

Impact of air pollution on human health in Kabul City

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Abstract- Clean air is a secret weapon for tackling the climate crisis, saving lives, fostering inclusive societies and improving childhood development.

From contaminating our environment to damaging our health, poor air quality is a major global challenge. No one is immune to the negative air pollution effects, but many think this shared burden doesn't affect their lives.

Clean air is everyone's business and air pollution are preventable. The solutions to this pressing issue are also Key to tackling the climate crisis, fostering inclusive societies and improving childhood development. By working together, we have a golden opportunity to transform our approach to one of the great hidden killers.

Afghanistan's capital and most populated city, Kabul, with a 1,028 km² area and 4.435 million people. It indicating that there are 4.863 inhabitants per square meter.

In addition to the fact that the population of Kabul city is more; The majority of its people are careless about preserving the environment. They still using a burn barrel, wood stove, or fire-pit for your trash, burning garbage and etc.

Because of this I select the "Impacts of air pollution on human health in Kabul City" for me publish Paper, the method which I used to completed this research paper was searching the different Journal, PDF researches, and book library in Kabul. Also, the current research I interview medicine (Doctors) and Hospital Officers Like Infectious Diseases Hospital Doctors, Jamhuriat Hospital, Spokesperson of the Ministry of Public Health of Afghanistan and others, in addition, I collected the Date from Islamic emirate of Afghanistan National Environmental Protection website.

The result of this study shows Kabul city weather is contaminated based on various factors that are detailed in this article.

Also, this air pollution has caused thousands of people in the city of Kabul to suffer from dangerous diseases every year, unfortunately, some of them reach the point where they lose their lives.

Keywords: Air Pollution, Human Health, Kabul City, Diseases.

I. INTRODUCTION

1.1 Kabul City

The capital and largest city of Afghanistan, Kabul (pronounced [k'bl]), is also its economic and cultural hub. The city is located 5,900 feet (1,800 m) above sea level in the Kabul River Valley, which is tucked between two angular Hindu Kush Mountain ranges.

Over the course of its 3,500-year history, numerous empires have fought over the city because of its important location along the trade routes between Southern and Central Asia. The primary approaches through the Khyber Pass from Pakistan and India, as well as the mountain passes from the north and south, all lead to Kabul. The Persian Empire, Alexander the Great, Muslim Arabs, Turkic peoples, the Mongols, the British Empire, and the Soviet Union were a few of the invaders that occupied Kabul over the centuries.

In 2001, the economy greatly improved. Insurmountable obstacles include crime, corruption, the capacity of the administration, and the reconstruction of infrastructure damaged by conflict. The City of Light Development is only one of many elaborate ideas for Kabul's renovation that have been made possible by foreign help.

1.2 Climate and Average Weather Year-Round in Kabul Afghanistan

The winters in Kabul are extremely cold, snowy, and partly cloudy, while the summers there are hot, dry, and clear. The average annual temperature ranges from 24°F to 93°F, rarely falling below 14°F or rising over 99°F.

The best time of year to visit Kabul for hot-weather activities, based on the beach/pool score, is from mid-June to late August.

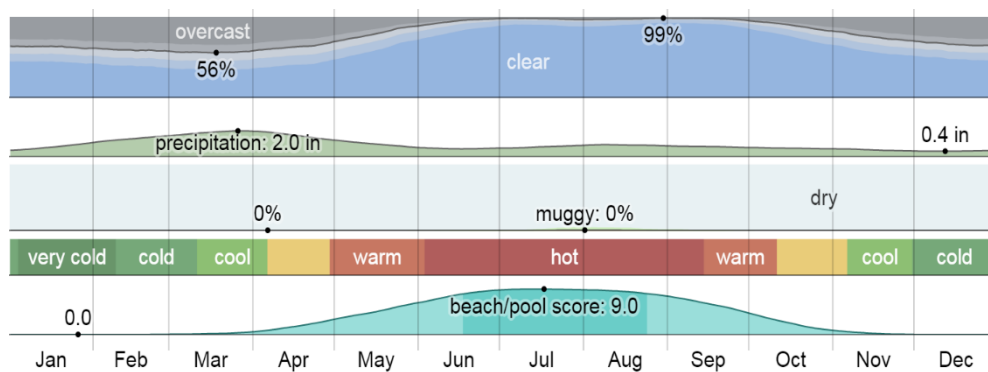


Fig1: Climate in Kabul

1.3 Average Temperature in Kabul

Between May 25 through September 21, which is 3.9 months, there is a hot season with daily maximum temperatures that typically exceed 83°F. In Kabul, July is the hottest month of the year, with an average high of 93°F and low of 67°F.

The cold season, with an average daily high temperature below 53°F, lasts for 3.0 months from December 4 to March 6. The coldest month of the year in Kabul is January, with average lows of 25°F and highs of 44°F.

