

PTT  
SUSTAINABILITY  
PERFORMANCE  
DATA  
**2022**





## \$ Economic

GRI	Required Data	Unit	PTT			
			2019	2020	2021	2022
GRI 201-1	Direct economic value generated					
	Sales and Service Revenue	THB million	2,219,739	1,615,665	2,258,818	3,367,203
	Revenues as net sales plus revenues from financial investments and sales of assets <sup>6</sup>	THB million	2,227,707	1,619,902	2,260,522	3,373,477
	Economic value distributed					
	Operating costs	THB million	1,967,529	1,446,649	1,882,252	2,906,726
	Employee wages and benefits <sup>1</sup>	THB million	9,865	8,149 <sup>2</sup>	9,286	9,993
	Dividend payments for the performance of the year	THB million	57,126	28,563	57,126	57,126 <sup>3</sup>
	Social investment	THB million	1,404	620	1,271	1,086
	Economic value retained	THB million	150,827	106,518	241,293	301,810
GRI 201-4	Tax					
	Tax privileges from the Board of Investment, Thailand <sup>4</sup>	THB million	0 <sup>5</sup>	0 <sup>5</sup>	0 <sup>5</sup>	0 <sup>5</sup>
GRI 201-1 GRI 207-4 (2019)	Income taxes payment	THB million	32,989	25,166	67,591	90,462

### Remarks:

<sup>1</sup> Employee wages and benefits for employees managed by PTT include: PTT's employees, PTT's secondment and employees in subsidiaries under PTT's financial management. The scope does not include the President and Chief Executive Officer and the Top Management according to SEC's definition. Employee wages and benefits include salaries, bonuses, contributions to provident funds, etc. (if applicable).

<sup>2</sup> Employee wages and benefits in 2020 have decreased from 2019 to around 1,700 million baht due to:

- The notice of the minimum standards of employment conditions in state-owned enterprises from the State Enterprise Labor Relations Committee resulting in the increase of maximum threshold of compensation for retirees shown in the fiscal year 2019;
- Smaller amount of bonus paid correlating with decreasing revenue;
- Due to the COVID-19 pandemic, PTT announced a Work@Home policy, in accordance with the government's announcement, causing a decrease in travel expenses from both domestically and internationally and training expense in 2020 from 2019.

<sup>3</sup> Dividend payment for the 2022 performance is subjected to approval from the 2023 Annual General Meeting (AGM).

<sup>4</sup> Amount of PTT's Tax privileges only.

<sup>5</sup> Tax Privileges from the Board of Investment of PTT ended corporate income tax exemption since 2018

<sup>6</sup> The information include sales and service income plus dividend income plus interest income and gain (loss) on disposals of assets and investments.





## People (continued)

GRI	Required Data	Unit	2019		2020		2021		2022	
			Male	Female	Male	Female	Male	Female	Male	Female
GRI 401-1	Voluntary employee turnover by age <sup>7</sup>									
	• Over 50 years old	Manpower	57	26	54	37	37	26	45	31
		%	1.59	0.73	1.54	1.06	1.04	0.73	1.27	0.88
	• 30 - 50 years old	Manpower	14	21	8	12	9	10	11	12
		%	0.39	0.59	0.23	0.34	0.26	0.28	0.31	0.34
	• Below 30 years old	Manpower	10	4	4	1	2	2	4	7
%		0.28	0.11	0.11	0.03	0.06	0.06	0.11	0.20	
GRI 401-3	Total number of employees entitled to parental leave	Manpower	2,200	1,378	2,157	1,349	2,189	1,362	2,184	1,356
	Total number of employees that took parental leave	Manpower	75	44	63	43	45	36	58	35
	Total number of employees that returned to work after parental leave ended	Manpower	75	44	63	43	45	32	55	30
	Total number of employees that returned to work after parental leave ended that were still employed 12 months after their return to work <sup>8</sup>	Manpower	75	43	63	39	-	-	-	-
	Retention rate	%	100.00	97.73	100.00	90.70	-	-	-	-
GRI 405-1	Employees by level and age group									
	Executive (Level 16 - 19)	%	1.29	0.59	1.28	0.51	1.35	0.54	0.01	0.00
	• Over 50 years old	%	1.17	0.59	1.23	0.51	1.24	0.51	1.24	0.45
	• 30 - 50 years old	%	0.11	0.00	0.06	0.00	0.11	0.03	0.06	0.03
	• Below 30 years old	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Middle management (Level 14 - 15)	%	2.12	1.84	2.25	1.91	2.34	2.03	0.02	0.02
	• Over 50 years old	%	1.20	1.23	1.34	1.34	1.58	1.44	1.50	1.50
	• 30 - 50 years old	%	0.92	0.61	0.91	0.57	0.76	0.59	0.99	0.62
	• Below 30 years old	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Junior management (Level 9 - 10 department and Level 11 - 13)	%	9.25	6.85	10.38	6.85	10.48	6.98	0.11	0.07
	• Over 50 years old	%	3.05	2.46	3.19	2.65	3.32	2.87	3.42	2.99
	• 30 - 50 years old	%	6.20	4.39	7.19	4.19	7.15	4.11	7.26	4.24
	• Below 30 years old	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Senior (Level 9 -10)	%	17.78	13.86	18.17	15.20	18.73	15.40	0.19	0.16
	• Over 50 years old	%	3.33	2.40	3.31	2.22	3.38	1.97	3.31	2.01
	• 30 - 50 years old	%	14.31	11.35	14.69	12.86	15.18	13.40	16.02	14.12
	• Below 30 years old	%	0.14	0.11	0.17	0.11	0.17	0.03	0.06	0.00
Employee (Level 8 and below)	%	31.05	15.37	29.44	14.00	28.75	13.40	0.28	0.12	
• Over 50 years old	%	1.17	0.28	1.03	0.23	0.99	0.17	0.88	0.11	
• 30 - 50 years old	%	18.59	8.66	19.48	8.30	20.11	8.73	20.06	8.08	
• Below 30 years old	%	11.29	6.43	8.93	5.48	7.66	4.51	6.92	4.15	
GRI 405-1	Total Employees by Religion									
	• Buddhism	%	96.92		97.10		96.97		96.94	
	• Christianity	%	1.79		1.70		1.59		1.64	
	• Islam	%	1.00		0.90		1.11		1.08	
	• Others	%	0.29		0.30		0.33		0.34	



