

► Employment in the critical minerals sector: A case study of Indonesia, Mongolia and the Philippines

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Key points

- In the face of rapid digital transformation and the transition to net zero, the supply of critical minerals is of strategic importance. Asia and the Pacific are a major source of critical minerals such as nickel and rare earth elements. As demand for these minerals intensifies, it will be important to monitor employment in the sector. This brief takes a data-oriented approach and examines employment-related issues in three countries of notable importance in the critical minerals space: Indonesia, Mongolia and the Philippines. The analysis complements case studies that were undertaken in each of these three countries that further explored decent work aspects of critical minerals and supply chains.¹
- Across the three countries, a little more than 770,000 people are employed in the mining of metal ores sector, with Indonesia accounting for the vast majority. As a share of total employment, the sector accounts for nearly 2 per cent of total employment in Mongolia, compared to 0.5 per cent and 0.2 per cent in Indonesia and the Philippines, respectively.
- There is wide variation in the type and quality of employment across the three countries. Elementary (manual, typically lower-skilled) occupations dominate in the Philippines (70 per cent), compared to Indonesia (41 per cent) and Mongolia (7 per cent).
- While employment in the mining of metal ores sector tends to offer higher average wages than other sectors – especially in Mongolia and Indonesia – informality remains a critical challenge. This is particularly the case in Indonesia, where more than 86 per cent of workers in the sector are informal and social security coverage is low.
- Looking ahead, as demand for critical minerals grows, further efforts will be needed to ensure inclusive and decent work while promoting resilience in the sector. The first is to promote and safeguard workers' access to safe work environments and social protection, especially in countries where informal employment is elevated. The second is to ensure employment strategies, such as upskilling and reskilling, are part of broader industrial and environmental policies to help both workers and enterprises transition from extraction-oriented activity to higher-value activities within the sector.

Context²

At the global level, critical minerals are vital for the transition to clean energy as they form the backbone of technologies such as electric vehicles, renewable energy systems, and energy storage solutions. Indeed, clean energy technologies are significantly more mineral-intensive than fossil fuel-based systems, which has led to

rising demands for the processing of minerals such as copper, cobalt, lithium, nickel, graphite and rare earth elements.³

Increased demand for these minerals is also set to sharply rise as they are essential inputs to electronics and IT, national defence systems and medical care, among others.⁴ However, the supply chains for critical minerals

¹ ILO, "Decent Work in Renewable Energy and Critical Mineral Supply Chains: Trends, challenges, and innovations in Asia and the Pacific", September 2025.

² This brief has been prepared by Steven Tobin and Mathys Quentin of the Regional Economic and Social Analysis Unit of the ILO Regional Office for Asia and the Pacific. The authors are grateful comments provided by the reviewers, Diego Rei, Makiko Matsumoto and Phu Huynh, employment specialists at the ILO for each of three countries under study.

³ ADB, "Building Resilient and Responsible Critical Minerals Supply Chains for the Clean Energy Transition", ADB Brief No. 298, May 2024.

⁴ IEA, *Global Critical Minerals Outlook 2025*, May 2025.

are highly complex and geographically concentrated, making them vulnerable to disruptions from geopolitical tensions, market volatility and environmental risks.

Such transformations will undoubtedly have important implications on employment in this sector with countries in Asia and the Pacific playing a particular vital role in the global supply chain for critical minerals.

Against this backdrop, this brief examines employment in the mining of metal ores sector as a proxy for the critical minerals sector. It examines employment patterns in three key countries in Asia and the Pacific that are home to substantial deposits of critical minerals: Indonesia, Mongolia and the Philippines.⁵ This data-driven analysis is complemented by three case studies examining decent work in critical mineral supply chains in the same three countries.⁶

Employment levels and shares

Across the three countries, employment in the sector totals more than 770,000 or approximately 0.4 per cent of total employment (table 1). The importance of the sector varies across the three countries.

Given the size of its mining of metal ores workforce (more than 650,000), Indonesia accounts for the vast majority of workers across the three countries, but in terms of relative importance, employment in the mining of metal ores accounts for nearly 2 per cent of total employment in Mongolia. In the Philippines, the same figure is 0.2 per cent.

