

TROIKA DRIVE

KOREA ZINC SUSTAINABILITY REPORT 2023



About this report

Korea Zinc's 2023 Sustainability Report describes achievements in the categories of environmental, social, and governance, focusing on the company's philosophy committed to sustainable management. This report presents the materiality analysis by examining the material issues Korea Zinc is facing based on two directions. By analyzing domestic and international trends through international indicators and industry benchmarking and reflecting stakeholder opinions in various ways, the report demonstrates transparency and fairness in disclosing the ESG data.

Reporting Principles and Standards

This report has been compiled in line with the 2021 Global Reporting Initiative (GRI) Standards. The financial data contained within this report adheres to the consolidation standard of the Korean version of the International Financial Reporting Standards (K-IFRS). Furthermore, Korea Zinc has taken into account the industry standards set by the Sustainability Accounting Standards Board (SASB) in order to identify material issues relevant to our sector. We have also incorporated the recommendations of the Task Force on Climate-related Financial Disclosure (TCFD)

Reporting Scope and Boundaries

This report encompasses the period from January 1, 2023 to December 31, 2023, and also includes significant performance through the first quarter of 2024. It covers the headquarters and Onsan Refinery and in relation to climate change, it contains some information about KZ Green Tech, a subsidiary of Korea Zinc, and Sun Metals Corporation(SMC) and Pedalpoint (Pedalpoint Holdings, LLC), which are its overseas worksites. Exceptional cases in the reporting scope shall be annotated with an explanatory note.

Changes from Previous Year

Changes from last year's report were made to the reporting scope and boundaries, and include overseas operations (SMC, Pedalpoint Holdings) in some aggregated tax information. In addition, if the previously disclosed values have been modified due to changes in some data calculation methods and scope, they are addressed with footnotes on the relevant page.

Report Assurance

Korea Zinc has undergone a verification process with BSI (British Standards Institution), an independent assurance agency, to ensure the independence and reliability of the report. Type 1 assurance has been applied in accordance with the A1000AS v3 assurance standard.

Report Distribution and Stakeholder Inquiries

This report can be downloaded from the Korea Zinc website. If stakeholders have any opinions or feedback, they are encouraged to contact us using the information provided below.

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Published in: Jul. 2024 / Contact: ESG Management Team, Sustainability Division

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Chairman's Message



Jun. 2024

Yun B. Choi

Executive Chairman of Korea Zinc

Dear valued stakeholders,

In 2023, stakeholder interest in sustainable business practices increased amid the uncertainties from the U.S.-China trade dispute, the prolonged the Russia-Ukraine war, and the Israel-Hamas war. The EU introduced the Critical Raw Materials Act (CRMA) and the Carbon Border Adjustment Mechanism (CBAM), while the U.S. enacted the Inflation Reduction Act (IRA). These legislative measures call for reducing carbon emissions and mitigating social risks in the supply chain. Despite these challenges, Korea Zinc remained committed to its operations and sustainability goals. To navigate the unstable environment, we undertook internal transformations, engaged more stakeholders, reinforced ethical management, and implemented carbon reduction initiatives. Our unwavering commitment to sustainable management will underpin our future business success.

Securing Sustainability through Active Transformation of Our Business Portfolio

Korea Zinc has established itself as the world's leading company in the non-ferrous metal smelting industry. With experience and technology, the company aims to grow into a sustainably through Troika Drive, the three new growth engines of renewable energy, secondary battery materials, and resource circulation. The company is bolstering cooperation with stakeholders to maximize the use of renewable energy and is laying the groundwork for producing secondary battery materials including producing nickel and eco-friendly copper foil from recycled waste. To achieve these objectives, the company plans to invest approximately KRW 12 trillion by 2033. Key Initiatives includes the Sun HQ for green hydrogen production via the Korea-Australia consortium and the customized all-in-one nickel smelter capable of processing all types of raw materials. These efforts underscore its commitment to eco-friendly practices and establish a strong foundation for future growth.

Carbon Neutral Strategy to Respond to Climate Change

Achieving carbon neutrality in the energy-intensive smelting industry is a challenging and complex endeavor. While reducing waste and maximizing raw material use, the processes are intricate and challenges, such as accurately measuring carbon emissions at each stage. Assuming precise carbon emissions calculations are essential for efficient reduction, Korea Zinc employs LCA (Life Cycle Assessment) to determine the carbon footprint of each product. In addition, we aim to contribute to both carbon neutrality and resource circulation by using low-carbon, recycled raw materials.

Supply Chain Management to Build a Sustainable Supply Chain

For smelting companies that acquire raw materials through mineral extraction, the sustainability of their mining suppliers is paramount. Accordingly, Korea Zinc is bolstering its suppliers' capabilities to measure and manage carbon emissions per product and supporting their carbon reduction efforts. Guided by the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-affected and High-risk Area, the company manages issues such as human rights violations, environmental degeneration, and conflict funding in the supply chain. Korea Zinc is vigilant about potential supply chain challenges and are committed to proactive solution. We support our partners believing shared sustainability will create a more efficient and eco-friendly and stable supply chain.

As such, we do not merely comply with regulations, but strive to proactively adopt and respond to them. Korea Zinc's investments and efforts toward optimal carbon neutrality are strategic choice for our future and central to our new sustainable management model. Looking ahead, we are committed to strengthening our competitive edge in the low-carbon business landscape and aim to be a global leader in carbon reduction both in non-ferrous metal smelting and new business ventures driven by Troika Drive. As we work move forward, we anticipate the continued interest and support of our stakeholders on our sustainability journey.

Korea Zinc refines today to shape the value of a tomorrow.

Thank you.

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Overview

Introduction of Korea Zinc

Korea Zinc is Korea's leading non-ferrous metal refining company. By leveraging the wealth of experience and expertise that it has accumulated over the past 50 years, the company is expanding its business portfolio into renewable energy such as green hydrogen, resource recycling, and secondary battery materials.

Name of the Company	Korea Zinc Co., Ltd
Foundation	August 1st, 1974
CEO	Ki D. Park, Tae W. Jung
No. of Employees	1,878*
Headquarters	542, Gangnam-daero, Gangnam-gu, Seoul, Republic of Korea
Onsan Refinery	139, Ijin-ro, Onsan-eup, Ulju-gun, Ulsan
Industry	Total non-ferrous metal smelting
Website	www.koreazinc.co.kr

*The number of employees as of December 31 (end date) of the current year, excluding the number of retired employees and registered executives. It differs from the number of employees in the "Social Performance" data in this report.

Management Philosophy

Management Philosophy



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Milestones



○ Foundation

- 1974**
 - Korea Zinc Co., Ltd. founded
- 1978**
 - Completed construction of zinc refinery
- 1986**
 - Completed construction of lead refinery
- 1990**
 - Listed on the Korea Exchange

○ Growth

- 1992**
 - Completed construction of DRS lead refinery (135,000 tons of lead)
- 1993**
 - Completed construction of the zinc sulfide plant (400 tons)
 - Completed construction of cogeneration power plant (43,000KW of electricity, 175 tons/hr of steam)
- 1994**
 - Completed construction of direct leaching factory
- 1995**
 - Completed construction of Fumer Factory 1
- 1997**
 - Established SMC in Australia
- 2000**
 - Completed construction of TSL plant
- 2004**
 - Completed construction of copper refinery (20,000 tons of copper)

○ Global Advancement

- 2015**
 - Completed construction of the 2nd non-ferrous metal complex (420,000 tons of lead)
- 2016**
 - Acquired Zinc Oxide Corporation
 - Established Townsville Logistics in Australia
- 2017**
 - Established Zinc Oxide Corporation Vietnam
- 2018**
 - Established Townsville Marine Logistics
- 2019**
 - Facility investment for zinc preparation process rationalization

○ Global Growth

- 2020**
 - Completed construction of LNG combined plant
 - Established KZAM Corporation, a subsidiary
- 2021**
 - Established Ark Energy in Australia
 - Acquired Epuron, a renewable energy developer
 - Established Pedalpoint Holdings in the USA
- 2022**
 - Established Korea Precursor Corporation (KPC)
 - Acquired electronic waste recycling company Igneo Holdings in the USA
 - Acquired Steel Cycle SC (formerly, GSDK), a steel dust recycling company
- 2023**
 - Began construction of an all-in-one nickel refinery

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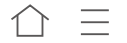
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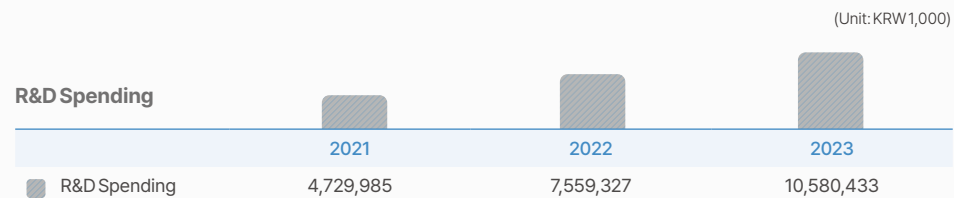
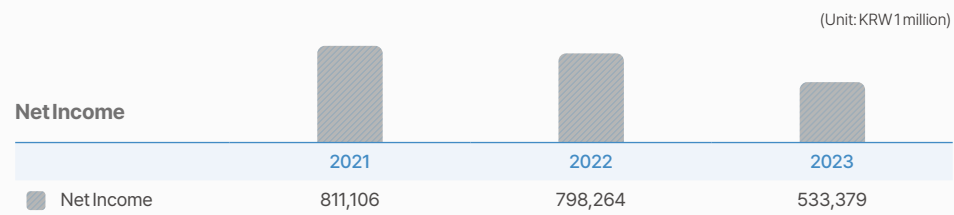
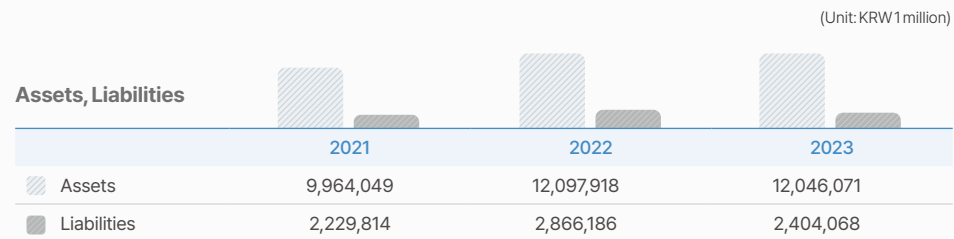
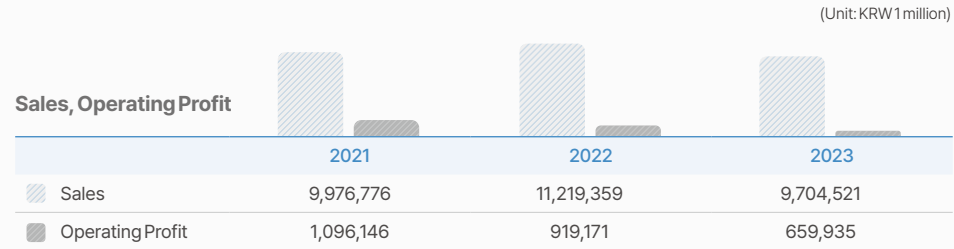
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Key Business Performance

Key Financial Performance Over the Past Three Years(Consolidated)



ESG Management Performance in 2023



Included in DJSI Korea index for two consecutive years



2022 Sustainability Report honored with LACP 2023 Platinum Award

Environmental



Total air pollutant emissions reduced by 11% compared to the previous year (55% reduction compared to 2019)



Carbon Trust carbon footprint certification for zinc, silver, and copper acquired

Social



Self-diagnosis conducted for 29 suppliers, and due diligence completed for 3 suppliers



Achieved 0.49 in integrated accident rate



Employee and partner lost work hours reduced by 38% compared to 2022



Invested 245.4 billion KRW for occupational safety and health



A worksite without labor-management disputes for 36 consecutive years



Received the highest grade of "Corporate Social Responsibility in the Community" from the Ministry of Health and Welfare and Korean Council on Social Welfare



Acquired TISAX Level 3 certification

Governance



Appointed a compliance officer



Distributed an interim dividend

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Global Network

* The percentage next to the affiliate name refers to the shares of Korea Zinc Co., Ltd. The affiliates are selected as the companies most connected to Korea Zinc's ESG management. Please refer to the Annual Report for a full list of subsidiaries.

[Annual Report](#)

Overseas Shares	
Townsville Marine Logistics Pty Ltd, based in Australia	100%
Townsville Logistics Pty Ltd, based in Australia	100%
Zinc Oxide Corporation (Thailand) Ltd, based in Thailand	100%
Pedalpoint, LLC based in the U.S.	100%
Sun Metals Holdings Ltd, based in Australia	100%
Zinc Oxide Corporation Vietnam LLC, based in Vietnam	100%

Domestic Shares	
KZAM Corporation	100%
KZ Green Tech Co Ltd	100%
Sorin Information Technology Co Ltd	33%
KZX Co Ltd	100%
Steel Cycle Co Ltd	100%
KEMCO Co Ltd	73%
Sorin Corporation	50%

Korea	
• KZX Co., Ltd.	Operation of construction equipment
• KZ Green Tech Co., Ltd.	Supply of electricity, gas and steam
• KZAM Corporation	Manufacturing and sales of copper foil
• KEMCO Co., Ltd	Manufacturing and sales of nickel sulfate and battery components
• Korea Precursor Corporation (KPC)	Manufacturing and sales of precursors for secondary battery materials
• Steel Cycle Co., Ltd.	Recycling and sales of non-ferrous metal
• Steel Cycle SC Co., Ltd.	Recycling and sales of non-ferrous metal
• Young Poong Precision Corporation	Design and production of acid-resistant pump, steel structures/design, production, and trade of general industrial machinery
• Sorin Corporation	Export of non-ferrous metals
• Sorin Information Technology Co., Ltd.	Network, SI, and IT solution business and software and hardware supply services
• Alantum Corporation	Manufacturing and sales of metal foam

Canada

- Pan-Pacific Metal Mining Corporation Mining rights development business

USA

- Pedalpoint Holdings, LLC Metal dismantling and sorting, and metal recycling business
- Igneo Holdings, LLC Metal dismantling and sorting, and metal recycling business

Peru

- ICM Pachapaqui S.A.C Mine development

Thailand

- Zinc Oxide Corporation (Thailand) Ltd Non-ferrous metal import and export business

Vietnam

- Zinc Oxide Corporation Vietnam LLC Hazardous waste (EAFD: Electric Arc Furnace Dust) treatment

Australia

- Sun Metals Corporation Pty Ltd Manufacturing, and sales of zinc
- Sun Metals Holdings Ltd Manufacturing, and sales of zinc
- Ark Energy Corporation Pty Ltd Renewable energy and hydrogen business development
- Ark Energy MacIntyre Pty Ltd Wind power generation
- Ark Energy H2 Pty Ltd Hydrogen business development
- Townsville Logistics Pty Ltd Transportation service
- Townsville Marine Logistics Pty Ltd Transportation service



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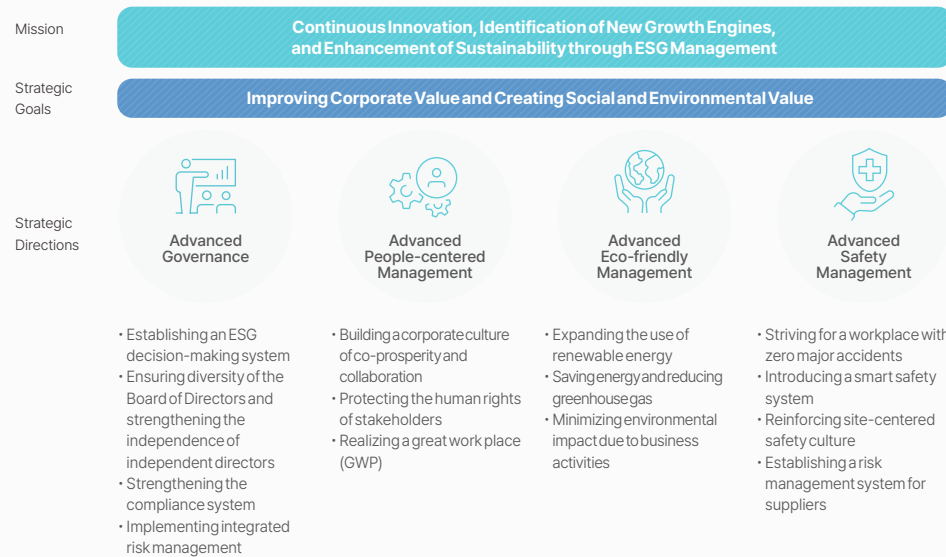
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ESG Management and Risk Management System

Korea Zinc's Sustainability Management Strategy

Korea Zinc operates its business by establishing four strategic directions under its mission of "Continuous Innovation, Identification of New Growth Engines, and Enhancement of Sustainability through ESG Management." The four strategic directions, which are "Advanced Governance," "Advanced People-centered Management," "Advanced Eco-friendly Management," and "Advanced Safety Management," aim not only to increase the corporate value but also to create positive social and environmental values.



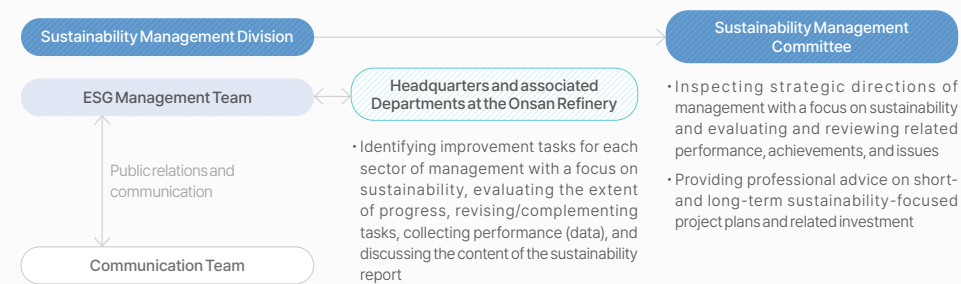
Korea Zinc has established sustainability management goals and prepared implementation plans. Major achievements of the previous year included obtaining Green Metal carbon footprint certification and establishing a supply chain management system. This year, we will operate a more advanced and expanded supply chain/purchasing system and pursue other new goals.

Sustainability Management Goals	Action Plans
Enhancing corporate value	Proactive response to global ESG initiatives and responsible social Contribution
Laying the groundwork for green metal	Carbon footprint certification and effective management of clean energy
Fostering collaborative prosperity with suppliers	Establishment of supply chain management and data system for purchasing raw materials and products
Achieving customer satisfaction, and strengthening mutual trust	Friendly and responsive customer service that attentively listens to customers' voices

ESG Management System

Korea Zinc's Sustainability Management Division consists of the ESG Management Team, and Communication Team, and the division's activities and related details are regularly reported to the Sustainability Management Committee, an advisory body directly under the CEO. Sustainability management-related issues such as major achievements, implementation plans, materiality assessment results, and sustainability reports in different ESG categories follow a series of reporting/decision-making systems that start with a preliminary review by the committee and end with the final approval of the CEO. The ESG Management Team is an organization that comprehensively manages sustainability management-related tasks, activities, and performance at the corporate level, and is dedicated to carrying out sustainability management-related tasks. The Communication Team, which conducts the media and public relations, is in charge of overall communication with external stakeholders at the Sustainability Management Division.

Sustainability Management Organizational Chart (as of the first half of 2024)



Sustainability Management Committee Sessions

In 2023, the Sustainability Management Committee was held four times. At the 2nd meeting, the materiality assessment was reported, and on a quarterly basis, agenda items such as green metal, carbon neutrality roadmap, and establishment of a social contribution division were presented based on major performance reports. At the 4th meeting, major strategic directions for occupational safety and health were reported so that the environment and safety and health could reflect sustainability, and the energy sector improvement plan for 2024 was also reported.

Session	Agenda	Date	
1st	<ul style="list-style-type: none"> Report on major activities in 2022 	<ul style="list-style-type: none"> Major activity implementation plan for 2023 	Feb. 15, 2023
2nd	<ul style="list-style-type: none"> Report on green metal progress status and plan Materiality assessment in Sustainability Management Report 	<ul style="list-style-type: none"> Review of sustainability management status of subsidiaries and affiliates 	May. 11, 2023
3rd	<ul style="list-style-type: none"> Report on carbon neutrality roadmap establishment plan 	<ul style="list-style-type: none"> Report on plans to establish a sustainable management data management system 	Aug. 10, 2023
4th	<ul style="list-style-type: none"> Review of revisions to the Sustainability Management Committee Regulations Report on major strategic directions for occupational safety and health 	<ul style="list-style-type: none"> Report on energy sector improvement plan Review of establishment and operation of social contribution division 	Dec. 12, 2023

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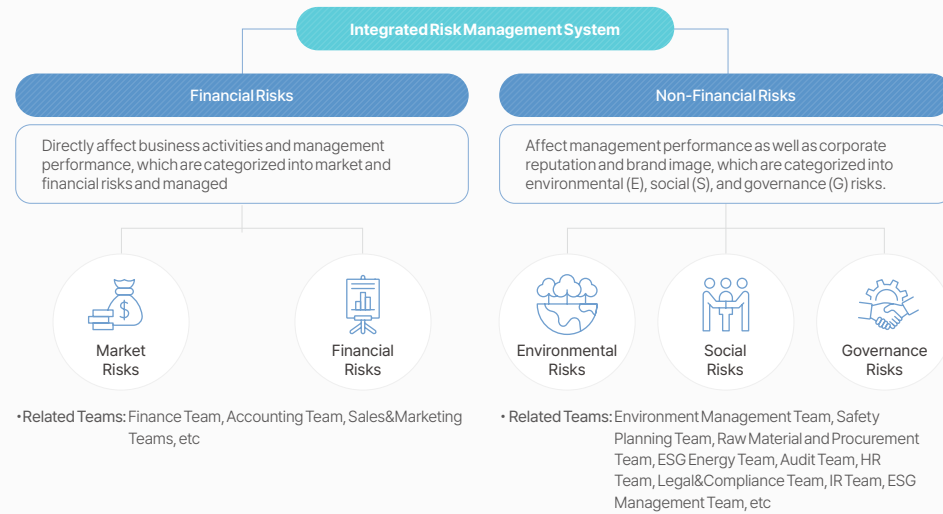
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ESG Management and Risk Management System

Risk Management System

Korea Zinc manages financial risks that have a direct impact on business activities and management performance, as well as non-financial risks that involve environmental and social issues. Financial risks are comprehensively managed by the Finance, Accounting, and Sales&Marketing Teams. Specifically, the Finance Team handles risks related to hedging against exchange rates and interest rates. The Accounting Team manages market volatility risks related to business plan benchmark indicators, while the Sale&Marketing Teams handle price fluctuation risks for raw materials and finished products. Non-financial risks are managed by various teams according to their specific functions: the Environmental Management Division(environmental risks), the Safety Management Department(safety risks), the Raw Materials and Procurement Divisions(supply chain risks), the ESG Energy Team(climate risks), the Audit and HR Teams(ethics), the Legal & Compliance Team(legal risks), and the IR Team(governance risks). The ESG Management Team undertakes comprehensive management tasks related to the supply chain and climate change, including supply chain due diligence, responsible minerals reports preparation, a carbon neutrality roadmap establishment, and the carbon footprint measurement. To identify the company's non-financial risk status, the team annually gathers and discloses non-financial risk information and statuses from each division.



Internal Accounting Management System

The Financial Supervisory Service announced in a press release in June 2023 that it would allow a postponement of the introduction of consolidated internal accounting controls for listed companies worth more than KRW 2 trillion. However, Korea Zinc implemented internal accounting controls for its headquarters and domestic and overseas subsidiaries without delay through the integrated internal accounting management system that it had built and operated preemptively. In 2024, the company plans to select a scope and implement internal accounting controls thoroughly according to the guidelines of the Financial Supervisory Service.

Non-financial Risk Management

Korea Zinc comprehensively manages both financial risks, which directly impact business activities and performance, and non-financial risks, which include environmental and social issues. Each team is responsible for managing relevant risks, and the ESG Management Team annually assesses and discloses the status of these managed risks.

[Sustainability Risk Management Policy](#)



Water Stress

In order to regularly manage water stress, Korea Zinc has, since 2023, been using a risk tool called WRI Aqueduct to measure water risk exposure where Onsan Refinery, its main production site, is located. We check the level of water stress by scenario from now to 2030 and 2050, and based on the results, we plan management activities to manage Onsan Refinery's industrial water usage at an appropriate level every year and minimize the impact on the local community.

Key worksite	Location	Water Stress		
		Present (2024)	2030	2050
Onsan Refinery	Uiju-gun, Ulsan Metropolitan City	Medium - High (2-3)	- Optimistic: Medium-high (20-40%) - Pessimistic: Medium-high (20-40%)	- Optimistic: Medium-high (20-40%) - Pessimistic: Medium-high (20-40%)
Number of worksites	Number of worksites in areas with high water stress	Ratio of worksites in areas with high water stress		
2	0	Not applicable		

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NAVIGATING TOMORROW

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Drive for Our Sustainable Future

Korea Zinc's Business Strategies

Refining Business

Korea Zinc aims to secure growth engines and sharpen its competitive edge in smelting. By promoting self-generation by operating an LNG combined cycle power plant, the company plans to reduce power cost, which is close to 30% of manufacturing cost. The company also plans to expand production by implementing changes and streamlining processes in a few plants.

TD Business

Korea Zinc is pursuing TD (Troika Drive), a new project that will drive the company's growth for the next 50 years. Our company presented a blueprint for new TD businesses until 2033 through a corporate briefing session. We aim to achieve total sales of KRW 12.2 trillion across the three divisions within ten years.

2033 Prospects*



*Revenue is based on a simple sum before intercompany elimination. For more details, please refer to the Investor Day presentation.

Korea Zinc's Sustainability Strategy

Korea Zinc's sustainability management mission is "Continuous Innovation, Identification of New Growth Engines, and Enhancement of Sustainability through ESG Management," and the company is pursuing various activities in the categories of environmental, social, and governance for the next 50 years.

Environmental

By measuring and reducing the carbon footprint of major products by 2030, the company is implementing the "Green Metal Project" to produce low-carbon and zero-carbon metals by 2050. In addition, we plan to achieve carbon neutrality by 2050 through the conversion to hydrogen mobility at the Onsan Refinery and the operation of a combined cycle power plant for hydrogen co-firing among others.

Social

To beef up the safety management system, Korea Zinc has increased safety-related investment costs by more than 135% in 2023 from 2022. By diagnosing safety practices, establishing an improvement roadmap, and implementing improvements, the company will eliminate work risk factors and spread safety culture across the company and its suppliers by 2027. Furthermore, we are minimizing risks related to various stakeholders, including suppliers and local communities, through supply chain management and the advancement of human rights management.

Governance

Korea Zinc will improve its shareholder return policy to enhance shareholder value. We introduced interim dividends and maintained a high dividend policy to enhance shareholder rights. Additionally, we established a plan to purchase treasury shares and completed the cancellation of these shares in 2023.



Establishing Mission and Core Values for the Next 50 Years

Throughout 2023, Korea Zinc carried out the Big Question project to establish mission and core values for employees. Korea Zinc's new mission and core values will be unveiled in the second half of 2024, marking its 50th anniversary.

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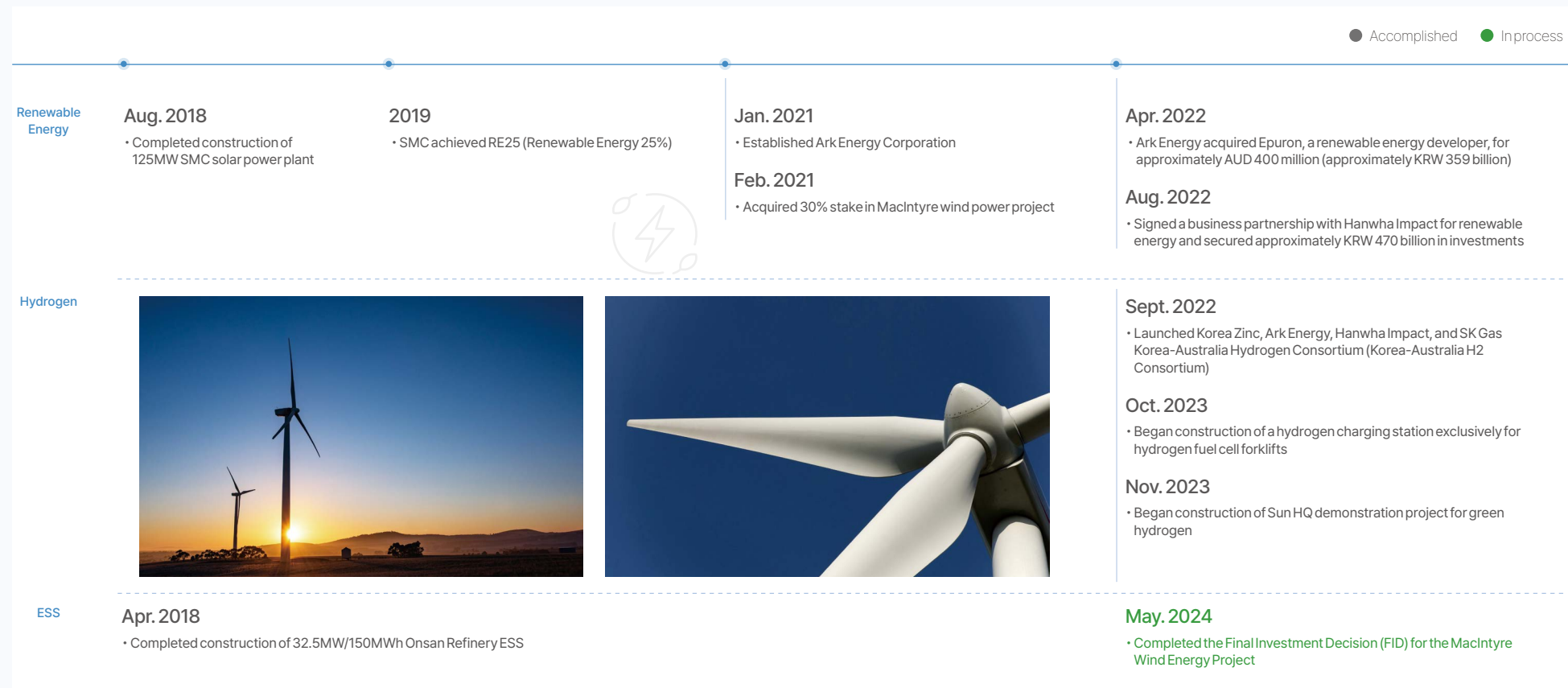


Renewable Energy and Hydrogen Business

Realizing RE100 Carbon Neutrality

Since declaring RE100, a first in the South Korean smelting industry, Korea Zinc has been expanding its renewable energy and hydrogen business to achieve energy transition and carbon neutrality. Its Australian subsidiary, SMC completed the construction of a 125MW solar power plant, the largest in Australia, in 2018 and has emerged as an eco-friendly business, meeting approximately 25% of its electricity demand through solar power plants in 2019. Korea Zinc also laid the foundation for the development and introduction of renewable energy into Korea through equity investment in the MacIntyre project, the largest wind power plant in Australia.

Renewable Energy and Hydrogen Business History and Roadmap



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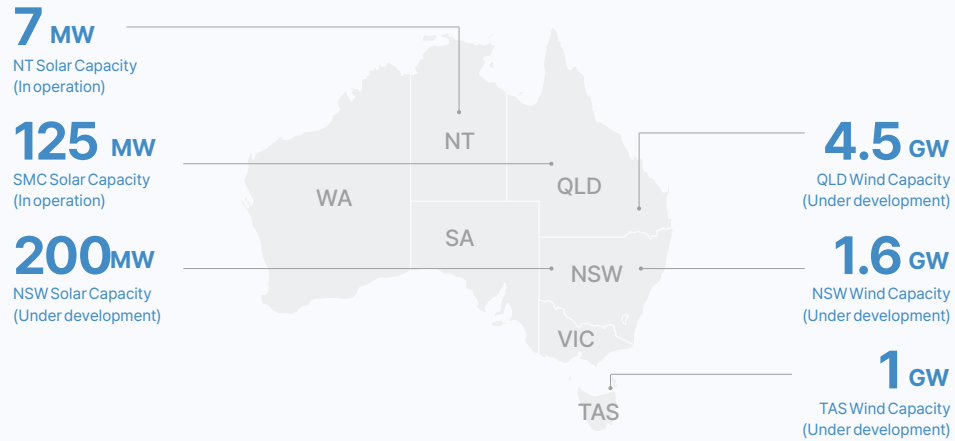
Renewable Energy and Hydrogen Business

Green Hydrogen Production

Korea Zinc is the first South Korean company to commercially produce green hydrogen overseas, and the company plans to start producing green hydrogen using solar power plants in the first half of 2024. Ark Energy, its subsidiary, completed the commissioning of a green hydrogen plant in the second half of 2023 and is targeting an initial production volume of 140 tons per year.

Korea Zinc plans to gradually expand production, eyeing 200,000 tons per year by 2030. By establishing a green hydrogen value chain through the Korea-Australia H2 consortium established by Hanwha Impact and SK Gas, the company is working to acquire more than 1 million tons of green ammonia into Korea. As green hydrogen is being introduced in Korea, we plan to contribute to the energy transition at our worksites in the country and ultimately revitalize the hydrogen economy and pioneer new markets.

