





GRI	Required Data	Unit		P	гт	
			2018	2019	2020	2021
GRI 201-1	Direct economic value generated					
	Sales revenues	Million baht	2,336,155	2,219,739	1,615,665	2,258,818
	Economic value distributed					
	Operating costs	Million baht	2,023,039	1,967,529	1,446,649	1,882,252
	Employee wages and benefits <sup>1</sup>	Million baht	9,953	9,865	8,1492	9,286
	Dividend payments for the performance of the year	Million baht	57,123	57,125	28,563	57,125 <sup>3</sup>
	Social investment	Million baht	1,559	1,404	620	1,271
	Economic value retained	Million baht	190,834	150,827	106,518	241,293
GRI 201-4	Tax					
	Tax privileges from the Board of Investment, Thailand <sup>4</sup>	Million baht	1,525	O <sup>5</sup>	O <sup>5</sup>	O <sup>5</sup>
GRI 201-1	Income taxes payment	Million baht	53,647	32,989	25,166	67,591
GRI 207-4 (2019)						

## 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 Chief Executive Officer and the top executives. 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 2021 performance is subjected to approval from the 2022 Annual General Meeting (AGM).
- <sup>4</sup> Amount of PTT's Tax privileges only.
- <sup>5</sup> Form 2019 to 2021, PTT did not receive Tax Privileges from the Board of Investment."





# People

GRI	Required Data	Unit	20	18	20	19	20	20	20	21
			Male	Female	Male	Female	Male	Female	Male	Female
GRI	Permanent employees	Manpower	2,303	1,412	2,200	1,378	2,157	1,349	2,189	1,362
102-8	Outsourced workers <sup>1</sup>	Service Point	1,0	019	1,0	051	1,0	058	1,0	54
	Employees by area					·				
	Bangkok	Manpower	1,128	1,216	1,042	1,181	1,015	1,154	1,037	1,150
	• Others <sup>2</sup>	Manpower	1,148	181	1,131	186	1,123	189	1,137	197
	Overseas	Manpower	27 <sup>3</sup>	154	275	116	19 <sup>7</sup>	68	15	15
GRI	Employees by level and age group									
405-1	Executive (Level 16 - 19)	%	1.16	0.57	1.29	0.59	1.28	0.51	1.35	0.54
	Over 50 years old	%	1.10	0.54	1.17	0.59	1.23	0.51	1.24	0.51
	• 30 - 50 years old	%	0.05	0.03	0.11	0.00	0.06	0.00	0.11	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)	%	2.07	1.78	2.12	1.84	2.25	1.91	2.34	2.03
	Over 50 years old	%	1.24	1.13	1.20	1.23	1.34	1.34	1.58	1.44
	• 30 - 50 years old	%	0.83	0.65	0.92	0.61	0.91	0.57	0.76	0.59
	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 L	evel 11 - 13) %	9.04	6.51	9.25	6.85	10.38	6.85	10.48	6.98
	Over 50 years old	%	3.39	2.50	3.05	2.46	3.19	2.65	3.32	2.87
	• 30 - 50 years old	%	5.65	4.01	6.20	4.39	7.19	4.19	7.15	4.11
	Below 30 years old	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Senior (Level 9 -10)	%	16.99	12.87	17.78	13.86	18.17	15.20	18.73	15.40
	Over 50 years old	%	3.12	2.21	3.33	2.40	3.31	2.22	3.38	1.97
	• 30 - 50 years old	%	13.70	10.50	14.31	11.35	14.69	12.86	15.18	13.40
	Below 30 years old	%	0.16	0.16	0.14	0.11	0.17	0.11	0.17	0.03
	Employee (Level 8 and below)	%	32.73	16.29	31.05	15.37	29.44	14.00	28.75	13.40
	Over 50 years old	%	1.24	0.32	1.17	0.28	1.03	0.23	0.99	0.17
	• 30 - 50 years old	%	18.65	8.75	18.59	8.66	19.48	8.30	20.11	8.73
	Below 30 years old	%	12.84	7.21	11.29	6.43	8.93	5.48	7.66	4.51
GRI	Total new employees	Manpower	22	24	7	6	4	6	12	29
401-1	New employees	Manpower	120	104	33	43	24	22	79	50
	New hire rate	%	3.23	2.80	0.92	1.20	0.68	0.63	2.22	1.41



