UPSC & STATE PCS CURRENT AFFAIRS · UJIYARI.COM

DAILY QUIZ — SOLVED

Daily Quiz — March 5, 2026

5 March 2026

CURATED & WRITTEN BY

Bharat Choudhary

UPSC Educator & Content Creator • linkedin.com/in/epicbharat

DAILY QUIZ — SOLVED

Daily Quiz — March 5, 2026

5 March 2026 · 10 Questions · Answers & Explanations Included

Q 1 India's 2015 environment norms for thermal power plants sought to reduce which major pollutants through mandatory installation of equipment like FGD systems?

A Carbon dioxide (CO2) and methane (CH4)

B **Sulphur dioxide (SO2), nitrogen oxides (NOx), and particulate matter ✓**

C Ozone (O3) and volatile organic compounds (VOCs)

D Mercury and arsenic

EXPLANATION

The 2015 environment norms for thermal power plants set stricter limits on sulphur dioxide (SO2), nitrogen oxides (NOx), and particulate matter. Flue-Gas Desulphurisation (FGD) systems are the primary technology used to reduce SO2 emissions by removing sulphur from flue gases before they exit the chimney. Compliance has been uneven across coal-fired power plants.

CONCEPT

Thermal power plants in India contribute significantly to air pollution in the Indo-Gangetic Plain. SO2 causes acid rain, which damages crops, forests, and built infrastructure. NOx contributes to ground-level ozone and smog. The Ministry of Environment, Forest and Climate Change (MoEFCC) sets these standards under the Environment (Protection) Act, 1986. FGD retrofitting is expensive and time-consuming, creating tensions between power security and environmental compliance.

Q 2 Flue-Gas Desulphurisation (FGD) technology installed in thermal power plants primarily reduces which pollutant?

A Carbon dioxide (CO2)

B Particulate matter (PM2.5 and PM10)

C **Sulphur dioxide (SO2) ✓**

D Nitrogen oxides (NOx)

EXPLANATION

FGD (Flue-Gas Desulphurisation) systems are specifically designed to remove sulphur dioxide (SO2) from the exhaust gases of thermal power plants. SO2 is produced when coal containing sulphur is burned. FGD systems use limestone slurry or other sorbents to chemically react with SO2, converting it into gypsum, which can be sold as a by-product for cement and wallboard manufacturing.

CONCEPT

For NOx reduction, different technologies are used — Selective Catalytic Reduction (SCR) or combustion modification. For particulate matter, Electrostatic Precipitators (ESPs) and Baghouse Filters are used. India has been pushing FGD installation in coal plants near major cities and ecologically sensitive areas. The Central Electricity Authority (CEA) monitors compliance.

Q 3 The 'dark oxygen' phenomenon being researched by scientists is associated with which unique feature of the deep seabed?

A Hydrothermal vents releasing oxygen-rich gases

B Polymetallic nodules potentially generating oxygen through electrochemical processes without sunlight ✓

C Deep-sea algae producing oxygen in complete darkness

D Submarine volcanoes releasing dissolved oxygen

EXPLANATION

Research suggests that polymetallic nodules on the deep seabed may generate oxygen through electrochemical processes even in the complete absence of sunlight — termed 'dark oxygen'. This challenges the conventional assumption that substantial oxygen generation requires photosynthesis. If confirmed, it would imply deep-ocean ecosystems are more complex than previously understood, strengthening the case for caution in deep-sea mining.

CONCEPT

Polymetallic nodules contain manganese, cobalt, nickel, and copper — minerals critical for batteries and clean energy. India has a Pioneer Investor status for nodule exploration in the Clarion-Clipperton Zone (Pacific Ocean). Deep-sea mining is regulated by the International Seabed Authority (ISA) under UNCLOS. The 'dark oxygen' finding, if validated, would add a new dimension to biodiversity preservation arguments against seabed mining.

Q 4 Which of the following correctly states the Ramsar Convention's definition of a wetland?

