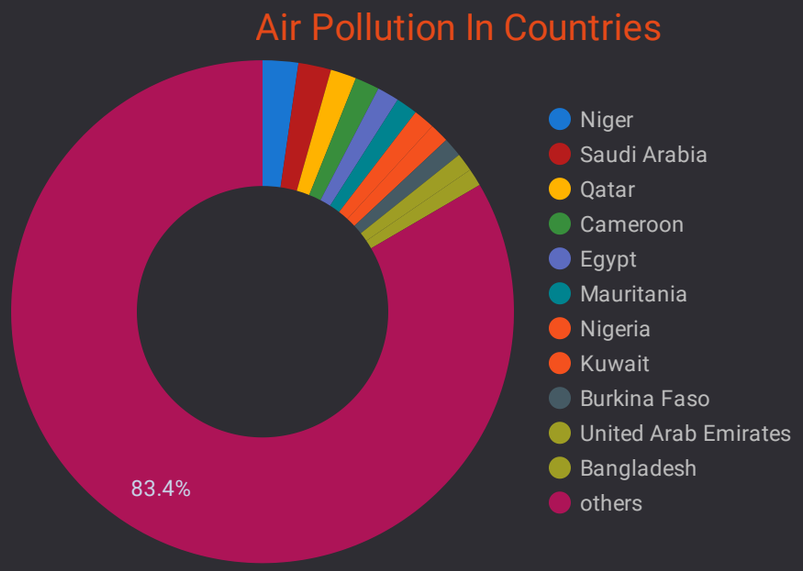
Impact Of Air Pollution On Our Lives

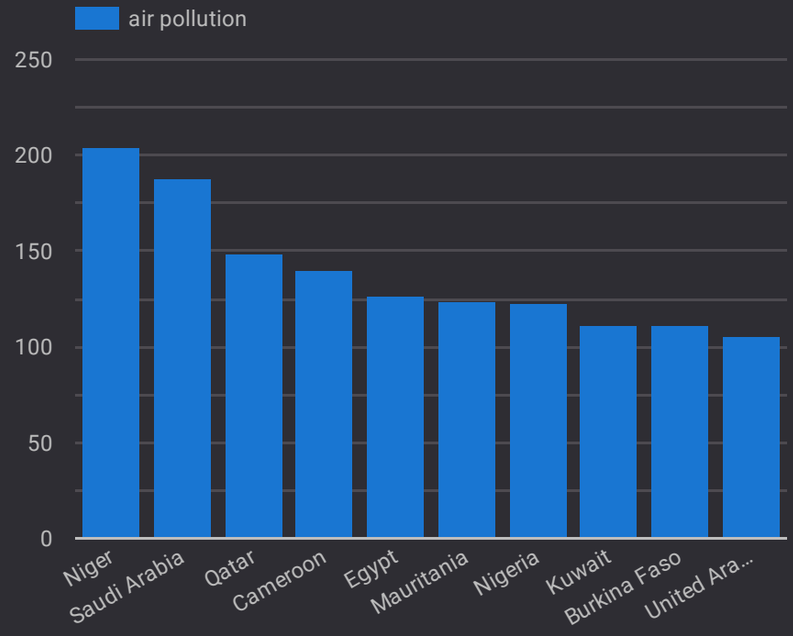
Air Pollution

Air pollution occurs when harmful or excessive quantities of substances are introduced into Earth's atmosphere. Sources of air pollution include gases (such as ammonia, carbon monoxide, sulfur dioxide, nitrous oxides, methane and chlorofluorocarbons), particulates (both organic and inorganic), and biological molecules. It may cause diseases, allergies and even death to humans; it may also cause harm to other living organisms such as animals and food crops, and may damage the natural or built environment. Both human activity and natural processes can generate air pollution.

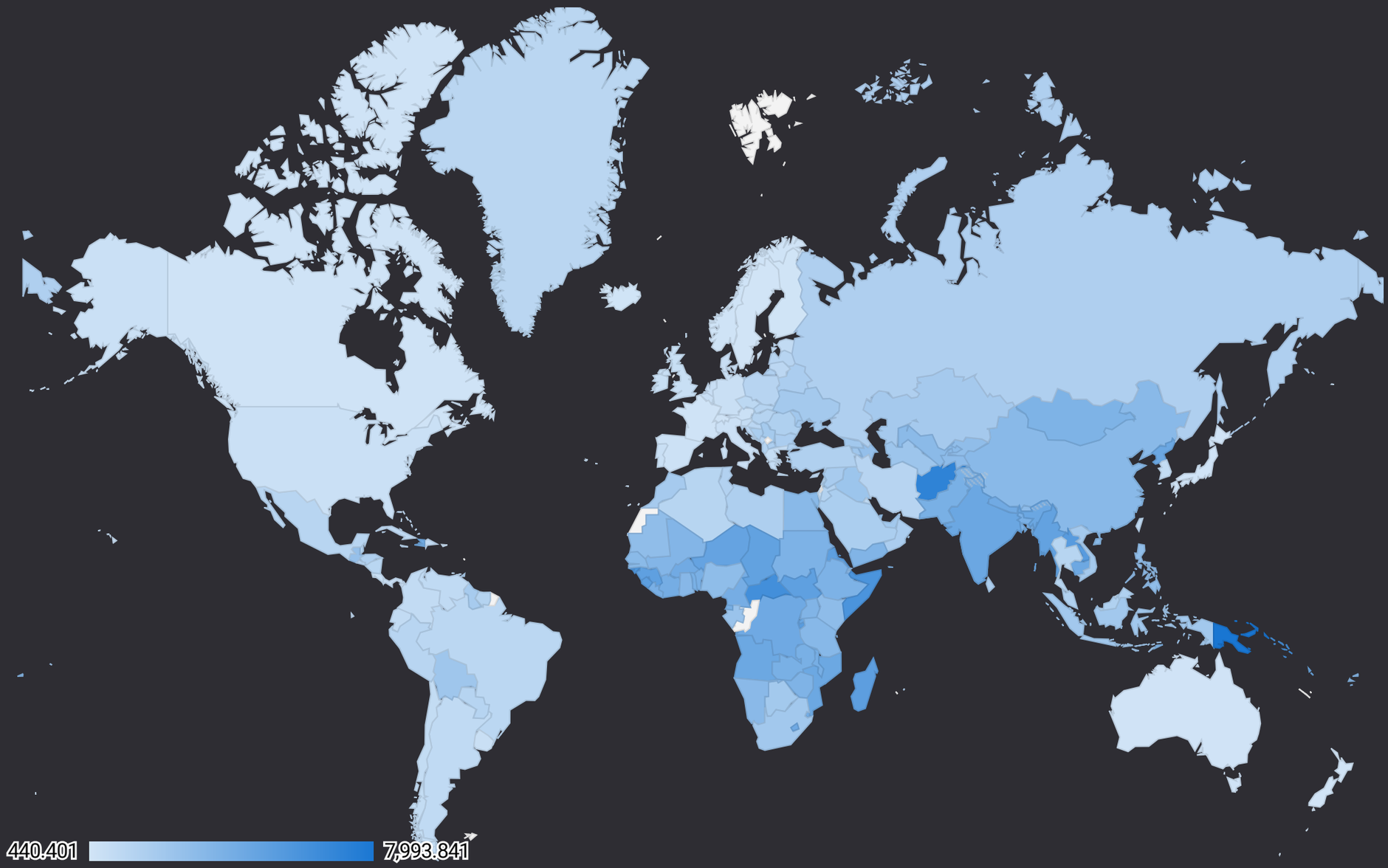


	Entity	air pollution
1.	Niger	203.74
2.	Saudi Arabia	187.87
3.	Qatar	148.24
4.	Cameroon	139.71
5.	Egypt	126.03
6.	Mauritania	123.63
7.	Nigeria	122.48
8.	Kuwait	110.96
9.	Burkina Faso	110.73
10.	United Arab Emirates	105.12

1 - 100 / 240



Total Death Due To Air Pollution Country-wise (1990-2017) per lakh



Air Pollution In Details

1. Source Of Air Pollution In India

Air Pollution is a serious issue in India. Of the most polluted cities in the world, 21 out of 30 were in India in 2019.