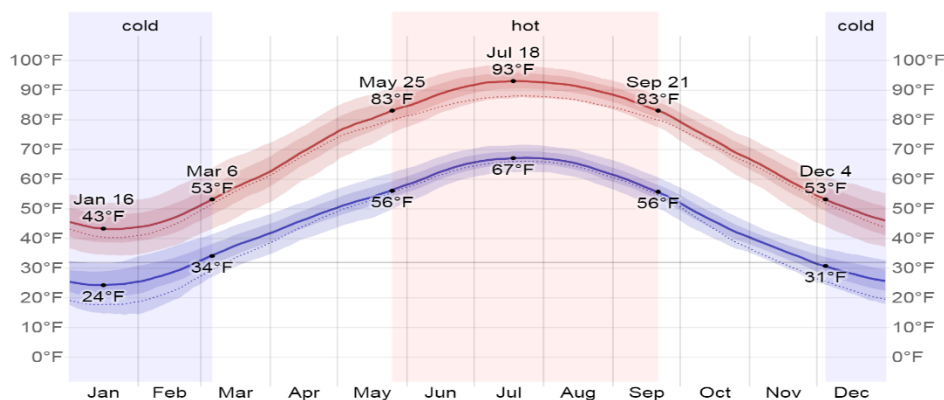


Fig2: Average High and Low Temperature in Kabul

1.4 Cloud in Kabul

In Kabul, there is a substantial seasonal change in the average percentage of the sky that is cloudy throughout the course of the year. The brighter season starts about May 13 and lasts for 5.9 months, ending around November 11.

In Kabul, July is the clearest month of the year, with 99% of the time experiencing clear, mostly clear, or partly overcast skies.

In Kabul, the cloudiest month of the year is March, when the sky is overcast or mostly cloudy 43% of the time on average. The cloudier part of the year starts around November 11 and lasts for 6.1 months, ending around May 13.

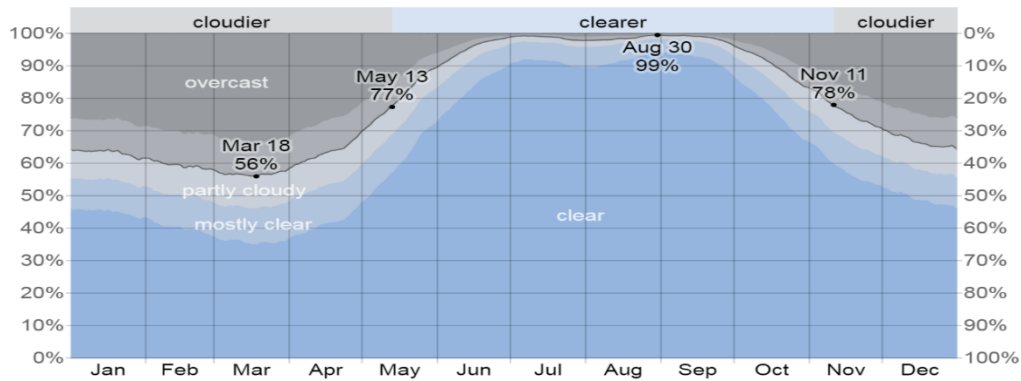


Fig3: Cloud Cover Categories in Kabul

1.5 precipitation

A day that has at least 0.04 inches of liquid or liquid-equivalent precipitation is considered to be wet. In Kabul, the likelihood of rainy days fluctuates throughout the year.

In the 2.9-month wetter season, which runs from February 5 to May 2, there is a larger than 14% probability that any given day would be rainy. With an average of 6.6 days with at least 0.04 inches of precipitation, March has the most rainy days in Kabul.

From May 2 to February 5, or 9.1 months, is the dry season. November has an average of just 2.0 days with at least 0.04 inches of precipitation, making it the month with the fewest rainy days in Kabul.

Rainy days are divided into three categories: those with only rain, those with only snow, and those with both. Based on this classification, the most common form of precipitation in Kabul changes throughout the year.

The one weather that occurs more frequently between January 31 and December 30 is rain. The month with the most rain in Kabul is March, with an average of 6.2 days.

The 1.1 months with the highest frequency of mixed snow and rain are from December 30 to January 31. The month with the most days of mixed snow and rain in Kabul is January, with an average of 1.5 days.

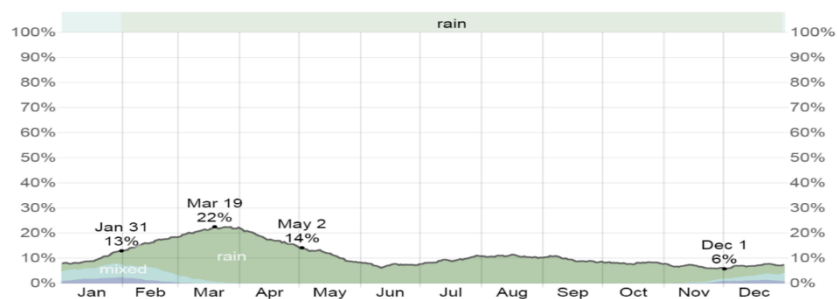


Fig4 Precipitation

II. Methodology

The method which I used to completed this research paper was searching the different Journal, PDF researches, and book library in Kabul. Also, the current research I interview medicine (Doctors) and Hospital Officers Like Infectious Diseases Hospital Doctors, Jamhuriat Hospital, Spokesperson of the Ministry of Public Health of Afghanistan and others.

In addition, I collected the Date from Islamic emirate of Afghanistan National Environmental Protection website.

III. Results and discussions

A few centuries ago, people did not know more about the importance of the environment or clean weather, nor what actions they took to prevent the destruction of the environment, they believed that the environment, which is a blessing of God for creatures, is never harmed, nor is man involved in it.

Now a day most part of the world population is facing different problems related with the nature and they are studying the solutions to save the nature and global problems, but on the second hand we even today do not try to understand our local problems related to the nature. [1]

Climate change specially air pollution impacts human health in both direct and indirect ways. Extreme heat waves, rising sea level, changes in precipitation resulting in flooding and droughts, and intense hurricanes can directly cause injury, illness, and even death. Through environmental changes, the consequences of climate change can also have an indirect impact on health. For instance, respiratory and cardiovascular problems may be negatively impacted by worsening air pollution levels.

