

**REGIONAL
COLLABORATION OF
HEALTH PROFESSIONALS
FOR RESOLVING
SOUTH ASIA'S
AIR POLLUTION &
CLIMATE CRISIS**

An initiative of

Climate Action Network South Asia (CANSA),
Doctors For Clean Air & Climate Action,
Health Care Without Harm (HCWH), Lung Care Foundation,
Air Quality Life Index (AQLI) & Fossil Fuel Treaty

South Asia is home to some of the world's countries most vulnerable to climate change.

South Asia is also home to the most polluted countries on Earth. Bangladesh, India, Nepal and Pakistan consistently rank among the top five most polluted countries in the world, while [42 out of the 50 cities](#) with the poorest air quality are in South Asia.

In the past decade alone, nearly 700 million people—half of the region's population—were affected by one or more climate-related disasters. Now, changing weather patterns are expected to impact directly [over 800 million people by 2050](#) and will continue to burden South Asian countries' economies.

Fossil Fuels – coal, oil, and gas – the major drivers of climate change, are also the biggest contributor to the poor air quality in the region.

Air pollution exposure is the [second most important risk factor for ill health in South Asia](#).

Burning fossil fuel causes air pollution and releases toxins that can lead to early death, heart attacks, respiratory disorders, stroke, exacerbation of asthma and impaired productivity. Air pollution causes daily disruptions in people's lives from allergies, cold, cough, irritation of the eyes, nose, and throat, headaches, dizziness, fatigue, and mental health issues.

As they confront the exorbitant cost of the twin disasters of climate change and air pollution, South Asian governments are beginning to realize the benefits of resilience. But to become climate-resilient, the region needs to adopt ambitious policies and strengthen planning.



NEED FOR REGIONAL COLLABORATION IN SOLVING THE AIR POLLUTION AND CLIMATE CRISIS:

South Asia is vulnerable to several climate change issues and impacts tied closely to the region's geography, economy, and population patterns. Air pollution, like climate change, knows no borders. There is plenty of evidence to show that efforts to control air pollution within a geographic limit often end up failing. Management of air pollution sources, particularly those which affect territories over thousands of kilometers, require high levels of co-ordination and co-operation among several institutions across states and countries. In other words, we need to evolve a new framework which focuses on reducing air pollution in an 'airshed', i.e., the entire area over which the pollutants disperse due to meteorological and geographical factors. The concept is very similar to 'watershed', an area of land that drains all the streams and rainfall into a common outlet like a river.

The region of the Indo-Gangetic plain, for example, may be considered as one airshed. The region extends from Rawalpindi in Pakistan to Rangpur in northern Bangladesh and passes through some of the most populous states of India—Punjab, Delhi, Haryana, Uttar Pradesh, Bihar and West Bengal. This region is home to 900 million people and several coal-based power plants and mines.

In an airshed approach, institutions in different jurisdictions would need to coordinate reductions in air emissions from all sources including industry, energy, vehicular and residential sources. Formal

coordination mechanisms through working groups and advisory committees between local, regional, state, and central authorities can provide pathways to effective regulatory and scientific cooperation across jurisdictions and sectors. The key is also to build trust and dialogue to achieve compliance with regulations and respond to political demands.

ROLE OF HEALTH LEADERSHIP IN RESOLVING THE AIR POLLUTION AND CLIMATE CRISIS:

Healthcare professionals generally play an important role in carrying health messages to the public. They are credible sources of health information because they see the adverse health outcomes in their clinics and hospitals. The COVID-19 pandemic has presented itself as an opportunity for health voices to be heard and amplified through various media; and its reception has reflected that public health professionals are regarded as key advocates for health protection.

The ongoing COVID-19 pandemic has shown the fragility of our environment and our inherent dependence on it. As we emerge from this crisis, we cannot afford to make the same mistakes of the past. Policy makers need to reimagine the idea of growth and adhere to the ecological boundaries. Priority must be given to protect the environment and public health.

This is a regional challenge, which requires a regional approach, to help support and inspire action. A regional approach will allow countries to spend their money more efficiently, pool their resources on climate change, and share this collective knowledge with governments, NGOs, the private sector, and citizens.

A WAY FORWARD

September 7, 2021 marks a beginning of a regional collaboration of the public health and medical experts on the issue of air pollution, climate, and health. Recognizing that air pollution is a public health emergency and is affecting the quality of life of the people in the region and that fossil fuels are the root cause of air pollution and climate crisis, the members of the health community from South Asia aim to:



- 1 Recognize that air pollution and climate change know no boundaries and there is a need for urgent cross border collaboration.
- 2 Pledge to work nationally and regionally to solve the air pollution crisis and prioritizing their health of the patients and the communities.
- 3 Endorse the call for a fossil fuel free world and the Fossil Fuel Treaty.
- 4 Call on South Asian governments to also ensure that pandemic recovery investments support climate action and reduce social and health inequities.
- 5 Call on South Asian governments to build climate resilient, low-carbon, sustainable health systems.
- 6 Demand that the developed countries provide the promised transfer of funds to low-income countries to help achieve the necessary mitigation and adaptation measures.

