

Sustainability Performance Data

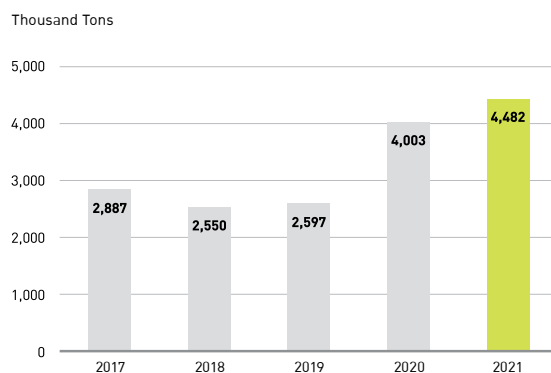
SCGP 2021 (Thailand)

Environmental Performance

Production and Raw Materials

Performance	2017	2018	2019	2020	2021	GRI Standard	THSI	Ecovadis	CSA 2021	Circulytics
Production (Thousan Tons)	3,411	3,439	3,442	3,359	3,480			610	0.1	6c
Total Raw Materials (Thousand Tons) ^{EN0.1}	5,224	5,483	5,177	6,405	4,507	GRI 301-1	25.4	610 630		6a, 6b
Recycled Materials (Thousand Tons) ^{EN0.1}	2,887	2,550	2,597	4,003	1,909	GRI 301-2	25.4	610 3501		6a, 6b
Renewable Materials (Ton) ^{EN0.1}	NA	NA	NA	NA	2,573	GRI 301-1			2.4.4	

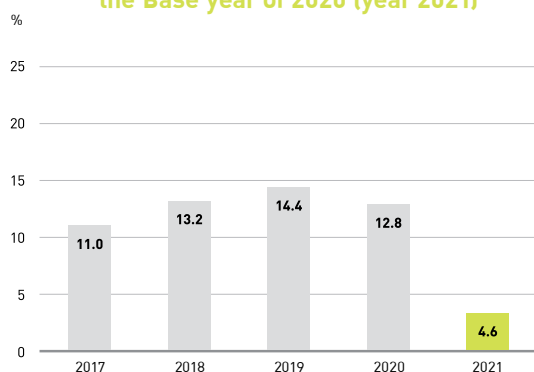
Recycle Materials and Renewable Materials



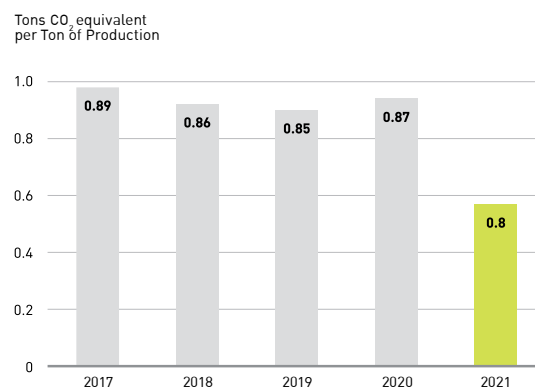
Greenhouse Gas Emissions

Performance	2017	2018	2019	2020	2021	GRI Standard	THSI	Ecovadis	CSA 2021	Circulytics
GHG Scope 1 (Million Tons CO ₂ equivalent) ^{EN1,*}	2.81	2.58	2.53	2.66	2.52	GRI 305-1	25.4 32.6	610 305 630	2.3.1	
GHG Scope 2 (Million Tons CO ₂ equivalent) ^{EN1,*}	0.21	0.38	0.38	0.26	0.27	GRI 305-2	25.4 32.6	610 305 630	2.3.2	
GHG Scope 1 and 2 (Million Tons CO ₂ equivalent) ^{EN1}	3.02	2.96	2.91	2.92	2.79		32.6	610 305 630		
Biogenic CO ₂ (Million Tons CO ₂ equivalent)	NA	NA	NA	NA	1.30					
GHG Emission Reduction compare with base year of 2020 (Million Tons CO ₂ equivalent) ^{EN1.1}	0.37	0.45	0.49	0.43	0.14	GRI 305-5	25.4 32.6	610 305 630		
GHG Emission Reduction compare with base year of 2020 [%]	11.0	13.2	14.4	12.8	4.6	GRI 305-5	25.4 32.6	610 305 630		
GHG Emission (Tons CO ₂ equivalent per Ton of Production)	0.89	0.86	0.85	0.87	0.80		32.6	610 305 630		
GHG Emission Target compare with base year of 2020 (Million Tons CO ₂ equivalent) ^{EN1.1}	3.39	3.41	3.40	3.35	2.86		25.2 32.6	610 305	2.5.9	
GHG Emission Target (Tons CO ₂ equivalent per Ton of Production)	1.00	0.99	0.99	1.00	0.82		25.2 32.6	610 305		

