ASSESSMENT
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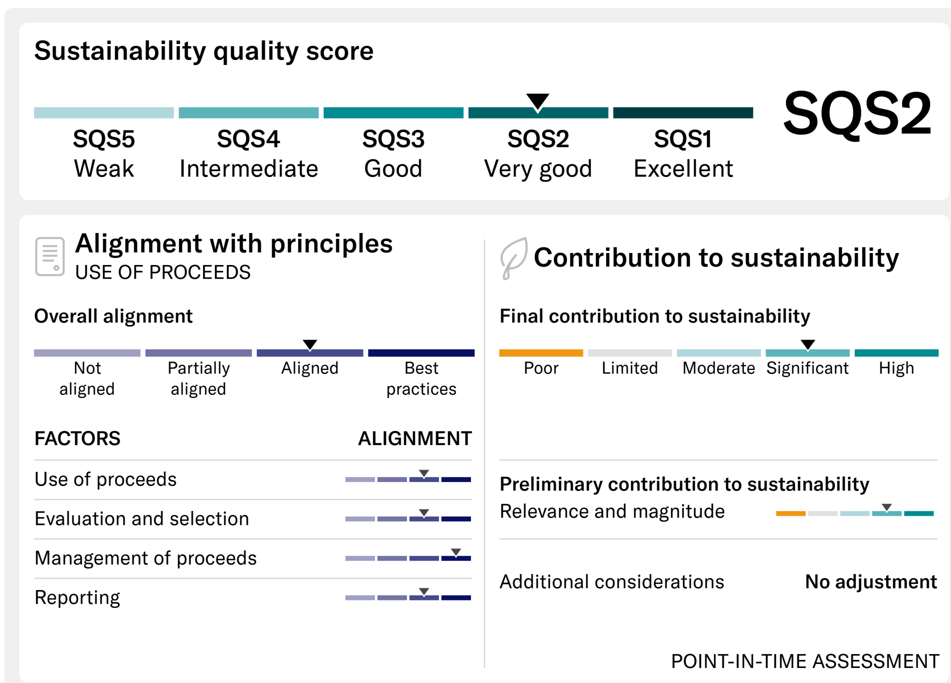
POSCO Holdings Inc.

Second Party Opinion – Sustainable Financing Framework Assigned SQS2 Sustainability Quality Score

Summary

We have assigned an SQS2 Sustainability Quality Score (Very good) to POSCO Holdings Inc.'s ('POSCO Holdings' or 'group') sustainable financing framework dated March 2025. POSCO Holdings has established its use-of-proceeds framework to finance six eligible green categories and one eligible social category. The framework is aligned with the four components of the International Capital Market Association's (ICMA) Green Bond Principles (GBP) 2021 (including the June 2022 Appendix 1), Social Bond Principles (SBP) 2023 and the Sustainability Bond Guidelines (SBG) 2021, and the Loan Market Association, Asia-Pacific Loan Market Association and Loan Syndications & Trading Association's (LMA/APLMA/LSTA) Green Loan Principles (GLP) 2023 and Social Loan Principles (SLP) 2023. The framework demonstrates a significant contribution to sustainability.



Scope

We have provided a Second Party Opinion (SPO) on the sustainability credentials of POSCO Holdings' sustainable financing framework, including the framework's alignment with the ICMA's GBP 2021 (including the June 2022 Appendix 1), SBP 2023 and SBG 2021, and the LMA/APLMA/LSTA's GLP 2023 and SLP 2023. Under its framework, POSCO Holdings plans to finance projects in six green categories and one social category, as outlined in Appendix 3 of this report.

Our assessment is based on the last updated version of the framework received on 24 March 2025, and our opinion reflects our point-in-time assessment[1] of the details contained in this version of the framework, as well as other public and non-public information provided by the company.

We produced this SPO based on our Assessment Framework: Second Party Opinions on Sustainable Debt, published in March 2025.

Issuer profile

POSCO Holdings Inc. (POSCO Holdings) is a holding company that wholly owns POSCO, one of the largest steel companies globally in terms of production volume. As of 30 September 2023, POSCO and its other steel subsidiaries had crude steel production capacity of 45 million tons on a consolidated basis. The group produces and sells a broad range of steel products, and also operates natural gas exploration and development, trading, engineering and construction, power generation, and lithium materials businesses through various subsidiaries. In 2023, the company's battery materials segment reported KRW5 trillion in revenue. Listed on the Korea Stock Exchange, POSCO Holdings had a market capitalization of KRW32.1 trillion ($23.3 billion) as of 14 June 2024.

POSCO Holdings' operations are exposed to significant physical climate risk, including increasing frequency and severity of typhoons and floods, particularly because its steel production facilities are geographically concentrated in its two main complexes in Korea. It is also exposed to natural capital risks related to its various mining and gas field investments, and carbon transition risks, because the steel sector is a highly energy- and carbon-intensive industry with most production heavily reliant on the use of coal. The group's strategy to diversify its business portfolio into nonsteel businesses, particularly its rapidly growing battery materials business, could help gradually mitigate the group's overall carbon transition risk exposure over time. However, such businesses remain a relatively small portion of the group's earnings at this moment.

Strengths

» Firm commitment that eligible green enabling projects will strictly abide with all criteria listed under ICMA's June 2024 Green Enabling Projects Guidance, ensuring transparency around end-use, carbon lock-in, attributable environmental benefits, and identification and management of adverse social or environmental impacts.

» Financing of materials, components, and recycling capabilities across the electric vehicle (EV) battery value chain, which is necessary to enable further adoption of EVs, a key decarbonization lever of the transport sector.

» Manufactured battery components and raw materials produced will be 100% dedicated to green end-uses – namely, EV batteries and energy storage systems used with renewable energy sources.

» A short allocation period within 24 months which is in line with market practice.

Challenges

» Lithium mining, conversion, and concentration are energy-intensive activities that typically rely on fossil fuel based energy sources for their operations and carry inherent negative externalities in terms of water, land use, energy consumption, and biodiversity.

» The green enabling projects lack quantitative technical thresholds in terms of carbon footprint, water consumption, and land use.

» Although the framework is in line with current market practices, inclusion of green financing allocation to equity investments in pure-play companies constitutes a non-standard use of proceeds susceptible to specific challenges in terms of asset level adherence to sustainability objectives, allocation and traceability, impact reporting, and an increased risk of double counting, for which the company has set relevant mitigation measures.

» No firm commitment to obtain external verification on the allocation of proceeds and impact reporting.