FACT PACK

SOUTH ASIA'S AIR POLLUTION AND CLIMATE CRISIS

AFGHANISTAN



Total Population

39.96 million
(39,958,748)



Climate Vulnerabilities: Afghanistan is one of the most vulnerable countries in the world to climate change, and one of the least equipped to handle what's to come.

Afghanistan is one of the most vulnerable countries in the world to climate change, and one of the least equipped to handle what's to come. Experts say drought, flood, avalanches, landslides, extreme weather, mass displacement, conflict, and child marriage—all of which already plague Afghanistan—are set to worsen.

RISK SUMMARY OF AFGHANISTAN

Flood: Over 800,000 people exposed

Drought: Have affected 6.5 million people since 2000

Landslide: Over 3 million people exposed

Avalanche: Over 2 million people exposed

Air Pollution: In 2019, at $31 \mu\text{g}/\text{m}^3$, Afghanistan was one of the top 20 most polluted countries in the world. According to the AQLI, all of Afghanistan's population is exposed to particulate pollution levels that exceed the WHO safe limit as well as the country's national standard.

- Kabul, the most populated province of Afghanistan and home to the country's capital, is the third most polluted region, with pollution levels more than four times the WHO guideline, shaving 3 years off of life expectancy.
- The residents of Kandahar, another heavily populated province, could gain up to 2.4 years in life expectancy if the pollution levels were permanently brought down to the WHO limit.

BANGLADESH



Total Population

166.52 million
(166,522,257)

Bangladesh is exceptionally vulnerable to climate change. Its low elevation, high population density and inadequate infrastructure all put the nation in harm's way, along with an economy that is heavily reliant on farming. Because of the country's natural susceptibility to extreme weather, the people of Bangladesh have always used migration as a coping strategy. However, as conditions intensify under climate change, more people are being driven from their homes and land by more frequent and severe hazards. Sea level rise, storms, cyclones, drought, erosion, landslides, flooding and salinization are already displacing large numbers of people.

RISK SUMMARY OF BANGLADESH

It has been estimated that by 2050, one in every seven people in Bangladesh will be displaced by climate change.

Sea Level Rise/ Flood: By 2050, with a projected 50 cm rise in sea level, Bangladesh may lose approximately 11% of its land, affecting an estimated 15 million people living in its low-lying coastal region. 28% of the population of Bangladesh lives on the coast, where the primary driver of displacement is tidal flooding caused by sea level rise.

Riverbank Erosion: Approximately 10,000 hectares of land is lost in Bangladesh every year to riverbank erosion.

Water Scarcity: Salinization of groundwater have impacted about 33 million people

Air Pollution: In 2019, at 65.5 $\mu\text{g}/\text{m}^3$, Bangladesh recorded the second-highest average PM2.5 concentration in the world. The AQLI shows that air pollution shortens the average

Bangladeshi's life expectancy by 5.4 years, relative to what it would have been if the World Health Organization (WHO) guideline was met. Some areas of Bangladesh fare much worse than average, with air pollution shortening lives by 6.5 years in the most polluted district.

- All of Bangladesh's 16 million people live in areas where the annual average particulate pollution level exceeds both the country's own standard and the WHO guideline.
- Particulate matter pollution has continued to rise. Since 1998, the average annual particulate pollution has increased 15.3 percent, cutting 0.9 years off the lives of the average Bangladesh resident over those years.
- In each of the country's 64 districts, particulate matter pollution levels are at least three times the WHO guideline. The most polluted areas of the country are the divisions of Khulna and Rajshahi, where