# People (continued)

GRI	Required Data	Unit	_0.0		20	19	20	20	202	21
			Male	Female	Male	Female	Male	Female	Male	Female
	New employees by area								'	$\overline{}$
	Bangkok	Manpower	92	91	15	29	7	14	30	37
	_	%	2.48	2.45	0.42	0.81	0.20	0.40	0.84	1.04
	Others <sup>2</sup>	Manpower	28	13	18	14	17	8	49	13
	_	%	0.75	0.35	0.50	0.39	0.48	0.23	1.38	0.37
	New employees by age	,							'	
	Over 50 years old	Manpower	2	0	1	0	1	0	1	0
		%	0.05	0.00	0.03	0.00	0.03	0.00	0.03	0.00
	• 30 - 50 years old	Manpower	12	22	7	8	4	5	7	10
		%	0.32	0.59	0.20	0.22	0.11	0.14	0.20	0.28
	Below 30 years old	Manpower	106	82	25	35	19	17	71	40
		%	2.85	2.21	0.70	0.98	0.54	0.48	2.00	1.13
	Voluntary employee turnover	Manpower	7	1	5	7	4	2	29	9
	Employee turnover rate	%	1.9	91	1.	59	1.2	20	8.0	32
	Employee turnover	Manpower	44	27	29	28	22	20	13	16
	Employee turnover rate by gender	%	1.18	0.73	0.81	0.78	0.63	0.57	0.37	0.45
	Employee turnover by area									
	Bangkok	Manpower	36	25	24	25	18	19	10	15
		%	0.97	0.67	0.67	0.70	0.51	0.54	0.28	0.42
	Others <sup>2</sup> -	Manpower	8	2	5	2	4	1	3	1
		%	0.22	0.05	0.14	0.06	0.11	0.03	0.08	0.03
	Employee turnover by age <sup>9</sup>									
	Over 50 years old  -	Manpower	7	5	5	3	10	7	2	4
		%	0.19	0.13	0.14	0.08	0.29	0.20	0.06	0.11
	• 30 - 50 years old	Manpower	26	15	14	21	8	12	9	10
		%	0.70	0.40	0.39	0.59	0.23	0.34	0.25	0.28
	Below 30 years old  -	Manpower	11	7	10	4	4	1	2	2
		%	0.30	0.19	0.28	0.11	0.11	0.03	0.06	0.06
GRI	Number of employees entitled to parental leave	Manpower	2,303	1,412	2,200	1,378	2,157	1,349	2,189	1,362
401-3	Number of employees taking parental leave	Manpower	66	49	75	44	63	43	45	36
	Number of employees returning to work after parental leave	Manpower	65	48	75	44	63	43	45	32
	Number of employees returning to work after parental leave who are still employed for the next 12 months	Manpower	60	45	75	43	63	39	-	-
	Retention rate	%	92.31	93.75	100.00	97.73	100.00	90.70	-	-
GRI	Ratio of salary and remunderation of employee in e	ach area: Male	to Fema	le						
405-2	Bangkok									
	Executive (Level 16 - 19)	Ratio	0.9	95	0.	93	0.9	97	0.9	93
	Middle management (Level 14 - 15)	Ratio	0.9	92	1.	00	0.9	99	0.9	99
	Junior management (Level 9 - 10 department and Level	11 - 13) Ratio	1.	05	1.	07	1.	16	1.1	16
	• Senior (Level 9 -10)	Ratio	1.0	00	0.	95	0.9	94	0.9	95
	Employee (Level 8 and below)	Ratio	0.9	96	0.9	96	0.9	96	0.9	94



# People (continued)

GRI	Required Data	Unit	20	)18	20	19	20	20	20	21
			Male	Female	Male	Female	Male	Female	Male	Female
GRI	Others <sup>2</sup>									
405-2	• Executive (Level 16 - 19)	Ratio	0.	82	0.9	92	0.	84	1.	13
	Middle management (Level 14 - 15)	Ratio	1.	20	1	20	0.	86	0.9	94
	Junior management (Level 9 - 10 department ar	nd Level 11 - 13) Ratio	1.	22	1.3	27	1.	08	1.	12
	• Senior (Level 9 -10)	Ratio	0.	96	0.9	93	0.	93	0.9	96
	Employee (Level 8 and below)	Ratio	1.	22	1.	12	1.	11	1.	13
GRI	Ratio of entry level salary by gender compar	ed to local minimum	salary							
202-1	Bangkok	Ratio	1.31	2.42	2.76	2.42	2.62	2.37	2.37	2.03
	• Others <sup>2</sup>	Ratio	1.29	2.38	1.29	1.41	1.27	2.34	1.27	2.68
GRI	Average hours of training per employee8	Hour per employee	68.78	76.69	74.81	71.25	28.74	32.72	37.52	36.70
404-1	Executive (Level 16 - 19)									
	Average hours of training	Hour per employee	96	111	115	145	53	11	14	41
	Average cost of training	Baht per employee	158,383	117,210	87,894	88,071	57,554	14,775	20,125	35,198
	Middle management (Level 14 - 15)									
	Average hours of training	Hour per employee	47	57	53	60	38	36	37	38
	Average cost of training	Baht per employee	131,984	73,140	25,399	45,559	10,749	17,984	20,194	29,554
	Junior management (Level 9 - 10 departmen	t and Level 11 - 13)								
	Average hours of training	Hour per employee	56	56	62	66	28	25	48	41
	Average cost of training	Baht per employee	26,147	26,875	26,376	28,832	5,402	3,591	31,817	31,154
	Senior (Level 9 -10)									
	Average hours of training	Hour per employee	57	52	58	56	26	22	32	33
	Average cost of training	Baht per employee	41,319	35,479	27,353	26,462	9,301	6,838	8,722	8,594
	Employee (Level 8 and below)									
	Average hours of training	Hour per employee	82	82	73	85	34	29	38	37
	Average cost of training	Baht per employee	38,847	37,897	29,376	28,852	2,172	3,209	5,018	6,470

- 1 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.
- $^{\,2}\,$  Others refers to other provinces outside Bangkok where PTT's offices are situated.
- <sup>3</sup> Including employees working abroad in Cambodia, Myanmar, Malaysia, the Philippines, Singapore, Indonesia and England.
- <sup>4</sup> Including employees working abroad in Cambodia, Laos, the Philippines, Singapore, Indonesia, England, China and the United States of America.
- <sup>5</sup> Including employees working abroad in Cambodia, Laos, Myanmar, Malaysia, the Philippines, Singapore, Indonesia and England.
- <sup>6</sup> Including employees working abroad in Cambodia, Laos, Singapore and England.
- <sup>7</sup> Including employees working abroad in Myanmar, Malaysia, the Philippines, Singapore and England.
- $^{\rm 8}\,$  Including employees working abroad in Singapore and England.
- <sup>9</sup> Employee turnover excludes retirement and death.
- $^{10}$  Hours of training and further study are included in the average hours of training per year per employee.