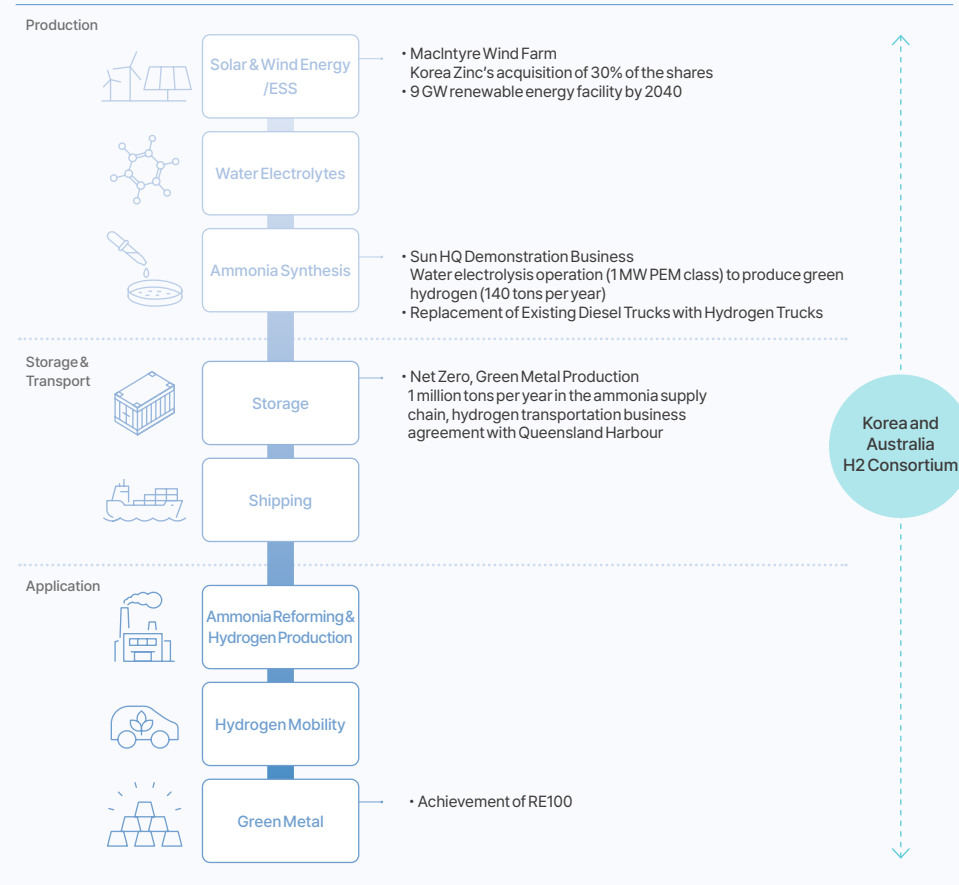
Renewable Energy Facilities in Operation and under Development



Building a Green Hydrogen Value Chain

Hydrogen has been recognized as the energy source that will drive the future of the energy industry. Korea Zinc is constructing a value chain rooted in renewable energy, which encompasses the production, storage, transportation, and export of hydrogen. The company is striving to generate new demand and penetrate new markets.

Green Hydrogen Value Chain



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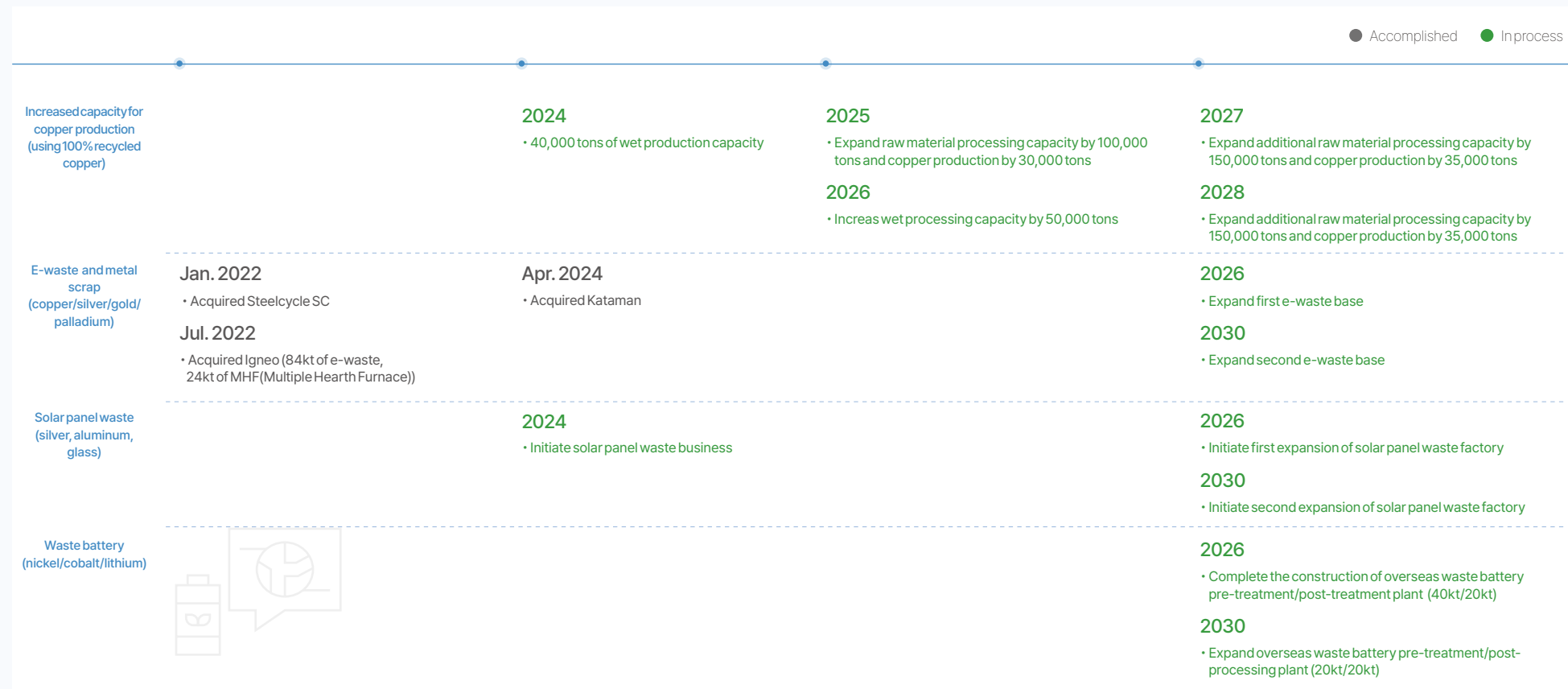


Resource Recycling Business

Resource Recycling Business Model

Korea Zinc is realizing a circular economy by establishing an urban mining model that recycles discarded raw materials. This is a green business that collects secondary materials such as steelmaking dust, electronic waste (e-waste) and waste batteries to extract valuable metals from them, and then re-injects them into the manufacturing of products such as electric copper and secondary battery materials to minimize landfill byproducts. In 2022, we acquired Igneo, an electronic waste company in the U.S., through its subsidiary Pedalpoint Holdings (the U.S.), and Steelcycle SC, a steel dust recycling company in Korea, to advance our resource recycling business. In order to ensure a stable supply of copper to accommodate the expansion of our copper production facilities, we acquired Kataman Metals, a scrap metal trading company, in 2024.

Resource Recycling Business History and Roadmap



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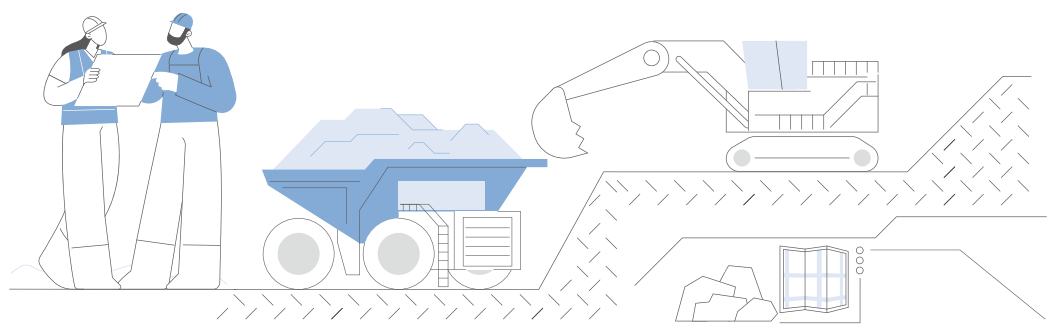
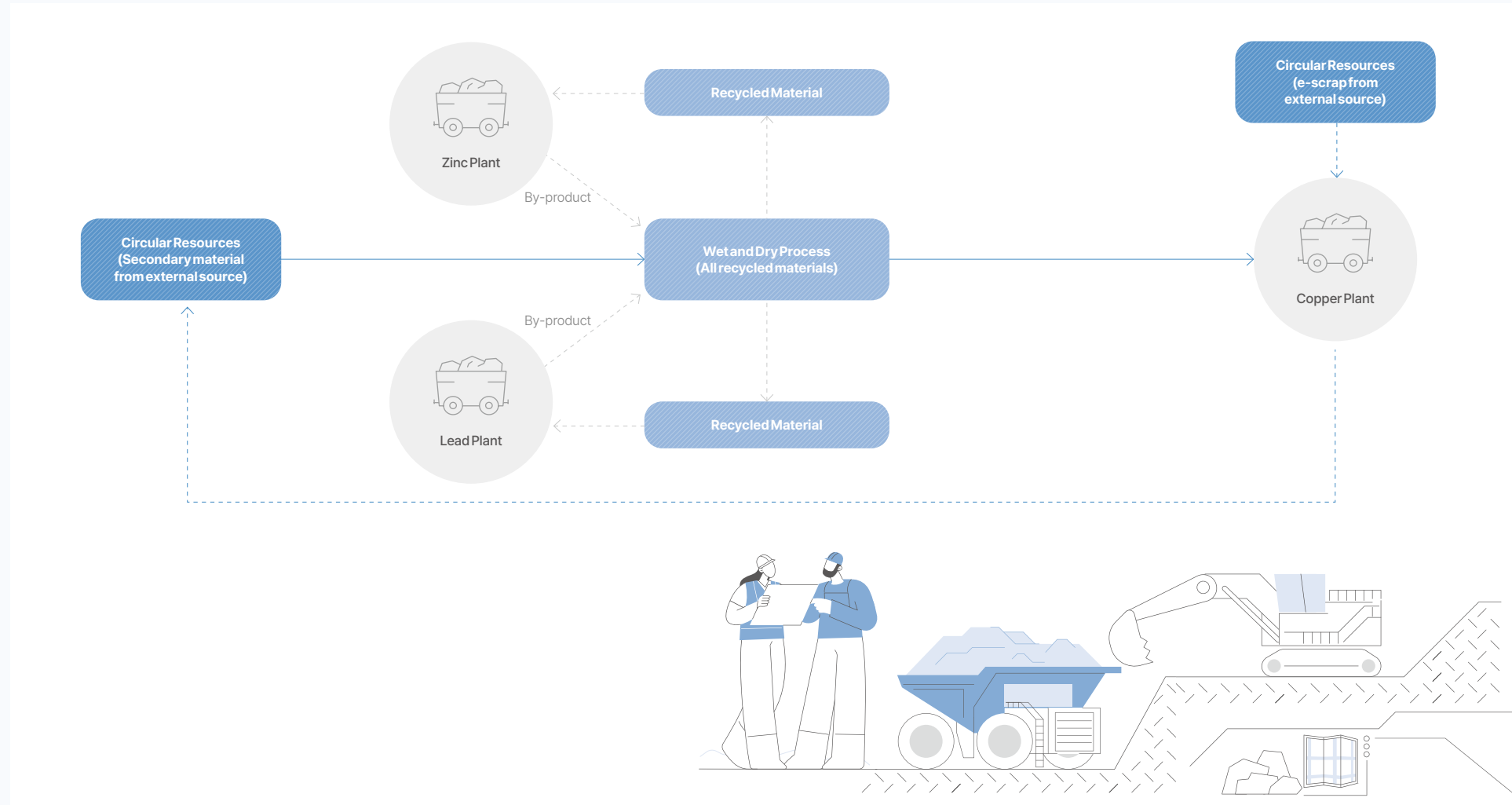
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Resource Recycling Business

Resource Recycling Process



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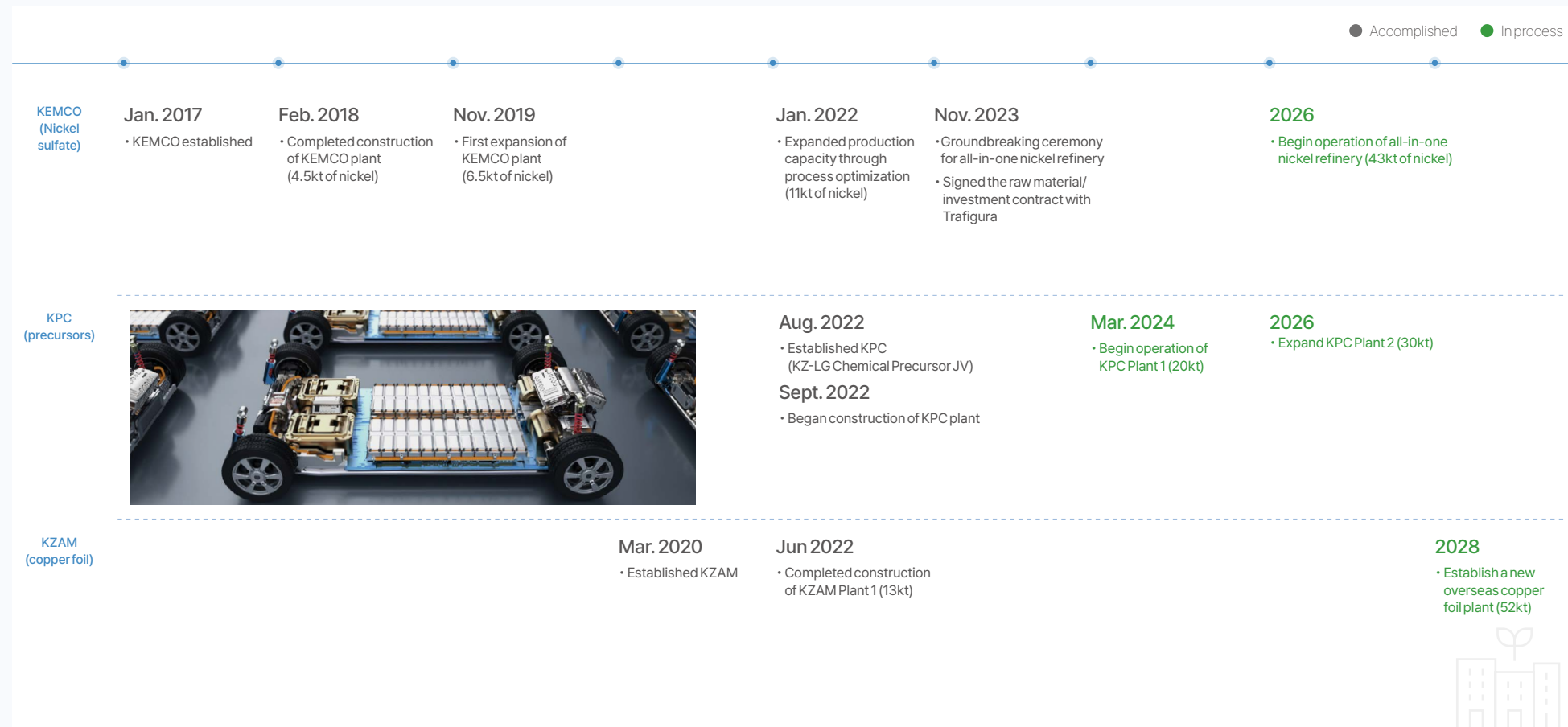


Secondary Battery Materials Business

Introduction of Secondary Battery Materials Business

Korea Zinc is working to make secondary battery core materials, which are essential for the production of eco-friendly electric vehicles. Based on our unrivaled smelting technology, we focus on building a value system to ensure a stable supply of most battery materials to battery manufacturers. Our subsidiaries KZAM and KEMCO have begun producing copper foil and nickel sulfate respectively, and Korea Precursor Company (KPC), a joint venture, is preparing to produce precursors.

Korea Zinc also began construction of a nickel refinery in November 2023. The "all-in-one" nickel refinery, which processes a variety of raw materials such as concentrates and black powder extracted from waste batteries, will boast the ability to produce high-purity nickel in an amount sufficient to produce 1 million electric vehicles, including existing production capacity, when completed in 2026. It is expected to contribute to improving the competitive edge of K-battery by reducing dependence on imports of core cathode materials.



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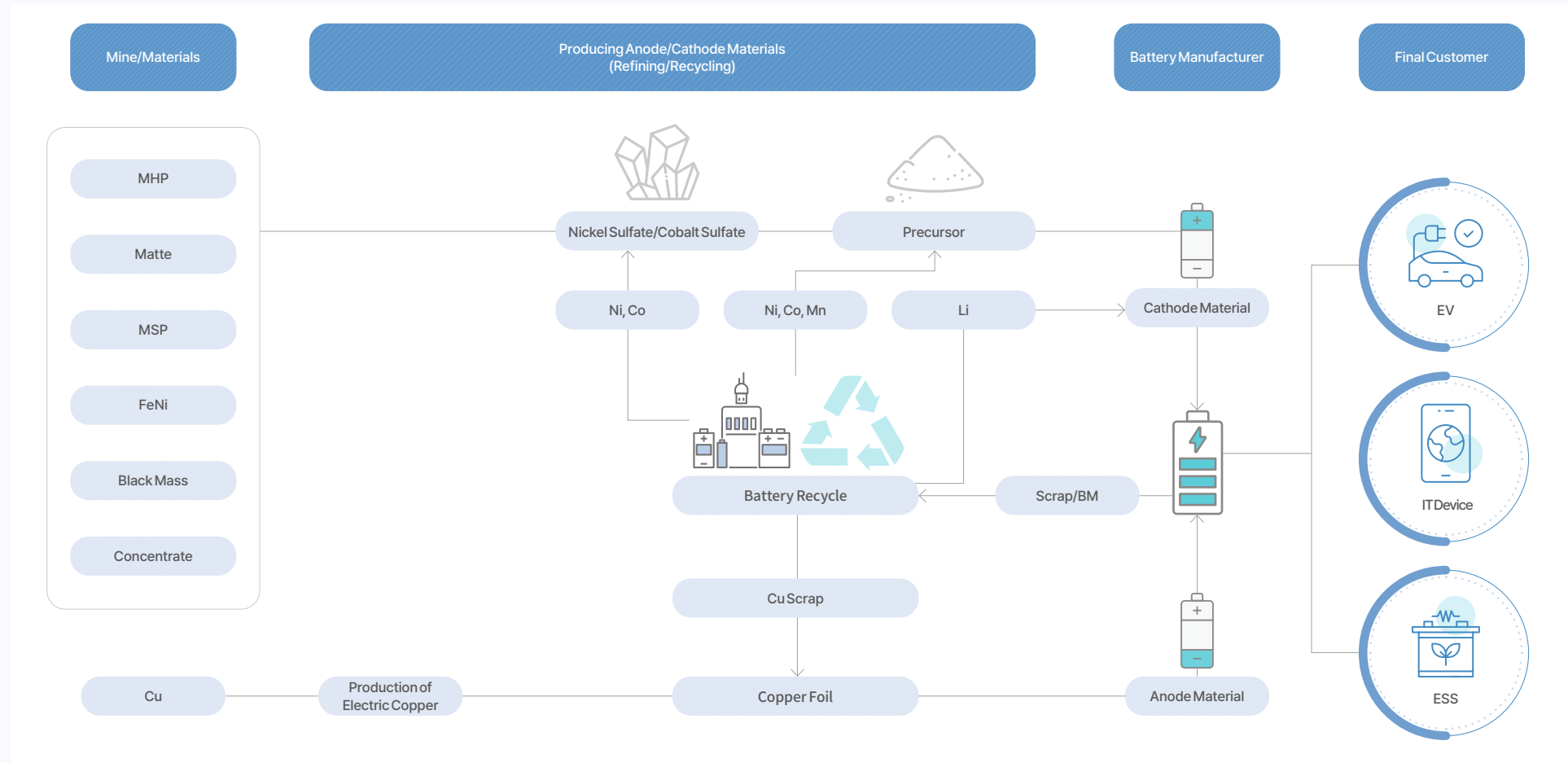
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Secondary Battery Materials Business

Korea Zinc Secondary Battery Value Chain

Korea Zinc extracts and refines raw materials from mines and other sources to produce anode and cathode materials for secondary batteries. By tapping into our high technology and production scale, we aim to dominate the downstream industries of eco-friendly mobility such as electric vehicles, IT devices, and ESS.



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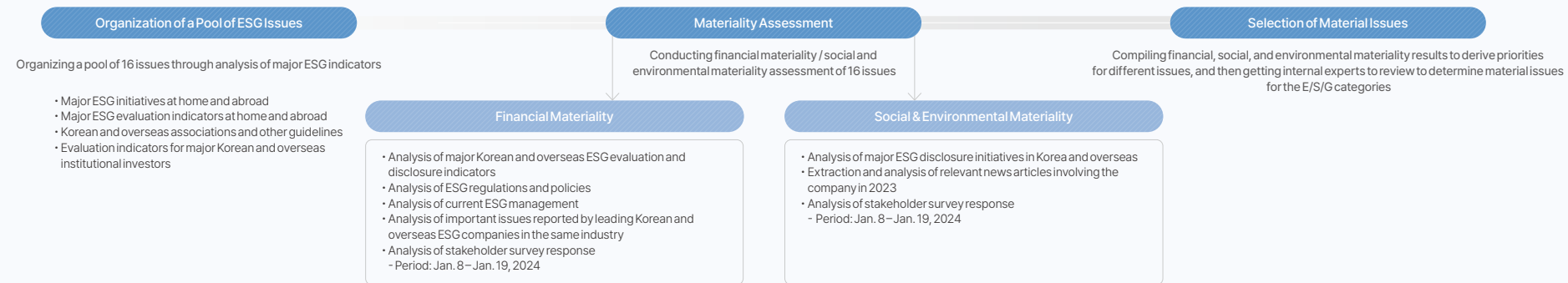
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Double Materiality

Assessment Process

Since the introduction of the double materiality in 2022, Korea Zinc has advanced its methodology to more effectively analyze the financial, social, and environmental materiality of each issue. From forming the issue pool to the actual materiality assessment process, the company has reviewed as many industry-specific issues as possible by significantly expanding industry initiatives and institutional investor evaluation indicators compared to the previous year. By diversifying the methods of measuring the impact of Korean and foreign ESG-related policies and regulations, we have also improved the accuracy of assessing the impact of related issues.



Findings

Korea Zinc has identified the top five issues as the final material issues and identified the scope of influence of each major issue, whether there are actual/potential opportunities/risks, and the expected occurrence point of positive/negative impacts. In addition, the company received final review and approval from the Sustainability Committee, performed activities with the relevant issues as the focal point of the company's ESG management, and organized the report with a focus on related achievements. The results of Korea Zinc's double materiality assessment were confirmed after a final review by the Sustainability Management Committee. The top material issues newly added compared to the previous year are "Air Pollutant Management" and "Supply Chain ESG Management." We aim to proactively identify and manage the impact of our business activities in a variety of ways. Ranked 5th among the top 5 issues derived from Korea Zinc's double materiality assessment of the previous year: climate change, worksite safety and health, labor (labor-management relations, employee happiness, etc.), minimizing environmental impact (air pollution, water resources, etc.), and environmental risk management. The issues that moved out of the top five are labor and environmental risk management, and the issues that moved into the ranking are supply chain sustainability and ethics/compliance management.

Category	No.	Issue	Impact Materiality				Financial Materiality				Double Materiality		
			Social & Environmental Impact (Inside-out)	Positive/Negative	Actual/Potential	Scope of Impact				Financial Impact (Outside-in)		Opportunity/risk	Time Horizon
						Worksite	Supply Chain	Customer	Local Community				
Environmental	1	Climate change response and energy transition	Direct/indirect greenhouse gas emissions or reduction through production at the worksite	Positive	Potential	●			●	Response costs incurred due to tightened greenhouse gas emission regulations (or generating non-operating revenue through sales of emission permits)	Risk	Long-term	●●●
Environmental	2	Air pollutant management	Minimizing environmental impact by managing worksite air pollutant emissions and responding to environmental laws and regulations	Negative	Actual	●			●	Fines incurred due to violation of environmental laws and regulations related to air pollutants	Risk	Mid-term	●●●
Social	3	Worksite safety and health	Ensuring the safety of internal and external stakeholders by strengthening occupational safety and health management capabilities within the worksite	Positive	Actual	●	●		●	Occurrence/prevention of fines and punishments due to violations of occupational safety and major disaster-related laws	Risk	Mid-term	●●●
Social	4	Supply chain sustainability	Management of risks related to major Korean and overseas supply chains, such as conflict minerals and environmental pollution	Positive	Actual		●			Reduction in trust and customer withdrawal due to violations of due diligence regulations on the raw materials procurement process, including the use of conflict minerals	Opportunity	Mid-term	●●●
Governance	5	Ethics/compliance management	Prevention of corruption, embezzlement, and illegal activities through internal controls and increasing corporate transparency	Positive	Actual	●	●	●	●	Occurrence/prevention of fines and punishments due to violations of ethical management-related laws, such as corruptions and embezzlement	Opportunity	Mid-term	●●●

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Double Materiality

Findings

Korea Zinc reports the details of its response plans, major activities, and annual goal plans for the top five material issues.

Material Issue	Scope of Impact	Response Plan	Major Activities in the Report	Goal/Plan
1 Climate change response and energy transition	Worksites, local communities	Stakeholders believe that responding to climate change will have a significant impact on Korea Zinc in financial, social and environmental aspects. Accordingly, Korea Zinc recognizes climate change as an opportunity from a long-term perspective and will expand its eco-friendly portfolio and resource recycling business, increasing the use of new and renewable energy at its worksites.	PP.21-25) Special Page 1 Climate Change Response and Energy Transition <ul style="list-style-type: none"> Reduction of energy-related expenses through energy transition, such as low-carbon energy and zero-carbon energy transition Increased profits through renewable energy production and sales Increased global sales profits through product LCA and expansion of production of low-carbon products 	<ul style="list-style-type: none"> Carbon neutrality and RE100 by 2050 Construction of a hydrogen charging station and introduction of hydrogen forklifts at the Onsan Refinery in 2024
2 Air pollution management	Worksites, local communities	Korea Zinc recognizes that risks arising from failure to manage air pollutants can have a significant impact on its worksites and local communities. Accordingly, the company is upgrading its facilities to observe and monitor emissions, and is continuing its efforts through the promotion of integrated environmental permitting tasks.	PP.26-28) Special Page 2 Air Pollution Management <ul style="list-style-type: none"> Operation of tightened internal emission standards compared to legally permitted standards Review of appropriate prevention facilities for facilities that exceed the self-measurement standards. Elimination of risks through inspection of overall facilities at the worksite, including discharge outlets 	<ul style="list-style-type: none"> Integrated Environmental Permit Completion Rate Goals: 33% achieved in 2023, 61% to be achieved in 2024 Fine dust emission reduction goal: reduce 1,012 tons, equivalent to 36% from 2016, the base year
3 Worksite safety and health	Worksites, supply chains, local communities	There are four risks linked to worksite safety and health issues: regulatory risk, supplier risk, productivity risk, and emergency risk. Each risk can result in financial loss due to failure to respond, and more than anything else, they can harm the health and safety of Korea Zinc and its suppliers' employees. Accordingly, Korea Zinc is striving to proactively prevent safety and health accidents through semi-annual inspections in view of the Serious Accidents Punishment Act and safety and health campaigns.	PP.29-33) Special Page 3 Occupational Safety and Health <ul style="list-style-type: none"> Conducting semi-annual inspections in view of the Severe Accidents Punishment Act Improvement of the grade in process safety management implementation status evaluation Implementation of partner company safety and health council Conducting employee stress assessments Preparation of government quarantine guidelines, storm and flood damage manuals Implementation of experiential safety training 	<ul style="list-style-type: none"> Occupational safety and health goals: 0.49 total accident rate achieved in 2023. 0 serious accidents to be achieved
4 Supply chain sustainability	Supply chains	Supply chain sustainability is a serious issue that can lead to a decline in the company's reputation and resultant financial losses due to the use of conflict minerals. Korea Zinc recognizes that supply chain sustainability issues present opportunities and conducts supply chain self-diagnosis and on-site inspections to proactively respond to risks that may arise within the supply chain and manage Korea Zinc's reputation.	PP.34-37) Special Page 4 Supply Chain Sustainability <ul style="list-style-type: none"> Screening sanctions related to countries, companies, etc. Operation of conflict minerals management process and publication of annual purchase due diligence report Receipt of a pledge to comply with the Supplier Code of Conduct Expansion of the scope of self-diagnosis and inspection 	<ul style="list-style-type: none"> Supply chain management mid-/long-term goals: Self-assessment to be conducted for 70 suppliers, On-site inspection and consulting for implementation of improvements to be provided to 20 suppliers
5 Ethics/compliance management	Worksites, supply chains, customers, local communities	Various stakeholders including worksites, supply chains, and local communities are in the scope of impact of the ethics/compliance management issues. Korea Zinc has established an internal controls system to prevent related risks and provides legal advice and training to its employees.	PP.38-40) Special Page 5 Ethics/Compliance Management <ul style="list-style-type: none"> Operation of the report handling process Receipt and investigation of fraud reports Conducting document-based and on-site audits of Korea Zinc's worksites 	<ul style="list-style-type: none"> All employees completed anti-corruption training

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#1. Climate Change Response and Energy Transition

Importance of Issue Management

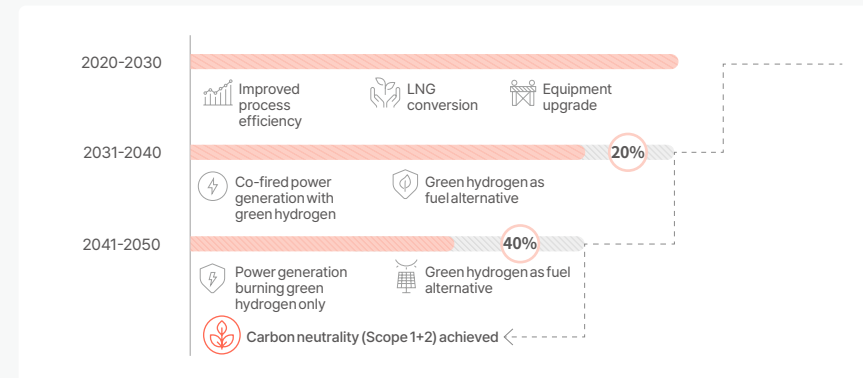
Impact Materiality (inside-out)

Direct/indirect greenhouse gas emissions or reduction through production at the worksite

Financial Materiality (outside-in)

Incurring response costs due to stricter greenhouse gas emission regulations (or generating non-operating revenue through sales of emission permits)

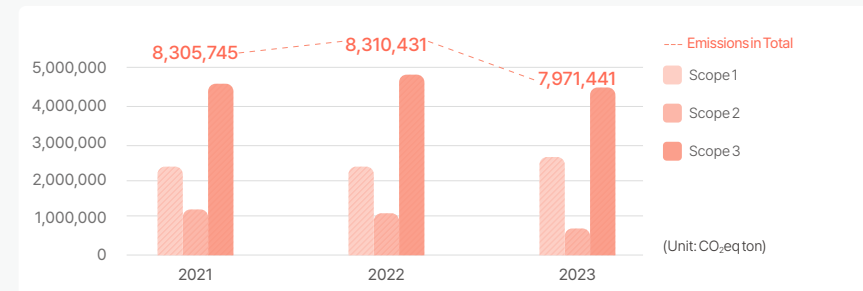
Carbon Neutrality Roadmap



Major Achievements in 2023

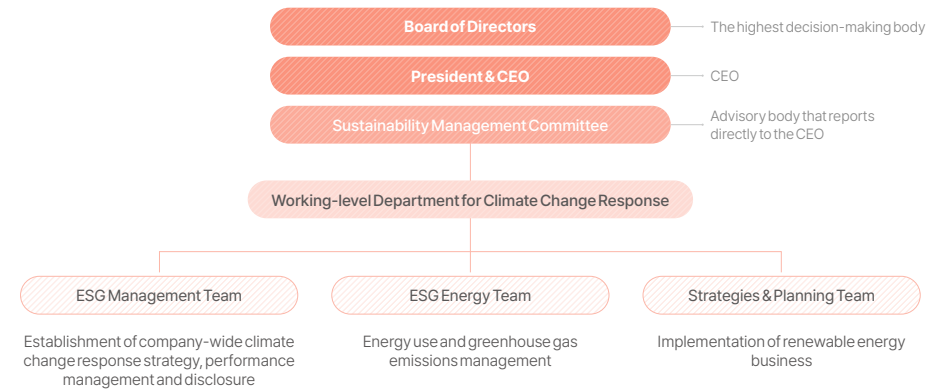
- 277MW in power generation secured from MacIntyre wind farm in Australia, operation of a 125 MW solar power plant in Australia

Annual greenhouse gas emissions



Governance

Korea Zinc integrates climate change risks into its company-wide risk management system. The company's Sustainability Management Committee is an advisory body that directly reports to the CEO. It supports climate change response duties and reports climate change-related projects, response strategies, activities, performance, and plans collected from the ESG Energy Team, ESG Management Team, and Strategies & Planning Team to the CEO. If an item related to climate change response poses a significant impact on business activities or requires board-level decision-making, the Sustainability Management Committee submits it as an agenda item in the regular or special board meetings.



A Word From Our Staff



Yul R. Jo
Senior Manager of ESG Energy Team

"Reducing energy use ensures both environmental and economic efficiency."

I am Senior Manager Yul R. Jo of the ESG Energy Team, which is in charge of managing Korea Zinc's greenhouse gas emissions and energy usage. Our ESG Energy Team carries out activities to reduce energy usage and carbon emissions through energy diagnosis, usage management, and reduction projects.

The export risk that is impacted by stricter international carbon regulations is one of the climate change response-related risks identified by the ESG Energy Team. To manage this risk, the company conducted a carbon footprint assessment for three of its products in 2023. In 2024, we will complete measuring the carbon footprint of the remaining items by upgrading the Scope 3 management level and sharpening the competitive edge of Korea Zinc products in the global market.

To reduce energy usage, the company is carrying out various activities such as improving old utility facilities, improving the efficiency of processes, and applying new technologies. Due to the nature of this particular work, collaboration across multiple departments and in various fields is essential. Thankfully, the work is made a lot easier due to a high level of active cooperation.

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#1. Climate Change Response and Energy Transition

Strategy

According to the TCFD recommendations, Korea Zinc divides climate change into physical risks and transition risks, and then measures the impact of climate change risks by using qualitative scenarios. Key physical risks include extreme weather and natural disasters, as well as transition risks arising from policy and market changes, such as EU battery regulations.. Financial impacts are largely divided into impacts on profit and loss, and impacts on the financial position.

In terms of impacts on profit and loss, we identify the main effects as the occurrence of compensation and restoration costs in the event of physical asset damage, and increased smelter operating costs due to flooding, abnormal heat, and other climate-related events. Impairment of physical assets is identified as a major impact on financial position.

Risk Management

Korea Zinc integrates climate change risks into its company-wide risk management system. We have designed response and management measures for each risk that we've identified. For example, we have revamped aging facilities to minimize damage due to natural disasters and also performed LCA on three major products to take advantage of the market transition to low-carbon products.

