

## Project Abstract

**Title:** Study to assess the compliance of the power plants in India to new SO<sub>2</sub> emission norms and layout a phased plan for FGD implementation across the country

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**Project Summary:** One of the major sources of air pollution in India is the coal-fired power generation. Power sector reportedly accounted for 51% of sulphur dioxide (SO<sub>2</sub>), 43% of carbon dioxide (CO<sub>2</sub>), 20% of oxides of nitrogen (NO<sub>x</sub>), and 7% of PM<sub>2.5</sub> emissions of the total environmental pollution (TERI Analysis). Coal based power plants have dominated the power supply mix since the 1980s. As of 31 March 2019, around 56% of India's total installed capacity, 365 GW, was coal based and these thermal power stations (TPSs) accounted for 75% of the total electricity generation in the country. India is the largest emitter of SO<sub>2</sub> in the world, contributing more than 15 percent of global anthropogenic emissions. The primary reason for India's high emission output is the expansion of coal-based electricity generation over the past decade. Five out of top ten SO<sub>2</sub> emission hotspots from the coal/power generation industry across the world are in India. The vast majority of TPPs in India lack flue-gas desulfurization (FGD) technology to reduce air pollution. This Project will help in identifying the areas where the dispersion of pollutants due to stack emissions in TPPs are maximum which in turn will help in prioritizing the FGD installation across the country.

### Deliverable

The project will have the following deliverables:

1. Climatology and trends in atmospheric SO<sub>2</sub> burden and emissions across India estimated using Satellite (AURA (OMI), TROPOMI) data, emission inventories (Eclipse, CMIP6 and SMOG) and reanalysis data (MERRA-2).
2. Dispersion maps of pollutants (SO<sub>2</sub>) emitted by the top 20 largest coal-based TPPs across the country generated using AERMOD simulations driven by WRF- simulated meteorological data.
3. Assessment of contribution of coal based TPPs towards the SO<sub>2</sub> and sulphate aerosols concentrations across India by switching off emissions from various TPPs using WRF-Chem modelling framework.