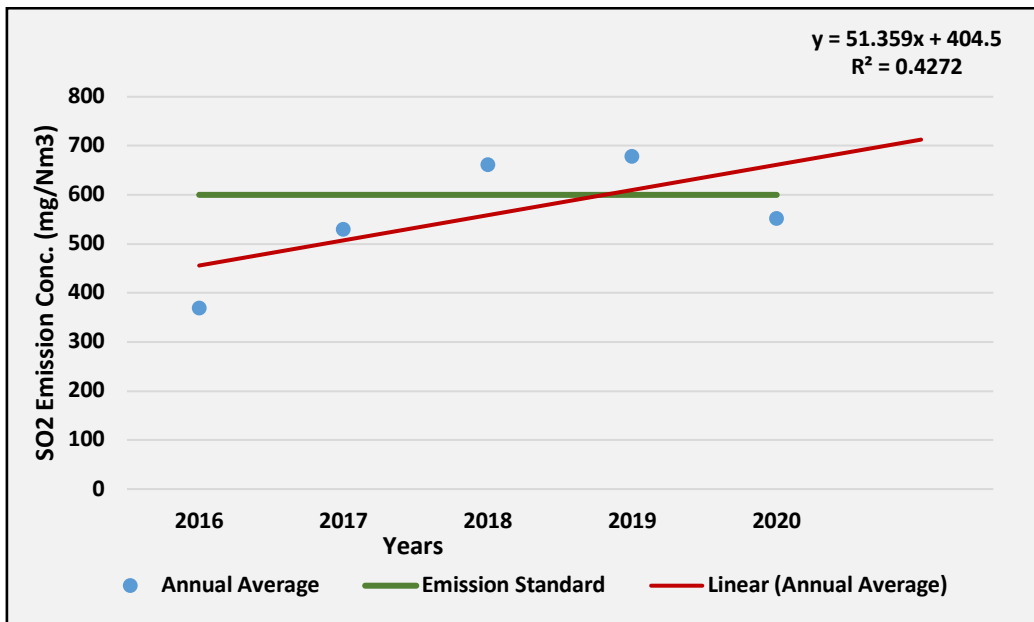


Fig. R37: Trend of annual mean SO₂ ambient air concentration

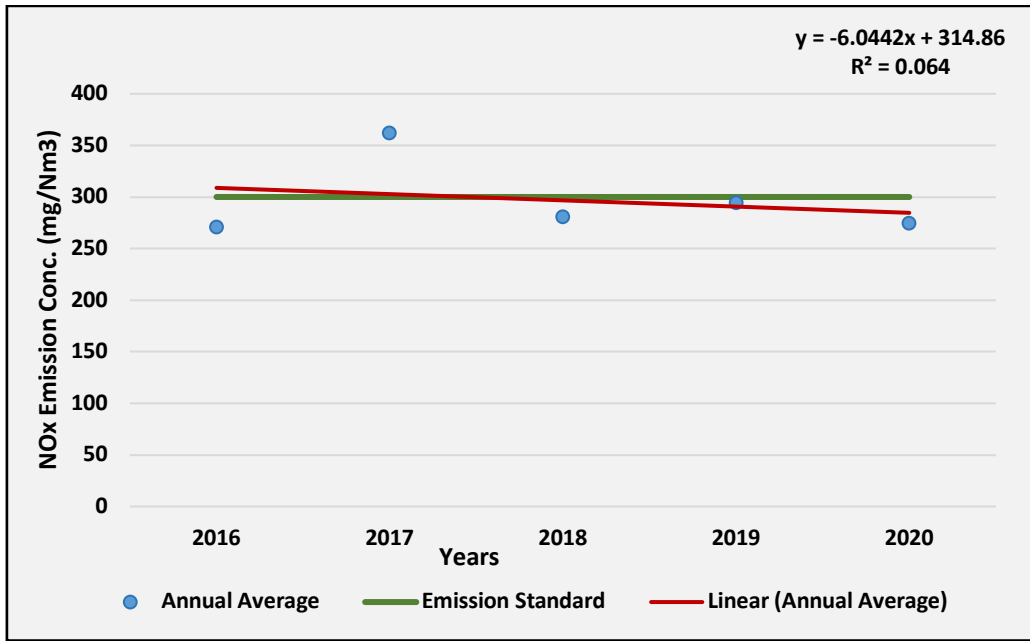


Fig. R38: Trend of annual mean NO_x ambient air concentration

UNIT-6

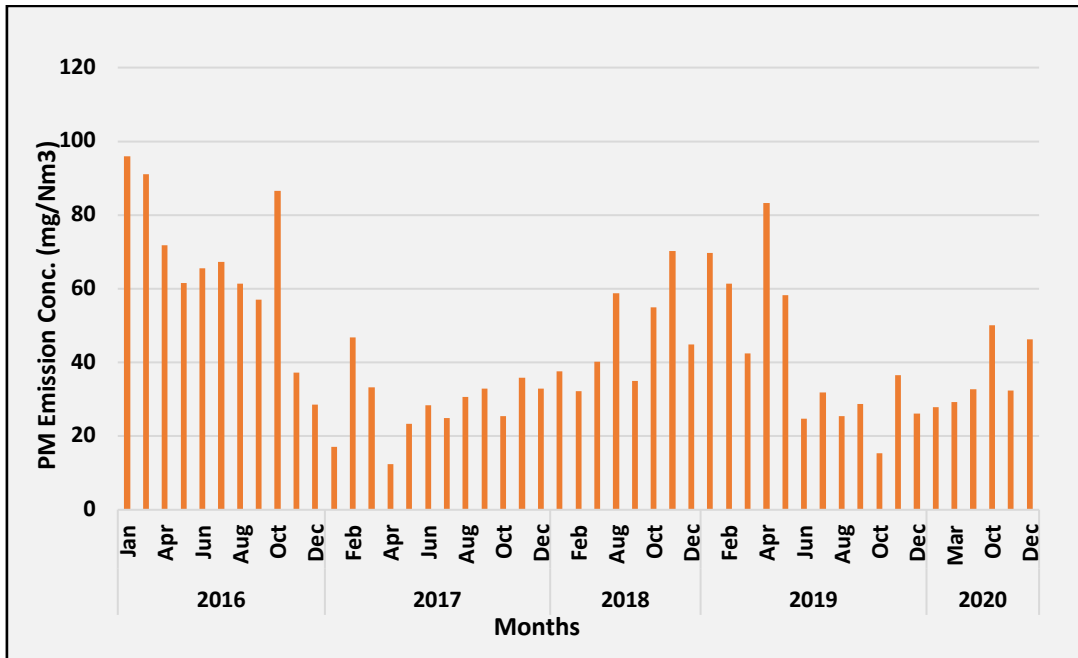


Fig. R39: Time series of monthly average PM ambient air concentration

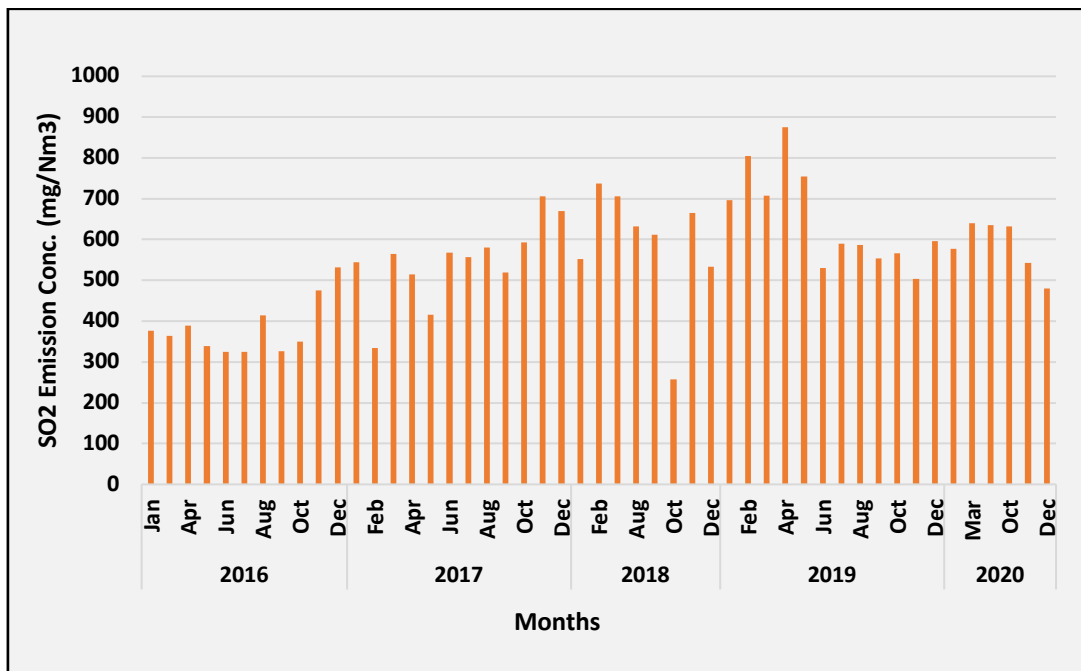


Fig. R40: Time series of monthly average SO₂ ambient air concentration

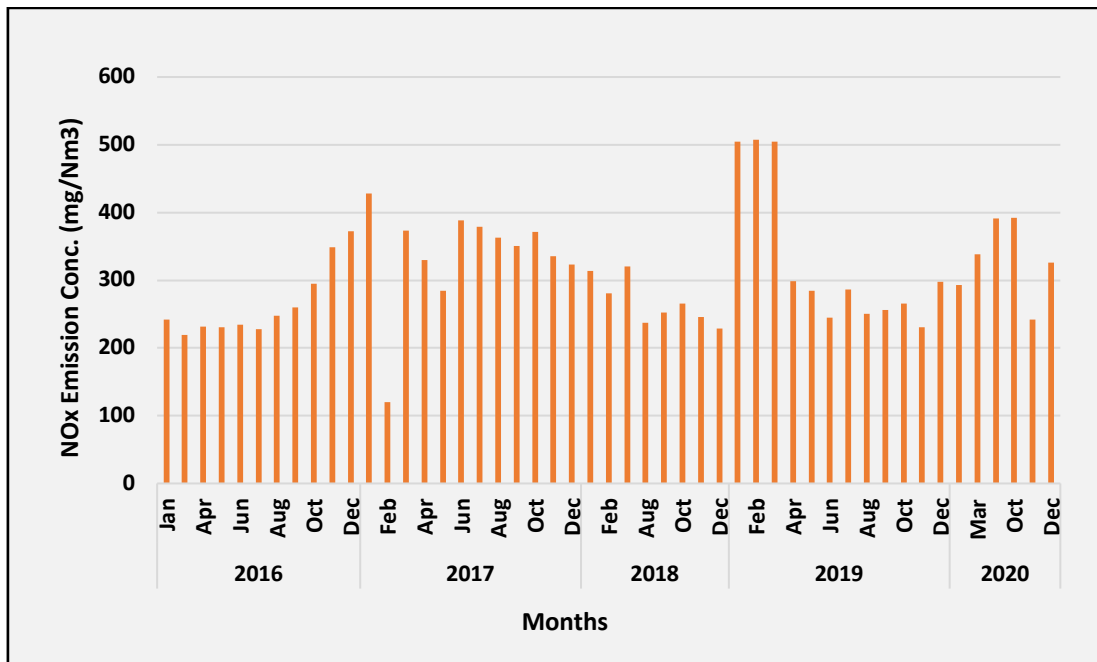


Fig.R41: Time series of monthly average NO_x ambient air concentration

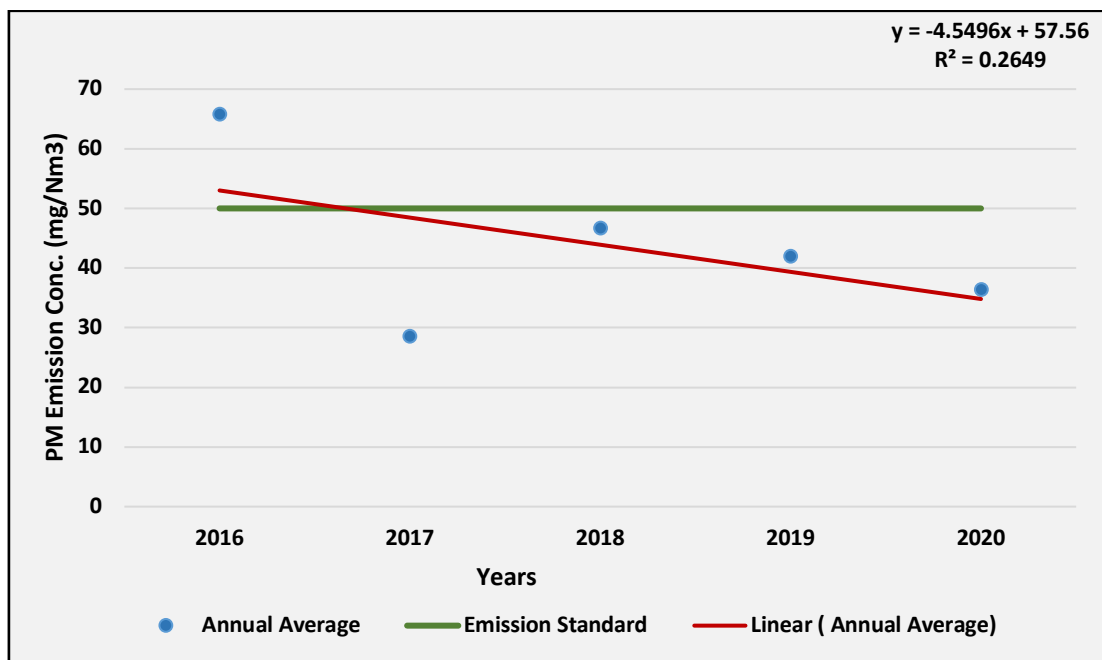


Fig. R42: Trend of annual mean PM ambient air concentration

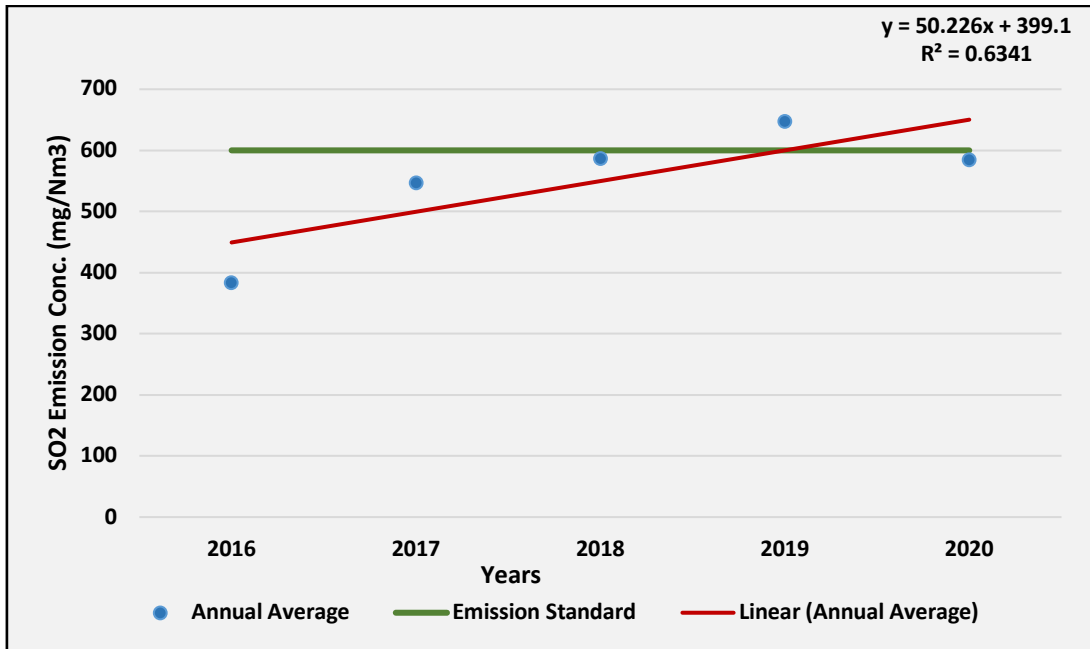


Fig. R43: Trend of annual mean SO₂ ambient air concentration

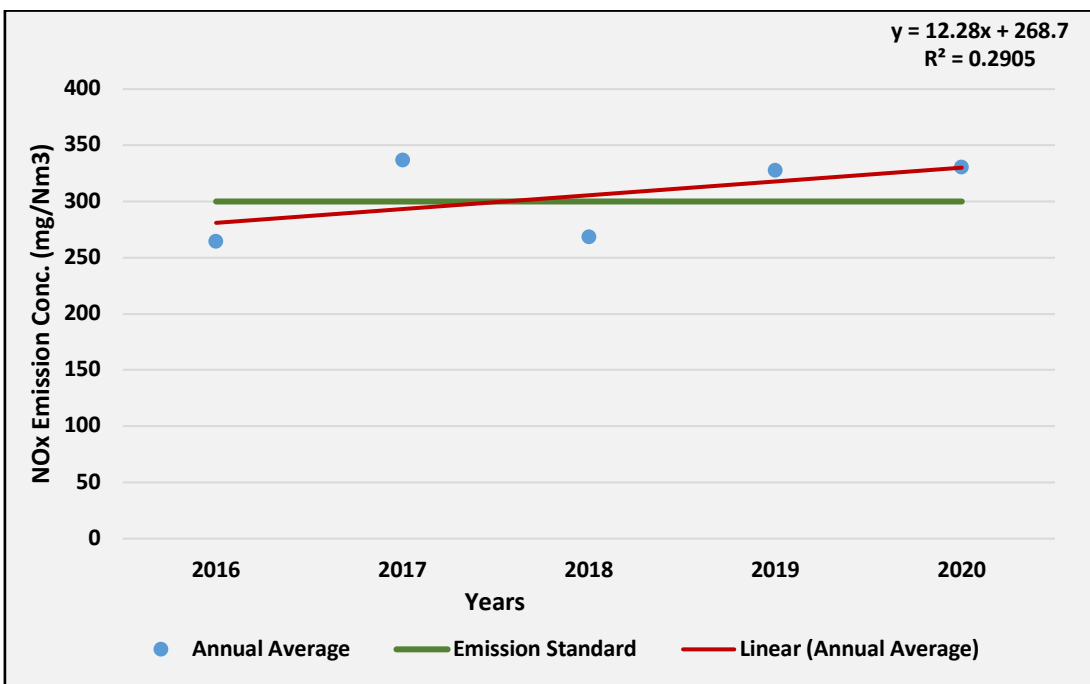


Fig. R44: Trend of annual mean NO_x ambient air concentration

UNIT-7

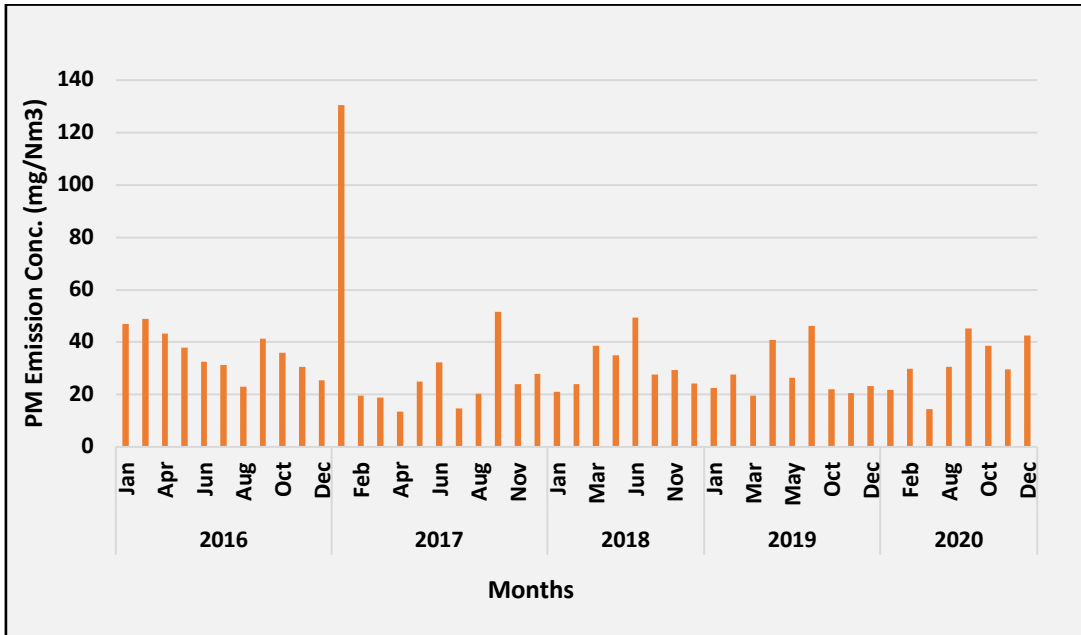


Fig. R45: Time series of monthly average PM ambient air concentration

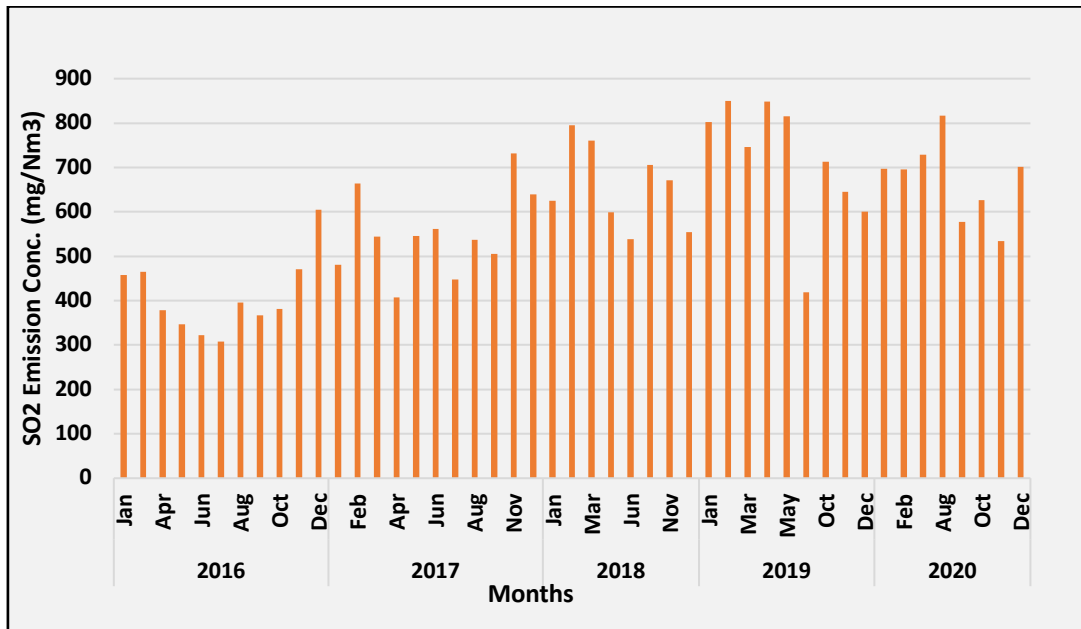


Fig. R46: Time series of monthly average SO₂ ambient air concentration

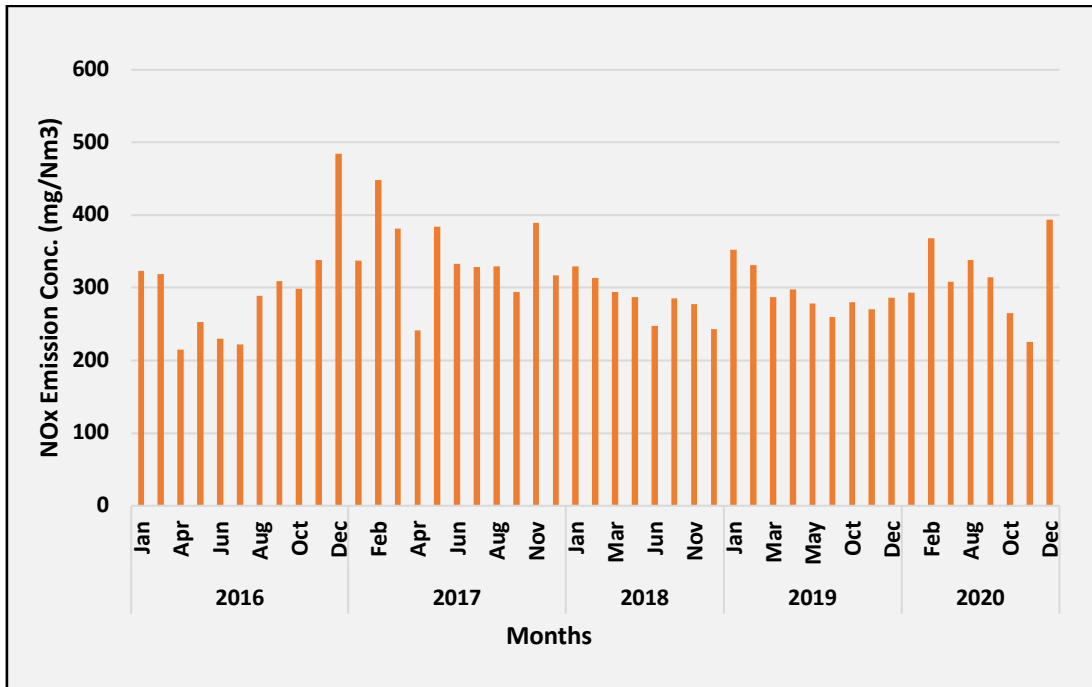


Fig.R47: Time series of monthly average NO_x ambient air concentration

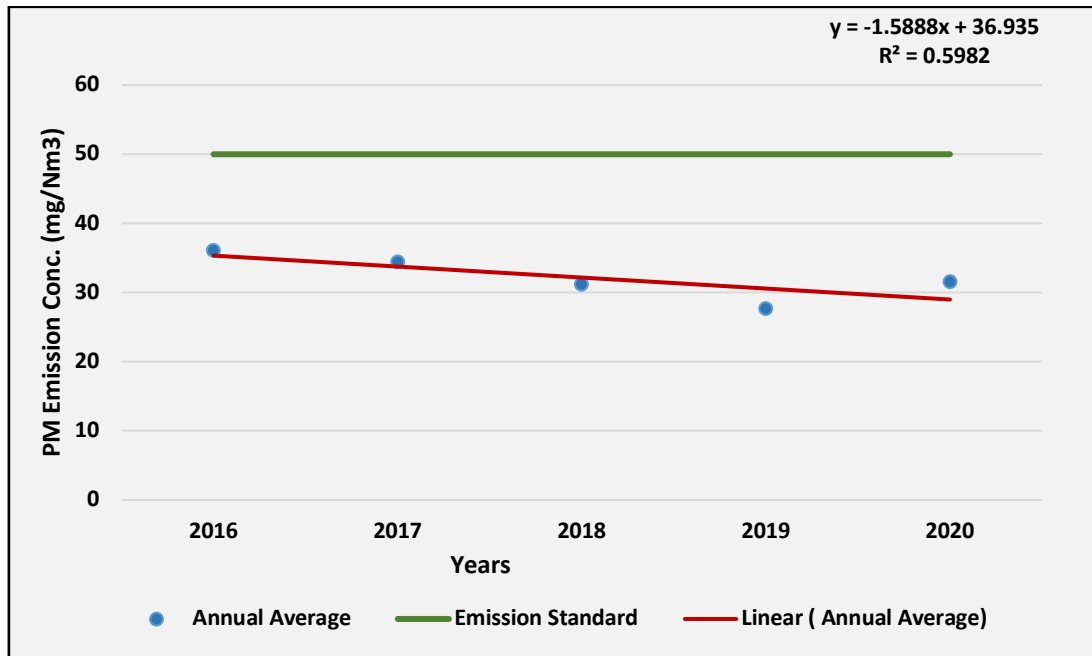


Fig. R48: Trend of annual mean PM ambient air concentration

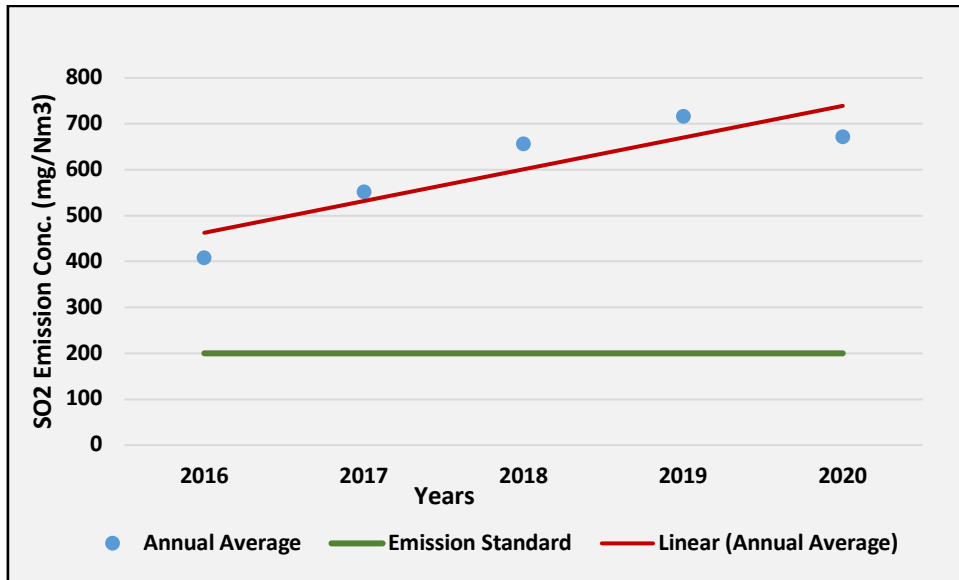


Fig. R49: Trend of annual mean SO₂ ambient air concentration

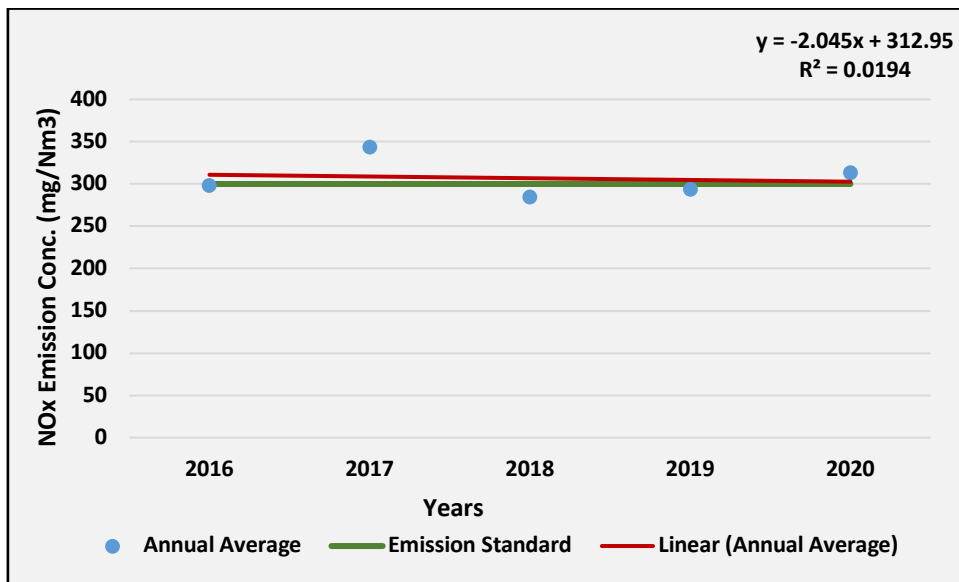


Fig. R50: Trend of annual mean NO_x ambient air concentration

UNIT-8

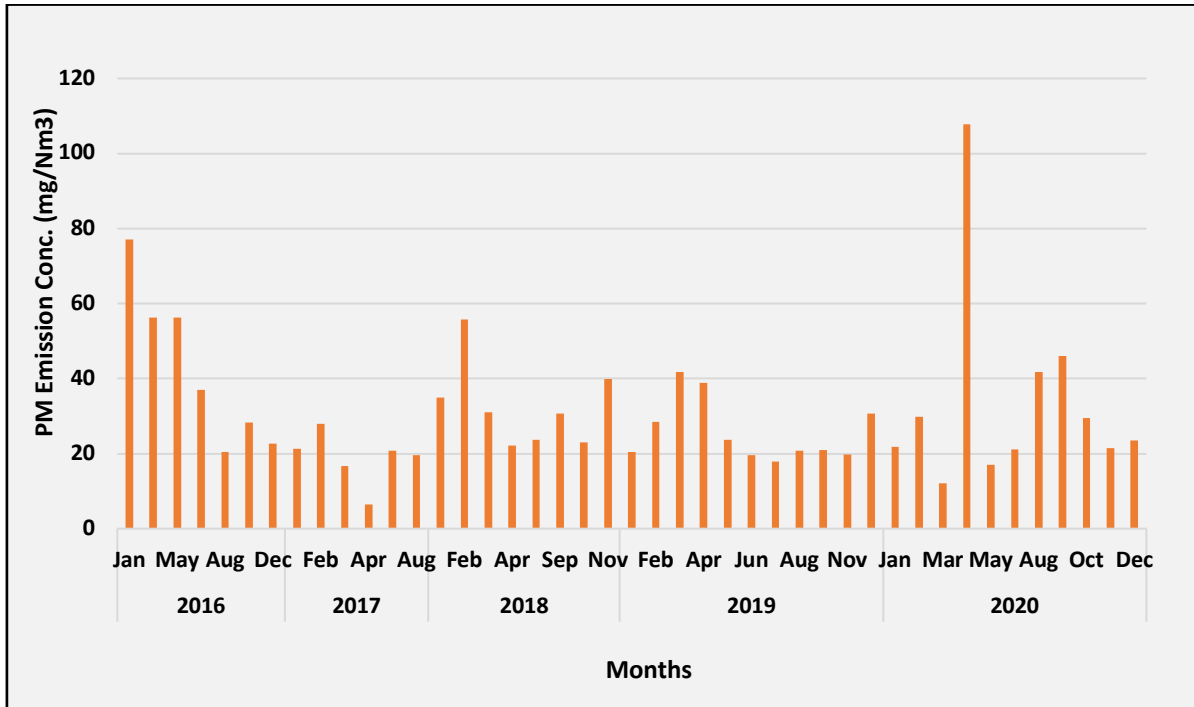


Fig. R51: Time series of monthly average PM ambient air concentration

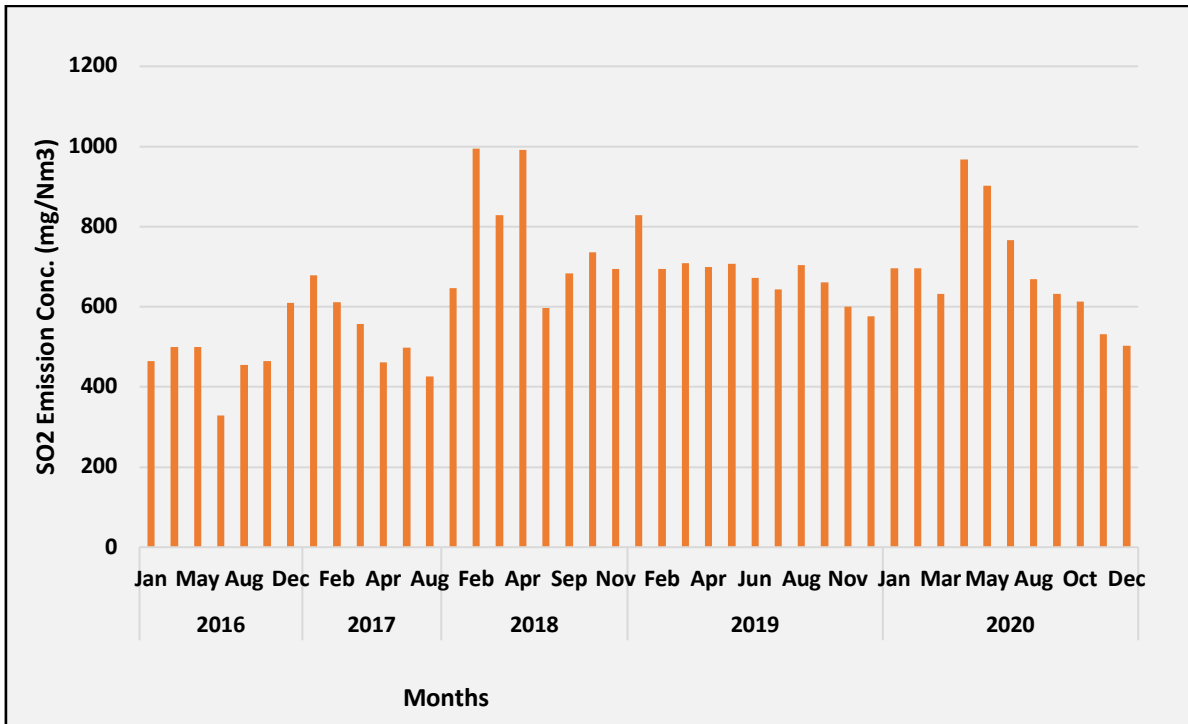


Fig. R52: Time series of monthly average SO₂ ambient air concentration

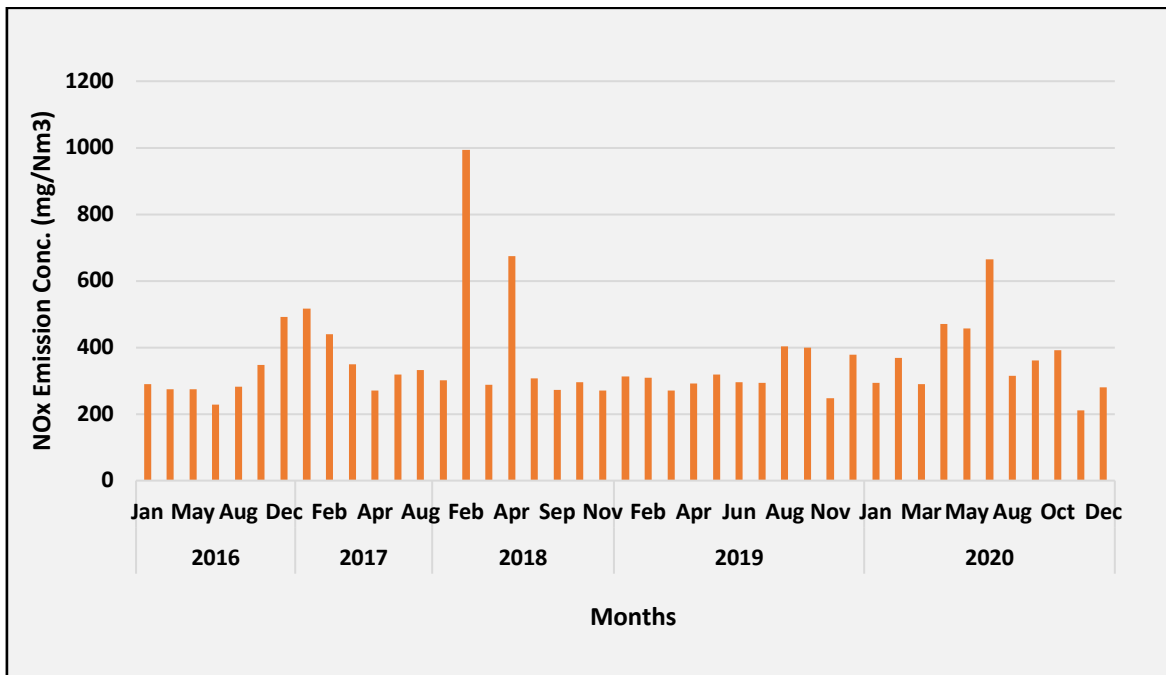


Fig.R53: Time series of monthly average NO_x ambient air concentration

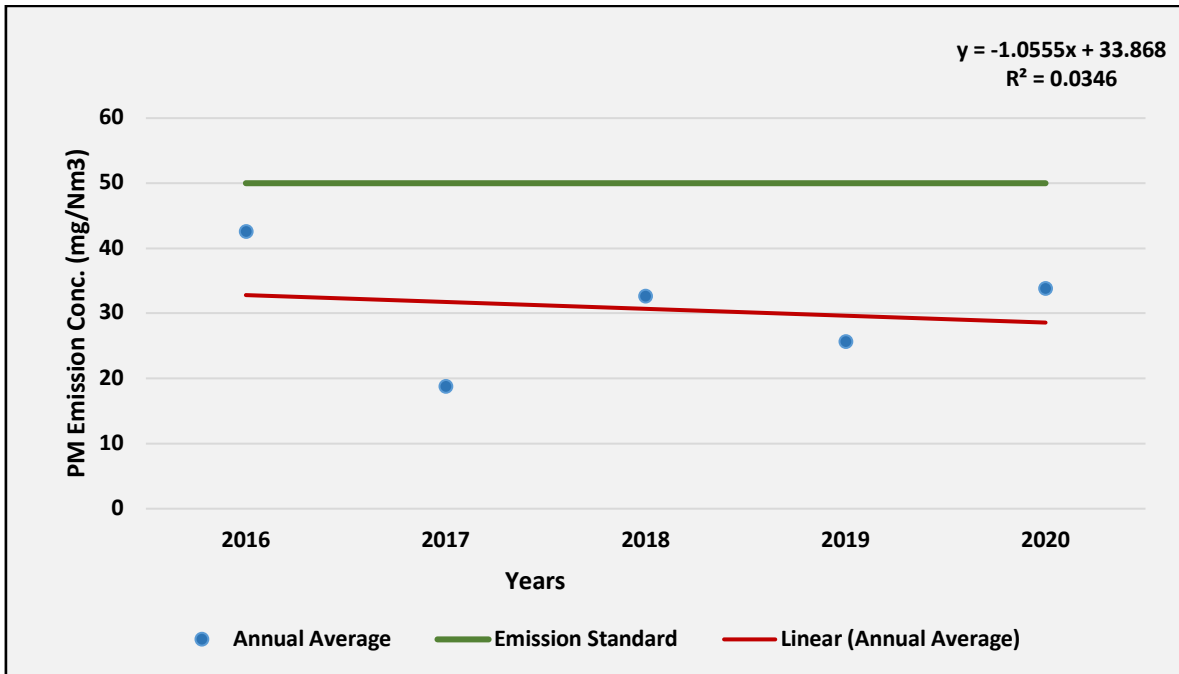


Fig. R54: Trend of annual mean PM ambient air concentration

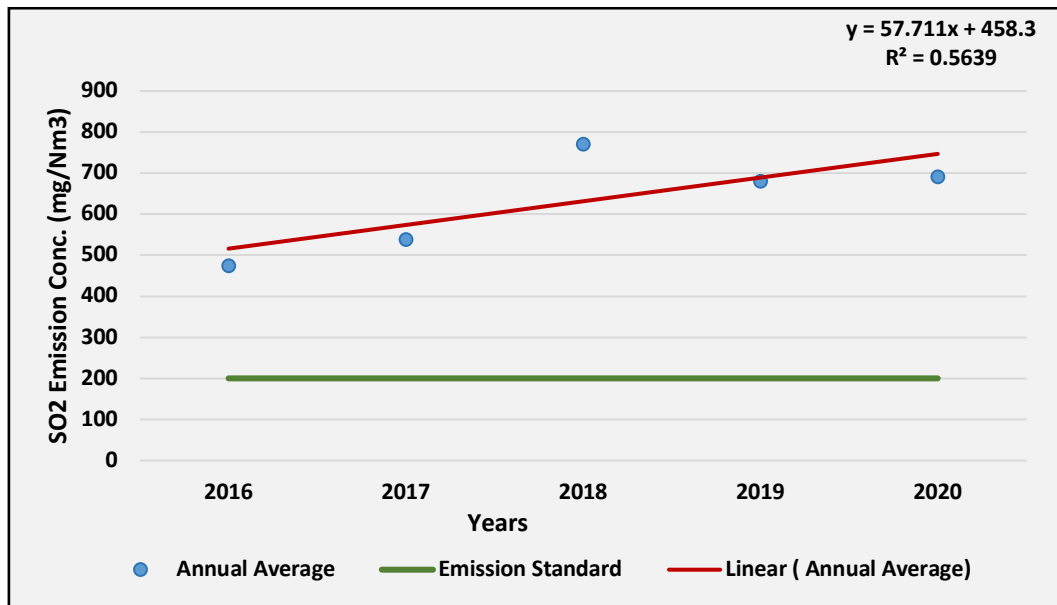


Fig. R55: Trend of annual mean SO₂ ambient air concentration

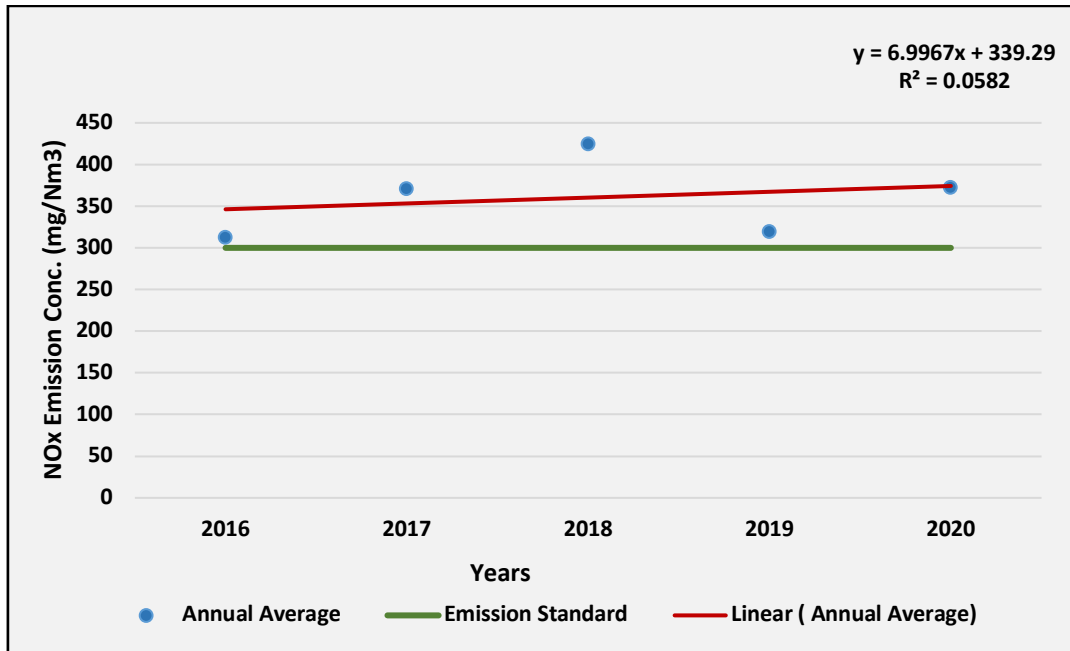


Fig. R56: Trend of annual mean NO_x ambient air concentration

The monthly and yearly ground level emission analysis for both the units of Nabha Thermal Power Plant shows that particulate matter is within the emission standards. The SO₂ parameter is much higher than the norms whereas NO_x parameter is just within the emission standard for the year 2018 and 2019 but it is exceeding its standard limit in the year 2016, 2019 and 2020.

GMR KAMALANGA THERMAL POWER PLANT

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. KOR1 – Fig. KOR50) for the last three years (2014-2020) using data provided by NTPC developer for Korba Power plant, Chhattisgarh, India.

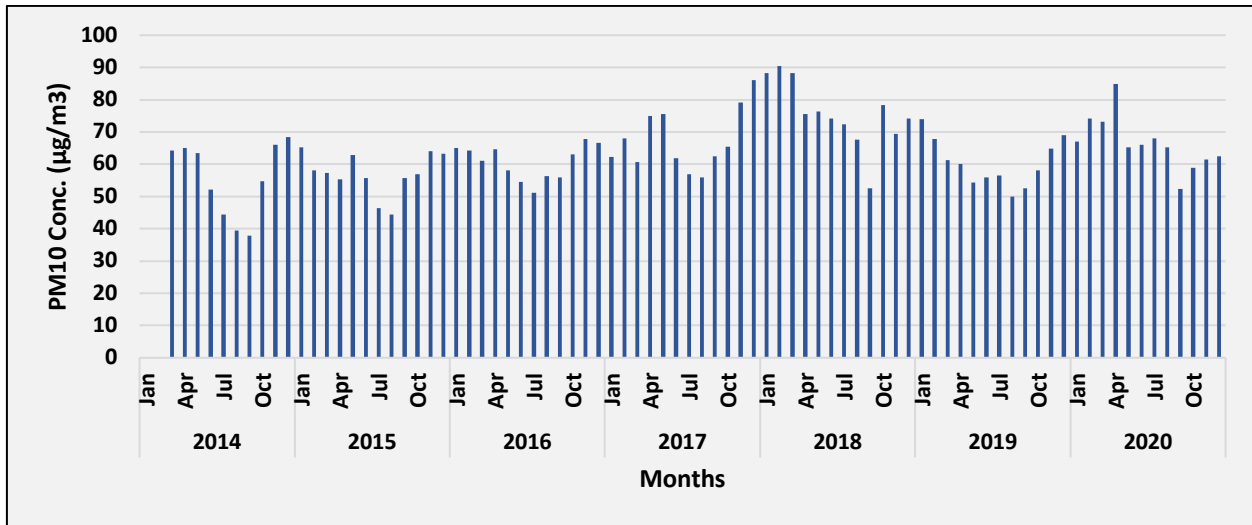


Fig. KAM1: Time series of monthly average PM_{10} ambient air concentration in Kamalanga TPP (Ambient)

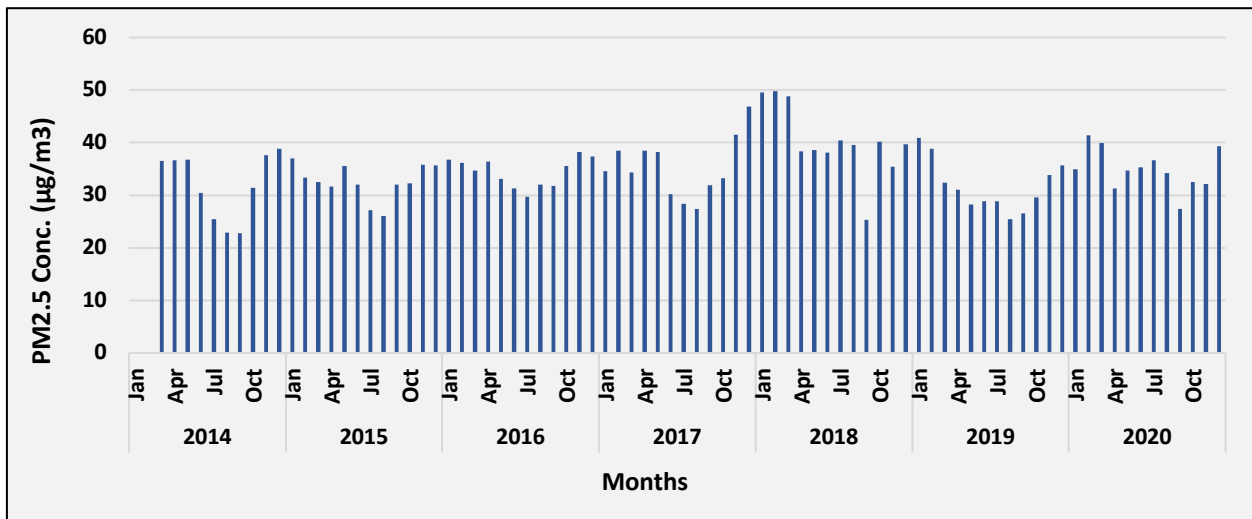


Fig. KAM2: Time series of monthly average $PM_{2.5}$ ambient air concentration in Kamalanga TPP (Ambient)

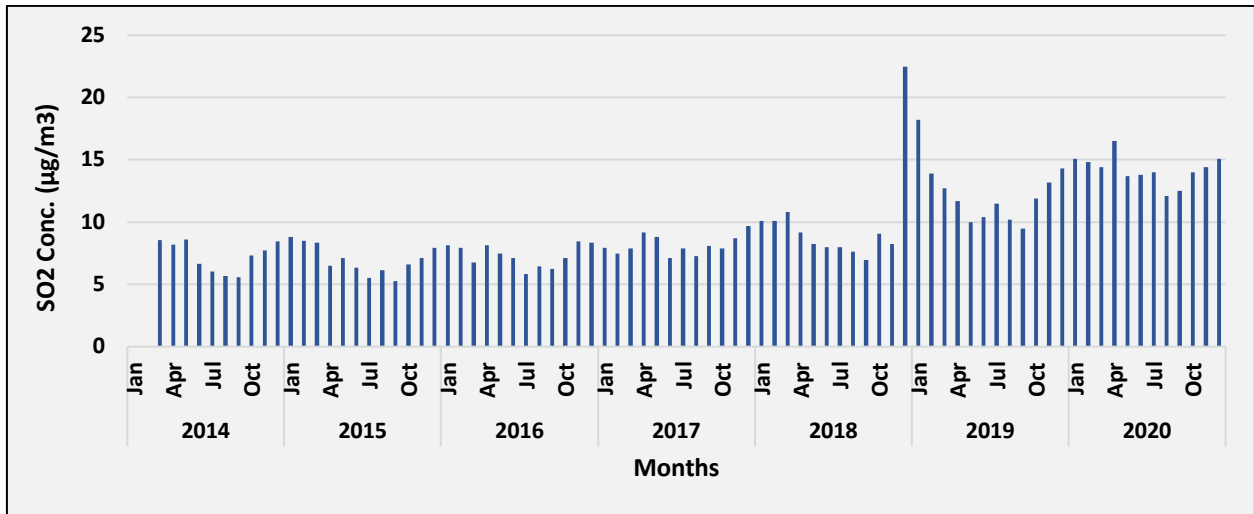


Fig. KAM3: Time series of monthly average SO_2 ambient air concentration in Kamalanga TPP (Ambient)

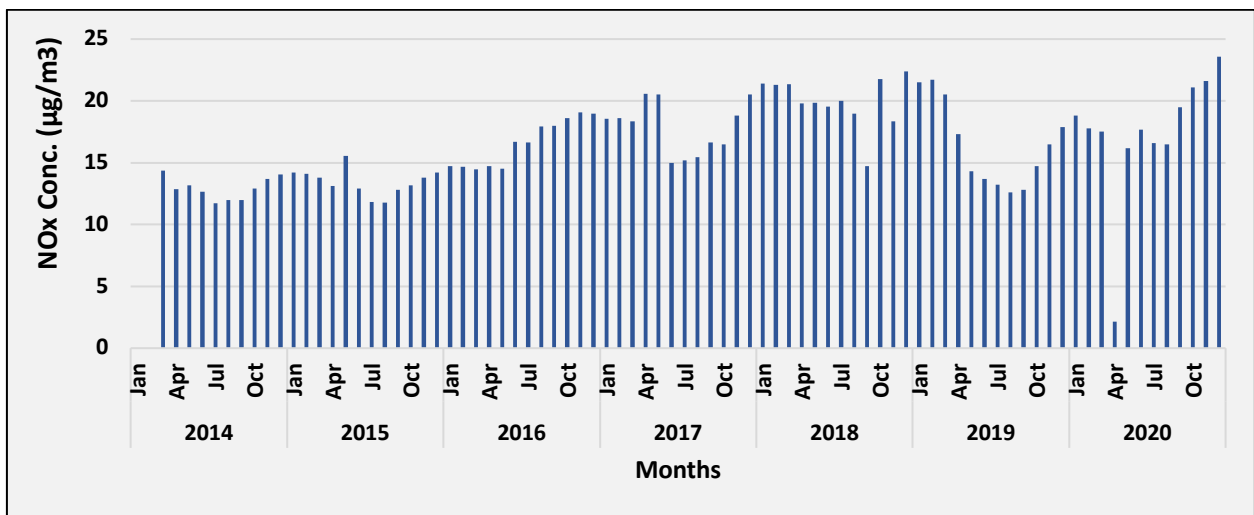


Fig. KAM4: Time series of monthly average NO_x ambient air concentration in Kamalanga TPP (Ambient)

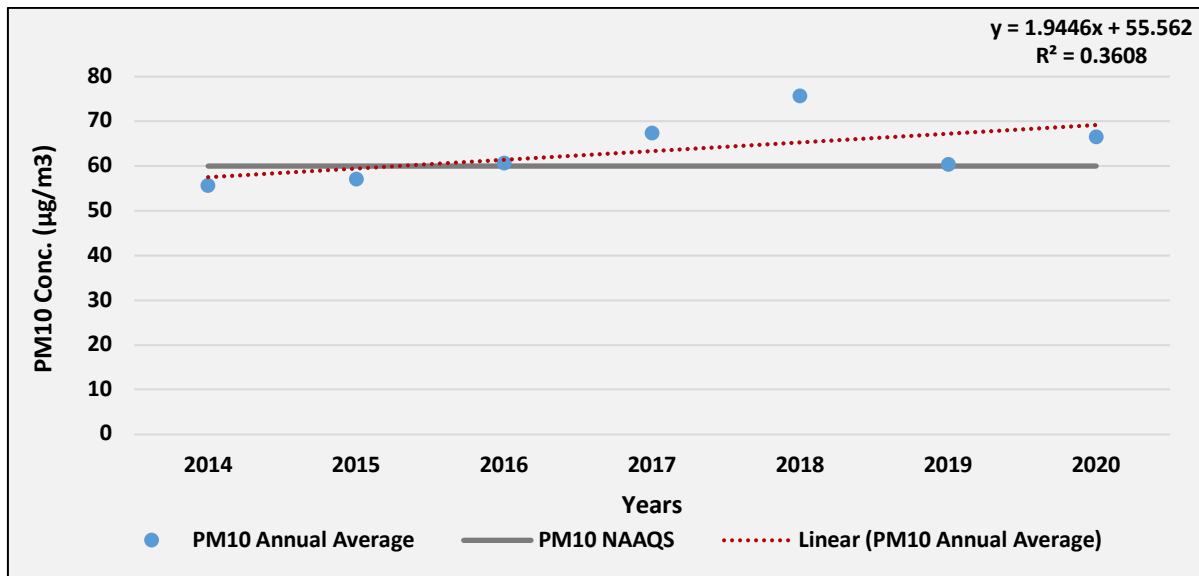


Fig. KAM5: Trend of annual mean PM_{10} ambient air concentration in Kamalanga TPP (Ambient)

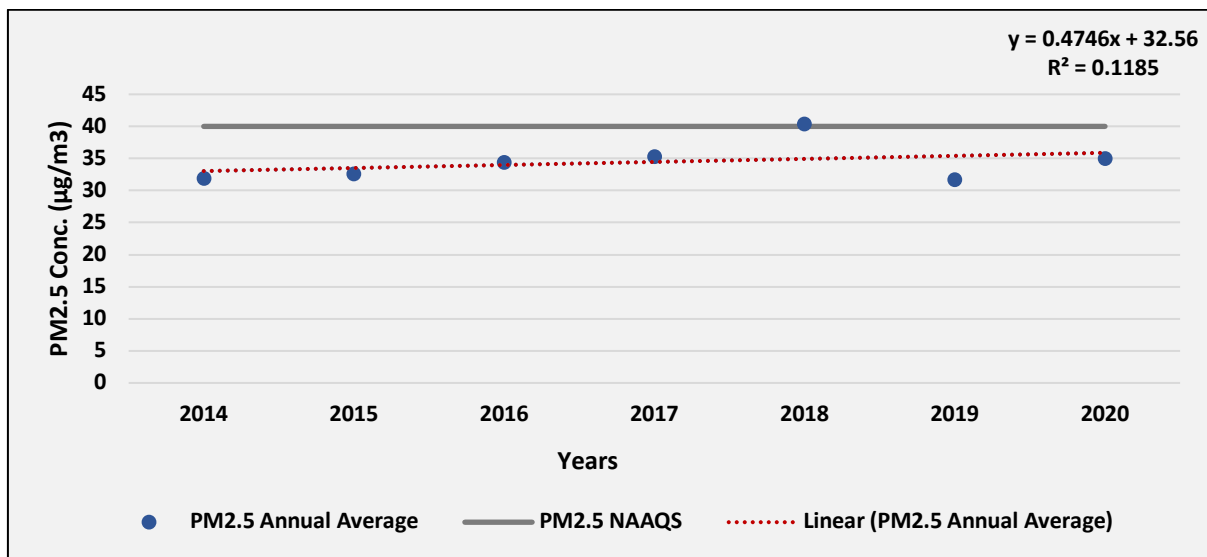


Fig. KAM6: Trend of annual mean $PM_{2.5}$ ambient air concentration in Kamalanga TPP (Ambient)

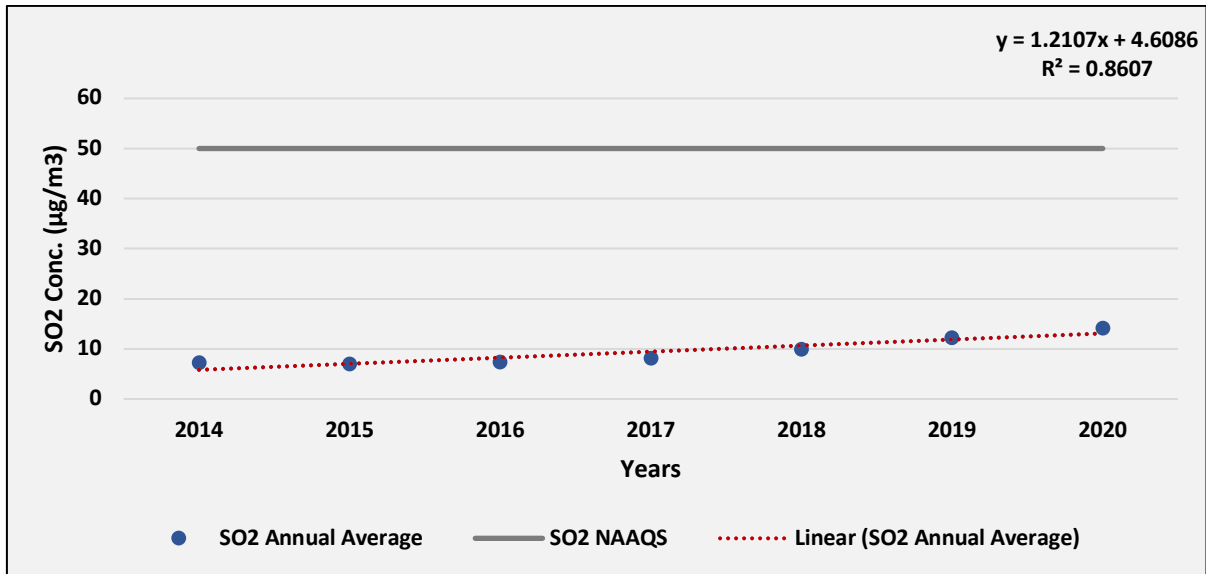


Fig. KAM7: Trend of annual mean SO₂ ambient air concentration in Kamalanga TPP (Ambient)

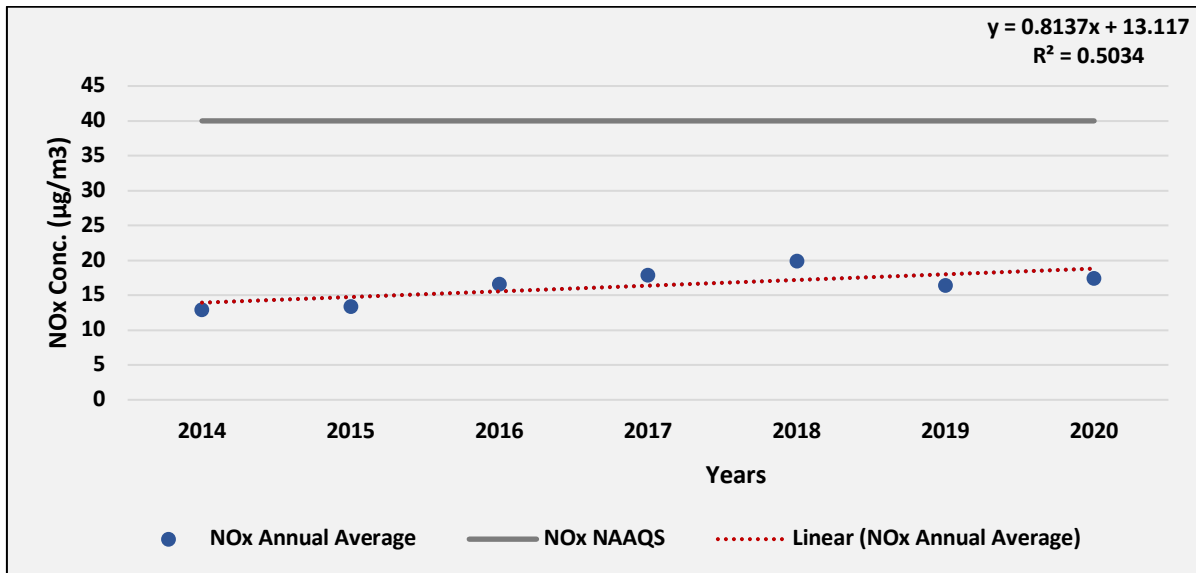


Fig. KAM8: Trend of annual mean NO_x ambient air concentration in Kamalanga TPP (Ambient)

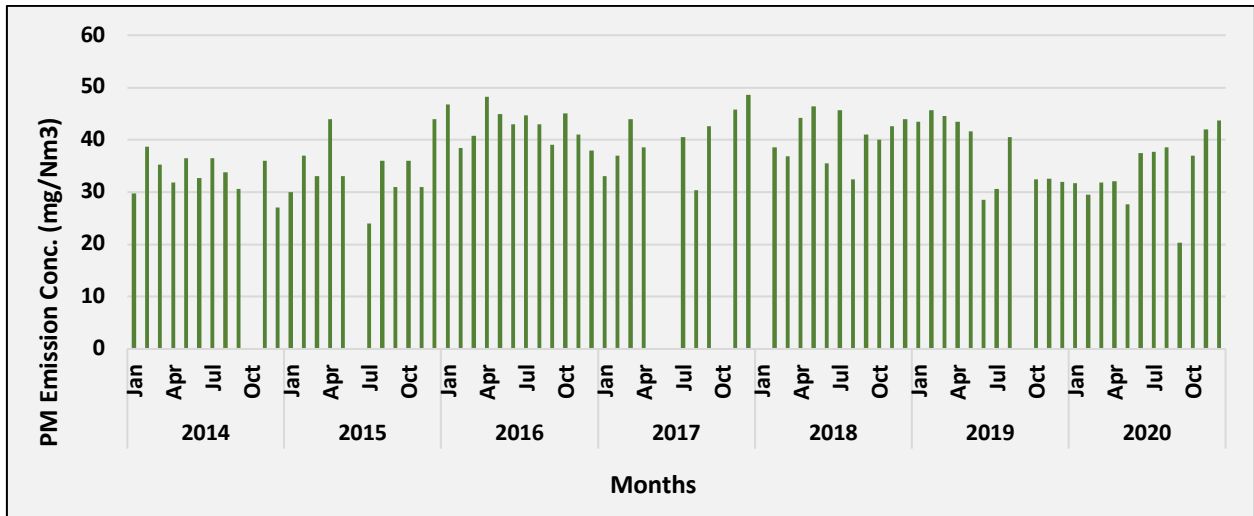


Fig. KAM9: Time series of monthly average PM Emission concentration in Kamalanga TPP (Stack 2)

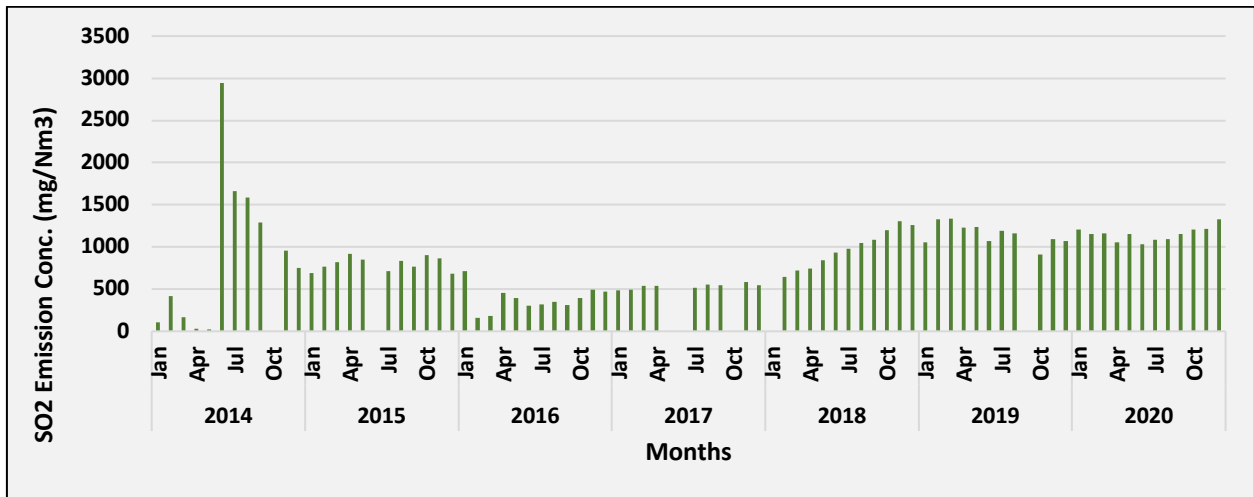


Fig. KAM10: Time series of monthly average SO₂ Emission concentration in Kamalanga TPP (Stack 2)

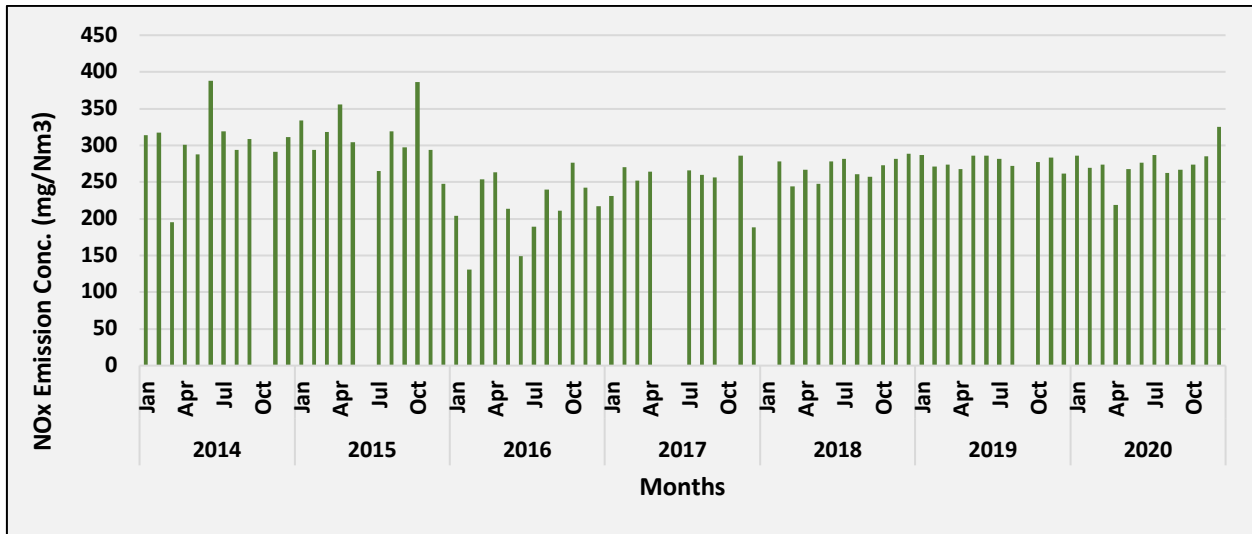


Fig. KAM11: Time series of monthly average NO_x Emission concentration in Kamalanga TPP (Stack 2)

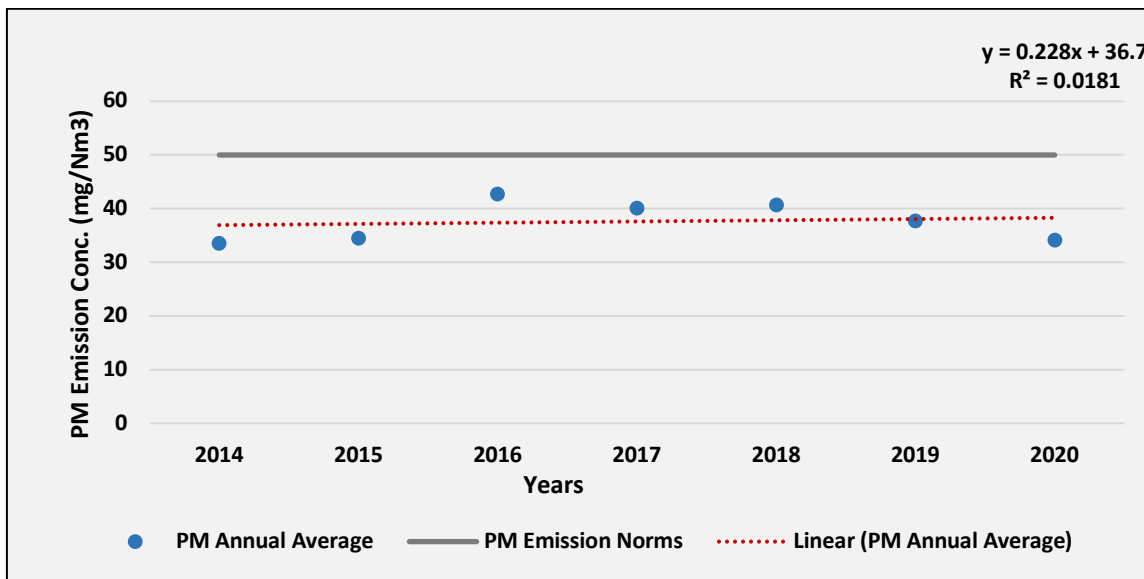


Fig. KAM12: Trend of annual mean PM Emission air concentration in Kamalanga TPP (Stack 2)

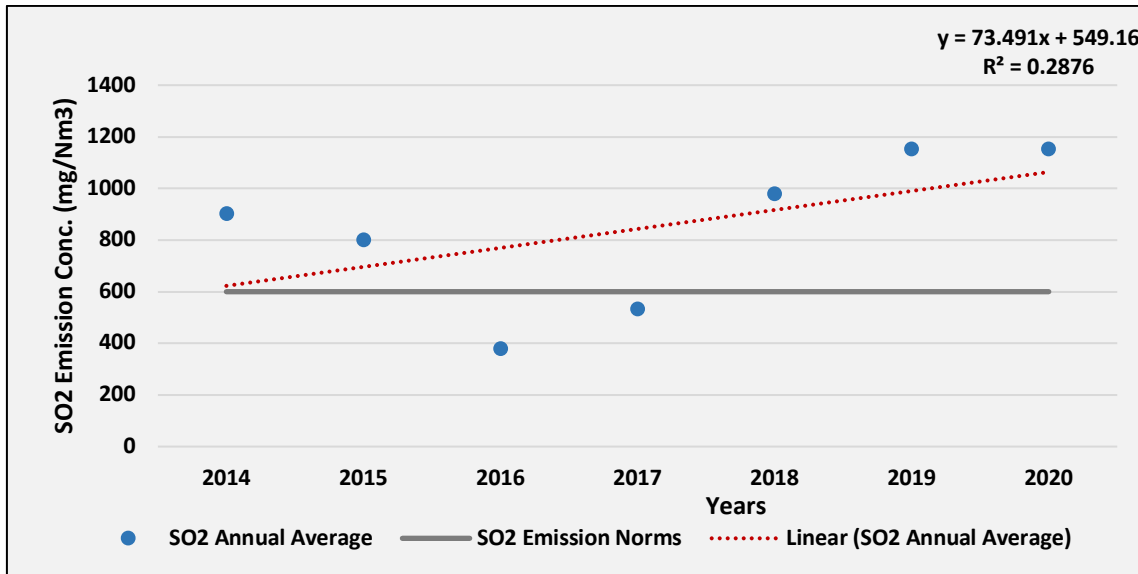


Fig. KAM13: Trend of annual mean SO₂ Emission air concentration in Kamalanga TPP (Stack 2)

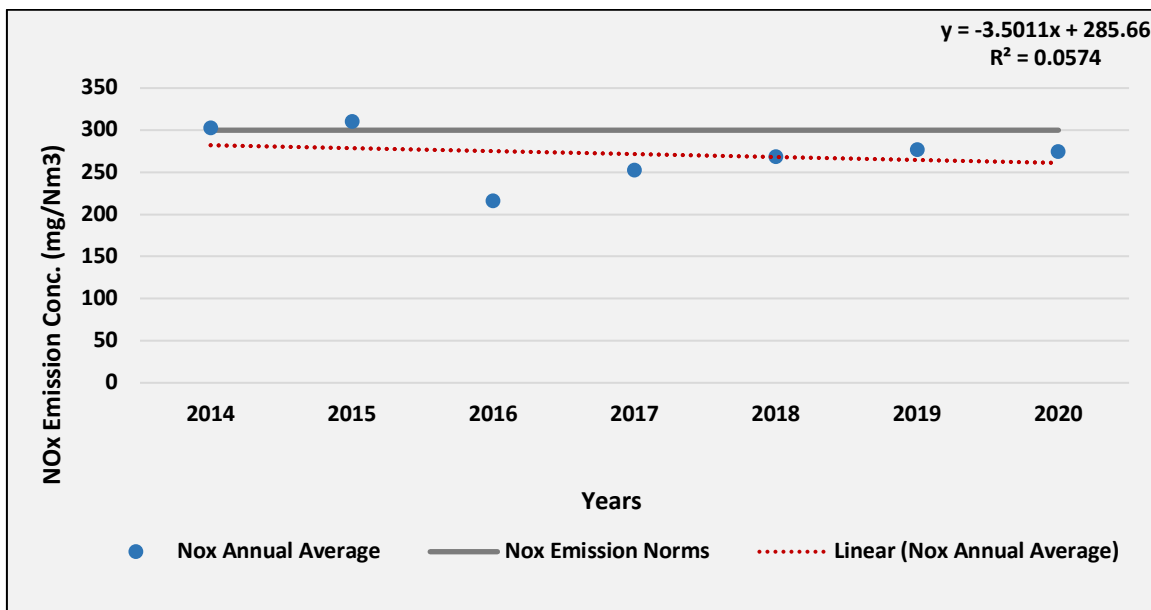


Fig. KAM14: Trend of annual mean NO_x Emission air concentration in Kamalanga TPP (Stack 2)

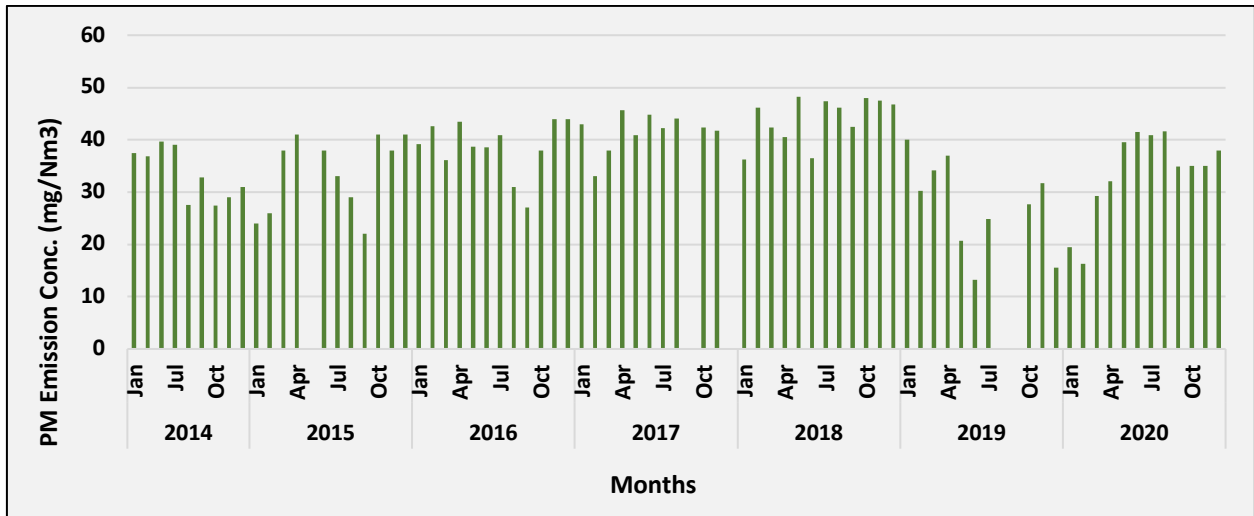


Fig. KAM15: Time series of monthly average PM Emission concentration in Kamalanga TPP (Stack 3)

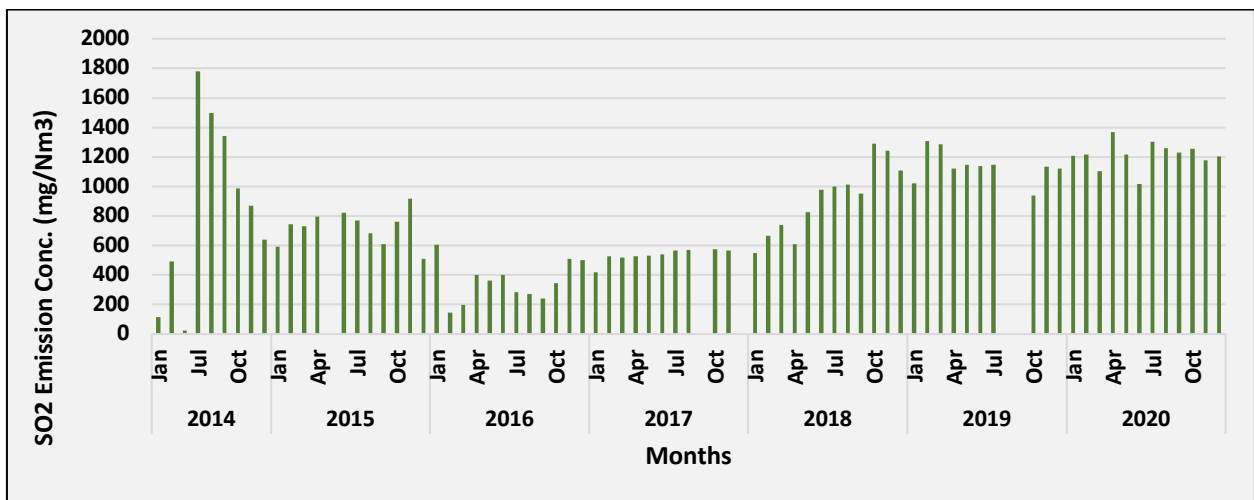


Fig. KAM16: Time series of monthly average SO₂ Emission concentration in Kamalanga TPP (Stack 3)

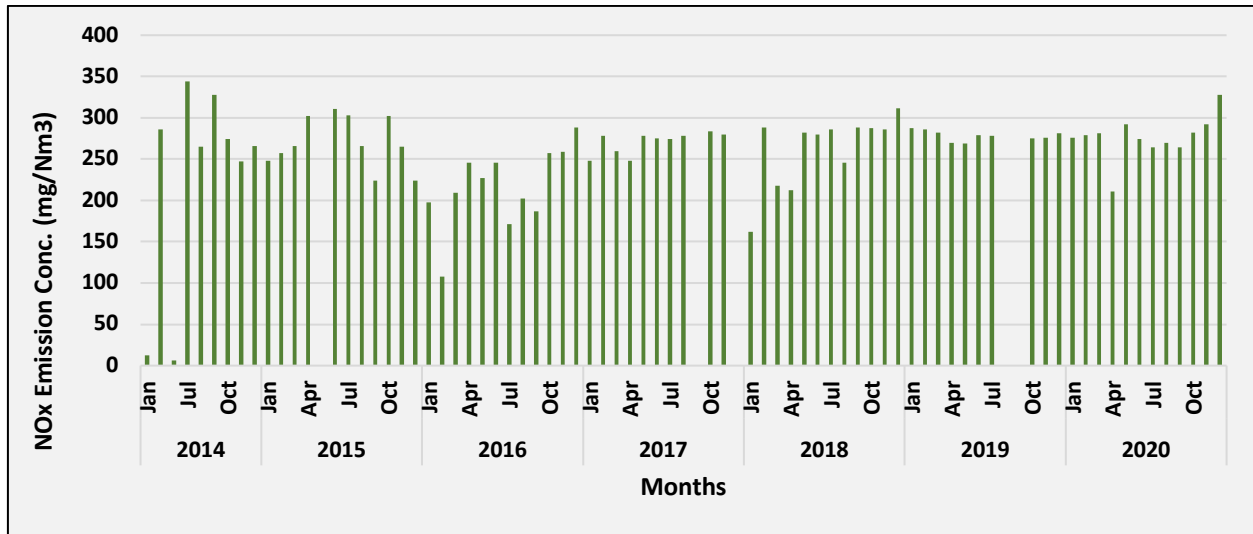


Fig. KAM17: Time series of monthly average NO_x Emission concentration in Kamalanga TPP (Stack 3)

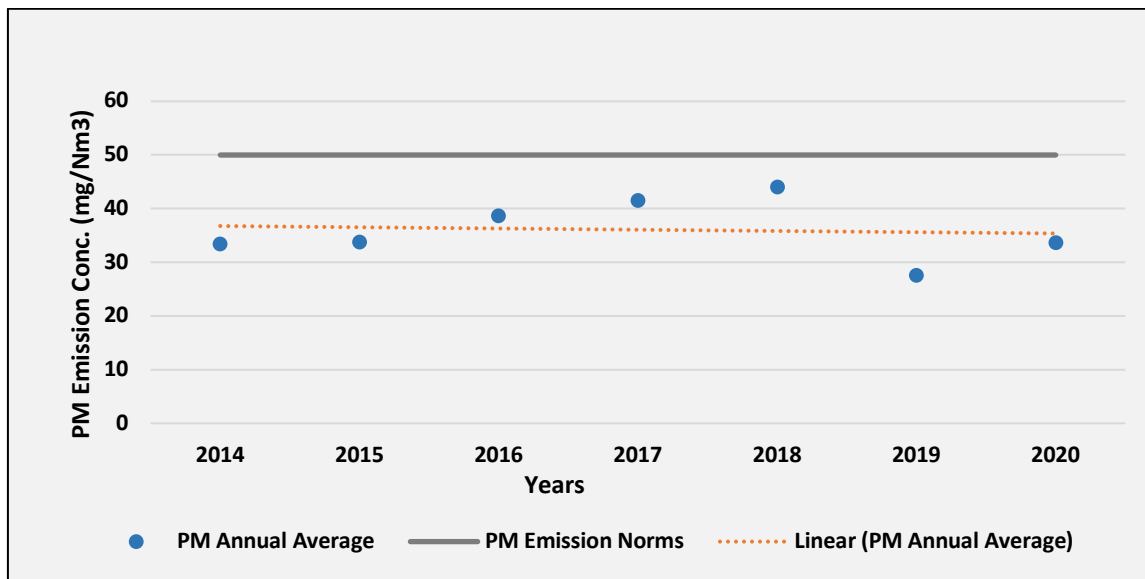


Fig. KAM18: Trend of annual mean PM Emission air concentration in Kamalanga TPP (Stack 3)

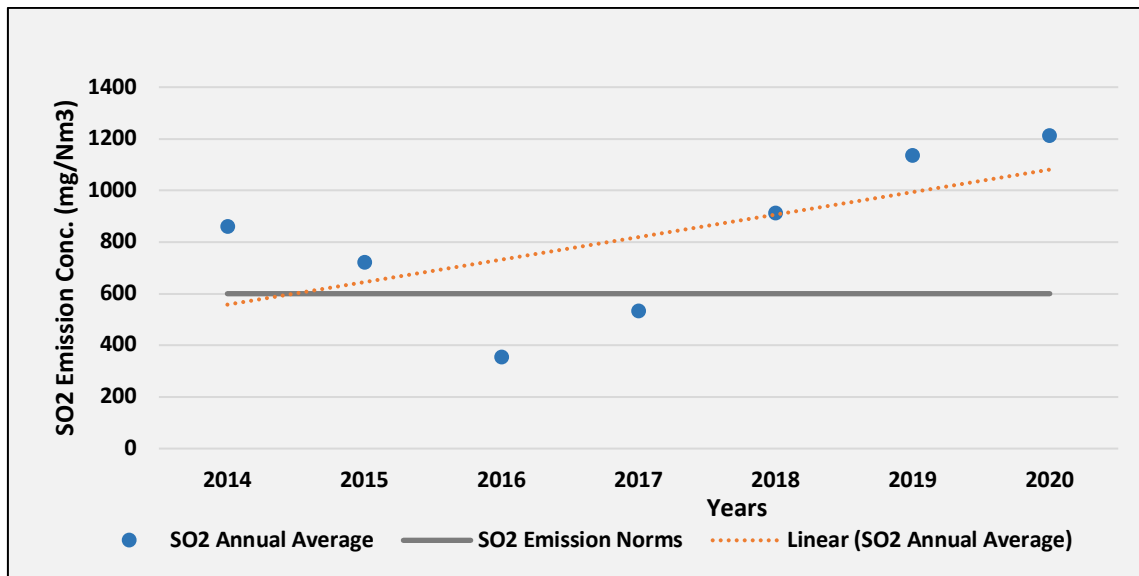


Fig. KAM19: Trend of annual mean SO₂ Emission air concentration in Kamalanga TPP (Stack 3)

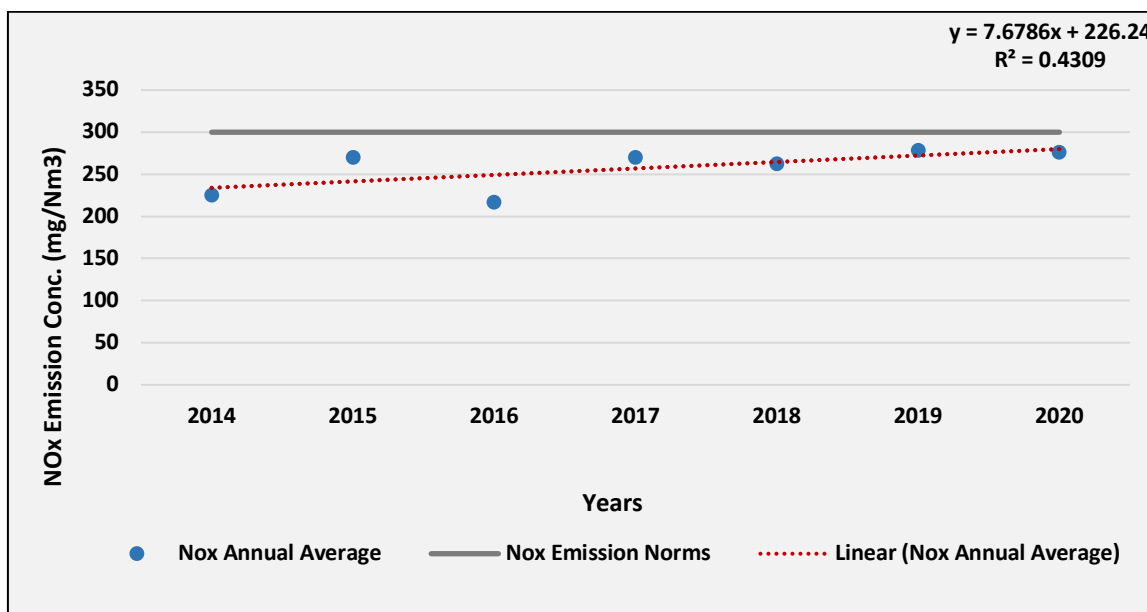


Fig. KAM20: Trend of annual mean NO_x Emission air concentration in Kamalanga TPP (Stack 3)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, Pm_{2.5} are exceeding whereas the SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

GMR WARORA THERMAL POWER PLANT

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. KOR1 – Fig. KOR50) for the last three years (2014-2020) using data provided by NTPC developer for Korba Power plant, Chhattisgarh, India.

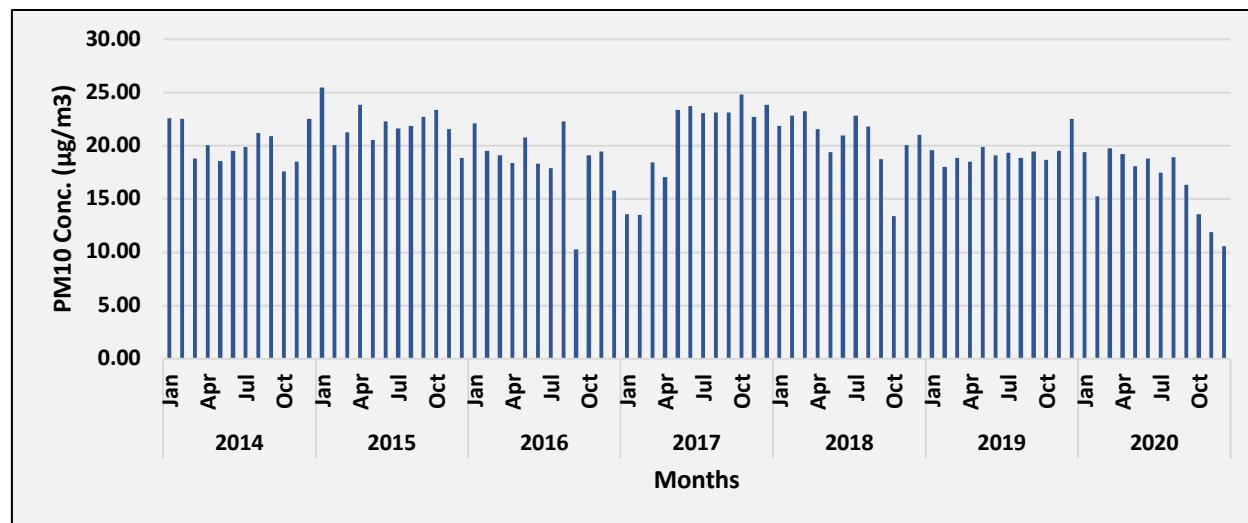


Fig. WAR1: Time series of monthly average PM₁₀ ambient air concentration in Warora TPP (Ambient)

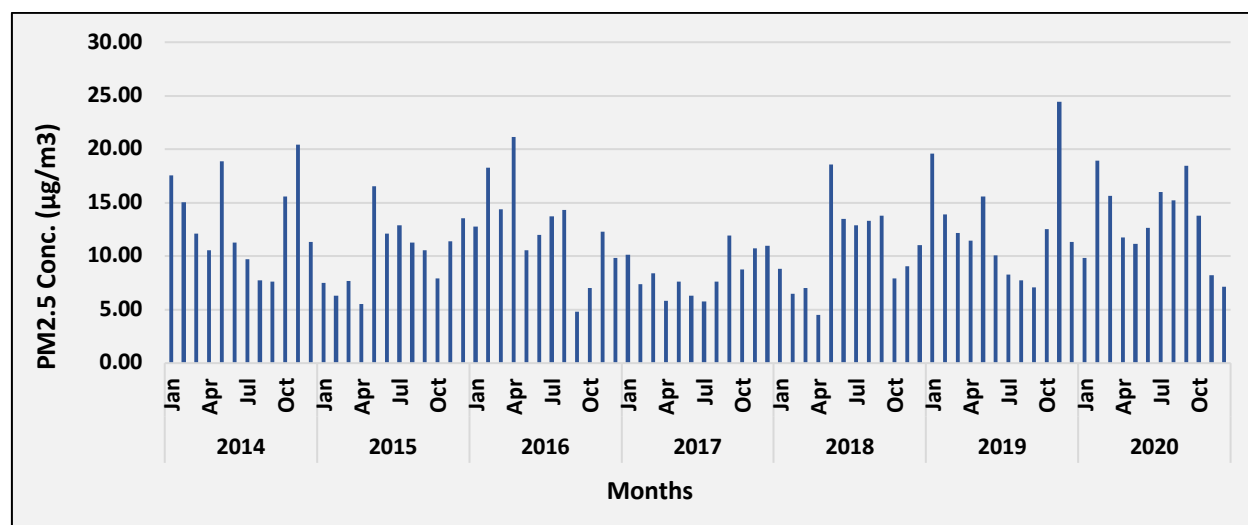


Fig. WAR2: Time series of monthly average PM_{2.5} ambient air concentration in Warora TPP (Ambient)

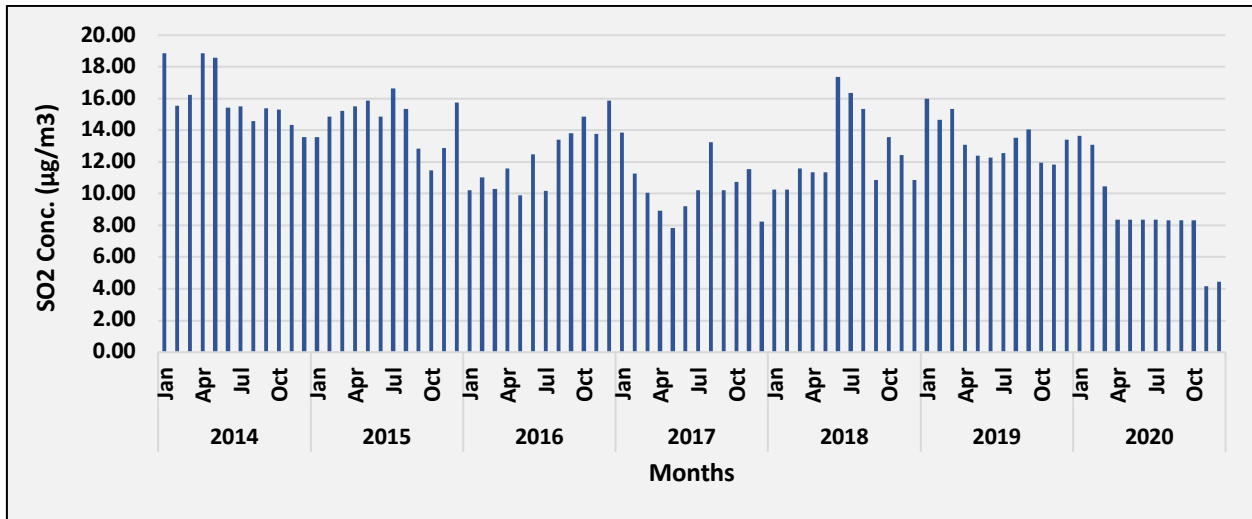


Fig. WAR3: Time series of monthly average SO_2 ambient air concentration in Warora TPP (Ambient)

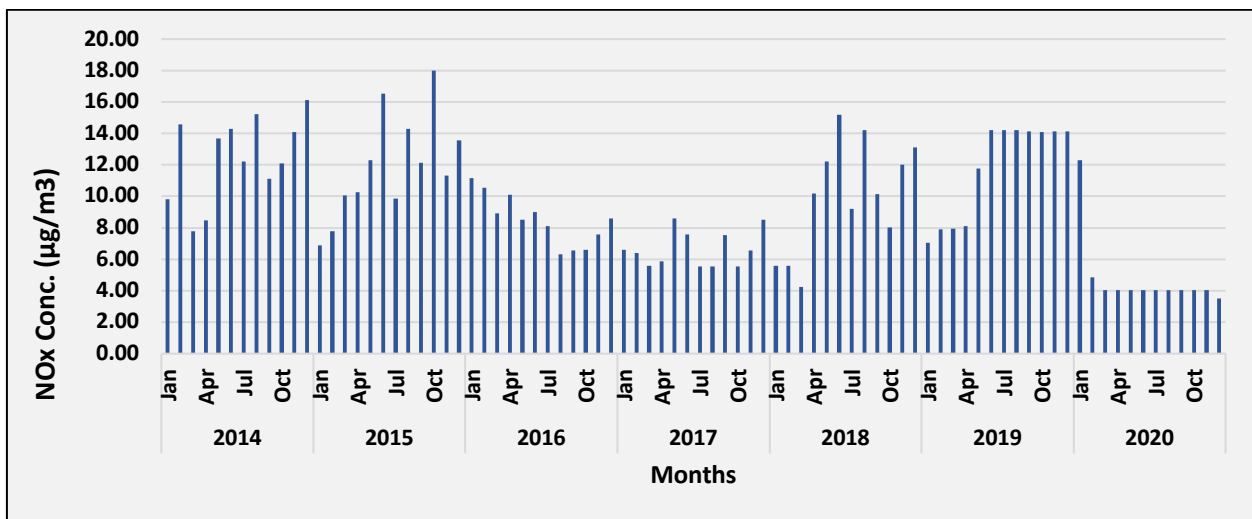


Fig. WAR4: Time series of monthly average NO_x ambient air concentration in Warora TPP (Ambient)

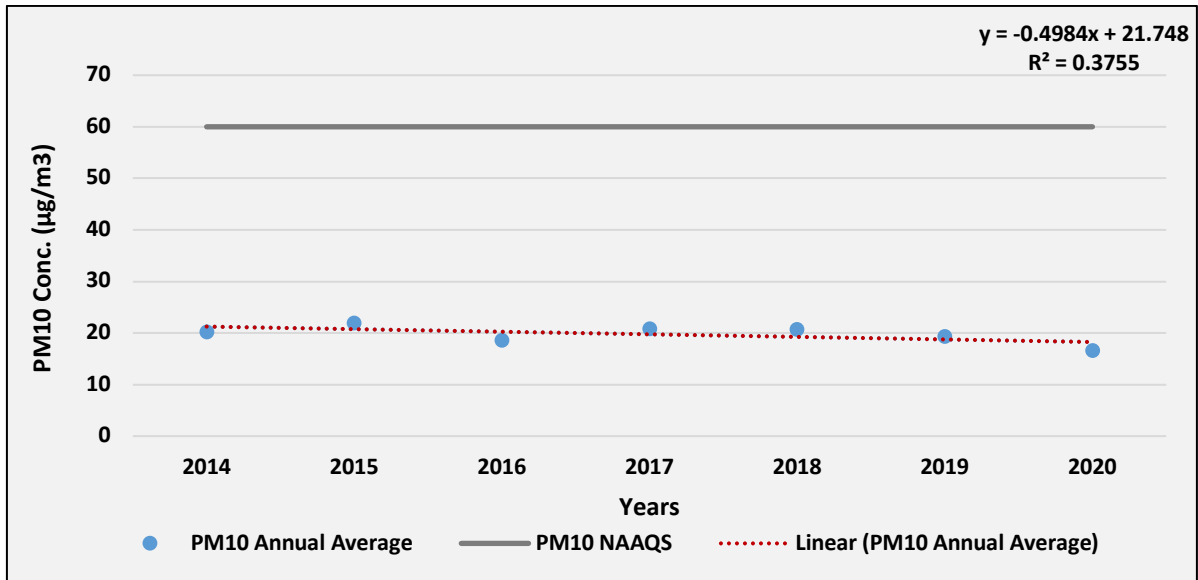


Fig. WAR5: Trend of annual mean PM_{10} ambient air concentration in Warora TPP (Ambient)

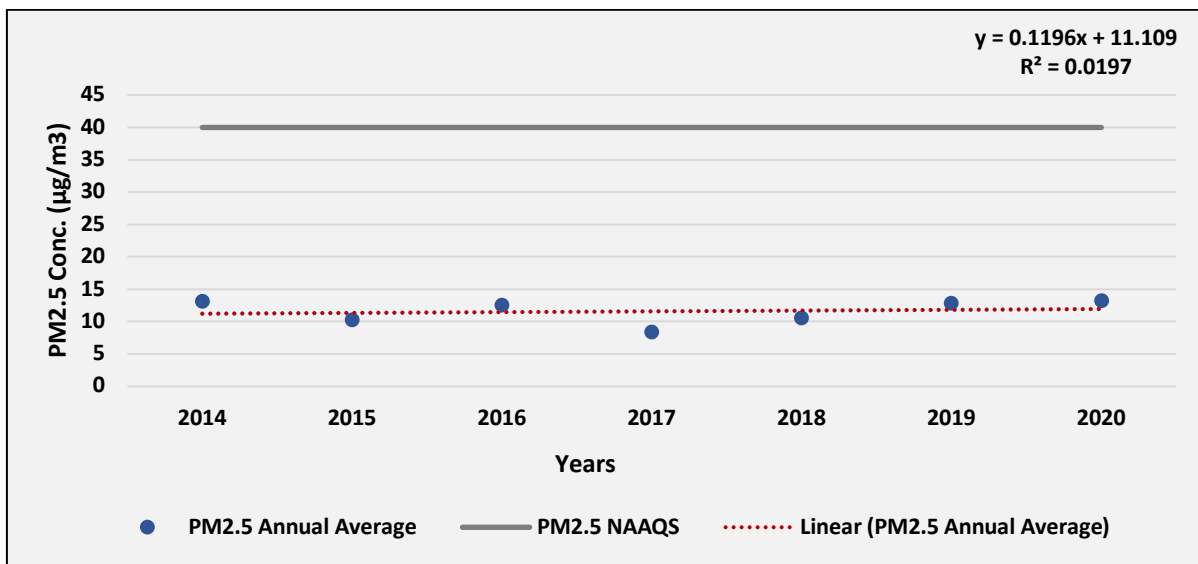


Fig. WAR6: Trend of annual mean $PM_{2.5}$ ambient air concentration in Warora TPP (Ambient)

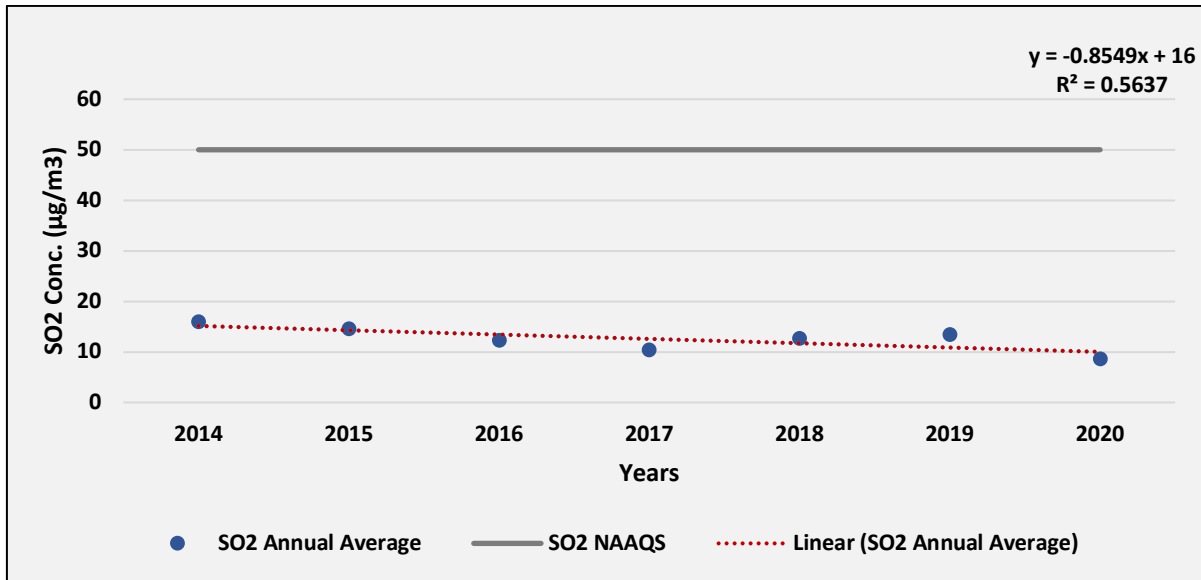


Fig. WAR7: Trend of annual mean SO₂ ambient air concentration in Warora TPP (Ambient)

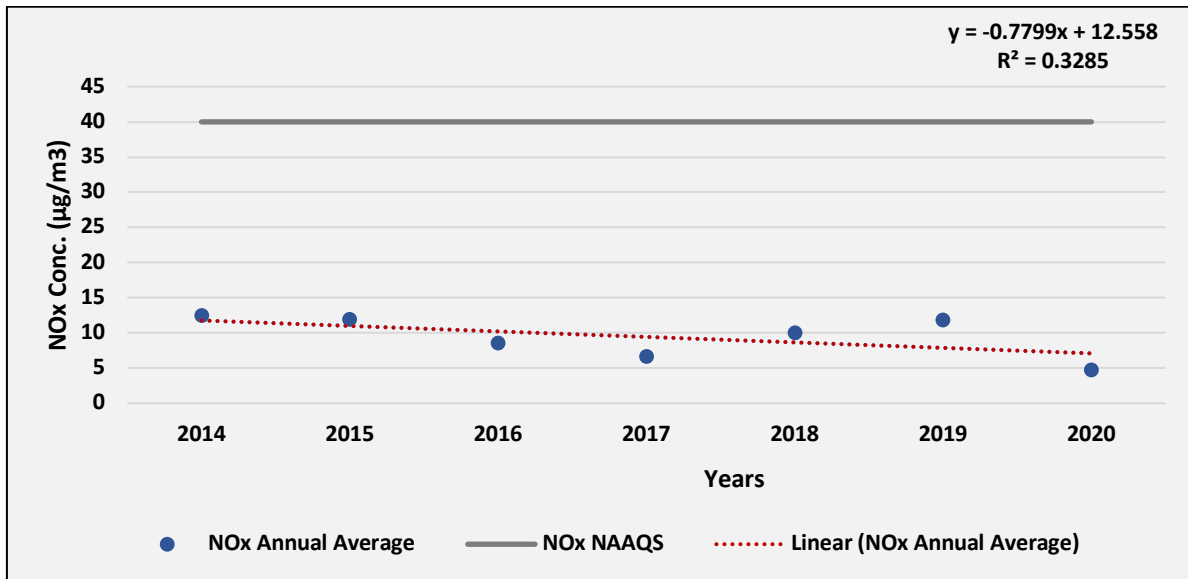


Fig. WAR8: Trend of annual mean NO_x ambient air concentration in Warora TPP (Ambient)

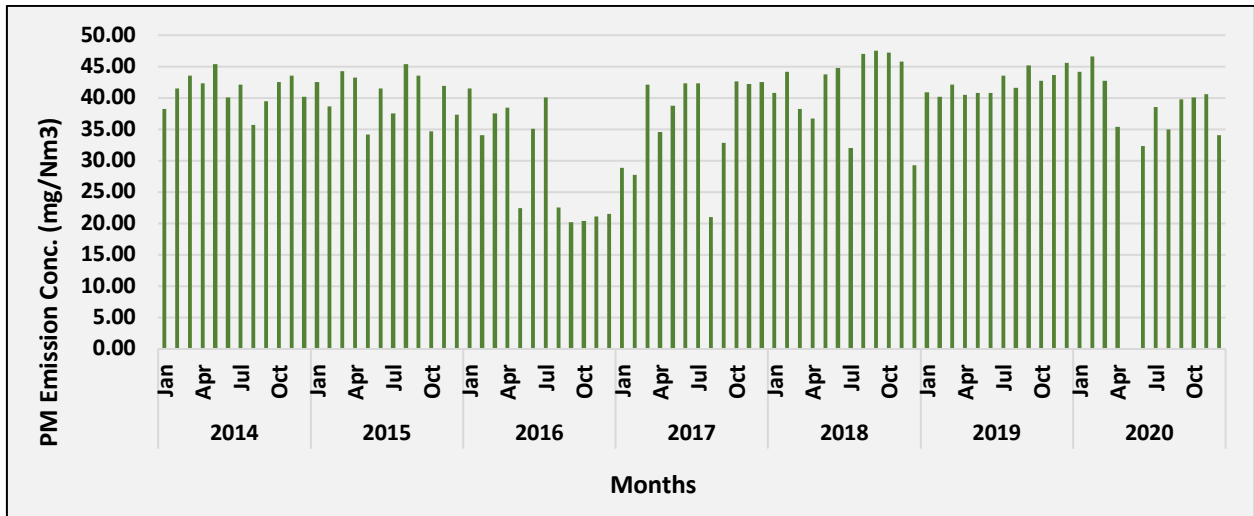


Fig. WAR9: Time series of monthly average PM Emission concentration in Warora TPP (Stack 1)

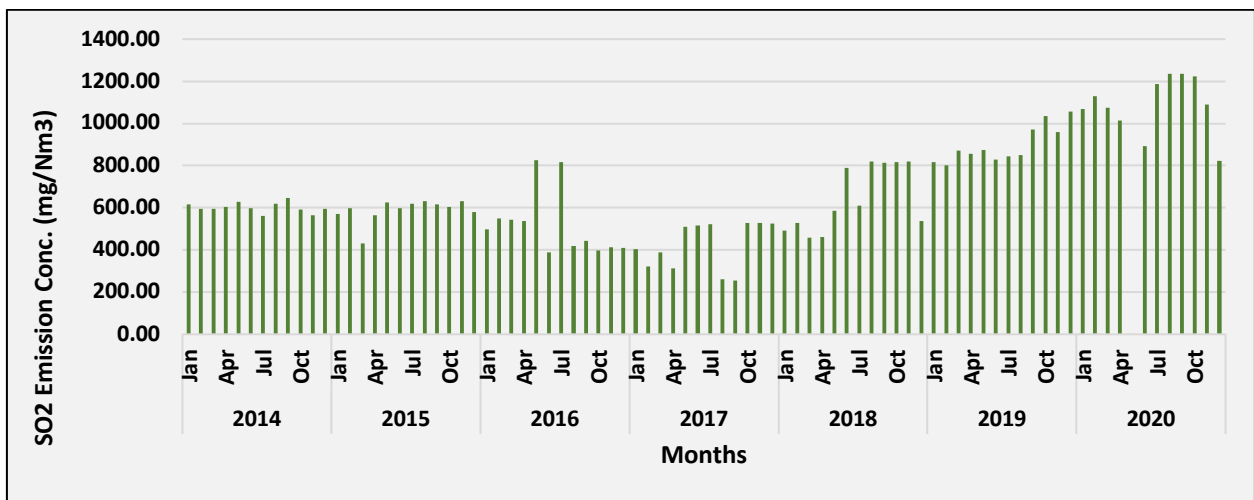


Fig. WAR10: Time series of monthly average SO₂ Emission concentration in Warora TPP (Stack 1)

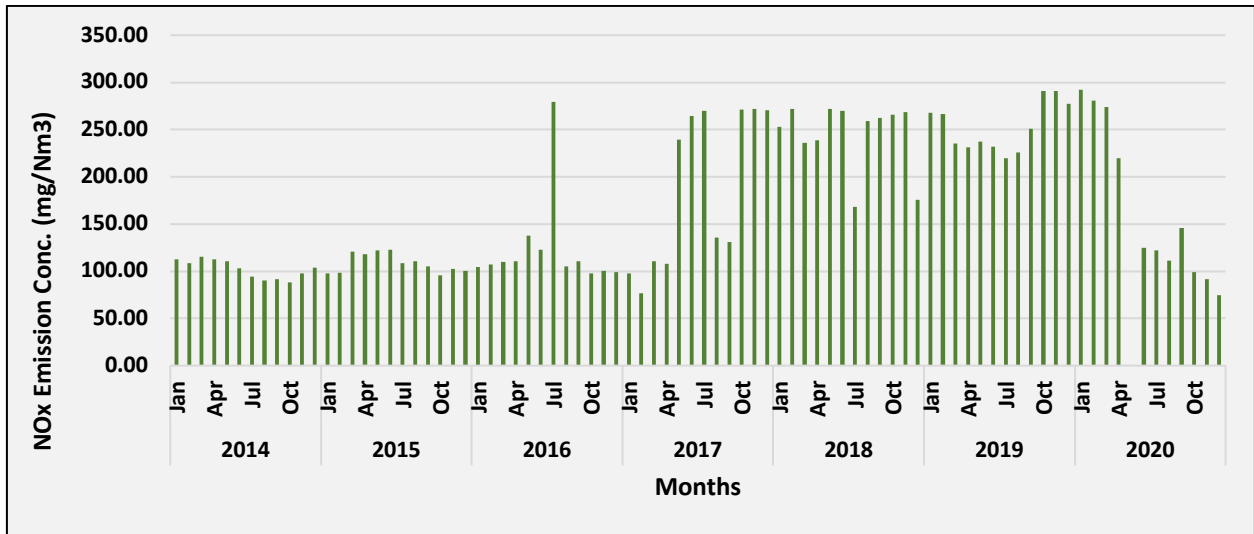


Fig. WAR11: Time series of monthly average NO_x Emission concentration in Warora TPP (Stack 1)

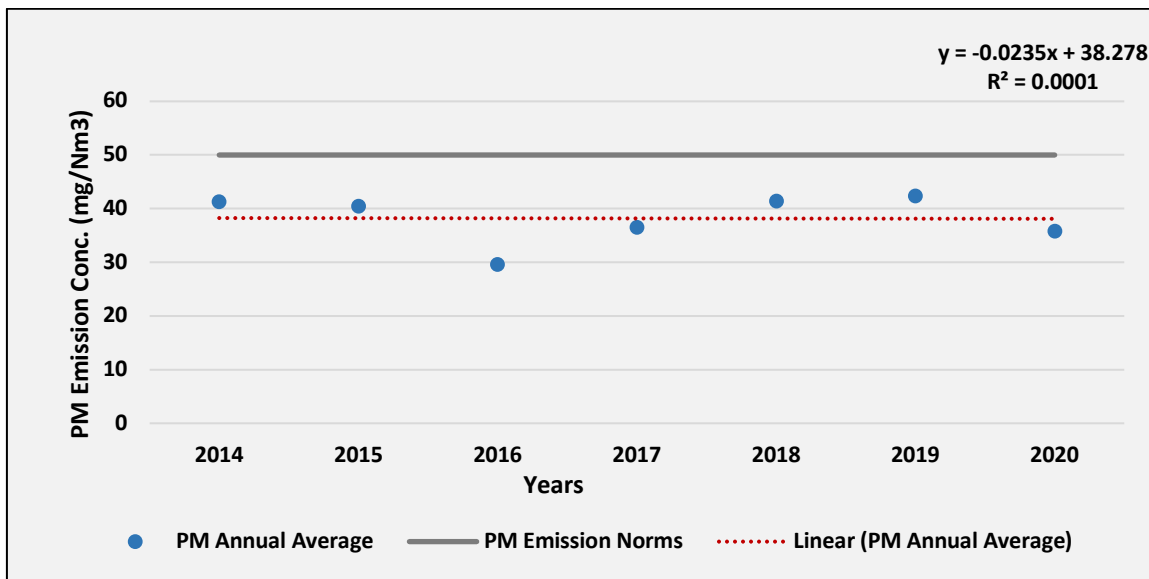


Fig. WAR12: Trend of annual mean PM Emission air concentration in Warora TPP (Stack 1)

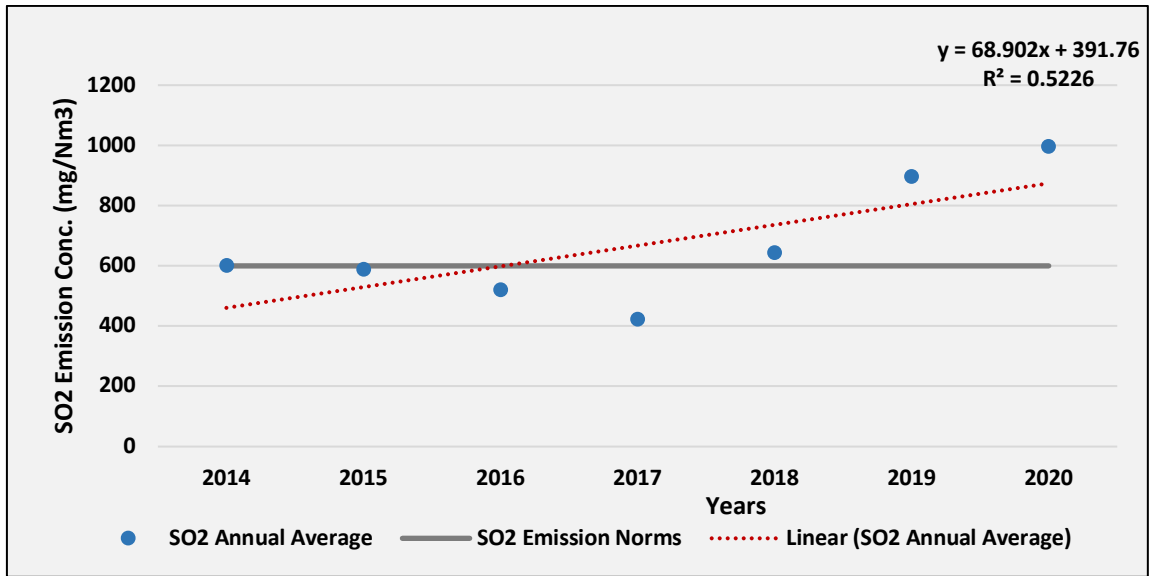


Fig. WAR13: Trend of annual mean SO₂ Emission air concentration in Warora TPP (Stack 1)

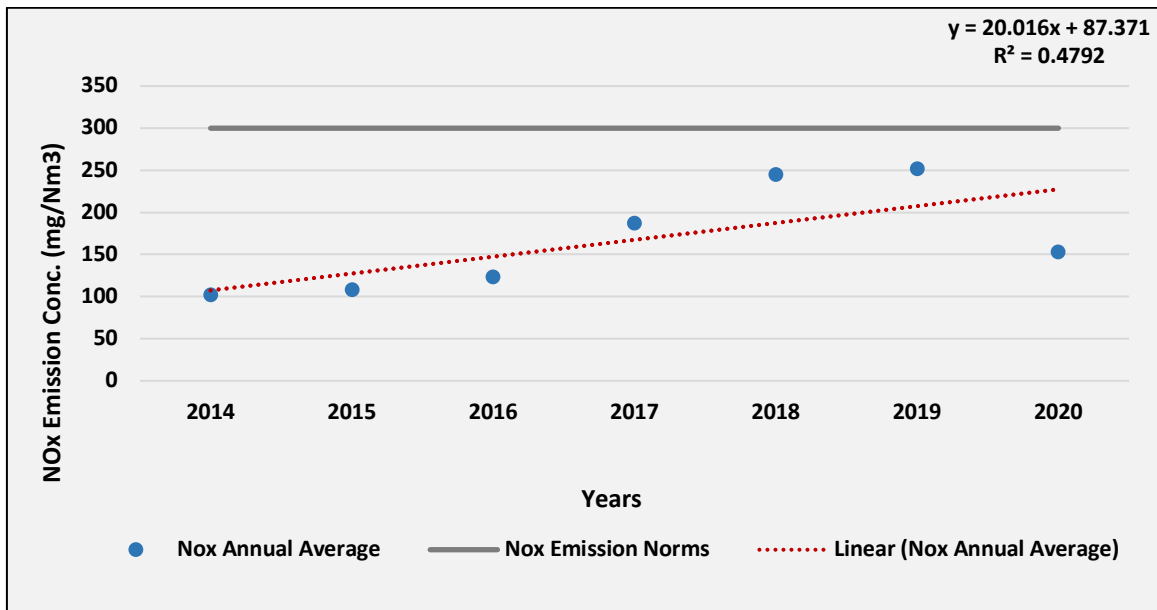


Fig. WAR14: Trend of annual mean NO_x Emission air concentration in Warora TPP (Stack 1)

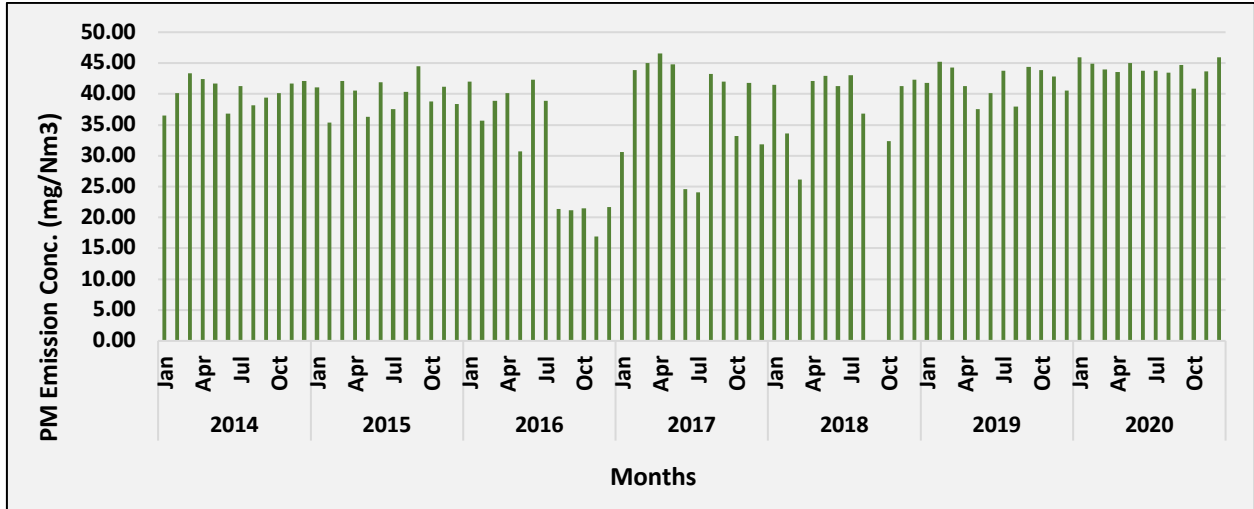


Fig. WAR15: Time series of monthly average PM Emission concentration in Warora TPP (Stack 2)

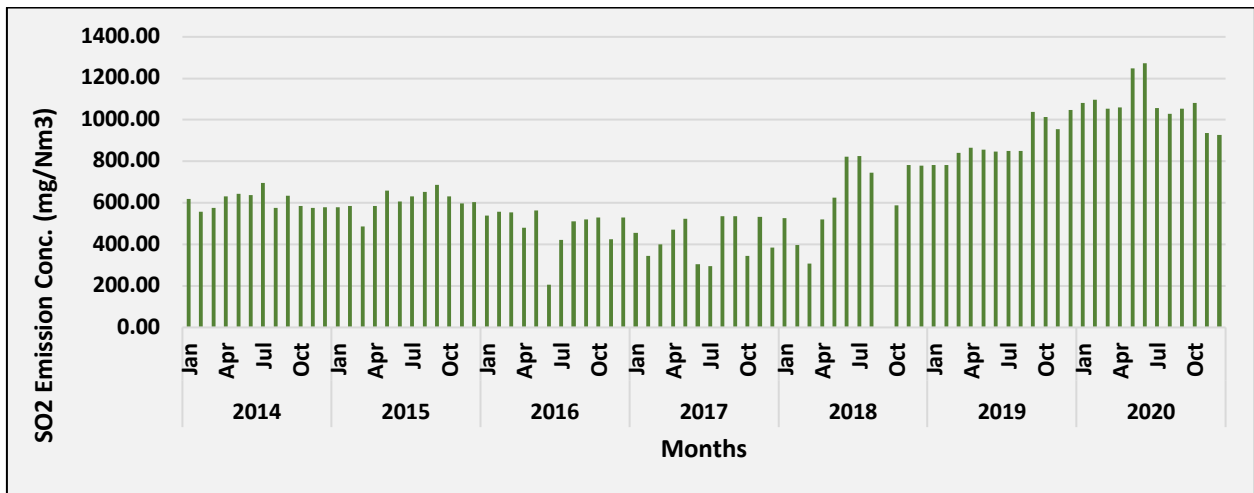


Fig. WAR16: Time series of monthly average SO₂ Emission concentration in Warora TPP (Stack 2)

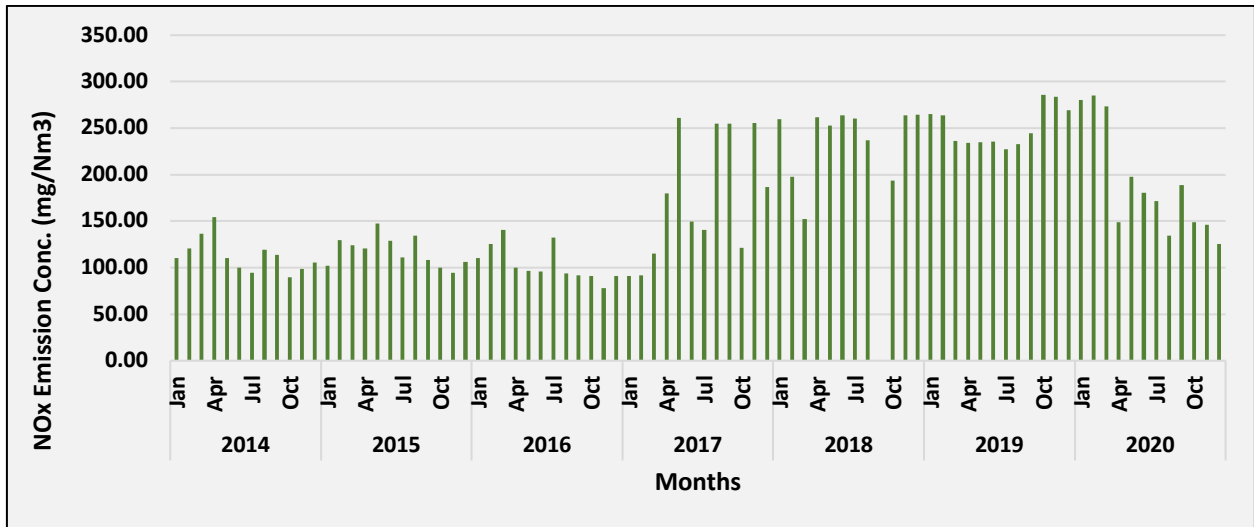


Fig. WAR17: Time series of monthly average NO_x Emission concentration in Warora TPP (Stack 2)

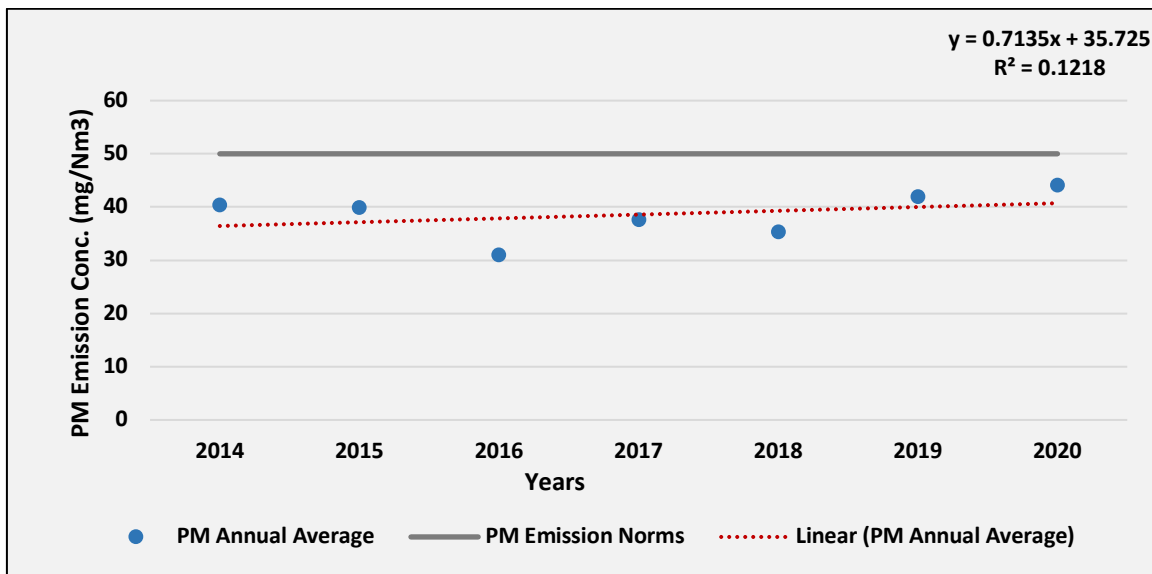


Fig. WAR18: Trend of annual mean PM Emission air concentration in Warora TPP (Stack 2)

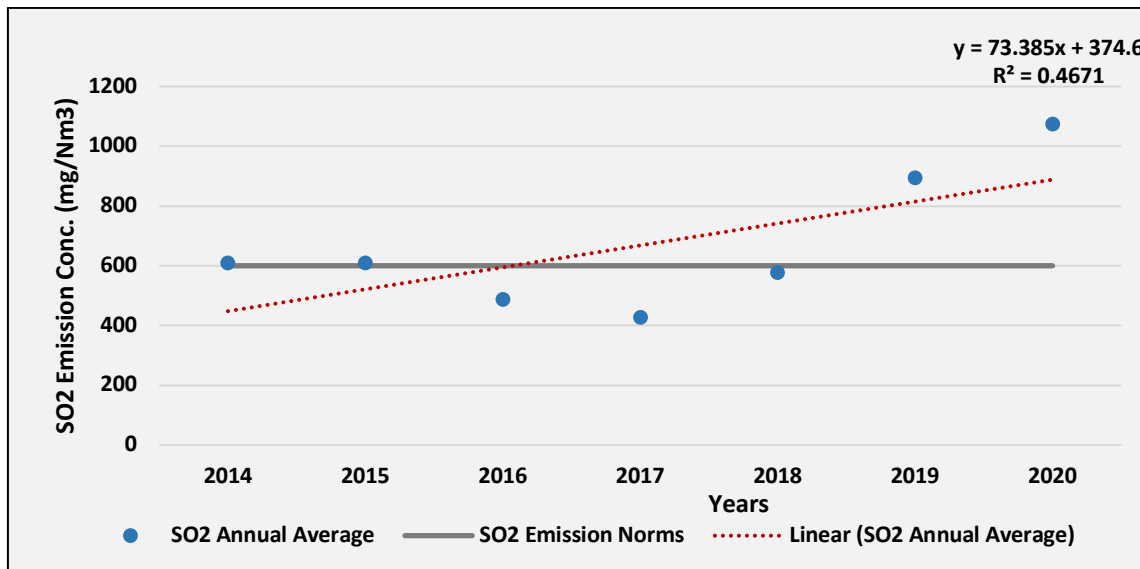


Fig. WAR19: Trend of annual mean SO₂ Emission air concentration in Warora TPP (Stack 2)

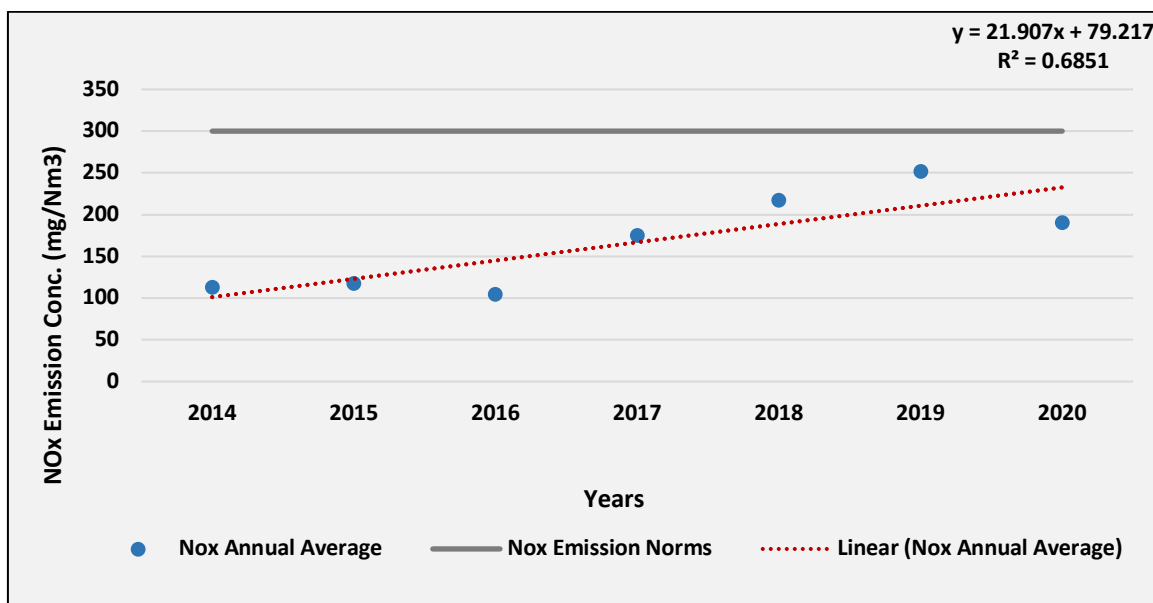


Fig. WAR20: Trend of annual mean NO_x Emission air concentration in Warora TPP (Stack 2)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, Pm_{2.5} are exceeding whereas the SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

SEMBCORP GAYATRI POWER LIMITED THERMAL POWER PLANT

Sembcorp Energy India Ltd. is a leading independent power producer (IPP) in India. Formerly known as Thermal Powertech Corporation India Limited, SEIL owns 100% of both Sembcorp Gayatri Power Limited and Sembcorp Green Infra Limited.

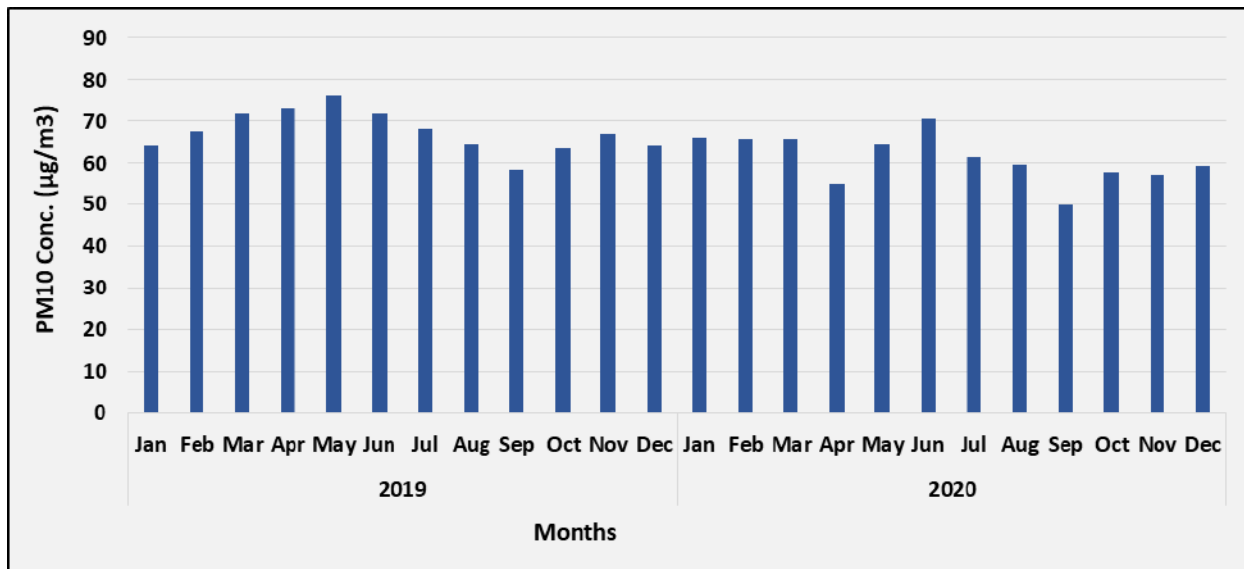


Fig. S1: Time series of monthly average PM_{10} ambient air concentration in SEIL TPP

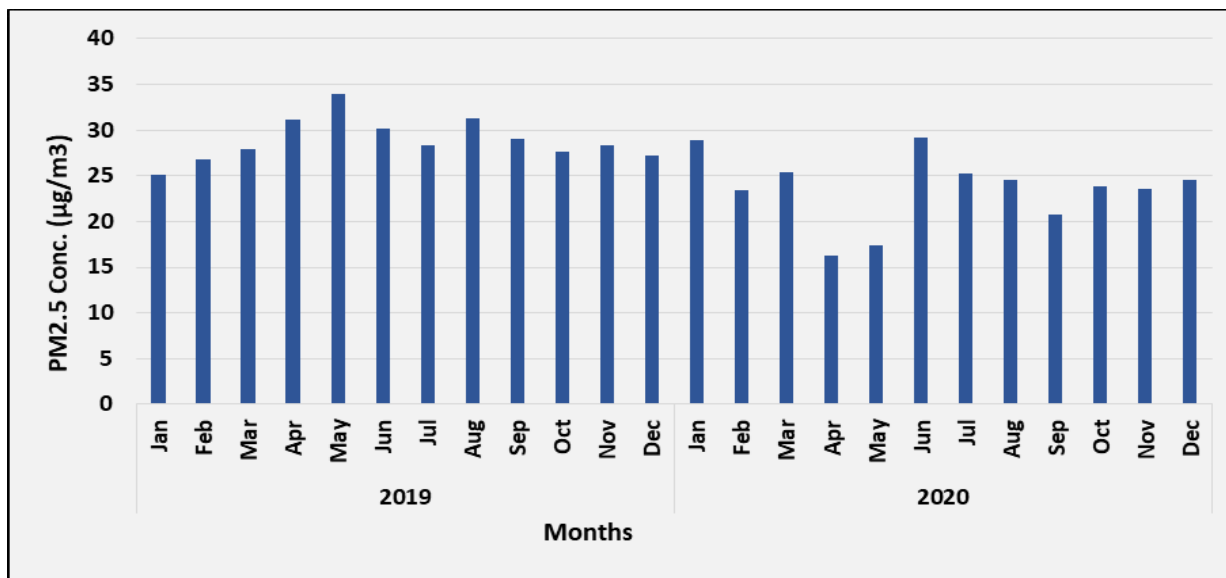


Fig. S2: Time series of monthly average $PM_{2.5}$ ambient air concentration in SEIL TPP

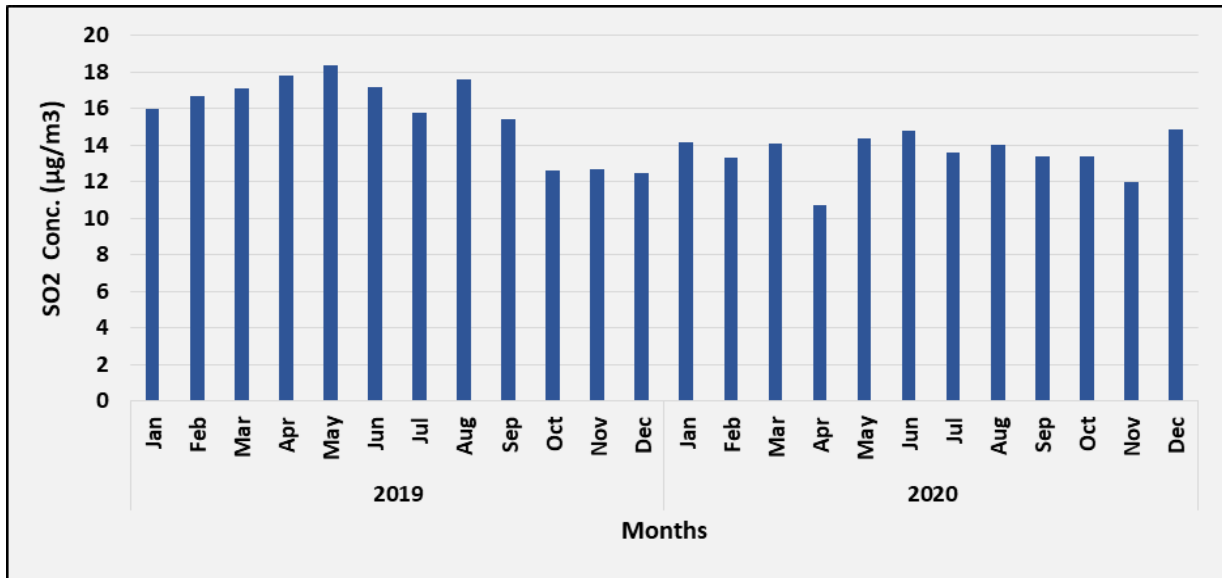


Fig. S3: Time series of monthly average SO₂ ambient air concentration in SEIL TPP

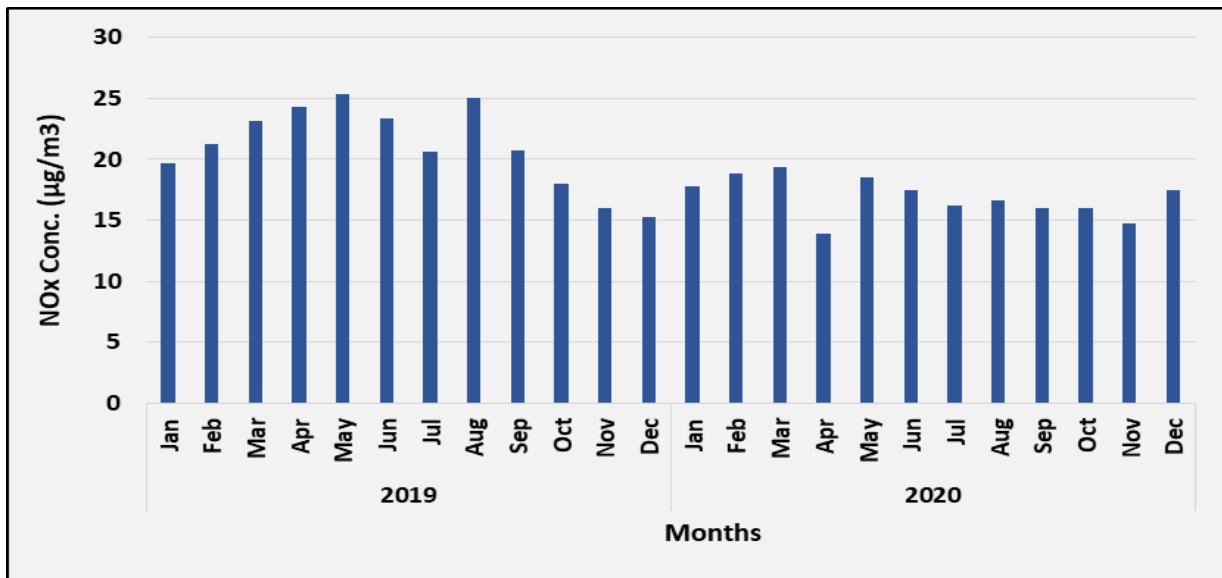


Fig. S4: Time series of monthly average NO_x ambient air concentration in SEIL TPP

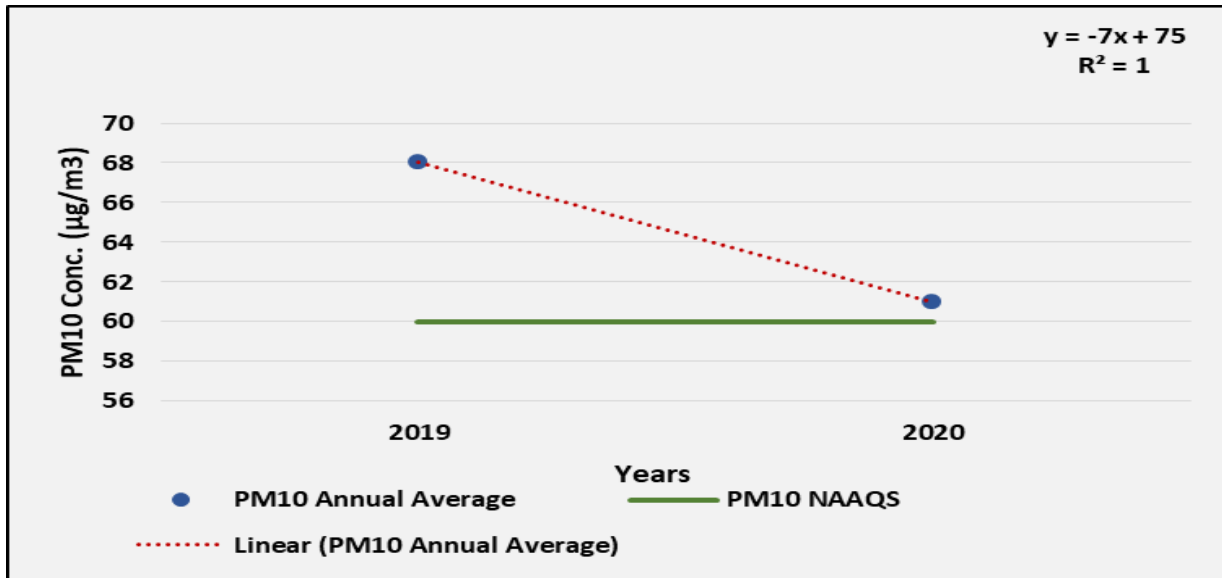


Fig. S5: Trend of annual mean PM₁₀ ambient air concentration in SEIL TPP

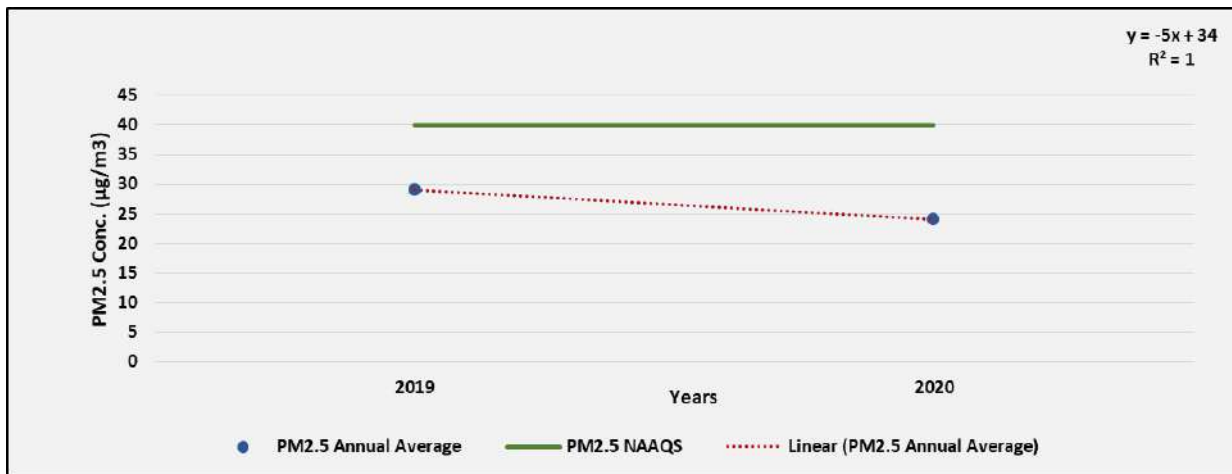


Fig. S6: Trend of annual mean PM_{2.5} ambient air concentration in SEIL TPP

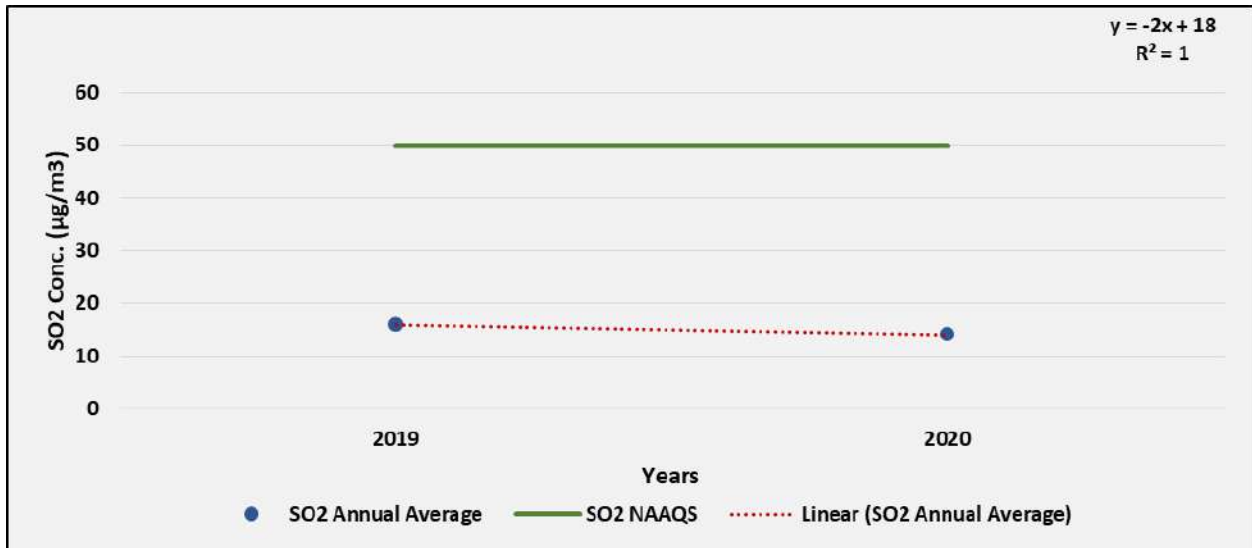


Fig. S7: Trend of annual mean SO₂ ambient air concentration in SEIL TPP

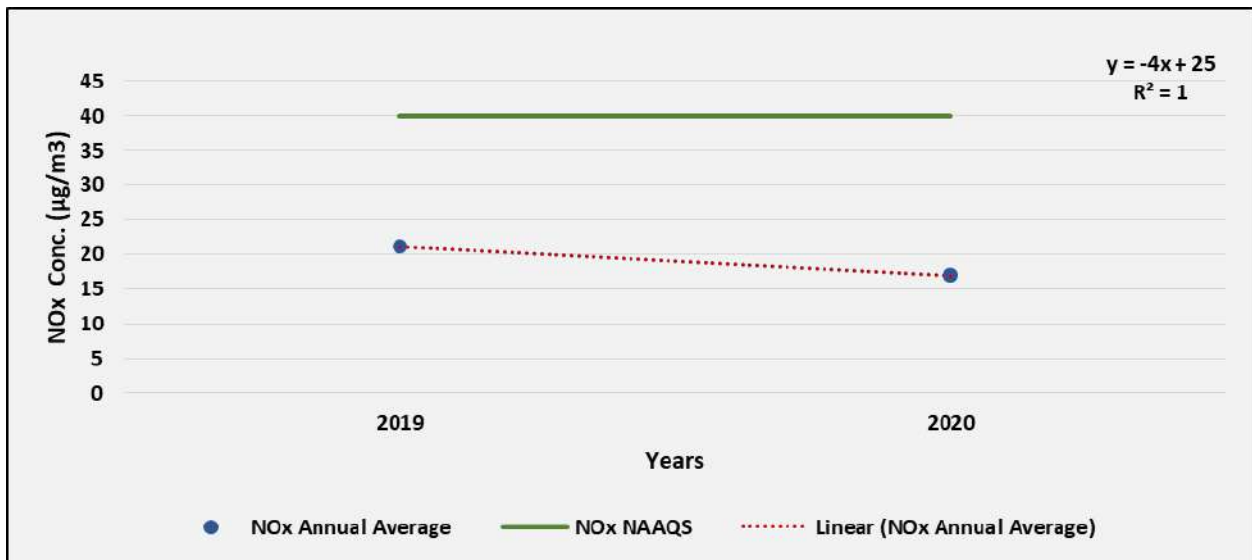


Fig. S8: Trend of annual mean NO_x ambient air concentration in SEIL TPP

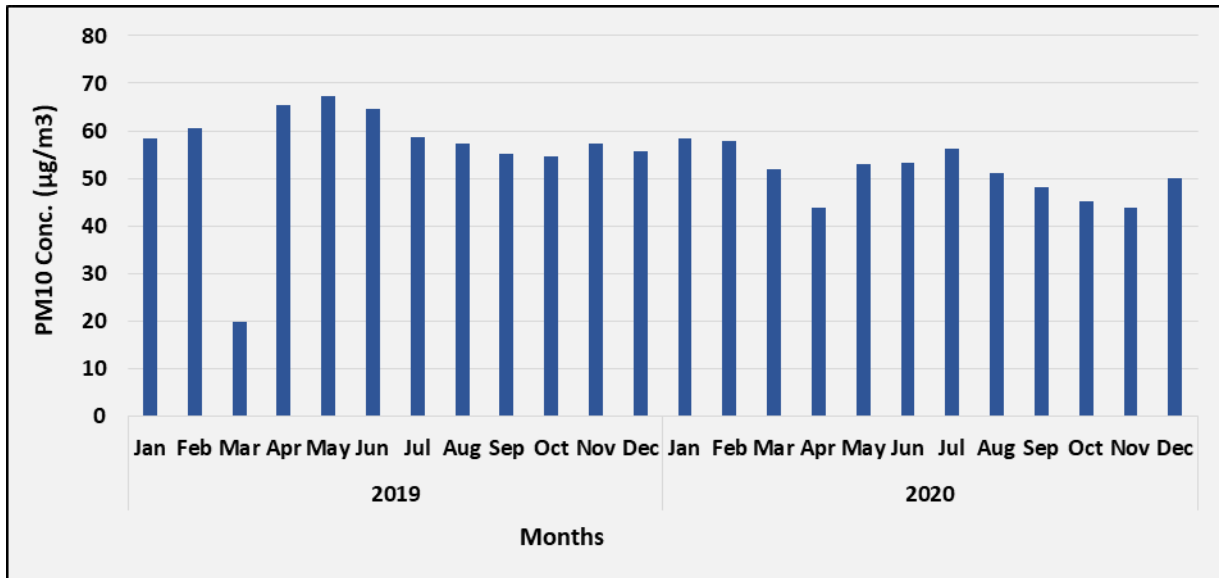


Fig. S9: Time series of monthly average PM₁₀ ambient air concentration in SEIL TPP

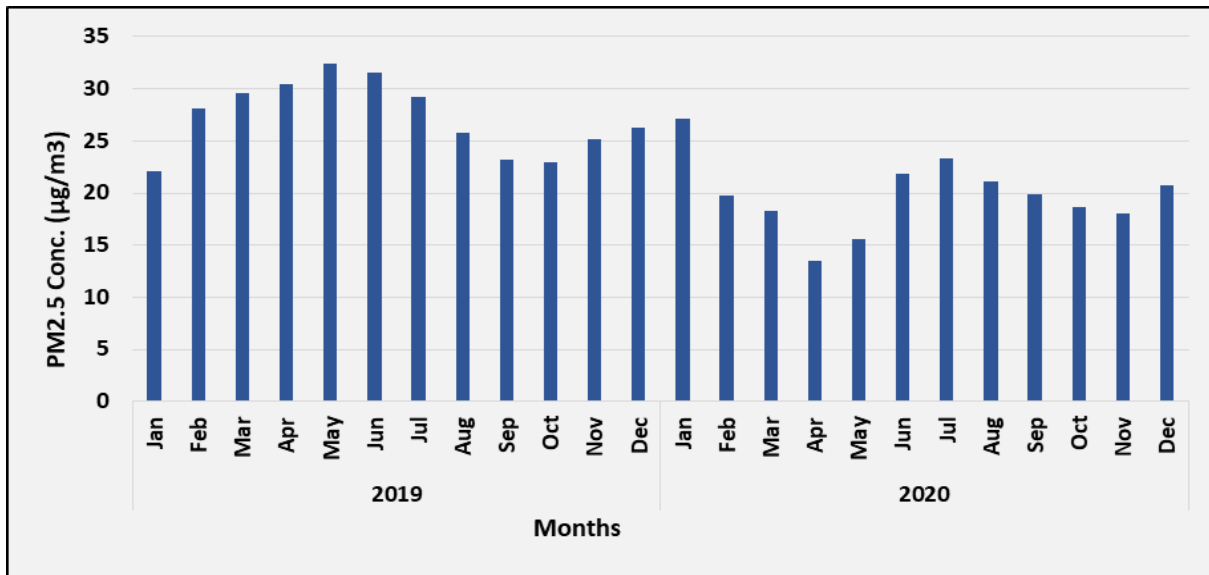


Fig. S10: Time series of monthly average PM_{2.5} ambient air concentration in SEIL TPP

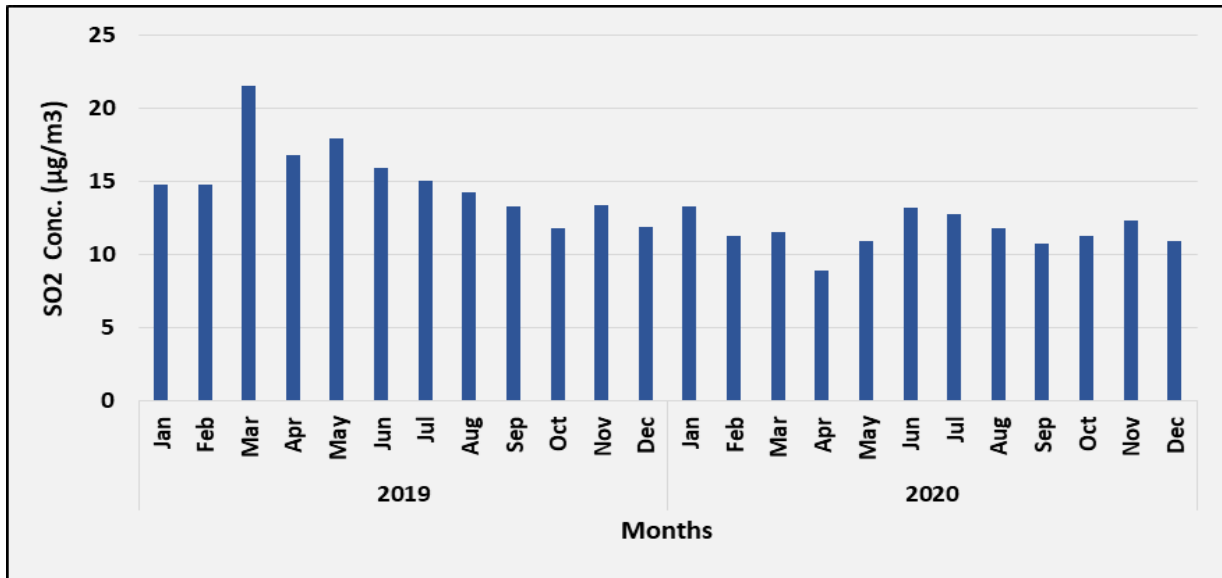


Fig. S11: Time series of monthly average SO₂ ambient air concentration in SEIL TPP

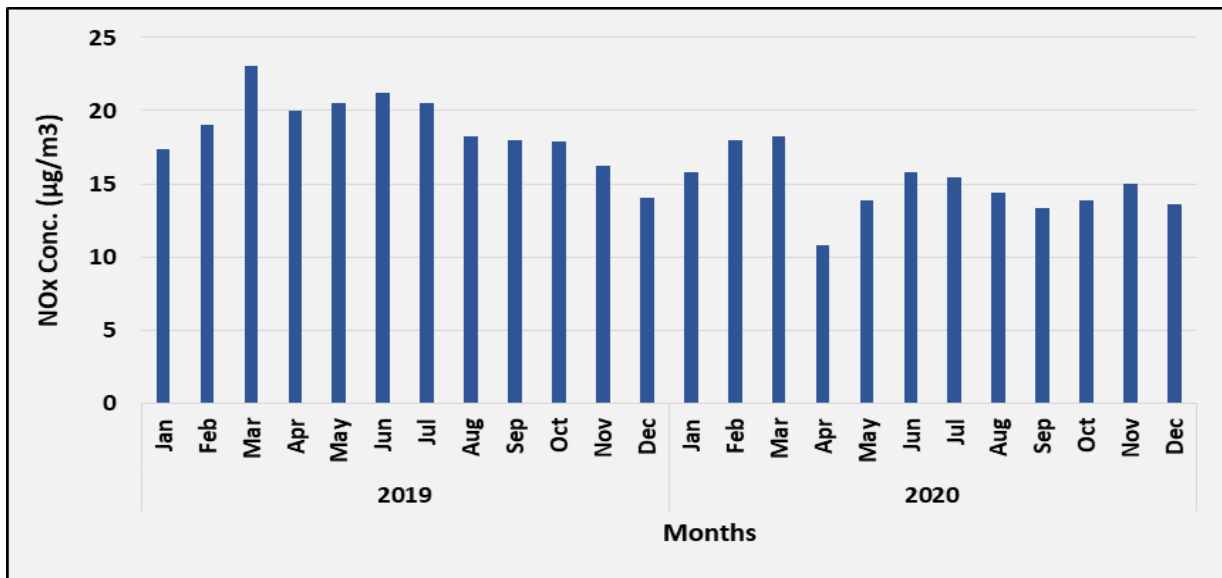


Fig. S12: Time series of monthly average NO_x ambient air concentration in SEIL TPP

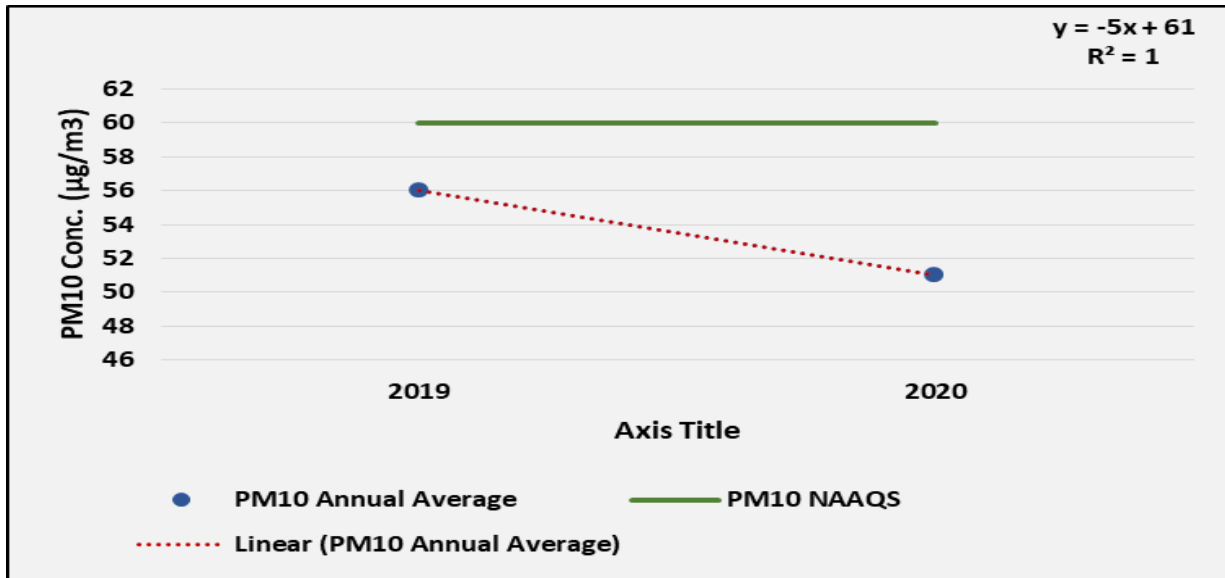


Fig. S13: Trend of annual mean PM_{10} ambient air concentration in SEIL TPP

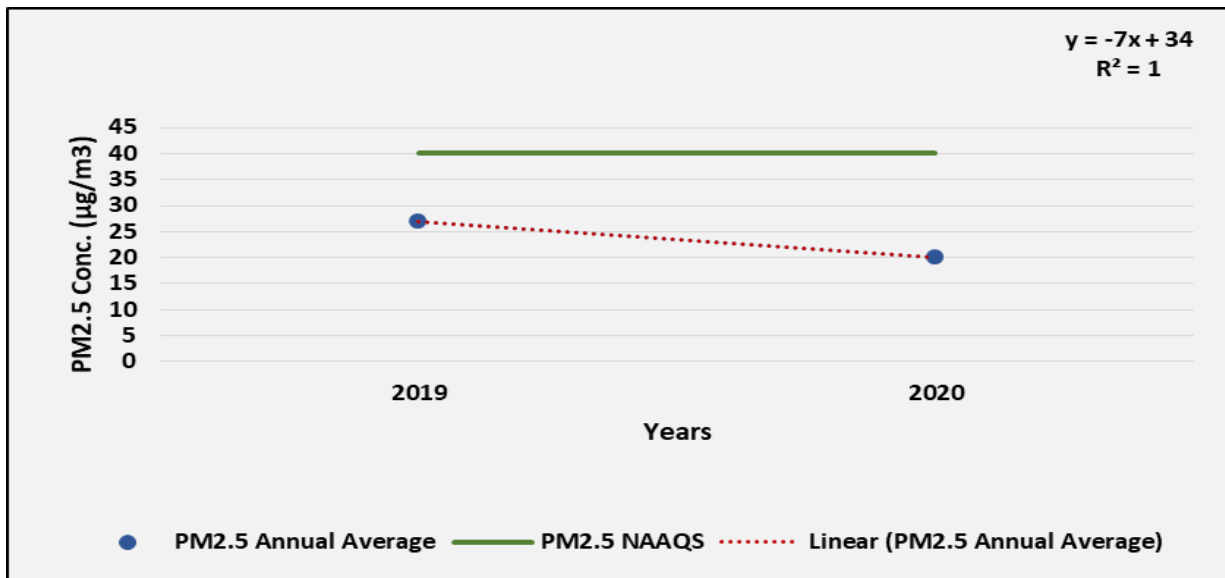


Fig. S14: Trend of annual mean $PM_{2.5}$ ambient air concentration in SEIL TPP

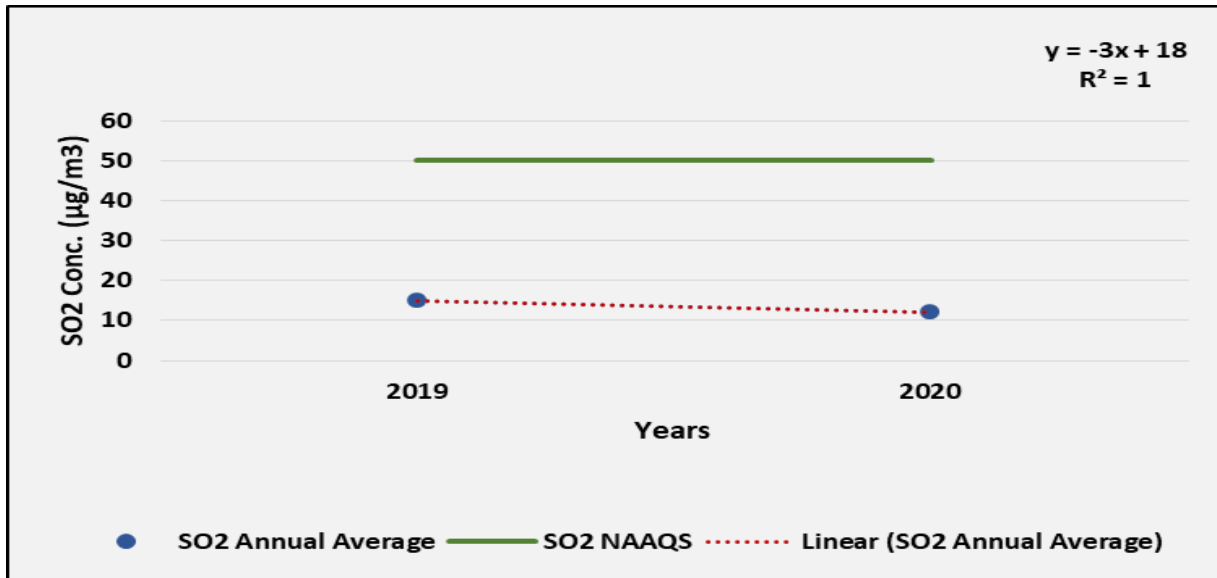


Fig. S15: Trend of annual mean SO₂ ambient air concentration in SEIL TPP

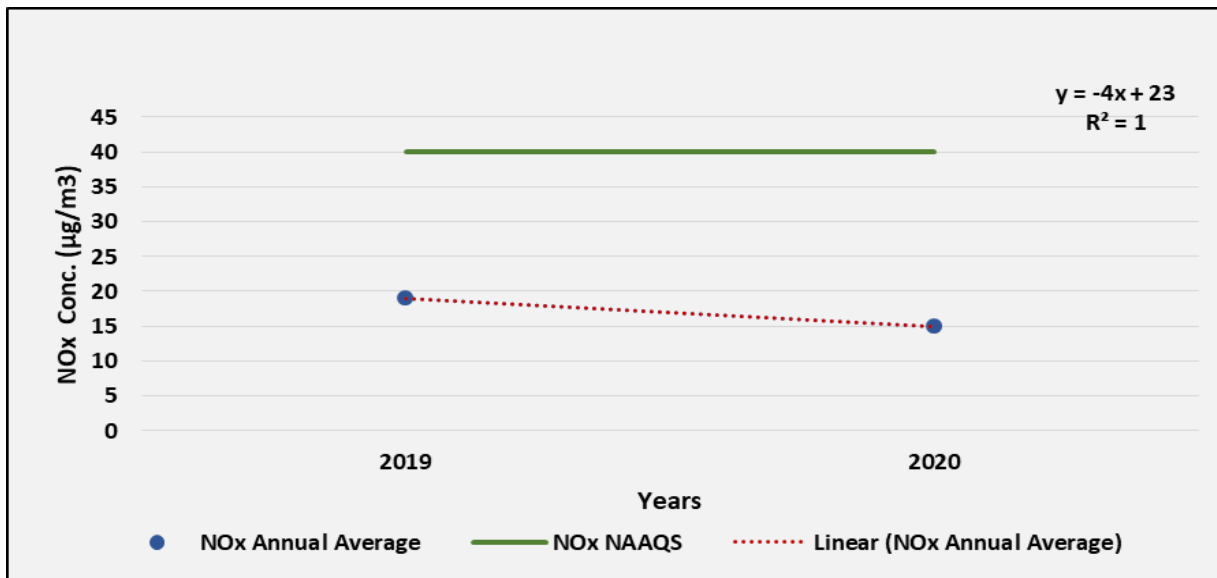


Fig. S16: Trend of annual mean NO_x ambient air concentration in SEIL TPP

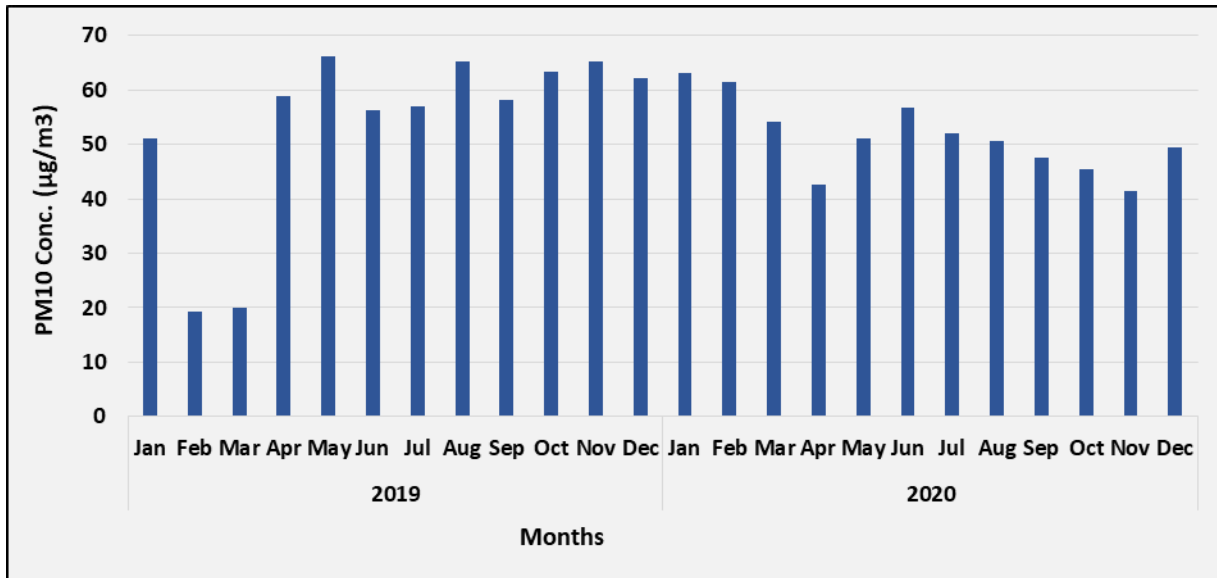


Fig. S17: Time series of monthly average PM_{10} ambient air concentration in SEIL TPP

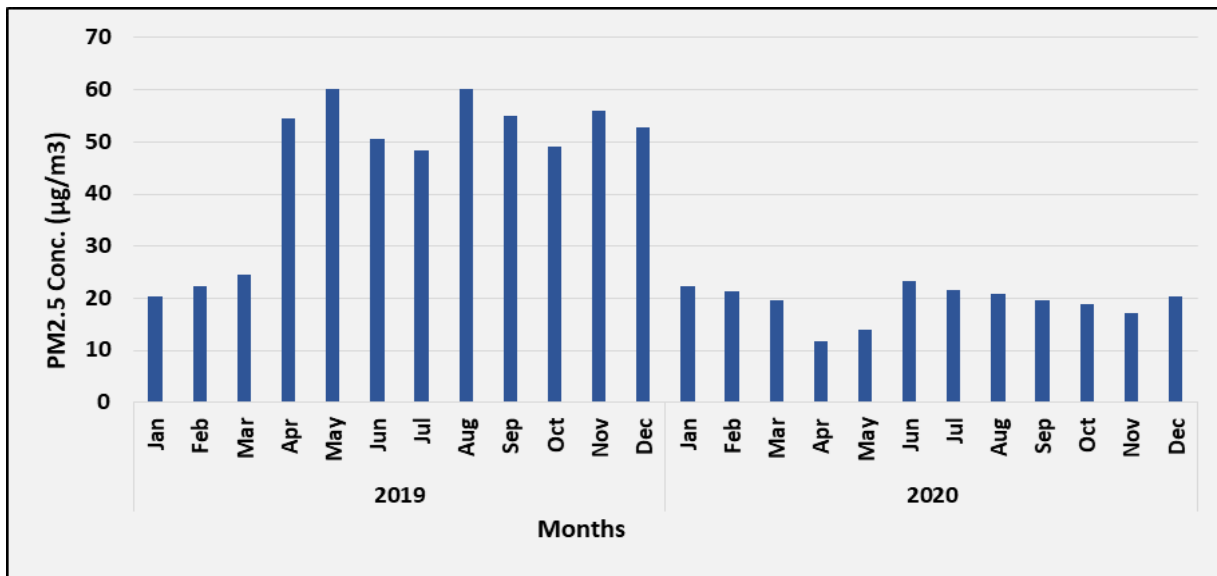


Fig. S18: Time series of monthly average $PM_{2.5}$ ambient air concentration in SEIL TPP

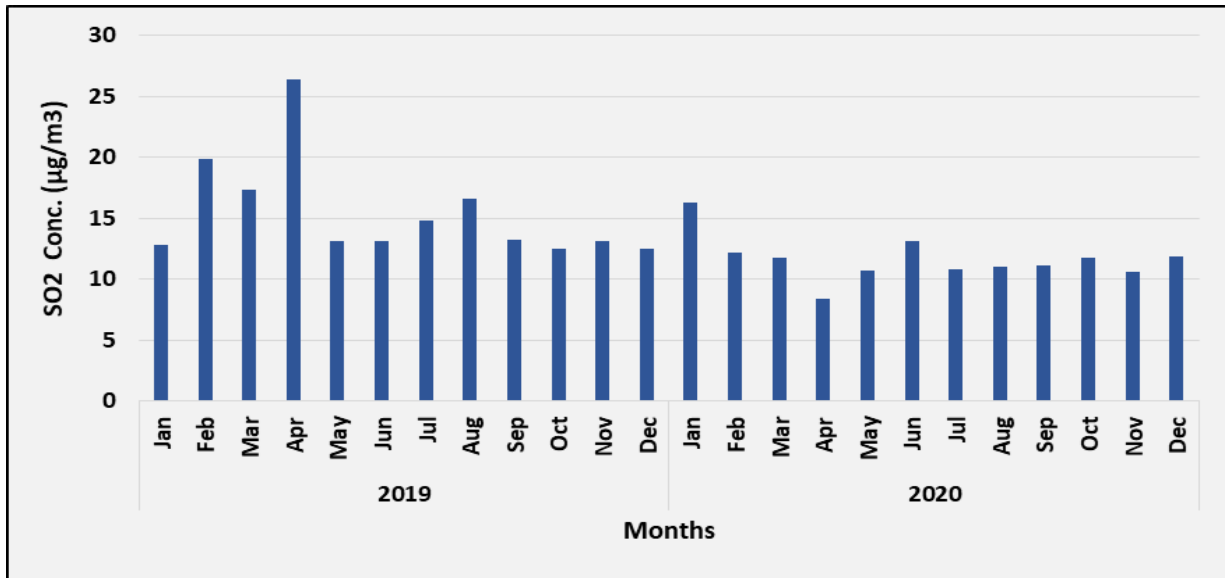


Fig. S19: Time series of monthly average SO₂ ambient air concentration in SEIL TPP

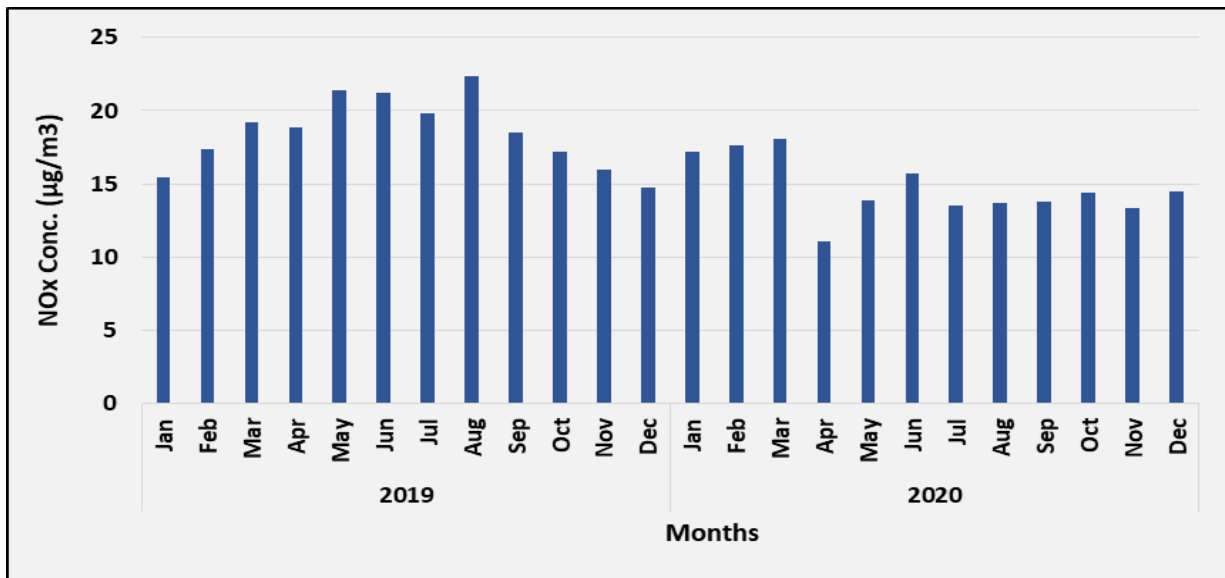


Fig. S20: Time series of monthly average NO_x ambient air concentration in SEIL TPP

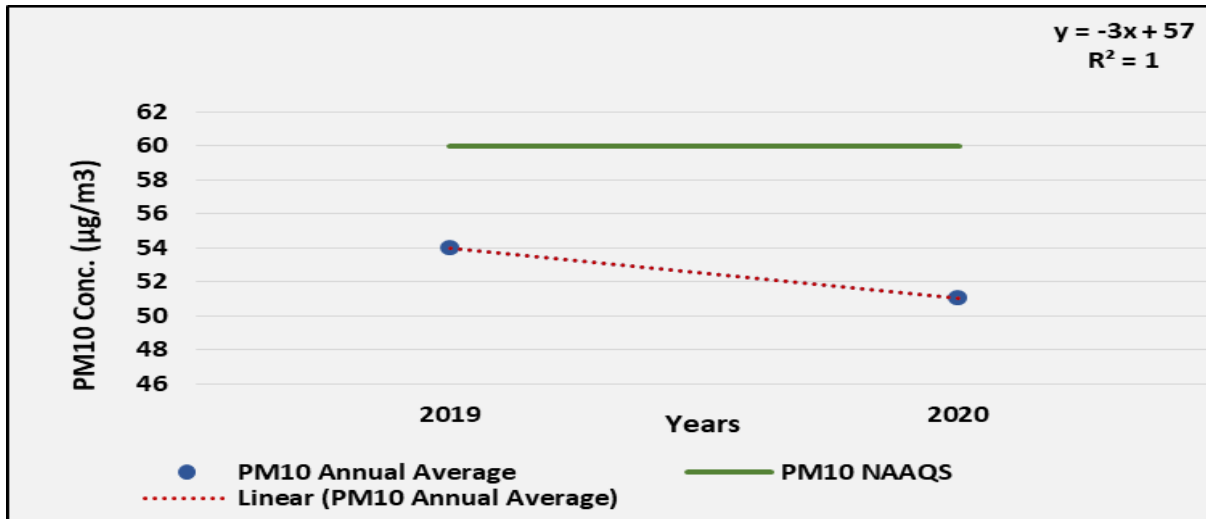


Fig. S21: Trend of annual mean PM_{10} ambient air concentration in SEIL TPP

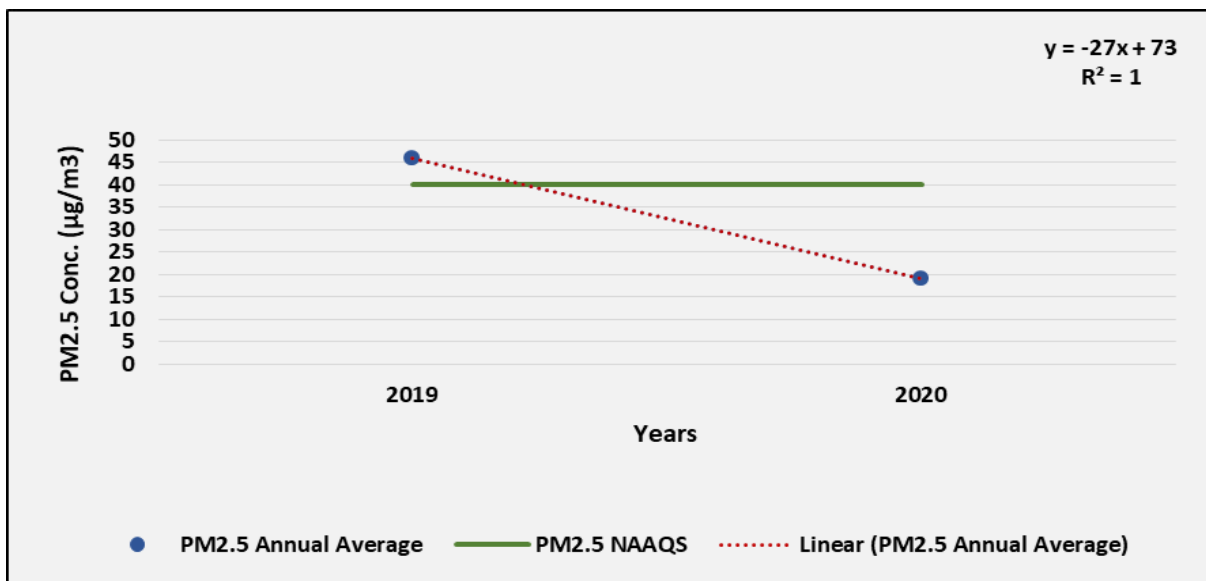


Fig. S22: Trend of annual mean $PM_{2.5}$ ambient air concentration in SEIL TPP

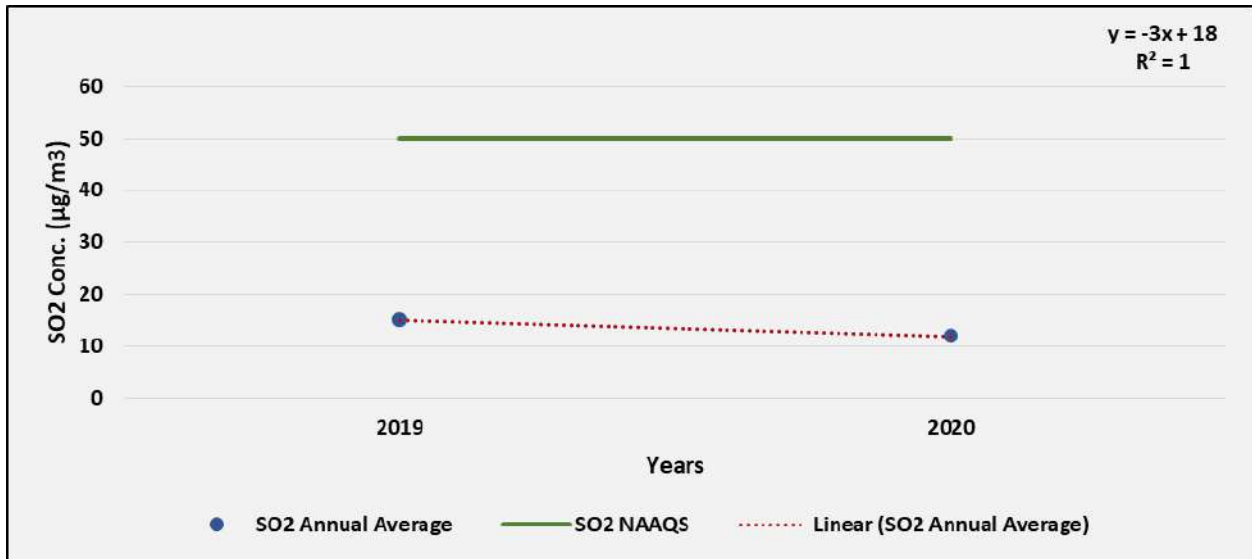


Fig. S23: Trend of annual mean SO₂ ambient air concentration in SEIL TPP

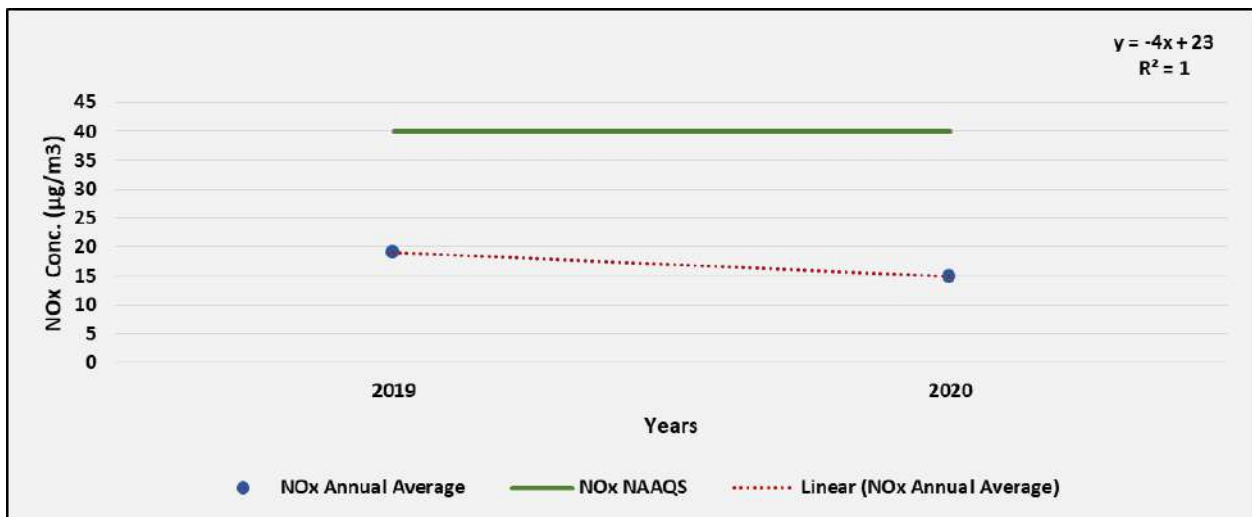


Fig. S24: Trend of annual mean NO_x ambient air concentration in SEIL TPP

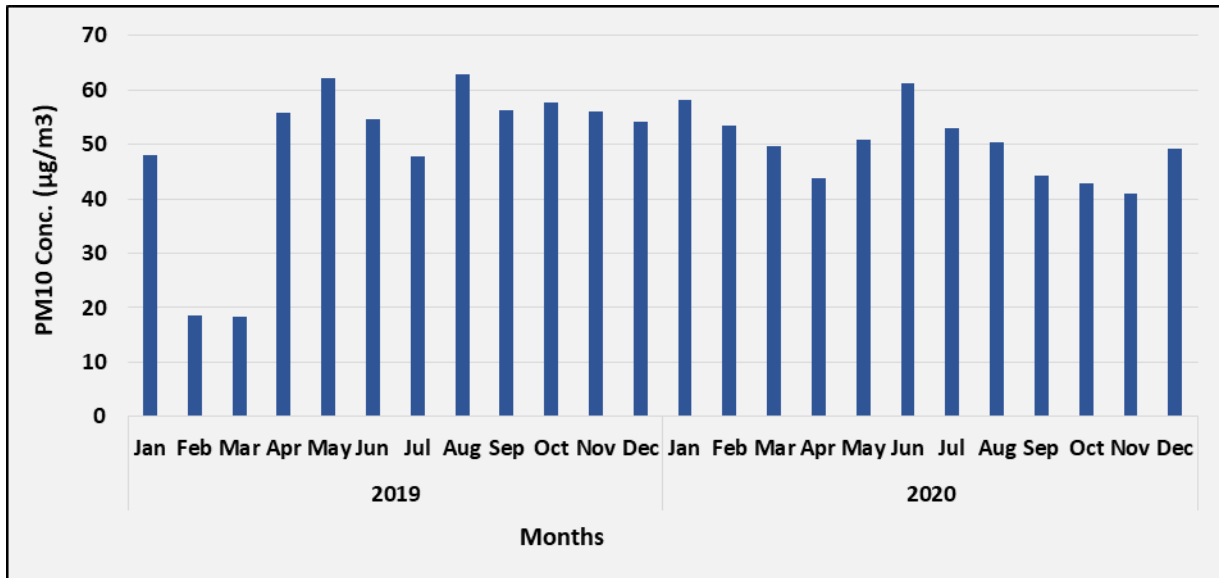


Fig. S25: Time series of monthly average PM₁₀ ambient air concentration in SEIL TPP

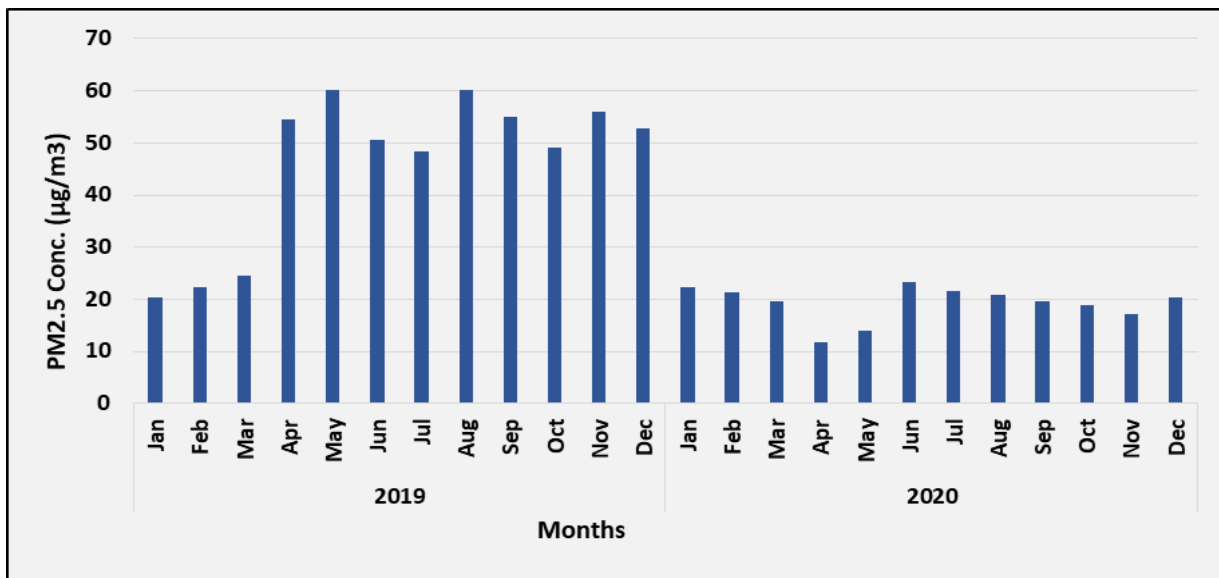


Fig. S26: Time series of monthly average PM_{2.5} ambient air concentration in SEIL TPP

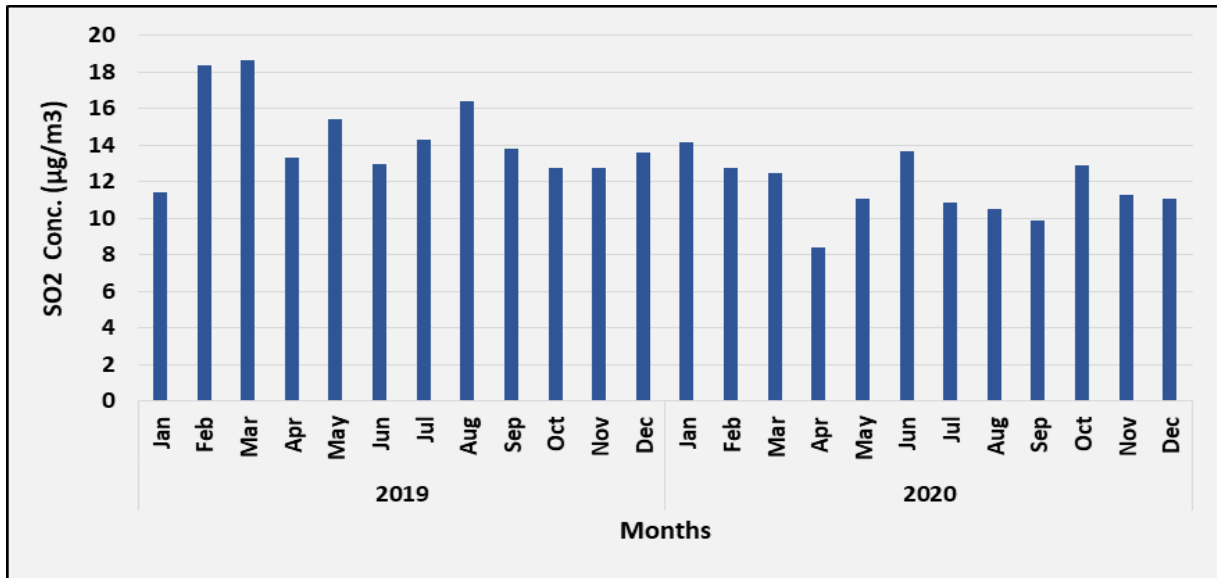


Fig. S27: Time series of monthly average SO₂ ambient air concentration in SEIL TPP

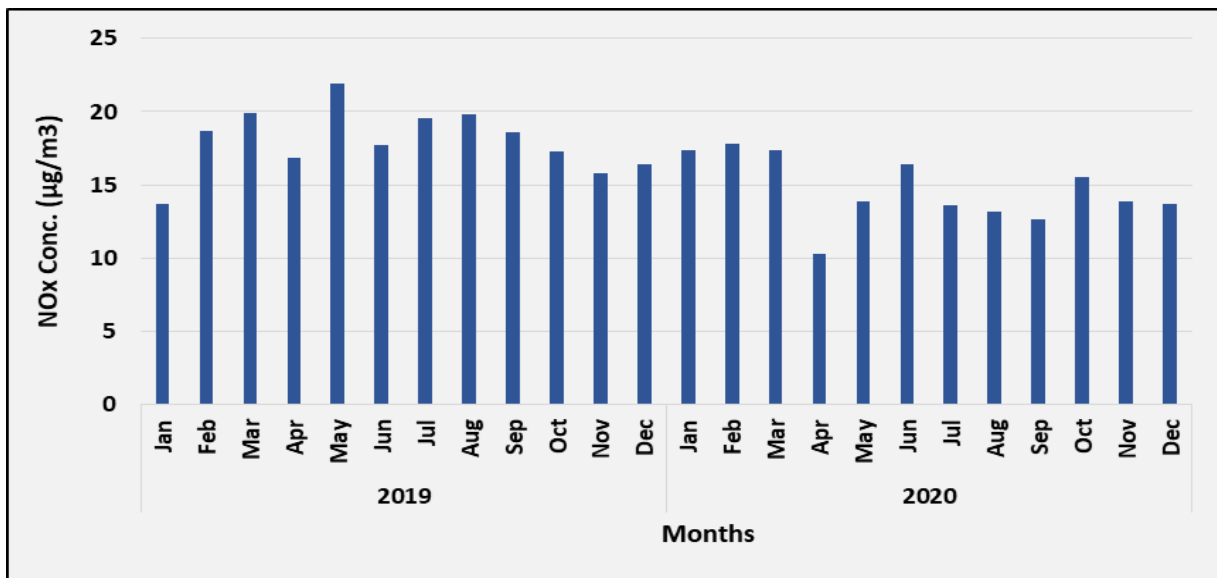


Fig. S28: Time series of monthly average NO_x ambient air concentration in SEIL TPP

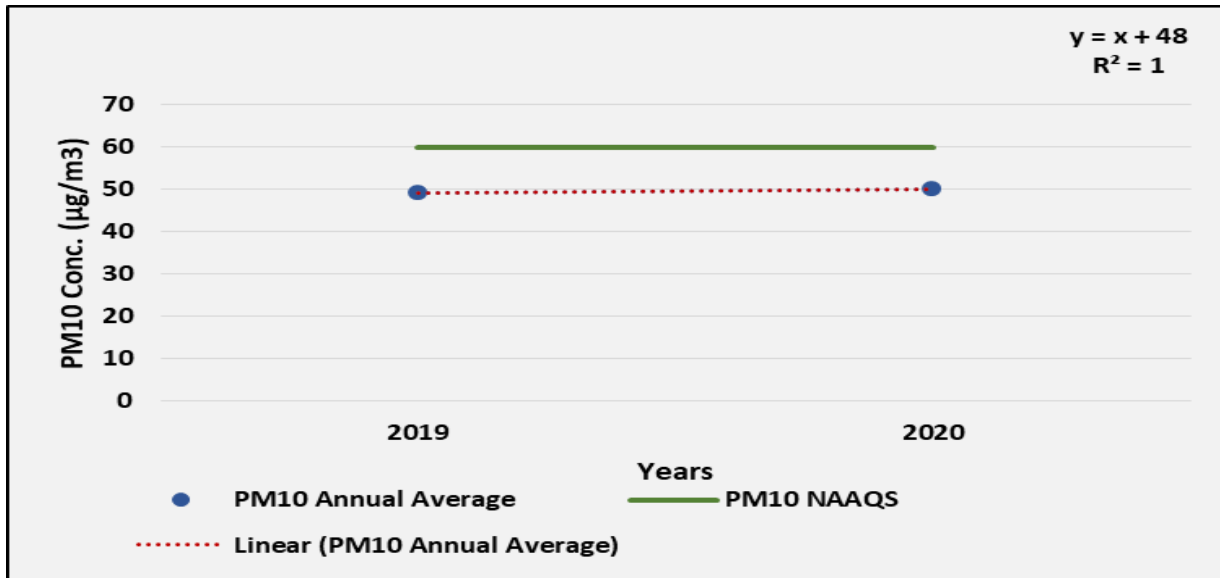


Fig. S29: Trend of annual mean PM₁₀ ambient air concentration in SEIL TPP

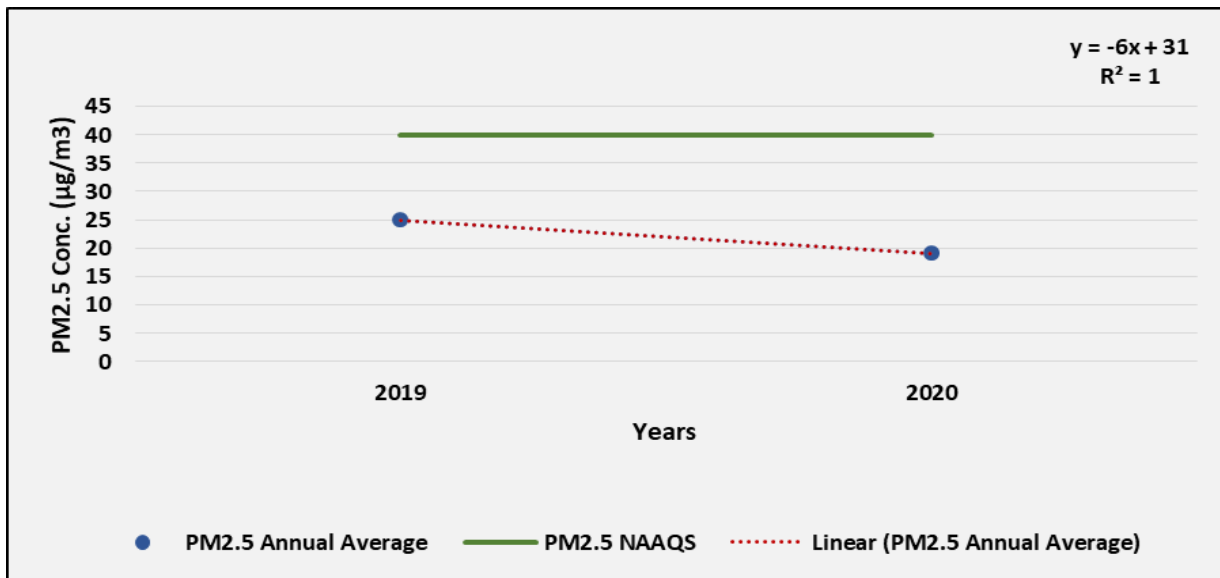


Fig. S30: Trend of annual mean PM_{2.5} ambient air concentration in SEIL TPP

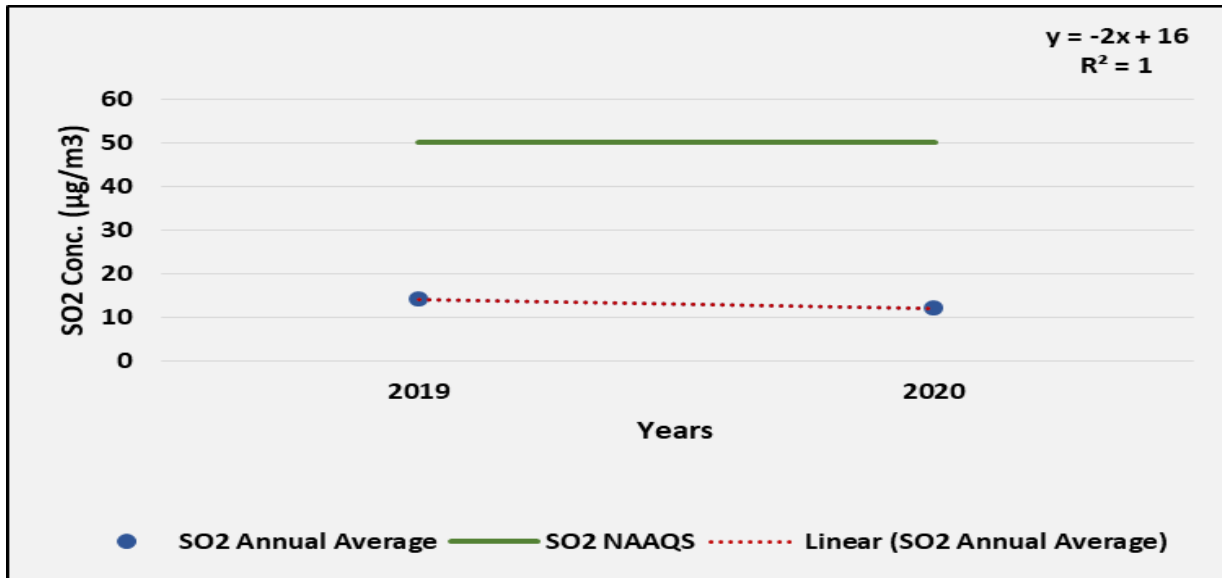


Fig. S31: Trend of annual mean SO₂ ambient air concentration in SEIL TPP

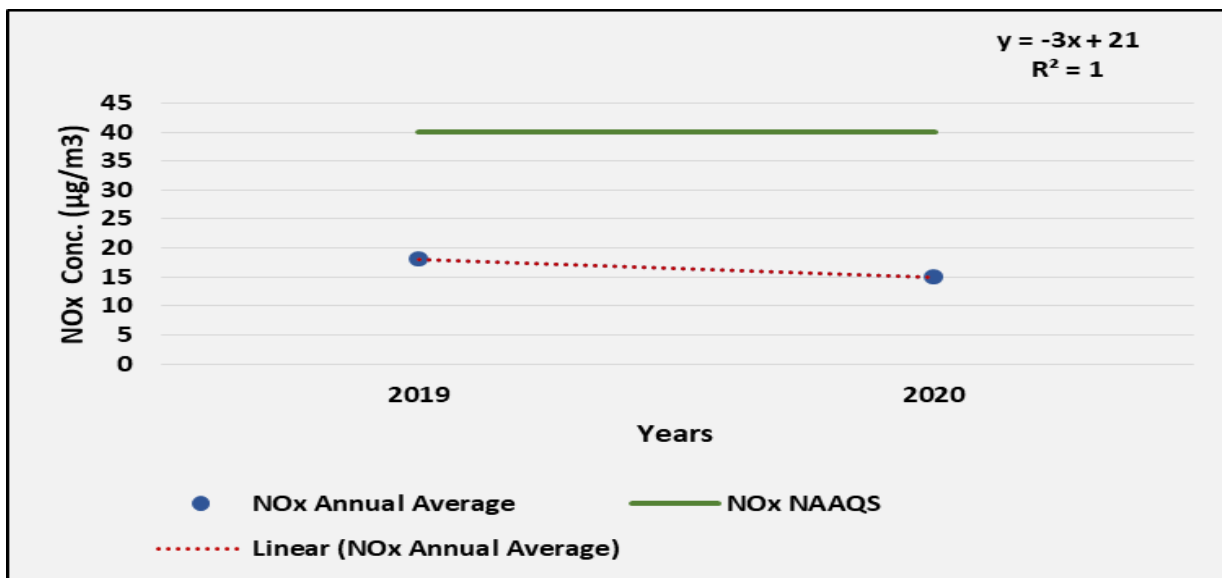


Fig. S32: Trend of annual mean NO_x ambient air concentration in SEIL TPP

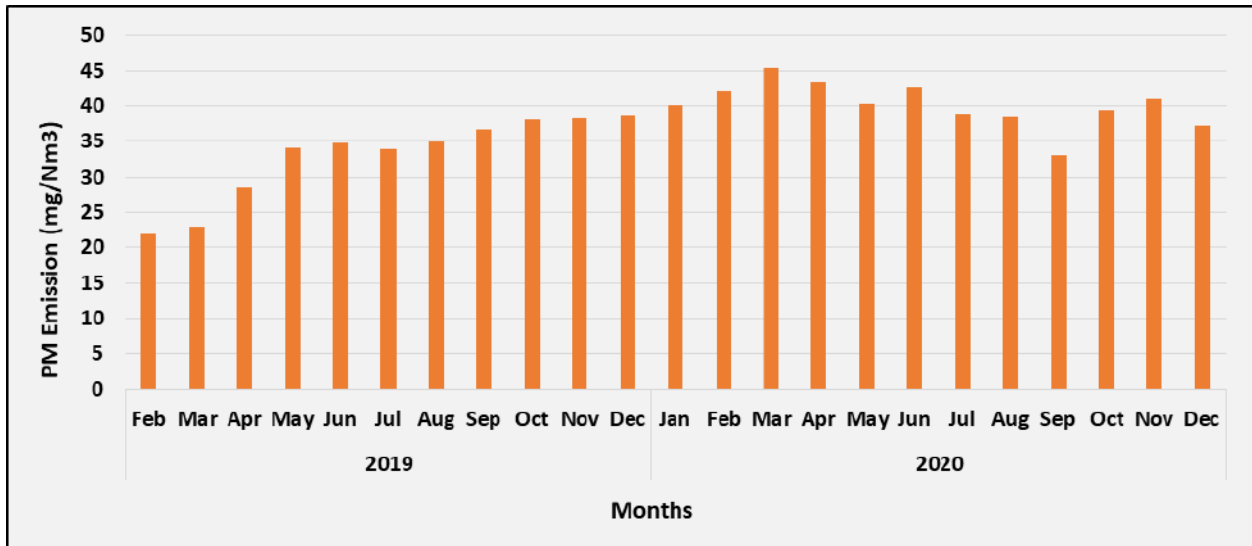


Fig. S33: Time series of monthly average emission of PM from Unit 1 in SIEL TPP

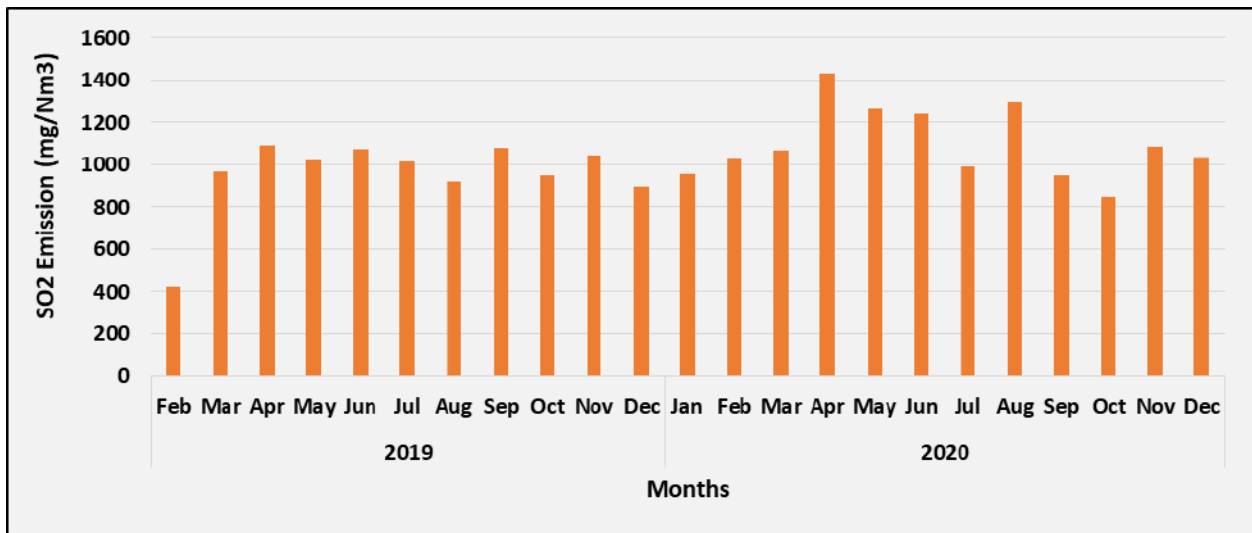


Fig. S34: Time series of monthly average emission of SO2 from Unit 1 in SEIL TPP

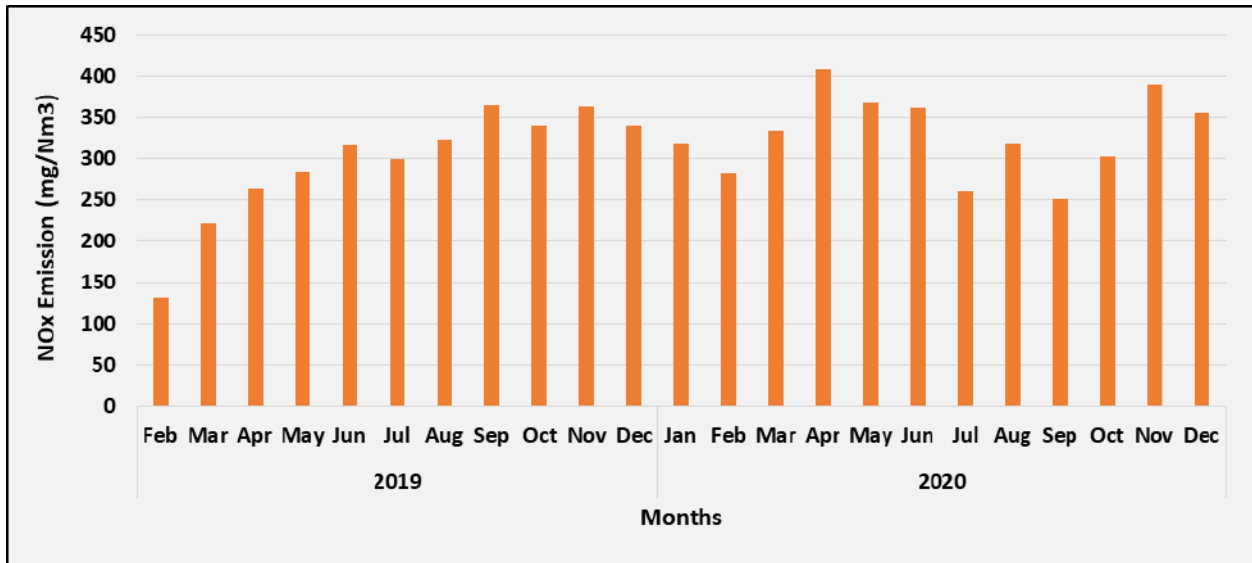


Fig. S35: Time series of monthly average emission of NOx from Unit 1 in SEIL TPP

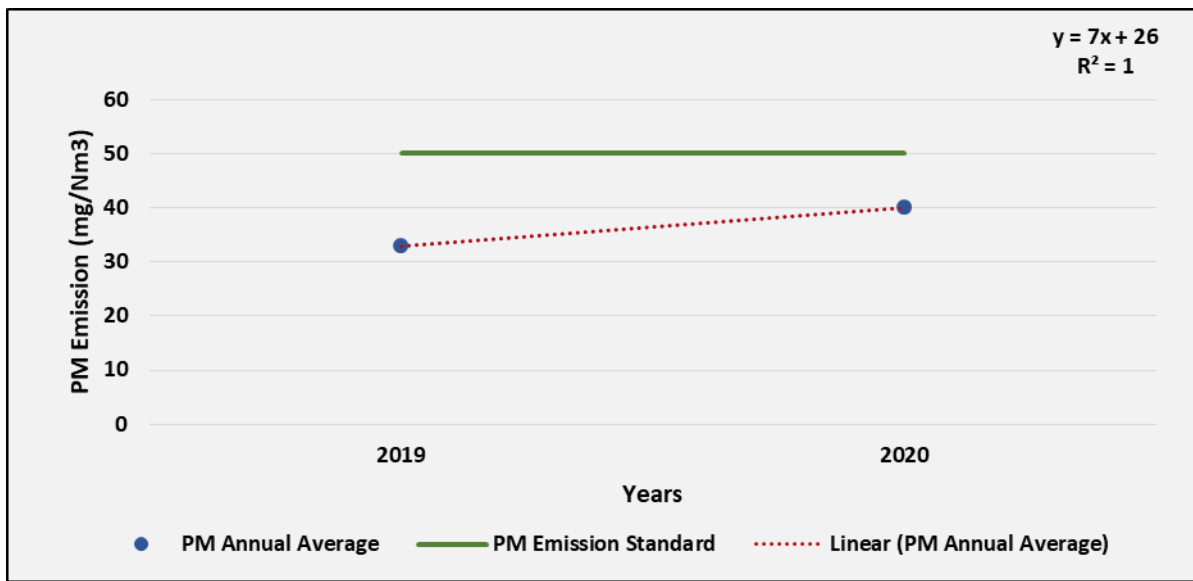


Fig. S36: Trend of annual average PM emissions from unit 1 in SEIL TPP

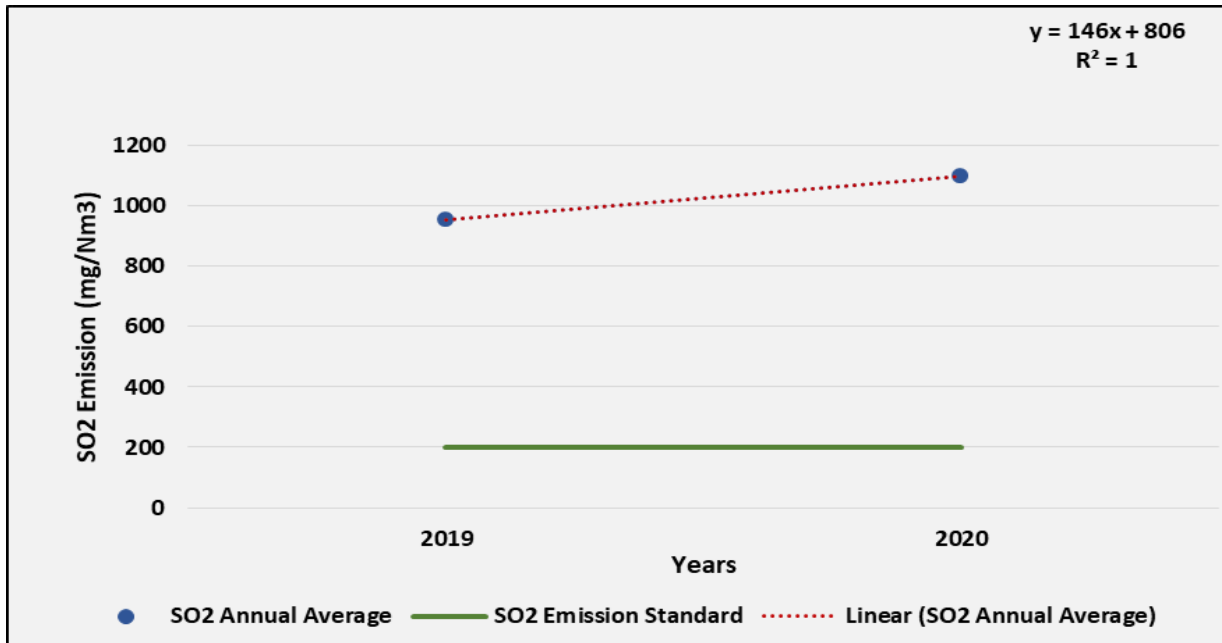


Fig. S37: Trend of annual average SO2 emissions from unit 1 in SEIL TPP

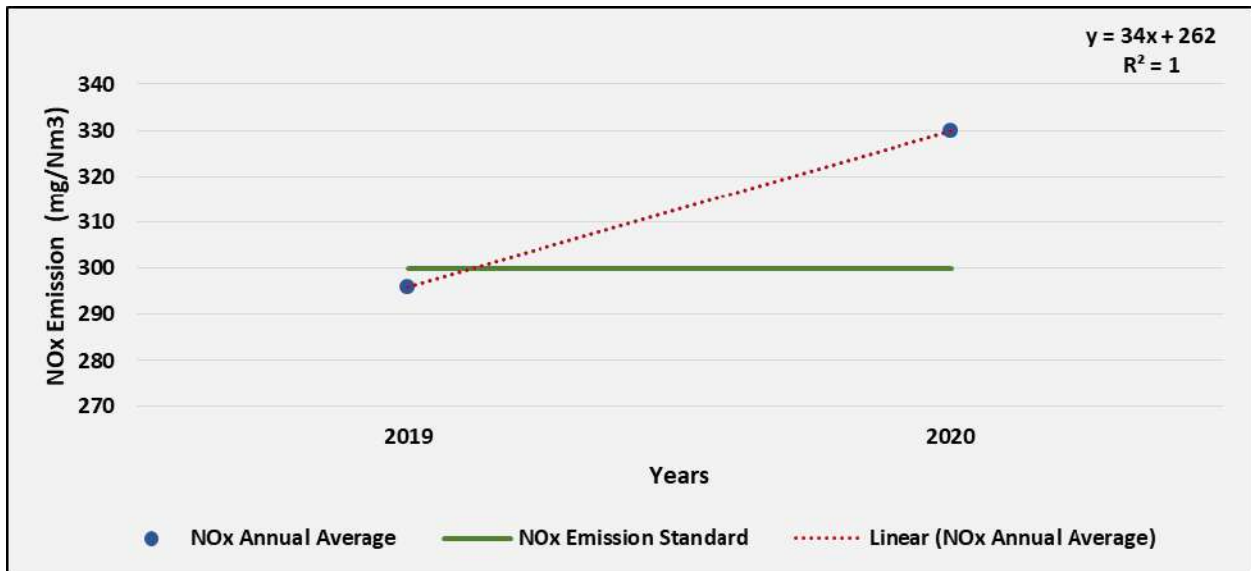


Fig. S38: Trend of annual average NOx emissions from unit 1 in SEIL TPP

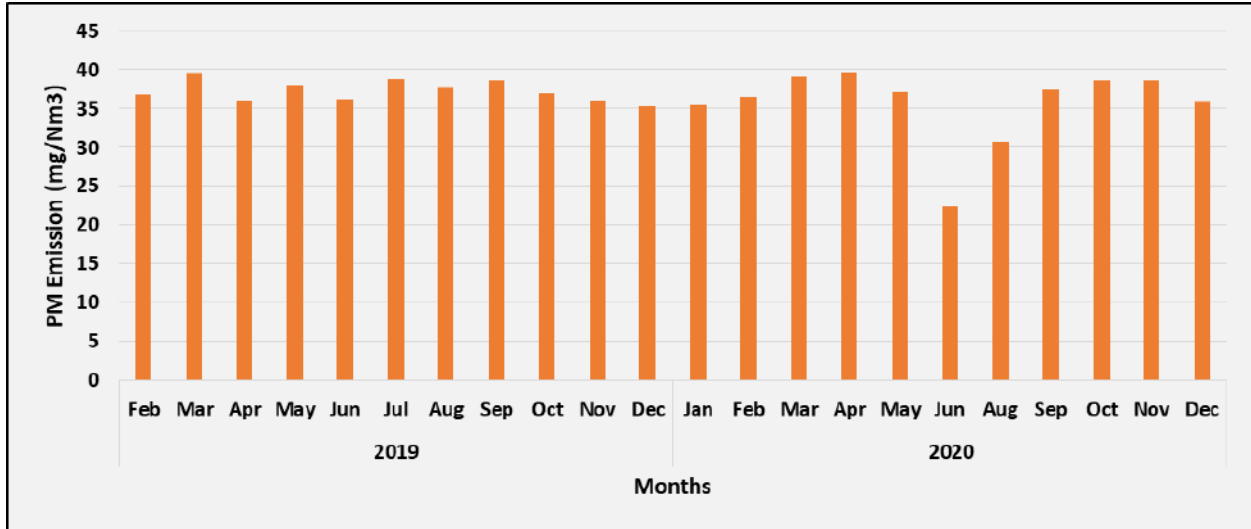


Fig. S39: Time series of monthly average emission of PM from Unit 2 in SIEL TPP

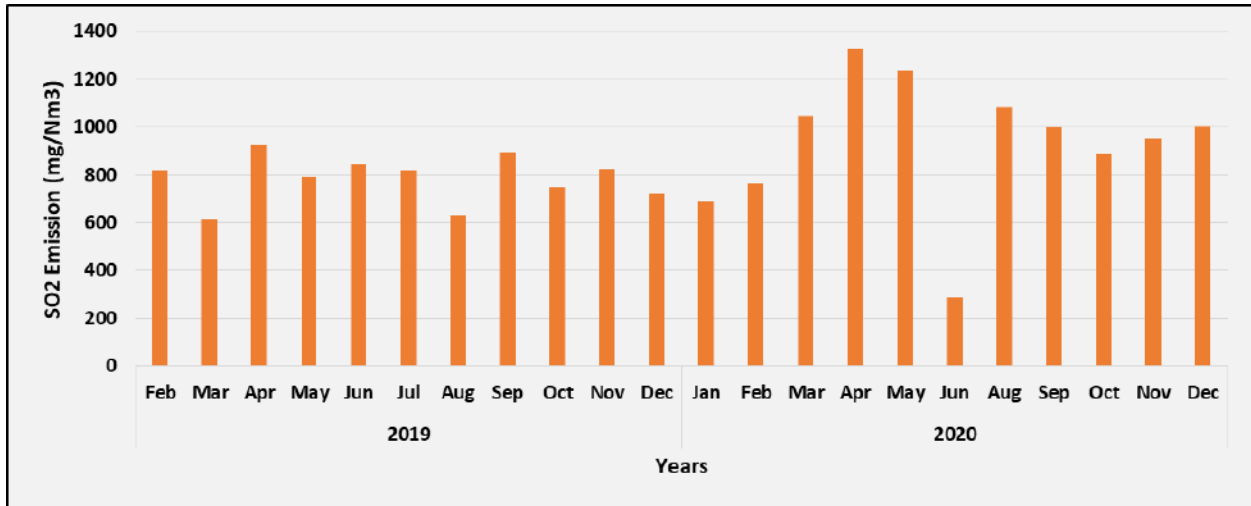


Fig. S40: Time series of monthly average emission of SO2 from Unit 2 in SEIL TPP

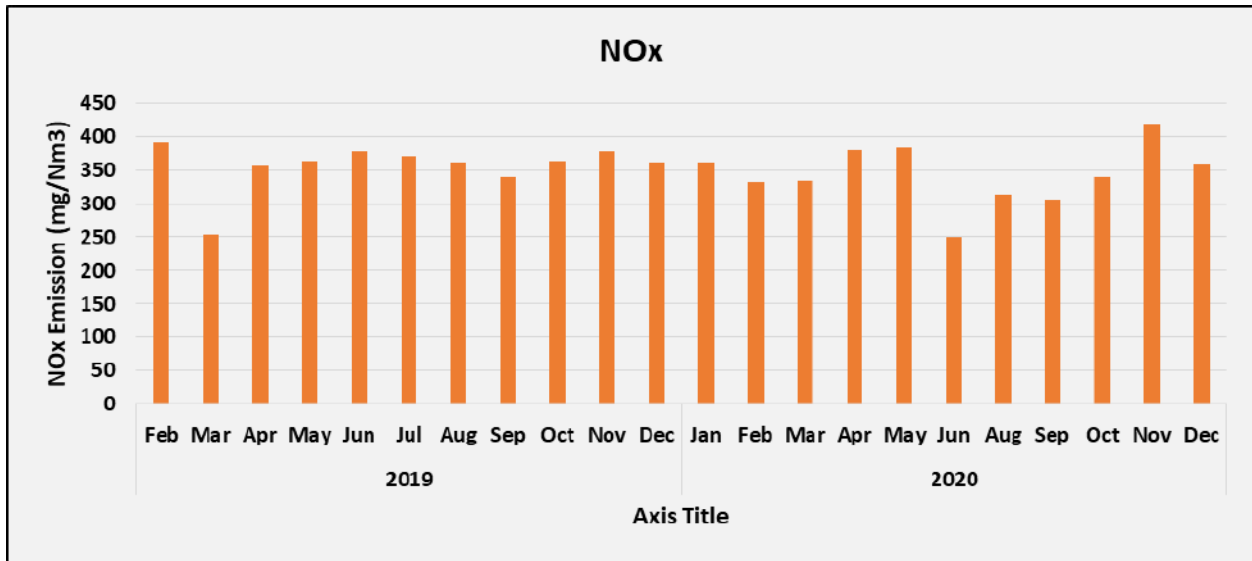
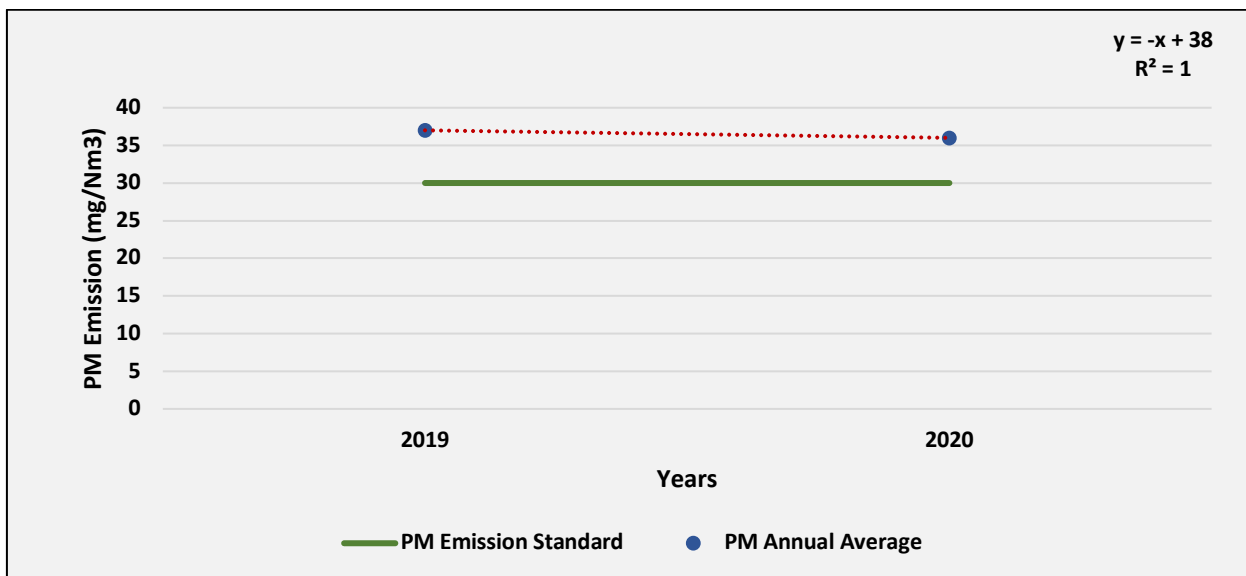


Fig. S41: Time series of monthly average emission of NOx from Unit 2 in SEIL TPP



Evidence based on ground level stations shows that the monthly average and annual average of PM10, PM2.5 are exceeding whereas the SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

PAINAMPURAM TPP

Muthukur Mandal power station (Painampuram), also known as the SGPL Power Project, is a 1,320-megawatt (MW) coal plant in Andhra Pradesh, India. Muthukur Mandal and the Bander power station are together known as the Sembcorp Gayatri Power Complex. It was granted environmental clearance in September 2010.^[3]

In January 2011, infrastructure company Nagarjuna Construction Co. (NCC) acquired 55% equity in Nelcast Energy Corporation. NCC was trying to set up the [Nagarjuna Construction Company Sompeta Thermal Plant](#), but said it had given up plans for the Sompeta plant and would transfer approvals for it to the plant being built by Nelcast Energy.

Compliance conditions of the EC were approved in 2013 Construction began in 2014. The power station is expected to begin operating by June 2016. The units were synchronized in 2016. Unit 1 is planned for commercial operation in November 2016, and unit 2 in March 2017. Unit 1 was commissioned in December 2016 and unit 2 in February 2017.

