
Prelims Exam Topics

COAL EXCHANGE RULES, 2026

Context

The **Coal Exchange Rules, 2026** have been notified to establish a regulatory framework for **electronic trading of coal** in India.

About Coal Exchange Rules, 2026

- **Nature:** The **Coal Exchange Rules, 2026** provide the framework for establishing and operating **Coal Exchanges**—electronic platforms for trading **coal, lignite, and their processed products** through **delivery-based spot contracts**.
- **Legal Framework:** Notified under **Section 18B of the Mines and Minerals (Development and Regulation) (MMDR) Act, 1957**.
- **Objective:** To promote **transparent price discovery, competitive trading, and efficient coal distribution through** a market-based mechanism.

Key Features

- **Regulation:** The **Coal Controller Organisation (CCO)** registers and regulates Coal Exchanges, oversees trading mechanisms, approves bye-laws, and monitors transaction fees.
- **Market Participation:** Permits **commercial miners, captive mine owners, Public Sector Undertakings (PSUs), and other eligible consumers** to participate in delivery-based coal trading.
- **Trading Mechanism:** Coal prices are determined through **competitive electronic bidding**, with final settlement adjusted according to **quality certification** issued by accredited coal sampling agencies.
- **Settlement & Surveillance:** Exchanges must maintain a **Settlement Guarantee Fund (SGF)** to manage settlement risks and establish systems for **market surveillance, grievance redressal, audit trails, and prevention of market manipulation**.

DAANVEER INITIATIVE

Context

The **Ministry of Panchayati Raj (MoPR)** has launched the **DAANVEER Initiative** to enable voluntary donations of digital equipment for strengthening rural digital infrastructure.

About DAANVEER Initiative

- **Nature:** DAANVEER (Digital Advancement and Access Network for Village Empowerment and E-governance Resources) is a digital platform that facilitates the donation of **computers and other digital equipment** to **Gram Panchayats**.
- **Nodal Ministry:** Ministry of Panchayati Raj (MoPR).
- **Objective:** To bridge the **digital infrastructure gap** in Gram Panchayats and improve technology-enabled rural governance.
- **Digital Platform:** Citizens, organisations, and the **Indian diaspora** can donate digital equipment through the **Meri Panchayat** mobile application, where Gram Panchayats list their technology requirements.
- **Integrated Procurement:** Linked with the **DigiHaat** marketplace, enabling donors to purchase and deliver **pre-approved digital equipment** directly to beneficiary Gram Panchayats.
- **Transparent Delivery:** Provides **end-to-end digital tracking**, from dispatch to installation, and issues a **digital certificate of appreciation** upon successful delivery.

HOUBARA BUSTARD

Context

Uzbekistan, Kazakhstan, and the UAE have jointly released **672 captive-bred Houbara Bustards** into the **Aral Sea region** of **Karakalpakstan** under a cross-border conservation programme.

About Houbara Bustard

- **Nature:** The **Houbara Bustard** also known as the **Asian Houbara** or **MacQueen's Bustard**, is a **medium-sized migratory ground bird** belonging to the **bustard family (Otididae)**.
- **Habitat:** Inhabits **arid and semi-arid ecosystems**, including **deserts, gravel plains, dry steppes, and open shrublands** across **Central Asia, the Middle East, North Africa, and South Asia**, including the **Thar Desert** and **Rann of Kutch**.
- **Conservation Status:** IUCN: Vulnerable | CITES: Appendix I |
- **Adaptations:** Possesses **sandy-brown cryptic plumage** for camouflage and **strong legs** adapted for running across desert terrain, taking flight mainly to evade predators.
- **Diet:** **Omnivore**, feeding on **seeds, shoots, insects, small reptiles, and other invertebrates**, enabling survival in water-scarce environments.

AI PALLETISING

Context

The global **AI palletising and depalletising market** is projected to grow from **US\$1.8 billion in 2026** to **US\$9 billion by 2036**, driven by increasing adoption of intelligent warehouse automation.