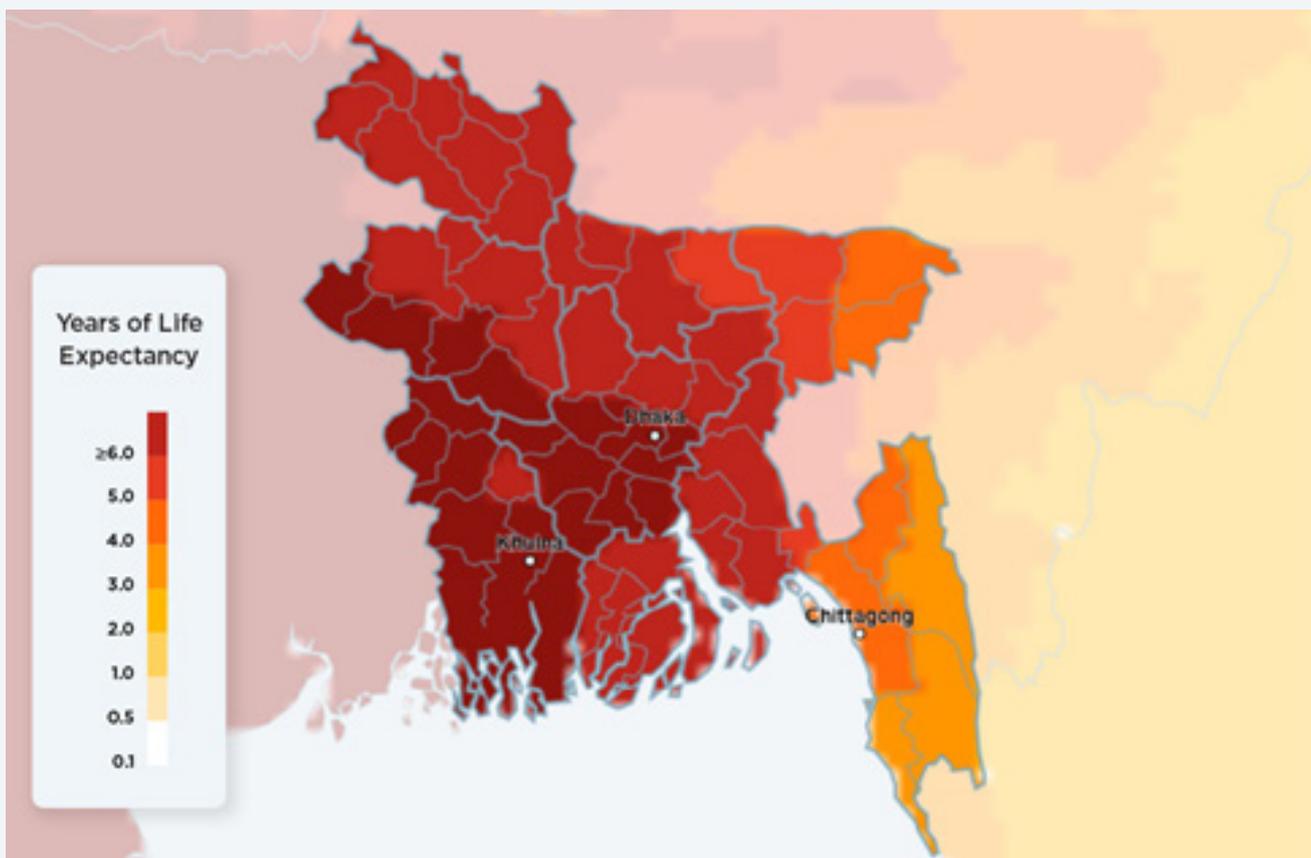
the average resident is exposed to pollution that is more than seven times the WHO guideline—reducing life expectancy by more than 6 years.

- Even in the second largest city of Chittagong, where air quality is better than the national average, residents still lose 3.6 life-years

because pollution levels exceed the WHO guideline.

Heat Wave: Bangladesh is classified as high on extreme heat hazard. This means that prolonged exposure to extreme heat, resulting in heat stress, is expected to occur at least once in the next five years.

Fig: Potential Gain in Life Expectancy through Permanently Reducing PM_{2.5} from 2019 Concentration to the WHO Guideline



Source: AQLI

Disclaimer: Maps used in this factsheet are for illustration purposes only and do not accurately depict state or national boundaries.

BHUTAN



Total Population

0.78 million
(781,097)

Flooding is considered to be the most significant climate-related hazard faced by Bhutan, with most of the country's agricultural land and infrastructure located along drainage basins that are highly vulnerable to heavy monsoon rains and glacial-lake outbursts. The impact of flooding on human health and livelihoods is expected to grow and could be 4% of GDP by the 2030s.

RISK SUMMARY OF BHUTAN

Air Pollution: Despite being a lot less populated and industrialized than the rest of South Asia, Bhutan is the 14th most polluted country in the world, with an average PM_{2.5} concentration of 35 µg/m³ in 2019. Bhutan's topography, together with its construction and cement industry, and burning of wood stoves for household cooking contribute towards particulate pollution. According to the AQLI, the average resident of the country stands to lose 2.4 years in life expectancy, relative to if the air quality met the WHO guideline.

- Samtse and Chhukha, two of the most populated provinces of the country, after the capital region of Thimphu, are exposed to particulate levels nearly five times the WHO limit, costing its residents 3.7 years in life expectancy.



INDIA



Total Population

1.39 billion
(1,395,161,030)

India was the seventh most affected by the devastating impact of climate change globally in 2020 according to the [Global Climate Risk Index](#). Nearly 700 million of India's over one billion population, living in rural areas, directly depend on climate-sensitive sectors (agriculture, fisheries, and forests) and natural resources (such as water, biodiversity, mangroves, coastal zones, grasslands) for their subsistence and livelihoods. Extreme weather events such as severe storms, floods, and drought have claimed thousands of lives during the last few years and have adversely affected the lives of millions and have had significant costs in terms of economic losses and damage to property. Malaria, malnutrition, and diarrhea are major public health problems. Any further increase in these incidents, as projected in weather-related disasters and related health effects, may cripple the already inadequate public health infrastructure in the country.

