

GRI Standards	Required Data	Unit	Data Collection Period											
			2020 ⁽¹⁾			2021 ⁽²⁾			2022			2023		
			Thailand	International	Global	Thailand	International	Global	Thailand	International	Global	Thailand	International	Global
	Flare	Tonne CO ₂ equivalent	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,560,291	489,174	3,049,465
	Stationary combustion	Tonne CO ₂ equivalent	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,027,215	777,227	2,804,442
	Mobile combustion	Tonne CO ₂ equivalent	ND	ND	ND	ND	ND	ND	ND	ND	ND	340,584	272,638	613,222
	Process and vent	Tonne CO ₂ equivalent	ND	ND	ND	ND	ND	ND	ND	ND	ND	18,244	18,635	36,879
	Fugitive	Tonne CO ₂ equivalent	ND	ND	ND	ND	ND	ND	ND	ND	ND	78,721	161,498	240,219
305-2 (11-1)	Indirect GHG emissions (Scope 2)													
	Location based	Tonne CO ₂ equivalent	6,382	7,990	14,372	7,426	6,558	13,984	8,259	6,659	14,918	8,542	8,781	17,323
	Market based		6,382	7,990	14,372	7,426	6,558	13,984	8,259	6,659	14,918	8,542	8,781	17,323
305-3 (11-1)	Other relevant indirect GHG emissions - Comprised of business travel and downstream transportation and distribution	Tonne CO ₂ equivalent	11,414	888	12,302	9,006	496	9,502	16,356	1,472	17,828	23,681	2,770	26,451
305-4 (11-1)	GHG intensity	Tonne CO ₂ equivalent/ thousand tonne production	269.64	235.30	258.79	260.65	147.85	223.47	285.52	148.41	234.34	253.6	136.3	208.0
GRI 11 Flare and Vent														
11-1	Total flaring	MMSCF	39,915	11,753	51,668	42,445	6,469	48,914	41,133	7,163	48,296	44,377	7,236	51,613
	Hydrocarbon flaring	Tonne	990,131	540,503	1,530,634	1,015,829	623,140	1,638,969	988,954	629,754	1,618,708	1,079,671	708,846	1,788,517
	Hydrocarbon flaring intensity	Tonne/ thousand tonne production	69.19	81.80	73.17	65.48	81.70	70.83	64.38	68.84	66.05	54.15	55.82	54.80
	Total venting	MMSCF	NA	NA	NA	NA	NA	NA	0	86	86	0	786	786
	Hydrocarbon venting	Tonne	NA	NA	NA	NA	NA	NA	0	2,038	2,038	0	18,635	18,635
	Hydrocarbon venting intensity	Tonne/ thousand tonne production	NA	NA	NA	NA	NA	NA	0	0.22	0.08	0	1.47	0.57
GRI: 305, 11 Emissions														
305-6	Ozone-depleting substances (hydrochlorofluorocarbon: HCFC) ⁽⁷⁾	Kg of CFC11 equivalent	41	18	59	17	12	29	30	15	45	6	18	24
305-7 (11-3)	Volatile organic compounds (VOCs)	Tonne VOC	14,945	8,201	23,146	15,360	9,461	24,821	15,024	9,570	24,594	16,560	10,851	27,411
	VOCs intensity	Tonne VOC/ thousand tonne production	1.04	1.24	1.11	0.99	1.24	1.07	0.98	1.05	1.00	0.83	0.85	0.84
	Nitrogen oxides (NOx)	Tonne NO ₂	7,131	5,284	12,415	8,364	6,073	14,437	10,842	6,513	17,355	18,692	10,628	29,320
	NOx intensity	Tonne NO ₂ / thousand tonne production	0.50	0.80	0.59	0.54	0.80	0.62	0.71	0.71	0.71	0.94	0.84	0.90
	Sulfur oxides (SOx)	Tonne SO ₂	313	358	671	434	448	882	714	488	1,202	1,399	864	2,263
	SOx intensity	Tonne SO ₂ / thousand tonne production	0.02	0.05	0.03	0.03	0.06	0.04	0.05	0.05	0.05	0.07	0.07	0.07
	Direct methane emission	Tonne	7,151	6,455	13,606	4,789	3,275	8,064	6,963	7,843	14,806	6,944	8,430	15,374
GRI: 306, 11 Spills														
306-3	Spills	Case	7	4	11	7	1	8	6	3	9	7	3	10

