

## ENVIRONMENTAL MANAGEMENT PERFORMANCE DATA

GRI Standards	Required Data	Unit	Data Collection Period											
			2018 <sup>(1)</sup>			2019 <sup>(2)</sup>			2020 <sup>(3)</sup>			2021 <sup>(4)</sup>		
			Thailand	International	Global	Thailand	International	Global	Thailand	International	Global	Thailand	International	Global
Hydrocarbon Production														
-	Production from operating asset	BOE	91,292,879	22,492,872	113,785,751	102,239,625	19,949,083	122,188,708	98,961,213	51,658,752	150,619,965	106,867,786	58,927,981	165,795,767
		Tonnes	14,040,323	2,574,323	16,614,646	14,874,273	2,223,853	17,098,126	14,311,053	6,607,544	20,918,597	15,513,470	7,627,056	23,140,526
GRI: 302 Energy Consumption <sup>(5)</sup>														
302-1	Total direct energy consumption	GJ	19,585,864	4,757,786	24,343,649	22,007,463	3,904,410	25,911,873	20,744,507	11,821,177	32,565,684	21,928,126	10,920,845	32,848,971
	Total indirect energy consumption by primary energy source (electricity purchased)	GJ	149,390	1,955	151,346	153,314	1,860	155,174	156,787	209,562	366,349	164,407	171,994	336,400
	Total non-renewable energy consumption	GJ	19,537,325	4,752,375	24,289,701	21,962,669	3,897,265	25,859,933	20,715,754	11,816,294	32,532,048	21,889,022	10,915,456	32,804,478
	Total renewable energy consumption	GJ	48,538	5,411	53,949	44,794	7,145	51,939	28,754	4,882	33,636	39,105	5,389	44,494
302-3	Total energy intensity	GJ/tonne production	1.41	1.85	1.47	1.49	1.68	1.51	1.46	1.82	1.57	1.42	1.45	1.43
GRI: 305 Greenhouse Gas Emissions (GHGs) <sup>(6) (7) (8)</sup>														
305-1 G4-EN15	Direct total GHGs	Tonne CO <sub>2</sub> equivalent	3,660,334	467,283	4,127,617	3,662,275	251,958	3,914,233	3,841,854	1,545,884	5,387,737	4,027,139	1,120,636	5,147,775
305-2	Indirect total GHGs	Tonne CO <sub>2</sub> equivalent	5,406	229	5,635	5,601	68	5,669	6,382	7,990	14,372	7,426	6,558	13,984
305-3	Other relevant indirect GHG emissions - Comprised of transportation and air travel	Tonne CO <sub>2</sub> equivalent	19,421	13,434	32,855	20,463	0	20,463	11,414	888	12,302	9,006	496	9,502
305-4 G4-EN18	GHG intensity	Tonne CO <sub>2</sub> equivalent/ thousand tonnes production	262.47	186.82	250.75	247.97	113.33	230.46	269.64	235.30	258.79	260.6	147.9	223.5
OGSD Flare														
OG6	Total flaring	MMscf	36,458	2,106	38,564	35,725	96	35,821	39,915	11,753	51,668	42,445	6,469	48,914
OG6	Hydrocarbon flaring	Tonne	886,178	49,613	935,791	894,610	1,910	896,520	990,131	540,503	1,530,634	1,015,829	623,140	1,638,968
OG6	Hydrocarbon flaring intensity	Tonnes/ thousand BOE	9.71	2.21	8.22	8.75	0.10	7.34	10.01	10.46	10.16	9.51	10.57	9.89
GRI: 305 Emissions														
305-7	Volatile organic compounds (VOCs)	Tonne VOC	13,385	776	14,161	13,508	42	13,550	14,945	8,201	23,146	15,360	9,461	24,821
G4-EN21	VOC intensity	Tonnes VOC/ thousand tonne production	0.95	0.3	0.85	0.91	0.02	0.79	1.04	1.24	1.11	0.99	1.24	1.07
305-7	Nitrogen oxides (NOx)	Tonnes NO <sub>2</sub>	7,122	1,655	8,777	6,926	832	7,758	7,131	5,284	12,414	8,364	6,073	14,437