			PTT	Build	dina				т.								
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		Head Office	Prakanong Office	PTT Innovation Institute	Rayong Office	Oil Business Academy (OBA)	Gas Separation Plant (GSP)	Gas Transmission (GTM)	Gas Terminal	Oil Terminal	Aviation	Retail	Lubrication	Transportation	NGV	Cafe Amazon Roasting Plant	2021 Coverage (%)
Employee and contractor	2021	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
Employee and contractor	2020	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
Employee and contractor	2019	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
Employee and contractor	2018	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Employee	0001	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
Contractor	2021	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
Employee	2000	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
Contractor	2020	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
Employee		•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
Contractor	2019	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
Employee		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Contractor	2018	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
		•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
. ,	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	100
	2019	•		•		-		•		•	-				•	-	
		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
	2018	•								•	-						
		•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	2021					_					1					-	
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	2020					-					1						
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	2019					_					1						
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	2018										-						
					-						-						
	2021		_			-					-						
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	2020	_				-					-						
						-					-						100
	2019	_				-					-						
						_					-						
	2018	_									-						
											-						
	2021					_					-						
						_					-						
	2020	_				_					-						
						_					-						100
	2019	_									-						
			_								-						
· · ·	2018	•									-						
	Employee and contractor Employee and contractor Employee and contractor Employee Contractor Employee Contractor Employee Contractor Employee Contractor Employee Contractor Employee	Employee and contractor 2019 Employee and contractor 2018 Employee and contractor 2018 Employee	Employee and contractor         2020           Employee and contractor         2019           Employee         2018           Employee         2021           Contractor         2020           Employee         2021           Contractor         2020           Employee         2020           Contractor         2018           Employee         2018           Contractor         2020           Employee         2021           Contractor         2020           Employee         2020           Contractor         2020           Employee         2020           Contractor         2018           Employee         2020           Contractor         2018           Employee         2020           Contractor         2020           Employee <t< td=""><td>Employee and contractor         2020         . NR           Employee and contractor         2019         . NR           Employee and contractor         2018         . NR           Employee         2021         . NR           Contractor         2020         . NR           Employee         2020         . NR           Contractor         2019         . NR           Employee         2019         . NR           Contractor         2018         . NR           Employee         2018         . NR           Contractor         2018         . NR           Employee         2021         . NR           Contractor         2020         . NR           Employee         2020         . NR           Contractor         2019         . NR           Employee         2020         . NR           Contractor         2021         . NR           Employee         2021         . NR           Contractor         2020         . NR           Employee         2020         . NR           Contractor         2019         . NR           Employee         2021         . NR           Co</td><td>Employee and contractor         2020         NR         .           Employee and contractor         2019         NR         .           Employee and contractor         2018         .         .         .           Employee         2021         .         NR         .           Employee         2020         .         NR         .           Contractor         2019         .         NR         .           Employee         2019         .         NR         .           Contractor         2018         .</td><td>Employee and contractor 2019   NR</td><td>Employee and contractor 2020</td><td>Employee and contractor 2020   1</td><td>Employee and contractor 2020   NR   NR   NR   NR   NR   NR   NR   N</td><td>Employee and contractor 2020   NR   NR   NR   NR   NR   NR   NR   N</td><td>Employee and contractor 2020   NR   NR   NR   NR   NR   NR   NR   N</td><td>Employee and contractor 2020   NR   NR   NR   NR   NR   NR   NR   N</td><td>Employee and contractor 2020</td><td>Employee and contractor 2020</td><td>Employee and contractor 2020   NR   NR   NR   NR   NR   NR   NR   N</td><td>Employee and contractor 2020 • NR • NR • NR • NR • • • • NR • NR •</td><td>Employee and contractor</td></t<>	Employee and contractor         2020         . NR           Employee and contractor         2019         . NR           Employee and contractor         2018         . NR           Employee         2021         . NR           Contractor         2020         . NR           Employee         2020         . NR           Contractor         2019         . NR           Employee         2019         . NR           Contractor         2018         . NR           Employee         2018         . NR           Contractor         2018         . NR           Employee         2021         . NR           Contractor         2020         . NR           Employee         2020         . NR           Contractor         2019         . NR           Employee         2020         . NR           Contractor         2021         . NR           Employee         2021         . NR           Contractor         2020         . NR           Employee         2020         . NR           Contractor         2019         . NR           Employee         2021         . NR           Co	Employee and contractor         2020         NR         .           Employee and contractor         2019         NR         .           Employee and contractor         2018         .         .         .           Employee         2021         .         NR         .           Employee         2020         .         NR         .           Contractor         2019         .         NR         .           Employee         2019         .         NR         .           Contractor         2018         .	Employee and contractor 2019   NR	Employee and contractor 2020	Employee and contractor 2020   1	Employee and contractor 2020   NR   NR   NR   NR   NR   NR   NR   N	Employee and contractor 2020   NR   NR   NR   NR   NR   NR   NR   N	Employee and contractor 2020   NR   NR   NR   NR   NR   NR   NR   N	Employee and contractor 2020   NR   NR   NR   NR   NR   NR   NR   N	Employee and contractor 2020	Employee and contractor 2020	Employee and contractor 2020   NR   NR   NR   NR   NR   NR   NR   N	Employee and contractor 2020 • NR • NR • NR • NR • • • • NR • NR •	Employee and contractor

