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Environmental_Domestic Worksites

Greenhouse gas emissions	Unit	2020	2021	2022
Direct/Indirect emissions (Scope 1&2)⁽¹⁾	tCo ₂ e	75,649,882	78,490,205	70,185,615
Direct emissions (Scope 1)	tCo ₂ e	75,069,656	77,101,095	68,305,993
Indirect emissions (Scope 2)	tCo ₂ e	580,226	1,389,117	1,879,630
Direct/indirect emission intensity (based on crude steel production)	tCo ₂ e/ton	2.11	2.05	2.05
Other indirect emissions(Scope 3)⁽²⁾	tCo ₂ e	13,202,091	12,872,905	7,107,502
Purchased goods & services ⁽¹⁾	tCo ₂ e	3,828,530	3,422,572	2,583,823
Capital goods ⁽²⁾	tCo ₂ e	-	-	857
Fuel and energy-related activities not included in Scope 1&2 ⁽³⁾	tCo ₂ e	-	-	298,540
Upstream transportation & distribution ⁽⁴⁾	tCo ₂ e	1,497,585	1,605,907	1,537,143
Waste generated in operations ⁽⁵⁾	tCo ₂ e	-	-	141,520
Business travel ⁽⁶⁾	tCo ₂ e	345	174	346
Employee commuting ⁽⁷⁾	tCo ₂ e	9,771	9,374	8,245
Downstream transportation & distribution ⁽⁸⁾	tCo ₂ e	-	-	489,786
Downstream leased assets ⁽⁹⁾	tCo ₂ e	2,012,756	2,087,193	1,888,240
Investments ⁽¹⁰⁾	tCo ₂ e	5,853,104	5,747,685	159,002

(1) Scope 1 & 2 emissions may fluctuate based on the government's official notification regarding emission certification. Differences may arise due to the rounding down of decimals when summing up the direct/indirect emissions (Scope 1+2) per worksite.

(2) The categories labeled②, ③, ⑤, and ⑥ were newly incorporated in our Scope 3 emission calculations for the year 2022. All category calculations are confined to the operations of Pohang and Gwangyang steelworks.

① ④ Emissions calculations consider only purchased raw materials that most directly impacted the production of steel production (calculations were made using iron ore, coal, and limestone, which collectively account for over 90% of use). The calculations utilize Carbon Intensity information for each product supplied by major raw material suppliers, as well as a DB of standardized shipping distances (EPD) between countries, categorized by source of raw materials.

② Calculations for 2022 encompass emissions related to assets acquired by POSCO, specifically fixtures and vehicles in steelworks.

③ Calculations were made using the carbon footprints of energy consumption, including electricity and LNG, at steelworks.

⑤ Calculations were made utilizing government-provided waste management website Allbaro Sys' data and based on waste generated at worksites that was outsourced for disposal.

⑥ ⑦ Calculations were made based on the business travel and commuting data of Pohang/Gwangyang steelworks employees.

⑧ Emissions related to transportation of domestic and export sales were calculated using a DB of standardized shipping distances between countries and other resources, based on the transportation destination information (country/city) of sold products.

⑨ Among leased assets, the Scope 1&2 emissions from a lime kiln plant that is leased by POSCO Future M were included in calculations.

⑩ For companies where POSCO has an equity stake, their respective Scope 1&2 emissions and equity ratio were taken into account in the calculations, particularly for firms that fall under the Emission Trading Scheme and Target Management System.

* Emissions decreased in categories ① and ④ due to a reduction in crude steel production in 2022 following the flooding of the Naengcheon in Pohang in September 2022.

Category ⑩ emissions decreased compared to 2021 due to changes in the relationship between POSCO and its subsidiaries (excluding POSCO Future M among others) after the establishment of POSCO Holdings in March 2022.

Energy	Unit	2020	2021	2022
Total Energy Consumed	GJ	374,874,611	380,052,800	333,781,599
Energy Directly Consumed	GJ	370,302,385	369,264,360	319,078,303
Natural gas	GJ	52,692,024	41,270,222	30,750,384
Gasoline (total)	GJ	8,347	4,587	6,249
Gasoline (for vehicles)	GJ	8,347	4,587	6,249
Diesel (total)	GJ	183,868	189,168	218,348
Diesel (for vehicles)	GJ	179,288	185,423	195,695
LPG (total)	GJ	62	34	30
LPG (for vehicles)	GJ	62	34	30
Off-gas	GJ	317,418,084	327,800,350	288,103,292
Energy Indirectly Consumed	GJ	4,571,908	10,788,169	14,703,073
Electricity	GJ	4,480,025	10,746,994	14,618,973
Steam	GJ	91,883	41,175	84,100
Percentage of electricity consumed	%	1.2	2.8	4.4
Renewable energy consumed	GJ	318	270	223
Percentage of renewable energy consumed	%	0.00008	0.00007	0.00007
Total energy intensity (based on crude steel production)	GJ/ton	10.4	9.9	9.8
Electricity sold⁽³⁾	GJ	16,287	13,840	8,671

(3) Limited to renewable energy sold

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Environmental_Domestic Worksites