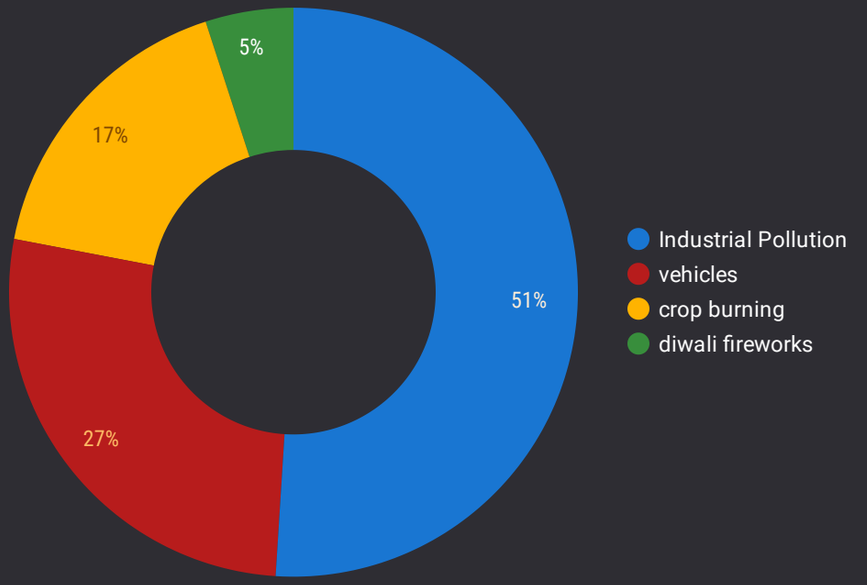
In India, at least 140 million people in India breathe air that is 10 times or more over the WHO safe limit.

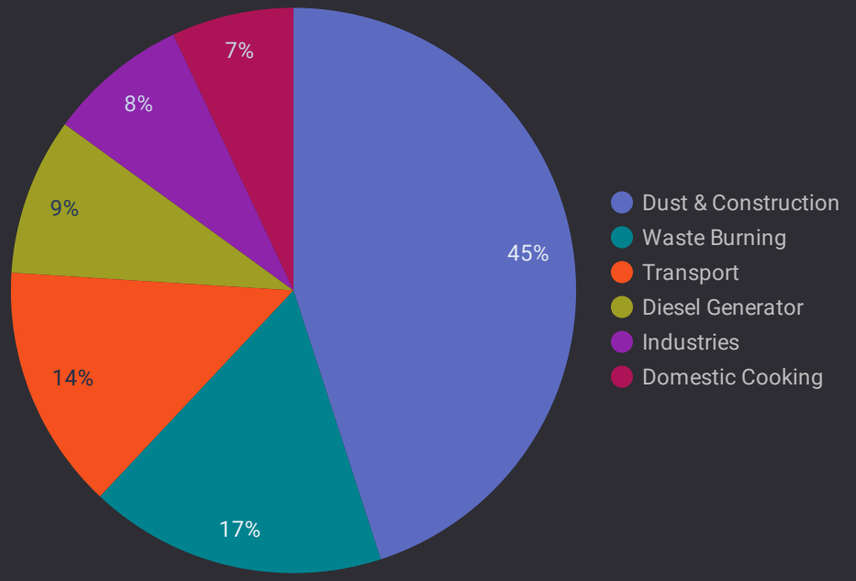
There are different Sources which cause Air Pollution:-

1. Dust and Construction.
2. Waste Burning.
3. Transport.
4. Diesel Generator.
5. Industries.
6. Domestic Cooking.

	Source	Percentage
1.	Dust & Construction	
2.	Waste Burning	
3.	Transport	
4.	Diesel Generator	
5.	Industries	
6.	Domestic Cooking	

1 - 6 / 6

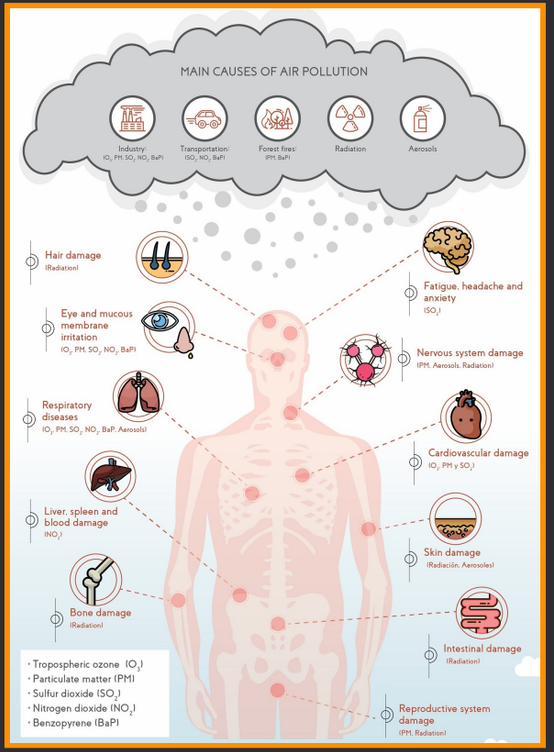




2. Effects Of Air Pollution On Human Health

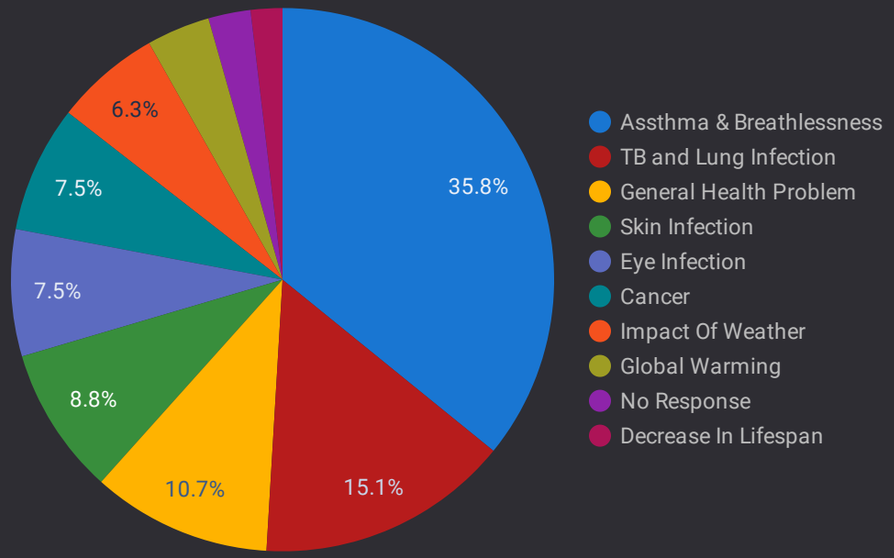
Our physical and psychological wellbeing is affected differently by the kind of air pollution we are exposed to. There are many organs and bodily functions that can be harmed, the consequences including:

- Respiratory diseases
- Cardiovascular damage
- Fatigue, headaches and anxiety
- Irritation of the eyes, nose and throat
- Damage to reproductive organs
- Harm to the liver, spleen and blood
- Nervous system damage.