## People (continued)

GRI	Required Data	Unit	2019		2020		2021		2022		
			Male	Female	Male	Female	Male	Female	Male	Female	
GRI 405-1	Total Management Employees by Religion										
	• Buddhism	%	98.09		98.00		97.62		97.67		
	• Christianity	%	1.28		1.50		1.78		1.74		
	• Islam	%	0.38		0.40		0.48		0.47		
	• Others	%	0.25		0.10		0.12		0.12		
GRI 405-2	Ratio of salary and remuneration of employee in each area: Female to Male										
	Bangkok										
	• Executive (Level 16 - 19)	Ratio	0.93		0.97		0.93		0.93		
	• Middle management (Level 14 - 15)	Ratio	1.00		0.99		0.99		1.05		
	• Junior management (Level 9 - 10 department and Level 11 - 13)	Ratio	1.07		1.16		1.16		1.13		
	• Senior (Level 9 - 10)	Ratio	0.95		0.94		0.95		0.95		
	• Employee (Level 8 and below)	Ratio	0.96		0.96		0.94		0.94		
	Others <sup>2</sup>										
	• Executive (Level 16 - 19)	Ratio	0.92		0.84		1.13		0.00		
	• Middle management (Level 14 - 15)	Ratio	1.20		0.86		0.94		0.98		
	• Junior management (Level 9 - 10 department and Level 11 - 13)	Ratio	1.27		1.08		1.12		1.11		
	• Senior (Level 9 - 10)	Ratio	0.93		0.93		0.96		1.02		
	• Employee (Level 8 and below)	Ratio	1.12		1.11		1.13		1.03		
	Women in workforce										
	Women in total workforce	% of total workforce		38.51		38.51		38.50		38.36	
	Target	% of target at fiscal year		23		23		23		23	
	Women in all management positions	% of total management workforce		42.35		41.35		40.06		40.57	
	Target	% of target at fiscal year		23		23		23		23	
	Women in top management positions	% of total top management positions		31.34		29.52		28.70		28.71	
	Target	% of target at fiscal year		23		23		23		23	
	Women in junior management positions	% of total junior management positions		42.61		41.55		39.74		40.32	
	Target	% of target at fiscal year		23		23		23		23	
	Women in management positions in revenue generating functions	% of total managers in revenue generating functions		28.00		28.07		27.77		28.88	
	Target	% of target at fiscal year		23		23		23		23	
	Women in STEM-related positions (Science, Technology, Engineering, and Mathematics)	% of total STEM positions		21.25		18.44		18.37		27.51	
	Target	% of target at fiscal year		23		23		23		23	



## People (continued)

GRI	Required Data	Unit	2019		2020		2021		2022		
			Male	Female	Male	Female	Male	Female	Male	Female	
GRI 404-1	Average hours of training per employee <sup>9</sup>	Hour per employee	74.81	71.25	28.74	32.72	37.52	36.70	45.03	42.85	
	Executive (Level 16 - 19)										
	• Average hours of training	Hour per employee	115	145	53	11	14	41	94	137	
	• Average cost of training	THB per employee	87,894	88,071	57,554	14,775	20,125	35,198	124,575	62,594	
	Middle management (Level 14 - 15)										
	• Average hours of training	Hour per employee	53	60	38	36	37	38	50	48	
	• Average cost of training	THB per employee	25,399	45,559	10,749	17,984	20,194	29,554	55,193	70,228	
	Junior management (Level 9 - 10 department and Level 11 - 13)										
	• Average hours of training	Hour per employee	62	66	28	25	48	41	42	43	
	• Average cost of training	THB per employee	26,376	28,832	5,402	3,591	31,817	31,154	26,105	17,756	
	Senior (Level 9 - 10)										
	• Average hours of training	Hour per employee	58	56	26	22	32	33	38	41	
	• Average cost of training	THB per employee	27,353	26,462	9,301	6,838	8,722	8,594	19,123	17,974	
	Employee (Level 8 and below)										
• Average hours of training	Hour per employee	73	85	34	29	38	37	48	40		
• Average cost of training	THB per employee	29,376	28,852	2,172	3,209	5,018	6,470	15,485	15,997		
Human Capital Return on Investment											
Resulting HC ROI	Times		220.84		193.83		239.77		333.00		
Type of Individual Performance Appraisal											
• Management by objectives	% of all employees		100		100		100		100		
• Multidimensional performance appraisal	% of all employees		100		100		100		100		
• Formal comparative ranking of employees within one employee category	% of all employees		100		100		100		100		
Employee Engagement											
• Employee engagement result	% of actively engaged employees		78		80		80		79		
• Employee engagement target	% of actively engaged employees		73		80		80		80		
• Coverage	% of total employees		91		84		91		89		

## Remarks:

<sup>1</sup> Outsourced workers refers to contractors who deliver tasks specified in the annual TOR and do not include short-term outsourced workers during the year e.g. sub-contractors, consultants, housekeepers, etc.

<sup>2</sup> Others refers to other provinces outside Bangkok where PTT's offices are situated e.g. Rayong, Chonburi, etc.

<sup>3</sup> Including employees working abroad in Cambodia, Laos, Myanmar, Malaysia, the Philippines, Singapore, Indonesia and England.

<sup>4</sup> Including employees working abroad in Cambodia, Laos, Singapore and England.

<sup>5</sup> Including employees working abroad in Myanmar, Malaysia, the Philippines, Singapore and England.

<sup>6</sup> Including employees working abroad in Singapore and England.

<sup>7</sup> Employee turnover excludes retirement and death.

<sup>8</sup> Data collection will examine information on maternity leave occurring in each year, including the duration of maternity leave (3 months) and parental leave (5 months). Regarding to the condition, employees return to work after taking maternity and parental leave, and being rehired for 12 months, the information will be summarized every 20 months after the end of each year. This will be in the period of August every year.

<sup>9</sup> Hours of training and further study are included in the average hours of training per year per employee.