GHG Emission Reduction Compared with Business as Usual (BAU) at the base Year of 2007 (year 2017-2020) and Compared with the Base year of 2020 (year 2021)



GHG Emission per Ton of Production

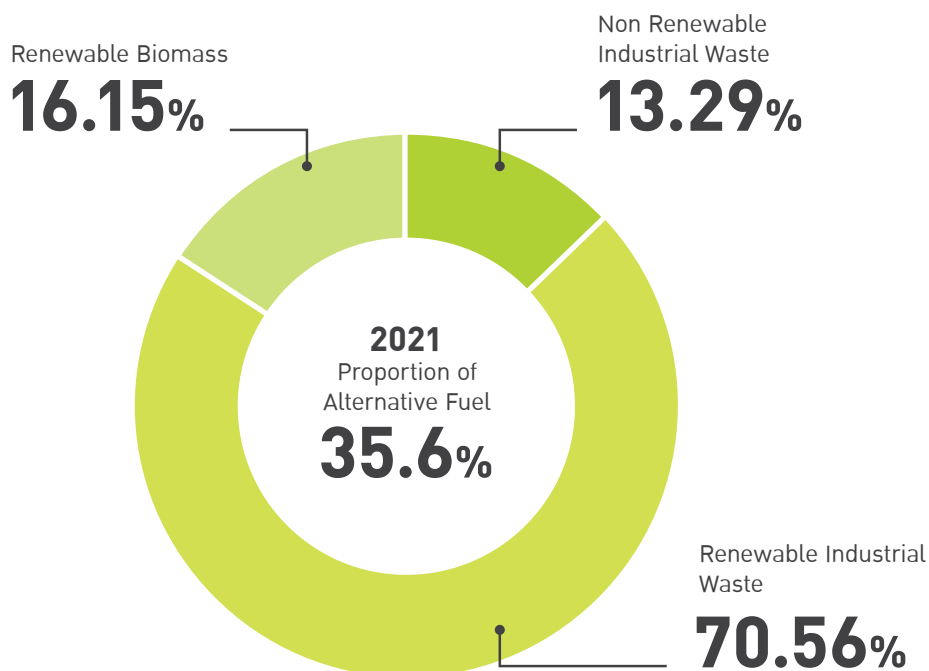


Energy Consumption

Performance	2017	2018	2019	2020	2021	GRI Standard	THSI	Ecovadis	CSA 2021	Circulytics
Total Energy Consumption (Petajoules) EN2,*	40.39	40.97	40.83	40.79	41.41	GRI 302-1	25.4	610 305 630		
Heating and Steam Consumption (Petajoules) EN2,*	39.13	39.58	39.45	39.87	40.18	GRI 302-1	25.4	610 305 630		
Alternative Fuel (Petajoules) EN2										
• Total Renewable Fuel*	9.50	10.76	11.20	10.40	12.40	GRI 302-1	25.4	610	2.3.3	
• Renewable Biomass	0.95	0.96	1.39	1.59	2.31	GRI 302-1	25.4	305	2.3.3	
• Renewable Industrial Waste	8.55	9.80	9.81	8.81	10.09	GRI 302-1	25.4	630	2.3.3	
• Non Renewable Industrial Waste	1.25	1.08	0.89	1.94	1.90	GRI 302-1	25.4		2.3.3	
Proportion of Alternative Fuel (%) EN2	27.5	29.9	30.6	31.0	35.6	GRI 302-1	25.4	610 305 630		
Nonrenewable fuels (nuclear fuels, coal, oil, natural gas, etc.) Consumption (Petajoules)*	NA	NA	NA	NA	26.31	GRI 302-3	NA	2.3.3		

* Within Deloitte's limited assurance scope (page 106-107)

