

ILO Brief

May 2025

Employment implications of the earthquake in Myanmar A preliminary rapid assessment

Key points

- Upwards of 3.5 million workers were employed in the area directly impacted by the earthquake. This represents US\$36.8 million in potential earnings lost per day (equivalent to US\$9.6 billion in lost earnings per annum) if these workers are unable to work or find quality employment elsewhere.
- In the absence of basic social protection, many workers and their families will be left without any support. Many of these workers are at heightened risks of poverty and to seeking out opportunities in the informal economy as a means of survival, exacerbating an already fragile situation.
- In the short term, humanitarian emergency cash assistance is needed, ideally linked to decent employment promotion (for instance, in debris removal or infrastructure reconstruction) with fair wages that are ideally based on the needs of workers and their families.
- Moving forward and given the evolving situation and the preliminary nature of this analysis, which combines unconventional data with more standardized sources, such as Labour Force Surveys – the ILO will continue to monitor the labour market and social consequences of the earthquake as more data becomes available. Future work will also make efforts to provide greater insights on the medium-term support measures that are needed to promote decent work and prevent abuses like child labour or forced labour.

Context

On 28 March 2025, a 7.7-magnitude earthquake hit central Myanmar with its epicentre near Mandalay, the nation's second-largest city. The disaster led to substantial loss of life, with official reports as of late April 2025 confirming that over 3,600 persons lost their life and more than 5,000 sustained injuries.

Moreover, an estimated 2 million people were in critical need of assistance as the earthquake and subsequent aftershocks severely disrupted essential services such as power, communication, water and sanitation, leaving many people homeless amid extreme heat and seasonal rains.¹ Prior to the earthquake, nearly 20 million people were already in need of aid, including 2.1 million within the affected region who were already displaced due to the ongoing conflict in the country.

The most recent poverty estimate by the World Bank indicates that 32.1 per cent of people in Myanmar live at or below the national poverty line – a rate that increases

¹ UN OCHA, "<u>Myanmar: Earthquake Response</u>", Situation Report No. 2, 12 April 2025.

to 50 per cent among internally displaced persons.² Prior to the earthquake, Mandalay had already experienced the strongest increase in poverty in the country, with rates jumping by more than 20 percentage points between 2017 and 2023. One likely reason is the decline in industrial output and reduced labour force participation, particularly among those with the highest education levels.

When a natural disaster strikes, the immediate focus is on the devastating impacts on the lives of those individuals who have been affected and their families. The earthquake that hit Myanmar was one of the largest in recent times and has led to international efforts and assistance to mitigate the risks of a widespread humanitarian crisis.

In the context of relief efforts, however, employment and the income associated with the ability to work are important considerations in the aftermath of such a crisis. Utilizing novel data sources, this brief presents a preliminary rapid assessment of the potential economic, employment and income implications of the Myanmar earthquake.

Preliminary assessment of the economic and employment impacts

The assessment focuses on the four most-affected regions of the country, namely Mandalay, Bago, Sagaing and Naypyitaw – all of which experienced severe ground shaking exceeding level 7 on the Modified Mercalli Intensity (MMI) scale (see annex figure 1). The potential impact on key agricultural sectors is also examined, given the heavy reliance on agriculture for employment in the four regions.³

Given the lack of recent and relevant official household data and crisis-related information, this preliminary assessment is based on an innovative methodology that leverages non-conventional sources of data, such as satellite imaging, and combines it with established baseline employment and earnings data from the 2020 Labour Force Survey and economic statistics from the Ministry of Planning and Finance and the Central Statistical Organization, as reported by the International Monetary Fund (IMF).

However, the intent of this brief is to provide preliminary and rapid insights into the impacts of the earthquake and to supplement the forthcoming post-disaster needs assessments that will be conducted in the field. As work unfolds, more research will be needed to fully assess the depth and breadth of the labour market and social consequences and the measures needed to ensure an inclusive recovery.

Population

According to the LandScan Population Data Explorer, approximately 14.2 per cent of Myanmar's population are estimated to live within the area that experienced ground shaking greater than 7 MMI (with 9.4 per cent living within the area that had ground shaking above 8 MMI).

Based on UN population estimates of 54.9 million in 2025,⁴ this translates to approximately 7.8 million people living within the area for which ground shaking was greater than 7 MMI (including 5.2 million in areas with ground shaking above 8 MMI). An estimated additional 200,000 people have been displaced by the earthquake.⁵ See table 1 below for a summary of the estimated impacts.

Economy

The geographical distribution of GDP was estimated using nightlight data (see Annex for details). This approach enabled a more precise estimate to be generated of the area directly affected by the earthquake.

