


Indonesia's New Growth Center: The IMIP Model

From Industrial Boom to Social Transformation: Labour Absorption, Inequality, and Partial Integration in Bahodopi's Nickel-Based Industrialization

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Abstract

This study examines the socio-economic consequences of rapid resource-based industrialization in Morowali, Indonesia, with a particular focus on Bahodopi as the core industrial node of the Indonesia Morowali Industrial Park (IMIP). Situated within the global expansion of critical minerals and downstream industrial policy, the paper analyzes how industrial transformation affects labour absorption, inequality, and social integration at the local level.

Using a theory-informed descriptive and comparative approach, the study integrates multiple datasets covering labour market indicators, inequality, wages, education, demographic change, and sectoral output over the period 2013–2025. The empirical analysis identifies strong labour absorption, with employment and labour force expanding by more than 50 percent, accompanied by declining unemployment and rising formalization. At the same time, the Gini coefficient decreased significantly, suggesting improvements in aggregate income distribution.

However, these aggregate gains are accompanied by emerging structural differentiation. The findings reveal a pattern of spatial concentration, uneven human capital upgrading, and likely segmentation in labour market access. This divergence between economic expansion and deeper social outcomes is conceptualized as partial integration, in which economic integration advances rapidly while social and institutional integration remains uneven.

The study contributes to the literature by demonstrating that resource-based industrialization can simultaneously generate employment growth and declining inequality while producing new forms of structural segmentation. It also highlights the importance of institutional capacity in translating industrial growth into inclusive development outcomes. The findings have broader implications for industrial policy in resource-rich regions, particularly in the context of the global energy transition and rising demand for critical minerals.

Keywords: Industrialization; Resource-based development; Labour absorption; Inequality; Social integration; Partial integration; Critical minerals; Nickel downstreaming; Industrial clusters; Indonesia; Morowali; Bahodopi

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I. Introduction

Over the past decade, Indonesia has emerged as a pivotal actor in the global critical minerals landscape, driven by an ambitious downstream industrialization strategy centered on nickel. As a key input in electric vehicle (EV) batteries and clean energy technologies, nickel has become a strategic commodity in the global energy transition, positioning Indonesia at the forefront of resource-based industrial transformation (International Energy Agency [IEA], 2023; World Bank, 2020). Within this national strategy, the Indonesia Morowali Industrial Park (IMIP), located in Bahodopi, Central Sulawesi, represents one of the most prominent and rapidly expanding industrial clusters in the Global South.

The transformation of Morowali from a peripheral agrarian region into a global industrial hub has been both rapid and profound. Empirical evidence indicates that the local labor force expanded from approximately 55,068 in 2016 to more than 85,039 in 2025, representing an increase of over 50 percent within less than a decade. Over the same period, total employment rose from around 52,925 to 82,653 workers, while the unemployment rate declined from approximately 3.9 percent to 2.8 percent. These trends point to a pattern of strong labour absorption, suggesting that industrialization in Morowali has been not only growth-enhancing but also employment-generating.

At the same time, income inequality—as measured by the Gini coefficient—has declined from 0.345 in 2016 to 0.265 in 2025. At first glance, this trajectory appears to support the notion that industrialization has contributed to more equitable income distribution. However, aggregate indicators such as the Gini coefficient may conceal deeper structural dynamics, particularly those related to labor segmentation, spatial disparities, and unequal access to opportunities (Sen, 1999; World Bank, 2023).

Table 1. Economic Expansion and Social Indicators in Morowali (2016–2025)

Indicator	Baseline	Latest	Change
Labor force	55068.0	85039.0	54.42
Employment	52925.0	82653.0	56.17
Open unemployment rate (%)	3.89	2.80	-1.085
Gini coefficient	345	265	-0.079
Formal employment share (%)	24.97	47.17	22.20
Higher education share of workers (%)	11.65	14.18	2.53
Industrial share in PDRB (%)	32.96	73.59	40.63
Agriculture share in PDRB (%)	12.64	1.55	-11.08
UMK (IDR)	2039000.0	3716125.0	82.25
Bahodopi population	8502.0	68455.0	705.16

Sources: Authors's estimation (Muhyiddin et al., 2026)

The table illustrates the rapid expansion of labor force and employment alongside a declining Gini coefficient, highlighting a divergence between economic growth and deeper structural inclusion.

As illustrated in Figure 1, Morowali's development trajectory is characterized by a striking divergence between economic expansion and social indicators. While employment and labor force participation increased rapidly, inequality declined more gradually. This pattern suggests that industrialization in Morowali may be simultaneously inclusive in aggregate terms yet uneven in its structural outcomes.

This dual trajectory raises fundamental questions about the nature of development in resource-based industrialization. Classical development theory, particularly the dual-sector model proposed by Lewis (1954), suggests that industrialization absorbs surplus labor from traditional sectors and generates broad-based welfare improvements. More recent contributions, however, emphasize that industrialization outcomes depend critically on institutional capacity, governance quality, and policy design (Rodrik, 2018; Acemoglu & Robinson, 2019).

In parallel, the literature on agglomeration and economic geography highlights that industrial clustering can generate both growth and inequality. While agglomeration economies enhance productivity through scale effects and labor pooling (Krugman, 1991), they may also produce spatial concentration and uneven development (Duranton & Puga, 2020; UN-Habitat, 2022). These dynamics are particularly relevant in rapidly industrializing regions, where infrastructure, urban planning, and social services often lag behind economic expansion.

The Morowali case brings these theoretical perspectives into sharp focus. Industrialization has triggered large-scale migration, transforming Bahodopi into a densely populated industrial hub. The population of Bahodopi increased more than eightfold within a decade, reflecting the strong pull of industrial employment opportunities. While this influx has contributed to economic dynamism, it has also introduced new challenges related to social integration, infrastructure provision, and local capacity to absorb rapid demographic change.

Despite the growing importance of critical minerals and industrial policy in global development debates, the social dimensions of resource-based industrialization remain underexplored. Existing studies tend to focus on macroeconomic performance, trade dynamics, and global value chains, with relatively limited attention to how industrialization reshapes local societies. This gap is particularly important in the Global South, where institutional capacity and social protection systems may not be fully equipped to manage rapid transformation.

This study addresses this gap by examining the social consequences of industrialization in Bahodopi, Morowali, focusing on three interrelated dimensions: labour absorption, inequality, and social integration. Rather than treating economic growth as a sufficient indicator of development, the analysis adopts a broader perspective that considers both distributional outcomes and structural dynamics.

The central argument of this paper is that Morowali represents a case of partial integration, in which economic expansion is both rapid and labour-absorbing, yet social and institutional adaptation remains uneven. While aggregate indicators suggest improvements in employment and inequality, deeper structural transformations reveal emerging forms of segmentation across labor markets, spatial configurations, and social groups.