Risk/ Opportunity	Factor	Potential Financial Impacts	Time Horizon	Response and Management (Mitigation) Measures	2023 Performance
Energy source	Low carbon energy transition	Reduced annual energy-related costs by switching to and introducing low-carbon energy sources into the worksite	Short-term Mid-term Long-term	<ul style="list-style-type: none"> Korea Zinc plans to reduce carbon emissions through measures such as optimizing cooling water supply temperature, installing energy-saving cold tower fans, and rationalizing operating facilities. The company plans to reduce emissions by converting some of its energy to carbon-free (co-firing). The company plans to convert all the energy used by Korea Zinc and the Onsan Refinery to carbon-free energy sources, transitioning all their energy consumption to carbon-free sources. 	<ul style="list-style-type: none"> Completed the construction and commissioning of the first plant cooling tower (plant currently in operation)
Products and services	Manufacturing low-carbon products	Increased exports and profits by meeting global needs through manufacturing low-carbon products	Short-term Mid-term Long-term	<ul style="list-style-type: none"> Through the LCA, the company plans to quantify the carbon footprint and environmental impact of its key products. The company plans to acquire Carbon Trust, a carbon footprint certification, for major products and proceed with calculating product carbon emissions more objectively. The company will set reduction goals for Scope 1, 2, and 3 for each product through quantified figures and respond to increasing market needs by reducing emissions and producing eco-friendly green metal. 	<ul style="list-style-type: none"> Conducted LCA for zinc, silver, and copper Produce eco-friendly products as we work toward achieving the production energy intensity reduction goal (KEEP30)
		Increased profits through renewable energy production and sales	Long-term	<ul style="list-style-type: none"> Through SMC, its Australian affiliate, the company plans to not only convert its own energy to green hydrogen but also expand green hydrogen production, and respond to the needs of the renewable energy market through green hydrogen energy export in the long term. 	<ul style="list-style-type: none"> Began the integrated green hydrogen production and charging facility demonstration project (Sun HQ)
Physical	Natural disasters caused by extreme weather (floods, typhoons)	Costs incurred for repairing damage to facilities due to natural disasters and reduced production due to temporary process interruption	Short-term	<ul style="list-style-type: none"> To prevent damage to facilities and process interruptions due to natural disasters, Korea Zinc conducts facility inspections and repairs aging facilities every year. 	<ul style="list-style-type: none"> Renovated aging facilities at the Onsan Refinery
Policy and legal	Export-related environmental policy and legal risks	Imposition of carbon tax following the introduction of the European carbon border tax	Mid-term Long-term	<ul style="list-style-type: none"> As the number of items subject to carbon border tax is expected to continue to increase, the company will identify the current statuses of carbon tax responses in industries already included and analyze the impacts they may have on the company. In order to respond to the carbon tax in the long term, the company will reduce carbon emissions generated during the production process. 	
		Increased demand for carbon reduction due to EU battery regulations	Mid-term Long-term	<ul style="list-style-type: none"> Once the EU battery regulations are officially implemented, clear proof of carbon in the electric vehicle industry will be required. The company will actively review the carbon emissions calculation standards and reflect them when calculating the carbon emissions of its products. Since carbon emissions must be reduced to zero throughout the electric vehicle production process in the long term, the company will expand renewable energy and manage the supply chain to continuously reduce carbon emissions. 	
Market	Decrease in the proportion of emission permits allocated for free	Changes in business and operating costs due to a decrease in the proportion of greenhouse gas emissions rights allocated for free	Short-term Mid-term Long-term	<ul style="list-style-type: none"> In order to reduce the future financial impact of carbon emissions credits as much as possible, the company keeps as much of the quota carried over as possible. For the possibility of purchasing allocation rights that may arise due to a decrease in the proportion of free allocations in the transition period to green hydrogen, the company plans to review RECs, PPAs, etc. from various perspectives to minimize the financial impact. The company will continue to promote new and renewable energy production projects so that it becomes possible to sell rather than purchase emissions credits through the introduction of green hydrogen. 	<ul style="list-style-type: none"> The carryover volume from 2023 is 437,338 tons.
	Increase in the number of customers requesting Scope 3 reduction	Long-term decline in profit due to failure in responding to customer needs	Short-term Mid-term Long-term	<ul style="list-style-type: none"> Through the LCA, the company will calculate exact Scope 3 emissions for each product. By establishing a supply chain management system, the company plans to encourage upstream carbon emissions reduction in the LCA. The company will respond to customer needs by developing a program to share various carbon emission reduction measures in order to reduce carbon emissions generated in the upstream. 	<ul style="list-style-type: none"> Conducted LCA for zinc, silver, and copper

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#1. Climate Change Response and Energy Transition

Metrics and Targets

To achieve carbon neutrality by 2050, Korea Zinc is planning a carbon neutral roadmap and establishing detailed goals for reducing energy consumption. We use carbon emissions and energy usage (energy costs) as our main performance indicators. We establish annual goals for greenhouse gas emissions and energy consumption and manage the achievement rate and increase/decrease compared to the previous year's emissions and consumption. Our energy consumption target for the next year (2024) is 1,186,746 TOE. We plan to check and announce the achievement rate compared to actual emissions in 2024.

Annual Greenhouse Gas Emissions Goal	Unit	2019	2020	2021	2022	2023
Greenhouse gas emissions goal	tCO ₂ eq	3,739,061	3,749,401	3,474,525	3,496,212	3,408,593
Actual emissions	tCO ₂ eq	3,845,243	3,534,549	3,553,425	3,450,416	3,277,964
Goal achievement rate	%	97	106	98	101	104
Year-on-year reduction	tCO ₂ eq	-	-310,694	18,876	-103,009	-172,452

Annual Energy Consumption Goal	Unit	2019	2020	2021	2022	2023
Energy consumption goal	TOE	1,331,721	1,347,344	1,215,976	1,252,991	1,230,126
Actual consumption	TOE	1,320,805	1,279,421	1,226,264	1,259,038	1,222,270
Goal achievement rate	%	101	105	99	100	101
Year-on-year reduction	TOE	-	-41,384	-53,157	32,774	-36,767

Carbon Neutral Roadmap

Korea Zinc established a carbon neutral roadmap in 2023, setting reduction goals and detailed implementation plans for every ten years. According to our roadmap, we have already reduced emissions by 372,672 tons by 2022, and plan to reduce emissions by up to 340,332 tons by 2030 through facility rationalization and process improvement.

We aim to reduce 870,223 tons in emissions by switching to non-carbon energy sources between 2031 and 2040 and achieve our ultimate goal of carbon neutrality by 2050 through LNG combined cycle power plants and green hydrogen co-fired power generation.

Greenhouse Gas Emissions		Unit	2019	2020	2021	2022	2023
Scope 1*	Total**	tCO ₂ eq	2,215,475	1,891,934	2,342,671	2,343,881	2,574,427
	Headquarters***	tCO ₂ eq	110	127	154	173	226
	Onsan Refinery***	tCO ₂ eq	2,215,366	1,891,807	2,342,375	2,343,708	2,574,200
Scope 2*	Total	tCO ₂ eq	1,629,769	1,642,616	1,210,755	1,106,536	703,539
	Headquarters	tCO ₂ eq	186	231	284	253	286
	Onsan Refinery	tCO ₂ eq	1,629,583	1,642,385	1,210,471	1,106,283	703,253
Scope 1+2 Emissions**		tCO ₂ eq	3,845,243	3,534,549	3,553,425	3,450,416	3,277,964
Scope 1 Intensity	Total	1,000tCO ₂ eq/KRW 1 billion****	0.33	0.25	0.23	0.21	0.26
	Headquarters	1,000tCO ₂ eq/KRW 1 billion****	0.000016	0.000017	0.000015	0.000015	0.000023
	Onsan Refinery	1,000tCO ₂ eq/KRW 1 billion****	0.33	0.25	0.23	0.21	0.26
Scope 2 Intensity	Total	1,000tCO ₂ eq/KRW 1 billion****	0.24	0.22	0.12	0.10	0.07
	Headquarters	1,000tCO ₂ eq/KRW 1 billion****	0.000028	0.000030	0.000028	0.000023	0.000029
	Onsan Refinery	1,000tCO ₂ eq/KRW 1 billion****	0.24	0.22	0.12	0.10	0.07
Total		tCO ₂ eq	-	-	4,752,462	4,860,014	4,693,476
1. Purchased Goods and Services		tCO ₂ eq	-	-	1,597,486	1,439,329	1,456,758
2. Capital Goods		tCO ₂ eq	-	-	12,578	33,809	15,727
3. Fuel-And Energy-Related Activities (Not Included in Scope 1 or 2)		tCO ₂ eq	-	-	173,332	230,939	243,958
4. Upstream Transportation and Distribution		tCO ₂ eq	-	-	245,959	207,803	249,870
Scope 3 *****	5. Waste Generated in Operations	tCO ₂ eq	-	-	24,756	32,726	31,490
	6. Business Travel	tCO ₂ eq	-	-	128	684	979
	7. Employee Commuting	tCO ₂ eq	-	-	1,696	1,901	2,053
	9. Downstream Transportation and Distribution	tCO ₂ eq	-	-	149,683	149,399	159,750
	10. Processing of Sold Products	tCO ₂ eq	-	-	2,435,293	2,655,653	2,431,864
	11. Use of Sold Products	tCO ₂ eq	-	-	28,371	32,071	25,846
	15. Investments	tCO ₂ eq	-	-	83,180	75,700	75,182
Scope 3 Intensity	Total	1,000tCO ₂ eq/KRW 1 billion****	-	-	0.48	0.43	0.47

*Calculated according to Article 27, Clause 3 of The Framework Act on Carbon Neutrality and Green Growth for Coping with Climate Crisis, Article 21, Clause 5 of the Enforcement Decree of the same Act, and Article 24, Clause 1 of The Act on the Allocation and Trading of Greenhouse-gas Emission Permits.

**Greenhouse gas emissions for different production sites differ from the total due to trimmed emissions at each site.

***After verification of greenhouse gas emissions, discrepancies were found between the total emission values stated in the verification opinion and the sum of emissions from each site (headquarters and Onsan Refinery), due to the final compliance assessment in the Korean Environment Corporation's specification report. Approximately 100 tons of excess emissions were adjusted in the reported values.

****Based on sales for the year

*****Scope 3 emissions measurement began in 2021, and the emission calculation range and collection data range for 2021 to 2023 were changed from the previous year's published data due to expansion and recalculation.

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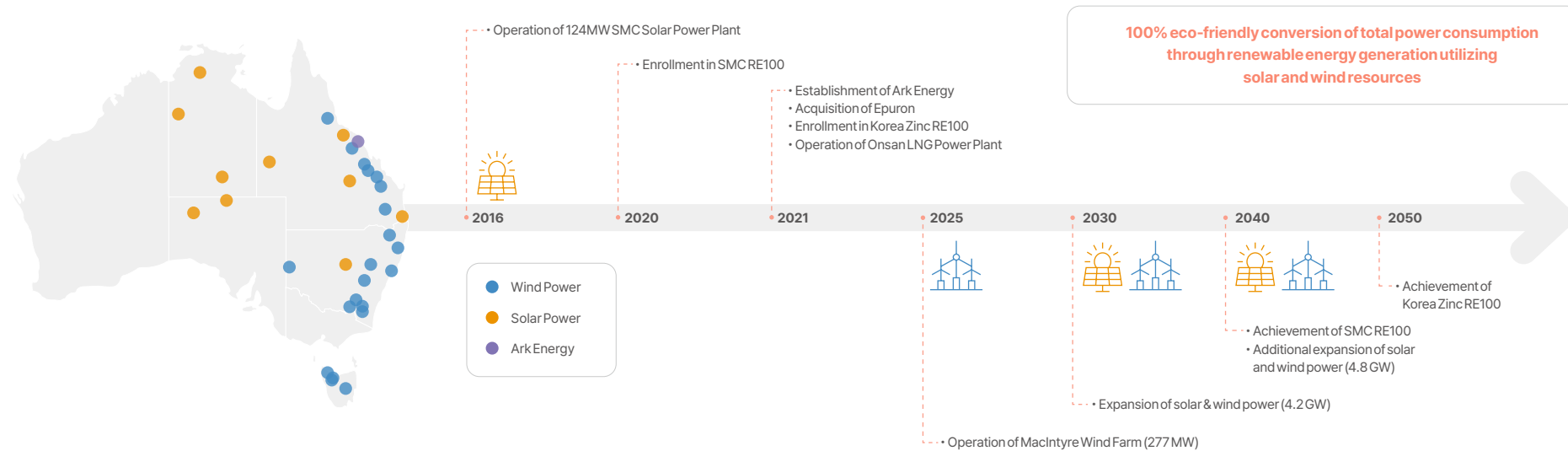
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#1. Climate Change Response and Energy Transition

Renewable Energy Roadmap

Ark Energy, a subsidiary of Korea Zinc, operates solar power facilities in Australia and the MacIntyre wind power facility to produce renewable energy such as green hydrogen. The company aims to introduce this production to the Onsan Refinery in South Korea, thereby converting 100% of its power usage to eco-friendly energy. SMC is aiming to achieve RE85 by 2030 and RE100 by 2040 based on renewable energy power generation facilities, and as the parent company, Korea Zinc is aiming to achieve RE100 by 2050.



Since 2018, Korea Zinc has invested a total of KRW 610.3 billion in its major overseas subsidiaries for renewable energy transition. Over the past five years, the investment amount has reached KRW 399.2 billion. We plan to continue investing in securing renewable energy in the future.

Investment in renewable energy (Last 5 years)	Unit	2019	2020	2021	2022	2023
Total investment	KRW 1 million*	-	23,536	7,363	361,749	6,578

*Investment amounts in foreign currencies (USD, AUD) have been converted to KRW based on the exchange rates as of May 3, 2024.

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#1. Climate Change Response and Energy Transition

Aiming to Expand Renewable Energy Usage

In 2023, Korea Zinc produced and operated 73 MWh (60 kW) of electricity through solar power generation, and an additional 78 kW solar power generation facility will be installed at the newly built safety training center by the end of June 2024. Korea Zinc's solar power generation capacity is expected to be 120MWh in 2024, and the company plans to expand power generation capacity by investing in a new 4.3MW rooftop solar power plant.

Korea Zinc will begin construction of a hydrogen charging station at the Onsan Refinery in late 2023, and this project is planned to be completed in June 2024. The company plans to promote the transition to renewable energy within its production sites by introducing approximately 30 hydrogen forklifts.

Energy Consumption by Source		Unit	2019	2020	2021	2022	2023
Total energy consumption*	Total	TOE	1,320,805	1,279,421	1,226,264	1,259,038	1,222,270
	Non-renewable energy	TOE	1,320,800	1,279,414	1,226,257	1,259,031	1,222,264
	Renewable energy	TOE	4.9	6.8	6.5	6.5	6.3
Domestic Energy consumption by source	Electricity	TOE	800,308	806,602	603,246	551,236	350,357
	City gas (LNG)	TOE	35,438	36,707	202,105	35,903	37,649
	Natural gas (LNG)	TOE	-	-	-	232,202	366,290
	Bituminous coal	TOE	110,050	87,012	99,236	80,239	89,785
	Anthracite	TOE	58,390	109,504	134,923	80,850	82,627
	Petroleum coke	TOE	239,321	157,801	103,695	195,842	213,240
	Refined oil	TOE	867	1,082	399	527	515
	LPG	TOE	7,361	7,262	7,397	8,305	8,337
	Diesel	TOE	94	100	90	87	76
	B-A fuel	TOE	30	-	-	-	-
	Exhaust gas	TOE	68,941	73,344	75,166	73,840	73,388
	(Renewable) Solar power	TOE	4.9	6.8	6.5	6.5	6.3

*Rounding down to the nearest decimal point may result in minor discrepancies in the totals.

Korea Zinc's Goal of Reducing Energy Consumption and Improving Efficiency

Korea Zinc established energy use efficiency and conservation goals. The company reduced 1.5MWh in energy consumption by improving efficiency in cooling tower operation and air compressor facility operation. In addition, the company succeeded in reducing energy costs by KRW 2.4 billion in 2023 through heat source recovery and cooling heat source recovery. Looking ahead, the company plans to work closely with the Production Division and Production Support Division to survey the conditions of aging facilities and integrate them to reduce power costs, which have increased by 50% compared to 2022.

Production Energy Intensity (KEEP30) Reduction Goal

Korea Zinc participated in KEEP30, which covers the top 30 energy-consuming companies, to establish a goal of reducing production energy intensity by 1% per year for the next five years (2023–2027). The performance for 2023 is currently being verified, and the energy intensity consumption performance is expected to improve compared to the previous year due to the operation of the combined cycle power plant.

Energy Usage and Intensity by Site*		Unit	2019	2020	2021	2022	2023
Energy consumption at each site	Total	TJ	53,537	50,347	50,368	49,781	46,574
	Headquarters	TJ	5	6	8	8	9
	Onsan Refinery	TJ	53,532	50,341	50,360	49,773	46,565
Energy intensity	Total	TJ/KRW 1 billion**	8.00	7.07	5.15	4.70	5.13
	Headquarters	TJ/KRW 1 billion**	0.00075	0.00079	0.00080	0.00071	0.00090
	Onsan Refinery	TJ/KRW 1 billion**	8.00	6.64	5.05	4.44	4.67

*Based on greenhouse gas inventory values.

**Based on sales for the relevant year

Scope 3 Energy Consumption*	Unit	2019	2020	2021	2022	2023
3. Fuel- and energy-related activities (Not Included in Scope 1 or 2)	TJ	-	-	50,369	49,781	46,575

*Energy data compiled and managed for calculating Scope 3 emissions is limited to Category 3. Scope 3 energy data compilation began from 2021 as measurement of Scope 3 emissions commenced

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#2. Air Pollution Management

Importance of Issue Management

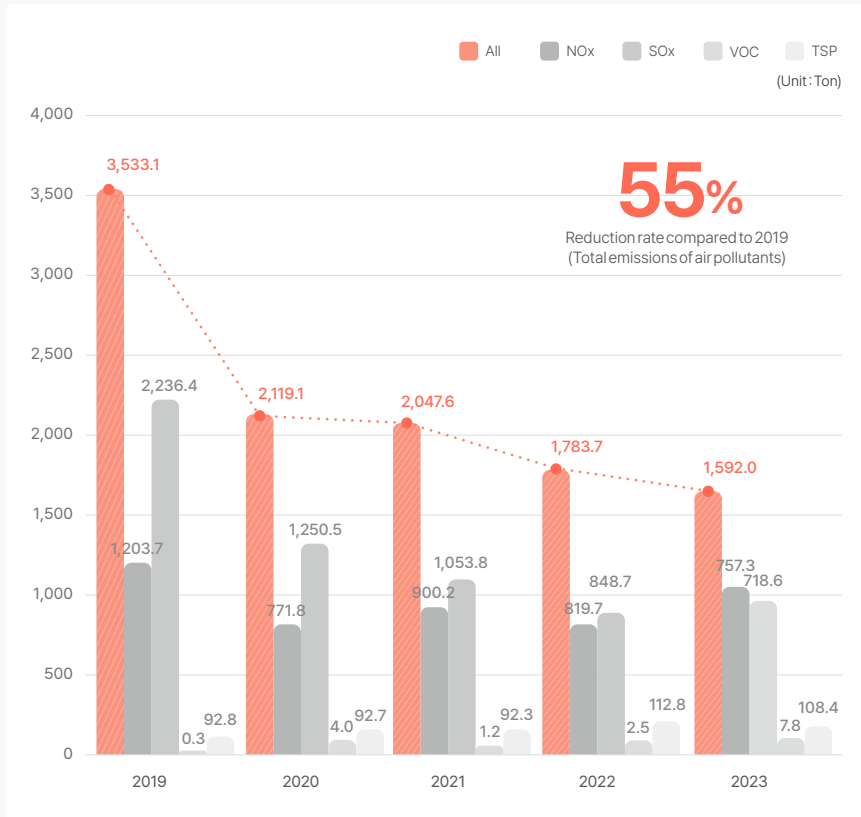
Impact Materiality (inside-out)

Minimizing environmental impact and responding to environmental laws and regulations through the management of air pollutant emissions at worksites

Financial Materiality (outside-in)

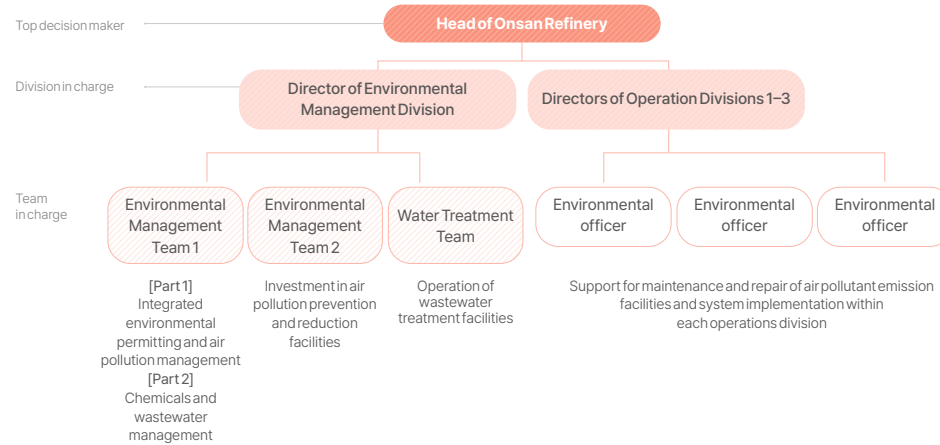
Incurrence or prevention of fines due to the violation of environmental laws and regulations related to air pollutants

Major Achievements in 2023



Governance

Korea Zinc's air pollution management is handled by the Environmental Management Division under the supervision of the Head of the Onsan Refinery. Following approval of the integrated environmental permit, the task force that used to perform environmental improvement activities became a permanent organization: Environmental Management Team 2. The company now handles air pollution tasks by assigning Environmental Management Team 1 to operate programs and systems such as integrated environmental permits, and assigning Team 2 to invest in pollutant prevention and reduction facilities. Each team reports its performance against emissions targets and task progress to the head of the Environmental Management Division, and ultimately to the Head of the Onsan Refinery, on a regular basis.



A Word From Our Staff



Jae W. Kwak,
General Manager of the
Environmental Management Division

"Only value investments and continuous efforts that consider the next 50 years will minimize risk."

My name is Jae W. Kwak, and I'm the General Manager of Korea Zinc's Environmental Management Division, which is in charge of air pollution management. As part of Environmental Management Team 1, we handle tasks related to Korea Zinc's integrated environmental permitting and air pollutant reduction. Environmental regulations are continuously becoming stricter with the aim of reducing the total amount of air pollutant emissions. In response to this trend, Onsan Refinery is enacting various efforts, including systematic prevention facility management, facility expansion, department evaluation, and performance compensation. As a result, the refinery succeeded in reducing air pollutants emitted from chimneys by 5 to 10% every year compared to the previous year.

Although the costs associated with environmental investments may be burdensome, they are essential when considering the potential future costs that may arise due to poor risk management. We hope that Korea Zinc's value investments and continuous efforts for the next 50 years will produce good results by minimizing costs and risks.

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#2. Air Pollution Management

Strategy

Korea Zinc's Environmental Management Division identified domestic environmental regulations as major risks related to air pollutants following the establishment of the SHE system in 2023. The company also identified biodiversity and productivity risks and measured their respective impacts through an environmental patrol at the Onsan Refinery site.

As for regulatory risk, the company is primarily tracking trends in air pollutant emissions regulations and the fine dust seasonal management system. We are also identifying negative impacts on the ecosystem and workers who spend time around the smelter.

Risk	Risk Factor	Potential & Real Impacts
Regulatory risk	<ul style="list-style-type: none"> Domestic environmental regulations related to air pollutants Fine dust seasonal management system, the Special Act on the Improvement of Air Quality in Air Control Zones, etc. 	<ul style="list-style-type: none"> Legal sanctions (improvement order, administrative disposition, etc.) for exceeding air pollutant emission standards
Biodiversity risk	<ul style="list-style-type: none"> Sales and production activities in areas near the ecosystem 	<ul style="list-style-type: none"> Negative effects on nearby local ecosystems due to air pollution
Local community impact risk	<ul style="list-style-type: none"> Sales and production activities in nearby communities 	<ul style="list-style-type: none"> Leakage of fugitive dust and odor exerts negative effects on the health of local residents and public opinion Costs incurred for pollution remediation in local communities
Productivity risk	<ul style="list-style-type: none"> Air pollution reduces the productivity of employees/suppliers' workers in the worksite 	<ul style="list-style-type: none"> Deterioration of worker health due to air pollution

Risk Management

Korea Zinc is implementing measures to mitigate and manage identified air pollutant risks. When it comes to regulatory risk, the company operates with stricter standards for SO_x, NO_x, and TSP emissions, ensuring they remain within 30% of the legally permitted limits. In order to respond to the Special Act on the Improvement of Air Quality in Air Control Zones, the company is voluntarily reducing fine dust emissions (base year 2016) by 1,012 tons by 2024.

In order to minimize the impact of air pollutants on site, we also review and manage self-measurement and prevention facilities. The company reflects air pollutant-related performance (violation of environmental laws, exceeding emission standards, and operation of prevention facilities) as a common item in the evaluation indicators for executives, team leaders, and team members of the Environmental Management Division. In doing so, Korea Zinc specifically emphasizes the responsibilities and roles of related personnel in regard to air pollutants.

Risk	Time Horizon	Response and Management (Mitigation) Measures
Regulatory risk	Short-term	<ul style="list-style-type: none"> Internal emission standards that are stricter than legal thresholds <ul style="list-style-type: none"> SO_x(sulfur oxides), NO_x(nitrogen oxides), TSP(total suspended particulate matter), carbon disulfide: 70% Arsenic, nickel, cadmium, benzene, lead: 49% Establishing and promoting fine dust emission reduction goals in response to the Special Act on the Improvement of Air Quality in Air Control Zones, etc.
Biodiversity risk	Short-term	<ul style="list-style-type: none"> Installation and inspection of air pollutant reduction facilities through expanded environmental investment
Local community impact risk	Short-term	<ul style="list-style-type: none"> Installation of a Tele-Monitoring System (TMS) for remote chimney monitoring and odor measurement devices Risk elimination through environmental patrols Recognition of remediation liabilities in contaminated areas (Refer to the consolidated financial statements footnotes within the 2023 Annual Report)
Productivity risk	Short-term	

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#2. Air Pollution Management

Metrics and Targets

Korea Zinc's Air Pollutant Emissions Reduction Performance and Goals

Korea Zinc has successfully reduced its emissions of air pollutants (NOx, SOx, VOC, TSP) for four consecutive years (2019-2023). In 2023, emissions decreased by 55% compared to 2019 and by 11% compared to the previous year. Moving forward, we remain committed to further lowering our emissions by executing annual reduction plans.

Air Pollutant Emissions		Unit	2019	2020	2021	2022*	2023
NOx	Emissions	Ton	1,203.7	771.8	900.2	819.7	757.3
	Year-on-year emissions	%	-	-36	17	-9	-8
SOx	Emissions	Ton	2,236.4	1,250.5	1,053.8	848.7	718.6
	Year-on-year emissions	%	-	-44	-16	-19	-15
VOC	Emissions**	Ton	0.3	4.0	1.2	2.5	7.8
	Year-on-year emissions	%	-	1,299	-70	111	211
TSP	Emissions	Ton	92.8	92.7	92.3	112.8	108.4
	Year-on-year emissions	%	-	0	0	22	-4
Total	Emissions	Ton	3,533.1	2,119.1	2,047.6	1,783.7	1,592.0
	Year-on-year emissions	%	-	-40	-3	-13	-11

*Correction of previously disclosed emission figures of year 2022.

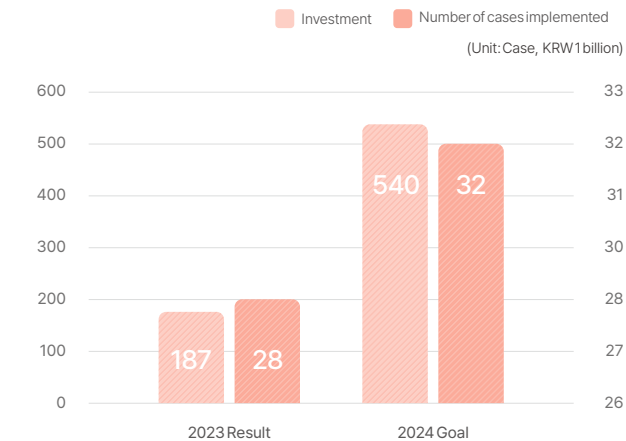
**There is an increase in emissions aggregated since additional measurement items for each outlet are added after obtaining integrated environmental permits.

Tasks for Korea Zinc's Integrated Environmental Permitting

To comply with the integrated environmental permit, Korea Zinc is undertaking 85 projects to be completed by 2027. As of the end of 2023, we have achieved a completion rate of 33%. By the end of 2024, we aim to reach 61%, thereby minimizing risks associated with air pollutants.

Korea Zinc is dutifully implementing the requirements of the integrated environment permit. In 2023, the company implemented 28 projects and invested KRW 18.7 billion in environmental facility investments. By installing thickener covers and dust TMS throughout the entire process, we expect to minimize dust generation and improve the accuracy of dust emission measurements.

One of the goals that our company has set for 2024 is to implement more than 30 cases of compliance with permit requirements, executing an investment worth more than KRW 50 billion. We plan to gradually reduce air pollutant emissions by installing prevention facilities in those facilities found in excess through self-measurement.



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#3. Workplace Safety and Health

Importance of Issue Management

Impact Materiality (inside-out)

Boost occupational safety and health management capabilities within the worksite by placing top priority on the safety and life of stakeholders

Financial Materiality (outside-in)

Enhance corporate image through compliance with laws and regulations related to occupational safety and health, and prevent legal sanctions such as fines

A Word From Our Staff



Joon Y. Choi,
Team Leader of
Safety Management Division

"Internalizing a strong safety culture is the first step on our journey toward becoming a disaster free workplace."

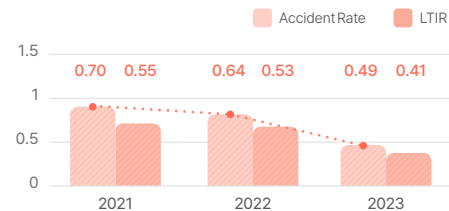
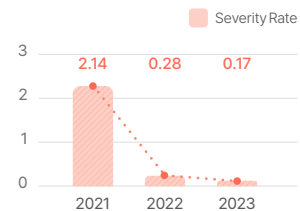
The Safety Management Division establishes and operates Korea Zinc's safety and health system, and is comprised of the Safety Culture Team, Health Management Team, Fire and Disaster Prevention Team, and Prevention & Safety Team. Our Safety Management Division aims to internalize a "strong safety culture" this year to create a safer and healthier workplace through the voluntary safety enhancement by all members.

To this end, we are continuously improving the company's safety and health system and are implementing diverse and effective safety and health policies and experience-oriented education programs to ensure that all of our members are aware of the importance of safety and are able to lead in actual cases.

Going forward, we believe that if we continue to make efforts and investments in safety and health, the company will eventually become the safe workplace we always wanted.

Major Achievements in 2023

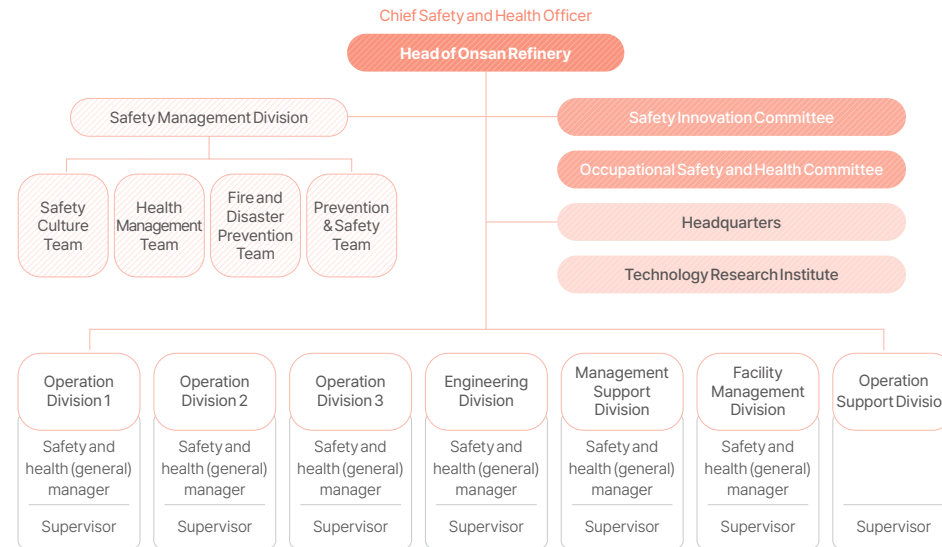
Korea Zinc's total (employees and contractors combined) severity rate, accident rate and LTIR show a significant decrease from 2021 and 2022.



Governance

Safety Management Organization

With the Head of Onsan Refinery as the Chief Safety and Health Officer and the Safety Management Division as a dedicated safety and health organization, the company actively bolsters internal and external communication through the Safety Innovation Committee and the Occupational Safety and Health Committee. In particular, the Safety Management Division has been subdivided and categorized into the Safety Culture Team, Health Management Team, Fire and Disaster Prevention Team, and Prevention & Safety Team according to the characteristics of the tasks performed.



Since its launch in 2021, the Safety Innovation Committee has had internal and external experts look at safety and health achievements and desired improvements every month, set future directions, and confirm active improvement activities for Korea Zinc's 44 mid- to long-term issues for safety and health promotion.

At the Occupational Safety and Health Committee, labor and management gather together every quarter to share diverse information on safety and health, and create a safety culture of labor-management harmony based on constructive suggestions and their implementation.

By establishing diverse preliminary communication channels between working-level staff through monthly labor-management safety working council meetings, we actively create a more advanced and effective Occupational Safety and Health Committee. While the details of the discussions are shared with the Sustainability Management Committee on a quarterly basis, the committee is continuously expanding its role.

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#3. Workplace Safety and Health

Safety and Health System and Three Safety Commandments

[Safety & Health Policy](#)

Korea Zinc considers safety and health management as a top priority, and we disclose our safety and health policy to uphold it. Our health and safety policy contains principles for creating a safe working environment for all stakeholders, including employees, in-house suppliers and dispatched workers, other partners, and customers.