Temperature and precipitation variations can affect the survival, dispersal, and behaviour of insects and other animals, which may modify the transmission of infectious diseases. Increases in precipitation, storm surge, and sea temperature may cause an increase in illnesses associated with drinking water. In addition to affecting food safety, climate change can expose people to tainted foods that can cause foodborne illnesses. Climate change can also have an impact on one's wellbeing and mental health. [2]

Unfortunately, the problems caused by the environment have remained and have not been solved in the backward countries, especially in Afghanistan, which, despite the natural problems of the environment, has suffered greatly from the effects of almost 40 years of wars. Even in some reliable media, reports have been published that problems caused by the environment are more dangerous in Afghanistan for people than wars. [3]

To ensure a sustainable development we need to know Environmental effects on human health, global warming, climate changes and the solution to problems caused by the environment. [2] That's why I became interested in writing a research paper regarding the effects of the environment on human health in Afghanistan.

I will attempt to change Afghanistan's air pollution issue in this article, as well as discuss the main air pollutants, illnesses brought on by air pollution, and potential solutions.

The leading environmental risk to public health worldwide is air pollution, which is thought to be the cause of 7 million annual preventable deaths. Since all main pollutants have an effect on the climate and the majority of them come from the same sources as greenhouse gases, air pollution and climate change are intimately related. Enhancing air quality will help our environment, economy, and health.

According to the UN environmental program report in 2019, 99% of the world population was living in places where the WHO's strictest 2021 air quality guideline levels were not met.

Even though air pollution is a global problem, it disproportionately affects those living in developing nations and particularly the most vulnerable, such as women, children and the elderly.

Air pollution is a major global health crisis and causes one in nine deaths worldwide. Exposure to PM2.5 reduced average global life expectancy by approximately one year in 2019.

The deadliest illnesses linked to PM2.5 air pollution are stroke, heart disease, lung disease, lower respiratory diseases (such as pneumonia), and cancer. High levels of fine particles also contribute to other illnesses, like diabetes, can hinder cognitive development in children and also cause mental health problems.

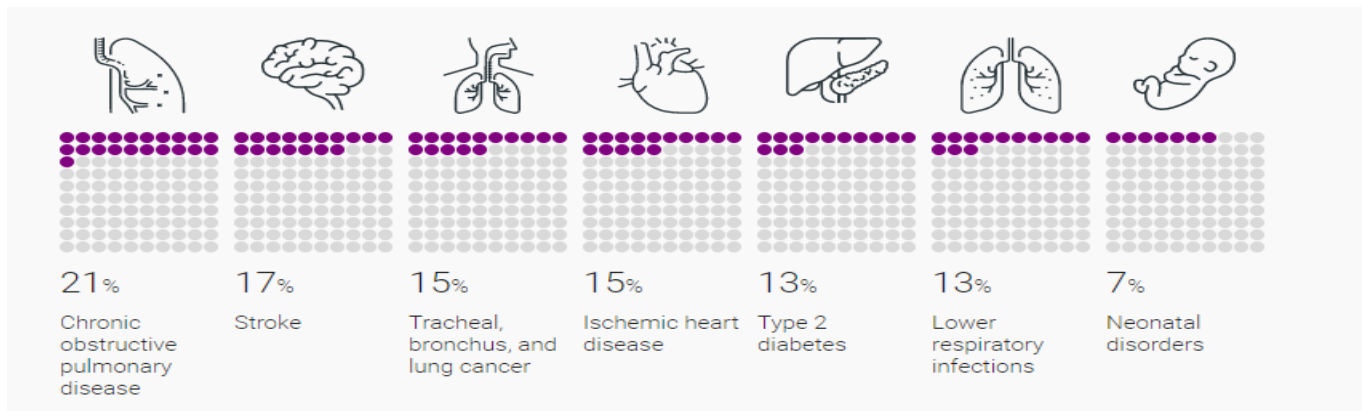


Fig6: Percent of deaths from each disease attributable to fine particle outdoor air pollution in 2019

According to World Health Organization (WHO) reported the consequence of air pollution as an infamous public health issue which led to premature deaths of 2 million annually could be linked to the effects of urban outdoors air pollutant and indoor pollutant. (WHO, 2006). Pollution, an unnatural destruction by man and naturally caused threats to the natural world, is a problem world is facing today.

The number of individuals is growing rapidly, due to the expansion of the world population. Emissions are accepted as an issue, not for a group but for everyone. The pollution of the environment includes pollution of air, water and land (or soil). Poor are most vulnerable group affected by Air and climate pollutants however, poor are not specifically victims of air pollution society Generally speaking, reducing the risks of home pollution from smoky wood and coal cook stoves could aid in lowering the burden of disease linked to poverty.

Although not the only ones impacted, the poor are particularly at danger from the health effects of air and climate pollutants. For example, lowering the risks of home pollution from smoky biomass and coal cook stoves can reduce the burden of diseases associated with poverty. Urban air pollution is more prevalent in many cities, especially those with middle- and high-income populations as well as those with unpleasant districts. Therefore, SLCP decreases may significantly improve the health of persons in lower income categories, particularly children and the elderly (World Health Organisation, 2012).