By integrating empirical evidence with theoretical insights from development economics, economic geography, and institutional analysis, this study contributes to the literature in three key ways. First, it provides detailed empirical evidence on the social dimensions of nickel-based industrialization in Southeast Asia. Second, it challenges the conventional assumption that declining inequality necessarily reflects inclusive development, demonstrating that aggregate improvements can coexist with structural fragmentation. Third, it introduces the concept of partial integration as a framework for understanding uneven development outcomes in rapidly industrializing regions.

The remainder of the paper is structured as follows. Section 2 reviews the relevant literature and develops the theoretical framework. Section 3 outlines the data and methodology. Section 4 presents the empirical findings, integrating quantitative indicators and structural interpretation. Section 5 discusses the broader implications of the findings within a global context. Section 6 concludes and outlines policy implications.

II. Literature Review and Theoretical Framework

2.1. Resource-Based Industrialization and Structural Transformation

Industrialization has long been considered a central pathway for economic development through the process of structural transformation from low-productivity to high-productivity sectors. The classical dual-sector model proposed by W. Arthur Lewis (1954) posits that surplus labor from traditional agricultural sectors is gradually absorbed into modern industrial activities, leading to rising productivity and income levels. In this framework, industrialization is expected to generate broad-based welfare improvements.

However, more recent evidence suggests that the outcomes of industrialization are highly heterogeneous, particularly in resource-rich economies. The literature on resource-based development highlights that natural resource endowments can lead to divergent trajectories, ranging from sustained industrial upgrading to the so-called resource curse (Auty, 2021; World Bank, 2020). Crucially, the determining factor is not resource abundance *per se*, but the institutional and policy frameworks governing resource utilization (Dani Rodrik, 2018).

In the context of critical minerals such as nickel, resource-based industrialization has gained renewed importance due to its role in global value chains for clean energy technologies and electric vehicles. The rapid expansion of demand for critical minerals has encouraged countries to move beyond raw extraction toward domestic processing and value addition (International Energy Agency, 2023; Sovacool, 2022). Indonesia's downstream industrialization strategy represents a prominent example of this approach.

Yet, while the macroeconomic and industrial aspects of resource-based industrialization have been extensively studied, its social consequences remain relatively underexplored, particularly at the local level.

2.2. Agglomeration, Industrial Clusters, and Spatial Inequality

The emergence of large-scale industrial clusters such as the Indonesia Morowali Industrial Park (IMIP) can be understood through the lens of agglomeration theory. According to Paul Krugman (1991), the spatial concentration of economic activity generates increasing returns through mechanisms such as economies of scale, labor market pooling, and knowledge spillovers.

These processes explain the rapid growth of industrial hubs, but they also contribute to uneven spatial development. Regions that attract industrial investment tend to experience accelerated growth, while surrounding areas may lag behind, leading to spatial inequality (Duranton & Puga, 2020; Fujita & Thisse, 2019). This phenomenon is particularly pronounced in developing countries, where urban planning and infrastructure provision often struggle to keep pace with rapid industrial expansion (UN-Habitat, 2022).

In resource-based industrial clusters, this spatial divergence may take the form of an enclave economy, where industrial activities are weakly integrated with the local economy (Bridge, 2021; Hilson, 2020). While such clusters can generate significant economic output, their benefits may not be evenly distributed across the local population.

The Morowali case provides an opportunity to assess whether contemporary industrial clusters in the Global South follow this enclave pattern or exhibit a more integrated development trajectory.

2.3. Migration, Labor Market Segmentation, and Social Transformation

Industrialization is intrinsically linked to migration dynamics, as labor reallocates toward regions with higher expected returns. The classical Harris–Todaro framework posits that migration decisions are driven by expected income differentials rather than realized wages, often leading to significant labor inflows into rapidly growing industrial regions (Todaro & Smith, 2020). In the context of large-scale industrial clusters such as IMIP, this mechanism generates substantial demographic shifts, transforming local labor markets and social structures.

Empirical evidence from emerging industrial hubs suggests that such migration flows often produce segmented labor markets, characterized by a dual structure between formal and informal employment. Migrant workers—who tend to possess higher mobility and, in some cases, better skills or networks—are more likely to access formal industrial jobs, while local populations remain disproportionately concentrated in informal or lower-productivity activities (International Labour Organization, 2023; OECD, 2021). This pattern resonates with findings in Indonesia’s labor market more broadly, where structural transformation does not automatically translate into equitable labor outcomes (Muhyiddin et al., 2025).

Beyond labor market outcomes, migration also reshapes social and institutional landscapes. Rapid population inflows can strain housing, public services, and social cohesion, particularly in regions with limited prior infrastructure. These pressures highlight the importance of institutional capacity in managing not only economic transformation but also its social consequences. In this sense, migration is not merely a byproduct of industrialization, but a central mechanism through which its broader developmental impacts are mediated.

2.4. Inequality, Capability, and Inclusive Development

The relationship between industrialization and inequality remains one of the most contested issues in development economics. While the Kuznets hypothesis suggests that inequality follows an inverted-U trajectory—rising in early stages of industrialization before declining—recent empirical evidence indicates that this pattern is neither universal nor automatic (Piketty, 2020; Kanbur, 2021). Instead, inequality outcomes are highly contingent on institutional arrangements, policy design, and initial conditions.

From a normative perspective, Sen’s capability approach shifts the focus from income-based measures of development to the distribution of opportunities and freedoms (Sen, 1999).

This perspective is particularly relevant in the context of industrial clusters, where rapid economic growth can coexist with uneven access to education, healthcare, and decent work. In such settings, aggregate indicators such as GDP growth may mask underlying disparities in well-being.

The empirical findings of this study reinforce this concern. While Morowali has experienced extraordinary economic expansion, improvements in labor formalization and quality remain partial. This suggests that the benefits of industrialization are not evenly distributed across social groups, and that structural transformation may generate new forms of inequality even as it reduces others.

Recent studies emphasize that inclusive development requires complementary public investment and institutional strengthening alongside industrial growth (World Bank, 2023; UNDP, 2023). Without such measures, industrialization may lead to “growth without inclusion,” where economic gains are concentrated among specific sectors or actors. In the Indonesian context, this challenge is further compounded by regional disparities and varying levels of institutional capacity across local governments.

Thus, the Morowali case underscores a key insight: industrialization can be a powerful engine of growth, but its contribution to inclusive development depends critically on the distribution of capabilities and access to opportunities.