Meanwhile, Korea Zinc maintains ISO 45001 certification, a global safety and health management system standard, and KOSHA-MS certification, a representative domestic standard. Through our unique safety and health system, Korea Zinc will systematically ensure the safety and health of all employees and stakeholders, including suppliers.



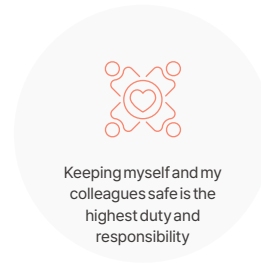
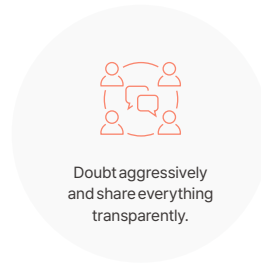
Category	Unit	2019	2020	2021	2022	2023
Covered workers	Korea Zinc (Onsan Refinery)*	% 100	100	100	100	100
	Suppliers	% 100	100	100	100	100

*Korea Zinc's Safety and Health System (ISO 45001) certification is for the production process (Onsan Refinery), and internal safety and health-related inspections are in progress at the headquarters.

Korea Zinc has established and is promoting the Three Safety Commandments to enhance occupational safety and health. By defining safety as the top priority, an integral duty and responsibility to which employees must adhere, and by improving the transparency of safety-related information, the company ultimately seeks to create a workplace with "zero serious accidents" that ensures everyone's safety.

Three Safety Commandments

Korea Zinc, the Safest and Most Eco-friendly Company



Strategy

Identifying Risks Related to Occupational Safety and Health

Korea Zinc identified risk factors and measured the impact of each risk. The most important risk we identify is regulatory risk. As South Korean industrial safety-related laws and regulations are even stricter now, the company plans to prepare response plans to proactively manage regulatory risks.

Risk	Risk Factor	Potential & Real Impacts
Regulatory risk	• Violation of domestic regulations related to occupational safety and health - The Serious Accidents Punishment Act, the Occupational Safety and Health Act, etc.	• Legal sanctions (business suspension, work stoppage, fines, etc.)
Supplier risk	• Inadequate safety and health activities by internal and external suppliers and safety and health compromising accidents	• Injuries and diseases affecting workers of suppliers to Korea Zinc's worksites (headquarters, Onsan Refinery) create risks for which the main contractor will be responsible.
Productivity risk	• Decreased worker productivity due to hazardous (harmful) factors in the refinery and the headquarters	• Business suspension/labor loss in the event of an accident at the Onsan Refinery or an illness affecting office workers at the headquarters
Emergency risk	• Occurrences of major disasters or industrial accidents • Outbreaks of infectious diseases such as COVID-19 or natural disasters	• Business suspension/labor loss due to inadequate prevention and response to emergencies within the workplace

Risk Management

Korea Zinc predicts the timing of impact from each identified risk and establishes response plans.

Risk	Time Horizon	Response and Management (Mitigation) Measures
Regulatory risk	Short-term	Korea Zinc conducts semi-annual inspections related to the Serious Accidents Punishment Act in the first and second half of the year to check compliance with relevant laws and evaluate the status of supervisors' work performance. Furthermore, we continuously strive to enhance safety and health for both the company and employees by adhering to safety and health-related regulations such as the Industrial Safety and Health Act.
Supplier risk	Short-term	The company implements a safety and health council for its suppliers and supports contractors' acquisition of the Safety and Health Management System (KOSHA-MS) certification. Through the in-house suppliers' response to the Serious Accidents Punishment Act and the win-win cooperation support agreement, we support our in-house suppliers in improving their ability to respond to regulatory risks.
Productivity risk	Mid-term	Korea Zinc conducts an accident prevention safety campaign every month. The company operates various health promotion programs including work environment management to prevent accidents and diseases.
Emergency risk	Short-term	Korea Zinc is prepared for emergencies through various types of emergency prevention and response training including for major disasters and industrial accidents, infectious diseases, and natural disasters.

Process Safety Management (PSM)

Korea Zinc undergoes evaluation of its process safety report implementation status in accordance with the Occupational Safety and Health Act. Our company was recognized for safety across 12 PSM elements, including process safety data, risk assessment, facility inspection and maintenance, contractor safety management, and self-audit, and received a grade of S (good). Korea Zinc operates PSM training in detail and improves the level of PSM management by enhancing its computer system. The company provides PSM specialized training, such as risk assessment, to leaders (executives/team leaders) of related departments, and supports uncovered departments in creating process safety data to comply with the PSM requirements. By conducting self-audits of operational departments, the company supports the establishment of improvement plans for items that have not yet been addressed. By utilizing the computer system, the company conducts a thorough review and implementation of the change management plan.

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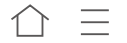
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#3. Workplace Safety and Health

Workplace Safety and Health Training

Experiential Safety Training

Korea Zinc provides various experiential and qualification training to bolster the safety capabilities of its employees and contractors. In 2023, we provided training to a total of 371 people, including 77 contractor employees, at the newly established experiential safety training center within the Onsan Refinery with the aim of providing them with the experience of different types of safety-threatening accidents in our major worksites.

Zone	Subject	List of Experiential Training Programs
1	Fall safety	<ul style="list-style-type: none"> Ⓞ Fall safety training Ⓞ Training on the proper use of safety harnesses
2	Fire/machine safety	<ul style="list-style-type: none"> Ⓞ Accident reporting training Ⓞ Fire extinguishers Ⓞ Conveyor belt entanglement simulation Ⓞ crane wire rope training
3	PPE/chemical safety	<ul style="list-style-type: none"> Ⓞ Safety shoes, hard hats, and safety glasses training Ⓞ Lock Out Tag Out Ⓞ Chemical leaks and safety devices training



Onsan Refinery Experiential Safety Training Center

Qualification Training

Korea Zinc provides statutory and its own qualification training. In 2023, a total of 437 employees and contractor employees acquired qualifications by completing oxygen and harmful gas concentration measurement and evaluation qualification training. Our in-house qualification courses include closed system monitoring, fire surveillance, conductor(signalman), and crane operation. As of 2023, a total of 3,324 people (with multiple counts, including contractor employees) have completed four training courses.

In-house Safety Awareness Events

Korea Zinc planned various in-house events to encourage safety culture activities.

Our company encourages compliance with the safety rules through monthly safety campaigns. In May 2023, the company held a safety event in which employees and their families participated, conducting activities to raise safety awareness suited to various levels, such as CPR for children and safety quizzes.

Two submissions to the user-created content(UCC) Contest on Occupational Safety & Health won the Grand Prize and Honorable Mention, respectively. We also held our first in-house Risk Assessment Competition in November, where we had a meaningful experience in discovering all accident-related risks that could occur in the work environment and finding ways to prevent them.



KZ Family Spring Picnic



TBM Video Contest hosted by Ministry of Employment and Labor



Risk Assessment Competition



KZ Safety Quiz Competition

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#3. Workplace Safety and Health

Public Health and Health Care Activities

Korea Zinc is actively promoting health management activities to improve the health of its employees and those of its contractors. The company has been running an in-house smoking cessation campaign for the past six years, holding an award ceremony every year for executives and employees who successfully quit smoking, and conducting general and special health checkups for workers, including those of contractors.

Korea Zinc also spares no effort in providing various support for the physical and mental health of its employees. To manage employee job stress levels, the company conducts follow-up management for high-risk groups and supports comprehensive checkups for over a thousand employees and their spouses.

Meanwhile, the company operates a return-to-work program that not only provides treatment and recovery support for workers returning to the workplace after an industrial accident, but also confirms the suitability of their work performance.



Smoking Cessation Program



Job Stress Relief and Management



Comprehensive Health Checkup for Employees and Spouses

Bolstering Safety Capabilities of Partners

Under the belief that the safety and health of our partners are directly related to the safety and health of Korea Zinc, the company actively carries out activities to support our suppliers' safety and health capabilities. Continuing from last year, we held a win-win growth seminar with suppliers in 2023 and shared the performance of safety and health activities and the safety and health promotion plan for 2024.

In order to preemptively respond to the expansion of the scope of the Serious Accidents Punishment Act from January 2024, Korea Zinc has provided support for strengthening safety capabilities and conducted safety and health assessments for contractors. The company strengthened our suppliers' ability to manage their own safety by supporting the construction of an autonomous safety and health management system for work contractors. This system realized benefits such as eliminating hazardous risk factors in the workplace, supporting work environment improvement, and industrial accident prevention training, as well as covering KOSHA-MS certification follow-up management costs.

In 2023, the company conducted a safety and health assessment on its suppliers. We evaluated 47 criteria, including accident management and supervisor activity management, and gave awards to the top supplier. If contractors fell below a certain score, they were restricted from participation in bidding for work for one to six months.



Win-win Growth Seminar for Suppliers



Support for Establishing Autonomous Safety and Health Management System for Work Contracting

Metrics and Targets

Occupational Safety Indicators

Korea Zinc establishes annual accident rate goals for all employees and suppliers, and the company manages performance in order to achieve zero serious accidents in the workplace. We have improved safety for two consecutive years (2021-2023) across all key indicators, including the total occupational accident rate, total recordable injury frequency rate (TRIFR), lost time injury rate (LTIR), and severity rate.

Occupational Safety Indicators*		Unit	2019	2020	2021	2022	2023
Total Occupational Accident Rate	Korea Zinc	%	0.16	0.08	0.54	0.49	0.58
	Contractor	%	0.99	1.06	0.83	0.76	0.42
	Total	%	0.63	0.62	0.70	0.64	0.49
Number of (recordable) disease occurrences	Korea Zinc	Case	0	0	0	0	0
	Contractor	Case	0	0	0	0	0
	Total	Case	0	0	0	0	0
Total Recordable Injury Frequency rate (TRIFR)	Korea Zinc	%	0.66	0.32	1.98	2.04	2.41
	Contractor	%	3.36	4.14	3.45	2.96	1.74
	Total	%	2.17	2.43	2.77	2.56	2.04
Labor Loss Injury Rate (LTIR)	Korea Zinc	200,000 hours worked	0.13	0.06	0.40	0.41	0.48
	Contractor	200,000 hours worked	0.67	0.83	0.69	0.63	0.35
	Total	200,000 hours worked	0.43	0.49	0.55	0.53	0.41
Severity rate related to workplace accident loss time due to direct employee injuries**	Korea Zinc	Number of lost work hours per 1,000 hours worked	-	-	4.38	0.24	0.22
	Contractor	Number of lost work hours per 1,000 hours worked	-	-	0.20	0.34	0.13
	Total	Number of lost work hours per 1,000 hours worked	-	-	2.14	0.28	0.17
Time lost from work accidents due to direct employee injuries**	Korea Zinc	Hours	-	-	123,048	6,296	6,944
	Contractor	Hours	-	-	813	1,716	677
	Total	Hours	-	-	16,194	2,503	1,545

*Industrial Accident Criteria

**Data calculation began in 2021

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#3. Workplace Safety and Health

Number of Safety and Health Training Participants and Completion Rate

Korea Zinc conducts safety and health training every year for its employees and those of its contractors. In addition to the mandatory training, our company provides a variety of other training, including self-certified training, CPR training, and chemical risk assessment training.

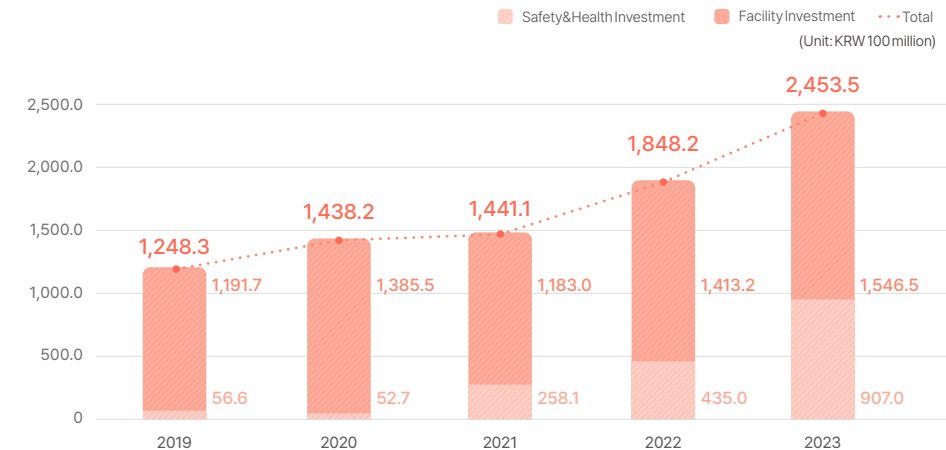
Safety and Health Training Status		Category	2021	2022	2023
Total		Total training hours*	47,065.0	70,823.0	68,223.0
		Regular employee	1,470.0	1,638.0	1,731.0
		Average training hours per employee**	32.0	43.2	39.4
Safety & health training	Mandatory training	Total training hours*	41,733.0	48,378.0	50,290.0
		Regular employee	1,470.0	1,638.0	1,731.0
		Average training hours per employee**	28.4	29.5	29.1
Other training		Total training hours*	5,332.0	22,445.0	17,933.0
		Regular employee	1,470.0	1,638.0	1,731.0
		Average training hours per employee**	3.6	13.7	10.4

*Total training hours per training program (Training hours X Number of trainees)

** Total training hours per regular employee

Safety and Health Budget Status and Plan

Korea Zinc is expanding its investment to enhance occupational safety and health. In 2023, we exceeded our original safety and health investment plan of KRW 89.7 billion, with an actual expenditure of KRW 90.7 billion which represents an approximately 100% increase compared to 2022. To continue our efforts to build a safe workplace for everyone, we plan to invest a total of KRW 259.9 billion in 2024.



Safety e-Report Reporting Channel for Safety Concerns

Korea Zinc operates a reporting channel in order to listen to feedback from both employees and stakeholders, and this channel is designed to increase communication and participation. For transparency, we disclose data on the channel's operations.

Safety e-Report		Unit	2019	2020	2021	2022	2023
Korea Zinc	Number of cases reported	Case	-	-	3	8	45
	Number of cases processed	Case	-	-	3	8	45
	Processing rate	%	-	-	100	100	100

*Safety e-Report began operation in 2021, so there is no operational performance for 2019-2020.

Safety e-Report



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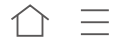
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#4. Supply Chain Sustainability

Importance of Issue Management

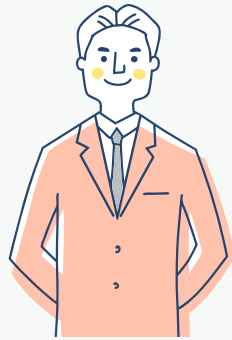
Impact Materiality (inside-out)

Management of risks linked to major domestic and international supply chains related to conflict minerals, environmental pollution, etc.

Financial Materiality (outside-in)

Reduction in trust and customer withdrawal due to violation of due diligence regulations in the raw material procurement process, including the use of conflict mineral

A Word From Our Staff



Do H. Hyun,
Manager of the Raw Materials Team

"We will endeavor to establish the true meaning of a supply chain ESG management system."

I am Manager Do-hoon Hyun of the Raw Materials Team, and my job entails managing Korea Zinc's responsible minerals. Supply chain sustainability management is directly related to Korea Zinc's product competitiveness and is an issue that the Raw Materials Team considers as highly important.

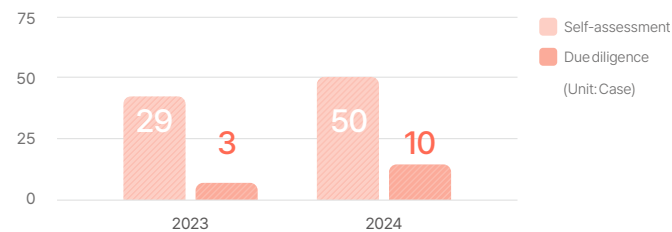
As geopolitical risks are recently increasing in some countries, such as Russia and Israel, sanctions by major countries are being imposed and growing stricter against those countries. There are many difficulties due to rapid changes in international affairs, and sanctions from major countries can occur at any time. In response, we are solving problems by cooperating with the sales teams, the Compliance Management Team, and the ESG Management Team.

As a member of the Raw Materials Team, I work to obtain and renew certifications such as LBMA, RMI, and LME. After the certification is completed every year, I take pride in playing a role in Korea Zinc's recognition for supply chain management and product competitiveness.

Major Achievements in 2023

Expansion of supplier ESG evaluation (self-assessment and due diligence)

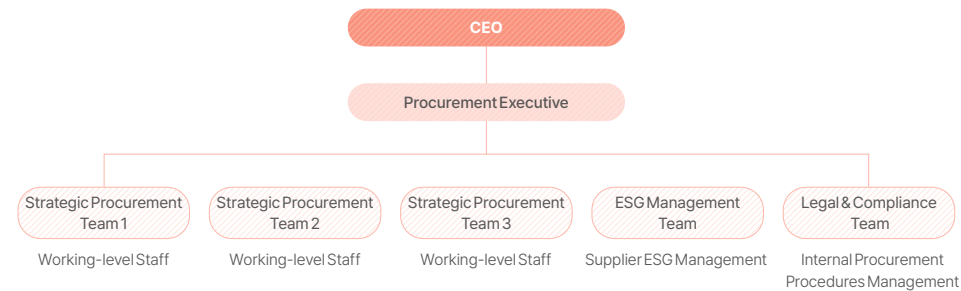
First implementation results in 2023: 29 companies completed self-assessment and 3 companies completed due diligence



Supply Chain Management

Governance

Korea Zinc operates a supply chain management system based on its Supplier Code of Conduct. The Strategic Procurement Team under the leadership of the executive in charge of purchasing establishes and operates a procurement management system. Korea Zinc actively carries out continuous supply chain management by establishing a supply chain system to build trust with suppliers and support their sustainable management.



Policies and Guidelines

Korea Zinc has established a Code of Conduct for its suppliers, specifying compliance requirements for human rights and labor protection, safety and health, environmental protection, ethical management, and responsible minerals. We have been receiving compliance pledges from Tier 1 suppliers since 2023.

[Supplier Code of Conduct](#)



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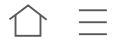
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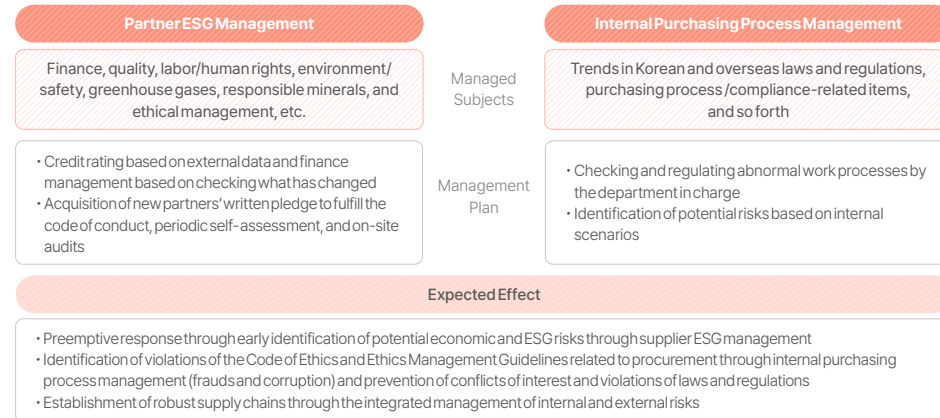


#4. Supply Chain Sustainability

Supply Chain Management

Korea Zinc also classifies supply chain risks identified through self-assessment and due diligence into supplier (external) risks and purchasing process (internal) risks, depending on management purposes and monitoring methods. For the early detection and timely response to risks related to the suppliers and their raw materials, such as finance, labor/human rights, environment/safety, and responsible minerals, Korea Zinc monitors suppliers by conducting credit evaluation, self-assessment, due diligence, and third-party verification, etc. Legal risks related to the internal purchasing process are managed through system-based control and on-site due diligence.

Supply Chain Management Plan



Supply Chain Management Process

Korea Zinc ran diagnostics and pilot inspections on identified suppliers and key suppliers to identify needed improvements. The company is working on a support plan for improvement in 2024.

Supply Chain Management Plan



To manage supply chain ESG risks, Korea Zinc regularly inspects identified suppliers' compliance with the Code of Conduct. In 2023, we ran diagnostics on 29 companies and identified eight companies as posing high risk. For the first time, we carried out due diligence on five of these companies, and also confirmed measures to support sustainable management of our suppliers based on the results of the diagnostics and due diligence.

As a result of the supply chain ESG evaluation, areas with strong legal regulations such as safety and health registered a high rate of the implementation of systems such as policies and management organizations. However, because no environmental-related system was in place, the possibility of negative environmental impacts was measured to be relatively high.

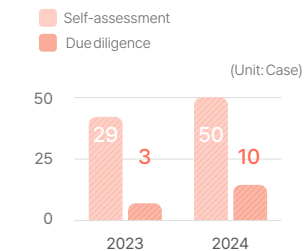
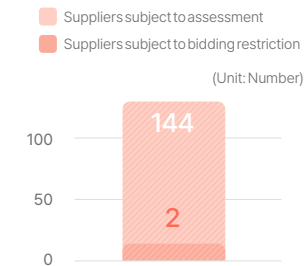
When assessing supply chain ESG, the proportion of suppliers with internal policies and regulations on minimum working age (child labor) and forced labor was higher than those without. Therefore, we did not identify suppliers with that specific criteria. Starting in 2024, we plan to raise the level of ESG management and awareness by receiving pledges to comply with the Code of Conduct from our suppliers.

Targets and Metrics

Korea Zinc evaluated the safety and health capabilities of 144 task/project subcontractors over the first and second half of 2023. As a result of the evaluation, we imposed a one-month bidding restriction on two companies that fell below the standard as there were concerns about negative impacts occurring inside and outside their worksites. Meanwhile, for 80% of all new suppliers in the same year, the company completed screening using social impact assessment standards. New company screening was also conducted from a safety and health perspective, while evaluating the occurrence of occupational and serious accidents, the status of safety qualifications and management supervisors, and possession of safety and health management system certifications such as ISO/KOSHA/OHSAS.

Korea Zinc has established a plan to expand the number of suppliers subject to self-assessment by 70-100% in 2024 compared to the previous year. Additionally, we plan to provide consulting to help each supplier implement improvements that were identified through diagnostics and due diligence.

Additionally, we are planning to expand the target group of the Code of Conduct compliance pledges to suppliers selected through sampling.



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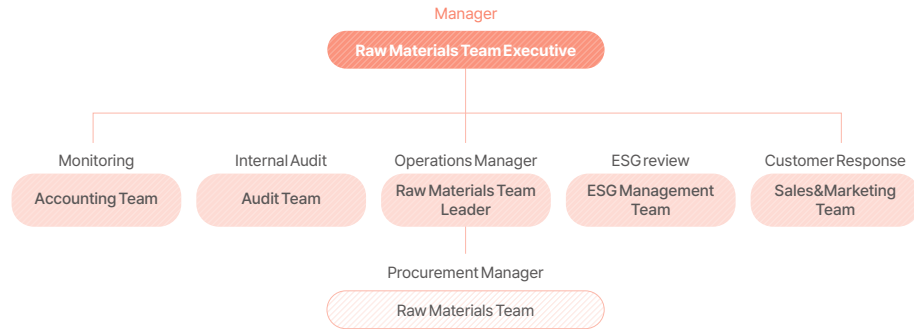
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#4. Supply Chain Sustainability

Responsible Minerals

Responsible Minerals Governance

Korea Zinc entrusts the Purchasing Team that purchases raw materials with the management of conflict minerals and responsible minerals. The company has established responsible minerals governance, which is led by executives in charge of purchasing raw materials. These executives are then divided into those in charge of purchasing raw materials, those in charge of training, and those in charge of responding to customers. In addition, the company operates an internal audit organization. Korea Zinc also conducts responsible minerals training for the staff every year and provides training for suppliers by distributing conflict/responsible minerals training materials throughout the raw materials supply chain.



Responsible Mineral Policy

[Responsible Mineral Policy](#)

Korea Zinc works to increase consumer awareness and transparency regarding conflict minerals. The company actively supports the bans promoted by RMI (Responsible Minerals Initiative) to reduce violence and exploitation in conflict zones by preventing business transaction profits from flowing into rebel groups. In order to expand the scope of management, Korea Zinc will continuously monitor mineral purchases from its suppliers. Based on Annex II of the OECD Due Diligence Guidelines*, we do not do business with suppliers that do not comply with our Responsible Mineral Policy and standards, and we aim to maintain long-term relationships with our suppliers.

1. We refrain from engaging in severe abuses associated with mining, transporting, or trading minerals.
2. We abstain from using minerals that directly or indirectly support non-state armed groups.
3. We abstain from sourcing minerals that provide direct or indirect support to public or private security forces.
4. We eschew minerals acquired through bribery and fraudulent misrepresentation of their origin.
5. We avoid minerals acquired through non-payment of taxes, fees, and royalties to governments.
6. We steer clear of minerals acquired through money laundering and the financing of terrorism.

* OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas

Responsible Minerals Partnership**

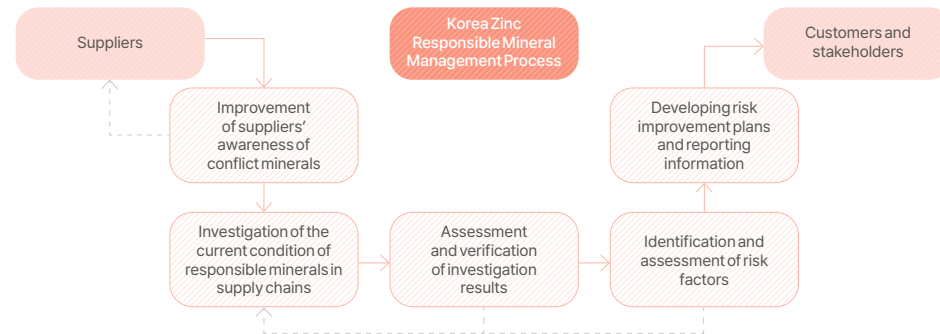
To minimize negative social and environmental impacts arising from responsible minerals sourcing and supply chains, the company has established a responsible minerals management system with global companies and participates in various partnerships through a consultative body aimed to standardize certification. As part of the partnership, we undergo gold evaluation by the Responsible Minerals Assurance Program (RMAP) of the Responsible Mineral Initiative (RMI) and publish a purchase due diligence report every year.



**Implemented jointly with RMI, LBMA, LME etc.

Korea Zinc Responsible Mineral Management System

In order to identify and manage responsible mineral risks in the supply chain through the operation of the responsible minerals management process, we have established and are implementing a risk mitigation plan. To mitigate risks related to responsible raw materials, we have adopted a variety of risk mitigation strategies targeting categories of risk, which are established on an annual basis. The company actively distributes educational materials on the OECD due diligence guidelines to raise awareness among suppliers, and is also conducting KYC (Know Your Customer or self-assessment) to investigate the status of responsible minerals in the supply chain. Self-assessment includes not only the risk of terrorism and human rights, but also the environment and safety, so it serves as a set of standards for judging sustainable suppliers. Based on self-assessment, we evaluate the risks of suppliers and decide whether to do business with them. By identifying and assessing the risks, we are establishing plans to make improvements and reporting information.



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Sustainability Report 2023

You can find more information about Korea Zinc on our website. For further details, please contact us at the address below.

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#4. Supply Chain Sustainability

Identifying Supply Chain Sustainability Risks

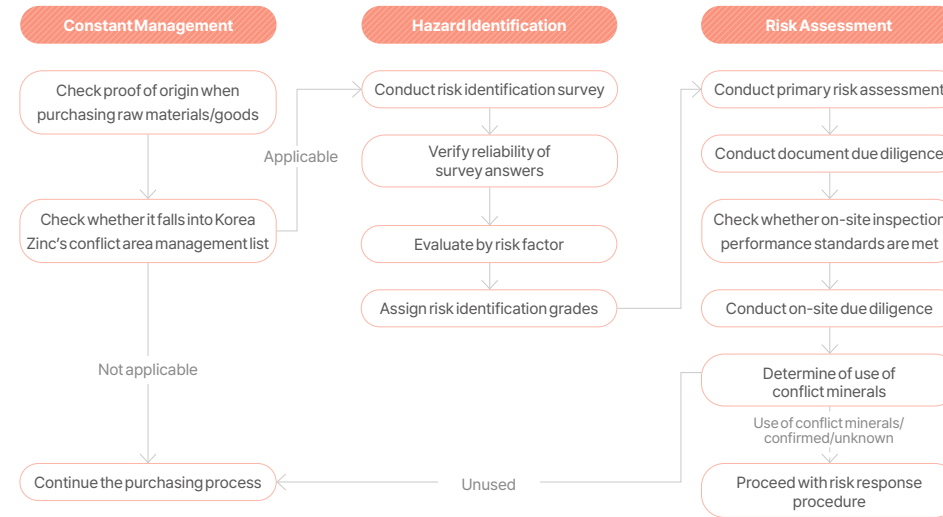
In regard to risks, Korea Zinc is most careful when identifying sanctions risks. They are difficult to predict due to their geopolitical nature, but their impact tends to be amplified compared to other types of risks. If our company is unable to secure new customers due to sanctions, time loss and economic costs may be incurred due to procurement delays. Therefore, the Purchasing Team is monitoring the international situation more closely.

Risk	Risk Factor	Potential & Real Impacts
Sanctions risk	• Global economic sanctions against the country of origin due to geopolitical/political reasons	• Procurement delays, time loss, and economic costs incurred from finding alternative exporters due to the use of sanctioned minerals
Responsible minerals risk	• Tightening management of imports of major minerals from conflict areas in Africa (expansion of minerals subject to import ban, etc.)	• Damage to our reputation and sanctions in the US/EU, or customer withdrawal, due to the use of conflict minerals and failure to respond early to the expansion of minerals subject to bans
Supplier risk	• Various supplier risks that may arise when purchasing through traders (ethical, environmental, social issues)	• The untraceability of raw materials purchased from traders raising significant environmental, social, and ethical issues during production and distribution

Risk Management

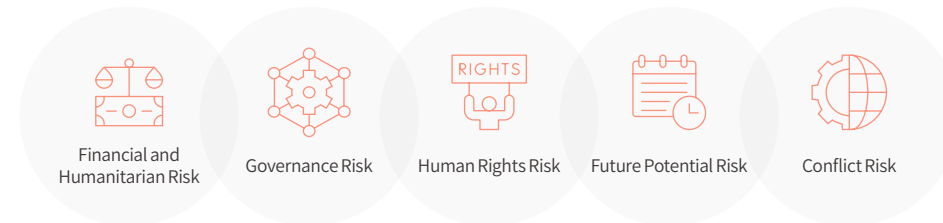
Korea Zinc conducts regular and frequent monitoring to manage risks that have already been identified. To prevent the risk of any sanctions, we use sanctions screening tools as well as establish our own diagnostic evaluation checklist to further manage risks..

Risk	Time Horizon	Response and Management (Mitigation) Measures
Sanctions risk	Short-term	<ul style="list-style-type: none"> • Korea Zinc checks risks related to countries, companies, etc. every month using the Reuters World-Check One screening tool • The company performs separate verification when necessary (e.g., media research, self-assessment)
Responsible minerals risk	Short-term	<ul style="list-style-type: none"> • The company conducts conflict minerals risk identification and level measurement based on RMI CAHRAs • The company conducts operation of conflict minerals management process and publishes annual purchase due diligence report
Supplier risk	Mid-term	<ul style="list-style-type: none"> • The company adds ESG-related provisions in the contract • The company receives a pledge to comply with the Code of Conduct from suppliers • Enforce stricter management by expanding the scope of suppliers subject to self-assessment and due diligence • The company supports the identification and implementation of improvement tasks for suppliers subject to assessment and due diligence. Also, it raises awareness through sustainable procurement and education on ESG risks.



CAHRA (Conflict-Affected and High-Risk Areas)

We establish Conflict-Affected & High-Risk Areas (CAHRA) every year and apply them to our purchases. CAHRA is evaluated based on seven criteria: five main criteria (governance, financial and humanitarian risk, future potential risk, human rights risk, and conflict risk), as well as the prohibition of money laundering and support for terrorism, in accordance with the EU CAHRA List and the Dodd-Frank Act standards. Risk areas for 2024 were selected based on the data up to 2023. 91 countries, including the Democratic Republic of Congo, were selected. Based on this, risk classification is applied to the internal payment system, and strategies to mitigate risks are internally adopted.



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#5. Business Ethics & Compliance

Importance of Issue Management

Impact Materiality (inside-out)

Prevention of corruption, embezzlement, and other illegal activities through internal control and increasing corporate transparency

Financial Materiality (outside-in)

Prevention of fines and other punishments for violations of ethical management-related laws, such as corruption and embezzlement

Interview with Staff



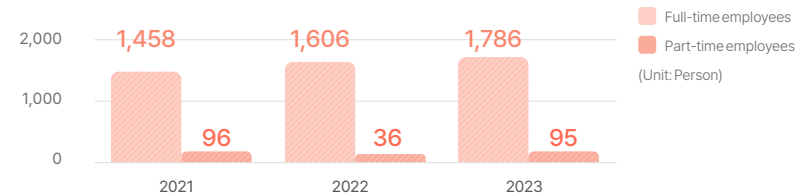
Yeong G. Kim,
Compliance Officer

"We strive to actively provide support while discreetly manage internal controls."

I am Officer Yeong G. Kim, and I am in charge of compliance at Korea Zinc. The Legal & Compliance Team endeavors to be a supportive organization where employees feel comfortable seeking advice at any indication of a potential legal violation. In fact, the team has handled 400 cases, doubling the number of cases from 2021, which personally makes me proud. As an executive in charge, I will spare no effort in providing advice and support to protect employees and related stakeholders in the promotion of Korea Zinc's new business.

Major Achievements in 2023

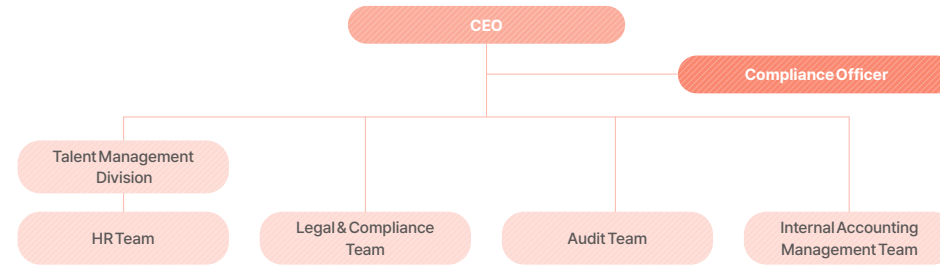
- Appointment of Compliance Officer
- Anti-corruption Training Completion Rate: 100% for 5 Consecutive Years



Governance

Korea Zinc's ethics/compliance management system comprises three organizations that report to the Audit Committee under the Board of Directors and the HR Team of the Talent Management Division.

