# ith POSCO





# POSCO'S DIALOGUE FOR CLIMATE ACTION

**BUILDING A BETTER FUTURE TOGETHER** WITH SUSTAINABLE STEEL

## **CONTENTS**

1. Who We	are
-----------	-----

1.1. A Letter from the CEO	 05
1.2. About POSCO	 06

## 2. Climate Change at POSCO

2.1. POSCO's Carbon Flow at a Glance	08
2.2. Our Approach to Climate Change	09
2.3. Steel as an Enabler of Circular	
Economy for Sustainable Earth	10
2.4. Governance and Risk Management	11

## 3. Impact on Our Business

3.1. Scenario Analys	is: Risks &	
Opportunities of	on Our Steel Business	 13
3.2. Our ambition		 17

## 4. Strategy Toward Low Carbon Future

TCFD Index	31
5. Next Steps for the Path Forward	30
4.3. Green Partnership	28
4.2. Green Product	24
4.1. Green Process	20



The Seoul National University Library Kwanjeong which adopted INNOVILT, POSCO's premium construction steel brand, in its construction

## **About This Report**

- This document outlines POSCO's strategic approach to climate change. While POSCO has already disclosed its future responses in accordance with the TCFD and SASB recommendations through its Corporate Citizenship Report 2019, this report intends to elaborate on POSCO's climate change response strategies for its technology development and partnerships for the transition to a low carbon economy that were not addressed in the Corporate Citizenship Report 2019. Climate change is a risk that exerts an unprecedented and profound impact on global businesses, and there exist numerous factors that influence the responses to climate change. Therefore, forward-looking information and statements contained in this document are subject to change as a result of other factors that may eventuate in the upcoming years, including but not limited to change in national-level ETS systems and to shift business market conditions. Furthermore, the realization of the statements presented in this document may involve numerous uncertainties or issues beyond POSCO's control. It should be noted that definitive action plans expressed through such statements may differ materially from how they actually unfold.

This document includes a portion of the information published by third-party organizations. To explain POSCO's directions in responding to climate change, this document cited information in regards to the climate change scenarios published by the IEA (International Energy Agency). It should be noted here that POSCO does not undertake any obligation to assume responsibility or offer guarantees for the information made available by third-parties. In the case that readers request POSCO's explanation of relevant information or content, POSCO may do so partially with the permission granted by the concerned third parties. All the information from third-parties presented in this document has been annotated with their sources at the bottom.

This document provides a macro perspective on the strategic directions taken by POSCO, a steel company geographically located in the Republic of Korea. As a global steelmaker, POSCO is setting its course of action for technology development to keep pace with the transition towards a low carbon economy. Upon finalizing its direction, the Company plans to take action accordingly across its global worksites in a selective and consecutive manner. Thus, words such as "we", "our", "us", or "it" are intended to refer to POSCO, not POSCO Group.

This document was prepared following the TCFD guidelines using their recommended terminology. It should be noted that the scenarios contained in this document were reviewed by ERM to ensure that their descriptions satisfy the TCFD guidelines. This document is not a mandatory disclosure and thus does not require assurance provided by ERM and any other organization. It should be specified, however, that POSCO maintains its position to proactively reflect advice and assistance from external expert groups to keep in line with the upcoming global low carbon era.

# • POSCO CHARTER OF CORPORATE CITIZENSHIP •

Companies achieve lasting growth and sustainability by pursuing harmony within the society where businesses operate.

As a member of the social community, companies who have benefited from resources provided by the society should look beyond profit, engage in addressing social issues and contribute to the prosperity of mankind and to making the world a better place. We believe that this is the right way to move forward.

POSCO, under its management philosophy of 'Corporate Citizenship: Building a Better Future Together', will engage and communicate with all stakeholders including customers, employees and shareholders, and continually seek change and innovation in pursuit of sustainability by ultimately creating greater value for the company.

Accordingly, POSCO that embraces Corporate Citizenship complies with the following principles when conducting business.

1	2	<u>3</u>
We nurture a robust business ecosystem with business partners.	We are at the forefront in addressing social issues and making society better.	We foster a happy and fulfilling workplace by creating a corporate culture based on trust and creativity.
<ul> <li>We practice the values of fairness, transparency and ethics across all business activities</li> </ul>	• We take a leading role in confronting social challenges at the corporate level with a sense of empathy	• We create a safe and pleasant working environment to promote the health and well-being of our employees
<ul> <li>We pursue collaboration and mutual growth with partners and suppliers based on a culture of consideration and respect</li> </ul>	• We carry out activities for the common good for the development of local communities and environmental protection	• We pioneer a corporate culture of trust and harmony through fair HR management practices and stable labor relations

- We support customer success by providing the finest products and services
- development of local communities and environmental protection
- We actively participate in philanthropy as part of our commitment to sharing with our neighbors and the society
- fair HR management practices and stable labor relations
- We create a great workplace where diversity is respected and a healthy work-life balance can be realized

## July 25, 2019 POSCO

As we open a new chapter in the history of POSCO in pursuit of mutually-beneficial growth and the value of consideration, co-existence and co-prosperity, we lay the foundation to become a centennial company in line with our 'Corporate Citizenship' management philosophy.

Jeong-Woo Choi Chief Executive Officer

1.1. A Letter from the CEO | 1.2. About POSCO

# WHO WE ARE

- 2010 Published the world's first carbon report in the steel industry
- **2012** Became the world's first steelmaker to acquire the ISO50001 certification
- 2019 Selected as 'Lighthouse Factory' by the Davos Forum
- 2019 Achieved the 'Environmental Product Declaration (EPD)' certification for all POSCO-manufactured steel products (Korean government)
- 2020 Named as World Champion of "Steel Challenge" hosted by the World Steel Association for the second consecutive years and holds the record for the most wins by a single corporate
- 2020 Ranked No. 1 in the World's Most Competitive Steel Company by World Steel Dynamics (WSD) for 11 consecutive years



This photo shows the winner of the 'The Iron Hidden in Everyday Life' in-house photo contest held by POSCO to commemorate Iron Day on June 4th, 2020. *Title* Steel and the Arts of Architecture, Fences surrounding the Pohang Canal not only ensure pedestrian safety, but they also reaffirm our value for steel in our everyday lives. Photographer Byung-Hyung Lee, Cold Rolling Plant 2, Pohang Works **1.1. A Letter from the CEO** I 1.2. About POSCO

# 1.1. A Letter from the CEO



We believe that we can build a better future and a low carbon society by tackling climate change. As a responsible corporate citizen, POSCO is committed to delivering sustainable steel.

At POSCO, we believe that "a company must grow in harmony with society to be sustainable". As a member of society, a company must contribute to making a better world beyond profit creation, and we are convinced that this is the right way for all companies to pursue. Tackling climate change is a critical agenda in achieving sustainable development for a better future. We acknowledge that it is not a matter of the future but an issue that requires immediate actions. In the same context, we believe that business leaders should play a key role in finding a way to build a low carbon society. Since the global steel industry is one of the largest contributors to carbon emissions, we recognize that the decarbonization of steelmaking is both inevitable and urgent to combat climate change and keep our planet sustainable.

## Our ambition to be carbon neutral by 2050

As a corporate citizen and global leading steelmaker, we aspire to follow the carbon neutral steelmaking route even though it will be a long journey. While gradual carbon emission reductions will be implemented in the near-term, we will, by 2050, transform our operations to net zero emissions. To achieve this, we are exploring a range of low carbon solutions to accelerate our decarbonization through alternative and innovative technologies that include the smartization of operations, the use of more recycling scraps, carbon capture, utilization and storage (CCUS), and hydrogen-based steelmaking. Alongside mitigation efforts, we are reinventing our business to become climate-resilient and also preparing the new growth engine that will better position us for a low carbon era. First, we will provide more decarbonization solutions to end-users with a variety of eco-friendly premium products such as high strength steel or electrical steel. In line with the electrification of the mobility and energy system, we are aiming to become a global key supplier of essential materials for secondary batteries, including lithium, cathode, and anode. We will leap forward to emerge as a business pioneer across the hydrogen and liquefied natural gas (LNG) value chain. Through these endeavors, we will surely help our customers discover new businesses and create shared value together.