Water	Unit	2020	2021	2022
Total water withdrawal ⁽¹⁾⁻⁽²⁾	ton	136,377,262	143,218,271	145,115,608
Treated municipal wastewater	ton	28,619,071	29,413,861	29,098,637
Surface water ⁽¹⁾⁻⁽²⁾	ton	93,311,289	100,116,109	108,957,548
Groundwater	ton	6,716,780	6,298,260	3,451,420
Desalinated water	ton	7,730,122	7,390,041	3,608,003
Total water withdrawn from regions with 'High' baseline water stress	ton	-	-	-
Total water withdrawn from regions with 'Extremely High' baseline water stress	ton	-	-	-
Total water withdrawn intensity (based on crude steel production) ⁽¹⁾⁻⁽²⁾	ton/ton	3.8	3.7	4.2
Total water consumed	ton	64,435,548	68,353,529	73,375,512
Total water consumed in regions with 'High' baseline water stress	ton	-	-	-
Total water consumed in regions with 'Extremely High' baseline water stress	ton	-	-	-
Total wastewater discharge	ton	71,941,714	74,864,742	71,740,096
Reused wastewater	ton	50,816,253	47,804,712	44,625,210
Percentage of reused wastewater	%	37.3	33.4	30.8
Number of worksites using recycled water	Count	2	2	2
Water pollutant discharge ⁽³⁾⁻⁽⁵⁾				
COD	ton	704	735	476
TOC (Total Organic Carbon)	ton	-	-	96
T-N	ton	928	948	685
SS	ton	146	169	135

(1) Data for 2021 has been adjusted due to an omission of water withdrawn from certain target facilities, hence the divergence from the data published in the "Sustainability Report 2021".

(2) From July 2022, facilities subject to water withdrawals were added, resulting in an increase in performance in 2022 compared to the previous years.

(3) Owing to the replacement schedule of the TMS measurement device, organic matter metrics (COD and TOC) for 2022 are geographically limited – COD is limited to Pohang steelworks, while TOC is limited to Gwangyang steelworks.

(4) In line with the "Act on the Integrated Control of Pollutant-discharging Facilities," the range of facilities used to calculate water pollutant emissions has been altered starting from 2022 as part of the integrated permit acquisition process.

(5) As a result of the transition from internal TMS data to government-verified data for calculating water pollutant emissions, this figure differs from that reported in the "Sustainability Report 2021".

Waste	Unit	2020	2021	2022
Total waste generated	ton	21,974,695	21,806,614	19,116,670
Recycled	ton	21,662,956	21,509,991	18,787,137
Incinerated	ton	64,985	60,302	62,031
Landfilled	ton	246,431	236,196	267,470
Disposed in other ways	ton	322	125	32
General waste generated	ton	21,881,629	21,712,129	19,020,091
Recycled	ton	21,583,265	21,433,251	18,727,793
Incinerated	ton	54,660	49,900	45,485
Landfilled	ton	243,704	228,978	246,813
Disposed in other ways	ton	-	-	-
Designated waste generated	ton	93,066	94,485	96,579
Recycled	ton	79,691	76,740	59,344
Incinerated	ton	10,326	10,401	16,546
Landfilled	ton	2,727	7,219	20,657
Disposed in other ways	ton	322	125	32
Total waste generated intensity (based on crude steel production)	ton/ton	0.61	0.57	0.56
Percentage of total waste recycled	%	98.6	98.6	98.3

Resource recycling	Unit	2020	2021	2022
Total Blast furnace slag recycled	ton	11,998,028	12,441,549	10,283,369
Granulated slag recycled	ton	11,087,808	11,454,700	9,422,994
For cement industry	ton	10,810,459	11,243,762	9,210,120
For other uses including fertilizer	ton	277,349	210,938	212,874
Air-cooled slag recycled	ton	910,220	986,849	860,375

Environmental_Domestic Worksites

Air pollutants	Unit	2020	2021	2022
Total emissions of air pollutants	ton	65,823	61,445	51,806
NOx	ton	40,680	35,755	27,877
SOx	ton	24,879	25,474	23,750
Dust	ton	264	216	180

Environmental regulation violations	Unit	2020	2021	2022
Number of environmental regulation violations	Case	5	12	9
Number of water quality-related regulation violations	Case	-	3	1
Number of administrative actions due to violations of environmental regulations and rules	Case	4	11	9
Administrative fines	Case	-	3	1
Non-monetary penalties (improvement orders, etc.)	Case	4	8	8
Number of wastewater-related incidents	Case	-	-	-

Green sales, purchases, and investments	Unit	2020	2021	2022
Sales of green products and services ⁽¹⁾	KRW Million	-	-	11,332,770
Percentage of green product and service sales	%	-	-	26.7
Purchases of green products and services ⁽²⁾	KRW million	-	3,005,898	3,495,961
Percentage of green product and service purchases	%	-	12.8	11.8
Environmental investment cost	KRW million	938,733	227,261	318,731

(1) The data for 2020-2021 was not collected due to the establishment of classification criteria for green products in 2022.

(2) The data for 2020 was not collected due to the establishment of classification criteria for green purchases in 2021.