A Any body of fresh water over 10 hectares in size

B Areas of marsh, fen, peatland, or water — whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt ✓

C Only coastal mangroves and estuaries

D Freshwater rivers and lakes listed in the national gazetteer

EXPLANATION

The Ramsar Convention (signed 1971 in Ramsar, Iran) defines wetlands very broadly — including marshes, fens, peatlands, and water bodies whether natural or artificial, permanent or temporary, with fresh, brackish, or salt water. This broad definition captures rice paddies, coral reefs, mangroves, peat bogs, and even constructed wetlands.

CONCEPT

India has 85 Ramsar-designated wetland sites (as of 2025) — the most in South Asia. Key Ramsar sites: Chilika Lake (Odisha) — India's largest coastal lagoon and first Ramsar site (1981); Wular Lake (J&K); Loktak Lake (Manipur); Deepor Beel (Assam). The Wetlands (Conservation and Management) Rules, 2017 govern wetland protection in India. Wetlands provide ecosystem services worth trillions — flood control, water purification, carbon storage.

Q 5 India's National Adaptation Plan (NAP) under the UNFCCC framework addresses which aspect of climate response?

A India's mitigation targets for reducing greenhouse gas emissions

B Building long-term resilience and adapting to climate change impacts ✓

C Technology transfer obligations under the Paris Agreement

D Carbon market participation rules for Indian industries

EXPLANATION
The National Adaptation Plan (NAP) is India's framework for building long-term climate resilience — addressing how India will adapt to climate change impacts like flooding, drought, sea level rise, and extreme heat. It is distinct from India's NDC (Nationally Determined Contribution), which covers mitigation — reducing greenhouse gas emissions.

CONCEPT
Under the UNFCCC, developing countries submit NAPs to address adaptation needs. India submitted its NAP in 2023. India's NDC (last updated 2022) includes targets like: 45% reduction in emissions intensity of GDP by 2030 (from 2005 levels), 50% of cumulative electric power capacity from non-fossil sources by 2030, and restoring 26 million hectares of degraded land. India also works through coalitions like LMDCs (Like-Minded Developing Countries) and BASIC group.

Q 6 Wildlife conservation finance — highlighted on World Wildlife Day — is important because which critical challenge does it address?

A It funds new scientific research into species genetics

B It provides stable funding for protected area management, anti-poaching, habitat restoration, and community incentives ✓

C It compensates industries that relocate away from forest areas

D It funds CITES conference organisational expenses

EXPLANATION
Conservation finance addresses the stable funding needed for day-to-day protected area management, anti-poaching patrols, wildlife corridors, ecological monitoring, eco-development around parks, and compensation for communities that bear wildlife-related costs (crop damage, livestock loss). Legal protection alone — designating a national park — rarely produces durable conservation outcomes without sustained funding.

CONCEPT
India's Project Tiger — funded through centrally sponsored schemes — is a model of dedicated conservation financing. The National Tiger Conservation Authority (NTCA) and the Wildlife Institute of India (WII) support tiger reserve management. CAMPA (Compensatory Afforestation Fund Management and Planning Authority) collects developer fees for afforestation as compensation for forest diversions. Conservation finance also includes international mechanisms like biodiversity credits and REDD+ (Reducing Emissions from Deforestation and Degradation).

Q 7 Acid deposition (acid rain), caused by SO_2 and NOx from thermal power plants, damages which of the following through altered soil and water chemistry?

- **A** **Groundwater quality, crop yields, forest health, and built infrastructure ✓**
- **B** Only coastal fisheries and marine ecosystems
- **C** Only urban air quality and human respiratory health
- **D** Only glaciers and snow-covered mountain regions

EXPLANATION
Acid deposition caused by SO_2 and NOx harms a wide range of systems: it acidifies soils (reducing crop yields and harming forests), acidifies water bodies (killing aquatic life), and chemically erodes limestone and marble buildings, monuments, and infrastructure. The Taj Mahal's yellowing is partly attributed to acid deposition from nearby industrial pollution.

