



Double Materiality Assessment

To accurately identify the needs and expectations of wide-ranging stakeholders and integrate them into our ESG management strategy, we have conducted double materiality assessment for three years since 2022.

For this year's reporting, we upgraded our double materiality assessment system to cover key ESG issues in each of the five business areas of steel, rechargeable battery, infrastructure, energy, and trading in addition to Group-wide key ESG issues. This is expected to help POSCO Group properly identify pending key ESG issues and assist effective business decision-making as a result.

In pooling together ESG issues affecting POSCO Holdings, we referred to agenda items discussed through the Group ESG Council supervised by the CEO, issues identified through direct communication with major stakeholders via ESG NDR*, conference calls, and e-mails, and organized feedback from internal and external stakeholders through surveys.

This was followed by the 3rd Stakeholder Round Table we hosted to invite a range of stakeholders including investors, academia, government agencies, customers, and suppliers to engage in in-depth discussions on ESG issues requiring our focused attention to make progress towards sustainable development.

The high-priority issues identified through the Stakeholder Round Table and double materiality assessment were selected as the 'Top 10 ESG Issues' of POSCO Holdings, and improvements are made in alignment with our mid/long-term KPIs. We will also fully disclose specifics on these issues, detailing how we manage each of these key ESG issues, through our annual sustainability reporting.

*Non Deal Roadshow

| Process | Purpose | Key Considerations |
|---|--|--|
| Understand and select | Identify potential significant impact on the sustainability of POSCO Holdings' business model and value chain | SASB's industry-specific metrics for each operating company/value chain ESG assessment metrics of 4 major global rating agencies (MSCI, Sustainalytics, ISS ESG, and KCGS) Inquiries raised by investors and other key stakeholders Materiality assessment results of respective operating companies and major ESG issue reports from industry peers |
| 2 Identify issues | Assess identified ESG issues for their social/ environmental Impact Materiality and Financial Materiality (risk & opportunity) | [Impact Materiality] Social/environmental impact of ESG issues identified across five business models and their value chain Positive/negative, actual/potential, inside-out impact brought by POSCO Holdings' business operations [Financial Materiality] Financial impact in the areas of ESG regulations/laws/policies associated with identified issues Risks and opportunities viewed from the outside-in impact perspective concerning POSCO Holdings' financial value |
| 3 Conduct double materiality assessment | Group ESG Council | • Analysis of the agendas discussed at the CEO-led Group ESG Council (29 agendas in 2023) |
| | Direct communication with stakeholders (ESG NDR, conference calls, etc.) | Analysis of on/offline requests and responses from key stakeholders, including investors (156 cases in 2023) |
| | Surveys on internal/external stakeholders | Survey on internal/external experts with a deeper understanding on POSCO Holdings' business and ESG (36 persons in 2023) |
| | Stakeholder Round Table with major stakeholders | • 3 rd Stakeholder Round Table to heed feedback from investors, government agencies, and customers/suppliers |
| 4 Finalize material issues | Prioritize key ESG issues | Prioritize key ESG issues based on quantitative analysis results, report them to the Board of Directors, and finalize material issues |









Double Materiality Assessment



| ESG | Specific Issue | GRI | SASB | TCFD | SDGs |
|-----|--|-----------------------------|--|------|---------------|
| | ① Climate change | GRI 305 | EM-IS-110a.1, EM-IS-110a.2 | • | SDGs 11, 13 |
| | 4 Energy | GRI 302 | EM-IS-130a.1, EM-IS-130a.2 | • | SDGs 7, 11 |
| E | ⑤ Green technology and products | GRI 302 | | • | SDGs 9, 12 |
| | ② Environmental management | GRI 303, 306 | EM-IS-120a.1, EM-IS-140a.1, EM-IS-150a.1 | | SDGs 6 |
| | 3 Biodiversity | GRI 304 | | | SDGs 14, 15 |
| | 3 Health and safety | GRI 403 | EM-IS-320a.1 | | SDGs 3 |
| S | 6 Working environment | GRI 401, 402, 407, 408, 409 | | | SDGs 3, 8 |
| | Diversity and inclusion | GRI 404, 405, 406 | | | SDGs 4, 5, 10 |
| C | ② Independent and transparent Board of Directors | GRI 405 | | | |
| G | © Compliance | GRI 205, 206 | | | SDGs 16 |







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Double Materiality Assessment

