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From Spatial Potential to Extractive Reality: The Politics of Nickel and Energy Transition in Morowali

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Abstract. Large-scale nickel extraction continues to accelerate in Morowali, leading to profound transformations in the region's socioeconomic structures and environmental landscape. While existing studies have primarily focused on the implications of nickel extraction for development, energy transition, or environmental degradation, they often overlook the interconnected dynamics across local, national, and global contexts that shape such transformations. Addressing this gap, this study employs a qualitative case study approach, using document analysis, semi-structured interviews, and spatial analysis to examine Morowali as a strategic site of Indonesia's downstream nickel industrialization. Drawing on economic geography and critical discourse analysis, the study explores how multi-scalar forces interact in reconfiguring Morowali's socioeconomic and environmental structures. The findings show that Morowali's geographic conditions initially enabled its economic transformation, but these are significantly shaped by national industrial policies for downstream processing and global discourses positioning nickel as vital to the energy transition. These forces converge to produce an extractive assemblage that reinforces spatial inequality and socio-environmental injustice. This article concludes that extractive-led development must be understood as embedded within overlapping spatial, political, and discursive relations. It contributes to the literature by offering a multiscalar framework that connects resource extraction, energy transition narratives, and the politics of space in the Global South.

Keywords: economic geography; socio-environmental transformation; energy transition; extractive industries; Morowali.

1. Introduction

Indonesia's nickel mining industry has undergone massive expansion over the past decade. This development is inseparable from the rising global demand for critical minerals to support the low-carbon energy transition agenda. As a key material in producing electric vehicle batteries, nickel has become a strategic commodity with significant influence on global energy geopolitics. Indonesia, as the world's largest producer of nickel, has made this sector a cornerstone of its national economic policy, notably through downstreaming strategies and the development of mining-based industrial zones (1,2). Through these policies, the expansion of the nickel mining



industry is expected to position Indonesia as a key player in the global supply chain for energy transition (3,4).

Indonesia's involvement in global energy transition projects marks a new chapter in its long history of extractive economies. However, this new phase continues to generate similar externalities. Changes in the economic structure of nickel-rich regions have not automatically led to improved welfare for local communities. On the contrary, local populations continue to bear the social, ecological, and economic burdens of large-scale projects driven by the state and transnational actors (5,6). Rather than liberating these regions from their dependence on primary commodities, the extractive-based development process reinforces the symptoms of the resource curse in a new form: green extractivism, a mode of resource extraction that is branded as sustainable yet remains exploitative of local space and labor (7).

The unequal distribution of burdens from extractive projects demonstrates that energy transition initiatives are not geographically neutral. From the perspective of economic geography, nickel extraction projects reaffirm that space and location are not merely passive containers but active arenas of power struggle and economic value creation (8,9). The economic transformation driven by nickel extraction has produced uneven spatial structures, where mineral-rich regions are trapped in the role of resource frontiers for global energy demands, yet remain disempowered in shaping their development trajectories. This pattern reflects a reproduction of inequality that has also been observed in other resource-rich regions, such as those with oil or coal (10,11).

In Indonesia, the Morowali Regency offers a concrete example of the reproduction of inequalities stemming from extractive projects. In Morowali, the Indonesia Morowali Industrial Park (IMIP) has emerged as the epicenter of the vertical integration of the nickel industry, linking Chinese investment with the consolidation of national politico-economic interests (12). With the influx of Chinese capital, Morowali has become a critical site for implementing Indonesia's energy transition vision. Numerous studies have examined the dynamics of the nickel industry in Morowali. Most of these studies analyze policies related to the extractive industry, including export bans, downstreaming, and nickel diplomacy (2,13). Others focus on environmental impacts like deforestation, habitat degradation, and pollution (5,6,14,15). Pollution, in particular, has emerged as a fundamental issue, as the extraction and processing of nickel contribute to soil, water, and air pollution. In addition to environmental degradation, several studies have highlighted the nickel industry's negative social impacts, including declining quality of life and the emergence of various social problems linked to mining activities (14,16).

