Peatland Fires

Prelims: *Current events of national and international importance | Environment*

Why in News?

Indonesia's dangerous peat fires are surging early in the 2026 fire season as a strengthening El Niño and severe drought dry out wetlands that can burn underground for months.

- **Peat fires** – These are slow, flameless, underground fires that occur in carbon-rich, waterlogged organic soils known as peatlands.

  Peatlands *– These are unique wetland ecosystems where waterlogged, oxygen-poor conditions prevent dead plant material from fully decomposing, leading to a net accumulation of organic matter called peat.*

- Unlike typical wildfires that rage across surface vegetation, peat fires burn underground.
- Because they rely on a process called smouldering combustion, they can burn silently for weeks, months, or even years, earning them the nickname "zombie fires."
  - **Smouldering combustion** is a slow, low-temperature, flameless form of burning that takes place directly on the surface of a solid, porous fuel.

- **Peatland's Carbon Storage** – Covering only about 3% of the Earth's land surface, peatlands store roughly 30% of global soil carbon—holding twice as much carbon as all the world's forests combined.
- **Reason for Occurrence** – Under normal conditions, peat deposits are too wet for fire to move underground.
- Drought changes that dramatically, allowing flames to enter the peat itself and continue flaming below the surface.
- Drought can therefore transform peatlands from natural carbon stores into major sources of greenhouse gases.
- The deeper the peat, the greater the carbon stock; in Kalimantan, peat deposits can exceed 20 metres in depth.
- **Indonesia's Vulnerability** – Indonesia contains about 36% of the world's tropical peatlands; the major regions include Kalimantan, Sumatra, and Papua.
- Over the past three decades, such conditions have repeatedly produced long-lasting fires that blanket large areas in smoke for weeks and disrupt the lives of millions of people.
- **Health impacts** – Irritation in eyes, chests and throats, respiratory problems, increased hospital admissions, etc.
- Across Indonesia as well as Brunei, Malaysia, Singapore and the Philippines, air pollution indices have soared to "unhealthy" extremes - almost 75 times the World Health Organisation's recommended level, in some cases – and hospital admissions have surged.
- **Dangerous Pollutants** – According to NASA Science data, it generates three times more PM2.5 than typical tropical forest fires, five times more sulfur dioxide, and massive concentrations of carbon monoxide.

Reference

Science Daily | Indonesia's most dangerous fires are burning underground

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