Key ESG Issues by Business Unit

POSCO Holdings further upgraded our double materiality assessment process to accurately identify the needs and expectations of wide-ranging stakeholders. This allowed us to identify key ESG issues in each of the five business areas of steel, rechargeable battery materials, infrastructure, energy, and trading.

| Steel | | | |
|--------------|-------------------------------|--|--|
| Top 5 Issues | | | |
| 1 | Climate change | | |
| 2 | Energy | | |
| 3 | Compliance | | |
| 4 | Green technology and products | | |
| 5 | Working environment | | |

| Rechargeable Battery Materials | | | | |
|--------------------------------|-------------------------|--|--|--|
| | Top 5 Issues | | | |
| 1 | Climate change | | | |
| 2 | Energy | | | |
| 3 | Compliance | | | |
| 4 | Health & safety | | | |
| 5 | Supply chain management | | | |

| (0 | Infrastructure (Construction, IT & Engineering) | | | |
|----|--|--|--|--|
| | Top 5 Issues | | | |
| 1 | Compliance | | | |
| 2 | Diversity & inclusion | | | |
| 3 | Health & safety | | | |
| 4 | Green technology and products | | | |
| 5 | Climate change | | | |

| Energy | | | |
|--------------|-------------------------------|--|--|
| Top 5 Issues | | | |
| 1 | Compliance | | |
| 2 | Climate change | | |
| 3 | Health & safety | | |
| 4 | Energy | | |
| 5 | Green technology and products | | |

| Trading |
|-------------------------------|
| Top 5 Issues |
| Compliance |
| Climate change |
| Green technology and products |
| Energy |
| Working environment |
| |

EnvironmentalSocialGovernance



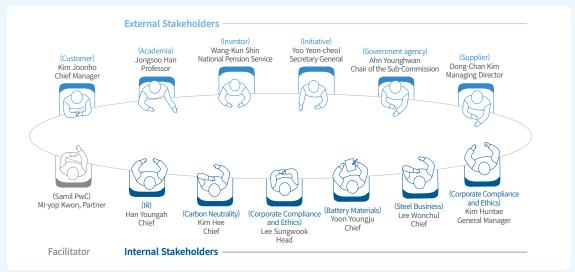


Double Materiality Assessment Special Page ① Stakeholder Round Table

On April 29, 2024, POSCO Holdings hosted the 3rd Stakeholder Round Table to invite ESG-related stakeholders to POSCO Center. Marking its 3rd meeting this year, the Stakeholder Round Table served to heed feedback and engage in mutual discussions on key ESG issues requiring Group-wide management efforts.

This year's Round Table was joined by Wang-Kun Shin, member of the Board Committee on Responsible Investment and Governance of the National Pension Service, Yoo Yeon-cheol, Secretary General of the UN Global Compact Korea Association, Ahn Younghwan, Chair of the Greenhouse Gas Reduction Sub-commission at the Presidential Commission on Carbon Neutrality and Green Growth, Han Jongsoo, President of the Korean Accounting Association, Kim Joonho, Head of the ESG Department at HD Korea Shipbuilding & Offshore Engineering, and Dong-Chan Kim, Managing Director at Chosun Refractories to represent external stakeholders. From POSCO Holdings, Lee Sungwook, Head of the Corporate Compliance and Ethics Team (Senior Executive Vice President), Yoon Youngju, Chief of Battery Materials Business Management, Kim Hee, Chief of Carbon Neutral Strategy, Lee Wonchul, Chief of Steel Business Management, Han Young-Ah, Chief of IR, and Kim Huntae, General Manager of Corporate Compliance and Ethics Team. Participants were briefed on POSCO Holdings' ESG management performance for the year 2023 and communicated their expectations for 2024, sharing a breadth of ideas for our balanced growth and sustainable development. POSCO Holdings will continue to provide diverse mechanisms to proactively heed the voice of stakeholders and integrate such feedback in our ESG policies and strategies.