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	Water discharged to seawater	Million cubic meter	0	5.43	5.43	0	4.57	4.57	0	4.96	4.96	0	2.98	2.98
	Third-party water discharged	Million cubic meter	0	0	0	0	0	0	0	0	0	0	0	0
	Injection from produced water and process wastewater	Million cubic meter	7.69	0	7.69	7.91	0	7.91	8.64	0	8.64	13.19	0	13.19
11-6	Produced water discharged	Million cubic meter	NA	NA	NA	NA	NA	NA	0	4.96	4.96	0	2.98	2.98
	Process wastewater discharged	Million cubic meter	NA	NA	NA	NA	NA	NA	0	0	0	0	0	0
	Produced water	Million cubic meter	7.82	5.65	13.47	7.79	4.57	12.36	8.46	4.96	13.42	12.57	2.98	15.55
	Injection	Million cubic meter	7.52	0	7.52	7.79	0	7.79	8.46	0	8.46	12.57	0	12.57
	Disposed by evaporation	Million cubic meter	0.301	0.000	0.301	0.000	0.000	0.000	0.004	0.000	0.004	0.004	0.000	0.004
	Treated & discharged	Million cubic meter	0	5.65	5.65	0	4.57	4.57	0	4.96	4.96	0	2.98	2.98
	Disposed by waste processor	Million cubic meter	0	0	0	0	0	0	0	0	0	0	0	0
	Process wastewater	Million cubic meter	0.17	0	0.17	0.12	0	0.12	0.18	0	0.18	0.62	0	0.62
	Injection	Million cubic meter	0.17	0	0.17	0.12	0	0.12	0.18	0	0.18	0.62	0	0.62
	Disposed by waste processor	Million cubic meter	0	0	0	0	0	0	0	0	0	0	0	0
	Treated & discharged	Million cubic meter	0	0	0	0	0	0	0	0	0	0	0	0
GRI: 303 (2018), 11 Water Consumption														
303-5 (11-6)	Total net freshwater consumption (A+B+C-D)	Million cubic meter			0.66			0.65			0.71			0.76
	A. Withdrawal: total municipal water supplies (or from other water utilities)	Million cubic meter			0.09			0.08			0.14			0.30
	B. Withdrawal: Fresh surface water (lakes, rivers, etc.) excluding seawater	Million cubic meter			0.03			0.03			0.03			0.05
	C. Withdrawal: fresh groundwater	Million cubic meter			0.54			0.54			0.54			0.41
	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 meter			0			0			0			0
	Total water consumption from all areas with water stress (A+B+C-D)	Million cubic meter			0.56			0.57			0.57			0.49
	A. Withdrawal: total municipal water supplies with water stress (or from other water utilities)	Million cubic meter			0.02			0.03			0.03			0.10

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	B. Withdrawal: Fresh surface water with water stress (lakes, rivers, etc.) excluding seawater	Million cubic meter			0			0			0			0
	C. Withdrawal: fresh groundwater with water stress	Million cubic meter			0.54			0.54			0.54			0.39
	D. Discharge with water stress: Water returned to the source of extraction at similar or higher quality as raw water extracted (only applies to B and C)	Million cubic meter			0			0			0			0
GRI: 306 Waste ^{(13) (14) (15) (16)}														
(2020), 11														
306-3 (11-5)	Total Waste Generated	Tonne	174,384	1,971	176,355	158,188	12,332	170,520	232,492	1,013	233,505	422,144	15,648	437,792
	Hazardous waste generated	Tonne	111,841	1,020	112,861	62,775	1,738	64,513	50,592	917	51,509	49,674	1,048	50,722
	Non-hazardous waste generated	Tonne	62,543	951	63,494	95,413	10,594	106,007	181,900	96	181,996	372,470	14,600	387,070
	Total Waste Disposed and Recycled	Tonne	173,959	2,019	175,979	144,866	1,500	146,366	231,704	1,676	233,380	422,939	16,882	439,821
	Hazardous waste disposed and recycled	Tonne	111,437	1,124	112,561	53,560	1,220	54,780	49,881	1,532	51,413	49,616	2,271	51,887
	Non-hazardous waste disposed and recycled	Tonne	62,523	895	63,418	91,306	280	91,586	181,823	144	181,967	373,323	14,611	387,934
306-4 (11-5)	Waste diverted from disposal ⁽¹⁶⁾	Tonne	58,368.5	96.8	58,465.3	137,938.0	25.0	137,963.0	266,213.0	17.2	266,230.2	414,227.2	14,352.8	428,580.0
	Hazardous waste diverted from disposal	Tonne	57,524.5	61.7	57,586.2	47,477.0	6.0	47,483.0	42,990.0	0.1	42,990.1	42,967.0	5.0	42,972.0
	Preparation for reuse	Tonne	450.1	54.8	504.8	0	1.0	1.0	0	0.1	0.1	0	4.0	4.0
	Recycling	Tonnes	56,687.4	3.9	56,691.3	42,391.0	5.0	42,396.0	42,990.0	0	42,990.0	42,967.0	1.0	42,968.0
	Other recovery operations	Tonne	0	0	0	5,086.0	0	5,086.0	0	0	0	0	0	0
	Exported hazardous waste under the Basel Convention	Tonne	387.0	3.0	390.0	0	0	0	0	0	0	0	0	0
	Non-hazardous waste diverted from disposal	Tonne	844.0	35.1	879.1	90,461.0	19.0	90,480.0	223,223.0	17.1	223,240.1	371,260.2	14,347.8	385,608.0
	Preparation for reuse	Tonne	209.0	0.1	209.1	2.0	0.0	2.0	0.0	0.1	0.1	0.0	0.4	0.4
	Recycling	Tonne	635.0	1.0	636.0	1,382.0	13.0	1,395.0	2,352.0	17.0	2,369.0	1,235.0	92.0	1,327.0
Other recovery operations	Tonne	0	34.0	34.0	89,077.0	6.0	89,083.0	220,871.0	0	220,871.0	370,025.2	14,255.4	384,280.6	
306-5 (11-5)	Waste directed to disposal	Tonne	115,978	1,925	117,903	6,926	1,476	8,402	98,835	1,551	100,386	8,712	2,530	11,242
	Hazardous waste directed to disposal	Tonne	54,300	1,065	55,365	6,082	1,214	7,297	97,841	1,424	99,265	6,649	2,267	8,916
	Incineration (with energy recover)	Tonne	24,600	53	24,653	6,008	101	6,109	6,398	40	6,438	4,663	30	4,693
	Incineration (without energy recover)	Tonne	33	795	828	12	476	488	644	889	1,533	1,780	2,088	3,868

