

Sustainable Performance – Information on Environment

Volume of Materials Used in Production Processes of Mitr Phol Group

Business Unit	Data	Unit	2019*	2020*	2021*	2022**
GRI 301-1 (2016) Volume of Materials Used						
Mitr Phol Group	Renewable materials used	Tonnes	20,666,338	17,013,344	16,704,942	11,257,033
	Non-renewable materials used	Tonnes	208,540	186,138	336,239	456,931
Farming business	Renewable materials used	Tonnes	53,307	78,187	61,012	277,824
	Non-renewable materials used	Tonnes	39	41	33	227
Sugar business	Renewable materials used	Tonnes	17,875,543	14,195,902	13,243,323	7,868,364
	Non-renewable materials used	Tonnes	101,731	83,061	74,357	118,123
Energy business	Renewable materials used	Tonnes	2,054,342	2,440,635	2,551,099	1,962,692
	Non-renewable materials used	Tonnes	20,855	12,543	173,791	11,845
Wood substitute materials business	Renewable materials used	Tonnes	1,317,916	1,443,362	1,440,332	927,357
	Non-renewable materials used	Tonnes	84,485	88,970	86,131	78,758
Fertilizer business	Renewable materials used	Tonnes	23,808	24,982	26,849	18,015
	Non-renewable materials used	Tonnes	77	71.49	646	247,934

Business Unit	Data	Unit	2019*	2020*	2021*	2022**
Logistics and warehouse business	Renewable materials used	Tonnes	NR	NR	0	0
	Non-renewable materials used	Tonnes	1,352	1,452	1,280	34.98
Other business	Renewable materials used	Tonnes	354	690	690	18.40
	Non-renewable materials used	Tonnes	0	0.09	0.22	41.84
GRI 301-2 (2016) Recycled Input Materials Used						
Mitr Phol Group	Percentage of recycled input materials used	Percent	0.30	0.31	0.27	0.26
Wood substitute materials business	Percentage of recycled input materials used	Percent	4.51	3.51	2.98	2.86
	Recycled input materials used	Tonnes	63,200	53,851	45,521	28,758

Remarks: * refer to data collected during 1 November of the previous year to 31 October of the reporting year.

** refer to data collected during 1 January 2022 – 31 December 2022.

NA refer to not available or no data was collected.

NR refer to not relevant.

Volume of materials that were purchased from business in Mitr Phol was eliminated from the data of materials used for Mitr Phol Group.

Only wood substitute materials business uses recycled materials to replace virgin materials.

In 2020, the Company's environmental performance report was expanded to include the performance scope of Mitr Phol Sugar (Amnat Charoen) Co., Ltd. and Mitr Phol Bio-Power (Amnat Charoen) Co., Ltd. due to the new acquisition. For the new acquisition in 2021, there is an additional performance from Betong Green Power

Co., Ltd. and Productivity Plus Co., Ltd., (Saraburi). In 2022, the new 10 companies were included in 2022 environmental performance data i.e. Green Pharmahol Co., Ltd., Bangkok Alcohol Industrial Co., Ltd., Kampaengpetch Green Energy Co., Ltd, Apcon Renewable Energy Co., Ltd., MP Apcon Operations Co., Ltd, Panel Design Lab Co., Ltd, Fair Fast Co., Ltd, Thai Environmental and Energy Development Co., Ltd, Health Innotech Co., Ltd, and Eto-Huay Kasain Valley CO., Ltd.

Energy Consumption

Business Unit	Data	Unit	2019*	2020*	2021*	2022**
GRI 302-1 (2016) Energy Consumption Within the Organization						
Mitr Phol Group	Total energy consumption within the organization	Million MJ	60,916.52	46,430.50	53,350.74	67,536.56
	Energy consumption within organization from non-renewable fuel	Million MJ	333.69	319.94	312.09	515.47
	Energy consumption within organization from renewable fuel	Million MJ	65,557.97	50,482.80	58,212.20	73,833.07
	Fuel types used					
	Non-renewable fuel					
	- Liquefied petroleum gas (LPG)	Million MJ	79.24	85.18	78.11	97.01
	- Gasoline	Million MJ	21.56	0.21	0.37	1.54
	- Fuel oil	Million MJ	42.38	44.76	11.68	8.43
	- Bituminous	Million MJ	0	0	0	132.31
	Non-renewable fuel mixed with renewable fuel					
	- Biodiesel B5/ B7	Million MJ	110.41	389.42	449.43	270.64
	- Biodiesel B10	Million MJ	75.94	22.35	52.48	0.21
	- Gasohol E10/ Gasohol 91/ Gasohol 95	Million MJ	12.25	11.31	9.08	14.71
	- Gasohol E20	Million MJ	1.80	1.49	0.95	1.08

Business Unit	Data	Unit	2019*	2020*	2021*	2022**
	- Gasohol E85	Million MJ	0.45	0.23	0.13	0.15
	Renewable fuel					
	- Biogas	Million MJ	370.57	231.07	324.93	348.20
	- Biomass	Million MJ	65,177.06	51,434.06	59,687.68	73,474.25
	Electricity and steam purchased from outside Mitr Phol Group	Million MJ	547.77	538.68	565.58	576.08
	- Non-renewable electricity purchased	Million MJ	547.77	538.68	565.58	576.08
	- Non-renewable steam purchased	Million MJ	0	0	0	0
	Generated electricity from solar power	Million MJ	379.80	6.65	22.94	29.68
	Electricity and steam sold to outside Mitr Phol Group	Million MJ	5,902.71	4,917.56	5,762.07	7,417.73
	- Renewable electricity sold	Million MJ	5,902.71	4,917.56	5,762.07	7,417.73
	- Renewable steam sold	Million MJ	0	0	0	0
Farming business	Total energy consumption within the organization	Million MJ	378.60	10.23	8.45	11.60
	Energy consumption within organization from non-renewable fuel	Million MJ	10.37	8.37	6.54	4.12
	Energy consumption within organization from renewable fuel	Million MJ	0.36	0.29	0.32	0.10

Business Unit	Data	Unit	2019*	2020*	2021*	2022**
	Electricity and steam purchased from outside organization	Million MJ	3.00	0.99	0.97	1.96
	- Non-renewable electricity purchased	Million MJ	3.00	0.99	0.97	1.96
	- Renewable electricity purchased	Million MJ	0	0	0	0
	- Renewable steam purchased	Million MJ	0	0	0	0
	Generated electricity from solar power	Million MJ	364.87	0.58	0.61	5.42
Sugar business	Total energy consumption within the organization	Million MJ	34,632.96	21,816.16	21,631.66	29,366.67
	Energy consumption within organization from non-renewable fuel	Million MJ	88.59	67.66	56.82	175.29
	Energy consumption within organization from renewable fuel	Million MJ	3,874.64	2,082.00	2,370.42	3,243.01
	Electricity and steam purchased from outside organization	Million MJ	30,991.14	19,820.46	19,456.37	26,264.06
	- Non-renewable electricity purchased	Million MJ	16.43	33.40	32.35	27.83
	- Renewable electricity purchased	Million MJ	2,111.99	1,415.33	1,365.56	1,811.99
	- Renewable steam purchased	Million MJ	28,862.72	18,405.13	18,058.46	24,424.24
	Generated electricity from solar power	Million MJ	0	0	0	0
	Electricity and steam sold to outside organization	Million MJ	321.41	187.37	251.95	315.70
	- Renewable electricity sold	Million MJ	321.41	187.37	251.95	315.70

Business Unit	Data	Unit	2019*	2020*	2021*	2022**
	- Renewable steam sold	Million MJ	0	0	0	0
Energy business	Total energy consumption within the organization	Million MJ	21,642.83	18,296.06	26,457.30	29,533.62
	Energy consumption within organization from non-renewable fuel	Million MJ	68.17	65.63	94.08	177.20
	Energy consumption within organization from renewable fuel	Million MJ	57,933.60	44,282.78	51,191.16	65,473.42
	Electricity and steam purchased from outside organization	Million MJ	80.36	92.20	90.11	97.91
	- Non-renewable electricity purchased	Million MJ	80.36	92.20	90.11	97.91
	- Renewable electricity purchased	Million MJ	0	0	0	0
	- Renewable steam purchased	Million MJ	0	0	0	0
	Generated electricity from solar power	Million MJ	3.93	5.88	20.68	2.85
	Electricity and steam sold to outside organization	Million MJ	36,443.23	26,150.43	24,938.73	36,217.75
	- Renewable electricity sold	Million MJ	7,692.21	6,170.87	6,515.53	9,215.35
	- Renewable steam sold	Million MJ	28,751.02	19,979.56	18,423.20	27,002.40
Wood substitute	Total energy consumption within the organization	Million MJ	4,215.58	4,575.76	5,137.38	5,372.79
	Energy consumption within organization from non-renewable fuel	Million MJ	107.00	129.04	119.94	108.32

Business Unit	Data	Unit	2019*	2020*	2021*	2022**
materials business	Energy consumption within organization from renewable fuel	Million MJ	3,676.77	4,046.32	4,597.29	5,086.93
	Electricity and steam purchased from outside organization	Million MJ	432.43	400.30	420.07	419.98
	- Non-renewable electricity purchased	Million MJ	432.43	400.30	420.07	419.98
	- Renewable electricity purchased	Million MJ	0	0	0	0
	- Renewable steam purchased	Million MJ	0	0	0	0
	Generated electricity from solar power	Million MJ	0.11	0.10	0.08	18.86
	Electricity and steam sold to outside organization	Million MJ	1.07	0	0	0
	- Renewable electricity sold	Million MJ	1.07	0	0	0
	- Renewable steam sold	Million MJ	0	0	0	0
Fertilizer business	Total energy consumption within the organization	Million MJ	80.13	78.57	72.68	54.68
	Energy consumption within organization from non-renewable fuel	Million MJ	5.41	5.75	5.61	8.89
	Energy consumption within organization from renewable fuel	Million MJ	69.19	68.95	51.36	27.95
	Electricity and steam purchased from outside organization	Million MJ	5.53	3.87	14.22	15.29
	- Non-renewable electricity purchased	Million MJ	5.53	3.87	14.22	15.29

Business Unit	Data	Unit	2019*	2020*	2021*	2022**
	- Renewable electricity purchased	Million MJ	0	0	0	0
	- Renewable steam purchased	Million MJ	0	0	0	0
	Generated electricity from solar power	Million MJ	0	0	1.48	2.55
Logistics and warehouse business	Total energy consumption within the organization	Million MJ	29.73	17.97	11.47	26.84
	Energy consumption within organization from non-renewable fuel	Million MJ	20.36	13.08	6.91	17.84
	Energy consumption within organization from renewable fuel	Million MJ	1.32	0.69	0.17	0.08
	Electricity and steam purchased from outside organization	Million MJ	8.05	4.20	4.39	8.92
	- Non-renewable electricity purchased	Million MJ	8.05	4.20	4.39	8.92
	- Renewable electricity purchased	Million MJ	0	0	0	0
	- Renewable steam purchased	Million MJ	0	0	0	0
	Generated electricity from solar power	Million MJ	0	0	0	0
Other business	Total energy consumption within the organization	Million MJ	48.74	35.99	27.21	33.70
	Energy consumption within organization from non-renewable fuel	Million MJ	33.78	30.41	22.18	23.81
	Energy consumption within organization from renewable fuel	Million MJ	2.10	1.77	1.47	1.57