Alternative Fuel



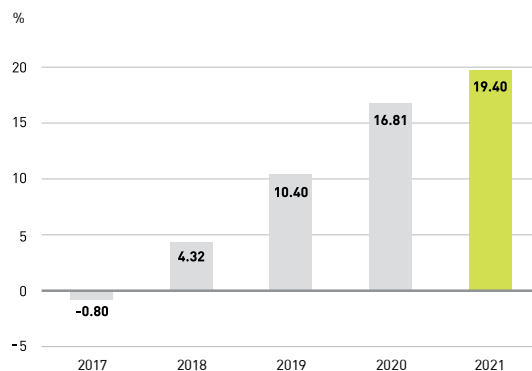
Energy Consumpition

Performance	2017	2018	2019	2020	2021	GRI Standard	THSI	Ecovadis	CSA 2021	Circulytics
Electrical Consumption (Gigawatt Hours) EN2,*	351.00	385.06	383.87	256.42	341.24	GRI 302-1	25.4	610 305 630		
Electricity Sold (Petajoules)*	NA	0.07	0.15	0.45	0.35	GRI 302-1	25.4	610 305	2.3.3	
Energy Consumption Reduction compare with business as usual (BAU) at base year of 2007 (Petajoules)	3.03	3.67	3.76	2.31	2.45	GRI 302-4	25.4	610 305 630		
Energy Consumption Reduction compare with business as usual (BAU) at base year of 2007 (%)	7.0	8.2	8.4	5.4	5.6	GRI 302-4	25.4	610 305 630		
Energy Consumpition (Gigajoules per Ton of Production)	11.84	11.91	11.86	12.14	11.89			610 305 630		
Energy Consumption Target compare with business as usual (BAU) at base year of 2007 (Petajoules)	43.42	44.64	44.59	43.10	43.86		25.2	610 305		
Energy Consumption Target (Gigajoules per Ton of Production)	12.73	12.98	12.95	12.83	12.60		25.2	610 305		

Water Withdrawal and Effluent Quality

Performance	2017	2018	2019	2020	2021	GRI Standard	THSI	Ecovadis	CSA 2021	Circulytics
Total water withdrawal (Million Cubic Meter) EN3,*	67.20	65.49	61.32	54.77	54.05	GRI 303-3	25.4	3260 610 630		
Water withdrawal from freshwater (TDS ≤ 1,000 mg/L) (Million Cubic Meter) EN3,*										
• Surface water	21.76	21.10	19.50	17.08	18.17	GRI 303-3	25.4	3260 610	2.3.4	
• Groundwater	44.97	44.00	41.41	30.64	35.45	GRI 303-3	25.4	3260 610	2.3.4	
• Seawater	0.00	0.00	0.00	0.00	0.00	GRI 303-3	25.4	3260 610	2.3.4	
• Tap water or Third-party	0.48	0.40	0.41	0.42	0.43	GRI 303-3	25.4	3260 610	2.3.4	
Water withdrawal from freshwater (TDS > 1,000 mg/L) (Million Cubic Meter) EN3,*										
• Surface water	0.00	0.00	0.00	0.00	0.00	GRI 303-3	25.4	3260 610	2.3.4	
• Groundwater	0.00	0.00	0.00	7.00	0.00	GRI 303-3	25.4	3260 610	2.3.4	
• Seawater	0.00	0.00	0.00	0.00	0.00	GRI 303-3	25.4	3260 610	2.3.4	
• Tap water or Third-party	0.00	0.00	0.00	0.00	0.00	GRI 303-3	25.4	3260 610	2.3.4	