RISK SUMMARY OF INDIA

Flood: Floods caused by heavy rain in 2019 took 1,800 lives across 14 States in India and displaced 1.8 million people. Overall, the intense monsoon season affected 11.8 million people, with the economic damage estimated to be \$10 billion (Rs.72,900 crore at \$1=INR 72.9).

Sea Level Rise: 12 coastal cities in the country face the risk of submergence by the end of the century. The cities could be nearly three feet underwater by the century's end, the climate change report has warned. The cities include Mumbai, Chennai, Kochi, and Visakhapatnam, among others.

Drought: 42% of India's land area was drought affected in 2018-19. Andhra Pradesh, Bihar, Gujarat, Jharkhand, Karnataka, Maharashtra, parts of the North-East, Rajasthan, Tamil Nadu and Telangana were the worst hit. These states are home to 500 million people, almost 40% of the country's population.

Indian cities themselves are facing water shortage—almost 21 cities including Bengaluru, New Delhi, Chennai and Hyderabad will run out of groundwater by 2020, affecting 100 million people, said the Composite Water Management Index (CWMI) published by the Niti Aayog in June 2018. In all, 600 million Indians—or half the population—face high to extreme water stress, as per CWMI. Up to 75% of households do not have drinking water on-premises and by 2030, 40% of the population will have no access to drinking water.

Air Pollution: In 2019, India's average particulate matter concentration was 70.3 $\mu\text{g}/\text{m}^3$ – the highest in the world and 7 times the WHO's guideline of 10 $\mu\text{g}/\text{m}^3$. The AQLI shows that air pollution shortens average Indian life expectancy by 5.9 years, relative to what it would be if the World Health Organization (WHO) guideline was met; 3 years relative to what it would be if pollution were reduced to meet the

country's own national standard. Some areas of India fare much worse than average, with air pollution shortening lives by 9.7 years in Delhi and 9.5 years in Uttar Pradesh, the most polluted states.

- All of India's 1.3 billion people live in areas where the annual average particulate pollution level exceeds the WHO guideline.
- Particulate pollution has increased over time. Since 1998, average annual particulate pollution has increased 15 percent, cutting 9 years off the life of the average resident over those years.
- Nearly 40% of India's population is exposed to pollution levels not seen in any other country, with 510 million residents of northern India on track to lose 8.5 years of life expectancy on average, if pollution levels persist.
- The annual average PM_{2.5} concentration in the cities of Allahabad and Lucknow in Uttar Pradesh is 12 times the WHO guideline. Residents of Lucknow stand to lose 11.1 years of life expectancy if these pollution levels persist.
- India's capital Delhi is also highly polluted. Residents of Delhi could see up to 10 years added to their lives if pollution were reduced to meet the WHO guideline; up to 7 years if pollution met India's national standard.

Heat Wave: July 2019 was the [hottest July ever in recorded Indian meteorological history](#) and 65.12% of India's population was exposed to temperatures of over 40 degrees Celsius between May and June.

In 50 years (1971-2019) EWE killed 1,41,308 people. Of this, 17,362 people were killed due to heatwave — a little over 12 percent of the

total deaths recorded, according to a study by Ministry of Earth Sciences. According to this study, the maximum heatwave deaths were in Andhra Pradesh, Telangana and Odisha. Core Heatwave Zone (CHZ) is the most prone area for heatwave (HW) and severe heatwave (SHW) with the highest frequency of occurrence during the month of May. The CHZ covers states of Punjab, Himachal Pradesh, Uttarakhand, Delhi, Haryana, Rajasthan, Uttar Pradesh, Gujarat, Madhya Pradesh, Maharashtra, Chhattisgarh, Bihar, Jharkhand, West Bengal, Odisha, Andhra Pradesh and Telangana.

Cyclone: A total of eight tropical cyclones meant that 2019 was one of the most active Northern Indian Ocean cyclone seasons on record. Six of them intensified to become "very severe". The worst was Cyclone Fani in May 2019 which affected a total of 28 million people, killing nearly 90 people in India and Bangladesh, and causing economic losses of \$8.1 billion (Rs.59,066 crore).