2.5. Institutional Capacity and the Political Economy of Industrialization

Institutions play a central role in shaping both the trajectory and outcomes of industrialization. According to Acemoglu and Robinson (2019), inclusive institutions are essential for ensuring that economic growth translates into broad-based development, while extractive institutions tend to concentrate benefits among a narrow set of actors. In resource-based industrialization, this distinction is particularly important, as large rents and capital flows create strong incentives for capture and unequal distribution.

In rapidly industrializing regions such as Morowali, institutional capacity is often challenged by the speed and scale of economic transformation. Local governments must simultaneously manage urban expansion, provide public services, regulate labor markets, and coordinate with private investors. When institutional capacity does not keep pace with economic growth, an institutional lag emerges, resulting in governance gaps and uneven development outcomes.

The Indonesian context adds further complexity through decentralization. While local governments are responsible for many aspects of service delivery and spatial planning, key policy levers—such as industrial regulation and resource governance—remain centralized. This creates potential coordination failures between levels of government, limiting the effectiveness of policy implementation (Fitriani, 2019; Smoke, 2018).

Recent policy-oriented research on Indonesia’s nickel industry highlights similar tensions. Nugroho and Al-Wafiy (2026) show that while downstreaming policies have been effective in attracting investment and expanding industrial capacity, institutional arrangements have struggled to keep pace with the rapid transformation of the sector. This mismatch between economic dynamism and institutional adaptation is a defining feature of contemporary resource-based industrialization.

The empirical evidence from this study aligns with this perspective. The persistence of fiscal imbalances, partial labor formalization, and spatial concentration suggests that institutional capacity remains a binding constraint. Consequently, the effectiveness of

industrial policy cannot be assessed solely in terms of growth outcomes, but must also consider the ability of institutions to manage and distribute the gains from industrialization.

2.6. Research Gap and Theoretical Contribution

Despite extensive literature on industrialization, several important gaps remain.

First, much of the existing research on resource-based industrialization focuses on macroeconomic outcomes and global value chains, with limited attention to local-level social transformation. Second, while inequality is widely studied, less attention has been given to the possibility that aggregate improvements in inequality may coexist with emerging structural disparities.

This study addresses these gaps by integrating insights from structural transformation theory, economic geography, and capability-based development to examine the social consequences of industrialization in Morowali.

It introduces the concept of partial integration, defined as a development trajectory in which economic expansion is both rapid and labor-absorbing, yet social and institutional integration remains uneven. This framework captures the coexistence of: strong employment growth, declining aggregate inequality, and emerging structural segmentation.

By doing so, the study contributes to the literature in three ways. First, it provides empirical evidence on the social dimensions of nickel-based industrialization in Southeast Asia. Second, it challenges the assumption that declining inequality necessarily implies inclusive development. Third, it highlights the importance of institutional capacity in mediating the relationship between industrialization and social outcomes.

III. Data and Methodology

3.1. Research Design

This study employs a theory-informed descriptive and comparative research design to examine the socio-economic consequences of rapid industrialization in Morowali, with a particular focus on Bahodopi as the core industrial node. Rather than relying on econometric causal identification, the analysis prioritizes pattern recognition, structural interpretation, and phase-based comparison, allowing for a nuanced understanding of complex transformation processes.

This approach is consistent with recent contributions in development economics and political economy, which emphasize that in rapidly evolving contexts—particularly in resource-based industrialization—rich empirical description combined with theoretical grounding can yield analytically robust insights (Rodrik, 2018; World Bank, 2020).

The empirical analysis is structured around three interrelated dimensions:

1. Growth and labour absorption, capturing the extent to which industrial expansion translates into employment creation;
2. Distribution and inequality, assessing whether economic gains are reflected in more equitable outcomes;
3. Social integration, examining whether structural transformation leads to broader inclusion across labor markets, space, and social groups.

3.2. Data Sources and Construction

The analysis integrates multiple datasets derived from official statistical sources, covering the period 2013–2025, with varying availability across indicators. The dataset combines labor, inequality, wage, demographic, educational, and sectoral indicators to construct a multi-dimensional profile of industrial transformation.

Labor market data are constructed from district-level statistical tables and include: working-age population, labor force, employment, unemployment, employment rate, open unemployment rate, and labor force participation rate (TPAK).

These indicators provide the basis for assessing labour absorption and market dynamics over the period 2015–2025.

Income distribution is measured using the Gini coefficient for the period 2014–2025. Given the limitations of aggregate inequality measures, the analysis also incorporates: formal–informal employment composition, used as a proxy for structural inequality within the labor market

To capture broader social outcomes beyond labour and income dynamics, this study incorporates four additional variables that reflect key dimensions of socio-economic transformation.

First, the minimum wage (UMK) is employed as a proxy for wage progression and the evolving valuation of labour within the local economy. Changes in UMK provide an indicative measure of how industrialization influences labour remuneration and institutional wage-setting mechanisms.

Second, the educational composition of workers is included to assess human capital upgrading. In particular, the share of workers with tertiary education serves as a proxy for shifts in skill demand and the extent to which industrialization is associated with a more skilled labour force.

Third, population dynamics are analyzed, with specific attention to the growth of Bahodopi relative to the broader Morowali region. This indicator captures patterns of demographic concentration and migration, reflecting the spatial reconfiguration of population associated with industrial clustering.

Fourth, the sectoral composition of PDRB is used to trace structural transformation within the regional economy. The shifting contribution from agriculture to manufacturing provides a direct measure of the transition from a primary-based economic structure to one dominated by industrial activities.

Taken together, these variables enable a more comprehensive assessment of social and economic transformation, linking labour market outcomes with demographic, educational, and structural changes.

3.3. Analytical Framework

The empirical analysis in this study is grounded in an integrated theoretical framework that synthesizes key perspectives from development economics and political economy. Specifically, it draws upon structural transformation theory (Lewis, 1954), agglomeration theory (Krugman, 1991), the capability approach (Sen, 1999), and institutional economics (Acemoglu & Robinson, 2019).

The integration of these frameworks enables a multidimensional interpretation of industrialization processes, moving beyond purely economic metrics toward a more comprehensive understanding of socio-economic transformation.