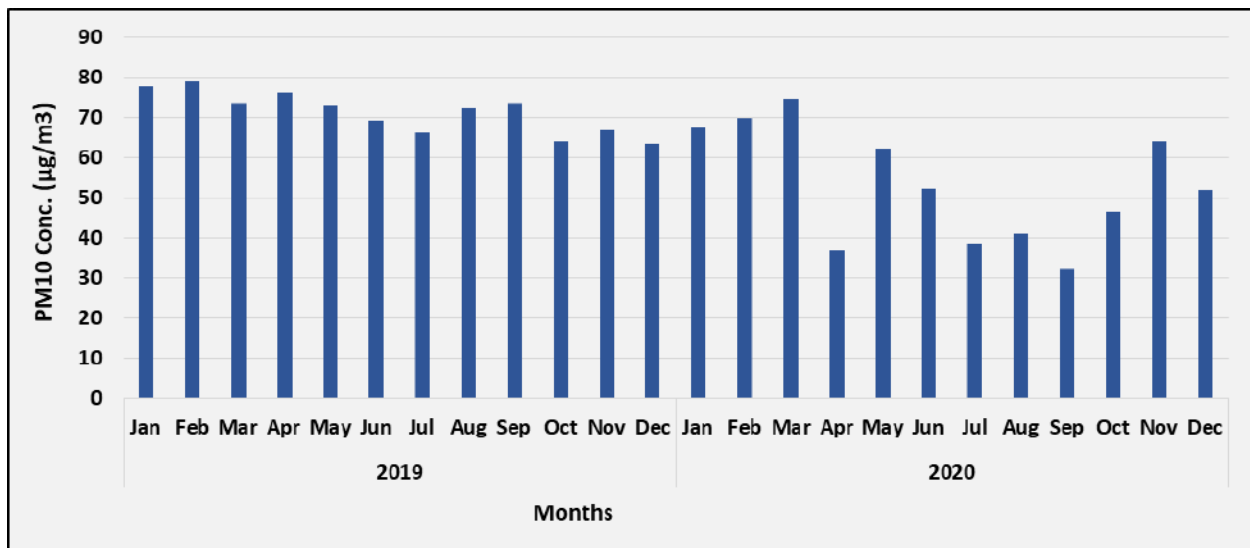


Fig. SP1: Time series of monthly average PM_{10} ambient air concentration in PAINAMPURAM TPP TPP

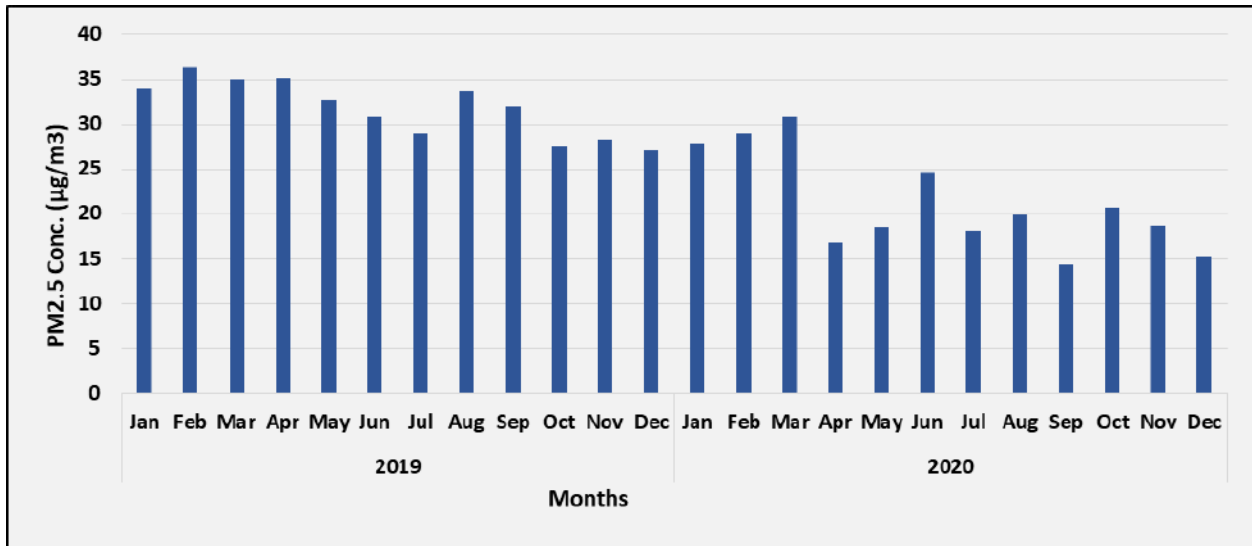


Fig. SP2: Time series of monthly average PM_{2.5} ambient air concentration in PAINAMPURAM TPP TPP

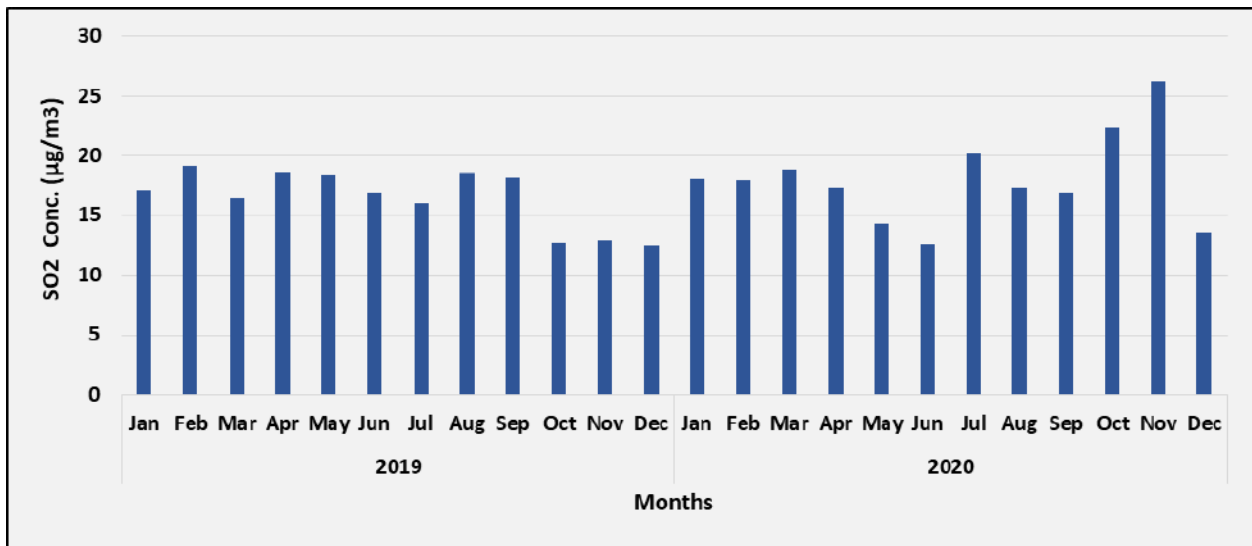


Fig. SP3: Time series of monthly average SO₂ ambient air concentration in PAINAMPURAM TPP TPP

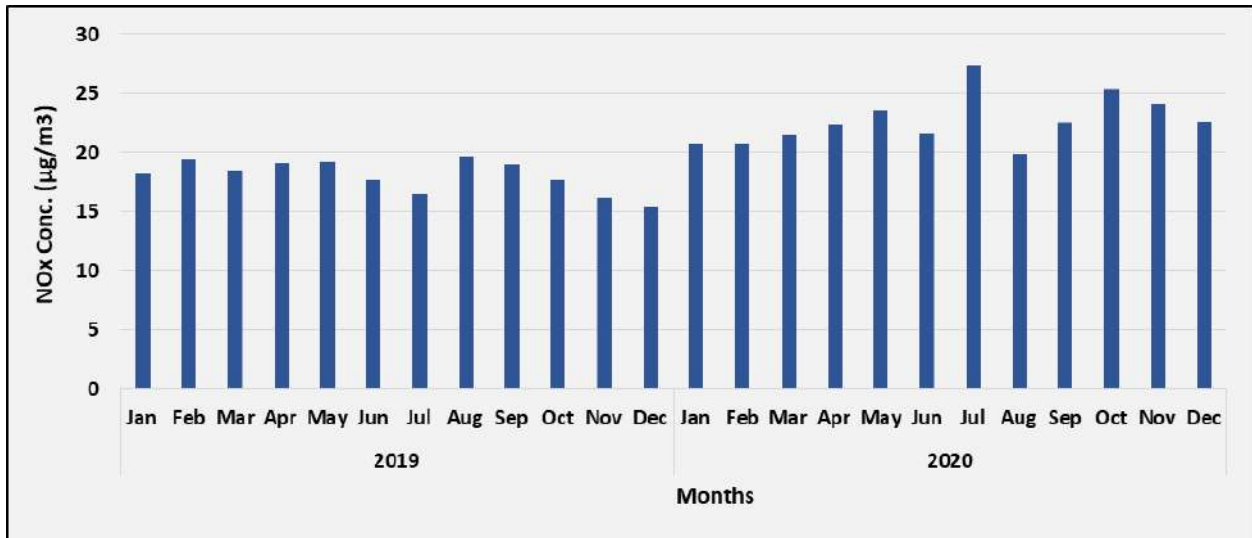


Fig. SP4: Time series of monthly average NO_x ambient air concentration in PAINAMPURAM TPP TPP

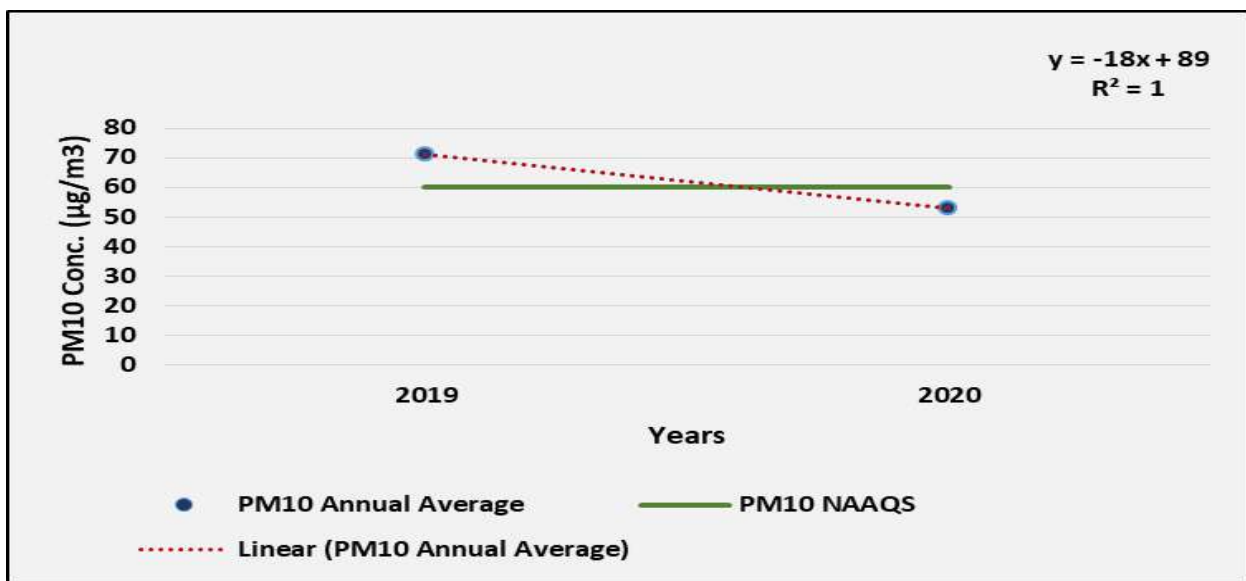


Fig. SP5: Trend of annual mean PM₁₀ ambient air concentration in PAINAMPURAM TPP TPP

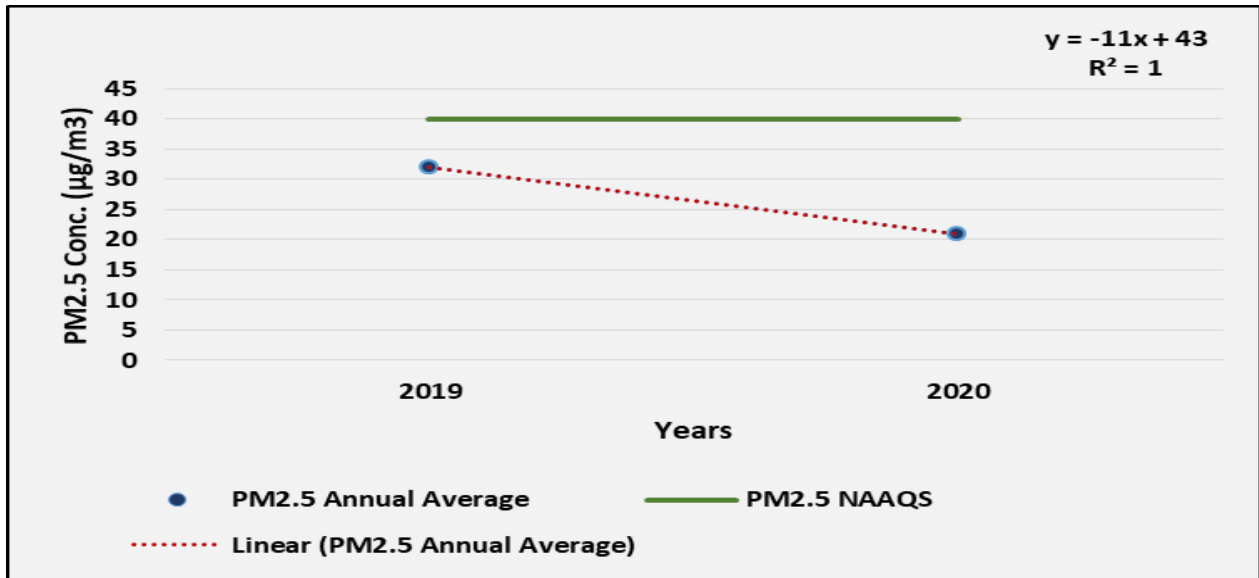


Fig. SP6: Trend of annual mean PM_{2.5} ambient air concentration in PAINAMPURAM TPP TPP

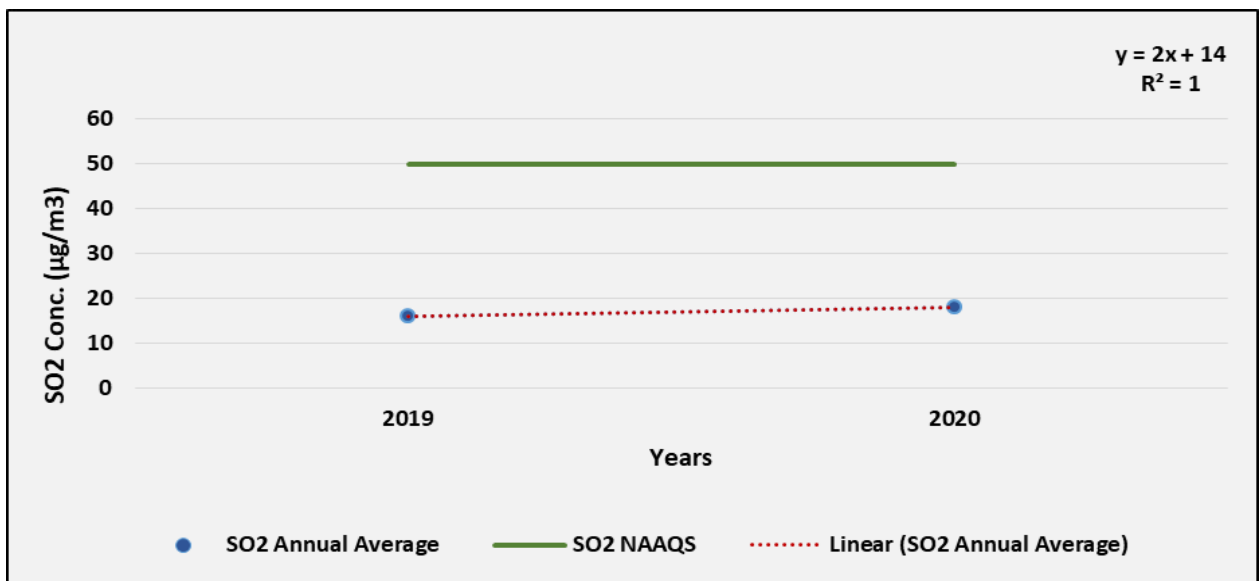


Fig. SP7: Trend of annual mean SO₂ ambient air concentration in PAINAMPURAM TPP TPP

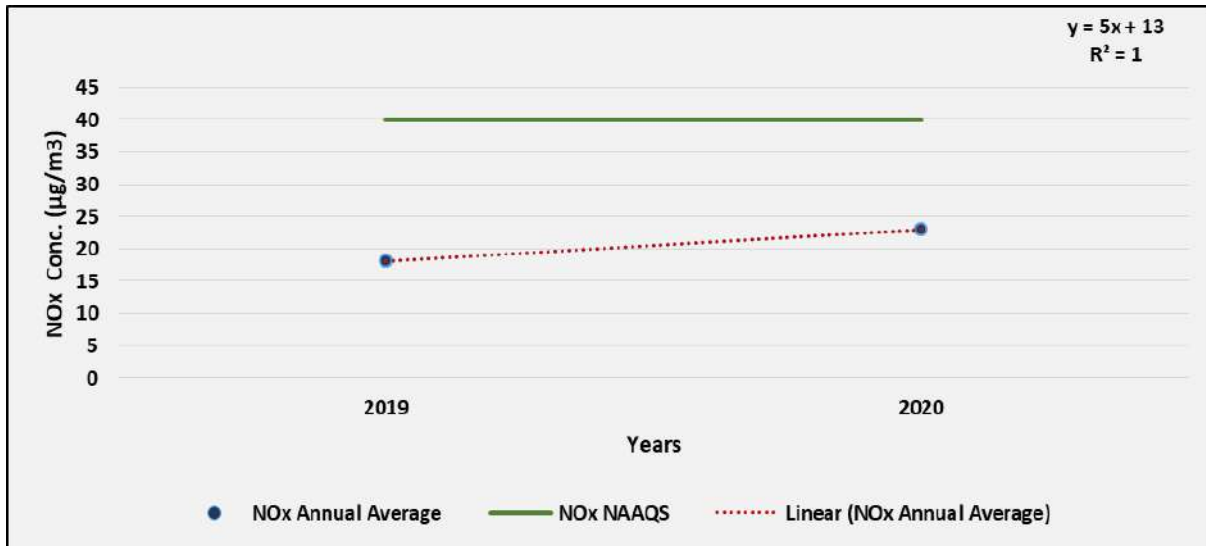


Fig. SP8: Trend of annual mean NO_x ambient air concentration in PAINAMPURAM TPP TPP

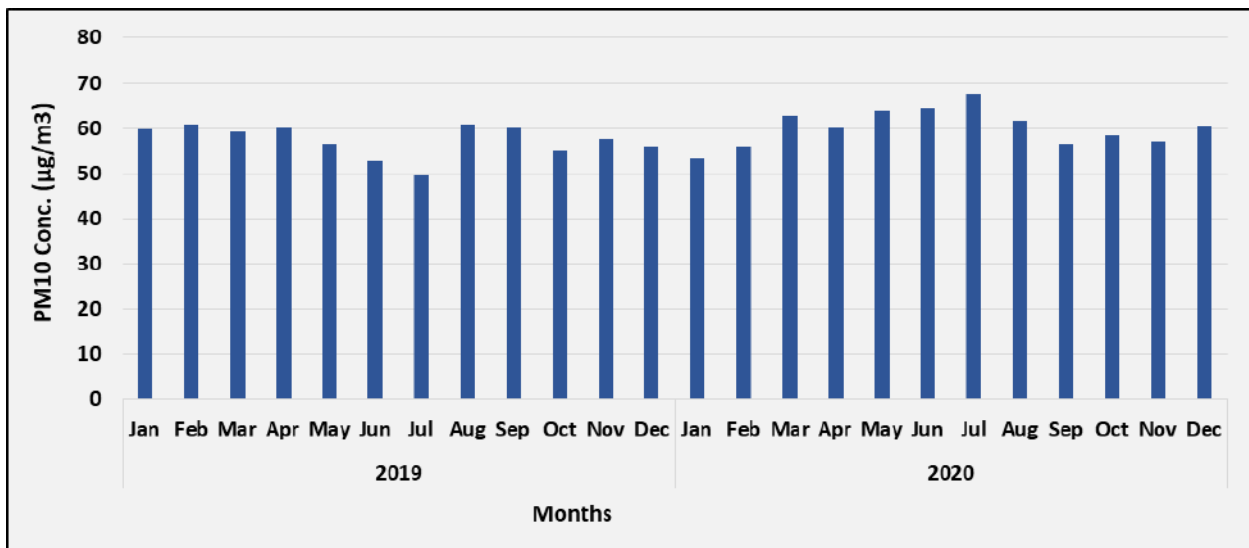


Fig. SP9: Time series of monthly average PM₁₀ ambient air concentration in PAINAMPURAM TPP TPP

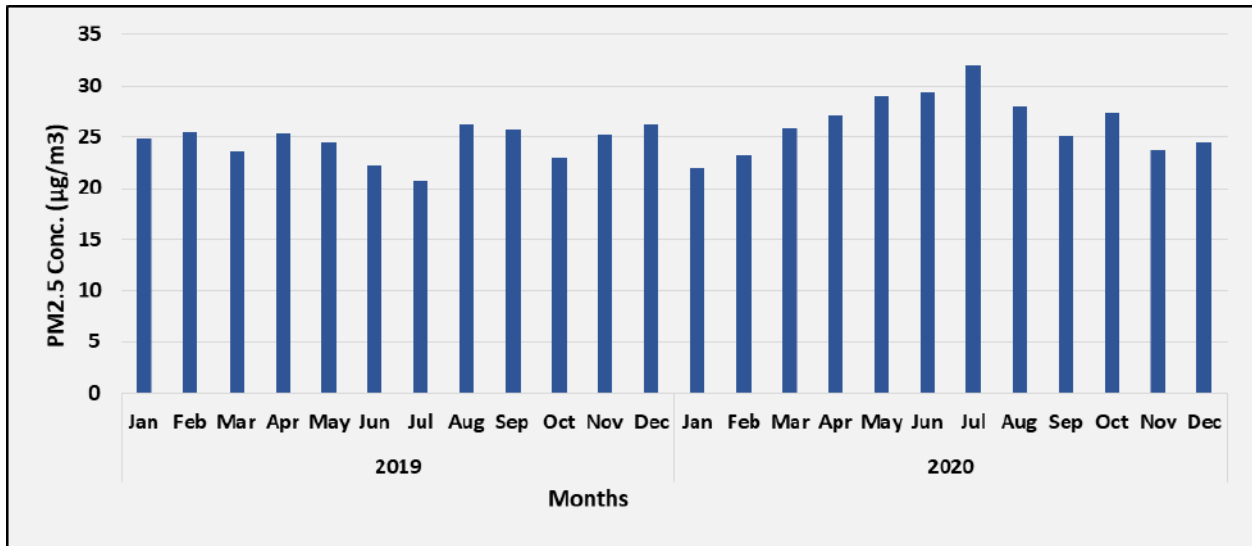


Fig. SP10: Time series of monthly average $PM_{2.5}$ ambient air concentration in PAINAMPURAM TPP TPP

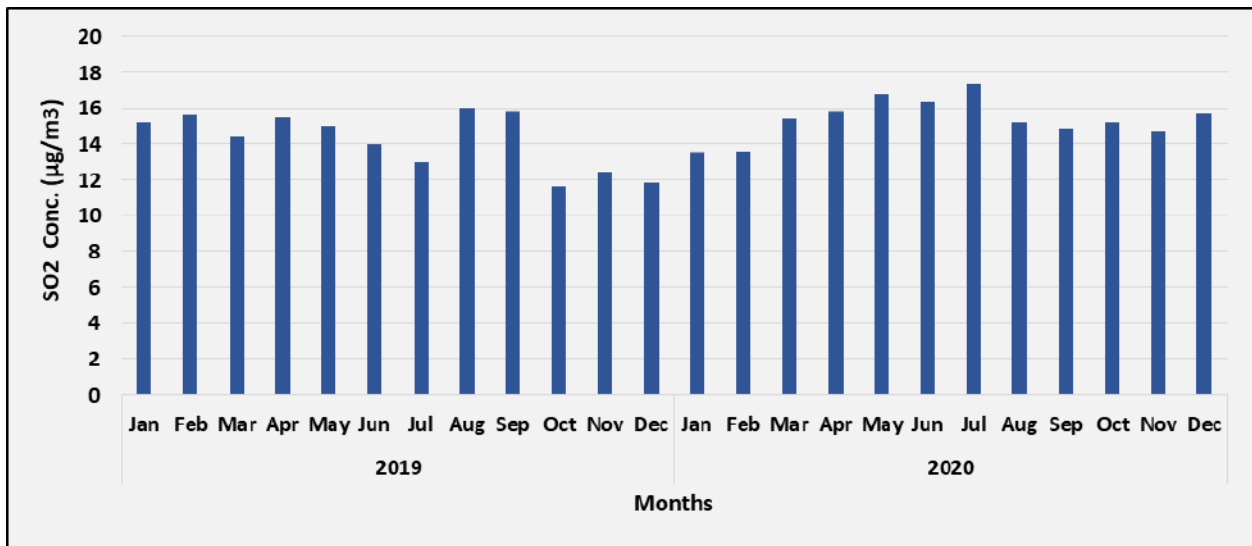


Fig. SP11: Time series of monthly average SO_2 ambient air concentration in PAINAMPURAM TPP TPP

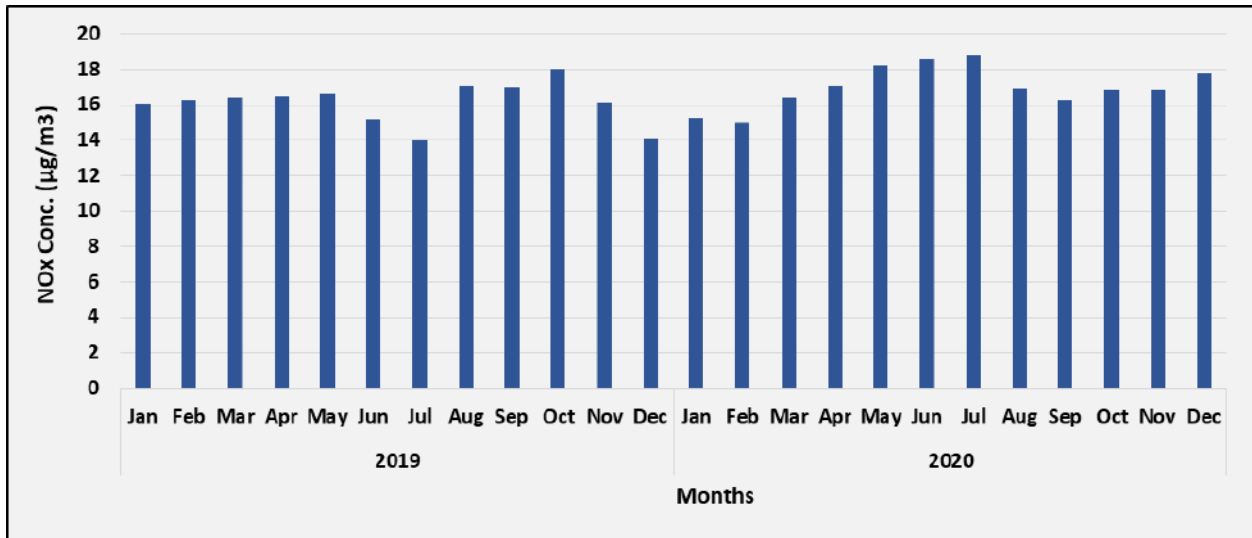


Fig. SP12: Time series of monthly average NO_x ambient air concentration in PAINAMPURAM TPP TPP

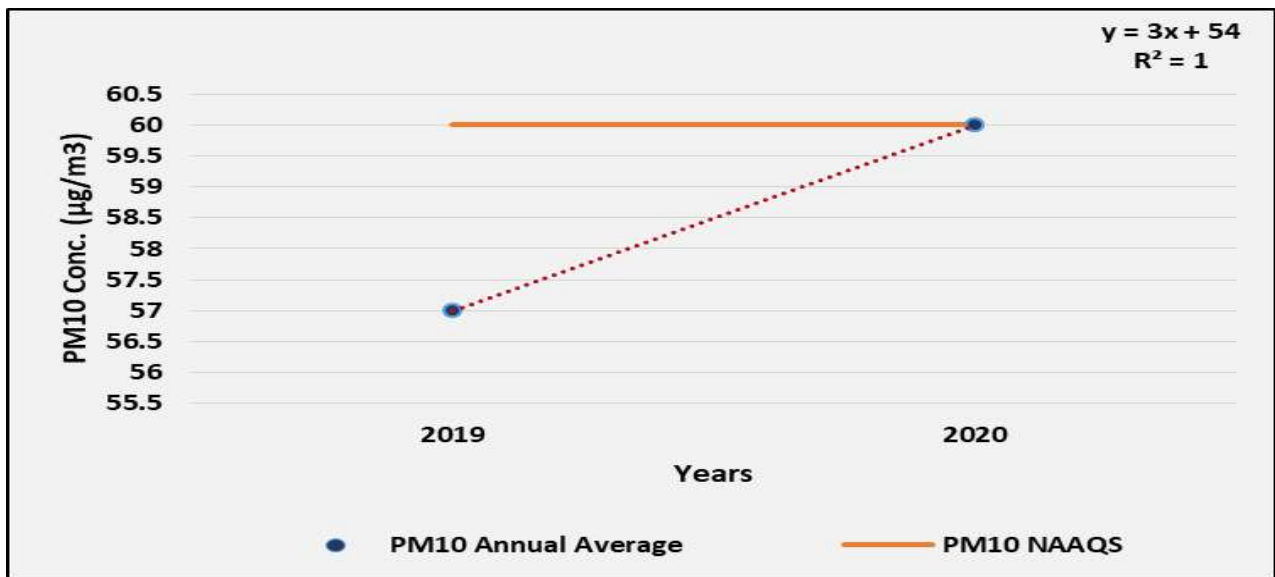


Fig. SP13: Trend of annual mean PM₁₀ ambient air concentration in PAINAMPURAM TPP TPP

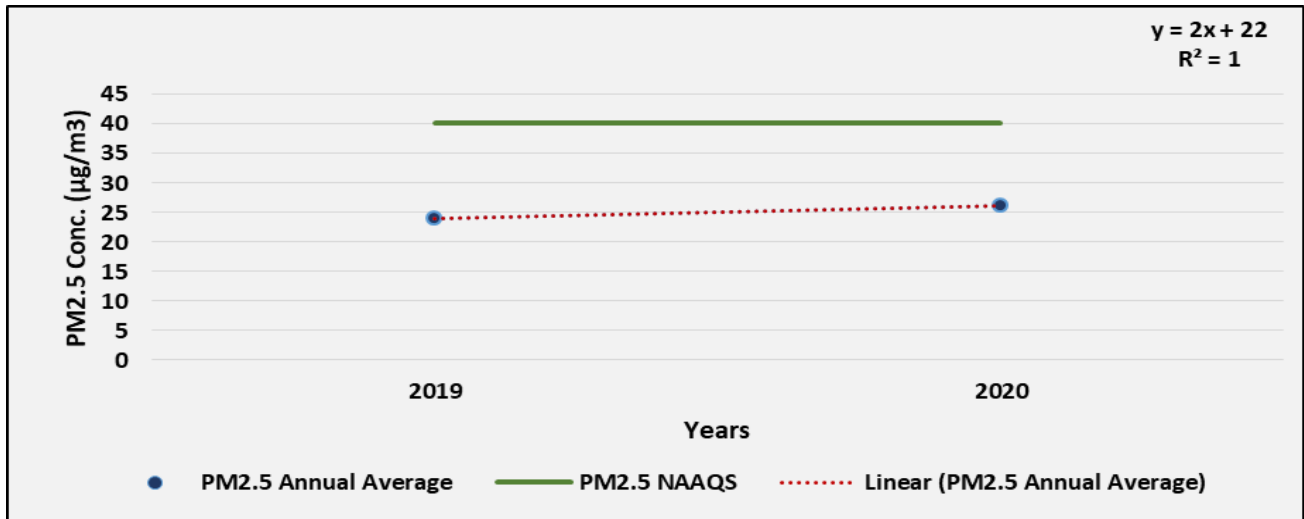


Fig. SP14: Trend of annual mean PM_{2.5} ambient air concentration in PAINAMPURAM TPP TPP

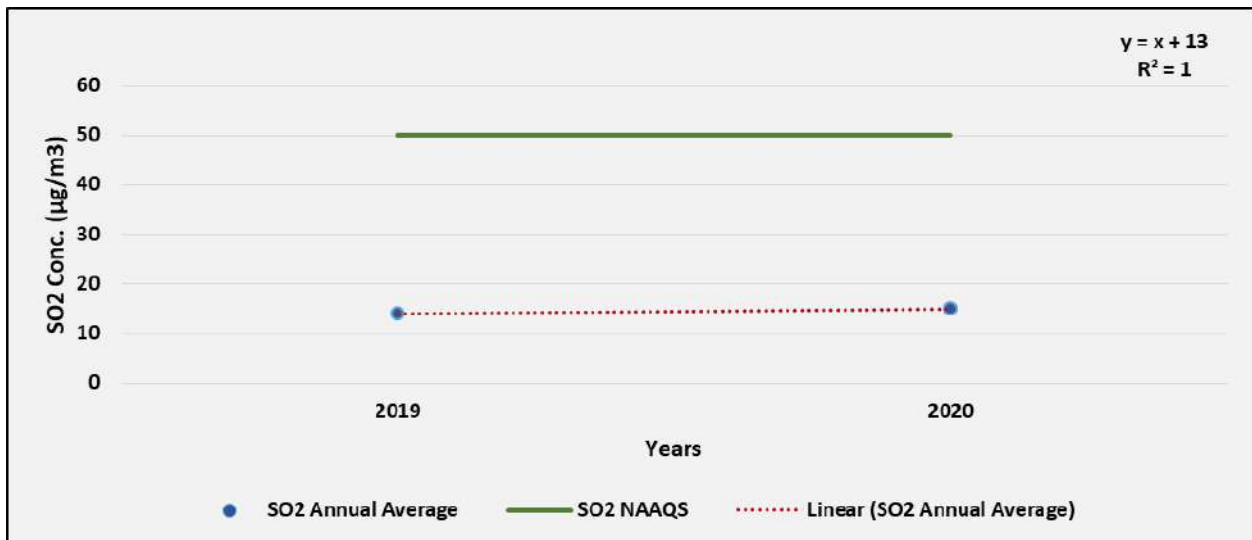


Fig. SP15: Trend of annual mean SO₂ ambient air concentration in PAINAMPURAM TPP TPP

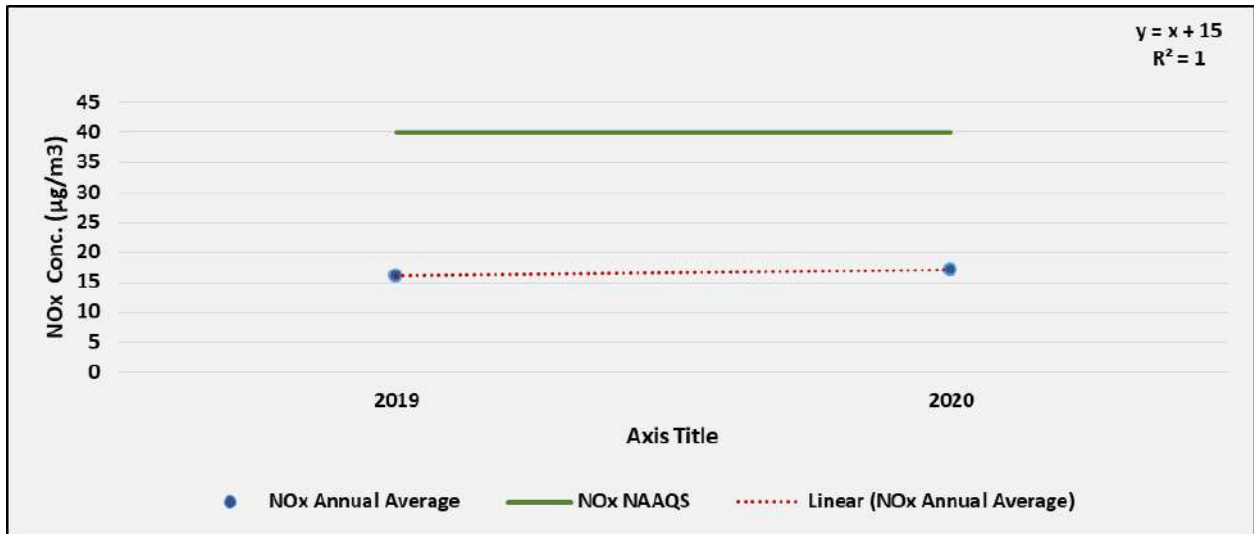


Fig. SP16: Trend of annual mean NO_x ambient air concentration in PAINAMPURAM TPP TPP

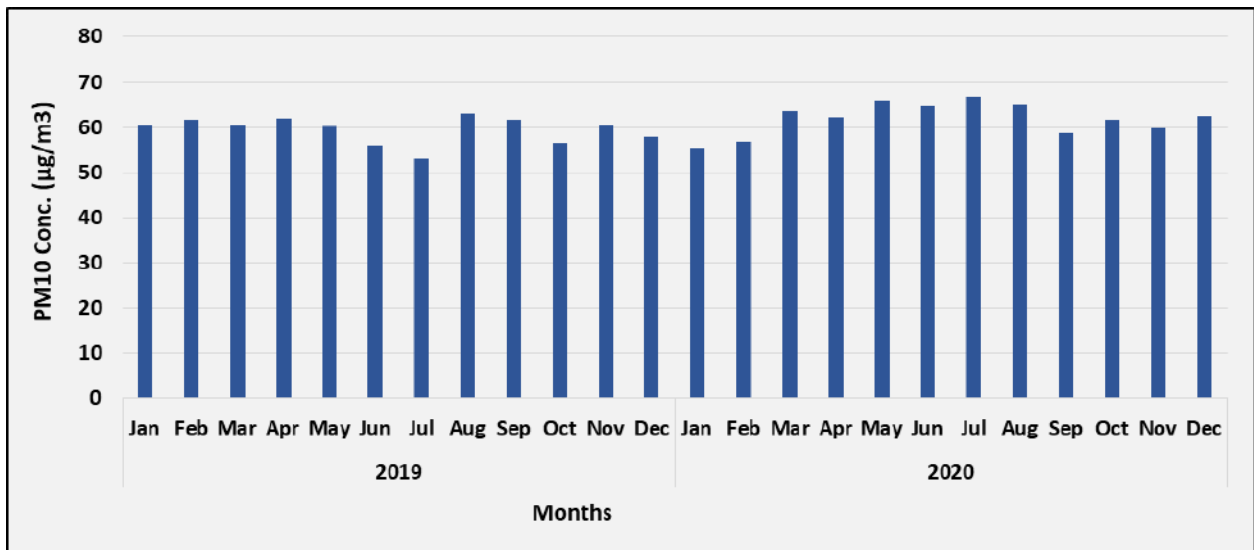


Fig. SP17: Time series of monthly average PM₁₀ ambient air concentration in PAINAMPURAM TPP TPP

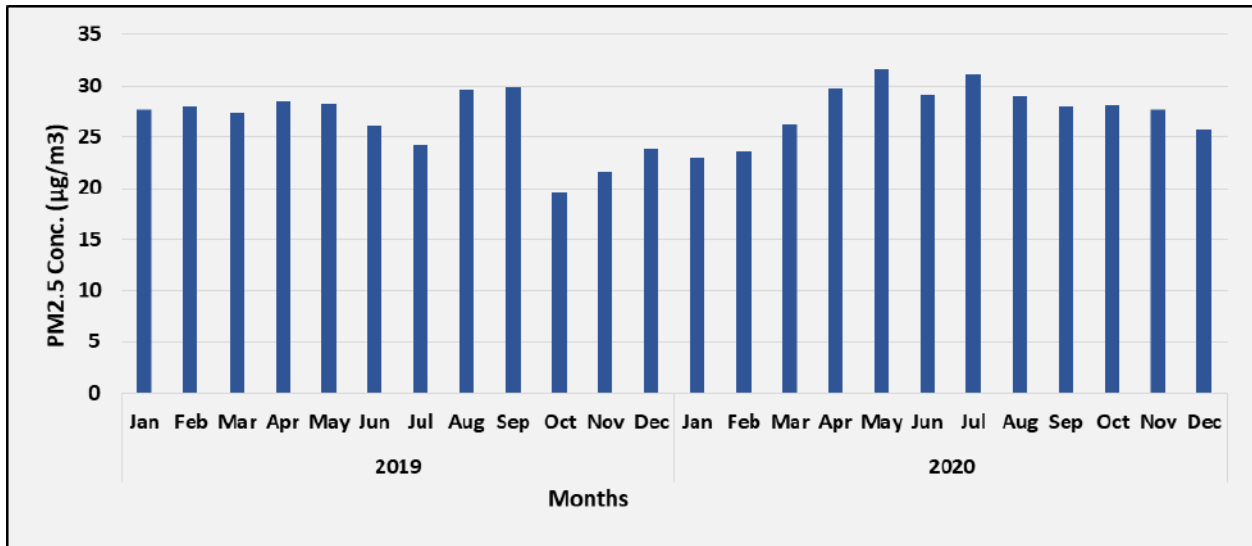


Fig. SP18: Time series of monthly average $PM_{2.5}$ ambient air concentration in PAINAMPURAM TPP TPP

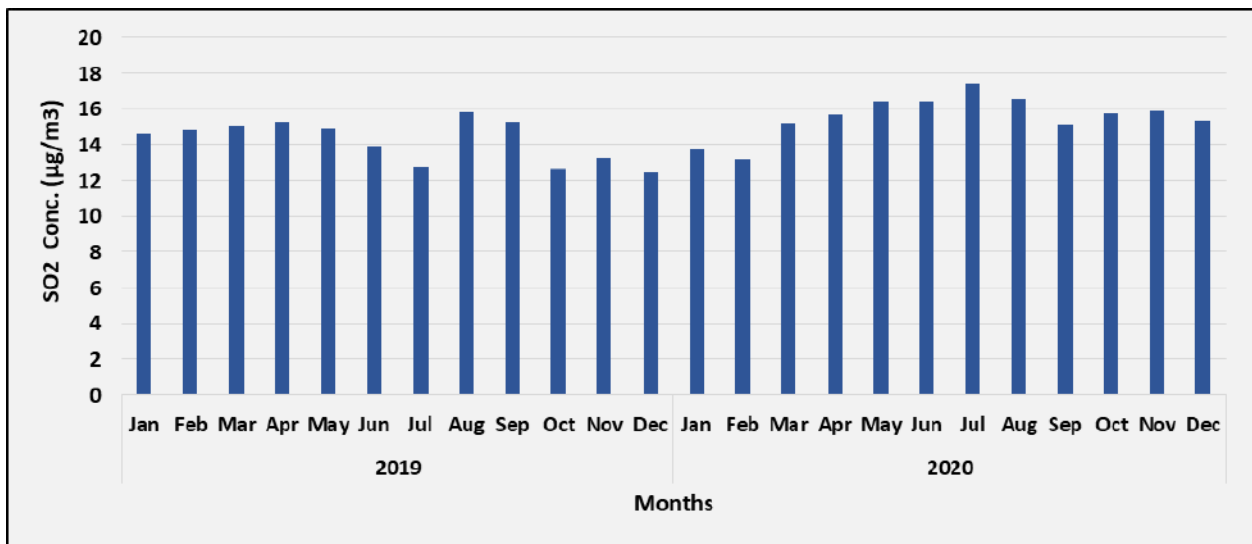


Fig. SP19: Time series of monthly average SO_2 ambient air concentration in PAINAMPURAM TPP TPP

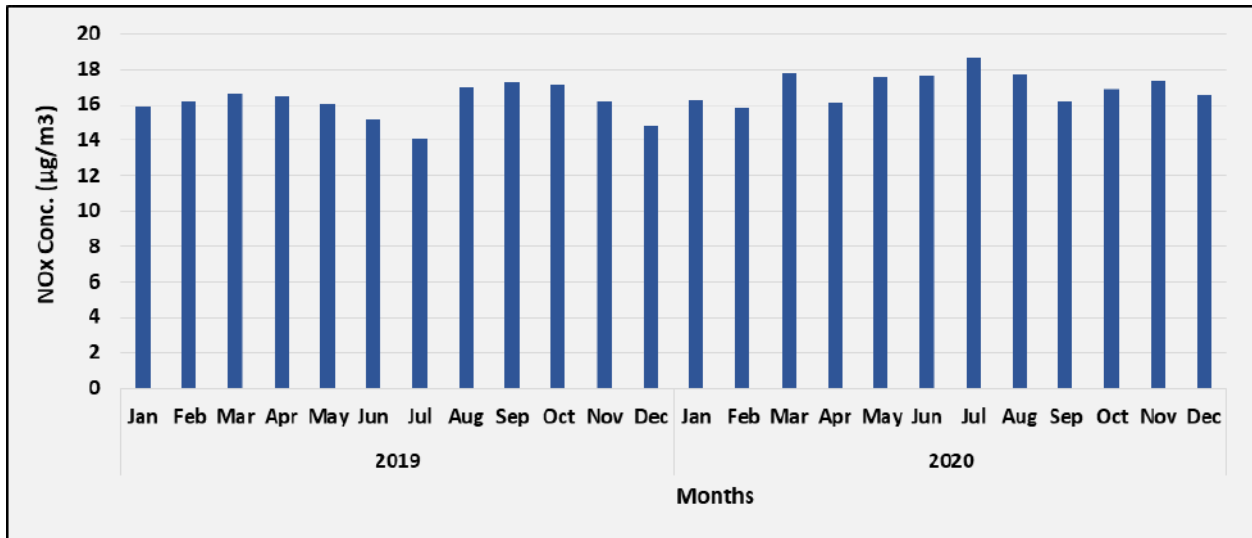


Fig. SP20: Time series of monthly average NO_x ambient air concentration in PAINAMPURAM TPP TPP

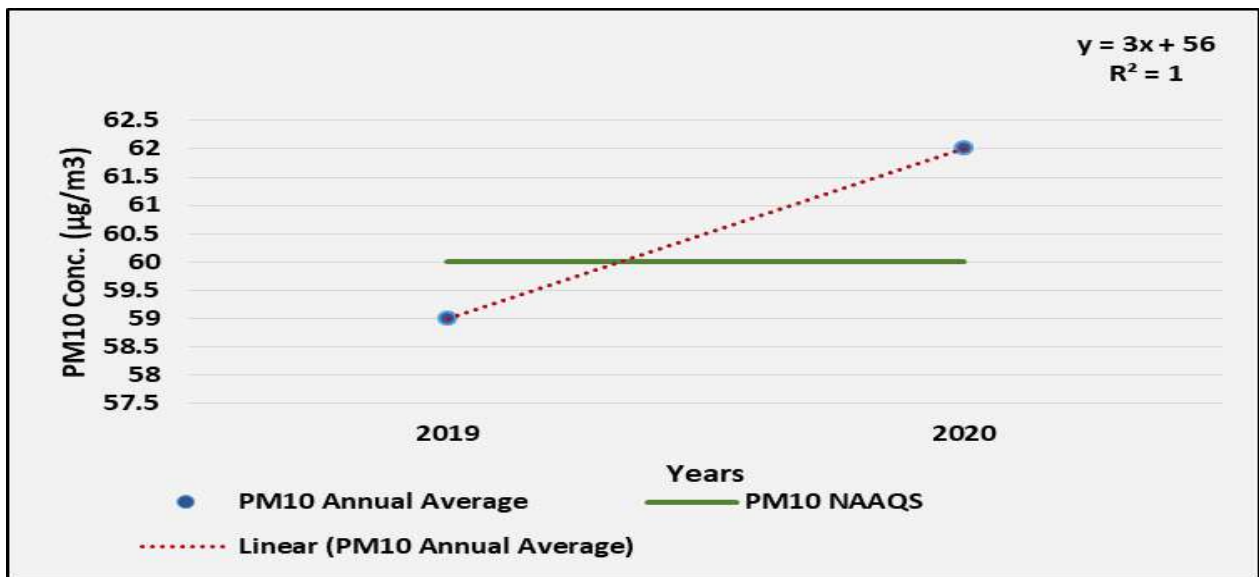


Fig. S21: Trend of annual mean PM₁₀ ambient air concentration in PAINAMPURAM TPP TPP

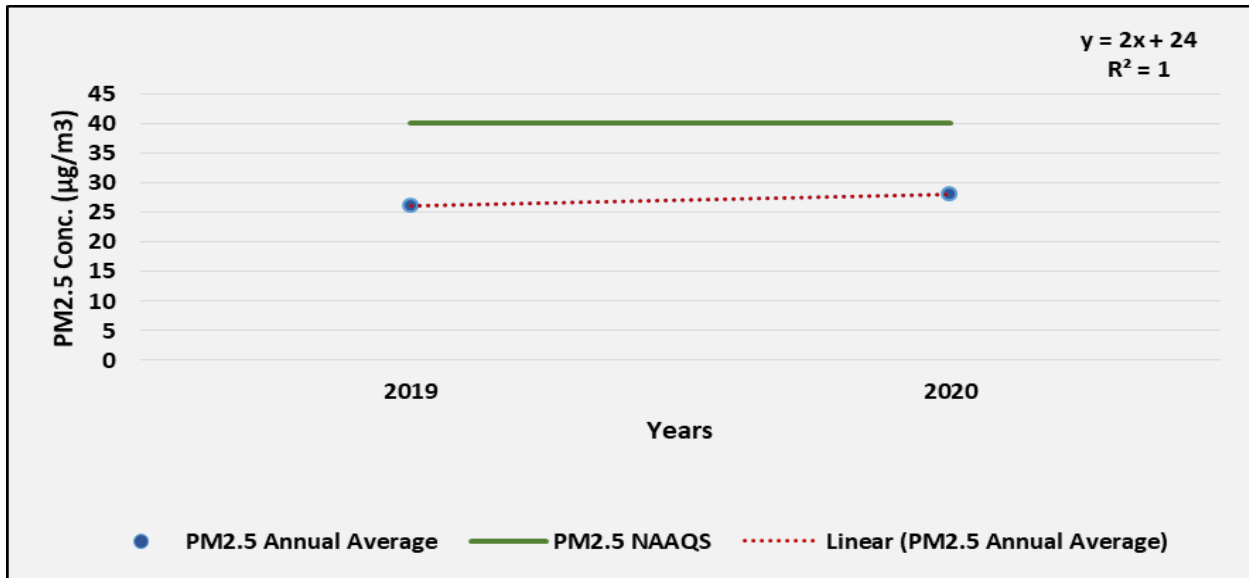


Fig. SP22: Trend of annual mean PM_{2.5} ambient air concentration in PAINAMPURAM TPP TPP

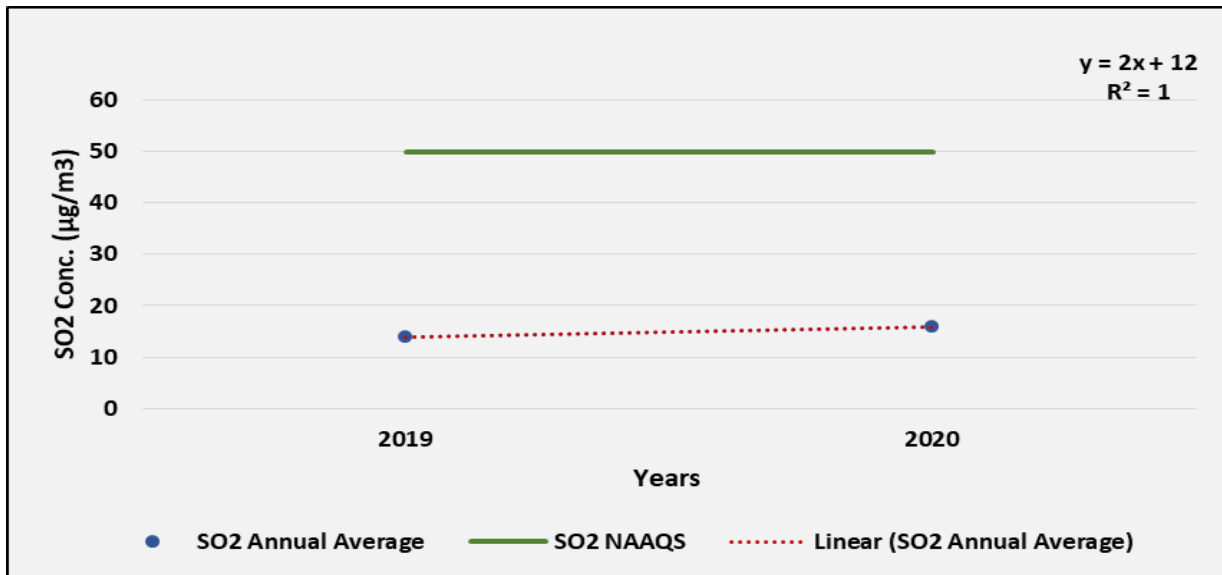


Fig. SP23: Trend of annual mean SO₂ ambient air concentration in PAINAMPURAM TPP TPP

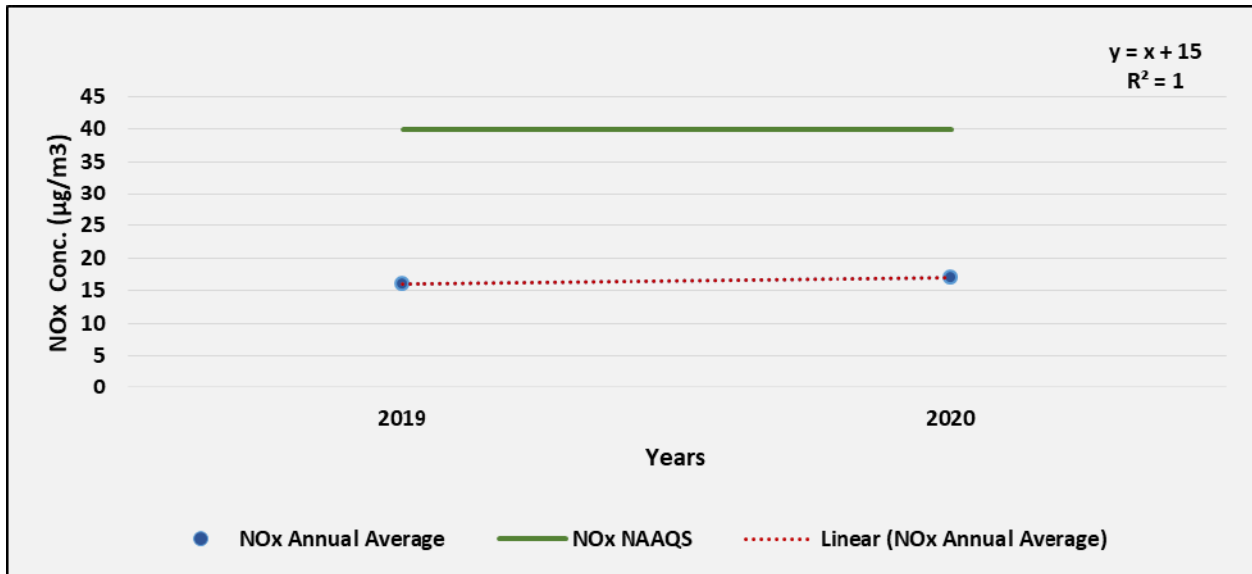


Fig. SP24: Trend of annual mean NO_x ambient air concentration in PAINAMPURAM TPP TPP

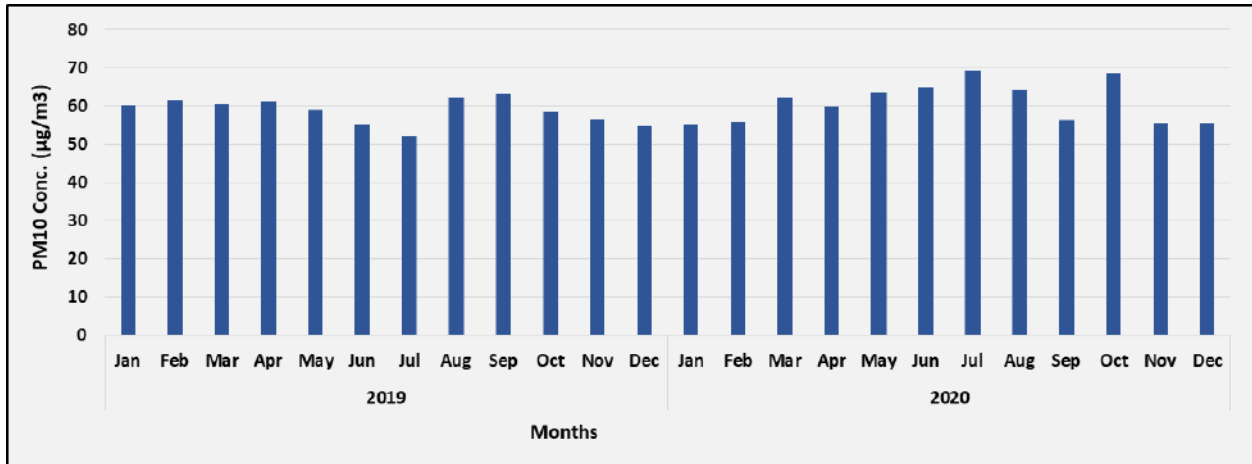


Fig. SP25: Time series of monthly average PM₁₀ ambient air concentration in PAINAMPURAM TPP TPP

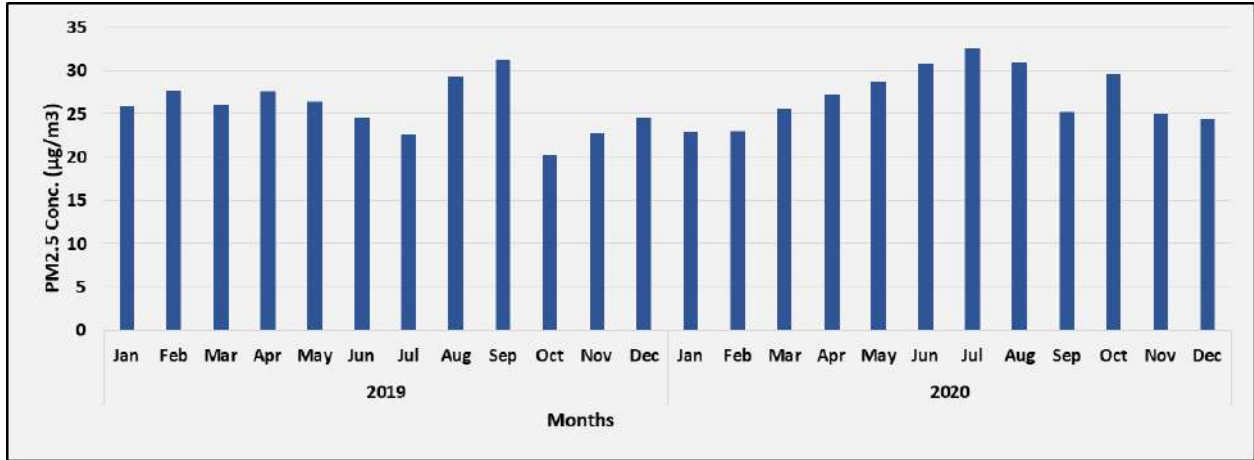


Fig. SP26: Time series of monthly average $PM_{2.5}$ ambient air concentration in PAINAMPURAM TPP TPP

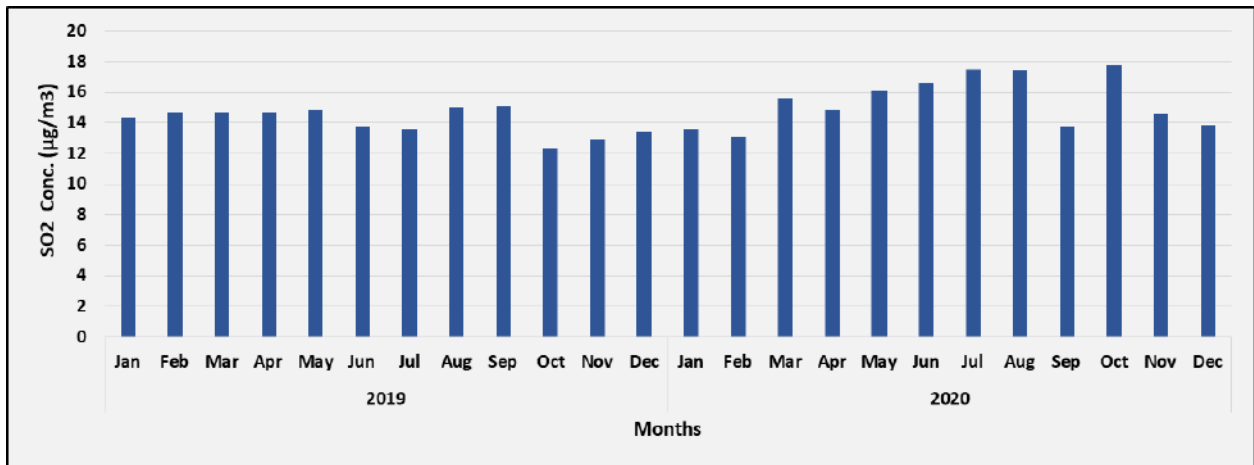


Fig. SP27: Time series of monthly average SO_2 ambient air concentration in PAINAMPURAM TPP TPP

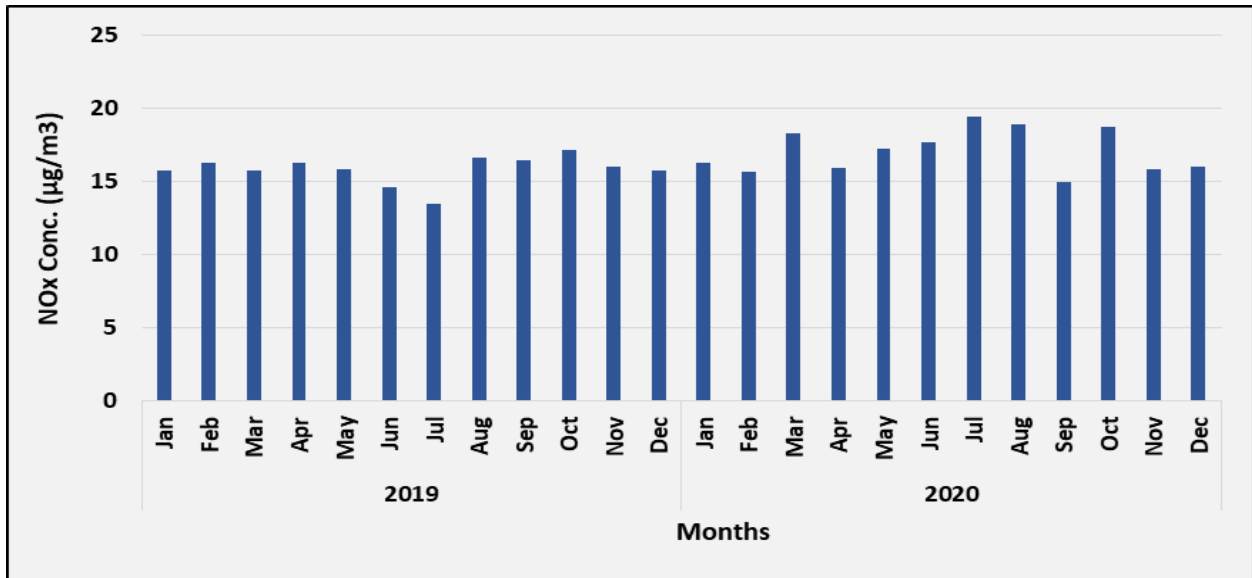


Fig. SP28: Time series of monthly average NO_x ambient air concentration in PAINAMPURAM TPP TPP

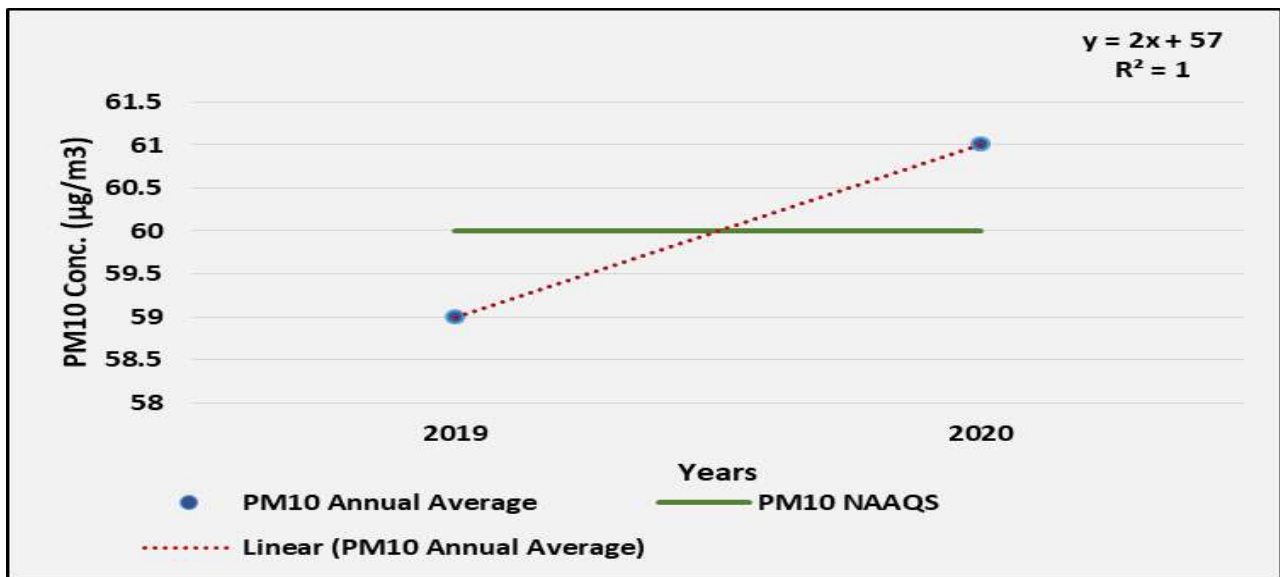


Fig. SP29: Trend of annual mean PM₁₀ ambient air concentration in PAINAMPURAM TPP TPP

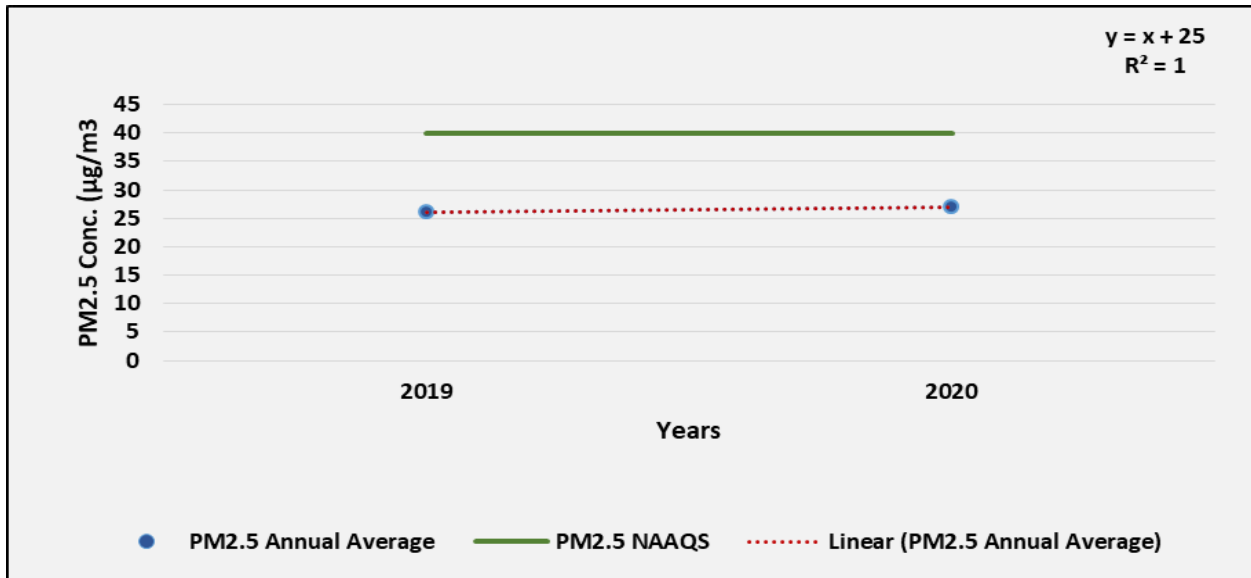


Fig. SP30: Trend of annual mean PM_{2.5} ambient air concentration in PAINAMPURAM TPP TPP

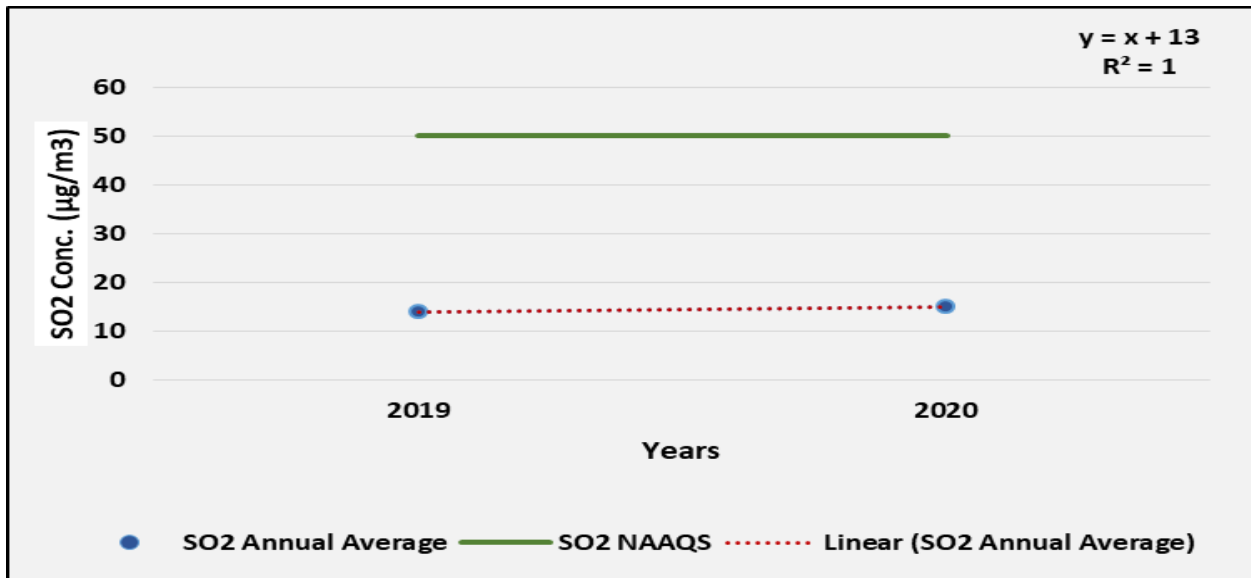


Fig. SP31: Trend of annual mean SO₂ ambient air concentration in PAINAMPURAM TPP TPP

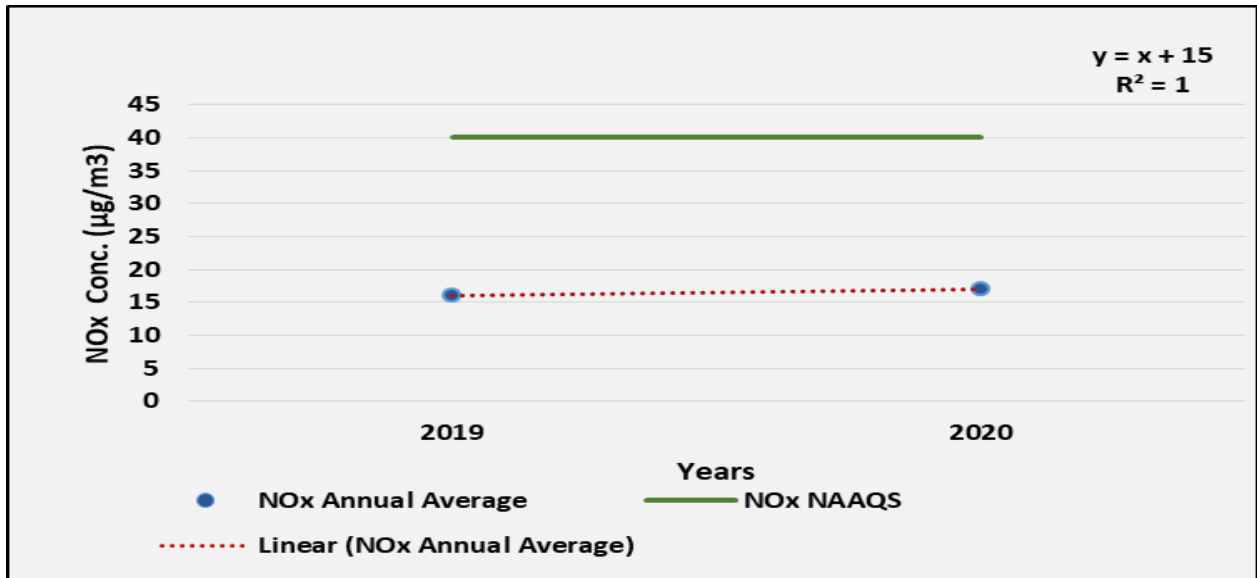


Fig. SP32: Trend of annual mean NO_x ambient air concentration in PAINAMPURAM TPP TPP

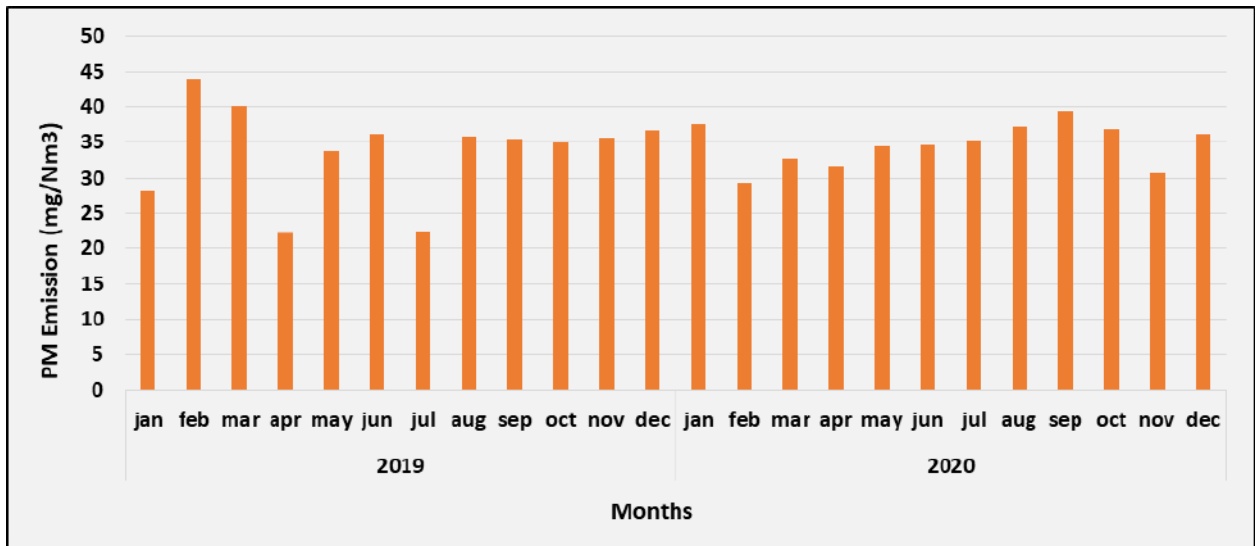


Fig. SP33: Time series of monthly average emission of PM from Unit 1 in SIEL TPP

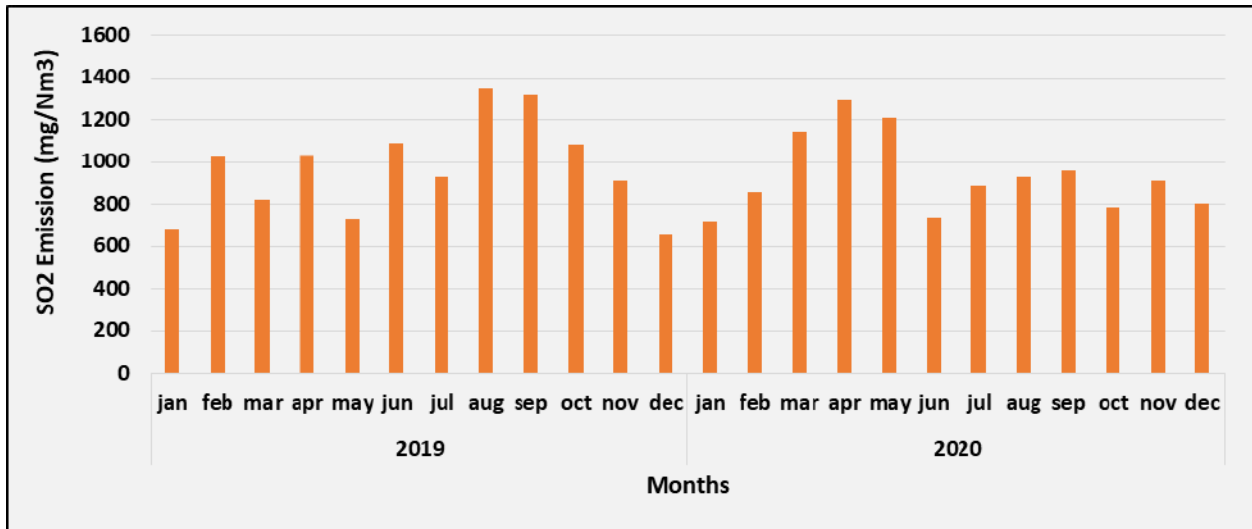


Fig. SP34: Time series of monthly average emission of SO₂ from Unit 1 in PAINAMPURAM TPP TPP

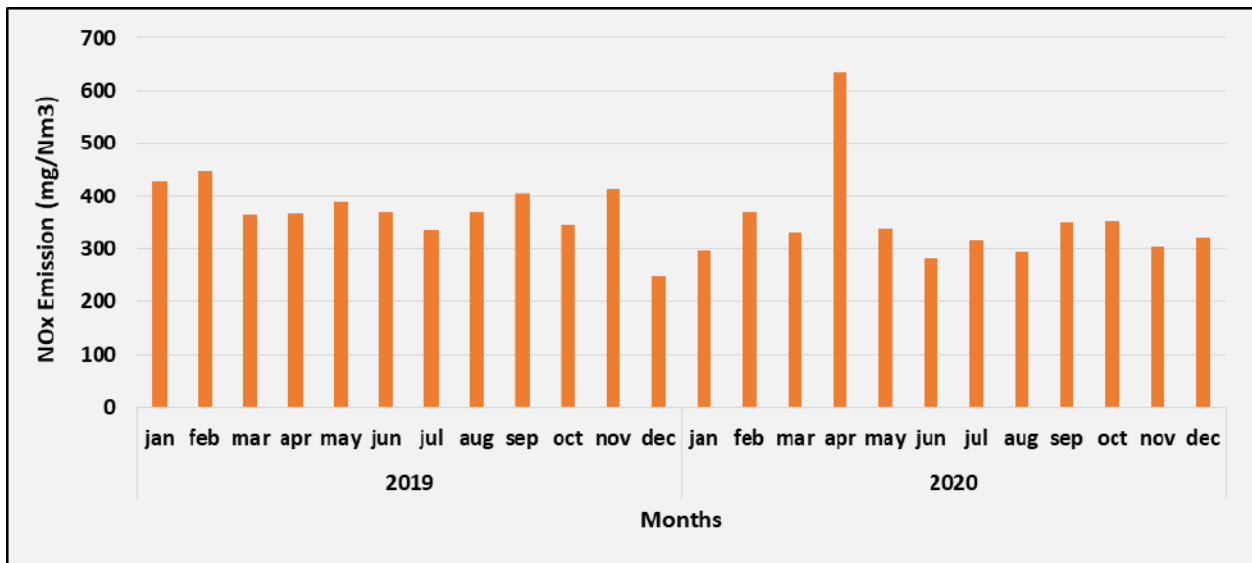


Fig. SP35: Time series of monthly average emission of NO_x from Unit 1 in PAINAMPURAM TPP TPP

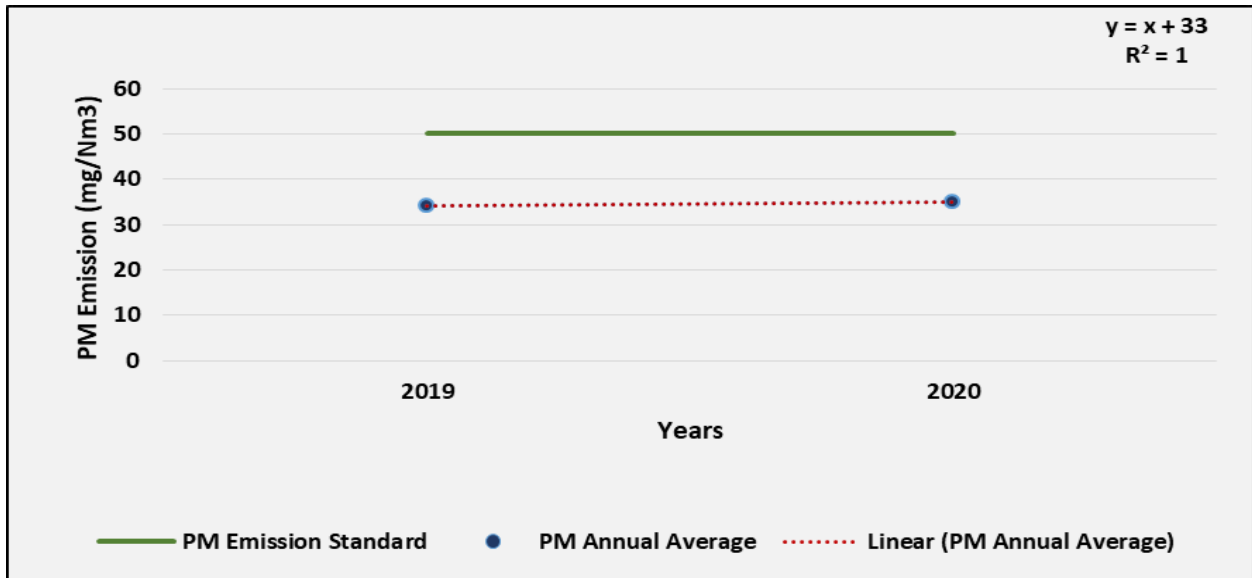


Fig. SP36: Trend of annual average PM emissions from unit 1 in PAINAMPURAM TPP TPP

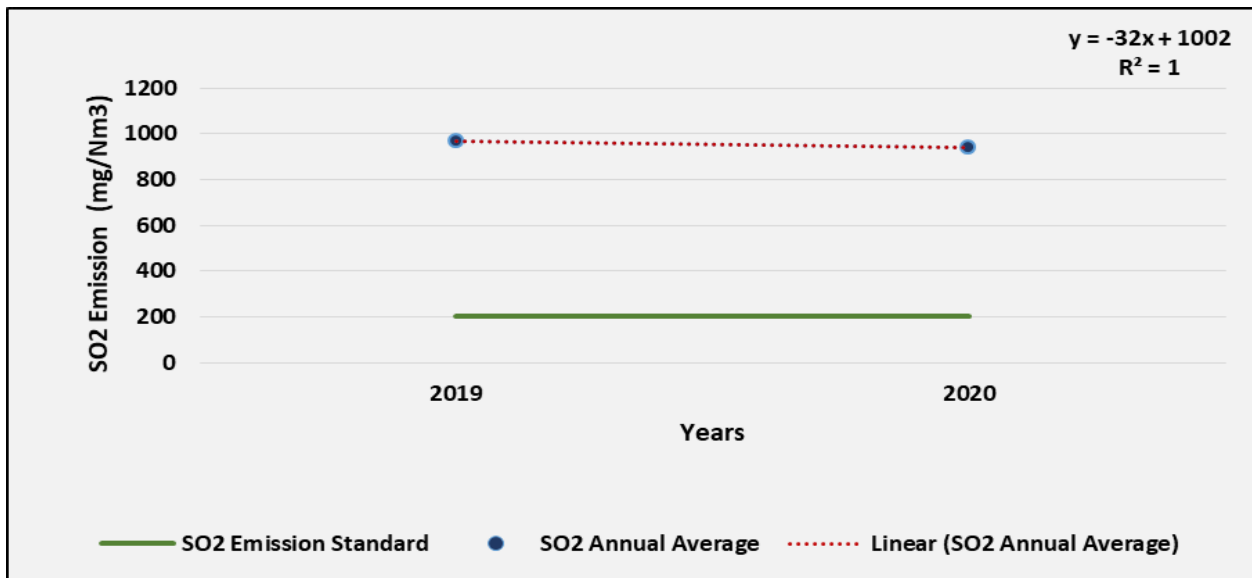


Fig. SP37: Trend of annual average SO2 emissions from unit 1 in PAINAMPURAM TPP TPP

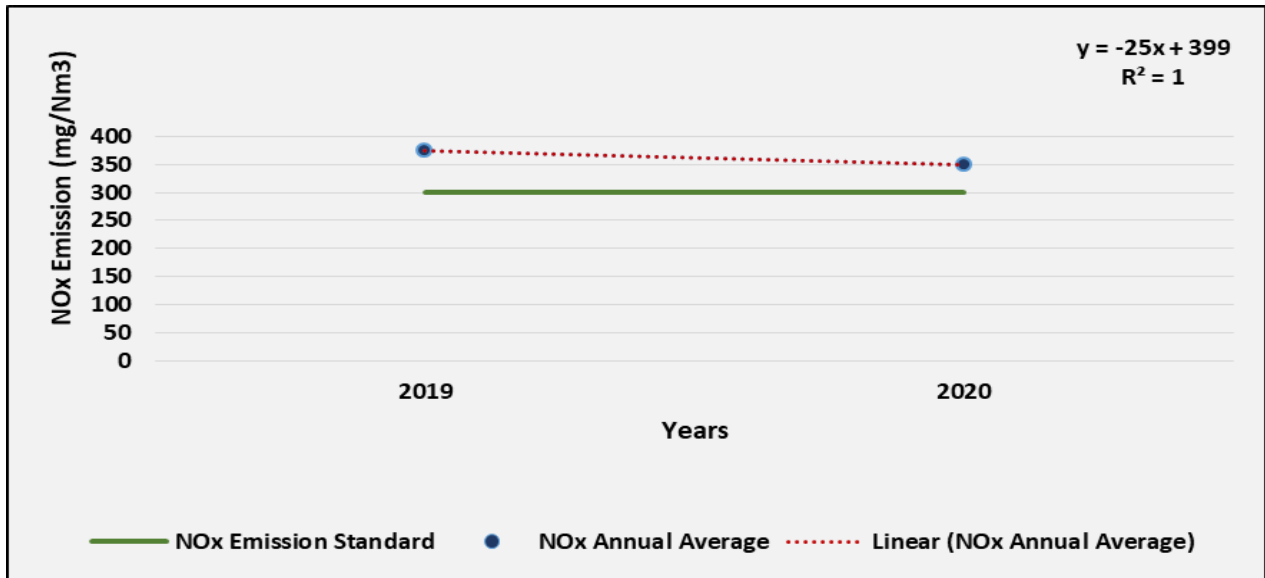


Fig. SP38: Trend of annual average NOx emissions from unit 1 in PAINAMPURAM TPP TPP

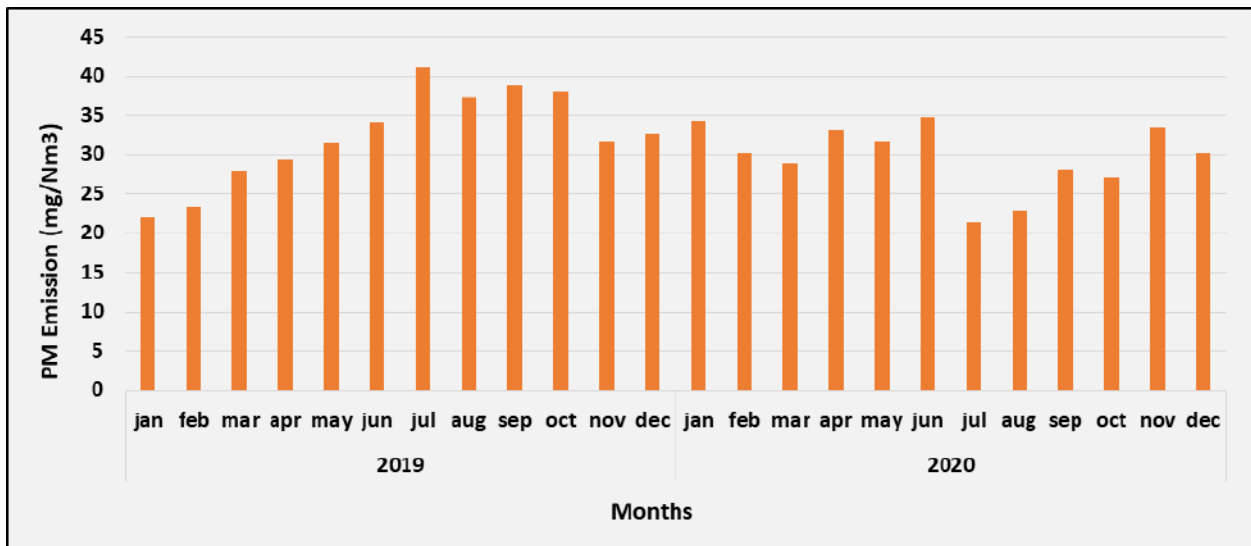


Fig. SP39: Time series of monthly average emission of PM from Unit 2 in SIEL TPP

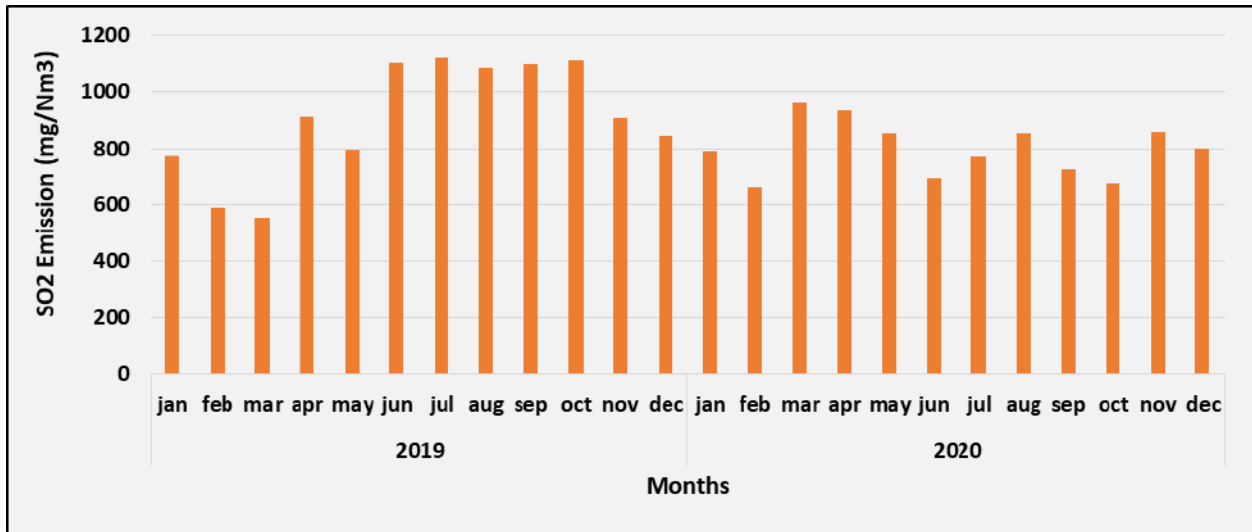


Fig. SP40: Time series of monthly average emission of SO₂ from Unit 2 in PAINAMPURAM TPP TPP

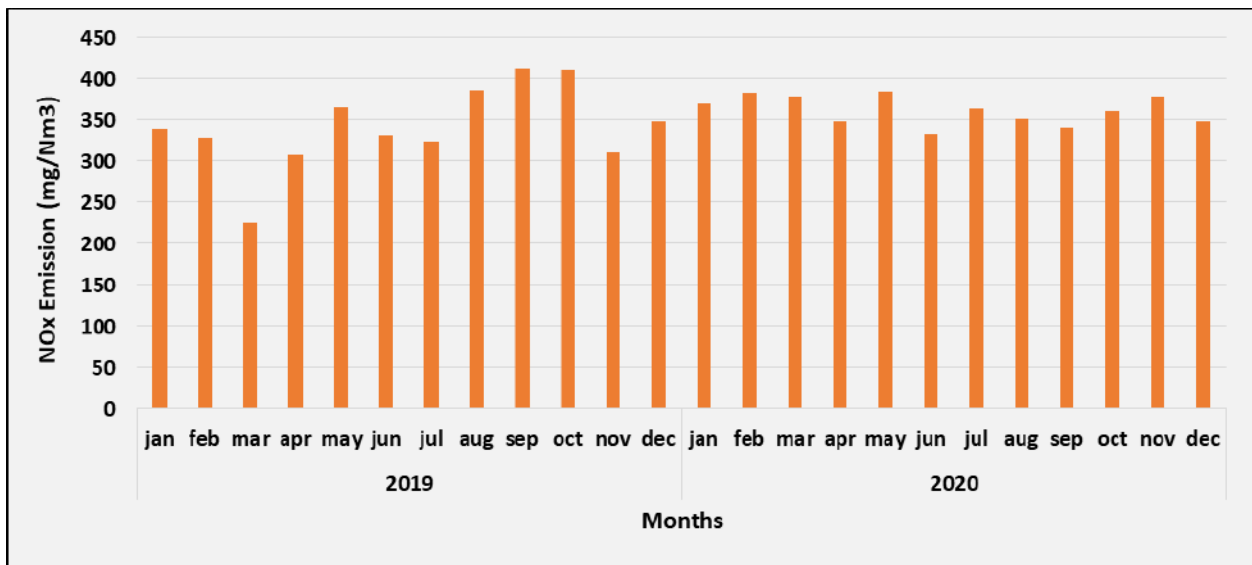


Fig. SP41: Time series of monthly average emission of NO_x from Unit 2 in PAINAMPURAM TPP TPP

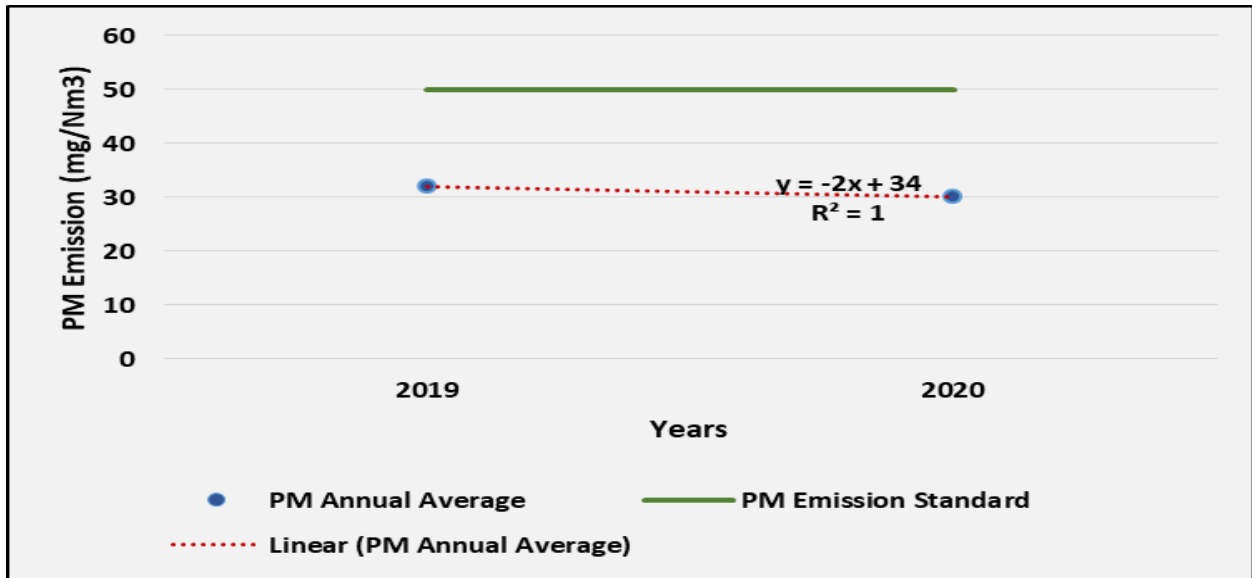


Fig. SP42: Trend of annual average PM emissions from unit 2 in PAINAMPURAM TPP TPP

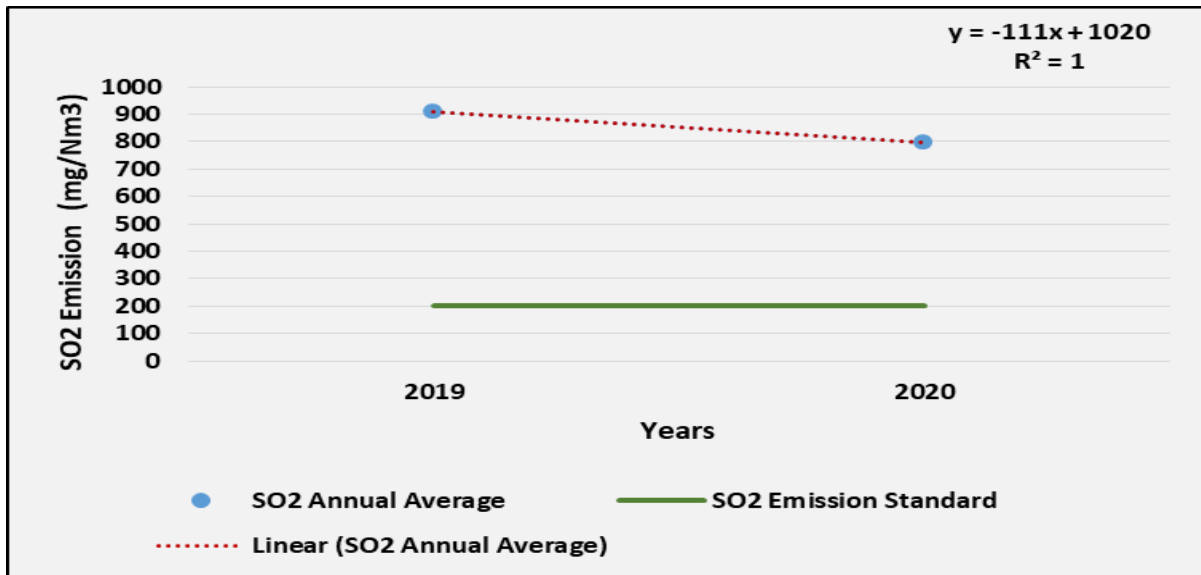


Fig. SP43: Trend of annual average SO2 emissions from unit 2 in PAINAMPURAM TPP TPP

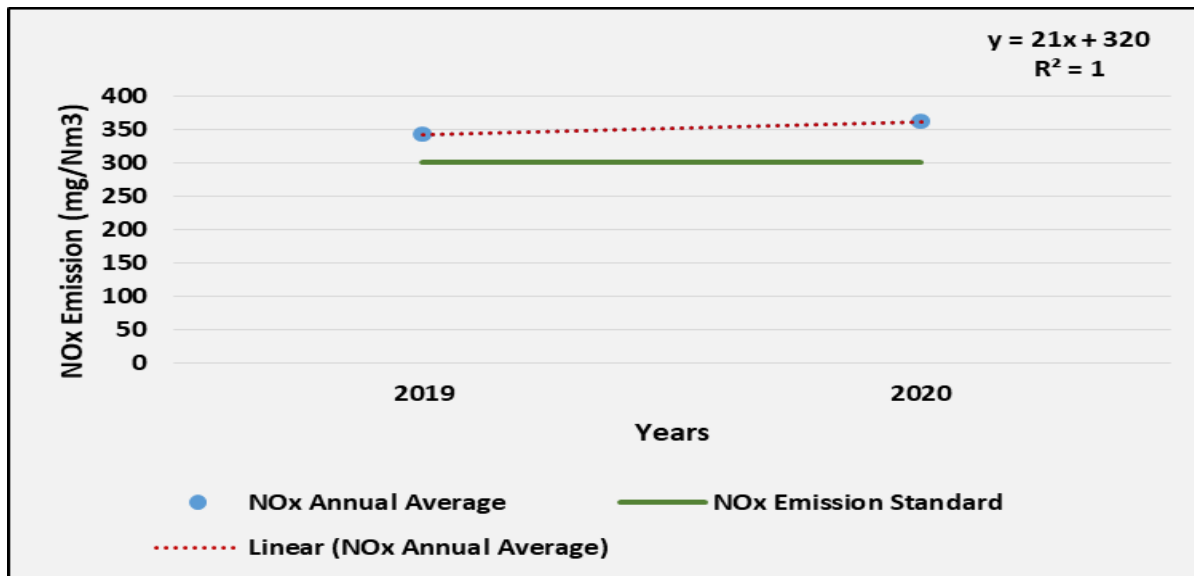


Fig. SP44: Trend of annual average NOx emissions from unit 2 in PAINAMPURAM TPP TPP

Evidence based on ground level stations shows that the monthly average and annual average of PM10, Pm2.5 are exceeding whereas the SO₂ &NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

Jhajjar Thermal Power Plant (JTPP)

Jhajjar Power Plant is a 1,320 MW (2 x 660 MW) coal based power project located at Village Khanpur, Dist. Jhajjar, Haryana. It is one of India's first and largest supercritical coal-fired power plant, one of the first major projects in India to be financed by a consortium of foreign banks. Construction started in 2009 and the first unit was synchronized exactly 36 months later. The second 660MW unit was synchronized in April 2012. The Plant was commissioned in July 2012.

As per the analysis, the ambient air concentration for SO₂ and NO_x are within the standard limits. Whereas the annual average of PM_{2.5} and PM₁₀ is much higher against the standard limit of 60 µg/m³ and 40 µg/m³ respectively. (Figure 22-29)

Jhajjar Thermal Power plant implemented Flue Gas Desulphurization in Feb 2019. Before the implementation of FGD system, the emissions of SO₂ and NO_x were very high as compared to emission standards. After implementing, it is important to highlight that the emission rate of both the pollutants decreased tremendously. There was sudden drop in SO₂ emission in 2019 and 2020.

As per the analysis, there was 85% decrease in 2019 w.r.t 2018 and 87% decrease in 2020 w.r.t 2018. (Figure 30-35)

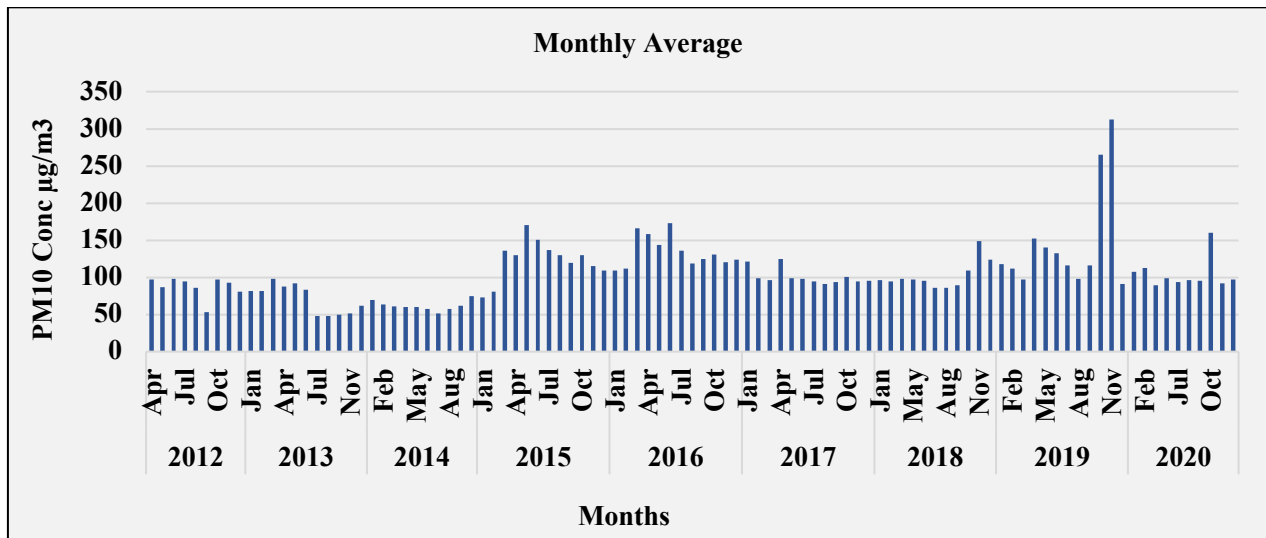


Fig. J1: Time series of monthly average PM₁₀ ambient air concentration in Jhajjar TPP

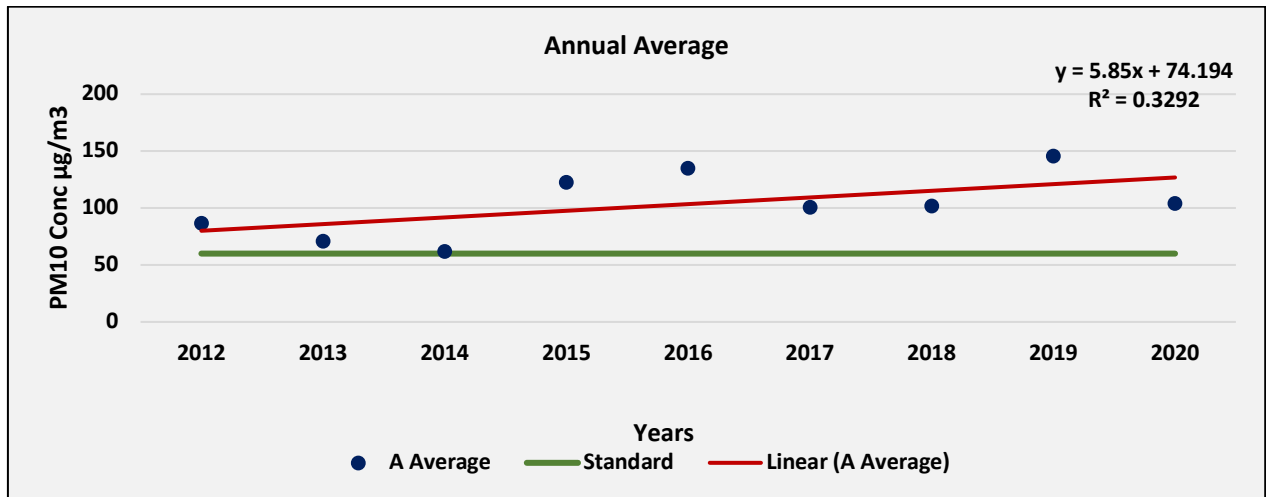


Fig. J2: Trend of annual mean PM₁₀ ambient air concentration in Jhajjar TPP

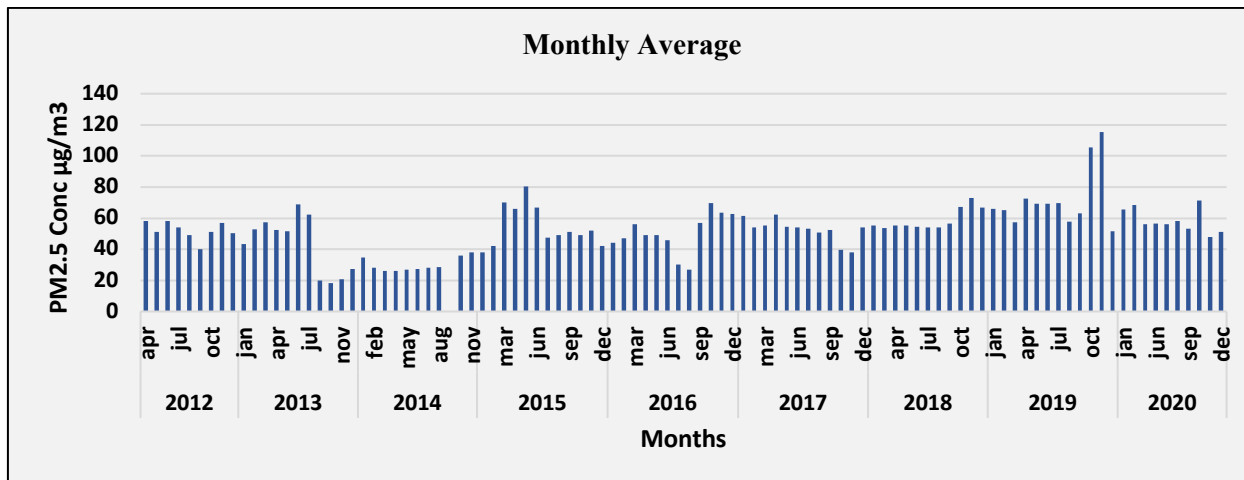


Fig. J3: Time series of monthly average PM_{2.5} ambient air concentration in Jhajjar TPP

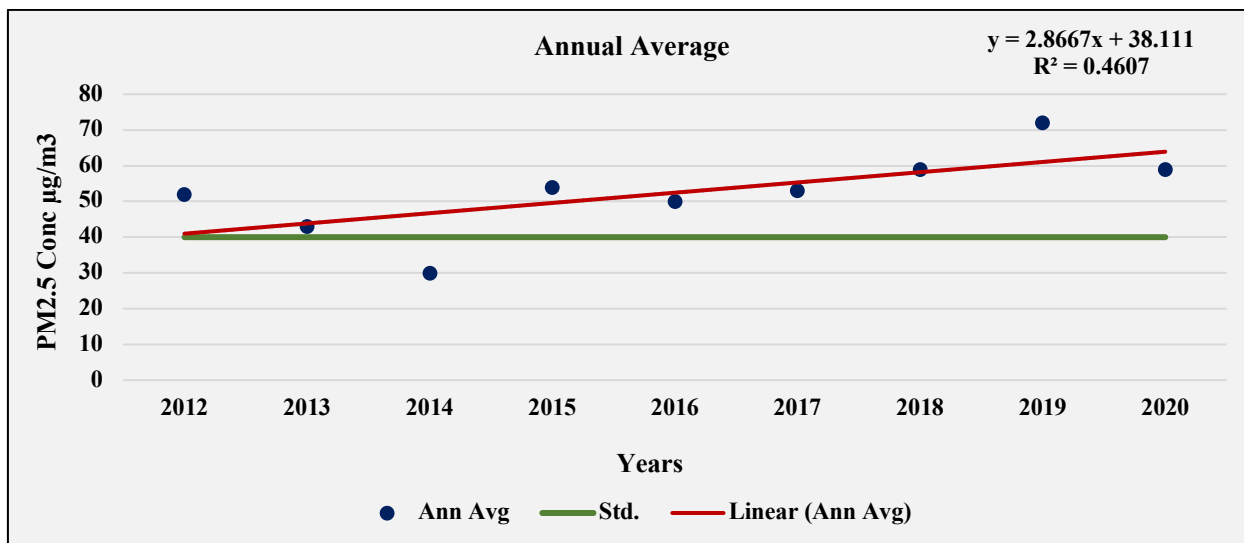


Fig. J4: Trend of annual mean PM_{2.5} ambient air concentration in Jhajjar TPP

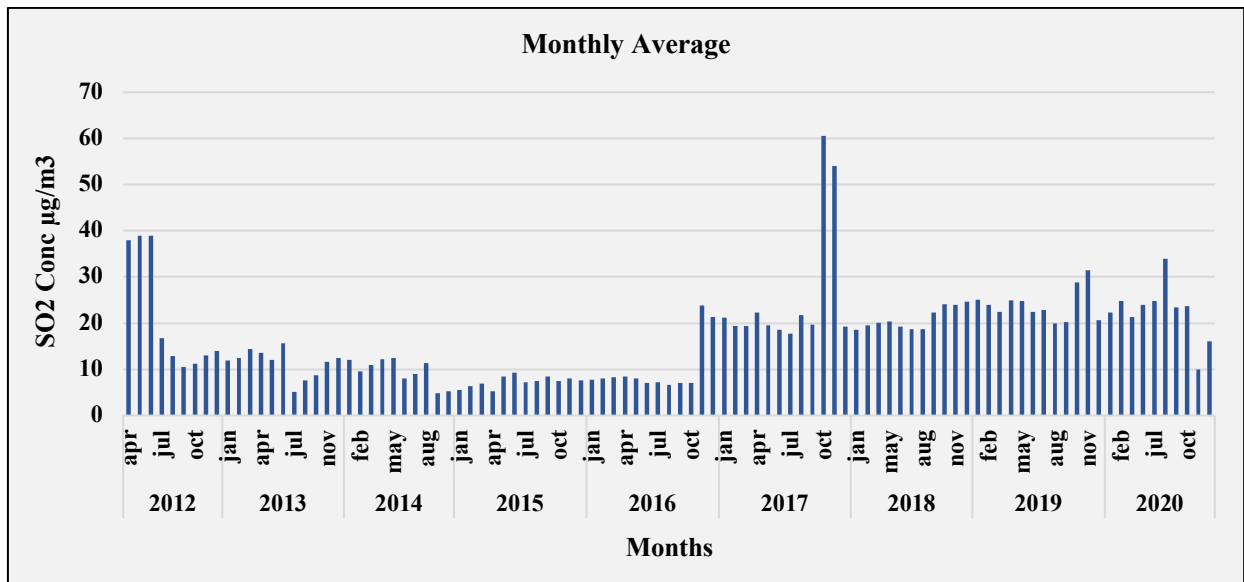


Fig. J5: Time series of monthly average SO₂ ambient air concentration in Jhajjar TPP

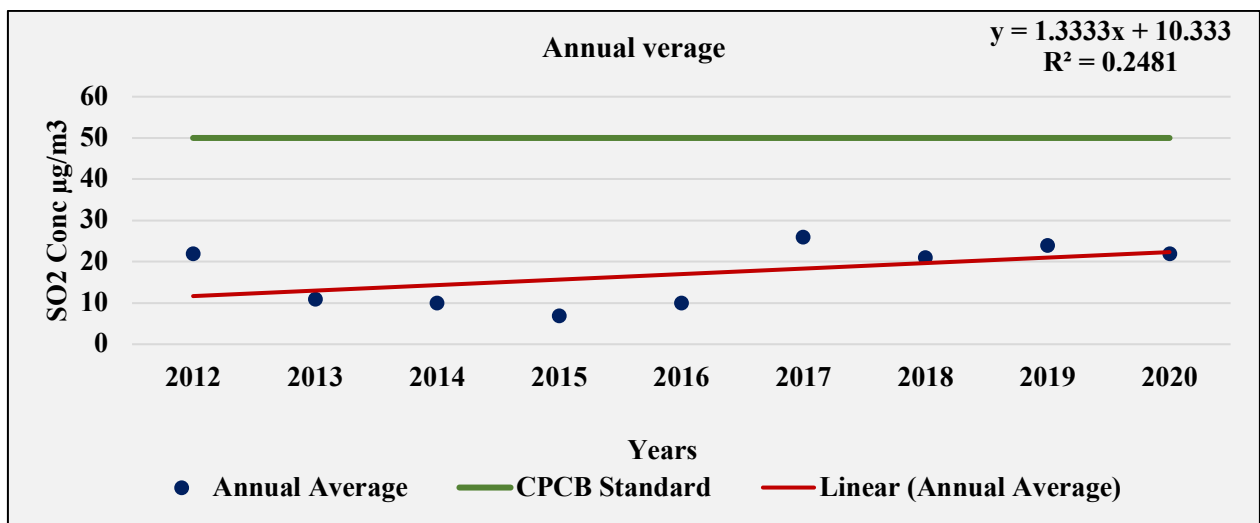


Fig. J6: Trend of annual mean SO₂ ambient air concentration in Jhajjar TPP

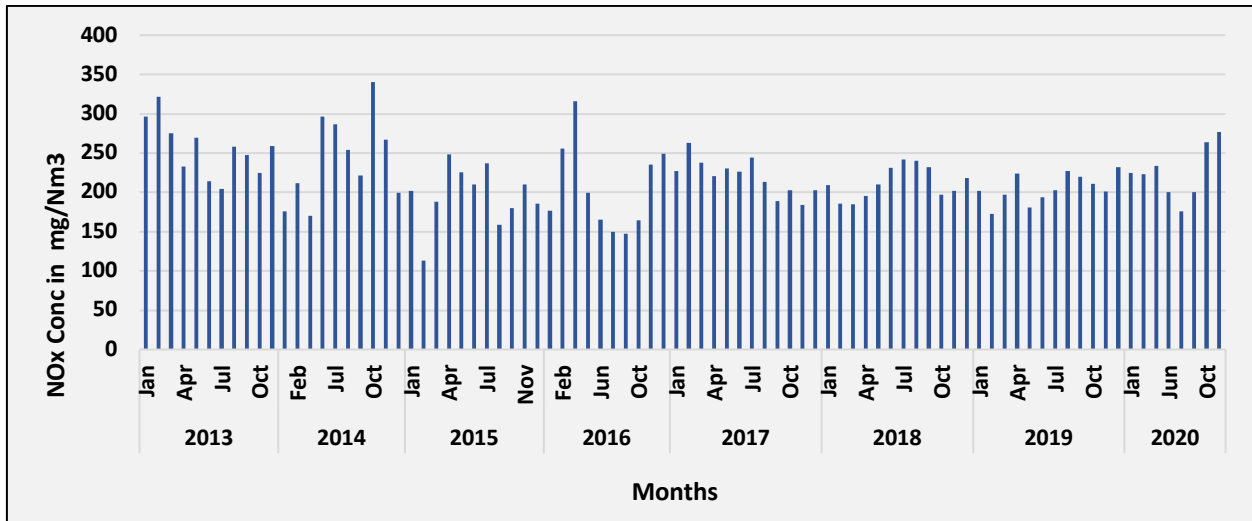


Fig. J7: Time series of monthly average NO_x ambient air concentration in Jhajjar TPP

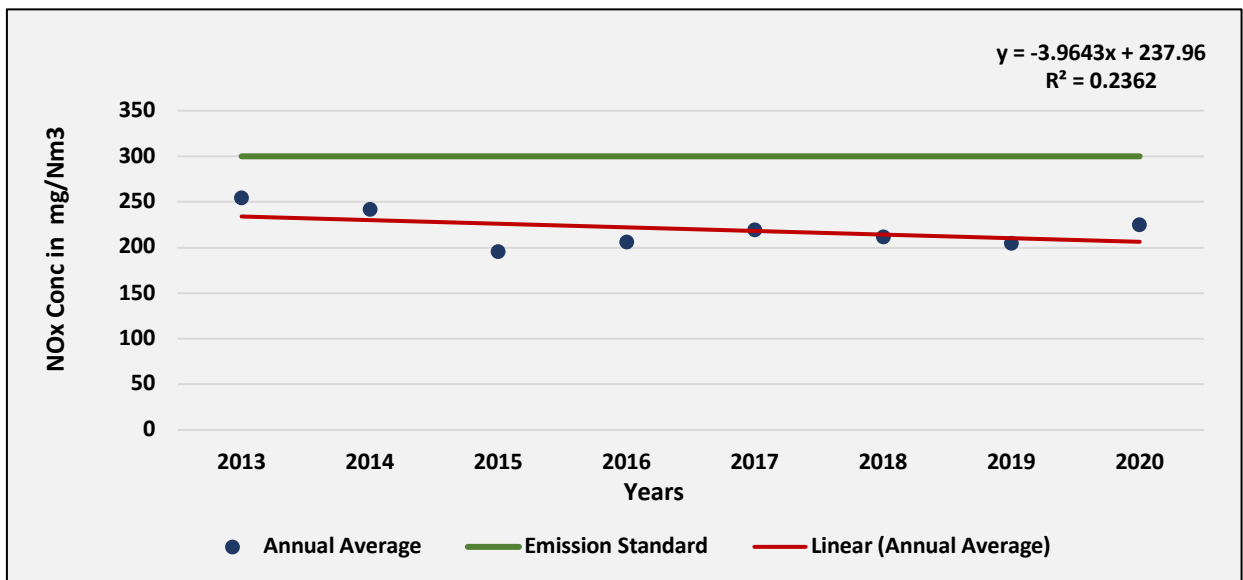


Fig. J8: Trend of annual mean NO_x ambient air concentration in Jhajjar TPP

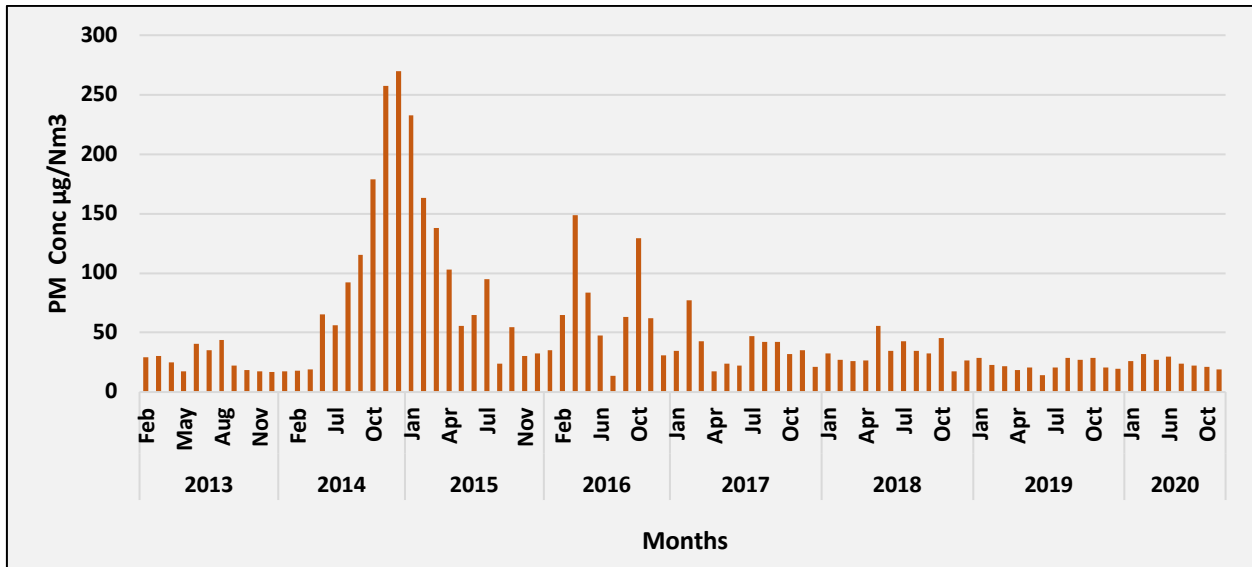


Fig. J9: Time series of monthly average emission of PM from Unit 1 in Jhajjar TPP

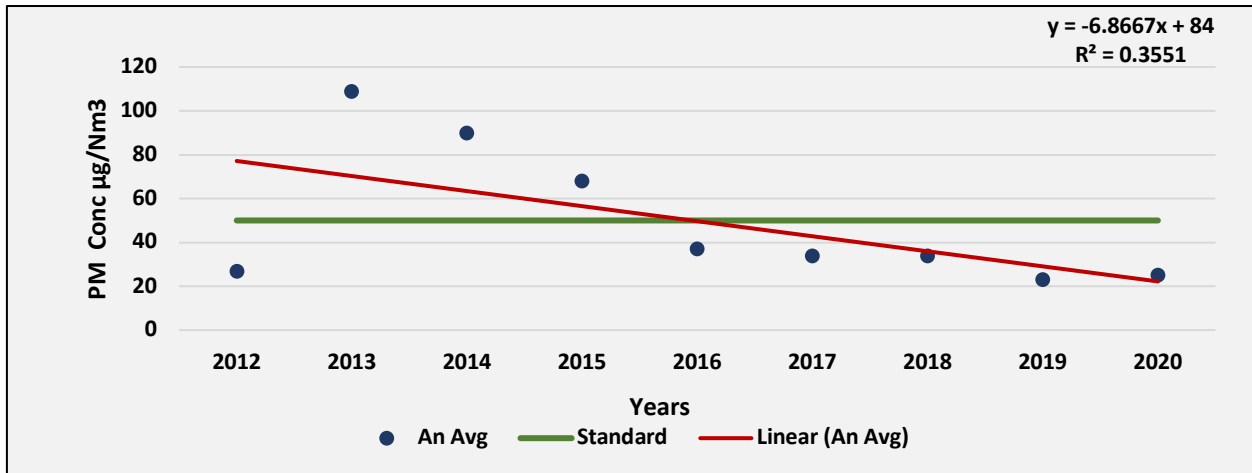


Fig. J10: Trend of annual average PM emissions from unit 1 in Jhajjar TPP

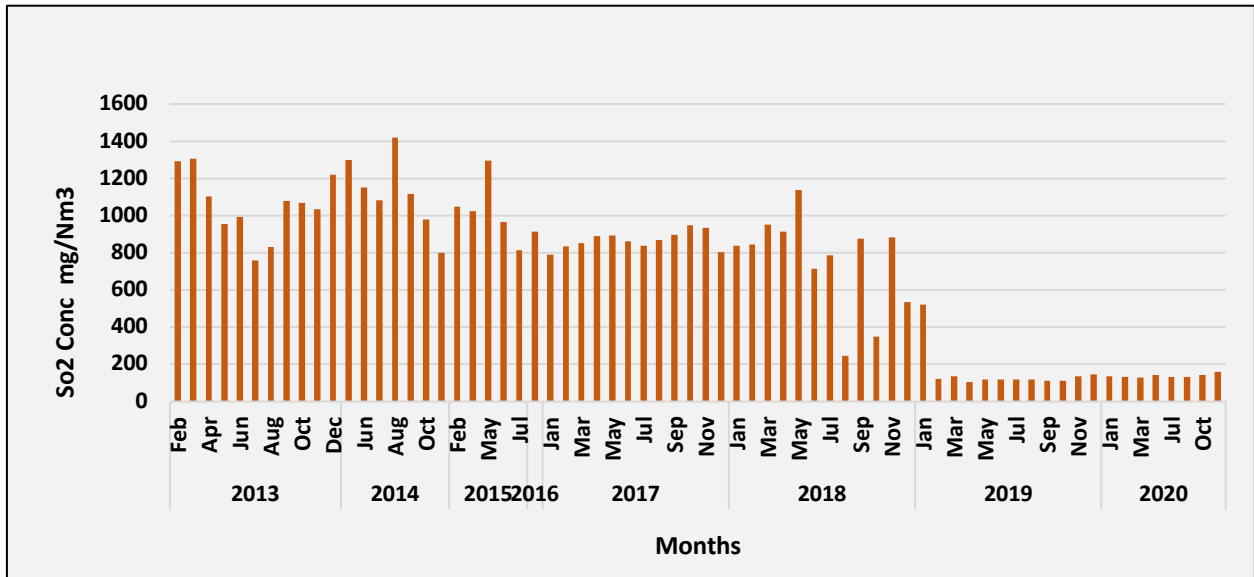


Fig. J11: Time series of monthly average emission of SO₂ from Unit 1 in Jhajjar TPP

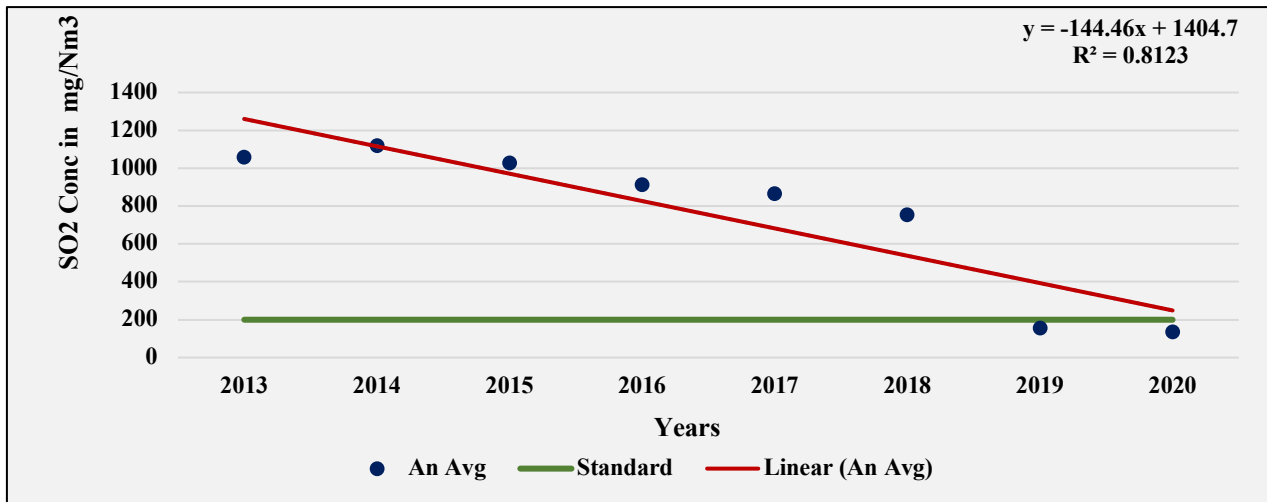


Fig. J12: Trend of annual average SO₂ emissions from unit 1 in Jhajjar TPP

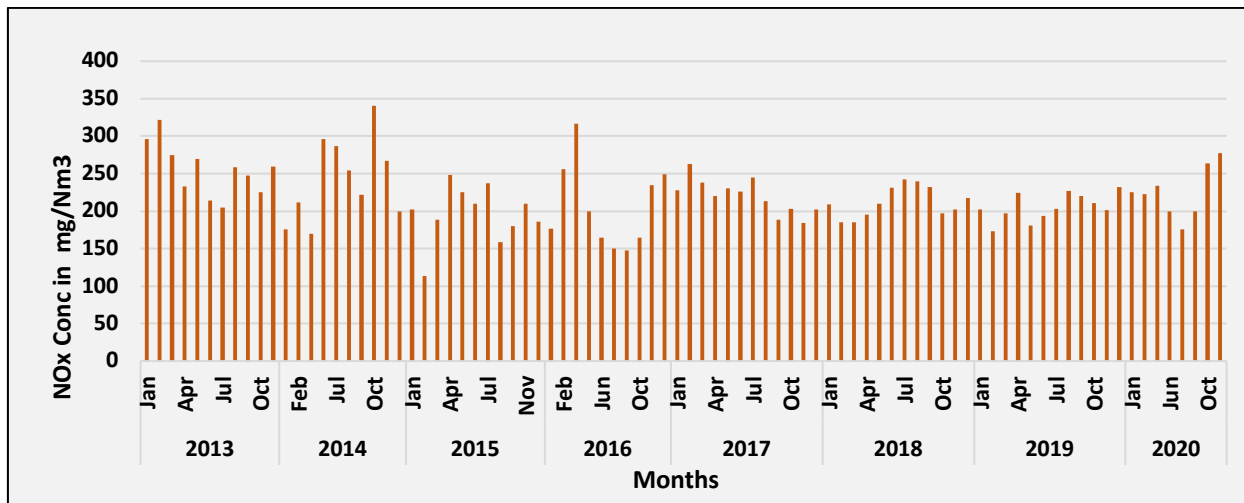


Fig. J13: Time series of monthly average emission of NOx from Unit 1 in Jhajjar TPP

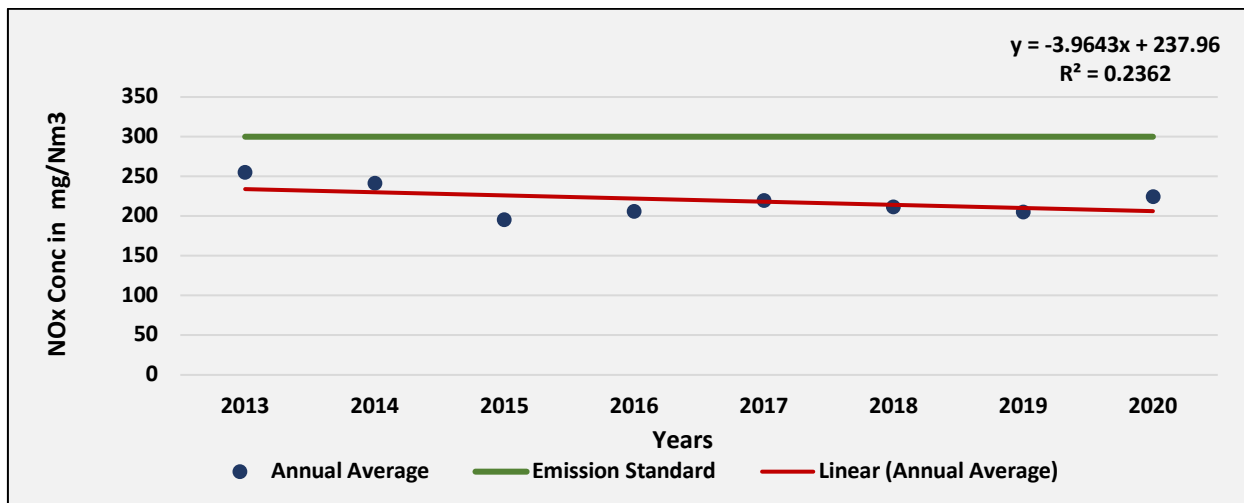


Fig. J14: Trend of annual average NOx emissions from unit 1 in Jhajjar TPP

PANIPAT THERMAL POWER STATION

Panipat Thermal Power Station II is located at Panipat in Haryana. The power plant is one of the coal based power plants of Haryana Power Generation Corporation (HPGCL). Panipat Thermal Power Station has an installed capacity of 500 MW comprising of two units (7&8) are 250 MW each and commissioned in 2004-2005. The exact location coordinates for the power plant are 29.397505867074, 76.876316070557.

The ambient air quality concentrations of SO₂, NO_x, PM₁₀, and PM_{2.5} data analyzed for the ten (2011-2020) years using data provided by HPGCL developer for Panipat Power Plant, Haryana, India.

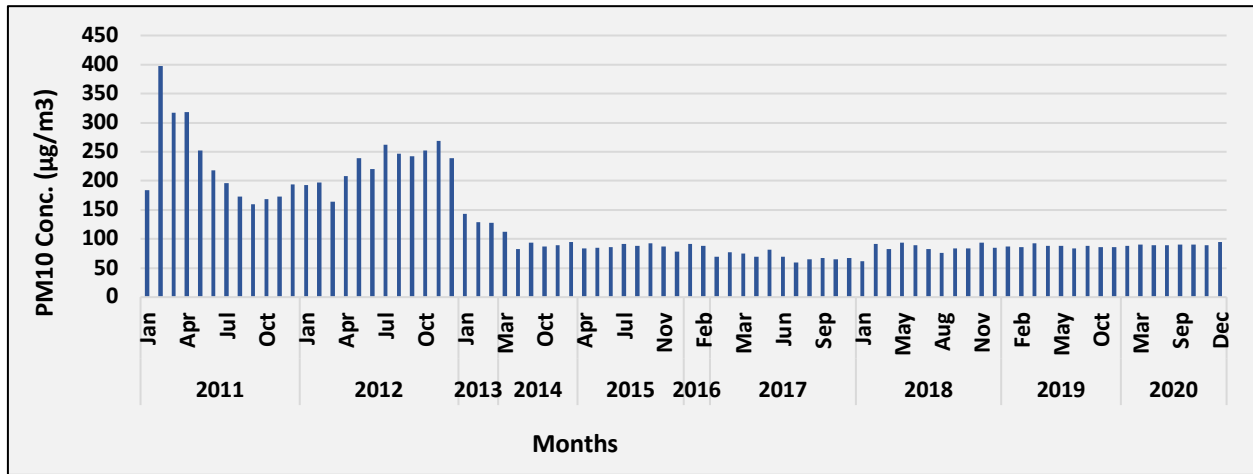


Fig. P1: Time series of monthly average PM₁₀ ambient air concentration in Panipat TPP

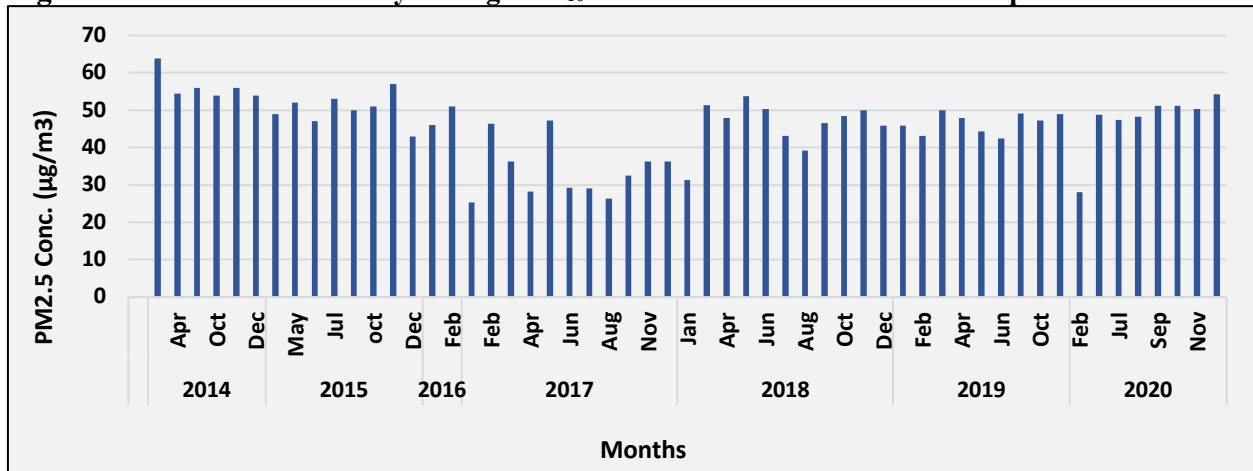


Fig. P2: Time series of monthly average PM_{2.5} ambient air concentration in Panipat TPP

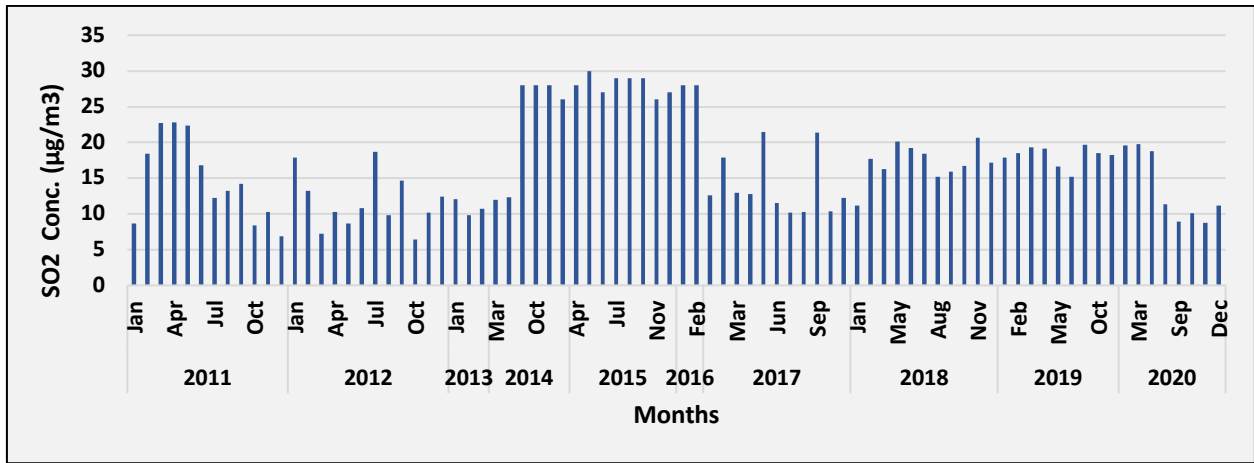


Fig. P3: Time series of monthly average SO₂ ambient air concentration in Panipat TPP

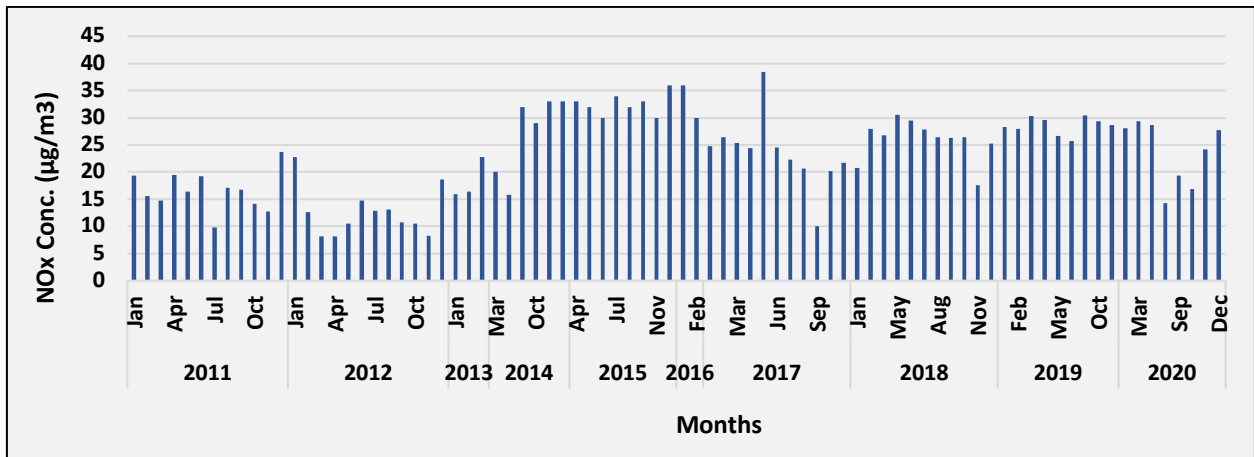


Fig. P4: Time series of monthly average NO_x ambient air concentration in Panipat TPP

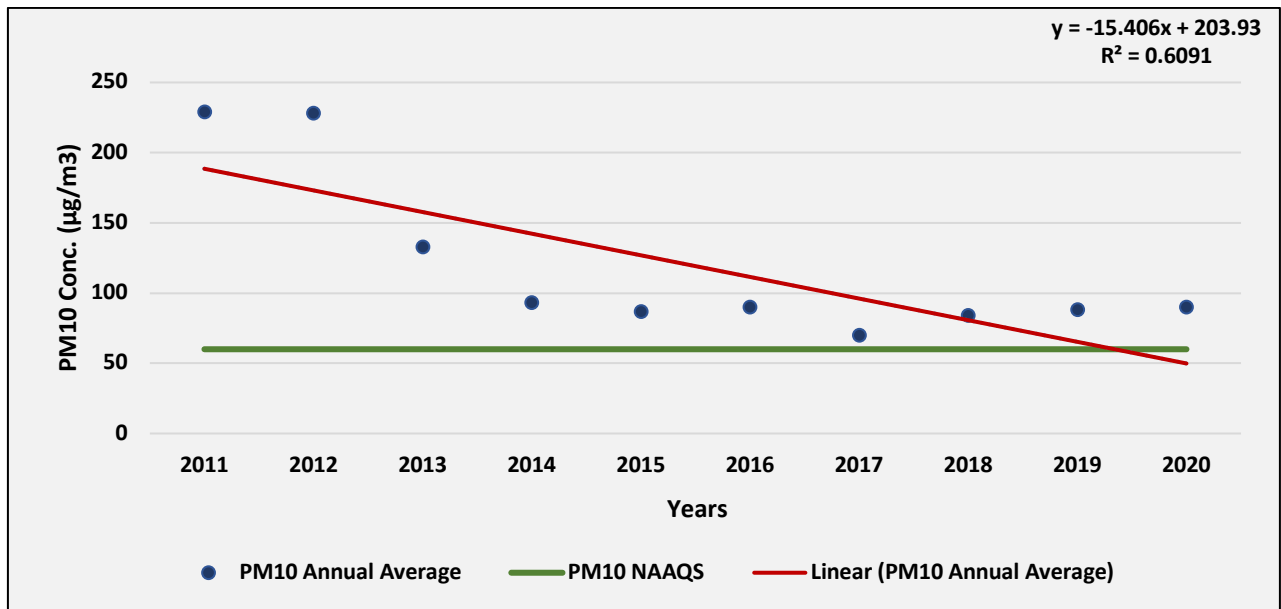


Fig. P5: Trend of annual mean PM₁₀ ambient air concentration in Panipat TPP

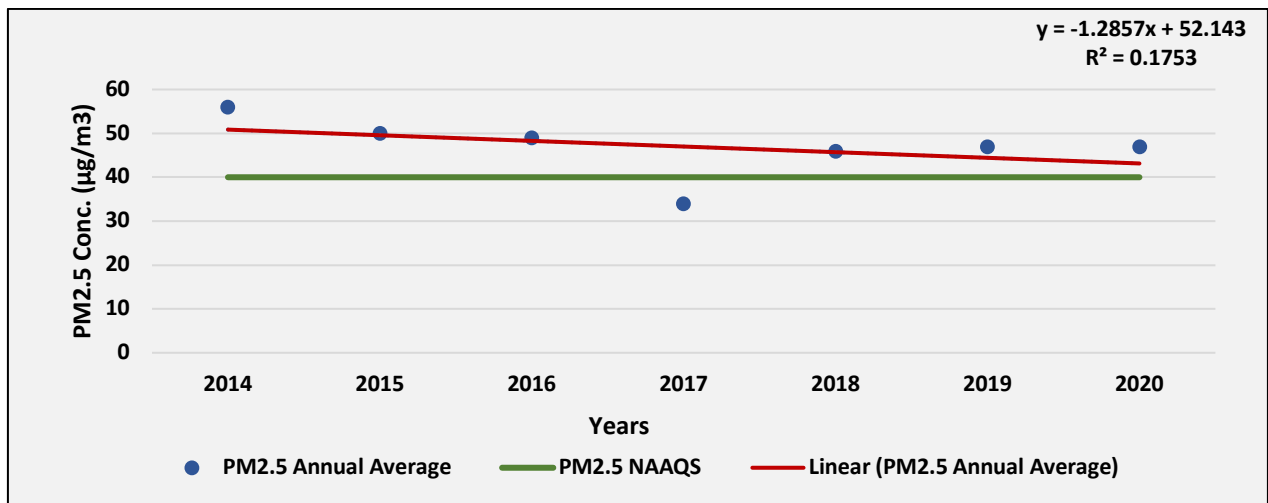


Fig. P6: Trend of annual mean PM_{2.5} ambient air concentration in Panipat TPP

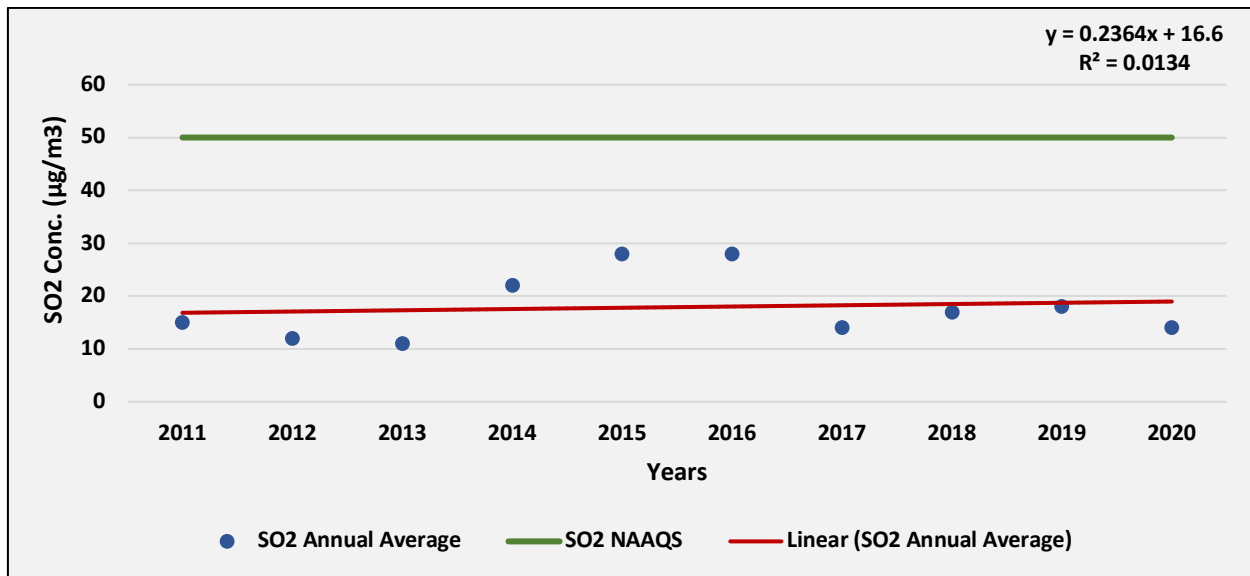


Fig. P7: Trend of annual mean SO₂ ambient air concentration in Panipat TPP

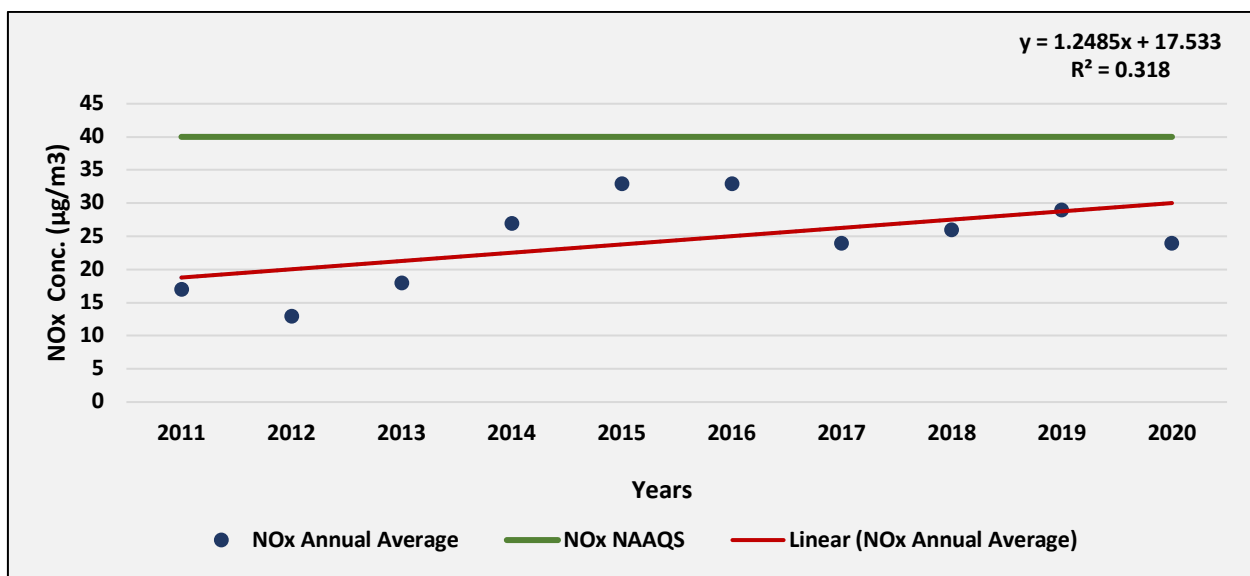


Fig. P8: Trend of annual mean NO_x ambient air concentration in Panipat TPP

Evidence based on ground level stations shows that the monthly average and annual average of SO₂ & NO_x levels in last eleven years are mostly within a range, which is good as per the as per the National Ambient Air Quality Standards (NAAQS). However, the major cause of concern is the PM₁₀ levels that are relatively high for both monthly and annual average and Pm_{2.5} levels which are slightly high w.r.t NAAQS.(Fig P1 & P8).

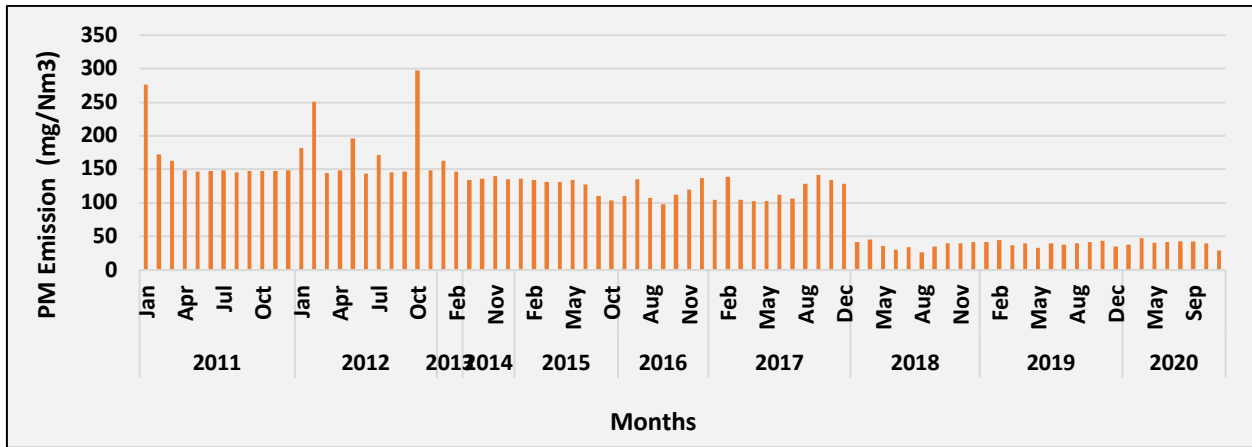


Fig. P9: Time series of monthly average emission of PM from Unit 1 in Panipat TPP

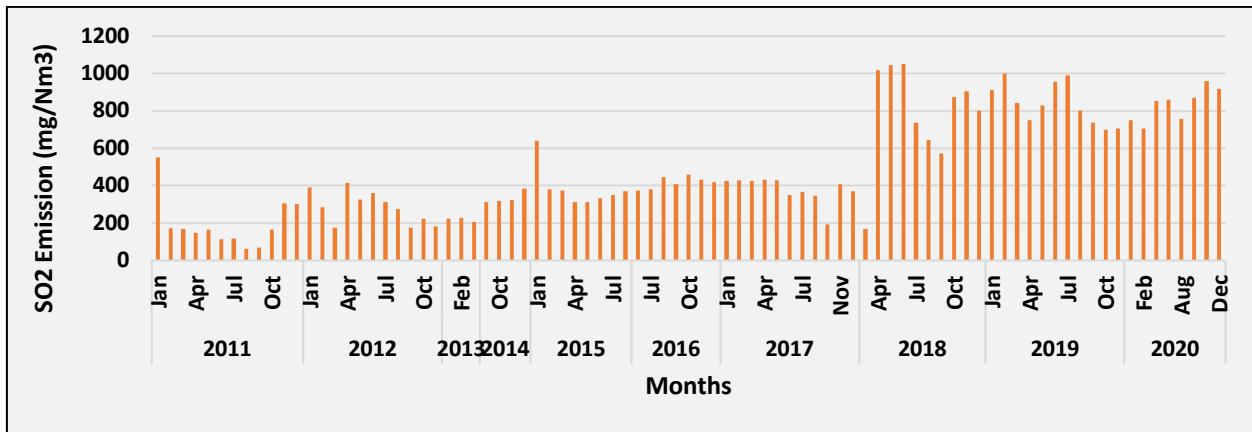


Fig. P10: Time series of monthly average emission of SO2 from Unit 1 in Panipat TPP

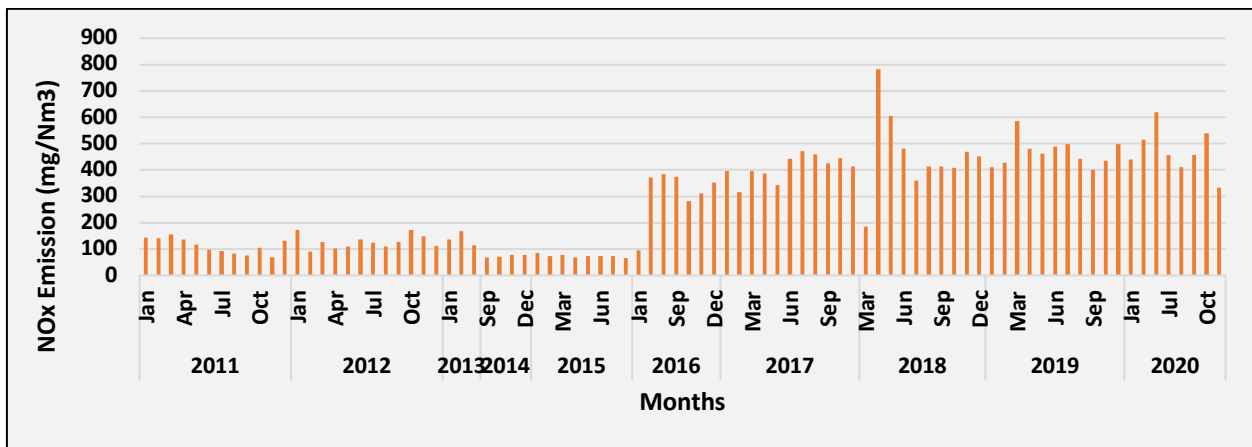


Fig. P11: Time series of monthly average emission of NOx from Unit 1 in Panipat TPP

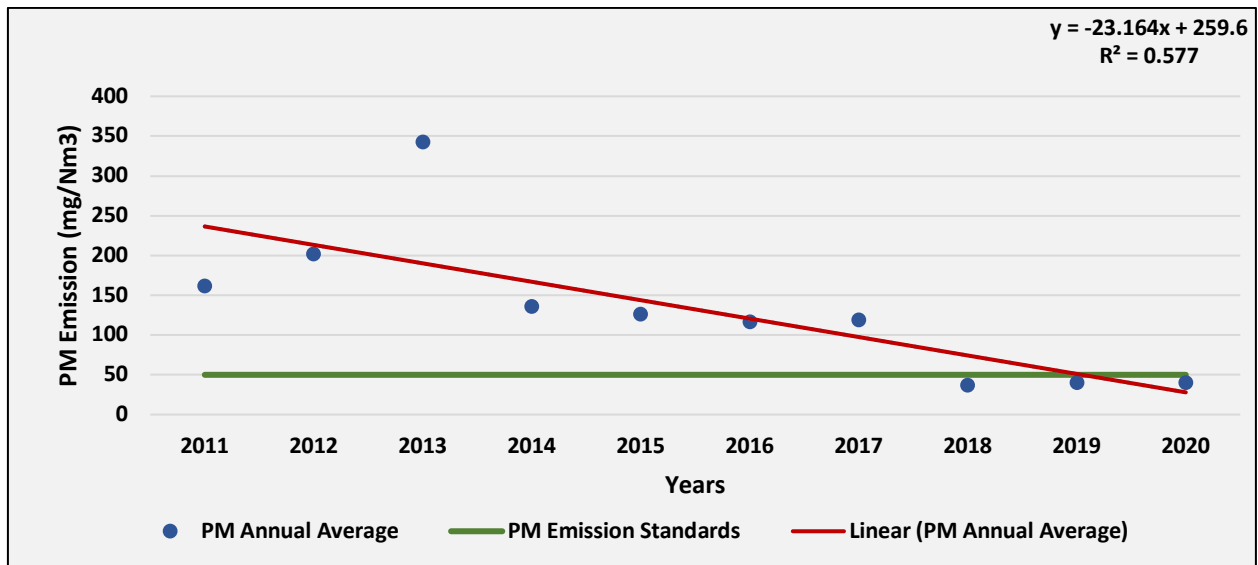


Fig. P12: Trend of annual average PM emissions from unit 1 in Panipat TPP

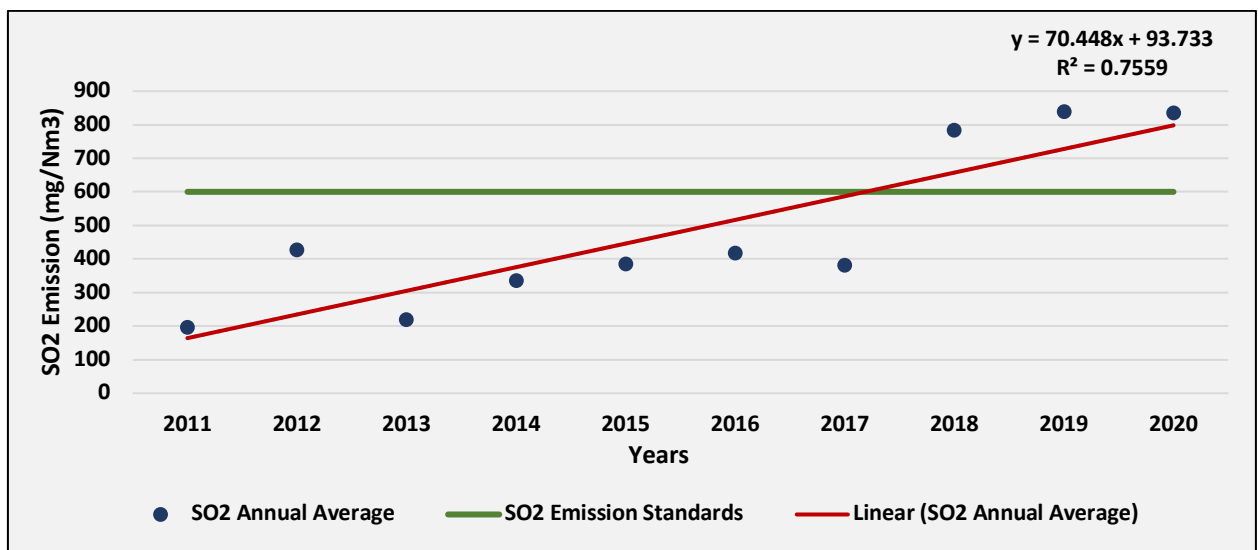


Fig. P13: Trend of annual average SO2 emissions from unit 1 in Panipat TPP

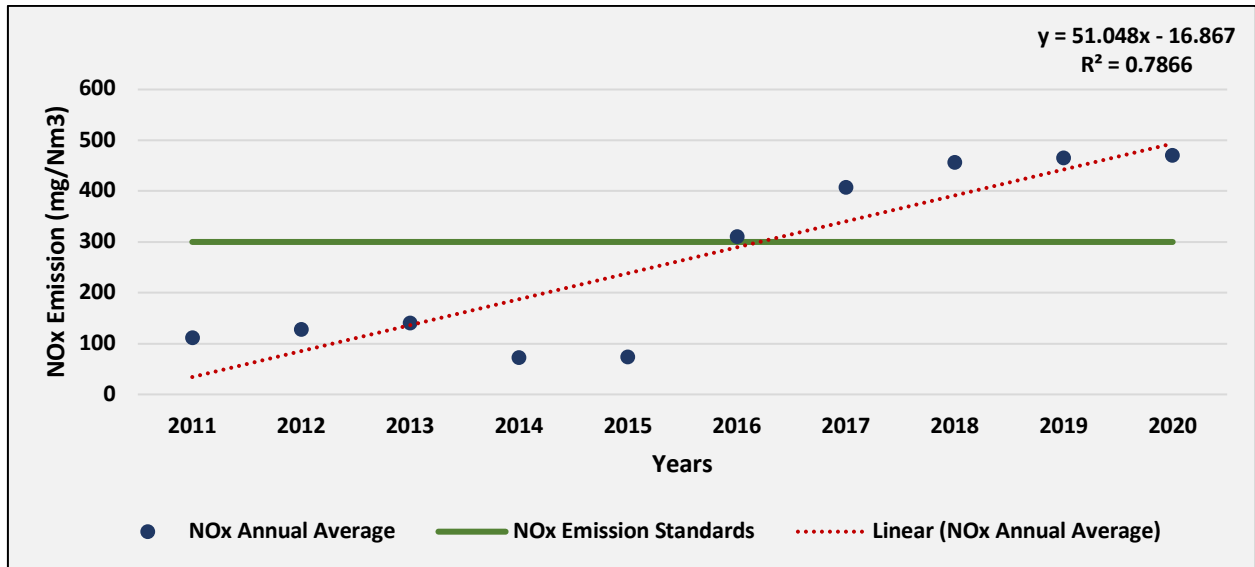


Fig. P14: Trend of annual average NOx emissions from unit 1 in Panipat TPP

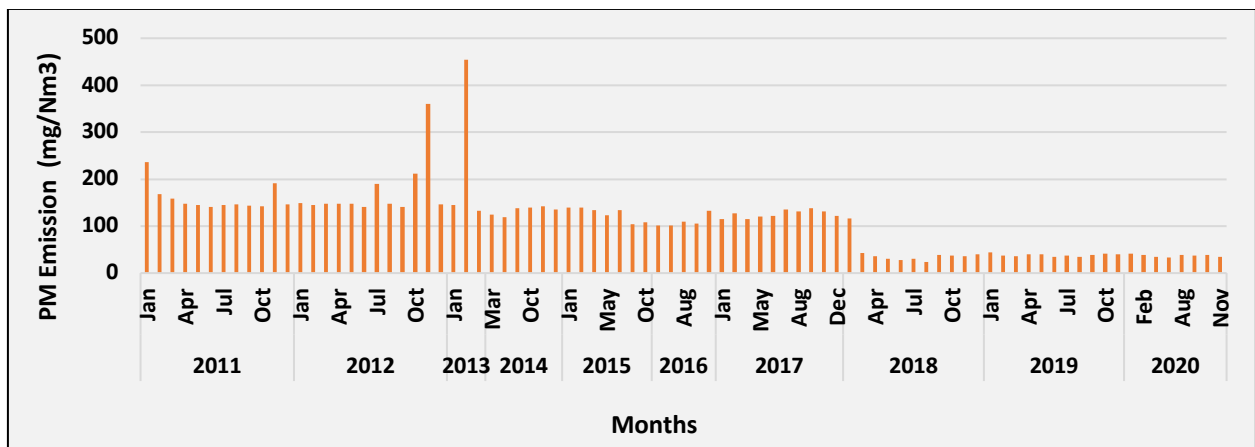


Fig. P15: Time series of monthly average emission of PM from Unit 2 in Panipat TPP

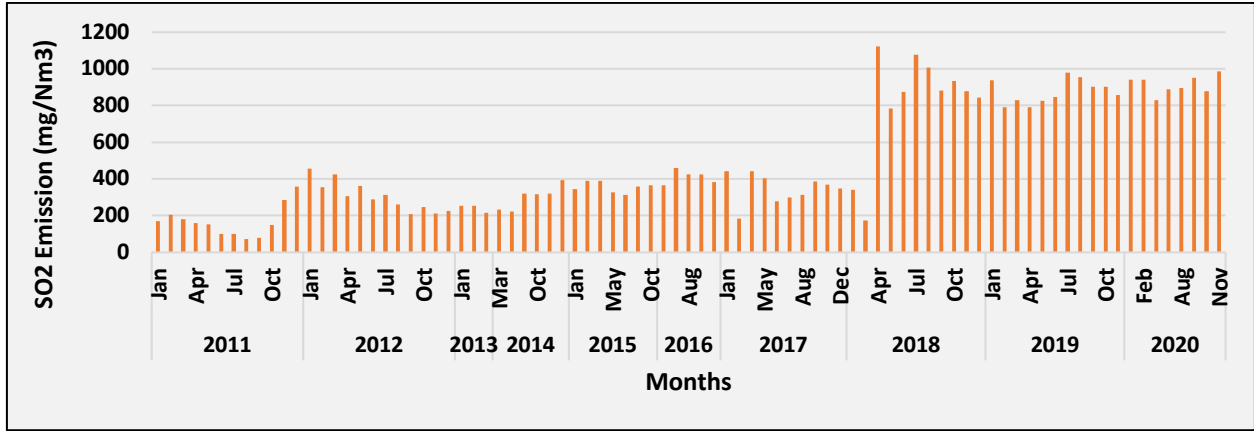


Fig. P16: Time series of monthly average emission of SO₂ from Unit 2 in Panipat TPP

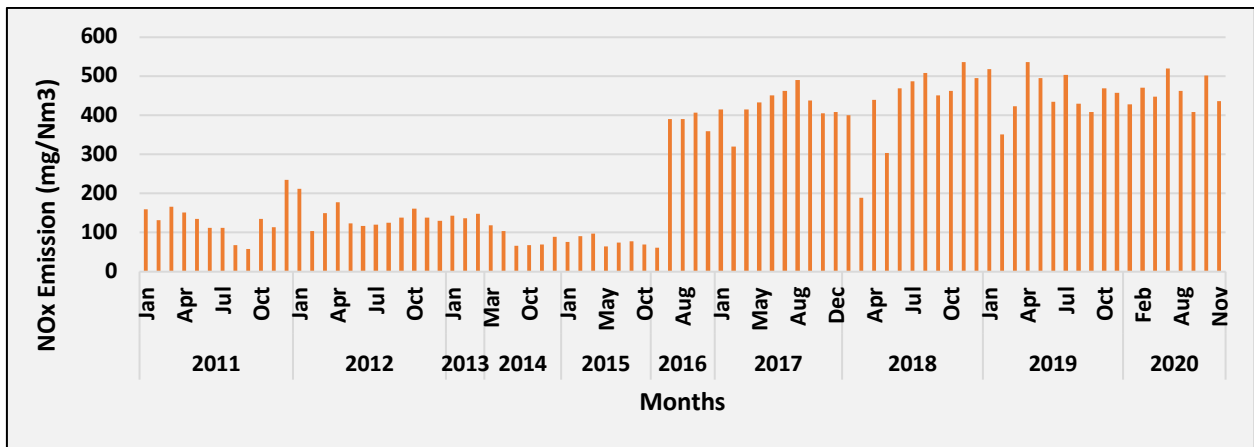


Fig. P17: Time series of monthly average emission of NO_x from Unit 2 in Panipat TPP

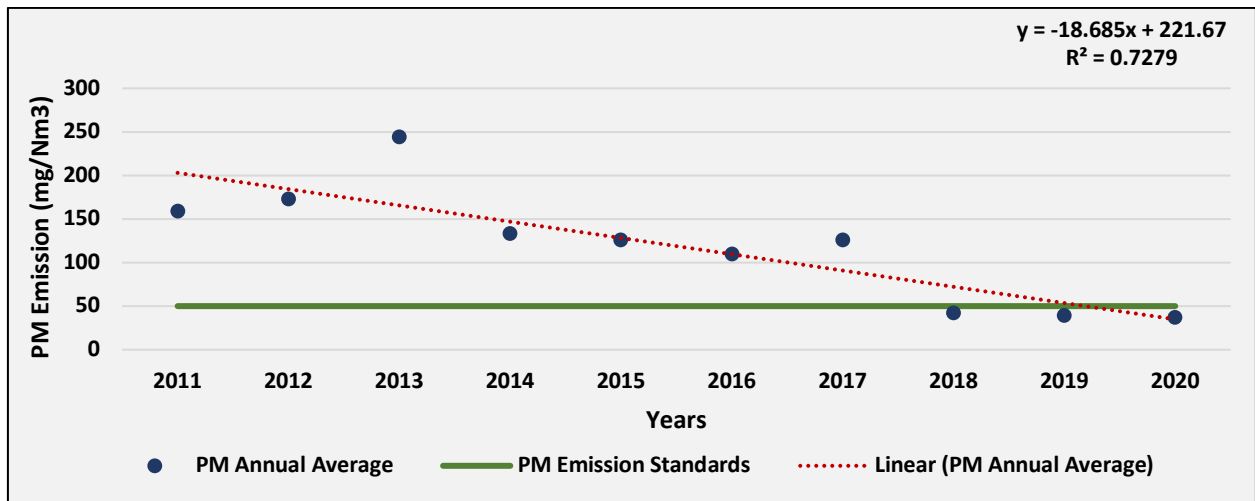


Fig. P18: Trend of annual average PM emissions from unit 2 in Panipat TPP

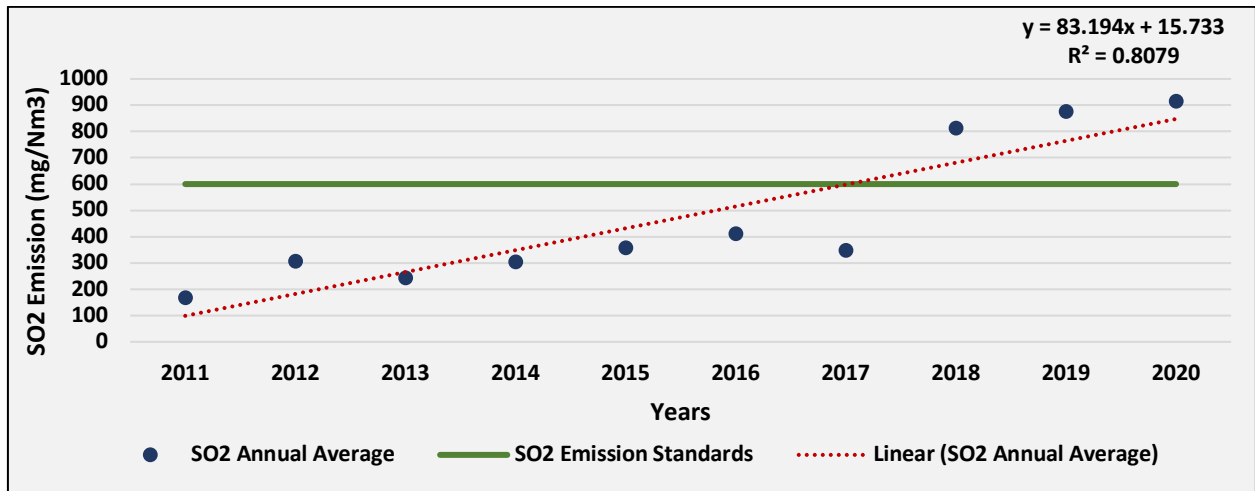


Fig. P19: Trend of annual average SO2 emissions from unit 2 in Panipat TPP

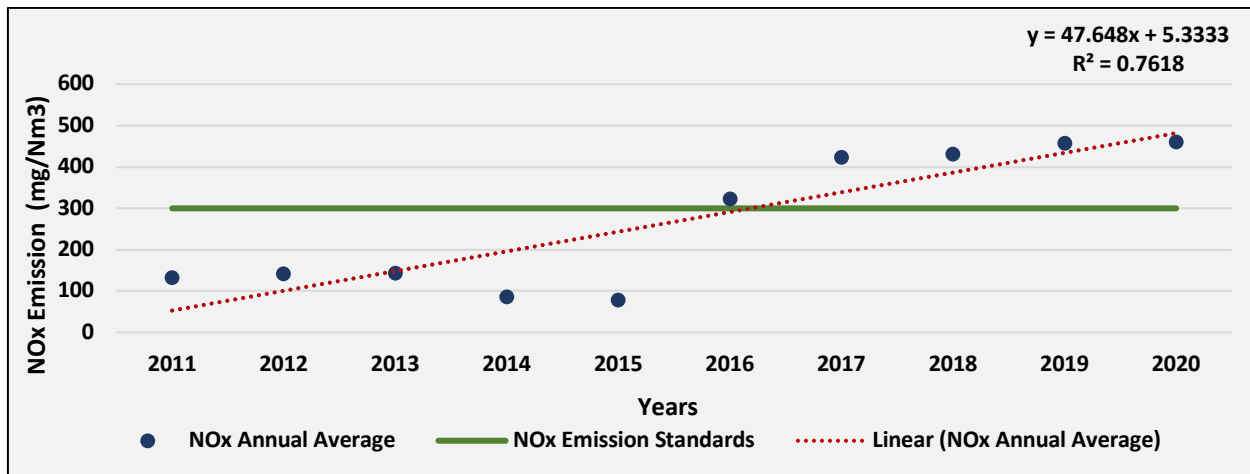


Fig. P20: Trend of annual average NOx emissions from unit 2 in Panipat TPP

For Unit 1 and Unit 2 of Panipat TPP, The emission of particulate matter and SO₂ were higher than emission limit until 2017 and are within limit standards from 2018 onwards. Similarly, for NO_x, the emission were higher from 2011 until 2016. (Fig P9-P20).

DCRTPP THERMAL POWER PLANT

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. KOR1 – Fig. KOR50) for the last six years (2014-2020) using data provided by HPGCL developer for Deen Bandhu Chotu Ram Thermal Power Plant, Haryana, India.

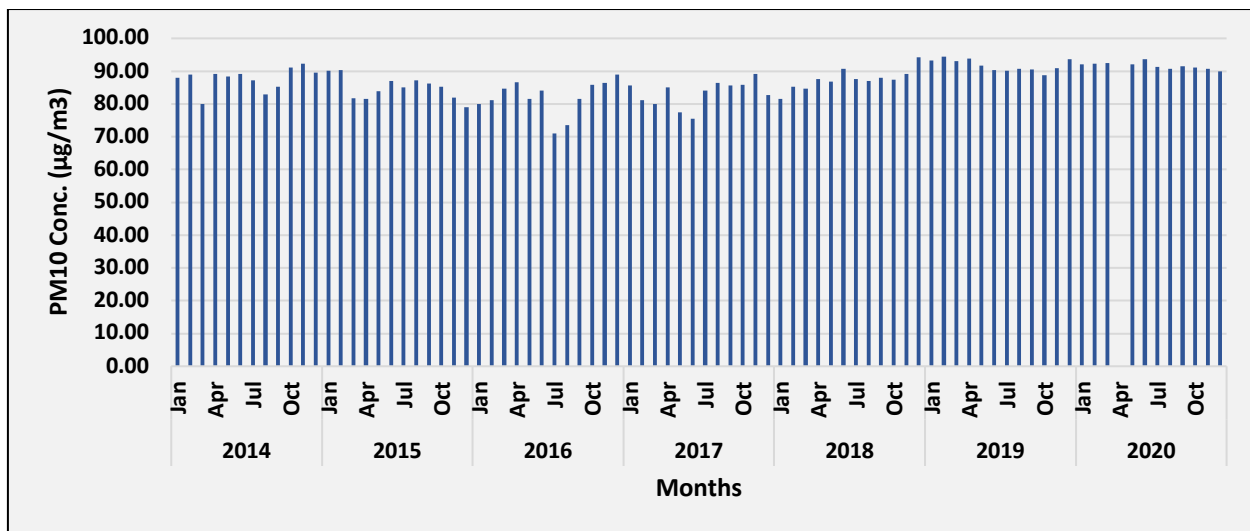


Fig. DCR1: Time series of monthly average PM₁₀ ambient air concentration in DCR TPP (Ambient 1)

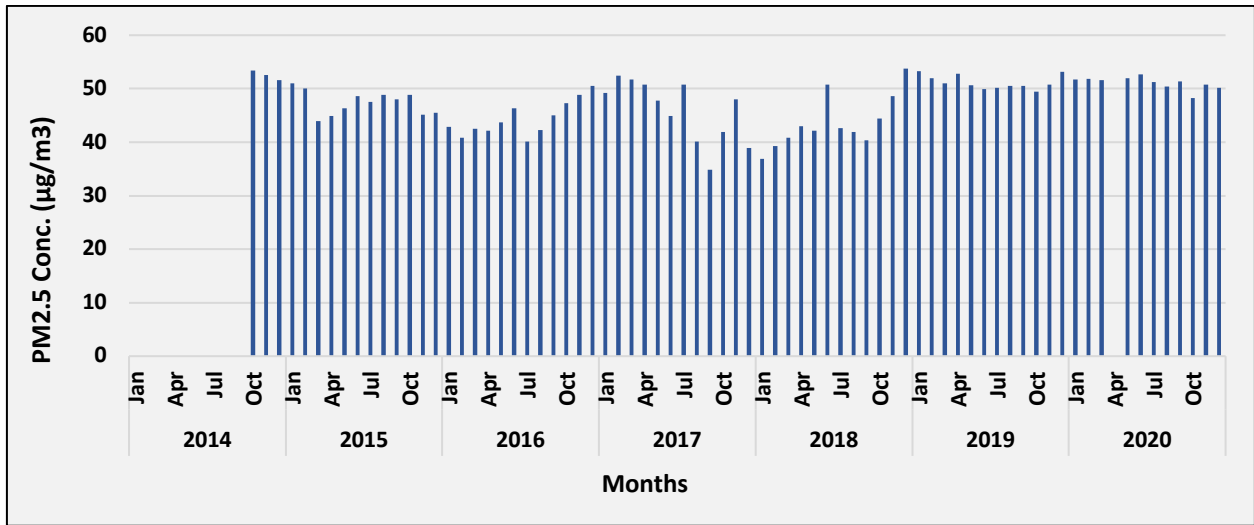


Fig. DCR2: Time series of monthly average PM_{2.5} ambient air concentration in DCR TPP (Ambient 1)

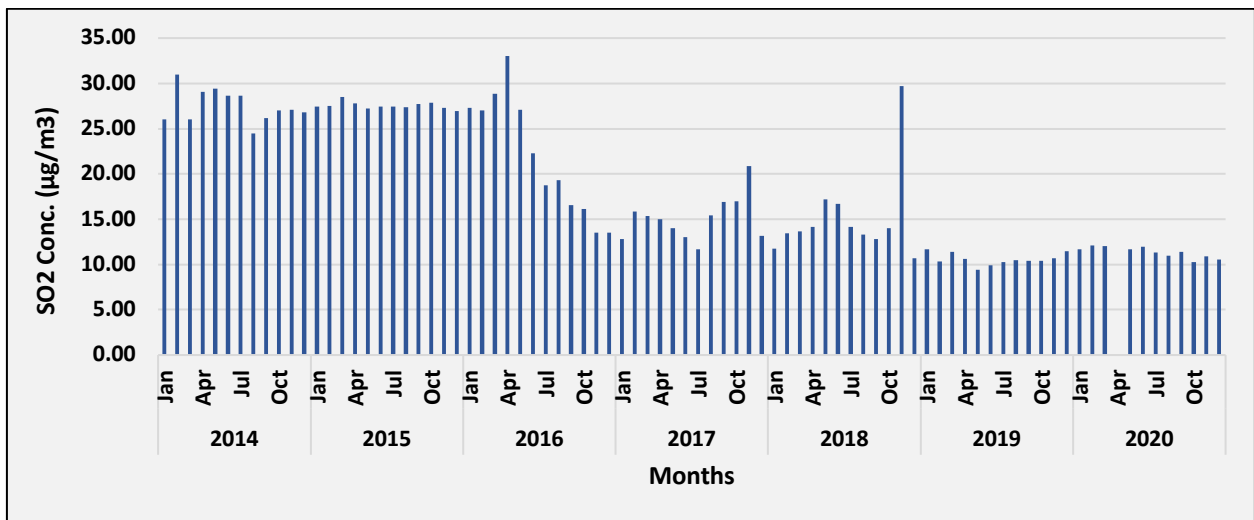


Fig. DCR3: Time series of monthly average SO₂ ambient air concentration in DCR TPP (Ambient 1)

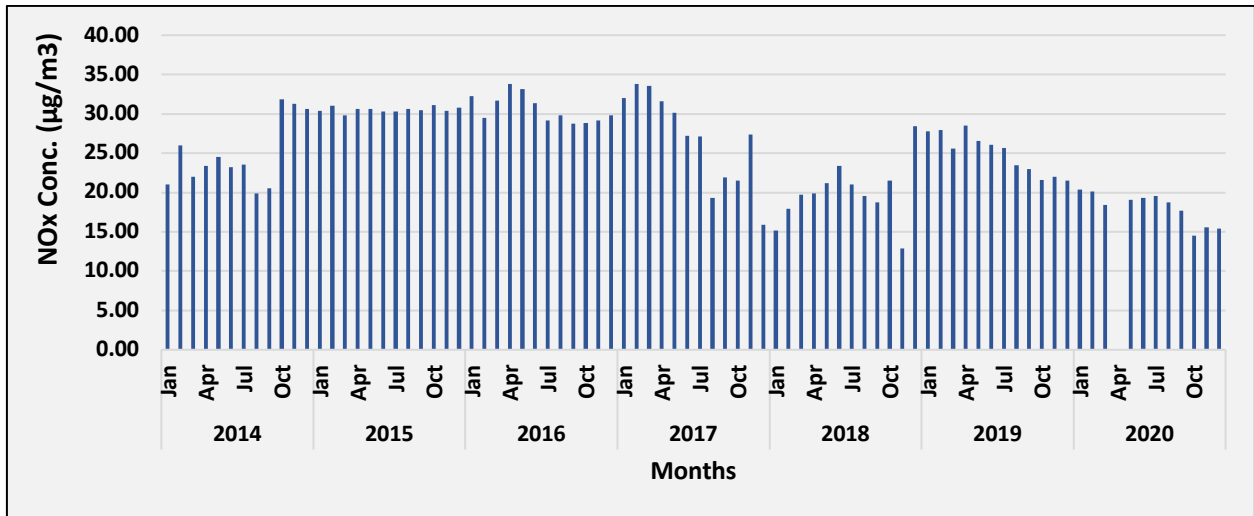


Fig. DCR4: Time series of monthly average NO_x ambient air concentration in DCR TPP (Ambient 1)

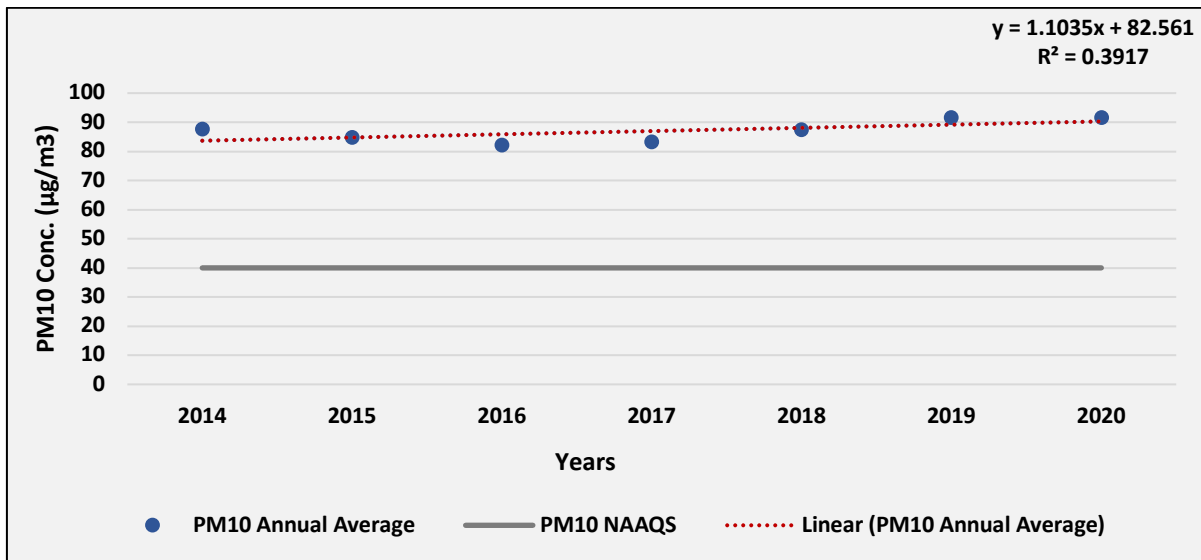


Fig. DCR5: Trend of annual mean PM₁₀ ambient air concentration in DCR TPP (Ambient 1)

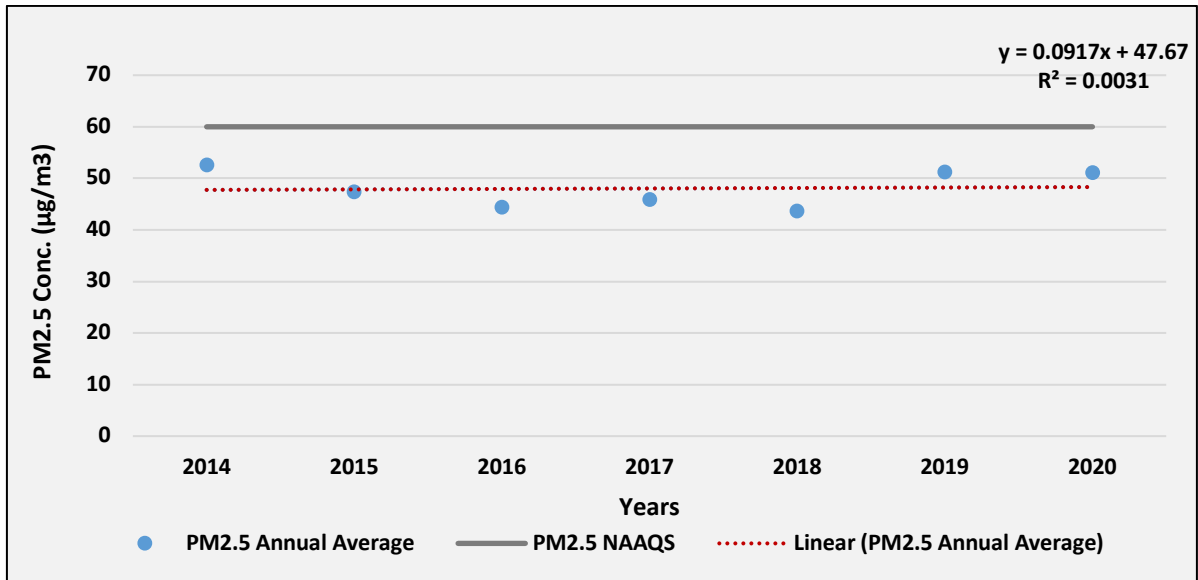


Fig. DCR6: Trend of annual mean PM_{2.5} ambient air concentration in DCR TPP (Ambient 1)

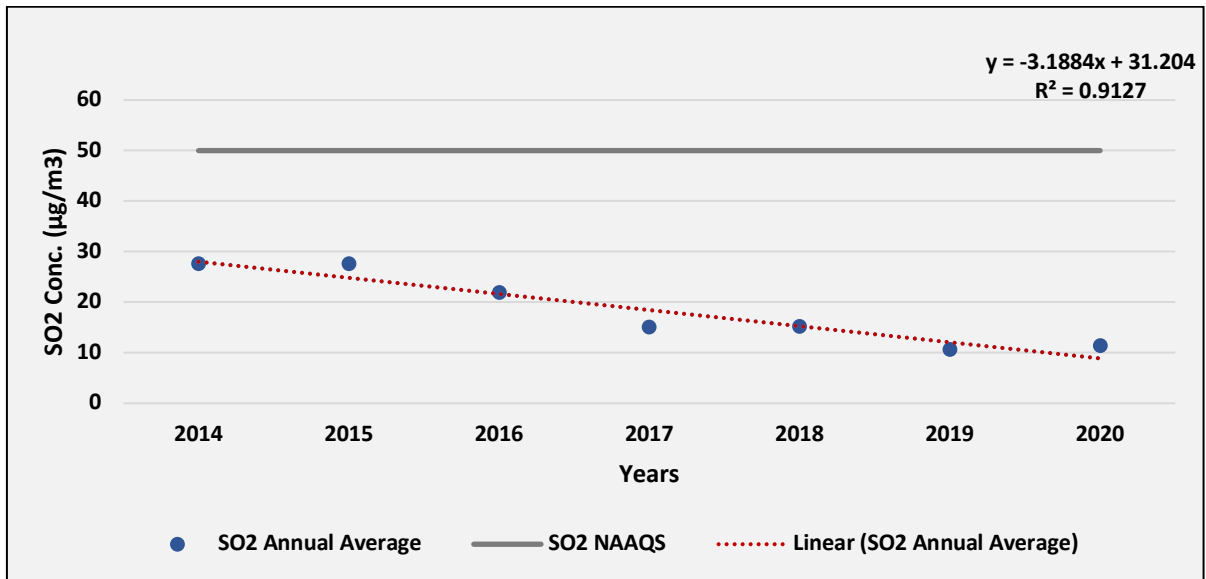


Fig. DCR7: Trend of annual mean SO₂ ambient air concentration in DCR TPP (Ambient 1)

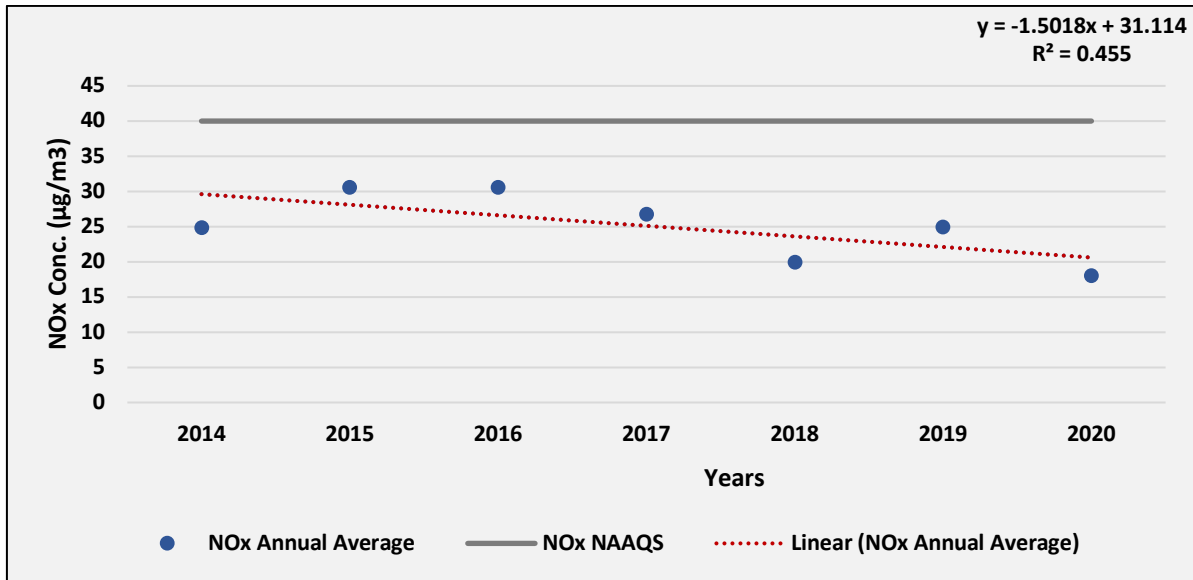


Fig. DCR8: Trend of annual mean NO_x ambient air concentration in DCR TPP (Ambient 1)

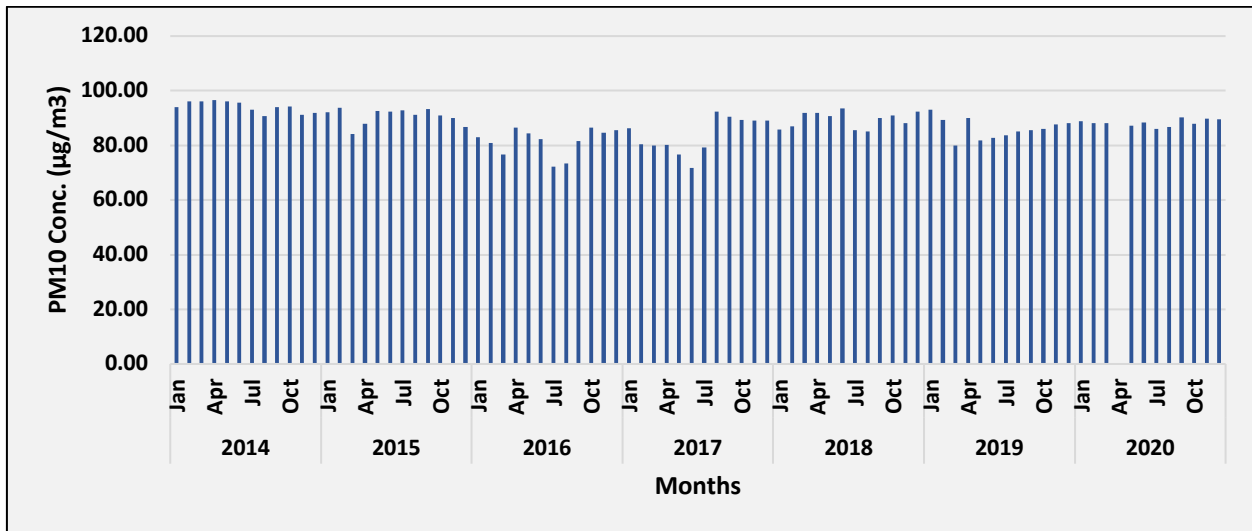


Fig. DCR9: Time series of monthly average PM₁₀ ambient air concentration in DCR TPP (Ambient 2)

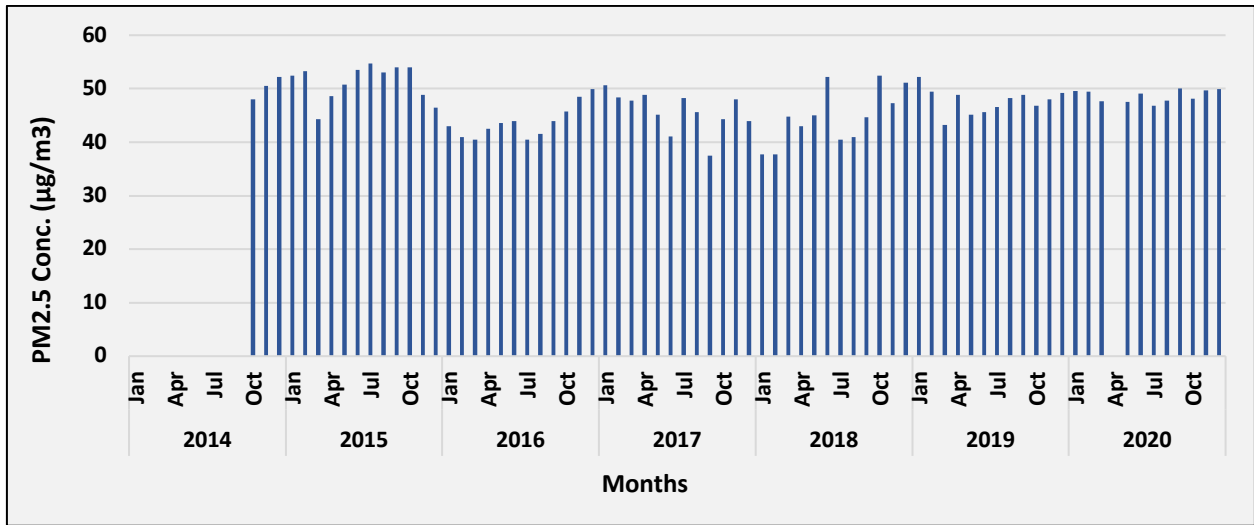


Fig. DCR10: Time series of monthly average PM_{2.5} ambient air concentration in DCR TPP (Ambient 2)

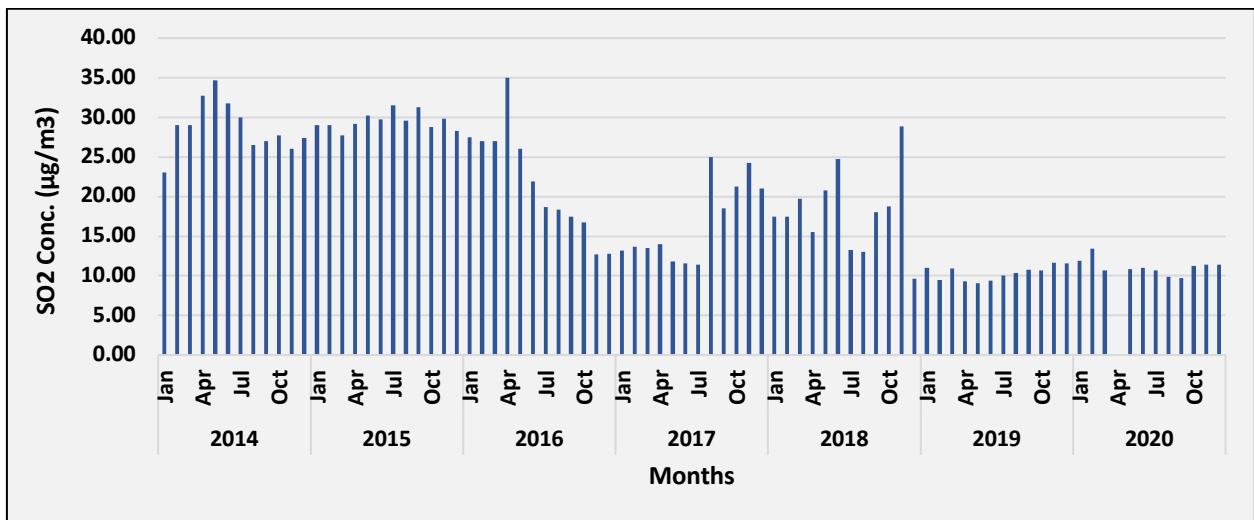


Fig. DCR11: Time series of monthly average SO₂ ambient air concentration in DCR TPP (Ambient 2)

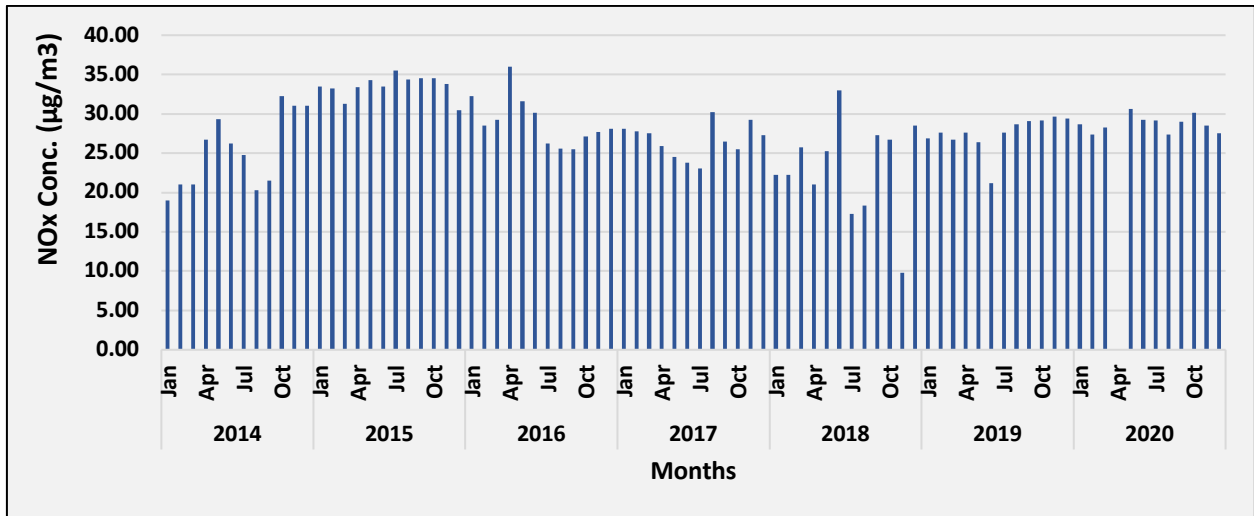


Fig. DCR12: Time series of monthly average NO_x ambient air concentration in DCR TPP (Ambient 2)

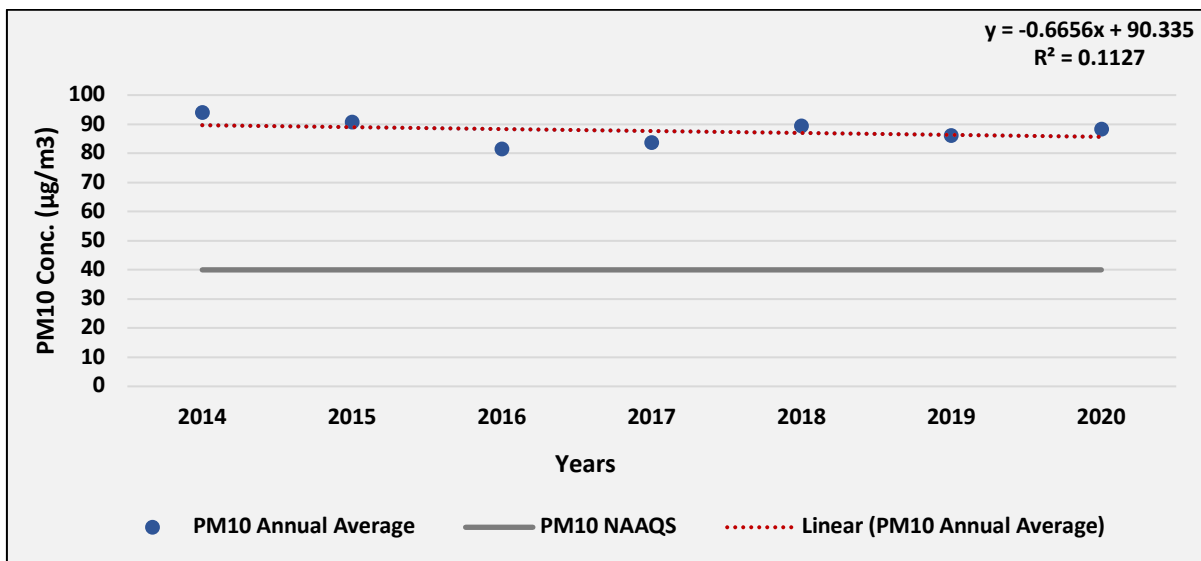


Fig. DCR13: Trend of annual mean PM₁₀ ambient air concentration in DCR TPP (Ambient 2)

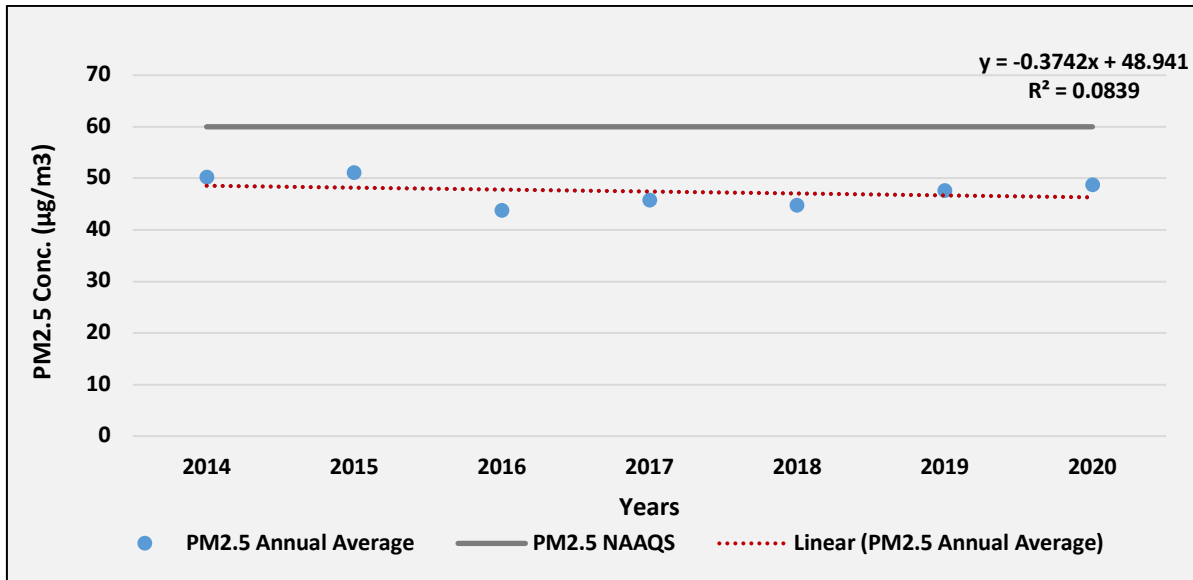


Fig. DCR14: Trend of annual mean $PM_{2.5}$ ambient air concentration in DCR TPP (Ambient 2)

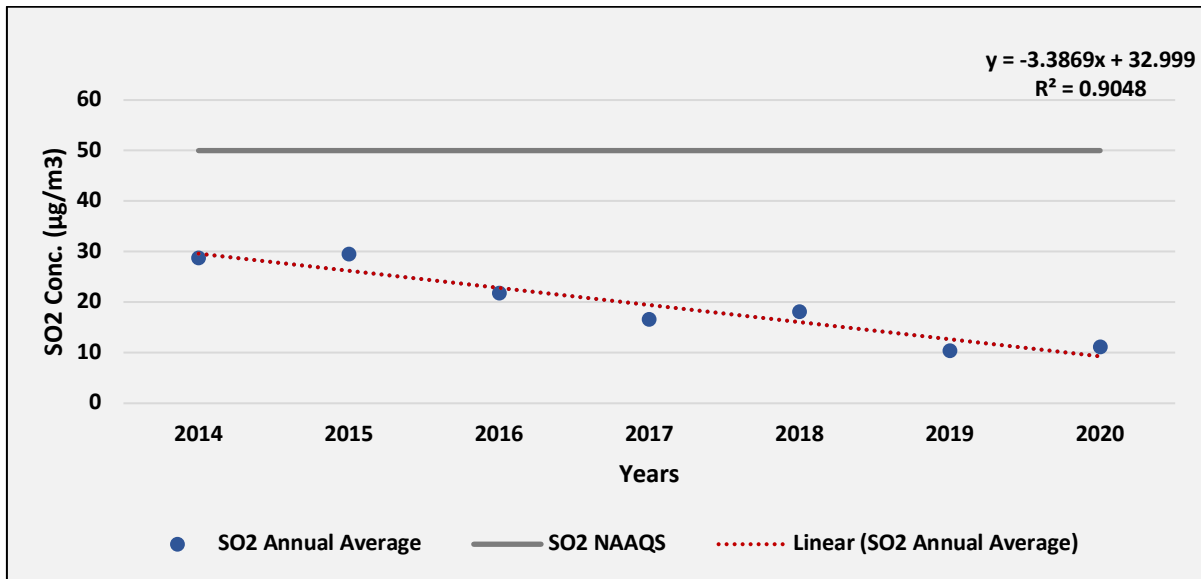


Fig. DCR15: Trend of annual mean SO_2 ambient air concentration in DCR TPP (Ambient 2)

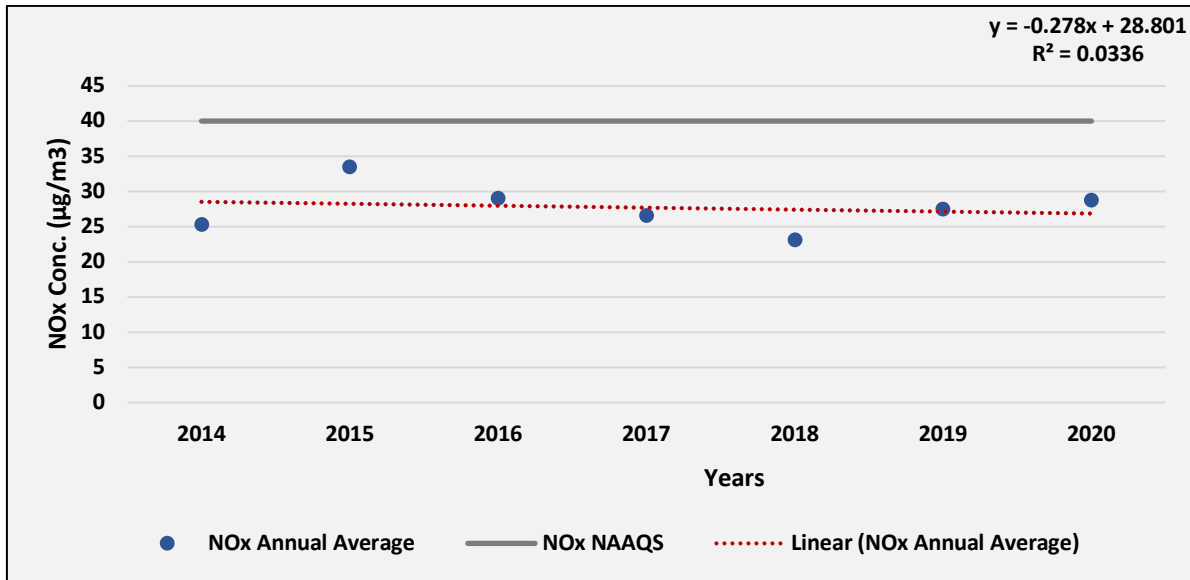


Fig. DCR16: Trend of annual mean NO_x ambient air concentration in DCR TPP (Ambient 2)

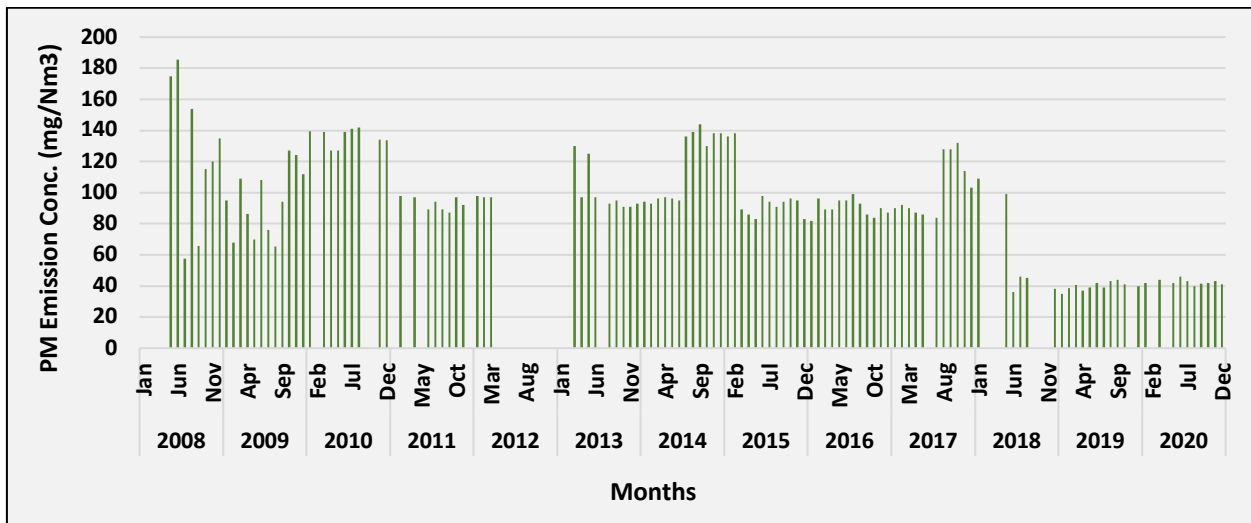


Fig. DCR17: Time series of monthly average PM Emission concentration in DCR TPP (Unit 1)

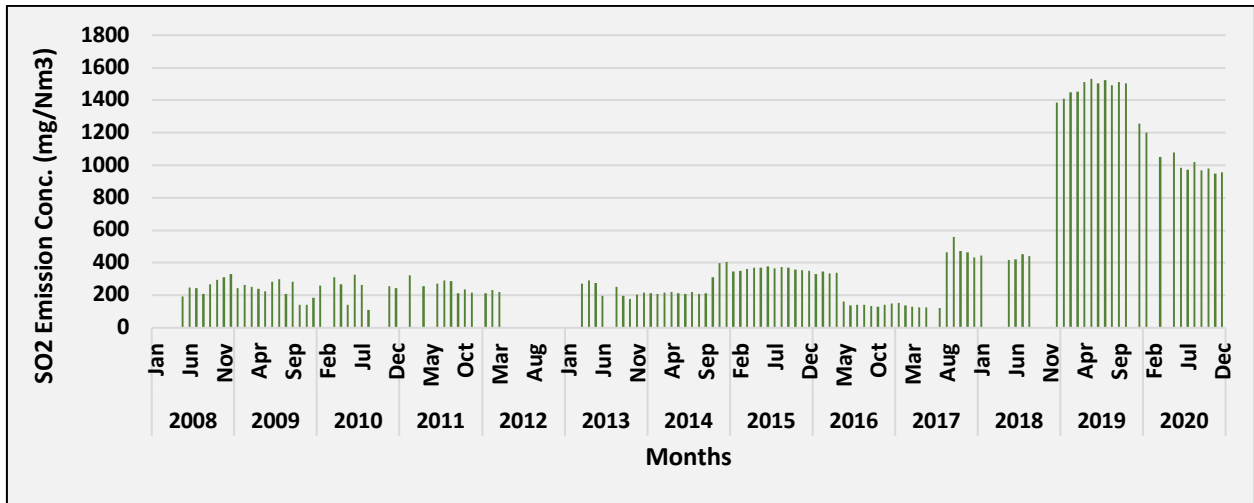


Fig. DCR18: Time series of monthly average SO₂ Emission concentration in DCR TPP (Unit 1)

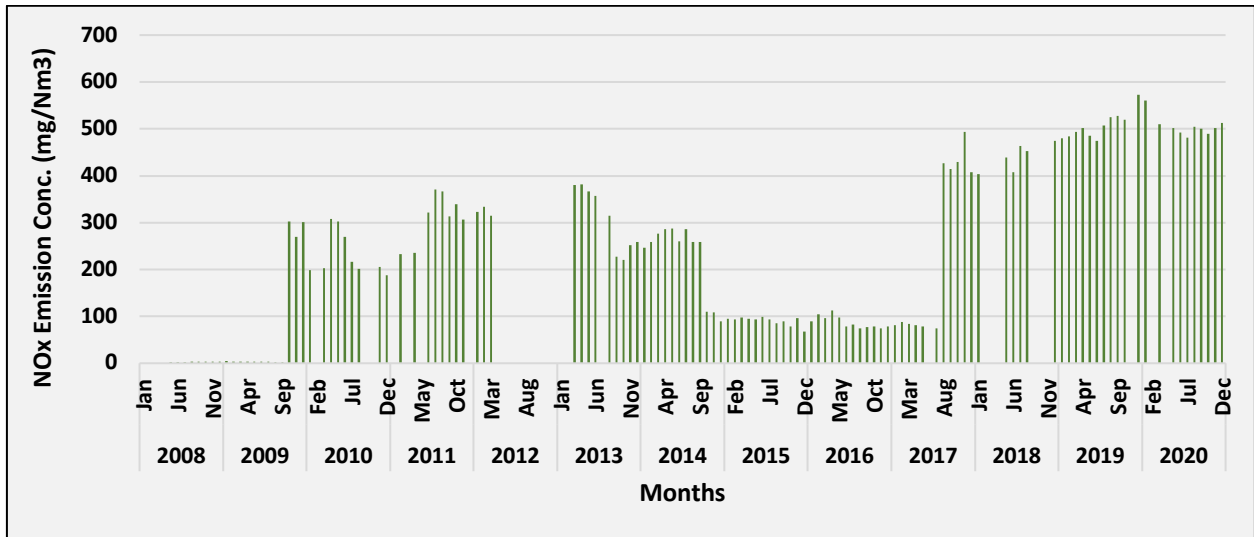


Fig. DCR19: Time series of monthly average NO_x Emission concentration in DCR TPP (Unit 1)

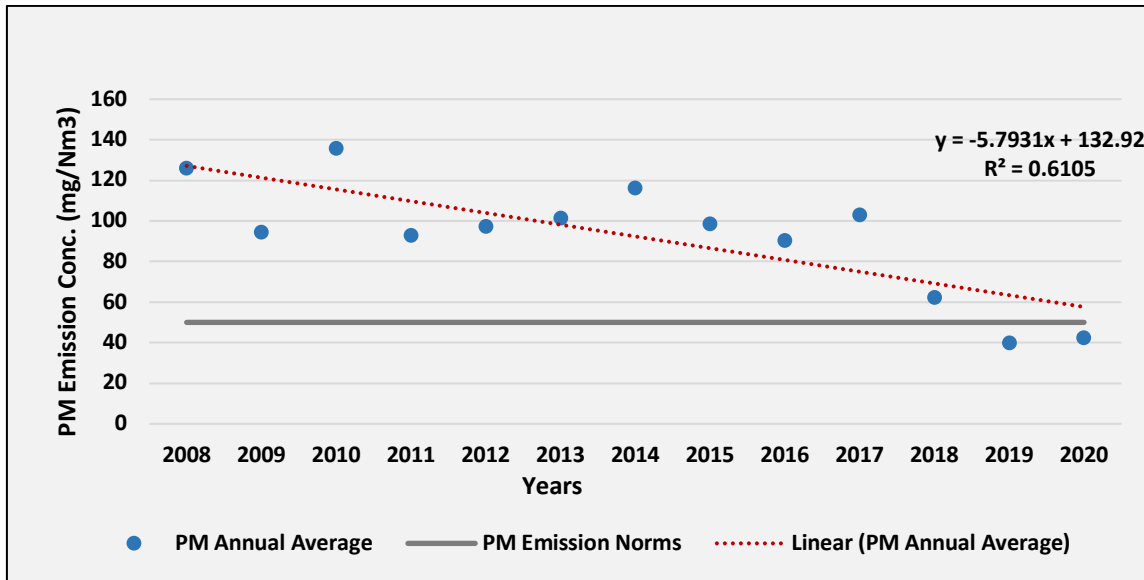


Fig. DCR20: Trend of annual mean PM Emission air concentration in DCR TPP (Unit 1)

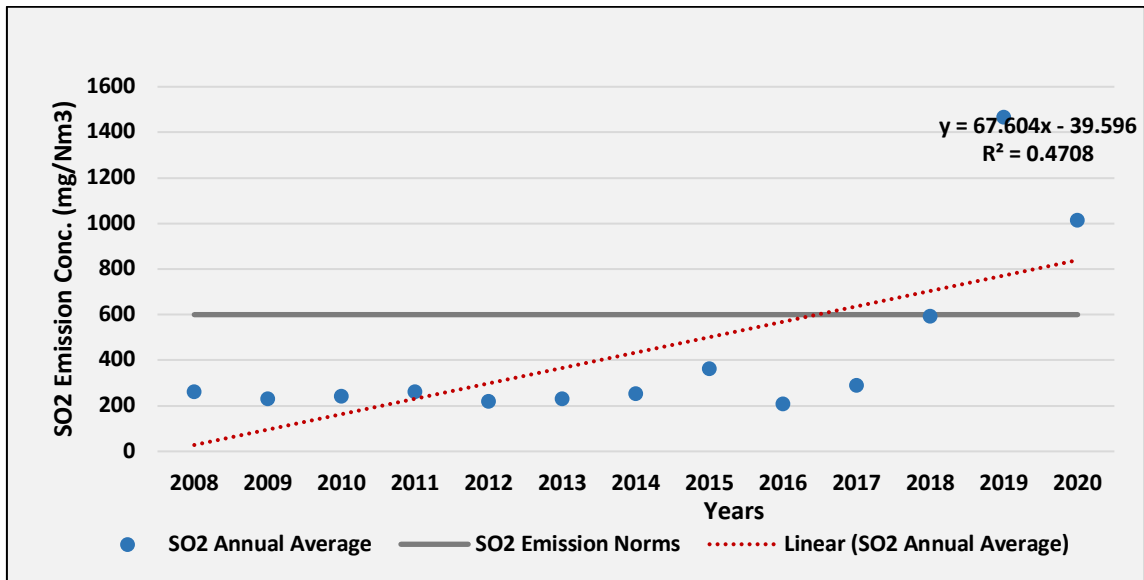


Fig. DCR21: Trend of annual mean SO₂ Emission air concentration in DCR TPP (Unit 1)

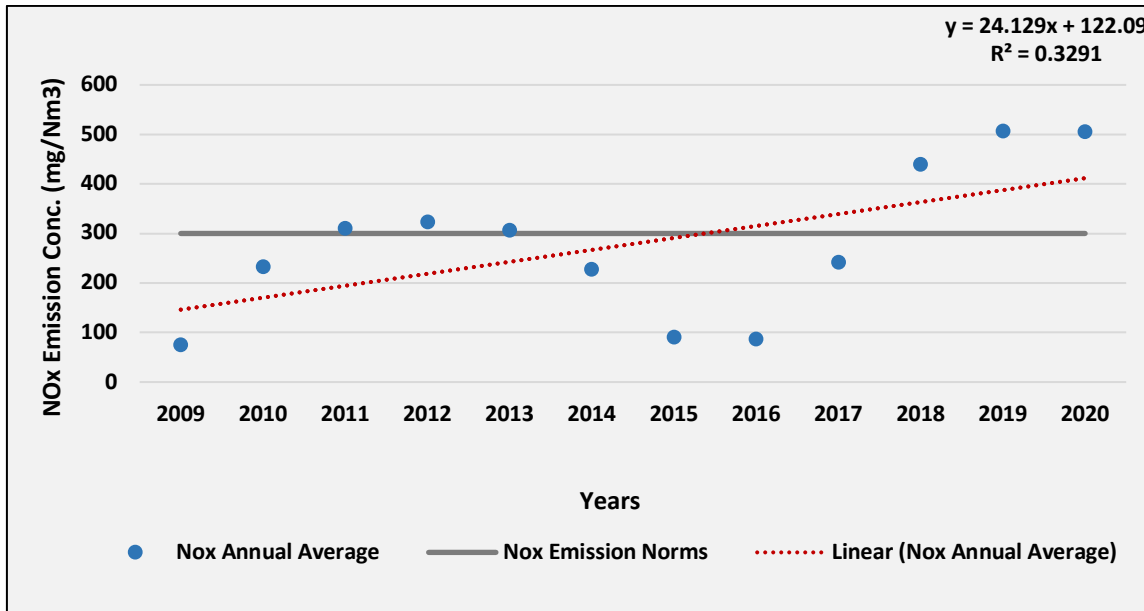


Fig. DCR22: Trend of annual mean NO_x Emission air concentration in DCR TPP (Unit 1)

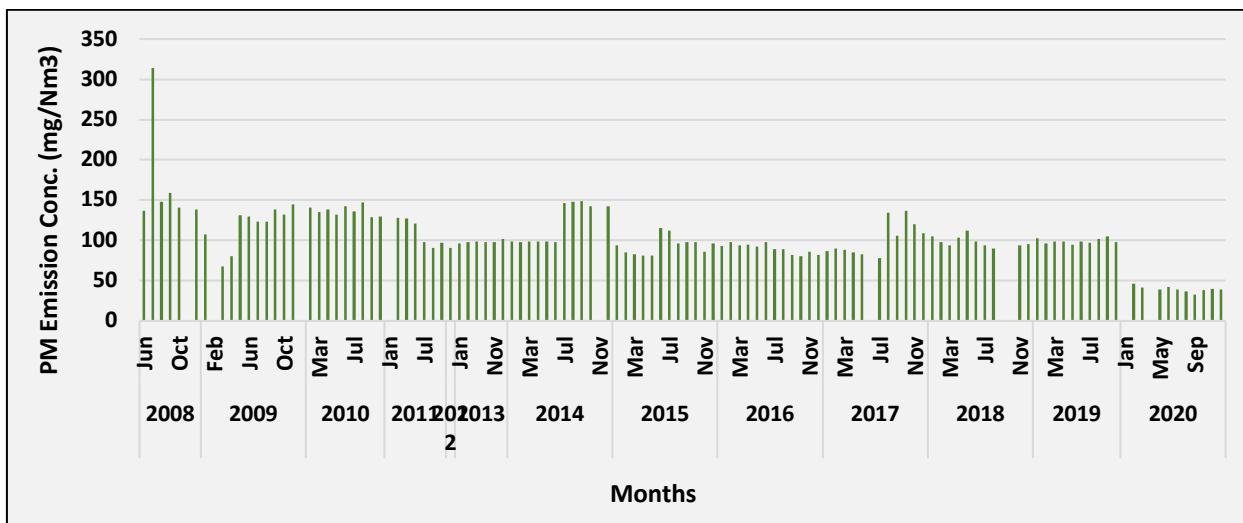


Fig. DCR23: Time series of monthly average PM Emission concentration in DCR TPP (Unit 2)

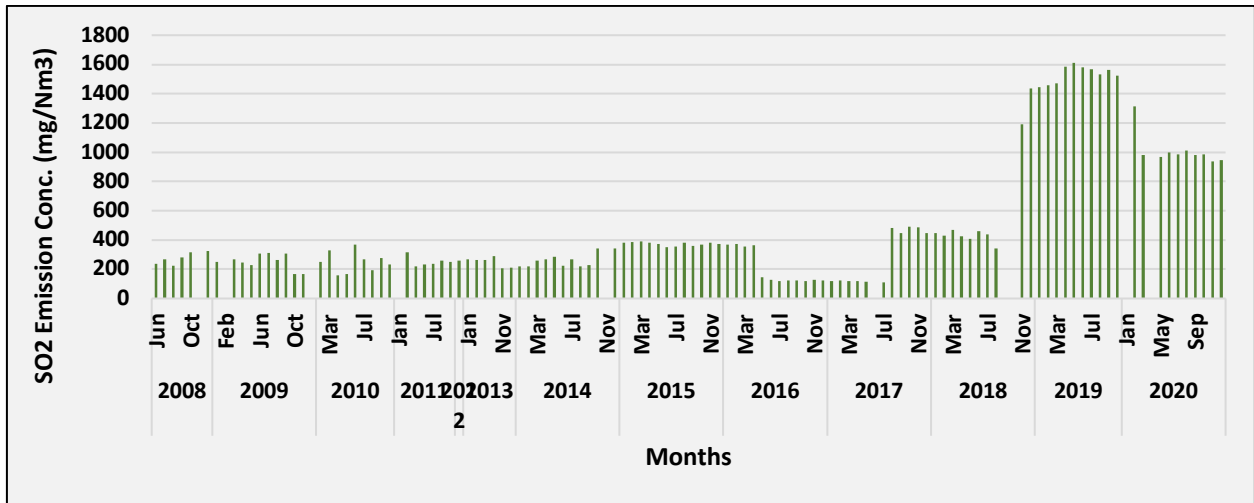


Fig. DCR24: Time series of monthly average SO₂ Emission concentration in DCR TPP (Unit 2)

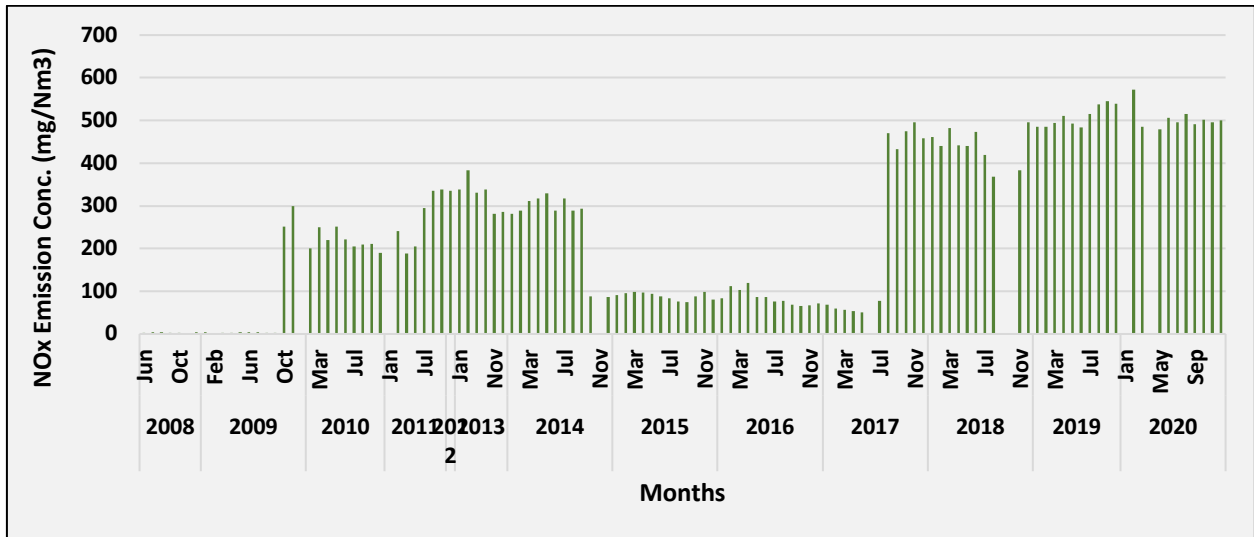


Fig. DCR25: Time series of monthly average NO_x Emission concentration in DCR TPP (Unit 2)

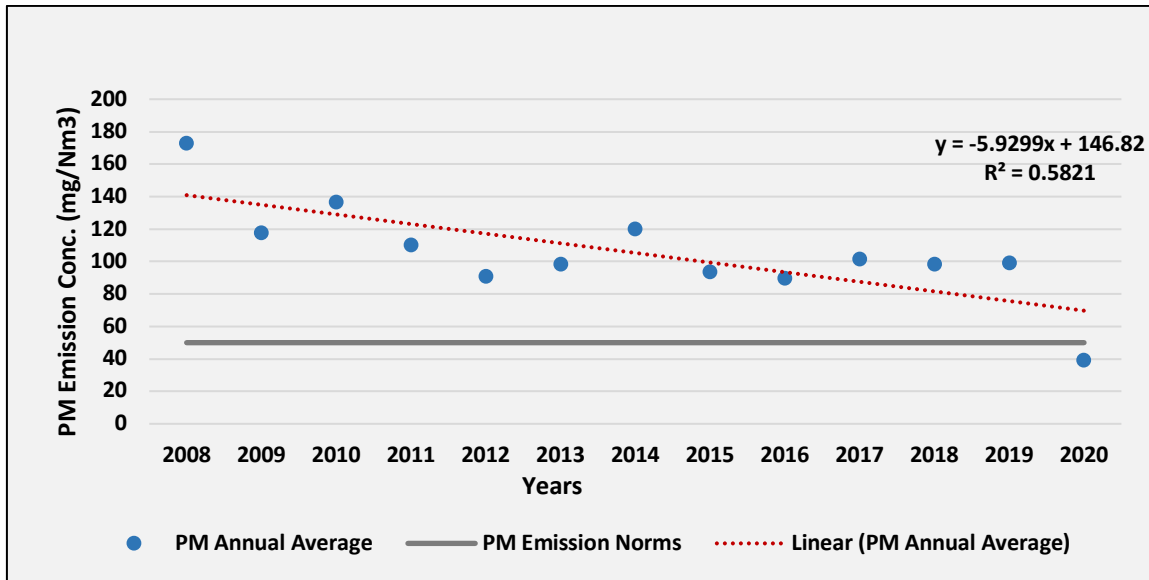


Fig. DCR26: Trend of annual mean PM Emission air concentration in DCR TPP (Unit 2)

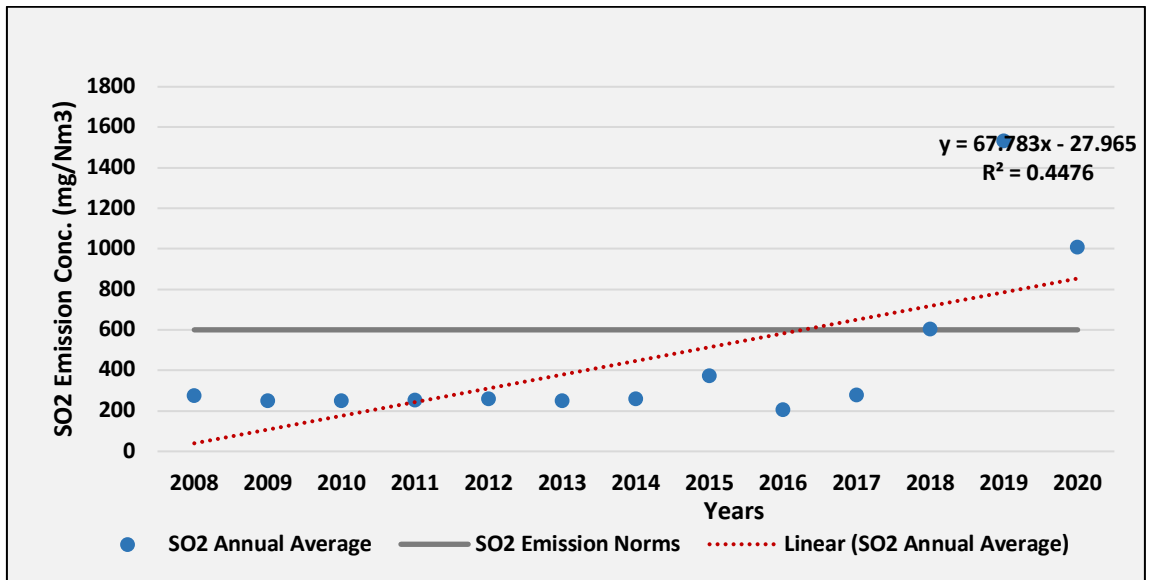


Fig. DCR27: Trend of annual mean SO₂ Emission air concentration in DCR TPP (Unit 2)

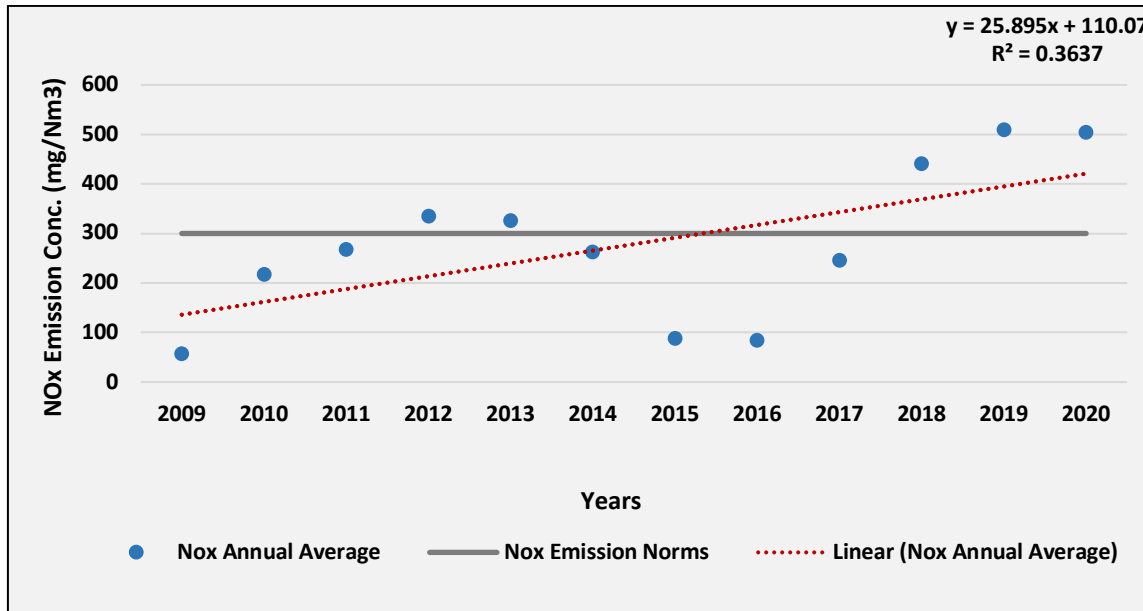


Fig. DCR28: Trend of annual mean NO_x Emission air concentration in DCR TPP (Unit 2)

Evidence based on ground level stations shows that the monthly average and annual average of PM10, PM2.5 are exceeding whereas the SO₂ &NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that PM. SO₂ and NO_x parameter are higher than the emission norms.

NABHA THERMAL POWER PLANT

Nabha Power Limited (NPL), a wholly owned subsidiary of L&T Power Development Limited has been successfully operating a 2x700 MW supercritical thermal power plant at Rajpura in the state of Punjab since 2014. Efficient and reliable power from NPL forms the backbone of electricity supply to the state.

The plant sources its fuel from South Eastern Coalfields Limited (a subsidiary of Coal India Limited) under a 20-year Fuel Supply Agreement (FSA). Bhanra-Nangal distributary is the perennial source of water for the plant under an allocation by the state irrigation department. The plant is operated by an in-house experienced team of operations and maintenance professionals.

Both the units were successfully commissioned within 48 and 54 months from zero date and commenced commercial operations in 2014. Supercritical boilers and turbines have been manufactured by the joint venture of L&T-MHPS at Hazira, Gujarat. Commercial operation dates (COD) for Unit-1 and Unit-2 were February 1 and July 10, 2014, respectively..

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, and NO_x, data analyzed (Fig. N1-N32) for the six years (2016-2020) using data provided by the Nabha Power Ltd. It has Four types of ambient data measurement systems across the thermal power plant.

AMBIENT_CAAQMS-1((Near NDCT))

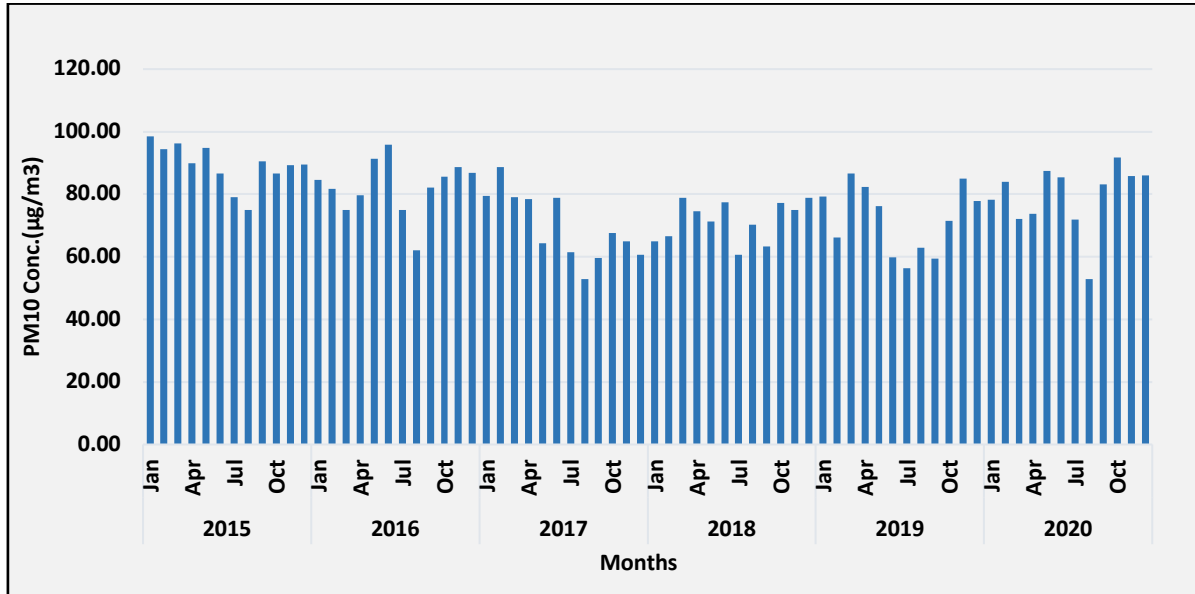


Fig. N1: Time series of monthly average PM₁₀ ambient air concentration

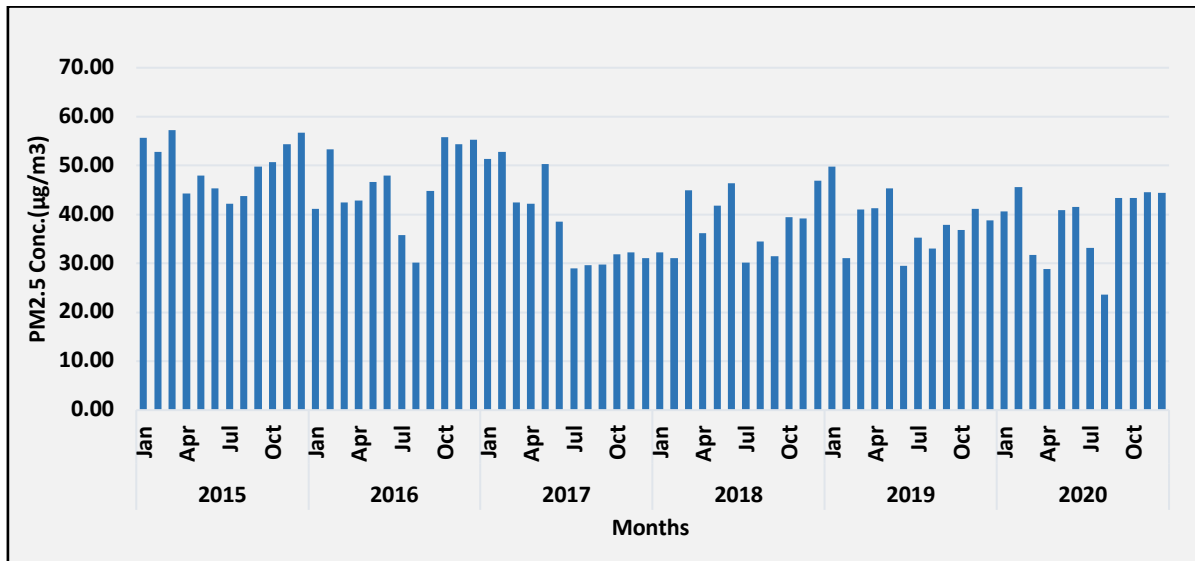


Fig. N2: Time series of monthly average PM_{2.5} ambient air concentration

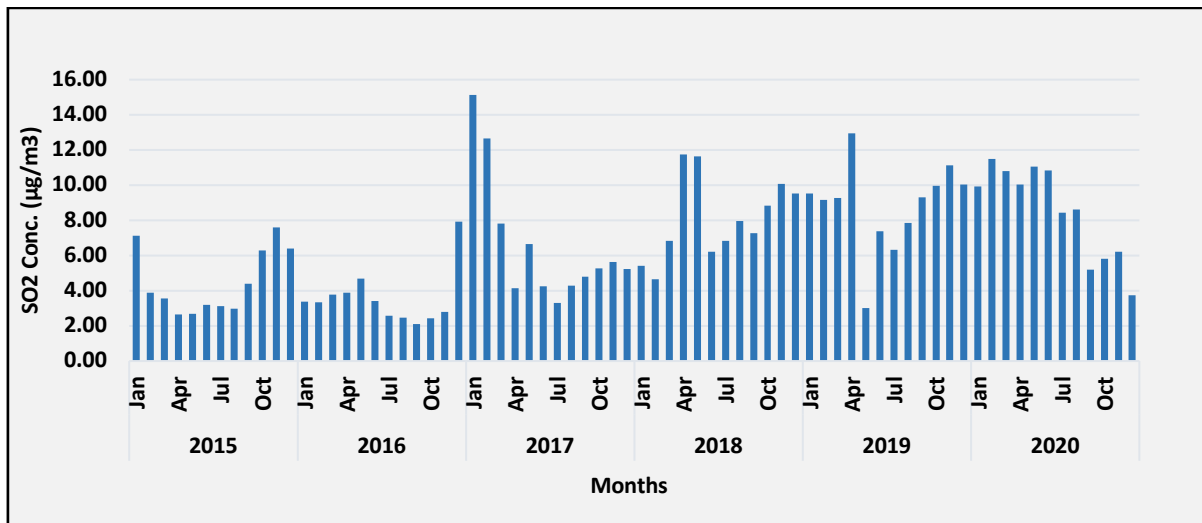


Fig. N3: Time series of monthly average SO₂ ambient air concentration

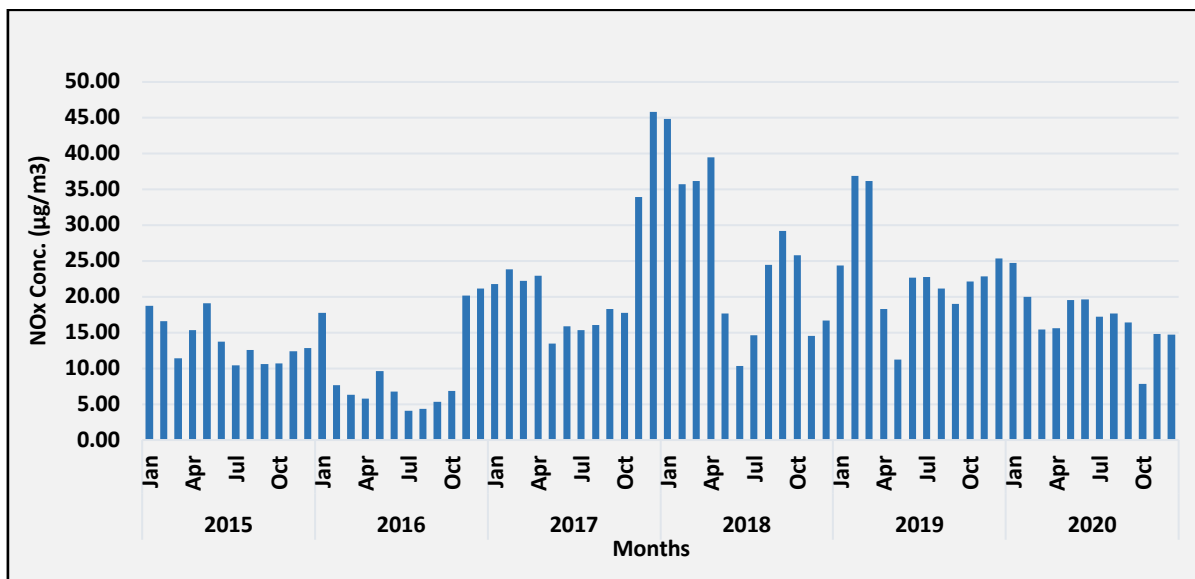


Fig. N4: Time Series of monthly mean NO_x ambient air concentration

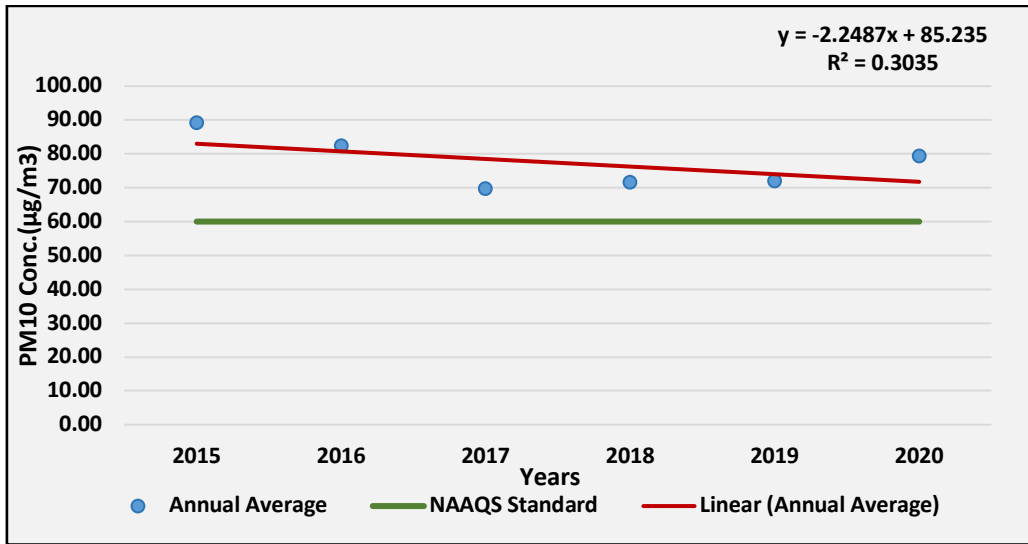


Fig. N5: Trend of annual mean PM₁₀ ambient air concentration

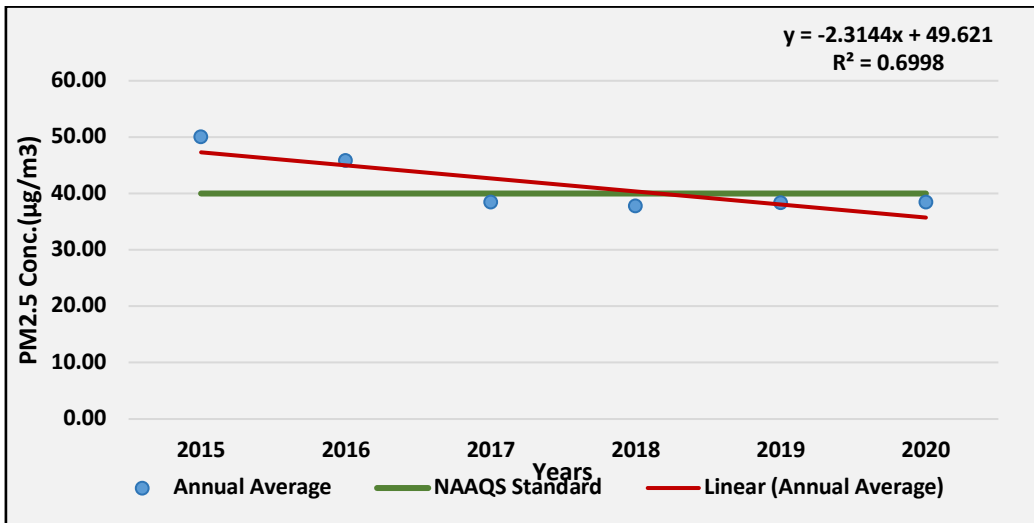


Fig. N6: Trend of annual mean PM_{2.5} ambient air concentration

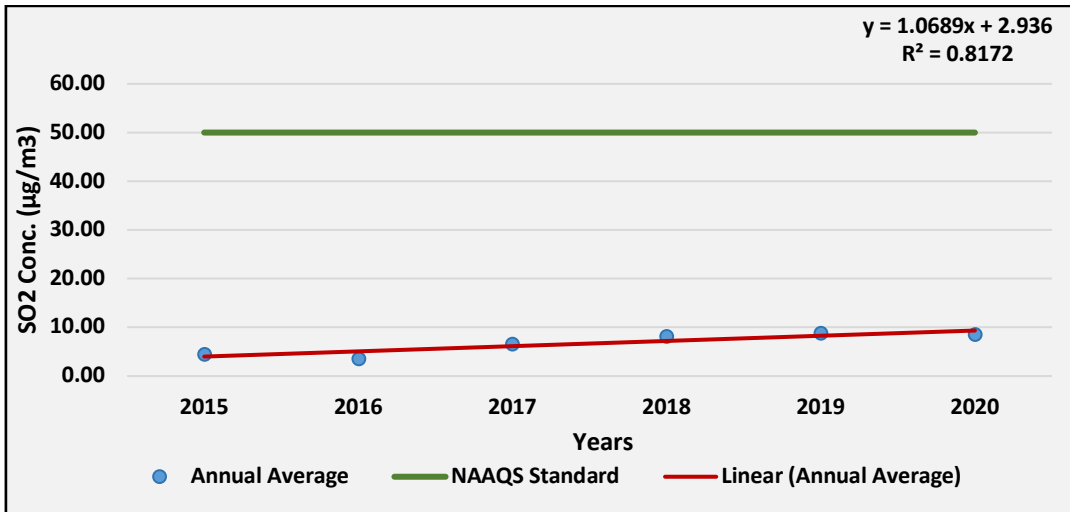


Fig. N7: Trend of annual mean SO₂ ambient air concentration

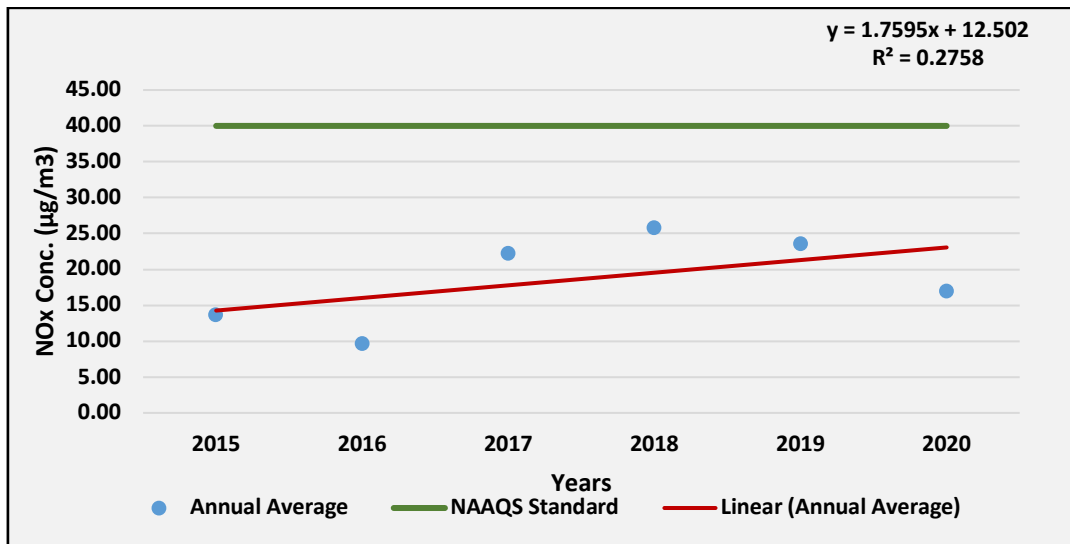


Fig. N8: Trend of annual mean NO_x ambient air concentration

AMBIENT CAAQMS-2 ((Near Loco Shed)

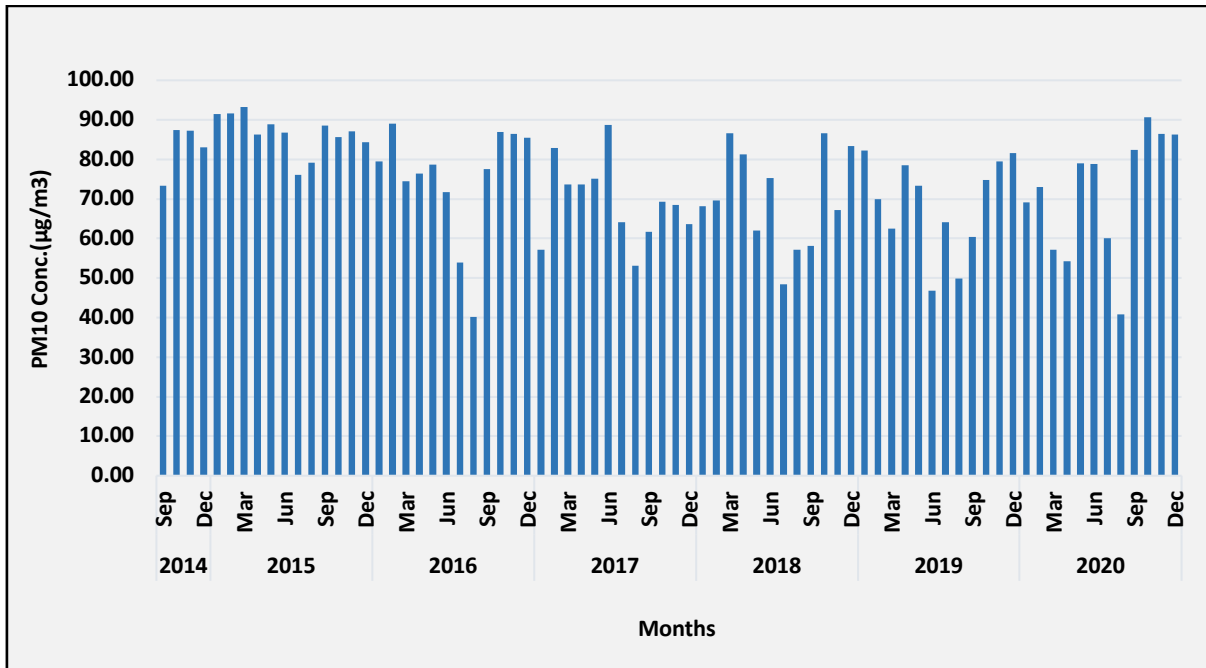


Fig. N9: Time series of monthly average PM₁₀ ambient air concentration

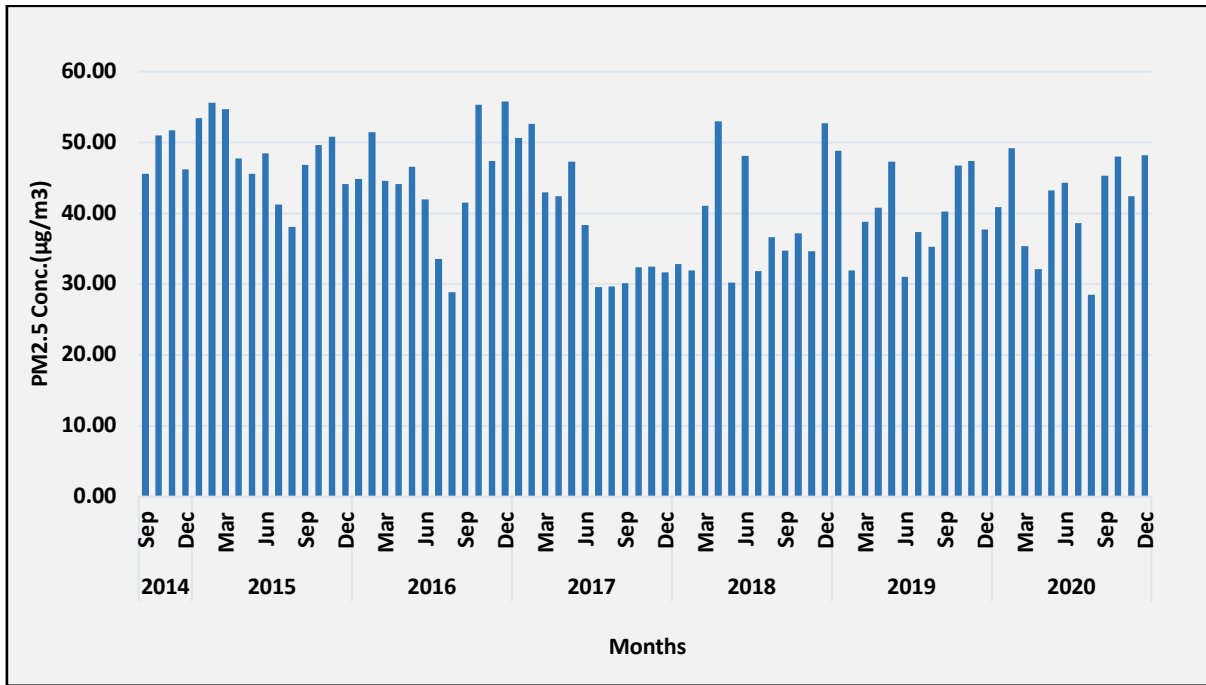


Fig. N10: Time series of monthly average PM_{2.5} ambient air concentration

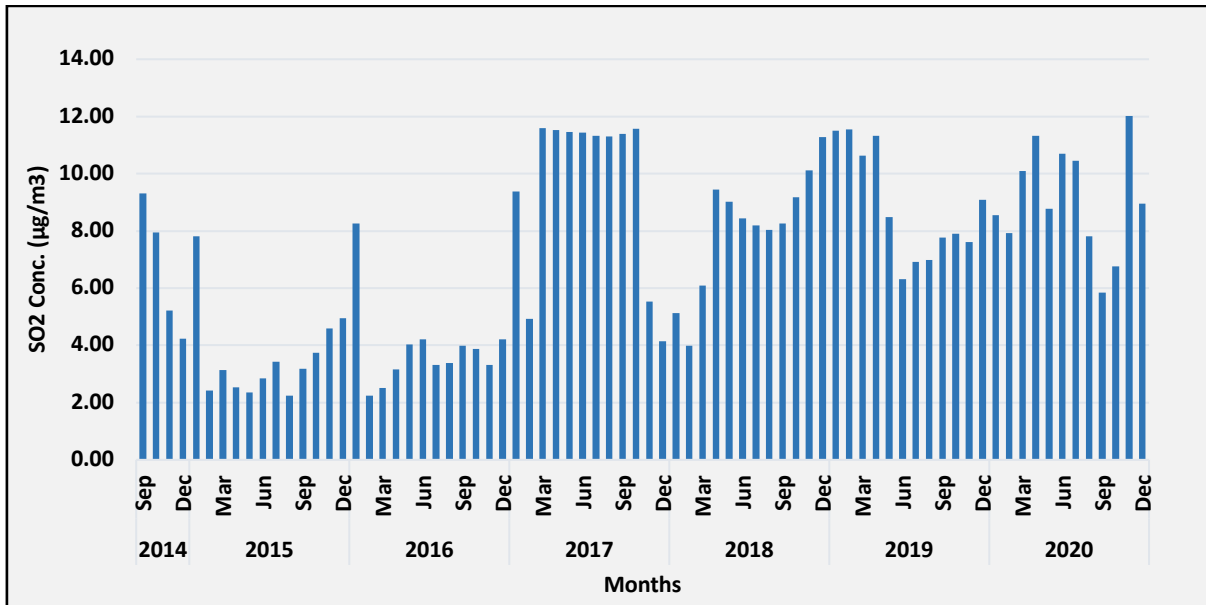


Fig. N11: Time series of monthly average SO₂ ambient air concentration

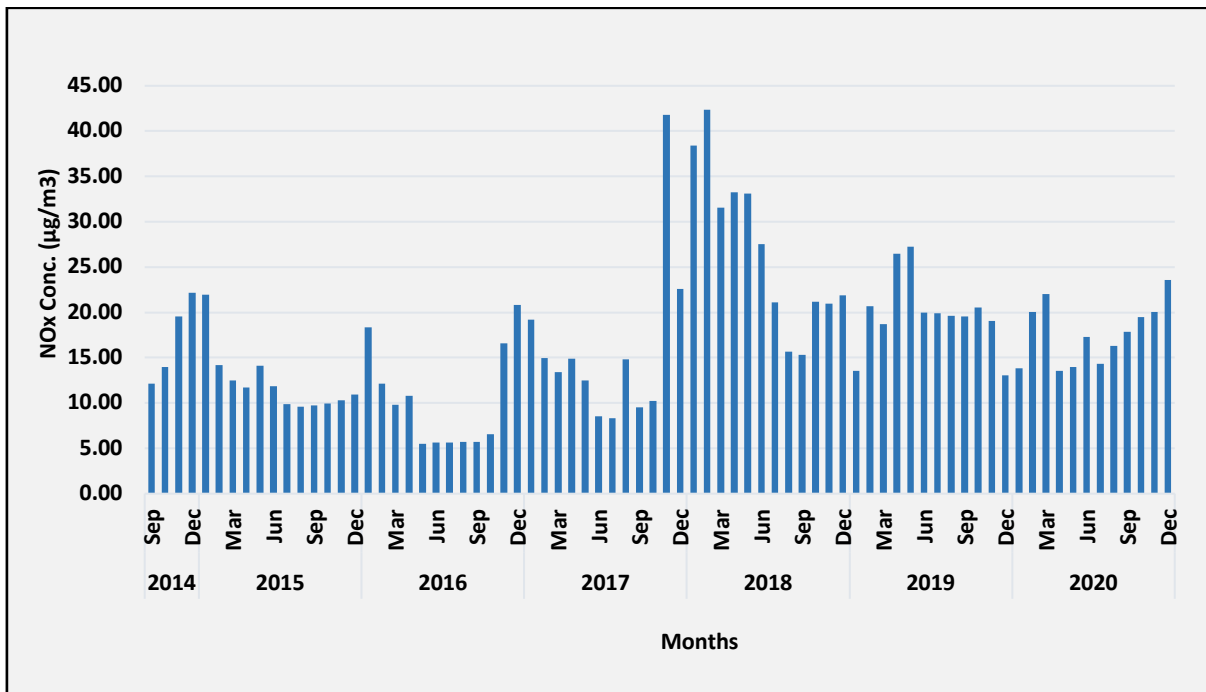


Fig. N12: Time series monthly mean NO_x ambient air concentration

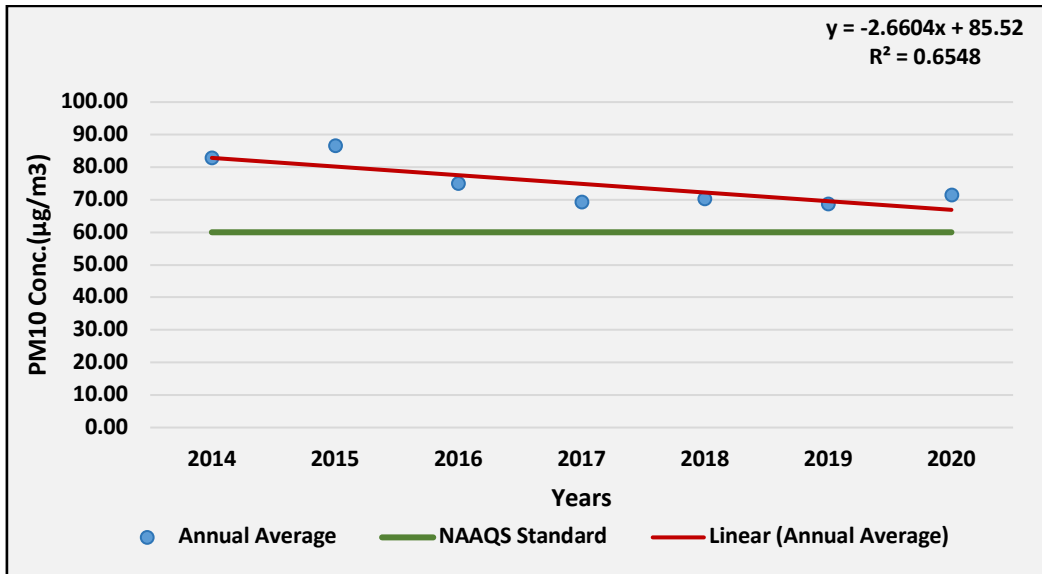


Fig. N13: Trend of annual mean PM_{10} ambient air concentration

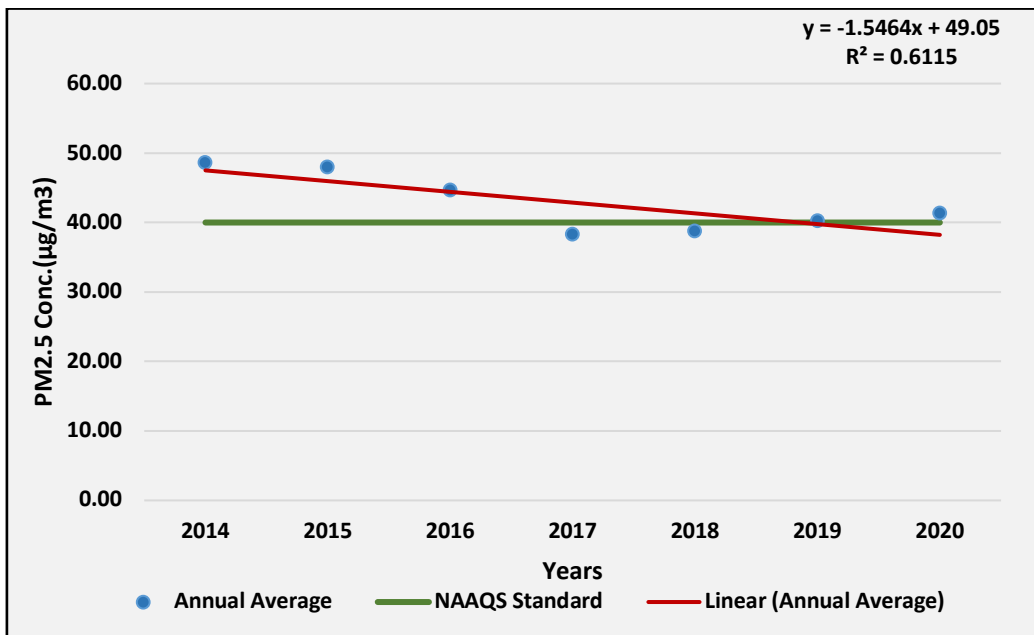


Fig. N14: Trend of annual mean $PM_{2.5}$ ambient air concentration

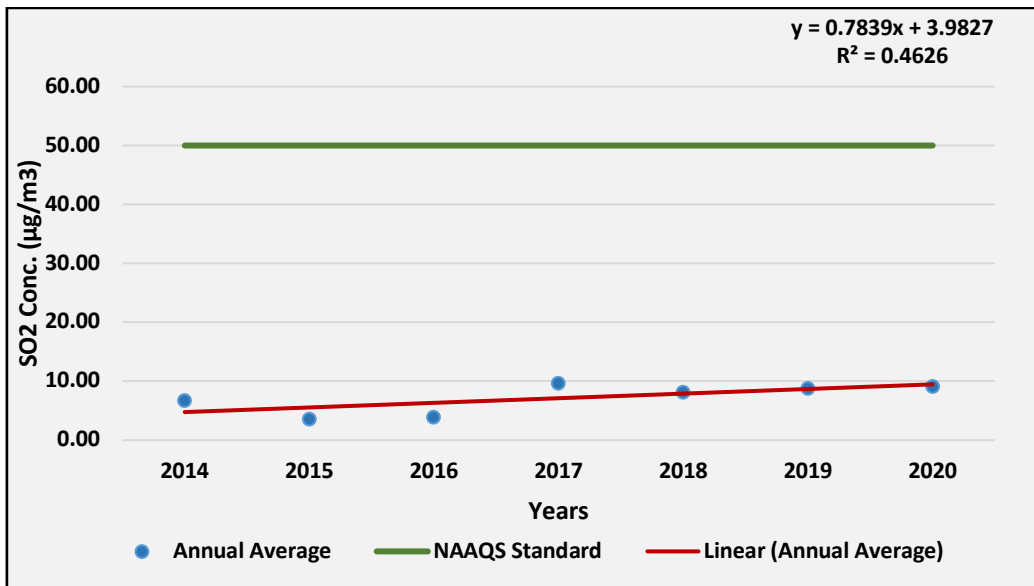


Fig. N15: Trend of annual mean SO₂ ambient air concentration

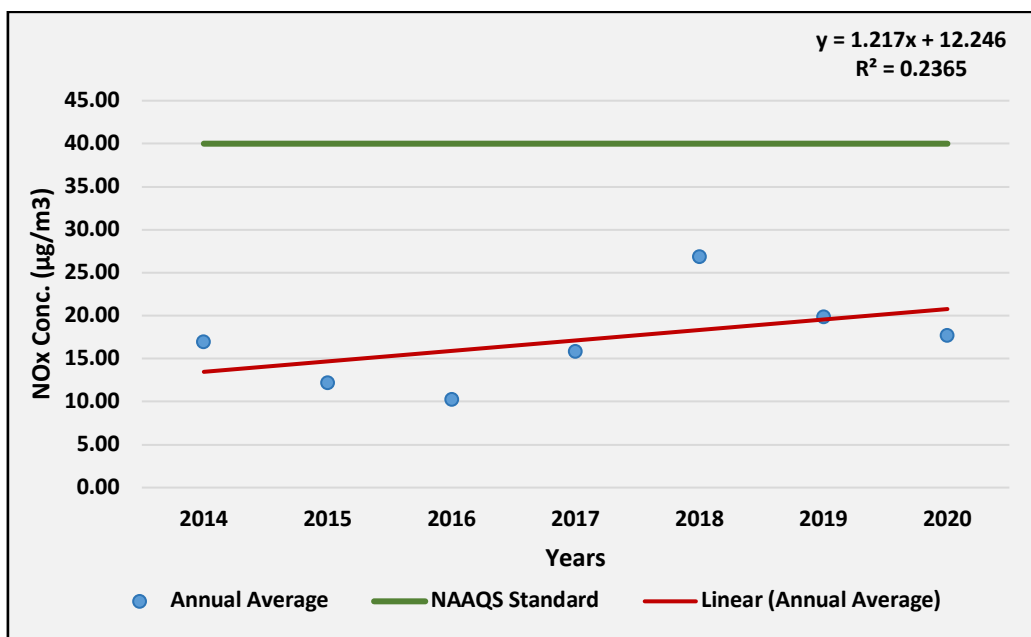


Fig. N16: Trend of annual mean NO_x ambient air concentration

AMBIENT CAAQMS-3 ((Near Storm Water Sump-2)

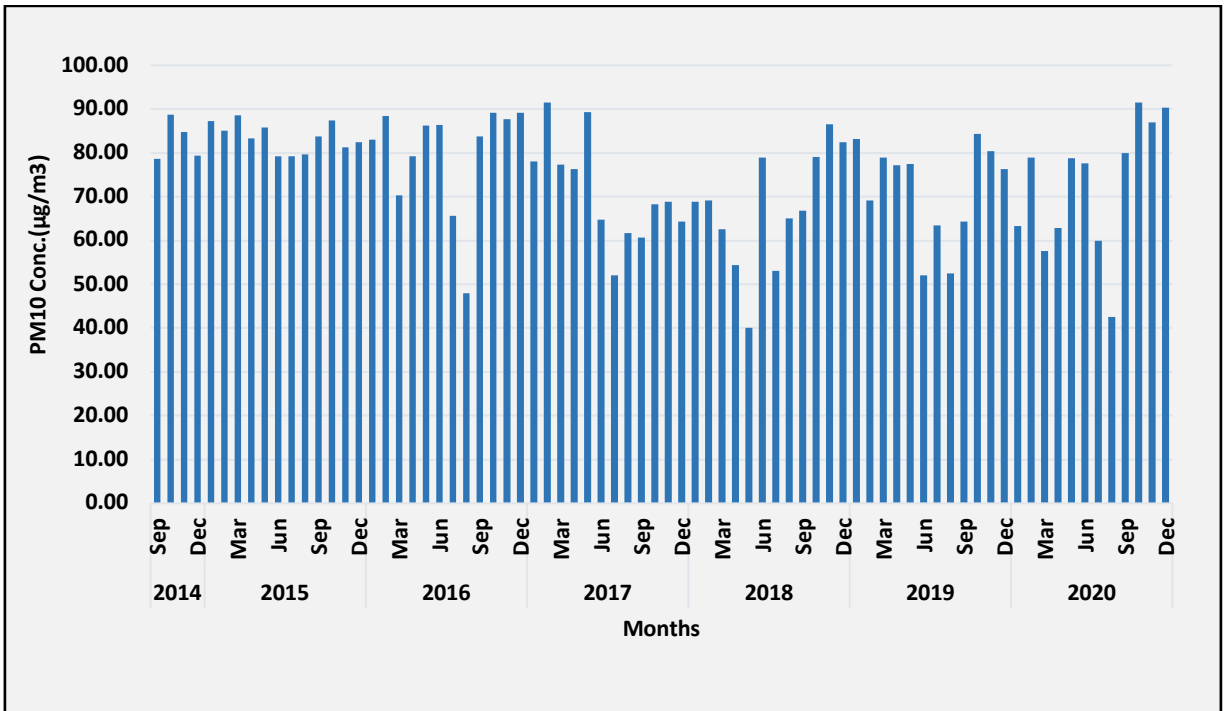


Fig. N17: Time series of monthly average PM₁₀ ambient air concentration

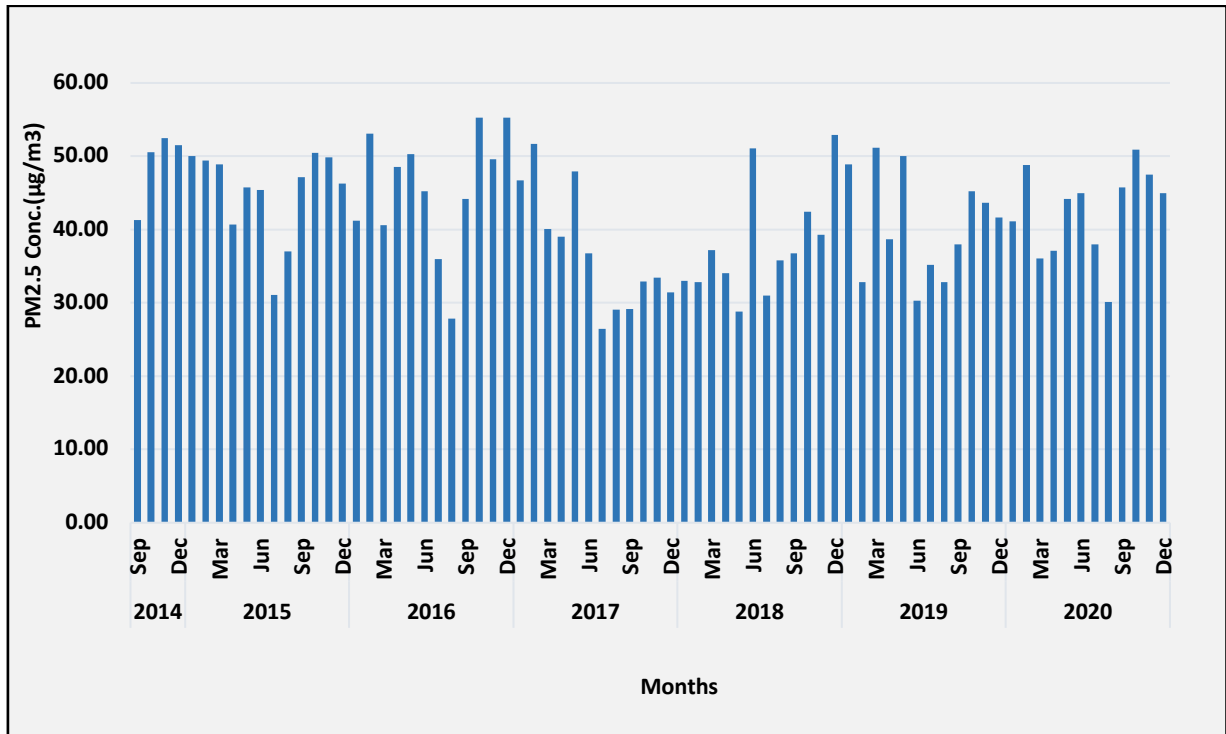


Fig. N18: Time series of monthly average PM_{2.5} ambient air concentration

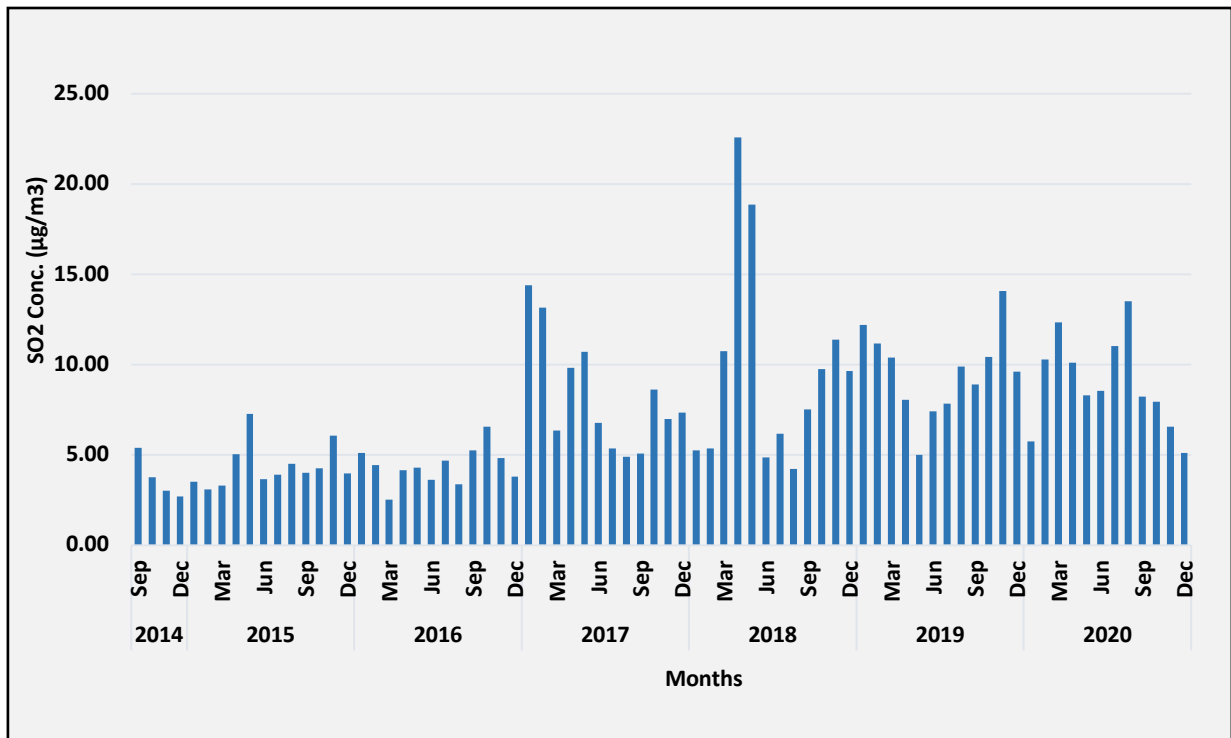


Fig. N19: Time series of monthly average SO₂ ambient air concentration

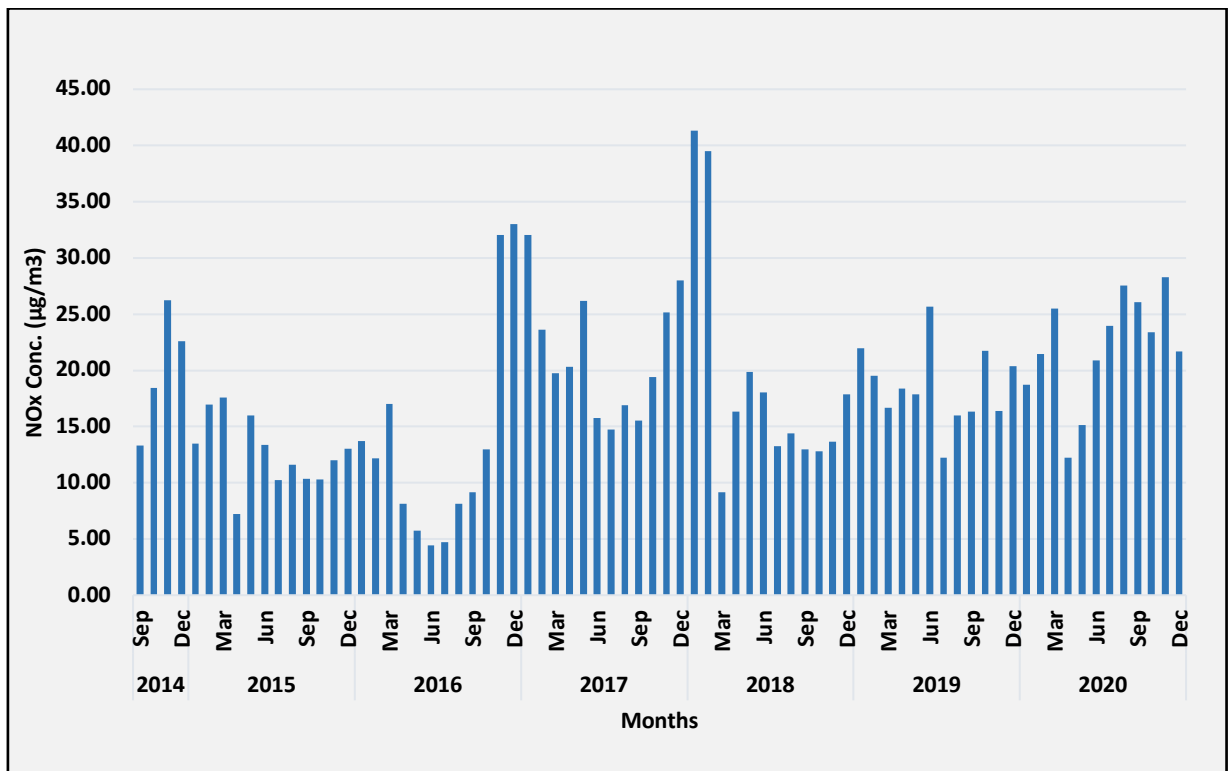


Fig.N20: Time series of monthly average NO_x ambient air concentration

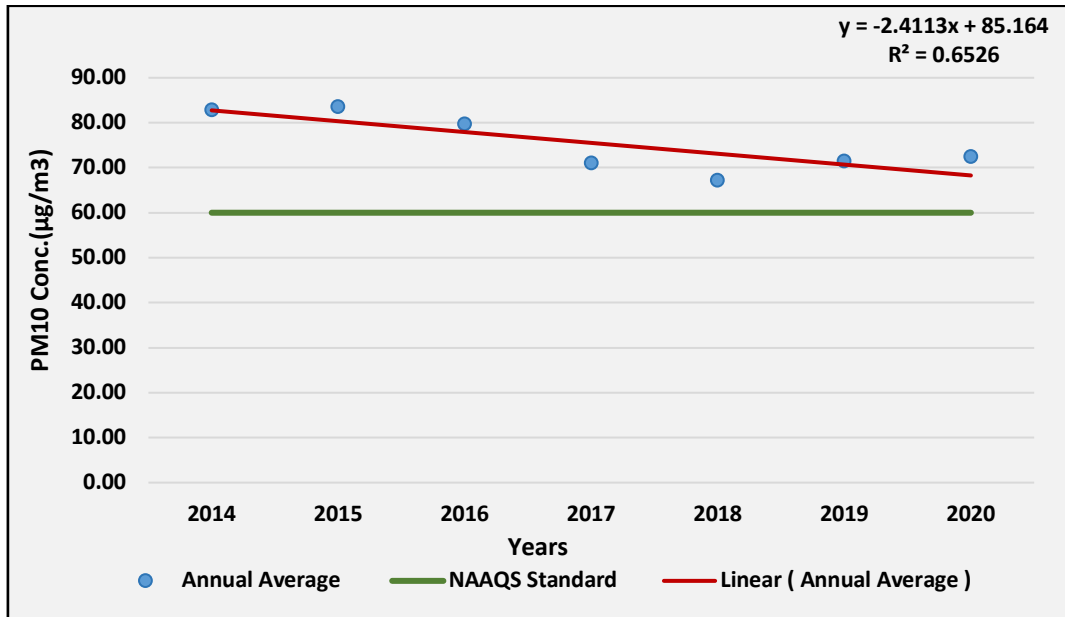


Fig. N21: Trend of annual mean PM₁₀ ambient air concentration

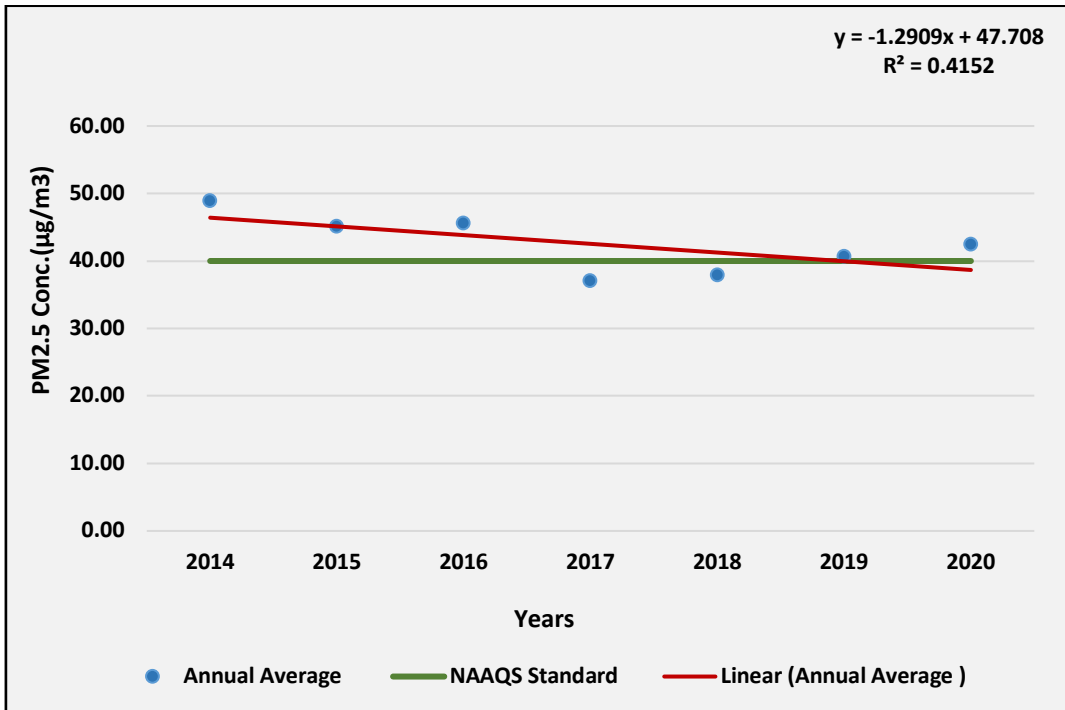


Fig. N22: Trend of annual mean PM_{2.5} ambient air concentration

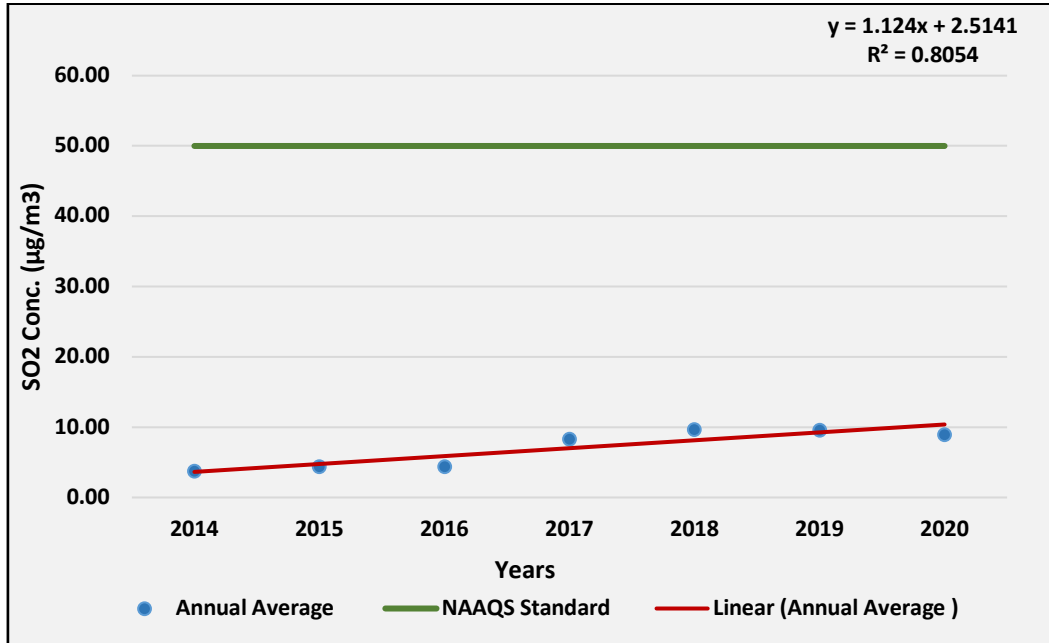


Fig. N23: Trend of annual mean SO₂ ambient air concentration

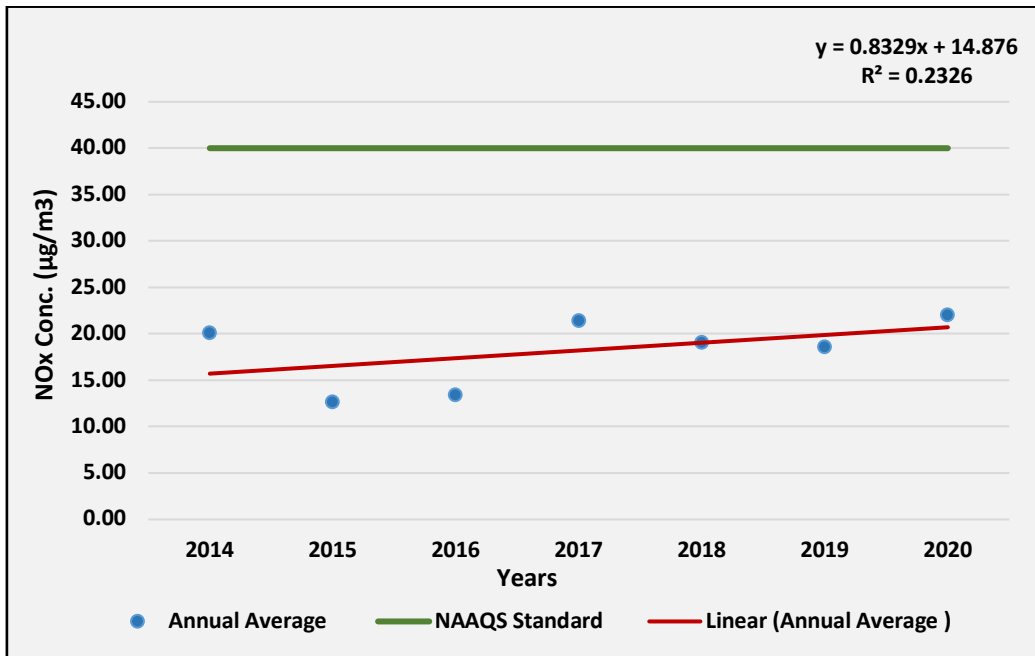


Fig. N24: Trend of annual mean NO_x ambient air concentration

AMBIENT CAAQMS-4 ((Near Switch Yard)

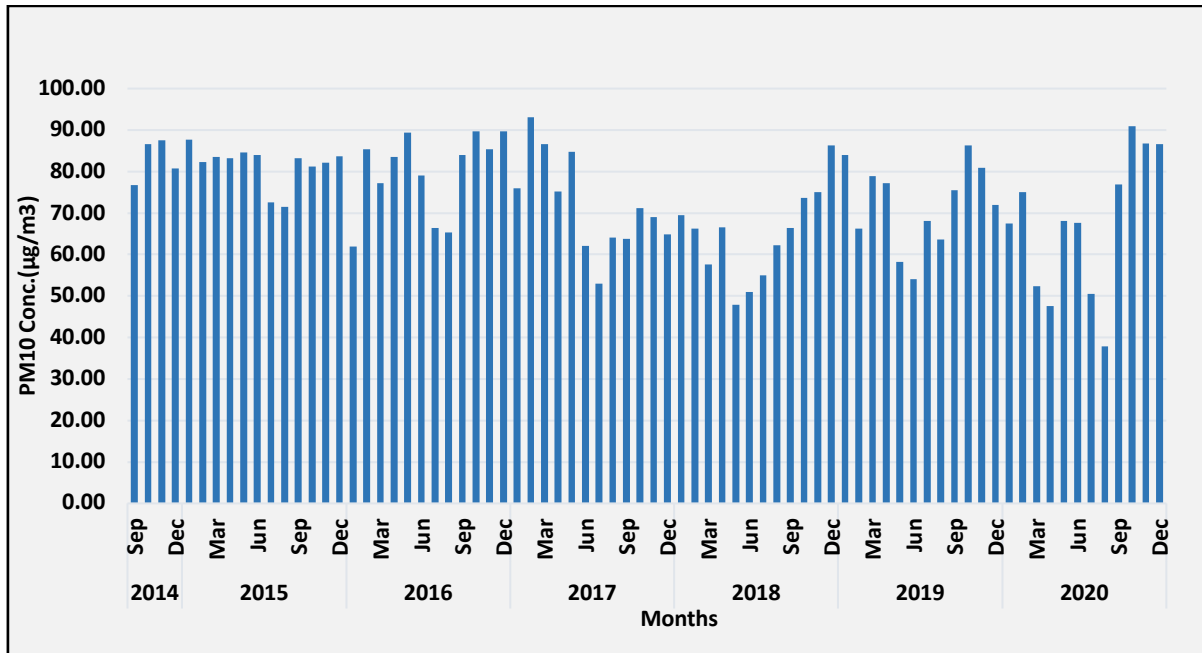


Fig. N25: Time series of monthly average PM₁₀ ambient air concentration

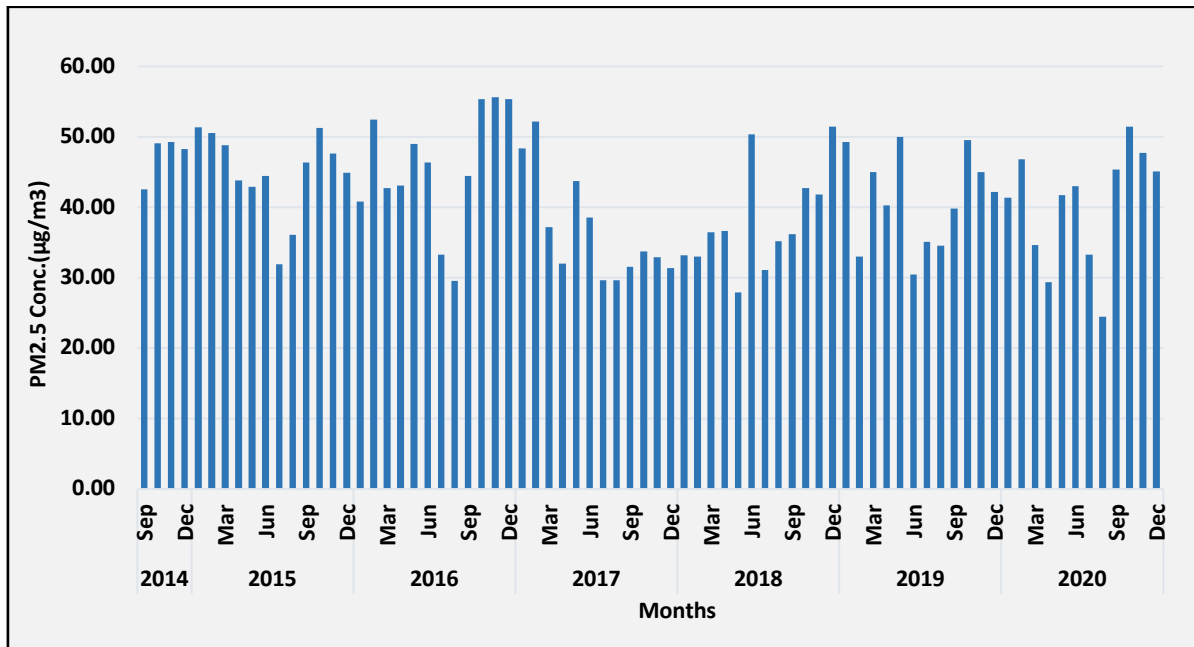


Fig. N26: Time series of monthly average PM_{2.5} ambient air concentration

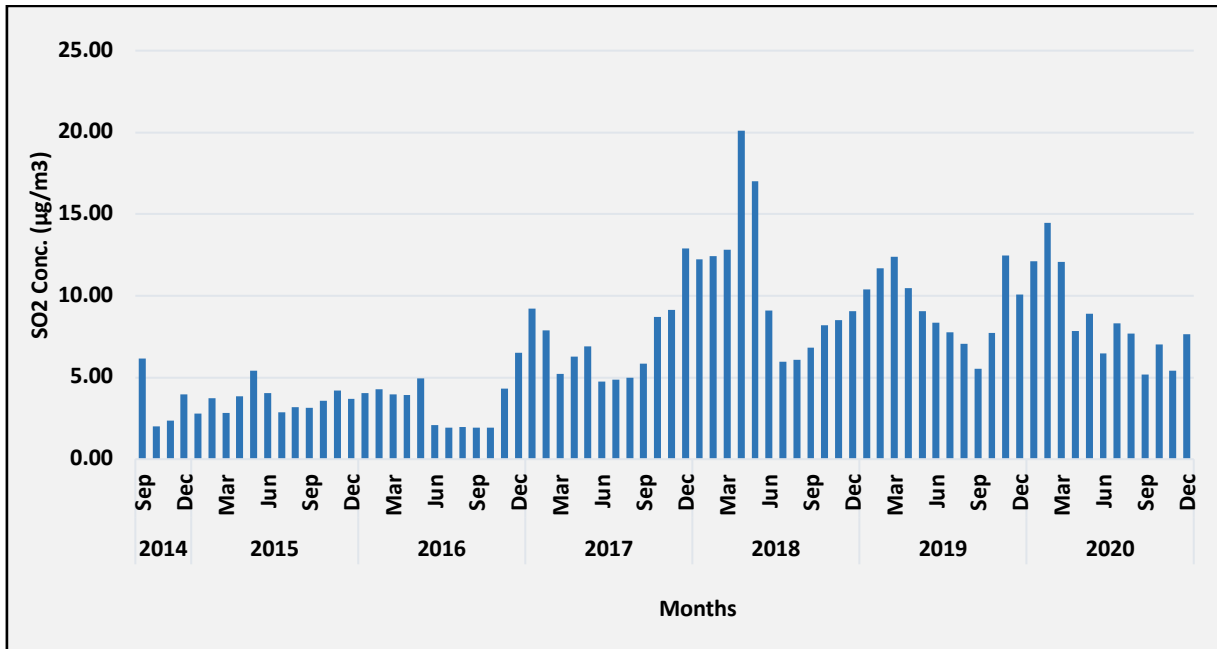


Fig. N27: Time series of monthly average SO₂ ambient air concentration

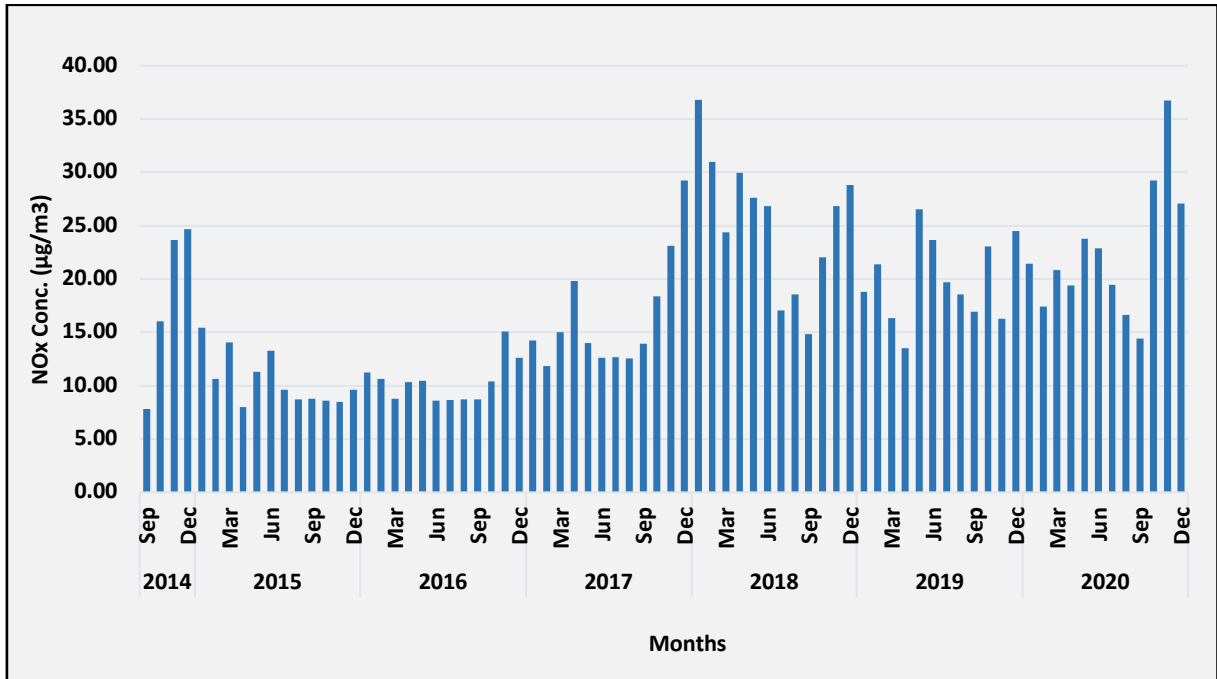


Fig.N28: Time series of monthly average NO_x ambient air concentration

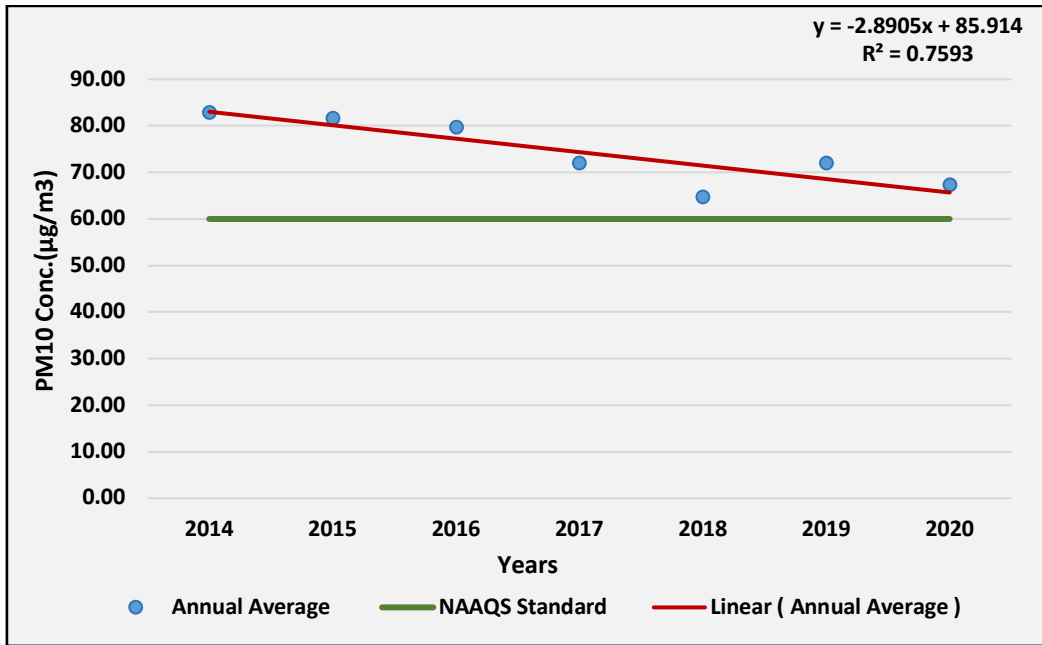


Fig. N29: Trend of annual mean PM_{10} ambient air concentration

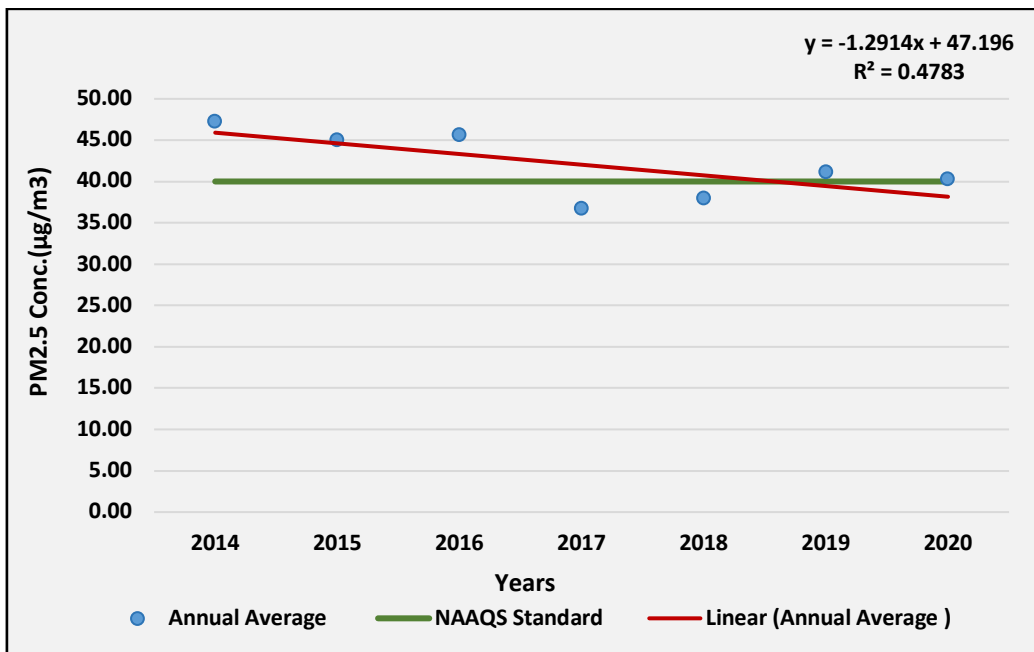


Fig. N30: Trend of annual mean $PM_{2.5}$ ambient air concentration

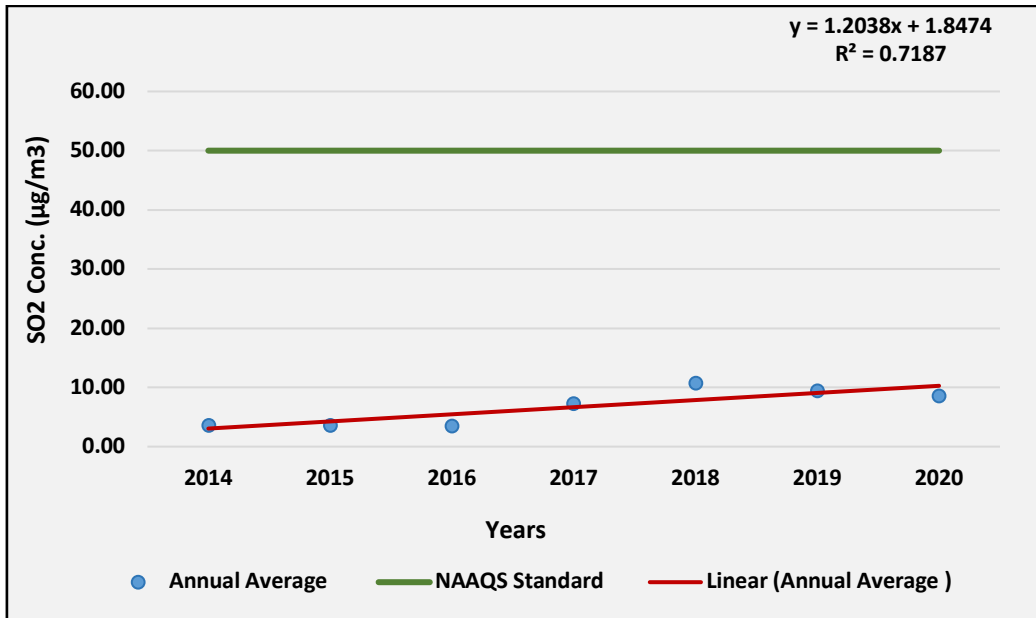


Fig. N31: Trend of annual mean SO₂ ambient air concentration

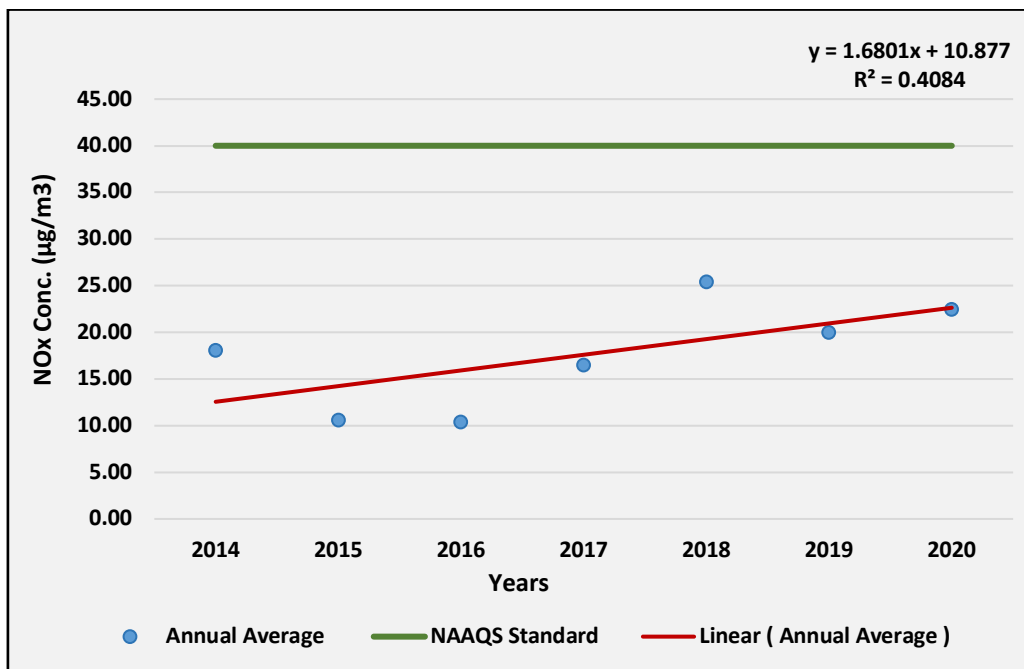


Fig. N32: Trend of annual mean NO_x ambient air concentration

Evidence based on ground level stations shows that the monthly average and annual average of SO₂ & NO_x levels in five years are mostly within a range of 0-50µg/m³ & 0-40 µg/m³ respectively, which is good as per the as per the National Ambient Air Quality Standards (NAAQS). However, the major cause of concern is the PM₁₀, PM_{2.5} levels that are relatively high for both monthly

and annual average. This suggests that the particulate matter contribution by the thermal power plant have to be controlled as per the NAAQS.