# Safety (continued)

Reporting Scope		Year					F	PTT	Ope	rated	Bus	ines	s					
				PTI	Build	ding				T	ermin	al					+e	
			Head Office	Prakanong Office	PTT Innovation Institute	Rayong Office	Oil Business Academy (OBA)	Gas Separation Plant (GSP)	Gas Transmission (GTM)	Gas Terminal	Oil Terminal	Aviation	Retail	Lubrication	Transportation	NGV	Cafe Amazon Roasting Plant	2021 Coverage (%)
Total recordable	Employee	0001	٠	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
injuries case (TRIC)	Contractor	2021	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee	2020	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Contractor	—— 2020	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
	Employee	0010	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
	Contractor	—— 2019	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee	0010	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
	Contractor	2018	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Total recordable	Employee	0001	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
injuries rate (TRIR)	Contractor	2021	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee		•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Contractor	—— 2020	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
	Employee	0010	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
	Contractor	2019	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee	0010	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
	Contractor	2018	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Lost time injury	Employee		•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
frequency rate	Contractor	2021	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
(LTIFR)	Employee	0000	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Contractor	—— 2020	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
	Employee	0010	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
	Contractor	2019	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee	0010	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
	Contractor	—— 2018	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
High-consequence	Employee	0001	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
work-related injuries	Contractor	2021	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Employee	0000	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	Contractor	—— 2020	•	NR	•	NR	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
	Employee	0010	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	100
	Contractor	2019	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
	Employee	0010	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
	Contractor	2018	NR	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.
- Gas terminal includes Khao Bo Ya Gas Terminal and Ban Rong Po Gas Terminal.
- Oil terminal includes only PTT Sriracha Oil Terminal.

# Safety (continued)

GRI	Required Data <sup>7</sup>	Unit		PT	T	
			2018	2019	2020	2021
GRI 403-9	Lost workday case (LWC) <sup>2</sup>			'		
(2018)1	Employee	Person	1	0	1	0
	• Contractor <sup>5</sup>	Person	7	2	2	0
	Lost day rate (LDR)					
	• Employee	Lost day per 200,000 hours worked	0.07	0	0.09	0
	• Contractor <sup>5</sup>	Lost day per 200,000 hours worked	0.61	0.11	0.54	0
	Total recordable injuries case (TRIC) <sup>3</sup>			0	2	
	Employee     Contractor <sup>5</sup>	Person Person	2 16	2	3 8	0
	Total recordable injuries rate (TRIR) <sup>3</sup>	1 613011	10	3	0	5
	Employee	Person per 200,000 hours worked	0.04	0.06	0.09	0
	• Contractor <sup>5</sup>	Person per 200,000 hours worked	0.04	0.00	0.03	0.038
	Lost time injury frequency rate (LTIFR) <sup>3</sup>					
	• Employee	Person per 200,000 hours worked	0.02	0	0.03	0
	- Employee	Person per 1,000,000 hours worked	0.13	0	0.15	0
	• Contractor⁵	Person per 200,000 hours worked	0.04	0.03	0.03	0
		Person per 1,000,000 hours worked	0.11	0.11	0.15	0
	High-consequence work-related injuries rate <sup>6</sup> (exclude	ding fatalities)				
	Employee	Person	NA	NA	0	0
	• Contractor <sup>5</sup>	Person	NA	NA	0	0
	High-consequence work-related injuries rate <sup>6</sup> (exclude					
	• Employee	Person per 1,000,000 hours worked	NA	NA	0	0
	• Contractor <sup>5</sup>	Person per 1,000,000 hours worked	NA	NA	0	0
GRI 403-	Occupational illness frequency rate (OIFR) <sup>3</sup>		_	-	- 1	_
10 (2018)	• Employee	Person per 200,000 hours worked	0	0	0	0
	Contractor <sup>5</sup> Work-related ill health for all employee:	Person per 200,000 hours worked	NA	0	0	0
		:::	0	0	0	
	<ul> <li>The number of fatalities as a result of work-related</li> <li>The number of cases of recordable work-related ill</li> </ul>		0	0	0	0
	Work-related ill health for all contractors <sup>5</sup>	Teatiff Ferson	0	0	0	0
	The number of fatalities as a result of work-related	ill health Person	0	0	0	0
	The number of latalities as a result of work-related     The number of cases of recordable work-related ill		0	0	0	0
GRI 403-9						
(2018)	Employee	%	1.58	1.44	0.90	0.42
	• Contractor <sup>5</sup>	%	NA	NA	NA	NA
	Fatalities as a result of work-related injury					
	Employee	Person	0	0	0	0
	• Contractor <sup>5</sup>	Person	14	0	0	0
	Fatality rate as a result of work-related injury					
	Employee	Person per 1,000,000 hours worked	0	0	0	0
	Contractor⁵	Person per 1,000,000 hours worked	0	0	0	0
	Near Misses					
	Employee and Contractor <sup>5</sup>	Case	113	75	76	76
NA	Tier 1 Process Safety Event	Number per 1,000,000 hours worked	0.024	0.033	0.032	0.0063
Zero	Number of accidents from using corporate vehicles	Case	6	6	1	1
accident		Target	10	5	3	2
	Number of land transport accidents	Case per 1,000,000 km	0.01	0.02	0.00	0.00
		Target	0.05	0.04	0.03	0.014

## Remarks:

- 1 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 2018, there were accidents resulting in one fatality. PTT has investigated and taken actions to prevent recurrence. The incident was raised as a lesson-learnt for relevant parties.
- 5 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).
- Workers were recategorized according to GRI 2016 for the year 2016 2018.