These findings align with broader global studies on extractivism. Many scholars note that while extractive activities may generate economic benefits, the sector also significantly negatively impacts the environment and society. Environmental consequences include deforestation, habitat destruction threatening biodiversity, pollution, land deformation, and disruptions to ecological structures and functions (17–20). Social consequences include displacement of communities from customary lands, rising social inequalities, and conflicts among mining companies, local governments, and affected communities (17,18,21). These recurring patterns in the extractive sector highlight the need for more comprehensive studies to understand mining expansion better, particularly in Indonesia's nickel sector.

This study seeks to fill that research gap. It aims to explore the roles of local, national, and global contexts in shaping socioeconomic and environmental transformations resulting from the nickel industry in Morowali. By employing an economic geography approach supported by critical discourse analysis, this article reexamines the energy transition narrative from the spatial and social justice perspective. This study contributes to the literature by offering a multiscalar framework that connects resource extraction, energy transition narratives, and the politics of space in the Global South.

2. Method

This study adopts a qualitative approach to understand how local, national, and global contexts influence the transformation of socioeconomic structures and the environment. A case study method is employed, with Morowali in Central Sulawesi selected as the primary research site. Morowali was chosen because it represents the epicenter of the downstream-driven expansion of the nickel industry and has become a symbol of Indonesia's involvement in global energy transition projects. Moreover, this region embodies various tensions that are typical in extractive economies, including unequal center-periphery relations, land conflicts, pressures on Indigenous and coastal communities, and dependency on foreign investment.

Data collection was carried out using several techniques: document analysis, semi-structured interviews, and spatial analysis. The data analysis follows the principles of thematic analysis (22). The analysis identifies key themes related to economic structural change, local social dynamics, and spatial inequality. It is carried out iteratively and reflectively, focusing on broader narratives around energy transition, resource nationalism, and social exclusion. Critical discourse analysis is also applied in certain sections to uncover deeper discursive dynamics and enhance the study's comprehensiveness. As part of a critical research paradigm, the analysis acknowledges the researcher's positionality within the social structures under study and aims to advocate for spatial and social justice (23).

This study is grounded in the economic geography approach. This framework allows the researcher to explain the geographical distribution of economic activity and explore power relations, conflict, and political-economic dynamics that socially construct space (8,24). Economic geography challenges neoclassical assumptions by emphasizing the importance of space, place, and social context in shaping economic processes (25). This study draws inspiration from works such as Grimm and Klasen, which emphasize the importance of geographical conditions in shaping a region's economic development. The approach is increasingly relevant in the modern world, as it can explain the centrality of flows, spatial interconnections, and the importance of place in the circulation between space, time, and geography (26).

Economic geography enables an understanding of how livelihoods emerge from a mix of formal and informal economic activities and acknowledges the embeddedness of economic life in broader sociopolitical structures. Its primary aim is to understand the world as it is rather than merely through theoretical models. An essential variable in this approach is the environmental dimension. The environment is understood as a product of economic practices and business decisions, whether by corporations or individuals, that often disregard environmental consequences in pursuit of profit (25). Therefore, environmental changes, whether driven by industrialization, substantial transformations, or lifestyle shifts, significantly influence economic formation dynamics (27,28). Jones and Murphy expand this perspective by emphasizing the importance of socioeconomic practices in shaping and stabilizing economic space (28).

3. Result and Discussion

3.1 Geography: The Key to Morowali's Transformation

Morowali Regency, located in Central Sulawesi Province, is characterized by a diverse topography, ranging from coastal areas to hilly regions. The regency is known for its abundant mineral resources, particularly nickel. Since its administrative separation in the early 2000s through Law No. 51 of 1999, Morowali has undergone rapid development and emerged as one of the largest nickel industrial hubs in Indonesia. According to data from the Ministry of Energy and Mineral Resources (MEMR), Indonesia holds an estimated 72 million tons of nickel reserves, accounting for approximately 52% of the world's total (29). Morowali's rise as a center of nickel industry is inseparable from the role played by the Indonesia Morowali Industrial Park (IMIP) and several

other companies engaged in nickel extraction and processing. The region's vast nickel resources have made Morowali a magnet for both domestic and foreign investment. Moreover, this mineral wealth positions Morowali as a key node in the global supply chain for batteries and electric vehicles, giving it strategic importance in the geopolitical landscape.

