Mapping Indonesia's EV Battery Supply Chain

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Research Objectives

01	Identify the types of minerals used as raw materials for battery electric vehicle (BEV) batteries and their availability and distribution in Indonesia.
02	Map business actors at each stage of the BEV battery supply chain in Indonesia.
03	Identify the current pattern of the BEV battery supply chain in Indonesia.
04	Identify regulations and policies related to the national BEV battery supply chain in Indonesia.
05	Identify and map stakeholders involved in developing governance the BEV battery supply chain in Indonesia.
06	Identify and map regional economic, socio-economic, and environmental impacts at each stage of the BEV battery supply chain in Indonesia.
07	Identify the economic vs environmental and social trade-offs that have been made so far in the BEV battery supply chain in Indonesia.

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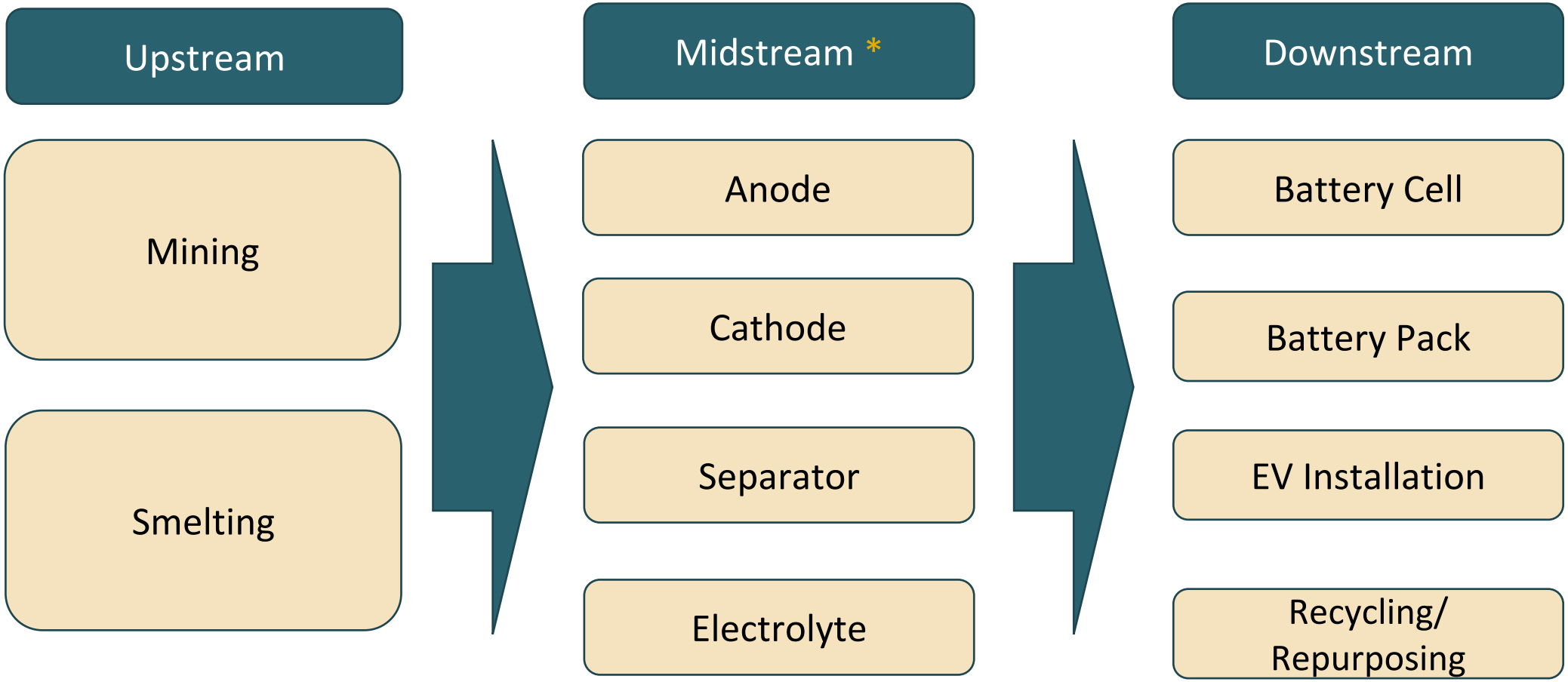
EV Battery Supply Chain Sectors



* Currently Indonesia does not have a Midstream for the EV battery supply chain, semi-processed minerals (nickel, bauxite, manganese etc). are exported to China for full processing, with some returned to Indonesia for assembly.