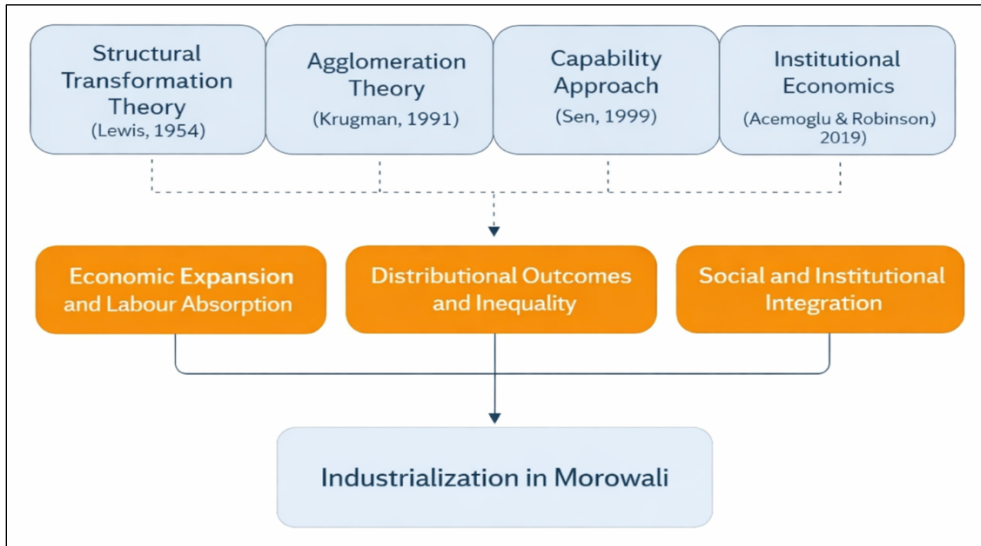


Figure 1. Analytical Framework

Within this framework, structural transformation theory provides the foundation for analyzing the reallocation of labor from low-productivity to high-productivity sectors. Agglomeration theory offers insights into the spatial concentration of economic activities and the resulting productivity gains, while also highlighting potential spatial disparities. The capability approach shifts the analytical focus toward human well-being and access to opportunities, emphasizing that development outcomes should not be assessed solely in terms of income. Finally, institutional economics underscores the role of governance structures and institutional capacity in shaping the distribution and sustainability of development outcomes.

Taken together, these perspectives allow the study to examine empirical findings along three interrelated analytical dimensions. First, economic expansion and labour absorption capture the extent to which industrialization generates employment and economic dynamism. Second, distributional outcomes and inequality assess whether the benefits of growth are equitably shared across the population. Third, social and institutional integration evaluates the degree to which economic transformation is accompanied by inclusive access to opportunities and supported by adequate institutional arrangements.

3.4. Empirical Strategy

The empirical strategy consists of five sequential steps.

The first step examines the time-series evolution of: labor force and employment, unemployment rate and TPAK, Gini coefficient, formal employment share, and wage levels (UMK)

This allows identification of long-run trends in growth, inequality, and labor market transformation.

The second step identifies structural breaks corresponding to industrial expansion. Rather than applying formal break tests, the analysis identifies breakpoints based on: sharp discontinuities in sectoral composition, acceleration in labor absorption, and rapid demographic shifts.

Two critical structural breakpoints are identified in the transformation trajectory. The first, around 2018, corresponds to the initial phase of large-scale industrial expansion, while the second, around 2022, reflects a consolidation phase marked by intensified labour absorption and pronounced demographic concentration.

The third step to assess the magnitude of transformation, the analysis compares: pre-industrial phase (2015–2017) and post-industrial phase (2022–2025)

For sectoral output, the comparison uses 2015–2017 vs 2022–2024 due to data availability.

This comparison allows identification of structural shifts in: employment, inequality, wages, formalization, and human capital.

The fourth step evaluates directional changes, asking whether indicators move toward: inclusion (e.g., employment growth, declining inequality), exclusion (e.g., unequal access, stagnation in upgrading), and transformation (e.g., sectoral shift, formalization)

This approach is particularly relevant in data-constrained contexts where structural interpretation is more informative than causal estimation.

The final step synthesizes all indicators to identify patterns of inclusion, exclusion, and structural segmentation. Inclusion is evidenced by broad-based gains in employment, wages, and distributional outcomes, whereas exclusion is reflected in unequal access to opportunities and resources. Structural segmentation, in turn, manifests in differentiation across labor markets, spatial configurations, and social groups. This integrative reading allows the study to move beyond aggregate measures and reveal the underlying structural dynamics of industrial transformation.

3.5. Phase Classification

For analytical clarity, Morowali's transformation is categorized into three distinct phases.

The pre-industrial phase (2015–2017) is characterized by limited industrial activity and relatively modest labour market dynamics. The transition phase (2018–2021) marks the onset of rapid industrial expansion, accompanied by significant labour market adjustment. Finally, the mature expansion phase (2022–2025) reflects a period of consolidated industrial growth, characterized by strong labour absorption, industrial dominance, and pronounced demographic concentration.

This phase-based classification provides a structured framework for interpreting the temporal dynamics of structural transformation.

3.6. Data Limitations and Robustness

This study acknowledges several limitations inherent in the available data and methodological approach.

First, the analysis relies primarily on aggregate district-level data, which constrains the ability to directly capture heterogeneity across population groups, particularly differences between local and migrant workers, as well as intra-group inequality.

Second, certain indicators—most notably subdistrict-level population data—contain incomplete observations for intermediate years. Nevertheless, the consistency of endpoint trends allows for reliable directional interpretation of demographic dynamics.

Third, the study does not employ econometric causal identification. Instead, it adopts a theory-informed descriptive approach that prioritizes the alignment between empirical patterns and theoretical expectations, which is appropriate for analyzing complex processes of structural transformation.

Despite these constraints, the analytical strategy remains robust, as it combines multiple sources of evidence with a theoretically grounded interpretative framework, thereby enabling a coherent and credible assessment of socio-economic transformation.

IV. Results

4.1. Growth and Labour Absorption

The empirical evidence indicates that Morowali has undergone an exceptionally rapid and labour-intensive phase of industrial expansion. Between 2016 and 2025, the labor force increased from 55,068 to 85,039, representing a growth of 54.4 percent. Over the same period, employment rose from 52,925 to 82,653, or 56.2 percent, suggesting that job creation not only kept pace with labor supply but slightly exceeded it.

The figure shows a sharp and sustained increase in both labor force and employment, indicating strong labour absorption associated with industrial expansion.

This pattern contrasts with the commonly observed phenomenon of jobless growth in resource-dependent economies. Instead, Morowali exhibits a labour-absorbing growth trajectory, where industrialization has translated into large-scale employment generation.

The open unemployment rate further supports this conclusion. While it temporarily increased during the transition period—rising above 5 percent in 2020–2021—it declined to 2.81 percent in 2025, lower than its pre-industrial level of 3.89 percent in 2016. This temporary increase suggests a period of labor market adjustment, followed by stabilization and improved absorption.

