

# ANNEX 9. ESG DATA

## PRODUCTION INDICATORS

Key production indicators	Unit of measure	2018	2019	2020	2021	2022
<b>Oil and gas sector</b>						
Oil and condensate production (per year)	thousand tons/year	23 625.9	23 634.99	21 767.2	21 665.2	22 025.2
Oil and condensate production (per day)	thousand tons/day	64.7	64.8	59.6	59.4	60.3
Natural and associated gas production (per year)	million m <sup>3</sup> /year	8 485.9	8 805	8 516.8	8 359.2	8 518.6
Extraction of natural and associated gas (per day)	thousand m <sup>3</sup> /day	978.3	982.2	914.9	784.2	782.9
Number of drilling sites (with a share of more than 50%)	amount	71	71	67	65	65
Oil and gas refining	thousand tons	19 715	20 588	18 077	18 833	19 900
Oil and gas refining, including	thousand tons	18 338	19 134	16 818	17 404	18 668
Gasoline	thousand tons	4 854	5 128	4 592	4 941	5 330
Fuel oil	thousand tons	2 344	2 347	1 939	2 190	2 416
Vacuum gas oil (VGO)	thousand tons	771	463	522	526	482
Paraxylene	thousand tons	16	119	205	45	76
Diesel fuel	thousand tons	6 569	6 945	6 305	6 387	6 588
Benzene	thousand tons	16	27	44	7	9
Coke	thousand tons	347	373	345	386	377
Liquefied gas	thousand tons	826	838	804	806	846
Sulfur	thousand tons	46	54	53	61	60
Aviation fuel	thousand tons	570	872	457	595	838
Heating oil	thousand tons	167	25	34	14	16
Bitumen	thousand tons	549	607	871	601	657
Commercial oil	thousand tons	251	254	243	257	231
Raw materials for technical carbon	thousand tons	-	-	-	26	10
Light naphtha	thousand tons	-	5	-	-	2
Propylene	thousand tons	142	153	-	-	-
Other (please specify)	thousand tons	869	926	403	562	730
Installed processing capacity*	thousand tons/day	75.8	75.8	75.8	75.8	76
Transportation of natural gas, including	billion m <sup>3</sup> *km	121 415	113 220	97 033	106 835	95 550
by main gas pipelines	million m <sup>3</sup>	111 567	103 494	86 590	95 422	83 744
by gas distribution networks	million m <sup>3</sup>	9 848	9 726	10 443	11 413	11 806

Oil transportation, including	million tons/km	75 038	78 066	73 171	74 565	74 659
by main pipelines	million tons/km	67 961	67 337	64 181	64 710	65 316
by sea (tankers)	million tons/km	7 077	10 729	8 990	9 855	9 343
<b>Energy</b>						
Electricity generation volume, including	billion kW/h	31.7	30.2	31.4	35.6	35.9
on coal	billion kW/h	28.4	27	28.2	32.8	32.7
on natural gas	billion kW/h	0.4	0.3	0.5	0.4	0.4
on fuel oil	billion kW/h					
HPP	billion kW/h	2.7	2.7	2.6	2.2	2.6
WPP	billion kW/h	0.2	0.2	0.2	0.2	0.2
SPP	billion kW/h	0.0072	0.0073	0.0079	0.0090	0.0082
Electricity generation from the turbine of SHZ-U LLP*	billion kW/h	0.114	0.118	0.104	0.105	0.116
Length of overhead and cable lines (0.4-220 kV transmission lines)	km	44 732.6	45 599.9	45 882.7	45 983.5	45 676.2
Length of overhead and cable lines (330-500 kV transmission lines)	km	10 152.1	10 151.3	10 151.3	10 145.5	10 145.5
Length of overhead and cable lines (1150 kV transmission lines)	km	1 421.2	1 421.2	1 421.2	1 421.2	1 421.2
Electricity supply volume (own production is excluded)	million kW/h	5 904	6 218	6 055	6 702	6 839
Coal production volume	million ton	44.9	44.9	43.3	44.6	42.5
<b>Chemical industry</b>						
Sulfuric acid	ton	121 244.9	154 334.6	153 601.3	180 902.8	175 339.2
Liquid herbicide	thousand liters	0	980	1 073	197	603
Granular herbicide	ton	0	0	0	46.3	12.1
BOPP	ton	4 596	7 070	8 312	9 357	5 299
PB	thousand pcs	15 921	20 682	17 848	15 546	15 476
<b>Mining and processing of minerals</b>						
Natural uranium production volume	ton	21 699	22 761	19 587	21 834	21 279
Uranium products manufacturing volume	ton	21 705	22 808	19 477	21 819	21 227
Rare metals production volume	ton	1 869	1 823	1 530	1 580	1 469
Ore extraction and processing volume	ton	–	21 920	21 920	–	185 000
Production of finished products: refined gold	ton	22.7	29.2	33.5	51.1	55.6
Production of finished products: refined silver	ton	6.2	7	9	6.4	8.3
Production of finished products: silicon	ton	14 408	14 134	–	–	–
Production of finished products: quartz	ton	49 000	53 000	–	–	–