With respect to the distribution of jobs within the sector, the role played by elementary occupations – that is, manual-oriented labour such as mineral extraction – varies across the three countries. For instance, in the Philippines, elementary occupations account for 70 per cent of employment in the sector, compared to 41 per cent in Indonesia and only 7 per cent in Mongolia.

► Table 1. Employment in mining of metal ores

	Indonesia	Mongolia	Philippines
All occupations			
Total (000s)	650.1	24.8	97.3
Share (% within total)	0.5	1.9	0.2
Elementary occupations			
Total (000)	269.4	1.8	67.8
Share (% within sector)	41.0	7.3	70.0

Note: Data refer to 2023 for Indonesia and Mongolia and to 2022 for the Philippines.

Source: Authors' calculations based on labour force survey data from ILO's microdata repository.

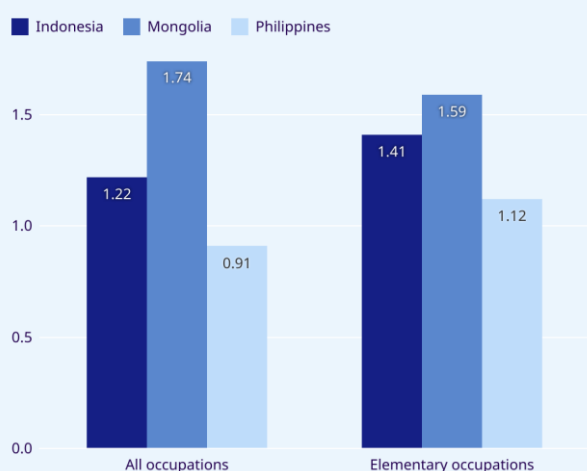
Employment quality

Earnings in the sector tend to be higher on average

Average monthly earnings per worker in the mining of metal ores sector tend – with one exception – to be higher than the average earnings in other sectors (see figure below). The trend is largely consistent when comparing both all occupations and just elementary occupations. The earnings premium is notably high in Mongolia, where workers in the mining of metal ores sector earn 74 per cent more on average than workers in all other sectors (all occupations). Elementary workers engaged in Mongolia's mining of metal ores sector earn 59 per cent more than elementary occupations workers in all other sectors. In Indonesia, a similar picture emerges, with workers engaged in the mining of metal ores earning considerably more than similar occupations in other sectors. The lone exception is in the Philippines. Elementary occupation workers in the mining of metal ores sector still earn 12 per cent more than their counterparts in other sectors, but when analysing all occupations, the average monthly earnings of mining of metal ores workers are only 91 per cent of the average across all other sectors.

⁵ See Appendix for details regarding data sources and methodologies.

⁶ ILO, "Decent Work in Renewable Energy and Critical Mineral Supply Chains: Trends, challenges, and innovations in Asia and the Pacific", September 2025.

► **Figure 1. Ratio of wages in the mining of metal ore sector to wages all other sectors**

Note: Wages refer to average monthly earnings of employees (PPP). Data refer to 2023 for Indonesia and Mongolia and to 2022 for the Philippines.

Source: Authors' calculations based on labour force survey data from ILO's microdata repository.

Evidence is mixed with respect to informality and social security coverage

There is a noticeable difference between formal employment and social security coverage with respect to mining of metal ore workers in Indonesia and Mongolia (table 2). In Mongolia, the sector is rather formal in nature, both in general and with respect to other sectors in the country. Only 2.5 per cent of mining of metal ore workers in Mongolia are informal – far less than the nearly 43 per cent of workers seen across all other sectors. As a consequence, social security coverage for mining of metal ore workers in Mongolia is notably high (above 90 per cent) and far superior than the coverage in other sectors.

In Indonesia, however, the opposite is true. Informal employment in the mining of metal ores sector stands above 86 per cent for all workers – and rises to nearly 95 per cent among elementary occupations. In both instances, the share of informal employment is marginally higher than the average across all other sectors. Related, social security coverage in the sector is both low in general (less than 6 per cent) and lower than what is seen in other sectors.

