TAINTED STEEL:

THE DEADLY CONSEQUENCES OF HYUNDAI'S DIRTY STEEL SUPPLY CHAIN

MIGHTY EARTH

Acknowledgments

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"We will prevent any case of human rights infringement, and at the same time, will not be involved in or abet any incident of human rights invasion within the applicable range of our Human Rights Policy. When the Guidelines stated in this human rights policy and the national or local legal regulations conflict, we will apply a stricter standard."

— Hyundai Motor Company's Human Rights Policy[1]

"In response to climate change, Hyundai Steel is making a range of efforts across all business operations, such as GHG reduction activities. In line with Korea's NDC roadmap, the Company takes active response measures, introducing new facilities and improving the existing processes, to reduce energy consumption and GHG emissions."

— Hyundai Steel, Response to Climate Change[2]

The steel industry is responsible for around 7% of the world's greenhouse gas emissions, making it the industrial material with the largest climate impact. Primary steel production, which hungrily feeds on coal and iron ore, is responsible for the vast majority of the steel industry's emissions.

Demand from the automotive sector, which is the third largest user of steel globally, bears a significant share of the responsibility for these impacts. Steel accounts for about half of the weight of the average passenger vehicle and is responsible for more than a third of the average vehicle's carbon dioxide emissions.[3] Most of the steel currently used in vehicle manufacturing is primary steel, causing the industry to be the top consumer of primary steel in markets such as the United States.

As the third largest automotive company globally and the only automaker with its own steelmaking subsidiary, Hyundai Motor Company is uniquely advantaged to play a leading role in driving the decarbonization of automotive steel globally. In recent years, Hyundai has also vigorously marketed itself as a sustainability champion that is leading the industry in electrification and clean and equitable supply chains.

However, this report adds to the growing body of evidence that Hyundai's purported sustainability credentials are a mirage. It travels along the road of Hyundai's steel supply chain, from the mines producing coal and iron ore through to the steelmaking process, uncovering a trail of devastating impacts on people and the planet. Some of the impacts identified within Hyundai's steel supply chain include:

- Huge quantities of climate destroying methane emissions, as well as habitat destruction and environmental pollution, caused by metallurgical coal mining in Australia and Canada.
- Coal mining in Colombia that has been linked to severe environmental pollution, health issues, and human rights abuses against the nearby Wayúu Indigenous People, including

allegations of complicity with paramilitary groups responsible for killings, displacements, and forced disappearances.

- The continued dependence of Hyundai's steel supply chain on coal from Russia, including from suppliers and mines connected to a company sanctioned by the U.S. Department of State following the onset of Russia's war in Ukraine
- Irresponsible iron ore mining in Brazil, which has caused the destruction and pollution of Indigenous Peoples' territories, as well as the catastrophic failure of a tailings dam in Brumadinho, resulting in 272 deaths and the displacement of over 60,000 people.
- Iron ore mining operations in Mexico that have been tied to pervasive violence and human rights abuses, including the forced disappearances and killings of multiple Indigenous community leaders and activists, with some evidence suggesting possible cartel involvement in these killings and allegations of company complicity.
- A toxic chemical spill from a steel plant in Vietnam caused what has been described as Vietnam's worst environmental disaster, devastating local fisheries, agriculture and livelihoods, and sparking protests that were violently repressed by the government. The company responsible faces ongoing allegations of failing to adequately compensate the nearly 44,000 affected families, as well as continued environmental harms, including improper hazardous waste disposal.
- Steelmaking facilities in South Korea, Brazil, Mexico and the United States that are responsible for releasing staggering quantities of greenhouse gas emissions but also harmful air pollution that is having devastating impacts on local communities, causing thousands of premature deaths and billions of dollars in healthcare costs.

The report finds that facilities in each of these locations supply products tainted by these abuses for Hyundai's global steel supply chain. These products are ultimately used to manufacture Hyundai and Kia vehicle models such as the Tucson, Santa Fe, Santa Cruz, Genesis, EV9, Sorento, and many more. These vehicles are then exported to and sold in a large number of markets, including the United States, Canada, Norway, Turkey, Mexico, Australia, the Philippines, and the European Union.

Despite Hyundai's pledge to "do the right thing for humanity," the company consistently fails to implement adequate mechanisms to address negative climate, environmental, and human rights impacts in its supply chain, such as the ones identified in the report. The Lead the Charge Leaderboard, an annual benchmark of automotive companies, finds that Hyundai and Kia significantly trail industry peers in both supply chain decarbonization and human rights due diligence. They have set meager 2030 emissions reduction targets that are less than half as ambitious as the next lowest competitor and they have taken no action on steel decarbonization. They have also failed to establish critical components of effective supply chain due diligence, such as grievance mechanisms for impacted rights-holders and processes for remedying confirmed violations.

Mighty Earth wrote to Hyundai Motor Company requesting the company provide a summary of any environmental and human rights due diligence it had conducted into the facilities and suppliers that Mighty Earth had identified as being part of the company's supply chain and that had been linked to the abuses detailed in this report, or to provide counter evidence from the company's supply chain

mapping activities that confirms these facilities do not form part of Hyundai Motor's global steel supply chain.

In the company's response to Mighty Earth, Hyundai did not provide any evidence of any due diligence activities it had undertaken into any of the specific facilities or suppliers identified by Mighty Earth, only stating that "it is difficult to provide specific answers to the individual supply chain information due to security issues," without explaining what these were (see Appendix A). Neither did the company provide any counter evidence that Hyundai does not source materials from these facilities and suppliers.

Hyundai's continued failure to signal intentions to shift away from coal-based steel sustains the status quo documented in this report, enabling mining and steelmaking companies to justify the expansion and continuation of coal mining and coal-based steel operations. Moreover, the absence of robust due diligence measures creates an environment where environmental and human rights abuses - such as the ones documented in this report - can persist unchecked throughout the company's supply chain.

It doesn't have to be this way. Hyundai can live up to its rhetoric by utilizing its substantial influence as the world's third-largest automaker to drive up environmental and human rights performance by companies across its steel supply chain and beyond. By doing this, Hyundai can leverage its steel supply chain as a force for good in the world, and truly fulfill its mission of driving "Progress for Humanity."[4]

In regard to the findings of this report Mighty Earth calls on Hyundai to:

- **Accelerate Transition to Electric Vehicles (EVs):** Hyundai should set binding deadlines to phase out fossil-fuel vehicles and fully transition to 100% electric vehicles in line with the Paris Agreement's 1.5°C target.
- **Decarbonize Steel Supply Chains:** Hyundai must establish science-based targets and partnerships to reduce carbon emissions in its steel supply chain through low- and zero-carbon material procurement.
- **Commit to Phasing Out Coal:** Hyundai should halt new coal investments and commit to fossil-free production methods for key materials like steel and aluminum.
- **Enhance Human Rights Due Diligence:** Hyundai needs robust mechanisms to identify, prevent, and address human rights risks in its supply chain, particularly around mining and Indigenous rights, with transparent reporting and adherence to global standards
- **Uphold Workers' Rights and Community Benefits:** Hyundai must protect workers' rights and ensure community benefits through agreements with local stakeholders and independent monitoring of labor conditions.

Introduction

The Steel Industry's Sky-High Emissions

The climate impact of the steel industry is massive, with just under two billion tons of raw steel produced each year,[5] resulting in approximately 7% of global greenhouse gas (GHG) emissions and 11% of global carbon dioxide (CO2) emissions.[6] This is four times more CO2 emissions than are emitted each year by every single plane in the sky across the globe.

The steel industry's direct emissions have doubled since 2000, and the industry is off track in decarbonizing at the rate needed to keep global warming to 1.5°C,[7] a threshold generally agreed upon by governments and scientists for reducing the impacts of climate change. The culprit for the vast majority of steel production's emissions is the coal used in primary steel production. Across the globe, more than two-thirds of steel is new, primary steel.[8] Over 90% of this steel is currently produced in coal-fired blast furnaces.[9]

According to experts, a ton of primary steel produced in this way uses 0.77 tons of metallurgical coal, also known as met coal or coking coal, which then leads to 2.3 to 3 tons of carbon dioxide emissions.[10] With methane emissions included, primary steel production using met coal emits the equivalent of 4.2 gigatons of CO2 per year and is responsible for 90 percent of emissions for the entire industry.[11]

In addition to producing huge quantities of GHG emissions, the steel supply chain – from mining coal and iron ore through to the steel production process itself – is rife with allegations of other forms of environmental devastation and human rights abuses. A recent report published by the Fair Steel Coalition documents the impacts of the steel industry and its supply chain across the globe.[12] The report finds that systemic failures of the industry are leading "to the unabated exploitation and devastation of lands, waters, and forests vital to indigenous and tribal communities, often stripping them of their rights and self-determination to pave the way for expansion." Moreover, they are also resulting "in the continued pollution of impoverished neighborhoods, harming their health and limiting their livelihood options."[13]

Maximizing circularity and the use of recycled steel is essential for reducing the climate and environmental impacts of steel production, but comprehensive action to decarbonize primary steel made from virgin iron ore is also needed. As stated in a recent study:

> *"Even in a more circular economy, over one billion tonnes per annum of primary steel (using iron ore feedstock as opposed to scrap) will be needed globally by 2050. Under a business-as-usual scenario, the increase in demand would result in 2.8 billion tonnes of annual CO2 emissions from the steel sector in 2050. This figure greatly exceeds the remaining carbon budget for the steel industry envisioned by the IEA's beyond 2°C scenario, and the more stringent net-zero emissions target [of 1.5°C] advocated by an increasing cohort of observers and countries … It is therefore critical that low- and eventually zero-carbon technologies are developed and deployed for primary steel production."*
>
> — ***Mission Impossible Partnership***[14]

Cleaning up primary steel production means getting coal out of steel. Fortunately, there are already solutions to producing steel without coal, the most promising of which is the use of hydrogen. In 2021, Hybrit, a Swedish company, delivered the first "green steel" – made with hydrogen, rather than coal – to Volvo.[15] In 2024, the Biden Administration announced up to $1.5 billion for six iron and steel projects, much of which is allocated for green steel production for the auto industry.[16] Although scaling up steel production without coal will take time and investment, it is possible, and automakers can play pivotal roles in driving that change.

The automotive industry's outsized influence on the steel industry owes to the fact that, collectively, the industry is the third-largest consumer of steel globally, and it is a particularly important consumer of high-grade primary steel.[17] Steel accounts for about half of the weight of the average passenger vehicle and is responsible for more than a third of the average vehicle's carbon dioxide emissions.[18] Currently, primary steel is used in at least 75% of the vehicles currently being manufactured. In the United States, for example, the automotive sector represents just over 20% of all steel consumption, but over 60% of primary steel consumption.[19] This underscores not only the automotive sector's responsibility for the impacts of coal-based steel production globally, but also the opportunity for the industry to use its leverage to shift the sector toward manufacturing processes that are free from fossil fuels and human rights violations.

The largest steel consumers in the automobile industry are Toyota, Volkswagen, and Hyundai Motor Company,[20] with Hyundai having the most consistent upward growth over the past four years.[21] In August, Hyundai announced its goal of selling 5.55 million vehicles each year by 2030, up 30% from 2023.[22] Additionally, Hyundai Motor Company (HMC) is the only automaker that has its own steel subsidiary, Hyundai Steel, which gives it a unique advantage in leading the charge, in regard to decarbonizing the steel used in its vehicles.

Hyundai Motor Company: Answering the Call for Sustainability?

HMC is a South Korea-based multinational corporation that manufactures internal combustion automobiles and electric vehicles, among other business segments. It was founded in 1967, and, by 2023, it had become the third-largest automaker worldwide, with $124.5 billion in sales and $30 billion in exports to over 200 countries. HMC is part of the conglomerate Hyundai Motor Group (HMG), also based in South Korea, which is involved in a wide range of businesses, from raw material extraction to the manufacture of electric and internal combustion vehicles. Kia Corporation and Hyundai Steel are both affiliates of HMG.[23]

In recent years, Hyundai and Kia have marketed themselves as sustainability leaders in the automotive industry. Hyundai touts its "success story as an electrification leader," which it claims is a "testament to its relentless commitment to innovation, quality and sustainability."[24] These branding efforts have been spearheaded by the group's current Executive Chair, Euisun Chung, who has been lauded as a visionary and industry leader on sustainability.[25] Under Chung's leadership, Hyundai has launched a new brand vision centered on "Progress for Humanity."[26]

"The clean and sustainable environment envisioned by HMG is both a duty to future generations and a right for humanity and the Earth. Thinking first and foremost about the environment, HMG strives to realize a better world for the future by developing eco-friendly products and services through technological innovation. With the aim of realizing carbon neutrality, the Group is striving to change the future energy paradigm, by expanding renewable energy and establishing a hydrogen society. Efforts are also directed towards protecting the precious natural capital of the planet and creating an eco-friendly workplace to realize a sustainable society."

— Hyundai Motor Group's Sustainability Message[27]

Through this marketing strategy, Hyundai not only promotes its leadership in electrification, but also on clean and equitable supply chains, promising clean vehicles that are made with sustainable and ethical materials. The luxury Genesis brand, for example, touts its "profound mission" to use "eco-friendly materials,"[28] whilst the Ioniq brand is marketed as having "sustainable materials applied throughout," and using "materials that take care of people."[29] Similarly, Kia promotes its "Sustainable Design," in which "every aspect of Kia's design is the result of careful consideration aimed at sustainable processes and solutions, ranging from colors and materials to finishes."[30]

These lofty ambitions are also reflected in the company's policies and commitments. Both Hyundai and Kia say they support The Paris Agreement, and they have set public commitments to achieve carbon neutrality by 2045 "by neutralizing CO2 emissions at all stages of production and operation."[31] They have published a Human Rights Policy that embraces international standards – including the UN Declaration of Human Rights, UN Guiding Principles on Business and Human Rights, OECD Guidelines for Multinational Enterprises, UN Convention on the Rights of the Child, ILO Core Conventions, and applicable laws of countries in which Hyundai operates – and have created a Supplier Code of Conduct, which applies to all partners, contractors, and suppliers.

These efforts in promoting a brand focused on sustainable and ethical practices have paid off, spurring the company's value even further. As stated in a recent publication, "Hyundai Motor's brand value has jumped $6 billion in just three years, as visionary changemaker Euisun Chung leads a human-centered approach to mobility."[32] This year, Jose Muñoz, the CEO of Hyundai and Genesis Motor North America, was also named as one of the 100 Most Influential Climate Leaders in Business by Time Magazine.[33] Muñoz is set to become president and CEO of Hyundai Motor Company by the time this report is published.[34]

However, these marketing strategies have been proven to be very misleading. A recent study found that Hyundai Motor Group underreported its total greenhouse gas emissions by 113%, the second-largest underreporting of all the automakers evaluated, and that investments in the company are more carbon-intensive than investments in ExxonMobil.[35]

Responding to Hyundai's latest sustainability report, Greenpeace expressed concerns that "although Hyundai is often seen as a leader in electrification, the latest sustainability report tells a different story. In 2023, 93.5% of Hyundai vehicles sold contained an internal combustion engine." Greenpeace also criticized the company for dropping a previous commitment for its Genesis brand to be fully electric by 2025, while increasing its total emissions in 2023 "by 8.7 million tonnes, an increase that alone exceeded the total emissions of Costa Rica."[36]

In regard to human rights, reports have revealed the use of both child labor[37] and forced Uyghur labor[38] in Hyundai's supply chain. The company is now facing a lawsuit from the Department of Labor in the United States over its suppliers' use of child labor.[39] In addition, Hyundai suppliers have been tied to numerous labor violations across the world.

This report adds further weight to the criticism that Hyundai's carefully constructed brand as a sustainability leader is a mirage. By examining the impacts of Hyundai's steel supply chain across the globe, from the coal and iron ore mining extracted to produce the steel for Hyundai's vehicles to the iron and steelmaking process itself, this report unravels a pattern of partners, contractors, and suppliers to Hyundai that have been implicated in climate destruction, environmental pollution, toxic chemical spills, and even deaths and forced disappearances.

But it doesn't have to be this way. Hyundai can live up to its rhetoric by utilizing its substantial influence as the world's third-largest automaker to drive up environmental and human rights performances by companies across its steel supply chain and beyond. By doing this, Hyundai can leverage its steel supply chain as a force for good in the world, and truly fulfill its mission of driving "Progress for Humanity."

Methodology

This report identifies a range of projects and facilities across many countries (including Brazil, Colombia, South Korea, U.S., Mexico, Vietnam, Australia, Canada, and Russia) producing materials and components within the Hyundai steel supply chain that have been tied to negative impacts on the environment, climate, and human rights. To identify these suppliers, projects, and facilities, Mighty Earth worked with Empower LLC, which analyzed 57,402 shipments made between January 2018 and October 2024 by 196 companies in the aforementioned supply chain.