 Safety

Reporting Scope

Year

PTT Operated Business

PTT Building		Terminal		Gas Separation Plant (GSP)	Gas Transmission (GTM)	Gas Terminal	Oil Terminal	Aviation	Retail	Lubrication	Transportation	NGV	Cafe Amazon Roasting Plant	2022 Coverage (%)
Head Office	Prakanong Office	PTT Innovation Institute	Rayong Office											

Near miss incident	Employee and contractor	2022	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
	Employee and contractor	2021	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee and contractor	2020	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee and contractor	2019	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
Occupational illness frequency rate (OIFR)	Employee	2022	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee	2021	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee	2020	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee	2019	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
Fatalities	Employee	2022	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee	2021	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee	2020	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee	2019	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
Absentee rate (AR)	Employee	2022	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
	Contractor		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
	Employee	2021	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Contractor		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	•	NR	
	Employee	2020	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Contractor		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	•	NR	
	Employee	2019	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Contractor		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	•	NR	
Lost workday case (LWC)	Employee	2022	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee	2021	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee	2020	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee	2019	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
Lost day rate (LDR)	Employee	2022	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee	2021	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee	2020	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee	2019	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	



## Safety (continued)

Reporting  
Scope

Year

### PTT Operated Business

PTT Building		PTT Innovation Institute		Rayong Office	Gas Separation Plant (GSP)	Gas Transmission (GTM)	Terminal			Retail	Lubrication	Transportation	NGV	Cafe Amazon Roasting Plant	2022 Coverage (%)
Head Office	Prakanong Office						Gas Terminal	Oil Terminal	Aviation						

Total recordable injuries case (TRIC)	Employee	2022	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100	
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Employee	2021	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Employee	2020	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Employee	2019	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
Contractor	•		NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR			
Total recordable injuries rate (TRIR)	Employee	2022	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		100
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Employee	2021	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Employee	2020	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Employee	2019	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
Contractor	•		NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR			
Lost time injury frequency rate (LTIFR)	Employee	2022	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100	
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Employee	2021	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Employee	2020	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Employee	2019	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
Contractor	•		NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR			
High-consequence work-related injuries	Employee	2022	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		100
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Employee	2021	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Employee	2020	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Contractor		•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR		
	Employee	2019	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR		
Contractor	NR		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR			

#### Remarks:

NR: Not relevant

- Working hours at service stations include those working at PTT-owned and operated stations only. Reporting includes total workforce only.

- Working hours at NGV Service Stations cover NGV Mother Station and PTT-owned and operated service stations only.

- LPG terminal boundary covers Khao Bo Ya LPG Terminal and Ban Rong Po LPG Terminal and fuel terminal boundary covers Sriracha Oil Terminal.





# Safety (continued)

GRI	Required Data	Unit	PTT				
			2019	2020	2021	2022	
GRI 403-9 (2018)	Fatalities as a result of work-related injury <sup>4</sup>						
	• Employee	Person	0	0	0	0	
	• Contractor <sup>5</sup>	Person	0	0	0	0	
	Fatality rate as a result of work-related injury						
	• Employee	Person per 1,000,000 hours worked	0	0	0	0	
	• Contractor <sup>5</sup>	Person per 1,000,000 hours worked	0	0	0	0	
	Near Misses						
	• Employee and Contractor <sup>5</sup>	Case	75	76	76	52	
	Lost workday case (LWC) <sup>2</sup>						
	• Employee	Person	0	1	0	0	
	• Contractor <sup>5</sup>	Person	2	2	0	0	
	Lost day rate (LDR)						
	• Employee	Lost day per 200,000 hours worked	0	0.09	0	0	
	• Contractor <sup>5</sup>	Lost day per 200,000 hours worked	0.11	0.54	0	0	
	Total recordable injuries case (TRIC) <sup>3</sup>						
	• Employee	Person	2	3	0	2	
	• Contractor <sup>5</sup>	Person	3	8	3	3	
	Total recordable injuries rate (TRIR) <sup>3</sup>						
	• Employee	Person per 200,000 hours worked	0.06	0.09	0	0.063	
	• Contractor <sup>5</sup>	Person per 200,000 hours worked	0.04	0.12	0.038	0.038	
	Lost time injury frequency rate (LTIFR) <sup>3</sup>						
	• Employee	Person per 200,000 hours worked	0	0.03	0	0	
		Person per 1,000,000 hours worked	0.07	0.15	0	0	
• Contractor <sup>5</sup>	Person per 200,000 hours worked	0.03	0.03	0	0		
	Person per 1,000,000 hours worked	0.11	0.15	0	0		
High-consequence work-related injuries rate <sup>6</sup> (excluding fatalities)							
• Employee	Person	NA	0	0	0		
• Contractor <sup>5</sup>	Person	NA	0	0	0		
High-consequence work-related injuries rate <sup>6</sup> (excluding fatalities)							
• Employee	Person per 1,000,000 hours worked	NA	0	0	0		
• Contractor <sup>5</sup>	Person per 1,000,000 hours worked	NA	0	0	0		
Absentee rate (AR)							
• Employee	%	1.44	0.90	0.42	0.84		
• Contractor <sup>5</sup>	%	NA	NA	NA	NA		
GRI 403-10 (2018)	Occupational illness frequency rate (OIFR) <sup>3</sup>						
	• Employee	Person per 200,000 hours worked	0	0	0	0	
	• Contractor <sup>5</sup>	Person per 200,000 hours worked	0	0	0	0	
	Work-related ill health for all employee:						
	• The number of fatalities as a result of work-related ill health	Person	0	0	0	0	
	• The number of cases of recordable work-related ill health	Person	0	0	0	0	
	Work-related ill health for all contractors <sup>5</sup>						
	• The number of fatalities as a result of work-related ill health	Person	0	0	0	0	
	• The number of cases of recordable work-related ill health	Person	0	0	0	0	
	NA	Tier 1 Process Safety Event	Number per 1,000,000 hours worked	0.033	0.032	0.0063	0
NA	Number of accidents from using corporate vehicles		Case	6	1	1	0
			Target	5	3	2	0
	Number of land transport accidents		Case per 1,000,000 km	0.02	0.00	0.00	0.00
			Target	0.04	0.03	0.014	0.00

**Remarks:**

NA: Not available

<sup>1</sup> The reporting boundary covers domestic operations only, not broken down at the regional level. OH&S data is also not broken down by gender because PTT equally regards the importance of safety for all employees, in accordance with PTT's Code of Business Ethics. The data excludes contractors working on construction projects that have not yet been handed over to PTT, such as the Natural Gas Transmission Pipeline Project.

<sup>2</sup> Monitored by calendar day, and is recorded after the day on which the incident occurred. The target is equal to zero from 2020 onwards.

<sup>3</sup> Do not include first aid cases.

<sup>4</sup> In 2022, there were no fatality accident.

<sup>5</sup> Definition of contractors according to GRI 403: Occupational Health and Safety 2018 is all workers who are not employees but whose work and/or workplace is controlled by the organization.

<sup>6</sup> Work-related injury that results in an injury from which the worker cannot, does not, or is not expected to recover fully to pre-injury health status within 6 months (exclude fatality).