UNIT-1

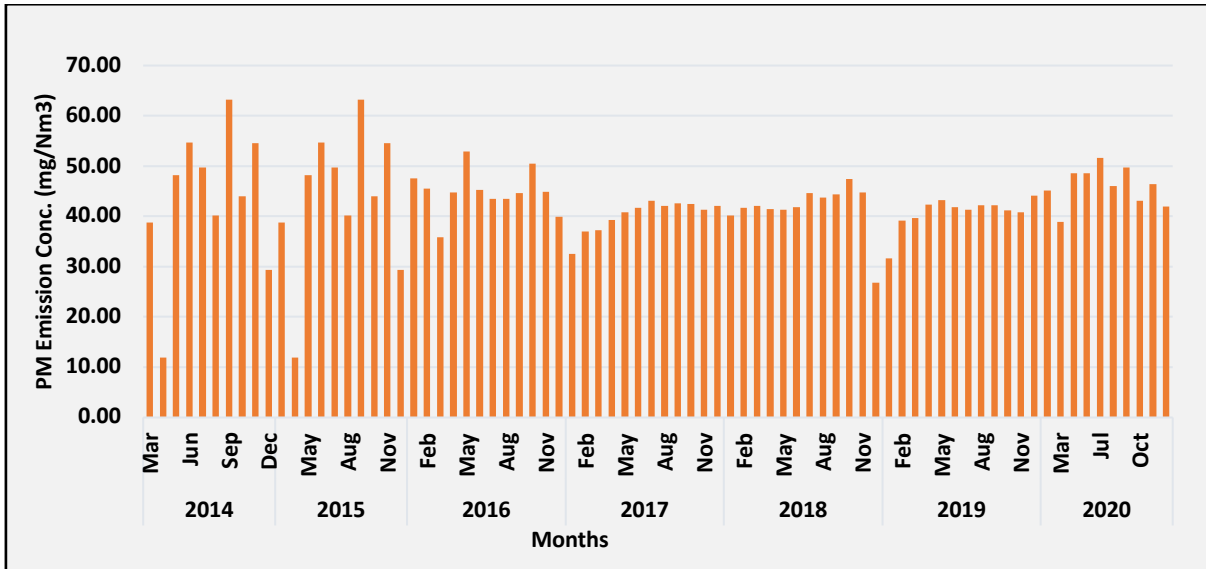


Fig. N33: Time series of monthly average PM ambient air concentration

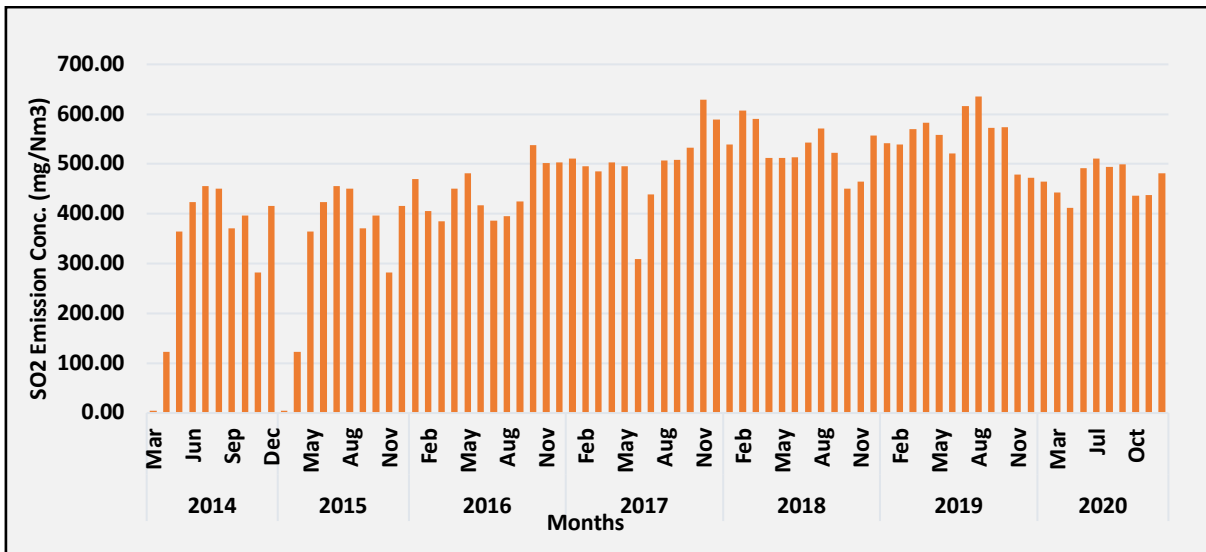


Fig. N34: Time series of monthly average SO2 ambient air concentration

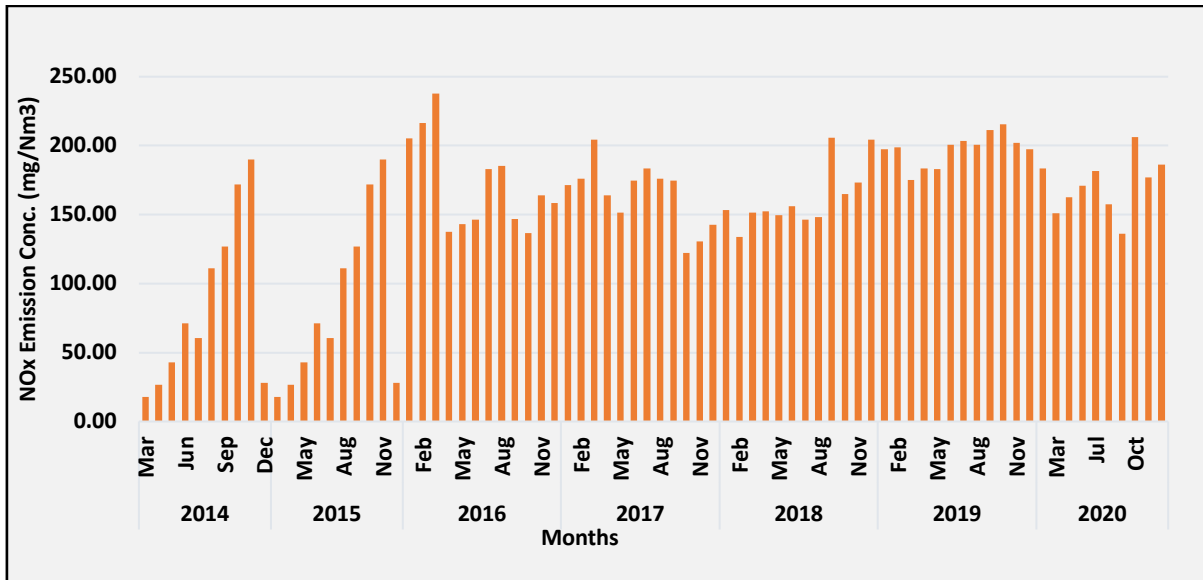


Fig.N35: Time series of monthly average NO_x ambient air concentration

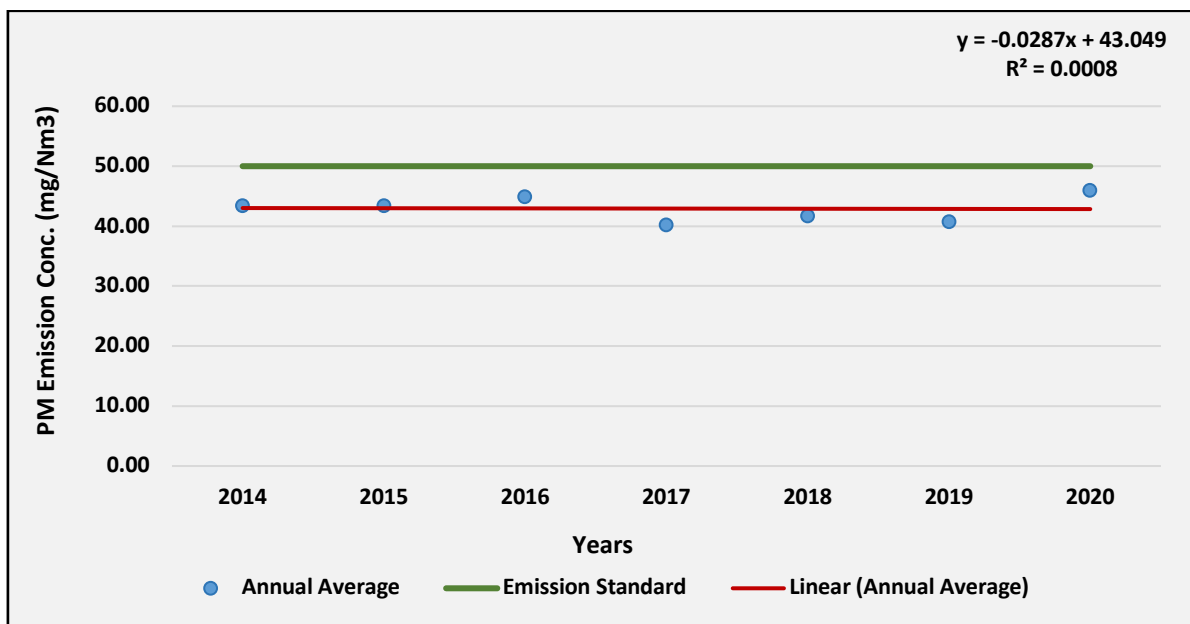


Fig. N36: Trend of annual mean PM ambient air concentration

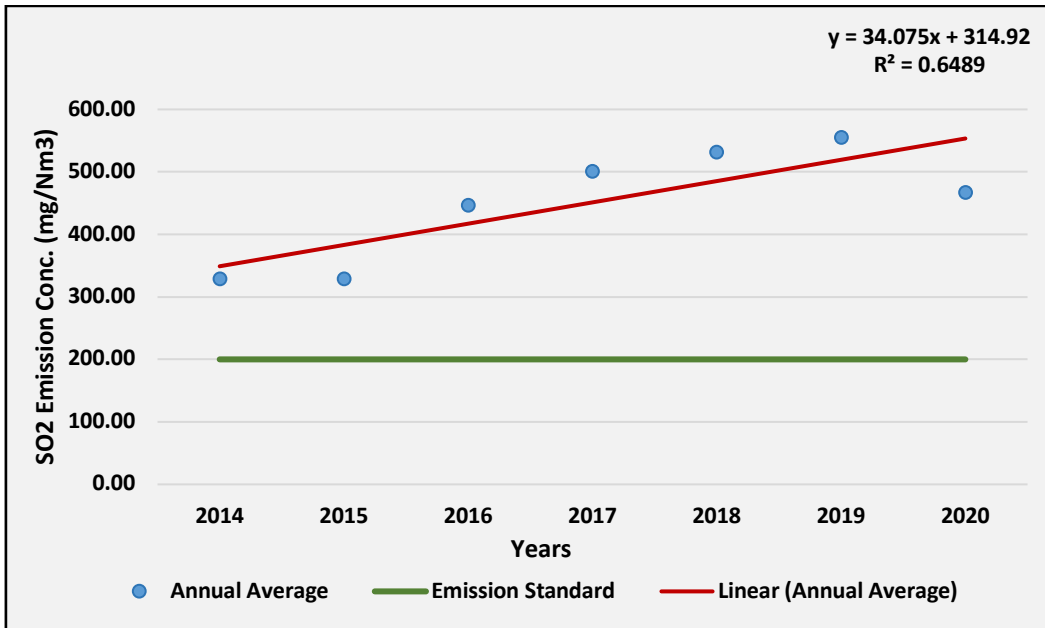


Fig. N37: Trend of annual mean SO₂ ambient air concentration

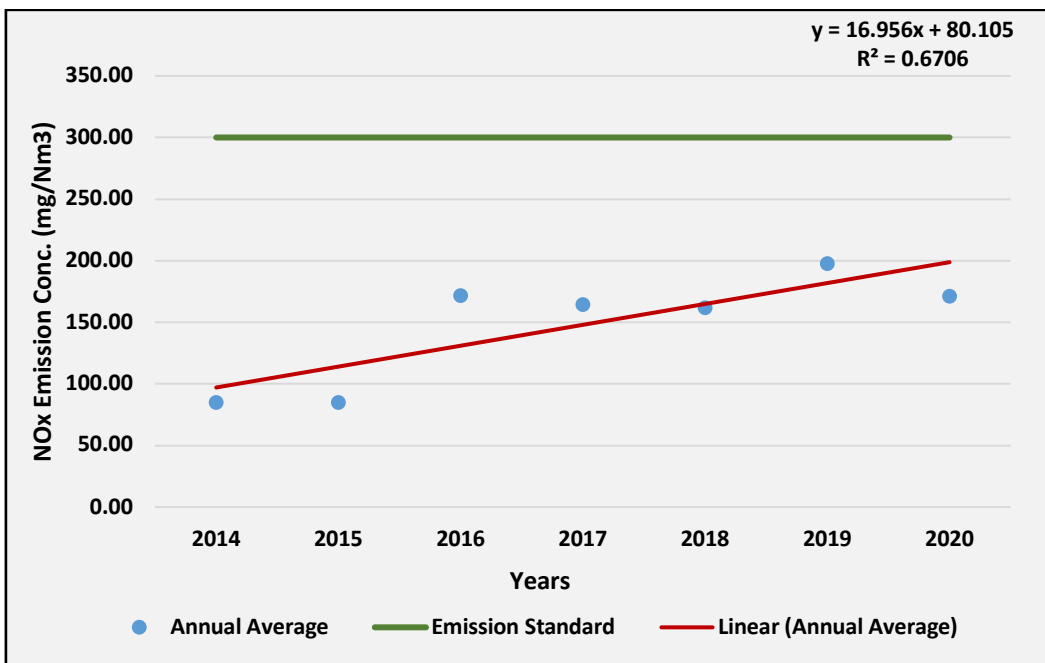


Fig. N38: Trend of annual mean NO_x ambient air concentration

UNIT-2

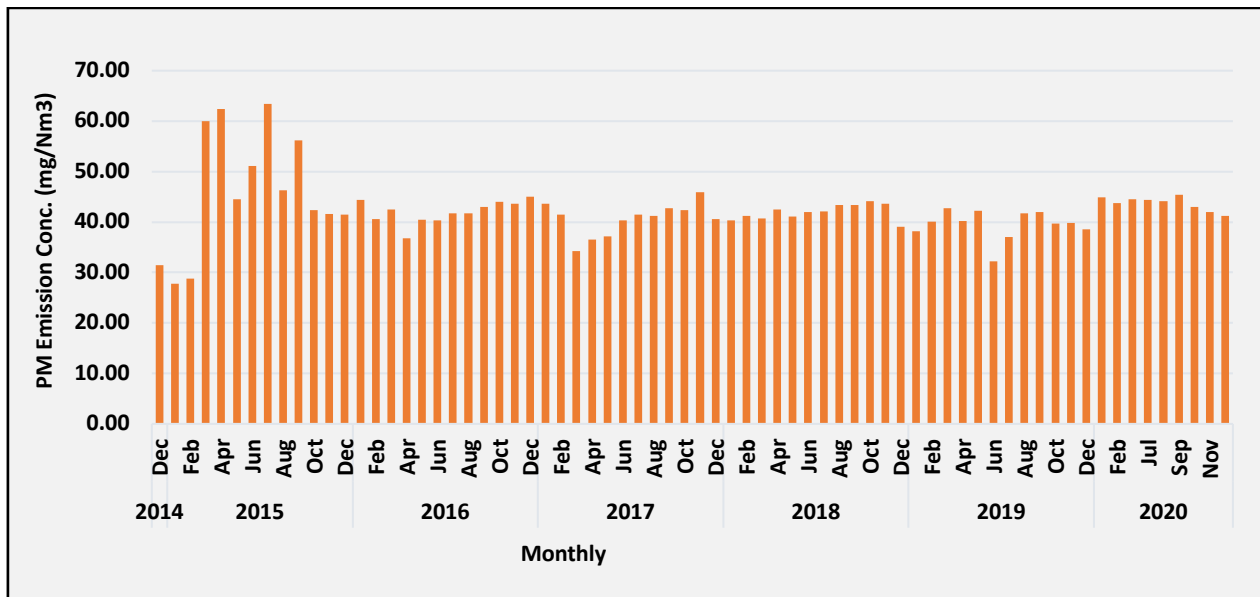


Fig. N39: Time series of monthly average PM ambient air concentration

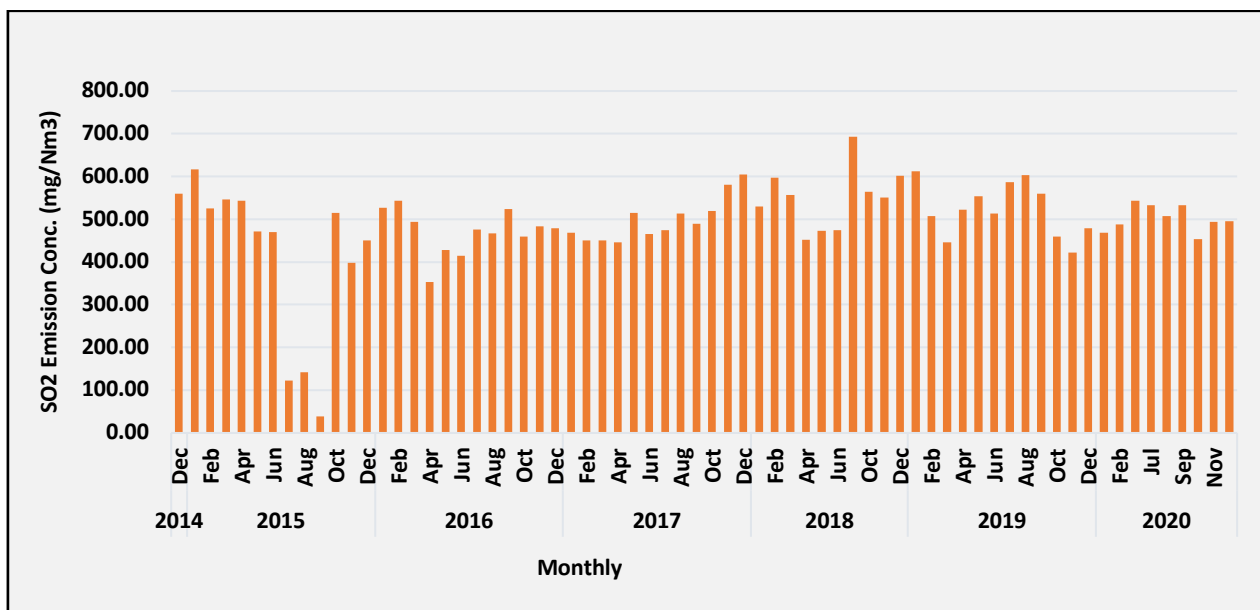


Fig. N40: Time series of monthly average SO₂ ambient air concentration

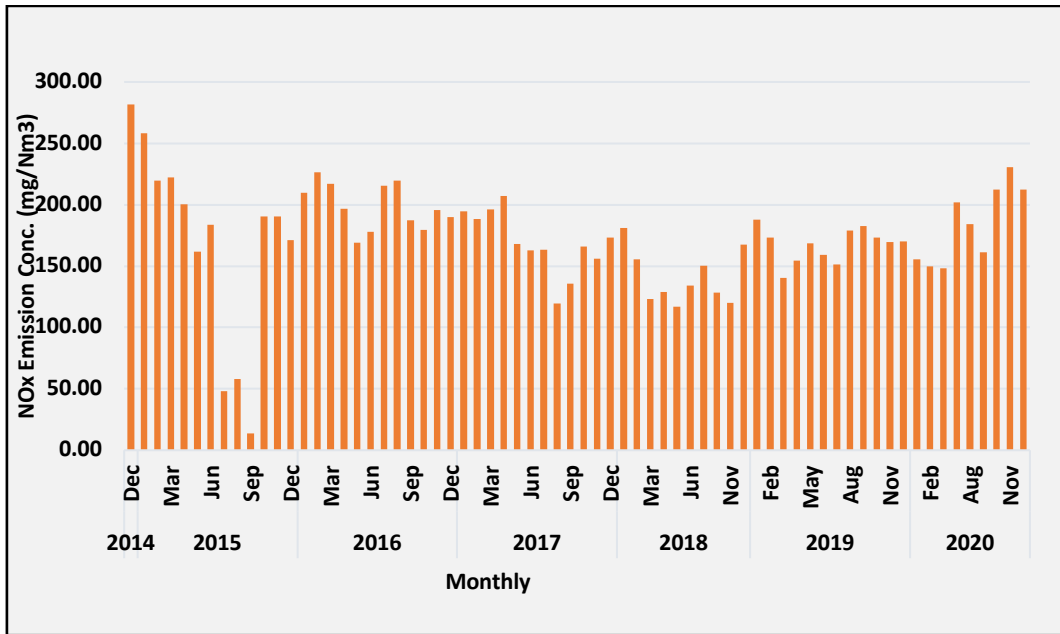


Fig.N41: Time series of monthly average NO_x ambient air concentration

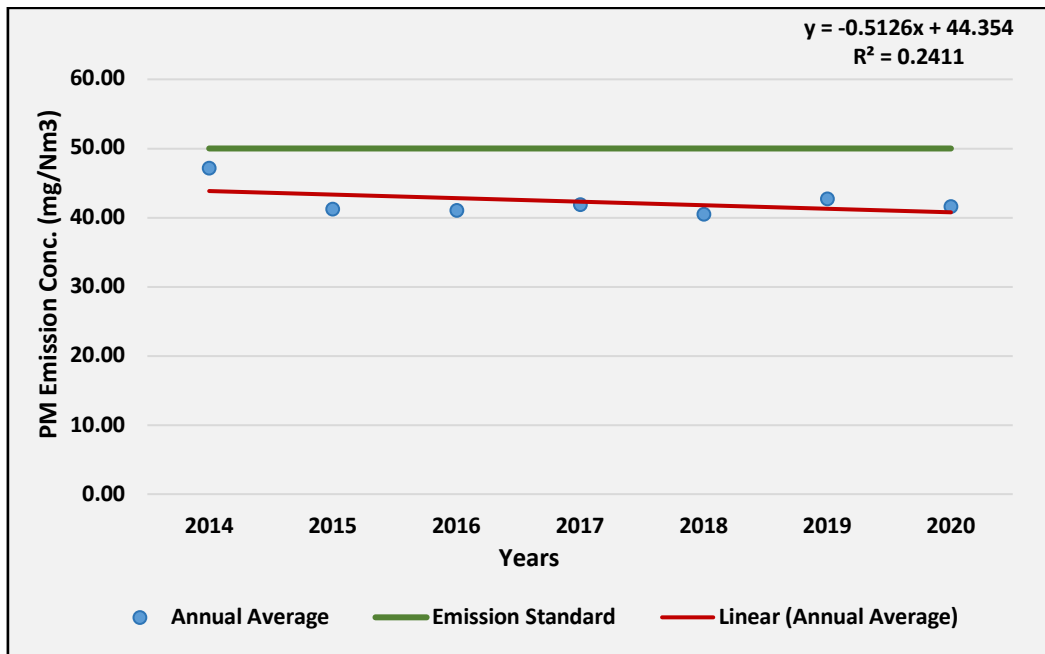


Fig. N42: Trend of annual mean PM ambient air concentration

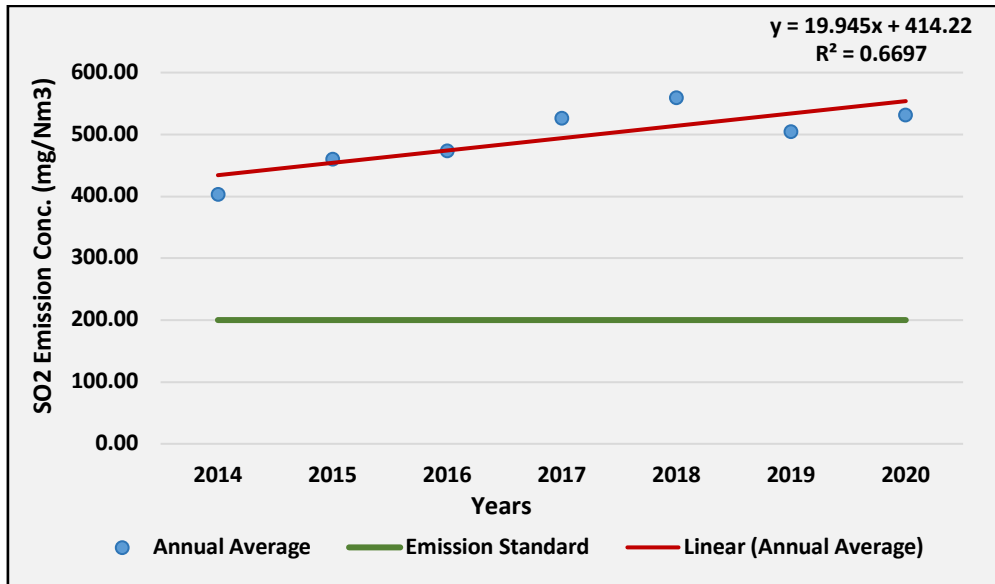


Fig. N43: Trend of annual mean SO₂ ambient air concentration

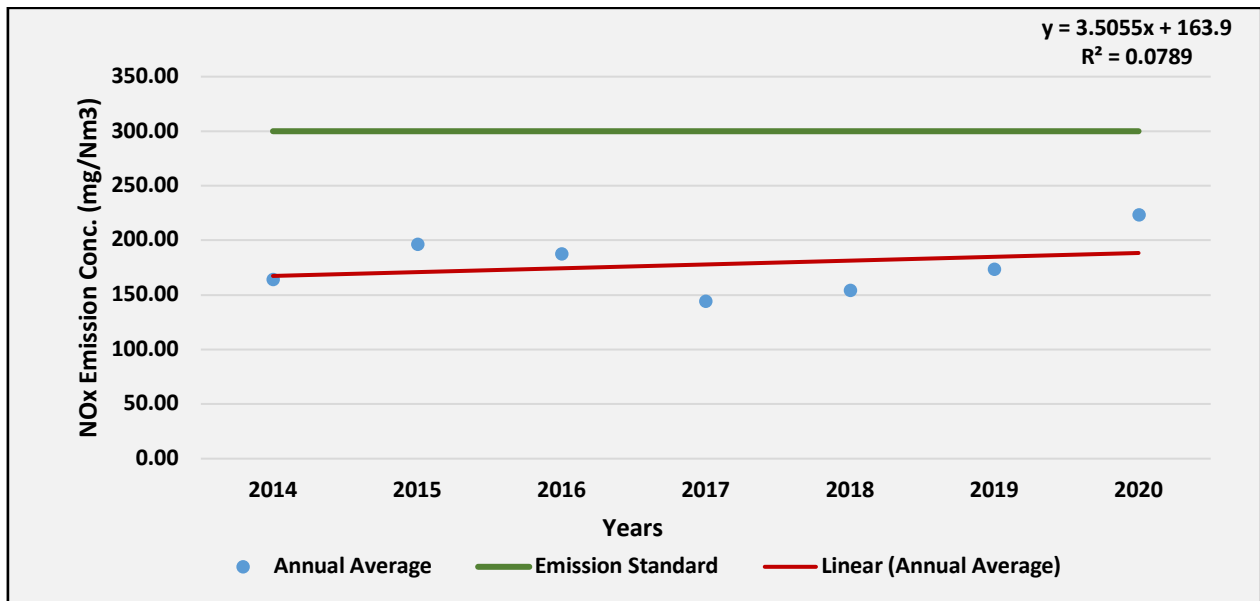


Fig. N44: Trend of annual mean NO_x ambient air concentration

The monthly and yearly ground level emission analysis for both the units of Nabha Thermal Power Plant shows that particulate matter is within the emission standards. The SO₂ parameter is much higher than the norms whereas NO_x parameter is just within the emission standard for the year 2018 and 2019 but it is exceeding its standard limit in the year 2016, 2019 and 2020.

GVK (GOINDWALSAHIB) THERMAL POWER PLANT

Goindwal Sahib Power Plant is a coal-based thermal power plant located at Goindwal Sahib in Tarn Taran district in the Indian state of Punjab. The power plant is operated by the GVK Group. It is a 540MW power station comprising two 270MW units. According to the Bharat Heavy Electricals Limited (BHEL), the first unit of the plant (270 MW) was "commissioned successfully on April 1st, 2016, Unit 2 was commissioned in April 16th of 2016. The exact location coordinates for the power plant are 31.3798N, 75.1497E.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, and NO_x, data analyzed (Fig. G1-G8) for the five years (2017-2020) using data provided by GVK developer for Goindwal Sahib Power Plant at Goindwal Sahib, state of Punjab.

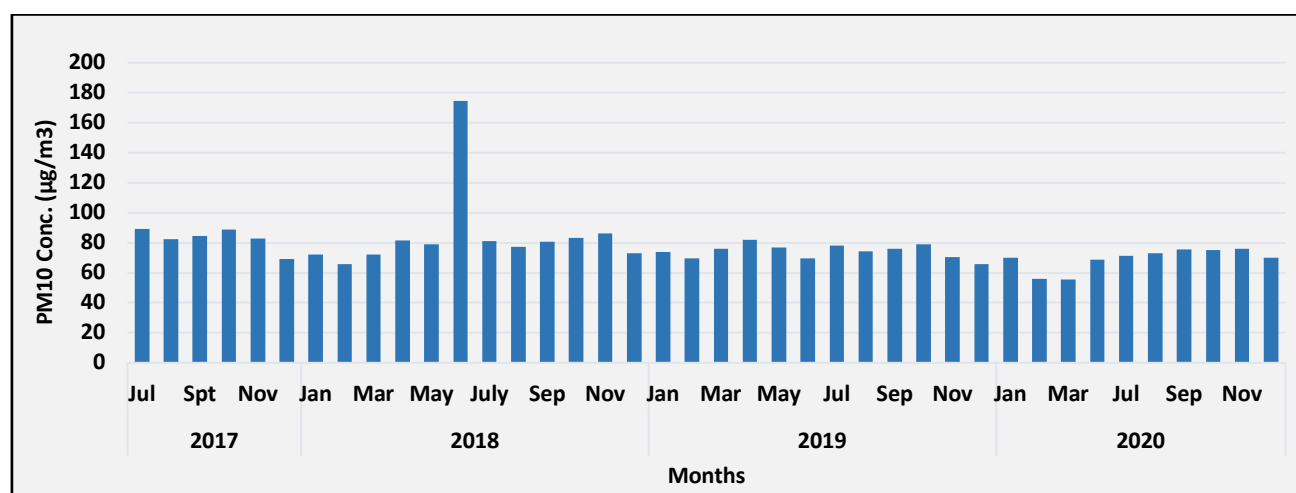


Fig. G1: Time series of monthly average PM₁₀ ambient air concentration in GVK TPP

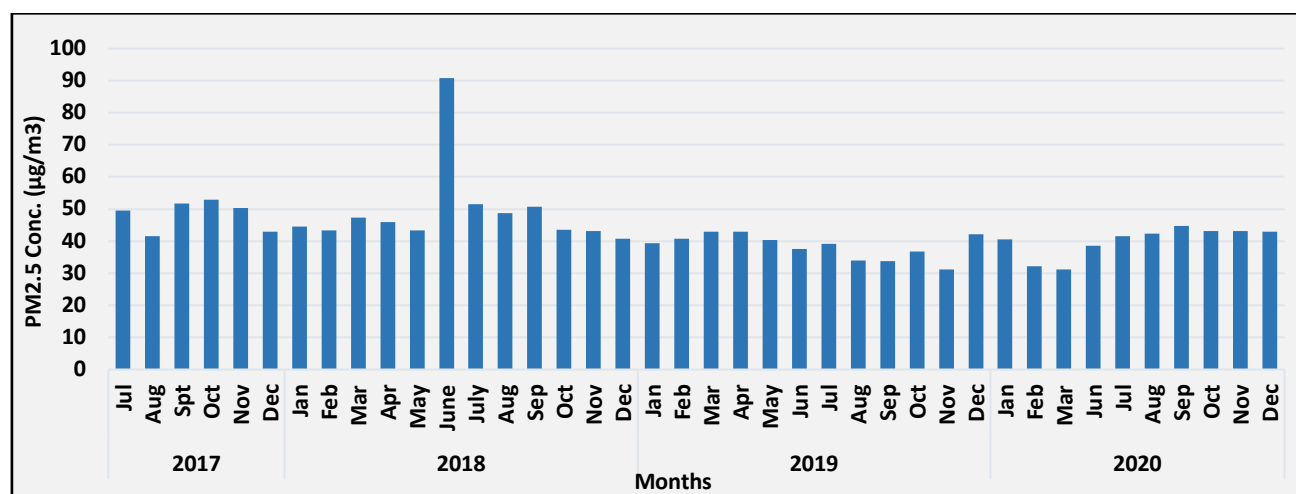


Fig. G2: Time series of monthly average PM_{2.5} ambient air concentration in GVK TPP

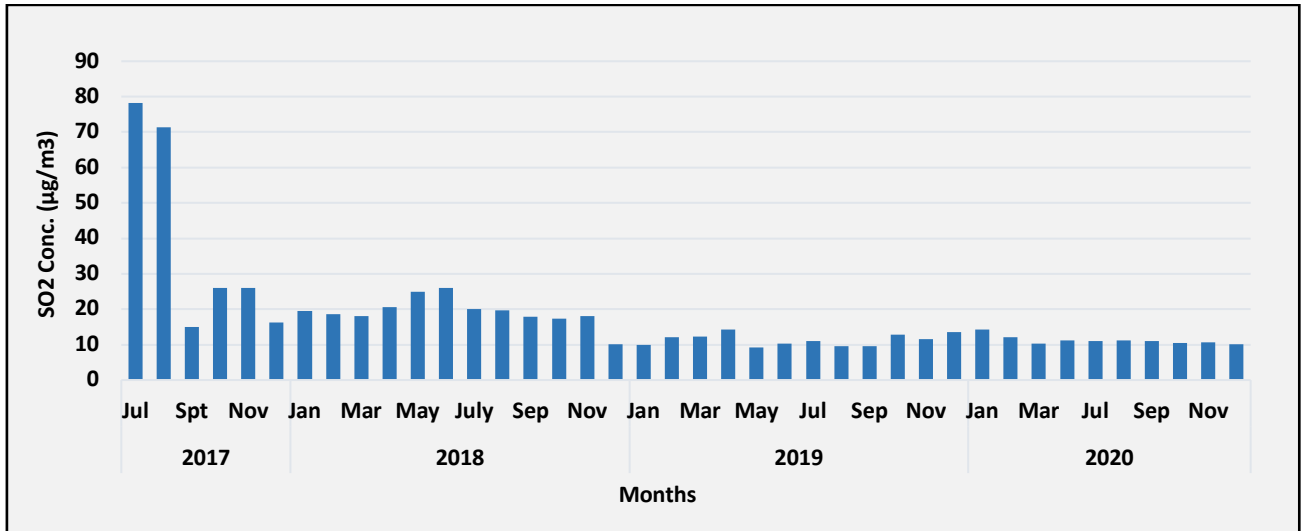


Fig. G3: Time series of monthly average SO₂ ambient air concentration in GVK TPP

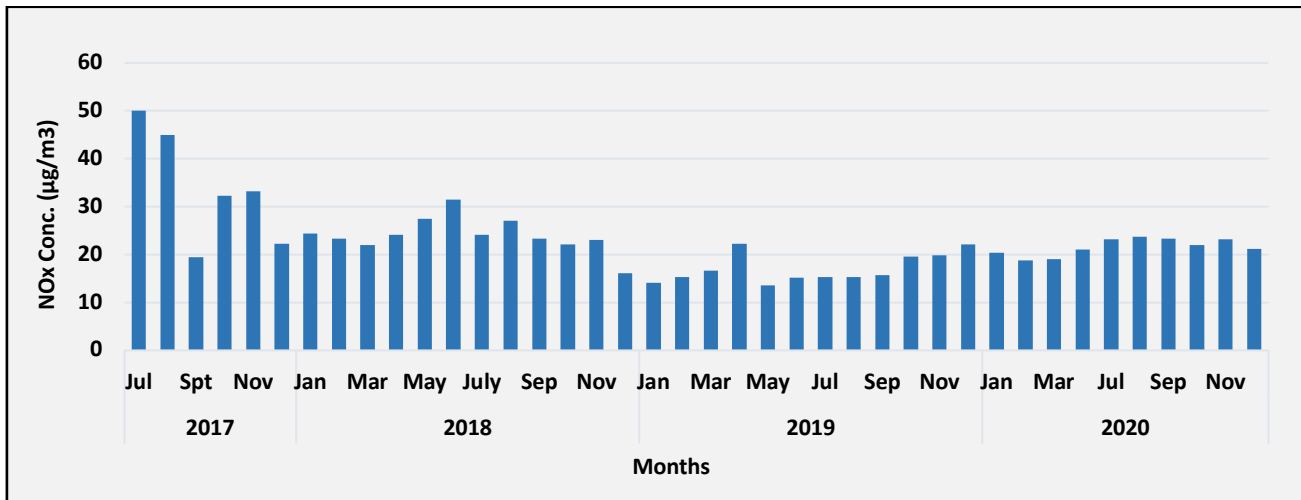


Fig. G4: Time series of monthly average NO_x ambient air concentration in GVK TPP

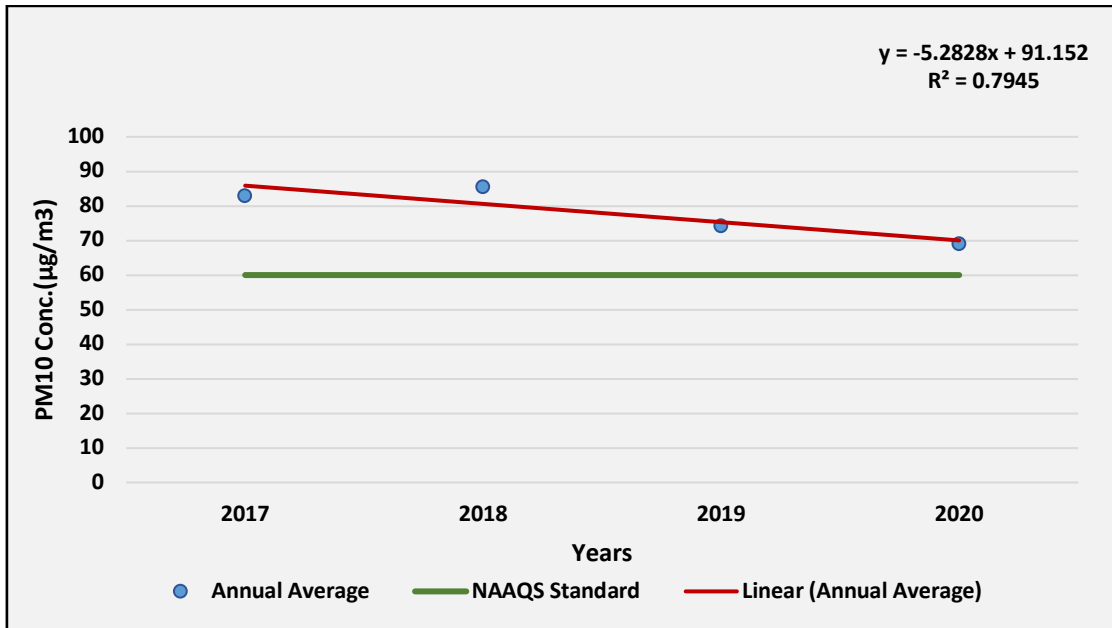


Fig. G5: Trend of annual mean PM_{10} ambient air concentration in GVK TPP

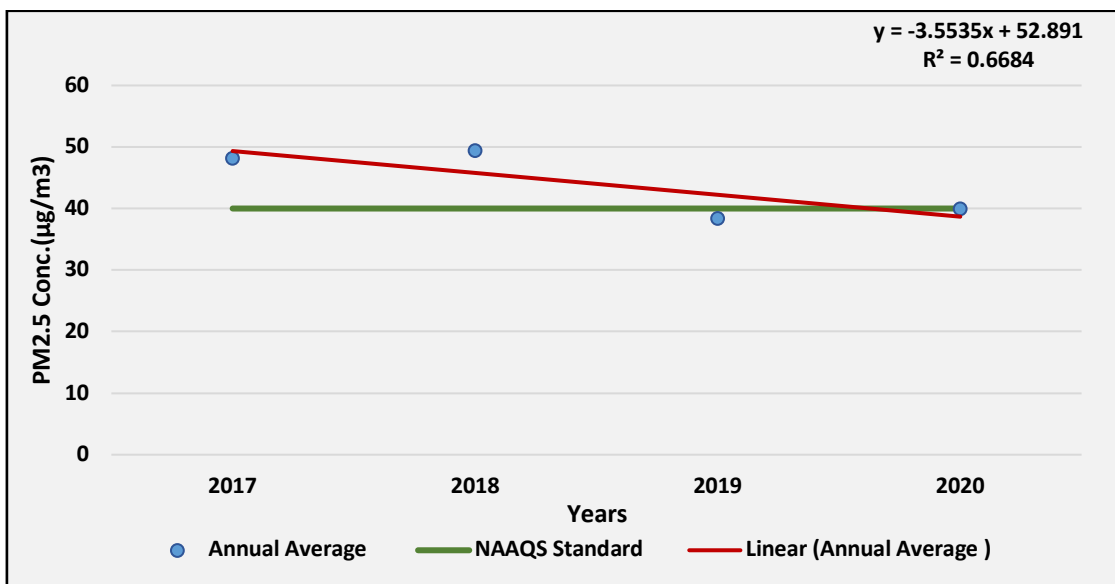


Fig. G6: Trend of annual mean $PM_{2.5}$ ambient air concentration in GVK TPP

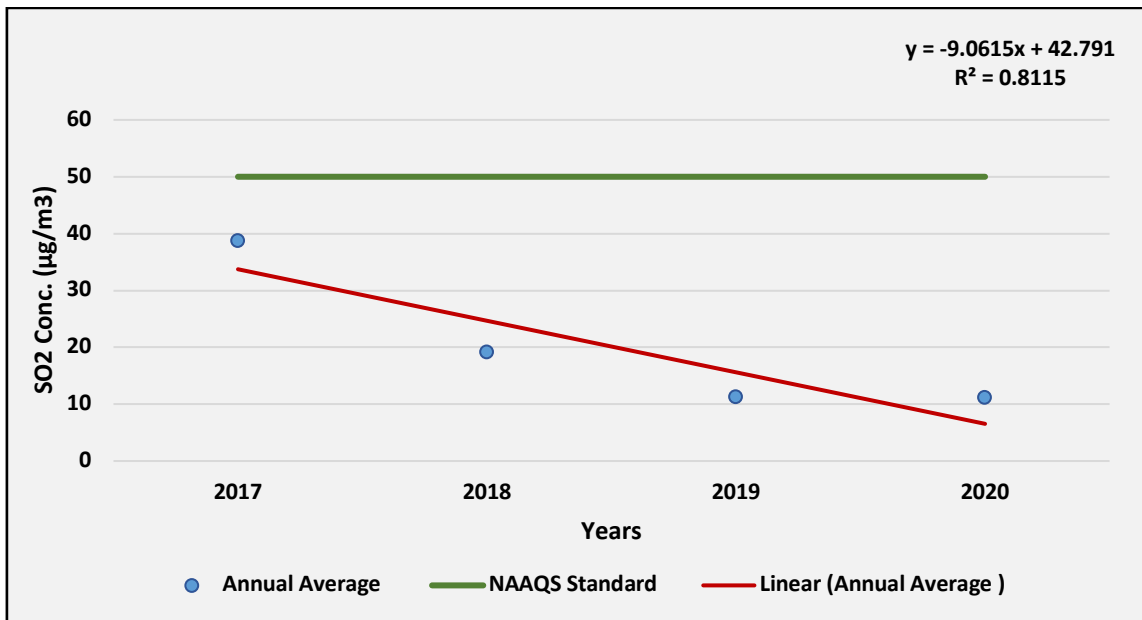


Fig. G7: Trend of annual mean SO₂ ambient air concentration in GVK TPP

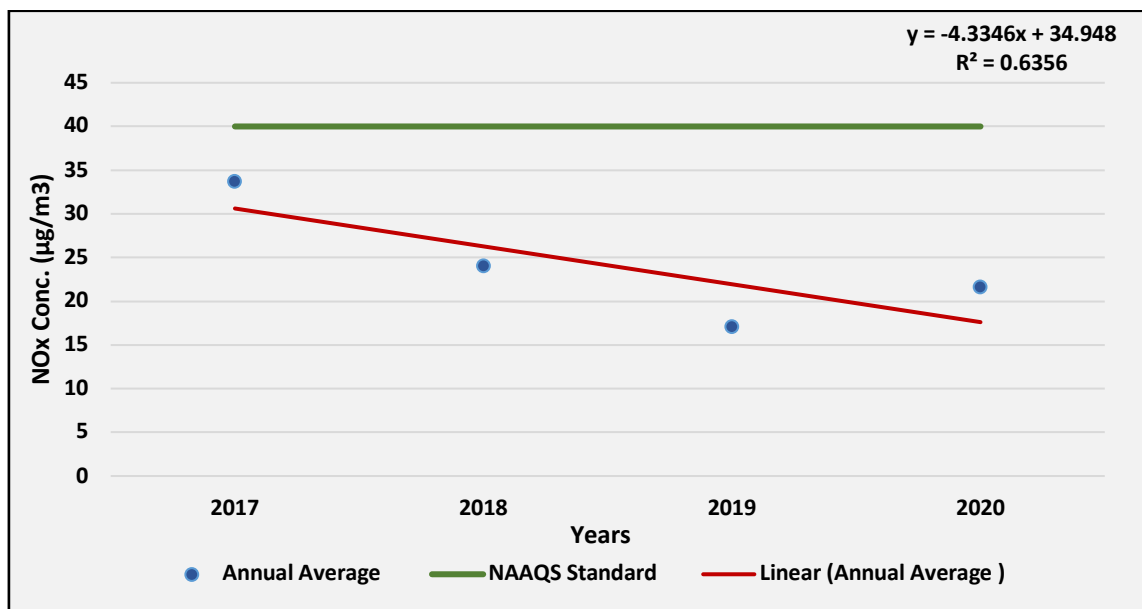


Fig. G8: Trend of annual mean NO_x ambient air concentration in GVK TPP

Evidence based on ground level stations shows that the monthly average (Fig. G1 & G4) and annual average (Fig. G5 & G8) of SO₂ & NO_x levels in five years are mostly within a range of 0-50 µg/m³ & 0-40 µg/m³ respectively, which is good as per the as per the National Ambient Air Quality Standards (NAAQS). However, the major cause of concern is the PM₁₀, PM_{2.5} levels that are also showing decreasing trend but still having higher values than standards (Fig G1 & G2) and annual average (Fig G5 & G6). This suggests that the particulate matter contribution by the GVK thermal power plant have to be controlled as per the NAAQS.

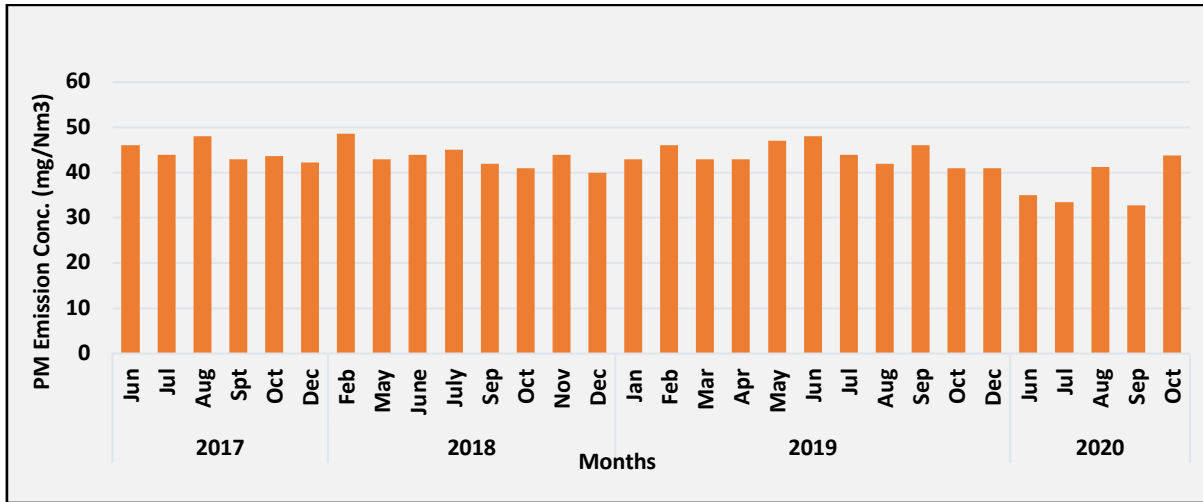


Fig. G9: Time series of monthly average emission of PM from Unit 1 in GVK TPP

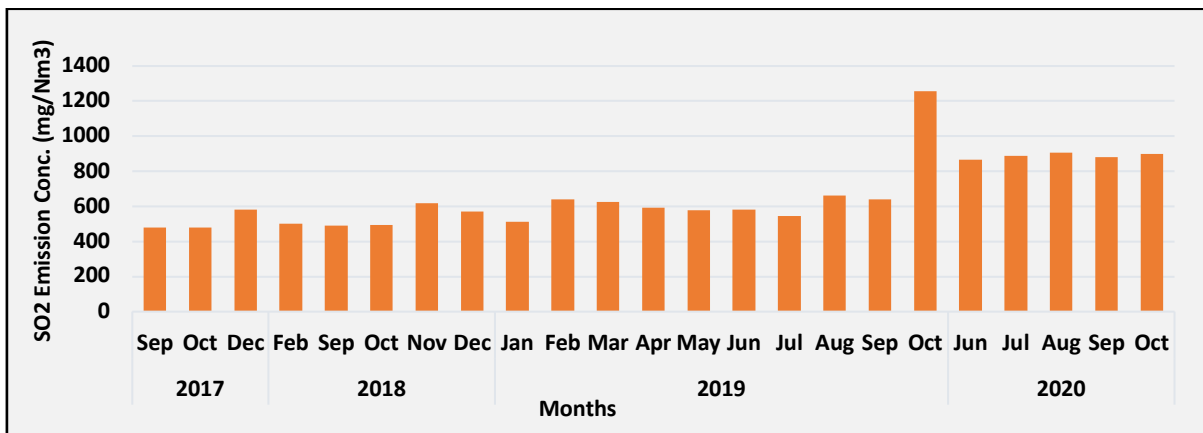


Fig. G10: Time series of monthly average emission of SO₂ from Unit 1 in GVK TPP

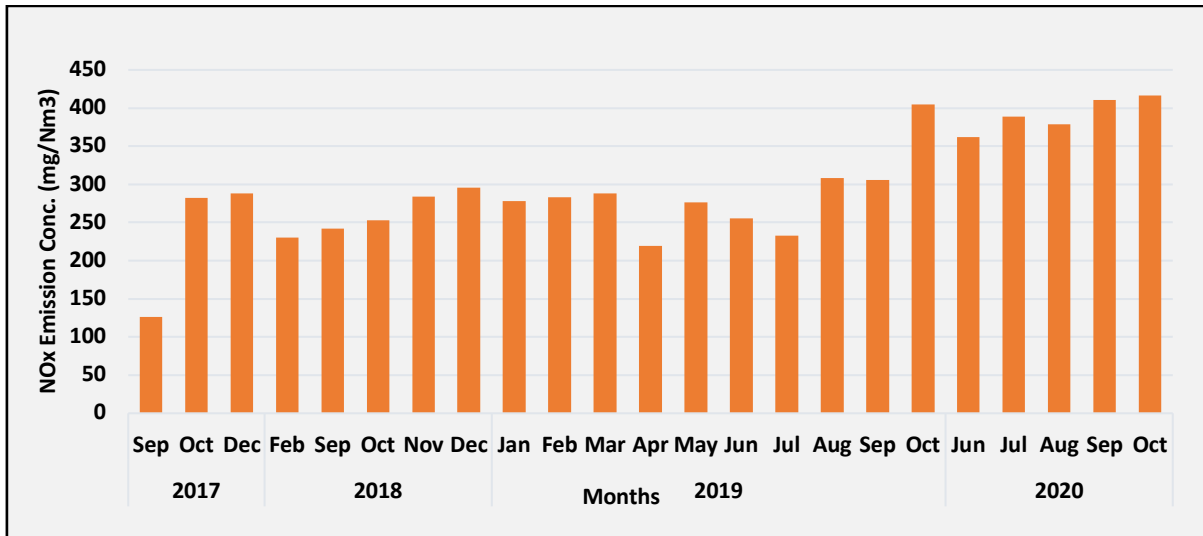


Fig. G11: Time series of monthly average emission of NO_x from Unit 1 in GVK TPP

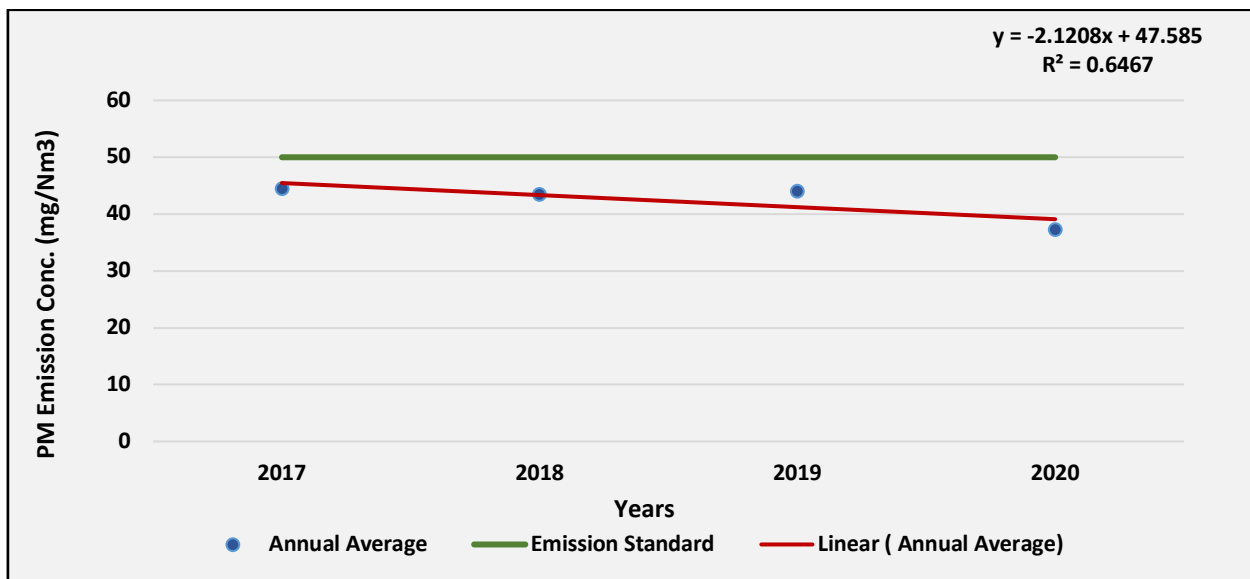


Fig. G12: Trend of annual average PM emissions from unit 1 in GVK TPP

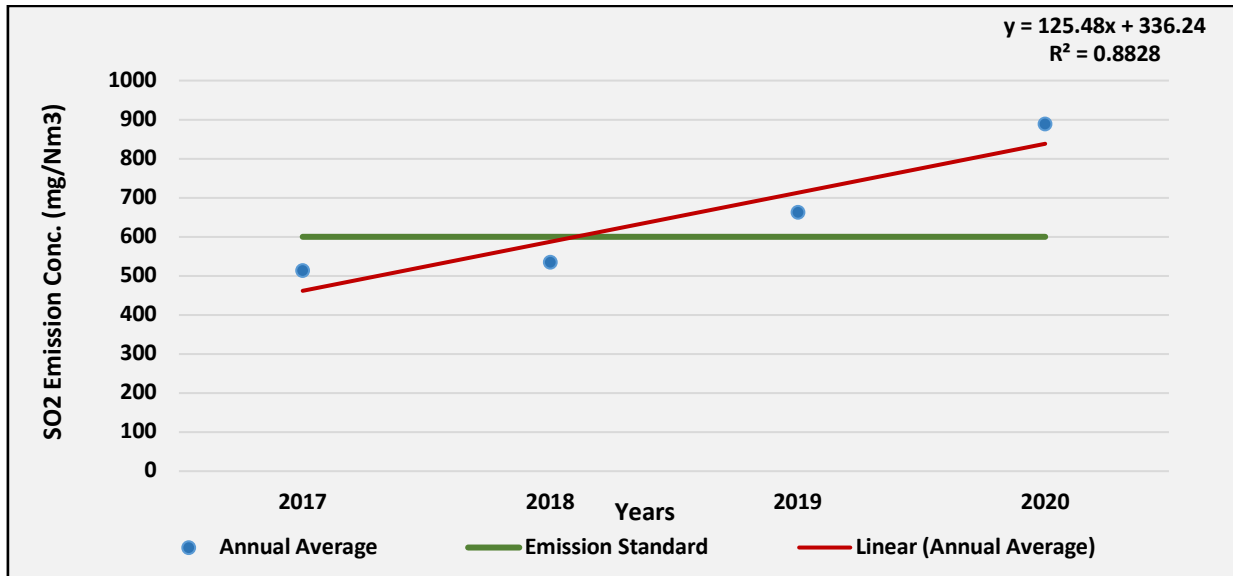


Fig. G13: Trend of annual average SO2 emissions from unit 1 in GVK TPP

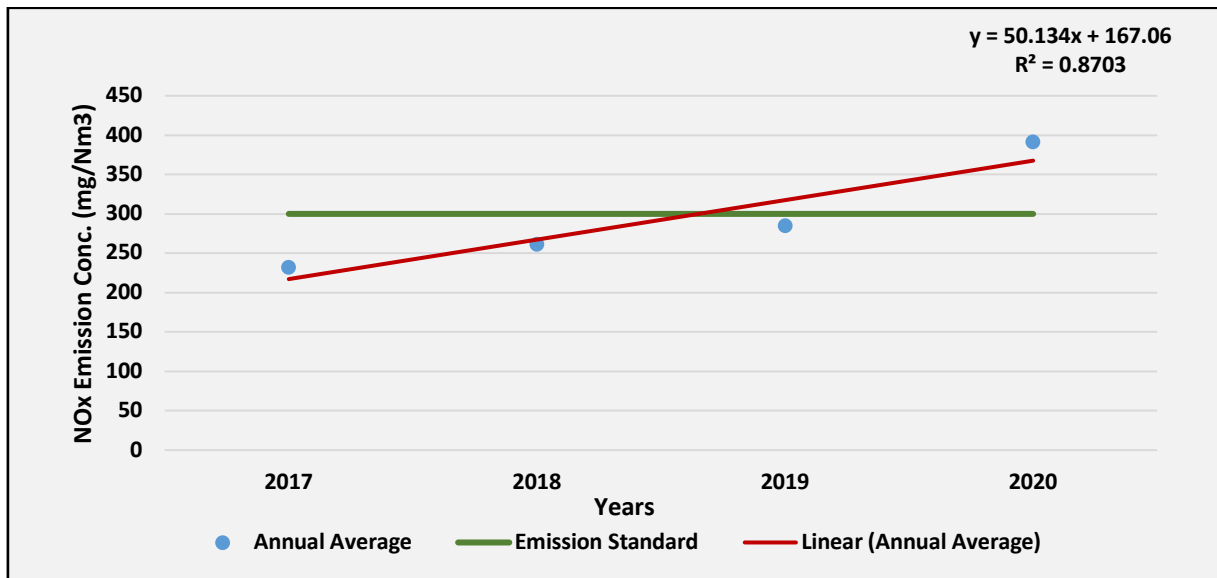


Fig. G14: Trend of annual average NOx emissions from unit 1 in GVK TPP

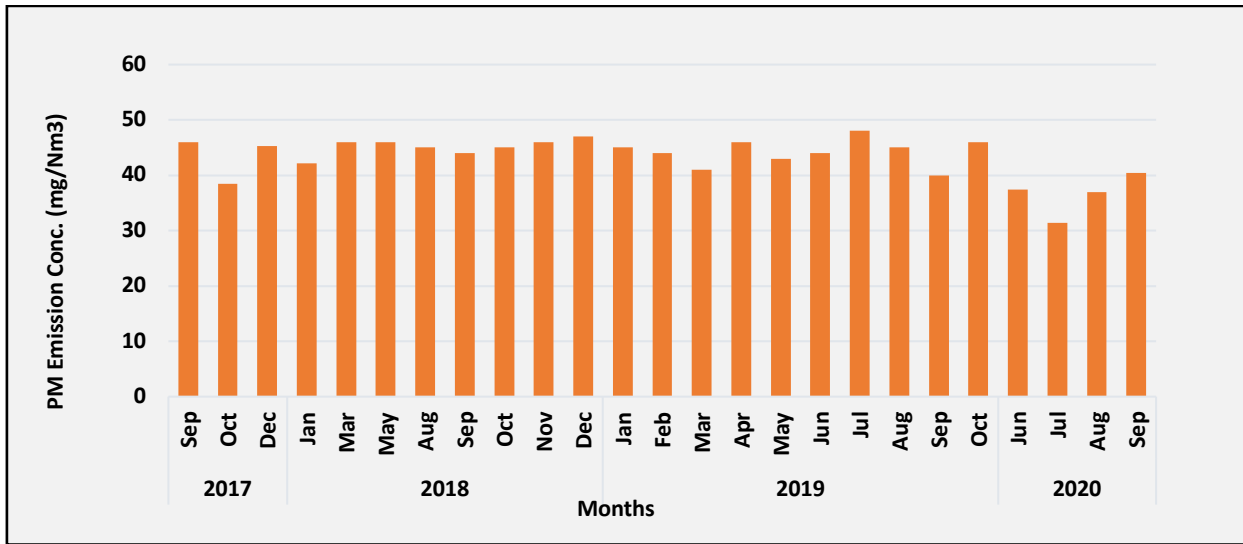


Fig. G15: Time series of monthly average emission of PM from Unit 2 in GVK TPP

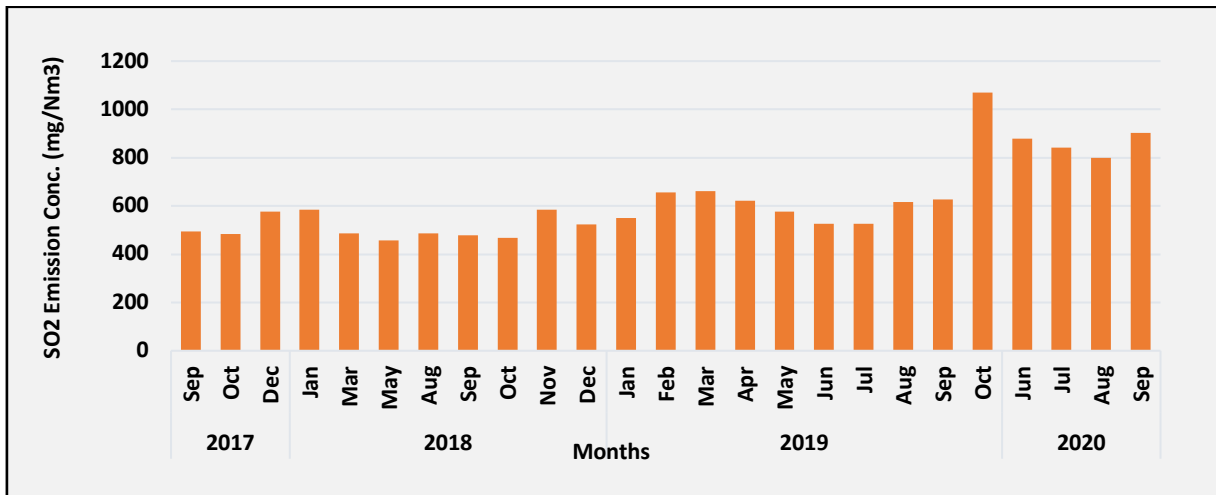


Fig. G16: Time series of monthly average emission of SO2 from Unit 2 in GVK TPP

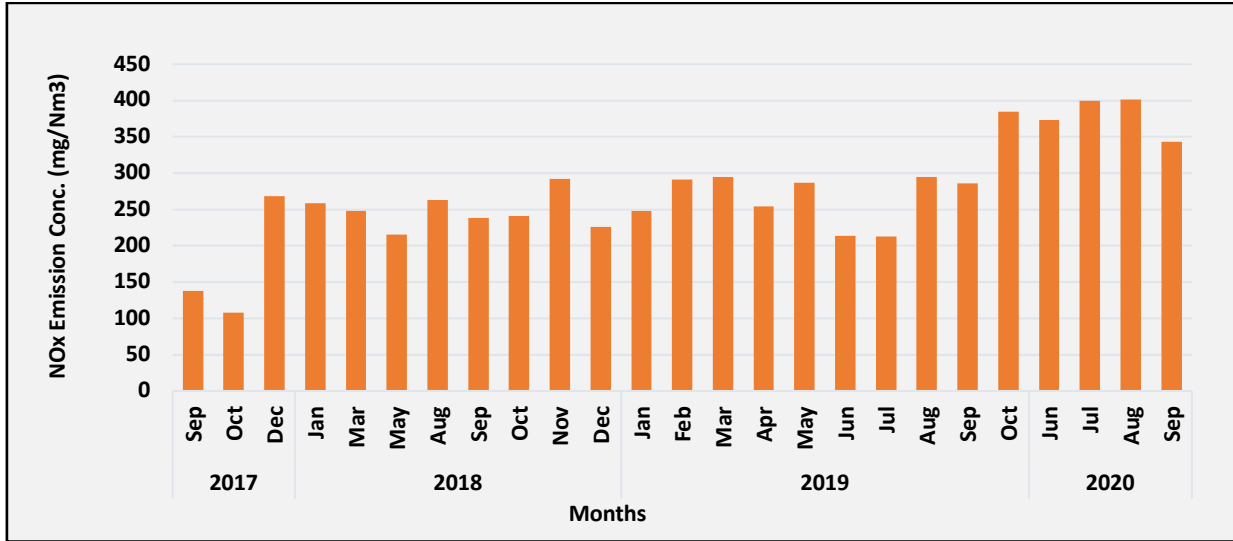


Fig. G18: Trend of annual average PM emissions from unit 2 in GVK TPP

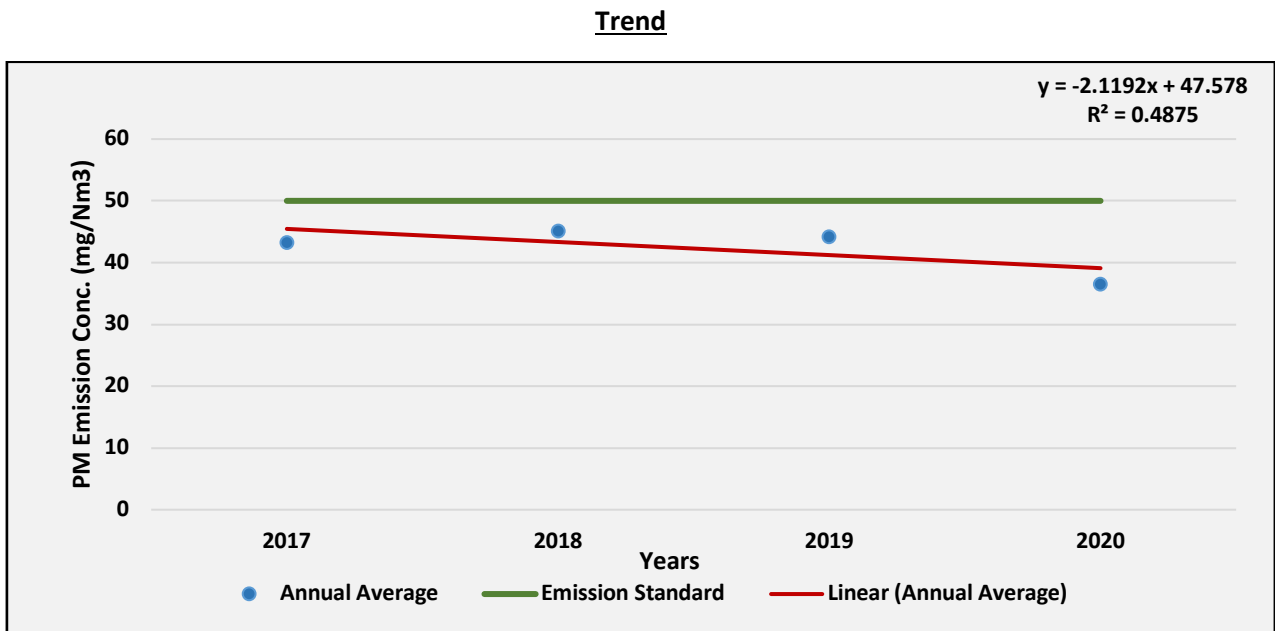


Fig. G19: Trend of annual average SO2 emissions from unit 2 in GVK TPP

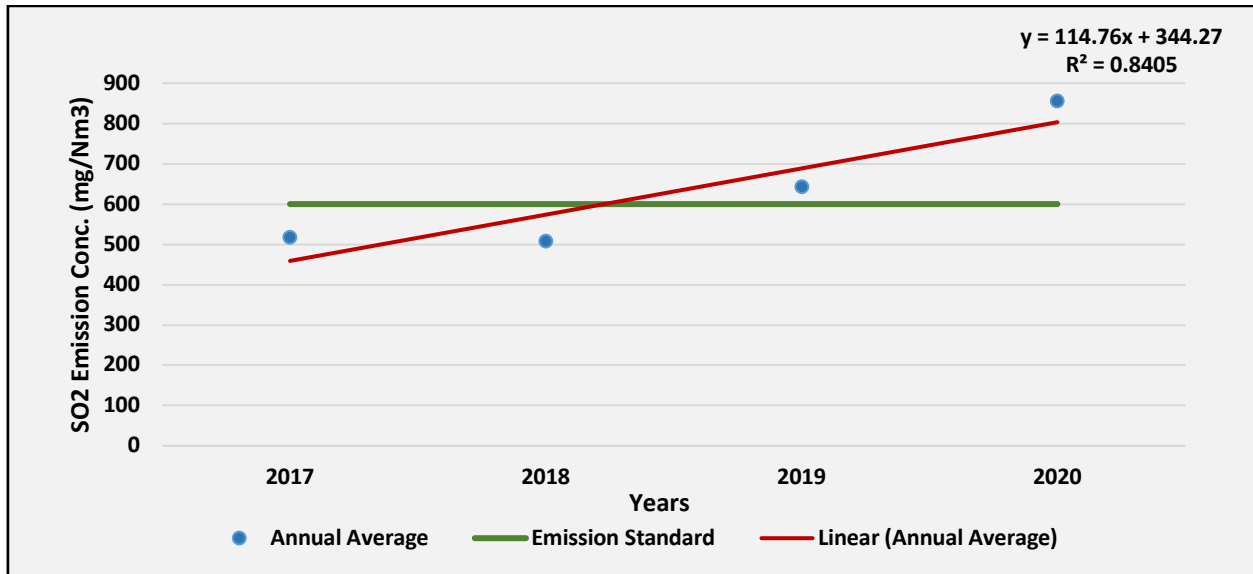


Fig. G20: Trend of annual average NOx emissions from unit 2 in GVK TPP

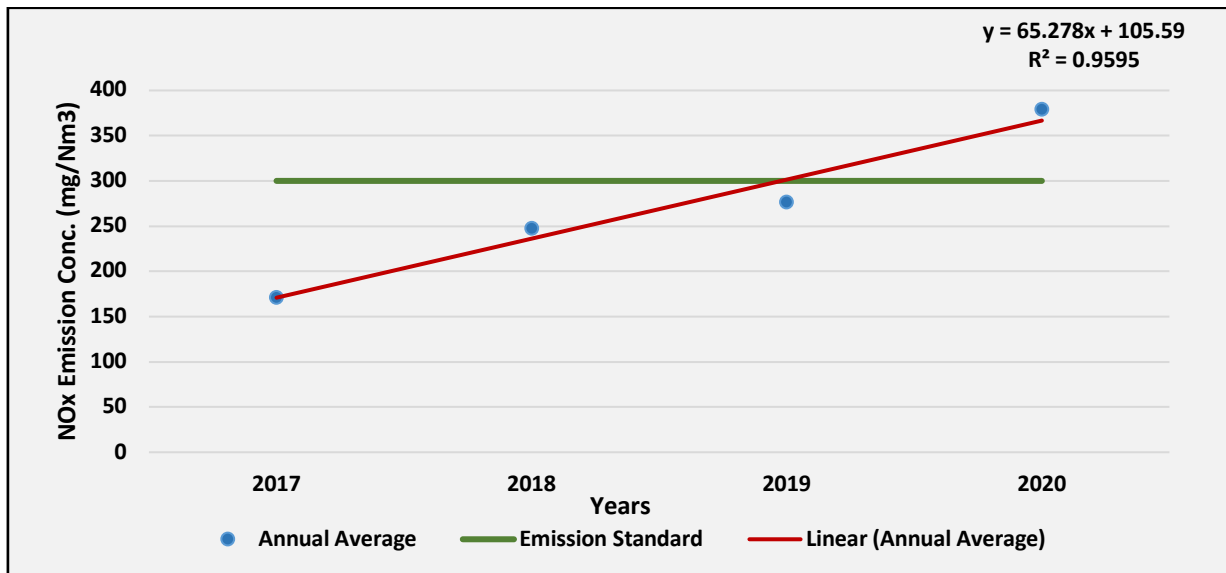


Fig. G20: Trend of annual average NOx emissions from unit 2 in GVK TPP

The monthly and yearly ground level emission analysis for both the units of GVK Thermal Power Plant shows that particulate matter is within the emission standards. The SO₂ parameter shows the increasing trend compared to norm whereas NO_x parameter is having the similar kind of trend as SO₂ from and having more values from year 2018. (Fig. G9-G20).

TAQA NEVYELI

TAQA owns and operates a 250 MW lignite-based thermal power plant in Neyveli in the state of Tamil Nadu. We generate and sell the power to the Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO), a power generation and distribution company owned by Government of Tamil Nadu.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, and NO_x, data analyzed for the five years (2015-2020) using data provided by DVC developer for Maithon Power plant, Jharkhand, India.

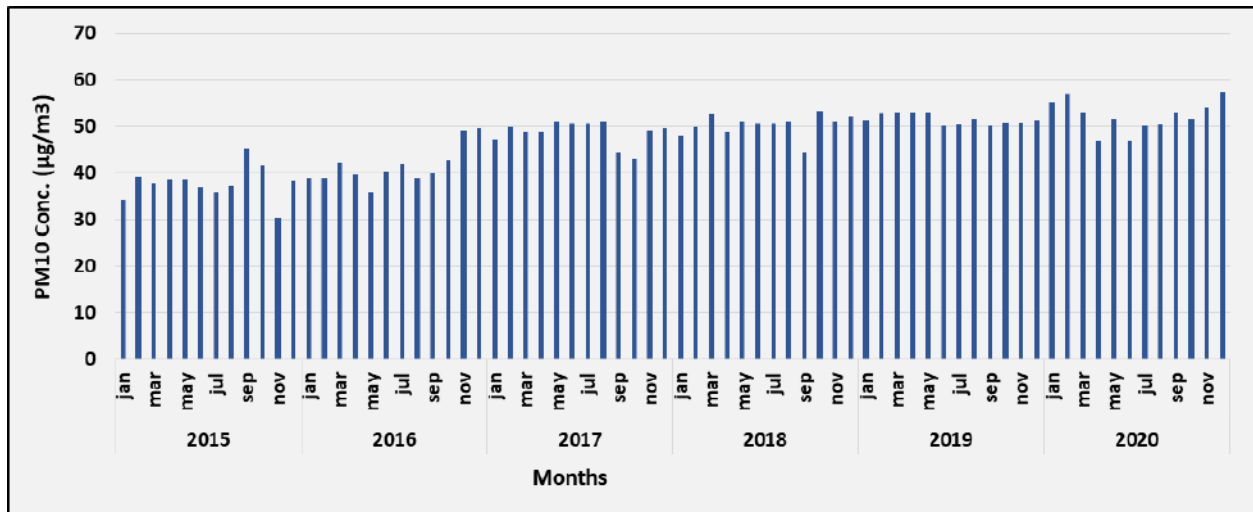


Fig. TQ1: Time series of monthly average PM₁₀ ambient air concentration in Taqa TPP

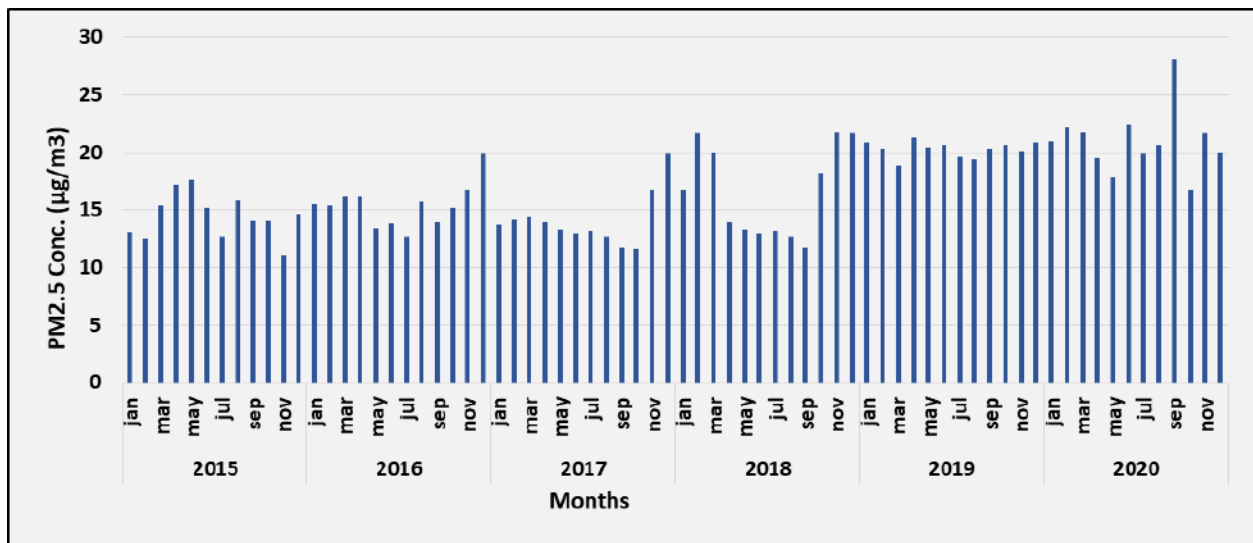


Fig. TQ2: Time series of monthly average PM_{2.5} ambient air concentration in Taqa TPP

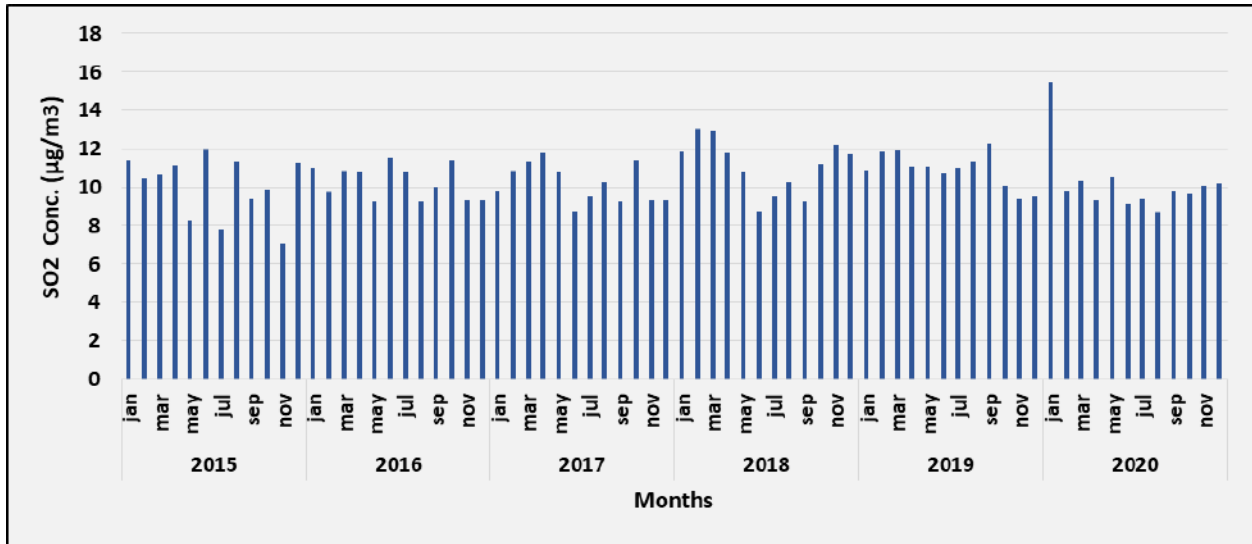


Fig. TQ3: Time series of monthly average SO₂ ambient air concentration in Taqa TPP

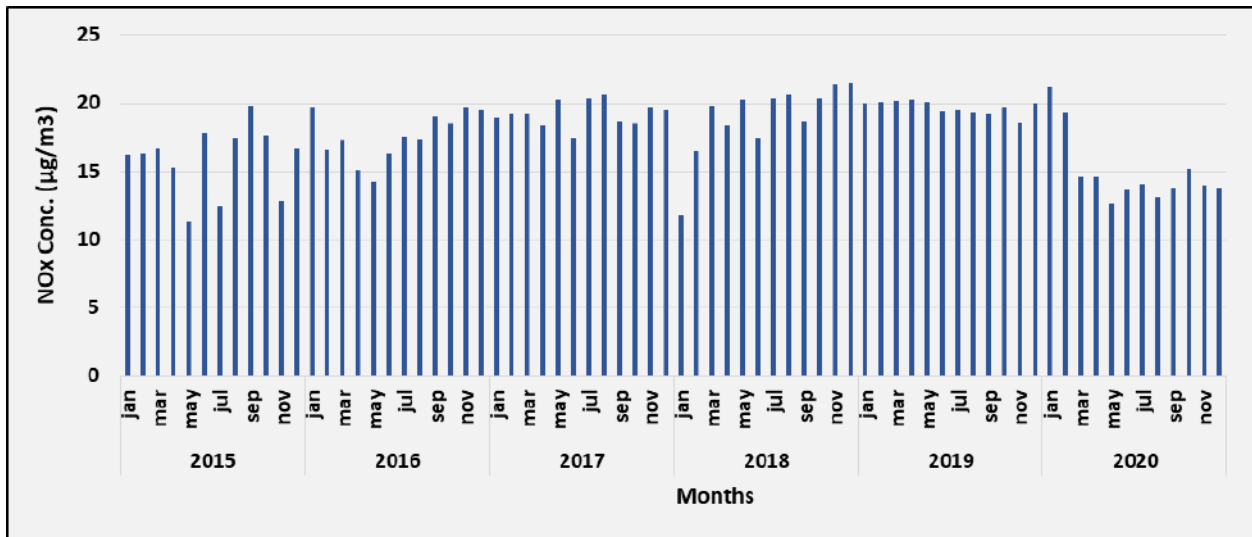


Fig. TQ4: Time series of monthly average NO_x ambient air concentration in Taqa TPP

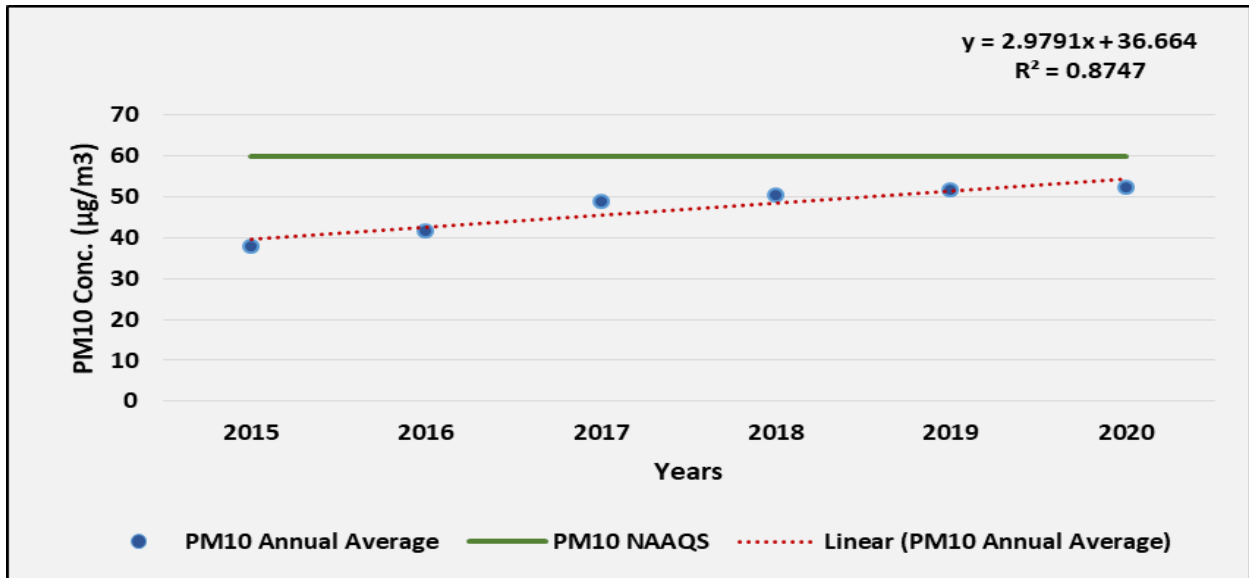


Fig. TQ5: Trend of annual mean PM_{10} ambient air concentration in Taqa TPP

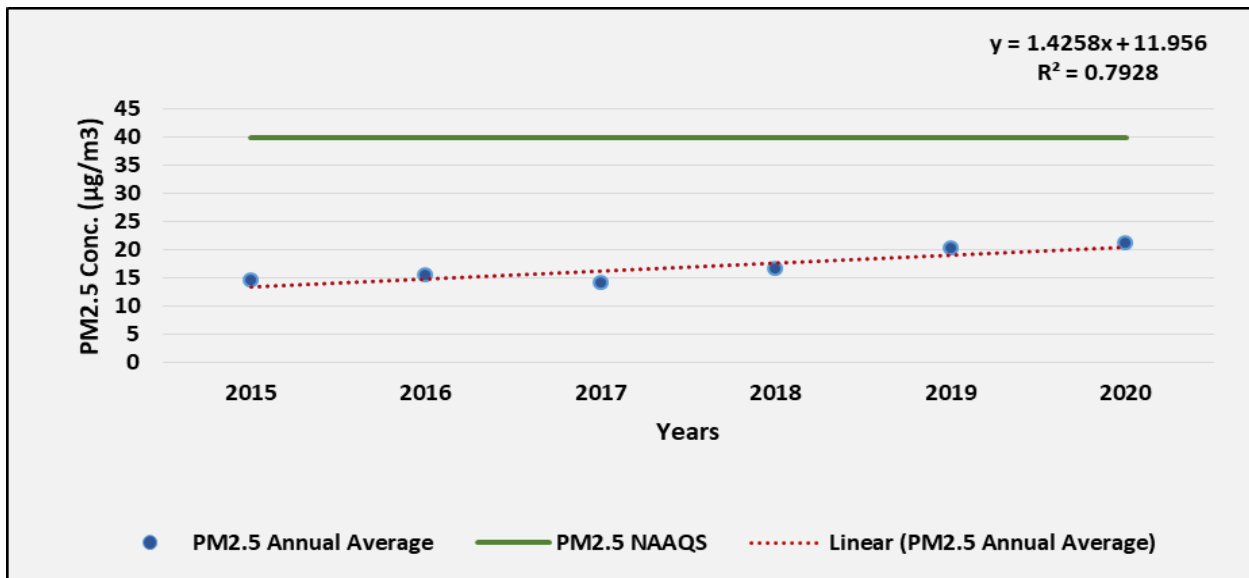


Fig. TQ6: Trend of annual mean $PM_{2.5}$ ambient air concentration in Taqa TPP

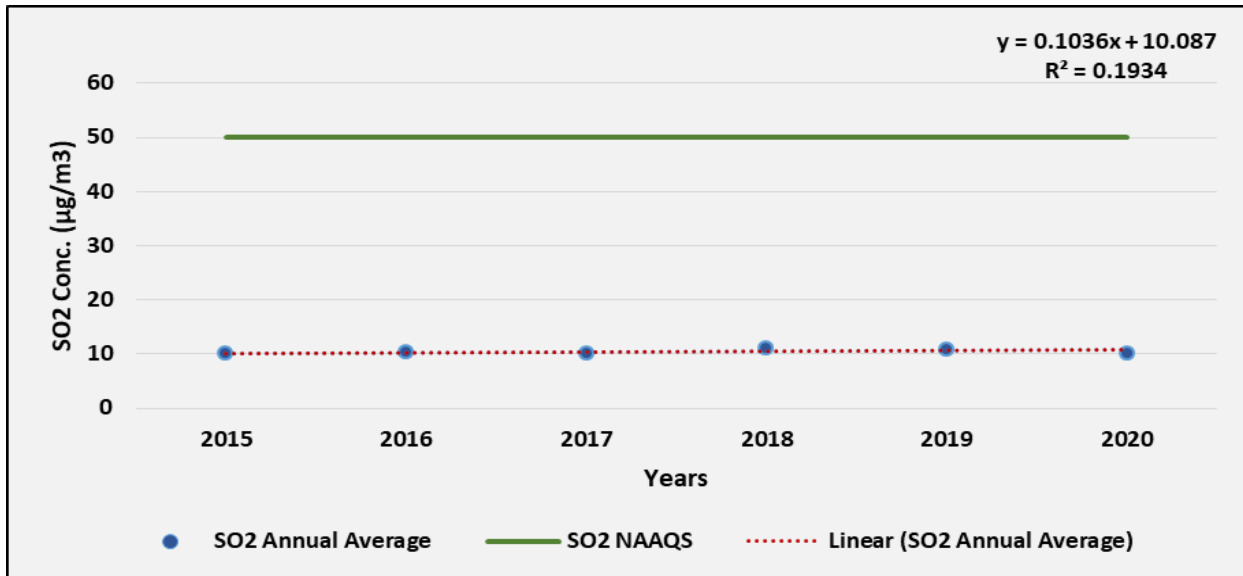


Fig. TQ7: Trend of annual mean SO₂ ambient air concentration in Taqa TPP

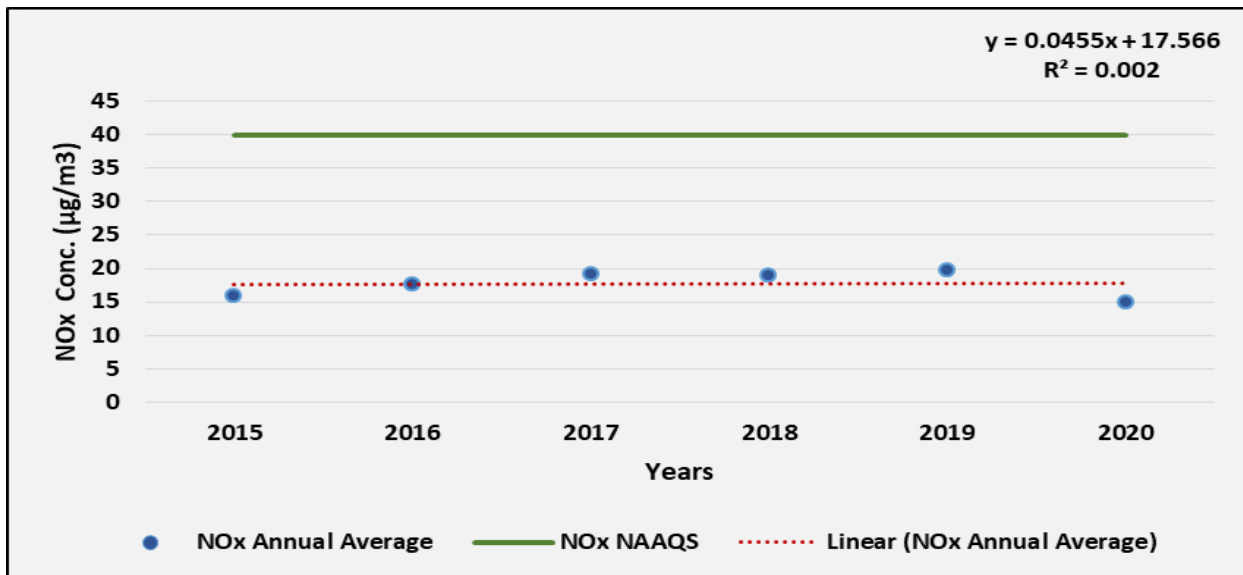


Fig. TQ8: Trend of annual mean NO_x ambient air concentration in Taqa TPP

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, Pm_{2.5}, SO₂ & NO_x levels in last five years are mostly within a range, which is good as per the as per the National Ambient Air Quality Standards (NAAQS). (Fig TQ1-TQ8)

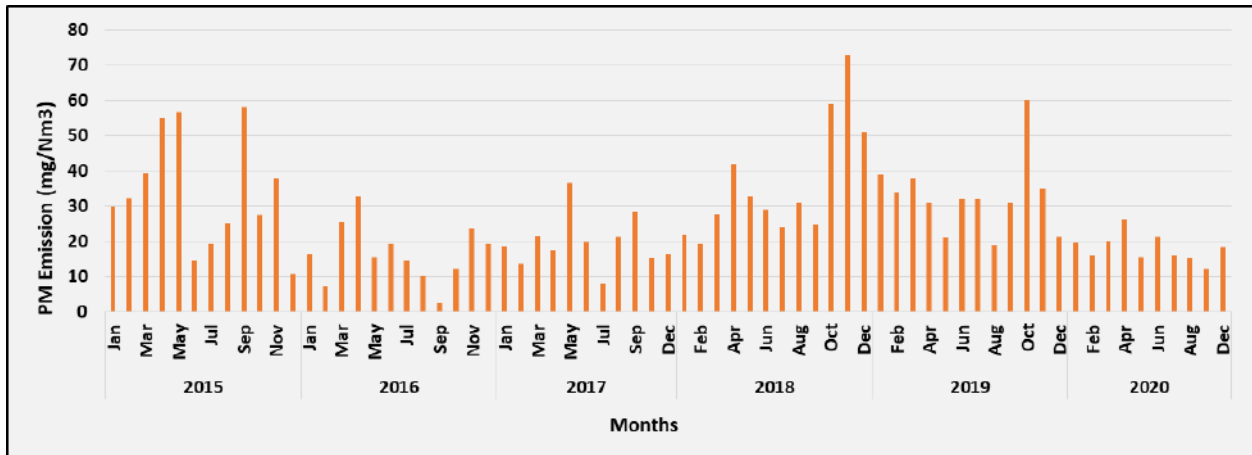


Fig. TQ9: Time series of monthly average emission of PM from Unit 1 in Taqa TPP

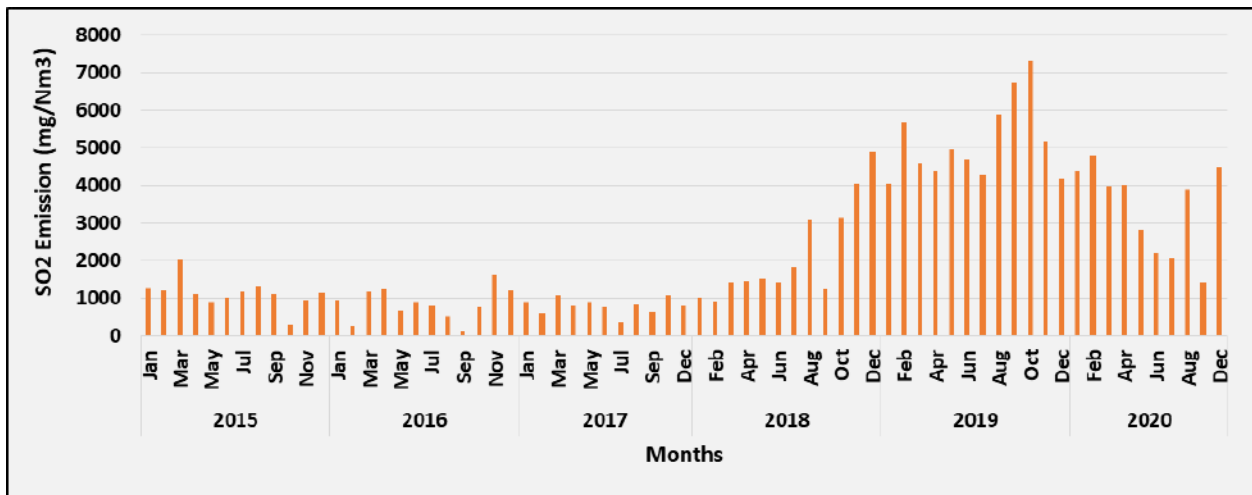


Fig. TQ10: Time series of monthly average emission of SO2 from Unit 1 in Taqa TPP

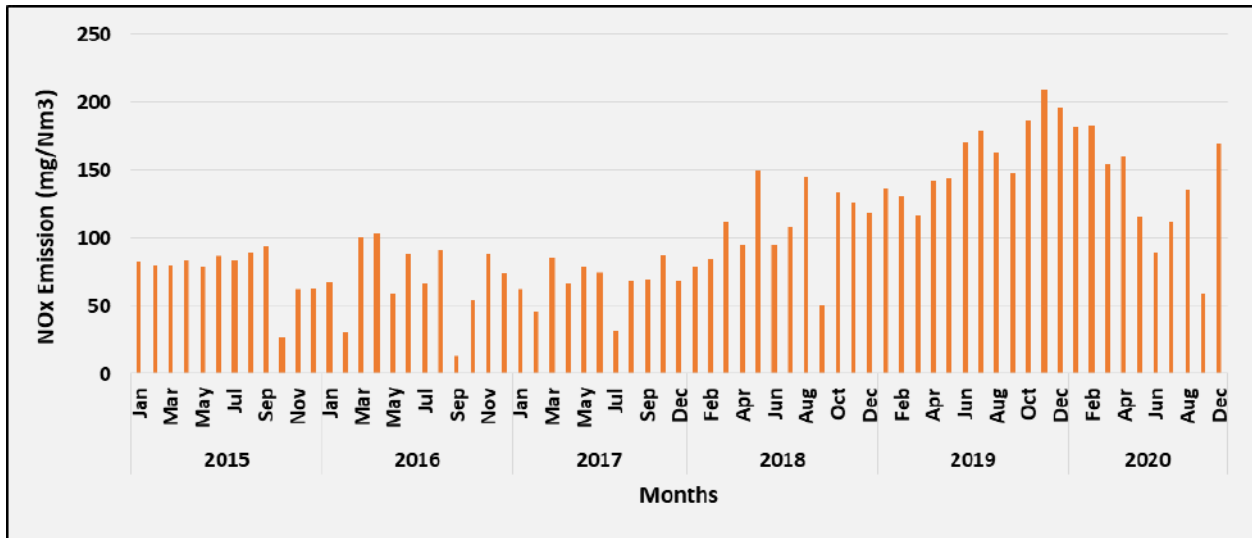


Fig. TQ11: Time series of monthly average emission of NOx from Unit 1 in Taqa TPP

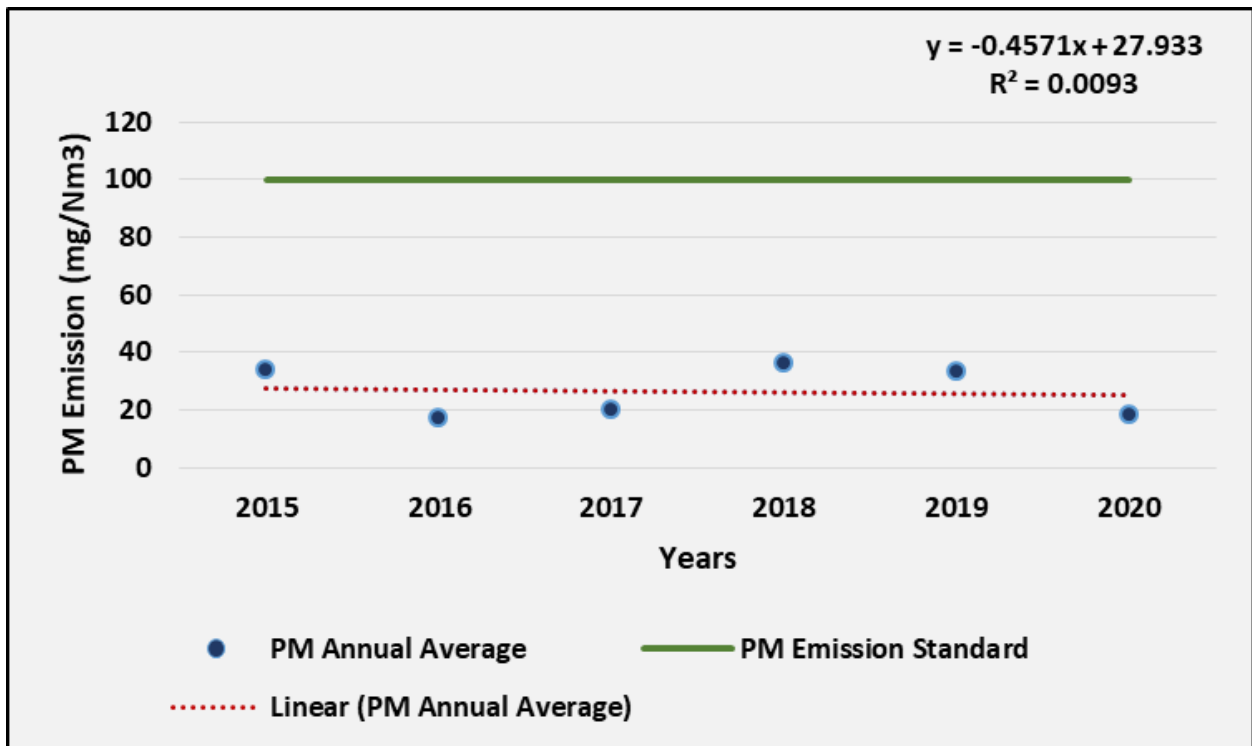


Fig. TQ12: Trend of annual average PM emissions from unit 1 in Taqa TPP

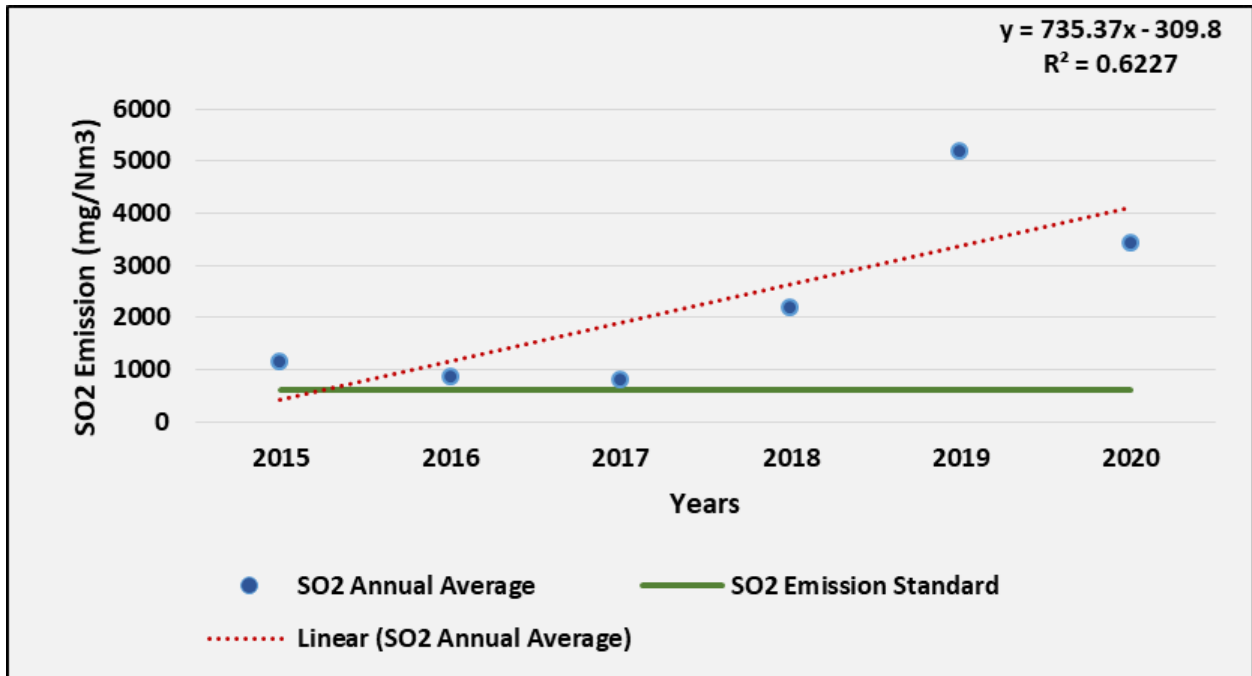


Fig. TQ13: Trend of annual average SO2 emissions from unit 1 in Taqa TPP

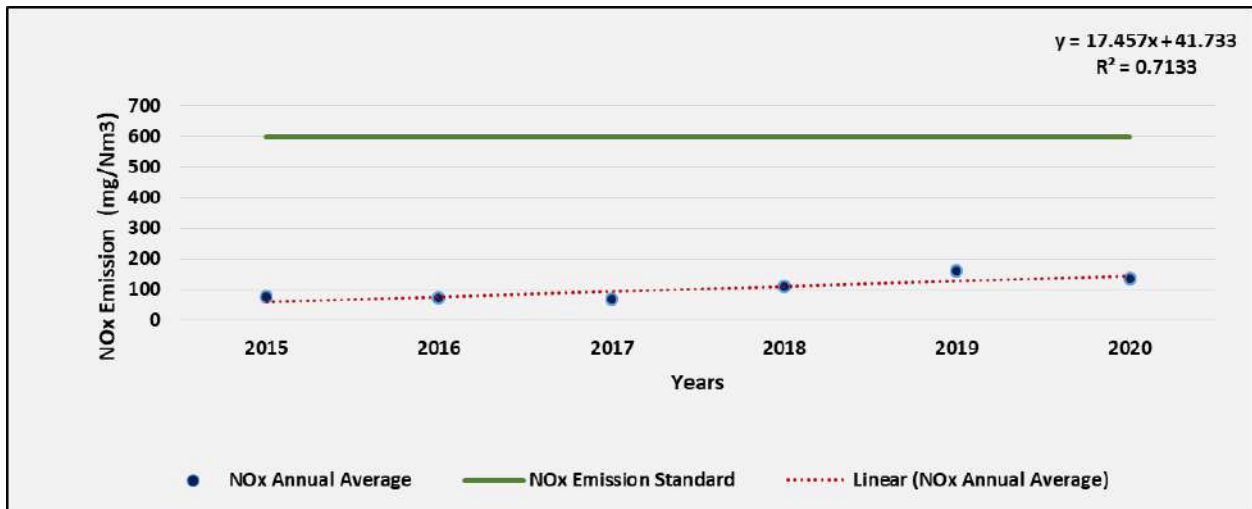


Fig. TQ14: Trend of annual average NOx emissions from unit 1 in Taqa TPP

The monthly and yearly ground level emission analysis for one unit of Taqa Nevyali Thermal Power Plant shows that particulate matter is within the emission standards. The SO2 and NOx parameter is much higher than the emission norms. (Fig. TQ9-TQ14).

PARLI THERMAL POWER PLANT

Parali Thermal Power Plant is located at Parali Vajinath in Beed district of Maharashtra. The power plant is one of the coal based power plants of Maharashtra State Power Generation Company (Mahagenco)

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, and NO_x, data analyzed (Fig. PA1-Fig. PA26) for the last four years (2016-2020) using data provided by Mahegenco developer for Parli Power plant, Maharashtra, India.

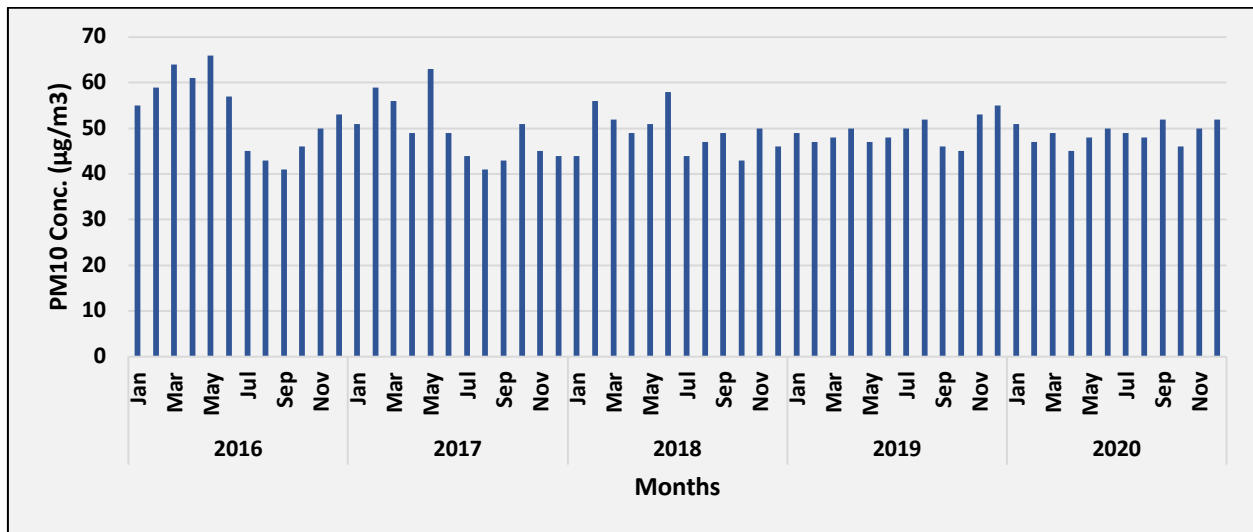


Fig. PA1: Time series of monthly average PM₁₀ ambient air concentration in Parli TPP (Ambient 1)

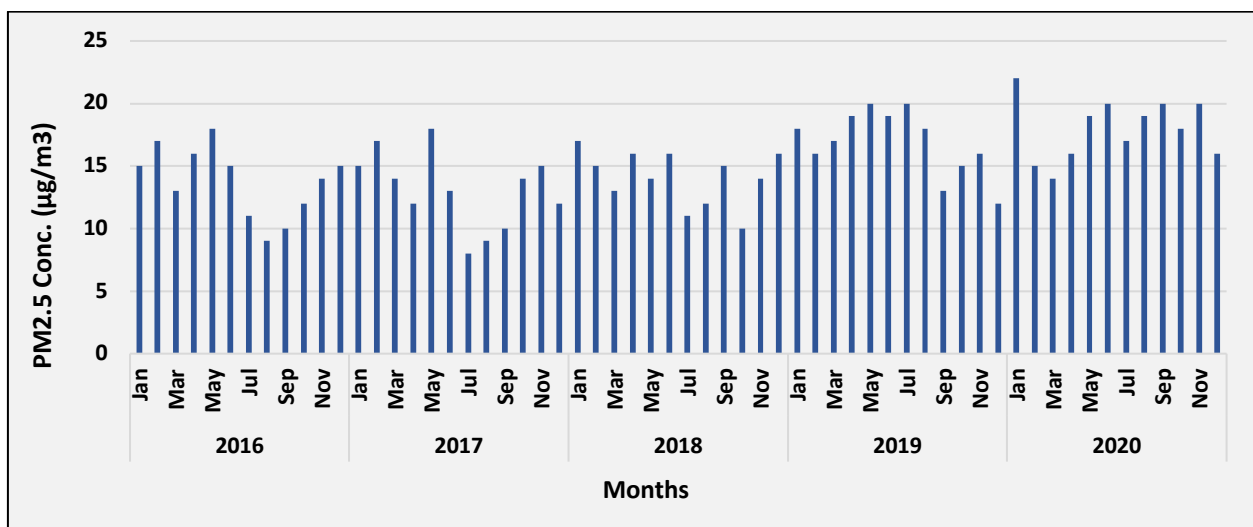


Fig. PA2: Time series of monthly average PM_{2.5} ambient air concentration in Parli TPP (Ambient 1)

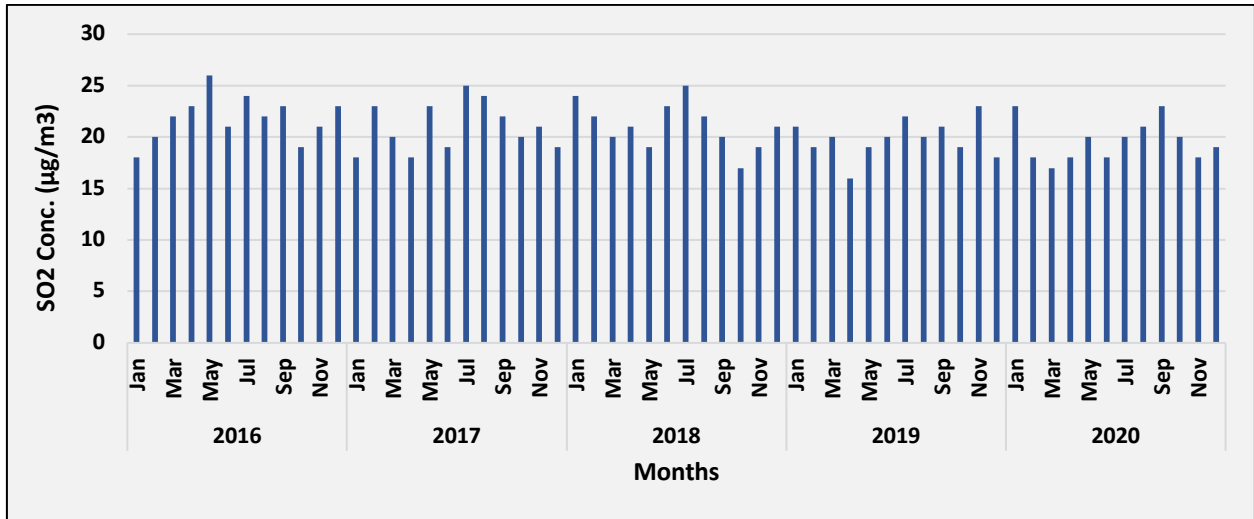


Fig. PA3: Time series of monthly average SO_2 ambient air concentration in Parli TPP (Ambient 1)

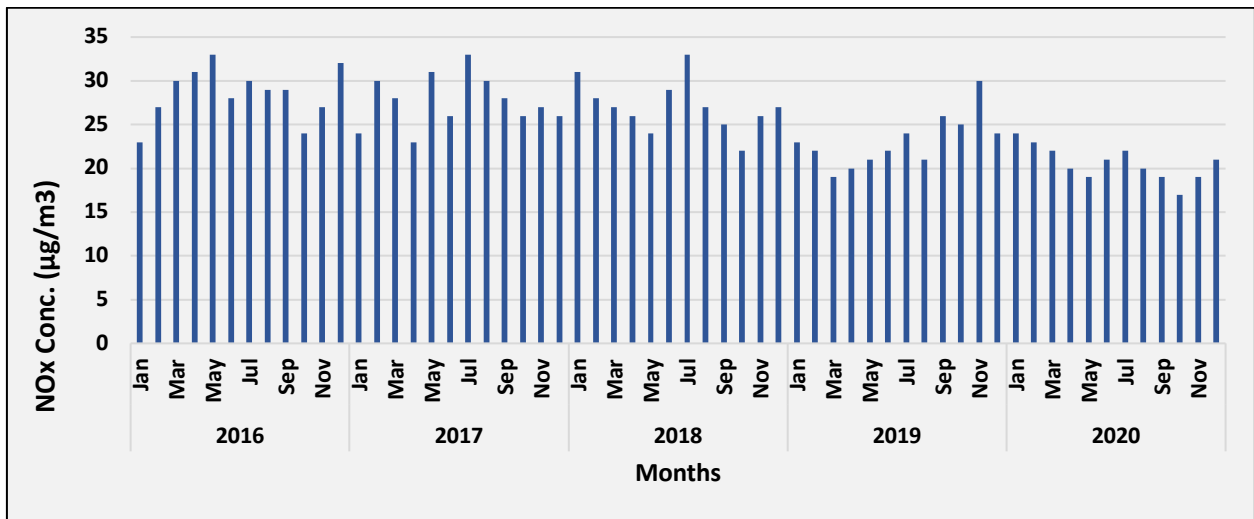


Fig. PA4: Time series of monthly average NO_x ambient air concentration in Parli TPP (Ambient 1)

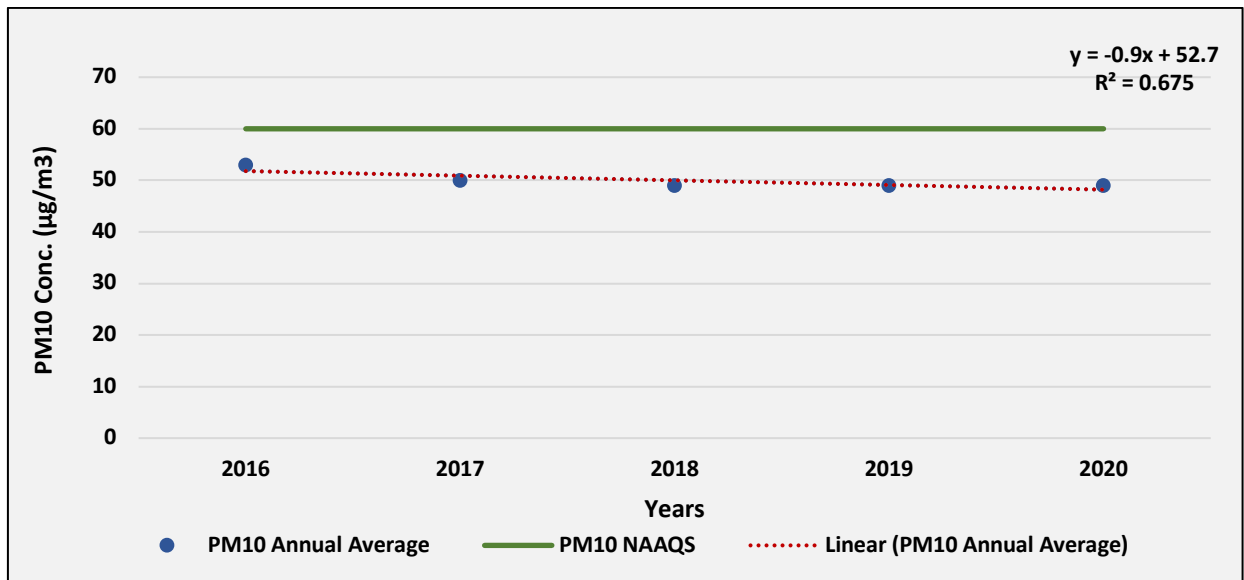


Fig. PA5: Trend of annual mean PM₁₀ ambient air concentration in Parli TPP (Ambient 1)

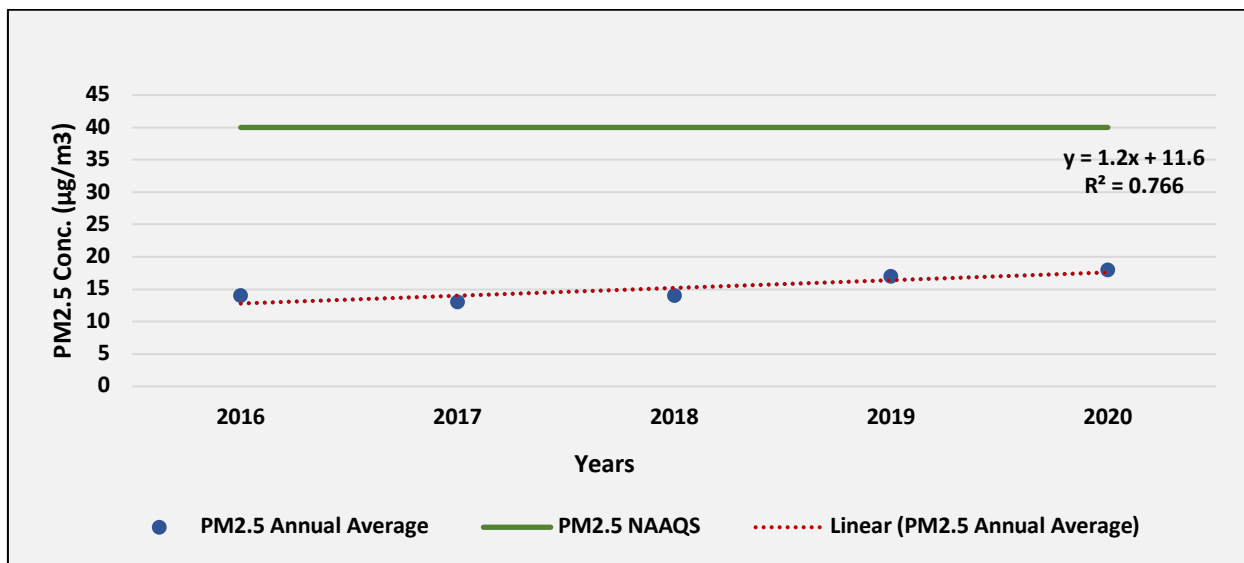


Fig. PA6: Trend of annual mean PM_{2.5} ambient air concentration in Parli TPP (Ambient 1)

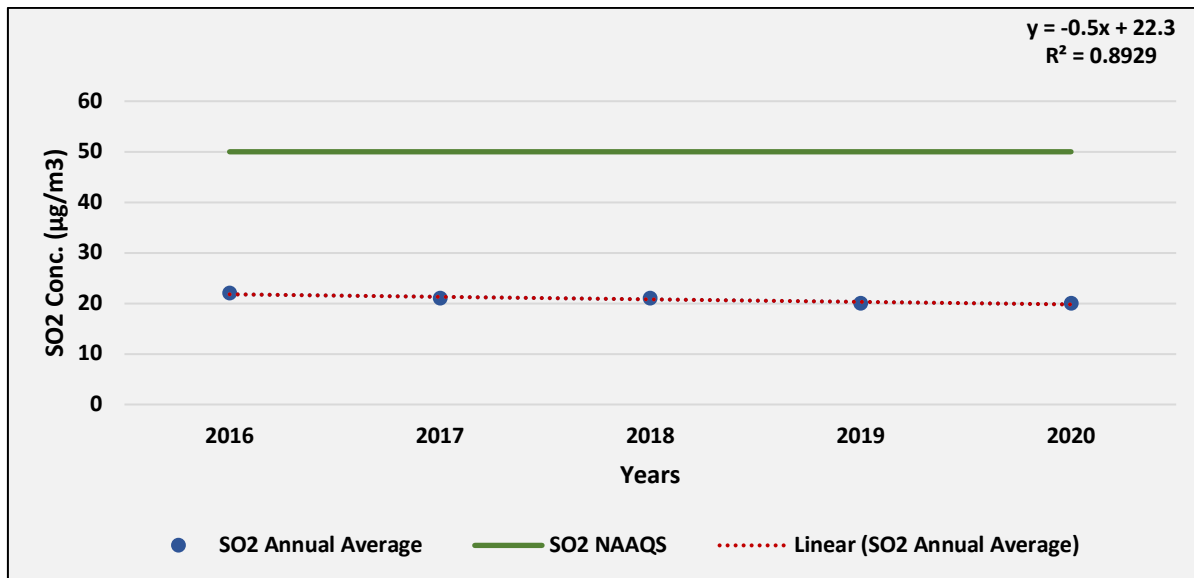


Fig. PA7: Trend of annual mean SO₂ ambient air concentration in Parli TPP (Ambient 1)

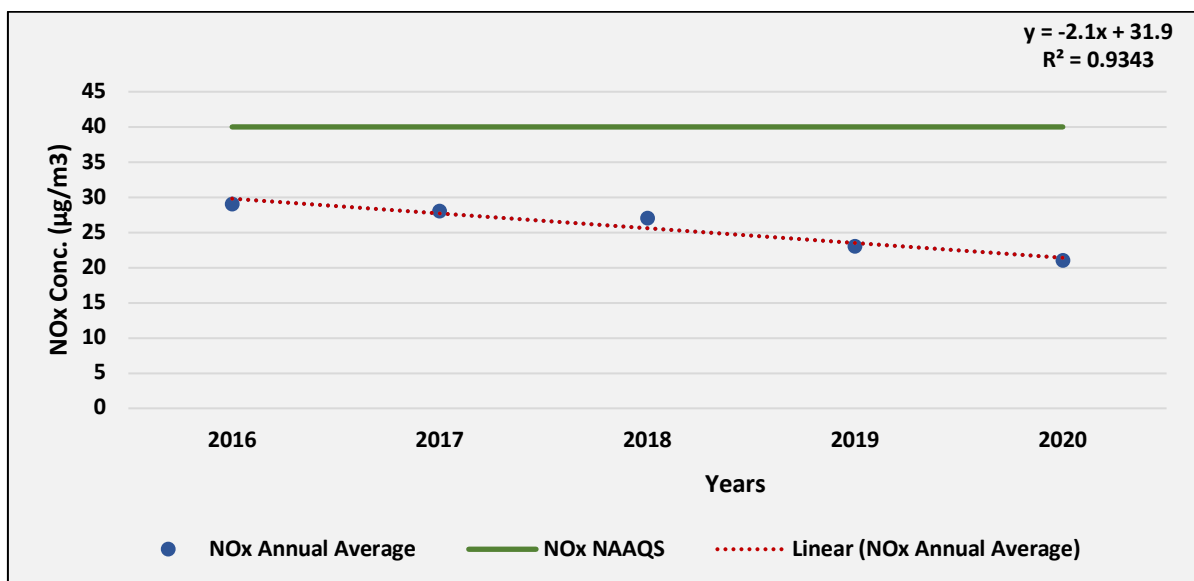


Fig. PA8: Trend of annual mean NO_x ambient air concentration in Parli TPP (Ambient 1)

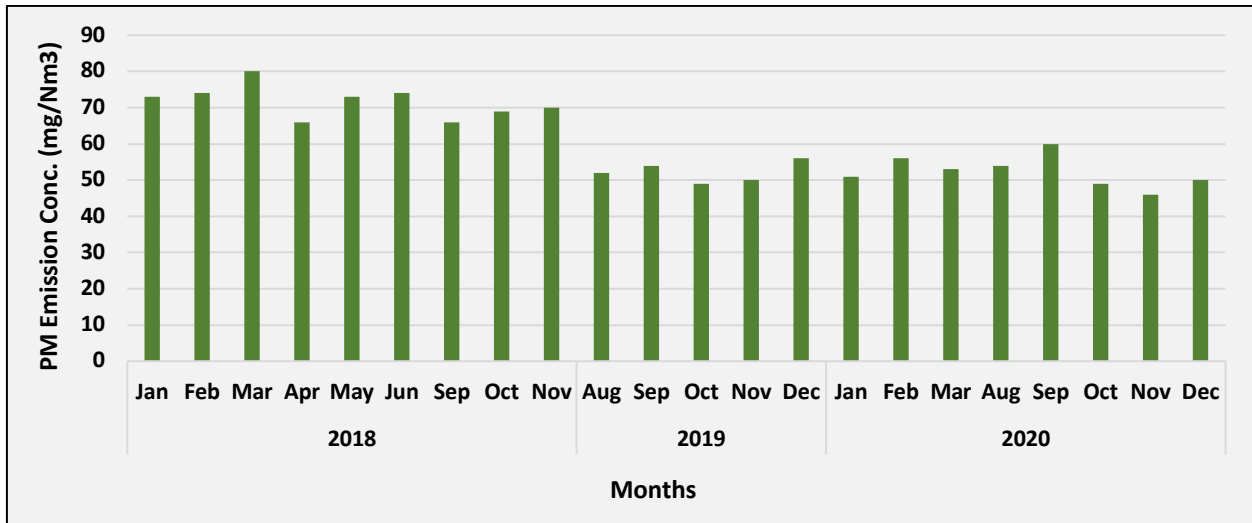


Fig. PA9: Time series of monthly average PM Emission concentration in Parli TPP (Stack 6)

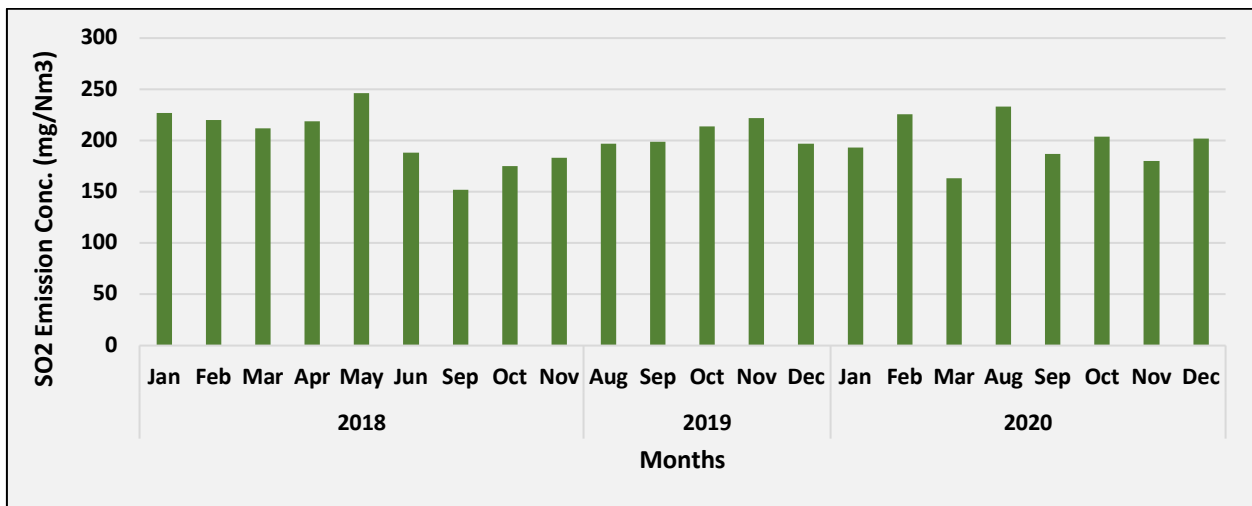


Fig. PA10: Time series of monthly average SO₂ Emission concentration in Parli TPP (Stack 6)

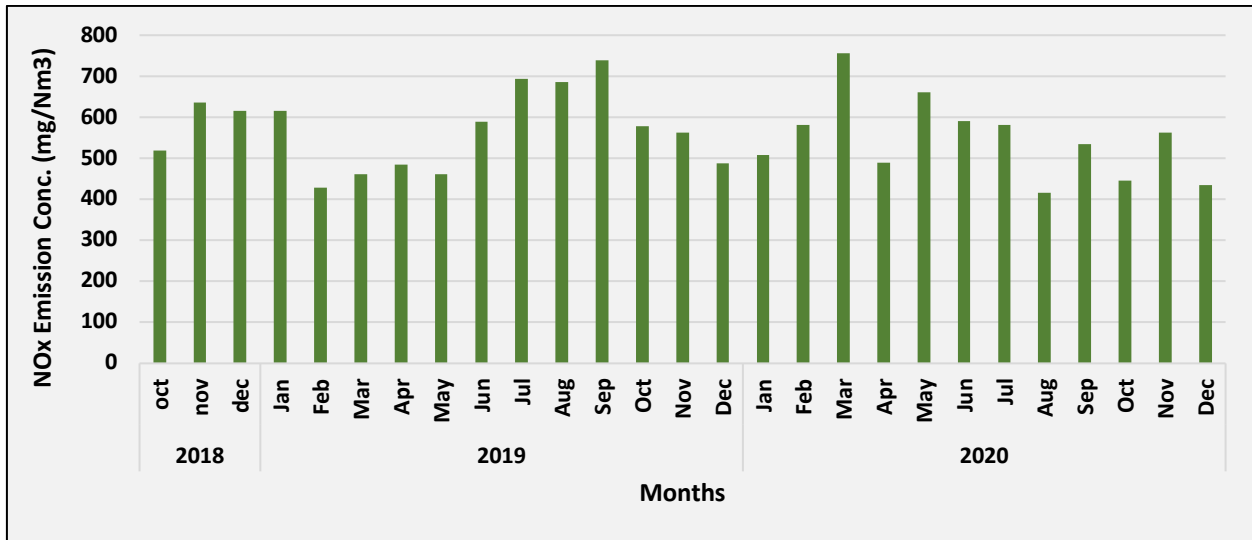


Fig. PA11: Time series of monthly average NO_x Emission concentration in Parli TPP (Stack 6)

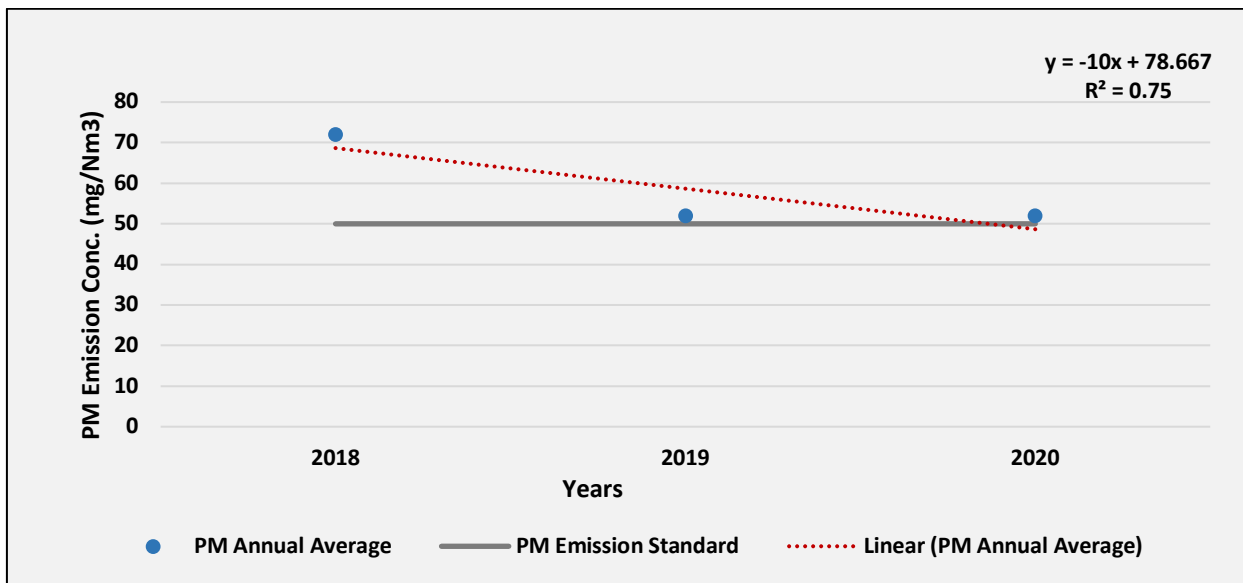


Fig. PA12: Trend of annual mean PM Emission air concentration in Parli TPP (Stack 6)

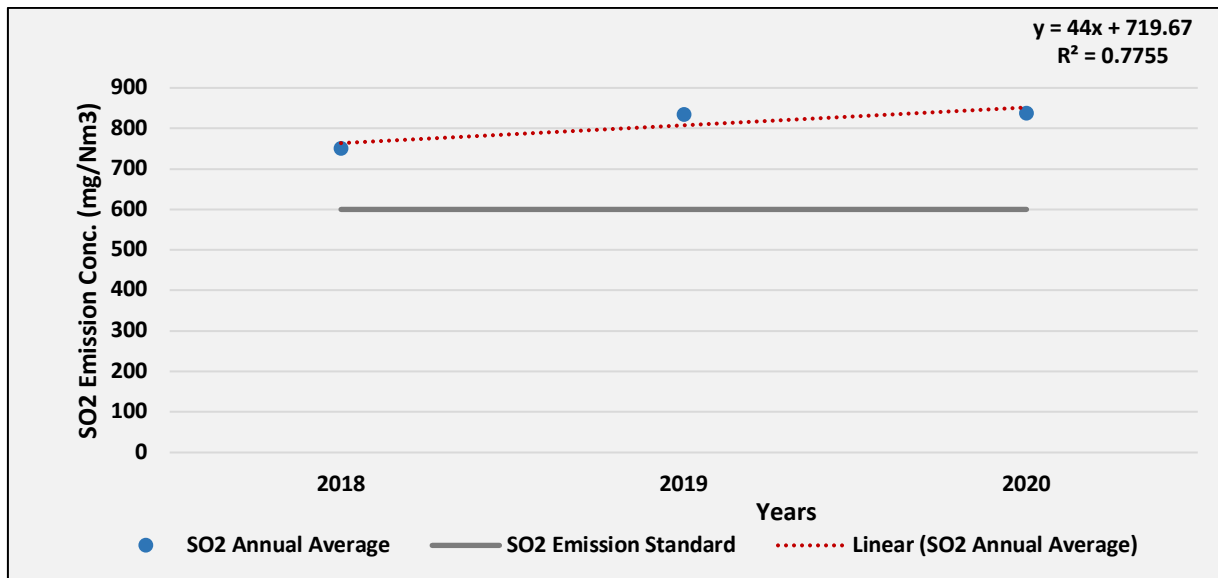


Fig. PA13: Trend of annual mean SO₂ Emission air concentration in Parli TPP (Stack 6)

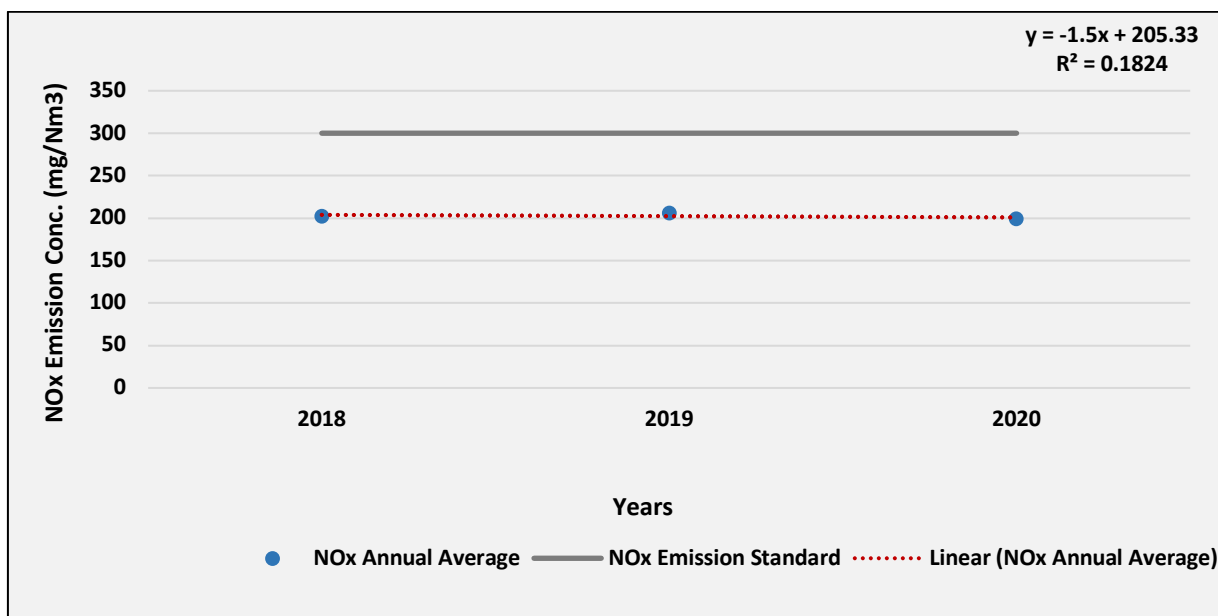


Fig. PA14: Trend of annual mean NO_x Emission air concentration in Parli TPP (Stack 6)

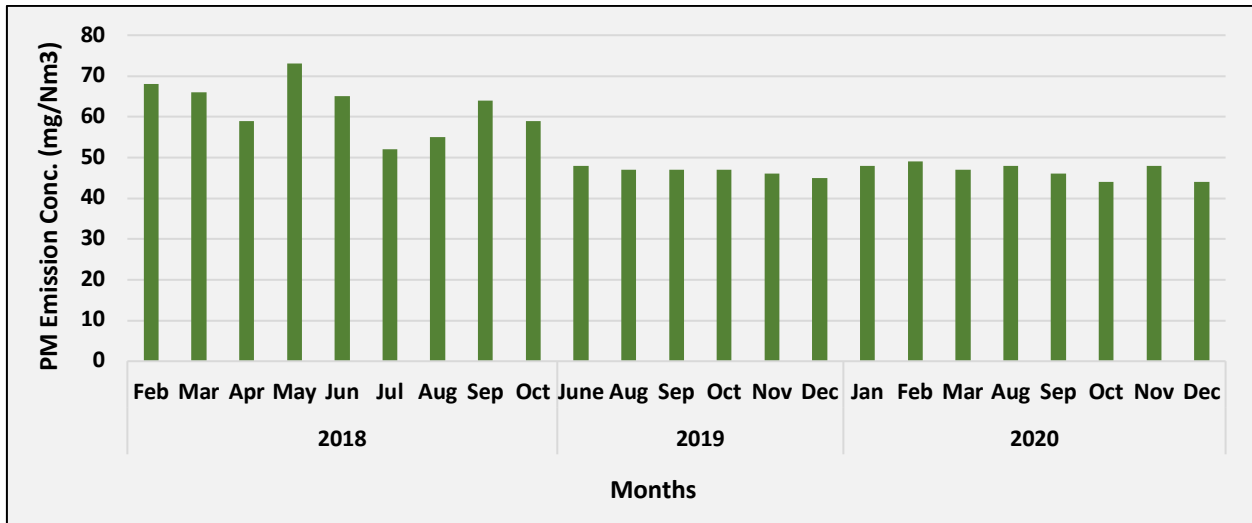


Fig. PA15: Time series of monthly average PM Emission concentration in Parli TPP (Stack 7)

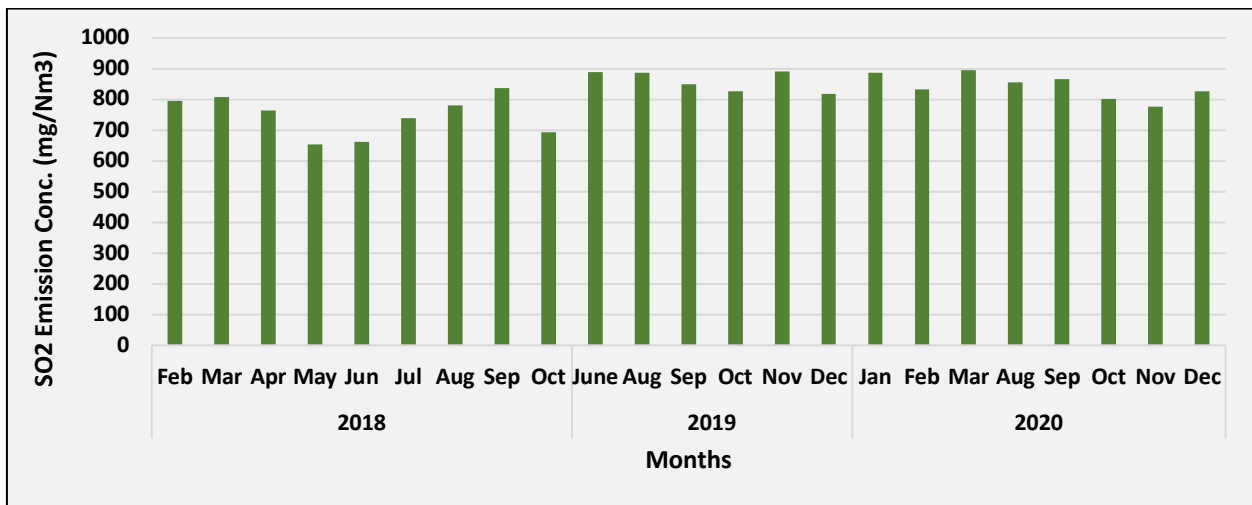


Fig. PA16: Time series of monthly average SO₂ Emission concentration in Parli TPP (Stack 7)

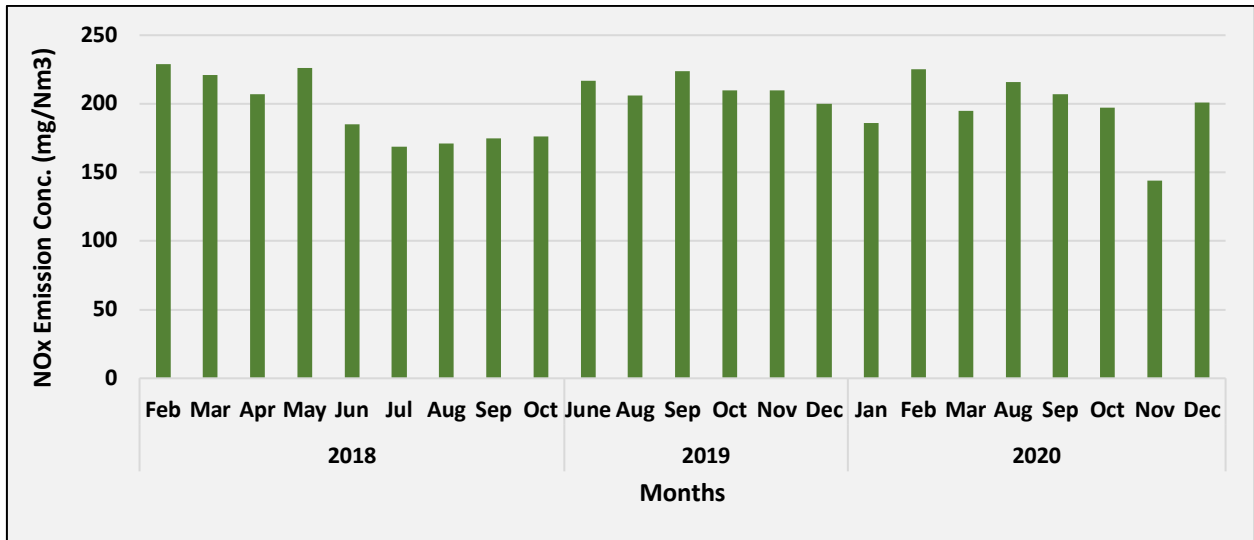


Fig. PA17: Time series of monthly average NO_x Emission concentration in Parli TPP (Stack 7)

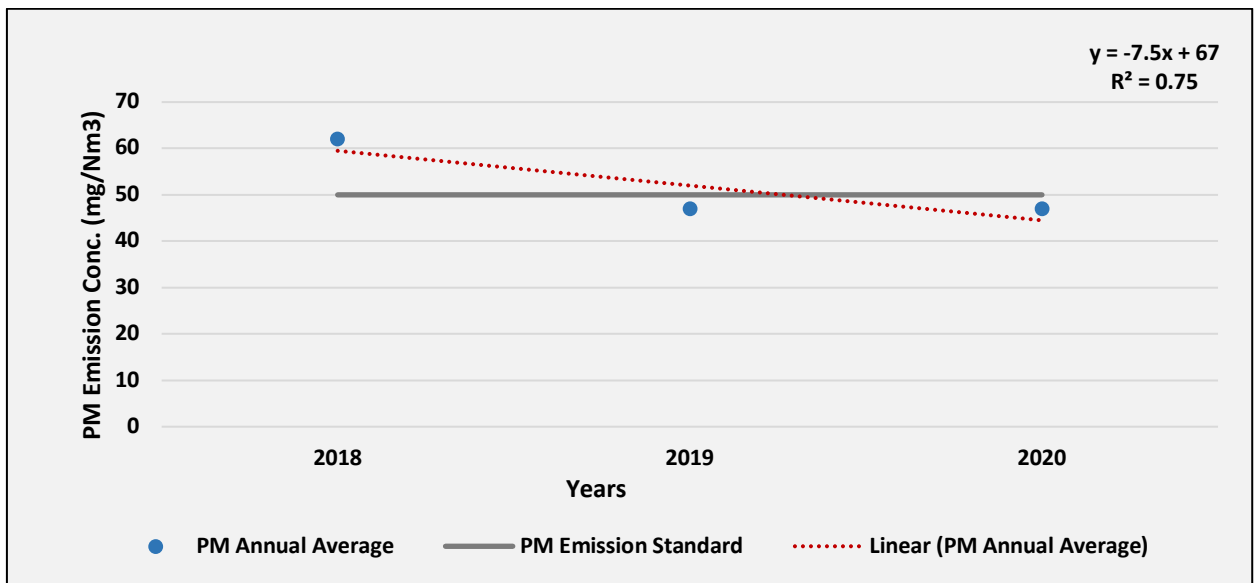


Fig. PA18: Trend of annual mean PM Emission air concentration in Parli TPP (Stack 7)

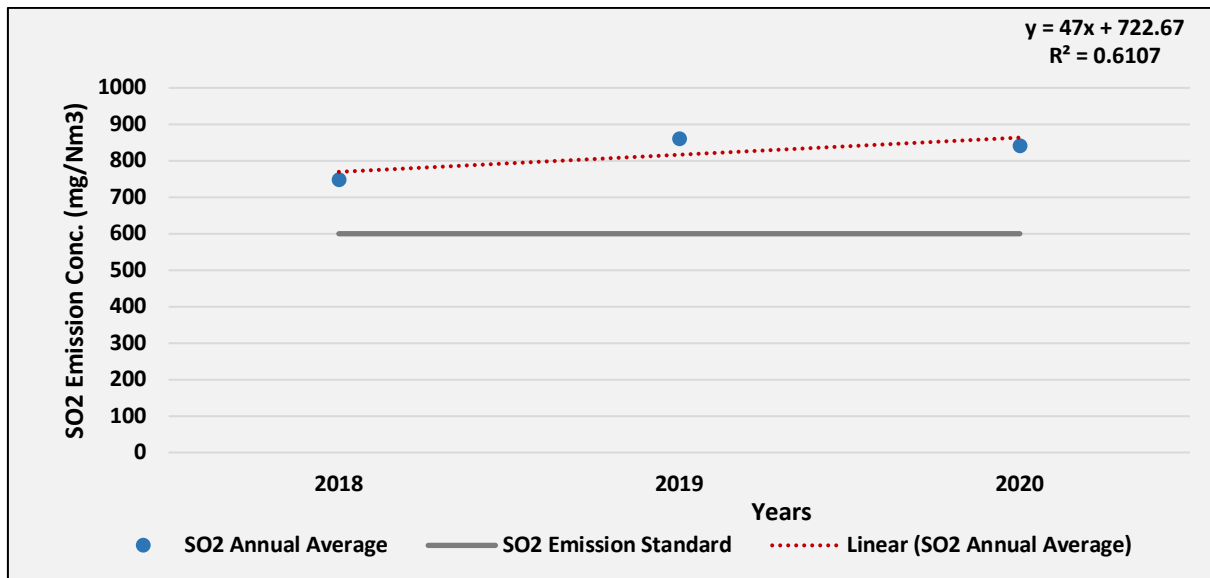


Fig. PA19: Trend of annual mean SO₂ Emission air concentration in Parli TPP (Stack 7)

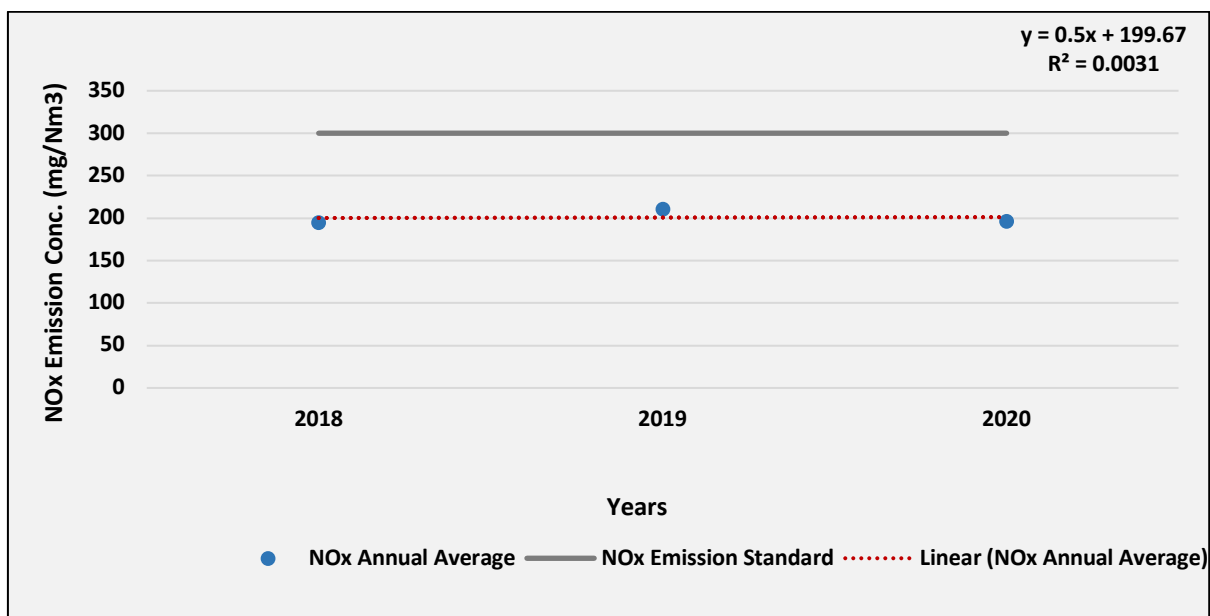


Fig. PA20: Trend of annual mean NO_x Emission air concentration in Parli TPP (Stack 7)

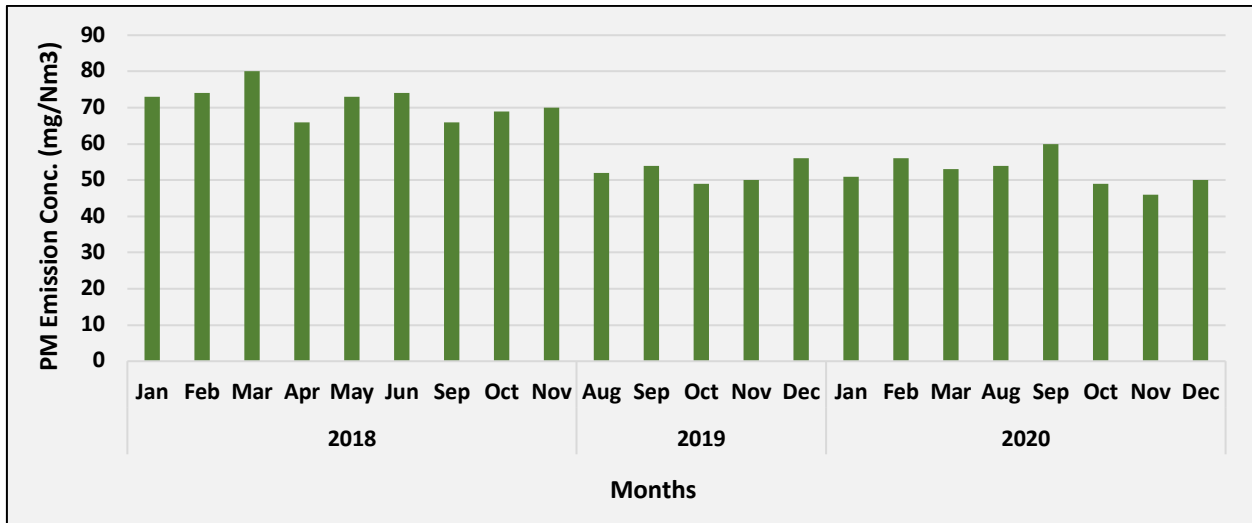


Fig. PA21: Time series of monthly average PM Emission concentration in Parli TPP (Stack 8)

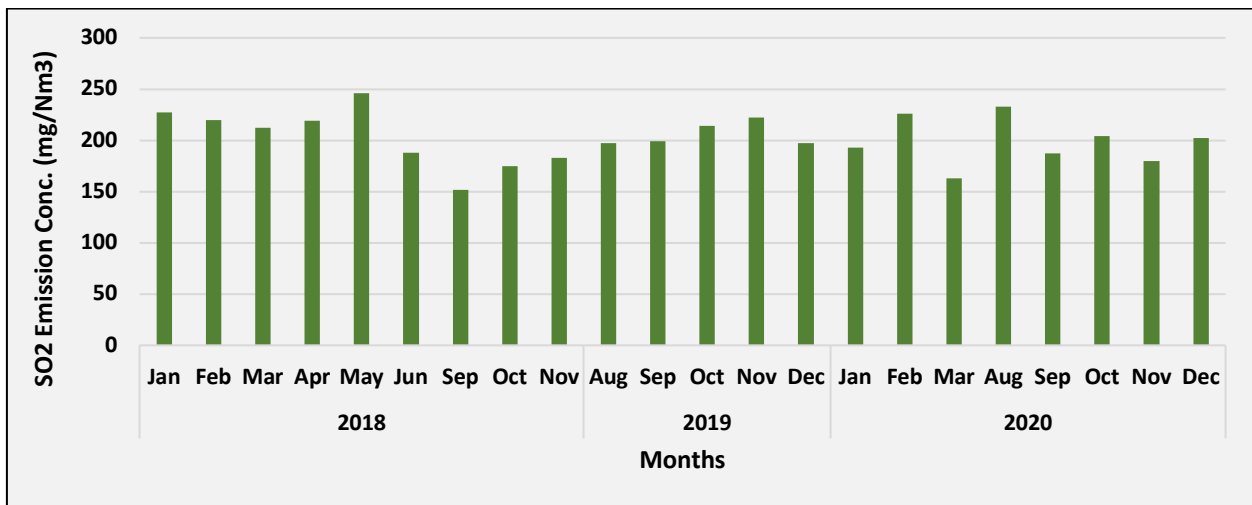


Fig. PA22: Time series of monthly average SO₂ Emission concentration in Parli TPP (Stack 8)

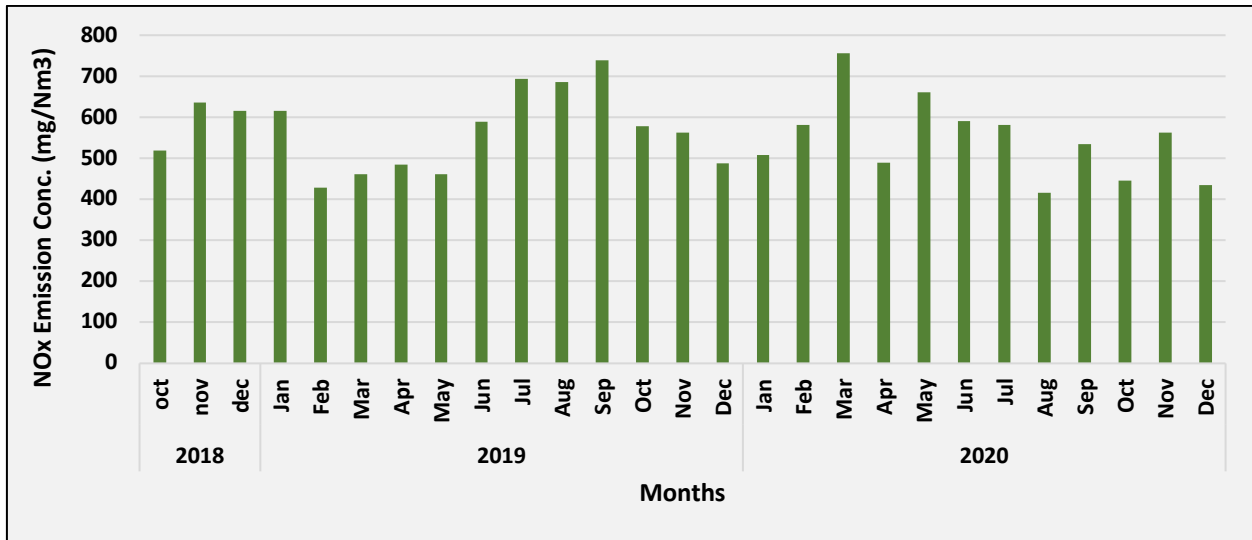


Fig. PA23: Time series of monthly average NO_x Emission concentration in Parli TPP (Stack 8)

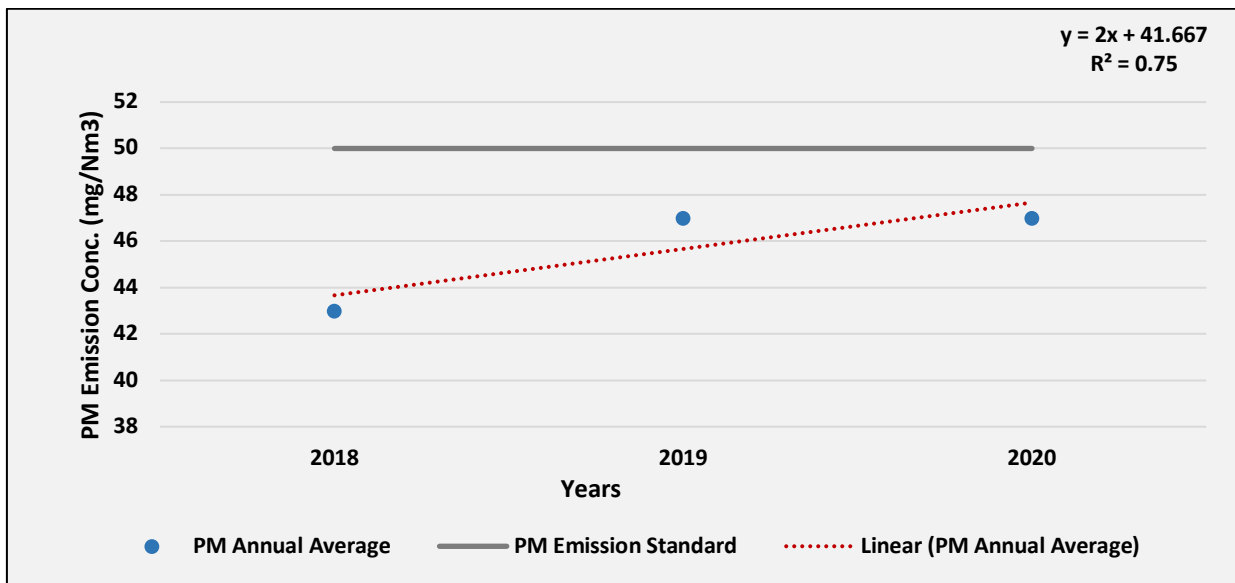


Fig. PA24: Trend of annual mean PM Emission air concentration in Parli TPP (Stack 8)

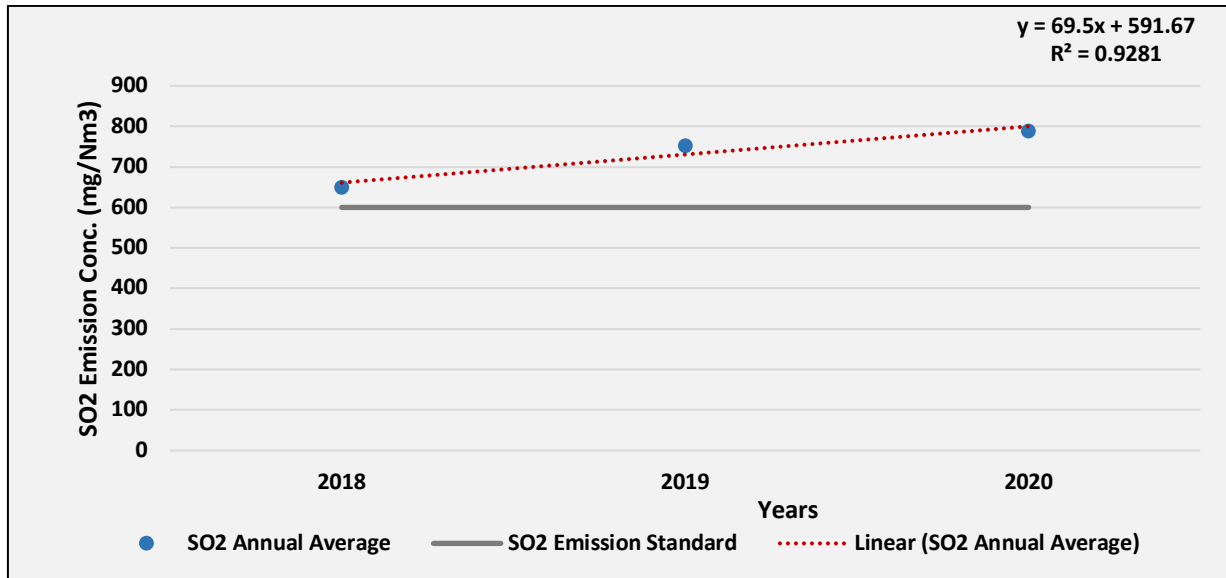


Fig. PA25: Trend of annual mean SO₂ Emission air concentration in Parli TPP (Stack 8)

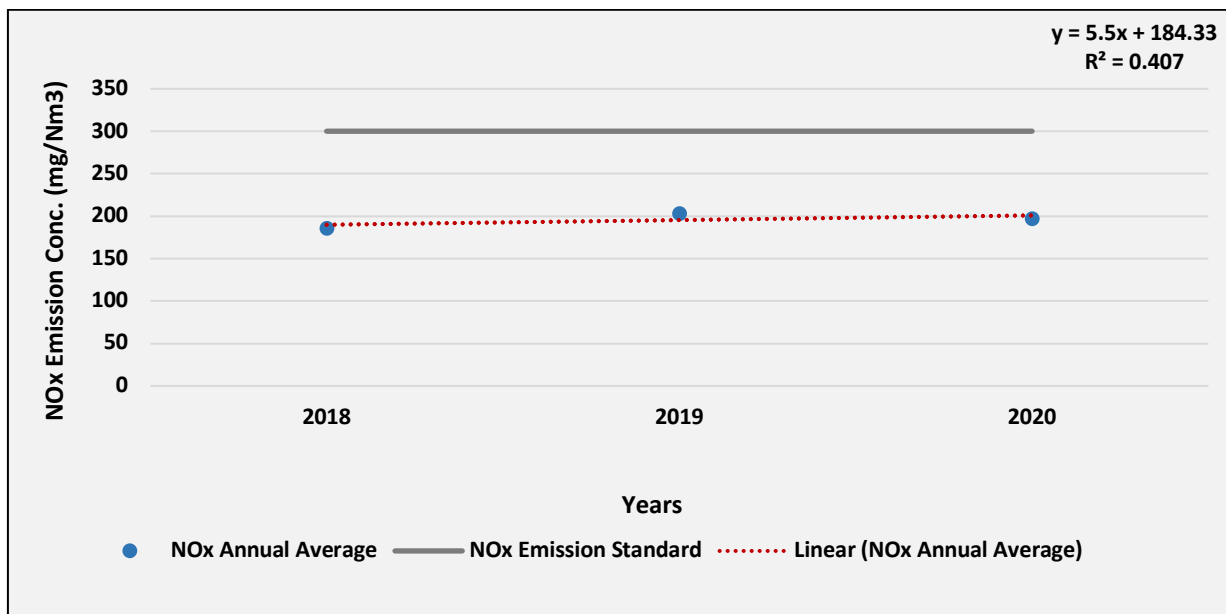


Fig. PA26: Trend of annual mean NO_x Emission air concentration in Parli TPP (Stack 8)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, is exceeding whereas the PM_{2.5}, SO₂ & NO_x levels are within a range for all the four ambient data as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for unit(s) analyzed that SO₂ and PM parameter are higher than the emission norms. Emission of NO_x is within the limit range.

MAAHAGENCO PARAS THERMAL POWER PLANT

Paras Thermal Power Plant is oldest power plant in the WORLD located at Paras, Akola district of Maharashtra. The power plant is one of the [coal] based power plants of Mahagenco.

The ambient air quality concentrations of PM₁₀, PM_{2.5} SO₂, & NO_x, and Unit emission for PM, SO₂ and NO_x data analyzed (Fig. KOR1 – Fig. KOR50) for the last eleven years (2018-2020) using data provided by Mahgenco developer for Paras Power plant, Chhattisgarh, India.

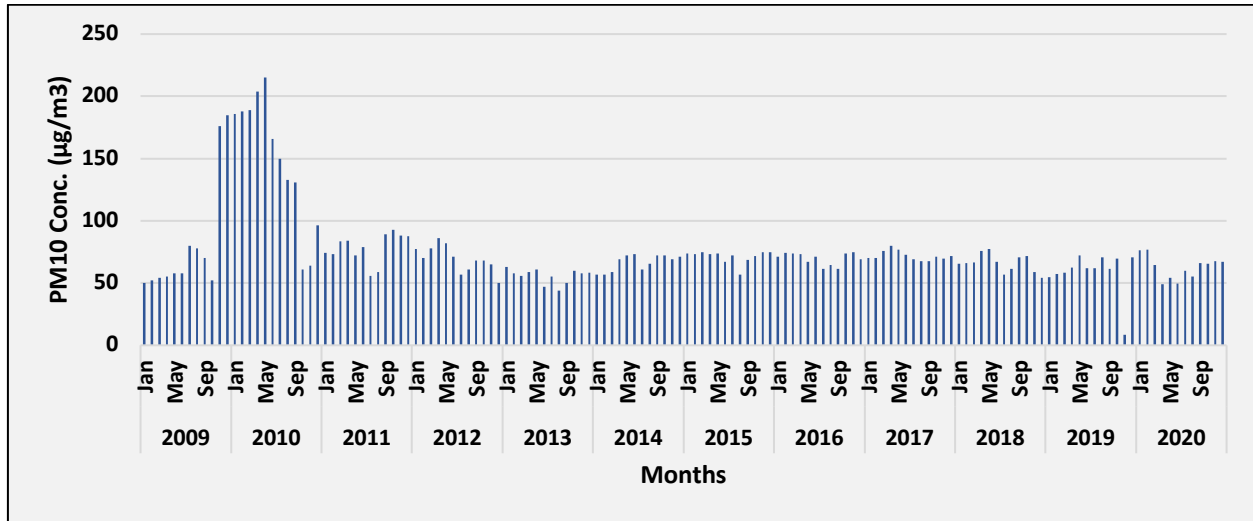


Fig. PAR1: Time series of monthly average PM₁₀ ambient air concentration in Paras TPP (Ambient 1)

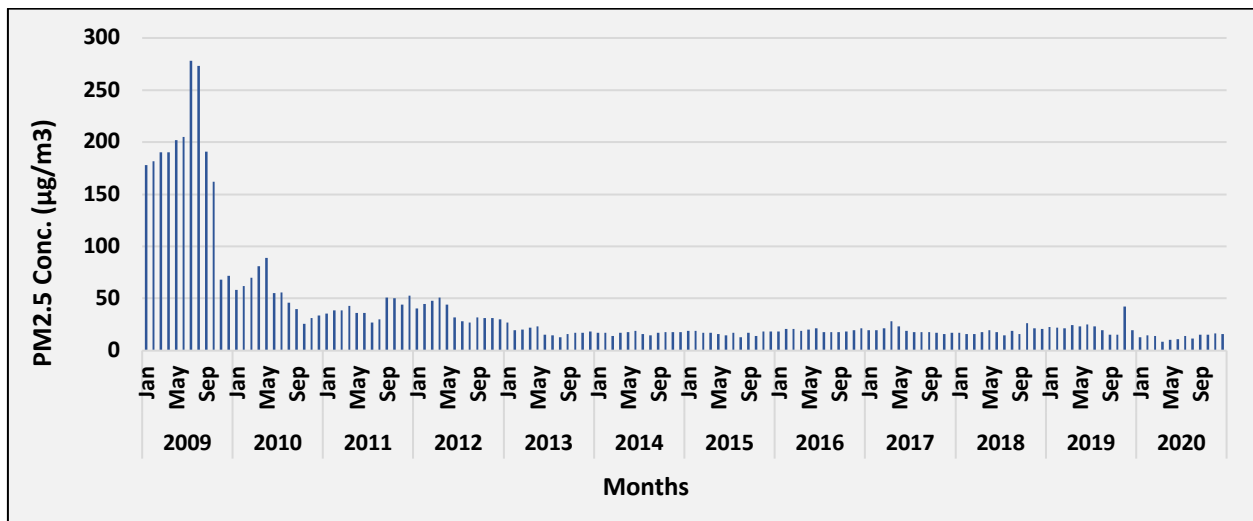


Fig. PAR2: Time series of monthly average PM_{2.5} ambient air concentration in Paras TPP (Ambient 1)

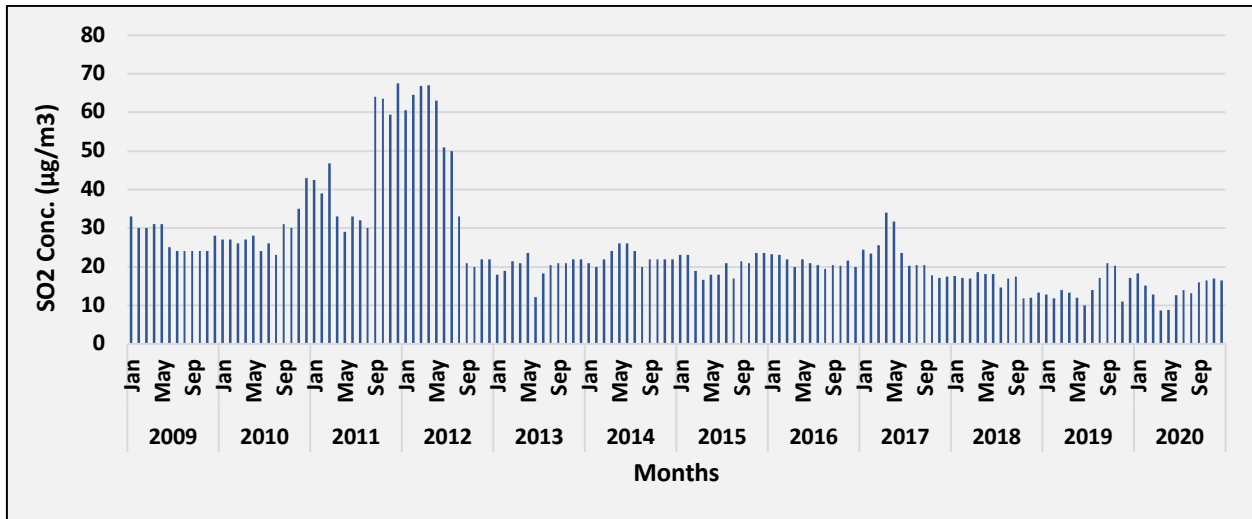


Fig. PAR3: Time series of monthly average SO₂ ambient air concentration in Paras TPP (Ambient 1)

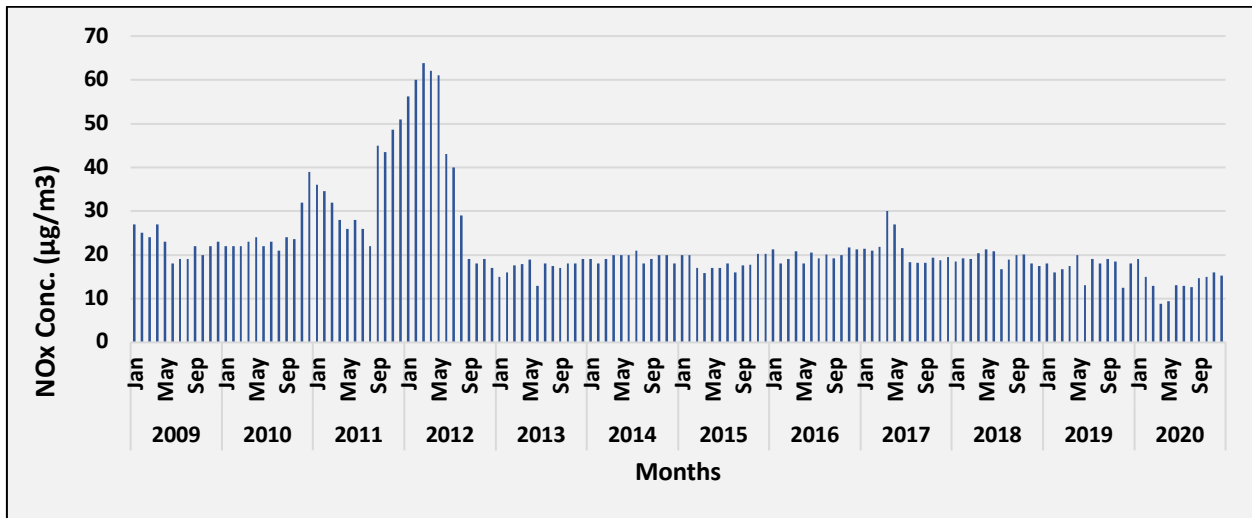


Fig. PAR4: Time series of monthly average NO_x ambient air concentration in Paras TPP (Ambient 1)

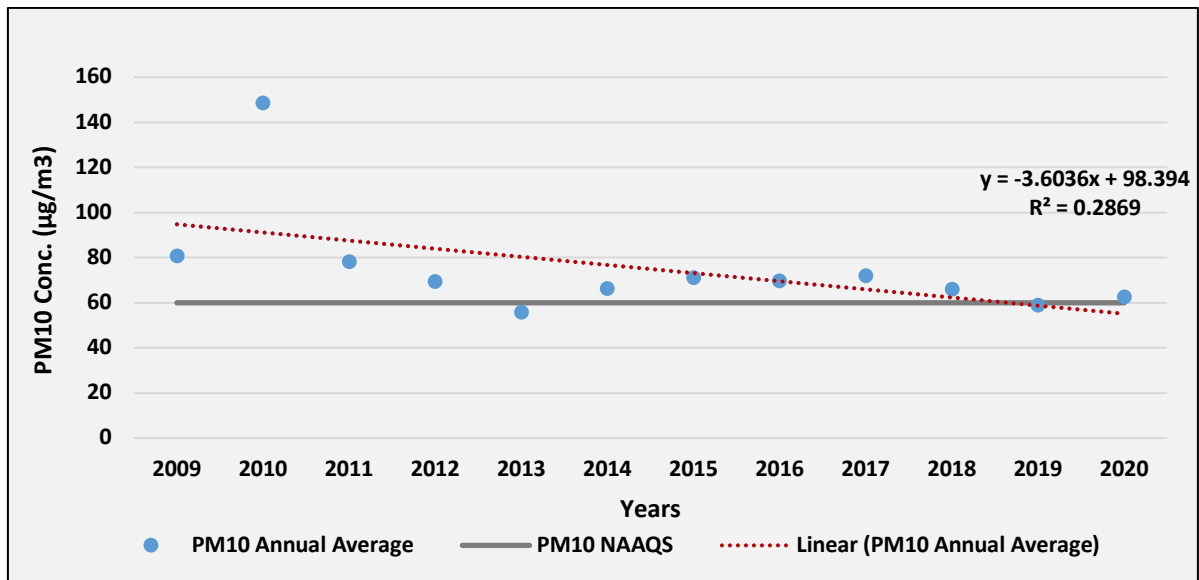


Fig. PAR5: Trend of annual mean PM₁₀ ambient air concentration in Paras TPP (Ambient 1)

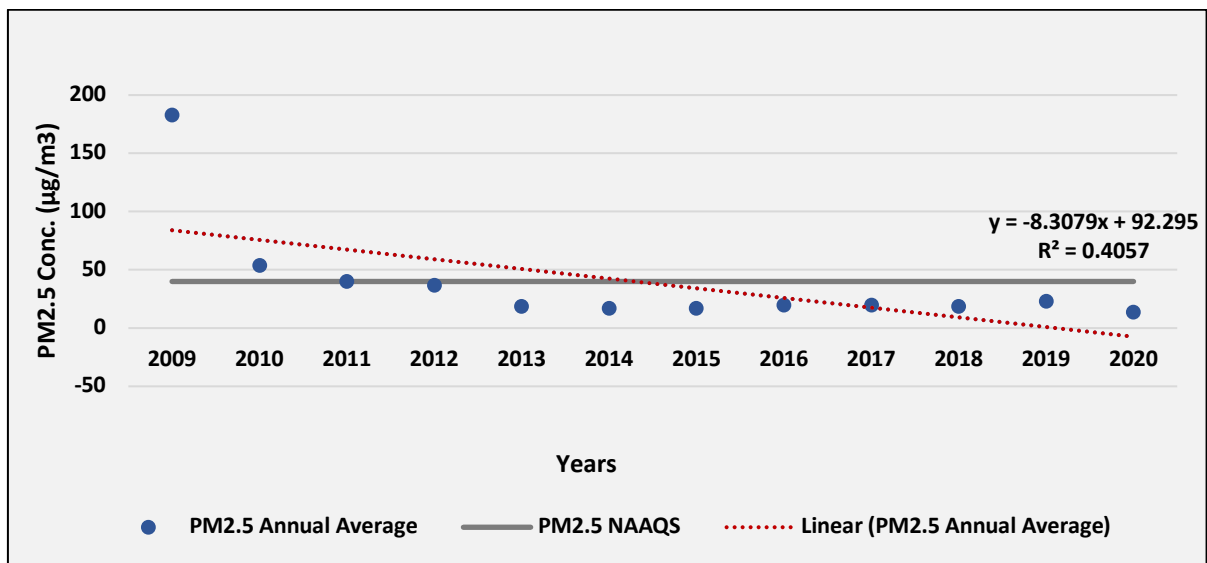


Fig. PAR6: Trend of annual mean PM_{2.5} ambient air concentration in Paras TPP (Ambient 1)

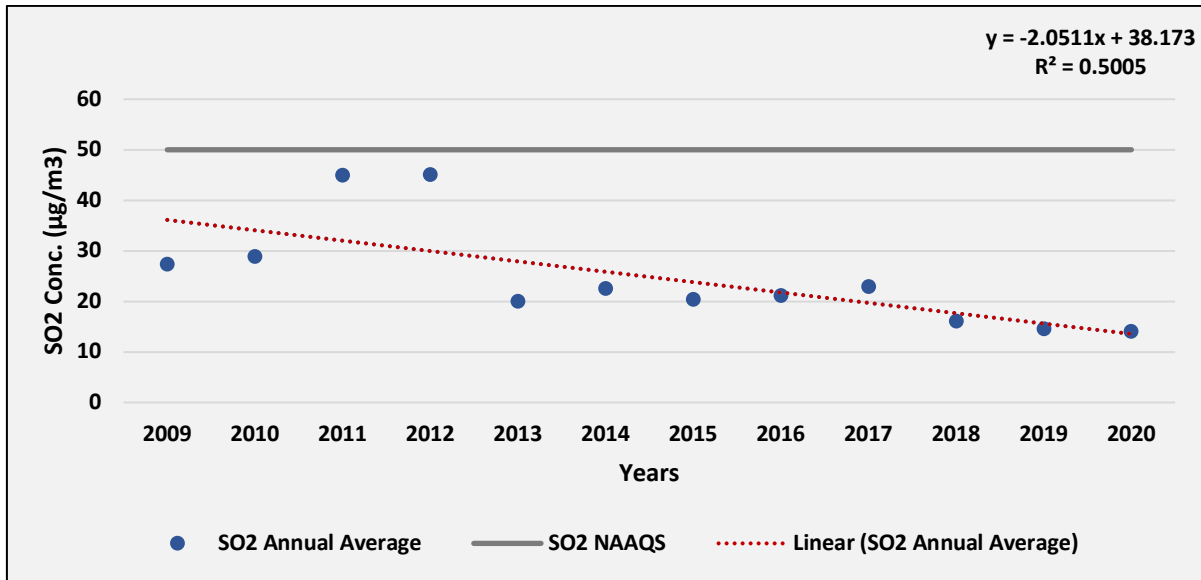


Fig. PAR7: Trend of annual mean SO₂ ambient air concentration in Paras TPP (Ambient 1)

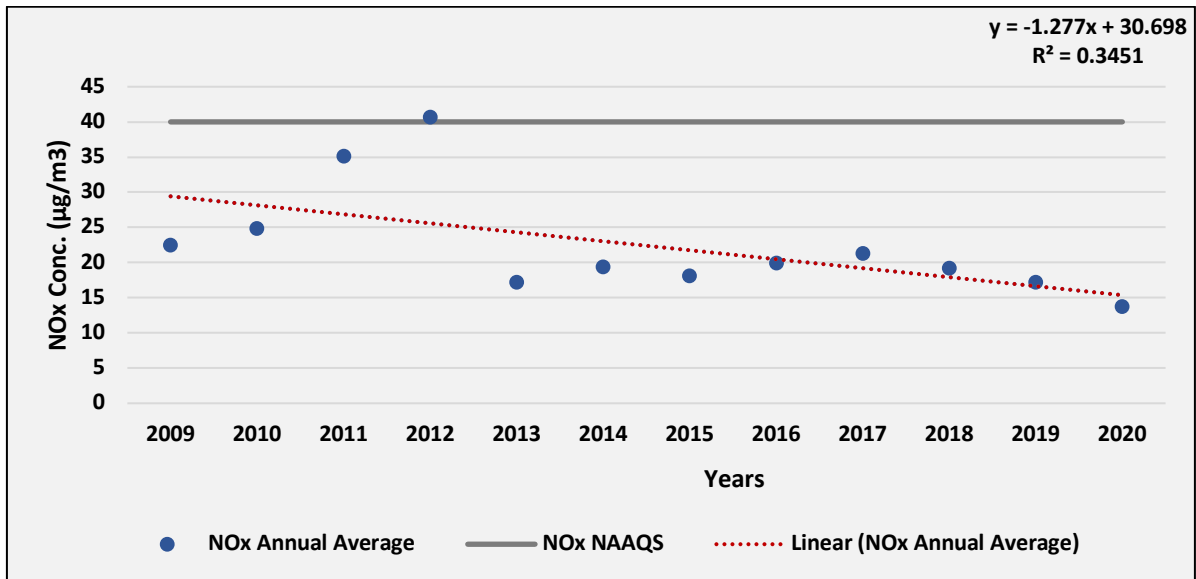


Fig. PAR8: Trend of annual mean NO_x ambient air concentration in Paras TPP (Ambient 1)

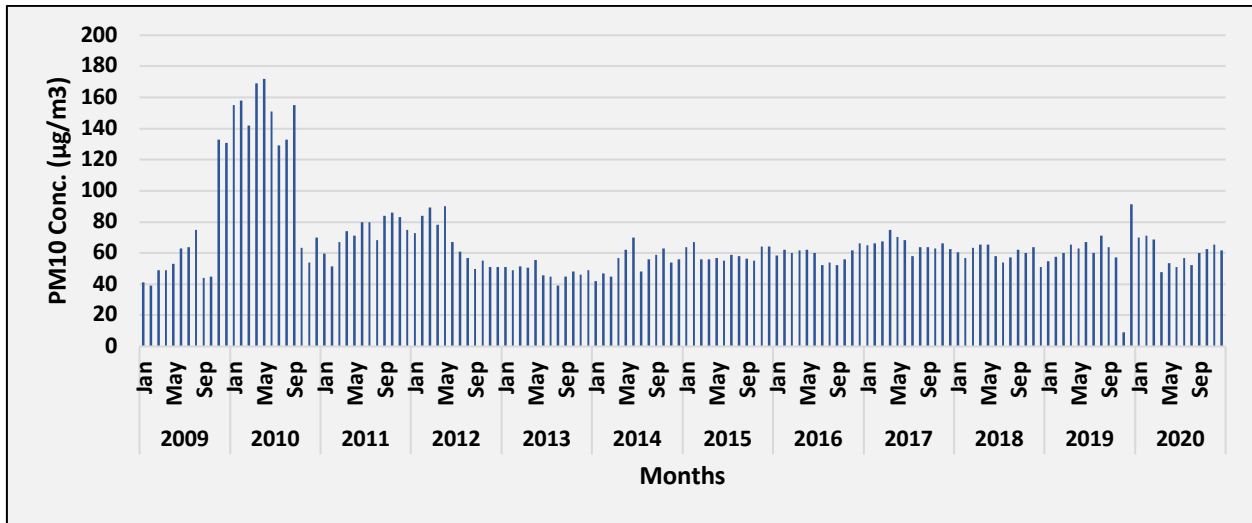


Fig. PAR9: Time series of monthly average PM₁₀ ambient air concentration in Paras TPP (Ambient 2)

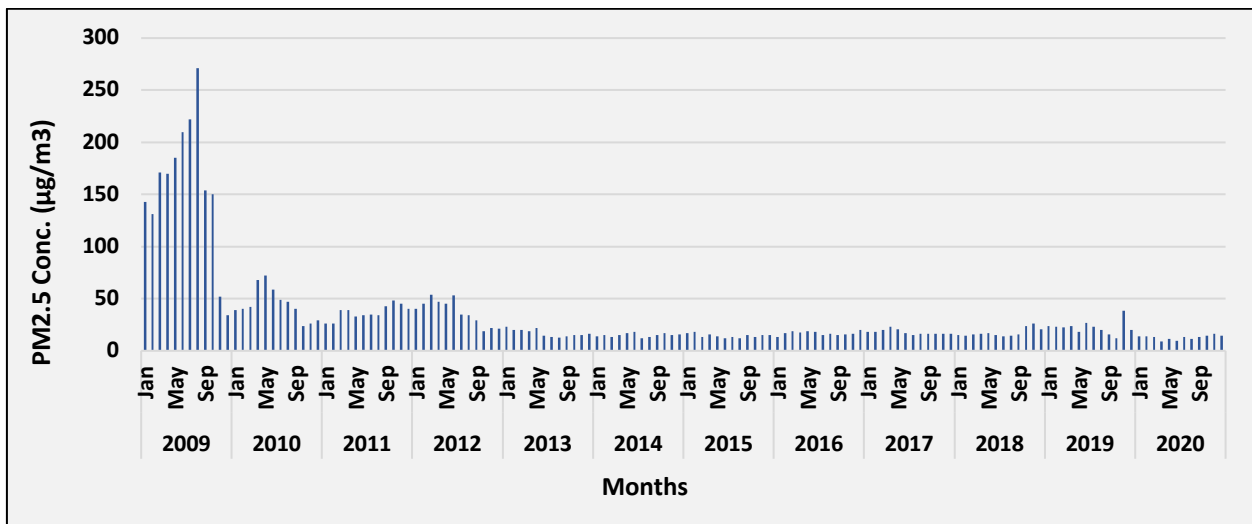


Fig. PAR10: Time series of monthly average PM_{2.5} ambient air concentration in Paras TPP (Ambient 2)

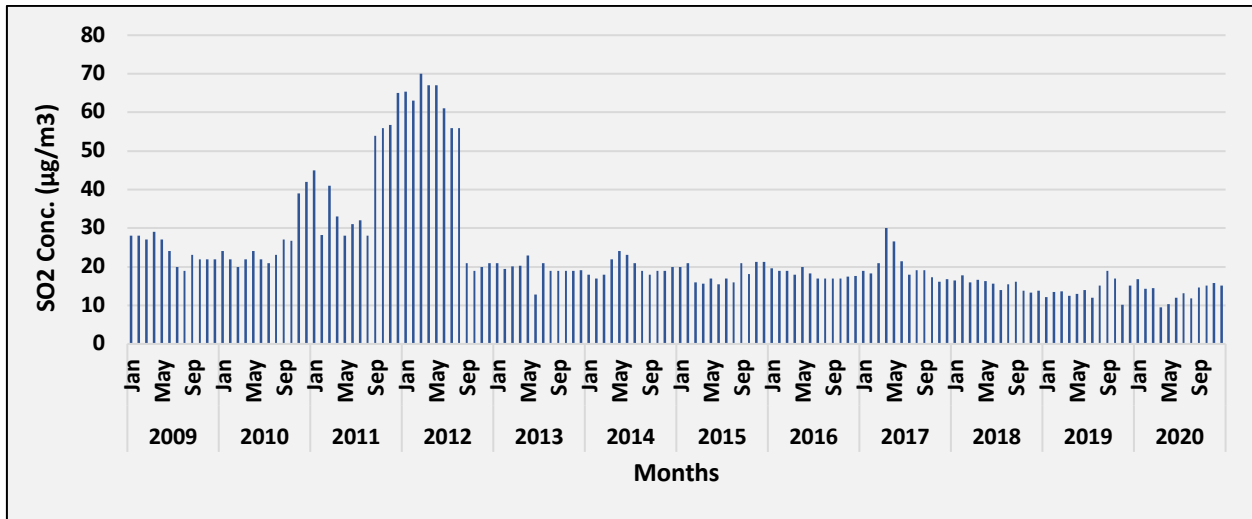


Fig. PAR11: Time series of monthly average SO₂ ambient air concentration in Paras TPP (Ambient 2)

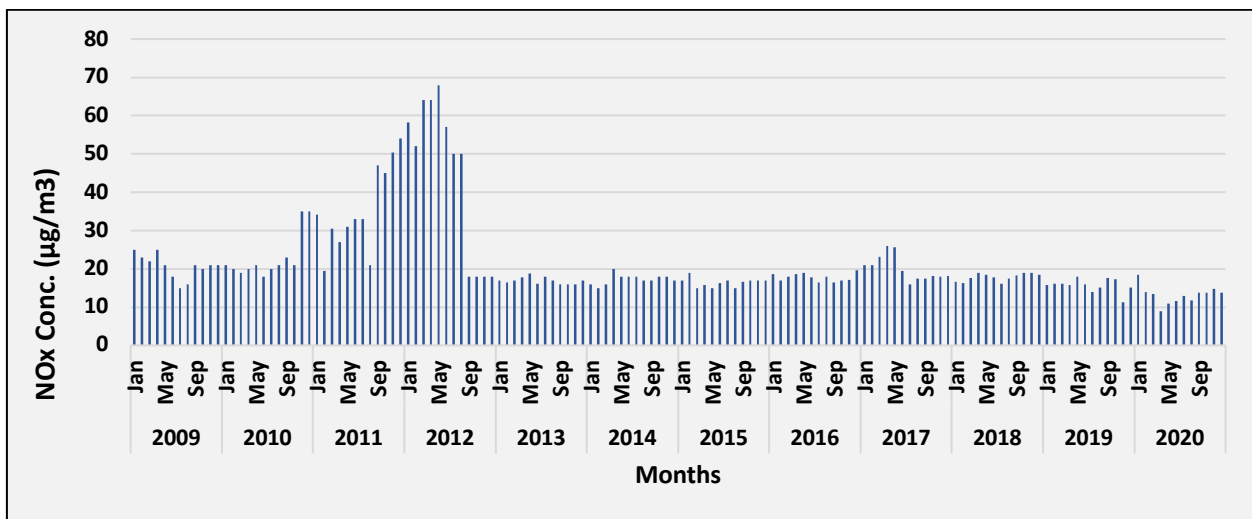


Fig. PAR12: Time series of monthly average NO_x ambient air concentration in Paras TPP (Ambient 2)

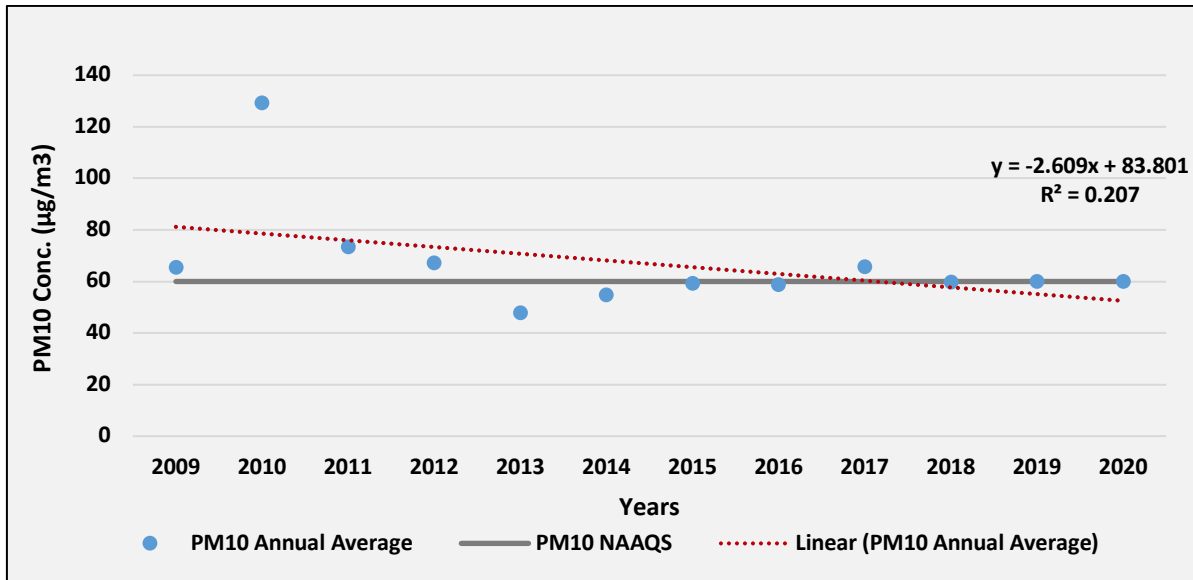


Fig. PAR13: Trend of annual mean PM_{10} ambient air concentration in Paras TPP (Ambient 2)

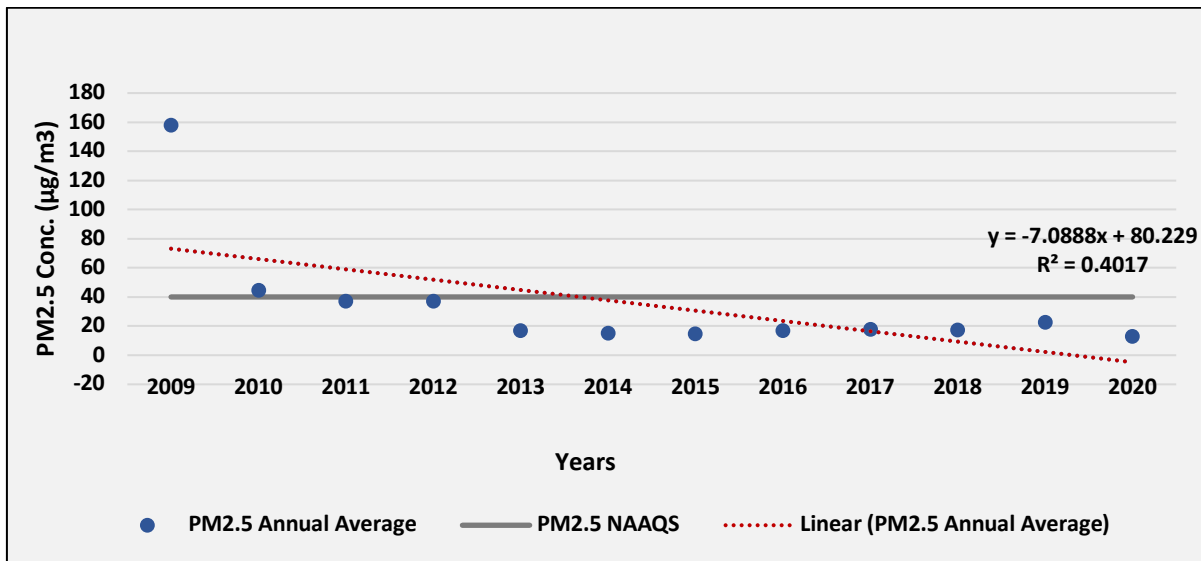


Fig. PAR14: Trend of annual mean $PM_{2.5}$ ambient air concentration in Paras TPP (Ambient 2)

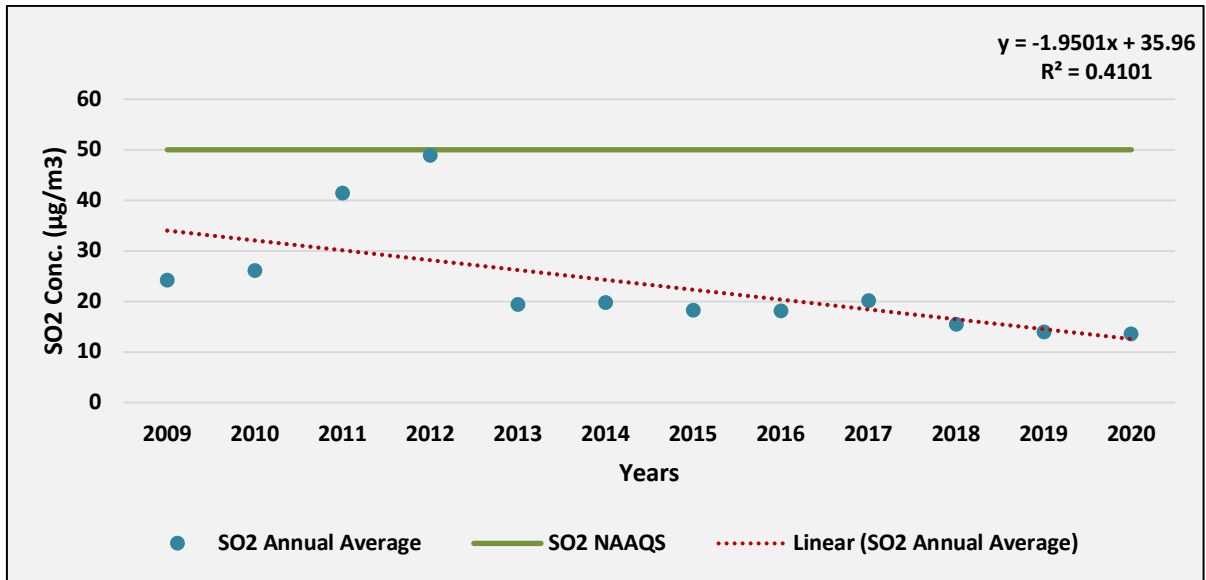


Fig. PAR15: Trend of annual mean SO₂ ambient air concentration in Paras TPP (Ambient 2)

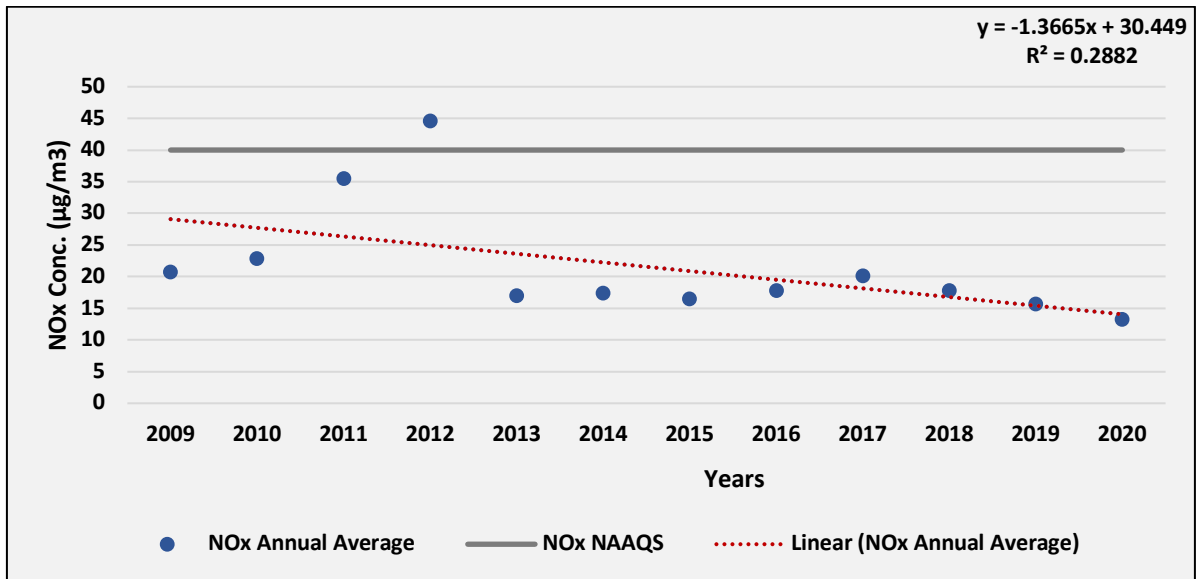


Fig. PAR16: Trend of annual mean NO_x ambient air concentration in Paras TPP (Ambient 2)

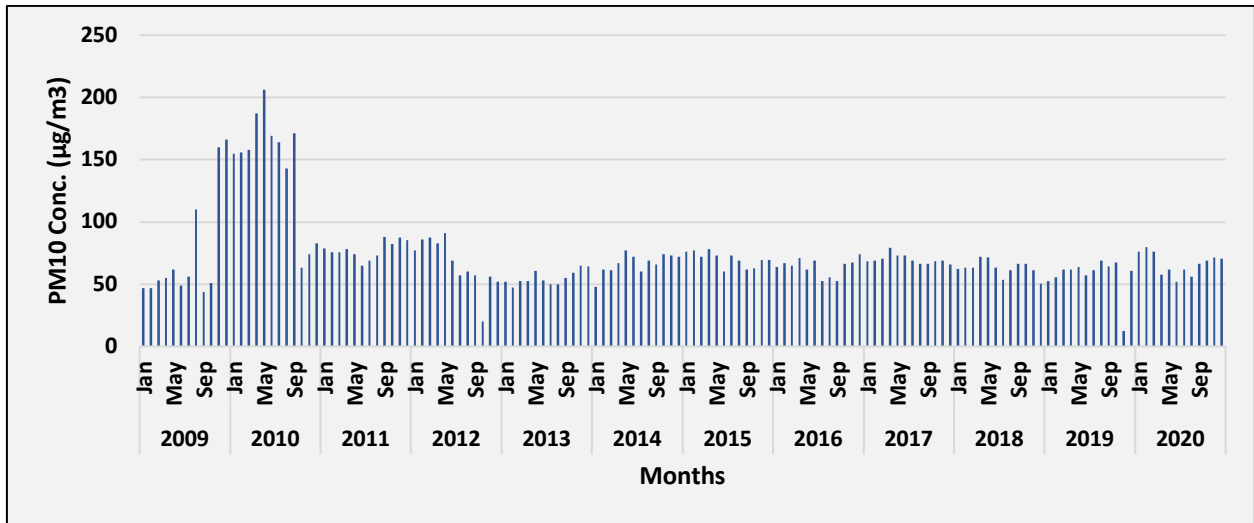


Fig. PAR17: Time series of monthly average PM₁₀ ambient air concentration in Paras TPP (Ambient 3)

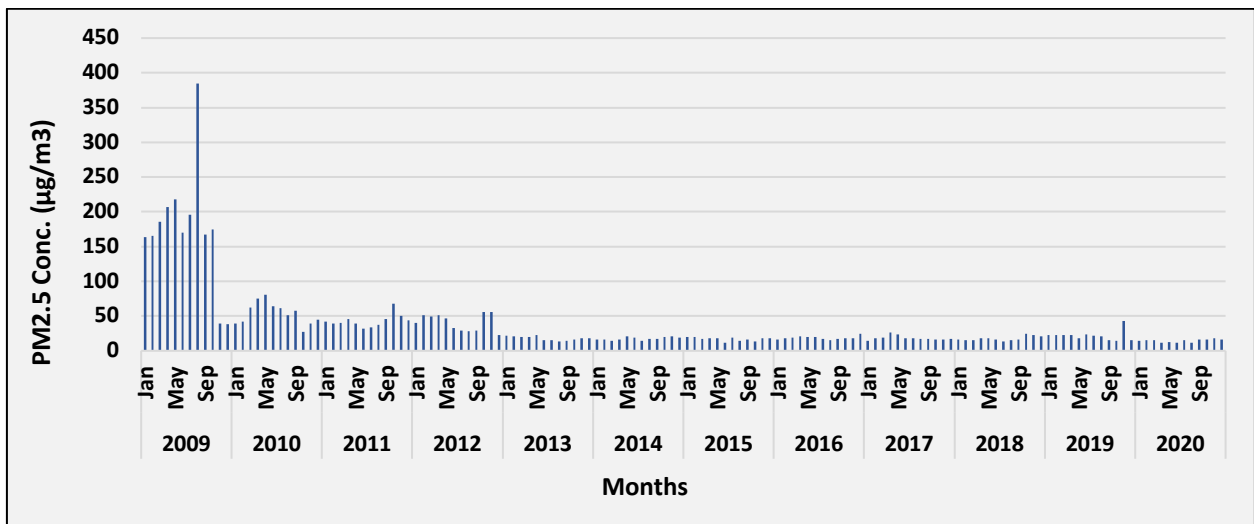


Fig. PAR18: Time series of monthly average PM_{2.5} ambient air concentration in Paras TPP (Ambient 3)

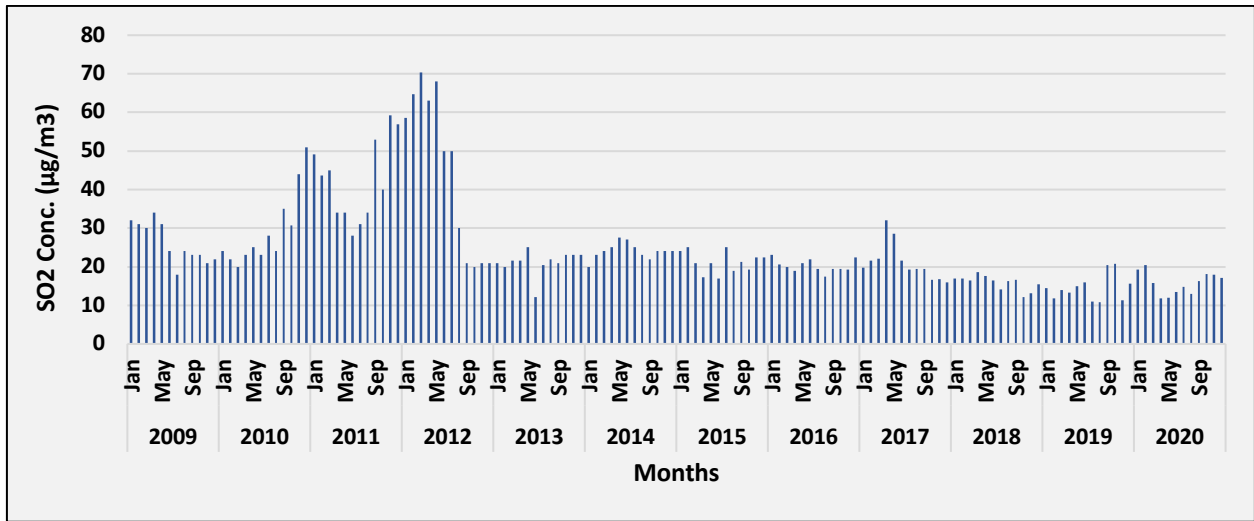


Fig. PAR19: Time series of monthly average So₂ ambient air concentration in Paras TPP (Ambient 3)

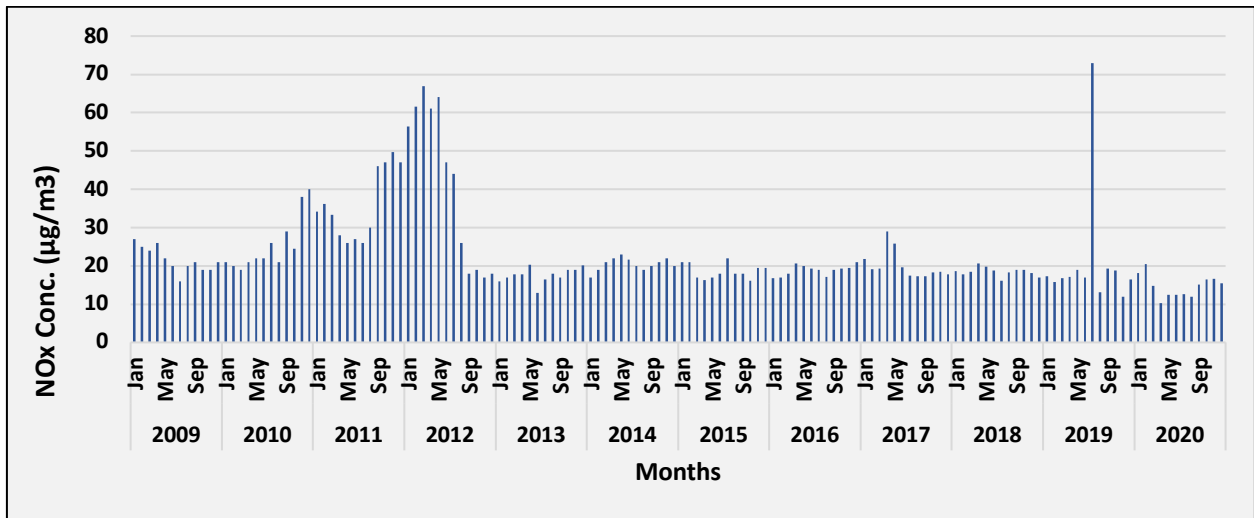


Fig. PAR20: Time series of monthly average NO_x ambient air concentration in Paras TPP(Ambient 3)

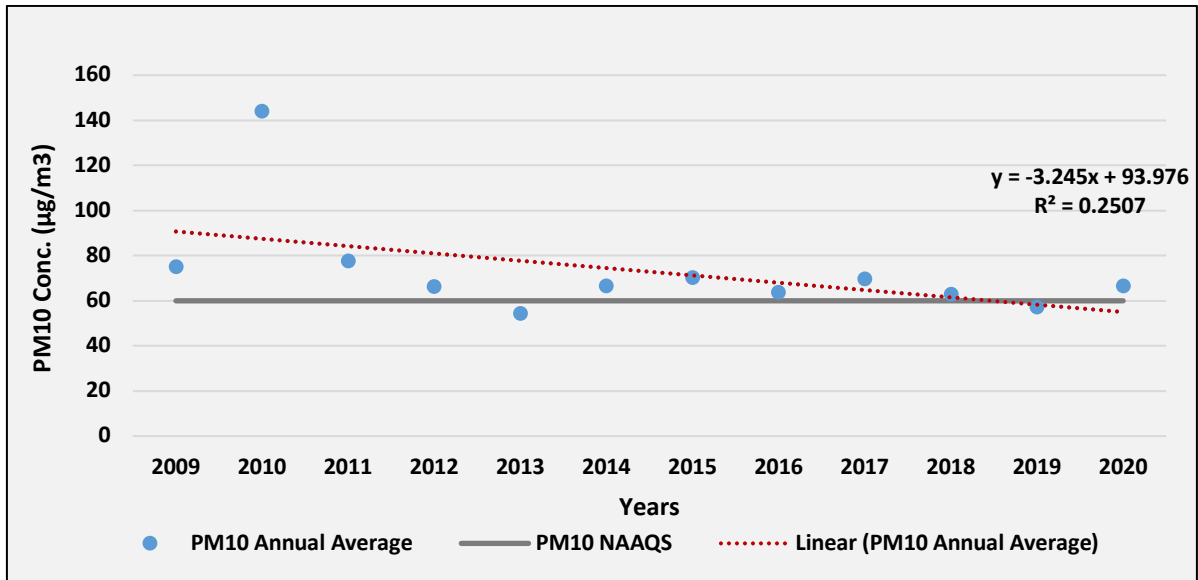


Fig. PAR21: Trend of annual mean PM_{10} ambient air concentration in Paras TPP (Ambient 3)

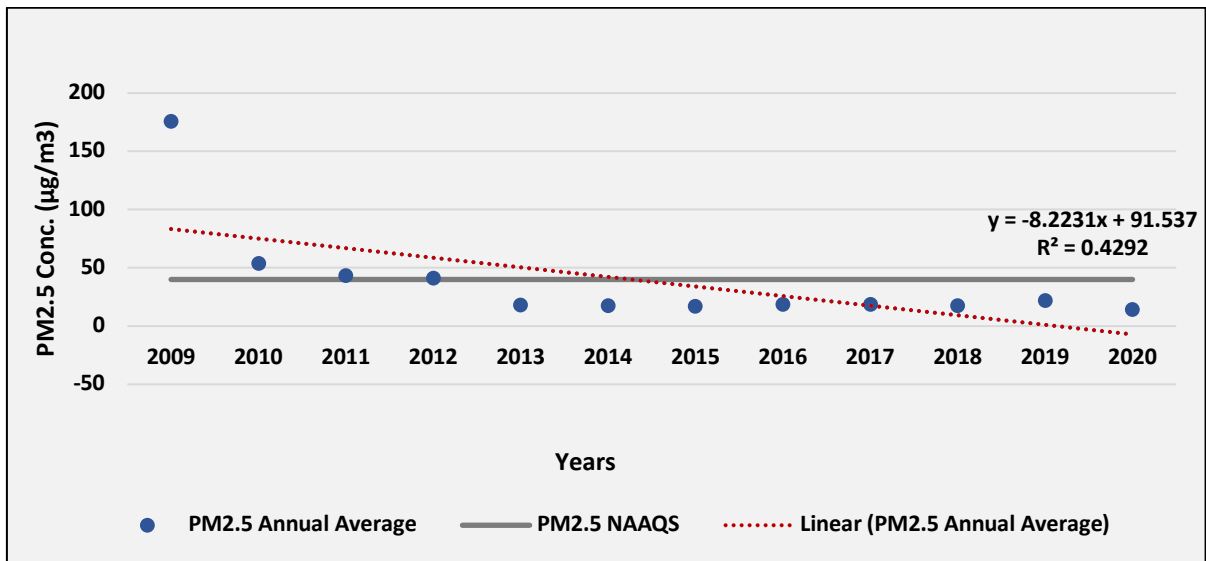


Fig. PAR22: Trend of annual mean $PM_{2.5}$ ambient air concentration in Paras TPP (Ambient 3)

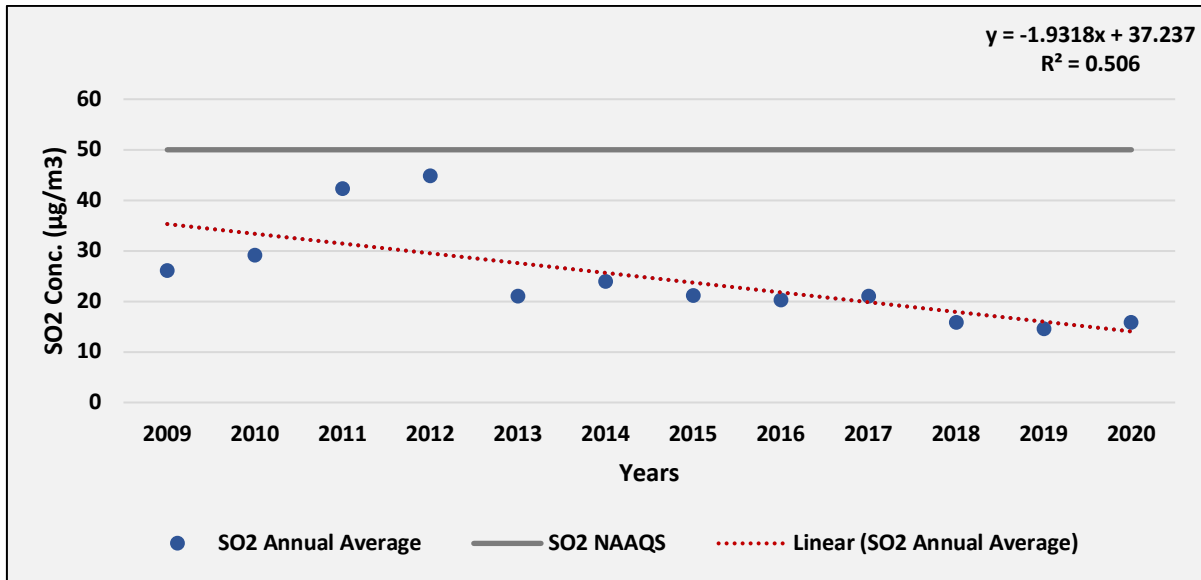


Fig. PAR23: Trend of annual mean SO₂ ambient air concentration in Paras TPP (Ambient 3)

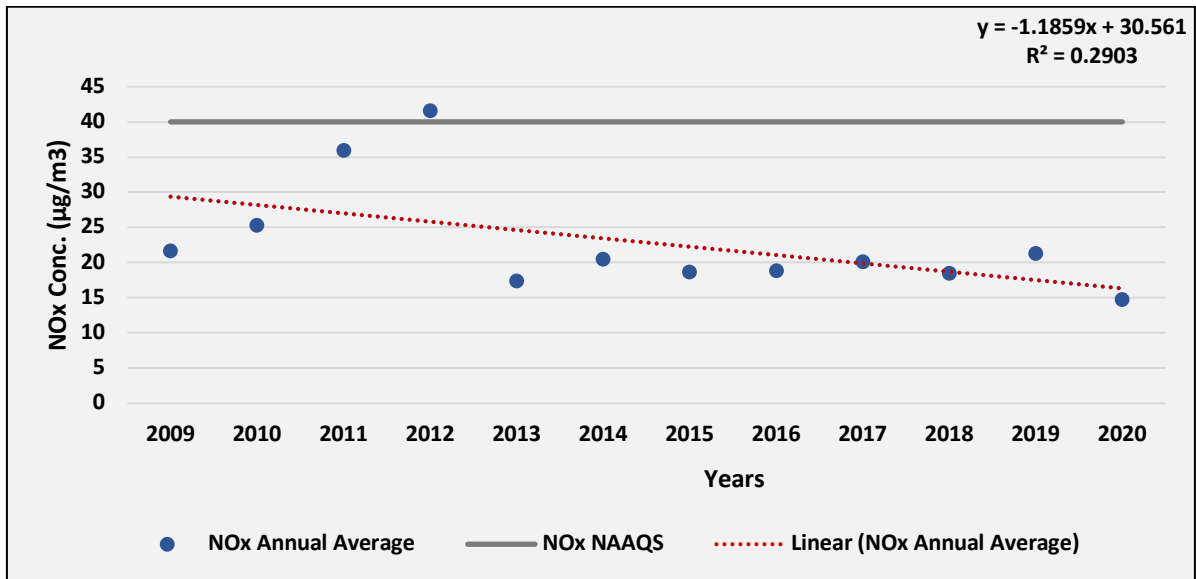


Fig. PAR24: Trend of annual mean NO_x ambient air concentration in Paras TPP (Ambient 3)

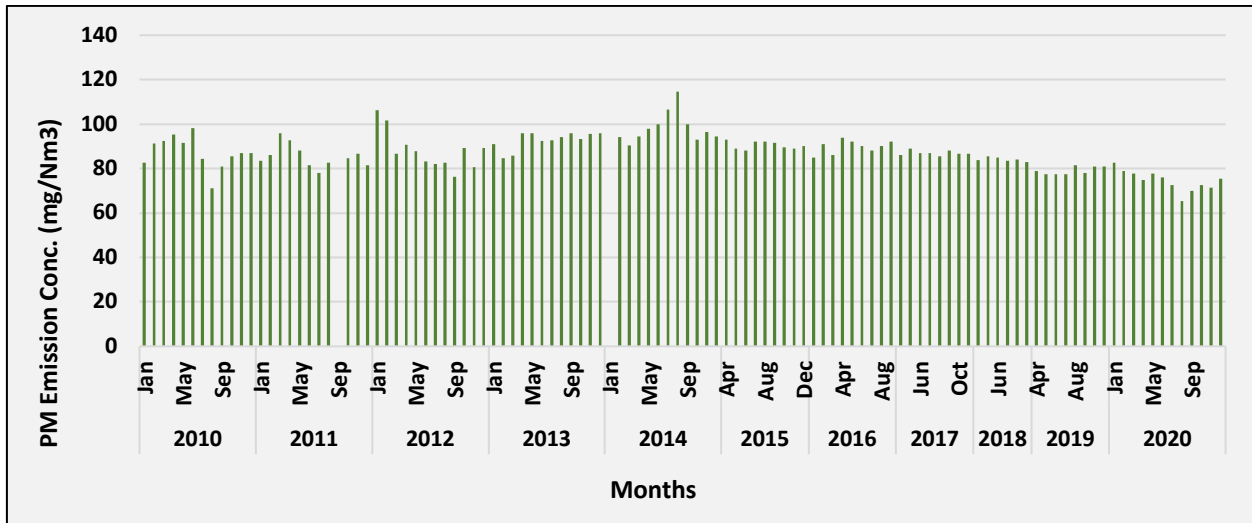


Fig. PAR25: Time series of monthly average PM Emission concentration in Paras TPP (Unit 3)

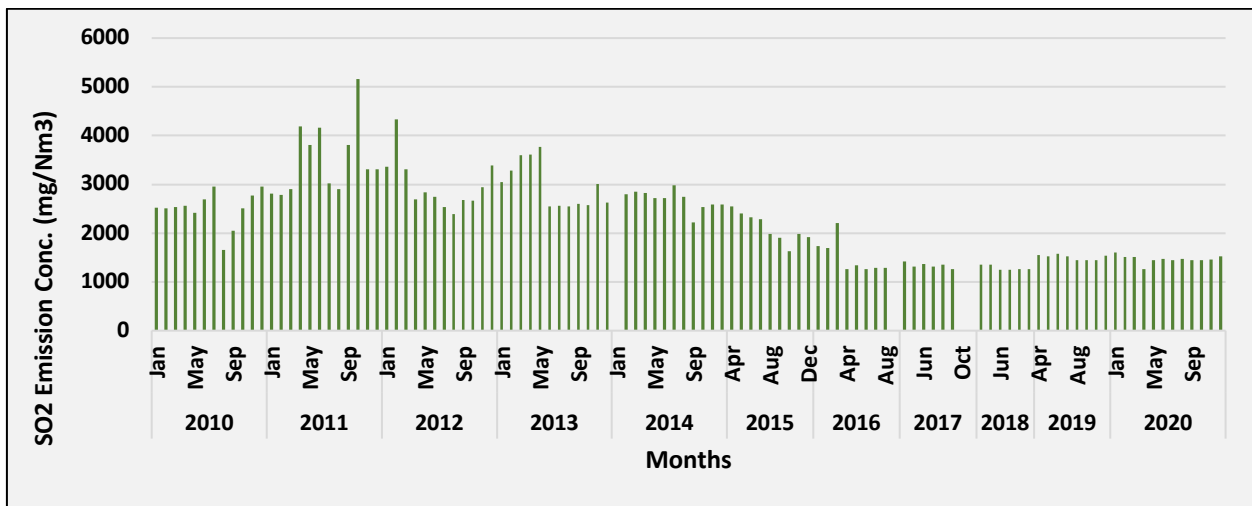


Fig. PAR26: Time series of monthly average SO₂ Emission concentration in Paras TPP (Unit 3)

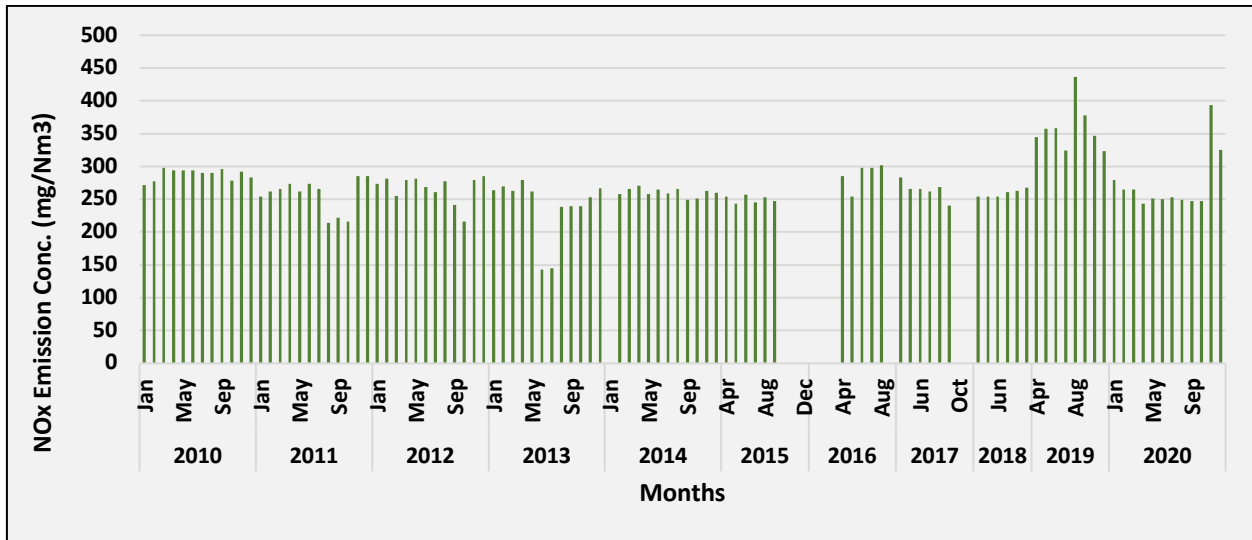


Fig. PAR27: Time series of monthly average NO_x Emission concentration in Paras TPP (Unit 3)

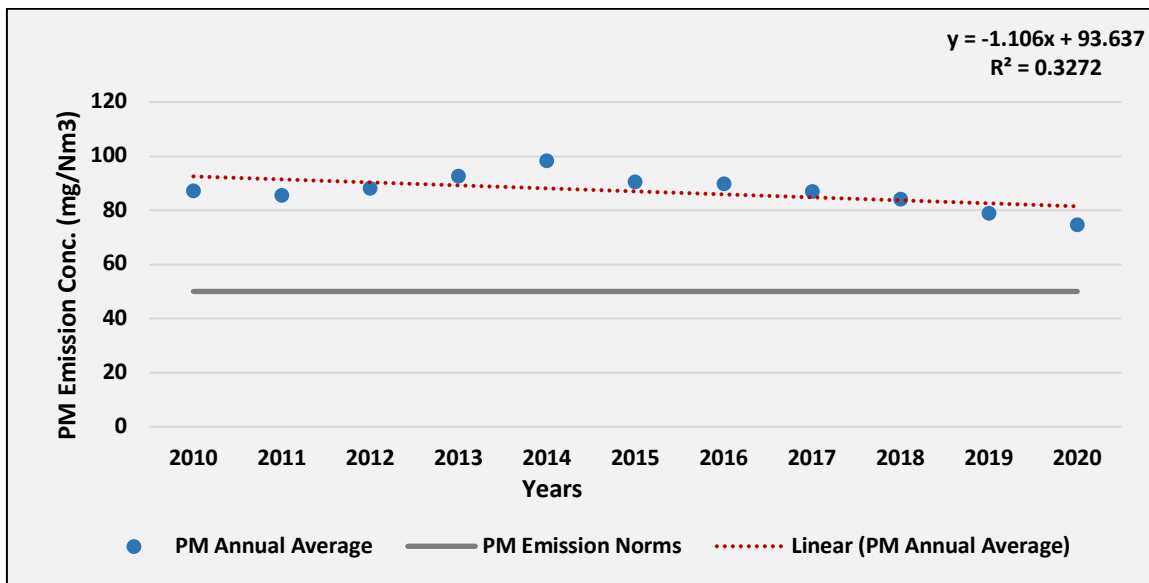


Fig. PAR28: Trend of annual mean PM Emission air concentration in Paras TPP (Unit 3)

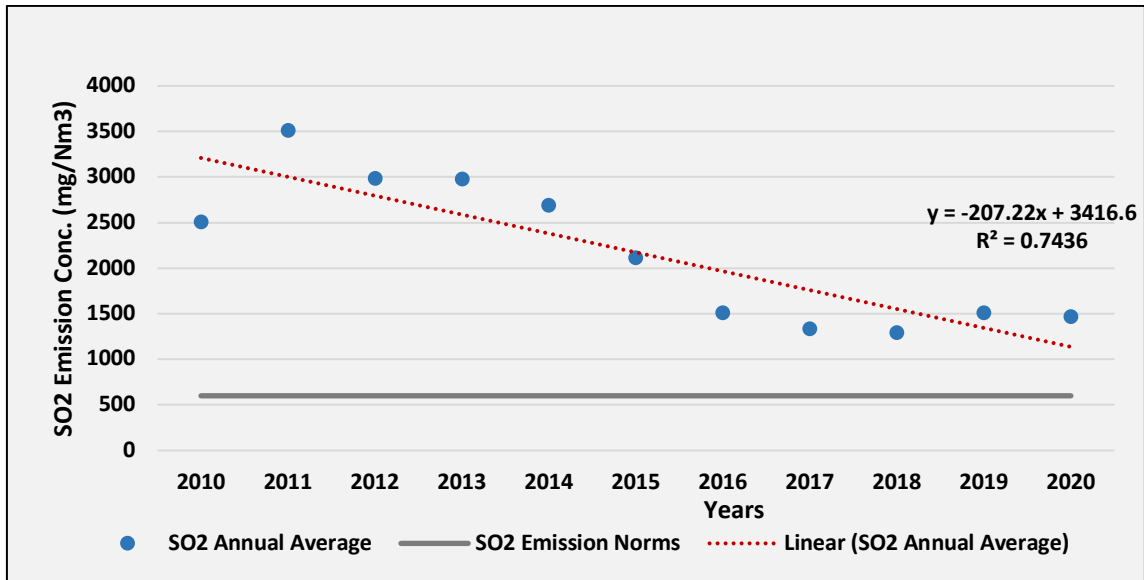


Fig. PAR29: Trend of annual mean SO₂ Emission air concentration in Paras TPP (Unit 3)

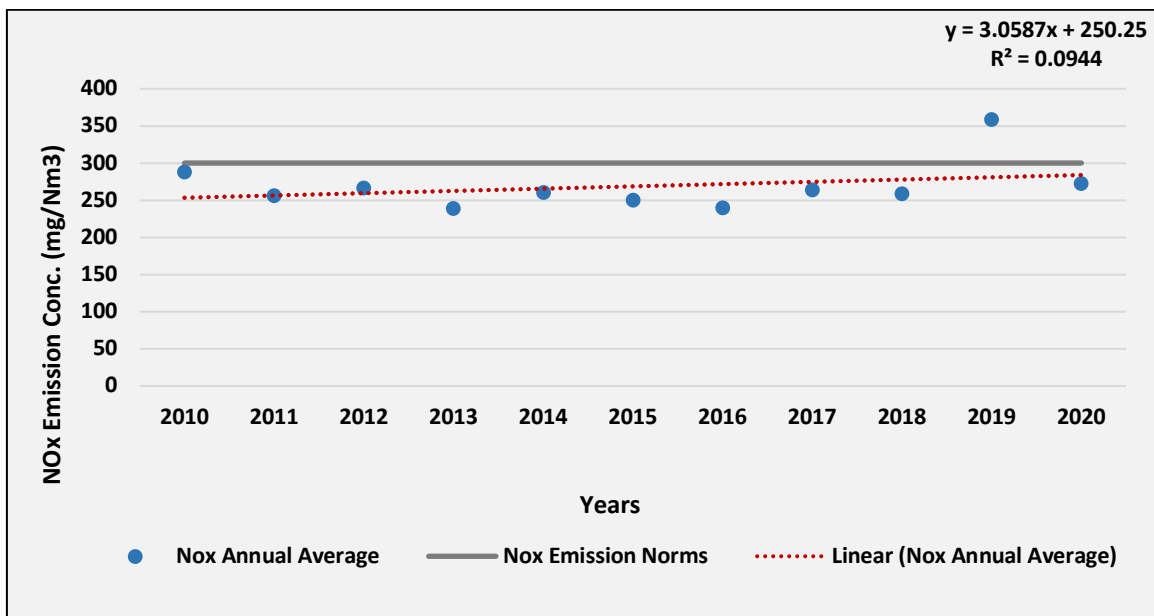


Fig. PAR30: Trend of annual mean NO_x Emission air concentration in Paras TPP (Unit 3)

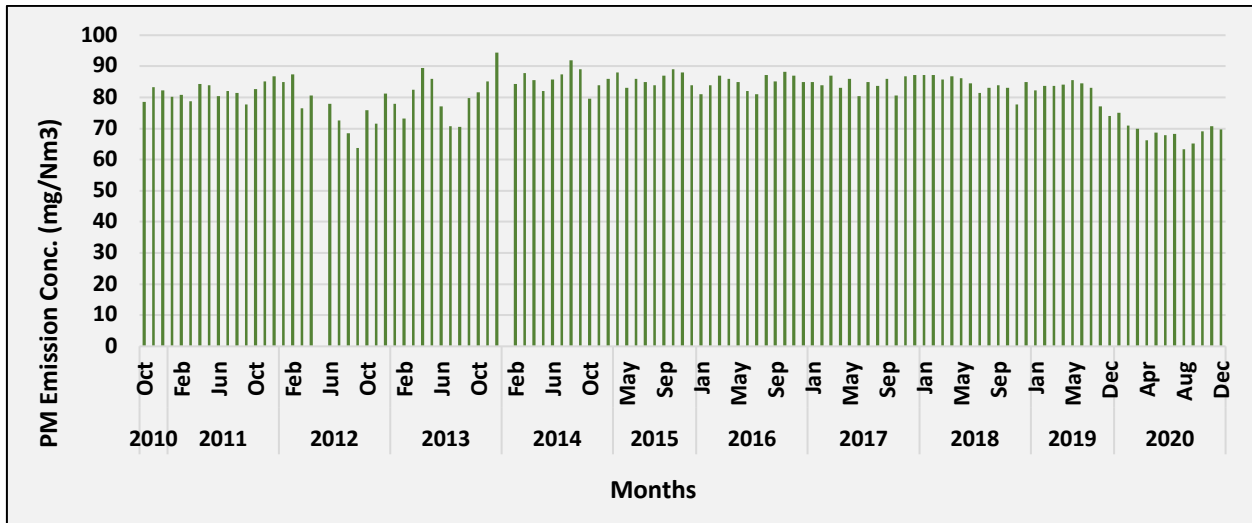


Fig. PAR31: Time series of monthly average PM Emission concentration in Paras TPP (Unit 4)

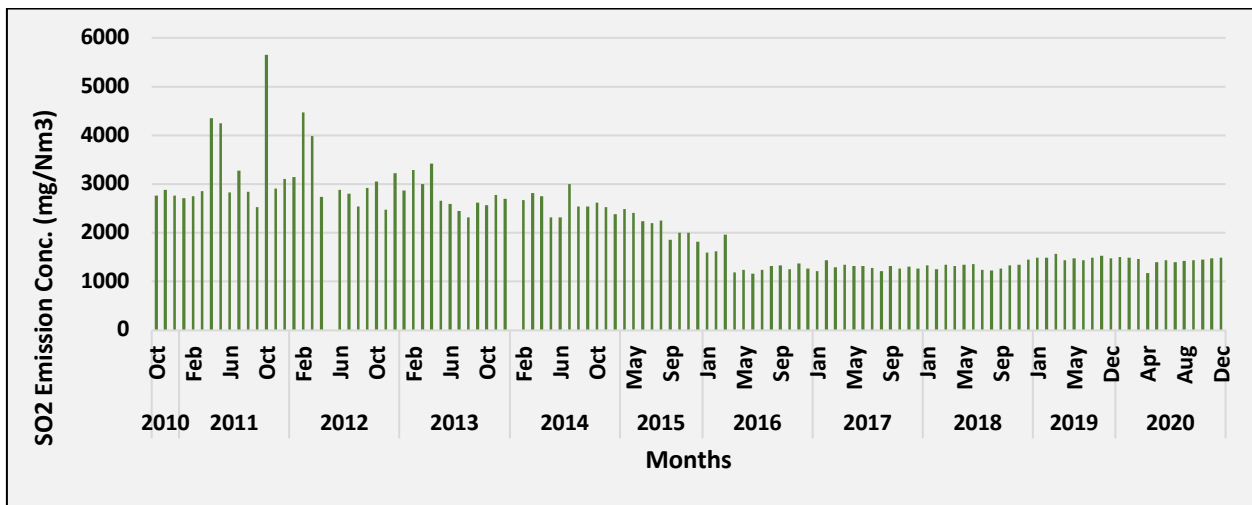


Fig. PAR32: Time series of monthly average SO₂ Emission concentration in Paras TPP (Unit 4)

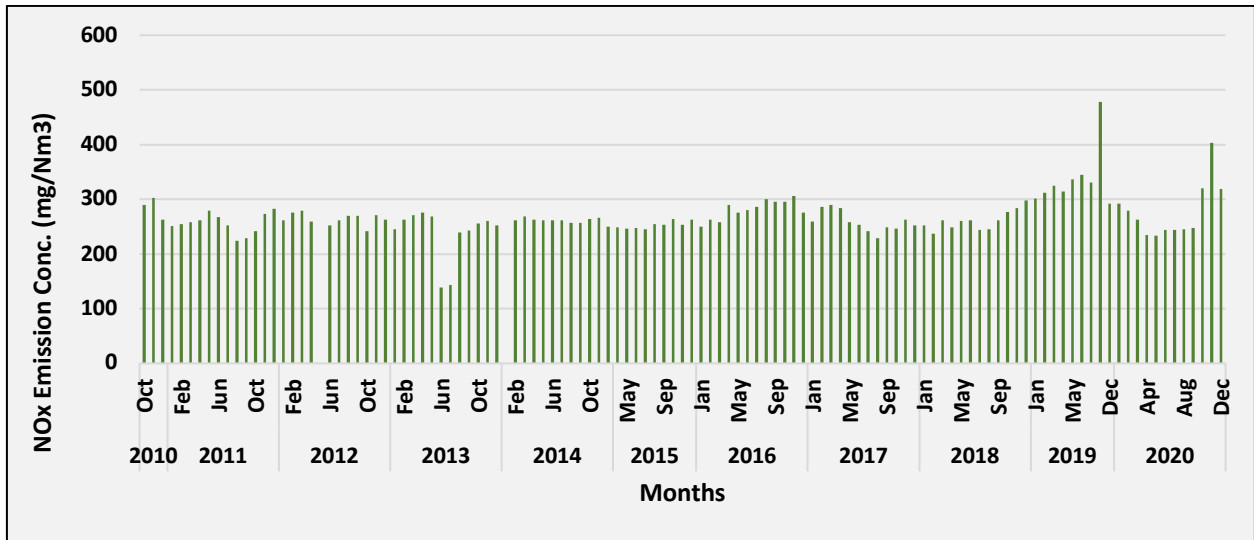


Fig. PAR33: Time series of monthly average NO_x Emission concentration in Paras TPP (Unit 4)

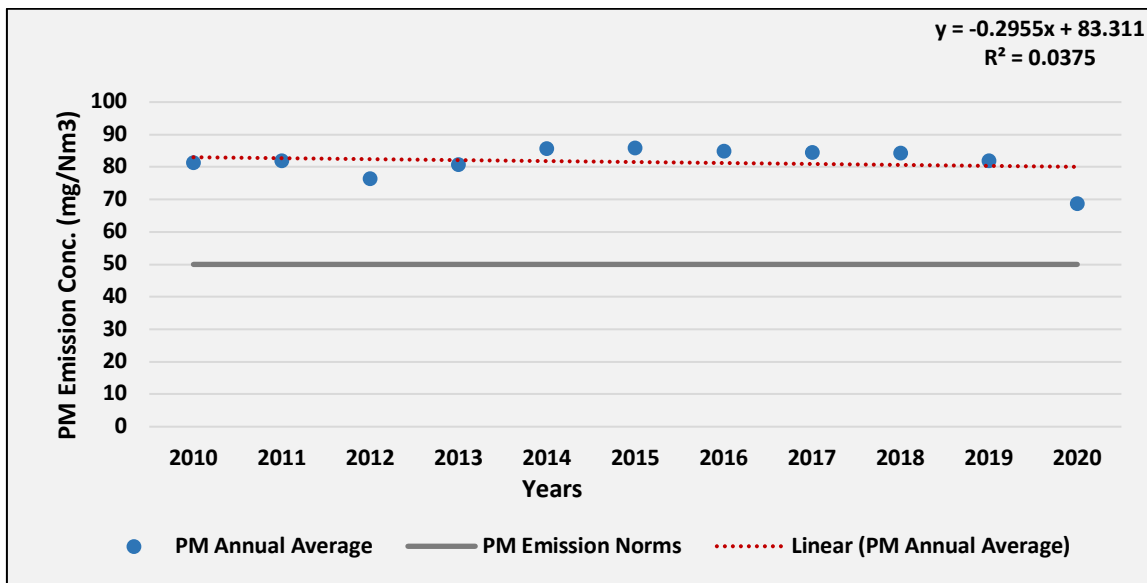


Fig. PAR34: Trend of annual mean PM Emission air concentration in Paras TPP (Unit 4)

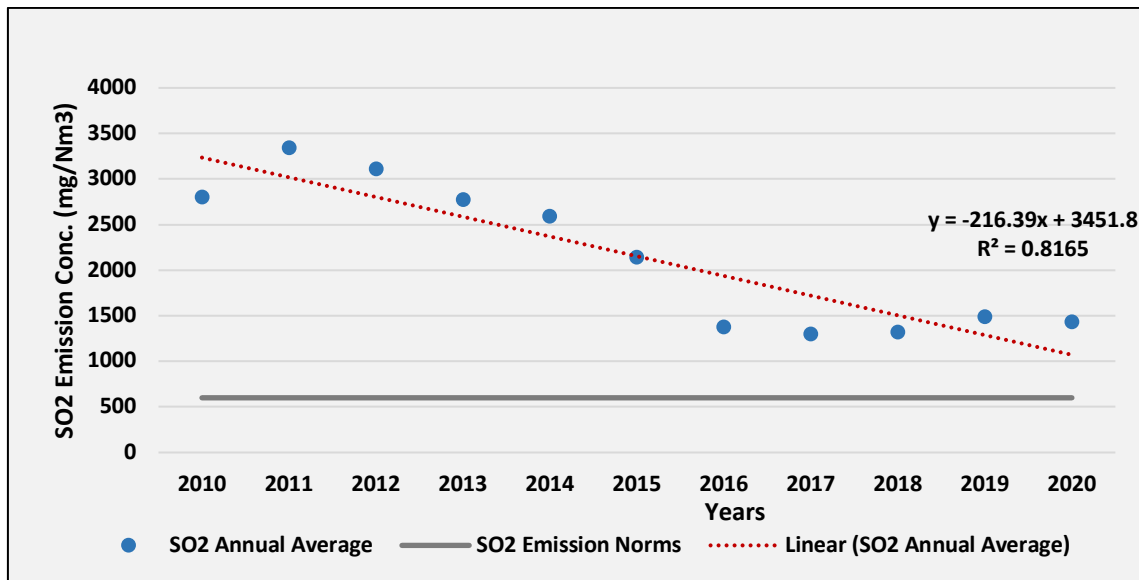


Fig. PAR35: Trend of annual mean SO₂ Emission air concentration in Paras TPP (Unit 4)

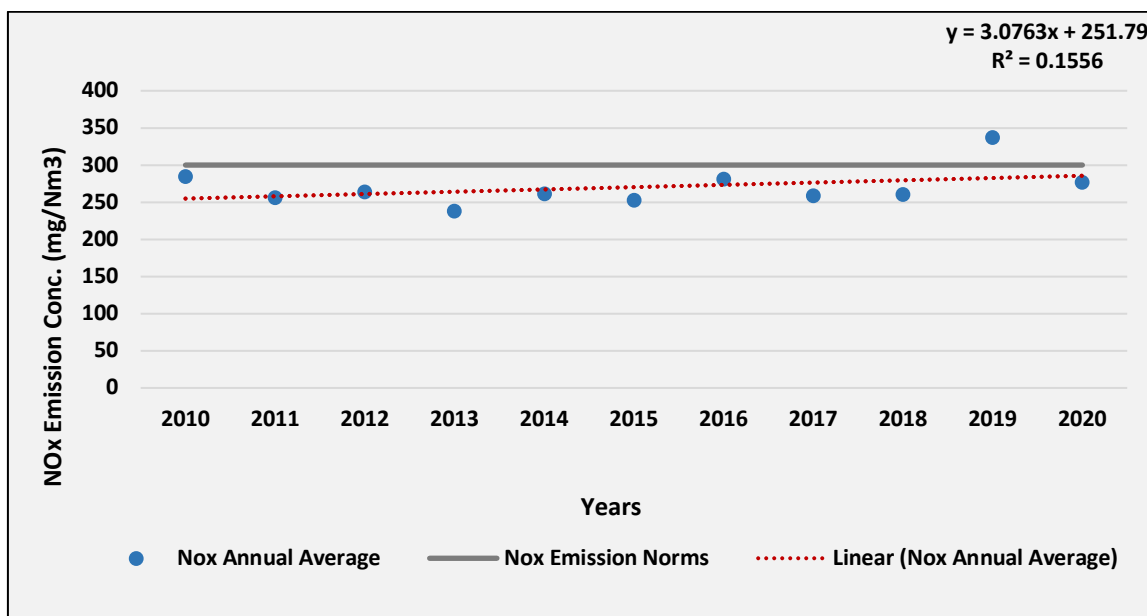


Fig. PAR36: Trend of annual mean NO_x Emission air concentration in Paras TPP (Unit 4)

Evidence based on ground level stations shows that the monthly average and annual average of PM10, PM2.5 are exceeding whereas the SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

MAHAGENCO BHUSAWAL THERMAL POWER PLANT

Bhusawal Thermal Power Station is located 8 km away from Bhusawal city of Jalgaon district in Maharashtra. The name of place where it is located is Deepnagar, which means City of Lights. The power plant is a coal based power plants of Mahagenco.