The research methodology involved six steps. First, reports from Hyundai-Kia subsidiaries were reviewed to identify suppliers involved in the manufacture of electric and conventional vehicles, along with public information. Customs records from subscription-based platforms, academic research, reports from civil society organizations (CSOs), and specialized media reports were also consulted. In addition, Empower filed freedom of information requests in several countries, and conducted interviews with CSOs to detect socio-environmental conflicts.

The second step involved analyzing Hyundai-Kia's steel supply chain. A database was created, which listed the identified subsidiaries and suppliers, along with details of shipments confirming the role of each company. These companies were classified by supplier level, based on: (1) public information from the companies themselves, describing their involvement in the automotive supply chain, (2) customs records consulted through Panjiva and Sayari, and (3) data from other subscription-based platforms providing market intelligence, such as CapitalIQ.

Empower's database includes details such as the shipment date, consignee, shipper, origin, destination, weight, value, and goods, among other data. In cases where Panjiva and Sayari did not specify the goods shipped, Empower used Harmonized System codes, a nomenclature for classifying internationally traded goods; however, some codes are generic, covering a range of parts and components, which occasionally complicates the identification of the materials used.[40] When a specific material could not be identified, it was labeled as "undisclosed."[41]

All companies were also searched using international watchlists, news reports, union websites, and CSOs to identify negative impacts from their activities. Identified companies were further investigated by Empower, using trade data to demonstrate how their products are used in the manufacture of Hyundai-Kia vehicles. Additionally, component reports and other documentation were reviewed in order to identify complementary and supporting evidence of supplier relationships. The results of this supply chain tracing process are illustrated in the diagrams included with each case study, as well as in the databases linked to from the endnotes for each diagram.[42]

It is important to note that Panjiva and Sayari are search engines that present certain limitations. In addition to those already mentioned, these platforms do not always have updated records, and the data can be poorly formatted. Moreover, the names of consignees and shippers are sometimes withheld at the requests of the companies themselves.[43] Despite these limitations, these databases provide the most up-to-date and accurate information currently available. In this report, all data related to shipments and supplier relationships derive from Panjiva or Sayari, unless otherwise specified.

As a third step, any socio-environmental conflicts identified were analyzed in depth, first by Empower, and then by Mighty Earth. Although the initial period of analysis was set between 2018 and 2024, Empower found a few cases in which earlier conflicts remained active, such as those involving Formosa Ha Tinh Steel Corporation (Formosa) in Vietnam.

The fourth step consisted of creating profiles for each company identified, documenting their business relationships, and details of the impacts of the facilities or projects that had been identified as supplying materials or products to Hyundai's supply chain.

For the fifth step, Empower conducted additional searches using Panjiva and Sayari to identify shipments of metallurgical coal, Pulverized Coal Injection (PCI), and iron ore to key suppliers, as well as to identify the mines from which these goods were sourced. In most cases, coal mines were disclosed in the customs records consulted through these databases. In cases where this information was not specified, Empower consulted public information to identify coal mine assets owned by the shipping companies, or agreements signed by the supplier and a third party, in order to identify the source of the coal.

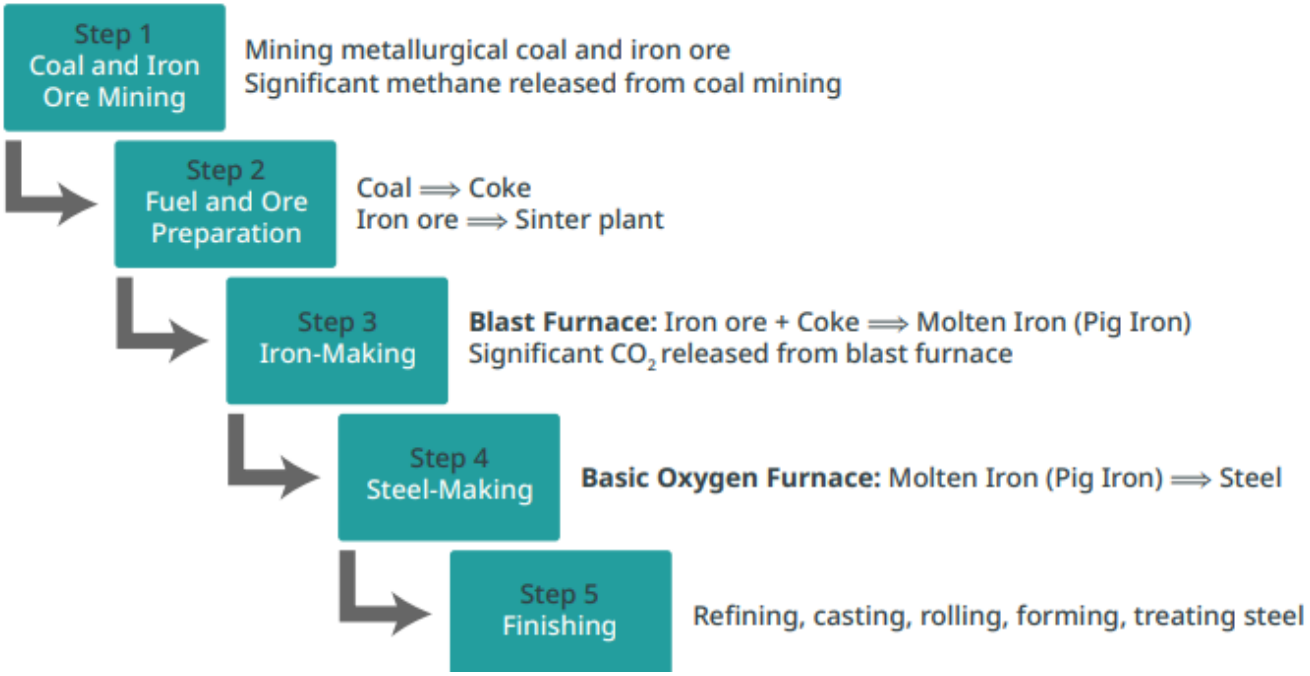
Mighty Earth then conducted additional research into the suppliers, projects, and facilities identified by Empower, in order to prioritize the final selection of cases that are included in this report. This research was conducted by contacting and interviewing representatives of local organizations that have worked to document the impacts of these cases, and reviewing additional documentation and reports provided by these organizations.

Finally, the sixth step involved identifying the last link in the supply chain: the manufacturing and exporting of Hyundai's and Kia's vehicles. For this step, Empower used Panjiva, Sayari, and Marklines, a subscription-based platform that provides data on the global automotive industry, to determine at which plants Hyundai-Kia EV models are assembled, and to which countries they are exported. It is worth noting that each shipment found in this step may contain up to hundreds of vehicles, and, for that reason, each case was analyzed individually.

Unraveling Hyundai's Steel Supply Chain

Hyundai is heavily dependent on coal-based primary steel production to manufacture its vehicles, first relying on some companies to mine coal and iron ore, and then other companies to produce steel via the BF-BOF process, relying on a blast furnace (BF), and then a basic oxygen furnace (BOF). A thorough investigation of Hyundai uncovered a trail of devastation along the different stages of the steelmaking process used for Hyundai's vehicles, with devastating consequences for the climate, natural resources, workers, and local communities.

The steps of the steelmaking process are illustrated in the diagram below.



The 5 steps of conventional coal-based blast furnace steel production. Source: SteelWatch

Starting at the mines, the investigation identified several sources of metallurgical coal for Hyundai's supply chain, primarily sourced from Australia, Russia, and Canada. Identified coal mines in Australia, such as the Saraji mine owned by BHP Mitsubishi Alliance, have been criticized for causing environmental destruction, threatening koala habitats and producing huge quantities of methane emissions. The investigation identified links among these mines and many Hyundai suppliers, including POSCO in South Korea, Ternium in Brazil, and Formosa in Vietnam.

The investigation also identified shipments from coal mines in Canada going to Hyundai Steel and POSCO in South Korea. These specific mines have faced fines and lawsuits for pollution, and for repeatedly violating environmental protection regulations. Coal mines in Russia were also identified as supplying Hyundai's supply chain, sending shipments to Hyundai Steel, directly and to Formosa in Vietnam, despite Hyundai's and South Korea's stated opposition to the war in Ukraine.

In addition to metallurgical coal, the investigation found that Hyundai's supply chain also relies on thermal coal from Glencore's Cerrejón mine in Colombia. This mining operation has been accused of funding paramilitary organizations in Colombia, and it has received a substantial number of complaints related to human rights from many who live close to the mines (see this section of the report).

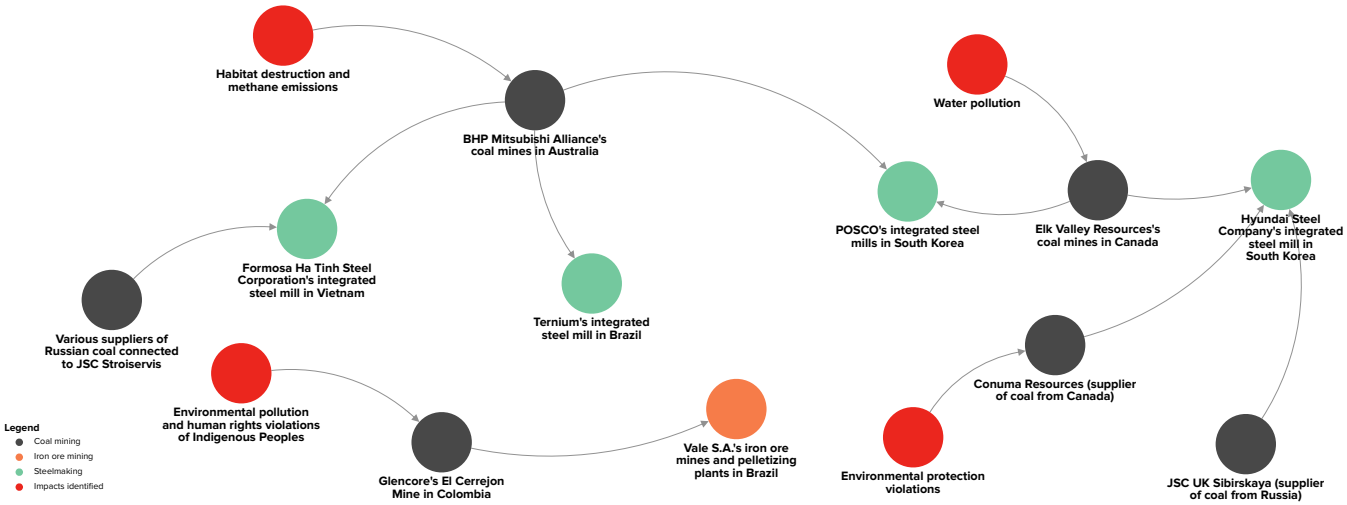


Figure 1: Coal suppliers identified in Hyundai's supply chain

Hyundai also requires iron ore for producing steel. One of Hyundai's most prominent suppliers is Vale, which owns several iron ore mines in Brazil, specifically in Minas Gerais and the Carajás region of Pará, where environmental pollution runs rampant. Vale uses coal to produce iron ore pellets (step 2 in the diagram above), which it then sells, together with iron ore, to Hyundai and its suppliers. Vale is also directly responsible for the Brumadinho dam disaster in 2019, where more than 250 people died (see this section of the report).

An additional supplier of iron ore is Ternium, which owns iron ore mines in Mexico that have been linked to environmental abuses and forced disappearances of environmental activists who have criticized the mines. With its iron ore, Ternium produces steel, which is then sold downstream to Hyundai suppliers.[44] The company also owns steel finishing facilities (step 5 in the diagram above) in Nuevo Leon that have been tied to significant environmental pollution.

Ternium also owns a steelmaking facility in Brazil (steps 3 and 4 in the diagram above), which obtains iron ore from Vale, and metallurgical coal from Australia, to produce steel slabs that are shipped to Ternium's facility in Mexico. Ternium's facility in Brazil is responsible for more than 50% of Rio de Janeiro's total greenhouse gasses, and research has revealed that air pollution from the facility has caused a range of severe health impacts to local residents.

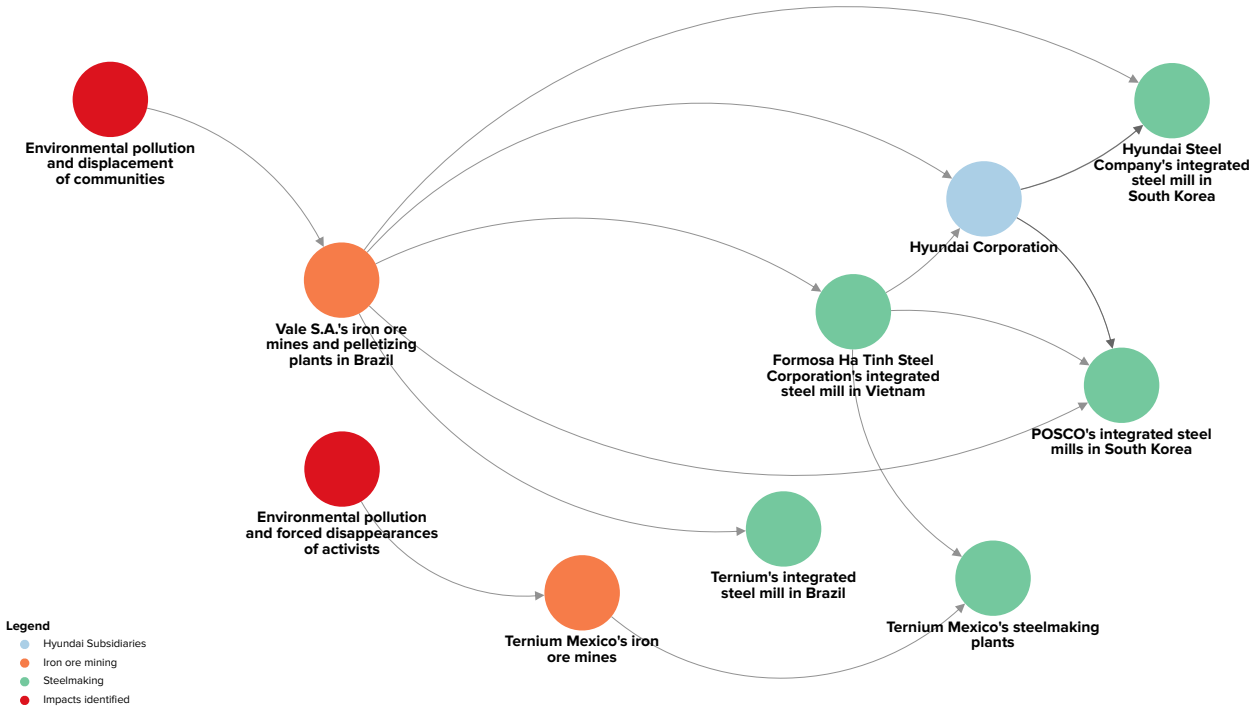


Figure 2: Iron ore miners identified in Hyundai's supply chain

Hyundai also relies heavily on Formosa in Vietnam, which sources iron ore and iron ore pellets from Vale, and metallurgical coal from both Russia and Australia, to produce steel slabs that are then shipped to Ternium Mexico. Formosa has a history of environmental pollution, including once dumping toxic chemicals into the sea, which led to the deaths of tons of fish in Vietnam, disrupting the lives of thousands of people along the coast. In addition to shipping prime steel slabs to Ternium in Mexico, Formosa also ships hot-rolled steel coils and alloyed steel wire to Hyundai and POSCO.

Also participating in steps 3 through 5 (see diagram above) of Hyundai's steel supply chain are U.S. Steel, POSCO, and Hyundai Steel. U.S. Steel supplies alloyed and unalloyed steel sheets and galvanized rolls to Hyundai's operations in Nuevo Leon, Mexico. These shipments originate from Pittsburgh, where U.S. Steel's largest integrated facility is located, consisting of the largest coke plant in the U.S., two blast furnaces, and two steel-finishing facilities. At one point, U.S. Steel was found to have committed more than 12,000 violations by U.S. regulators.

POSCO and Hyundai Steel own multiple blast furnaces in South Korea, which produce steel for Hyundai Motors' supply chain. These blast furnaces have been tied to environmental pollution that has caused hundreds of premature deaths and billions of dollars in economic costs, due to increased health spending and loss of productive work hours. Additionally, one of POSCO's plants has been connected to a string of labor rights violations that have been committed since 2020.