Reporting Scope	year	PTT Operated Business													2022 Coverage (%)				
		PTT Building				Gas Separation Plant (GSP)	Gas Transmission (GTM)	Terminal			Retail	Lubrication	Transportation	NGV		Cafe Amazon Roasting Plant			
		Head Office	Prakanong Office	PTT Innovation Institute	Rayong Office			Gas Terminal	Oil Terminal	Aviation									
Direct GHG emissions (Scope 1)	2022	•	•	•	NA	•	•	•	•	•	•	•	•	•	•	•	•	•	100
	2021	•	•	•	NA	•	•	•	•	•	•	•	•	•	•	•	•	•	
	2020	•	•	•	NA	•	•	•	•	•	•	•	•	•	•	•	•	•	
	2019	•	•	•	NA	•	•	•	•	•	•	•	•	•	•	•	•	•	
Indirect GHG emissions (Scope 2)	2022	•	•	•	NA	•	•	•	•	•	•	•	•	•	•	•	•	•	100
	2021	•	•	•	NA	•	•	•	•	•	•	•	•	•	•	•	•	•	
	2020	•	•	•	NA	•	•	•	•	•	•	•	•	•	•	•	•	•	
	2019	•	•	•	NA	•	•	•	•	•	•	•	•	•	•	•	•	•	
Direct energy consumption	2022	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	100
	2021	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
	2020	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
	2019	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Electricity purchased	2022	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	100
	2021	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
	2020	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
	2019	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Water withdrawal	2022	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	•	NR	•	100
	2021	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	•	NR	•	
	2020	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	•	NR	•	
	2019	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	•	NR	•	
Effluents	2022	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	•	NR	•	100
	2021	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	•	NR	•	
	2020	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	•	NR	•	
	2019	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	•	NR	•	
Produced water	2022	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	100
	2021	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
	2020	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
	2019	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Waste disposal	2022	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	•	NR	•	100
	2021	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	•	NR	•	
	2020	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	•	NR	•	
	2019	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	•	NR	•	
Oil and chemical spills	2022	•	NR	•	NR	•	•	•	•	NR	NR	NR	•	•	NR	•	NR	•	100
	2021	•	NR	•	NR	•	•	•	•	NR	NR	NR	•	•	NR	•	NR	•	
	2020	•	NR	•	NR	•	•	•	•	NR	NR	NR	•	•	NR	•	NR	•	
	2019	•	NR	•	NR	•	•	•	•	NR	NR	NR	•	•	NR	•	NR	•	
Nitrogen oxides (NOx)	2022	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	100
	2021	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
	2020	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
	2019	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Sulphur dioxide (SO <sub>2</sub> )	2022	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	100
	2021	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
	2020	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
	2019	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Volatile Organic Compounds (VOCs)	2022	NR	NR	NR	NR	•	•	•	•	NR	NR	NR	NR	NR	NR	NR	NR	NR	100
	2021	NR	NR	NR	NR	•	•	•	•	NR	NR	NR	NR	NR	NR	NR	NR	NR	
	2020	NR	NR	NR	NR	•	•	•	•	NR	NR	NR	NR	NR	NR	NR	NR	NR	
	2019	NR	NR	NR	NR	•	•	•	•	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Volume of methane (CH <sub>4</sub> ) emitted	2022	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	NR	100
	2021	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	NR	
	2020	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	NR	
	2019	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	NR	
Direct methane (CH <sub>4</sub> ) emissions	2022	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	NR	100
	2021	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	NR	
	2020	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	NR	
	2019	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	NR	

**Remarks:**  
 NA: Not available  
 NR: Not relevant

GRI	Required Data	Unit	PTT			
			2019	2020	2021	2022

GRI 303-3 (2018)	Water Withdrawal by Sources					
	Total water withdrawal	Million Liters	2,423.15	1,844.43	2,010.73	1,862.48
	Surface water	Million Liters	136.84	142.97	140.10	251.74
	• Fresh water ≤1,000 mg/l TDS	Million Liters	136.84	142.97	140.10	251.74
	• Other water >1,000 mg/l TDS	Million Liters	0.00	0.00	0.00	0.00
	Ground water	Million Liters	37.07	44.16	33.18	62.51
	• Fresh water ≤1,000 mg/l TDS	Million Liters	37.07	44.16	33.18	62.51
	• Other water >1,000 mg/l TDS	Million Liters	0.00	0.00	0.00	0.00
	Produced Water	Million Liters	0.00	0.00	0.00	0.00
	• Fresh water ≤1,000 mg/l TDS	Million Liters	0.00	0.00	0.00	0.00
	• Other water >1,000 mg/l TDS	Million Liters	0.00	0.00	0.00	0.00
	Seawater	Million Liters	87.54	93.64	83.25	84.13
	• Fresh water ≤1,000 mg/l TDS	Million Liters	0.00	0.00	0.00	0.00
	• Other water >1,000 mg/l TDS	Million Liters	87.54	93.64	83.25	84.13
	Third-party water	Million Liters	2,161.71	1,563.67	1,754.20	1,464.10
	• Fresh water ≤1,000 mg/l TDS	Million Liters	2,161.71	1,563.67	1,754.20	1,464.10
	• Other water >1,000 mg/l TDS	Million Liters	0.00	0.00	0.00	0.00
	Total water withdrawal from areas with water stress	Million Liters	286.74	265.66	195.58	324.32
	Surface water	Million Liters	76.64	71.65	62.91	163.84
	• Fresh water ≤1,000 mg/l TDS	Million Liters	76.64	71.65	62.91	163.84
	• Other water >1,000 mg/l TDS	Million Liters	0.00	0.00	0.00	0.00
	Ground water	Million Liters	35.27	38.33	29.42	60.57
	• Fresh water ≤1,000 mg/l TDS	Million Liters	35.27	38.33	29.42	60.57
	• Other water >1,000 mg/l TDS	Million Liters	0.00	0.00	0.00	0.00
	Produced Water	Million Liters	0.00	0.00	0.00	0.00
	• Fresh water ≤1,000 mg/l TDS	Million Liters	0.00	0.00	0.00	0.00
	• Other water >1,000 mg/l TDS	Million Liters	0.00	0.00	0.00	0.00
	Seawater	Million Liters	0.00	0.00	0.00	0.00
	• Fresh water ≤1,000 mg/l TDS	Million Liters	0.00	0.00	0.00	0.00
	• Other water >1,000 mg/l TDS	Million Liters	0.00	0.00	0.00	0.00
	Third-party water	Million Liters	174.83	155.68	103.25	99.91
• Surface water	Million Liters	174.83	155.68	99.76	99.91	
• Ground water	Million Liters	0.00	0.00	3.49	0.00	
• Seawater	Million Liters	0.00	0.00	0.00	0.00	
• Produced Water	Million Liters	0.00	0.00	0.00	0.00	
- Fresh water ≤1,000 mg/l TDS	Million Liters	174.83	155.68	103.25	99.91	
- Other water >1,000 mg/l TDS	Million Liters	0.00	0.00	0.00	0.00	
GRI 303-5 (2018)	Total Water Consumption	Million Liters	1,926.12	1,579.35	1,584.76	1,650.06
	• Total water consumption from areas with water stress	Million Liters	265.75	245.33	179.33	306.12
	Total net fresh water consumption	Million m <sup>3</sup>	4.17	3.24	3.45	3.35
	Withdrawal: Total municipal water supplies (or from other water utilities)	Million m <sup>3</sup>	4.32	3.13	3.51	2.93
	Withdrawal: Fresh surface water	Million m <sup>3</sup>	0.27	0.29	0.28	0.50
	Withdrawal: Fresh ground water	Million m <sup>3</sup>	0.07	0.09	0.07	0.13
	Discharge: Water returned to the source of extraction at similar or higher quality as raw water extracted	Million m <sup>3</sup>	0.50	0.27	0.41	0.21

