



# Sand and Dust Storms Risk Assessment in Asia and the Pacific

## Why in News

According to a new [United Nations \(UN\)](#) report, more than **500 million people in India** and **more than 80% of the entire populations** of Turkmenistan, Pakistan, Uzbekistan, Tajikistan and the Islamic Republic of Iran are **exposed to medium and high levels of poor air quality due to sand and dust storms**.

- The **risk of impacts from sand and dust storms is projected to increase in the 2030s** due to more extreme drought conditions in parts of Western Australia, south-eastern Turkey, Iran and Afghanistan.

## Key Points

### ▪ Sand and Dust Storms:

#### ◦ About:

- Sand and dust storms are **common meteorological hazards** in arid and semi-arid regions.
- They are usually caused by **thunderstorms - or strong pressure gradients** associated with [cyclones](#) - which increase wind speed over a wide area.
- Some **40% of aerosols in the troposphere (the lowest layer of Earth's atmosphere)** are dust particles from wind erosion.

#### ◦ Main Sources:

- The main sources of these mineral dusts are the **arid regions of Northern Africa, the Arabian Peninsula, Central Asia and China**.
- Comparatively, **Australia, America and South Africa make minor**, but still important, contributions.

### ▪ Impacts:

#### ◦ Negative:

#### • Impact on Power Plants:

- They can interfere with energy infrastructure, adversely affecting electricity transmission lines and causing power outages.
- India, China and Pakistan witnessed **1,584 gigawatt-hours (gWh), 679 gWh and 555 gWh of energy loss**, respectively.
- These losses amounted to over **Rs. 782 crore for India per year**.

#### • Affect Source of Freshwater:

- Very high dust deposition also occurs in the [Himalaya-Hindu Kush mountain range](#) and the **Tibetan Plateau**, the so-called '**third pole**' that

are the sources for fresh water for more than 1.3 billion people in Asia.

- **Increases Melting of Ice:**

- The deposition of dust on glaciers induces a **warming effect**, increasing the melting of ice, with direct and indirect impacts on society through numerous issues, including food security, energy production, agriculture, water stress and flood regimes.

- **On Farmland:**

- Dust deposition **impacted large portions of farmland** in Turkmenistan, Pakistan and Uzbekistan.
  - Much of this dust is characterised by **high salt content, making it toxic for plants.**
- It **reduces yield**, posing a significant threat to the production of irrigated cotton and other crops.

- **On Sustainable Development Goals (SDG):**

- They directly affect **11 of the 17 United Nations-mandated [Sustainable Development Goals \(SDG\)](#):**
  - Ending poverty in all forms, Ending hunger, Good health and well-being, Affordable and clean energy, Decent work and economic growth, Climate action, etc.

- **Positive:**

- They can **increase the nutrient content in the areas of deposition** and benefit vegetation.
- Dust **deposited on water bodies can alter their chemical characteristics**, triggering both positive as well as adverse outcomes.
- Dust particles that carry iron can enrich parts of oceans, **improving the phytoplankton balance and impacting marine food webs.**

- **Suggestions:**

- Their impacts are complex, and thus, they represent **an important emerging issue for policy-makers in the Asia-Pacific region.**
- Member States **need to strategize their joint actions**, considering gaining a deeper understanding of the socio-economic impact of sand and dust storms, establishing a coordinated monitoring and early warning system with an impact-based focus, and coordinating actions in most at-risk and exposed geographical areas to mitigate the risks.

**[Source: DTE](#)**

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