Business Unit	Data	Unit	2019*	2020*	2021*	2022**
	Electricity and steam purchased from outside organization	Million MJ	1.97	3.73	3.47	8.31
	- Non-renewable electricity purchased	Million MJ	1.97	3.73	3.47	4.19
	- Renewable electricity purchased	Million MJ	0	0	0	4.07
	- Renewable steam purchased	Million MJ	0	0	0	0.05
	Generated electricity from solar power	Million MJ	10.89	0.08	0.08	0.01
GRI 302-2 (2016) Energy Consumption Outside of the Organization						
Mitr Phol Group	Energy consumption outside of the organization	Million MJ	2,217.01	1,412.74	858.99	5,309.61
Farming business	Energy consumption outside of the organization	Million MJ	13.85	1.58	2.26	4.80
Sugar business	Energy consumption outside of the organization	Million MJ	583.40	360.99	381.74	982.30
Energy business	Energy consumption outside of the organization	Million MJ	217.41	288.61	176.49	323.54
Wood substitute materials business	Energy consumption outside of the organization	Million MJ	173.05	360.99	232.44	508.00

Business Unit	Data	Unit	2019*	2020*	2021*	2022**
Fertilizer business	Energy consumption outside of the organization	Million MJ	1.09	1.21	10.08	18.40
Logistics and warehouse business	Energy consumption outside of the organization	Million MJ	0.13	0	0.86	128.11
Other business	Energy consumption outside of the organization	Million MJ	1,228.08	617.50	55.12	3,344.45
GRI 302-3 (2016) Energy Intensity						
Mitr Phol Group	Energy consumption within the organization per revenue	Million MJ/Million Baht	0.8725	0.7660	0.8911	0.6534
	Energy consumption outside the organization per revenue	Million MJ/Million Baht	0.0318	0.0233	0.0143	0.0514
CSA 2.3.3 Energy Consumption						
Mitr Phol Group	Total non-renewable energy consumption	MWh	244,850.20	238,505.75	243,797.42	303,207.78
	Total renewable energy consumption	MWh	16,676,418.90	12,658,868.46	14,575,864.44	18,456,962.94
	Target of total non-renewable energy consumption	MWh				231,608.00

Business Unit	Data	Unit	2019*	2020*	2021*	2022**
						(Reduce 5% from 2021)
	Total non-renewable energy consumption per revenue	MWh/Million baht	3.51	3.93	4.07	2.93
	Target of total non-renewable energy consumption per revenue	MWh/Million baht				3.87 (Reduce 5% from 2021)
	Data coverage	% of revenue	100	100	100	100

Remarks: * refer to data collected during November 1 of the previous year to October 31 of the reporting year.

** refer to data collected during 1 January 2022 – 31 December 2022.

NA refer to not available or no data was collected.

NR refer to not relevant.

Net calorific values refer to the data of the Department of Alternative Energy Development and Efficiency and the IPCC 2006.

Mitr Phol Group generates electricity and steam produced from biomass to use within Mitr Phol Group, and electricity produced from biomass to sell to outside Mitr Phol Group. Additionally, we purchase non-renewable electricity from outside organization to use within Mitr Phol Group.

For the proportion of energy consumption within the organization per revenue was included only energy consumption of fuel, electricity, steam and solar power.

Energy consumption outside the organization includes energy consumption for raw material transportation by third-party organization, product transportation by third-party organization, and employee's ground transportation and air travel.

Biomass fuel includes bagasses, cane leaves, wood chips, etc.

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Co., Ltd. and Productivity Plus Co., Ltd., (Saraburi). In 2022, the new 10 companies were included in 2022 environmental performance data i.e. Green Pharmahol Co., Ltd., Bangkok Alcohol Industrial Co., Ltd., Kampaengpetch Green Energy Co., Ltd, Apcon Renewable Energy Co., Ltd., MP Apcon Operations Co., Ltd, Panel Design Lab Co., Ltd, Fair Fast Co., Ltd, Thai Environmental and Energy Development Co., Ltd, Health Innotech Co., Ltd, and Eto-Huay Kasain Valley CO., Ltd.

Water Usage by the Water Sources

Business	Data		Unit	All areas				Area with Water Stress				
Unit				2019*	2020*	2021*	2022**	2019*	2020*	2021*	2022**	
GRI 303-3 (2018) Water Withdrawal												
Mitr Phol Group	Total volume of water from surface water		Million liters	18,128.52	15,035.58	18,611.42	21,481.86	5,085.66	3,844.22	4,058.85	6,885.44	
	- Freshwater (≤ 1,000 mg/L TDS)		Million liters	18,128.52	15,035.58	18,611.42	21,481.86	5,085.66	3,844.22	4,058.85	6,885.44	
	- Other water (> 1,000 mg/L TDS)		Million liters	0	0	0	0	0	0	0	0	
	Total volume of water from groundwater		Million liters	2,012.96	3,041.71	1,570.00	4,888.86	2.93	3.02	126.89	72.18	
	- Freshwater (≤ 1,000 mg/L TDS)		Million liters	2,012.96	1,767.45	1,553.72	4,873.48	2.93	3.02	126.89	72.18	
	- Other water (> 1,000 mg/L TDS)		Million liters	0	1,274.26	16.28	15.38	0	0	0	0	
	Total volume of water from third-party water		Million liters	4,941.53	61.79	87.50	124.27	2,299.29	7.67	18.07	91.27	
	- Freshwater (≤ 1,000 mg/L TDS)		Million liters	4,941.53	61.79	87.50	124.27	2,299.29	7.67	18.07	65.82	
	- Other water (> 1,000 mg/L TDS)		Million liters	0	0	0	0	0	0	0	0	
	Total volume of water from produced water		Million liters	NA	3,857.90	4,957.82	2,897.07	NA	780.76	743.69	184.70	
	- Freshwater (≤ 1,000 mg/L TDS)		Million liters	NA	3,857.90	4,957.82	2,860.67	NA	780.76	743.69	184.70	
	- Other water (> 1,000 mg/L TDS)		Million liters	NA	0	0	36.39	NA	0	0	0	
	Total volume of water		Surface water	Million liters					2,299.29	7.67	18.07	65.82
	form third-party water		Groundwater	Million liters					0	0	0	0
	Total volume of water			Million liters	25,083.01	21,996.98	25,226.73	29,392.06	7,387.89	4,635.67	4,947.49	7,233.59
	Total volume of water from surface water		Million liters	3,334.27	3,103.92	3,770.48	3,320.31	1,913.35	941.11	1,052.30	226.77	

Business Unit	Data		Unit	All areas				Area with Water Stress			
				2019*	2020*	2021*	2022**	2019*	2020*	2021*	2022**
Farming business	- Freshwater (≤ 1,000 mg/L TDS)		Million liters	3,334.27	3,103.92	3,770.48	3,320.31	1,913.35	941.11	1,052.30	226.77
	- Other water (> 1,000 mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	Total volume of water from groundwater		Million liters	94.35	350.05	383.45	3,856.25	0	0	124.66	48.36
	- Freshwater (≤ 1,000 mg/L TDS)		Million liters	94.35	348.07	381.47	3,856.25	0	0	124.66	48.36
	- Other water (> 1,000 mg/L TDS)		Million liters	0	1.98	1.98	0	0	0	0	0
	Total volume of water from third-party water		Million liters	0	0	0	0	0	0	0	0
	- Freshwater (≤ 1,000 mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	- Other water (> 1,000 mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	Total volume of water	Surface water	Million liters					0	0	0	0
	form third-party water	Groundwater	Million liters					0	0	0	0
	Total volume of water			Million liters	3,428.62	3,453.97	4,153.93	7,176.56	1,913.35	941.11	1,176.96
Sugar business	Total volume of water from surface water		Million liters	5,810.03	5,782.07	6,733.59	10,485.08	3,172.31	2,903.11	3,006.55	5,909.45
	- Freshwater (≤ 1,000 mg/L TDS)		Million liters	5,810.03	5,782.07	6,733.59	10,485.08	3,172.31	2,903.11	3,006.55	5,909.45
	- Other water (> 1,000 mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	Total volume of water from groundwater		Million liters	106.15	151.45	80.19	71.27	0	0	0	0
	- Freshwater (≤ 1,000 mg/L TDS)		Million liters	106.15	51.24	75.76	71.27	0	0	0	0
	- Other water (> 1,000 mg/L TDS)		Million liters	0	100.21	4.43	0	0	0	0	0
	Total volume of water from third-party water		Million liters	457.49	256.85	403.47	149.09	29.76	14.05	21.15	25.46

Business Unit	Data		Unit	All areas				Area with Water Stress			
				2019*	2020*	2021*	2022**	2019*	2020*	2021*	2022**
	- Freshwater ($\leq 1,000$ mg/L TDS)		Million liters	457.49	256.85	403.47	149.09	29.76	14.05	21.15	25.46
	- Other water ($> 1,000$ mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	Total volume of water from produced water		Million liters	NA	3,857.90	4,957.82	2,897.07	NA	780.77	743.69	184.71
	- Freshwater ($\leq 1,000$ mg/L TDS)		Million liters	NA	3,857.90	4,957.82	2,860.67	NA	780.77	743.69	184.71
	- Other water ($> 1,000$ mg/L TDS)		Million liters	NA	0	0	36.39	NA	0	0	0
	Total volume of water from third-party water	Surface water	Million liters					29.76	14.05	21.15	25.46
		Groundwater	Million liters					0	0	0	0
	Total volume of water		Million liters	6,373.67	10,048.27	12,175.07	13,602.51	3,202.07	3,697.93	3,771.39	6,119.61
Energy business	Total volume of water from surface water		Million liters	8,974.22	6,138.40	8,096.15	7,669.33	0	0	0	749.22
	- Freshwater ($\leq 1,000$ mg/L TDS)		Million liters	8,974.22	6,138.40	8,096.15	7,669.33	0	0	0	749.22
	- Other water ($> 1,000$ mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	Total volume of water from groundwater		Million liters	890.64	1,557.94	202.96	133.55	2.93	3.01	2.23	20.48
	- Freshwater ($\leq 1,000$ mg/L TDS)		Million liters	890.64	385.87	193.10	118.17	2.93	3.01	2.23	20.48
	- Other water ($> 1,000$ mg/L TDS)		Million liters	0	1,172.07	9.86	15.38	0	0	0	0
	Total volume of water from third-party water		Million liters	4,404.14	3,321.81	4,528.90	5,406.22	2,261.43	2,151.82	2,310.74	2,591.80
	- Freshwater ($\leq 1,000$ mg/L TDS)		Million liters	4,404.14	3,321.81	4,528.90	5,272.28	2,261.43	2,151.82	2,310.74	2,591.80
	- Other water ($> 1,000$ mg/L TDS)		Million liters	0	0	0	133.94	0	0	0	0
		Surface water	Million liters					2,261.43	2,151.82	2,310.74	2,591.80