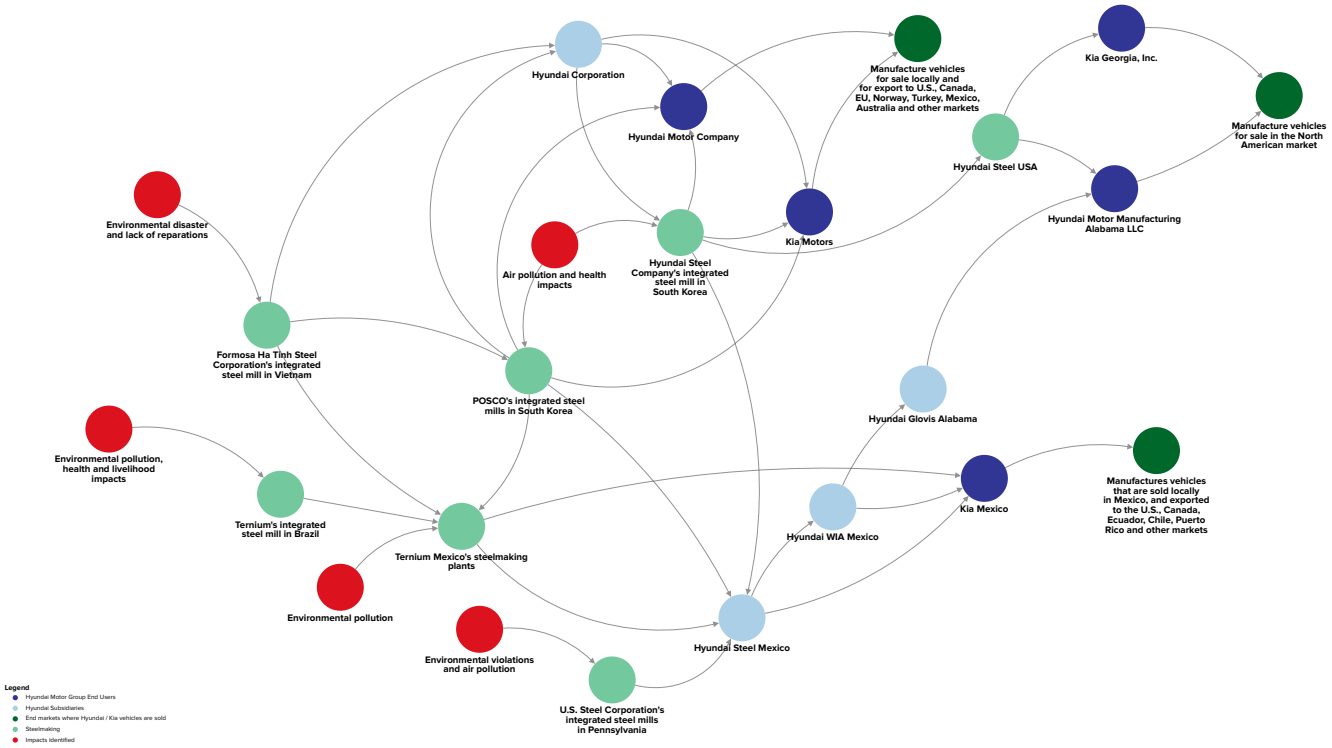


Figure 3: Steelmakers identified in Hyundai's supply chain

Hyundai relies heavily on these suppliers, from the coal and iron ore mines to the steel manufacturers, in order to manufacture millions of automobiles sold around the world. Hyundai's and Kia's factories in South Korea manufacture a large number of their passenger vehicle models using steel from Hyundai Steel, POSCO, and Formosa, which, in turn, use coal from Australia, Russia, and Canada, and iron ore from Vale (whose iron ore pellets are produced with coal from Glencore). These vehicles are then exported for sale in markets all over the world, including the United States, Canada, Norway, Turkey, Mexico, Australia, the Philippines,[45] and the EU.[46]

Kia's plant in Nuevo Leon, Mexico, manufactures the K3, K4 Tucson, and Accent models, which are sold locally and also exported to countries such as the United States, South Korea, Canada, Ecuador, Chile, Puerto Rico, and Nigeria. These vehicles are manufactured with steel from Hyundai Steel's, POSCO's and Ternium's facilities in Brazil and Mexico, which use iron ore from its mines in Mexico and Vale's mines in Brazil, as well as steel slabs from Formosa in Vietnam.

In the United States, Hyundai's and Kia's plants manufacture models such as the Tucson, Santa Fe, Santa Cruz, Genesis, Sorento, Sportage, and EV9 for the North American market. These facilities use steel from Hyundai Steel's facilities in South Korea, which use iron ore from Brazil, together with coal from Russia and Canada, and likely also contain steel produced in Ternium's facilities in Mexico.

It is easy to ignore the fact that these automobiles were manufactured using coal, iron, and steel that has devastated environments, the climate, and communities in so many different regions. In reality, however, a Hyundai vehicle driving down a New York City street likely contains steel

that was made using iron ore pellets from Vale that were, in turn, produced with coal from Glencore's mine in Colombia, despite Glencore having been accused of funding paramilitary organizations near its mines. A Hyundai vehicle in Europe may have steel produced by Formosa, using Russian coal.

In the end, Mighty Earth asks Hyundai to abide by its own words: "We will prevent any case of human rights infringement and at the same time will not be involved in or abet any incident of human rights invasion within the applicable range of our Human Rights Policy." As Hyundai's Executive Chair Euisun Chung recently stated, "To preserve the sustainable life of our planet Earth, we need not fancy words, but immediate action."[47]

Coal Mining

Hyundai's vehicle manufacturing relies heavily on coal-based primary steel production, making it dependent on coal mining companies. However, many of the companies supplying Hyundai coal have been linked to environmental destruction and human rights violations in various countries. This report will focus specifically on four of those countries: Australia, Canada, Russia, and Colombia.

Coal from Australia

Peak Downs Mine, Queensland, Australia. Courtesy of The Sunrise Project.

The investigation has revealed that Australian coal mines play key roles in Hyundai's steel supply chain. Hyundai has long touted its commercial relationships in Australia, stating in 2010 that "Australian iron ore and coking coal are exported directly to South Korea for processing into the steel used in Hyundai's vehicle manufacturing ... Of the total raw materials imported by Hyundai Steel, 60% (8.2 million tonnes) of the iron ore and 65% (4.2 million tonnes) of the coking coal is expected to come from Australia, making the country Hyundai's biggest single supplier of raw materials."[48]

Today, Hyundai's supply chain relies heavily on BHP Mitsubishi Alliance (BMA), a joint venture between BHP Group Limited and Mitsubishi that is now Australia's largest producer and supplier of seaborne metallurgical coal. Ternium in Brazil (see this section of the report), for example, receives shipments from BMA's Peak Downs and Saraji coal mines in Australia. Similarly, Formosa (see this section of the report) in Vietnam receives coal shipments from BMA and BHP subsidiaries sourced from the Caval Ridge, Peak Downs, Saraji, Daunia, and Goonyella Riverside mines. Finally, POSCO (see this section of the report) also identifies subsidiaries of BHP as "stable" suppliers of raw materials, including coal.[49]

The graphic below highlights how BHP mines are situated in the Hyundai supply chain (see legend below).

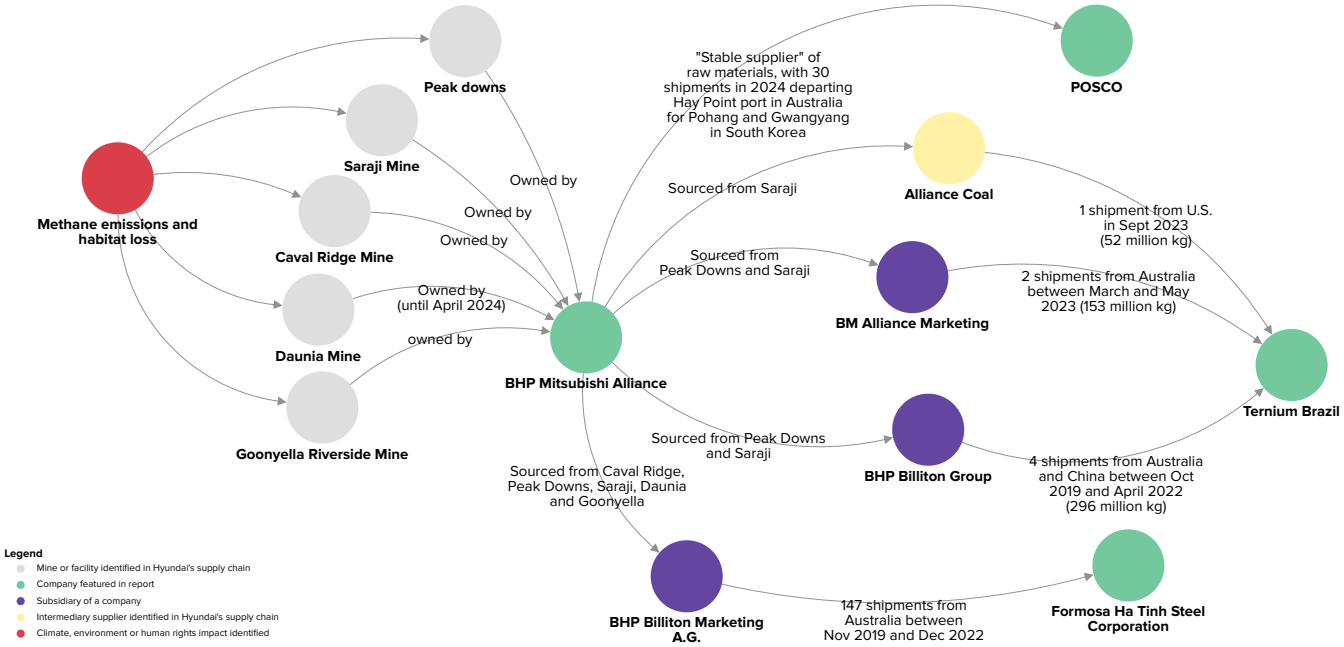


Figure 4: Supply chain links identified to BHP Mitsubishi Alliance's coal mines in Australia[50]

Coal mines in Australia, including those owned by the BHP Mitsubishi Alliance, have come under scrutiny in recent years for their impact on biodiversity, and for emitting huge quantities of methane, a greenhouse gas that is 80 times more potent than carbon dioxide in trapping heat in the atmosphere over a 20-year period.

A 2021 study calculated that the coal mines located in Australia's Bowen Basin, where BMA owns five large coal mines, including Peak Downs, Saraji, Caval Ridge, and Goonyella Riverside, were responsible for emitting 1.6 million tonnes of methane per year in 2019 and 2020. This is equivalent to 134Mt of CO2 per year, or the annual emissions from approximately 30 million passenger vehicles.[51] Another study published in 2024 found that 11 of Australia's top twenty methane hotspots are in the Bowen Basin, and that Australian coal mines are emitting twice as much methane as reported under the national framework.[52]

In the light of these impacts, BMA's plans to expand or significantly extend the lifetimes of several metallurgical coal mines it owns in Queensland, including Caval Ridge, Peak Downs, and Saraji, in addition to the proposed new Saraji East coal mine, are especially concerning. The company has proposed extending the lifetime of its Peak Downs mine by a staggering 93 years, until 2116. The proposed expansion would involve clearing of habitat for the endangered koala and greater glider,[53] and would result in an estimated 2.3bn tonnes of CO2 emissions.[54]

BMA's proposed new coal mine, Saraji East, was recently identified as one of several coal mine expansion projects that would have a devastating impact on koala habitats. If approved, it would entail clearing 1,160 hectares of koala habitat, which is equivalent to over 500 MCG-sized football fields. The proposed mine would also clear 748 hectares of critical habitat for the endangered greater glider. According to research, this represents the third-largest impact on koala habitats out of all the proposed coal mining expansion projects in the country.[55]

The Australian Centre for Corporate Responsibility has stated that BHP's forecast of its future metallurgical coal production, including proposed mine extensions and expansions, is "misaligned with the Paris Agreement," and criticized the company for failing to adequately address methane emissions from its coal operations in its 2024 Climate Transition Action Plan.[56]

BMA's mines in Queensland have also faced fines and lawsuits for environmental and labor violations. In 2017, a BMA coal mine in Queensland was fined $200,000 after it was discovered that the mine was dumping 3,000 tons of silt and sediment into a nearby river.[57]

In 2024, BHP was fined $78,000 for an incident in 2018 that led to the death of a worker at its Saraji mine.[58] Separately, BHP was found guilty in 2024 of firing workers who complained about worker safety.[59] And, in December 2024, former female employees launched a class action against BHP, including some from its Bowen Basin coal mines, alleging systemic sexual harassment and gender discrimination at its mines.[60]

Coal from Canada

Fording River coal mine, Elk Valley Canada. Photo by Garth Lenz

Canada is another prominent source of coal for Hyundai's supply chain. The investigation revealed shipments to Hyundai Steel of coking and PCI[61] coal from several mines in Canada, including the Brule and Willow Creek mines, operated by Conuma Resources, as well as from a company called Teck Resources (Teck). Shipments from Teck most likely originate from its Line Creek mine as this is the company's only mine in Canada involved in pulverized coal injection (PCI) coal production.[62]

Teck's steelmaking coal operations in Canada are held by the Elk Valley Mining Limited Partnership, in which POSCO Holdings Inc. (through its subsidiary POSCO Canada Ltd.) holds a 3% interest.[63] The investigation identified several shipments of metallurgical coal from POSCO Canada to POSCO's operations in South Korea, which was likely sourced from one or several of these mines.

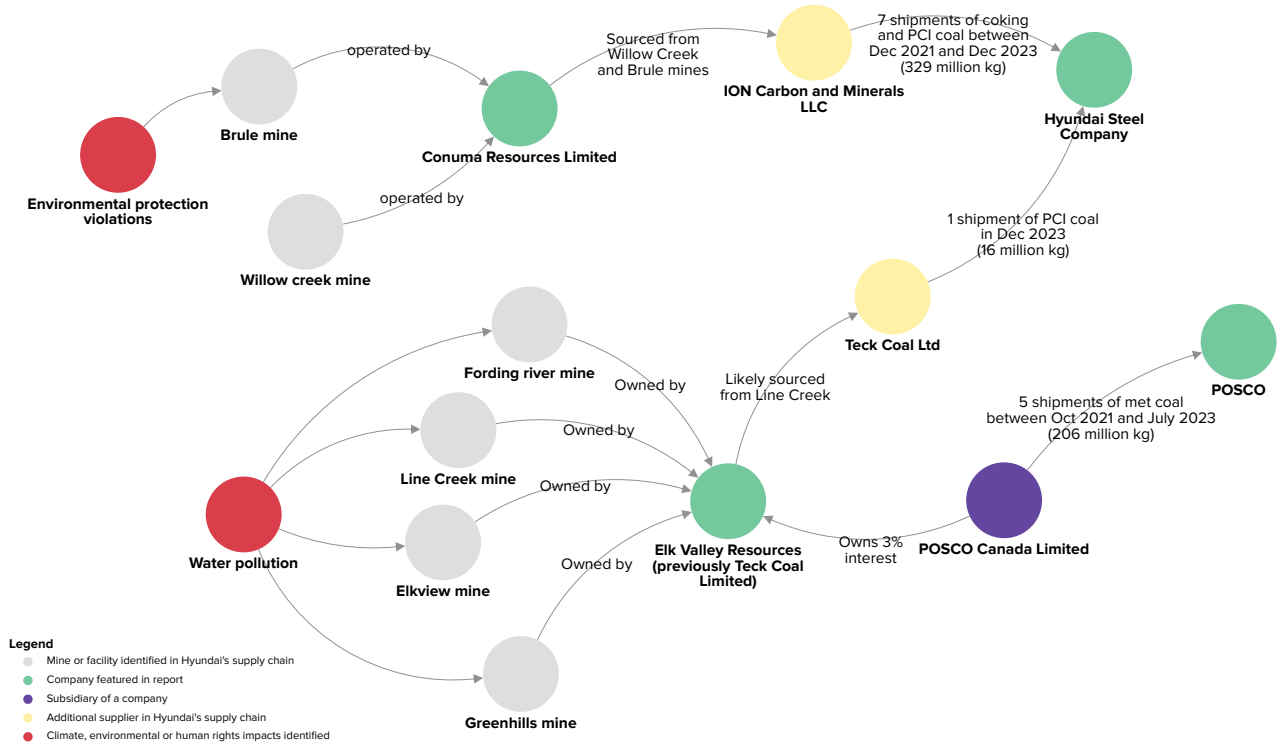


Figure 5: Supply chain links identified to Canadian met coal mines[64]

Teck has been accused of flouting environmental laws and regulations for years. In 2013, it was ordered to develop water quality management systems to address selenium leaching out of the enormous waste rock piles produced by mountaintop removal mining practices.[65] Teck proceeded to exceed those limits six separate times in 2016, and 20 times in 2017, and it continues to leach selenium in concentrations considered unsafe for aquatic life into the downstream Elk River, which is a tributary of the Columbia River. An independent report found that it would cost $6.4 billion (CAD) to follow through with Teck's selenium mitigation plan, which would require more than a dozen water treatment facilities to be built and operated for at least 60 years, long after coal reserves have been depleted.[66] Nonetheless, Teck's coal assets were recently acquired by Glencore, another important cog in the Hyundai supply chain.[67]

In British Columbia, a company called Conuma Resources operates the Brule and Willow Creek mines.[68] Between 2020 and 2024, Conuma Resources was fined by the British Columbia Ministry of Environment and Climate Change for more than 400 environmental protection violations, which occurred at the company's Brule mine between 2020 and 2023.[69] As recently as June 6, 2024, Conuma was fined for yet another violation at its Brule mine.[70]

Coal from Russia

Russian flag on coal. Photo by Andrzej Rostek

The investigation found strong evidence that Hyundai's steel supply chain continues to be heavily reliant on Russian coal, despite opposition to the Russian-led war in Ukraine from the South Korean government and Hyundai itself. South Korea, under the leadership of suspended President Yoon Suk Yeol, has denounced Russia's war, and has provided economic and humanitarian aid to the Ukrainian people. In 2023, the South Korean government asked its state-owned power-generating companies to limit imports of Russian coal.[71] In addition, Hyundai donated $1 million to Red Cross for Ukrainian aid.[72]

The opposition to the war has not stopped Hyundai from working with Russian companies. In late 2023, a company in Russia made four shipments of coking coal to Hyundai Steel in South Korea, which was valued at $32.4 million. It is likely that the coal for these shipments was sourced from the Sibirskaya underground coal mine, located in the Kemerovo region of Russia. This mine is operated by Shakhta Sibirskaya LLC, which is owned by UglePromInvest.[73] However, another source indicates that the mine is owned by Sibuglemet Holding OOO, a subsidiary of the Bank for Development and Foreign Economic Affairs, a Russian State-owned corporation.[74] Hyundai Steel is not only a key supplier of steel for Hyundai's vehicle facilities in South Korea, but it also ships large quantities of steel abroad – to countries such as Mexico and the United States.