Environmental and energy management system	Unit	2020	2021	2022
Environmental management system (ISO 14001) certification				
Target worksites for certification	Count	2	2	2
Worksites with certification	Count	2	2	2
Certification rate	%	100	100	100
Energy management system (ISO 50001) certification				
Target worksites for certification	Count	2	2	2
Worksites with certification	Count	2	2	2
Certification rate	%	100	100	100

Zero-emission vehicles	Unit	2020	2021	2022
Percentage of zero-emission vehicles owned ⁽³⁾	%	-	12	21
Number of zero-emission vehicles owned	Count	-	71	156
Total number of vehicles owned	Count	-	590	751

(3) Results for 2020 were not tallied as a consequence of joining EV100 in 2021

Production data	Unit	2020	2021	2022
Crude steel produced	kt	35,935	38,263	34,219
Blast furnace/converter	kt	34,703	36,907	33,255
Electric arc furnace	kt	1,232	1,356	964
Percentage from blast furnace/converter	%	96.6	96.5	97.2
Percentage from electric arc furnace	%	3.4	3.5	2.8
Main raw material consumed				
Iron ore	Mt	53.5	55.6	49.1
Metallurgical coal	Mt	24.9	25.4	22.7
Limestone	Mt	6.8	6.9	5.5



Social_Domestic Worksites

Human resources	Unit	2020	2021	2022
Total number of employees	Persons	17,944	18,259	18,122
Number of executives	Persons	81	86	67
Males	Persons	78	84	66
Females	Persons	3	2	1
Percentage of females	%	3.7	2.3	1.5
By age group				
Under 30 years old	Persons	-	-	-
30-50 years old	Persons	-	2	-
Over 50 years old	Persons	81	84	67
Number of non-managerial staff	Persons	17,863	18,173	18,055
Males	Persons	16,940	17,126	17,046
Females	Persons	923	1,047	1,009
Percentage of females	%	5.2	5.8	5.6
By age group				
Under 30 years old	Persons	2,718	2,921	3,035
30-50 years old	Persons	7,253	7,365	7,353
Over 50 years old	Persons	7,892	7,887	7,667
Number of managerial staff	Persons	4,029	4,116	4,135
Males	Persons	3,988	4,058	4,063
Females	Persons	41	58	72
Percentage of females	%	1.0	1.4	1.7
By age group				
Under 30 years old	Persons	-	-	1
30-50 years old	Persons	1,004	1,090	1,193
Over 50 years old	Persons	3,025	3,026	2,941

Human resources	Unit	2020	2021	2022
Number of non fixed-term employees (permanent)	Persons	17,665	17,559	17,107
Males	Persons	16,753	16,561	16,147
Females	Persons	912	998	960
Percentage of females	%	5.2	5.7	5.6
Percentage of fixed-term employees (contract-based)	%	98.5	96.2	94.4
Number of fixed-term employees (contract-based)	Persons	267	685	1,007
Males	Persons	253	635	957
Females	Persons	14	50	50
Percentage of females	%	5.2	7.3	5.0
Percentage of fixed-term employees (contract-based)	%	1.5	3.8	5.6
Total new hires	Persons	702	1,192	1,336
Males	Persons	652	1,114	1,276
Females	Persons	50	78	60
Percentage of females	%	7.1	6.5	4.5
By age group				
Under 30 years old	Persons	481	681	882
30-50 years old	Persons	23	78	103
Over 50 years old	Persons	198	433	351
Total employee turnover	Persons	817	1,070	1,180
Turnover rate	%	4.6	5.9	6.5
Number of voluntary departures	Persons	223	359	568
Voluntary departure rate	%	1.2	2.0	3.1
Number of involuntary departures	Persons	594	711	612
Retirements at mandatory age	Persons	578	691	588
Layoffs	Persons	-	-	-
Other reasons for departure	Persons	16	20	24



Social_Domestic Worksites

Human Resources	Unit	2020	2021	2022
Number of employees subjected to regular performance evaluations	Persons	16,220	15,663	15,300
Males	Persons	15,427	14,799	14,464
Females	Persons	793	864	836
By employment type	Persons	16,357	15,819	15,300
Executives	Persons	74	78	64
Non fixed-term employees (permanent)	Persons	16,220	15,663	15,137
Fixed-term employees (contract-based)	Persons	63	78	99
Employees with disabilities				
Number of employees with disabilities	Persons	598	588	565
Veterans				
Number of employed veterans	Persons	728	711	738

Work-Life Balance	Unit	2020	2021	2022
Flexible work arrangements				
Number of employees using flexible work arrangements	Persons	5,121	4,935	5,316
Parental leave				
Total parental leave-takers	Persons	97	106	152
Males	Persons	45	57	96
Females	Persons	52	49	56
Employees returning from parental leave	Persons	127	121	141
Males	Persons	48	46	79
Females	Persons	79	75	62
Infertility treatment leave				
Number of employees using infertile vacation	Persons	81	85	81

Education	Unit	2020	2021	2022
Total training hours	Hours	1,397,942	1,332,271	1,769,947
Average training hours per person	Hours/person	78	73	98
Total training cost	KRW million	21,681	26,954	22,938
Average training cost per person	KRW million/person	1.21	1.48	1.27
Occupational safety training				
Number of employees who completed compulsory occupational safety training ⁽¹⁾	Persons	-	-	73,964
Information security training				
Total training hours	Hours	29,848	31,953	24,338
Number of employees who completed compulsory information security training	Persons	17,909	17,589	17,180
Non fixed-term employees (permanent)	Persons	17,522	16,779	15,917
Fixed-term employees (contract-based)	Persons	387	810	1,263

(1) Based on the completion of compulsory training, which may lead to potential double-counting of those who have completed the course.