Alignment with principles

POSCO Holdings' sustainable financing framework is aligned with the four core principles of ICMA's GBP 2021 (including the June 2022 Appendix 1), SBP 2023 and SBG 2021, and the LMA/APLMA/LSTA's GLP 2023 and SLP 2023. For a summary alignment with principles scorecard, please see Appendix 1.

☑ Green Bond Principles (GBP)	☑ Green Loan Principles (GLP)
☑ Social Bond Principles (SBP)	☑ Social Loan Principles (SLP)
○ Sustainability-Linked Bond Principles (SLBP)	○ Sustainability Linked Loan Principles (SLLP)

Use of proceeds

Not aligned	Partially aligned	Aligned ▼	Best practices

Clarity of the eligible categories – ALIGNED

POSCO Holdings has clearly communicated the nature of the expenditures as equity investment, acquisition, capital and operating expenditure (CapEx and OpEx), and research and development (R&D). The eligibility and exclusion criteria for most of the financed project categories are clearly defined. The company has confirmed through internal documentation the location of the eligible projects to mainly be South Korea, Australia, Argentina and Chile, but may also include Indonesia, Canada and China.

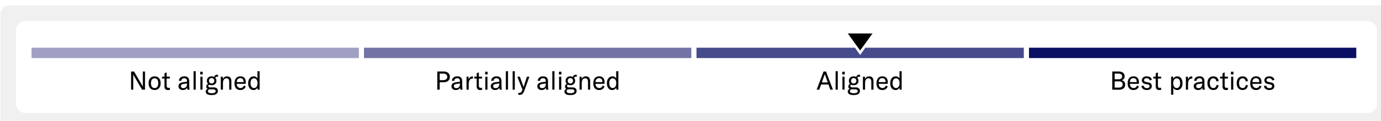
The cornerstone of the ICMA's Green Bond Principles and Social Bond Principles is the full utilization of net bond proceeds for eligible projects with clear environmental or social benefits. Some of the contemplated types of financing, notably with regards to equity investments into pure play companies, could conceivably introduce concerns in terms of alignment to sustainability objectives, allocation and traceability at the asset level, or impact reporting. POSCO Holdings' framework includes equity investments to pure play companies that derive at least 90% of their revenue or CapEx from eligible green projects. For the 10% residual, the company confirmed it will check that this is not derived from activities that conflict with the pursued environmental and social objectives. In this case, POSCO Holdings has provided information that demonstrates suitable measures to identify, select and allocate net proceeds to equity investments into pure play companies that adhere to the sustainability objectives and benefits targeted in the framework, and also to track and report on the associated sustainability benefits. POSCO Holdings will monitor the continued compliance of pure play investments with the eligibility criteria, as well as environmental, social and governance (ESG) controversies, through its Sustainable Financing Working Group (SFWG) on an annual basis. To mitigate the risk of double counting, the SFWG will liaise with relevant stakeholders of the investee companies to ensure that SFT proceeds have not already been used as part of a sustainable financing instrument. Such information will be published as part of subsequent allocation and impact reports, whenever applicable. Although POSCO Holdings has committed to post-issuance reporting for its pure player investments, the company did not disclose the estimated allocation, meaning the estimated percentage of allocation to pure players could vary from one issuance to another. The company has confirmed that only direct investments will be eligible and that it will have traceability of net proceeds to eligible underlying assets.

With these mitigation measures in place, coupled with the 90% revenue (or capital expenditure) threshold, we consider the structure of the framework to be in line with current market practices and is sufficient to largely mitigate the potential associated risks.

Clarity of the environmental or social objectives – ALIGNED
The company has clearly outlined the environmental and social (E&S) objectives associated with nearly all the six categories. Most eligible categories are relevant to the respective environmental or social objectives to which they aim to contribute. POSCO Holdings has referenced the United Nations' (UN) Sustainable Development Goals (SDGs) in articulating the objectives of the eligible categories, and the objectives are coherent with these recognized international standards.

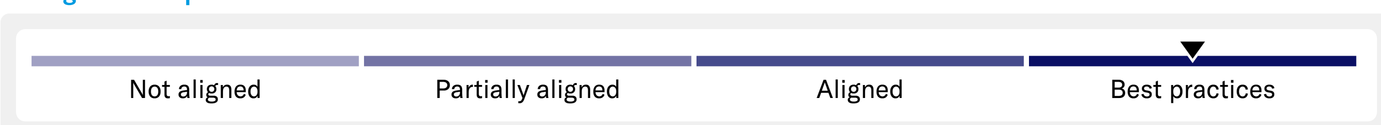
Clarity of the expected benefits – ALIGNED
POSCO Holdings has identified relevant expected E&S benefits for nearly all eligible categories. The benefits are measurable for all project categories and will be quantified in the company's annual reporting. The company has communicated that it will strive on a best-effort basis to provide an indication of the estimated share of financing versus refinancing prior to issuances, disclose this information in the relevant allocation and impact reporting post-issuance, and strive to allocate proceeds of new issuance to more recent projects. The maximum look-back period for OpEx is disclosed in the framework as 36 months.

Process for project evaluation and selection



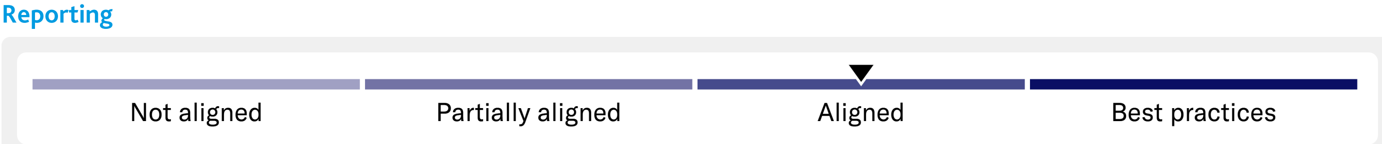
Transparency and clarity of the process for defining and monitoring eligible projects – ALIGNED
The company's decision-making process for the selection and evaluation of projects is clearly structured, and is outlined in its publicly available framework. POSCO Holdings has set up the a Sustainable Financing Working Group (SFWG) comprising members from the corporate sustainability, treasury/finance, legal, operations, audit and project teams to oversee its reporting and sustainable financing transactions (SFTs). The SFWG will be held at least annually to review and select eligible projects according to the eligibility criteria and monitor projects for continued compliance with the eligibility criteria, as well as ESG risks and controversies. In the event a project no longer fulfills the eligibility criteria, the net proceeds will be reallocated and replaced with other eligible projects as soon as reasonably practicable. The E&S risk mitigation process includes an ESG checklist for investment deliberation, which is clearly detailed in the framework.