Overview of Participants



Review on Our 2023 Activities

Q. Please give us an overview of POSCO Holdings' key ESG achievements in 2023.

(POSCO Holdings) Kim Huntae Let me briefly share our major ESG achievements in 2023. I would first like to highlight that we set new mid-term net zero goals to tackle the issue of 'climate change response'. Our initial pathway was to reduce carbon emissions by 10% by 2030 and by 50% by 2040 to achieve net zero by 2050. We added

a more ambitious interim goal of mitigating our carbon emissions by 30% by 2035. To attain this goal, POSCO is investing over KRW 600 billion in its Gwangyang Steelworks to build a large-sized electric arc furnace with annual capacity of 2.5 million tons, which will be completed by the end of 2025 to produce low-carbon steel materials starting from 2026. In 2022, we initiated the design of a HyREX demonstration plant and committed to making full-scale investments to achieve net zero emissions by 2050. In January this year, we opened the Hydrogen Reduction Steel Development Center at the Pohang Steelworks. Throughout 2023, we took a series of specific actions for decarbonization to combat climate change.

Turning to 'ethics and compliance', we launched the Group Council on Respect for Human Rights in 2023 to further advance human rights management at the Group-wide level. This Council is joined by 20 operating companies including POSCO. For the three maintenance subsidiaries we created in Pohang and Gwangyang to ensure robust facility operations as the foundation for competitiveness of our steel business, we established their ethical management infrastructure early on to uphold respect for human rights. It is also notable that 10 operating companies of POSCO Group were rated excellent and above in the Compliance Program assessments performed by the Fair Trade Commission, setting a record ever achieved by a single enterprise group since the introduction of the CP system. Such accomplishments indicate that our Group-level commitment and efforts for ethics and compliance are gaining recognition both internally and externally.

Concerning 'supply chain management', we launched the Group Supply Chain Management Council which convenes semiannually to effectively manage supply chain ESG issues at the Group level. In particular, POSCO made written assessments on over 96% of its suppliers that exceed KRW 500 million in annual transaction amount. This was followed by on-site due diligence conducted on low-performing suppliers to develop improvement plans and take action accordingly. POSCO FUTURE M completed written assessment on 337 suppliers, and will do so for all suppliers by 2028.

Lastly, let me share our progress made on 'safety' issues. To raise employees' safety awareness, POSCO Group keeps track of TRIFRs (Total Recordable Incident Frequency Rate) in addition to LTIFRs (Lost Time Injury Frequency Rate) at all levels of the Group. This enables us to document even small trivial accidents to take a preventive approach to safety management. Our Group Safety Council attended by C-level executives convenes on a semi-annual basis to raise the bar on safety management. Meanwhile, POSCO implements 'integrated smart safety solutions' to automatically detect unsafe worker behaviors and take proactive action. Enabled by smart CCTVs operating on AI imaging technology, these solutions were independently developed by POSCO DX to allow for remote monitoring of high-risk tasks and areas as well as facility abnormalities. These solutions were deployed at over 130 manufacturing, construction, and power plant locations to verify their effectiveness, and were applied to wider Group affiliates including POSCO, POSCO E&C, and POSCO FUTURE M in 2023. We also introduce AI robotic solutions to create a safework environment.





All these achievements demonstrate that POSCO Holdings is becoming more sustainable year after year through ESG management, and we will step up our efforts to continuously advance our ESG management across the board.

Double Materiality Assessment Special Page ① Stakeholder Round Table

Q. Can you offer your suggestions on key ESG issues and responses in the environmental area?

(Environmental expert) Ahn Younghwan While playing a crucial role in driving our national economy, the steel industry is also known for its carbon-intensive nature, representing 16.7% of Korea's GHG emissions. Achieving our NDC (Nationally Determined Contribution) goals is only possible when carbon emissions are reduced in the steel

industry. It is deeply meaningful that POSCO set a new interim goal of mitigating its carbon emissions by 30% by 2035. However, 'setting goals' is one thing and 'achieving goals' is another. My suggestion for POSCO is that the company should elaborate on its plans and achievements in reducing carbon emissions through its future sustainability reporting to clearly demonstrate its firm commitment to reaching the set goals for stakeholders.

(POSCO Holdings) Kim Hee As Ahn Younghwan mentioned, POSCO established its 2050 carbon neutrality roadmap and disclosed this through its sustainability report. This roadmap entails mid/long-term goals and comprehensive strategies in the areas of raw materials, investment, energy, and technology development, and efforts are being made on multiple fronts in collaboration with shopfloor operations to progress towards these goals. For instance, we are improving the efficiency of existing facilities, shifting to low-carbon fuels and raw materials, and developing low-HMR (Hot Metal Ratio) operation technology in the short-term. Over the mid-term horizons, we aim to introduce electric arc furnaces (EAF) and highly viable bridge technologies such as CCUS (Carbon Capture, Utilization, Storage). Ultimately, our aim is to develop HyREX technology to achieve carbon-free steelmaking. Our net zero commitment is clearly demonstrated in our efforts to invest in EAFs, initiate the design of an HyREX demonstration plant, and open the Hydrogen Reduction Steel Development Center.