	Concern	Percentage
1.	Assthma & Breathlessness	57
2.	TB and Lung Infection	24
3.	General Health Problem	17
4.	Skin Infection	14
5.	Eye Infection	12
6.	Cancer	12
7.	Impact Of Weather	10
8.	Global Warming	6
9.	No Response	4
10.	Decrease In Lifespan	3

1 - 10 / 10



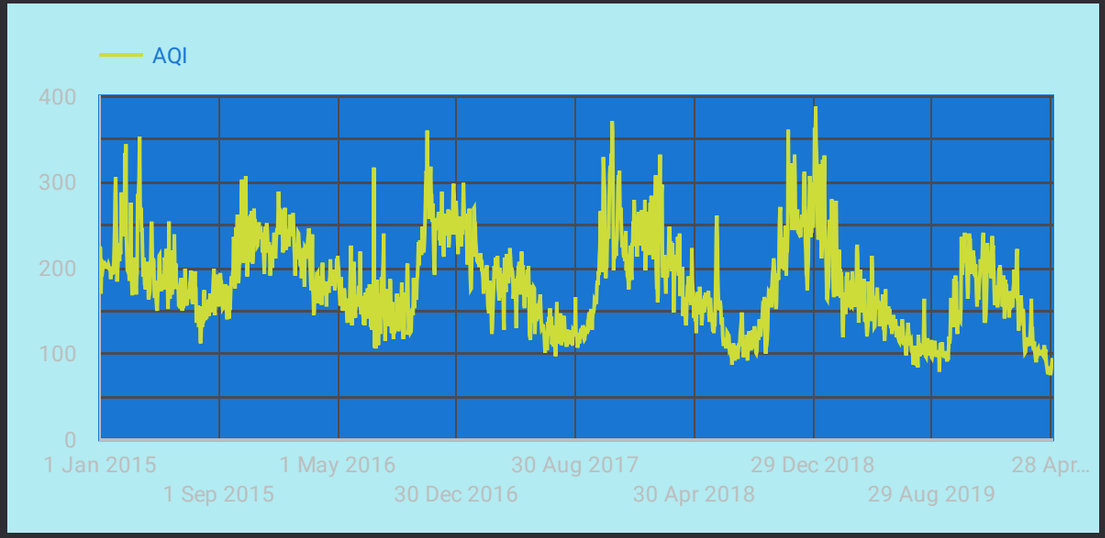
3. Air Pollution Level In India

The study, performed by an international team of 50 scientists and published in the specialist New England Journal of Medicine, gathers data on cities in 24 countries, including India, Mexico City, New York City, London and Madrid. The research focuses on two kinds of ambient suspended particles, emitted mainly from car exhausts: PM10, able to penetrate lungs; and PM2.5, which can enter the blood.

Some Of The Major Pollutants are:-

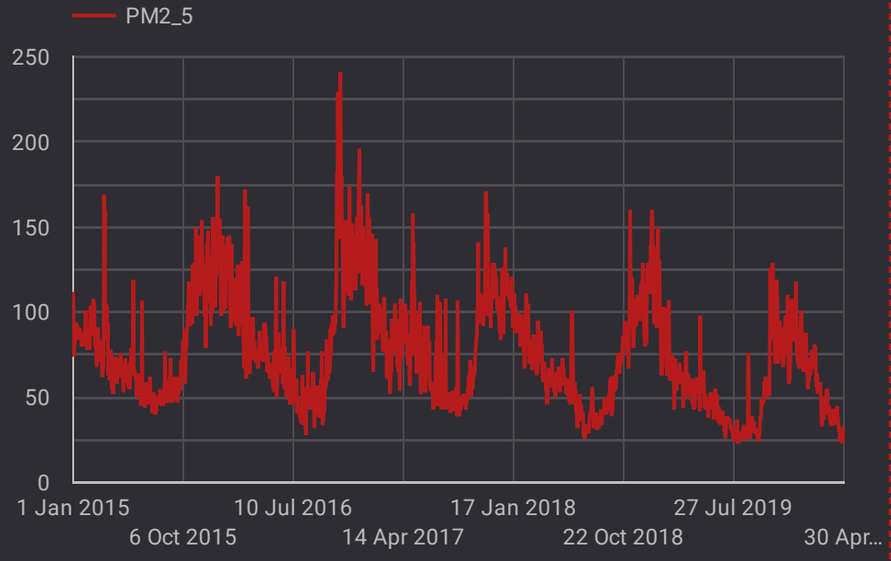
1. PM 2.5
2. PM 10
3. O3
4. NO2
5. SO2
6. CO

Air Quality Index (2015-2020)



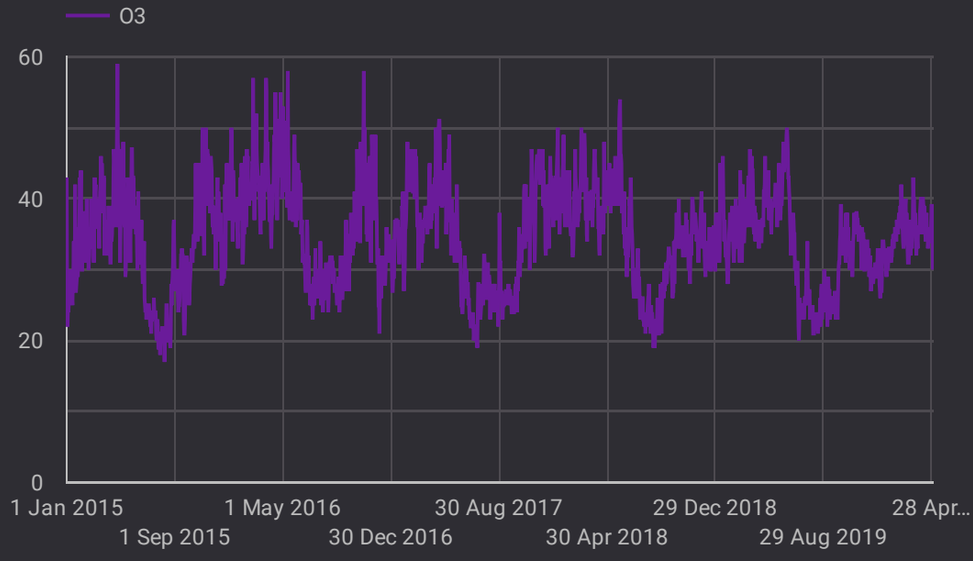
Showing huge drop in Last few months due to lockdown in India.

PM 2.5



Showing a good amount of drop in last few months due to lockdown in India

O3 (Ozone)



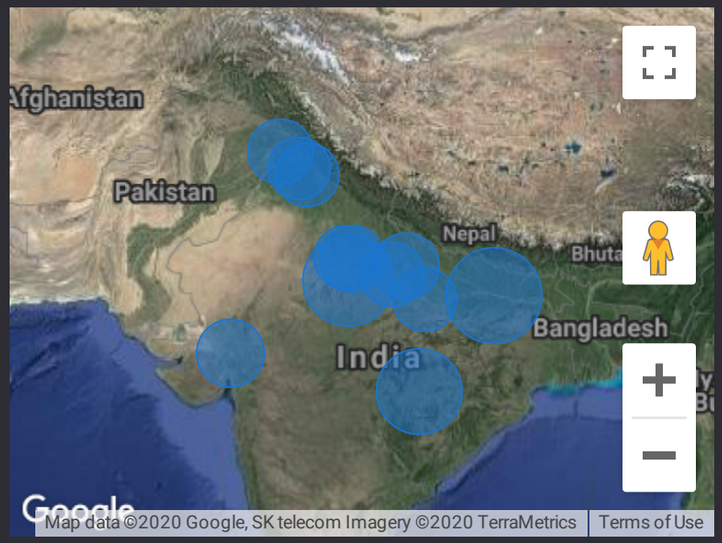
Showing a little drop in last few months due to the lockdown in India.