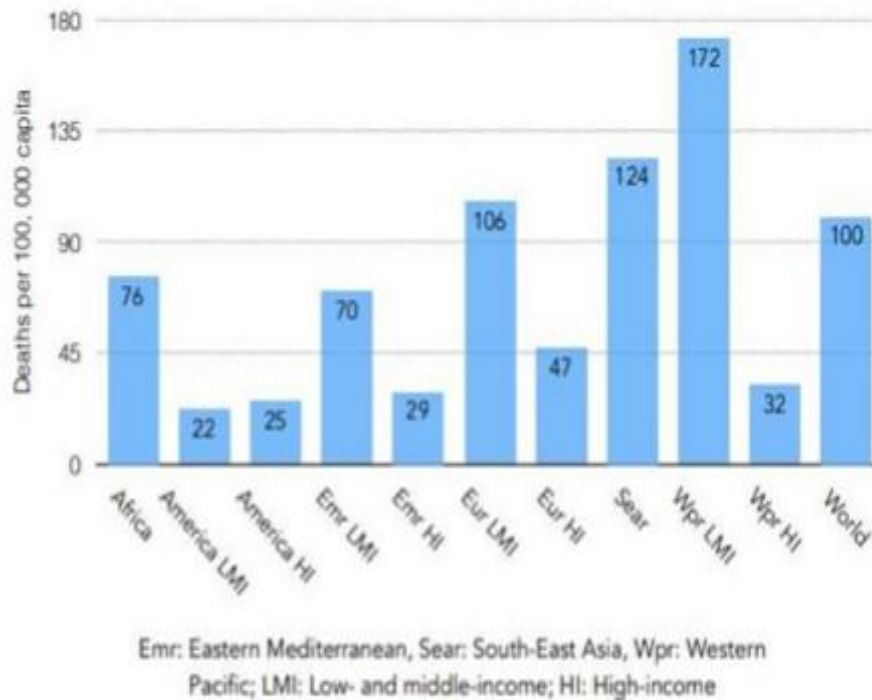


Fig7: Deaths per capita attributable to the joint effects of household air pollution and ambient air pollution by region, 2012 (C. Dora, WHO)

After cigarette use, air pollution ranks second in terms of causes of fatalities from noncommunicable diseases (NCDs) (Fig. 1). In 2018, poor diets, cigarette use, harmful alcohol consumption, and physical inactivity were all identified as risk factors for non-communicable along with indoor and outdoor air pollution.

According to figures from 2016 (3), more than 5 million of the 7 million premature deaths annually brought on by indoor and outdoor air pollution are due to NCDs. More than 550 000 deaths in the WHO European Region in 2016 were attributable to the combined impacts of home and ambient air pollution, with over 500 000 deaths linked to ambient air pollution and more than 50 000 deaths linked to household air pollution (4-6).

The main NCDs associated with air pollution are ischemic heart disease (IHD), stroke, chronic obstructive pulmonary disease (COPD), and lung cancer. According to data from 2012, 2.8 and 3.7 million NCD deaths globally were caused by ambient and household air pollution, respectively. There were 120 000 NCD fatalities in the WHO European Region from IHD, stroke, COPD, and lung cancer, and over 480 000 deaths related to ambient and indoor air pollution, respectively.

2.1 Air quality in Kabul

The capital and largest city of Afghanistan, Kabul is situated in the eastern portion of the country. Kabul, the commercial hub of Afghanistan, has a population of about 4.2 million people and is rapidly urbanising and expanding its infrastructure. As a result, Kabul is experiencing some significant pollution-related problems, with year-round high PM_{2.5} levels.

Despite having a backdrop of beautiful mountain ranges and other geographical traits, Kabul as a city is suffering the effects of this rapid urbanization, seeing some of the worst pollution levels in the world. The annual average PM_{2.5} value for Kabul in 2019

was 58.8 g/m³. This reading places it in the category known as "unhealthy," which calls for a PM_{2.5} reading of between 55.5 and 150.4 g/m³.

As the name suggests, the air quality would be extremely poor, with significant volumes of smoke, haze, and fine particulate matter infiltrating the air and harming the city's residents, even if this yearly average is on the lower end of the unhealthy range.

With a value of 58.8 g/m³ in 2019, Kabul placed 70th among the world's most polluted cities, with the heavily polluted city of Ghaziabad, India, holding the top spot. Because Kabul readings were the only ones collected from any Afghan city in 2019, they were high enough to rank Afghanistan as the fourth-most polluted nation in the world, behind Bangladesh, Pakistan, and Mongolia. As a result, Kabul has extremely filthy air that poses risks to all facets of the population.

2.2 Main causes of pollution in Kabul

Whilst it may be undergoing rapid urbanization, there are still many parts of the city and people without proper access to electricity and other fundamental aspects of life. Due to this, many citizens resort to the burning of various materials to provide energy for cooking, small businesses and heating.

It is commonly known that people have begun to rely on materials like plastic, rubber, wood, and coal for their energy and heating needs, with the quick increase in pollution during the colder months serving as evidence of this trend. Burning fossil fuels, organic waste like wood, and synthetic man-made materials like rubber tyres and other kinds of plastic can cause dangerously high levels of pollution to build up in the atmosphere of a city.

Other factors include several unregistered villages and construction sites, as well as numerous poorly surfaced roads that dramatically raise the amount of fine particulate matter in the air, such as PM_{2.5} and PM₁₀. These factors would all add up and compound one another, which would be visible in the extremely high pollution levels recorded throughout the year. In December 2019, PM_{2.5} levels reached a lethal 196 g/m³, which is high enough to hospitalise a sizeable portion of the population, including both healthy and ill people.

2.3 Main pollutants in Kabul's air

Due to the extensive burning of materials like plastic and rubber, Kabul's air is home to a large number of incredibly undesirable chemicals and fine particulate matter, all of which can enter the body through breathing and, in some cases, pass through the blood barrier into the blood stream, having terrible effects on people's health.