Business Unit	Data		Unit	All areas				Area with Water Stress			
				2019*	2020*	2021*	2022**	2019*	2020*	2021*	2022**
	Total volume of water from third-party water	Groundwater	Million liters					0	0	0	0
	Total volume of water		Million liters	14,269.00	11,018.15	12,828.01	13,209.11	2,264.36	2,154.83	2,312.97	3,361.50
Wood substitute materials business	Total volume of water from surface water		Million liters	0	0	0	0	0	0	0	0
	- Freshwater ($\leq 1,000$ mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	- Other water ($> 1,000$ mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	Total volume of water from groundwater		Million liters	898.66	880.40	802.50	814.52	0	0	0	0
	- Freshwater ($\leq 1,000$ mg/L TDS)		Million liters	898.66	880.40	802.50	814.52	0	0	0	0
	- Other water ($> 1,000$ mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	Total volume of water from third-party water		Million liters	27.52	28.28	22.96	6.82	2.61	2.83	6.25	6.82
	- Freshwater ($\leq 1,000$ mg/L TDS)		Million liters	27.52	28.28	22.96	6.82	2.61	2.83	6.25	6.82
	- Other water ($> 1,000$ mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	Total volume of water from third-party water	Surface water	Million liters					2.61	2.83	6.25	6.82
		Groundwater	Million liters					0	0	0	0
	Total volume of water		Million liters	926.18	908.68	825.46	821.35	2.61	2.83	6.25	6.82
Fertilizer business	Total volume of water from surface water		Million liters	0	0	0	0	0	0	0	0
	- Freshwater ($\leq 1,000$ mg/L TDS)		Million liters	0	0	0	0	0	0	0	0

Business Unit	Data		Unit	All areas				Area with Water Stress			
				2019*	2020*	2021*	2022**	2019*	2020*	2021*	2022**
	- Other water (> 1,000 mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	Total volume of water from groundwater		Million liters	6.31	4.84	4.37	5.45	0	0	0	0
	- Freshwater (≤ 1,000 mg/L TDS)		Million liters	6.31	4.84	4.37	5.45	0	0	0	0
	- Other water (> 1,000 mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	Total volume of water from third-party water		Million liters	5.49	4.83	11.81	10.50	5.49	4.83	11.81	10.50
	- Freshwater (≤ 1,000 mg/L TDS)		Million liters	5.49	4.83	11.81	10.50	5.49	4.83	11.81	10.50
	- Other water (> 1,000 mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	Total volume of water form third-party water	Surface water	Million liters					5.49	4.83	11.81	10.50
		Groundwater	Million liters					0	0	0	0
	Total volume of water		Million liters	11.80	9.67	16.18	15.95	5.49	4.83	11.81	10.50
Logistics and warehouse business	Total volume of water from surface water		Million liters	0	0	0	0	0	0	0	0
	- Freshwater (≤ 1,000 mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	- Other water (> 1,000 mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	Total volume of water from groundwater		Million liters	0	0	0	0	0	0	0	0
	- Freshwater (≤ 1,000 mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	- Other water (> 1,000 mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	Total volume of water from third-party water		Million liters	34.61	25.35	50.53	26.90	0	0	0	0
	- Freshwater (≤ 1,000 mg/L TDS)		Million liters	34.61	25.35	50.53	26.90	0	0	0	0

Business Unit	Data		Unit	All areas				Area with Water Stress			
				2019*	2020*	2021*	2022**	2019*	2020*	2021*	2022**
	- Other water (> 1,000 mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	Total volume of water from third-party water	Surface water	Million liters					0	0	0	0
		Groundwater	Million liters					0	0	0	0
	Total volume of water		Million liters	34.61	25.35	50.53	26.90	0	0	0	0
Other business	Total volume of water from surface water		Million liters	10.00	11.20	11.20	7.14	0	0	0	0
	- Freshwater (≤ 1,000 mg/L TDS)		Million liters	10.00	11.20	11.20	7.14	0	0	0	0
	- Other water (> 1,000 mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	Total volume of water from groundwater		Million liters	16.85	97.04	96.52	7.82	0	0	0	0
	- Freshwater (≤ 1,000 mg/L TDS)		Million liters	16.85	97.04	96.52	7.82	0	0	0	0
	- Other water (> 1,000 mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	Total volume of water from third-party water		Million liters	12.28	3.34	2.20	5.51	0	0	0	0
	- Freshwater (≤ 1,000 mg/L TDS)		Million liters	12.28	3.34	2.20	5.51	0	0	0	0
	- Other water (> 1,000 mg/L TDS)		Million liters	0	0	0	0	0	0	0	0
	Total volume of water from third-party water	Surface water	Million liters					0	0	0	0
		Groundwater	Million liters					0	0	0	0
	Total volume of water		Million liters	39.13	111.58	109.92	20.47	0	0	0	0
	Proportion of Water Withdrawal from Water Sources										

Business Unit	Data		Unit	All areas				Area with Water Stress			
				2019*	2020*	2021*	2022**	2019*	2020*	2021*	2022**
Mitr Phol Group	Volume of water withdrawal from water sources per revenue		Million liters/Million baht	0.3592	0.3629 ^A	0.4213 ^A	0.2843 ^A				
			cu.m./Million baht	359.2440	362.8879 ^A	421.3414 ^A	284.3462 ^A				
GRI 303-4 (2018) Water Discharge											
Mitr Phol Group	Volume of water discharge by destination	Volume of water discharge to surface water	Million liters	13.68	23.50	402.53	10.05				
		Volume of water discharge to groundwater	Million liters	0	0	0	0				
		Volume of water discharge to third-party water	Million liters	3.14	70.57	48.56	17.29				
		Total volume of water discharge	Million liters	16.82	94.07	451.09	27.35				
	Volume of water discharge to outside organization	Freshwater (≤ 1,000 mg/L TDS)	Million liters	16.82	39.04	63.82	27.35	0	2.27	5.00	12.34
		Other water (> 1,000 mg/L TDS)	Million liters	0	55.04	387.27	0	0	0	385.34	0

Business Unit	Data		Unit	All areas				Area with Water Stress			
				2019*	2020*	2021*	2022**	2019*	2020*	2021*	2022**
Farming business	Volume of water discharge by destination	Volume of water discharge to surface water	Million liters	0	0	0	0				
		Volume of water discharge to groundwater	Million liters	0	0	0	0				
		Volume of water discharge to third-party water	Million liters	0	0	0	0				
		Total volume of water discharge	Million liters	0	0	0	0				
	Volume of water discharge to outside organization	Freshwater ($\leq 1,000$ mg/L TDS)	Million liters	0	0	0	0	0	0	0	0
		Other water ($> 1,000$ mg/L TDS)	Million liters	0	0	0	0	0	0	0	0
Sugar business	Volume of water discharge by destination	Volume of water discharge to surface water	Million liters	0	0	378.85	0				
		Volume of water discharge to groundwater	Million liters	0	0	0	0				
		Volume of water discharge to third-party water	Million liters	0	0	0	0				

Business Unit	Data		Unit	All areas				Area with Water Stress			
				2019*	2020*	2021*	2022**	2019*	2020*	2021*	2022**
		Total volume of water discharge	Million liters	0	0	378.85	0				
	Volume of water discharge to outside organization	Freshwater ($\leq 1,000$ mg/L TDS)	Million liters	0	0	0	0	0	0	0	0
		Other water ($> 1,000$ mg/L TDS)	Million liters	0	0	378.85	0	0	0	378.85	0
Energy business	Volume of water discharge by destination	Volume of water discharge to surface water	Million liters	0	0	0	0				
		Volume of water discharge to groundwater	Million liters	0	0	0	0				
		Volume of water discharge to third-party water	Million liters	0	55.04	1.93	286.70				
		Total volume of water discharge	Million liters	0	55.04	1.93	286.70				
	Volume of water discharge to	Freshwater ($\leq 1,000$ mg/L TDS)	Million liters	0	0	0	286.70	0	0	0	285.98
		Other water ($> 1,000$ mg/L TDS)	Million liters	0	55.04	1.93	0	0	0	0	0

Business Unit	Data		Unit	All areas				Area with Water Stress			
				2019*	2020*	2021*	2022**	2019*	2020*	2021*	2022**
	outside organization										
Wood substitute Materials business	Volume of water discharge by destination	Volume of water discharge to surface water	Million liters	9.95	12.00	12.18	0				
		Volume of water discharge to groundwater	Million liters	0	0	0	0				
		Volume of water discharge to third-party water	Million liters	0	2.27	5.00	3.94				
		Total volume of water discharge	Million liters	9.95	14.26	17.18	3.94				
	Volume of water discharge to outside organization	Freshwater ($\leq 1,000$ mg/L TDS)	Million liters	9.95	14.26	17.18	3.94	0	2.27	5.00	3.94
		Other water ($> 1,000$ mg/L TDS)	Million liters	0	0	0	0	0	0	0	0
Fertilizer business	Volume of water discharge	Volume of water discharge to surface water	Million liters	0	0	0	0				
		Volume of water discharge to groundwater	Million liters	0	0	0	0				

Business Unit	Data		Unit	All areas				Area with Water Stress			
				2019*	2020*	2021*	2022**	2019*	2020*	2021*	2022**
	by destination	Volume of water discharge to third-party water	Million liters	0	0	6.49	8.4				
		Total volume of water discharge	Million liters	0	0	6.49	8.4				
	Volume of water discharge to outside organization	Freshwater ($\leq 1,000$ mg/L TDS)	Million liters	0	0	0	8.4	0	0	0	8.4
		Other water ($> 1,000$ mg/L TDS)	Million liters	0	0	6.49	0	0	0	6.49	0
Logistics and Warehouse business	Volume of water discharge by destination	Volume of water discharge to surface water	Million liters	2.89	10.55	7.04	6.14				
		Volume of water discharge to groundwater	Million liters	0	0	0	0				
		Volume of water discharge to third-party water	Million liters	0.32	10.60	33.38	0.01				
		Total volume of water discharge	Million liters	3.21	21.15	40.42	6.15				
	Volume of water	Freshwater ($\leq 1,000$ mg/L TDS)	Million liters	3.21	21.15	40.42	6.15	0	0	0	0

Business Unit	Data		Unit	All areas				Area with Water Stress			
				2019*	2020*	2021*	2022**	2019*	2020*	2021*	2022**
	discharge to outside organization	Other water (> 1,000 mg/L TDS)	Million liters	0	0	0	0	0	0	0	0
Other business	Volume of water	Volume of water discharge to surface water	Million liters	0.84	0.96	4.46	3.92				
	discharge by destination	Volume of water discharge to groundwater	Million liters	0	0	0	0				
		Volume of water discharge to third-party water	Million liters	2.82	2.67	1.76	4.22				
		Total volume of water discharge	Million liters	3.65	3.63	6.22	8.14				
	Volume of water	Freshwater (≤ 1,000 mg/L TDS)	Million liters	3.65	3.63	6.22	8.14	0	0	0	0
	discharge to outside organization	Other water (> 1,000 mg/L TDS)	Million liters	0	0	0	0	0	0	0	0
GRI 303-5 (2018) Water Consumption											
Mitr Phol Group	Total water consumption		Million liters	25,066.19	21,902.90	24,775.64	29,078.73	7,387.89	4,633.40	4,557.15	6,935.27

