

APPENDIX 4. ENVIRONMENTAL PERFORMANCE

Indicator	Unit	2016	2017	2018	2018 vs. 2017	
					Δ	%
Air Emissions						
Key Air emissions	thousand tonnes	130.68	137.11	128.24	-8.87	-6.5
SOx	thousand tonnes	49.00	58.18	51.30	-6.88	-11.8
NOx	thousand tonnes	29.20	29.17	29.69	0.52	1.8
Dust	thousand tonnes	51.25	48.61	45.98	-2.63	-5.4
VOC	thousand tonnes	1.23	1.15	1.26	0.12	10.3
CO	thousand tonnes	274.40	311.09	285.94	-25.15	-8.1
Greenhouse Gases						
GHG Scope 1	Million tonnes CO₂e	35.81	36.68	34.56	2.12	-5.8
CO ₂	Million tonnes CO ₂ e	28.76	28.35	26.86	-1.49	-5.3
CH ₄	Million tonnes CO ₂ e	6.99	8.26	7.64	-0.63	-7.6
N ₂ O	Million tonnes CO ₂ e	0.07	0.06	0.06	-0.001	-1.1
PFC and HFC	Million tonnes CO ₂ e	0.00010	0.00003	0.00009	0.00006	187.5
SF ₆	Million tonnes CO ₂ e	-	-	-	-	-
NF ₃	Million tonnes CO ₂ e	-	-	-	-	-
GHG Scope 2	Million tonnes CO₂e	5.02	4.97	4.23	0.74	-14.9
Total GHG	Million tonnes CO₂e	40.83	41.65	38.79	2.86	-6.9
GHG Steel Segment	Million tonnes CO ₂ e	31.32	30.44	28.15	-2.29	-7.5
Scope 1	Million tonnes CO ₂ e	27.69	27.02	25.47	-1.56	-5.8
Scope 2	Million tonnes CO ₂ e	3.63	3.42	2.68	-0.74	-21.5
GHG Steel NA Segment	Million tonnes CO ₂ e	1.07	1.45	1.39	-0.06	-4.1
Scope 1	Million tonnes CO ₂ e	0.58	0.83	0.75	-0.08	-9.7
Scope 2	Million tonnes CO ₂ e	0.49	0.62	0.64	0.02	3.4
GHG Coal Segment	Million tonnes CO ₂ e	8.45	9.76	9.25	-0.51	-5.2
Scope 1	Million tonnes CO ₂ e	7.54	8.82	8.34	-0.48	-5.5
Scope 2	Million tonnes CO ₂ e	0.91	0.94	0.91	-0.03	-2.8
GHG per t of steel cast	tCO₂e per tonne of steel cast	2.11	2.02	2.005	-0.015	-0.7
GHG per revenue	kg CO₂e/US\$	5.29	3.80	3.02	-0.80	-21.1
GHG Steel Segment	kg CO ₂ e/US\$	5.70	3.90	3.17	-0.70	-17.9
GHG Steel NA Segment	kg CO ₂ e/US\$	0.73	0.80	0.54	-0.30	-37.5
GHG Coal Segment	kg CO ₂ e/US\$	6.39	4.40	3.96	-0.40	-9.1
Water Management						
Total fresh water intake for production needs	million m³	327.60	319.43	226.49	-92.94	-29.1
surface water sources	million m ³	293.70	288.55	196.74	-91.81	-31.8
ground water	million m ³	8.99	9.09	8.64	-0.46	-5.0
seawater	million m ³	-	-	-	-	-
public network	million m ³	18.27	17.30	15.34	-1.96	-11.3
other sources	million m ³	6.64	4.49	5.77	1.29	28.7
Mine and quarry water usage for production needs		20.34	21.15	17.36	-3.79	-17.9
mine water	million m ³	11.86	11.78	11.01	-0.77	-6.5
quarry water	million m ³	8.48	9.37	6.35	-3.02	-32.2

Definition	Comments
The key air emissions comprise NOx, SOx, dust and VOC emissions.	
Sulfur dioxide (SO ₂)	
Sum of Nitric oxides (NOx) as nitrogen dioxide (NO ₂)	
Sum of PM10 and PM25	
Volatile organic compounds	
Carbon Monoxide (CO)	
Direct GHG emissions; sum of CO₂ equivalent of CO₂, CH₄, N₂O, PFC, HFC, SF₆ and NF₃	Direct GHG emissions are emissions from sources that are owned or controlled by EVRAZ
Carbon dioxide (CO ₂)	Direct CO ₂ emissions from operations were calculated using the carbon balance method for carbon flows within production facilities, including fuel use. Emissions of other GHGs were calculated based on measured volumes, inventory changes or IPCC 2006 factors and models (including for post-mining coal methane emissions) where direct measurement data were not available.
CO ₂ equivalent of methane (CH ₄) emission	
CO ₂ equivalent of nitrous oxide (N ₂ O) emission	
CO ₂ equivalent of hydrofluorocarbons & perfluorocarbons emissions	
CO ₂ equivalent of sulphur hexafluoride (SF ₆) emissions	
CO ₂ equivalent of nitrogen trifluoride (NF ₃) emissions	
Indirect GHG emissions from consumption of purchased electricity, heat or steam	"Scope 2 emissions are emissions associated with the generation of electricity, heating/cooling, or steam purchased by EVRAZ assets for own consumption. Scope 2 emissions were estimated using emission factors specifically developed for the country or region, if available, or otherwise factors provided by UK Defra or given in National Inventory Reports."
Calculation perimeter includes the following subsidiaries:	
EVRAZ NTMK, EVRAZ KGOK, EVRAZ ZSMK, Evrazruda, EVRAZ DMZ, EVRAZ, Vanady Tula, EVRAZ Caspian Steel, EVRAZ Palini e Bertoli, EVRAZ Nikom, EVRAZ Stratcor	
EVRAZ Calgary, EVRAZ Camrose, EVRAZ Portland, EVRAZ Pueblo, EVRAZ Red Deer, EVRAZ Regina	
Raspadskaya Coal Company (Novokuznetsk and Mezhdurechensk sites), Mezhegeyugol	
EVRAZ NTMK, EVRAZ ZSMK, EVRAZ DMZ and EINA	Only steelmaking enterprises were included into the calculation.
EVRAZ NTMK, EVRAZ KGOK, EVRAZ ZSMK, Evrazruda, EVRAZ DMZ, EVRAZ, Vanady Tula, EVRAZ Caspian Steel, EVRAZ Palini e Bertoli, EVRAZ Nikom, EVRAZ Stratcor	
EVRAZ Calgary, EVRAZ Camrose, EVRAZ Portland, EVRAZ Pueblo, EVRAZ Red Deer, EVRAZ Regina	
Raspadskaya Coal Company (Novokuznetsk and Mezhdurechensk sites), Mezhegeyugol	