Burning plastic releases toxic gases and compounds like furans, dioxins, and polychlorinated biphenyls as well as dangerous metals like lead and mercury. These damage ecosystems and areas of vegetation while also being harmful to the environment and human health.

Other pollutants found in the air would include finely ground particles of silica and gravel dust, released from the unpaved roads and construction sites. These particles can enter into the lungs and cause scarring as well as a reduction in full respiratory function. Of note is that vehicular emission would also be playing a prominent part in year-round ambient pollution readings, with compounds such as nitrogen dioxide (NO₂) and sulfur dioxide (SO₂) all permeating the air.

2.4 Health issues associated with breathing polluted air in Kabul

In Kabul, there would be a wide range of negative health impacts that grew in direct proportion to the pollution levels observed, with months with higher PM_{2.5} readings being the most harmful. In addition to persistent chest infections and other respiratory conditions, breathing this air can cause eye, mouth, nose, and throat irritation. Bronchitis, emphysema, and exacerbations of asthma are just a few of the disorders that are grouped together under the umbrella term of chronic obstructive pulmonary disease (COPD).

Exposure to plastic fumes can cause increased rates of cancer over longer periods (similar to many other of the materials mentioned in the previous list, with a large amount of them having carcinogenic properties). The toxic chemicals and elements such as cyanide, mercury, and lead can all permanently damage the nervous system, resulting in chronic fatigue, cognitive impairment, an increased risk of fatal heart attacks or strokes, as well as less severe symptoms like headaches and an overall increase in illness susceptibility, significantly lowering the quality of life. The carbon monoxide (CO) released can cause instances of rapid death in homes where there is insufficient ventilation.

The spokesman of the Ministry of Public Health of Afghanistan has said that air pollution kills more than 3 thousand people in Afghanistan every year, at least 700 thousand people have suffered from various respiratory diseases in the capital, this figure is only among those who went to government hospitals for treatment. While thousands of other patients have referred to other hospitals.

2.5 Kabul's air at its most polluted

It is evident from looking at the data for 2019 that the colder months are when major increases in PM_{2.5} and other pollutants are noticed, along with significant increases in particulate matter and a clearly deterioration of the US AQI scores. The cleanest months are April through September, with June having extremely good air quality at 9.6 g/m³, which is within the safe air quality goal range of 0 to 10 g/m³ set by the World Health Organisation.

Around October is when a massive decline in air quality is seen, with October jumping to 45.1 $\mu\text{g}/\text{m}^3$, then to 60.9 $\mu\text{g}/\text{m}^3$ in November, and finally reaching its peak at 196 $\mu\text{g}/\text{m}^3$ in December. Naturally, January is also a highly polluted month with the winters thrall still affecting the amount of material that people are burning. It started off at 145 g/m^3 , then dropped quickly to 58.7 g/m^3 in February and then further to 40.1 g/m^3 in March. So, from October through March of the following year, or throughout the winter, is the riskiest time to breathe the air in Kabul.

2.6 The severity of Air Pollution in Kabul:

According to the Afghanistan National Environmental Protection Agency 2018 report, the average of the nitrogen dioxide and sulfur dioxide mean values and the average of (PM₁₀ & PM_{2.5}) exceeded the defined standard at least twofold. For example, in January, the average nitrogen dioxide monthly mean value was reported at 212 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), and the set standard was 80 $\mu\text{g}/\text{m}^3$. The sulfur dioxide average mean value in January was 168 $\mu\text{g}/\text{m}^3$ exceeding the standard (50 $\mu\text{g}/\text{m}^3$) threefold. The PM₁₀ and PM_{2.5} average concentration in December was 1002 $\mu\text{g}/\text{m}^3$ and 361 $\mu\text{g}/\text{m}^3$ accordingly while the air quality standard for PM₁₀ was 150 $\mu\text{g}/\text{m}^3$ and 75 $\mu\text{g}/\text{m}^3$ for PM_{2.5} in 24 hours.

Based on the Air Quality Index (AQI) system of measuring toxic particles in the air, Kabul's air quality during winter was consistently rated as "hazardous." The index ranges from 0-500, and Kabul crosses 400 during the night and early morning (0-50 good; 51-100 moderate; 101-150 unhealthy to sensitive people; 151-200 unhealthy; 201-300 very unhealthy; 301-500 hazardous).

3.7 Kabul air quality infographics during 2018

Table1: Show Average of PM10, Pm2.5, CO2, NO2, SO2, O3 and CO During 2018

	March	April	May	June	July	August	September	October	November	December	January	February	Annual average
PM10	259.2	267.29	129.26	254.27	68.88		208.383	620.7	1002	511.44	163.08	177.12	332.87
PM2.5	191.93	255.19	180.36	179.15	73.55		198.974	282.04	361.77	194.19	88.198	65.21	195.04
SO2	242.67	564.31	44.57	0			82.586	88.974	102.27	168.6	106.091	86.11	165.1312
NO2	61.37			320.66			98.46	185.067	193.61	212.063	193.99	185.44	181.3325
O3	103.84	84.97	57.93	156.86			8.622	3.341	5.69	153.2	131.35	132.35	83.8153
Co		1.3	0.31	0.31			4.9	23.129	9.981	11.34	7.113	7.49	

Table2: Chemical testing of water quality sources by spectrophotometer from different areas of Kabul city in 2017