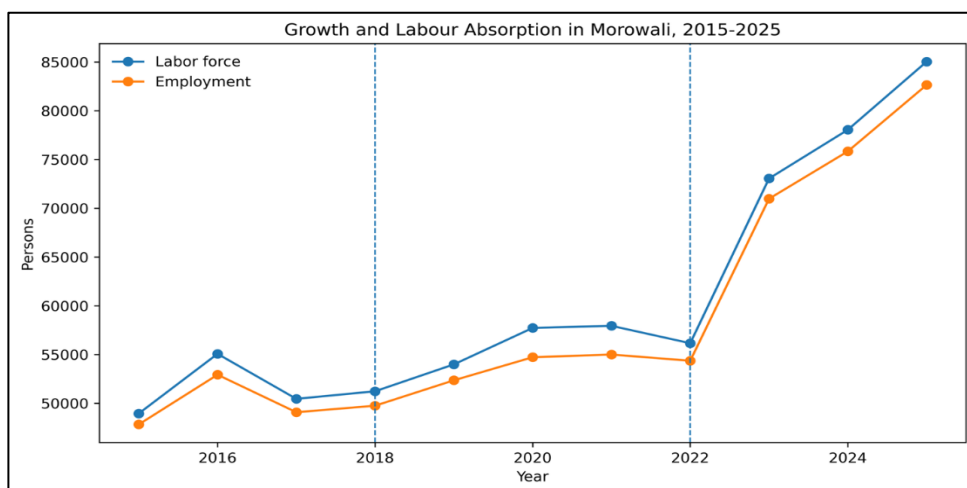


Figure 2. Growth and Labour Absorption in Morowali (2015–2025)

Source: Processed by the authors from various official datasets (Muhyiddin et al., 2026)

The labor force participation rate (TPAK) also increased from 64.48 percent to 65.87 percent, indicating a broader engagement of the population in economic activity. Taken together, these indicators confirm that industrialization in Morowali has been both growth-enhancing and employment-generating.

4.2. Structural Transformation and Sectoral Recomposition

The rapid expansion of employment is closely linked to profound structural changes in Morowali’s economy. Manufacturing has emerged as the dominant sector, with its share in total PDRB increasing from 32.97 percent in 2016 to 73.60 percent in 2024. In contrast, the agricultural sector’s contribution declined sharply from 12.64 percent to 1.55 percent over the same period.

The figure highlights the dramatic shift from an agriculture-based economy to one dominated by industrial processing.

This transformation reflects a fundamental shift in the economic base of the district. Morowali has transitioned from a mixed primary–secondary economy into a highly concentrated industrial system centered on mineral processing.

Two structural breakpoints are particularly evident. The first occurs around 2018, marking the onset of large-scale industrial expansion. The second occurs around 2022, when industrial dominance consolidates and labour demand intensifies. These breakpoints correspond closely with the expansion phases of the IMIP cluster.

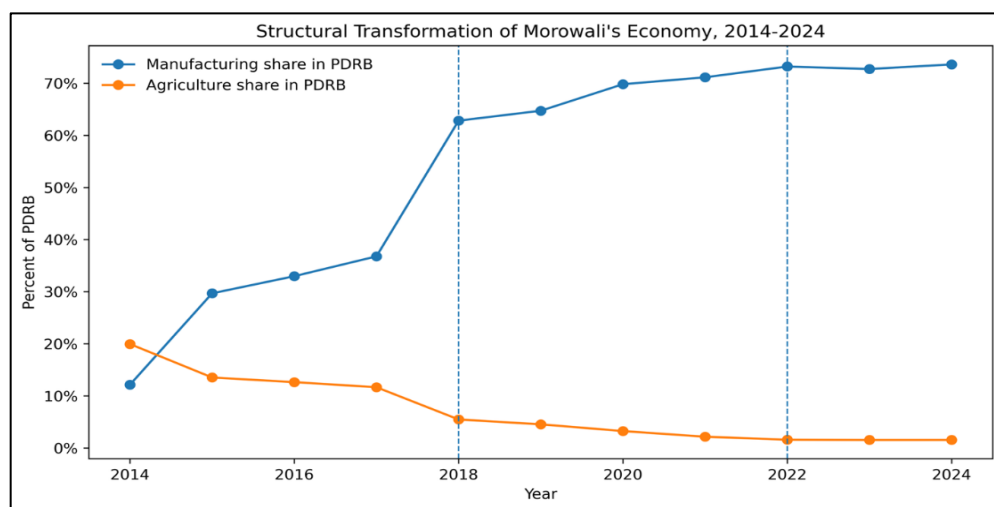


Figure 3. Structural Transformation of Morowali’s Economy (2014–2024)

Source: Processed by Authors from various official datasets (Muhyiddin et al., 2026)

4.3. Distribution and Inequality

Despite rapid industrial growth, aggregate inequality in Morowali has declined. The Gini coefficient fell from 0.345 in 2016 to 0.265 in 2025, indicating a notable improvement in income distribution.

The figure shows declining inequality alongside rising formal employment share.

At the same time, the share of formal employment increased significantly, rising from approximately 30.8 percent in 2015 to 47.2 percent in 2025. This suggests that a growing proportion of workers are employed in more structured and regulated forms of employment.

The coexistence of declining inequality and rising formalization indicates that industrialization has generated broad-based income gains, likely through wage increases and expanded access to formal employment.

However, aggregate measures of inequality do not fully capture the distributional complexity associated with industrial transformation. While the Gini coefficient reflects overall income dispersion, it does not account for underlying structural disparities, including differences between local and migrant workers, unequal access to formal employment, and spatial inequalities between industrial and non-industrial areas.

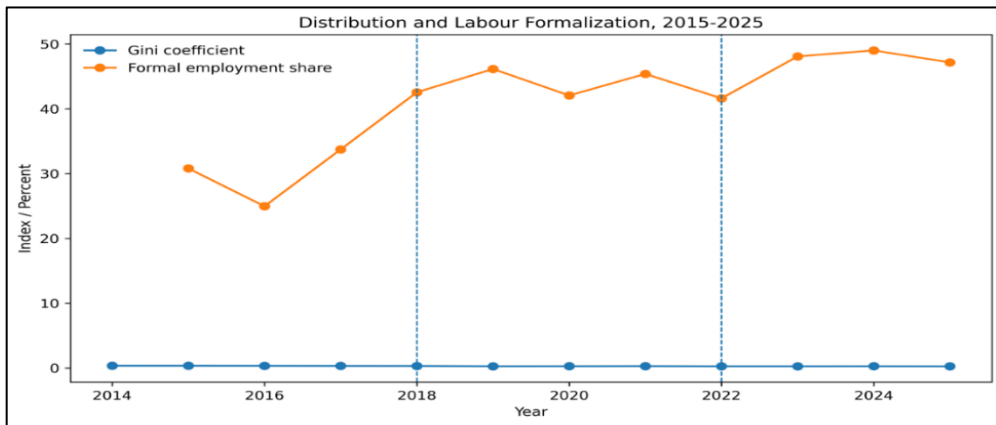


Figure 4. Distribution and Labour Formalization in Morowali (2015–2025)

Source: Processed by Authors from various official datasets (Muhyiddin et al., 2026)

Accordingly, the observed decline in inequality is better understood as an aggregate improvement that may coexist with persistent—and potentially widening—structural disparities.