In addition, one of Hyundai's suppliers, Formosa, received shipments of coal valued at more than $450 million between 2022 and 2024. This has at least partly contributed to Vietnam setting record highs in coal use, imports, and coal-fired emissions in 2024.[75] These shipments were from mines and subsidiaries connected to JSC Stroiservis, a company that has been flagged and sanctioned by the U.S. Department of State following the onset of Russia's war in Ukraine, still applicable at the time of the writing of this report.[76]

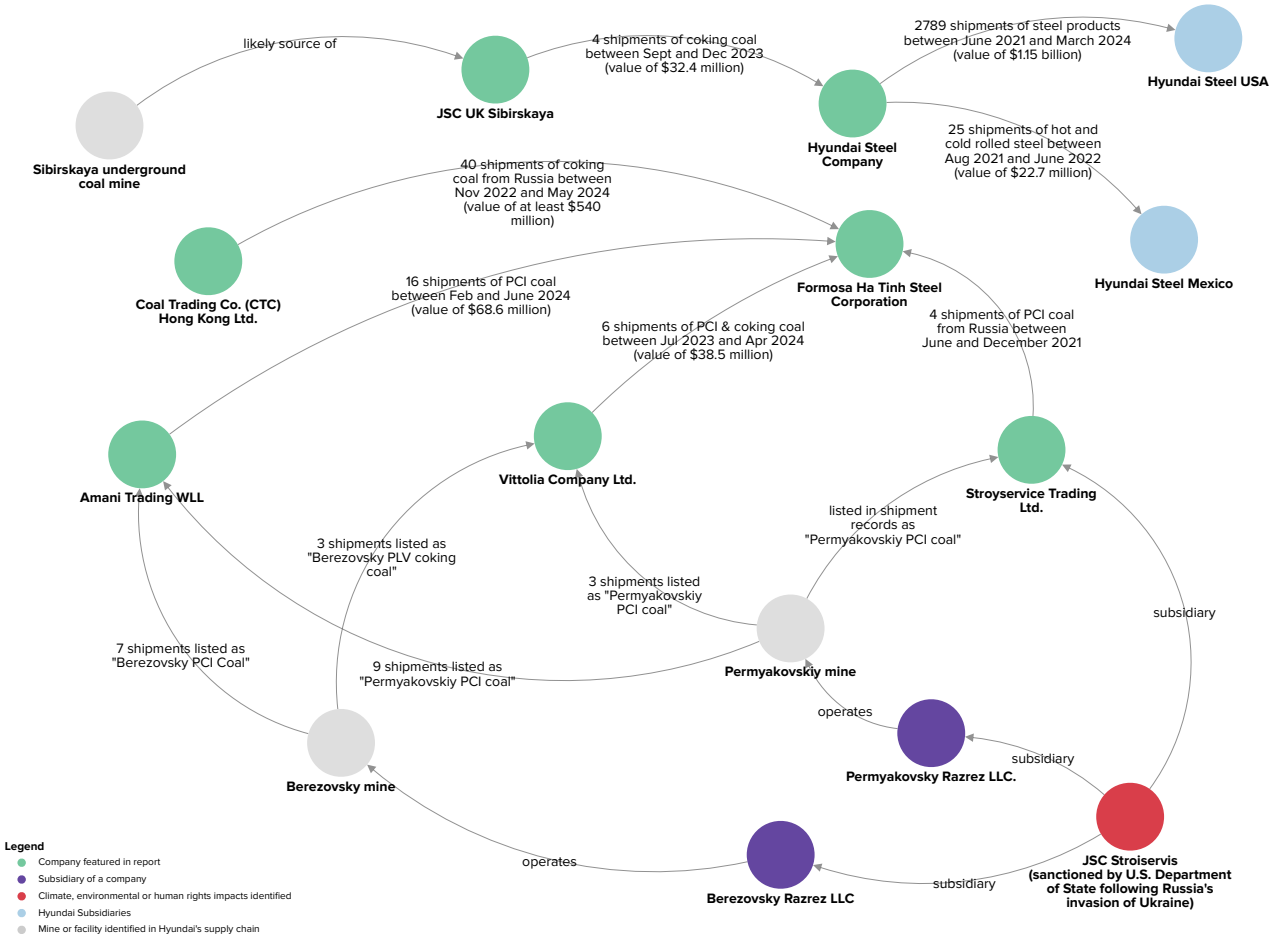


Figure 6: Supply chain links identified to suppliers of coal from Russia[77]

The Hyundai supply chain – rather than limiting its reliance on Russian coal – seems to have become more dependent on Russia than ever before, despite its war in Ukraine.

Coal from Colombia

Thermal coal from Glencore's operations in Colombia was also identified within Hyundai's steel supply chain. Between 2019 and 2023, Glencore made 28 shipments of coal to Vale in Brazil, totaling more than 942.5 million kg, and valued at more than $61.5 million. The shipments originated from Glencore's El Cerrejon mine, and were shipped to where Vale's iron pellet processing facilities are located in Brazil.[78] Vale uses coal to produce iron pellets,[79] which are then sold to multiple suppliers in Hyundai's supply chain (see this section of the report for more information).

The El Cerrejon mine has been tied to polluting waterways with heavy metals, and condoning human rights abuses in the communities surrounding the mines. The graphic below highlights how Glencore's El Cerrejon mine is situated in the Hyundai supply chain.

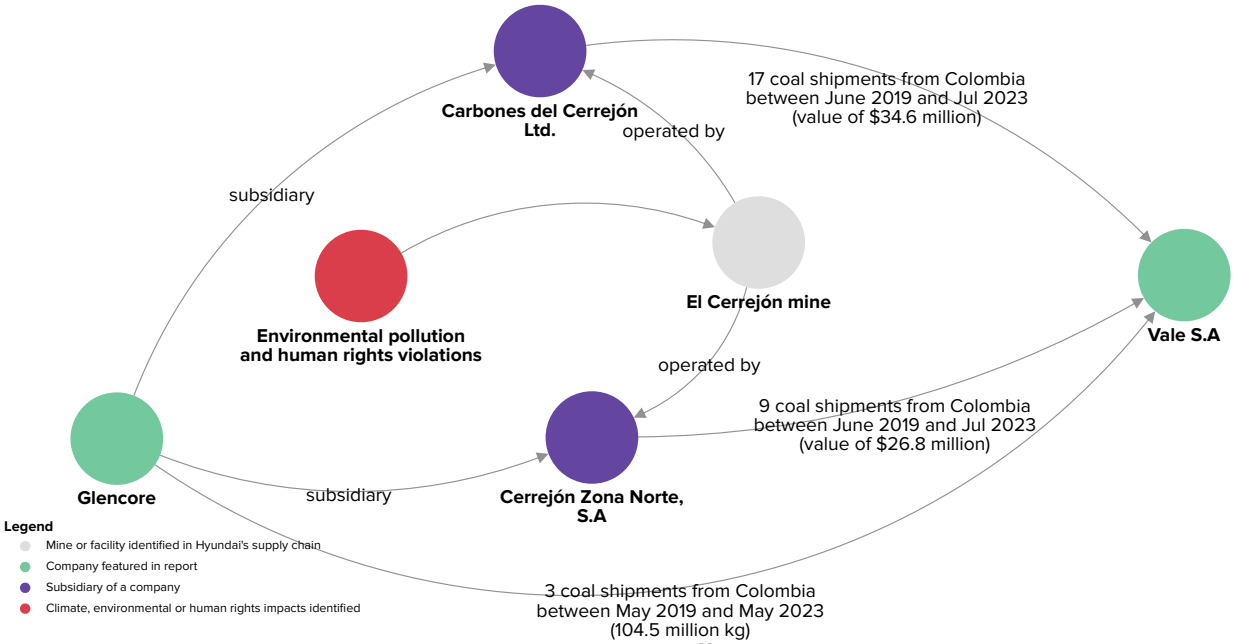


Figure 7: Supply chain links identified to Glencore's El Cerrejón Mine[80]

Glencore's Cerrejón mine in La Guarjira, Colombia, is one of the largest open-pit coal mines in the world.[81] The mine is located near the Wayúu Indigenous people (also known as Guajiros) who live in the northeast of La Guajira.[82] According to Indigenous leaders, Glencore's coal extraction in the area has led to heavy metal pollution in the Ranchería River and other bodies of water, such as the Bruno and Tabaco streams, which are major sources of water for the surrounding community.[83] According to one report, Glencore's operations dumped 578 million liters of liquid waste into bodies of water, leading to "water scarcity, food scarcity, and health impacts for those who live in La Guajira."[84]

Independent technical studies have identified the presence of manganese, barium, copper, and selenium above the admissible limits for water consumption, in addition to high levels of alkalinity, which indicate the presence of metals such as arsenic, molybdenum, zinc, and cadmium, according to local organizations.[85] In addition, the Wayúu have also reported health problems, including respiratory disease, heart, skin, and stomach disorders, and cancer related to pollution of air and soil, resulting from the dispersion of coal dust that reaches residential homes, plants, and animals.[86]

In 2020, Dr. David Boyd, United Nations' Special Rapporteur on human rights and the environment, described the situation in the following way:

"The situation that was brought to my attention recently regarding the Cerrejón mine and the Wayúu Indigenous people is one of the most disturbing situations that I have learned about in my two-and-a-half years as the Special Rapporteur on human rights and the environment." The Wayúu Indigenous people live directly adjacent to El Cerrejón mine … they have been suffering for years from chronic air pollution, water pollution, diversion of the water supply, dust falling on their crop lands, making agriculture impossible, noise, vibrations, disruptions, a total calamity in terms of their quality of life and their human rights: their rights to water, their right to food, to health, to life, and their right to live in a healthy environment, a right which is protected by the Colombian constitution."

– Dr. David Boyd, UN Special Rapporteur[87]

In addition to environmental pollution, a 2023 report indicates that Glencore took territorial rights from the Wayúu by means of fraudulent negotiations and threats, confinement, displacement, and forced eviction. Community leaders who publicly denounced Glencore's practices in Guajira have been victims of harassment and persecution by paramilitary groups.[88] In February 2021, Glencore's Colombian subsidiary, Prodeco,[89] was listed as an accomplice of paramilitary groups that committed crimes against humanity, including forced disappearance and mass murder. According to a documentary on this subject, members of paramilitary groups in the area describe killings as "orders from international coal suppliers."[90]

The company had denied the accusations, claiming that, although there was a case of displacement of residents by paramilitary forces in a territory contiguous with a Prodeco mine, Glencore had "no interest," relationships, or operations in the territory.[91] In March 2021, however, a witness came forward with information that allegedly would prove links between the Prodeco Group and paramilitary forces.[92] According to that information, Prodeco provided financial and logistic support to a paramilitary group that operated in the César region, causing appropriation of land, forced displacement, killings, and disappearances of persons.[93]

Glencore received similar accusations back in 2014, when a report linked Glencore's complicity with right-wing paramilitary groups.[94] A year later, in 2015, several NGOs published a shadow report on Glencore's operations in Colombia, in which they also describe the serious human rights violations committed by this company.[95] Based on several interviews with the Business & Human Rights Resource Centre (BHRRC), an organization dedicated to advancing human rights in business, and eradicating abuse, Glencore maintained a cooperation agreement with the state to fund a military battalion that was deployed for the purpose of protecting its mining infrastructure.[96] In fact, Glencore has been accused of funding the Special Energy Battalion and Vial No. 2 of the Army's Tenth Brigade at least between 2010 and 2015.[97] These entities have been accused of committing extrajudicial killings in areas near the Calenturitas mine, which operated between 2004 and 2021, for Prodeco.[98]

Overall, Glencore has received a total of 76 accusations of abuses related to human rights, and it is one of the largest receivers of complaints registered in the BHRRC Transition Minerals Tracker.[99]

Iron Ore Mining

If not managed responsibly, mining iron ore can have many negative effects on the environment and communities surrounding the mines. It can disrupt habitats and require large quantities of water, reducing the amount of fresh water for local communities. Iron ore mining can also lead to pollution in the air and water, due to dust and particulate matter being released during mining and mine waste failures. Hyundai sources its iron ore from at least two companies: Vale, with mines in Brazil, and Ternium, with mines in Mexico. Their mines have been linked to a plethora of devastating impacts in both countries.

Iron Ore from Brazil

Headquartered in Brazil, Vale is a major iron supplier within Hyundai's supply chain, and is it one of the largest iron ore producers in the world. In Brazil, it owns iron ore mines in the Carajás region of Pará (the Northern System) and Minas Gerais (the Southern/Southeastern System), as well as a number of iron ore concentrator and pelletizing plants, which have been linked to environmental pollution, spills of toxic waste, community displacement, and even human deaths.

Vale supplies iron ore from Carajás directly to Hyundai Steel. It also supplies iron ore and iron ore pellets to Hyundai Corporation in South Korea, a general trading company providing export and import services for a range of materials and semi-finished products. Hyundai Corporation's largest clients include Hyundai Motor Company and Kia Corporation.[100] Between March 2020 and August 2023, the investigation identified shipments of iron ore and pellets totaling at least 5 billion kilograms.

Vale has also made more than 100 shipments of iron ore and pellets to Hyundai's upstream suppliers, including POSCO and Formosa. Most of the shipments of iron ore were listed as being sourced from Carajás, transported from these mines overland via the Estrada de Ferro Carajás (EFC), a railway connecting Pará to the Port of Ponta da Madeira in Maranhão. However, a significant number of shipments to Formosa were also identified as "Brazilian Blend fines," which is "a product resulting from blending fines from Carajás, in the Northern System, with fines from the Southern and Southeastern Systems."[101]

All shipments of iron ore pellets and sinter were listed as being sourced from Vale's Sao Luis and Tubarão facilities. The Sao Luis facility is located in Ponta da Madeira, connected to the Carajás mine via the EFC, whilst the Tubarão facility is located in the Port of Tubarão, in Espírito Santo, and receives "iron ore primarily from [Vale's] Southeastern System mines"[102] in Minas Gerais, which are connected to Tubarão via the Estrada de Ferro Vitória to Minas (EFVM).[103]

Within Brazil, Vale is also a major supplier of iron ore to Ternium's Santa Cruz facility in Rio de Janeiro. Ternium Brasil has signed an exclusivity agreement with Vale until 2029, for the purchase of approximately 8 million tons per year of iron ore.[104] However, it is unclear which of Vale's mines in Brazil this iron originates from.

The graphic below highlights how the Vale is situated in the Hyundai supply chain.