GRI Standards	Required Data	Unit	Data Collection Period											
			2018 <sup>(1)</sup>			2019 <sup>(2)</sup>			2020 <sup>(3)</sup>			2021 <sup>(4)</sup>		
			Thailand	International	Global	Thailand	International	Global	Thailand	International	Global	Thailand	International	Global
G4-EN21	NOx intensity	Tonnes NO <sub>2</sub> / thousand tonnes production	0.51	0.64	0.53	0.47	0.37	0.45	0.50	0.80	0.59	0.54	0.80	0.62
305-7	Sulfur oxides (SOx)	Tonnes SO <sub>2</sub>	298	118	417	286	43	329	313	358	671	434	448	882
G4-EN21	SOx intensity	Tonnes SO <sub>2</sub> / thousand tonnes production	0.02	0.05	0.03	0.02	0.02	0.02	0.02	0.05	0.03	0.03	0.06	0.04
305-6	Ozone-depleting substances (hydrochlorofluorocarbon: HCFC) <sup>(9)</sup>	Kg of CFC11 equivalent	7	17	24	33	19	53	41	18	58	17	12	29
305-7	Direct methane emission	Metric tonnes			12,925			12,440			15,590			12,774
<b>GRI: 306 Spills</b>														
306-3	Spills	Cases	8	1	9	10	0	10	7	4	11	7	1	8
		Tonnes	9.7	0.29	9.99	10.85	0	10.85	1.72	0.02	1.74	0.46	0.000009	0.46
	Hydrocarbons	Cases	8	1	9	9	0	9	6	4	10	5	1	6
		Tonnes	9.77	0.29	10.05	10.85	0	10.85	1.7	0.02	1.72	0.46	0.000009	0.46
	Volume of significant hydrocarbon spills <sup>(9)</sup>	Barrels	80.69	2.14	82.83	80.39	0	80.39	0	0	0	2.90	0	2.90
	Non-hydrocarbons	Cases	0	0	0	1	0	1	1	0	1	2	0	2
		Tonnes	0	0	0	0	0	0	0.02	0	0.02	0.002	0	0.002
	Oil and chemical spill rate	Tonnes per million tonnes of petroleum production			0.60			0.63			0.08			0.02
<b>GRI: 303 (2018)<sup>(10)</sup> Water Withdrawal<sup>(11)</sup></b>														
303-3	Total water withdrawal from all areas	Million cubic meters	57.57	6.04	63.6	54.77	0.22	55	55.75	31.2	86.95	47.53	29.05	76.59
	Surface water (total) from all areas	Million cubic meters	0	0.03	0.03	0	0.03	0.03	0	0.03	0.04	0	0.03	0.03
	Freshwater	Million cubic meters	0	0.03	0.03	0	0.03	0.03	0	0.03	0.04	0	0.03	0.03
	Other water	Million cubic meters	0	0	0	0	0	0	0	0	0	0	0	0
	Groundwater (total) from all areas	Million cubic meters	0.43	0	0.43	0.50	0	0.50	0.54	0.001	0.54	0.54	0.001	0.54
	Freshwater	Million cubic meters	0.43	0	0.43	0.50	0	0.50	0.54	0.001	0.54	0.54	0.001	0.54