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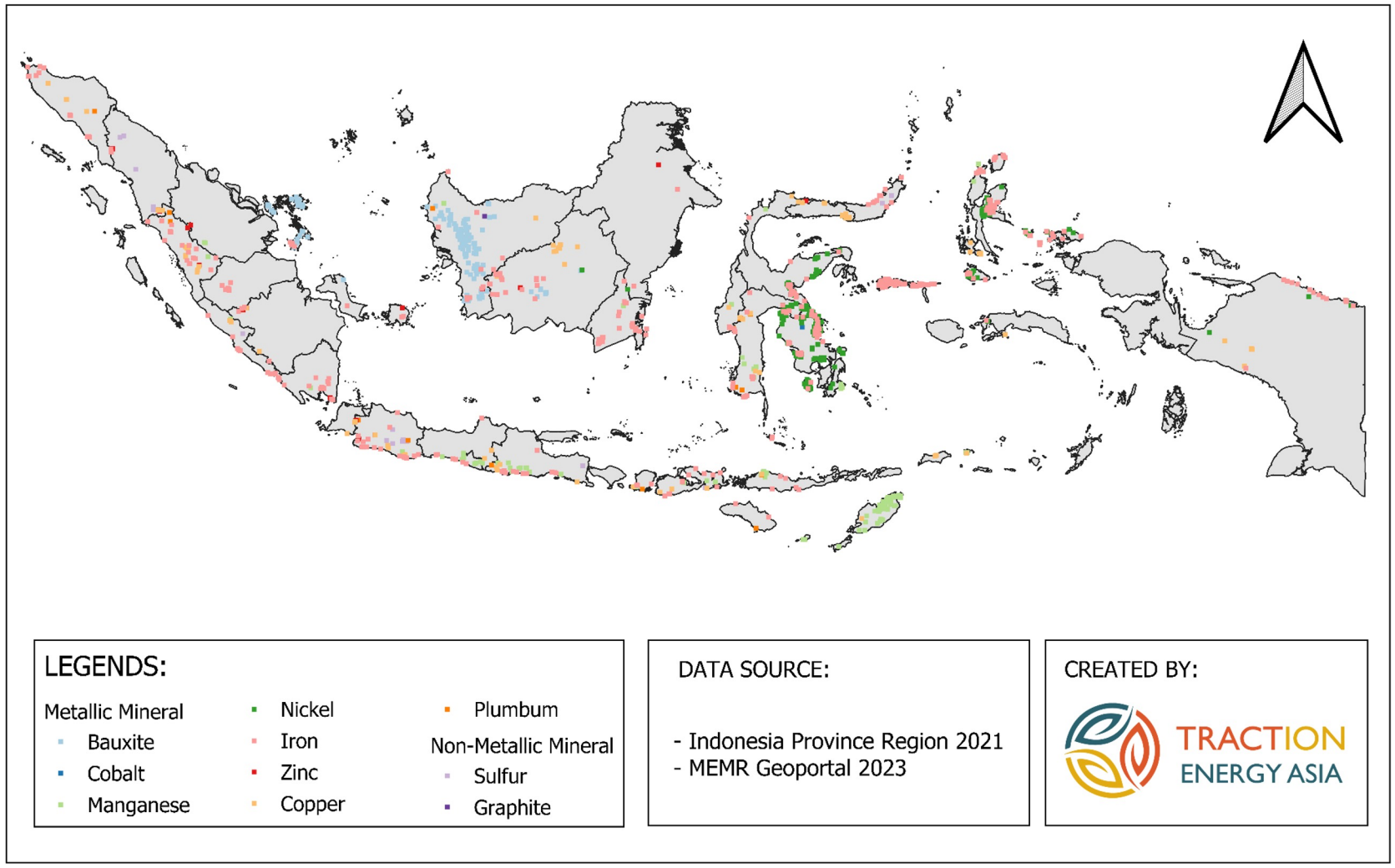
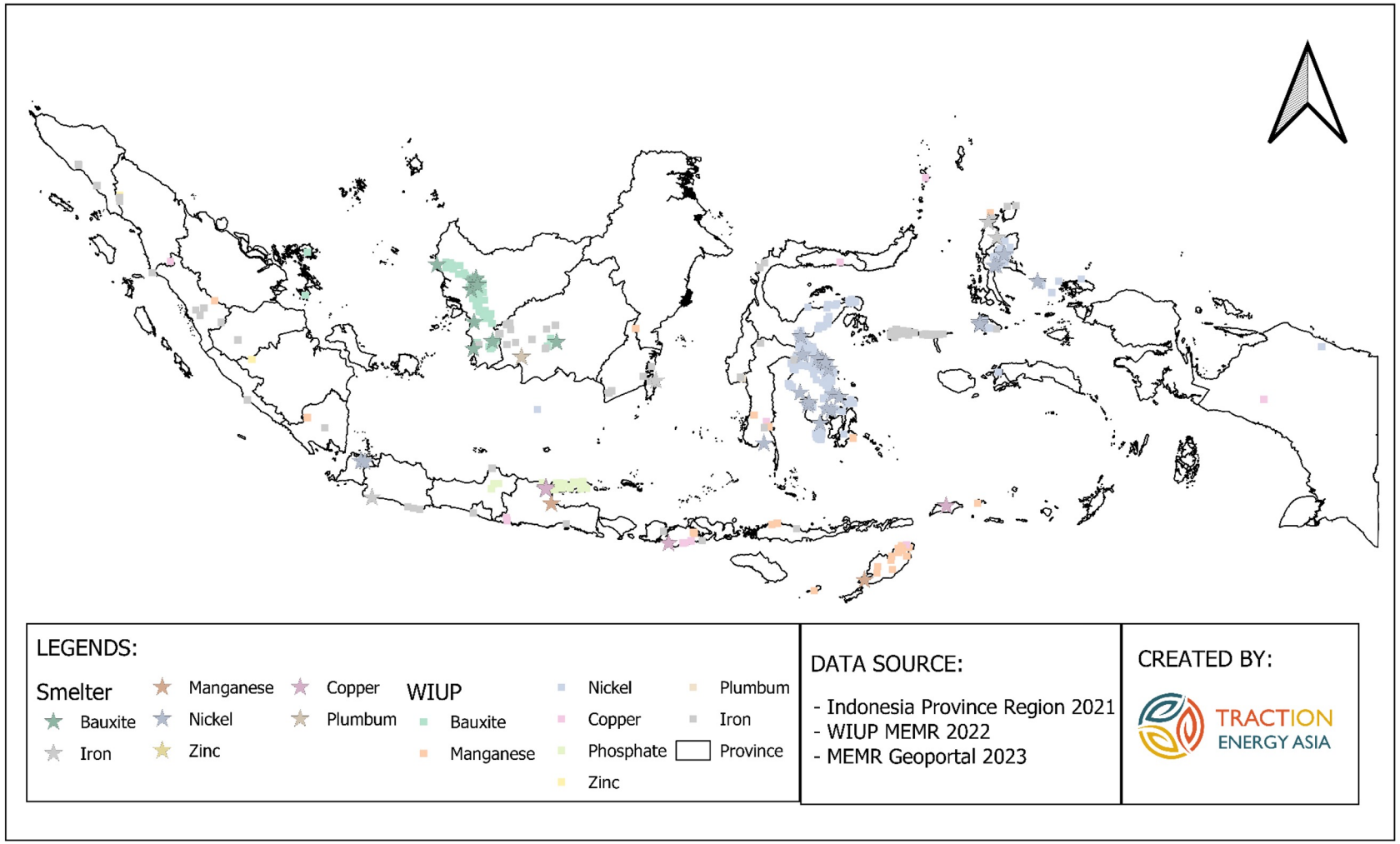
Indonesia EV Battery Supply Chain: Current Status

