Issues with open cast mines

What is the issue?

Open cast mines in Jharkhand continues to be a death trap.

What are open cast mines?

- Open-pit mining, also known as opencast mining, is a surface mining technique that extracts minerals from an open pit in the ground.
- It is the most common method used throughout the world for mineral mining and does not require extractive methods or tunnels.
- Generally a traditional 'cone-shaped' excavation is done.
- The technique is used when mineral or ore deposits are found relatively close to the surface of the earth.
- Open-pits are sometimes called 'quarries' when they produce building materials and dimension stone.
- Dhanbad has 105 mining leases altogether comprising underground, open cast and exhausted mining areas.
- Some leases are not operational because of lack of statutory clearances.

How the mining is done?

- Opencast mining operations involve the removal of huge quantities of overburden, dumping, and backfilling of the excavated area
- Overburden removal refers to the removal of top-soil to expose the coal seams making them ready for mining.
- Tailings are a by-product of mining. After ore is processed the resultant waste stream is termed "tailings".
- Backfill typically contains these tailings.

What are the advantages of Open cast mining?

- Full visualization of exposed orebody and negligible ore loss
- Greater concentration of operations, better grade control and blending,
- No need of artificial light with natural ventilation round the clock.
- Greater safety, minimum mining hazards like gasification, roof and wall support.
- Easy pumping of sub surface water
- No restriction of working with heavy and bulky machineries.
- Lower capital and operating costs,
- Minimum mine development work
- Early production and quick return of capital invested.

What are the impacts of such mining?

- **Ecosystem Damage -** The ecosystem that was present at the time prior to mining activity is basically destroyed.
- **Soil degradation –** Various mining activities, particularly open pit, affect the topsoil and subsoil to a great extent by changing the natural soil characteristics. e.g. texture, grain size, moisture, pH, organic matter, nutrients etc.
- Overburden differs substantially from previous local soils, and some maybe even toxic for plants.
- **Loss of agricultural and forestland -** In case of open cast mining there will be complete loss of agricultural land and deforestation in and around the pit.
- **Water pollution -** Water pumped into mines can affect local water table depths, resulting in the release of acidic mining water into surface waters.
- The damage of natural drains and waste dumps may act as a barrier to the natural flow of rainwater
- **Water logging and Flash Flood -** This will result in water logging and flash floods which will damage the agriculture and to local properties downstream.
- The seasonal filling of nearby reservoirs and recharging of the groundwater around the area will be affected.
- **Landslides -** Opencast mining on hill slopes, particularly in areas of heavy rainfall, is vulnerable to landslides causing loss of human life, property and deforestation.
- This can be controlled by geo-technically designed slope of the mine and adequate support system.
- **Affects livelihood -** The land owners, often tribal population, and contractual farmers living within the Mining Lease area are affected.

How to overcome these issues?

- **Loss of Agriculture -** New agricultural land is developed and aforestation is done under overall land-use planning.
- **Soil degradation -** Topsoil and subsoil must be removed separately and stockpiled at an easily accessible place.
- These soils can selectively be re-laid to reclaim degraded land for agriculture
- **Water logging and Flash Flood** - The changes in the drainage pattern can be anticipated from the expected post-mining surface contours.
- Action plan for the surface drainage pattern can be designed accordingly.
- **Landslides -** This can be controlled by geo-technically designed slope of the mine and adequate support system.
- Rehabilitated people must be compensated by cash, separate housing, employment, health care, education, and other facilities.

Reference

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