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	Landfilling	Tonne	0	21	21	0	464	464	0	319	319	0	140	140
	Other disposal operations (reinjecting to depleted reservoir, thermal evaporation and thermal oxidation)	Tonne	29,667	196	29,863	62	173	235	90,799	176	90,975	206	9	215
	Non-hazardous waste directed to disposal	Tonne	61,678	859	62,537	844	263	1,107	994	127	1,121	2,063	263	2,326
	Incineration (with energy recover)	Tonne	131	0	131	496	0	496	495	0	495	717	0	717
	Incineration (without energy recover)	Tonne	462	20	482	247	6	253	426	46	472	1,261	43	1,304
	Landfilling	Tonne	99	92	191	100	257	357	73	81	154	63	218	281
	Other disposal operations (sea or land reclamation)	Tonne	60,986	747	61,733	1	0	1	0	0	0	22	2	24
11-5	Total Hazardous & Non-Hazardous Drilling mud and cutting waste	Tonne	124,625	843	125,468	135,904	10,300	146,204	221,174	0	221,174	304,463	14,210	318,673
11-5	Hazardous Drilling mud and cutting waste	Tonne	63,389	96	63,485	41,011	0	41,011	39,646	0	39,646	40,988	0	40,988
306-3 (11-5)	Generated	Tonne	63,389	96	63,485	41,011	0	41,011	39,646	0	39,646	40,988	0	40,988
	Disposed of	Tonne	63,389	96	63,485	41,011	0	41,011	0	0	0	0	0	0
306-5 (11-5)	Directed to disposal	Tonne	NA	NA	NA	NA	NA	NA	0	0	0	0	0	0
306-4 (11-5)	Diverted from disposal	Tonne	NA	NA	NA	NA	NA	NA	39,646	0	39,646	40,988	0	40,988
11-5	Non-Hazardous Drilling mud and cutting waste	Tonne	61,236	747	61,983	94,893	10,300	105,193	181,528	0	181,528	263,475	14,210	277,685
306-3 (11-5)	Generated	Tonne	61,236	747	61,983	94,893	10,300	105,193	181,528	0	181,528	263,475	14,210	277,685
	Disposed of	Tonne	61,236	747	61,983	94,893	10,300	105,193	NA	NA	NA	NA	NA	NA
306-5 (11-5)	Directed to disposal	Tonne	NA	NA	NA	NA	NA	NA	0	0	0	0	0	0
306-4 (11-5)	Diverted from disposal	Tonne	NA	NA	NA	NA	NA	NA	181,528	0	181,528	263,475	14,210	277,685
GRI: 304, 11 Biodiversity and Ecosystem Services														
304-1 (11-4)	Total number of sites and areas used for operational activities ⁽¹⁷⁾	Number of sites	8	2	10	8	2	10	8	3	11	8	4	12
		Area (Hectare)	1,295,068	1,567,574	2,862,642	1,295,068	1,567,574	2,862,642	11,117	1,315	12,432	24,637	1,800	26,437
304-2 (11-4)	Total number of sites and areas conducted for biodiversity impact assessments	Number of sites	8	2	10	8	2	10	8	3	11	8	4	12
		Area (Hectare)	1,295,068	1,567,574	2,862,642	1,295,068	1,567,574	2,862,642	11,117	1,315	12,432	24,637	1,800	26,437
		%	100	100	100	100	100	100	100	100	100	100	100	100
304-1 (11-4)	Total number of sites and areas in close proximity to critical biodiversity	Number of sites	1	1	2	1	1	2	1	1	2	1	2	3
		Area (Hectare)	23,200	77	23,277	23,200	77	23,277	5	66	71	5	138	143
		%	1.80	0.01	0.82	1.80	0.01	0.82	0.05	5.02	0.58	0.03	7.67	0.55
	Total number of sites and areas in close proximity to critical biodiversity that have a biodiversity management plan	Number of sites	1	1	2	1	1	2	1	1	2	1	2	3
		Area (Hectare)	23,200	77	23,277	23,200	77	23,277	5	66	71	5	138	143
	Total number of sites and areas in close proximity to critical	Number of sites	NA	NA	NA	NA	NA	NA	1	1	2	1	2	3