The ambient air quality concentrations of PM₁₀, PM_{2.5} SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. KOR1 – Fig. KOR50) for the last three years (2017-2020) using data provided by NTPC developer for Korba Power plant, Chhattisgarh, India.

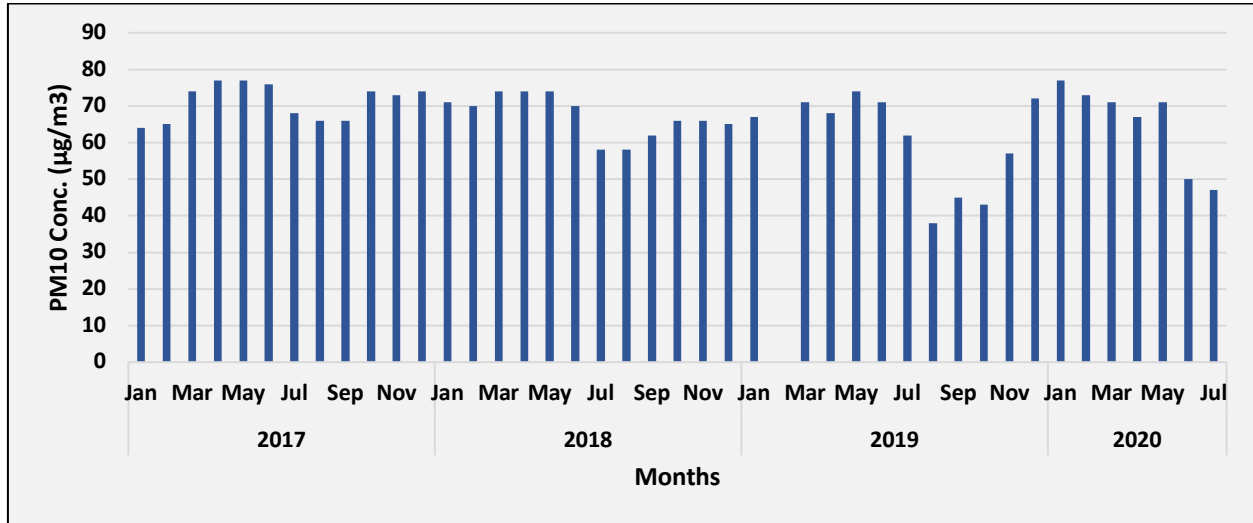


Fig. BHU1: Time series of monthly average PM₁₀ ambient air concentration in Bhusawal TPP (Ambient 1)

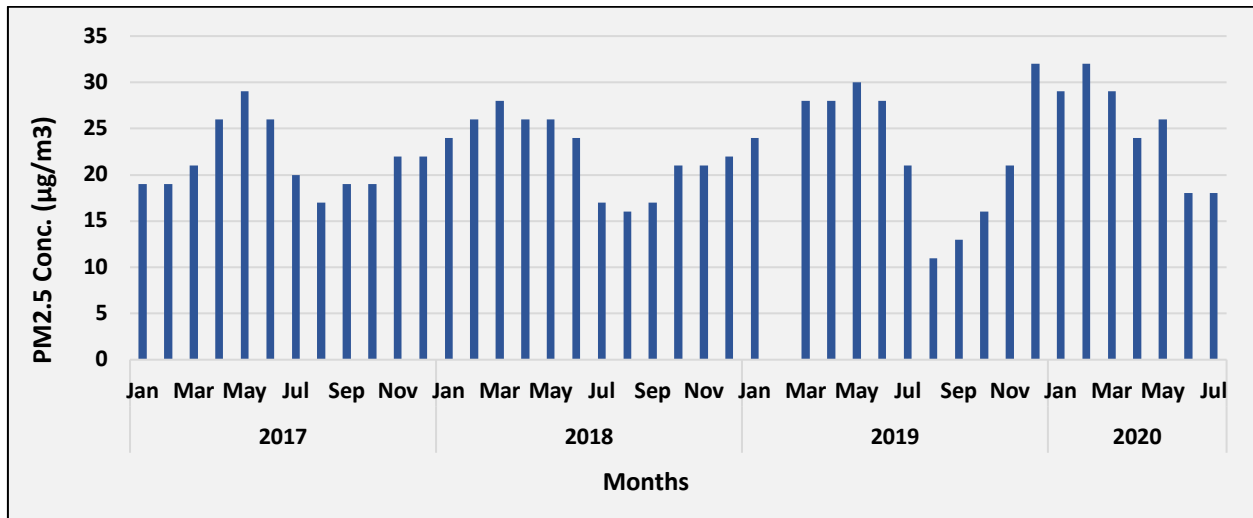


Fig. BHU2: Time series of monthly average PM_{2.5} ambient air concentration in Bhusawal TPP (Ambient 1)

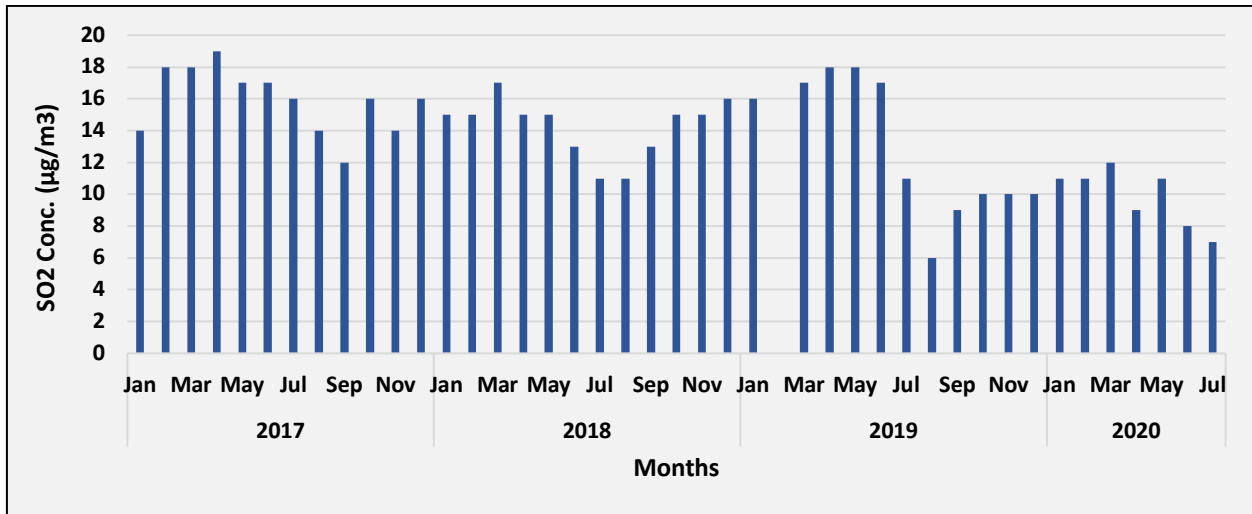


Fig. BHU3: Time series of monthly average SO_2 ambient air concentration in Bhusawal TPP (Ambient 1)

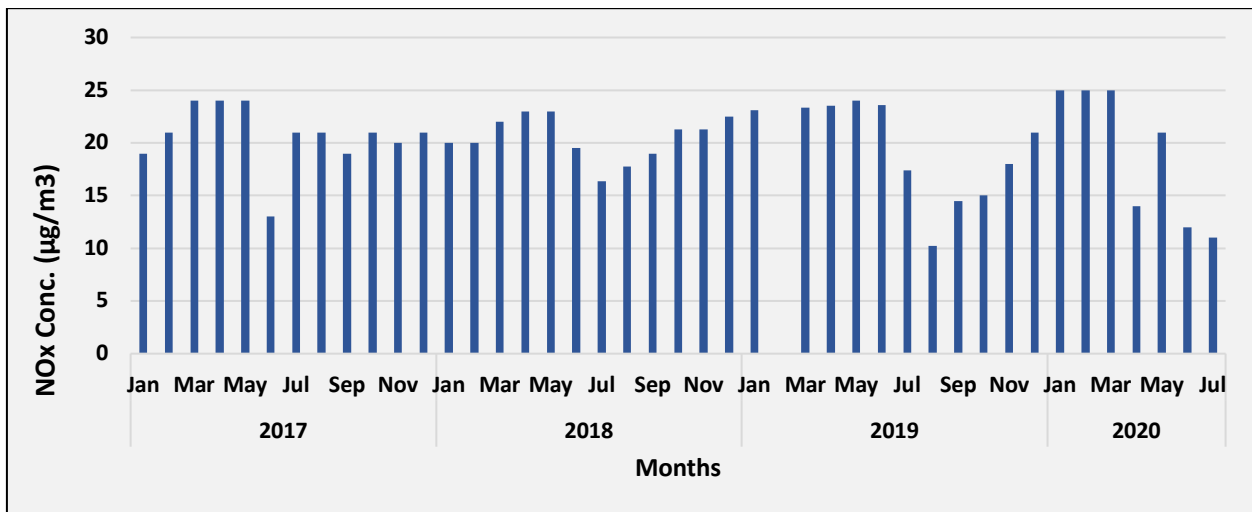


Fig. BHU4: Time series of monthly average NO_x ambient air concentration in Bhusawal TPP (Ambient 1)

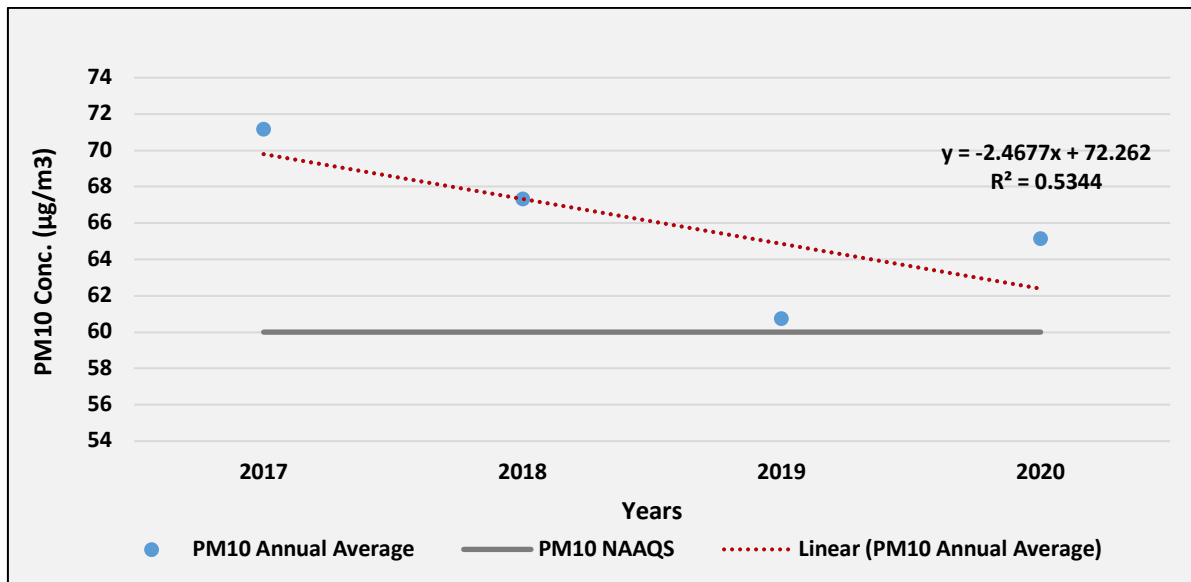


Fig. BHU5: Trend of annual mean PM₁₀ ambient air concentration in Bhusawal TPP (Ambient 1)

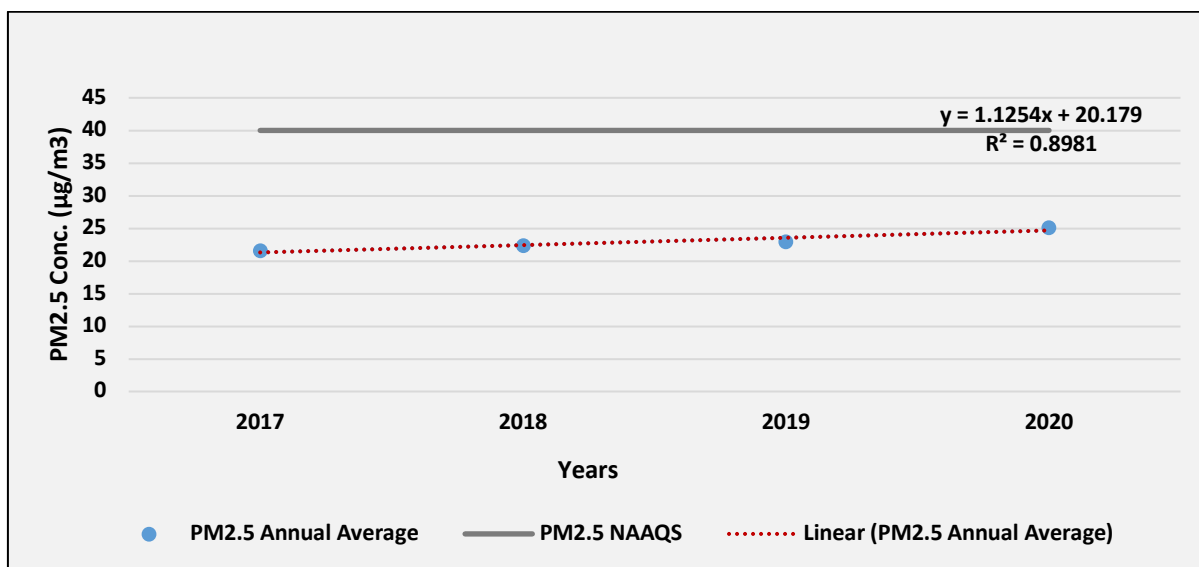


Fig. BHU6: Trend of annual mean PM_{2.5} ambient air concentration in Bhusawal TPP (Ambient 1)

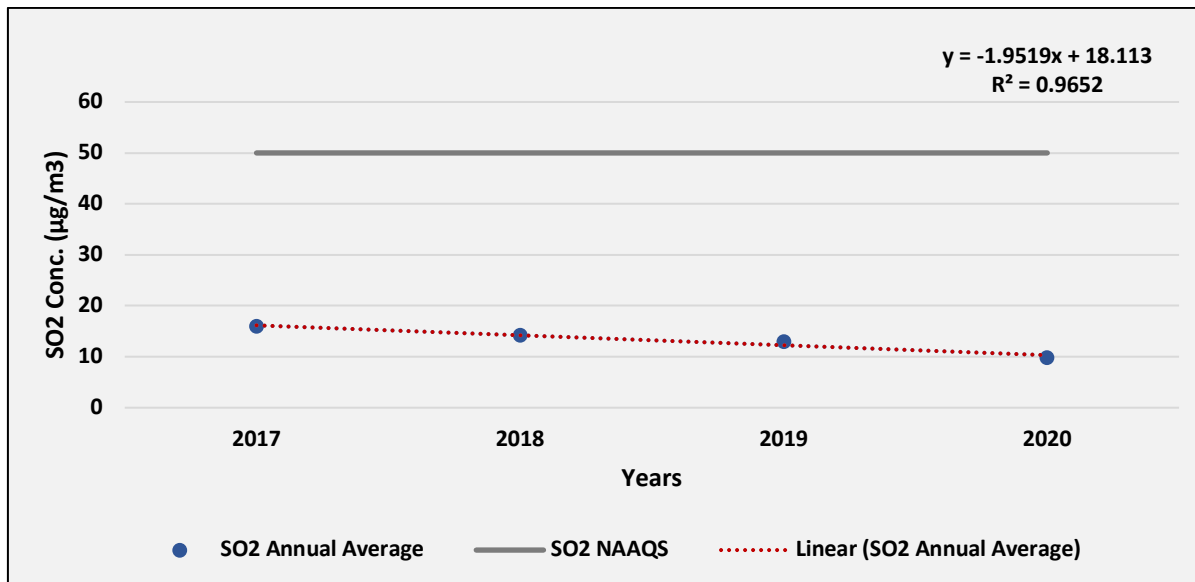


Fig. BHU7: Trend of annual mean SO₂ ambient air concentration in Bhusawal TPP (Ambient 1)

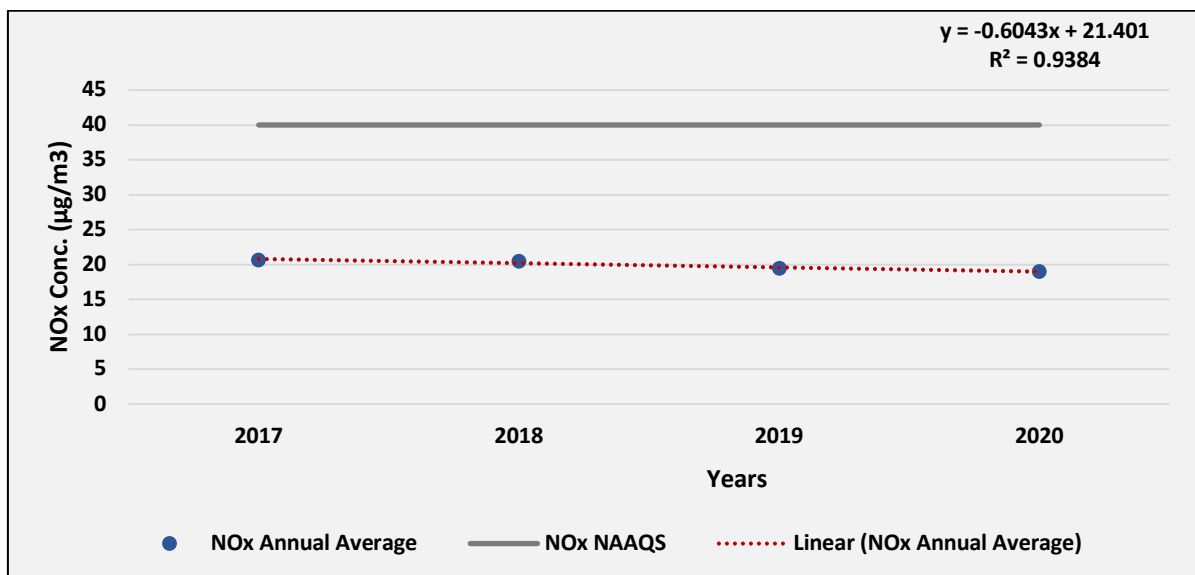


Fig. BHU8: Trend of annual mean NO_x ambient air concentration in Bhusawal TPP (Ambient 1)

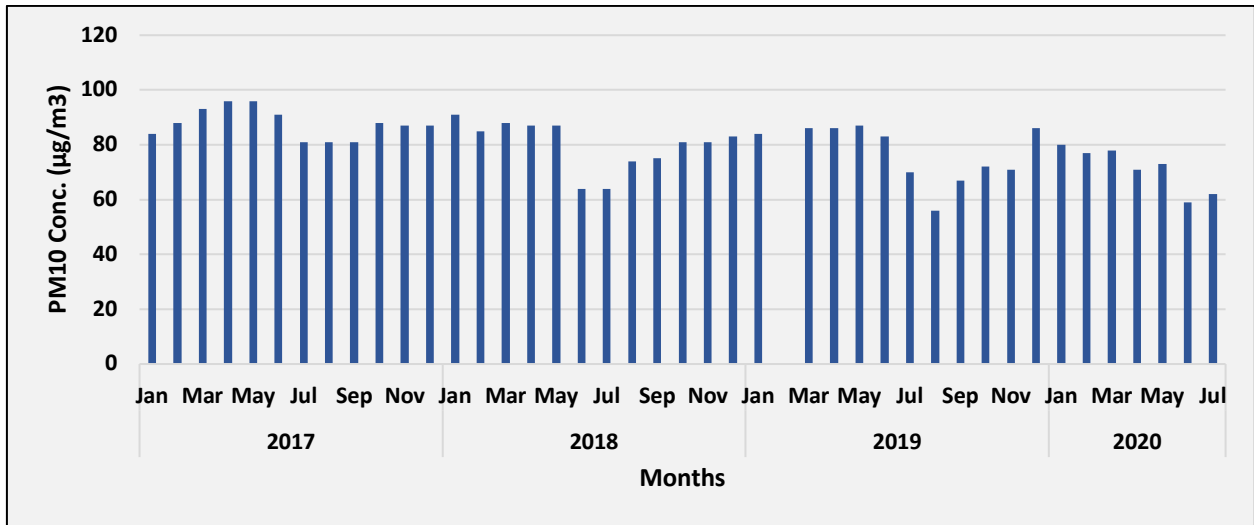


Fig. BHU9: Time series of monthly average PM_{10} ambient air concentration in Bhusawal TPP (Ambient 2)

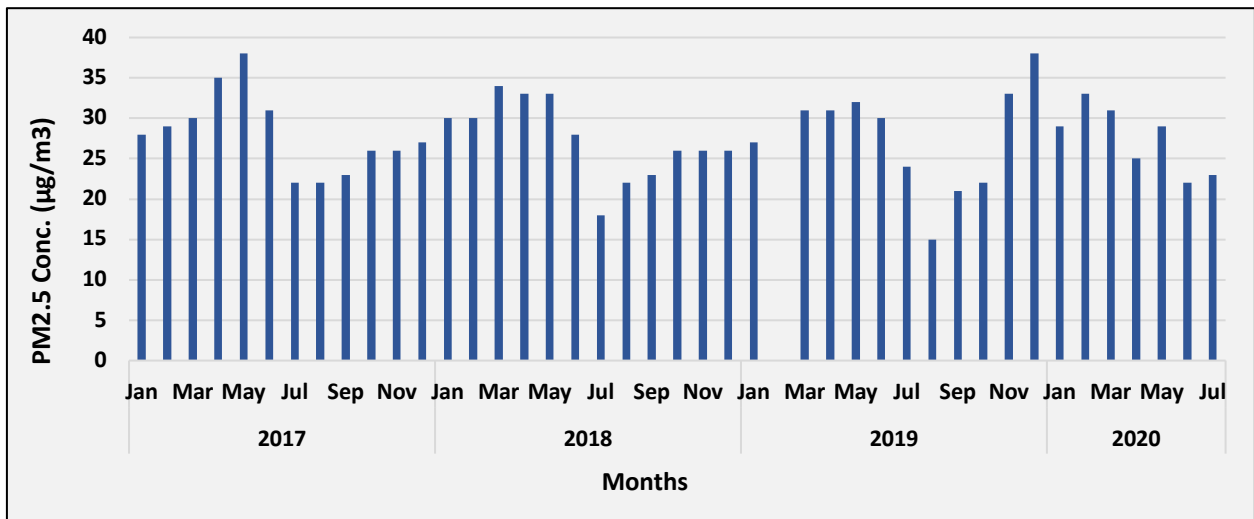


Fig. BHU10: Time series of monthly average $PM_{2.5}$ ambient air concentration in Bhusawal TPP (Ambient 2)

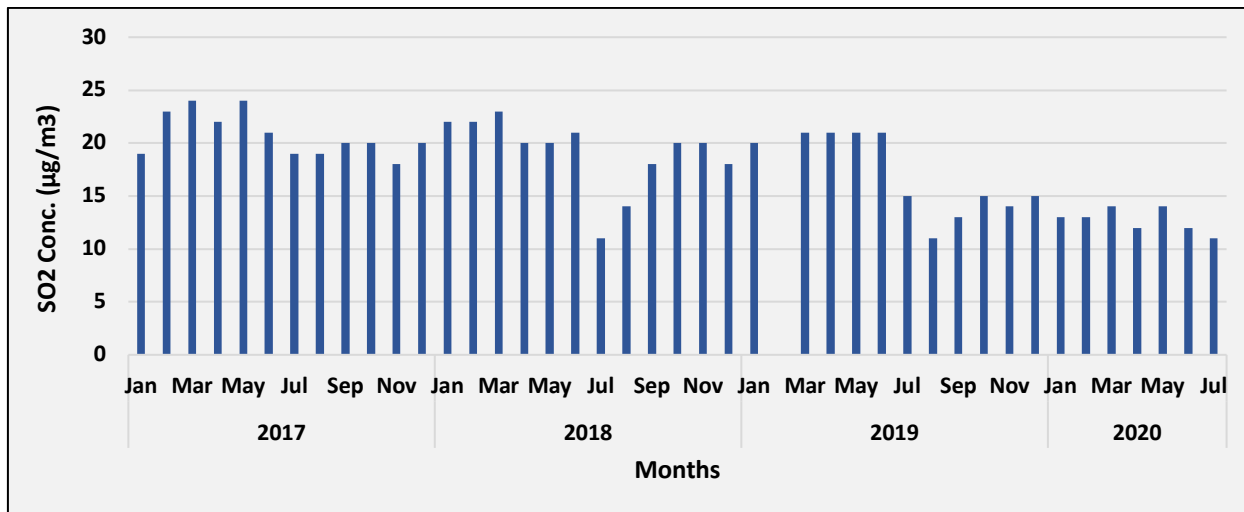


Fig. BHU11: Time series of monthly average SO_2 ambient air concentration in Bhusawal TPP (Ambient 2)

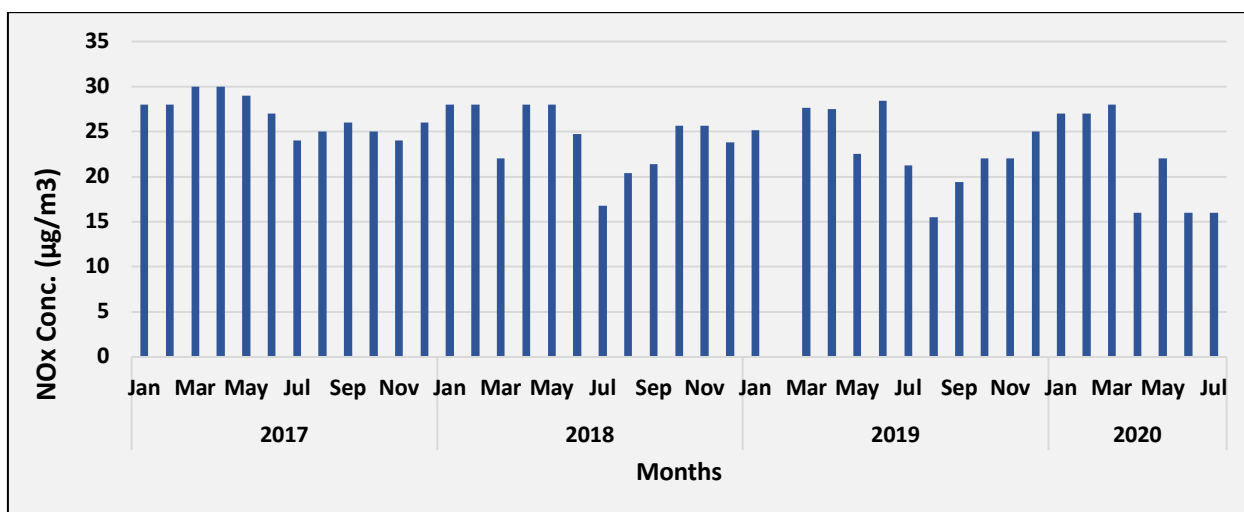


Fig. BHU12: Time series of monthly average NO_x ambient air concentration in Bhusawal TPP (Ambient 2)

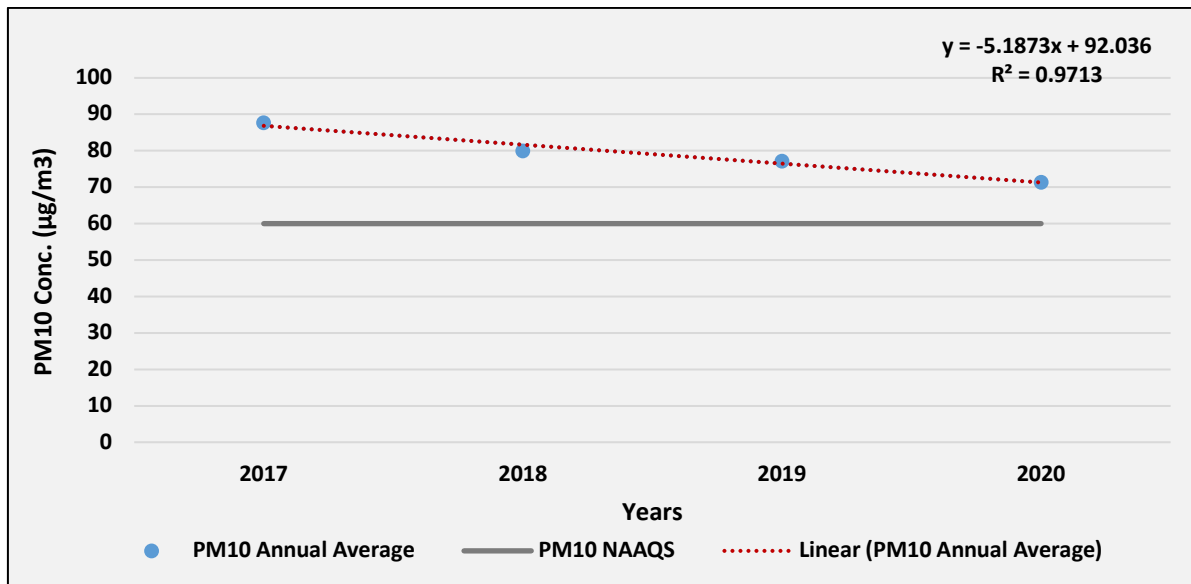


Fig. BHU13: Trend of annual mean PM_{10} ambient air concentration in Bhusawal TPP (Ambient 2)

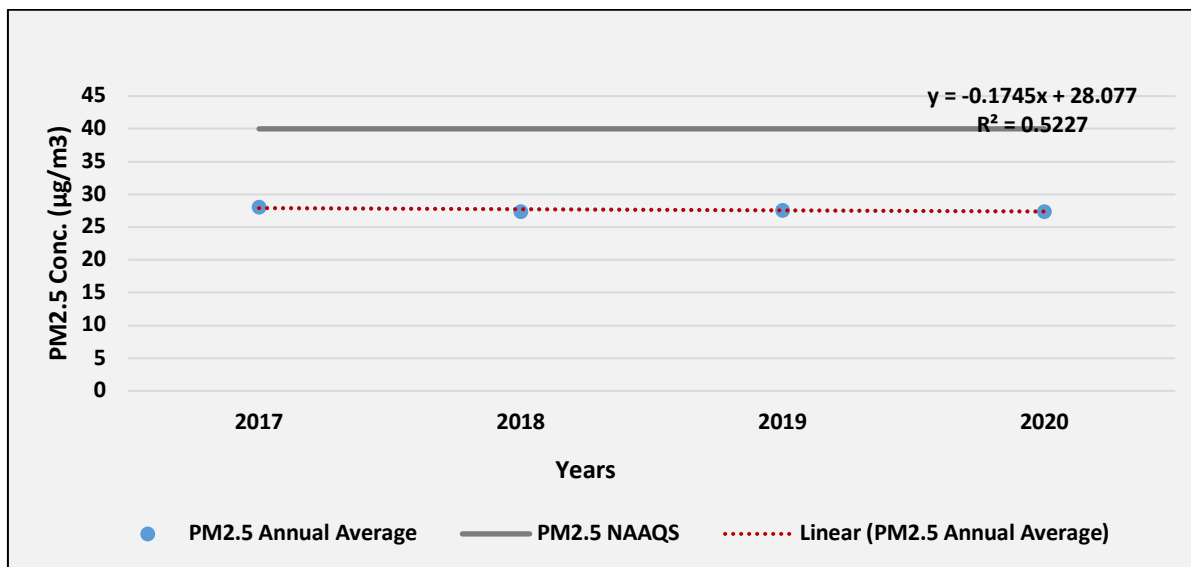


Fig. BHU14: Trend of annual mean $PM_{2.5}$ ambient air concentration in Bhusawal TPP (Ambient 2)

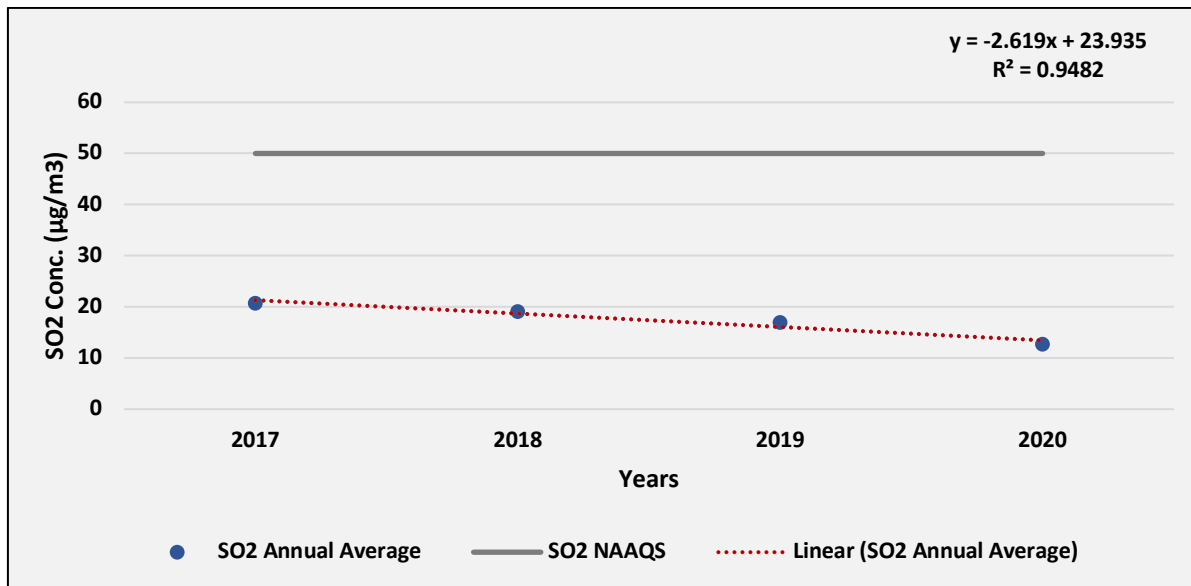


Fig. BHU15: Trend of annual mean SO₂ ambient air concentration in Bhusawal TPP (Ambient 2)

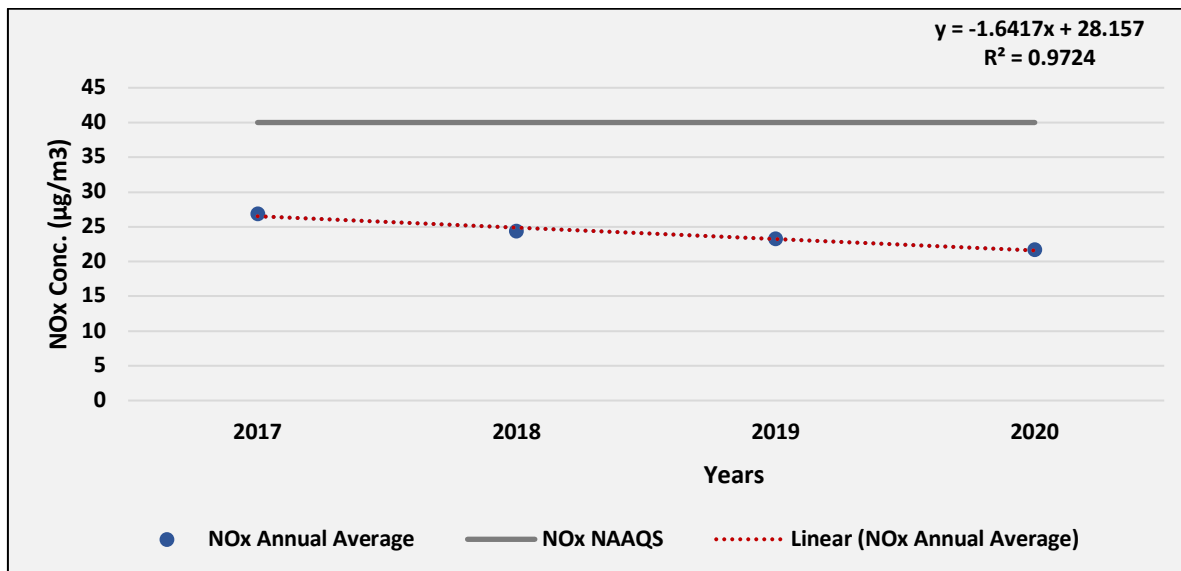


Fig. BHU16: Trend of annual mean NO_x ambient air concentration in Bhusawal TPP (Ambient 2)

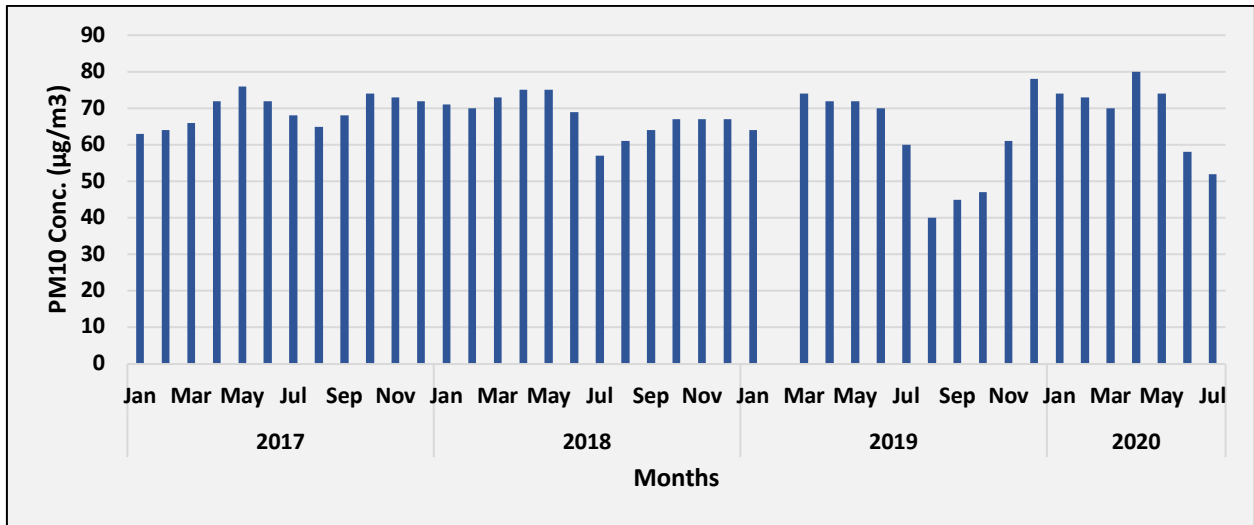


Fig. BHU17: Time series of monthly average PM_{10} ambient air concentration in Bhusawal TPP (Ambient 3)

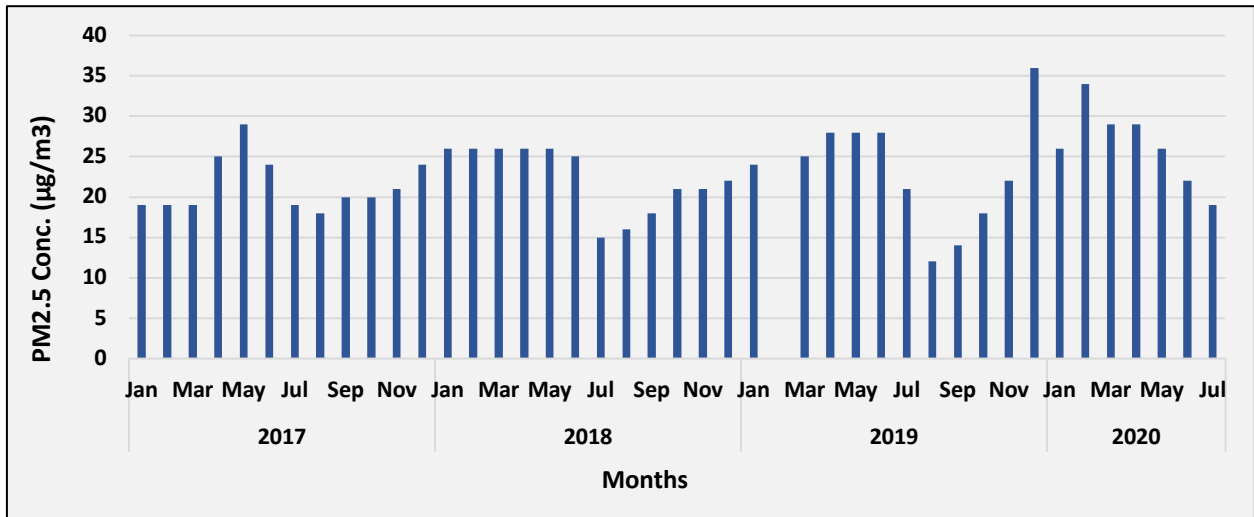


Fig. BHU18: Time series of monthly average $PM_{2.5}$ ambient air concentration in Bhusawal TPP (Ambient 3)

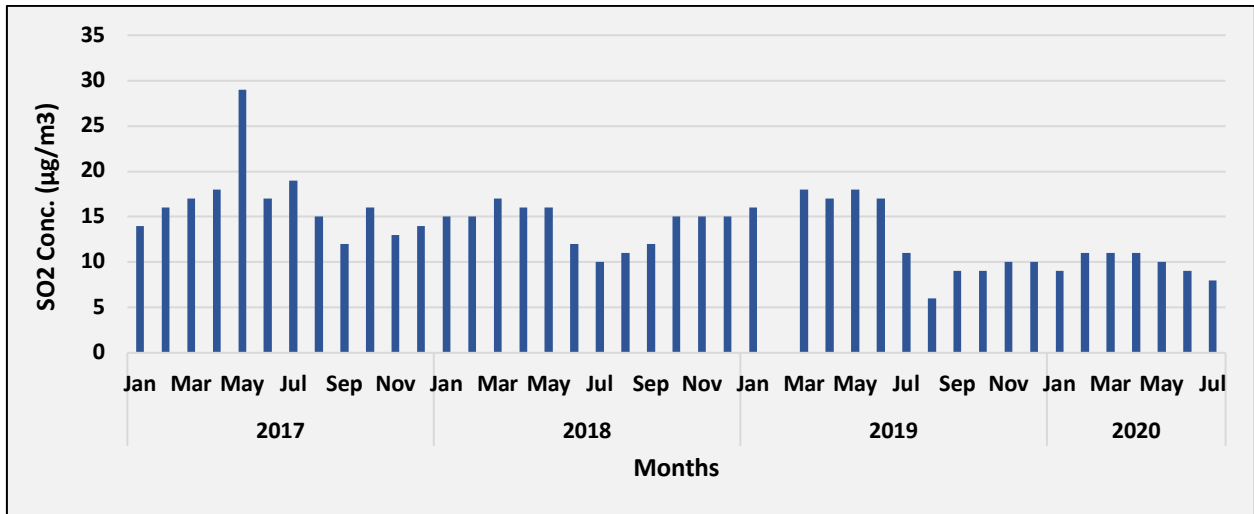


Fig. BHU19: Time series of monthly average SO_2 ambient air concentration in Bhusawal TPP (Ambient 3)

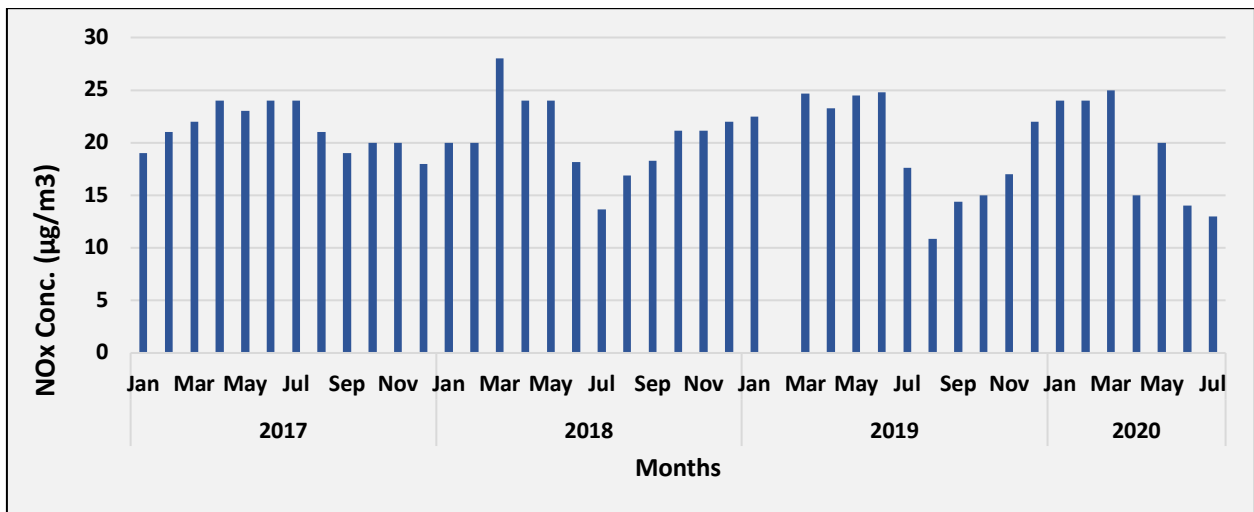


Fig. BHU20: Time series of monthly average NO_x ambient air concentration in Bhusawal TPP (Ambient 3)

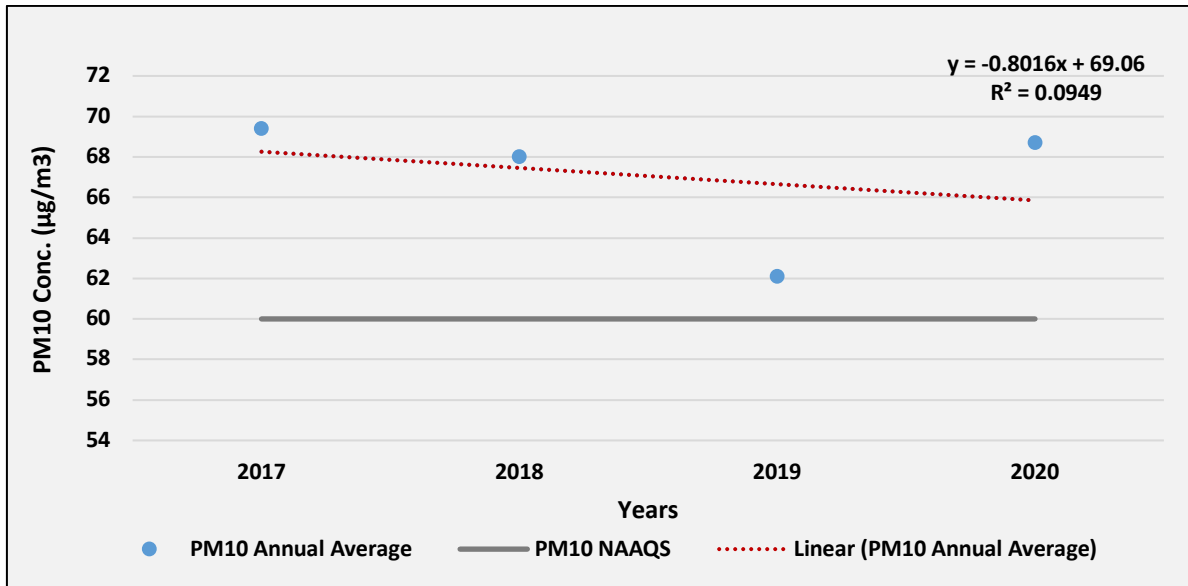


Fig. BHU21: Trend of annual mean PM₁₀ ambient air concentration in Bhusawal TPP (Ambient 3)

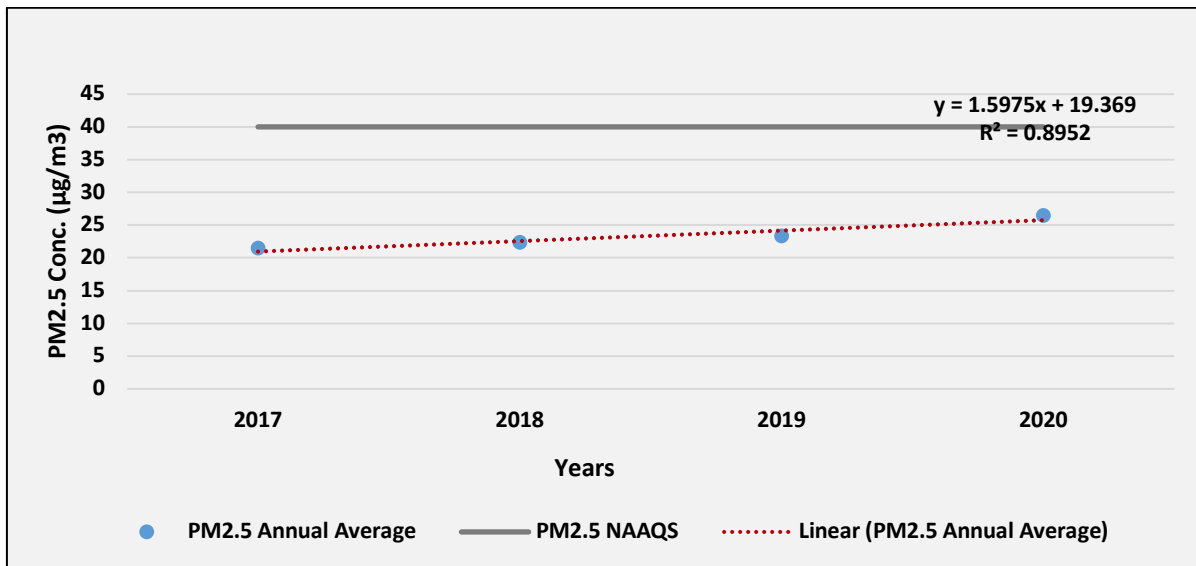


Fig. BHU22: Trend of annual mean PM_{2.5} ambient air concentration in Bhusawal TPP (Ambient 3)

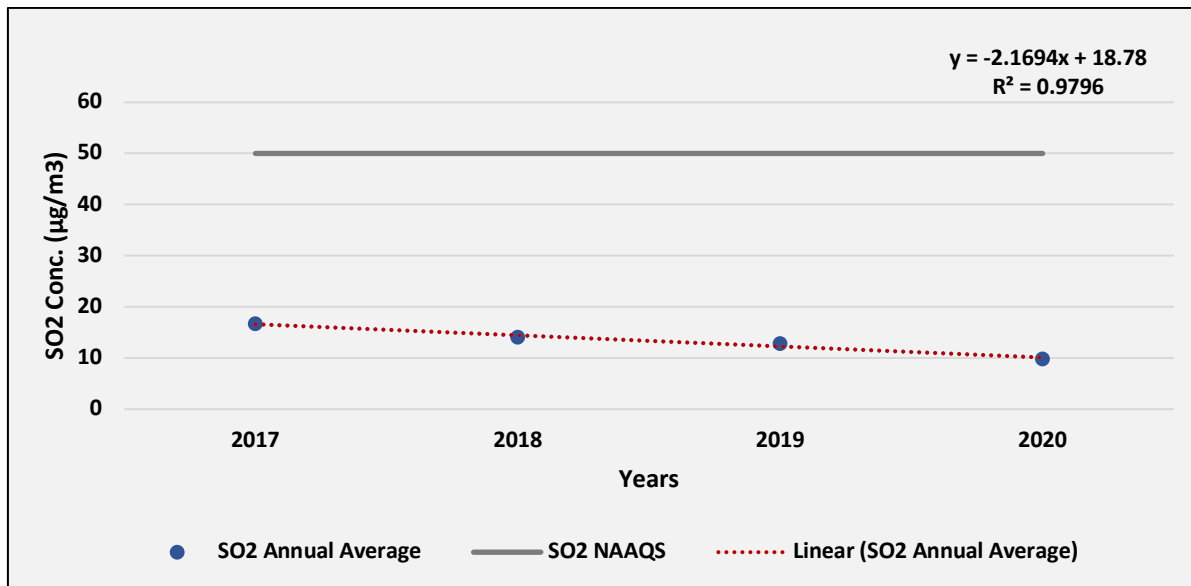


Fig. BHU23: Trend of annual mean SO₂ ambient air concentration in Bhusawal TPP (Ambient 3)

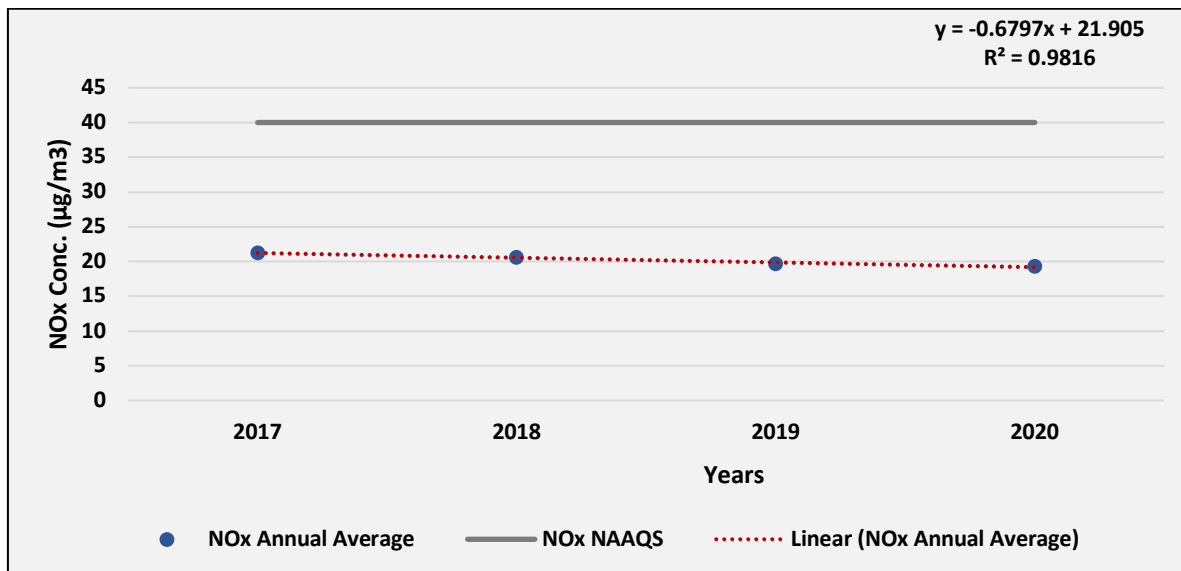


Fig. BHU24: Trend of annual mean NO_x ambient air concentration in Bhusawal TPP (Ambient 3)

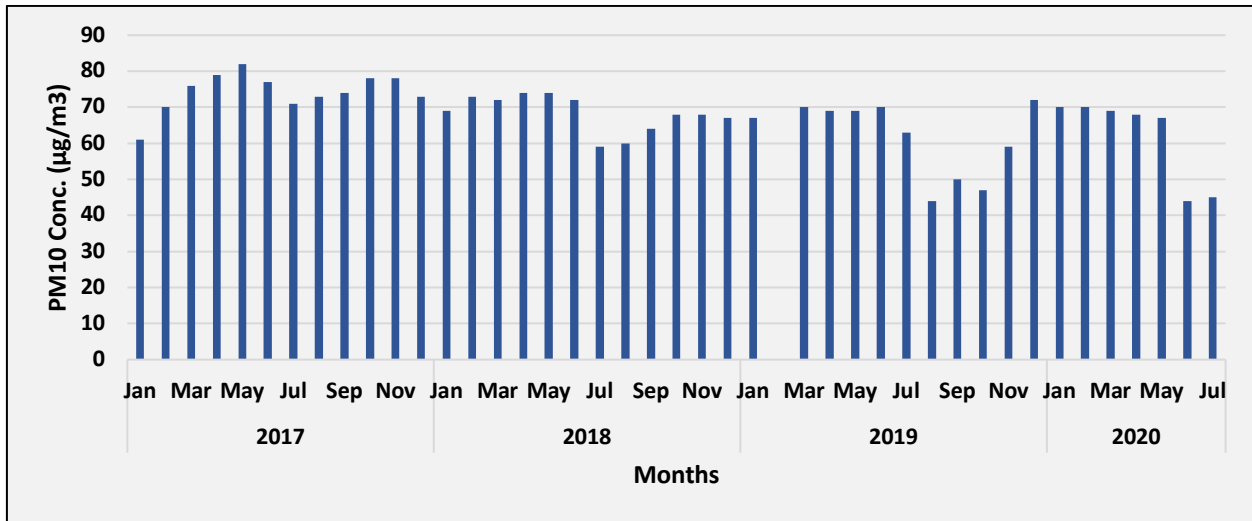


Fig. BHU25: Time series of monthly average PM_{10} ambient air concentration in Bhusawal TPP (Ambient 4)

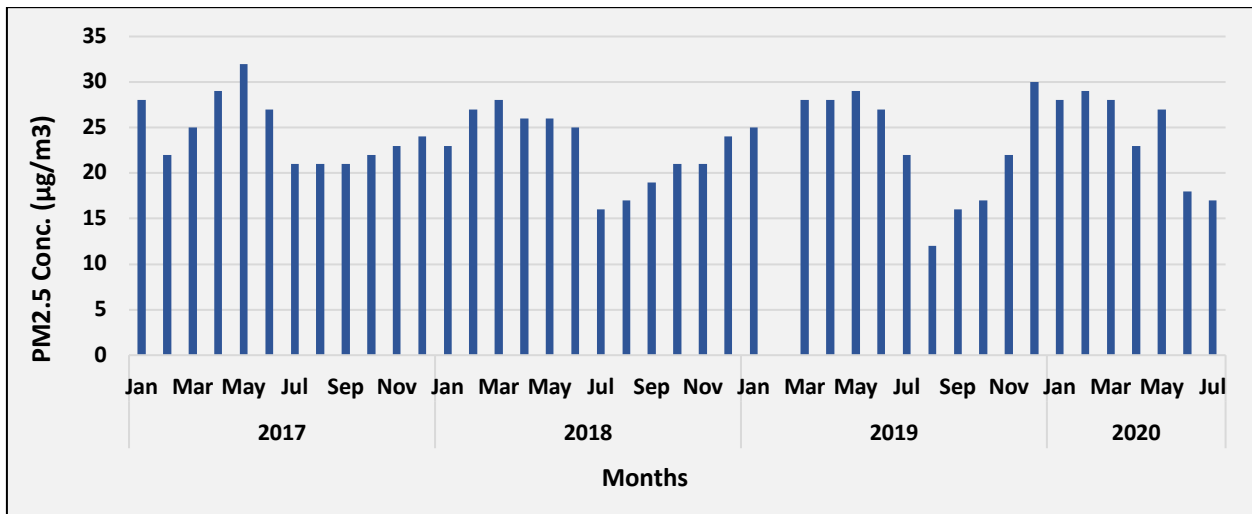


Fig. BHU26: Time series of monthly average $PM_{2.5}$ ambient air concentration in Bhusawal TPP (Ambient 4)

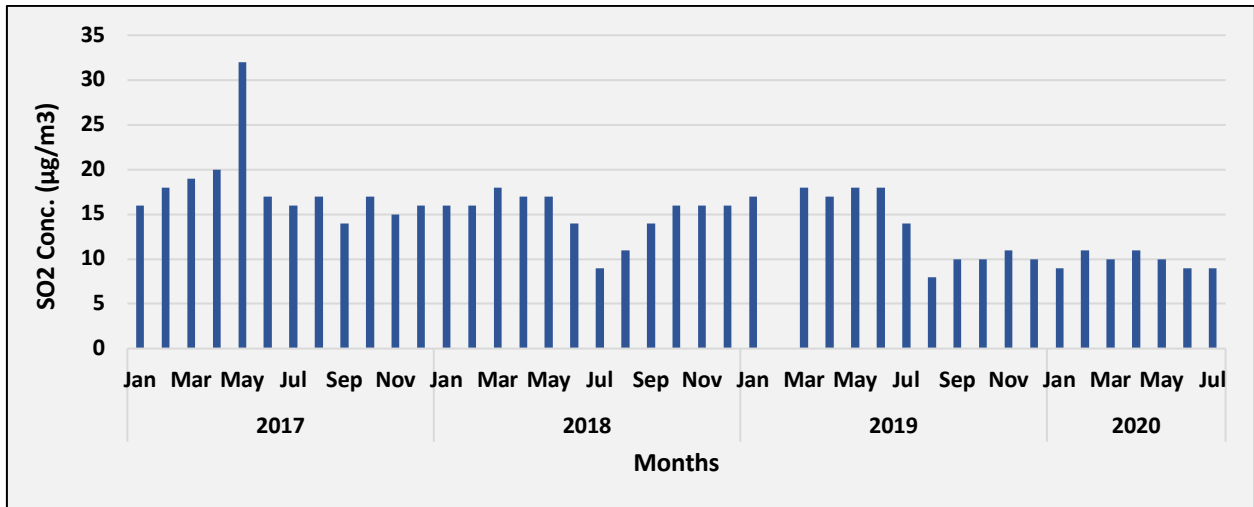


Fig. BHU27: Time series of monthly average SO_2 ambient air concentration in Bhusawal TPP (Ambient 4)

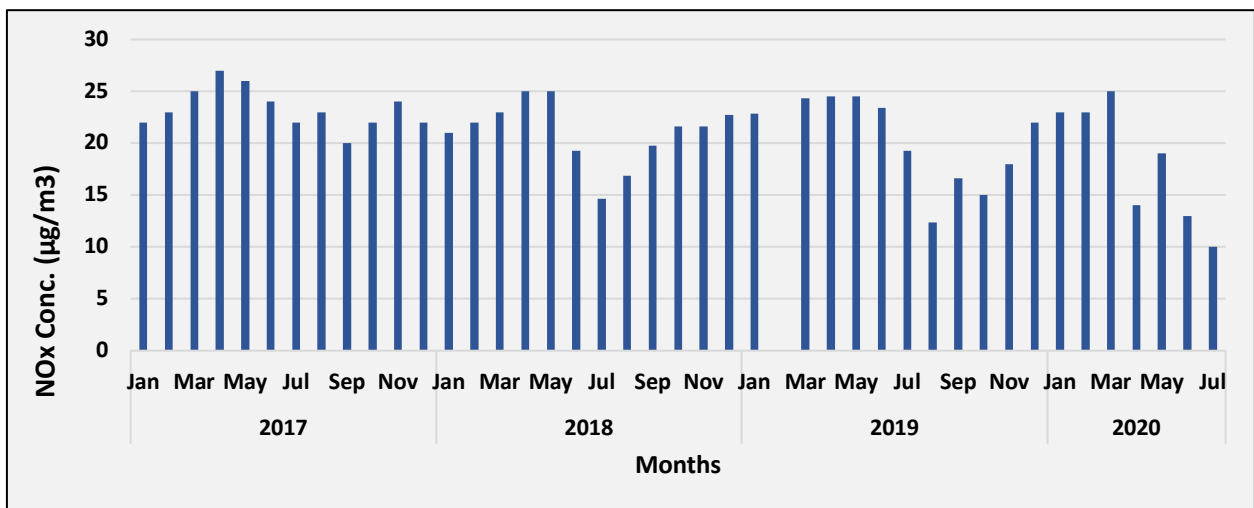


Fig. BHU28: Time series of monthly average NO_x ambient air concentration in Bhusawal TPP (Ambient 4)

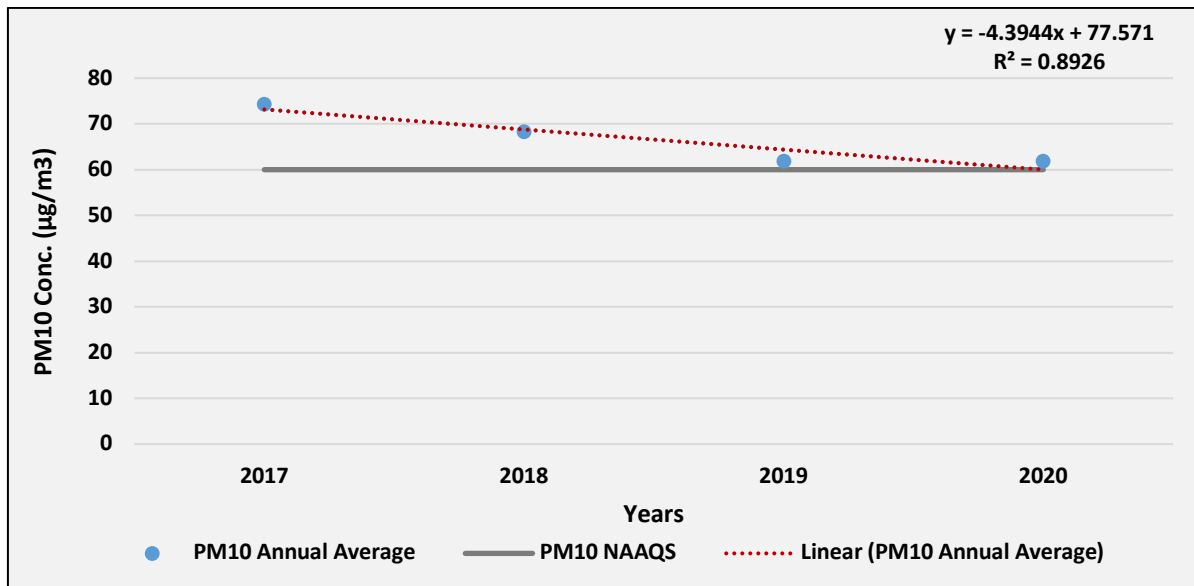


Fig. BHU29: Trend of annual mean PM_{10} ambient air concentration in Bhusawal TPP (Ambient 4)

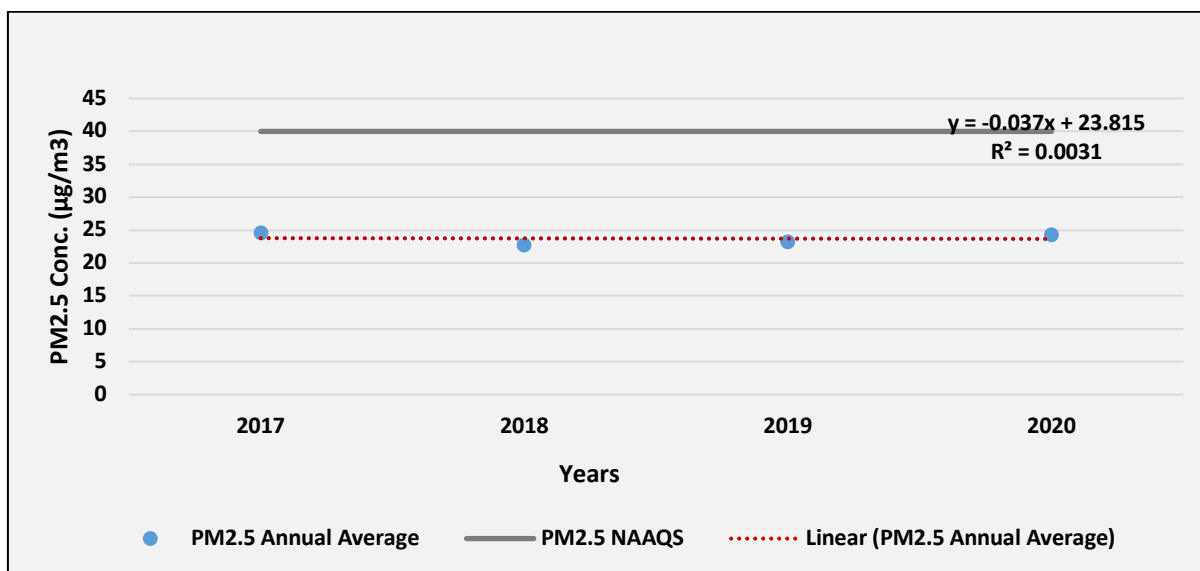


Fig. BHU30: Trend of annual mean $PM_{2.5}$ ambient air concentration in Bhusawal TPP (Ambient 4)

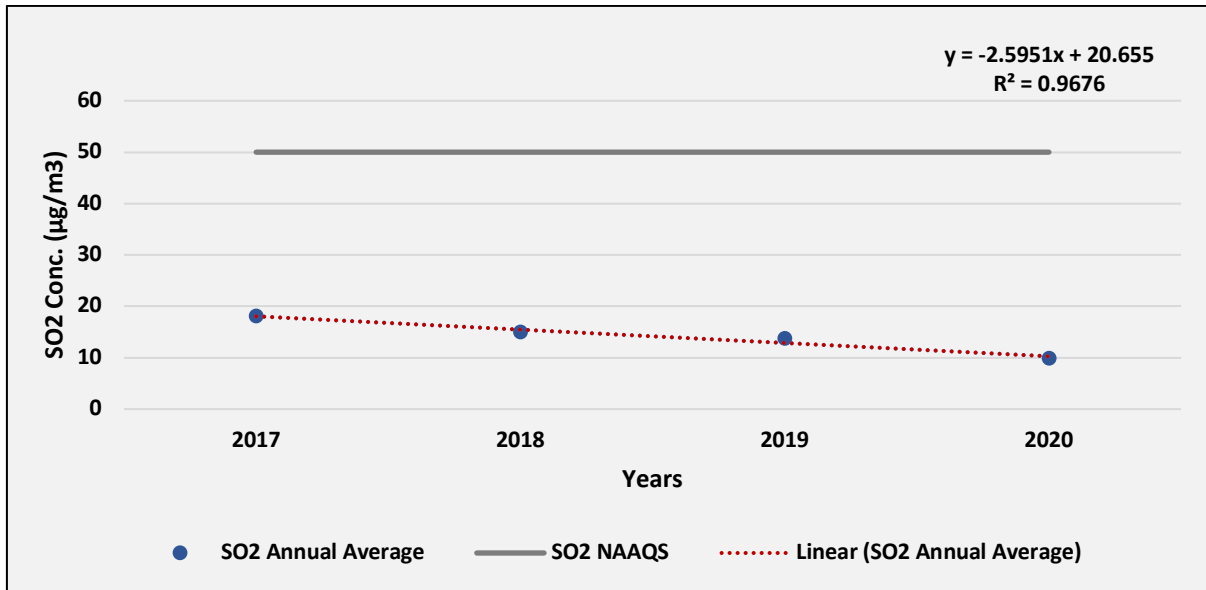


Fig. BHU31: Trend of annual mean SO₂ ambient air concentration in Bhusawal TPP (Ambient 4)

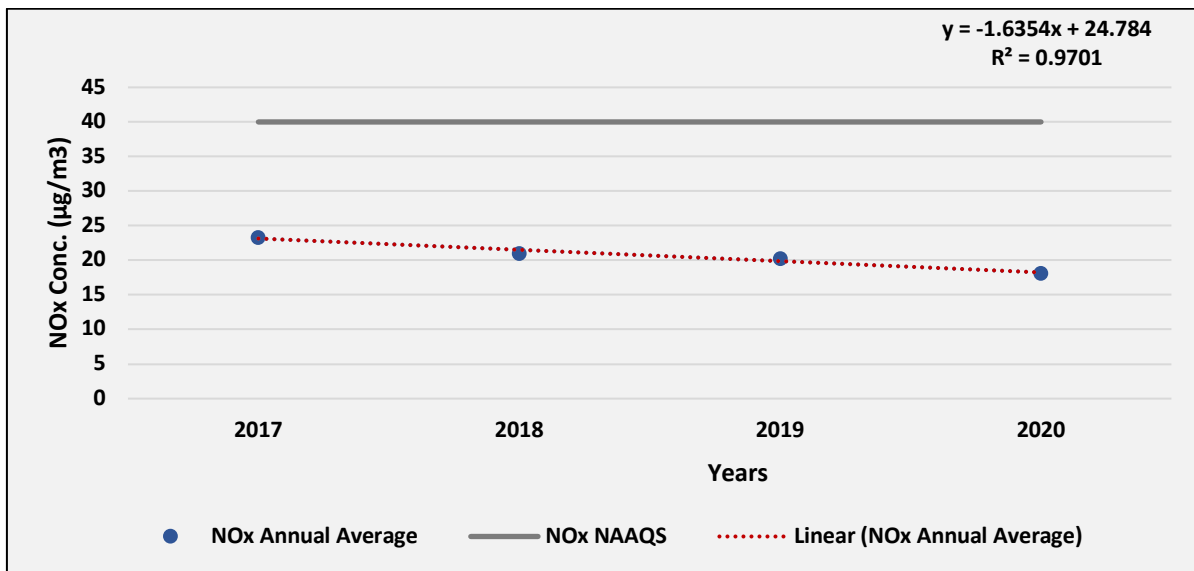


Fig. BHU32: Trend of annual mean NO_x ambient air concentration in Bhusawal TPP (Ambient 4)

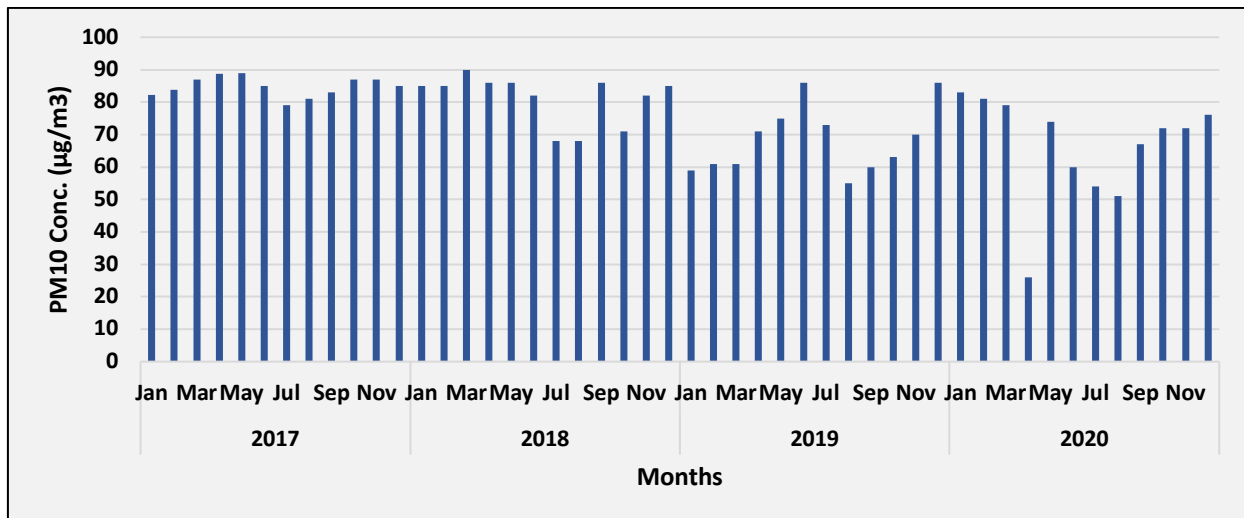


Fig. BHU33: Time series of monthly average PM_{10} ambient air concentration in Bhusawal TPP (Ambient 5)

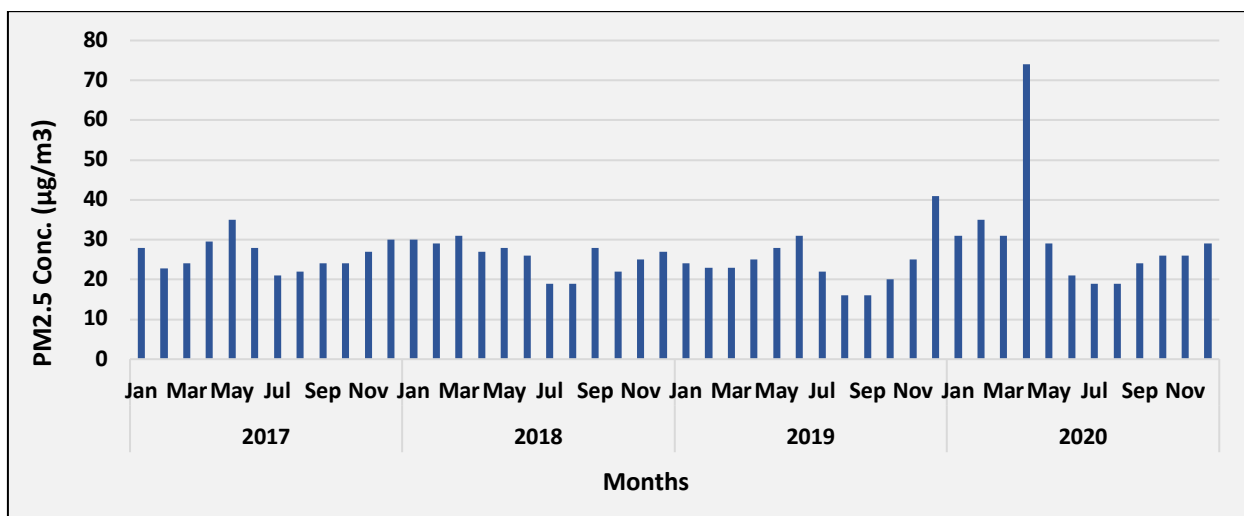


Fig. BHU34: Time series of monthly average $PM_{2.5}$ ambient air concentration in Bhusawal TPP (Ambient 5)

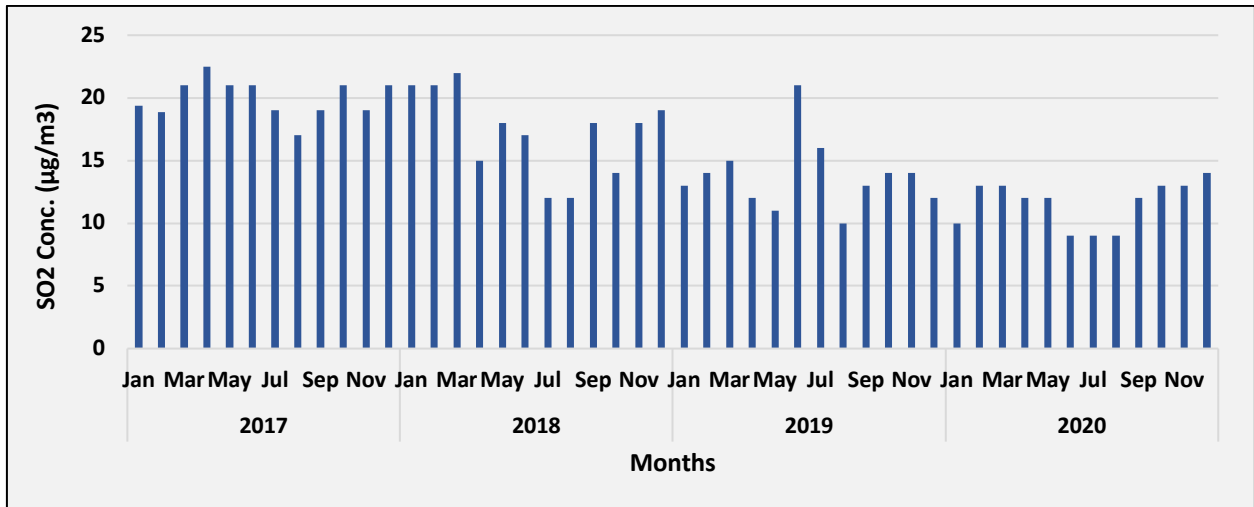


Fig. BHU35: Time series of monthly average SO₂ ambient air concentration in Bhusawal TPP (Ambient 5)

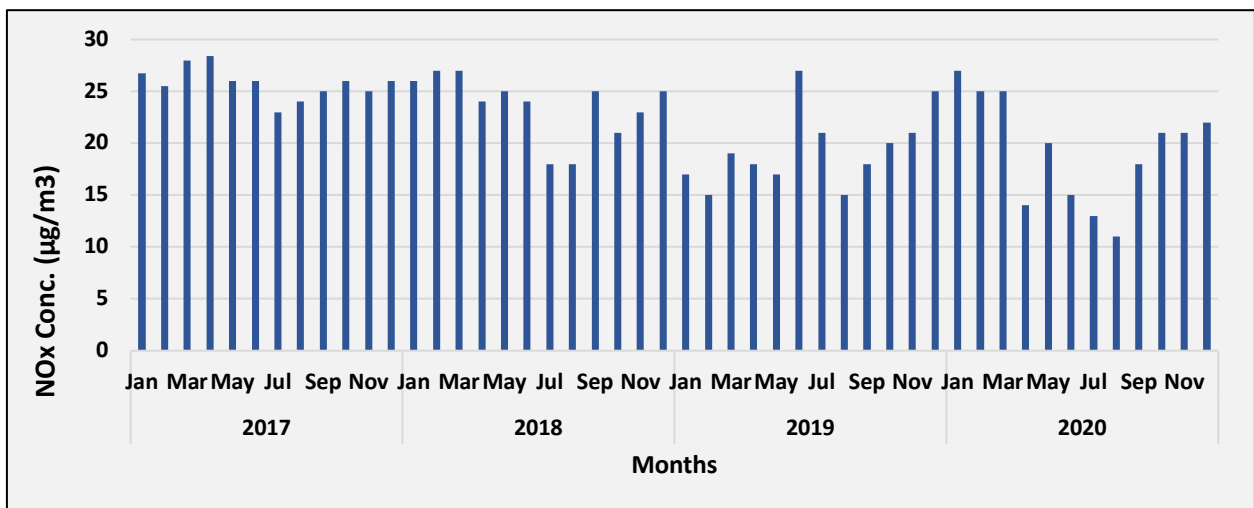


Fig. BHU36: Time series of monthly average NO_x ambient air concentration in Bhusawal TPP (Ambient 5)

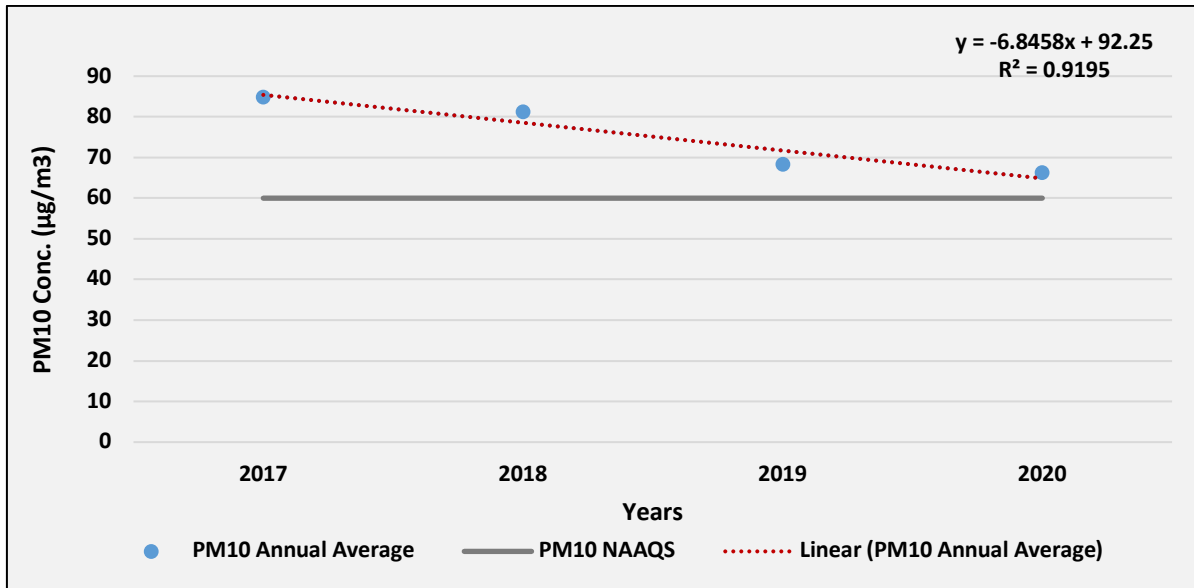


Fig. BHU37: Trend of annual mean PM_{10} ambient air concentration in Bhusawal TPP (Ambient 5)

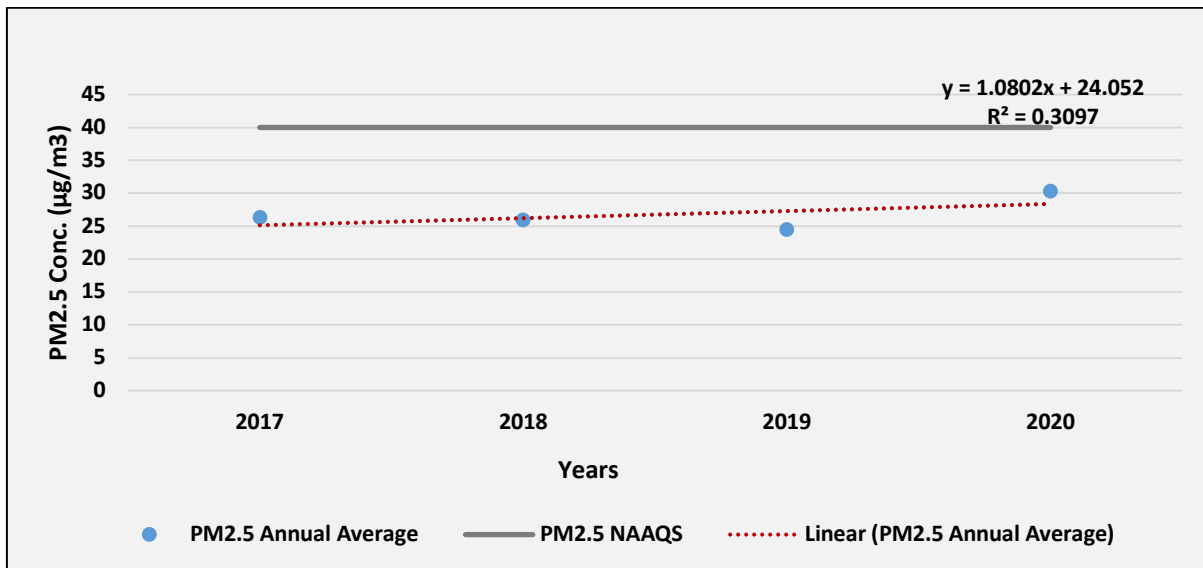


Fig. BHU38: Trend of annual mean $PM_{2.5}$ ambient air concentration in Bhusawal TPP (Ambient 5)

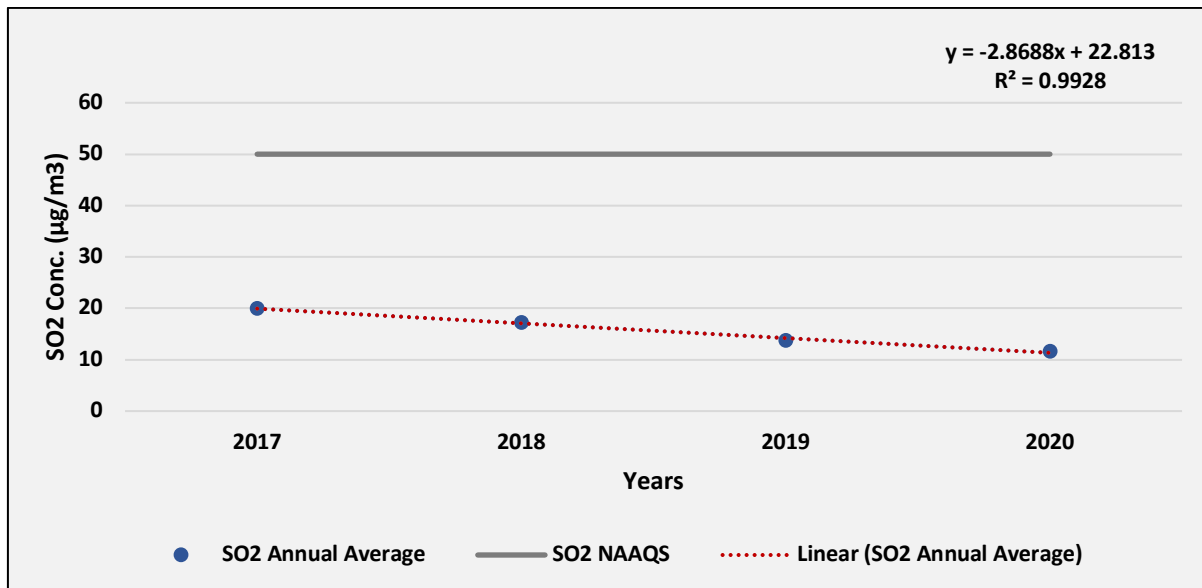


Fig. BHU39: Trend of annual mean SO₂ ambient air concentration in Bhusawal TPP (Ambient 5)

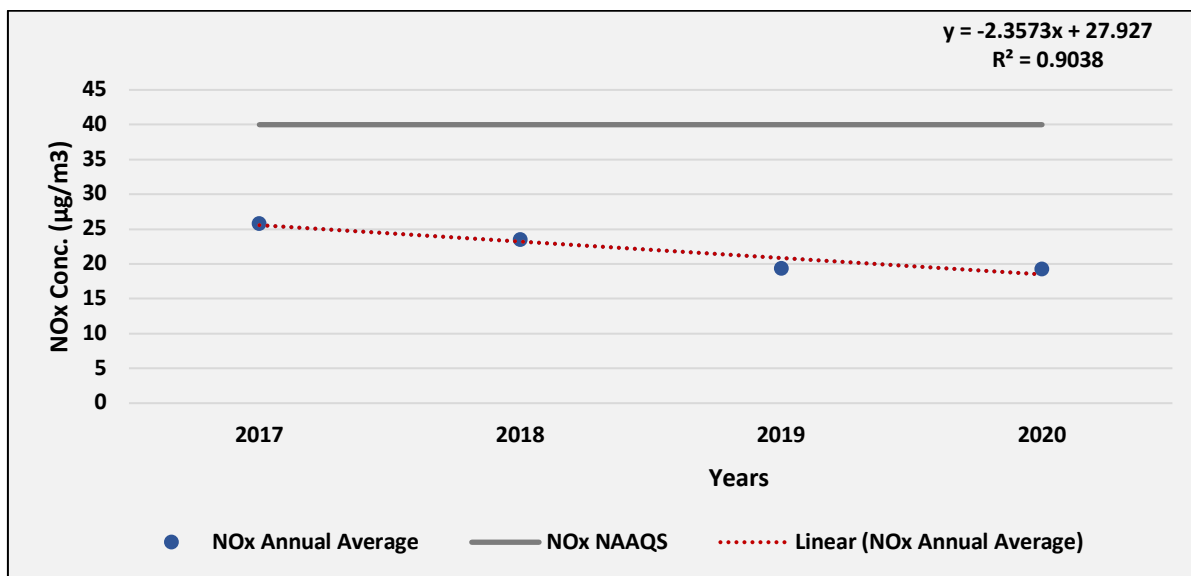


Fig. BHU40: Trend of annual mean NO_x ambient air concentration in Bhusawal TPP (Ambient 5)

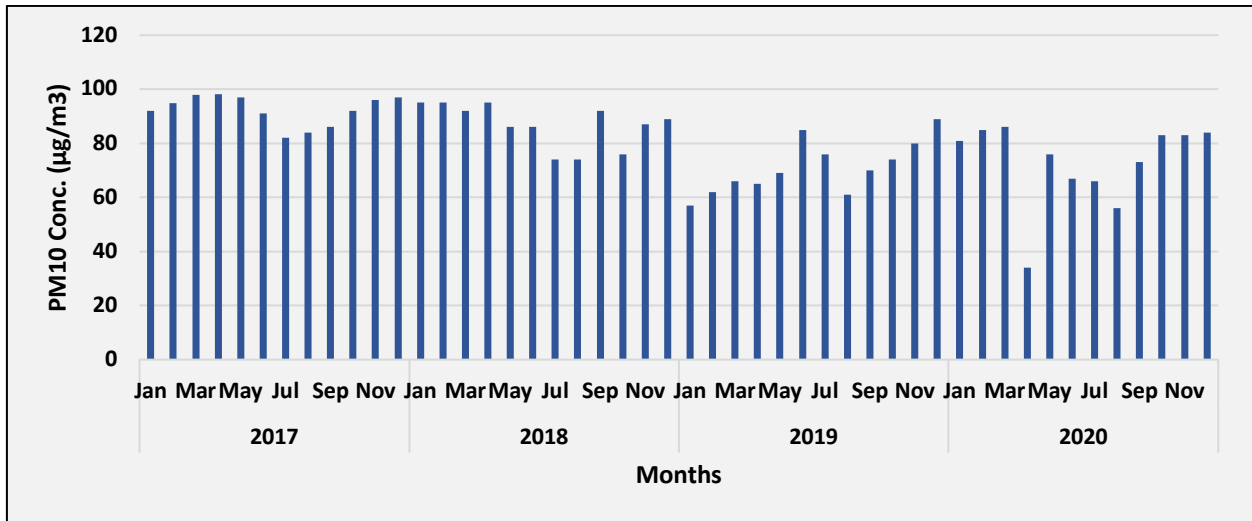


Fig. BHU41: Time series of monthly average PM_{10} ambient air concentration in Bhusawal TPP (Ambient 6)

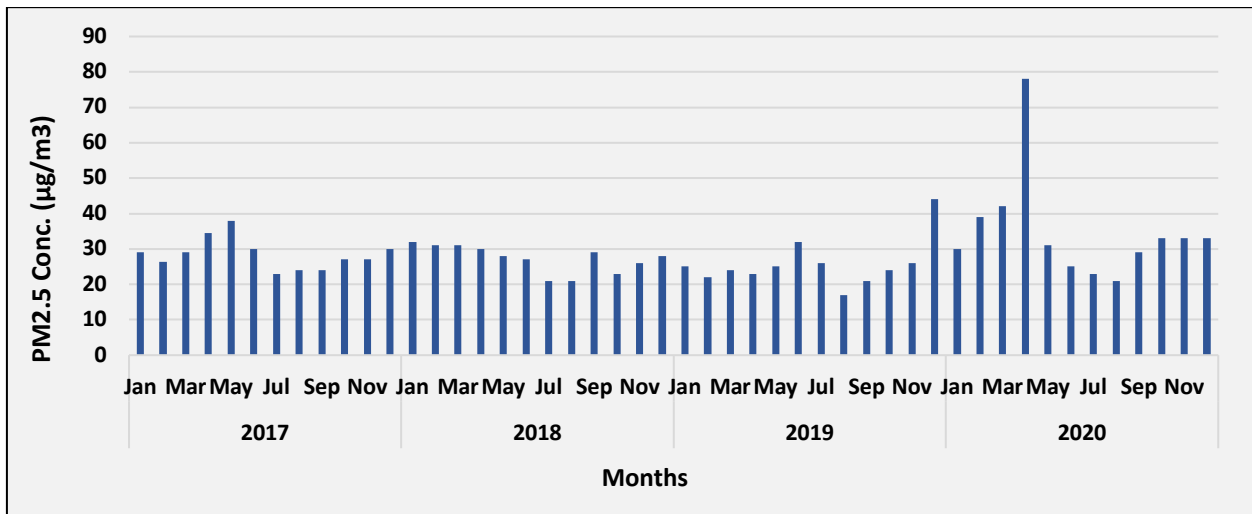


Fig. BHU42: Time series of monthly average $PM_{2.5}$ ambient air concentration in Bhusawal TPP (Ambient 6)

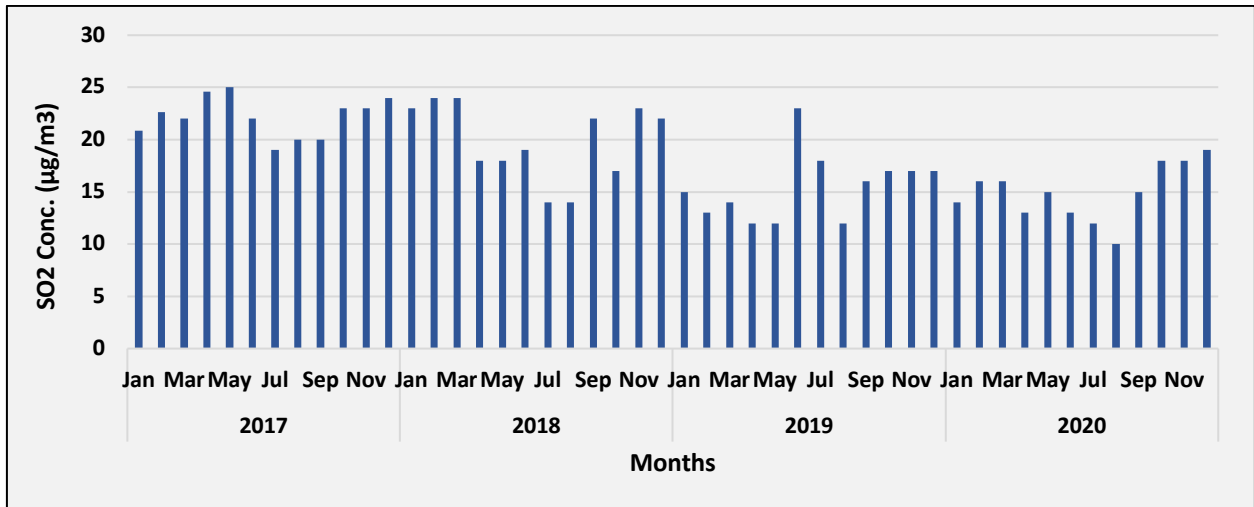


Fig. BHU43: Time series of monthly average SO_2 ambient air concentration in Bhusawal TPP (Ambient 6)

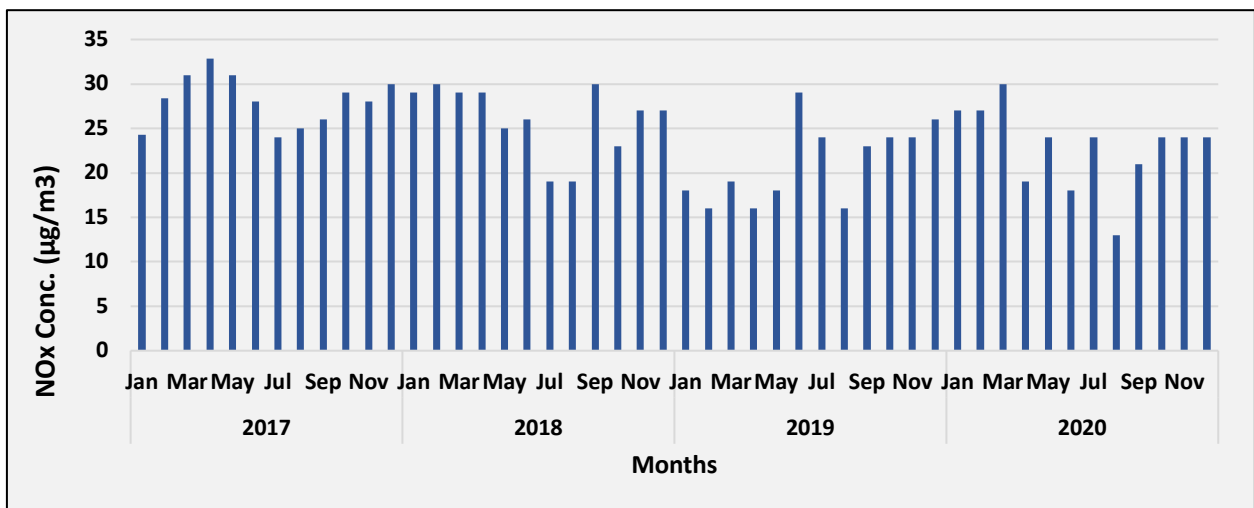


Fig. BHU44: Time series of monthly average NO_x ambient air concentration in Bhusawal TPP (Ambient 6)

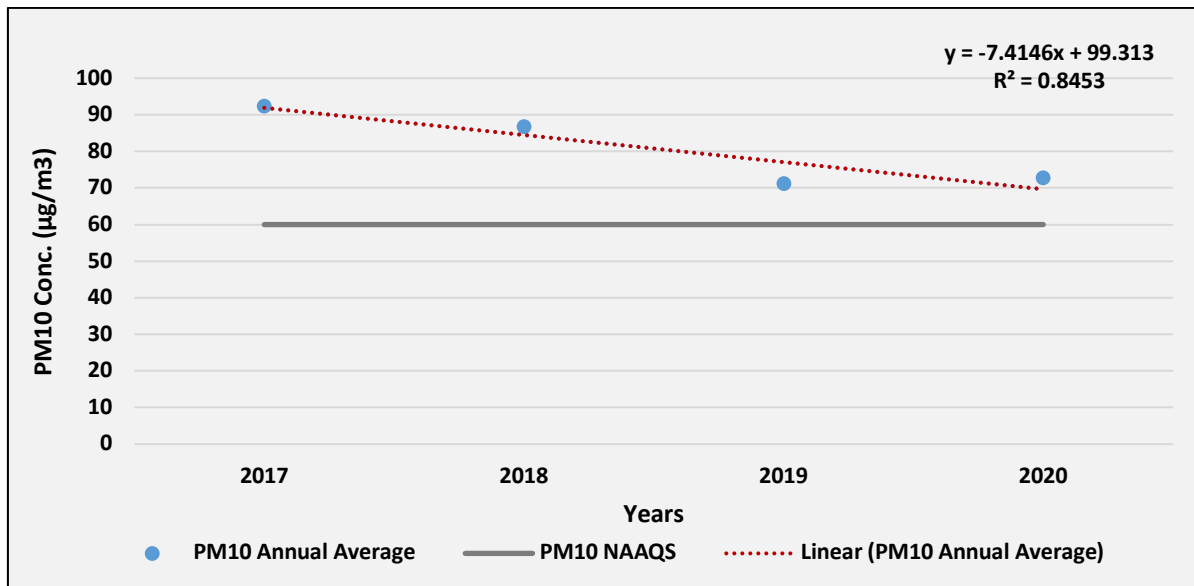


Fig. BHU45: Trend of annual mean PM_{10} ambient air concentration in Bhusawal TPP (Ambient 6)

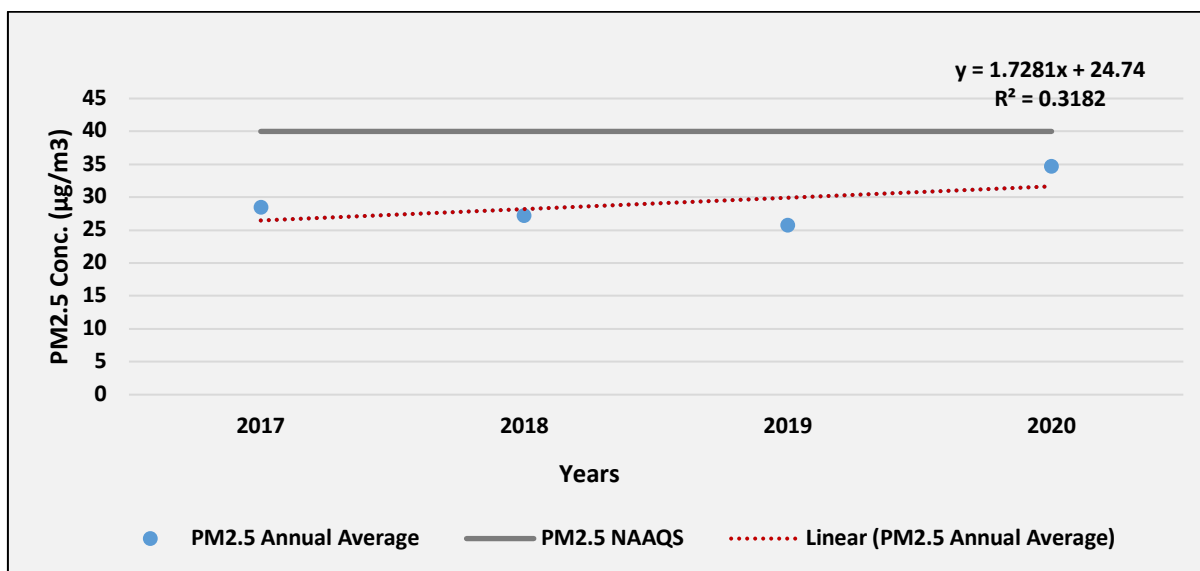


Fig. BHU46: Trend of annual mean $PM_{2.5}$ ambient air concentration in Bhusawal TPP (Ambient 6)

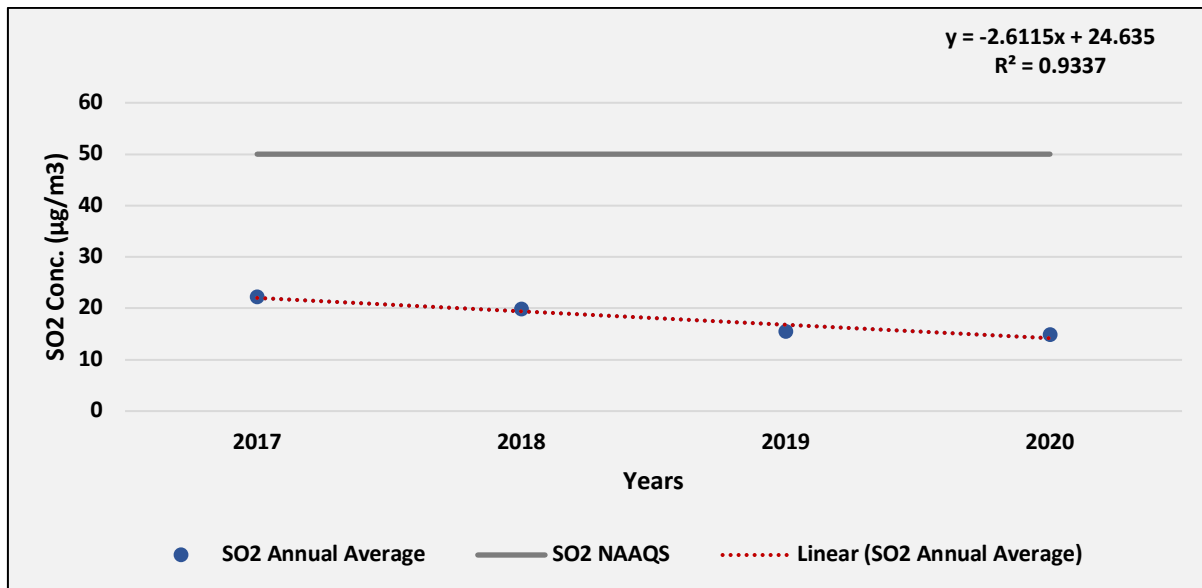


Fig. BHU47: Trend of annual mean SO₂ ambient air concentration in Bhusawal TPP (Ambient 6)

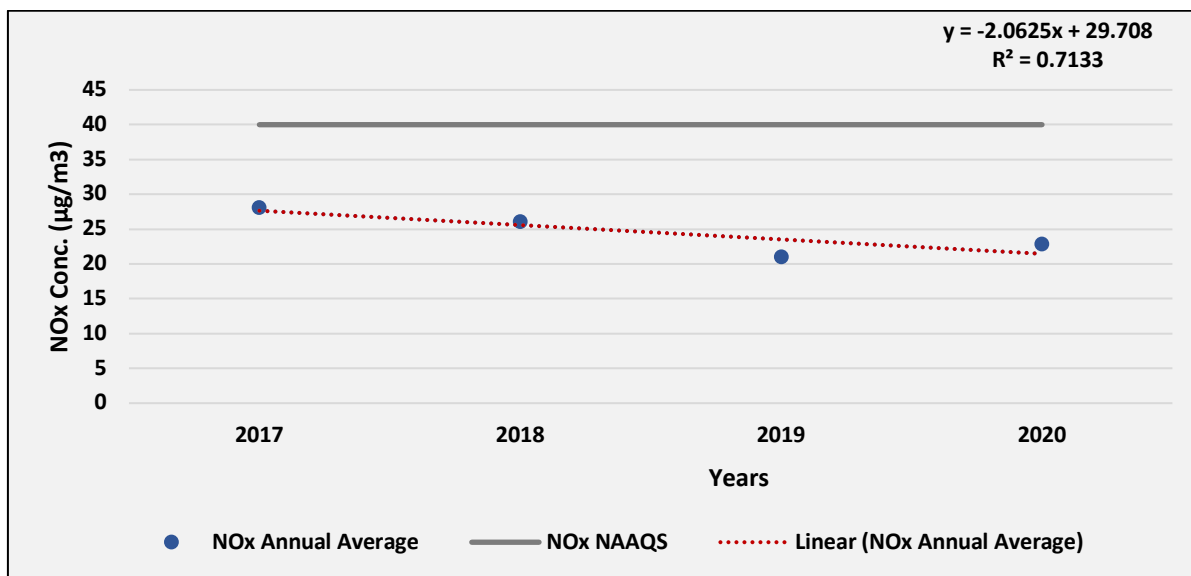


Fig. BHU48: Trend of annual mean NO_x ambient air concentration in Bhusawal TPP (Ambient 6)

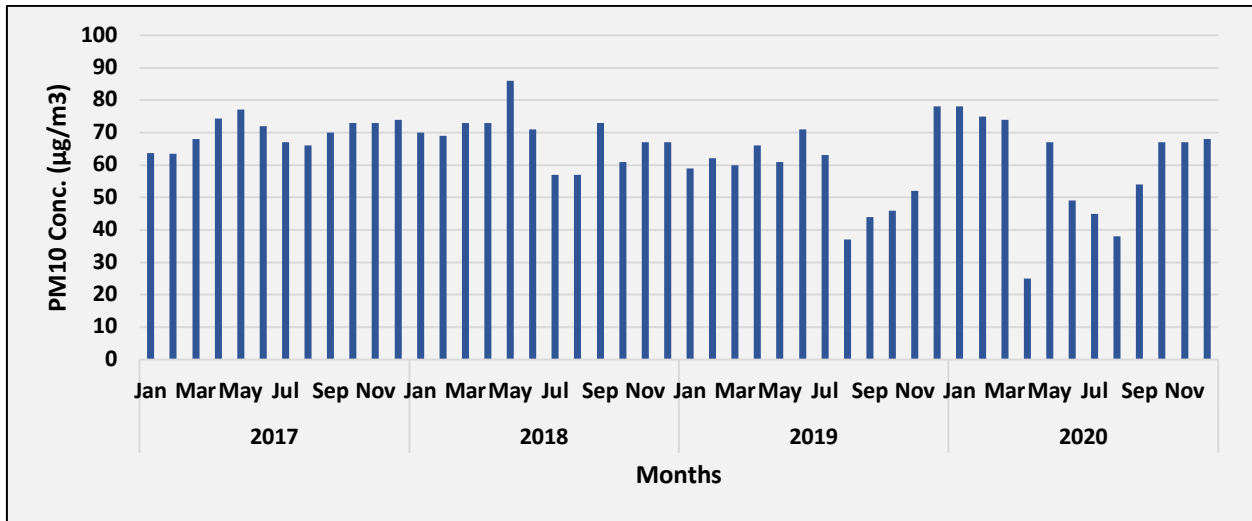


Fig. BHU49: Time series of monthly average PM_{10} ambient air concentration in Bhusawal TPP (Ambient 7)

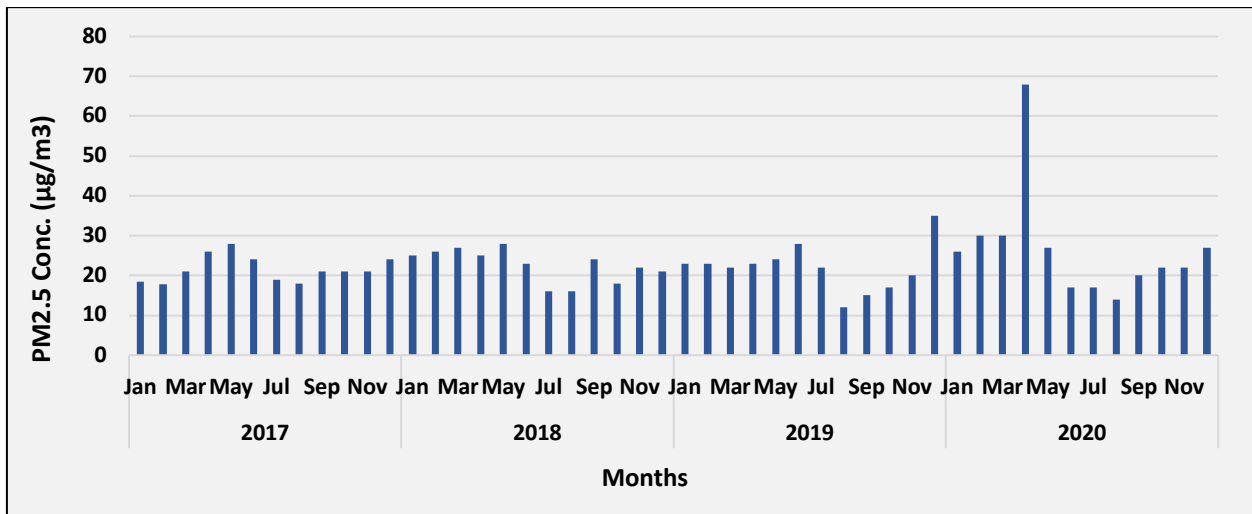


Fig. BHU50: Time series of monthly average $PM_{2.5}$ ambient air concentration in Bhusawal TPP (Ambient 7)

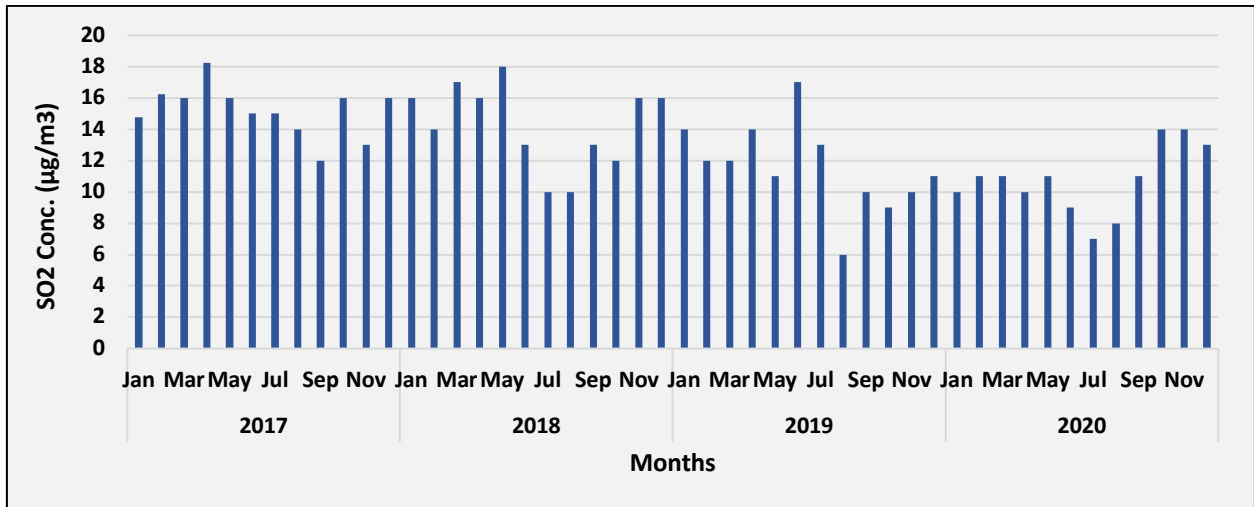


Fig. BHU51: Time series of monthly average SO₂ ambient air concentration in Bhusawal TPP (Ambient 7)

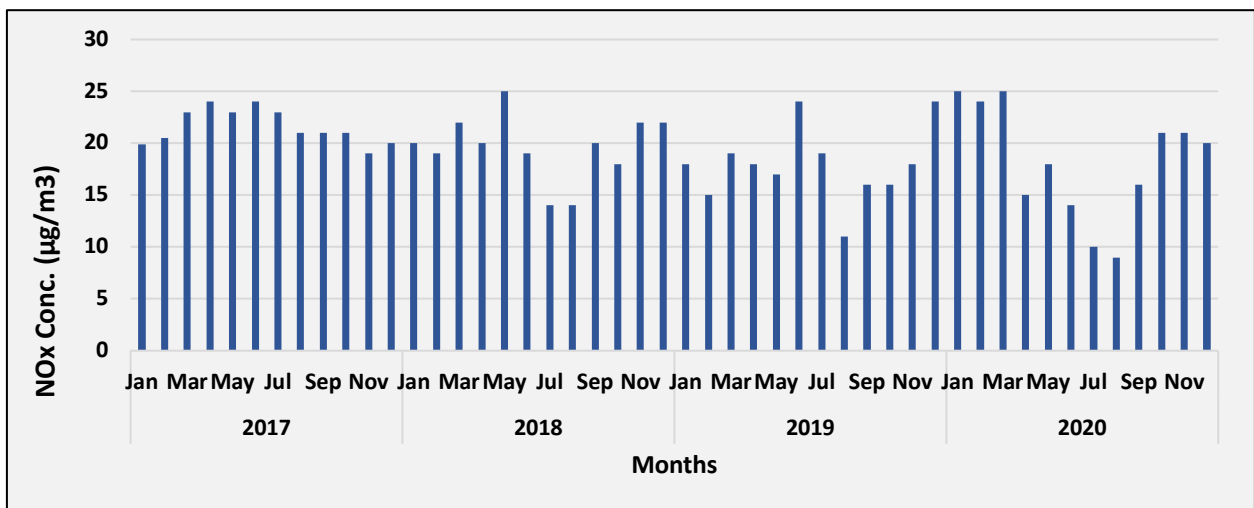


Fig. BHU52: Time series of monthly average NO_x ambient air concentration in Bhusawal TPP (Ambient 7)

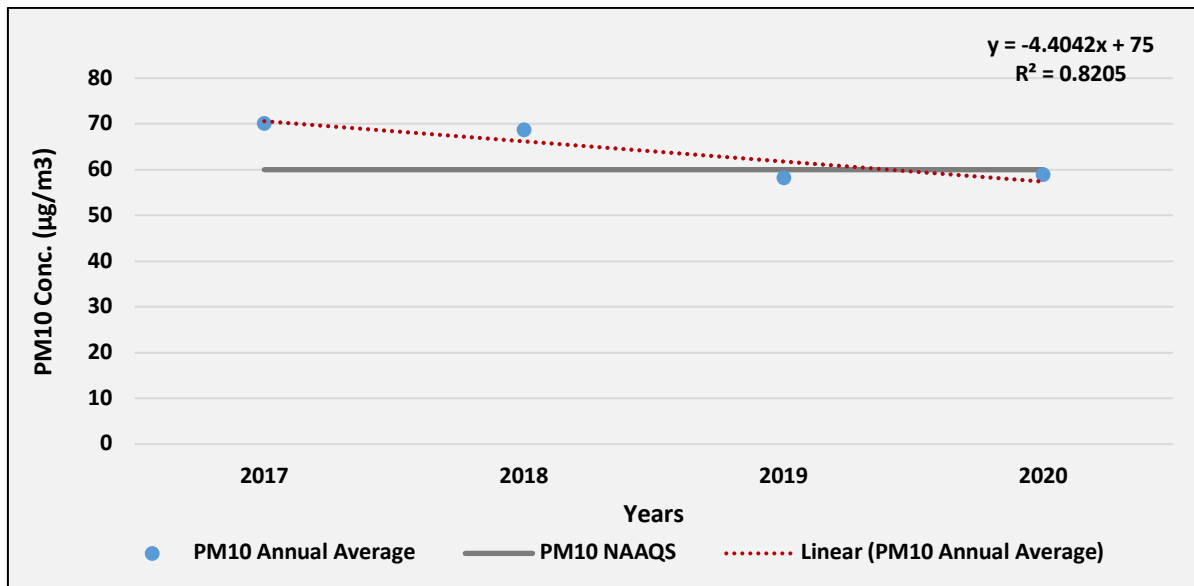


Fig. BHU53: Trend of annual mean PM_{10} ambient air concentration in Bhusawal TPP (Ambient 7)

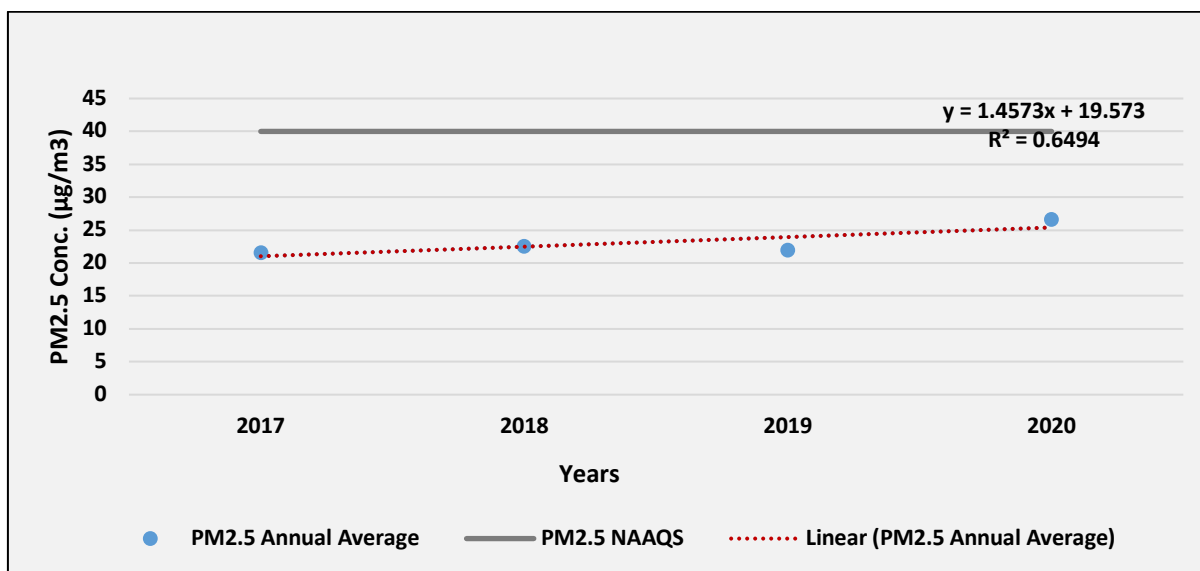


Fig. BHU54: Trend of annual mean $PM_{2.5}$ ambient air concentration in Bhusawal TPP (Ambient 7)

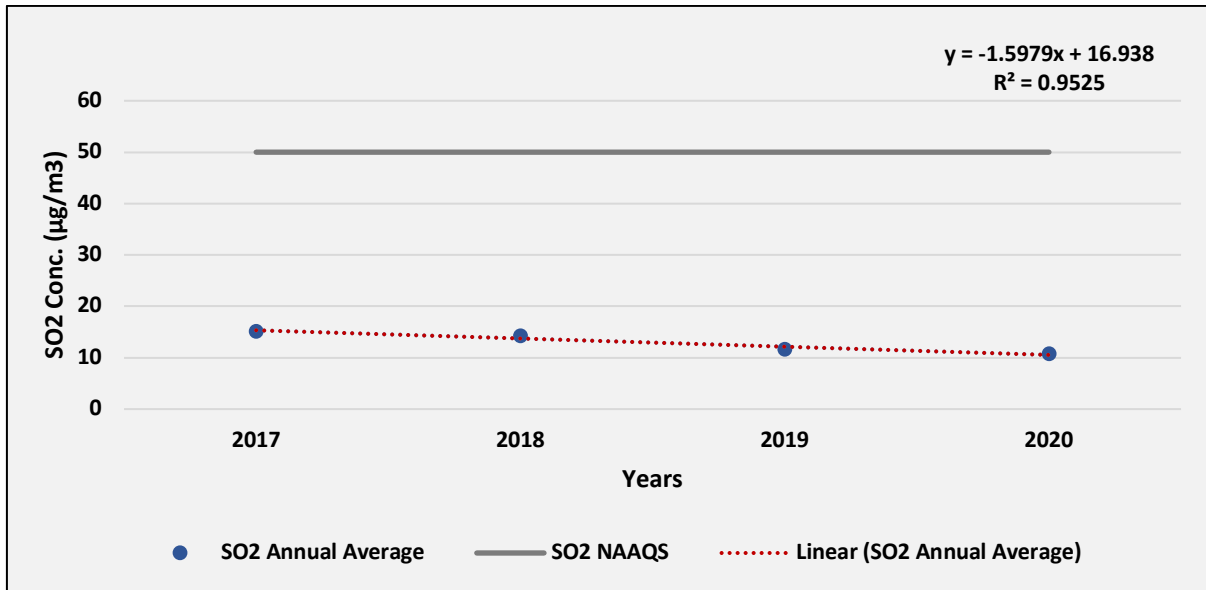


Fig. BHU55: Trend of annual mean SO₂ ambient air concentration in Bhusawal TPP (Ambient 7)

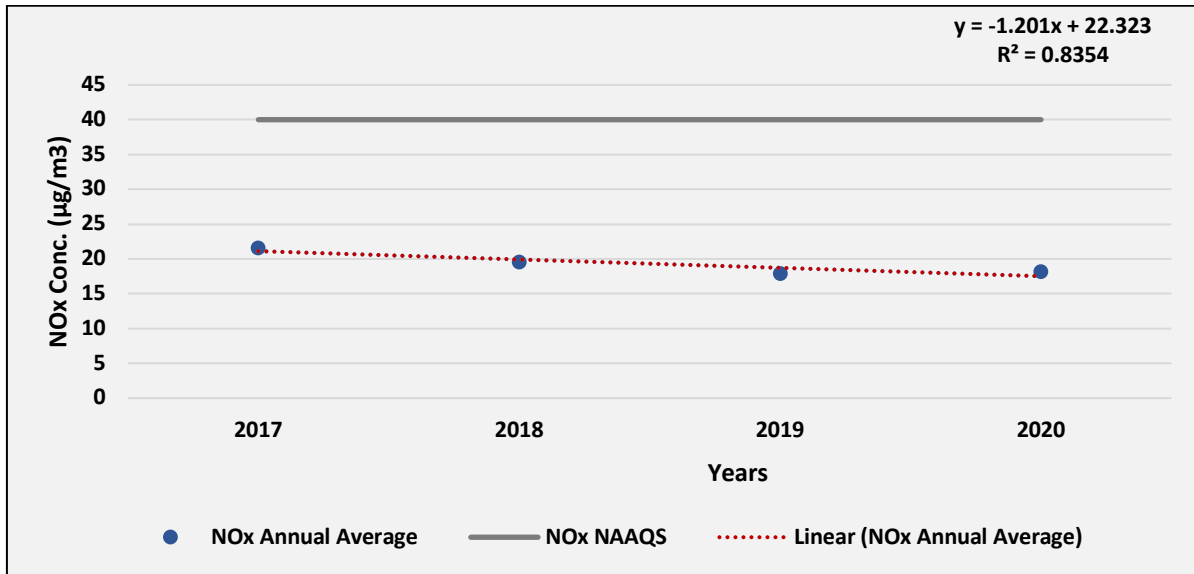


Fig. BHU56: Trend of annual mean NO_x ambient air concentration in Bhusawal TPP (Ambient 7)

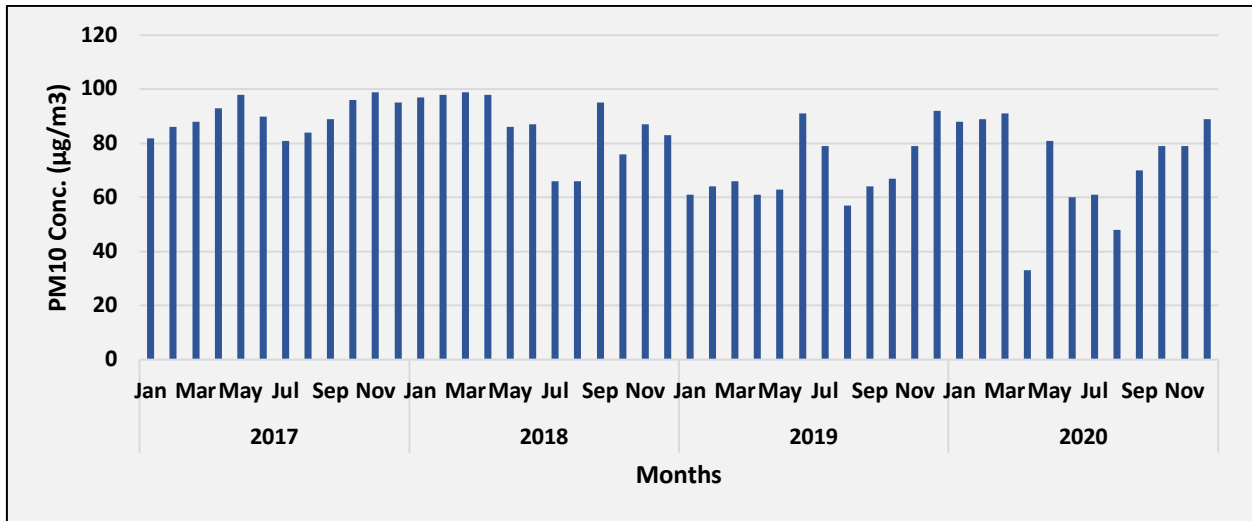


Fig. BHU57: Time series of monthly average PM_{10} ambient air concentration in Bhusawal TPP (Ambient 8)

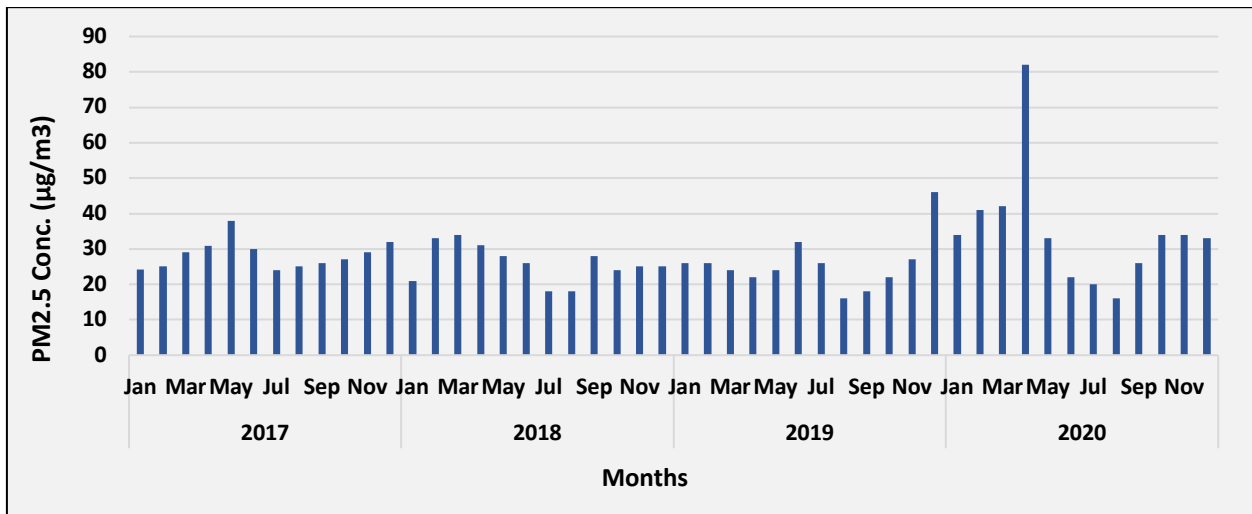


Fig. BHU58: Time series of monthly average $PM_{2.5}$ ambient air concentration in Bhusawal TPP (Ambient 8)

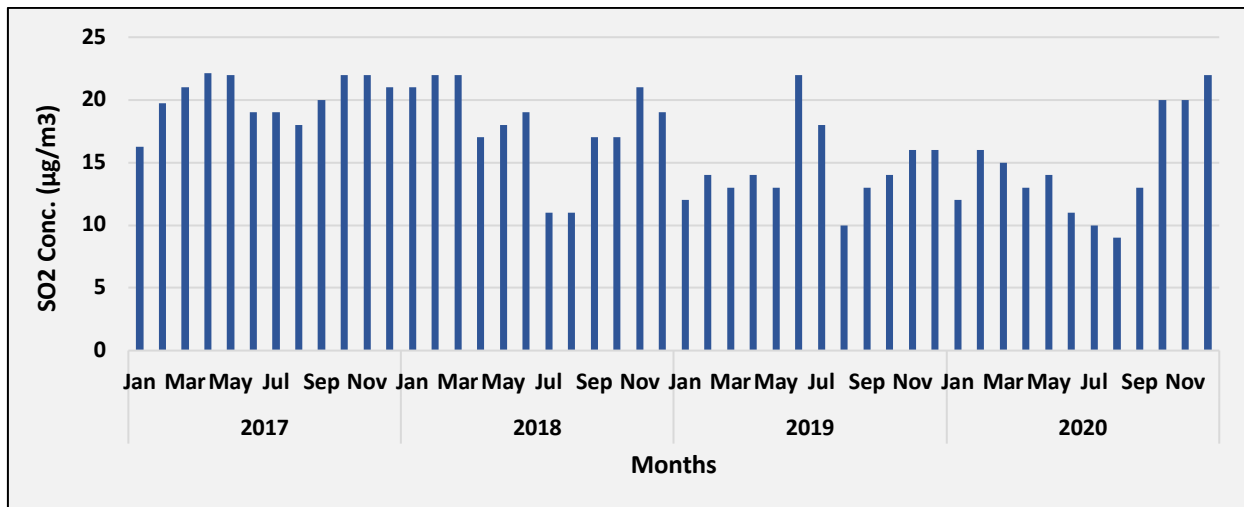


Fig. BHU59: Time series of monthly average SO_2 ambient air concentration in Bhusawal TPP (Ambient 8)

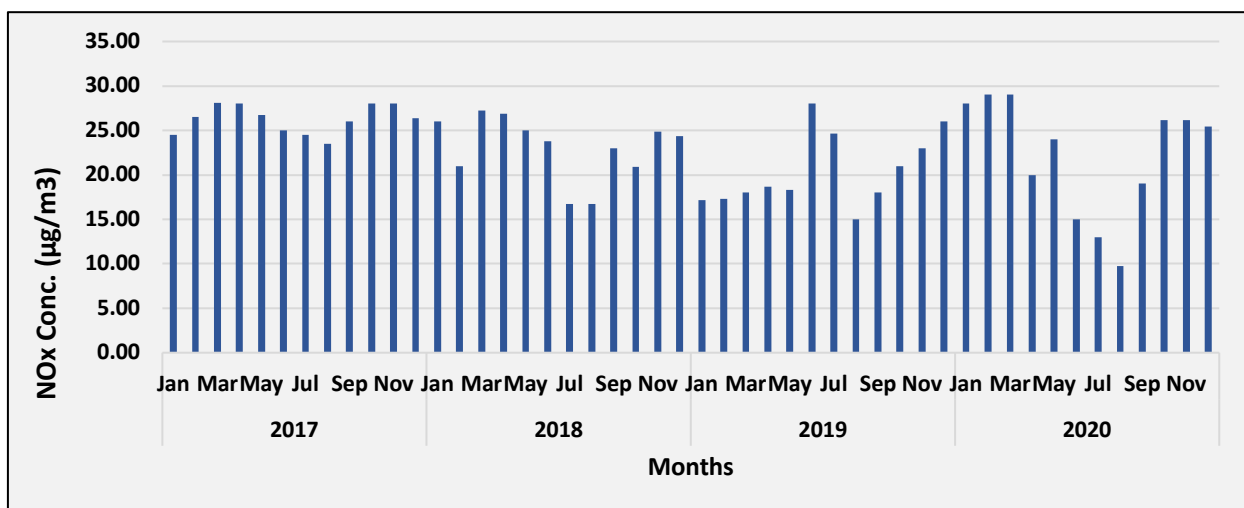


Fig. BHU60: Time series of monthly average NO_x ambient air concentration in Bhusawal TPP (Ambient 8)

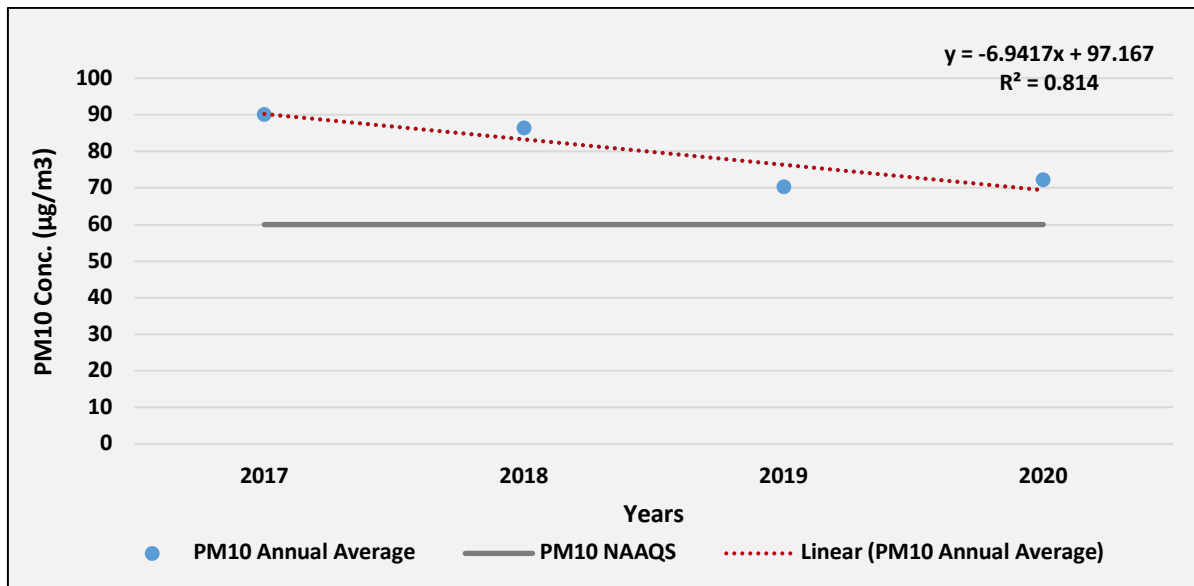


Fig. BHU61: Trend of annual mean PM_{10} ambient air concentration in Bhusawal TPP (Ambient 8)

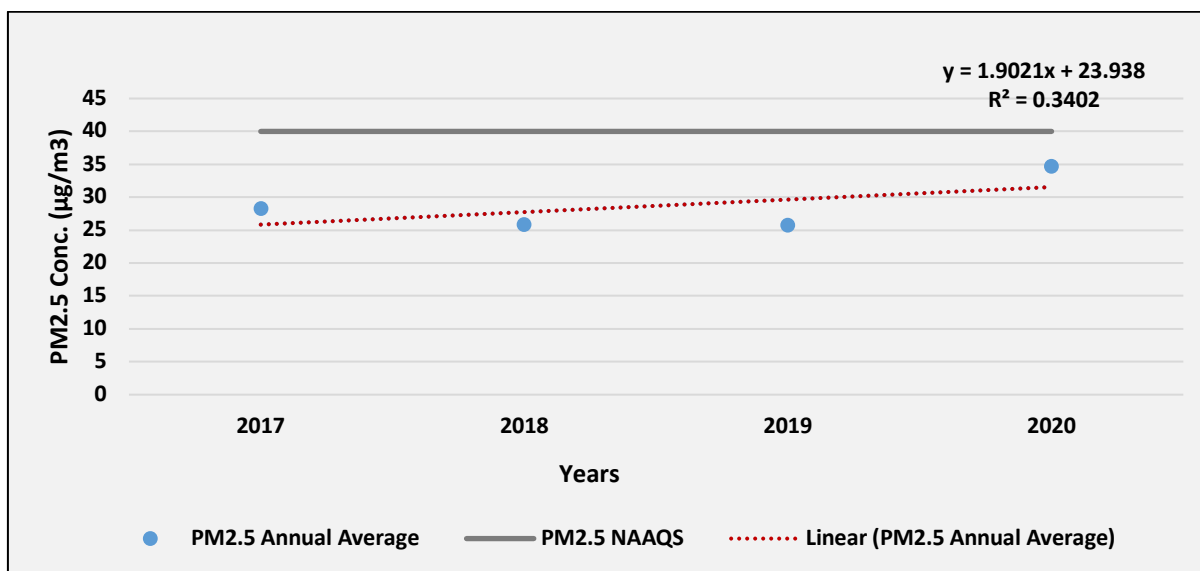


Fig. BHU62: Trend of annual mean $PM_{2.5}$ ambient air concentration in Bhusawal TPP (Ambient 8)

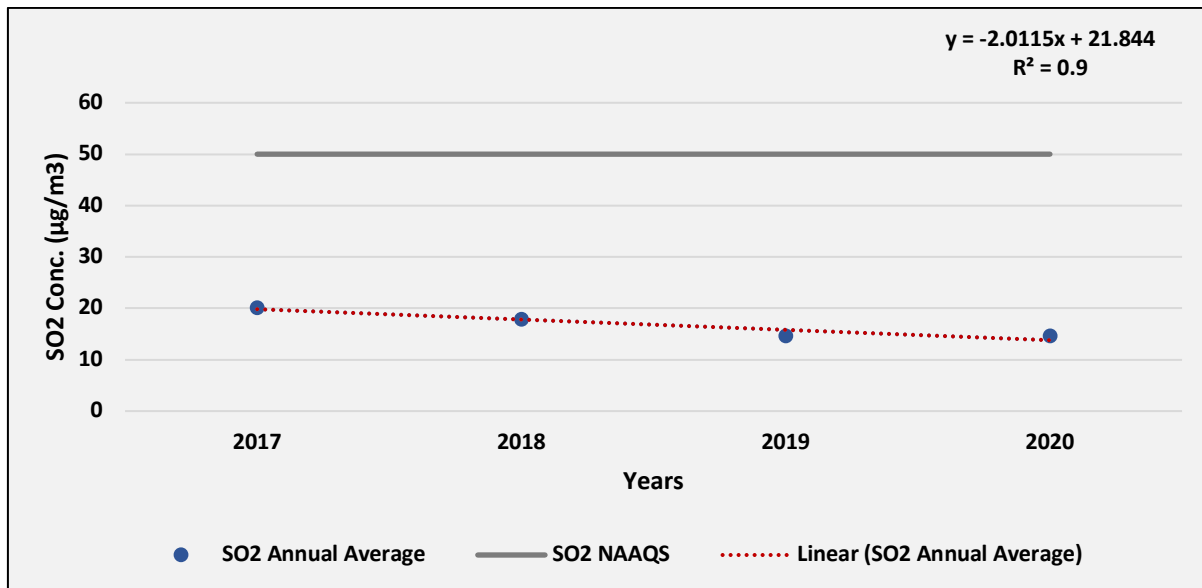


Fig. BHU63: Trend of annual mean SO₂ ambient air concentration in Bhusawal TPP (Ambient 8)

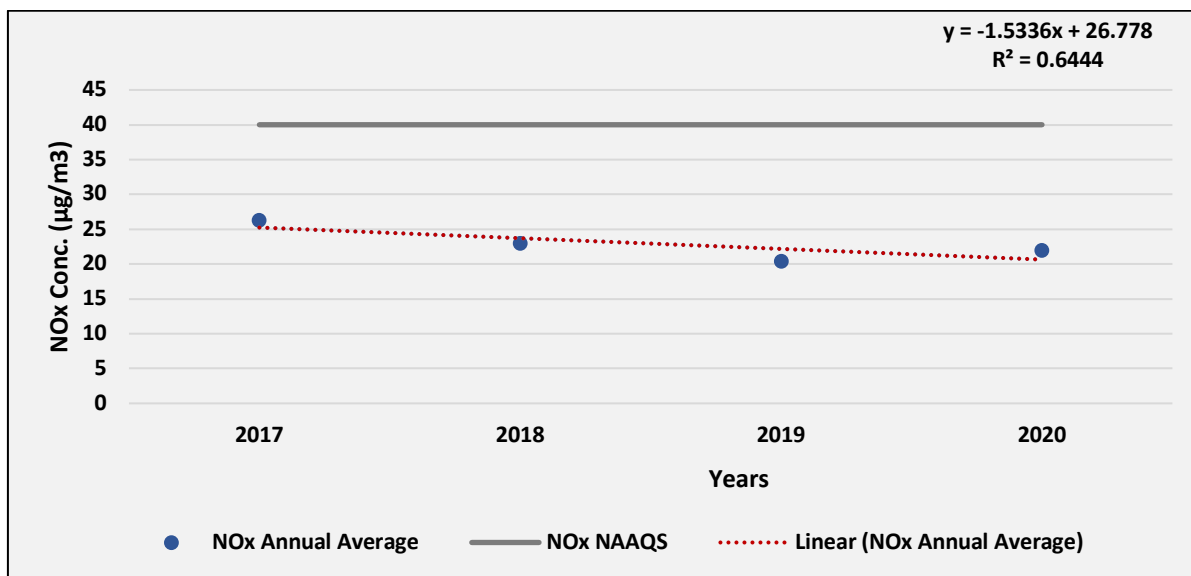


Fig. BHU64: Trend of annual mean NO_x ambient air concentration in Bhusawal TPP (Ambient 8)

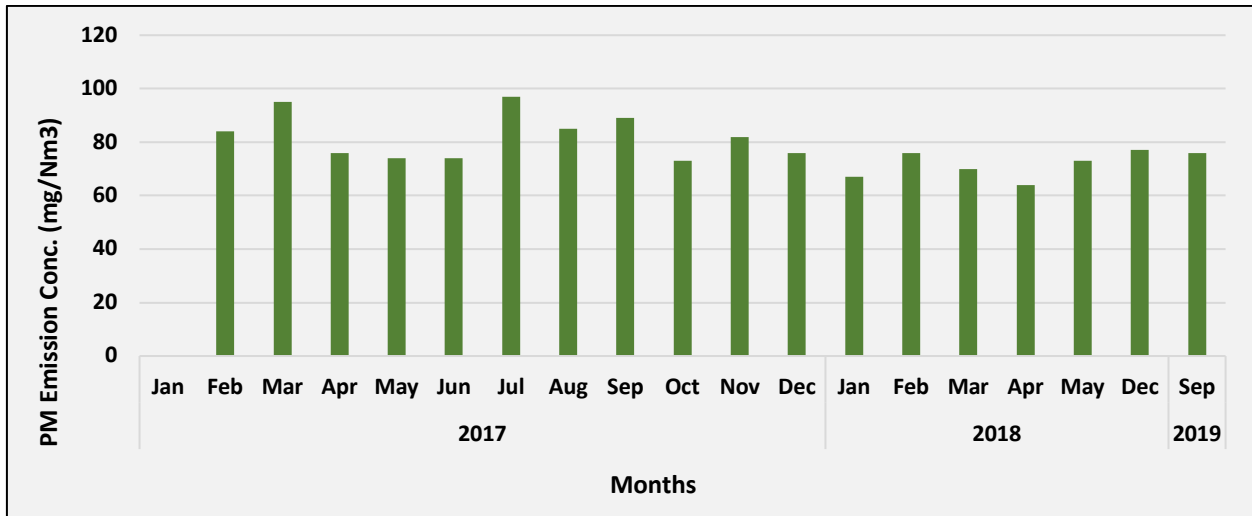


Fig. BHU65: Time series of monthly average PM Emission concentration in Bhusawal TPP (Unit 1)

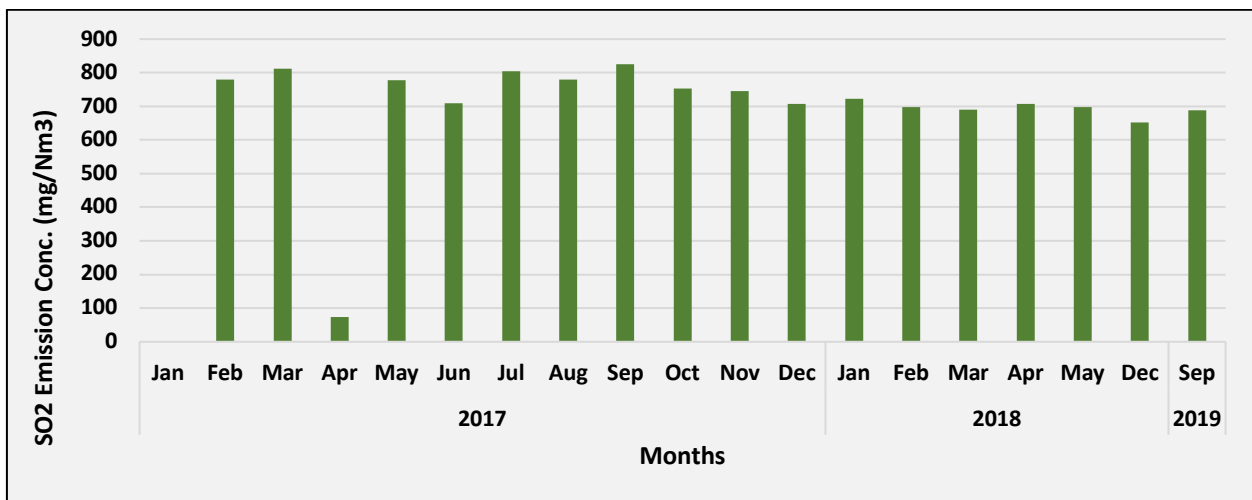


Fig. BHU66: Time series of monthly average SO₂ Emission concentration in Bhusawal TPP (Unit 1)

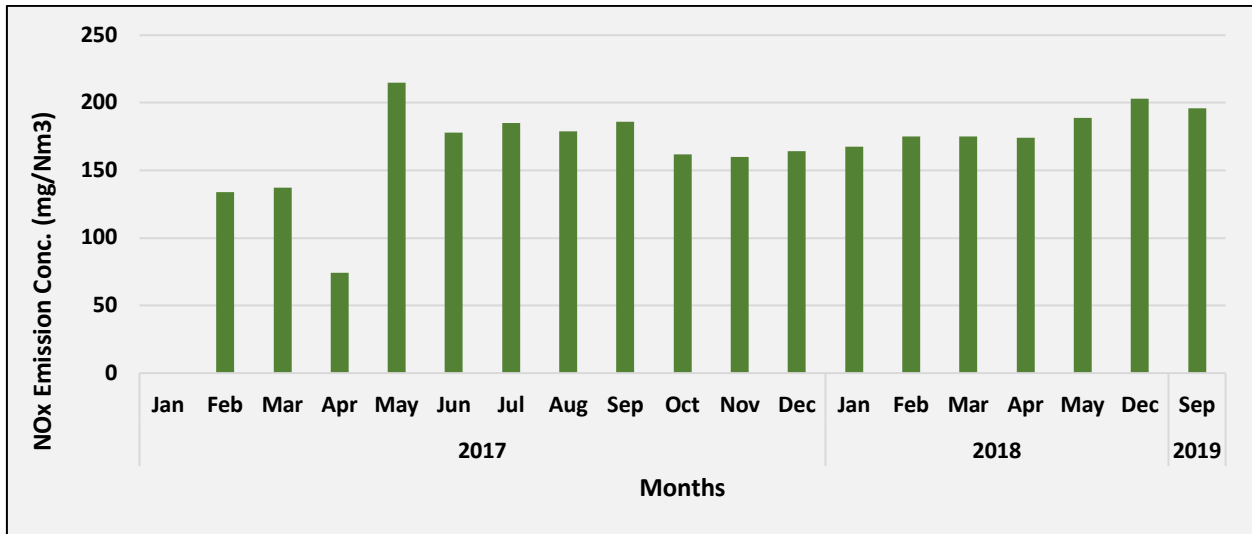


Fig. BHU67: Time series of monthly average NO_x Emission concentration in Bhusawal TPP (Unit 1)

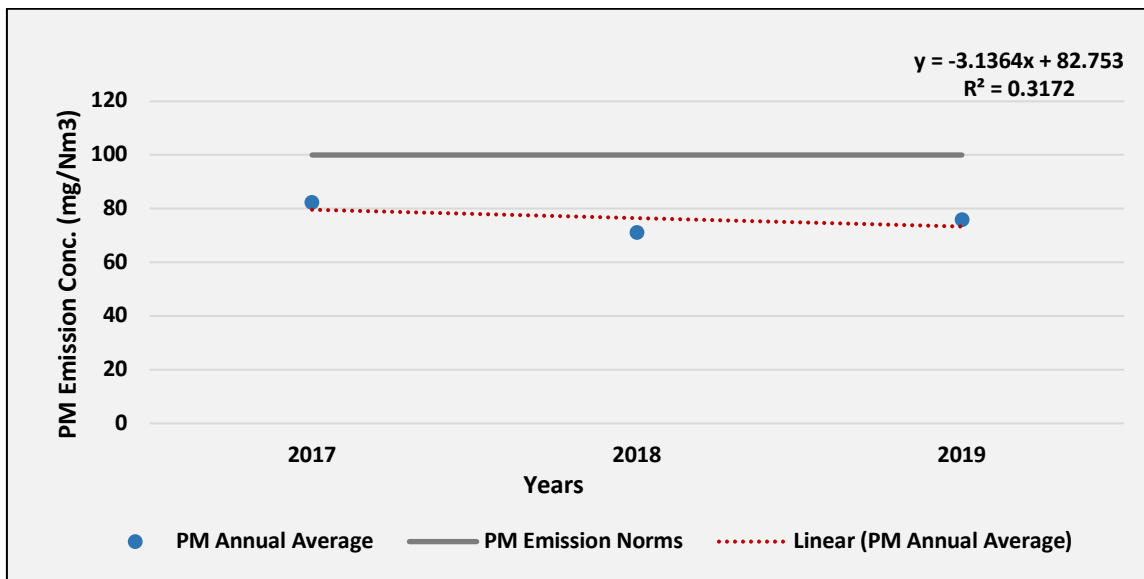


Fig. BHU68: Trend of annual mean PM Emission air concentration in Bhusawal TPP (Unit 1)

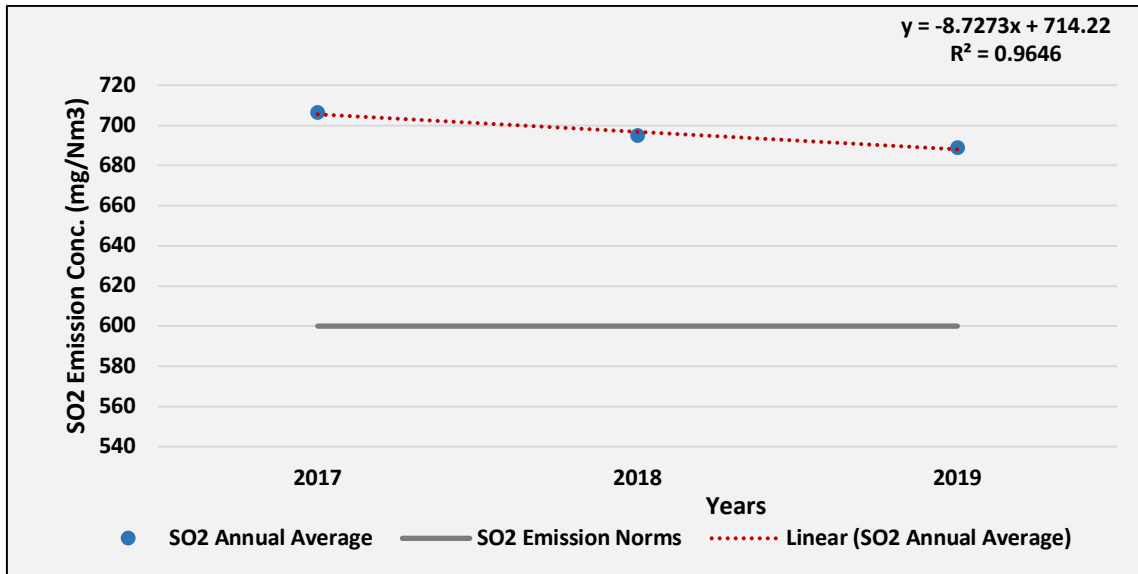


Fig. BHU69: Trend of annual mean SO₂ Emission air concentration in Bhusawal TPP (Unit 1)

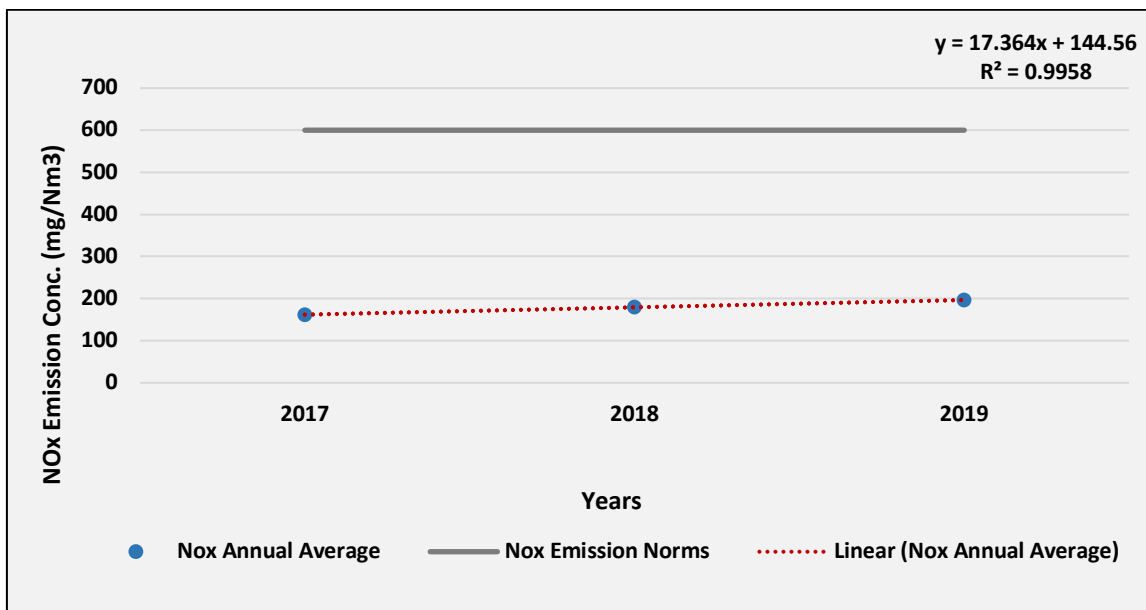


Fig. BHU70: Trend of annual mean NO_x Emission air concentration in Bhusawal TPP (Unit 1)

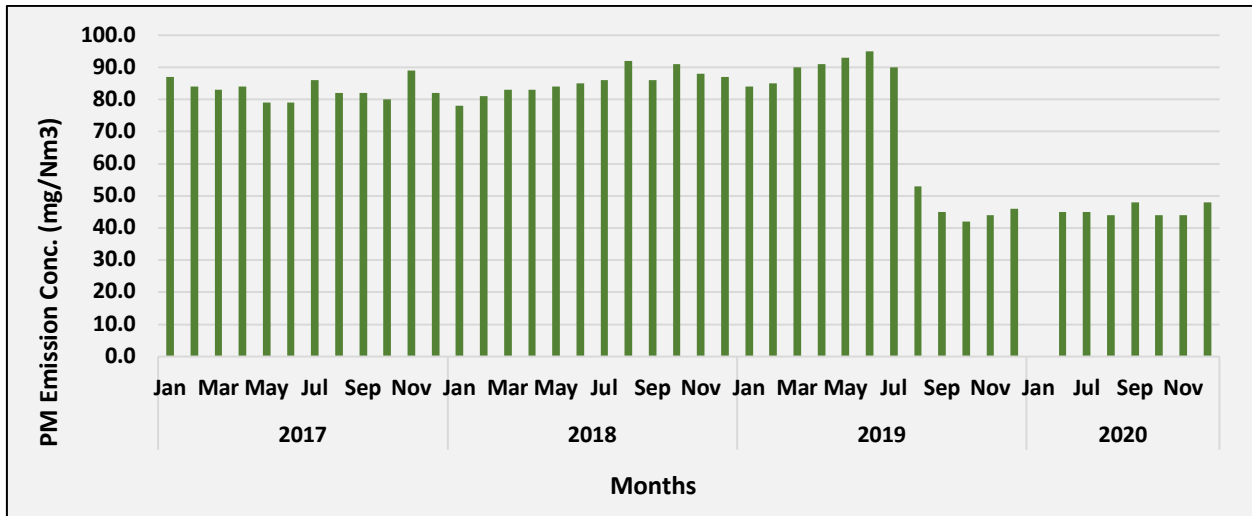


Fig. BHU71: Time series of monthly average PM Emission concentration in Bhusawal TPP (Unit 2)

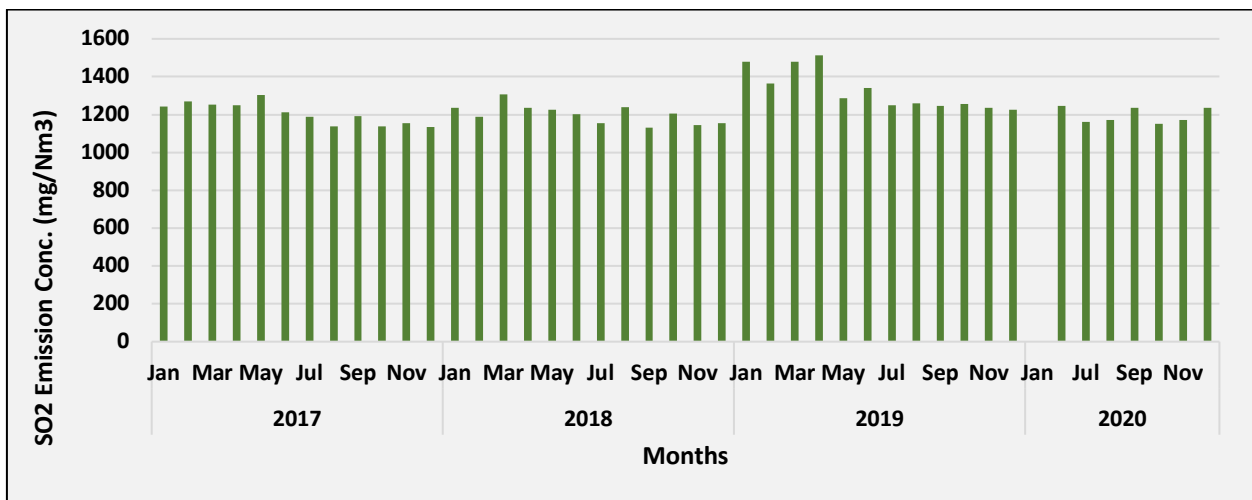


Fig. BHU72: Time series of monthly average SO₂ Emission concentration in Bhusawal TPP (Unit 2)

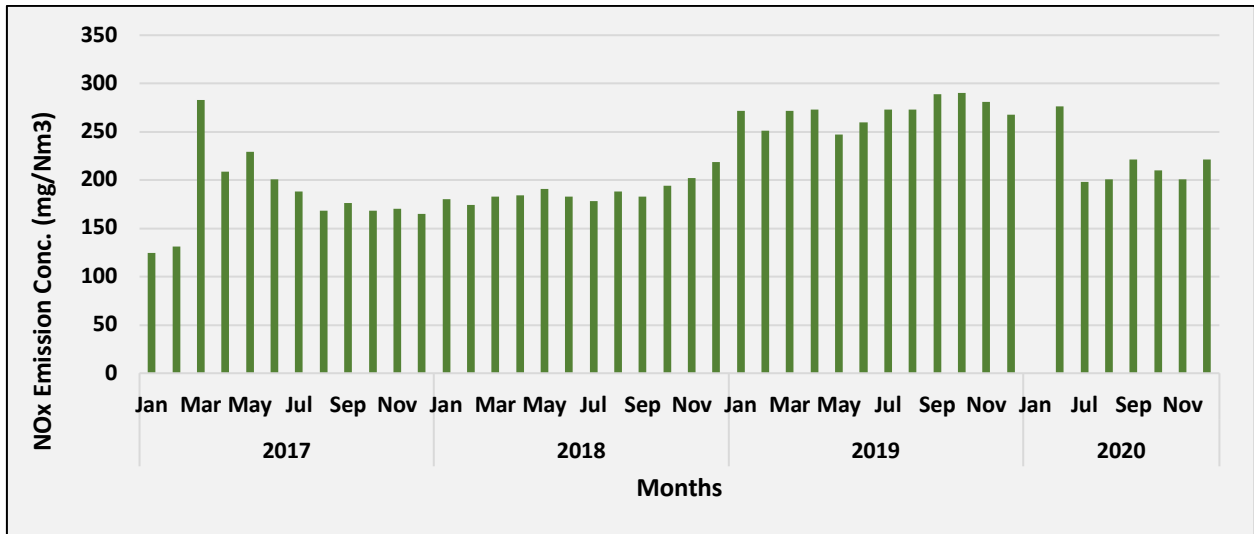


Fig. BHU73: Time series of monthly average NO_x Emission concentration in Bhusawal TPP (Unit 2)

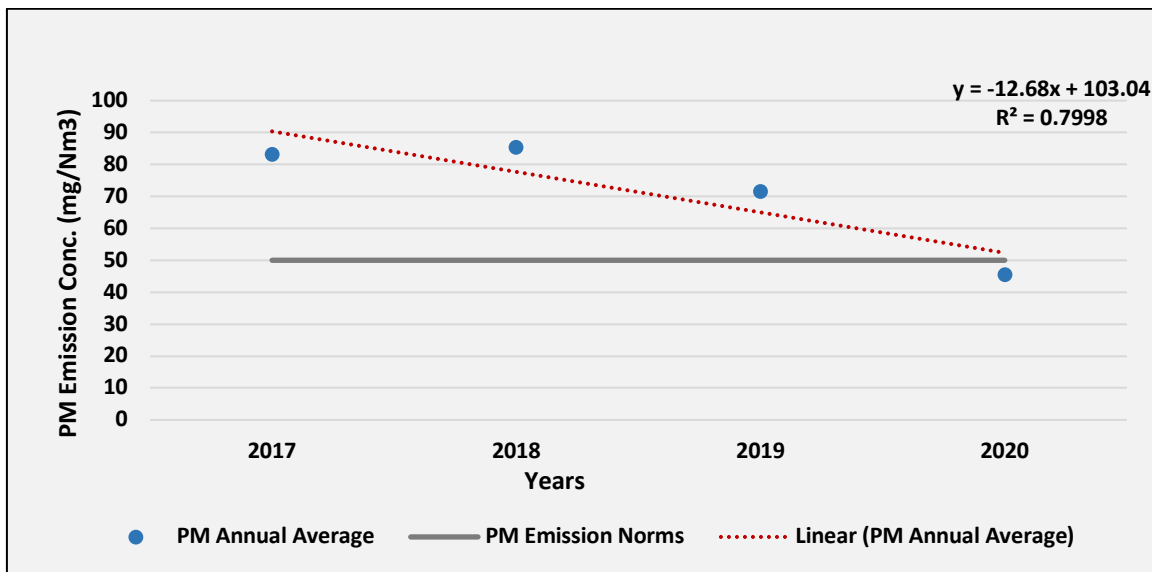


Fig. BHU74: Trend of annual mean PM Emission air concentration in Bhusawal TPP (Unit 2)

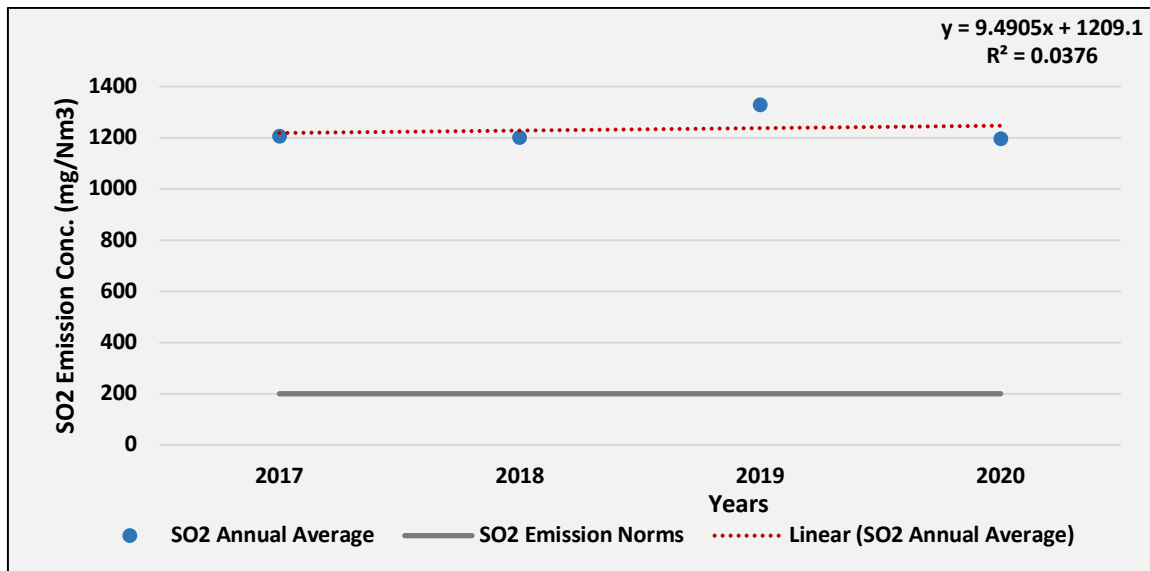


Fig. BHU75: Trend of annual mean SO₂ Emission air concentration in Bhusawal TPP (Unit 2)

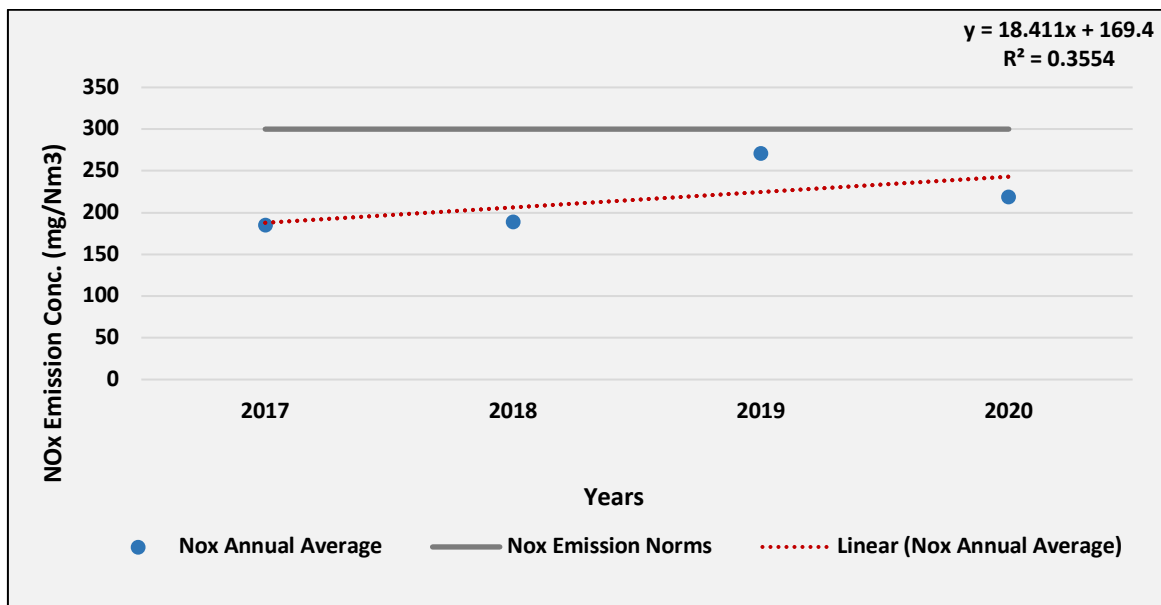


Fig. BHU76: Trend of annual mean NO_x Emission air concentration in Bhusawal TPP (Unit 2)

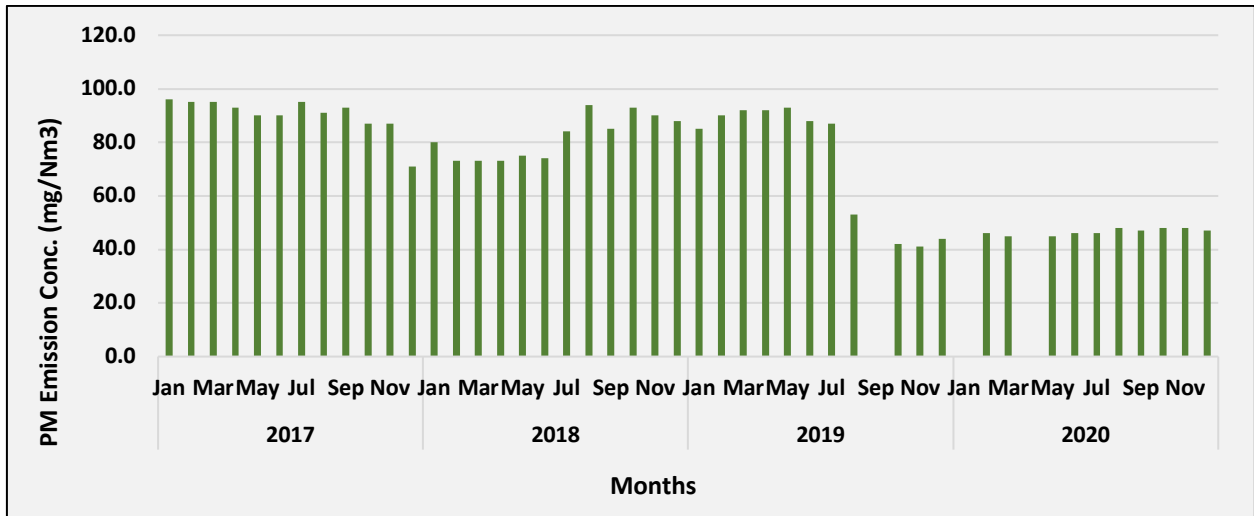


Fig. BHU77: Time series of monthly average PM Emission concentration in Bhusawal TPP (Unit 3)

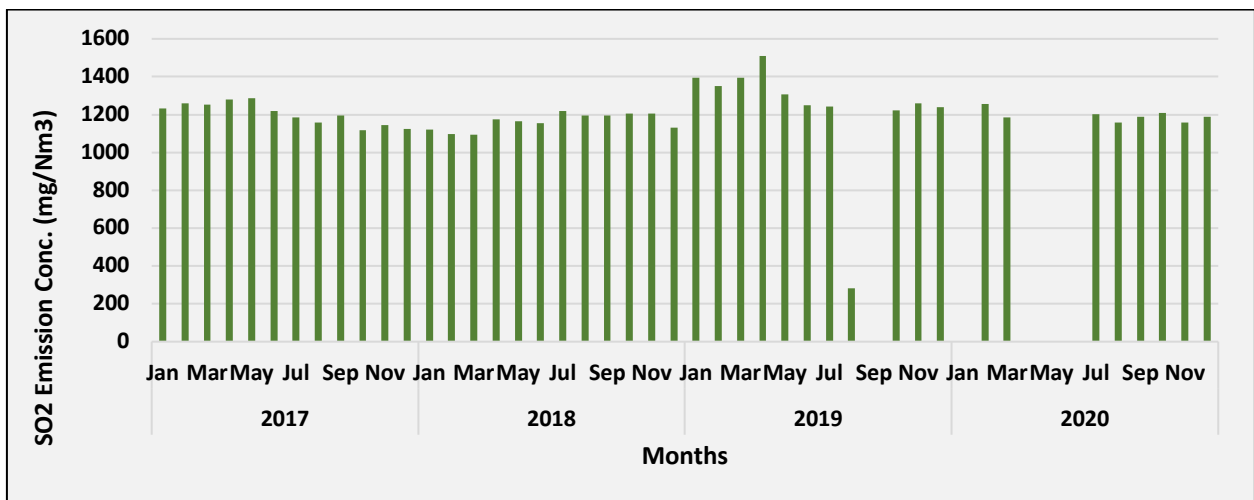


Fig. BHU78: Time series of monthly average SO₂ Emission concentration in Bhusawal TPP (Unit 3)

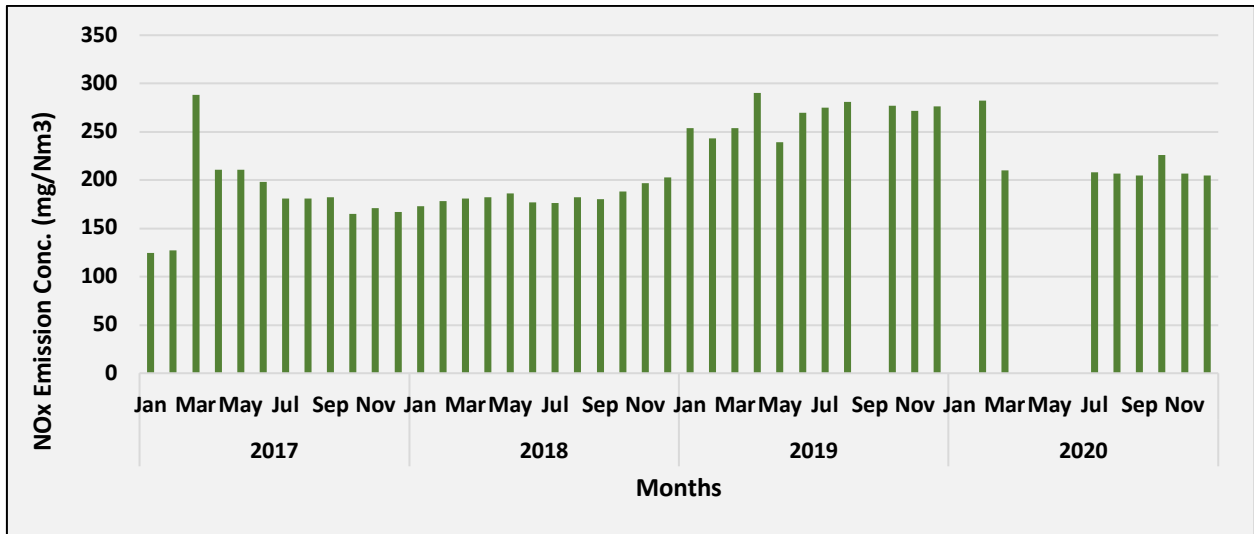


Fig. BHU79: Time series of monthly average NO_x Emission concentration in Bhusawal TPP (Unit 3)

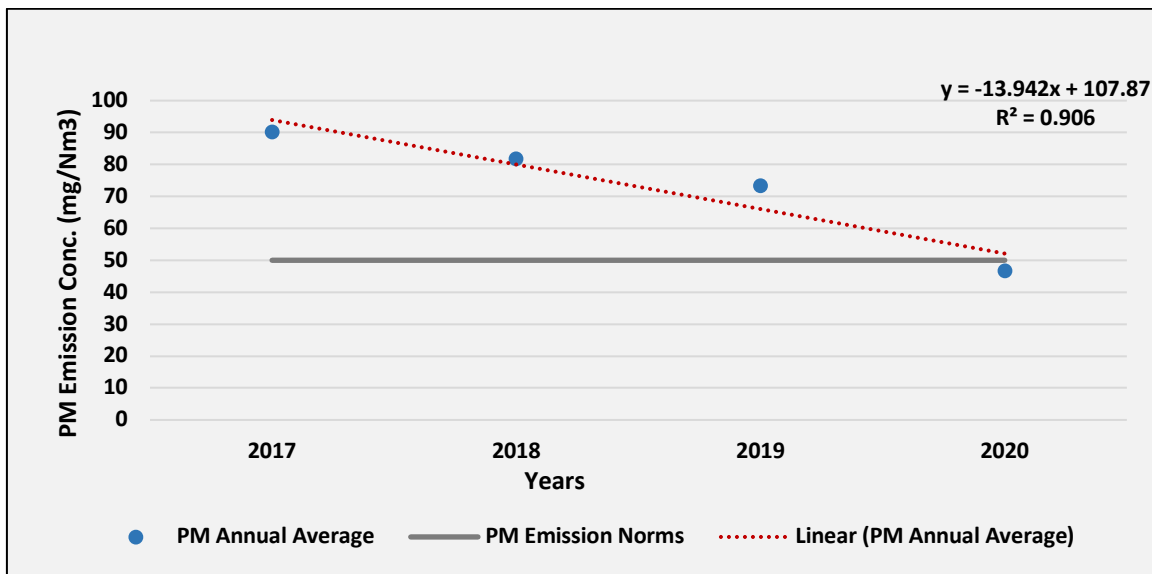


Fig. BHU80: Trend of annual mean PM Emission air concentration in Bhusawal TPP (Unit 3)

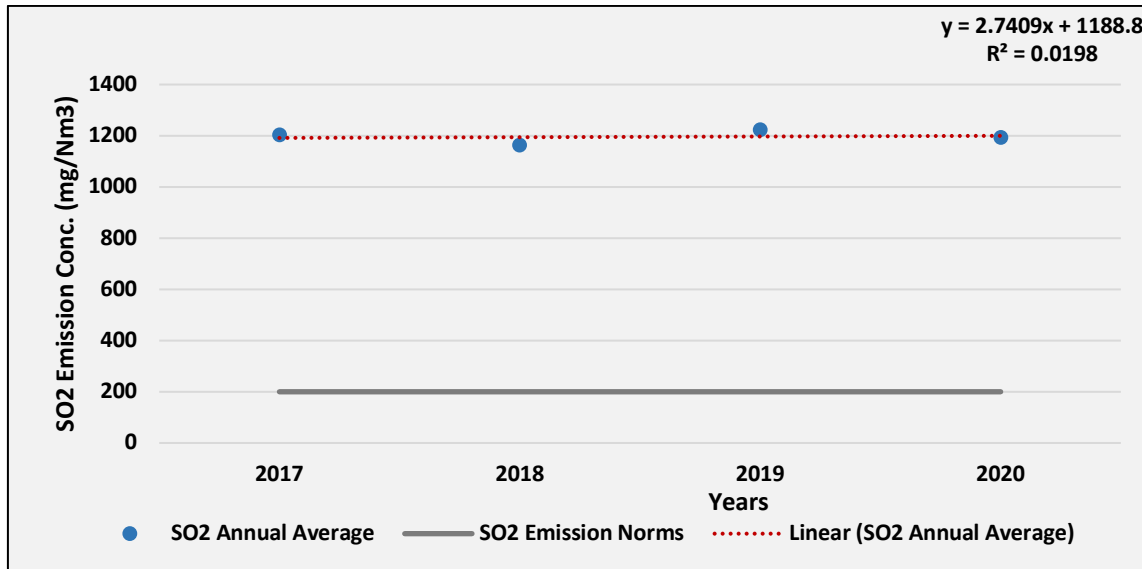


Fig. BHU81: Trend of annual mean SO₂ Emission air concentration in Bhusawal TPP (Unit 3)

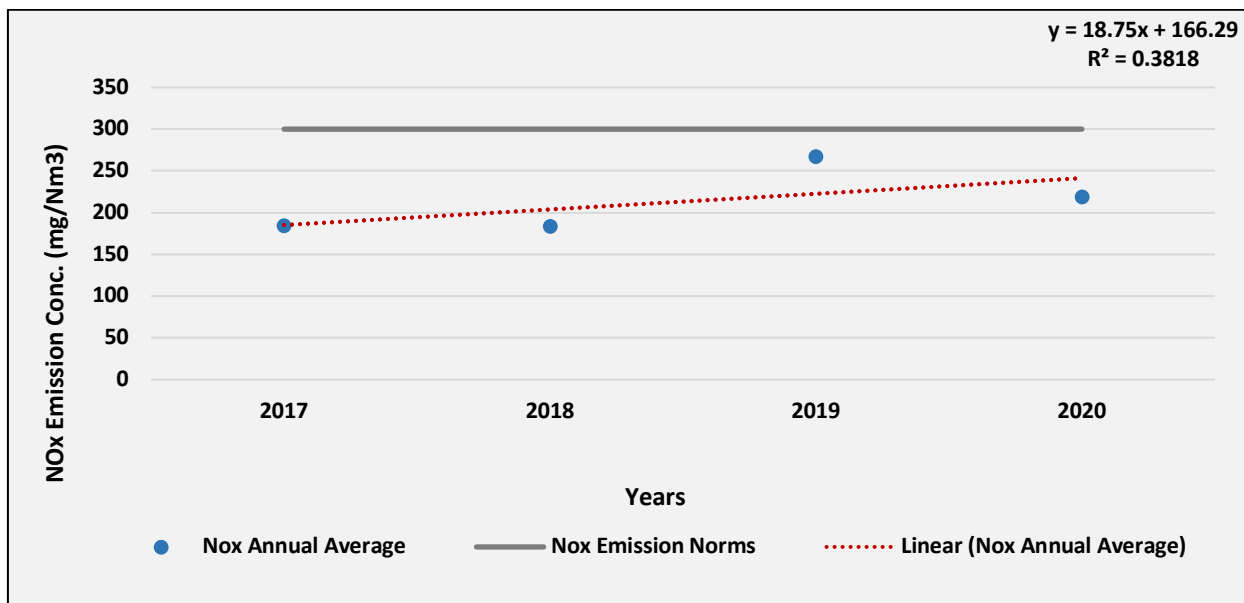


Fig. BHU82: Trend of annual mean NO_x Emission air concentration in Bhusawal TPP (Unit 3)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, is exceeding whereas the PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and PM parameter are much higher than the emission norms. Emission of NO_x is within the limit range.

KORADI THERMAL POWER PLANT

Koradi Thermal Power Station (KTPS) is located at Koradi near Nagpur, Maharashtra. The power plant is one of the four major power plants in Vidarbha – a power surplus region of India. The power station began operations in 1974 and is one of the nine active power stations operated by Maharashtra State Power Generation Company Limited (Prajot), a subsidiary of Government of Maharashtra owned Maharashtra State Electricity Board (MSEB).

The ambient air quality concentrations of PM₁₀, PM_{2.5} SO₂, & NO_x, and Unit emission for PM, SO₂ and NO_x data analyzed (Fig. KRD1 – Fig. KRD36) for the last three years (2018-2020) using data provided by Mahagenco developer for Koradi Power plant, Maharashtra, India.

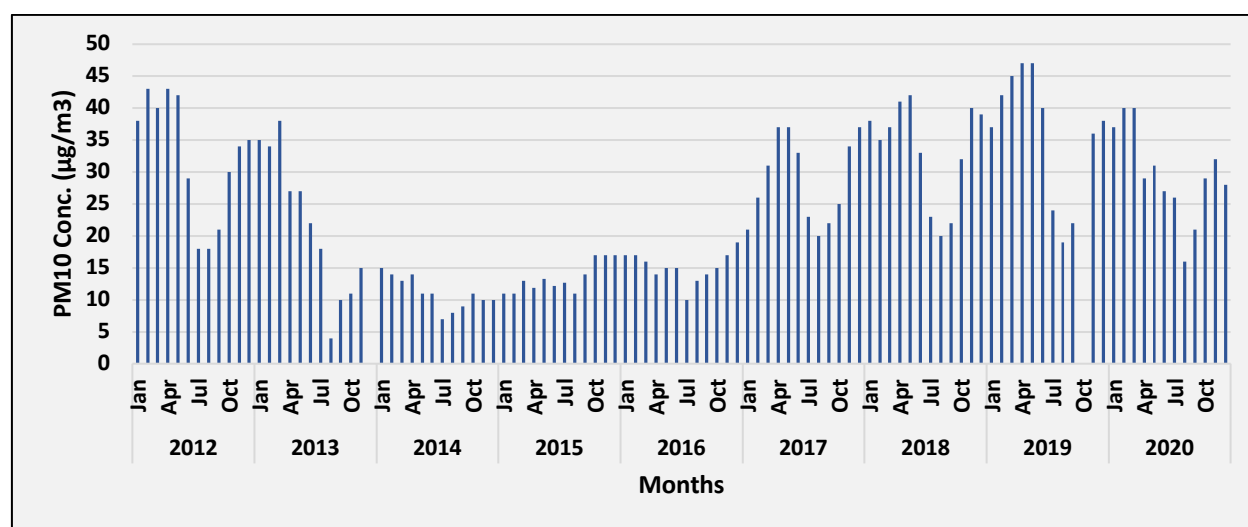


Fig. KRD1: Time series of monthly average PM₁₀ ambient air concentration in Koradi TPP (Ambient 1)

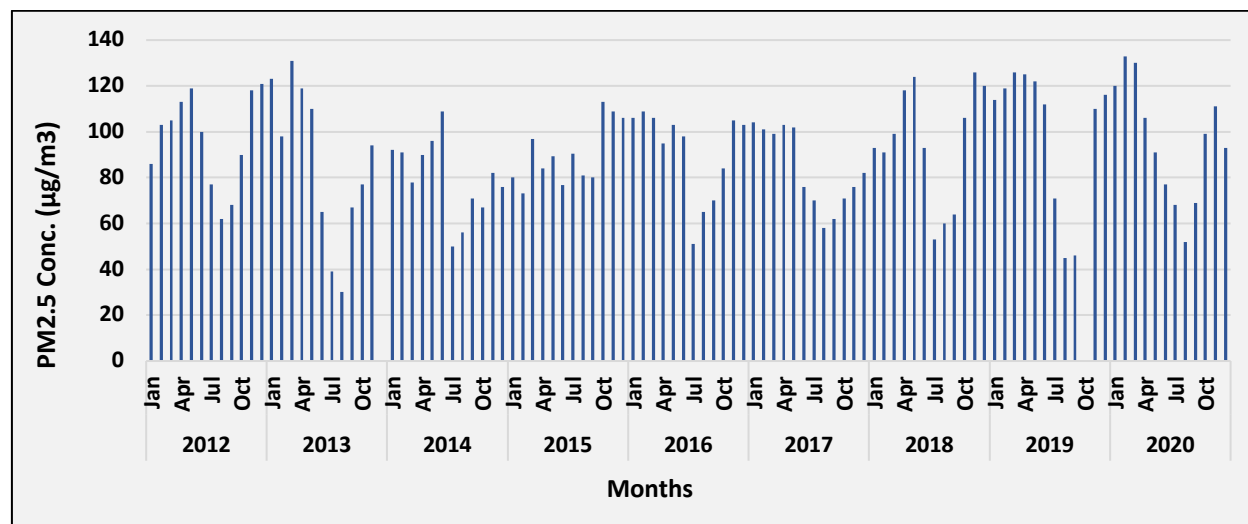


Fig. KRD2: Time series of monthly average PM_{2.5} ambient air concentration in Koradi TPP (Ambient 1)

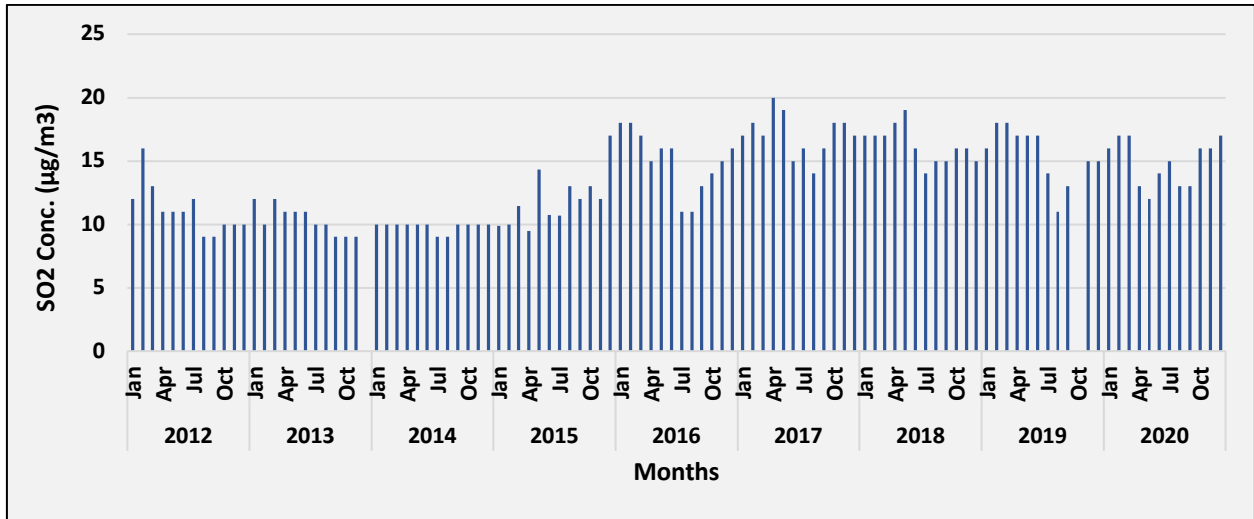


Fig. KRD3: Time series of monthly average SO_2 ambient air concentration in Koradi TPP (Ambient 1)

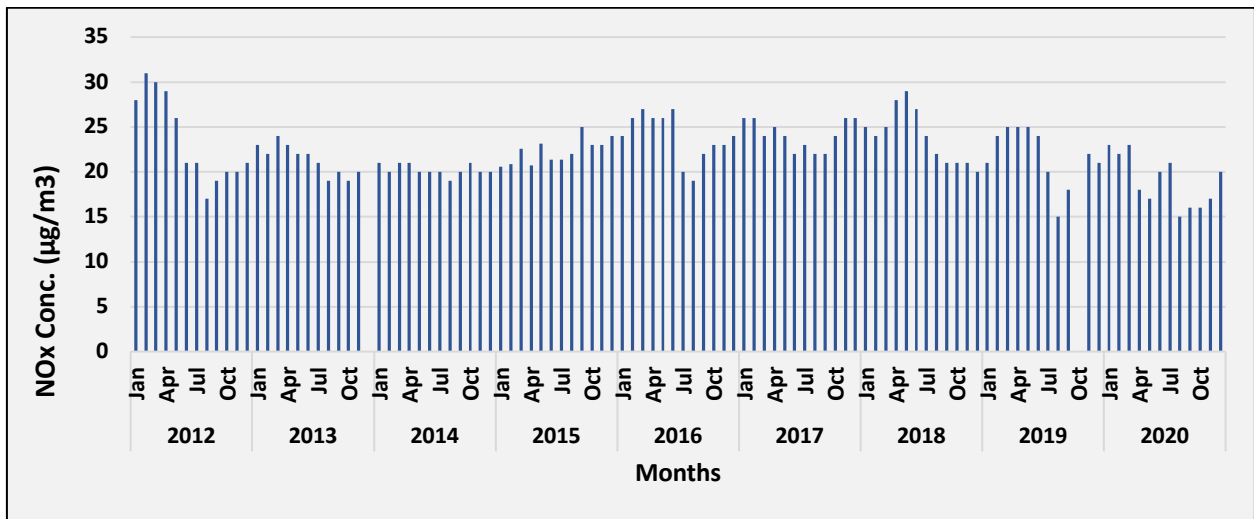


Fig. KRD4: Time series of monthly average NO_x ambient air concentration in Koradi TPP (Ambient 1)

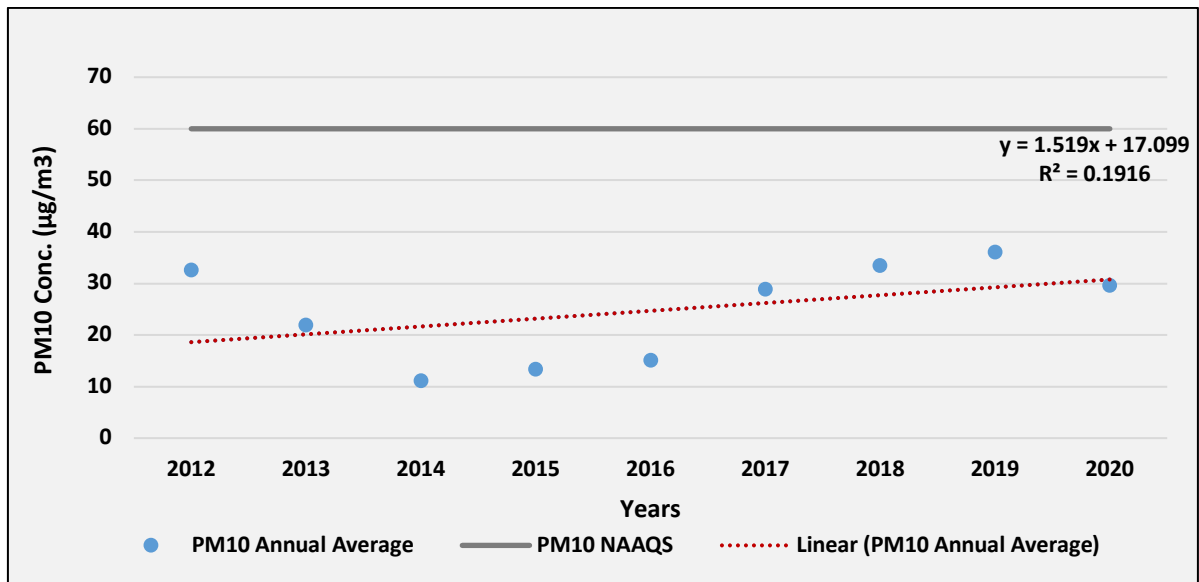


Fig. KRD5: Trend of annual mean PM_{10} ambient air concentration in Koradi TPP (Ambient 1)

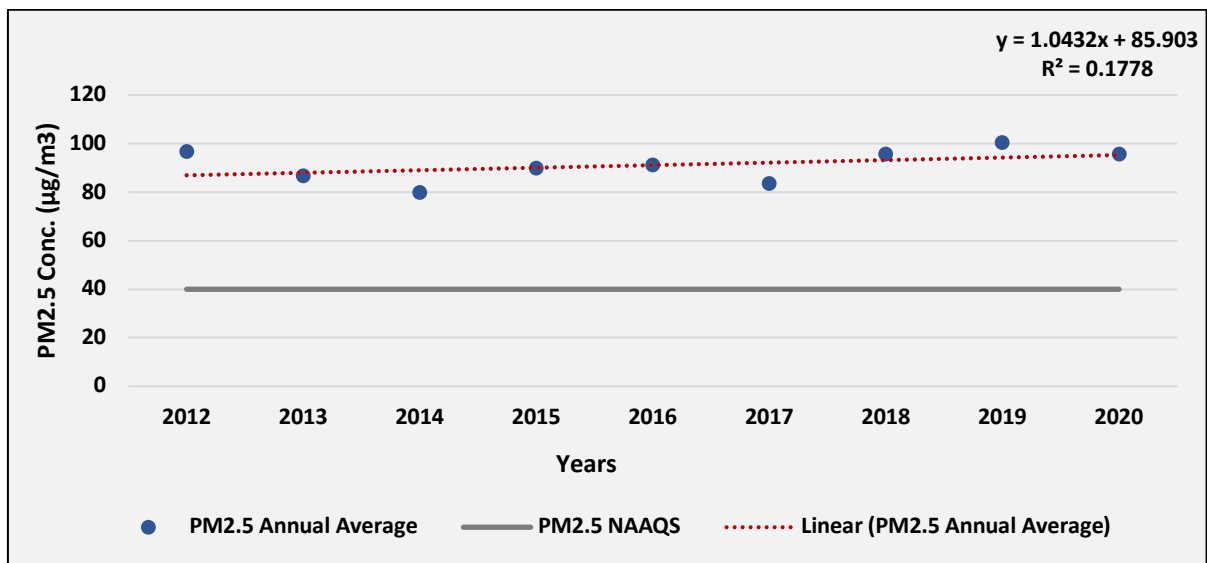


Fig. KRD6: Trend of annual mean $PM_{2.5}$ ambient air concentration in Koradi TPP (Ambient 1)

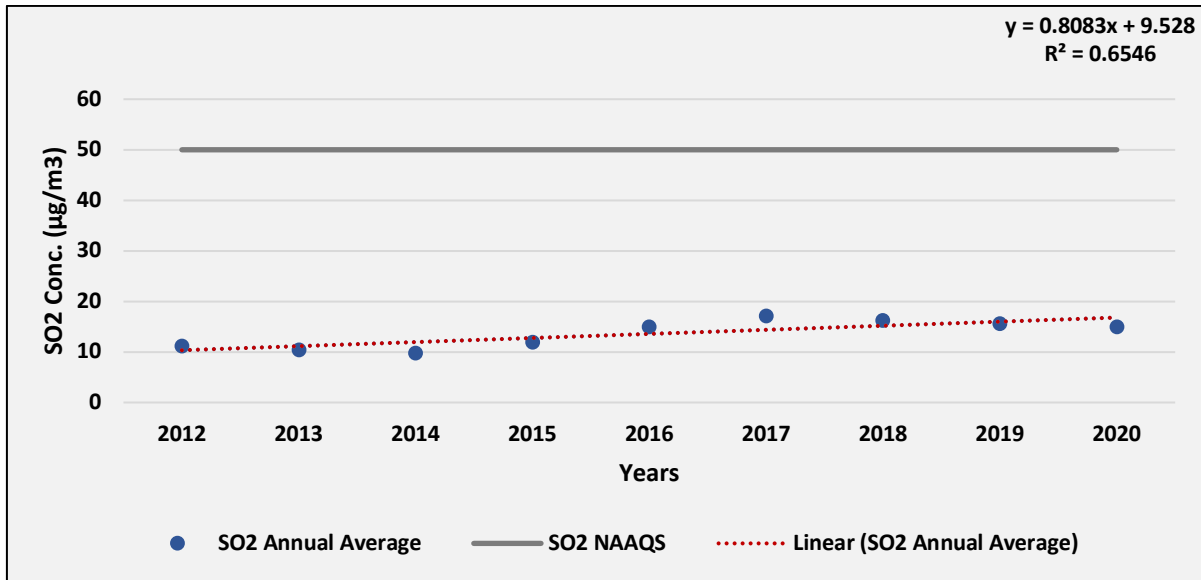


Fig. KRD7: Trend of annual mean SO₂ ambient air concentration in Koradi TPP (Ambient 1)

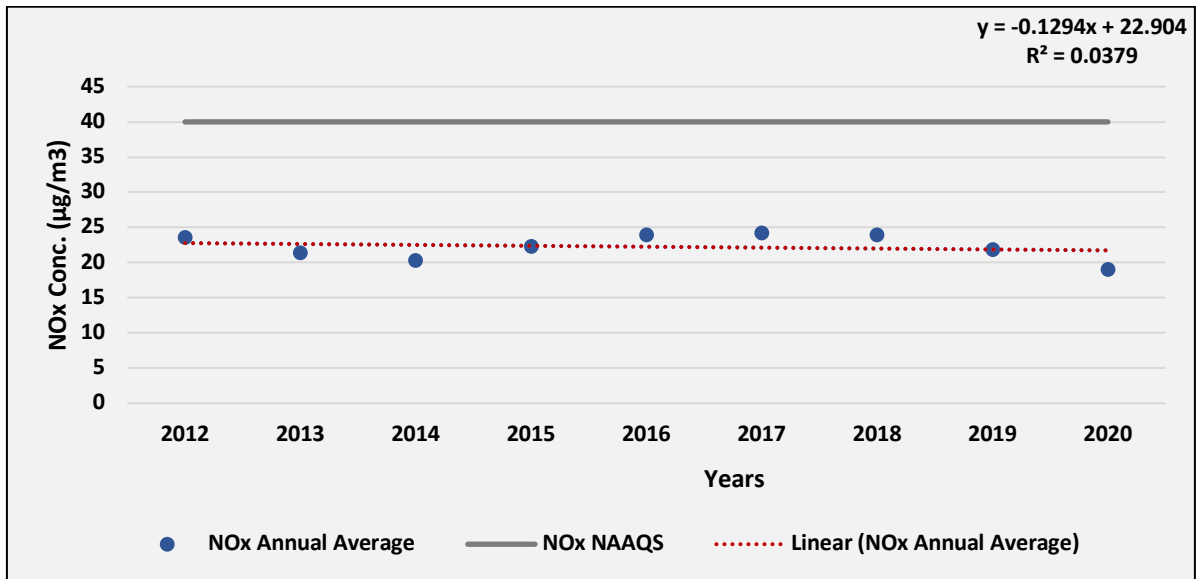


Fig. KRD8: Trend of annual mean NO_x ambient air concentration in Koradi TPP (Ambient 1)

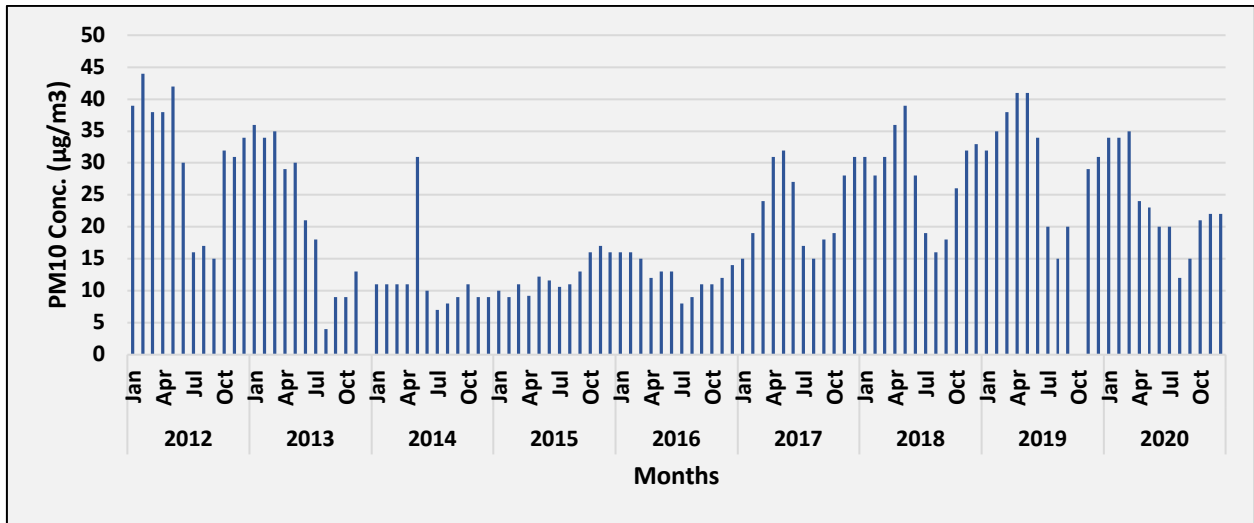


Fig. KRD9: Time series of monthly average PM₁₀ ambient air concentration in Koradi TPP (Ambient 2)

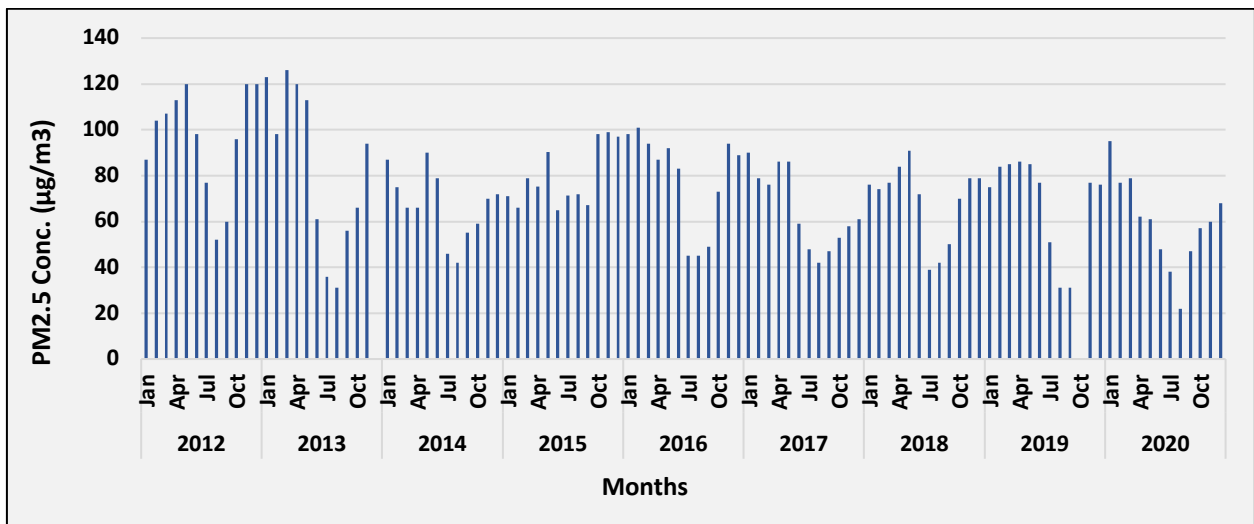


Fig. KRD10: Time series of monthly average PM_{2.5} ambient air concentration in Koradi TPP (Ambient 2)

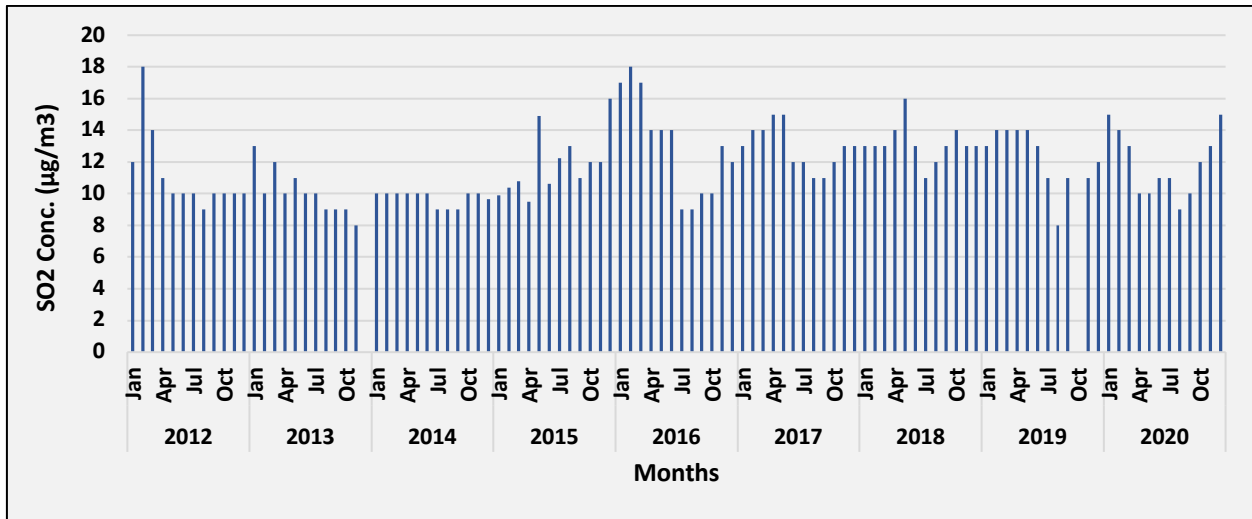


Fig. KRD11: Time series of monthly average SO_2 ambient air concentration in Koradi TPP (Ambient 2)

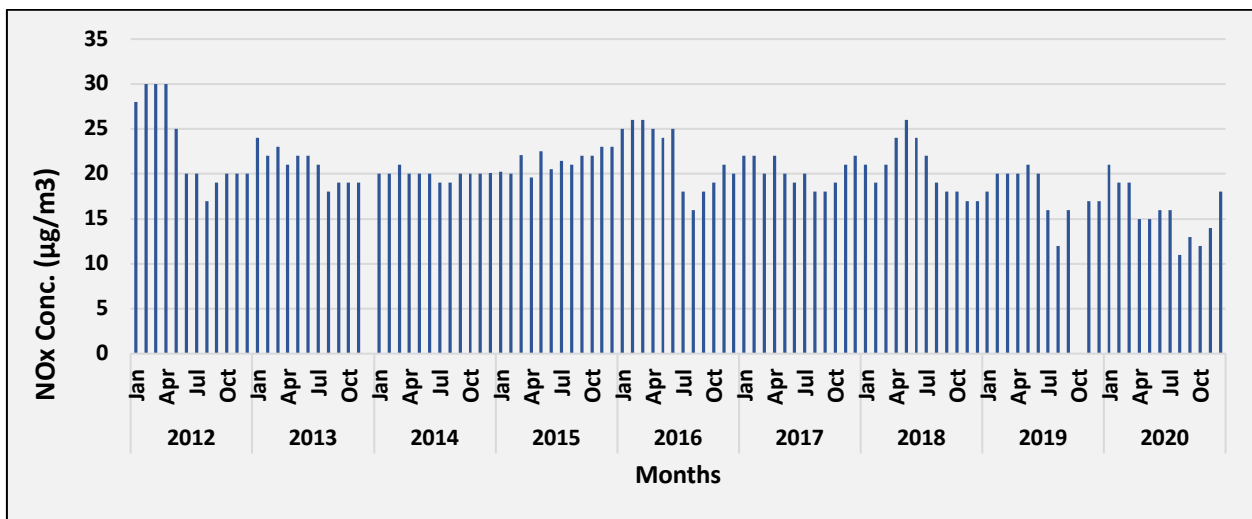


Fig. KRD12: Time series of monthly average NO_x ambient air concentration in Koradi TPP (Ambient 2)

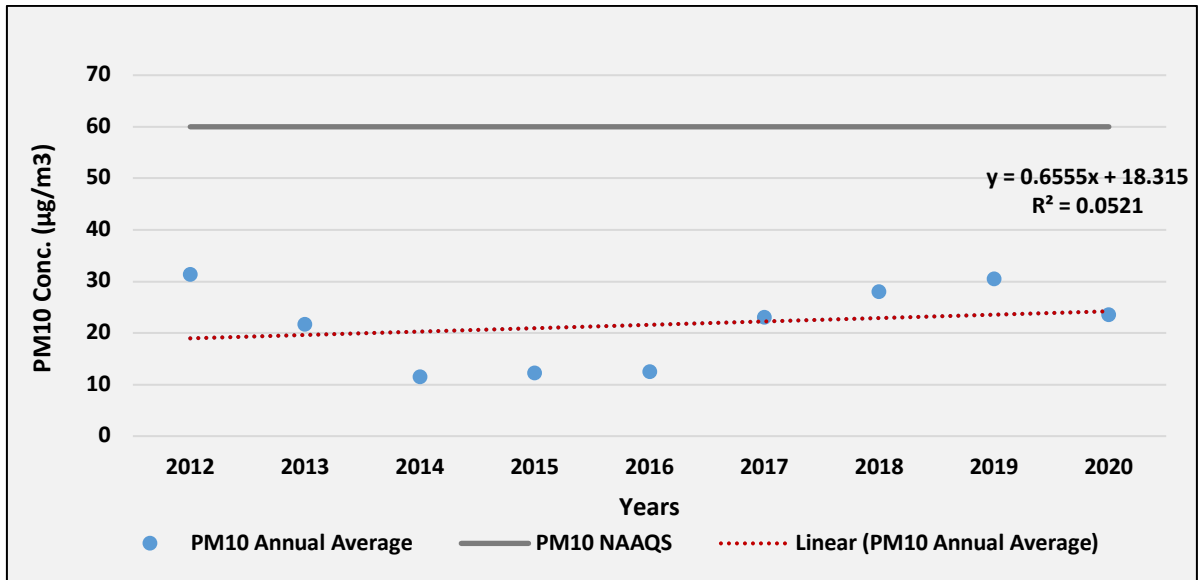


Fig. KRD13: Trend of annual mean PM_{10} ambient air concentration in Koradi TPP (Ambient 2)

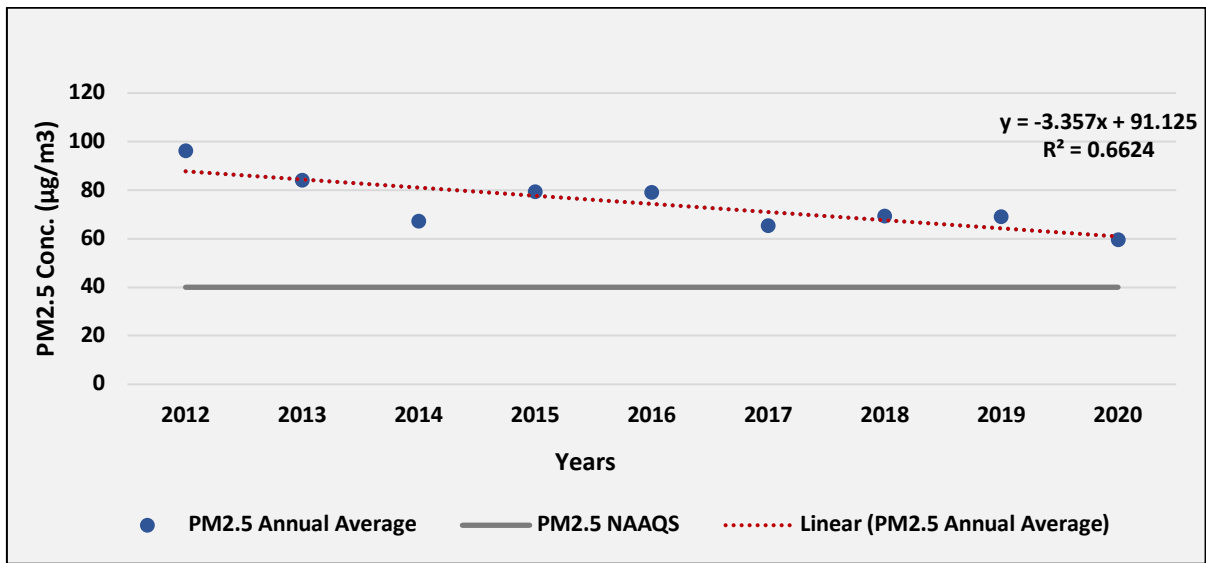


Fig. KRD14: Trend of annual mean $PM_{2.5}$ ambient air concentration in Koradi TPP (Ambient 2)

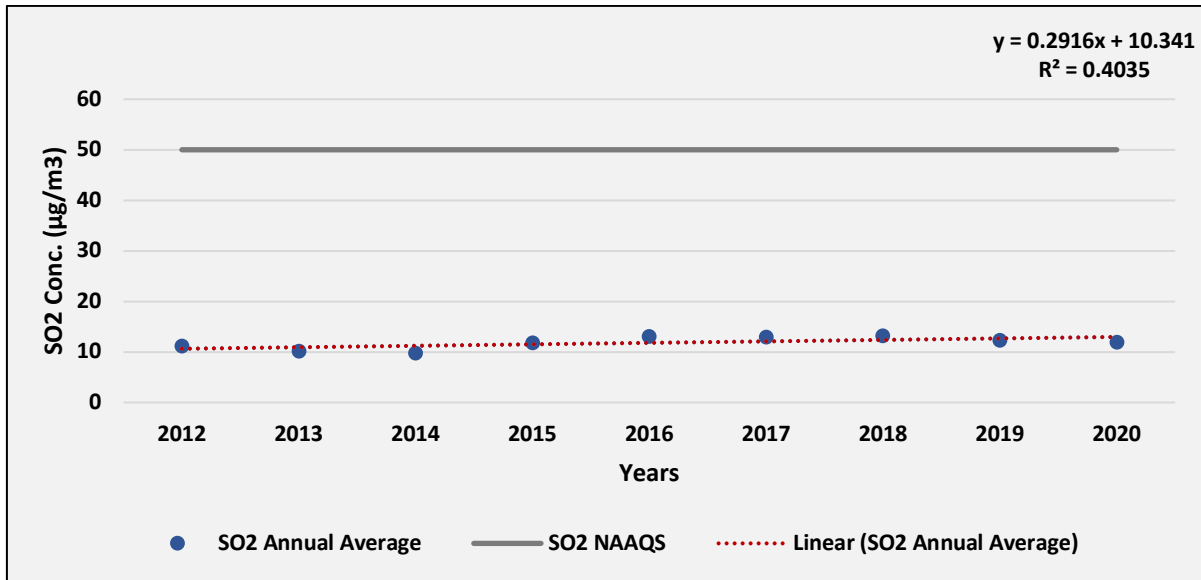


Fig. KRD15: Trend of annual mean SO₂ ambient air concentration in Koradi TPP (Ambient 2)

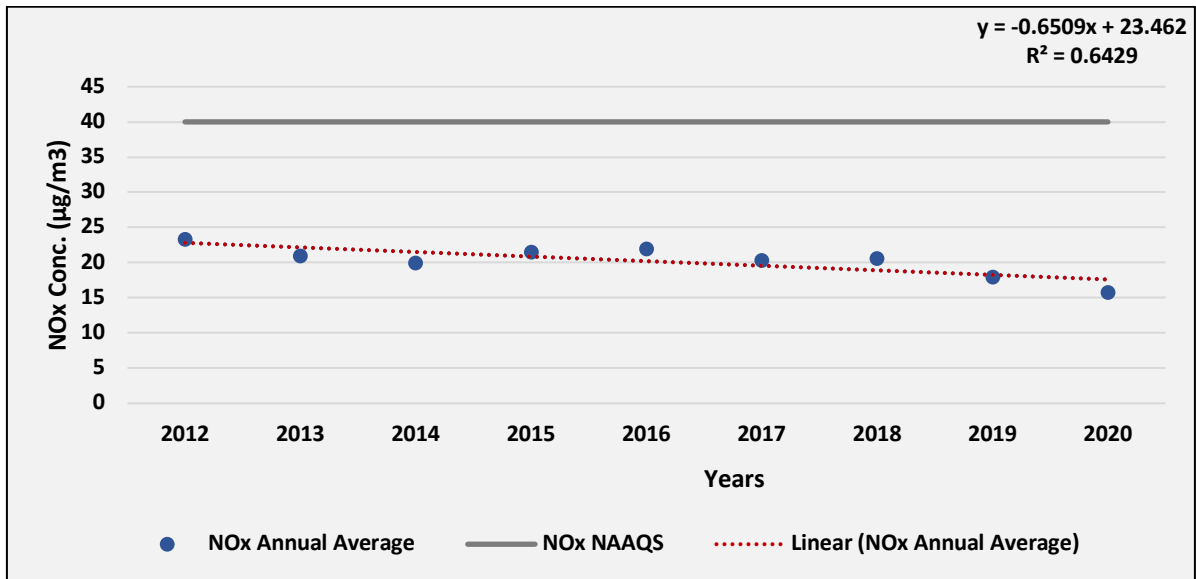


Fig. KRD16: Trend of annual mean NO_x ambient air concentration in Koradi TPP (Ambient 2)

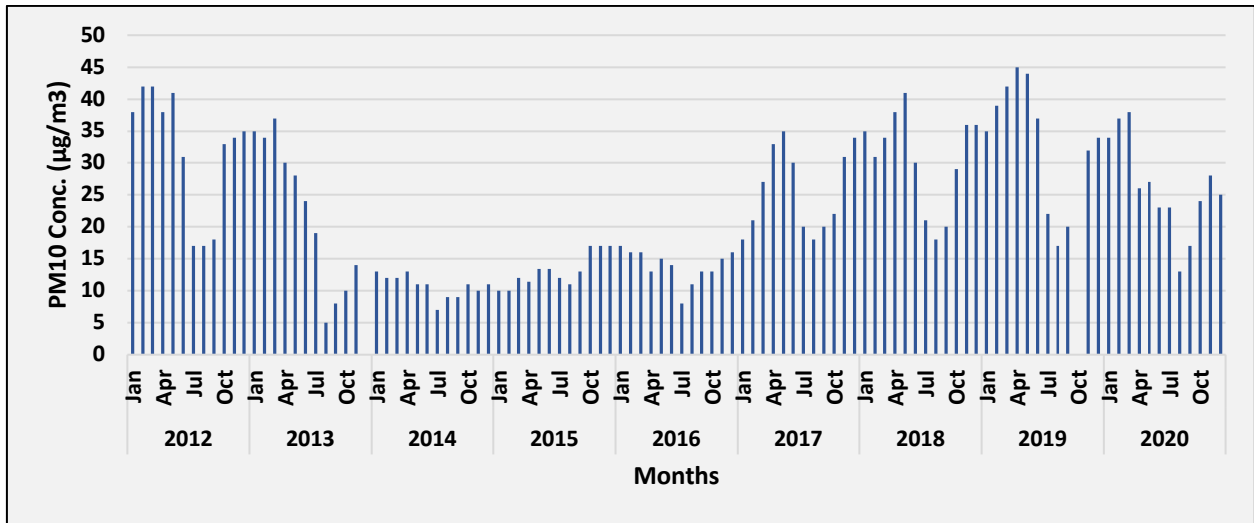


Fig. KRD17: Time series of monthly average PM_{10} ambient air concentration in Koradi TPP (Ambient 3)

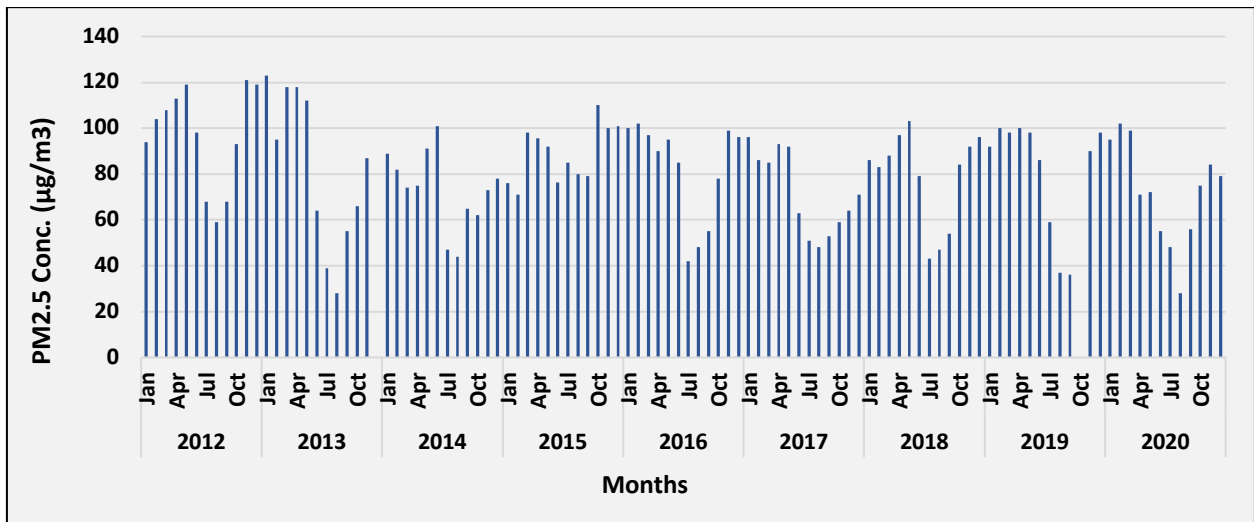


Fig. KRD18: Time series of monthly average $PM_{2.5}$ ambient air concentration in Koradi TPP (Ambient 3)

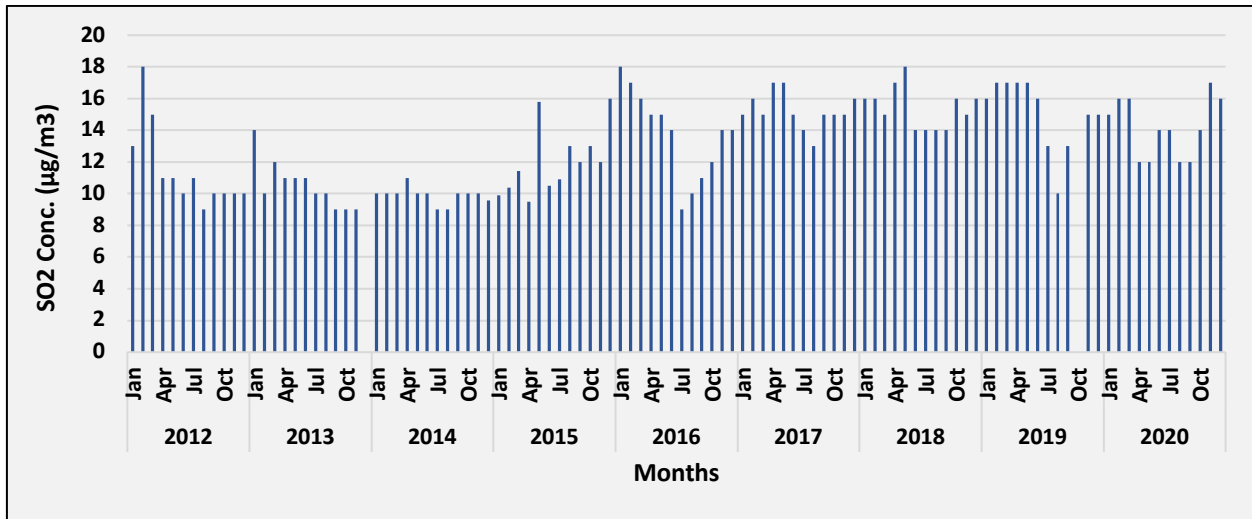


Fig. KRD19: Time series of monthly average SO_2 ambient air concentration in Koradi TPP (Ambient 3)

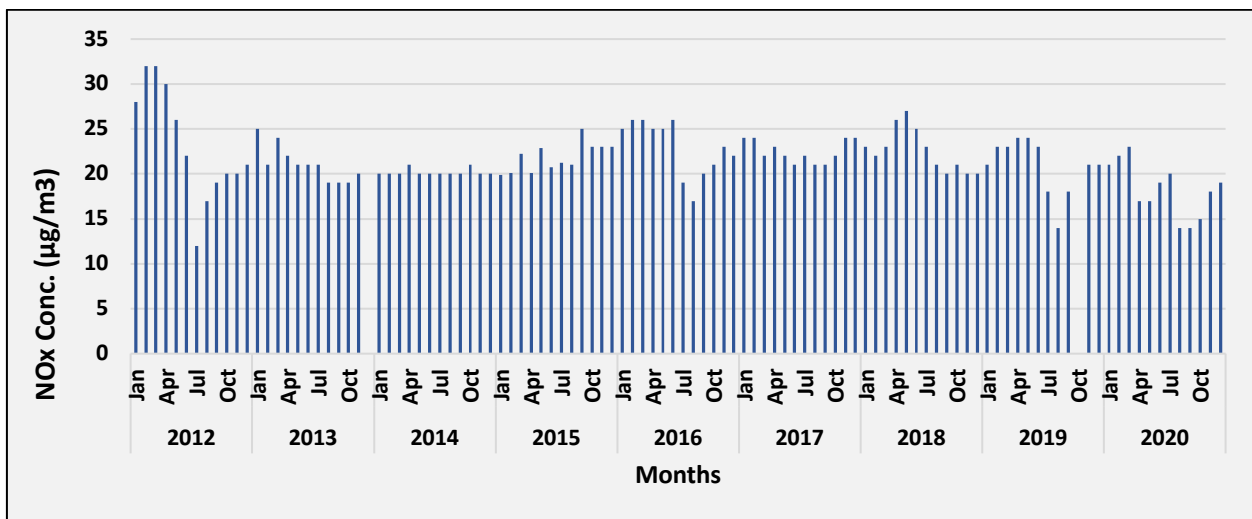


Fig. KRD20: Time series of monthly average NO_x ambient air concentration in Koradi TPP (Ambient 3)

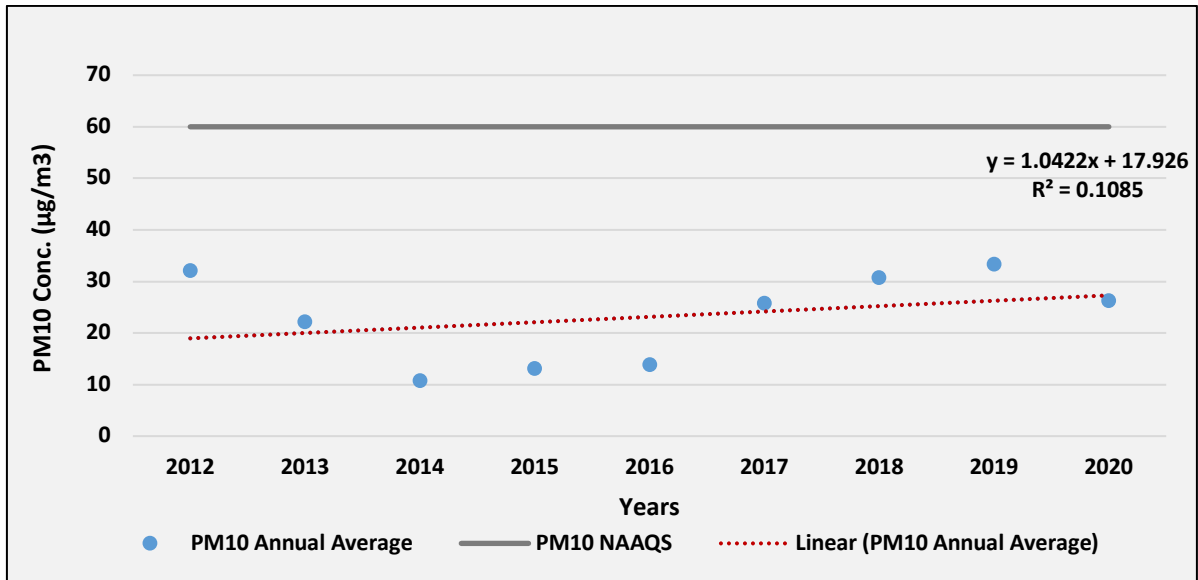


Fig. KRD21: Trend of annual mean PM_{10} ambient air concentration in Koradi TPP (Ambient 3)

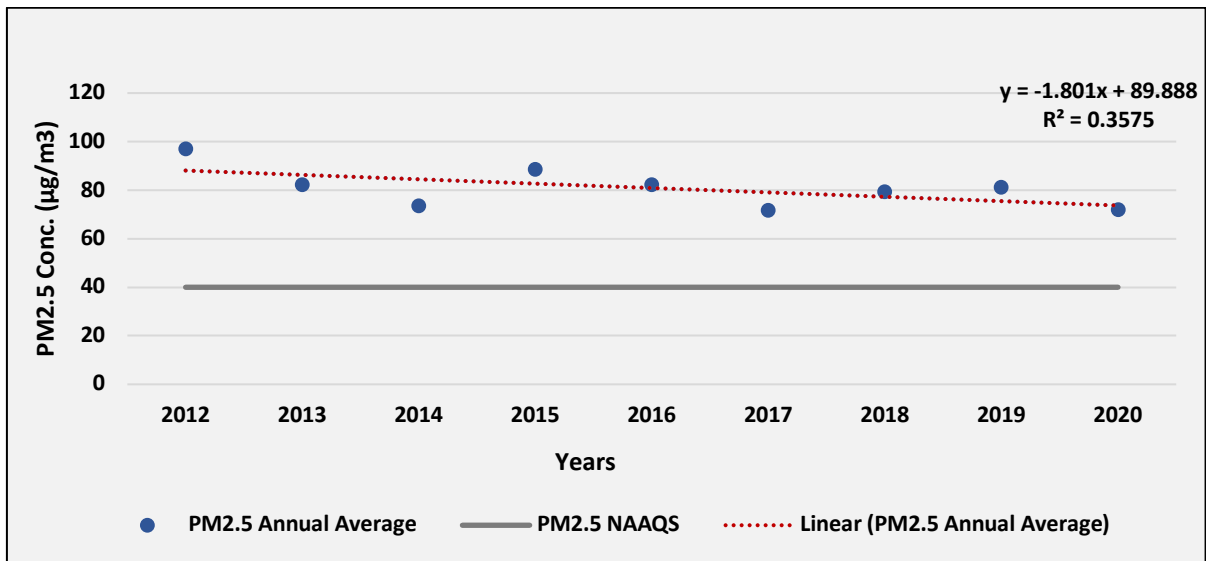


Fig. KRD22: Trend of annual mean $PM_{2.5}$ ambient air concentration in Koradi TPP (Ambient 3)

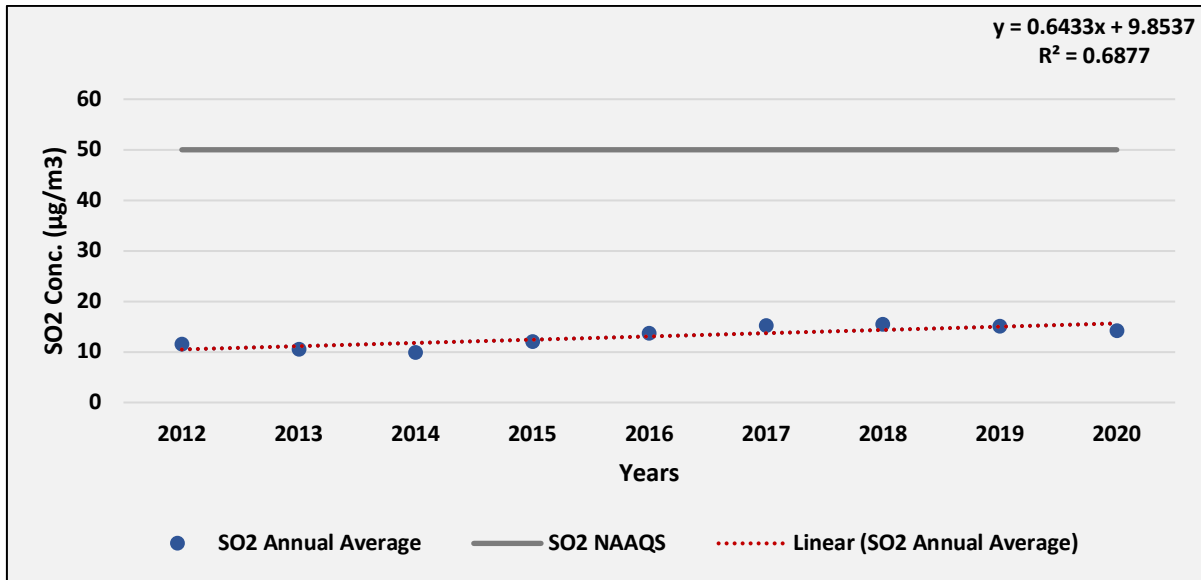


Fig. KRD23: Trend of annual mean SO₂ ambient air concentration in Koradi TPP (Ambient 3)

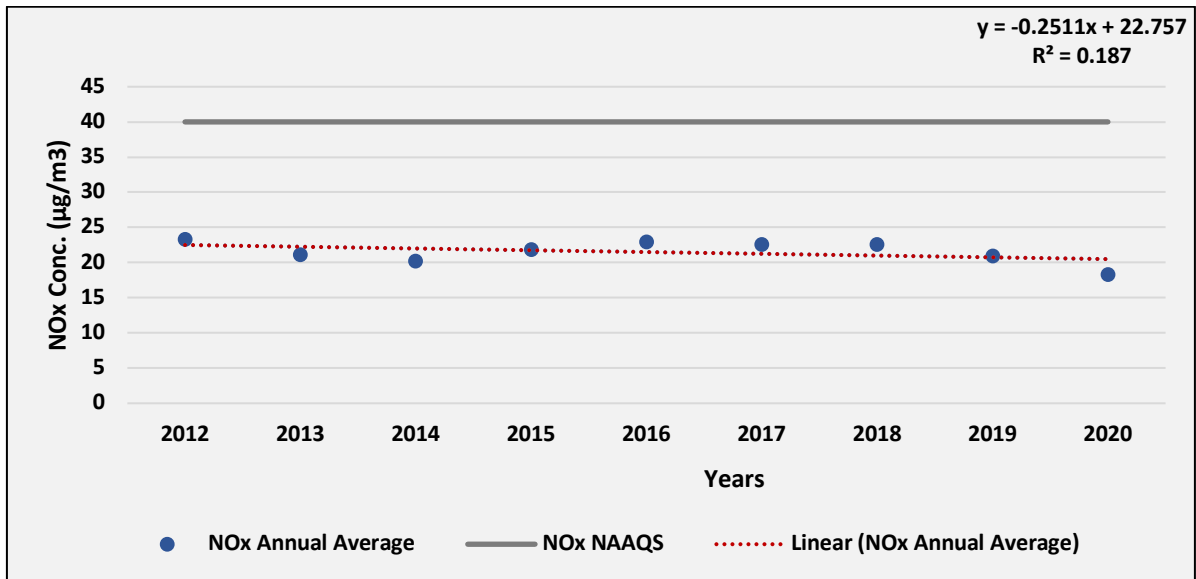


Fig. KRD24: Trend of annual mean NO_x ambient air concentration in Koradi TPP (Ambient 3)

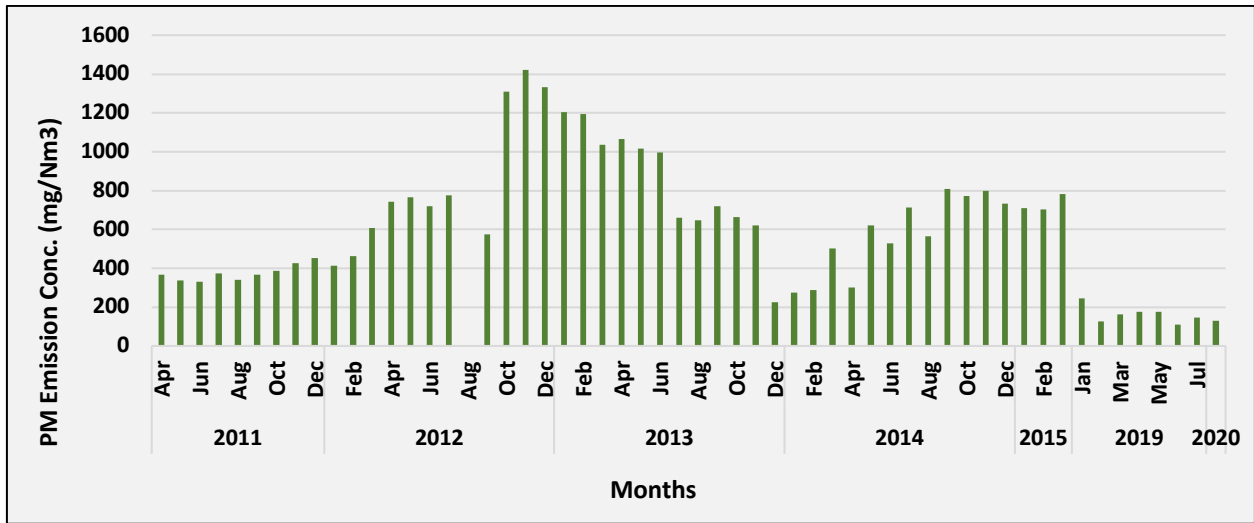


Fig. KRD25: Time series of monthly average PM Emission concentration in Koradi TPP (Unit 6)

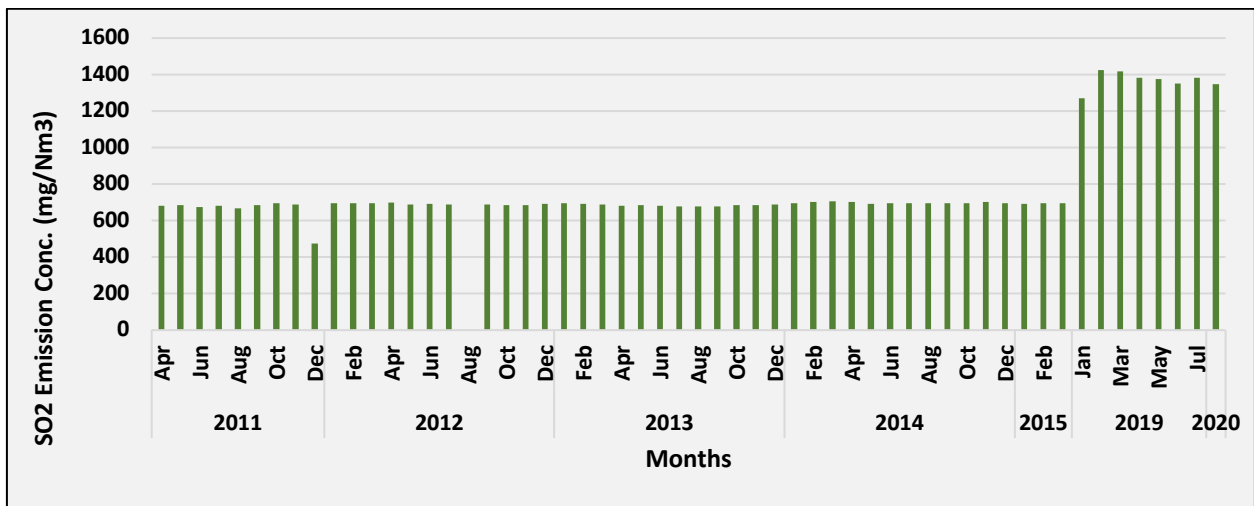


Fig. KRD26: Time series of monthly average SO₂ Emission concentration in Koradi TPP (Unit 6)

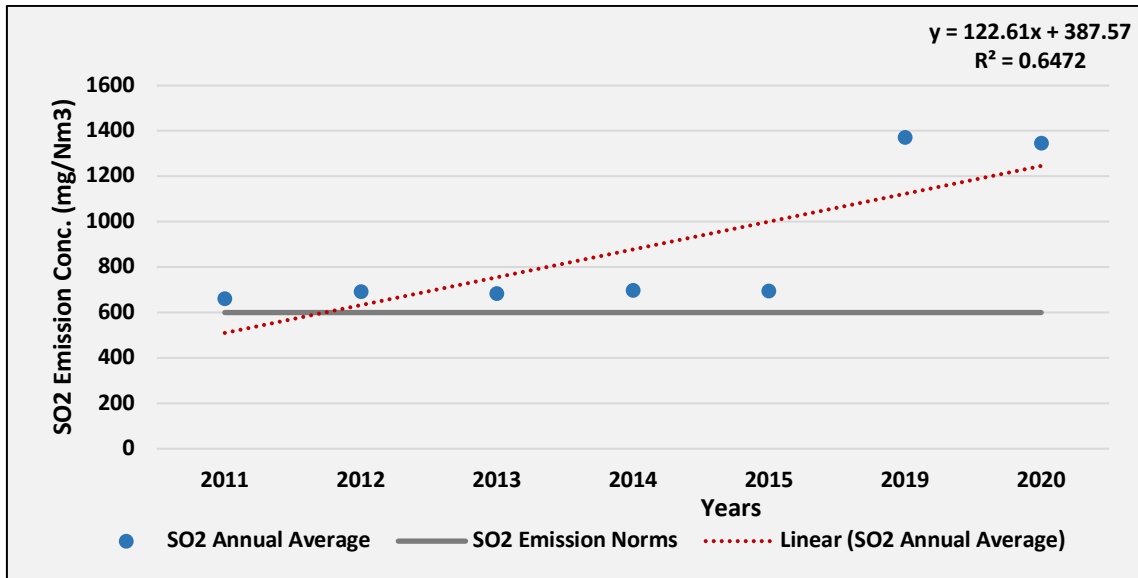


Fig. KRD29: Trend of annual mean SO₂ Emission air concentration in Koradi TPP (Unit 6)

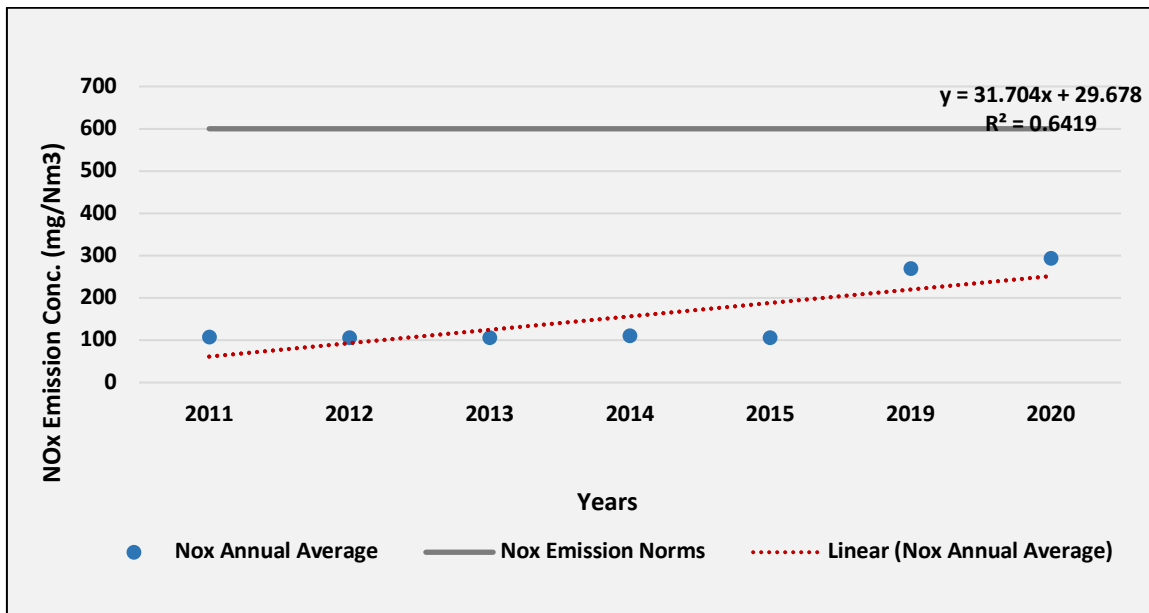


Fig. KRD30: Trend of annual mean NO_x Emission air concentration in Koradi TPP (Unit 6)

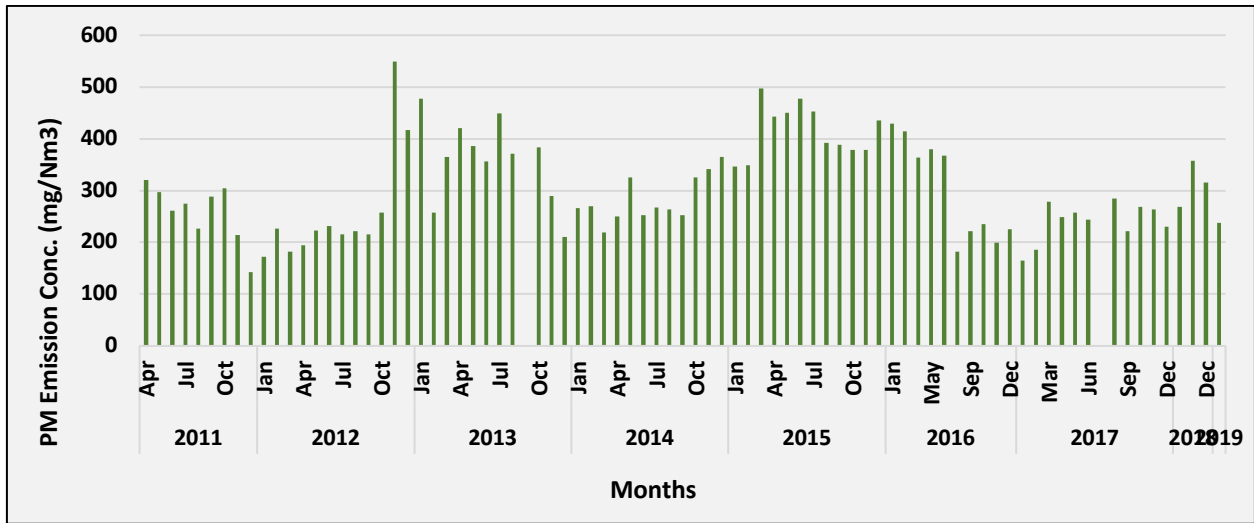


Fig. KRD31: Time series of monthly average PM Emission concentration in Koradi TPP (Unit 7)

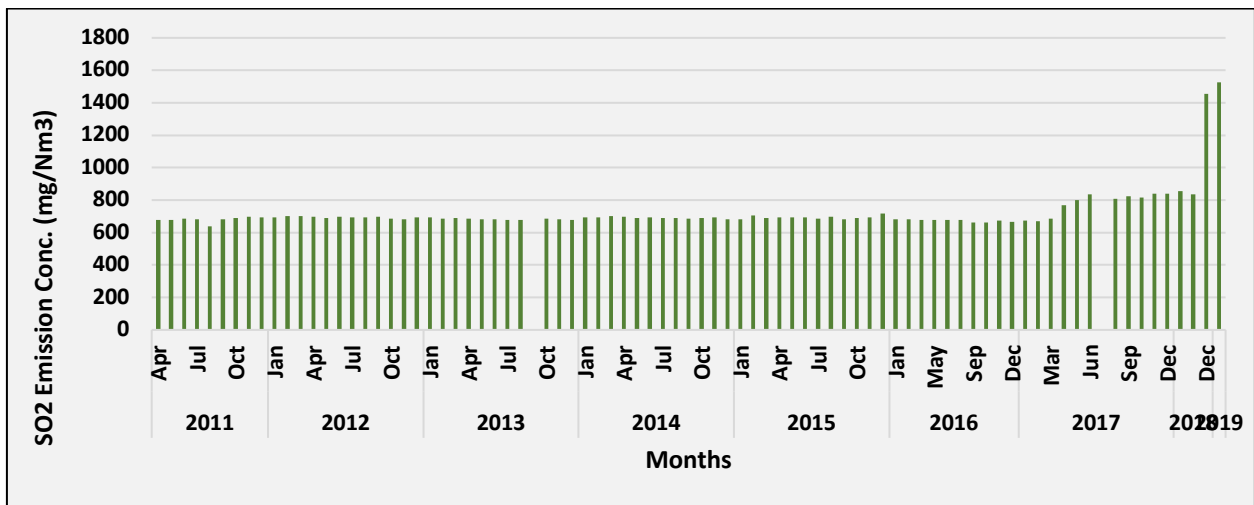


Fig. KRD32: Time series of monthly average SO₂ Emission concentration in Koradi TPP (Unit 7)

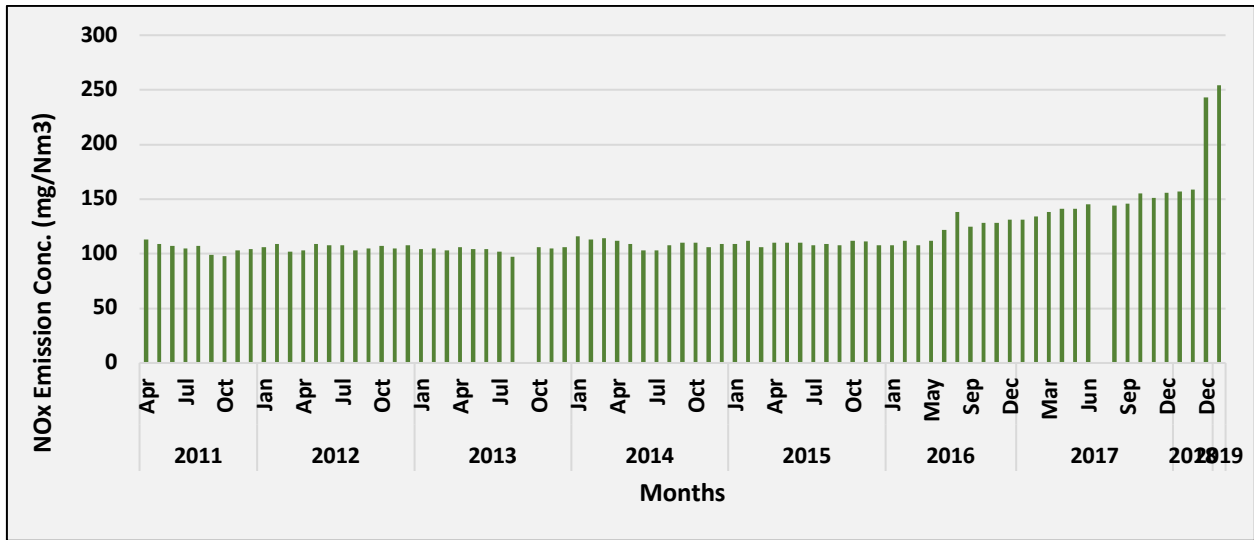


Fig. KRD33: Time series of monthly average NO_x Emission concentration in Koradi TPP (Unit 7)

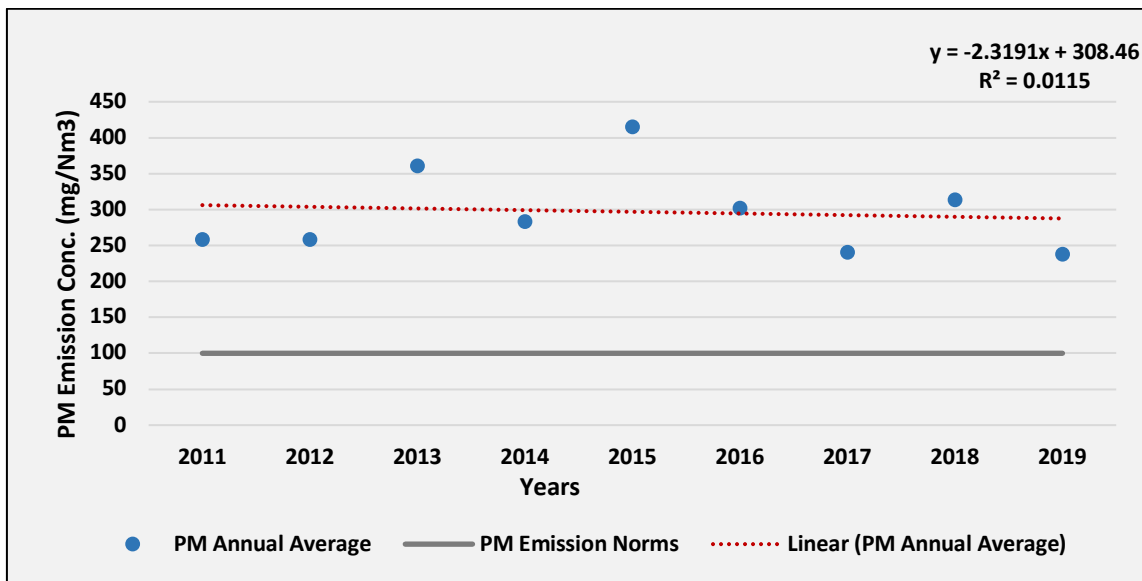


Fig. KRD34: Trend of annual mean PM Emission air concentration in Koradi TPP (Unit 7)

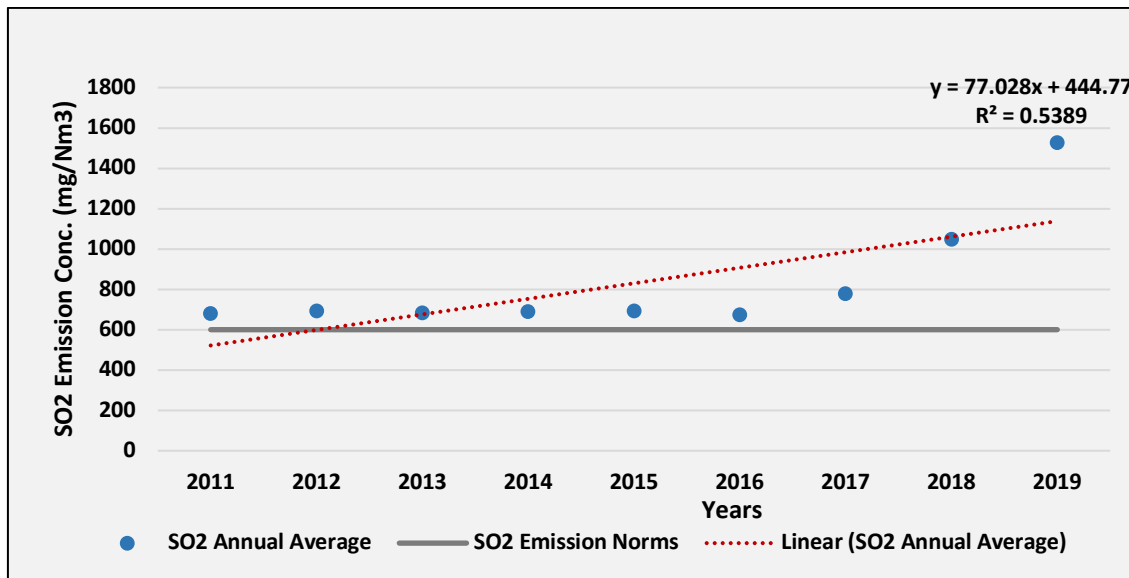


Fig. KRD35: Trend of annual mean SO₂ Emission air concentration in Koradi TPP (Unit 7)

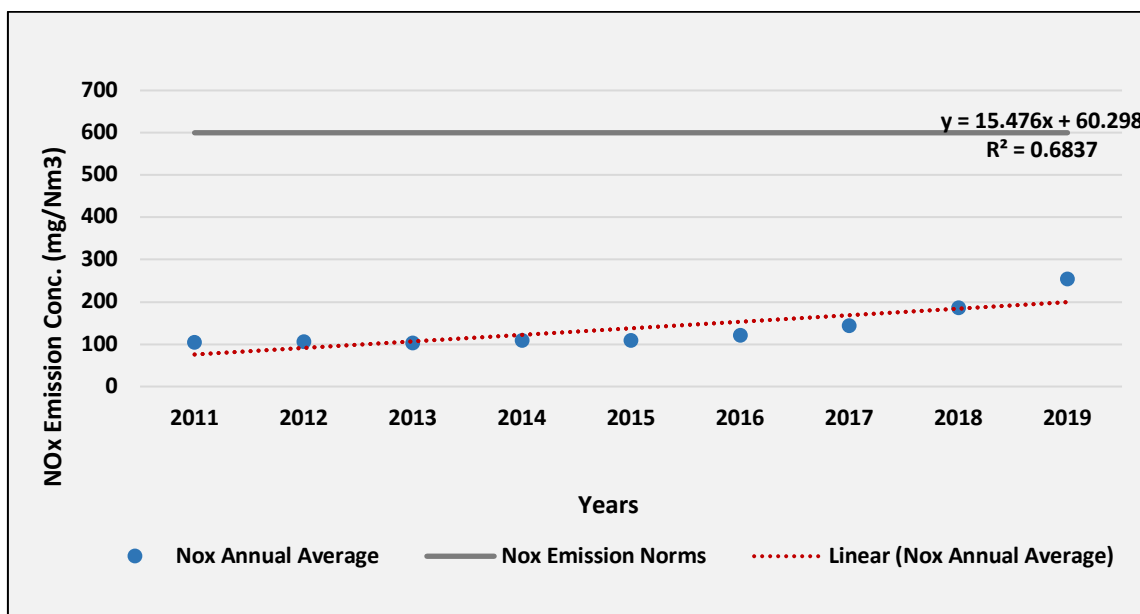


Fig. KRD36: Trend of annual mean NO_x Emission air concentration in Koradi TPP (Unit 7)

Evidence based on ground level stations shows that the monthly average and annual average of PM_{2.5} is exceeding whereas the PM₁₀, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and PM parameter are much higher than the emission norms. Emission of NO_x is within the limit range.