Business Unit	Data	Unit	All areas				Area with Water Stress			
			2019*	2020*	2021*	2022**	2019*	2020*	2021*	2022**
Farming business	Total water consumption	Million liters	3,428.62	3,453.97	4,153.93	7,176.56	1,913.35	941.11	1,176.96	275.13
Sugar business	Total water consumption	Million liters	6,373.67	10,048.27	11,796.22	13,602.51	3,202.07	3,697.93	3,392.54	6,119.61
Energy business	Total water consumption	Million liters	14,269.00	10,963.11	12,826.08	13,049.90	2,264.36	2,154.83	2,312.97	3,075.52
Wood substitute materials business	Total water consumption	Million liters	916.23	894.41	808.28	835.60	2.61	0.57	1.25	2.89
Fertilizer business	Total water consumption	Million liters	11.80	9.67	9.69	7.55	5.49	4.83	5.32	2.10
Logistics and warehouse business	Total water consumption	Million liters	31.39	4.19	10.11	20.75	0	0	0	0
Other business	Total water consumption	Million liters	35.48	107.94	103.69	12.33	0	0	0	3.57
Total Net Fresh Water Consumption (CSA 2.3.4 Water Consumption)										

Business Unit	Data	Unit	All areas				Area with Water Stress			
			2019*	2020*	2021*	2022**	2019*	2020*	2021*	2022**
Mitr Phol Group	Total net freshwater consumption	Million cubic meters	25.07	16.84	13.14	19.28	5.48	2.90	3.15	6.04
	Total net freshwater consumption target	Million cubic meters				12.48 (Reduce 5% from 2021)				2.99 (Reduce 5% from 2021)
	- Withdrawal of municipal water	Million cubic meters	4.942	0.062	0.088	0.124				
	- Withdrawal of fresh surface water (excluding rainwater)	Million cubic meters	18.129	15.036	11.885	14.262				
	- Withdrawal of fresh ground water	Million cubic meters	2.013	1.767	1.570	4.889				
	- Water returned to the source of extraction at similar or higher quality as raw water extracted	Million cubic meters	0.014	0.024	0.403	0.00001				
	Total net freshwater consumption per revenue	Million cubic meters/ million baht	0.00036	0.00028	0.00022	0.00019	0.00008	0.00005	0.000053	0.000058

Business Unit	Data	Unit	All areas				Area with Water Stress			
			2019*	2020*	2021*	2022**	2019*	2020*	2021*	2022**
	Target of total net freshwater consumption per revenue	Million cubic meters/ million baht				0.00021 (Reduce 5% from 2021)				0.000050 (Reduce 5% from 2021)
	Data coverage	% of revenue	100	100	100	100	100	100	100	100

Remarks: * refer to data collected during November 1 of the previous year to October 31 of the reporting year.

** refer to data collected during 1 January 2022 – 31 December 2022.

A Total volume of water withdrawal for Mitr Phol Group in 2020 – 2022 include water data from surface water, groundwater, third-party water, and produced water.

The 2019 data includes water from surface water, groundwater and third-party water.

NA refer to not available or no data was collected.

NR refer to not relevant.

The water risk map of the AQUEDUCT Water Risk Atlas was used for risk assessment of water stress area.

Total net fresh water consumption = Total volume of third-party water + Total volume of fresh surface water + Total volume of fresh ground water – water returned to the source of extraction at similar or higher quality as water extracted.

For the reporting of total water volume in business unit, the data includes water volume received from the Mitr Phol's entity that is outside the boundary of this business unit.

In 2020, the Company's environmental performance report was expanded to include the performance scope of Mitr Phol Sugar (Amnat Charoen) Co., Ltd. and Mitr Phol Bio-Power (Amnat Charoen) Co., Ltd. due to the new acquisition. For the new acquisition in 2021, there is an additional performance from Betong Green Power Co., Ltd. and Productivity Plus Co., Ltd., (Saraburi). In 2022, the new 10 companies were included in 2022 environmental performance data i.e. Green Pharmahol Co., Ltd., Bangkok Alcohol Industrial Co., Ltd., Kampaengpetch Green Energy Co., Ltd, Apcon Renewable Energy Co., Ltd., MP Apcon Operations Co., Ltd, Panel Design Lab Co., Ltd, Fair Fast Co., Ltd, Thai Environmental and Energy Development Co., Ltd, Health Innotech Co., Ltd, and Eto-Huay Kasain Valley CO., Ltd.

Water Quality Post-treatment by Business Unit

Business Unit	Water Quality	Standard Level	Average of Water Quality Post-treatment in Each Year			
			2019*	2020*	2021*	2022**
GRI 303-4 (2018) Water Quality Post-treatment						
Farming business	BOD (mg/l)	20	NR	NR	NR	NR
	COD (mg/l)	120	NR	NR	NR	NR
	TSS (mg/l)	50	NR	NR	NR	NR
Sugar business	BOD (mg/l)	20	4.9	5.4	11.8	4.71
	COD (mg/l)	120	53.6	60.5	50.1	57.15
	TSS (mg/l)	50	16.1	16.8	55.5	22.86
Energy business	BOD (mg/l)	20	17.4	14.6	13.4	12.17
	COD (mg/l)	120	82.4	80	71.2	51.88
	TSS (mg/l)	50	33.3	30.2	24.2	24.62
Wood substitute materials business	BOD (mg/l)	20	14.5	11.3	10.3	6.51
	COD (mg/l)	120	93.8	61.4	71.8	45.97
	TSS (mg/l)	50	34.0	28.9	22.9	13.76
Fertilizer business	BOD (mg/l)	500***	NR	NR	23.0	34.40
	COD (mg/l)	750***	NR	NR	169.8	137.58
	TSS (mg/l)	200***	NR	NR	46.6	39.95
	BOD (mg/l)	20	6.6	11.6	32.6	2.32

Business Unit	Water Quality	Standard Level	Average of Water Quality Post-treatment in Each Year			
			2019*	2020*	2021*	2022**
Logistics and warehouse business	COD (mg/l)	120	62.4	69.7	61.7	39.39
	TSS (mg/l)	50	16.7	9.4	6.5	8.39
Other business	BOD (mg/l)	20	1.1	17.9	14.4	-
	COD (mg/l)	120	5.3	66.3	40.0	46.20
	TSS (mg/l)	50	2.1	27.3	15.0	33.34

Remark: * refer to data collected during November 1 of the previous year to October 31 of the reporting year.

** refer to data collected during 1 January 2022 – 31 December 2022.

NA refer to not available or no data was collected.

NR refer to not relevant.

Standard level is in accordance with the standards in the Notification of the Ministry of Industry, B.E. 2560 (2017), Re: Prescribing the Standards for the Control of Water Discharge from the Factory.

*** Standard is in accordance with the standards in the Notification of the Industrial Estate Authority of Thailand No.76/2017, Re: Prescribing General Standard to Discharge Wastewater to Central Wastewater Treatment System of Industrial Estate Authority.

In 2020, the Company's environmental performance report was expanded to include the performance scope of Mitr Phol Sugar (Amnat Charoen) Co., Ltd. and Mitr Phol Bio-Power (Amnat Charoen) Co., Ltd. due to the new acquisition. For the new acquisition in 2021, there is an additional performance from Betong Green Power Co., Ltd. and Productivity Plus Co., Ltd., (Saraburi). In 2022, the new 10 companies were included in 2022 environmental performance data i.e. Green Pharmahol Co., Ltd., Bangkok Alcohol Industrial Co., Ltd., Kampaengpetch Green Energy Co., Ltd, Apcon Renewable Energy Co., Ltd., MP Apcon Operations Co., Ltd, Panel Design Lab Co., Ltd, Fair Fast Co., Ltd, Thai Environmental and Energy Development Co., Ltd, Health Innotech Co., Ltd, and Eto-Huay Kasain Valley CO., Ltd.

Greenhouse Gas (GHG) Emission

Business Unit	Data	Unit	2019*	2020*	2021*	2022**
GRI 305-1 (2016)/ CSA 2.3.1 Direct GHG Emissions (Scope 1)						
Mitr Phol Group	Direct GHG emissions (Scope 1)	Tonnes CO ₂ e	343,646	342,482	382,318	565,423.24
	Biogenic CO ₂ emissions	Tonnes CO ₂	6,766,178	5,597,886	11,376,682	8,168,455.45
	Target of direct GHG emissions (Scope 1)	Tonnes CO ₂ e				363,202.10 (Reduce 5% from 2021)
	Data coverage	% of revenue	100	100	100	100
Farming business	Direct GHG emissions (Scope 1)	Tonnes CO ₂ e	828.96	1,486	2,437	2,303.67
	Biogenic CO ₂ emissions	Tonnes CO ₂	0	0	0	0
Sugar business	Direct GHG emissions (Scope 1)	Tonnes CO ₂ e	188,359	163,863	98,394	67,215.02
	Biogenic CO ₂ emissions	Tonnes CO ₂	391,874	210,771	212,263	339,592.70
Energy business	Direct GHG emissions (Scope 1)	Tonnes CO ₂ e	132,241	152,801	252,916	469,716.19
	Biogenic CO ₂ emissions	Tonnes CO ₂	5,898,175	4,862,722	10,583,344	7,255,398.76
Wood substitute materials business	Direct GHG emissions (Scope 1)	Tonnes CO ₂ e	16,428	18,878	19,219	19,701.44
	Biogenic CO ₂ emissions	Tonnes CO ₂	467,980	516,299	575,357	570,309.85
Fertilizer business	Direct GHG emissions (Scope 1)	Tonnes CO ₂ e	1,483	1,989	6,486	3,032.21
	Biogenic CO ₂ emissions	Tonnes CO ₂	8,151	8,095	5,718	3,102.22

Business Unit	Data	Unit	2019*	2020*	2021*	2022**
Logistics and warehouse business	Direct GHG emissions (Scope 1)	Tonnes CO ₂ e	1,645	1,048	819	1,389.25
	Biogenic CO ₂ emissions	Tonnes CO ₂	0	0	0	0
Other business	Direct GHG emissions (Scope 1)	Tonnes CO ₂ e	2,665	2,421	2,047	2,065.46
	Biogenic CO ₂ emissions	Tonnes CO ₂	0	0	0	51.92
GRI 305-2 (2016)/ CSA 2.3.2 Energy Indirect GHG Emissions (Scope 2)						
Mitr Phol Group	Energy indirect GHG emissions (Scope 2)	Tonnes CO ₂ e	105,492	78,322	77,988	78,151.96
	Target of Energy indirect GHG emissions (Scope 2)	Tonnes CO ₂ e				74,088.60 (Reduce 5% from 2021)
	Data coverage	% of revenue	100	100	100	100
Farming business	Energy indirect GHG emissions (Scope 2)	Tonnes CO ₂ e	578	137	333	271.73
Sugar business	Energy indirect GHG emissions (Scope 2)	Tonnes CO ₂ e	36,243	25,795	86,510	109,165
Energy business	Energy indirect GHG emissions (Scope 2)	Tonnes CO ₂ e	15,477	12,803	13,935	13,902.04
Wood substitute materials business	Energy indirect GHG emissions (Scope 2)	Tonnes CO ₂ e	83,279	55,586	56,047	58,319.15

