

GOVERNMENT OF INDIA
MINISTRY OF COAL

RAJYA SABHA
UNSTARRED QUESTION NO. 213
ANSWERED ON- 02.02.2026

MODERNIZATION OF COAL MINES

213 SHRI C. VE. SHANMUGAM:

Will the Minister of COAL be pleased to state:

- (a) whether Government is taking steps to modernize coal mines in the country;
- (b) if so, the details thereof;
- (c) the steps taken by Government to modernise safety regulations in the country;
- (d) if so, the details thereof including measures taken to ensure safety and welfare of workers;
- (e) the details of action plan being formulated to prevent deaths of workers in coal mine accidents; and
- (f) further steps taken by Government in this regard?

ANSWER

MINISTER OF COAL & MINES
(SHRI G. KISHAN REDDY)

(a) & (b): Yes, the Government has taken several steps to modernise coal mines in the country through technological interventions. In this regard, Public Sector Undertakings (PSUs) under the Ministry of Coal have taken measures across the entire value chain, from exploration and planning to mining operations and coal evacuation, with the objective of enhancing operational efficiency, safety, and sustainability. The major initiatives include:

- i. Deployment of high-capacity excavators and dumpers equipped with state-of-the-art technology; standardisation of Heavy Earth Moving Machinery and deployment of Surface Miners in opencast mines; introduction of Mass Production Technologies such as Continuous Miners, Longwall, and Highwall mining systems, wherever feasible, in underground mines.
- ii. Implementation of Information Technology initiatives such as Establishment of Integrated Command and Control Centres, Operator Independent Truck Dispatch System, GPS-based vehicle tracking systems, Radio Frequency Identification-based boom barriers, and CCTV-based e-monitoring systems.
- iii. Implementation of digital transformation pilot project (Digicoal) in seven coal mines of Coal India Limited (CIL) across machine efficiency, operator efficiency, spares & consumables, contractor's efficiency, planning-monitoring-compliance and health-safety-environment.
- iv. First Mile Connectivity projects towards mechanisation of coal transportation and rake loading operations.

(c) & (d) : The Central Government has enacted the Occupational Safety, Health and Working Conditions (OSH&WC) Code, 2020, which came into force on 21.11.2025. The Code regulates working conditions and workplace environments to safeguard the health, safety, and welfare of workers, including mine workers.

Further, coal sector-specific safety regulations have been implemented under the Coal Mines Regulations, 2017, to prescribe modernisation, mechanisation, and emergency response and evacuation requirements in coal mines.

Following measures have been taken by coal PSUs to ensure safety and welfare of workers:

- i. Provision of statutory facilities such as canteens, rest shelters, crèches, drinking water facilities, conservancy services, pithead baths, etc.
- ii. Provision of voluntary welfare facilities, including townships, clubs, housing facilities, and cooperative societies.
- iii. Medical facilities through hospitals and dispensaries operated by Coal PSUs.
- iv. Educational facilities through financial support to schools in mining areas.

(e) & (f) : The following action plans have been formulated, and steps taken to prevent fatalities and reduce accidents in coal mines, thereby improving overall safety standards:

- i. **Adoption of Self-Regulation:** Formulated Hazard Identification and Risk Assessment (HIRA)-based Safety Management Plans (SMPs), fostering a culture of proactive risk management.
- ii. **Risk-Based SOPs:** Formulated and enforced risk-based Standard Operating Procedures for mining and associated activities to standardize safe work practices and reduce operational hazards.
- iii. **Blast-Free, Eco-Friendly Safe Mining Technologies:** Introduced advanced mass production technologies such as Continuous Miners in underground mines; Surface Miners and Vero-Rippers in opencast mines; and High Wall Mining in hybrid mines to ensure safer, cleaner, and more efficient operations.
- iv. **Mechanized Strata Control:** Deployed mechanized drilling and resin capsule-based roof bolting, supplemented with instrumentation, to ensure robust and scientifically managed strata control.
- v. **Real-Time Safety Monitoring:** Strengthened safety oversight through integration of mine surveillance systems using Integrated Command and Control Centers for continuous monitoring and rapid response.
- vi. **Improved Mine Atmosphere Analysis:** Utilized gas chromatographs to enhance precision and reliability of mine air sample analysis.
- vii. **Traffic Safety:** Formulated and enforced COPs for transport plying inside mines. Also implemented GPS-enabled Operator Independent Truck Dispatch Systems with ge-fencing, improving haulage efficiency and minimising human error.
- viii. **Modernisation of Training:** Enhanced operator skill and safety awareness through simulator-based training for HEMM operators and the use of Virtual Reality (VR) for immersive, scenario-based safety training.
- ix. **Modern and Advanced Dust Suppression:** Deployed advanced dust control technologies, including fog cannons and mist spray systems, to minimize airborne particulate exposure and improve air quality.
- x. **Use of Digitalisation and AI-based Analytics:** Leveraged digital tools and data analytics to support predictive risk management, informed decision-making, and creation of a safer, smarter, and more sustainable mining ecosystem.