Reporting Scope	Year					P.	TT Op	perate	d Bus	iness						
Tropositing coops		Р	TT Bu	ilding			ξ	Те	rmina	ıl					D D	
	2001	Head Office	Prakanong Office	PTT Innovation Institute	Rayong Office	Gas Separation Plant (GSP)	Gas Transmission (GTM)	Gas Terminal	Oil Terminal	Aviation	Retail	• Lubrication	Transportation	NGV	Cafe Amazon Roasting Plant	2021 Coverage (%)
Direct GHG emissions (Scope 1)	2021	•	•	•	NA NA	•	•	•	•	•	•	•	•	•	•	
	2019	•	•	•	NA	•	•	•	•	•	•	•	•	•	•	100
	2018	•	•	•	NA	•	•	•	•	•	•	•	•	•	•	
Indirect GHG emissions (Scope 2)	2021	•	•	•	NA	•	•	•	•	•	•	•	•	•	•	
	2020	•	•	•	NA NA	•	•	•	•	•	•	•	•	•	•	100
	2019	•	•	•	NA	•	•	•	•	•	•	•	•	•	•	
Direct energy consumption	2021	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Direct energy consumption	2020	•	•	•	•	•	•	•	•	•	•	•	•	•	•	100
	2019	•	•	•	•	•	•	•	•	•	•	•	•	•	•	100
	2018	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Electricity purchased	2021	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
	2020	•	•	•	•	•	•	•	•	•	•	•	•	•	•	100
	2018	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Water withdrawal	2021	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	2020	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
	2019	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
	2018	•	• NR	•	• NR	•	•	•	•	• NR	• NR	• NR	NR NR	•	NR	
Effluents	2021	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
	2019	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
	2018	•	•	•	NR	•	•	•	•	•	•	•	NR	•	NR	
Produced water	2021	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	100
	2019	NR NR	NR NR	NR NR	NR NR	NR NR	NR NR	NR NR	NR NR	NR NR	NR NR	NR NR	NR NR	NR NR	NR NR	
\A/	2018	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	
Waste disposal	2020	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
	2019	•	NR	•	NR	•	•	•	•	NR	NR	NR	NR	•	NR	100
	2018	•	•	•	•	•	•	•	•	•	•	•	NR	•	•	
Oil and chemical spills	2021	•	NR	•	NR	•	•	•	•	NR	NR	NR	•	•	NR	
	2020	•	NR NR	•	NR NR	•	•	•	•	NR NR	NR NR	NR NR	•	•	NR NR	100
	2018	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Nitrogen oxides (NOx)	2021	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	NR	
The ober onder (Tren)	2020	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	NR	100
	2019	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	NR	
	2018	NR NR	NR NR	NR NR	NR NR	•	•	NR NR	NR NR	NR NR	NR NR	NR NR	NR NR	NR NR	NR NR	
Sulphur dioxide (SO <sub>2</sub> )	2021	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	NR	100
	2019	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	NR	100
	2018	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	NR	
Volatile Organic Compounds (VOCs)	2021	NR	NR	NR	NR	•	•	•	•	NR	NR	NR	NR	NR	NR	
	2020	NR NR	NR	NR	NR	•	•	•	•	NR	NR	NR	NR	NR NR	NR NR	100
	2019	NR	NR NR	NR NR	NR •	•	•	•	•	NR •	NR •	NR NR	NA NA	NR	NK •	
Volume of methane (CH <sub>4</sub> ) emitted	2018	•	•	•	•	•	•	•	•	•	•	•	•	•	NR	
volume of methane (or 14) efficied	2020	•	•	•	•	•	•	•	•	•	•	•	•	•	NR	100
	2019	•	•	•	•	•	•	•	•	•	•	•	•	•	NR	100
	2018	•	•	•	•	•	•	•	•	•	•	•	•	•	NR	
Direct methane (CH <sub>4</sub> ) emissions	2021	•	•	•	•	•	•	•	•	•	•	•	•	•	NR	
	2020	•	•	•	•	•	•	•	•	•	•	•	•	•	NR NR	100

## Remarks:

NA: Not available NR: Not relevant



GRI	Required Data	Unit		P1	гт	
	•		2018	2019	2020	2021
GRI 303-1	Water withdrawal by sources					
	Total water withdrawal	Million Liters	3,676.14	2,412.65	1,835.40	2,010.72
	Surface water	Million Liters	234.30	136.14	142.97	140.10
	Fresh water ≤1,000 mg/l TDS	Million Liters	234.30	136.14	142.97	140.10
	Other water >1,000 mg/l TDS	Million Liters	0.00	0.00	0.00	0.00
	Ground water	Million Liters	148.70	36.57	43.23	33.18
	Fresh water ≤1,000 mg/l TDS	Million Liters	148.70	36.57	43.23	33.18
	• 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	21.02	87.54	93.64	83.25
	Fresh water ≤1,000 mg/l TDS	Million Liters	0.00	0.00	0.00	0.00
	• Other water >1,000 mg/I TDS	Million Liters	21.02	87.54	93.64	83.25
	Third-party water	Million Liters	3,272.12	2,152.40	1,555.56	1,754.19
	Fresh water ≤1,000 mg/l TDS	Million Liters	3,272.12	2,152.40	1,555.56	1,754.19
	• Other water >1,000 mg/I TDS	Million Liters	0.00	0.00	0.00	0.00
	Total water withdrawal from areas with water stress	Million Liters	831.60	195.79	264.11	195.57
	Surface water	Million Liters	174.34	53.71	71.65	62.91
	Fresh water ≤1,000 mg/l TDS	Million Liters	174.34	53.71	71.65	62.91
	• Other water >1,000 mg/l TDS	Million Liters	0.00	0.00	0.00	0.00
	Ground water	Million Liters	35.38	35.27	38.33	29.41
	Fresh water ≤1,000 mg/l TDS	Million Liters	35.38	35.27	38.33	29.41
	• 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	621.88	106.81	154.13	103.25
	- Surface water	Million Liters	621.88	106.81	154.13	99.76
	- Ground water	Million Liters	0.00	0.00	0.00	3.49
	- 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	621.88	106.81	154.13	103.25
	Other water >1,000 mg/l TDS	Million Liters	0.00	0.00	0.00	0.00
GRI 303-3	Total water consumption	Million Liters	2,209.77	1,924.10	1,577.48	1,585.14
	Total water consumption from areas with water stress	Million Liters	446.01	176.33	245.02	179.32