**Remarks:**

- In 2020, the total volume of water withdrawal has decreased due to the Water Conservation project and the reduction of production from Rayong Gas Separation Plant Unit 1.
- Since 2019, OR's data is excluded from the scope, resulting in the reduction of water withdrawal.
- Revise 2019 - 2021 data for better accuracy.
- In 2022, total water withdrawal decreased as the implementation of water reduce project at Natural gas separation plant unit 1 which can reduce of water withdrawal approximately by 170 million liters per year.
- In 2022, due to the leakage of water storage ponds for fire extinguishers at pipeline operation area (Chachoengsao). This causes increasing in water withdrawal for storage in water stress area.
- In 2022, there are 15 establishments located in water stress area e.g., Pipeline operations region 1,2,9,10, 11, Chonburi Operation Center, PTT Innovation Institute, Main gas distribution stations at Kaeng Khoi, Nimit Mai, Nimit Mai 2, Ban Bueng, Rangsit, Lat Lum Kao, Lan Krabue and Lam Luk Ka.



## Effluents

GRI	Required Data	Unit	PTT			
			2019	2020	2021	2022
GRI 303-4 (2018)	Total water discharge	Million Liters	497.03	265.08	409.72	212.41
	• Surface water	Million Liters	490.65	258.53	402.74	205.32
	• Ground water	Million Liters	0.00	0.00	0.00	0.00
	• Seawater	Million Liters	5.98	6.01	6.98	7.09
	• Third-party Water	Million Liters	0.40	0.54	0.00	0.00
	Water discharge by fresh water ( $\leq 1,000$ mg/l Total Dissolved Solids)	Million Liters	497.03	265.08	409.72	205.32
	Water discharge by other water ( $> 1,000$ mg/l Total Dissolved Solids)	Million Liters	0.00	0.00	0.61	7.09

**Remarks:**

- Water discharge remained in line with the legal requirements
- Water discharge of the organization is in accordance with the definition prescribed in the regulation.
- Since 2019, the data excludes that of PTT Oil and Retail Business Public Company (Limited) - resulting in reduced overall water discharge
- Revise 2019 - 2021 data for better accuracy



GRI	Required Data	Unit	PTT			
			2019	2020	2021	2022
<b>TOTAL WASTE GENERATED (GRI 2020) - Effective 2022</b>						
<b>GRI 306-3 (2020)</b>	Total waste generated	Ton				
	• Total hazardous waste generated	Ton	3,978.68	3,003.24	1,609.80	2,873.50
	• Total non-hazardous waste generated	Ton	3,865.52	2,801.18	3,256.30	11,597.99
<b>WASTE DIVERTED FROM DISPOSAL (GRI 2020) - Effective 2022</b>						
<b>GRI 306-4 (2020)</b>	Total waste diverted from disposal	Ton	2,539.08	1,778.70	987.26	959.55
	<b>TOTAL WASTE DIVERTED FROM DISPOSAL(GRI 2020) - Effective 2022 (Onsite)</b>					
	Total hazardous waste diverted from disposal (Onsite)	Ton	0.00	0.00	0.00	0.00
	• Preparation for reuse	Ton	0.00	0.00	0.00	0.00
	• Recycling	Ton	0.00	0.00	0.00	0.00
	• Other recovery operations	Ton	0.00	0.00	0.00	0.00
	Total non-hazardous waste diverted from disposal (Onsite)	Ton	0.00	0.00	0.00	0.00
	• Preparation for reuse	Ton	0.00	0.00	0.00	0.00
	• Recycling	Ton	0.00	0.00	0.00	0.00
	• Other recovery operations	Ton	0.00	0.00	0.00	0.00
	<b>WASTE DIVERTED FROM DISPOSAL(GRI 2020) - Effective 2022 (Offsite)</b>					
	Total hazardous waste diverted from disposal (Offsite)	Ton	416.97	719.86	186.76	160.89
	• Preparation for reuse	Ton	0.24	0.00	0.32	0.00
	• Recycling	Ton	416.73	719.86	186.44	160.89
	• Other recovery operations	Ton	0.00	0.00	0.00	0.00
	Total non-hazardous waste diverted from disposal (Offsite)	Ton	2,122.11	1,058.84	800.50	798.66
	• Preparation for reuse	Ton	1,839.44	1.20	1.20	0.00
	• Recycling	Ton	100.15	866.85	658.90	610.26
	• Other recovery operations	Ton	182.52	190.75	140.40	188.40
	<b>TOTAL WASTE DIRECTED TO DISPOSAL (GRI 2020) - Effective 2022</b>					
	<b>GRI 306-5 (2020)</b>	Total waste directed to disposal	Ton	5,175.43	3,955.94	3,932.81
<b>WASTE DIRECTED TO DISPOSAL (GRI 2020) - Effective 2022 (Onsite)</b>						
Total hazardous waste directed to disposal (Onsite)		Ton	0.00	0.00	0.00	0.00
• Incineration (with energy recovery)		Ton	0.00	0.00	0.00	0.00
• Incineration (without energy recovery)		Ton	0.00	0.00	0.00	0.00
• Landfilling		Ton	0.00	0.00	0.00	0.00
• Other disposal operations		Ton	0.00	0.00	0.00	0.00
Total non-hazardous waste directed to disposal (Onsite)		Ton	0.00	0.00	0.00	0.00
• Incineration (with energy recovery)		Ton	0.00	0.00	0.00	0.00
• Incineration (without energy recovery)		Ton	0.00	0.00	0.00	0.00
• Landfilling		Ton	0.00	0.00	0.00	0.00
• Other disposal operations		Ton	0.00	0.00	0.00	0.00
<b>TOTAL WASTE DIRECTED TO DISPOSAL (GRI 2020) - Effective 2022 (Offsite)</b>						
Total hazardous waste directed to disposal (Offsite)		Ton	3,592.62	2,222.53	1,456.62	2,656.99
• Incineration (with energy recovery)		Ton	526.32	191.17	756.75	2,520.48
• Incineration (without energy recovery)		Ton	3,051.36	1,997.95	643.75	115.10
• Landfilling		Ton	6.26	0.00	0.00	0.00
• Other disposal operations		Ton	8.68	33.41	56.12	21.41
Total non-hazardous waste directed to disposal (Offsite)		Ton	1,582.81	1,733.41	2,476.19	10,777.80
• Incineration (with energy recovery)		Ton	6.59	10.02	222.41	148.10
• Incineration (without energy recovery)		Ton	555.26	254.10	108.52	15.08
• Landfilling	Ton	27.39	24.05	0.00	0.00	
• Other disposal operations	Ton	993.57	1,445.24	2,145.26	10,614.62	