Name of parameter	The third district	Thirteenth district	The ninth district	The eighth district	The seventh district	The sixth district	The fifth district	15th district	second area	water quality Standard
Ph	8.5	9.75	8.1	7.89	7.9	9	8.9	7.359	8.2	6.5 - 9
Nitrate (NO3)	0.006 mg/l	0.007 mg/l	2.401 mg/l	1.34 mg/l	0.6mg/l	47.35 mg/l	0.000mg/l	0.007mg/l	1.5 mg/l	50 mg/l
Copper/Zinc	0 mg/l	0.08 mg/l	0.028 mg/l	0.06mg/l	0.025 mg/l	1.2mg/l	0.041 mg/l	0.039mg/l	0.14mg/l	2.0 mg/l
Chloride (Cl)	38.29 mg/l	8.447mg/l	37.13 mg/l	36.75 mg/l	12.61mg/l	20.19 mg/l	22.46 mg/l	19.88mg/l	37.59 mg/l	500mg/l
Sulfate (SO4)	128.4 mg/l	8.364 mg/l	196.6 mg/l	160.3mg/l	84.2mg/l	266.8 mg/l	55.28 mg/l	636.6 mg/l	141.1mg/l	500mg/l
Phosphorus	0.255 mg/l	1.228mg/l	0.2 mg/l	1.28mg/l	0.3mg/l	0.03mg/l	0.3mg/l	0.8mg/l	0.2mg/l	0.5mg/l
Manganese	0.337 mg/l	0.158mg/l	0.3mg/l	0.2mg/l	0.1 mg/l	0.04mg/l	0.82mg/l	0.098mg/l	2.22mg/l	0.2mg/l
Bromine	0.00 mg/l	0.000mg/l	0.000 mg/l	0.000mg/l	0.000mg/l	0.034mg/l	0.000mg/l	0.338 mg/l	0.000mg/l	0.5mg/l

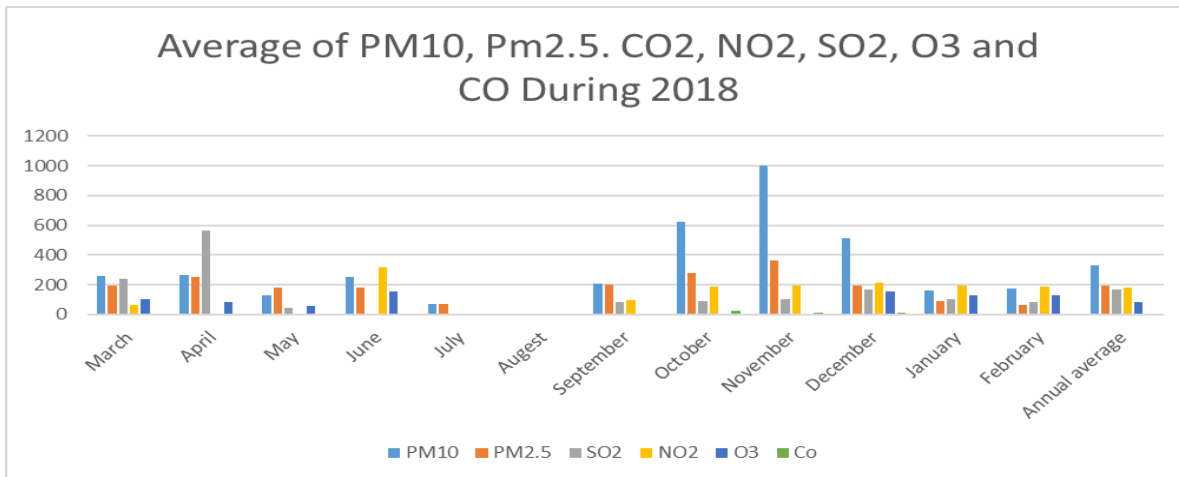


Fig5: Show Average of PM10, Pm2.5. CO2, NO2, SO2, O3 and CO During 2018

3.1 Ten Common Diseases Due to Air Pollution:

Air pollution is a major environmental and health risk. Here is a list of 10 diseases caused by air pollution.

1. Cardiovascular Diseases
2. Cancer
3. Neurological Disorders
4. Gastrointestinal Disorders
5. Kidney Diseases
6. Liver Diseases
7. Skin Diseases
8. Asthma
9. Bronchitis
10. Chronic Obstructive Pulmonary Disease

3.1.1 cardiovascular diseases

Pollution has been linked to an increased risk of cardiovascular disease. It can lead to inflammation and damage to the heart and blood vessels. Studies have shown that exposure to air pollution can increase the risk of heart attack, stroke, and other forms of heart disease.

There are a few ways in which air pollution can contribute to cardiovascular disease:

Particulate matter can enter the lungs and cause inflammation. This can lead to an increase in blood pressure and damage to the lining of the arteries.

Pollutants can trigger changes in heart rate and rhythm, which can lead to arrhythmias or cardiac arrest.

Long-term exposure to air pollution has been linked with an increased risk of atherosclerosis, or hardening of the arteries.

3.1.2 Cancer

Cancer is one of the most common air pollution diseases. It is caused by exposure to carcinogenic airborne particles, such as those released from burning fossil fuels.

Cancer can develop in any organ of the body. But it is most commonly found in the lungs. Non-small cell lung cancer is a more common type of lung cancer. It accounts for about 80% of all cases. It is generally less aggressive than small-cell lung cancer and has a better prognosis.

Smoking is the leading cause of lung cancer too. It is responsible for about 85% of all cases. Other risk factors include exposure to second hand smoke, radon gas, asbestos, and air pollution.

3.1.3 Neurological Disorders

Air pollution has been linked to a variety of neurological disorders as well. Some of the illnesses include Alzheimer's disease and Parkinson's disease.

Alzheimer's disease is a degenerative brain disorder. It leads to memory loss and cognitive decline. Studies have shown that air pollution can accelerate the progression of Alzheimer's disease.