## Remarks

- Data collection and disclosure are adjusted in alignment with the GRI 303-3 Water Withdrawal (2018 Version).
- 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.
- $\bullet\,$  Since 2019, OR's data is excluded from the scope, resulting in the reduction of water withdrawal.
- In 2018, surface water withdrawal decreased as PTT sold the WEcoZi asset. In addition, there were other sources of water withdrawal from other organizations to cover the scope of data collection and disclosure to service stations operated and owned by PTT launching in 2018.
- Revise 2017 2019 data for better accuracy.



GRI	Required Data	Unit		PT	Т	
			2018	2019	2020	2021
GRI 306-1	Total water discharge	Million Liters	1,466.04	488.54	257.91	425.58
	Surface water	Million Liters	544.94	482.56	251.90	418.60
	Ground water	Million Liters	0.00	0.00	0.00	0.00
	Seawater	Million Liters	10.22	5.98	6.01	6.98
	Third-party water	Million Liters	910.88	0.00	0.00	0.00
	Water discharge by fresh water (≤1,000 mg/l Total Dissolved Solids)	Million Liters	1,466.37	488.54	257.91	424.97
	Water discharge by other water (>1,000 mg/l Total Dissolved Solids)	Million Liters	0.00	0.00	0.00	0.61

#### Remarks:

- $\bullet \ \ \text{Data collection and disclosure are adjusted in alignment with the GRI 303-4 Water discharge (2018 \, version)}$
- 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 2017 2019 data for better accuracy



GRI	Required Data	Unit		PT	т	
			2018	2019	2020	2021
TOTAL WA	ASTE GENERATED (GRI 2020) - Effective 2022					
GRI 306-3	Total waste generated	Tonne				
(2020)	Total hazardous waste generated	Tonne	4,320.45	3,950.08	3,004.29	1,610.37
	Total non-hazardous waste generated	Tonne	15,583.62	3,847.18	2,786.01	3,256.30
WASTE DI	VERTED FROM DISPOSAL (GRI 2020) - Effective 2022					
GRI 306-4	Total waste diverted from disposal	Tonne	2,737.28	2,538.41	1,783.52	987.26
(2020)	WASTE DIVERTED FROM DISPOSAL(GRI 2020) - Effective 2022 (Onsite)					
	Total hazardous waste diverted from disposal (Onsite)	Tonne	0.00	0.00	0.00	0.00
	Preparation for reuse	Tonne	0.00	0.00	0.00	0.00
	Recycling	Tonne	0.00	0.00	0.00	0.00
	Other recovery operations	Tonne	0.00	0.00	0.00	0.00
	Total non-hazardous waste diverted from disposal (Onsite)	Tonne	0.00	0.00	0.00	0.00
	Preparation for reuse	Tonne	0.00	0.00	0.00	0.00
	Recycling	Tonne	0.00	0.00	0.00	0.00
	Other recovery operations	Tonne	0.00	0.00	0.00	0.00
	WASTE DIVERTED FROM DISPOSAL(GRI 2020) - Effective 2022 (Offsite)					
	Total hazardous waste diverted from disposal (Offsite)	Tonne	933.12	416.97	719.86	186.76
	Preparation for reuse	Tonne	7.09	0.24	0.00	0.32
	Recycling	Tonne	926.03	416.73	719.86	186.44
	Other recovery operations	Tonne	0.00	0.00	0.00	0.00
	Total non-hazardous waste diverted from disposal (Offsite)	Tonne	1,804.16	2,121.44	1,063.66	800.50
	Preparation for reuse	Tonne	632.85	1,839.44	1.20	1.20
	Recycling	Tonne	964.48	99.48	871.71	658.90
	Other recovery operations	Tonne	206.83	182.52	190.75	140.40
TOTAL WA	STE DIRECTED TO DISPOSAL (GRI 2020) - Effective 2022					
GRI 306-5	Total waste directed to disposal	Tonne	17,288.22	5,129.15	3,940.95	3,934.17
(2020)	WASTE DIRECTED TO DISPOSAL (GRI 2020) - Effective 2022 (Onsite)					
	Total hazardous waste directed to disposal (Onsite)	Tonne	0.00	0.00	0.00	0.00
	Incineration (with energy recovery)	Tonne	0.00	0.00	0.00	0.00
	Incineration (without energy recovery)	Tonne	0.00	0.00	0.00	0.00
	Landfilling	Tonne	0.00	0.00	0.00	0.00
	Other disposal operations	Tonne	0.00	0.00	0.00	0.00
	Total non-hazardous waste directed to disposal (Onsite)	Tonne	0.00	0.00	0.00	0.00
	Incineration (with energy recovery)	Tonne	0.00	0.00	0.00	0.00
	Incineration (without energy recovery)	Tonne	0.00	0.00	0.00	0.00
	Landfilling	Tonne	0.00	0.00	0.00	0.00
	Other disposal operations	Tonne	0.00	0.00	0.00	0.00
	TOTAL WASTE DIRECTED TO DISPOSAL (GRI 2020) - Effective 2022 (Off	site)				
	Total hazardous waste directed to disposal (Offsite)	Tonne	3,358.30	3,564.01	2,222.53	1,457.98
	Incineration (with energy recovery)	Tonne	303.23	516.32	191.17	758.11
	Incineration (without energy recovery)	Tonne	2,946.80	3,033.94	1,997.95	643.75
	Landfilling	Tonne	34.43	6.26	0.00	0.00
	Other disposal operations	Tonne	73.84	7.49	33.41	56.12
	Total non-hazardous waste directed to disposal (Offsite)	Tonne	13,929.92	1,565.14	1,718.42	2,476.19
	Incineration (with energy recovery)	Tonne	6.56	6.59	10.02	222.41
	Incineration (without energy recovery)	Tonne	433.59	555.26	254.10	108.52
	Landfilling	Tonne	358.93	27.39	24.05	0.00
	Other disposal operations	Tonne	13,130.84	975.90	1,430.25	2,145.26