**Remarks:**

- Waste to landfill from PTT's routine operations is separated from the beginning, allowing for more appropriate waste disposal methods and alignment with the Group Strategic Goal 2020 "Zero industrial waste to landfill"
- The amount of waste from non-routine operations includes waste generated from the construction of capital projects, oil and chemical spills management, and risk & crisis management.
- There is no established minimum threshold for hazardous waste reporting but all operations must report their total volume of hazardous waste sent for disposal.
- Domestic waste disposed by municipality cannot be tracked on disposal method; either landfill and/or incineration due to limited access to municipal data.
- Since 2019, performance data does not include OR's domestic waste and therefore resulting in decreased domestic waste volume.
- Revise 2019 - 2021 data for better accuracy.
- Other recovery operations covers composting etc.
- Other disposal operations covers land reclamation, deepwell injection etc.
- In 2022, the amount of non-hazardous waste increased due to waste generated from PTT's new construction projects, such as soil, cement, and wood. PTT manages those waste by reclamation at approximately 9,800 tons.




## Spills

GRI	Required Data	Unit	PTT			
			2019	2020	2021	2022

GRI 306-3 (2016)	Oil and chemical spills		PTT			
			2019	2020	2021	2022
From PTT operational boundary						
	• Number of hydrocarbon spills	Number of spills	0	0	0	0
	• Volume of hydrocarbon spills	m <sup>3</sup>	0.00	0.00	0.00	0.00
	• Number of non-hydrocarbon spills	Number of spills	0	0	0	0
	• Volume of non-hydrocarbon spills	m <sup>3</sup>	0.00	0.00	0.00	0.00
From 3 <sup>rd</sup> party (transportation): truck transportation						
	• Number of hydrocarbon spills	Number of spills	0	0	0	0
	• Volume of hydrocarbon spills	m <sup>3</sup>	0.00	0.00	0.00	0.00
	• Number of non-hydrocarbon spills	Number of spills	0	0	0	0
	• Volume of non-hydrocarbon spills	m <sup>3</sup>	0.00	0.00	0.00	0.00
From 3 <sup>rd</sup> party (transportation): ship and barge transportation						
	• Number of hydrocarbon spills	Number of spills	0	0	0	0
	• Volume of hydrocarbon spills	m <sup>3</sup>	0.00	0.00	0.00	0.00
	• Number of non-hydrocarbon spills	Number of spills	0	0	0	0
	• Volume of non-hydrocarbon spills	m <sup>3</sup>	0.00	0.00	0.00	0.00
Significant spill (Volume ≥ 100 barrel)						
From PTT operational boundary						
	• Number of hydrocarbon spills	Number of spills	0	0	0	0
	• Volume of hydrocarbon spills	m <sup>3</sup>	0.00	0.00	0.00	0.00
	• Number of non-hydrocarbon spills	Number of spills	0	0	0	0
	• Volume of non-hydrocarbon spills	m <sup>3</sup>	0.00	0.00	0.00	0.00
From 3 <sup>rd</sup> party (transportation): truck transportation						
	• Number of hydrocarbon spills	Number of spills	0	0	0.00	0.00
	• Volume of hydrocarbon spills	m <sup>3</sup>	0.00	0.00	0.00	0.00
	• Number of non-hydrocarbon spills	Number of spills	0	0	0	0
	• Volume of non-hydrocarbon spills	m <sup>3</sup>	0.00	0.00	0.00	0.00
From 3 <sup>rd</sup> party (transportation): ship and barge transportation						
	• Number of hydrocarbon spills	Number of spills	0	0	0	0
	• Volume of hydrocarbon spills	m <sup>3</sup>	0.00	0.00	0.00	0.00
	• Number of non-hydrocarbon spills	Number of spills	0	0	0	0
	• Volume of non-hydrocarbon spills	m <sup>3</sup>	0.00	0.00	0.00	0.00

**Remarks:**

- Volume of hydrocarbon and non-hydrocarbon spills include spills which occur in operational areas, as well as those from truck and shipping transportation, that result in a volume of more than 1 barrel of oil spilled to the environment. In spill cases, PTT executes spill response procedures to control spills within the shortest time possible in order to minimize widespread environmental impacts, for instance, with the use of booms and skimmers.