The transformation of Morowali over the past two decades serves as a concrete example of how geographical structures, in this case, natural resource endowments, play a pivotal role in shaping a region's social, economic, and political dynamics. The resource wealth illustrates that development in Morowali is not solely market- or investment-driven but also deeply influenced by spatial configurations, location, and the social construction of economic practices within a complex local context. The massive expansion of the nickel industry has shifted the regional economy from one dominated by agriculture to one centered on extractive and manufacturing industries. Data on Gross Regional Domestic Product (GRDP) shows that the contribution of the manufacturing sector increased from 11.09% in 2013 to 72.72% in 2023. This figure becomes even more striking when combined with the mining and quarrying sector, which accounted for 17.79% in 2023. In contrast, agriculture's contribution declined significantly from 18.57% in 2013 to just 1.55% in 2023.

Table 1. Distribution of Percentage of Gross Regional Domestic Product of Morowali Regency Based on Current Prices by Business Field, 2013-2023

Business Field	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Agriculture, Forestry and Fisheries	18,57	19,96	13,54	12,68	11,60	10,08	4,55	3,26	2,17	1,60	1,55
Mining and Quarrying	49,54	20,98	26,19	26,88	27,30	27,69	18,28	18,28	18,61	17,29	17,79
Processing industry	11,09	12,15	29,68	33,09	35,51	37,95	64,86	69,80	71,13	73,19	72,72

*Data processed from the Central Statistics Agency of Morowali Regency.

These structural changes demonstrate how nickel has become a trigger commodity that reconfigures spatial structures, land use, and local livelihoods. In temporal terms, the rise in contributions from mining and manufacturing sectors corresponds with the expansion of nickel operations and manufacturing industries in Morowali. This expansion began and accelerated over the past 12 years, especially following the establishment of the IMIP in 2013. The construction of nickel smelters, such as the one built in 2015 by PT Sulawesi Mining Investment (SMI) which produces 1.2 million tons of nickel pig iron (NPI) annually, has further reshaped the region's economic landscape (30). The industrial transition continued with the arrival of other nickel companies, such as PT Guang Ching Nickel and Stainless Steel Industry, which also constructed smelters essential for supplying the stainless steel industry, both for domestic use and exports to China.

Beyond the economic change, the transformation in Morowali has deeply affected local livelihoods. Farmland and plantations have been converted into industrial zones, often through coercive land acquisition, and displacing communities dependent on agriculture. Similarly, coastal residents, including the Suku Bajo, have abandoned fishing due to marine degradation caused by mining. As traditional jobs disappear, locals are pushed into the industrial sector, where they face intense competition from Indonesian and Chinese migrant workers. This has marginalized local communities and deepened social divides, with Morowali's nickel wealth becoming a source of alienation.

In addition, environmental degradation has become an unavoidable consequence of nickel industrialization. Deforestation, pollution, and increased ecological risks reflect how economic space is shaped by political and socio-economic forces. In Morowali, the nickel industry has caused severe environmental harm: coal dust blankets residential areas, rivers and seas are polluted by factory waste, small village waterways have been closed for industrial expansion etc. A striking example is the closure of rivers in Bahodopi Subdistrict, ironically named from *baho* (meaning water or river) and *dopi* (meaning place). This highlights the tragic contradiction between the area's name and its current reality, illustrating a renewed form of the resource curse experienced by communities in resource-rich regions.

The transformation of living spaces in Morowali reveals the tension between development and sustainability. Large-scale investment and migration have strained local infrastructure, while a pragmatic and poorly coordinated development approach has led to disorganized spatial planning and land-related conflicts. The rise of boarding houses owned by wealthy locals also has further deepened inequalities in housing access. This reflects how economic space is actively shaped by socio-economic practices, not formed naturally. In this process, the institutionalization of economic actors in the nickel industry has been central to reshaping Morowali's social and economic landscape.

In sum, Morowali exemplifies how geographic structures based on natural resource wealth, such as nickel, serve as the foundation for regional transformation. However, this transformation is neither neutral nor technocratic; it is deeply shaped by power, social relations, and political decisions that socially produce space. Through the lens of economic geography, we see that nickel's significance extends beyond economic value. It organizes and reconfigures socio-economic structures, ecology, living spaces, and inter-group relations. Therefore, to fully understand Morowali's transformation, geography must be seen not as a passive backdrop but as an active structure that plays a central role in shaping the region's political-economic future. Still, geography alone is not sufficient. The local geographical context requires two additional dimensions to enable all of the aforementioned transformations.