- 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
   Other Other recovery operations covers composting etc. 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 2017 2019 data for better accuracy.

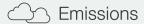
  - Other disposal operations covers land reclamation, deepwell injection etc.



GRI	Required Data	Unit		PTT		
			2018	2019	2020	2021
GRI 306-3	Oil and chemical spills					
(2016)	From PTT operational boundary					
	Number of hydrocarbon spills	Number of spills	0	0	0	0
	Volume of hydrocarbon spills	m³	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	m³	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	m³	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	m³	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	m³	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	m³	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	m³	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	m³	0.00	0.00	0.00	0.00
	From 3 <sup>rd</sup> party (transportation): truck transportation					
	Number of hydrocarbon spills	Number of spills	2	0	0	0.00
	Volume of hydrocarbon spills	m³	59.00	0.00	0.00	0.00
	Number of non-hydrocarbon spills	Number of spills	0	0	0	0
	Volume of non-hydrocarbon spills	m³	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	m³	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	m³	0.00	0.00	0.00	0.00

## Remarks:

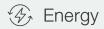
• Volume of hydrocarbon and non-hydrocarbon spills include spills which occur in operational areas, as well as those from truck and shipping transportation, that result in a volume of more than 1 barrel of oil spilled to the environment. In spill cases, PTT executes spill response procedures to control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



GRI	Required Data	Unit	PTT			
			2018	2019	2020	2021
GRI 305-7	Volatile Organic Compounds	(VOCs) Tonne	10,454.11	2,157.40	1,954.67	1,839.64
	VOCs Intensity	Tonne per million barrel oil equivalent (mboe)	26.07	5.41	5.42	5.15
	Nitrogen oxides (NOx)	Tonne	1,033.61	888.47	796.28	883.85
	NOx intensity	Tonne per million barrel oil equivalent (mboe)	2.58	2.23	2.21	2.47
	Sulphur dioxide (SO <sub>2</sub> )	Tonne	60.00	48.79	27.17	24.67
	SO <sub>2</sub> intensity	Tonne per million barrel oil equivalent (mboe)	0.15	0.12	0.08	0.07

#### Remarks

- $\bullet\,$  Strategic Objective 2020: Zero emission rate of  ${\rm SO_2},\,{\rm NOx},$  and VOCs.
- $\bullet~{\rm SO_2}$  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 data for better accuracy



GRI	Required Data	Unit	PTT			
			2018	2019	2020	2021
GRI 302-1	Total direct energy consumption	GJ	44,415,197	45,464,198	41,975,966	43,686,633
	Total indirect energy consumption	GJ	2,340,957	1,968,011	1,703,994	1,936,013
	Electricity purchased	GJ	2,340,957	1,968,011	1,703,994	1,933,534
	Total energy sold	GJ	0	0	0	0
	Electricity sold	GJ	0	0	0	0

GRI	Required Data	Unit	PTT Group			
			2018	2019	2020	2021
GRI 302-1	Total energy consumption	GJ	314,748,809	309,976,495	336,270,017	324,127,772
	Total direct energy consumption	GJ				
	PTT operational control		300,103,606	294,434,912	322,810,439	310,757,695
	Total indirect energy consumption	GJ	14,645,203	15,541,583	13,459,579	13,370,077
GRI 302-3	Direct energy intensity					
	Oil and gas production	GJ/mboe	205,577	198,080	212,244	220,641
	Refinery throughput	GJ/Tonne refinery throughout	1.57	1.51	1.55	1.55
	Petrochemical throughput	GJ/Tonne petrochemical throughout	5.62	5.60	5.77	6.03

## Remarks:

NA: ไม่มีข้อมูล

- The organizational boundary of PTT Group based on the equity share approach includes all domestic subsidiaries in which PTT directly owns more than 20% of shares or indirectly owns

  100% of shares.
- PTT's indirect energy consumption solely comes from electricity purchase and electricity from solar panel on InI, P010 and 11.
- Data in 2018 2020 are re-calculated as in 2021, the organization boundary has been expanded as TOP merging TP in business scope, the operational boundary has been expanded as ORP additional form GC, depot and tank farm additional from IRPC, LPG cylinder from OR, and the activity boundary has been expanded that LNG has installed and generated power on site.
- In 2021, energy intensity increase as consumption from high vallue production by ORP from.