Management of proceeds



Allocation and tracking of proceeds – BEST PRACTICES
POSCO Holdings has defined a clear process for the management and allocation of proceeds in its publicly available framework. The proceeds of each SFT will be deposited in general funding accounts and will be earmarked for allocation using a project register. POSCO Holdings has confirmed that periodic adjustments will be made at least annually to ensure that the amount of eligible green and social projects is at least equal to the proceeds of outstanding funding instruments. The balance of the tracked proceeds will be provided on an annual basis until full allocation of proceeds. The company commits to allocate proceeds within 24 months of the SFT issuance. Temporarily unallocated proceeds will be held in accordance with POSCO Holdings' liquidity management policy, and will be kept as cash and cash equivalents, short-term deposits and money market funds.

Reporting

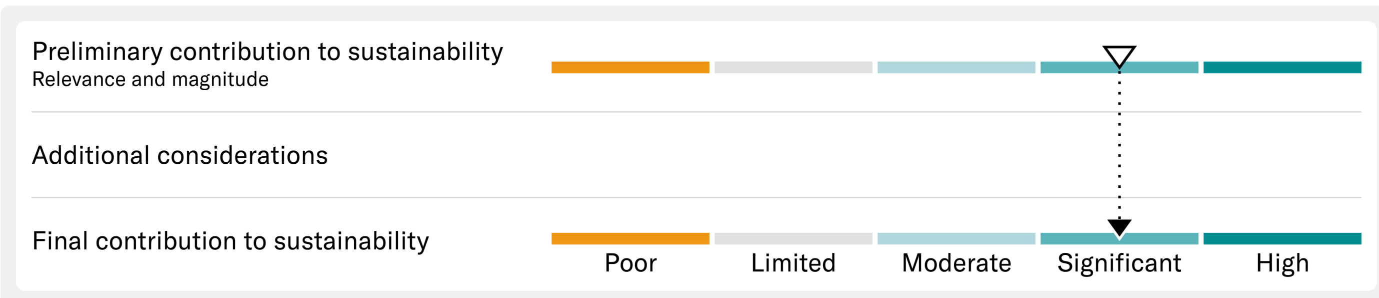


Reporting transparency – ALIGNED
POSCO Holdings will report annually on the use of proceeds of SFTs under its framework until full allocation of the net proceeds, and on a timely basis in the event of material developments. This reporting will be made publicly available on the company's website. The allocation reporting will include relevant information about description of projects, the amount of proceeds allocated to each eligible

project, the remaining amount and type of unallocated proceeds, share of proceeds used for financing versus refinancing purposes, and where feasible and subject to confidentiality disclosures, illustrative case studies of eligible projects. For green enabling projects, a rationale following the guidance of the ICMA's June 2024 Green Enabling Projects Guidance document will be reported. The company has identified relevant E&S impact indicators for most of the eligible categories, and the methodologies and assumptions used to report on E&S impacts will be disclosed in its publicly available report. There is no firm commitment to obtain an external verification for the allocation report and impact reporting, but an independent third party may be engaged.

Contribution to sustainability

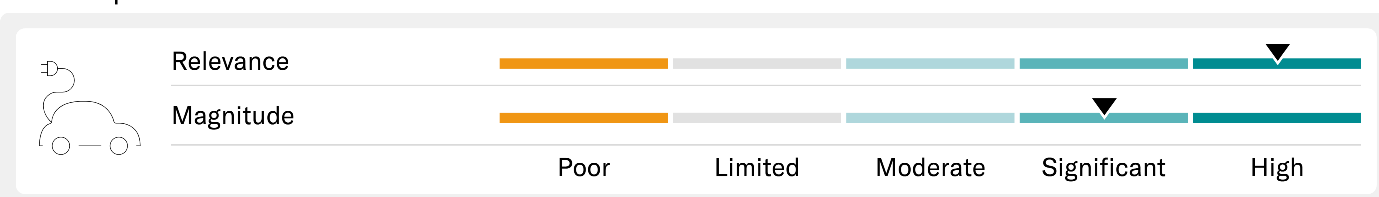
The framework demonstrates a significant overall contribution to sustainability. This reflects a preliminary contribution to sustainability score of significant, based on the relevance and magnitude of the eligible project categories, and we have not made an adjustment to the preliminary score based on additional contribution to sustainability considerations.



Preliminary contribution to sustainability

The preliminary contribution to sustainability is significant, based on the relevance and magnitude of the eligible project categories. Based on information provided by the issuer, we have assigned higher weights to the clean transportation, renewable energy, and circular economy categories. The clean transportation category was assigned a comparatively higher weight, given the allocation from forthcoming issuances is expected to broadly be in line with the company's 2021 green bond issuance in terms of project category allocation. A detailed assessment by eligible category has been provided below.

Clean transportation



The relevance of this category is high because electric vehicle (EV) batteries are an essential component of EVs, which are critical for enabling the decarbonization of the transportation sector, a major contributor of CO_2 emissions globally. Importantly, POSCO Holdings confirmed that the final end-use for the eligible projects will be limited to EV batteries. As of 2021, 74% of the global lithium supply was allocated to battery production, a substantial increase from 23% in 2010[2]. This trend is likely to continue, with the EV industry poised to account for around 90% of the increase in lithium demand by 2050 in the Announced Pledges Scenario. In the Net Zero Emissions Scenario, demand for lithium is projected to grow ninefold by 2040[3]. The projects are also highly relevant to South Korea, which is a major player in the global battery market, and home to leading battery and EV manufacturers. However, the country lacks substantial domestic reserves of critical battery materials, such as lithium, cobalt and nickel. This necessitates the need to invest in critical mineral resource asset reserves, which are geographically concentrated in locations such as Chile, Argentina and Australia. The eligible projects are also highly relevant to POSCO Holdings' rechargeable battery materials business division (although this currently accounts for roughly 4% of the company's total revenue), and is in line with the group's plans to expand its battery materials business through vertical integration and by establishing a full value chain.

The magnitude of this category is significant because eligible projects mainly focus on expenditures related to EV battery materials and components, which are a necessary green enabling component of an enabled green project's value chain, namely, EVs. Therefore, overall, the eligible projects will help enable the capacity and further adoption of EVs, which is likely to entail a structurally positive sustainable impact in terms of CO_2 emissions avoidance in the long term. While the issuer has not disclosed information on the offtakers of its battery materials and components, it has clearly confirmed to us that the end-use of its green enabling projects will be exclusively limited to batteries for electric and hydrogen vehicles. The project locations will primarily be in South Korea, Australia, Argentina and Chile, but could also include Indonesia, Canada and China. For its forthcoming issuances, POSCO Holdings communicated that the distribution of net proceeds across the various projects under this category is not concentrated in a particular sub-category. Thus, the significant score holistically considers the expected impact and associated externalities across the various projects.