<b>Total volume of exports of products in physical terms</b>						
U <sub>3</sub> Q <sub>8</sub> sales volume (consolidated)	ton	16 647	16 044	16 432	16 526	16 358
incl. Company sales volume	ton	15 287	14 148	14 126	13 586	13 572
<b>Rare metal sales</b>						
Beryllium products	ton	1 662	1 636	1 375	1 529	1 332
Tantalum products	ton	138	120	144	165	166
Niobium products	ton	23	9	16	8	13
<b>Communication services</b>						
Number of fixed lines	thousands of lines	2 978.5	2 849.9	2 893.5	2 774.5	2 636.6
Number of broadband access subscribers	thousands of ports	1 700.9	1 705.5	1 833.2	1 860.7	1 857.4
Number of pay TV subscribers	thousands of points	772.4	774	863.9	918.7	917.5
Number of mobile communication subscribers	million subscribers	16.1	15.5	14.8	14.5	14.4
<b>Air transportation</b>						
Sortie number	amount	44 670	47 505	30 955	47 113	51 819
Fleet average age	number of years	8.3	6.5	5.1	4.7	5
Available Seat Kilometers		14 267 050	14 781 918	7 904 320	13 063 678	15 921 347
<b>Railway transportation</b>						
Passenger turnover*	billion pkm	19.1	18.4	8.6	13.6	16.9
Freight turnover**	billion tons/km	219.9	224	231.8	233.3	245.2
<b>Postal Services</b>						
Postal Services	thousand units	191 951	177 517	137 752	131 662	114 663

**WHOLESALE SALE OF PETROLEUM PRODUCTS MANUFACTURED IN THE REPUBLIC OF KAZAKHSTAN**

Products	Unit of measure	2018		2019		2020		2021		2022	
		Internal market	Export	Internal market	Export	Internal market	Export	Internal market	Export	Internal market	Export
Gasoline	thousand tons	701	0	789	37	647	163	1 195	0	1 333	7
Fuel oil	thousand tons	192	414	188	469	211	402	241	542	265	588
Vacuum gas oil (VGO)	thousand tons	0	200	0	167	0	155	0	166	0	105
Paraxylene	thousand tons	0	2	0	55	0	90	0	25	0	34
Diesel fuel	thousand tons	954	0	1 028	0	930	115	1 291	57	1 513	0
Benzene	thousand tons	0	5	0	12	0	19	0	4	0	3
Coke	thousand tons	44	58	40	51	61	57	79	66	56	65
Liquefied gas	thousand tons	128	0	114	0	133	1	162	1	204	0
Sulfur	thousand tons	9	4	2	13	6	5	3	17	5	14
Aviation fuel	thousand tons	34	0	85	0	65	0	120	0	161	0
Heating oil	thousand tons	32	34	7	0	6	0	4	0	0	0
Bitumen	thousand tons	53	0	65	0	87	0	83	0	125	0
Technological fuel	thousand tons	0	0	0	0	0	0	382	0	408	0
<b>Other (please specify)</b>	<b>thousand tons</b>	<b>4</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>18</b>	<b>0</b>	<b>22</b>	<b>0</b>

**SOCIAL INDICATORS** [GRI 2-7, GRI 2-8, GRI 401-1, GRI 403-9](#)

<b>FULL-TIME EMPLOYEES</b>	<b>Unit of measure</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
Number of full-time employees at the end of the year	person	286 520	278 586	268 220	258 044	259 055
by gender						
Men	person	205 006	199 236	190 914	185 233	187 115
Share of men	%	72	72	71	72	72
Share of men in governing bodies	%	67	75	69	62	60
Women	person	81 514	79 350	77 306	72 811	71 940
Share of women	%	28	28	29	28	28
Share of women in governing bodies	%	33	25	31	38	40
by age						
<b>Up to 30</b>	person	61 178	55 811	52 355	44 845	44 397
Share of employees up to 30	%	21	20	20	17	17
Men	person	43 302	39 240	37 039	31 988	32 318
Women	person	17 876	16 571	15 316	12 857	12 080