3.2 Two Foundations: National Policy and the Energy Transition Discourse

While geography has been a crucial factor in shaping socio-economic and environmental change in Morowali, it does not act alone. The region's transformation cannot be explained solely by the presence of nickel. From an economic geography perspective, spatial conditions provide the material basis for economic structures, but this potential only becomes transformative through national policies and global discourses. Morowali's nickel wealth is a "potential space" that becomes "actual" when activated by broader political and economic forces. Thus, geography is a starting point, but its impact relies on two key pillars: national policy and the global energy transition narrative that drives nickel industrialization.

3.2.1 First Foundation: National Policy on Downstreaming to Support the Energy Transition Agenda

The red carpet rolled out by the state to support nickel extraction and industry is inseparable from the downstreaming imperative. Downstreaming aims to increase the economic value of raw mineral extraction. Understanding the downstreaming policy in Morowali requires referring to the context surrounding the issuance of Law No. 4 of 2009 on Mineral and Coal Mining, commonly known as the Mining Law (UU Minerba). This law not only changed the mechanisms and intensification of mining activities but also impacted the map of actors involved in nickel mining and processing in Morowali. The Mining Law can be read alongside other regulations, such as Government Regulation (PP) No. 1 of 2014 and Ministerial Regulation No. 11 of 2019, which prohibiting the export of nickel ore with a grade below 1.7%.

The implementation of the Mining Law became part of the decentralization of licensing, granting regional governments the authority to issue Mining Business Permits (IUP). This policy led to a massive expansion of the mining industry across Indonesia, including in Morowali Regency, which holds significant nickel deposits. Since 2014, the number of IUPs has surged nationally to over 10,000, most of them issued by regional governments. In Morowali, by 2014, the local government had issued IUPs to over 200 companies, triggering intense mining activity and the export of nickel ore. This phenomenon caused environmental degradation, land governance conflicts, and the unchecked opening of extractive frontiers. However, the closure of many mines due to overlapping regulations and the 2014 export ban on raw minerals under the downstreaming policy marked a turning point. The shutdown of many mining operations and the mandatory requirement for downstream processing forced many small companies out of business, as they could not build smelters or meet the new policy demands.

While many companies closed due to the Mining Law, only large companies, especially those partnered with Chinese investors, managed to survive. Some even expanded rapidly by building integrated smelting facilities. One company that not only endured but grew quickly is IMIP. Since its establishment in 2013, the development of IMIP has progressed at an extraordinary pace. Within just two years, a range of supporting infrastructure had been built in the industrial area, including jetties, worker housing, executive guest accommodations, a private airport, a dedicated telecommunications network, as well as health and education facilities such as a polyclinic and a polytechnic school. Moreover, within two years of signing the agreement, IMIP completed the construction of its first smelter, operated by PT SMI.

The rapid growth of IMIP was not only driven by the downstreaming policy, yet also by special protection from the central government through several policies:

First, Presidential Regulation (Perpres) No. 55 of 2019 on the Acceleration of the Battery Electric Vehicle Program for Road Transportation. According to Article 17, the central and regional governments will provide both fiscal and non-fiscal incentives to accelerate the electric vehicle (EV) program. These incentives directly benefit IMIP, which has committed to becoming a hub for the EV industry. Currently, IMIP has initiated two EV battery production projects: first, PT Huayue Nickel and Cobalt (HYNC) is developing a hydrometallurgy project for laterite nickel, with a production capacity of 60,000 tons; second, PT Qing Mei Bang New Energy Materials Indonesia (QMB) is developing a project to produce nickel sulphate and building a High-Pressure Acid Leach (HPAL) facility with an annual capacity of 50,000 tons (31).