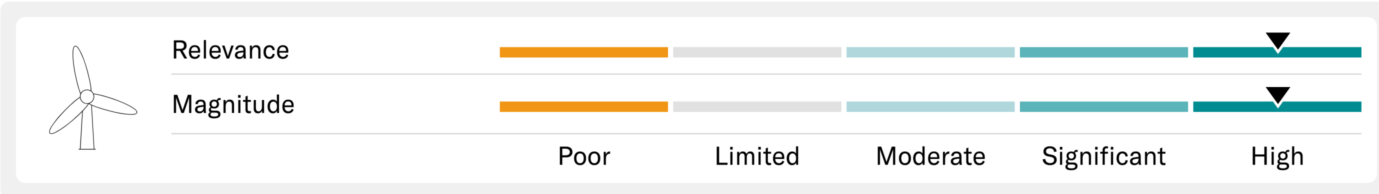
For green enabling projects, POSCO Holdings confirmed that these will strictly follow specific criteria outlined in ICMA's June 2024 Green Enabling Projects Guidance, which aims to ensure that projects are necessary for an enabled green project's value chain, do not lead to carbon lock-ins, have clearly attributable environmental benefits, and mitigate adverse E&S impacts and risks. However, we note that lithium production is an energy-intensive process where carbon emissions vary significantly depending on the extraction technique used[4], energy consumption during processing, and the logistics of transportation. The lack of details around the carbon footprint of the eligible projects limits our visibility to fully assess the carbon intensity of the projects. However, we note lithium brine extraction is generally less energy-intensive than hard-rock extraction.

In terms of water consumption, brine extraction has a higher negative impact on water sources than hard-rock mining, taking into account both freshwater and salar deposits[5],[6]. While we lack information on the total water consumption, the water source, maximum water extracted and proportion of reused water, POSCO Holdings uses a proprietary lithium extraction technology that reduces water consumption by roughly 50%-80% compared with its peers. The company also has mitigation measures in place to minimize the impact of its water use on local communities and ecosystems, taking into account the distinctive high elevation of its operations. Sources of water withdrawal are categorized, and regular inspections are conducted on the quantity and quality of water resources to ensure its groundwater development does not affect surface water resources. The company will communicate the results with local residents, who are able to directly participate in water quality inspections for joint monitoring. However, we note that potential project locations include Chile, where water stress and scarcity is a significant concern, and that the mining industry faces significant challenges in terms of land use and biodiversity. In response, the issuer has in place several mitigation measures to minimize negative impact of its operations and will ensure and transparently outline the identification and management of relevant material adverse impacts, as required under the ICMA Green Enabling Projects Guidance.

Investments in battery materials and components (such as cathodes, precursors, anodes, separators and electrolytes) are essential for EV batteries which will help enable the capacity and further adoption of EVs. However, such activities are generally associated with negative externalities during the extraction of raw minerals, construction of manufacturing facilities and energy-intensive manufacturing process. For instance, production of cathodes involves cobalt as a key input, which is typically mined in regions with poor labor conditions and weak regulatory oversight. Anode production is an energy-intensive process that can generate significant greenhouse gas (GHG) emissions, cause air and waste pollution, and involves carbon-rich raw materials (petroleum coke and coal tar). Battery separators' reliance on petrochemical feedstock (i.e., polymers like polyethylene or polypropylene) also lead to lock-in emissions. The lack of emissions related thresholds for such activities limit our visibility to fully assess the projects' expected benefits. Conflict minerals will be strictly excluded in line with the issuer's exclusion criteria.

R&D activities related to testing concepts for EV battery systems and materials are expected to generate positive impact through more efficient, higher performing batteries and improved manufacturing processes.

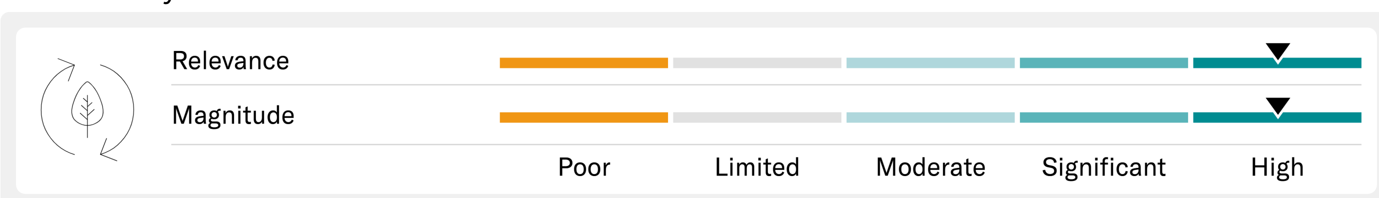
Renewable energy



The relevance of this category is high because the expansion of renewable energy capacity is essential and highly relevant at the global level to reduce GHG emissions stemming from a wide range of economic activities. In addition, the eligible projects are highly relevant to POSCO Holdings' operating group business of building a full hydrogen value chain, which encompasses renewable energy generation and electrolysis technologies to support decarbonization efforts across the group.

The magnitude of this category is high because the eligible projects focus on power generation and dedicated transmission and distribution (T&D) assets for wind and solar power, which are considered use of best available technologies with limited lock-in effects. Generation facilities will focus on solar photovoltaics (PVs) and onshore wind power, and will follow the Climate Bonds Initiative's (CBI) criteria of having no more than 15% of electricity generated from non-renewable sources. While concentrated solar power (CSP) and offshore wind power facilities may potentially be included in the future, the issuer has confirmed that they will have in place clear water risk and marine biodiversity management plans to mitigate associated negative externalities and risks. The category also includes energy storage systems (ESS) and associated enabling technologies (such as batteries, green hydrogen fuel cells and electrolyzers), which are necessary solutions that support further adoption of renewable energy sources. The issuer confirmed that electrolyzers (namely, alkaline electrolyzers and Proton Exchange Membrane (PEM) electrolyzers) will be powered mainly by on-site solar and wind power and will be used for storage of green hydrogen. The issuer also confirmed that battery ESS will be dedicated to renewable energy storage and will not be used in carbon-intensive end-use sectors.