GRI Standards	Required Data	Unit	Data Collection Period											
			2018 <sup>(1)</sup>			2019 <sup>(2)</sup>			2020 <sup>(3)</sup>			2021 <sup>(4)</sup>		
			Thailand	International	Global	Thailand	International	Global	Thailand	International	Global	Thailand	International	Global
	Other water	Million cubic meters	0	0	0	0	0	0	0	0	0	0	0	0
	Seawater (total) from all areas	Million cubic meters	49.15	5.5	54.65	46.09	0.16	46.25	47.3	25.51	72.81	39.11	24.45	63.57
	Freshwater	Million cubic meters	0	0	0	0	0	0	0	0	0	0	0	0
	Other water	Million cubic meters	49.15	5.5	54.65	46.09	0.16	46.25	47.3	25.51	72.81	39.11	24.45	63.57
	Produced water (total) from all areas	Million cubic meters	7.89	0.5	8.39	8.09	0.03	8.13	7.82	5.65	13.47	7.79	4.57	12.37
	Freshwater	Million cubic meters	0	0	0	0	0	0	0	0	0	0	0	0
	Other water	Million cubic meters	7.89	0.5	8.39	8.09	0.03	8.13	7.82	5.65	13.47	7.79	4.57	12.37
	Third-party water (total) from all areas	Million cubic meters	0.1	0.01	0.1	0.09	0	0.09	0.09	0	0.09	0.08	0.001	0.08
	Freshwater	Million cubic meters	0.1	0.01	0.1	0.09	0	0.09	0.09	0.001	0.09	0.08	0.001	0.08
	Other water	Million cubic meters	0	0	0	0	0	0	0	0	0	0	0	0
Water withdrawal excluding once through cooling water	Million cubic meters	2.55	0.05	2.6	2.88	0.12	2.99	2.51	25.56	28.06	2.05	26.35	28.40	
303-3	Total water withdrawal from areas with water stress <sup>(12) (13)</sup>	Million cubic meters	6.32	0	6.32	6.35	0	6.35	5.82	0	5.82	5.28	0	5.28
	Surface water (total) from areas with water stress	Million cubic meters	0	0	0	0	0	0	0	0	0	0	0	0
	Freshwater	Million cubic meters	0	0	0	0	0	0	0	0	0	0	0	0
	Other water	Million cubic meters	0	0	0	0	0	0	0	0	0	0	0	0
	Groundwater (total) from areas with water stress	Million cubic meters	0.43	0	0.43	0.5	0	0.5	0.54	0	0.54	0.54	0	0.54
	Freshwater	Million cubic meters	0.43	0	0.43	0.5	0	0.5	0.54	0	0.54	0.54	0	0.54





GRI Standards	Required Data	Unit	Data Collection Period											
			2018 <sup>(1)</sup>			2019 <sup>(2)</sup>			2020 <sup>(3)</sup>			2021 <sup>(4)</sup>		
			Thailand	International	Global	Thailand	International	Global	Thailand	International	Global	Thailand	International	Global
GRI: 303 (2018), Water Consumption OGSD														
303-5	Total net freshwater consumption (A+B+C-D)	Million cubic meters			0.56			0.62			0.67			0.65
	A. Withdrawal: total municipal water supplies (or from other water utilities)	Million cubic meters			0.10			0.09			0.09			0.08
	B. Withdrawal: Fresh surface water (lakes, rivers, etc.) excluding seawater	Million cubic meters			0.03			0.03			0.03			0.03
	C. Withdrawal: fresh groundwater	Million cubic meters			0.43			0.50			0.54			0.54
	D. Discharge: Water returned to the source of extraction at similar or higher quality as raw water extracted (only applies to B and C)	Million cubic meters			0			0			0			0
GRI: 306 (2020), Waste <sup>(16)</sup> <sup>(17)</sup> OGSD														
306-3	Total Waste Generated	Tonnes			177,568			164,216			176,355			170,520
	Hazardous waste generated	Tonnes	57,815	267	58,082	87,751	186	87,937	111,841	1,020	112,861	62,775	1,738	64,513
	Non-hazardous waste generated	Tonnes	80,707	38,778	119,485	65,407	10,871	76,279	62,543	951	63,494	95,414	10,594	106,007
	Total Waste Disposed and Recycled	Tonnes			179,692			163,912			175,979			169,148
	Hazardous waste disposed and recycled	Tonnes	60,037	322	60,359	87,477	184	87,660	111,437	1,124	112,561	61,908	1,310	63,219
	Non-hazardous waste disposed and recycled	Tonnes	80,616	38,717	119,333	65,381	10,870	76,251	62,523	895	63,418	95,349	10,581	105,930
306-4	Waste diverted from disposal	Tonnes	56,959	160	57,119	60,819	132	60,951	57,982	94	58,076	43,768	197	43,965
	Hazardous waste diverted from disposal	Tonnes	56,048	124	56,172	59,283	97	59,381	57,137	59	57,196	42,383	179	42,562
	Preparation for reuse	Tonnes	1,168	122	1,289	953	97	1,051	450	55	505	708	174	883
	Recycling	Tonnes	54,880	3	54,883	58,330	0	58,330	56,687	4	56,691	41,674	5	41,679
	Other recovery operations	Tonnes	0	0	0	0	0	0	0	0	0	0	0	0
	Non-hazardous waste diverted from disposal	Tonnes	912	35	947	1,535	35	1,570	844	35	880	1,385	18	1,404
	Preparation for reuse	Tonnes	230	2	231	272	2	274	209	0	209	196	0	196
	Recycling	Tonnes	172	0	172	1,263	1	1,264	635	1	636	1,190	12	1,202
Other recovery operations	Tonnes	510	34	543	0	32	32	0	34	34	0	6	6	

