



AIR POLLUTION IN NEW DELHI

SUSTAINABLE DEVELOPMENT GOAL #3

Ensure healthy lives and promote well-being for all at all ages

SUSTAINABLE DEVELOPMENT GOAL #11

Make cities and human settlements inclusive, safe, resilient and sustainable

POSSIBLE ESSENTIAL QUESTIONS

- What are ways in which air pollution and climate change are interconnected?
- What are the public opinions about air pollution in Delhi and how are they impacting the actions that are or are not being taken to improve it?
- What are the main factors contributing to air pollution in India?
- Are there promising ideas or programs to deal with Delhi's air pollution problems?
- What are the lasting health impacts of air pollution?

- How does India's relationship with climate change and air pollution compare to other countries?

BACKGROUND

For about 10,000 years, the Earth's climate has been unusually stable. This stability has been conducive to the development of human civilization and is referred to as the Holocene State. The climate stability of the Holocene was expected to last for thousands of years. However, since the start of the Industrial Revolution about 200 years ago, the average global temperature has risen about 2°F. This change in temperature can be accredited to increasing greenhouse gases in the atmosphere, which trap heat from the sun radiating off the surface of the earth. A main contributor to recent changes in greenhouse gas concentrations is human use of oil, coal, and other fossil fuels in industrial and domestic processes.

Rising temperatures are not the only consequence of our changing atmosphere. Scientists predict that higher *average* temperatures are also associated with more *variable* temperature periods such as heat waves. Climate change is also more than likely influencing precipitation patterns that lead to more superstorms, flooding, and periods of droughts. These changes in the climate are already having a significant impact on human activities across the globe.

Climate change can also have effects that actually speed up the future rate of change. This pattern is called a positive feedback. One example is melting "[permafrost](#)" (i.e. ground that has been frozen for years). Climate change melts permafrost, which releases carbon dioxide and methane, which leads to more climate change.

Other climate change feedbacks may have direct effects on human health. Examples include wildfires and air pollution. When vegetation is dried out due to low precipitation levels and high temperatures, wildfires occur. Increased temperatures and dry conditions lead to more wildfires, and more wildfires lead to increased greenhouse gas release and more air pollution. A similar positive feedback occurs in cities. Warmer temperatures lead to more greenhouse gas emissions that also increase smog levels. Many studies have shown that air pollution (or smog) has major effects on human health. According to the Center for Disease Control and Prevention (CDC), rises in the levels of air pollution are directly linked to the decrease of lung function and increase the risk of heart attacks. The EPA Air Quality Index has found that pollutants drastically affect people with asthma and other forms of lung or heart disease.

This case study is organized around an Under-Told Story video, [Fighting to Breathe in the World's Most Polluted City](#), which investigates efforts to tackle air pollution challenges in Delhi, India. Delhi is the second most populated city in India, with over 11 million people. According to the World Health Organization, in 2014, Delhi was the most polluted city in the world, with air pollution causing the deaths of about 10,500 people each year. The high levels of air pollutants are attributed mostly to

increases in ownership of diesel-burning cars, coal burning industries, and wind patterns.

RESOURCES

Personal Stories

- [New Delhi Residents Protest Air Pollution \(AP\)](#)
- ['You Can Taste the Air': Your Stories of Life in Polluted Cities, 2017 \(The Guardian\)](#)
- [Prateek Sharma | NasoFilters: Indian-made innovation that filters polluted air \(TEDx\)](#)
- [Delhi Youth on Smog and Pollution \(First Post\)](#)

Art & Images

- [New Delhi's Latest Status Symbol \(The Hindu Business Line\)](#)
- [Air pollution lessons from Beijing, Delhi \(China Daily\)](#)
- [London 'pollution pods' let you sample the smog in Beijing and Delhi \(The Guardian\)](#)
- [Stunning Street Art and Anti-Pollution Paint Add Colours to Delhi Flyovers! \(The Better India\)](#)
- [Children's Day Protest In Delhi \(New Delhi Television Limited\)](#)
- [Image of Delhi Pollution \(Guardian Cities via Twitter\)](#)
- [14 Images Of Air Pollution In Delhi-NCR Show How Difficult It Is To Breathe Here \(India Times\)](#)
- [Haze Blankets Northern India \(NASA\)](#)

Articles

- [New Delhi is the Most Polluted City on Earth Right Now \(CNN\)](#)
- [Two Children, One Rich, One Poor, Gasping for Air in Delhi's Smog \(The NY Times\)](#)
- [More than 90% of the world's children breathe toxic air every day \(WHO\)](#)
- [Delhi tests water cannons to combat deadly air pollution \(CNN\)](#)
- [Do Heat Waves Make Air Quality Worse? \(ThoughtCo\)](#)
- [Odd-even 3.0 to combat Delhi smog: All you need to know about the previous drives \(Hindustan Times\)](#)
- [India's Air Pollution Rivals China as World's Deadliest \(New York Times\)](#)
- [Is Beijing or Delhi Air Worse? \(Smart Air\)](#)
- [Air Pollution Solutions \(YourStory\)](#)

- [Tired of air pollution, children from Noida invent an air filter of their own](#)
- [How Climate Change Can Cause More Air Pollution \(All By Itself\) \(Live Science\)](#)
- [Meet Delhi's pollution migrants, those who have left the city because of the rising smog levels \(DNA\)](#)
- [Parents in Delhi need to educate children on how to tackle pollution, not just escape it; outdoor activities key to wholesome development \(Firstpost\)](#)

Data and Maps

- [Air Pollution in World: Real-time Air Quality Index Visual Map](#)
- [Air Quality Index \(AQI\) Basics \(US Environmental Protection Agency\)](#)
- [Graphic: The relentless rise of carbon dioxide \(NASA\)](#)
- [Comparing Air Pollution Actions Infographic \(Environmental Performance Index\)](#)

Podcasts

- [Air Pollution In New Delhi Forced Airlines To Ground Planes, Factories And Schools To Close \(NPR\)](#)
- [Inside Delhi's Air Pollution Crisis \(Science Weekly\)](#)

Videos

- [Fighting to breathe in the world's most polluted city \(PBS\)](#)
- [Watch: Protests Force Delhi Environment Minister to Stop Tree Cutting \(The Wire\)](#)

Websites

- [Help Delhi Help Delhi Breathe and the people-powered movement to clean Delhi's air \(Mob Lab\)](#)
- [Global Climate Change \(NASA\)](#)
- [CDC, Air Quality](#)
- [Air Pollution \(WHO\)](#)

**Developed by students of University of St. Thomas and World Savvy Staff*