Methodology Overview

Which minerals are mined in the world's most conflict-affected regions?

This analysis compares recorded conflict-event rates and industrial mining presence at first-level administrative division, or Admin1, broadly corresponding to states, provinces or regions. Mines, events and population estimates were assigned to a common Admin1 geography.

Results cover the 12 months and five years ending 25 July 2026. Both are expressed as annualised recorded events per million people.

Main limitations

This is an exploratory analysis and not intended as a fully validated risk screening tool. As such there are several limitations which limit the findings of this analysis. These include:

- The mining dataset is a proxy for recorded industrial mining presence. The public ICMM dataset excludes approximately 5,000 of 12,000 facilities due to licensing restrictions. There are notable and important gaps; for example, Kachin and Shan state in Myanmar have no recorded rare earth or tin mines respectively.
- Artisanal and small-scale mining is not covered by the data.
- Mine count limitation: Mine numbers do not indicate production volume, value, capacity or importance to global supply.
- Conflict rate is measured as annualised recorded events per million people, calculated at Admin1 level. It does not measure event severity, mine disruption or proximity to conflict.
- No recorded events or mines does not prove that a region is conflict-free or does not have mining.
- ACLED reporting coverage and source availability may vary between and within countries.
- Interpretation of figures based on small numbers of producing regions and mines require particular caution.

Exclusions and exceptions

- Liechtenstein, Malta, Nauru and Seychelles were excluded because duplicated geometries and inconsistent relationships between regional names and populations could not be resolved reliably.

- Small overlaps, gaps and offshore discrepancies remain in a limited number of territories.
- Mine primary and secondary commodities were retained and 'other' commodities excluded to reduce the influence of minor or incidental associations.
- Admin 1 regions with populations below 5,000 were excluded. With very small population denominators, population-normalised rates become highly sensitive to individual events and to potential variations in reporting coverage. The threshold was informed by sensitivity analysis showing that it substantially reduced volatility among small-population regions. Rates for less-populated regions retained in the dataset should still be interpreted with caution.

Conflict-event data

Weekly conflict data aggregated at Admin1-level comes from the Armed Conflict Location & Event Data (ACLED) dataset. ACLED draws on local, national and international sources, but recorded events should not be treated as a complete account of everything that occurred. Reporting coverage and source availability can vary between and within countries.

ACLED data was processed as follows:

- Events were limited to abduction/forced disappearance; air/drone strike; armed clash; attack; chemical weapon; excessive force against protesters; grenade; looting/property destruction; mob violence; remote explosive/landmine/IED; sexual violence; shelling/artillery/missile attack; suicide bomb; violent demonstrations
- The analysis counts events, not fatalities or people affected
- All regional rates and transformations were calculated by TDi, not by ACLED
- ACLED's Cayenne series (French Guiana) was assigned to Cayenne by name, although its representative centroid falls within Saint-Georges

Conflict-rate calculation

The principal measure is annualised recorded events per million people. Weekly retained events were divided by the relevant annual Admin 1 population estimate, multiplied by one million and annualised (multiplied by 52 and averaged over each selected period). Regions with no retained event in each week were assigned a weekly count of zero. Population estimates are modelled and may differ from official figures.

Rates were grouped into five bands: No recorded events: 0; Lower: >0–5; Moderate: >5–15; Higher: >15–50; Highest: >50. The bands support comparison and are not absolute classifications of safety, stability or risk.

Mining and commodity data

ICMM mine dataset was processed as follows:

- Facilities which included the asset type 'mine' were retained. 6,665 mining facilities were matched to the Admin1 locations retained in the analysis.
- Mine records were retained at all ICMM confidence levels. The analysis uses mine records to indicate presence of primary production of a commodity, rather than to verify individual facilities.
- The commodity analysis includes only commodities noted as the primary and secondary commodities produced by the facility. Commodities recorded only as "other" were excluded to reduce the influence of minor or incidental associations.
- Chromite was standardised to chromium and duplicate chromite records were removed where chromium was already recorded; alumina and aluminium were standardised to bauxite; ferronickel and ferrochrome were removed.
- Mine locations were matched to Admin1s via a point-in-polygon approach, and manual assignment was done where a match was not found (e.g. due to boundary precision).

Note that the analysis only indicates whether a commodity is recorded as being produced in a region and/or the number of mines in that region recorded as producing that commodity. It is not an indication of factors such as production volume or value; capacity, reserves or workforce; the region's contribution to global supply.

Statistical comparisons

For the comparison of gold and silver presence in higher- (>15 events per million people per year) and other mining regions (<=15 events per million people per year), Pearson chi-squared tests of independence were used:

- Gold: $\chi^2(1, N = 733) = 11.51, p < 0.001$
- Silver: $\chi^2(1, N = 733) = 9.03, p = 0.003$

These tests identify associations between recorded commodity presence and regional conflict classification. They do not demonstrate causation, mine-level exposure or a relationship between mineral production and the occurrence of conflict.