Governing bodies	person	1 038	954	817	929	814
<b>30-50</b>	person	153 312	150 639	145 436	143 421	144 003
Share of employees from 30 to 50	%	53	55	54	56	56
Men	person	108 835	106 883	102 129	102 287	103 417
Women	person	44 477	43 756	43 307	41 134	40 586
Governing bodies	person	6 846	7 051	7 127	7 584	7 788
<b>50+</b>	person	72 030	72 136	70 429	69 778	70 654
Share of employees over 30	%	25	27	26	27	27
Men	person	52 869	53 113	51 746	50 958	51 381
Women	person	19 161	19 023	18 683	18 820	19 273
Governing bodies	person	2 813	2 767	2 807	3 098	3 107
by type of activity		286 520	278 586	268 220	258 044	259 055
Production and transmission of heat and electricity	%	5	5	6	6	6
Oil and gas exploration and production	%	5	5	5	6	6
Oil and gas refining	%	2	2	2	2	2
Oil and gas transportation	%	6	6	6	7	7
Railway transportation	%	47	46	44	44	44
Mining industry	%	8	8	8	8	8
Air transportation	%	2	2	2	2	3
Postal Services	%	8	8	8	7	7
Chemical industry	%	0	0	0	0	0
Telecommunication	%	8	10	10	10	9
Other	%	9	8	8	8	8
by the term of the employment contract		286 520	278 586	268 220	258 044	259 055
Permanent employees	person	273 210	264 370	254 719	245 056	246 618
Men	person	200 589	194 432	186 767	181 478	183 178
Women	person	72 621	69 938	67 952	63 578	63 440
Temporary workers (for the period of maternity and child care leave, study leave, etc.)	person	13 310	14 216	13 501	12 988	12 436
Men	person	4 417	4 804	4 147	3 755	3 937
Women	person	8 893	9 412	9 354	9 233	8 499
by region		286 520	278 586	268 220	258 044	259 055
Republic of Kazakhstan	person	277 769	269 880	259 616	249 816	250 813
Astana	person	25 843	26 307	23 778	22 274	19 862
Pavlodar region	person	16 519	15 895	15 138	14 536	14 662

Almaty oblast	person	27 748	28 287	27 376	25 944	26 886
Hyzylorda oblast	person	14 358	14 292	13 100	12 445	13 274
Aktobe region	person	17 123	17 441	16 466	15 659	15 535
Atyrau region	person	19 279	17 945	18 304	17 552	17 472
Mangystau oblast	person	28 518	27 441	26 803	27 298	28 688
North Kazakhstan oblast	person	3 155	3 031	2 838	2 945	3 202
Kostanai oblast	person	11 376	10 665	10 939	10 375	10 480
Zhambyl region	person	12 340	12 094	11 501	11 070	10 889
Turkestan region	person	14 213	13 931	13 619	14 111	15 926
Shymkent	person	5 475	5 672	5 321	5 351	5 869
Abai region	person	7	6	6	6	472
Almaty	person	27 524	29 523	28 909	26 360	18 250
Zhetysu region	person	11	12	13	9	764
Akmola oblast	person	7 719	7 343	6 711	7 132	10 403
Karaganda region	person	15 137	15 747	15 323	14 572	15 822
Ulytau oblast	person	1	1	25	33	284
West Kazakhstan oblast	person	9 983	4 107	3 610	3 525	4 384
East Kazakhstan oblast	person	15 901	15 426	15 072	13 984	14 524
South Kazakhstan region	person	1 888	1 858	1 842	1 691	204
Other regions	person	3 651	2 856	2 942	2 944	2 961
Outside the Republic of Kazakhstan	person	8 752	8 707	8 605	8 229	8 242
Staff with disabilities	person	1 937	2 541	2 443	2 725	2 860
Republic of Kazakhstan	person	1 923	2 530	2 432	2 710	2 848
Astana	person	116	134	137	138	136
Pavlodar region	person	140	169	189	191	187
Almaty oblast	person	122	184	205	199	211
Hyzylorda oblast	person	81	149	144	224	210
Aktobe region	person	107	129	128	120	136
Atyrau region	person	183	231	214	229	236
Mangystau oblast	person	244	290	303	454	482
North Kazakhstan oblast	person	31	62	41	37	39
Kostanai oblast	person	74	91	82	95	100
Zhambyl region	person	64	115	98	92	118
Turkestan region	person	81	94	93	108	182

Shymkent	person	43	67	69	86	94
South Kazakhstan region	person	83	95	100	96	36
Abai region	person	-	-	-	-	2
Almaty	person	135	160	146	129	137
Zhetysu region	person	11	11	8	10	12
Akmola oblast	person	76	129	77	79	94
Karaganda region	person	150	186	196	201	209
Ulytau oblast	person	-	-	-	-	1
West Kazakhstan oblast	person	56	70	71	77	71
East Kazakhstan oblast	person	113	154	117	122	137
Continue	person	13	10	14	23	18
Outside the Republic of Kazakhstan	person	14	11	11	15	12
Staff turnover	%	10	9	9	13	8
New employees hired in the reporting year by gender	person	39 602	33 829	35 103	41 436	38 437
Men	person	28 618	23 747	26 059	30 013	28 305
Women	person	10 984	10 082	9 044	11 423	10 132
Number of employees on maternity and paternity leave or returned from these vacations	person	13 129	13 641	14 329	14 780	13 170
Men	person	269	393	453	604	705
Women	person	12 860	13 248	13 876	14 176	12 465
<b>TEMPORARY WORKERS</b>	<b>Unit of measure</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
Temporary workers (for the period of maternity and child care leave, study leave, etc.)	person	13 310	14 216	13 501	12 988	12 436.3
Men	person	4 417	4 804	4 147	3 755	3 937
Women	person	8 893	9 412	9 354	9 233	8 499.3
<b>STAFF TRAINING</b>	<b>Unit of measure</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>Total number of hours of study per year</b> <a href="#">(GRI 404-1)</a>	hours	3 843 772.1	7 725 566.4	7 201 789.5	6 115 097	11 809 889
Men	hours	3 146 574	743 167	6 051 484	1 677 832	9 208 124
Women	hours	697 198	6 982 399	1 150 305	4 437 266	2 601 765
<b>Average number of hours of training per employee per year</b> <a href="#">GRI 404-1</a>		15	16	16	13	19
by gender						
Men	hours	17	8	17	7	22
Women	hours	9	17	12	20	13

