

APPENDIX 2. ENVIRONMENTAL INDICATORS

	Production			Transportation				Processing		
	2019	2020	2021	2019	2020	2021		2019	2020	2021
						KMG	KTG (10 mon)			
Greenhouse gas (GHG) emissions										
Direct GHG emissions (CO ₂ , mln tonnes)	2.3	2.0	2.2	2.7	2.1	0.2	2.6	4.7	4.6	4.5
GHG emission intensity (tonnes of CO ₂ per 1000 tonnes of HCs)	93	87	102	-	-	-	-	-	-	-
APG flaring										
Flaring (mln tonnes of CO ₂)	0.2	0.13	0.11	-	-	-	-	-	-	-
Flared gas amount per unit of produced HCs (tonnes per 1000 tonnes of produced HCs)	2.95	2.2	2.1	-	-	-	-	-	-	-
Flaring (mln m ³)	0.08	0.06	0.05	-	-	-	-	-	-	-
Energy Intensity										
Energy consumption (mln GJ)	55.5	48.2	53.9	66	44.6	5.4*	45.4	61.3	63.8	55.5
Pollutant emissions										
Sulfur oxides (SO _x) (thous. tonnes of SO ₂)	4.8	5.6	7.4	0.2	0.3	0.1	0.1	7.2	6.9	4.7
Nitrogen oxides (NO _x) (thous. Tonnes of NO ₂)	5.3	5.4	5.6	6.2	5.6	0.6*	6.4	6.9	6.7	6.5
Spills										
Unauthorised tie-ins – volume (thous. tonnes)	-	-	-	-	-	-	-	-	-	-
Unauthorised tie-ins – quantity	-	-	-	2	-	-	-	-	-	-
Oil spills – volume (onshore) (thous. tonnes)	0.65	0.29	0.33	-	-	-	-	-	-	-
Water										
Total water intake volume of KMG (mln m ³)	52.4	47.7	45.1	24.9	22.7	23.1	0.86	16.2	15.4	16.1
Water discharge volume (mln m ³)	0.9	0.7	0.4	1.0	0.8	0.21	0.33	9.2	9.2	12.9
Waste										
Hazardous (thous. tonnes)	846.4	824.9	788.4	46.6	40.3	69.1	2.0	62.2	128.5	106.7
Non-hazardous (thous. tonnes)	12.6	28.8	34.7	4.9	6.8	11.1	1.0	7.3	1.9	22.0
Total waste (thous. tonnes)	859	853.7	823.1	51.5	47.1	80.2	3.0	69.5	130.4	128.7
• *including drill cuttings, onshore (thous. tonnes)	193.2	178.7	158.6	-	-	-	1.5	-	-	-
• *including drill cuttings, offshore (thous. tonnes)	0	0	0	-	-	-	-	-	-	-

* the decrease in the level of indicators is associated with the retirement of KTG from the asset structure

ENVIRONMENTAL COSTS (GRI 103-3)

Costs	2019		2020		2021			
	mln tenge	mln USD	mln tenge	mln USD	KMG mln tenge	mln USD	KTG (10 m.) mln tenge	mln USD
1 Costs associated with waste, emissions and pollutant discharges. total	14,847.3	38.79	18,312.1	43.0	23,468.9	55	328.7	0.77
1.1 Waste processing and disposal	9,733.2	25.43	13,190.3	30.9	12,750.86	299	80.3	0.18
1.2 Purification of emissions and pollutant discharges	3,177.6	8.3	4,787.9	11.2	10,104.56	23.7	197.7	0.46
1.3 Costs of development and verification of document packages on greenhouse gas emissions	101.9	0.27	149.3	0.4	229.29	0.5	22.5	0.05
1.4 Environmental liability insurance	118.2	0.31	125.1	0.3	370.35	0.9	28.2	0.06
1.5 Costs of elimination of environmental damage, including spill response costs	1,460.7	3.8	0.3	0.001	4.4	0.01	0	0
1.6 Costs of environmental compensatory measures	255.7	0.7	59.2	0.1	9.42	0.02	0	0
2 Investments in prevention of environmental impact and environmental management. total	1,198.1	3.1	21,535.3	50.5	5,607.5	13	23.8	0.05
2.1 Personnel for education and training of employees	18.8	0.5	9.3	0.02	68.2	0.16	0	0
2.2 External certification and development of environmental management system	43.4	0.1	24.1	0.06	39.21	0.09	2.7	0.006
2.3 Personnel for general environmental management activities	196.7	0.5	2.0	0.005	3.4	0.008	4.1	0.009
2.4 Research and development	366.0	1.0	820.5	1.93	520.98	1.2	0	0
2.5 Additional expenses on introduction of cleaner technologies	123.5	0.3	20,665.4	48.49	4,489.8	10.5	0	0
2.6 Additional expenses on “green procurements”	360.3	0.9	7.2	0.02	38.1	0.08	6.2	0.01
2.7 Other environmental management costs	89.4	0.2	6.8	0.02	447.7	1	10.8	0.02

ENVIRONMENTAL PAYMENTS (REGULATORY)

	2019		2020		2021			
	mln tenge	mln USD	mln tenge	mln USD	KMG mln tenge	mln USD	KTG (10 mln) mln tenge	mln USD
Atmospheric emissions from APG flaring	1,054	2.7	1,170	2.7	2,329	5.5	2.8	0.006
Atmospheric emissions (other than APG flaring)	1,584	4.1	1,843	4.3	1,546	3.6	623	1.5
Water contamination	63	0.2	102	0.2	100	0.2	0.9	0.002
Waste disposal	131	0.3	109	0.3	228	0.5	0.3	0.001

LOCATION AND SCALE OF PRODUCTION OPERATIONS IN RELATION TO KEY BIODIVERSITY AREAS

304-3

Site	Location	Key biodiversity areas (KBA)	Location in relation to KBA	Contract territory area (sq.km)	Impact mitigation plan
Urikhtau	Mugalzhar District of Aktobe Region	Kokzhide-Kumzhargan State Integrated Nature Reserve of local status	Includes part of the territory	239.9	Hydrogeological monitoring
Alibekmola and Kozhasay	Mugalzhar District of Aktobe Region	Kokzhide Sands Kokzhide underground water	Located nearby	156.5	Hydrogeological monitoring
Zhambyl	KSCS, Atyrau District	Special environmentally sensitive zone of KSCS, Novinsky nature reserve	Located in the nature conservation area and includes part of the territory	1,935.2	Regular environmental monitoring, restrictions during offshore oil operations
Isatay	Central part of KSCS, North Mangystau Region	Special environmentally sensitive zone of KSCS	Located in the nature conservation area	1,060.0	Seasonal baseline environmental studies, regular environmental monitoring
Satpayev	North-western part of KSCS, Atyrau District	Special environmentally sensitive zone of KSCS	Located in the nature conservation area	1,481.0	Procedures to return the territory and surrender the Contract have started

2021