Retirement Pension Plans	Unit	2020	2021	2022
Defined Benefit(DB) Retirement Pension				
Current value of defined benefit liabilities	KRW million	1,378,597	1,330,938	1,193,500
Fair value of plan assets	KRW million	1,455,098	1,543,469	1,475,606
Recognition of liabilities under defined benefit plans	KRW million	76,501	212,531	282,106

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Social_Domestic Worksites

Safety	Unit	2020	2021	2022
LTIR	Person/ 200,000 hours	0.10	0.10	0.19
Employee LTIR	Person/ 200,000 hours	0.11	0.10	0.11
Contractor LTIR	Person/ 200,000 hours	0.09	0.10	0.25
LTIFR	Person/1 million hours	0.48	0.51	0.93
Employee LTIFR	Person/1 million hours	0.54	0.52	0.56
Contractor LTIFR	Person/1 million hours	0.43	0.51	1.26
TRIR⁽¹⁾	Person/ 200,000 hours	-	-	0.35
Employee TRIR	Person/ 200,000 hours	-	-	0.27
Contractor TRIR	Person/ 200,000 hours	-	-	0.41
TRIFR⁽¹⁾	Person/1 million hours	-	-	1.73
Employee TRIFR	Person/1 million hours	-	-	1.37
Contractor TRIFR	Person/1 million hours	-	-	2.06
Accident rate	%	0.08	0.06	0.13
Employee accident rate	%	0.07	0.04	0.08
Contractor accident rate	%	0.09	0.09	0.19
Fatality rate	‰	1.53	0.29	0.30
Employee fatality rate	‰	1.18	0.00	0.00
Contractor fatality rate	‰	1.90	0.60	0.63

Safety	Unit	2020	2021	2022
Employees				
Number of employee LTIs	Persons	16	19	20
Number of employee TRIs ⁽¹⁾	Persons	-	-	49
Number of employee fatalities	Persons	2	-	-
Number of employees injured in accidents	Persons	12	7	14
Number of employee near-miss accidents	Cases	5,857	5,149	6,391
Contractors				
Number of Contractor LTIs	Persons	14	19	49
Number of Contractor TRIs ⁽¹⁾	Persons	-	-	82
Number of Contractor fatalities	Persons	3	1	1
Number of Contractor employees injured in accidents	Persons	14	15	30
Number of Contractor near-miss accidents	Cases	423	362	289

(1) Adopted and managed as a preventive metric to prevent serious accidents by identifying and making improvements on even minor accidents (2022-)

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Social_Domestic Worksites

CSR activity achievements	Unit	2020	2021	2022
Employee volunteering				
Hours volunteered	Hours	319,305	296,729	346,855
Number of volunteers	Persons	14,407	12,024	13,096
Volunteer hours per person	Hours/person	18	16	19
Employee volunteering participation rate	%	81	67	73
CSR expenses				
Donations ⁽¹⁾	KRW million	15,989	38,891	47,970
Investment in local communities	KRW million	17,984	9,323	5,306
Other	KRW million	116	901	982

(1) CSR expenses in 2021, excluding expenses related to the GEM matching fund, has been revised from KRW 49.45 billion to KRW 49.11 billion.

Labor-Management relations	Unit	2020	2021	2022
Percentage of employees under collective bargaining agreements	%	100	100	100
Number of strikes causing work stoppages	Count	-	-	-

Supply chain management	Unit	2020	2021	2022
Supplier Relationship Management(SRM) assessments				
Total number of suppliers	Count	1,374	1,469	1,408
Number of assessed suppliers	Count	1,129	1,159	1,182
Percentage of assessed suppliers	%	82.2	78.9	83.9

Supply chain management	Unit	2020	2021	2022
Safety and Health Management System(ISO 45001/OHSAS 18001/KOSHA-MS) Certification				
Target worksites for certification	Count	2	2	2
Worksites with certification	Count	1	2	2
Certification rate	%	50	100	100
Quality Management System(ISO 9001 or IATF 16949) Certification				
Target worksites for certification	Count	2	2	2
Worksites with certification	Count	2	2	2
Certification rate	%	100	100	100

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Governance_Domestic Worksites

Fair Trade/Anti-corruption	Unit	2020	2021	2022
Status of fair trade training ⁽¹⁾				
Number of employees who completed fair trade training	Persons	3,199	3,136	3,783
Fair trade law violations				
Total number of instances for which fines were incurred for unfair competition and violation of the fair trade compliance	Cases	-	-	-
Number of ongoing cases	Cases	-	-	-
Number of resolved cases	Cases	-	-	-
Total number of instances for which non-monetary sanctions were incurred	Cases	-	-	-
Number of ongoing cases	Cases	-	-	-
Number of resolved cases	Cases	-	-	-
Total monetary value of fines for instances of unfair competition and violation of the fair trade compliance	KRW	-	-	-

(1) Based on the individual completion of training programs, which may result in double counting the same individuals.

Ethics	Unit	2020	2021	2022
Number of ethics reports filed ⁽²⁾	Cases	-	322	403
By type				
Corruption	Cases	-	107	165
Violations of human rights	Cases	-	34	46
Abuse of power	Cases	-	19	16
Other	Cases	-	162	176
Number of resolved ethics reports	Cases	-	322	403
Ethics training				
Total training hours	Hours	35,816	36,444	35,198
Number of participants who completed compulsory ethics training	Persons	17,908	18,222	17,599

(2) Only data from 2021 and beyond is disclosed due to a revision in the classification criteria for the count of ethics complaints.