Parkinson's disease is a neurodegenerative disorder. It affects movement and coordination. Air pollution has been linked to an increased risk of developing Parkinson's disease.

3.1.4 Gastrointestinal Disorders

Several gastrointestinal disorders have been linked to air pollution, including irritable bowel syndrome, Crohn's disease, and ulcerative colitis. Studies have shown that people who live in areas with high levels of air pollution are more likely to suffer from these conditions.

Symptoms of gastrointestinal disorders include abdominal pain, diarrhoea, constipation, and bloating. Gastrointestinal disorders can be very serious and even life-threatening if they are not treated properly.

3.1.5 kidney diseases

Several kidney diseases can be caused by air pollution, including:

- ❖ Chronic kidney disease: This is a long-term condition that can lead to kidney failure. It is caused by the accumulation of toxins in the body, including those from air pollution.
- ❖ Acute kidney injury: This is a sudden and potentially reversible loss of kidney function. It can be caused by exposure to high levels of air pollution, particularly particulate matter.
- ❖ Dialysis: This is a treatment used for people with renal failure. It involves filtering the blood to remove waste products and excess fluid.

Table2: Afghanistan’s kidney disease

Deaths	%	Rate	World Rank
6,590	2.85	46.10	15

According to the latest WHO data published in 2020 Kidney Disease Deaths in Afghanistan reached 6,590 or 2.85% of total deaths, the age adjusted Death Rate is 46.10 per 100,000 of population ranks Afghanistan #15 in the world. Review other causes of death by clicking the links below or choose the full health profile.

3.1.6 Liver Diseases

A higher incidence of fatty liver disease connected to metabolic dysfunction is linked to air pollution exposure. The buildup of fat in the liver, which can cause inflammation and scarring, is known as fatty liver disease. Hepatitis is a liver inflammation that can be brought on by a virus or another kind of infection. The liver hardens and becomes scarred as a result of the chronic disease cirrhosis.

Table3: Afghanistan’s liver disease

Deaths	%	Rate	World Rank
4,600	1.99	27.20	67

According to the latest WHO data published in 2020 Liver Disease Deaths in Afghanistan reached 4,600 or 1.99% of total deaths. The age adjusted Death Rate is 27.20 per 100,000 of population ranks Afghanistan #67 in the world. Review other causes of death by clicking the links below or choose the full health profile

3.1.7 Skin Diseases

There are a variety of skin diseases that have been linked to air pollution, including eczema, psoriasis, and acne, eczema is a condition that causes the skin to become dry, itchy, and inflamed. It is thought that air pollution can trigger or worsen eczema flare-ups.

Psoriasis is a chronic autoimmune condition that causes the skin to develop raised, red patches covered with white scales. Air pollution has been shown to trigger psoriasis flare-ups.

Acne is a common skin condition that causes pimples and blackheads. Air pollution has been linked to an increase in acne breakouts.

3.1.8 Asthma

Asthma is a condition in which the airways narrow and swell, and produce extra mucus. This can make breathing difficult and trigger coughing, wheezing, and shortness of breath.

Asthma is often triggered by environmental factors such as air pollution, cold weather, or pollen. It is important to be aware of these triggers and try to avoid them if possible. If you have asthma, it is also important to have an asthma action plan in place so that you know what to do if you have an asthma attack.

Table4: Afghanistan’s asthma

Deaths	%	Rate	World Rank
3,403	1.47	24.23	1313

According to the latest WHO data published in 2020 Asthma Deaths in Afghanistan reached 3,403 or 1.47% of total deaths. The age adjusted Death Rate is 24.23 per 100,000 of population ranks Afghanistan #13 in the world. Review other causes of death by clicking the links below or choose the full health profile.

3.1.9 Bronchitis

Bronchitis is another common air pollution-related disease. It occurs when the bronchi, or airways, become inflamed and irritated. This can be caused by exposure to airborne irritants, such as smoke, dust, or chemical fumes. Bronchitis can also be caused by viral infections. Symptoms of bronchitis include coughing, wheezing, shortness of breath, and chest pain. Bronchitis is often treated with medications, such as bronchodilators and corticosteroids. In severe cases, hospitalization may be necessary.

The capital and largest city of Afghanistan, Kabul is situated in the eastern portion of the country. Kabul, the commercial hub of Afghanistan, has a population of about 4.2 million people and is rapidly urbanizing and expanding its infrastructure. As a result, Kabul is experiencing some significant pollution-related problems, with year-round high PM2.5 levels.

3.1.10 Chronic Obstructive Pulmonary Disease

Chronic Obstructive Pulmonary Disease (COPD) is a lung condition that makes it hard to breathe. COPD is caused by long-term exposure to harmful particles in the air, such as smoke from cigarettes or factory emissions. People with COPD often experience symptoms like shortness of breath, wheezing, and coughing. In severe cases, COPD can be fatal.