Distribution of Minerals for BEV Batteries in Indonesia



Indonesia EV Battery Supply Chain: Current Status



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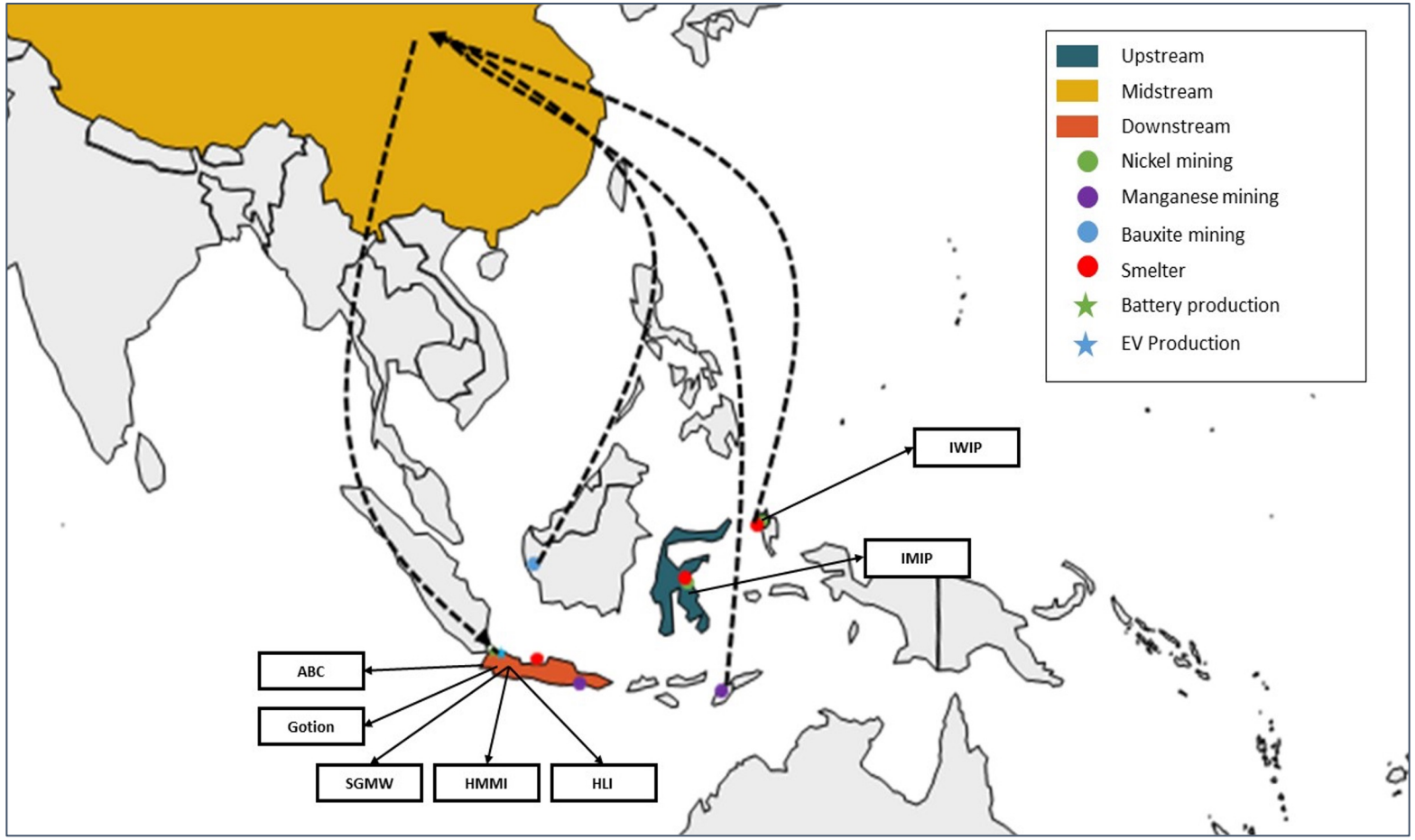

- Many large global and domestic mining companies are already well established in the new EV battery sector, such as PT Vale Indonesia, PT Aneka Tambang, and PT Freeport.
- The number of business actors in the refining/ processing sector is still growing, so far including PT Huayue Nickel Cobalt, PT Gunbuster Nickel, and PT Smelting.
- There are still few business actors in the EV battery packing sector, which so far include PT HLI Green Power, PT International Chemical Industry, and Gotion Indonesia Minerals.
- There are also still few EV assembly plant businesses, which so far include Hyundai, Wuling, Gesits, and DFSK.