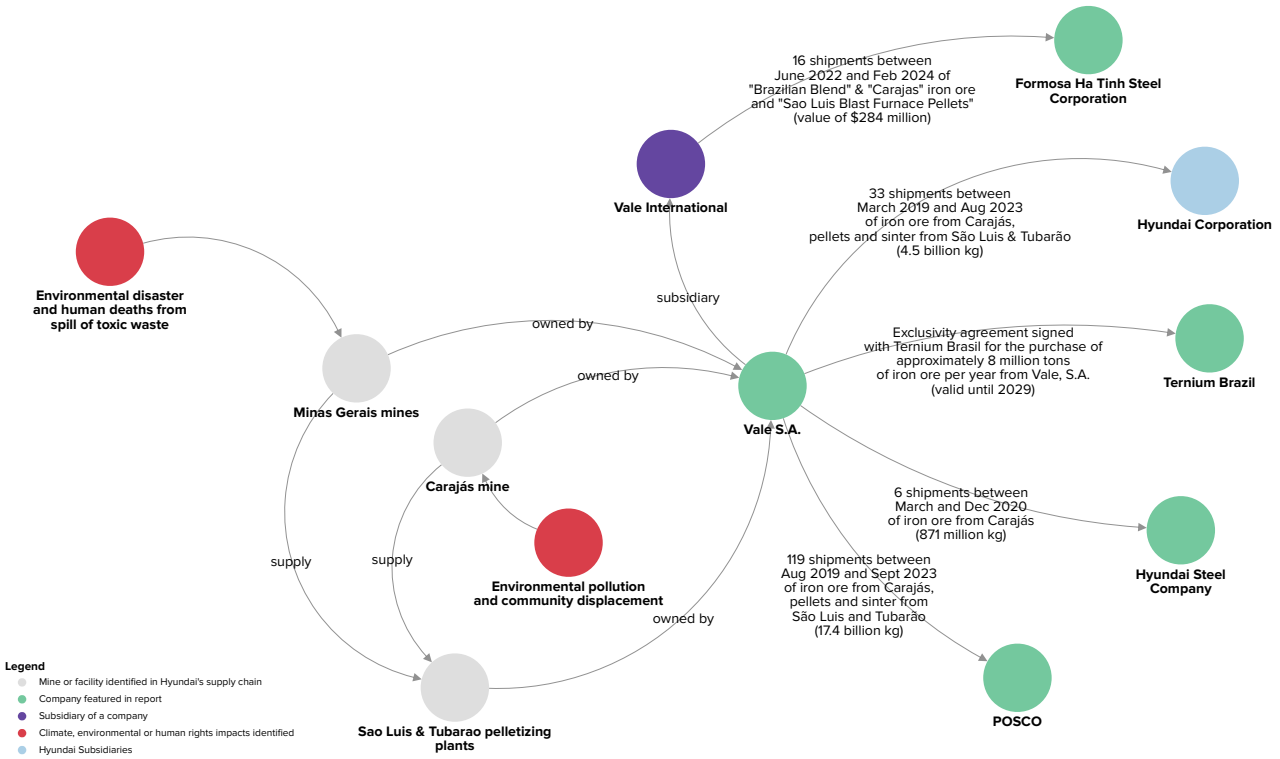


Figure 8: Supply chain links identified to Vale's iron ore mines in Brazil[105]

On January 25, 2019, a tailings dam – an earth-filled embankment dam generally used to store byproducts from mining – burst at the Corrego de Feijao iron ore mine, causing a massive mudflow to engulf the land, destroying houses, farms, inns, and roads. Approximately 272 people died in the town of Brumadinho in Minas Gerais, Brazil, leading this event to be named the Brumadinho dam disaster.[106] The dam was owned by Vale.[107]

Mineral tailings mud after dam rupture in Brumadinho. Photo by Christyam de Lima

The Brumadinho dam disaster affected more than 60,000 inhabitants across 26 cities and towns, and it polluted the Paraopeba River, whose waters were essential for the life of the Nao-xoha Indigenous people (which included Pataxó, and Pataxó Hãhãhãe ethnic groups).[108] In 2020, the United Nations published a report that claimed that Vale had known of the risk to the Brumadinho dam since 2003, but the company disregarded recommendations made by external consultants.[109] As a result of the Brumadinho disaster, the Indigenous community Aldeia Naô Xohã (Pataxó, and Pataxó Hãhãhãe village) was forced to abandon its lands. Overall, many people's lives were changed forever that day, including many children and elderly who suffered skin injuries due to environmental pollution from the disaster.[110]

In 2023, Vale paid a $55.9 million fine to the U.S. Securities and Exchange Commission (SEC) for the disaster.[111] As the SEC reported "[…] Vale also deliberately manipulated dam safety audits; obtained numerous fraudulent stability declarations; and regularly and intentionally misled local governments, communities, and investors about the dam's integrity."[112] The SEC also affirms that Vale had information in its possession showing that the Brumadinho dam was fragile, at least since 2003. In its report, the SEC stated that, following a previous disaster at a dam owned by another company in 2015, Vale identified Brumadinho as one of six critical dams that needed attention and presented significant risk of failure due to liquefaction. Vale also performed field tests that further confirmed the precarious and unsafe conditions of the dam. Safety auditors and engineers contracted by Vale also evaluated the Brumadinho dam and found that it posed risks deemed unacceptable under established international best practices that Vale had undertaken to implement and claimed to apply.[113]

Today, the Nao-xoha continue to seek justice. According to one estimate, a total of 319 lawsuits were filed against Vale in the Minas Gerais Court of Justice between 2019 and 2023. Many cases remain ongoing.[114] Vale has stated that it has paid around 3.5 billion realis (approximately $606 million) to more than 15,000 people, although not all were done in a court of law.[115]

In September 2022, Vale signed two agreements for reparations, indemnification, and compensation for the disaster with local Pataxó and Pataxó Hãhãhãe groups. However, in March 2023, the Federal Prosecution Office (MPF) and the Federal Public Defenders' Office (DPU) appealed the ruling.[116] According to DPU, Vale had not guaranteed the Pataxó and Pataxó Hãhãhãe communities comprehensive reparation for the damages caused. On the contrary, the resolution the company sought was for the communities to waive rights established in prior agreements.[117] On December 18, 2023, Vale signed a new agreement with the MPF and the DPU, to guarantee proper conditions of housing, healthcare, and infrastructure for the Pataxó and Pataxó Hãhãhãe communities.[118] As of March 2024, the agreement was still in the process of being fulfilled.

Many victims of the dam disaster, including family members of the dead, formed the Association of Families of Victims and Persons Affected by the Corrego do Feijao Dam Break.[119] Early on, this association called out the Brazilian government for not holding Vale accountable, and labeling all aspects of mining to be essential during COVID, stating that "defining mining as an essential service was just another way of putting profit above everything else."[120] By January 2024, groups came together to create the Observatory of Criminal Actions on the Tragedy in Brumadinho (OAPTB), a website hosted in Brazil and Germany to facilitate access to public and non-confidential information on the legal proceedings for victims' families and society at large.[121] One major goal of the OAPTB is to prosecute Vale executives, including Fabio Schvartsman, the company's former president, and 15 other former executives.[122] According to the OAPTB coalition, when Schvartsman was Vale CEO, he knew there could be an abrupt rupture of Dam I, resulting in the violent release of tons of mud from the Brumadinho dam.[123] However,

on March 13, 2024, Schvartsman received a habeas corpus ruling, a legal figure suspending the proceedings and referring the matter for judgment to the Brazilian judicial system.[124]

In addition to the Brumadinho disaster, several other negative situations have been tied to Vale. For example, in an area about 2,000 kilometers north in Piquia de Baixo, there is a village of about 1,500 people. Since its founding, residents have complained about pollution from iron ore concentrator plants, as well as pollution caused by iron dust transported by the Estrada de Ferro Carajas (EFC), a railway that connects production from Vale's "Northern System."[125] The Northern System is "comprised of three mine complexes … located in the Pará state of Brazil and is fully integrated with mines, railroads, maritime terminals and a port."[126]

From 2018 to 2022, 37 collisions were reported on the EFC, between Pará and Maranhão. In the same period, the JNT reported a 16.2% increase in the number of pedestrian accidents compared with the previous five years (2013-2017).[127] In addition, the municipality of Bom Jesus do Tocantins is home to the Gaviao Indigenous community, which inhabits Terra Indigena Mae Maria. The Gaviao affirm that the EFC has destroyed parts of their territory. Although Vale claims they reached agreements with local Indigenous leaders, some claim that they did not give their consent for the expansion of the railway.[128]

At least since 2016, the EFC has also pressured the Maranhão Public Ministry to establish a public civil action to require Vale and the National Ground Transport Agency of Brazil to implement safety measures to prevent accidents involving collision with persons and animals in the 23 municipalities the railway crosses.[129]

Iron Ore from Mexico

Ternium owned iron ore mine, Ayotitlan, Mexico. Courtesy of Tsikini.

Headquartered in Luxembourg, Ternium Mexico is an important supplier of steel for Hyundai's operations in North America. In Mexico, Ternium owns three mines, which supply iron ore for its steel production: Aquila and Las Palomas in the states of Michoacán and Jalisco, respectively

(both operated by Las Encinas, S.A. de C.V., a company owned by Ternium México) and Peña Colorada in Colima, a joint venture with ArcelorMittal. In 2022, these mines produced 3.5 million tons of iron ore.[130]

In addition to iron ore mines, Ternium also operates several steelmaking and steel finishing facilities in Mexico. Ternium's three integrated mills in the country – located in Monterrey and Puebla – produce steel via the direct reduced iron (DRI) method,[131] using fossil gas. On average, Ternium consumes "8 million btu of natural gas to produce one ton of crude steel" in Mexico.[132]

Ternium's Guerrero integrated steel mill, located in Monterrey metropolitan area obtains all its iron ore from Ternium México's mining operations.[133] It produces hot-rolled and cold-rolled coils for the industrial, construction, and home appliance sectors, and for further processing in other Ternium México' units, such as its industrial center, located in Pesquería, Nuevo León, which produces various steel products for the automotive industry, including for Hyundai, as explained in more detail in this section of the report.[134]

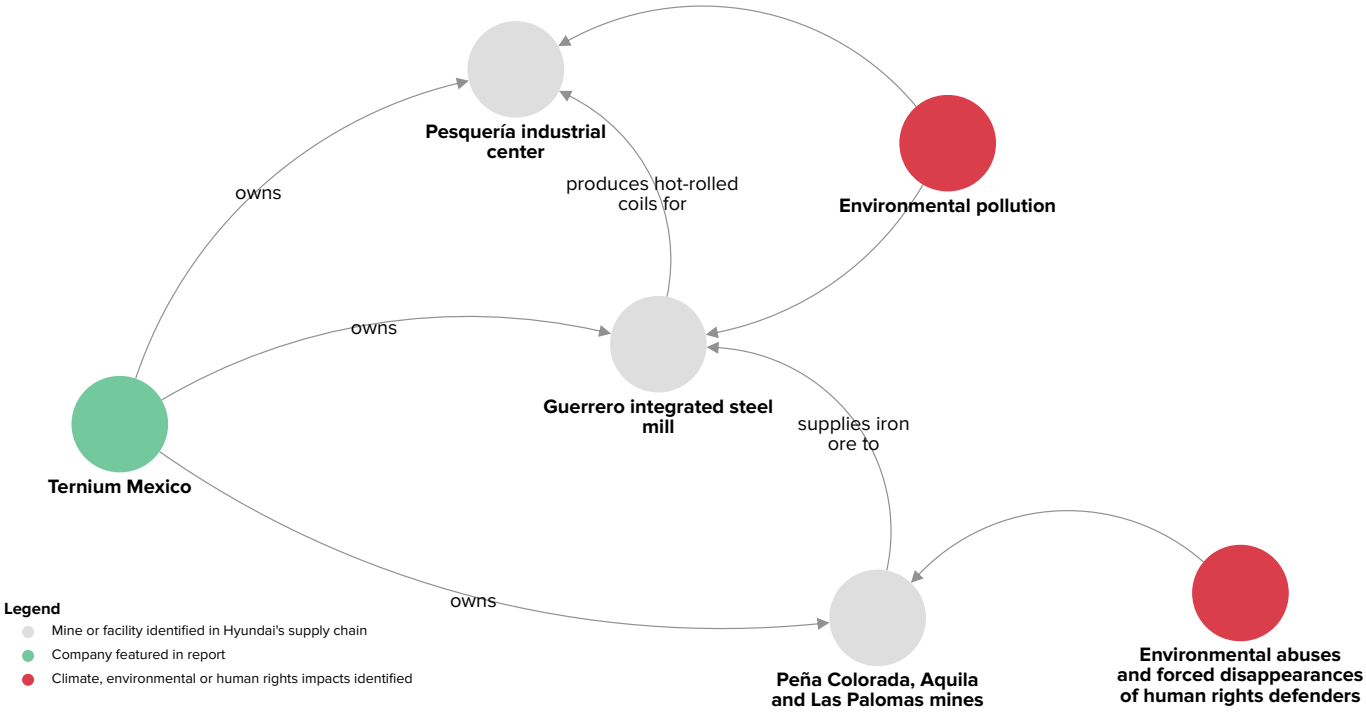


Figure 9: Supply chain links identified to Ternium's iron ore mines[135] (see the diagram in the "Steelmaking in Brazil and Mexico" section of the report for information on additional downstream links identified from Ternium's steelmaking facilities in Mexico)

Ternium's iron ore operations in Mexico have been linked to environmental and human rights abuses, including forced disappearances. According to a recent 2024 report, "In recent years, more than a half-dozen people who had challenged Ternium's mines have been kidnapped or murdered, or have disappeared."[136]

One of the most recent cases occurred on January 15, 2023, when Antonio Díaz Valencia, community leader in San Miguel de Aquila, Michoacán, and Ricardo Lagunes, a human rights defender and attorney advising the community, were the victims of forced disappearances. They

had been working together to protect the community's rights in relation to Ternium's Aquila mine,[137] which "locals claim has devastated wildlife and polluted the water supply."[138] The disappearances occurred as Díaz and Lagunes were leaving an assembly in the communal auditorium of San Miguel de Aquila,[139] where they had discussed issues related to Ternium's failure to pay royalties for the exploitation of ejido lands. Their truck was found abandoned along the side of a highway, riddled with bullets.[140]

A cartel member later told police that he had helped abduct the pair because they were causing problems with the mines. The cartel member was released by the authorities an killed.[141] A sister of Lagunes stated, "The company is one of the most powerful actors in the region, and its operations have not only affected the environment, but also the social fabric, generating conflicts and violence. The company has relations with different local groups and possibly with the perpetrators of this disappearance."[142] Ternium has denied any involvement.

Regarding the Peña Colorada mine, in 2022, Higinio Trinidad de la Cruz, a Nahua Indigenous ejido member and activist opposed to mining operations in the region, was kidnapped by armed men who told him to abandon his anti-mining activism. He continued his activism and was an upcoming candidate for the Ayotitlán Ejido Commission, running on the promise that he would review mining concessions. On November 24, 2023, Trinidad was the victim of a forced disappearance in the Manantlán mountains. The next day, his body was discovered with a gunshot wound.[143]

The year prior, in 2021, J. Santos Isaac Chavez, who was involved in legal efforts against the mine, was a candidate for president of the Ayotitlán ejido. According to Mary Lawlor, a United Nations Special Rapporteur on Human Rights Defenders, Chavez was "an Indigenous activist, lawyer, and candidate to the ejidal commissariat of Ayotitlán (a local body elected to manage the Indigenous territories and coordinate actions with communities). He was the only candidate who vocally opposed an open-pit mine."[144] On April 1, 2021, ten days prior to the election, he was taken from his home, and he disappeared. Three days later, he was found dead.[145]

Celedonio Monroy Prudencio was another visible community leader and environmental defender who had denounced the impacts of the mining in Colima, and had also taken part in legal proceedings against Peña Colorada.[146] Monroy received threats in mid-2012, and, in October 2012, was the victim of a forced disappearance when armed men entered his home and took him. He has never been found.[147]

Iron and Steelmaking

Manufacturing iron and steel does not have to come at the cost of the environment and human rights. However, Hyundai has chosen to rely on steel sourced from facilities operated by companies such as Formosa, POSCO, U.S. Steel, and Ternium, which have extensive histories of alleged abuses.

Steelmaking in Vietnam

Formosa disaster victims hold a banner reading "Please Help Us Sue Formosa". Courtesy of Nancy Bui.

The Formosa Ha Tinh Steel Corporation (Formosa) is a subsidiary of Formosa Plastics Group, a corporation headquartered in Taiwan, and a large steel supplier to Hyundai. Formosa is deeply embedded in Hyundai's steel supply chain, receiving coal from Russia and BHP in Australia, and iron ore from Vale, and supplying steel made in blast furnaces to Hyundai directly, and to multiple Hyundai suppliers.

Over the past two years, Formosa has sent 71 shipments of steel coils and alloyed steel wire to Hyundai Corporation in South Korea, a supplier to Hyundai Steel, Hyundai Motors, and Kia.[148] Additionally, between 2019 and 2024, the company made more than 400 shipments of steel coils, steel wire, and steel slabs to POSCO in South Korea and Ternium's Pesqueria Industrial Center in Mexico. Together, these shipments were worth over $1 billion.