4.4. Social Integration: Wages, Human Capital, and Demographic Dynamics

Industrialization in Morowali has produced mixed outcomes in terms of social integration.

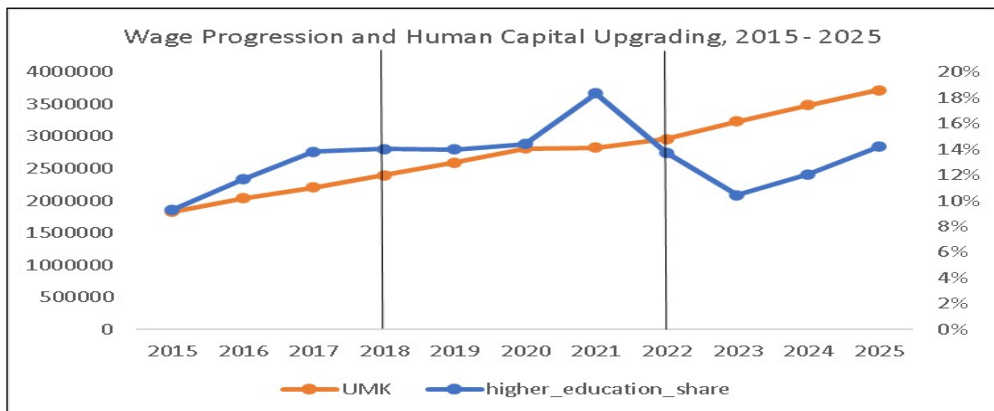


Figure 5. Wage Progression and Human Capital Upgrading (2015–2025)

Source: Processed by Authors from various official datasets (Muhyiddin et al., 2026)

First, wage dynamics show substantial improvement. The district minimum wage (UMK) increased from approximately Rp 2.03 million in 2015 to Rp 3.72 million in 2025, representing an increase of over 100 percent. This reflects strong labor demand and rising valuation of labor in the industrial sector.

Second, human capital indicators suggest gradual but incomplete upgrading. The share of workers with tertiary education increased from approximately 9–11 percent in the mid-2010s to around 14 percent by 2025. While this indicates progress, the magnitude of change is modest relative to the scale of industrial transformation.

The figure illustrates strong wage growth alongside gradual increases in educational attainment.

Third, demographic dynamics reveal intense spatial concentration. The population of Bahodopi increased from approximately 8,500 in 2016 to over 68,000 in 2025, far outpacing the overall population growth of Morowali.

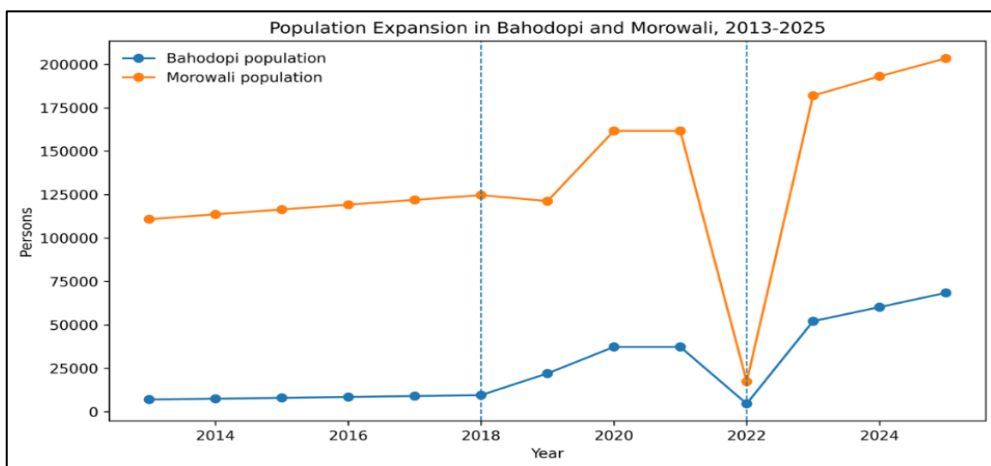


Figure 6. Population Expansion in Bahodopi and Morowali (2013–2025)

Source: Processed by Authors from various official datasets (Muhyiddin et al., 2026)

The figure shows the rapid demographic concentration in the industrial core area. This pattern indicates that industrialization has triggered large-scale migration and spatial concentration, reinforcing Bahodopi’s role as the central node of economic activity.

4.5. Comparative Analysis: Pre- and Post-Industrialization Phases

A comparison between pre-industrial (2015–2017) and post-industrial (2022–2025) phases reveals substantial structural change.

Average labor force increased by more than 40 percent, while average employment rose by a similar magnitude. The Gini coefficient declined from approximately 0.345 to 0.276, indicating improved aggregate distribution.

Formal employment share increased by around 17 percentage points, while UMK nearly doubled. The share of tertiary-educated workers also increased, although more modestly.

These changes indicate that industrialization has produced systematic improvements across multiple dimensions, including employment, wages, and inequality. However, the

magnitude and consistency of these improvements vary across indicators, suggesting uneven transformation.

4.6. Inclusion, Exclusion, and Structural Segmentation

When the indicators are considered jointly, Morowali's development trajectory reveals a complex configuration of inclusion and differentiation. Evidence of inclusion is reflected in strong employment growth, declining unemployment, rising wages, and the expansion of formal employment, indicating broad-based improvements in aggregate economic outcomes.

At the same time, the data suggest emerging patterns of potential exclusion. These are evident in unequal access to formal employment, uneven human capital upgrading, and the concentration of economic opportunities within the industrial core. Such patterns point to disparities in the distribution of the benefits of industrialization.

More fundamentally, the evidence indicates the presence of **structural segmentation**. Industrialization has been associated with a high concentration of economic activity in manufacturing, pronounced spatial clustering in Bahodopi, and increasing differentiation in labor market outcomes.

Taken together, these findings suggest that Morowali's industrialization is not characterized by uniform inclusion. Rather, it reflects a pattern of **aggregate inclusion accompanied by structural differentiation**, where broad-based gains coexist with uneven integration across economic, spatial, and social dimensions.

4.7. Synthesis of Results

Taken together, the findings indicate that Morowali represents a case of rapid industrial growth with partial social integration. Economic expansion has been strong and labour-absorbing, and aggregate inequality has declined. However, deeper structural dynamics reveal uneven integration across labor markets, space, and social groups.