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Environmental_Domestic and International Production Subsidiaries

* The data collected from both domestic and international production subsidiaries reflects the combined performance of upstream process worksites equipped with crude steel production facilities. These worksites include POSCO's domestic worksites, its subsidiary POSCO Yamato Vina (Vietnam), as well as Krakatau Posco (Indonesia) and POSCO Zhangjiagang Stainless Steel (China), both of which are managed under POSCO's outsourcing agreement.

Greenhouse gas emissions	Unit	2020	2021	2022
Direct/Indirect emissions (Scope 1&2)(1)	tCo ₂ e	84,133,893	86,839,467	78,597,742
Direct emissions (Scope 1)	tCo ₂ e	82,252,254	84,175,764	75,459,989
Indirect emissions (Scope 2)	tCo ₂ e	1,881,639	2,663,710	3,137,762
Direct/indirect emission intensity (based on crude steel production)	tCo ₂ e/ton	2.07	2.02	2.03

Energy	Unit	2020	2021	2022
Energy consumed	GJ	418,146,872	421,703,664	375,227,503
Energy directly consumed	GJ	402,674,822	400,355,302	350,246,630
Coal consumed	GJ	508,303	481,616	455,618
Natural gas consumed	GJ	58,126,679	46,499,182	35,806,534
Gasoline consumed (total)	GJ	8,347	4,587	6,249
Diesel consumed (total)	GJ	360,063	350,922	395,479
LPG consumed (total)	GJ	62	34	30
Off-gas consumed	GJ	343,671,368	353,018,961	313,582,720
Energy indirectly consumed	GJ	15,465,280	21,341,434	24,973,020
Electricity (power) consumed	GJ	13,559,564	19,549,609	23,178,662
Steam consumed	GJ	1,905,717	1,791,824	1,794,358
Renewable energy consumed	GJ	6,770	6,929	7,853
Total energy intensity (based on crude steel production)	GJ/ton	10.3	9.8	9.5
Electricity sold	GJ	1,114,148	1,131,632	1,134,249

Water	Unit	2020	2021	2022
Total water withdrawal	ton	152,027,126	158,033,999	159,359,899
Treated municipal wastewater	ton	29,668,596	30,417,281	29,769,412
Surface water ⁽¹⁾	ton	107,111,235	113,229,057	122,056,776
Groundwater	ton	7,517,173	6,997,620	3,925,708
Desalinated water	ton	7,730,122	7,390,041	3,608,003
Total water withdrawn from regions with 'High' baseline water stress	ton	-	-	-
Total water withdrawn from regions with 'Extremely High' baseline water stress	ton	-	-	-
Total water withdrawn intensity (based on crude steel production)	ton/ton	3.7	3.7	4.1
Total water consumed	ton	77,058,768	80,171,222	84,643,731
Total water consumed in regions with 'High' baseline water stress	ton	-	-	-
Total water consumed in region with 'Extremely High' baseline water stress	ton	-	-	-
Total wastewater discharge	ton	74,968,358	77,862,777	74,716,168
Reused wastewater	ton	51,889,603	48,748,687	45,318,777
Percentage of reused wastewater	%	34.1	30.8	28.4
Number of worksites using recycled water	Count	4	4	4

(1) Treated groundwater from POSCO's domestic operations is included

Air pollutants	Unit	2020	2021	2022
Total emissions of air pollutants	ton	79,905	76,866	64,887
NOx	ton	47,606	43,122	34,416
SOx	ton	29,324	30,974	28,299
Dust	ton	2,975	2,770	2,173

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Environmental_Domestic and International Production Subsidiaries

Waste	Unit	2020	2021	2022
Total waste generated	ton	24,310,264	24,109,019	21,434,243
Recycled	ton	23,679,483	23,654,147	21,085,400
Incinerated	ton	69,902	64,944	66,795
Landfilled	ton	247,491	236,469	267,486
Disposed in other ways	ton	10,999	14,045	14,548
General waste generated	ton	23,735,121	23,550,393	20,903,290
Recycled	ton	23,130,080	23,130,060	20,607,298
Incinerated	ton	58,655	53,351	49,179
Landfilled	ton	243,704	228,978	246,813
Disposed in other ways	ton	-	-	-
Designated waste generated	ton	575,143	558,627	530,953
Recycled	ton	549,403	524,086	478,103
Incinerated	ton	11,248	11,592	17,615
Landfilled	ton	3,787	7,492	20,673
Disposed in other ways	ton	10,999	14,045	14,548
Total waste generated intensity (based on crude steel production)	ton/ton	0.60	0.56	0.54
Percentage of total waste recycled	%	97.4	98.1	98.4

Environmental management system(ISO 14001) certification	Unit	2020	2021	2022
Target worksites for certification	Count	5	5	5
Worksites with certification	Count	4	5	5
Certification rate	%	80	100	100

Production data	Unit	2020	2021	2022
Crude steel produced	kt	40,578	42,964	38,635
Blast furnace/converter	kt	37,803	40,043	36,285
Electric arc furnace	kt	2,775	2,921	2,350
Percentage from blast furnace/ converter	%	93.2	93.2	93.9
Percentage from electric arc furnace	%	6.8	6.8	6.1