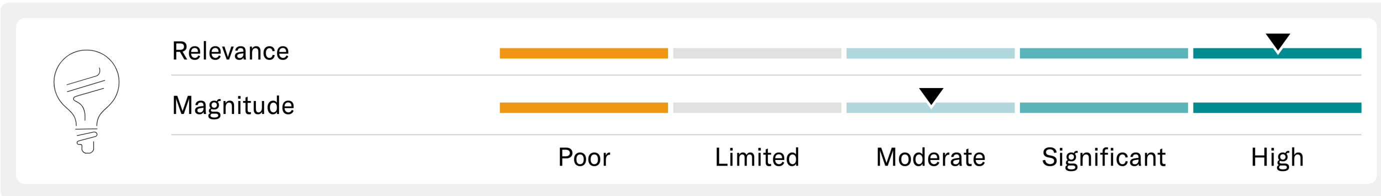
Circular economy



The relevance of this category is high because the management and recycling of waste batteries is an important issue globally, and especially in South Korea, which is a major player in the global battery market and home to leading battery manufacturers. As global demand for batteries, particularly for EVs and renewable energy storage systems, expands rapidly, improper disposal of batteries will increasingly pose environmental risks. Additionally, critical materials used in batteries are limited in supply and concentrated in a few countries. Korea, in particular, lacks substantial domestic reserves of critical battery materials (such as lithium, cobalt and nickel, and manganese), making it highly dependent on imports. Thus, efficient recycling of waste batteries can help many countries mitigate resource scarcity, alleviate pressure on natural resources, and minimize environmental hazards stemming from landfilling or incineration of waste batteries. Recycling of waste batteries is a key environmental challenge that is also highly relevant to POSCO Holdings' battery manufacturing business.

The magnitude of this category is high. Recycling and reuse of battery materials are likely to positively contribute to the objectives of pollution prevention and promotion of a circular economy by enabling the recovery and reuse of critical materials. This substantially reduces the need for mining and processing of virgin raw materials – processes that are energy-intensive and environmentally damaging – and minimizes hazardous materials from entering landfills. While the issuer did not set a target input rate of recycled material for the various metals, which could help ensure a higher impact for recycling projects, projects will generally aim to reach higher recovery rates in line with economic incentives. The issuer will also follow relevant national standards related to waste battery recycling in the target project locations, and has confirmed through internal documentation that it will follow the waste hierarchy for batteries, involving cascade utilization, which can help extend the useful life of batteries.

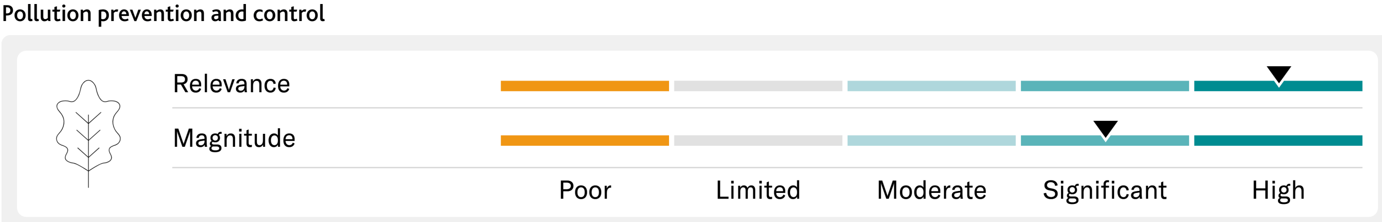
Energy efficiency



The proposed energy efficiency projects are highly relevant to both Korea's national greenhouse gas (GHG) reduction target and to POSCO Holdings. As the country's electricity generation is currently heavily reliant on fossil fuels, there is a critical need to decarbonize through improved efficiency of energy use. Furthermore, Korea's Nationally Determined Contribution (NDC) target includes various initiatives related to energy efficiency across residential and industrial sectors, which demonstrates that energy efficiency measures are an integral decarbonization means to achieve the national emissions reduction goal. In addition, the eligible projects are highly relevant to POSCO Holdings' battery manufacturing business, given improvement in energy efficiency has been identified as an important decarbonization lever for the division's energy-intensive value chain.

This category is expected to have a moderate contribution. The projects will positively contribute to reducing GHG emissions through energy efficiency improvements across the entire battery manufacturing value chain, with a threshold of at least 30% in energy savings. The issuer confirmed that projects would include heating, ventilation, and air conditioning (HVAC) systems; waste heat recovery systems; efficient kilns and furnaces; and smart energy management systems, which would overall lead to better energy consumption performance. However, we lack details regarding the specific types of waste heat recovery systems and types of kilns and furnaces under scope, which limits our visibility to assess the full extent of the projects' expected impact. Additionally, while the issuer confirmed that fossil fuel systems would not be financed during its phaseout period, it also communicated that proceeds may be used to finance energy efficiency projects aimed at reducing emissions from fossil fuel systems, and also confirmed that the source of waste heat would be from furnaces. While such projects would help reduce emissions from fossil fuel systems, concerns remain around negative lock-in effects of these assets.

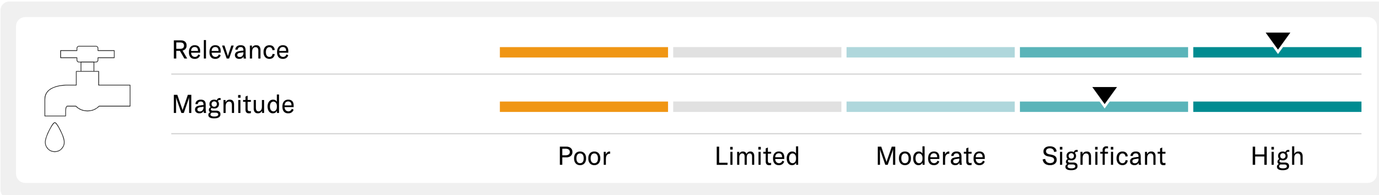
Pollution prevention and control



Tackling air pollution is a highly relevant environmental challenge faced in South Korea, where around 98% of the population lives in areas that exceed the country's national air quality standards[7]. In recent years, the level of fine particulate matter (PM) reached PM2.5 (double the recommended level by IQAir), and exposure to PM and ground-level ozone has been particularly severe. In general, air pollutants and GHG emissions stemming from battery manufacturing facilities can have serious impact on the environment and human health for surrounding areas within project locations. Financing of air pollutant mitigation measures and equipments addresses a key environmental challenge faced by the battery manufacturing sector, and is therefore highly relevant for POSCO Holdings battery manufacturing division.