Water Withdrawal Reduction Compare with Business as Usual at Base Year of 2014

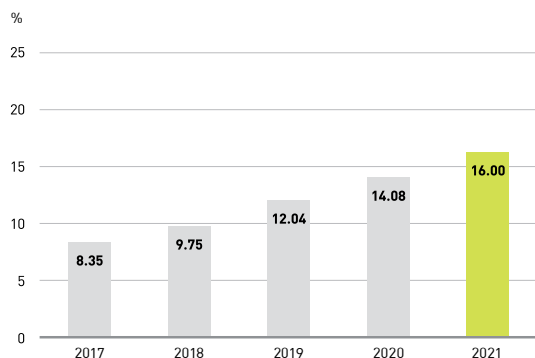


Water Withdrawal and Effluent Quality

Performance	2017	2018	2019	2020	2021	GRI Standard	THSI	Ecovadis	CSA 2021	Circulytics
Water withdrawal from freshwater (TDS ≤ 1,000 mg/L) in water stress area (Million Cubic Meter) ^{EN3,*}										
• Surface water	0.00	0.00	0.00	0.00	0.00	GRI 303-3	25.4	3260 610	2.3.4	
• Groundwater	0.00	0.00	0.00	0.00	0.00	GRI 303-3	25.4	3260 610	2.3.4	
• Seawater	0.00	0.00	0.00	0.00	0.00	GRI 303-3	25.4	3260 610	2.3.4	
• Tap water or Third-party	0.00	0.00	0.00	0.00	0.00	GRI 303-3	25.4	3260 610	2.3.4	
Water withdrawal from freshwater (TDS > 1,000 mg/L) in water stress area (Million Cubic Meter) ^{EN3,*}										
• Surface water	0.00	0.00	0.00	0.00	0.00	GRI 303-3	25.4	3260 610		
• Groundwater	0.00	0.00	0.00	0.00	0.00	GRI 303-3	25.4	3260 610		
• Seawater	0.00	0.00	0.00	0.00	0.00	GRI 303-3	25.4	3260 610		
• Tap water or Third-party	0.00	0.00	0.00	0.00	0.00	GRI 303-3	25.4	3260 610		
Water Withdrawal Reduction compare with business as usual at base year of 2014 (Million Cubic Meter)	-0.53	2.96	7.12	11.07	13.02			3260 610		
Water Withdrawal Reduction compare with business as usual at base year of 2014 (%)	-0.80	4.32	10.40	16.81	19.40			3260 610		
Recycle Water (Million Cubic Meter)*	6.12	7.07	8.39	8.97	10.33			3260 610		
Proportion of Recycled Water (%)	8.35	9.75	12.04	14.08	16.00			3260 610		
Water Withdrawal (Cubic Meter per Ton of Production)	19.70	19.05	17.82	16.31	15.53			3260 610		
Water Withdrawal Target compare with business as usual at base year of 2014 (Million Cubic Meter)	66.67	68.45	68.44	65.84	67.01		25.2	3260 610		
Water Withdrawal Target (Million Cubic Meter per Ton of Production)	19.54	19.91	19.88	19.60	19.27		25.2	3260 610		
Water discharge to surface water (Million Cubic Meter) ^{EN3,*}	NA	NA	NA	30.84	42.60	GRI 303-4	25.4	3260 610	2.3.4	
Water discharge to groundwater (Million Cubic Meter) ^{EN3,*}	NA	NA	NA	1.16	0.00	GRI 303-4	25.4	3260 610	2.3.4	
Water discharge to seawater (Million Cubic Meter) ^{EN3,*}	NA	NA	NA	0.00	0.00	GRI 303-4	25.4	3260 610	2.3.4	
Water discharge to third-party water (total) (Million Cubic Meter) ^{EN3,*}	NA	NA	NA	4.69	3.91	GRI 303-4	25.4	3260 610	2.3.4	
Third-party water sent for use to other organizations (Million Cubic Meter) ^{EN3,*}	NA	NA	NA	4.62	3.81	GRI 303-4	25.4	3260 610	2.3.4	
Total water discharge (Million Cubic Meter) ^{EN3,*}	NA	NA	NA	36.69	46.51	GRI 303-4	25.4	3260 610	2.3.4	
Water discharge by freshwater (TDS ≤ 1,000 mg/L) (Million Cubic Meter) ^{EN3,*}	NA	NA	NA	4.31	7.16	GRI 303-4	25.4	3260 610	2.3.4	
Water discharge by other water (TDS > 1,000 mg/L) (Million Cubic Meter) ^{EN3,*}	NA	NA	NA	32.39	39.35	GRI 303-4	25.4	3260 610	2.3.4	
Water discharge by freshwater (TDS ≤ 1000 mg/L) in water stress area (Million Cubic Meter) ^{EN3,*}	NA	NA	NA	0.00	0.00	GRI 303-4	25.4	3260 610		
Water discharge by other water (TDS > 1,000 mg/L) in water stress area (Million Cubic Meter) ^{EN3,*}	NA	NA	NA	0.00	0.00	GRI 303-4	25.4	3260 610		
BOD (Tons) ^{EN3}	355	214	147	153	172		25.4	3260 610		
COD (Tons) ^{EN3}	5,899	5,074	4,224	3,623	4,103		25.4	3260 610		
TSS (Tons) ^{EN3}	965	792	572	505	440		25.4	3260 610		

* Within Deloitte's limited assurance scope (page 106-107)

Portion of Recycled Water



Water Withdrawal per Ton of Production



Waste Management/Air Emission/Environmental Expenditures and Benefits/Violations of Legal Obligations and Regulations