Second, the expansion of IMIP as part of nickel industrialization in Morowali is also supported by its designation as a National Strategic Project (Proyek Strategis Nasional or PSN). According to Government Regulation (PP) No. 42 of 2021 on the Facilitation of National Strategic Projects, PSNs are defined as projects and/or programs carried out by the central government, regional governments, and/or businesses that are strategic for growth and equitable development, particularly in terms of job creation and improving public welfare. Under this regulation, the PSN status grants IMIP operational privileges, including expedited procedures in planning, preparation, transactions, construction, and operations, especially concerning permits and financing mechanisms. The designation of IMIP as a PSN is based on a series of regulations, including Presidential Regulation No. 109 of 2020 (third amendment) and Regulation of the Coordinating Minister for Economic Affairs No. 9 of 2022.

Third, in addition to its PSN status, IMIP is also designated as a National Vital Object (Objek Vital Nasional or Obvitnas). According to Presidential Decree (Keppres) No. 63 of 2004 on the Security of National Vital Objects, these are areas, buildings/installations, and/or businesses critical to the livelihoods of many people, national interests, or strategic state revenues. The Obvitnas status of IMIP refers to the Decree of the Minister of Energy and Mineral Resources No. 77 K/90/MEM/2019, which names PT Sulawesi Mining Investment (SMI), a major company operating within IMIP, as a National Vital Object under the mineral and coal sub-sector. Although

the decree does not explicitly mention IMIP, the named facilities for nickel processing and refining are located within the IMIP complex.

These three layers of policy support (PSN status, EV policy incentives, and Obvitnas designation) demonstrate the state's strong prioritization of downstreaming through nickel industrialization in Morowali. Without this state prioritization, geographical factors alone would not have had such a transformative impact on Morowali's socio-economic and environmental structure. However, this prioritization also relies on another foundational element: global legitimacy.

3.2.2 Second Foundation: The Dominance of Climate Change Discourse and Energy Transition as the Basis of Legitimacy for Downstreaming Policies

The energy transition has become one of the most dominant discourses in the current global geopolitical order. Efforts to reduce carbon emissions and shift from fossil fuels to renewable energy have driven demand for green technologies such as electric vehicles (EVs). This global trend has significantly increased the demand for critical minerals, including nickel. In this context, Indonesia, home to the world's largest nickel reserves, particularly in regions such as Morowali, Central Sulawesi is now at the center of a global resource rush driven by the spirit of "decarbonization." Thus, Indonesia's position cannot be separated from the global discourse on energy transition.

However, Indonesia's involvement in the global EV battery supply chain is not neutral, nor is it free from power relations. The narrative of global energy transition is not merely a technical or environmental issue, but a hegemonic discourse that induces compliance from lower-income countries with the needs of global green capitalism. Referring to Antonio Gramsci's theory of hegemony, ideological domination does not occur through direct coercion, but rather through consensus built by dominant discourses perceived as "rational" and "inevitable." (32) In this case, the narratives of climate change and energy transition create a global consensus in which countries like Indonesia seemingly have a "moral obligation" to participate in the energy transition and decarbonization agenda. This moral imperative underpins Indonesia's role in supplying the raw materials needed to "save the planet."

Nevertheless, it is important to highlight that this moral imperative is not always driven by good intentions. On the contrary, it can serve as a justification for latent interests behind every nickel extraction project and other critical minerals involved in the energy transition. More importantly, it can also be exploited by predatory elites in Indonesia as a shield for downstreaming policies that, at their core, serve ordinary business interests. In this sense, the energy transition discourse plays a dual role: on the one hand, it serves as a moral reference for state policies addressing the global climate crisis; on the other hand, it justifies economic policies driven by elite interests under the guise of environmental concern.

The moral justification employed by the government in downstreaming-related policies must therefore be viewed critically. The nickel downstreaming project in Morowali, for example, often ends up exacerbating the gap between the Global North and Global South. Countries in the Global South, rich in natural resources, continue to be exploited for global interests, particularly those of higher-income countries, under the dominant discourse of energy transition. This imbalance can be interpreted through the lens of the "decarbonisation divide," in which the burdens of the energy transition disproportionately fall on countries in the Global South, especially those involved in the upstream segment of the decarbonization process. These countries frequently face environmental degradation, social inequality, and violence. In short, energy transition, despite being framed in a positive discourse, often leads to a decline in quality of life for people living in resource-rich countries.