This dual pattern forms the empirical basis for the concept of partial integration, which is further developed in the following section.

V. Discussion

5.1. Rethinking Resource-Based Industrialization: From Resource Curse to Productive Transformation

The findings from Morowali challenge dominant narratives in the resource-based development literature. Traditionally, resource-rich regions are often associated with the *resource curse*, characterized by limited diversification, weak institutions, and poor socio-economic outcomes (Auty, 2021; World Bank, 2020). However, the Morowali case presents a markedly different trajectory.

Empirical evidence shows strong employment growth, declining unemployment, rising wages, and improving aggregate income distribution. These outcomes indicate that Indonesia's downstream industrialization strategy—particularly in the nickel sector—has succeeded in generating productive structural transformation, rather than merely extractive growth.

This finding aligns with the argument advanced by Rodrik (2018), which emphasizes the role of active industrial policy in shaping development outcomes. By promoting domestic

processing and industrial clustering, Indonesia has moved beyond primary commodity dependence toward higher value-added activities.

However, while Morowali demonstrates that resource-based industrialization can be economically successful, the results also indicate that economic success does not automatically translate into comprehensive social inclusion. This distinction is central to understanding the broader implications of the case.

5.2. Agglomeration, Industrial Concentration, and Structural Inequality

The rapid growth of IMIP can be interpreted through the lens of agglomeration theory (Krugman, 1991). The concentration of industrial activity has generated strong economic dynamism, reflected in high labour absorption and wage growth.

At the same time, the findings indicate that agglomeration processes are associated with the emergence of structural inequalities. While the decline in the Gini coefficient suggests an improvement in aggregate income distribution, a more comprehensive analysis reveals increasing differentiation across multiple dimensions.

In the labour dimension, the expansion of formal employment is accompanied by indications of segmentation in access to higher-quality jobs. Spatially, economic activity is increasingly concentrated in Bahodopi, reinforcing geographic disparities. Socially, access to industrial opportunities appears uneven, reflecting differential integration across population groups.

This pattern suggests that inequality in Morowali is not primarily captured by income distribution alone, but rather by differential access to economic opportunities and institutional resources.

The coexistence of declining aggregate inequality and increasing structural segmentation contributes to a refinement of agglomeration theory. While the literature recognizes spatial inequality, it often underestimates the extent to which social and institutional inequalities emerge within rapidly growing clusters, particularly in the Global South.

5.3. Labour Absorption without Full Inclusion

One of the most significant findings of this study is the coexistence of strong labour absorption and incomplete social inclusion. Morowali's industrialization has generated substantial employment, consistent with the structural transformation model proposed by Lewis (1954).

However, the evidence suggests that labour absorption alone does not guarantee inclusive outcomes. High employment growth coexists with: uneven human capital upgrading, concentration of opportunities in specific sectors and locations, and potential segmentation between different groups of workers

This finding highlights a critical limitation of aggregate labour indicators. Employment expansion can occur alongside differences in job quality, access to formal employment, and long-term economic mobility.

In this sense, Morowali illustrates that industrialization can be simultaneously: inclusive in employment terms, and uneven in structural and institutional terms.

5.4. Distributional Gains versus Capability Expansion

The decline in the Gini coefficient suggests that income distribution has improved. However, from the perspective of the capability approach (Sen, 1999), development should

be evaluated not only in terms of income, but also in terms of individuals' ability to access opportunities and improve their well-being.

In Morowali, the evidence indicates that industrialization has driven income expansion, but not necessarily equally distributed capability expansion. While wages have increased and formal employment has expanded, improvements in human capital and access to broader opportunities appear more gradual and uneven.

This distinction is critical because it highlights the difference between: growth with distribution, and development with inclusion.

The Morowali case suggests that the former can occur without fully achieving the latter.

5.5. Structural Breaks and the Dynamics of Industrial Deepening

The identification of structural breakpoints around 2018 and 2022 provides important insight into the dynamics of industrialization.

The first breakpoint corresponds to the initial industrial take-off, characterized by rapid expansion of manufacturing activity. The second breakpoint reflects a phase of industrial consolidation, in which labour absorption, wage growth, and demographic concentration intensify.

This two-stage process suggests that industrialization unfolds in phases: (1) productive transformation, where output structure changes; and (2) social reconfiguration, where labour markets and demographic patterns adjust

The lag between these phases helps explain why economic indicators improve faster than social integration outcomes. Industrial growth can be rapid, while institutional and social adaptation takes longer to materialize.

5.6. Partial Integration: A Conceptual Contribution

Building on the empirical findings, this study advances the concept of **partial integration** to characterize Morowali's development trajectory. Partial integration refers to a condition in which economic integration—reflected in expanding industrial output, employment, and wages—progresses rapidly, while social and institutional integration—encompassing equity, access to opportunities, capability development, and spatial balance—lags behind.

This framework captures the central paradox observed in Morowali: strong economic performance and declining aggregate inequality coexist with persistent structural differentiation. In this context, industrialization generates broad-based economic gains, yet these gains are unevenly distributed across labour markets, spatial configurations, and social groups.

Conceptually, the notion of partial integration contributes to the literature by offering a more nuanced understanding of industrialization outcomes in the Global South. Rather than framing development as either inclusive or exclusive, it emphasizes the coexistence of **simultaneous inclusion and segmentation**, thereby bridging the gap between aggregate improvements and underlying structural disparities.

5.7. Implications for Global Industrialization in the Era of Critical Minerals

The Morowali case has broader implications for global debates on industrialization, particularly in the context of critical minerals and the energy transition.

First, it demonstrates that resource-based industrialization can generate substantial employment and economic growth when supported by active industrial policy. This challenges pessimistic views associated with the resource curse.

Second, it shows that improvements in aggregate indicators—such as employment and inequality—do not necessarily imply inclusive development. Structural and institutional dimensions must be considered.

Third, it highlights the importance of governance and institutional capacity in managing rapid transformation. Without effective coordination, industrialization may produce uneven outcomes, even when economic performance is strong.

In this sense, Morowali serves as a global reference point for understanding the opportunities and challenges of industrialization in resource-rich regions.

5.8. Policy Interpretation: From Growth to Inclusion

The findings suggest that policy should move beyond a narrow emphasis on industrial growth toward a more integrated development strategy. In particular, three interrelated priorities emerge.

First, human capital upgrading is essential to ensure broader and more equitable access to industrial employment opportunities. Second, spatial integration is required to mitigate excessive concentration of economic activity and promote more balanced regional development. Third, institutional strengthening is critical to align rapid economic expansion with inclusive social development outcomes.