Performance	2017	2018	2019	2020	2021	GRI Standard	THSI	Ecovadis	CSA 2021	Circulytics
Hazardous Waste Generation (Thousand Tons) ^{EN4,*}	1.03	1.61	2.00	2.66	2.98	GRI 306-3	25.4	610 630	2.3.5	
Hazardous Waste Generation (Kilograms per Ton of Production)	0.30	0.47	0.58	0.79	0.86			610		
Hazardous Waste Management ^{EN4} • Reuse/Recycled/Other Recovery/Incineration with Energy Recovery (Thousand Tons)	0.74	1.24	1.77	2.66	2.94	GRI 306-4 GRI 306-5	25.4	610 3501	2.3.5	
• Incineration without energy recovery (Thousand Tons)	0.27	0.32	0.06	0.02	0.01	GRI 306-5	25.4	610	2.3.5	6e
• Landfilling (Tons)	1.00	0.00	0.00	0.77	0.00	GRI 306-5	25.4	610	2.3.5	6d
Hazardous Waste in the storage at the end of year (Thousand Tons) ^{EN4}	NA	NA	0.13	0.11	0.14		25.4	610		
Non Hazardous Waste Generation (Thousand Tons) ^{EN4,*}	1,025.32	1,065.08	1,053.91	1,042.74	1,108.77	GRI 306-3	25.4	610 630	2.3.5	
Non Hazardous Waste Generation (Kilograms per Ton of Production)	300.56	309.74	306.19	310.44	318.60			610		
Non Hazardous Waste Management ^{EN4} • Reuse/Recycled/Other Recovery/Incineration with Energy Recovery (Thousand Tons)	1,044.21	1,011.10	1,074.48	1,064.32	1,129.30	GRI 306-5 GRI 306-4	25.4	610 3501	2.3.5	
• Incineration without energy recovery (Thousand Tons)	1.32	0.40	0.28	0.00	0.00	GRI 306-5	25.4	610	2.3.5	6e
• Landfilling (Tons)	0.00	0.00	0.00	0.00	0.00	GRI 306-5	25.4	610	2.3.5	6d
Non Hazardous Waste in the storage at the end of year (Thousand Tons) ^{EN4}	NA	NA	145.22	123.63	103.10		25.4	610		
Oxides of Nitrogen (Thousand Tons) ^{EN5}	2.53	2.86	2.48	2.97	NA	GRI 305-7	25.4	610		
Oxides of Nitrogen by CEMs (Thousand Tons) ^{EN5,*}	NA	NA	NA	3.12	3.14					
Oxides of Sulfur (Thousand Tons) ^{EN5}	2.68	2.20	1.81	2.57	NA	GRI 305-7	25.4	610		
Oxides of Sulfur by CEMs (Thousand Tons) ^{EN5,*}	NA	NA	NA	2.28	1.99					
Dust (Thousand Tons) ^{EN5}	0.41	0.39	0.34	0.31	NA	GRI 305-7	25.4	610		
Dust by CEMs (Thousand Tons) ^{EN5,*}	NA	NA	NA	0.64	0.52					
Operating Expenses-Environment (Million Baht)	889	722	681	742	739			610	2.2.3	
Capital Investments-Environment (Million Baht)	178	347	383	330	512			610	2.2.3	
Tax Incentives linked to environment investment ^{EN6}	NA	19	17	8	70			610	2.2.3	
Number of violations of legal obligations/regulations (Number of Cases) ^{EN7}	0	0	0	0	0	GRI 307-1	25.4	610	2.2.4	
Amount of fines/penalties related to the above. (Baht) ^{EN7}	0	0	0	0	0	GRI 307-1			2.2.4	
Environmental liability accrued at year end. (Baht) ^{EN7}	0	0	0	0	0	GRI 307-1			2.2.4	

* Within Deloitte's limited assurance scope (page 106-107)