Khaparkheda Thermal Power Plant

Khaparkheda Thermal Power Station is located in Khaperkheda Town Nagpur district in the Indian state of Maharashtra. The power plant is one of the oldest coal based power plants of MAHAGENCO. The coal for the power plant is sourced from Saoner and Dumri Khurd mines of Western Coalfields Limited (WCL)

The ambient air quality concentrations of PM₁₀, PM_{2.5} SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. KPKD1 – Fig. KPKD70) for the last nineteen years (2001-2020) using data provided by Mahgenco developer for Khaparkhera Power plant, Maharashtra, India.

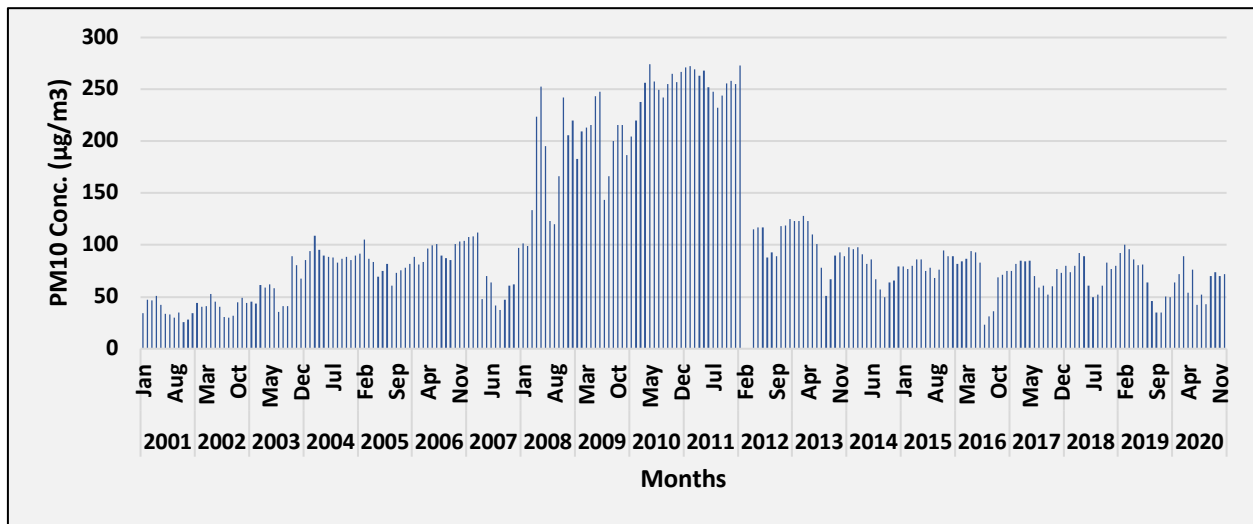


Fig. KPKD1: Time series of monthly average PM₁₀ ambient air concentration in KPKD TPP (Ambient 1)

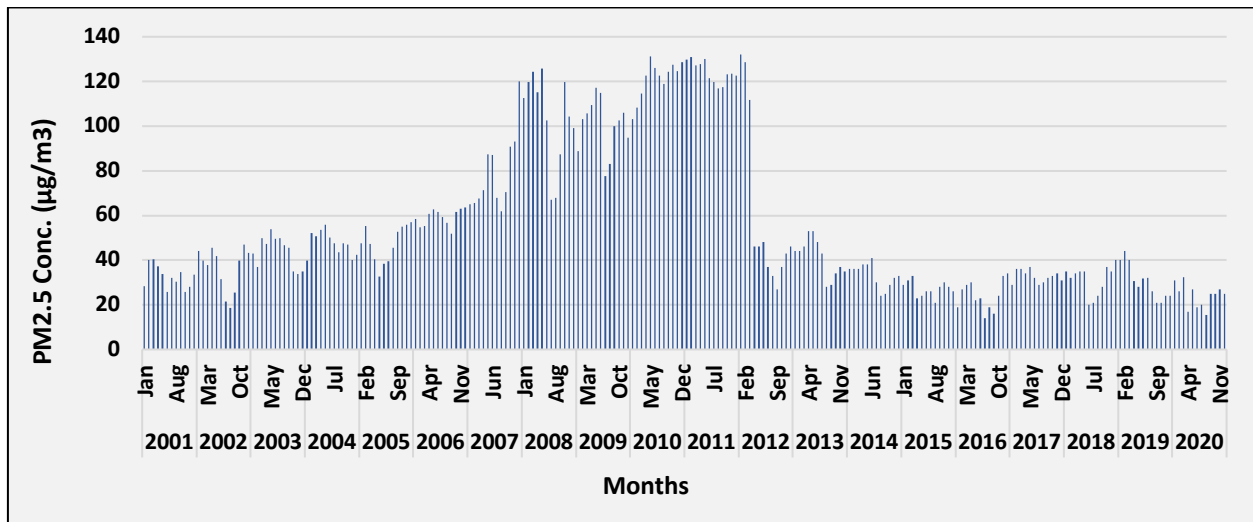


Fig. KPKD2: Time series of monthly average $PM_{2.5}$ ambient air concentration in KPKD TPP (Ambient 1)

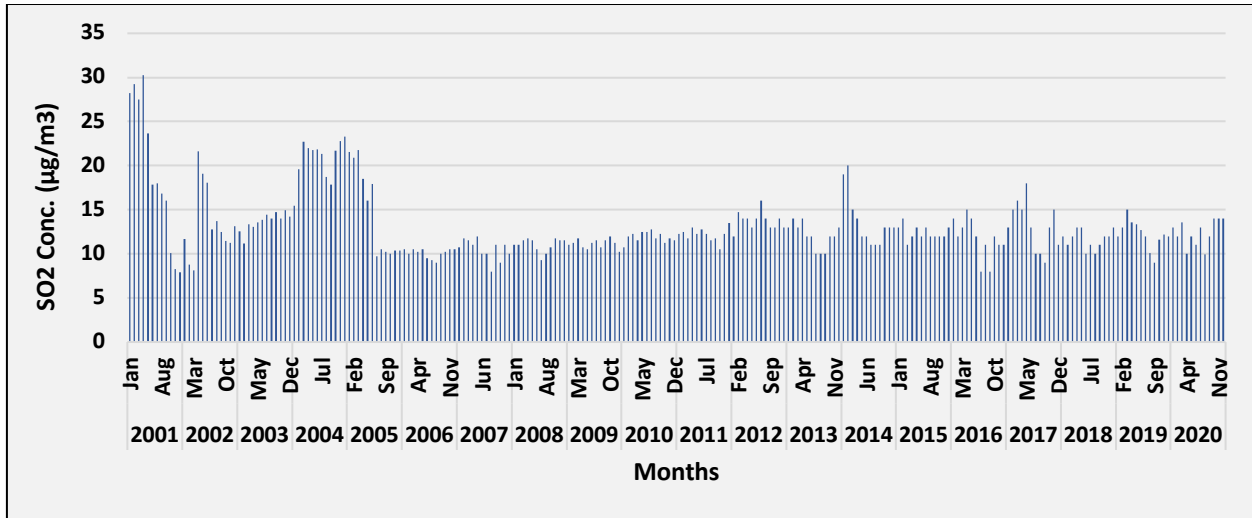


Fig. KPKD3: Time series of monthly average SO_2 ambient air concentration in KPKD TPP (Ambient 1)

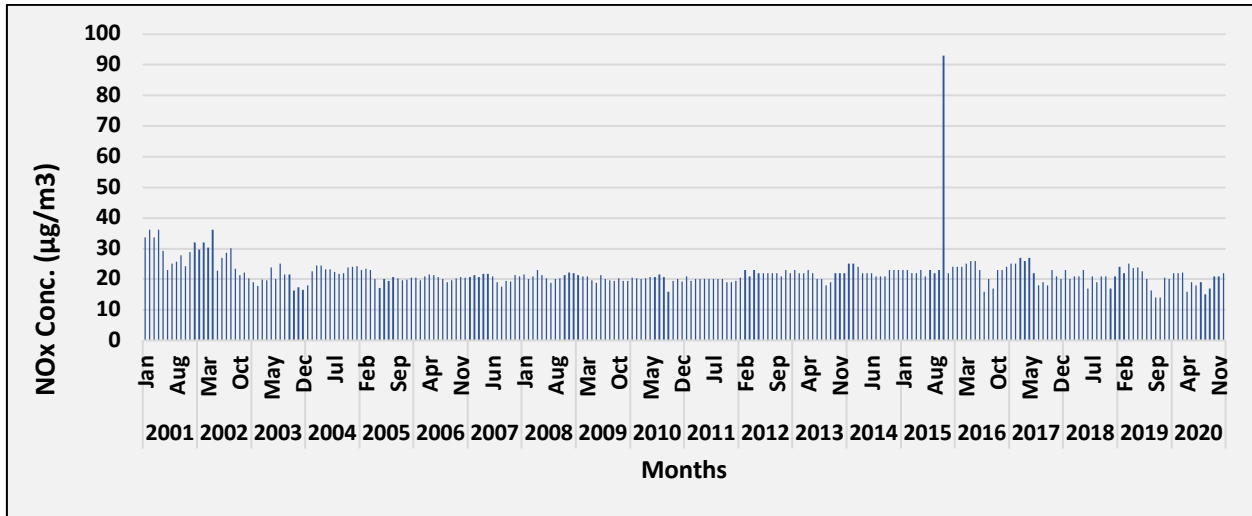


Fig. KPKD4: Time series of monthly average NO_x ambient air concentration in KPKD TPP (Ambient 1)

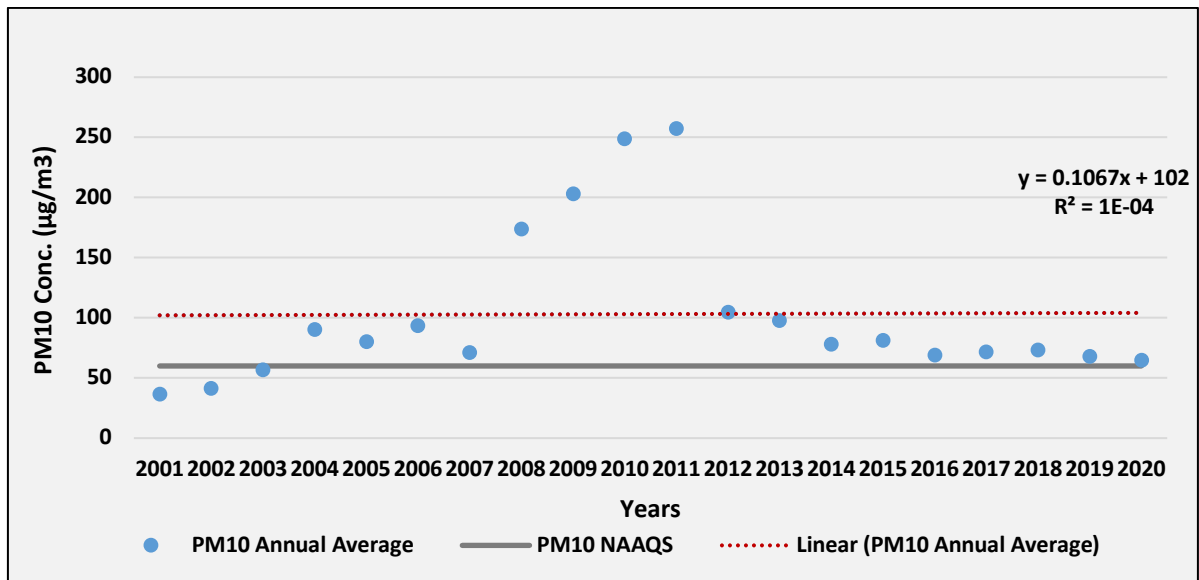


Fig. KPKD5: Trend of annual mean PM_{10} ambient air concentration in KPKD TPP (Ambient 1)

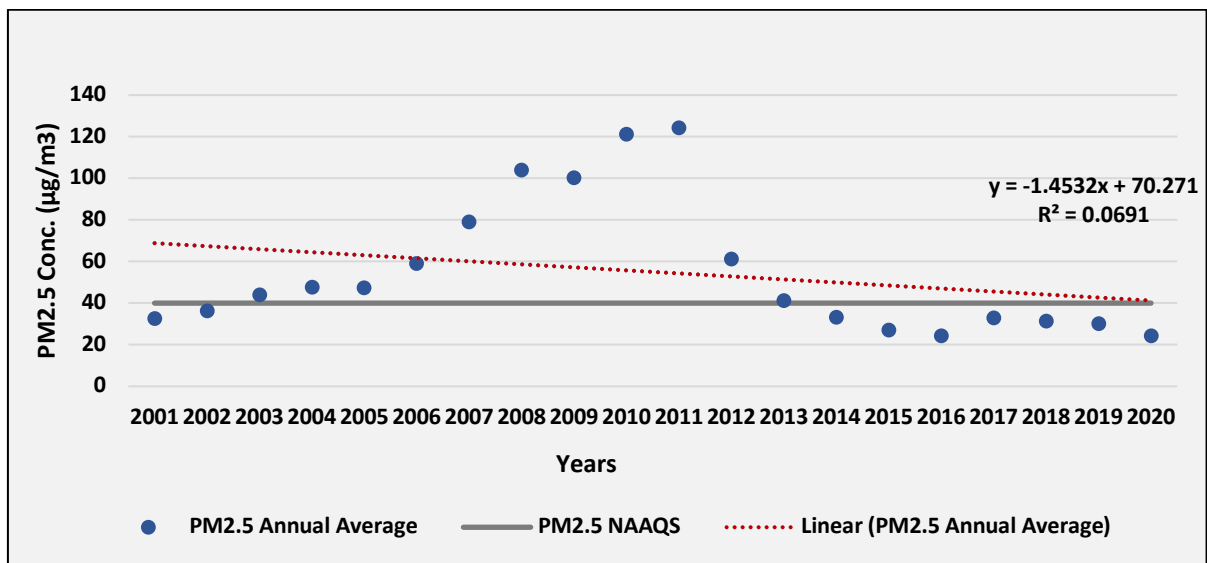


Fig. KPKD6: Trend of annual mean $PM_{2.5}$ ambient air concentration in KPKD TPP (Ambient 1)

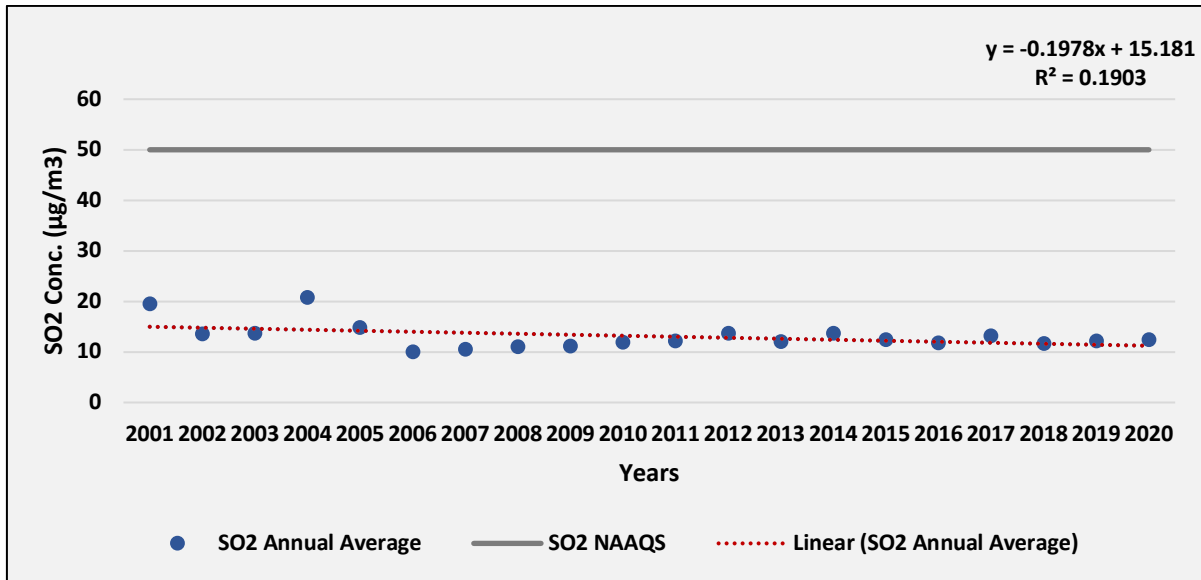


Fig. KPKD7: Trend of annual mean SO₂ ambient air concentration in KPKD TPP (Ambient 1)

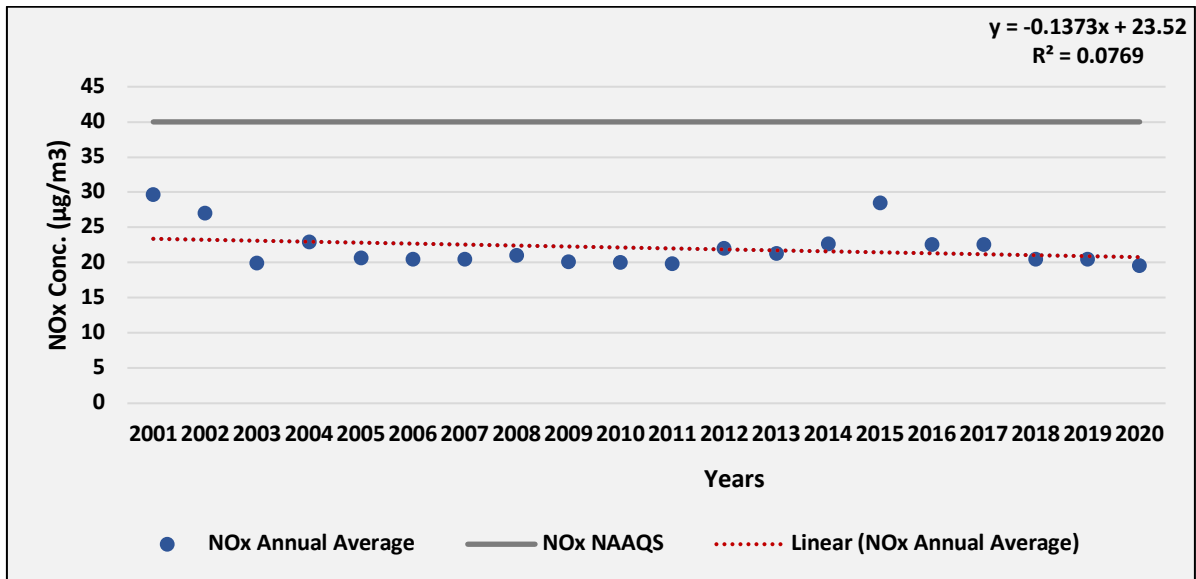


Fig. KPKD8: Trend of annual mean NO_x ambient air concentration in KPKD TPP (Ambient 1)

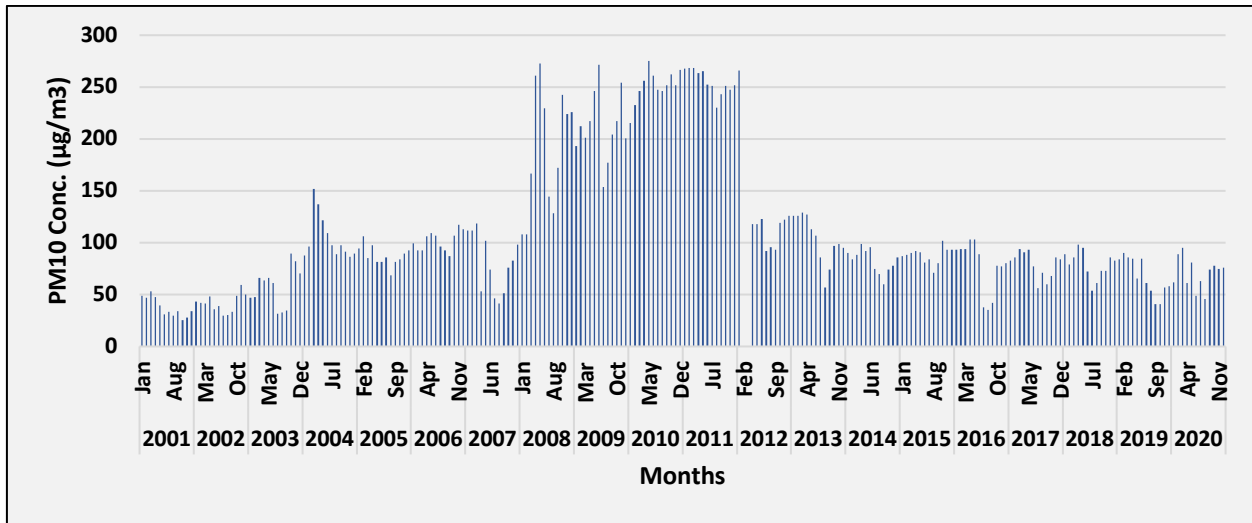


Fig. KPKD9: Time series of monthly average PM₁₀ ambient air concentration in KPKD TPP (Ambient 2)

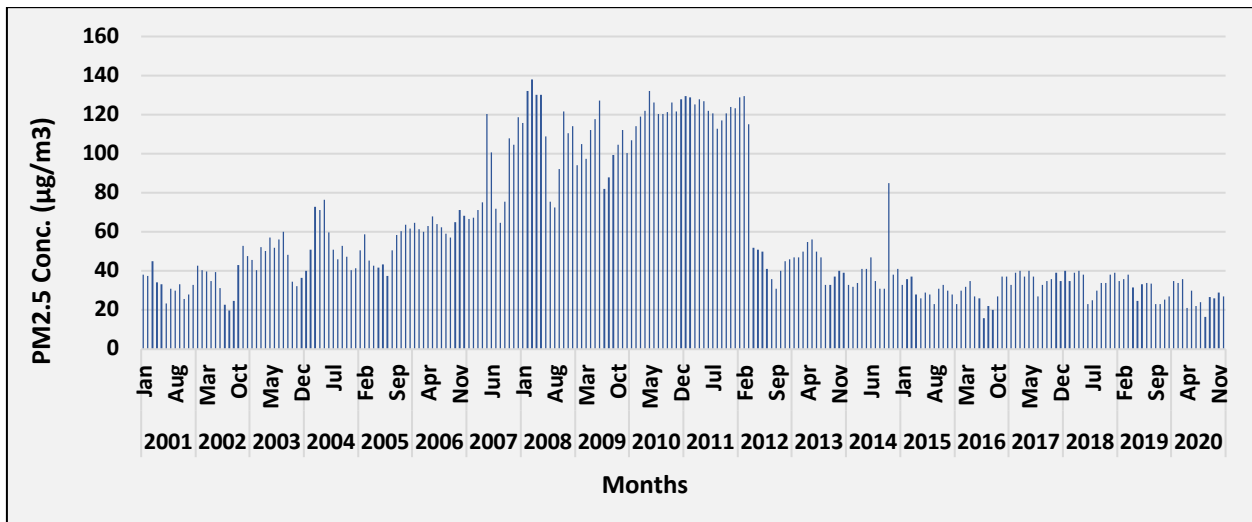


Fig. KPKD10: Time series of monthly average PM_{2.5} ambient air concentration in KPKD TPP (Ambient 2)

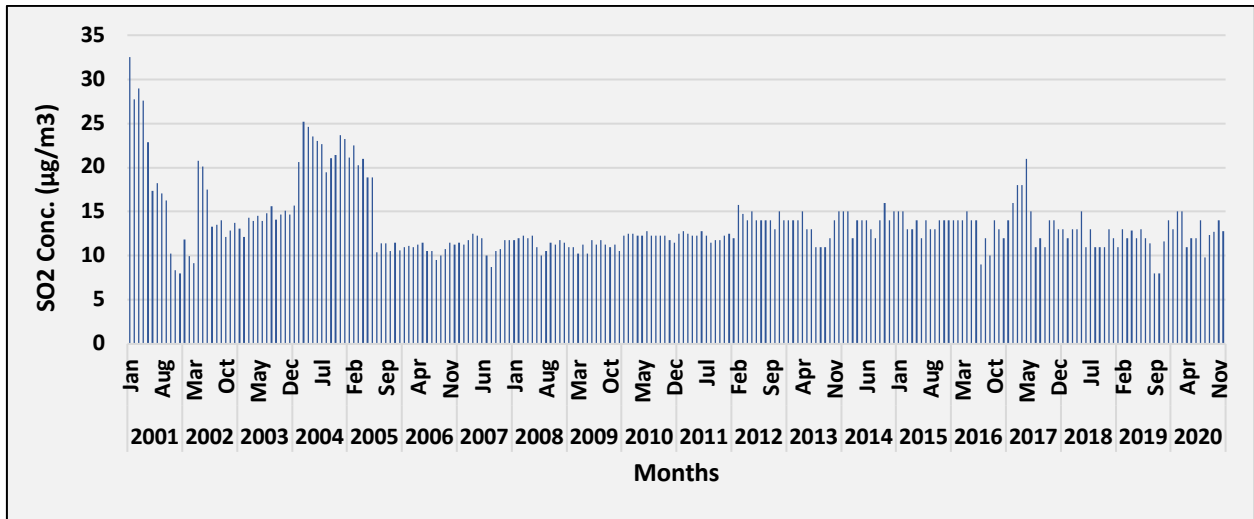


Fig. KPKD11: Time series of monthly average SO_2 ambient air concentration in KPKD TPP (Ambient 2)

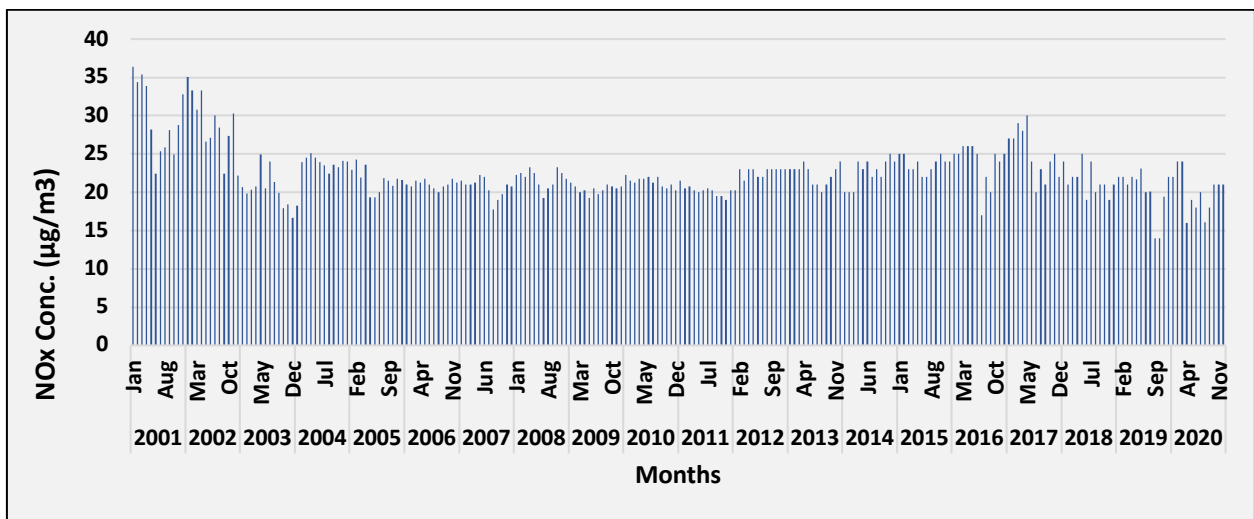


Fig. KPKD12: Time series of monthly average NO_x ambient air concentration in KPKD TPP (Ambient 2)

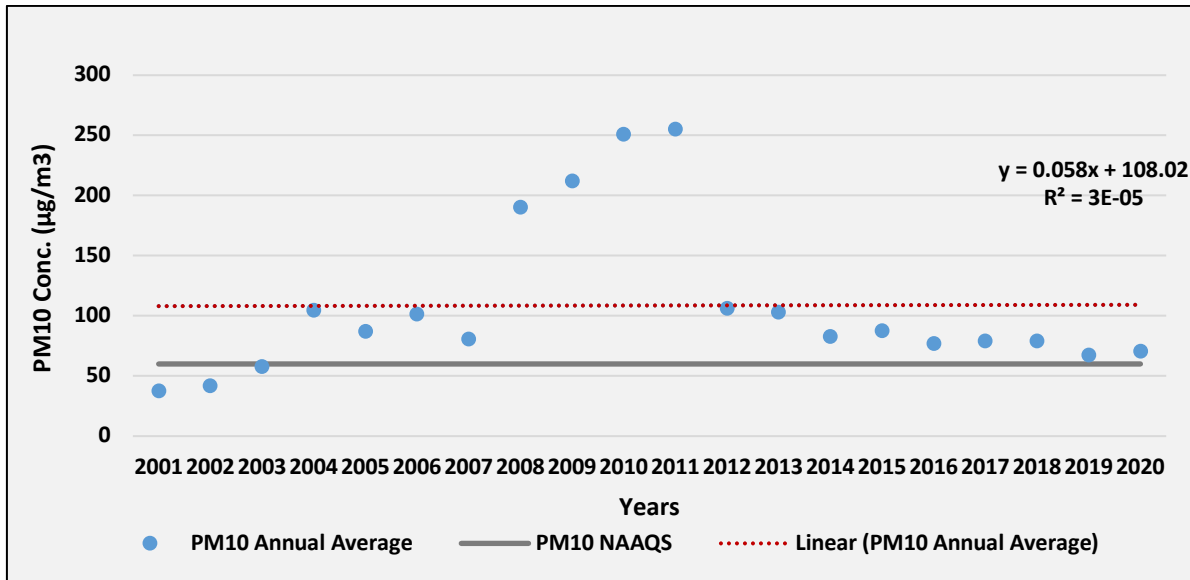


Fig. KPKD13: Trend of annual mean PM_{10} ambient air concentration in KPKD TPP (Ambient 2)

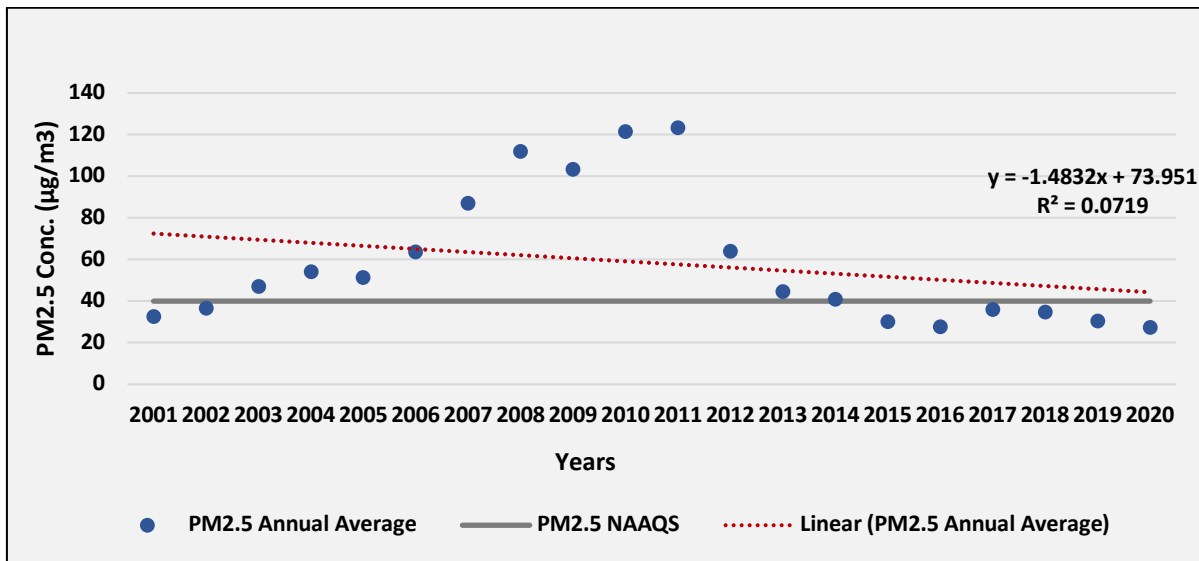


Fig. KPKD14: Trend of annual mean $PM_{2.5}$ ambient air concentration in KPKD TPP (Ambient 2)

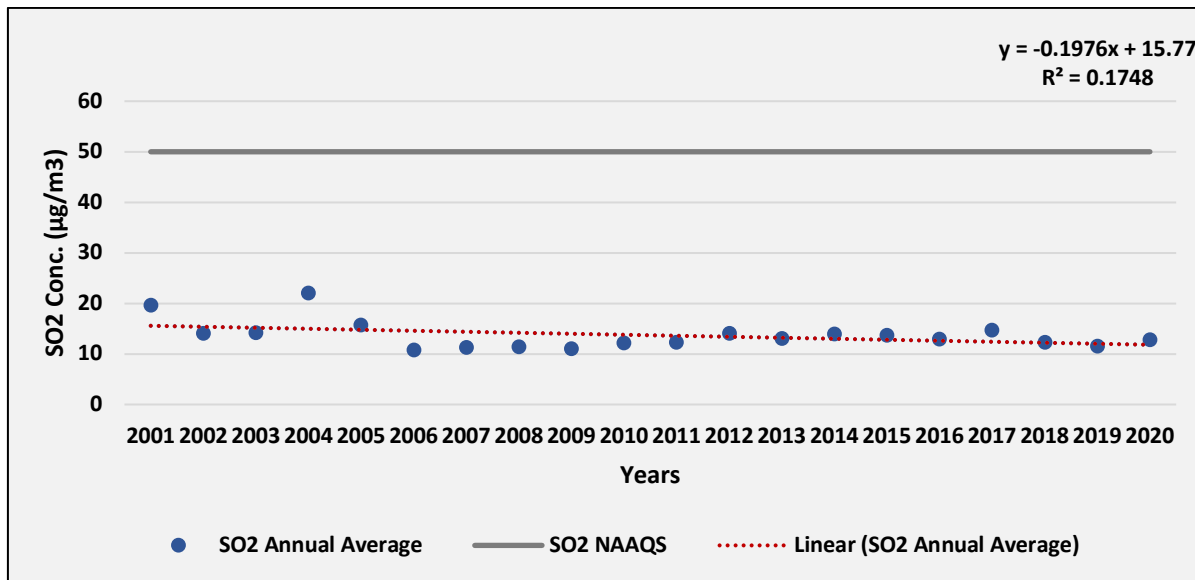


Fig. KPKD15: Trend of annual mean SO₂ ambient air concentration in KPKD TPP (Ambient 2)

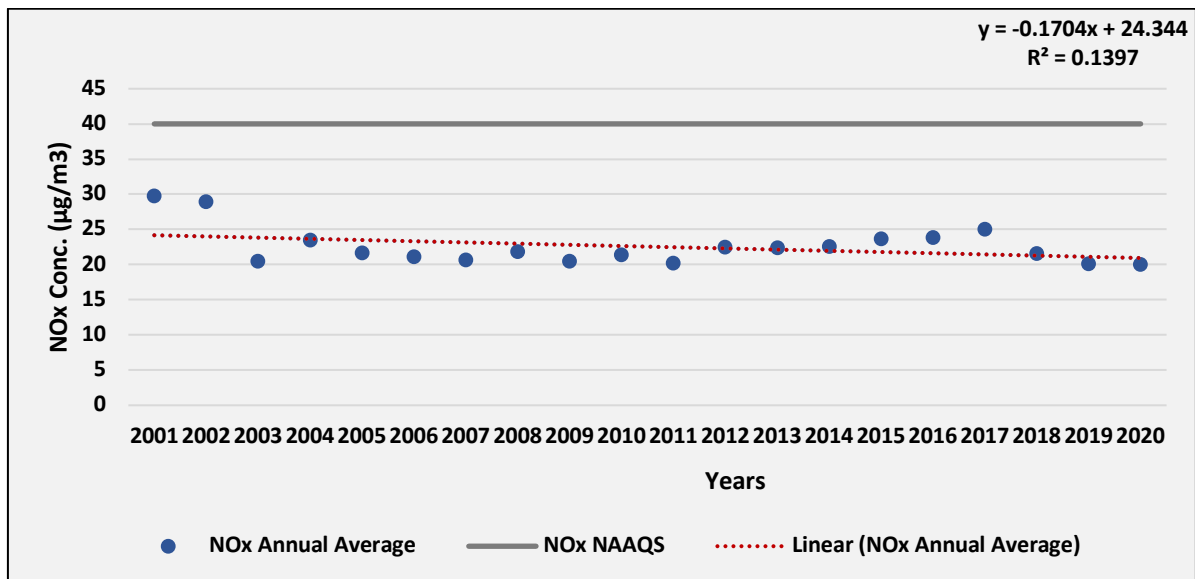


Fig. KPKD16: Trend of annual mean NO_x ambient air concentration in KPKD TPP (Ambient 2)

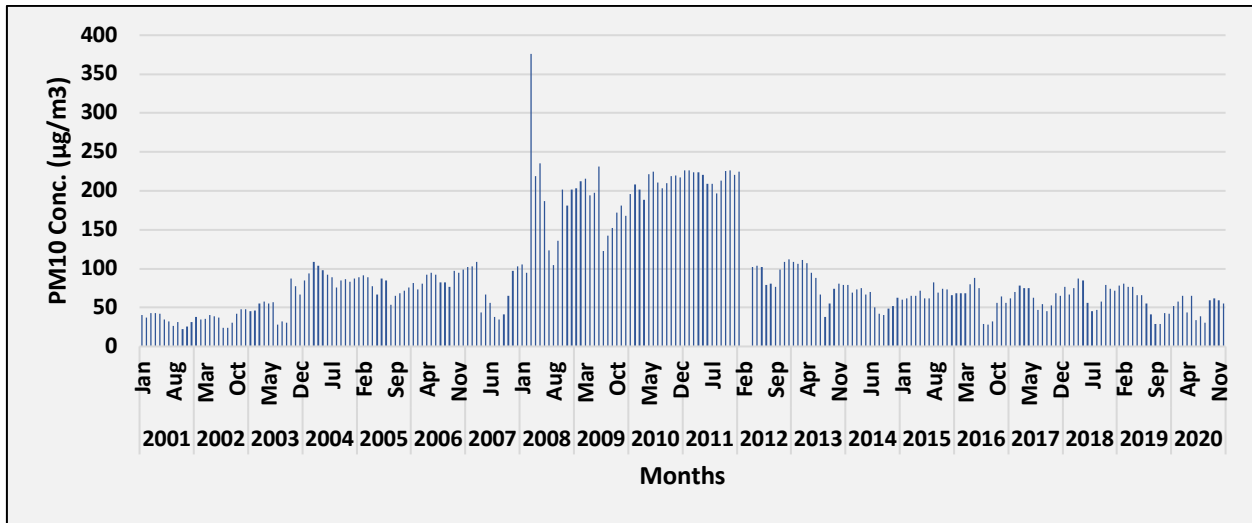


Fig. KPKD17: Time series of monthly average PM₁₀ ambient air concentration in KPKD TPP (Ambient 3)

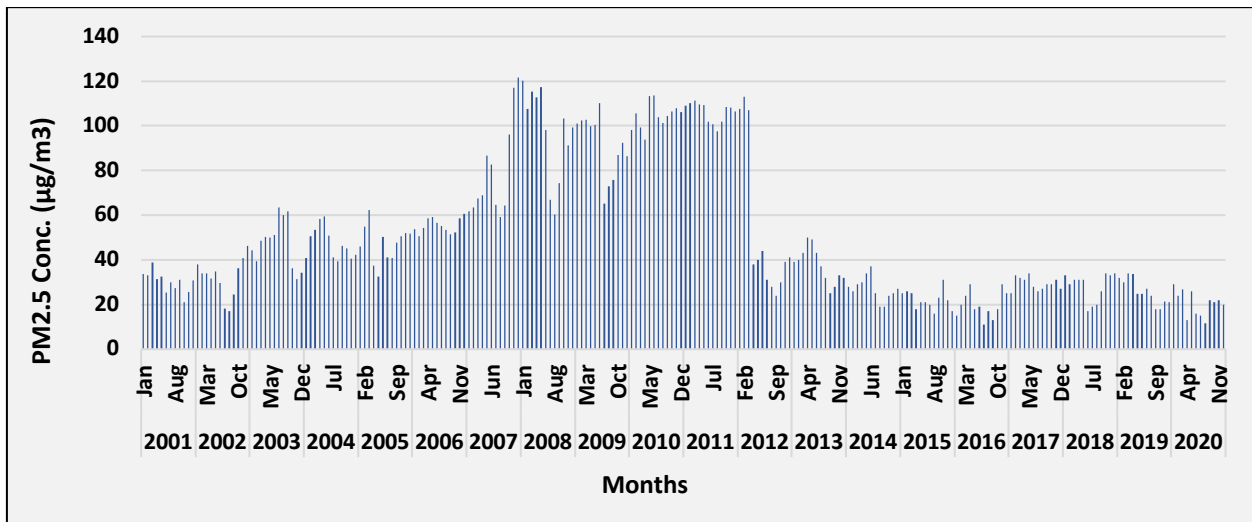


Fig. KPKD18: Time series of monthly average PM_{2.5} ambient air concentration in KPKD TPP (Ambient 3)

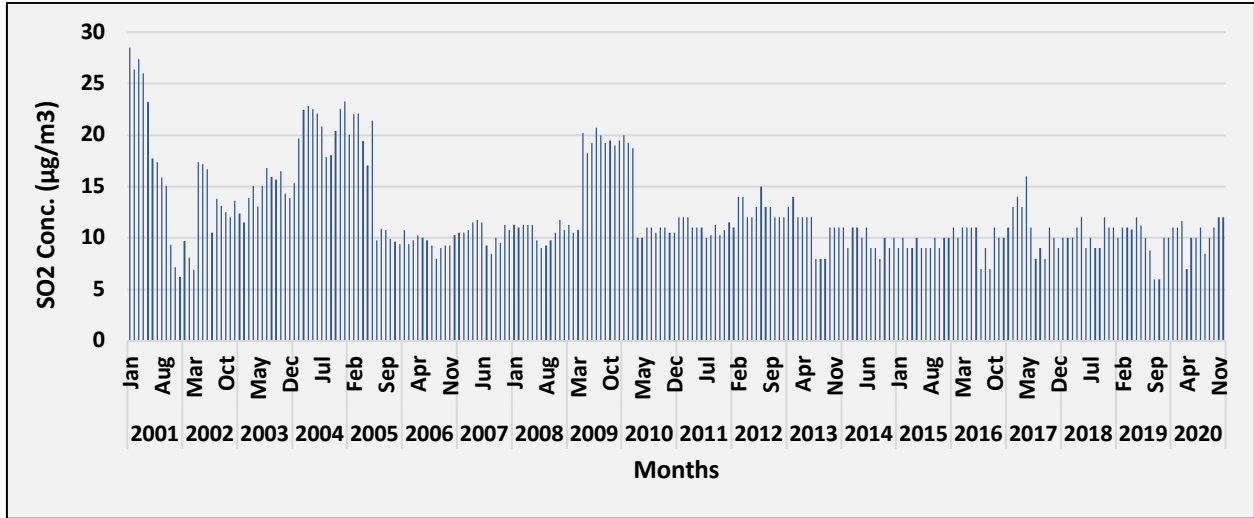


Fig. KPKD19: Time series of monthly average SO_2 ambient air concentration in KPKD TPP (Ambient 3)

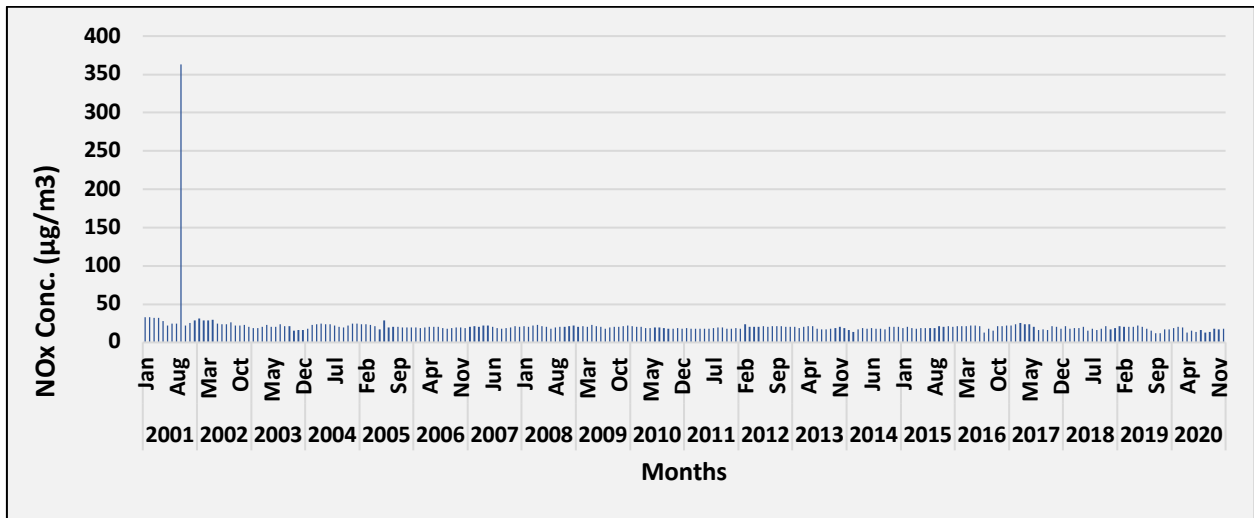


Fig. KPKD20: Time series of monthly average NO_x ambient air concentration in KPKD TPP (Ambient 3)

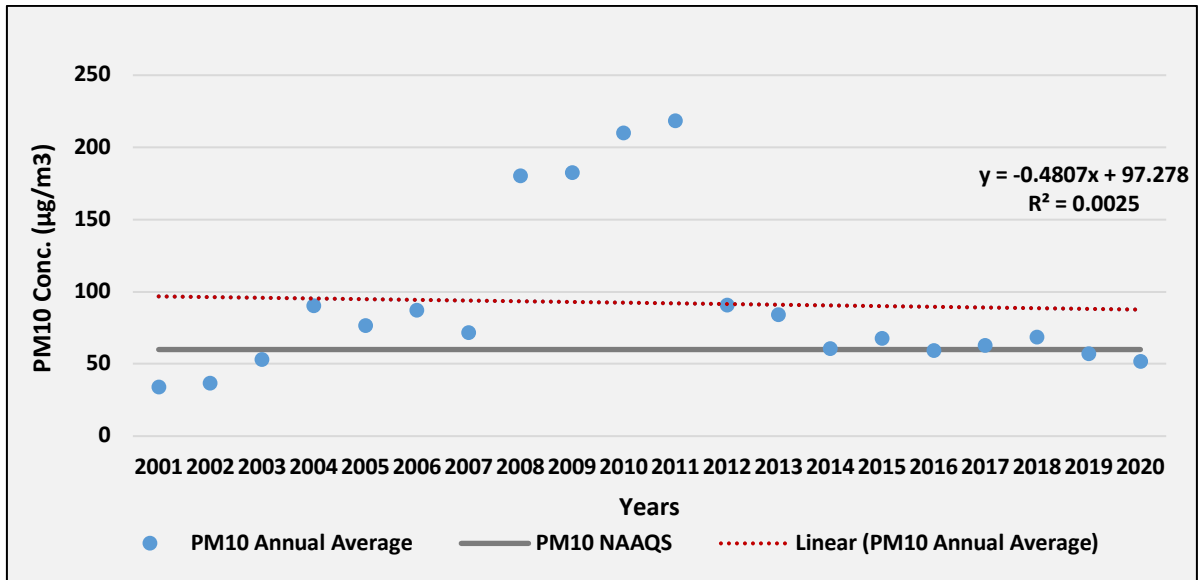


Fig. KPKD21: Trend of annual mean PM_{10} ambient air concentration in KPKD TPP (Ambient 3)

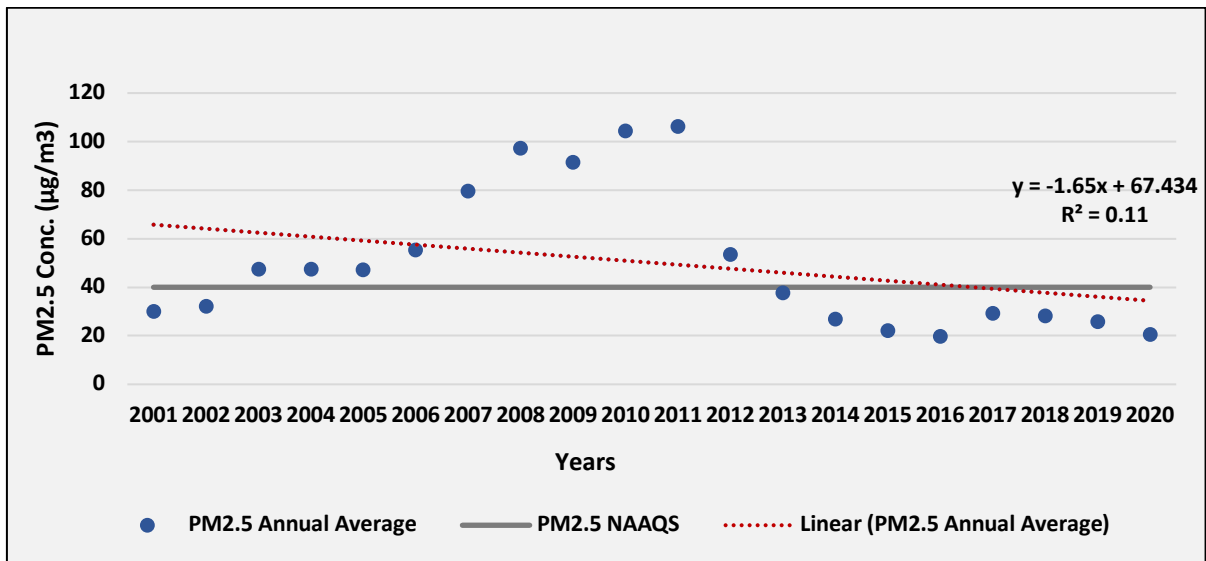


Fig. KPKD22: Trend of annual mean $PM_{2.5}$ ambient air concentration in KPKD TPP (Ambient 3)

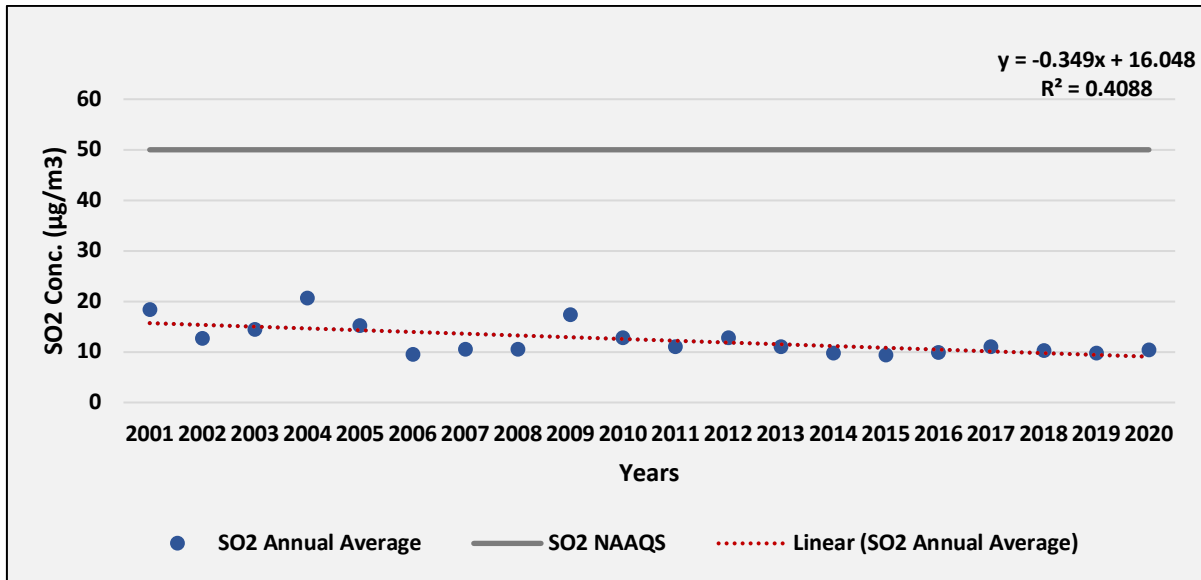


Fig. KPKD23: Trend of annual mean SO₂ ambient air concentration in KPKD TPP (Ambient 3)

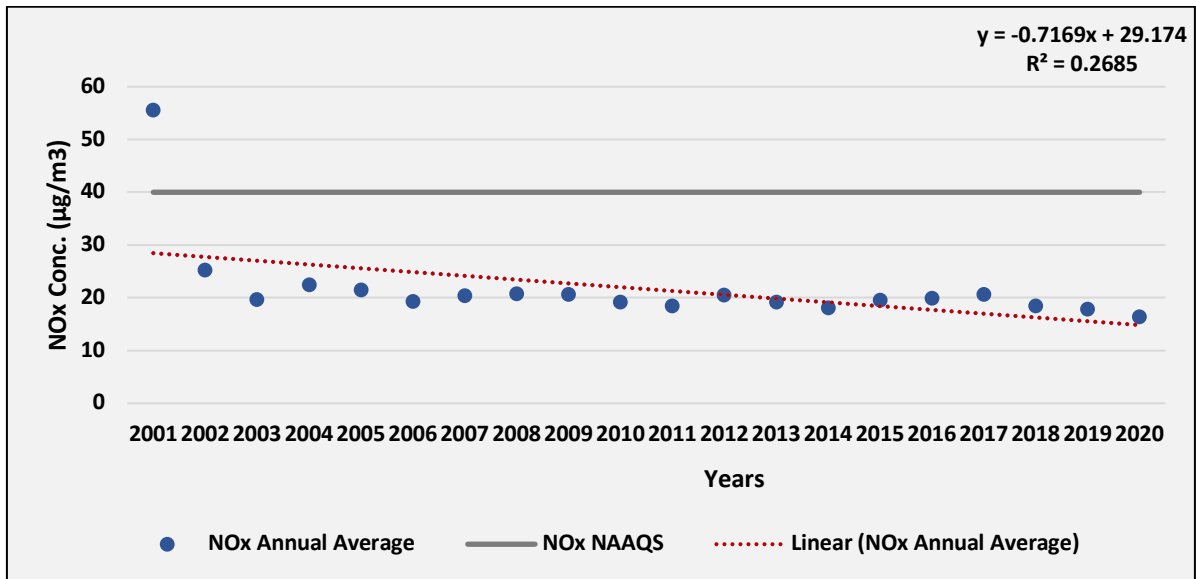


Fig. KPKD24: Trend of annual mean NO_x ambient air concentration in KPKD TPP (Ambient 3)

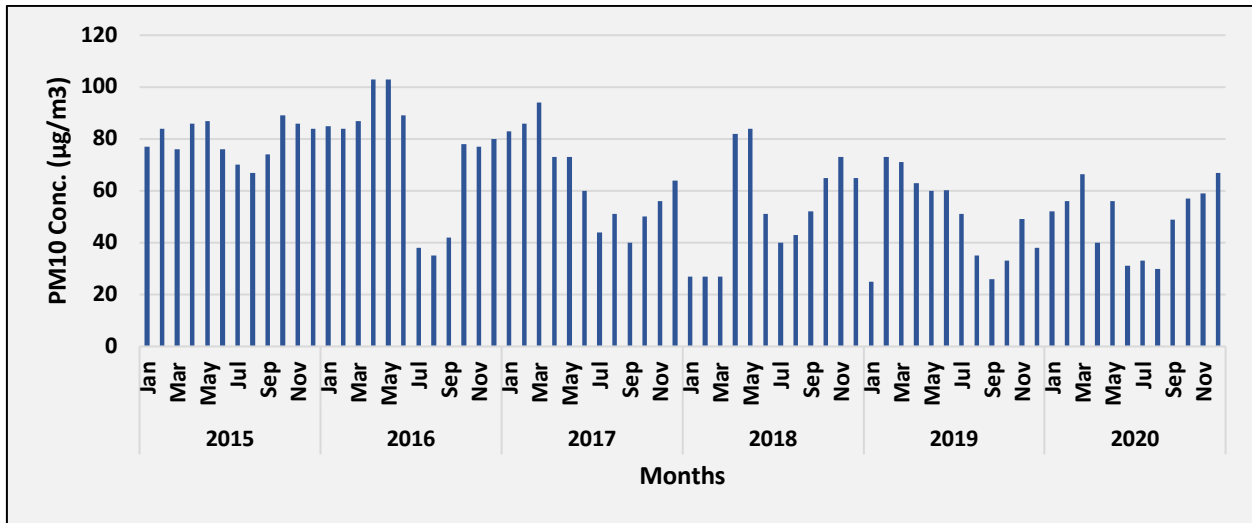


Fig. KPKD25: Time series of monthly average PM_{10} ambient air concentration in KPKD TPP (Ambient 4)

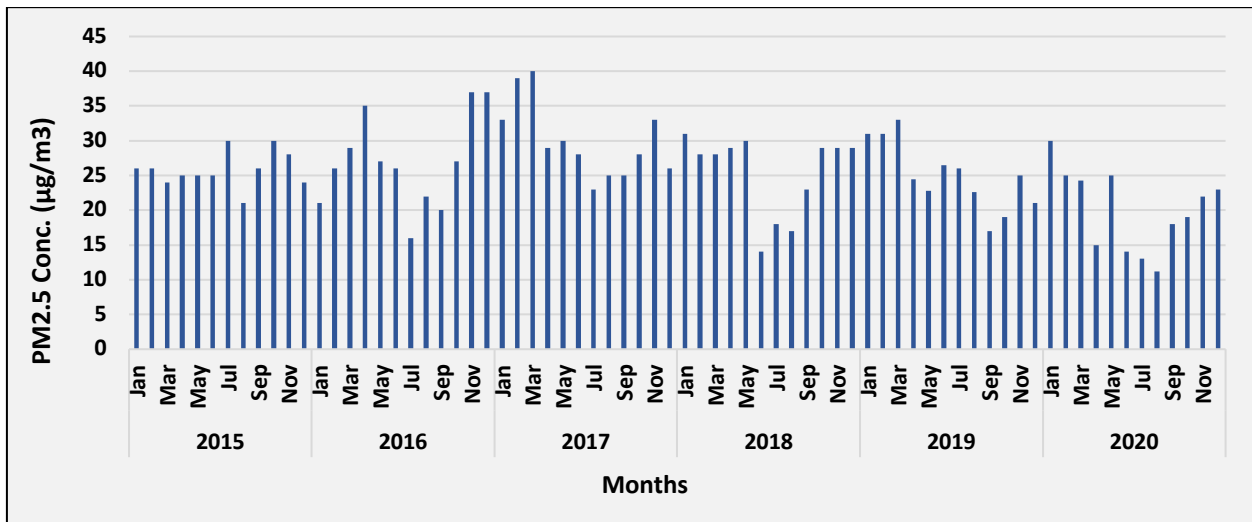


Fig. KPKD26: Time series of monthly average $PM_{2.5}$ ambient air concentration in KPKD TPP (Ambient 4)

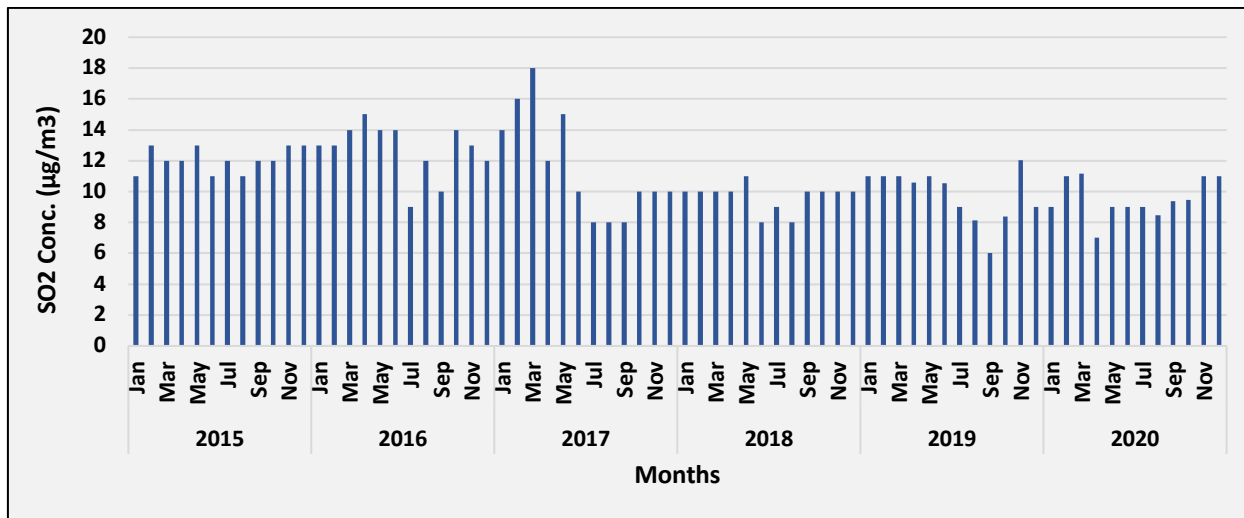


Fig. KPKD27: Time series of monthly average SO_2 ambient air concentration in KPKD TPP (Ambient 4)

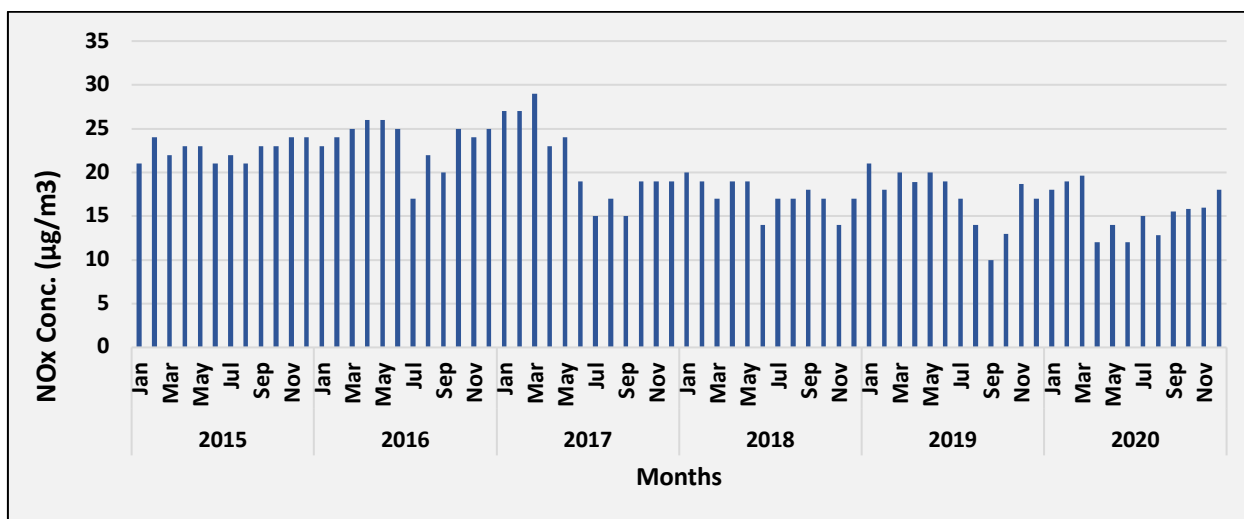


Fig. KPKD28: Time series of monthly average NO_x ambient air concentration in KPKD TPP (Ambient 4)

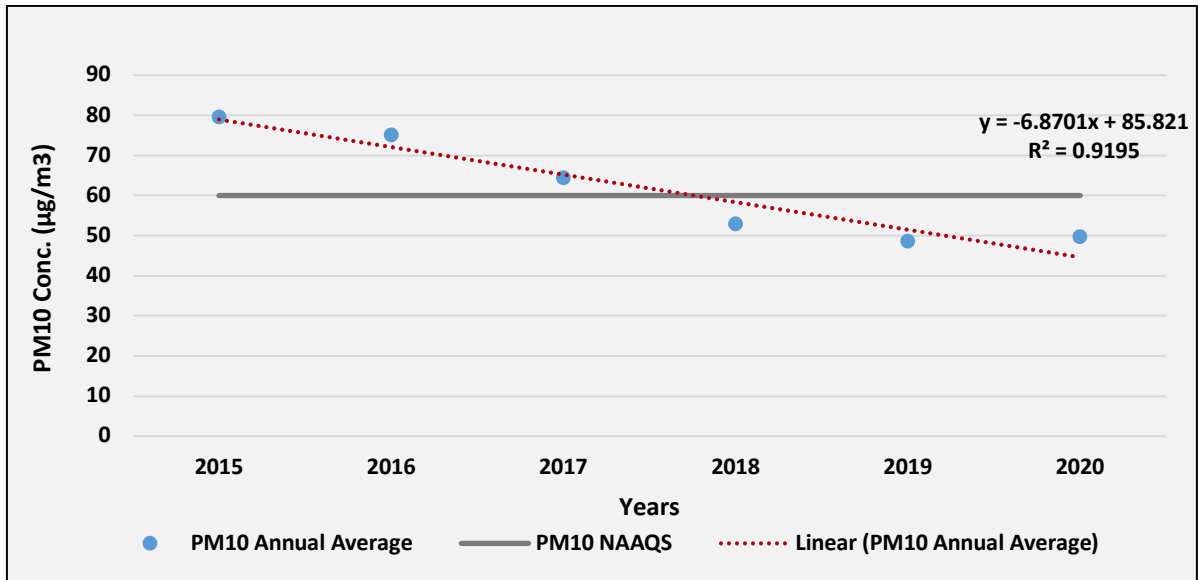


Fig. KPKD29: Trend of annual mean PM_{10} ambient air concentration in KPKD TPP (Ambient 4)

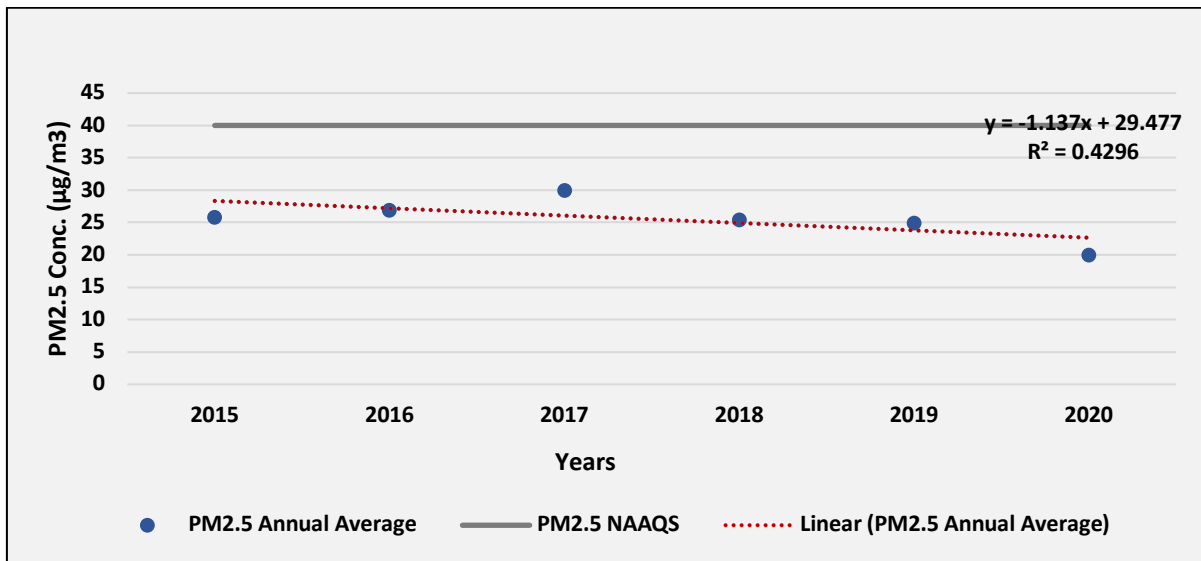


Fig. KPKD30: Trend of annual mean $PM_{2.5}$ ambient air concentration in KPKD TPP (Ambient 4)

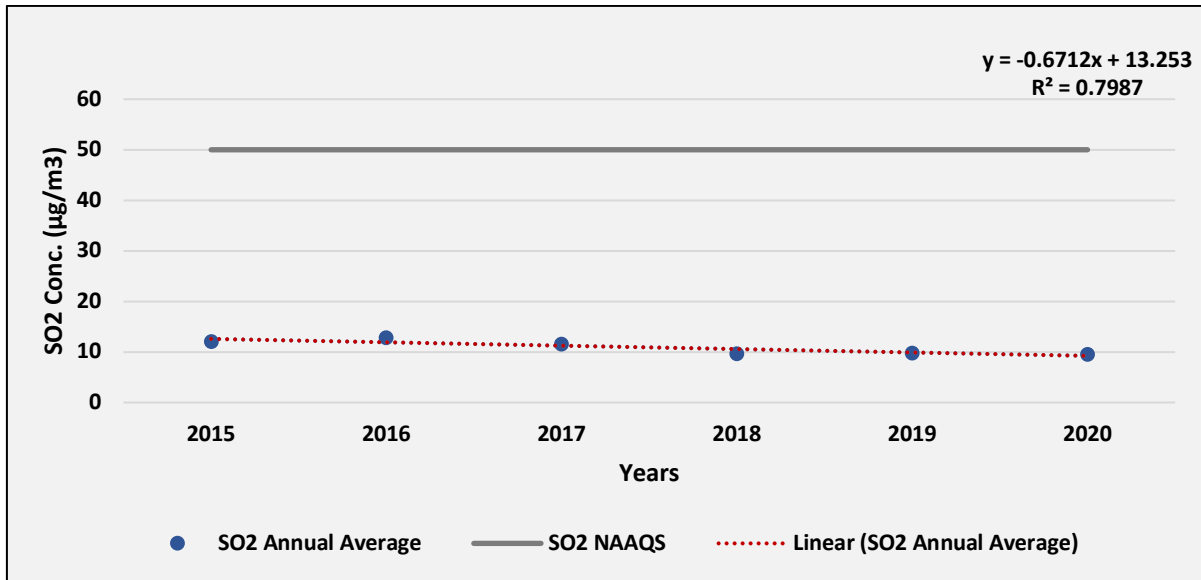


Fig. KPKD31: Trend of annual mean SO₂ ambient air concentration in KPKD TPP (Ambient 4)

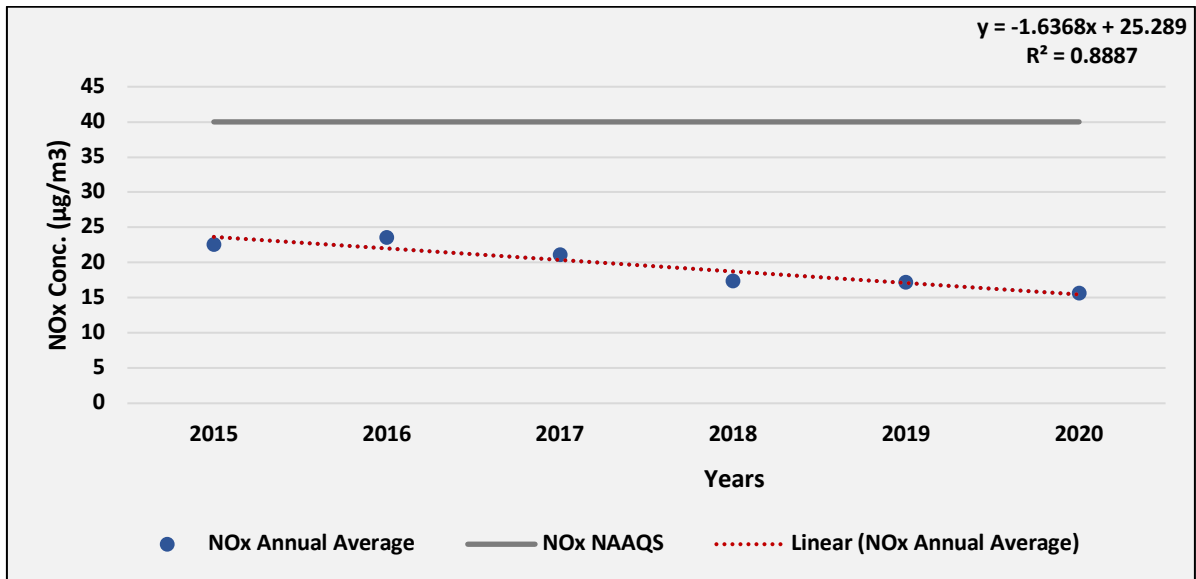


Fig. KPKD32: Trend of annual mean NO_x ambient air concentration in KPKD TPP (Ambient 4)

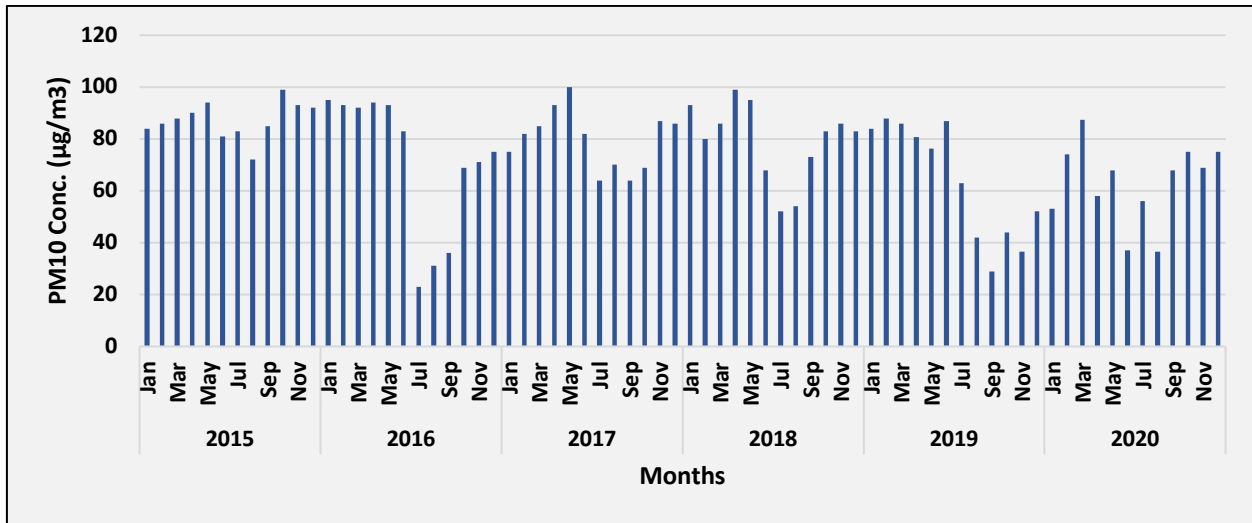


Fig. KPKD33: Time series of monthly average PM_{10} ambient air concentration in KPKD TPP (Ambient 5)

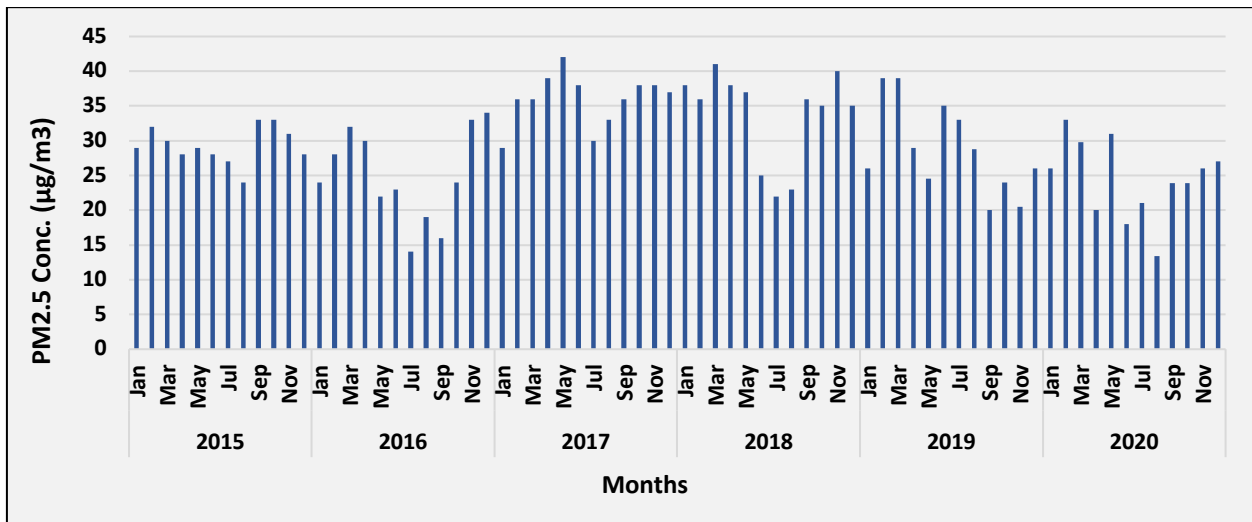


Fig. KPKD34: Time series of monthly average $PM_{2.5}$ ambient air concentration in KPKD TPP (Ambient 5)

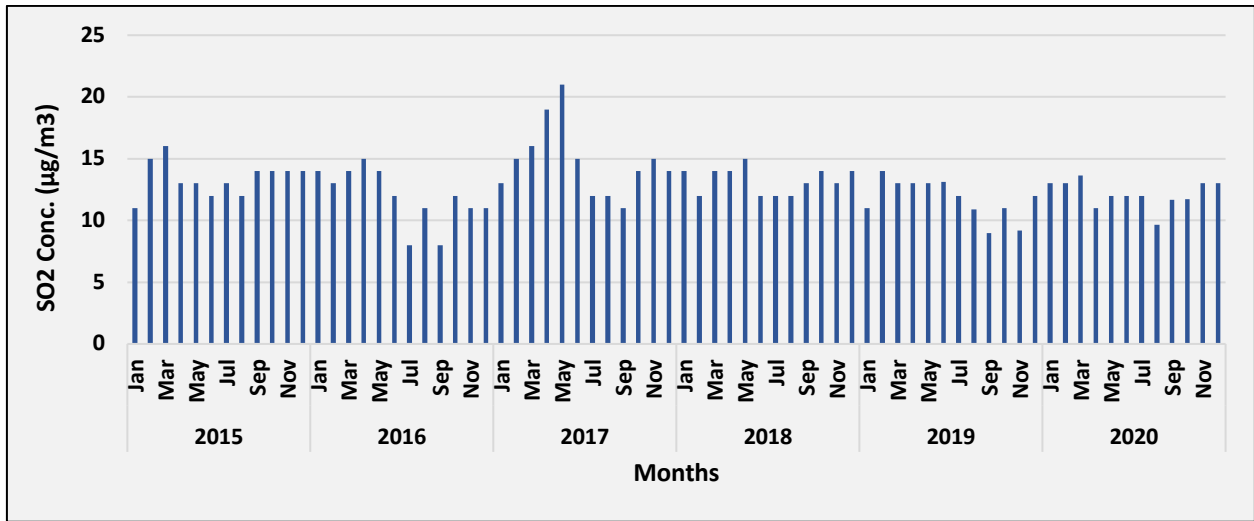


Fig. KPKD35: Time series of monthly average SO_2 ambient air concentration in KPKD TPP (Ambient 5)

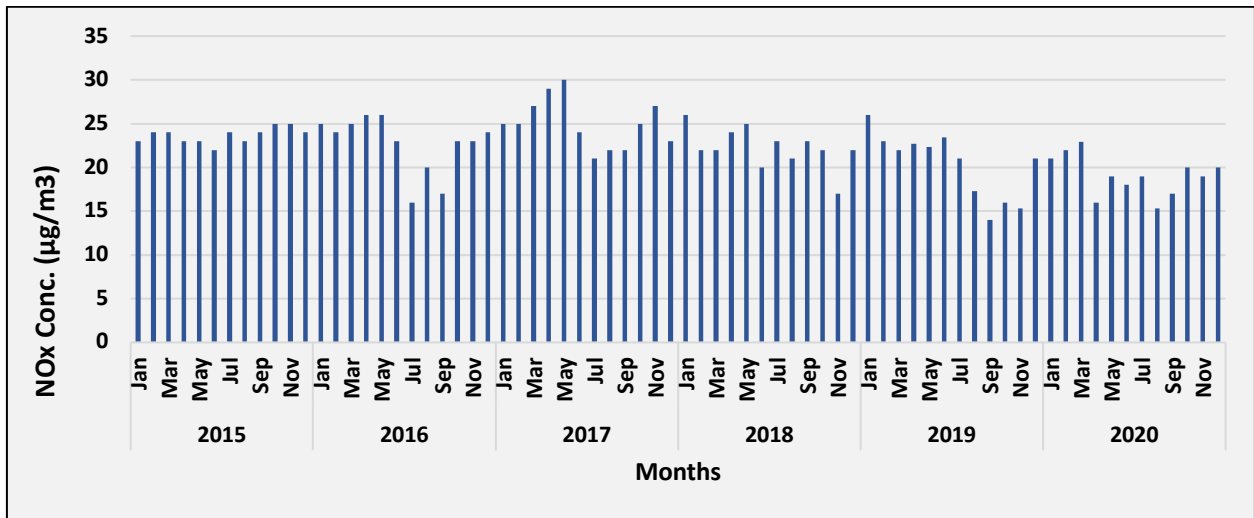


Fig. KPKD36: Time series of monthly average NO_x ambient air concentration in KPKD TPP (Ambient 5)

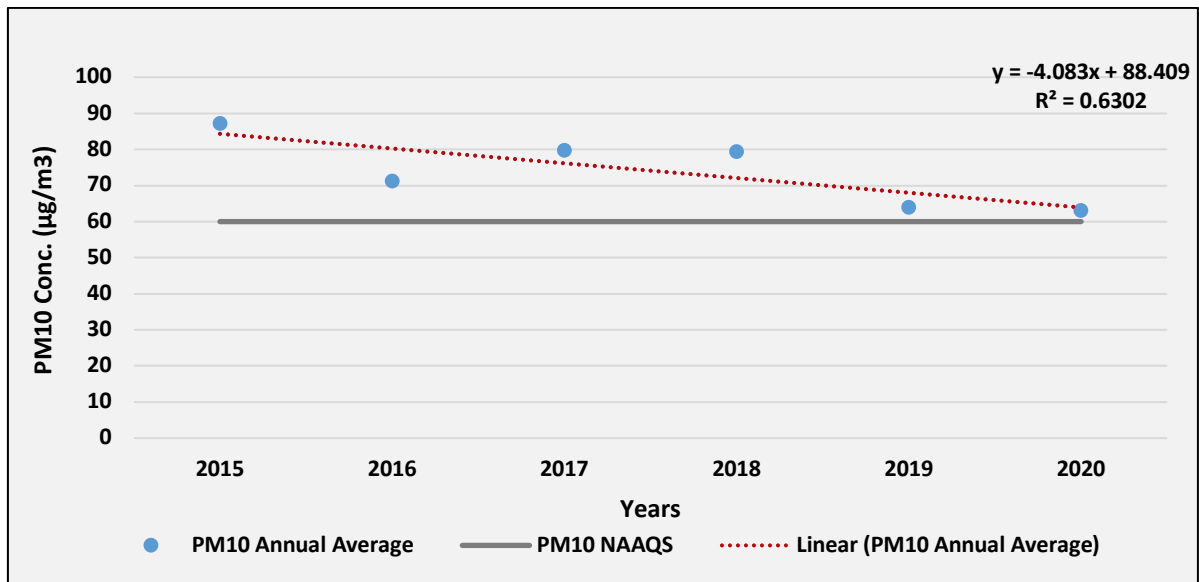


Fig. KPKD37: Trend of annual mean PM_{10} ambient air concentration in KPKD TPP (Ambient 5)

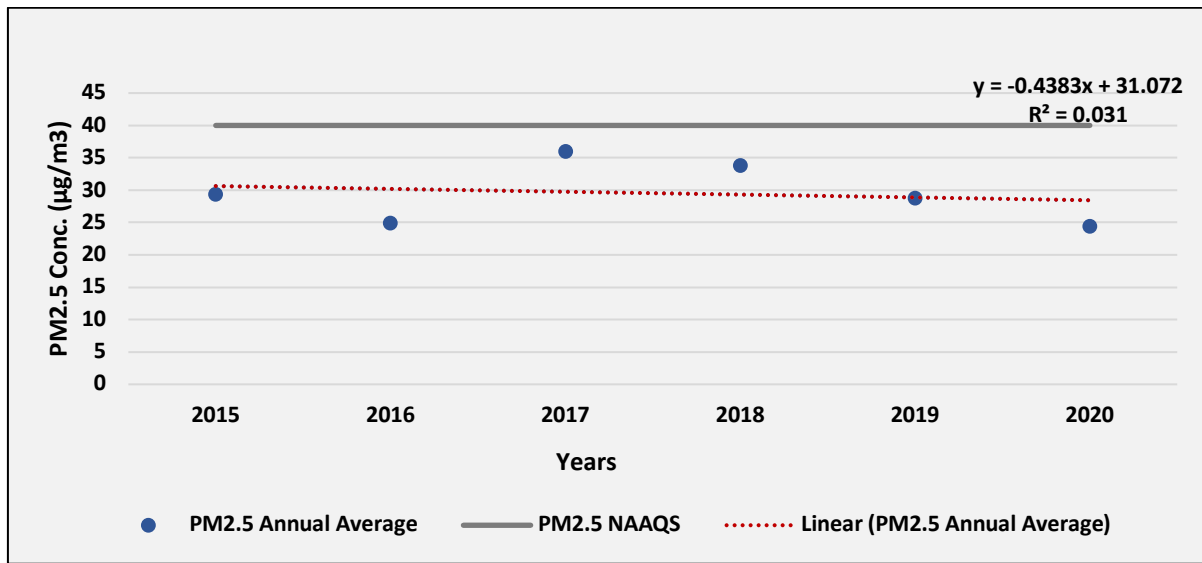


Fig. KPKD38: Trend of annual mean $PM_{2.5}$ ambient air concentration in KPKD TPP (Ambient 5)

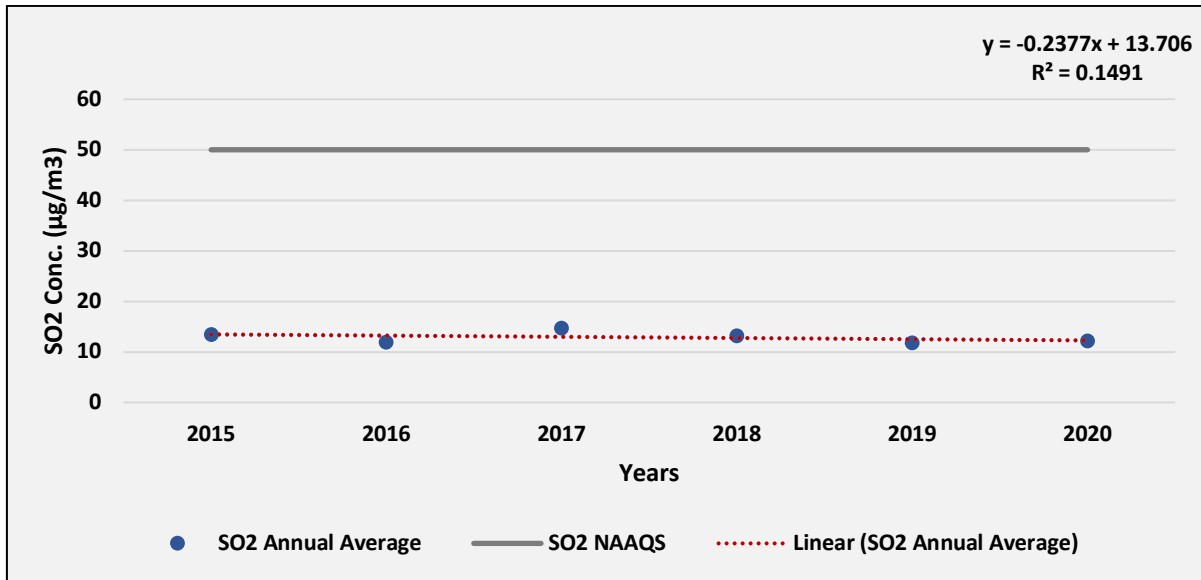


Fig. KPKD39: Trend of annual mean SO₂ ambient air concentration in KPKD TPP (Ambient 5)

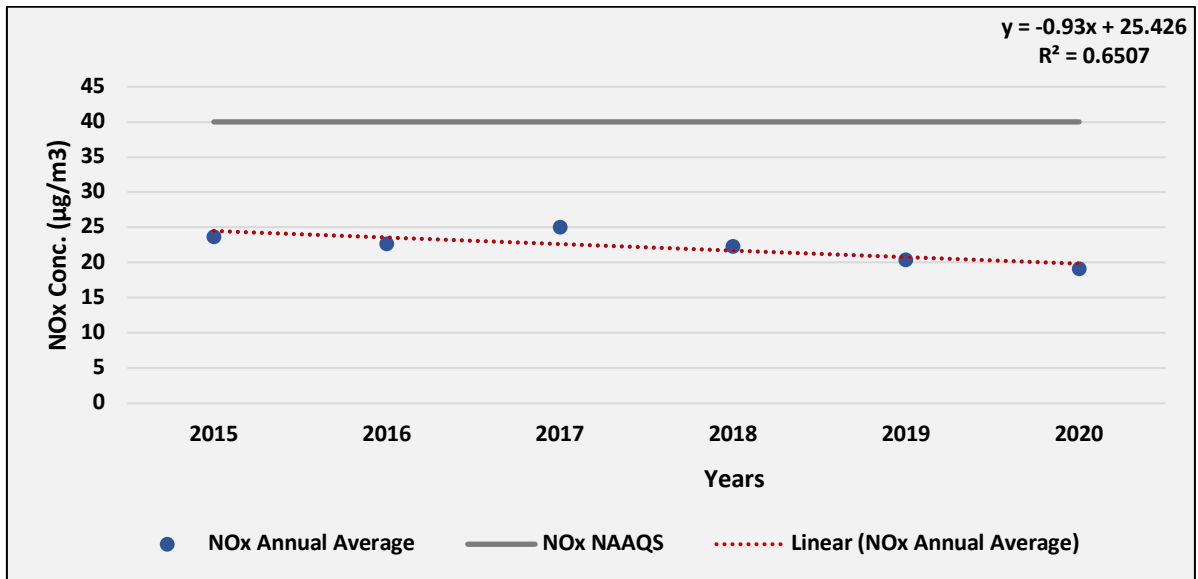


Fig. KPKD40: Trend of annual mean NO_x ambient air concentration in KPKD TPP (Ambient 5)

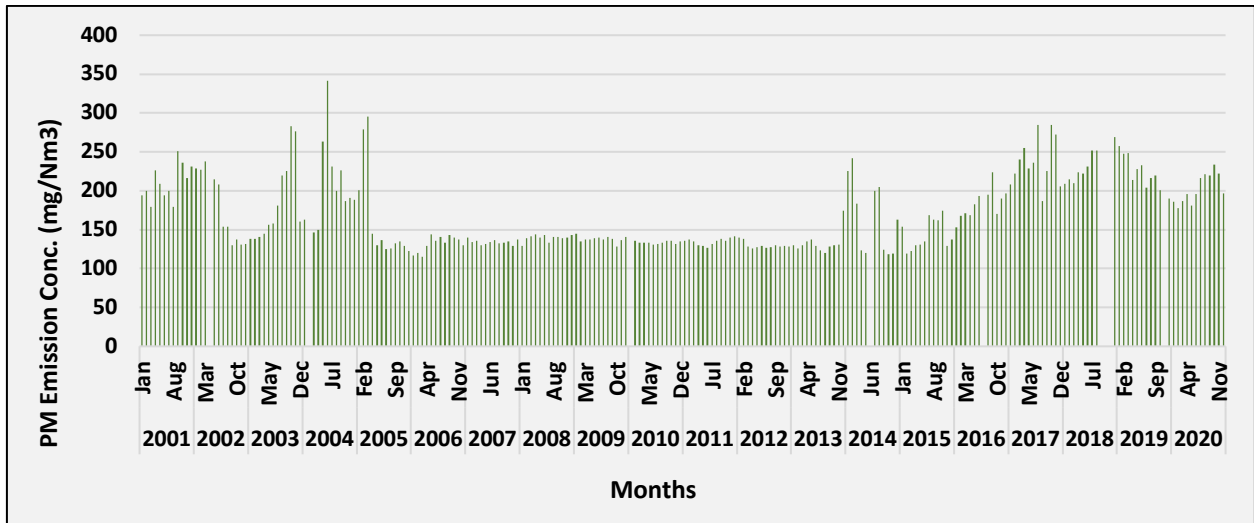


Fig. KPKD41: Time series of monthly average PM Emission concentration in KPKD TPP (Unit 1)

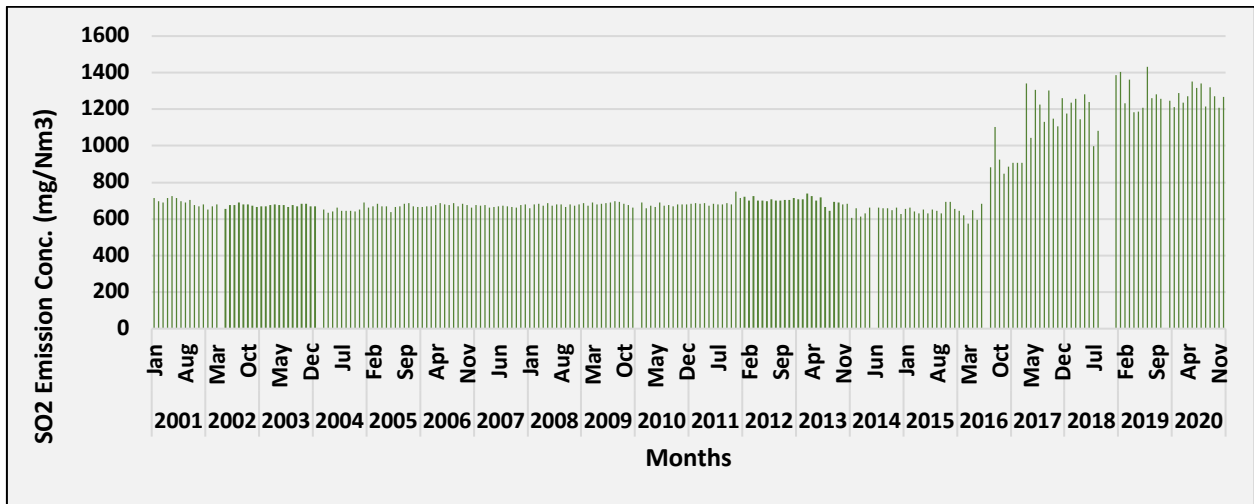


Fig. KPKD42: Time series of monthly average SO₂ Emission concentration in KPKD TPP (Unit 1)

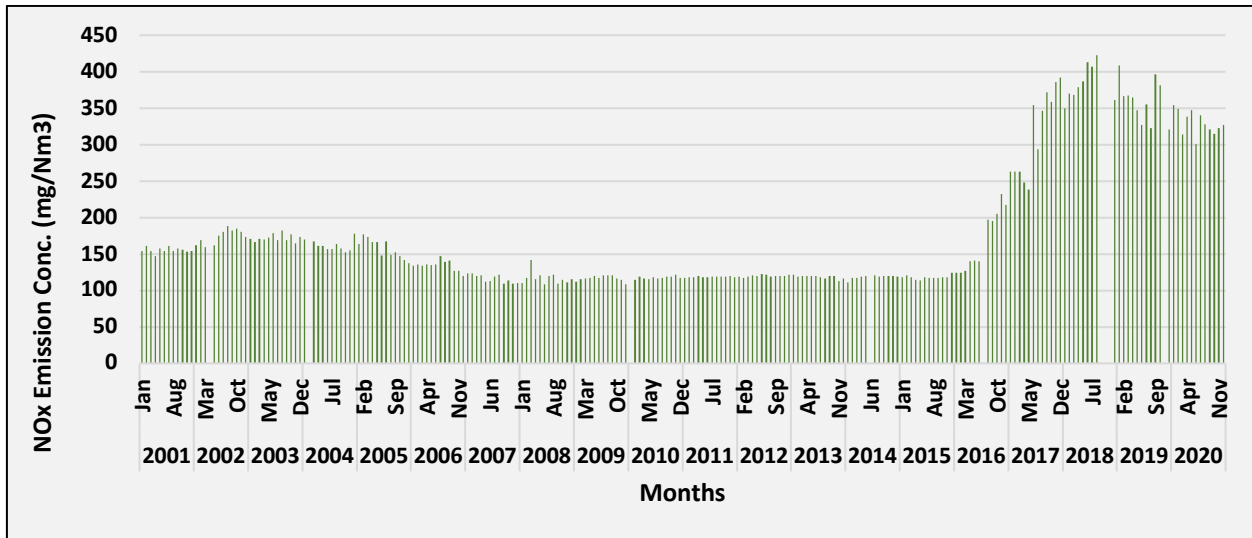


Fig. KPKD43: Time series of monthly average NO_x Emission concentration in KPKD TPP (Unit 1)

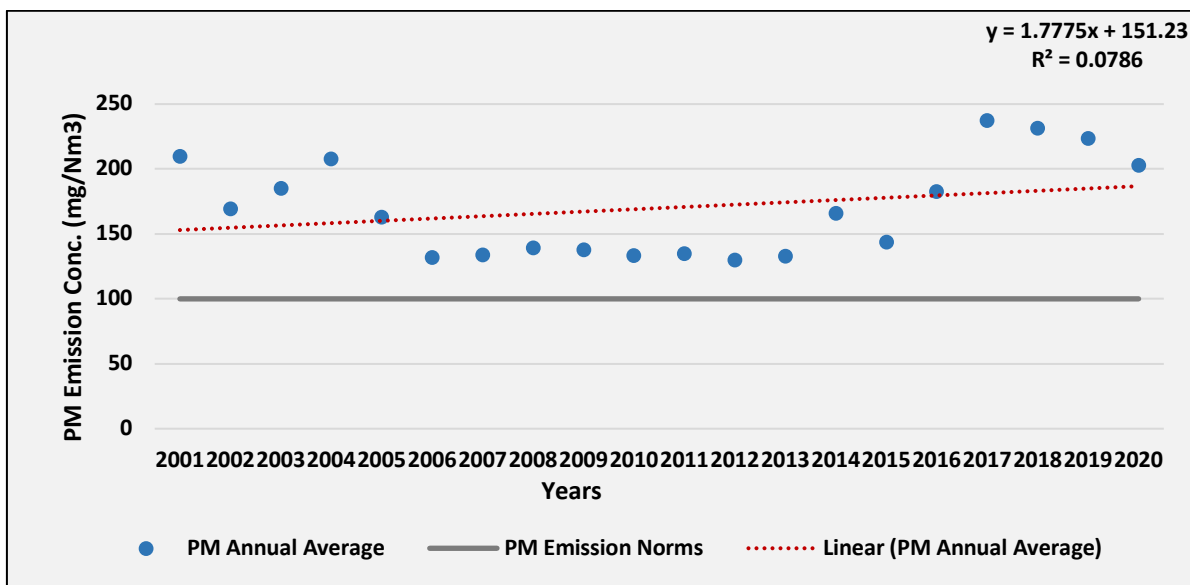


Fig. KPKD44: Trend of annual mean PM Emission air concentration in KPKD TPP (Unit 1)

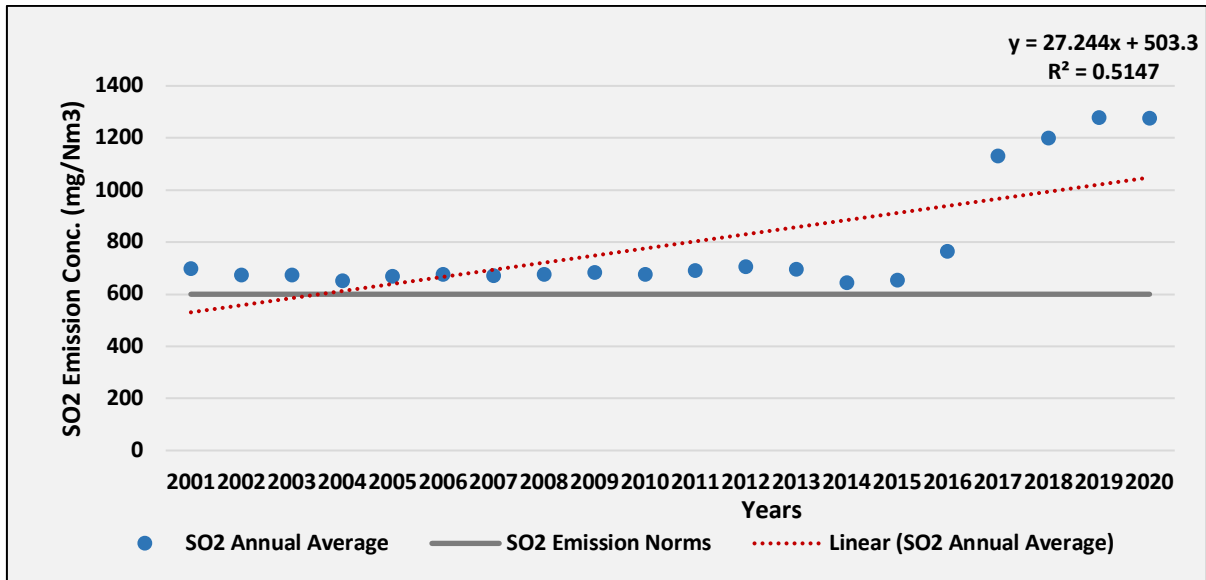


Fig. KPKD45: Trend of annual mean SO₂ Emission air concentration in KPKD TPP (Unit 1)

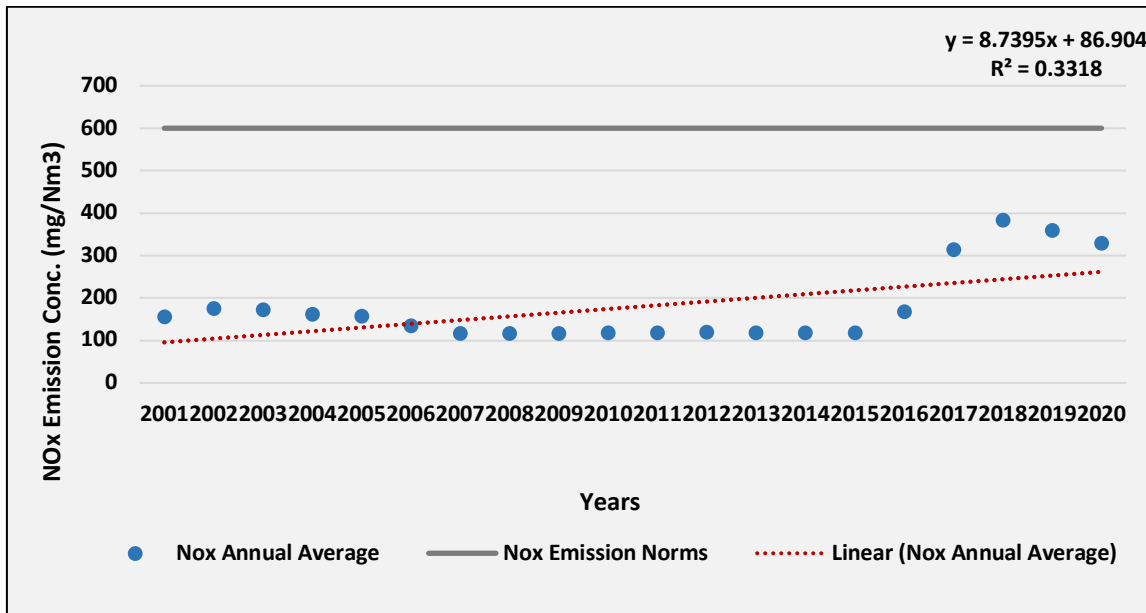


Fig. KPKD46: Trend of annual mean NO_x Emission air concentration in KPKD TPP (Unit 1)

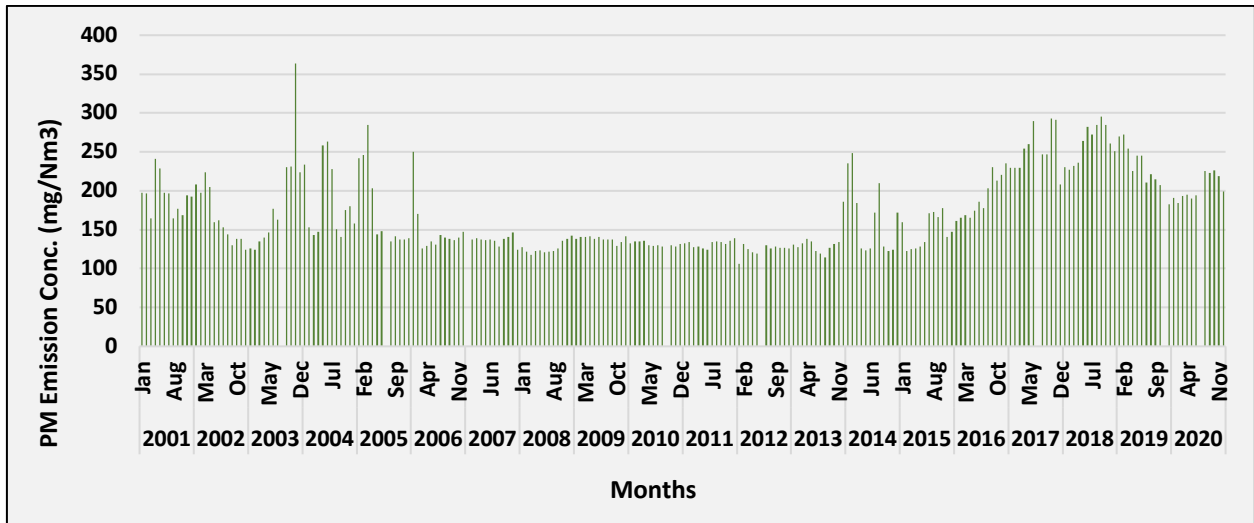


Fig. KPKD47: Time series of monthly average PM Emission concentration in KPKD TPP (Unit 2)

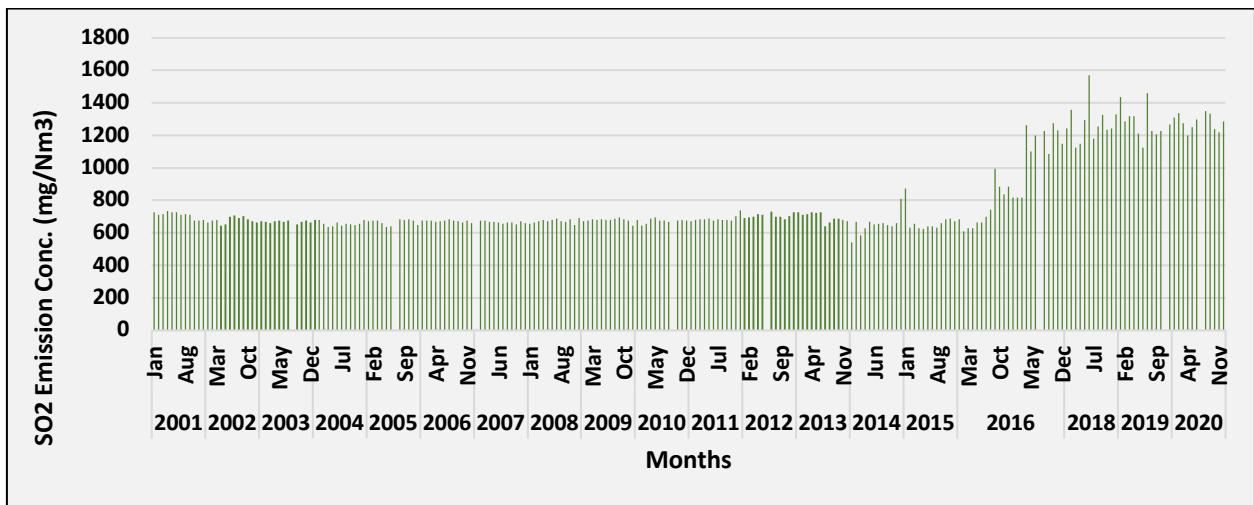


Fig. KPKD48: Time series of monthly average SO₂ Emission concentration in KPKD TPP (Unit 2)

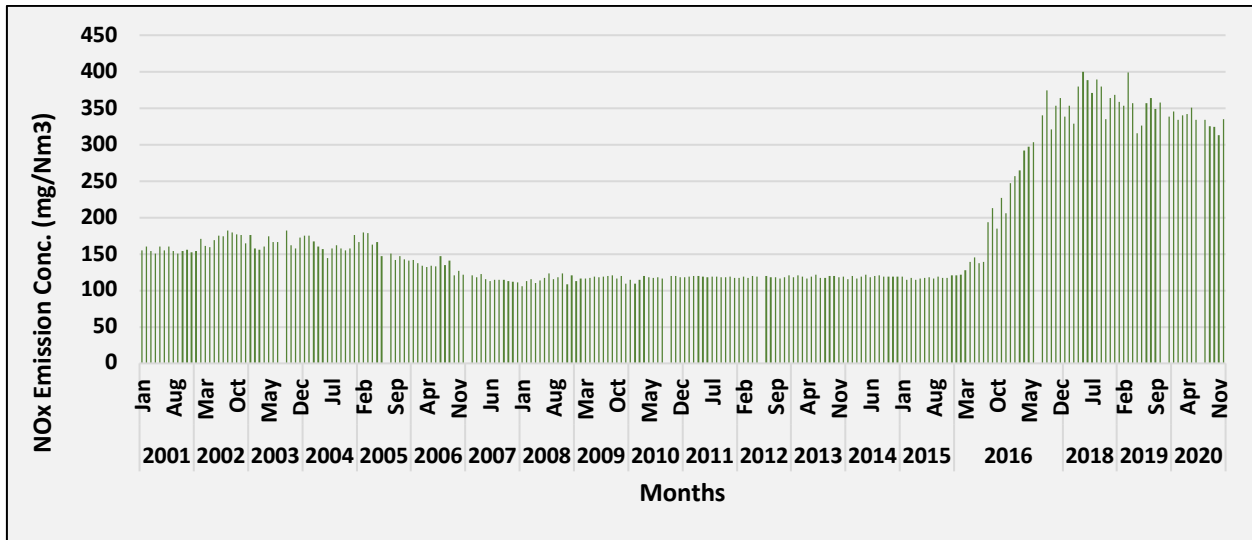


Fig. KPKD49: Time series of monthly average NO_x Emission concentration in KPKD TPP (Unit 2)

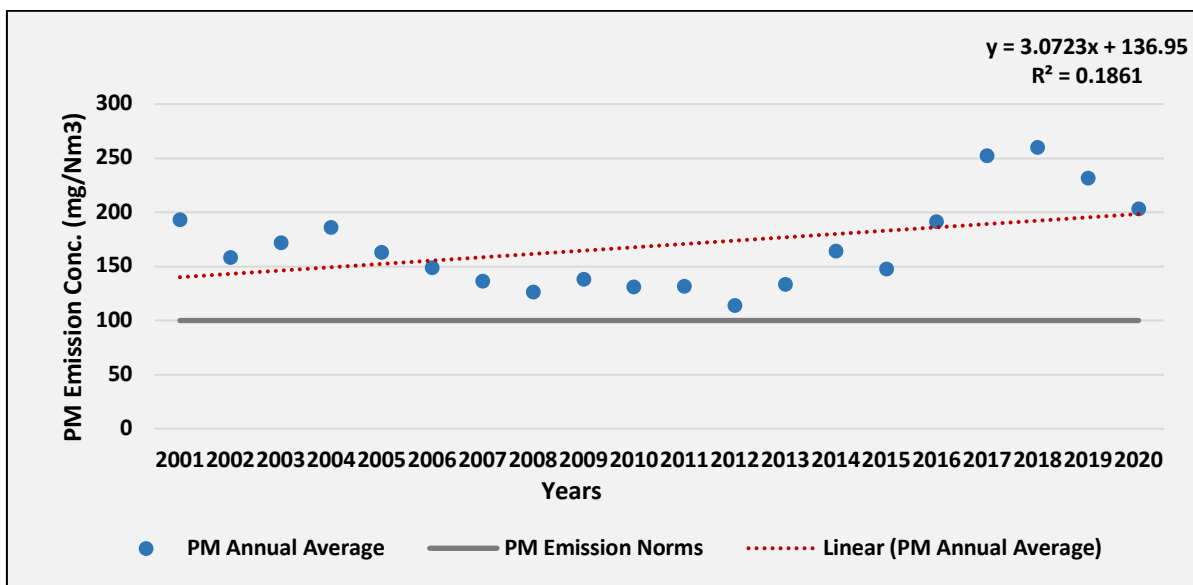


Fig. KPKD50: Trend of annual mean PM Emission air concentration in KPKD TPP (Unit 2)

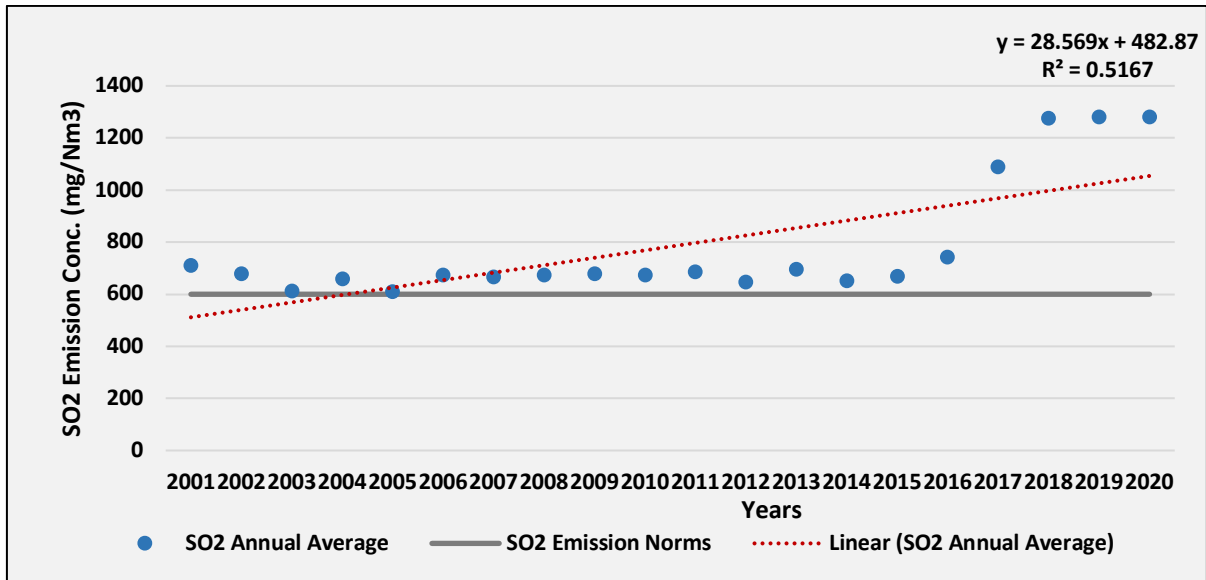


Fig. KPKD51: Trend of annual mean SO₂ Emission air concentration in KPKD TPP (Unit 2)

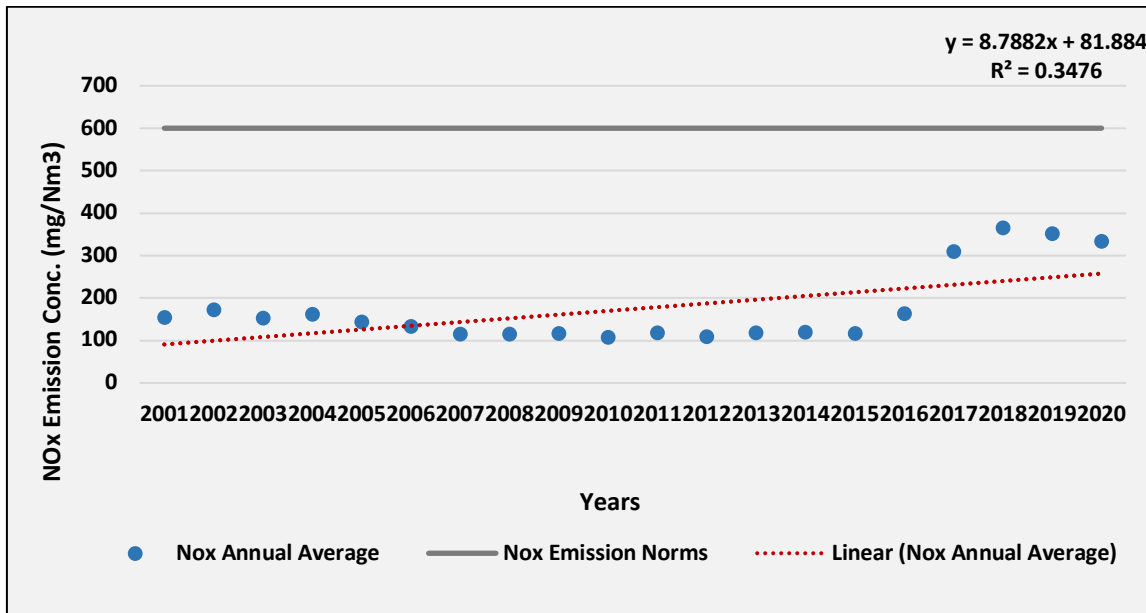


Fig. KPKD52: Trend of annual mean NO_x Emission air concentration in KPKD TPP (Unit 2)

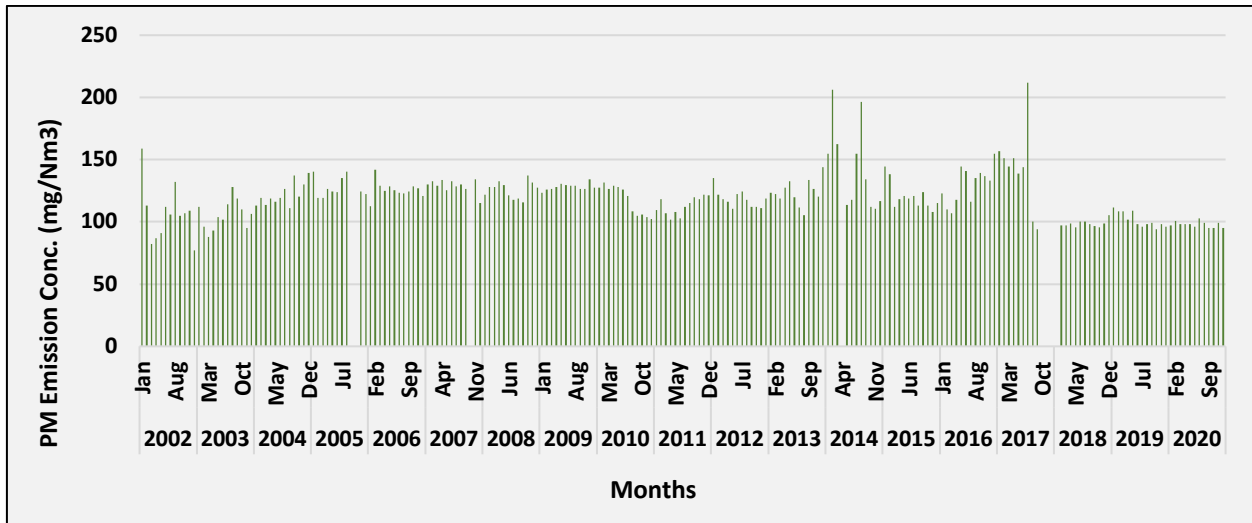


Fig. KPKD53: Time series of monthly average PM Emission concentration in KPKD TPP (Unit 3)

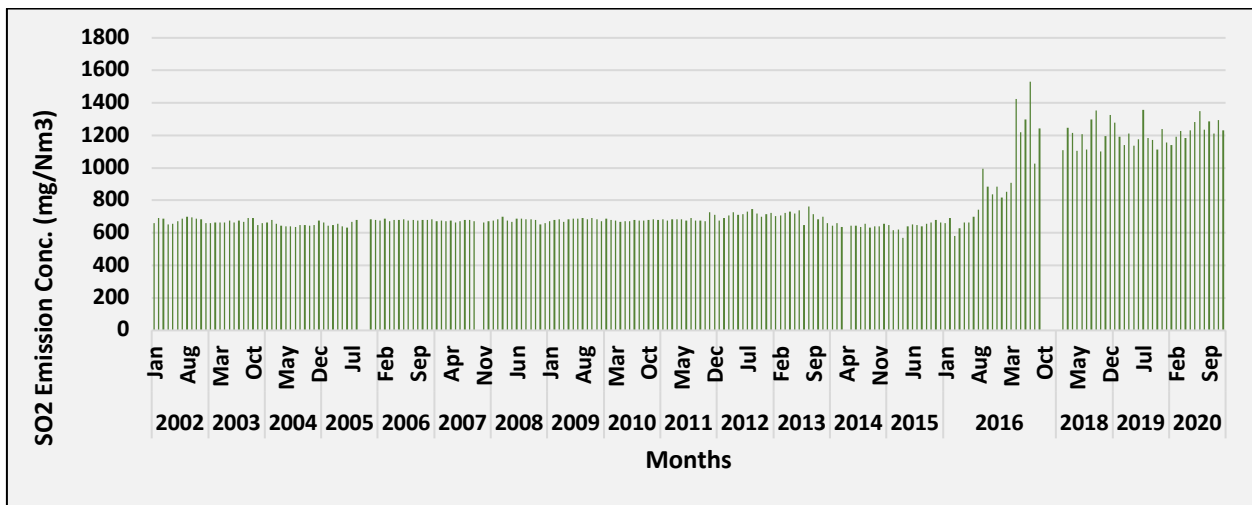


Fig. KPKD54: Time series of monthly average SO₂ Emission concentration in KPKD TPP (Unit 3)

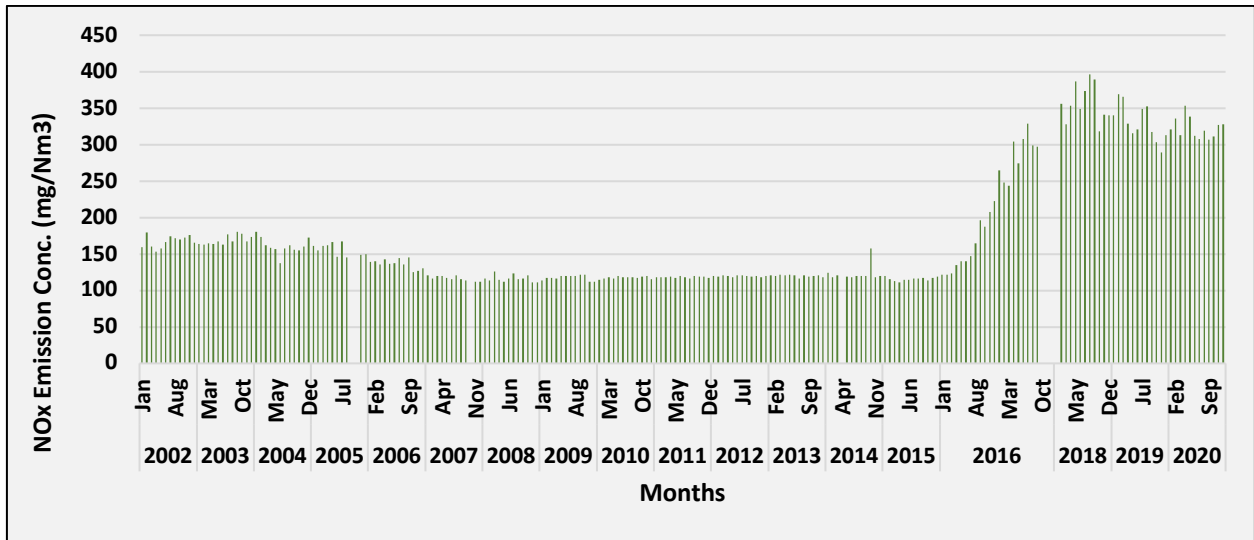


Fig. KPKD55: Time series of monthly average NO_x Emission concentration in KPKD TPP (Unit 3)

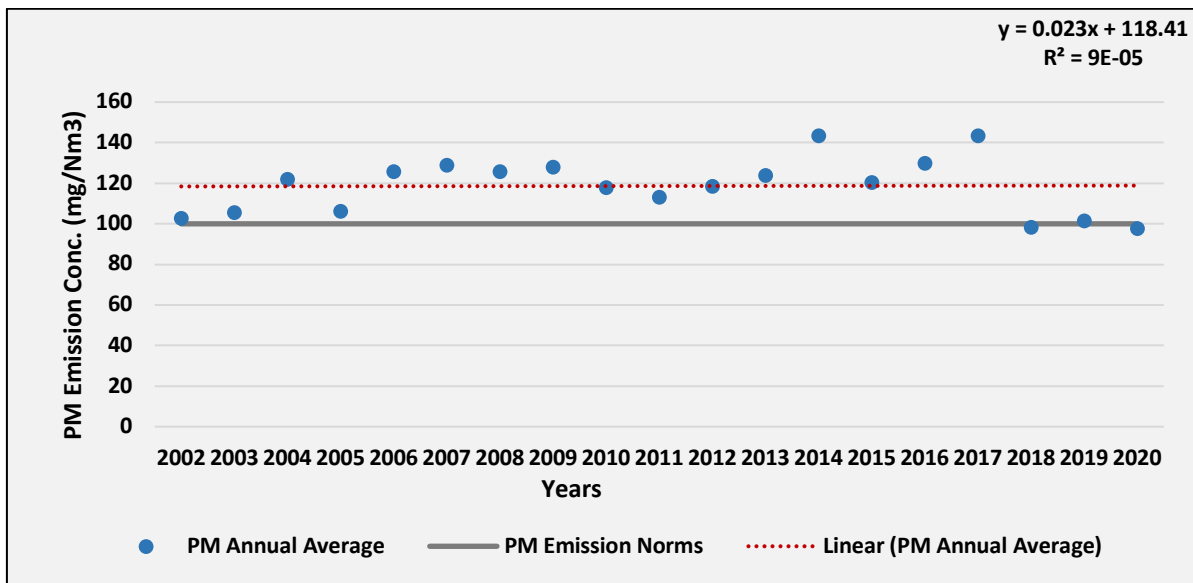


Fig. KPKD56: Trend of annual mean PM Emission air concentration in KPKD TPP (Unit 3)

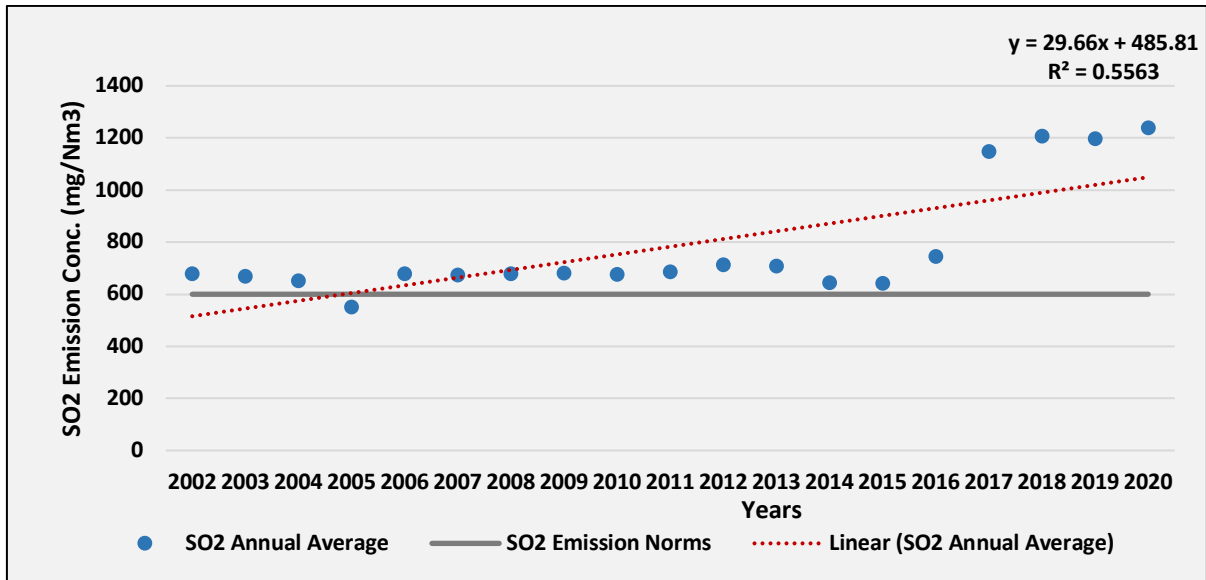


Fig. KPKD57: Trend of annual mean SO₂ Emission air concentration in KPKD TPP (Unit 3)

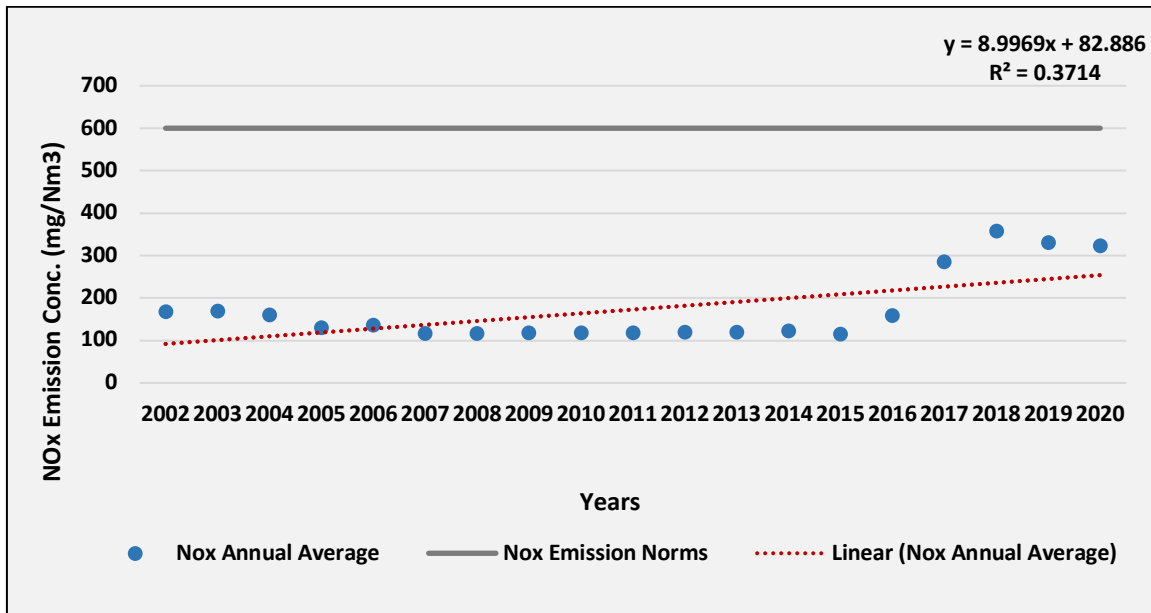


Fig. KPKD58: Trend of annual mean NO_x Emission air concentration in KPKD TPP (Unit 3)

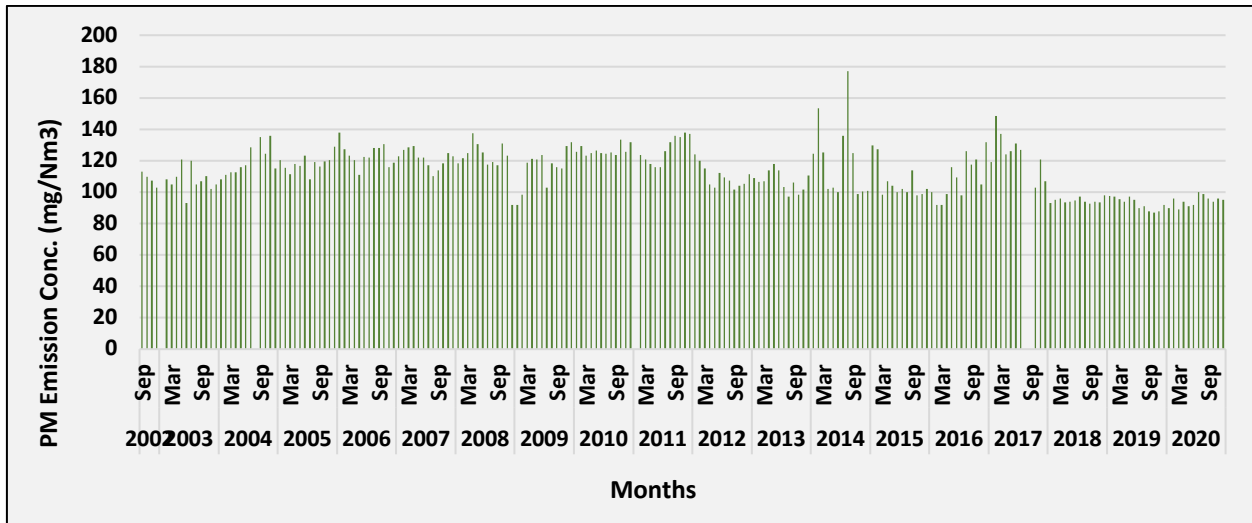


Fig. KPKD59: Time series of monthly average PM Emission concentration in KPKD TPP (Unit 4)

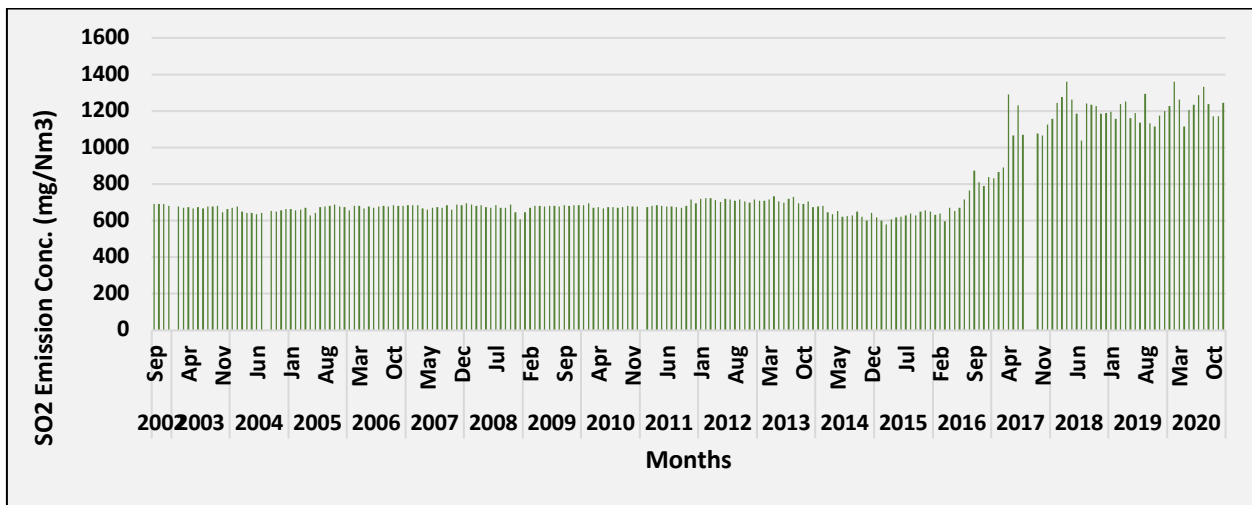


Fig. KPKD60: Time series of monthly average SO₂ Emission concentration in KPKD TPP (Unit 4)

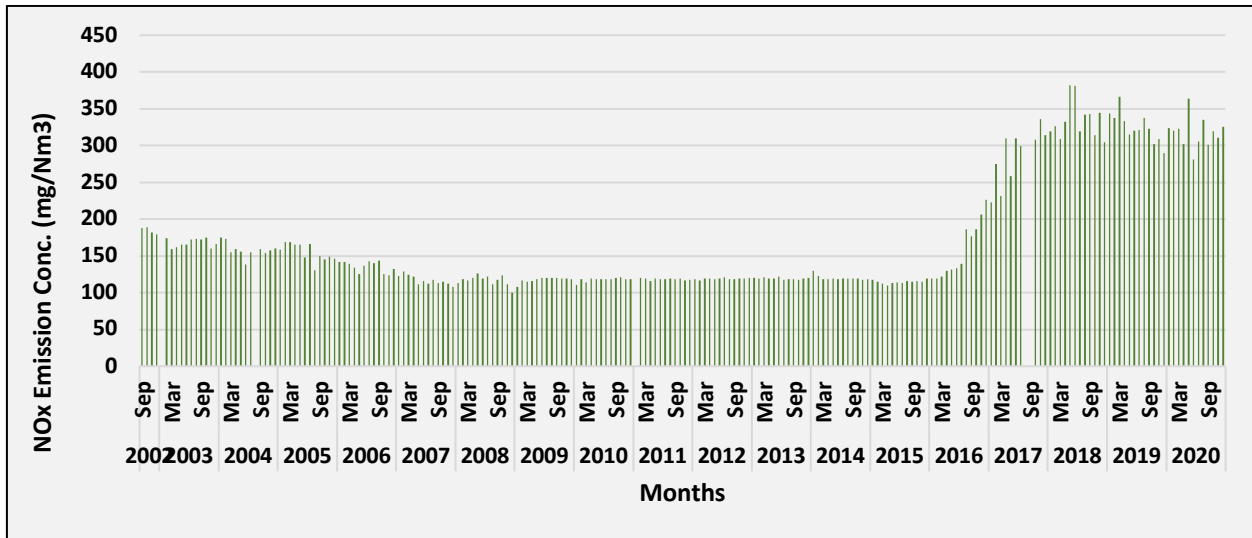


Fig. KPKD61: Time series of monthly average NO_x Emission concentration in KPKD TPP (Unit 4)

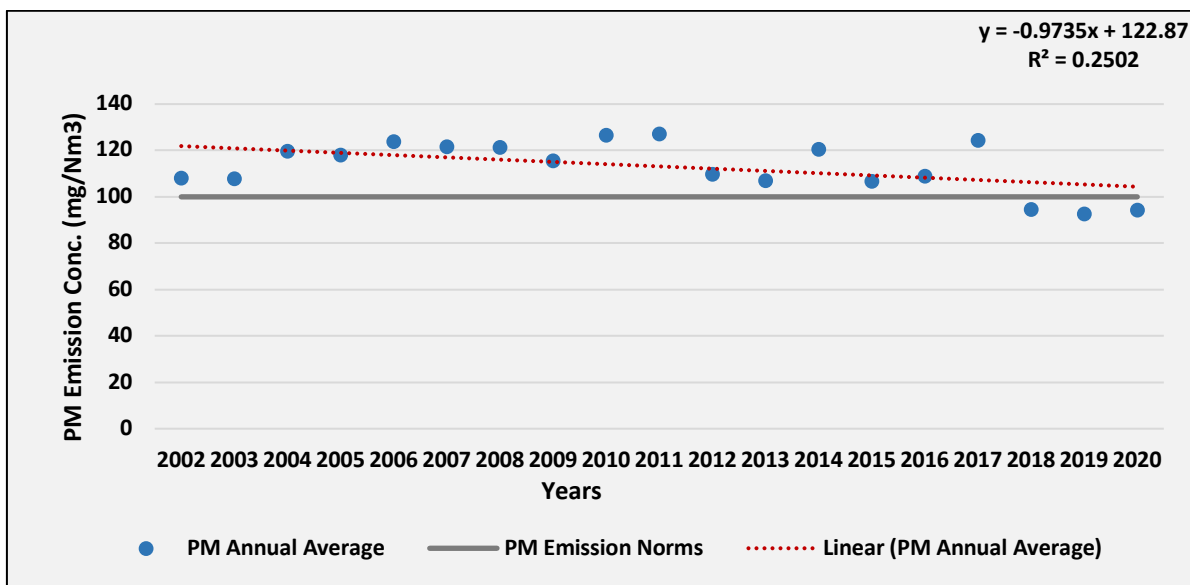


Fig. KPKD62: Trend of annual mean PM Emission air concentration in KPKD TPP (Unit 4)

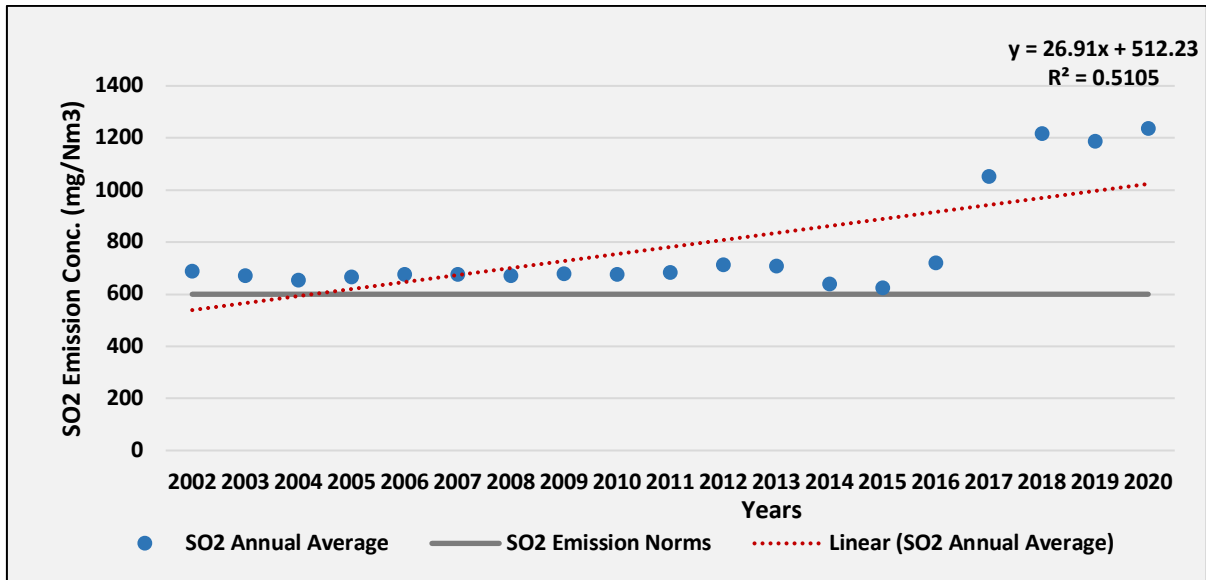


Fig. KPKD63: Trend of annual mean SO₂ Emission air concentration in KPKD TPP (Unit 4)

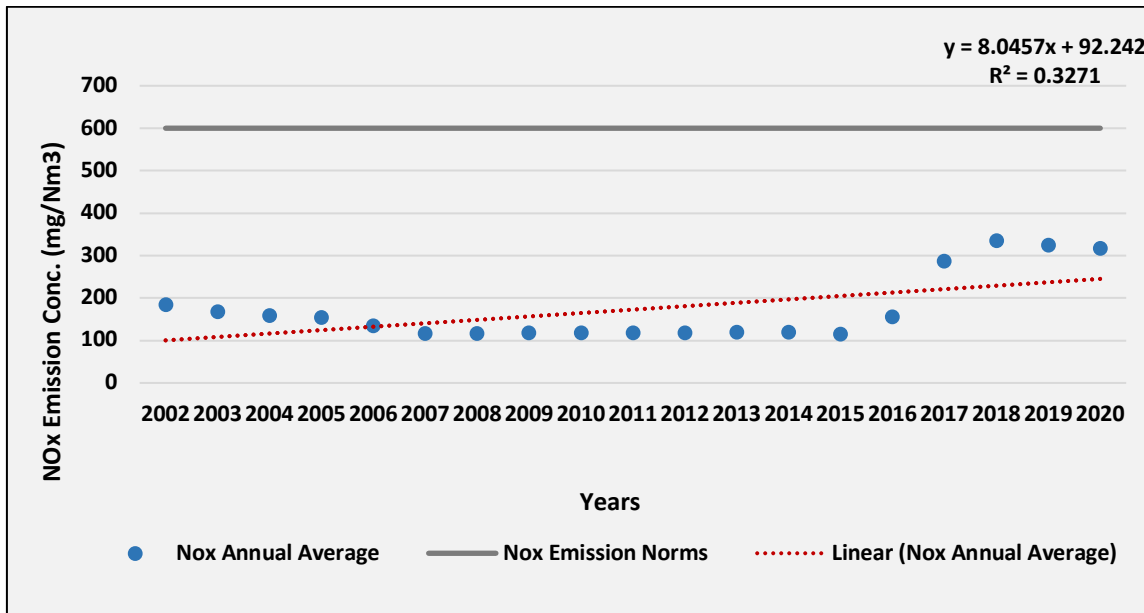


Fig. KPKD64: Trend of annual mean NO_x Emission air concentration in KPKD TPP (Unit 4)

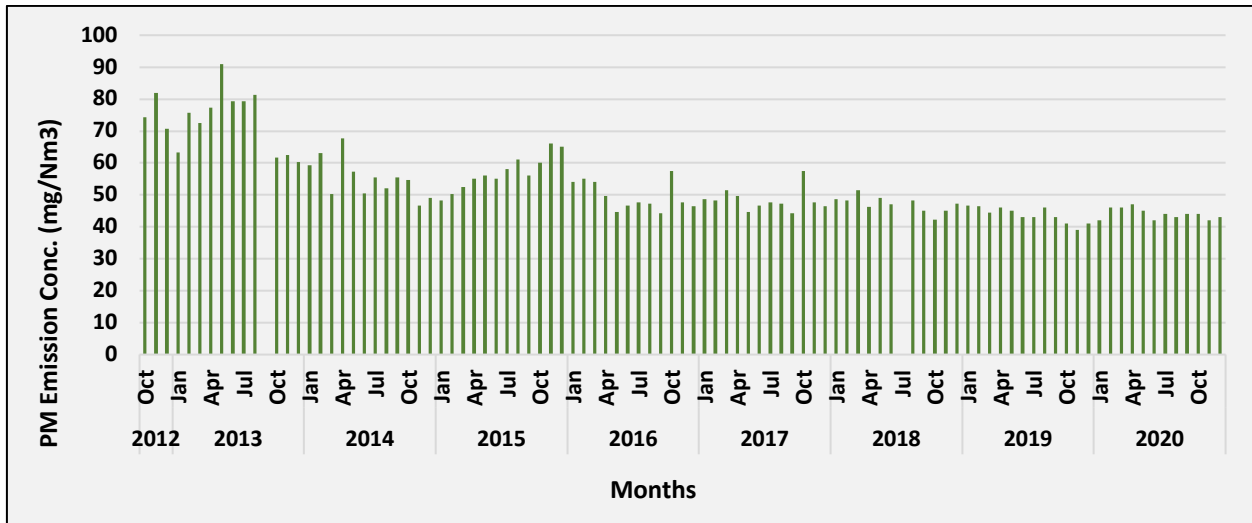


Fig. KPKD65: Time series of monthly average PM Emission concentration in KPKD TPP (Unit 5)

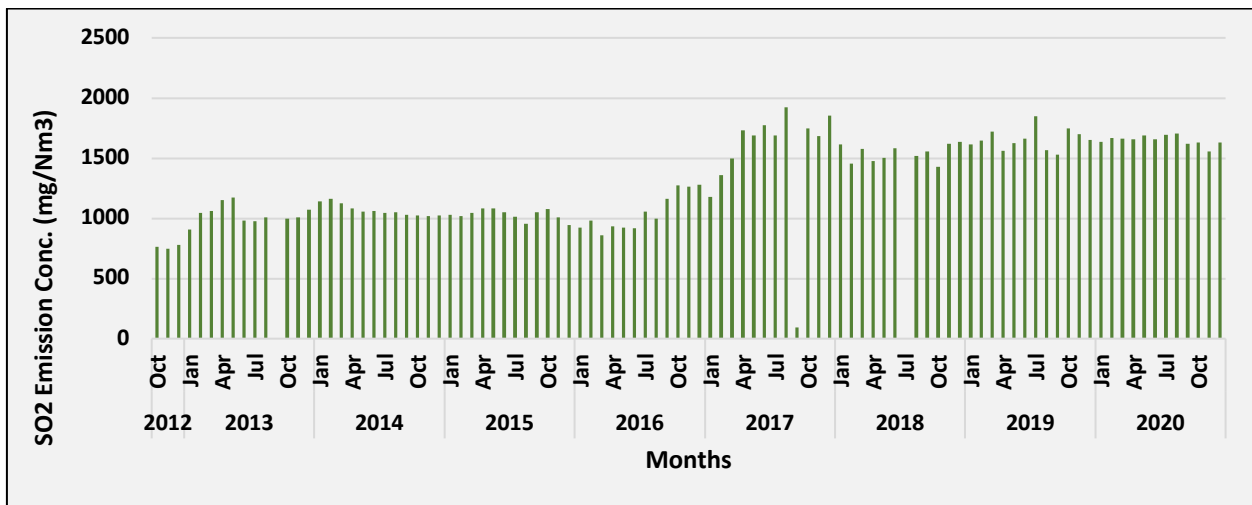


Fig. KPKD66: Time series of monthly average SO₂ Emission concentration in KPKD TPP (Unit 5)

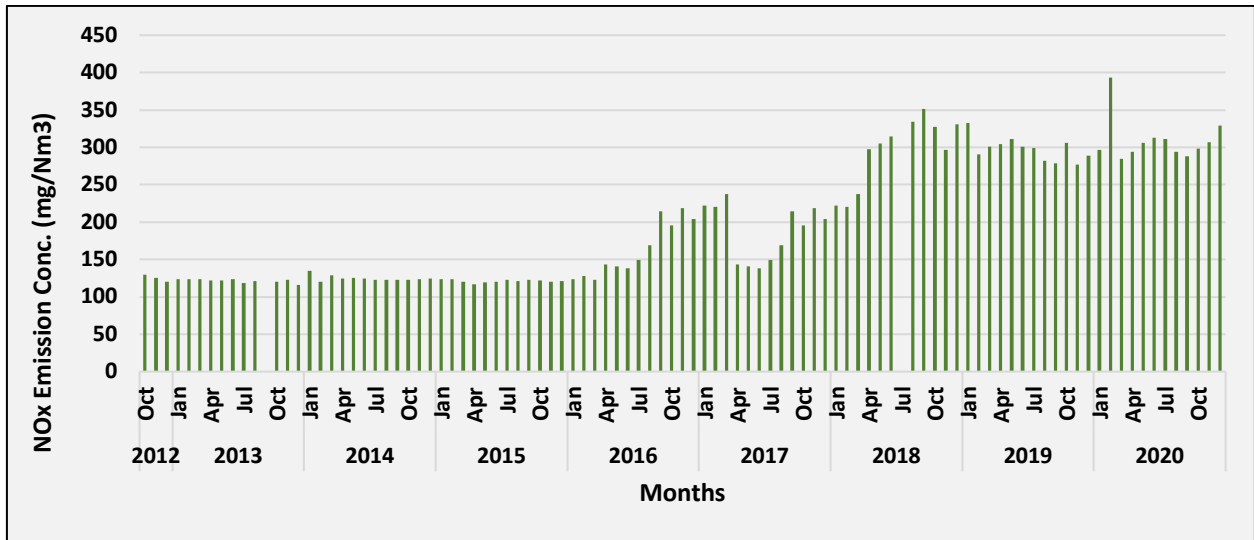


Fig. KPKD67: Time series of monthly average NO_x Emission concentration in KPKD TPP (Unit 5)

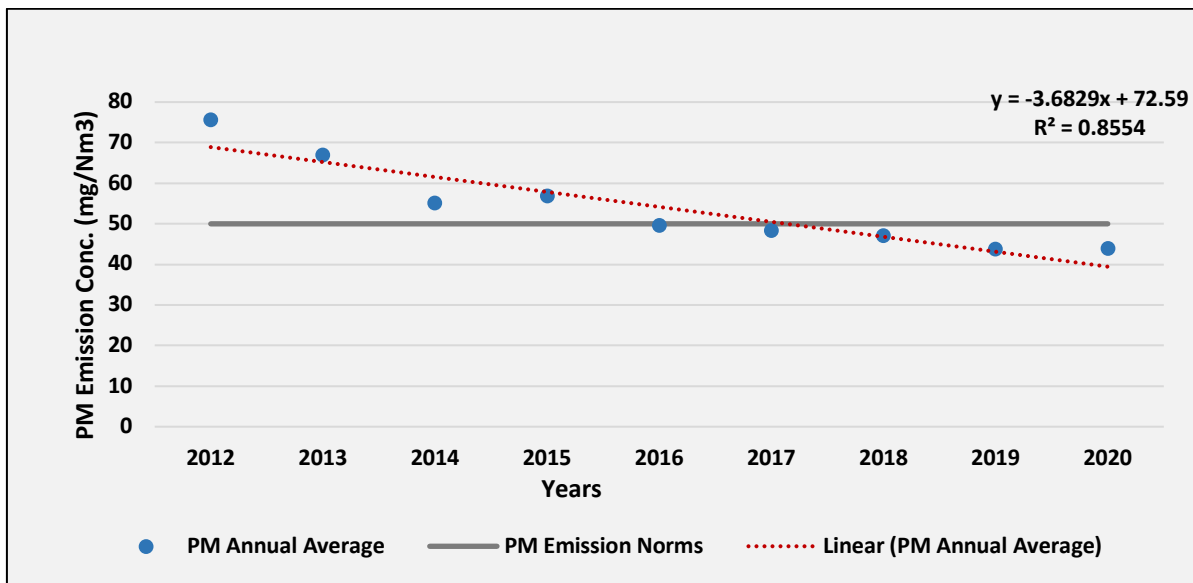


Fig. KPKD68: Trend of annual mean PM Emission air concentration in KPKD TPP (Unit 5)

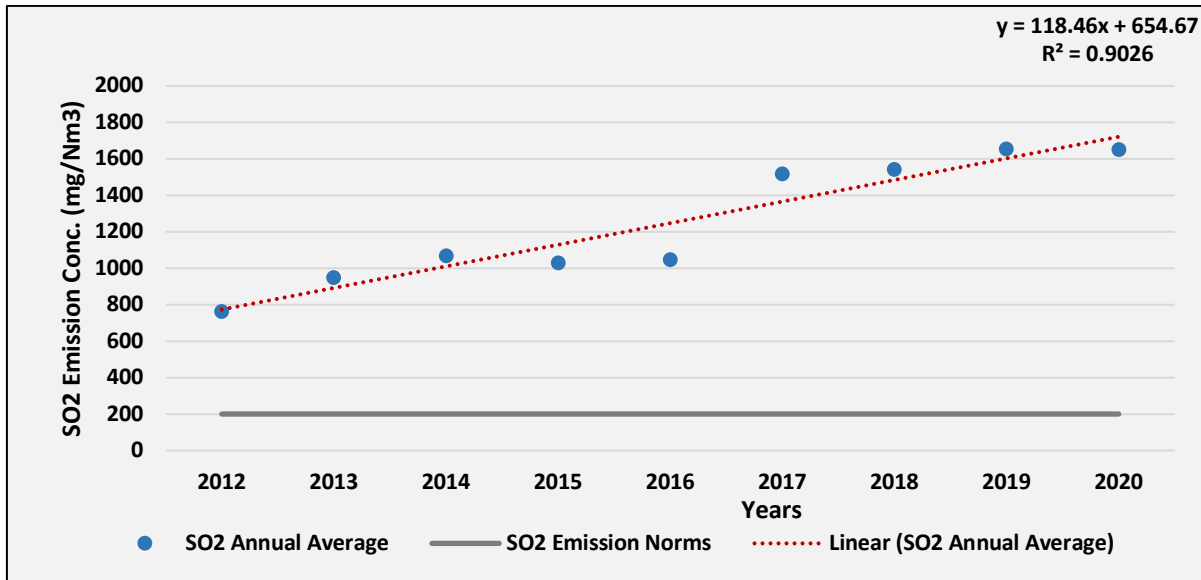


Fig. KPKD69: Trend of annual mean SO₂ Emission air concentration in KPKD TPP (Unit 5)

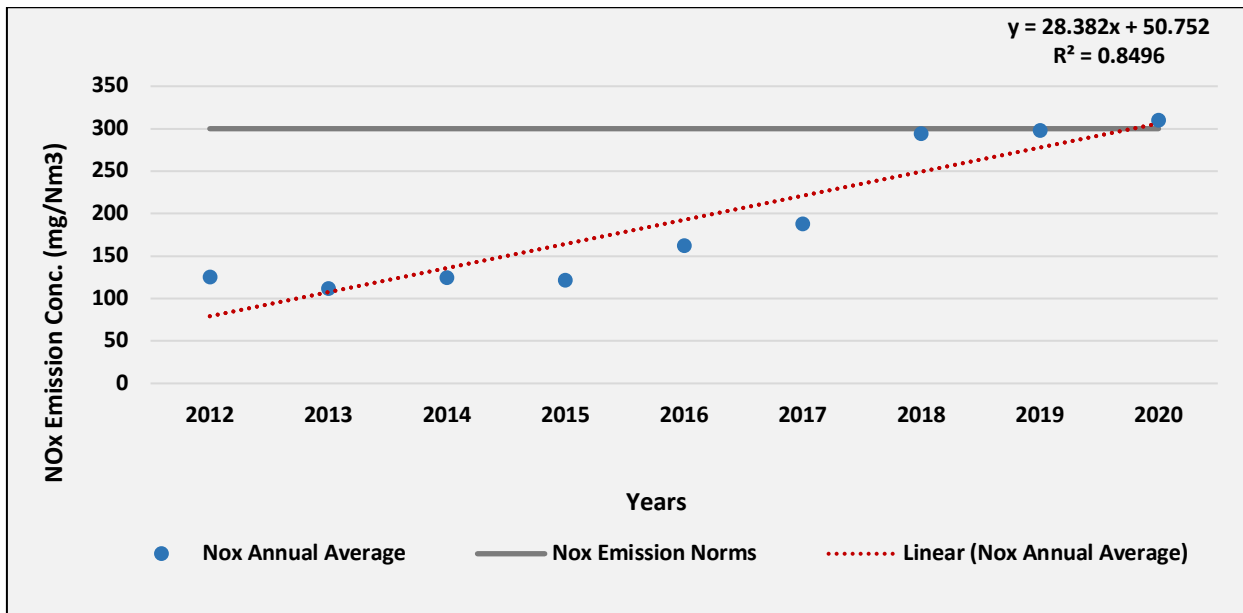


Fig. KPKD70: Trend of annual mean NO_x Emission air concentration in KPKD TPP (Unit 5)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, PM_{2.5} are exceeding whereas the SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and PM parameter are much higher than the emission norms. Emission of NO_x is within the limit range

NASHIK THERMAL POWER PLANT

Nashik Thermal Power Plant is located at Eklahare village near Nashik in Maharashtra. The power plant is one of the coal based power plants of Maharashtra State Power Generation Company (Mahagenco)

The ambient air quality concentrations of PM₁₀, PM_{2.5} SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. KOR1 – Fig. KOR50) for the last three years (2018-2020) using data provided by NTPC developer for Korba Power plant, Chhattisgarh, India.

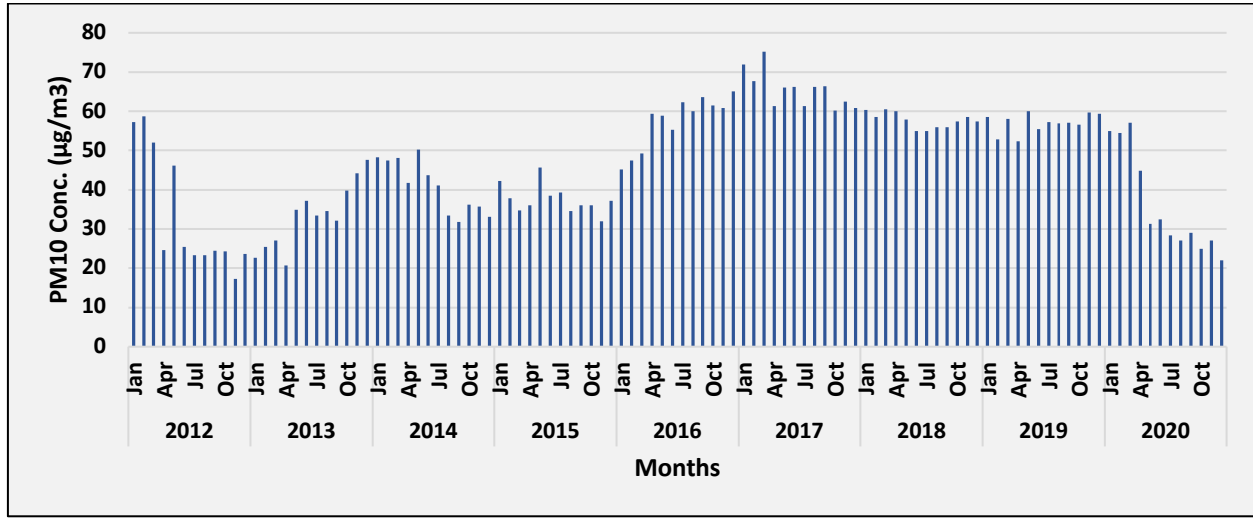


Fig. NAS1: Time series of monthly average PM₁₀ ambient air concentration in NASHIK TPP (Ambient 1)

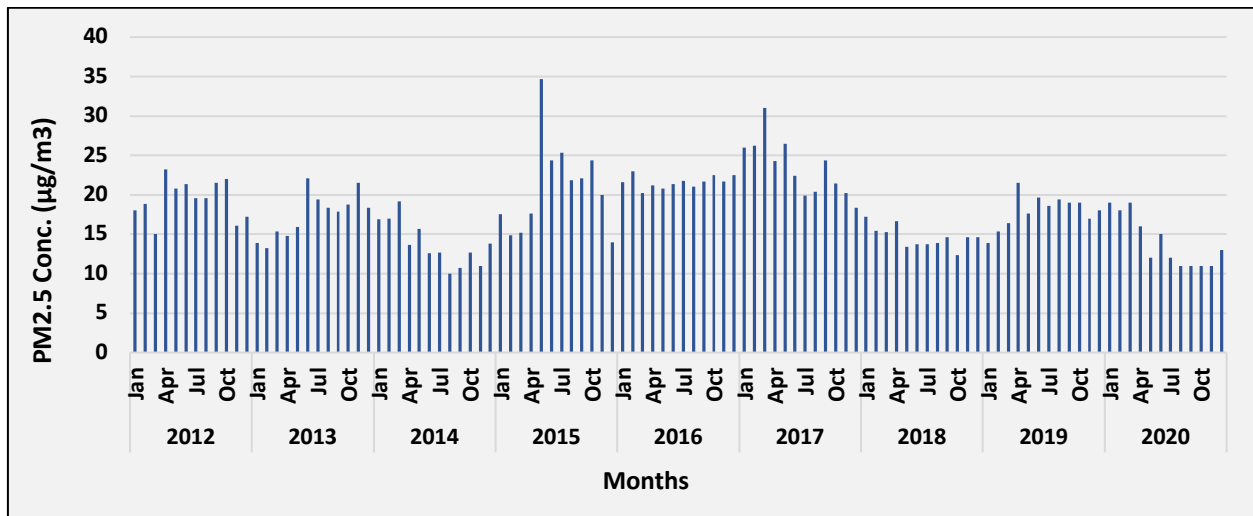


Fig. NAS2: Time series of monthly average PM_{2.5} ambient air concentration in NASHIK TPP (Ambient 1)

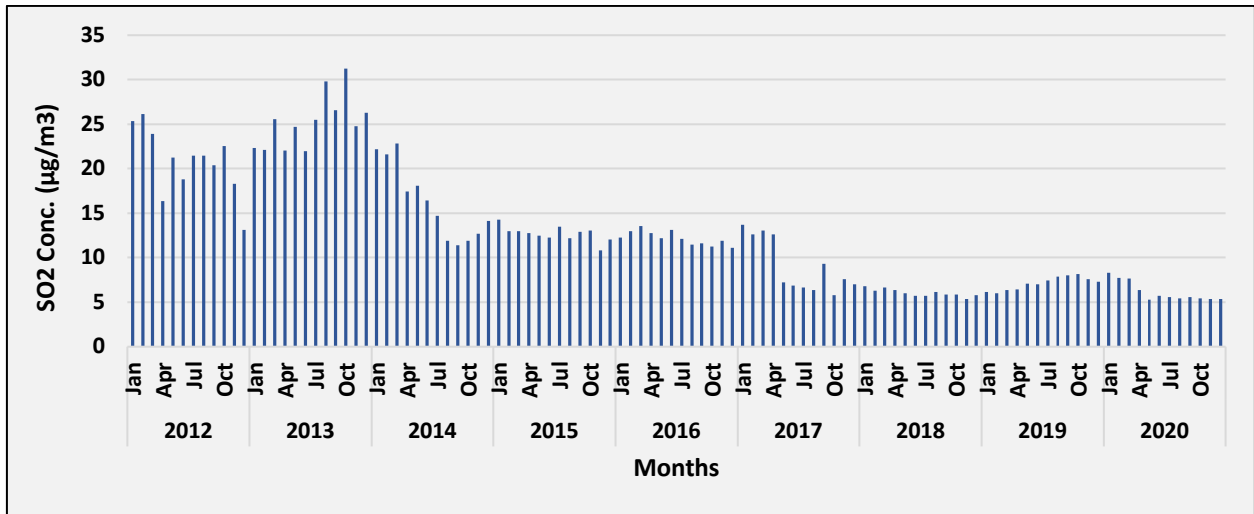


Fig. NAS3: Time series of monthly average SO_2 ambient air concentration in NASHIK TPP (Ambient 1)

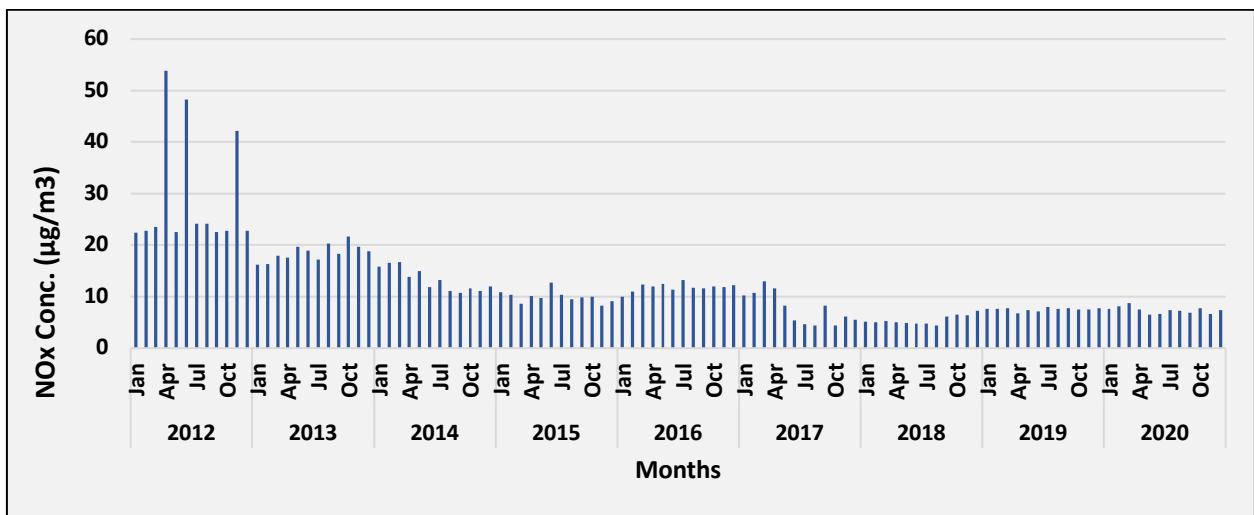


Fig. NAS4: Time series of monthly average NO_x ambient air concentration in NASHIK TPP (Ambient 1)

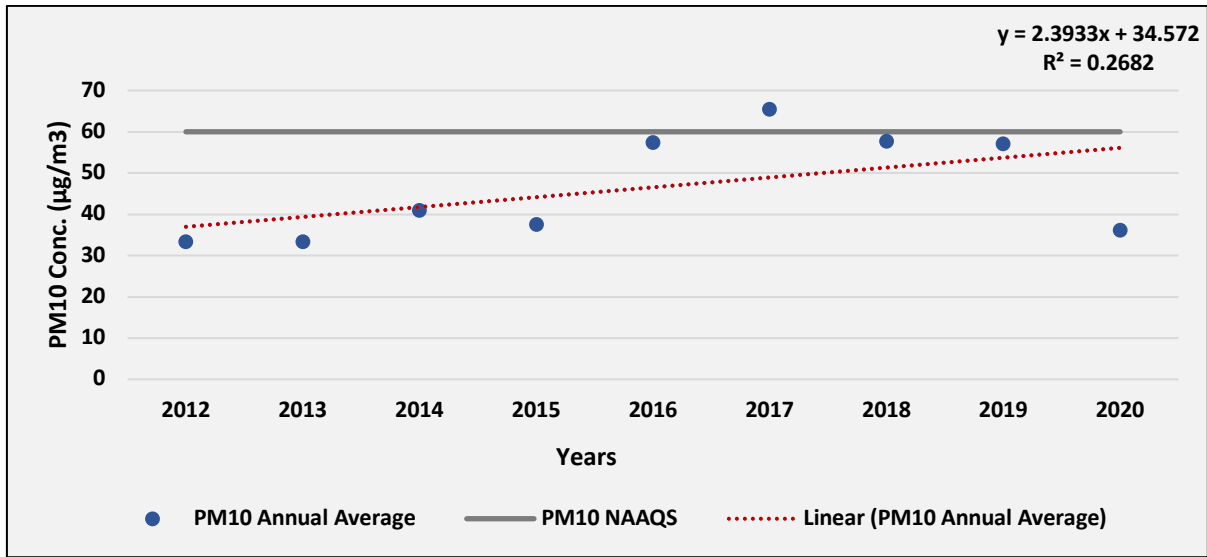


Fig. NAS5: Trend of annual mean PM_{10} ambient air concentration in NASHIK TPP (Ambient 1)

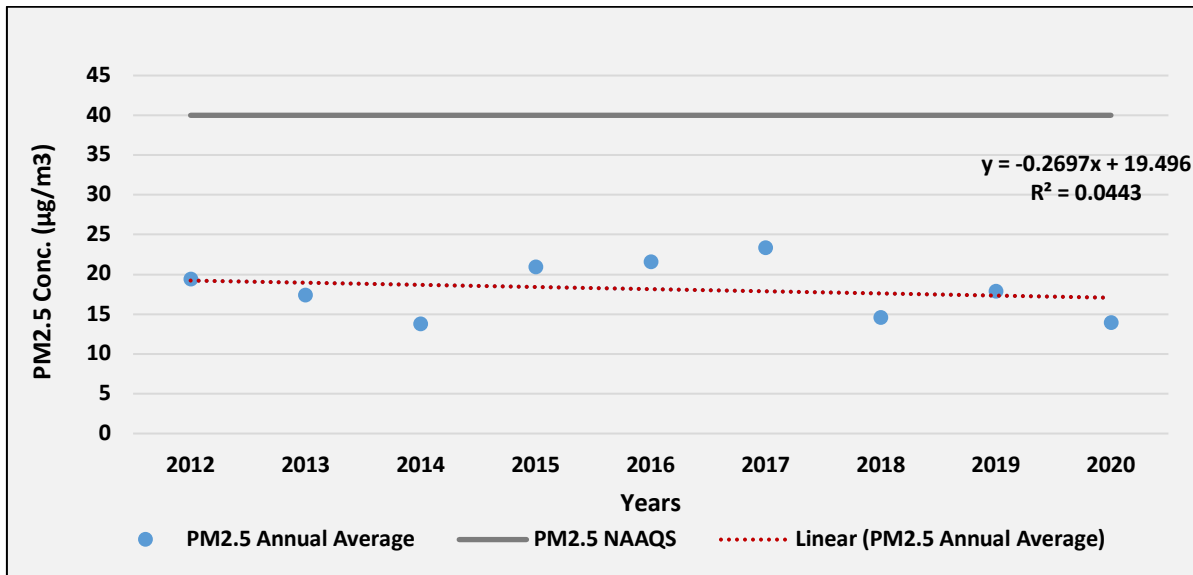


Fig. NAS6: Trend of annual mean $PM_{2.5}$ ambient air concentration in NASHIK TPP (Ambient 1)

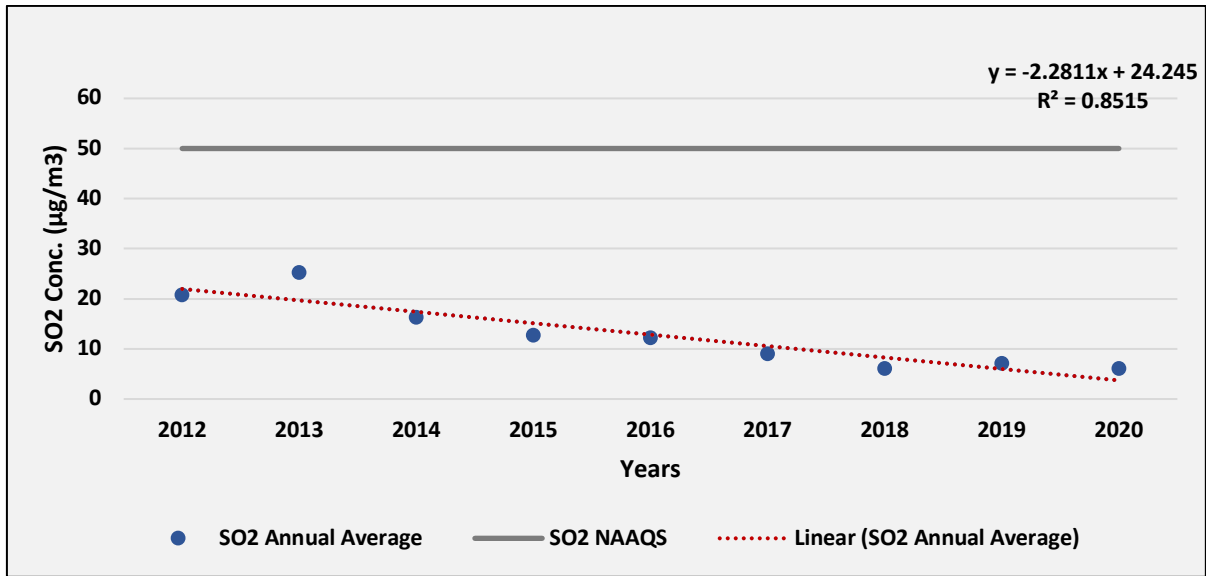


Fig. NAS7: Trend of annual mean SO₂ ambient air concentration in NASHIK TPP (Ambient 1)

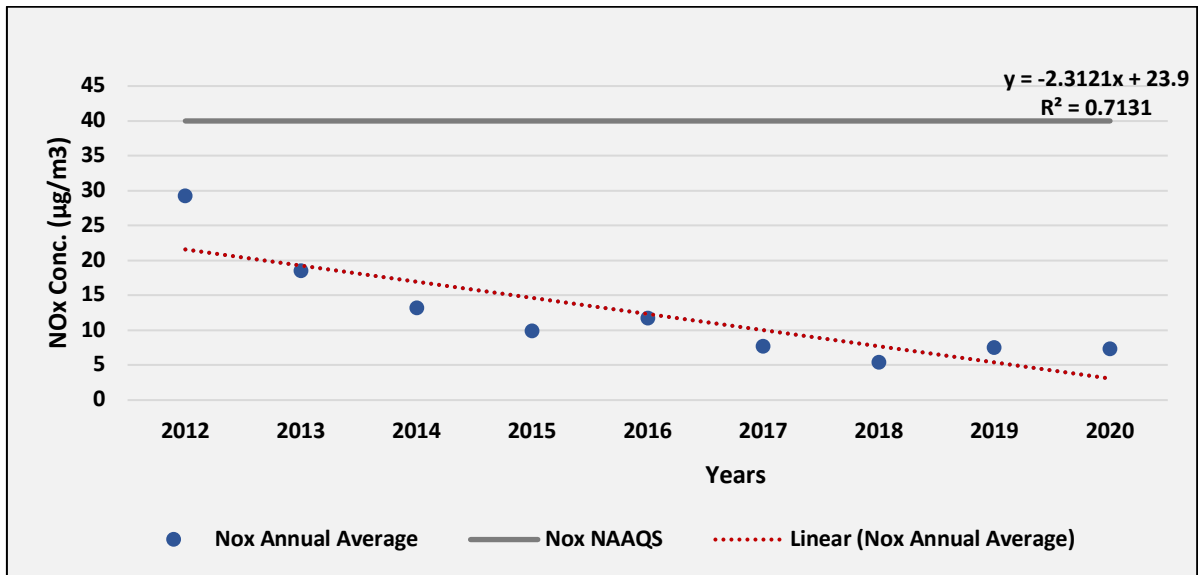


Fig. NAS8: Trend of annual mean NO_x ambient air concentration in NASHIK TPP (Ambient 1)

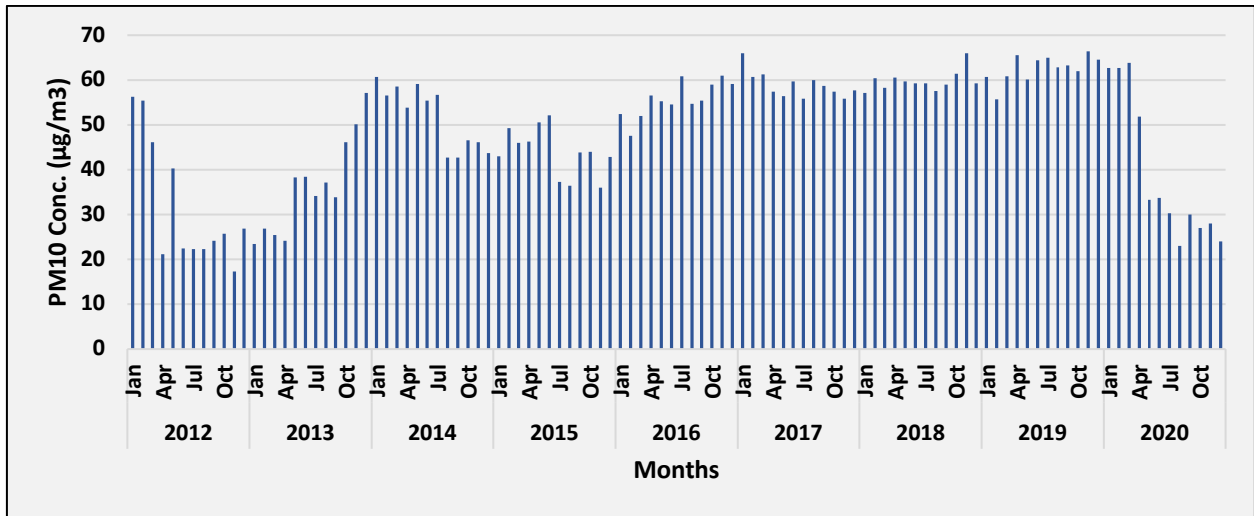


Fig. NAS9: Time series of monthly average PM₁₀ ambient air concentration in NASHIK TPP (Ambient 2)

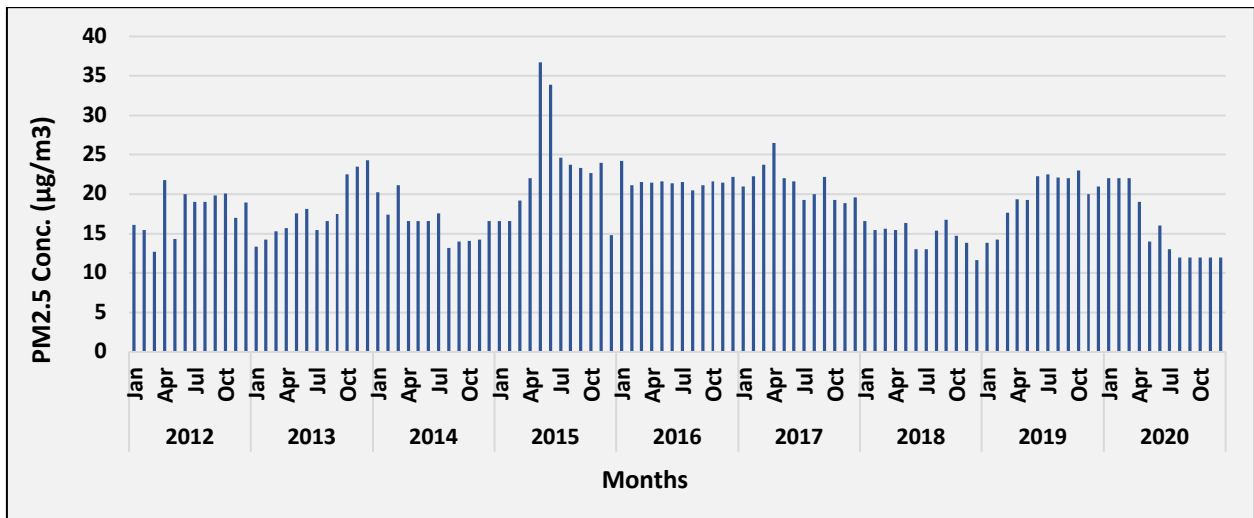


Fig. NAS10: Time series of monthly average PM_{2.5} ambient air concentration in NASHIK TPP (Ambient 2)

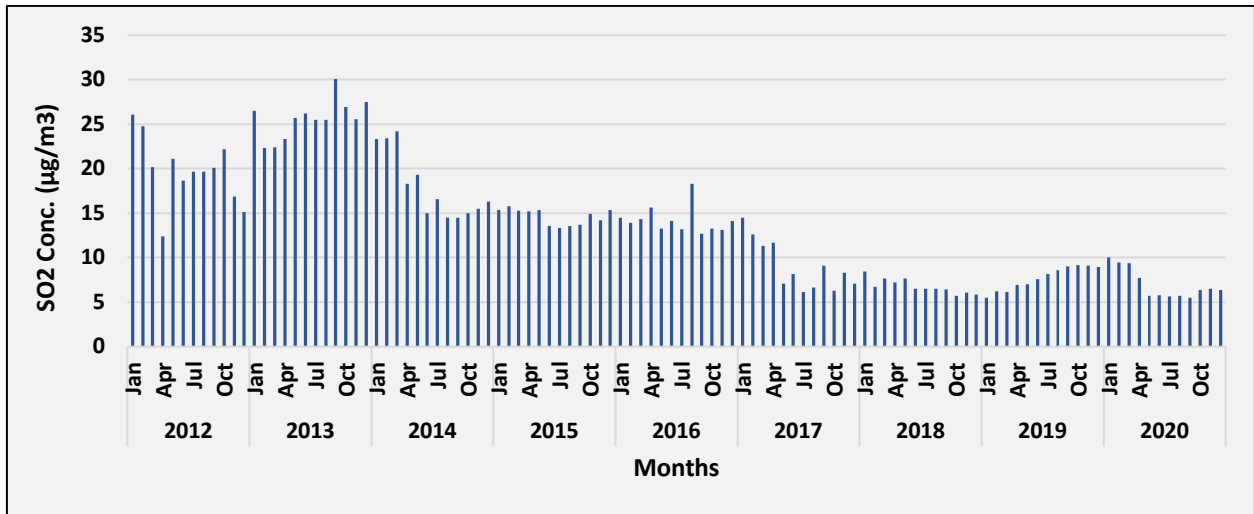


Fig. NAS11: Time series of monthly average SO_2 ambient air concentration in NASHIK TPP (Ambient 2)

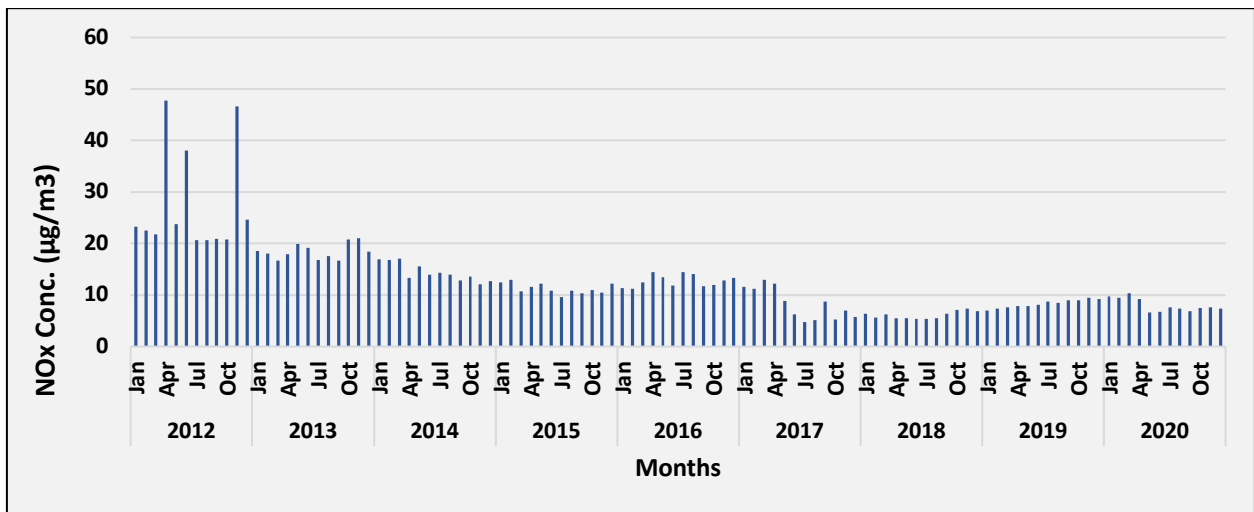


Fig. NAS12: Time series of monthly average NO_x ambient air concentration in NASHIK TPP (Ambient 2)

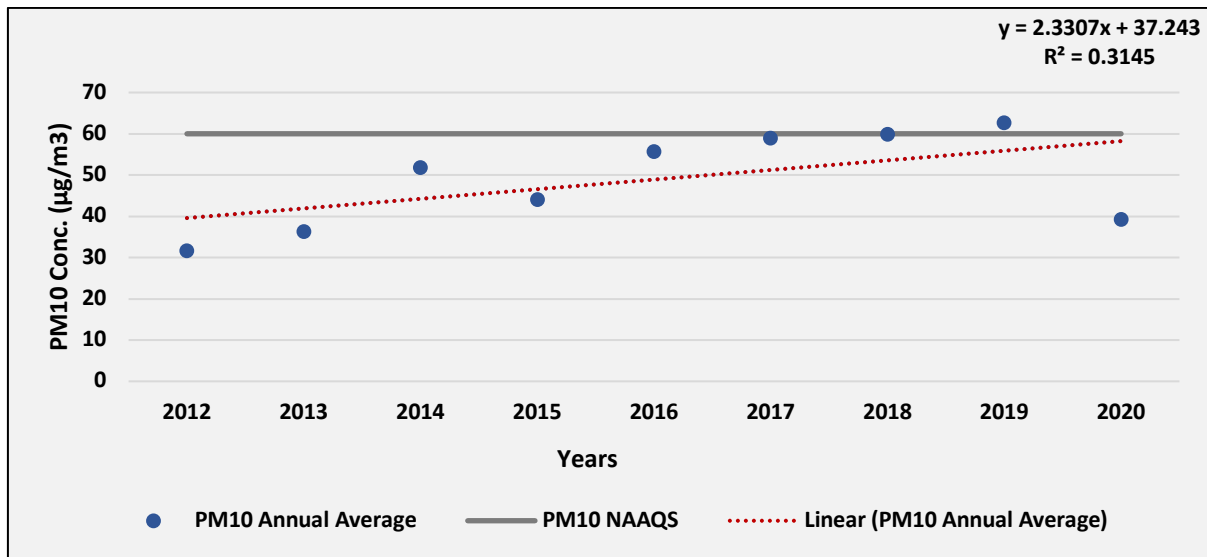


Fig. NAS13: Trend of annual mean PM_{10} ambient air concentration in NASHIK TPP (Ambient 2)

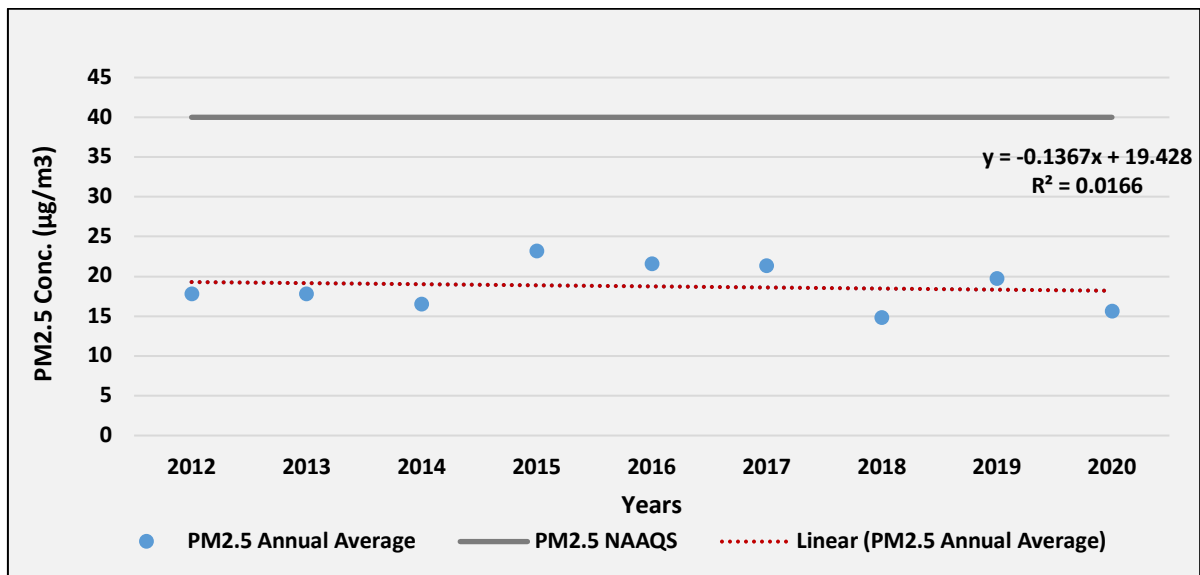


Fig. NAS14: Trend of annual mean $PM_{2.5}$ ambient air concentration in NASHIK TPP (Ambient 2)

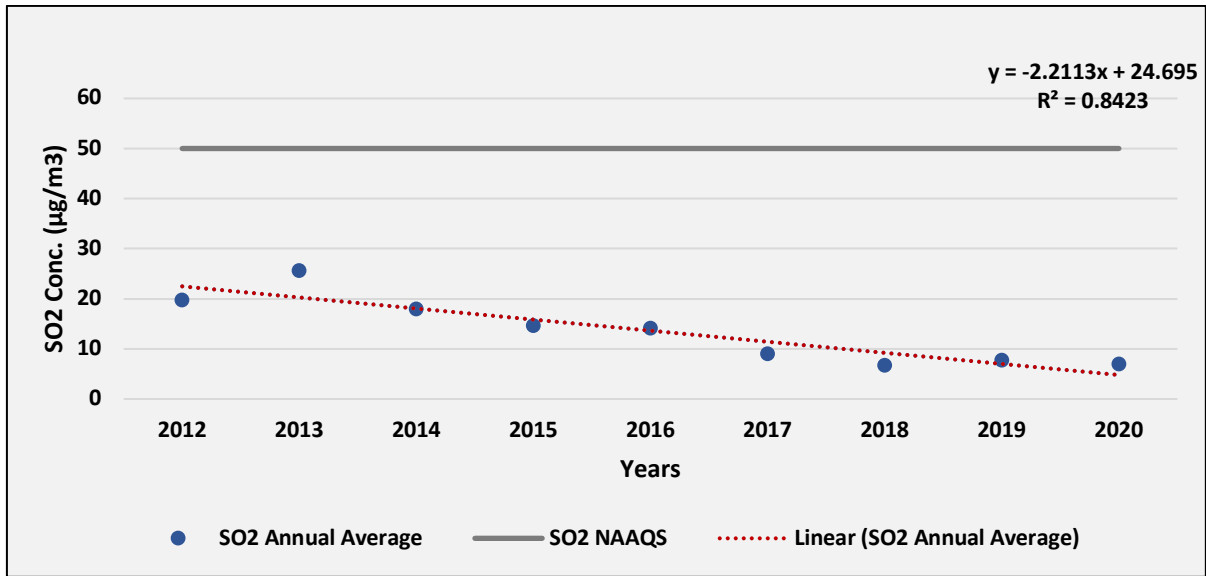


Fig. NAS15: Trend of annual mean SO₂ ambient air concentration in NASHIK TPP (Ambient 2)

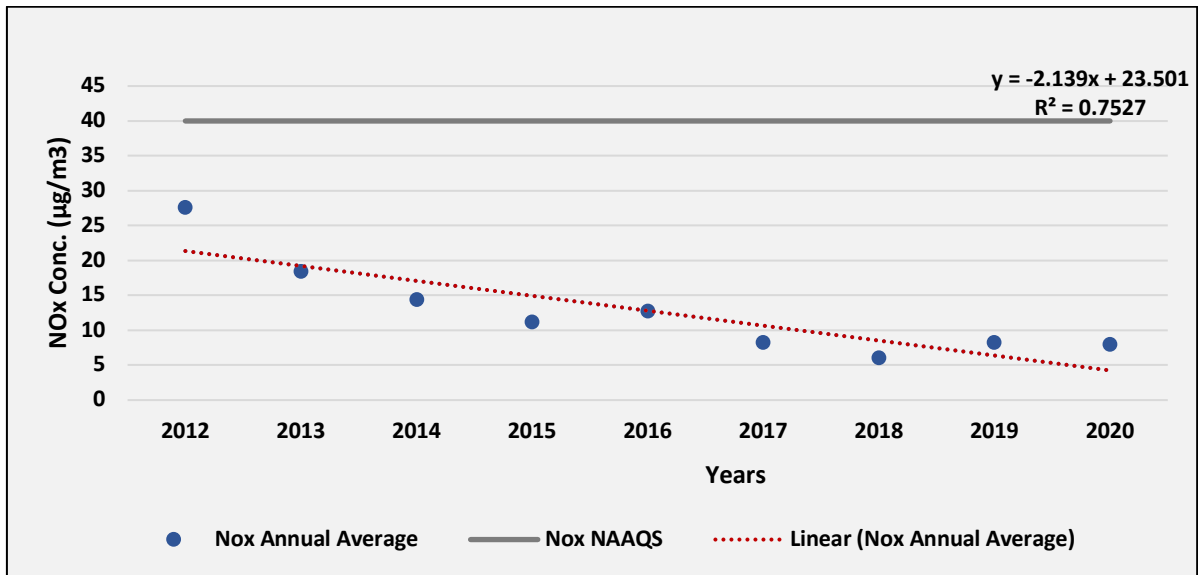


Fig. NAS16: Trend of annual mean NO_x ambient air concentration in NASHIK TPP (Ambient 2)

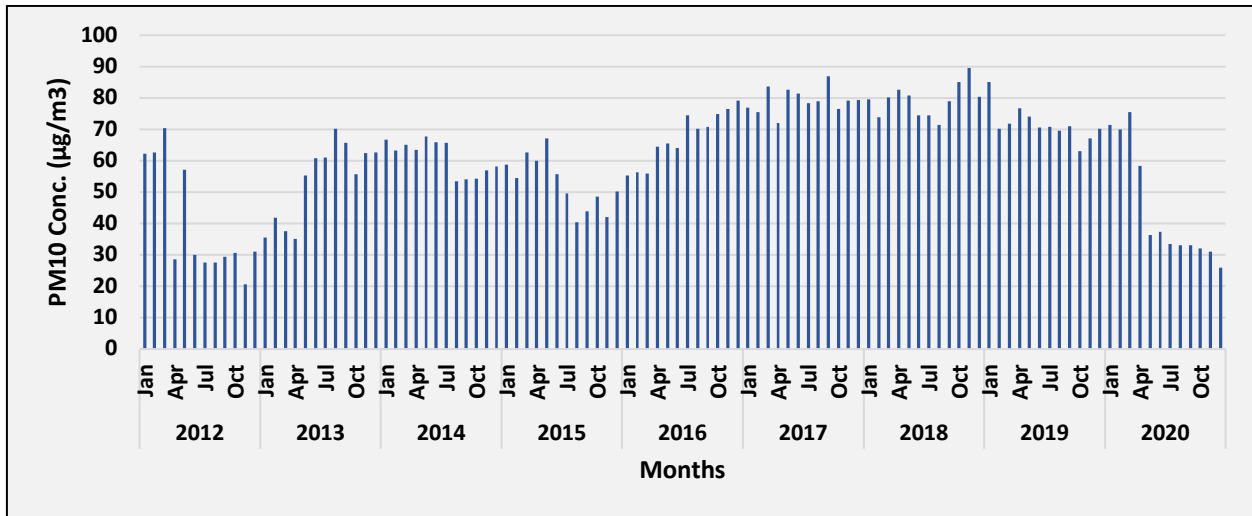


Fig. NAS17: Time series of monthly average PM₁₀ ambient air concentration in NASHIK TPP (Ambient 3)

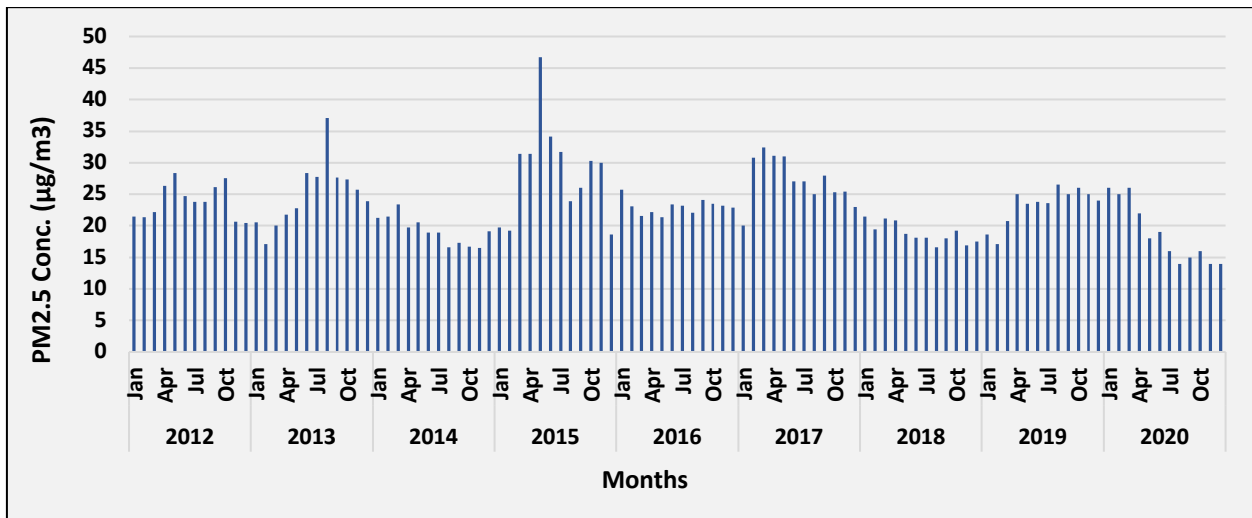


Fig. NAS18: Time series of monthly average PM_{2.5} ambient air concentration in NASHIK TPP (Ambient 3)

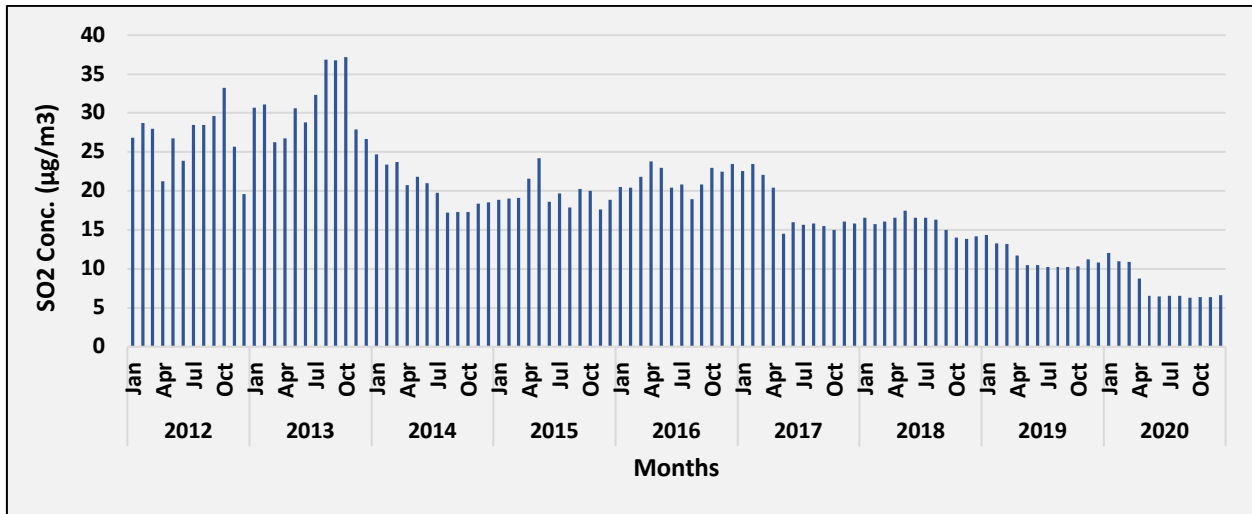


Fig. NAS19: Time series of monthly average SO_2 ambient air concentration in NASHIK TPP (Ambient 3)

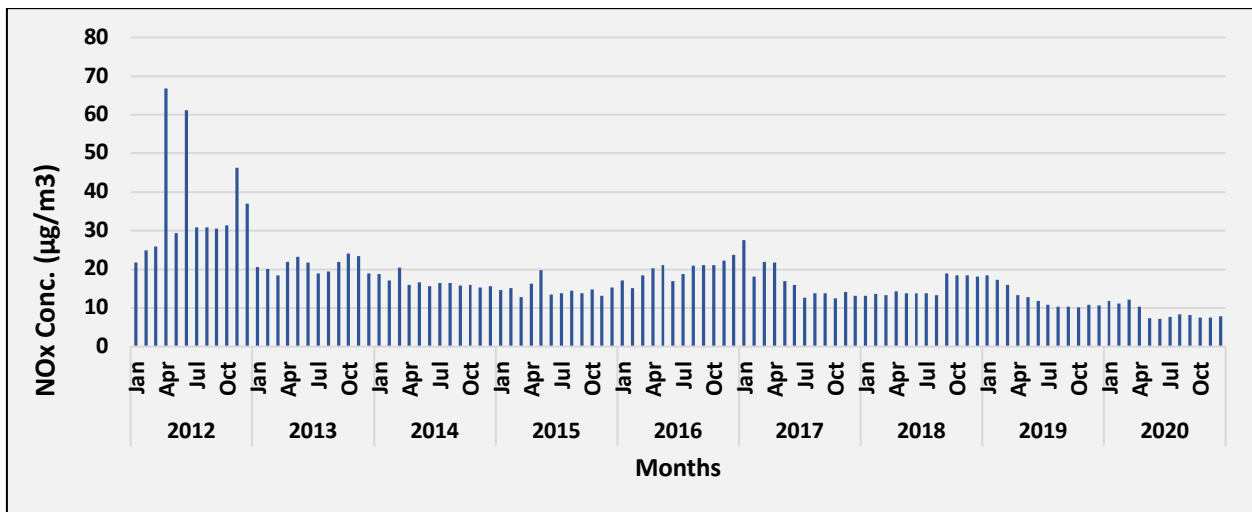


Fig. NAS20: Time series of monthly average NO_x ambient air concentration in NASHIK TPP (Ambient 3)

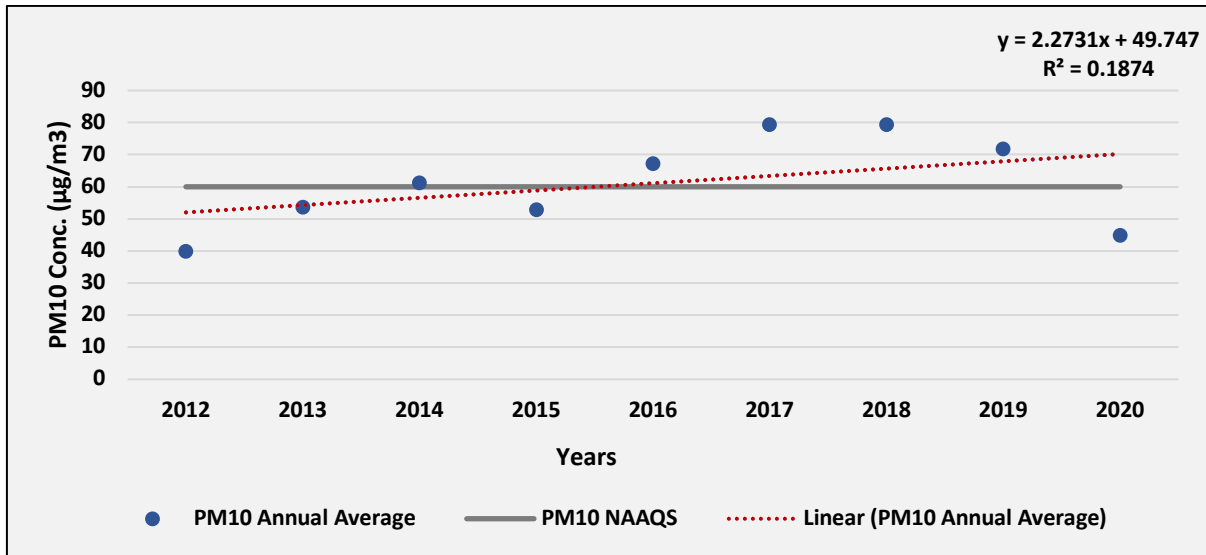


Fig. NAS21: Trend of annual mean PM_{10} ambient air concentration in NASHIK TPP (Ambient 3)

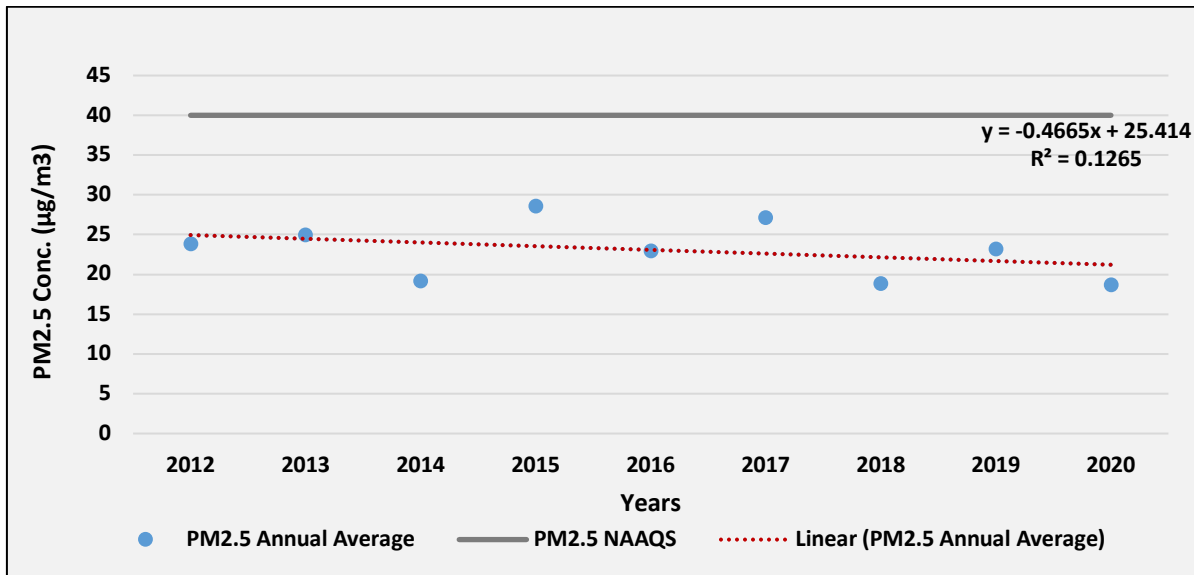


Fig. NAS22: Trend of annual mean $PM_{2.5}$ ambient air concentration in NASHIK TPP (Ambient 3)

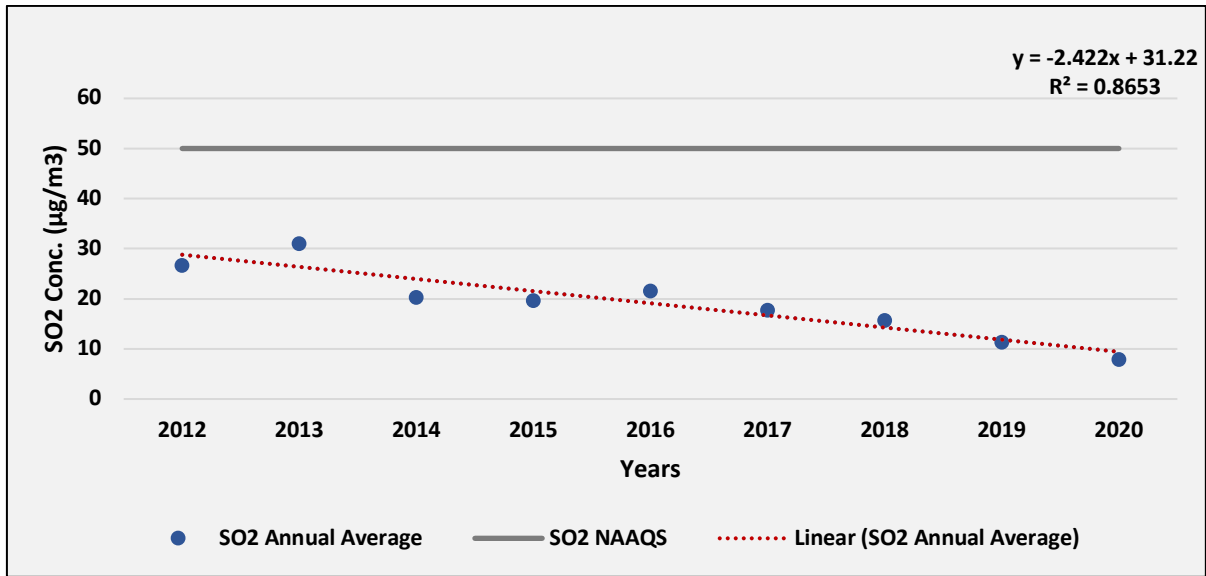


Fig. NAS23: Trend of annual mean SO₂ ambient air concentration in NASHIK TPP (Ambient 3)

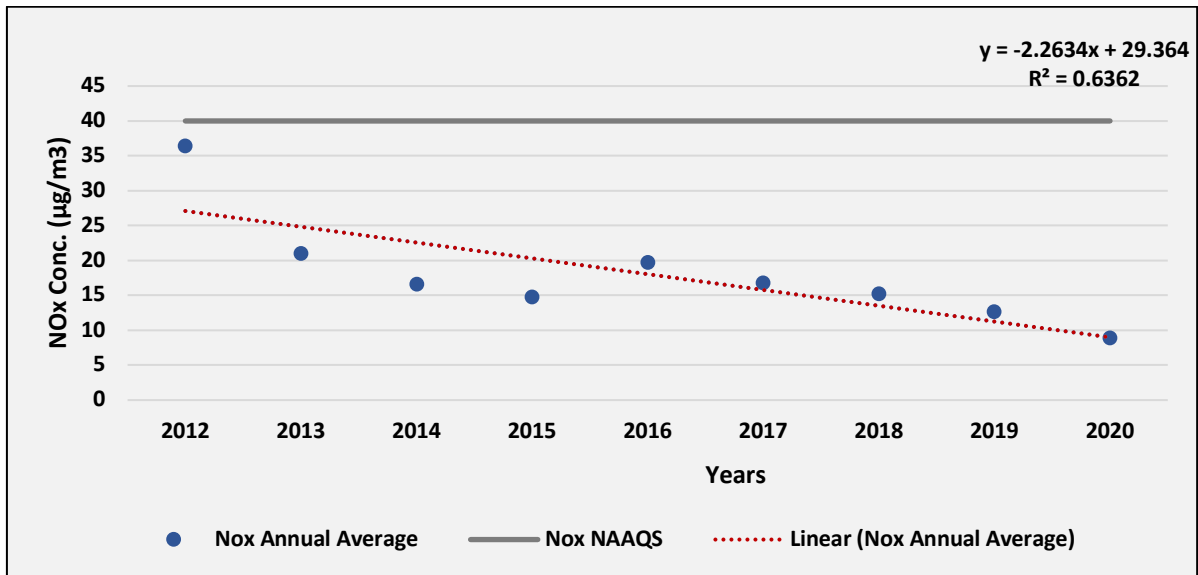


Fig. NAS24: Trend of annual mean NO_x ambient air concentration in NASHIK TPP (Ambient 3)

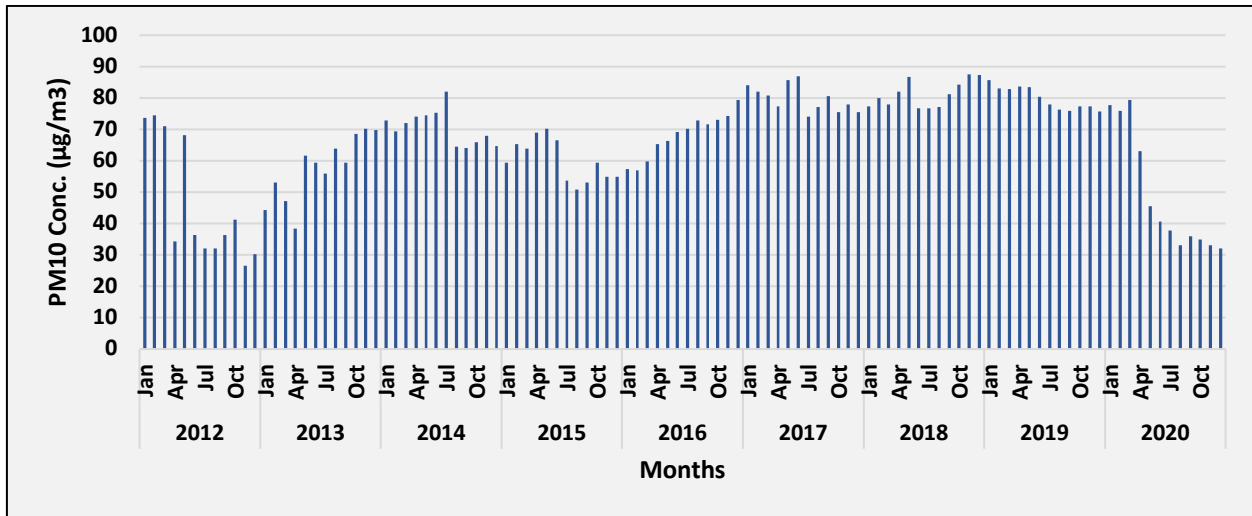


Fig. NAS25: Time series of monthly average PM₁₀ ambient air concentration in NASHIK TPP (Ambient 4)

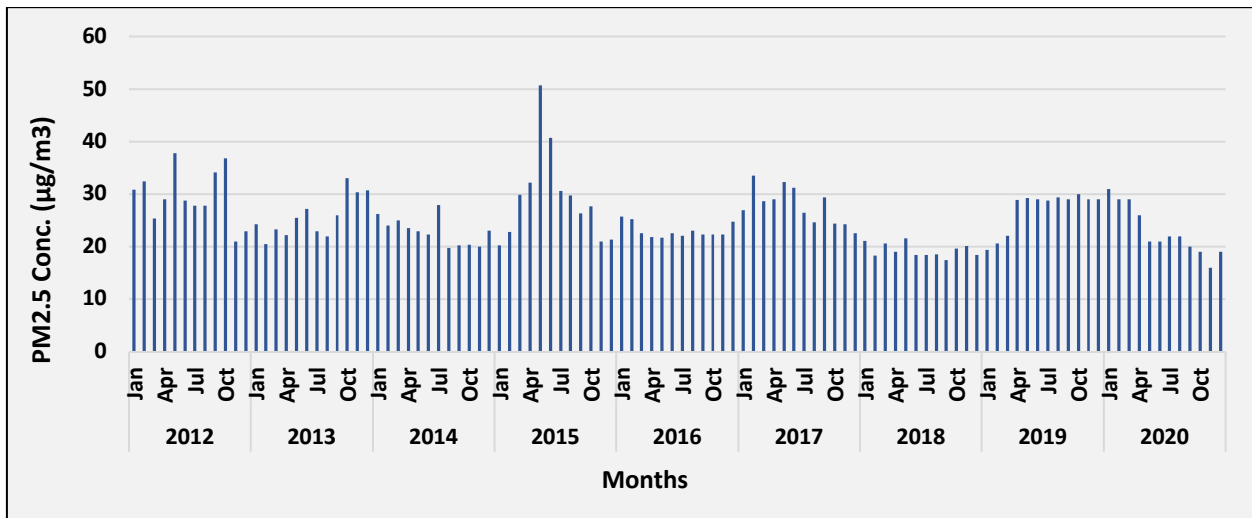


Fig. NAS26: Time series of monthly average PM_{2.5} ambient air concentration in NASHIK TPP (Ambient 4)

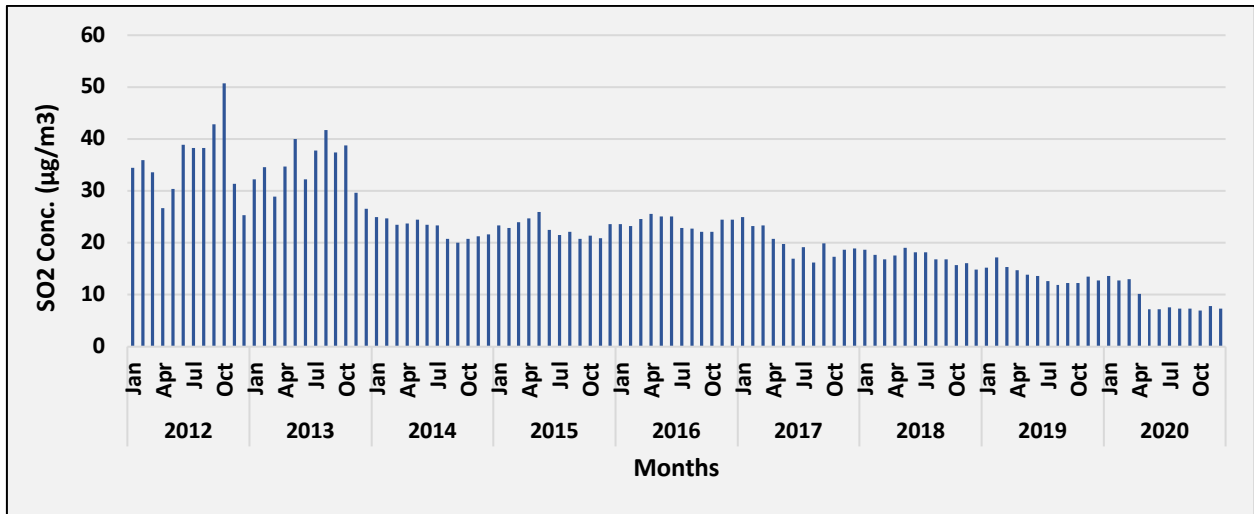


Fig. NAS27: Time series of monthly average SO₂ ambient air concentration in NASHIK TPP (Ambient 4)

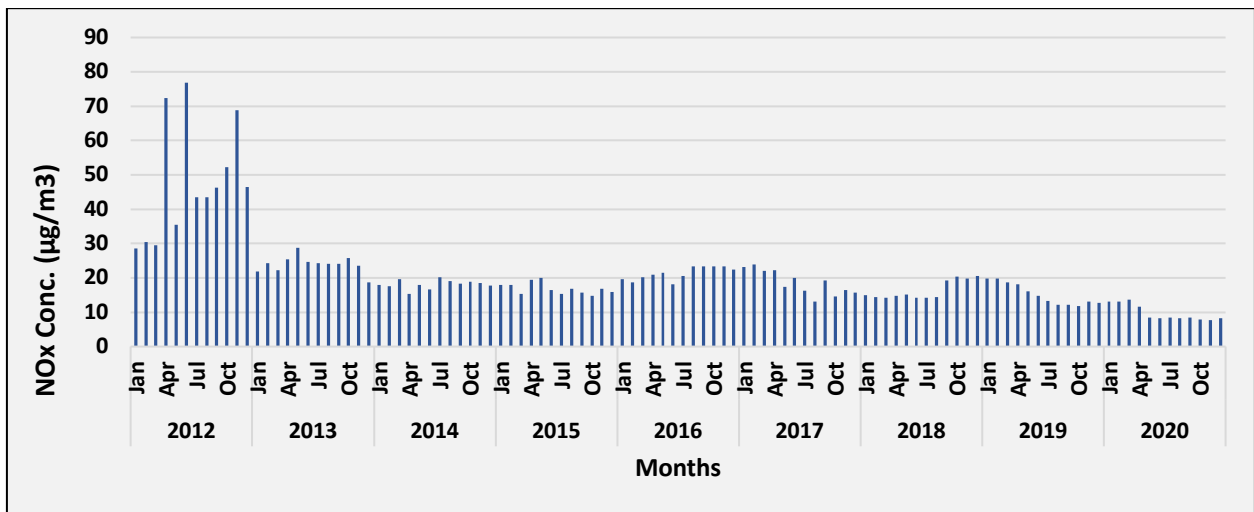


Fig. NAS28: Time series of monthly average NO_x ambient air concentration in NASHIK TPP (Ambient 4)

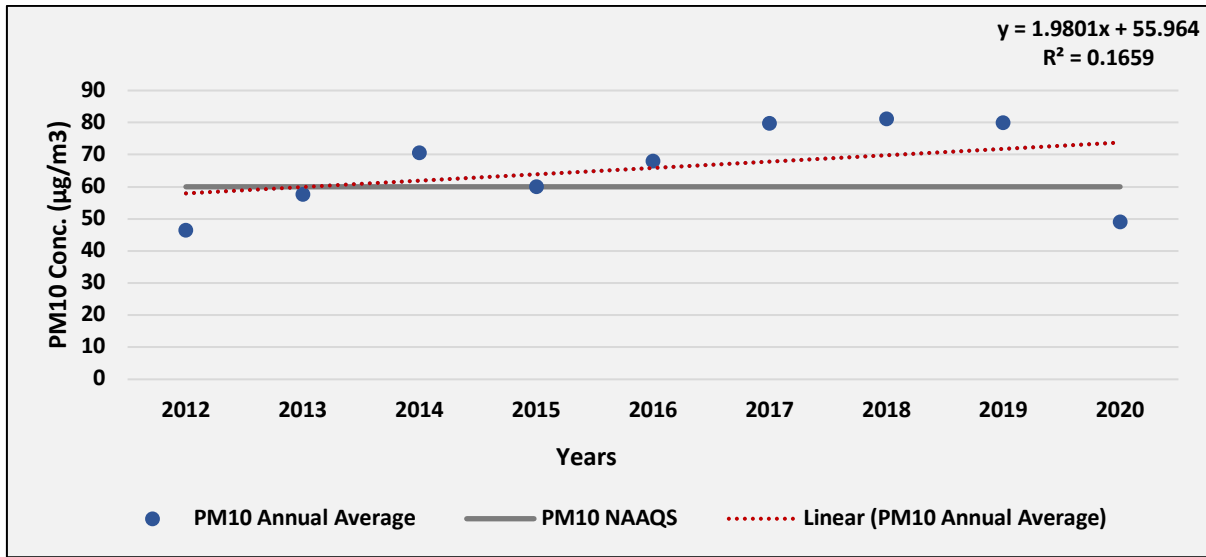


Fig. NAS29: Trend of annual mean PM_{10} ambient air concentration in NASHIK TPP (Ambient 4)

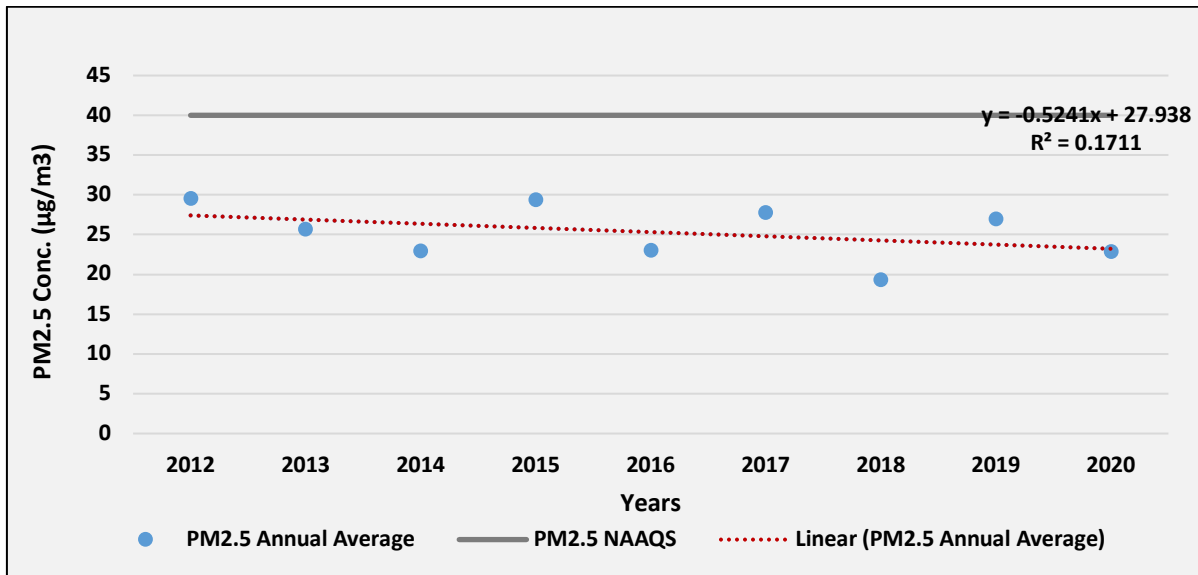


Fig. NAS30: Trend of annual mean $PM_{2.5}$ ambient air concentration in NASHIK TPP (Ambient 4)

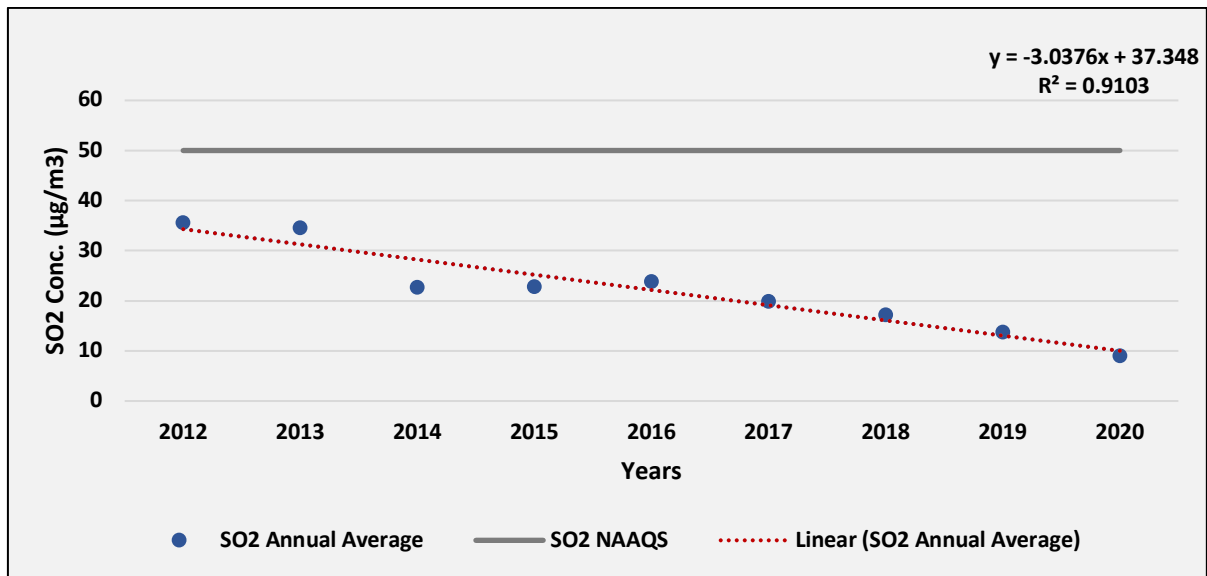


Fig. NAS31: Trend of annual mean SO₂ ambient air concentration in NASHIK TPP (Ambient 4)

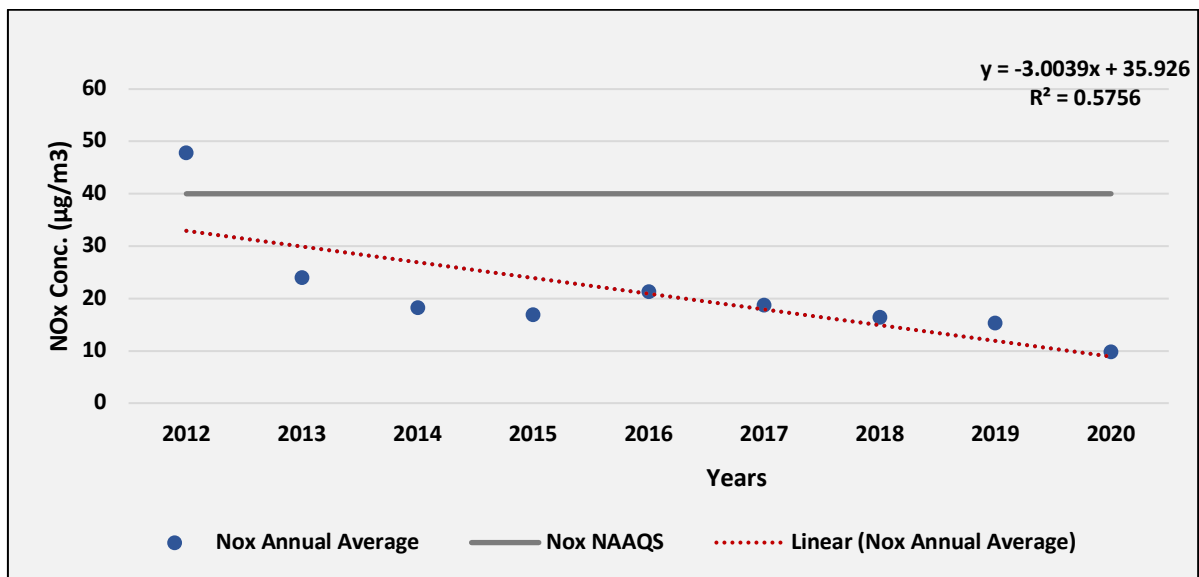


Fig. NAS32: Trend of annual mean NO_x ambient air concentration in NASHIK TPP (Ambient 4)

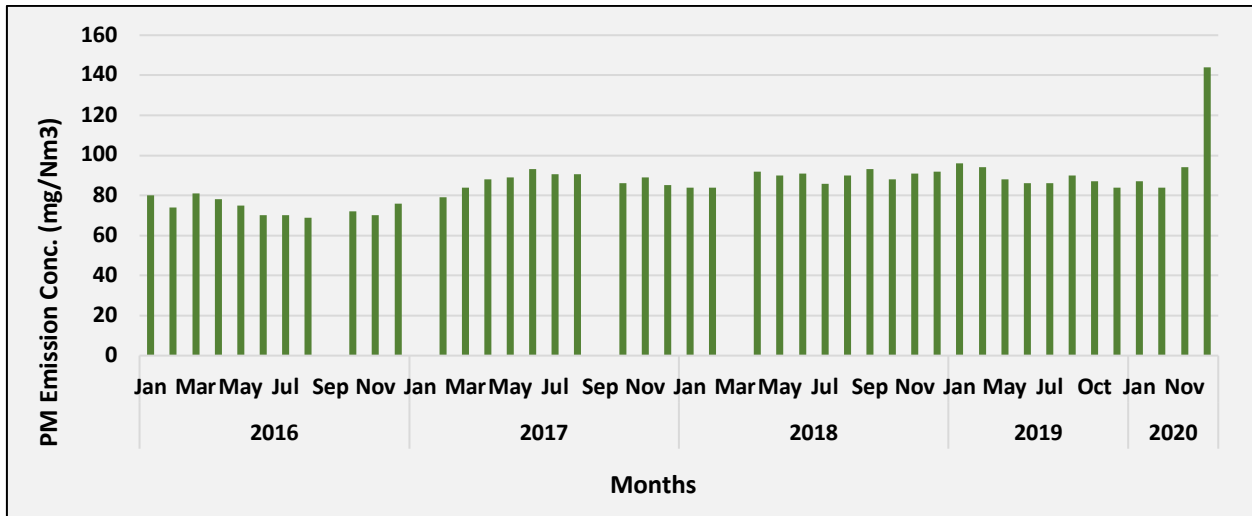


Fig. NAS33: Time series of monthly average PM Emission concentration in NASHIK TPP (Unit 3)

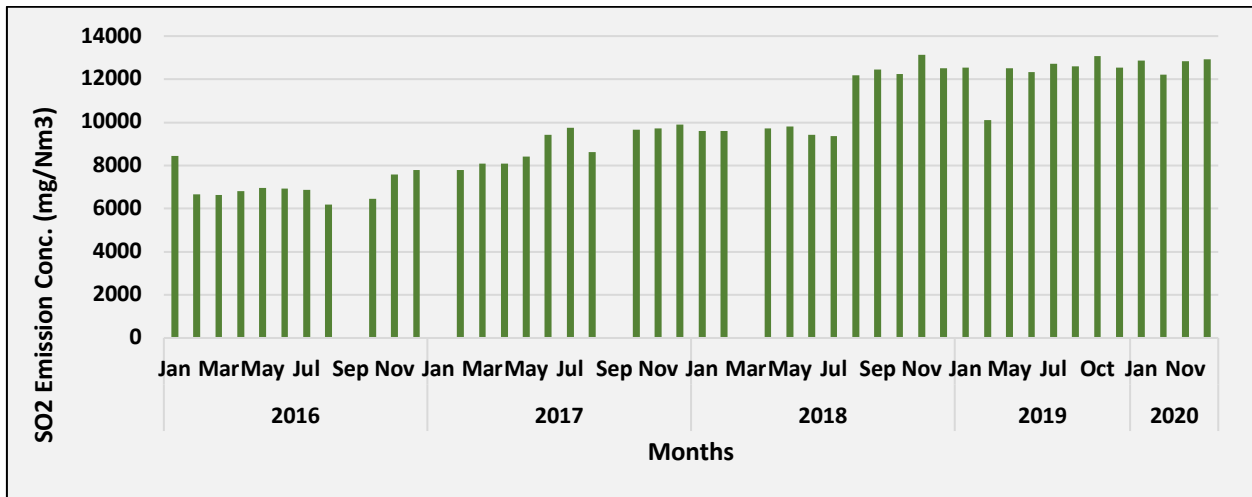


Fig. NAS34: Time series of monthly average SO₂ Emission concentration in NASHIK TPP (Unit 3)

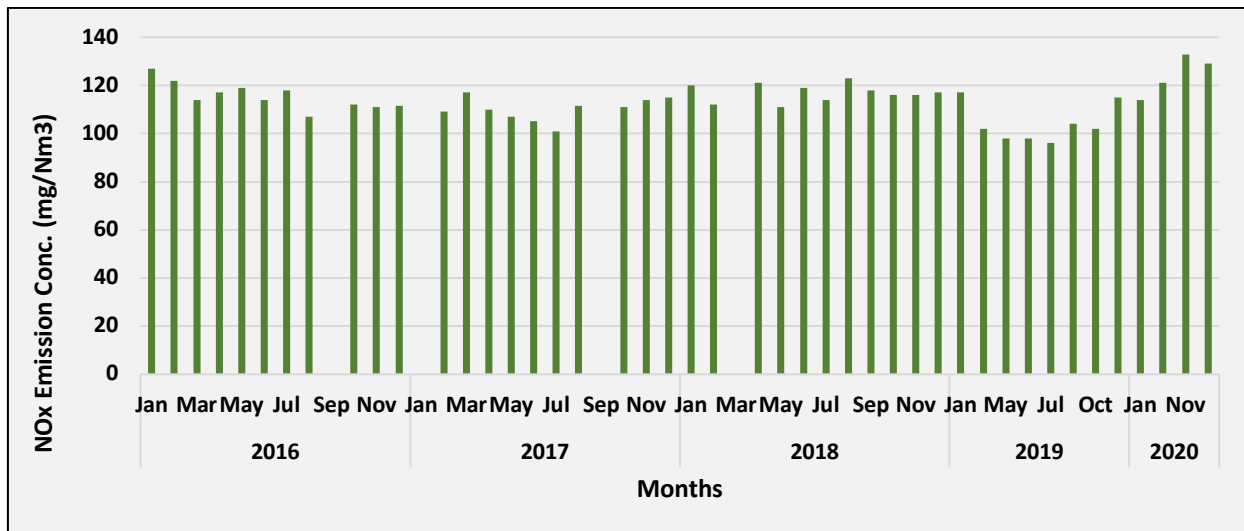


Fig. NAS35: Time series of monthly average NO_x Emission concentration in NASHIK TPP (Unit 3)

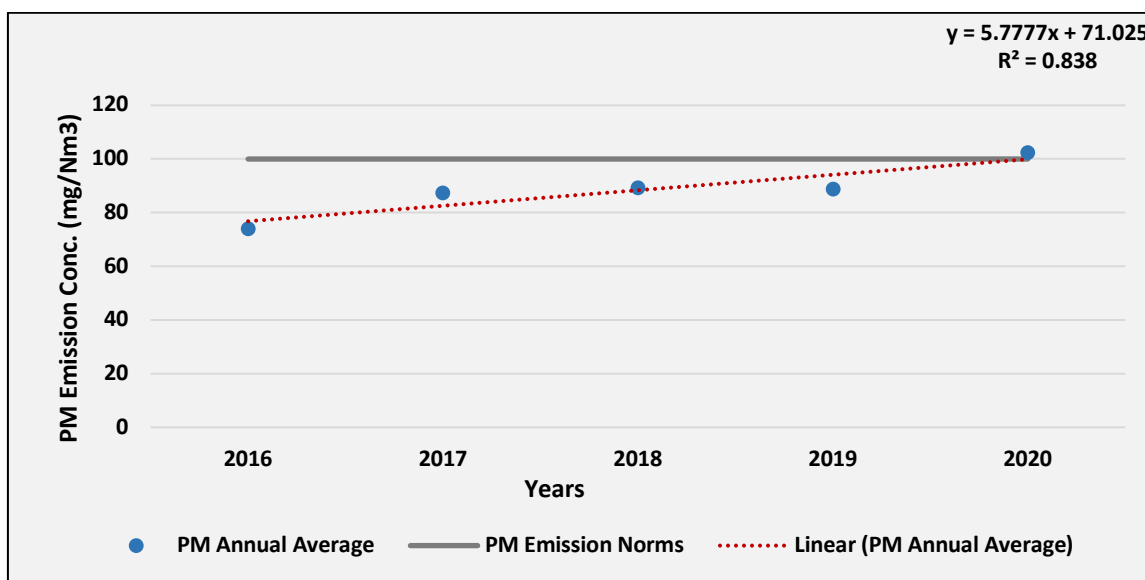


Fig. NAS36: Trend of annual mean PM Emission air concentration in NASHIK TPP (Unit 3)

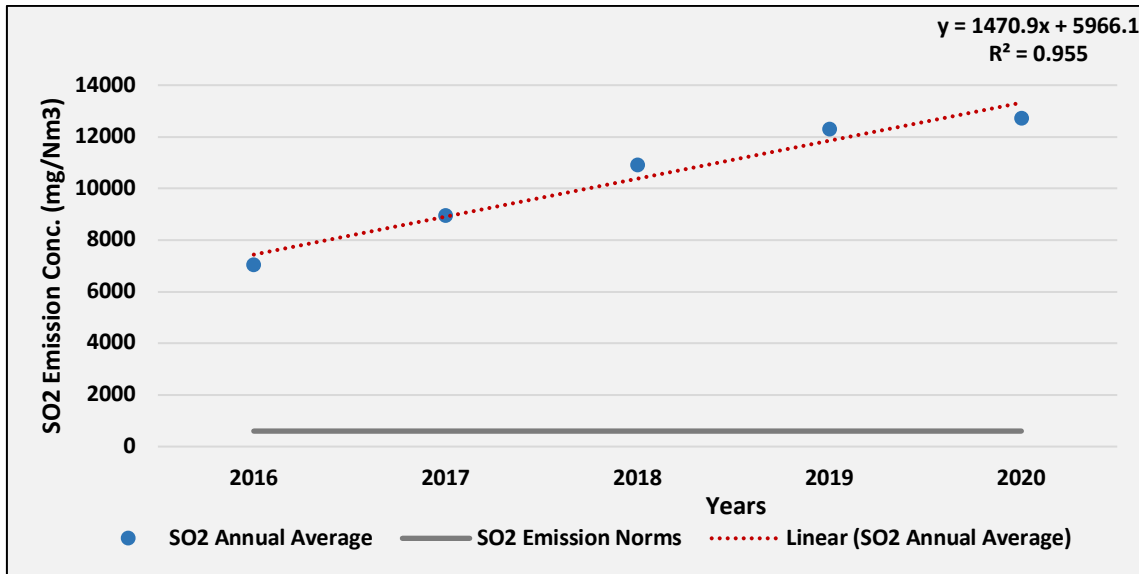


Fig. NAS37: Trend of annual mean SO₂ Emission air concentration in NASHIK TPP (Unit 3)

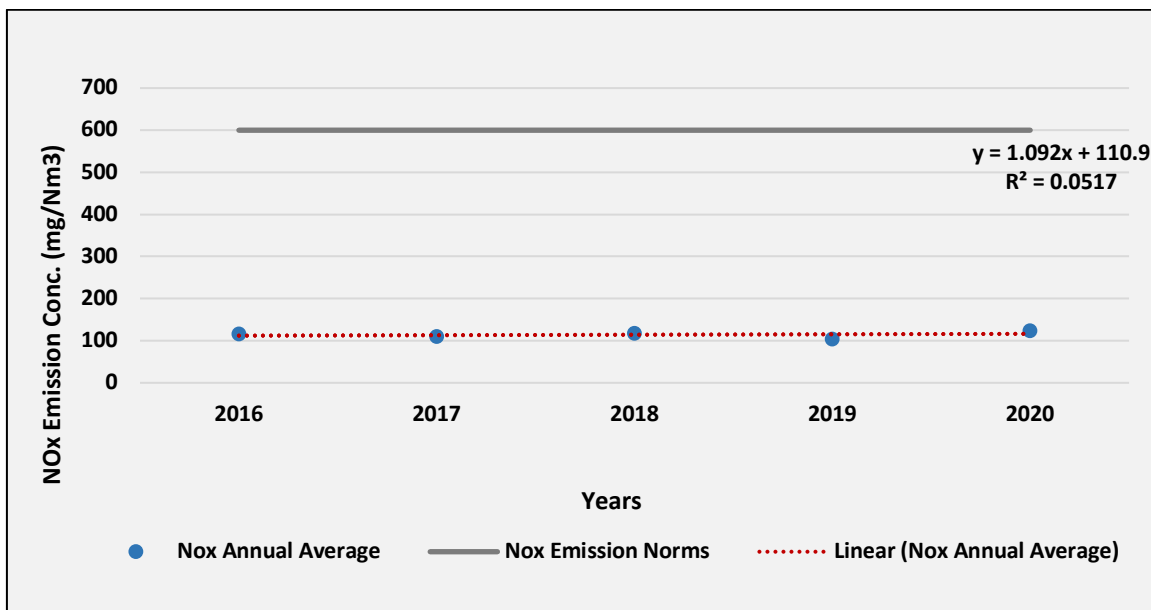


Fig. NAS38: Trend of annual mean NO_x Emission air concentration in NASHIK TPP (Unit 3)

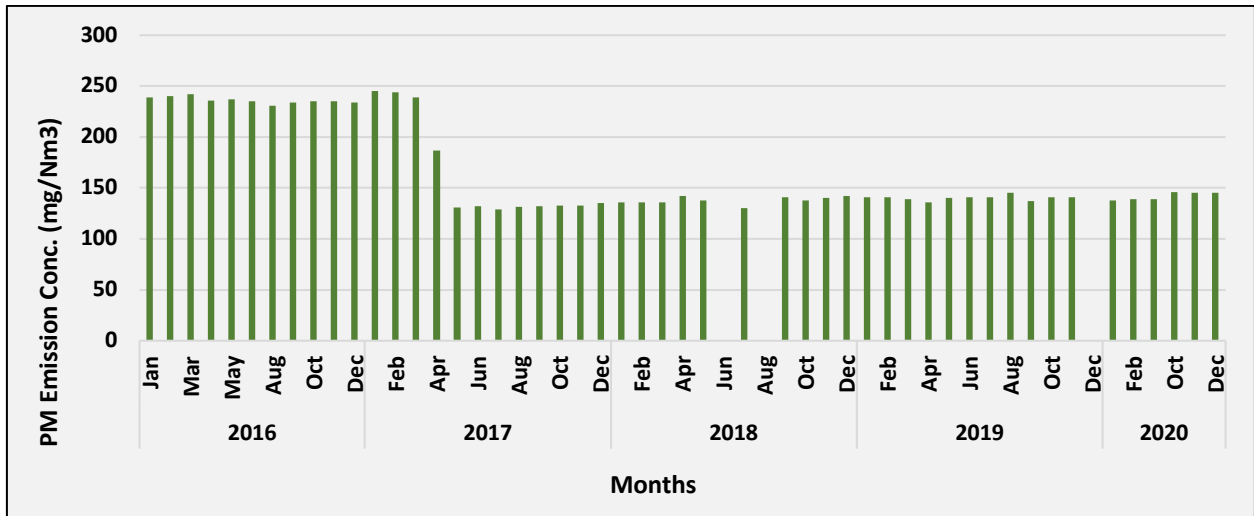


Fig. NAS39: Time series of monthly average PM Emission concentration in NASHIK TPP (Unit 4)

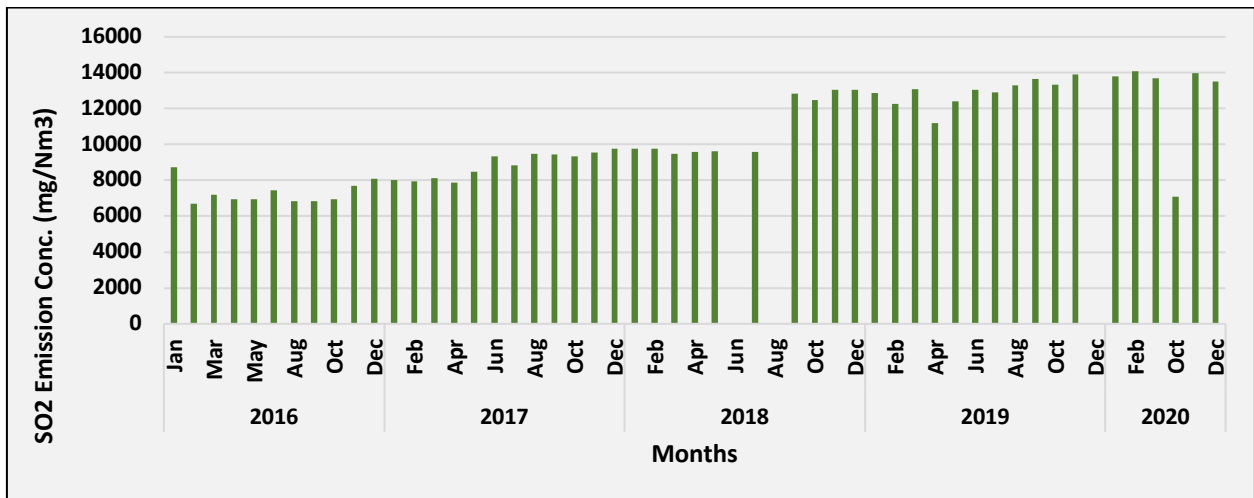


Fig. NAS40: Time series of monthly average SO₂ Emission concentration in NASHIK TPP (Unit 4)

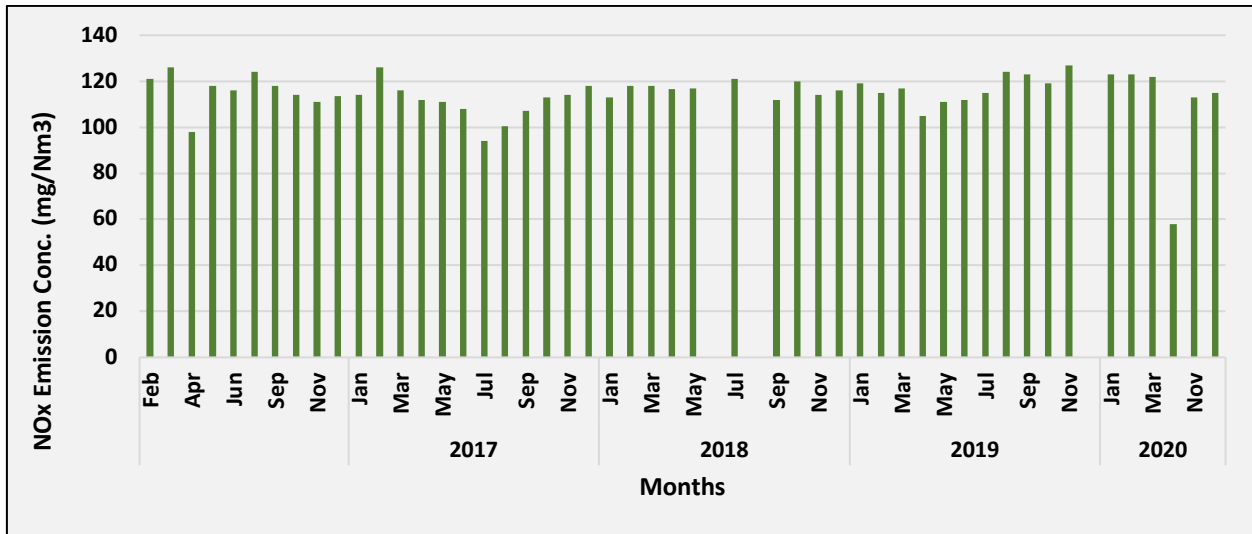


Fig. NAS41: Time series of monthly average NO_x Emission concentration in NASHIK TPP (Unit 4)

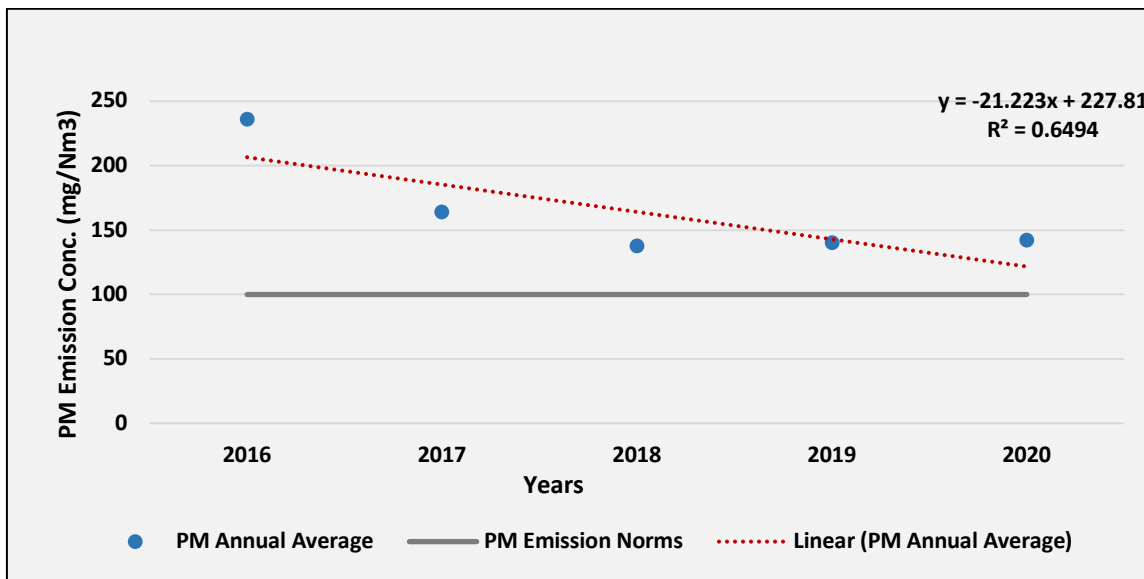


Fig. NAS42: Trend of annual mean PM Emission air concentration in NASHIK TPP (Unit 4)

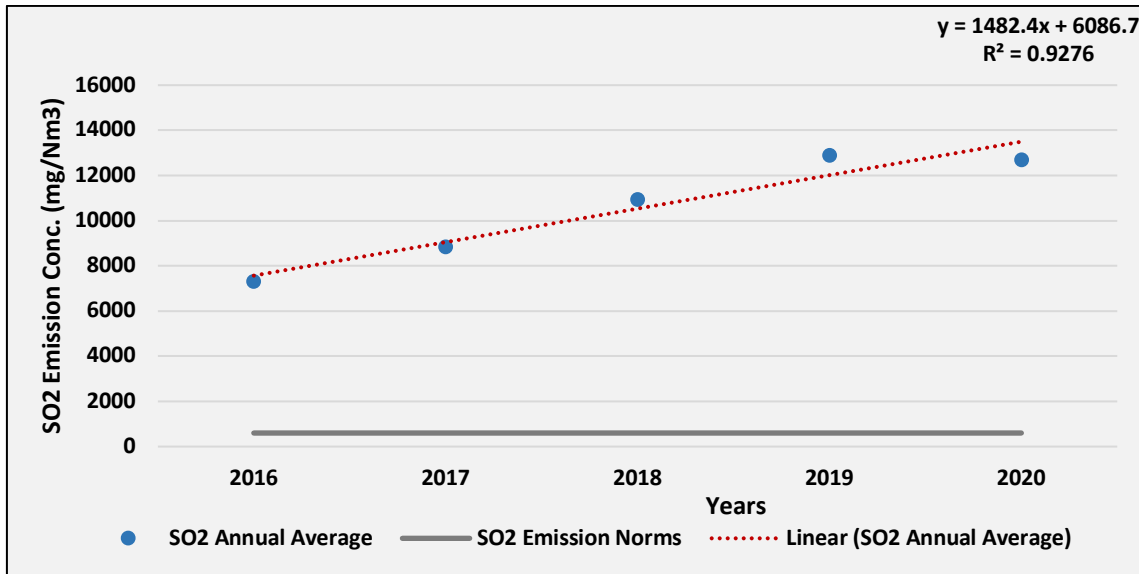


Fig. NAS43: Trend of annual mean SO₂ Emission air concentration in NASHIK TPP (Unit 4)

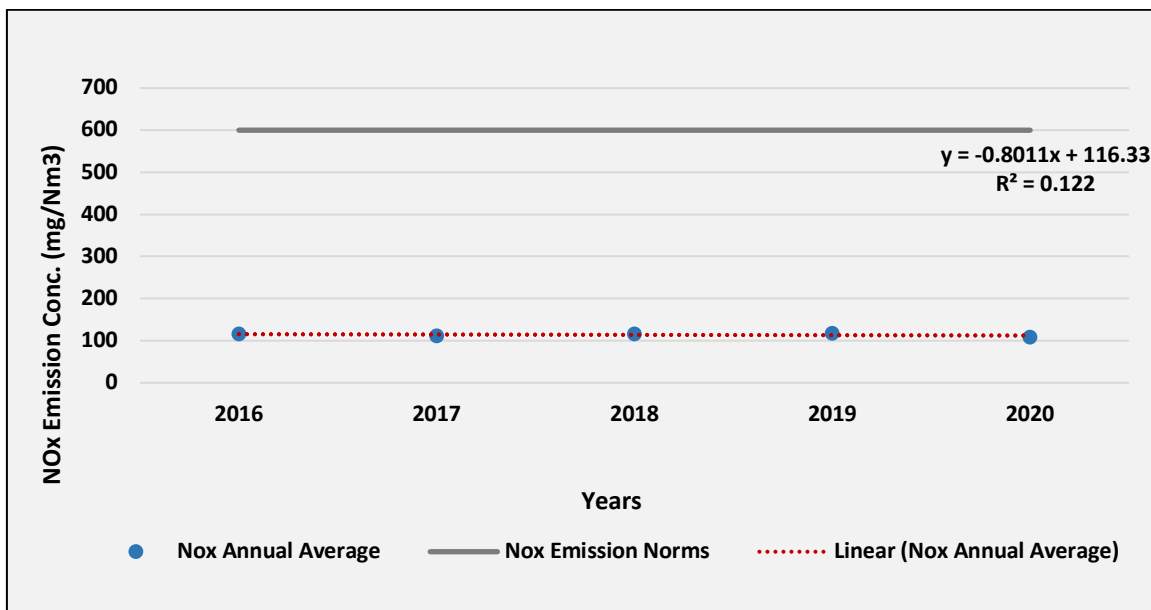


Fig. NAS44: Trend of annual mean NO_x Emission air concentration in NASHIK TPP (Unit 4)

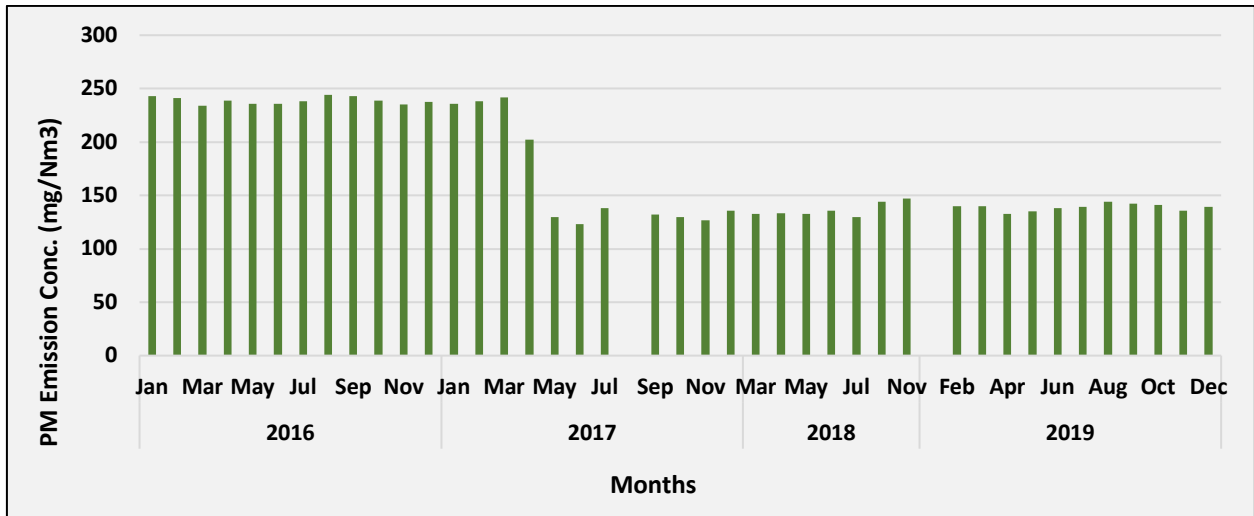


Fig. NAS45: Time series of monthly average PM Emission concentration in NASHIK TPP (Unit 5)

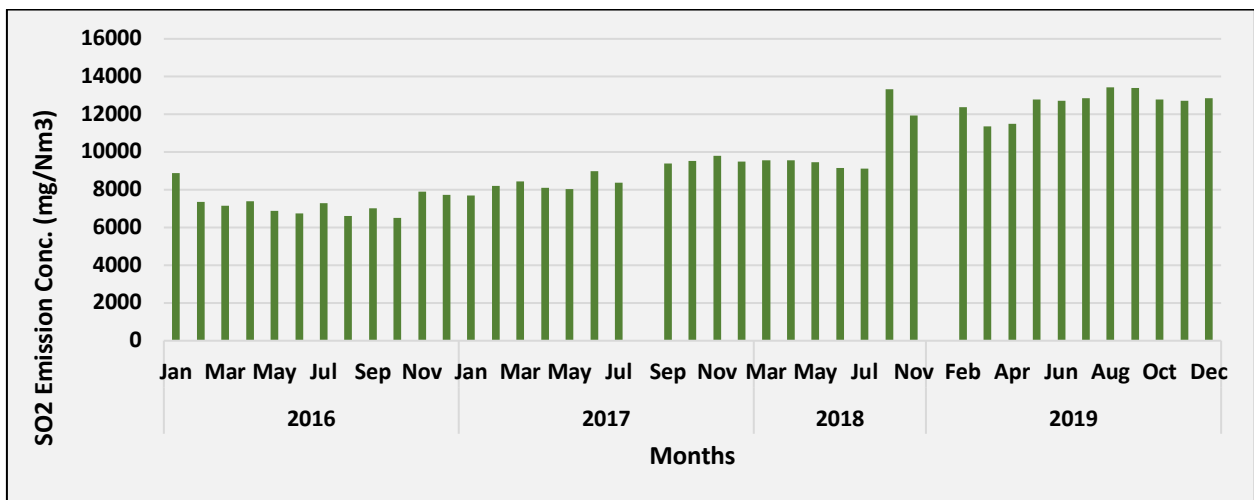


Fig. NAS46: Time series of monthly average SO₂ Emission concentration in NASHIK TPP (Unit 5)

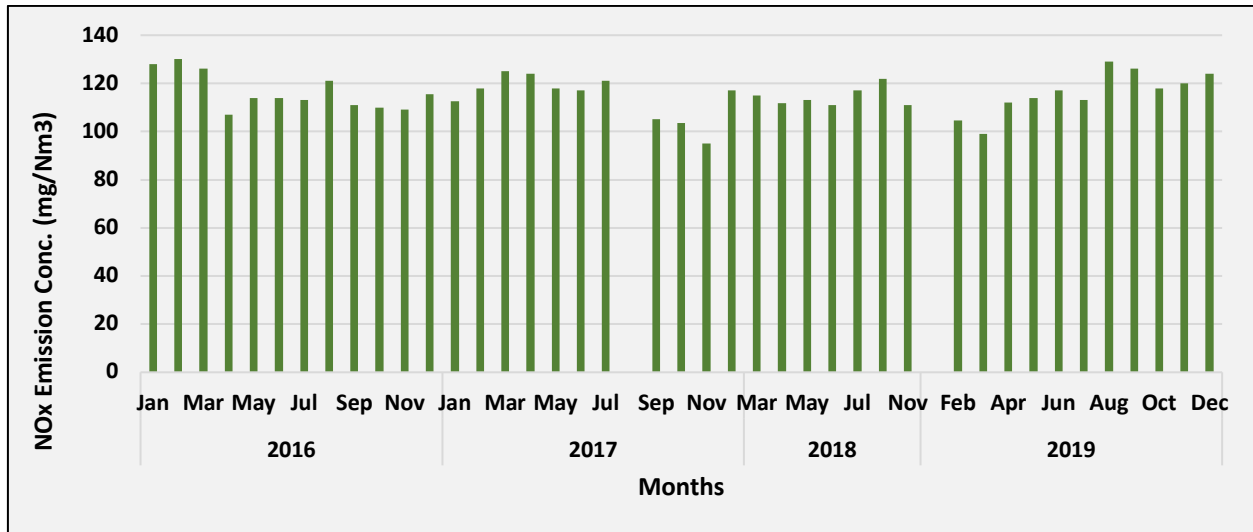


Fig. NAS47: Time series of monthly average NO_x Emission concentration in NASHIK TPP (Unit 5)

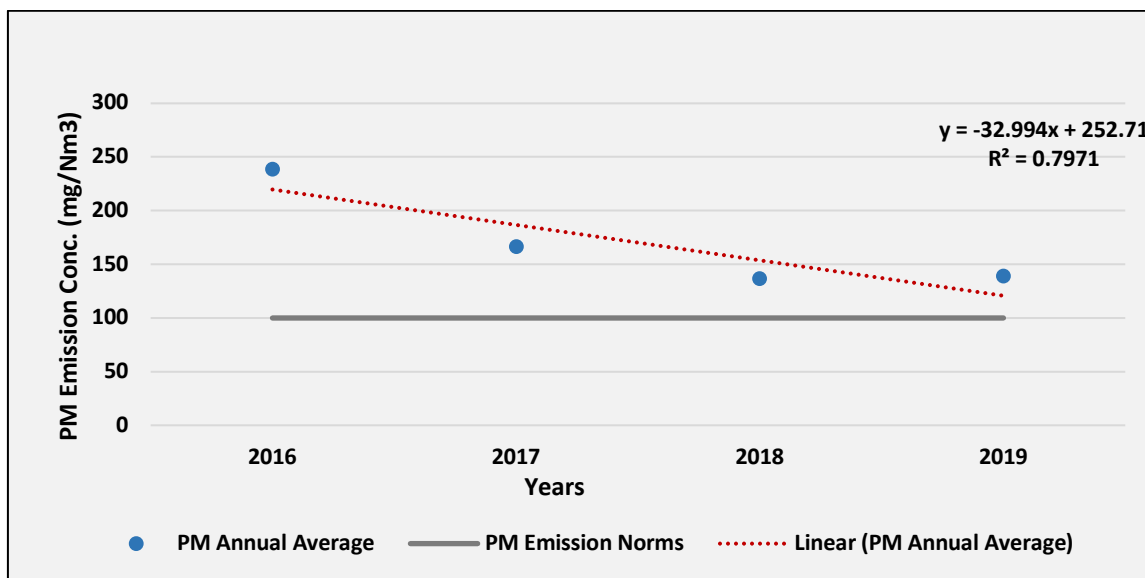


Fig. NAS48: Trend of annual mean PM Emission air concentration in NASHIK TPP (Unit 5)

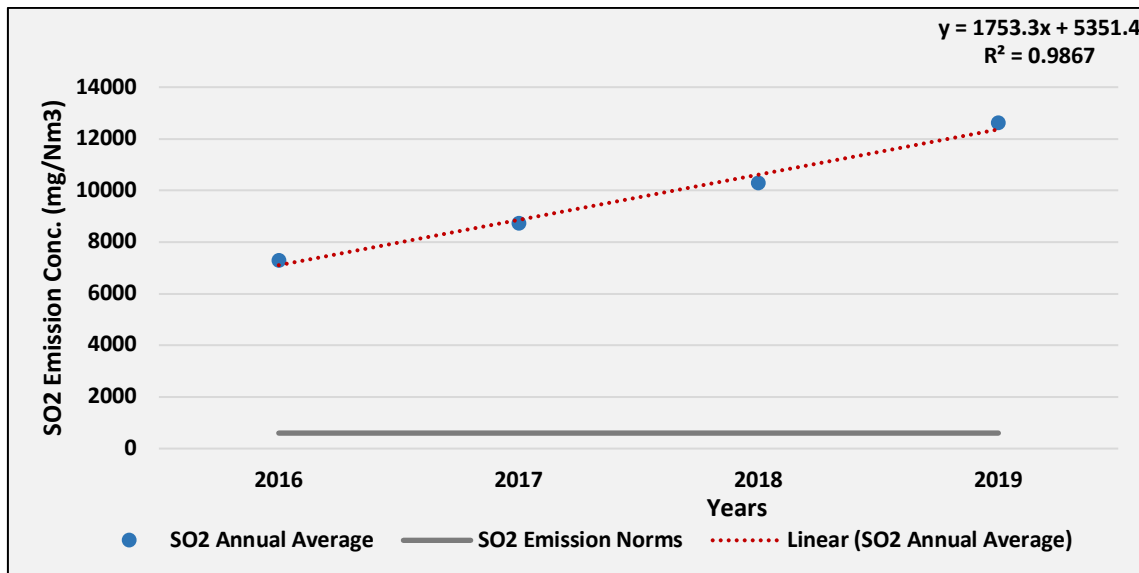


Fig. NAS49: Trend of annual mean SO₂ Emission air concentration in NASHIK TPP (Unit 5)

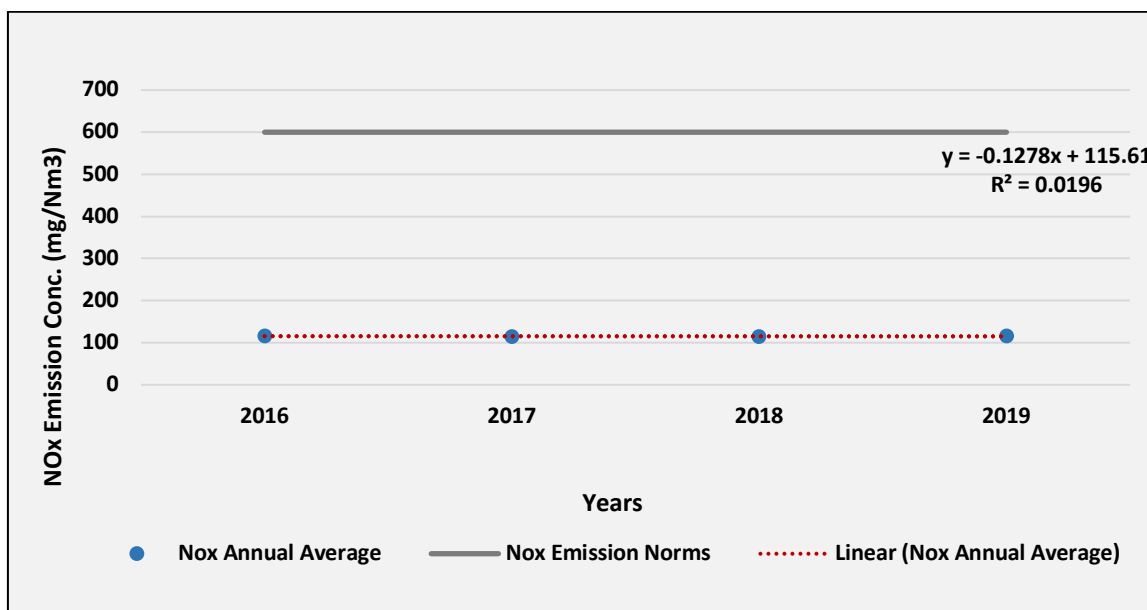


Fig. NAS50: Trend of annual mean NO_x Emission air concentration in NASHIK TPP (Unit 5)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀ is exceeding whereas the PM_{2.5}, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and PM parameter are much higher than the emission norms. Emission of NO_x is within the limit range.