Without such interventions, industrialization risks entrenching a pattern of aggregate growth accompanied by persistent structural inequality.

VI. Conclusion

This study has examined the socio-economic consequences of rapid resource-based industrialization in Morowali, with a particular focus on Bahodopi as the core industrial node. By integrating labour market dynamics, inequality indicators, and broader structural transformations, the analysis provides a comprehensive assessment of how industrial expansion reshapes local economies and societies.

The findings demonstrate that Morowali represents a case of exceptionally rapid and labour-absorbing industrial growth. Between 2016 and 2025, the labor force and employment expanded by more than 50 percent, accompanied by declining unemployment and rising labor force participation. At the same time, the Gini coefficient decreased substantially, indicating improvements in aggregate income distribution. These results suggest that Indonesia's nickel-based downstream industrialization strategy has been effective in generating both economic growth and employment.

However, the analysis also reveals a more complex and nuanced reality. Beneath these aggregate improvements lies a pattern of emerging structural segmentation, reflected in sectoral concentration, spatial clustering, and uneven human capital upgrading. The dramatic rise of manufacturing as the dominant sector, the concentration of population in Bahodopi, and the partial nature of labor market upgrading all point to an uneven process of social transformation.

To capture this dynamic, the study advances the concept of partial integration, defined as a development trajectory in which economic integration progresses rapidly while social

Muhyiddin, Muhammad Dio Rhiza Amrizal, Fatoni Amirudin Akbar, Iqbal Faza Ahmad, Achmanto Mendatu, Johan Wahyuningrat, Agung Prasetyo

and institutional integration lags behind. This framework highlights the coexistence of: strong employment growth, declining aggregate inequality, and persistent structural differentiation.

The concept of partial integration contributes to the literature by offering a more nuanced understanding of industrialization outcomes in the Global South. Rather than framing development as either inclusive or exclusive, it demonstrates that industrialization can simultaneously generate broad-based economic gains and uneven structural outcomes.

The findings have three main implications for theory and policy.

First, they show that resource-based industrialization, when supported by active industrial policy, can generate substantial employment and reduce aggregate inequality. This challenges the pessimistic view associated with the resource curse and highlights the potential of downstream industrialization strategies.

Second, they demonstrate that aggregate improvements in inequality do not necessarily imply inclusive development. Structural factors—such as labor market segmentation, spatial concentration, and differential access to opportunities—must be considered to fully understand development outcomes.

Third, they underscore the importance of institutional capacity and governance in mediating the relationship between industrialization and social transformation. Rapid economic expansion can outpace the ability of institutions to respond, resulting in partial rather than full integration.

From a policy perspective, these findings suggest that the central challenge of industrialization is no longer simply to generate growth, but to ensure that growth translates into inclusive, equitable, and sustainable development outcomes. This requires a more integrated policy approach that combines industrial strategy with: (1) investments in human capital development; (2) expansion of public services and infrastructure; (3) policies that promote social integration and cohesion; and (4) stronger coordination between central and local governments.

Without such measures, industrialization may continue to produce strong economic performance while leaving underlying structural disparities unresolved.

In conclusion, the Morowali case illustrates both the opportunities and limitations of contemporary resource-based industrialization. As global demand for critical minerals continues to rise, the experience of Morowali offers important lessons for other resource-rich regions. The key challenge is not only to replicate its economic success, but to ensure that industrialization leads to broad-based and socially integrated development.

References

- Acemoglu, D., & Robinson, J. A. (2019). *The narrow corridor: States, societies, and the fate of liberty*. Penguin Press.
- Auty, R. M. (2021). Natural resource-led development: Concepts and consequences. *Resources Policy*, 74, 102301. <https://doi.org/10.1016/j.resourpol.2021.102301>
- Bridge, G. (2021). Resource geographies I. *Progress in Human Geography*, 45(4), 817–826.

- Duranton, G., & Puga, D. (2020). The economics of urban agglomeration. In *Handbook of regional and urban economics*. Elsevier.
- Fujita, M., & Thisse, J.-F. (2019). *Economics of agglomeration* (2nd ed.). Cambridge University Press.
- Hilson, G. (2020). Extractive industries and development. *The Extractive Industries and Society*, 7(4), 1245–1248.
- International Energy Agency (IEA). (2023). *The role of critical minerals in clean energy transitions*.
- International Labour Organization (ILO). (2023). *World employment and social outlook*.
- Kanbur, R. (2021). Inequality in developing countries. *Oxford Review of Economic Policy*, 37(1), 25–39.
- Krugman, P. (1991). Increasing returns and economic geography. *Journal of Political Economy*, 99(3), 483–499.
- Lewis, W. A. (1954). Economic development with unlimited supplies of labour. *The Manchester School*, 22(2), 139–191.
- Muhyiddin, M., Wijaya, A. F. ., Putra, F. ., & Wike, W. . (2025). Evaluating active labor market policy in Indonesia: A case study of the job loss insurance program. *Edelweiss Applied Science and Technology*, 9(6), 2751–2762. <https://doi.org/10.55214/25768484.v9i6.8470>.
- Nugroho, H., & Al-Wafiy, M. (2026). Evolusi Industri Nikel Global dan Indonesia: Tinjauan Historis dan Pelajaran Kebijakan. *Bappenas Working Papers*, 9(2), 236–255. <https://doi.org/10.47266/bwp.v9i2.560>.
- OECD. (2021). *OECD Regional Outlook 2021: Addressing COVID-19 and Moving to Net Zero Greenhouse Gas Emissions*. OECD Publishing. Paris, <https://doi.org/10.1787/17017efe-en>.
- Piketty, T. (2020). *Capital and ideology*. Harvard University Press.
- Rodrik, D. (2018). New technologies, global value chains, and developing economies. *NBER Working Paper No. 25164*.
- Sen, A. (1999). *Development as freedom*. Oxford University Press.
- Sovacool, B. K. (2022). Critical minerals and energy justice. *Energy Research & Social Science*, 90, 102589.
- Todaro, M. P., & Smith, S. C. (2020). *Economic development* (13th ed.). Pearson.
- UNDP. (2024). *Human development report 2023/2024: Breaking the gridlock Reimagining cooperation in a polarized world*. United Nation for Development Programme.
- UN-Habitat. (2022). *World cities report 2022: Envisaging the Future of Cities*. United Nation for Human Settlement Programme.
- World Bank. (2020). *World Development Report 2020: Trading for Development in the Age of Global Value Chains*. World Bank. <https://doi.org/10.1596/978-1-4648-1457-0>.
- World Bank. (2023). *World Development Report 2023: Migrants, Refugees, and Societies*. World Bank. <https://doi.org/10.1596/978-1-4648-1964-3>.