by position						
CEOs	hours	555 770	1 126 545	948 246	1 074 268	1 590 746
Specialists	hours	1 132 033	1 947 678	2 078 862	2 545 972	4 158 895
Workers	hours	2 155 968	4 651 343	4 174 682	2 494 857	6 060 248
Number of trained employees per year	person	262 370	490 983	454 922	472 316	625 328
Employee training costs per year	HZT million	13 319	21 405	15 448	107 621	104 259
<b>PROCUREMENT PRACTICE</b>	<b>Unit of measure</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
Total purchased goods and services	HZT billion	3 216	3 731	3 103	3 427	3 591
Single-source procurement	HZT billion	2 829	2 285	626	475	636
Single-source procurement	%	88	61	20	14	18
Procurement through request for quotations	HZT billion	22	35	45	55	83
Procurement through request for quotations	%	1	1	1	2	2
Open tender procurement	HZT billion	365	492	515	640	1 077
Open tender procurement	%	11	13	17	19	30
Procurement by holding competitive negotiations	HZT billion	0	17	1 152	1 405	997
Procurement by holding competitive negotiations	%	0	0	37	41	28
Procurement within intra-holding cooperation	HZT billion		902	765	852	799
Procurement within intra-holding cooperation	%	0	24	25	25	22
<b>LOCAL CONTENT SHARE</b>	<b>Unit of measure</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
Total throughout the Fund	%	88	90	90	91	92
By Portfolio Companies						
HazMunayGas JSC	%	79	79	82	78	82
HazTransGas JSC	%	–	–	–	90	90
Hazakhstan Temir Zholy JSC	%	74	80	80	79	85
JSC NAC Kazatomprom	%	84	80	68	80	82
Samruk-Energy JSC	%	85	80	79	89	85
Hazakhtelecom JSC	%	23	51	41	55	24
Air Astana JSC	%	32	33	30	45	23
HEGOC JSC	%	62	58	62	58	52
JSC NMC Tau-Hen Samruk	%	68	71	70	46	52
Hazpost JSC	%	64	80	74	26	34
Other	%	46	34	38	36	30
<b>OCCUPATIONAL HEALTH AND INDUSTRIAL SAFETY</b> <a href="#">GRI 403-9</a>	<b>Unit of measure</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
Number of registered work-related injuries	person	157	145	117	119	108



Number of injured persons in work-related accidents	person	162	165	122	133	111
Number of fatalities in work-related accidents	person	15	11	11	14	12
Number of severe injuries related to industrial activity	person	-	-	-	-	71
Lost Time Industrial Injury Frequency Rate (LTIF)	ratio	0.29	0.3	0.24	0.22	0.16
Fatality rate	ratio	2.49	1.95	2.18	2.93	2.60
Ratio of serious injuries related to industrial activity	ratio	-	-	-	-	0.15
Road accidents ratio	ratio	0.11	0.08	0.04	0.07	0.05
All road accidents ratio	unit	165	131	68	79	60
<b>Indicators of occupational injuries by Group (contractors)</b>						
Number of contractors' employees fatalities in work-related accidents	person	0	4	2	1	1
Number of injured persons in contracting organizations in labor-related accidents	person	2	22	21	17	14
<b>Indicators of industrial diseases</b>						
Number of cases of health deterioration in the workplace that are not related to work and have not led to a fatal outcome	person	-	-	-	3 877	6 384
Number of fatalities not related to work due to poor health	person	-	-	-	53	27
Number of employees registered on the "D" account	person	-	-	-	108 501	23 958
Number of employees subject to mandatory periodic medical examination	person	-	-	-	203 212	207 407
Number of employees who have undergone periodic medical examination according to laws of the Republic of Kazakhstan	person	-	-	-	193 026	201 463
Number of fires	pcs	89	91	90	103	106
Number of accidents	pcs	2	5	5	13	7
Number of incidents	person	357	316	327	284	334
<b>Labor protection and occupational safety costs</b>						
Amount of money spent to ensure the occupational safety requirements, including in the following areas:	HZT billion	57	65.3	122.4	99.8	126
Labor protection	HZT billion	17	17.7	19.9	22.5	24.4
Fire safety	HZT billion	7.6	8.2	8.6	10.2	15.2
Occupational safety	HZT billion	27.8	34	88.4	60.8	81.9
Training	HZT billion	2	2.4	1.9	2.4	1.7
Other	HZT billion	2.2	2.5	3.3	3.6	2.5