This is our first climate report intended to facilitate communication with all stakeholders by illustrating POSCO's efforts and preparedness related to climate change. In achieving our ambition, however, POSCO will face numerous challenges and cannot do it alone. Therefore, we need to continuously reach out to and partner with various stakeholders including customers, governments, and investors. We look forward to your support and advice to our commitment so that POSCO can find a better way.

Yours Sincerely, Jeong-Woo Choi, Chief Executive Officer

tw choi

1.1. A Letter from the CEO | **1.2. About POSCO** 

# 1.2. About POSCO

POSCO was established as a general steelmaker on April 1, 1968. As Korea's first integrated steelworks operator, POSCO was listed on the Korea Stock Exchange on June 10, 1988, and has grown into a global steel company with more than 43 million tons in annual steel production capacity.



Company name	POSCO
Head office	6261, Donghaean-ro (Goedong-dong), Nam-gu, Pohang-si, Gyeongsangbuk-do, Korea
Business areas	Iron making, steel making, and production & sale of rolled steel products
Major products	Hot rolled steel, steel plates, wire rod, cold rolled steel, galvanized steel, electrical galvanized steel, electrical steel, stainless steel, titanium, etc.
Company representatives	CEO Jeong-Woo Choi, President In-hwa Chang
Date of establishment	April 1, 1968
Website	www.posco.com

## **Credit Ratings**

> Domestic	> International	
	S&P	Moody's
$AA+_{(Positive)}$	$BBB+_{(Stable)}$	$Baa1_{(\text{Stable})}$

	기업시민 포스코			
Management Philosophy	Corporate Cit	izenship: Build	ing a Better Fi	uture Together
Vision	ith POSCO			
	Business		<b>Y</b> iety	People
	Business partners		nmunities ividuals	POSCO Group employees
Field of Activity	· Practice of fairness, transparency, and ethics	· Contribution to social issues wi		· Creation of a safe and pleasant work environment
	· Shared growth	· Development of local communities & environmental management		· Fair HR affairs & stable labor-management relations
	· Best products & services	· Participation in philanthropy		Diversity & inclusion, and improvement of work-life balance at workplace
POSCO Talent	Talent with the n	nindset of actio	on, considerat	ion and creativity
Code of Conduct	Shiljil(實質, Substance)	Shilhaeng()	፪行, Execution)	Shilli(實利, Practical)
Core Value	Safety	Win-Win	Ethics	Creativity

2.1. POSCO's Carbon Flow at a Glance | 2.2. Our Approach to Climate Change
2.3. Steel as an Enabler of Circular Economy for Sustainable Earth | 2.4. Governance and Risk Management



In line with the Corporate Citizenship management philosophy, POSCO vows to do its utmost through wide-ranging activities and endeavors during its business conduct to achieve the Paris Agreement goals and accelerate the low carbon transition worldwide.



This photo shows the winner of the 'The Iron Hidden in Everyday Life' in-house photo contest held by POSCO to commemorate Iron Day on June 4th, 2020. *Title* Steel and the Arts of Architecture, The beauty of urban architecture is something made possible because of steel. **Photographer** Hong-Kyu Jeong, Production Process Improvement Section, Gwangyang Works

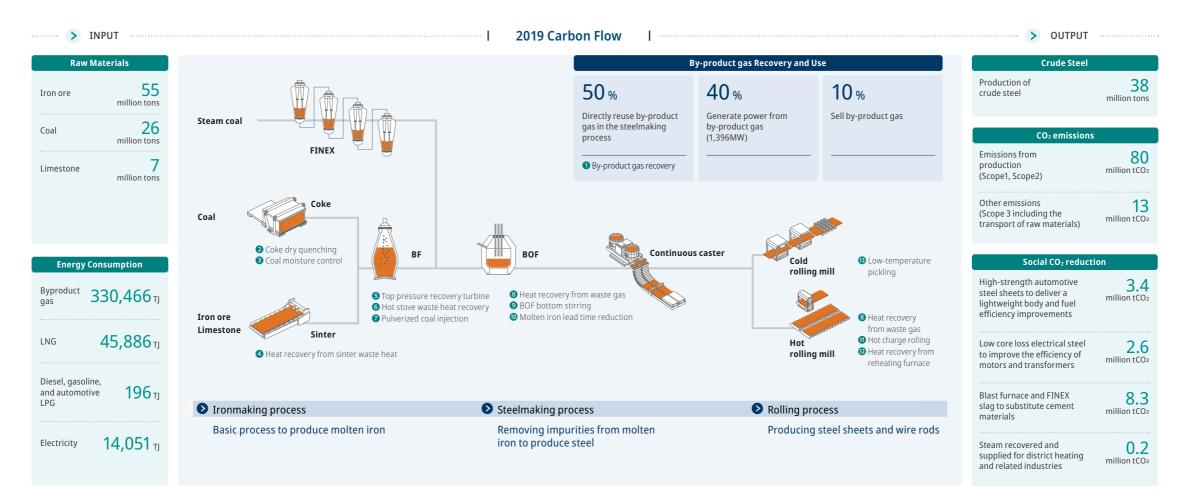
7

8	Who We Are	Climate Change at POSCO	Impact on Our Business	Strategy Toward Low Carbon Future	Next Steps for the Path Forward
		2.1. POSCO's Carbon Flow at	a Glance   2.2. Our Approac	h to Climate Change	
		2.3. Steel as an Enabler of Circ	ular Economy for Sustainable Ea	rth   2.4. Governance and Risk Manageme	ent

# 2.1. POSCO's Carbon Flow at a Glance

8

CO<sub>2</sub> produced by coal fuel entering the blast furnace either directly or indirectly accounts for the majority of the GHG emissions generated from steelworks, and its main source of generation is in the iron making process where reduction reactions take place. In calculating GHG emissions, POSCO includes not only emissions from the production process at its primary worksites of the Pohang and Gwangyang Works (Scope 1&2) but also indirect emissions that could occur along the value chain, concerning the transport of raw materials, employee commutes/business trips, and upstream leased assets (Scope 3).



2.1. POSCO's Carbon Flow at a Glance | 2.2. Our Approach to Climate Change
2.3. Steel as an Enabler of Circular Economy for Sustainable Earth | 2.4. Governance and Risk Management

# 2.2. Our Approach to Climate Change

As a business leader in the global steel industry, we are fully committed to fulfilling our role and responsibility to tackle climate change. While steel is one of the most essential materials needed to build a sustainable society, transforming the way we produce steel into an ever greener one is inevitable, and now we have the opportunity to do this with our carbon neutral goal.

## • 66

As the COO in charge of low carbon steel making technology and production, I believe that our commitment to decarbonization will enable us not only to remain the most competitive steel company but also to become the most respected company in the future.



In-Hwa Chang President, Head of Steel Business Unit



The issue of climate change has emerged as a significant challenge faced by all humanity enough to be called a climate crisis and climate emergency. We are already witnessing extreme weather conditions such as heavy rain, drought, and wildfire around the world. Climate-related issues dominated the top risks of the World Economic Forum`s Global Risks Report 2020, which identified the threats facing our world over the next decade. And the report urged responsible climate action for policymakers and business leaders. As such, stakeholders are further raising their voices for corporate leadership in reducing GHG emissions and shifting to a low carbon economy. The international community is stepping up efforts to curb global warming, and governments are strengthening policies to reduce greenhouse gas emissions ahead of the implementation of the Paris Agreement from 2021.

In this (low carbon) context, accelerating the decarbonization transformation is more central to business strategy around the globe, including ours. We fully recognize the potential risks of climate change, which is listed as one of the most critical issues through our annual ESG materiality assessment. To drive green and sustainable solutions, we embed climate change in the top-level decision-making process as a strategic priority. As a leading steelmaker, which was selected as the World's most competitive steelmaker by World Steel Dynamics (WSD) for 11 consecutive years, we aspire to fulfill our responsibility to reduce CO<sub>2</sub> emissions. We aim to develop a series of new innovative solutions in steelmaking process, not yet proven or achieved at scale, to reduce our carbon footprint in the long term. We also play a leading role in transparency by reporting our climate-related information aligned with Task Force on Climate-related Financial Disclosures (TCFD) recommendations and joined as a supporter of TCFD.