GRI Standards	Required Data	Unit	Data Collection Period												
			2018 <sup>(1)</sup>			2019 <sup>(2)</sup>			2020 <sup>(3)</sup>			2021 <sup>(4)</sup>			
			Thailand	International	Global	Thailand	International	Global	Thailand	International	Global	Thailand	International	Global	
306-5	Waste directed to disposal	Tonnes	83,693	38,880	122,573	92,039	10,922	102,961	115,977	1,926	117,903	113,489	11,694	125,183	
	Hazardous waste directed to disposal	Tonnes	3,989	198	4,187	28,193	87	28,280	54,299	1,066	55,365	19,526	1,131	20,657	
	Incineration (with energy recover)	Tonnes	1,958	0	1,958	9,418	0	9,418	24,600	53	24,653	5,964	101	6,065	
	Incineration (without energy recover)	Tonnes	2,003	70	2,073	49	78	127	33	795	828	12	476	489	
	Landfilling	Tonnes	28	58	86	0	8	9	0	21	21	64	468.00	532	
	Other disposal operations	Tonnes	0	69	69	18,726	0	18,726	29,667	196	29,863	13,486	86	13,572	
	Non-hazardous waste directed to disposal	Tonnes	79,704	38,682	118,386	63,846	10,835	74,681	61,678	860	62,538	93,963	10,563	104,526	
	Incineration (with energy recover)	Tonnes	97	0	97	151	0	151	131	0	131	496	0	496	
	Incineration (without energy recover)	Tonnes	15,988	20	16,008	523	16	539	462	20	483	247	1	248	
	Landfilling	Tonnes	136	300	435	111	338	450	99	92	191	37	262	299	
Other disposal operations	Tonnes	63,483	38,362	101,845	63,060	10,481	73,541	60,986	747	61,733	93,183	10,300	103,483		
OG7	Drilling mud and cutting waste disposed (Hazardous waste)	Tonnes	54,811	0	54,811	58,219	0	58,219	63,389	96	63,485	41,011	0	41,011	
	Drilling mud and cutting waste disposed (Non-hazardous waste)	Tonnes	78,859	41,859	120,718	59,266	10,029	69,295	61,236	747	61,983	94,893	10,300	105,194	
GRI: 304, Biodiversity and Ecosystem Services															
OG4															
	Total number and area of sites used for operational activities	Number of sites	8	2	10	8	1	9	8	2	10	8	2	10	
		Area (Hectares)	1,295,068	1,364,886	2,659,954	1,295,068	1,230,786	2,525,854	1,295,068	1,567,574	2,862,642	1,295,068	1,567,574	2,862,642	
	Total number and area of sites conducted biodiversity impact assessments for sites used for operational activities	Number of sites	8	2	10	8	1	9	8	2	10	8	2	10	
		Area (Hectares)	1,295,068	1,364,886	2,659,954	1,295,068	1,230,786	2,525,854	1,295,068	1,567,574	2,862,642	1,295,068	1,567,574	2,862,642	
	Total number and area of sites are in close proximity to critical biodiversity	%	100	100	100	100	100	100	100	100	100	100	100	100	
		Number of sites	1	1	2	1	1	2	1	1	2	1	1	2	
		Area (Hectares)	23,200	77	23,277	23,200	77	23,277	23,200	77	23,277	23,200	77	23,277	
	Total number and area of sites sites have a biodiversity management plan	%	1.79	0.01	0.88	1.79	0.01	0.92	1.79	0	0.81	1.79	0	0.81	
		Number of sites	1	1	2	1	1	2	1	1	2	1	1	2	
		Area (Hectares)	23,200	77	23,277	23,200	77	23,277	23,200	77	23,277	23,200	77	23,277	
	GRI: 307 Environmental Management and Legal Compliance <sup>(18)</sup>														
	-	Investing in managing environmental impacts	Million USD	21.3	1.89	23.19	7.36	0.88	8.24	14.78	1.39	16.17	15.07	2.58	17.65
-	Treatment and disposal expenses	Million USD	4.76	0.1	4.86	2.05	0.08	2.13	2.37	0.67	3.04	4.42	0.67	5.09	