## CORPORATE GOVERNANCE

BOARD OF DIRECTORS OF THE FUND		Unit of measure	2018	2019	2020	2021	2022
Average age		years	59	60	56	51	52
Chairman of the Board of Directors			Sagintayev	Mamin	Dudas	Dudas	Dudas
Independent Directors on the Board of Directors		person	3	3	4	4	3
Share of independent members on the Board of Directors		%	43	43	57	50	43
Chief Executive Officer on the Board of Directors		person	Yessimov	Yessimov	Yessimov	Satkaliyev	Satkaliyev
Number of meetings held		amount	11	10	15	10	18
MANAGEMENT BOARD OF THE FUND GROUP		Unit of measure	2018	2019	2020	2021	2022
Number of members		pcs	287	272	267	271	258
Men		pcs	272	264	258	262	248
Women		pcs	24	28	28	26	36
Share of women on the Management Board		%	8	10	10	10	14

ENVIRONMENTAL INDICATORS [GRI 302-1](#), [GRI 302-3](#), [GRI 302-4](#)

CLIMATE AND ECOLOGY		Unit of measure	2018	2019	2020	2021	2022
<b>Carbon footprint</b>		million tons of CO <sub>2</sub> -eq.	<b>65.1</b>	<b>64.5</b>	<b>69</b>	<b>72.1</b>	<b>60.9</b>
<b>Direct greenhouse gas emissions (Scope 1)</b> <a href="#">GRI 305-1</a>		million tons of CO <sub>2</sub> -eq.	58.5	56.7	58.4	61.6	50.7
by type of greenhouse gases							
Carbon dioxide (CO <sub>2</sub> )		million tons of CO <sub>2</sub>	46.2	44.3	44.7	45.4	44.9
Methane (CH <sub>4</sub> )		million tons of CO <sub>2</sub> -eq.	11.8	11.9	12.9	15.3	5.1 <sup>26</sup>
Nitrogen oxide (N <sub>2</sub> O)		million tons of CO <sub>2</sub> -eq.	0.5	0.4	0.9	0.9	0.6
By segments:							
Oil and gas exploration and production		million tons of CO <sub>2</sub> -eq.	4.2	3.8	4.1	4.3	2.8
Oil and gas refining		million tons of CO <sub>2</sub> -eq.	4.4	4.8	6.2	6.1	5.2
Oil and gas transportation		million tons of CO <sub>2</sub> -eq.	5.1	5.7	4.7	7.5	6.1
Uranium exploration and production		million tons of CO <sub>2</sub> -eq.	0.13	0.11	0.09	0.11	0.10
Electricity and heat production		million tons of CO <sub>2</sub> -eq.	41.2	39.11	40.68	40.31	32.99
Railway transportation		million tons of CO <sub>2</sub> -eq.	2.33	2.23	2.16	2.28	2.39
Passenger air transportation		million tons of CO <sub>2</sub> -eq.	1.07	0.97	0.54	0.84	1.02
Telecommunication services		million tons of CO <sub>2</sub> -eq.	0.03	0.02	0.03	0.03	0.03

<sup>26</sup> The decrease is due to a change in the calculation methodology in accordance with Order No. 9 of the Minister of Ecology and Natural Resources of the Republic of Kazakhstan dated 17 January 2023 "On Approval of Methodologies for Calculating Greenhouse Gas Emissions and Absorption".

Electric power transmission sector	million tons of CO <sub>2</sub> -eq.	0	0	0.0085	0.0091	0.0089
Production of chemical products	million tons of CO <sub>2</sub> -eq.	0.0008	0.0017	0.0012	0.0013	0.0015
Extractive projects	million tons of CO <sub>2</sub> -eq.	0.0023	0.0027	0.0012	0.0012	0.0014
Metallurgical projects (For Tau-Ken Altyn only, Tau-Ken Temir is at downtime)		0.0714	0.0490	0.0002	0.002	0.002
By sources						
from stationary sources, including flaring	million tons of CO <sub>2</sub> -eq.	39.2	37.3	38.1	42.7	42.2
unorganized sources	million tons of CO <sub>2</sub> -eq.	3.8	3.9	5.8	6	3
industrial processes (except TER)	million tons of CO <sub>2</sub> -eq.	3.7	3.9	2.6	5	4
other		11.9	11.5	12	7.9	1.5
<b>Indirect GHG emissions (Scope 2)</b> <a href="#">GRI305-2</a>	<b>million tons of CO<sub>2</sub>-eq.</b>	<b>6.62</b>	<b>7.81</b>	<b>10.53</b>	<b>10.53</b>	<b>10.2</b>
By segments:						
Oil and gas exploration and production	million tons of CO <sub>2</sub> -eq.	1.3	1.32	1.44	1.38	1.26
Oil and gas refining	million tons of CO <sub>2</sub> -eq.	1.88	1.79	1.84	1.7	1.74
Oil and gas transportation	million tons of CO <sub>2</sub> -eq.	0.14	0.35	0.33	0.33	0.29
Uranium exploration and production	million tons of CO <sub>2</sub> -eq.	-	0.84	0.82	0.84	0.84
Railway transportation	million tons of CO <sub>2</sub> -eq.	3.3	3.3	3.3	3.2	3.2
Electricity and heat production	million tons of CO <sub>2</sub> -eq.	-	-	-	-	0.013
Telecommunication services	million tons of CO <sub>2</sub> -eq.	-	0.198	0.196	0.225	0.204
Electric power transmission sector	million tons of CO <sub>2</sub> -eq.	-	-	2.61	2.85	2.63
Production of chemical products	million tons of CO <sub>2</sub> -eq.	0.00001	0.000019	0.000012	0.000012	0.0014
Mining projects	million tons of CO <sub>2</sub> -eq.	0.017	0.016	0.013	0.023	0.018
Metallurgical projects (Only for Tau-Ken Altyn, Tau-Ken Temir at idle)	million tons of CO <sub>2</sub> -eq.	0.264	0.242	0.003	0.003	0.003
<b>GHG emissions intensity (Scope 1)</b> <a href="#">GRI305-4</a>	<b>million tons of CO<sub>2</sub>-eq./pcs of product</b>					
By segment						
Oil and gas exploration and production	million tons of CO <sub>2</sub> -eq./1000 tons of CHC	0.0002	0.0002	0.0002	0.0002	0.0001
Oil and gas refining	million tons of CO <sub>2</sub> -eq./1000 tons of CHC	0.0002	0.0002	0.0003	0.0002	0.0002
Oil and gas transportation	million tons of CO <sub>2</sub> -eq./1000 tons of CHC	0.00006	0.00006	0.00005	0.00006	0.00005
Electric power generation (EGRES-1 LLP; SEGRES-2 JSC; AIES JSC (HPP-1; HPP-2; HPP-3))	million tons of CO <sub>2</sub> /million kWh	0.92	0.86	0.88	0.86	0.84
Heat/energy generation (AIES JSC)	million tons of CO <sub>2</sub> -eq./million Gcal	0.44	0.44	0.43	0.31	0.3
Coal mining (Bogatyr-Komir LLP)	million tons of CO <sub>2</sub> -eq./million tons	0.26	0.25	0.27	0.17	0.03

