Disaster Management · GS - III

Why are unregulated small-scale mining operations particularly vulnerable to climate-induced disasters? Examine the regulatory and technological measures required to reduce these risks.

EXAM YEAR	PAPER	SUBJECT
DAILY PRACTICE 25/11/2026	GS - III	Disaster Management

MARKS	WORD LIMIT
15	~250 words

Answer Hint

Informal mining, occupational safety, extreme rainfall, geological instability, environmental regulation, early warning systems

Model Answer

Small-scale mining supports local livelihoods but often operates with inadequate technical supervision, drainage infrastructure and worker protection. Increasingly intense rainfall can magnify these vulnerabilities.

Factors increasing disaster vulnerability

1. **Unsafe excavation:** Unscientific digging and unsupported tunnels increase the risk of collapses.
2. **Hydrological exposure:** Mines located near rivers or unstable slopes face flooding, waterlogging and landslide risks.
3. **Informal operations:** Unauthorised mines may lack safety audits, emergency exits and reliable communication systems.
4. **Climate stress:** Extreme rainfall can overwhelm drainage arrangements and destabilise surrounding terrain.

Measures for risk reduction

1. **Regulatory enforcement:** Identify and close illegal mining sites while strengthening inspections of licensed small mines.
2. **Scientific assessment:** Conduct geological surveys, slope-stability studies and flood-risk mapping before granting mining permissions.
3. **Technology integration:** Use rainfall monitoring, drainage sensors, geospatial mapping and early-warning systems.
4. **Worker protection:** Ensure protective equipment, emergency evacuation routes, rescue training and mandatory safety protocols.
5. **Community participation:** Involve local communities in reporting unsafe operations and monitoring environmental changes.

India's mining safety framework, including the Mines Act and applicable mining regulations, must be supported by effective enforcement and climate-risk planning.