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			Thailand	International	Global	Thailand	International	Global	Thailand	International	Global	Thailand	International	Global
	biodiversity that the progress of biodiversity management plans are monitored	Area (Hectare)	NA	NA	NA	NA	NA	NA	5	66	71	5	138	143
Environmental Management and Legal Compliance ⁽¹⁸⁾														
	Total expenses	Million USD			16.17			17.65			21.07			113.86
	Capital investments	Million USD			5.90			6.67			3.39			107.51
	Operating expenses	Million USD			10.27			10.98			17.68			6.35
	Saving, cost avoidance income, etc.	Million USD			27.83			36.69			73.38			25.85
2-27	Amount of significant environmental fines / penalties (more than \$10,000 USD)	USD			0			0			0			0
	Significant Environmental violations	Number of violations of legal obligations / regulations			0			0			0			0
	Total actual and opportunity costs from water-related incidents	USD			0			0			0			0
	Significant Environmental liability accrued at year end	USD			0			0			0			0
Renewable Generation for 3 rd Party ⁽¹⁹⁾														
	Gross generation	GWh	NA	NA	NA	0.23	0	0.23	0.24	0	0.24	NA	NA	NA
	Installed capacity	MW	NA	NA	NA	0.25	0	0.25	0.25	0	0.25	NA	NA	NA

Remarks:

- ⁽¹⁾ Since 2020, international column includes Myanmar and Malaysia assets.
- ⁽²⁾ In 2021, G2 asset in Thailand column includes activities during transition period only.
- ⁽³⁾ Since 2021, total direct energy consumption separated into 2 categories, non-renewable energy consumption and renewable energy consumption.
- ⁽⁴⁾ Total indirect energy consumption by primary energy source (electricity purchased) calculation in 2020-2022 is revised, and reflects to total energy intensity.
- ⁽⁵⁾ GHG emissions from well service venting is not included.
- ⁽⁶⁾ Since 2022, GHG emission factor from indirect emission of Malaysia is revised by using 2017 CDM Electricity Baseline for Malaysia.
- ⁽⁷⁾ Ozone-depleting substances (ODS) includes Hydrochlorofluorocarbon (HCFC) only.
- ⁽⁸⁾ Volume of significant hydrocarbon spill is over than 1 barrel.
- ⁽⁹⁾ Since 2020, water and effluent data was reported in accordance to GRI: 303 (2018).
- ⁽¹⁰⁾ Total water withdrawal from all areas has increased due to include produced water in accordance to GRI: 303 (2018).
- ⁽¹¹⁾ Since 2018, water risk assessment has covered international assets, including Myanmar and Malaysia.
- ⁽¹²⁾ Since 2020, water stress area classified by WRI Aqueduct Tool.
- ⁽¹³⁾ Waste generation and disposal include both production and drilling activities.
- ⁽¹⁴⁾ The difference between waste generation and disposal amount is accounted for on-site storage.
- ⁽¹⁵⁾ Since 2021, waste disposal data was reported in accordance to GRI: 306 (2020).
- ⁽¹⁶⁾ The waste disposal method used by the company has been re-aligned with the GRI waste grouping, resulting in GRI 306 waste reporting from 2021 to 2023.
- ⁽¹⁷⁾ Total number and the total area of your own operational sites mean operational sites where PTTEP has operational control, located in or adjacent to protected areas and areas of high biodiversity value outside protected areas.
- ⁽¹⁸⁾ Environmental expenditure is based on a new systematic environmental management accounting methodology as PTT Group Guideline, which has been implemented in Q3, 2019 onward.
- ⁽¹⁹⁾ The renewable generation (Solar and Wind) for 3rd party including Energy Complex Co., Ltd. under PTTEP subsidiary.

NA: Not Applicable

ND: No Data