About AI Palletising

- **Definition:** **AI palletising** is an industrial automation technology that uses **artificial intelligence, robotics, computer vision, and machine learning** to automatically **stack (palletise)** and **unstack (depalletise)** goods.
- **Application:** It is designed to handle **mixed, irregular, and damaged packages** without requiring manual reprogramming.
- **Objective:** To improve the **speed, accuracy, safety, and efficiency** of warehouse and manufacturing operations.
- **Adaptive Automation:** Robotic arms dynamically adjust to **different package dimensions, weights, and layouts**, enabling seamless handling of mixed-product pallets without manual intervention.
- **Continuous Learning:** Machine learning models enhance **stacking efficiency, gripping accuracy, and error recovery** using real-time operational data.
- **Industrial Applications:** Widely used in **e-commerce, logistics, FMCG, food processing, pharmaceuticals, and chemical industries** for automated material handling.

MACHILIPATNAM ASW SHALLOW WATER CRAFT

Context

The **Indian Navy** has launched **Machilipatnam (BY 529)**, the **seventh Mahe-class Anti-Submarine Warfare Shallow Water Craft (ASW-SWC)**.

About Machilipatnam ASW Shallow Water Craft

- **Nature:** **Machilipatnam** is the **seventh Mahe-class Anti-Submarine Warfare Shallow Water Craft (ASW-SWC)** built for the **Indian Navy**.
- **Builder:** Constructed by **Cochin Shipyard Limited (CSL)** under the **Atmanirbhar Bharat** initiative.

- **Specifications:** Displaces about **900 tonnes**, has a **maximum speed of 25 knots**, and an **operational endurance of 1,800 nautical miles**.
- **Combat Systems:** Equipped with **indigenously developed Hull-Mounted Sonar (HMS)** and **Low-Frequency Variable Depth Sonar (LFVDS)** for underwater detection and tracking.
- **Operational Roles:** Designed for **Anti-Submarine Warfare (ASW)**, **underwater surveillance**, **Low Intensity Maritime Operations (LIMO)**, and **mine warfare**.

HIMALAYAN CHANDRA TELESCOPE (HCT)

Context

The **25th anniversary** of the **Himalayan Chandra Telescope (HCT)** was recently celebrated, marking 25 years of astronomical observations from **Hanle, Ladakh**.

About Himalayan Chandra Telescope (HCT)

- **Nature:** The **Himalayan Chandra Telescope (HCT)** is a **2-metre optical-infrared telescope** named after **Nobel Laureate Subrahmanyan Chandrasekhar**.
- **Location:** It is installed at the **Indian Astronomical Observatory (IAO)** in **Hanle, Ladakh**, at an altitude of about **4,500 metres**, making it one of the **highest optical telescopes** in the world.
- **Operations:** Remotely operated from the **Centre for Research and Education in Science and Technology (CREST)**, **Indian Institute of Astrophysics (IIA)**, **Hosakote, Karnataka**, via a dedicated satellite link.
- **Observing Conditions:** Hanle's **high altitude**, **clear skies**, and **low atmospheric water vapour** provide excellent conditions for observations in the **optical, infrared, sub-millimetre, and millimetre** wavelength bands.
- **Scientific Instruments:** Equipped with **HFOSC (optical spectrograph and camera)**, **uTIRSPEC (near-infrared spectrometer and imager)**, and **HESP (high-resolution Echelle spectrograph)**.
- **Research Applications:** Supports studies of **planets, asteroids, stars, galaxies, comets, and exoplanets**, and contributed to the discovery of the **TRAPPIST-1 planetary system**.

SMOOTH-COATED OTTER

Context

A recent study has reported a **significant population of Smooth-coated Otters** in the **Mettur Dam** and **Cauvery River** stretches of **Salem district, Tamil Nadu**, highlighting the need for protecting the area as a freshwater habitat.

About Smooth-coated Otter

- **Nature:** The **Smooth-coated Otter** is a **semi-aquatic mammal** and the **only living species** of the genus **Lutrogale**.
- **Distribution:** It occurs across **South and Southeast Asia**, including **India, Nepal, Bangladesh, Bhutan, Myanmar, Thailand, Cambodia, Vietnam, Malaysia**, with a small isolated population in **Iraq**.
- **Habitat:** Inhabits **freshwater rivers, lakes, wetlands, mangroves, peat swamps, estuaries, and rice fields**, and can travel considerable distances over land in search of suitable habitats.
- **Physical Characteristics:** The **largest otter species in Southeast Asia**, it has a **rounded head, broad hairless nose, flattened tail, webbed feet, and short, smooth, water-repellent fur**.
- **Behaviour:** A **social and highly efficient swimmer**, it often hunts **cooperatively in groups**, frequently moving in **V-shaped formations** while fishing.
- **Indicator Species:** Serves as an important **indicator of healthy freshwater ecosystems** and the ecological integrity of wetlands and river systems.
- **Conservation Status**
 - **IUCN Red List: Vulnerable**
 - **WPA: Schedule I**

CAUVERY RIVER

Context

The **Tamil Nadu Government** has urged the Union Government to withhold statutory clearances for Karnataka's proposed **Mekedatu Balancing Reservoir Project** on the **Cauvery River**.