Business Unit	Data	Unit	2019*	2020*	2021*	2022**
Fertilizer business	Energy indirect GHG emissions (Scope 2)	Tonnes CO ₂ e	1,066	539	2,224	2,123.65
Logistics and warehouse business	Energy indirect GHG emissions (Scope 2)	Tonnes CO ₂ e	1,551	583	904	1,238.29
Other business	Energy indirect GHG emissions (Scope 2)	Tonnes CO ₂ e	379	519	615	656.56
GRI 305-3 (2016) Other Indirect GHG Emissions (Scope 3)						
Mitr Phol Group	Other indirect GHG emissions (Scope 3)	Tonnes CO ₂ e	163,646 ^A	105,227 ^A	1,193,123	1,776,664.58
	1. Purchased goods and services	Tonnes CO ₂ e	-	-	807,493	993,265.53
	2. Capital goods	Tonnes CO ₂ e	-	-	-	-
	3. Fuel and energy related activities (not included in Scope 1 or 2)	Tonnes CO ₂ e	-	-	24,959	87,420.43
	4. Upstream transportation and distribution	Tonnes CO ₂ e	37,492	35,143	106,497	149,403.12
	5. Waste generated in operations	Tonnes CO ₂ e	-	-	1,503	1,018.32
	6. Business travel	Tonnes CO ₂ e	36,451	44,607	97	238,495.22
	7. Employee commuting	Tonnes CO ₂ e	-	-	13,830	9,357.82
	8. Upstream leased assets	Tonnes CO ₂ e	NR	NR	NR	NR
	9. Downstream transportation and distribution	Tonnes CO ₂ e	89,703	25,477	103,527	185,232.47
	10. Processing of sold products	Tonnes CO ₂ e	-	-	-	-

Business Unit	Data	Unit	2019*	2020*	2021*	2022**
	11. Use of sold products	Tonnes CO ₂ e	-	-	132,719	110,001.46
	12. End of life treatment of sold products	Tonnes CO ₂ e	-	-	2,320	2,186.51
	13. Downstream leased assets	Tonnes CO ₂ e	-	-	178	283.72
	14. Franchises	Tonnes CO ₂ e	NR	NR	NR	NR
	15. Investments	Tonnes CO ₂ e	NR	NR	NR	NR
Farming business	Other indirect GHG emissions (Scope 3)	Tonnes CO ₂ e	1,062 ^A	121 ^A	5,981	2,229.07
Sugar business	Other indirect GHG emissions (Scope 3)	Tonnes CO ₂ e	44,649 ^A	27,620 ^A	590,103	676,122.95
Energy business	Other indirect GHG emissions (Scope 3)	Tonnes CO ₂ e	16,647 ^A	22,122 ^A	406,006	256,956.62
Wood substitute business	Other indirect GHG emissions (Scope 3)	Tonnes CO ₂ e	13,270 ^A	11,061 ^A	219,845	188,138.23
Fertilizer business	Other indirect GHG emissions (Scope 3)	Tonnes CO ₂ e	84 ^A	93 ^A	424,630	349,047.26
Logistics and warehouse business	Other indirect GHG emissions (Scope 3)	Tonnes CO ₂ e	10 ^A	0 ^A	2,448	31,337.65
Other business	Other indirect GHG emissions (Scope 3)	Tonnes CO ₂ e	87,925 ^A	44,210 ^A	4,431	252,880.48
GRI 305-4 (2016) GHG Emissions Intensity						

Business Unit	Data	Unit	2019*	2020*	2021*	2022**
Mitr Phol Group	Direct GHG emissions (Scope 1) per revenue	Tonnes CO ₂ e /Million baht	4.92	5.65	6.39	5.47
	Target of Direct GHG emissions (Scope 1) per revenue	Tonnes CO ₂ e /Million baht				6.07 (Reduce 5% from 2021)
	Energy indirect GHG emissions (Scope 2) per revenue	Tonnes CO ₂ e /Million baht	1.51	1.29	1.30	0.76
	Target of Energy indirect GHG emissions (Scope 2) per revenue	Tonnes CO ₂ e /Million baht				1.24 (Reduce 5% from 2021)
	Other indirect GHG emissions (Scope 3) per revenue	Tonnes CO ₂ e /Million baht	2.3438 ^A	1.7360 ^A	19.93	17.19
	Target of other indirect GHG emissions (Scope 3) per revenue	Tonnes CO ₂ e /Million baht				18.93 (Reduce 5% from 2021)

Remarks: * refer to data collected during November 1 of the previous year to October 31 of the reporting year.

** refer to data collected during 1 January 2022 – 31 December 2022.

NA refer to not available or no data was collected.

NR refer to not relevant.

All greenhouse gases included in the report.

Emission factors of GHG emissions refer to the data of Thailand Greenhouse Gas Management Organization (Public Organization), IPCC 2006 and Thai National LCI database. The data of GWP refers to IPCC, AR5

Reporting scope of GHG emissions is operational control.

Reporting of indirect GHG emissions (scope 2) for Mitr Phol Group is the location-based method which the data is as same as the data of market-based method.

^A Other indirect GHG emissions (Scope 3) in 2019-2020 include GHG emissions from raw material transportation by third-party organization, product transportation by third-party organization, and employee's ground transportation and air travel.

For 2021-2022, Mitr Phol Group has collected and calculated other indirect GHG emissions (Scope 3) in line with the Corporate Value Chain (Scope 3) Accounting & Reporting Standard, Greenhouse Gas Protocol.

In 2020, the Company's environmental performance report was expanded to include the performance scope of Mitr Phol Sugar (Amnat Charoen) Co., Ltd. and Mitr Phol Bio-Power (Amnat Charoen) Co., Ltd. due to the new acquisition. For the new acquisition in 2021, there is an additional performance from Betong Green Power Co., Ltd. and Productivity Plus Co., Ltd., (Saraburi). In 2022, the new 10 companies were included in 2022 environmental performance data i.e. Green Pharmahol Co., Ltd., Bangkok Alcohol Industrial Co., Ltd., Kampaengpetch Green Energy Co., Ltd, Apcon Renewable Energy Co., Ltd., MP Apcon Operations Co., Ltd, Panel Design Lab Co., Ltd, Fair Fast Co., Ltd, Thai Environmental and Energy Development Co., Ltd, Health Innotech Co., Ltd, and Eto-Huay Kasain Valley CO., Ltd.

Air Emissions Quality from Factory

Business Unit	Air Quality	Standard Level	Average of Air Emission Quality in Each Year			
			2019*	2020*	2021*	2022**
GRI 305-7 (2016) Air Quality						
Sugar business	NO _x (ppm)	≤ 200	44.92	30.20	82.20	81.41
	SO _x (ppm)	≤ 60	1.74	0.77	1	1
	CO (ppm)	≤ 690	166.58	216.42	278.52	316.98
	TSP (mg/m ³) ¹⁾	≤ 120	29.40	9.60	26.15	16.59
	TSP (mg/m ³) ³⁾	≤ 320	26.65	43.71	8.59	9.27
	TSP (mg/m ³) ⁴⁾	≤ 400	4.68	1.65	0.95	1.82
Energy business	NO _x (ppm)	≤ 200	81.54	61.14	96.84	86.10
	SO _x (ppm)	≤ 60	3.19	3.25	2.08	6.06
	CO (ppm)	≤ 690	177.12	126.66	217.42	399.40
	TSP (mg/m ³) ¹⁾	≤ 120	22.46	20.48	32.89	23.10
	TSP (mg/m ³) ²⁾	≤ 320	30.14	38.42	19.66	25.40
	TSP (mg/m ³) ⁴⁾	≤ 400	NR	NR	NR	33.24
Wood substitute materials business	NO _x (ppm)	≤ 200	20.95	18.65	36.30	29.72
	SO _x (ppm)	≤ 60	2.24	2.00	2.10	2.11

Business Unit	Air Quality	Standard Level	Average of Air Emission Quality in Each Year			
			2019*	2020*	2021*	2022**
	CO (ppm)	≤ 690	53.82	80.59	126.88	184.31
	TSP (mg/m ³) ¹⁾	≤ 120	4.95	10.69	9.20	11.98
	TSP (mg/m ³) ³⁾	≤ 320	2.54	2.94	2.59	4.03
	TSP (mg/m ³) ⁴⁾	≤ 400	81.20	34.16	50.98	71.33
Fertilizer business	NO _x (ppm)	≤ 200	20.41	14.48	29.00	25.25
	SO _x (ppm)	≤ 60	1.31	0.66	1	1
	CO (ppm)	≤ 690	11.20	8.99	31.17	0.1
	TSP (mg/m ³) ¹⁾	≤ 120	NR	NR	NR	NR
	TSP (mg/m ³) ³⁾	≤ 320	NR	NR	NR	NR
	TSP (mg/m ³) ⁴⁾	≤ 400	204.54	131.74	90.97	147.72

Remarks: * refer to data collected during November 1 of the previous year to October 31 of the reporting year

** refer to data collected during 1 January 2022 – 31 December 2022.

NA refer to not available or no data was collected.

NR refer to not relevant.

Farming, logistics and warehouse, and other businesses don't have air emission stacks.

Air quality standards:

- 1) The definition of new power plant is in accordance with the definition under the Notification of the Ministry of Industry, B.E. 2547 (2004), Re: Prescribing Air Pollutant Concentrations from Power Plant Producing, Distributing or Selling Electricity.

- 2) The definition of old power plant is in accordance with the definition under the Notification of the Ministry of Industry, B.E. 2547 (2004), Re: Prescribing Air Pollutant Concentrations from Power Plant Producing, Distributing or Selling Electricity.
- 3) The Notification of the Ministry of Industry, B.E. 2549 (2006), Re: Prescribing Air Pollutant Concentrations from Factory, for general manufacturing with fuel combustion.
- 4) The Notification of the Ministry of Industry, B.E. 2549 (2006), Re: Prescribing Air Pollutant Concentrations from Factory, for general manufacturing without fuel combustion.

In 2020, the Company's environmental performance report was expanded to include the performance scope of Mitr Phol Sugar (Amnat Charoen) Co., Ltd. and Mitr Phol Bio-Power (Amnat Charoen) Co., Ltd. due to the new acquisition. For the new acquisition in 2021, there is an additional performance from Betong Green Power Co., Ltd. and Productivity Plus Co., Ltd., (Saraburi). In 2022, the new 10 companies were included in 2022 environmental performance data i.e. Green Pharmahol Co., Ltd., Bangkok Alcohol Industrial Co., Ltd., Kampaengpetch Green Energy Co., Ltd, Apcon Renewable Energy Co., Ltd., MP Apcon Operations Co., Ltd, Panel Design Lab Co., Ltd, Fair Fast Co., Ltd, Thai Environmental and Energy Development Co., Ltd, Health Innotech Co., Ltd, and Eto-Huay Kasain Valley CO., Ltd.