4. Death In India Due To Air Pollution

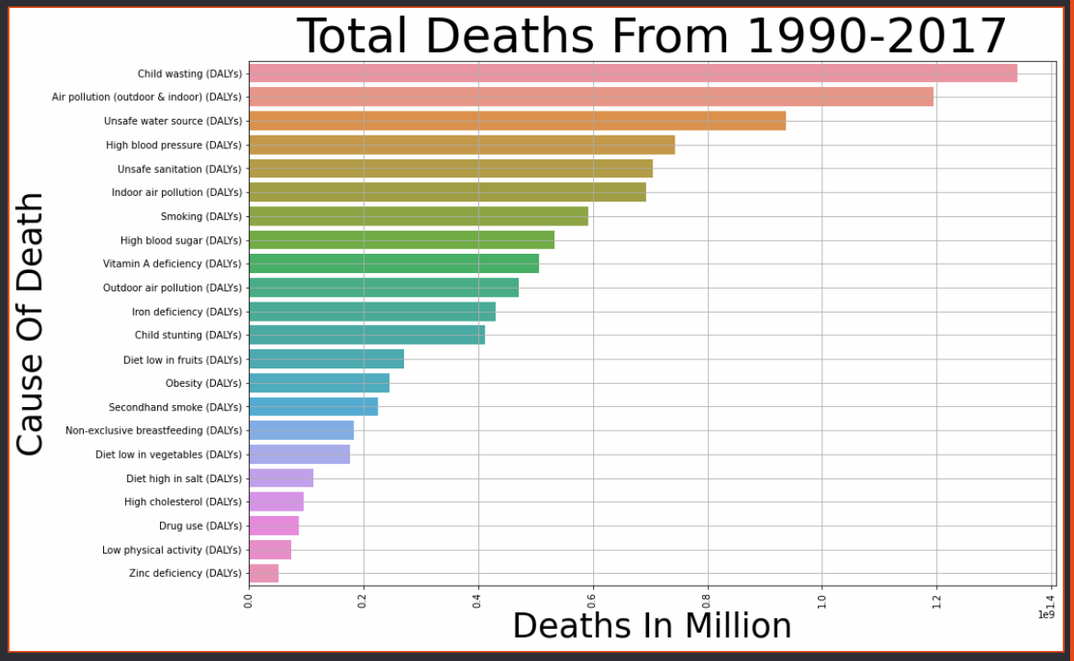
In India, Air pollution contributes to the premature deaths of 2 million Indians every year.

Urban populations are more exposed to suffer the effects of air pollution and, in this context, people who are already ill are particularly vulnerable, as are children and the elderly.

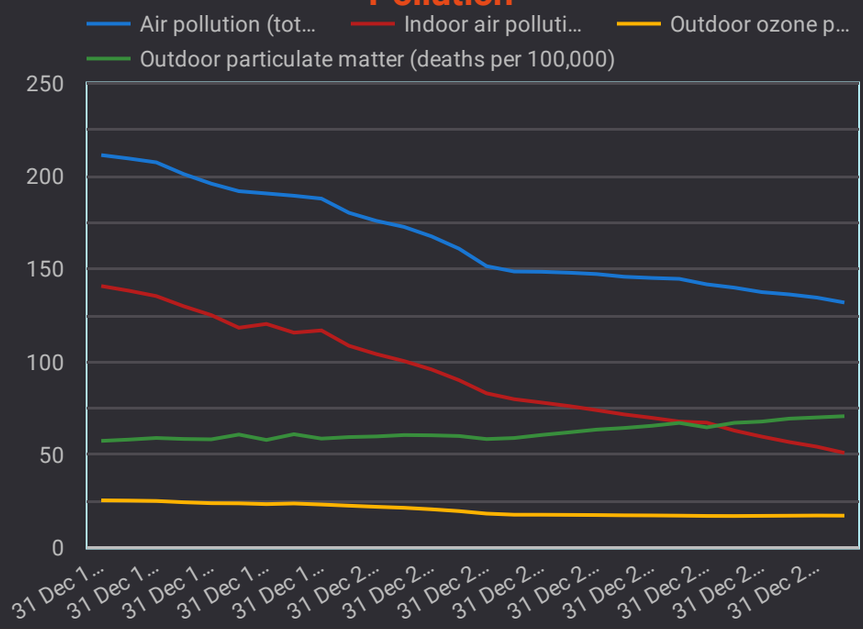
Top Polluted Cities In India



From the below graph we can see that Air Pollution comes in the second place in terms of Total Death (1990-2017) from different causes



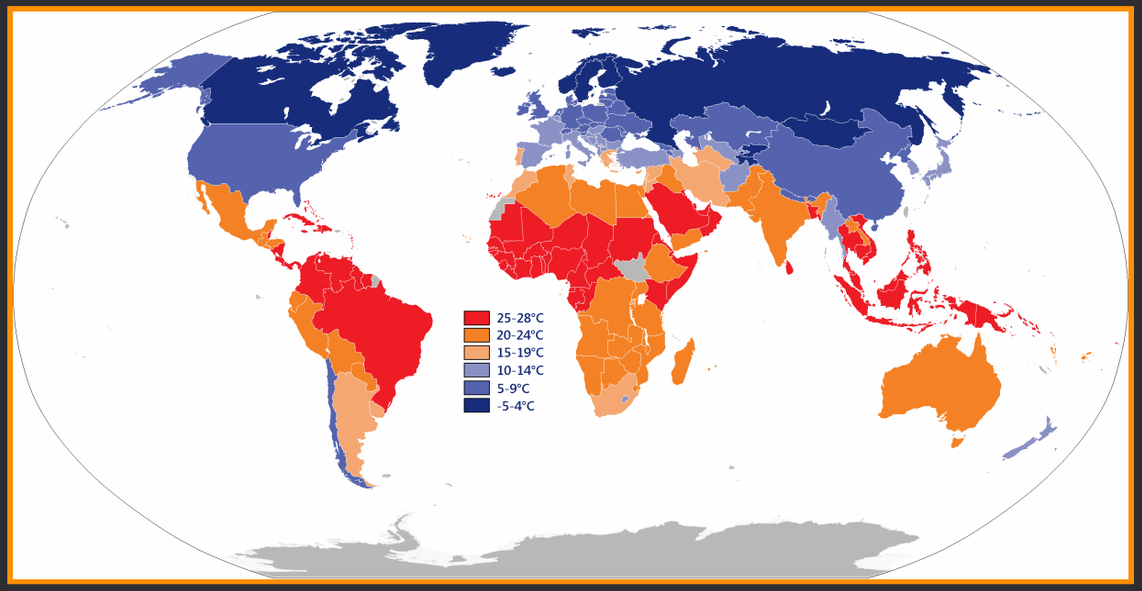
Death Due To Different Air Pollution



5. Rise In Temperature

Increase of Air Pollution is one of the main reason for the increase of the temperature.

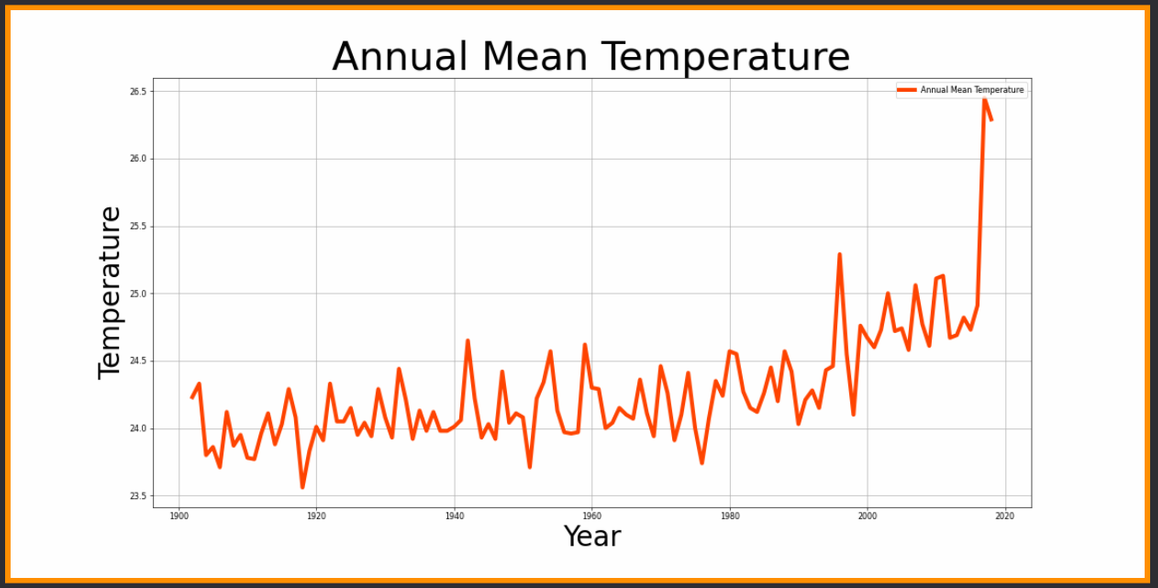
Burning fossil fuels releases gases and chemicals into the air. And in an especially destructive feedback loop, air pollution not only contributes to climate change but is also exacerbated by it. Air pollution in the form of carbon dioxide and methane raises the earth's temperature.