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Field Survey Loci

22-31 May 2023

Downstream

Greenland International Industrial Center (GIIC), Cikarang, Bekasi. Location of EV assembly plants, such as Hyundai and Wuling.

Downstream

Karawang New Industrial City (KNIC), Telukjambe Barat, Karawang. EV battery packing plant, PT HLI Green Power.

12-16 June 2023

Upstream

Indonesia Morowali Industrial Park (IMIP), Bahodopi, Morowali. EV battery raw material mining and refining.

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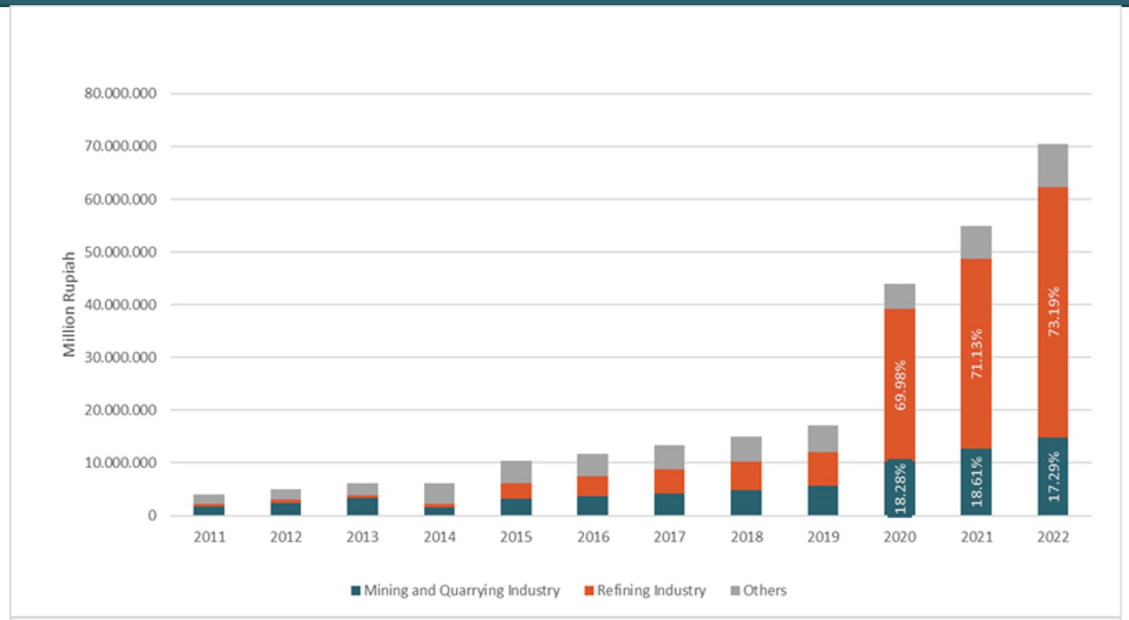
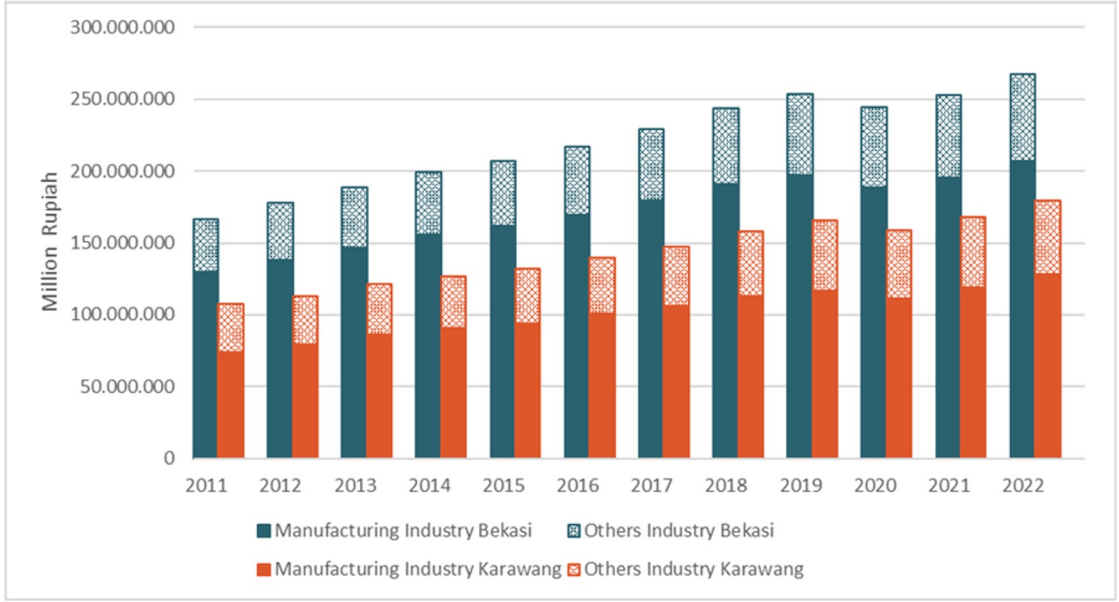
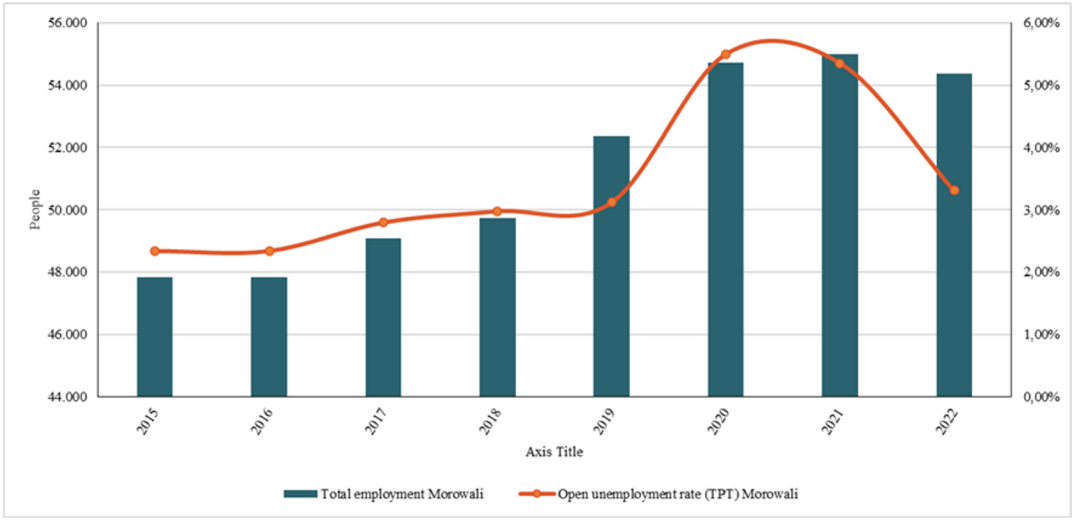
Positive Impacts on Regional Economy