The Legal & Compliance Team is in charge of legal affairs and fair trade, and the Audit Team is in charge of identifying corruption risks through regular in-house documents and on-site audits. The Internal Accounting Management Team prevents fraud and accounting error risks in the operating cycle from sales and purchases to cost calculation and settlement. Meanwhile, the HR Team is responsible for overall ethical management such as planning and conducting statutory ethics and anti-corruption training, operating the Code of Ethics, holding Personnel Committee sessions, etc. Compliance officer starting in 2023, who checks compliance with the compliance control standards and reports the results to the Board of Directors.



Compliance Activities

Precautionary Principle	Monitoring	Post-management	Management System	Grievance Handling System
<ul style="list-style-type: none"> • Identification of regulatory trends • Enactment and amendment of regulations • Establishment of manuals for guidance • Employee training and campaign • Self-assessment 	<ul style="list-style-type: none"> • Issue response and status management • Reporting and risk management 	<ul style="list-style-type: none"> • Analysis and evaluation of issue response results • Establishment of improvement measures • Evaluation of implementation status 	<ul style="list-style-type: none"> • Contract management system • Legal document management system • Supplier data request system • Cybersecurity early warning system • Risk Management system • Online training on ethics and Improper Solicitation and Graft Act • Online training on sexual harassment and bullying 	<ul style="list-style-type: none"> • Operation of a cyber audit office • Operation of a hotline on the website

Korea Zinc's Ethics Policy provides detailed guidelines that the company and its employees must adhere to, and they serve as ethical references that all members aspire to uphold. We revised the Code of Ethics in 2021 to ensure that it comprises all stakeholders within our new and expanding business scope and region. Korea Zinc's Fair Trade policy cover customers, suppliers, and competitors, and describe protection of the rights and interests of customers and suppliers and fair competition with competitors, as well as other details.

[Ethics Policy](#)[Anti-Corruption Policy](#)[Fair Trade Policy](#)[CHAIRMAN'S MESSAGE](#)[PREVIOUS 50 YEARS OF KOREA ZINC](#)

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#5. Business Ethics & Compliance

Strategy

Korea Zinc conducts annual internal audits to identify its ethical and compliance risks. The company conducts document and on-site audits of more than 10 production sites, including the headquarters, Onsan Refinery, and affiliates. Auditing includes not only items from a financial perspective, such as investment effectiveness and inventory due diligence, but also items from an ethics/compliance perspective, such as corruption and document security.

In order to identify risks, Korea Zinc also receives reports of fraud not only through its internal audit but also through its official Cyber Audit channel. Unreasonable demands and unfair business practices that are not detected through internal audit are also subject to reporting, and Cyber Audit results are monitored every quarter. The reports received are investigated by the HR Team, and when actual violations are discovered, the company takes action in accordance with disciplinary regulations to prevent recurrence and raise internal awareness.

The main ethics/compliance risks that we have identified are the risk of illegality in the process of conducting business and the risk of internal corruption.

Risk	Risk Factor	Potential & Actual Impacts
Fraud risk	<ul style="list-style-type: none"> Declining morale and ethical awareness of employees due to corporate crises, etc. Weakening of systematic control, such as defective internal controls and financial reporting fraud 	<ul style="list-style-type: none"> Financial losses due to breach of trust and embezzlement Legal sanctions arise from distortion of financial information due to accounting fraud
Illegality risk	<ul style="list-style-type: none"> Illegal acts resulting from lack of information regarding laws and regulations in the process of promoting new business projects in the country Illegal/unethical actions such as unfair practices or bribery during excessive (aggressive) sales activities 	<ul style="list-style-type: none"> Financial sanctions such as fines are imposed on the company Losses incurred due to business suspension and other penalties
Conflict of interest risk	<ul style="list-style-type: none"> Breached independence of key personnel such as the Board of Directors and the senior management (due to excessive concurrent employment, etc.) 	<ul style="list-style-type: none"> Loss in business performance, etc. in the long run Losses incurred such as dividend reduction due to falling profits and damage to company value
Corruption risk	<ul style="list-style-type: none"> Corruption due to a decline in ethical awareness during the process of transactions, such as bribery 	<ul style="list-style-type: none"> Legal sanctions such as bribery charges, tarnishing of the company's reputation Losses incurred from unreasonable transactions due to solicitations

Risk Management

Korea Zinc is working to upgrade its internal control system to manage fraud risks. The company plans to establish a systematic internal control system starting in 2024 to prevent fraud such as embezzlement and minimize damage if it occurs.

Risk	Time Horizon	Response and Management (Mitigation) Measures
Fraud risk	Mid-term	<ul style="list-style-type: none"> Proactive prevention through establishment of an internal control system
Illegality risk	Short-term	<ul style="list-style-type: none"> Awareness raising by providing legal advice and training to employees
Conflict of interest risk	Short-term	<ul style="list-style-type: none"> Specification of conflicts of interest within the Code of Ethics and the Ethical Management Code of Practice Awareness raising by bolstering internal ethics training Enforcement of regulations such as term extension and concurrency restriction to strengthen the independence of the Board of Directors Operation of a reporting process to identify and mitigate conflict of interest risks
Corruption risk	Short-term	<ul style="list-style-type: none"> Ethics training for employees and partners A "Don't Give or Receive Gifts" letter campaign during periods that require special attention, such as New years holiday

Korea Zinc operates a reporting process to manage ethics and compliance risks. We investigate the details of reports received through our website or by phone, and thoroughly protect the identity of the reporter in the process. If the facts are confirmed, then the Human Resources Team holds a session of the Personnel Committee, carries out job sanctions (disciplinary actions), and provides ethics training to prevent recurrence.

Reporting Channels

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#5. Business Ethics & Compliance

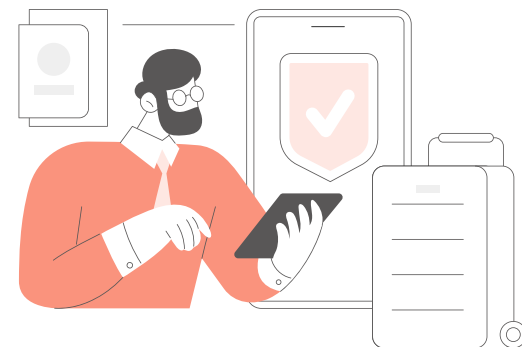
Metrics and Targets

Site Corruption Assessment

Korea Zinc evaluates corruption risks at its business locations every year. In 2023, we not only confirmed reports covering 12 production sites*, but also conducted field inspections to inspect effectiveness, safety management etc. regarding the overall team performance and investments.

Site Corruption Assessment Results		Unit	2019	2020	2021	2022	2023
Business Sites Assessed for Corruption Risk	Number of Business Sites	Site	11	12	11	11	12
	Percentage of Business Sites	%	100	100	100	100	100
	Number of Business Sites that Underwent Field Audits	Site	2	3	3	2	2
Confirmed Corruption Cases and Measures in Response	Reported Cases	Case	-	-	1	-	2
	Measures Completed, such as Disciplinary Actions	Case	-	-	In progress	-	-

*Including subsidiaries other than Korea Zinc business locations



Korea Zinc provides ethics/compliance (anti-corruption) training for all employees. In 2023, 100% of 11 board members, 1,786 full-time employees, and 95 contract employees completed training.

Anti-corruption Training Completion Status		Unit	2019	2020	2021	2022	2023
Number of employees who have completed anti-corruption training	Total number of employees	Person	1,417	1,455	1,554	1,742	1,881
	Number of board members	Person	9	9	11	11	11
	Number of full-time employees	Person	1,385	1,401	1,458	1,606	1,786
	Number of contract employees	Person	32	54	96	136	95
Ratio of employees who have completed anti-corruption training	Ratio of employees completing training	%	100	100	100	100	100
	Ratio of board members	%	100	100	100	100	100
	Ratio of full-time employees	%	100	100	100	100	100
	Ratio of contract employees	%	100	100	100	100	100

Cases Processed Through the Cyber Audit Channel

Korea Zinc operates the Cyber Audit channel to receive reports of cases of ethics/compliance violations. Our Human Resources Team investigates fraudulent reports, and if violations are discovered, action is taken in accordance with the internal disciplinary regulations. Korea Zinc protects the identities of reporters and related information and encourages reporting of all irregularities related to the company.

The number of corruption/bribery cases at Korea Zinc has gradually decreased since 2019, and this is the result of our continued efforts to beef up our ethics/compliance management, including internal audit (corruption evaluation) and anti-corruption training.

Category	Unit	2019	2020	2021	2022	2023
Number of disciplinary referral cases*	Case	1	0	5	1	2

*Limited to issues related to ethics/compliance, such as anti-corruption.

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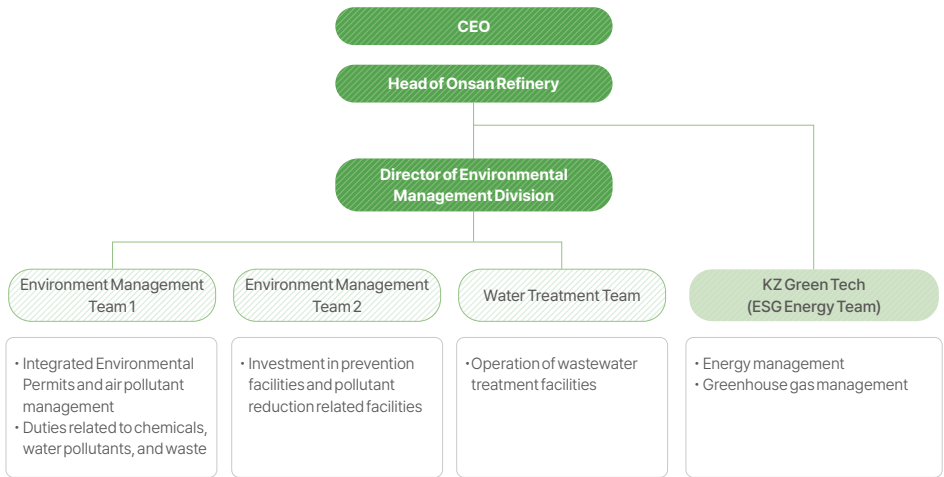
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Environmental

Environmental Management System

Environmental Management Organization

Korea Zinc's environmental impact and performance, response to environmental legal requirements at domestic and overseas business locations, etc. are managed through the Environmental Management Division and its subordinate organizations dedicated to environmental management. Environment Management Teams 1 and 2, which are under the Director of Environmental Management Division, carry out tasks to minimize the environmental load of the Onsan Refinery, including obtaining Integrated Environmental Permits and investing in air pollutant, chemical, and waste prevention facilities. Meanwhile, KZ Green Tech's ESG Energy Team operates to respond to climate change and enhance energy management expertise, including energy conservation and greenhouse gas emissions management.



Environmental Management Policy

Korea Zinc revised its environmental management policy for 2023 and specified its commitment to developing into a responsible, eco-friendly business that minimizes the environmental impact resulting from business management and production activities and is doing its best to preserve the environment in the local community. We also have policies in place and make them public by subdividing the major environmental issues into biodiversity protection, mineral waste management, water use, and forest protection. The company strives to protect the surrounding ecosystem and resources and preserve forests for all business locations subject to biodiversity protection and international conventions. By complying with the tailings management standards and minimizing water usage, we further aim to operate our business locations in an environmentally friendly manner.



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Environmental

Environmental Investment Performance

To minimize environmental impact, Korea Zinc made an environmental investment of KRW 39.6 billion in 2023. We are installing eight odor detectors (for hydrogen sulfide, VOCs, and ammonia) to manage odors, along with tanks designed for the management of non-point source pollution. Korea Zinc continues to commit its efforts to operating a green smelter, including improving old facilities and acquiring energy efficiency improvement equipment.

Korea Zinc has also expanded its CCTV system and smart wireless terminals to all factories from 2021 to the end of 2023 in a bid to transform Onsan Refinery into a smart factory. For smart environmental management and computerization based on core technologies of the 4th Industrial Revolution such as the Internet of Things, our company successfully completed the pilot operation of the lighthouse factory last December.

Environmental Investment		Unit	2019	2020	2021	2022	2023
Environmental investment costs	Air	KRW 1 million	7,718	24,737	2,818	9,593	27,893
	Water	KRW 1 million	1,785	1,652	1,401	2,085	10,866
	Chemicals	KRW 1 million	453	2,579	7,217	660	854
Total		KRW 1 million	9,956	28,968	11,436	12,338	39,613

Environmental Management System (ISO 14001) Certification

Since it first obtained the ISO 14001 certification, an international standard for environmental management systems in 2015, Onsan Refinery, which accounts for 87% of Korea Zinc's worksites in Korea, has maintained its certification through continuous renewal. In order to renew and maintain certification, Korea Zinc conducts assessment of the environmental management system through an external specialist organization, and the feedback derived from the assessment is reflected in the system.



Environmental Management Goals and Employee Participation

To achieve its four major environmental management goals, Korea Zinc raises environmental awareness and encourages employee participation in environmental improvement activities. To this end, the company has specified matters related to the participation of all employees in environmental improvement activities and posted them within the Environmental Management Policy. We also conduct environmental education not only for all our employees but for employees of our suppliers.

Environmental Management Goals



Enactment of and compliance with the internal environmental regulations tighter than the air and water environment conservation laws

Environmental Training Performance*		Unit	2019	2020	2021	2022	2023
Hazardous chemical handler training	Number of participants in environmental training	Person	-	-	1,027	1,768	1,104
	Number of hours completed in environmental training	Hour	-	-	16	16	16
Hazardous chemical worker training	Number of participants in environmental training	Person	3,246	3,000	879	200	299
	Number of hours completed in environmental training	Hour	2	2	2	2	2

*Due to changes in environmental training aggregate training standards, the figures are different from those announced in the previous year's (2022) report. The figures have been revised to include the number of people receiving internal training and supplier training in addition to online training.

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Environmental

Resource Management

Korea Zinc discloses usage data for major primary and secondary raw materials.

		Resource Usage*, **	Unit	2019	2020	2021	2022	2023	
Main raw materials	Primary raw materials***	Zinc concentrate	Ton	1,426,403	1,260,239	1,136,410	1,129,947	1,176,475	
		Lead concentrate	Ton	600,047	636,712	644,519	590,258	542,586	
		Silver concentrate	Ton	10,834	9,409	8,362	11,772	24,869	
	Total		Ton	2,037,284	1,906,360	1,789,291	1,731,977	1,743,930	
	Secondary raw materials***	Zinc material	Ton	22,105	26,961	26,093	24,103	17,954	
		Zinc powder	Ton	5,284	5,250	3,923	4,224	3,725	
		Copper cement	Ton	6,590	7,064	8,092	6,900	6,696	
		Purchased Cu matte	Ton	4,259	3,312	3,070	2,645	7,781	
		Lead sulfate	Ton	4,275	4,188	26,222	19,185	22,450	
		Gold and silver ash	Ton	6,362	908	1,460	678	714	
		Zinc oxide	Ton	101,740	90,660	81,578	83,799	60,394	
		Pb residue	Ton	27,674	26,091	24,986	26,426	26,877	
		Other scrap	Ton	5,674	4,938	3,327	1,871	2,384	
		Hikoshima cake	Ton	54,429	72,998	22,763	26,940	22,000	
		Zn slag	Ton	-	24,831	189,580	129,788	172,142	
		Proportion of secondary raw materials (of major raw materials used)		%	10	12	18	16	16
		Total		Ton	238,392	267,201	391,094	326,559	343,117
		Auxiliary raw materials	Caustic soda	Ton	20	17	21	22	32
			Soda water	Ton	74	2	-	-	-
Soda ash	Ton		2	17	13	1	1		
Mixed alkali	Ton		27	27	80	149	99		
Other (Magnesium hydroxide etc.)	Ton		12	7	-	-	-		
Anthracite	Ton		140,409	256,694	324,319	178,181	182,337		
P. Coke	Ton		355,137	242,214	159,748	296,877	321,612		
Bituminous coal	Ton		185,895	146,980	167,629	136,926	153,291		
Total			Ton	681,576	645,958	651,810	612,157	657,372	

*Due to changes in data collection and classification standards in 2023, there may be differences from the data values disclosed in the previous year.

**Corresponds to main raw material and secondary raw material usage data.

***Primary raw materials are non-renewable raw materials (raw materials mined from nature), and secondary raw materials are by-products from mines or smelters or recycled raw materials collected and recycled by recycling companies.

Meanwhile, Korea Zinc is continuing its efforts to upgrade its zero waste-based resource circulation system. To this end, the company exported 660,000 tons of slag (aggregate for concrete) for recycling in 2023.

Category	Unit	2019	2020	2021	2022	2023
Exported amount of slag*	Ton	-	699,444	732,432	614,832	661,461
Resource circulation rate.	%	-	30	41	31	30
Upcycling rate						

*Waste exported as concrete aggregate through environmental label certification. However, this is excluded from the amount of waste generated.



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Environmental

Water Resources Management

Korea Zinc purchases and uses 100% industrial water without engaging in water intake. Meanwhile, Onsan Refinery's water usage in 2023 was 14,389,650 m³. Water usage has increased as the operation rate of private power plants has increased, but the company is aiming for higher efficiency in water use through increased water recycling and the introduction of water-saving technologies.

Water Usage		Supply	Unit	2019	2020	2021	2022	2023
Onsan Refinery	Industrial water	Water usage	m ³	12,316,391	12,156,003	13,595,789	13,505,918	14,389,650
		YoY increase/decrease	%	-	-1	12	-1	7
Headquarters*	Municipal water	Water usage	m ³	1,654	3,058	3,106	3,452	4,590
		YoY increase/decrease	%	-	85	2	11	33
Total		Water usage	m ³	12,318,044	12,159,061	13,598,895	13,509,370	14,394,240
		YoY increase/decrease	%	-	-1	12	-1	7

*Calculations for 2019 to 2022 are based on the leased area of the main Youngpoong building (26.41%). For 2023, the usage of the annex building is included due to its utilization.

Other Water Resource-related Metrics		Unit	2019	2020	2021	2022	2023
Onsan Refinery	Amount of industrial water purchase	m ³	5,780	5,578	6,098	6,315	6,936
Onsan Refinery	Amount of water recycling	m ³	710,551	553,675	415,130	667,870	571,327
Headquarters	Wastewater discharge	m ³	2,490,655	2,460,532	2,566,453	2,886,452	2,815,746

Korea Zinc filters up to 2,000 tons of rainwater per day through the operation of a reverse osmosis filtration system. Additionally, the company plans to enable the filtration of up to 3,000 tons of rainwater per day by adding two more units by 2027.

All water used in the company's processes undergoes physical and chemical treatment in accordance with Korea Zinc's own water quality standards (80% or less of the legal pollutant limit) before being discharged to the Onsan Water Quality Improvement Office. Environmental pollution caused by leakage of process fluid used in the hydrometallurgical process is prevented by installing acid-resistant facilities on the upper cover and lower floor.

Water Pollutant Emissions		Unit	2019	2020	2021	2022	2023
TOC*	Emissions	Ton	-	-	-	32.6	20.5
	Emissions compared to the previous year	%	-	-	-	-	-37
COD*	Emissions	Ton	56.9	14.8	11.8	71.0	-
	Emissions compared to the previous year	%	-23	-74	-20	502	-
SS	Emissions	Ton	22.7	20.7	14.4	103.9	120.3
	Emissions compared to the previous year	%	-61	-9	-30	621	16
BOD	Emissions	Ton	24.7	9.8	12.8	8.2	6.0
	Emissions compared to the previous year	%	-16	-60	31	-36	-28
T-N	Emissions	Ton	74.2	75.8	75.4	150.7	141.9
	Emissions compared to the previous year	%	-16	2	-1	100	-6
T-P	Emissions	Ton	0.3	0.1	0.1	0.064	0.1
	Emissions compared to the previous year	%	200	-66	0	-36	56

*With the change from COD to TOC in 2022, data has also been managed from 2022 onwards.

Waste Management and Recycling

Korea Zinc manages the details of hazardous waste and general waste disposal through the legal waste disposal system (Allbaro).

Volume of Waste Disposal*		Unit	2019	2020	2021	2022	2023	
Headquarters	General waste	Total	Ton	11	12	11	9	9
		Landfilling	Ton	62,782	69,408	49,893	68,200	65,876
Onsan Refinery	All waste	Incineration	Ton	3,376	3,687	3,202	3,885	5,491
		Other	Ton	38,493	31,827	35,334	30,676	28,660
	Total	Ton	104,650	104,922	88,428	102,761	100,028	
	General waste	Landfilling	Ton	713	521	261	430	945
Incineration		Ton	1,556	2,055	1,639	2,090	5,425	
Designated waste	Other	Ton	38,422	31,705	35,234	30,559	28,582	
		Total	Ton	40,691	34,281	37,134	33,079	34,952
	Landfilling	Ton	62,069	68,887	49,632	67,770	64,931	
		Incineration	Ton	1,820	1,632	1,563	1,795	66
Other	Ton	71	122	100	117	78		
	Total	Ton	63,960	70,641	51,295	69,682	65,075	

*The headquarters only disposes general waste.

Volume of Recycled Waste		Unit	2019	2020	2021	2022	2023
Recycled* volume	General	Ton	33,153	26,857	26,931	27,049	25,868
	Designated	Ton	71	118	100	117	78
	Total	Ton	33,224	26,975	27,030	27,166	25,944

*All recycling is being handled on consignment.

Category	Unit	2019	2020	2021	2022	2023
Volume of waste disposal	Ton	104,650	104,922	88,428	102,761	100,028
Disposal volume goal		-	-3% YoY	-3% YoY	-3% YoY	-3% YoY
Actual increase or decrease	%	-	0.3	-15.7	16.2	-2.7

Mine Tailings

Korea Zinc inspects facilities and procedures related to mine waste disposal in accordance with the international industrial standard (GISTM). The company has established its own standards for mine waste management and disposal to protect the environment in the vicinity of the mine.

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Environmental

Biodiversity Protection

Biodiversity Protection and Risk Assessment

Korea Zinc has established and operates its own biodiversity policy and applies it to all business locations. Accordingly, when operating a new business location, we plan to check in advance the flora and fauna and the presence of endangered species near the area. For operating worksites, the company will regularly measure pollution levels and, if expert cooperation is necessary, conduct investigations and take action in cooperation with specialist organizations.

Ecosystem Protection Programs Near Business Locations

Korea Zinc continued environmental purification activities in 2023 to protect the ecosystem around the Onsan Refinery and the company headquarters. Carrying on with our pet tree program, we remind ourselves of the importance of protecting homegrown species that are designated as endangered.

Habitat Restoration Program: Forest of Connection

Korea Zinc is implementing the "Forest of Connection" program to protect biodiversity and restore habitats. In 2023, efforts were undertaken to rehabilitate the ecosystem in the Uljin wildfire area, which experienced the longest and most severe wildfire on record. Consequently, 10,000 tulip trees were planted. These trees are a fire-resistant species with thick bark and moisture-rich leaves, offering effective heat insulation. This initiative is anticipated to expedite the restoration of the wildfire-affected area and support the recovery of the local ecosystem.



Chemical Substance Management

Korea Zinc monitors chemical substances emitted through the manufacturing process, focusing on the amount of emissions and movement depending on where the chemicals undergo final processing.

Chemicals Management System

Korea Zinc has established its own processes to respond to domestic and international regulations such as the Act on Registration and Evaluation of Chemical Substances, the Chemical Substances Control Act, and EU REACH. Chemical substances emitted through the manufacturing process are monitored in real time through related facilities. The environmental information collected through this is disclosed to the local community and stakeholders through the environmental information disclosure system. In addition, the Material Safety Data Sheet (MSDS) for all products sold by Korea Zinc is posted on the company website.

Chemicals Management Process

Korea Zinc's management of new chemicals is handled by Environment Management Division, which is in charge of chemicals. A series of procedures from purchase to disposal of new chemical substances are reviewed in accordance with regulations such as the Act on Registration and Evaluation of Chemical Substances and the Chemical Substances Control Act. The company also manages handling facility standards, management ledgers, changes, etc. according to the receipt and delivery of chemical substances.

Chemicals Management Capacity Building Training

Korea Zinc provides regular chemicals management capacity building training to employees of related departments and subcontractors who perform work related to chemicals, such as purchasing and handling. In 2023, Korea Zinc conducted virtual public-private joint training simulating a spill or leak at the sulfuric acid shipping dock at Plant 2 to improve the ability of relevant stakeholders to respond to chemical leaks.

Violations of Environmental Laws

Korea Zinc discloses data on violations of environmental laws and regulations at all its business locations (Headquarters and Onsan Refinery) to the public through the Business Management and Environmental Information Disclosure System. Going forward, the company will strive to closely monitor and comply with environmental laws and regulations. Our company's environmental law violations* include a total of 2 cases in 2019 (penalties: KRW 6,100,000), a total of 0 cases in 2020, a total of 2 cases in 2021 (penalties: KRW 2,080,000), a total of 2 cases in 2022 (penalties and fines: KRW 51,440,000), and a total of 3 cases in 2023 (penalties: KRW 4,000,000).

*The amount of fines imposed in 2019 and 2022 announced through the previous year's report has been corrected.



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Environmental

Green Procurement

[Sustainable Procurement Policy](#)

Green Procurement Direction

Korea Zinc actively reviews means and measures to promote green procurement in accordance with the Sustainable Procurement Policy. The policy apply to all products purchased by Korea Zinc, including subsidiary materials consumed in business operations, corporate consumables (MRO, Maintenance, Repair and Operations), and civil engineering. We are committed to making every effort to transition to green procurement for certain items that are currently irreplaceable.

Scope of Green Procurement Product Certification

As for domestically produced products, those that have obtained certification in accordance with Article 66 (4) of the 'Framework Act on Carbon Neutrality and Green Growth for Coping With Climate Crisis,' are recognized as green products. Accordingly, products holding certifications such as the Eco-label Certification, Environmental Product Labeling Certification, Low-carbon Certification, and Good Recycled Certification are recognized as green products, and products subject to Korea Zinc's green purchasing are included among these. For products that have obtained overseas certification, we determine whether to recognize them as green purchases through a separate internal review.



Eco-label Certification



Environmental Product Declaration



Low-carbon Certification

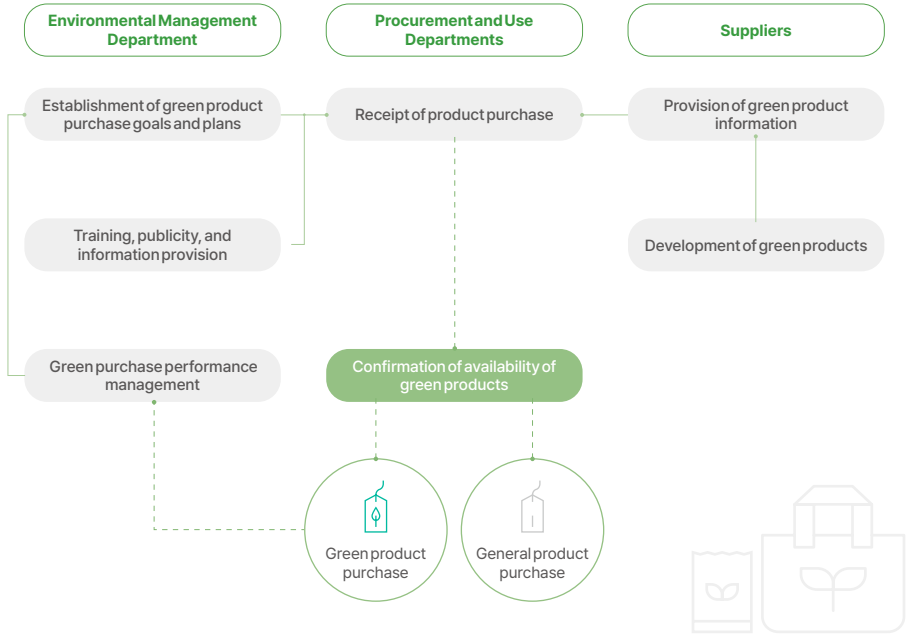


Good Recycled Certification



Green Procurement Process

Korea Zinc operates the Green Procurement Process when purchasing products, through which the company strives to expand and revitalize the purchase of green products.



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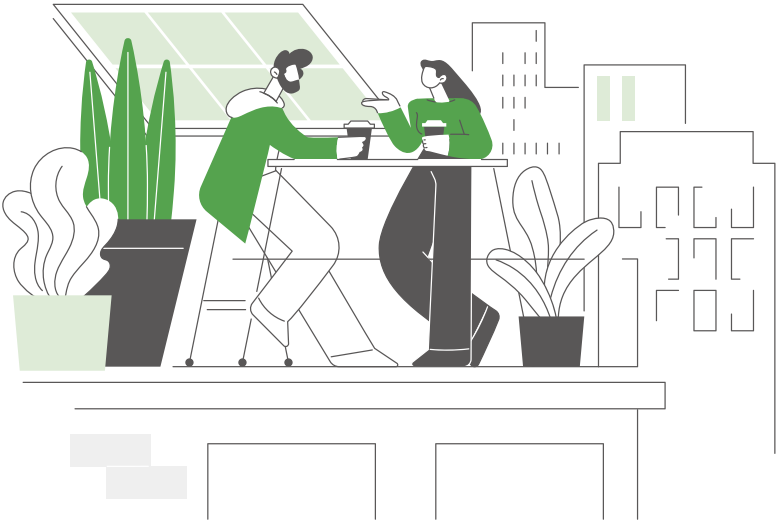
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Environmental

Development of Eco-friendly Products and Technologies

Korea Zinc currently classifies products manufactured using recycled materials as “eco-friendly products” and calculates the proportion of such products in sales. The proportion of eco-friendly products in total sales was 4.72% in 2023, an increase compared to the previous year.

Sales of Eco-friendly Products		Unit	2019	2020	2021	2022	2023
Sales of low-carbon products	Ratio against total sales	%	3.44	3.30	4.07	3.68	4.72



Green Metal

[Korea Zinc Website: Green Metal](#)

The development of eco-friendly products and technologies is one of the key elements in Korea Zinc's plan not only to carbon neutrality, but also to respond to customers' Scope 3 reduction needs. Korea Zinc calculated carbon emissions based on the Life Cycle Assessment (LCA) in accordance with the PAS2050 standards for zinc, silver, and copper among its major products in 2023. Based on this, the company obtained the Carbon Trust carbon footprint certification. For the future nickel refinery under construction, carbon emissions have been calculated based on current business plans using a life cycle assessment approach. Precision will be further refined based on actual emissions in the future.



Korea Zinc completed carbon footprint calculation and certification for zinc, copper, and silver products in 2023, and plans to expand certification to lead, gold, and semiconductor sulfuric acid in 2024.

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Social

Human Rights Management

[Human Rights Policy](#)

Respect for Human Rights

Korea Zinc respects the rights contained in the Universal Declaration of Human Rights, the International Covenant on Civil and Political Rights, the International Covenant on Economic, Social and Cultural Rights, the ILO Declaration on Fundamental Principles and Rights at Work, the United Nations Guiding Principles on Business and Human Rights, and the OECD Guidelines for Multinational Enterprises. The company strives to comply with the standards of the Convention on the Rights of the Child and the Protocol to Prevent, Suppress and Punish Trafficking In Persons Especially Women and Children. To this end, the company has disclosed its Human Rights Policy, starting in 2022. Based on this principle, Korea Zinc practices respect for human rights through human rights impact assessment and stakeholder communication. Our Human Rights Policy applies not only to employees, but also to all stakeholders affected by our business activities, including suppliers and local communities.

Human Rights Impact Assessment

Korea Zinc established a human rights impact assessment process in 2023 to proactively identify and manage human rights risks and key management issues. After initially identifying vulnerable groups, the company conducts assessments, grievance collection, and interviews to measure detailed risks. Afterward, the company analyzes the results of the human rights impact assessment and seeks mitigation measures for risk management and improvement purposes. Korea Zinc also ensures the effective operation of the human rights management system by reporting the status of improvement of human rights issues to the Sustainable Management Committee.

Establishment and Declaration of Human Rights Policy

- Publicize human rights management policies and basic principles
- Declare commitment to human rights management

Identification of Vulnerable Groups

- Identify key affected groups
- Identify potential human rights issues based on our basic principles and management policies for human rights
- Anticipate potential issues before launching new businesses or undertaking facility expansions and relocations

Risk Measurement

- Implement grievance handling processes and conduct interviews for HRIA
- Regular measurement: conduct an annual HRIA for employees, partners, customers, and local communities
- Constant measurement: receive information on human rights issues through grievance channels

Risk Management and Issue Improvement

- Implement mitigating and remedial actions based on the results of HRIA (disciplinary actions against offenders, and compensation and counseling for psychological harm)
- Apply the findings of HRIA to manage risks in the supply chain

Monitoring and Disclosure

- Regularly monitor the findings of HRIA as incorporated into our human rights management system
- Disclose outcomes in public reports

Korea Zinc conducted a human rights impact assessment for the first time in 2023, targeting employees, affiliates, suppliers, customers, and local community stakeholders. The company effectively operates a human rights management system by primarily identifying potential human rights risks and vulnerable groups and identifying human rights improvement issues through surveys.

Item	Category	TOP1	TOP2	TOP3
Human rights issues	Vulnerability (Human Rights)	Employee safety and health (52.9%)	Performance and evaluation compensation (44.2%)	Working hours (31.7%)
	Vulnerability (Stakeholders)	Partners (53.8%)	Employees (38.9%)	Affiliates (22.6%)
Human rights impact groups	Vulnerability (Employees)	No difference (36.1%)	Women (29.8%)	Production/research (24.5%)
	Vulnerability (Partners)	In-house Partners (46.6%)	No difference (40.9%)	Suppliers (13.5%)

Item	Category	Employees	Affiliates	Partners	Customers	Others
Experience in human rights issues	Human rights issues	Almost none (36.5%)	Almost none (60.8%)	Almost none (45.5%)	None (100%)	Almost none (73.3%)
	Major human rights Management requirements	Performance and evaluation compensation, safety and health (46.4%)	Performance and evaluation compensation (69.2%)	Shared growth (100%)	Negative impact on labor union activities and local community (100%)	-
	Response to human rights issues	Asking for help from senior managers (72.7%)	Asking for help from senior managers (100%)	-	-	-
	Reasons for not responding to human rights issues	Nothing to gain from taking responsive actions (46.7%)	Nothing to gain from taking responsive actions (33.3%)	Nothing to gain from taking responsive actions (100%)	The matter is not important (100%)	-

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Social

Talent Recruitment

In order to hire excellent human resources, establish a desirable organizational culture, and cultivate the expertise of each member of the organization, Korea Zinc has set five major directions for talent management. The ideal talent that Korea Zinc wants to hire are people who are like hot metal in the refining process: they engage in their work with a burning focus, are innovative in creating new value like combinations with other metals, and have the flexibility to change into any form depending on the mold. In order to discover and nurture such talented people, Korea Zinc operates various training and welfare programs as well as family-friendly systems.