Uranium exploration and production	million tons of CO <sub>2</sub> -eq./t U	0.000006	0.000005	0.000005	0.000005	0.000005
Railway transportation (cargo turnover)	grams of CO <sub>2</sub> -eq /tkm	10.5	8.7	8.1	6.7	8.8
Railway transportation (passenger turnover)	grams of CO <sub>2</sub> -eq /km-p	15.6	13.9	30.9	20.4	17.2
<b>GHG emissions intensity (Scope 2)</b> <a href="#">GRI.305-4</a>	<b>million tons of CO<sub>2</sub>-eq./pcs of product</b>					
By segment						
Oil and gas exploration and production	million tons of CO <sub>2</sub> -eq./1000 tons of CHC	0.05	0.05	0.06	0.06	0.06
Oil and gas refining	million tons of CO <sub>2</sub> -eq./1000 tons of CHC	0.1	0.09	0.1	0.09	0.09
Oil and gas transportation	million tons of CO <sub>2</sub> -eq./1000 tons of CHC	0.01	0.01	0.01	0.01	0.01
Uranium exploration and production	million tons of CO <sub>2</sub> -eq./t U	-	0.00004	0.00004	0.00004	0.00004
Railway transportation (cargo turnover)	grams of CO <sub>2</sub> -eq /tkm	15.2	14.9	14.4	13.9	13.3
Railway transportation (passenger turnover)	grams of CO <sub>2</sub> -eq /km-p	22.5	22.1	52.3	34.2	26.4
<b>Greenhouse gas emission intensity</b> <a href="#">GRI.305-4</a>						
GHG emissions (Scope 1) on revenue, HZT	metric tons of CO <sub>2</sub> -eq. per HZT million of sales	166.2	167.9	152.6	130.2	92.9
GHG emissions (Scope 1) on revenue, USD	metric tons of CO <sub>2</sub> -eq. per HZT million of sales	57 265.2	64 169.1	63 013.9	55 348.9	43 075.7
GHG emissions (Scope 1+2) on revenue, HZT	metric tons of CO <sub>2</sub> -eq. per HZT million of sales	169.9	173.7	165.8	150.2	108.9
GHG emissions (Scope 1+2) on revenue, USD	metric tons of CO <sub>2</sub> -eq. per HZT million of sales	58 673.5	66 205.5	65 366	57 213.1	44 907.6
<b>Additional information about GHG emissions: quotas</b>						
Allocated GHG quotas	t CO <sub>2</sub>	112 279 844		40 758 049		40 037 200
Inventory of GHG emissions	t CO <sub>2</sub>	41 985 174.8	40 029 837.6	41 131 752.6	41 796 175.2	40 753 643.1
Deficit, including	t CO <sub>2</sub>	7 382 682	6 214 876	7 284 717	5 108 907	4 785 231
Received additionally	t CO <sub>2</sub>	7 313 560	6 214 876	6 966 630	4 956 071	92 382
<b>RESOURCE CONSUMPTION AND ENERGY EFFICIENCY</b>						
	<b>Unit of measure</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>Total energy consumption<sup>27</sup></b>	thous. GJ	555 646.3	541 493.5	535 287.4	593 626.7	594 144.2
Electricity, including	thous. GJ	55 465	54 913.7	53 361.9	55 402.3	54 499.9
Purchased electricity, including	thous. GJ	40 871.3	40 794.9	40 009.9	40 558.2	39 063.7
RES		0	0	0	26.2	43
Own electricity production, including	thous. GJ	14 593.7	14 118.8	13 351.9	14 844	15 436.2
RES	thous. GJ	47.6	41.8	49.7	36.8	52.6
Thermal energy, including	thous. GJ	36 641.9	41 730.9	41 413.1	41 568.3	40 371.9
purchased thermal energy	thous. GJ	8 491.9	7 176.9	6 773.3	6 717.5	5 989

