

The Impact of an Emissions Trading Scheme on Economic Growth and Air Quality in India

Researchers:

Michael Greenstone

Rohini Pande

Nick Ryan

Anant Sudarshan

Sector(s): Environment, Energy, and Climate Change

J-PAL office: J-PAL South Asia

Location: Gujarat, India

Sample: 320 industrial plants

Target group: Small and medium enterprises

Outcome of interest: Pollution Transparency and accountability Climate change mitigation

Intervention type: Pricing and fees Regulation enforcement programs

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Partner organization(s): Government of India, State of Gujarat Pollution Control Board (GPCB)

Despite the global threat of air pollution to health and productivity, policymakers have been slow to enact environmental regulation for fear of compromising economic growth. In India, researchers are evaluating the impact of the first emissions trading scheme for particulate matter on air quality, industry compliance costs, and industry profits.

Policy issue

Globally, air pollution causes billions to live shorter, less healthy, and less productive lives.¹ According to the World Health Organization, outdoor air pollution accounts for 4.2 million deaths per year.² Governments may hesitate to adopt mitigation policies that they perceive to reduce pollution or emissions at the expense of economic development. For instance, environmental regulation, such as command and control policies, can impose compliance costs on firms and requires government resources to monitor compliance. Command and control regulations can include requirements to invest in pollution abatement technology or bans on production activities that generate pollution. An alternative approach is to create market-based mechanisms, which could help to strike a balance between improved air quality and economic growth. One example is an emissions trading scheme (ETS) in which the government sets a cap on emissions and distributes emissions permits to firms. Since firms decide how to allocate permits among themselves, ETS minimizes the costs of meeting the emissions target. Firms that find it cheap to reduce pollution cut back and profit by selling excess permits. ETS has been implemented in the European Union to address carbon emissions,³ and has successfully reduced sulfur dioxide in the United States. Can an emissions trading scheme for particulates improve air quality and reduce compliance costs for industry?

Context of the evaluation

India faces one of the world's worst air pollution crises. It is home to 13 of the world's 20 cities with the highest levels of air pollution.⁴ As of 2017, air pollution was the third-highest cause of death and disability—ranking higher than smoking, high blood pressure, and poor sanitation.⁵ One source of air-pollution is industrial emissions, regulated in India through rigid command and control policy instruments. These include mandates on pollution control equipment, absolute emissions standards and bans on production processes. Despite these mandates, enforcement has been challenging and data from different states suggests frequent non-compliance with regulatory limits. This is partly because although industries do make the initial investment in compliant technology, high costs of operation and maintenance may prevent them from using the technology regularly.

In the state of Gujarat, the Gujarat Pollution Control Board (GPCB) enforces national pollution laws and regulations. These interventions have included third-party audit systems, and environmental inspections of high-polluting industrial plants.



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Details of the intervention

In partnership with GPCB, researchers are evaluating the impact of the first ever emissions trading program for particulate air pollution on air quality and compliance costs for industrial plants. Researchers are partnering with GPCB to evaluate an ETS

market in the industrial city of Surat, where textile and dye mills are a major source of pollution. The evaluation of ETS leverages an existing innovation of rolling out continuous emissions monitoring systems (CEMS) devices across the state, which send live readings of particulate emissions. ETS takes advantage of this technology to track industry emissions in a transparent way and better inform emissions regulation.

From a sample of about 320 solid fuel burning factories already implementing CEMS in Surat, half were chosen at random to participate in the first phase of a new emissions trading scheme (the intervention group) while the others remained under the status-quo command and control regulation.

Following several months of mock-trading, plants started trading permits in September 2019. Following the end of the 2019-2020 financial year, researchers will measure impacts on particulate matter emissions among industrial plants, output, revenues, and compliance costs.

Results and policy lessons

Project ongoing, results forthcoming

1. Institute for Health Metrics and Evaluation. 2019. *State of Global Air 2019: A Special Report on Global Exposure to Air Pollution and Its Disease Burden*.
2. World Health Organization. 2019. "Air Pollution." Accessed December 2. https://www.who.int/health-topics/air-pollution#tab=tab_2
3. European Union. 2019. "Emissions Trading Scheme (EU ETS)." Accessed January 6. https://ec.europa.eu/clima/policies/ets_en
4. World Health Organization. 2018. "Global Ambient Air Quality Database (update 2018)." Accessed December 2.
5. Institute for Health Metrics and Evaluation. 2019. "India." Accessed December 2. <http://www.healthdata.org/india>