About Cauvery River

- **Nature:** The **Cauvery (Kaveri)** is a major **east-flowing peninsular river**, often referred to as the '**Dakshin Ganga**' (**Ganga of the South**).

- **Origin & Mouth:** Originates at **Talakaveri** in the **Brahmagiri Hills** of the **Western Ghats** (Kodagu district, Karnataka) and drains into the **Bay of Bengal** at **Poompuhar, Tamil Nadu**.
- **Basin:** Flows for about **800 km**, covering **Karnataka, Tamil Nadu, Kerala, and Puducherry**.
- **Left-bank Tributaries:** **Harangi, Hemavati, Shimsha, and Arkavati**.
- **Right-bank Tributaries:** **Lakshmantirtha, Kabini, Suvarnavathi, Bhavani, Noyyal, and Amaravati**.
- **Protected Areas:** The **Cauvery Wildlife Sanctuary** lies along the **Cauvery River**, **Nagarhole National Park** and **Wayanad Wildlife Sanctuary** are traversed by the **Kabini River**, **BRT Tiger Reserve** is drained by the **Bhargavi River**, and **Sathyamangalam Tiger Reserve** is traversed by the **Bhavani** and **Moyar** rivers.

Mekedatu Balancing Reservoir Project

- **Nature:** The **Mekedatu Project** is a proposed **multipurpose balancing reservoir** on the **Cauvery River** by the **Government of Karnataka**.
- **Location:** Planned at **Mekedatu Gorge** in **Ramanagara district, Karnataka**, near the confluence of the **Arkavati and Cauvery** rivers, close to the **Tamil Nadu border**.
- **Objective:** To provide **drinking water to the Bengaluru Metropolitan Region** and generate **hydroelectric power**.

Mains Exam Topics

REIMAGINING POLICE REFORMS IN INDIA

Context

The alleged use of excessive force by Delhi Police against peaceful student protesters at **Jantar Mantar** has renewed concerns over **police neutrality, accountability, and crowd management**. The incident highlights how political pressures, social media scrutiny, weak institutional autonomy, and deficiencies in policing can undermine the rule of law, with wider implications for **economic development, gender justice, and public trust in democratic institutions**.

Why is police neutrality becoming harder in the age of social media in India?

- **Information Velocity:** Social media spreads information within minutes, forcing police to act before facts are verified. This shifts policing from evidence-based investigation to immediate public response.
 - e.g., During the **2013 Muzaffarnagar riots**, a doctored video spread before verification, influencing public reaction faster than the police investigation.
- **Political Contestation:** Because facts remain unclear after this early response, political actors exploit the ambiguity to push partisan narratives. Police decisions are increasingly judged through a political lens rather than legal merit.
 - e.g., During the **2020 Delhi riots**, rival political groups promoted contrasting narratives of police actions, intensifying allegations of bias.
- **Communal Mobilisation:** Once politically framed, these narratives spread through closed messaging networks, rapidly mobilising communities along identity lines. Police often prioritise preventing violence over uniform enforcement.
 - e.g., In **Bulandshahr (2018)**, WhatsApp rumours of cow slaughter mobilised crowds before the claims could be verified.
- **Personalised Accountability:** When officers confront these mobilised crowds, every action can be instantly recorded and shared online. Fear of viral backlash, transfers, or suspension encourages risk-averse rather than impartial policing.
 - e.g., Officers policing protests have faced transfers or suspension after viral social media campaigns despite later being cleared in departmental inquiries.

- **Institutional Erosion:** As officers make defensive decisions under immediate public scrutiny, fewer decisions pass through the command hierarchy meant to absorb external pressure. This weakens institutional safeguards and encourages perception-driven decisions over due process.
 - e.g., In the **Hathras case (2020)**, the hurried night cremation was widely criticised as prioritising narrative management over established procedure.