KPCL BELLARY THERMAL POWER PLANT

Bellary Thermal Power station is located in Kudatini Village, Bellary District in the Indian state of Karnataka. Two coal-fired units of 500 MW each are in operation

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. KOR1 – Fig. KOR50) for the last three years (2018-2020) using data provided by KPCL developer for Bellary Power plant, Karnataka, India.

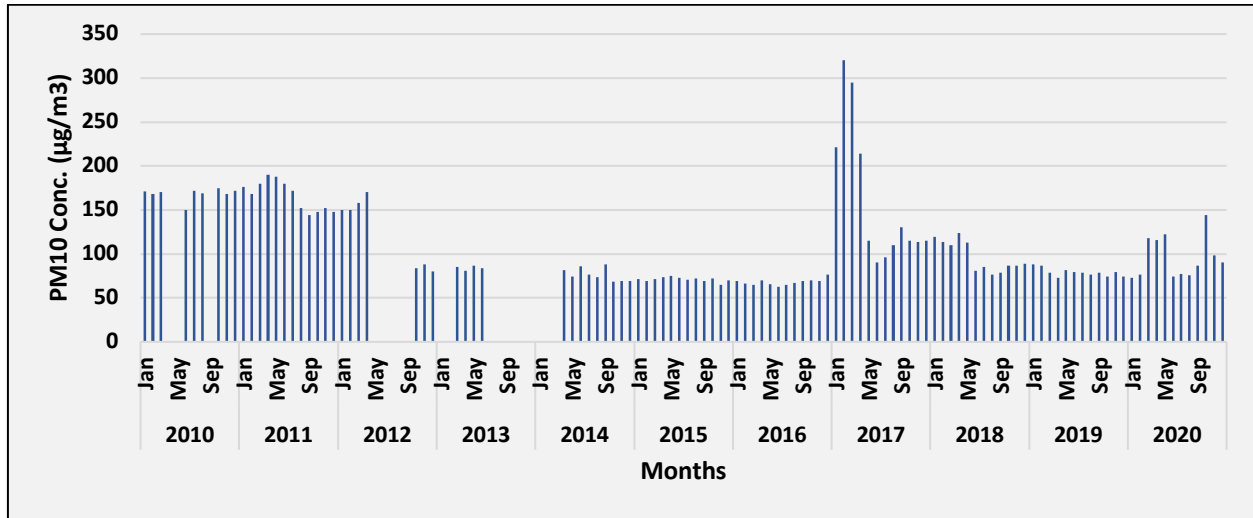


Fig. BEL1: Time series of monthly average PM₁₀ ambient air concentration in Bellary TPP (Ambient)

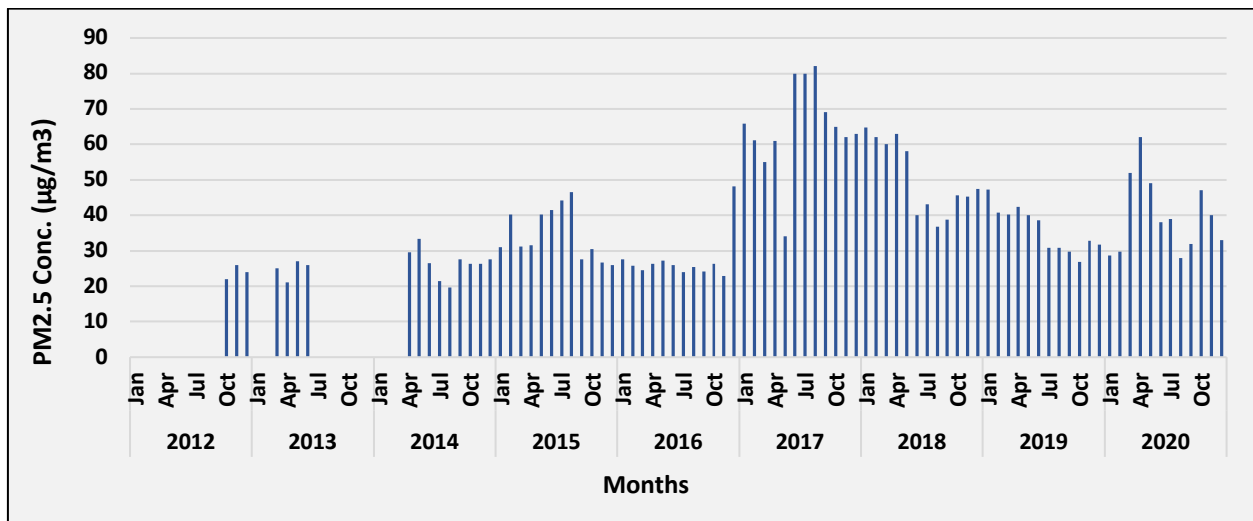


Fig. BEL2: Time series of monthly average PM_{2.5} ambient air concentration in Bellary TPP (Ambient)

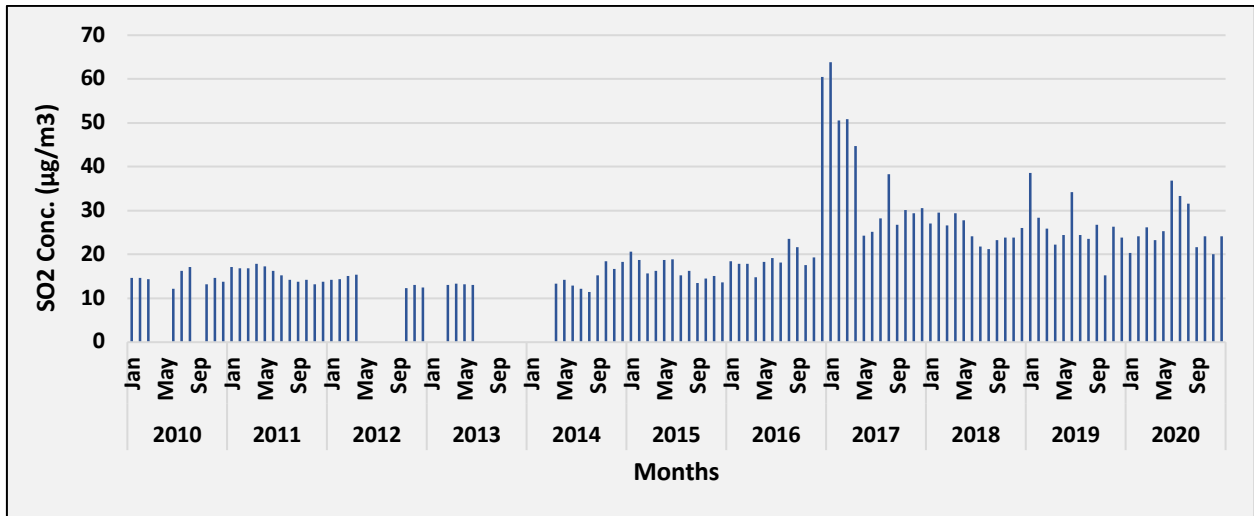


Fig. BEL3: Time series of monthly average SO_2 ambient air concentration in Bellary TPP (Ambient)

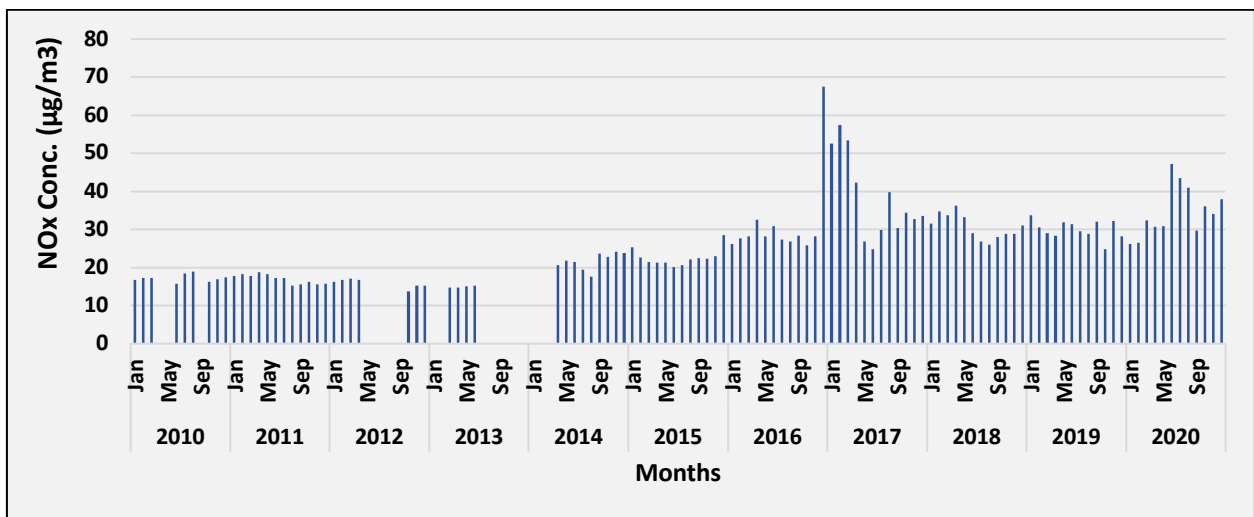


Fig. BEL4: Time series of monthly average NO_x ambient air concentration in Bellary TPP (Ambient)

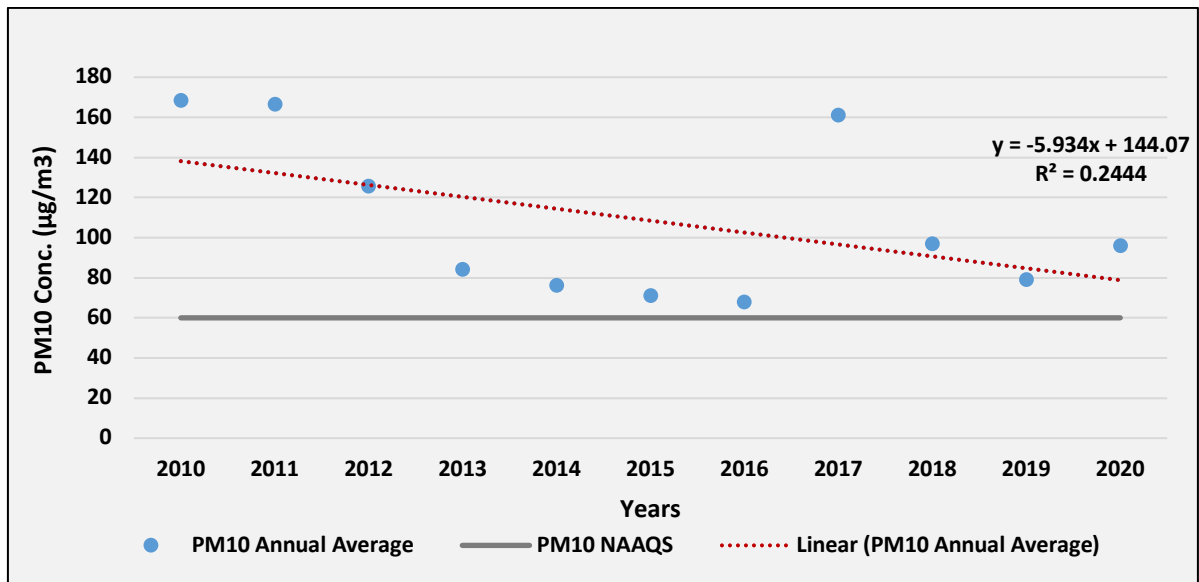


Fig. BEL5: Trend of annual mean PM_{10} ambient air concentration in Bellary TPP (Ambient)

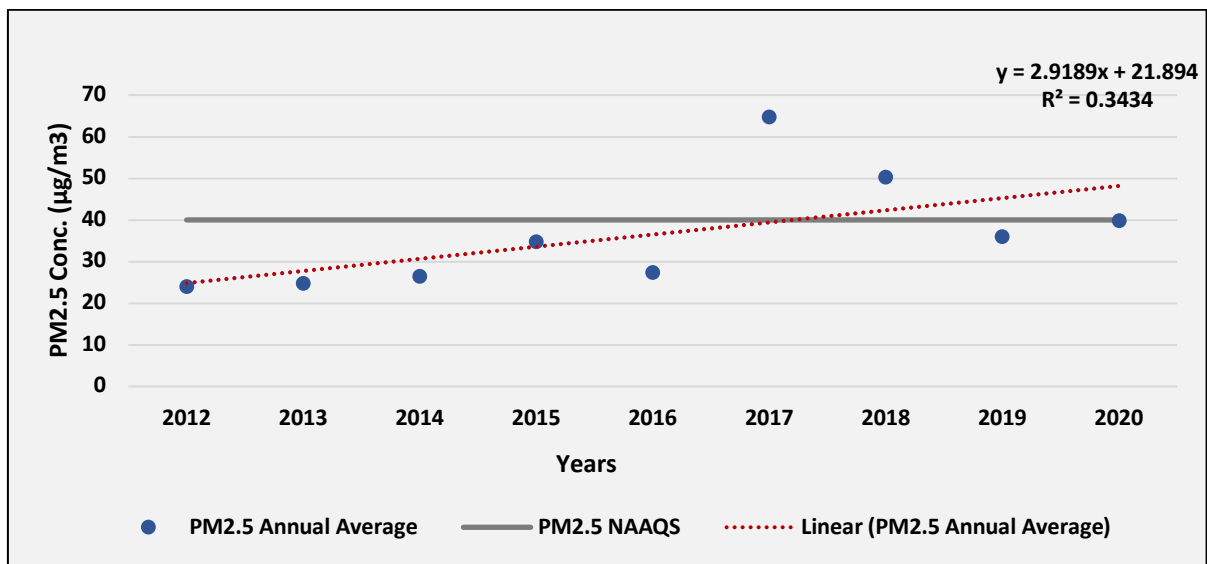


Fig. BEL6: Trend of annual mean $PM_{2.5}$ ambient air concentration in Bellary TPP (Ambient)

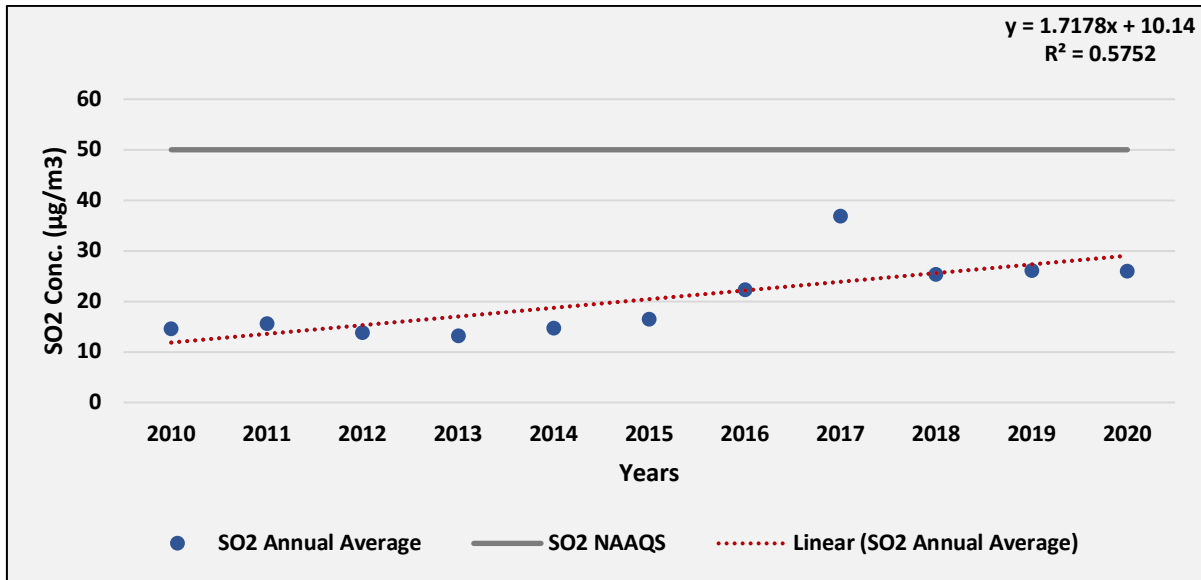


Fig. BEL7: Trend of annual mean SO₂ ambient air concentration in Bellary TPP (Ambient)

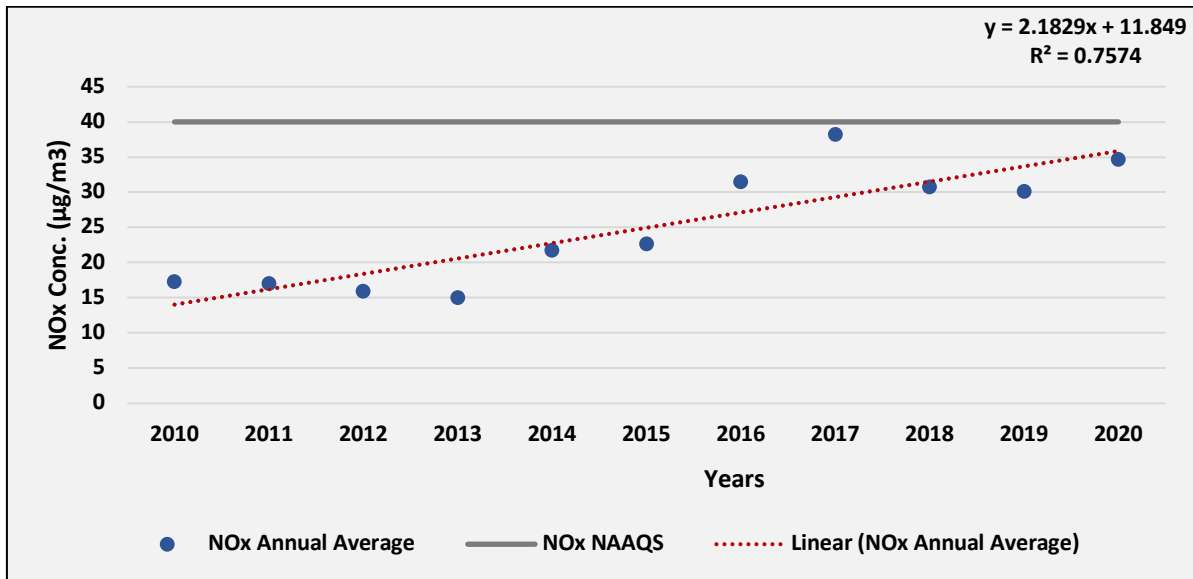


Fig. BEL8: Trend of annual mean NO_x ambient air concentration in Bellary TPP (Ambient)

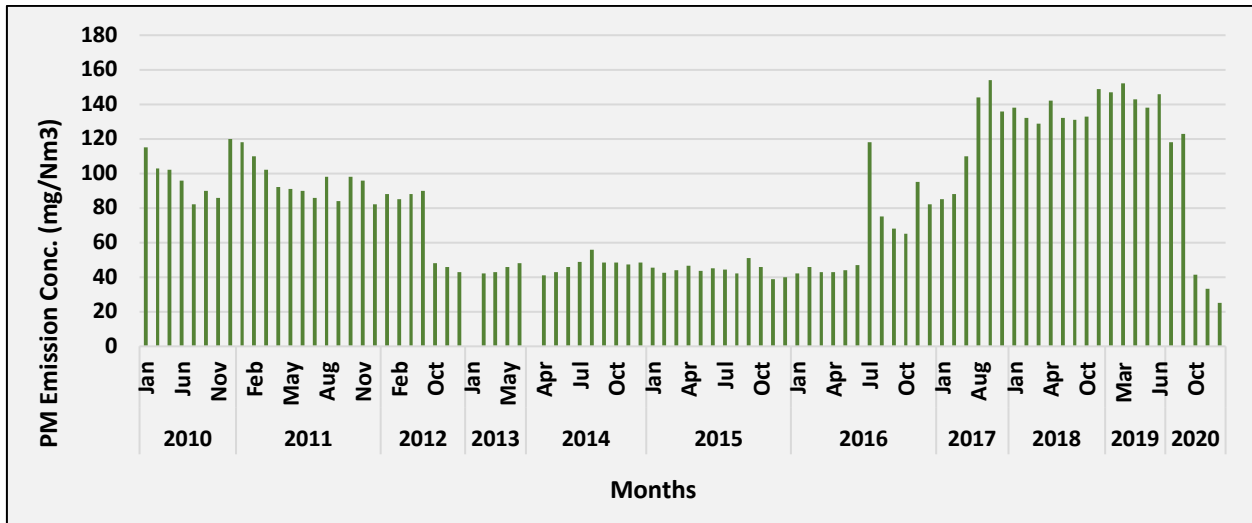


Fig. BEL9: Time series of monthly average PM Emission concentration in Bellary TPP (Stack 1)

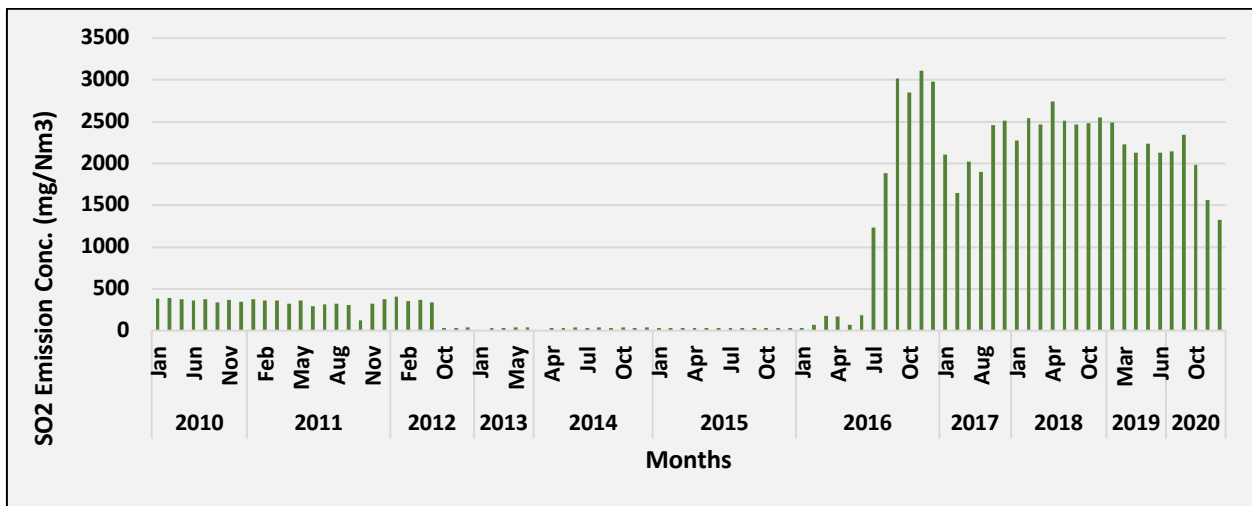


Fig. BEL10: Time series of monthly average SO₂ Emission concentration in Bellary TPP (Stack 1)

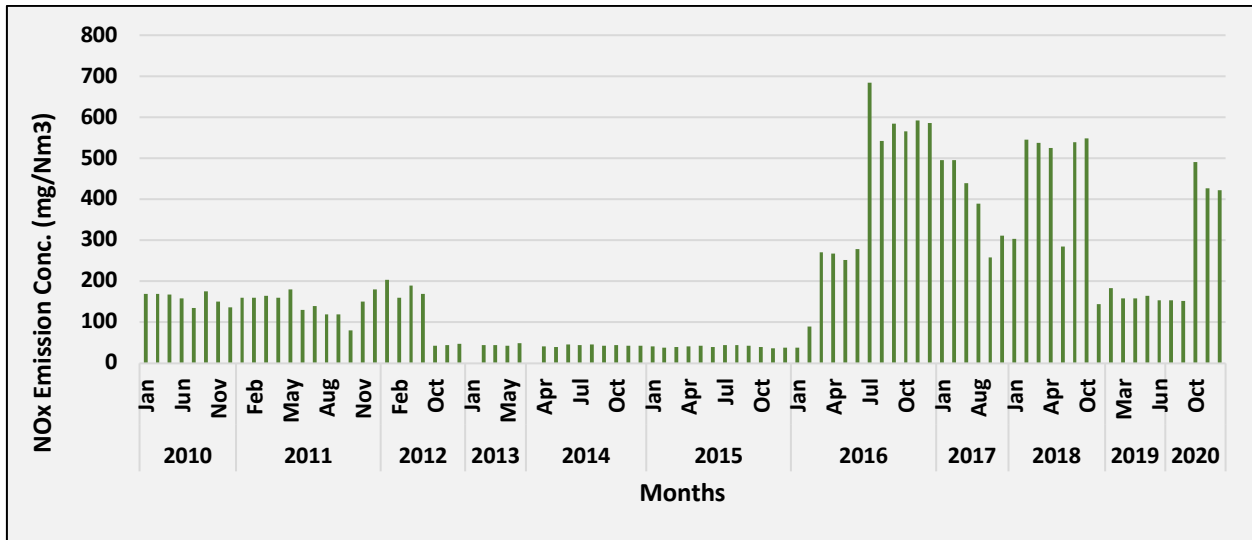


Fig. BEL11: Time series of monthly average NO_x Emission concentration in Bellary TPP (Stack 1)

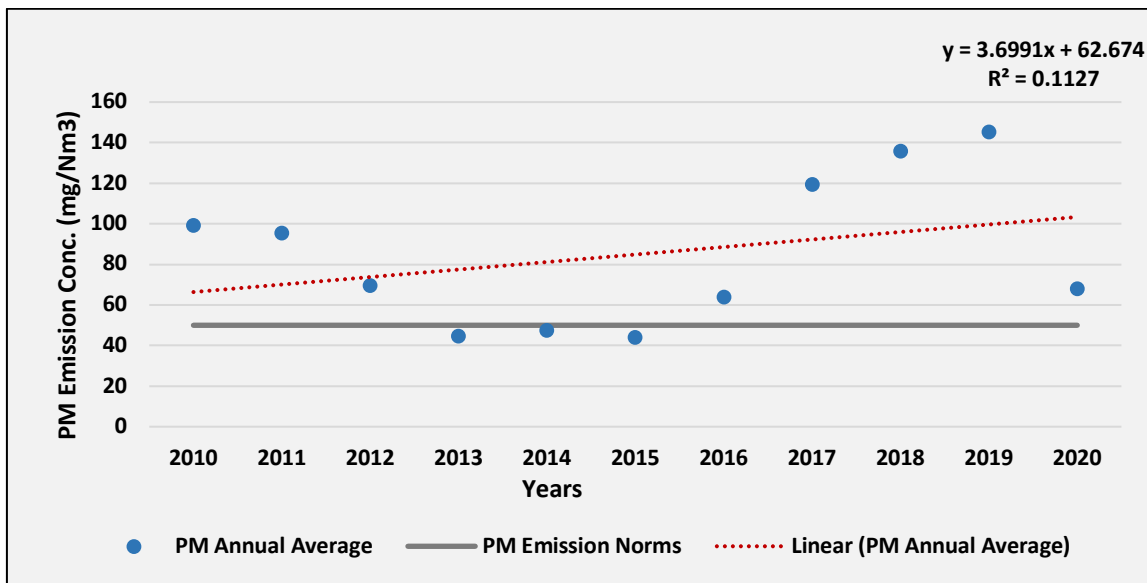


Fig. BEL12: Trend of annual mean PM Emission air concentration in Bellary TPP (Stack 1)

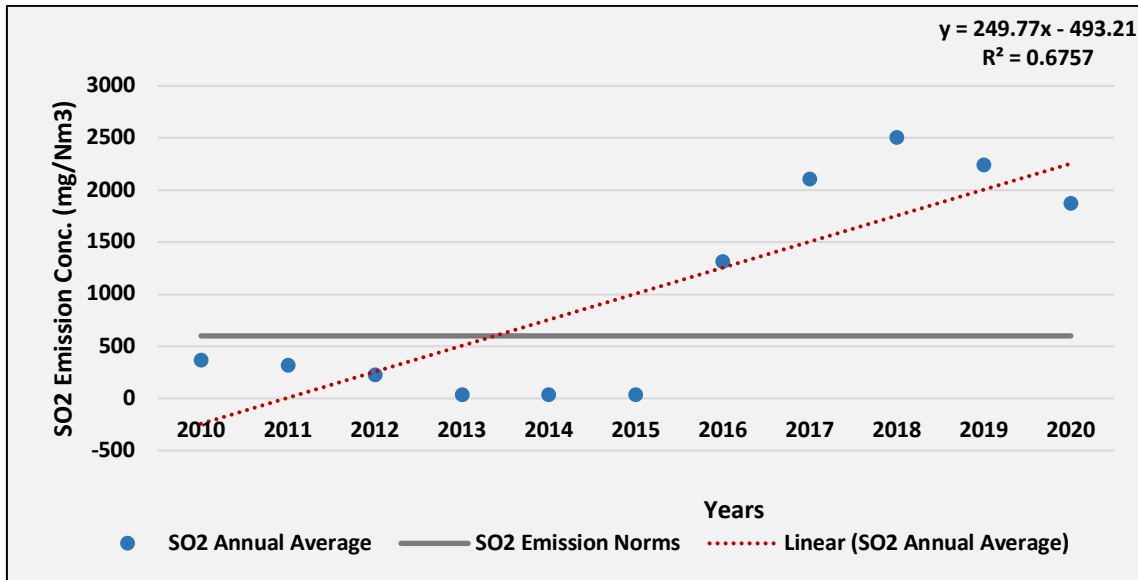


Fig. BEL13: Trend of annual mean SO₂ Emission air concentration in Bellary TPP (Stack 1)

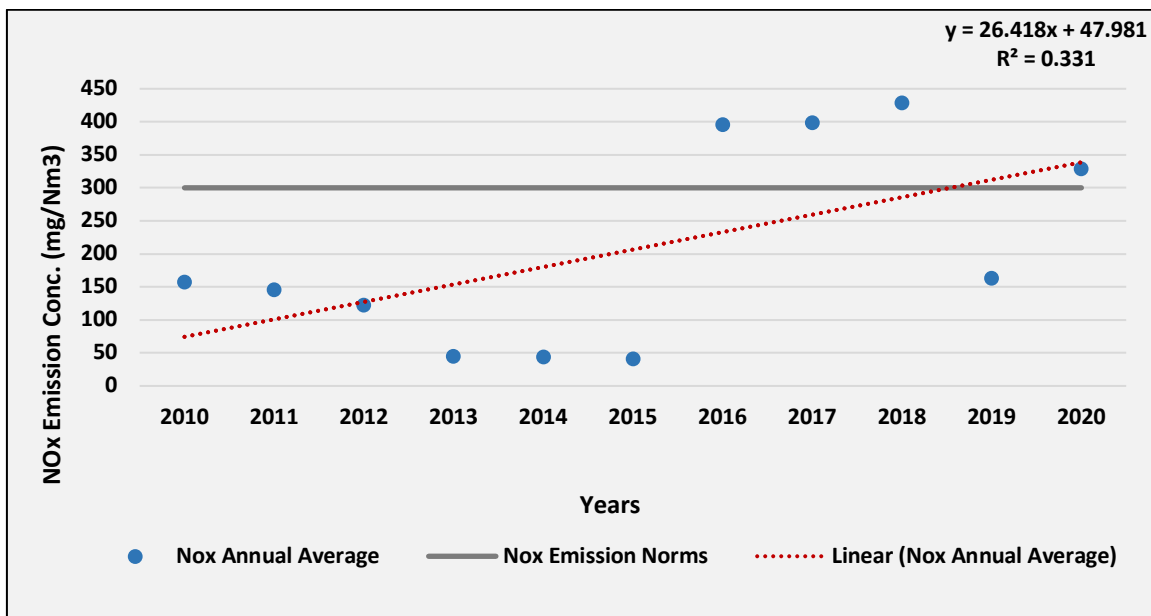


Fig. BEL14: Trend of annual mean NO_x Emission air concentration in Bellary TPP (Stack 1)

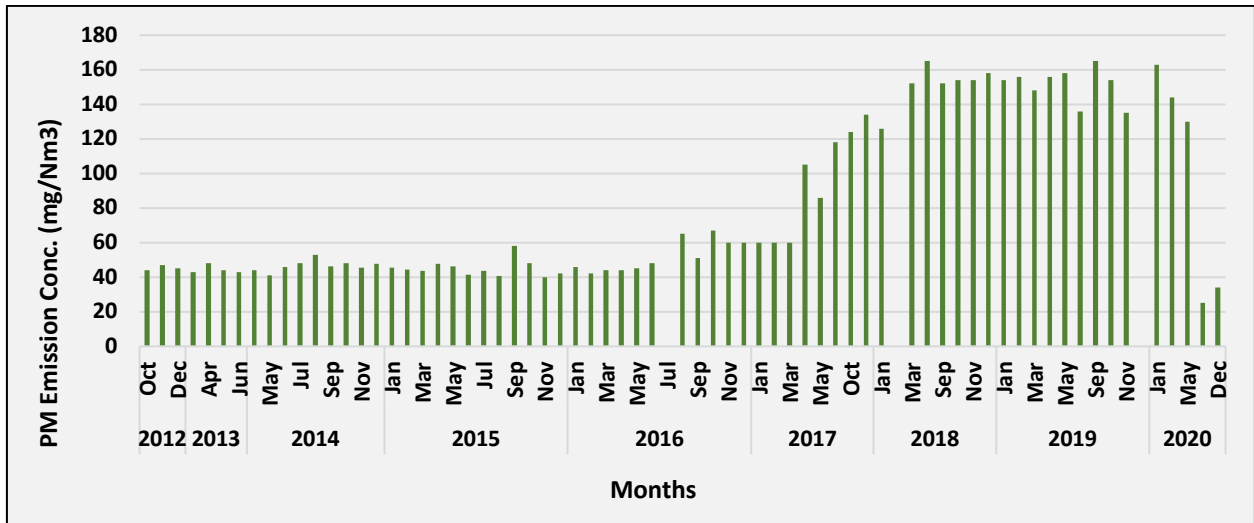


Fig. BEL15: Time series of monthly average PM Emission concentration in Bellary TPP (Stack 2)

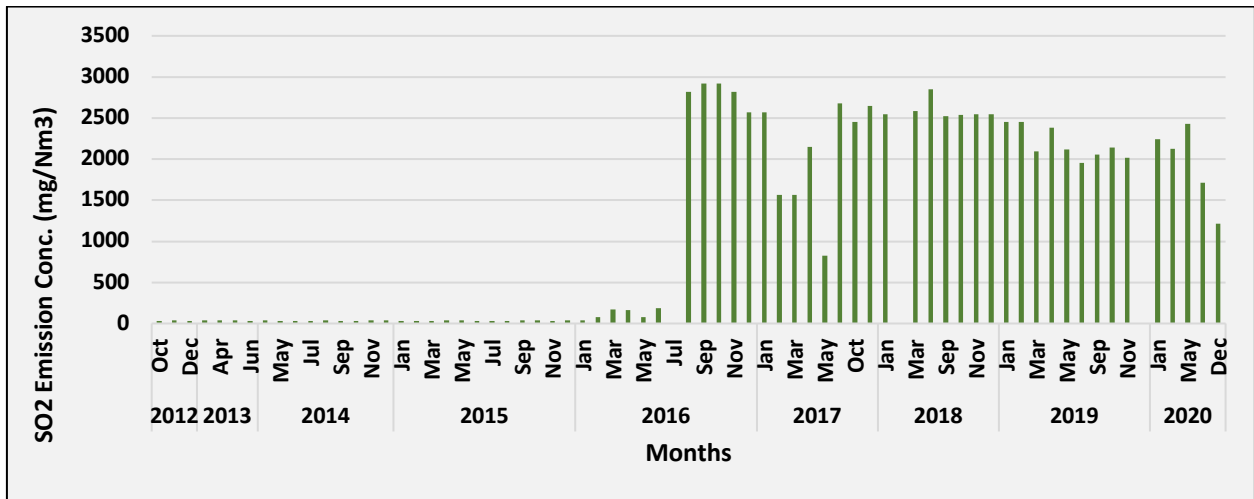


Fig. BEL16: Time series of monthly average SO₂ Emission concentration in Bellary TPP (Stack 2)

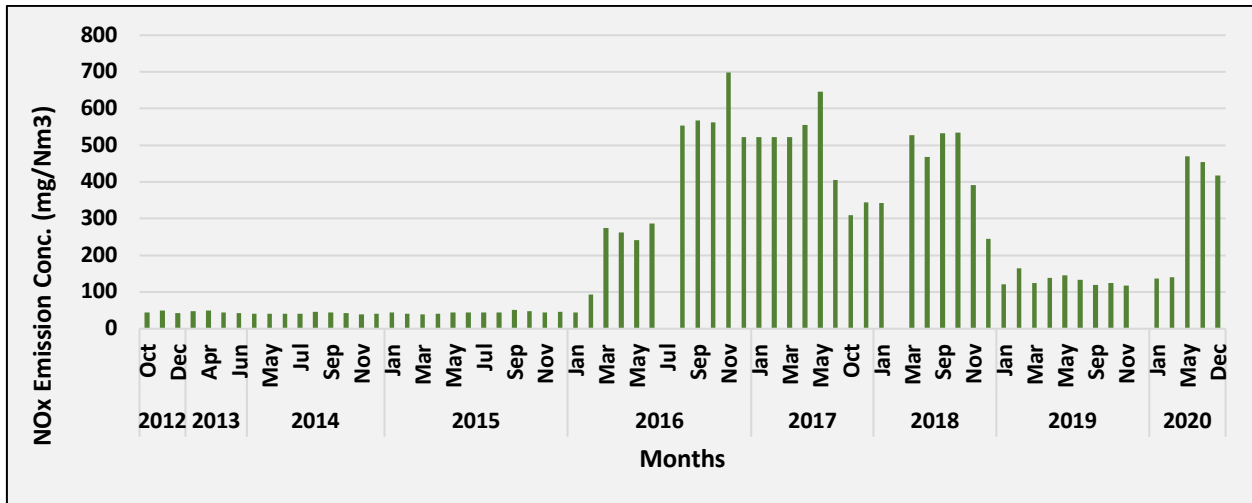


Fig. BEL17: Time series of monthly average NO_x Emission concentration in Bellary TPP (Stack 2)

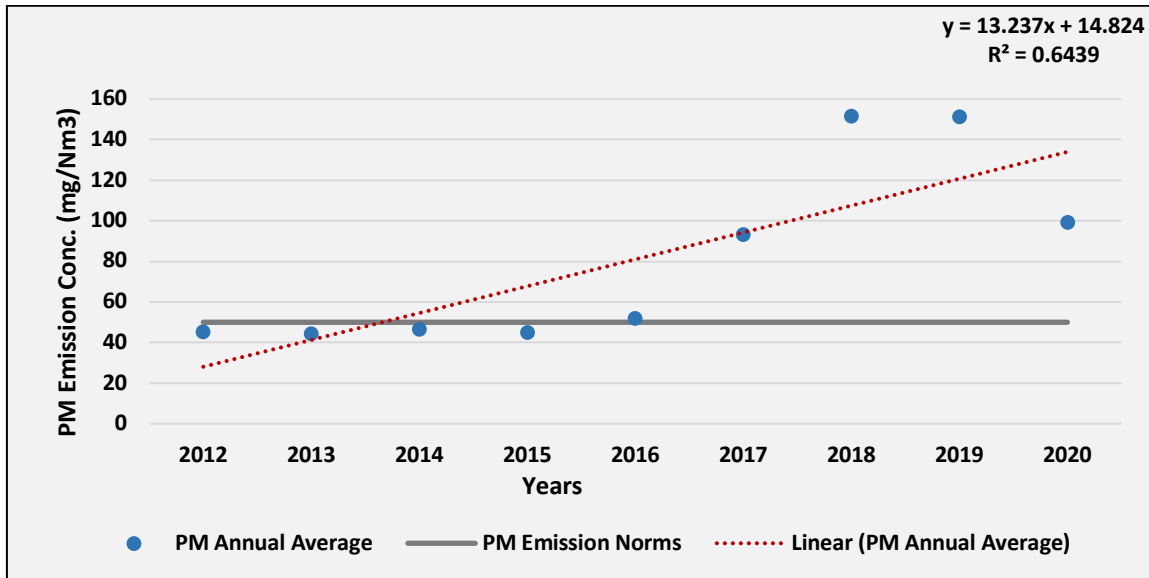


Fig. BEL18: Trend of annual mean PM Emission air concentration in Bellary TPP (Stack 2)

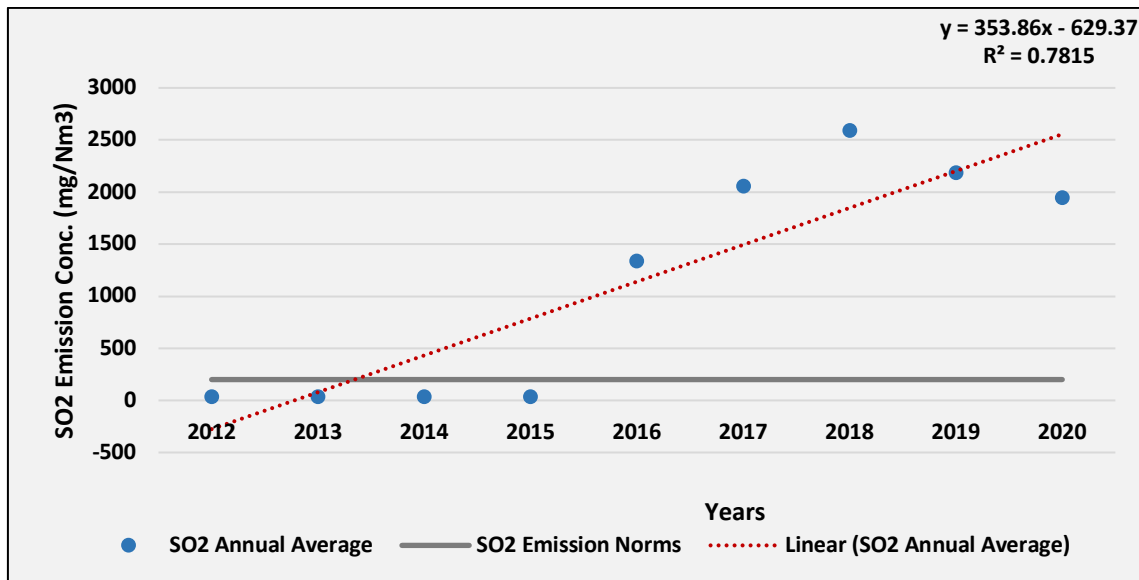


Fig. BEL19: Trend of annual mean SO₂ Emission air concentration in Bellary TPP (Stack 2)

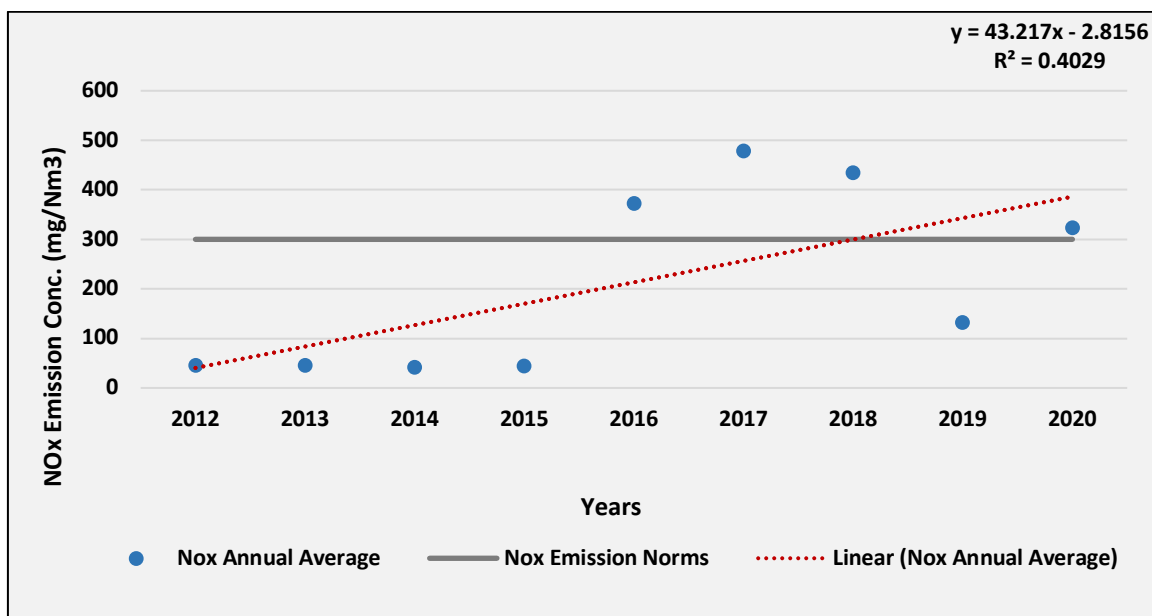


Fig. BEL20: Trend of annual mean NO_x Emission air concentration in Bellary TPP (Stack 2)

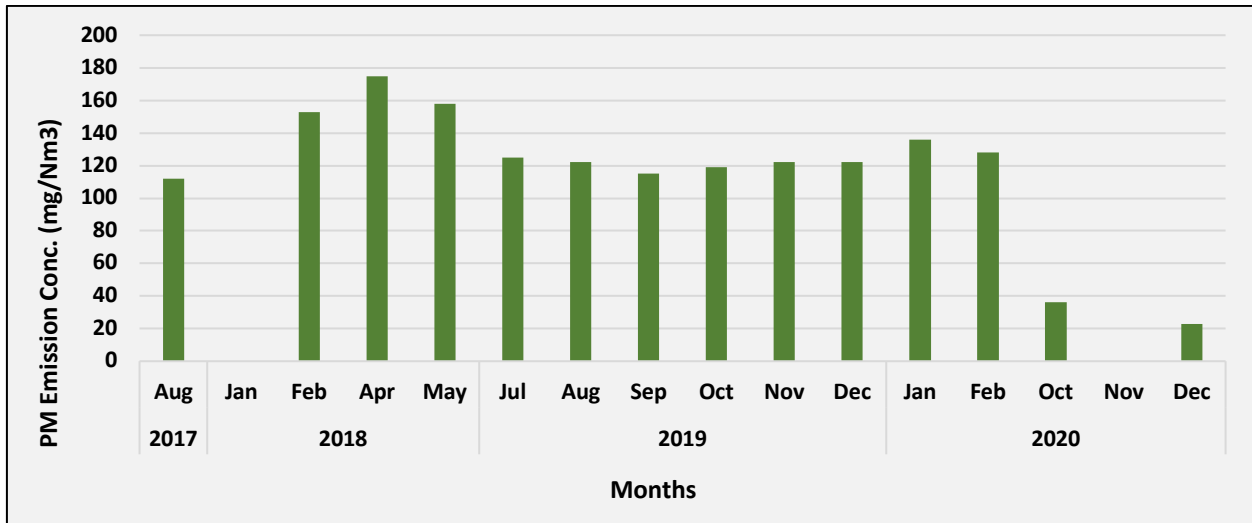


Fig. BEL21: Time series of monthly average PM Emission concentration in Bellary TPP (Stack 3)

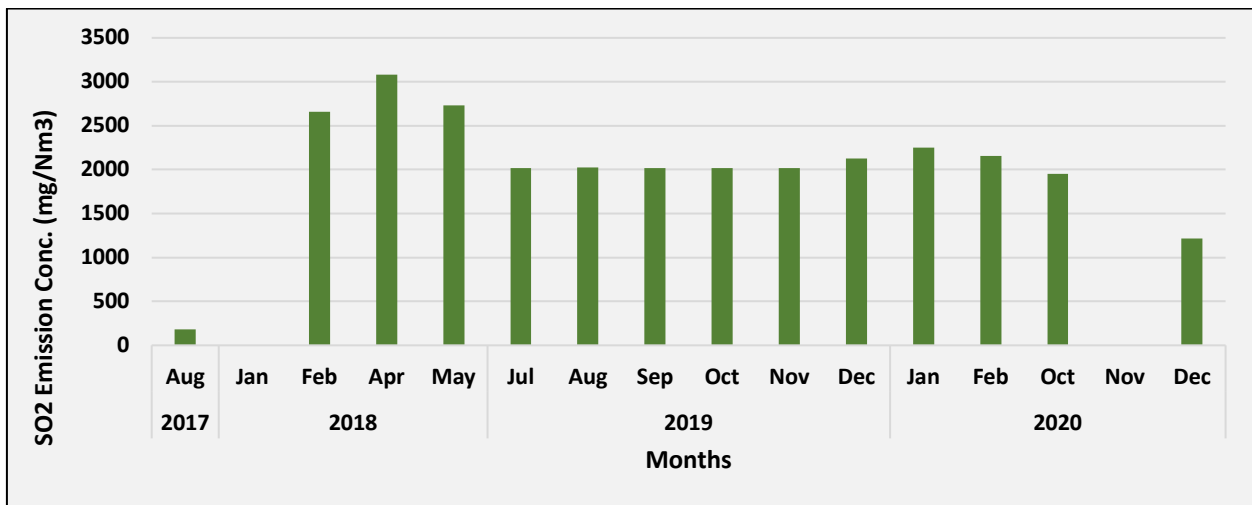


Fig. BEL22: Time series of monthly average SO₂ Emission concentration in Bellary TPP (Stack 3)

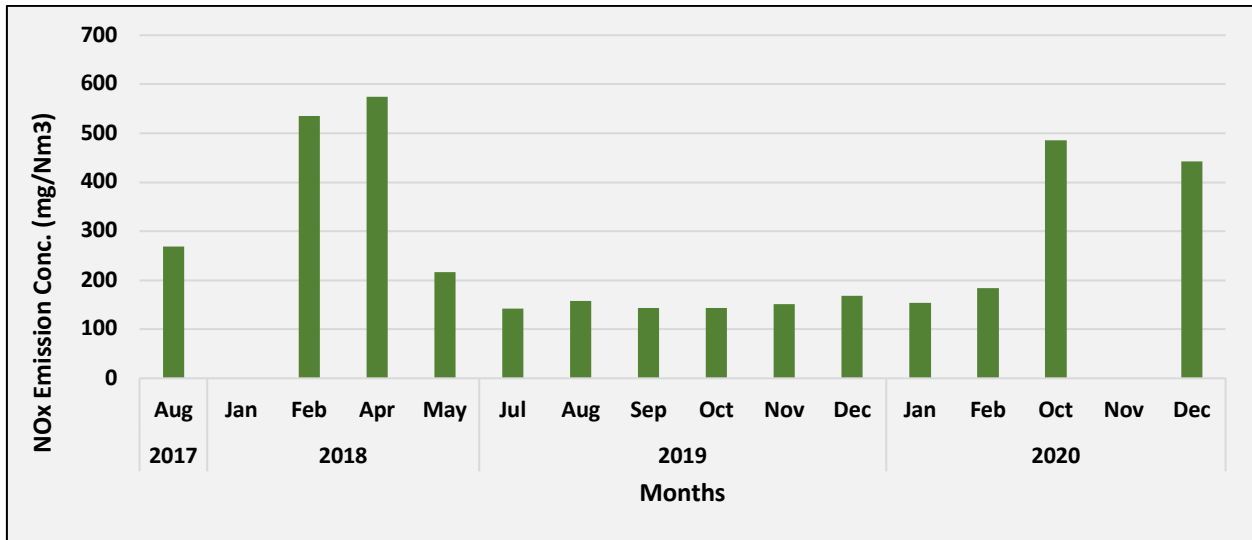


Fig. BEL23: Time series of monthly average NO_x Emission concentration in Bellary TPP (Stack 3)

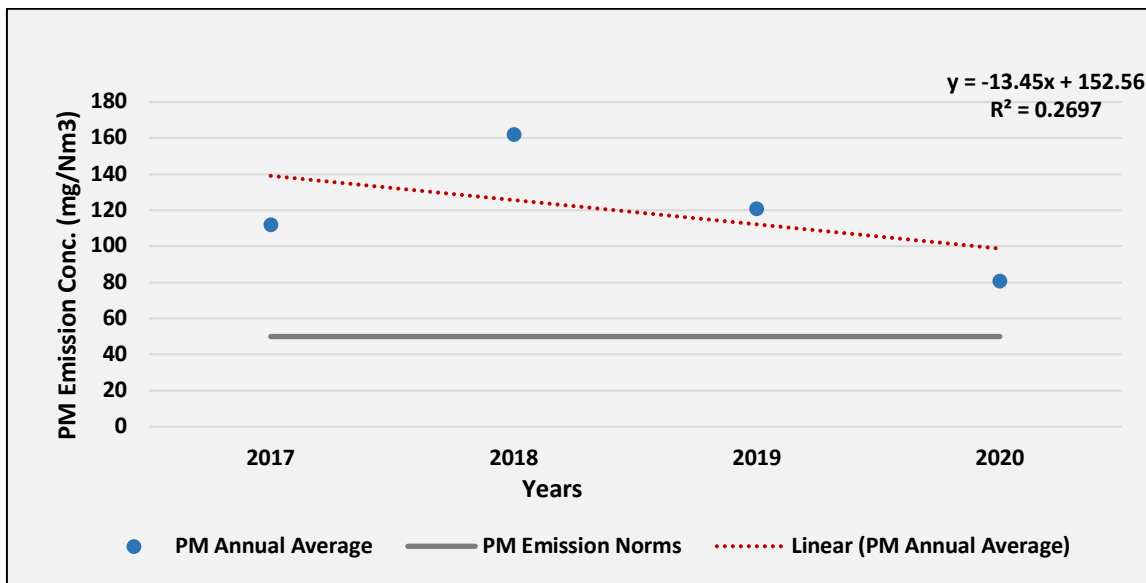


Fig. BEL24: Trend of annual mean PM Emission air concentration in Bellary TPP (Stack 3)

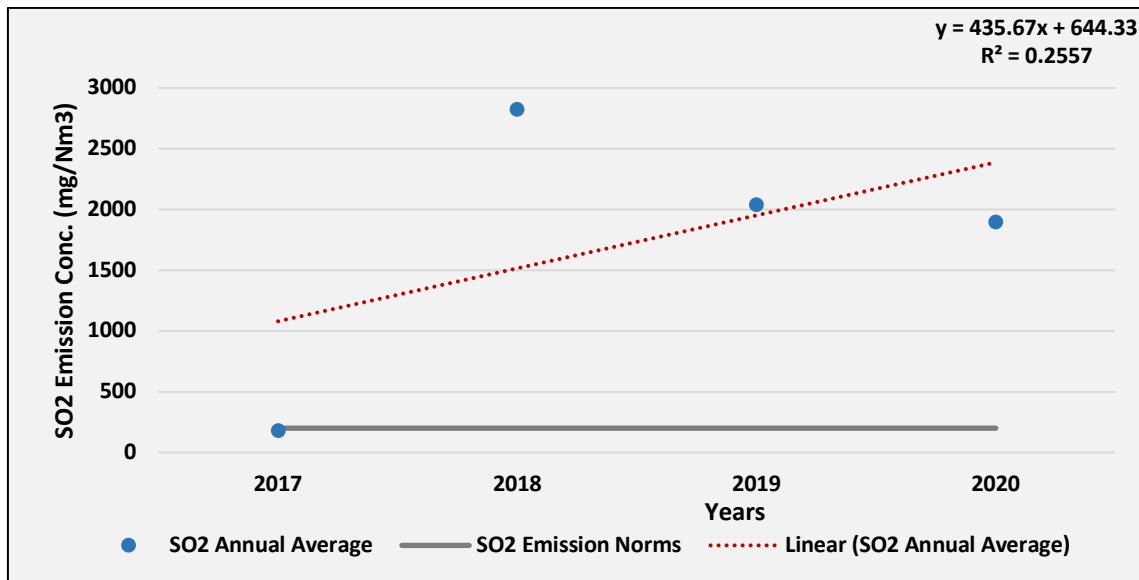


Fig. BEL25: Trend of annual mean SO₂ Emission air concentration in Bellary TPP (Stack 3)

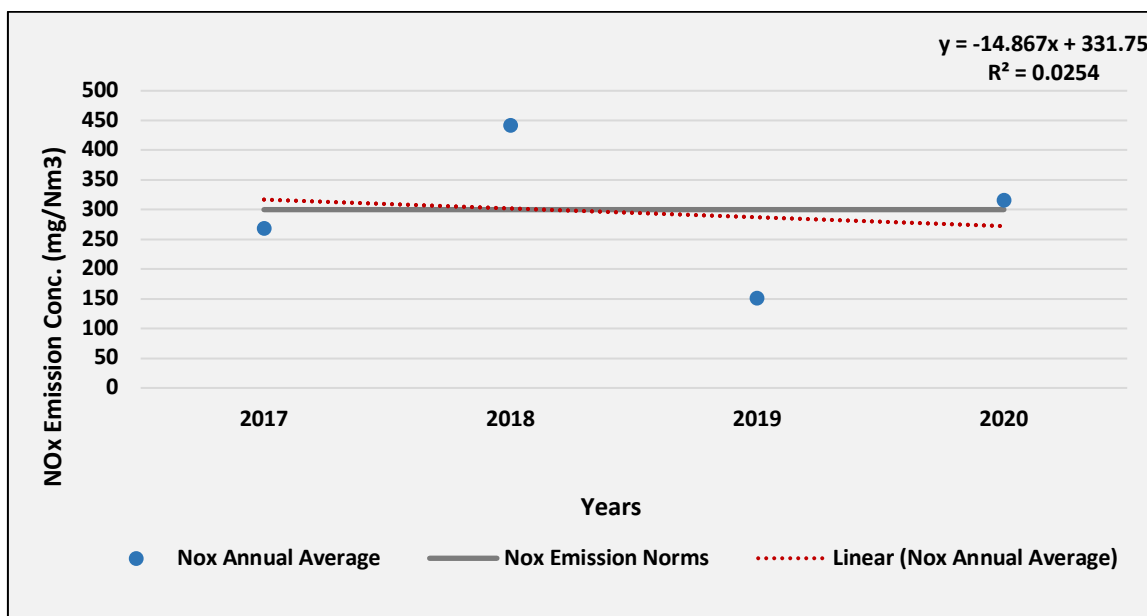


Fig. BEL26: Trend of annual mean NO_x Emission air concentration in Bellary TPP (Stack 3)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, PM_{2.5} are exceeding whereas the SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that PM, SO₂ and NO_x parameter are much higher than the emission norms.

KPCL RAICHUR THERMAL POWER PLANT

Raichur Thermal Power Station (RTPS) is a coal-fired electric power station located at Yadlapur D (Shaktinagar) in the Raichur district of the state of Karnataka, India. It is operated by the Karnataka Power Corporation Limited (KPCL) and was the first thermal power plant to be set up in the state.

The ambient air quality concentrations of PM₁₀, PM_{2.5}, SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. KOR1 – Fig. KOR50) for the last three years (2018-2020) using data provided by KPCL developer for Raichur Power plant, Karnataka, India.

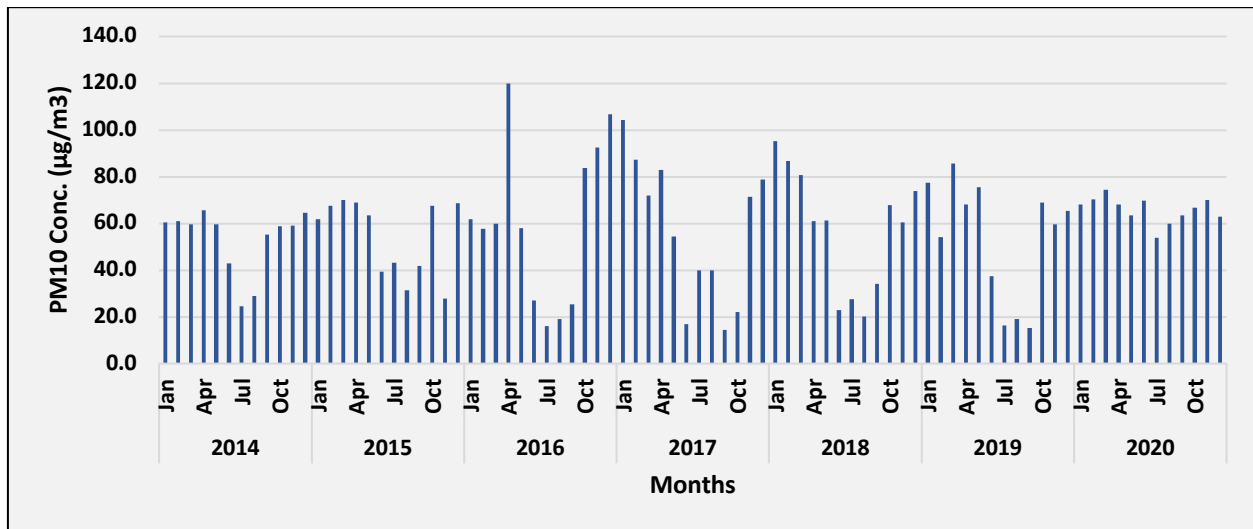


Fig. RAIC1: Time series of monthly average PM₁₀ ambient air concentration in Raichur TPP (Ambient I)

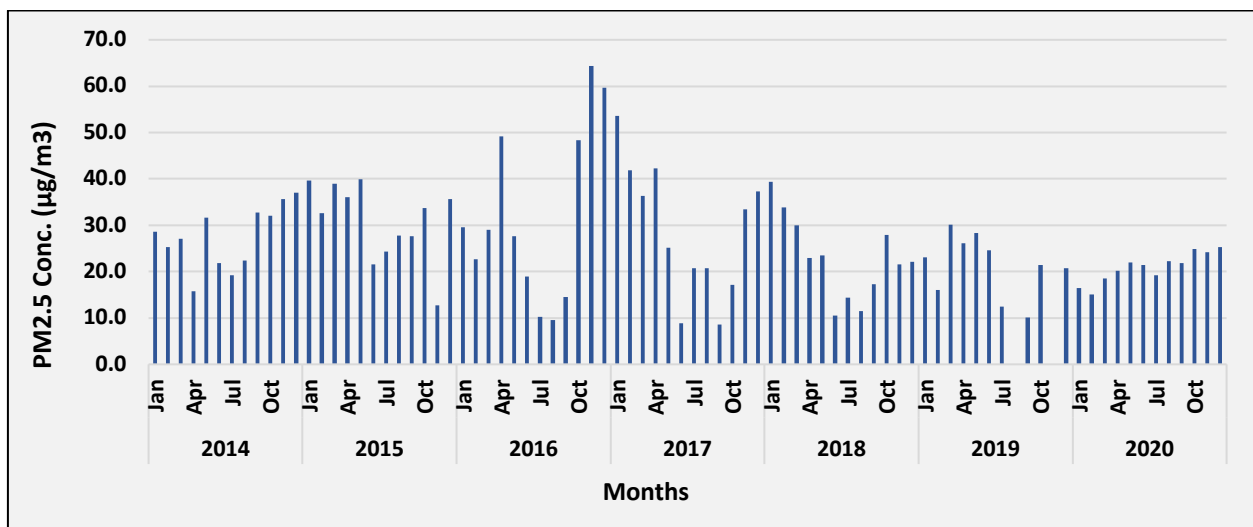


Fig. RAIC2: Time series of monthly average PM_{2.5} ambient air concentration in Raichur TPP (Ambient I)

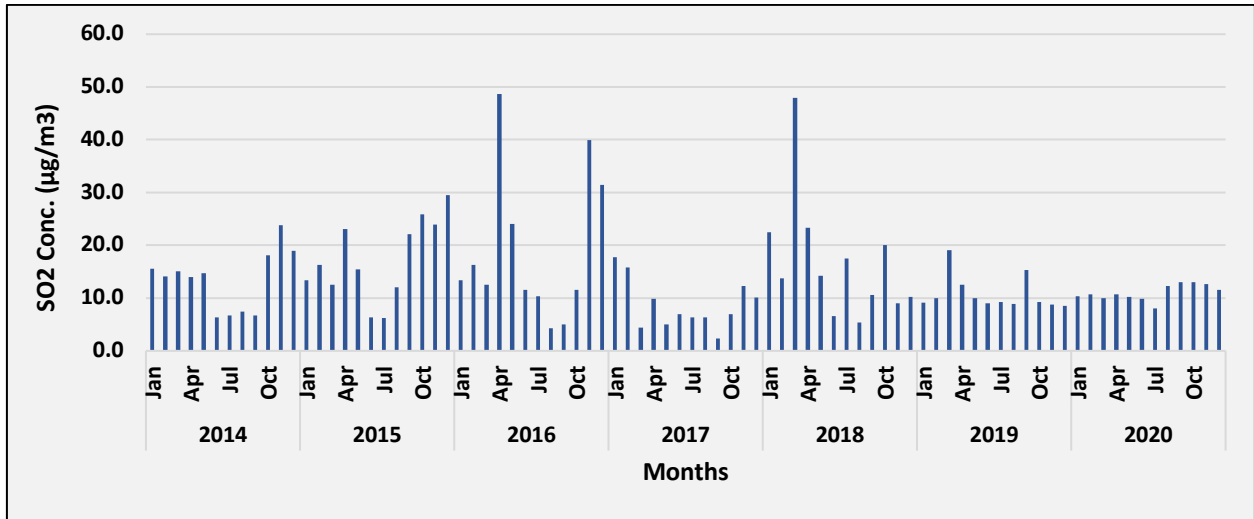


Fig. RAIC3: Time series of monthly average SO_2 ambient air concentration in Raichur TPP (Ambient 1)

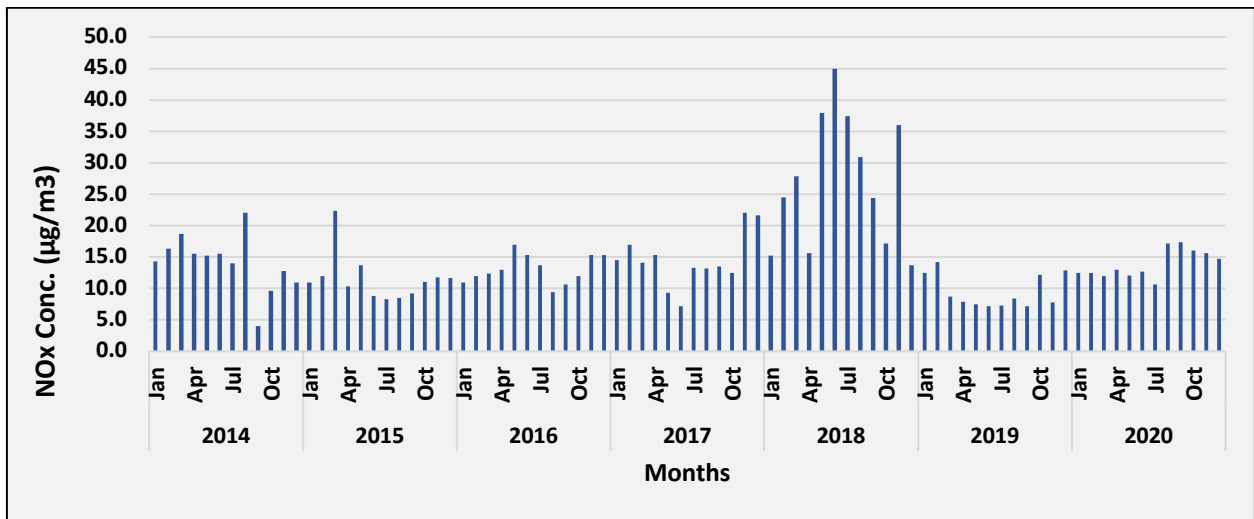


Fig. RAIC4: Time series of monthly average NO_x ambient air concentration in Raichur TPP (Ambient 1)

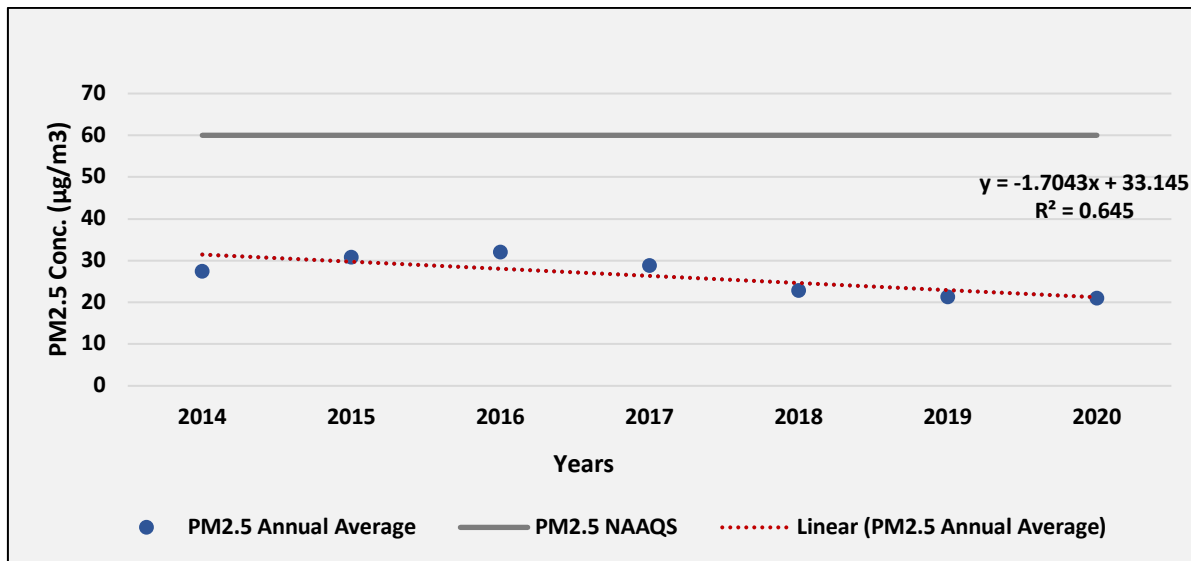


Fig. RAIC5: Trend of annual mean PM_{10} ambient air concentration in Raichur TPP (Ambient 1)

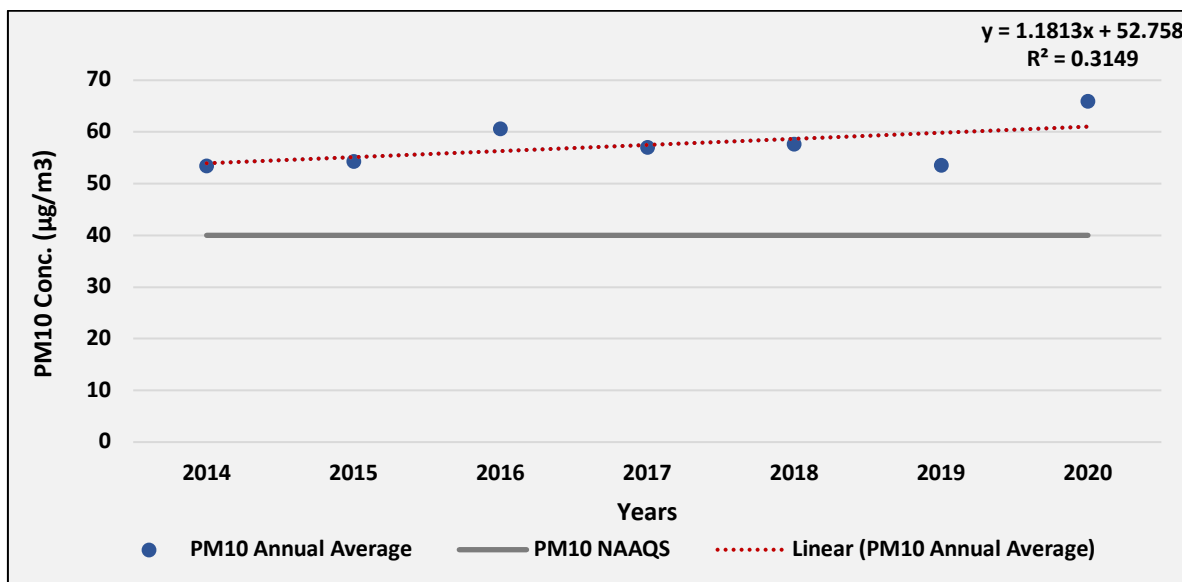


Fig. RAIC6: Trend of annual mean $PM_{2.5}$ ambient air concentration in Raichur TPP (Ambient 1)

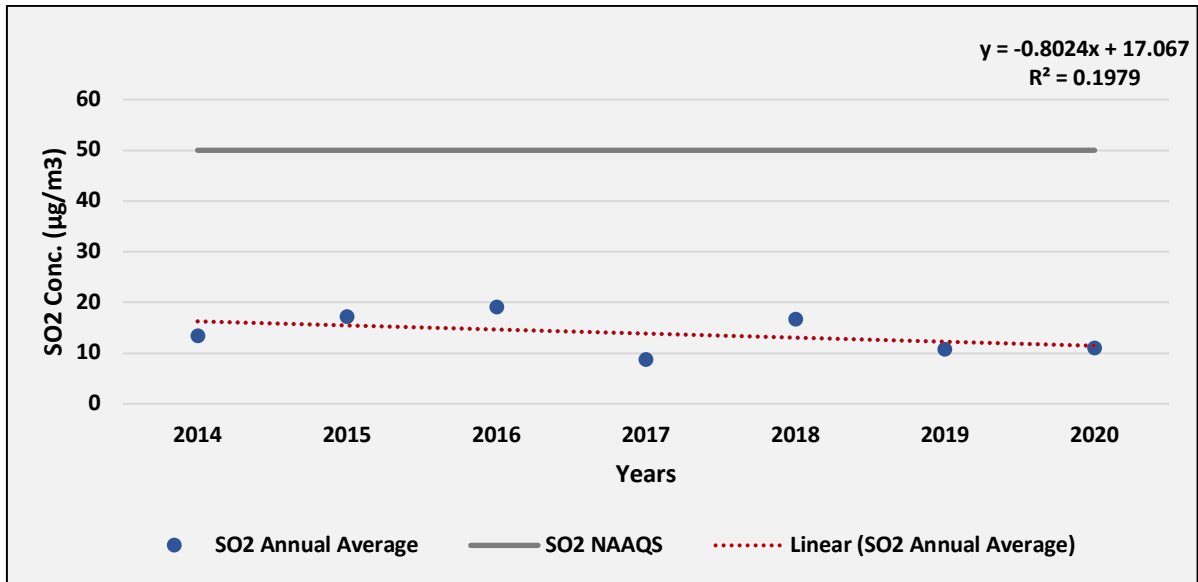


Fig. RAIC7: Trend of annual mean SO₂ ambient air concentration in Raichur TPP (Ambient 1)

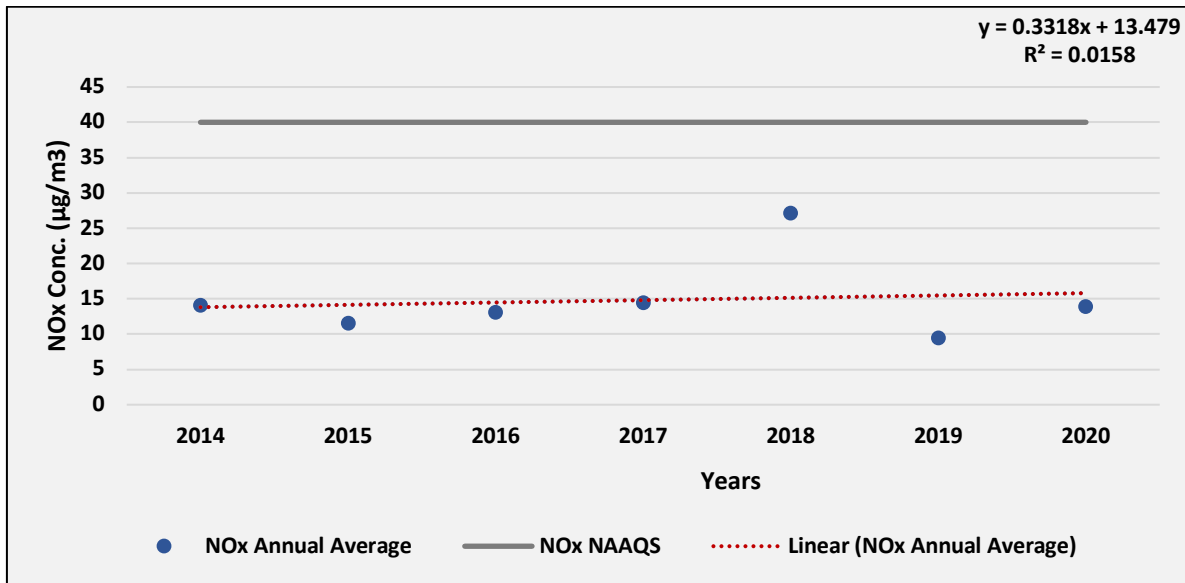


Fig. RAIC8: Trend of annual mean NO_x ambient air concentration in Raichur TPP (Ambient 1)

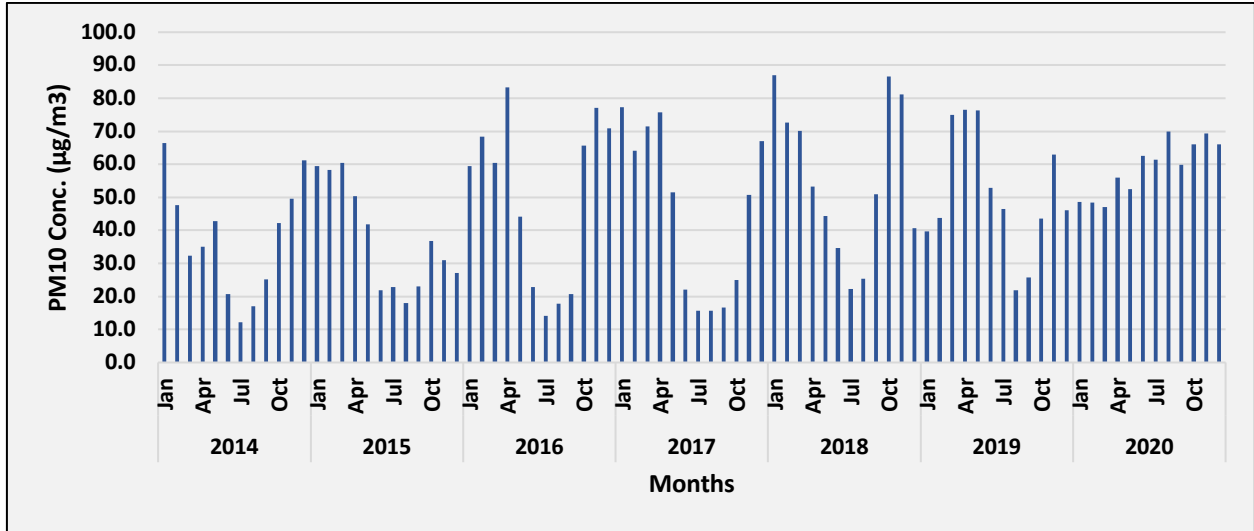


Fig. RAIC9: Time series of monthly average PM_{10} ambient air concentration in Raichur TPP (Ambient 2)

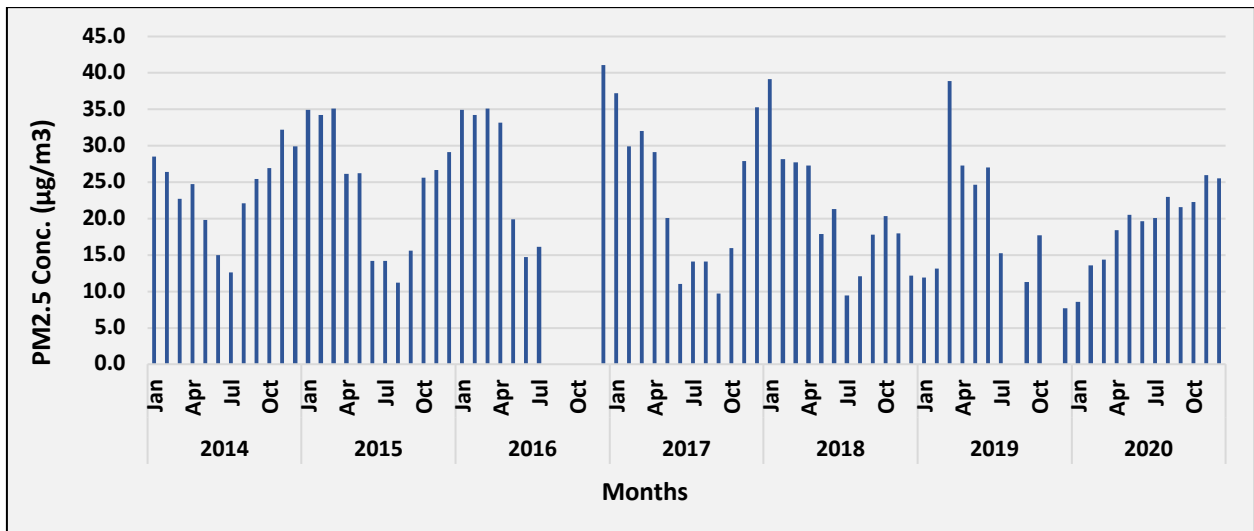


Fig. RAIC10: Time series of monthly average $PM_{2.5}$ ambient air concentration in Raichur TPP (Ambient 2)

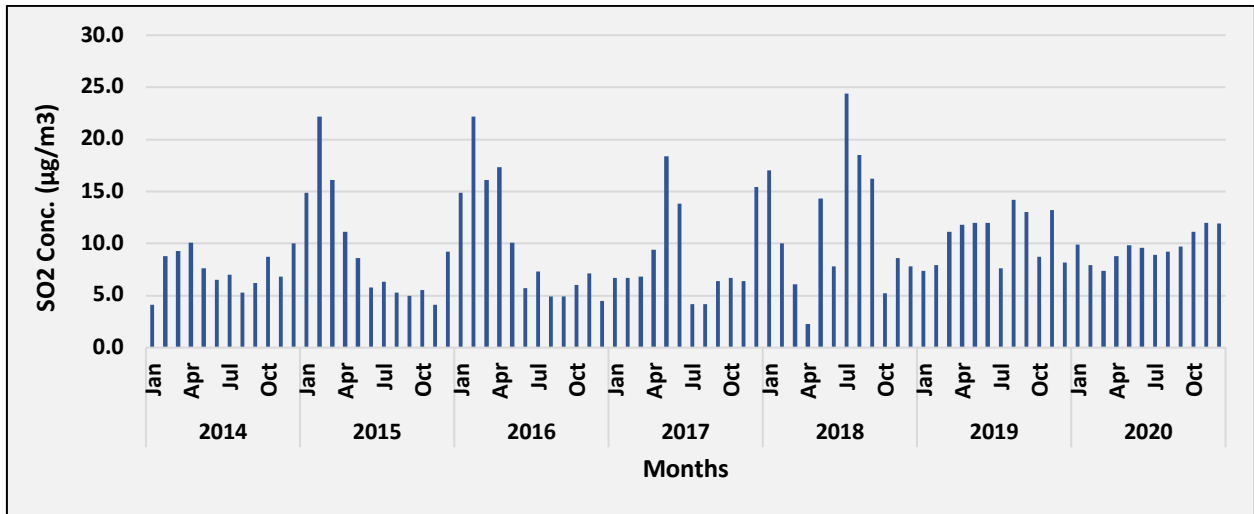


Fig. RAIC11: Time series of monthly average SO_2 ambient air concentration in Raichur TPP (Ambient 2)

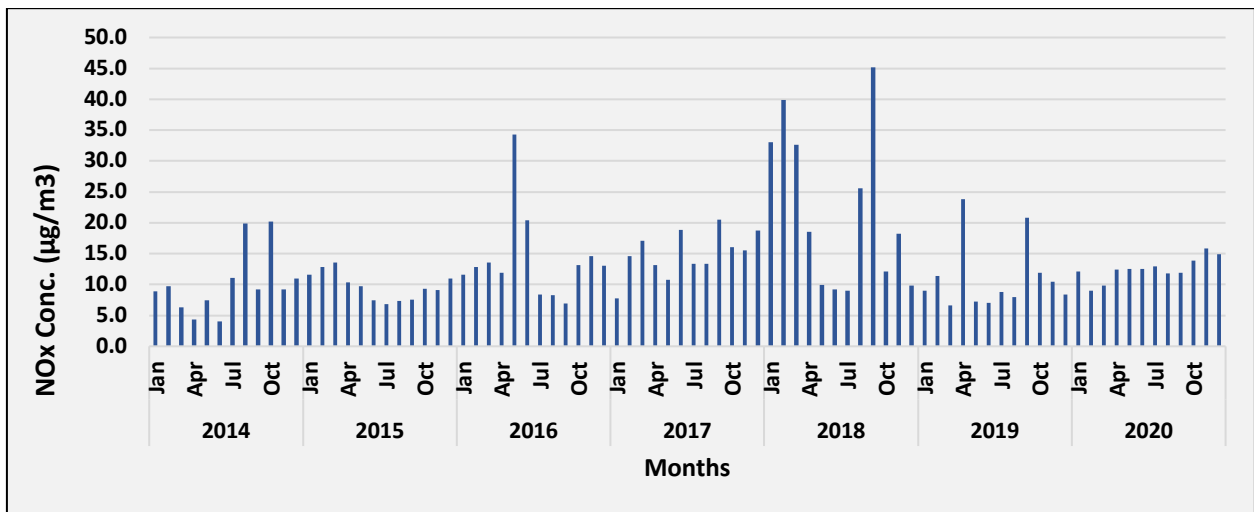


Fig. RAIC12: Time series of monthly average NO_x ambient air concentration in Raichur TPP (Ambient 2)

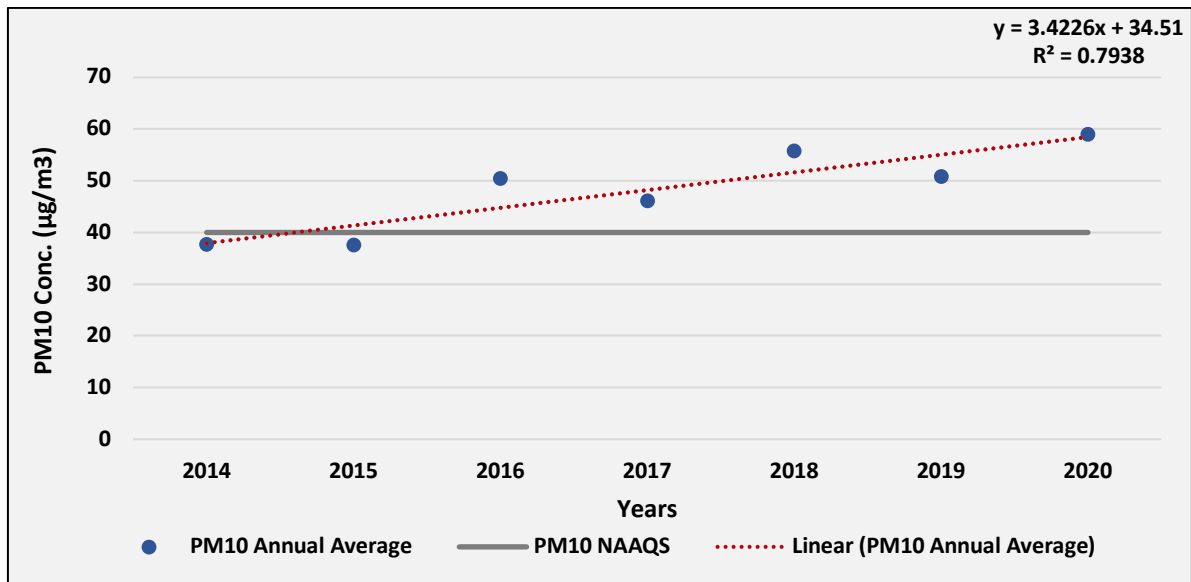


Fig. RAIC13: Trend of annual mean PM_{10} ambient air concentration in Raichur TPP (Ambient 2)

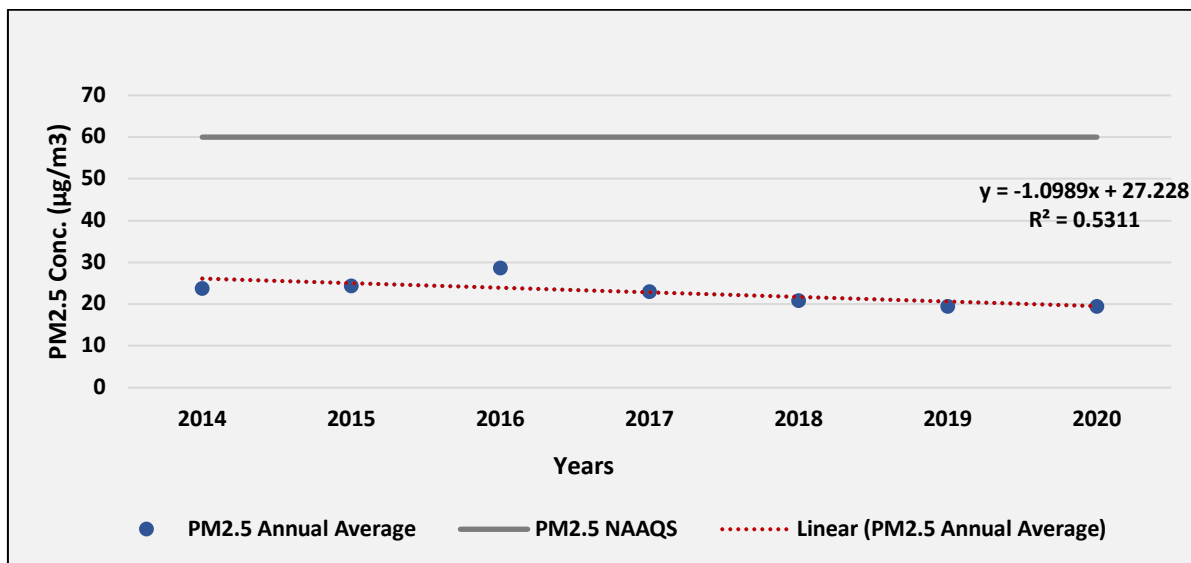


Fig. RAIC14: Trend of annual mean $PM_{2.5}$ ambient air concentration in Raichur TPP (Ambient 2)

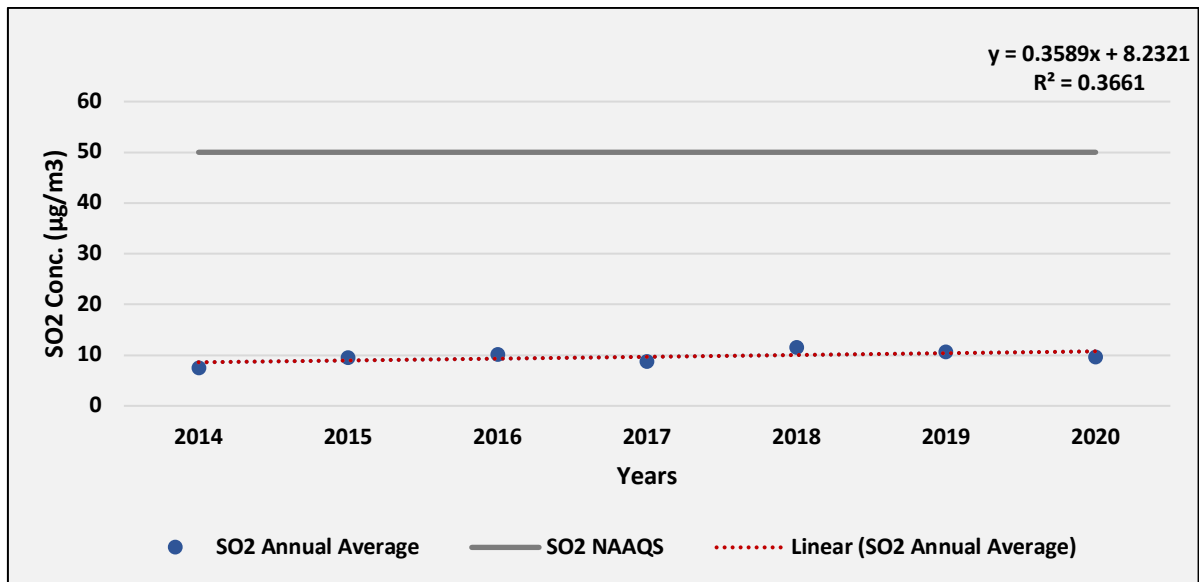


Fig. RAIC15: Trend of annual mean SO₂ ambient air concentration in Raichur TPP (Ambient 2)

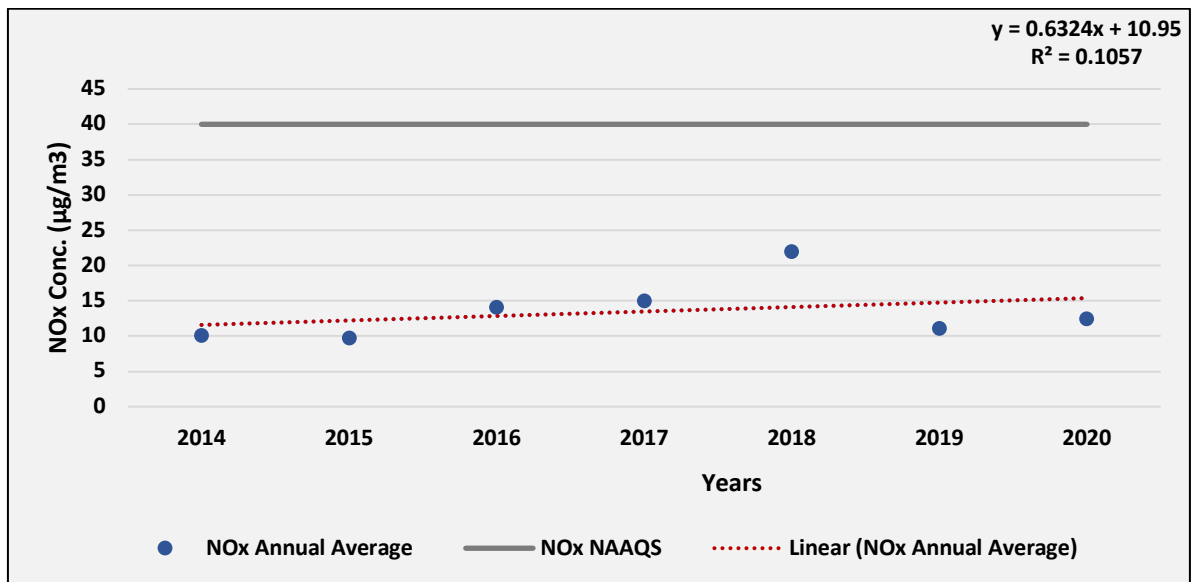


Fig. RAIC16: Trend of annual mean NO_x ambient air concentration in Raichur TPP (Ambient 2)

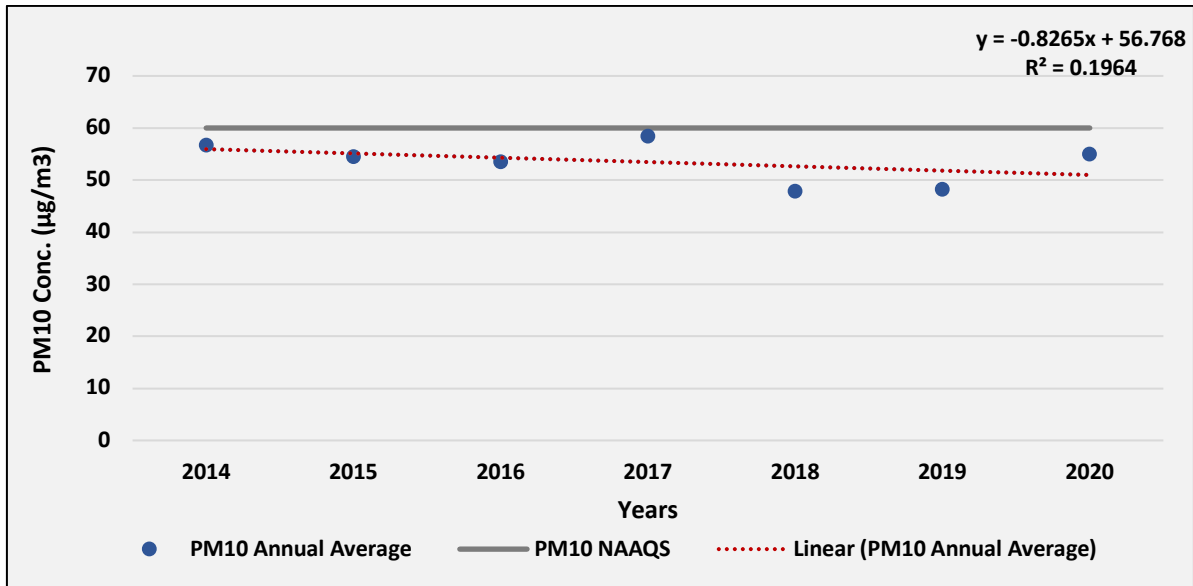


Fig. RAIC17: Time series of monthly average PM_{10} ambient air concentration in Raichur TPP (Ambient 3)

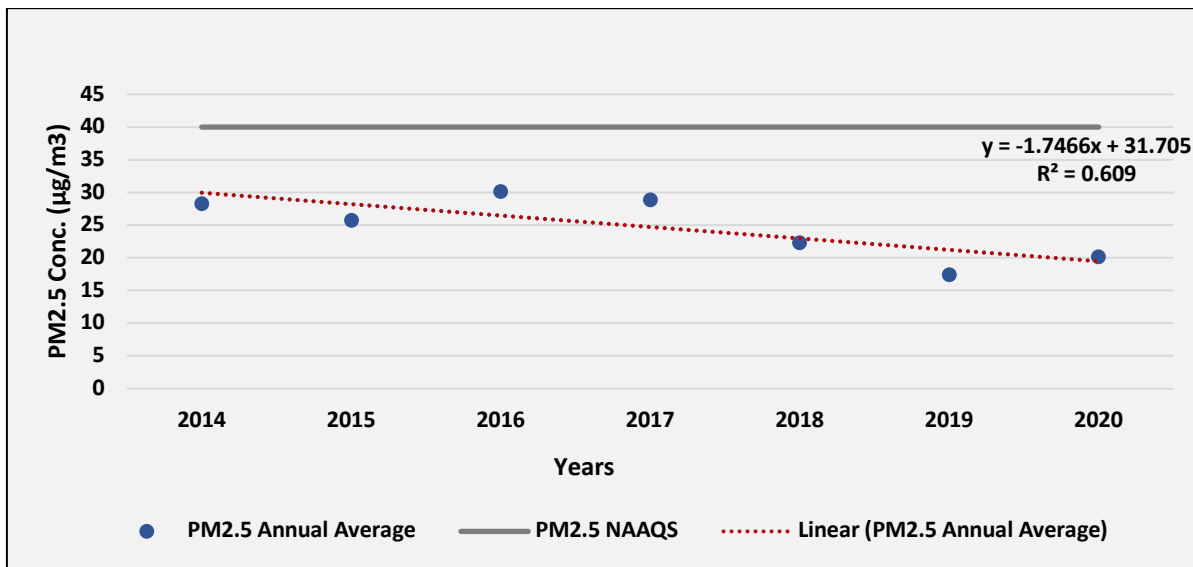


Fig. RAIC18: Time series of monthly average $PM_{2.5}$ ambient air concentration in Raichur TPP (Ambient 3)

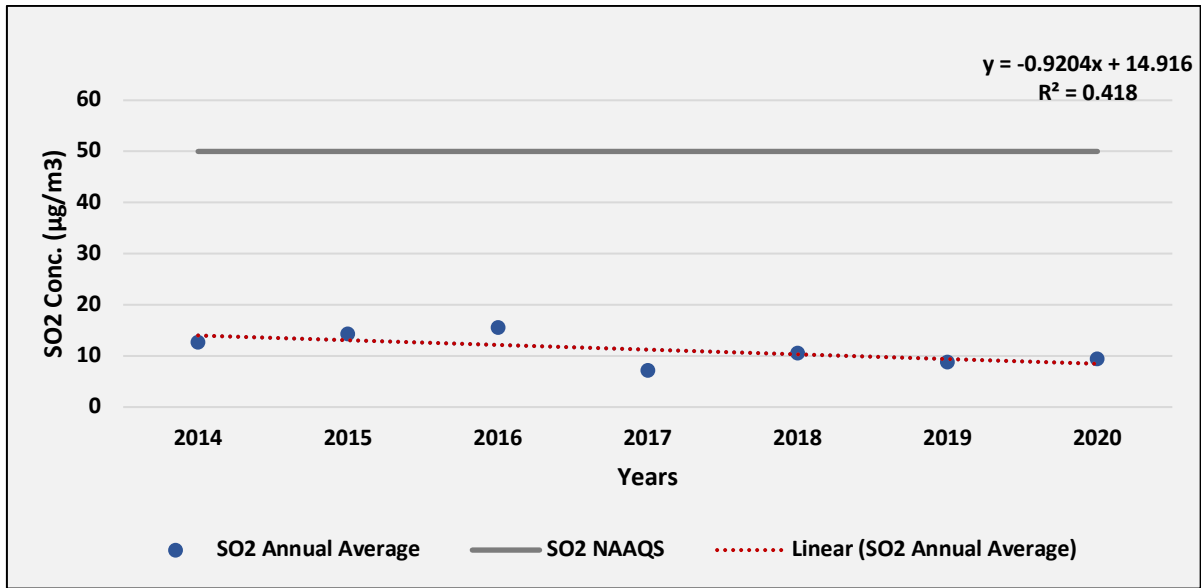


Fig. RAIC19: Time series of monthly average SO_2 ambient air concentration in Raichur TPP (Ambient 3)

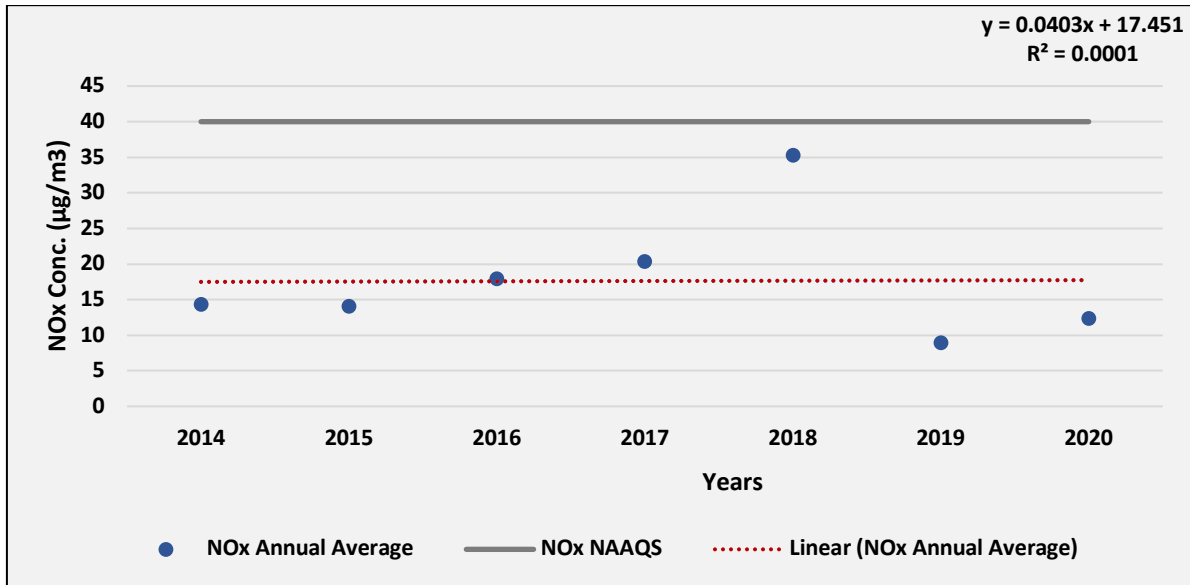


Fig. RAIC20: Time series of monthly average NO_x ambient air concentration in Raichur TPP (Ambient 3)

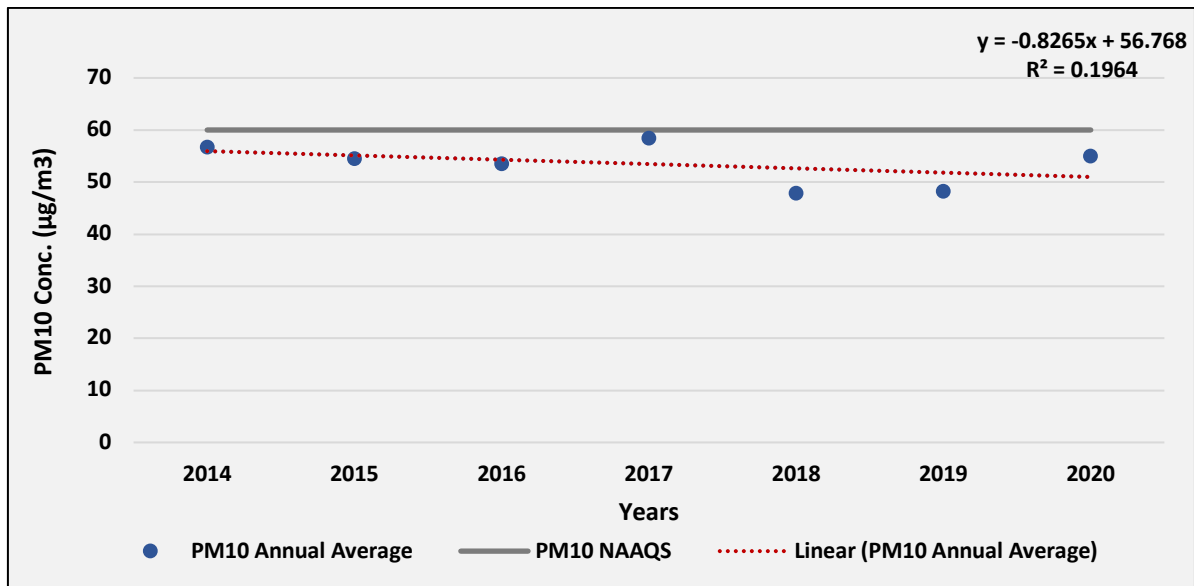


Fig. RAIC21: Trend of annual mean PM_{10} ambient air concentration in Raichur TPP (Ambient 3)

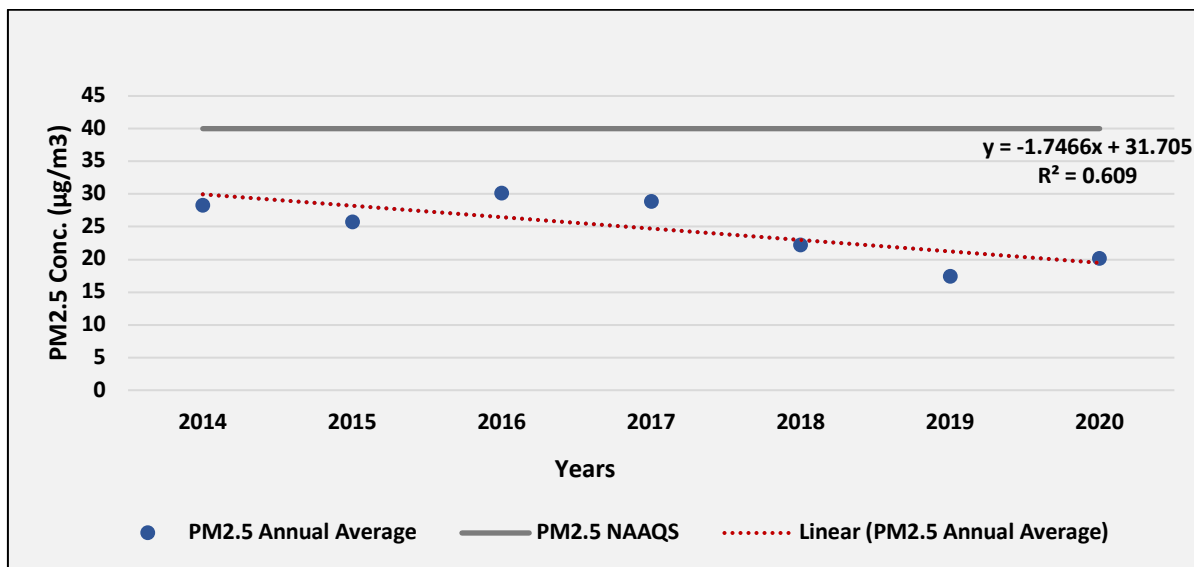


Fig. RAIC22: Trend of annual mean $PM_{2.5}$ ambient air concentration in Raichur TPP (Ambient 3)

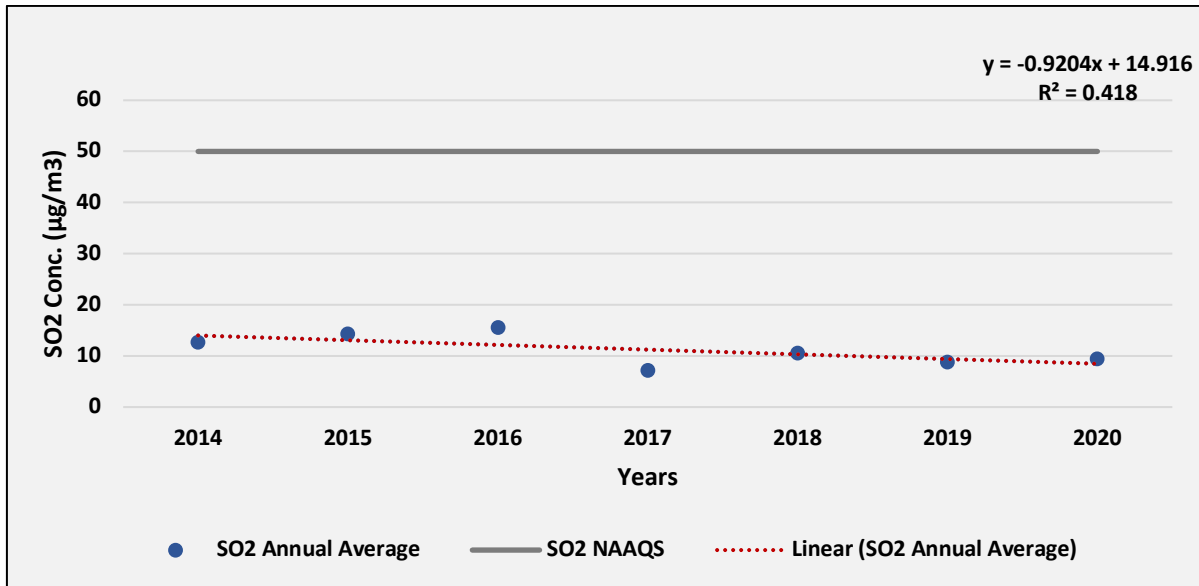


Fig. RAIC23: Trend of annual mean SO₂ ambient air concentration in Raichur TPP (Ambient 3)

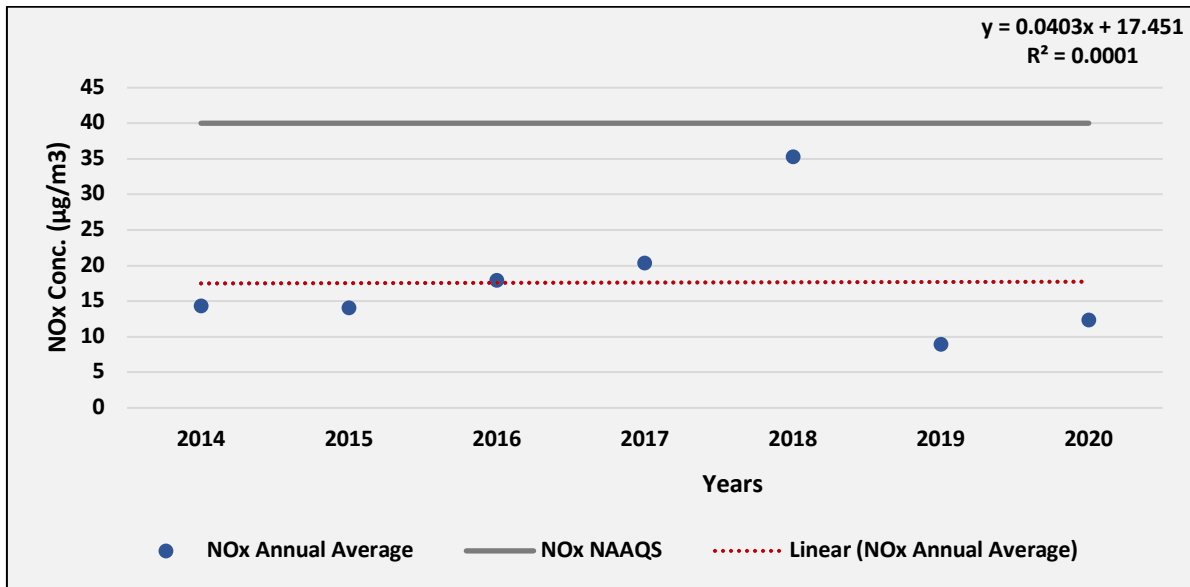


Fig. RAIC24: Trend of annual mean NO_x ambient air concentration in Raichur TPP (Ambient 3)

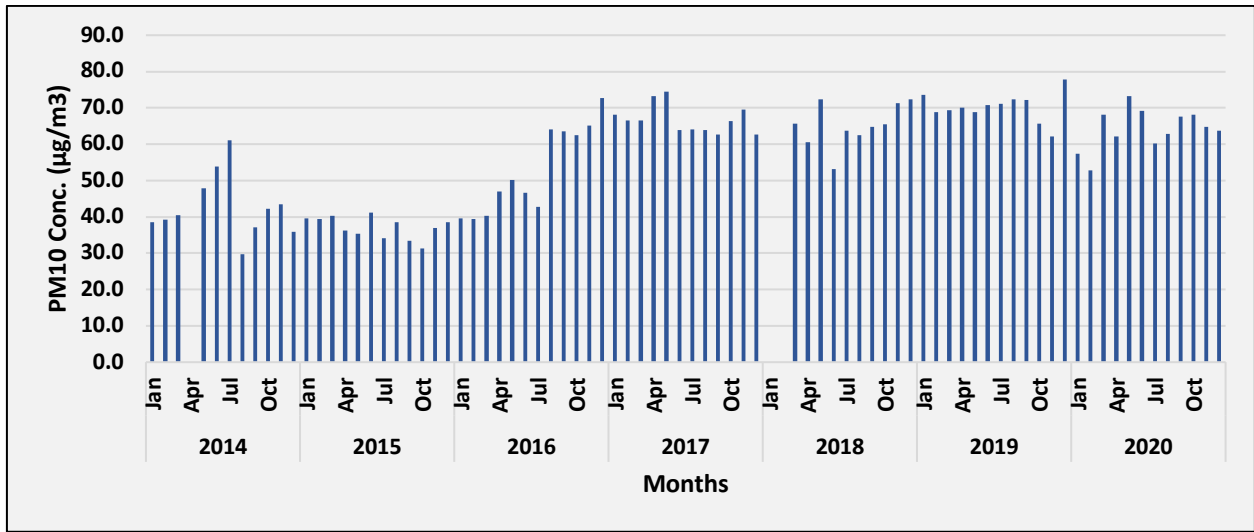


Fig. RAIC25: Time series of monthly average PM_{10} ambient air concentration in Raichur TPP (Ambient 4)

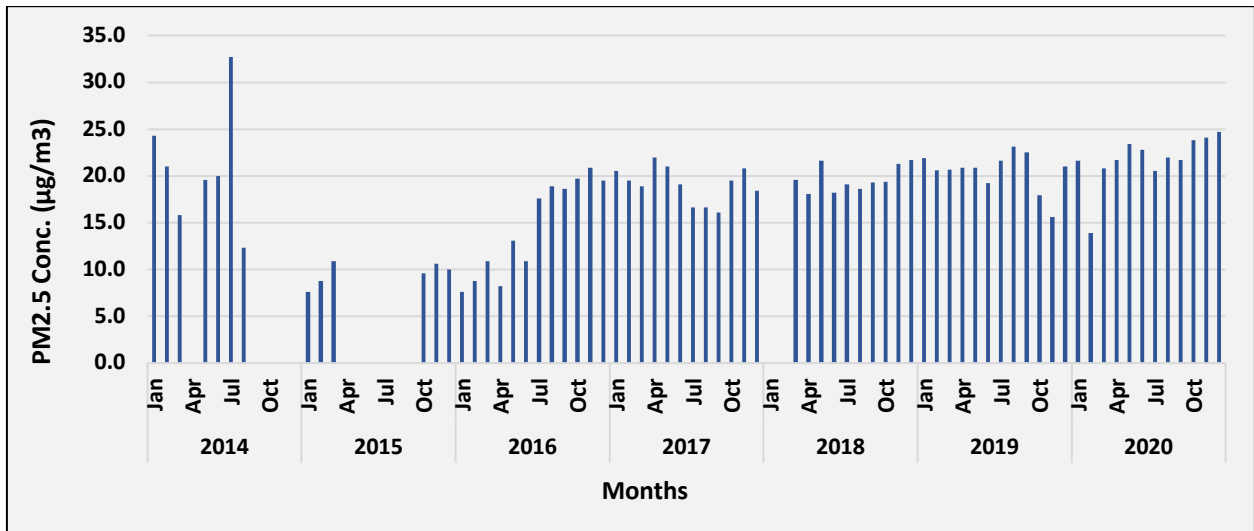


Fig. RAIC26: Time series of monthly average $PM_{2.5}$ ambient air concentration in Raichur TPP (Ambient 4)

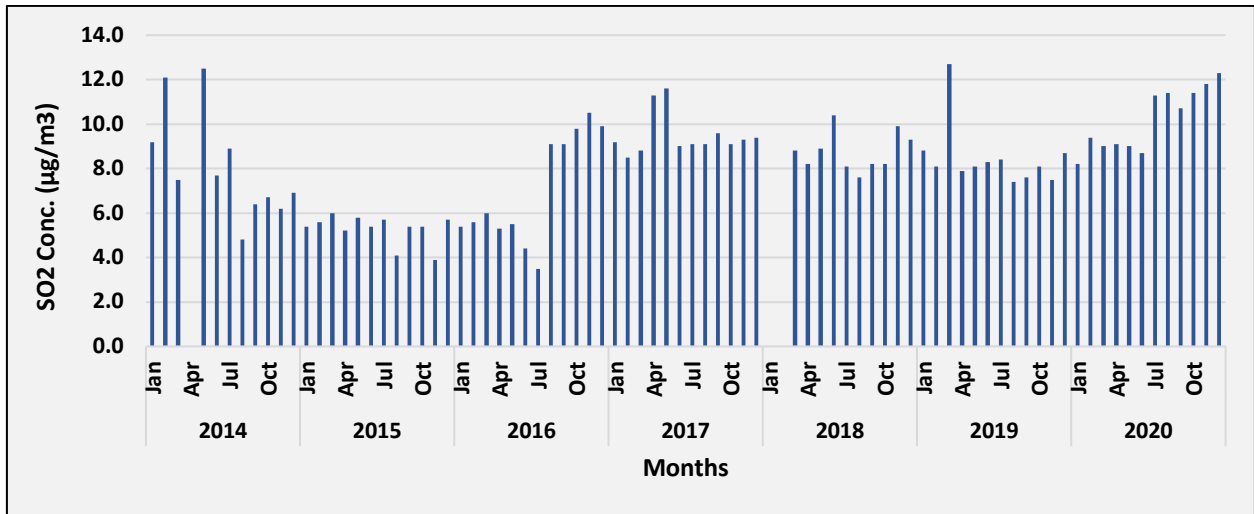


Fig. RAIC27: Time series of monthly average SO_2 ambient air concentration in Raichur TPP (Ambient 4)

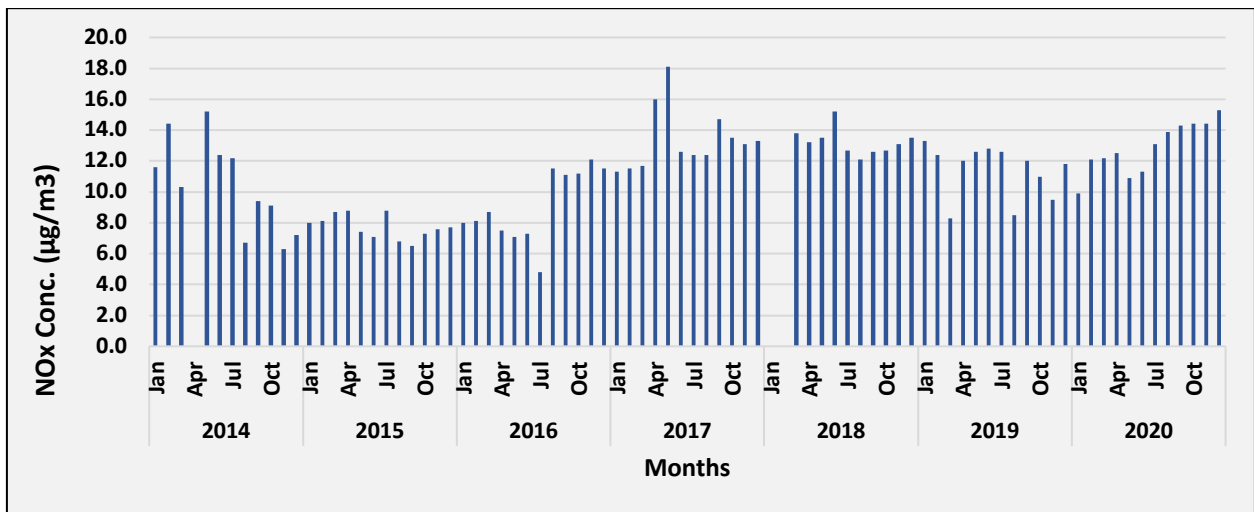


Fig. RAIC28: Time series of monthly average NO_x ambient air concentration in Raichur TPP (Ambient 4)

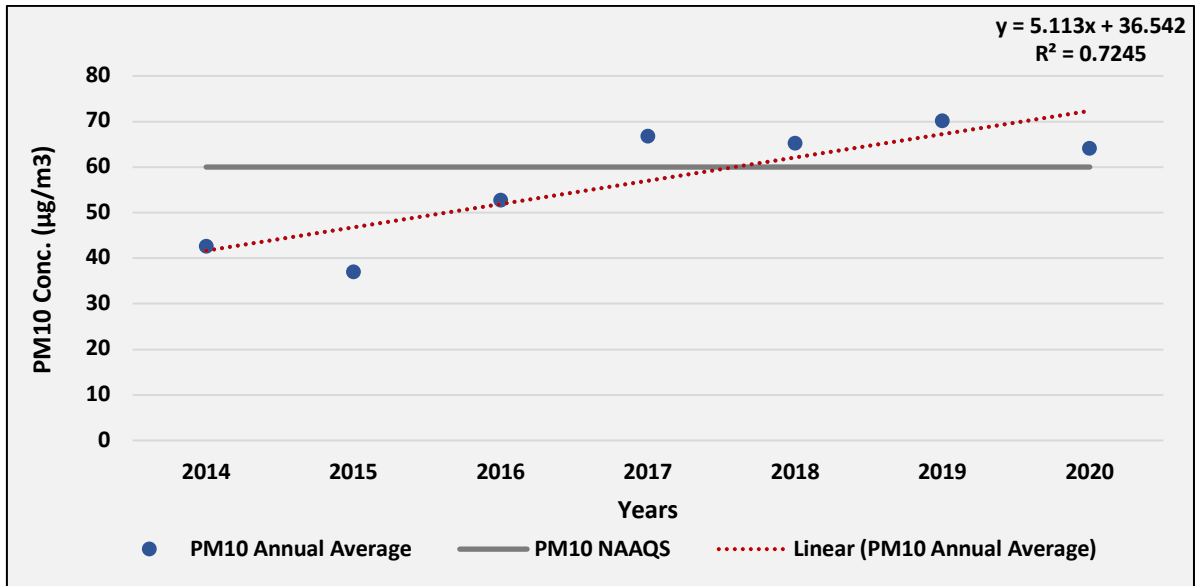


Fig. RAIC29: Trend of annual mean PM_{10} ambient air concentration in Raichur TPP (Ambient 4)

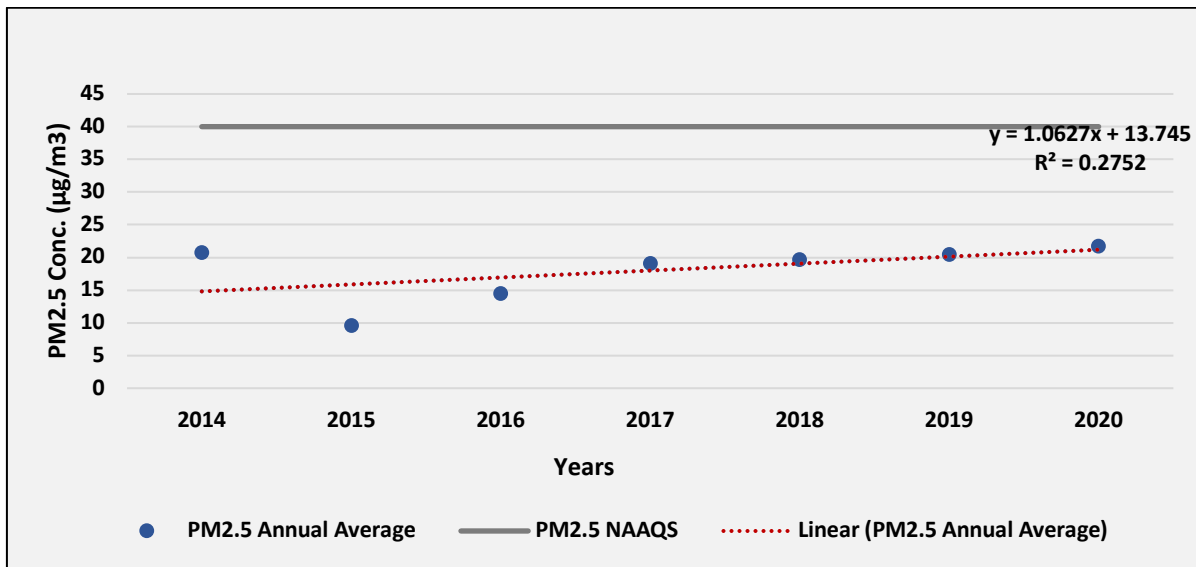


Fig. RAIC30: Trend of annual mean $PM_{2.5}$ ambient air concentration in Raichur TPP (Ambient 4)

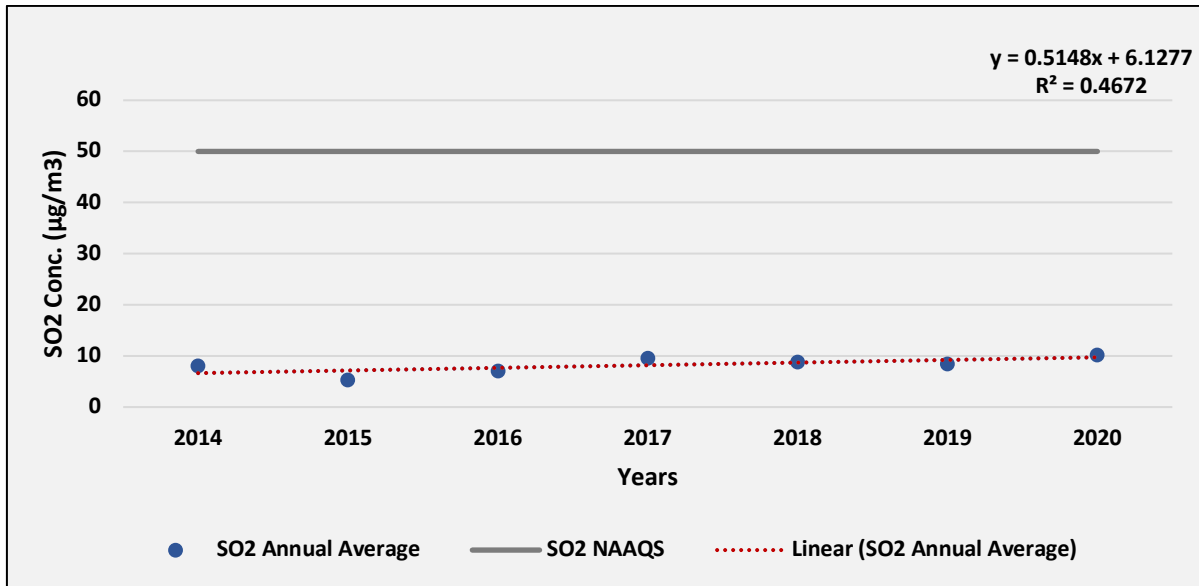


Fig. RAIC31: Trend of annual mean SO₂ ambient air concentration in Raichur TPP (Ambient 4)

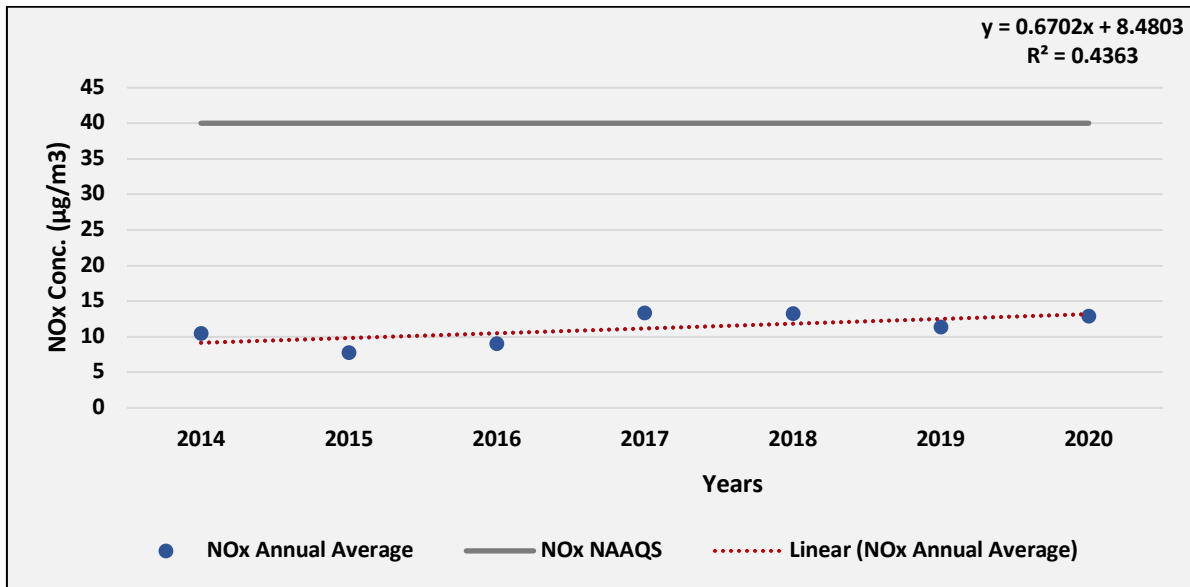


Fig. RAIC32: Trend of annual mean NO_x ambient air concentration in Raichur TPP (Ambient 4)

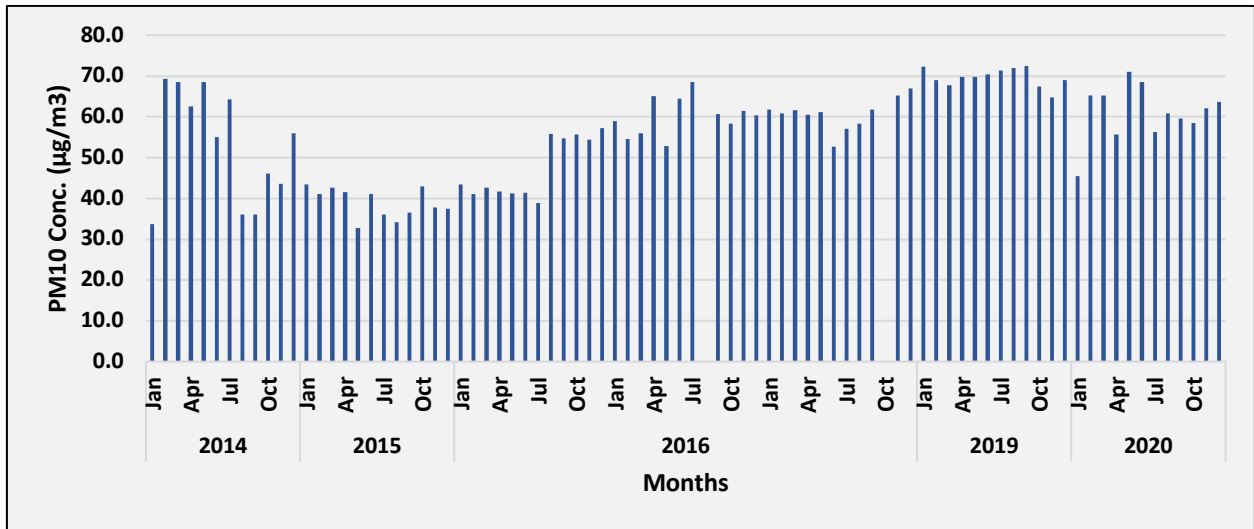


Fig. RAIC33: Time series of monthly average PM_{10} ambient air concentration in Raichur TPP (Ambient 5)

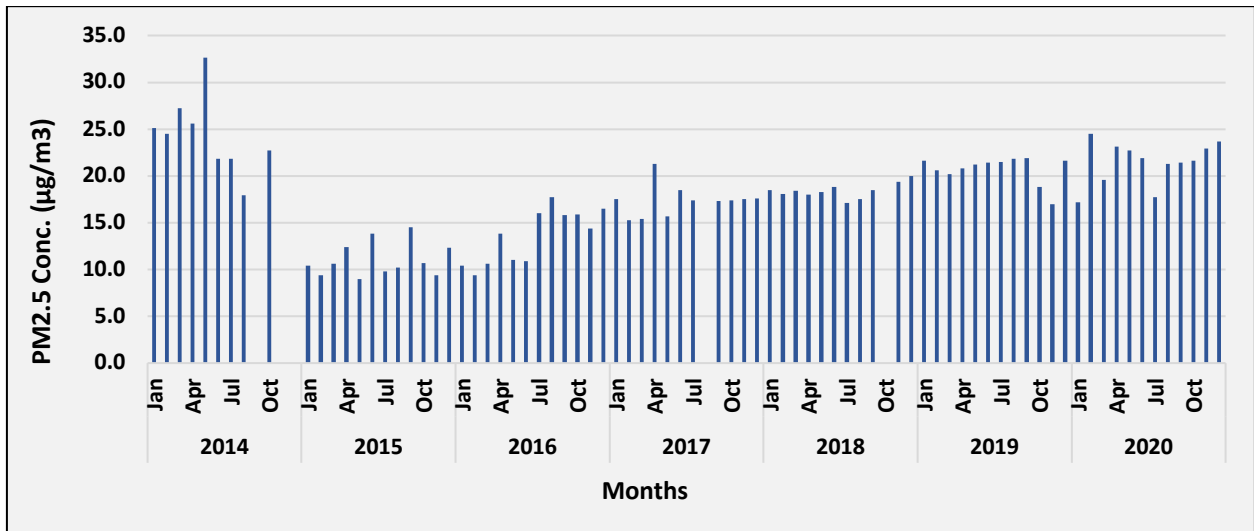


Fig. RAIC34: Time series of monthly average $PM_{2.5}$ ambient air concentration in Raichur TPP (Ambient 5)

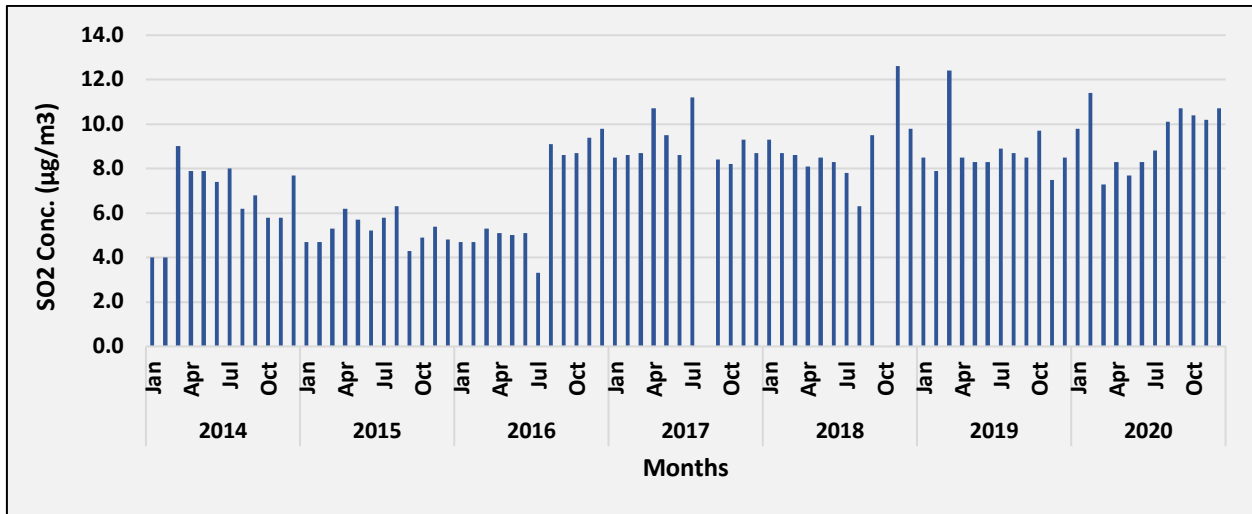


Fig. RAIC35: Time series of monthly average SO_2 ambient air concentration in Raichur TPP (Ambient 5)

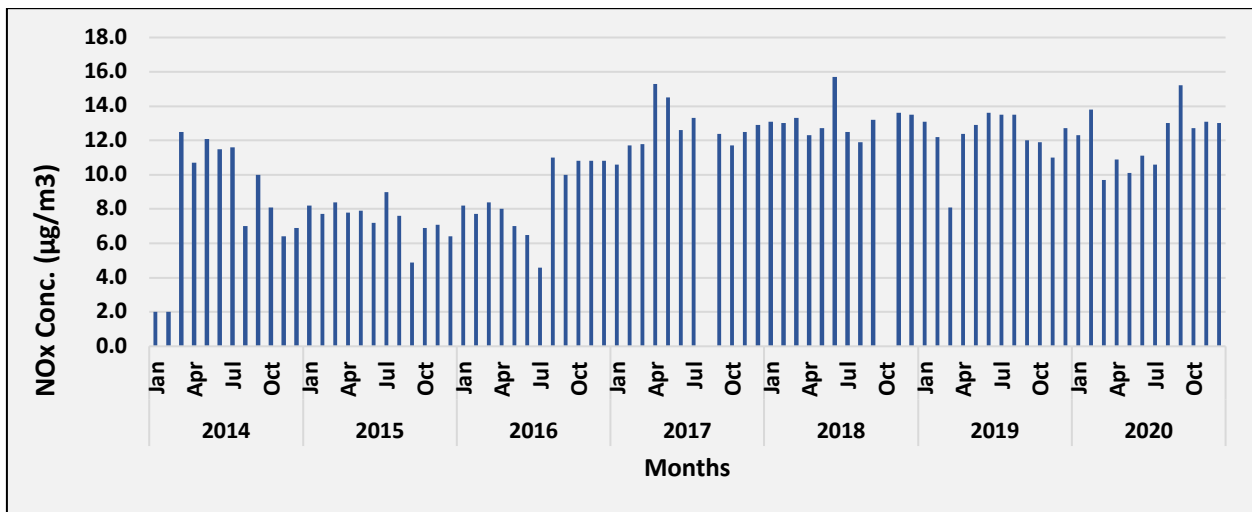


Fig. RAIC36: Time series of monthly average NO_x ambient air concentration in Raichur TPP (Ambient 5)

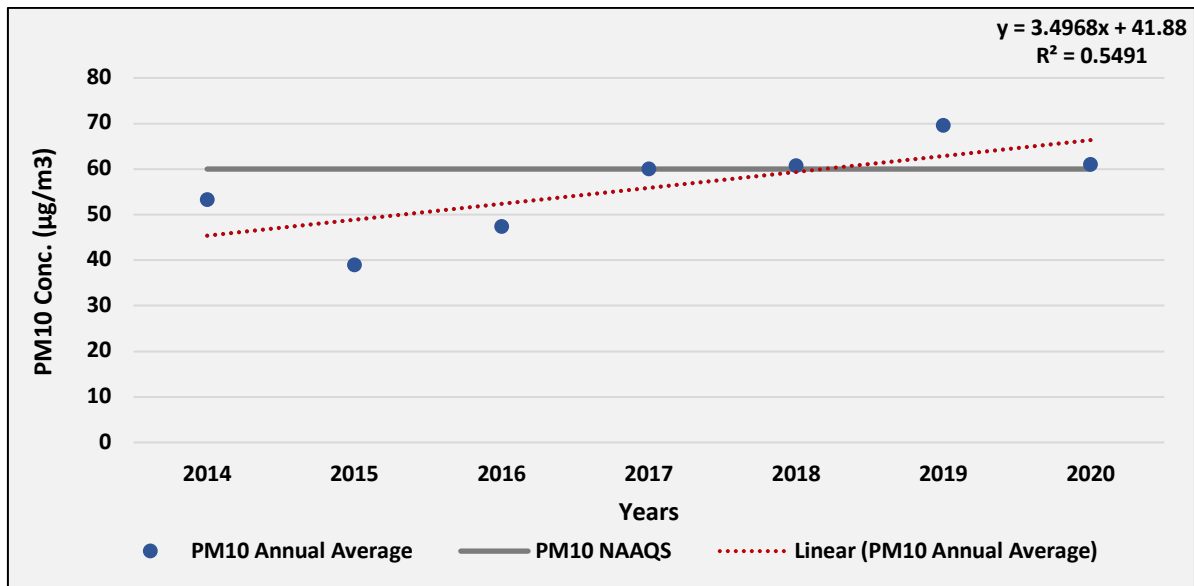


Fig. RAIC37: Trend of annual mean PM_{10} ambient air concentration in Raichur TPP (Ambient 5)

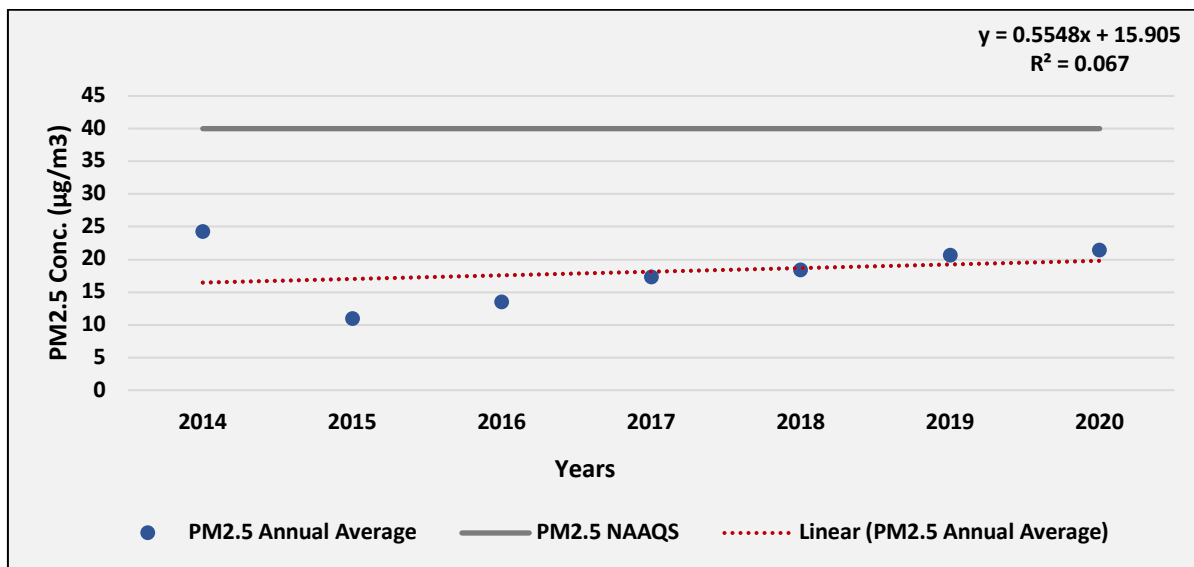


Fig. RAIC38: Trend of annual mean $PM_{2.5}$ ambient air concentration in Raichur TPP (Ambient 5)

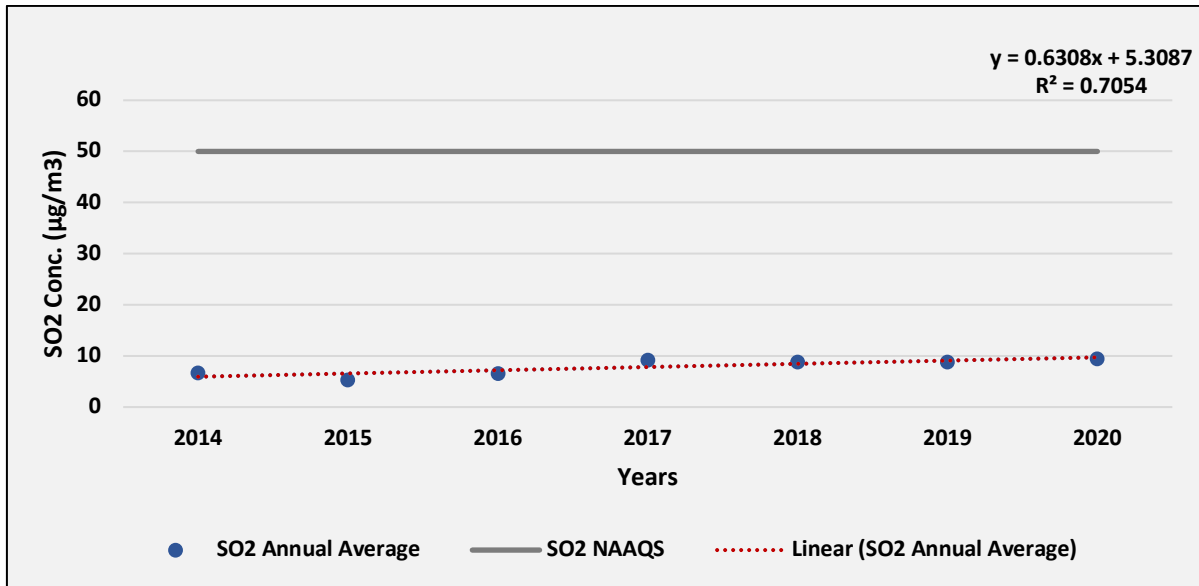


Fig. RAIC39: Trend of annual mean SO₂ ambient air concentration in Raichur TPP (Ambient 5)

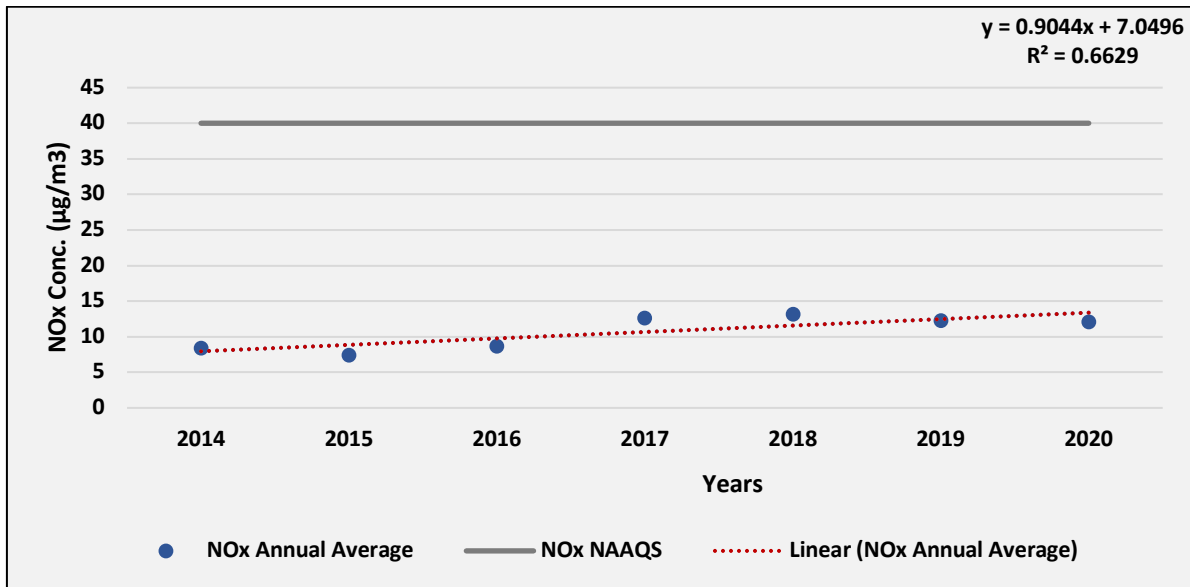


Fig. RAIC40: Trend of annual mean NO_x ambient air concentration in Raichur TPP (Ambient 5)

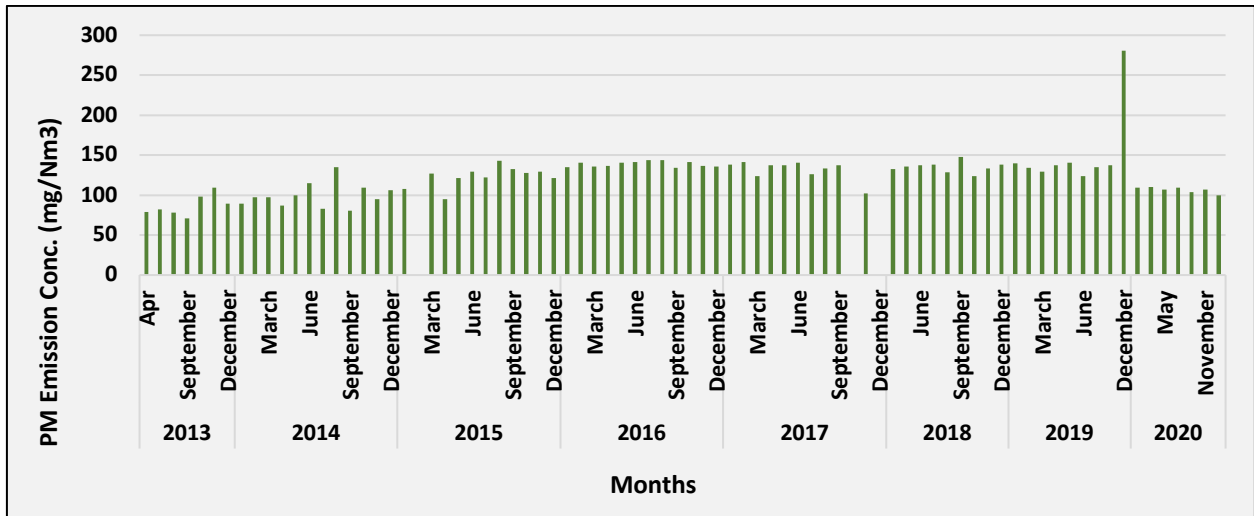


Fig. RAIC41: Time series of monthly average PM Emission concentration in Raichur TPP (Unit 1)

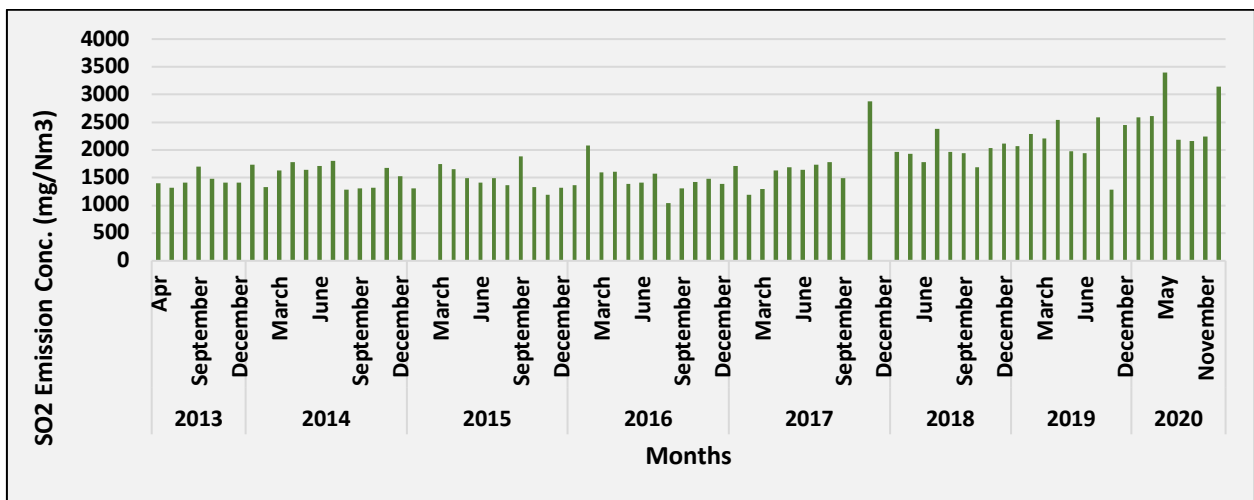


Fig. RAIC42: Time series of monthly average SO₂ Emission concentration in Raichur TPP (Unit 1)

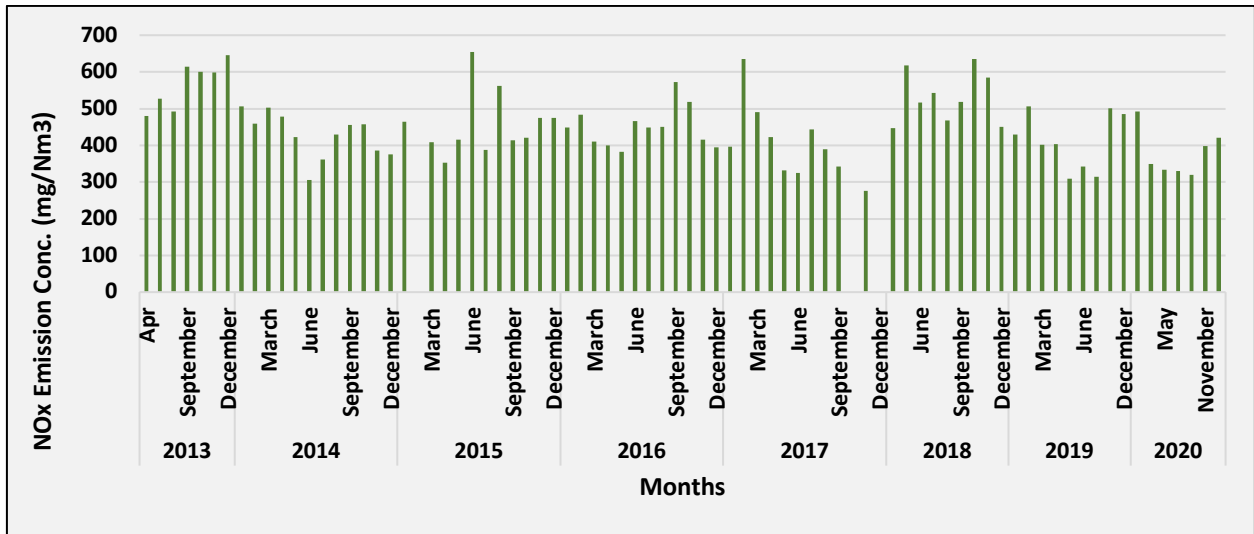


Fig. RAIC43: Time series of monthly average NO_x Emission concentration in Raichur TPP (Unit 1)

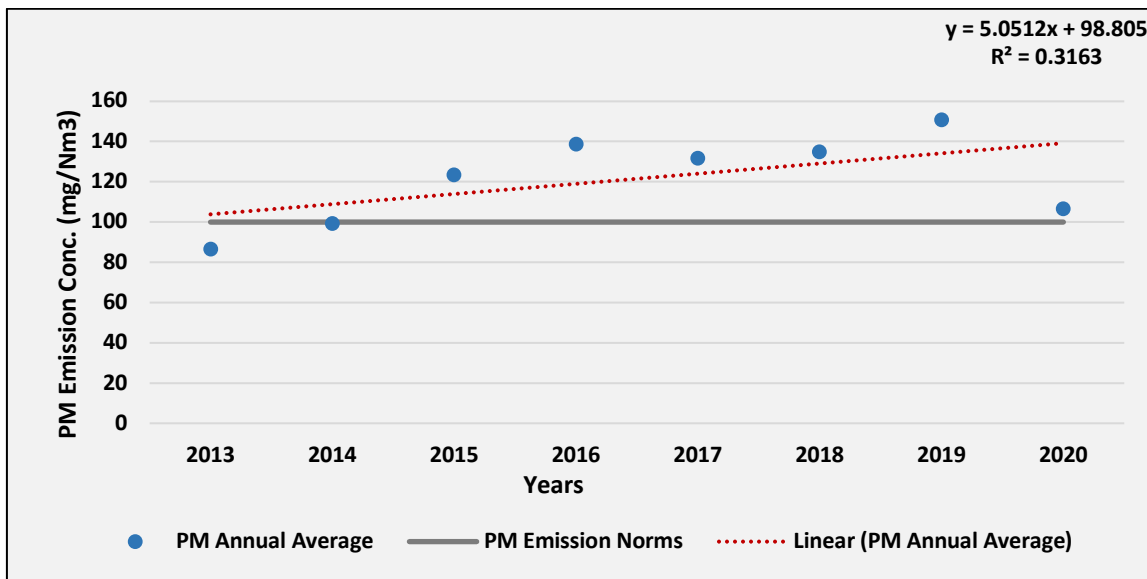


Fig. RAIC44: Trend of annual mean PM Emission air concentration in Raichur TPP (Unit 1)

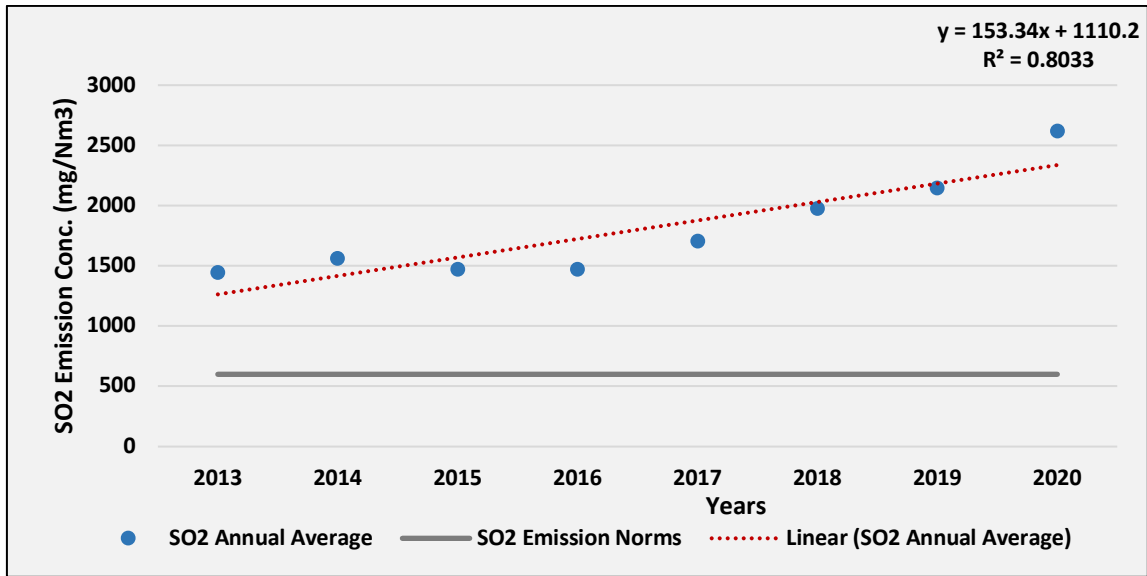


Fig. RAIC45: Trend of annual mean SO₂ Emission air concentration in Raichur TPP (Unit 1)

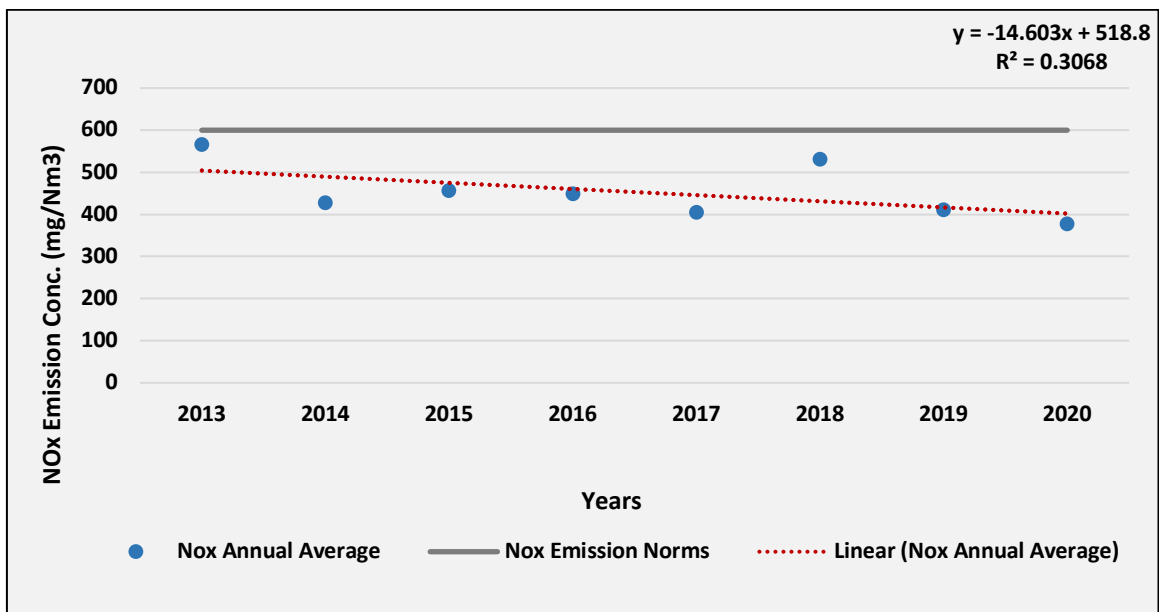


Fig. RAIC46: Trend of annual mean NO_x Emission air concentration in Raichur TPP (Unit 1)

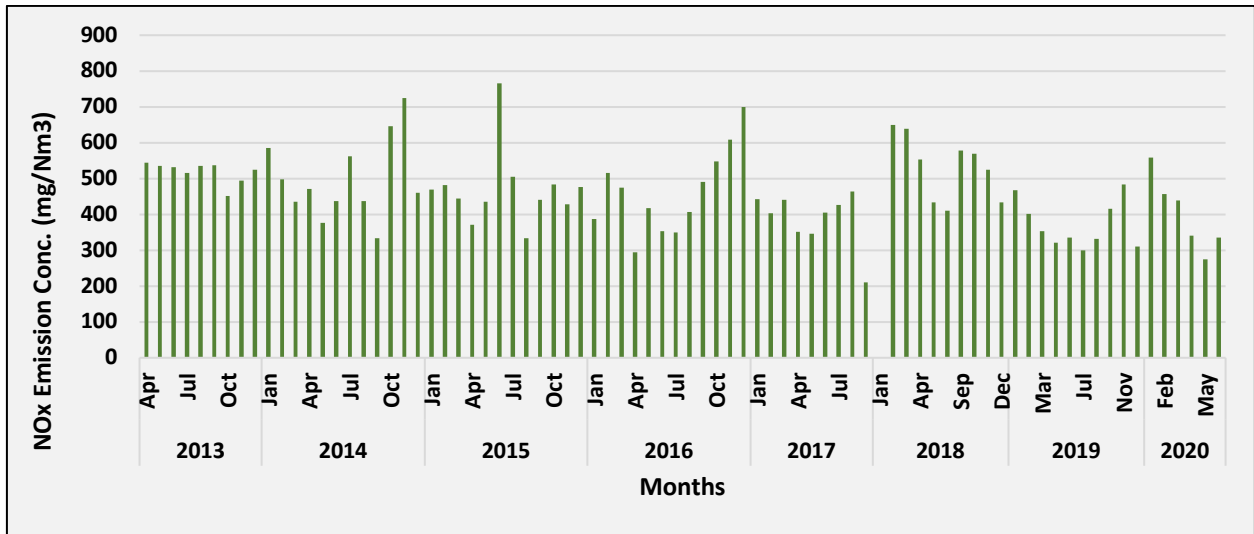


Fig. RAIC49: Time series of monthly average NO_x Emission concentration in Raichur TPP (Unit 2)

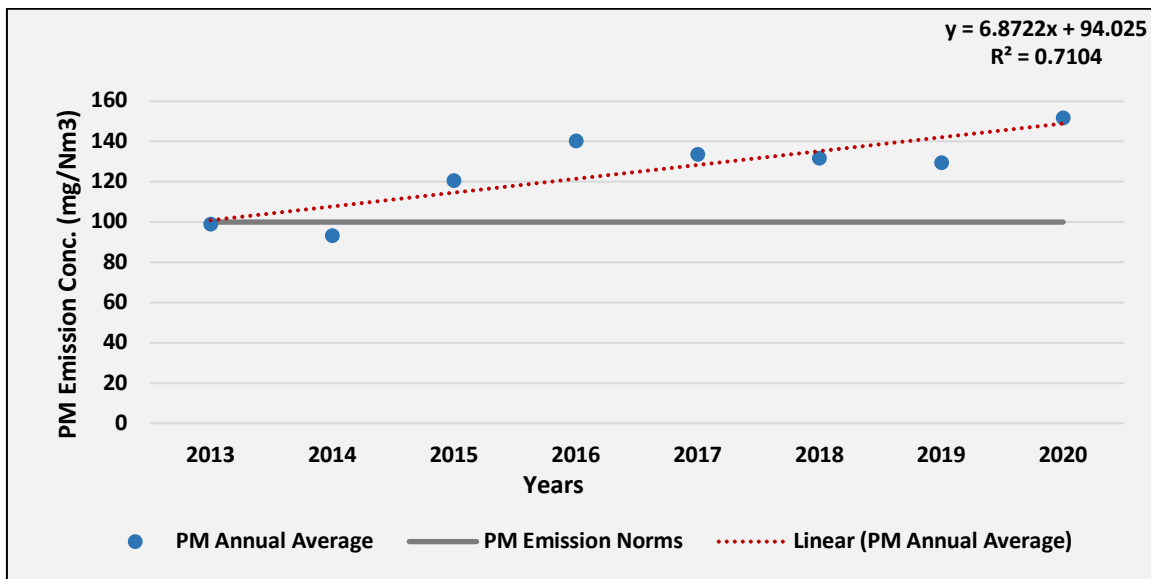


Fig. RAIC50: Trend of annual mean PM Emission air concentration in Raichur TPP (Unit 2)

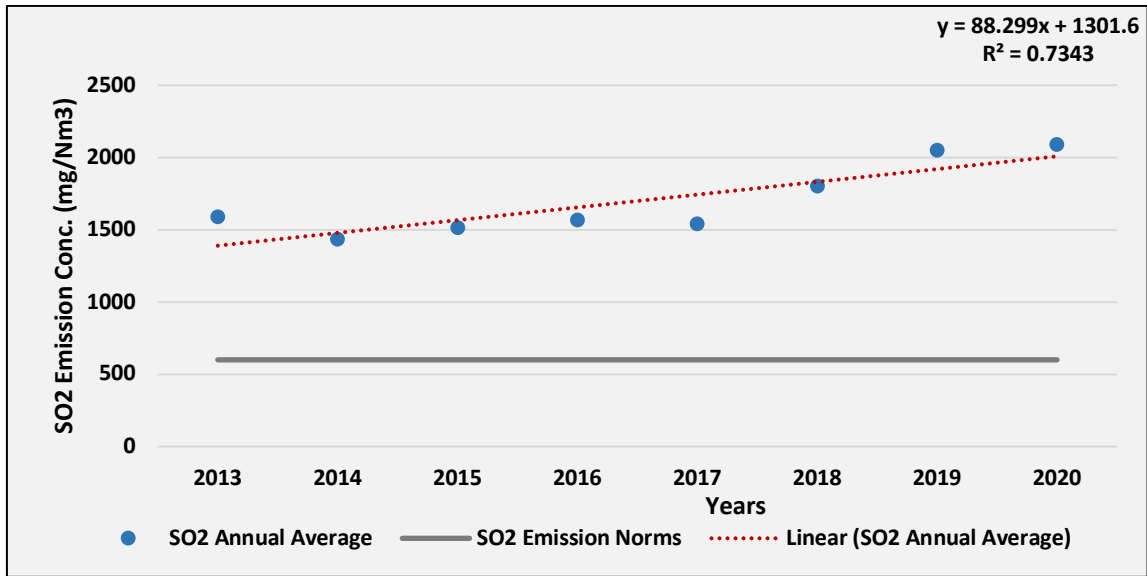


Fig. RAIC51: Trend of annual mean SO₂ Emission air concentration in Raichur TPP (Unit 2)

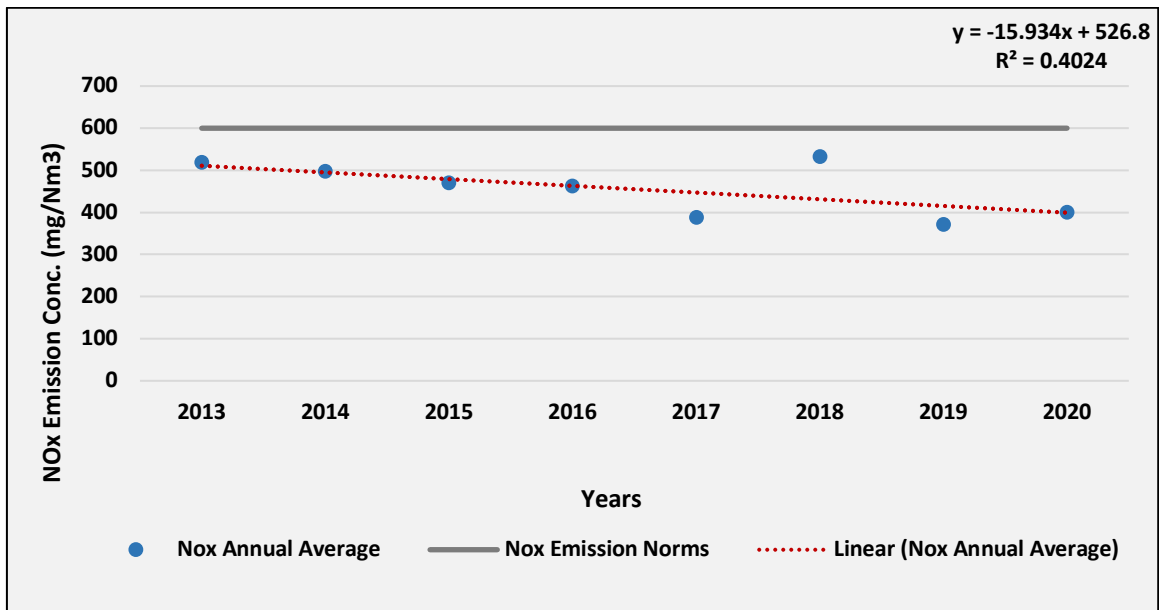


Fig. RAIC52: Trend of annual mean NO_x Emission air concentration in Raichur TPP (Unit 2)

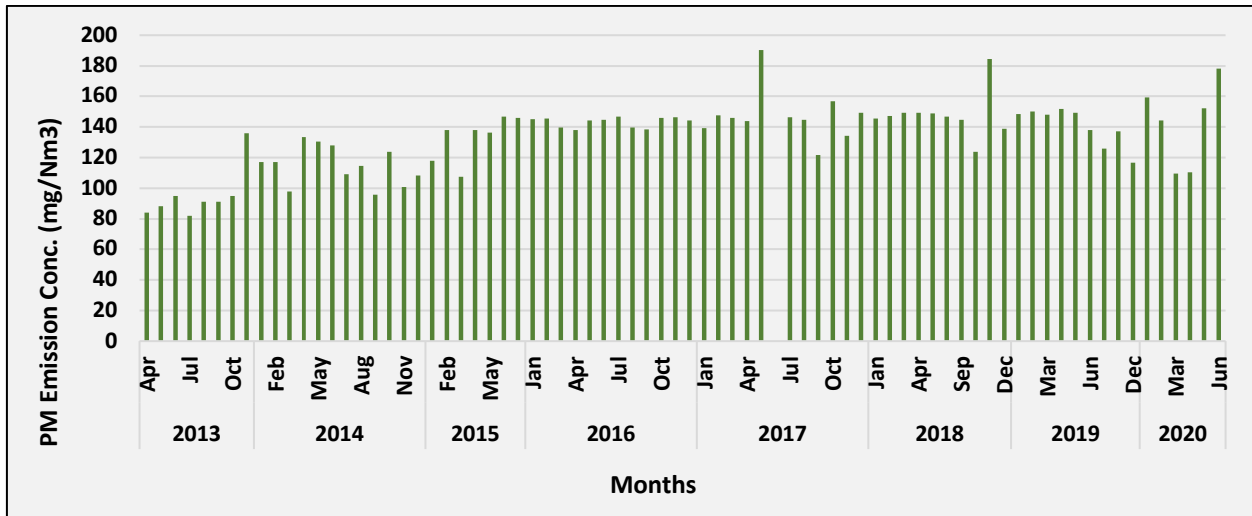


Fig. RAIC53: Time series of monthly average PM Emission concentration in Raichur TPP (Unit 3)

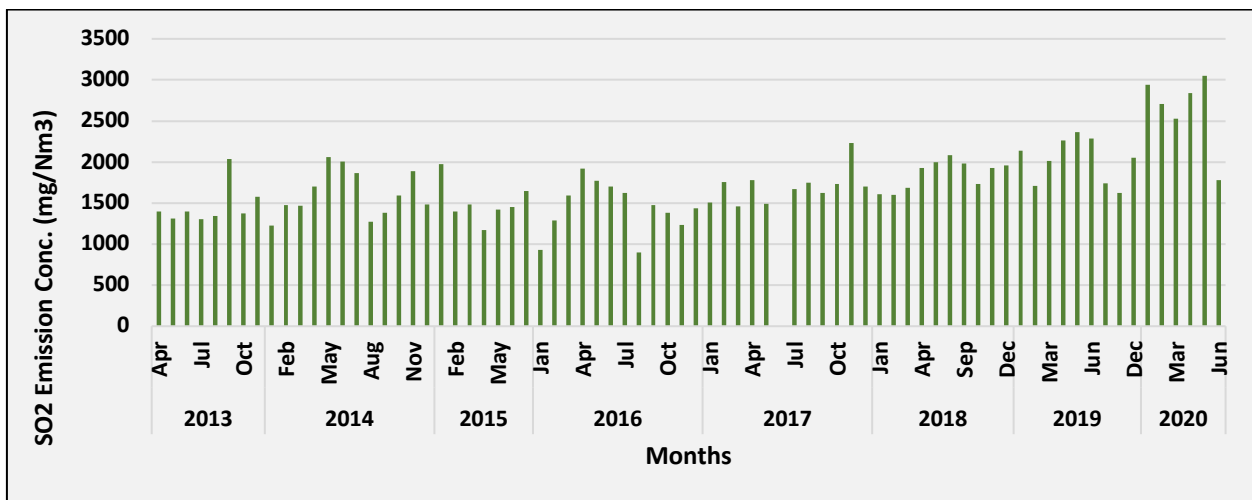


Fig. RAIC54: Time series of monthly average SO₂ Emission concentration in Raichur TPP (Unit 3)

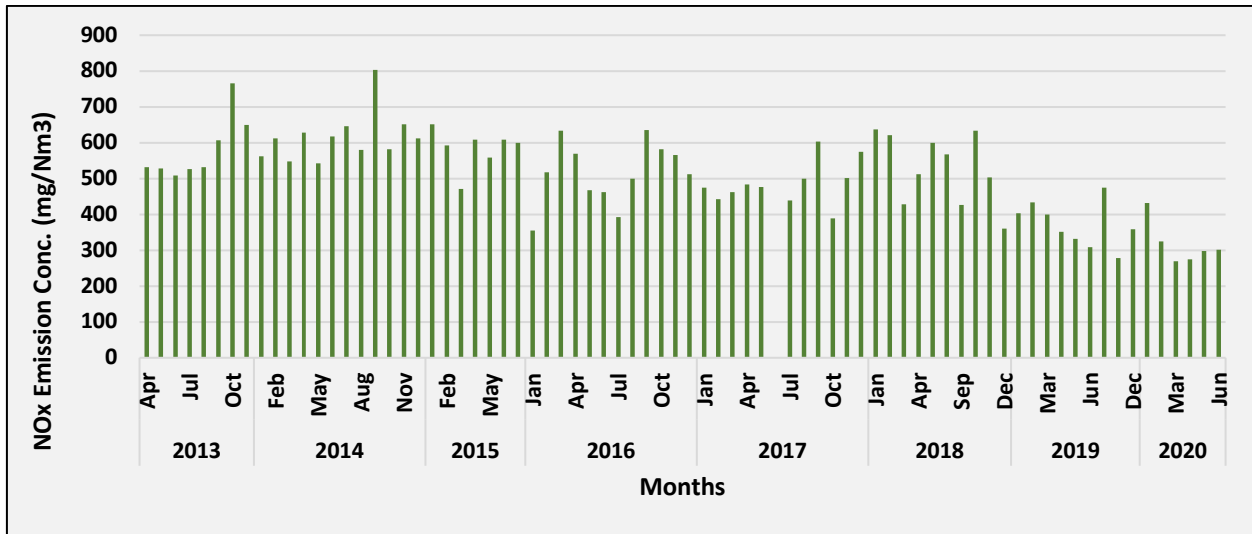


Fig. RAIC55: Time series of monthly average NO_x Emission concentration in Raichur TPP (Unit 3)

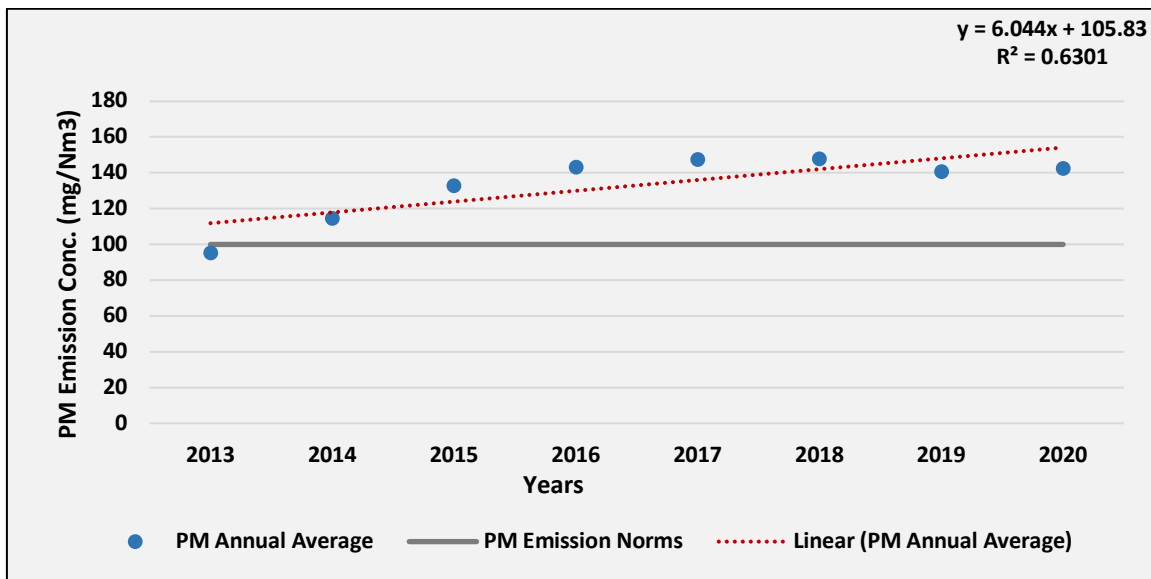


Fig. RAIC56: Trend of annual mean PM Emission air concentration in Raichur TPP (Unit 3)

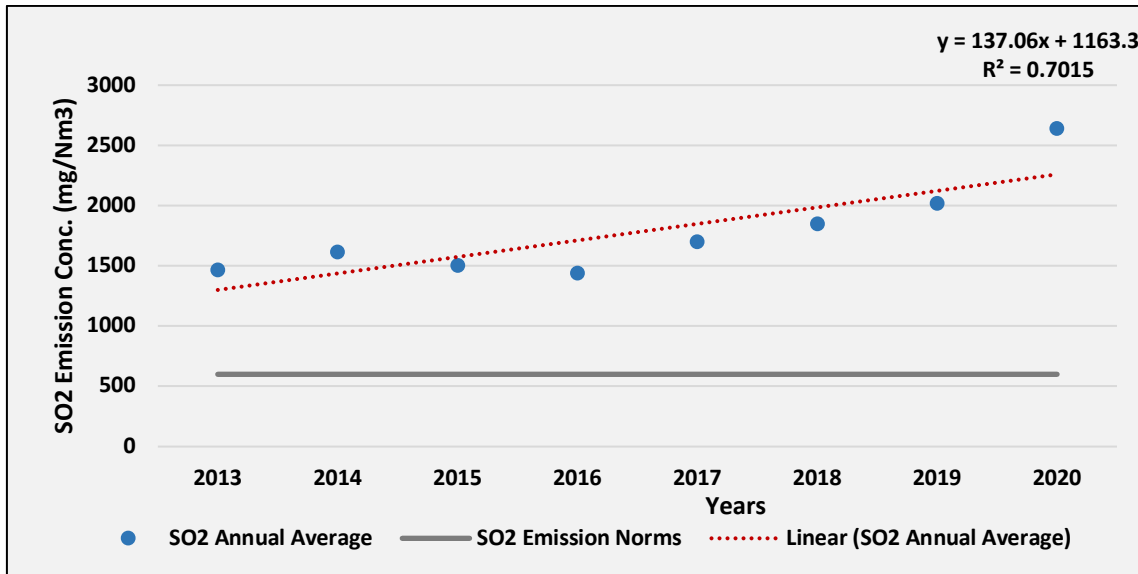


Fig. RAIC57: Trend of annual mean SO₂ Emission air concentration in Raichur TPP (Unit 3)

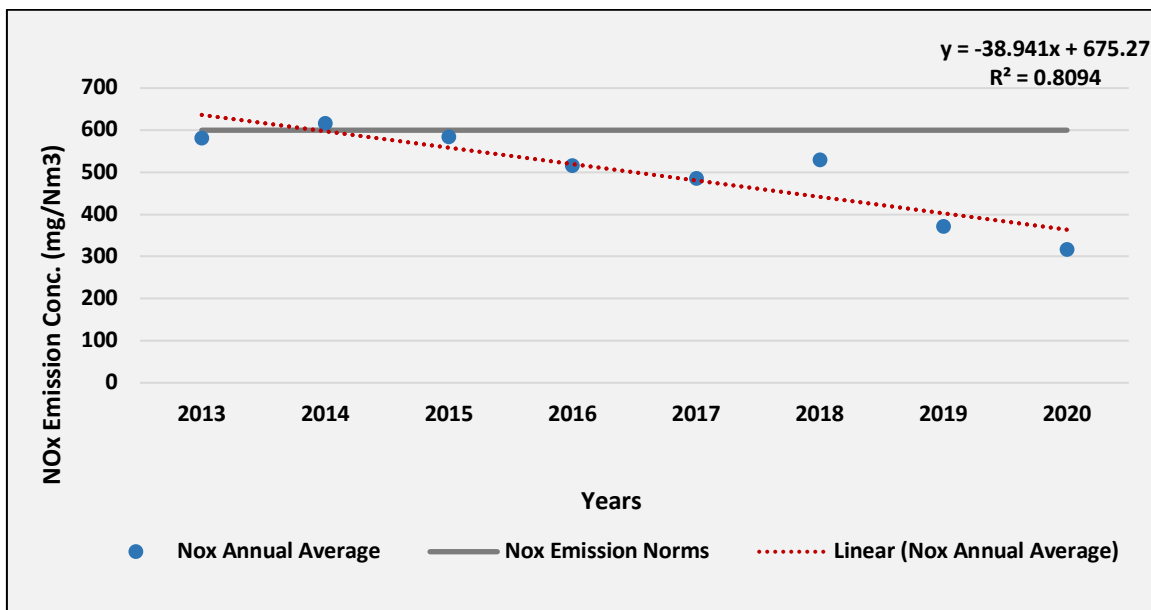


Fig. RAIC58: Trend of annual mean NO_x Emission air concentration in Raichur TPP (Unit 3)

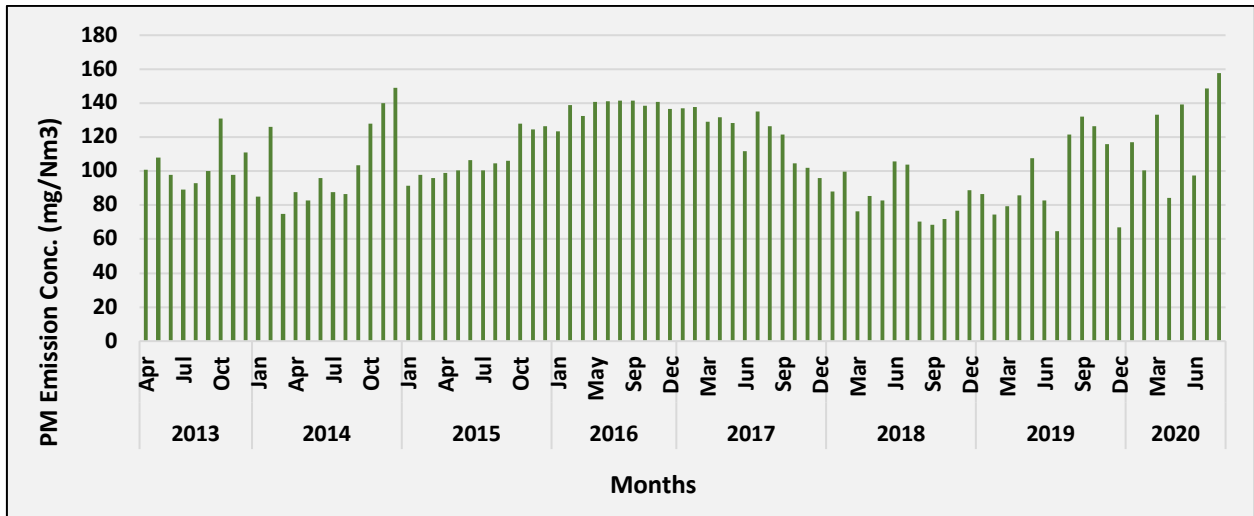


Fig. RAIC59: Time series of monthly average PM Emission concentration in Raichur TPP (Unit 4)

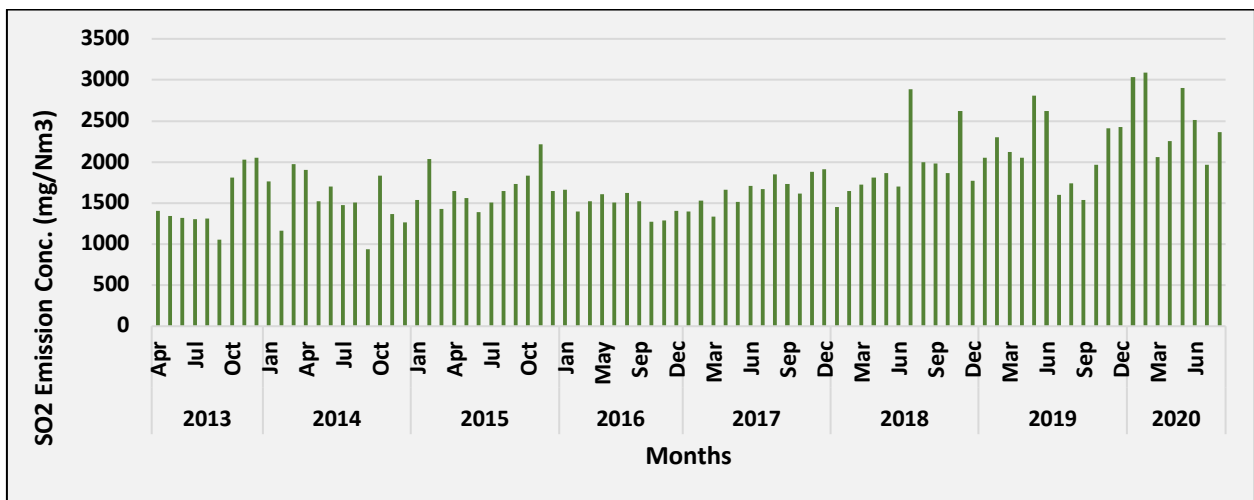


Fig. RAIC60: Time series of monthly average SO₂ Emission concentration in Raichur TPP (Unit 4)

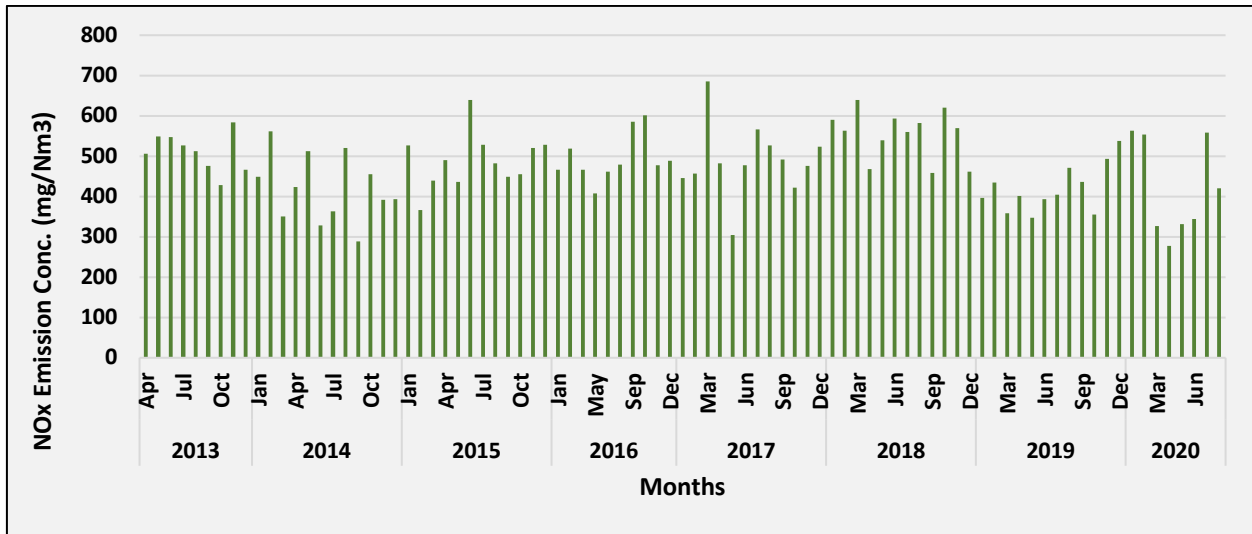


Fig. RAIC61: Time series of monthly average NO_x Emission concentration in Raichur TPP (Unit 4)

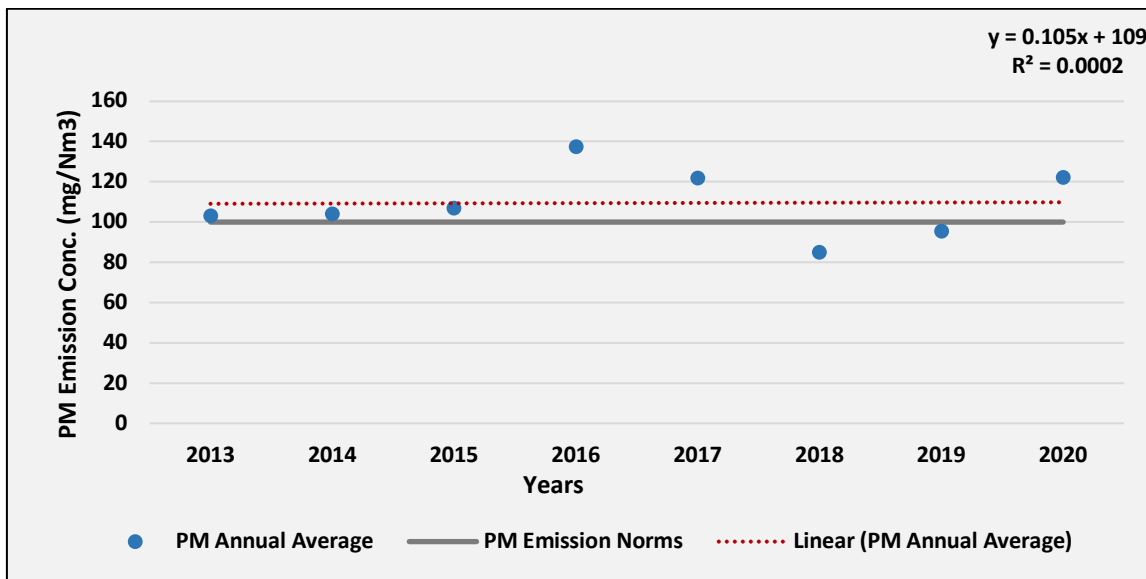


Fig. RAIC62: Trend of annual mean PM Emission air concentration in Raichur TPP (Unit 4)

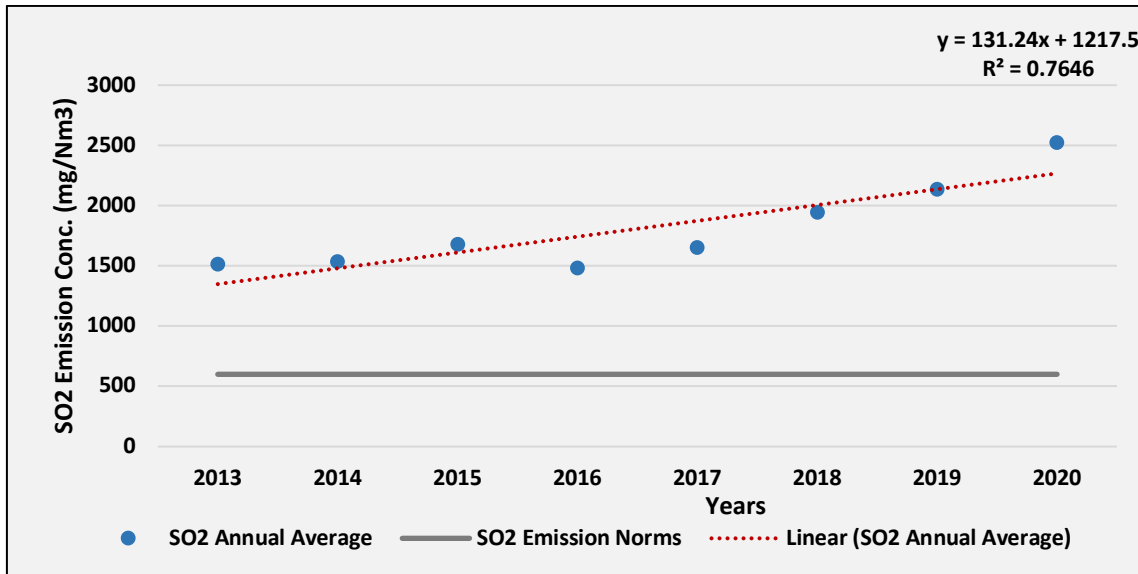


Fig. RAIC63: Trend of annual mean SO₂ Emission air concentration in Raichur TPP (Unit 4)

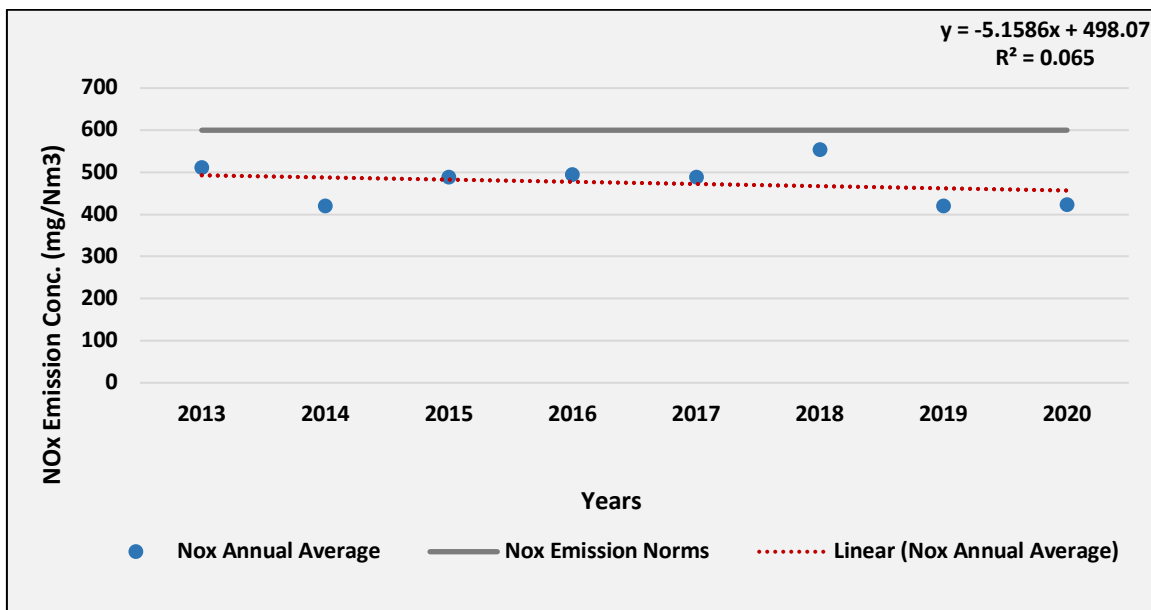


Fig. RAIC64: Trend of annual mean NO_x Emission air concentration in Raichur TPP (Unit 4)

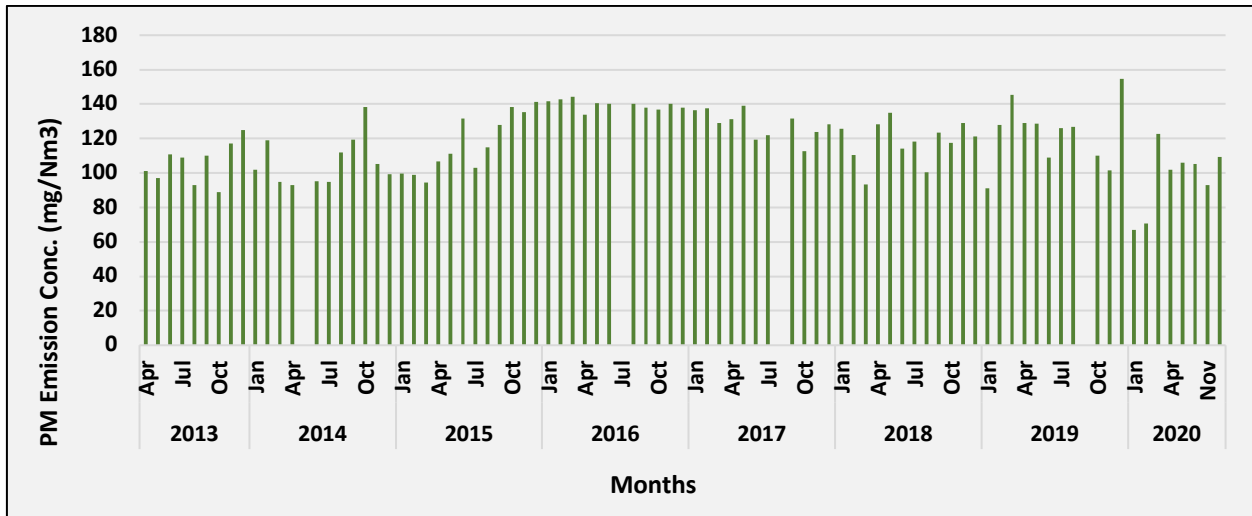


Fig. RAIC65: Time series of monthly average PM Emission concentration in Raichur TPP (Unit 5)

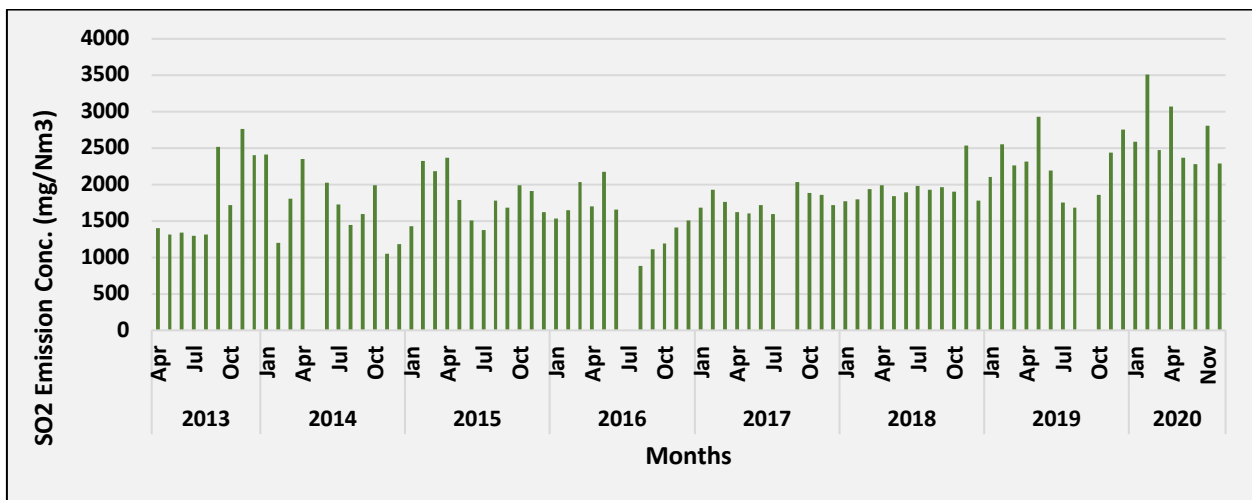


Fig. RAIC66: Time series of monthly average SO₂ Emission concentration in Raichur TPP (Unit 5)

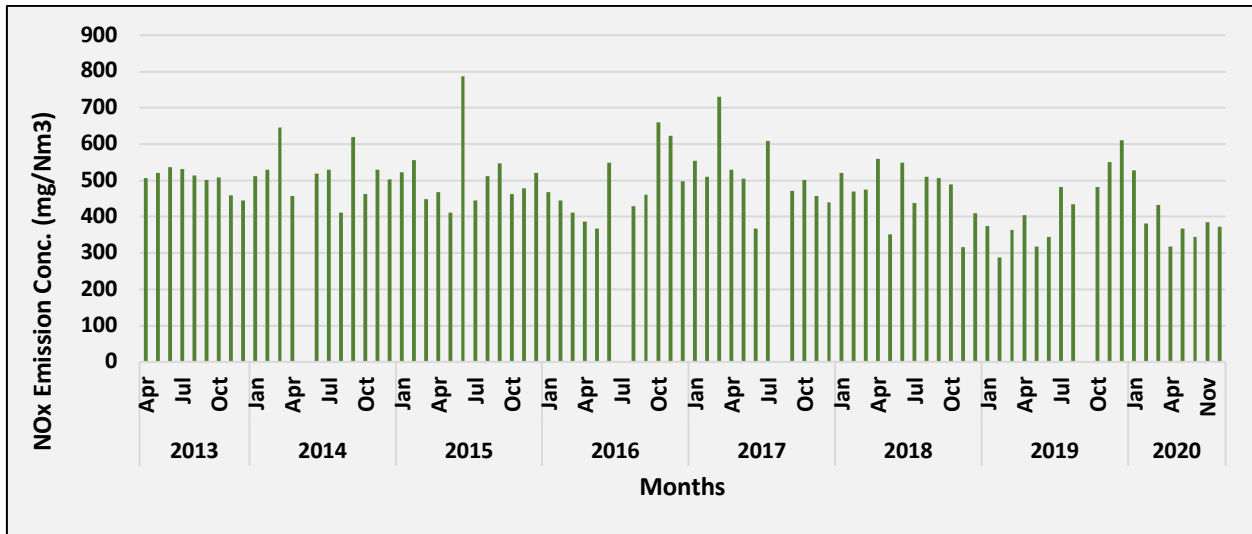


Fig. RAIC67: Time series of monthly average NO_x Emission concentration in Raichur TPP (Unit 5)

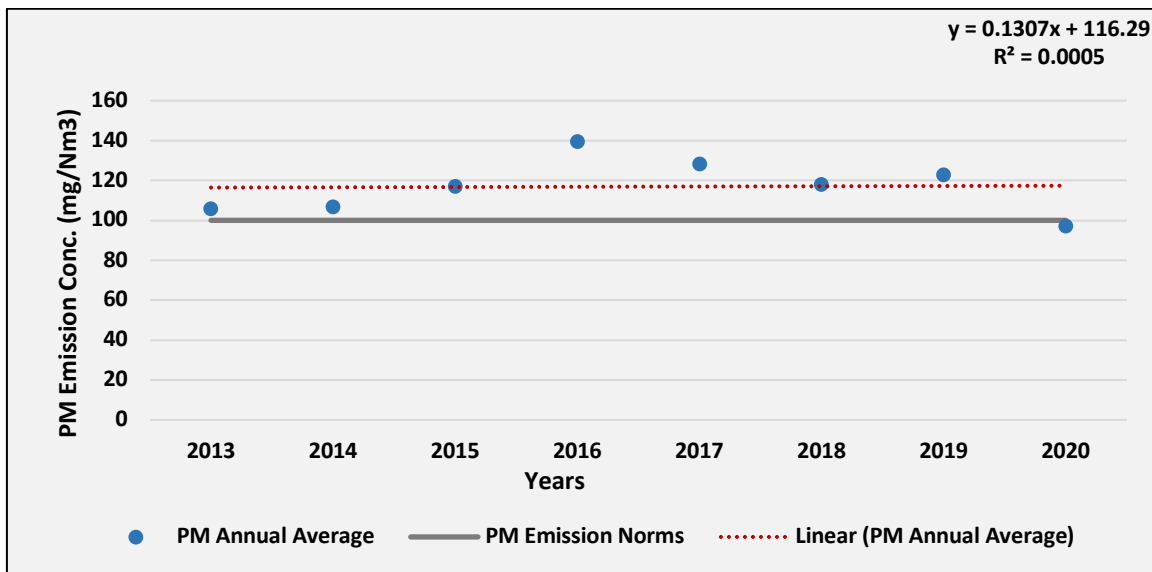


Fig. RAIC68: Trend of annual mean PM Emission air concentration in Raichur TPP (Unit 5)

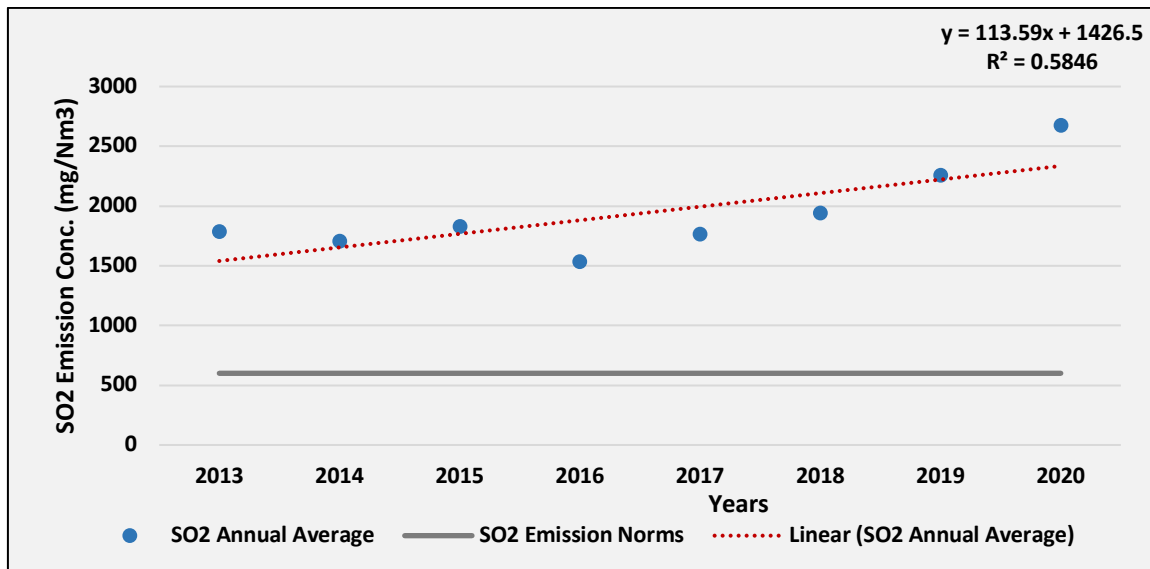


Fig. RAIC69: Trend of annual mean SO₂ Emission air concentration in Raichur TPP (Unit 5)

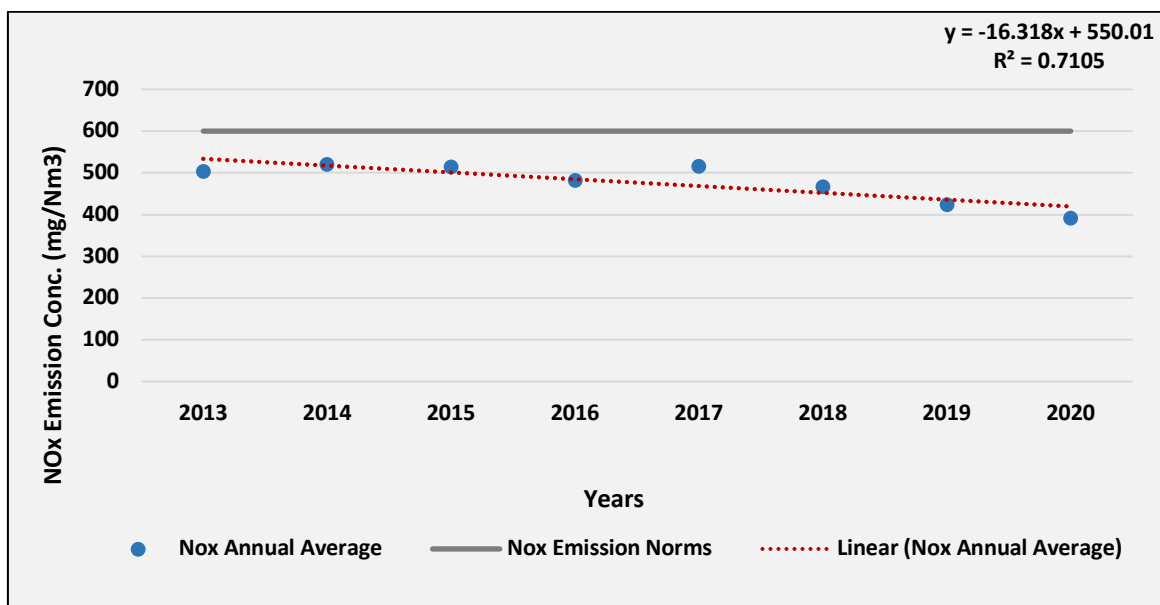


Fig. RAIC70: Trend of annual mean NO_x Emission air concentration in Raichur TPP (Unit 5)

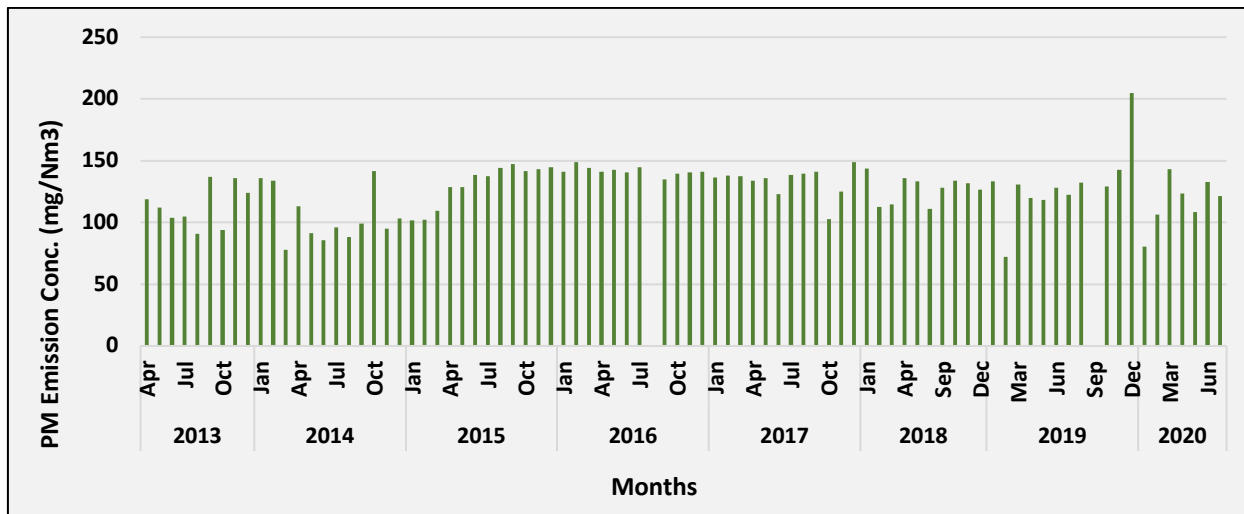


Fig. RAIC71: Time series of monthly average PM Emission concentration in Raichur TPP (Unit 6)

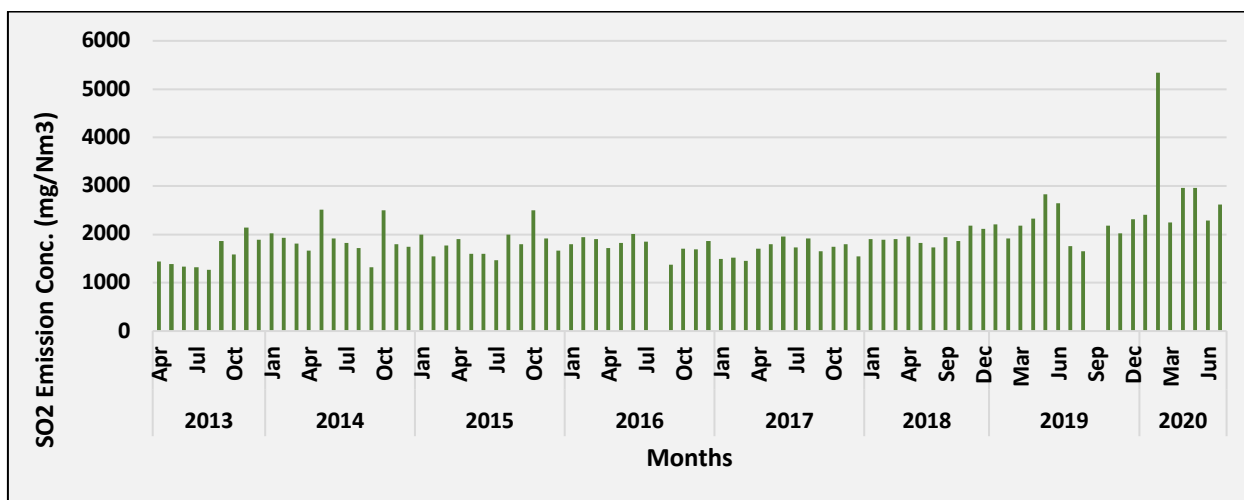


Fig. RAIC72: Time series of monthly average SO₂ Emission concentration in Raichur TPP (Unit 6)

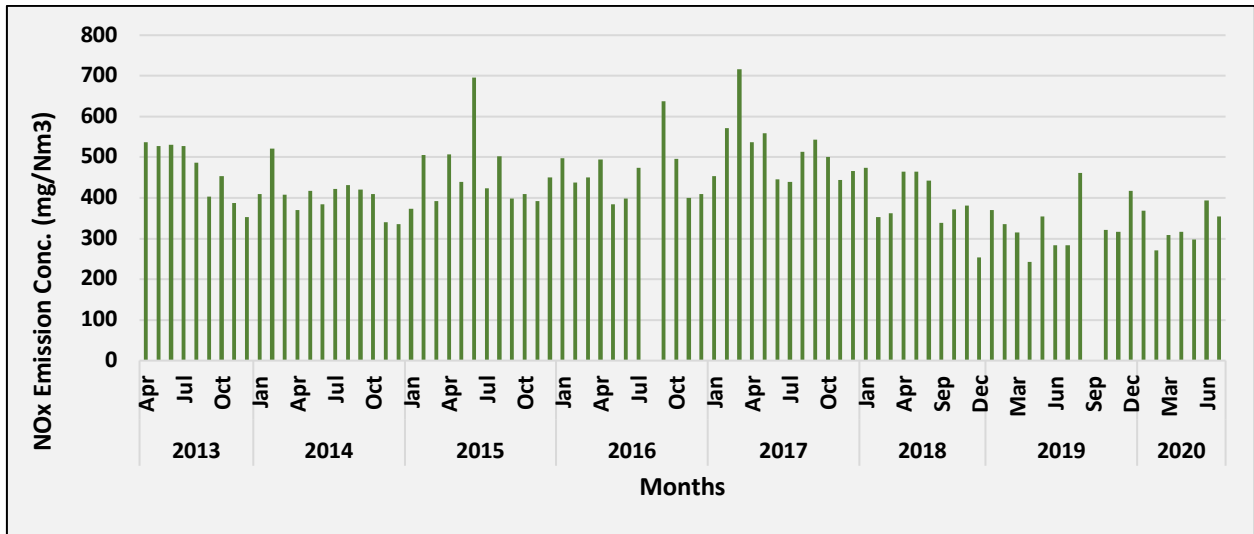


Fig. RAIC73: Time series of monthly average NO_x Emission concentration in Raichur TPP (Unit 6)

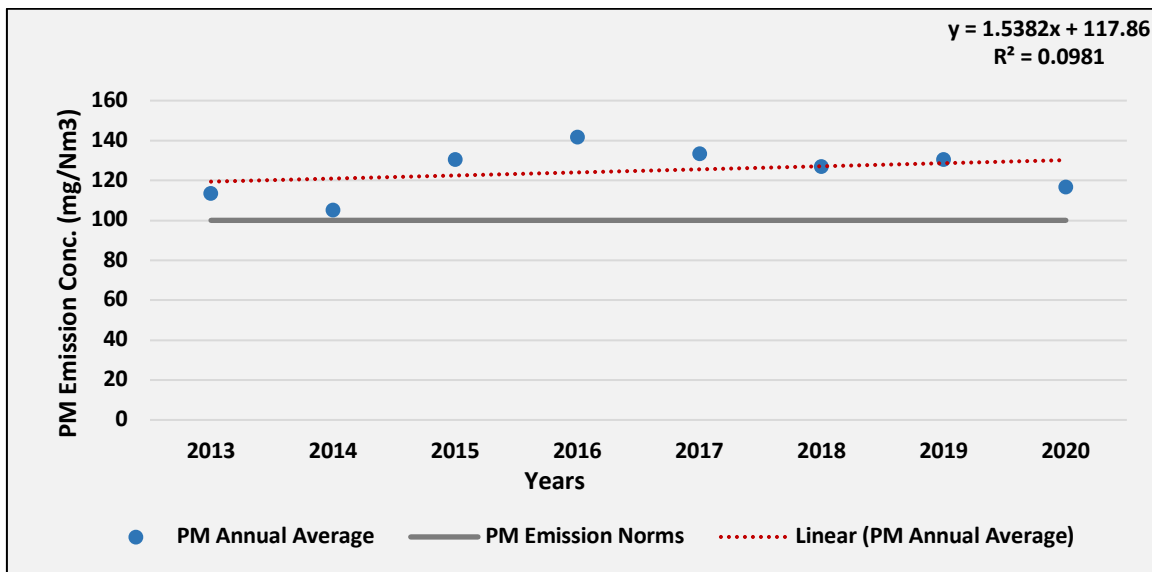


Fig. RAIC74: Trend of annual mean PM Emission air concentration in Raichur TPP (Unit 6)

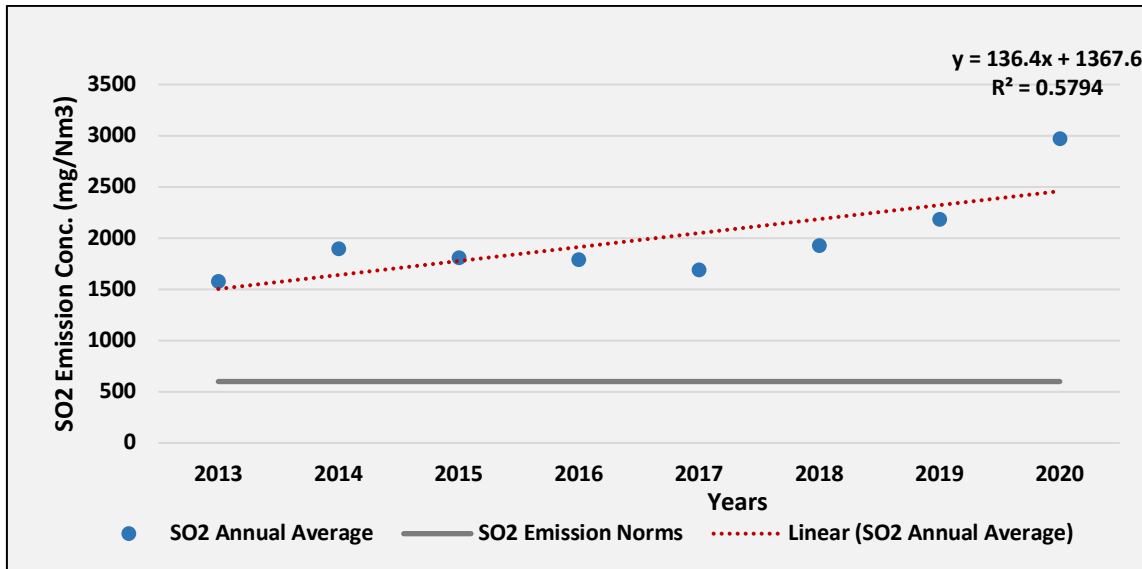


Fig. RAIC75: Trend of annual mean SO₂ Emission air concentration in Raichur TPP (Unit 6)

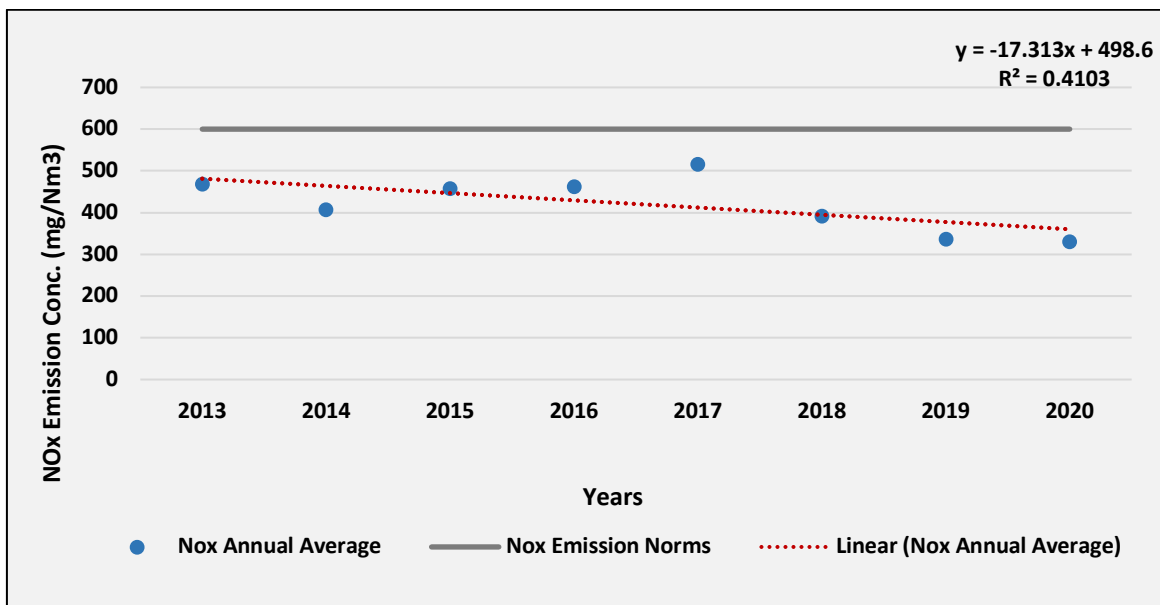


Fig. RAIC76: Trend of annual mean NO_x Emission air concentration in Raichur TPP (Unit 6)

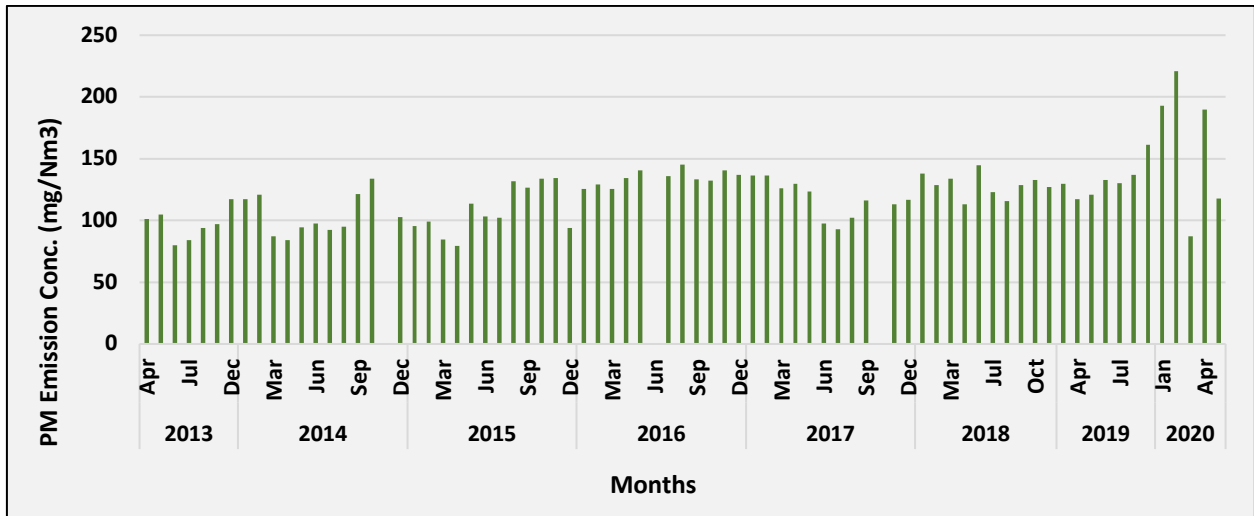


Fig. RAIC77: Time series of monthly average PM Emission concentration in Raichur TPP (Unit 7)

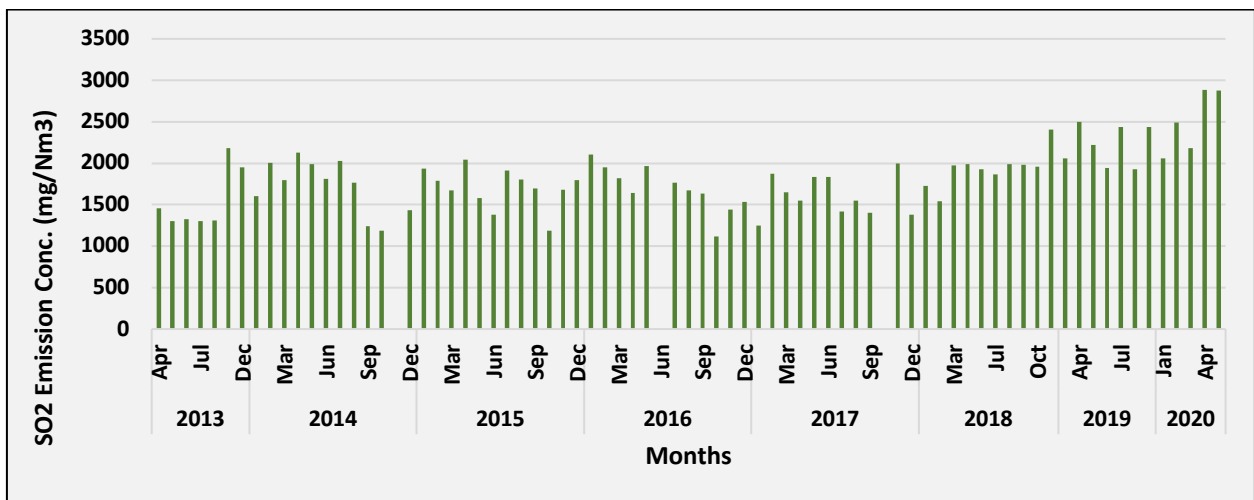


Fig. RAIC78: Time series of monthly average SO₂ Emission concentration in Raichur TPP (Unit 7)

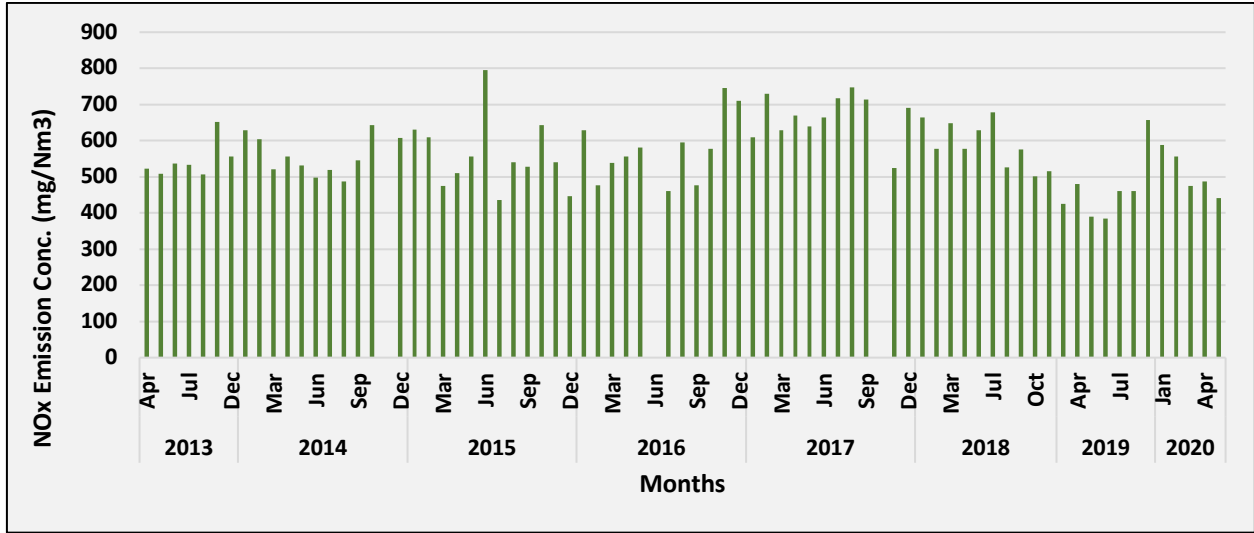


Fig. RAIC79: Time series of monthly average NO_x Emission concentration in Raichur TPP (Unit 7)

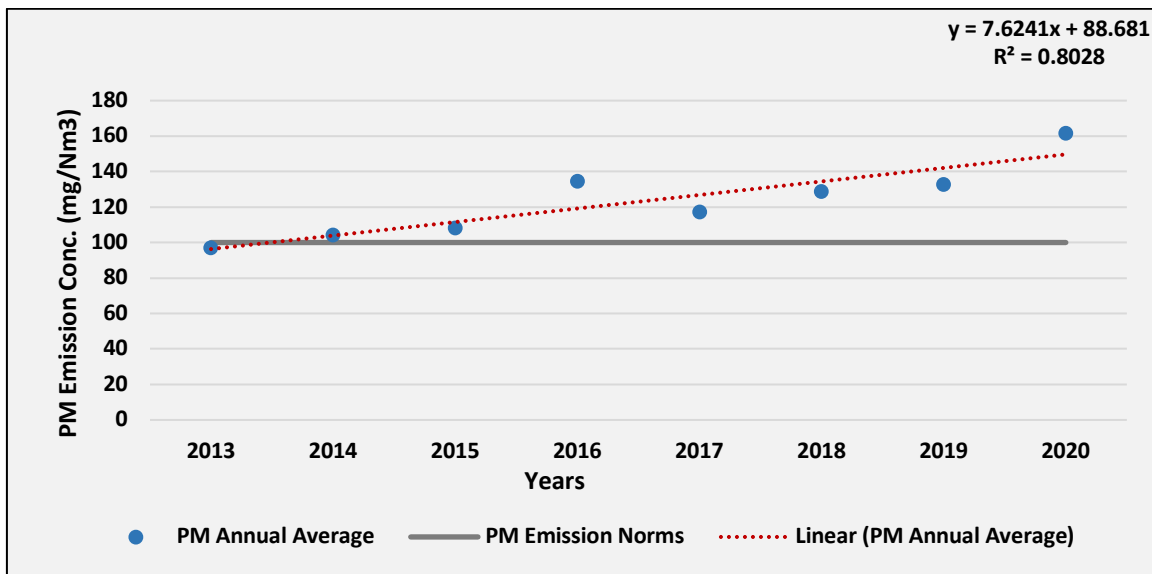


Fig. RAIC80: Trend of annual mean PM Emission air concentration in Raichur TPP (Unit 7)

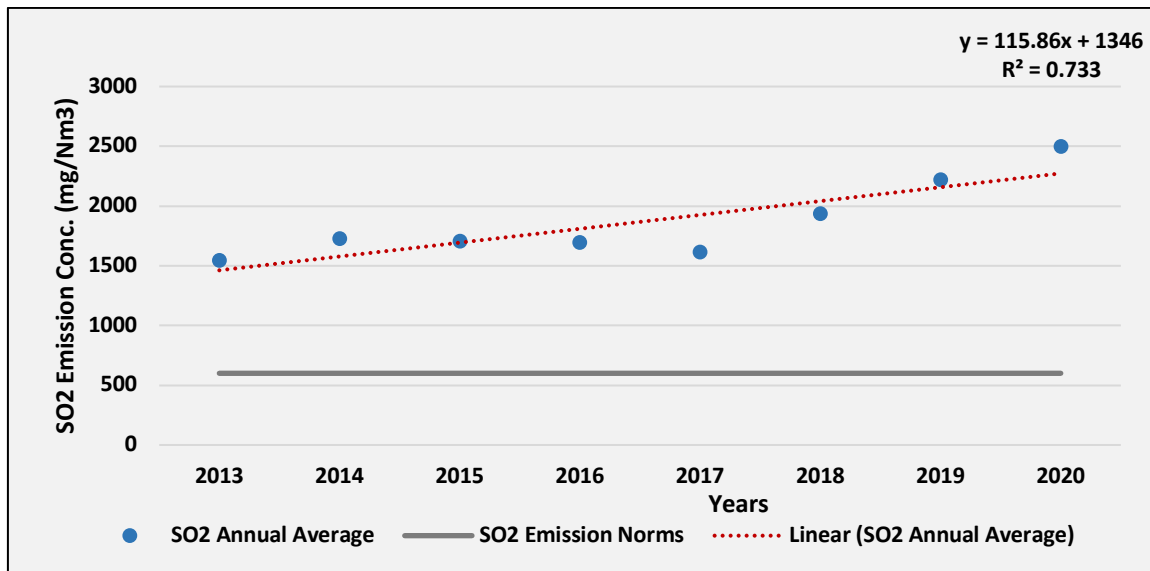


Fig. RAIC81: Trend of annual mean SO₂ Emission air concentration in Raichur TPP (Unit 7)

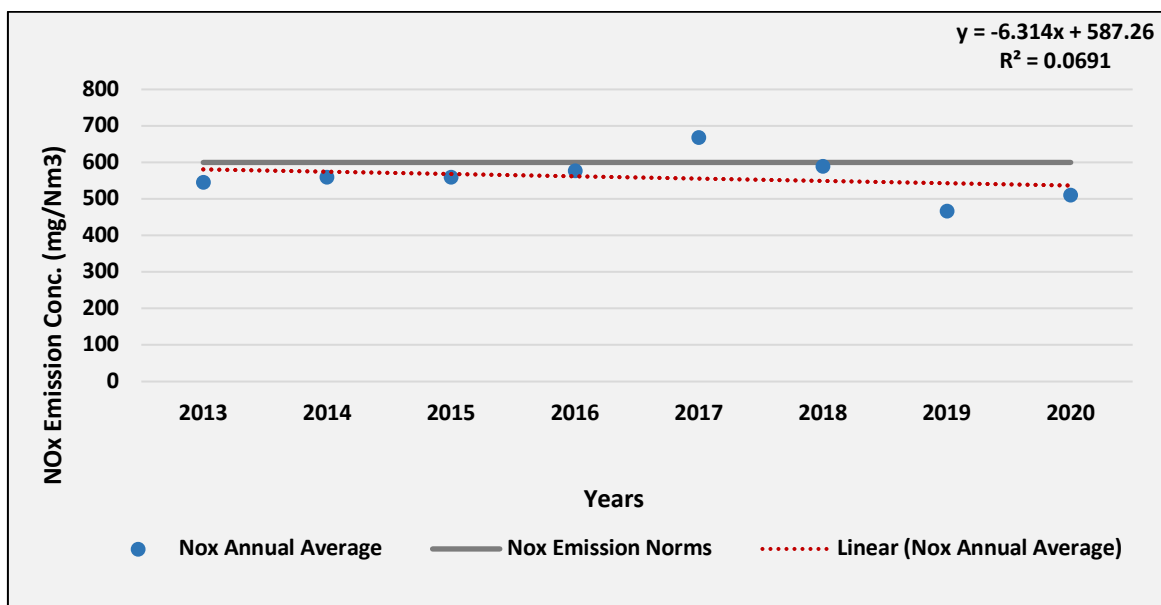


Fig. RAIC82: Trend of annual mean NO_x Emission air concentration in Raichur TPP (Unit 7)

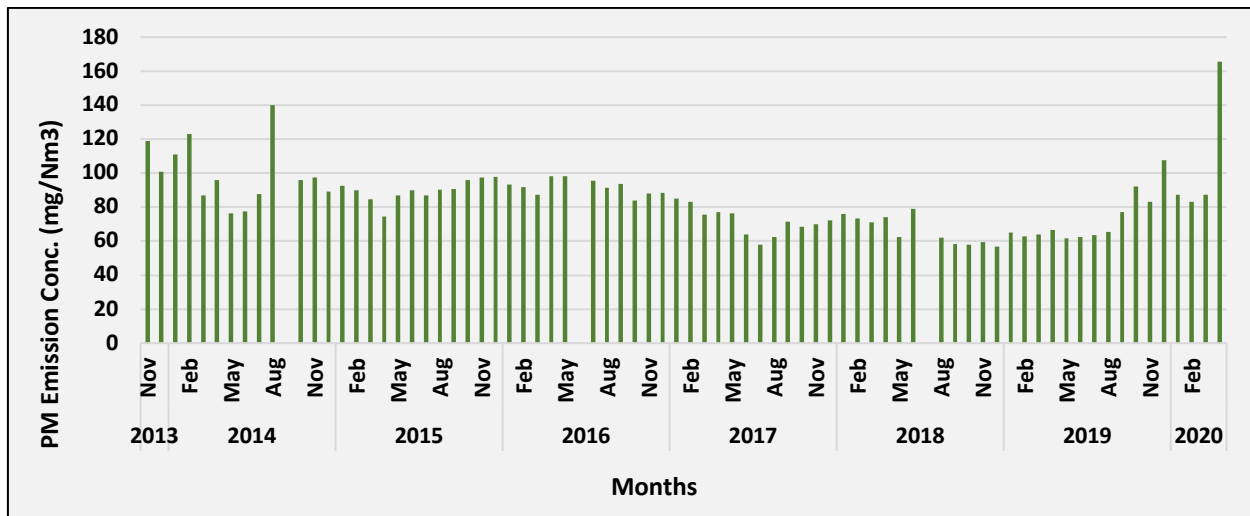


Fig. RAIC83: Time series of monthly average PM Emission concentration in Raichur TPP (Unit 8)

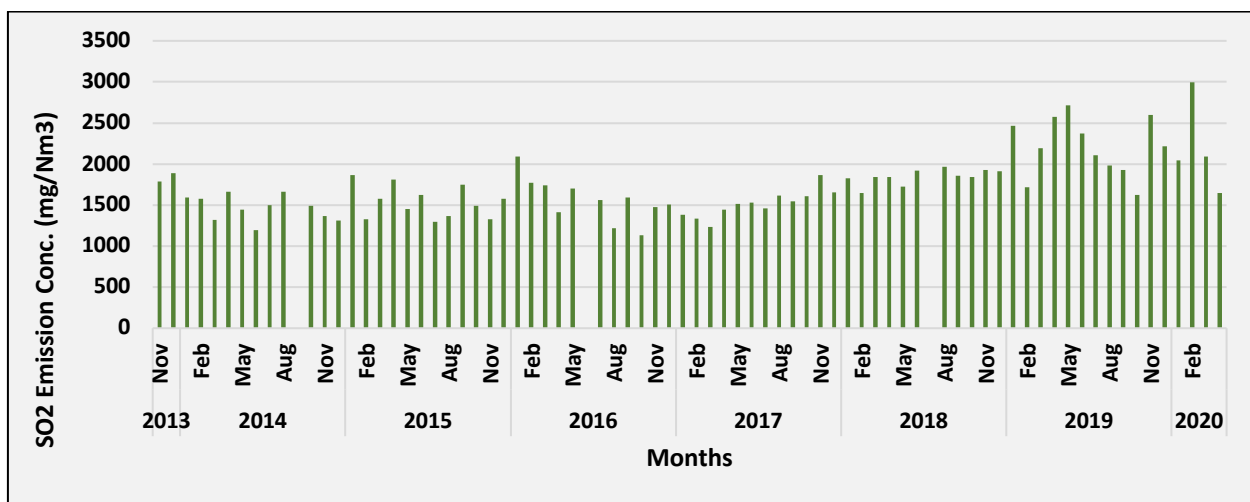


Fig. RAIC84: Time series of monthly average SO₂ Emission concentration in Raichur TPP (Unit 8)

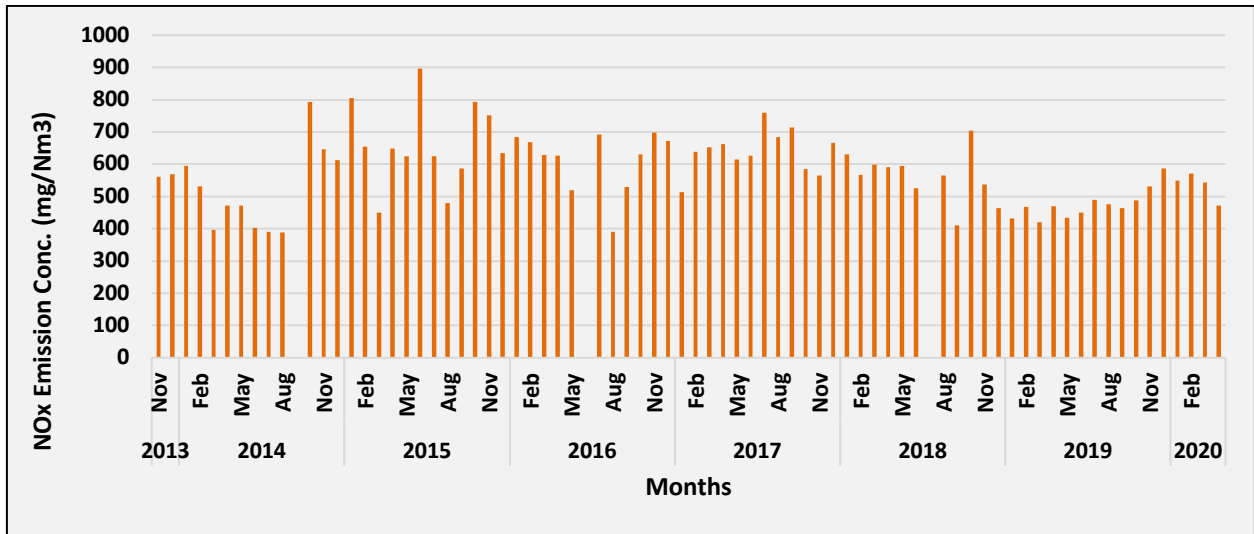


Fig. RAIC85: Time series of monthly average NO_x Emission concentration in Raichur TPP (Unit 8)

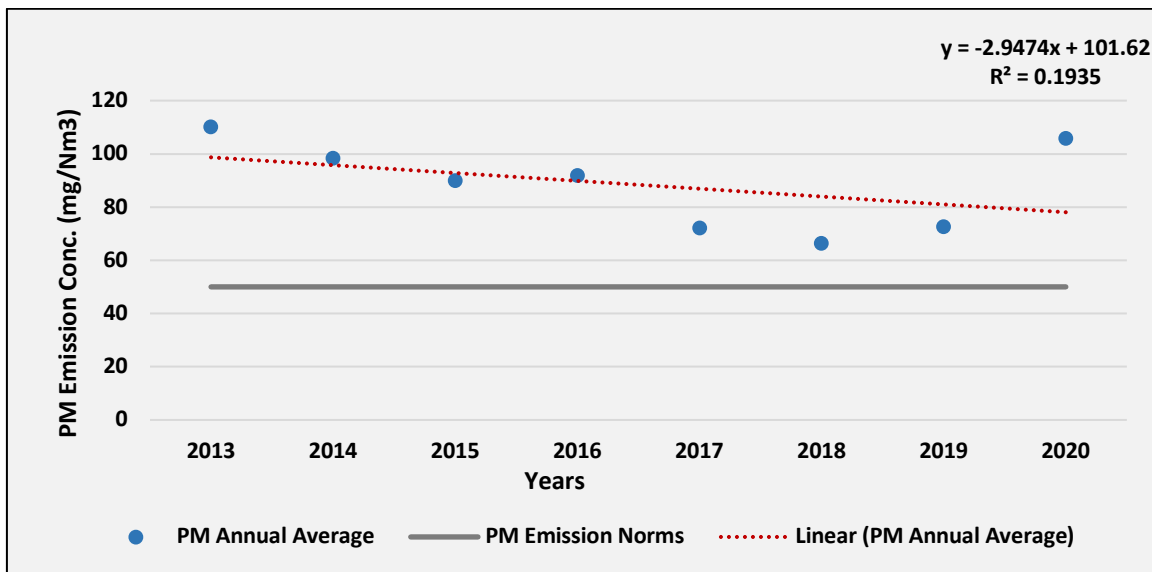


Fig. RAIC86: Trend of annual mean PM Emission air concentration in Raichur TPP (Unit 8)

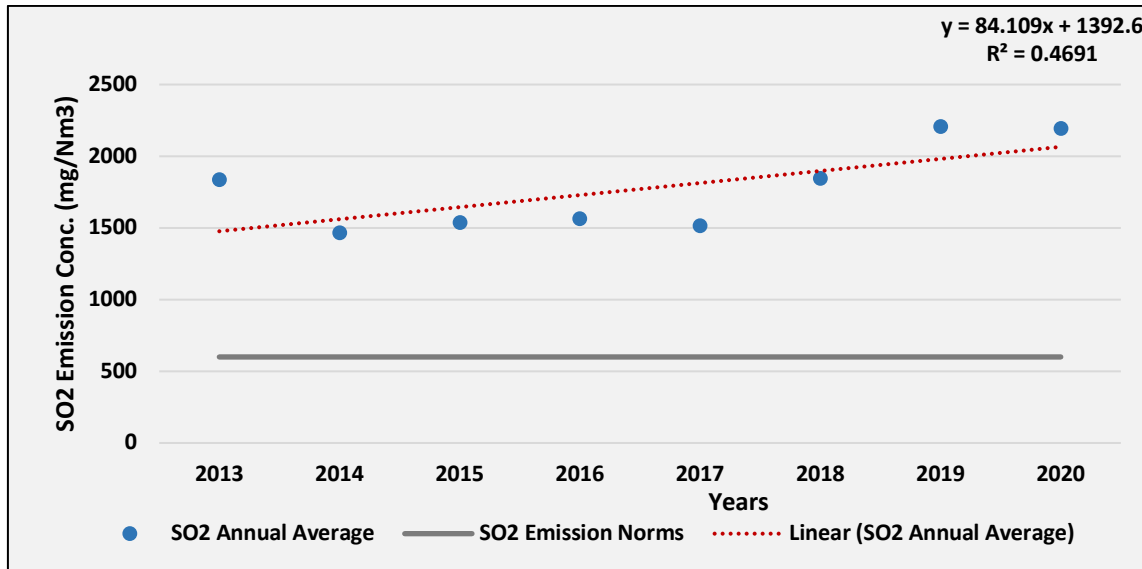


Fig. RAIC87: Trend of annual mean SO₂ Emission air concentration in Raichur TPP (Unit 8)

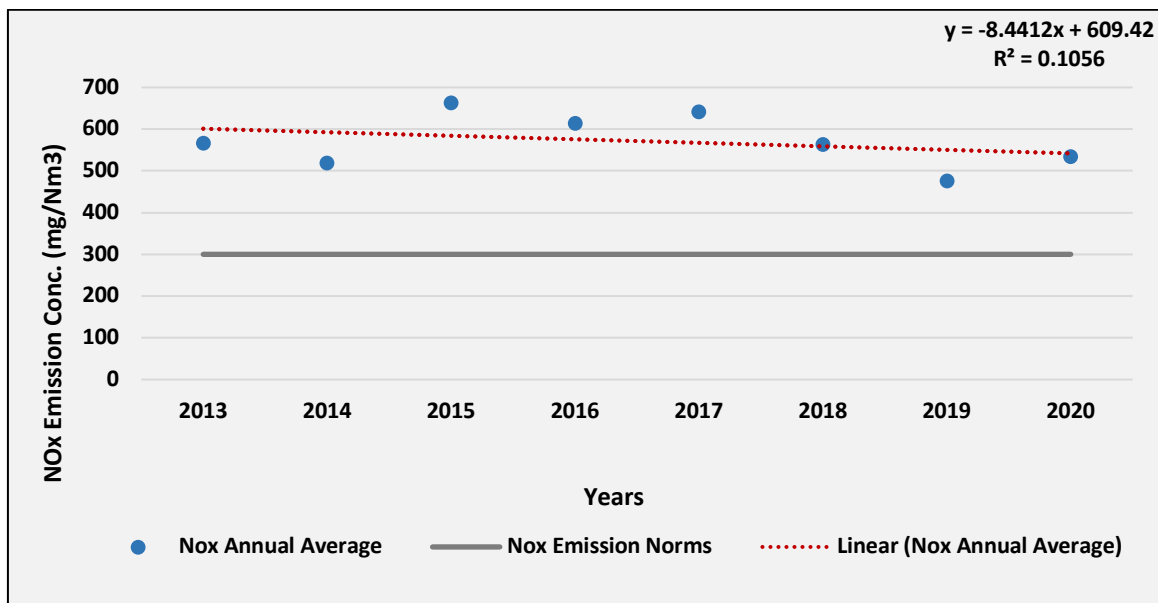


Fig. RAIC88: Trend of annual mean NO_x Emission air concentration in Raichur TPP (Unit 8)

Evidence based on ground level stations shows that the monthly average and annual average of PM10 is exceeding whereas the PM10, SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and PM parameter are much higher than the emission norms. Emission of NO_x mostly is within the limit range.