Annual Mean Temperature Data Of India

	YEAR	ANNUAL
1.	31 Dec 1901	24.23
2.	31 Dec 1902	24.33
3.	31 Dec 1903	23.8
4.	31 Dec 1904	23.86
5.	31 Dec 1905	23.71
6.	31 Dec 1906	24.12
7.	31 Dec 1907	23.87
8.	31 Dec 1908	23.95

1 - 100 / 117



6. Rise In Global Sea Level

The causes of global sea level rise can be roughly split into three categories:
(1) thermal expansion of sea water as it warms up
(2) melting of land ice
(3) changes in the amount of water stored on land

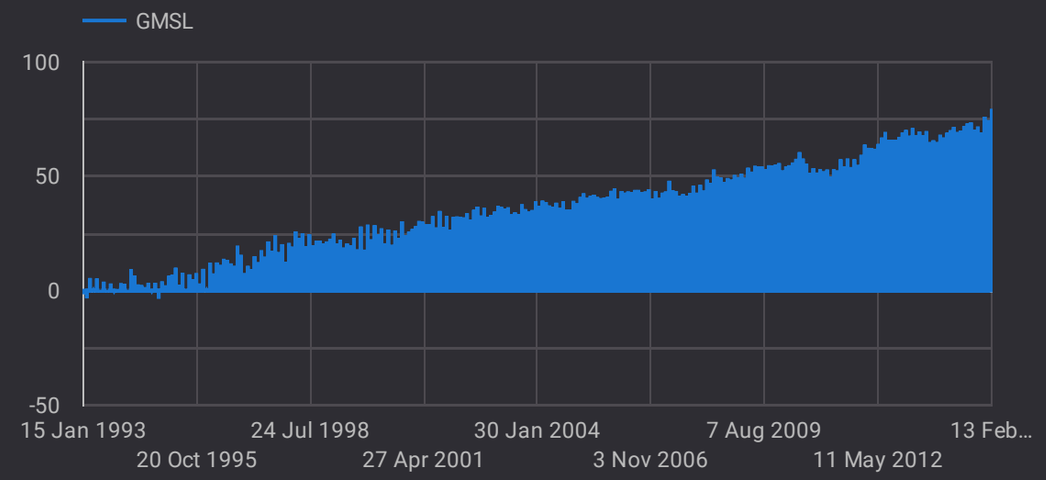
When sea levels rise as rapidly as they have been, even a small increase can have devastating effects on coastal habitats farther inland, it can cause destructive erosion, wetland flooding, aquifer and agricultural soil contamination with salt, and lost habitat for fish, birds, and plants.

Global Mean Sea Level Data

	Date	GMSL
1.	15 Jan 1993	-1.6
2.	15 Feb 1993	-3.4
3.	15 Mar 1993	5.5
4.	15 Apr 1993	0.1
5.	15 May 1993	5.3
6.	15 Jun 1993	0.2
7.	15 Jul 1993	3.9
8.	15 Aug 1993	0.2

1 - 100 / 266

Rise Of Global Mean Sea Level



Rise of Sea Level In India

The rise of Sea Level had raised a big question in front of our Country that "how to counter the rise of sea level."

Our Country constitutes of 14.2 % of coastal district with 43230 km² area of coastal wetlands.

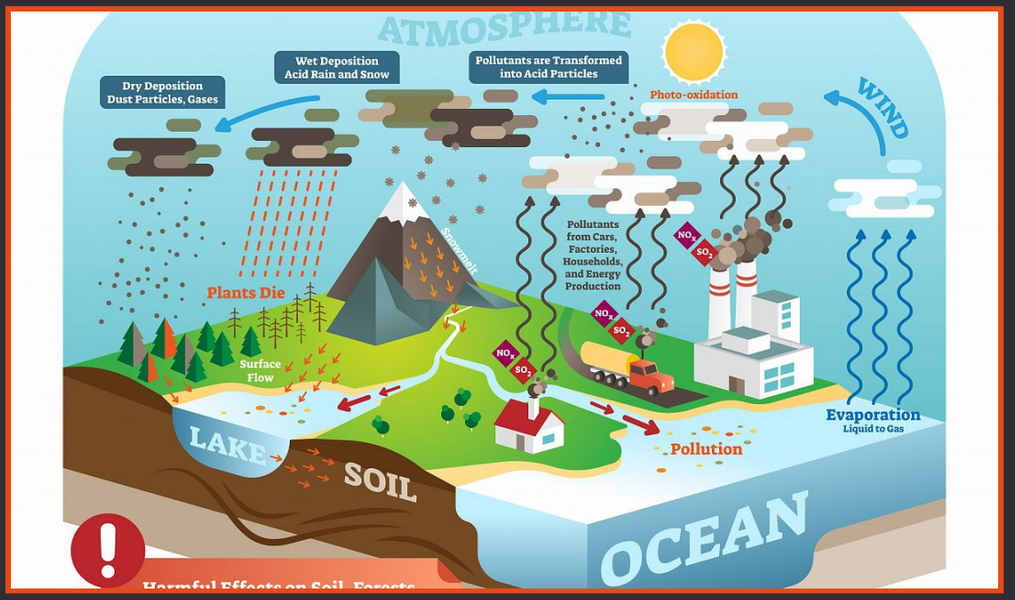
Sea level along the Indian coast has risen by 8.5 cm in the last five decades. During the study held from 2003-2013, it experienced sea level rise at a rate of 6.1 mm/year.

The studies shows, the impact of rise in sea level is concentrated in Mumbai, Kolkata, Odisha, coastal Gujarat, as well as Chennai and Kochi.

Some More Effects Of Air Pollution In Our Lives

Acid Rain

Acid Rain is a term used for rain with a pH of less than 5.6. The acid characteristic of water is measured by pH (the negative logarithm of the hydrogen ion activity of the medium). The normal pH range is 6.5 to 7.5. Below pH 6.5 indicates acidic character. If the pH of rainfall is 6, it is considered as only 'mildly' or 'weakly' acidic. This level of acidity is not considered dangerous. The 'normal' rain is mildly acidic showing a pH value of around 6. This mild acidity is due to dissolution of CO2, that forms carbonic acid and due to the presence of chemicals produced by lightening and volcanic activity. When the falling rain exhibits a pH value of less than 5.6, it is termed "acid rain". Further drop in the pH from 'around 6 pH' to less than pH 5.6 occurs when more acid forming gases present in the polluted air gets dissolved in the falling rain. Acid Rain represents one of the major consequences of air pollution. It has adverse effect on forest, agriculture, soil, microorganisms, wild animals and even buildings. The polluted air generally contains gases like Sulphur dioxide and nitrogen oxide at higher than normal concentrations. Other chemical present in the polluted air consists of hydrochloric acid vapours, phosphoric acid, formic acid, formaldehyde, carbon mono oxide, carbon dioxide, sulphuric acid and nitric acid. When rain falls through the polluted air different gases and vapours gets dissolved in the falling rain making it more acidic than natural rain.