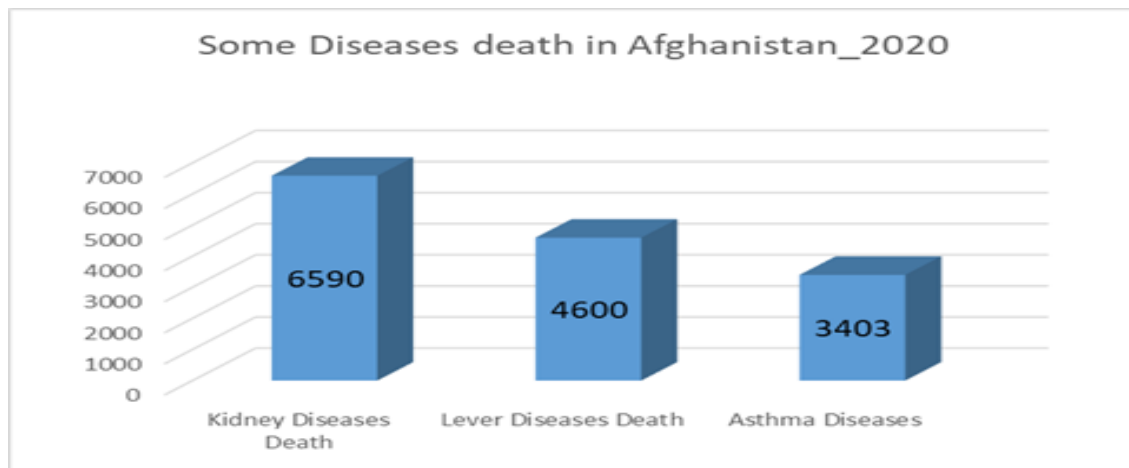


Fig6: Diseases Death in Afghanistan 2020

IV. Conclusion

Air pollution is a serious global specially Kabul problem that contributes to a wide range of diseases. Many of Dangerous diseases are preventable. So, it is important to be aware of them and take steps to protect yourself from air pollution. It is important to take seasonal air pollution in Kabul seriously, and measures to combat it must begin right now. It is crucial for the government to become involved in spreading awareness and enforcing laws. Residents need to be made aware of the harmful impact that air pollution has on their children's health and development and educated on how to get part in resolving this grave problem. Fighting for clean air is a lifelong endeavor that calls for the responsible participation of both the federal government and the general public.

Many areas of the city and its residents still lack appropriate access to power and other necessities of life. As a result, many residents turn to the burning of various materials to supply energy for heating, heating systems, and small companies.

It is commonly known that people have begun to rely on materials like plastic, rubber, wood, and coal for their energy and heating needs, with the quick increase in pollution during the colder months serving as evidence of this trend. Burning fossil fuels, organic waste like wood, and synthetic man-made materials like rubber tyres and other kinds of plastic can cause dangerously high levels of pollution to build up in the atmosphere of a city.

In Kabul, there would be a wide range of negative health impacts that grew in direct proportion to the pollution levels observed, with months with higher PM_{2.5} readings being the most harmful. In addition to persistent chest infections and other respiratory conditions, breathing this air can cause eye, mouth, nose, and throat irritation. Bronchitis, emphysema, and exacerbations of asthma are just a few of the disorders that are grouped together under the umbrella term of chronic obstructive pulmonary disease (COPD).

According to the Afghanistan National Environmental Protection Agency 2018 report, the average of the nitrogen dioxide and sulfur dioxide mean values and the average of (PM₁₀ & PM_{2.5}) exceeded the defined standard at least twofold. For example, in January, the average nitrogen dioxide monthly mean value was reported at 212 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), and the set standard was 80 $\mu\text{g}/\text{m}^3$. The sulfur dioxide average mean value in January was 168 $\mu\text{g}/\text{m}^3$ exceeding the standard (50 $\mu\text{g}/\text{m}^3$) threefold. The PM₁₀ and PM_{2.5} average concentration in December was 1002 $\mu\text{g}/\text{m}^3$ and 361 $\mu\text{g}/\text{m}^3$ accordingly while the air quality standard for PM₁₀ was 150 $\mu\text{g}/\text{m}^3$ and 75 $\mu\text{g}/\text{m}^3$ for PM_{2.5} in 24 hours.

V. Recommendations

- Raise awareness of the nature of air pollution, its causes, and effects.
- Provide guidelines for parents about how to protect children or at least reduce their exposure to air pollution. Make sure that information reaches the whole population, especially the most vulnerable groups.
- Establish a network of air quality monitoring equipment around Kabul, and inform locals about it by highlighting any detrimental effects. For instance, exposure to unhealthy air quality can cause severe irritability and harmful health impacts that may progress to other disorders.
- Engage the residents as part of the solution. Communicate clear and practical guidelines about what residents can do to reduce air pollution. The efforts should focus on empowering individuals and communities to mobilize against air pollution. Communicate the risks and consequences of residents' inactions.
- Governments should control the amount of Vehicle and Keep vehicle in good repair.
- It is improper for people to burn their trash. Burning trash in the home is harmful to the environment and people's health, therefore it is generally prohibited in Minnesota. If you still dispose of your waste in a burn barrel, wood stove or fire pit, speak with your county about setting up trash removal services.
- Limit backyard fires in urban areas. Numerous people may become sick from the smoke from backyard fires, especially in periods of stale weather. People with asthma and other lung diseases are particularly bothered by urban fires in Kabul because of the city's higher pollution levels compared to rural areas.
- Grow and take care of trees. Trees remove toxins and take in carbon dioxide. Additionally, trees help cool our homes and release oxygen into the atmosphere.
- Use hand-powered or electric lawn equipment instead. Pollution control mechanisms are frequently absent from gas-powered engines, such as those found in lawnmowers, leaves or snow blowers. A lawnmower running for one hour can generate almost as much pollution as a 100-mile vehicle drive! Use electric or hand-powered lawn care tools instead.
- Conserve energy. Select energy-efficient heating and cooling systems. Obtain an energy audit and heed the recommendations. Unused electrical equipment should be turned off. All of it adds up.
- Become an advocate for fresh air. Point local companies, government agencies, and educational institutions in the direction of initiatives that can help them cut air pollution and improve sustainability.

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