9

2.1. POSCO's Carbon Flow at a Glance | 2.2. Our Approach to Climate Change
2.3. Steel as an Enabler of Circular Economy for Sustainable Earth | 2.4. Governance and Risk Management

# 2.3. Steel as an Enabler of Circular Economy for Sustainable Earth

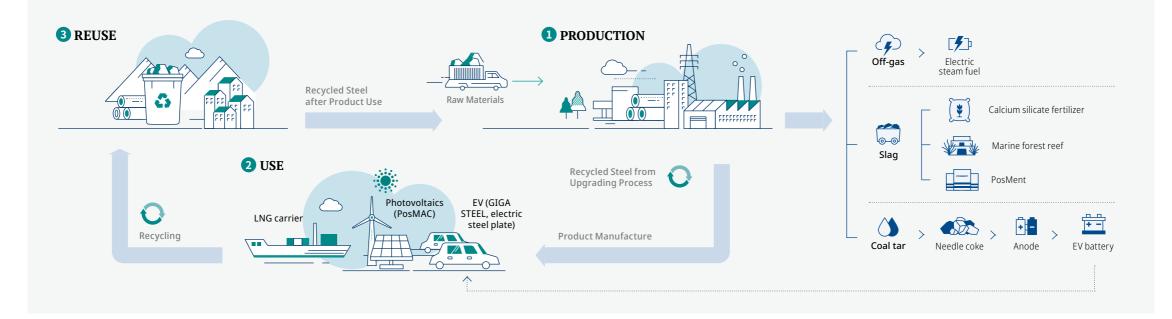
Steel products are used as essential materials throughout the daily life and economic activities of modern society. We have developed steel products into lighter, stronger, and more durable materials. Based on our efforts, we believe that it will contribute significantly to making cities and communities sustainable (UN SDGs 11). From a climate change perspective, steel will also be used as a critical material in the electrification of transportation and in energy-efficient buildings to create a climate resilient society and accelerate the energy transition.

Steel also contributes to achieving a sustainable circular economy through outstanding recyclability. The consumed

steel can be recycled infinitely as a raw material for the manufacturing of new products and can also be reused and re-manufactured to help reduce the environmental footprint. In addition, the recycling rate of by-products generated in the global steel industry reaches 96.3%, which demonstrates that very little waste is discarded.

We strive to recycle these by-products generated at our steelworks as valuable resources to minimize the generation of waste. To ensure that the landfill or incineration of unrecyclable waste materials is reduced to the minimum, we have included 'by-product recycling rates' as one of our key performance indicators. The recycling rate of by-products at our worksites is over 98%.

Our typical by-product recycling involves converting slag into valuable resources. For example, we developed slag as substitute to cement materials, and are using steel slag for our 'TRITON' product offerings designed to restore marine areas damaged by whitening due to rising sea temperatures. Furthermore, POSCO is contributing to the creation of added value through the recycling of coal tar, a by-product of the steelmaking process, as a material for the production of needle coke that serves as an anode material for electric vehicle batteries.



11	 Who We Are	Climate Change at POSCO	Impact on Our Business	Strategy Toward Low Carbon Future	Next Steps for the Path Forward
		2.1. POSCO's Carbon Flow at a	Glance I 2.2. Our Approach te	o Climate Change	
		2.3. Steel as an Enabler of Circu	ular Economy for Sustainable Ear	th   2.4. Governance and Risk Manager	ment

# 2.4. Governance and Risk Management

	— Director Candidate Recommendation and Management Committee
	— Evaluation and Compensation Committee 4 Steel Production & Technology Division
<ul> <li>Board</li> <li>of Directors</li> </ul>	<ul> <li>2 Executive Management Committee</li> <li>3 Low Carbon Environment-Friendly Council</li> <li>3 Corporate Citizenship Office</li> <li>3 Corporate Citizenship Office</li> </ul>
	Finance and Related Party Transactions Committee
	- Audit Committee

## 1 Board of Directors

The BOD approves the climate change strategies and polices.

## **2** Executive Management Committee

The committee is responsible for reviewing and approving POSCO's comprehensive low carbon strategy. It also serves to review climate change-related risks and response strategies in executing the company-wide business strategy. Furthermore, the committee approves or decides on the appointment and dismissal of members of senior management in alignment with low carbon strategy implementation.

## **3** Low Carbon Environment-Friendly Council

The council, chaired by Head of Steel Business Unit on a quarterly basis, monitors those departments in charge of steel production and technology and GHG management respectively while discussing and finalizing comprehensive low carbon strategies. It also reports finalized strategies to subcommittees and the Board of Directors to request their approval and review of strategic implementation.

## **4** Steel Production & Technology Division

The division is responsible for setting targets, managing outputs and improving on indicators to develop and commercialize low carbon steelmaking processes and put such technologies to use for production.

## **5** Safety & Environmental Planning Office

The office responds to the nation's GHG reduction goal and management policy while setting POSCO's GHG management indicators and managing their performance as well as improving on these indicators.

## **6** Corporate Citizenship Office

The office communicates with stakeholders, including climate disclosures aligned with the TCFD.

## 🕖 Business Unit

Business units perform detailed implementation tasks in accordance with POSCO's low carbon strategy, compile their outcomes, and regularly report such outcomes to the Board of Directors.

# IMPACT ON OUR BUSINESS

POSCO identifies climate-related risks and opportunities, and fully acknowledges their impact on our business. Through proactive decarbonization, POSCO aims to build climateresilient business portfolios, leading us to create greater value in a low carbon future.



This photo is the winner of the 'The Iron Hidden in Everyday Life' photo contest held by POSCO for employees to commemorate the Iron Day on June 4th. *Title* Steel Beyond Its Frame, The lighthouse stands tall as it pushes beyond the limitations imposed by its steel frame. **Photographer** Sunghoon Kim, Safety Planning & Coordination Section, Pohang Works

# 3.1. Scenario Analysis: Risks & Opportunities on Our Steel Business

We identify climate-related risks and opportunities, and we integrate them into our strategic decision making process. Our scenario analysis suggests that we need to accelerate the decarbonization of our business portfolio to take an advantage of the low carbon economy in the coming decades. We plan to reallocate capital resources to transform our steelmaking so that we become a net zero emitter and to seize new opportunities for low carbon businesses, which will surely allow us to ensure robust financial performance.

Ultimately, carbon neutrality is about how we keep our competitiveness and sustainability, and we aim to leverage the carbon neutral challenge to create greater value in a low carbon future.



66

## **Jung-Son Chon** CFO, Head of Corporate Strategy & Planning Division



As the international society set a goal of limiting global warming to 2°C from pre-industrial levels through the Paris Agreement, the 'under the 2°C scenario' serves as the reference point in the global endeavors made to mitigate GHG emissions. As suggested in the TCFD's scenario analysis guidelines, we turned to the SDS (Sustainable Development Scenario) proposed by the IEA in its World Energy Outlook 2019 in an effort to adopt scientifically-based scenarios. The SDS is consistent in achieving the goals of the Paris Agreement, as well as the energy-related Sustainable Development Goals. The scenario lays out a plausible pathway for the energy system transformation<sup>1)</sup>. Based on IEA's SDS and Energy Technology Perspectives 2020 report, we have determined future industry trends and steel demand, identified climaterelated risks and opportunities, and developed strategies to achieve our aim towards a low carbon transition. Key risks and opportunities and their impacts on the steel business are categorized on the next pages.

Steel plays a key role in modern society and is expected to become more vital in the coming low carbon and circular economy. Steel is used in all aspects of our daily lives including buildings, infrastructure, transportation systems and consumer goods, and increasing social and economic welfare needs are expected to drive the steel demand in the future. In particular, industry-wide efforts towards carbon neutrality and the circular economy could highlight the advantages of steel, such as a long service life and inherent recyclability in addition to its strength and lightweight nature. In the SDS, however, the global steel demand is projected to grow gradually in the coming decades, since the steel intensity is expected to fall across end-user sectors<sup>2)</sup>. For example, greater efforts for the electrification of transportation and the construction of energy efficient buildings lead to an increase in the demand for more lightweight and durable steel, eventually offset the increase in steel consumption for the sectors.

Under this scenario, the global temperature rise would be limited to 1.8°C with a 66% probability, reaching net zero CO<sub>2</sub> emissions by 2070.
 According to the SDS, the global steel demand is expected to grow by 10% for the next 30 years, at a 20% lower level than the Stated Policies Scenario.