1> What are some direct effects of acid rain on humans?

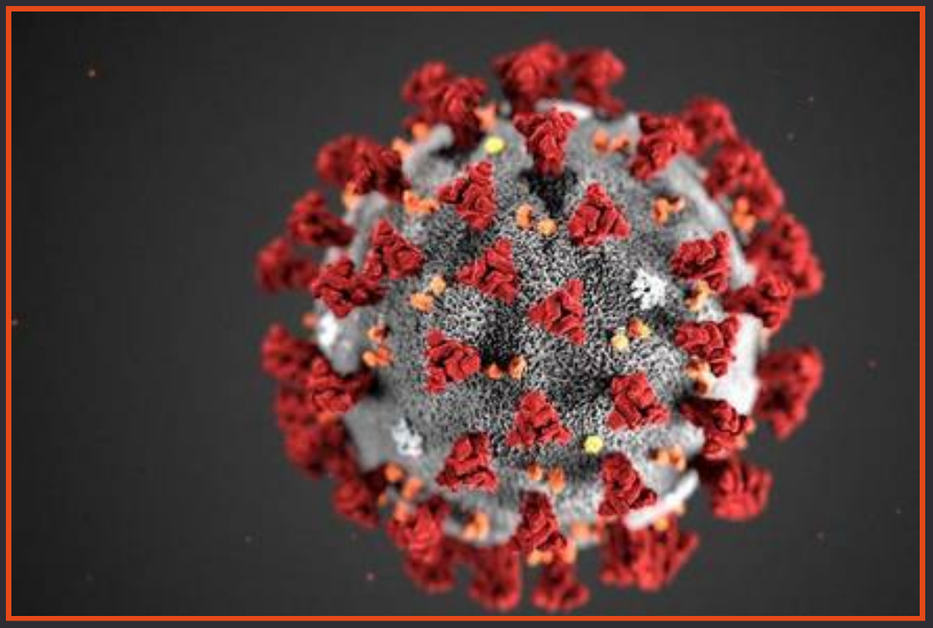
Sulfur dioxide & nitrogen dioxide can cause problems such as asthma, dry coughs, headaches, eye, nose, and throat irritations. Acid rain can also damage or irritate our lungs. It can cause liver problems and can give you diarrhea.

2> How are we trying to fix acid rain?

A great way to reduce acid rain is to produce energy without using fossil fuels. Instead, people can use renewable energy sources, such as solar and wind power. Renewable energy sources help reduce acid rain because they produce much less pollution.

Post Corona

What is Corona Virus ?



As per WHO, Coronavirus disease (COVID-19) is defined as an infectious disease caused by a newly discovered coronavirus.
Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness.

It is tough to estimate when corona will end. There's a good chance the coronavirus will never go away.
Even after a vaccine is discovered and deployed, the corona virus will likely remain for decades to come, circulating among the world's population.
Experts call such diseases endemic — stubbornly resisting efforts to stamp them out. Think measles, HIV, chickenpox.

What preventative measures one should take against the coronavirus disease

To prevent infection and to slow transmission of COVID-19, do the following:

1. **Wash your hands regularly with soap and water, or clean them with alcohol-based hand rub.**
2. **Maintain at least 1 metre distance between you and people coughing or sneezing.**
3. **Avoid touching your face.**
4. **Cover your mouth and nose when coughing or sneezing.**
5. **Stay home if you feel unwell.**
6. **Refrain from smoking and other activities that weaken the lungs.**
7. **Practice physical distancing by avoiding unnecessary travel and staying away from large groups of people.**

Corona Virus In India

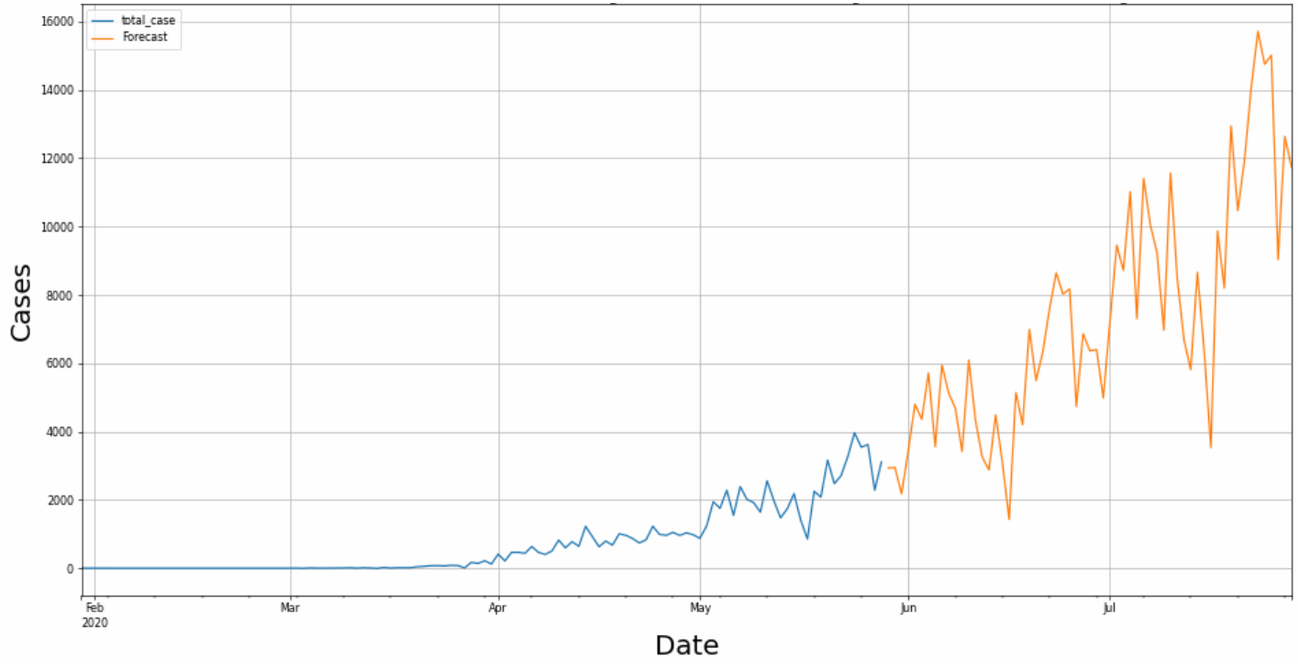
India currently has the largest number of confirmed cases in Asia with number of cases breaching the 185,000 mark on 31 May 2020. India's case fatality rate is relatively lower at 3.09%, against the global 6.63% as of 20 May 2020. Six cities account for around half of all reported cases in the country – Mumbai, Delhi, Ahmedabad, Chennai, Pune and Kolkata. As of 24 May 2020, Lakshadweep is the only region which have not reported a case.

The outbreak has been declared an epidemic in more than a dozen states and union territories, where provisions of the Epidemic Diseases Act, 1897 have been invoked, and educational institutions and many commercial establishments have been shut down. India has suspended all tourist visas, as a majority of the confirmed cases were linked to other countries.

I have forecast the rise of daily active COVID-19 cases in India as per data available. As per the forecast, the total active cases in the month of June- July'20 in India will be more then 4 Lakhs.

Forecasting The Active Covid-19 Cases in India

Rise Of Daily Active Cases In India (Formula : Daily Case - (Daily Death + Daily Cured))



1. Air Pollution In India

During the lockdowns we have seen a great reduction in the Air Pollution. But this can not be the case for eternity, the time will come when every thing will come back to normal. The Industries, vehicles, etc. will again come in the path and the rise of pollution will not only increase but will increase at higher rate from the normal state.

During the lockdowns we have seen great images went viral which showed Himalayan ranges visible for the first time in 30 years from the Singhwahini village in Bihar which is at a distance of 150 km due to decrease in Air Pollution level. Not only this happen in Singhwahini but in many different parts of India.