The graphic below highlights how the Formosa is situated in the Hyundai supply chain (see legend below).

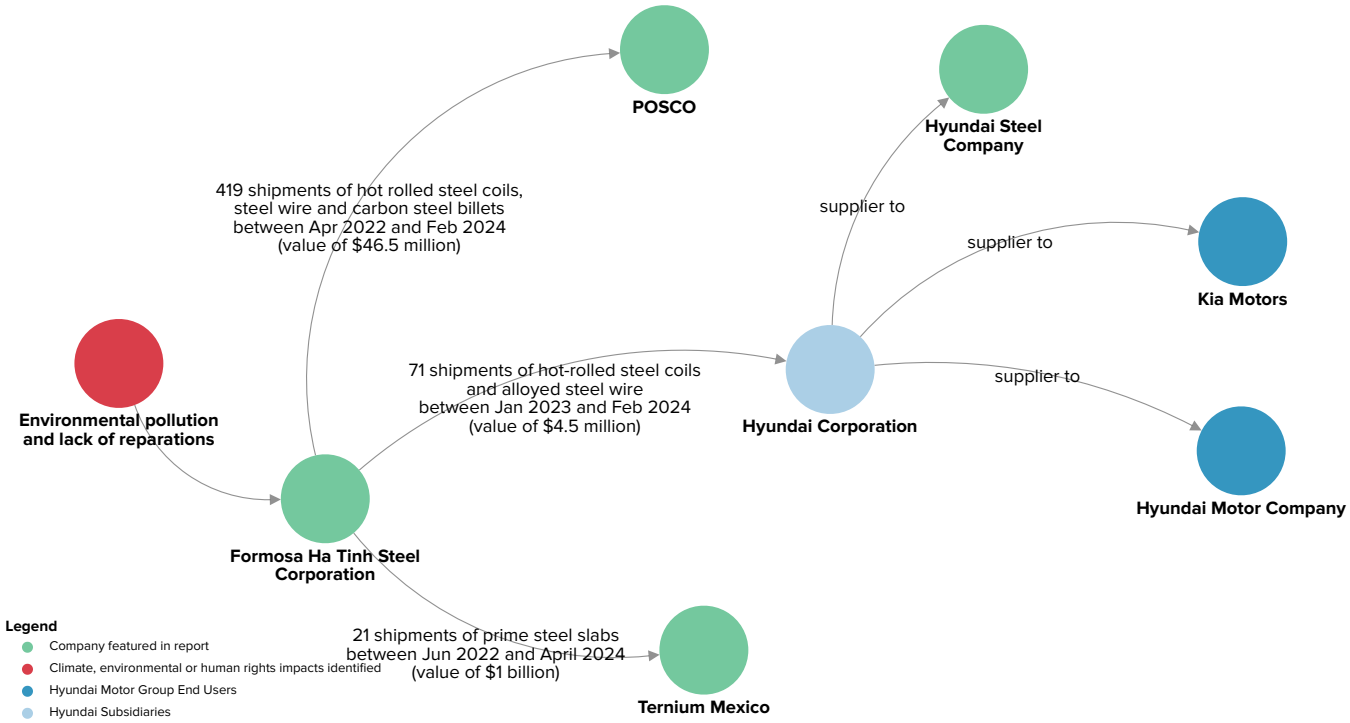


Figure 10: Supply chain links identified to Formosa's steelmaking facilities in Vietnam[149]

In April 2016, approximately one hundred tons of dead fish appeared in several Vietnamese provinces, mainly in the Ha Tĩnh Province, but also in three neighboring provinces: Quang Binh, Quang Tri, and Thua Thien Hue.[150] Three months later, government officials announced that Formosa's steel plant nearby had released toxic waste, specifically a mixture of cyanide and phenol, into the ocean during a test at its steel plant.[151] Formosa initially denied responsibility, despite the company's director of public relations stating, "Such things were the price you pay for economic development."[152]

This incident devastated local fisheries and agriculture, affecting nearly 44,000 families, and increasing the unemployment rate 15-fold in the four provinces involved.[153] Formosa eventually paid a $500 million fine, but only a small number of the victims' families received $650 each in compensation, an amount far below the damages they suffered.[154]

The situation triggered widespread protests in Vietnam, which were rapidly repressed by the government. Pham Doan Trang, a popular blogger who covered the incident, is currently serving a 9-year prison sentence for "conducting propaganda against the state."[155] Hoang Duc Binh, a labor activist who participated in protests over the spill, is serving a 14-year prison sentence. Nguyen Nam Phong, who drove people to an event where people were filing court petitions against Formosa, was also arrested.

More than 7,000 victims filed a lawsuit against Formosa in a Vietnamese court, which dismissed the case on the grounds that the company had already paid compensation for the damages.[156] In June 2019, the victims filed a lawsuit in the Taipei District Court, which initially refused to accept the case due to lack of jurisdiction. Subsequently, the victims decided to appeal to the Taiwan High Court, but the High Court upheld the district court's decision.[157] The victims then pursued a further appeal to the Taiwan Supreme Court, which reversed the previous rulings, and established jurisdiction based on the

permanent residency of 13 defendants in Taiwan, including the directors of Formosa and its two largest shareholders, Formosa Plastics Corporation and China Steel Corporation.[158]

In September 2023, the International Monitor Formosa Alliance[159] sent a letter to U.S. President Joe Biden – on the eve of his visit to Vietnam – regarding the lack of compensation for victims of the environmental disaster at the steel plant owned by Formosa.[160] According to the Alliance, Formosa Plastics Corporation had consistently failed to comply with environmental regulations, and put workers and communities at risk around the world.[161] As of October 2023, 24 people remained in prison for participating in protests linked to this case in Vietnam.[162]

Nguyen Xuan Phuc, the Prime Minister of Vietnam at the time, said that the chemical spill by Formosa was "the most serious environmental disaster Vietnam has ever faced."[163] Formosa, an integral supplier for Hyundai, has clearly disrupted the environment and economy in those provinces in which they operate. Although Formosa may not have been working with Hyundai at the time of this incident, Formosa has fallen short on remedying its negative impact on the environment, which would constitute a violation in Hyundai's Supplier Code of Conduct. [164]

Air pollution and hazardous waste disposal at Formosa Ha Tinh Steel also threaten underground water quality. In 2017, Formosa illegally buried hundreds of tons of hazardous industrial waste in Ha Tinh Province. This waste, containing cyanide, phenols, and heavy metals, can leach into underground water, contaminating wells and aquifers. Villagers have reported changes in their water's taste, color, and smell, while farmers link poor crop growth to polluted irrigation water.[165] Water contaminated with these toxins poses health risks, including cancer, kidney damage, and developmental disorders. Although the exact health toll is unclear, the risks are significant.

Steelmaking in South Korea

Smoke emitting from smokestacks of Gwangyang Steel Works, Gwangyang, Jeonnam, Korea. Photo by: Igor Grochev

Headquartered in South Korea, POSCO Holdings is a supplier of steel to Hyundai, and it is one of the largest steel producers in the world, producing 37.9 million tons of crude steel and stainless steel in 2022. POSCO owns two of South Korea's three coal-fired steel plants, Gwangyang Works and Pohang Works, which have been linked to labor rights violations and environmental pollution. Both plants manufacture steel products for POSCO, which ships steel to various Hyundai subsidiaries, including Hyundai Corporation USA and Hyundai Glovis Mexico, a supplier to Kia in Mexico.[166] POSCO also exports steel from its plants in South Korea to POSCO Mexico, which is listed as a supplier of Hyundai Steel Mexico.[167] Finally, POSCO is identified as a continued supplier of Hyundai's and Kia's automotive facilities in South Korea,[168] where a wide range of their vehicle models are manufactured, and then exported for sale in markets across the globe.

Hyundai Steel is jointly owned by Hyundai Motor Company and Kia Corporation. It manufactures steel alloys, steel plates, cold-rolled coils, and high-strength steel for the automotive sector. Hyundai Steel is a major supplier of steel to Hyundai's and Kia's automotive facilities in South Korea. According to the CEO of Hyundai Steel, in 2023, over 80% of steel sheets produced by the company are supplied to Hyundai Motor and Kia.[169]

In addition to supplying these local facilities in South Korea, Hyundai Steel also exports automotive steel to its subsidiaries abroad. For example, for the period from June 2021 to March 2024, the investigation identified 76 shipments from Hyundai Steel in South Korea to subsidiaries in Mexico, and 2,789 to Hyundai Steel USA, with a registered total value of over $1 billion.

The facilities that Hyundai Steel supplies abroad are typically Hyundai Steel Service Centers (SSCs), which "sell automotive steel sheets to overseas production plants such as Hyundai Motor and Kia Corp. plants abroad. When Hyundai Motor builds overseas production plants, Hyundai Steel also builds SSCs nearby exclusively for their supply."[170] For example, Hyundai Steel has built SSCs for Hyundai and/or Kia vehicle manufacturing facilities in Monterrey, Mexico; Pune, India; Chongqing, China; as well as Alabama and Georgia in the United States.[171]

The graphic below highlights how POSCO and Hyundai Steel are situated in Hyundai's supply chain (see legend below).

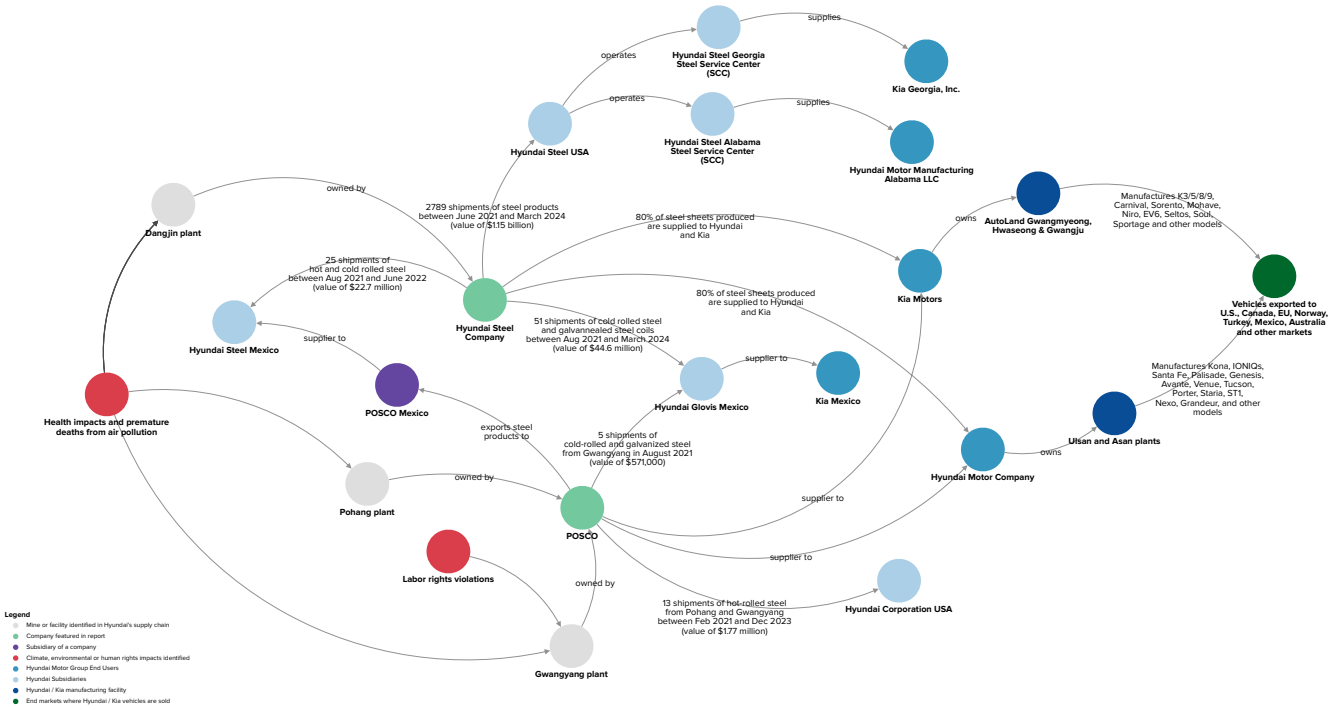


Figure 11: Supplier links to POSCO and Hyundai Steel's steelmaking facilities in South Korea[172]

According to research published by Solutions for our Climate and the Center for Research on Energy and Clean Air in 2022, air pollution from South Korea's three BF-BOF steelmaking facilities in South Korea, two operated by POSCO, and one by Hyundai Steel, was directly linked to approximately 506 premature deaths in 2021. In that year alone, there was an increase of 150 new cases of asthma, and 60 premature births, with all events associated with pollutant exposure. Additionally, that year, the economic cost of increased health spending and loss of productive work hours due to exposure to air pollution from the plants were estimated to be KRW 3.4 trillion ($2.95 billion). These organizations estimate that, under South Korea's Current Policy scenario, and without additional emission control interventions, pollution from these BF-BOF facilities will result in 19,400 cumulative premature deaths between 2022 and 2050, with an associated economic burden of KRW 127 trillion ($111 billion).

In 2021, POSCO's Gwangyang Works steel plant had a large amount of suspended particle matter and greenhouse gas emissions, with 16,621 tons in total.[173] Among the emissions for which this plant is responsible are dust particles containing heavy metals, carbon dioxide, nitrogen dioxide, sulfur dioxide, and carbon monoxide. A study conducted in 2022 on the inhabitants of Ondong village, which is a short two kilometers from the Gwangyang plant, detected the presence of high amounts of cadmium, mercury, and lead in their bodies. Some residents reported not taking walks or opening their windows, to avoid inhaling these pollutants.[174]

POSCO has also faced criticism for its decision to reline its blast furnace facilities in Pohang and Gwangyang, which would significantly extend their lifespans, rather than transition to cleaner steelmaking methods. Experts believe that POSCO's decision to reline its facilities will contribute an additional 199 million tons of CO2 for the next 15-20 years,[175] and that it will be incompatible with a Paris climate trajectory,[176] supposedly supported by both POSCO and Hyundai.

POSCO's Gwangyang and Pohang plants have also faced problems related to worker safety and their freedom to organize and collectively bargain. In November and December 2020, five workers died in accidents at POSCO's Gwangyang steel mills in Korea.[177] According to the Korean Metalworkers' Union, an explosion near a blast furnace killed three, while the remaining two died in separate accidents. According to the union, over a three-year period, from 2018 to 2020, 18 workers died at POSCO's Pohang and Gwangyang plants for reasons such as suffocation, explosions, fires, and physical injuries due to crushing, among others.[178]

During this time, POSCO fired three union activists who exposed how the company prevents union representatives from accessing accident sites, and union safety experts from participating in investigations. The company did not reinstate the dismissed workers, even after the National Labor Relations Commission of Korea determined that the dismissals were unlawful.[179]

In 2021, the Daegu Regional Employment and Labor Administration reviewed POSCO's Pohang Steel Mill, and found 225 violations of the law, yet only levied a fine of $443.2 million won (roughly $300,000) against POSCO.[180] Roh Woong-rae, a Korean lawmaker, asked at the time, "What's the point of a fine of 400 million won when POSCO's annual sales exceed 50 trillion won?"[181]

Steelmaking in the United States

Headquartered in the United States, the U.S. Steel Corporation (U.S. Steel) is a supplier of steel sheets to Hyundai. Between 2021 and 2024, U.S. Steel made nearly 4,000 shipments of alloyed and unalloyed steel sheets and galvanized rolls worth over $100 million to Hyundai Steel Mexico and Hyundai Hysco Mexico.[182]

All were shipped to Nuevo León, Mexico, where the Kia de México Pesquería complex, and several subsidiaries of Hyundai Motor Company (including Hyundai Steel Mexico) are located. Hyundai Steel's SSC in Nuevo Leon is located adjacent to Kia's Pesquería complex, and it uses steel purchased from U.S. Steel, as well as from Ternium Mexico, POSCO, and Hyundai Steel's facilities in South Korea,[183] to produce automotive steel products for Kia's Pesquería Complex, supplying Kia Motors directly,[184] as well as subsidiaries such as Hyundai Wia.[185]

This complex is a key link in Hyundai's North American supply chain, manufacturing not only vehicles in Mexico, but also a range of automotive components, including many that are made with steel, which are used to manufacture vehicles in Kia's Pesquería Plant, and are also exported to Hyundai subsidiaries in the U.S., in particular those that participate in Hyundai's and Kia's automotive industrial clusters in Alabama and Georgia (see this section of the report for more details on these clusters). This complex has also been linked to environmental pollution, as detailed in the section on Ternium below.

The graphic below highlights how U.S. Steel and the Pesquería complex are situated in the Hyundai supply chain (see legend below).