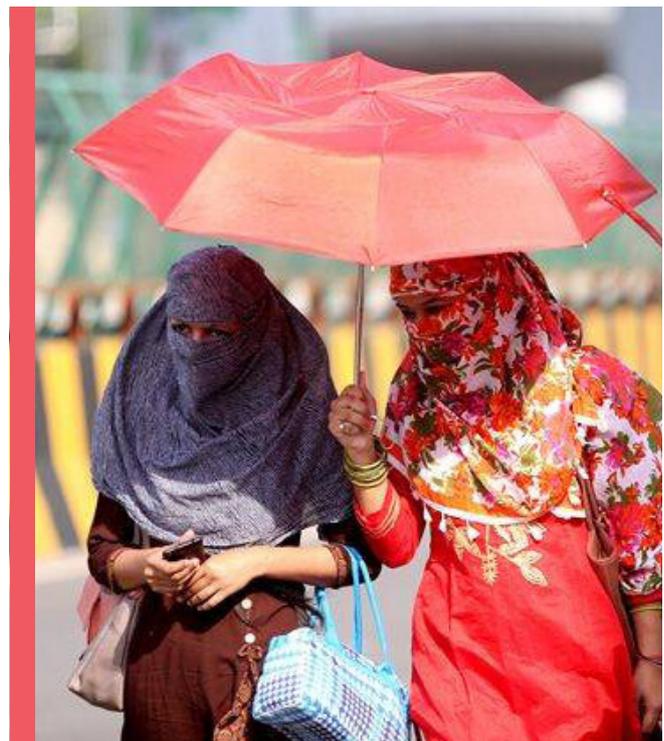
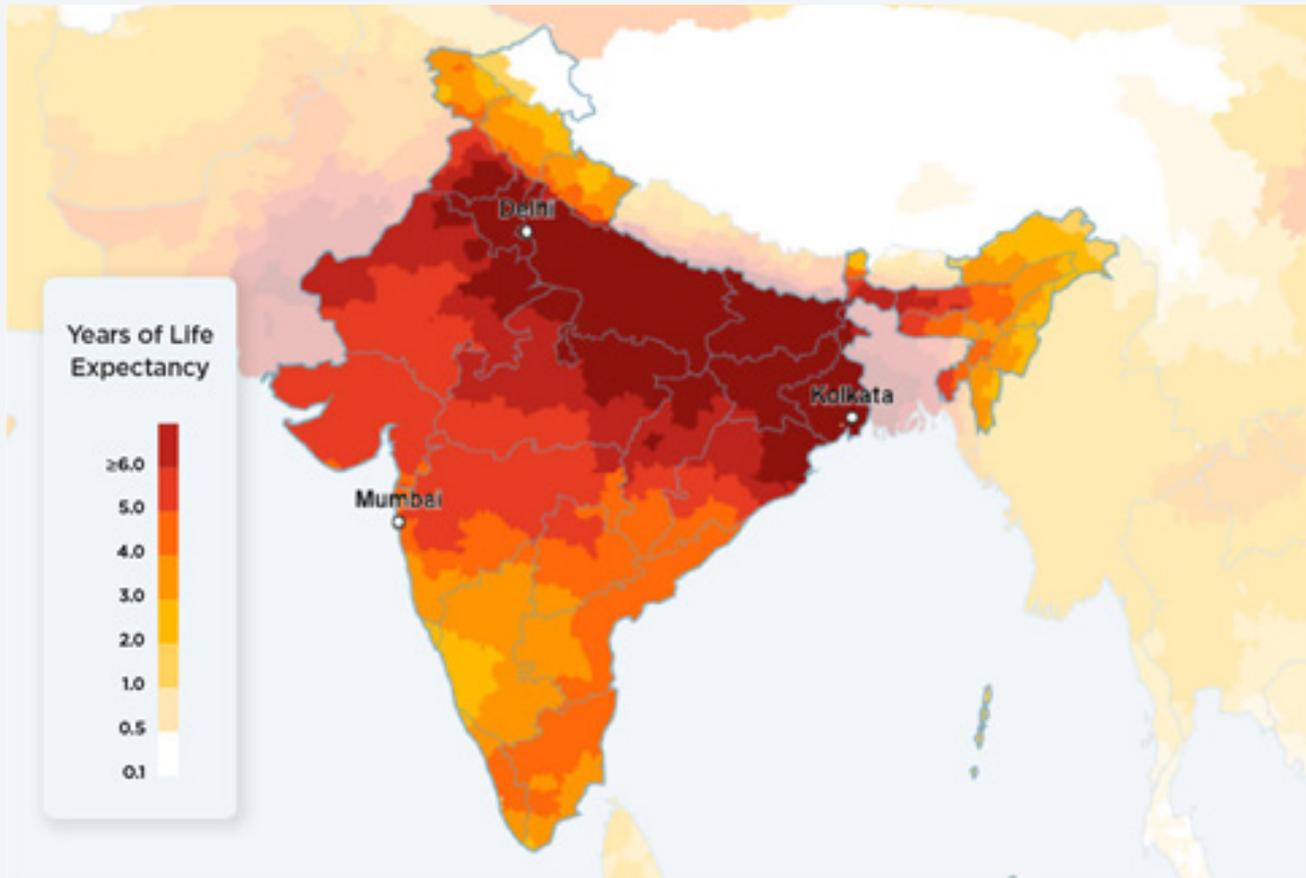


Fig: Potential Gain in Life Expectancy through Permanently Reducing PM_{2.5} from 2019 Concentration to the WHO Guideline



Source: AQLI

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NEPAL



Total Population

29.72 million
(29,721,252)

Natural hazards such as drought, heatwave, river flooding, and glacial lake outburst flooding are all projected to intensify over the 21st century, potentially exacerbating disaster risk levels and putting human life at risk. The vulnerability of Nepal's communities, particularly those living in poverty, in remote areas, and operating subsistence agriculture, increases the risk posed by climate change.