<sup>27</sup> According to GRI 2021, total energy consumption (302-1. E) = Non-renewable fuel consumed + Renewable fuel consumed + Electricity, heating, cooling, and steam purchased for consumption + Self-generated electricity, heating, cooling, and steam, which are not consumed – Electricity, heating, cooling, and steam sold

own production of thermal energy	thous. GJ	28 149.9	34 554	34 639.8	34 850.8	34 382.9
Cooling	thous. GJ	0	0	0	0	0
Steam	thous. GJ	0	0	0	0	0
Refinery gas	thous. GJ	33 433.5	36 209.3	41 034	37 919.4	43 156
Coal	thous. GJ	300 506	281 929.6	293 560.4	334 720.2	328 635.9
APG	thous. GJ	14 877.1	14 786.3	13 931.6	14 460.6	15 702
Gas, including	thous. GJ	96 728.2	103 320.1	94 336.3	109 071.7	104 280.2 <sup>28</sup>
Natural gas	thous. GJ	84 671.1	86 700.8	76 876	90 779.6	87 056
tail gas	thous. GJ	11 863.5	16 418.2	17 256.5	18 071.4	17 103.2
CPBM (LPG)	thous. GJ	193.5	201.2	203.7	220.7	121
Liquid fuel, including	thous. GJ	46 497.5	45 553.4	36 799.4	42 713.4	50 214.4
Gasoline	thous. GJ	1 135.7	1 075.1	976.6	892.3	958.3
Diesel fuel	thous. GJ	30 024.2	29 093.3	27 992.8	29 743.2	30 971.9
jet fuel	thous. GJ	15 337.7	15 385	7 830.1	12 077.9	18 288.3
Boiler fuel, including	thous. GJ	14 240.7	11 723	8 842.4	7 465.6	7 099
heating oil	thous. GJ	809.8	1 257.3	1 171.9	1 780.1	3 216
Oil	thous. GJ	1 588	864.6	780.5	651.9	958
Fuel oil	thous. GJ	11 829.6	9 555.8	6 836	5 006	2 924
marine fuel (fuel oil, IFO)	thous. GJ	13.4	45.2	53.9	27.5	1
By segments:						
Oil and gas exploration and production	thous. GJ	53 131.3	54 652.9	50 950.2	53 869.7	58 216.2
Oil and gas refining	thous. GJ	67 408.4	70 180.7	71 294.1	67 323	68 654
Oil and gas transportation	thous. GJ	48 070.2	50 590.6	42 020.1	54 934.2	49 516
Uranium exploration and production	thous. GJ	5 584.8	5 425.6	5 072.8	5 470.5	5 250.1
Electricity and heat production	thous. GJ	310 642.9	291 384	306 441.5	346 373.9	340 197.2
Railway transportation	thous. GJ	40 675.7	39 489.9	38 659.3	39 759.8	40 938.7
Passenger air transportation	thous. GJ	16 431.4	16 458.5	9 039.4	13 076.8	19 428.9
Telecommunication services	thous. GJ	1 369.8	1 405.5	1 433.4	1 624.2	1 385.7
Electric power transmission sector	thous. GJ	10 780.7	10 711	10 350.7	11 163	10 373.2
Production of chemical products	thous. GJ	75	154.8	89.9	91.8	80.5
<b>Energy intensity</b>						
		<b>kWh/pcs of product</b>				
By segments:						
Oil and gas exploration and production	GJ/ton of extracted CHC	2.29	2.37	2.39	2.43	2.78

<sup>28</sup> This indicator does not include technological losses of gas.