## Risk

## Socioeconomic and Industry-wide Impact

Regulation & Policy

## **Emissions Trading Scheme**

While the steel industry receives the majority of its emissions allowances through free allocation under the current Korean Emissions Trading System (K-ETS), it is likely that the share of free allowances will decrease in the future. At the same time, the price of emissions allowances will likely increase, reflecting a '2050 net zero' ambition from the Korean Government to reduce GHG emissions in alignment with the Paris Agreement.

### **Carbon Tariffs**

International carbon pricing policies, such as the introduction of the Carbon Border Adjustment, can also pose risks to our business.

### **Carbon Price**

Global efforts to reduce GHG emissions, which are consistent with limiting warming to well below 2°C, and even further to  $1.5^{\circ}$ C, will involve more stringent climate policies and carbon regulations worldwide. In the SDS, the carbon price could rise all over the world to US\$ 140-152/tCO<sub>2</sub> in 2040.

## Market & Technology

## Increased demand for low-emission steel

In the coming decades, reducing carbon intensity and increasing recyclability will be a core aspect of the materials market with the development of a low carbon and circular economy. More and more businesses across industries will require their suppliers to reduce their carbon footprint along the entire value chain.

## Challenges for breakthrough technologies

Deployment of low carbon steelmaking will be required to deliver on time and in an affordable manner to support the industry-wide low carbon transition and sustain leadership in the global steel market. The decarbonization of the steel industry, however, is likely to face potential technological, financial and regulatory challenges. While low carbon steelmaking involves large-scale technological innovations and operational changes, requiring large and long-term investments, its scale-up and commercialization are also dependent on external factors such as affordable and reliable clean energy systems, e.g. renewable energy and carbon storage facilities, as well as policy support.

## Technology innovation to capture the growing demand for low carbon steel is crucial to ensuring our sustainable growth and maintaining our market leadership in a future low carbon world. There could be financial pressure related to not only an increased demand for capital expenditures to roll-out low carbon steelmaking, but also an increase in operational costs due to the relatively higher cost of clean energy systems including renewable energy and hydrogen.

However, we believe that our experience in successful technology innovation, such as the commercialization of FINEX, and the maturity of clean energy system in line with the Korean government's Green New Deal, could enable us to successfully transform the way we produce steel. In addition, as some of the core technological elements for hydrogen-induced reduction technology are already in their demonstration phase in the FINEX process, it would place us at an advantage in developing and deploying low carbon steelmaking technology.

## Our Business Implication

POSCO has participated in the K-ETS since 2015. The expected stringent carbon pricing policies and a surge in carbon prices could potentially make a substantial financial impact on us due to higher compliance and operation costs. Furthermore, the introduction of carbon-related trade barriers, such as the Carbon Border Adjustment, could also affect our competitiveness in international markets.

To manage these financial risks with respect to carbon regulations, we are implementing a strategy to reach net zero emissions by 2050. As explained in the Chapter 4, this strategy focuses on implementing process and energy efficiency measures over the next decade. Over the longer term, we will further mitigate our GHG emissions by deploying innovative technologies such as CCUS and hydrogen-based steelmaking, as well as increasing the share of scrap recycling in our production processes.

14



#### Risk Socioeconomic and Industry-wide Impact **Our Business Implication Reputation Responsible climate action** If we fail to demonstrate responsible climate action, our reputation could be damaged. It could impact our social license to operate, influence talent attraction and retention, Stakeholders around any corporation—including customers, investors, ESG analysts, employees and communities—are increasingly seeking transparent reduce our market share and even result in higher costs of capital. climate disclosures. They call for responsible climate action aligned with the goals We are actively managing reputational risks. We have been transparently reporting our climate performance to the CDP since 2010, and in 2019, our disclosure of the Paris Agreement. As a result, our reputation will be shaped by our climate received an A- rating. Indeed, we adopt and support the TCFD guidelines (refer performance. to our Corporate Citizenship Report 2019). In this report, we further highlight our commitment and lay out our plans for achieving low carbon transformation, aligned with the goal of the Paris Agreement. **Physical Risk** Extreme weather events More frequent extreme weather events could impact • our operations, including docks, storage yards and steel production facilities, and Even under a 2°C scenario aligned with the Paris Agreement, changes in precipitation patterns are anticipated and the frequency of extreme weather events such as • our souring of raw materials. If a severe water shortage were to occur, it could impact anything from higher costs of typhoons, heavy rain and snow blizzards are likely to increase. water to a disruption of steelworks operations. We manage physical risks through our enterprise risk management system, and

15

We manage physical risks through our enterprise risk management system, and we are conducting research to further understand the potential impact that natural disasters could have on our steelworks. We are also making an effort to manage potential water risks by recycling wastewater, reducing water use and securing replacement water supplies.



Korea's National Assembly Communication Building which adopted INNOVILT, POSCO's premium construction steel brand, in its construction

## Opportunity

### Products & Services

# Demand for a net zero society

The transition to a low carbon economy, together with continued economic and population growth, will result in sustained demand for steel in the coming decades. Furthermore, numerous technologies needed for a net zero emissions energy system, including the electrification of transportation, renewable energy and CCUS equipment, make use of large quantities of steel.

Socioeconomic and Industry-wide Impact

## **Material Efficiency**

This transition will also mean that the embodied and lifecycle GHG emissions of products—covering the manufacturing, use and end-of-life product phases— will become an increasingly important factor in product design and materials procurement, especially in the automotive and construction segments. The endless recyclability of steel, combined with innovations in lightweight steel components, will deliver clear benefits from the lifecycle emissions perspective, well over those of substitute materials.

## **Our Business Implication**

POSCO is well positioned to capture additional revenue opportunities arising from this trend towards specialty steel products:

- Automotive: we produce advanced high-strength steel such as 'GIGA STEEL', which can be used in the body and chassis of a vehicle as well as EV batteries, electrical steel sheets that are used in the EV motor, and ferritic steel products that serve as a core component in hydrogen fuel cells.
- Construction: we produce high-performance wire rods, weather resistant panels, and resilient structural steel for the construction market. Furthermore, POSCO intends to deliver high-value products and create solutions for construction by launching 'INNOVILT', a premium brand of steel products for buildings and infrastructures that applies POSCO steel.
- Energy: we have products that pair perfectly with wind turbine towers, motors and bearings, as well as rust-proof steel products for solar panel structures.

POSCO also set a strategy to transition towards net zero emissions steelmaking. We are therefore ready to meet demand from our customers for low carbon embodied steel products.

Irrespective of the fact that steel is a vital material in achieving the Sustainable Development Goals and a low carbon transition, the steel industry still needs to produce and deliver products in a sustainable manner to support global efforts to achieve the overarching aim of the Paris Agreement. Therefore, the development and deployment of breakthrough technologies to substantially reduce CO<sub>2</sub> emissions from the production of steel are very crucial. From the circular economy perspective, scrap-based secondary steel production will be encouraged and its share will grow much higher with increasing scrap availability supported by the increasing collection rate and improvements made on the sorting method. The overall expected changes in the pattern of steel manufacturing and consumption pose both risks and opportunities for us. These changes could pose potential financial risks related to strengthened climate and energy regulations as well as technology development and reputational risks. On the other hand, new market by product development and cost savings by energy efficiency improvements will serve as opportunities for us.

# 3.2. Our Ambition

## **Carbon Neutral by 2050**

Our analyses performed in accordance with the 'well below 2°C' scenario demonstrates the urgency in implementing low carbon initiatives. Furthermore, the international community is highlighting the need to go even further to limit warming to 1.5°C, and a number of national targets already aim to achieve 'net zero' by 2050 or sooner. This global race for net zero calls for a low carbon industrial revolution, and an increasing number of businesses around the world are accelerating their decarbonization strategy.

These goals will drive our innovation and decarbonization even deeper and enable us to play a leading role in global commitments to net zero pathway in order to combat global warming and protect the planet. In pursuing our target, we aspire to produce and deliver high-quality steel products in a sustainable manner. This will encourage us to take advantage of the increasing demand for green steel and ensure our competitive edge in a low carbon future.