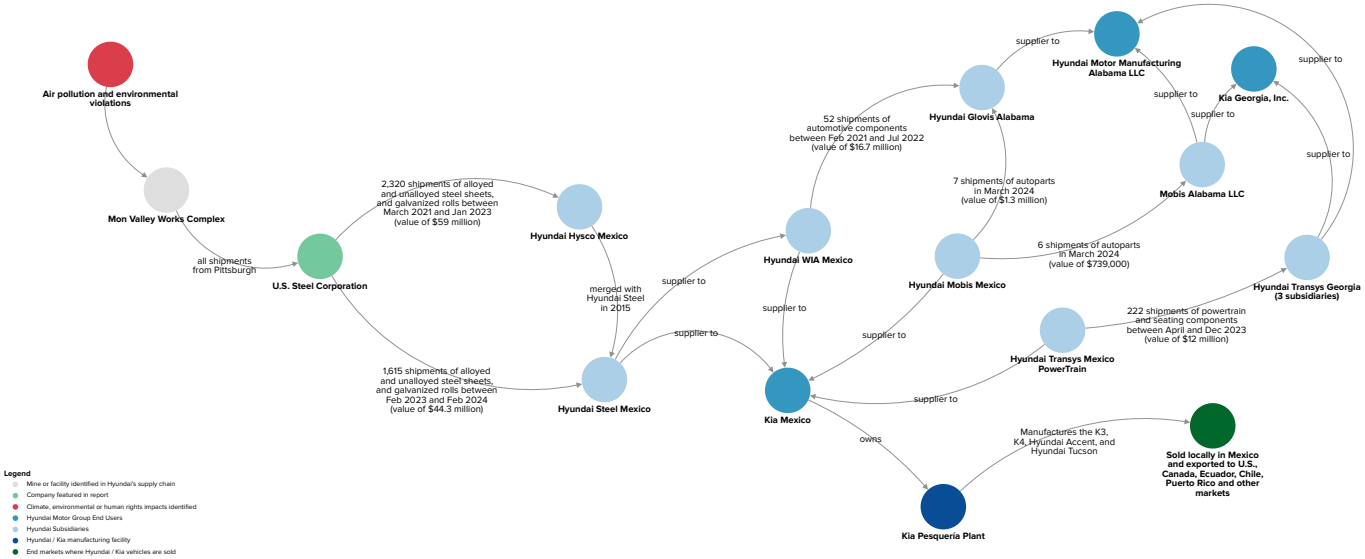


Figure 12: Supplier links identified to U.S. Steel's steelmaking facilities in the United States[186]

U.S. Steel has often skirted laws and regulations, preferring to act first, and ask questions later. The company has a steel production facility located in Braddock, Pennsylvania, which has been found to be of particular concern. In 2022, the Environmental Protection Agency (EPA) and U.S. Steel agreed on a settlement that would levy a $1.5 million penalty against the company for long-standing air pollution violations.[187] As part of the settlement, U.S. Steel agreed to make improvements in training and monitoring emissions.[188] According to the EPA, their primary concern with this particular plant was PM 2.5.

"The primary pollutant of concern is particulate matter, including PM 2.5. Particulate matter contains microscopic solids or liquid droplets that are so small that they can be inhaled and cause serious health problems. Some particles less than 10 micrometers in diameter can get deep into your lungs and some may even get into your bloodstream. Particles less than 2.5 micrometers in diameter (PM2.5) pose the greatest risk to health, including susceptibility to respiratory diseases, including acute respiratory distress, asthma, chronic obstructive pulmonary disease (COPD), and lung cancer."

– Environmental Protection Agency[189]

In 2024, U.S. Steel was back in the media, when it agreed to another settlement related to an accidental fire from 2018. In December of that year, U.S. Steel's Clairton Coke Works experienced an accidental fire that destroyed facility equipment that helps control the plant's sulfur dioxide and benzene emissions. Rather than closing down the plant, U.S. Steel continued production for 100 days, racking up more than 12,000 violations of the Clean Air Act.[190] During this time, local news outlets reported significant increases in respiratory issues and asthma attacks.

Two academic studies of the fire, one by the University of Pittsburgh, and a second by Dr. Deborah Gentile, a local expert, "found respiratory problems worsened significantly as a result of the pollution."[191] In 2024, a court settlement required U.S. Steel to pay $37 million in pollution control and reliability upgrades, and imposed a $5 million penalty against U.S. Steel, one of the largest penalties in a Clean Air Act citizen enforcement suit in Pennsylvania history.[192]

Steelmaking in Brazil and Mexico

As mentioned earlier in this report, Ternium plays a central role in the Hyundai supply chain. In addition to producing iron ore in Mexico, Ternium is also an important supplier of steel for Hyundai's supply chain, which is produced in Mexico and Brazil.

In Brazil, Ternium owns the Santa Cruz integrated mill that produces steel with iron ore and coal from suppliers such as Vale and the BHP Mitsubishi Alliance. This steel is then shipped to Ternium in Mexico. Between March 2019 and February 2024, the investigation identified 253 shipments of steel slabs from Ternium in Brazil to Ternium Mexico worth $33 billion. These shipments were then transported to Ternium's facilities in Nuevo Leon. Ternium's Churubusco facility in this state uses these slabs from Ternium Brazil to produce hot-rolled and cold-rolled coils, which it then supplies to Ternium's Pesquería Industrial Center for further processing. [193]

This Industrial Center produces hot-rolled, cold-rolled, galvanized, and color-coated coils for the automotive sector. The hot-rolling mill uses slabs sourced from Ternium Brazil as well as from third parties. The cold-rolling mill processes hot-rolled coils sourced from the hot-rolling mill and also from Ternium Mexico's Churubusco and Guerrero units. As mentioned in the section above, the Guerrero facility uses iron ore sourced from Ternium's mines in Mexico, and steel scrap, to produce hot-rolled and cold-rolled steel coils.[194] Ternium's facilities in Nuevo Leon also source steel slabs from Formosa in Vietnam.

Ternium is identified by multiple sources as a supplier to Kia in Mexico,[195] as well as to Hyundai Steel Mexico.[196] The steel supplied to Kia in Mexico is likely all, or mostly, sourced from its Pesquería Center – since this is the only facility listed by Ternium as supplying steel to the automotive sector, and it is also located adjacent to Kia's own Pesquería complex.[197]

The investigation also identified multiple steel shipments from Ternium to Hyundai de Mexico in Tijuana. Hyundai de Mexico owns five plants in Tijuana that manufacture components for the automotive industry, including engine headers and chassis. Hyundai de Mexico has made a large number of shipments to the United States, where the company has industrial clusters for automotive manufacturing in Georgia and Alabama, producing various Hyundai and Kia models for sale in the North American market.[198]

The investigation found that, between January 2018 and February 2024, Hyundai de Mexico made over 2,000 shipments of automotive components, many made with steel, to the United States, worth over $11 billion in total. These shipments were listed as being sent to "undisclosed" companies in the United States,[199] although it is likely that many were to Hyundai subsidiaries in Alabama and Georgia, given the extensive number of shipments identified from other Hyundai subsidiaries in the north of Mexico to subsidiaries in these locations.

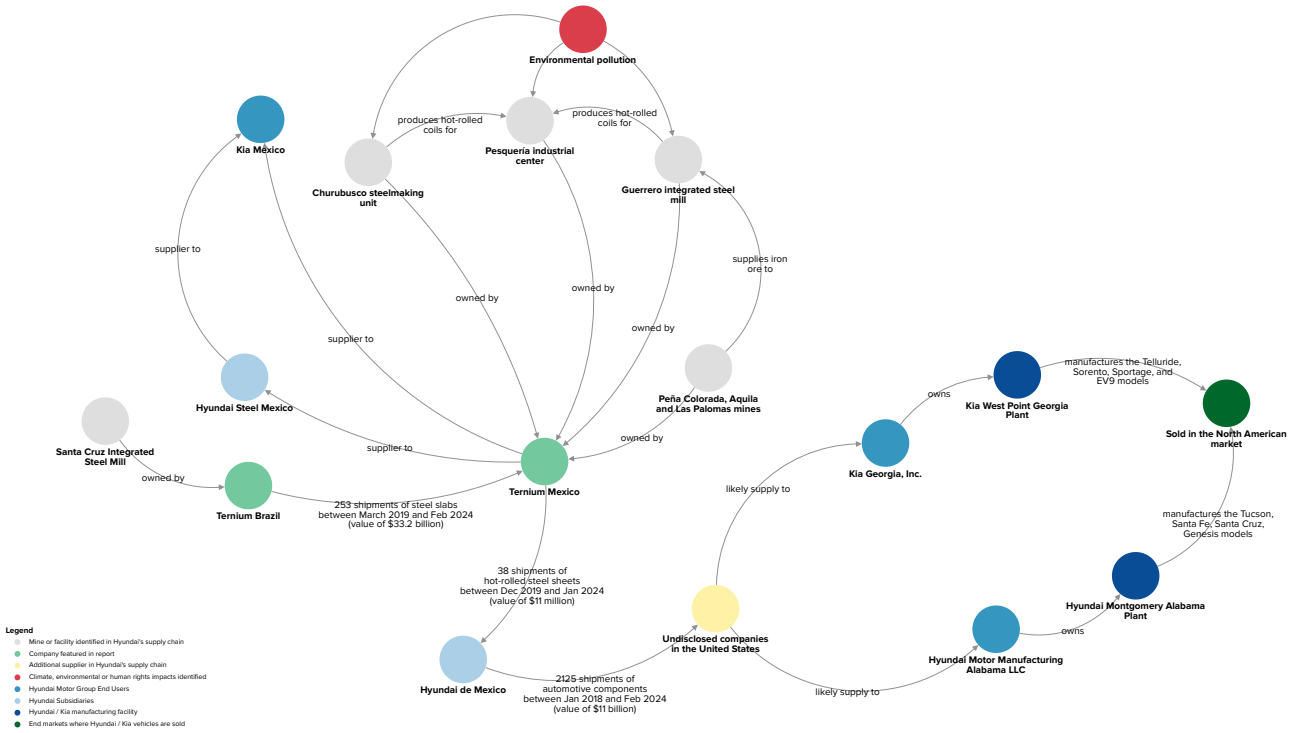


Figure 13: Supplier links identified to Ternium's steelmaking facilities in Brazil and Mexico[200]

A report published in 2024 by the Fair Steel Coalition[201] documents severe climate, environmental, and human rights impacts caused by Ternium's integrated steel plant in Santa Cruz, Rio de Janeiro. The facility emits over 10 million tons of CO2 annually, representing more than 50% of the city's total greenhouse gas emissions. According to the report, the facility consumes as much water as 10.2-14.4 million people, has polluted rivers and the Sepetiba Bay, deforested mangroves, caused "silver rain" events, where graphite soot falls over the neighborhood, and harmed the livelihoods of around 8,000 artisanal fishermen, farmers, and shellfish gatherers.

Air pollution from the plant disproportionately affects the approximately 250,000 residents of the impoverished Santa Cruz neighborhood, who report increased respiratory, heart, skin, cancer, and mental health ailments. According to another report by the Centre for Research on Energy and Clean Air (CREA),[202] the facility emits dangerous levels of particulate matter (PM2.5), nitrogen dioxide (NO2), and sulfur dioxide (SO2), with pollution reaching as far as São Paulo. CREA estimates that exposure to these pollutants from the facility has caused 1,200 deaths, including 35 children under age 5, due to diseases like stroke, respiratory infections, COPD, lung cancer, and diabetes. The plant's emissions also led to asthma-related ER visits, hundreds of new asthma cases in children, pre-term and low-weight births, and 120,000 days of work absences. CREA calculated that these health impacts resulted in an economic cost to society of $1.8 billion (BRL 9.1 billion) from 2010 to 2023, exceeding Rio de Janeiro's combined annual spending on education, culture, and sports.

Regarding Ternium's facilities in Mexico, according to the Mexican Pollutant Release and Transfer Register of the Secretariat of Environment and Natural Resources (Semarnat), Ternium has seven production plants in Nuevo León that emit many pollutants in the air, water, soil, and sewage. Between 2018 and 2022, these production plants emitted more than 1.5 billion tons of carbon dioxide, alongside nitrogen dioxide, nickel, methane, formaldehyde, chrome, cadmium, and arsenic.[203]

Period	Compound	Air	Water	Soil	Sewage Discharge
2018-22	Carbon Dioxide	1,529,131,383	--	--	--
2018	Methane	7,940,246	--	--	--
2019-22	Nitrogen Dioxide	2,728,691	--	--	--
2018-22	Formaldehyde	2,216	--	--	--
2018-22	Chrome	185	5.2	1.7	194
2018-22	Cadmium	97.3	38.7	3.6	3.3
2018-22	Nickel	73.0	75.1	26.0	29,967
2018-20	Arsenic	5.5	3.5	--	15.1

According to government standards, many of these pollutants can have detrimental effects on humans and the environment. Nitrogen dioxide, for example, can produce PM10 and PM2.5 in the atmosphere, which can lead to increases in pulmonary irritation, respiratory tract inflammation, low birth weights, and premature births.[204] In 2021, press reports from Mexico suggest high levels of suspended particles in Nuevo Leon, such as PM2.5, which increased the risk of miscarriages by 16%.[205]

In addition, arsenic can cause increased mortality or serious illnesses in humans exposed to significant levels, according to the EPA. Unlike concentrations in drinking water and food, there is no standard for permissible levels of arsenic in ambient air.[206] Cadmium in high concentrations in foods or drinking water can cause many disorders, such as severe irritation of the stomach, which can cause vomiting and diarrhea. Accumulation of cadmium in the kidneys can lead to renal disease.[207] Chromium can cause asthma, coughing, shortness of breath, and gasping breathing, as well as lung cancer. Consuming foods with high levels of chromium can cause anemia, and damage the stomach and intestines.[208] According to the U.S. Department of Health and Human Services, Ternium is also responsible for nickel, which is a carcinogenic compound that can cause pulmonary dysfunction and cancer or bronchitis,[209] in the air, water, and soil. Formaldehyde, in the environment, can cause pollution and produce irritation of the eyes, nose, and throat, as well as tearing.[210]

Between 2004 and 2014, the municipalities of Apodaca, Escobedo, Guadalupe, Monterrey, San Nicolás, San Pedro, and Santa Catarina (MMA) recorded high levels of PM10 and nitrogen dioxide, among other pollutants, which have caused an increase in the risk of death due to respiratory diseases, primarily in adults over the age of 65, and children under five years old.[211] Thus, Ternium's pollution directly contributes to the pollutant emissions that threaten the civilian population of the MMA.

When asked about inspections conducted at Ternium in Nuevo Leon, the Secretariat of Environment of Nuevo León (SMA) stated that there are three administrative proceedings pending against the Pesquería Plant for environmental violations. The Federal Environmental Protection Agency (PROFEPA) stated that there are two administrative files for inspections in the area of prevention and control of atmospheric pollution conducted at Ternium Pesquería. However, both SMA and PROFEPA did not provide any additional information.

In response to freedom of information requests made in 2024, SMA stated that Ternium Pesquería was subject to an official inspection in June 2020 by the SMA. During this inspection, an administrative proceeding was initiated for violations of the Nuevo León State Environmental Law, and for having "piles of waste from demolition and construction, without accrediting

registration in the Waste and Special Handling Generator Registry," for which there was an administrative proceeding that, as of March 2024, remained pending.[212] Selene Martínez, executive director of Observatorio Ciudadano de Calidad del Aire del Área Metropolitana de Monterrey, stated that Ternium is among the companies that pollute the most in the MMA, including Pesquería, where Hyundai has several production plants.[213]

Hyundai's Failings on Supply Chain Sustainability & Due Diligence

Hyundai pledges to "do the right thing for humanity." However, this report finds a consistent pattern of Hyundai choosing and partnering with an assortment of unscrupulous companies within its steel supply chain that are failing to take sufficient measures to reduce their greenhouse gas emissions, protect the environment, or respect human rights.

This section of the report looks deeper into Hyundai's supply chain policies and practices, to demonstrate how the company's lack of effective incentives, requirements, and control systems plays an active role in facilitating, and leaving unchecked, the kinds of abuses this report has documented. It finds that, if one looks beyond Hyundai's superficial commitments, the company is consistently failing to put in place adequate mechanisms to address negative climate, environmental, and human rights impacts by its suppliers, or to take adequate action to build a responsible and sustainable supply chain.

For the past three years, Hyundai's and Kia's performances on supply chain sustainability and due diligence have been evaluated annually as part of the Lead the Charge Leaderboard, which has revealed that both companies are falling far behind many of their peers on clean and equitable supply chains.

The Leaderboard evaluates 18 of the world's leading automakers on their efforts to eliminate emissions, environmental harms, and human rights violations from their supply chains. In the third edition, due to be published in February 2025, Hyundai achieved a total score of 20%, coming in at tenth place, whilst Kia achieved a total score of just 15%, coming in at twelfth place.