RISK SUMMARY OF NEPAL

Flood: 1.7 million people affected in Nepal during the 2017 floods. At least 140 people were killed, and it was estimated around 80% of the Terai was flooded. The damage was estimated by the Government to be USD 584.7 Million, with a reconstruction cost of USD 375.8 Million to housing alone⁵. In this event over 900 irrigation schemes were lost, with the reconstruction of these planned to take at least three years, meaning a loss in agricultural productivity long after the end of the flood event.

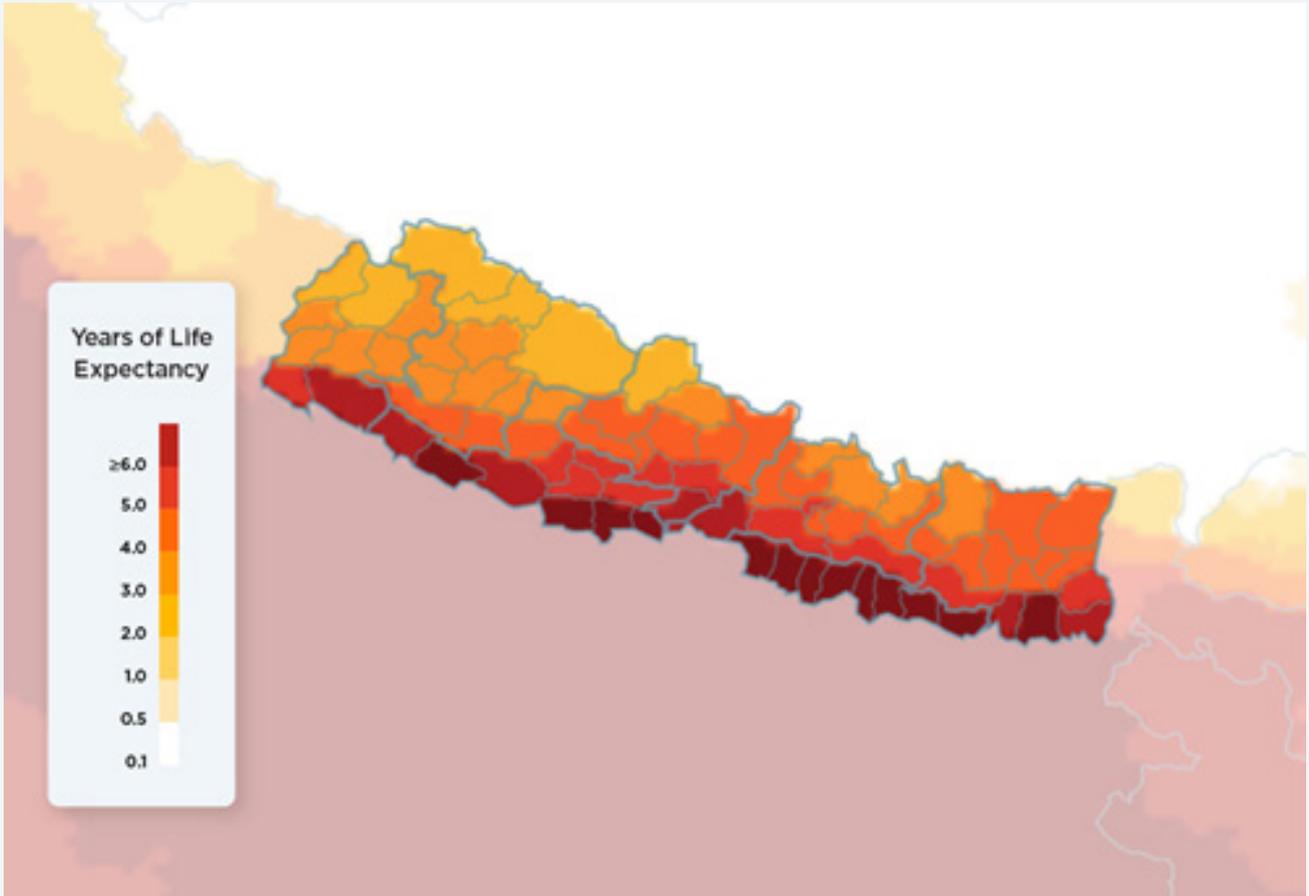
Modelling has suggested that the number of people annually affected by **river flooding** could more than double by 2030 as a result of climate change. At the same time the economic impact of river flooding could triple.

Air Pollution: In 2019, Nepal's average PM_{2.5} concentration was 61.2 µg/m³ – six times more than the permissible limit of 10 µg/m³ set by the World Health Organization (WHO), making Nepal the third most polluted country in the world. According to the AQLI, the Nepalese are on track to lose 5 years of life expectancy if these pollution levels persist. The highest concentrations were

observed in Nepal's southwestern districts which share their borders with the highly polluted Indo Gangetic Plain (IGP).