CONCEPT
Acid rain is formed when SO_2 and NOx react with water, oxygen, and other atmospheric chemicals to form sulphuric and nitric acids. These fall as wet deposition (rain, snow, fog) or dry deposition (gas, particles). The Convention on Long-Range Transboundary Air Pollution (CLRTAP, 1979) is the main international treaty addressing transboundary acid rain. India's National Clean Air Programme (NCAP, 2019) targets 40% reduction in PM2.5/PM10 by 2026.

Q 8 The Biomass co-firing approach in thermal power plants involves mixing which material with coal to reduce emissions and carbon intensity?

- **A** Natural gas
- **B** **Agricultural residue pellets or wood chips ✓**
- **C** Hydrogen gas
- **D** Municipal solid waste

EXPLANATION
Biomass co-firing involves mixing biomass (agricultural residue pellets, wood chips, sugarcane bagasse) with coal in thermal power plants. Since biomass is considered carbon-neutral (it re-absorbs CO_2 when new plants grow), co-firing reduces the net carbon emissions per unit of electricity generated. India has a mandate for 5-10% biomass co-firing in coal plants to manage crop stubble burning, especially in Punjab and Haryana.

CONCEPT
Biomass co-firing directly addresses the stubble burning problem in Punjab and Haryana, where farmers burn rice straw after harvest — a major source of Delhi's winter smog. Converting stubble into biomass pellets for co-firing in thermal plants creates an economic value for crop residue. The Ministry of New and Renewable Energy (MNRE) has a National Bioenergy Programme supporting this.

Q 9 Which international framework governs biodiversity conservation finance and includes mechanisms for payments for ecosystem services?

A Paris Agreement under UNFCCC

B Convention on Biological Diversity (CBD) and the Kunming-Montreal Global Biodiversity Framework ✓

C CITES (Convention on International Trade in Endangered Species)

D Ramsar Convention on Wetlands

EXPLANATION
The Convention on Biological Diversity (CBD) and the Kunming-Montreal Global Biodiversity Framework (adopted at COP15, 2022) provide the international framework for biodiversity conservation finance. The Kunming-Montreal framework includes the '30x30' target (protect 30% of land and ocean by 2030) and the goal of mobilising $200 billion/year for biodiversity by 2030.

CONCEPT
India is a signatory to the CBD (joined 1994). The Kunming-Montreal GBF adopted at CBD COP15 in December 2022 is considered the 'Paris Agreement for biodiversity'. India's Biodiversity Act, 2002 operationalises CBD domestically through the National Biodiversity Authority (NBA) and State Biodiversity Boards. India has four biodiversity hotspots: Western Ghats, Eastern Himalayas, Indo-Burma, and part of Sundaland.

Q 10 Which of the following best explains why compliance with thermal power plant emission norms has been uneven in India despite the 2015 deadline?

A State governments have constitutional authority to override central environmental norms for power sector

B The cost of FGD retrofitting, technology procurement challenges, and the risk of power supply disruption during installation ✓

C Coal companies have a legal exemption from emission norms under the Mines Act

D The Central Electricity Authority has jurisdiction only over interstate transmission, not generation

EXPLANATION
The main barriers to FGD compliance are: high capital cost of retrofitting existing plants (often Rs 400-600 crore per 500 MW unit), technology procurement timelines, the risk of plant shutdown during installation affecting power supply, and financial stress of electricity distribution companies (DISCOMs) that makes passing costs to consumers politically difficult.

CONCEPT
This is a classic governance tension: energy security vs. environmental compliance. The MoEFCC has extended compliance deadlines multiple times. Plants near cities and ecologically sensitive areas have stricter deadlines than remote plants. This is a good Mains GS-3 case study on regulatory credibility, cost-benefit analysis in environmental policy, and the political economy of energy regulation.

CURATED & WRITTEN BY

Bharat Choudhary

UPSC Educator & Content Creator

linkedin.com/in/epicbharat

Published on **ujiyari.com** · Free UPSC & State PCS Current Affairs