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Environmental_Domestic and International Production Subsidiaries

Human resources	Unit	2020	2021	2022
Total number of employees	Persons	22,709	23,078	23,279
Number of executives	Persons	100	105	92
Males	Persons	97	103	91
Females	Persons	3	2	1
Percentage of females	%	3.0	1.9	1.1
By age group				
Under 30 years old	Persons	-	-	-
30-50 years old	Persons	1	3	3
Over 50 years old	Persons	99	102	89
Number of non-managerial staff	Persons	22,609	22,973	23,187
Males	Persons	21,293	21,532	21,773
Females	Persons	1,316	1,441	1,414
Percentage of females	%	5.8	6.3	6.1
By age group				
Under 30 years old	Persons	4,540	4,437	4,611
30-50 years old	Persons	9,970	10,382	10,646
Over 50 years old	Persons	8,099	8,154	7,930
Number of managerial staff	Persons	4,302	4,386	4,450
Males	Persons	4,229	4,294	4,335
Females	Persons	73	92	115
Percentage of females	%	1.7	2.1	2.6
By age group				
Under 30 years old	Persons	-	-	1
30-50 years old	Persons	1,215	1,301	1,451
Over 50 years old	Persons	3,087	3,085	2,998

Human resources	Unit	2020	2021	2022
Number of non fixed-term employees (permanent)	Persons	22,071	21,996	21,868
Males	Persons	20,810	20,654	20,558
Females	Persons	1,261	1,342	1,310
Percentage of females	%	5.7	6.1	6.0
Percentage of non fixed-term employees (permanent)	%	97.3	95.5	94.1
Number of fixed-term employees (contract-based)	Persons	607	1,048	1,378
Males	Persons	549	949	1,273
Females	Persons	58	99	105
Percentage of females	%	9.6	9.4	7.6
Percentage of fixed-term employees (contract-based)	%	2.7	4.5	5.9
Total new hires	Persons	836	1,502	1,663
Males	Persons	758	1,382	1,553
Females	Persons	78	120	110
Percentage of females	%	9.3	8.0	6.6
By age group				
Under 30 years old	Persons	552	874	1,146
30-50 years old	Persons	79	163	144
Over 50 years old	Persons	205	465	373
Total employee turnover	Persons	1,068	1,334	1,424
Turnover rate	%	4.7	5.8	6.1
Number of voluntary departures	Persons	453	609	794
Voluntary departure rate	%	2.0	2.6	3.4
Number of involuntary departures	Persons	615	725	630
Retirements at mandatory age	Persons	583	699	598
Layoffs	Persons	5	2	4
Other reasons for departure	Persons	27	24	28

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Environmental_Domestic and International Production Subsidiaries

Safety	Unit	2020	2021	2022
LTIR	Person/ 200,000 hours	0.08	0.08	0.14
Employee LTIR	Person/ 200,000 hours	0.09	0.08	0.10
Contractor LTIR	Person/ 200,000 hours	0.07	0.08	0.19
LTIFR	Person/ 1 million hours	0.38	0.41	0.72
Employee LTIFR	Person/ 1 million hours	0.43	0.40	0.48
Contractor LTIFR	Person/ 1 million hours	0.34	0.42	0.94
TRIR⁽¹⁾	Person/ 200,000 hours	-	-	0.27
Employee TRIR	Person/ 200,000 hours	-	-	0.23
Contractor TRIR	Person/ 200,000 hours	-	-	0.31
TRIFR⁽¹⁾	Person/ 1 million hours	-	-	1.35
Employee TRIFR	Person/ 1 million hours	-	-	1.14
Contractor TRIFR	Person/ 1 million hours	-	-	1.53
Accident rate	%	0.06	0.05	0.10
Employee accident rate	%	0.06	0.03	0.06
Contractor accident rate	%	0.07	0.07	0.14
Fatality rate	‰	1.15	0.22	0.23
Employee fatality rate	‰	0.92	0.00	0.00
Contractor fatality rate	‰	1.38	0.44	0.46

Safety	Unit	2020	2021	2022
Employees				
Number of employee LTIs	Persons	17	19	22
Number of employee TRIs ⁽¹⁾	Persons	-	-	53
Number of employee fatalities	Persons	2	-	-
Number of employees injured in accidents	Persons	13	7	14
Contractors				
Number of Contractor LTIs	Persons	15	21	49
Number of Contractor TRIs ⁽¹⁾	Persons	-	-	82
Number of Contractor fatalities	Persons	3	1	1
Number of Contractor employees injured in accidents	Persons	15	16	30
Safety and Health Management System(ISO 45001/OHSAS 18001/KOSHA-MS) Certification				
Target worksites for certification	Count	5	5	5
Worksites with certification	Count	3	4	5
Certification rate	%	60	80	100
Quality Management System(ISO 9001 or IATF 16949) Certification				
Target worksites for certification	Count	5	5	5
Worksites with certification	Count	5	5	5
Certification rate	%	100	100	100

(1) Adopted and managed as a preventive metric to prevent serious accidents by identifying and making improvements on even minor accidents (2022-)