- All of Nepal's 30 million people live in areas where the average particulate pollution exceeds the WHO guideline.
- Half of Nepal's population resides in the Outer Terai region which sees particulate matter concentrations that are seven to eight times the WHO standard. Its residents can expect to lose 6.4 years of life expectancy, on average.
- In Kathmandu, Nepal's largest city and capital, average annual particulate matter concentrations are five times the WHO guideline, reducing life expectancy by an average of 4.1 years.

Heat Wave: Under a high emissions scenario heat-related deaths in the elderly (65+ years) are **projected** to increase to about 53 deaths per 100,000 by 2080 compared to the estimated baseline of approximately 4 deaths per 100,000 annually between 1961 and 1990.



Source: AQLI

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PAKISTAN



Total Population

225.66 million
(225,662,497)

In 2019, Pakistan was listed eighth most vulnerable country, but it climbed three spots to attain the fifth position in 2020. Despite the improvement in its standing this year, Pakistan is still ranked amongst the top ten countries most at risk of climate change.

The Global Climate Risk Index, published by *Germanwatch*, elaborated that Pakistan lost 9,989 lives, suffered economic losses worth \$3.8 billion and witnessed 152 extreme weather events from 1999 to 2018, which indicates an increase in climate-related vulnerabilities.

RISK SUMMARY OF PAKISTAN

Flood: In 2020, at least 1.4 million children were at risk of homelessness and disease due to floods. About 4 million people in Sindh province alone were affected by the 2020 floods. In 2010, widespread flooding affected about 20 million Pakistanis and inundated an area the size of Florida within the country.

Heat Wave: A large proportion of the population are exposed to this risk, as demonstrated by estimates that over 65,000 people were hospitalized with heat stroke during the 2015 heatwave in Pakistan.

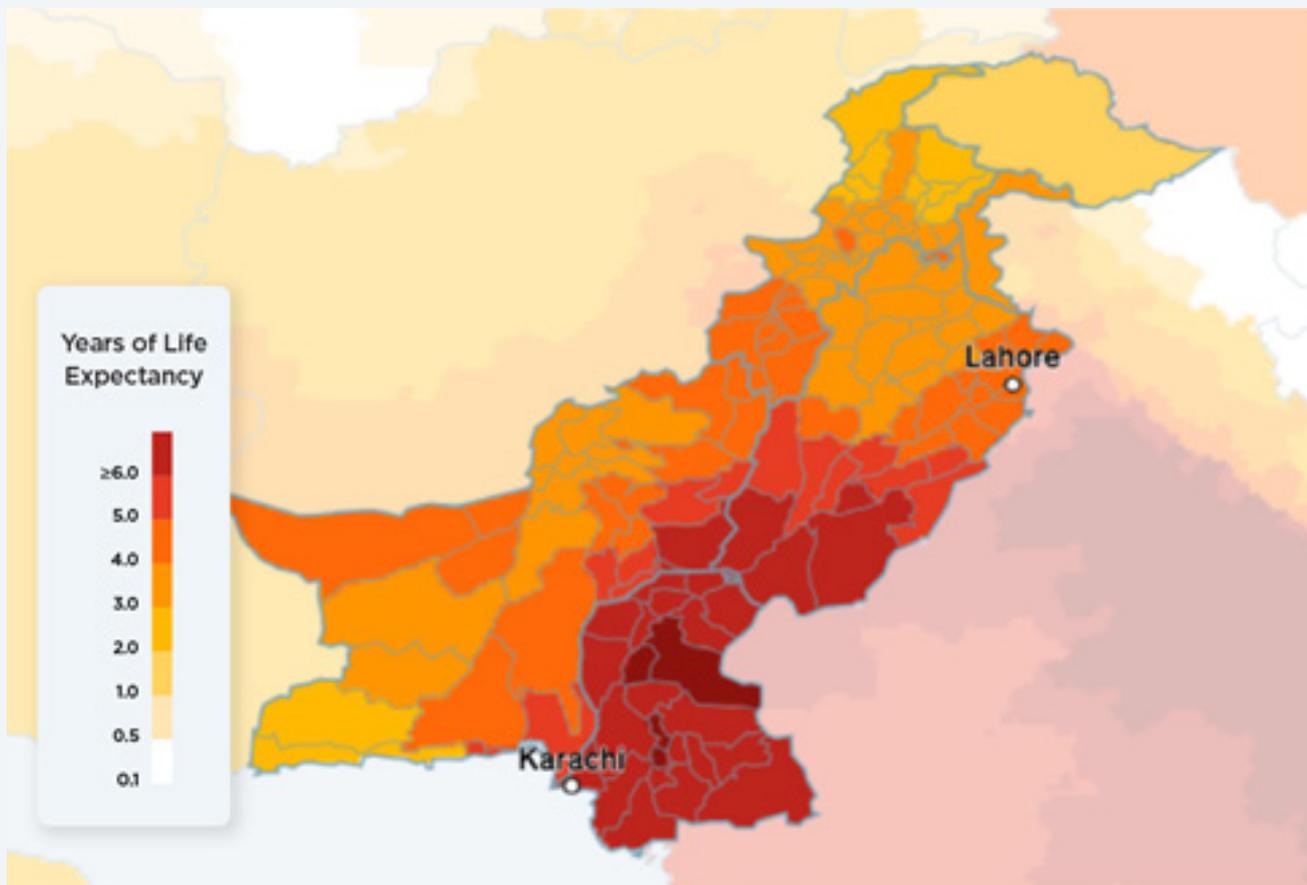
Drought: Pakistan is forecast to reach absolute water scarcity (per capita annual water availability of 1,000 cubic metres) by 2025. Droughts in Balochistan and Sindh in 2000 and 2002 severely affected over 3 million people: in 2001 economic growth fell from an average of 6% to 2.6%; in Tharparkar (Sindh) many children died of malnutrition in 2014 after severely reduced rainfall from March 2013 to February 2014.

