



'5G Use Case Test Lab' Inaugurated in Ranchi | Jharkhand | 11 Jan 2025

Why in News?

Recently, **the Union Minister for Coal and Mines** inaugurated the '[5G Use Case Test Lab](#)' at the [Central Mine Planning and Design Institute \(CMPDI\)](#) in **Ranchi**, Jharkhand.

- The facility aims to **advance the coal sector's digital transformation and technological capabilities.**

Key Points

- **Sustainable Art Showcase:**
 - The minister unveiled a '**Replica of CMPDI services**' sculpture made from industrial scrap material, showcasing CMPDI's services in geomatics, exploration, and environmental monitoring.
 - The installation emphasizes **recycling and sustainable practices** in art.
 - The Minister **also launched CMPDI's new corporate logo.**
- **5G Use Case Lab:**
 - **Features:**
 - The lab serves as a **scaled-down representation** of an [Industry 5G Private Network](#), tailored for the coal sector.
 - **Capabilities:**
 - Integrates **5G Radio, Core technologies, Edge/Cloud IT/OT applications, and 5G-enabled** devices.
 - Supports voice, video, and data communication applications.
 - Includes IIoT sensors for vehicle management and other applications.
 - **Objectives:**
 - Develop 5G use cases such as **predictive maintenance, smart mining, and real-time monitoring.**
 - Create a replicable model of a 5G private network for real-world applications.
 - **Future Applications:**
 - Implement advanced technologies like **digital twins, Automated Guided Vehicles (AGVs), and AR/VR for operational optimization.**
- **Benefits to the Coal Industry:**
 - Reliable, high-speed, low-latency connectivity to support **mission-critical operations.**
 - Real-time data exchange for better decision-making and streamlined processes.
 - The private captive network ensures data generated during operations remains with [Coal India Limited \(CIL\).](#)
 - Adoption of 5G will improve efficiency and safety in mining operations.

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Coal India Limited

▪ About:

- CIL is a **state-owned coal mining corporation in India**, responsible for producing and managing coal resources in the country.
 - It was founded in **1975 and is the world's largest coal producer.**

▪ Organisational Structure:

- CIL is classified as a **'Maharatna' public sector enterprise** and operates through 8 subsidiaries like Eastern Coalfields Limited (ECL), Bharat Coking Coal Limited (BCCL).
- **Mahanadi Coalfields Limited (MCL)** is CIL's largest coal-producing subsidiary.

▪ Strategic Importance:

- Over half of India's **installed power capacity is coal-based**, with CIL supplying around 78% of the country's total coal production.
- Coal also accounts for **40% of India's primary commercial energy needs.**

▪ Mining Capacity:

- Across **eight Indian states**, CIL operates in **84 mining areas**, and manages a total of **313 active mines.**