(A) (HD Korea Shipbuilding & Offshore Engineering) Kim Joonho In the shipbuilding industry, over 90% of carbon emissions are generated in the ship operation phase. This makes transitioning to greener fuels through introducing ammonia-propelled vessels and green methanol-fueled vessels a top priority in our industry. When we fully shift to greener fuels, our priority then will be reducing Scope 3 emissions from supply chains. In particular, steel materials account for about 20~30% of the parts used for shipbuilding, and we anticipate increases in demand for low-carbon steel in the foreseeable future. This underscores the need for POSCO to ready itself to meet the growing demand for low-carbon steel products.

(POSCO Holdings) Kim Hee As just mentioned by Kim Joonho, POSCO is aware of the demand for low-carbon steel products among our key customers in the automobile and shipbuilding industries. This is why we are focused on technology development to produce low-carbon steel materials capable of mitigating Scope 1 & 2 emissions generated from product manufacturing, and we are also developing technologies to produce high-end steel through EAFs to cater to market needs.

(POSCO Holdings) Lee Wonchul The steel industry plays a highly influential role across automobile, home electronics, shipbuilding, construction, machinery and other wide-ranging industries. This highlights the utmost importance of

continuously developing low-carbon products and bringing them to market. While the most ideal option is to supply carbonfree steel products through hydrogen reduction steelmaking, it will take considerable time and expenses to commercialize this technology. As such, a realistically feasible option for us is to maintain the current blast furnace production system for several years to come. In this regard, it is critical that we develop bridge technology to significantly reduce GHG emissions from the currently-operating blast furances. POSCO is exploring new operational technologies to 'directly inject hydrogencontaining gases to the blast furance' or 'integrate CCUS into blast furnace operations'. In so doing, POSCO is engaging in technology development for low-carbon steel products under varying scenarios to prevent any shortage in the supply of steel products or customers shouldering excessive cost burdens.

Q. Can you share your suggestions on key ESG issues and responses in the social area?

(Social expert) Yoo Yeon-cheol The achievements made by POSCO Holdings and its major operating companies for the past year show that their ESG system has been firmly established. It is particularly encouraging that 10 operating companies of POSCO Group received excellent Compliance Program ratings and that

POSCO, a steelmaker, achieved zero incidences of high-consequence injuries. The safety reward program, which originates from POSCO Group's unique corporate culture, testifies to the effects of incentivizing positive performance over penalizing negative performance. Meanwhile, POSCO Group needs to widely publicize its key ESG achievements in alignment with the UN Sustainable Development Goals (UN SDGs).

(POSCO Holdings) Lee Sungwook As Mr. Secretary General suggested, we will show how POSCO Group's key ESG achievements align with the UN SDGs through this year's sustainability report. In the social area, we are focused on the ESG issue of 'safety'. Since the Serious Accidents Punishment Act took effect, many companies prioritize the prevention of safety accidents. At POSCO, we are going the extra mile to consider potential health issues that may arise in the working environment from the vantage point of 'rights to health'. POSCO has convened the 'Health Advisory Committee' since 2021 joined by labor representatives, executives, and external health experts while measuring the risk level of working conditions and systematically promoting lifecycle-based health management. As such, POSCO remains committed to providing a safe and pleasant workplace to prevent injuries and improving the health and quality of life for employees.

(Investor) Wang-Kun Shin Starting from this year, the National Pension Service (NPS) added climate change and occupational safety as key management matters. While these factors were reviewed only when relevant issues arose previously, they will be subject to continuous and systemic review efforts even when there are no related issues occurring. This change is highly relevant to POSCO Group, and the National Pension Service expects to have more active engagement with POSCO Group in this regard. POSCO Holdings has been recognized for its exemplary performance in the occupational safety area compared to other companies, and has always been a cooperative dialogue partner for the NPS. The NPS expects that POSCO Holdings set yet another example in addressing climate change issues by actively engaging with the NPS and transparently disclosing its major accomplishments.