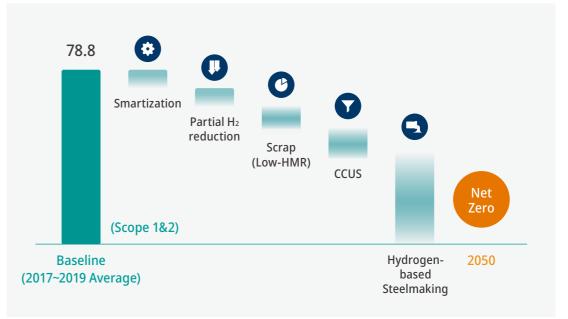
### Our commitment to reduce CO<sub>2</sub> emissions

We are fully committed to align our target to support and promote net zero society, and POSCO has set the following ambitious goals:

- $\cdot$  By 2030, in the short-term, reduction of CO<sub>2</sub> emissions by 20%
- By 2040, in the mid-term, reduction of CO<sub>2</sub> emissions by 50%
- · By 2050, in the long-term, we aim to achieve a carbon neutral



### Pathway to achieving the carbon neutral ambition (million tCO<sub>2</sub>)



# *STRATEGY TOWARD LOW CARBON FUTURE*

As a low carbon future is upon us, we at POSCO formulated strategies enabled by innovative technologies and solutions in order to set our mid and long-term goals.

As ambitious and challenging our goals will be to achieve, they will eventually drive us to transition to a low carbon future together with our stakeholders.



This photo is the winner of the 'The Iron Hidden in Everyday Life' photo contest held by POSCO for employees to commemorate the Iron Day on June 4th. **Title** Steel Easily Cutting through the Rugged Waters of the Ocean, Watching the steel of the Yi Sun-sin Bridge cuts easily through the rugged waters of the ocean, we once again feel grateful for the essential role steel plays for us in crossing physical divides. Photographer Kyung-Sik Yang, Raw Materials Handling Plant, Gwangyang Works

# Focus Areas of the Low Carbon Strategy

———— Our low carbon transformation is focused on three strategic areas: Green Process, Green Product, and Green Partnership.

The Green Process area pertains to energy saving and efficiency improvements through smartization, increased scrap use, and the development of such innovative low carbon technologies as CCUS and hydrogen-based steelmaking. The Green Product area focuses on the development and design of eco-friendly products, including high-strength steel for lightweightness and electrical steel for high-efficiency, and this will support end-users in their shift towards low carbon business including EVs and wind power generation. Lastly, the Green Partnership area concerns itself with domestic and overseas cooperation to formulate well-designed carbon policies as well as corporate initiatives to facilitate the low carbon transformation of the steel industry.



### **1** Green Process

Development of innovative low carbon technologies smartization • increased scrap use • CCUS • hydrogen-based steelmaking

## **2** Green Product

Development and design of eco-friendly products · high-strength steel for lightweightness · electrical steel for high-efficiency

## **3** Green Partnership

· Join initiatives and lead public-private partnerships to accelerate an industry-wide low carbon transition



# 4.1. Green Process

We already possess a great deal of knowledge and a proven track record in technology innovation with FINEX, our unique and ecofriendly ironmaking process, and this provides us confidence in the shift toward low carbon steelmaking.

Once again, we are testing our limits to develop a series of low carbon solutions, including our distinctive hydrogen-based ironmaking 'HyREX', and we aim to redesign and operate our facilities to become net zero.



# Hag-Dong Kim

Head of the Steel Production & Technology Division

The Seoul Botanical Park - which adopted INNOVILT, POSCO's premium construction steel brand, in its construction



- As iron and steelmaking are an energy and CO<sub>2</sub>intensive process, there is an obvious need to develop innovative technology to shift away from dependence on fossil fuels. We have been developing a range of eco-friendly steel production processes over the years such as FINEX, POSCO's innovative and unique ironmaking technology. The FINEX process, based on the pure oxygen BF concept, has advantages in adopting carbon capture, utilization and storage (CCUS) technology. Its fluidized reduction system is also conducive to deploying hydrogen-based ironmaking technology. At POSCO, a number of low carbon steelmaking technologies are currently in their early stage of development and some have reached the demonstration phase. We have recently set the carbon neutral transformation roadmap through the combination of the evolutionary Carbon Lean and the revolutionary Carbon Neutral pathways, and this roadmap aims to commercialize and deploy various low carbon steelmaking processes. In the short-term, we will, with smartization, focus primarily on improving our productivity and energy efficiency through the optimization of raw material mixes and the rationalization of operations.

To further reduce carbon emissions, we plan to develop and incorporate a series of 'Bridge Technologies' in the upcoming 10~15 years. They include increasing the use of scrap metal in the BF as well as BOF from the standpoint of the circular economy, and partially deploying hydrogen-based ironmaking technology that uses H<sub>2</sub>-rich off-gas as a reducing agent in the existing BF process. Moreover, we plan to scale-up CCUS technologies and integrate them into our operations.

In the long-term, we will commercialize the hydrogen-based steelmaking process to transform our operations into one that is net zero. In particular, we are developing the hydrogen-based ironmaking technology dubbed HyREX based on the FINEX process. Unlike typical direct reduced iron (DRI) technology that uses high-end pellets as feedstock in Europe, POSCO's HyREX can directly utilize iron ore fines to produce reduced iron. Once the hydrogen ecosystem fully matures, we will be able to produce steel in a sustainable manner with HyREX which uses green hydrogen-based DRI in combination with renewable energy-based EAFs to achieve carbon neutrality.

# 4.1. Green Process

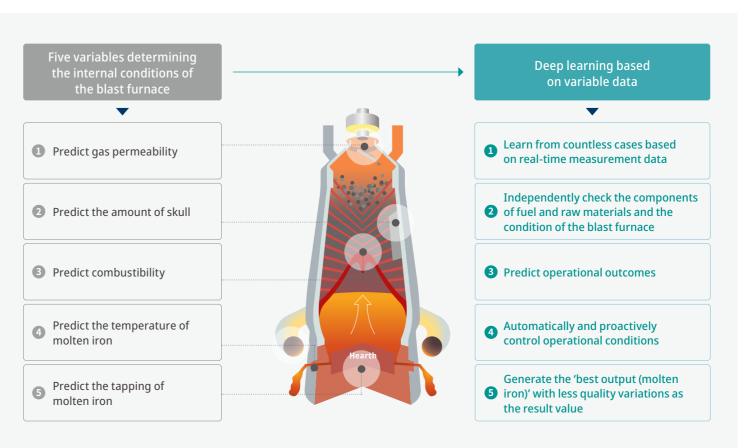
## Trajectories of Innovation : Evolutionary Carbon Lean efforts to Revolutionary Carbon Neutral transformation

## Carbon Lean Phase I, Smartization, Energy Efficiency and Facility Rationalization

We are fully embracing artificial intelligence (AI), big data and other core technologies of the Fourth Industrial Revolution to create a smart factory platform customized for the steel industry. In 2019, the World Economic Forum (WEF) designated POSCO as one of the world's 'Lighthouse Factories' for our achievement in pioneering the innovative future of manufacturing. We leverage our unique smart factory platform 'PosFrame' to lead digital transformation in the steel industry, and advance smart steelworks capable of setting optimal process conditions and controlling the production process in real time.

This digitization is at the heart of our efforts to attain the shortterm goal, and the smart operation of steelworks will contribute to lowering coal consumption to a very minimal level and reducing carbon emissions in so doing. In addition to smartization, we plan to pursue facility modernization and rationalization to increase energy efficiency, ranging from the reuse of off-gas and off-heat to the adoption of coke dry quenching and the improvement of power generation efficiency. Such all-encompassing reduction activities are expected to reduce approximately 10% of CO<sub>2</sub> emissions from the 2017–2019 base-period while minimizing the burden from cost increases.





# 4.1. Green Process

## Carbon Lean Phase II, Bridge Technologies for More Significant CO<sub>2</sub> Reductions

We are developing a series of alternative and innovative new processes, to-be termed 'bridge technologies', to aid our transition to a carbon neutral steelmaking route. By incorporating such bridge technologies in a portion of our current ironmaking process, we will be able to achieve greater emissions reductions.

#### More scrap use

As part of our efforts towards a more significant reduction in CO<sub>2</sub> emissions, we aim to make use of much more scraps to help in the process of achieving a circular economy. In particular, our distinctive technology under development will enable us to maximize the use of scraps while maintaining the BF/BOF production routes. This technology has the potential to lower hot metal ratios (HMR) up to 70% in the BOF, which can lower the production of molten iron and ultimately mitigate CO<sub>2</sub> emissions. We are also exploring the possibility of operating new and more electric arc furnaces (EAF) to produce steel.

