

WMO Greenhouse Gas Bulletin 2026

Prelims: Current events of national and international importance | Environment

Why in News?

Recently, the World Meteorological Organization (WMO) published those atmospheric concentrations of the 3 primary long-lived greenhouse gases Carbon Dioxide (CO₂), Methane (CH₄), and Nitrous Oxide (N₂O) reached unprecedented record highs in 2025.

- **Released ahead of** - The UN Climate Conference (COP31 in Antalya, Turkiye).
- The report warns that long atmospheric lifetimes commit the planet to multi-decadal temperature increases and heightened extreme weather risks.

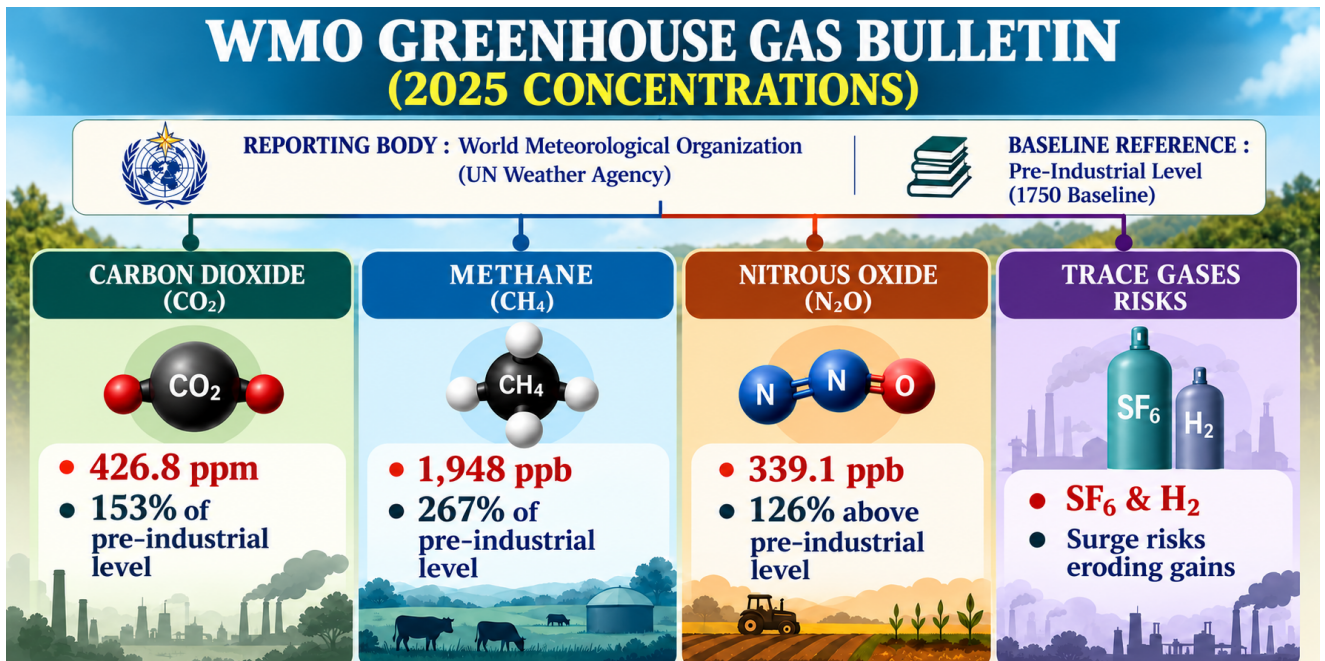
Key Benchmarks (2025 Data)

Greenhouse Gas	2025 Average Concentration	Percentage of Pre-Industrial (1750) Level	Primary Anthropogenic Drivers
Carbon Dioxide (CO ₂)	426.8 ppm (parts per million)	153%	Fossil fuel combustion, cement production, deforestation, land-use change.
Methane (CH ₄)	1,948 ppb (parts per billion)	267%	Ruminant livestock, rice paddies, fossil fuel extraction/leaks, landfills, biomass burning.
Nitrous Oxide (N ₂ O)	339.1 ppb (parts per billion)	126% above baseline	Synthetic nitrogen fertilizers, manure management, industrial chemical processes.

Emerging Dynamics

- **Role of Land Sinks**
 - Approximately **50% of annual CO₂ emissions** remain trapped in the atmosphere, while the rest is absorbed by terrestrial ecosystems (forests, soil) and oceans.
 - The annual CO₂ growth rate in 2024-2025 (+2.8 ppm) showed slight moderation compared to the 2023-2024 spike, reflecting partial recovery of land carbon sinks following the end of the severe 2023/2024 El Niño cycle.
- **Emerging Atmospheric Threats**
 - **Sulphur Hexafluoride (SF₆)** - Used extensively as an insulating gas in electrical switchgear and grid distribution.
 - It possesses a Global Warming Potential (GWP) **24,300 times greater than CO₂** over a 100-year timescale, with emissions steadily rising over the past three decades.

- **Molecular Hydrogen (H₂)** - Rapid expansion in green hydrogen production presents potential leakage risks.
- Uncontrolled H₂ leakage extends the atmospheric lifetime of methane by competing for hydroxyl (OH) radicals, indirectly intensifying warming.



Reference

[Down to earth | Greenhouse gases hit record highs in 2025](#)