Air Pollution: Pakistan is today the world's fourth most polluted country. The AQLI shows that air pollution shortens the average Pakistani's life expectancy by 3.9 years, relative to what it would have been if the World Health Organization (WHO) guideline was met. Some areas of Pakistan fare much worse than average, with air pollution shortening lives by almost 7 years in the most polluted regions.

- All of Pakistan's 228 million people live in areas where the annual average particulate pollution level exceeds the WHO guideline as well as Pakistan's own air quality standard of 15 µg/m³.
- Particulate pollution has increased over time. Since the early 2000s, average annual particulate pollution has increased 20 percent, shaving 0.9 years off the lives of the average Pakistan resident over those years.

- The most polluted areas of the country are the provinces of Sindh, Baluchistan, and Punjab, where residents would gain between 3 to 5 years of life expectancy if particulate pollution were permanently reduced to the WHO guideline.
- In Karachi, Pakistan's largest city, residents would gain 5.2 years. In Lahore, the second largest city, residents would gain 4 years. Residents of the capital of Islamabad residents would gain 3.1 years.

Fig: Potential Gain in Life Expectancy through Permanently Reducing PM_{2.5} from 2019 Concentration to the WHO Guideline



Source: AQLI

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SRI LANKA



Total Population

21.51 million
(21,513,404)

Sri Lanka's high temperatures, unique and complex hydrological regime, and exposure to extreme climate events make it highly **vulnerable to climate change**. In 2012, the Ministry of Environment submitted its Second National Communication to the UNFCCC (NC2), which highlights key vulnerabilities in the agriculture and water resources sectors, as well as significant risks to human health and in coastal zones.

RISK SUMMARY OF SRI LANKA

Flood: According to a [report](#) by The World Bank, as of 2010, assuming protection for up to a 1-in-25-year event, the population annually affected by river flooding in Sri Lanka is estimated at 59,000 people and the expected annual impact on GDP is estimated at \$267 million. By the 2030s, this is expected to increase the annually affected population by 26,000 people, and annual GDP by \$338 million. Research suggest that increased frequency of floods could lead to an increase in the population affected by an extreme flood of 70,000–560,000 people in Sri Lanka.

Sea Level Rise: Sri Lanka has a [moderate level of vulnerability to slow onset sea-level rise](#) impacts but has been identified as having particularly high vulnerability to the combined impacts of storm surge and sea-level rise. While the total population likely to be exposed to

permanent flooding by 2070–2100 is relatively low at 66,000 people without adaptation actions, the population exposed to a 1-in-100-year coastal flood induced by storm surge is relatively high. It is estimated that by the 2030s, approximately 230,000–400,000 people could reside in exposed floodplains, growing to 400,000 to 500,000 by the 2060s. These estimates assume modest sea-level rise of 10 centimeters (cm) by 2030 and by 21 cm by 2060.

Heat Wave: A [study](#) by International Water Management Institute (IWMI) found that around 23% of Sri Lanka's population were exposed to hazardous heatwaves during the period 2001–2013 (defined here as an anomaly of +6°C).

Drought: A IWMI [study](#) found that between 2001–2013, approximately 10% of Sri Lanka's population was exposed to drought.

MALDIVES



Total Population

0.55 million
(551,110)

RISK SUMMARY OF MALDIVES

Sea Level Rise & Flooding: The World Economic Forum has estimated that by 2050, 80% of people in the world will be impacted by climate change. Meantime, scientists suggest sea levels could rise by as much as **1.1 meters by 2100**. Today, 80% of Maldives's 1,190 islands

are just a meter above sea level, making them particularly **vulnerable to rising sea levels**. Already, 90% of the islands have reported flooding, 97% shoreline erosion, and 64% serial erosion.





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AND CLIMATE ACTION
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