At the domestic level, the decarbonisation divide manifests in the deepening of inequality between the center and the periphery. While large cities reap the benefits of energy transition

projects, resource-rich regions bear the brunt of their negative externalities. In this case, the downstreaming of nickel, though consistently wrapped in positive narratives, produces a different pendulum swing when viewed from a local perspective. These regions continue to shoulder the multiple burdens stemming from the interests of a select few who exploit the energy transition discourse for economic gain. This is precisely the case found in Morowali.

4. Conclusion

This article has shown that the socio-economic and environmental transformation in Morowali cannot be understood solely as a result of its natural nickel resources. Using an economic geography perspective, the study highlights that space is not neutral; rather, it is actively shaped by social, political, and economic forces across different scales. Morowali's geographic advantages provided the starting point for economic change, but these alone were not enough. The transformation gained momentum through two key foundations: national policies that aggressively promote downstream industrialization, and global discourses on energy transition that legitimize these efforts. Together, these forces have helped create and expand extractive spaces, aligning national and global interests, but often at the expense of local social and environmental justice.

Given the complex and overlapping roles of various actors in Morowali's nickel industrialization, there is a pressing need to reorient policy in favor of spatial and social equity. Government strategies should not only pursue macroeconomic goals through industrial growth but must also ensure that local communities benefit fairly and that environmental protections are upheld. At the same time, the global narrative of energy transition must be critically examined. While framed as a moral duty to address climate change, it can also serve to justify new forms of unsustainable extractivism, especially in the Global South. To address these risks, energy and industrial policies must be developed in ways that are inclusive, participatory, and transparent. Only then can the energy transition lead to a truly fair and sustainable transformation, from the local to the global level.

References

1. Sunuhadi D. N., Ernowo, Hilman P. M., Suseno T. Availability of Indonesian Nickel Reserves and Efforts to Improve Reserves Resistance and Its Impact to Economic Growth. *Mineral Economics*. 2024;37(3):601–17.
2. Warburton E. Nationalist enclaves: Industrialising the critical mineral boom in Indonesia. *Extr Ind Soc*. 2024 Dec 1;20:101564.
3. Mubarok M, Syafi'ul W, Kartini E. Nickel diplomacy: Strengthening Indonesia's role in global battery and electric vehicles supply chain . *AIP Conf Proc*. 2004 Nov;3213(1).
4. Lazuardi SD, Hadi F, Devintasari D V., Wuryaningrum P, Riduwan M, Noarista OS, et al. The impact on downstream policy implementation for mineral export products in Indonesia: marine transportation point of view. *IOP Conf Ser Earth Environ Sci*. 2024 Feb;1298(1).
5. Wahyono Y, Sasongko NA, Trench A, Anda M, Hadiyanto H, Aisyah N, et al. Evaluating the impacts of environmental and human health of the critical minerals mining and processing industries in Indonesia using life cycle assessment. *Case Studies in Chemical and Environmental Engineering*. 2024 Dec 1;10:100944.
6. Nasution MJ, Bakri S, Setiawan A, Wulandari C, Wahono EP. The Impact of Increasing Nickel Production on Forest and Environment in Indonesia: A Review. *Jurnal Sylva Lestari*. 2024;12(3):549–79.
7. Arsel M, Hogenboom B, Pellegrini L. The extractive imperative in Latin America. *Extr Ind Soc*. 2016;3(4):880–7.