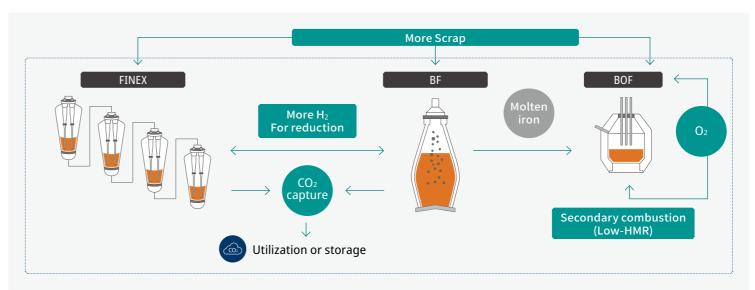
Presently, we are testing the low-HMR process in operating the BOF(100t), and work is under way to scale up for a larger BOF(300t). We believe that the commercialization of such low-HMR process may take roughly 10 years. This low-HMR technology is expected to bring a nearly 10% reduction in carbon emissions. Facility improvements that allow for direct scrap charging in the ironmaking process are also forecast to reduce carbon emissions by more than 5%.

## CCUS

In the FINEX process, we already incorporate the commercial-scale demonstration of carbon capture technology with 75% in purity and 100,000 m3/hr in capacity. We currently reuse the captured carbon in the steel production process and plan to scale up in the coming decade. In addition, we are reviewing several routes to utilize the captured carbon as raw materials for chemical products or other alternative fuels. We are also exploring the availability of CO<sub>2</sub> storage technology assuming that a safe and affordable storage infrastructure is established. To facilitate CCUS technology, we lead the industry-wide partnership, including the government, in Korea.

## Partial deployment of hydrogen reduction technology

A key feature of our bridge technologies is the injection of coke oven gas (COG) and FINEX off-gas (FOG), which contain rich hydrogen, into the BF or FINEX. In addition to COG and FOG, we plan to produce and use hydrogen via reforming natural gas or green hydrogen as a reducing agent in the ironmaking process. In so doing, we could lower CO<sub>2</sub> emissions by nearly 10% in the ironmaking process.



## Bridge Technologies

# 4.1. Green Process

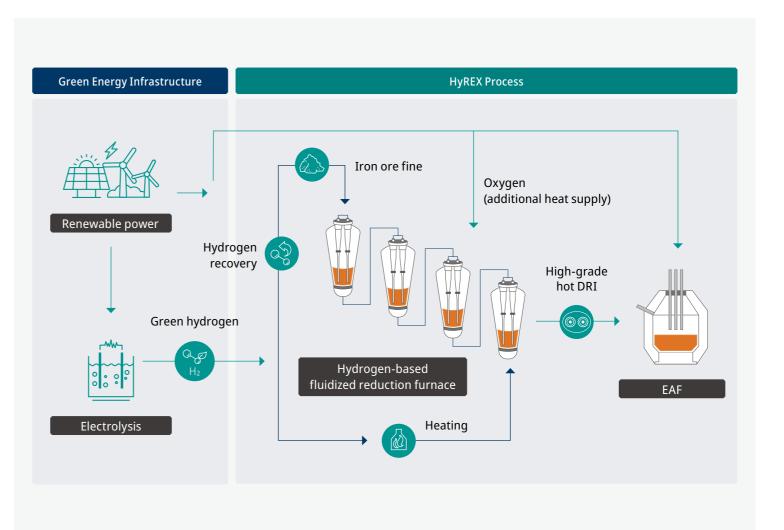
## **Carbon Neutral transformation**

——— Since hydrogen-based steelmaking is crucial to achieve carbon neutral ambition, we put our best efforts to commercialize it in a timely manner.

### Hydrogen-based Steelmaking

At POSCO, we are developing what we call HyREX, our distinctive carbon-free hydrogen direct reduction steelmaking technology. As some of our core technological elements are in their demonstration phase in the FINEX process, we believe these trials will place us at an advantage in developing hydrogen reduction technology. We will continue with our R&D on hydrogen direct reduction by gradually increasing the ratio of hydrogen on two fluidized reduction furnaces – 1.5 million-ton and 2 million-ton in annual production capacity respectively – that are currently under commercial operation at our Pohang site.

We aim to complete the development of HyREX technology on an industrial scale in 10~20 years and gradually transform our operations into a hydrogen-based DRI-EAF production route. We will produce DRI through HyREX with green hydrogen and operate EAF with renewable energy. This will enable us to reduce carbon emissions to near zero. Such carbon neutral transformation, however, will require a well-designed national energy policy that is able to supply cost effective green hydrogen and sufficient renewable energy. Since the Korean government is stepping up its efforts to shift to a low carbon economy through Green New Deal initiative, we expect that the green hydrogen ecosystem will be built in the coming decades.



# 4.2. Green Product

# Enabling our customers to transition towards a low carbon economy

As part of our endeavors to create a cleaner and safer world as a corporate citizen, we are fully committed to creating and supporting a low carbon industrial ecosystem. An increasing number of businesses around the world are accelerating their decarbonization strategy. Our customers are also taking steps to achieve climate resilience in the shift of their business portfolios to the green sector, such as electric vehicles (EVs) and hydrogen fueled cell vehicles (HFCVs) for low-emission mobility, solar and wind farms for renewable energy, and LNG-fueled vessels for green shipping.

As such green trends are expected to have a profound impact on the steel industry, we made a preemptive move to provide more steel products to support our customers' economic and effective low carbon transition. We are delivering a variety of steel products with advanced solutions that enable our customers to reduce carbon footprints of their activities and products across the value chain. In particular, we selected green mobility, green energy, and green shipping as our focus industries, and jointly developed product designs and process technology with customers while strengthening our promotional support and training for customers and employees.

In so doing, we assist our customers in exploring new business opportunities in line with the global low carbon transition, and this in turn will help increase our sales of green products and spur the development of the green industry, which will result in the establishment of a virtuous cycle as a result.

#### Mobility

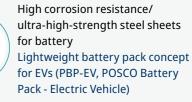
While vehicle CO<sub>2</sub> emission standards have been
 tightened all over the globe, some countries aim to ban on the
 sales of internal combustion engine vehicles in the coming
 decades. Such regulatory changes are expected to spur a
 worldwide electrification in the mobility sector, with a rising
 demand for lightweight, robust, and energy-efficient materials.
 We believe that steel serves as a key material in developing
 green mobility, including EVs (hybrid or battery-powered) and
 FCEVs, with wide-ranging high-performance products from
 advanced high-strength steel to electrical steel.
 We are providing high quality non-oriented electrical steel
 (Hyper NO) required to manufacture traction motors. This
 steel improves the efficiency of traction motors to increase the
 driving range of EVs.

We have developed 'GIGA STEEL', the next-generation automotive steel sheet to significantly reduce the weight of automobiles, which can be used for the production of the body, chassis, and battery packs. It is more affordable, recyclable, durable and lightweight than such competing materials as aluminum and carbon fiber reinforced plastic (CFRP). Based on our outstanding of product portfolios, we are making an effort to develop and offer concepts and application technologies on optimal EV chassis, suspension, batteries and traction motors, which will help our customers to maintain their competitiveness on the pathway toward green mobility.



Ultra-high-strength steel sheets for a lightweight automotive body Lightweight body concept for EVs (PBC-EV, POSCO Body Concept - Electric Vehicle)

Wire rods for high-strength chassis springs Lightweight suspension concept for EVs (PSC-EV, POSCO Suspension Concept-Electric Vehicle) Low core loss electrical steel sheets for high-efficiency motors Traction motor concept for EVs



25

4.1. Green Process | 4.2. Green Product | 4.3. Green Partnership

# 4.2. Green Product

### Energy

The global energy transition, shifting from fossil-based energy system to renewable energy sources, has become one of the key priorities of the governments around world. The transition already shows signs of accelerating, will support the continued growth of the solar and wind power market and serve as an opportunity for the steel industry in line with the expected increase in demand for premium steel products. We are capable of delivering solution support on tower designs and the minimization of welding-induced thermal deformation for wind power projects, developing PosMAC, the high corrosion resistance steel sheets for solar photovoltaic (PV) power generation structures, assisting in the design of structures with improved durability and performance, and identifying a range of applications. These applications range from PV-powered parking systems and stereoscopic artworks to exterior PV generation panels. We believe that the sum of all these endeavors surely provide our customers with optimal business support.