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Category	Indicator	POSCO Response
General Disclosures	2-1	Organizational details p.6
	2-2	Entities included in the organization's sustainability reporting p.2
	2-3	Reporting period, frequency and contact point p.2
	2-4	Restatements of information p.106, 111
	2-5	External assurance p.124
	2-6	Activities, value chain and other business relationships p.6
	2-7	Employees p.108
	2-8	Workers who are not employees p.108
	2-9	Governance structure and composition p.92~93
	2-10	Nomination and selection of the highest governance body p.92
	2-11	Chair of the highest governance body p.92
	2-12	Role of the highest governance body in managing impacts p.93
	2-13	Delegation of responsibility for managing impacts p.93
	2-14	Role of the highest governance body in sustainability reporting p.93
	2-15	Conflicts of interest p.92~93
	2-16	Communication of critical concerns p.93
	2-17	Collective knowledge of the highest governance body p.92~93
	2-18	Performance evaluation of the highest governance body p.93
	2-19	Remuneration policies p.93
	2-20	Process to determine remuneration p.93
	2-21	Annual total compensation ratio Business Report p.296~302 
	2-22	Statement on sustainable development strategy p.8~9
	2-23	Policy commitments Policies & Positions 
	2-24	Embedding policy commitments Policies & Positions 
	2-25	Processes to remediate negative impacts p.42, 45, 52, 58~59, 68, 72, 75~77, 89~91, 94~96, 99, 101

Category	Indicator	POSCO Response
General Disclosures	2-26	Mechanisms for seeking advice and raising concerns p.89~90
	2-27	Compliance with laws and regulations p.107, 112
	2-28	Membership associations p.103
	2-29	Approach to stakeholder engagement p.102
	2-30	Collective bargaining agreements p.111
Material Topics	3-1	Process to determine material topics p.24
	3-2	List of material topics p.25
	3-3	Management of material topics p.26
Economic Performance	201-2	Financial implications and other risks and opportunities due to climate change p.28~32
	201-3	Defined benefit plan obligations and other retirement plans p.109
Anti-Corruption	205-1	Operations assessed for risks related to corruption p.94
	205-2	Communication and training about anti-corruption policies and procedures p.87~88, 112
	205-3	Confirmed incidents of corruption and actions taken p.89, 112
Tax	207-1	Approach to tax p.101
Materials	301-1	Materials used by weight or volume p.107
		Recycled input materials used p.106, 107
Energy	302-1	Energy consumption within the organization p.105, 113
	302-2	Energy consumption outside of the organization p.105, 113
	302-3	Energy intensity p.105, 113
	302-4	Reduction of energy consumption p.36, 105, 113
	302-5	Reductions in energy requirements of products and services p.38
Water and Effluents	303-1	Interactions with water as a shared resource p.47~48
	303-2	Management of water discharge-related impacts p.47~48
	303-3	Water withdrawal p.106, 113
	303-4	Water discharge p.106, 113
		Water consumption p.106, 113

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Category	Indicator		POSCO Response
Biodiversity	304-3	Habitats protected or restored	p.50
	305-1	Direct (Scope 1) GHG emissions	p.42, 105, 113
Emissions	305-2	Energy indirect (Scope 2) GHG emissions	p.42, 105, 113
	305-3	Other indirect (Scope 3) GHG emissions	p.105
	305-4	GHG emissions intensity	p.42, 105, 113
	305-5	Reduction of GHG emissions	p.28~42
	305-6	Emissions of ODS	(1)
	305-7	NOx, SOx, and other significant air emissions	p.107, 113
	306-3	Waste generated	p.106, 114
Waste	306-4	Waste diverted from disposal	p.106, 114
	306-5	Waste directed to disposal	p.106, 114
	308-1	New suppliers that were screened using environmental criteria	p.58~59
Supplier Environmental Assessment	308-2	Negative environmental impacts in the supply chain and actions taken	p.59
	401-1	New employee hires and employee turnover	p.108, 115
Employment	401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	p.82
	401-3	Return to work and retention rates of employees that took parental leave, by gender.	p.109
	402-1	Minimum notice periods regarding operational changes	(2)

(1) Substances such as CFCs and halon, which deplete the ozone layer, are neither principally emitted nor utilized in the steel manufacturing process. Thus, they aren't measured or collated.

(2) Notices are made in compliance with labor-related legislation and collective bargaining agreements.

Category	Indicator		POSCO Response
Occupational Health and Safety	403-1	Occupational health and safety management system	p.69
	403-2	Hazard identification, risk assessment, and incident investigation	p.72
	403-3	Occupational health services	p.69~73
	403-4	Worker participation, consultation, and communication on occupational health and safety	p.69~73
	403-5	Worker training on occupational health and safety	p.70, 109
	403-6	Promotion of worker health	p.71
	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	p.70~72
	403-8	Workers covered by an occupational health and safety management system	p.70~72
	403-9	Work-related injuries	p.110, 116
	403-10	Work-related illnesses	p.110
Training and Education	404-1	Average hours of training per year per employee	p.109
	404-2	Programs for upgrading employee skills and transition assistance programs	p.78~79
	404-3	Percentage of employees receiving regular performance and career development reviews	p.109
Diversity and Equal Opportunity	405-1	Diversity of governance bodies and employees	p.108, 115
Non-Discrimination	406-1	Incidents of discrimination and corrective actions taken	p.75~77, 89
Child Labor	408-1	Operations and suppliers at significant risk for incidents of child labor	p.59, 77
Forced or Compulsory Labor	409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	p.59, 77
Local Communities	413-1	Operations with local community engagement, impact assessments, and development programs	p.63~68
	413-2	Operations with significant actual and potential negative impacts on local communities	p.68
Supplier Social Assessment	414-1	New suppliers that were screened using social criteria	p.58~59
	414-2	Negative social impacts in the supply chain and actions taken	p.58~59