## **GHG** Emissions

GRI	Required Data	Unit	PTT			
			2018	2019	2020	2021
	Total GHG emissions	Tonne CO <sub>2</sub> equivalent	11,292,029	11,888,918	11,260,432	11,655,554
GRI 305-1 (2016)	Direct (Scope 1) GHG emissions	Tonne CO <sub>2</sub> equivalent	10,985,990	11,637,769	11,049,816	11,372,665
GRI 305-2 (2016)	GHG Scope 2	Tonne CO <sub>2</sub> equivalent	306,039	251,149	210,616	282,889
GRI 305-3 (2016)	GHG Scope 3	Tonne CO <sub>2</sub> equivalent	127,046,865	81,862,930	75,115,542	74,020,821
		2				

GRI	Required Data	Unit		PTT G	iroup	
			2018	2019	2020	2021
GRI 305-1 (2016)	GHG Scope 1					
	PTT operational control	Tonne CO <sub>2</sub> equivalent	29,882,080	29,940,265	29,030,149	31,729,751
	PTT equity share	Tonne CO <sub>2</sub> equivalent	20,187,235	20,591,682	19,749,544	21,180,570
GRI 305-2 (2016)	GHG Scope 2					
	PTT operational control	Tonne CO <sub>2</sub> equivalent	1,914,522	1,983,294	1,663,600	1,419,881
	PTT equity share	Tonne CO <sub>2</sub> equivalent	819,344	850,656	898,513	719,719
GRI 305-3 (2016)	GHG Scope 3	Tonne CO <sub>2</sub> equivalent	127,046,865	126,355,782	116,150,201	113,477,070
GRI 305-4 (2016)	GHG Intensity					
	Oil and gas production	Tonne CO <sub>2</sub> equivalent/ Million barrel oil equivalent	38,672	36,398	38,247	40,661
	Refinery	$\label{eq:tonne_constraint} \mbox{Tonne CO}_2 \mbox{ equivalent/} \\ \mbox{Tonne refinery throughput}$	0.1275	0.1324	0.1441	0.1586
	Petrochemical	Tonne CO <sub>2</sub> equivalent/ Tonne petrochemical product	0.3857	0.3995	0.4423	0.4866

## 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.
- GHG scope 3 emissions of PTT includes the combustion of fuel sold by PTT only.
- In 2019 2021 other indirect GHG emissions (scope 3) of PTT Group includes emissions from the combustion of fuel sold by PTT and PTTOR only.
- $\bullet\,$  In 2017, PTT sold euity shares of PTTAC, PTTMCC, PTTPL, PTTPM and HMC to PTTGC.
- GHG scope 2 of PTT and PTT group in 2018 2020 are re-calculated by emission factor adjust from EPPO 2021 data
- Data in 2018 2020 are re-calculated as in 2021, the organization boundary has been expanded as TOP merging TP in business scope, the operational boundary has been expanded as ORP additional form GC, depot and tank farm additional from IRPC, LPG cylinder from OR, and the activity boundary has been expanded that LNG has installed and generated power on site.
- $\bullet \ \ \text{In 2021, GHG intensity of petrochemical increased due to the demand for electricity to produce High Value Product by PTTGC.}$



## Methane Emissions

GRI	Required Data	Unit	PTT				
			2018	2019	2020	2021	
	Volume of methane emitted	m <sup>3</sup>	25,663,465	25,298,193	25,808,053	21,534,301	
	(leakage, venting, and flaring)						
	Direct CH <sub>4</sub> emissions	Tonne	17,339	17,092	17,436	14,549	
	(extracted from GHG)						
G4-0G6	Volume of flared hydrocarbon	Mm³	192,662	198,481	118,880	108,938	
	Volume of vented hydrocarbon	Mm <sup>3</sup>	23,911	21,143	19,630	16,932	

GRI	Required Data	Unit	PTT Group			
			2018	2019	2020	2021
	Volume of methane emitted (leakage, venting, and flaring)	m <sup>3</sup>	63,556,618	67,111,079	58,338,111	59,989,194
	Direct CH <sub>4</sub> emissions (extracted from GHG)	Tonne	43,023	46,751	39,469	40,609
G4-0G6	Volume of flared hydrocarbon	Mm <sup>3</sup>	1,282,747	1,168,177	1,004,610	1,088,109
	Volume of vented hydrocarbon	Mm <sup>3</sup>	24,003	21,219	17,046	16,932

- 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 2020 are re-calculated as in 2021, the organization boundary has been expanded as TOP merging TP in business scope, the opprational boundary has been expanded as ORP additional form GC, depot and tank farm additional from IRPC, LPG cylinder from OR, and the activity boundary has been expanded that LNG has installed and generated power on site.



## Environmental Management

Required Data	Unit		P	П	
		2018	2019	2020	2021
Environmental Policy/Management System					
Capital investments	Million Baht	163	55	6	170
Operating expenses	Million Baht	331	348	323	289
Total expenses (Capital Investment + Operating Expense)	Million Baht	494	403	329	459
Savings, cost avoidance, income, tax incentives, etc.	Million Baht	43	298	42	205
Operations covered (by revenue, production volume, or employees, etc.)	%	100	100	100	100
Environmental Violations					
Number of violations of legal obligations/ regulations	Case	0	0	0	0
Amount of fines/ penalties related to the above	Baht	0	0	0	0
Environmental liability accrued at year end	Baht	0	0	0	0

- 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 1st, 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
- In 2019, PTT has devleoped e-Expense system, enabling more comprehensive collection of corporate envionrmental expenditure. PTT is also investing in 'Regenerative Thermal Oxidizer (ROT) type remover of hydrogen sulfide contaminantin acaidic 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 million baht to 298 million baht.
- In 2021, environmental investment increased from the installation of sewage pipe system in Wangchan valley area, Rayong.