## Shipbuilding

——— The International Maritime Organization (IMO)'s regulations on gas emissions from ships are accelerating a significant transformation in the ship market. The shipping industry has come to choose one of the three options of using fuel oil with ultra low sulfur content, installing SOx scrubbers, and building LNG-fueled vessels. POSCO assists customers in making the best choices with the most optimal materials and application technology, and plans to make further progress on this in the years ahead.



# Major Components for Eco-friendly Ships and POSCO's Steel Products



LNG-fueled vessel



# shipbuilding (thick plate)

Structural steel for

Hull

LNG Tank High manganese steel (or 9% nickel steel)

SOx Scrubber High alloy stainless steel with high corrosion resistance

# 4.2. Green Product

### Lithium and secondary battery material

We are building on our approach to new growth momentum by providing key materials to accelerate the electrification of mobility and energy systems. Our top strategic priority is set on battery materials – lithium, cathode, and anode – harnessing our technological capabilities accumulated in the steel business and on the relationships we forged with global automobile customers. As we embrace the upcoming low carbon era with our diversified portfolio as a material supplier, this will surely place us at an advantage over competing steelmakers from the sustainability perspective.

### Lithium

——— Amid the global energy transition, we have endeavored to secure lithium production technology for secondary battery applications in preparation for the electrification of mobility and the rapid growth of energy storage systems. PosLX\* refers to POSCO's proprietary lithium extraction technology and is applicable to both brines and raw ores. This advantage is further highlighted as we have already secured high-quality brine in Argentina and ores through Pilbara Minerals of Australia. Currently, our demo plant in Gwangyang is producing lithium hydroxide and lithium carbonate from raw ores, and another demo plant is under construction in Argentina to use locallyavailable brine. Going forward, we will build lithium plants with a 68,000 ton annual capacity – 43,000 ton ore-based capacity in Korea and 25,000 ton brine-based capacity in Argentina – to manufacture battery-grade lithium hydroxide.

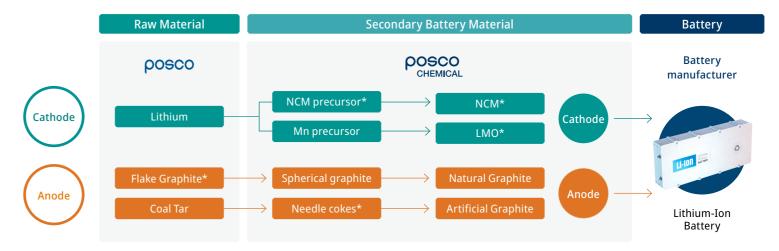
\*PosLX(Posco Lithium eXtraction): POSCO's proprietary lithium extraction technology with 80% or higher in the recovery of battery-grade high-quality lithium

### Cathode

POSCO, by way of its affiliate POSCO CHEMICAL, is
 building a stronger presence in the cathode and anode business
 and has already joined the secondary battery material value
 chain. POSCO has reaped success in mass-producing high capacity cathode with 80% or higher nickel content to establish
 technology leadership in the cathode market, and is investing
 in facility expansion to further broaden its market presence.
 POSCO CHEMICAL has an annual production capacity of 45,000
 tons of cathode in Korea and China. With sustained investment in
 facility expansion, its cathode production capacity is expected to
 increase to 75,000 tons in 2022.

### Anode & Needle Coke

As Korea's sole anode manufacturer, POSCO CHEMICAL is also one of the world's largest anode makers. The company broke ground for a new plant with the goal of completing its construction by 2023, with an annual production capacity of 16,000 tons of artificial graphite anodes recognized for their exceptional quick-charging performance and long service life when used for EV batteries. Needle coke, raw material of artificial graphite anodes, is produced by our affiliate PMC Tech, and its raw materials come from coal tar, a by-product generated from our steelworks in the coke manufacturing process. As such, our anode value chain maximizes the circulation of carbon and the creation of added value.



\*Precursor : An intermediate material produced by combining raw material other than lithium \*Flake Graphite : Procured overseas, \*Needle cokes : Manufactured at PMC Tech, a POSCO Affiliate \*NCM : Nickel, Cobalt, Manganese, \*LMO : Lithium, Manganese, Oxide

# Special. Creating a Marine Forest

**Triton** Triton, son of Poseidon is a god of the sea in Greek mythology, and we coined the term to represent POSCO's reefs made of steel slag. The safety of the TRITON Reef was verified through the environmental stability and marine bio food safety evaluations conducted by the government, and TRITON Reef has been designated as a national general reef. Steel slag is generated as a by-product along with molten iron in the steel making process as a result of it melting at a high temperature of 1,500°C and above and then cooling. Steel slag is often used as a raw material in making cement, and in construction and civil engineering materials, as well as in fertilizers.

Eco-friendly TRITON marine forests are highly effective in promoting the growth of algae and contribute to restoring the marine ecosystem and nurturing fishery resources in so doing.

### ----- TRITON contains high quantities of iron, calcium and other minerals conducive to the growth of algae compared to natural rocks, and is capable of quickly recovering the marine ecosystem in the waters damaged by the whitening event.

TRITON-based sea forestation technology has been deployed in areas experiencing the spread of whitening-affected areas near Korea's East Sea and South Sea to prove its effectiveness since 2009 through collaboration among POSCO, RIST, and other specialized research institutes. Whitening refers to the sea desertification that results in the reduction of algae and fishery resources in coastal bedrock areas. Whitening is reportedly caused by a combination of factors by area, including but not limited to rising sea temperatures, nutritional deficiency in the seawater, and increases in such algae-eating organisms as sea urchins or abalones. While iron that flows from the land to oceans is known to have a significant impact on the growth of algae, the inflow of iron is blocked due to the development of streams and coastal areas, resulting in whitening. This served to inspire our TRITON marine forest technology as steel slag is able to supply this much-needed iron.

When installed under the sea, TRITON Reef demonstrates exceptional physical stability due to the high specific gravity and high strength of steel slag, and has been known to endure tidal waves and even typhoons. When compared to conventional synthetic reefs made of basic concrete, TRITON Reef does not use rebars for its internal structure and is highly resistant to salt damage, staying solid without suffering corrosion or shattering in the seawater for an extended period of times. Furthermore, the maximum area of attachment for algae is secured to outperform general concrete-based reefs in creating marine forests at the same cost.

— TRITON marine forests contribute to the development of Blue Carbon, a term that refers to carbon sink and storage enabled by seagrasses and sediments in the marine ecosystem. POSCO deployed 6,559 units of TRITON Reef in more than 30 sea areas from Samcheok to Yeosu as of 2019 to create marine forests.

It is expected that roughly three to 16 tons of carbon can be stored per hectare of TRITON marine forests based on carbon dioxide absorbed through the photosynthesis of seaweeds and sediments within the seabed, generating comparable carbon sink effects to land forests. To scientifically demonstrate the benefits of Blue Carbon, POSCO is cooperating with POSTECH, and is consistently developing more effective and eco-friendly marine forest technology, including TRITON Fertilizer and new types of TRITON Reef to expand marine carbon sinks. Our TRITON marine forest technology makes an outstanding case in point in effectively using resources from the perspective of resource circulation. It also contributes to promoting ocean biodiversity through marine ecosystem restoration. TRITON has already been welcomed as a best practice at the World Conservation Congress (WCC) and the World Business Council for Sustainable Development (WBCSD).

— We will contribute to the formation of 75% of the marine forests in the coastal areas and the restoration of fishery production by utilizing the functional characteristics of by-products from steel making, thereby fulfilling an integral part of our role as a good corporate citizen.

In 2020, POSCO was selected as the winner for the 'Excellence in Sustainability' category for its sea forest cultivation project at the 11th Steelie Awards organized by worldsteel. We plan to develop a new type of artificial reef using steel slag, which is expected to contribute to restoring the marine ecosystem and also help improve the income of local fishermen.



TRITON Reef installation

TRITON marine forest



# 4.3. Green Partnership

We have played a leading role in climate transparency and reporting in accordance with global initiatives and standards



## 4.3. Green Partnership

## **Building a Better Future Together**

— To promote a low carbon transformation and fulfill our commitment to carbon neutrality, we also focus on communicating and engaging with our stakeholders. Driven by our management philosophy 'Corporate Citizenship: Building a Better Future Together', we willingly assume our role as a leader so that our staff, investors, governments and the industry at large are all aligned towards the common goal of taking responsible climate actions. We believe that those efforts encourage us to promote low carbon solutions with a welldefined regulation framework, easier access to sustainable finance, and affordable clean energy such as green hydrogen.