Oil refining	GJ/ton of refined oil (gas)	4.1	4.05	4.45	3.84	3.79
Oil transportation	GJ/ ton of oil	0.56	0.62	0.59	0.7	0.7
Freight turnover (electric locomotives)	kWh/ 10 thousand tons km	132.5	128.9	126.2	128.7	128.4
Freight turnover (diesel locomotives)	kWh/ 10 thousand tons km	28.7	28.2	27.5	28.4	26.9
Production of chemical products	GJ/t of manufactured chemical products	10.9	14.3	12	22.6	14
Uranium exploration and production	thous. GJ/t of extracted U	0.220	0.305	0.259	0.251	0.254
Electricity and heat production	GJ/thousand kWh	9.8	9.6	9.8	9.7	9.5
Metallurgical projects (Only for Tau-Ken Altyn, Tau-Ken Temir idle)	GJ/refined gold	71	67	202	141	162
<b>Total amount of energy saving</b>	thous. GJ	1 716.2	9 595.1	13 029.1	15 825.2	16 551.3
<b>EMISSIONS</b>	<b>Unit of measure</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
Emissions of pollutants, including	ton	599 990	594 341.2	566 825.4	615 263.7	608 760.6
by type of pollutants						
Nitrogen oxides (in terms of NOx)	ton	93 339.3	89 799.4	91 314.3	100 913.7	104 212.6
Sulfur Dioxide (SOx)	ton	217 466	225 427	220 942.3	236 412.3	235 612.2
Particulate matter (PM)	ton	45 414.2	44 582	45 856.3	51 333	51 217.8
Carbon oxide (CO)	ton	32 929.1	27 361.2	25 138.9	27 864.6	29 719.6
Other	ton	209 574.4	203 093.7	180 128.3	195 441.7	187 998.4
by place of emissions						
Republic of Kazakhstan	ton	599 990	594 340.8	566 544.2	614 965.1	608 676.5
Outside the Republic of Kazakhstan		93.5	93.5	84.1	84.1	84.1
<b>WATER USE AND SANITATION</b>	<b>Unit of measure</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>Water withdrawal</b> <a href="#">GRI 303-3</a>	<b>thousand m<sup>3</sup></b>	<b>300 346</b>	<b>293 850</b>	<b>287 829</b>	<b>305 844</b>	<b>304 143</b>
Fresh water (Total salinity <1000 mg/l)	thousand m <sup>3</sup>	158 143	157 123	185 614	200 712	205 073
Other water (Total salinity ≥1000 mg/l)	thousand m <sup>3</sup>	142 203	136 727	102 215	105 133	99 070
by source type						
Surface water bodies	thousand m <sup>3</sup>	186 591	185 233	183 916	201 267	199 760
Underground water bodies	thousand m <sup>3</sup>	42 377	43 055	43 225	39 914	34 622
Municipal water supply systems	thousand m <sup>3</sup>	44 359	40 982	40 143	44 527	49 498
Other sources (please specify)	thousand m <sup>3</sup>	27 018	24 580	20 545	20 137	20 264
Water intensity (specify units of production)	m <sup>3</sup> per pcs of product	567	474	538	467	435
<b>Water consumption</b> <a href="#">GRI 303-5</a>	<b>thousand m<sup>3</sup></b>	<b>300 346</b>	<b>293 850</b>	<b>287 829</b>	<b>305 844</b>	<b>304 143</b>
Production needs, including	thousand m <sup>3</sup>	225 553	222 706	219 803	237 391	234 895

Household and drinking	thousand m <sup>3</sup>	6 466	5 751	6 059	5 712	5 831
Transferred to other customers without use	thousand m <sup>3</sup>	56 109	54 699	51 514	52 621	54 227
<b>Water discharge</b> <small>GRI 303-4</small>	<b>thousand m<sup>3</sup></b>	<b>84 606</b>	<b>81 163</b>	<b>82 537</b>	<b>88 912</b>	<b>87 926</b>
By type of receivers						
Discharge to evaporation ponds	thousand m <sup>3</sup>	77 520	74 059	76 444	83 163	83 569
Transferred to third-party organizations	thousand m <sup>3</sup>	1 836	1 429	853	926	941
Reuse						
Volume of reused water	thousand m <sup>3</sup>	10 011	7 112	8 008	9 302	10 122
Volume of recycled water	thousand m <sup>3</sup>	3 757 254	3 630 426	3 581 714	3 935 229	3 978 678
Total volume of produced water	thousand m <sup>3</sup>	124 372	129 200	125 374	136 520	136 519
<b>OTHER INDICATORS</b>						
Number of hours of environmental training per person	number/person	-	-	32	24	24
<b>ENVIRONMENTAL PROTECTION COSTS</b>						
	<b>Unit of measure</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>Environmental protection costs</b>						
Total	HZT million	35 273.7	32 425.6	41 576.9	55 308.5	56 284.3
by type of event						
Technologies implementation, including	HZT million	1 283.3	1 247.5	1 234.8	4 579.8	1 150.7
BAT	HZT million	0	0	0	0	8.6
AMS	HZT million	0	0	0	0	1 092.5
Energy efficiency	HZT million	1 048.9	950.9	1 085.2	184.4	920.7
R&D	HZT million	861.8	734.1	1 152.5	727.6	890.7
Emissions Payments, including	HZT million	11 507.3	9 991.2	10 956.5	13 716.6	13 747
Regulatory emissions payments (tax)	HZT million	10 401.8	9 944.6	10 886.9	13 696.9	13 738.6
Over limit emissions payments	HZT million	1 105.6	46.6	69.6	19.7	8.4
Other	HZT million	20 572.4	19 502	27 147.9	36 100.1	39 575
<b>Environmental fines</b>		<b>8 635.3</b>	<b>243.5</b>	<b>334.4</b>	<b>627.2</b>	<b>1 937.2</b>
Claimed	HZT million	85 614.3	244.5	269.2	752.2	1 831.7
Paid	HZT million	8 635.3	243.5	335.2	627.2	1 937.2
Cases of non-financial sanctions	amount	3	1	0	0	2