The magnitude of this category is significant. The issuer has communicated that the financed equipment and monitoring systems, such as scrubbers and filters, will mainly tackle air pollution to reduce the emission of volatile organic compounds (VOCs) and PM. This is likely to lead to an overall reduction of harmful air pollutants across the battery manufacturing process. The issuer has also set a threshold of reducing air pollution by at least 30% compared with a pre-project implementation baseline. Furthermore, POSCO Holdings' ESG checklist for investment deliberation[8] requires the eligible projects' technology and equipment to comply with air quality regulations of the investment destinations, minimizing concerns around air pollutants exceeding harmful levels in respective project locations. However, the lack of details on the specific technologies to be financed limits our ability to fully assess the extent to which this category contributes to its environmental objective.

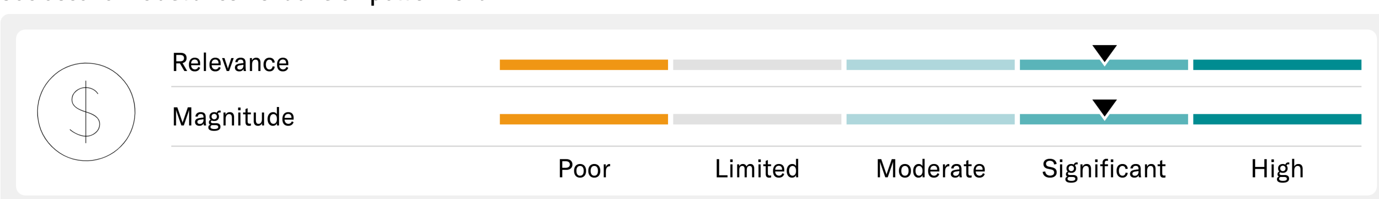
Water and wastewater management



The relevance of this category is high. Water management is a highly relevant sustainability challenge for critical mineral extraction, lithium brine extraction and battery manufacturing, and is crucial to address the pressing issues of water scarcity and management in regions like Chile, Argentina and Australia, where lithium brine assets and hard rock mines are mostly located. In Chile, the second-largest producer of lithium, brine extraction methods used to extract lithium for batteries have exacerbated scarce water conditions in nearby lagoons, leaving contaminants and toxic wastes behind. Battery manufacturing is also a water-intensive process, consuming significant amounts of water for various stages, including cooling, cleaning and chemical processing. This highlights the need to finance projects to properly manage water resources, which POSCO Holdings is actively addressing within its battery materials business division.

The category is likely to have a significant positive impact in terms of sustainable management of water resources because eligible projects will mainly focus on optimizing water usage and recycling and reusing wastewater throughout the battery manufacturing process with a threshold of at least a 30% improvement in water use, wastewater or recycled water. Specifically for lithium-related assets, brine extraction has a higher negative impact on water sources than hard-rock mining. The company has communicated that eligible projects in this category include its proprietary lithium extraction technology that reduces water consumption by roughly 50%-80% compared with its peers, as well as other water and wastewater treatment recovery systems. While we lack visibility regarding the specific treatment and recovery systems to be financed, as well as technical details around the total water consumption, target water sources, maximum water extracted and proportion of reused water, POSCO Holdings has mitigation measures in place to minimize the impact of its operations on local communities and ecosystems (see Clean Transportation category above), and will ensure and transparently outline the identification and management of relevant material adverse impacts. Nevertheless, concerns remain around the water-intensive nature and inherent negative externalities associated with lithium extraction, in addition to ongoing water stress challenges faced in countries such as Chile.

Socioeconomic advancement and empowerment



The projects in this category have significant relevance. Access to employment and other financial support for underserved populations (such as the disabled, youth or elderly) are often limited because of higher risks and social bias associated with these groups. The employment rate for Korean youths remains well below the OECD average. The government has also been actively promoting re-employment services for the elderly due to the overall aging workforce. Employing underserved groups (as part of POSCO HUMANS) would help foster a more inclusive and diverse workforce in Korea, where the employment rate of people with disabilities was 34.9% as of 2019[9]. Small- and medium-sized enterprises (SMEs) also serve as the backbone of the Korean economy because they account for nearly 99% of all businesses, 81% of total employment and roughly 39% of exports[10]. Still, the productivity gap between large firms and SMEs in Korea is the largest among OECD countries[11]. However, compared to other social projects, socioeconomic advancement is not the most pressing social challenge faced by the issuer.

Eligible projects under this category will likely have a significant impact in terms of promoting socioeconomic advancement through employment and free ESG consulting services for SMEs and start-ups across POSCO Holdings' various business segment supply chains. The company has confirmed that the projects will be located in Korea only. The target population is clearly defined in line with the Korean government's technical thresholds and focuses on providing training or employment to underserved populations as outlined in the eligibility criteria. The company has communicated through internal documentation that projects will focus on POSCO HUMANS, a subsidiary of POSCO Holdings that aims to provide employment opportunities for individuals with disabilities. However, there is limited information around how projects will benefit other target groups, including single parents.

For SMEs and start-up companies, POSCO Holdings has communicated to us that it will offer consulting services for supply chain ESG improvements free-of-charge across its various business segments, minimizing concerns around affordability. The consulting programs are also expected to lead to environmental benefits as they aim to help SMEs build their ESG management environment by improving working conditions, eliminating safety hazards, and implementing energy-saving and carbon emissions reduction plans. Eligible projects aimed at women-owned SMEs and start-up companies follow clearly defined criteria set by the International Finance Corporation (IFC) or the Korean government's Article 2 of the Enforcement Decree of the Act on Support for Female-Owned Businesses, which can help ensure the impact is directed towards women-owned businesses. However, the projects lack detail around the tailor-made consulting programs, making it difficult to fully assess whether the projects will provide structural, long-term solutions that address specific social challenges faced by the SMEs and start-ups.

Additional contribution to sustainability considerations

We have not made an adjustment to the preliminary contribution to sustainability score based on additional considerations.

We consider POSCO Holdings to have appropriate processes in place to identify and manage E&S risks associated with its financed projects. The company will assess potential E&S impacts in accordance with its 'ESG checklist for investment deliberation', which outlines relevant core ESG risk topics for eligible projects under this framework. The ESG Team under the Corporate Compliance and Ethics Team establishes and operates the group-level ESG issue response and management system to effectively respond to internal and external ESG risks associated with POSCO Group. Specifically, the group's regulations stipulate that ESG risks should be reviewed in making new investment through the Internal Investment Deliberation Committee to ensure such risks are rigorously managed. Ongoing monitoring continues following investment approval to review overall issues and ESG risks.

Specifically for the management of social risks, POSCO Holdings has established a group-wide human rights management policy which applies to employees and its suppliers alike, and complies with international human rights standards such as the UN Guiding Principles on Business and Human Rights, UN Global Compact, Universal Declaration of Human Rights, and OECD Guidelines for Multinational Enterprises. Information on human rights management, including supply chain human rights and human rights controversies, are reported through the ESG Committee and sessions attended by all inside and outside directors. The issuer will also follow minimum social safeguards and has systems in place to manage human rights, as well as health and safety risks, not only for green enabling activities, but for all financed activities.