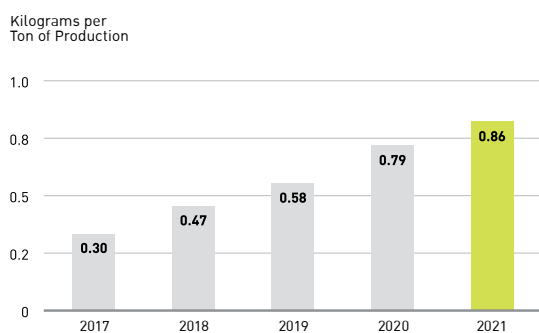
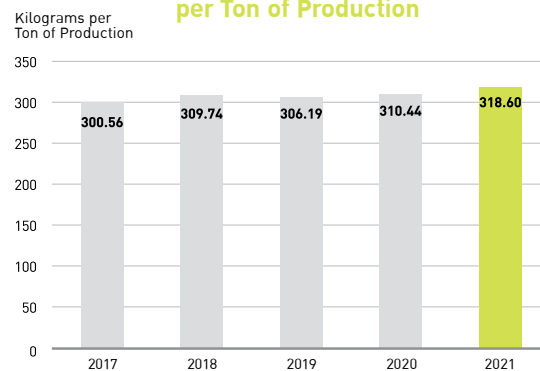
Waste diverted from disposal - Thailand, GRI 306-4*

2021 (Tons)					
	Inside SCGP		Outside SCGP		Total
	Onsite		Offsite		
	Factory	In SCGP	In SCG	Out SCG	
Hazardous Waste					
Reuse	0.00	0.00	0.00	21.36	21.36
Recycling	2.82	0.00	49.76	625.17	677.75
Other recovery operations	0.00	0.00	0.00	87.34	87.34
Treatment	0.00	0.00	0.00	0.00	0.00
Total	2.82	0.00	49.76	733.87	786.45
Non Hazardous Waste					
Reuse	0.00	6,264.28	0.00	76.73	6,341.01
Recycling	72,055.29	206,205.53	121,518.08	185,607.00	585,385.90
Other recovery operations	0.00	0.00	0.00	25.63	25.63
Treatment	0.00	0.00	0.00	0.00	0.00
Total	72,055.29	212,469.81	121,518.08	185,709.36	591,752.54

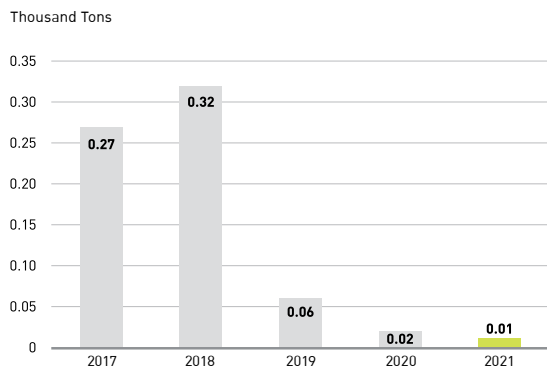
Waste directed to disposal - Thailand, GRI 306-5*

2021 (Tons)					
	Inside SCGP		Outside SCGP		Total
	Onsite		Offsite		
	Factory	In SCGP	In SCG	Out SCG	
Hazardous waste					
Incineration (with energy recovery)	0.00	0.00	6.25	2,143.85	2,150.10
Incineration (without energy recovery)	0.00	0.00	0.00	9.67	9.67
Landfilling	0.00	0.00	0.00	0.00	0.00
Other disposal operations	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	6.25	2,153.52	2,159.77
Non-hazardous waste					
Incineration (with energy recovery)	287,390.59	24,898.23	33,519.07	191,736.26	537,544.15
Incineration (without energy recovery)	0.00	0.00	0.00	0.00	0.00
Landfilling	0.00	0.00	0.00	0.00	0.00
Other disposal operations	0.00	0.00	0.00	0.00	0.00
Total	287,390.59	24,898.23	33,519.07	191,736.26	537,544.15

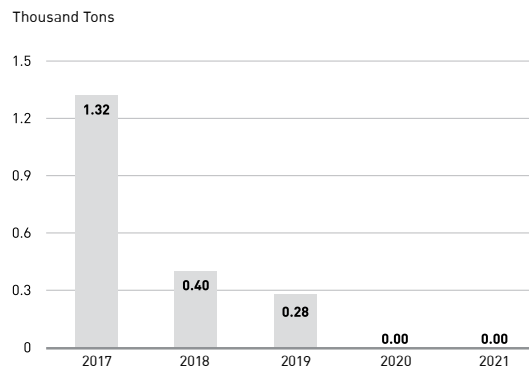
* Within Deloitte's limited assurance scope (page 106-107)

Hazardous Waste Generation
per Ton of ProductionNon Hazardous Waste Generation
per Ton of Production