Indicator	Unit	2016	2017	2018	2018 vs. 2017	
					Δ	%
Water Intensity	m³/tonne of steel cast	0.020	0.019	0.014	-0.01	-28.1
Fresh water withdrawal intensity	m ³ /US\$ revenue	42.47	29.50	17.64	-11.86	-40.2
Water recycled for use in own operations	%	90.1	90.4	92.8	2.40	
Waste & By-product Management						
Non-mining waste & by-product generation	thousand tonnes	9,651.8	9,233.5	7,947.8	-1,285.7	-13.9
Metallurgical by-product generation	thousand tonnes	7,619.1	7,629.5	6,401.7	-1,227.8	-16.1
General waste	thousand tonnes	2,032.7	1,603.9	1,546.1	-57.8	-3.6
non-hazardous waste generation	thousand tonnes	1,963.6	1,533.5	1,471.9	-61.5	-4.0
hazardous waste generation	thousand tonnes	69.1	70.5	74.2	3.7	5.2
Non-mining waste & by-product recycled	thousand tonnes	11,594.2	9,666.7	8,846.8	-819.9	-8.5
Non-mining waste & by-product non-recycled	thousand tonnes	745.5	538.7	591.2	52.5	9.7
Non-mining waste recycling or re-use rate	%	120.1	104.7	111.3	6.6	n/a
Mining waste	thousand tonnes	157,305.7	169,569.5	232,004.5	62,435.0	36.8
Mining waste used	thousand tonnes	28,652.5	50,353.5	62,049.0	11,695.5	23.2
Mining waste recycling or re-use rate	%	18.2	29.7	26.7	-3.0	n/a
Environmental Compliance						
Environmental commitments	US\$ million	119	102	121	19.00	18.6
Environmental Liabilities	US\$ million	224	289	244	-45.00	-15.6
Environmental Levies and Fines for Non-compliance	US\$ million	2.1	2.6	2.2	-0.40	-15.4
Cost of environmental compliance	US\$ million	24	30.7	30.1	-0.60	-2.0
Investments to improve environmental performance	US\$ million	12	28	29.8	1.80	6.4
Material environmental incidents	cases	0	0	0	0.00	0.0
Public complaints	cases	38	29	36	7	24.1
Compliance with REACH requirements	cases of non-compliance	0	0	0	0.00	0.0

Definition	Comments
Estimated for metallurgical assets: ZSMK, NTMK, DMZ, EINA	
Total fresh water intake for production needs per EVRAZ total revenue	
Metallurgical by-products Includes: slags, sludge and scale	
Amount of waste and by-products recycled or re-used vs. generated during the year.	
Mining waste include: overburden grounds, depleted rock, tailings	
Amount of waste and by-products recycled or re-used vs. generated during the year.	
A documented and approved by regulator liability to perform corrective actions to be in compliance with environmental requirements applicable to a specific facility	Exchange rate as of 31 December report year
Or Asset Retirement Obligation – is a legal obligation associated with the retirement of a tangible long-lived asset (i.e. remediation work such as, land rehabilitation, removing underground fuel storage tanks, cleanup, etc.).	"The amount of Environmental Liabilities is calculated using discounted amounts of future cash flows and disclosed in the Financial Statements as Site rehabilitation provision. Exchange rate as of 31 December report year"
Total sum of accrued environmental levies (taxes) for the impact caused in excess of established standards and penalties/claims accepted for payment	Exchange rate - year average
Expenses related to the maintenance of daily environmental operation (waste management, maintenance of environmental equipment, monitoring, etc.)	
Expenses related to the projects aimed to improve environmental performance	
Significant environmental accidents (first and second category incidents) comprise massive discharges into natural zones, hazardous emissions, the destruction of reservoirs, and fires at facilities.	
Cases of public complaints registered by Evraz sites	
Cases of non-compliance include: breaches of registration requirements, requirements to the content of Safety Data Sheets and breaches of the authorisation and restriction provisions.	