We consider the projects financed under the framework to be in line with POSCO Holdings' business objective of establishing a full battery materials value chain to maximize synergies across its vertically integrated battery businesses, with the aim of enabling the production of EV batteries. As part of its decarbonization plan, the group is focusing on new growth businesses such as rechargeable battery materials and hydrogen, which we consider the eligible projects under this framework to be coherent with. POSCO Holdings has established a 2050 carbon neutrality road map for each of its carbon-intensive domestic operations, including POSCO (its steelmaker and largest operating company), POSCO International and POSCO Future M, which collectively represent 99.9% of the group's total carbon emissions. The company plans to reduce its carbon emissions by 10% by 2030, 30% by 2035, 50% by 2040, and ultimately achieve net zero by 2050.

However, we note that the company is associated with substantial carbon emissions through its carbon-intensive steelmaking business, POSCO. Additionally, POSCO International, one of the group's main operation businesses, aims to build a full value chain of Liquefied Natural Gas (LNG) business and plans to increase gas reserves and explore new assets by 2030. However, POSCO International's energy business accounts for a relatively minor share of the division's total revenue (around 12% in 2023), and the business targets to gradually switch from LNG to hydrogen co-firing and 100% hydrogen firing for key domestic operations by 2050, as well as increase its onshore wind, PV, and other renewable power generation to 1.5GW by 2030. In addition, POSCO plans to decarbonize its steelmaking segment by shifting to low-carbon fuels and raw materials for its currently-operating facilities, developing low Hot Metal Ratio (HMR) technology, and improving the efficiency of existing facilities in the short term. In the medium term, decarbonization means include introducing blast furnace based low-carbon bridge technologies, such as Electric Arc Furnace (EAF) and carbon capture utilization and storage (CCUS). Ultimately, in the long term, POSCO aims to develop its hydrogen-based steelmaking technology – HyREX

(Hydrogen Reduction) – and gradually transition from conventional furnaces to new HyREX facilities by 2050 as a way to achieve carbon neutrality. Lastly, we note that the scope of this framework does not cover activities related to POSCO's steelmaking business, given the division has already established its own sustainable financing framework.

Appendix 1 - Alignment with principles scorecard for POSCO Holdings' sustainable financing framework

Factor	Sub-factor	Component	Component score	Sub-factor score	Factor score
Use of proceeds	Clarity of the eligible categories	Nature of expenditure	A	Aligned	**Aligned**
		Definition of content, eligibility and exclusion criteria for nearly all categories	A		
		Location	A		
		BP: Definition of content, eligibility and exclusion criteria for all categories	No		
	Clarity of the objectives	Relevance of objectives to project categories for nearly all categories	A	Aligned	
		Coherence of project category objectives with standards for nearly all categories	A		
		BP: Objectives are defined, relevant and coherent for all categories	No		
	Clarity of expected benefits	Identification and relevance of expected benefits for nearly all categories	A	Aligned	
		Measurability of expected benefits for nearly all categories	A		
		BP: Relevant benefits are identified for all categories	No		
		BP: Benefits are measurable for all categories	Yes		
		BP: Disclosure of refinancing prior to issuance and in post-allocation reporting	No		
		BP: Commitment to communicate refinancing look-back period prior to issuance	Yes		
Process for project evaluation and selection	Transparency and clarity of the process for defining and monitoring eligible projects	Clarity of the process	A	Aligned	**Aligned**
		Disclosure of the process	A		
		Transparency of the environmental and social risk mitigation process	A		
		BP: Monitoring of continued project compliance	No		
Management of proceeds	Allocation and tracking of proceeds	Tracking of proceeds	A	Best practices	**Best practices**
		Periodic adjustment of proceeds to match allocations	A		
		Disclosure of the intended types of temporary placements of unallocated proceeds	A		
		BP: Disclosure of the proceeds management process	Yes		
		BP: Allocation period is 24 months or less	Yes		
Reporting	Reporting transparency	Reporting frequency	A	Aligned	**Aligned**
		Reporting duration	A		
		Report disclosure	A		
		Reporting exhaustivity	A		
		BP: Allocation reporting at least until full allocation of proceeds, and impact reporting until full bond maturity or loan payback	No		
		BP: Clarity and relevance of the indicators on the sustainability benefits	No		
		BP: Disclosure of reporting methodology and calculation assumptions	Yes		
		BP: Independent external auditor, or other third party, to verify the tracking and allocation of funds	No		
		BP: Independent impact assessment on environmental and social benefits	No		
				Overall alignment with principles score:	**Aligned**

Legend: BP - Best practice, A - Aligned, PA - Partially aligned, NA - Not aligned

Appendix 2 - Mapping eligible categories to the United Nations' Sustainable Development Goals

The seven eligible categories included in POSCO Holdings' framework are likely to contribute to seven of the United Nations' Sustainable Development Goals (SDGs), namely:

UN SDG 17 Goals	Eligible Category	SDG Targets
GOAL 5: Gender Equality	*Socioeconomic advancement and empowerment*	5.A: Establish women's equal rights to economic resources, access to ownership and control over property and financial services
GOAL 6: Clean Water and Sanitation	*Water and Wastewater Management*	6.3: Improve water quality by reducing pollution, eliminating dumping and minimizing hazardous chemicals and materials
GOAL 7: Affordable and Clean Energy	*Renewable Energy*	7.2: Increase substantially the share of renewable energy in the global energy mix
GOAL 8: Decent Work and Economic Growth	*Socioeconomic advancement and empowerment*	8.3: Promote policies that support productivity, job creation, entrepreneurship, innovation, and encourage the growth of SMEs
	Socioeconomic advancement and empowerment	8.6: Substantially reduce the proportion of youth not in employment, education or training
GOAL 10: Reduced Inequality	*Socioeconomic advancement and empowerment*	10.3: Ensure equal opportunity and reduce inequalities, including by promoting legislation, policies and action
GOAL 11: Sustainable Cities and Communities	*Clean Transportation*	11.2: Provide access to safe, affordable, accessible and sustainable transport systems for all
	Pollution Prevention and Control	11.6: Reduce the adverse per capita environmental impact of cities, with special attention to air quality and waste management
GOAL 12: Responsible Consumption and Production	*Energy Efficiency*	12.2: Achieve the sustainable management and efficient use of natural resources
	Pollution Prevention and Control	12.4: Achieve environmental management of chemicals and all wastes, and reduce their release to air, water and soil
	Circular Economy	12.5: Substantially reduce waste generation through prevention, reduction, recycling and reuse

The mapping of the UN's SDGs in this SPO considers the eligible project categories and associated sustainability objectives/benefits documented in the issuer's financing framework, as well as resources and guidelines from public institutions, such as the ICMA's SDG Mapping Guidance and the UN's SDG targets and indicators.