GRI Standards	Required Data	Unit	Data Collection Period											
			2018 <sup>(1)</sup>			2019 <sup>(2)</sup>			2020 <sup>(3)</sup>			2021 <sup>(4)</sup>		
			Thailand	International	Global	Thailand	International	Global	Thailand	International	Global	Thailand	International	Global
-	Protection, management and investments	Million USD	16.55	1.8	18.35	5.32	0.8	6.12	12.41	0.72	13.13	10.65	1.91	12.57
-	Percentage of prevention cost in total environment expense	%	78.00	94.97	79.13	72.00	90.00	74.27	83.96	51.65	81.18	70.68	74.14	71.19
307-1	Amount of significant environmental fines / penalties (more than \$10,000 USD)	USD	0	0	0	0	0	0	0	0	0	0	0	0
	Significant Environmental violations	Number of violations of legal obligations/ regulations	0	0	0	0	0	0	0	0	0	0	0	0
	Significant Environmental liability accrued at year end	USD	0	0	0	0	0	0	0	0	0	0	0	0

**Remarks:**

- <sup>(1)</sup> In 2018, international column includes Australia and Myanmar assets.
- <sup>(2)</sup> In 2019, international column includes only Myanmar asset as PTTEP completed sales agreement of Australia asset.
- <sup>(3)</sup> In 2020, international column includes Myanmar and Malaysia assets.
- <sup>(4)</sup> In 2021, G2 asset in Thailand column includes activities during transition period only.
- <sup>(5)</sup> Since 2021, total direct energy consumption separated into 2 categories, non-renewable energy consumption and renewable energy consumption
- <sup>(6)</sup> Total direct GHG emissions (Scope 1) in this report are based on operational control.
- <sup>(7)</sup> GHG emissions from well service venting is not included.
- <sup>(8)</sup> Ozone-depleting substances (ODS) includes Hydrochlorofluorocarbon (HCFC) only.
- <sup>(9)</sup> Volume of significant hydrocarbon spill is over than 1 barrel.
- <sup>(10)</sup> Since 2020, water and effluent data was reported in accordance to GRI: 303 (2018).
- <sup>(11)</sup> Total water withdrawal from all areas has increased due to include produced water in accordance to GRI: 303 (2018).
- <sup>(12)</sup> Between 2017-2019, water stress area classified by IPIECA Global Water Tool. Since 2020, water stress area classified by WRI Aqueduct Tool.
- <sup>(13)</sup> Since 2018, water risk assessment for water stress area has been conducted to covers the operation in Myanmar asset. In 2020, water risk assessment for water stress area has been conducted to covers the operation in Malaysia asset.
- <sup>(14)</sup> Since 2017, injected process wastewater was reported to include in water discharge.
- <sup>(15)</sup> The company does not consider produced water reinjection as discharge to groundwater because produced water is discharged to depleting hydrocarbon reservoir.
- <sup>(16)</sup> The difference between waste generation and disposal amount is accounted for on-site storage.
- <sup>(17)</sup> Since 2021, waste disposal data was reported in accordance to GRI: 306 (2020).
- <sup>(18)</sup> Environmental expenditure is based on a new systematic environmental management accounting methodology as PTT Group Guideline, which has been implemented in Q3, 2019 onward.

The summation of performance data in a global column in some parameters is unequal due to rounding to the decimal point of the raw data.

N/A: Not Available