Ideal Talent for Korea Zinc

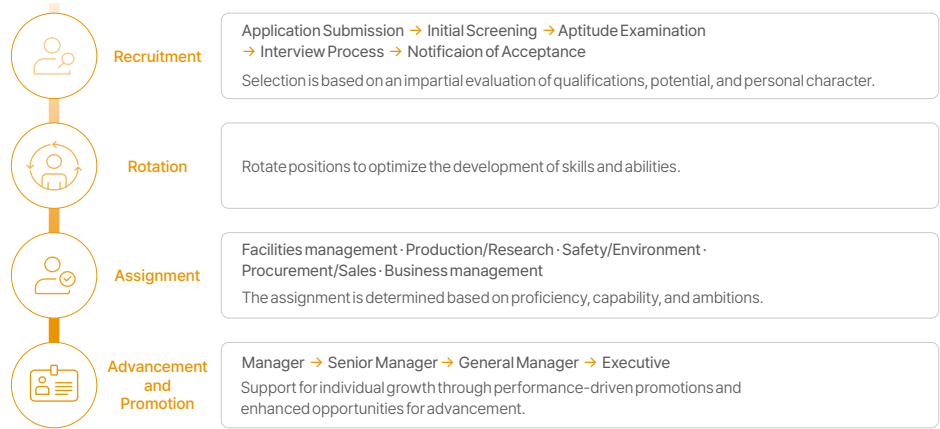
 <p>Engagement</p> <p>Being deeply engaged in even the smallest tasks and finding joy in overcoming challenges.</p>	 <p>Innovation</p> <p>Driving innovation through ongoing education and a fresh perspective.</p>	 <p>Flexibility</p> <p>Valuing diversity and striving to foster flexible communication and collaboration.</p>
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Five Major Directions for Talent Management

1. Articulating a strategic direction for the next half-century by defining missions and core values through active employee engagement and consensus-building
2. Attracting and nurturing exceptional talent to meet management objectives and enhance competencies for new business initiatives
3. Developing an HR framework that fosters mutual growth for employees and the company by setting ambitious targets and facilitating performance excellence
4. Cultivating a culture of 'respect and collaboration' through effective communication and harmonious interactions between the organization and its members
5. Establishing a mutually beneficial labor-management partnership grounded in trust and mutual understanding

Human Resources Management Process

Korea Zinc secures excellent talent at the right place and time through regular public recruitment and opportunistic recruitment by job group. The hiring process provides preferential treatment to socially vulnerable groups such as veterans and the disabled. Through this, Korea Zinc protects the livelihoods of vulnerable groups and enhances diversity within the organization. The evaluation of applicants is conducted based on competency-based recruitment, and the company strives to evaluate applicants through a three-dimensional and multifaceted process, including aptitude tests and structured interviews. Assignment after recruitment takes into account individual characteristics, such as the employee's abilities, aptitude, and desired department. The operation of a job rotation system helps employees discover and develop their aptitudes. Advancements and promotions for employees are based on evaluations of their individual abilities and achievements to ensure fairness.



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Workforce		Unit	2019	2020	2021	2022	2023	
Number of employees	Headquarters	Person	139	146	154	196	244	
	Onsan Refinery	Person	1,273	1,295	1,400	1,546	1,637	
	Total	Person	1,412	1,441	1,554	1,742	1,881	
By gender	Headquarters	Male	Person	116	122	124	152	181
		Female	Person	23	24	30	44	63
	Onsan Refinery	Male	Person	1,242	1,262	1,365	1,497	1,593
		Female	Person	31	33	35	49	44
By age	Headquarters	Employees (under age 30)	Person	22	22	25	28	40
		Employees (age 30-50)	Person	94	99	101	133	156
		Employees (over age 50)	Person	23	25	28	35	48
	Onsan Refinery	Employees (under age 30)	Person	223	206	276	366	383
		Employees (age 30-50)	Person	830	840	855	893	942
		Employees (over age 50)	Person	220	249	269	287	312
Employees with disabilities	Korea Zinc	Person	25	27	25	24	26	

New Employees*		Unit	2019	2020	2021	2022	2023	
Total number of new employees	Headquarters	Person	4	10	14	55	47	
	Onsan Refinery	Person	38	57	173	241	192	
	Total	Person	42	67	187	296	239	
New employees by age	Korea Zinc (Headquarters + Onsan Refinery)	Employees (under age 30)	Person	37	54	161	223	162
		Employees (age 30-50)	Person	5	13	25	66	74
		Employees (over age 50)	Person	0	0	1	7	3
New employees by gender	Male	Headquarters	Person	2	7	7	33	26
		Onsan Refinery	Person	37	54	167	225	180
		Total	Person	39	61	174	258	206
	Female	Headquarters	Person	2	3	7	22	21
		Onsan Refinery	Person	1	3	6	16	12
		Total	Person	3	6	13	38	33

*Due to changes in calculation methods and criteria, there are differences from the data disclosed in the previous year's report.

Employees by Type of Employment		Unit	2019	2020	2021	2022	2023	
Headquarters	Permanent	Male	Person	116	122	124	152	181
		Female	Person	22	24	30	43	61
		Total	Person	138	146	154	195	242
	Temporary	Female	Person	1	0	0	1	2
		Total	Person	1	0	0	1	2
		Male	Person	1,211	1,213	1,269	1,366	1,502
Onsan Refinery	Permanent	Female	Person	30	33	35	45	42
		Total	Person	1,241	1,246	1,304	1,411	1,544
		Male	Person	31	49	96	131	91
	Temporary	Female	Person	1	0	0	4	2
		Total	Person	32	49	96	135	93
		Male	Person	1	5	5	7	12
Other indirectly employed personnel	Dispatched worker*	Person	1	5	5	7	12	

*Workers (including office assistants, etc.) belonging to a placement agency who are dispatched to Korea Zinc and receive work instructions from the company and engage in work for the company.



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Social

Managers and above by Gender		Unit	2019	2020	2021	2022	2023
Percentage of women among all management positions	All managers	%	1.16	1.10	1.37	3.20	5.26
	Percentage of women among top management positions*	%	0.99	0.91	0.91	2.92	2.61
	Percentage of women among junior management positions**	%	1.27	1.23	1.65	3.38	6.91
Women in managerial or higher positions by business location	Headquarters	%	3.09	2.78	3.88	7.69	11.59
	Onsan Refinery	%	0.00	0.00	0.00	0.47	0.85
Percentage of women in revenue-generating departments***		%	1.01	1.08	1.04	1.34	1.25
Percentage of women in STEM departments****		%	9.09	7.14	8.33	11.10	17.91

* Top management position: executive and general manager level or higher

** Junior management position: lower level manager at the level of senior manager

*** Revenue-generating department: a department that manufactures products directly, or a department that sells products through sales activities, etc.

**** STEM department: a department in IT, new material development, or under the Strategies & Planning Division

Status of Employee Turnover*		Unit	2019	2020	2021	2022	2023
Number of retirees		Person	31	44	78	118	125
Retirees by gender	Male	Person	30	42	73	108	106
	Female	Person	1	2	5	10	19
Retirees by age	Employees (under age 30)	Person	6	12	30	69	53
	Employees (age 30-50)	Person	9	13	24	27	53
	Employees (over age 50)	Person	16	19	24	22	19
Total turnover**		%	2.20	3.10	5.00	6.80	6.60
Employee turnover		%	1.50	2.10	3.70	6.10	5.80

* Includes all resignations and job changes (dismissal, employee's desired resignation, retirement, and transfer)

** Turnover: Includes both voluntary and involuntary turnover (dismissal, natural/forced by retirement age, etc.)

*** Calculated based on voluntary job changes other than involuntary job changes (dismissal, natural/forced by retirement age, etc.)

Employee and Board Compensation*		Unit	2019	2020	2021	2022	2023	
Board compensation	Number of persons	Person	9	9	11	11	11	
	Upper remuneration limit	KRW 100 million	70	70	70	70	100	
	Total remuneration	KRW 100 million	38.5	40.6	42.6	63.0	48.0	
	Average remuneration per person	KRW 100 million	4.3	4.5	3.9	5.7	4.3	
CEO compensation	Total annual compensation	KRW 1 million	746	1,664	756	1,002	1,119	
	Average remuneration per person	All	KRW 1 million	83	85	86	95	102
Male		KRW 1 million	84	87	88	98	105	
Female		KRW 1 million	42	44	45	49	60	
Employee compensation	Ratio of CEO compensation to the annual salary of all employees excluding the CEO (or equivalent position)	Average value**	fold	9.0	19.6	8.8	10.6	10.9
	CEO annual total compensation growth rate and annual total compensation growth rate for all employees (excluding CEO)	Median	%	7.1	4.4	3.4	14.8	11.3
Equal pay for men and women	New employees	Starting basic salary	%	-	-	-	100	100

* Company-wide (Korea Zinc (Headquarters + Onsan Refinery)) data.

** Calculated based on CEO and corresponding position, with the average value according to the Annual Report.

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Social

Talent Development and Capacity Building

Korea Zinc conducts various training programs for the growth and career development of its employees. We increase the company's competitive edge by bolstering the leadership and job capabilities of employees and support new employees as they adapt to the company through an onboarding program.

Category	Core Values (Onboarding)		Leadership		Job			Global		Statutory/Other			
	Common	Introductory	New Employee	Level	Common	Detailed	Entrusted	Common	Selected	Common	Online		
Executives	Internalizing core values	Experienced employee onboarding program	New executive	Executives' workshop	External training programs			Language class	New expatriate program	Returning expatriate program	Statutory training	KZ School	
Team Leader			New team leader										
General Managers			Promoted General Managers (year 1)	Performance management training	Training in-house instructors	Common abilities program by job group	Core job basic capabilities program						SHE/quality training
Senior Managers			Promoted Senior Managers (year 1)										
Managers			New employee onboarding program	Promoted Managers (year 1)									
Technicians			Technician onboarding program	Field leadership program	Technician skills program								

Leadership Training

Korea Zinc conducts a variety of leadership programs to enhance the leadership capabilities of employees, through which they seek to recognize their role as leaders and bolster their leadership capabilities. Every year, we provide basic leadership competency training for team leaders and above to support their effective management of others within the organization, as well as training to learn business status and business management knowledge. We also offer one-on-one or group coaching programs for new leaders.

Category	Subject	Number of People Completing Training (ratio)	Key Details
Executive Training	Executives	46 people (99% of all executives)	- Recognizing the role of an executive - Understanding business status and management knowledge
Team Leader Training	Team leaders	76 people (100% of all team leaders)	- Recognizing the role of a team leader - Learning organizational management and performance management methodologies
Training for Promoted Managers	Newly promoted general manager/ senior manager/ managers	36 people (100% of all promoted managers)	- Recognizing your changed role - Learning the necessary competencies for each role

Job Training

Korea Zinc actively supports the improvement of employees' job competencies by deriving required competencies for each job and providing necessary training. Through in-house instructor training, the company accumulates job-related knowledge and skills and disseminates them within the company.

Training for Global Operations

Korea Zinc provides online and offline language learning programs to enhance employees' global business capabilities. Employees are free to select/apply for the courses they want to take. In addition, we support employees' early adaptation by providing courses for new and returning expatriates.

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Social

New Employee Onboarding Training

Onboarding Programs for New Employees

Korea Zinc operates new employee onboarding programs to support new employees' adaptation to the organization and career development. During the introductory training period, new employees learn Korea Zinc's history and business and acquire the knowledge and skills required for new employees. After completing the introductory training, new employees can grow into KZ People by strengthening their work capabilities and understanding Korea Zinc's culture through various programs for one year.



Introductory Training

- Business introduction
- Understanding systems/regulations
- Cultivating basic attitude/knowledge
- Understanding the worksite/process training, excursions



OJT/Buddy Program

- Learning tasks through weekly OJT
- Understanding Korea Zinc's culture through the buddy program



Basic Job Skills Training

- Learning OA skills, work knowledge, etc.



Thematic Research Projects

- Selection of field tasks
- Announcement of research results



2023 Introductory Training for New Employees



New Employee Onboarding Training



Experienced Employee Onboarding Process

Korea Zinc also provides an onboarding program for experienced employees. The company actively supports the adaptation of experienced employees by providing time for networking between experienced employees and existing members as well as time to understand the company, business, system, and field.

Supporting Career Development and Self-development Training

Korea Zinc supports various training programs to develop employees' careers. Employees can establish a self-development plan every year and apply for the training they need. To support employee self-development, Korea Zinc operates an online learning platform where employees can learn anywhere, including on PCs and smartphones. Individuals are free to take courses other than their own if they deem it necessary. By supporting outsourced training and domestic degree programs, the company strives to build a culture where employees can grow on their own.

Number of Recipients Supported in Domestic Degree Programs (Last 3 Years)

Category	Unit	2021	2022	2023
Number of Participants	Person	3	8	17
Eligibility	Support for obtaining work-related degrees such as technology management and business administration			

Ethical Management and Statutory Training

Korea Zinc established the Code of Ethics in 2003, which is a standard for judging desirable thinking and behavior to which all employees must adhere. Korea Zinc employees raise awareness of ethical management and consistently practice it through ethical management pledges and ethical management training every year. The company conducted statutory training on preventing sexual harassment and bullying in the workplace, improving awareness of the disabled, and personal information protection training, and also conducted re-employment training for seventeen people scheduled to retire.

Category	Unit	Ethical Management Training	Sexual Harassment Prevention Training	Workplace Bullying Prevention Training	Disability Awareness Training	Personal Information Protection Training
Completion Rate	%	100	100	100	100	100

Retiree Training

Korea Zinc implements training programs aimed at assisting retiring employees. In 2023, the company delivered a comprehensive program comprising 18 hours of career and life planning education for 17 retirees. Furthermore, a dedicated 1:1 employment consulting service was provided over a period of approximately 5 months. This service encompassed financial support for post-retirement career exploration, guidance in establishing new career objectives, and facilitation of job placement opportunities.

Category	Life Design Education for Retirees	1:1 Career Consulting & Learning Support
Content	Change Management (Acceptance of Change, Need for Future Planning), Unemployment Benefits, Financial/Asset Management, Career Exploration (Reemployment, Entrepreneurship, Rural Migration), Career Planning Internship, Health Management	- Career Goal Setting (Self-exploration, Competency Analysis) - Career Goal Execution (Resume Clinic, Job Search Strategies, etc.) - Job Placement Support (Employment Agency Connections, Course Recommendations)
Scale of Support	KRW 12.86 million	KRW 58.65 million

- Environmental
- Social**
- Governance
- Economic



Social

Human Rights Protection Training		Unit	2019	2020	2021	2022	2023
Employee training on business-related human rights policies and procedures	Number of employees	Person	1,376	1,402	1,467	1,637	1,860
	Number of training hours	Hour	11,008	9,582	8,081	5,798	6,831

Current Status of Training		Unit	2019	2020	2021	2022	2023
Total training expenses		KRW 1,000	422,400	322,800	436,300	1,584,000	2,924,266
Total number of employees participating in training		Person	1,412	1,441	1,554	1,742	1,881*
By gender**	Male	Person	-	-	-	-	1,779
	Female	Person	-	-	-	-	110
By position**	Administrative position	Person	-	-	-	-	147
	Employee	Person	-	-	-	-	1,742
Total training hours (accumulated hours)		Hour	67,587	82,313	61,538	84,582	107,929
Average training hours per person		Hour	48	57	40	49	57
Average training cost per person		KRW 1,000	299	224	281	909	1,555
Human capital ROI***		%	7.65	8.01	8.98	6.40	4.26

*The figure includes individuals who completed the training and then resigned within the year.

**Gender and rank-specific data management began in 2023.

***The calculation scope for human capital investment expenditure includes benefits, salaries, and training expenses. This differs from the calculation scope disclosed in the previous year, which has been corrected.

Status of Employees Subject to Regular Performance Evaluation and Career Development Review		Unit	2019	2020	2021	2022	2023	
Percentage of employees subject to regular performance evaluations and career development reviews	By gender	Male	%	97.1	96.7	92.1	93.6	95.2
		Female*	%	83.3	84.2	84.6	82.8	75.7
Korea Zinc	By type of employee	Administrative position	%	100	100	100	100	100
	By age	Employees (under age 30)	%	96.5	96.2	79.5	89.8	94.6
		Employees (age 30-50)	%	98.5	98.1	97.3	95.9	94.5
		Employees (over age 50)	%	89.7	90.5	89.9	88.8	92.2

*The percentage of female assistants who are not subject to regular performance evaluations and career development reviews is higher than that of male counterparts

Labor-management Relations

Korea Zinc recognizes the formation and membership of a labor union in accordance with the Trade Union and Labor Relations Adjustment Act. Our company has achieved a 36-year dispute-free workplace as of 2023, and this was made possible by the various discussions and activities to promote labor-management relations.

As of 2023, the labor union membership rate is 60.9% of all employees, and the company successfully concludes a collective agreement and determines the wage increase rate through collective bargaining with the labor union.

Labor Union Membership Status	Unit	2019	2020	2021	2022	2023
Number of employees affiliated with the labor union*	Person	995	988	1,000	1,052	1,147
Percentage of employees affiliated with the labor union**, **	%	100	100	100	100	100

*This has been corrected due to a change in the calculation method compared to the previous year's data.

**It is the same as the ratio of all employees included in collective bargaining, and the membership rate of all technical workers eligible for union membership is calculated.

Korea Zinc pays its employees wages above the legal minimum wage, and the ratio of wages between men and women is equal compared to the local minimum wage.

Payment of Minimum Wage and Living Wage		Unit	2019	2020	2021	2022	2023
Minimum wage	Ratio of new male employee wage to local legal minimum wage	%	175	172	177	231	230
	Ratio of new female employee wage to local legal minimum wage	%	175	172	177	231	230

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Social

Organizational Culture

Pursuing GWP (Great Work Place)

Smart Office

Korea Zinc created a smart office through remodeling to improve employees' work engagement and satisfaction. By installing an electric motion desk in the office so that the height can be adjusted to suit each employee's body and work situation, the company increased convenience and expanded and remodeled the conference room space. By establishing the latest remote system through smart monitors, etc., we provide an environment where collaboration is possible at all times regardless of work location at home or abroad.

Organizational Culture Orientation

Based on several workshops conducted in 2023, Korea Zinc is working to establish an organizational culture orientation that incorporates the opinions of employees and senior management. We are establishing a new organizational culture orientation (mission, core values) that employees can share and pursue together. The new mission and core values that will be established and declared in celebration of the 50th anniversary will increase the sense of belonging and instill pride in Korea Zinc employees.

Trust within the Organization through Effective Communication

Korea Zinc carried out the Team Together activity to improve communication and build trust within the organization. The company appointed a communication leader to improve communication within teams and classes, and also conducted various activities to communicate with senior management.

Fun and Vibrant Organizational Culture

Korea Zinc conducted an ethics campaign through webtoons to effectively convey proper work ethics in the workplace and community. The company operates an employee walking program, experiential activities aimed at interacting with attendees (KZ Together Class), and a program in which employees and their families can participate together (Family Month Event) to promote communication within and outside the organization. Through New Year's events and the Employee of the Month selection, we also provided an opportunity to give consideration and recognition for our valued colleagues.

EAP (Employee Assistance Program)

Korea Zinc provides counseling services with professional counselors to employees and their families to resolve concerns they may experience in their daily and corporate lives. We help Korea Zinc employees find emotional stability and happiness by providing stress-free consultation on a variety of topics ranging from work-related stress to interpersonal relationships, psychological conditions such as depression and anxiety, family and children, and financial/legal advice.



First Communication Team Leader Workshop



Family Month Event

Employee Benefits

Family-friendly Policies

Korea Zinc values its employees' work-life balance and strives to foster a family-friendly corporate culture by offering benefits that cater to different life stages. We facilitate maternity leave, parental leave, leave for miscarriage or stillbirth, and reduced work hours during pregnancy and childcare. Notably, our male employees are also encouraged to take advantage of parental leave. Furthermore, we support both childbirth and childcare by operating a top-notch daycare center, equipped with excellent facilities and an enriching educational environment, located in Onsan company housing.

Flextime

Korea Zinc implements flextime that allows employees to voluntarily adjust their working hours and types. Employees maximize work efficiency by selecting a total of four options: Staggered Schedule, Flexible Time, Remote Work, and Discretionary.

Scholarship Support

Korea Zinc covers tuition not only for its employees but also for their children. The company covers a certain amount of the employee's graduate school tuition, as well as childcare allowances, school admission congratulatory fees, and tuition incurred during the child's transition from kindergarten to college.

Medical Expenses

Korea Zinc covers the medical expenses of employees and their families (spouse and children) and provides comprehensive checkups every two years to employees and their spouses over the age of 30.

Company Housing and Dormitories

Korea Zinc operates a residential-commercial apartment complex capable of housing a total of 762 households as company housing for the Onsan Refinery. We provide self-development programs such as pottery classes and yoga classes for employees who live in the company housing. Meanwhile, we operate in Seoul 25-unit company housing located in Gangseo-gu and Nowon-gu.



Korea Zinc Daycare Center



Scholarship Support

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Social

Parental Leave		Unit	2019	2020	2021	2022	2023		
Use of parental leave	Headquarters	Male Person	0	0	0	0	0		
		Female Person	1	0	3	2	1		
		Total Person	1	0	3	2	1		
	Onsan Refinery	Male Person	1	3	1	9	4		
		Female Person	2	2	3	0	3		
		Total Person	3	5	4	9	7		
Korea Zinc (total)		Total Person	4	5	7	11	8		
Return after parental leave	Headquarters	Male Person	0	0	0	0	0		
		Female Person	1	0	1	2	2		
		Total Person	1	0	1	2	2		
	Onsan Refinery	Male Person	0	3	2	8	3		
		Female Person	1	2	3	2	0		
		Total Person	1	5	5	10	3		
	Korea Zinc (total)		Total Person	2	5	6	12	5	
	Number of people scheduled to return	Korea Zinc (total)		Total Person	3	6	6	13	7
		Korea Zinc (total)		Total %	67	83	100	92	71
	Continued employment after childcare leave (12 months)	Korea Zinc (total)		Total Person	2	5	6	12	4
Korea Zinc (total)		Total %	100	100	100	100	80		

Immersion (Happiness) Survey	Unit	2019	2020	2021	2022	2023
Employee Happiness Index*	Point	-	-	5	5.6	-

* Started in 2021, it will be implemented every other year beginning in 2023. The complete score is designed to have a total of 10 points.

Group Insurance and Retirement Pensions

Korea Zinc has signed up for group insurance to prepare for disasters, diseases, or accidents that may occur in the course of performing work and to provide reasonable compensation. In addition, Korea Zinc has subscribed to the defined benefit (DB) and defined contribution (DC) retirement pension systems to help employees maintain a stable life after retirement.

Retirement Pensions*		Unit	2019	2020	2021	2022	2023
Defined benefit (DB) pension	Estimated pension liability	KRW 100 million	1,397.9	1,550.7	1,747.8	1,897.6	2,602.5

* The size of the defined contribution (DC) cannot be disclosed since it is privately managed.



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Social

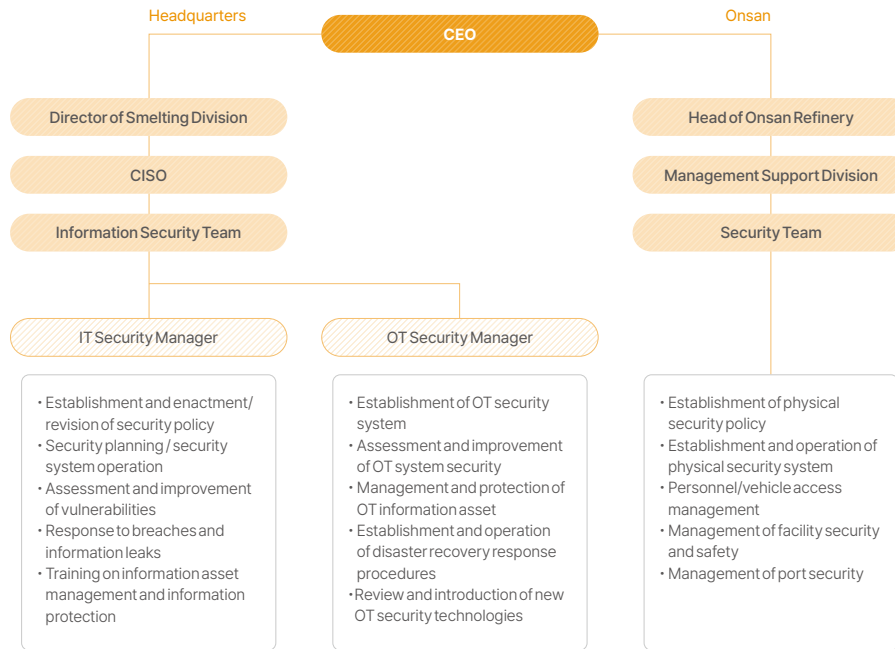
Information Asset Protection

Korea Zinc's Information Security Team is based at the Headquarters, and IT and OT security managers are responsible for security. Meanwhile, the Onsan Refinery's security team focuses on physical security.

The Information Security Team at the Headquarters makes efforts to protect internal information by actively responding to increasingly sophisticated intrusion attacks and strengthening access control through detecting and responding to abnormal signs in real time. The Onsan Refinery security team prevents security incidents and responds quickly in emergencies by strictly controlling people entering the refinery through an access control system and through 24-hour CCTV monitoring through the information security center.

[Cybersecurity Policy](#)

Korea Zinc conducts security reviews when acquiring new assets and systems to ensure system security against external cyberattacks. As part of the activities to raise information security awareness among employees, the company conducted company-wide hacking email response training once each in the first and second half of the year in 2023, and according to the results of the training, the company conducted separate information protection training. In addition, the company regularly provides information security training to new employees and new position holders. In order to successfully pursue Troika Drive, our future growth strategy, we have acquired TISAX* Level 3, a European information security certification, for our Headquarters and KZAM, a subsidiary. With the acquisition of this certification, we plan to provide customers with improved data security and continue to bolster our information protection activities to sharpen our competitive edge in the automotive supply chain market related to the secondary battery core materials business.



Information on Information Protection	Unit	2021	2022	2023	
Loss of customer information	Number of data breaches	Case	0	0	
	Number of data thefts	Case	0	0	
	Number of data losses	Case	0	0	
	Number of information security-related issues	Case	0	0	
	Number of customers affected by the breach	Person	0	0	
Information security investment amount		KRW 1 million	2,235	1,949	2,886

*TISAX (Trusted Information Security Assessment Exchange): an automotive cybersecurity certification



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Social

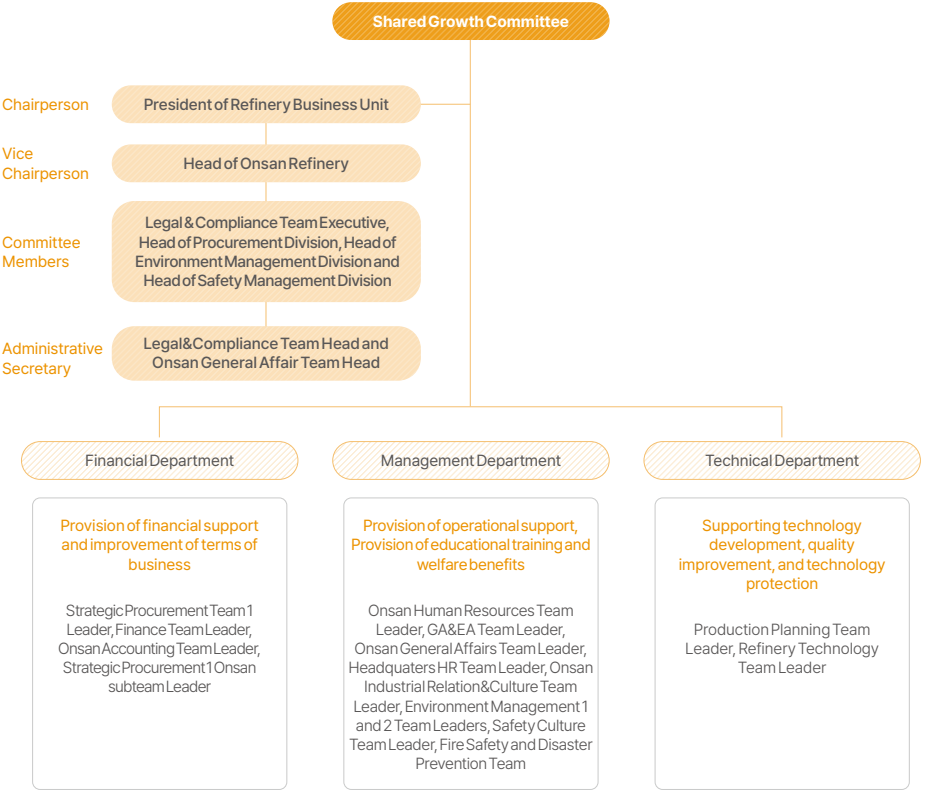
Shared Growth

Korea Zinc, which has continued to grow over the past 50 years, continues to provide support in various ways to spread the values of shared growth and coexistence with its suppliers, and is also continuously and systematically promoting support activities through the shared growth operating system.

We established a Shared Growth Committee, chaired by the President of Refinery Business Unit, which actively carries out various activities by assigning personnel in the areas of finance, management, and technology.

Since it signed a shared growth agreement with 83 suppliers in 2022, Korea Zinc has been providing them with environmental, safety, health, and TPM (Total Productive Maintenance) training. For win-win cooperation with its supplier, the company has been providing KOSHA-MS safety and health management system certification and follow-up management support to its in-house suppliers. By including contractor employees in various in-house safety and health training and activity programs, we support the bolstering of their safety and health capabilities. We hold a shared growth agreement ceremony for our suppliers to practice autonomous safety and provide incentives for achieving zero accidents. In order to increase the management stability of our suppliers and promote effective shared growth, we provide financial support and improve transaction conditions. In addition, we support technology development and quality improvement, and protect our suppliers' technology.

(As of the first half of 2024)



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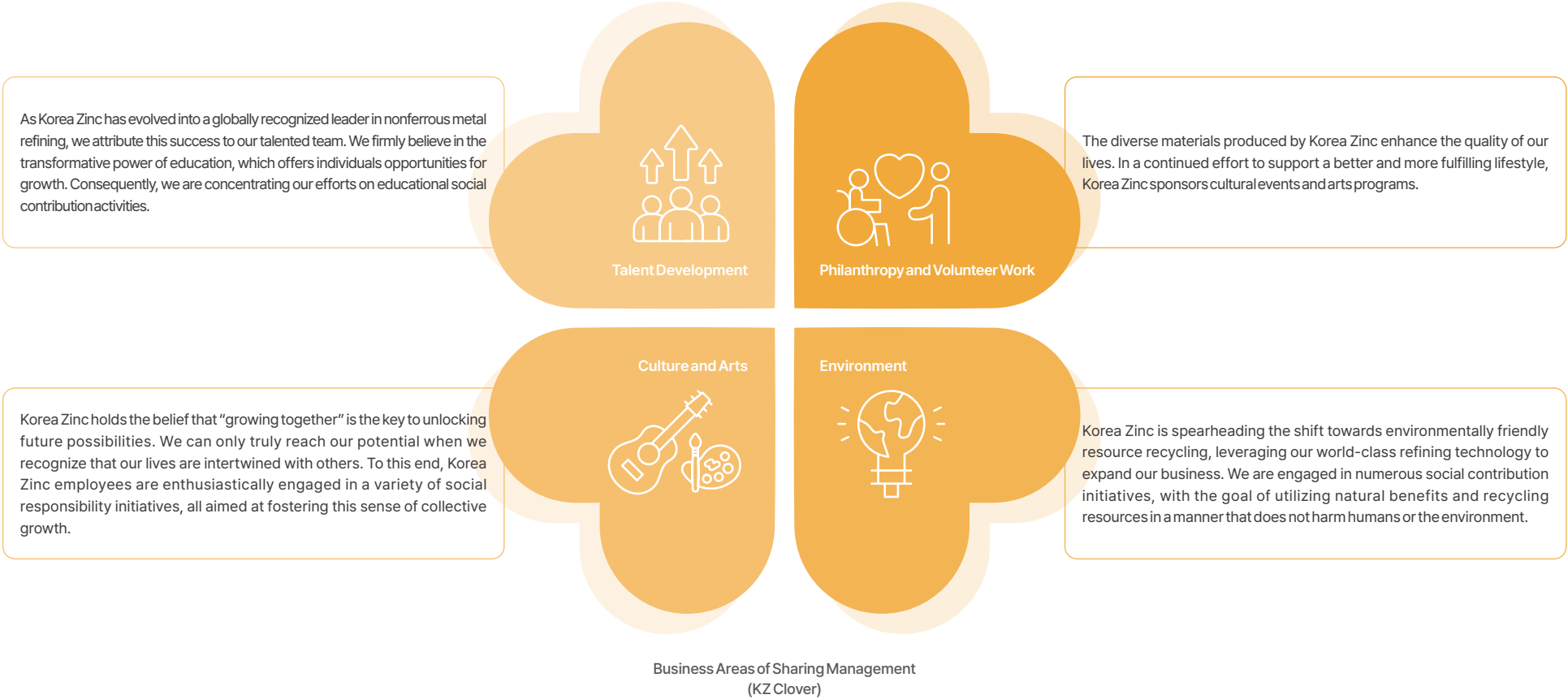
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Social

Sharing Management

Since launching KZ Clover, a social contribution strategy and brand established in 2022, Korea Zinc has been practicing shared management for members of various local communities. In order to benefit more stakeholders, Korea Zinc actively carries out various Clover areas such as talent development, volunteer work, culture and arts, and eco-friendly activities. In 2023, Korea Zinc was honored for its ongoing positive influence in the Ulsan region, earning the highest grade in the "Community Contribution Recognition Program." Looking ahead, we will remain committed to executing sustained and meaningful initiatives across its four key areas of philanthropic management.