Appendix 3 - Summary of eligible categories in POSCO Holdings' framework

Eligible Categories	Description	Sustainability Objectives	Impact Reporting Metrics
Clean Transportation	• Expenditures related to the investment, acquisition, manufacturing, distribution, maintenance and operation of battery materials and components for electric and hydrogen vehicles to support the EV market development including: - Cathodes, precursors (such as lithium hydroxide, lithium carbonate), anodes, separators, electrolytes • Green Enabling Projects: mineral resources / raw materials for EV batteries, such as nickel, graphite and lithium brine (salt lakes) • R&D (Research and Development) for production process, sourcing, tooling and testing concepts for EV battery systems and EV battery materials	Climate change mitigation; Pollution prevention and control	• Number of batteries produced for electric vehicles or low emission transports • GHG emissions avoided per year with a Green Enabling Project, compared to a non-green alternative or baseline scenario (tCO2e) • Energy efficiency improvements in the battery manufacturing process through eligible R&D projects
Renewable Energy	• Projects aimed at facilitating the generation, transmission, distribution of renewable energy: - Wind Power; - Solar Energy Generation and Solar Thermal Energy; • Expenditures related to the investment, research, development, acquisition, manufacturing, distribution, maintenance and operation of energy storage systems and enabling technologies for energy storage and optimization, such as batteries and green hydrogen fuel cells and other energy storage devices including electrolysers	Climate change mitigation; Pollution prevention and control	• Total renewable Capacity (in MW) • Energy generated per year (MWh) • GHG emissions avoided per year, reported in tonnes CO2-quivalent (tCO2e)
Circular Economy	• Expenditures related to the investment in battery recycling aiming at building a closed loop of battery production, utilization, cascade utilization, recycling and resource regeneration following standards related to waste battery recycling and battery material regeneration including: - The construction and maintenance of battery recycling facilities and equipment - The recycling and reuse of valuable metals such as nickel, cobalt, manganese, and lithium from used batteries	Climate change mitigation; Transition to a circular economy; Pollution prevention and control	• The % increase in materials, components and products that are reusable, recyclable as a result of the project and/or in absolute amount (tonnes) • The increased proportion of circular materials produced as a % of the total material production of the project (%) • Increase in products or parts derived from redundant products or components in valorised amount, in % of the total product portfolio, and/or in absolute amount (tonnes) • Waste diverted from landfill per year (tonnes)

Eligible Categories	Description	Sustainability Objectives	Impact Reporting Metrics
Energy Efficiency	• Expenditures related to projects that are designed to enable energy and emissions reductions as part of the battery manufacturing value chain such as: - The installation of energy efficient equipment and technology to increase the operational energy efficiency of facilities - Switching from equipment and materials that rely on fossil fuels (LPG, diesel, etc.) to electricity-powered alternatives *Such projects should lead to energy savings of at least 30% compared to a pre-project implementation baseline*	Climate change mitigation; Pollution prevention and control;	• Energy savings per year (MWh) • GHG emissions avoided per year (tCO2e)
Pollution Prevention and Control	• Equipment, system that are used to mitigate air pollution along the battery manufacturing process. *Such projects should lead to a diminution in air pollution by at least 30% compared to a pre-project implementation baseline* • Monitoring systems to ensure pollutants are treated properly before discharge	Climate change mitigation; Pollution prevention and control; Protection and restoration of biodiversity and ecosystems	• GHG emissions or pollutants reduced/avoided per year(tCO2eq)
Water and Wastewater Management	• Equipment, systems that are used to mitigate water usage and wastewater along the battery manufacturing process, such as water and wastewater treatment and recovery systems *Such projects should demonstrate at least a 30% improvement (in water use, wastewater or recycled water) compared to a pre-project implementation baseline*	Sustainable use and protection of water and marine resources	• Amount of water/wastewater purified or reused (litres) and % reduction • Wastewater treated per year (litres)

Eligible Categories	Description	Sustainability Objectives	Impact Reporting Metrics
Socioeconomic advancement and empowerment	• Training or employment provided to underserved population including but not limited to: - Disabled, youth or elderly (POSCO HUMANS) - Low-income individuals - Single parents with child(ren) below 18 - Families or individuals with financial dependent(s) aged over 60 • Support to Small and Medium Enterprises (SMEs) defined by the Enforcement Decree of The Framework Act on Small and Medium Enterprises with less than 50 employees and/or start-up companies established for a period of less than 7 years - Support to SMEs/start up may include providing consulting for supply chain ESG improvement, which may have both green and social co-benefits, R&D expenses support, etc. • Support to SMEs and start-up companies that meet the definition of Woman-Owned Enterprise set forth by the International Finance Corporation or the definition of Female-Owned Business set forth under Article 2 of the Enforcement Decree of the Act on Support for Female-Owned Businesses, in furtherance of the United Nations Sustainable Development Goal No. 5, "Achieve gender equality and empower all women and girls." *For avoidance of doubt, support to companies operating in the sectors listed in the Exclusionary Criteria will not be eligible*	Socioeconomic advancement and empowerment; employment generation	• Number of startups / SMEs supported • Number of beneficiaries, by category • Jobs created, supported, and/or retained

Endnotes

1 The point-in-time assessment is applicable only on the date of assignment or update.

2 Emerging technologies: This chart shows which countries produce the most lithium, World Economic Forum, 5 January 2023.

3 Global Critical Minerals Outlook 2024, International Energy Agency, 2024.

4 GHG emissions intensity for lithium by resource type and processing route, International Energy website, accessed in March 2025.

5 Life cycle assessment and water use impacts of lithium production from salar deposits: Challenges and opportunities, Halkes et al., 2024.

6 Hydrological Conditions and Impacts of Lithium Production in South American Salares: Results and Challenges, Boutt et al., 2023.

7 South Korea Fact Sheet, Air Quality Life Index, accessed on 10 March 2025.

8 POSCO Holdings 2023 Sustainability Report, POSCO Holdings, July 2023.

9 Employment Policy, Ministry of Employment and Labor, accessed on 13 March 2025.

10 Status of Korean SMEs, Ministry of SMEs and Startups, accessed on 13 March 2025.

11 OECD Economic Surveys: Korea 2022, OECD, September 2022.

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