Mitr Phol Group's Waste Management

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
GRI 306-3 (2020) Waste Generated						
Mitr Phol Group	Total weight of waste generated	Tonnes	5,001,379.15	3,103,779.08	3,179,774.70	3,090,052.18
	Total weight of hazardous waste generated	Tonnes	103,489.05	1,079.46	725.88	7,603.70
	Total weight of non-hazardous waste generated	Tonnes	4,897,890.10	3,102,699.63	3,179,048.82	3,082,448.49
Farming business	Total weight of waste generated	Tonnes	NA	NA	4.36	33,595.30
	Total weight of hazardous waste generated	Tonnes	NA	NA	0	3.63
	Total weight of non-hazardous waste generated	Tonnes	NA	NA	4.36	33,591.67
Sugar business	Total weight of waste generated	Tonnes	2,231,241.86	3,973,618.22	3,706,609.91	5,110,065.97
	Total weight of hazardous waste generated	Tonnes	98,849.10	337.76	257.08	4,377.34
	Total weight of non-hazardous waste generated	Tonnes	2,132,392.76	3,973,280.46	3,706,352.83	5,105,688.64
Energy business	Total weight of waste generated	Tonnes	2,754,439.98	2,154,133.94	2,466,188.34	2,656,608.12
	Total weight of hazardous waste generated	Tonnes	4,448.49	170.26	100.45	2,832.83
	Total weight of non-hazardous waste generated	Tonnes	2,749,991.49	2,153,963.68	2,466,087.90	2,653,775.29
Wood substitute materials business	Total weight of waste generated	Tonnes	15,609.81	13,456.70	30,749.09	23,659.07
	Total weight of hazardous waste generated	Tonnes	183.37	272.59	366.20	368.56
	Total weight of non-hazardous waste generated	Tonnes	15,426.44	13,184.11	30,382.89	23,290.51
Fertilizer business	Total weight of waste generated	Tonnes	27.00	16.96	44.88	114.41
	Total weight of hazardous waste generated	Tonnes	0.30	0	0.55	14.21

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
	Total weight of non-hazardous waste generated	Tonnes	26.70	16.96	44.33	100.20
Logistics and warehouse business	Total weight of waste generated	Tonnes	41.85	360.73	457.02	224.33
	Total weight of hazardous waste generated	Tonnes	6.13	296.84	0.61	7.13
	Total weight of non-hazardous waste generated	Tonnes	35.72	63.89	456.40	217.20
Other business	Total weight of waste generated	Tonnes	18.65	48.40	51.00	217.58
	Total weight of hazardous waste generated	Tonnes	1.66	2.00	1.00	0
	Total weight of non-hazardous waste generated	Tonnes	16.99	46.40	50.00	217.58
GRI 306-4 (2020) Waste Diverted from Disposal						
Mitr Phol Group	Total weight of waste diverted from disposal	Tonnes	2,252,014.81	2,391,468.61	3,062,560.96	2,089,874.73
	Total weight of hazardous waste diverted from disposal	Tonnes	21,356.04	288.46	99.98	3,692.33
	Onsite					
	- Reuse	Tonnes	0	5.25	5.83	1.80
	- Recycling	Tonnes	0	0	0	0
	- Other recovery operations	Tonnes	0	0	0	0
	Offsite					
	- Reuse	Tonnes	4.28	18.9	0.86	3.80
	- Recycling	Tonnes	21,351.76	252.87	85.85	2,881.86
	- Other recovery operations	Tonnes	0	11.44	7.44	804.87
	Total weight of non-hazardous waste diverted from disposal	Tonnes	2,230,658.77	2,391,180.15	3,062,460.98	2,086,182.40

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
	Onsite					
	- Reuse	Tonnes	0	68.15	39.68	0
	- Recycling	Tonnes	0	0	0	0
	- Composting	Tonnes	0	3,650.14	8,312.03	146,644.04
	- Other recovery operations	Tonnes	0	31,306.70	0	26.80
	Offsite					
	- Reuse	Tonnes	110.30	3.5	2.75	0
	- Recycling	Tonnes	441,6.98	570,549.67	75,095.53	629,249.83
	- Composting	Tonnes	1,788,907.49	1,719,110.35	2,502,169.18	914,024.99
	- Other recovery operations	Tonnes	0	66,491.64	476,841.82	396,236.74
Farming business	Total weight of waste diverted from disposal	Tonnes	NA	NA	4.36	0
	Total weight of hazardous waste diverted from disposal	Tonnes	NA	NA	0	0
	Onsite					
	- Reuse	Tonnes	NA	NA	0	0
	- Recycling	Tonnes	NA	NA	0	0
	- Other recovery operations	Tonnes	NA	NA	0	0
	Offsite					
	- Reuse	Tonnes	NA	NA	0	0
	- Recycling	Tonnes	NA	NA	0	0
	- Other recovery operations	Tonnes	NA	NA	0	0

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
	Total weight of non-hazardous waste diverted from disposal	Tonnes	NA	NA	4.36	0
	Onsite					
	- Reuse	Tonnes	NA	NA	0	0
	- Recycling	Tonnes	NA	NA	0	0
	- Composting	Tonnes	NA	NA	0	0
	- Other recovery operations	Tonnes	NA	NA	0	0
	Offsite					
	- Reuse	Tonnes	NA	NA	0	0
	- Recycling	Tonnes	NA	NA	0	0
	- Composting	Tonnes	NA	NA	0	0
	- Other recovery operations	Tonnes	NA	NA	4.36	0
Sugar business	Total weight of waste diverted from disposal	Tonnes	743,658.31	718,627.76	640,293.65	1,357,872.03
	Total weight of hazardous waste diverted from disposal	Tonnes	17,566.92	23.61	65.64	303.11
	Onsite					
	- Reuse	Tonnes	0	1.82	1.73	0
	- Recycling	Tonnes	0	0	0	0
	- Other recovery operations	Tonnes	0	0	0	0
	Offsite					
	- Reuse	Tonnes	1.88	0	0.86	3.80

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
	- Recycling	Tonnes	17,565.04	10.35	63.05	286.67
	- Other recovery operations	Tonnes	0	11.44	0	12.64
	Total weight of non-hazardous waste diverted from disposal	Tonnes	726,091.39	718,604.15	640,228.01	1,357,568.93
	Onsite					
	- Reuse	Tonnes	0	36.08	22.55	0
	- Recycling	Tonnes	0	0	0	0
	- Composting	Tonnes	0	0	500	137,295.71
	- Other recovery operations	Tonnes	0	0	0	19.80
	Offsite					
	- Reuse	Tonnes	26.35	0	0	0
	- Recycling	Tonnes	398,592.26	49,061.61	65,738.77	628,648.94
	- Composting	Tonnes	327,472.78	655,157.56	572,778.62	590,221.47
	- Other recovery operations	Tonnes	0	14,348.90	1,188.07	1,383.01
Energy business	Total weight of waste diverted from disposal	Tonnes	1,492,899.86	1,975,052.13	2,448,217.41	1,713,362.98
	Total weight of hazardous waste diverted from disposal	Tonnes	3,606.15	6.13	29.61	3,295.38
	Onsite					
	- Reuse	Tonnes	0	3.43	4.10	1.80
	- Recycling	Tonnes	0	0	0	0
	- Other recovery operations	Tonnes	0	0	0	0

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
	Offsite					
	- Reuse	Tonnes	2.40	0	0	0
	- Recycling	Tonnes	3,603.75	2.70	22.80	2,505.14
	- Other recovery operations	Tonnes	0	0	2.71	788.44
	Total weight of non-hazardous waste diverted from disposal	Tonnes	1,489,293.71	1,975,046.00	2,448,187.80	1,710,067.60
	Onsite					
	- Reuse	Tonnes	0	32.07	17.13	0
	- Recycling	Tonnes	0	0	0	0
	- Composting	Tonnes	0	3,656.84	7,812.03	71,771.65
	- Other recovery operations	Tonnes	0	0	0	7
	Offsite					
	- Reuse	Tonnes	25.33	3.50	2.75	0
	- Recycling	Tonnes	27,833.67	521,4806	9,291.27	582.65
	- Composting	Tonnes	1,461,434.71	1,366,966.22	1,955,919.47	1,243,382.72
	- Other recovery operations	Tonnes	0	51,606.01	475,145.15	394,323.58
Wood substitute materials business	Total weight of waste diverted from disposal	Tonnes	15,456.63	13,366.36	30,331.60	23,287.53
	Total weight of hazardous waste diverted from disposal	Tonnes	182.97	238.88	4.12	86.72
	Onsite					
	- Reuse	Tonnes	0	0	0	0

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
	- Recycling	Tonnes	0	0	0	0
	- Other recovery operations	Tonnes	0	0	0	0
	Offsite					
	- Reuse	Tonnes	0	0	0	0
	- Recycling	Tonnes	182.97	238.88	0	82.93
	- Other recovery operations	Tonnes	0	0	4.12	3.79
	Total weight of non-hazardous waste diverted from disposal	Tonnes	15,273.66	13,127.48	30,327.48	23,200.81
	Onsite					
	- Reuse	Tonnes	0	0	0	0
	- Recycling	Tonnes	0	0	0	0
	- Composting	Tonnes	0	0	0	0
	- Other recovery operations	Tonnes	0	0	0	0
	Offsite					
	- Reuse	Tonnes	58.62	0	0	0
	- Recycling	Tonnes	15,215.04	0	65.49	8.8
	- Composting	Tonnes	0	12,584.05	29,805.93	22,725.15
	- Other recovery operations	Tonnes	0	543.43	456.07	466.86
Fertilizer business	Total weight of waste diverted from disposal	Tonnes	0	0	23.98	62.29
	Total weight of hazardous waste diverted from disposal	Tonnes	0	0	0	0

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
	Onsite					
	- Reuse	Tonnes	0	0	0	0
	- Recycling	Tonnes	0	0	0	0
	- Other recovery operations	Tonnes	0	0	0	0
	Offsite					
	- Reuse	Tonnes	0	0	0	0
	- Recycling	Tonnes	0	0	0	0
	- Other recovery operations	Tonnes	0	0	0	0
	Total weight of non-hazardous waste diverted from disposal	Tonnes	0	0	23.98	62.29
	Onsite					
	- Reuse	Tonnes	0	0	0	0
	- Recycling	Tonnes	0	0	0	0
	- Composting	Tonnes	0	0	0	0
	- Other recovery operations	Tonnes	0	0	0	0
	Offsite					
	- Reuse	Tonnes	0	0	0	0
	- Recycling	Tonnes	0	0	0	0
	- Composting	Tonnes	0	0	0	0
	- Other recovery operations	Tonnes	0	0	23.98	62.29

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
Logistics and warehouse business	Total weight of waste diverted from disposal	Tonnes	0	19.84	24.81	7.12
	Total weight of hazardous waste diverted from disposal	Tonnes	0	19.84	0.61	7.12
	Onsite					
	- Reuse	Tonnes	0	0	0	0
	- Recycling	Tonnes	0	0	0	0
	- Other recovery operations	Tonnes	0	0	0	0
	Offsite					
	- Reuse	Tonnes	0	18.90	0	0
	- Recycling	Tonnes	0	0.94	0	7.12
	- Other recovery operations	Tonnes	0	0	0.61	0
	Total weight of non-hazardous waste diverted from disposal	Tonnes	0	0	24.20	0
	Onsite					
	- Reuse	Tonnes	0	0	0	0
	- Recycling	Tonnes	0	0	0	0
	- Composting	Tonnes	0	0	0	0
	- Other recovery operations	Tonnes	0	0	0	0
	Offsite					
	- Reuse	Tonnes	0	0	0	0
	- Recycling	Tonnes	0	0	0	0