- The mining and smelting sectors contribute over 95% to the regional economy, positively impacting regional GRDP.
- The Own Source Revenue of Morowali Regency increased to around USD 22.19 billion in 2022.
- The upstream sector's local workforce lacks the qualifications to meet the demands of the mining sector.
- In the downstream sector, the regional income increases each year in proportion to the growth of the industry in their respective regions.

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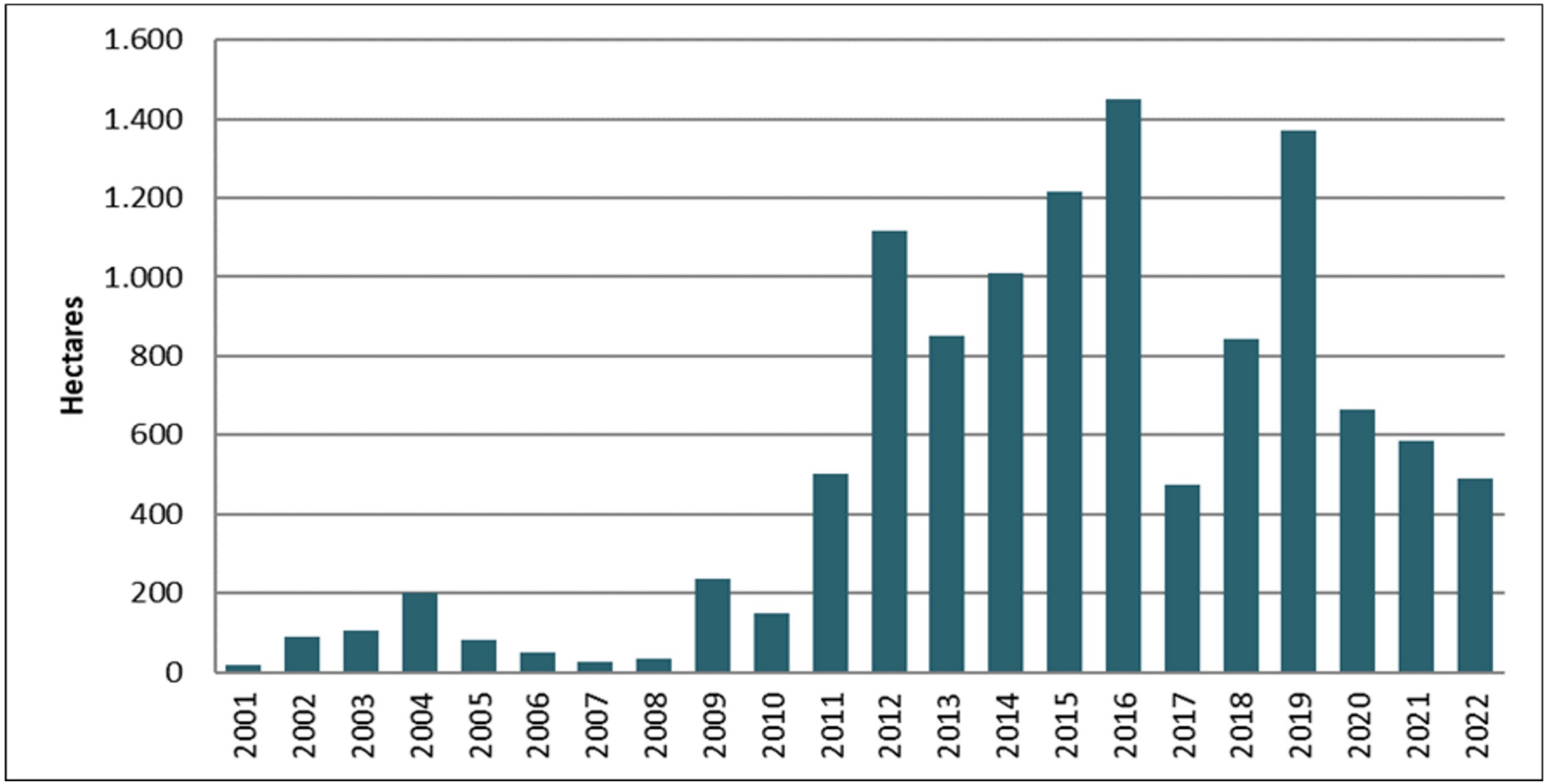
Negative Environmental Impacts: Forest Loss