By triangulating the geographic area with the nightlight data, it was estimated that the 7+MMI area contributes approximately 14 per cent of Myanmar's GDP (approximately 9 per cent of GDP's share is attributed to the 8+ MMI area). The IMF's 2025 GDP estimate for Myanmar comes to US\$65 billion. That means that the entire affected area represents approximately US\$9.1

² Sutirtha Sinha Roy and Roy Van der Weide, *Development Reversed: Poverty and Labor Markets in Myanmar* (World Bank, May 2024).

³ Agriculture accounts for nearly half of total employment in Myanmar. Source: Myanmar, Central Statistical Organization, Labour Force Survey 2020; World Bank, *Development Reversed: Poverty and Labor Markets in Myanmar*, 2024.

⁴ UN Population estimates.

⁵ ACAPS, "<u>Myanmar Earthquake: Bago Region Pre-Crisis Profile</u>", ACAPS Thematic Report, 22 April 2025.

billion for the year – including US5.9 billion within the 8+ MMI area.⁶

Employment and earnings

Using the population estimates derived above, the total working-age population in the entire affected area is approximately 5.5 million, including 3.7 million in the 8+ MMI area.

Using the weighted average employment rate for Sagaing, Bago, and Mandalay (63.3 per cent), it is estimated that approximately 3.5 million workers are within the 7+ MMI (2.1 million men and 1.4 million women), including 2.3 million within the 8+ MMI area.⁷

Based on the average hourly earnings estimates from the 2020 Labour Force Survey, inflated to 2025, this translates into US\$36.8 million in earnings potentially lost per day in the affected area, including \$24.5 million per day in the 8+ MMI area. This comes to US\$9.6 billion in lost earnings per annum (including US\$6.4 billion in the 8+ MMI area).

Sector

Using data from CROPGRIDS,⁸ it was also possible to capture the potential damage done to the main four crops produced in Myanmar: rice, beans, sesame and groundnuts. As seen in annex figure 2 below, agriculture production represents a significant component of the economy of the area impacted by the earthquake and thus, while the preliminary estimates indicate that urban, densely populated areas were most acutely impacts, agricultural prodcution will also be disprupted.

Table 1. Overview of population, economic and employment impacts of the Myanmar earthquake

	Level of ground shaking		
	8 MMI or greater	7 MMI or greater	
Population affected	5.2 million	7.8 million	
GDP (US\$)	5.9 billion	9.1 billion	
Employment	2.3 million	3.5 million	

Earnings (US\$)	24.5 million	36.8 million
per day		

Next steps

Myanmar does not have a national social protection system. Hence, workers and families who have been affected by the earthquake are not covered by any social protection benefits. In this context, humanitarian emergency cash assistance is urgently needed. Careful consideration should be given to how to ensure the fair and effective delivery of such assistance.

Employment promotion measures can also contribute to securing possible humanitarian cash. These could include employment programmes that help with the removal of debris and the reconstruction of crucial economic and social infrastructure through employment-intensive approaches incorporating decent work principles. Such programmes can be highly effective in early recovery by providing immediate financial support to affected workers and individuals while engaging them in recovery activities such as debris removal, infrastructure repair, and community rebuilding. This intervention aims to offer immediate income to workers and individuals affected by earthquake, helping them meet basic needs, support communities to accelerate rehabilitation process. While promoting adherence to the Fundamental Principles and Rights at Work, ILO crisis response program prioritizes the most vulnerable and affected individuals to maximize impact, and work through workers' and employers' organizations, as well as community-based organizations.

In the medium term, assistance is needed to ensure decent working conditions during the recovery and reconstruction period, not least to guarantee the prevention of child labour and forced labour.⁹ Moreover, the earthquake has revealed the need to invest in building a comprehensive and shock-resilient social protection system in Myanmar.

At the same time, the earthquake has inevitably affected the sectoral and occupational structure of the economy, and affected populations may not have the competencies

⁶ Final estimates of the GDP impact will vary. Already, some US sources suggest that the economic loss may exceed the GDP of Myanmar. See, for instance: United States Geological Survey, "M 7.7, 2025 Mandalay, Burma (Myanmar) Earthquake", PAGER Version 22.

⁷ For context, in 2020 the three provinces of Sagaing, Bago and Mandalay accounted for 35 per cent of total employment in Myanmar, or approximately 7.7 million individuals.

⁸ CROPGRIDS data estimates 173 crops worldwide at a resolution of 0.05 degrees (5.5 km2 at the equator) for the year 2020. Fiona H.M. Tang et al., "CROPGRIDS: A Global Geo-Referenced Dataset of 173 Crops". Scientific Data No. 11 (2024): 413.