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
	- Composting	Tonnes	0	0	0	0
	- Other recovery operations	Tonnes	0	0	24.20	0
Other business	Total weight of waste diverted from disposal	Tonnes	0.01	0	0	10.44
	Total weight of hazardous waste diverted from disposal	Tonnes	0	0	0	0
	Onsite					
	- Reuse	Tonnes	0	0	0	0
	- Recycling	Tonnes	0	0	0	0
	- Other recovery operations	Tonnes	0	0	0	0
	Offsite					
	- Reuse	Tonnes	0	0	0	0
	- Recycling	Tonnes	0.01	0	0	0
	- Other recovery operations	Tonnes	0	0	0	0
	Total weight of non-hazardous waste diverted from disposal	Tonnes	0	0	0	10.44
	Onsite					
	- Reuse	Tonnes	0	0	0	0
	- Recycling	Tonnes	0	0	0	0
	- Composting	Tonnes	0	0	0	0
	- Other recovery operations	Tonnes	0	0	0	0
	Offsite					

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
	- Reuse	Tonnes	0	0	0	0
	- Recycling	Tonnes	0	0	0	9.44
	- Composting	Tonnes	0	0	0	0
	- Other recovery operations	Tonnes	0	0	0	1
GRI 306-5 (2020) Waste Directed to Disposal						
Mitr Phol Group	Total weight of waste directed to disposal	Tonnes	2,749,364.35	136,056.42	53,252.39	27,130.96
	Total weight of hazardous waste directed to disposal	Tonnes	82,133.02	20,422.60	587.45	4,724.79
	Onsite					
	- Incineration with energy recovery	Tonnes	0	0	0	0.30
	- Incineration without energy recovery	Tonnes	0	0	1	0.93
	- Landfilling	Tonnes	0	0	0	5.56
	- Other disposal operations	Tonnes	0	0	0	0.50
	Offsite					
	- Incineration with energy recovery	Tonnes	43,578.91	9,204.43	318.53	282.43
	- Incineration without energy recovery	Tonnes	718.43	296.56	34.79	3,979.15
	- Landfilling	Tonnes	37,705.16	10,597.10	109.48	369.55
	- Other disposal operations	Tonnes	130.52	324.51	123.65	86.37
	Total weight of non-hazardous waste directed to disposal	Tonnes	2,667,231.33	289,243.82	52,664.94	22,406.17
	Onsite					
	- Incineration with energy recovery	Tonnes	0	0	0	0

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	0	109.23	1,468.61	1,829.71
	- Other disposal operations	Tonnes	0	0	0.5	11.36
	Offsite					
	- Incineration with energy recovery	Tonnes	820,362.93	0	0	0
	- Incineration without energy recovery	Tonnes	6.18	0	6.37	0.80
	- Landfilling	Tonnes	103,769.57	115,482.17	51,176.99	20,564.30
	- Other disposal operations	Tonnes	1,743,092.65	42.42	12.47	0
Farming business	Total weight of waste directed to disposal	Tonnes	NA	NA	0	8.12
	Total weight of hazardous waste directed to disposal	Tonnes	NA	NA	0	0
	Onsite					
	- Incineration with energy recovery	Tonnes	NA	NA	0	0
	- Incineration without energy recovery	Tonnes	NA	NA	0	0
	- Landfilling	Tonnes	NA	NA	0	0
	- Other disposal operations	Tonnes	NA	NA	0	0
	Offsite					
	- Incineration with energy recovery	Tonnes	NA	NA	0	0
	- Incineration without energy recovery	Tonnes	NA	NA	0	0
	- Landfilling	Tonnes	NA	NA	0	0
	- Other disposal operations	Tonnes	NA	NA	0	0

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
	Total weight of non-hazardous waste directed to disposal	Tonnes	NA	NA	0	8.12
	Onsite					
	- Incineration with energy recovery	Tonnes	NA	NA	0	0
	- Incineration without energy recovery	Tonnes	NA	NA	0	0
	- Landfilling	Tonnes	NA	NA	0	0
	- Other disposal operations	Tonnes	NA	NA	0	0
	Offsite					
	- Incineration with energy recovery	Tonnes	NA	NA	0	0
	- Incineration without energy recovery	Tonnes	NA	NA	0	0
	- Landfilling	Tonnes	NA	NA	0	8.12
	- Other disposal operations	Tonnes	NA	NA	0	0
Sugar business	Total weight of waste directed to disposal	Tonnes	1,487,578.3	2,138,19.53	3,020,000.74	3,735,953.45
	Total weight of hazardous waste directed to disposal	Tonnes	81,282.19	11,992.28	175.00	4,054.77
	Onsite					
	- Incineration with energy recovery	Tonnes	0	0	0	0
	- Incineration without energy recovery	Tonnes	0	0	1	0.93
	- Landfilling	Tonnes	0	0	0	1.33
	- Other disposal operations	Tonnes	0	0	0	0
	Offsite					
	- Incineration with energy recovery	Tonnes	43,566.14	2,326.23	74.41	282.43

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
	- Incineration without energy recovery	Tonnes	8.92	13.19	31.18	3,979.15
	- Landfilling	Tonnes	37,643.47	9,652.86	68.40	369.55
	- Other disposal operations	Tonnes	63.66	0	0	86.37
	Total weight of non-hazardous waste directed to disposal	Tonnes	1,406,296.19	2,126,527.25	3,019,825.75	3,731,898.68
	Onsite					
	- Incineration with energy recovery	Tonnes	0	0	0	0
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	0	109.23	1,457.23	1,679.00
	- Other disposal operations	Tonnes	0	0	0.50	0
	Offsite					
	- Incineration with energy recovery	Tonnes	579,303.01	2,092,528.08	2,967,995.05	3,729,704.93
	- Incineration without energy recovery	Tonnes	0	0	0	0.80
	- Landfilling	Tonnes	103,406.24	33,889.94	50,372.95	513.95
	- Other disposal operations	Tonnes	723,586.94	0	0.02	0
Energy business	Total weight of waste directed to disposal	Tonnes	1,261,540.12	89,544.42	323.64	19,997.11
	Total weight of hazardous waste directed to disposal	Tonnes	842.34	8,090.61	49.86	301.63
	Onsite					
	- Incineration with energy recovery	Tonnes	0	0	0	0
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	0	0	0	4.23

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
	- Other disposal operations	Tonnes	0	7.53	0	0.50
	Offsite					
	- Incineration with energy recovery	Tonnes	12.77	6,878.20	5.39	3.59
	- Incineration without energy recovery	Tonnes	709.51	256.37	3.61	0
	- Landfilling	Tonnes	61.69	944.24	40.87	290.89
	- Other disposal operations	Tonnes	58.37	4.27	0	2.42
	Total weight of non-hazardous waste directed to disposal	Tonnes	1,260,697.78	81,453.81	273.78	19,695.48
	Onsite					
	- Incineration with energy recovery	Tonnes	0	0	0	0
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	0	0	11.39	4.54
	- Other disposal operations	Tonnes	0	0	0	11.36
	Offsite					
	- Incineration with energy recovery	Tonnes	241,059.92	0	0	0
	- Incineration without energy recovery	Tonnes	6.18	0	6.37	0
	- Landfilling	Tonnes	203.95	81,453.39	243.57	19,679.58
	- Other disposal operations	Tonnes	1,019,427.73	0.42	12.45	0
Wood substitute materials business	Total weight of waste directed to disposal	Tonnes	153.18	90.34	416.56	452.49
	Total weight of hazardous waste directed to disposal	Tonnes	0.40	33.71	361.15	362.79
	Onsite					

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
	- Incineration with energy recovery	Tonnes	0	0	0	0
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	0	0	0	0
	- Other disposal operations	Tonnes	0	0	0	0
	Offsite					
	- Incineration with energy recovery	Tonnes	0	0	238.74	278.84
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	0	0	0	0
	- Other disposal operations	Tonnes	0.40	33.71	122.41	83.95
	Total weight of non-hazardous waste directed to disposal	Tonnes	152.78	56.63	55.41	89.70
	Onsite					
	- Incineration with energy recovery	Tonnes	0	0	0	0
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	0	0	0	0
	- Other disposal operations	Tonnes	0	0	0	0
	Offsite					
	- Incineration with energy recovery	Tonnes	0	0	0	0
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	152.78	56.63	55.41	89.70
	- Other disposal operations	Tonnes	0	0	0	0

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
Fertilizer business	Total weight of waste directed to disposal	Tonnes	27.00	13.92	19.10	28.52
	Total weight of hazardous waste directed to disposal	Tonnes	0.30	0	0.45	5.61
	Onsite					
	- Incineration with energy recovery	Tonnes	0	0	0	0.3
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	0	0	0	0
	- Other disposal operations	Tonnes	0	0	0	0
	Offsite					
	- Incineration with energy recovery	Tonnes	0	0	0	0
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	0	0	0.21	5.31
	- Other disposal operations	Tonnes	0.30	0	0.24	0
	Total weight of non-hazardous waste directed to disposal	Tonnes	26.70	13.92	18.65	22.91
	Onsite					
	- Incineration with energy recovery	Tonnes	0	0	0	0
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	0	0	0	0
	- Other disposal operations	Tonnes	0	0	0	0
	Offsite					
	- Incineration with energy recovery	Tonnes	22.50	0	0	0

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	4.20	13.92	18.65	22.91
	- Other disposal operations	Tonnes	0	0	0	0
Logistics and warehouse business	Total weight of waste directed to disposal	Tonnes	41.85	340.89	436.40	189.07
	Total weight of hazardous waste directed to disposal	Tonnes	6.13	277.00	0	0
	Onsite					
	- Incineration with energy recovery	Tonnes	0	0	0	0
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	0	0	0	0
	- Other disposal operations	Tonnes	0	0	0	0
	Offsite					
	- Incineration with energy recovery	Tonnes	0	0	0	0
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	0	0	0	0
	- Other disposal operations	Tonnes	6.13	277.00	0	0
	Total weight of non-hazardous waste directed to disposal	Tonnes	35.72	63.89	436.40	189.07
	Onsite					
	- Incineration with energy recovery	Tonnes	0	0	0	0
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	0	0	0	0

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
	- Other disposal operations	Tonnes	0	0	0	0
	Offsite					
	- Incineration with energy recovery	Tonnes	0	0	0	0
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	0	21.89	436.40	189.07
	- Other disposal operations	Tonnes	35.72	42.00	0	0
Other business	Total weight of waste directed to disposal	Tonnes	18.64	48.40	51.00	207.14
	Total weight of hazardous waste directed to disposal	Tonnes	1.66	2.00	1.00	0
	Onsite					
	- Incineration with energy recovery	Tonnes	0	0	0	0
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	0	0	0	0
	- Other disposal operations	Tonnes	0	0	0	0
	Offsite					
	- Incineration with energy recovery	Tonnes	0	0	0	0
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	0	0	0	0
	- Other disposal operations	Tonnes	1.66	2.00	1.00	0
	Total weight of non-hazardous waste directed to disposal	Tonnes	16.98	46.40	50.00	207.14
	Onsite					

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
	- Incineration with energy recovery	Tonnes	0	0	0	0
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	0	0	0	146.17
	- Other disposal operations	Tonnes	0	0	0	0
	Offsite					
	- Incineration with energy recovery	Tonnes	0	0	0	0
	- Incineration without energy recovery	Tonnes	0	0	0	0
	- Landfilling	Tonnes	16.98	46.40	50.00	60.97
	- Other disposal operations	Tonnes	0	0	0	0
CSA 2.3.5 Waste Disposal						
Mitr Phol Group	Total waste recycled/ reused/ composted	Tonnes	2,252,014.81	2,391,468.61	3,062,560.96	2,089,874.73
	Total waste disposed	Tonnes	2,749,364.35	136,056.42	53,252.39	27,130.96
	- Waste landfilled	Tonnes	141,474.73	126,188.50	52,755.08	22,769.12
	- Waste incinerated with energy recovery	Tonnes	863,941.84	9,204.43	318.53	282.73
	- Waste incinerated without energy recovery	Tonnes	724.61	296.56	42.16	3,980.88
	- Waste otherwise disposed (waste stabilization, biological treatment, physio-chemical treatment)	Tonnes	1,743,223.17	366.93	136.62	98.23
	Target of total waste disposed	Tonnes				50,589.77 (Reduce 5% from 2021)

Business Unit	Waste to Disposal	Unit	2019*	2020*	2021*	2022**
	Total waste disposed per revenue	Tonnes/ Million baht	39.38	2.25	0.89	0.26
	Target of total waste disposed per revenue	Tonnes/ Million baht				0.84 (Reduce 5% from 2021)
	Data coverage	% of revenue	100	100	100	100

Remarks: * refer to data collected during November 1 of the previous year to October 31 of the reporting year.