Double Materiality Assessment Special Page ① Stakeholder Round Table

Q. Can you share your suggestions on key ESG issues and responses in the governance area?

(Investor) Wang-Kun Shin When it comes to POSCO Holdings' outside director appointment process, the Director Candidate Recommendation Committee is currently mandated to screen candidates for their qualifications and recommend candidates. Meanwhile, the current approach of engaging incumbent outside

directors in appointing their successors may give rise to concerns over shareholders. Global leading companies nominate outside director candidates by collecting feedback from wide-ranging stakeholders and seeking advice from external specialized organizations to verify the independence and expertise of these candidates. POSCO Holdings will benefit from adopting such a system facilitating interactions with various stakeholders.

(POSCO Holdings) Kim Huntae We appreciate your invaluable feedback on the nomination of outside director candidates. If I add some comments on the point you made, POSCO has operated the Outside Director Recommendation Advisor Panel solely composed of external experts since 2004 to ensure incumbent outside directors do not influence the appointment of their successors. The panel engages in robust assessments to recommend candidates five times the number of directors to be appointed to the Director Candidate Recommendation Committee, and the finalists chosen by the Committee through qualification assessment are appointed as outside directors through the decision made by the Annual General Meeting of shareholders.

(Governance expert) Jongsoo Han Ethical management warrants greater focus in operating the Board of Directors. While it is true that POSCO Group is a leader in ethical management among Korean businesses, this leadership status is not always fully evident in its Board operations. I expect POSCO Group to rigorously apply its ethical management guidelines to the Board of Directors as well. Its outside director appointment process also needs to be improved through proactive efforts, shifting away from simply following past practices in operating the Board and appointing its members.

Q. Can you share your suggestions for risk management and opportunity creation?

(Governance expert) Jongsoo Han The ESG issues identified through double materiality assessment are primarily related to risks. Given that POSCO Group is moving beyond steel to transition into a leader in eco-friendly future materials, my impression is that the potential of many ESG issues to create opportunity for the Group has

been rather underestimated. Apart from risk management, POSCO Group also needs to explore ways to create new values and opportunities. It is critical that such values and opportunities are discovered in diverse business areas beyond steel, and efforts are needed to generate tangible outcomes in so doing.

(POSCO Holdings) Yoon Youngju Founded as a steelmaker, POSCO Group is now advancing into the wider business areas of rechargeable battery materials that are essential in shaping a green tomorrow. It is noteworthy that we established a full value chain for rechargeable battery inputs from raw materials to final materials. This will surely help us improve supply chain efficiency and hone the competitive edge of our raw material business. For instance, reclaiming lithium, nickel, and cobalt from

end-of-life batteries for reuse through recycling delivers both reliability in raw material supply and demand and cost savings for waste disposal. This also creates social value through the resources conserved and environmental pollution reduced. While the rechargeable battery market is faltering temporarily, POSCO Group continues with our investment to acquire high-quality resources and remains agile in embracing future innovative technology so that we could maximize performance when the market recovers.

(Chosun Refractories) Dong-Chan Kim Chosun Refractories produces refractories highly resistant to high-temperature conditions that characterize blast furance and electric arc furnace operations, and engages in on-site disassembly and construction at POSCO's operations. Such working conditions inevitably expose our employees to increased health and safety risks. To minimize safety risks, we aim to actively team up with POSCO in terms of equipment and facilities used on-site.

(A) (HD Korea Shipbuilding & Offshore Engineering) Kim Joonho Risk management is instrumental from the supply chain perspective. POSCO is one of our key suppliers, and this means that when POSCO fails to properly practice risk management, this will bring immense impact to our operations. Such risks may include natural disasters or strikes staged by shipping companies. We expect POSCO to develop its internal carbon information system on steel materials to help us accurately measure Scope 3 emissions.

(POSCO Holdings) Kim Hee As more and more stakeholders demand disclosure of carbon emissions data, we have established a system to manage our carbon emissions and intensity by process and product unit to effectively respond to the Carbon Border Adjustment Mechanism (CBAM). This supports our ability to effectively cater to customer requirements.

(POSCO Holdings) Han Youngah Let me share my views on risk management from the investor perspective. We remain committed to attaining the three goals we set when transitioning into a holding company structure through spin-off. First, we are redirecting profits generated towards areas with high ROI and symbolic significance. A case in point is rechargeable battery business. Second, we strive to become a shareholder-friendly company. We paid KRW 10,000 in minimum dividends, and will continue to apply the dividend policy we set in 2023. Third, we continue to establish sound and transparent governance. One common concern raised by external investors is related to uncertainties that derive from change in top leadership and risks involving the Board of Directors. POSCO Holdings is clearly aware of such market concerns, and is engaging in consulting to internally pursue improvement. In 2024, we will disclose specific improvement plans and take action accordingly.