We actively comply with global standards and participate in initiatives in improving transparency in climate information. We published the first environmental report in Korea in 1995 and issued our carbon reports in the years 2010-2014. Currently, our Corporate Citizenship Report, which incorporates TCFD/ SASB guidelines, discloses climate-related information. POSCO has joined the Carbon Disclosure Project (CDP) since 2003 to receive external assessments on the measures it has taken to address climate change. Notably, we were included in the Carbon Disclosure Leadership Index in 2019. POSCO announced its endorsement of the TCFD and became the first supporter in the manufacturing sector in Korea in March of 2020.

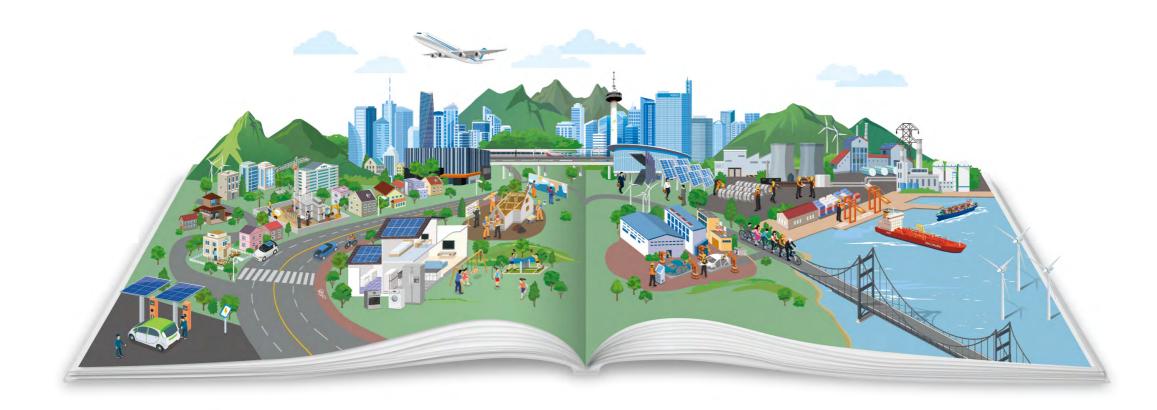
We participate in the climate action program supervised by the World Steel Association. Our contribution to this program through the 'worldsteel Climate Change Policy Group' and the 'worldsteel CO<sub>2</sub> Data Collection Project', designed to compile and analyze calculation data, allowed us to serve as a 'worldsteel Climate Action Member' for ten consecutive years since it began in 2008. In addition, we are planning to conduct joint research with global steelmakers through the Carbon Free Steelmaking Technology Forum to be hosted in Korea in 2021. We also collaborate with the Korean government to fulfill its Green New Deal and achieve the national net zero goal. In addition, we explore a number of multilateral partnerships across different sectors as well as within the steel industry in Korea and abroad. We believe these collective actions, in sharing know-how and advanced technologies, will bring synergies and promote an industry-wide low carbon transition.

Furthermore, we are engaging in sustainable finance. POSCO issued the first sustainability bonds among global steel companies. These sustainability bonds were issued for USD 500 million in 2019 and EUR 500 million in 2020. The funds are used for various ESG activities, which also include low carbon projects such as developing lithium, helping us to implement climate-resilient business strategies, and encouraging a smooth transition into a low carbon system and investment.



# 5. Next Steps for the Path Forward

This report is the first step in the disclosure of our long-term low carbon transition goal and roadmap. In accordance with the TCFD recommendations, we will pursue improved transparency in the disclosure of climate-related opportunities and risks as well as their financial implications. This will enable us to share our vision and facilitate collaborative climate action with our stakeholders. In line with POSCO's decarbonization aims, we pursue integrating climate change into our group-wide strategic planning and risk management, to ensure that our business portfolio is climate-resilient in response to a low carbon future. We aspire to provide solutions with delivering essential materials required to shift to a low carbon society. We do this not only by providing green steel, but also by supplying such secondary battery materials as lithium, cathode and anode. We also aim to pioneer the energy transition era in our business conduct across the hydrogen and LNG value chain. No one can hope to accomplish significant reductions in carbon emissions with just one solution, and we are no exception to this. Thus, we are committed to step up our exploration of all promising pathways and mobilizing responsible climate actions, so as to take joint action to build a better future together. Not only does this generate even greater value for us as a company but it will also ensure the well-being of our communities and all our stakeholders.



# **TCFD Index**

TCFD Recommended Disclosures	POSCO's Response	Alignment with CDP Climate Change 2020
Governance		
a) Describe the board's oversight of climate-related risks and opportunities	p.45-46 (climate change), Corporate Citizenship Report 2019; p.12 (governance), Climate Action report	CDP_C1.1b
b) Describe management's role in assessing and managing climate-related risks and opportunities	p.39 (environmental management), p.45-46 (climate change), p.85-86 (Corporate Citizenship Committee), Corporate Citizenship Report 2019	CDP_C1.2; C1.2a
Strategy		
a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term	p.24-26(FOCUS 02), p.45 (climate change), Corporate Citizenship Report 2019; p.14-16 (scenario analysis), Climate Action report	CDP_C2.1a; C2.3; C2.3a; C2.4; C2.4a
b) Describe the impact of climate-related risks and opportunities on the organization's business, strategy, and financial planning	p.24-26(FOCUS 02), p.45 (climate change), Corporate Citizenship Report 2019; p.14-16 (scenario analysis), Climate Action report	CDP_2.3a; C2.4a; C3.1; C3.1b; C3.1d; C3.1e
c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	p.14-16 (scenario analysis), Climate Action report	CDP_C3.1a; C3.1b
Risk Management		
a) Describe the organization's processes for identifying and assessing climate-related risks	p.15 (materiality analysis), p.45-46 (climate change), Corporate Citizenship Report 2019; p.12 (governance), Climate Action report	CDP_C2.1; C2.2; C2.2a
b) Describe the organization's processes for managing climate-related risks	p.45-46 (climate change), Corporate Citizenship Report 2019; p.12 (governance), Climate Action report	CDP_C2.1; C2.2
c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management	p.45-46 (climate change), Corporate Citizenship Report 2019; p.12 (governance), Climate Action report	CDP_C2.1; C2.2
Metrics and Targets		
a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process	p.40-42 (environmental performance), p.46-48 (climate change), Corporate Citizenship Report 2019	CDP_C4.1; C4.1b
b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	p.46-48 (climate change), Corporate Citizenship Report 2019	CDP_C6.1; C6.3; C6.5
c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets	p.46-48 (climate change), Corporate Citizenship Report 2019; p.17(ambition), Climate Action report	CDP_C4.1; C4.1b

# **Our Efforts for UN SDGs**

Economic and environmental	Develop premium products	Respond to climate change
performance	New eco-friendly products	Improve the atmospheric environment
	Operate and manage quality certification systems	Manage water/by-products/chemicals
	Create smart factories	Respect biodiversity and create marine forests
	Conduct secondary battery materials business	Raise venture funds and establish a venture platform
Social performance	Advance shared growth and supply chain management	Become and make good corporate citizens
	Corporate philanthropy	Strengthen employee health & safety management
	Role Model: Present a role model to enhance fertility	Nurture talent and build employee capacity
•	Support youth employment and startups	Build a corporate culture and win-win labor relations
	Create marine forests	Respect diversity
Governance	Operate the Board of Directors and the Corporate Citizenship Committee	Business ethics
<u></u>	Investor relations and tax policy	Fair trade
	Risk management	Information security

More information on our efforts for UN SDGs is available at: Corporate Citizenship Report

32





# POSCO's Dialogue for Climate Action

Published in December 11, 2020

### For More Information

More information on Our Approach To Climate Change and Efforts to Reduce GHG Emissions is available at:

Corporate Citizenship Report

If you happen to have any questions about this report, contact us at sustainability@posco.com

FORM 20FPOSCO ProductPOSCO IR

Contact ESG Group, Corporate Citizenship Office Tel 82-2-3457-0114 www.posco.com Corporatecitizenship.posco.com