KPCL YERAMARUS THERMAL POWER PLANT

Yeramarus Thermal Power Station is a coal-based thermal power plant located in Yeramarus village in Raichur district, Karnataka. The power plant is owned by the Karnataka Power Corporation. This is India's first 800MW super critical thermal power plant and Bharat Heavy Electricals is the EPC contractor for this power project

The ambient air quality concentrations of PM10, PM2.5 SO2, & NOx, and stack emission for PM, SO2 and NOx data analyzed (Fig. KOR1 – Fig. KOR50) for the last three years (2018-2020) using data provided by KPCL developer for Yeramarus Power plant, Karnataka, India.

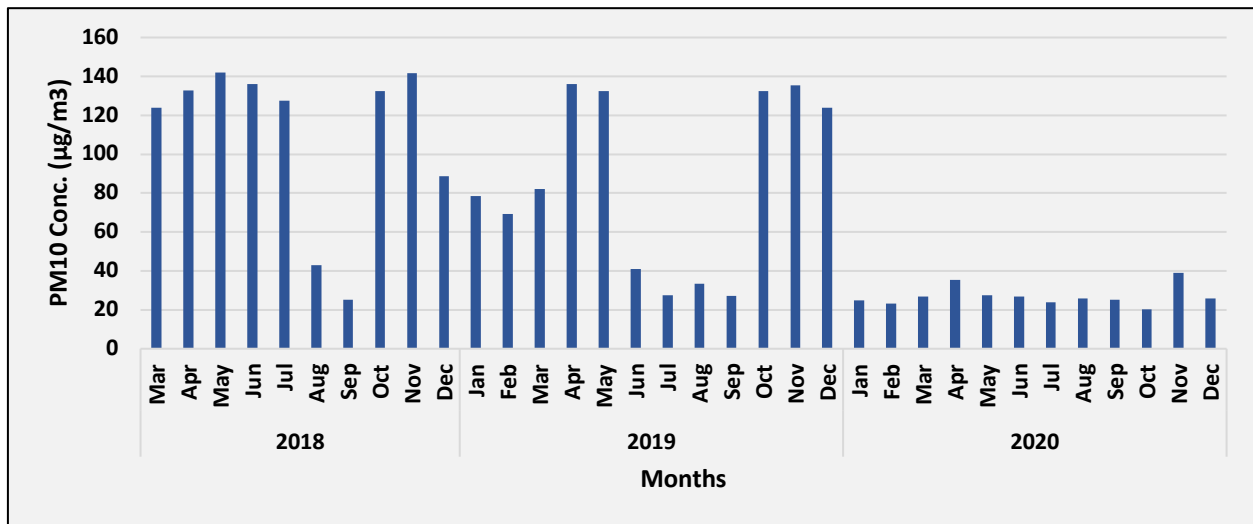


Fig. YER1: Time series of monthly average PM₁₀ ambient air concentration in Yeramarus TPP (Ambient)

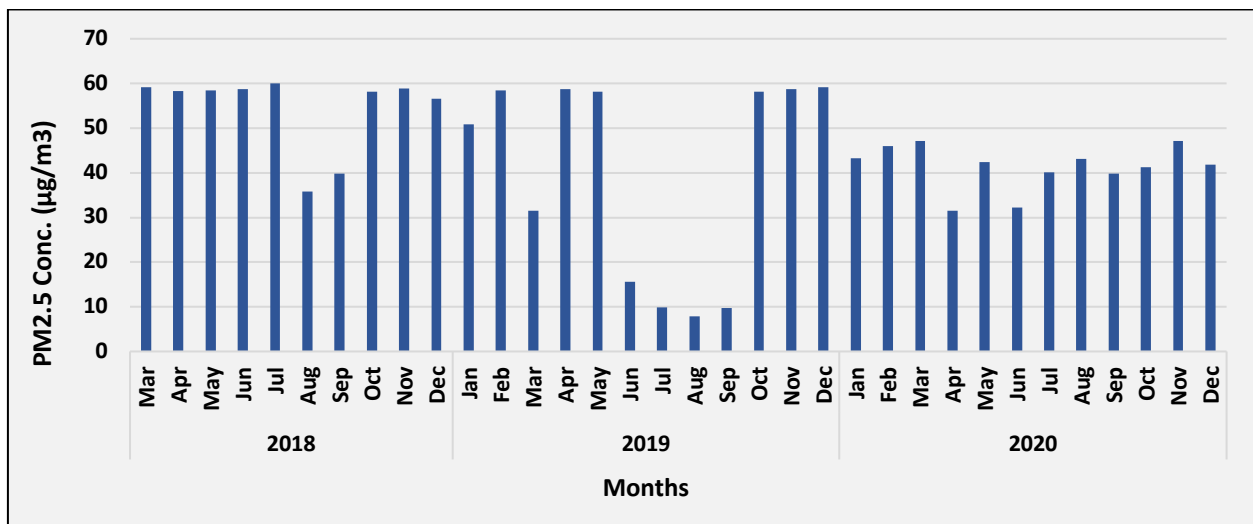


Fig. YER2: Time series of monthly average $PM_{2.5}$ ambient air concentration in Yeramarus TPP (Ambient)

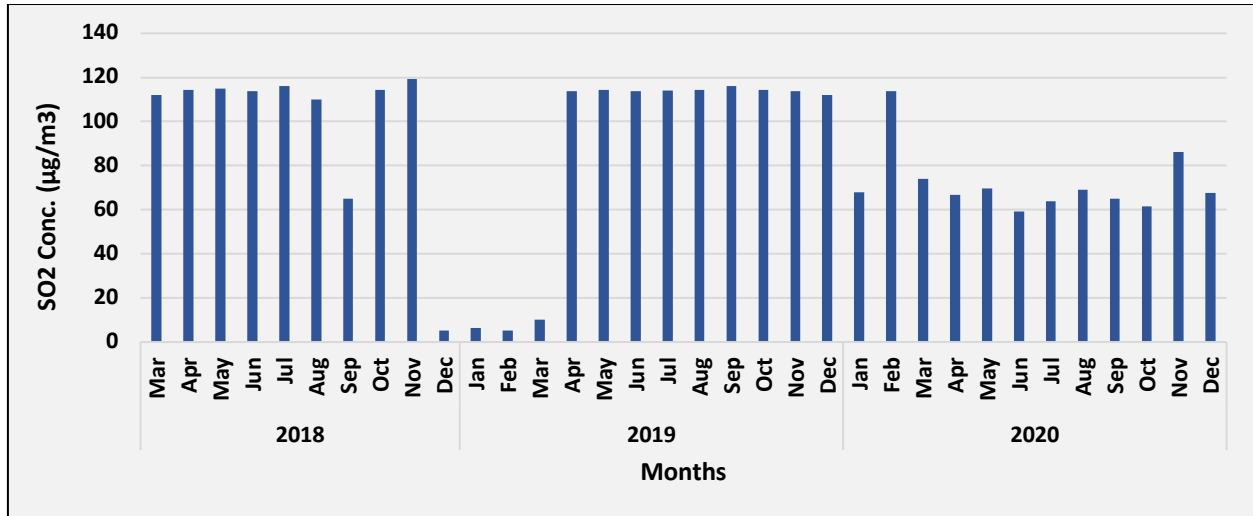


Fig. YER3: Time series of monthly average SO_2 ambient air concentration in Yeramarus TPP (Ambient)

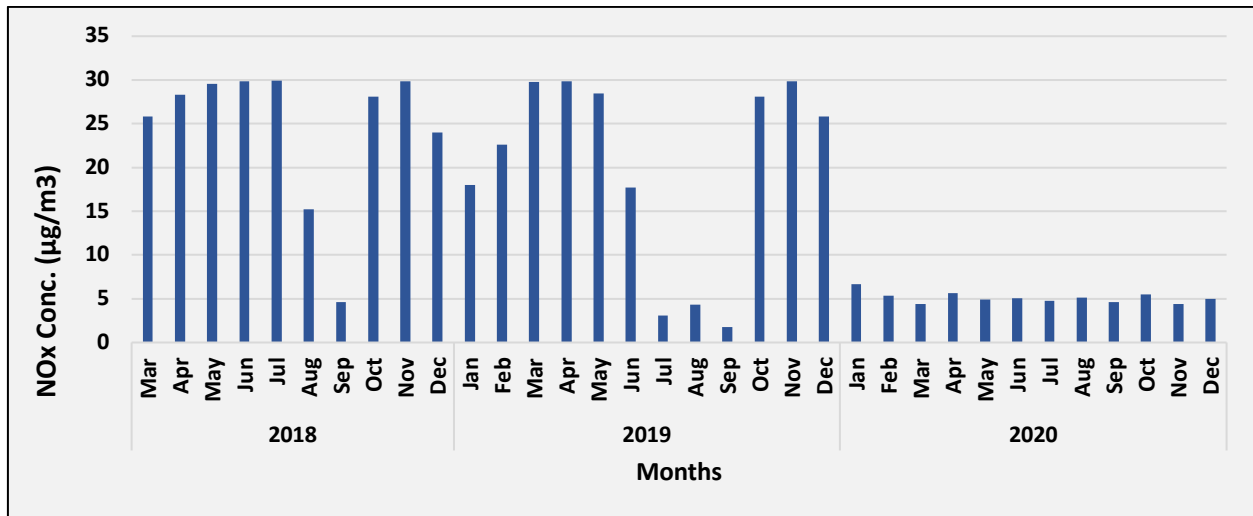


Fig. YER4: Time series of monthly average NO_x ambient air concentration in Yeramarus TPP (Ambient)

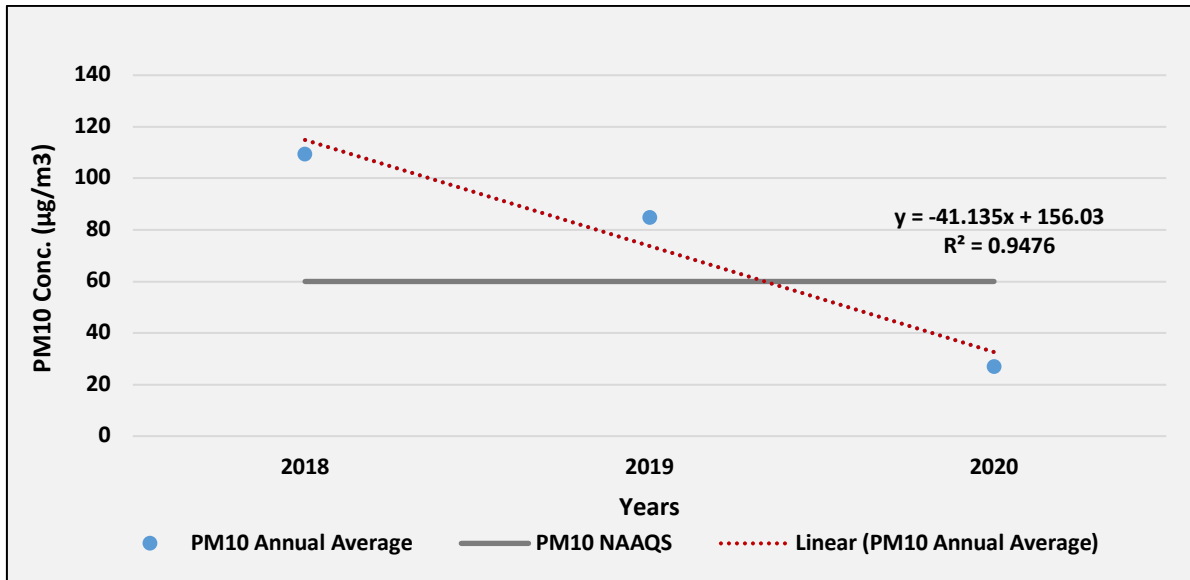


Fig. YER5: Trend of annual mean PM_{10} ambient air concentration in Yeramarus TPP (Ambient)

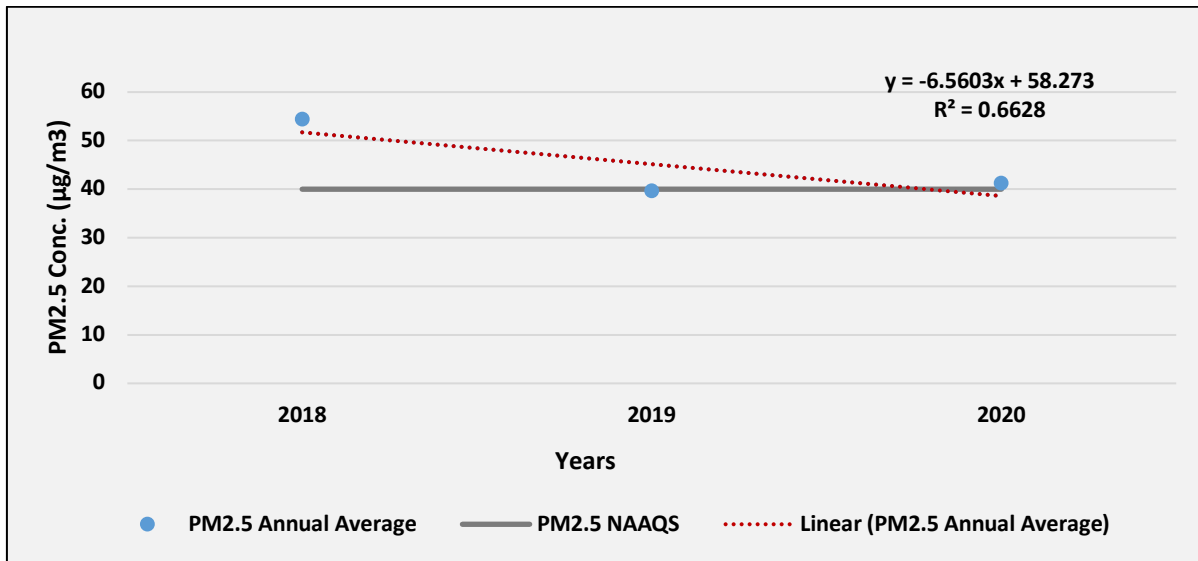


Fig. YER6: Trend of annual mean $PM_{2.5}$ ambient air concentration in Yeramarus TPP (Ambient)

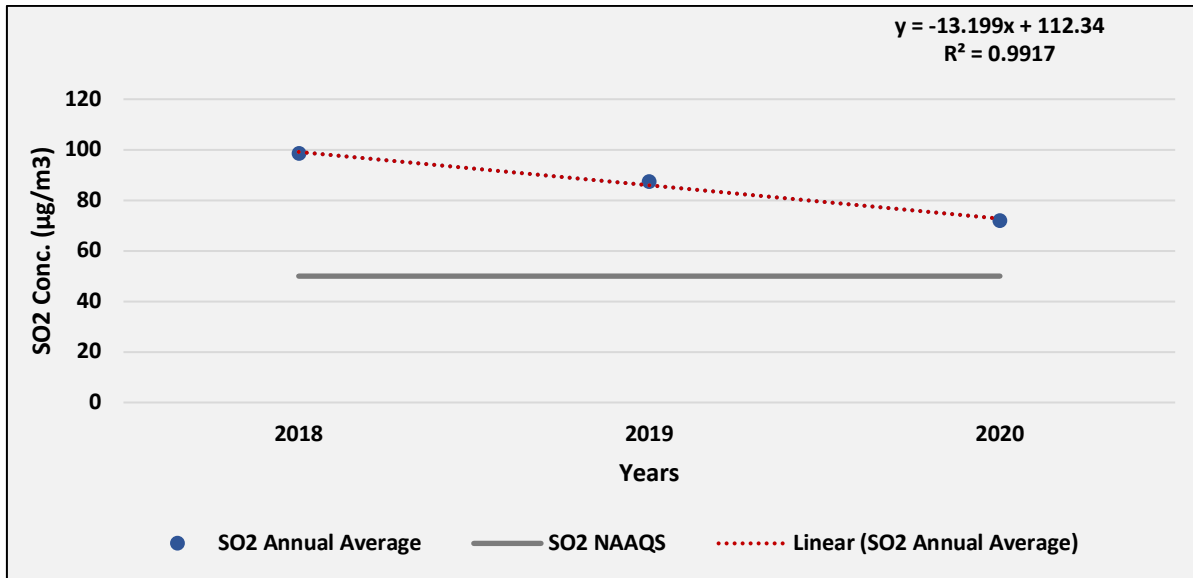


Fig. YER7: Trend of annual mean SO₂ ambient air concentration in Yeramarus TPP (Ambient)

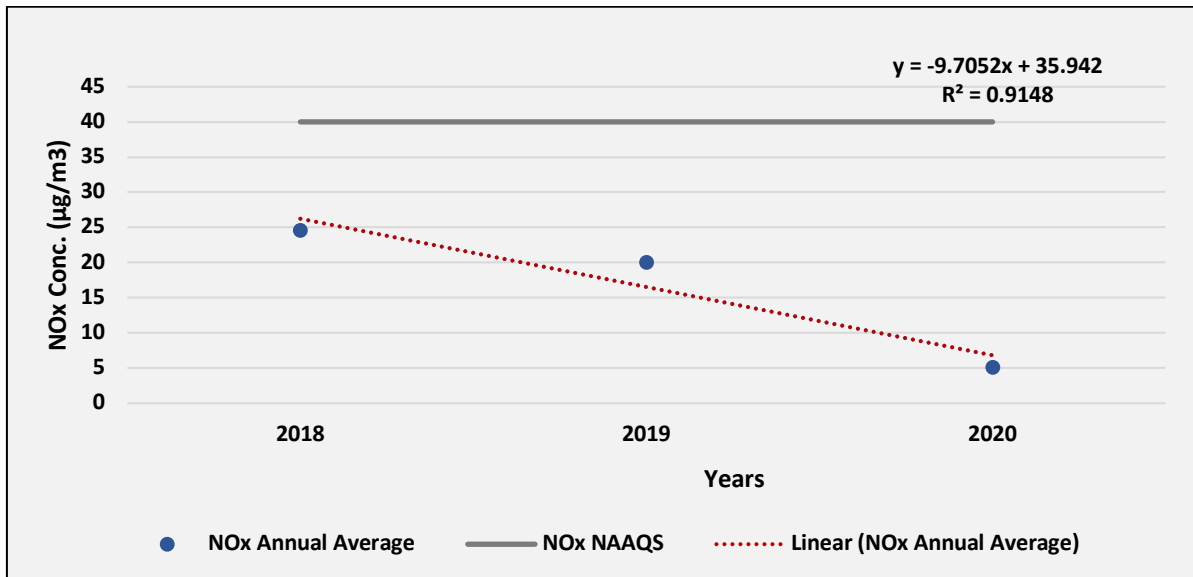


Fig. YER8: Trend of annual mean NO_x ambient air concentration in Yeramarus TPP (Ambient)

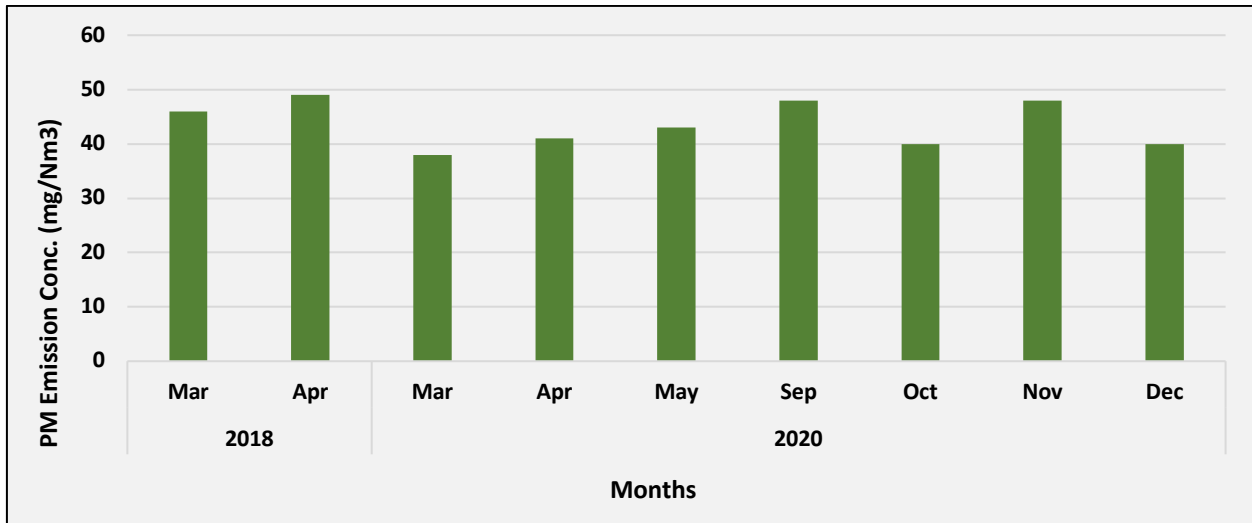


Fig. YER9: Time series of monthly average PM Emission concentration in Yeramarus TPP (Stack 1)

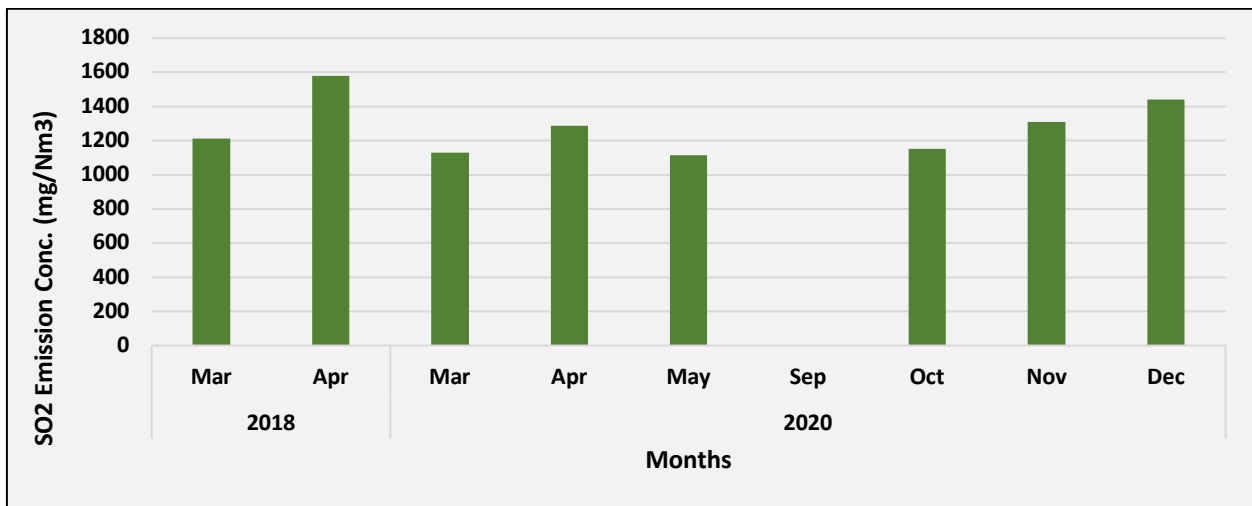


Fig. YER10: Time series of monthly average SO₂ Emission concentration in Yeramarus TPP (Stack 1)

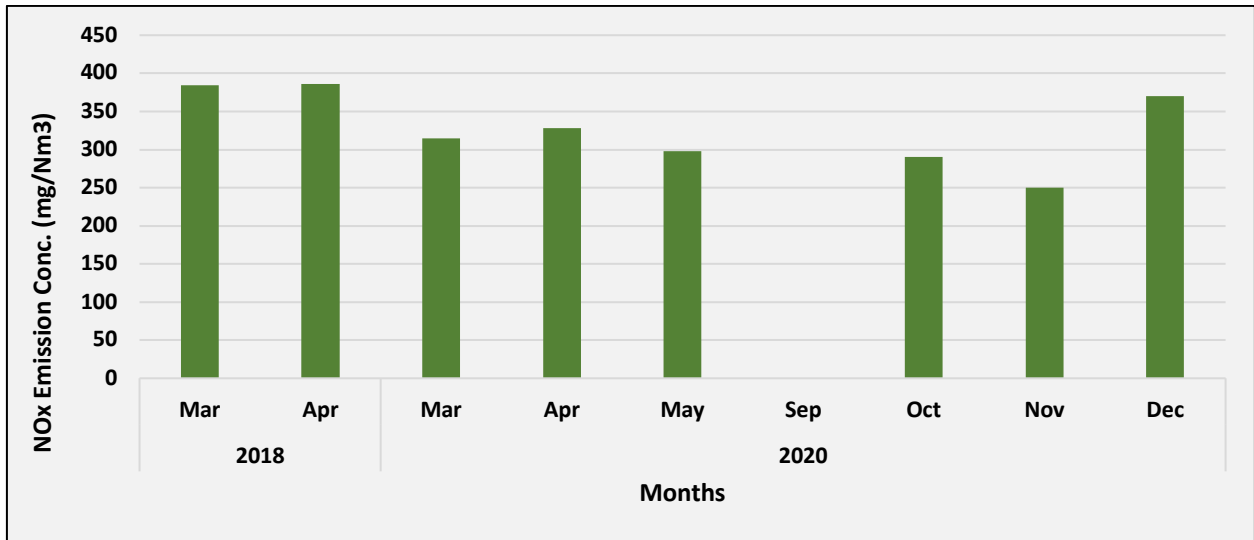


Fig. YER11: Time series of monthly average NO_x Emission concentration in Yeramarus TPP (Stack 1)

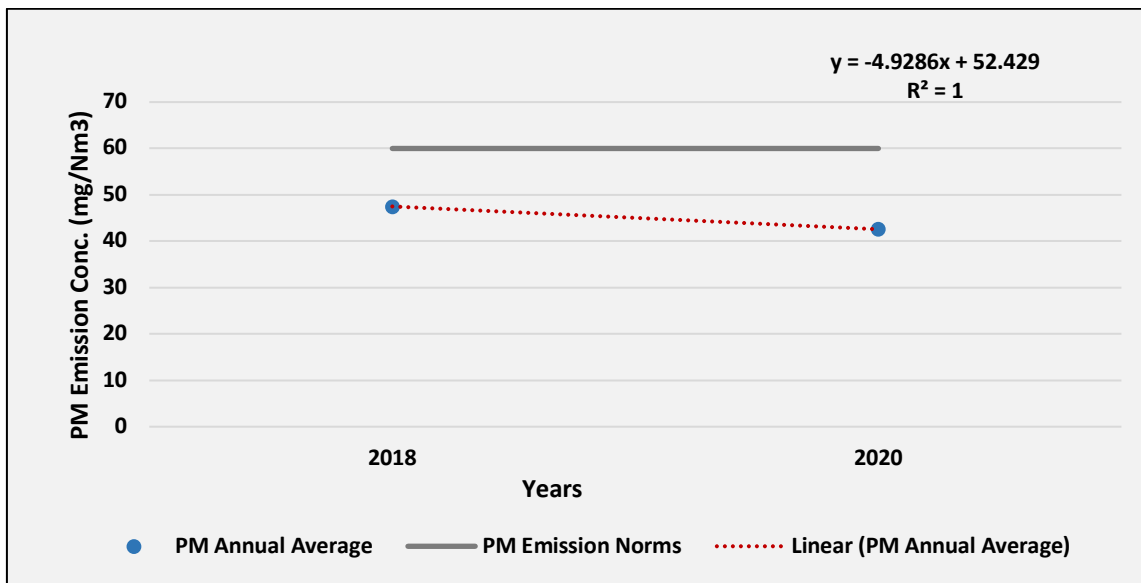


Fig. YER12: Trend of annual mean PM Emission air concentration in Yeramarus TPP (Stack 1)

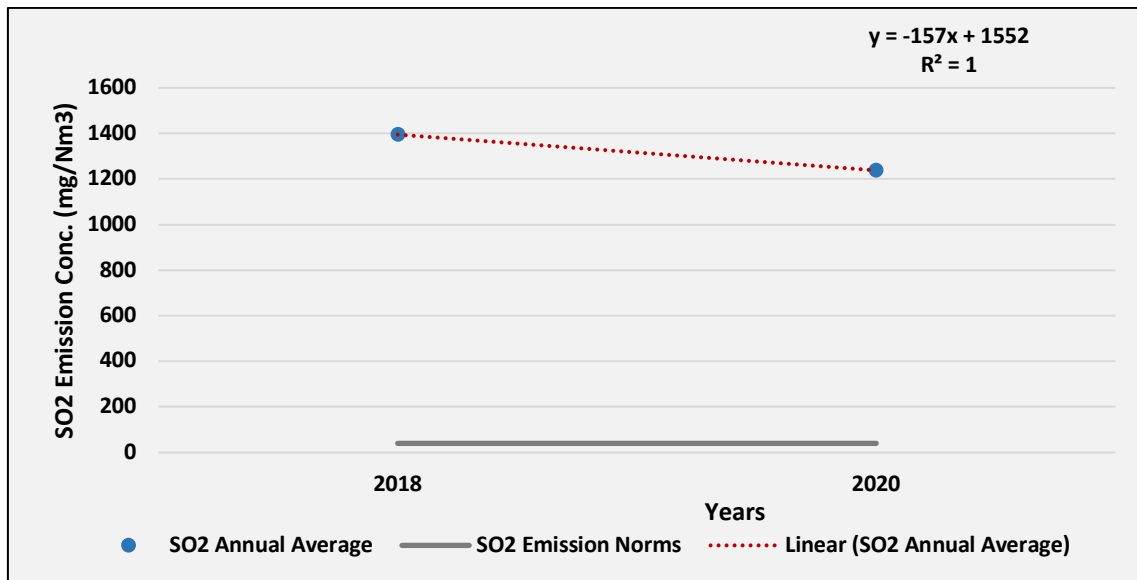


Fig. YER13: Trend of annual mean SO₂ Emission air concentration in Yeramarus TPP (Stack 1)

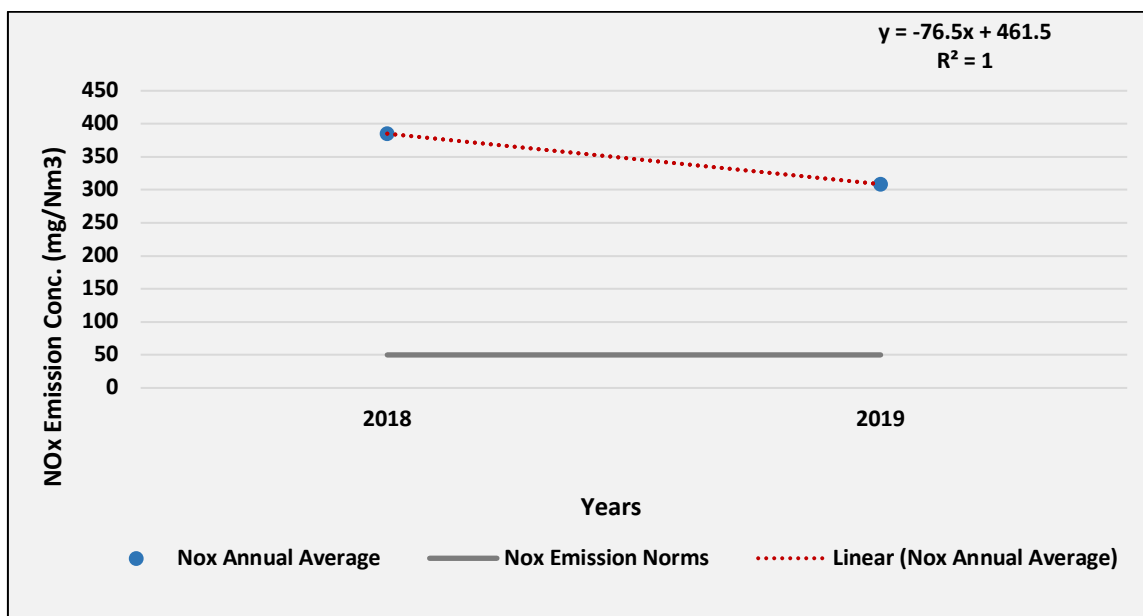


Fig. YER14: Trend of annual mean NO_x Emission air concentration in Yeramarus TPP (Stack 1)

Evidence based on ground level stations shows that the monthly average and annual average of PM10, Pm2.5 and SO2 are exceeding whereas the NOx levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that PM, SO2 and NOx parameter are much higher than the emission norms.

APGENCO NTPPS THERMAL POWER PLANT

Dr Narla Tata Rao Thermal Power Plant or Vijayawada Thermal Power Plant is located at Vijayawada in Andhra Pradesh. It is named after, Dr. Narla Tata Rao, the erstwhile chairman of the Andhra Pradesh State Electricity board. The power plant is one of the coal-based power plants of APGENCO

The ambient air quality concentrations of PM₁₀, PM_{2.5} SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. KOR1 – Fig. KOR50) for the last eight years (2012-2020) using data provided by APGENCO developer for .Narla Tata Rao Power plant, Chhattisgarh, India.

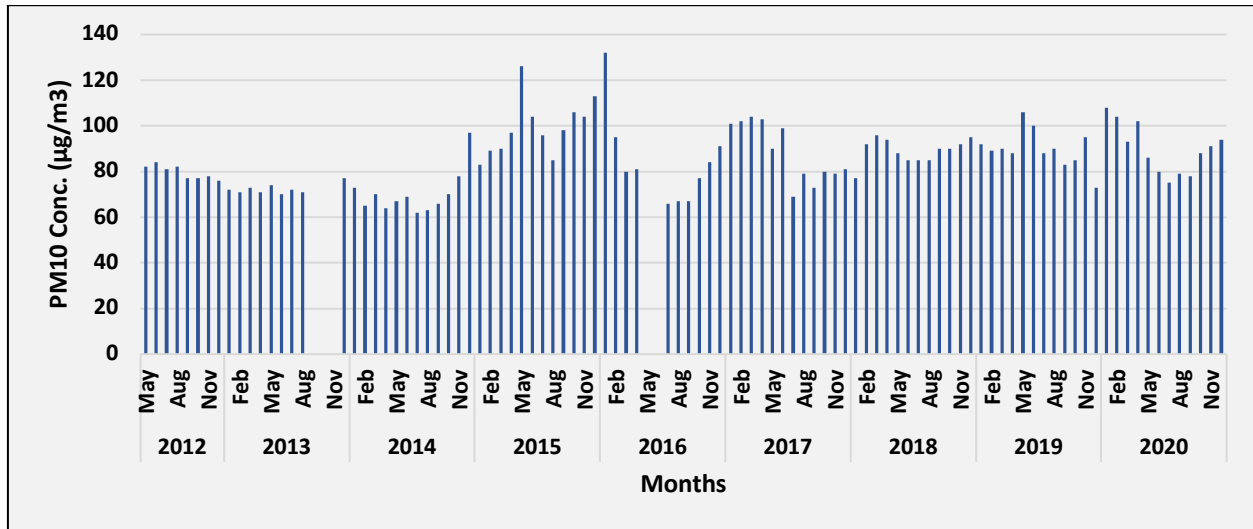


Fig. NTT1: Time series of monthly average PM₁₀ ambient air concentration in NTPPS TPP (Ambient 1)

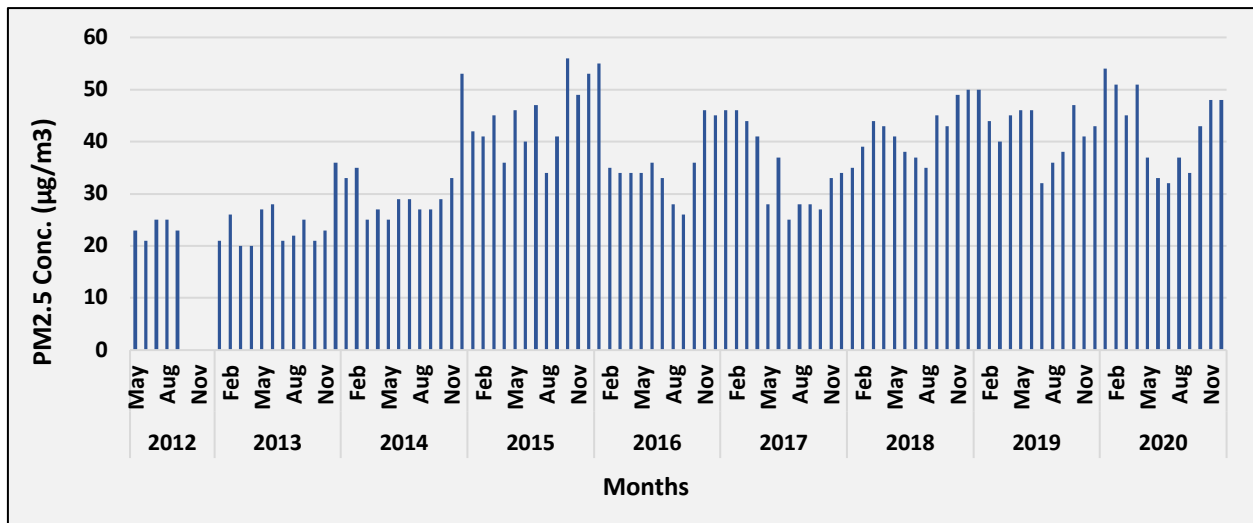


Fig. NTT2: Time series of monthly average PM_{2.5} ambient air concentration in NTPPS TPP (Ambient 1)

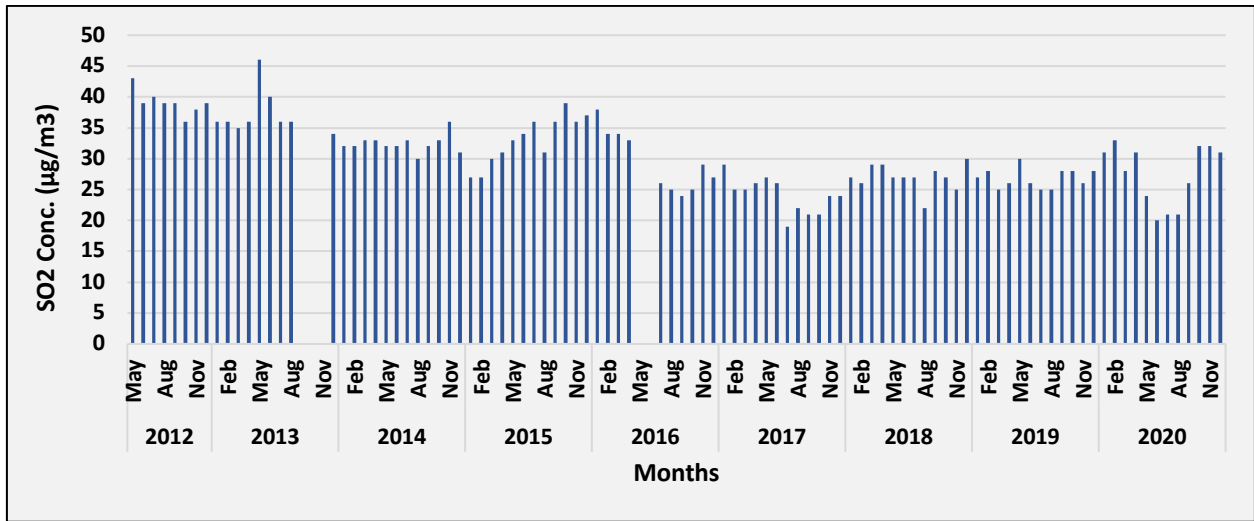


Fig. NTT3: Time series of monthly average SO₂ ambient air concentration in NTTPS TPP (Ambient 1)

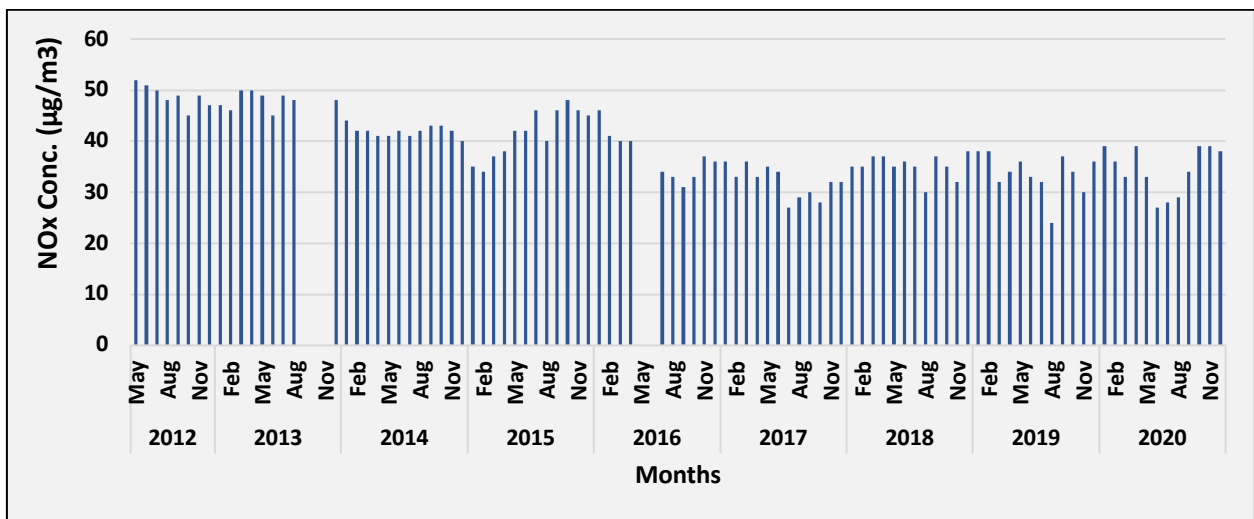


Fig. NTT4: Time series of monthly average NO_x ambient air concentration in NTTPS TPP (Ambient 1)

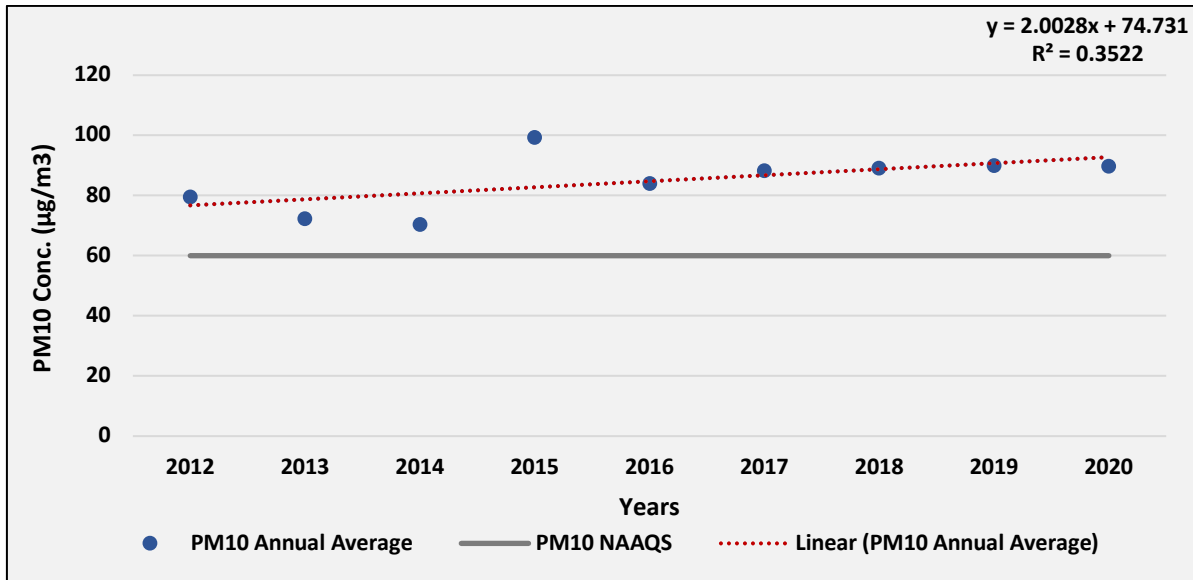


Fig. NTT5: Trend of annual mean PM_{10} ambient air concentration in NTTPS TPP (Ambient 1)

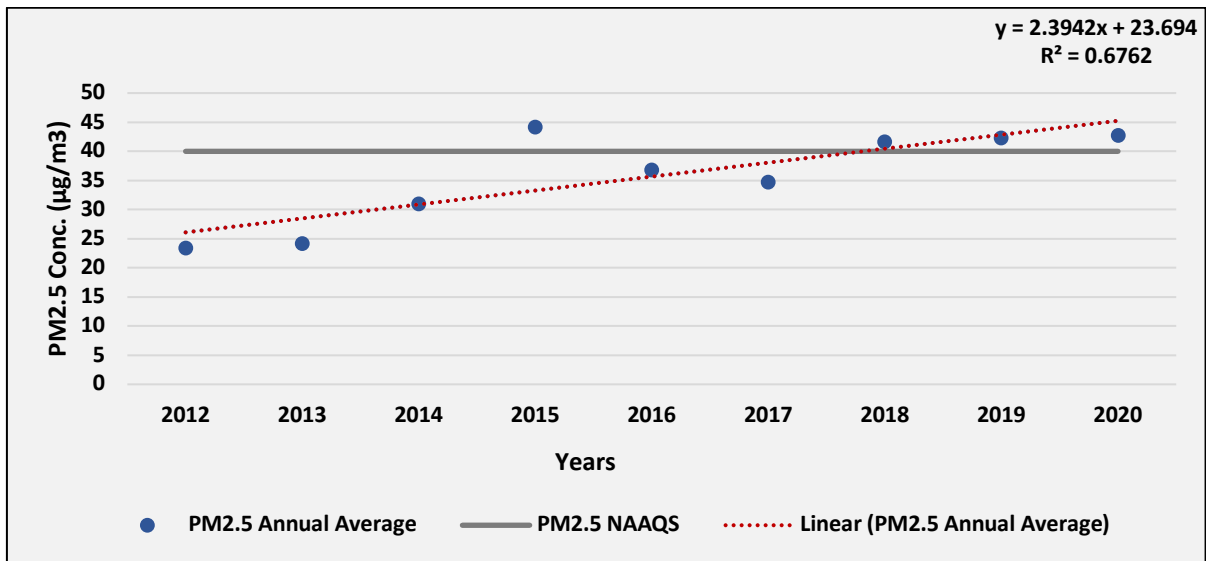


Fig. NTT6: Trend of annual mean $PM_{2.5}$ ambient air concentration in NTTPS TPP (Ambient 1)

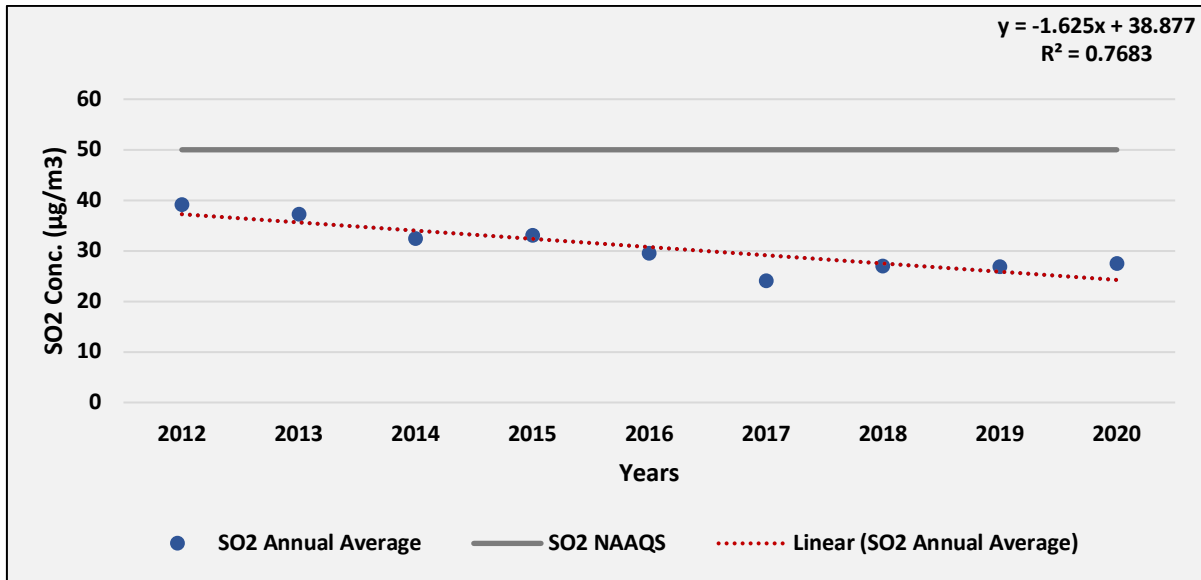


Fig. NTT7: Trend of annual mean SO₂ ambient air concentration in NTTPS TPP (Ambient 1)

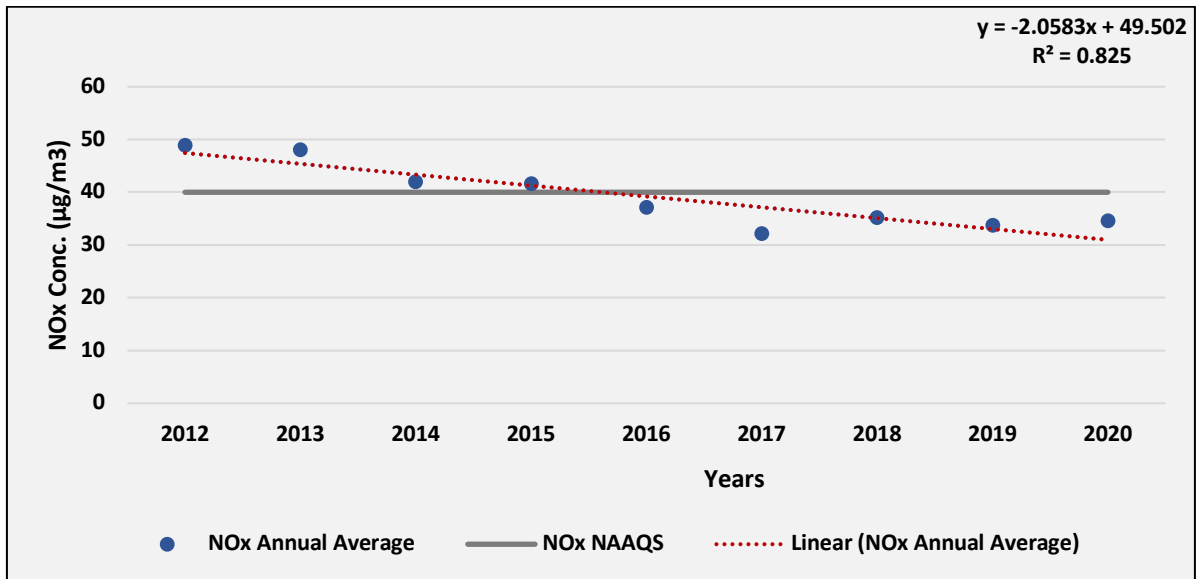


Fig. NTT8: Trend of annual mean NO_x ambient air concentration in NTTPS TPP (Ambient 1)

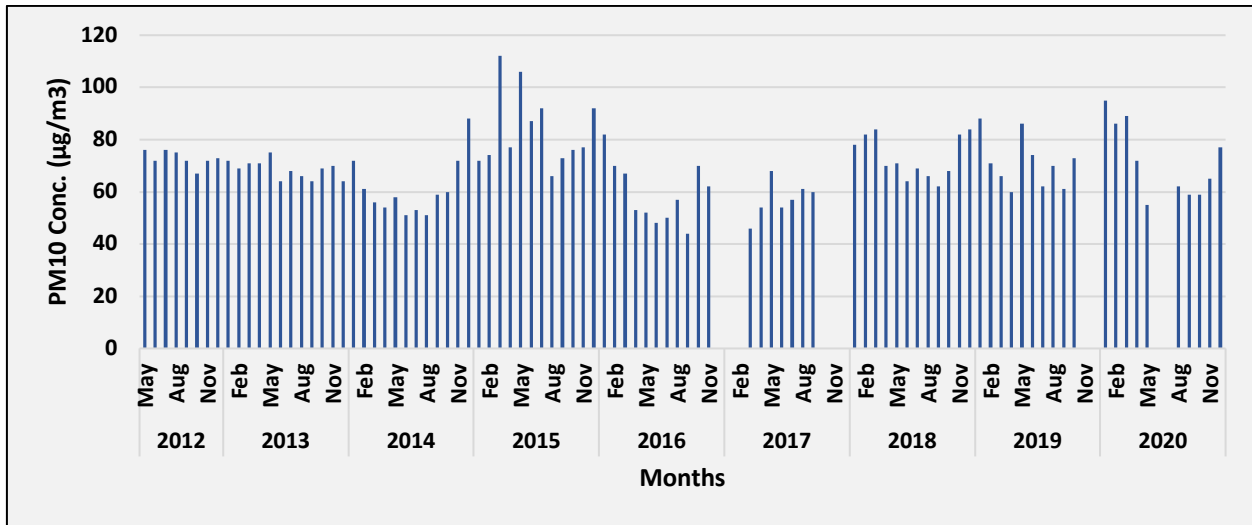


Fig. NTT9: Time series of monthly average PM_{10} ambient air concentration in NTTPS TPP (Ambient 2)

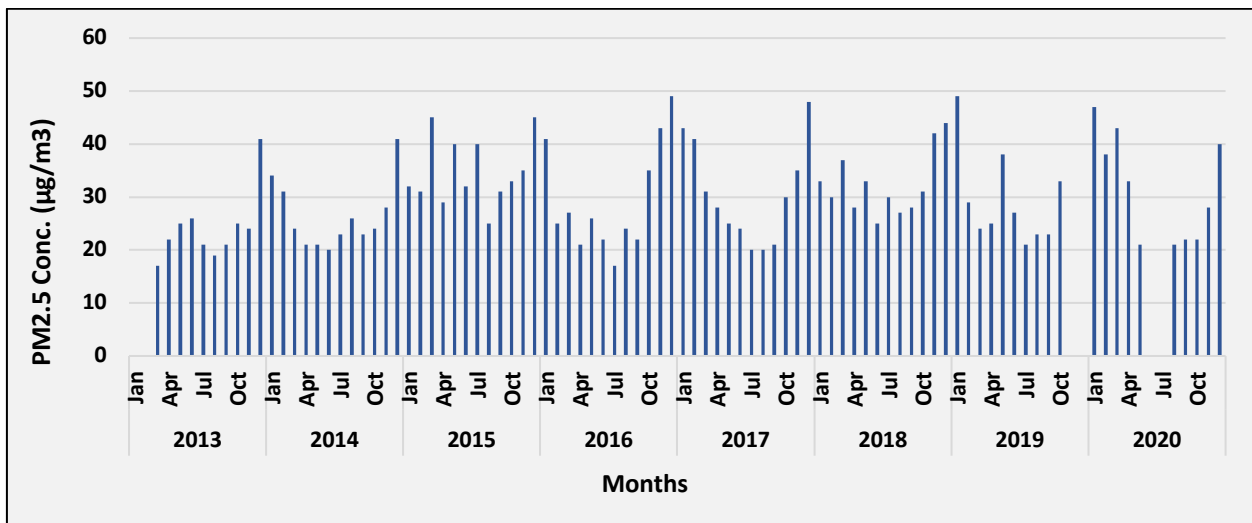


Fig. NTT10: Time series of monthly average $PM_{2.5}$ ambient air concentration in NTTPS TPP (Ambient 2)

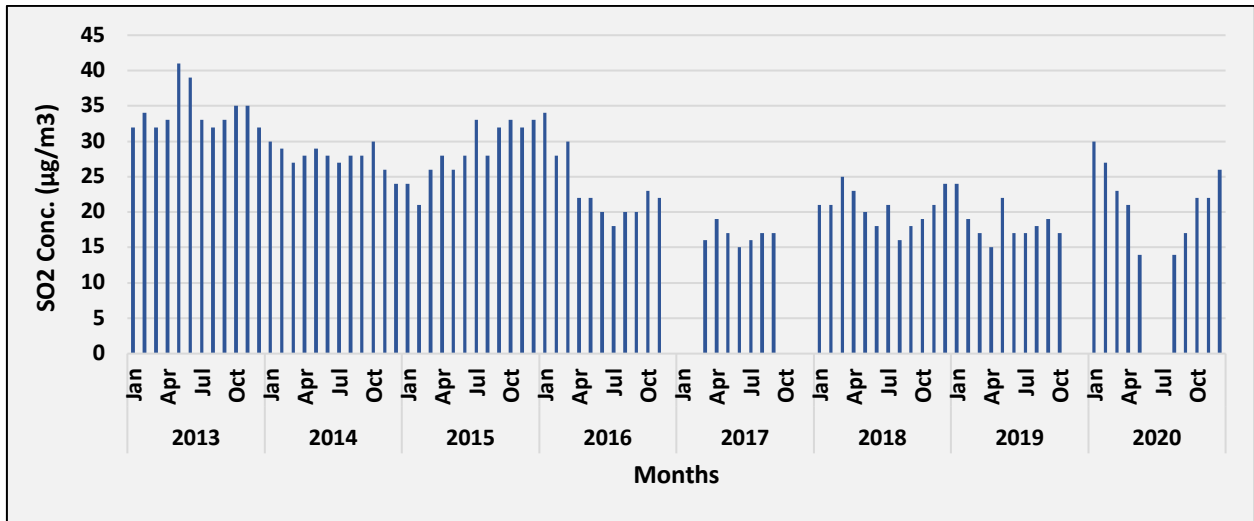


Fig. NTT11: Time series of monthly average SO_2 ambient air concentration in NTTPS TPP (Ambient 2)

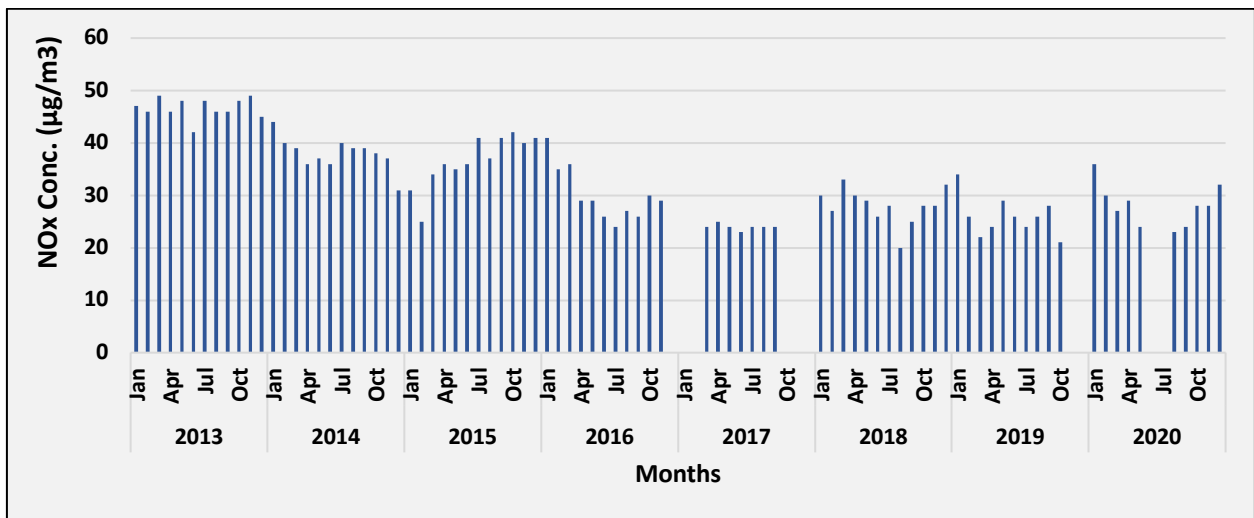


Fig. NTT12: Time series of monthly average NO_x ambient air concentration in NTTPS TPP (Ambient 2)

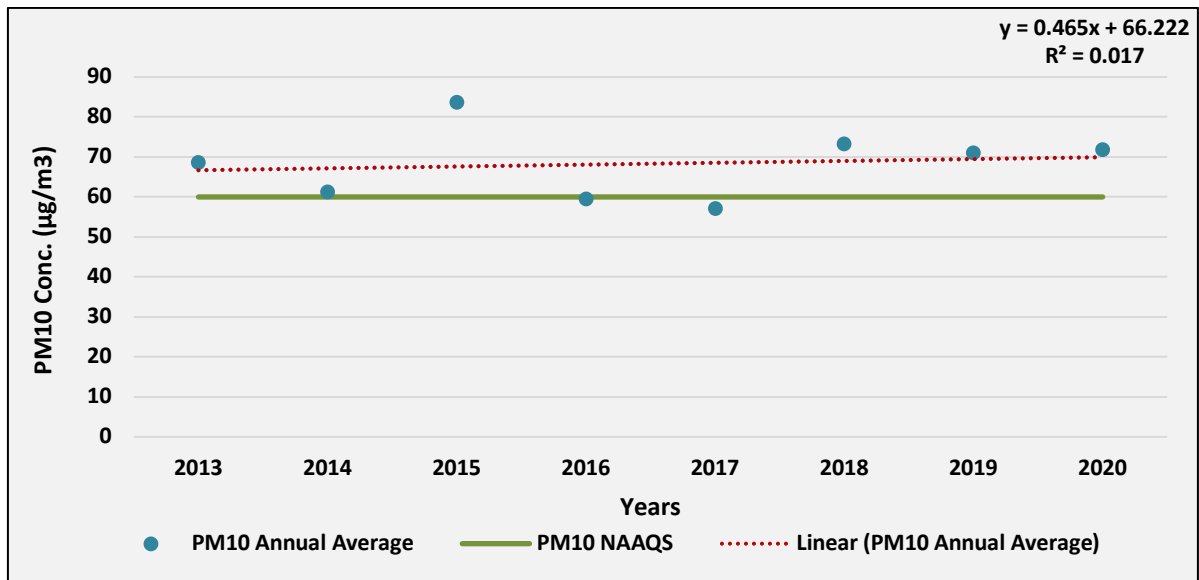


Fig. NTT13: Trend of annual mean PM_{10} ambient air concentration in NTTPS TPP (Ambient 2)

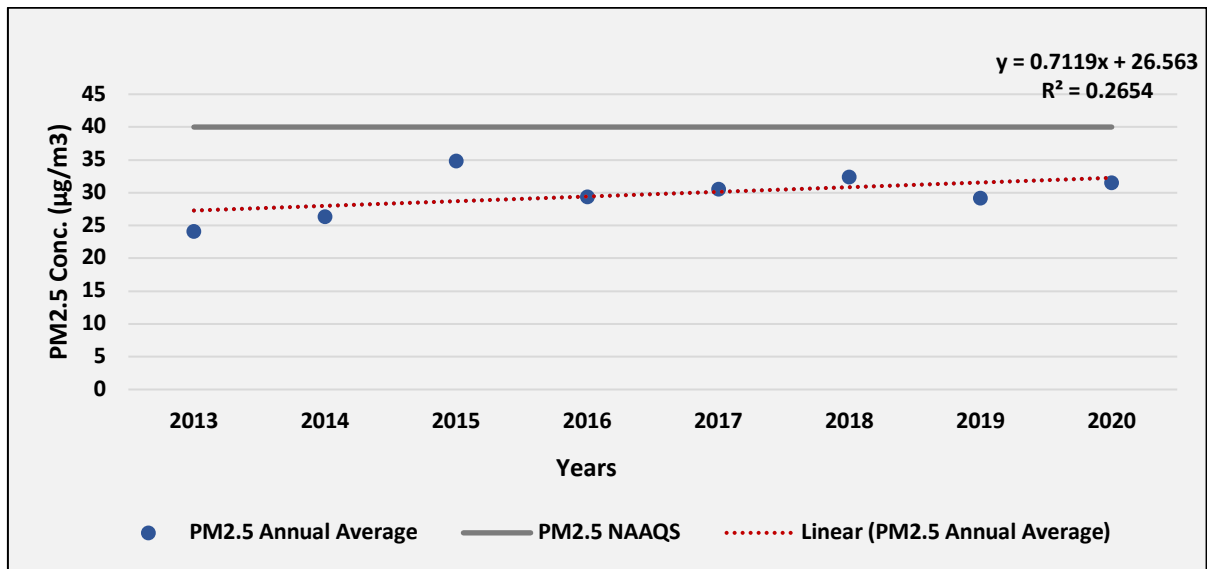


Fig. NTT14: Trend of annual mean $PM_{2.5}$ ambient air concentration in NTTPS TPP (Ambient 2)

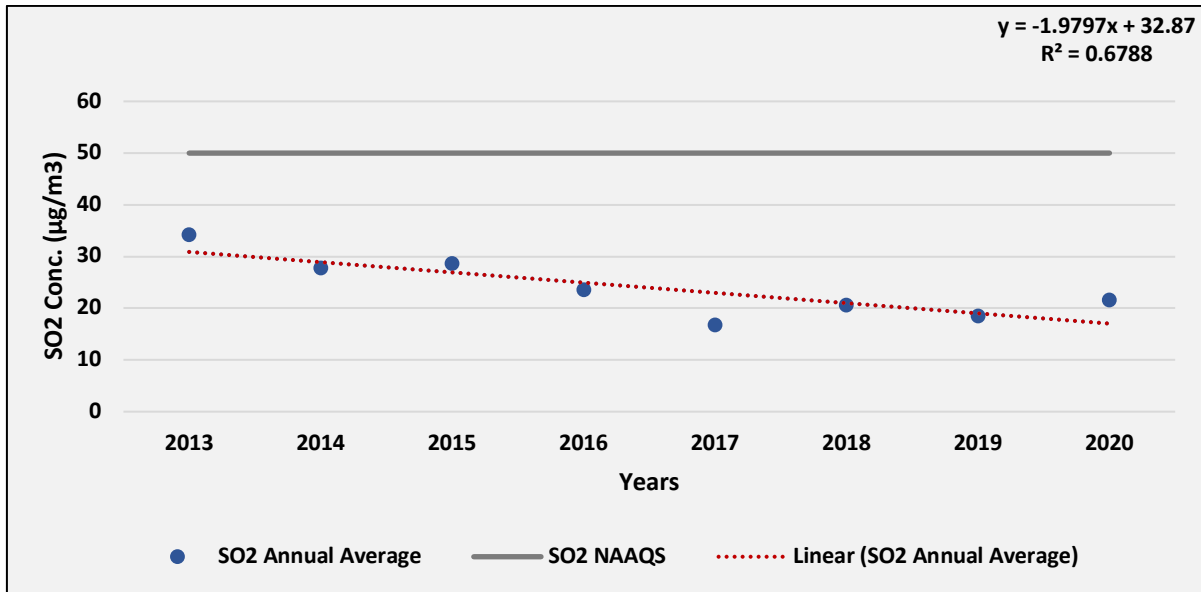


Fig. NTT15: Trend of annual mean SO₂ ambient air concentration in NTTPS TPP (Ambient 2)

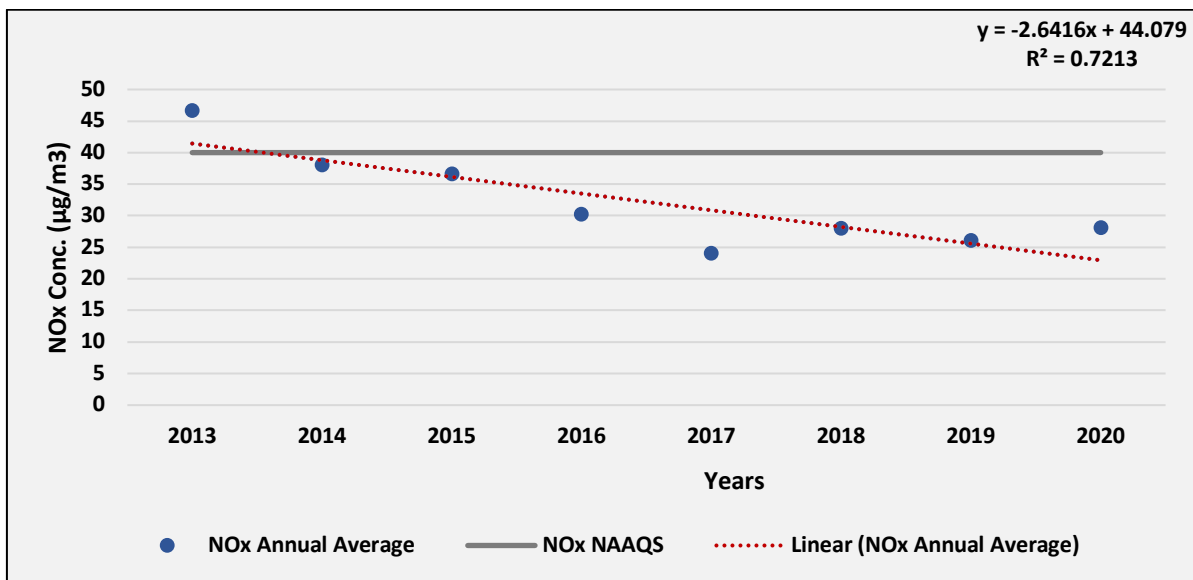


Fig. NTT16: Trend of annual mean NO_x ambient air concentration in NTTPS TPP (Ambient 2)

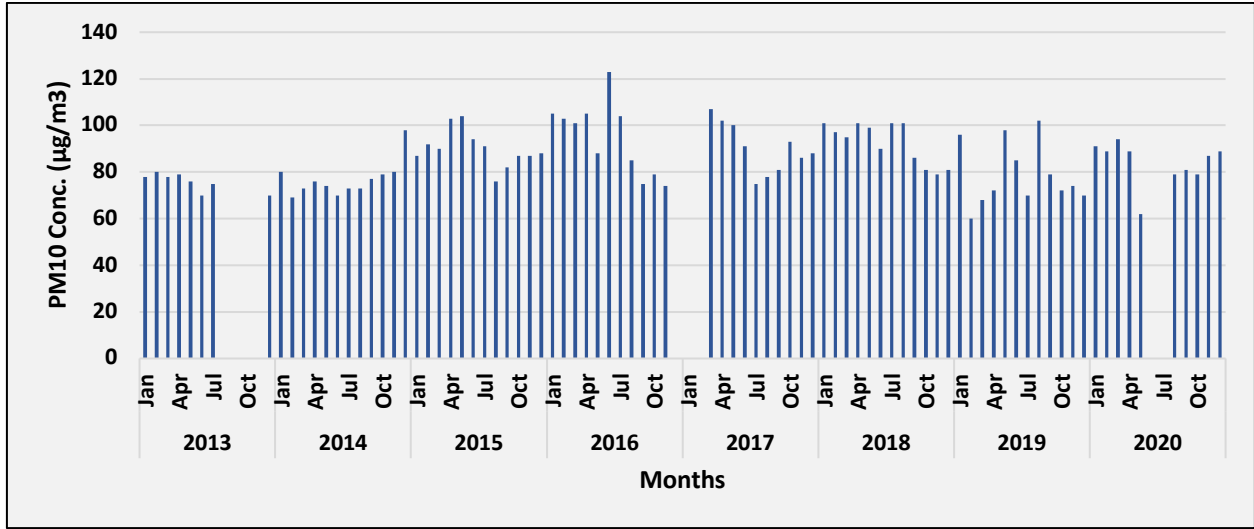


Fig. NTT17: Time series of monthly average PM₁₀ ambient air concentration in NTTPS TPP (Ambient 3)

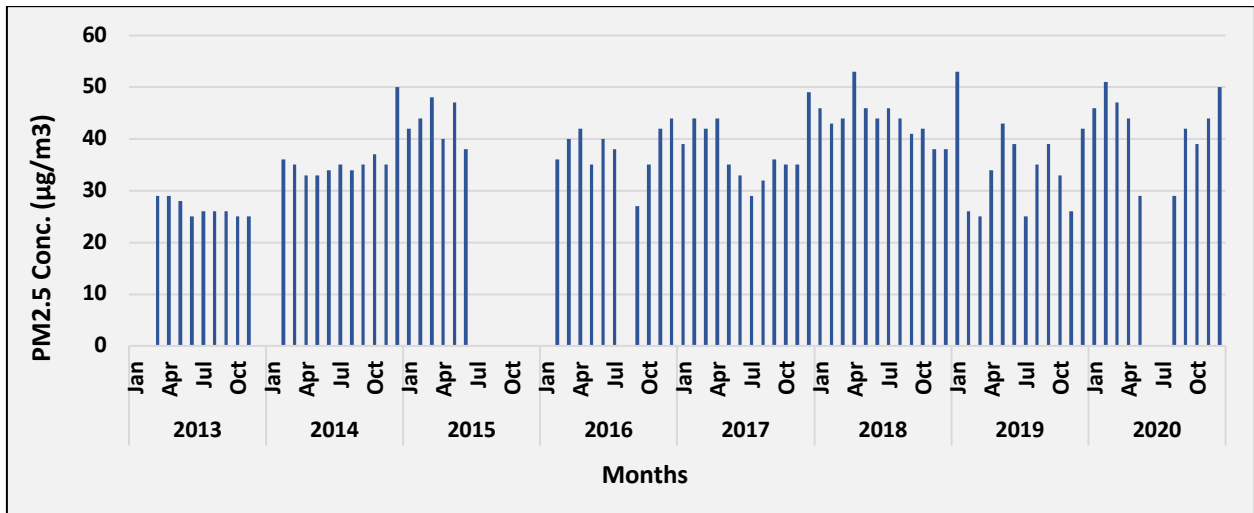


Fig. NTT18: Time series of monthly average PM_{2.5} ambient air concentration in NTTPS TPP (Ambient 3)

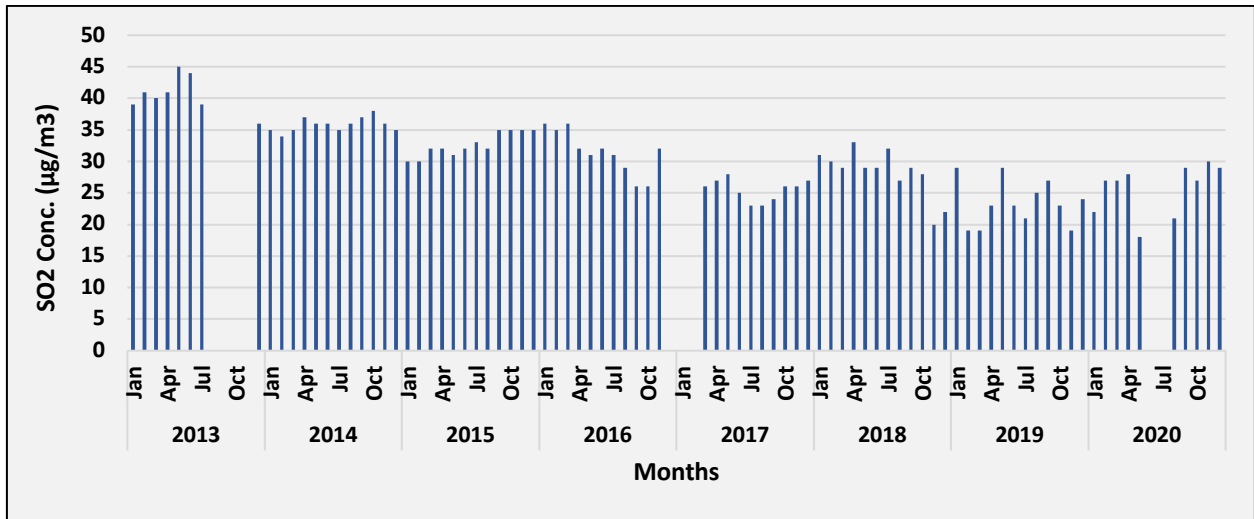


Fig. NTT19: Time series of monthly average SO₂ ambient air concentration in NTTPS TPP (Ambient 3)

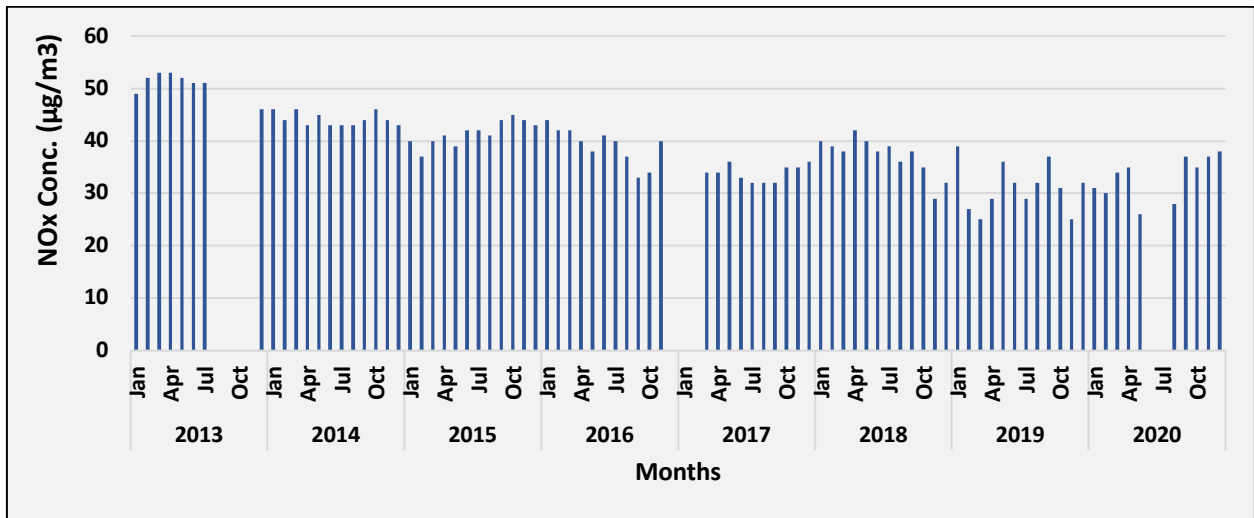


Fig. NTT20: Time series of monthly average NO_x ambient air concentration in NTTPS TPP (Ambient 3)

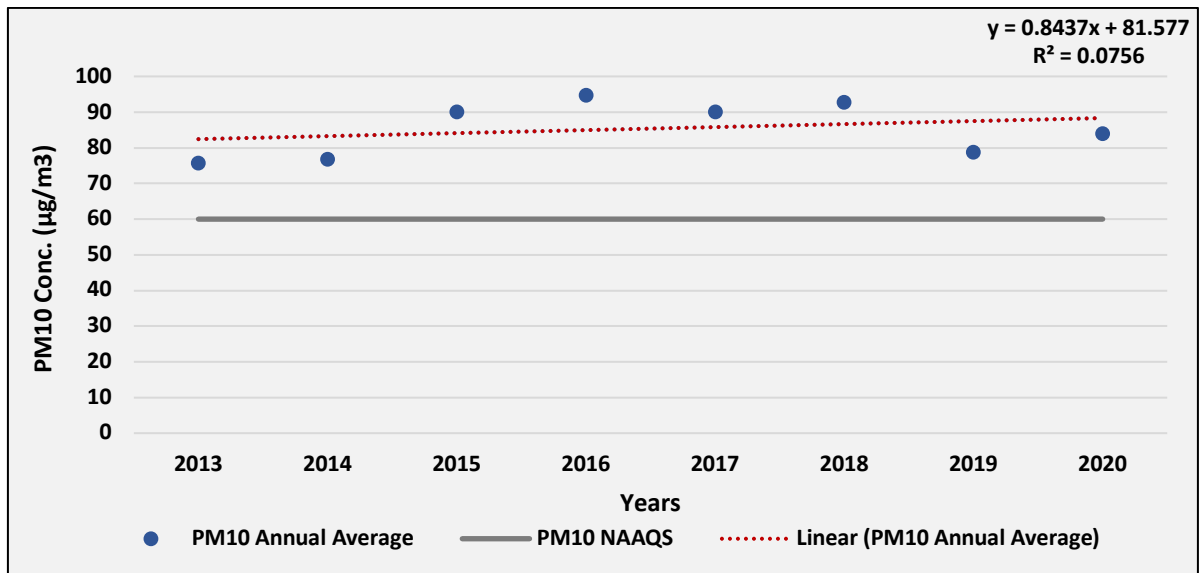


Fig. NTT21: Trend of annual mean PM_{10} ambient air concentration in NTTPS TPP (Ambient 3)

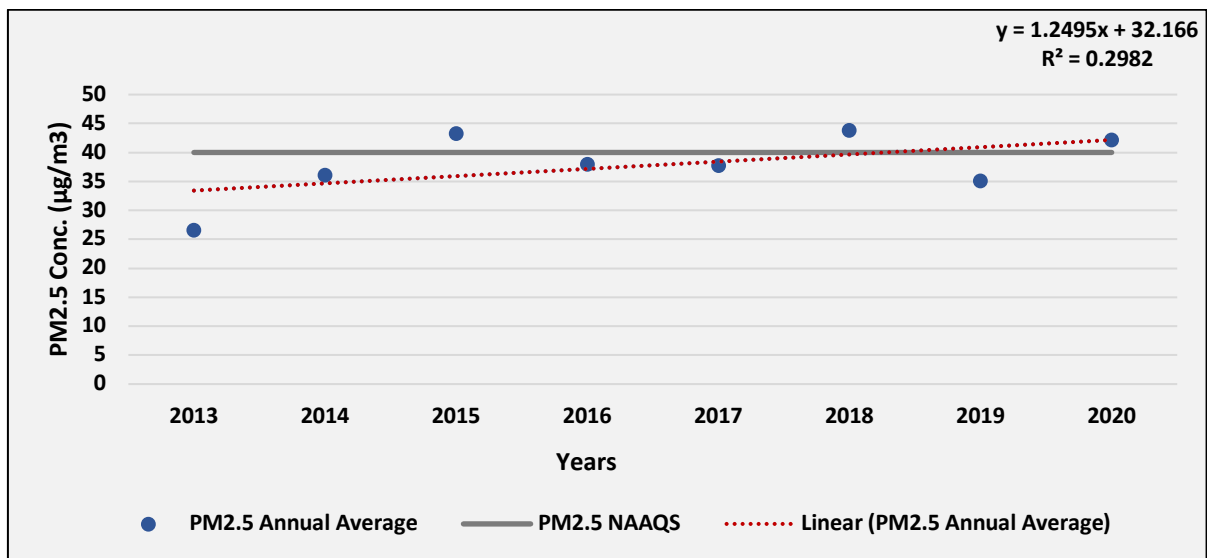


Fig. NTT22: Trend of annual mean $PM_{2.5}$ ambient air concentration in NTTPS TPP (Ambient 3)

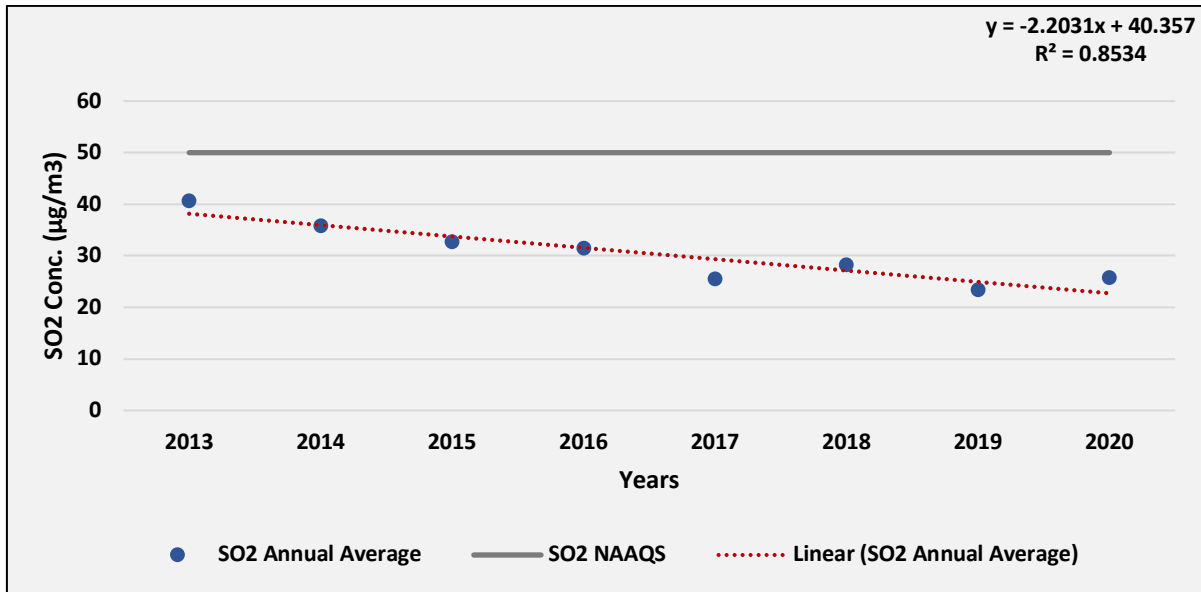


Fig. NTT23: Trend of annual mean SO₂ ambient air concentration in NTTPS TPP (Ambient 3)

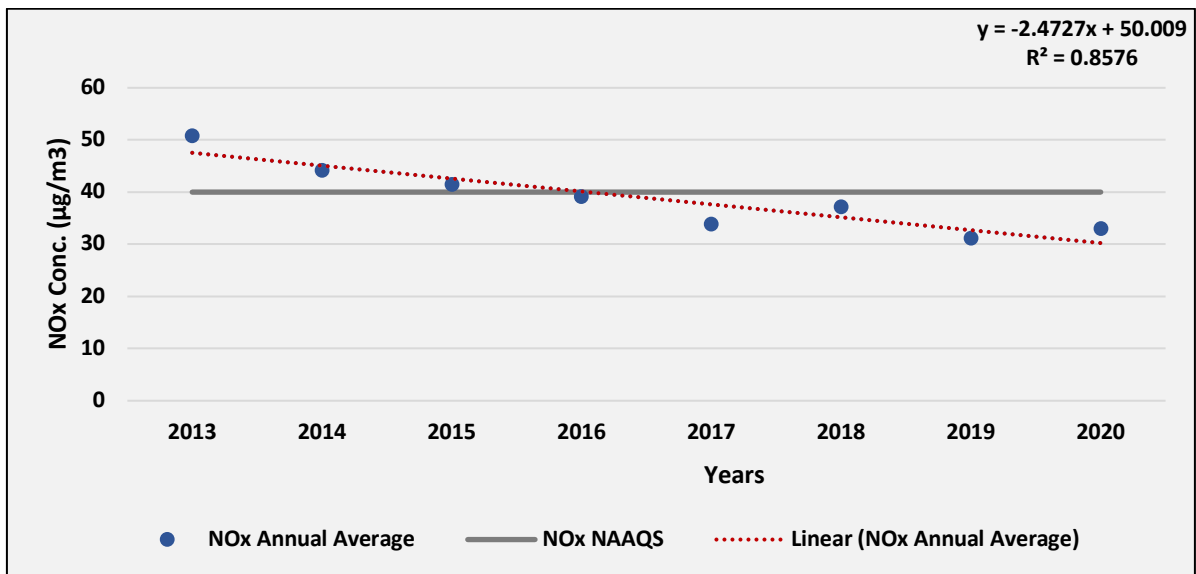


Fig. NTT24: Trend of annual mean NO_x ambient air concentration in NTTPS TPP (Ambient 3)

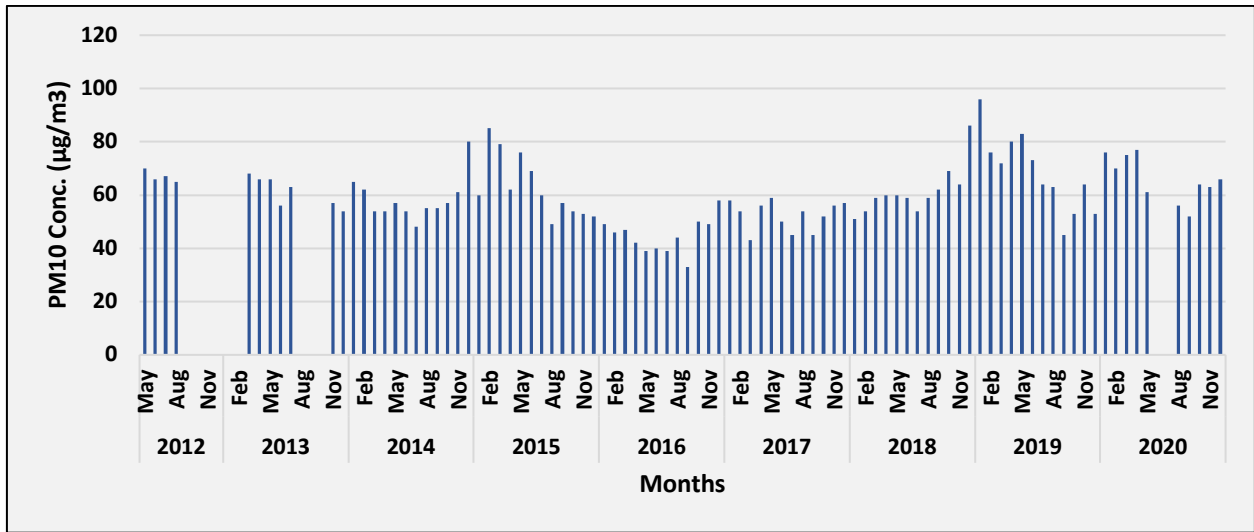


Fig. NTT25: Time series of monthly average PM_{10} ambient air concentration in NTTPS TPP (Ambient 4)

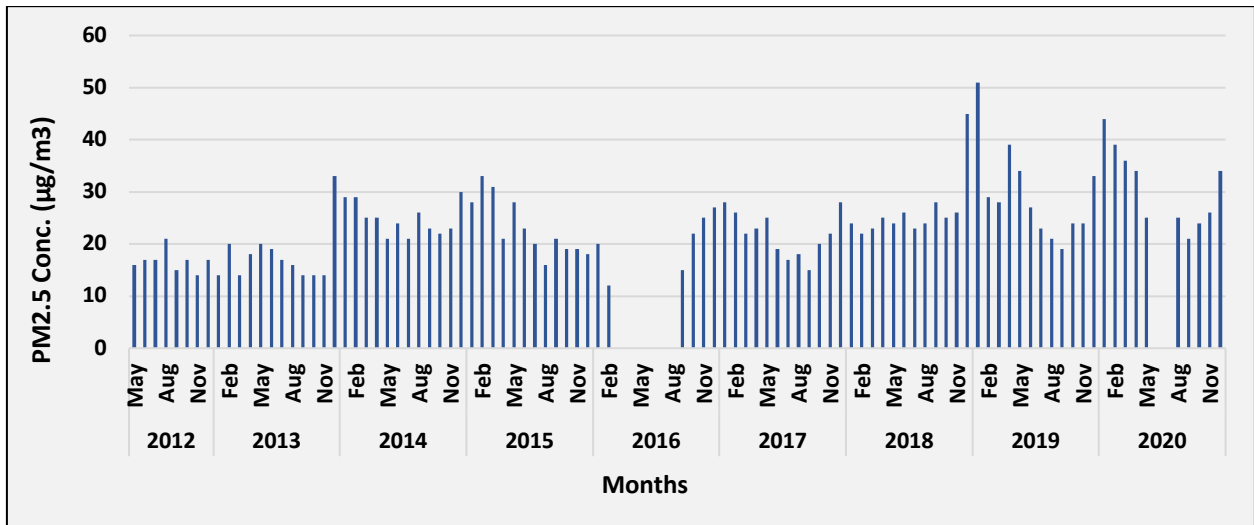


Fig. NTT26: Time series of monthly average $PM_{2.5}$ ambient air concentration in NTTPS TPP (Ambient 4)

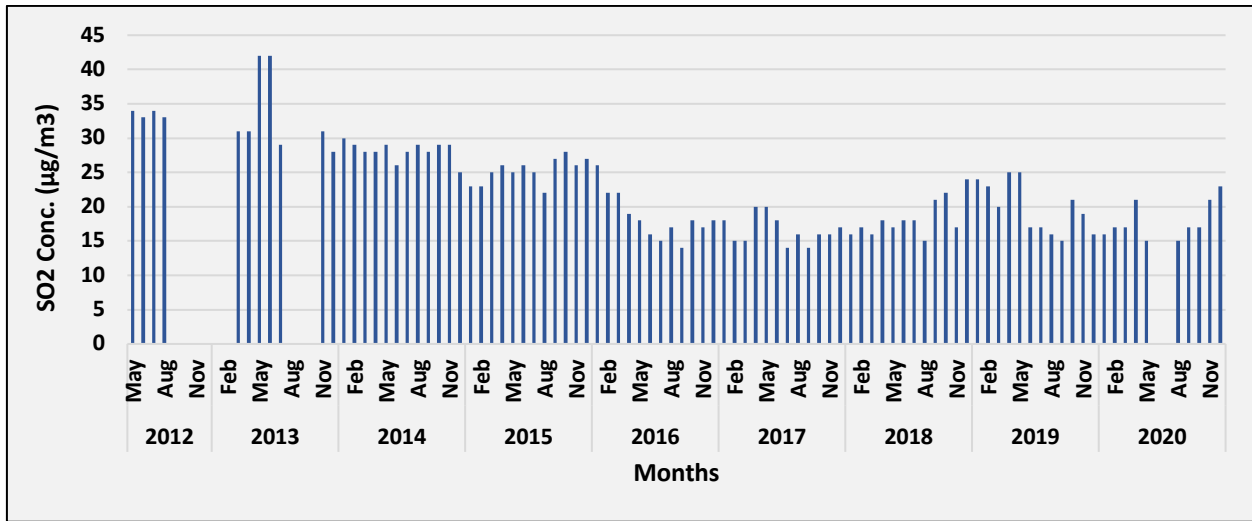


Fig. NTT27: Time series of monthly average SO_2 ambient air concentration in NTTPS TPP (Ambient 4)

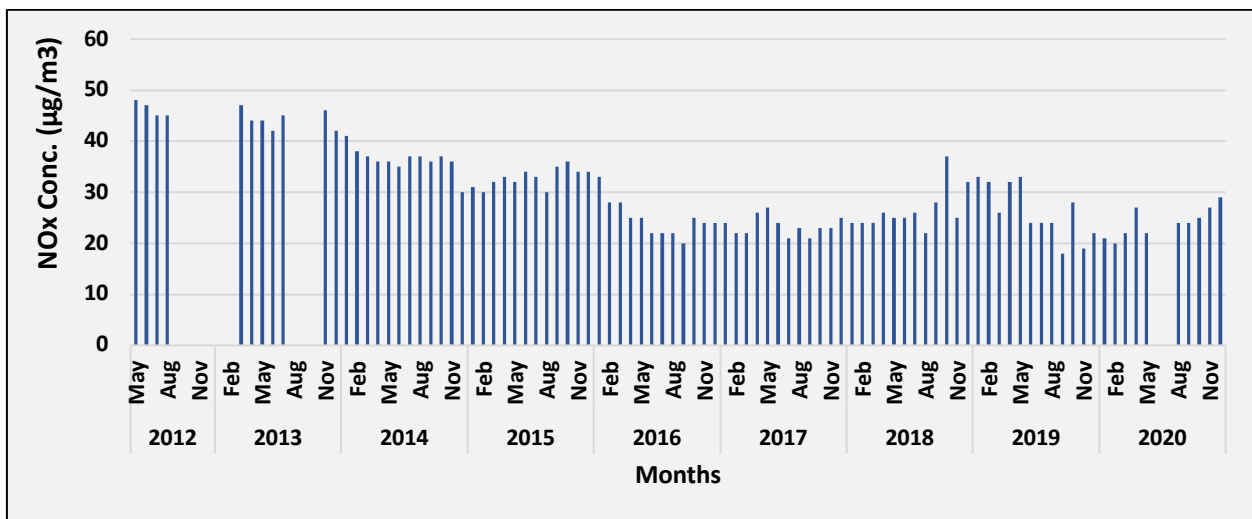


Fig. NTT28: Time series of monthly average NO_x ambient air concentration in NTTPS TPP (Ambient 4)

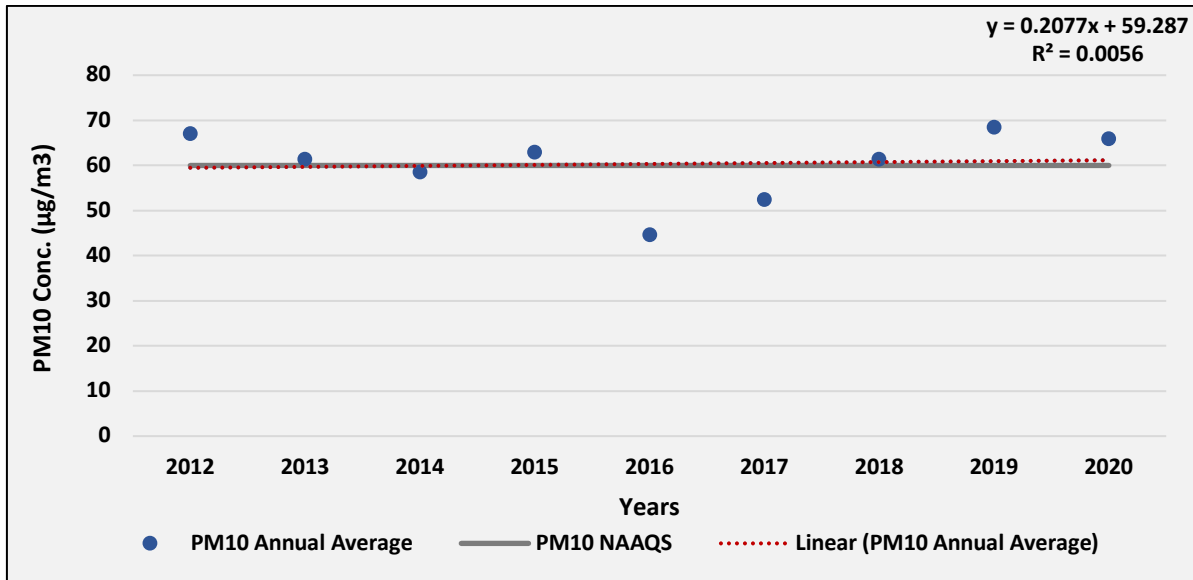


Fig. NTT29: Trend of annual mean PM_{10} ambient air concentration in NTTPS TPP (Ambient 4)

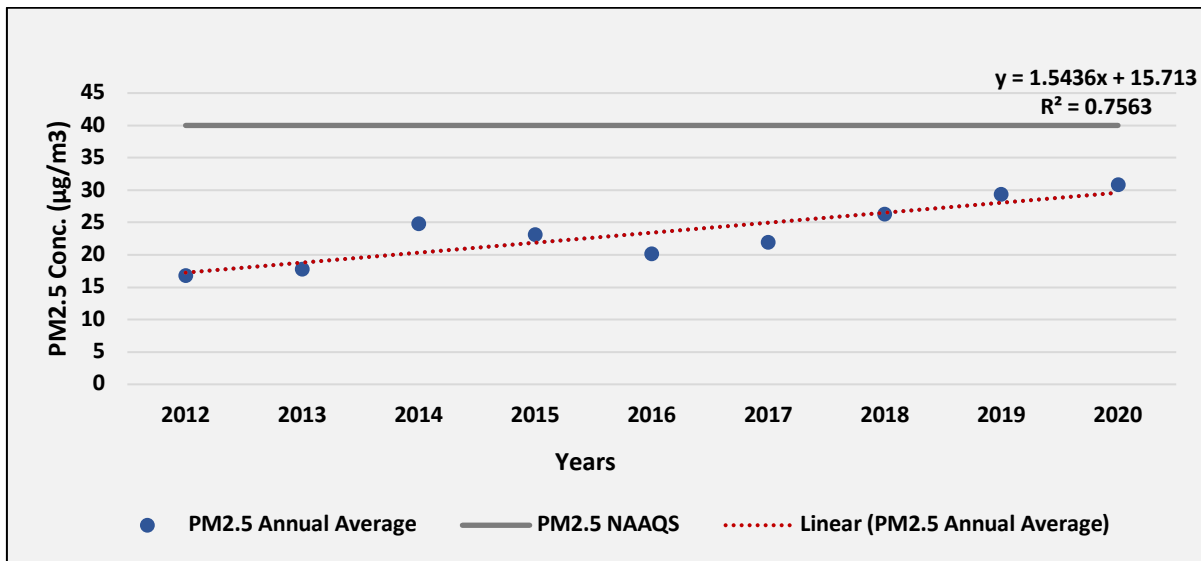


Fig. NTT30: Trend of annual mean $PM_{2.5}$ ambient air concentration in NTTPS TPP (Ambient 4)

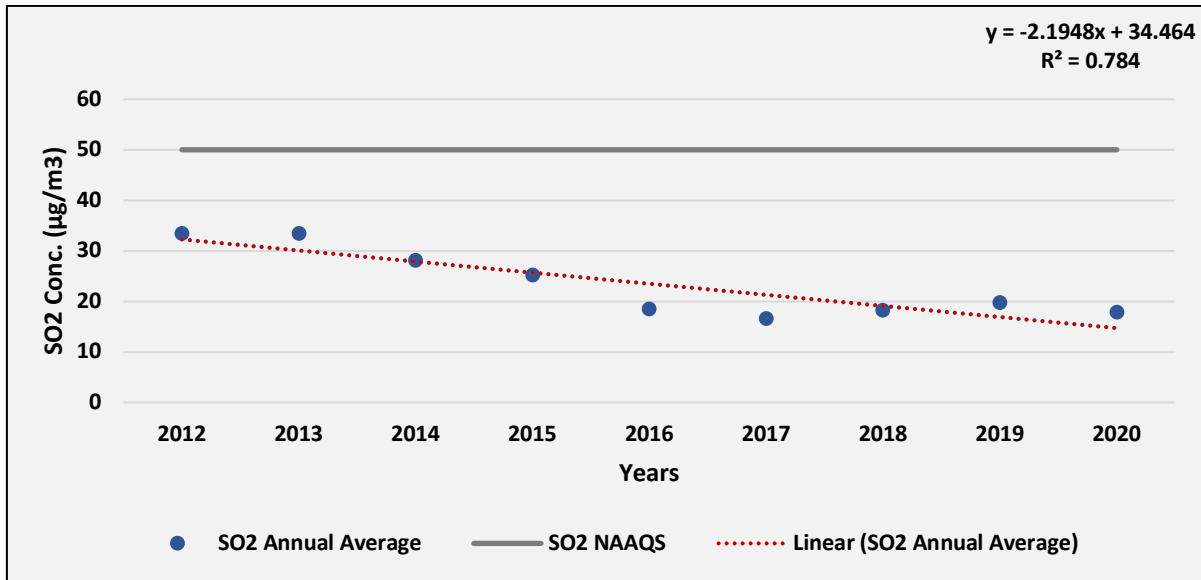


Fig. NTT31: Trend of annual mean SO₂ ambient air concentration in NTTPS TPP (Ambient 4)

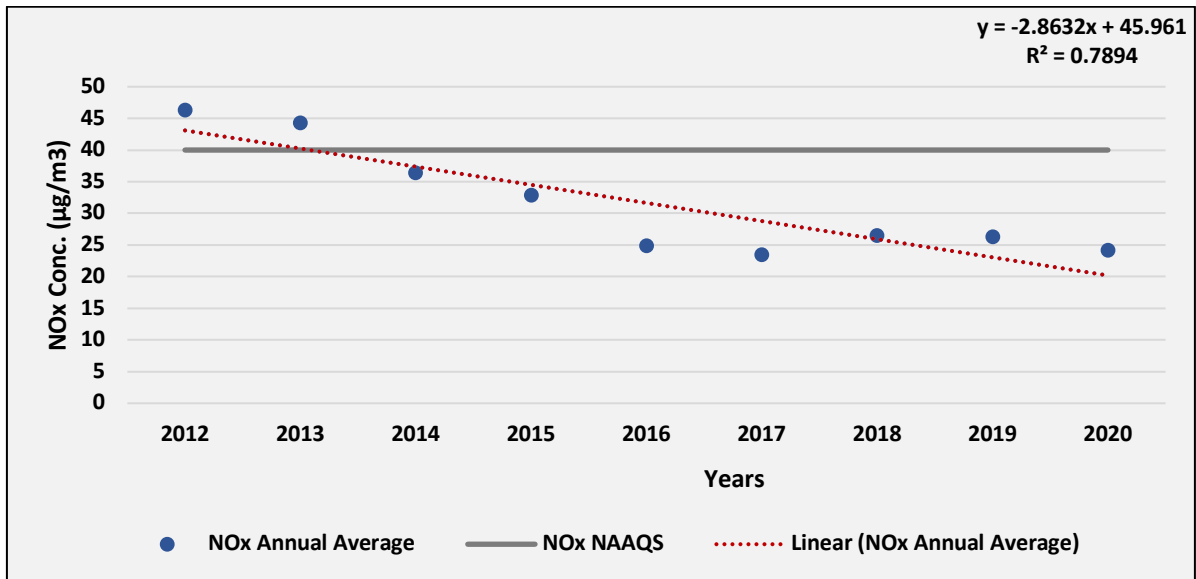


Fig. NTT32: Trend of annual mean NO_x ambient air concentration in NTTPS TPP (Ambient 4)

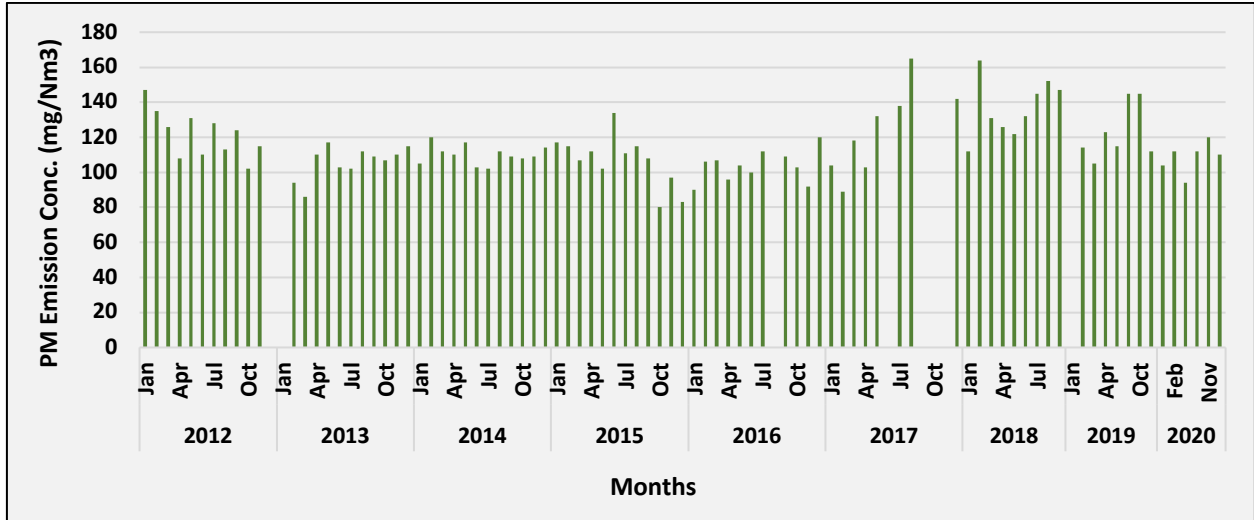


Fig. NTT33: Time series of monthly average PM Emission concentration in NTTPS TPP (Unit 1)

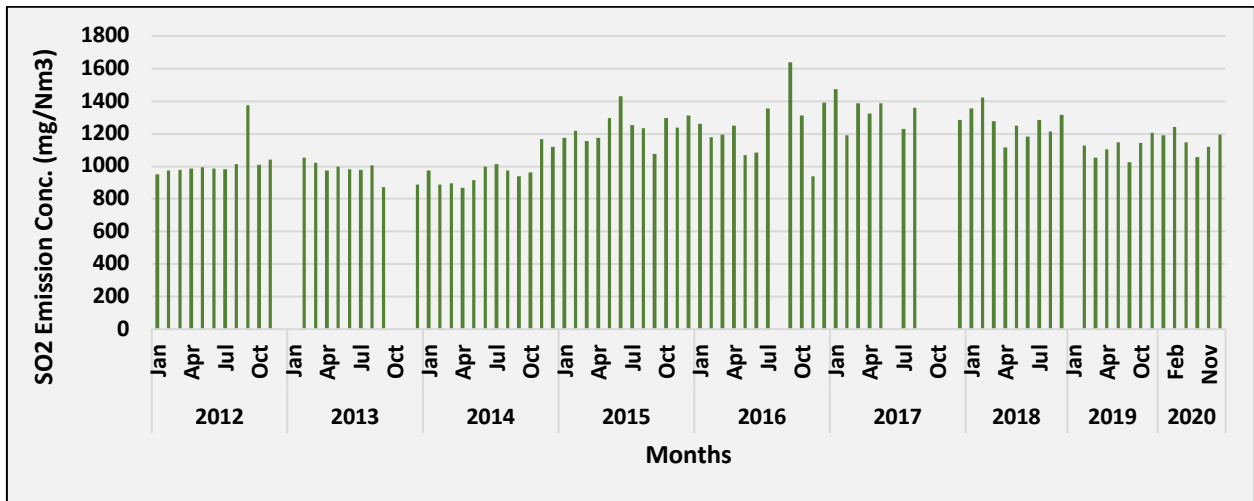


Fig. NTT34: Time series of monthly average SO₂ Emission concentration in NTTPS TPP (Unit 1)

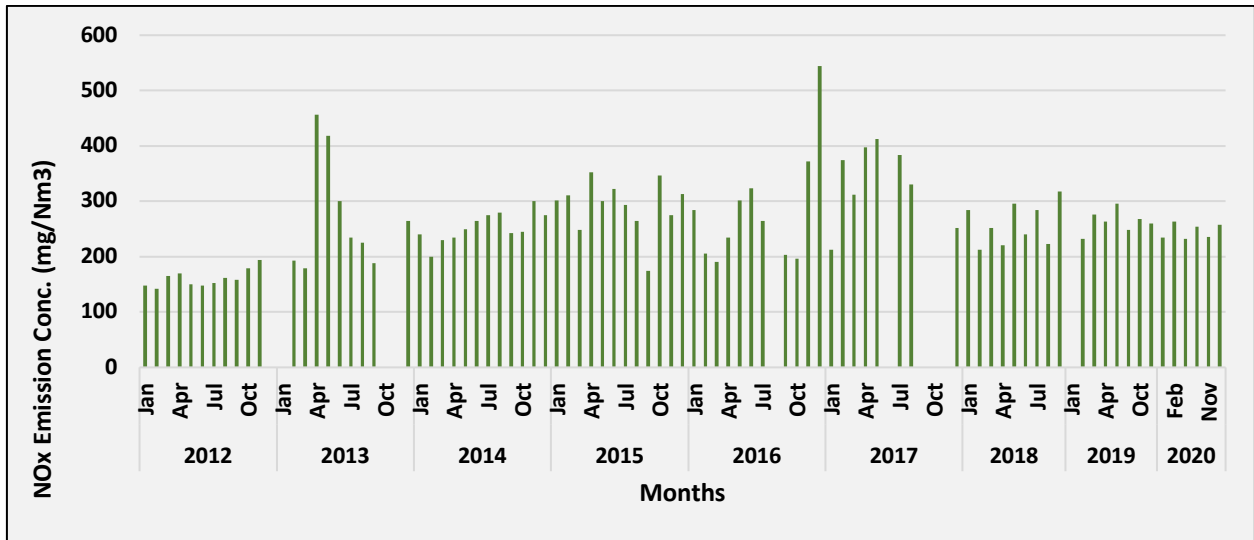


Fig. NTT35: Time series of monthly average NO_x Emission concentration in NTTPS TPP (Unit 1)

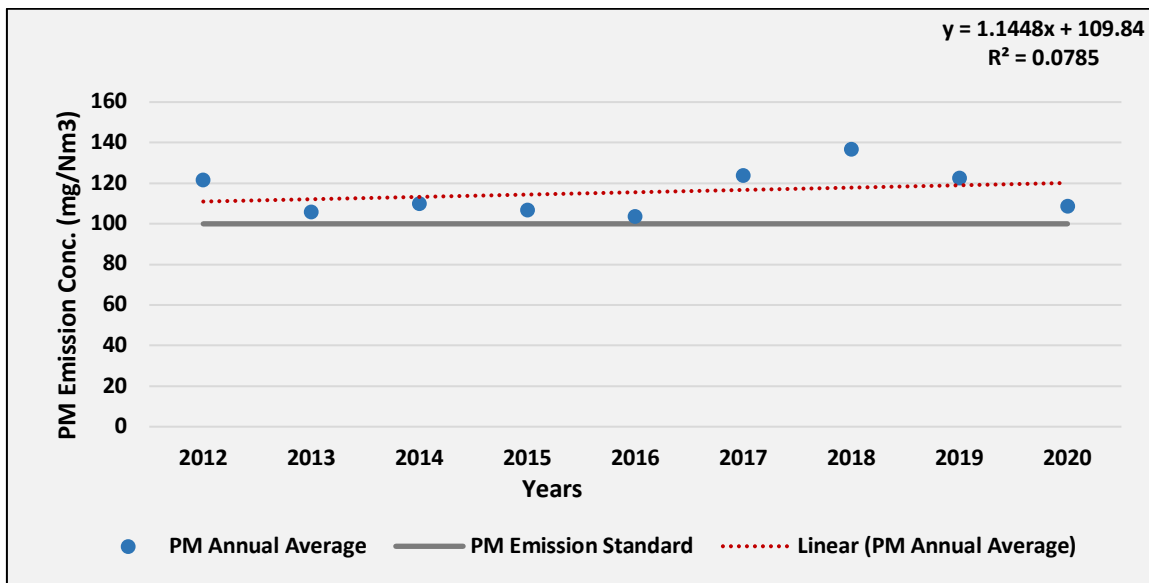


Fig. NTT36: Trend of annual mean PM Emission air concentration in NTTPS TPP (Unit 1)

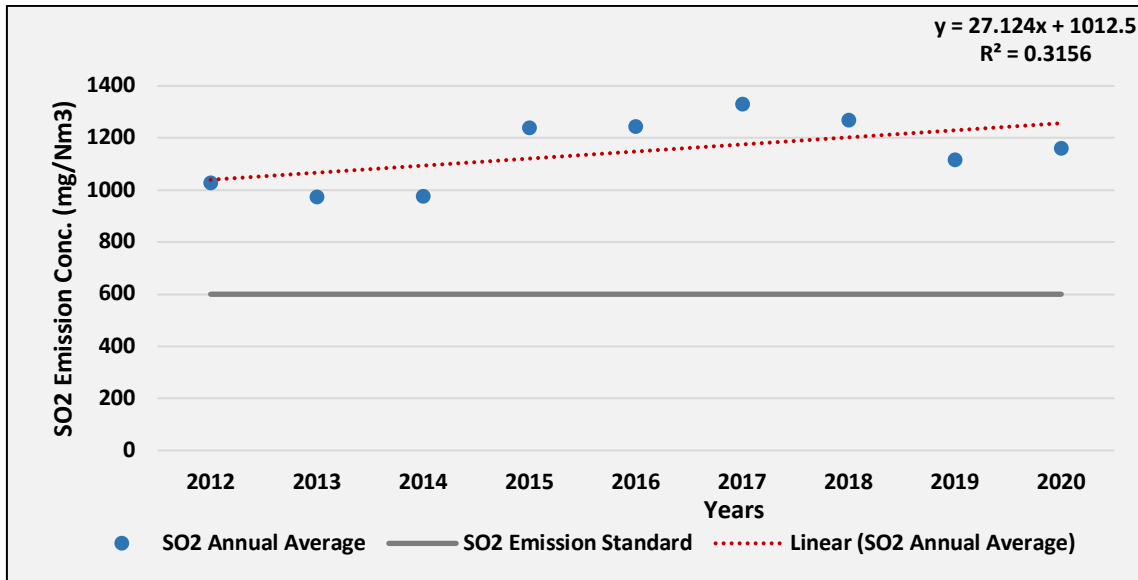


Fig. NTT37: Trend of annual mean SO₂ Emission air concentration in NTTPS TPP (Unit 1)

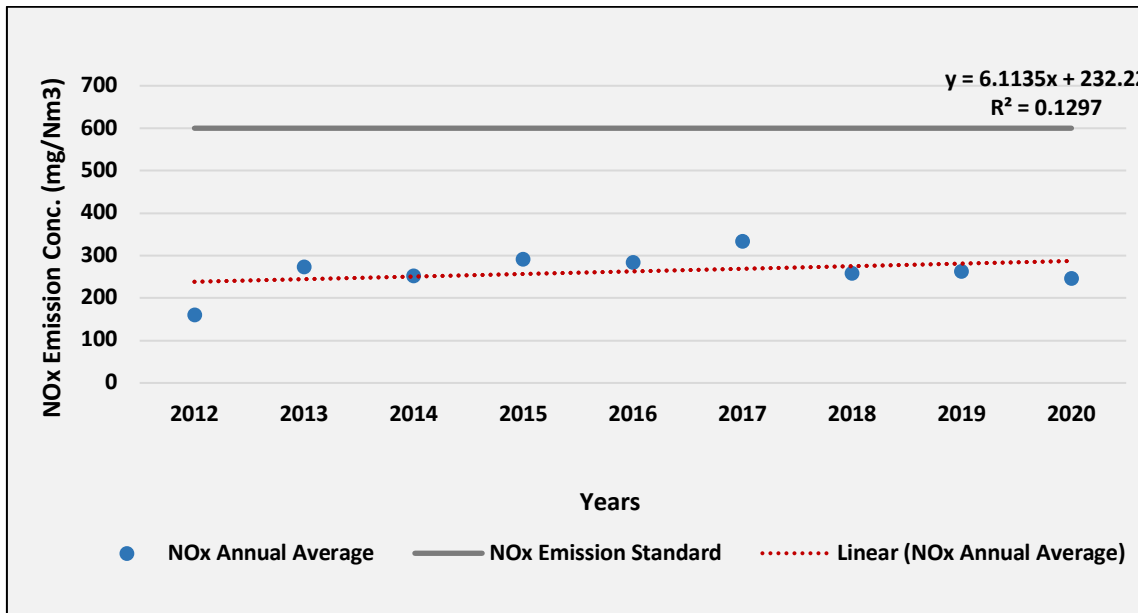


Fig. NTT38: Trend of annual mean NO_x Emission air concentration in NTTPS TPP (Unit 1)

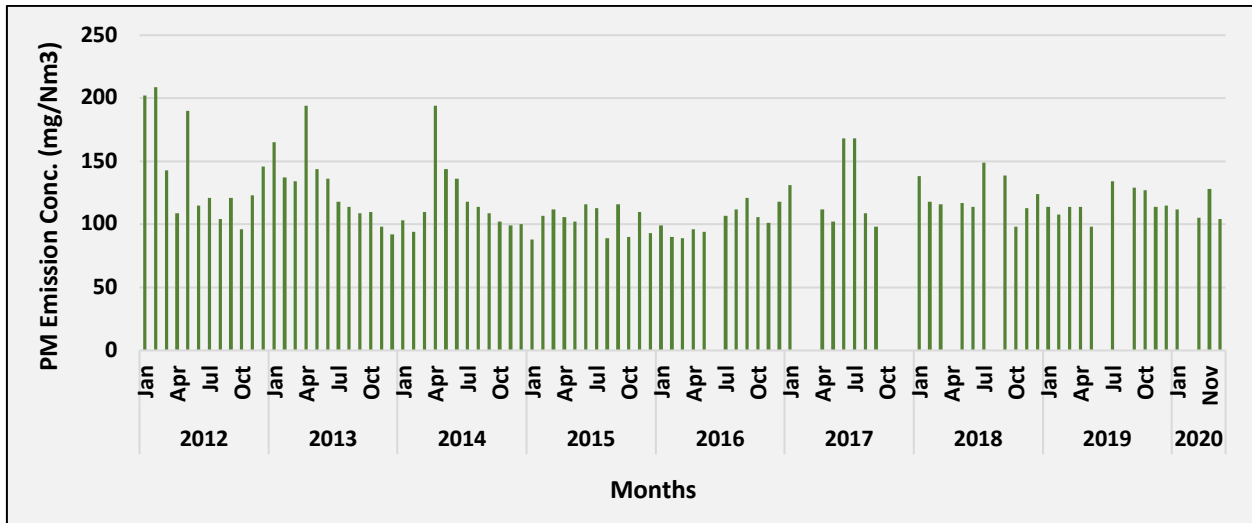


Fig. NTT39: Time series of monthly average PM Emission concentration in NTTPS TPP (Unit 2)

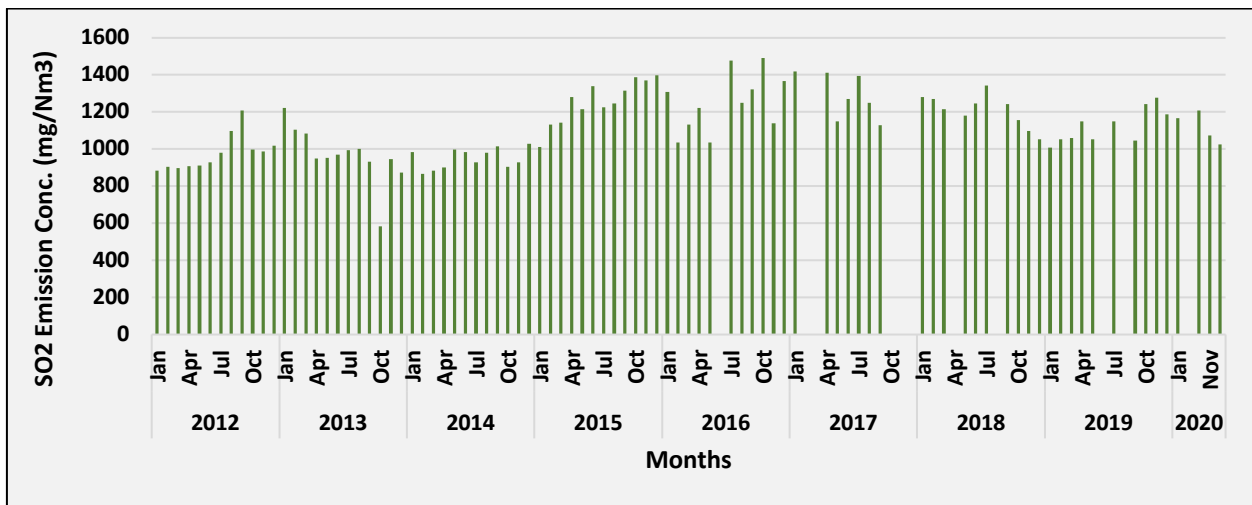


Fig. NTT40: Time series of monthly average SO₂ Emission concentration in NTTPS TPP (Unit 2)

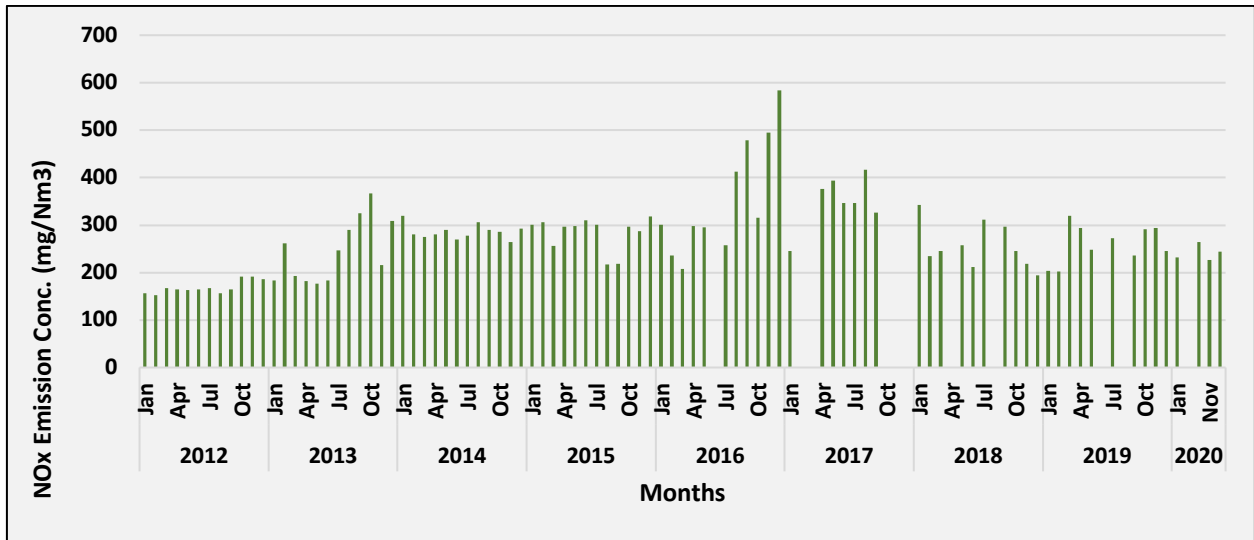


Fig. NTT41: Time series of monthly average NO_x Emission concentration in NTTPS TPP (Unit 2)

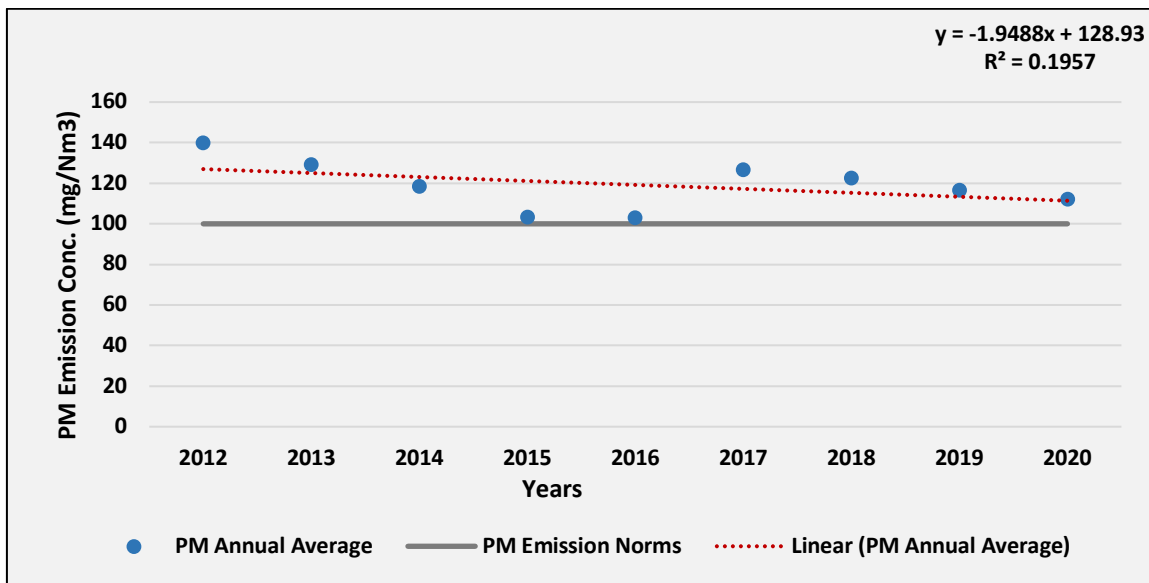


Fig. NTT42: Trend of annual mean PM Emission air concentration in NTTPS TPP (Unit 2)

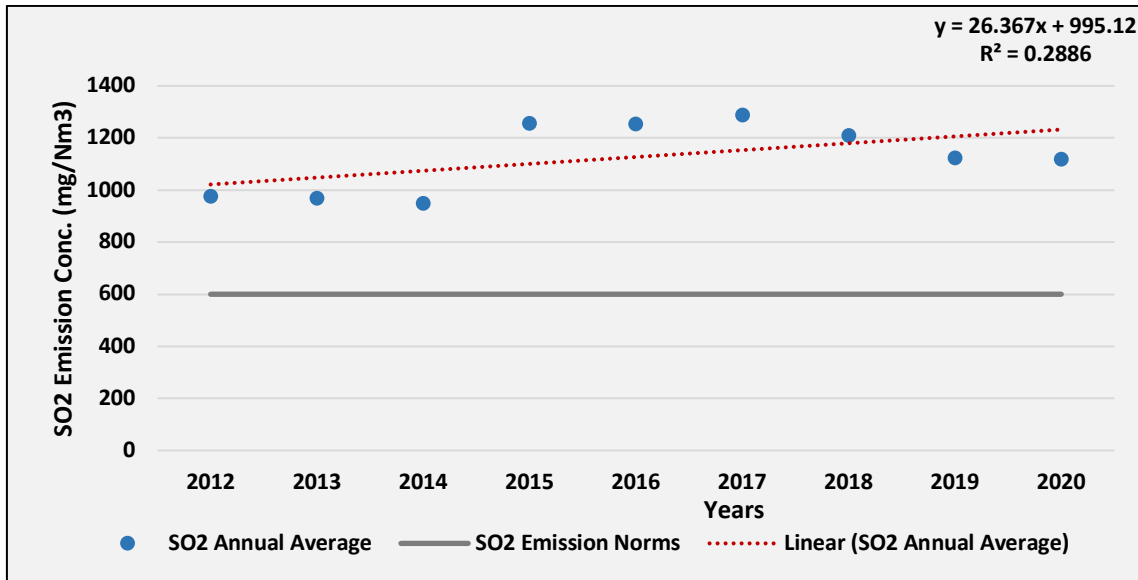


Fig. NTT43: Trend of annual mean SO₂ Emission air concentration in NTTPS TPP (Unit 2)

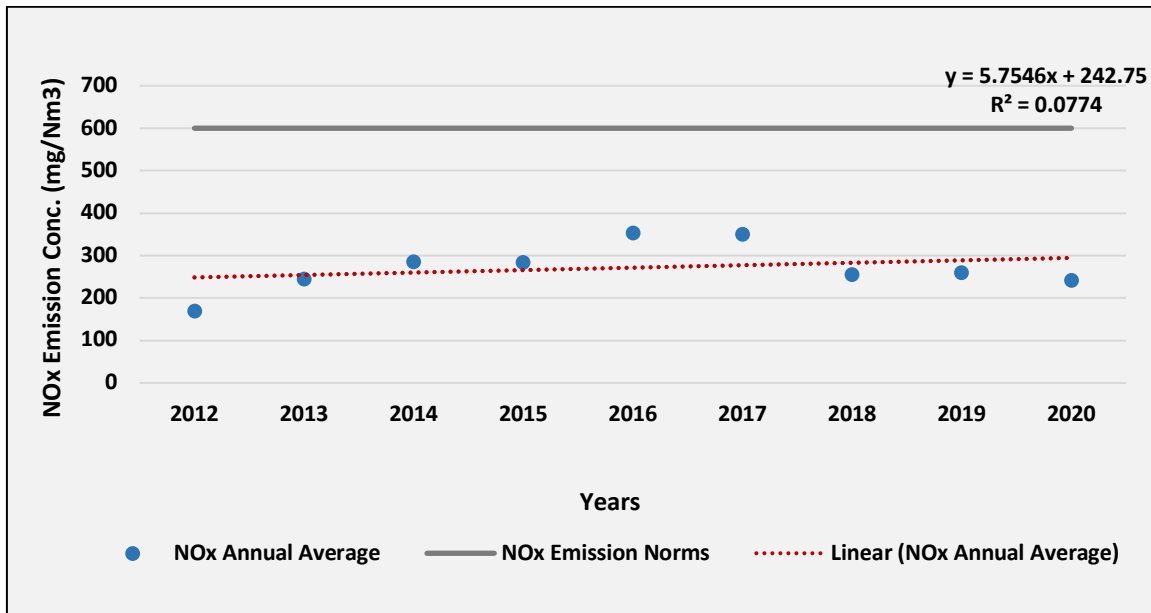


Fig. NTT44: Trend of annual mean NO_x Emission air concentration in NTTPS TPP (Unit 2)

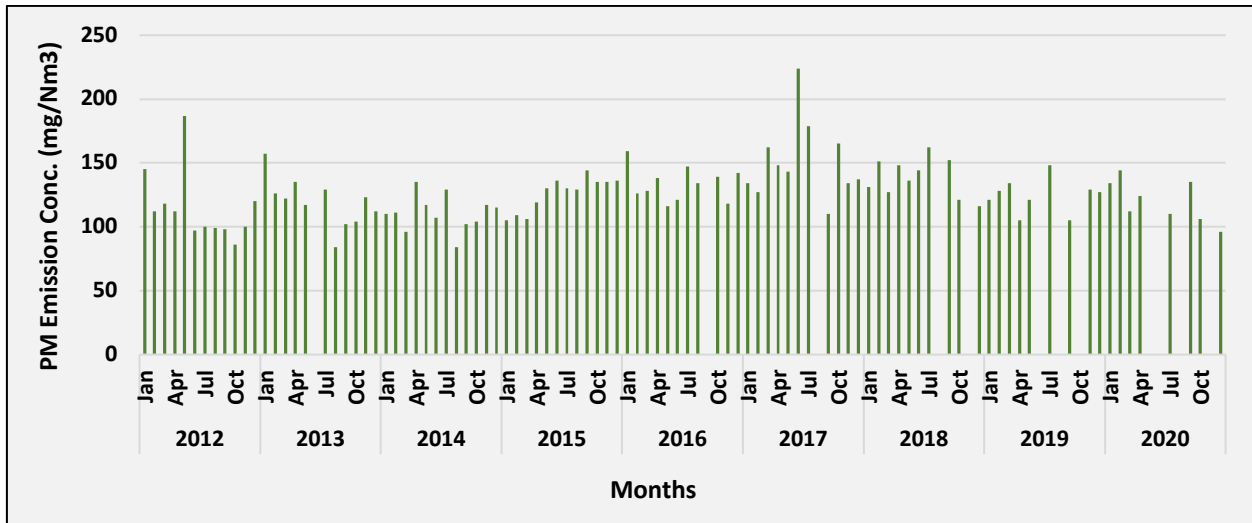


Fig. NTT45: Time series of monthly average PM Emission concentration in NTTPS TPP (Unit 3)

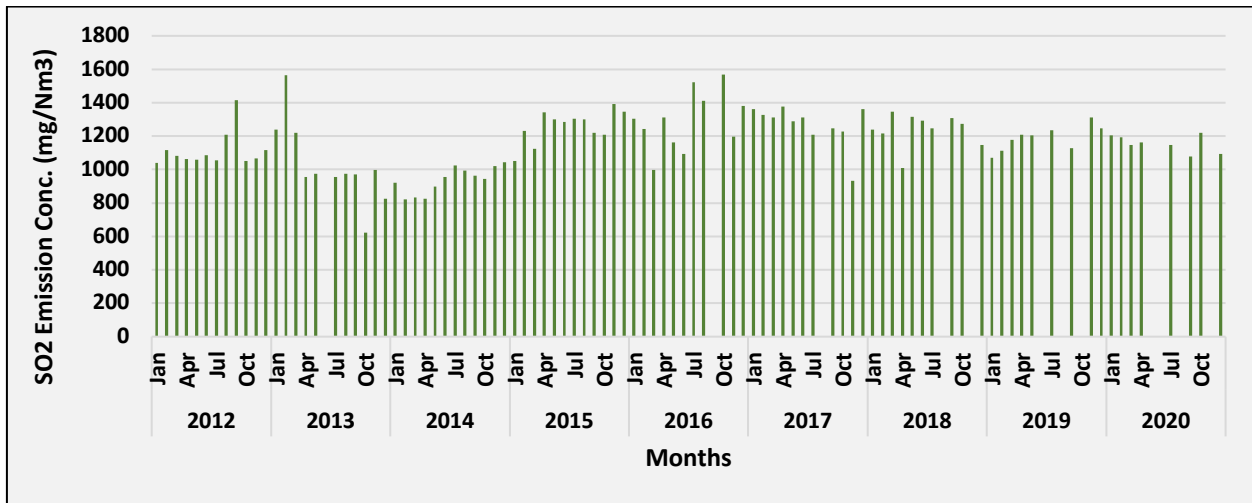


Fig. NTT46: Time series of monthly average SO₂ Emission concentration in NTTPS TPP (Unit 3)

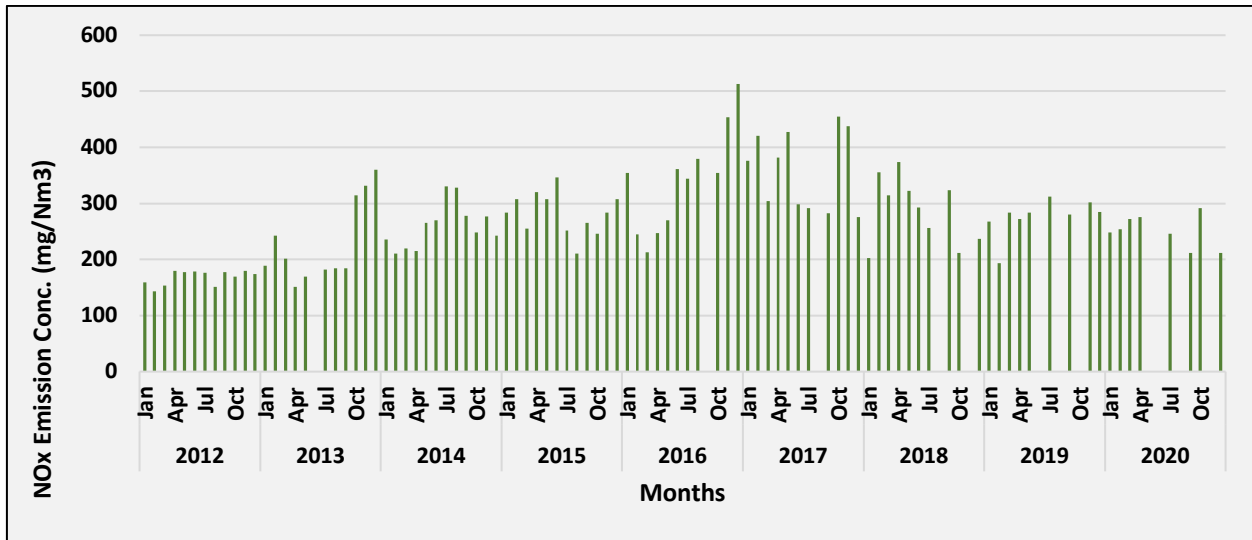


Fig. NTT47: Time series of monthly average NO_x Emission concentration in NTTPS TPP (Unit 3)

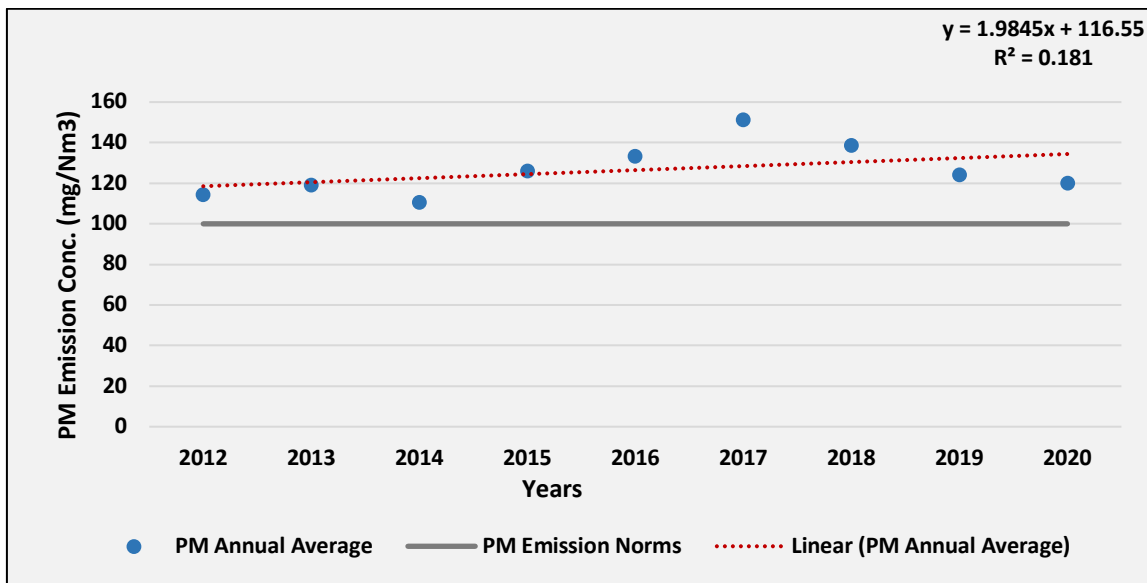


Fig. NTT48: Trend of annual mean PM Emission air concentration in NTTPS TPP (Unit 3)

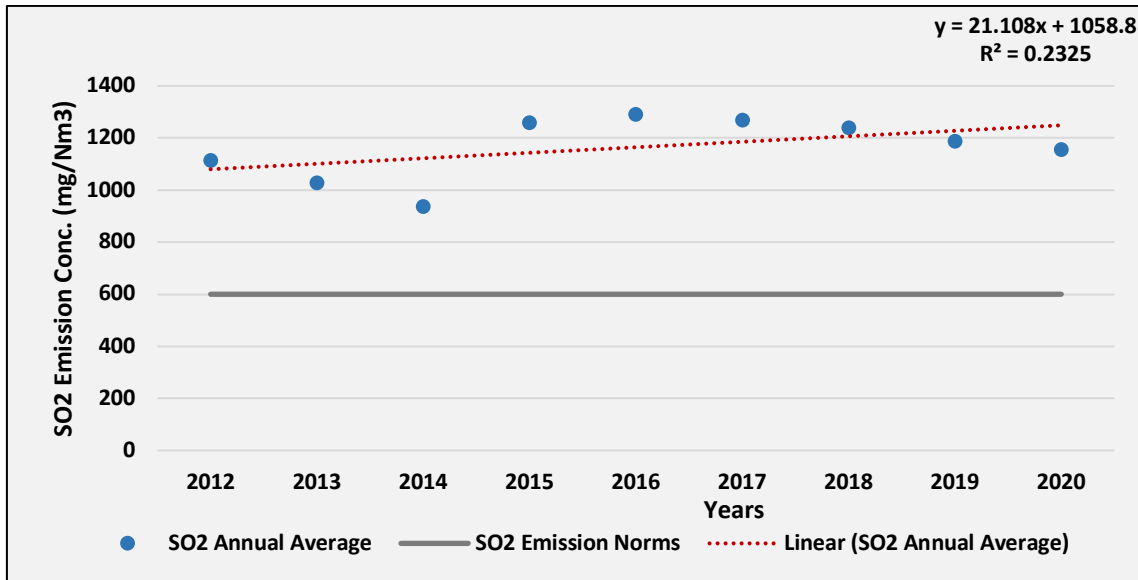


Fig. NTT49: Trend of annual mean SO₂ Emission air concentration in NTTPS TPP (Unit 3)

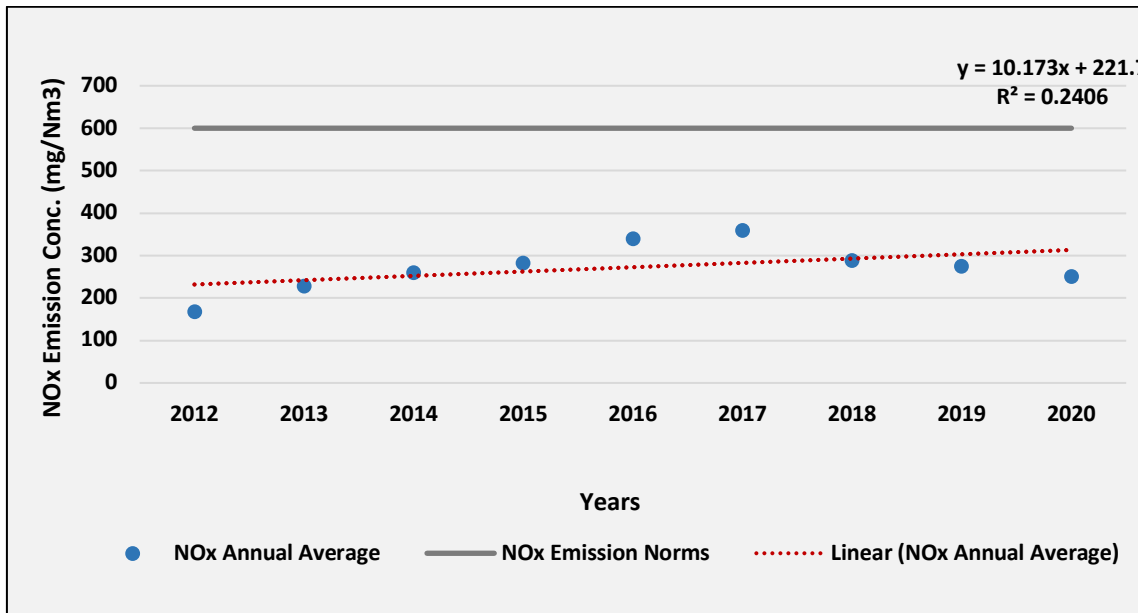


Fig. NTT50: Trend of annual mean NO_x Emission air concentration in NTTPS TPP (Unit 3)

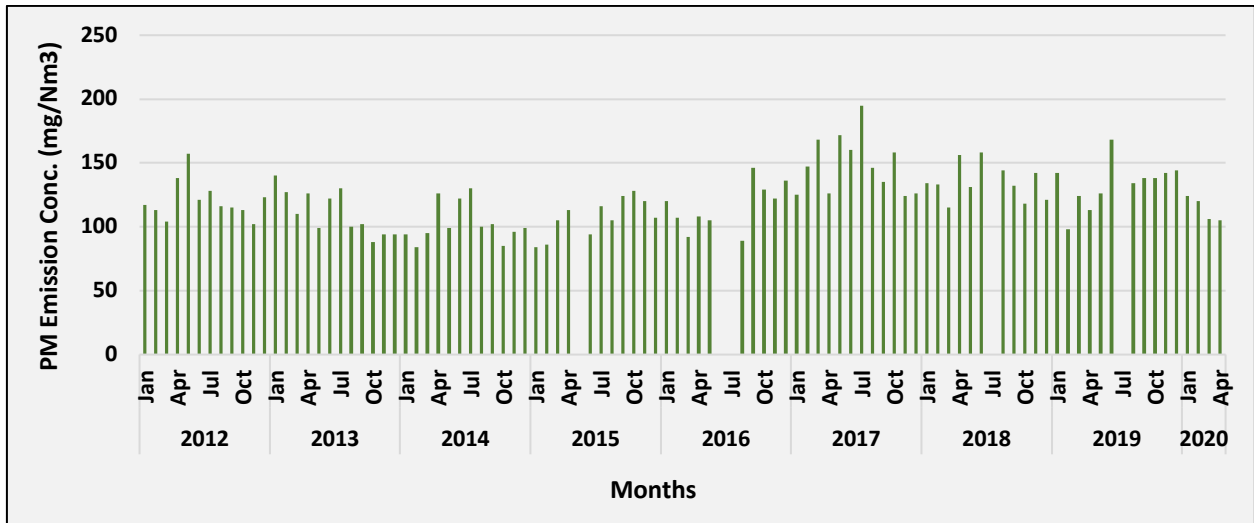


Fig. NTT51: Time series of monthly average PM Emission concentration in NTTPS TPP (Unit 4)

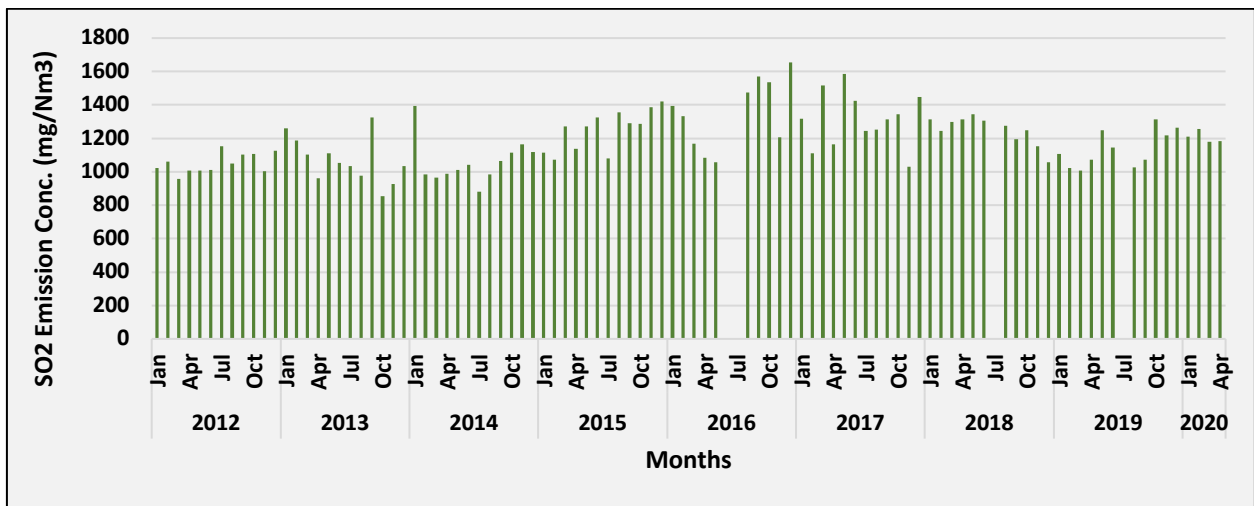


Fig. NTT52: Time series of monthly average SO₂ Emission concentration in NTTPS TPP (Unit 4)

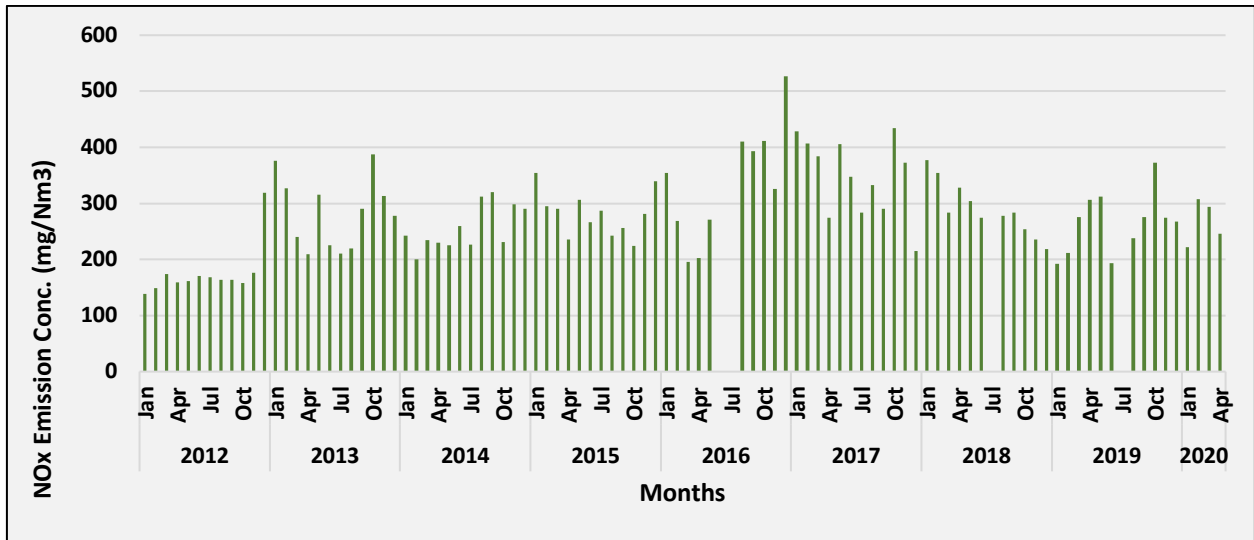


Fig. NTT53: Time series of monthly average NO_x Emission concentration in NTTPS TPP (Unit 4)

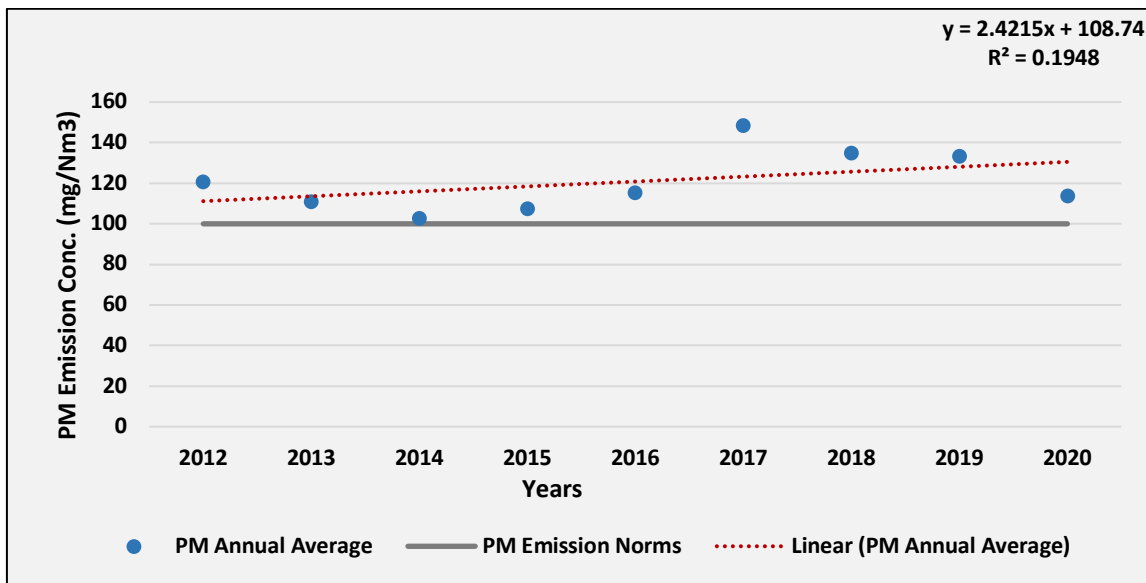


Fig. NTT54: Trend of annual mean PM Emission air concentration in NTTPS TPP (Unit 4)

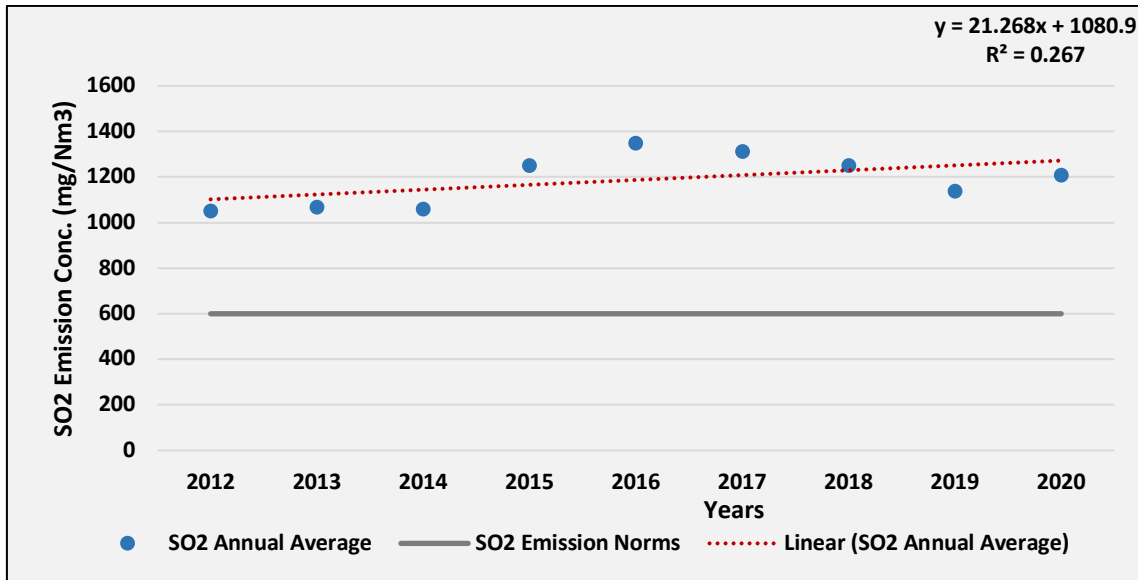


Fig. NTT55: Trend of annual mean SO₂ Emission air concentration in NTTPS TPP (Unit 4)

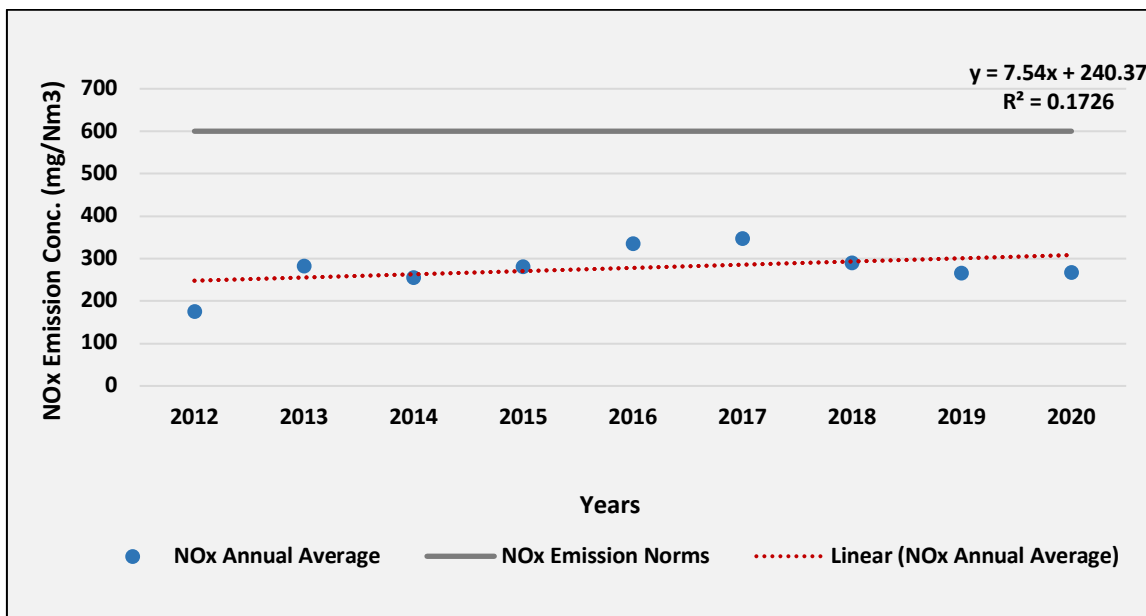


Fig. NTT56: Trend of annual mean NO_x Emission air concentration in NTTPS TPP (Unit 4)

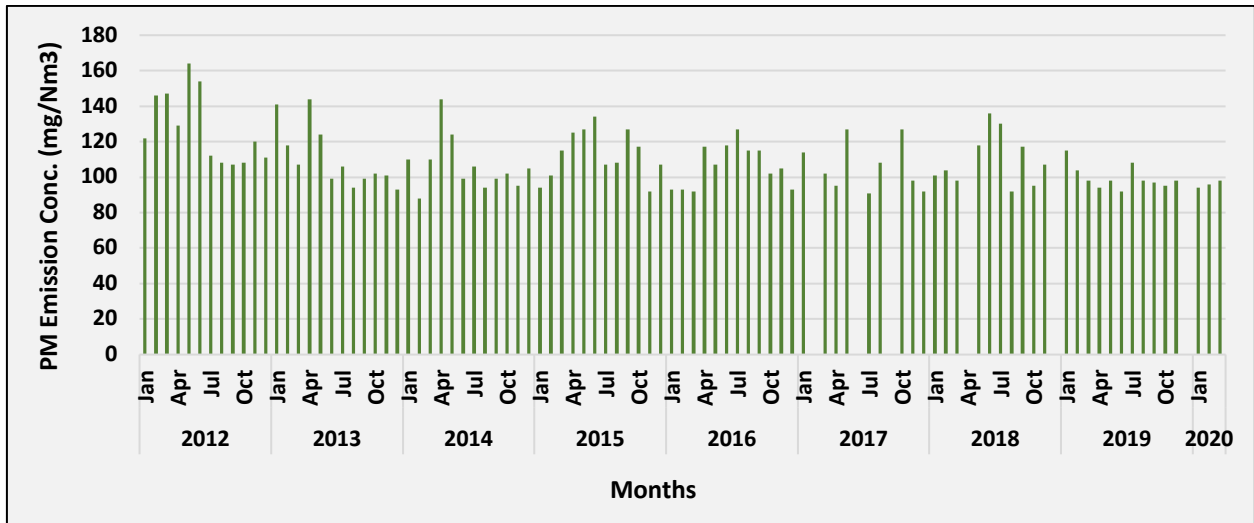


Fig. NTT57: Time series of monthly average PM Emission concentration in NTTPS TPP (Unit 5)

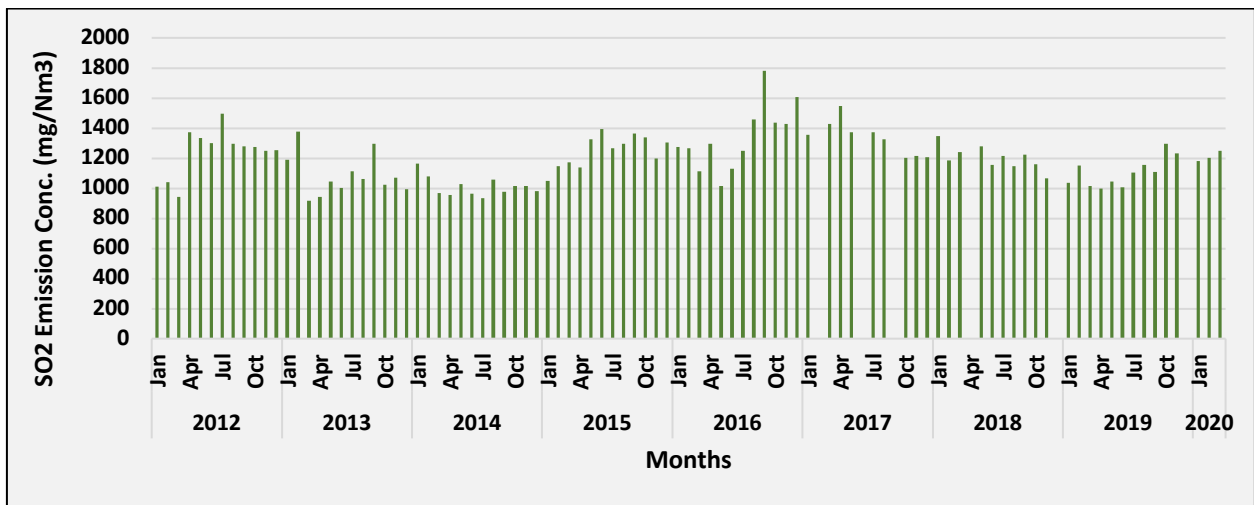


Fig. NTT58: Time series of monthly average SO₂ Emission concentration in NTTPS TPP (Unit 5)

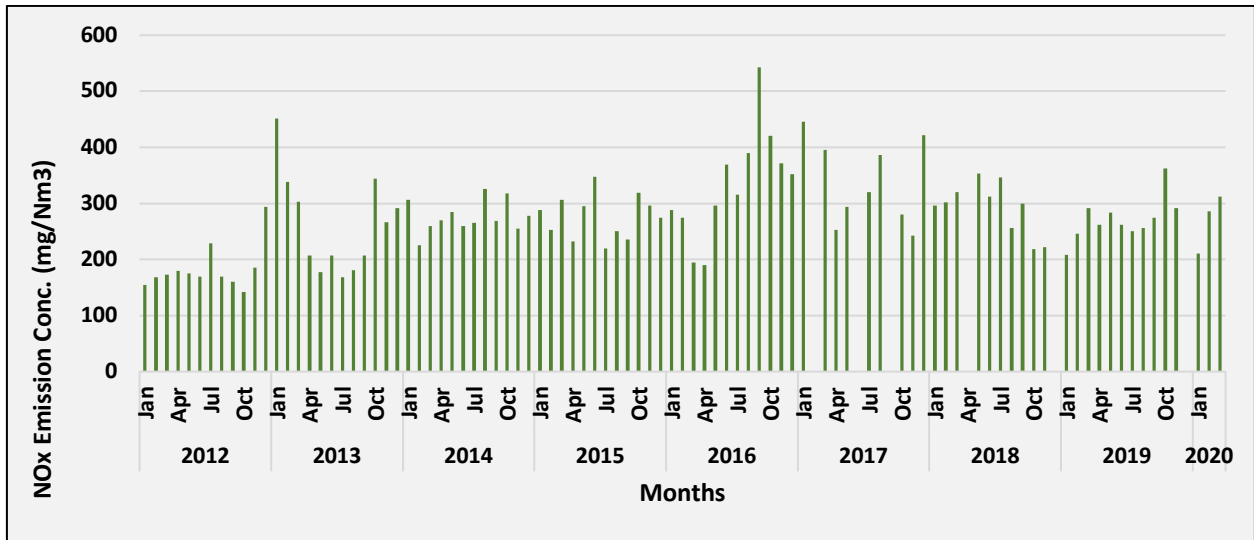


Fig. NTT59: Time series of monthly average NO_x Emission concentration in NTTPS TPP (Unit 5)

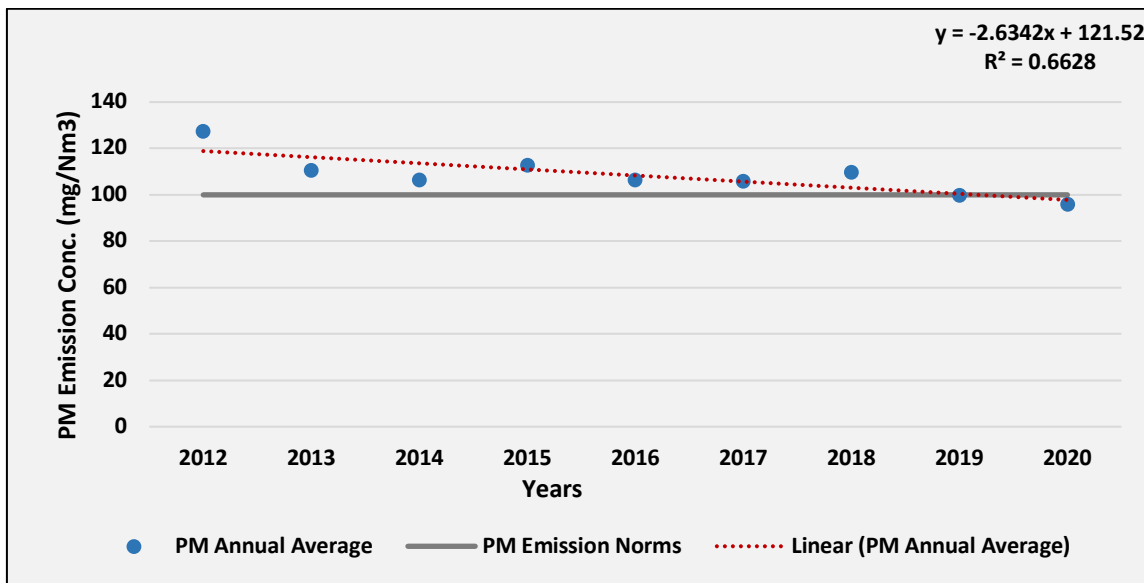


Fig. NTT60: Trend of annual mean PM Emission air concentration in NTTPS TPP (Unit 5)

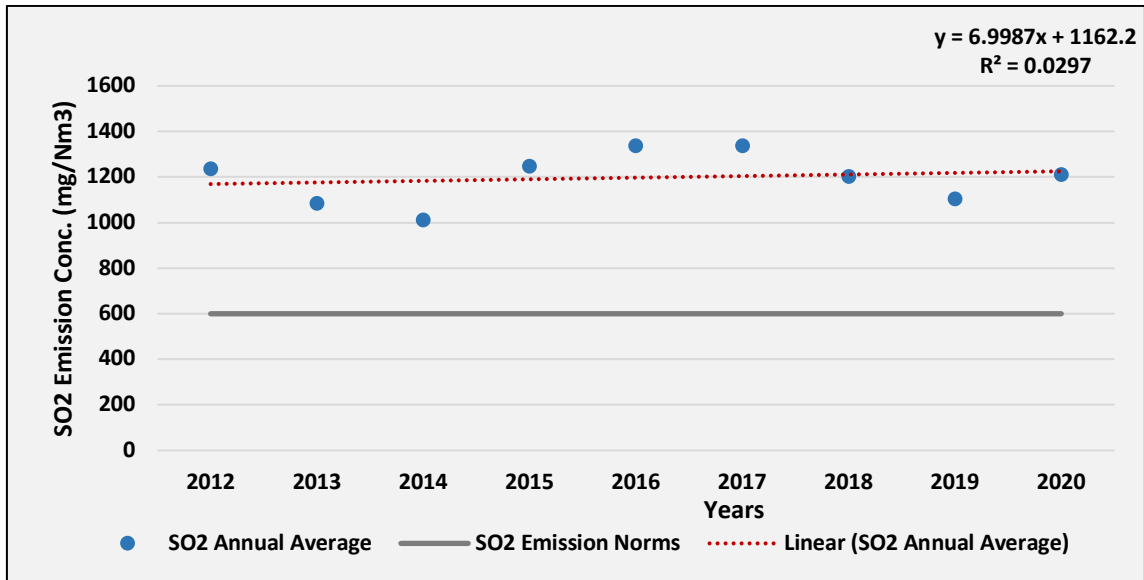


Fig. NTT61: Trend of annual mean SO₂ Emission air concentration in NTTPS TPP (Unit 5)

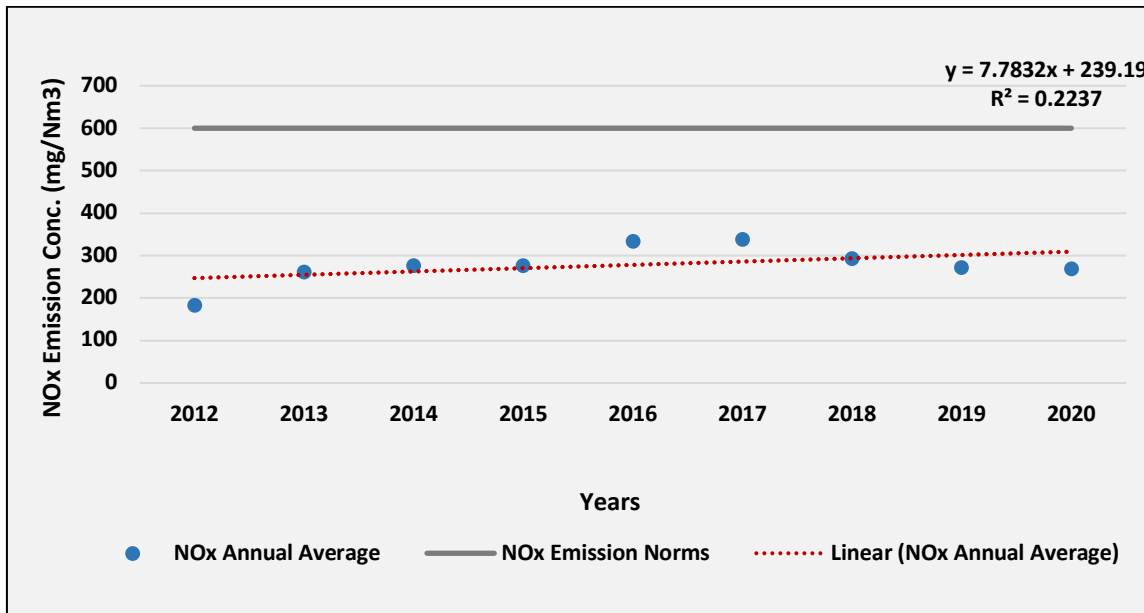


Fig. NTT62: Trend of annual mean NO_x Emission air concentration in NTTPS TPP (Unit 5)

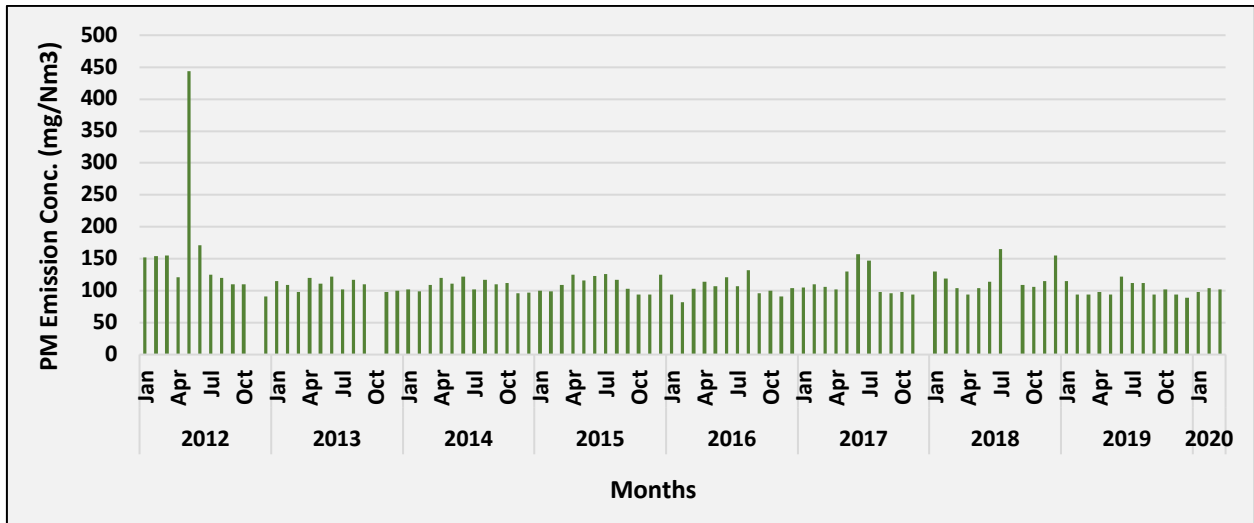


Fig. NTT63: Time series of monthly average PM Emission concentration in NTTPS TPP (Unit 6)

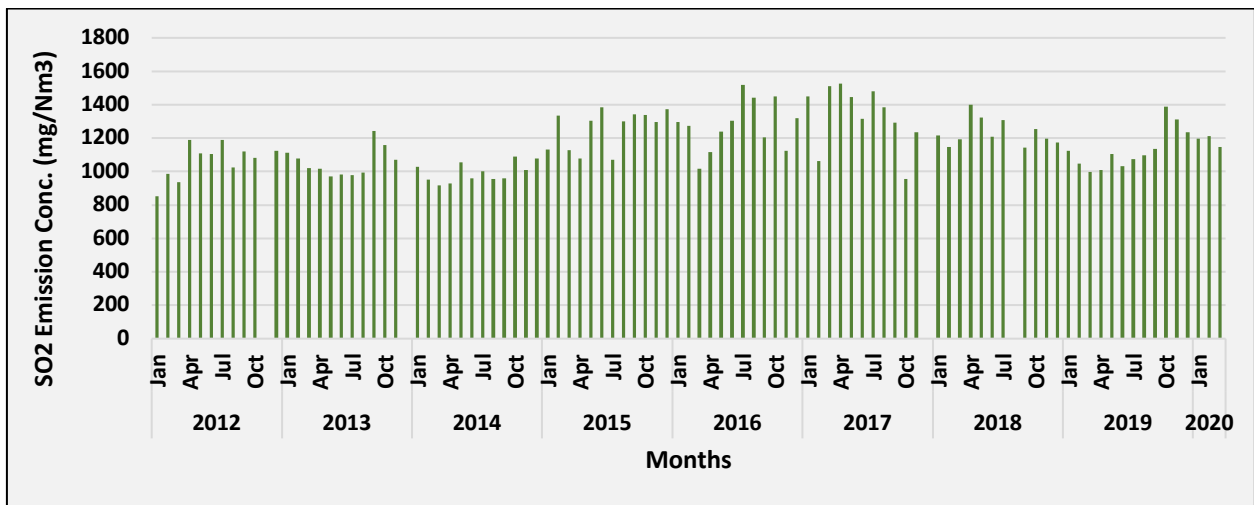


Fig. NTT64: Time series of monthly average SO₂ Emission concentration in NTTPS TPP (Unit 6)

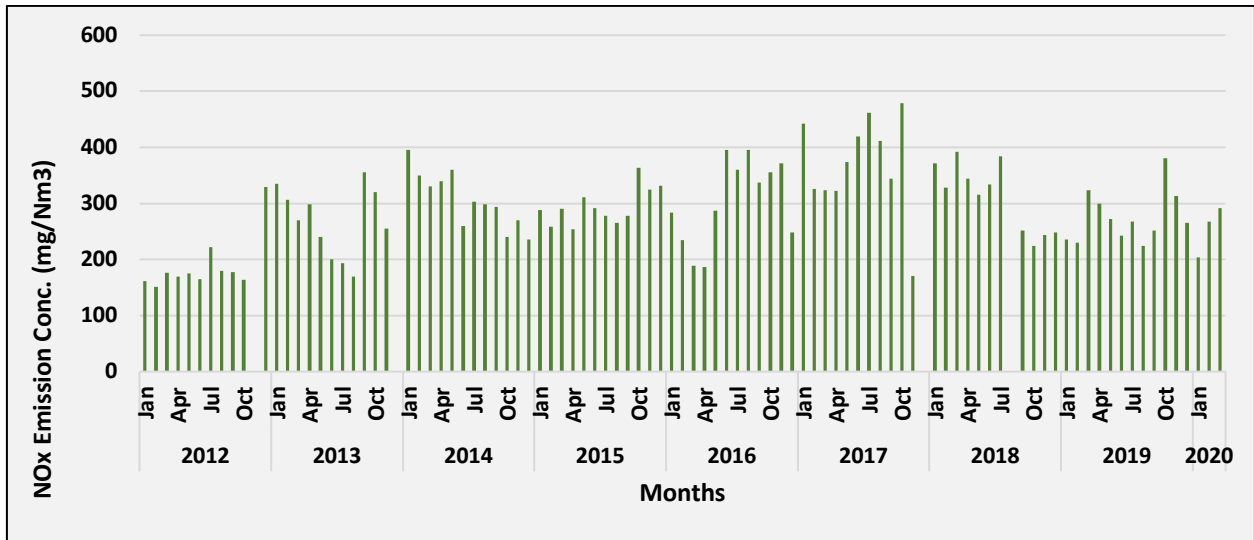


Fig. NTT65: Time series of monthly average NO_x Emission concentration in NTTPS TPP (Unit 6)

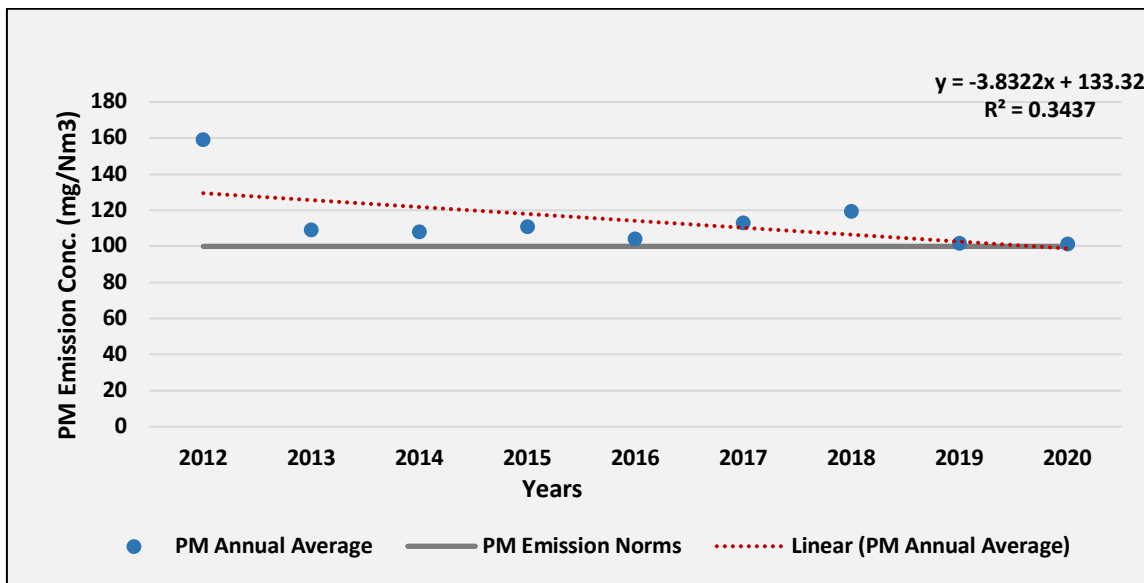


Fig. NTT66: Trend of annual mean PM Emission air concentration in NTTPS TPP (Unit 6)

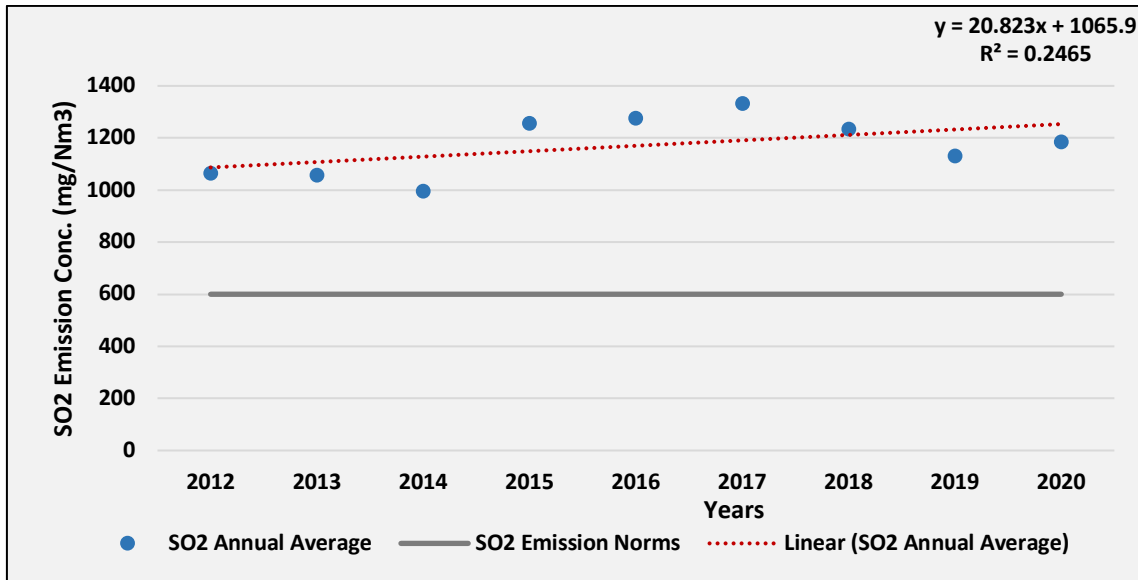


Fig. NTT67: Trend of annual mean SO₂ Emission air concentration in NTTPS TPP (Unit 6)

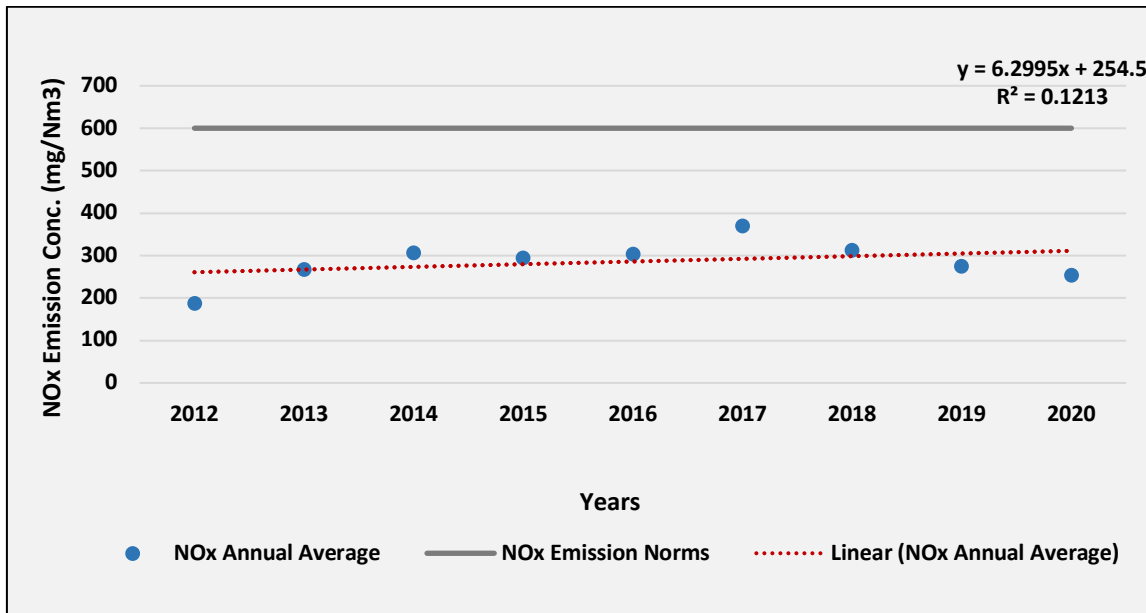


Fig. NTT68: Trend of annual mean NO_x Emission air concentration in NTTPS TPP (Unit 6)

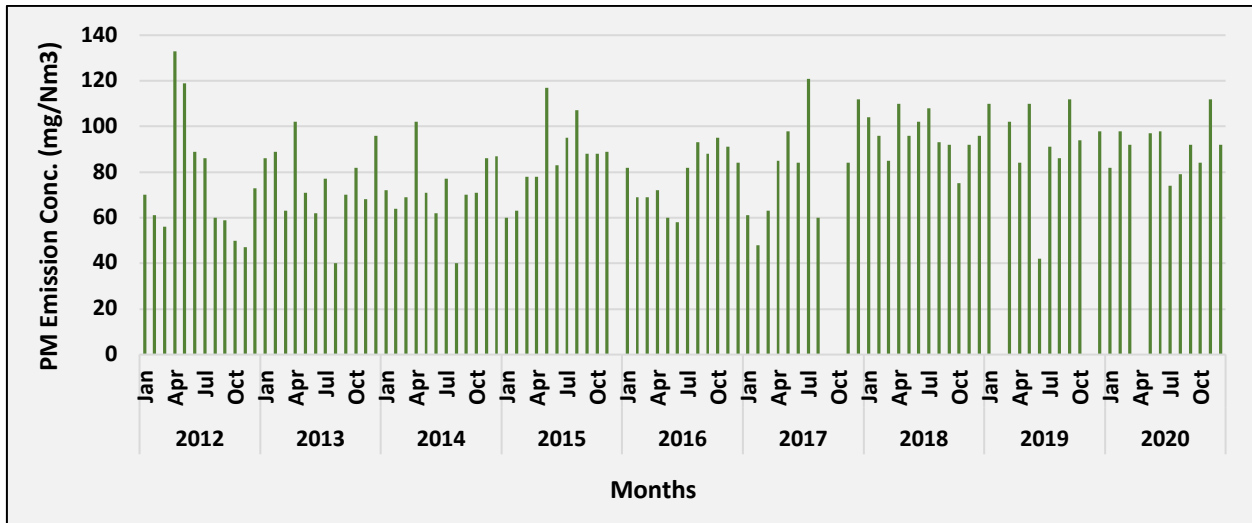


Fig. NTT69: Time series of monthly average PM Emission concentration in NTTPS TPP (Unit 7)

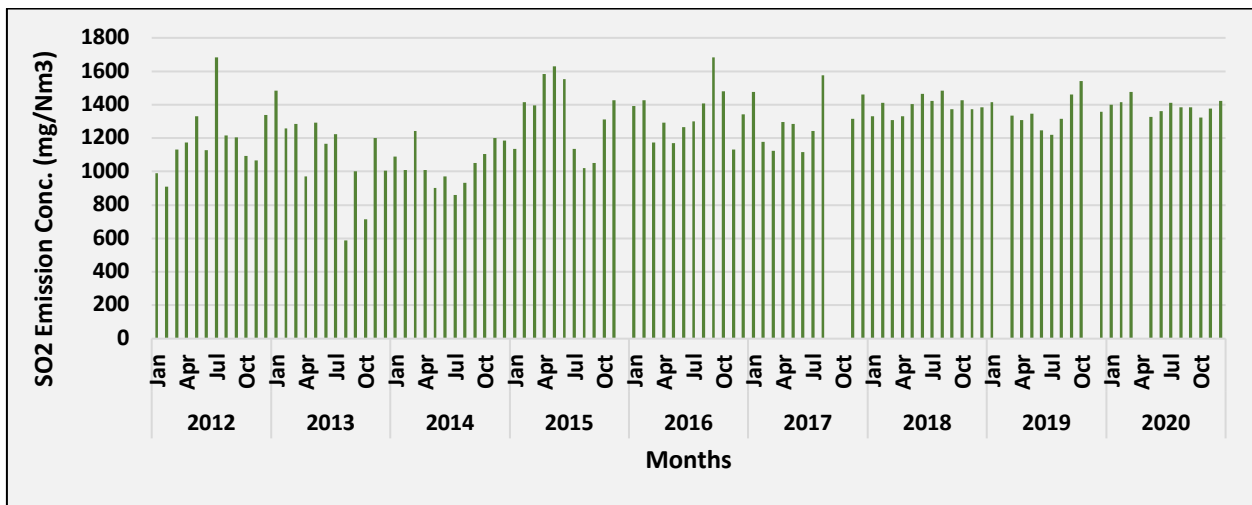


Fig. NTT70: Time series of monthly average SO₂ Emission concentration in NTTPS TPP (Unit 7)

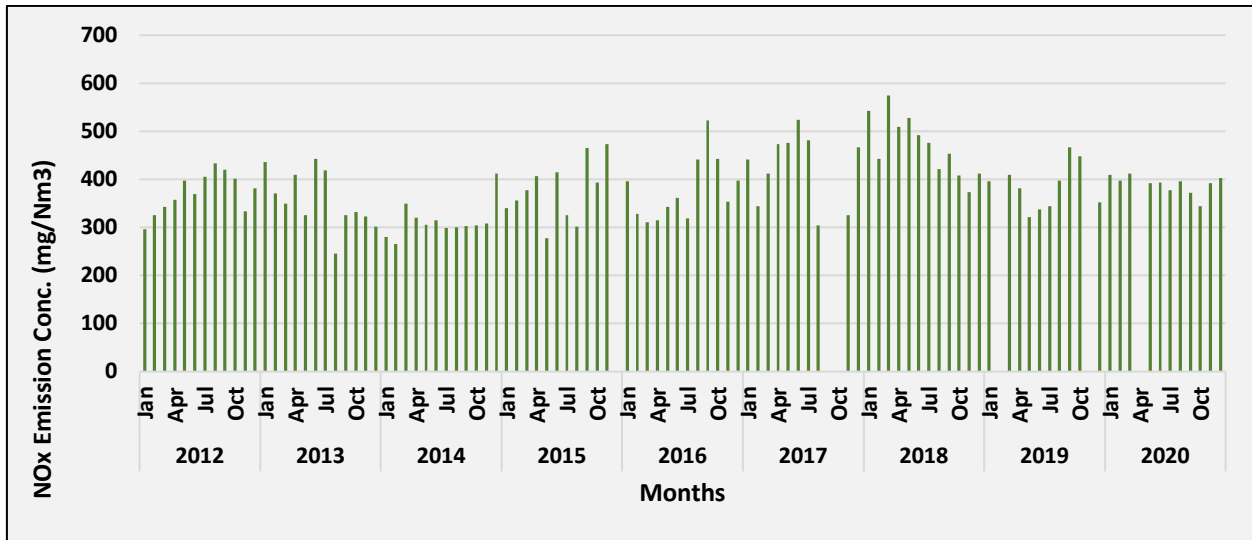


Fig. NTT71: Time series of monthly average NO_x Emission concentration in NTTPS TPP (Unit 7)

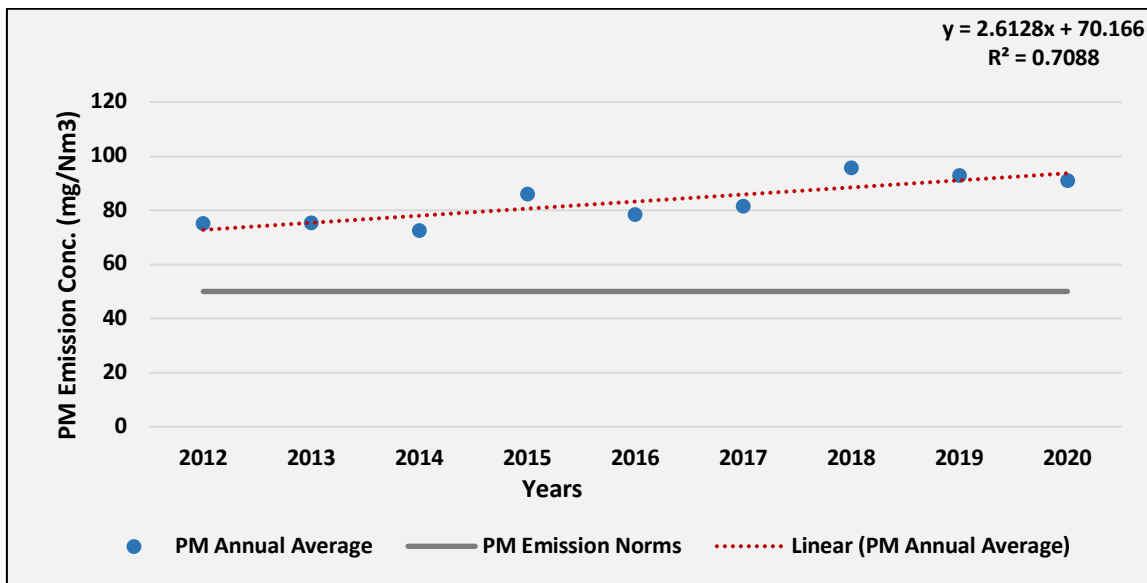


Fig. NTT72: Trend of annual mean PM Emission air concentration in NTTPS TPP (Unit 7)

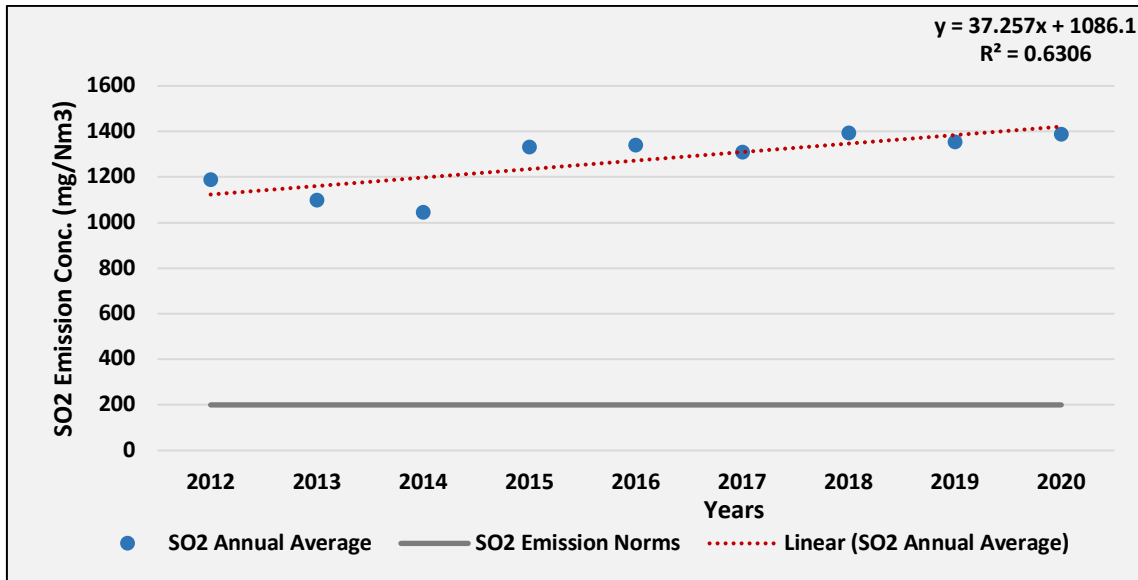


Fig. NTT73: Trend of annual mean SO₂ Emission air concentration in NTTPS TPP (Unit 7)

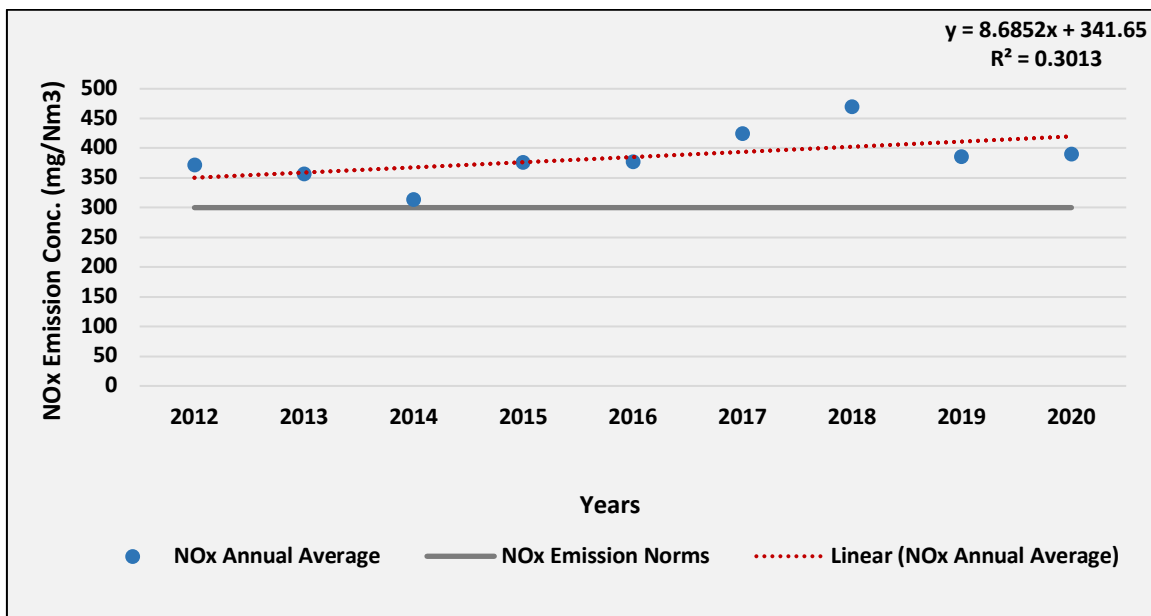


Fig. NTT74: Trend of annual mean NO_x Emission air concentration in NTTPS TPP (Unit 7)

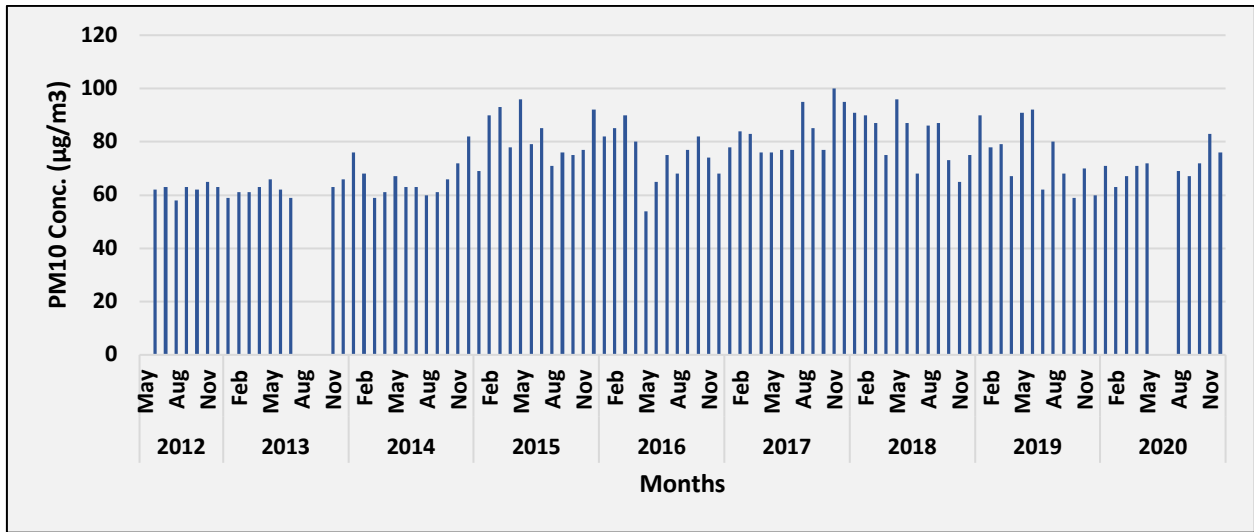


Fig. NTT75: Time series of monthly average PM_{10} ambient air concentration in NTTPS TPP (Ambient 5)

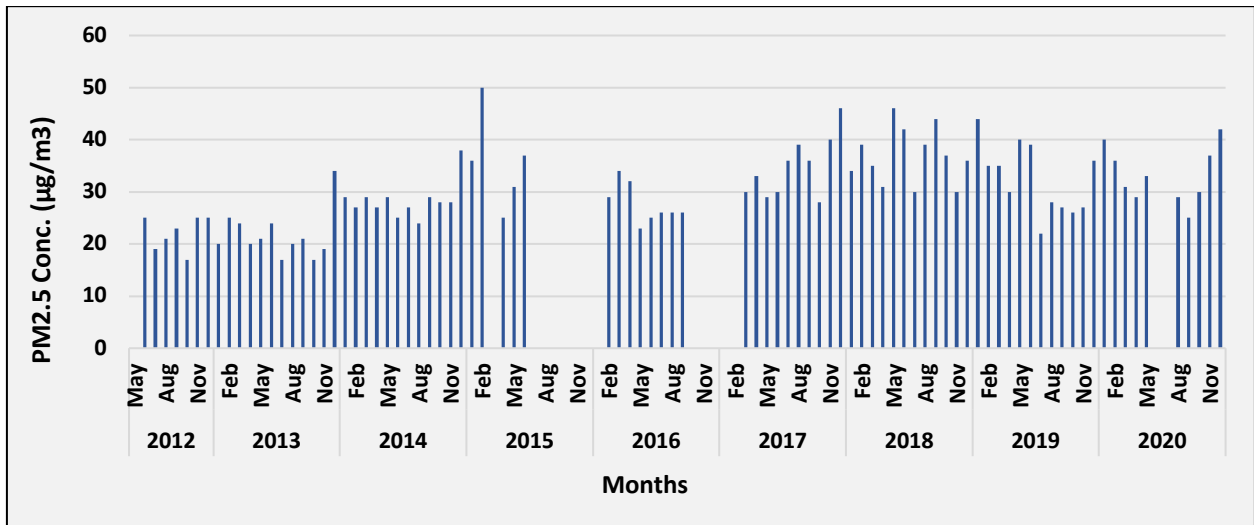


Fig. NTT76: Time series of monthly average $PM_{2.5}$ ambient air concentration in NTTPS TPP (Ambient 5)

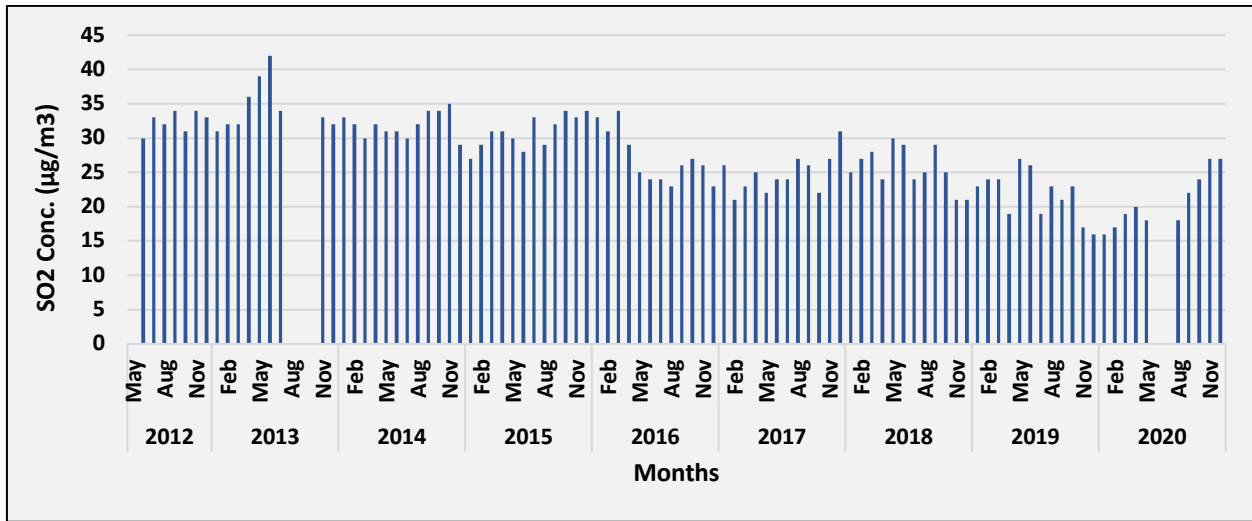


Fig. NTT77: Time series of monthly average SO₂ ambient air concentration in NTTPS TPP (Ambient 5)

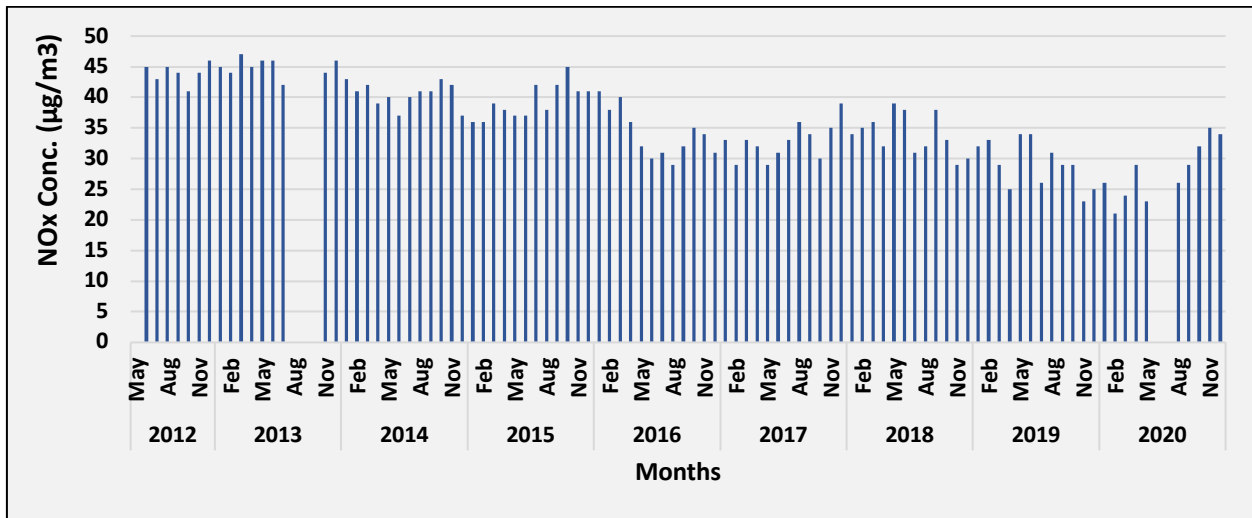


Fig. NTT78: Time series of monthly average NO_x ambient air concentration in NTTPS TPP (Ambient 5)

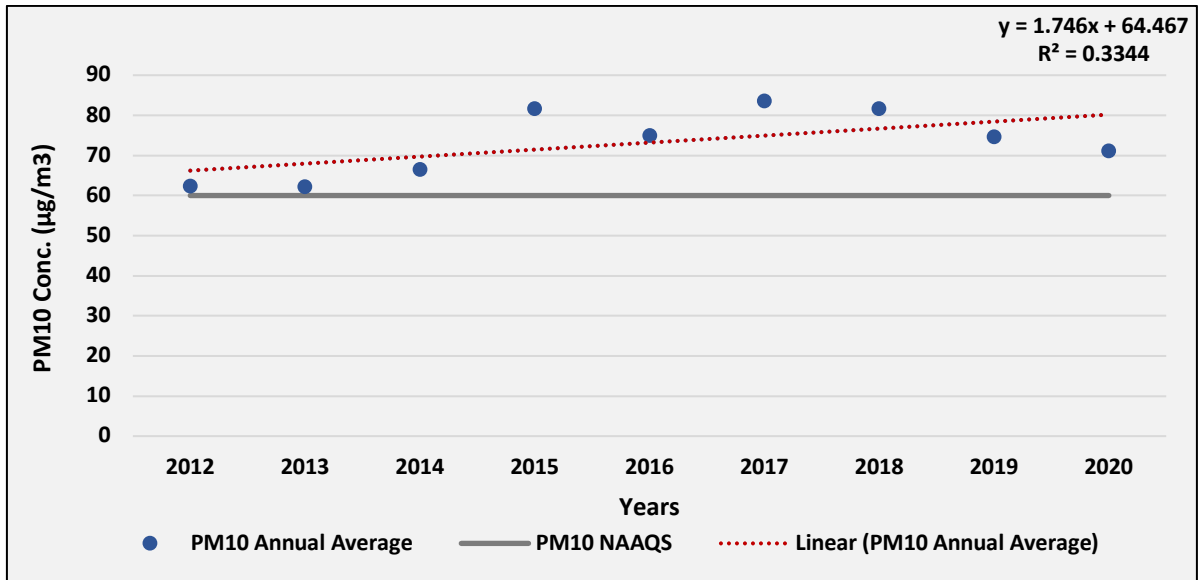


Fig. NTT79: Trend of annual mean PM_{10} ambient air concentration in NTTPS TPP (Ambient 5)

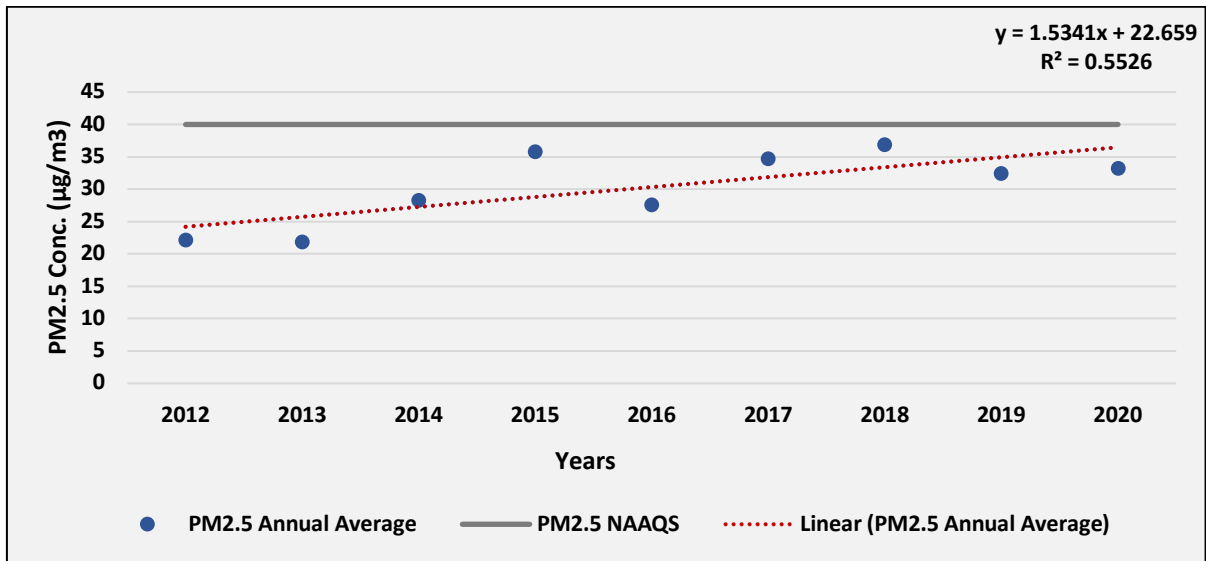


Fig. NTT80: Trend of annual mean $PM_{2.5}$ ambient air concentration in NTTPS TPP (Ambient 5)

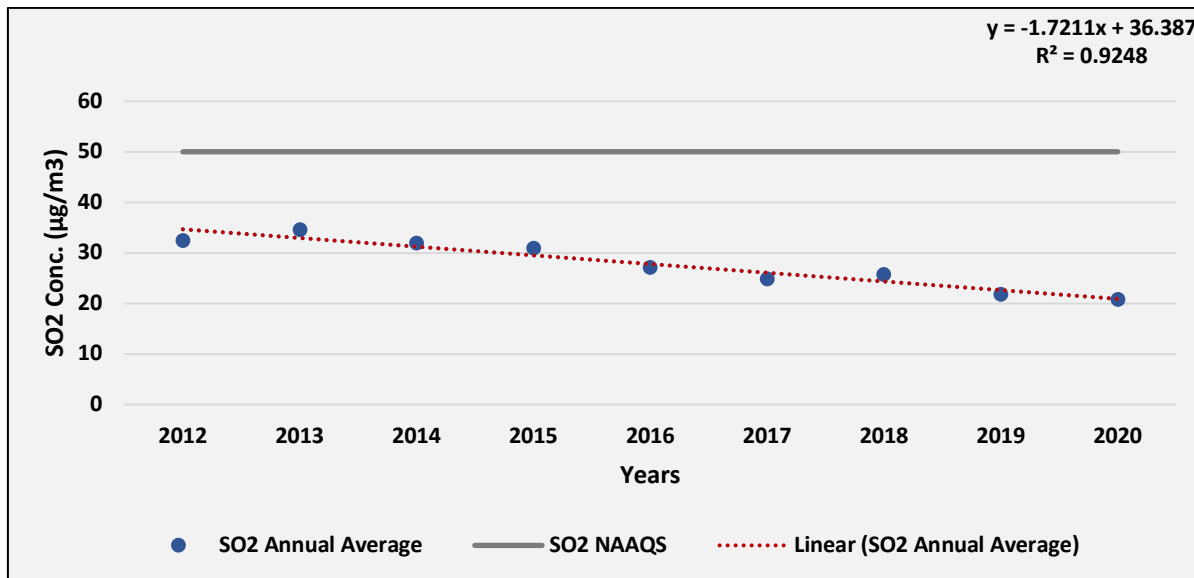


Fig. NTT81: Trend of annual mean SO₂ ambient air concentration in NTTPS TPP (Ambient 5)

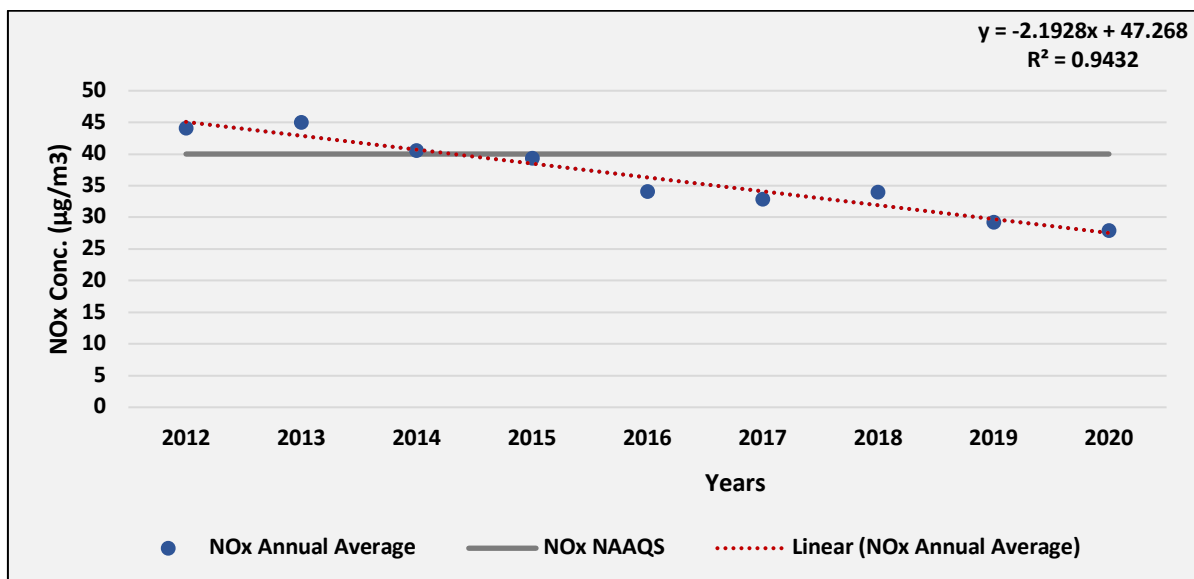


Fig. NTT82: Trend of annual mean NO_x ambient air concentration in NTTPS TPP (Ambient 5)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, PM_{2.5} are exceeding whereas the SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that PM, SO₂ and NO_x parameter are much higher than the emission norms.

APGENCO RTTP THERMAL POWER PLANT

Royalaseema Thermal Power Station is located at Yerraguntla (Md) in Kadapa(Dist) in Andhra Pradesh. The power plant is one of the coal-based power plants of APGENCO

The ambient air quality concentrations of PM₁₀, PM_{2.5} SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. RTTP1 – Fig. RTTP70) for the last twelve years (2008-2020) using data provided by APGENCO developer for Royalaseema Power plant, Chhattisgarh, India.

