

Invisible Forced Labour in Japan's Manufacturing Supply Chains

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Author: Fumiya NAGASHIMA

Global production networks have expanded rapidly over the past decades, making labour conditions in upstream supply chains increasingly invisible to final consumers. While recent studies have begun to quantify modern slavery risks embodied in international trade, little is known about the extent to which the consumption of manufactured products in Japan contributes to forced labour across global supply chains.

This study addresses the following research question: to what extent and through which global supply chains does Japan's final demand for manufactured goods induce forced labour worldwide, and how are these risks distributed across countries, sectors, gender groups, and income levels?

To answer this question, we employ a labour-extended multi-regional input-output (MRIO) model to estimate the global forced labour footprint associated with Japan's final consumption of manufactured products. The MRIO framework allows us to trace how final demand propagates through international production networks and induces labour inputs across multiple upstream production stages. The model captures both domestic and international supply-chain linkages and quantifies the number of forced labourers embodied in global production activities.

The analysis integrates multiple international datasets. In particular, we combine the GLORIA global MRIO database with modern slavery statistics from the Global Slavery Index and the Global Estimates of Modern Slavery to construct a satellite account of forced labour consistent with global industrial classifications. Gender- and skill-disaggregated labour data from GLORIA are used to allocate forced labour across industries and countries. The resulting framework enables a detailed decomposition of forced labour footprints by country, sector, gender, and income group.

The results show that Japan's consumption of manufactured products induces approximately 48,000 forced labourers globally, of which around 90% are concentrated in ten countries, particularly in emerging Asian economies such as China, India, Indonesia, and Vietnam. Sectoral decomposition reveals that food-related products, electronics, and textiles are major channels through which Japanese demand generates forced labour risks. The analysis also uncovers clear gendered patterns of exploitation, with male-dominated risks in construction and extractive industries and female-concentrated risks in agriculture and apparel production. Furthermore, the income-group analysis reveals that middle-income countries exhibit significantly higher forced labour intensity, suggesting that global production networks generate an unequal exchange in which high-income consumer economies externalize social costs to more labour-intensive economies.

The novelty of this study lies in providing the first comprehensive MRIO-based estimation of the forced labour footprint specifically associated with Japan's manufacturing consumption. By integrating modern slavery statistics with a global MRIO database, the study offers a high-resolution analysis of how consumption in a major high-income economy structurally contributes to forced labour risks across global supply chains. The findings contribute to the growing literature on social footprints and provide quantitative evidence relevant to human rights due diligence and SDG 8.7, highlighting the need for multi-tier supply chain governance that extends beyond direct suppliers.