There are other aspects of decent work that merit attention and additional research. For instance, case studies in the three countries indicates that unsafe and

unhealthy working environments, with women and Indigenous peoples most affected, need to be addressed.⁷

► **Table 2. Share of mining of metal ore workers engaged in informal employment and share with social security coverage, 2023 (percentage)**

	Indonesia		Mongolia	
	Mining of metal ores	Other sectors	Mining of metal ores	Other sectors
All occupations				
Informality	86.7	81.2	2.5	42.7
Social security coverage	5.6	8.4	97.5	48.9
Elementary occupations				
Informality	94.9	94.2	-	-
Social security coverage	1.6	3.8	92.8	69.4

Source: Authors' calculations based on labour force survey data from ILO's microdata repository.

Policy considerations

As global demand for critical minerals accelerates to support the clean energy transition and digital transformation, ensuring that mining-related employment is both sustainable and decent will be central. Through an analysis of three countries in Asia and Pacific, this brief does demonstrate that wages tend to be favourable for mining of metal ore workers in these countries, but there are still potential gaps that merit attention.

First, in some instances, such as in the Philippines, there is a heavy concentration of low-skill, elementary occupations, suggesting that there is scope to transform the sector to incorporate more high-value activities that would require, and promote, more skilled and productive employment.

Second, the prevalence of informal work, notably in Indonesia, undermines worker protections and limits access to social security benefits. Efforts to develop and implement comprehensive and integrated approaches that acknowledge the complex interrelations and

⁷ ILO, "Decent Work in Renewable Energy and Critical Mineral Supply Chains: Trends, challenges, and innovations in Asia and the Pacific", September 2025.

synergies required to effectively and persistently tackle informality are needed.⁸

Finally, other aspects of employment quality such as occupation health and safety need to be part of a comprehensive approach to improving decent work in the sector.

Looking ahead, ensuring inclusive and resilient employment in the mining sector will require integrating employment strategies within broader industrial and environmental policies. Well-designed employment and social protection measures can help workers and enterprises take advantage of higher value-added opportunities within the sector and broader supply chain.

► Appendix. Methodology and figures

The International Standard Industrial Classification of All Economic Activities (ISIC) is a classification system of economic activities following agreed upon concepts and terms. Within the ISIC, there are several levels of categories of activities, ranging from the highest level (“divisions”, represented by two-digit codes) to the lowest level (“classes”, represented by four-digit codes). However, the structure of the ISIC does not allow for a granular analysis of activities related to critical minerals. As such, the analysis in this brief is based on the two-digit division of “ISIC 07: Mining of metal ores”. This includes “mining of iron ores” as well as “mining of non-ferrous metal ores”. As a result, the analysis presented is broader in nature. At the same time, taking a slightly broader approach to data extraction enables the estimation of more detailed cross tabulations, such as employment by occupation and earnings.

Related, employment categorized by the ISIC is, by definition, organized according to economic activity, and thus, is agnostic concerning the specific types of employment. In this case, employment engaged in “mining of metal ore” activities would include, among others, engineers, labourers and accountants. In an effort to better understand working conditions related more specifically to the actual extraction of critical minerals, the analysis also presents labour market indicators for those who are employed in ISIC 07 and also work – according to the International Standard Classification of Occupations (ISCO) – in “Elementary Occupations” (ISCO 09). Elementary Occupations include jobs that involve the performance of simple and routine tasks that may require the use of hand-held tools – for instance, mining and quarrying labourers.

The analysis also leverages the [ILO’s microdata repository](#), notably Labour Force Surveys of Indonesia (2023), Mongolia (2023) and the Philippines (2022).

Contact details	ILO Regional Office for Asia and the Pacific United Nations Building Bangkok 10200 Thailand	T: + 66 2 288 1234 E: BANGKOK@ilo.org W: www.ilo.org/asiapacific DOI: https://doi.org/10.54394/TVOP1587
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⁸ ILO, [Innovative Approaches to Formalization in Asia and the Pacific: Background Report to ILO Asia and the Pacific Tripartite Regional Knowledge Sharing Forum](#), April 2025