8. Harvey D. *Spaces of Capital: Towards a Critical Geography*. Routledge; 2001.
9. Bridge G. *Material worlds: Natural resources, resource geography and the material economy*. *Geogr Compass*. 2009;3(3):1217–44.
10. Bado B, Alam S, Eka Atmaja V, Saparuddin. *Analysis of Welfare in Indonesia*. *International Journal of Economics and Business Administration*. 2018;VI(3):136–45.
11. Wen Q, Li J, Mwenda KM, Ervin D, Chatterjee M, Lopez-Carr D. Coal exploitation and income inequality: Testing the resource curse with econometric analyses of household survey data from northwestern China. *Growth Change*. 2022 Mar 1;53(1):452–69.
12. Rumiarta INPB, Yusa IG, Parsa IW, Putri M. *Business on Nickel Downstreaming with China and European Union Lawsuits*. *Jurnal IUS Kajian Hukum dan Keadilan*. 2024;12(2):315–29.
13. Santoso RB, Moenardy DF, Dermawan W. *Indonesia's rational choice in the nickel ore export ban policy*. *Cogent Soc Sci*. 2024;10(1):2400222.
14. Lo MGY, Morgans CL, Santika T, Mumbunan S, Winarni N, Supriatna J, et al. Nickel mining reduced forest cover in Indonesia but had mixed outcomes for well-being. *One Earth*. 2024 Nov 15;7(11):2019–33.
15. Heijlen W, Duhayon C. *An empirical estimate of the land footprint of nickel from laterite mining in Indonesia*. *Extr Ind Soc*. 2024 Mar 1;17:101421.
16. Satyawan IA, Kevin MS, Pardede TM. *Nickel mining in Obi Island: problem or solution for mitigating climate change effects?* *E3S Web of Conferences*. 2023;467:02005.
17. Raji N, Nadir B. *The impact of mining on the environment in Morocco*. *E3S Web of Conferences*. 2023;412:01040.
18. Biswas N, Ghosh A, Mitra S, Majumdar G. *Environmental issues associated with mining and minerals processing*. *Comprehensive Materials Processing*. 2024 Jan 1;77–86.
19. Radu VM, Filiuță AE, Vijdea AM, Ivanov AA, Alexe VE, Dincă G, et al. *Research on the closure and remediation processes of mining areas in Romania and approaches to the strategy for heavy metal pollution remediation*. *Sustainability*. 2023;15(21):15293.
20. Górniak-Zimroz J, Pactwa K. *Identification of social and environmental conflicts resulting from open-cast mining*. *IOP Conf Ser Earth Environ Sci*. 2016;44(5):052033.
21. Shiquan D, Amuakwa-Mensah F, Deyi X, Yue C, Yue C. *The impact of mineral resource extraction on communities: How the vulnerable are harmed*. *Extr Ind Soc*. 2022 Jun 1;10:101090.
22. Braun V, Clarke V. *Using thematic analysis in psychology*. *Qual Res Psychol*. 2006;3(2):77–101.
23. Young MD, Diem S, Sampson C. *The Vital Necessity of Critical Education Policy Research*. *Educ Eval Policy Anal*. 2024 Jun 1;46(2):397–405.
24. Castree N. *The spatio-temporality of capitalism*. *Time Soc*. 2009;18(1):26–61.
25. Malecki EJ. *Economic Geography*. *International Encyclopedia of the Social & Behavioral Sciences: Second Edition*. 2015 Jan 1;33–7.
26. Grimm M, Klasen S. *Geography vs. institutions at the village level*. *CESifo Working Paper Series No 2259*. 2008;
27. Crang M, Hughes A, Gregson N, Norris L, Ahamed F. *Rethinking governance and value in commodity chains through global recycling networks*. *Transactions of the Institute of British Geographers*. 2013;38(1):12–24.
28. Jones A, Murphy JT. *Theorizing practice in economic geography: Foundations, challenges, and possibilities*. *Prog Hum Geogr*. 2010;35(3):366–92.
29. ESDM. *Ministry of Energy and Mineral Resources*. 2020 [cited 2025 Apr 18]. *Peluang Investasi Nikel di Indonesia*. Available from: <https://www.esdm.go.id/id/booklet/booklet-tambang-nikel-2020>
30. *Kepala Pusat Komunikasi Publik. Kemenperin RI*. 2015 [cited 2025 Apr 17]. *Menperin dan Menteri ESDM Meninjau Objek Industri di Morowali*. Available from:

- <https://www.kemenperin.go.id/artikel/12883/Menperin-dan-Menteri-ESDM-Meninjau-Objek-Industri-di-Morowali>
31. Tim Redaksi. Proyek Baterai Kendaraan Listrik. Seputar Rakyat [Internet]. 2020 [cited 2025 Apr 10];8-9. Available from: <https://ytm.or.id/wp-content/uploads/2020/03/Seputar-Rakyat-Nomor-1-Tahun-2020.pdf>
 32. Gramsci A. Selections from the Prison Notebooks. International Publishers; 1971.