[Korea Zinc Website: Sharing Management](#)



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Social

Sharing Management Activities

[KZ Progress: Talent Development]

Sponsorship of Education for Children of Multicultural Families

As the number of multicultural families in Ulsan City increases, it is difficult to secure a budget from the local government to support children. Accordingly, Korea Zinc carries out a Korean language and culture education support project in conjunction with the Ulsan City Office of Education and local organizations.

Donating Growth Fund to Ulsan Schools

Korea Zinc donates development funds to more than 10 elementary, middle, and high schools in Ulsan every year.

Child Welfare

Since 2011, Korea Zinc has been donating KRW 40 to 50 million annually to Dongmyeong Children's Welfare Center to cover children's projects. At the same time, employees carry out volunteer work to provide assistance to children every year. In addition, the company carries out activities to support the future of children in various fields, such as protecting single mothers and children, supporting multicultural children, and sponsoring the children of inmates.

Youth Support Project

Korea Zinc has been operating a youth dream support project for socially vulnerable children for 12 years. Through this project, we will provide children and youth with opportunities to develop their talent and contribute to nurturing the generation that will lead the future.

Mid/Long-term Plan

Korea Zinc will continue to support the career development for youth from multicultural or vulnerable families. Through not only financial support but also volunteer work in which our employees participate, we will work together to foster future generations.



Volunteering at Dongmyeong Children's Welfare Center



Child Engineering Class in Onsan



Delivered Donations to the Ulsan Branch of Community Chest of Korea



Employees Volunteered in Habitat's Improvement of Residential Environment



Volunteering at Raphael Nanum Foundation

[KZ Together: Philanthropy and Volunteer Work]

Community Chest of Korea

At the end of every year, Korea Zinc donates KRW 3 billion as an expression of our love for our neighbors through the Community Chest of Korea. As the company has participated in the "Hope Sharing Campaign" since 2007, our accumulated donations by 2023 amount to KRW 35.8 billion, and we also joined the "Hope Sharing Campaign 30 Billion Won Club" in 2022. The company also delivered donations to the Ulsan branch, where the Onsan Refinery is located. The money is being used to support neighbors in need in the region by repairing discarded PCs at the smelter, installing a local children's center, and providing bathing services for the vulnerable elderly.

Habitat Improvement of Residential Environment and Winter Support Activities

Korea Zinc has been providing KRW 150 million in donations every year since 2012 to improve the residential environment of vulnerable groups in Seoul and Ulsan regions, and in 2023, the company participated in improving the residential environment of fourteen households. In addition, we delivered winter kits to one hundred households.

Crime Victim Support Center and Abuse Prevention Support

Korea Zinc donated KRW 20 million to the Ulsan Crime Victim Support Center to help crime victims return to their daily lives. Our company also delivered donations to two institutions specializing in elderly protection to provide intensive care for elderly and children victims of abuse and operate abuse prevention programs.

Medical Volunteer Work

In order to provide medical benefits to homeless people who have difficulty visiting hospitals, Korea Zinc has been donating KRW 20 million in donations and participating in volunteer activities annually to the Raphael Nanum Foundation since 2016.

Mid/Long-term Plan

Korea Zinc is expanding its budget to support the disabled, seeking ways to help their livelihood, and planning donations and volunteer activities that can provide practical benefits.

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Social

[KZ Happiness: Culture & Arts]

Metal Craftsman of the Year Award

For the past 10 years, Korea Zinc has sponsored the "Craft Trend Fair," which best demonstrates the characteristics of our company's business. Starting in 2023, the company began holding and hosting award ceremonies and awarded prize money of KRW 10 million and plaques to the winners, artists Seoul G. Kwon and Sang H. Kim. In December of the same year, the company received the Minister of Culture, Sports and Tourism Award at the 2023 Craft of the Year Awards* in recognition of its contributions.

KZ Project

Korea Zinc strives to create sustainable value beyond financial value in order to fulfill our mission of the times: "Healthy development and growth of the world." In pursuit of this, we signed an agreement with the Seoul Museum of Craft Art for joint promotion and cooperation of modern craft exhibitions and related programs in an effort to raise the prestige of crafts. For our first joint project, we held a special exhibition, "Long-Lasting Objects of Metalsmiths," with the winners of the "Metal Craftsman of the Year Award" in December 2023.

Sponsorship of other Cultural Projects

Korea Zinc donates KRW 10 million each year to the Gloria Opera Company and Orchestra Ensemble to revitalize domestic cultural projects. The sponsorship of the National Museum of Modern and Contemporary Art, which began in 2021, will continue in 2024.

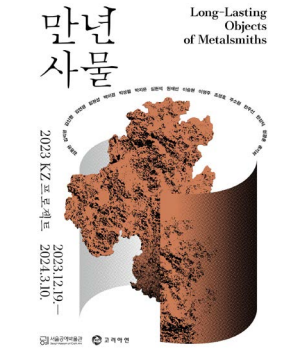
Mid/Long-term Plan

Through collaboration with the Seoul Museum of Craft Art, the company prepares the next story of the KZ Project. Through the new exhibition in 2025, we are expected to contribute to revitalizing new areas of craft culture.

*An award given to individuals or organizations that have contributed to the development of Korean crafts and publicity of craft culture.



Honored by Craft Trend Fair



A Special Exhibition "Long-Lasting Objects of Metalsmiths"



Creating a Forest of Connection



Plogging

[KZ Sustainability: Environment]

Creation of a Forest of Connection

After Korea Zinc signed a business agreement to create a Forest of Connection in 2022, approximately 20 Korea Zinc employees and labor union members participated in the Ujjin forest fire-affected area in April 2023 and helped create a sustainable forest ecosystem. In June of the same year, Korea Zinc expanded its business to Indonesia, and then created a second Forest of Connection on Lombok, fulfilling its social responsibility as a global company.

Cleanup Activities near Worksites, such as Plogging

Korea Zinc carried out environmental purification activities to prevent urban flooding near its business locations.

Mid/Long-term Plan

The Forest of Connection Project continues at home and abroad in 2024. We are planning to plant additional trees in the Ujjin forest fire-affected area, and considering to create additional forests overseas. We are planning volunteer and donation activities related to waste plastic and various recyclables in connection with the resource circulation project, one of Korea Zinc's new business projects.

Donation and Sponsorship Policy

Participating in Social Contribution	Unit	2019	2020*	2021*	2022	2023
Number of participants per year	Person	133	-	-	90	56
Total participation time	Hour	532	-	-	360	312
Participation time per person	Hour	4	-	-	4	5.6

*No social contribution activities due to COVID-19 social distancing

Social Contribution Cost	Unit	2019	2020	2021	2022	2023
Total	KRW 1 million	5,881	6,608	6,767	7,958	8,611
Donation to charity*	KRW 1 million	4,630	5,275	4,776	5,547	5,525
Community investment**	KRW 1 million	1,240	1,315	1,988	2,379	2,718
Commercial initiatives***	KRW 1 million	11	17	3	32	368

*Donation to charity: Goods/food/donations provided to socially vulnerable groups and funds for welfare purposes, etc.

**Community investment: Amount invested directly or indirectly in infrastructure and programs within the community, such as support for arts, education/career projects, and forest creation, in addition to support for the socially vulnerable

***Donations/investments for association activities related to Korea Zinc's business or sales activities, not included in local community investments or charitable donations

****In accordance with Article 31 of the Political Funds Act, Korea Zinc does not provide donations or sponsorships for the purpose of influencing policy formation, and does not provide funds to institutions or companies that are experiencing legal or financial conflicts or are affiliated with specific political parties or organizations.

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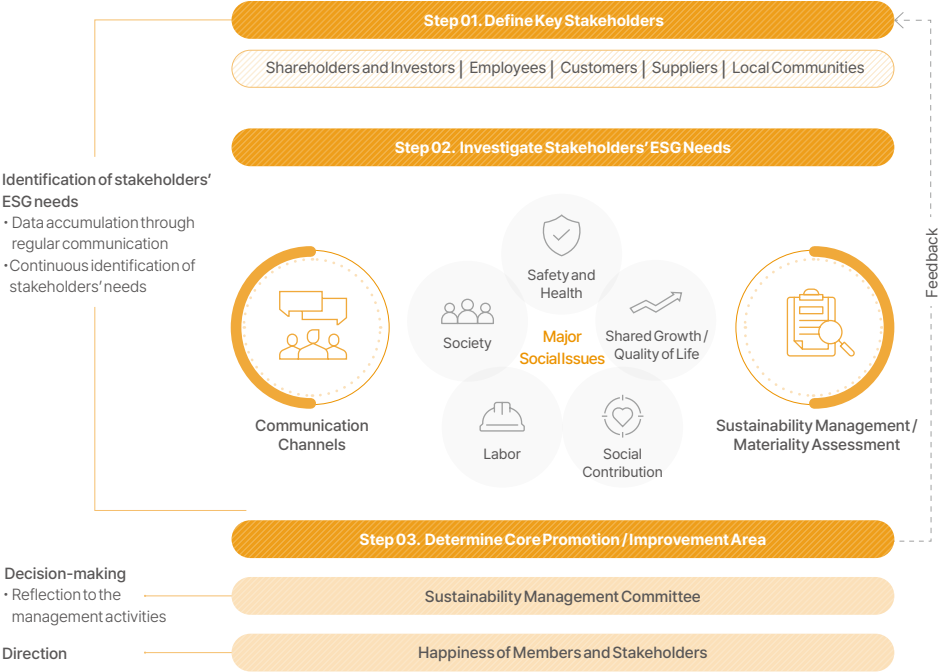
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Social

Stakeholder Communication

Korea Zinc identifies and manages various internal and external stakeholders, including employees, affiliates, suppliers, customers, shareholders, investors, local communities, and the government, as major stakeholder groups. In order to regularly check for positive or negative impacts on stakeholders that may arise from Korea Zinc's management activities, the company carefully listens to the voices of stakeholders through various channels.

In 2023, Korea Zinc increased communication with shareholders and investors by holding its first Investors' Day, and is also bolstering communication with the local community, potential customers, NGOs, and the government through YouTube and Instagram. By publishing sustainability reports and operating a cyber report, the company actively tries to listen to the opinions of its suppliers and affiliates. By reflecting not only employees but also external stakeholders in double materiality assessment, supply chain management, and human rights impact assessment, the company strives to collect opinions from various stakeholders in as many areas as possible. Going forward, we will expand and improve communication with stakeholders by establishing various communication channels to identify and mitigate internal and external risks and strive to achieve more sustainable management activities.



Communication Channels with Different Stakeholders

Korea Zinc actively utilizes its website and YouTube channels to provide company news and ESG content related to the interests of various stakeholders. Meanwhile, the Board of Directors and subordinate committees reflect the opinions of stakeholders collected through each communication channel in the company's management activities.

Stakeholder	Main Interest	Communication Channel	Common	Frequency of Management
Shareholders/ Investors	<ul style="list-style-type: none"> • Highest decision-making structure • Management strategy and investment plans • Compliance • Financial and non-financial performance • Risk management 	General meeting of stockholders		Regular
		IR (Investors Relation)		Regular
		Public notice		Ad hoc
Employees	<ul style="list-style-type: none"> • Work-life balance • Labor-management relations • Benefits package • Assessment and rewards • Capacity enhancement 	Labor-Management Council		Ad hoc
		Happiness Index survey within the organization	• Website (www.koreazinc.co.kr)	Regular
		Communication platforms	• Sustainability Report	At any time
Customers	<ul style="list-style-type: none"> • Product quality and safety • Competitiveness of product prices • Terms of contracts for products • Brand reputation 	Voice of Customers (www.koreazinc.co.kr)	• Social media channels	At any time
			• Instagram (www.instagram.com/koreazinc)	
Partners	<ul style="list-style-type: none"> • Fair trade • Shared growth • Win-win collaboration • Supply chain management policies 	Shared growth	• YouTube Korea Zinc TV	Regular/ Ad hoc
		Seminars/education		Ad hoc
Local Communities	<ul style="list-style-type: none"> • Effects on local communities • Social contributions (donations and sponsorship) • Responses to climate change • Participation in government policies • Activation of industrial ecosystems 	Local governments in communities (economics/ social welfare, volunteer activities, and education)		At any time
		Institutions/ organizations (Sustainable Development Council, RE100 Council)		At any time

Community Communication

Korea Zinc implements local employment directly in the countries where it operates and indirect employment through suppliers in their local countries. We also provide training to local personnel and strive to maintain continuous communication with the local community.

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Governance

Governance Structures

Composition and Roles of the Board of Directors

The Korea Zinc Board of Directors is composed of three internal directors, seven independent directors, and three non-executive directors, with independent directors making up more than half (61.5%) of the Board members. Korea Zinc also separated the positions of the CEO and the Chairperson of the Board of Directors to improve management policy efficiency and realize responsible management. At the general meeting of shareholders in March 2024, CEO Tae W. Jung was elected as internal director, while new independent director Deok N. Hwang, a lawyer, and non-executive director Woo J. Kim, the head of Hyundai Motor Company Planning and Coordination Office (#1), were also elected.

(As of Mar. 2024)

[Corporate Governance Report](#)

Type	Name	Position	Gender	Age*	Term Endpoint	Initial Election Date	Career Highlights	Expertise	Concurrent Position
Internal director	Yun B. Choi	• Executive Chairperson of Korea Zinc	Male	49	2026 annual general meeting of shareholders	May 1, 2007	• Vice Chairperson of Korea Zinc	Overall management	• KZAM Corp., Yoo Mi Development Corp.
	Ki D. Park	• CEO of Korea Zinc	Male	56	2025 annual general meeting of shareholders	Mar 17, 2023	• CFO of SMC Australia • Executive Director of Korea Zinc	Overall management	• KZAM Corp.
	Tae W. Jung	• Co-President and Co-CEO	Male	57	2026 annual general meeting of shareholders	Mar 19, 2024	• Head of Materials Purchasing Division, Korea Zinc	Overall management	• KGX Co., Ltd., KG Green Tech Co., Ltd.
Independent director	Yong R. Sung	• Chairperson of Audit Committee • Independent Director Recommendation Committee member • Chairperson of Internal Transaction Committee	Male	66	2026 annual general meeting of shareholders	Mar 20, 2020	• Advisor at Bae, Kim & Lee LLC (current) • Acting Chairperson of the Board of Audit	Regulation and audit	
	Do H. Kim	• Audit Committee member • Internal Transaction Committee member • Chairperson of Remuneration Committee	Male	54	2026 annual general meeting of shareholders	Mar 20, 2020	• Chairperson of Startup Alliance (current) • Professor of Kookmin University College of Business Administration (current)	Consultation on internal process improvement	• Independent director of GOWITH Corporation
	Bo Y. Kim	• Remuneration Committee member	Female	55	2025 annual general meeting of shareholders	Mar 24, 2021	• Professor, Hanyang University Business School (current)	ESG-related consultation	
	Min H. Lee	• Internal Transaction Committee member	Male	59	2026 annual general meeting of shareholders	Mar 23, 2022	• Director of ESG Research Center of Yulchon LLC (current) • Deputy Minister of Policy Planning at the Ministry of Environment	Environment (climate changes and ESG)	• Independent director of POSCO
	Dae W. Suh	• Audit Committee member • Chairperson of Independent Director Recommendation Committee	Male	62	2025 annual general meeting of shareholders	Mar 17, 2023	• Chairperson of BnH Tax Accounting Cooperation (current)	Tax	
	Soon B. Kwon	• Independent Director Recommendation Committee member • Remuneration Committee member	Male	55	2025 annual general meeting of shareholders	Mar 17, 2023	• Representative Lawyer of SOL Law Firm (current) • Chief Prosecutor of Daegu High Prosecutors' Office	Law	• Independent director of Lotte Capital Co., Ltd.
	Deok N. Hwang	• Independent Director Recommendation Committee member	Female	67	2026 annual general meeting of shareholders	Mar 19, 2024	• Seoul Mediation Committee member, High Court and Seoul Central District Court	Law	• Independent director of Lotte Capital Co., Ltd.
Non-executive director	Hyung J. Chang	• Chairperson of Young Poong	Male	78	2026 annual general meeting of shareholders	Mar 12, 1993	• CEO of Young Poong	Nonferrous metal industry	• Sorin Corporation, Young Poong Precision Corp., CK Ltd. HCLtd.
	Nae H. Choi	• CEO of KEMCO Co., Ltd., Korea Nickel Corp., and Alantum Corp.	Male	54	2025 annual general meeting of shareholders	Mar 17, 2023	• CEO of Alantum Corp. (current), KEMCO Co., Ltd., and Korea Precursor Company	Nonferrous metal industry	• CEO of KEMCO Co., Ltd., Korea Precursor Company, and Alantum Corp.
	Woo J. Kim	• Head of Planning and Coordination Office (#1), Hyundai Motor Company,	Male	53	2026 annual general meeting of shareholders	Mar 19, 2024	• Head of PMO Business, Planning and Coordination Office, Hyundai Motor Company	Consultation on new businesses	

* As of May 21, 2024

* For additional information, refer to the 2023 Corporate Governance Report published this year.

Structure of Board of Directors	Unit	2019	2020	2021	2022	2023
Total number of registered directors	Person	9	9	11	11	11
Internal directors	Person	3	3	4	4	3
Independent directors	Person	5	5	6	6	6
Non-executive directors	Person	1	1	1	1	2
Proportion of independent directors	%	55.6	55.6	54.5	54.5	54.5
Male	Person	9	9	10	10	10
Female	Person	0	0	1	1	1
Number of female directors that are not controlling shareholders or their relatives, among registered directors	Person	0	0	1	1	1
Proportion of female directors	%	0	0	9.1	9.1	9.1

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Governance

Operation of the Board of Directors

Korea Zinc holds regular Board meetings every quarter and additional meetings as needed to address crucial matters. In 2023, a total of 13 Board meetings took place, during which various agenda items were addressed, including the review of the internal accounting management system's operational status, approval of disposal of retained earnings (dividend) and approval of appointment of compliance officer.

Activities of Board of Directors		Unit	2019	2020	2021	2022	2023	
Board of Directors	Total	Session	15	13	14	23	13	
	Total number of meetings held	Regular meetings	Session	6	6	5	5	4
		Special meetings	Session	9	7	9	18	9
		Attendance rate						
	Internal director (executive director)	%	96.4	100	100	95	96.2	
		Independent director	%	98.6	98.5	96.4	88.2	94.9
	Number of agenda items	Case	23	24	25	33	28	
Review of ESG-related agenda items	Session	-	-	-	3	-		
Reporting on important matters	Session	-	-	-	3	-		
Audit Committee	Total number of meetings held	Session	3	3	3	3	4	
	Attendance rate	%	100	100	100	88.9	100	
Independent Director Recommendation Committee	Total number of meetings held	Session	1	1	2	1	2	
	Attendance rate	%	100	100	100	100	100	
Remuneration Committee*	Total number of meetings held	Session	-	-	-	-	3	
	Attendance rate	%	-	-	-	-	100	
Internal Transaction Committee*	Total number of meetings held	Session	-	-	-	-	6	
	Attendance rate	%	-	-	-	-	100	

*The Remuneration Committee and the Internal Transaction Committee were established in 2023, and thus there is no history of their meetings in previous years.

Directors and Officers ("D&O") Liability Insurance

To enable unhindered management activities for executives and reduce excessive legal liabilities, Korea Zinc has purchased D&O liability insurance for all members of the Board. This insurance allows Korea Zinc to cover the legal liability for financial harm inflicted upon shareholders and third parties as a result of unjust actions, such as breach of duty or negligence by directors and executives (officers).

Chief Executive Officer (CEO) Succession Policy

In December 2023, Korea Zinc established its CEO Succession Procedure. Korea Zinc's CEO is selected based on his/her understanding and experience in the smelting business, management ability, etc., and is appointed as CEO after his/her ability as business executive is verified in the stages as a candidate and internal director. If the CEO is unable to perform his/her duties, the acting CEO shall perform the duties of the CEO in accordance with the Articles of Incorporation and the Board of Directors Regulation.

Board of Directors and Committee Evaluation

Korea Zinc evaluates the activities of the Board of Directors and Committees in accordance with Article 3.1 (Board of Directors Evaluation) of its Board of Directors Regulation. The Board of Directors and committee evaluation was conducted for the first time in 2023 and is being used as data for improving governance and enhancing the Board of Directors' capabilities. There are a total of 10 evaluation items based on the categories of the Board of Directors' roles and responsibilities, operational efficiency, and committees, and the evaluation is scheduled to be conducted once a year at the end of the year.



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Governance

Operation of Committees under the Board of Directors

Committees	Roles and Functions	Composition
Independent Director Recommendation Committee	Verify the qualifications and capabilities of independent director candidates and recommend them to the Board of Directors	4 independent directors: Dae W. Suh (Chairperson), Yong R. Sung, Soon B. Kwon, Deok N. Hwang
Audit Committee	Evaluate the audit of accounting and key management tasks and the operation of the internal accounting management system, and supervise the execution of executive duties	3 independent directors: Yong R. Sung (Chairperson), Do H. Kim, Dae W. Suh
Remuneration Committee	Ensure objectivity and transparency of director compensation, and deliberate on the limit of registered directors' compensation to be submitted to the general meeting of shareholders	3 independent directors: Do H. Kim (Chairperson), Bo Y. Kim, Soon B. Kwon
Internal Transaction Committee	Enhance transparency of corporate management by establishing a fair trade voluntary compliance system and manage important internal transactions between affiliates	3 independent directors: Yong R. Sung (Chairperson), Do H. Kim, Min H. Lee

Independent Director Recommendation Committee

Session	Date	Agenda	Status	Attendance rate (%)	Approval rate (%)
1st	Feb 16, 2023	Recommendation of independent director candidates	Accepted	100	100
2nd	Mar 17, 2023	Appointment of the Chairperson of the Independent Director Recommendation Committee	Accepted	100	100

Audit Committee

[Audit Committee Regulations](#)

Session	Date	Agenda	Status	Attendance rate (%)	Approval rate (%)
1st	Feb 16, 2023	Final Submission of the 2022 annual report	Accepted	100	100
2nd	May 11, 2023	Annual audit plan for 2023 Internal accounting management system audit	Reported	100	100
3rd	Aug 10, 2023	Progress of integrated audit for 2023 Progress of semi-annual review	Reported	100	100
4th	Nov 9, 2023	Progress of integrated audit for 2023 Progress of quarterly review	Reported	100	100

Internal Transaction Committee

Session	Date	Agenda	Status	Attendance rate (%)	Approval rate (%)
1st	Feb 16, 2023	Appointment of the Chairperson of the Internal Transaction Committee	Accepted	100	100
2nd	Jun 27, 2023	Transactions with Young Poong for 2023 Q2/Q4 Change in the sales and purchase transaction amount with major domestic affiliates	Reported Accepted	100	100
3rd	Jul 28, 2023	Reporting on the types of large-scale internal transactions Sales and Purchase Agreement for the Onsan Plant Assets of Korea Nickel Corp.	Reported Accepted	100	100
4th	Sep 19, 2023	Transactions with Young Poong for Q3/Q4 2023 Change in the sales and purchase transaction amount with major domestic affiliates (goods and services transaction) for 2023 Q3	Reported Accepted	100	100
5th	Nov 16, 2023	Participation in KEMCO's paid-in capital increase	Accepted	100	100
6th	Dec 14, 2023	Projection of goods and services transactions for 2024 Quarterly projection of sales and purchase transaction amount with affiliates (goods and services transaction) for 2024	Reported Accepted	100	100

Remuneration Committee

Session	Date	Agenda	Status	Attendance rate (%)	Approval rate (%)
1st	Feb 16, 2023	Appointment of the Chairperson of the Remuneration Committee	Accepted	100	100
2nd	Mar 17, 2023	Deliberation on the 2023 Director Compensation Policy Re-delegation of individual remuneration decisions within the limit on director compensation for 2023	Accepted Accepted	100	100
3rd	Sep 7, 2023	Approval of the executive performance and compensation standards	Accepted	100	100

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Governance

Independence, Expertise, and Diversity of the Board of Directors

Board Independence

[Policy on Independence Criteria for Independent Directors](#)

Korea Zinc secures the independence of the Board of Directors by separating the CEO and the Chairperson the Board of Directors. Yun B. Choi, an internal director, was appointed as the Chairperson of the Board of Directors, and Ki D. Park and Tae W. Jung, internal directors, were appointed as the CEOs.

To ensure the independence of each director, Korea Zinc takes additional steps to confirm the qualifications of internal director candidates, who are experts in their respective fields, in accordance with relevant laws, including the Commercial Act. Korea Zinc has established its independence criteria for independent directors, consisting of 10 items, and considers candidates who meet them all as independent. The Independent Director Recommendation Committee, which operates under the Board of Directors, reviews the independence of candidates and makes recommendations to the Board. Independent directors are ultimately elected at a general meeting of shareholders.

To strengthen independence of independent directors during execution of their duties, Korea Zinc restricts their terms to 2 years and guarantees that no long-term independent directors are present. Furthermore, Korea Zinc mitigates conflicts of interest by examining if independent directors engage in transactions with the company or its affiliates, or hold concurrent positions.

Board Diversity

Principles and Standards of Board Diversity

[Board Expertise and Diversity Policy](#)

As a global company, Korea Zinc is committed to ensuring diversity within its Board of Directors and has established the principles and standards of Board diversity. To this end, Korea Zinc selects directors solely based on their work experience and expertise, without discrimination regarding nationality, gender, education, or regional affiliations.

Director Bo Y. Kim, initially elected at the 2021 annual general meeting of shareholders, was re-elected at the 2023 annual general meeting of shareholders, and Director Deok N. Hwang was elected at the 2024 annual general meeting of shareholders, enhancing gender diversity within the Board of Directors. As of 2024, female directors account for 15.4% of Korea Zinc's Board of Directors, which is expected to reflect more diverse and rich perspectives in key management decisions in the future.

Board Expertise

Board Skills Matrix (BSM)*

The Board of Directors of Korea Zinc consists of experts in various fields, including corporate management, nonferrous metals, finance and accounting, risk management, and ESG. Recently, to address the growing demand from stakeholders for verification of the Board members' abilities to fulfill their roles, Korea Zinc has created and shared a BSM. This matrix offers a concise overview of the Board members' expertise and career experiences.

Type	Name	Corporate Management	Industry (Nonferrous Metals)	Finance and Accounting	Law	Risk Management	Global Capabilities	ESG/ Sustainability
Internal directors	Yun B. Choi	●			●		●	
	Ki D. Park	●		●				
	Tae W. Jung	●	●					
Independent directors	Yong R. Sung				●	●		
	Do H. Kim	●						
	Bo Y. Kim	●						●
	Min H. Lee							●
	Dae W. Suh			●				
	Soon B. Kwon				●	●		
	Deok N. Hwang				●	●		
Non-executive directors	Hyung J. Chang		●					
	Nae H. Choi		●					
	Woo J. Kim	●					●	

*Based on the Board of Directors after the 2024 annual general meeting of shareholders

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Governance

Shareholder Return

In February 2023, in order to improve investors' predictability of dividends, the company established a dividend policy and provided it to shareholders with the goal of maintaining a dividend payout ratio of 30% or more based on separate (non-consolidated) net income for the next three years (2023-2025) and implementing an interim dividend once a year. In addition, in December 2023, the company established a plan to return a total of KRW 4 trillion or more to shareholders through dividends and acquisition/cancellation of treasury stocks over the next 10 years (2024-2033) and announced a mid- to long-term shareholder return policy through IR (investor relations).

In accordance with this shareholder return policy, the company paid out an interim dividend for the first time in August 2023, paid out a total dividend of KRW 15,000 per share (interim dividend of KRW 10,000 and year-end dividend of KRW 5,000) in 2023, and entered into a KRW 100 billion treasury stock acquisition trust agreement (trust agreement for acquisition of treasury stocks) in November for the purpose of cancellation thereof, completed the acquisition in May 2024 and then cancelled all of them. In addition, the company entered into a new KRW 150 billion treasury stock acquisition trust agreement in May 2024 with its resolved purpose being cancellation and employee evaluation and compensation, thereby continuing the implementation and efforts of the shareholder return policy announced in 2023. The company is seeking to increase shareholder value through active shareholder return and is continuously expanding the dividend payout ratio within the predictable range. In particular, despite the fact that its consolidated sales and net income decreased by 13.5% and 33.2%, respectively in 2023 compared to the previous fiscal year due to the decline in zinc prices and the increase in electricity rates, the consolidated dividend payout ratio for 2023 was 57.4% in order to ensure stable dividends in accordance with the previously announced dividend policy, and the total shareholder return rate (including acquisition and cancellation of treasury stocks) was 76.3%, the highest level since its establishment.

The company plans to continue pursuing a stable dividend policy while securing investment resources for new growth engines in the future, and will continue to strive to increase corporate value and shareholder value through consistent policies for securing of the company's stable management and mid- to long-term future growth engines.

Protection of shareholder rights		Unit	2019	2020	2021	2022	2023
Shareholder return	Types of stock	Share	Common stock	Common stock	Common stock	Common stock	Common stock
	Par value	KRW	5,000	5,000	5,000	5,000	5,000
	Dividends per share	KRW	14,000	15,000	20,000	20,000	15,000
	Total dividends	100 million	2,474	2,651	3,545	3,973	3,027
	Dividend yield	%	3.26	3.63	3.75	3.5	3.0
	Dividend payout ratio (consolidated)	%	39.1	46.3	43.8	50.9	57.4
	Acquisition and cancellation of treasury stocks	KRW 100 million	0	0	0	0	1,000

Tax Transparency

In order to systematically manage tax risks, Korea Zinc has appointed its CFO (Chief Financial Officer) to oversee tax affairs. Accordingly, the CFO manages Korea Zinc's business activities to ensure that proper tax payment is made through compliance with domestic and international tax laws, and reports to the management and the Board of Directors when a tax issue that materially affects the business arises. Korea Zinc transparently manages and discloses tax information in accordance with its own tax principles, and related information can be found in Korea Zinc's Sustainable Management Report and website. Through compliance with OECD guidelines and respect for tax authorities, Korea Zinc will continue to do its best to achieve transparent tax management with no tax evasion.

Financial Status		Unit	2020	2021	2022	2023
Debt ratio (debt/equity)		%	12.8	16.2	31.70	24.93
	Profit before tax	KRW 100 million	8,124	11,391	8,815	7,281
Tax paid	Nominal tax amount	KRW 100 million	2,376	3,280	832	1,946
	Nominal tax rate	%	29.2	28.8	9.4	26.7
	Effective tax amount	KRW 100 million	2,657	2,728	3,302	4,331
	Effective tax rate	%	32.7	24.0	37.5	59.5

Tax information, by Country*		Unit	2019	2020	2021	2022	2023
Australia	Revenue (after consolidation adjustments)	USD	568,390,220	422,380,688	600,770,290	571,353,224	616,916,824
	Revenue (before consolidation adjustments)	USD	80,024,939	165,497,041	168,971,270	51,073,670	59,412,273
	Profit (loss) before tax	USD	37,328,089	37,546,015	80,964,071	(63,342,783)	116,834,192
	Tangible assets (other than cash and cash equivalents)	USD	509,317,102	687,899,096	755,241,989	790,084,743	799,509,629
USA**	Revenue (after consolidation adjustments)	USD	-	-	-	25,487,232	61,971,062
	Revenue (before consolidation adjustments)	USD	-	-	-	454,328	514,494
	Profit (loss) before tax	USD	-	-	-	(21,693,616)	(39,898,338)
	Tangible assets (other than cash and cash equivalents)	USD	-	-	-	42,522,214	54,756,808

* In the case of Australia and the US, this applies to SMH (Australia) and Pedalpoint (US), major subsidiaries subject to business reporting consolidation. Korea Zinc also has subsidiaries/affiliates in other countries (Canada, Vietnam, etc.), but the scope of financial statement consolidation is limited to that of disclosure in this Sustainability Report.

** Pedalpoint (US subsidiary) is a company established in 2022, thus there is no tax information for 2019-2021.

[Tax Policy](#)

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Economic

Korea Zinc's economic data was prepared based on consolidated financial statements.

Financial Status

	Category	Unit	2020	2021	2022	2023
Assets	Current assets	KRW	4,912,869,202,998	5,689,044,210,643	6,071,090,869,900	5,571,656,932,735
	Non-current assets	KRW	3,586,776,374,652	4,275,004,424,006	6,026,827,489,074	6,474,414,378,915
	Total	KRW	8,499,645,577,650	9,964,048,634,649	12,097,918,358,974	12,046,071,311,650
Debt	Current assets	KRW	1,118,415,592,360	1,770,527,531,625	2,319,116,608,598	1,902,819,300,929
	Non-current assets	KRW	294,201,298,978	459,286,640,200	547,069,633,828	501,249,141,851
	Total	KRW	1,412,616,891,338	2,229,814,171,825	2,866,186,242,426	2,404,068,442,780
Capital	Capital	KRW	94,350,000,000	94,350,000,000	99,315,790,000	104,542,940,000
	Capital surplus	KRW	56,572,486,272	57,338,578,345	1,085,852,954,318	1,621,678,266,999
	Capital adjustment	KRW	(53,508,694,647)	(53,508,694,647)	(15,029,842,807)	(66,913,304,807)
	Accumulated other comprehensive income	KRW	(67,310,345,930)	(8,860,906,556)	(80,834,625,981)	(112,461,541,079)
	Retained earnings	KRW	6,939,677,782,254	7,518,367,793,855	7,953,409,019,052	7,843,381,808,493
	Non-controlling interest	KRW	117,247,458,363	126,547,691,827	189,018,821,966	251,774,699,264
	Total	KRW	7,087,028,686,312	7,734,234,462,824	9,231,732,116,548	9,642,002,868,870
Total Debt + Equity	KRW	8,499,645,577,650	9,964,048,634,649	12,097,918,358,974	12,046,071,311,650	
Equity capital ratio (capital/assets)	%	88.6	76.4	74.9	78.0	
Debt ratio (debt/equity)	%	12.8	16.2	31.7	24.9	

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Economic

Production Performance			Unit	2019	2020	2021	2022	2023
Korea Zinc	Base metals	Zinc	Ton	650,086	643,542	640,372	640,067	640,020
		Lead	Ton	413,060	435,040	426,415	412,432	413,328
	Precious metals	Gold	Ton	8	10	14	12	9
		Silver	Ton	2,083	2,321	2,202	2,075	1,974
	Sulfuric acid		Ton	1,251,259	1,309,118	1,298,192	1,257,802	1,397,519
SMC	Base metals	Zinc	MT	209,831	227,775	206,780	149,130	214,951
	Sulfuric acid		MT	444,801	481,618	408,549	330,282	410,307
	Others		MT	277,593	184,668	139,621	120,903	131,938

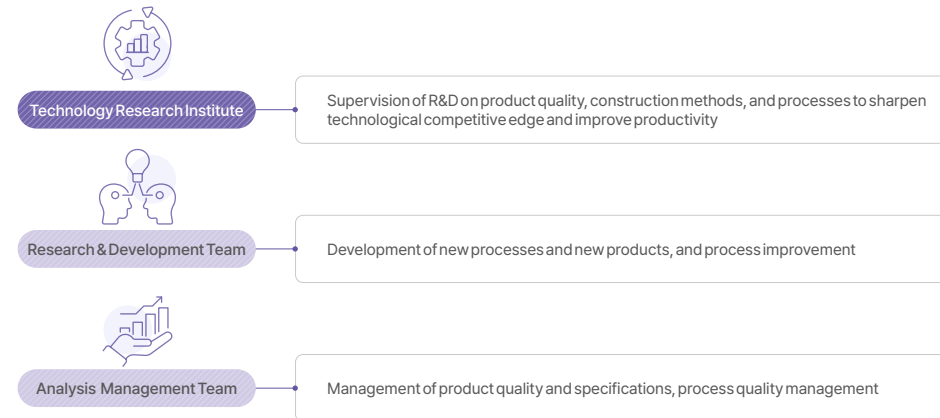
Proportion of Main Products Sales			Unit	2019	2020	2021	2022	2023
Korea Zinc	Base metals	Zinc	%	38.95	32.47	31.84	37.53	33.74
		Lead	%	19.79	17.47	16.81	16.63	17.84
	Precious metals	Gold	%	7.50	10.96	12.83	11.01	10.36
		Silver	%	23.27	30.31	29.04	22.72	26.39
	Copper	%	-	-	-	-	4.72	
Others	%	7.10	8.79	9.48	12.10	6.95		
SMC	Base metals	Zinc	%	-	-	85.27	87.41	87.79
	Sulfuric acid		%	-	-	3.43	4.26	2.77
	Others		%	-	-	11.30	8.33	9.44

*Based on the business report, there are some differences compared to the disclosures in the previous year's sustainability report.