Double Materiality Assessment Special Page ② Results of Direct Stakeholder Communication (FY2023)

As a holding company, POSCO Holdings operates a POSCO Group-level ESG risk response system developed to ensure effective response to internal/external ESG risks. Group-wide ESG issues raised through wide-ranging channels are compiled by the Corporate Compliance and Ethics Team of POSCO Holdings (ESG), and key issues are reported to the Board of Directors with C-level management meetings including the Group ESG Council playing a pivotal role in developing responses.

In 2023, we received and addressed a total of 156 ESG issues at the Group-wide level by leveraging our ESG risk response mechanism encompassing ESG NDRs, investor conference calls, and e-mails. By area, these issues were categorized into 69 environmental issues, 59 social issues, 20 governance issues, and eight cross-cutting issues.

By agenda, 50 issues were associated with GHG emissions and 37 issues with human rights. By stakeholder group, inquiries from investors and insurers accounted for the largest portion with 81 issues, followed by 30 issues from customers and suppliers and 27 issues from ESG rating agencies.

We prepared this report in a way to fully describe the major inquiries identified through stakeholder communication and the progress we made in addressing them. We also accommodated the request from global investors to make our sustainability reports available in both Korean and English simultaneously, publishing our sustainability report in English and Korean concurrently starting from this year. Going forward, POSCO Holdings will engage in open communication with stakeholders to drive sustainable change together.

Issues Identified through Direct Communication with Stakeholders (156 issues)

| By Area | Issues | Percentage |
|---------------------------|--------|------------|
| Environmental | 69 | 44% |
| Social | 59 | 38% |
| Governance | 20 | 13% |
| Cross-cutting | 8 | 5% |
| By Agenda | Issues | Percentage |
| GHG emissions | 50 | 32% |
| Human rights | 37 | 24% |
| Governance | 14 | 9% |
| Supply chain | 10 | 6% |
| Biodiversity | 9 | 6% |
| Ethics/compliance | 9 | 6% |
| Health & safety | 5 | 3% |
| Others | 22 | 14% |
| By Stakeholder Group | Issues | Percentage |
| Investors/insurers | 81 | 52% |
| Customers/suppliers | 30 | 19% |
| ESG rating agencies | 27 | 17% |
| Central/local governments | 3 | 2% |
| Local communities | 2 | 1% |
| Others | 13 | 9% |

| Area | Agenda | Major Stakeholder Inquiries | Page |
|-----------------------|--|--|--|
| Environmental | GHG emissions | Rigorous analysis of carbon neutrality roadmap scenarios through transition risk reviews Need for more robust Scope 3 emissions measurement and external verification Additional explanation on bridge technology and update on the current status of low-carbon investments and technology developments including HyREX technology development | 50 160 38~42 |
| | Biodiversity | Details of NDPE implementation of the palm plantation in Indonesia Update on the studies conducted on plant construction in Argentina | 151~155 71~72 |
| Social | Local community/ indigenous peoples | • Improvement of the grievance system for indigenous peoples near the palm plantation in Indonesia | 152 |
| | Supply chain | • Disclosure of due diligence plans developed for key supply chains and due diligence results | 95~96 |
| | Human rights | Update on the progress made on the labor union issues of POSCO ASSAN TST in Türkiye Development of measures at the HQ level to prevent labor issues at overseas operations Disclosure of human rights due diligence results and improvement plans for overseas operations Disclosure of the human rights due diligence conducted on MPCC in Myanmar and its details | 144~146 147~148 149 102 |
| Governance | Governance | • Explanation of the CEO/director appointment process | 128~129 |
| Others ESG disclosure | | Proposal to simultaneously publish both Korean and English reports to address the inappropriate time lag in accessing critical information caused by the choice of language Prepare for the ESRS, the ISSB Standards and other ESG disclosure standards and make additional disclosures on new global disclosure metrics | Simultaneously publish this year's report in Korean/English on June 28, 2024 (Fri.) Disclose ESG performance in line with ISSB's 4 pillars, reflect the ESRS in updating the ESG Factbook |