The poor and most vulnerable will suffer most from both the health impacts and the economic crisis. Cleaner air for a few months may be a tiny silver lining to COVID-19's dark clouds, but will do little in the long run to solve the problem of outdoor air pollution that kills more than four million people every year. For that we need to kick our habit of burning coal, oil and gas.

But world leaders now have a chance to plot a different, cleaner future.

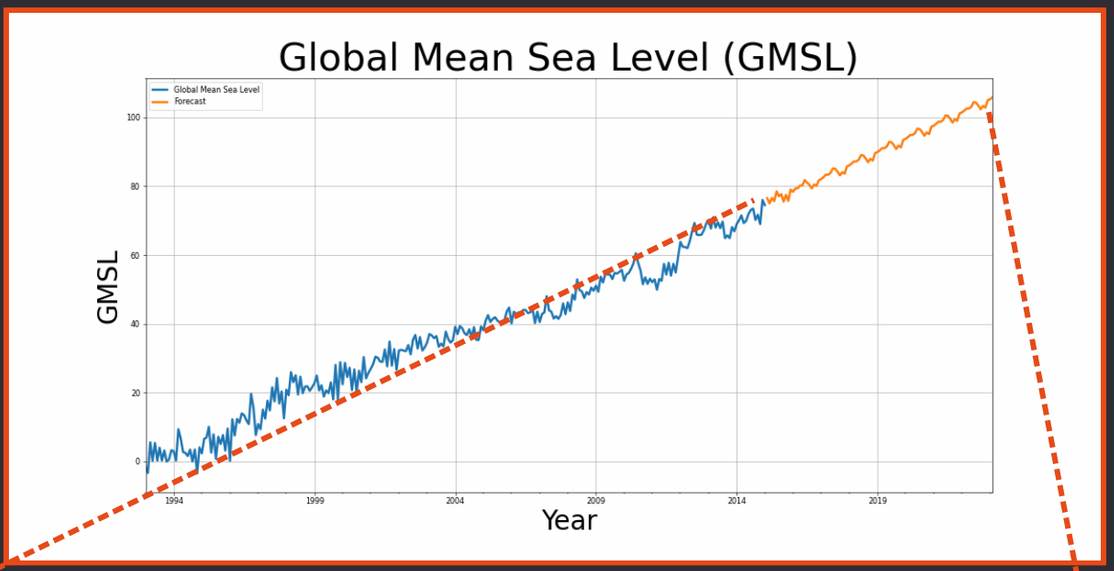
As lockdowns have shut down factories and kept cars off the roads, global pollution levels have fallen drastically. According to this year's Air Quality Index, cities with historically high levels of PM2.5 have witnessed a dramatic drop in pollution since enforcing lockdowns; 44% in Wuhan, 54% in Seoul and 60% in New Delhi.

2. Rise In Sea Level

Due to the increase in the the air pollution, the temperature will increase which will leads to the increase in sea level.

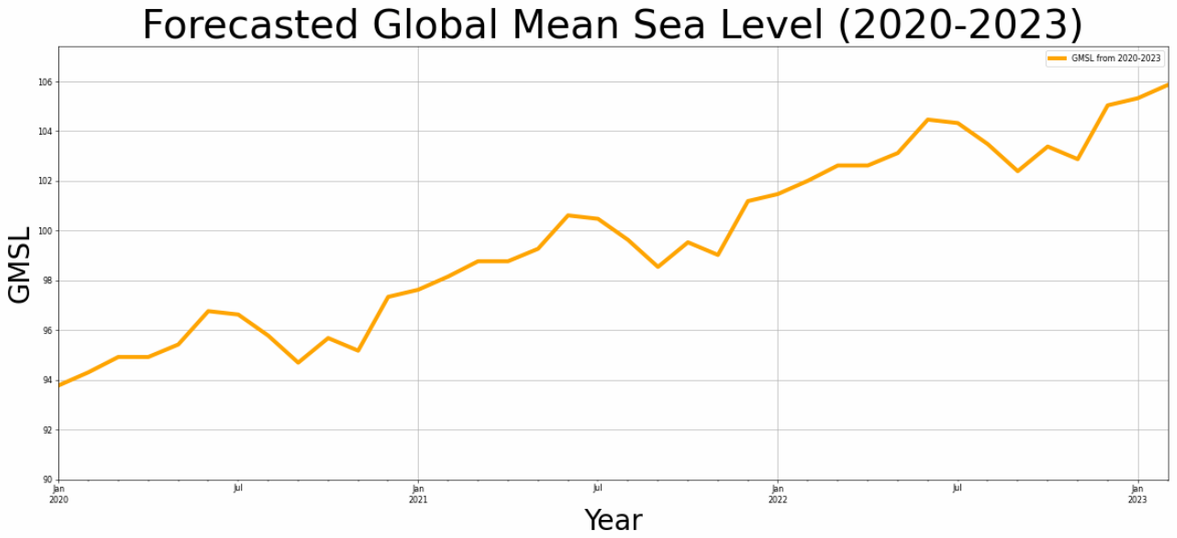
By 2050, according to a new study 36 million Indians may be affected by flooding and inundation due to sea level rise.
The impact will be concentrated in Mumbai, Kolkata, Odisha, coastal Gujarat, as well as Chennai and Kochi.

300 million people globally live on land that will flood at least once a year by 2050 due to sea level .



Forecast

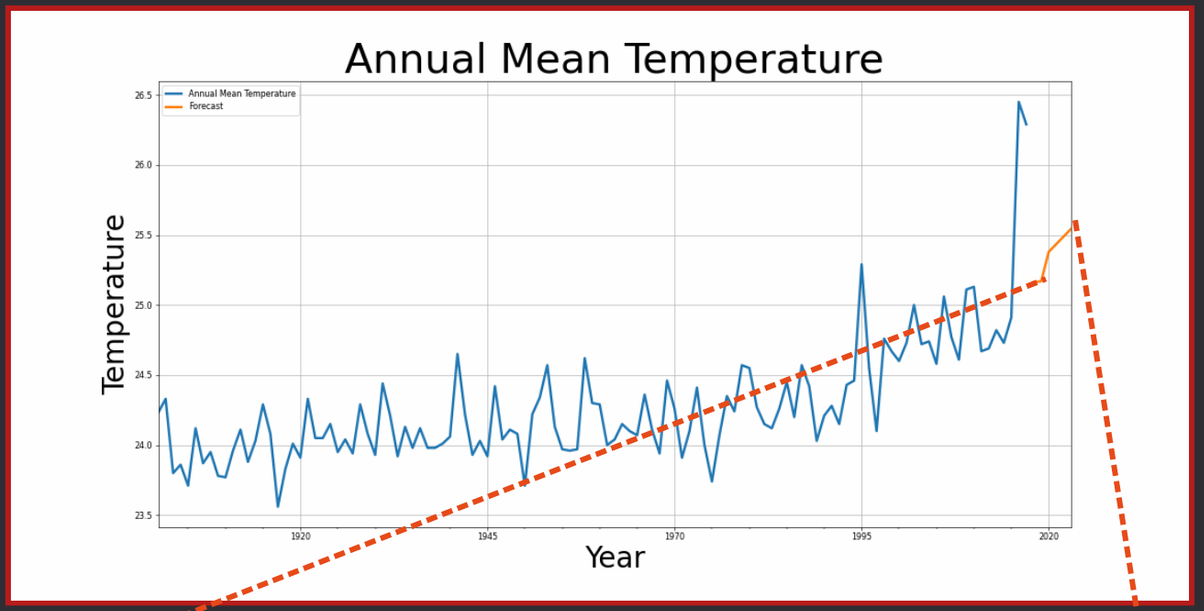
In forecasted GMSL, we can see that there can be an increase of 12 mm sea level from 2020 to 2023