Export and Domestic Sales		Unit	2019	2020	2021	2022	2023
Korea Zinc	Sales (Domestic)	KRW 1 million	1,653,805	1,701,829	2,494,490	2,560,819	2,125,409
		%	31.69	30.11	34.83	31.69	29.15
	Sales (Export)	KRW 1 million	3,565,018	3,950,320	4,668,016	5,520,559	5,165,660
		%	68.31	69.89	65.17	68.31	70.85
SMC	Sales (Domestic)	USD 1,000	127,006	139,335	209,348	224,899	171,538
		%	-	-	27.20	37.39	25.43
	Sales (Export)	USD 1,000	529,037	448,543	560,392	376,631	503,072
		%	-	-	72.80	62.61	74.57

R&D and Intellectual Property Rights

Korea Zinc conducts research and development on product quality, construction methods, and processes through the operation of the Technology Research Institute, and has been expanding its investment for five consecutive years since 2019. Through this R&D work, Korea Zinc has succeeded in developing a wide range of technologies, from efficiency improvement processes in the company's existing business to the development of precursor manufacturing technology to be used in secondary batteries. A total of 17 technologies were developed in 2023, and patent applications and registrations for six of these technologies were completed.



R&D Performance

Korea Zinc's R&D cost in 2023 increased 6.5 times compared to 2019. Korea Zinc will continue to sustainably grow as a company by expanding research on eco-friendly and resource-efficient construction methods and new technologies.

Category	Unit	2019	2020	2021	2022	2023
R&D cost	KRW 100 million	14.11	24.32	47.30	75.59	105.80

Intellectual Property Rights

Korea Zinc holds a total of eight trademark rights and 25 patent rights as of the end of 2023 (based on registration date). We are securing a competitive edge in secondary battery materials through an economical nickel smelting method patented in 2020. In 2023, new patents were registered for the manufacturing method of nickel aqueous solution and the manufacturing method of nickel sulfate solution for secondary batteries.

Korea Zinc will continue its efforts to maintain and secure competitiveness not only in the existing smelting business but also in the Troika Drive business through active investment in research and development and protection of intellectual property rights.

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GRI

Universal Standards

General Disclosures

Topic	GRI Standards	Disclosure	Page	Remarks
The Organization and Its Reporting Practices	2-1	Organizational details	5	
	2-2	Entities included in the organization's sustainability reporting	2	
	2-3	Reporting period, frequency and contact point	2	
	2-4	Restatements of information	2	
	2-5	External assurance	76-77	Verification statement attached
Activities and Workers	2-6	Activities, value chain, and other business relationships	12-18	
	2-7	Employees	51	
	2-8	Workers who are not employees	51	
	2-9	Governance structure and composition	64	
	2-10	Nomination and selection of the highest governance body	64	
Governance	2-11	Chair of the highest governance body	64	
	2-12	Role of the highest governance body in overseeing the management of impacts	65-67	
	2-13	Delegation of responsibility for managing impacts	9	
	2-14	Role of the highest governance body in sustainability reporting	9	
	2-15	Conflicts of interest	39-40, 67	
	2-16	Communication of critical concerns	63	-
	2-17	Collective knowledge of the highest governance body	64, 67	
	2-18	Evaluation of the performance of the highest governance body	65	
	2-19	Remuneration policies	66	
	2-20	Process to determine remuneration	66	
	2-21	Annual total compensation ratio	52	
	2-22	Statement on sustainable development strategy	3, 9	
Strategy, Policies and Practices	2-23	Policy commitments	9, 12	
	2-24	Embedding policy commitments	12	
	2-25	Processes to remediate negative impacts	33, 49	
	2-26	Mechanisms for seeking advice and raising concerns	63	
	2-27	Compliance with laws and regulations	38-40	
	2-28	Membership associations	79	
Stakeholder Engagement	2-29	Approach to stakeholder engagement	63	
	2-30	Collective bargaining agreements	55	

Material Topics

Topic	GRI Standards	GRI 14: Mining Sector	Disclosure Name	Page	Remarks	
Material Topics	3-1		Process to determine material topics	19		
	3-2		List of material topics	19-20		
	3-3	14.1.1	Management of material topics		21-25	
		14.2.1		21-25		
		14.3.1		26-28		
		14.16.1		29-33		

Topic Specific Standards

Economic Performance (GRI 200)

Topic	GRI Standards	GRI 14: Mining Sector	Disclosure Name	Page	Remarks
Economic Performance	201-1		Direct economic value generated and distributed	7, 69-70	
	201-2	14.2.2	Financial implications and other risks and opportunities due to climate change	22-23	
	201-3		Defined benefit plan obligations and other retirement plans	57	
Anti-corruption	205-1		Infrastructure investments and services supported	40	
	205-2		Communication and training about anti-corruption policies and procedures	40	
	205-3		Confirmed incidents of corruption and actions taken	40	
Anti-competitive Behavior	206-1		Legal actions for anti-competitive behavior, anti-trust, and monopoly practices		No violations
Tax	207-1		Approach to tax	68	

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GRI

Environmental Performance(GRI 300)

Topic	GRI Standards	GRI 14: Mining Sector	Disclosure	Page	Remarks
Materials	301-1		Materials used by weight or volume	44	
	301-2		Recycled input materials used	44	
Energy	302-1	14.1.2	Energy consumption within the organization	23, 25	
	302-2	14.1.3	Energy consumption outside of the organization	23, 25	
	302-3	14.1.4	Energy intensity	25	
	302-4		Reduction of energy consumption	25	
Water and Effluents	303-1		Interactions with water as a shared resource	45	
	303-2		Management of water discharge-related impacts	45	
	303-3		Water withdrawal	45	
	303-4		Water discharge	45	
	303-5		Water consumption	45	
Biodiversity	304-1		Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	46	
Emissions	305-1	14.1.5	Direct (Scope 1) GHG emissions	23	
	305-2	14.1.6	Energy indirect (Scope 2) GHG emissions	23	
	305-3	14.1.7	Other indirect (Scope 3) GHG emissions	23	
	305-4	14.1.8	GHG emissions intensity	23	
	305-5	14.1.9	Reduction of GHG emissions	23	
Effluents and Waste	306-3		Waste generated	45	
	306-4		Waste diverted from disposal	45	
	306-5		Waste directed to disposal	45	
Environmental Compliance	307-1		Non-compliance with environmental laws and regulations	46	
Supplier Environmental Assessment	308-1		New suppliers that were screened using environmental criteria	34-35	
	308-2		Negative environmental impacts in the supply chain and actions taken	34-35	

Social Performance(GRI 400)

Topic	GRI Standards	GRI 14: Mining Sector	Disclosure	Page	Remarks
Employment	401-1		New employee hires and employee turnover	51-52	
	401-2		Benefits provided to full-time employees that are not provided to temporary or part-time employees	56-57	
	401-3		Parental leave	57	
	403-1	14.16.2	Occupational health and safety management system	29-30	
	403-2	14.16.3	Hazard identification, risk assessment, and incident investigation	30	
	403-3	14.16.4	Occupational health services	31-32	
	403-4	14.16.5	Worker participation, consultation, and communication on occupational health and safety	33	
	403-5	14.16.6	Worker training on occupational health and safety	33	
	403-6	14.16.7	Promotion of worker health	32	
	403-7	14.16.8	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	32	
Occupational Health and Safety	403-8	14.16.9	Workers covered by an occupational health and safety management system	30	
	403-9	14.16.10	Work-related injuries	32	
	403-10	14.16.11	Work-related ill health	32	
	404-1		Average hours of training per year per employee	55	
Training and Education	404-2		Programs for upgrading employee skills and transition assistance programs	53-54	
	404-3		Percentage of employees receiving regular performance and career development reviews	55	
Diversity and Equal Opportunity	405-1		Diversity of governance bodies and employees	51, 64	
	405-2		Ratio of basic salary and remuneration of women to men	52	
Freedom of Association and Collective Bargaining	407-1		Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	35	
Child Labor	408-1		Operations and suppliers at significant risk for incidents of child labor	35, 49	
Forced or Compulsory Labor	409-1		Operations and suppliers at significant risk for incidents of forced or compulsory labor	35, 49	
Human Rights Assessment	412-1		Operations that have been subject to human rights reviews or impact assessments	49	
	412-2		Employee training on human rights policies or procedures	55	
	412-3		Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	34	
Local Communities	413-1		Operations with local community engagement, impact assessments, and development programs	60-62	
	413-2		Operations with significant actual and potential negative impacts on local communities	27, 46	
Supplier Social Assessment	414-1		New suppliers that were screened using social criteria	35	
	414-2		Negative social impacts in the supply chain and actions taken	35	
Public Policy	415-1		Political contributions		No political contribution
Customer Privacy	418-1		Substantiated complaints concerning breaches of customer privacy and losses of customer data	58	
Socioeconomic Compliance	419-1		Non-compliance with laws and regulations in the social and economic area	38-40	

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SASB

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Topic	Code	Classification	Accounting Metric	Unit	Page
Greenhouse Gas Emissions	EM-MM-110a.1	Quantitative	Gross global Scope 1 emissions, percentage covered under emissions limiting regulations	Ton, %	23
	EM-MM-110a.2	Qualitative	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets		23
Air Quality	EM-MM-120a.1	Quantitative	Air emissions of the following pollutants: CO, NOx (excluding N2O), SOx, particulate matter (PM10), mercury (Hg), lead (Pb), and volatile organic compounds (VOCs)	Ton	28
Energy Management	EM-MM-130a.1	Quantitative	Total energy consumed, percentage grid electricity, percentage renewable	TJ	25
Water Management	EM-MM-140a.1	Quantitative	Total fresh water withdrawn, total fresh water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	m³%	45
Waste & Hazardous Materials Management	EM-MM-150a.2	Quantitative	Description of waste and hazardous materials management policies and procedures for active and inactive operations	Ton, %	Not applicable
Workforce Health & Safety	EM-MM-320a.1	Quantitative	(1) MSHA all-incidence rate, (2) fatality rate, (3) near miss frequency rate (NMFR) and (4) average hours of health, safety, and emergency response training for (a) full-time employees and (b) contract employees	%	32
Business Ethics & Transparency	EM-MM-510a.1	Qualitative	Description of the management system for prevention of corruption and bribery throughout the value chain	-	38-40

TCFD

TCFD Index

Pillar	Disclosures	Page	CDP
Governance	The board's oversight of climate-related risks and opportunities.	21	C1.1a
	Management's role in assessing and managing climate-related risks and opportunities.		C1.2a
Strategy	The climate-related risks and opportunities the organization has identified over the short, medium, and long term.	22	C2.3, C2.4
	The impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.		C2.3, C2.4, C3.3
	The resilience of the organization's strategy, taking into consideration different climate related scenarios, including a 2°C or lower scenario.		C3.2
Risk Management	The organization's processes for identifying and assessing climate-related risks.	22	C2.2
	The organization's processes for managing climate-related risks.		
Metrics and Targets	How processes for identifying, assessing, and managing climate related risks are integrated into the organization's overall risk management.	23-25	C6.10
	The metrics used by the organization to assess climate related risks and opportunities in line with its strategy and risk management process.		C9
	Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.		C6
	The targets used by the organization to manage climate related risks and opportunities and performance against targets		C4.1

UN SDGs

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UNSDGs	Activities of Korea Zinc	Page
End poverty in all its forms everywhere	Social contribution activities to reduce poverty for the socially vulnerable and underprivileged	61
Ensure healthy lives and promote well-being for all	Strengthening safety-related institutions and operating related programs for employees and business partners	31-33
Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	Education programs on capacity building and life planning for all employees	53-54
Ensure access to affordable, reliable, sustainable, and modern energy	Development and expansion of renewable energy, such as solar, wind, and hydrogen energy	24-25
Promote inclusive and sustainable economic growth, employment and decent work for all	Creating new jobs and recruiting people through promoting new businesses	12-18
Build resilient infrastructure, promote sustainable industrialization and foster innovation	Increasing investment in minimizing environmental impact and participatory activities in institutions for a healthy industrial ecosystem	43, 78
Make cities inclusive, safe, resilient and sustainable	Residential development projects to improve residential areas and buildings of lower-income families or welfare facilities	61
Ensure sustainable consumption and production patterns	Continuous production through inter-industry circulation and cooperation	48
Take urgent action to combat climate change and its impacts	Conversion to renewable energy via energy conservation, greenhouse gas reduction, and the RE100	21-25

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PART A: GOVERNANCE OF RESPECT FOR HUMAN RIGHTS			
Topic	Code	Disclosure	Page
Policy Commitment	A1	What does the company say publicly about its commitment to respect human rights?	49
	A1.1	How has the public commitment been developed?	49
	A1.2	Whose human rights does the public commitment address?	49
	A1.3	How is the public commitment disseminated?	49
Embedding Respect for Human Rights	A2	How does the company demonstrate the importance it attaches to the implementation of its human rights commitment?	49
	A2.1	How is day-to-day responsibility for human rights performance organized within the company, and why?	9-10
	A2.2	What kinds of human rights issues are discussed by senior management and by the Board, and why?	49
	A2.3	How are employees and contract workers made aware of the ways in which respect for human rights should inform their decisions and actions?	49, 55
	A2.4	How does the company make clear in its business relationships the importance it places on respect for human rights?	49
	A2.5	What lessons has the company learned during the reporting period about achieving respect for human rights, and what has changed as a result?	49

PART B: DEFINING THE FOCUS OF REPORTING			
Topic	Code	Disclosure	Page
Statement of Salient Issues	B1	State the salient human rights issues associated with the company's activities and business relationships during the reporting period.	49
Determination of Salient Issues	B2	Describe how the salient human rights issues were determined, including any input from stakeholders.	49
Choice of Focal Geographies	B3	If reporting on the salient human rights issues focuses on particular geographies, explain how that choice was made.	49
Additional Severe Impacts	B4	Identify any severe impacts on human rights that occurred or were still being addressed during the reporting period, but which fall outside of the salient human rights issues, and explain how they have been addressed.	Not applicable

PART C: MANAGEMENT OF SALIENT HUMAN RIGHTS ISSUES			
Topic	Code	Disclosure	Page
Specific Policies	C1	Does the company have any specific policies that address its salient human rights issues and, if so, what are they?	49, 78
	C1.1	How does the company make clear the relevance and significance of such policies to those who need to implement them?	34, 49
Stakeholder Engagement	C2	What is the company's approach to engagement with stakeholders in relation to each salient human rights issue?	49
	C2.1	How does the company identify which stakeholders to engage with in relation to each salient issue, and when and how to do so?	63
	C2.2	During the reporting period, which stakeholders has the company engaged with regarding each salient issue, and why?	63
	C2.3	During the reporting period, how have the views of stakeholders influenced the company's understanding of each salient issue and/or its approach to addressing it?	63
	C3	How does the company identify any changes in the nature of each salient human rights issue over time?	49
Assessing Impacts	C3.1	During the reporting period, were there any notable trends or patterns in impacts related to a salient issue and, if so, what were they?	49
	C3.2	During the reporting period, did any severe impacts occur that were related to a salient issue and, if so, what were they?	49
Integrating Findings and Taking Action	C4	How does the company integrate its findings about each salient human rights issue into its decision-making processes and actions?	49
	C4.1	How are those parts of the company whose decisions and actions can affect the management of salient issues, involved in finding and implementing solutions?	9-10
	C4.2	When tensions arise between the prevention or mitigation of impacts related to a salient issue and other business objectives, how are these tensions addressed?	9-10
	C4.3	During the reporting period, what action has the company taken to prevent or mitigate potential impacts related to each salient issue?	35
Tracking Performance	C5	How does the company know if its efforts to address each salient human rights issue are effective in practice?	49
	C5.1	What specific examples from the reporting period illustrate whether each salient issue is being managed effectively?	Not reported
Remediation	C6	How does the company enable effective remedy if people are harmed by its actions or decisions in relation to a salient human rights issue?	49
	C6.1	Through what means can the company receive complaints or concerns related to each salient issue?	49
	C6.2	How does the company know if people feel able and empowered to raise complaints or concerns?	49
	C6.3	How does the company process complaints and assess the effectiveness of outcomes?	49
	C6.4	During the reporting period, what were the trends and patterns in complaints or concerns and their outcomes regarding each salient issue, and what lessons has the company learned?	49
C6.5	During the reporting period, did the company provide or enable remedy for any actual impacts related to a salient issue and, if so, what are typical or significant examples?	Not reported	

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Independent Assurance Statement

Overview

The British Standards Institution (hereinafter referred to as the "Assurer") was requested to verify the 2023 Sustainability Report (hereinafter referred to as the "Report"). The Assurer is independent to Korea Zinc and has no major operational financial interest other than the assurance of the Korea Zinc's report relating to the environment, social and governance (ESG) to the relevant stakeholders and may not be used for any other purpose. This assurance opinion statement is prepared based on the information presented by the Korea Zinc. The verification does not extend beyond such information and is solely based on it. In performing such verification, the Assurer has assumed that all such information is complete and accurate.

Korea Zinc is responsible for managing the relevant information contained within the scope of assurance, operating the relevant internal control procedures, and for all information and claims contained in the Report. Any queries that may arise by virtue of this independent assurance opinion statement or matters relating to it should be addressed to Korea Zinc only.

The Assurer is responsible for providing Korea Zinc's management team with an independent assurance opinion containing professional opinions derived by applying the assurance methodology to the scope specified, and to provide the information to all stakeholders of Korea Zinc. The Assurer will not, in providing this Independent assurance opinion statement, accept or assume responsibility (legal or otherwise) or accept liability for or in connection with any other purpose for which it may be used, or to any person or party by whom the Independent assurance opinion statement may be read.

Scope

The scope of engagement agreed upon with Korea Zinc includes the following:

- Report contents during the period from January 1st to December 31st 2023 included in the Report, some data of 2024 are included.
- Major assertion included in the Report, such as sustainability management policies and strategies, goals, projects, and performance, and the Report contents related to material issues determined as a result of materiality assessment.
- Appropriateness and consistency of processes and systems for data collection, analysis and review.
- Confirmation of the Report's compliance with the AA1000 AccountAbility Four Principles and, where applicable, the reliability of the sustainability performance information contained within the Report, based on the type of sustainability assurance performed in accordance with AA1000 AS v3.

The following contents were not included in the scope of assurance.

- Financial information in Appendix.
- Index items related to other international standards and initiatives other than the GRI.
- Other related additional information such as the website, business annual report.

Assurance Level and Type

The assurance level and type are as follows;

- Moderate level based on AA1000 AS and Type 1 (confirmation to the four principles as described in the AA1000 Accountability Principle 2018)

Description and Sources of Disclosures Covered

Based on the scope and methodology of assurance applied, the Assurer reviewed the following disclosures based on the sampling of information and data provided by Korea Zinc.

[Universal Standards]

2-1 to 2-5 (The organization and its reporting practices), 2-6 to 2-8 (Activities and workers), 2-9 to 2-21 (Governance), 2-22 to 2-28 (Strategy, policies and practices), 2-29 to 2-30 (Stakeholder engagement), 3-1 to 3-3 (Material Topics Disclosures)

[Topic Standards]

201-2, 205-1, 207-1-3, 301-1&2, 302-1-3, 305-1-5, 306-3&4, 308-1&2, 401-1&2, 403-4&5, 403-7-10, 404-1-3, 405-1&2, 407-1, 408-1, 409-1, 413-2, 414-1&2, 415-1, 418-1

Methodology

As a part of its independent assurance, the Assurer has used the methodology developed for relevant evidence collection in order to comply with the verification criteria and to reduce errors in reporting. The Assurer has performed the following activities;

- Validation of the materiality assessment and internal analytical process for determining assurance priorities, and a top-level review of issues that may be raised by external stakeholders in the context of sustainability.
- Discussion with managers and representatives on stakeholder engagement.
- Review of the supporting evidence related to the material issues through interviews with senior managers in the responsible departments.
- Verification of data generation, collection and reporting for each performance index and document review of relevant systems, policies, and procedures.
- An assessment of Korea Zinc's reporting and management processes against the principles of Inclusivity, Materiality, Responsiveness and Impact as described in the AA1000 AccountAbility Principles Standard (2018).
- Visit of the Main office of Korea Zinc to confirm the data collection processes, record management practices.

Limitations and Approach Used to Mitigate Limitations

The Assurer performed limited verification for a limited period based on the data provided by Korea Zinc. It implies that the Assurer is therefore subject to limitations relating to inherent risks that may exist without the identification of material errors. The Assurer does not provide assurance on possible future impacts that cannot be predicted or verified during the verification process and any additional aspects related thereto.

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Independent Assurance Statement

Competency and Independence

British Standards Institution (BSI) is a leading global standards and assessment body founded in 1901. BSI is an independent professional institution that specializes in quality, health, safety, social and environmental management with over 120 years history in providing independent assurance services globally. No member of the assurance team has a business relationship with Korea Zinc. The Assurer has conducted this verification independently, and there has been no conflict of interest. All assurers who participated in the assurance have qualifications as an AA1000AS assurer, have a lot of assurance experience, and have in-depth understanding of the BSI Group's assurance standard methodology.

Opinion Statement

The assurance was conducted by a team of sustainability report assurers in accordance with the AA1000 Assurance Standard v3. The Assurer planned and performed the verification and collected sufficient evidence to explain Korea Zinc's approach to the AA1000 Assurance Standard and to provide confidence in its self-declaration of compliance with the GRI Standards.

On the basis of our methodology and the activities described above, it is our opinion that the information and data included in the Report are accurate and reliable and the Assurer cannot point out any substantial aspects of material with mistake or misstatement. We believe that the economic, social and environment performance indicators are accurate and are supported by robust internal control processes.

Conclusions

The Report is prepared in accordance with the GRI Standards. (Reporting in accordance with the GRI standards). A detailed review against the AA1000 AccountAbility Principles of Inclusivity, Materiality, Responsiveness and Impact and the GRI Standards is set out as below.

Inclusivity

Korea Zinc defined Customers, employees, partners, and communities as key stakeholder groups, and operated communication channels for each stakeholder group for engagement. Korea Zinc reflected key issues derived from stakeholder channels to sustainability management decisions and disclosed the process in the Report.

Materiality

Korea Zinc has established strategies related to sustainable management and established a process to derive reporting issues. 5 major issues have been derived through analysis of the environmental and social impact on domestic and foreign stakeholders, analysis of ESG disclosure criteria, media analysis, and financial impact on executives and employees, and regulatory analysis of ESG financial impact initiatives.

Responsiveness

Korea Zinc has established a management process for critical issues determined by the materiality assessment. In order to properly respond to the expectations of stakeholders, the background, response, and control plan for critical issues are disclosed through the report.

Impact

Korea Zinc has established a process to identify and evaluate the impact on organizations and stakeholders related to critical issues. The management plan for critical issues is used in decision-making to establish a response strategy for each issue, and the process is disclosed through the report.

Recommendations and Opportunity for Improvement

The Assurer provides the following observations to the extent that they do not affect the assurance opinion;
 - Korea Zinc has established Long-term strategies and detailed goals for the environment (Greenhouse gas, Air pollutants) and society (occupational safety and health) fields. Disclosing its annual achievement strategies and detailed performance can help advance the sustainability management system of organizations.

GRI-reporting

Korea Zinc has self-declared compliance with GRI Standards. Based on the data and information provided by Korea Zinc, the Assurer confirmed that the Report is prepared in accordance with the GRI Standards, and confirmed there are no errors in the disclosures related to the Universal Standards and Topic Standards Indicators. No sector standards were applied, and the Mining Sector in the GRI Index was included for reference purposes only.



Issue : 18/06/2024
 For and on behalf of BSI(British Standards Institution)

BSI representative

Doowon Kim, Lead Assurer


Seonghwan Lim, Managing Director of BSI Korea

BSI Group Korea Limited : 29, Insa-dong 5-gil, Jongno-gu, Seoul, South Korea
 Hold Statement Number : SRA 806605

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KOREA ZINC
 Sustainability Report 2023

You can find more information about Korea Zinc on our website. For further details, please contact us at the address below.

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Greenhouse Gas Emissions Verification Report

Scope 1, 2

GV-24201

Verification Opinion Statement

GHG Emissions **KOREA ZINC Corporation**

Verification Target
Korean Foundation for Quality (hereinafter 'KFQ') has conducted a verification of Greenhouse Gas Emissions (hereinafter 'GHG Inventory') of KOREA ZINC Corporation (hereinafter 'Company') for 2023.

Verification Scope
KFQ's verification covered on all facilities and emission sources under the operational control and organizational boundary of KOREA ZINC Corporation during 2023.

Verification Criteria
The verification process was based on [Rule for emission reporting and certification of greenhouse gas emission trading Scheme¹⁾], [Rules for verification of operating the greenhouse gas emission trading scheme²⁾] and 'ISO14064-3' for every applicable part.
1) Notification No. 2023-221 of Ministry of Environment 2) Notification No. 2021-278 of Ministry of Environment

Level of Assurance
The Verification has been planned and conducted as the 'Rules for verification of operating the greenhouse gas emission trading scheme', and the level of assurance for verification shall be satisfied as reasonable level of assurance. And it was confirmed through an internal review whether the process before the verification was conducted effectively.

Verification Limitation
The verification shall contain the potential inherent limitation in the process of application of the verification criteria and methodology.

Verification Opinions
Regarding to the data of the Greenhouse Gas Emission Consumption from the report through the verification, KFQ provides our verification opinions as below:
1) The Inventory Report has been stated in accordance with "Rule for emission reporting and certification of greenhouse gas emission trading Scheme" and "ISO 14064-1". The totals in this verification statement do not match the totals in emission trading scheme because the total emissions of each facility are calculated by truncating to integer units.
2) The result of material discrepancy satisfied the criteria for an organization that emits 500,000 or more and less than 5,000,000 tCO₂e shall not exceed 2.5% from total emission as per "Rules for verification of operating the greenhouse gas emission trading scheme".
3) Thus, KFQ concludes that the Greenhouse Gas Emissions of Company in 2023 is correctly calculated and stated in accordance with "Rule for emission reporting and certification of greenhouse gas emission trading Scheme".

		Unit : tCO ₂ e
Scope 1	Scope 2	Total
2,574,426.571	703,538.864	3,277,964

* The totals in this verification statement do not match the totals in emission trading scheme because the total emissions of each facility are calculated by truncating to integer units.

April 2nd, 2024
Ji Young Song
CEO Ji-Young Song
Korean Foundation for Quality

www.kfq.or.kr
137, Woolim 1st~3 Valley B Bldg. 168, Gaxan digital 1-ro, Gurocheon-gu, Seoul, Korea

Scope 3

VVC-24-031

GHG Emission Verification Opinion

Korea Zinc Company, Ltd.
542, Gangnam-daero, Gangnam-gu, Seoul, Republic of Korea

1. Verification Goal
The goals of greenhouse gas (GHG) emission verification (hereinafter referred to as 'verification') conducted by the Korean Standards Association are as follows:
• Confirming the conformity with standards and procedures of GHG emission and GHG emissions calculated within the scope of verification
• Checking the validity of declarations related to the organization's GHG emissions or removals
• Confirming the effective implementation of the organization's management of GHG emissions or removals
• Confirming the conformity of processes for implementing, managing and improving the organization's GHG emissions or removals estimates

2. Verification Scope
Korean Standards Association conducted limited guarantee level verification for Scope3 for Korea Zinc Company, Ltd.'s Greenhouse Gas declaration.
• Reporting Target : Headquarters, Omsan Refinery
• Boundary : Scope3(Other indirect emissions)
• Category 1: Purchased goods and service
- Category 2: Capital goods
- Category 3: Fuel and energy-related activities(not included in scope 1 or scope 2)
- Category 4: Upstream transportation and distribution
- Category 5: Waste generated in operations
- Category 6: Business travel
- Category 7: Employee commuting
- Category 9: Downstream transportation and distribution
- Category 10: Processing of sold products
- Category 11: Use of sold products
- Category 15: Investments
• Year : January 1, 2023 to December 31, 2023

3. Verification Criteria and Guidelines
Korean Standards Association conducted verification according to international standards and the standards and guidelines of the National Institute of Environmental Research.
• KS I ISO 14064-1:2018, KS I ISO 14064-3:2019
• Verification Guidelines for the Operation of the Greenhouse Gas Emissions Trading System (Recent Issue, Ministry of Environment)
• Guidelines for Reporting and Certification of Emissions from Greenhouse Gas Emissions Trading System (Recent Issue, Ministry of Environment)
• 2006 IPCC Guidelines for National Greenhouse Gas Inventories
• WRI(World Resources Institute) Greenhouse Gas Protocol
• Technical Guidance for Calculating Scope3 Emissions

4. Level of assurance verification and Responsibility
Korea Standards Association provides verification at limited level of assurance to strengthen GHG management for your company's GHG emissions.
• On-site inspection : Visit to Korea Zinc Company, Ltd. Headquarters
• Method of confirmation :
- Interview with greenhouse gas emissions manager and field staff
- Review of the management system and data used to calculate greenhouse gas emissions during the reporting period
- Tracking review of internal documents and basic data

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Korea Zinc Company, Ltd. should provide fair data on information and evidence related to GHG emissions, and the KSA is limited to guaranteeing GHG emissions.

5. Verification Limit
GHG emissions can be affected by factors such as data limits and uncertainties in the scope of verification, and inherent limitations may exist accordingly.

6. Verification Conclusion
No errors or false facts were found in Korea Zinc Company, Ltd.'s GHG emissions verified through the ISO 14064-3 verification procedure within the scope of verification.

• **Appendix. Scope3 GHG Emissions**

		(Unit : tCO ₂ e)
Category		GHG Emissions
Category 1	Purchased goods and service	1,456,758
Category 2	Capital goods	15,727
Category 3	Fuel and energy-related activities (not included in scope 1 or scope 2)	243,958
Category 4	Upstream transportation and distribution	249,870
Category 5	Waste generated in operations	31,490
Category 6	Business travel	979
Category 7	Employee commuting	2,053
Category 9	Downstream transportation and distribution	159,750
Category 10	Processing of sold products	2,431,864
Category 11	Use of sold products	25,846
Category 15	Investments	75,182
Total		4,693,476

April 29, 2024

Myungso Kang

KOREAN STANDARDS ASSOCIATION

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Memberships and Associations

Memberships and Associations		
Korea Customs Logistics Association	Korea Industrial Safety Association	Korean Institute of Plant Engineering
Korean Chemical Society	Civil Defense Council	Korea Emissions Market Association
Industrial Safety Committee	Regional (Ulsan) Legislation Association	Busan/Ulsan/Gyeongnam Forum
Emergency Planning Council	Industrial Security Council	Listed Company Audit Committee
Seoul Chamber of Commerce	Reserve Army Council	Onsan Industrial Complex Safety Management Association
Onsan Industrial Complex General Affairs Department Heads' Council	Onsan Industrial Complex Facility Directors' Council	Onsan Industrial Complex Scholarship Committee
Onsan Industrial Complex Environmental Management Association	Ulsan/Yangsan Entrepreneur Association	Ulsan Regional Facility Directors' Council
Ulsan Industrial Health Council	Ulsan Chamber of Commerce	Ulsan Electric Engineers Association
Ulsan Safety Communication Committee	Ulsan Research Center Directors' Council	Ulsan Port Development Council
Ulsan Logistics Council	Korea Personal Improvement Association	KRX Emissions Market
Korea Metal Recycling Industry Association	Korea International Trade Association	Korea Nonferrous Metal Association
Korean Association of Occupational Health Nurses	Korea Industrial Technology Association	Korea Listed Companies Association
Korea-America Association	Ulsan Environmental Engineers Association	Environmental Protection Council
Uiju Province Volunteer Center	Korea Mining Association	Overseas Resource Development Association
International Antimony Association	International Lead Association	International Zinc Association
KBCSD	Korea RE100 Committee	

Sustainability-related Policies

Area	Policy	
Environmental	Environmental Management Policy	Biodiversity Policy
	Sustainable Procurement Policy	Water Policy
	Mineral Waste Management Policy	Deforestation Prevention Policy
Social	Safe & Health Policy	Human Rights Policy
	Responsible Mineral Policy	Mine Closure and Regeneration Policy
	Fair Compensation Policy	Fair Trade Policy
	Supplier Code of Conduct	Donation and Sponsorship Policy
	Modern Slavery Prevention Policy	Cybersecurity Policy
	Policy Prohibiting Harassment and Bullying	
Governance	Ethics Policy	Board Expertise and Diversity Policy
	Sustainability Risk Management Policy	Policy on Independence Criteria for Independent Directors
	Anti-Corruption Policy	Tax Policy

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