 Emissions

GRI	Required Data	Unit	PTT			
			2019	2020	2021	2022
GRI 305-7 (2016)	Volatile Organic Compounds (VOCs)	Ton	1,995.88	1,800.71	1,867.06	1,812.16
	VOCs Intensity	Ton per million barrel oil equivalent (mboe)	5.37	5.00	5.22	4.84
	Nitrogen oxides (NOx)	Ton	888.47	795.59	883.85	818.32
	NOx intensity	Ton per million barrel oil equivalent (mboe)	2.39	2.21	2.47	2.19
	Sulphur dioxide (SO <sub>2</sub> )	Ton	48.79	26.91	24.68	28.21
	SO <sub>2</sub> intensity	Ton per million barrel oil equivalent (mboe)	0.13	0.07	0.07	0.08

## Remarks:

- Strategic Objective 2020: Zero emission rate of SO<sub>2</sub>, NOx, and VOCs.
- SO<sub>2</sub> and NOx emissions from all facilities remain below the legal threshold for air quality.
- In 2019, data excludes that of OR, resulting in decreased VOCs emissions
- Revise 2019 - 2021 data for better accuracy

 Energy

GRI	Required Data	Unit	PTT			
			2019	2020	2021	2022
GRI 302-1 (2016)	Total direct energy consumption	GJ	45,464,198	41,975,966	43,686,633	40,434,125
	• Total non-renewable fuel consumed	GJ	47,432,209	43,679,960	45,620,167	42,356,520
	• Total renewable fuel consumed	GJ	0	0	2,479	895
	Total indirect energy consumption	GJ	1,968,011	1,703,994	1,936,013	1,923,290
	• Electricity purchased	GJ	1,968,011	1,703,994	1,933,534	1,922,395
	Total energy sold	GJ	0	0	0	0
	• Electricity sold	GJ	0	0	0	0

GRI	Required Data	Unit	PTT Group			
			2019	2020	2021	2022
GRI 302-1 (2016)	Total energy consumption	GJ	472,771,094	499,064,617	495,236,605	482,460,331
	Total direct energy consumption					
	• PTT operational control	GJ	457,005,965	485,381,492	481,571,352	473,472,604
	• Total non-renewable fuel consumed	GJ	457,005,965	485,381,492	481,568,873	482,385,161
	• Total renewable fuel consumed	GJ	-	-	2,479	75,170
	Total indirect energy consumption	GJ	15,765,129	13,683,125	13,665,253	8,912,556
GRI 302-3 (2016)	Direct energy intensity					
	• Oil and gas production	GJ/mboe	198,080	212,244	220,641	159,414
	• Refinery throughput	GJ/Ton refinery throughput	1.51	1.55	1.55	1.38
	• Petrochemical throughput	GJ/Ton petrochemical throughput	5.60	5.77	6.03	6.13


**GHG Emissions**

GRI	Required Data	Unit	PTT			
			2019	2020	2021	2022
	Total GHG emissions	Ton CO <sub>2</sub> equivalent	11,981,231	11,353,434	11,725,381	9,988,792
	PTT operational control					
<b>GRI 305-1 (2016)</b>	GHG Scope 1	Ton CO <sub>2</sub> equivalent	11,719,798	11,133,501	11,442,492	9,707,941
<b>GRI 305-2 (2016)</b>	GHG Scope 2 (location-based)	Ton CO <sub>2</sub> equivalent	253,409	207,223	234,746	224,816
	GHG Scope 2 (market-based)	Ton CO <sub>2</sub> equivalent	261,433	219,933	282,889	280,851
<b>GRI 305-3 (2016)</b>	GHG Scope 3	Ton CO <sub>2</sub> equivalent	81,862,930	75,115,542	74,020,821.49	70,728,078.06

GRI	Required Data	Unit	PTT Group			
			2019	2020	2021	2022
<b>GRI 305-1 (2016)</b>	GHG Scope 1					
	• PTT operational control	Ton CO <sub>2</sub> equivalent	43,260,114	42,321,571	46,121,113	44,233,824
	- Percentage of Scope 1 emissions from CH <sub>4</sub> (operational control)	Percentage	3.13	2.78	2.62	2.93
	- Breakdown by type of source (operational control)					
	• Stationary combustion	Ton CO <sub>2</sub> equivalent	N/A	N/A	N/A	N/A
	• Mobile combustion	Ton CO <sub>2</sub> equivalent	N/A	N/A	N/A	N/A
	• Process	Ton CO <sub>2</sub> equivalent	N/A	N/A	N/A	N/A
	• Fugitive	Ton CO <sub>2</sub> equivalent	N/A	N/A	N/A	N/A
	• PTT equity share	Ton CO <sub>2</sub> equivalent	24,510,327	23,701,587	27,415,019	26,403,394
<b>GRI 305-2 (2016)</b>	GHG Scope 2					
	• PTT operational control					
	- Location-based (operational control)	Ton CO <sub>2</sub> equivalent	1,294,923	1,011,700	1,114,707	650,610
	- Market-based (operational control)	Ton CO <sub>2</sub> equivalent	1,646,126	1,318,345	1,486,715	851,432
	• PTT equity share					
	- Location-based (equity share)	Ton CO <sub>2</sub> equivalent	N/A	N/A	N/A	N/A
	- Market-based (equity share)	Ton CO <sub>2</sub> equivalent	921,708	700,456	736,258	460,758
<b>GRI 305-3 (2016)</b>	GHG Scope 3					
	• PTT operational control	Ton CO <sub>2</sub> equivalent	126,361,746	116,151,249	113,477,296	132,172,331
	• Waste generated in operations	Ton CO <sub>2</sub> equivalent	N/A	N/A	N/A	35,158
	• Business travel	Ton CO <sub>2</sub> equivalent	5,964	1,048	226	4,246
	• Use of sold products	Ton CO <sub>2</sub> equivalent	126,355,782	116,150,201	113,477,070	132,132,928
<b>GRI 305-4 (2016)</b>	GHG Intensity					
	• Oil and gas production	Ton CO <sub>2</sub> equivalent/ Million barrel oil equivalent	36,398	38,247	40,661	33,059
	• Refinery	Ton CO <sub>2</sub> equivalent/ Ton refinery throughput	0.1324	0.1441	0.1586	0.1125
	• Petrochemical	Ton CO <sub>2</sub> equivalent/ Ton petrochemical product	0.3995	0.4423	0.4866	0.5171