- By the end of 2022, 543,615 Ha. of forest had been cleared for nickel mining and smelting, including 100,666 just in Morowali district.

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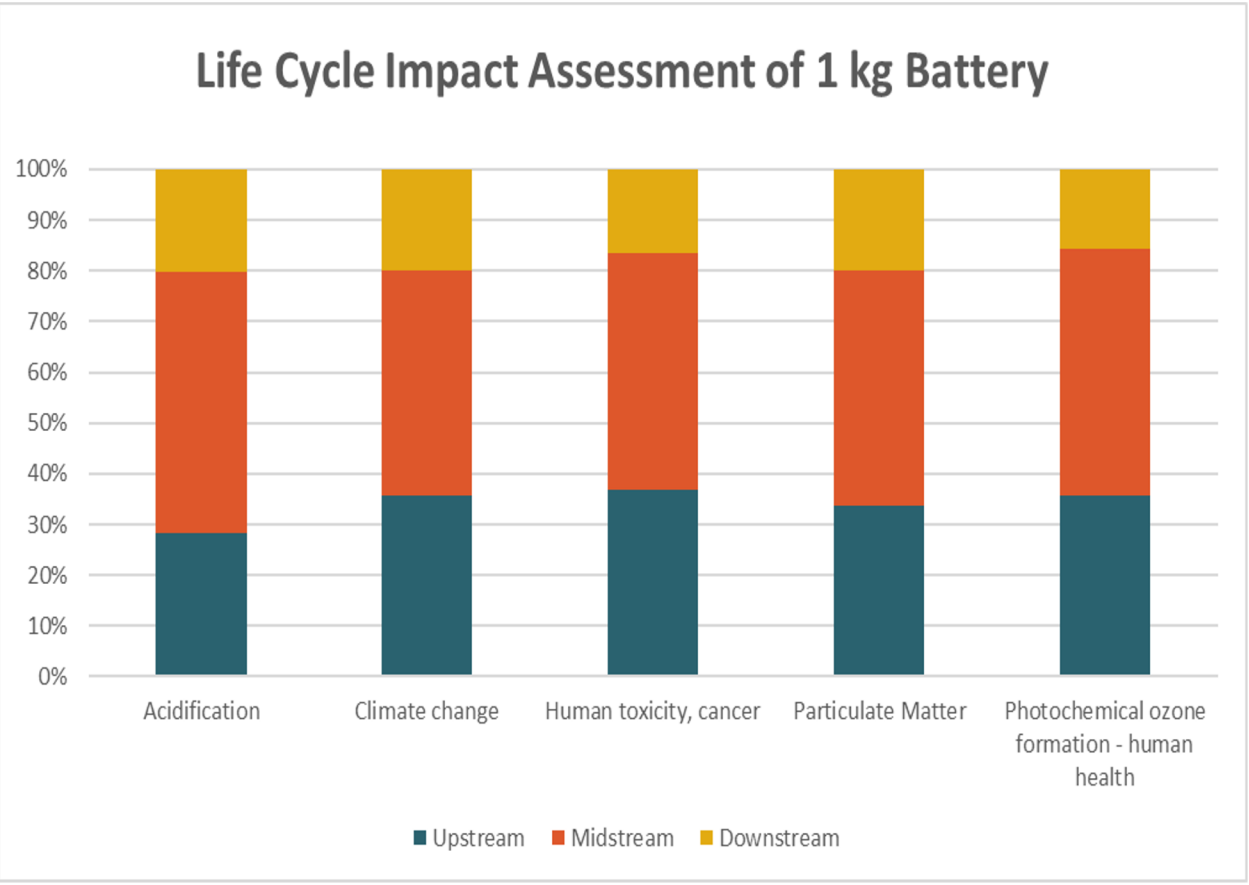
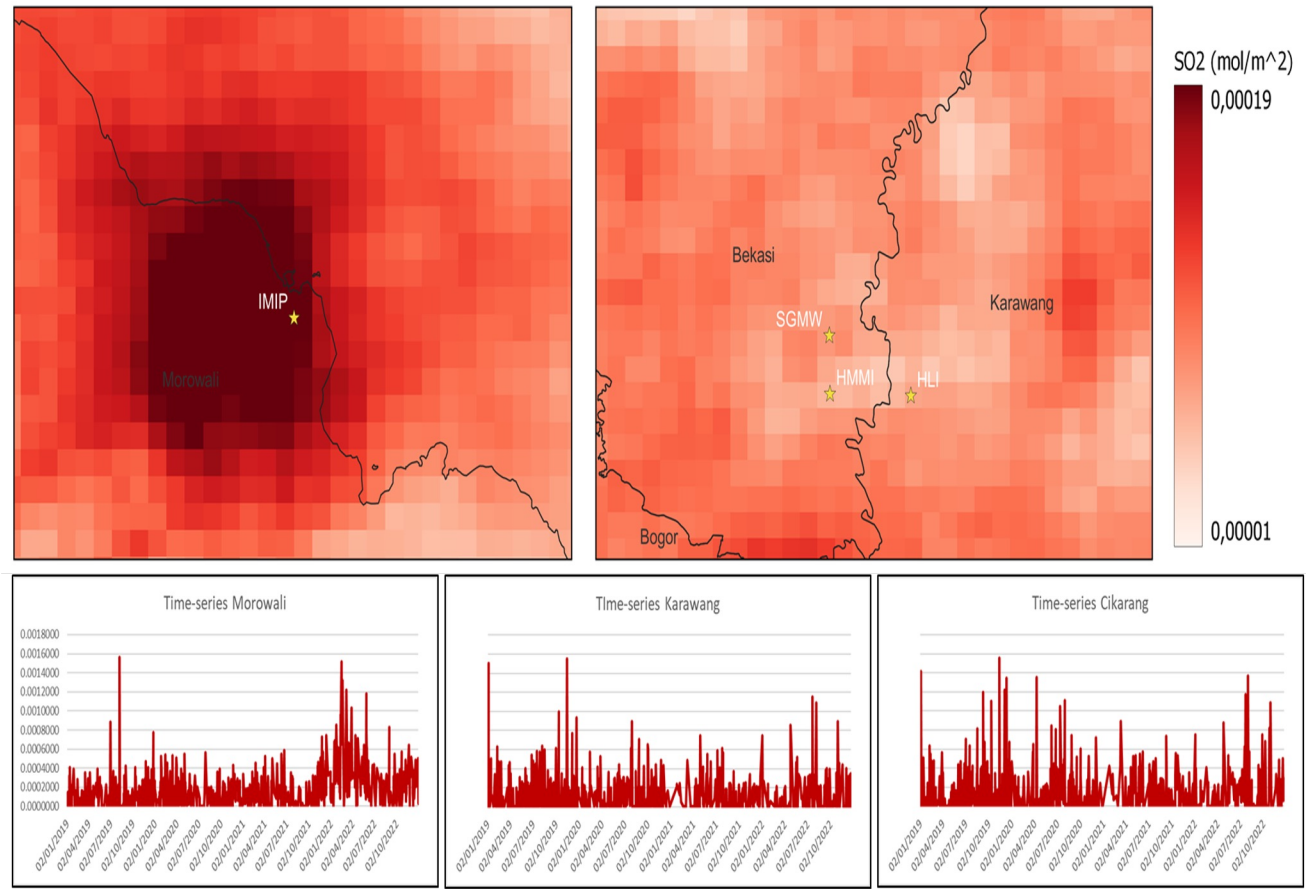
Negative Environmental Impacts: GHG Emissions Increase