Why is ineffective policing an economic problem in India?

- **Investment Risk Premium:** Weak policing raises the perceived security risk for investors, especially in law-and-order-sensitive regions. Firms demand higher returns or avoid investing, reducing capital inflows.
 - e.g., Parts of **Bihar** and eastern **Uttar Pradesh** witnessed prolonged industrial stagnation despite resource advantages, with firms citing extortion and weak enforcement.
- **Informal Economy Lock-in:** As formal investment declines, businesses increasingly rely on cash-based, informal transactions instead of police-backed contracts. This discourages formal registration and regulatory compliance.
 - e.g., In several North Indian wholesale markets, traders prefer informal credit and cash settlements to avoid legal disputes.
- **Privatised Enforcement:** Because these informal transactions lack police-backed contractual enforcement, firms secure agreements through private means. Spending on private security, recovery agents, or informal protection raises the cost of doing business.
 - e.g., World Bank Enterprise Surveys identify weak contract enforcement as a major business constraint, leading many firms to rely on private recovery mechanisms.
- **Market Concentration:** Because these private enforcement costs are largely fixed, larger firms absorb them more easily than smaller businesses. This raises entry barriers and concentrates market power.
 - e.g., In mining regions such as **Jharkhand**, large operators can afford security arrangements that smaller licence holders cannot.
- **Fiscal Base Erosion:** Because market power becomes concentrated in fewer firms, the tax base depends on a smaller share of formal economic activity, a problem further reinforced by the existing informal sector. This lowers revenue while increasing welfare and enforcement expenditure.

- e.g., Over **90% of India's workforce** remains informal, limiting tax buoyancy and increasing fiscal pressure.

How can police reforms become India's most significant gender reform?

- **Reporting Barrier:** Women often underreport domestic violence, sexual harassment, and assault because police stations are perceived as hostile or unsupportive. As a result, many crimes remain invisible, weakening both justice delivery and policy response.
 - e.g., **NFHS** data shows that only a small share of women experiencing spousal violence report it to the police.
- **Institutional Representation:** Because this reporting barrier stems from discomfort at the first point of contact, increasing women's representation in the police directly addresses that barrier. Women officers improve survivor confidence, encourage reporting, and ensure complaints receive a more sensitive response.
 - e.g., States introducing **women help desks** and increasing women constables have recorded higher registration of crimes against women.
- **Investigative Capacity:** As more complaints enter the system, effective investigation becomes essential to convert reporting into justice. Gender-sensitive training and stronger forensic capacity improve evidence collection and increase the likelihood of conviction.
 - e.g., The **Nirbhaya Fund** strengthened forensic infrastructure and gender-sensitisation after weaknesses exposed by the 2012 Delhi case.
- **Deterrence:** As investigations become more reliable and convictions more certain, the perceived cost of offending increases. Visible and professional policing discourages crimes against women before they occur.
 - e.g., **Delhi's** enhanced night patrolling and PCR deployment have been associated with lower street harassment in monitored areas.
- **Economic Mobility:** As public spaces become safer, women face fewer mobility constraints in education and employment. Greater mobility raises female labour force participation, making police reform a structural gender reform rather than merely a criminal justice reform.
 - e.g., **World Bank** studies identify safety-related mobility constraints as a major factor behind India's low female labour force participation.

Way Forward

- **Democratic Crowd Management:** Establish AI-enabled **social media monitoring centres**, pre-agreed protest protocols, and early communication channels to anticipate flashpoints and de-escalate tensions before they turn violent.
- **Operational Autonomy:** Implement **Prakash Singh (2006)** reforms by establishing **State Security Commissions** and ensuring fixed tenures for police leadership to insulate policing from political interference.
- **Data-Driven Policing:** Integrate **CCTNS** and **ICJS** with predictive analytics to identify crime hotspots, optimise resource deployment, and shift policing from reactive response to preventive action.
- **Financial Independence:** Create a **ring-fenced State Investigation Fund** to ensure timely access to forensic tools, cyber expertise, and interstate investigations without administrative delays.
- **Specialised Capacity Building:** Establish a **National Police Staff College**, enable lateral entry of experts, and institutionalise cross-functional training to build multidisciplinary and gender-sensitive policing.
- **Institutional Accountability:** Create an independent **Police Ombudsman** with whistleblower protection to strengthen internal accountability, improve public trust, and safeguard police neutrality.