⁹ ILO, <u>Understanding and addressing child labour across the Humanitarian-Development-Peace Nexus</u>, December 2023.

they need to transition successfully into new occupations and sectors. Assistance will be needed to ensure that affected individuals and households are provided with the necessary supports, including reskilling and upskilling measures to improve their access viable long-term solutions. These measures should include training on occupational safety and health, not least because Myanmar face high risks to both physical and mental health due to exposure to multiple hazards from dusts and heat to stress and anxiety. The reconstruction process also provides an opportunity to tackle longstanding labour market challenges in Myanmar. For instance, prior research by the ILO indicates that women have been more negatively affected by the economic decline since the military takeover.¹⁰

Finally, concrete progress on the implementation of the Commission of Inquiry recommendations is critical to a sustainable recovery.

Annex. Methodology and figures

Employment and related data are relatively scarce in Myanmar, with the last Labour Force Survey being carried out in 2020. During the COVID pandemic, the ILO managed to carry out a number of employment assessments based in part on the World Bank's High-Frequency Phone Surveys. Moreover, while a natural disaster of this magnitude will inevitably have significant spill-over effects on the wider economy and society, the initial impacts are most felt in the areas directly affected by the earthquake.

In the absence of such household data, a novel approach to estimating population, employment and GDP within the affected area has been taken by combining unconventional data sources with other traditional sources of labour market data. This has enabled a preliminary and rapid assessment of the labour market and social consequences of the earthquake, while continuing to monitor the evolving situation as more information and data become available. In particular, nighttime light data from 2023 has been leveraged to produce a proxy for economic activity taking place within the affected area. Nightlight radiance is taken from the visible infrared imaging radiometer suite Black Marble.¹¹ Black Marble gives access to snow-free radiance corrected for sunlight, glare, moonlight, cloud cover and lightning from the aurora. The data is measured in radiance, where pixels marked with a low-quality flag are removed. Based on this data, the radiance for the area hit with ground shaking at a Modified Mercalli Intensity (MMI) level of 7 or above. The result is that the affected area accounts for approximately 14 per cent of GDP. Similarly, the share of GDP contained within the 8+ MMI area is estimated to account for 9 per cent of GDP. These GDP shares were then applied to the IMF's most recent estimate of GDP in Myanmar for 2025.

Population data has been taken from LandScan Population Data Explorer, which projects existing regional or district population data at the pixel level, typically derived from census data. The methodology integrates a wide range of geographic information system (GIS) and satellite imagery with advanced machine learning techniques to estimate the population distribution residing in the areas affected by the earthquake. Similar to the estimates of GDP, the population shares within the affected areas – that is, areas with MMI scores of 7+ and 8+ – were estimated and applied to the UN population estimates for 2025 to estimate the total population living in those areas.

Based on the estimates of the total population in the affected areas, the working-age population, that is, persons aged 15 years and above, was calculated by applying the share of working-age individuals in the total population from the 2020 Labour Force Survey (70.9 per cent). This results in an estimated working-age population of 5.5 million living in the 7+ MMI area and 3.7 million living in the 8+ MMI area. The weighted employment rate from Sagaing, Bago and Mandalay (63.3 per cent according to the 2020 Labour Force Survey) was then applied to the working-age population to calculate the total number of jobs in the affected area. The gender disaggregation of employment was estimated using

¹⁰ ILO, "Employment in Myanmar in the First Half of 2022: A Rapid Assessment", ILO Brief, August 2022.

¹¹ See: <u>https://blackmarble.gsfc.nasa.gov/</u>.

the female share of employment as reported in the 2020 Labour Force Survey. Earnings estimates were calculated using mean hourly earnings of employees in 2020 (inflated to 2025) and for this purpose assumes 8 hours of work per day and 40 hours per week.

Annex figure 1. Area impacted by the earthquake and related population density



Note: In Panel C, the main cities and the main towns are represented by a cross (yellow and blue respectively Axis represents longitude and latitude.

Sources: GADM for administrative areas, USGS for shakemaps, Landscan for population and Openstreet map for populated places.

To reflect the agriculture production taking place in the affected area, the maps in annex figure 2 plot the crop areas for the four main crops produced in Myanmar: rice, beans, sesame and groundnuts. These plots are based on the CROPGRIDS database for the year 2020. This figure shows that agriculture production is a significant component of the economy of the area impacted by the earthquake.



Annex figure 2. Crops impacted by the earthquake

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