2. Annual Mean Temperature In India

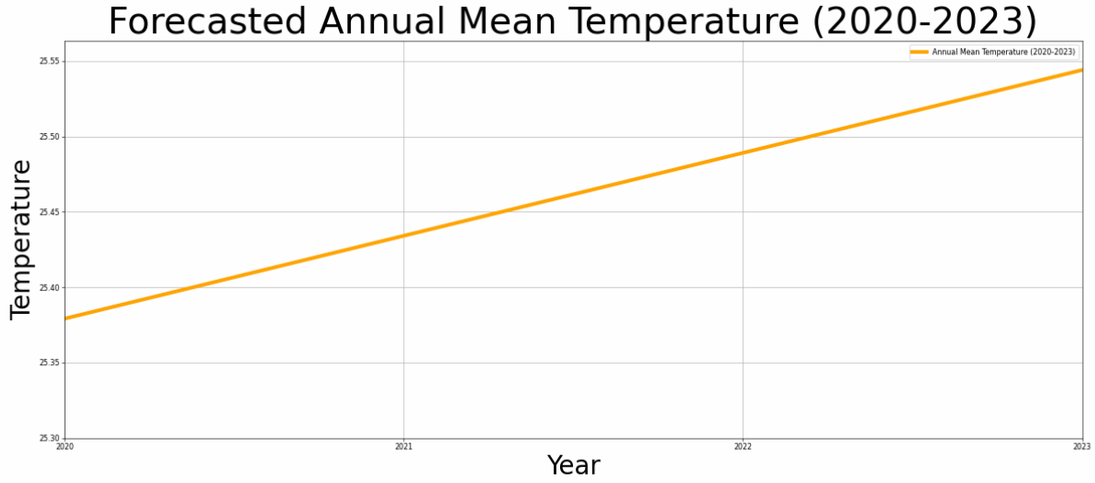
During Corona lockdown period, there have been some drop in pollution. This drop was just a little to Nature, this will not do much to control the Temperature.

In the graph, we can see that in last 100 years there has been a little increase till 1995. But after 1995, in graph we can see the great increase in the Annual Mean Temperature.



Forecast

In forecasted graph, we can see that there will be an increase of 0.28 degree Celsius from 2020 to 2023

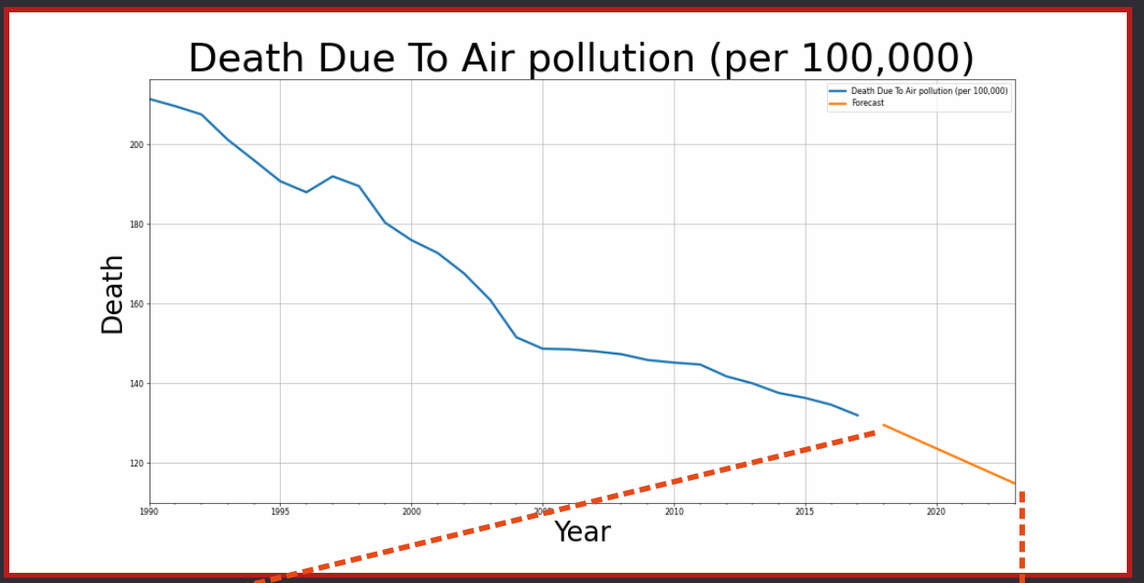


3. Death Due To Air Pollution In India

Death due to Air pollution is in 2nd place just below Child Wasting (low weight for height) in the graph shows number of deaths in India.

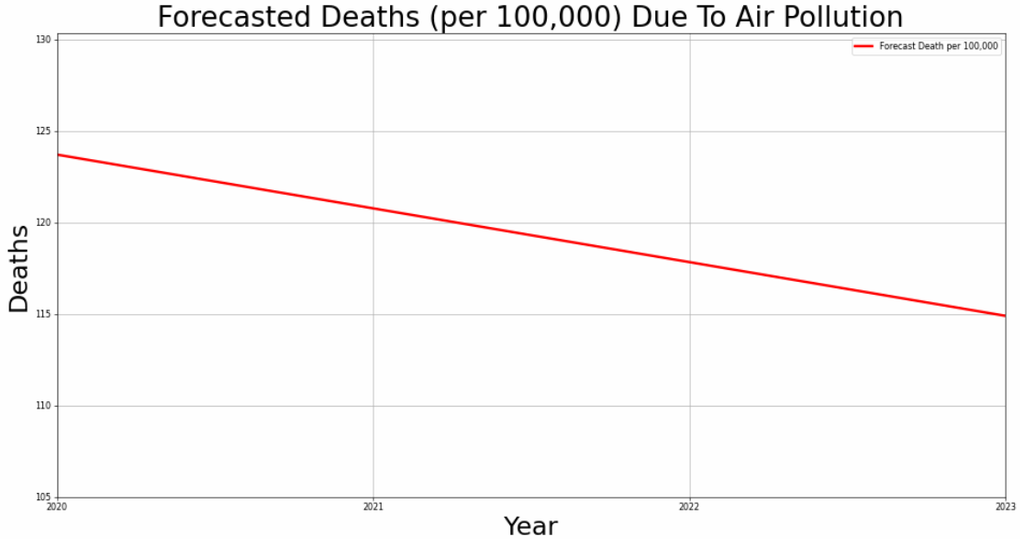
Air pollution contributes to the premature deaths of 2 million Indians every year.

In the graph, we can see there has been a great drop in last 2.5 decades. The reason in drop of death can be the laws from the government and rise in good facilities.



Forecast

In the forecasted graph, we can see a drop of 8 lakhs death in the coming 3 years



Summary

WHO Director-General Tedros Adhanom Ghebreyesus stressed “It is still possible to control the virus, with effort. The trajectory is in our hands, and it's everybody's business, and we should all contribute to stop this pandemic. The Coronavirus may never go away and populations will have to learn to live with it just as they have HIV”

The massive global response to COVID-19 leads us to the question: What can we take from the pandemic to tackle the pollution crisis & implement for further progress?

We all have a role to play, Air Pollution or in other words-Climate change and COVID-19 are two very different challenges, but they do have some key things in common as both are globally spread, they do not respect national boundaries and both require countries to work together to find solutions.

The global community has shown that they can work together, even small personal actions when put together, like physical distancing, can make a big difference, helping us to overcome huge challenges.

We as a one world have to unite behind the science. Both climate change caused by air pollution and the COVID-19 pandemic require us to unite behind the science and not play politics with people’s lives, means responding to the challenge at the suitable scale and treating a crisis with the urgency that’s required.

A good education is one of the most valuable tools to fight climate change, because it provides younger generation with the skills and knowledge they need to create a better tomorrow.
Everyone from this endemic should learn:

“ONE WORLD, ONE NATION, ONE LIFE, JOIN HANDS TOGETHER”