Hazardous Waste Management Incinerated without Energy Recovery



Non Hazardous Waste Management Incinerated without Energy Recovery



EN0.1	
	Raw materials and recycled materials from both domestic and international factories are included in the volume of raw materials and recycle materials stated in Y2017-2020. Raw materials and recycled materials quantities domestic and international factories will be reported separately in Y2021.
EN1	Greenhouse gas <p>Greenhouse gas means the amount of greenhouse gas emission from operations calculated in accordance with the WRI / WBCSD GHG Emissions Protocol "Greenhouse Gas Reporting and Calculation Guidelines", including calculation tools from the International Council of Forest and Paper Associations (ICGPA) as follows</p> <p>1. Scope of reporting</p> <p>1.1 Greenhouse gases directly generated (Scope 1)</p> <p>It is arisen from the production process or various activities with a source in the supervision and management of a company or factory, such as the emission of greenhouse gases arising from stationary combustion, Greenhouse gas emissions arising from moving combustion, Greenhouse gas emissions arising from the leak Emissions of greenhouse gases resulting from chemical reactions, Carbon dioxide emissions occurring from biomass burning and Lime Mud burning at Lime Kiln are reported separately from Scope 1 because the carbon contained in biomass, biogas and lime is of natural origin.</p> <p>1.2 Greenhouse gas indirectly generated (Scope 2)</p> <p>It is caused by indirect greenhouse gas emissions from energy use, e.g. the amount of greenhouse gases generated from electricity, heat or steam imported from outside for internal consumption.</p> <p>1.3 Greenhouse gases indirectly generated (Scope 3)</p> <p>It is arisen from other indirect greenhouse gas emissions are the amount of GHGs arising from activities other than those specified in Category 1 and Type 2 (Existing During the study and collecting information in the section Transportation, Processing of sold products, use of sold products, End-of-life treatment of sold products)</p>
EN1	Greenhouse gas <p>2. Volume reporting</p> <p>2.1 Calculation of greenhouse gas emissions from direct production processes (Scope 1)</p> <ul style="list-style-type: none"> Caused by the combustion process. Report based on fuel consumption (By weight or volume), e.g. oil or natural gas x emission values referenced from the Thailand Greenhouse Gas Management Organization (Public Organization) (TGO) Other than TGO refer to "Intergovernmental Panel on Climate Change 2006", (IPCC) Report based on fuel consumption. (Based on heat value) such as coal content x heat value x TGO-referenced greenhouse gas emissions in the event other than TGO Other than TGO refer to "Intergovernmental Panel on Climate Change 2006", (IPCC) <p>3. Greenhouse gas emission reporting</p> <p>3.1 Greenhouse gas emissions are reporting covers CO₂, CH₄, N₂O, HFCs, PFCs and SF₆, calculated and displayed in the form of carbon dioxide equivalent to the Global Warming Potential (GWP) set by the IPCC</p> <p>3.2 Used the data of 2020 both Thailand and abroad (Include PT Fajar Surya Wisesa Tbk.) to serve as the base year to set target to reduce greenhouse gas emission 20 percent by 2030 and Net Zero by 2050.</p>
EN1.1	
	1. The performance of greenhouse gas emission in 2017-2020 (Thailand only) was compared with Business As Usual (BAU) at the base year 2007 and used the data of 2020 to serve as the base year to set target to reduce greenhouse gas emission both Thailand and abroad and Net zero by 2050.