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SASB Index_Domestic Worksites

Industrial Classification: Iron & Steel Producers

Category	Code	Metric	POSCO Response
Greenhouse Gas	EM-IS-110a.1	(1) Gross global Scope 1 emissions (2) Percentage covered under emissions-limiting regulations	(1) p.105 (2) 100%
	EM-IS-110a.2	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emission reduction targets, and an analysis of performance against those targets	p.28-41
Air	EM-IS-120a.1	(1) NOx (excluding N ₂ O) (2) SOx (3) Particulate matter (PM10)	p.107
		(4) CO emissions (5) Manganese (MnO) emissions (6) Lead (Pb) emissions (7) Volatile organic compounds (VOCs) emissions (8) Polycyclic aromatic hydrocarbons (PAHs) emissions	N/A
Energy	EM-IS-130a.1	(1) Total energy consumed (2) Percentage of grid electricity (3) Percentage of renewable source electricity	p.105
	EM-IS-130a.2	(1) Total fuel consumed (2) Percentage coal (3) Percentage natural gas (4) Percentage renewable	p.105
Water	EM-IS-140a.1	(1) Total fresh water withdrawn (2) Percentage recycled	p.106
		(3) Percentage in regions with High or Extremely High Baseline Water Stress (4) Percentage in regions with Extremely High (>80%) Baseline Water Stress	N/A
Waste Management	EM-IS-150a.1	(1) Total amount of waste generated (2) Percentage hazardous (3) Percentage recycled	p.106
Workforce Health & Safety	EM-IS-320a.1	(1) Total recordable incident rate (full-time and contract, TRIR) (2) Fatality rate (full-time and contract) (3) Near miss frequency rate (full-time and contract)	p.110
Supply Chain Management	EM-IS-430a.1	Discussion of the process for managing iron ore and/or coking coal sourcing risks arising from environmental and social issues	p.62
Activity Metric	EM-IS-000.A	Raw steel production, percentage from: (1) basic oxygen furnace processes (2) electric arc furnace processes	p.107
	EM-IS-000.B	Total iron ore production	N/A
	EM-IS-000.C	Total coking coal production	N/A

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SASB Index_Domestic and International Worksites

Industrial Classification: Iron & Steel Producers

Category	Code	Metric	POSCO Response
Greenhouse Gas	EM-IS-110a.1	(1) Gross global Scope 1 emissions (2) Percentage covered under emissions-limiting regulations	(1) p.113 (2) 100%
	EM-IS-110a.2	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emission reduction targets, and an analysis of performance against those targets	p.28-41
Air	EM-IS-120a.1	(1) NOx (excluding N ₂ O) (2) SOx (3) Particulate matter (PM10)	p.113
		(4) CO emissions (5) Manganese (MnO) emissions (6) Lead (Pb) emissions (7) Volatile organic compounds (VOCs) emissions (8) Polycyclic aromatic hydrocarbons (PAHs) emissions	N/A
Energy	EM-IS-130a.1	(1) Total energy consumed (2) Percentage of grid electricity (3) Percentage of renewable source electricity	p.113
	EM-IS-130a.2	(1) Total fuel consumed (2) Percentage coal (3) Percentage natural gas (4) Percentage renewable	p.113
Water	EM-IS-140a.1	(1) Total fresh water withdrawn (2) Percentage recycled	p.113
		(3) Percentage in regions with High or Extremely High Baseline Water Stress (4) Percentage in regions with Extremely High (>80%) Baseline Water Stress	N/A
Waste Management	EM-IS-150a.1	(1) Total amount of waste generated (2) Percentage hazardous (3) Percentage recycled	p.114
Workforce Health & Safety	EM-IS-320a.1	(1) Total recordable incident rate (full-time and contract, TRIR) (2) Fatality rate (full-time and contract) (3) Near miss frequency rate (full-time and contract)	p.116
Supply Chain Management	EM-IS-430a.1	Discussion of the process for managing iron ore and/or coking coal sourcing risks arising from environmental and social issues	p.62
Activity Metric	EM-IS-000.A	Raw steel production, percentage from: (1) basic oxygen furnace processes (2) electric arc furnace processes	p.114
	EM-IS-000.B	Total iron ore production	N/A
	EM-IS-000.C	Total coking coal production	N/A

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TCFD Index

Category	Metric	POSCO Response
Governance	Describe the board’s oversight of climate-related risks and opportunities.	p.33
	Describe management’s role in assessing and managing climate-related risks and opportunities.	
Strategy	Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	p.28-41
	Describe the impact of climate-related risks and opportunities on the organization’s businesses, strategy, and financial planning.	
	Describe the resilience of the organization’s strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	
Risk Management	Describe the organization’s processes for identifying and assessing climate-related risks.	p.42
	Describe the organization’s processes for managing climate-related risks.	
	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization’s overall risk management.	
Metrics and Targets	Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	P.42
	Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions and the related risks.	
	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	

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