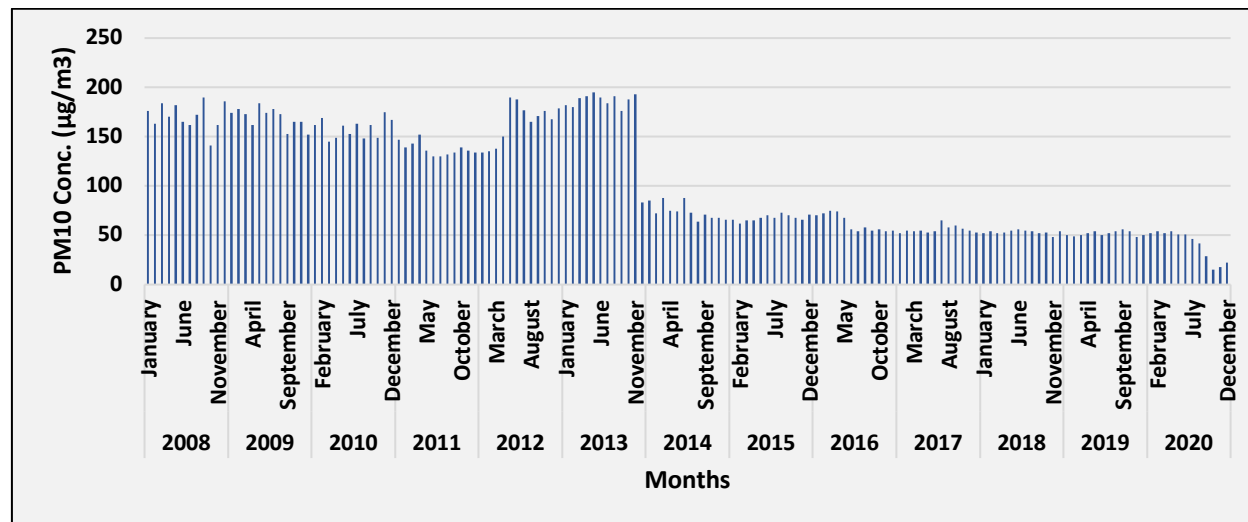


Fig. RTTP1: Time series of monthly average PM₁₀ ambient air concentration in APGENCO RTTP TPP (Ambient 1)

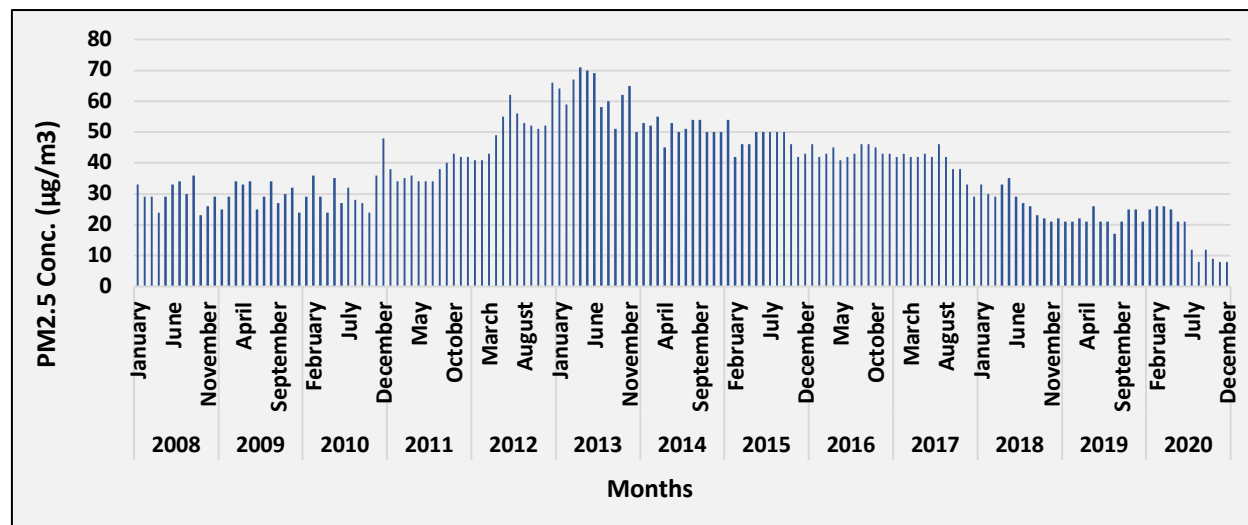


Fig. RTTP2: Time series of monthly average PM_{2.5} ambient air concentration in APGENCO RTTP TPP (Ambient 1)

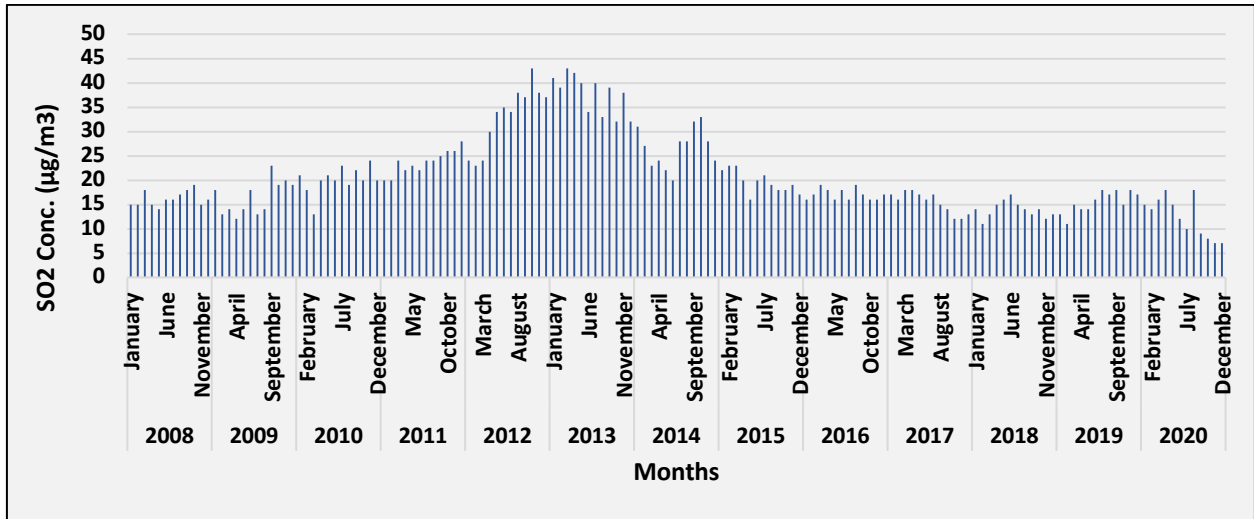


Fig. RTTP3: Time series of monthly average SO_2 ambient air concentration in APGENCO RTTP TPP (Ambient 1)

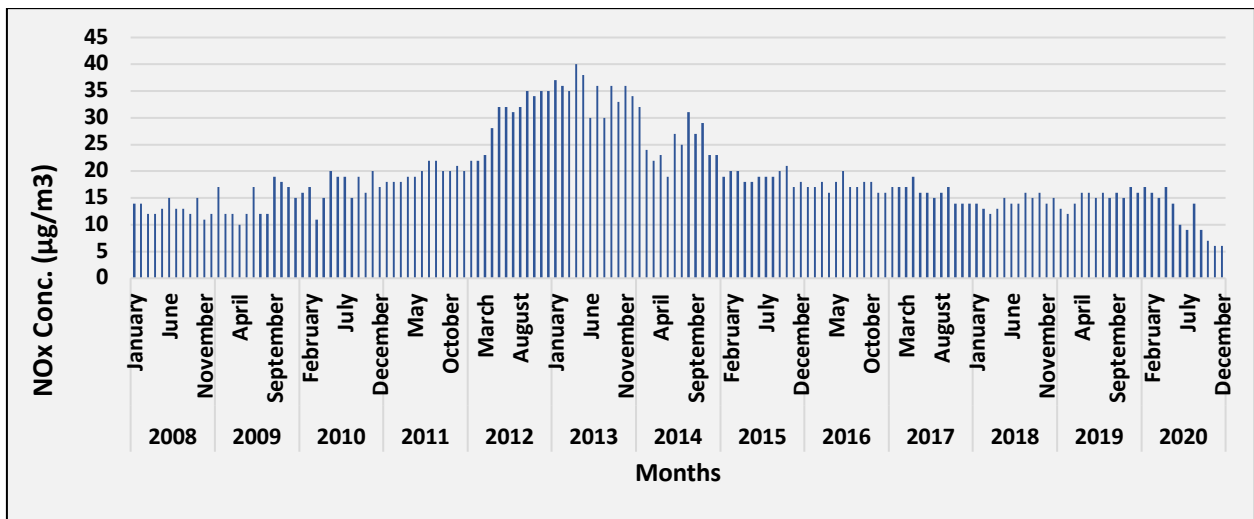


Fig. RTTP4: Time series of monthly average NO_x ambient air concentration in APGENCO RTTP TPP (Ambient 1)

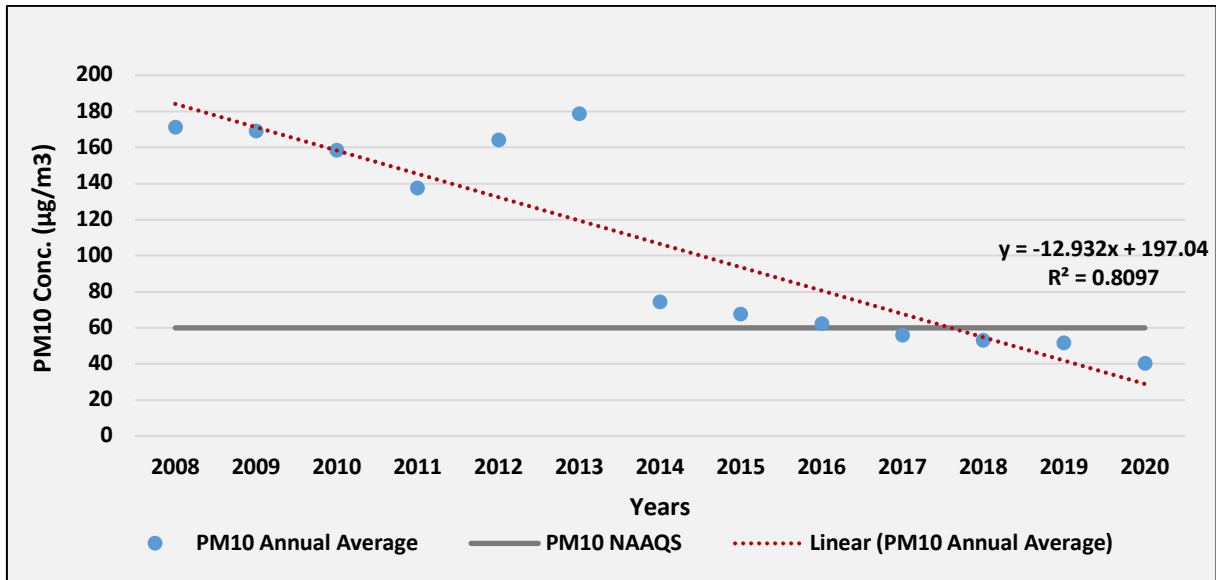


Fig. RTTP5: Trend of annual mean PM_{10} ambient air concentration in APGENCO RTTP TPP (Ambient 1)

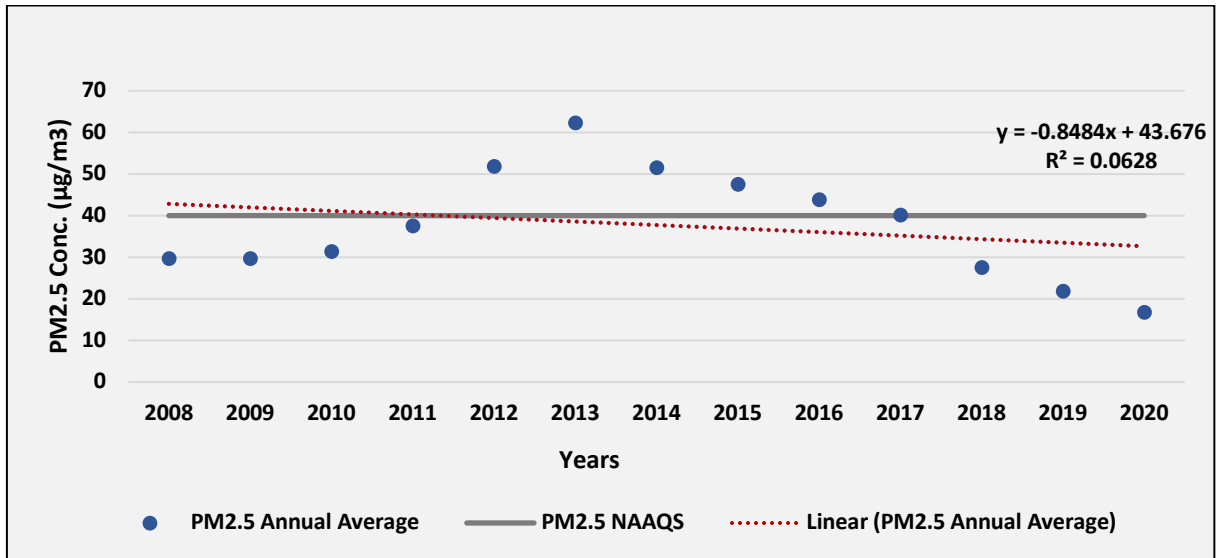


Fig. RTTP6: Trend of annual mean $PM_{2.5}$ ambient air concentration in APGENCO RTTP TPP (Ambient 1)

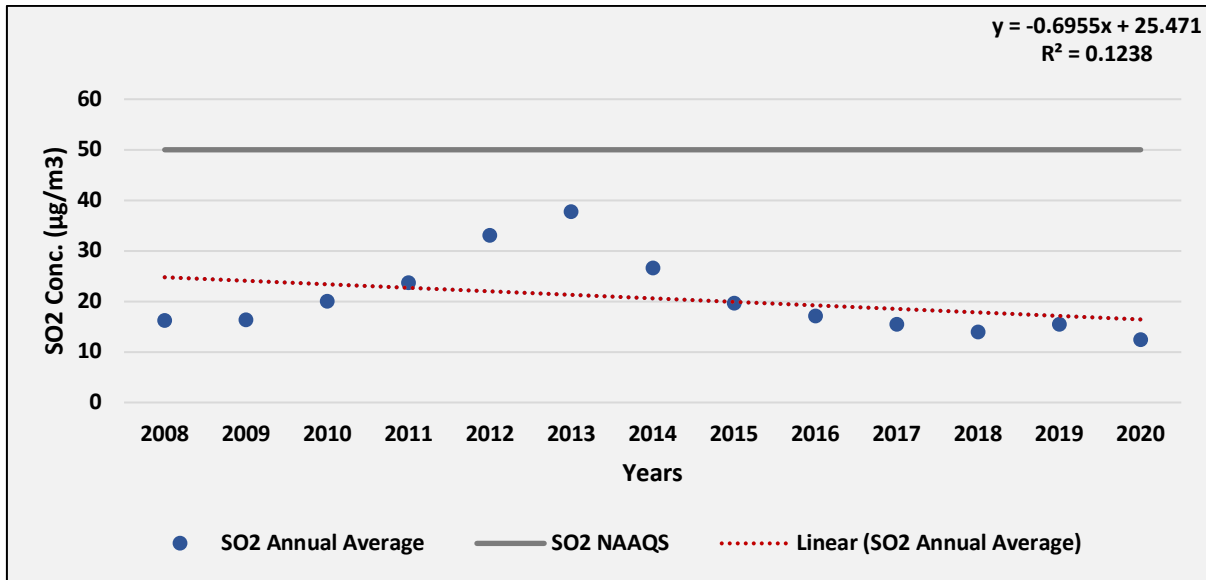


Fig. RTTP7: Trend of annual mean SO₂ ambient air concentration in APGENCO RTTP TPP (Ambient 1)

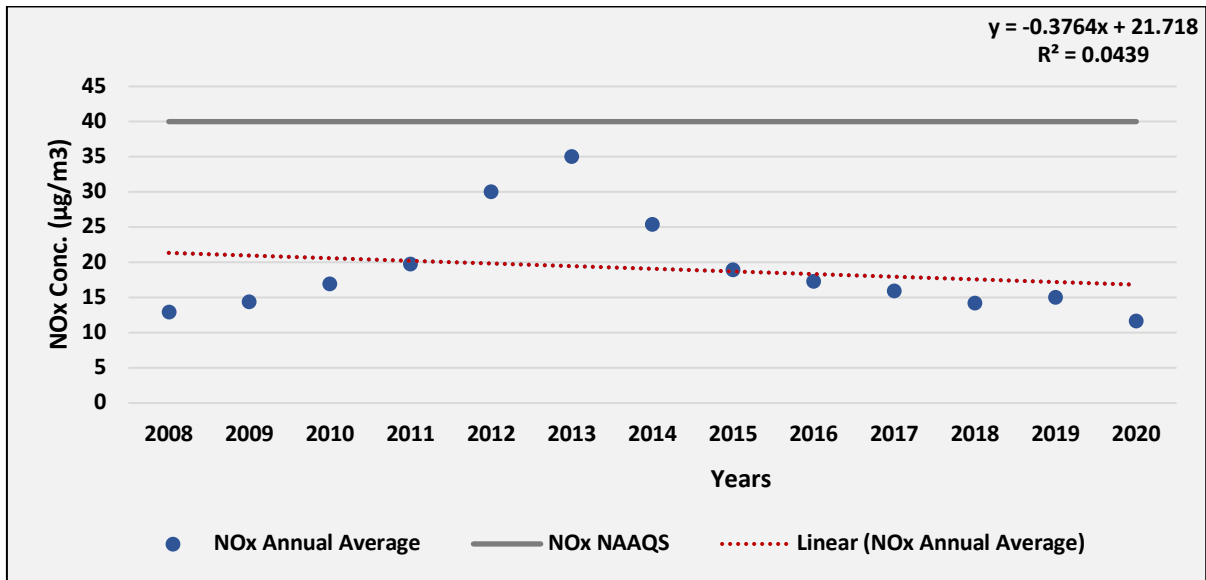


Fig. RTTP8: Trend of annual mean NO_x ambient air concentration in APGENCO RTTP TPP (Ambient 1)

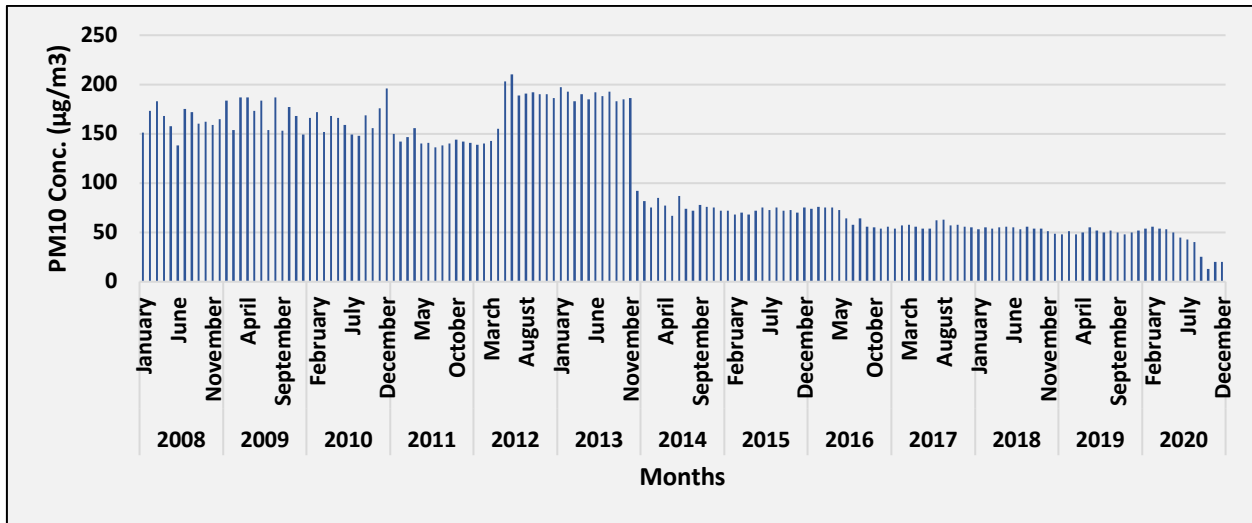


Fig. RTTP9: Time series of monthly average PM₁₀ ambient air concentration in APGENCO RTTP TPP (Ambient 2)

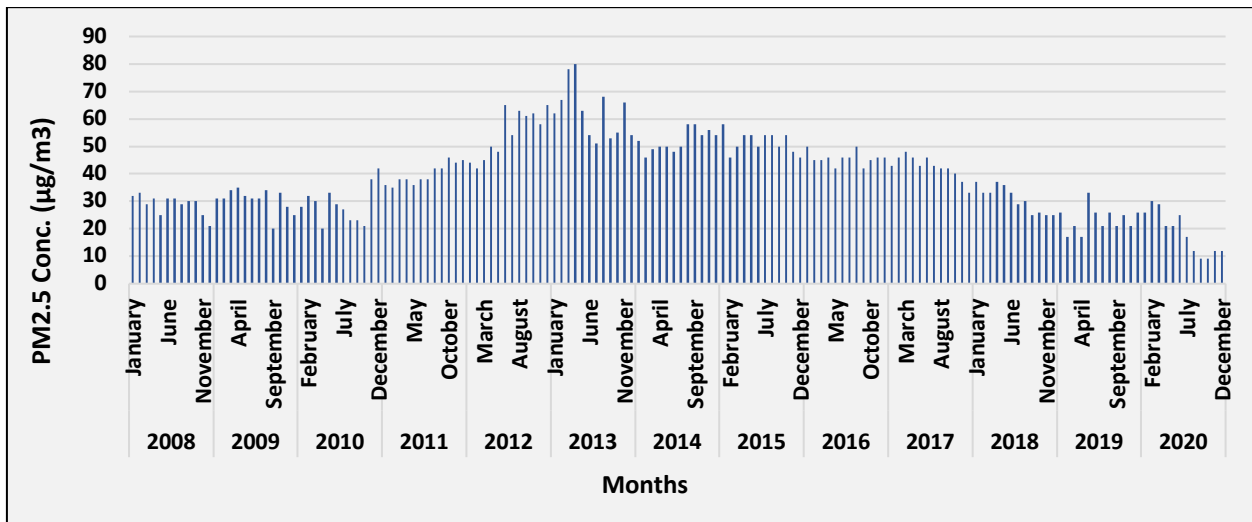


Fig. RTTP10: Time series of monthly average PM_{2.5} ambient air concentration in APGENCO RTTP TPP (Ambient 2)

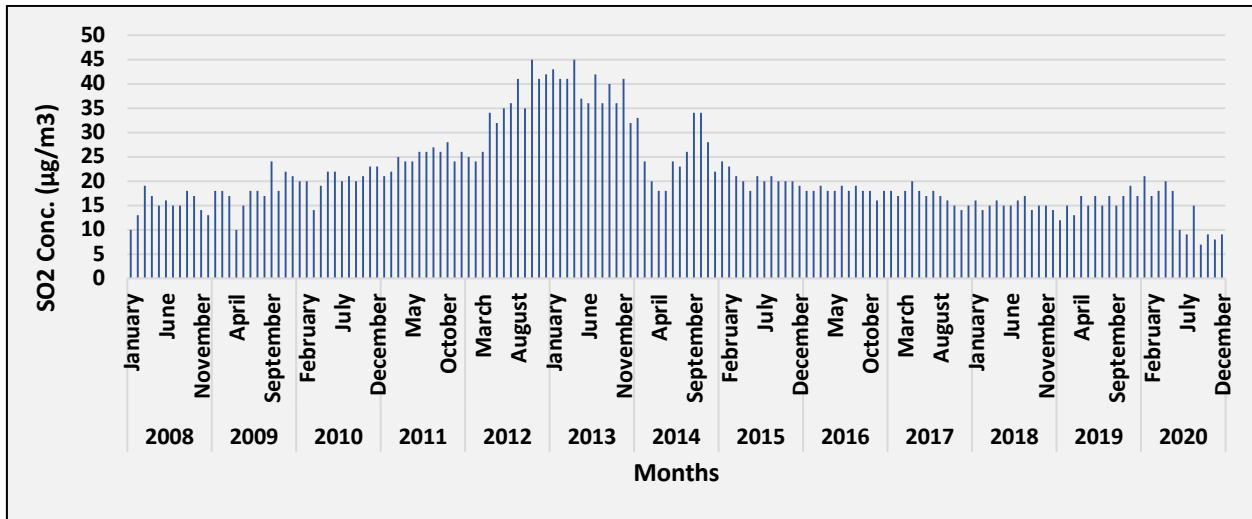


Fig. RTTP11: Time series of monthly average SO₂ ambient air concentration in APGENCO RTTP TPP (Ambient 2)

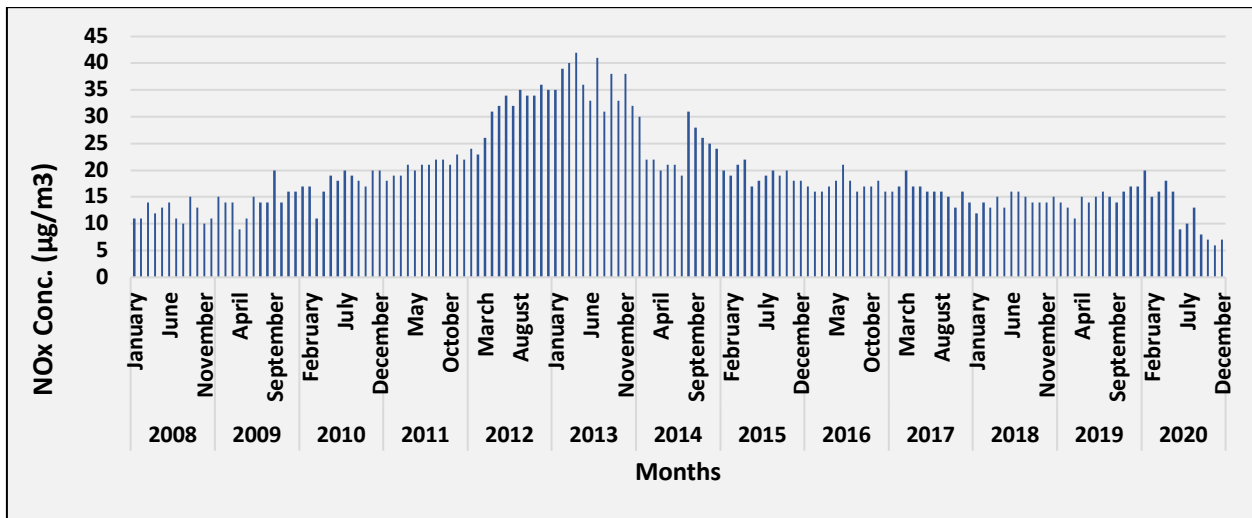


Fig. RTTP12: Time series of monthly average NO_x ambient air concentration in APGENCO RTTP TPP (Ambient 2)

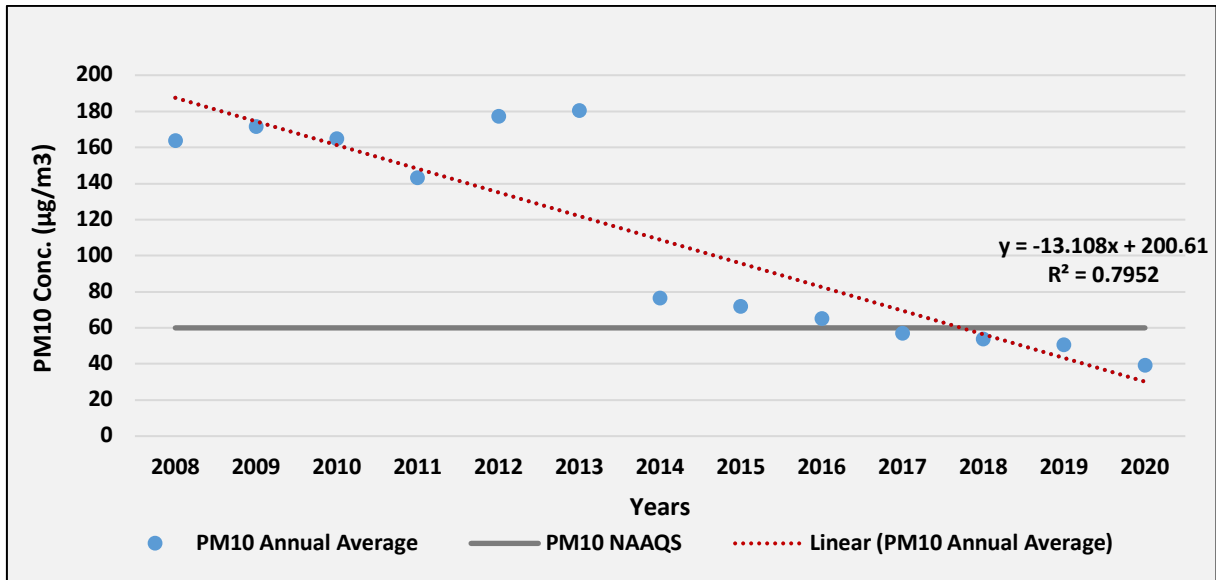


Fig. RTTP13: Trend of annual mean PM_{10} ambient air concentration in APGENCO RTTP TPP (Ambient 2)

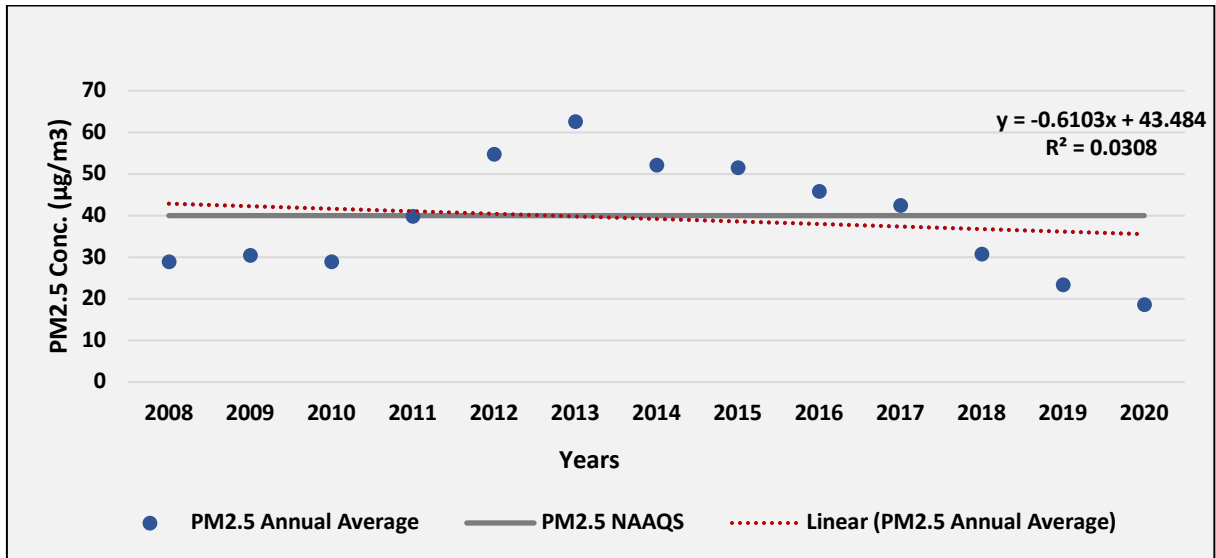


Fig. RTTP14: Trend of annual mean $PM_{2.5}$ ambient air concentration in APGENCO RTTP TPP (Ambient 2)

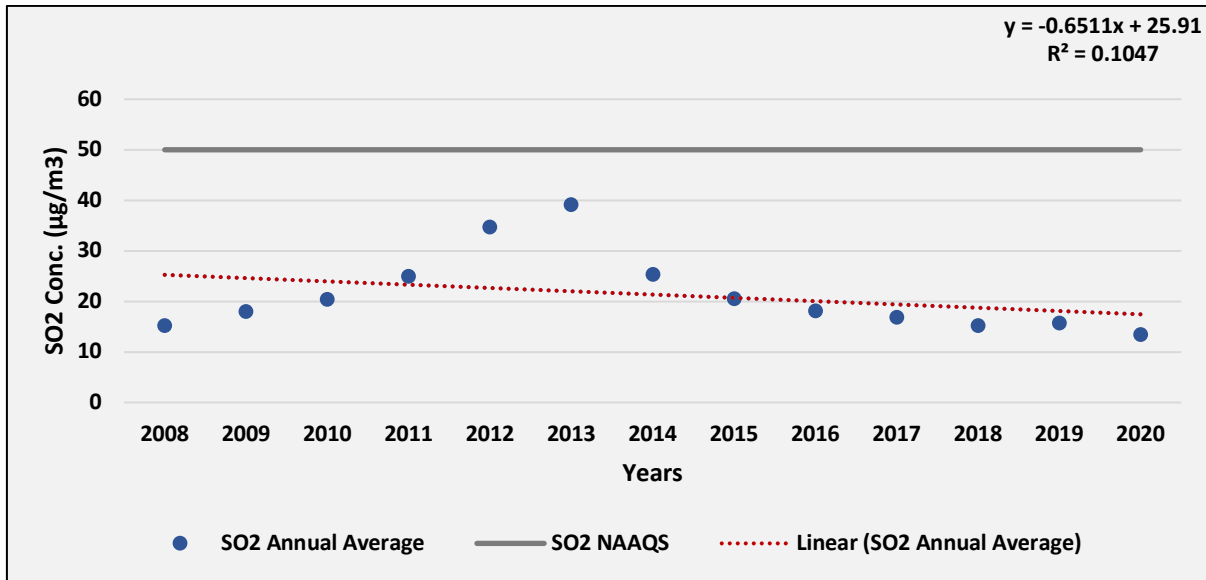


Fig. RTTP15: Trend of annual mean SO₂ ambient air concentration in APGENCO RTTP TPP (Ambient 2)

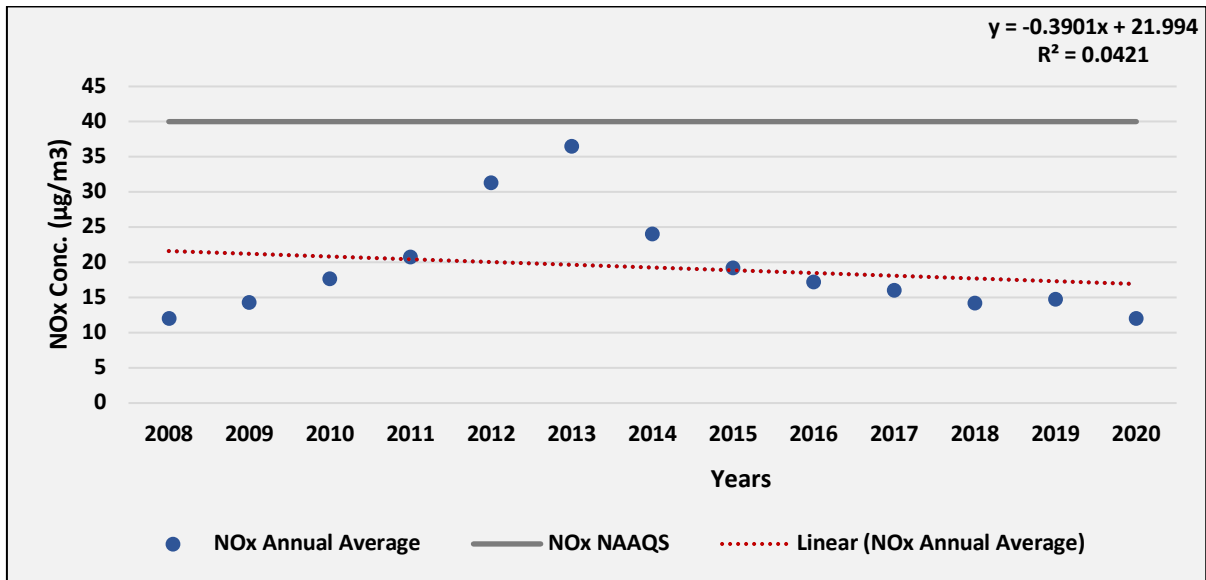


Fig. RTTP16: Trend of annual mean NO_x ambient air concentration in APGENCO RTTP TPP (Ambient 2)

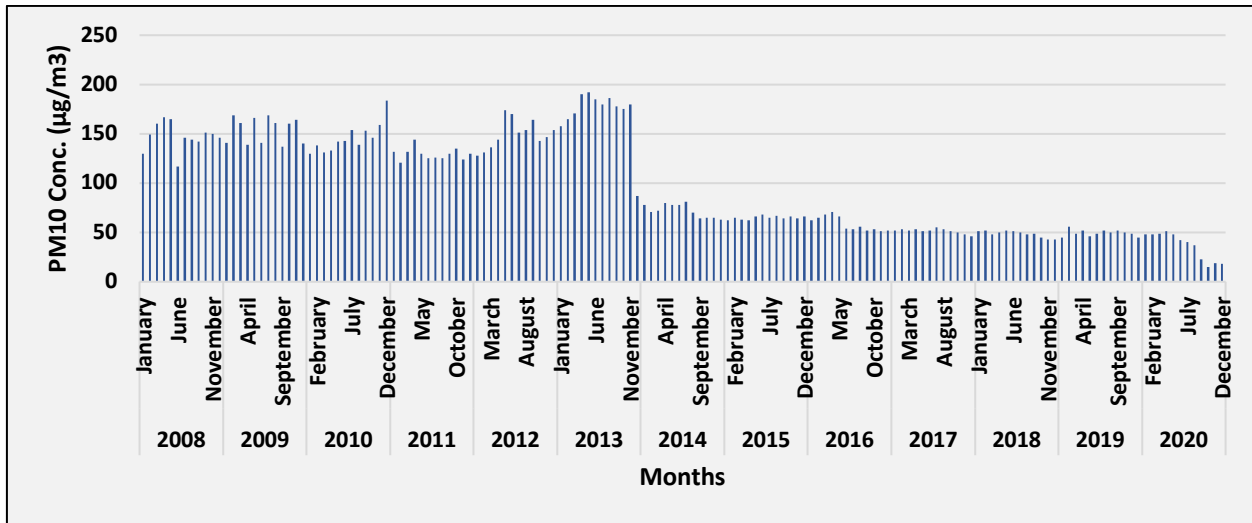


Fig. RTTP17: Time series of monthly average PM_{10} ambient air concentration in APGENCO RTTP TPP (Ambient 3)

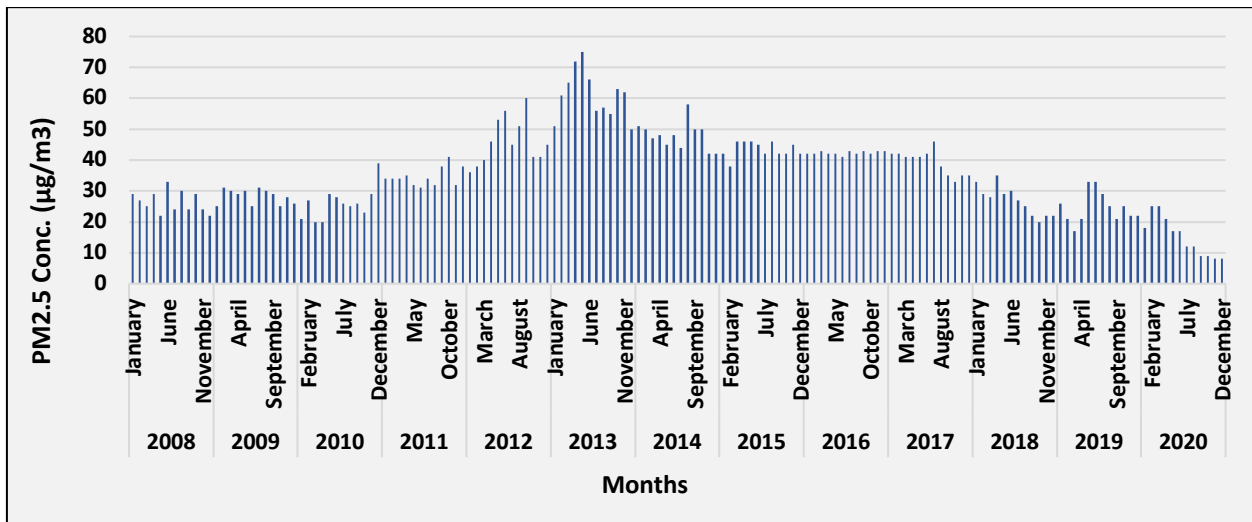


Fig. RTTP18: Time series of monthly average $PM_{2.5}$ ambient air concentration in APGENCO RTTP TPP (Ambient 3)

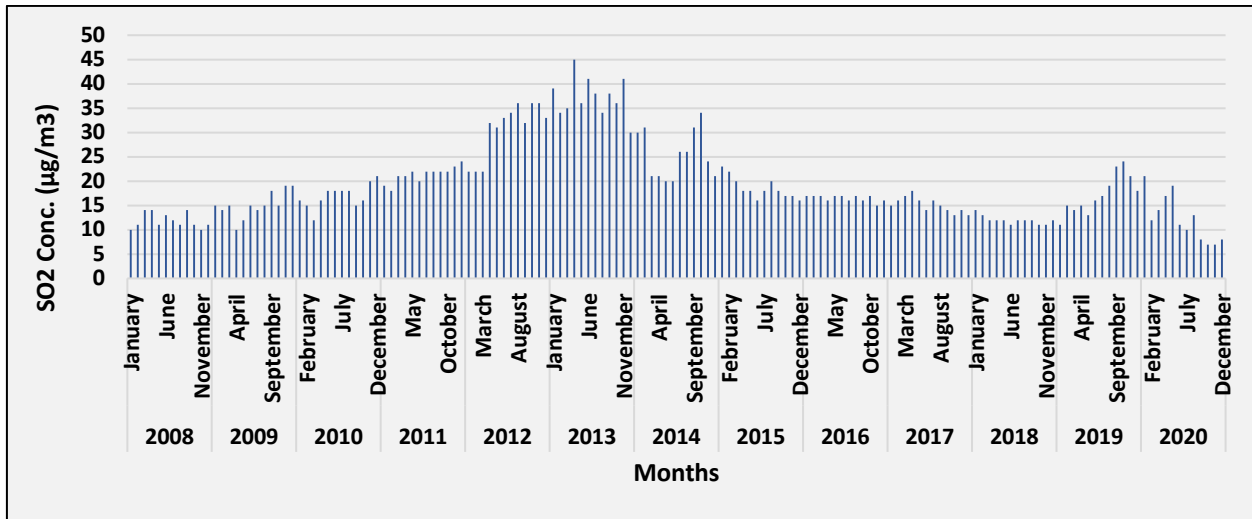


Fig. RTTP19: Time series of monthly average SO_2 ambient air concentration in APGENCO RTTP TPP (Ambient 3)

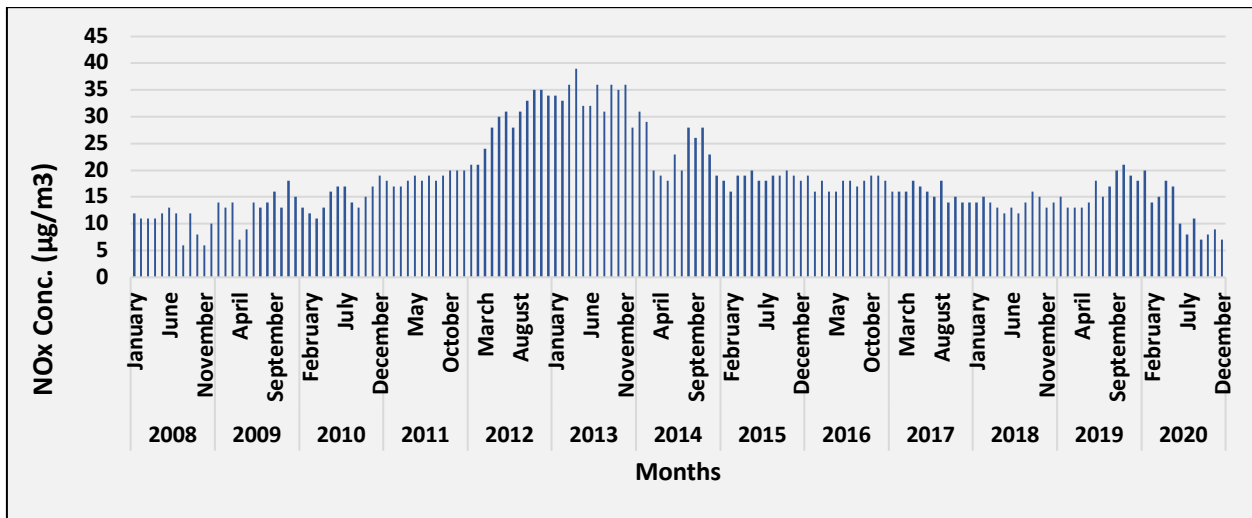


Fig. RTTP20: Time series of monthly average NO_x ambient air concentration in APGENCO RTTP TPP (Ambient 3)

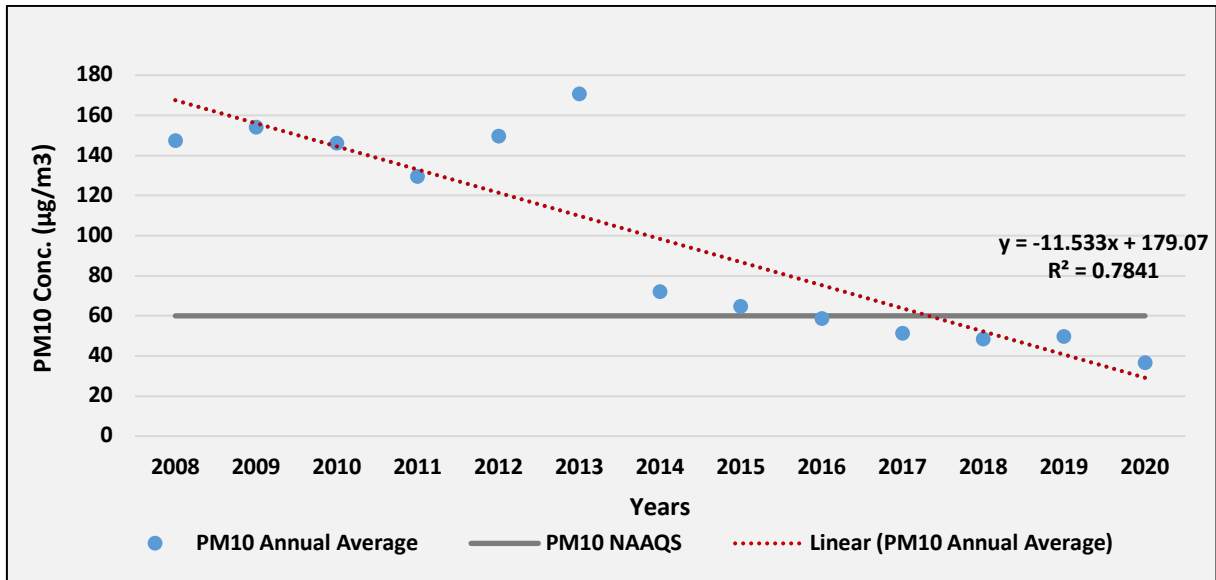


Fig. RTTP21: Trend of annual mean PM_{10} ambient air concentration in APGENCO RTTP TPP (Ambient 3)

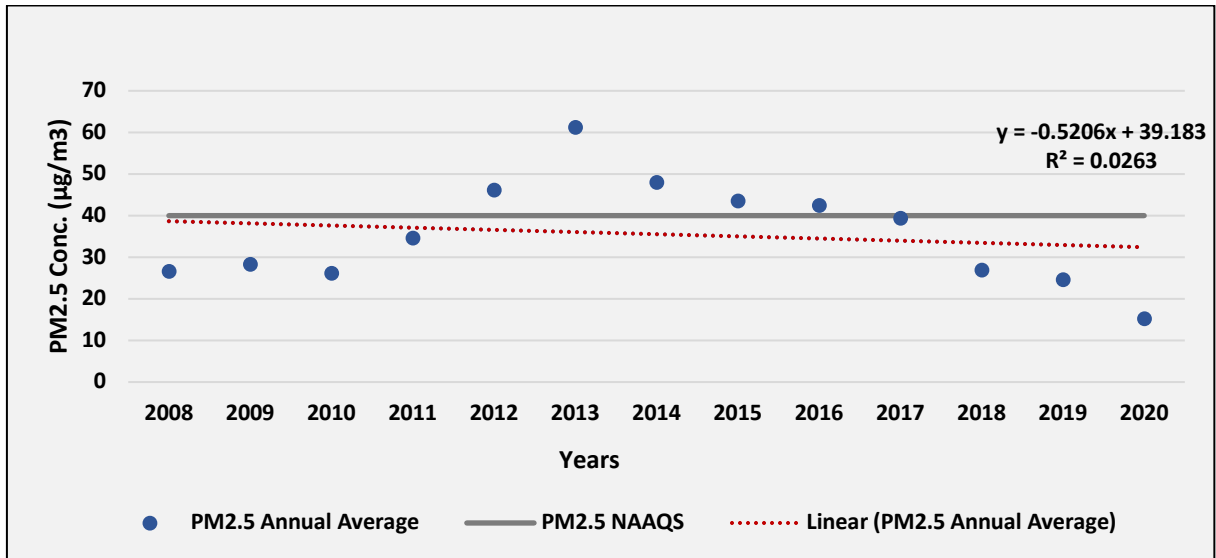


Fig. RTTP22: Trend of annual mean $PM_{2.5}$ ambient air concentration in APGENCO RTTP TPP (Ambient 3)

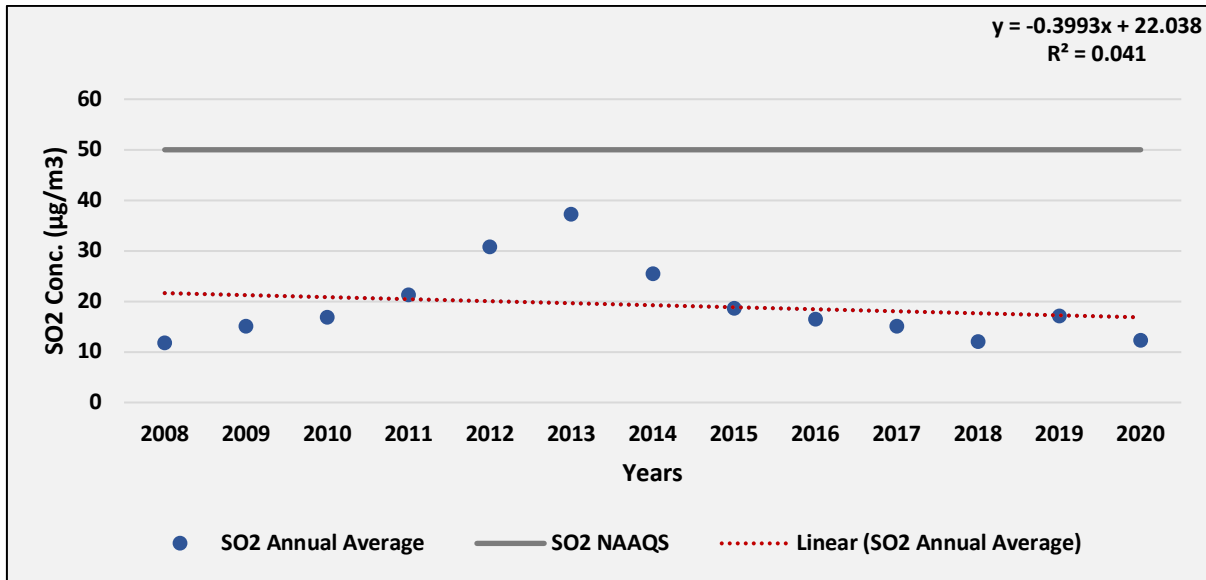


Fig. RTTP23: Trend of annual mean SO₂ ambient air concentration in APGENCO RTTP TPP (Ambient 3)

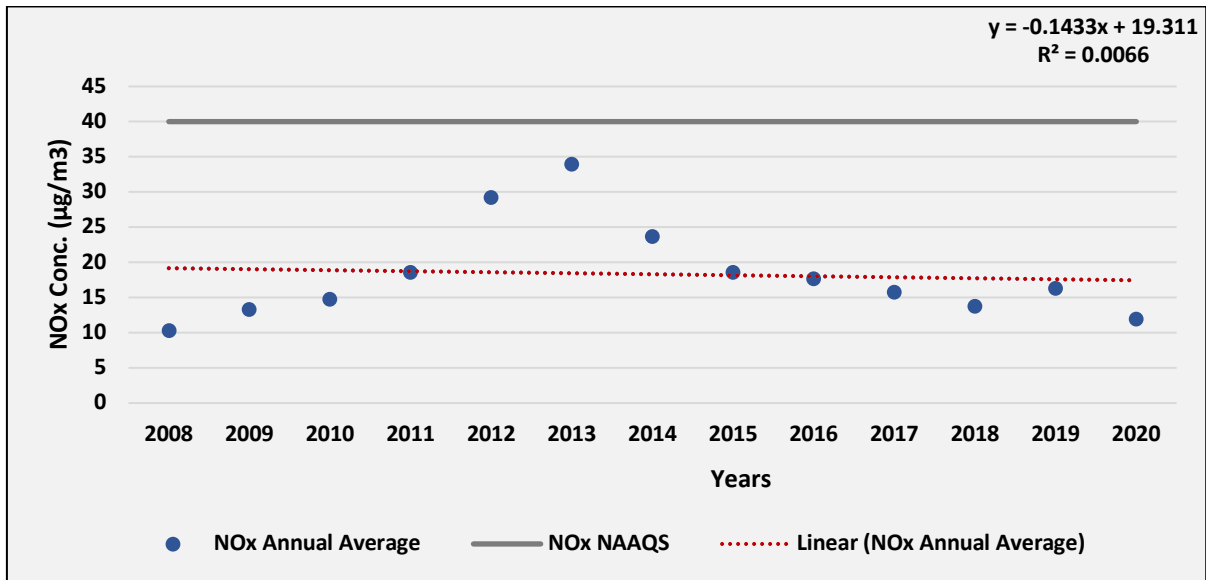


Fig. RTTP24: Trend of annual mean NO_x ambient air concentration in APGENCO RTTP TPP (Ambient 3)

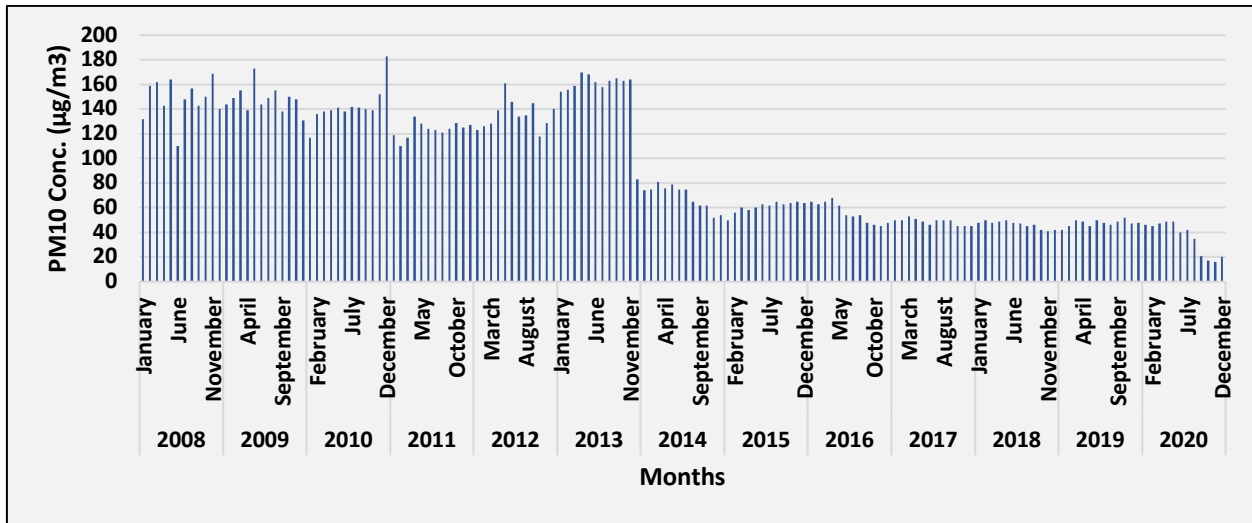


Fig. RTTP25: Time series of monthly average PM_{10} ambient air concentration in APGENCO RTTP TPP (Ambient 4)

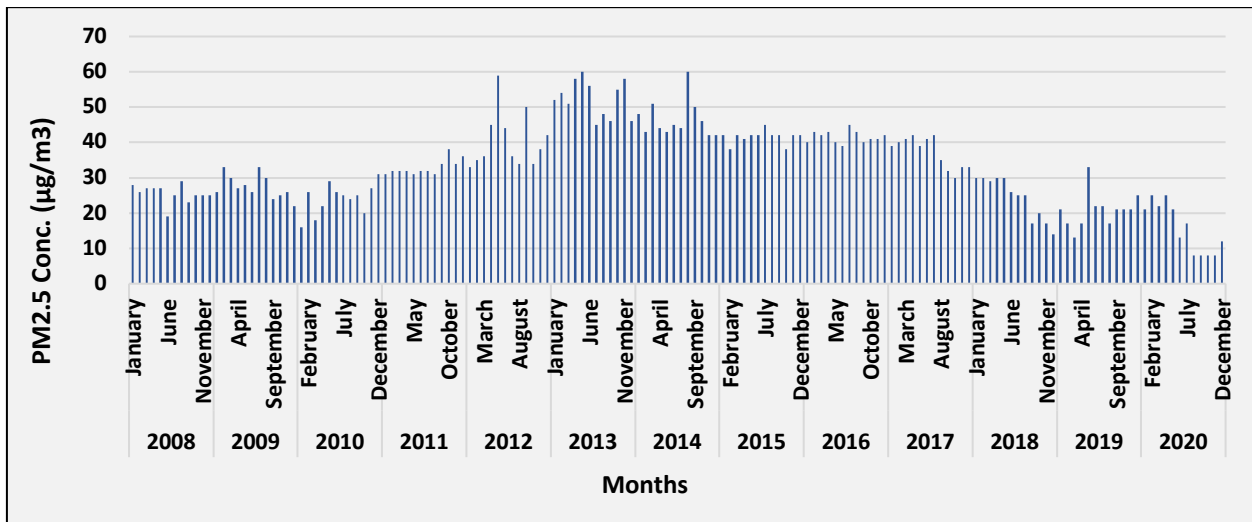


Fig. RTTP26: Time series of monthly average $PM_{2.5}$ ambient air concentration in APGENCO RTTP TPP (Ambient 4)

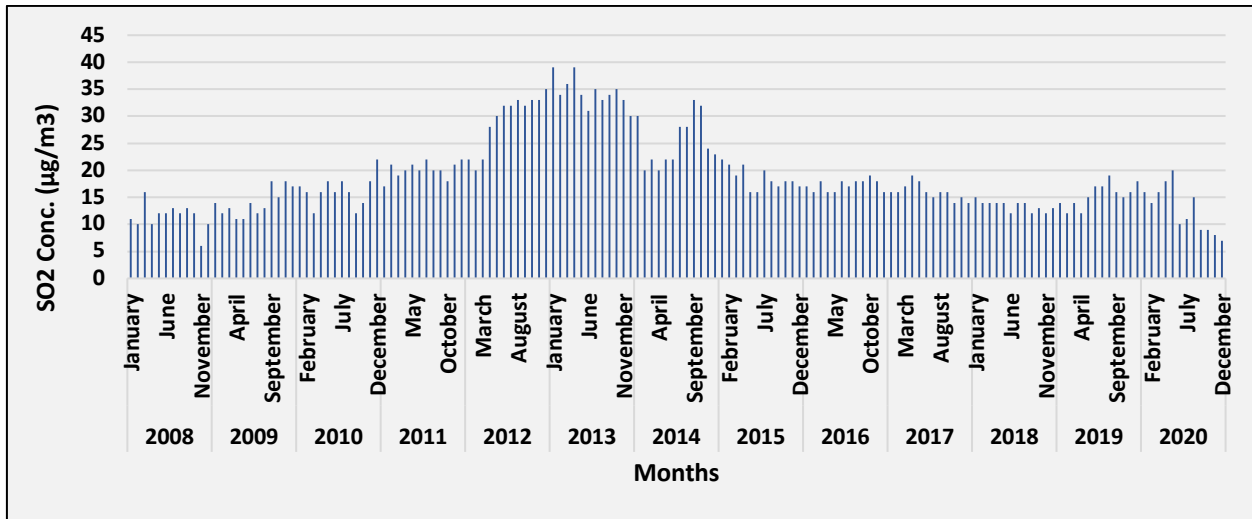


Fig. RTTP27: Time series of monthly average So₂ ambient air concentration in APGENCO RTTP TPP (Ambient 4)

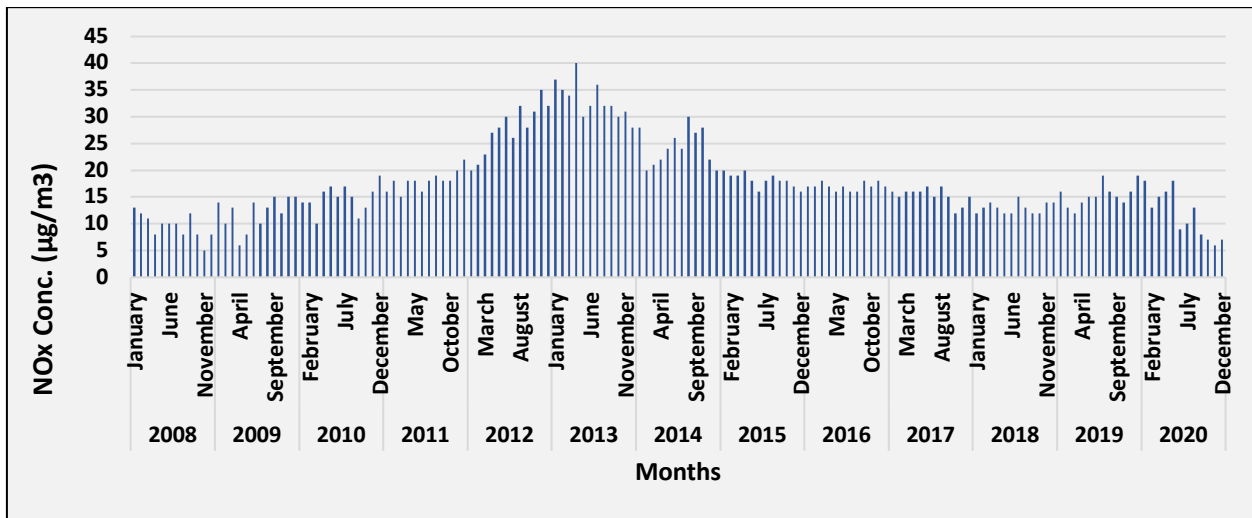


Fig. RTTP28: Time series of monthly average NO_x ambient air concentration in APGENCO RTTP TPP (Ambient 4)

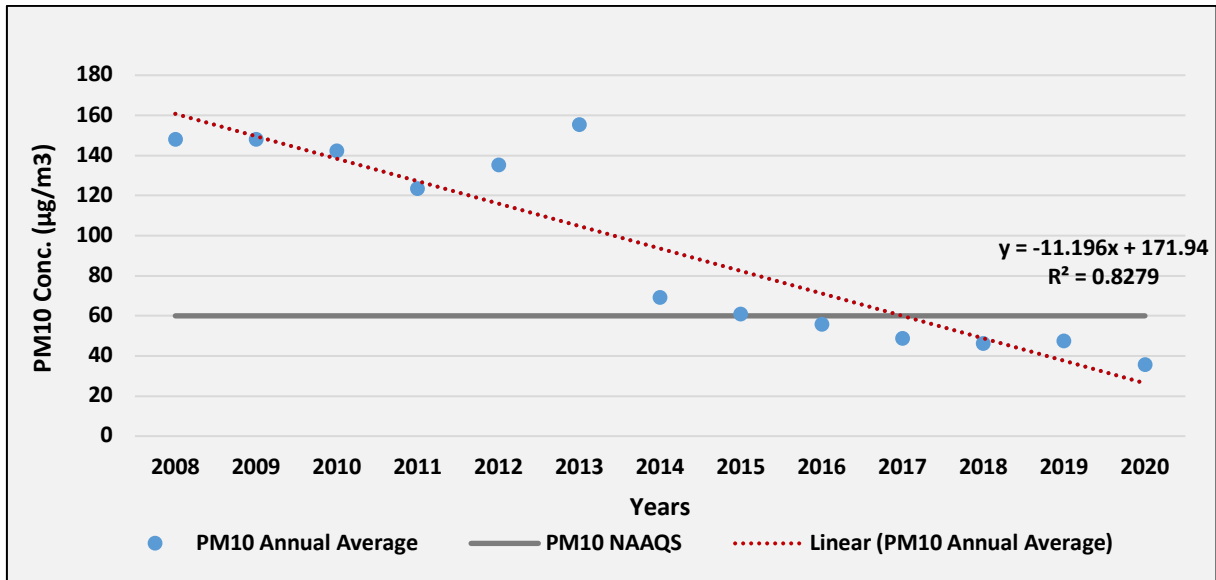


Fig. RTTP29: Trend of annual mean PM_{10} ambient air concentration in APGENCO RTTP TPP (Ambient 4)

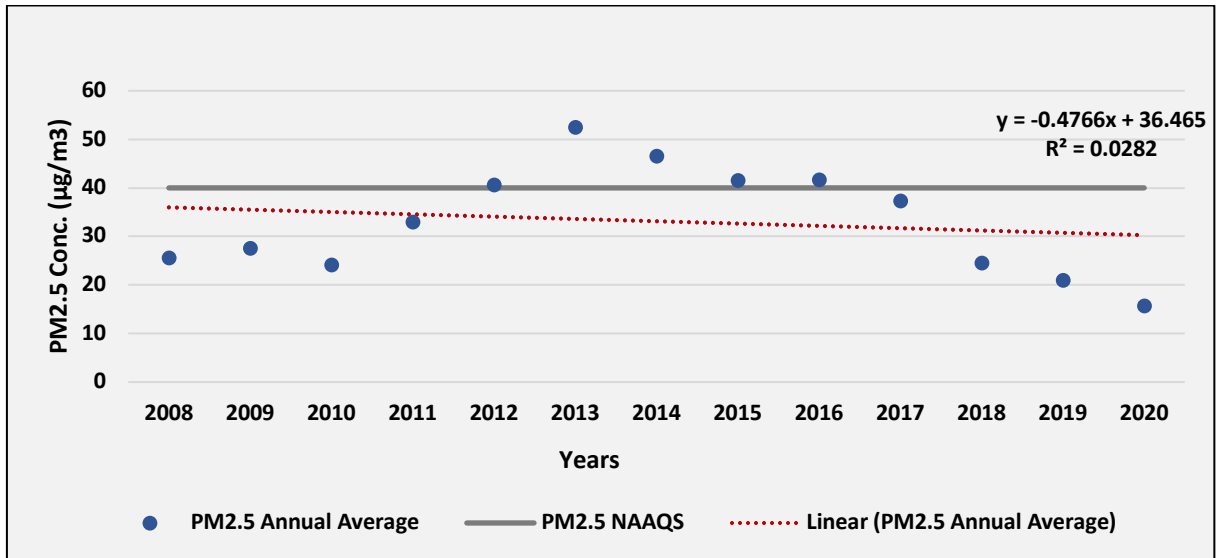


Fig. RTTP30: Trend of annual mean $PM_{2.5}$ ambient air concentration in APGENCO RTTP TPP (Ambient 4)

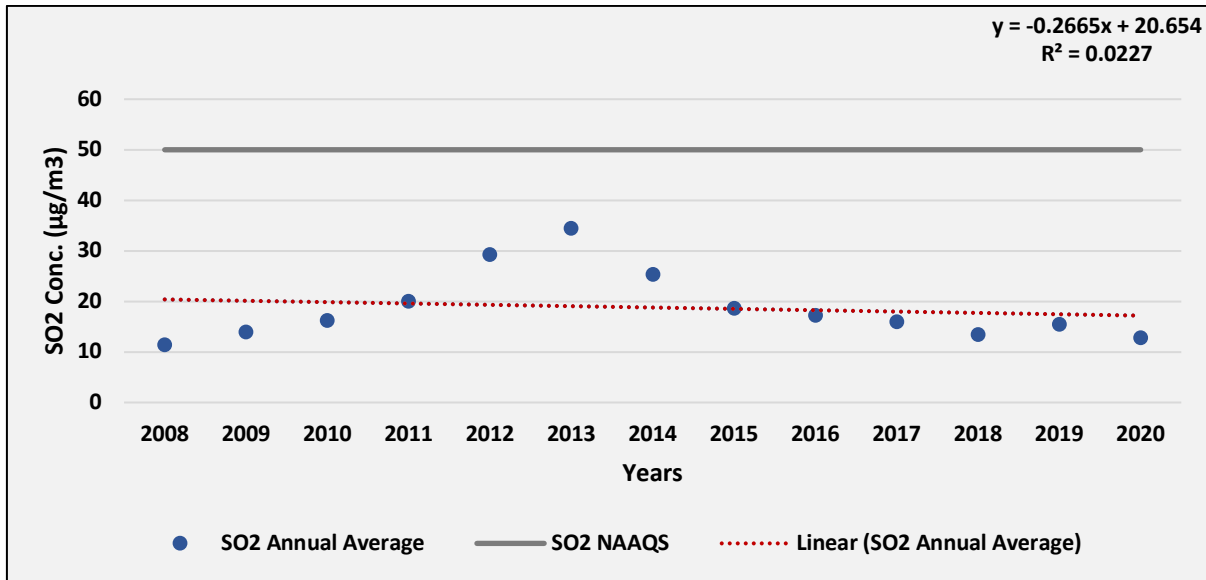


Fig. RTTP31: Trend of annual mean SO₂ ambient air concentration in APGENCO RTTP TPP (Ambient 4)

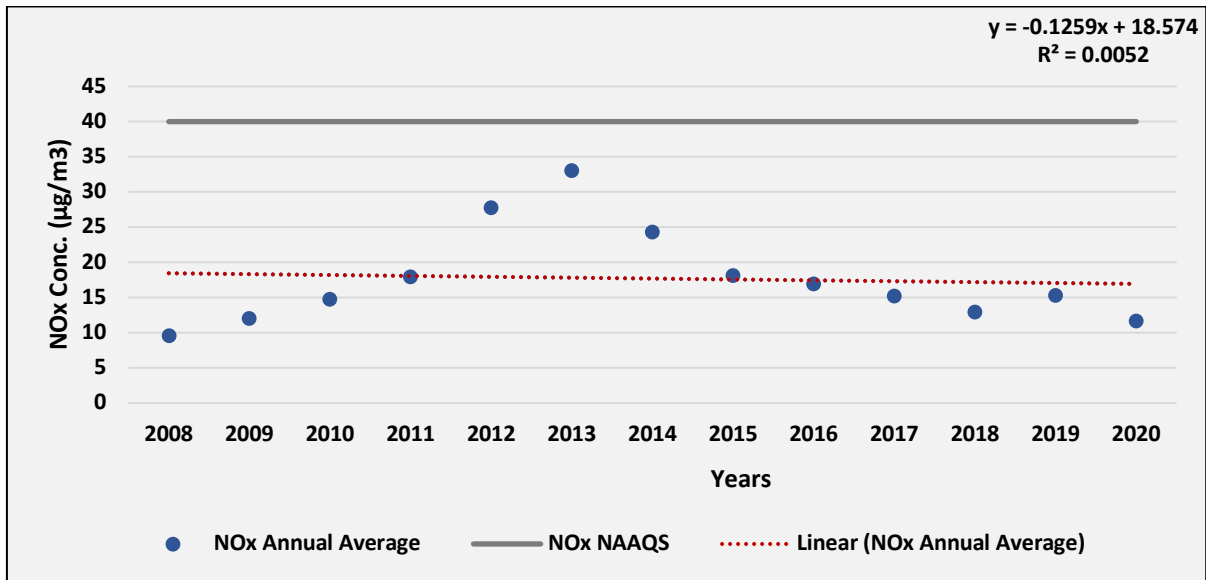


Fig. RTTP32: Trend of annual mean NO_x ambient air concentration in APGENCO RTTP TPP (Ambient 4)

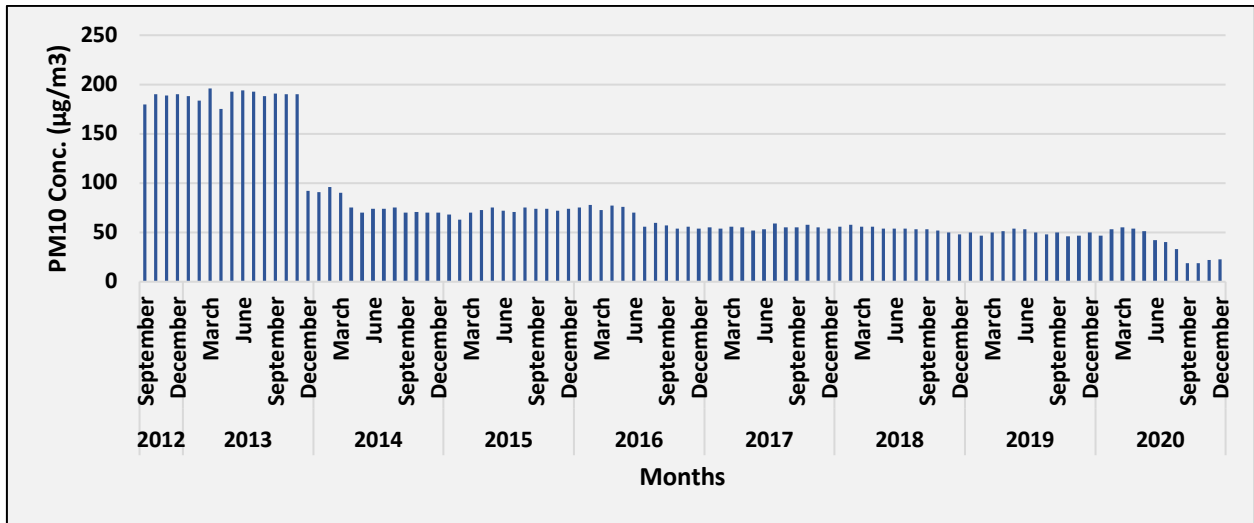


Fig. RTTP33: Time series of monthly average PM_{10} ambient air concentration in APGENCO RTTP TPP (Ambient 5)

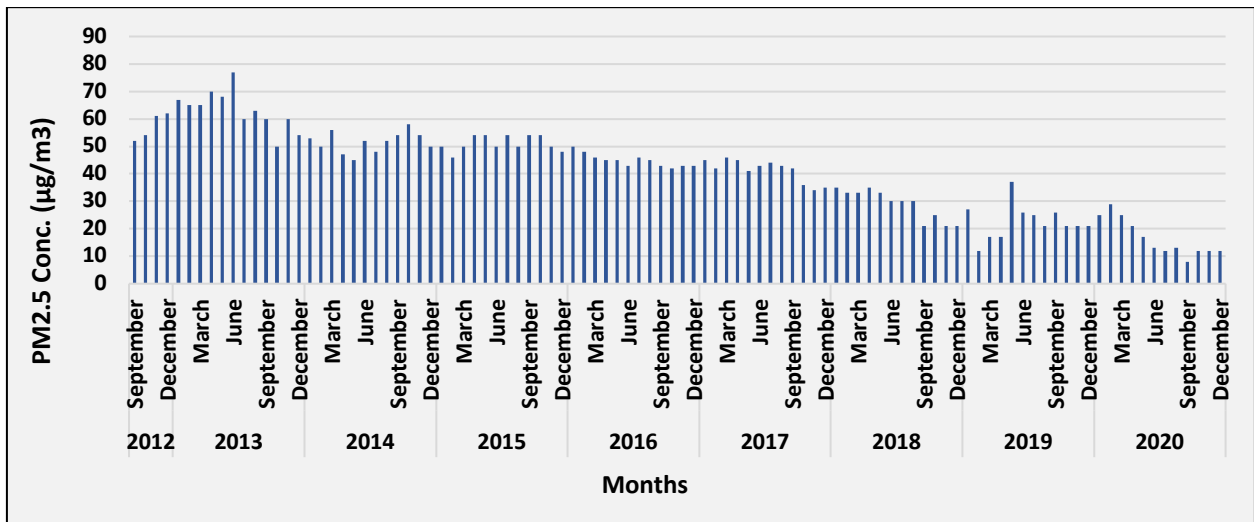


Fig. RTTP34: Time series of monthly average $PM_{2.5}$ ambient air concentration in APGENCO RTTP TPP (Ambient 5)

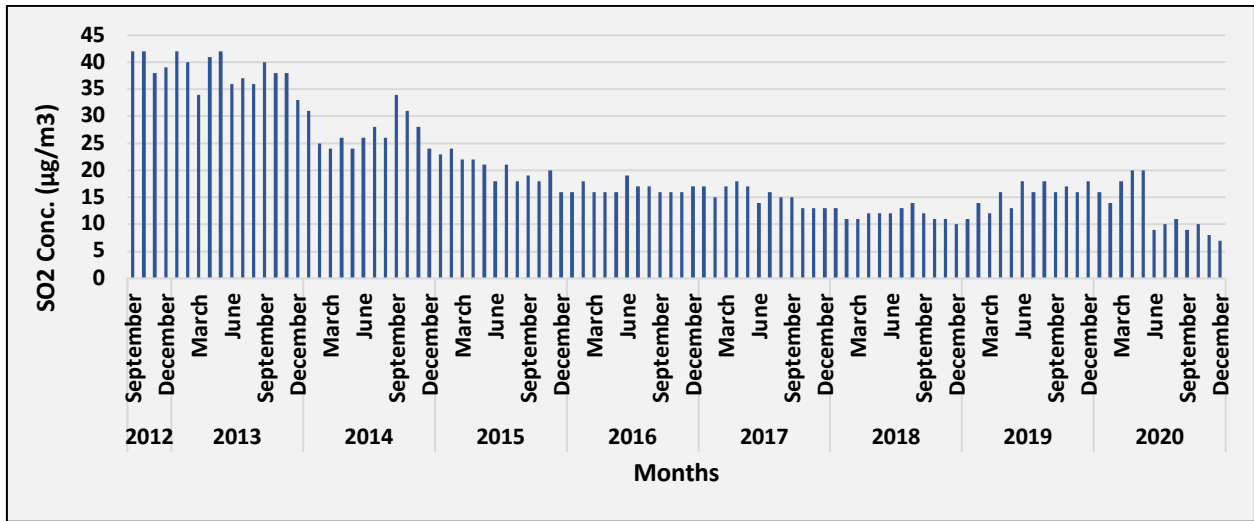


Fig. RTTP35: Time series of monthly average SO_2 ambient air concentration in APGENCO RTTP TPP (Ambient 5)

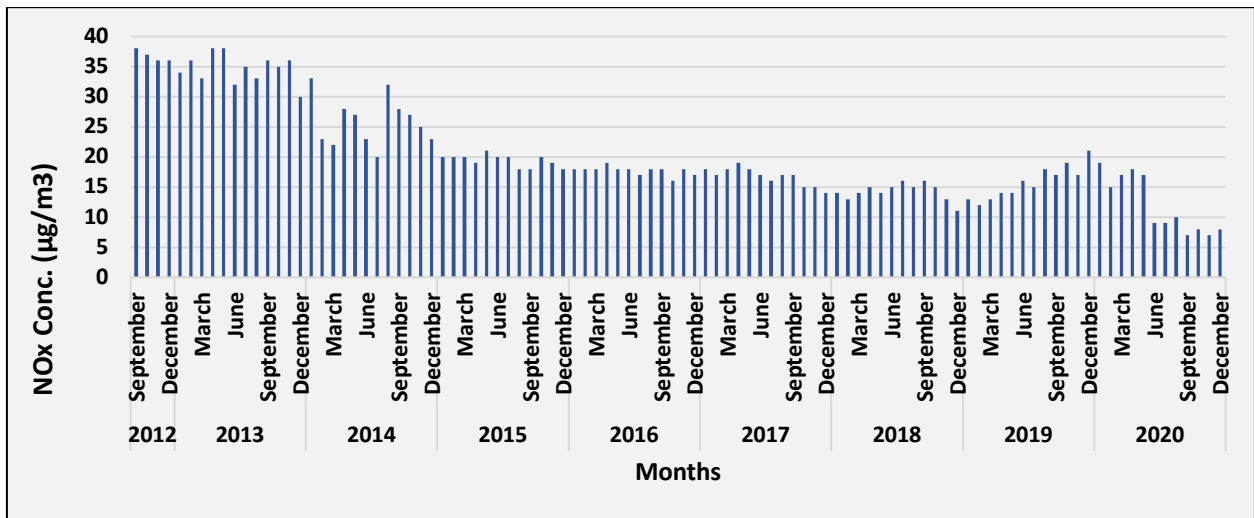


Fig. RTTP36: Time series of monthly average NO_x ambient air concentration in APGENCO RTTP TPP (Ambient 5)

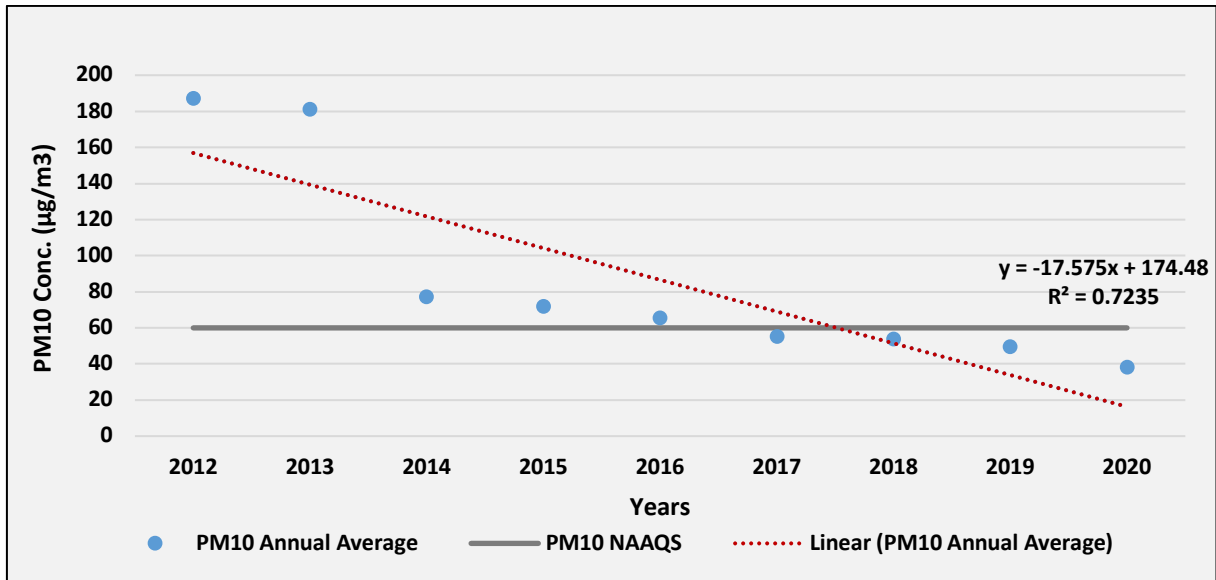


Fig. RTTP37: Trend of annual mean PM_{10} ambient air concentration in APGENCO RTTP TPP (Ambient 5)

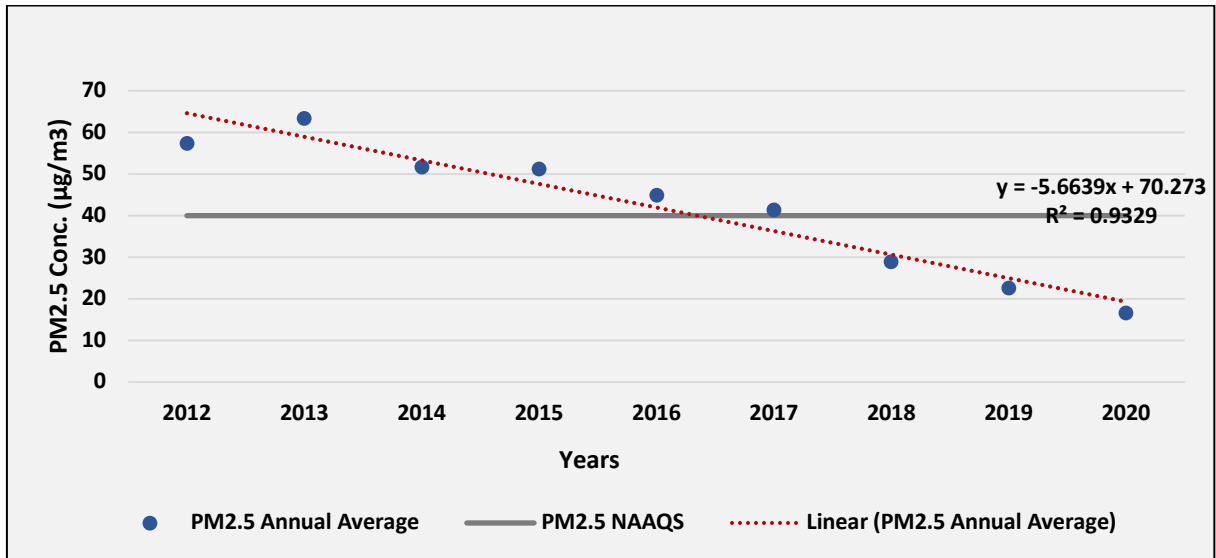


Fig. RTTP38: Trend of annual mean $PM_{2.5}$ ambient air concentration in APGENCO RTTP TPP (Ambient 5)

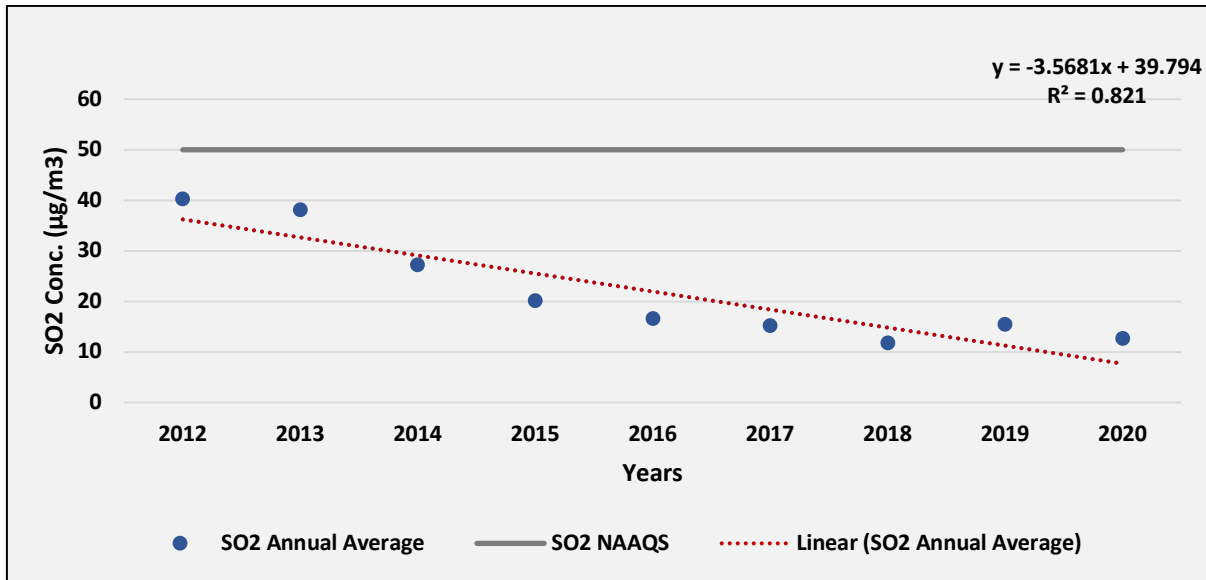


Fig. RTTP39: Trend of annual mean SO₂ ambient air concentration in APGENCO RTTP TPP (Ambient 5)

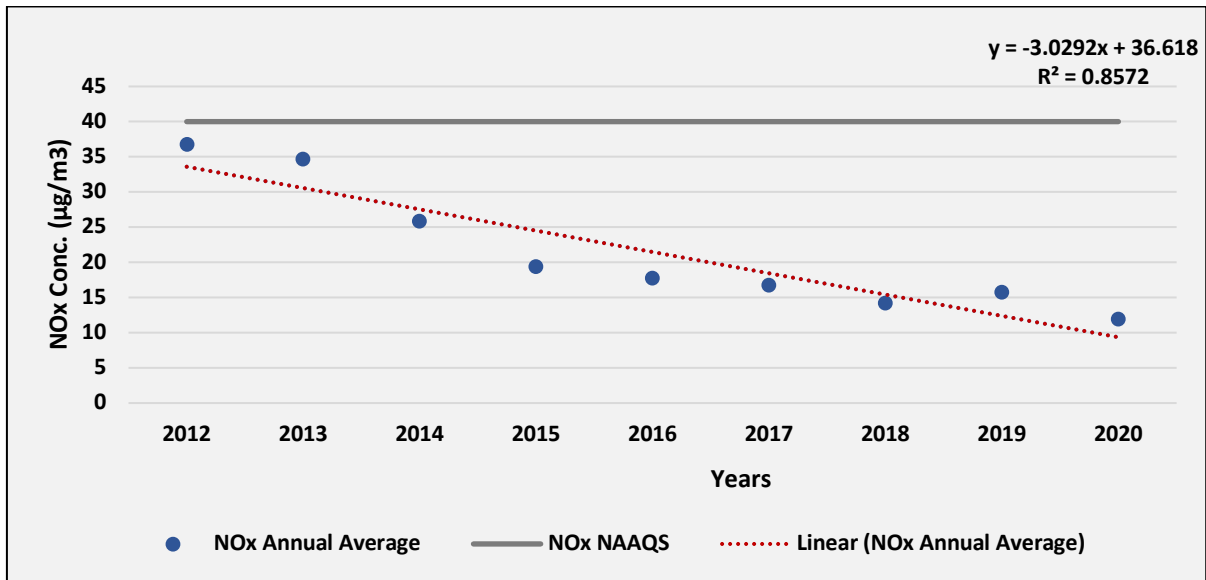


Fig. RTTP40: Trend of annual mean NO_x ambient air concentration in APGENCO RTTP TPP (Ambient 5)

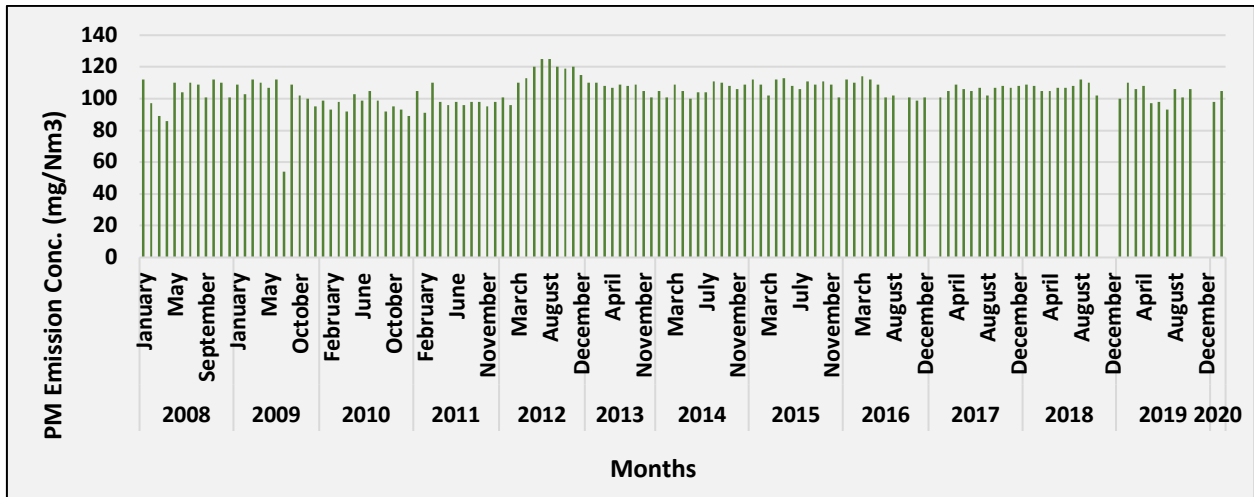


Fig. RTTP41: Time series of monthly average PM Emission concentration in APGENCO RTTP TPP (Unit 1)

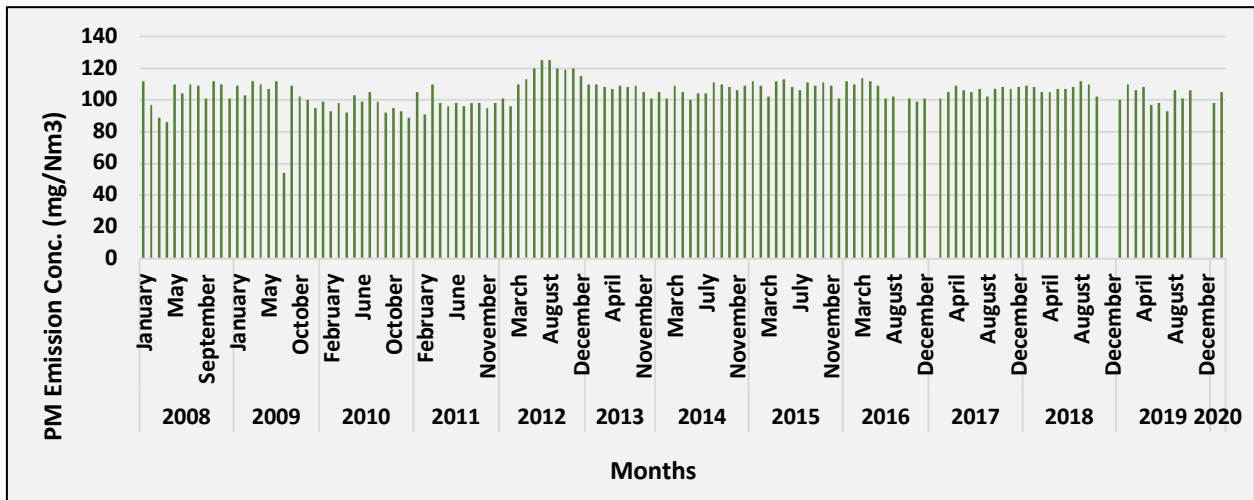


Fig. RTTP42: Time series of monthly average SO₂ Emission concentration in APGENCO RTTP TPP (Unit 1)

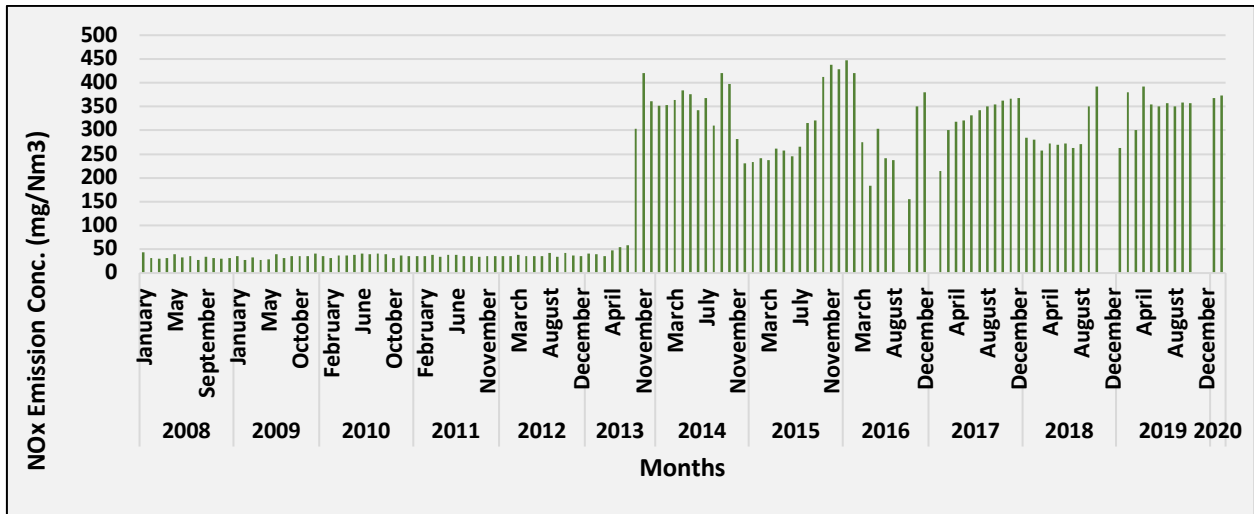


Fig. RTTP43: Time series of monthly average NO_x Emission concentration in APGENCO RTTP TPP (Unit 1)

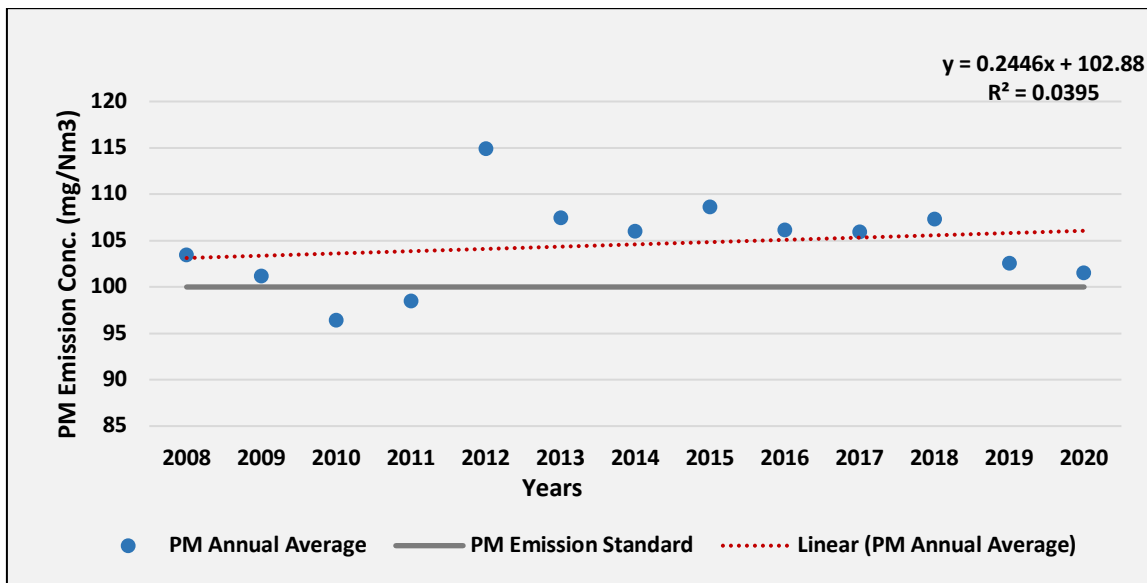


Fig. RTTP44: Trend of annual mean PM Emission air concentration in APGENCO RTTP TPP (Unit 1)

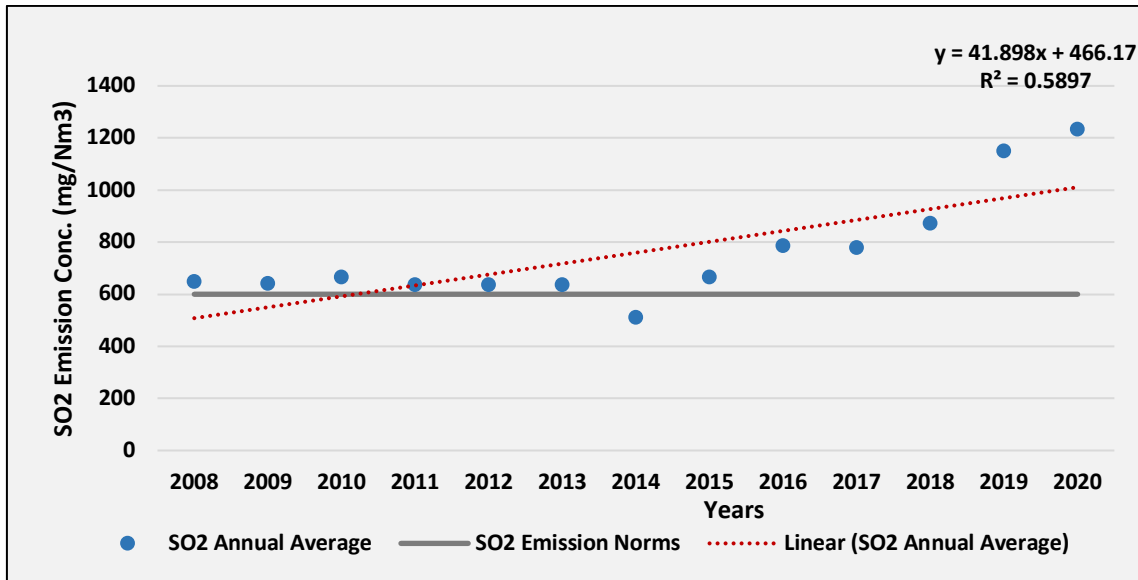


Fig. RTTP45: Trend of annual mean SO₂ Emission air concentration in APGENCO RTTP TPP (Unit I)

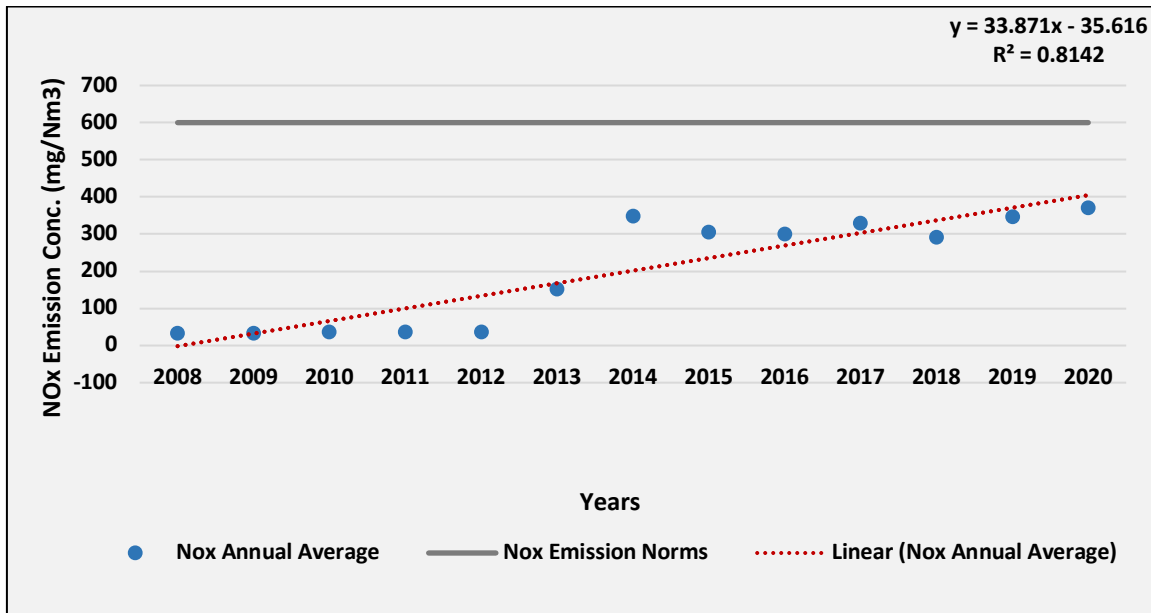


Fig. RTTP46: Trend of annual mean NO_x Emission air concentration in APGENCO RTTP TPP (Unit I)

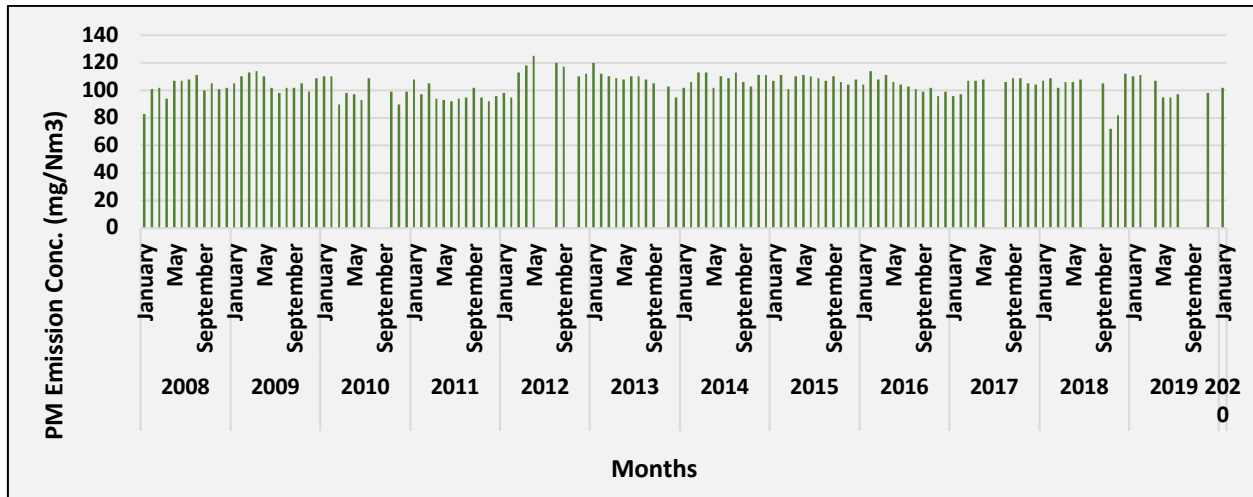


Fig. RTTP47: Time series of monthly average PM Emission concentration in APGENCO RTTP TPP (Unit 2)

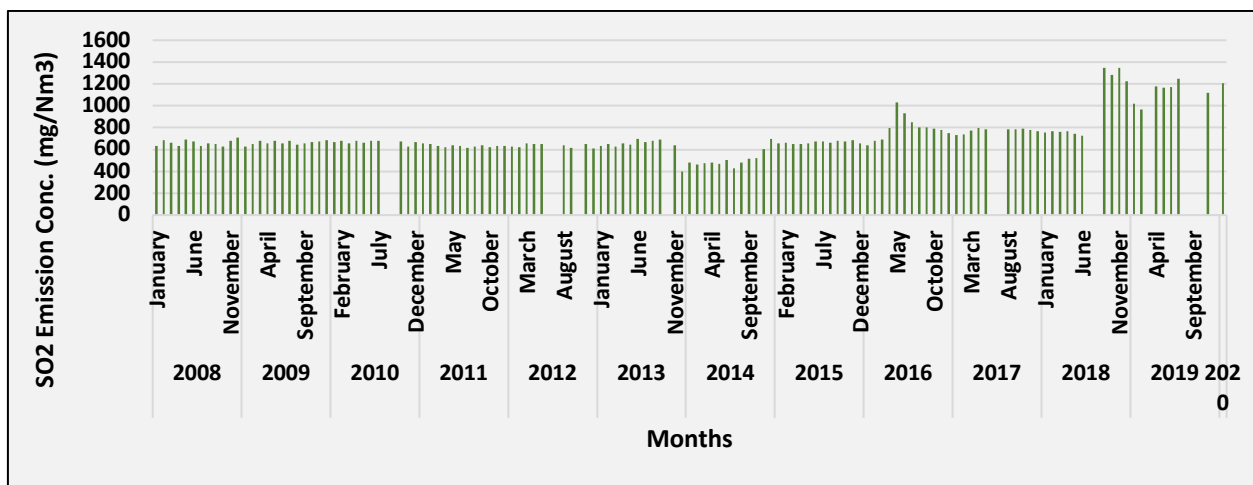


Fig. RTTP48: Time series of monthly average SO₂ Emission concentration in APGENCO RTTP TPP (Unit 2)

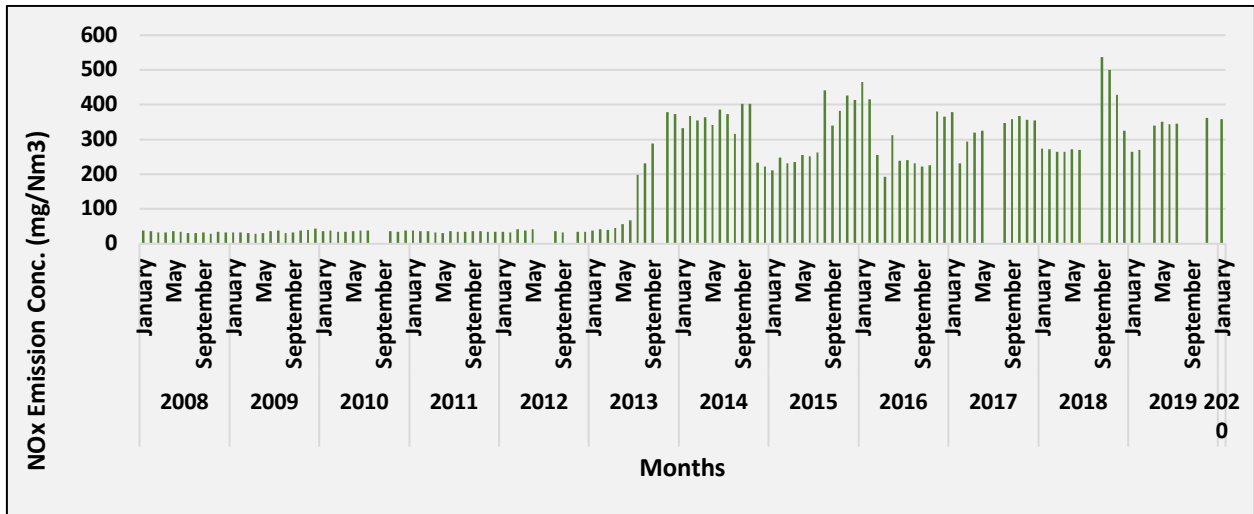


Fig. RTTP49: Time series of monthly average NO_x Emission concentration in APGENCO RTTP TPP (Unit 2)

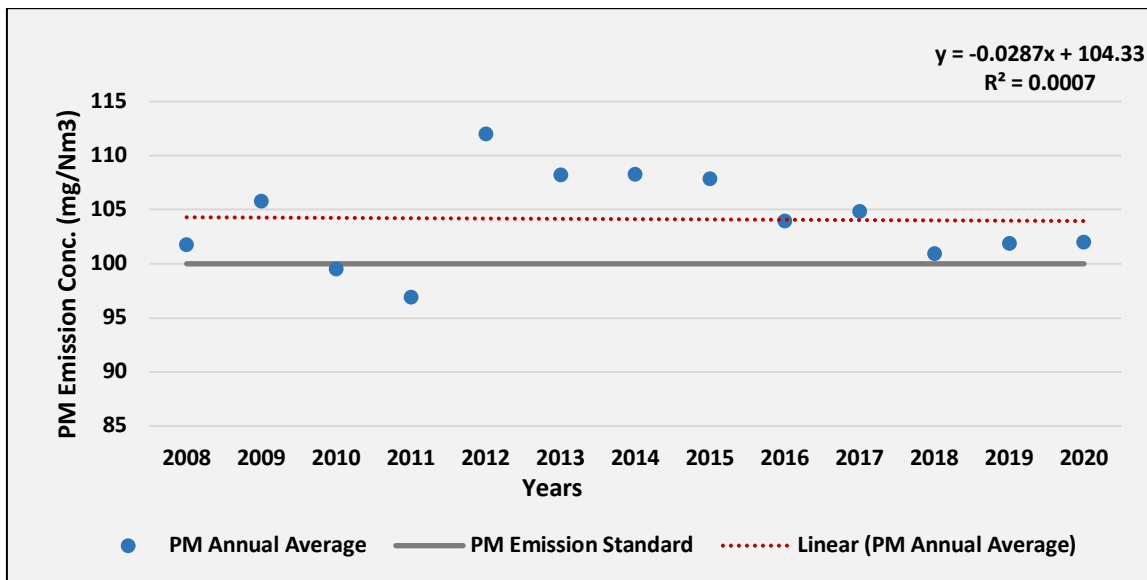


Fig. RTTP50: Trend of annual mean PM Emission air concentration in APGENCO RTTP TPP (Unit 2)

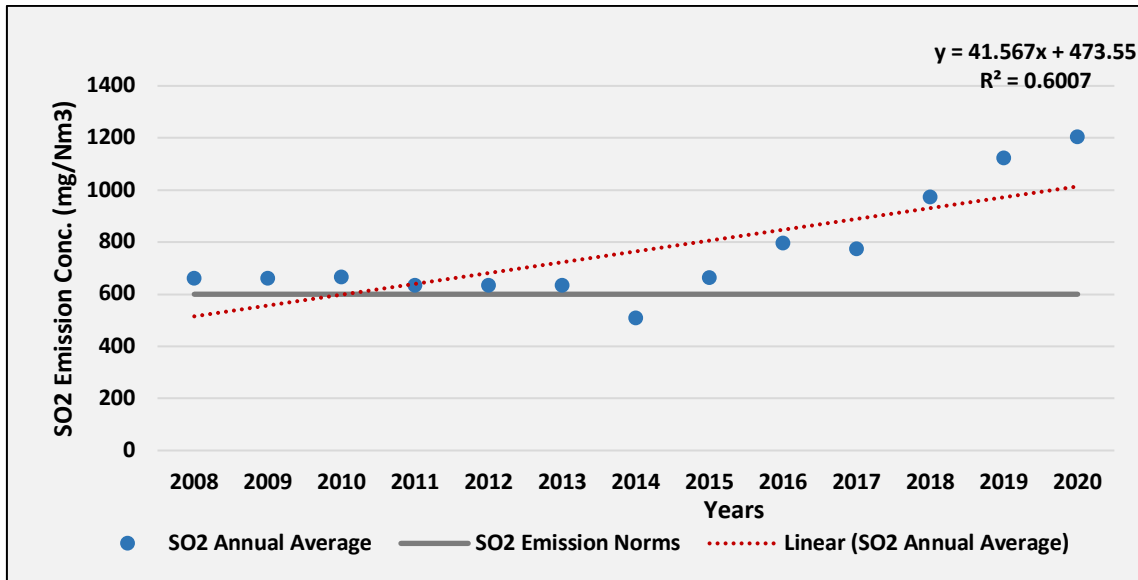


Fig. RTTP51: Trend of annual mean SO₂ Emission air concentration in APGENCO RTTP TPP (Unit 2)

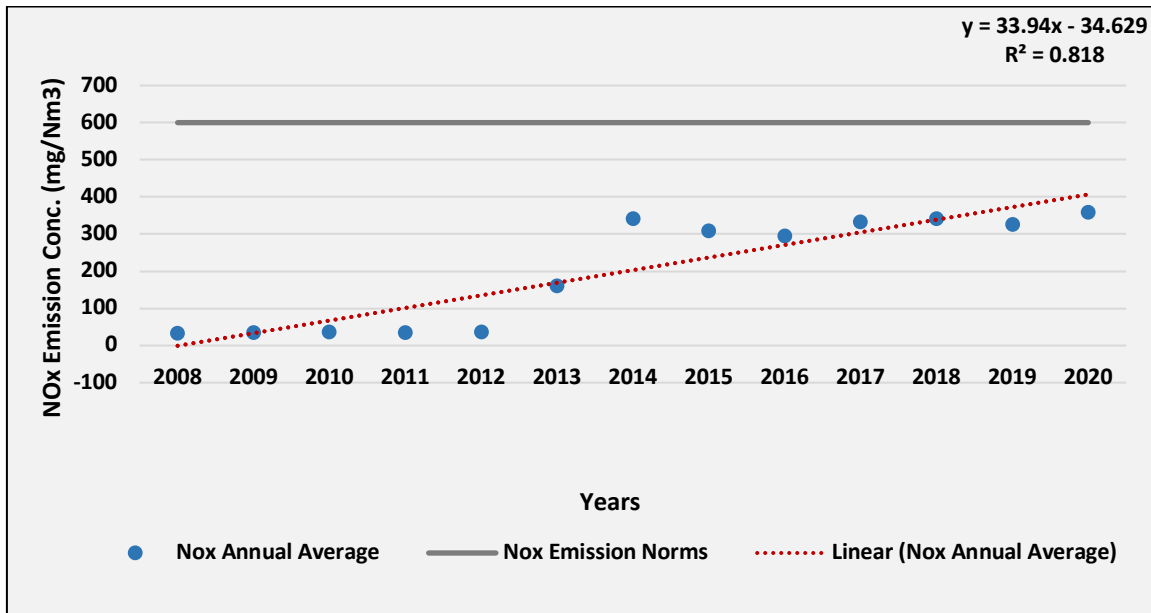


Fig. RTTP52: Trend of annual mean NO_x Emission air concentration in APGENCO RTTP TPP (Unit 2)

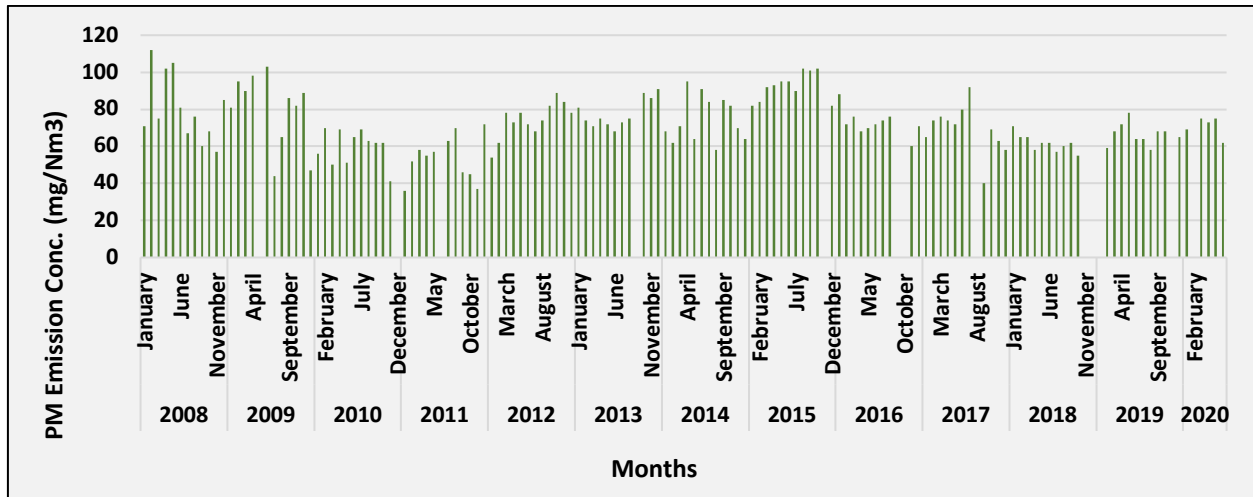


Fig. RTTP53: Time series of monthly average PM Emission concentration in APGENCO RTTP TPP (Unit 3)

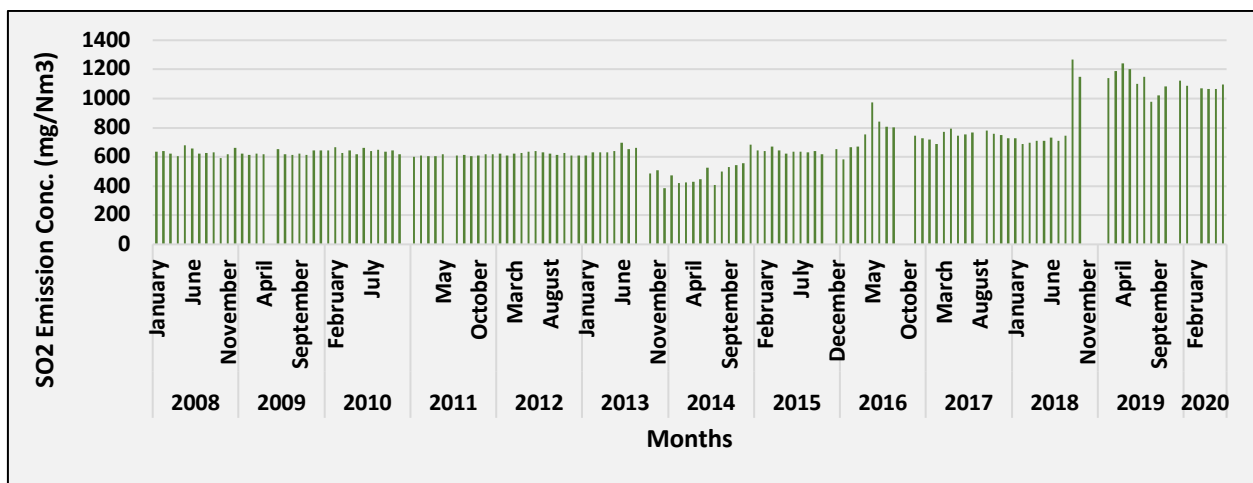


Fig. RTTP54: Time series of monthly average SO₂ Emission concentration in APGENCO RTTP TPP (Unit 3)

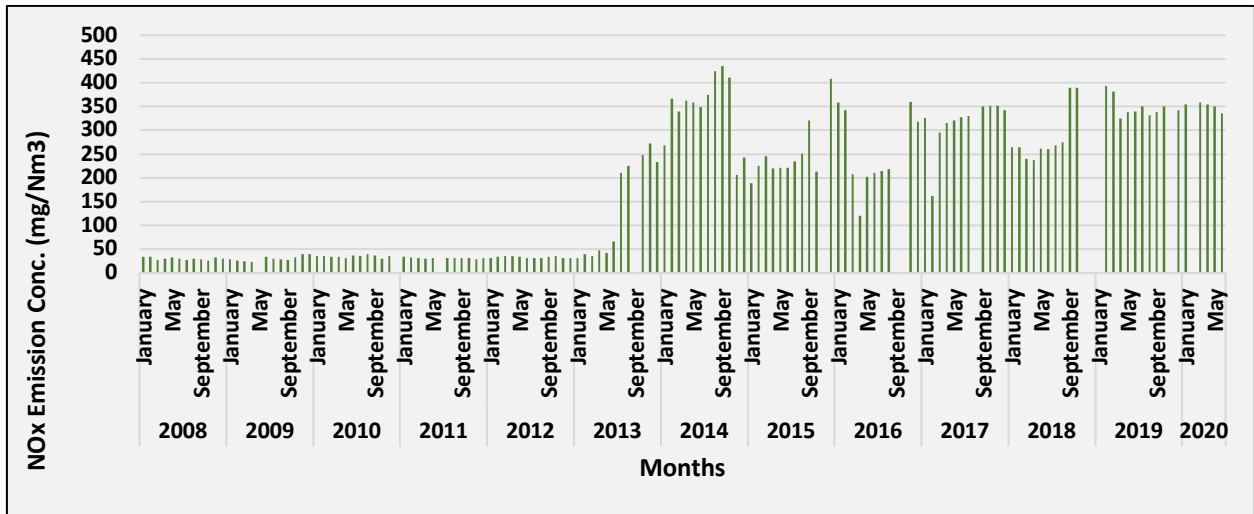


Fig. RTTP55: Time series of monthly average NO_x Emission concentration in APGENCO RTTP TPP (Unit 3)

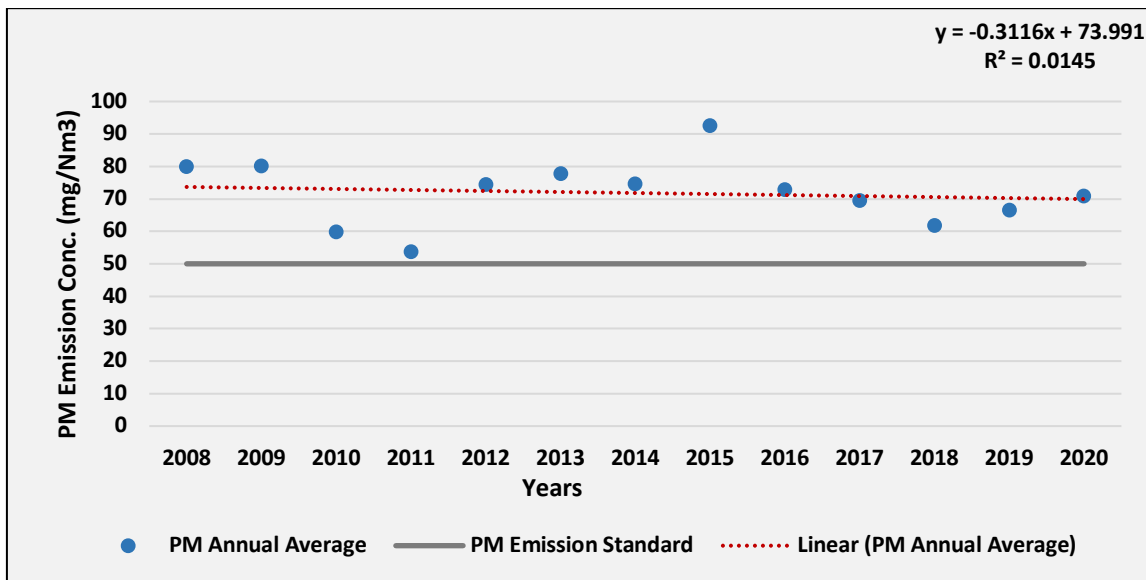


Fig. RTTP56: Trend of annual mean PM Emission air concentration in APGENCO RTTP TPP (Unit 3)

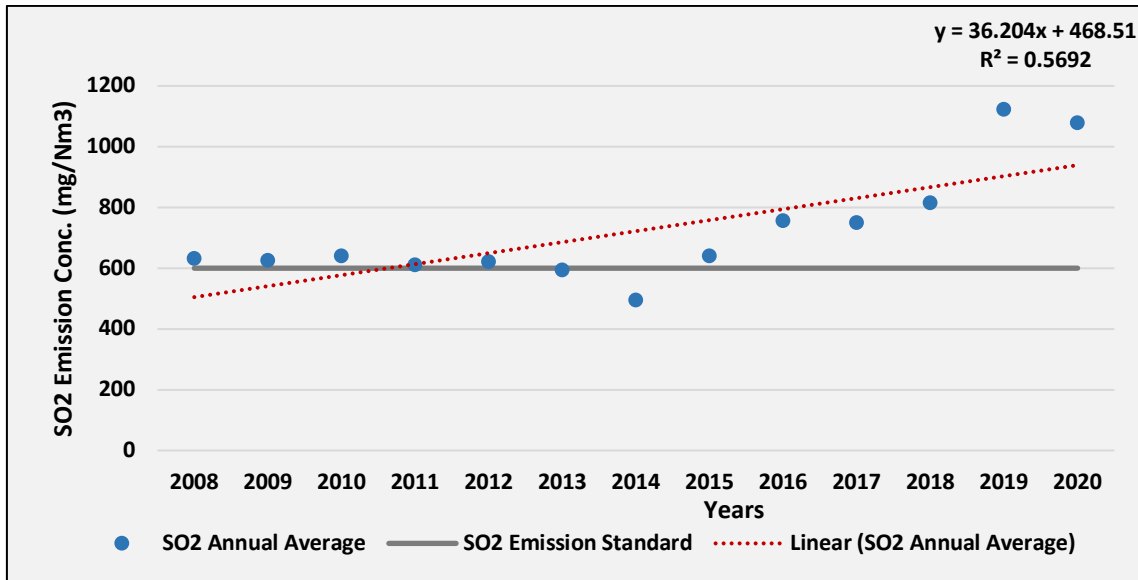


Fig. RTTP57: Trend of annual mean SO₂ Emission air concentration in APGENCO RTTP TPP (Unit 3)

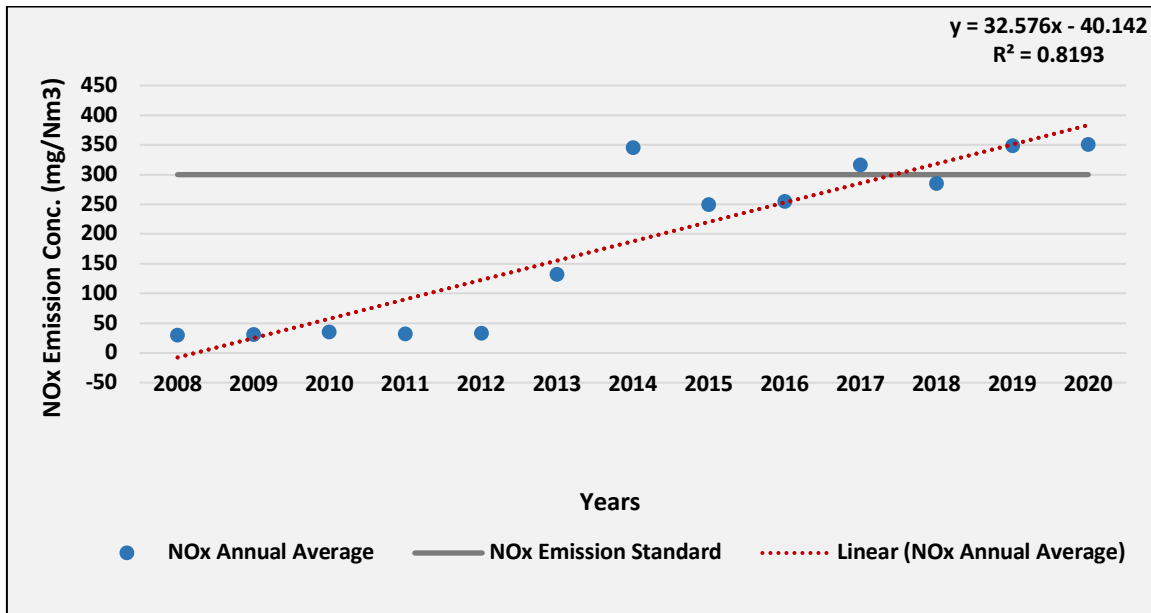


Fig. RTTP58: Trend of annual mean NO_x Emission air concentration in APGENCO RTTP TPP (Unit 3)

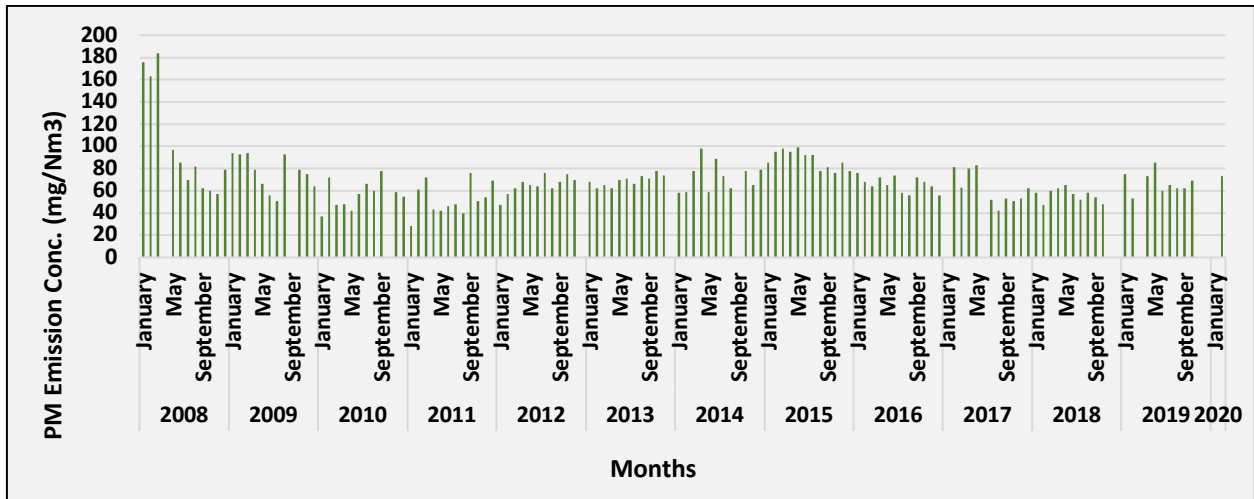


Fig. RTTP59: Time series of monthly average PM Emission concentration in APGENCO RTTP TPP (Unit 4)

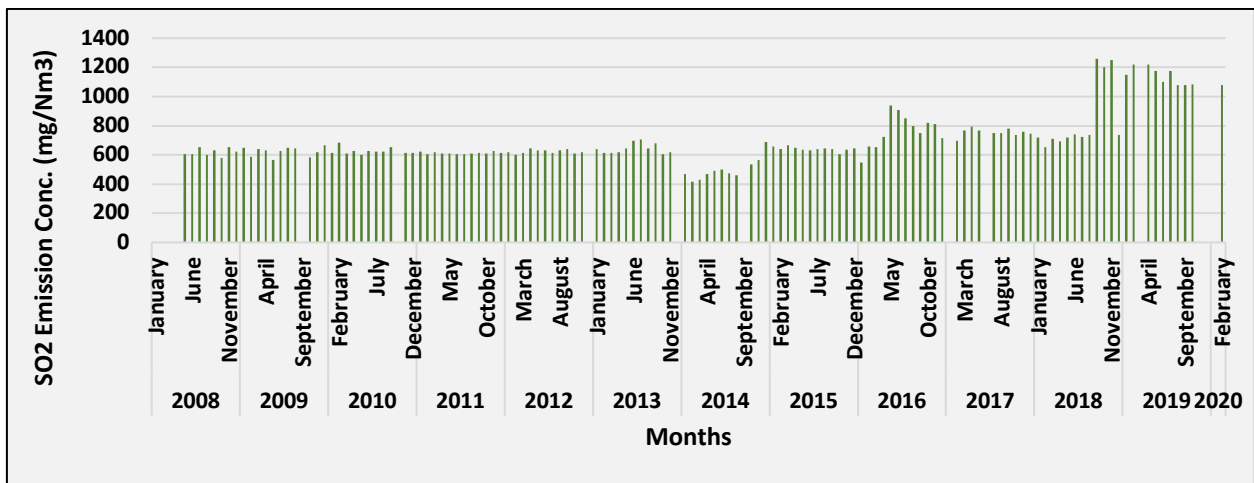


Fig. RTTP60: Time series of monthly average SO₂ Emission concentration in APGENCO RTTP TPP (Unit 4)

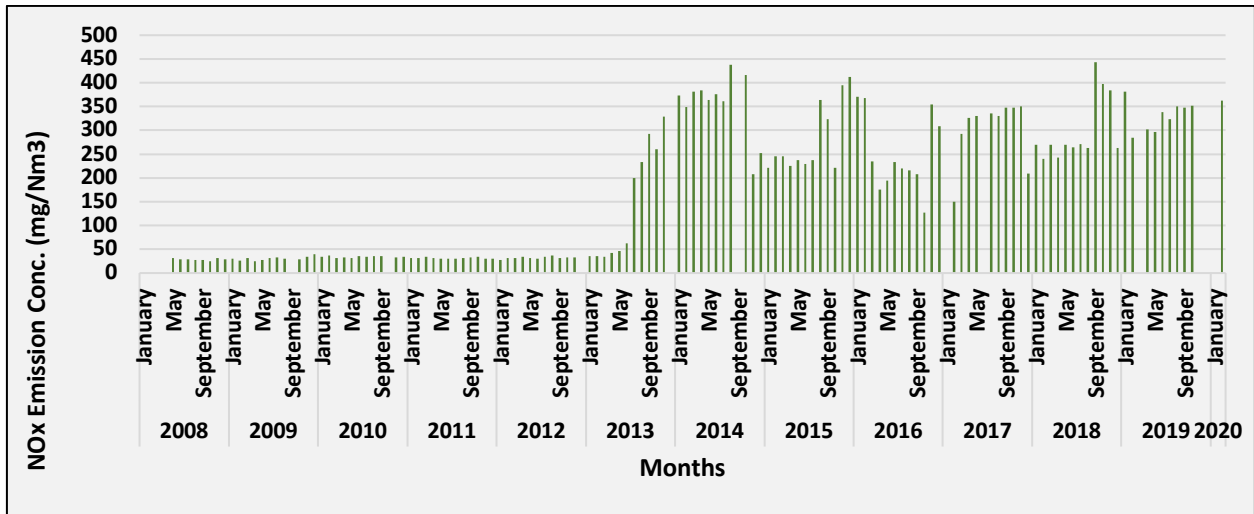


Fig. RTTP61: Time series of monthly average NO_x Emission concentration in APGENCO RTTP TPP (Unit 4)

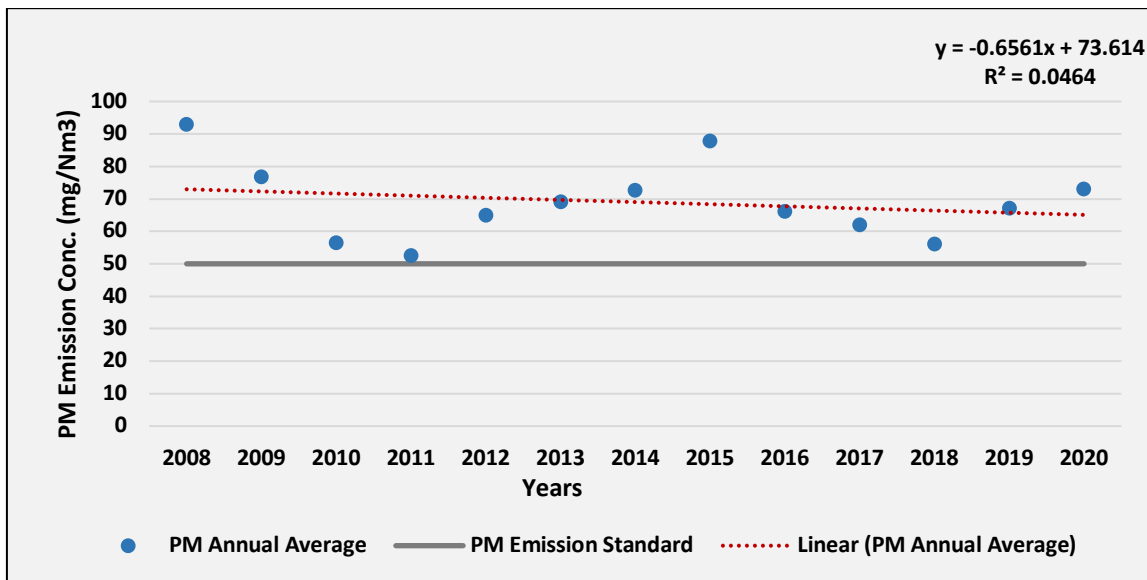


Fig. RTTP62: Trend of annual mean PM Emission air concentration in APGENCO RTTP TPP (Unit 4)

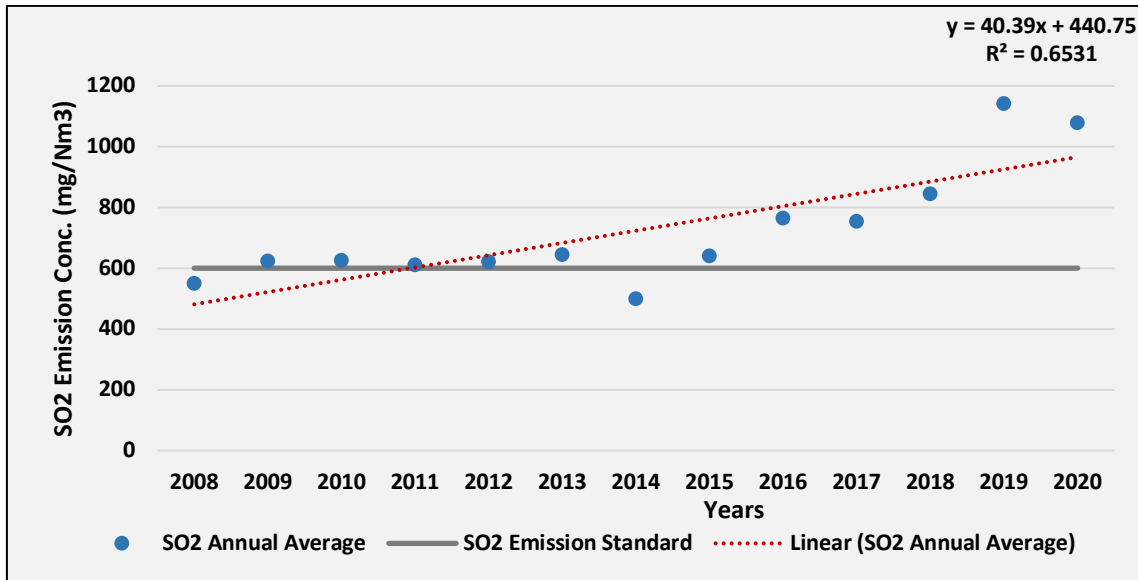


Fig. RTTP63: Trend of annual mean SO₂ Emission air concentration in APGENCO RTTP TPP (Unit 4)

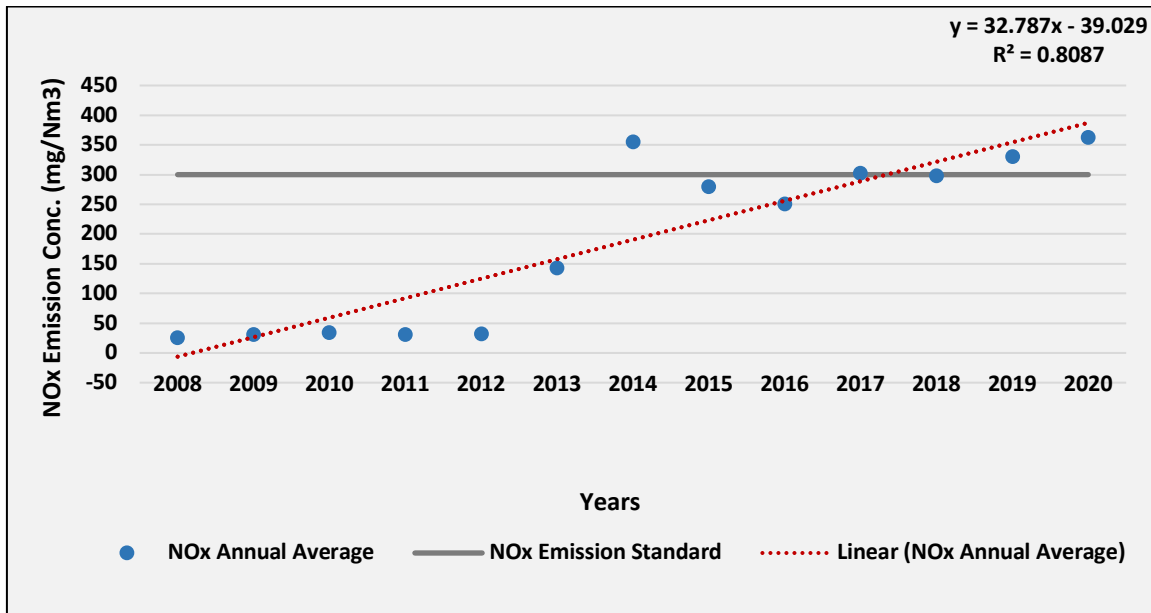


Fig. RTTP64: Trend of annual mean NO_x Emission air concentration in APGENCO RTTP TPP (Unit 4)

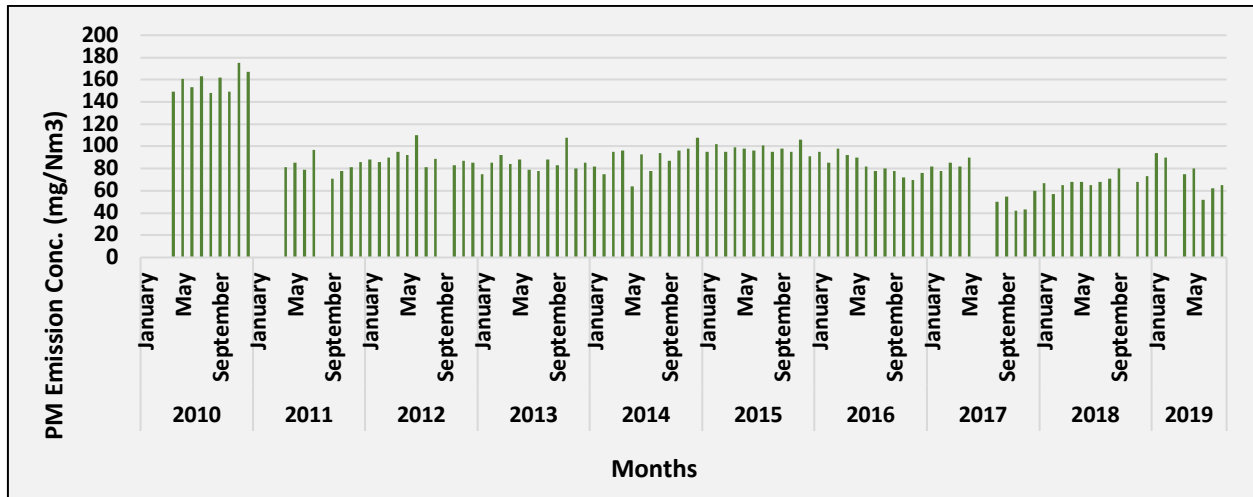


Fig. RTTP65: Time series of monthly average PM Emission concentration in APGENCO RTTP TPP (Unit 5)

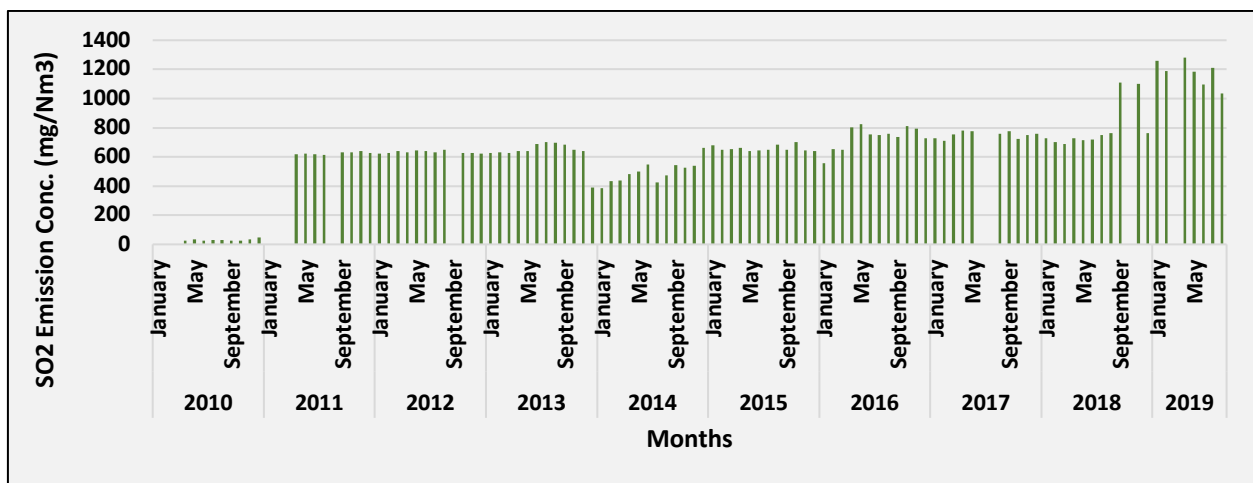


Fig. RTTP66: Time series of monthly average SO₂ Emission concentration in APGENCO RTTP TPP (Unit 5)

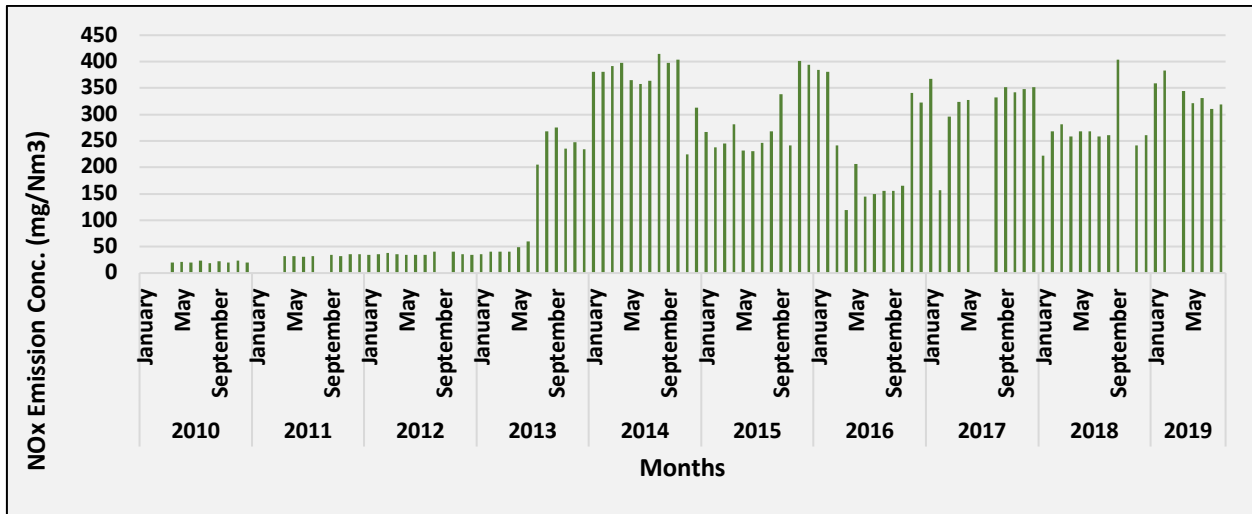


Fig. RTTP67: Time series of monthly average NO_x Emission concentration in APGENCO RTTP TPP (Unit 5)

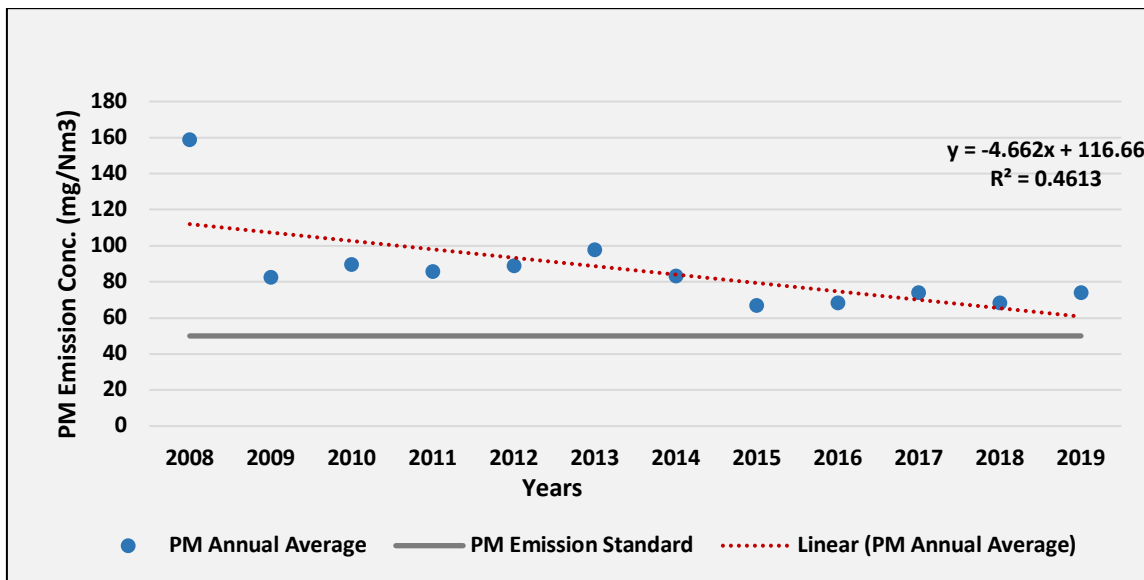


Fig. RTTP68: Trend of annual mean PM Emission air concentration in APGENCO RTTP TPP (Unit 5)

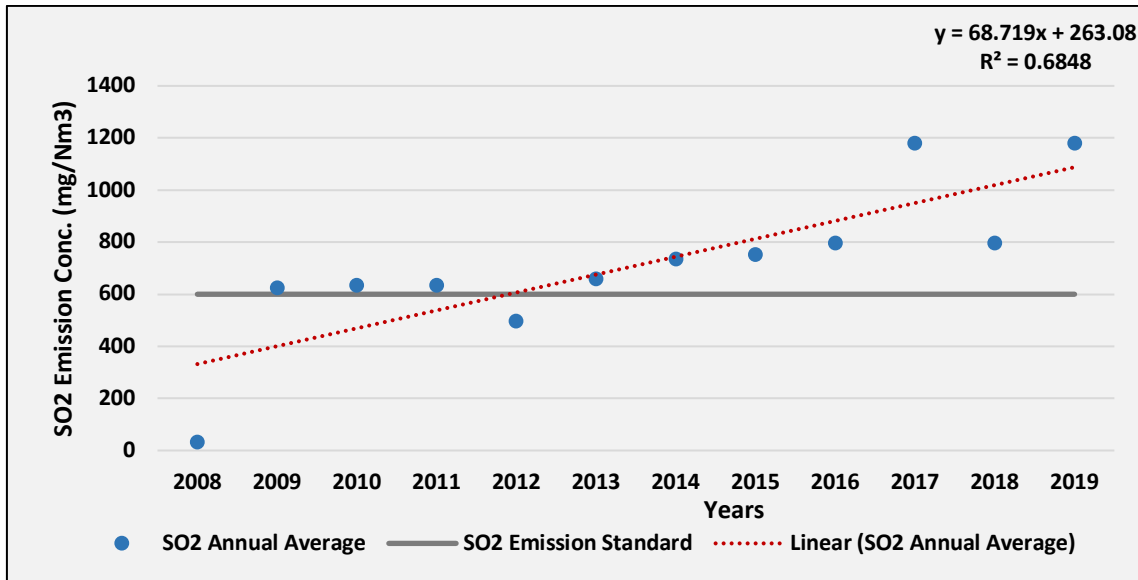


Fig. RTTP69: Trend of annual mean SO₂ Emission air concentration in APGENCO RTTP TPP (Unit 5)

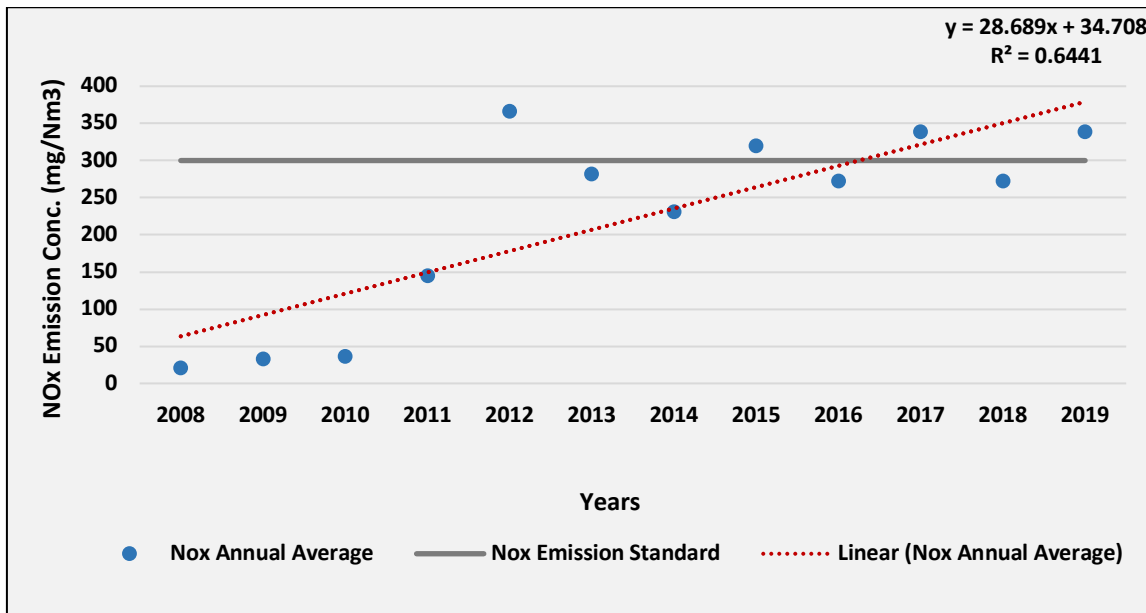


Fig. RTTP70: Trend of annual mean NO_x Emission air concentration in APGENCO RTTP TPP (Unit 5)

Evidence based on ground level stations shows that the monthly average and annual average of PM10, PM2.5 are exceeding whereas the SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that PM, SO₂ and NO_x parameter are much higher than the emission norms.

Barsingsar Thermal Power Station

Barsingsar power station project is a 250-megawatt (MW) lignite based power station operated by NLC India Limited, formerly Neyveli Lignite Corporation (NLC), located at Barsingsar in Bikaner district, Rajasthan, India

The ambient air quality concentrations of PM₁₀, PM_{2.5} SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. KOR1 – Fig. KOR50) for the last eight years (2012-2020) using data provided by NLC developer for Barsinsagar Power plant, Rajasthan, India.

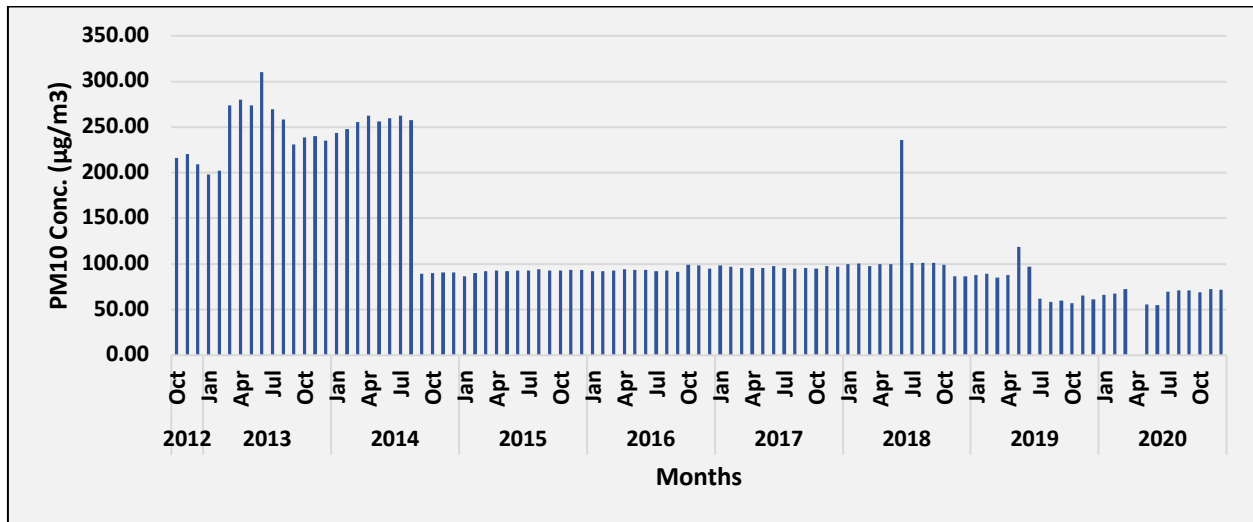


Fig. BTPS1: Time series of monthly average PM₁₀ ambient air concentration in BTPS TPP (Ambient)

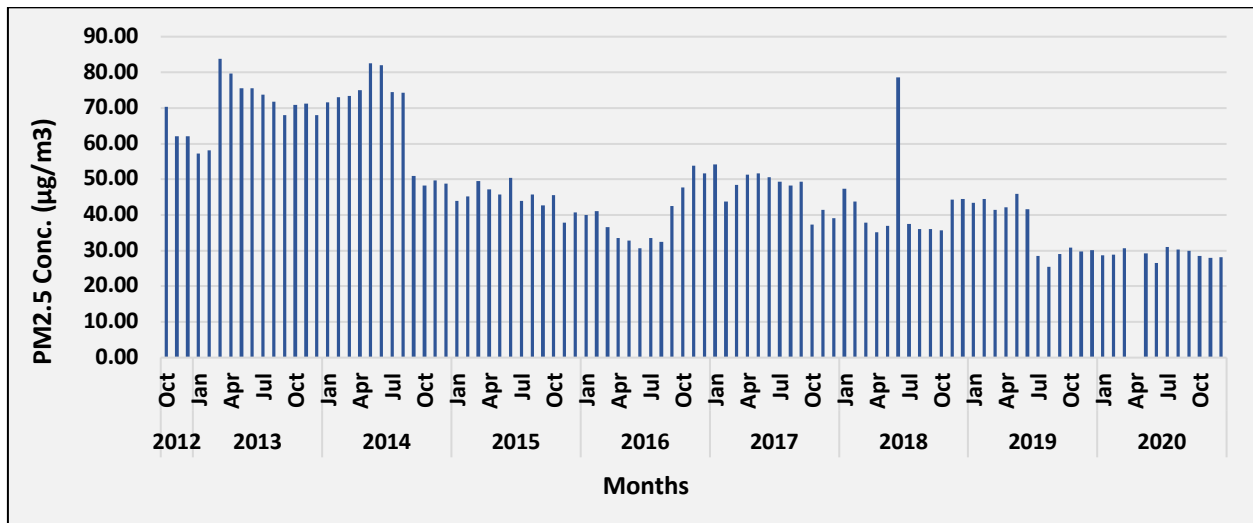


Fig. BTPS2: Time series of monthly average PM_{2.5} ambient air concentration in BTPS TPP (Ambient)

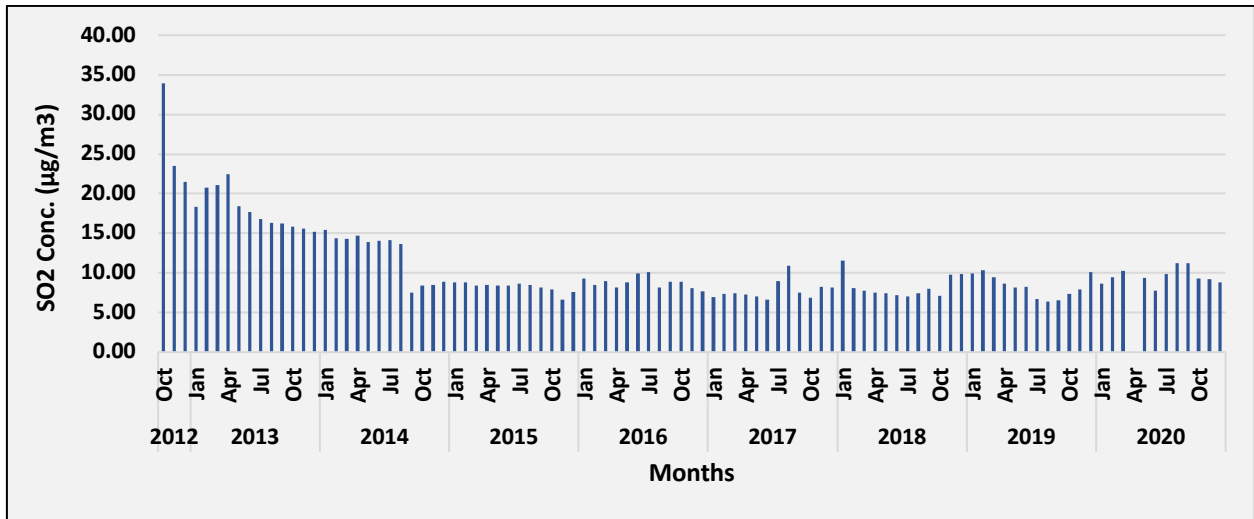


Fig. BTPS3: Time series of monthly average SO₂ ambient air concentration in BTPS TPP (Ambient)

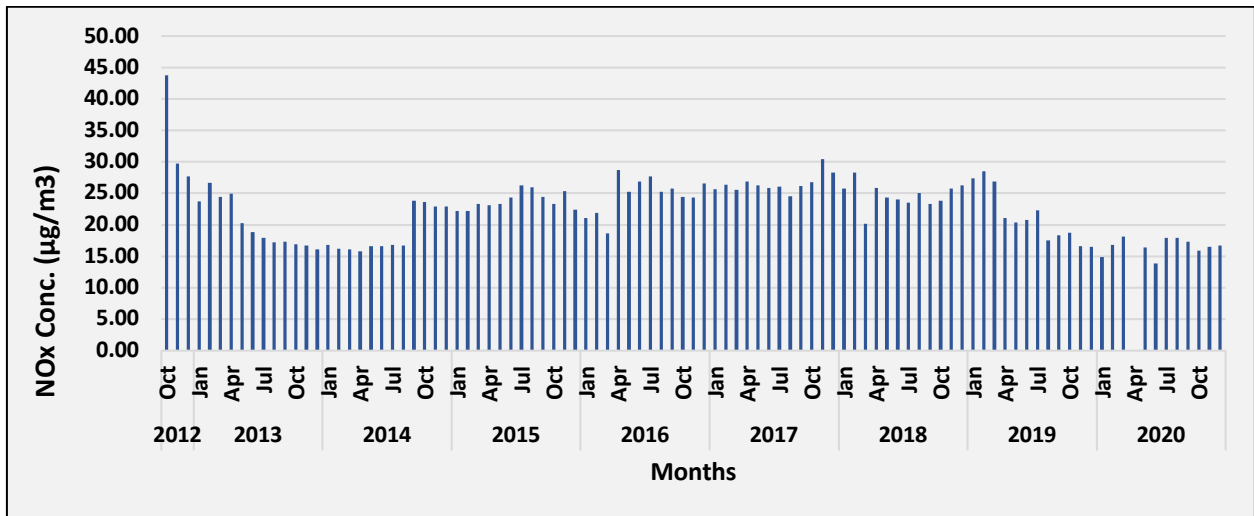


Fig. BTPS4: Time series of monthly average NO_x ambient air concentration in BTPS TPP (Ambient)

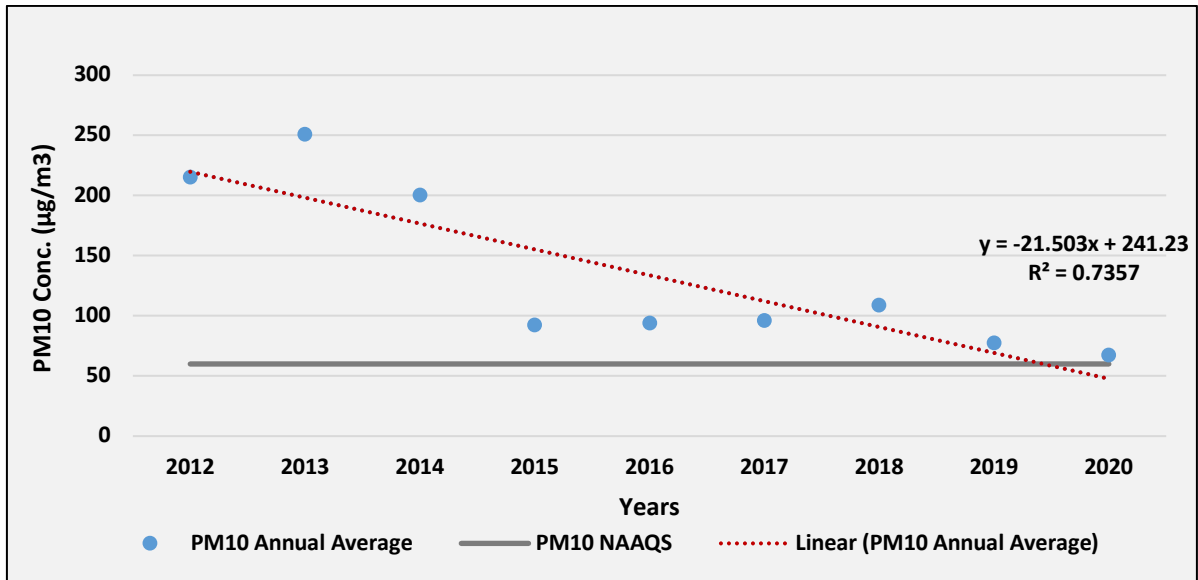


Fig. BTPS5: Trend of annual mean PM_{10} ambient air concentration in BTPS TPP (Ambient)

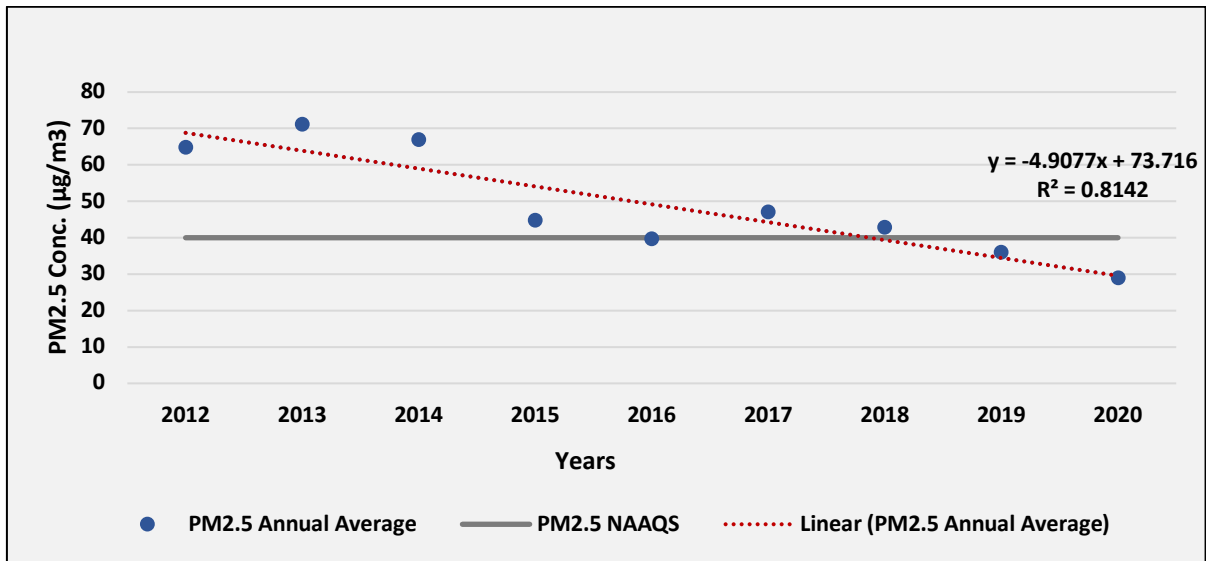


Fig. BTPS6: Trend of annual mean $PM_{2.5}$ ambient air concentration in BTPS TPP (Ambient)

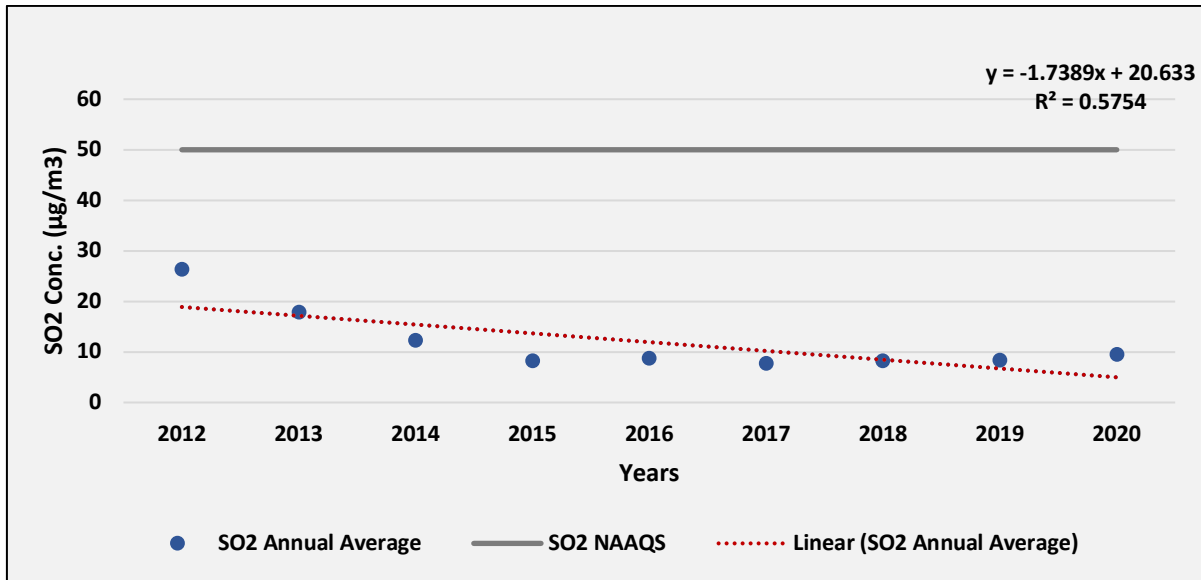


Fig. BTPS7: Trend of annual mean SO₂ ambient air concentration in BTPS TPP (Ambient)

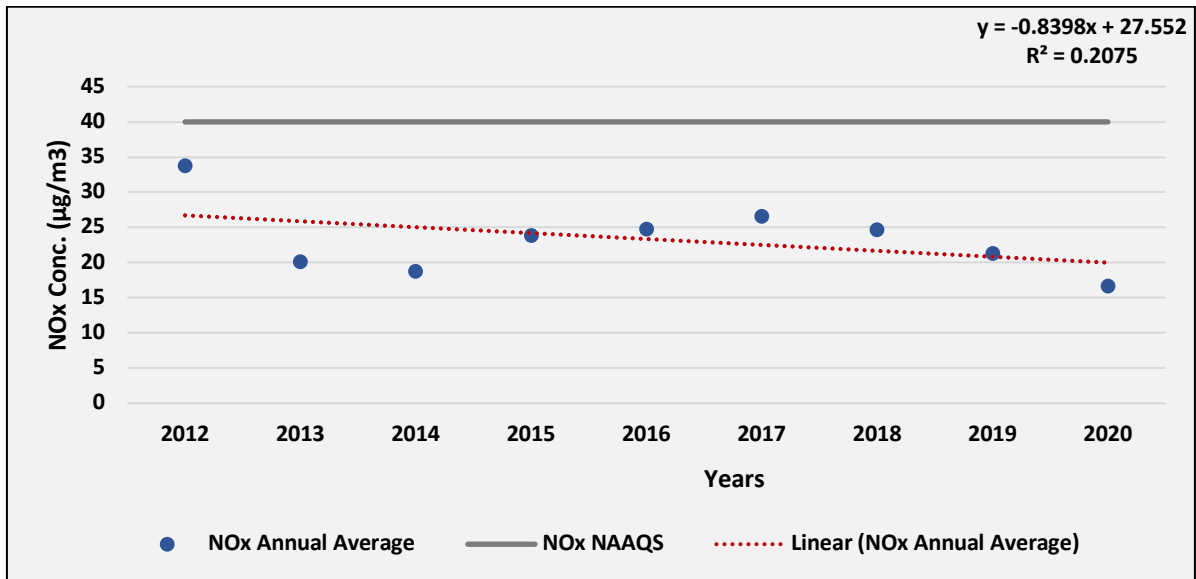


Fig. BTPS8: Trend of annual mean NO_x ambient air concentration in BTPS TPP (Ambient)

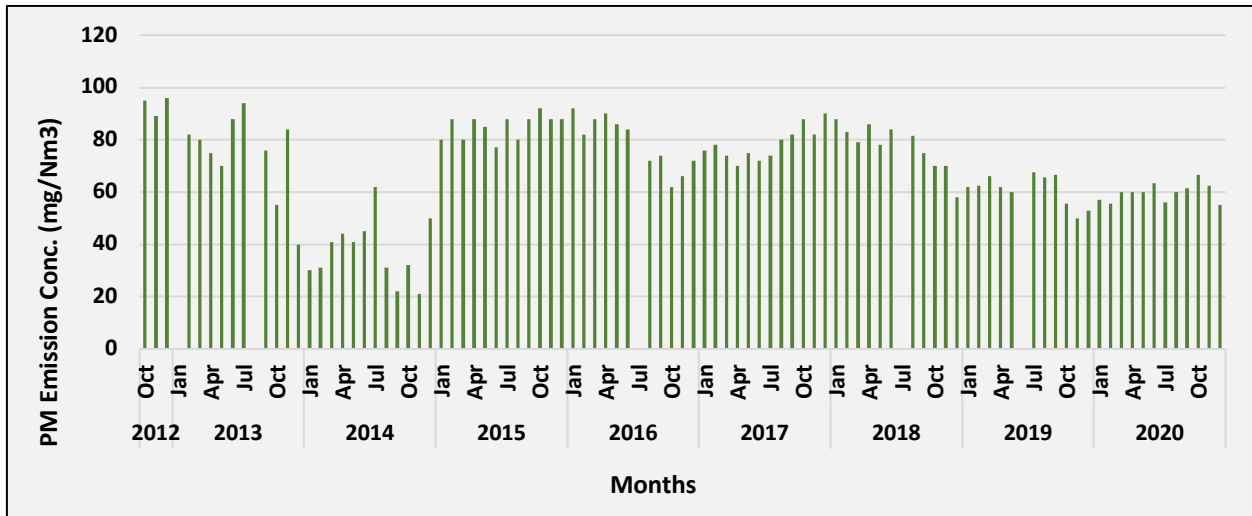


Fig. BTPS9: Time series of monthly average PM Emission concentration in BTPS TPP (Stack 1)

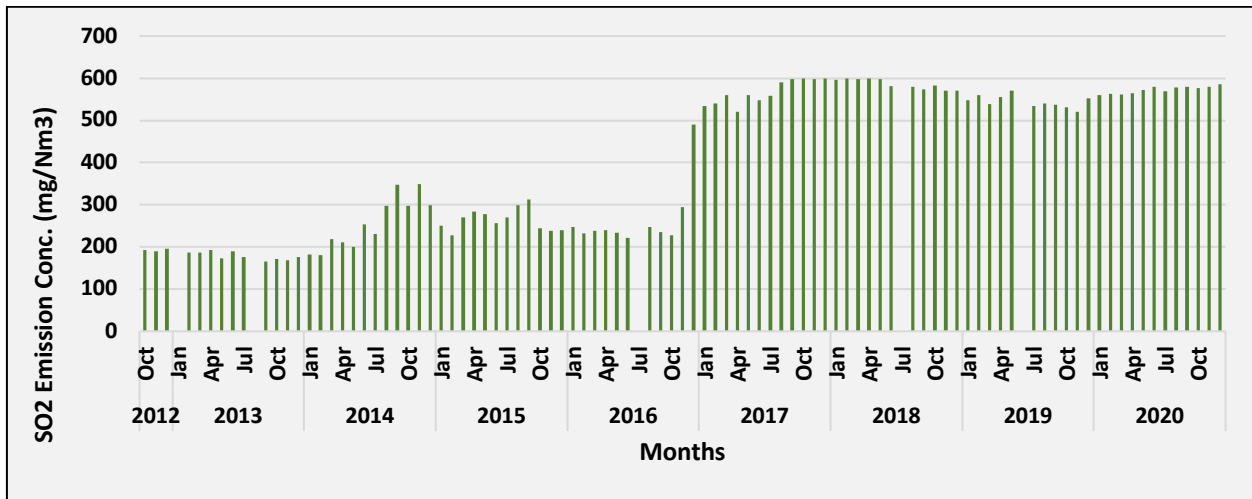


Fig. BTPS10: Time series of monthly average SO₂ Emission concentration in BTPS TPP (Stack 1)

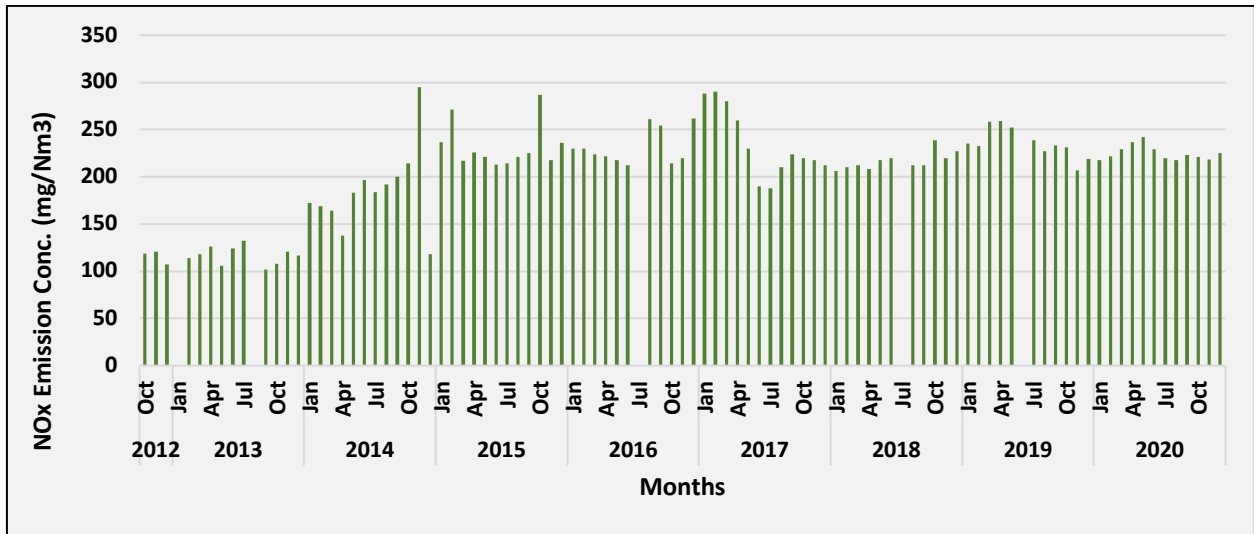


Fig. BTPS11: Time series of monthly average NO_x Emission concentration in BTPS TPP (Stack 1)

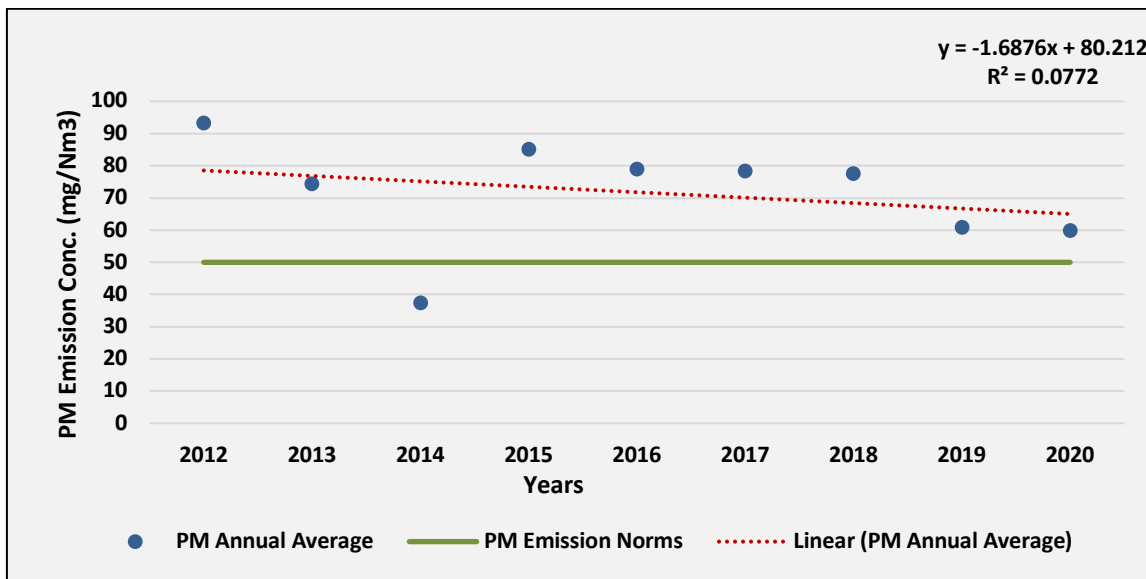


Fig. BTPS12: Trend of annual mean PM Emission air concentration in BTPS TPP (Stack 1)

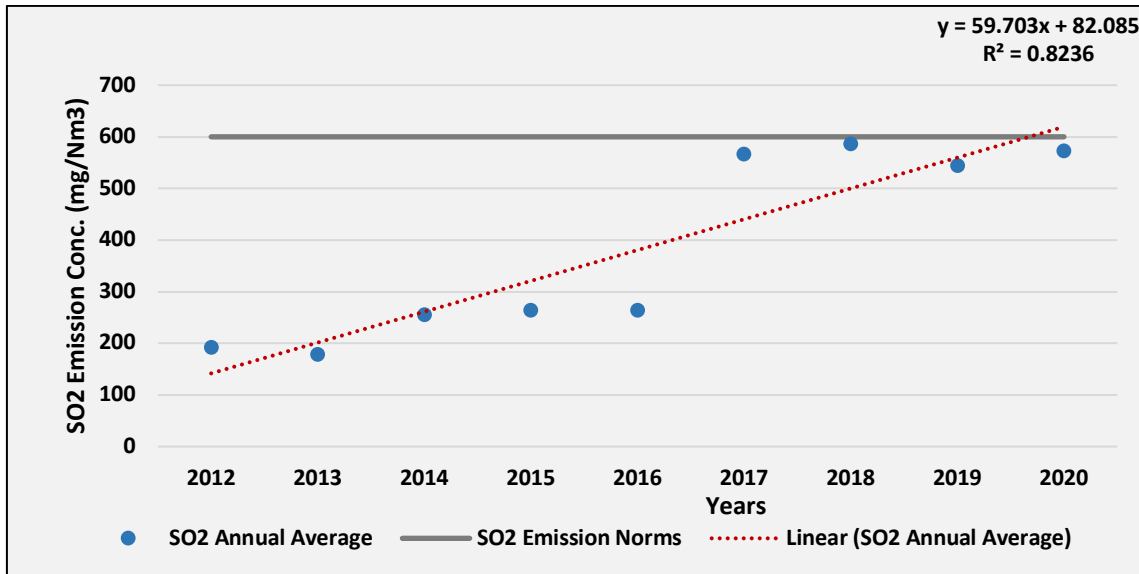


Fig. BTPS13: Trend of annual mean SO₂ Emission air concentration in BTPS TPP (Stack 1)

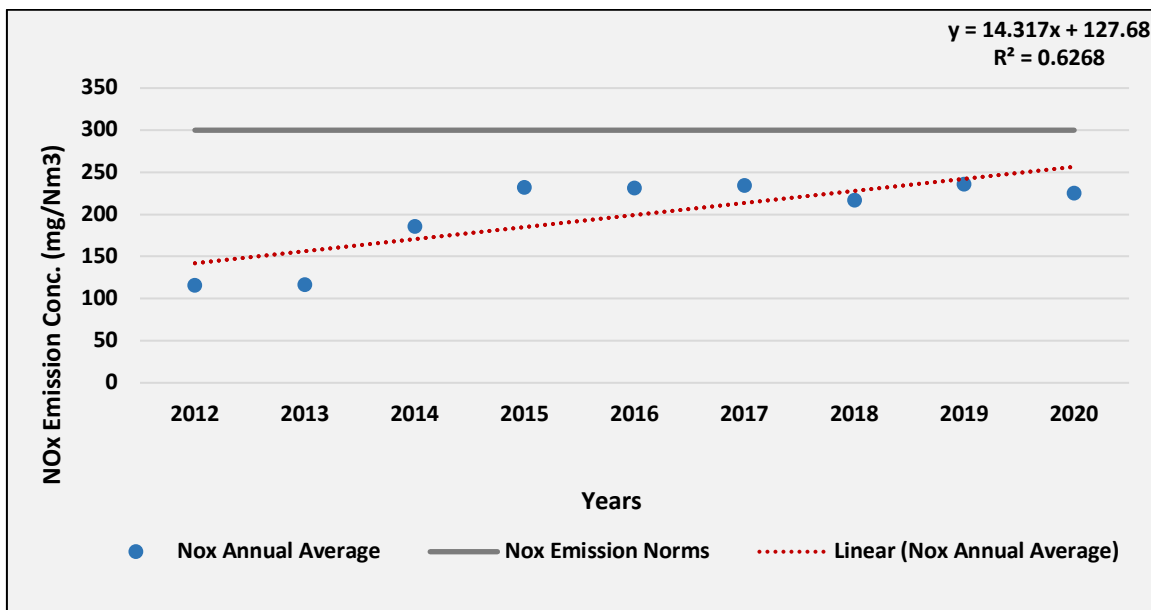


Fig. BTPS14: Trend of annual mean NO_x Emission air concentration in BTPS TPP (Stack 1)

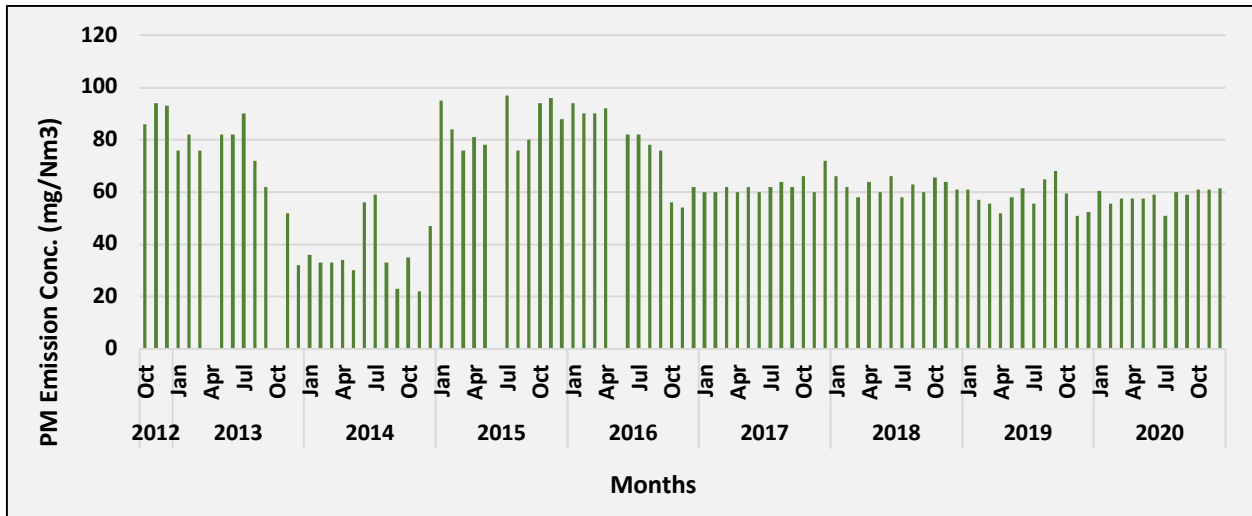


Fig. BTPS15: Time series of monthly average PM Emission concentration in BTPS TPP (Stack 2)

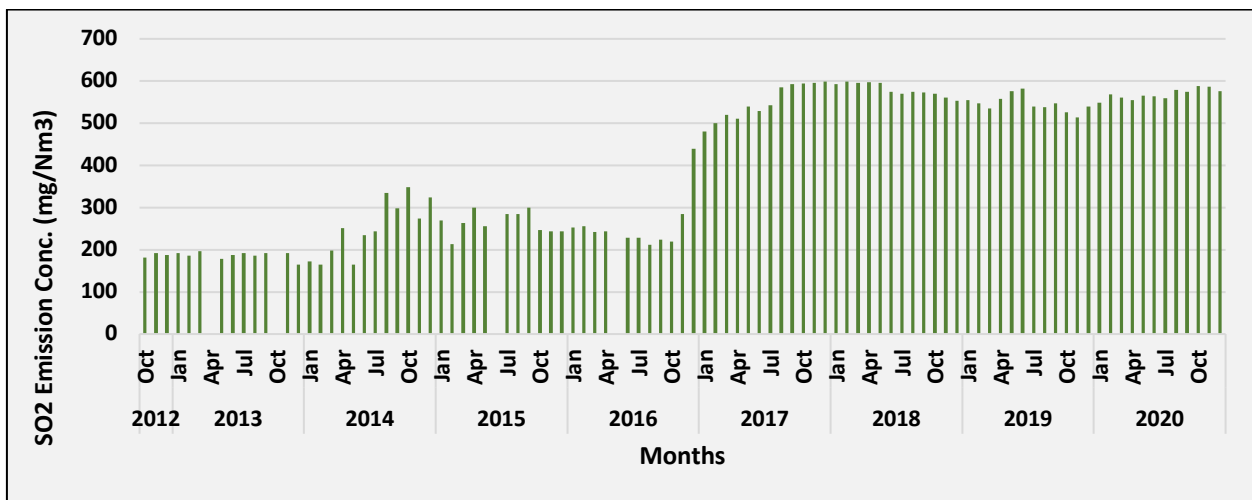


Fig. BTPS16: Time series of monthly average SO₂ Emission concentration in BTPS TPP (Stack 2)

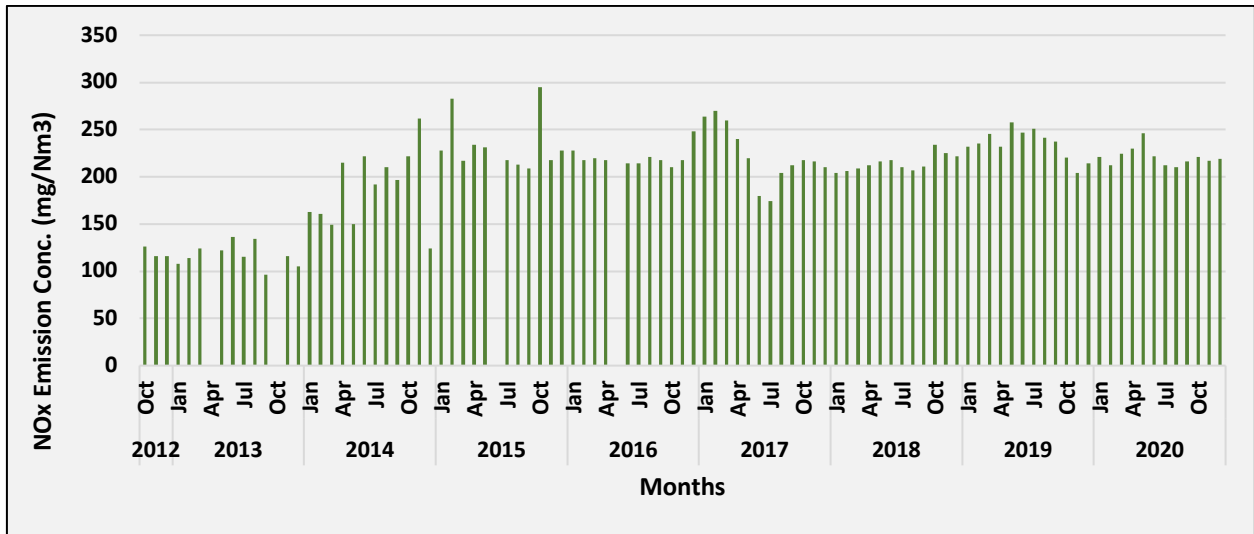


Fig. BTPS17: Time series of monthly average NO_x Emission concentration in BTPS TPP (Stack 2)

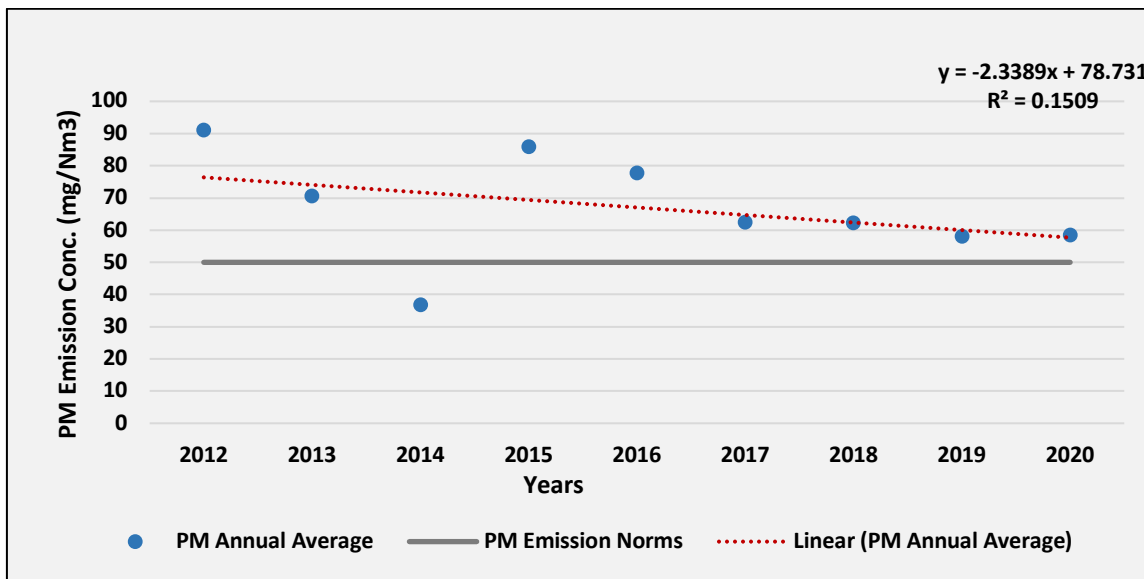


Fig. BTPS18: Trend of annual mean PM Emission air concentration in BTPS TPP (Stack 2)

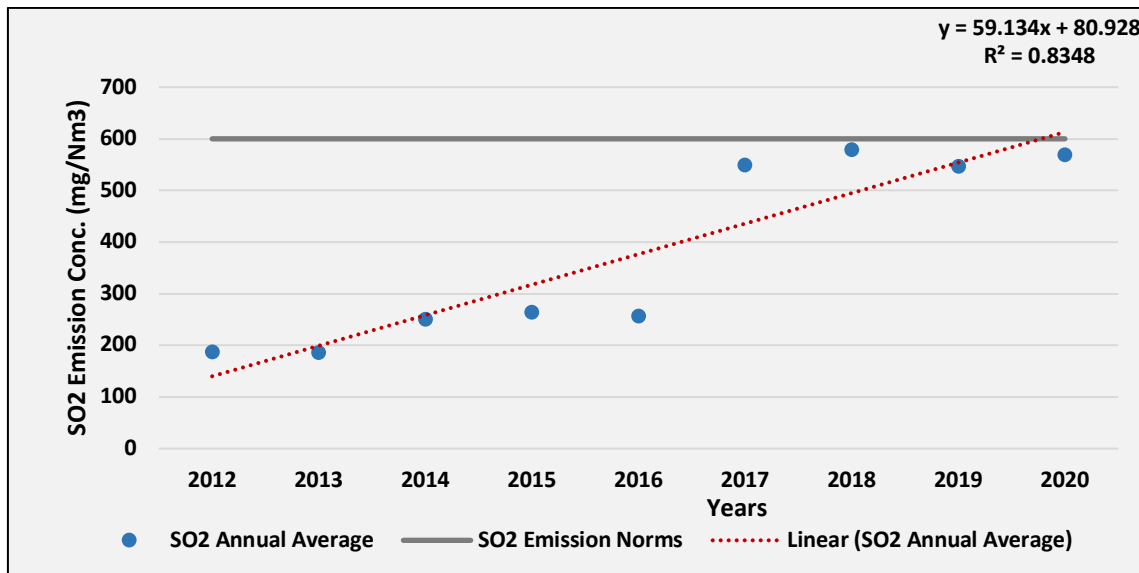


Fig. BTPS19: Trend of annual mean SO₂ Emission air concentration in BTPS TPP (Stack 2)

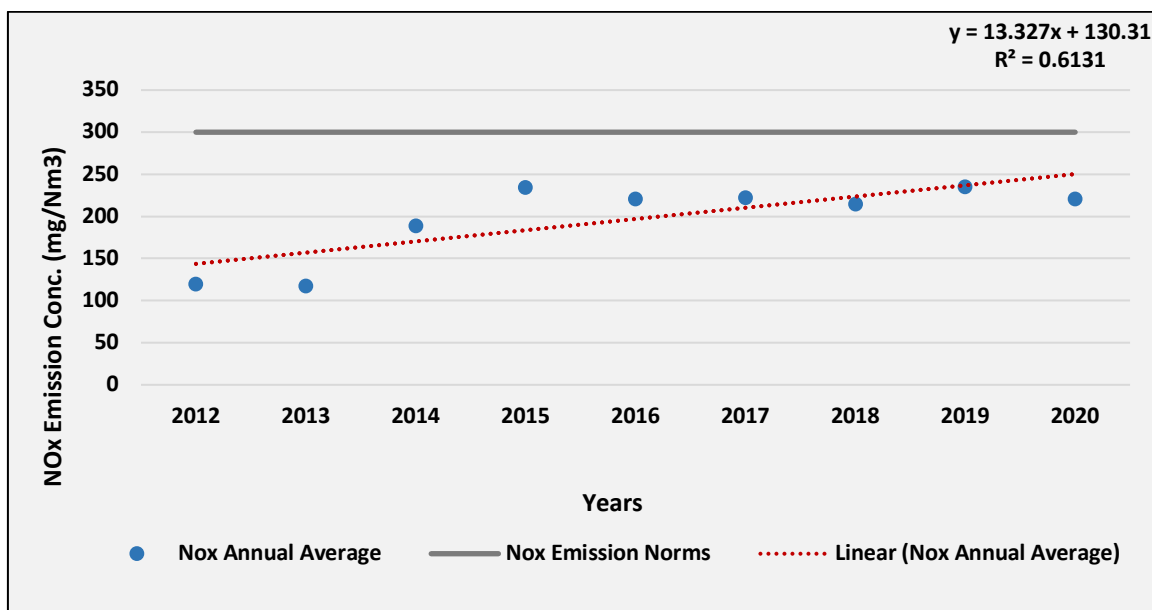


Fig. BTPS20: Trend of annual mean NO_x Emission air concentration in BTPS TPP (Stack 2)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀, PM_{2.5} are exceeding whereas the SO₂ & NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that PM parameter is much higher than the emission norms. Emission of SO₂ and NO_x is within the limit range.

Neyveli New Thermal Power Station

Neyveli Thermal Power Station is a set of power plant situated near lignite mines of Neyveli. It consists of three distinct units (Neyveli Thermal Power Station I, Neyveli Thermal Power Station II and Neyveli New Thermal Power Station) capable of producing 420 MW, 1,970 MW and 1000 MW respectively including their expansion units. It is operated by NLC

The ambient air quality concentrations of PM₁₀, PM_{2.5} SO₂, & NO_x, and stack emission for PM, SO₂ and NO_x data analyzed (Fig. KOR1 – Fig. KOR50) for the last three years (2018-2020) using data provided by NLC developer for Neyveli New Power plant, Tamil Nadu, India.

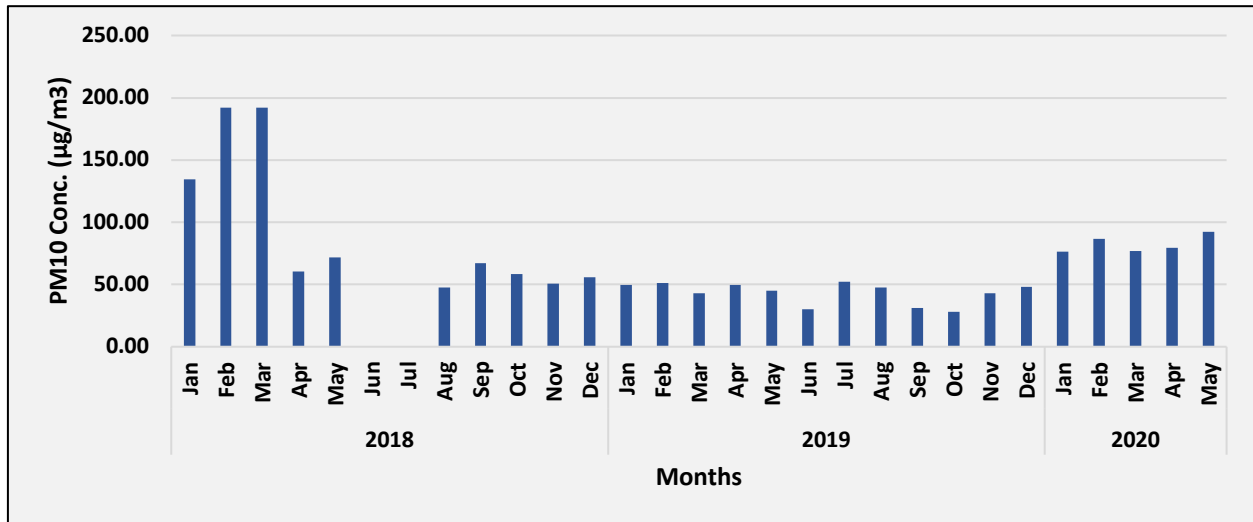


Fig. NN1: Time series of monthly average PM₁₀ ambient air concentration in NNTPPS (Ambient)

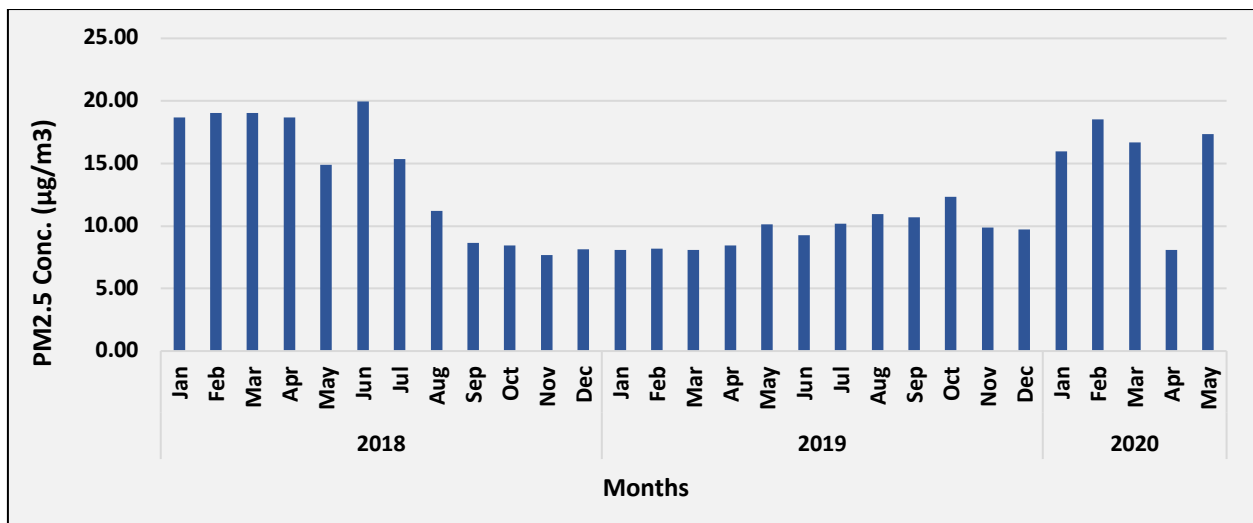


Fig. NN2: Time series of monthly average PM_{2.5} ambient air concentration in NNTPPS (Ambient)

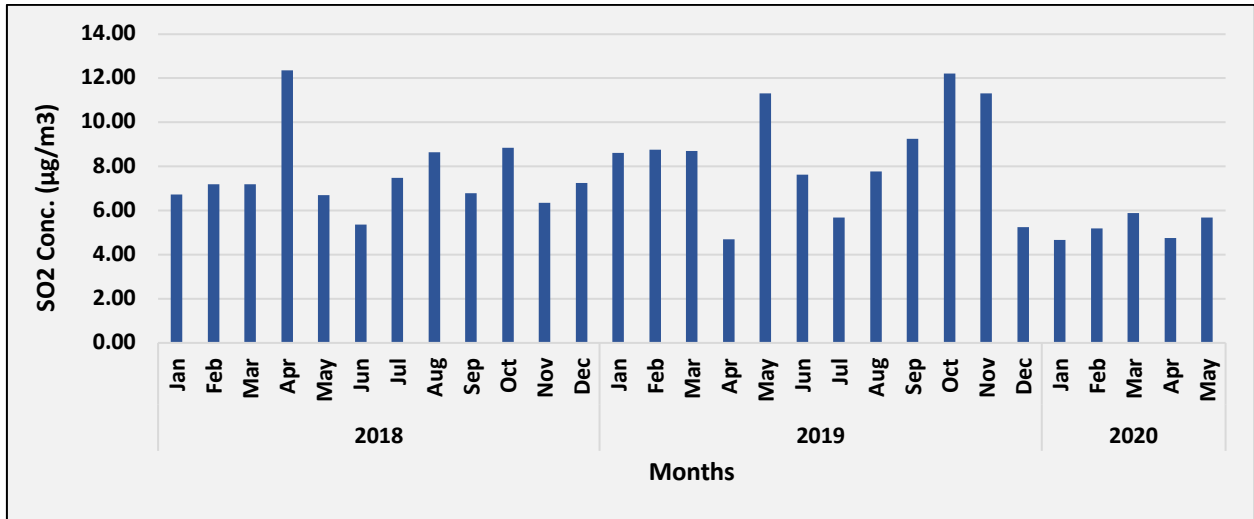


Fig. NN3: Time series of monthly average SO_2 ambient air concentration in NNTPPS (Ambient)

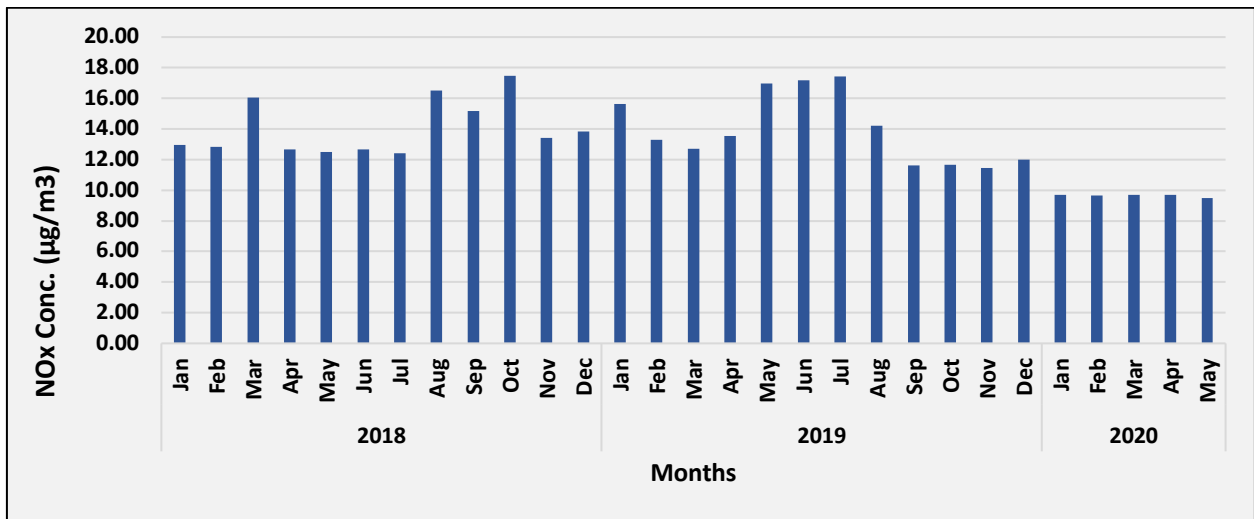


Fig. NN4: Time series of monthly average NO_x ambient air concentration in NNTPPS (Ambient)

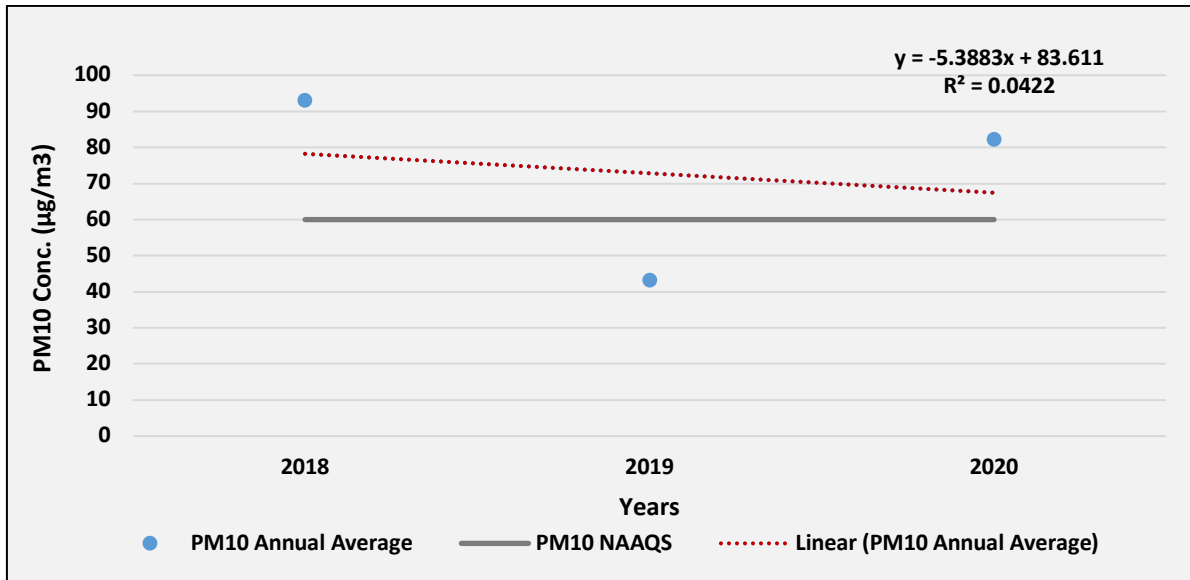


Fig. NN5: Trend of annual mean PM_{10} ambient air concentration in NNTPPS TPP (Ambient)

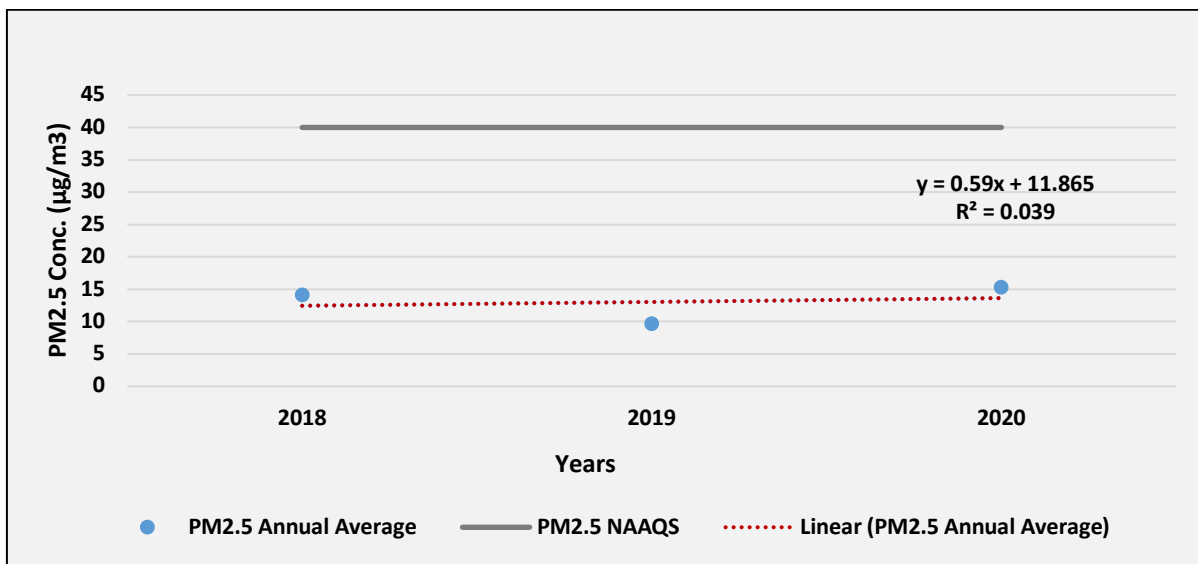


Fig. NN6: Trend of annual mean $PM_{2.5}$ ambient air concentration in NNTPPS TPP (Ambient)

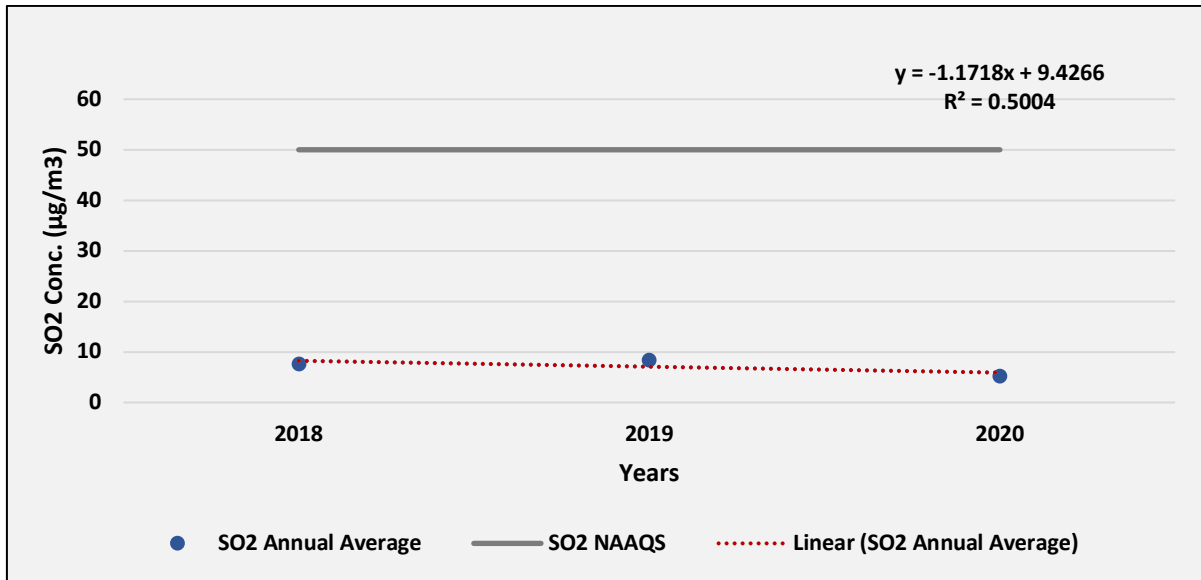


Fig. NN7: Trend of annual mean SO₂ ambient air concentration in NNTPPS (Ambient)

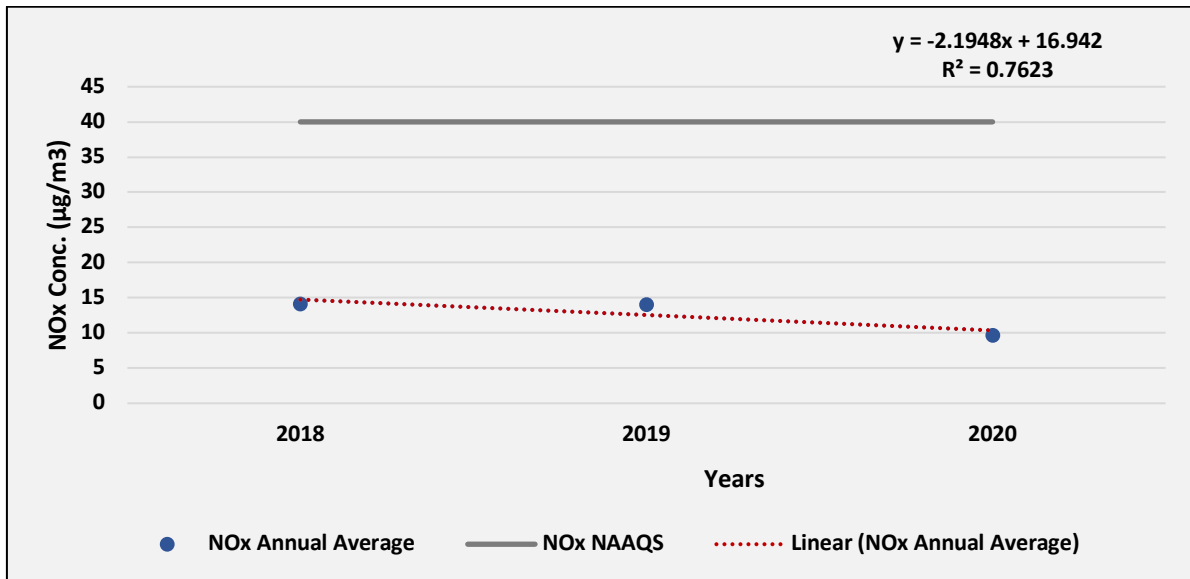


Fig. NN8: Trend of annual mean NO_x ambient air concentration in NNTPPS (Ambient)

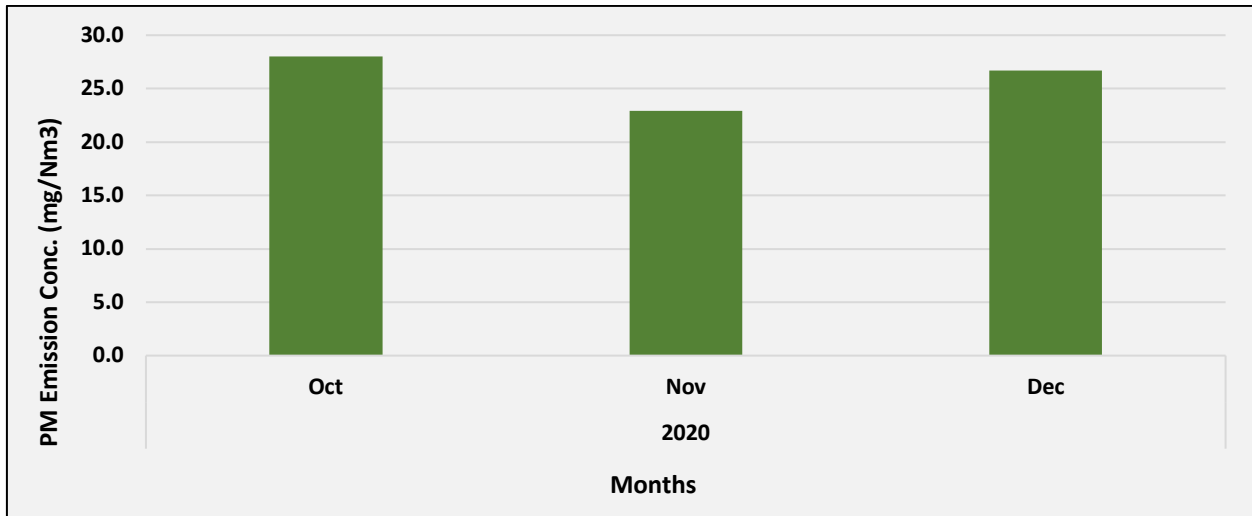


Fig. NN9: Time series of monthly average PM Emission concentration in NNTPPS (Stack 1)

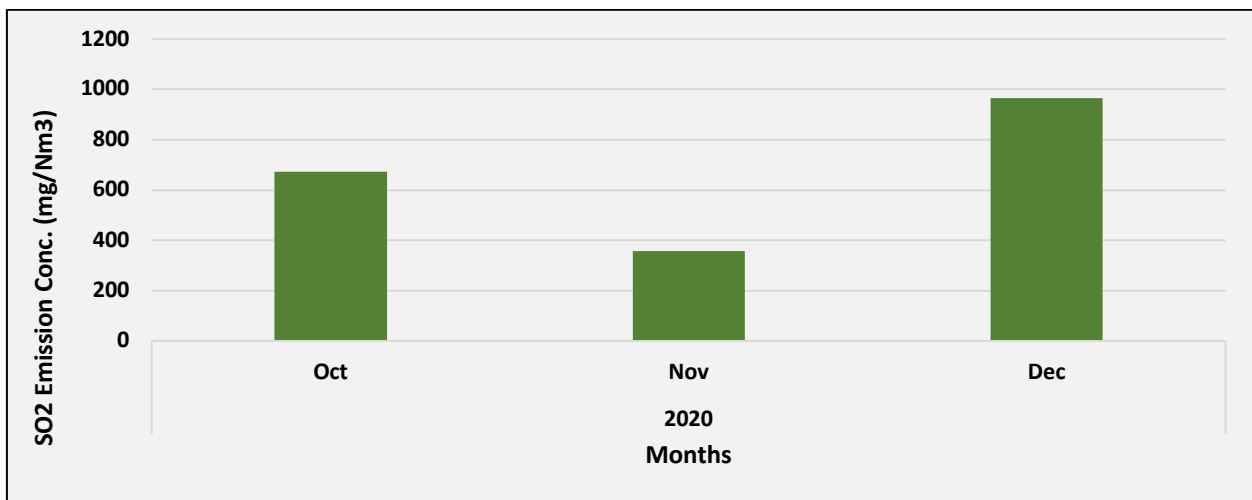


Fig. NN10: Time series of monthly average SO₂ Emission concentration in NNTPPS (Stack 1)

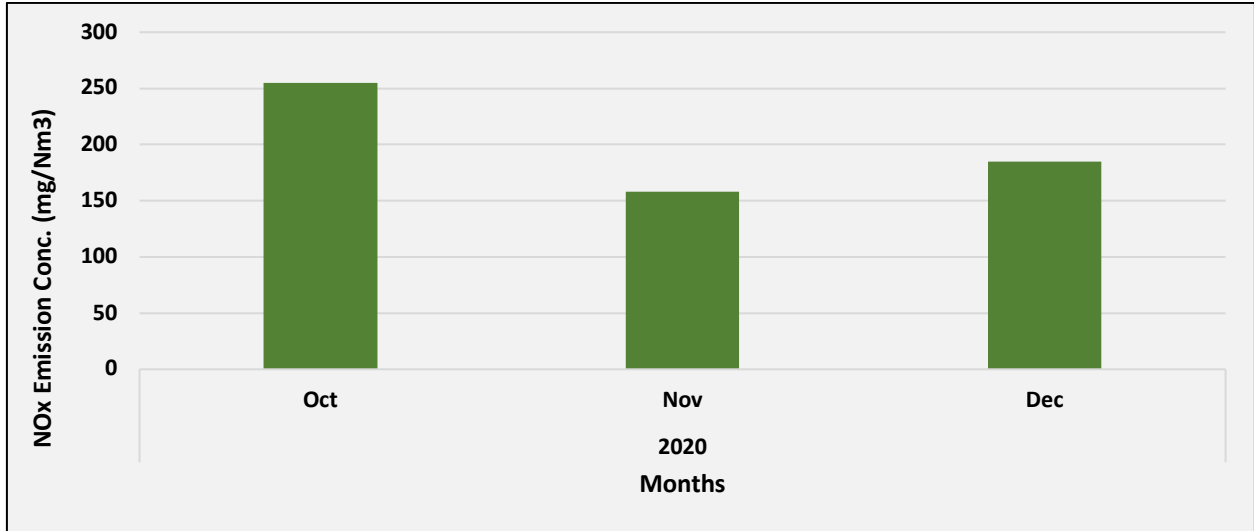


Fig. NN11: Time series of monthly average NO_x Emission concentration in NNTPPS (Stack 1)

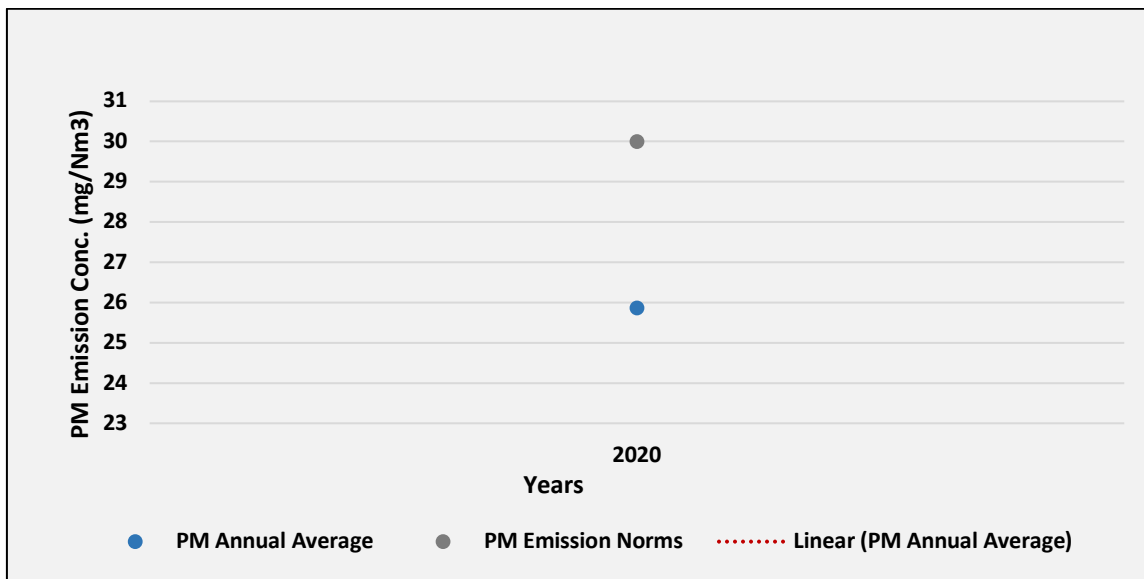


Fig. NN12: Trend of annual mean PM Emission air concentration in NNTPPS (Stack 1)

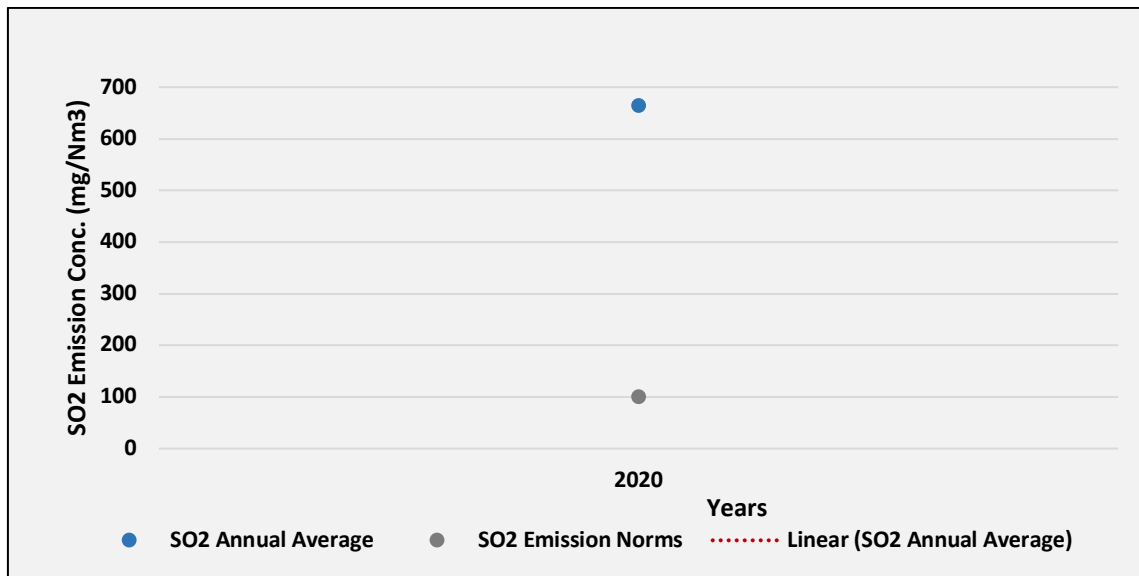


Fig. NN13: Trend of annual mean SO₂ Emission air concentration in NNTPPS (Stack 1)

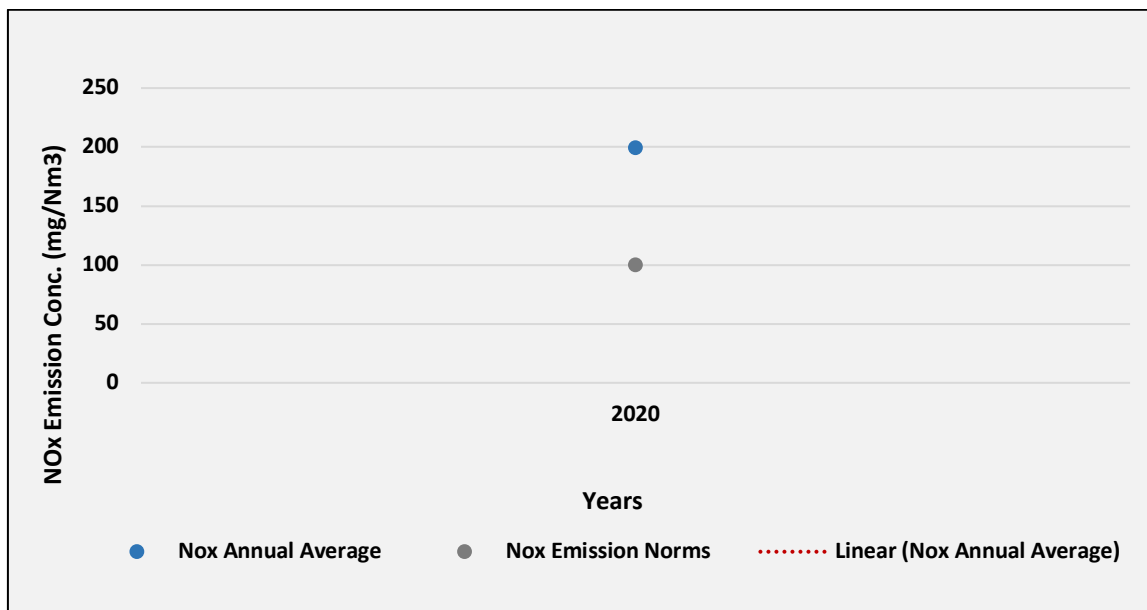


Fig. NN14: Trend of annual mean NO_x Emission air concentration in NNTPPS (Stack 1)

Evidence based on ground level stations shows that the monthly average and annual average of PM₁₀ is exceeding whereas the PM_{2.5}, SO₂ &NO_x levels are within a range as per the as per the National Ambient Air Quality Standards (NAAQS).

The monthly and yearly ground level emission analysis for one unit of shows that SO₂ and NO_x parameter are much higher than the emission norms. Emission of particulate matter is within the limit range.

SUMMARY of trends of ambient concentration and stack emissions of air pollutants from coal-based thermal power plants

Widespread economic growth in India has led to increasing episodes of severe air pollution, especially in major urban areas. Thermal power plants represent a particularly important class of emissions. Here we present an evaluation/ summary of the predicted effectiveness of a series of recently proposed thermal power plant emission controls in the national region. Coal-based thermal power stations with no pollution control technology are responsible for sulphur dioxide (SO₂), oxides of nitrogen (NO_x), particulate matter (PM), among other synthetic emissions in the country. Unabated burning of coal in thermal power stations and a delay in implementation of latest carbon capture storage technology are among major reasons of air pollution in India.

To meet the energy requirements of rapidly developing infrastructure and economy, Delhi National Capital Region (NCR), India relies on thermal power. With the city improving on air quality after implementation of environmental norms in transport and industry, there arises a need for assessment of the contribution of thermal power plants (TPPs), which are largely coal based. This study has been undertaken with an objective to assess and summarize the contributors of air pollution.

With 5th highest installed thermal capacity globally, Thermal Power Plants in India are one of the most pivotal industries that provide electricity and support expansion and development of all the other sectors. Coal is the most carbon intensive fossil fuel and most emissions from coal are emitted from the electricity sector. Particulate matter, Greenhouse gases, Polycyclic aromatic hydrocarbons, Sulfur dioxide, Nitrogen oxide, Volatile organic compounds are just some of the major emissions from these power plants.

Summary for ambient concentration (Units: µg/m³)

Sr. No.	TPP Name	Years	Ambient Concentration			
			PM10	PM2.5	SO2	NOx
1	Sipat TPP	2018	55	34	19	20
		2019	42	24	12	16
		2020	38	18	14	18
2	Korba TPP	2018	74	35	25	16
		2019	49	33	18	24
		2020	45	25	22	20
3	Mouda TPP	2018	67	31	11	16
		2019	56	31	17	19
		2020	64	42	11	23
4	Dadri TPP	2018	86	48	17	20
		2019	98	62	17	20
		2020	110	66	9	16
5	Ramagundam TPP	2018	61	29	24	26
		2019	72	36	19	22
		2020	60	23	17	20
6	Singrauli TPP	2018	73	48	10	19
		2019	73	44	9	17
		2020	76	48	10	17
7	Kudgi TPP	2018	69	31	10	17
		2019	67	30	11	19
		2020	76	33	18	15
8	Simhadri TPP	2018	47	29	13	22
		2019	42	26	18	21
		2020	44	25	16	20
9	Tanda TPP	2018	73	42	17	22
		2019	75	41	15	22
		2020	79	41	15	24
10	Vindyachal TPP	2018	59	37	25	24
		2019	75	40	25	23
		2020	79	43	23	22
11	Rihand TPP	2018	50	34	17	19
		2019	66	39	12	20
		2020	60	36	13	21
12	Unchahar TPP	2018	78	49	8	26
		2019	71	36	12	27
		2020	68	40	9	23

Sr. No.	TPP Name	Years	Ambient Concentration			
			PM10	PM2.5	SO2	NOx
13	Kahalgaon TPP	2018	69	38	9	22
		2019	68	35	12	25
		2020	68	35	12	21
14	Farakka TPP	2018	77	36	14	21
		2019	67	34	16	21
		2020	44	24	14	19
15	Darlipali TPP	2020	57	31	16	12
16	Barh TPP	2018	73	37	8	15
		2019	78	39	9	15
		2020	72	35	8	13
17	Khargone TPP	2019	83	43	21	18
		2020	63	31	15	13
18	Solapur TPP	2018	70	36	6	8
		2019	69	34	7	13
		2020	60	32	11	16
19	Gadarwara TPP	2019	56	19	9	15
		2020	70	27	11	9
20	Lara TPP	2019	58	29	17	21
		2020	45	24	18	21
21	Baruani TPP	2020	79	46	12	16
22	Bongaigaon TPP	2018	60	28	8	12
		2019	60	30	8	17
		2020	69	37	7	18
23	Talcher TPP	2018	64	26	14	26
		2019	57	30	18	19
		2020	68	33	17	18

Sr. No.	Developer	TPP Name	Years	Ambient 1				Ambient 2				Ambient 3				Ambient 4				Ambient 5				Ambient 6						
				PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2
24		Wanakbori Thermal Power Station	2016	68	37	16	13	46	46	46	46	63	30	16	13	43	22	12	11											
			2017	71	41	16	14	50	50	50	50	71	40	20	13	43	23	12	10											
			2018	65	39	14	11	51	51	51	51	68	38	21	14	48	21	10	8											
			2019	69	41	14	11	46	46	46	46	73	45	29	15	46	23	10	8											
			2020	67	41	15	13	51	51	51	51	76	45	34	16	46	26	12	9											
25		Gandhinagar Thermal Power Station	2016	92	48	9	10	110	49	10	10	86	48	9	9	75	44	8	8	101	53	9	10							
			2017	110	50	10	11	125	54	10	11	89	42	9	10	86	42	9	10	116	48	10	11							
			2018	105	46	11	13	118	53	11	13	91	43	10	11	79	41	11	12	105	43	12	14							
			2019	108	45	12	13	114	47	12	14	98	39	11	13	80	32	11	12	100	39	12	13							
			2020	103	39	11	13	112	47	12	14	100	43	11	13	78	32	10	12	88	33	11	15							
26	GSECL	Sikka Thermal Power Station	2016	69	30	12	17	61	24	10	16	56	23	11	17	70	28	10	14	62	26	9	13	67	27	10	16			
			2017	84	43	36	36	76	35	29	30	67	30	16	19	68	31	18	20	67	30	20	22	63	29	17	19			
			2018	109	44	42	37	96	39	35	31	93	36	26	26	100	33	25	28	86	32	22	21	89	35	26	25			
			2019	86	29	11	15	91	20	10	13	99	25	9	18	100	35	10	11	143	59	6	20	116	29	7	8			
			2020	76	44	26	18	70	40	25	17	65	36	20	12	67	37	16	24	73	42	13	20	62	36	12	19			
27		Ukai Thermal Power Station	2016	77	41	24	21	76	38	28	22	74	40	24	20	71	36	23	20											
			2017	73	28	21	20	73	28	25	21	74	28	27	19	57	18	18	19											
			2018	76	25	17	18	77	23	18	18	71	23	17	18	62	18	16	18											
			2019	78	26	19	20	80	30	21	21	81	27	17	18	76	26	15	18											
			2020	64	29	14	15	69	33	20	22	77	33	14	14	66	26	16	14											
28		Kutch Lignite Thermal Power Station	2016	64	29	22	24	63	28	23	26	63	27	22	26	60	27	23	26											
			2017	65	34	22	25	66	35	21	24	67	37	22	25	65	38	21	24											
			2018	64	33	21	24	66	35	23	28	63	34	22	27	66	31	21	25											
			2019	61	24	24	22	66	28	26	25	61	30	27	25	65	28	26	25											
			2020	62	25	19	21	64	28	21	24	62	27	22	23	62	27	22	24											

Sr. No.	Developer	TPP Name	Years	Ambient 1				Ambient 2				Ambient 3			
				PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx
29	Adani	Kawai Thermal Power Station	2018	76	32	12	12								
			2019	60	28	12	13								
			2020	61	31	15	16								
30		Raigarh Thermal Power Station	2020	68	35	22	14								
31		Raikheda Thermal Power Station	2020	56	31	14	15	56	22	11	14	71	27	33	13
32		Tirora Thermal Power Station	2015	80	33	12	20	78	33	12	20	74	30	12	19
			2016	68	31	10	19	65	31	10	18	66	31	11	19
			2017	61	33	11	28	62	32	11	28	61	31	11	28
			2018	66	31	12	26	60	27	12	26	65	30	12	26
			2019	51	24	12	23	48	20	12	22	53	23	13	23
2020	63		26	11	21	50	25	11	20	67	28	13	24		

Sr. No.	Developer	TPP Name	Years	Ambient 1				Ambient 2				Ambient 3				Ambient 4			
				PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx
33	Tata Power Co	Jojobera Thermal Power Station	2016	57	34	29	37	57	34	30	37	57	35	31	38	34	37	54	36
			2017	55	30	26	37	53	30	27	37	54	30	26	36	45	31	33	35
			2018	65	34	20	36	64	33	20	37	65	33	20	36	66	34	20	35
			2019	55	32	29	39	56	32	31	40	55	32	31	41	56	32	31	40
		2020	47	29	30	36	47	29	30	37	47	28	29	36	48	29	31	36	
34		Maithon Thermal Power Station	2018	72	35	8	35												
			2019	72	35	8	35												
			2020	70	33	8	32												
35		Trombay Thermal Power Station	2016	74	33	27	24												
			2017	70	40	30	26												
			2018	71	39	24	26												
			2019	76	37	25	19												
	2020	63	26	26	25														
36	OP Jindal	Raigarh Thermal Power Station	2010	64	31	7	14	60.7	29	7	14	67	34	6	14	65.9	34	7	14
			2011	62.9	31	7	15	58	28	7	15	66.8	34	8	15	64.3	32	7	15
			2012	55	29	8	18	50	26	8	18	58	31	8	19	53	28	8	18
			2013	51	26	8	20	48	24	8	19	52	27	8	21	50	26	8	21
			2014	53	25	9	21	51	24	8	21	53	24	9	20	54	25	9	21
			2015	53	22	9	22	52	22	9	22	49	21	9	20	48	21	8	20
			2016	50	18	8	19	48	18	8	19	47	17	8	19	50	18	8	18
			2017	48	17	10	21	54	23	8	19	45	19	8	21	44	15	9	20
			2018	56	21	8	23	51	22	9	22	52	24	8	19	53	21	9	22
			2019	57	20	10	23	58	25	10	24	56	22	10	23	51	21	9	22
		2020	54	17	10	24	58	23	10	26	52	20	12	22	56	21	11	23	
37		Tamnar Thermal Power Station	2010	60	30	7	14	57	27	6	13	49	25	6	13				
			2011	57	28	7	15	50	25	6	13	45	23	7	17	59	31	7	15
			2012	51	26	8	18	47	24	7	17	45	23	7	17	53	28	8	18
			2013	52	27	9	20	51	27	9	19	47	25	8	18	53	28	9	20
			2014	53	25	8	21	53	25	8	21	51	24	8	20	54	25	8	21
			2015	49	21	8	20	47	21	8	20	44	20	8	20	49	21	8	20
			2016	50	18	8	19	49	18	8	18	43	16	8	18	48	17	8	18
	2017		51	19	8	19	47	18	8	19	43	16	7	18	50	19	8	19	
	2018		59	21	9	22	56	23	10	21	48	18	8	18	57	20	9	21	
	2019		65	23	10	24	55	23	9	22	51	21	9	22	62	21	10	22	
	2020	60	22	11	22	51	20	11	23	48	19	8	21	57	20	11	22		

Sr. No.	Developer	TPP Name	Years	Ambient 1			
				PM10	PM2.5	SO2	NOx
38	DVC	Durgapur Steel Thermal Power Station	2016	238	119	13	36
			2017	115	54	8	31
			2018	102	48	13	34
			2019	79	38	17	31
			2020	98	49	15	28
39		Bokaro -A Thermal Power Plant	2018	63	39	33	31
			2019	84	51	42	42
			2020	82	48	32	44
40		Chandrapura Thermal Power Plant	2016	63	32	43	33
			2017	76	41	29	36
			2018	77	42	26	42
			2019	81	49	31	43
			2020	74	51	41	45
41		Koderma Thermal Power Plant	2016	80	46	21	34
			2017	60	36	26	25
	2018		46	29	26	26	
	2019		122	91	2	5	
	2020		103	65	10	13	
42	Mejia Thermal Power Plant	2016	62	34	40	45	
		2017	70	33	28	39	
		2018	49	30	28	36	
		2019	50	27	19	29	
		2020	42	20	16	24	
43	Raghunathpur Thermal Power Plant	2017	80	41	7	31	
		2018	69	39	7	36	
		2019	82	41	10	31	
		2020	101	47	15	31	

Sr. No.	Developer	TPP Name	Years	Ambient 1				Ambient 2				Ambient 3				Ambient 4						
				PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx			
44	GMR	Kamalanga Energy Limited	2014	56	32	7	13															
			2015	57	33	7	13															
			2016	61	34	7	17															
			2017	67	35	8	18															
			2018	76	40	10	20															
			2019	60	32	12	16															
			2020	67	35	14	17															
45		GMR	Warora Energy Limited	2014	20	13	16	12														
				2015	22	10	15	12														
				2016	19	13	12	9														
				2017	21	8	10	7														
				2018	21	11	13	10														
				2019	19	13	13	12														
				2020	17	13	9	5														
46	Sembcorp Energy India Ltd.		Sembcorp Gayatri P.Ltd.	2019	68	29	16	21	56	27	15	19	54	46	15	19	49	25	14	18		
				2020	61	24	14	17	51	20	12	15	51	19	12	15	50	19	12	15		
47			PAINAMPURAM TPP	2019	71	32	16	18	57	24	14	16	59	26	14	16	59	26	14	16		
				2020	53	21	18	23	60	26	15	17	62	28	16	17	61	27	15	17		

Sr. No.	Developer	TPP Name	Years	Ambient 1				Ambient 2				Ambient 3				Ambient 4					
				PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx		
48	CHINA LIGHT POWER	MAHATMA GANDHI TPS/Jhajjar TPP	2012	87	52	22	36														
			2013	71	43	11	23														
			2014	62	30	10	25														
			2015	123	54	7	43														
			2016	135	50	10	29														
			2017	101	53	26	34														
			2018	102	59	21	36														
			2019	146	72	24	40														
			2020	104	59	22	38														
49	HPGCL	Panipat Thermal Power Station	2011	229		15	17														
			2012	228	NA	12	13														
			2013	133		11	18														
			2014	93	56	22	27														
			2015	87	50	28	33														
			2016	90	49	28	33														
			2017	70	34	14	24														
			2018	84	46	17	26														
			2019	88	47	18	29														
50		Yamuna Nagar Thermal Power Station	2014	88	53	28	25	94	50	29	25										
			2015	85	47	28	31	91	51	30	34										
			2016	82	44	22	31	81	44	22	29										
			2017	83	46	15	27	84	46	17	27										
			2018	88	44	15	20	89	45	18	23										
			2019	92	51	11	25	86	48	10	28										
51	GVK	Nabha Thermal Power Plant	2014		NA				NA			83	49	4	20	83	47	4	18		
			2015	89	50	4	14	83	49	7	17	84	45	4	13	82	45	4	11		
			2016	82	46	4	10	87	48	4	12	80	46	4	13	80	46	3	10		
			2017	70	38	7	22	75	45	4	10	71	37	8	21	72	37	7	16		
			2018	72	38	8	26	69	38	10	16	67	38	10	19	65	38	11	25		
			2019	72	38	9	24	70	39	8	27	72	41	10	19	72	41	9	20		
			2020	79	38	9	17	69	40	9	20	73	42	9	22	67	40	9	22		
52		Goindwal Thermal Power Plant	2017	83	48	39	34														
			2018	86	49	19	24														
			2019	74	38	11	17														
			2020	69	40	11	22														
53	TAQA	TAQA, Neyveli	2015	38	14	10	16														
			2016	42	15	10	18														
			2017	49	14	10	19														
			2018	50	17	11	19														
			2019	52	20	11	20														
2020	52	21	10	15																	

Sr. No.	TPP Name	Years	Ambient 1				Ambient 2				Ambient 3			Ambient 4				Ambient 5						
			PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx		
58	Koradi Thermal Power Plant	2011	NA				31	96	11	23	NA													
		2012	33	97	11	24	22	84	10	21	32	97	12	23										
		2013	22	87	10	21	12	67	10	20	22	82	11	21										
		2014	11	80	10	20	12	79	12	21	11	73	10	20										
		2015	13	90	12	22	13	79	13	22	13	89	12	22										
		2016	15	91	15	24	23	65	13	20	14	82	14	23										
		2017	29	84	17	24	28	69	13	21	26	72	15	23										
		2018	34	96	16	24	31	69	12	18	31	79	15	23										
		2019	36	101	16	22	24	60	12	16	33	81	15	21										
		2020	30	96	15	19	38	33	20	30	26	72	14	18										
		59	Mahagenco Khaperkheda Thermal Power Plant	2001	37	32	19	30	42	37	14	29	34	30	18	56								
2002	41			36	14	27	58	47	14	20	37	32	13	25										
2003	57			44	14	20	105	54	22	23	53	48	15	20										
2004	90			48	21	23	87	51	16	22	91	47	21	22										
2005	80			47	15	21	102	64	11	21	77	47	15	21										
2006	93			59	10	20	81	87	11	21	87	55	10	19										
2007	71			79	11	20	190	112	11	22	72	79	10	20										
2008	174			104	11	21	212	103	11	20	180	97	11	21										
2009	203			100	11	20	251	121	12	21	183	91	17	21										
2010	249			121	12	20	255	123	12	20	210	104	13	19										
2011	257			124	12	20	106	64	14	22	218	106	11	18										
2012	105			61	14	22	103	45	13	22	91	54	13	21										
2013	98			41	12	21	83	41	14	23	84	38	11	19										
2014	78			33	14	23	88	30	14	24	61	27	10	18										
2015	82			27	12	28	77	28	13	24	68	22	9	20	80	26	12	23	87	29	13	24		
2016	69			24	12	23	79	36	15	25	59	20	10	20	75	27	13	24	71	25	12	23		
2017	72			33	13	23	79	35	12	22	63	29	11	21	65	30	12	21	80	36	15	25		
2018	73			31	12	20	67	30	12	20	69	28	10	18	53	25	10	17	79	34	13	22		
2019	68			30	12	20	71	27	13	20	57	26	10	18	49	25	10	17	64	29	12	20		
2020	65	24	12	20	32	18	20	28	52	21	10	16	50	20	10	16	63	24	12	19				
60	Nashik Thermal Power Plant	2012	33	19	21	29	36	18	26	18	40	24	27	36	46	30	36	48						
		2013	33	17	25	19	52	17	18	14	54	25	31	21	58	26	35	24						
		2014	41	14	16	13	44	23	15	11	61	19	20	17	71	23	23	18						
		2015	38	21	13	10	56	22	14	13	53	29	20	15	60	29	23	17						
		2016	57	22	12	12	59	21	9	8	67	23	22	20	68	23	24	21						
		2017	65	23	9	8	60	15	7	6	79	27	18	17	80	28	20	19						
		2018	58	15	6	5	63	20	8	8	79	19	16	15	81	19	17	16						
		2019	57	18	7	8	39	16	7	8	72	23	11	13	80	27	14	15						
2020	36	14	6	7	NA				45	19	8	9	49	23	9	10								

Sr. No.	Developer	TPP Name	Years	Ambient 1				Ambient 2				Ambient 3				Ambient 4				Ambient 5				
				PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx	PM10	PM2.5	SO2	NOx	
61	Karnataka Power Corporation Ltd.	Bellary Thermal Power Station	2017	161	65	37	38	NA				NA				NA				NA				
			2018	97	50	25	31	NA				NA				NA				NA				
			2019	79	36	26	30	NA				NA				NA				NA				
			2020	96	40	26	35	NA				NA				NA				NA				
62		Karnataka Power Corporation Ltd.	Raichur Thermal Power Plant	2015	54	31	17	12	50	29	10	14	54	26	14	14	37	10	5	8	39	11	5	7
				2016	61	32	19	13	46	23	9	15	54	30	16	18	53	15	7	9	47	14	7	9
				2017	57	29	9	14	56	21	12	22	58	29	7	20	67	19	10	13	60	17	9	13
				2018	58	23	17	27	51	19	11	11	48	22	11	35	65	20	9	13	61	18	9	13
				2019	54	21	11	9	59	19	10	12	48	17	9	9	70	20	8	11	70	21	9	12
2020				66	21	11	14					55	20	9	12	64	22	10	13	61	21	9	12	
63	Karnataka Power Corporation Ltd.		Yermarus Thermal Power Station	2018	109	54	98	25																
				2019	85	40	87	20																
				2020	27	41	72	5																
64			APGENCO	Dr.Narla Tata Rao Thermal Power Station	2012	80	23	39	49	69	24	34	47	NA				67	17	34	46	62	22	32
		2013			72	24	37	48	61	26	28	38	76	27	41	51	61	18	33	44	62	22	35	45
		2014			70	31	32	42	84	35	29	37	77	36	36	44	59	25	28	36	67	28	32	41
		2015			99	44	33	42	60	29	24	30	90	43	33	42	63	23	25	33	82	36	31	39
		2016			84	37	30	37	57	31	17	24	95	38	31	39	45	20	19	25	75	28	27	34
		2017			88	35	24	32	73	32	21	28	90	38	26	34	52	22	17	23	84	35	25	33
		2018			89	42	27	35	71	29	19	26	93	44	28	37	61	26	18	27	82	37	26	34
	2019	90			42	27	34	72	32	22	28	79	35	23	31	69	29	20	26	75	32	22	29	
	2020	90			43	28	35	NA				84	42	26	33	66	31	18	24	71	33	20.8	28	
	65	APGENCO			Rayalaseema Thermal Power Station	2000	NA				164	29	15	12	NA									
2008			171	30		16	13	171	30	18	14	147	27	12	10	148	26	11	10	NA				
2009			169	30		16	14	165	29	20	18	154	28	15	13	148	28	14	12	NA				
2010			159	31		20	17	143	40	25	21	146	26	17	15	142	24	16	15	NA				
2011			138	38		24	20	177	55	35	31	130	35	21	19	123	33	20	18	NA				
2012			164	52		33	30	181	63	39	37	150	46	31	29	135	41	29	28	187	57	40	37	
2013			179	62		38	35	77	52	25	24	171	61	37	34	155	52	34	33	181	63	38	35	
2014			74	51		27	25	72	52	21	19	72	48	25	24	69	47	25	24	77	52	27	26	
2015			68	47		20	19	65	46	18	17	65	44	19	19	61	42	19	18	72	51	20	19	
2016			62	44		17	17	57	42	17	16	59	42	17	18	56	42	17	17	66	45	17	18	
2017			56	40		15	16	54	31	15	14	51	39	15	16	49	37	16	15	55	41	15	17	
2018			53	28		14	14	51	23	16	15	49	27	12	14	46	24	13	13	54	29	12	14	
2019			52	22		16	15	39	19	13	12	50	25	17	16	48	21	15	15	50	23	15	16	
2020	41	17	12	12	NA				37	15	12	12	36	16	13	12	38	17	13	12				
66	NLC India Limited	Barsingsar Thermal Power Station	2012	215	65	26	34																	
			2013	251	71	18	20																	
			2014	200	67	12	19																	
			2015	92	45	8	24																	
			2016	94	40	9	25																	
			2017	96	47	8	27																	
			2018	109	43	8	25																	
			2019	78	36	8	21																	
67	NLC India Limited	Neyveli New Thermal Power Station	2020	82	15	5	9																	

Summary for Particulate Matter Emissions (Units: mg/Nm³)

Sr. No.	Developer	TPP Name	Years	PM						
				Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7
1	NTPC	Korba Super Thermal Power Station	2018	42	40	37	45	41	41	41
			2019	43	41	41	41	39	38	42
			2020	42	42	37	42	43	40	46
2		Unchahar TPP	2018	95	79	39	33	39	45	
			2019	93	78	38	26	40	40	
			2020	86	67	40	27	35	38	
3		Sungrauli TPP	2018	96	92	94	90	94	94	93
			2019	88	87	86	85	84	84	86
			2020	90	87	87	80	87	85	88
4		Talcher Super TPP	2018	54	74	67	68	43	42	
	2019		54	62	67	67	61	41		
	2020		69	62	62	62	74	43		
5	Farakka TPP	2018	111	79	112	134	141	41		
		2019	118	77	113	134	136	42		
		2020	78	79	83	105	106	43		
6	Barauni TPP	2020	43							
7		Gadarwara TPP	2019	26						
			2020	25						
8	Darlipalii TPP	2020	23							

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7	Stack 8	Stack 9	Stack 10	Stack 11	Stack 12	Stack 13	
9		Lara TPP	2019	26													
			2020	26	29												
10		Kudgi TPP	2018	22	25	25											
			2019	22	26	22											
			2020	24	20	17											
11		Khargone TPP	2020	20	26												
12		Bongaigaon TPP	2018	32	39												
			2019	34	39	38											
			2020	43	36	38											
13		Solapur TPP	2018	28													
			2019	26													
			2020	26	24												
14		Vindhyachal	2018	108	108	108	105	109	105	70	69	49	47	45	45	44	
			2019	95	95	94	94	94	95	73	73	46	46	46	46	46	45
			2020	93	94	94	94	94	94	73	76	45	45	45	44	44	45
15		Tanda	2018	107	116	126	101										
			2019	80	79	75	75	29									
			2020	81	80	76	74	26									
16		Sipat TPP	2018	44	38	38	37	38									
			2019	45	40	37	37	37									
			2020	45	39	33	37	41									

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7	Stack 8	Stack 9	Stack 10	Stack 11	Stack 12	Stack 13	
17		Rihand TPP	2018	69	70	45	43	43	42								
			2019	77	78	45	43	44	44								
			2020	82	76	46	44	43	42								
18		Barh TPP	2018	30	29												
			2019	33	34												
			2020	27	29												
19		Simhadhri TPP	2018	52	56	33	39										
			2019	45	40	30	29										
			2020	47	40	17	31										
20		Kahalgaoon TPP	2018	137	146	146	146	47	46	46							
			2019	141	144	145	141	46	46	45							
			2020	140	143	138	141	43	44	43							
21		Ramagundam TPP	2018	84	85	86	96	98	97	44							
			2019	84	87	91	96	97	91	41							
			2020	84	86	83	73	91	86	46							
22		Mouda TPP	2018	43	43	46	27										
			2019	46	46	46	27										
			2020	43	45	41	28										
23		Dadri TPP	2018	49	48	47	51	30	30								
			2019	50	46	44	46	32	31								
			2020	45	38	39	42	31	30								

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7	
24	GSECL	Wanakbori Thermal Power Station	2016	198	162	190	154	127	157	95	
			2017	113	184	195	117	116	103	88	
			2018	78	85	78	106	96	105	75	
			2019	91	82	95	107	95	113	70	
			2020	96	91	86	84	88	98	80	
25		Gandhinagar Thermal Power Station	2016			91	89	84			
			2017			96	108	87			
			2018			102	111	74			
			2019			101	97	66			
			2020			112	94	60			
26		Sikka Thermal Power Station	2016			33	34				
			2017			31	34				
			2018			43	35				
			2019			10	9				
			2020			13	12				
27		Ukai Thermal Power Station	2016			133	169	149	67		
			2017			115	107	106	47		
			2018			93	94	80	37		
			2019			93	93	78	44		
			2020			82	84	90	47		
28	Kutch Lignite Thermal Power Station	2016	131	134	136						
		2017	147	147	141						
		2018	150	142	144						
		2019	168	176	176						
		2020			158						

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7	Stack 8	
29	Adani	Kawai Thermal Power Station	2018	21	43							
			2019	44	43							
			2020	46	44							
30			Raigarh Thermal Power Station	2020	46							
31			Raikheda Thermal Power Station	2020	35							
32			Tirora Thermal Power Station	2015	35	33	40	37	36			
		2016		36	36	40	35	35				
		2017		45	41	43	37	32				
		2018		45	44	44	43	41				
		2019		44	37	36	45	42				
				2020	44	43	43	43	41			
33		Tata Power Co	Jojobera Thermal Power Station	2016	74	74	74	49	49			
	2017			75	75	75	50	49				
	2018			74	74	73	48	48				
	2019			73	74	74	49	49				
	2020			69	70	70	46	46				
34			Maithon Thermal Power Station	2018	35	37						
	2019			28	29							
	2020			38	38							
35			Trombay Thermal Power Station	2016					95			26
	2017							94				24
	2018							79				28
	2019							39				31
	2020							28				28
36	OP Jindal		Raigarh Thermal Power Station	2008	36	38	37	40				
				2009	35	34	36	37				
		2010		40	40	40	43					
		2011		38	39	38	42					
		2012		37	39	39	40					
		2013		38	38	38	39					
		2014		38	38	38	39					
		2015		39	38	39	39					
		2016		39	38	39	39					
		2017		37	39	38	37					
		2018		40	38	39	40					
2019				39	37							
2020		40	41	40	41							
37			Tamnar Thermal Power Station	2014	41	41						
		2015		38	38							
		2016		39	38							
		2017		39	39							
		2018		38	40	38	43					
		2019		37	40	36	42					
2020		41	42	41	40							

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7	Stack 8	
38	DVC	Durgapur Steel Thermal Power Station	2016	34	32							
			2017	44	42							
			2018	30	31							
			2019	40	34							
			2020	44	38							
39		Bokaro -A Thermal Power Plant	2018	30								
			2019	29								
			2020	32								
40		Chandrapura Thermal Power Plant	2016	38	42							
			2017	40	44							
			2018	37	39							
			2019	45	44							
	2020		43	43								
41	Koderma Thermal Power Plant	2016	37	43								
		2017	38	38								
		2018	41	40								
		2019	36	33								
		2020	33	31								
42	Mejia Thermal Power Plant	2016	105	105	95	129	70	66	36	43		
		2017	107	83	98	37	35	29	34	19		
		2018	111	115	187	48	54	47	31	33		
		2019	184	150	183	54	46	42	28	26		
		2020	105	99	108	36	41	36	32	34		
43	Raghunathpur Thermal Power Plant	2017	16	16								
		2018	42	36								
		2019	53	44								
		2020	53	50								

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3
44	GMR	Kamalanga Energy Limited	2014	34	33	35
			2015	34	34	30
			2016	43	39	34
			2017	40	42	38
			2018	41	44	44
			2019	38	28	30
			2020	34	34	34
45		Warora Energy Limited	2014	41	40	
			2015	40	40	
			2016	30	31	
			2017	37	38	
			2018	41	35	
			2019	42	42	
	2020		36	44		
46	Sembcorp Energy India Ltd.	Sembcorp Gayatri P.Ltd.	2019	33	37	
2020			40	36		
47		PAINAMPURAM TPP	2019	34	32	
			2020	35	30	

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2
48	CHINA LIGHT POWER	MAHATMA GANDHI TPS/Jhajjar TPP	2012	27	
			2013	109	
			2014	90	
			2015	68	
			2016	37	
			2017	34	
			2018	34	
			2019	23	
			2020	25	
49	HPGCL	Panipat Thermal Power Station	2011	162	159
			2012	202	173
			2013	343	244
			2014	136	133
			2015	126	126
			2016	117	110
			2017	119	126
			2018	37	42
			2019	40	39
			2020	40	37
50	HPGCL	Yamuna Nagar Thermal Power Station	2008	126	173
			2009	95	118
			2010	136	137
			2011	93	110
			2012	97	91
			2013	101	99
			2014	116	120
			2015	99	94
			2016	90	90
			2017	103	102
			2018	62	98
2019	40	99			
2020	42	39			

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7	Stack 8
51	GVK	Nabha Thermal Power Plant	2014	43	47						
			2015	43	41						
			2016	45	41						
			2017	40	42						
			2018	42	41						
			2019	41	43						
52		Goindwal Thermal Power Plant	2020	46	42						
			2017	44	43						
			2018	43	45						
			2019	44	44						
53	TAQA	TAQA, Neyveli	2020	37	37						
			2015	34							
			2016	17							
			2017	20							
			2018	36							
			2019	33							
54		Parli Thermal Power Station	2020	18							
			2018						72	62	43
			2019						52	47	47
55		Chandrapur Thermal Power Plant	2020						52	47	47
			2016			107	107	107	108	109	49
			2017			94	88	108	105	101	53
			2018			91	87	95	94	93	32
			2019			88	85	93	92	93	28
56	Mahagenco	Paras Thermal Power Plant	2020			89	89	92	93	95	26
			2010			87	81				
			2011			86	82				
			2012			88	76				
			2013			93	81				
			2014			98	86				
			2015			90	86				
			2016			90	85				
			2017			87	85				
			2018			84	84				
57		Bhusawal Thermal Power Plant	2019			79	82				
			2020			75	69				
			2017	82	83	90					
			2018	71	85	82					
57		Bhusawal Thermal Power Plant	2019	76	72	73					
			2020	NA	45	47					

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7	Stack 8
58		Koradi Thermal Power Plant	2011						375	259	
			2012						829	259	
			2013						837	361	
			2014						575	283	
			2015						732	416	
			2016						NA	302	
			2017						NA	241	
			2018						NA	314	
			2019						163	238	
			2020						128	NA	
59	Mahagenco	Khaperkheda Thermal Power Plant	2001	210	193						
			2002	169	158	103	108				
			2003	185	172	106	108				
			2004	208	186	122	120				
			2005	163	163	106	118				
			2006	132	149	126	124				
			2007	134	136	129	122				
			2008	140	127	126	121.5				
			2009	138	138	128	116				
			2010	134	131	118	127				
			2011	135	132	113	127				
			2012	130	114	118	110	76			
			2013	133	133	124	107	67			
			2014	166	164	144	120	55			
			2015	144	148	121	107	57			
			2016	183	192	130	109	50			
			2017	238	253	144	124	48			
2018	232	260	98	95	47						
2019	224	232	102	93	44						
2020	203	204	98	94	44						
60		Nashik Thermal Power Plant	2016	74	236	239					
			2017	87	164	167					
			2018	89	138	137					
			2019	89	140	139					
			2020	102	142						
61		Bellary Thermal Power Station	2017	120	93	112					
			2018	136	152	162					
			2019	145	151	121					
			2020	68	99	81					
62	Karnataka Power Corporation Ltd.	Raichur Thermal Power Station	2013	87	99	95	103	106	114	97	110
			2014	99	93	115	104	107	105	104	98
			2015	123	121	133	107	117	131	108	90
			2016	139	140	143	138	140	142	134	92
			2017	132	134	147	122	128	133	117	72
			2018	135	132	148	85	118	127	129	66
			2019	151	129	141	95	123	130	133	73
2020	106	152	142	122	97	117	162	106			
63		Yermarus Thermal Power Station	2018	48							
			2020	43							

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7
64	APGENCO	Dr.Narla Tata Rao Thermal Power Station	2012	122	140	115	121	127	159	75
			2013	106	129	119	111	111	109	76
			2014	110	119	111	103	106	108	73
			2015	107	104	126	107	113	111	86
			2016	104	103	133	115	106	104	79
			2017	124	127	151	149	106	113	82
			2018	137	123	139	135	110	120	96
			2019	123	117	124	133	100	102	93
			2020	109	112	120	114	96	101	91
			65	Rayalaseema Thermal Power Station	2008	103	102	102	93	159
2009		101			106	106	77	82		
2010		96			100	100	56	90		
2011		98			97	97	53	85		
2012		115			112	112	65	89		
2013		107			108	108	69	98		
2014		106			108	108	73	83		
2015		109			108	108	88	67		
2016		106			104	104	66	68		
2017		106			105	105	62	74		
2018		107			101	101	56	68		
2019	103	102			102	67	74			
2020	102	102	102	73						
66	NLC India Limited	Barsingsar Thermal Power Station	2012	93	91					
			2013	74	71					
			2014	38	37					
			2015	85	86					
			2016	79	78					
			2017	78	63					
			2018	78	62					
			2019	61	58					
2020	60	58								
67		Neyveli New Thermal Power	2020	26						

Summary for SO₂ Emissions (Units: mg/Nm³)

Sr. No.	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7
1	Korba Super Thermal Power Station	2018	1030	1077	1074	1111	1079	1184	1082
		2019	1084	1047	1070	1095	1081	1118	1079
		2020	1125	1118	1145	1127	1150	1151	1160
2	Unchahar TPP	2018	1089	1300	1101	1119	1155	1209	
		2019	1057	1303	1156	1179	1129	1220	
		2020	1065	2336	1181	1098	1129	1201	
3	Singrauli TPP	2018	1021	1136	949	983	1010	1067	1000
		2019	1006	1135	954	1007	980	1011	1042
		2020	1021	1114	993	973	981	1077	1050
4	Talcher Super TPP	2018	951	945	1334	1201	1179	1089	
		2019	990	954	1188	1188	1203	1125	
		2020	889	1039	1099	1099	1075	1071	
5	Farakka TPP	2018	1157	1159	1174	1179	1123	1123	
		2019	1129	1102	1134	1204	1161	1154	
		2020	1043	1086	1069	1229	1205	1243	
	Barauni TPP	2020	1079						
7	Gadarwara TPP	2019	1440						
		2020	1544						
8	Darlipalii TPP	2020	1169						
9	Lara TPP	2019	1049	1354					
		2020	1447						

Sr. No.	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7	Stack 8	Stack 9	Stack 10	Stack 12	Stack 13
10	Kudgi TPP	2018	1045	1060	1151									
		2019	1215	1255	1228									
		2020	1141	938	934									
11	Khargone TPP	2020	1147	1126										
12	Bongaigaon TPP	2018	1099	1021										
		2019	1123	987	950									
		2020	1264	1046	1040									
13	Solapur TPP	2018	1288											
		2019	1329											
		2020	1125	1145										
14	Vindhyachal	2018	1024	1023	1020	1042	1008	1022	995	978	1019	1071	1069	1017
		2019	934	930	945	937	955	951	952	928	948	934	956	955
		2020	1010	1022	1003	1016	1009	1040	1022	1001	1035	1037	1031	1036
15	Tanda	2018	1261	1239	1126	906								
		2019	1194	1100	967	873	1033							
		2020	1127	1023	857	766	1080							
16	Sipat TPP	2018	974	956	959	917	959							
		2019	1001	1015	1004	970	1030							
		2020	985	971	1016	1001	1020							

Sr. No.	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7
17	Rihand TPP	2018	859	865	865	899	958	951	
		2019	1157	1222	1247	1114	1294	1341	
		2020	1305	1394	1373	1244	1407	1460	
18	Barh TPP	2018	1240	1218					
		2019	1324	1223					
		2020	1091	1067					
19	Simhadhri TPP	2018	1230	1359	1406	1278			
		2019	1146	1258	1419	1219			
		2020	1152	1106	1156	1349			
20	Kahalgaon TPP	2018	928	952	908	943	904	925	869
		2019	1145	1148	1142	1127	1073	1048	1078
		2020	1112	1095	1091	1105	1083	1079	1053
21	Ramagundam TPP	2018	1634	1569	1606	1574	1604	1683	1578
		2019	1471	1509	1568	1642	1616	1627	1534
		2020	1293	1301	1351	1352	1477	1491	1399
22	Mouda TPP	2018	1313	1313	1388	1378			
		2019	1342	1284	1517	1523			
		2020	1339	1354	1478	1529			
23	Dadri TPP	2018	861	813	814	820	1035	10060	
		2019	906	902	876	876	1066	1071	
		2020	565	560	749	543	1060	1092	

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7
24	GSECL	Wanakbori Thermal Power Station	2016	359	315	357	331	304	370	265
			2017	804	833	763	828	873	986	796
			2018	1293	1285	1326	1296	1285	1349	1247
			2019	1249	1413	1391	1309	1342	1340	1203
			2020	1103	985	1191	1217	1102	1086	999
25		Gandhinagar Thermal Power Station	2016			317	290	301		
			2017			506	582	568		
			2018			881	885	824		
			2019			1024	1082	1185		
			2020			112	1446	1169		
26		Sikka Thermal Power Station	2016			167	126			
			2017			1003	1072			
			2018			844	821			
			2019			809	906			
			2020			1944	1905			
27		Ukai Thermal Power Station	2016			662	543	599	494	
			2017			910	980	932	928	
			2018			1324	1408	1311	1382	
			2019			1108	1061	1113	1314	
			2020			1056	1137	1000	1273	
28		Kutch Lignite Thermal Power Station	2016	1660	1767	1754				
			2017	2090	2126	2281				
			2018	2366	2279	2371				
			2019	2794	2607	2758				
			2020			3472				
29	Adani	Kawai Thermal Power Station	2018	1853	1748					
			2019	1349	1283					
			2020	1359	1477					
30		Raigarh Thermal Power Station	2020	1001						
31		Raikheda Thermal Power Station	2020	1141						
32		Tirora Thermal Power Station	2015	938	1022	1019	957	985		
			2016	917	879	894	992	964		
			2017	1081	886	866	953	944		
			2018	893	960	905	899	882		
			2019	935	949	931	947	840		
			2020	949	953	962	946	923		

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7	Stack 8	
33	Tata Power Co	Jojobera Thermal Power Station	2016	456	524	526	488	423				
			2017	564	583	584	575	577				
			2018	641	650	660	633	625				
			2019	844	901	893	872	849				
			2020	823	909	911	932	848				
34		Maithon Thermal Power Station	2018	494	492							
			2019	1066	1035							
			2020	891	828							
35		Trombay Thermal Power Station	2016						144			157
			2017						188			188
			2018						138			207
			2019						109			177
			2020						113			161
36		OP Jindal	Raigarh Thermal Power Station	2008	1070	997	934	1060				
				2009	1019	1035	1054	1075				
	2010			1054	1039	1069	1068					
	2011			1060	1081	1062	1063					
	2012			1070	1096	1096	1099					
	2013			1108	1105	1108	1109					
	2014			1167	1163	1166	1174					
	2015			1015	1062	1050	1026					
	2016			741	745	723	748					
	2017			796	879	877	815					
	2018			1257	1060	1313	1307					
	2019					1313	1311					
2020	1094		1082	1037	1214							
37	Tamnar Thermal Power Station		2016	1058								
			2017	1112	1162							
			2018	1251	1305	1346	1254					
			2019	1443	1293	1353	1479					
		2020	1165	1139	1123	1157						

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7	Stack 8	
38	DVC	Durgapur Steel Thermal Power Station	2016	568	591							
			2017	635	632							
			2018	545	523							
			2019	614	556							
			2020	897	522							
39		Bokaro -A Thermal Power Plant	2018	1309								
			2019	1393								
			2020	1280								
40		Chandrapura Thermal Power Plant	2016	484	404							
			2017	516	437							
			2018	582	554							
			2019	598	590							
	2020		564	563								
41	Koderma Thermal Power Plant	2016	287	411								
		2017	170	192								
		2018	287	184								
		2019	679	623								
		2020	478	487								
42	Mejia Thermal Power Plant	2016	380	454	363	328	370	383	409	474		
		2017	530	525	597	623	530	547	551	539		
		2018	627	616	653	540	662	587	656	772		
		2019	680	641	656	688	679	647	716	681		
		2020	716	593	641	748	552	584	672	691		
43	Raghunathpur Thermal Power Plant	2017	527	556								
		2018	491	506								
		2019	631	670								
		2020	740	790								
44	GMR	Kamalanga Energy Limited	2014	902	861	1346						
			2015	801	722	638						
			2016	380	356	332						
			2017	534	534	511						
			2018	979	914	920						
			2019	1152	1135	1147						
			2020	1154	1213	1159						
45		Warora Energy Limited	2014	601	610							
			2015	589	609							
			2016	520	486							
			2017	423	427							
			2018	644	576							
			2019	897	894							
			2020	998	1075							

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2
46	Sembcorp Energy India Ltd.	Sembcorp Gayatri P.Ltd.	2019	952	785
			2020	1098	934
47		PAINAMPURAM TPP	2019	970	909
			2020	938	798
48	CHINA LIGHT POWER	MAHATMA GANDHI TPS/Jhajjar TPP	2013	1058	
			2014	1121	
			2015	1029	
			2016	913	
			2017	867	
			2018	756	
			2019	155	
			2020	138	
49	HPGCL	Panipat Thermal Power Station	2011	195	168
			2012	426	306
			2013	219	243
			2014	335	302
			2015	385	356
			2016	417	411
			2017	380	347
			2018	782	811
			2019	839	875
			2020	834	914
50		Yamuna Nagar Thermal Power Station	2008	263	275
			2009	230	251
			2010	242	249
			2011	261	253
			2012	221	259
			2013	231	250
			2014	252	261
			2015	362	373
	2016		208	206	
	2017		289	278	
	2018	594	604		
	2019	1468	1534		
	2020	1016	1011		

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7	Stack 8	
51	GVK	Nabha Thermal Power Plant	2014	329	403							
			2015	329	460							
			2016	447	473							
			2017	500	526							
			2018	532	559							
			2019	555	504							
52		Goindwal Thermal Power Plant	2020	467	531							
			2017	513	518							
			2018	535	509							
			2019	663	643							
53	TAQA	TAQA, Neyveli	2020	889	856							
			2015	1141								
			2016	861								
			2017	807								
			2018	2172								
54		Parli Thermal Power Station	2019	5177								
			2020	3426								
			2018						750	748	650	
55	Mahagenco	Chandrapur Thermal Power Plant	2019						835	860	753	
			2020						838	842	789	
			2016			804	786	894	886	871	1582	NA
			2017			1256	1259	1332	1319	1380	1459	1457
			2018			1237	1254	1301	1269	1339	1304	1322
56	Mahagenco	Paras Thermal Power Plant	2019			1206	1195	1298	1303	1337	1330	1331
			2020			1173	1172	1213	1226	1205	1177	1187
			2010			2510	2806					
			2011			3514	3340					
			2012			2988	3111					
			2013			2981	2772					
			2014			2687	2592					
			2015			2112	2145					
			2016			1511	1381					
			2017			1338	1300					
			2018			1291	1320					
2019			1507	1491								
2020			1467	1431								

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7	
57	Mahagenco	Bhusawal Thermal Power Plant	2017	706	1206	1204					
			2018	695	1202	1163					
			2019	689	1327	1223					
			2020	NA	1196	1193					
58		Mahagenco	Koradi Thermal Power Plant	2011						660	680
				2012						691	694
				2013						685	684
				2014						697	691
				2015						694	694
				2016						NA	674
	2017								NA	778	
	2018								NA	1048	
	2019								1372	1527	
	2020								1347	NA	
59	Mahagenco	Khaperkheda Thermal Power Plant	2001	698	710						
			2002	674	679	678	689				
			2003	674	613	669	671				
			2004	652	658	653	654				
			2005	669	611	550	666				
			2006	675	673	680	677				
			2007	670	666	673	676				
			2008	675	673	678	672				
			2009	683	679	682	678				
			2010	676	674	677	677				
			2011	691	687	687	684				
			2012	707	647	714	714	762			
			2013	696	697	707	708	949			
			2014	644	652	645	640	1069			
			2015	653	669	641	625	1030			
			2016	765	743	744	722	1047			
			2017	1132	1090	1147	1052	1518			
2018	1200	1275	1206	1217	1542						
2019	1278	1280	1196	1187	1656						
2020	1275	1282	1239	1237	1650						
60	Mahagenco	Nashik Thermal Power Plant	2016	7031	7304	7291					
			2017	8945	8848	8734					
			2018	10912	10926	10303					
			2019	12295	12905	12612					
			2020	12711	12687						

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7	Stack 8		
61	Karnataka Power Corporation Ltd	Bellary Thermal Power Station	2017	2109	2057	181							
			2018	2506	2589	2822							
			2019	2241	2188	2036							
			2020	1872	1945	1895							
62		Karnataka Power Corporation Ltd	Raichur Thermal Power Station	2013	1448	1590	1468	1515	1787	1580	1546	1838	
				2014	1561	1435	1618	1535	1708	1895	1727	1466	
				2015	1473	1514	1505	1681	1831	1811	1705	1538	
				2016	1471	1569	1438	1481	1532	1787	1696	1565	
				2017	1703	1539	1701	1650	1766	1691	1613	1516	
				2018	1977	1804	1851	1943	1944	1929	1937	1845	
				2019	2149	2052	2020	2137	2259	2183	2218	2207	
2020			2619	2089	2640	2523	2675	2974	2498	2194			
63	Karnataka Power Corporation Ltd		Yermarus Thermal Power Station	2018	1395								
				2020	1238								
64			APGENCO	Dr.Narla Tata Rao Thermal Power Station	2012	1027	977	1114	1050	1238	1065	1189	
					2013	975	968	1027	1069	1086	1057	1100	
		2014			977	950	937	1059	1012	995	1047		
		2015			1239	1256	1259	1251	1249	1257	1332		
		2016			1243	1253	1290	1348	1337	1275	1339		
		2017			1330	1289	1269	1312	1336	1333	1308		
		2018			1268	1209	1239	1250	1202	1233	1393		
		2019			1116	1123	1188	1137	1104	1130	1355		
2020		1159		1119	1156	1208	1211	1185	1389				
65		APGENCO		Rayalaseema Thermal Power Station	2008	650	661	633	550	31			
	2009				643	662	626	624	625				
	2010				667	667	640	626	633				
	2011		637		633	610	612	635					
	2012		637		635	622	623	496					
	2013		636		635	595	644	659					
	2014		512		509	495	500	735					
	2015		666		664	640	641	752					
	2016		787		796	757	764	797					
	2017		780		774	751	755	1179					
2018	873		973	815	846	797							
2019	1150		1124	1123	1142	1179							
2020	1235	1204	1078	1079									
66	NLC India Limited	Barsingsar Thermal Power Station	2012	192	187								
			2013	179	187								
			2014	256	251								
			2015	264	264								
			2016	265	257								
			2017	567	549								
			2018	586	580								
			2019	544	547								
2020		572	569										
67		NLC India Limited	Neyveli New Thermal Power Station	2020	665								

Summary for NO_x Emissions (Units: mg/Nm³)

Sr. No.	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7
1	Korba Super Thermal Power Station	2018	399	360	370	368	360	397	365
		2019	441	432	452	428	357	429	345
		2020	432	439	437	352	343	455	359
2	Unchahar TPP	2018	291	296	299	426	362	362	
		2019	331	338	323	334	347	368	
		2020	363	362	354	346	347	357	
3	Singrauli TPP	2018	427	413	425	419	408	416	398
		2019	411	404	411	412	412	404	402
		2020	411	406	420	405	415	403	410
4	Talcher Super TPP	2018	375	372	451	401	330	325	
		2019	387	364	416	416	415	381	
		2020	399	410	436	436	507	399	
5	Farakka TPP	2018	352	370	378	360	342	355	
		2019	356	352	365	361	378	351	
		2020	391	412	407	428	424	360	
6	Barauni TPP	2020	311						
7	Gadarwara TPP	2019	312						
		2020	314						
8	Darlipalli TPP	2020	296						
9	Lara TPP	2019	329						
		2020	354	376					

Sr. No.	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7	Stack 8	Stack 9	Stack 10	Stack 11	Stack 12	Stack 13
10	Kudgi TPP	2018	303	315	318										
		2019	294	291	332										
		2020	301	270	284										
11	Khargone TPP	2020	292	295											
12	Bongaigaon TPP	2018	295	343											
		2019	293	329	351										
		2020	343	335	345										
13	Solapur TPP	2018	265												
		2019	269												
		2020	277	252											
14	Vindhyachal	2018	550	546	554	552	556	566	551	547	560	557	552	560	525
		2019	555	558	549	553	540	550	535	526	453	422	449	564	393
		2020	526	542	550	551	562	550	532	528	437	315	440	439	358
15	Tanda	2018	321	318	328	293									
		2019	348	378	370	303	359								
		2020	410	394	434	314	300								
16	Sipat TPP	2018	371	332	321	353	357								
		2019	345	382	358	337	344								
		2020	350	364	354	335	349								
17	Rihand TPP	2018	334	336	334	326	337	330							
		2019	474	480	375	370	407	387							
		2020	533	532	431	395	424	418							

Sr. No.	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7
18	Barh TPP	2018	236	224					
		2019	267	246					
		2020	292	260					
19	Simhadhri TPP	2018	403	416	400	380			
		2019	410	401	388	423			
		2020	389	416	430	412			
20	Kahalgaon TPP	2018	564	584	584	583	358	335	333
		2019	551	523	533	534	336	354	351
		2020	548	515	517	519	350	372	348
21	Ramagundam TPP	2018	453	462	439	336	329	352	420
		2019	377	375	394	350	341	393	391
		2020	457	463	469	427	467	430	400
22	Mouda TPP	2018	355	356	367	368			
		2019	355	347	374	375			
		2020	344	348	371	367			
23	Dadri TPP	2018	350	331	336	358	350	353	
		2019	390	417	418	439	401	398	
		2020	436	420	434	400	391	408	

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7	
24	GSECL	Wanakbori Thermal Power Station	2016	52	36	43	238	29	47	37	
			2017	321	340	249	594	326	363	273	
			2018	293	306	324	338	356	354	297	
			2019	362	359	420	387	417	391	332	
			2020	419	390	447	482	440	385	420	
25		Gandhinagar Thermal Power Station	2016			19	17	21			
			2017			32	37	40			
			2018			180	174	204			
			2019			240	327	346			
			2020			112	406	368			
26		Sikka Thermal Power Station	2016			104	106				
			2017			474	528				
			2018			422	385				
			2019			306	274				
			2020			308	304				
27		Ukai Thermal Power Station	2016			339	307	352	274		
			2017			501	564	498	476		
			2018			367	447	358	309		
			2019			439	508	336	445		
			2020			459	497	473	483		
28	Kutch Lignite Thermal Power Station	2016	216	16	19						
		2017	21	25	24						
		2018	99	105	83						
		2019	123	123	112						
		2020			92						
29	Adani	Kawai Thermal Power Station	2018	590	560						
2019			565	541							
2020			547	510							
30		Raigarh Thermal Power Station	2020	595							
31		Raikheda Thermal Power Station	2020	533							
32		Tirora Thermal Power Station	2015	461	416	432	357	441			
			2016	340	350	364	361	362			
			2017	352	341	379	357	332			
			2018	265	243	271	249	272			
			2019	274	279	273	279	257			
	2020		280	278	284	279	267				

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7	Stack 8	
33	Tata Power Co	Jojobera Thermal Power Station	2016	306	312	326	259	262				
			2017	341	362	368	281	303				
			2018	366	380	401	286	380				
			2019	541	578	594	545	577				
			2020	535	557	556	549	557				
34		Maithon Thermal Power Station	2018	474	458							
			2019	774	638							
			2020	699	662							
35		Trombay Thermal Power Station	2016					219			233	
			2017					189			189	
			2018					170			166	
			2019					145			176	
	2020						205			155		
36	OP Jindal	Raigarh Thermal Power Station	2008	370	367	340	346					
			2009	336	339	346	357					
			2010	351	367	350	376					
			2011	340	354	345	361					
			2012	357	360	365	370					
			2013	383	381	397	398					
			2014	403	397	417	421					
			2015	358	373	371	366					
			2016	345	369	372	361					
			2017	358	370	373	349					
			2018	438	399	458	442					
			2019			458	484					
37	Tamnar Thermal Power Station	2016	402									
		2017	430	433								
		2018	485	507	523	472						
		2019	569	554	594	506						
		2020	443	492	430	479						

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7	Stack 8	
38	DVC	Durgapur Steel Thermal Power Station	2016	517	528							
			2017	554	533							
			2018	408	399							
			2019	442	508							
			2020	458	289							
39		Bokaro -A Thermal Power Plant	2018	454								
			2019	449								
			2020	445								
40		Chandrapura Thermal Power Plant	2016	446	365							
			2017	390	275							
			2018	427	417							
			2019	302	312							
	2020		266	266								
41	Koderma Thermal Power Plant	2016	298	432								
		2017	250	255								
		2018	304	284								
		2019	449	462								
		2020	413	522								
42	Mejia Thermal Power Plant	2016	40	318	267	161	271	264	298	312		
		2017	42	354	356	430	362	337	344	371		
		2018	295	269	262	255	281	268	285	425		
		2019	280	424	283	284	294	328	294	320		
		2020	345	412	272	457	275	331	313	373		
43	Raghunathpur Thermal Power Plant	2017	244	317								
		2018	335	258								
		2019	277	387								
		2020	557	683								
44	Kamalanga Energy Limited	2014	302	225	257							
		2015	310	270	246							
		2016	216	217	193							
		2017	253	270	258							
		2018	269	262	259							
		2019	277	278	282							
		2020	274	276	279							
45	Warora Energy Limited	2014	102	113								
		2015	109	117								
		2016	124	104								
		2017	187	175								
		2018	245	217								
		2019	252	251								
		2020	153	190								

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2
46	Sembcorp Energy India Ltd.	Sembcorp Gayatri P.Ltd.	2019	296	356
47			2020	330	343
		PAINAMPURAM TPP	2019	374	341
			2020	349	362
48	CHINA LIGHT POWER	MAHATMA GANDHI TPS/Jhajjar TPP	2013	255	
			2014	242	
			2015	196	
			2016	206	
			2017	220	
			2018	212	
			2019	205	
			2020	225	
49	HPGCL	Panipat Thermal Power Station	2011	112	132
			2012	128	141
			2013	140	143
			2014	73	86
			2015	74	78
			2016	310	322
			2017	408	424
			2018	457	431
			2019	466	457
			2020	471	460
50	HPGCL	Yamuna Nagar Thermal Power Station	2008	NA	
			2009	75	58
			2010	232	218
			2011	311	267
			2012	324	335
			2013	307	327
			2014	227	263
			2015	90	89
			2016	87	85
			2017	242	245
	2018	440	441		
	2019	507	509		
	2020	506	505		
51	GVK	Nabha Thermal Power Plant	2014	85	165
			2015	85	196
			2016	172	188
			2017	164	144
			2018	162	155
			2019	197	174
	2020	171	223		
52	GVK	Goindwal Thermal Power Plant	2017	232	171
			2018	261	248
			2019	285	277
			2020	391	379

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7	Stack 8
53	TAQA	TAQA, Neyveli	2015	76							
			2016	70							
			2017	67							
			2018	108							
			2019	160							
			2020	136							
54		Parli Thermal Power Station	2018						202	195	186
			2019						206	211	203
			2020						199	196	197
55		Chandrapur Thermal Power Plant	2016			137	138	149	147	145	287
			2017			281	278	287	291	307	293
			2018			323	315	355	358	361	271
			2019			289	288	313	308	335	276
			2020			302	302	310	313	313	283
56	Mahagenco	Paras Thermal Power Plant	2010			288	285				
			2011			256	256				
			2012			267	264				
			2013			239	238				
			2014			260	261				
			2015			250	253				
			2016			240	281				
			2017			264	259				
			2018			259	261				
			2019			359	337				
2020			272	277							
57		Bhusawal Thermal Power Plant	2017	161	184	184					
			2018	181	188	184					
			2019	196	271	266					
			2020	NA	218	219					

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7	Stack 8
58		Koradi Thermal Power Plant	2011						106	105	
			2012						106	106	
			2013						105	104	
			2014						110	109	
			2015						106	109	
			2016						NA	121	
			2017						NA	144	
			2018						NA	186	
			2019						269	254	
			2020					293	NA		
59	Mahagenco	Khaperkheda Thermal Power Plant	2001	155	155						
			2002	175	172	167	184				
			2003	172	153	169	168				
			2004	162	162	161	158				
			2005	157	144	130	155				
			2006	134	134	137	136				
			2007	116	115	117	117				
			2008	117	115	116	117				
			2009	117	117	118	118				
			2010	118	107	118	118				
			2011	119	119	118	118				
			2012	120	109	120	119	125			
			2013	119	119	120	119	111			
			2014	119	119	123	120	125			
			2015	118	117	116	115	121			
			2016	167	163	159	156	162			
			2017	315	310	285	286	188			
2018	384	366	357	335	294						
2019	360	352	330	325	298						
			2020	330	334	323	318	310			
60		Nashik Thermal Power Plant	2016	116	116	117					
			2017	110	111	114					
			2018	117	117	114					
			2019	104	117	116					
			2020	124	109						
61		Bellary Thermal Power Station	2017	398	479	269					
			2018	428	435	442					
			2019	164	132	151					
			2020	329	324	317					
62	Karnataka Power Corporation Ltd.	Raichur Thermal Power Station	2013	566	519	581	511	502	467	545	566
			2014	428	498	616	420	520	406	558	518
			2015	457	470	585	489	513	457	559	662
			2016	449	462	516	495	481	462	577	613
			2017	405	388	486	488	516	516	667	640
			2018	531	533	529	554	466	390	589	562
			2019	410	372	371	419	423	336	465	476
			2020	378	401	317	422	391	330	510	534
63		Yermarus Thermal Power Station	2018	385							
			2020	309							

Sr. No.	Developer	TPP Name	Years	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7
64	APGENCO	Dr.Narla Tata Rao Thermal Power Station	2012	161	169	168	175	183	188	372
			2013	273	245	228	283	262	268	357
			2014	253	286	260	256	277	306	313
			2015	292	284	282	282	276	295	376
			2016	284	353	339	336	334	304	378
			2017	334	350	359	348	338	371	425
			2018	259	256	289	290	293	313	470
			2019	263	261	276	266	272	276	386
			2020	246	242	252	268	269	255	390
65	APGENCO	Rayalaseema Thermal Power Station	2008	33	34	30	26	21		
			2009	34	35	30	31	33		
			2010	37	37	35	34	36		
			2011	36	35	31	31	145		
			2012	37	36	33	32	366		
			2013	151	160	132	143	282		
			2014	348	342	345	355	231		
			2015	305	308	250	280	320		
			2016	300	295	255	251	272		
			2017	330	333	316	302	338		
			2018	291	341	285	298	272		
2019	346	325	349	331	338					
2020	371	358	351	363						
66	NLC India Limited	Barsingsar Thermal Power Station	2012	116	119					
			2013	117	117					
			2014	186	189					
			2015	232	234					
			2016	232	221					
			2017	234	222					
			2018	217	215					
			2019	236	235					
			2020	225	221					
67		Neyveli New Thermal Power Station	2020	199						