- The production of a 1 kg battery pack emits 584.5 kg of CO_2-eq. The midstream process contributes the most to emissions, mainly due to marine vessels transporting nickel to China for processing and then back to Indonesia.
- Pollution levels in the upstream area are more concentrated and have been increasing annually.

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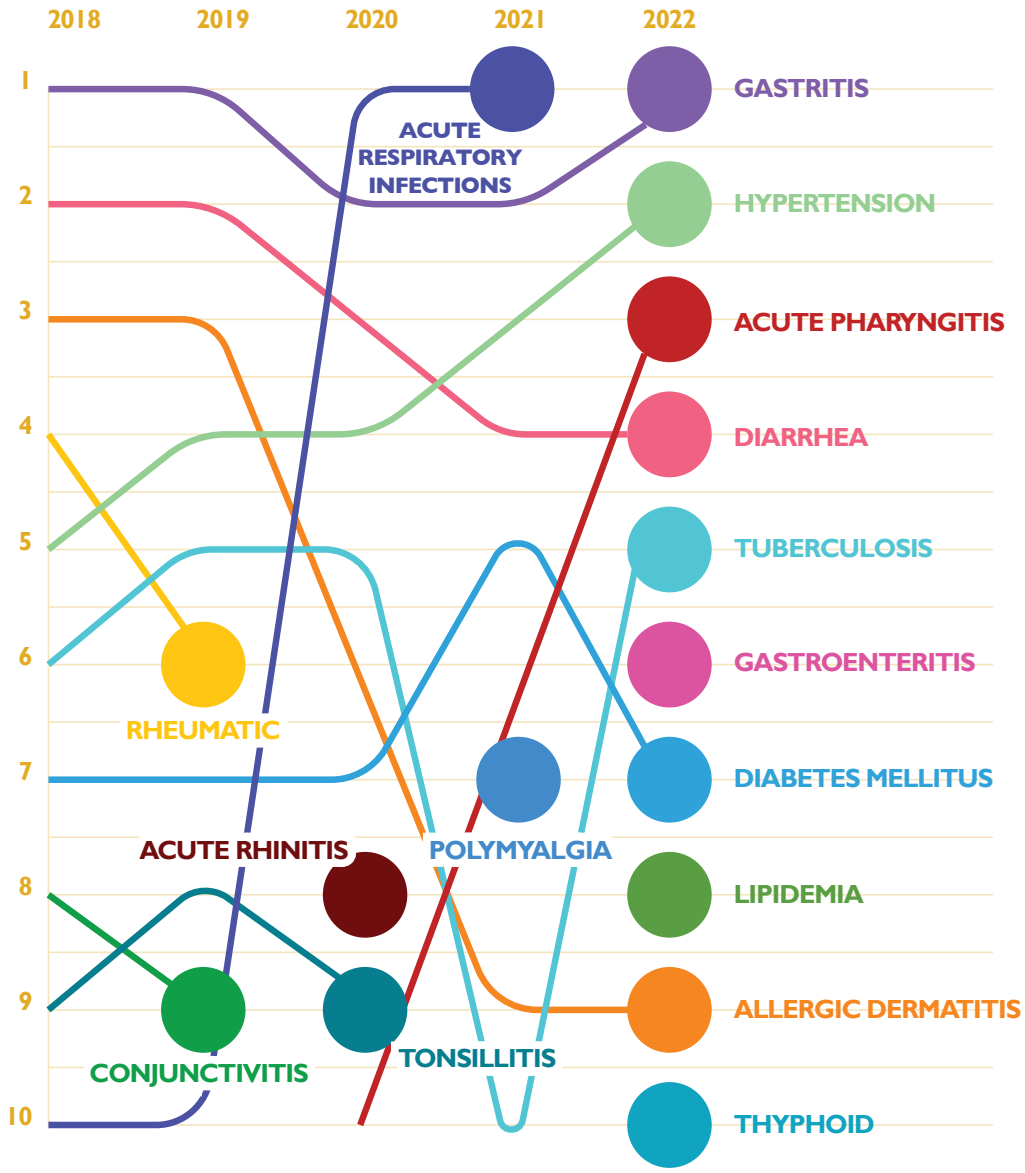
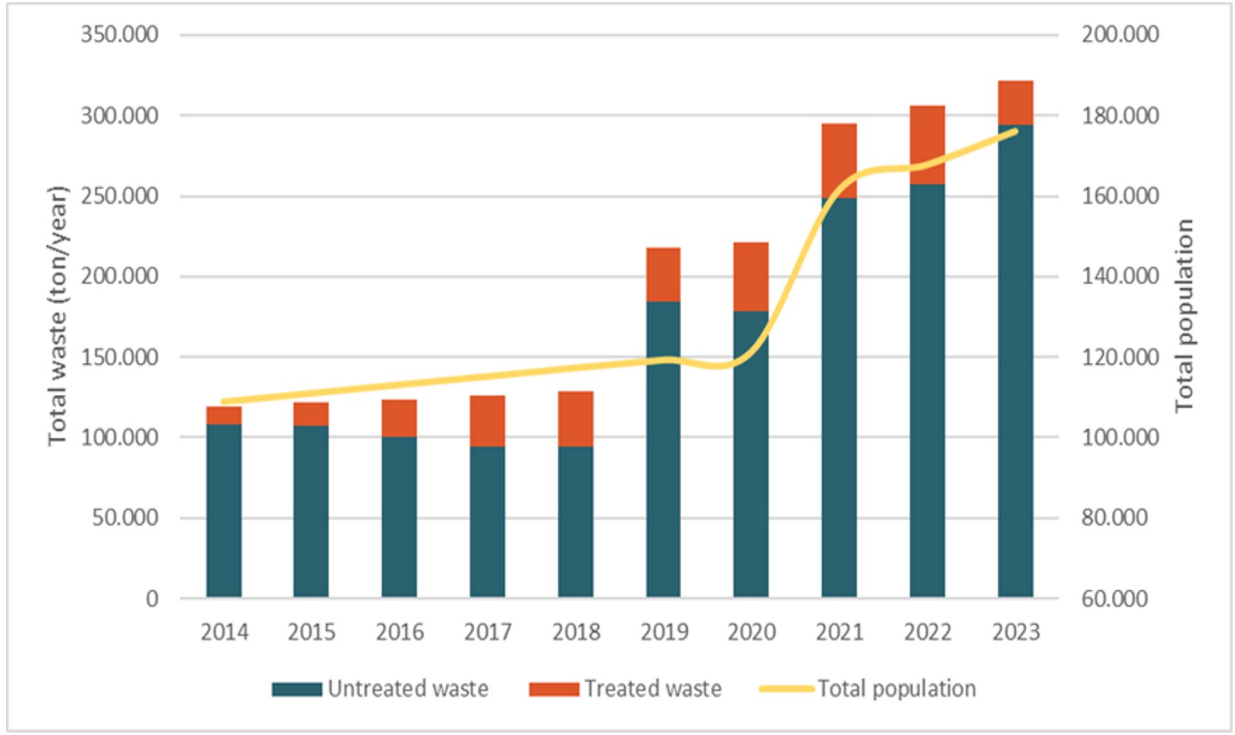
Negative Socio-Economic Impacts





- The top 10 most prevalent diseases in the community are primarily related to respiratory issues in both upstream and downstream areas caused by the declining air quality around the industrial zone.
- The surge in population in these areas has led to an increase in waste production. Unfortunately, there is no proper waste management system in place, resulting in only 17% of waste being successfully managed.

Policy Gaps for Further Research and Engagement

Upstream

- Many nickel and other transition mineral deposits are located in forest areas
- No responsible mining regulations yet in Indonesia, and mining cos struggle to comply with EU and US regulations for nickel supply chains
- No regulations in place for the disposal of mining and smelting wastes
- Nickel smelters continue to depend on coal as their primary source of electricity rather than clean renewable energy

Midstream

- No policy to regulate the midstream sector yet
- No regulation or education to prepare human resources.
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Downstream

- No policies yet to to promote battery recycling and mineral recovery, or repurposing
- Indonesia's transport decarbonization efforts still prioritize private transport over public transport

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Thank you

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