**Remarks:**

- The organizational boundary of PTT Group based on the equity share approach which includes all domestic subsidiaries that PTT directly holds more than 20% of shares or indirectly holds 100% of shares.
- Scope 3 emissions includes the combustion of fuel sold by PTT only.
- In 2017, PTT sold equity shares of PTTAC, PTTMCC, PTTPL, PTTPM and HMC to GC.
- In 2019 - 2021 other indirect GHG emissions includes emissions from the combustion of fuel sold by PTT and PTTOR only.
- GHG scope 2 of PTT and PTT group in 2018 - 2020 are re-calculated by emission factor adjust from EPP0 2021 data
- PTT's indirect energy consumption solely comes from electricity purchase and electricity from solar panel on InI, PO10 and 11, and NGV.
- PTT Group's indirect energy consumption solely comes from electricity purchase and electricity from solar panel on PTT, PTTEP, GC, IRPC, TOP, PTT Tank, PTTLNG
- Data in 2018 - 2022 are re-calculated as follow:
  - Organization boundary: in 2022, PTTEP has operated G2 and collected data from TLB, TOPSPP, TPX, LABIX by TOP and BPE, EOEG, GCL, GCME, GCMP, GCO, GCP, BPA, Phenol, GCS, ME I&II, NPS S&E, TPRC, TTT by GC, in 2021, TOP merging TP in business scope, the operational boundary has been expanded as ORP additional from GC, and GPSC has merged GLOW Group in 2019
  - Operational Boundary: additional reporting from IRPC for depot and tank farm, SGP, ENCO and Rayong office, Lab, Innovation2, and Workshop of GC, IRPC's warehouse and tank LPG cylinder, Lubricant Distribution Center from OR
  - Activity boundary has been expanded power generator operation at LNG site in 2020.
  - In 2021, energy intensity increase as consumption from GC for high value production.
  - PTTEP has closed in 2022
  - Scope 2 emissions (location-based) of PTT includes electricity consumption from national grid. Market-based includes electricity consumption from national grid and GPSC.
  - Scope 2 emissions (location-based) of PTT Group includes electricity consumption from national grid. Market-based includes electricity consumption from national grid and other companies.
  - Other indirect GHG emissions (scope 3) includes emissions from the combustion of fuel sold by PTT, GC, TOP, IRPC and PTTOR.
  - Other indirect GHG emissions (scope 3) includes emissions from PTT, PTTEP, GC, IRPC, GPSC and PTTOR.
  - In 2018 - 2021 Other indirect GHG emissions (scope 3) includes emissions from business travel by PTT only.
  - Other indirect GHG emissions (scope 3) includes emissions from business travel by PTT and PTTEP only.
  - Direct and indirect GHG emission excludes GC's operations overseas, whose emission was expected to be at 0.32 million tons of CO<sub>2</sub> equivalent approximately (forecasted from 2020 operational performance)
  - Source of the emission factors and the global warming potential (GWP) rates used from AR6 value, IPCC
  - Standards, methodologies, assumptions, and/or calculation tools used from GHG Protocol and API Compendium



CH<sub>4</sub>

## Methane Emissions

GRI	Required Data	Unit	PTT			
			2019	2020	2021	2022
	Volume of methane emitted (leakage, venting, and flaring)	m <sup>3</sup>	25,298,193	25,808,053	21,534,301	18,987,762
	Direct CH <sub>4</sub> emissions (extracted from GHG)	Ton	17,092	17,436	14,549	12,828
GRI 305-1	Volume of flared hydrocarbon	Mm <sup>3</sup>	198,481	118,880	108,938	76,440
GRI 11 (11.1.5)	Volume of vented hydrocarbon	Mm <sup>3</sup>	21,143	19,630	16,932	13,363

GRI	Required Data	Unit	PTT Group			
			2019	2020	2021	2022
	Volume of methane emitted (leakage, venting, and flaring)	m <sup>3</sup>	64,415,749	67,970,210	59,197,241	63,978,573
	Direct CH <sub>4</sub> emissions (extracted from GHG)	Ton	43,718	47,446	40,164	43,469
GRI 305-1	Volume of flared hydrocarbon	Mm <sup>3</sup>	1,290,510	1,175,941	1,012,373	1,278,879
GRI 11 (11.1.5)	Volume of vented hydrocarbon	Mm <sup>3</sup>	24,003	21,219	19,630	13,363

## Remarks:

- The volume of methane emitted includes leakage (fugitive), gas vented from processes (CO<sub>2</sub> separation and ethylene production), methane emitted from vented emissions, and flaring.
- Direct CH<sub>4</sub> emissions include those from aforementioned sources, as well as direct CH<sub>4</sub> emitted from combustion sources.
- Data in 2018 - 2022 are re-calculated as follow:
  - Organization boundary: in 2022, PTTEP has operated G2 and collected data from TLB, TOPSPP, TPX, LABIX by TOP and BPE, EOEG, GCL, GCME, GCMP, GCO, GCP, BPA, Phenol, GCS, ME I&I, NPS S&E, TPRC, TTT by GC, in 2021, TOP merging TP in business scope, the operational boundary has been expanded as ORP additional from GC, and GPSC has merged GLOW Group in 2019
  - Operational Boundary: additional reporting from IRPC for depot and tank farm, SGP, ENCO and Rayong office, Lab, Innovation2, and Workshop of GC, IRPC's warehouse and tank LPG cylinder, Lubricant Distribution Center from OR
  - Activity boundary has been expanded from power generator operation at LNG site in 2020.



## Environmental Management

GRI	Required Data	Unit	PTT			
			2019	2020	2021	2022
	Environmental Policy/ Management System					
	Capital investments	THB million	55	6	170	133
	Operating expenses	THB million	348	323	289	311
	Total expenses (Capital Investment + Operating Expense)	THB million	403	329	459	443
	Savings, cost avoidance, income, tax incentives, etc.	THB million	298	42	205	512
	Operations covered (by revenue, production volume, or employees, etc.)	%	100	100	100	100
GRI 2-27	Environmental Violations (significant instances of non-compliance)					
	Number of violations of legal obligations/ regulations	Case	0	0	0	0
	Amount of fines/ penalties related to the above	THB	0	0	0	0
	Environmental liability accrued at year end	THB	0	0	0	0

## Remarks:

- Environmental investment refers to investment made to gain environmental assets, specifically for PTT
- Since 2016, PTT improved the methodologies for completeness and to be in accordance with the Environmental Management Accounting Procedures and Principles developed by the United Nations. Return on environmental investment calculation was improved by including the projects registered under PTT's Productivity Improvement Circle Programs.
- Eventhough PTT's and Oil Retail Business' assets have been separated since July 1<sup>st</sup>, 2018; environmentally-related assets has increased compares to 2017. In 2018, PTT worked to raise investment for implementation of Selective Catalyst Reduction (SCR) type NOx emission reduction system at Waste Heat Recovery Unit (WHRU) of Gas Separation Plan No. 5, and was able to raised more.
- In 2019, PTT has developed e-Expense system, enabling more comprehensive collection of corporate environmental expenditure. PTT is also investing in 'Regenerative Thal Oxidizer (ROT) type remover of hydrogen sulfide contaminating acidic gaseous by-product' and 'SO<sub>2</sub> Scrubber' of Natural gas Separation Plan No.5, Rayong.'
- In 2019, there were some revisions in expense, unavoidable cost and corporate income tax from 288 THB million to 298 THB million.
- In 2021, environmental investment increased from the installation of sewage pipe system in Wangchan valley area, Rayong.