The Leaderboard's assessment of company performance on supply chain decarbonization and sustainability reveals little in the way of concrete actions by Hyundai or Kia to reduce greenhouse gas (GHG) emissions or broader environmental impacts within their supply chains. Both companies have set targets to be carbon neutral by 2045, which includes a commitment to a "net zero automotive supply chain" by the same date.

However, the companies only commit to reducing their supply chain emissions by "more than 10%" by 2030 (compared to the base year of 2023). This is by far the least ambitious commitment out of all companies evaluated that have set interim targets to reduce their supply chain emissions. In fact, as shown in the table below, it is less than half the amount as the next least ambitious target (22% by 2030, belonging to BMW Group).

Comparison of Hyundai's/Kia's supply chain emissions reduction target with those set by other automakers (source: 2025 Lead the Charge Leaderboard, forthcoming)

Company	Interim Supply Chain Emissions Reduction Target	Base year
Hyundai and Kia	10% by 2030 (supply chain reduction)	2023
BMW Group	22% by 2030 (for purchased goods and services per vehicle sold)	2019
Geely	20% by 2025 (average supply chain emissions for each car series (new energy and fuel vehicles, respectively))	2020
Mercedes	50% by 2030 (per car across the entire value chain)	2020
Renault	30% by 2030 (CO2e/kg emissions reduction from the extraction of raw materials and the manufacture of parts)	2019
Stellantis	40% by 2030 (supply chain emissions per BEV)	2021
Volvo	25% by 2025 and 30% by 2030 (CO2 emissions from materials per average vehicle)	2018

Unlike many of their industry peers, Hyundai and Kia also do not require their suppliers to set GHG emissions reductions targets, and do not provide any data on the number of suppliers that have set such targets, or any evidence of systems or programs to monitor supplier compliance with GHG emissions targets, illustrating a lack of comprehensive action by the companies to actually move toward their meager 2030 target for supply chain emissions reduction.

This pattern is repeated when it comes to actions to decarbonize the companies' steel supply chains specifically, despite the fact that steel is one of the largest sources of upstream emissions for passenger vehicles, constituting approximately 30% of the average internal combustion engine vehicle's material emissions, and 16% of a BEV's supply chain emissions.[214]

Although Hyundai and Kia have made some commendable progress when it comes to increasing the use of scrap steel in their vehicles, both companies continue to perform abysmally in this subsection of the Leaderboard, scoring 12% and 6%, respectively. Particularly notable is the fact that Hyundai has not improved its performance against any of the indicators in this subsection for two years running, since the Leaderboard was first launched in 2023.

The 2025 edition of the Leaderboard found that neither company has taken any action to decarbonize the primary steel used in their vehicles, scoring 0% against all of the indicators focused on this issue. Both companies have failed to set any kind of public intention, commitment, or target to transition away from the use of coal-based steel for their vehicles, or to reduce the emissions from their steel supply chains overall. Further, neither company has signed any kind of procurement agreement with steel suppliers to support greater investment in, and production of, fossil-free steel. This is again in contrast to many industry competitors, such as Mercedes, Ford, GM, Volvo, Nissan, Tesla, VW, and BMW, which have all taken an array of different actions in this area.

When major global customers of the steel industry, such as Hyundai and Kia, fail to signal their intentions to shift away from using coal-based steel, it is perhaps no surprise to see executives from

coal mining companies such as BHP Mitsubishi Alliance[215] and Whitehaven[216] in turn refer to robust market projections for the future demand of metallurgical coal in order to justify the continued expansion of coal mining assets. For example, in its 2024 Climate Transition Action Plan (CTAP), BHP makes it clear that it doesn't see any threat to metallurgical coal demand on the horizon: "Steelmaking coal continues to be an attractive commodity for us over the next several decades."[217] IEEFA strongly criticized BHP's CATP for overestimating long-term metallurgical coal demand, and using these estimations to justify the expansion and extension of its coal mining assets, including its Peak Downs Mine Continuation Project, which would extend the life of that mine "out to 2116, 66 years beyond [BHP's] goal to reach net zero emissions."[218]

When it comes to conducting adequate due diligence in order to identify, prevent, mitigate, and remedy adverse human rights impacts within their supply chains, Hyundai's and Kia's performances are also lacking in several critical areas, according to the Leaderboard's assessment. Although both companies made some notable improvements in the 2025 edition of the Leaderboard, particularly in the area of overall supply chain due diligence, their total scores for this section of the Leaderboard continue to be just 21% and 20% respectively – less than half of the scores of the top three companies for this section.

Hyundai and Kia have established policies with commitments to respect human rights, and supplier codes of conduct with requirements for suppliers to respect human rights. Further, both companies have made some progress on strengthening human rights due diligence systems, providing, for example, information on how they monitor suppliers for compliance with their supplier codes of conduct as well as some numerical data on supplier assessments and audits to illustrate implementation.

However, both companies continue to have major gaps. For example, neither company provides sufficient information regarding instances of supplier nonconformance they have identified within their supply chains, or on the corrective actions taken to address such nonconformances. Particularly alarming is the fact that neither company has established a mechanism for impacted rights-holders and other external stakeholders to raise grievances regarding adverse human rights impacts within their supply chains, or a process to determine remedy for confirmed cases of human rights violations.

The companies score even lower in the remaining subsections of the human rights and responsible sourcing section of the Leaderboard. With regard to responsible mineral sourcing, the companies only disclose basic information regarding the actions they have taken to address risks of conflict minerals within their supply chains. They score 0% against almost all of the indicators in this subsection requiring companies to disclose measures they have taken to identify, prevent, mitigate, and remedy broader human rights risks and impacts from mining companies, smelters, and refiners within their supply chains.

Given the multiple impacts on the rights of Indigenous Peoples identified in this report, it is equally concerning that both companies continue to score 0% on this subsection of the Leaderboard, focused on the specific measures and actions taken by companies to address risks to the rights of Indigenous Peoples within their supply chains.

By failing to establish adequate policies, systems, and processes for supply chain due diligence, Hyundai and Kia create the enabling conditions for environmental and human rights abuses, such as those identified in this report, to continue unchecked within their supply chains.

Conclusion

Despite Hyundai's public commitments to sustainability and ethical practices, this report reveals an alarming pattern of human rights violations, environmental abuses, and disregard for the climate throughout the company's steel supply chain. The systemic environmental and human rights challenges embedded within Hyundai's steel supply chain and many of its suppliers are directly linked to devastating environmental destruction, exploitation of workers, and violations of community rights.

Coal and iron mining operations supplying Hyundai's steel production, including those managed by BHP in Australia and Glencore in Colombia, have caused widespread environmental degradation. Glencore's Cerrejón mine has polluted critical water sources in Colombia, devastating local ecosystems and communities. Meanwhile, coal mines in Australia have destroyed habitats, including those of endangered species like koalas, and contributed to massive methane emissions, exacerbating global warming. Coal mines in western Canada continue to leach enormous volumes of pollutants into the Columbia River, impacting millions in downstream communities.

In Korea, the pollution resulting from steel production facilities, such as Hyundai Steel plants and POSCO's Gwangyang Works, has been linked to significant emissions and severe air pollution, which have caused hundreds of premature deaths and chronic health problems among nearby residents. Similar issues plague Ternium's plants in Mexico, which release high levels of harmful pollutants, impacting the health and livelihoods of local communities.

Another tragic example is the Brumadinho dam disaster, which occurred when a Vale-owned dam collapsed in Minas Gerais, Brazil. It was one of the deadliest industrial disasters in history, resulting in the deaths of approximately 270 people, and irreparable damage to ecosystems, and investigations revealed that Vale had prior knowledge of the dam's instability, but failed to act, prioritizing profit over safety. Similarly, Formosa's operations in Vietnam have resulted in severe environmental damage, economic devastation for coastal communities, and repression of activists seeking justice.

In addition to the environmental destruction caused by Hyundai's steel supply chain, human rights violations are equally pervasive. Evidence points to forced labor, unsafe working conditions, and exploitation of Indigenous communities. In Colombia, Glencore's operations have been accused of displacing Indigenous communities through fraudulent negotiations and violent evictions. Reports also document the company's alleged financial and logistical support of paramilitary groups responsible for forced disappearances and murders.

POSCO has also been tied to extensive labor rights violations, including unsafe working conditions that have caused fatalities, as well as retaliatory actions against union leaders advocating for worker protections. U.S. Steel has similarly amassed a staggering record of environmental violations and workplace safety concerns, demonstrating systemic disregard for both environmental and human rights standards.

The sad reality is that Hyundai's and Kia's factories in South Korea manufacture a large number of their passenger vehicle models using steel from Hyundai Steel, POSCO, and Formosa, which, in turn, use coal from Australia, Russia, and Canada, and iron ore from Vale (whose iron ore pellets are produced with coal from Glencore). These vehicles are then exported for sale in markets all over the world, including the United States, Canada, Norway, Turkey, Mexico, Australia, the Philippines,[219] and the EU.[220]

Hyundai also sources steel from Formosa, a corporation notorious for severe environmental destruction—deemed the most devastating in Vietnam's history—in Hà Tĩnh, as well as human rights violations in its steel operations in Vietnam and plastic factories in the United States.

This report lays bare the dissonance between Hyundai's sustainability commitments and the grim realities within its steel supply chain. The company's reliance on suppliers engaged in environmental destruction and human rights abuses tarnishes Hyundai's reputation and undermines its credibility as a leader in the transition to a sustainable future. To fulfill its promises and ethical obligations, Hyundai must overhaul its supply chain policies, enforce rigorous human rights and environmental standards, and ensure accountability among its suppliers. Only by addressing these systemic failings can Hyundai truly embody the principles of sustainability and progress for humanity it so fervently promotes.

Hyundai's Executive Chair, Euisun Chung, recently said, "To preserve the sustainable life of our planet Earth, we need not fancy words, but immediate action." In the spirit of immediate action, Mighty Earth calls on Hyundai to:

- **Accelerate Transition to Electric Vehicles (EVs):** Hyundai must expedite the phase-out of fossil-fuel vehicles, and fully embrace a future of 100% electric vehicles. This transition should include setting binding deadlines for internal combustion engine phase-outs in alignment with global climate goals, particularly the 1.5°C warming limit outlined by the Paris Agreement. A robust plan to achieve this transition will reaffirm Hyundai's position as a leader in sustainable mobility.
- **Decarbonize Steel Supply Chains:** The steel industry, responsible for a significant proportion of Hyundai's emissions, requires targeted interventions to reduce carbon intensity. Hyundai should establish science-based targets to decarbonize its supply chains, including annual purchasing goals for low-carbon and zero-carbon materials, backed up with binding purchase agreements. Collaborating with initiatives like SteelZero and the First Movers Coalition will accelerate these goals, and catalyze broader industry shifts.
- **Commit to Phasing Out Coal:** Hyundai must unequivocally commit to halting new coal investments, and phasing out coal usage in its supply chains. Ensuring that future investments exclusively support fossil-free production of essential materials such as steel and aluminum will pave the way for a sustainable and resilient production model.
- **Enhance Human Rights Due Diligence:** Comprehensive human rights due diligence is essential to addressing the documented risks in Hyundai's supply chain. From mining to manufacturing, Hyundai must implement proactive measures to identify, prevent, and remediate human rights violations, particularly those tied to transition mineral sourcing and Indigenous People's rights. This includes a zero-tolerance policy for violence throughout its supply chain. These measures should include transparent reporting and active engagement with affected communities. Additionally, Hyundai and its suppliers should join the Initiative for Responsible Mining Assurance (IRMA), a third-party certification body for industrial-scale mine sites that aim to promote responsible mining practices.
- **Uphold Workers' Rights and Community Benefits:** Respect for workers' rights is fundamental. Hyundai should adopt Community Benefit Agreements with host communities, and institute independent, third-party monitoring of labor conditions within its supply chains. Such initiatives will ensure that economic development does not come at the expense of human dignity and safety.

Hyundai has a critical choice: Maintain the status quo or lead the industry in aligning production practices with sustainability and human rights imperatives. The transformation required is not

without challenges, but the potential rewards — enhanced brand reputation, customer loyalty, and compliance with evolving regulations — far outweigh the risks of inaction. Hyundai's influence as one of the world's largest automakers positions it uniquely to spearhead change within the automotive and steel sectors.

By embracing these recommendations, Hyundai can live up to its own stated commitment to "progress for humanity," and ensure a legacy of sustainable innovation and responsible stewardship. The time for action is now, and Hyundai must lead the charge in driving the transition to a just and sustainable future.

Appendix A

Matthew Groch

From: [redacted]@hyundai.com>
Sent: Monday, January 13, 2025 12:58 AM
To: Matthew Groch
Subject: RE: Due Diligence Inquiry re: Hyundai Motor Group's Steel Supply Chain

Dear Mr.Groch

This is [redacted] in charge of NGO Communication at Hyundai Motor Group.
I would like to express deepest condolences over LA fires. I sincerely hope that the fires will be extinguished and the damage will be restored.

I have reviewed the mail you sent.
It would be appreciated it if you understand that it is difficult to provide specific answers to the individual supply chain information due to security issues.

To protect human rights and the environment in the supply chain, Hyundai Motor Group is carrying out various activities such as strengthening responsible mineral management, checking risks through due diligence on the supply chain, supplier compliance programs, distributing carbon neutrality guides, and establishing'Integrated Greenhouse gas Information System'.

In particular, with the recent revision of the parts supply contract, domestic and foreign suppliers, including steel companies, are obligated to comply with Hyundai Motor Company/Kia's 'Suppliers Code of Conduct', to provide supply chain information related to the 1st~Nth suppliers, and to take corrective actions of Hyundai Motors. Hyundai Motor Company's right to terminate contracts is applied in the event of failure to take corrective action.

Overall, Hyundai Motor Group strengthens supply chain sustainability management.
We will expand the scope of supply chain management of raw and subsidiary materials such as steel, starting with battery materials according to the importance of the industry.
We will also strengthen due diligence on responsible mineral supply chains and mines/smelters.

Hyundai Motor Group will continue to make efforts to meet the high level of external expectations for ESG management.

Regards,

[redacted]

Together for a better future

[redacted]

HYUNDAI MOTOR GROUP

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[213] Secretaría del Medio Ambiente, "Plan Integral para la Gestión Estratégica de la Calidad del Aire." Available at: www.nl.gob.mx/sites/default/files/pigeca_2023_2033_documento_final_vf.pdf.
[214] Kearney, "*Polestar and Rivian Pathway Report."* Available at: https://www.kearney.com/documents/291362523/295334577/Polestar+and+Rivian+pathway+report-+supported+by+Kearney.pdf
[215] "We believe that the market generally will have opportunity for further growth developments in coking coal" - BHP Mitsubishi Alliance CEO Mike Henry at the FY23 investor Q&A in June 2023.
[216] "Our confidence in the demand outlook for our products remains strong." - Mark Vaile WHC 2024 AGM "Whitehaven's position [is] that our high-quality NSW thermal coal operations remain strategically important to our business and indeed the world, and that they will continue to support global energy security for decades to come, particularly in Asia." - Paul Flynn WHC 2024 AGM. See: Listcorp, "AGM Addresses and Presentation." Available at: https://www.listcorp.com/asx/whc/whitehaven-coal/news/agm-addresses-and-presentation-3107869.html for the transcript and Whitehaven Coal, "Annual General Meetings." Available at: https://whitehavencoal.com.au/annual-general-meetings/ for video and audio recordings.
[217] BHP, "Climate Transition Action Plan 2024." Available at: https://www.bhp.com/-/media/documents/investors/annual-reports/2024/240827_bhpclimatetransitionactionplan2024.pdf.
[218] BHP, "BHP is lagging its peers on Scope 3 and steel technology transition." Available at: https://ieefa.org/sites/default/files/2024-10/BN_BHP%20is%20lagging%20its%20peers%20on%20Scope%203%20and%20steel%20technology%20transition_Oct24.pdf.
[219] The investigation identified thousands of vehicle shipments from these facilities in 2024 alone. The limited shipments included in the database were identified after cleaning data from the most recent 10,000 shipments, out of tens of thousands more shipments made by Hyundai and Kia corporations that were registered in 2024. This indicates that thousands more shipments were made in 2024 alone.
[220] Due to data limitations, vehicle shipments from South Korea to the EU were not identified. However, Hyundai and Kia vehicle exports from South Korea to Europe are valued at billions of dollars a year. See: Available at: Business Korea, "Korea's Auto Industry Achieves Record $37 Billion in Exports in First Half of 2024." Available at: https://www.businesskorea.co.kr/news/articleView.html?idxno=221302, and Business Korea, "Hyundai and Kia Struggle with Declining EV Exports This Year, Marking a 23% drop YOY." Available at: https://www.businesskorea.co.kr/news/articleView.html?idxno=224900.