** refer to data collected during 1 January 2022 – 31 December 2022.

NA refer to not available or no data was collected.

NR refer to not relevant.

The data of wastes disposal was referred to the data provided by the waste disposers and the waste disposal report submitted to government authorities.

The 2020 – 2022 data is collected according to GRI Waste 2020.

Other recovery operations include repurposing, sorting for sale and anaerobic digestion treatment.

Other disposal method includes waste stabilization and other treatment.

The 2019 data is collected according to GRI 306 Effluents and Waste 2016. Other disposal method includes sorting for sale and other treatment method.

Total waste disposal of Mitr Phol Group in 2020 – 2022 excluded bagasses generated in sugar business since the bagasses are used as biomass energy in Mitr Phol's power plant.

In 2020 – 2022, remaining bagasses from power plant were sent to another power plant in Mitr Phol Group for incineration with energy recovery which power plants are in energy business unit.

In 2020, the Company's environmental performance report was expanded to include the performance scope of Mitr Phol Sugar (Amnat Charoen) Co., Ltd. and Mitr Phol Bio-Power (Amnat Charoen) Co., Ltd. due to the new acquisition. For the new acquisition in 2021, there is an additional performance from Betong Green Power Co., Ltd. and Productivity Plus Co., Ltd., (Saraburi). In 2022, the new 10 companies were included in 2022 environmental performance data i.e. Green Pharmahol Co.,

Ltd., Bangkok Alcohol Industrial Co., Ltd., Kampaengpetch Green Energy Co., Ltd, Apcon Renewable Energy Co., Ltd., MP Apcon Operations Co., Ltd, Panel Design Lab Co., Ltd, Fair Fast Co., Ltd, Thai Environmental and Energy Development Co., Ltd, Health Innotech Co., Ltd, and Eto-Huay Kasain Valley CO., Ltd.

Non-compliance with Environmental Laws and Regulations

Business Unit	Non-compliance with Environmental Laws and Regulations	Unit	2019*	2020*	2021*	2022**
GRI 2-27 (2021) Compliance with Laws and Regulations/ CSA 2.2.4 Environmental Violations/ CSA 2.10.7 Business Impacts of Water Related Incidents						
Mitr Phol Group	Number of cases for significant fines for non-compliance with laws and regulations (> 10,000 USD)	Cases	0	0	0	0
	Significant fines for non-compliance with laws and regulations (> 10,000 USD)	Baht	0	0	0	0
	Number of non-monetary sanctions	Cases	0	0	0	0
	Number of cases brought through dispute resolution mechanism	Cases	0	0	0	0

Remark: * refer to data collected during November 1 of the previous year to October 31 of the reporting year.

** refer to data collected during 1 January 2022 – 31 December 2022.

In 2020, the Company's environmental performance report was expanded to include the performance scope of Mitr Phol Sugar (Amnat Charoen) Co., Ltd. and Mitr Phol Bio-Power (Amnat Charoen) Co., Ltd. due to the new acquisition. For the new acquisition in 2021, there is an additional performance from Betong Green Power Co., Ltd. and Productivity Plus Co., Ltd., (Saraburi). In 2022, the new 10 companies were included in 2022 environmental performance data i.e. Green Pharmahol Co., Ltd., Bangkok Alcohol Industrial Co., Ltd., Kampaengpetch Green Energy Co., Ltd, Apcon Renewable Energy Co., Ltd., MP Apcon Operations Co., Ltd, Panel Design Lab Co., Ltd, Fair Fast Co., Ltd, Thai Environmental and Energy Development Co., Ltd, Health Innotech Co., Ltd, and Eto-Huay Kasain Valley CO., Ltd.

Environmental Management Expenses

Business Unit	Types of Expenses for Environmental Management	Unit	Expenses for Environmental Management			
			2019*	2020*	2021*	2022**
Mitr Phol Group	Total environmental expenses and investment	Baht	302,693,905	242,589,294	188,631,583	302,451,242
	- Air and water pollution management	Baht	161,025,039	145,346,749	128,463,193	264,730,497
	- Environmental promotion and development	Baht	141,668,866	97,242,545	60,168,390	37,720,745
Farming business	Total environmental expenses and investment	Baht	240	3,176,720	1,709,160	240
	- Air and water pollution management	Baht	240	720	720	240
	- Environmental promotion and development	Baht	0	3,176,000	1,708,440	0
Sugar business	Total environmental expenses and investment	Baht	64,701,518	35,332,477	44,730,692	33,944,388
	- Air and water pollution management	Baht	36,432,118	28,414,996	30,330,453	28,839,510
	- Environmental promotion and development	Baht	28,269,400	6,917,481	14,400,239	5,104,878
Energy business	Total environmental expenses and investment	Baht	223,399,751	196,877,100	129,323,666	263,889,572
	- Air and water pollution management	Baht	110,240,445	109,894,540	85,512,006	231,712,574

Business Unit	Types of Expenses for Environmental Management	Unit	Expenses for Environmental Management			
			2019*	2020*	2021*	2022**
	- Environmental promotion and development	Baht	113,159,306	86,982,560	43,811,660	32,176,998
Wood substitute materials business	Total environmental expenses and investment	Baht	14,138,891	6,689,127	12,287,111	3,723,801
	- Air and water pollution management	Baht	13,898,731	6,538,723	12,039,059	3,316,278
	- Environmental promotion and development	Baht	240,160	150,404	248,052	407,523
Fertilizer business	Total environmental expenses and investment	Baht	80,100	62,542	277,809	410,943
	- Air and water pollution management	Baht	80,100	62,542	277,809	379,598
	- Environmental promotion and development	Baht	0	0	0	31,345
Logistics and warehouse business	Total environmental expenses and investment	Baht	267,600	393,927	245,745	353,648
	- Air and water pollution management	Baht	267,600	377,827	245,745	353,648
	- Environmental promotion and development	Baht	0	16,100	0	0
Other business	Total environmental expenses and investment	Baht	105,805	57,400	57,400	128,650

Business Unit	Types of Expenses for Environmental Management	Unit	Expenses for Environmental Management			
			2019*	2020*	2021*	2022**
	- Air and water pollution management	Baht	105,805	57,400	57,400	128,650
	- Environmental promotion and development	Baht	0	0	0	0

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** refer to data collected during 1 January 2022 – 31 December 2022.

NA refer to not available or no data was collected.

NR refer to not relevant.

In 2020, the Company's environmental performance report was expanded to include the performance scope of Mitr Phol Sugar (Amnat Charoen) Co., Ltd. and Mitr Phol Bio-Power (Amnat Charoen) Co., Ltd. due to the new acquisition. For the new acquisition in 2021, there is an additional performance from Betong Green Power Co., Ltd. and Productivity Plus Co., Ltd., (Saraburi). In 2022, the new 10 companies were included in 2022 environmental performance data i.e. Green Pharmahol Co., Ltd., Bangkok Alcohol Industrial Co., Ltd., Kampaengpetch Green Energy Co., Ltd, Apcon Renewable Energy Co., Ltd., MP Apcon Operations Co., Ltd, Panel Design Lab Co., Ltd, Fair Fast Co., Ltd, Thai Environmental and Energy Development Co., Ltd, Health Innotech Co., Ltd, and Eto-Huay Kasain Valley CO., Ltd.

Air and water pollution management includes expenses of waste disposal, treatment of pollutants (air and water), machinery and equipment maintenance and environmental impact assessment.

Environmental promotion and development includes expenses of training, environmental management system services, environmental management certificates from external organizations, environmental protection projects and other services related to environment.

Food Loss & Waste

Business Unit	Food Loss & Waste	Unit	2019*	2020*	2021*	2022**	Target for 2022
Mitr Phol Group	Total food loss & waste	Tonnes	705,900.26	411,981.48	372,299.32	460,521.68	
	Total food loss & waste used for alternative purposes	Tonnes	464,056.58	267,572.04	264,025.65	312,469.71	
	Total food loss & waste, which is undetermined loss	Tonnes	241,843.68	144,409.44	108,273.66	148,051.97	
	Total food loss & waste per weight of sugar sales	Tonnes/ Tonnes sugar sales	0.247	0.263	0.222	0.196	0.189
	Data coverage	Total weight of sugar sales	100	100	100	100	

Remarks: * refer to data collected during November 1 of the previous year to October 31 of the reporting year.

** refer to data collected during 1 January 2022 – 31 December 2022.

Food loss & waste used for alternative purposes includes sugar loss in bagasses used for biomass energy, sugar loss in molasses used for ethanol production, sugar loss in filter cake used for fertilizer, and deteriorated sugar that are reprocessed.

Food loss & waste, which is undetermined loss e.g., loss into condensate, inversion loss by microorganisms or heat, etc.

Packaging

Business Unit	Packaging	Unit	2019*	2020*	2021*	2022**	Target for 2022
Mitr Phol Group	Total weight of all plastic packaging	Tonnes	4,914.21	4,935.35	5,500	6,599	6,600
	Recyclable plastic packaging	% of total weight of all plastic packaging	96.451	95.913	94.50	94.50	94
	Compostable plastic packaging	% of total weight of all plastic packaging	0.003	0.003	0.007	0.001	0.001
	Recycled content within plastic packaging	% of total weight of all plastic packaging	0	0	0	0	0
	Data coverage	% of cost of goods sold	100	100	100	100	
	Recycled and/or certified paper packaging	% of total weight of paper packaging				93.61	91
	Data coverage	% of cost of goods sold				100	

Remarks: * refer to data collected during November 1 of the previous year to October 31 of the reporting year.

** refer to data collected during 1 January 2022 – 31 December 2022.