

CLIMATE CHANGE IN PAKISTAN

Properly flow the structure This is not an essay outline but your rough work

CAUSES AND CONSEQUENCES

- emerged as a formidable global concern/challenge.
- Pak bearing disproportionate burden.
- Pak. is ranked among the most climate vulnerable countries in the world (despite contributing <1% GHG emission)

• Pak is witnessing

Rising temp¹)

changing monsoon patterns

melting

glaciers

increased freq. of intensity of extreme weather events

Global Climate Risk Index 2021

Pak ranked 8th among countries most affected by climate related disasters (Germanwatch, 2021)

• Pak contributes 0.9% GHG emission (World Bank, 2022)
→ still pays steep env. & economic price

UNDP
2023

• 2022 floods → submerged 1/3rd of the country.
→ displaced 33 M people
caused damage exceeding \$30 Billion

Causes:

① Green House Gas Emissions

- ↑ global temp. → ↑ conc. of GHG
e.g. CO₂, CH₄ and N₂O
→ due to industrialization, deforestation & fossil fuel consumption.

- Pak's direct contribution is ↓, remain vulnerable due to limited adaptive capacity.
(does not have enough resources, technology or strong infrastructure to adapt to these changes easily).

Dawn: (15th Aug 2025)

- 224 extreme disaster events experienced b/w 1980 - 2024
- Floods affected >100M people
- Caused damage worth \$36.4 Bn
- 109 floods till now

② Deforestation:

- Deforestation rate is highest in Asia.
- Forests only 5% area of total Pak's area.
(far below global avg).
- Not only affects rainfall patterns and soil erosion but also ↑ carbon conc. in atmosphere.

Dawn: (22nd March 2025)

Pak's losses

Thousands of hectares of forests are destroyed yearly, making way for various human activities. The rising population, coupled with poverty and lack of awareness, has led to illegal and unsustainable logging, overharvesting of wood for fuel and charcoal and increased small-scale farming that continues to reduce the forest cover of Pak."

(WWF-P)

World-wide demand for resources - Pak.

③ Urbanization and Industrialization:

- Cities like Karachi, Faisalabad and Lahore → expanding rapidly without proper urban planning.
- More traffic congestion (more fuel burnt releasing harmful gases)
- Industries → smoke and chemicals worsening air quality.
- Urban Heat Island Effect?
 - area with ↑ building, roads, concrete and ↓ grass/trees
 - hard surfaces absorb ↑ heat and release it slowly over night due to which rural areas are relatively ↓ hot than urban areas.

Dawn:

At the Jinnah International Airport, nighttime temp. was recorded 2.6°C higher than 6 decades ago. The heat island effect has caused this difference.

④ Agricultural Practices:

- Methane emissions from rice paddies (fields where rice grow in standing water)
- Farmers use synthetic fertilizers (nitrous oxide).

Impacts of Climate Change

① Agriculture and Food security:

- employs 40% of the workforce, highly climate sensitive.
- changes in rainfall, heatwaves and pest outbreaks affects crop yields (wheat, rice, cotton).

(FAO, 2019)

In 2018, extreme heat led to 20% drop in wheat prod. in southern Punjab.

Dawn: (28th Oct 2024)

"Rice (paddy), Pak's largest export crop, severely affected in 2024 by high temp.

This led to a sig. increase in non-productive (empty) kernels, resulting in much lower yields compared to previous years."

② Water Resources:

• Melting glaciers + Monsoon rains (Pak. water resource.)

→ accelerated / became erratic (irregular)

→ floods + drought

• 1951, per person water availability reduced from 5900 m^3 to $\downarrow 1000 \text{ m}^3$

(a level that marks water scarcity).

③ Glacial Melting

- Pak's portion of Hindu Kush - Himalayan region has 1000s of glaciers (regressing rapidly).
- increased risk of Glacial Lake Outburst Floods (GLOFs)
(sudden, devastating floods when glacial lakes burst)

Dawn: (20th May 2025)

"Due to rising global temp., nearly 10000 glaciers in Pak are retreating. This has led to formation of 3044 lakes with 33 of them being highly volatile!"

④ Health impact

- Rising heat, polluted air and unsafe water → health concerns.



heat stroke, infectious diseases, respiratory illness.

The Express Tribune:

- Severe heatwave in Apr. 2500-3000 patients rushed to hospitals in Rawalpindi for heat related illness e.g., sunstroke, dehydration.

⑤ Natural Disasters:

- Pak faces more freq. and severe natural disasters due to climate change. (floods, droughts and cyclones)
- Changes in rainfall patterns and rising temp. amplify these hazards, overwhelming infrastructure and communities