EN2	Energy
	<p>Total energy consumption includes all thermal and electricity used in the company/factory areas. For the details on thermal energy, the amount and ration of alternative fuel utilization is also presented, together with the addition of renewable biomass, renewable industrial waste and non-renewable industrial waste.</p> <ul style="list-style-type: none"> Thermal energy consumption = fuel weight or steam volume [Based on the volume purchased or stockpile changed] x Low Heating Value (provided by laboratory test or suppliers) Electrical energy consumption = energy used in form of electrical currents that purchased from outsources electrical generators for companies / plants' activities and does not account self-generated electricity from fuel combustion since it can be considered as double-count for thermal energy. Alternative Fuel = renewable biomass, renewable industrial waste and non-renewable industrial waste that can produce heat and energy. Renewable biomass = fuel from wood chip, pin chip, bark and bagasse. Renewable Industrial waste = fuels produced from renewable resources for examples black liquor from pulp process, biogas and sludge from wastewater treatment plant. Non-renewable Industrial waste = waste material rejects including residue leftover from production processes such as waste rejects and used oil. Renewable energy = Clean energy derived from nature are biomass [Biomass, Biogas, Sludge, Black Liquor], solar energy, wind power, hydropower, geothermal energy. To be used as a replacement for energy from fossil fuels.
EN3	Water
	<ul style="list-style-type: none"> Water management [water withdrawal, water discharge, water treatment and water recycling] is considered in order to assess efficiency of water from various sources Water withdrawal is the quantity of fresh water taken from external sources for used in production process, offices, maintenance and utilities. Sources of water are divided into surface water, groundwater, tap water and recycled water- the treated water returned to the process. It is obtaining data from accounting evidences or meter reading. Effluent water quality is the quality of water discharged to external by measuring the Total Dissolved Solids (TDS). According to the standard methods to categorize the quality of water sources, there are 2 types of effluent water quality as follows <ul style="list-style-type: none"> Freshwater TDS is less than or equal to 1,000 milligrams per litre. Other water TDS more than 1,000 milligrams per litre. Water recycling, the reused water in a factory's activities after treatment processes, excluding water that has not undergone the treatment process. Effluent water quality is the quality of water discharged to external sources, such as BOD COD and Total Suspended Solids (TSS) with the quality of discharged water measured by a standard test method and volume of released water. Water source quality is the quality of various water sources by measuring the Total Dissolved Solids (TDS). According to the standard methods to categorize the quality of water sources into 2 types as follows <ul style="list-style-type: none"> Freshwater TDS is less than or equal to 1,000 milligrams per litre. Other water TDS more than 1,000 milligrams per litre.
EN4	Industrial Waste
	<p>Waste Management is considered to assess the production process efficiency, product quality improvement, and a decrease in production cost. SCGP has established "Waste Reporting Guideline" since March 2010 for waste data collection and calculation. The quantity of industrial waste is the amount of waste generated from the production process, excluding the waste that can be recycled in the production process (Work in process, WIP). Industrial wastes are divided into 2 categories comprising hazardous waste and non-hazardous waste as listed in the Ministry of Industry's 2005 Decree on the Disposal of Wastes and Unused Materials.</p> <p>Volume Reporting</p> <p>Waste or unused material at the place of origin or before entering the waste storage building is compiled from weighting scale or estimation</p> <p>Industrial waste stock refers to the amount of waste that occurs but not yet managed or collected in storage areas is compiled from weighting scale or estimation</p> <p>The amount of industrial waste to be disposed of (Waste Manage) refers to the amount of waste, to be managed both inside and outside SCGP compiled from weighting scale only</p> <p>SCGP's internal waste management (Onsite) means waste management operated by companies within the scope of SCGP's management.</p> <p>SCGP's external waste management (Offsite) means waste management operated by companies outside the scope of SCGP's management.</p> <p>Reporting of waste management quantities from 2017-2020 in accordance with GRI 306, 2016</p> <p>Reporting of waste management quantities since 2021 in accordance with GRI 306-4, 2020 and GRI 306-5, 2020</p>
EN5	Air Emission
	<p>Air emissions are the quantity of air pollution such as NOx, SOx, and Particulate Matter deriving from combustions and being the components during the production process. Types of air pollutants depend upon each production process in which chemical substance is produced. The result and measurement method shall refer to the method required by laws such as US EPA or equivalent standard.</p> <p>Reporting on air emission quantity will be calculated based on concentration measured from random Spot Check conducted by laboratories certified and registered to the Department of Industrial Works, multiplied by hot air flow rate and production hours. Besides, SCGP measures the stack's emissions using continuous Emission Monitoring Systems (CEMS)</p> <ul style="list-style-type: none"> Consumer Industrial Packaging and Performance Polymer Packaging Business carried out the measurement of air pollution emissions from stacks by Spot Check. according to the actual conditions while measuring by a laboratory that is certified and registered with the Department of Industrial Works. In 2021, Pulp and Paper business began to report the results of air pollution emissions from stack by Continuous Emission Monitoring System, CEMS). And 2020 data is used for both Thailand and abroad (Include PT Fajar Surya Wisesa Tbk.) with CEMS as the base year to determine air emission reduction targets. <ol style="list-style-type: none"> Oxides of Nitrogen 0.797 Thousand Tons Oxides of Sulfur 1.61 Thousand Tons Particulate Matter 0.35 Thousand Tons <p>Note : Performance of abroad air emission in 2020 by Continuous Emission Monitoring System : CEMS</p>
EN6	Including Tax privilege from the Board of Investment (BOI) for environmental projects.
EN7	Amount of Fines or Compare fines in case of violation of Legal binding /regulatory obligations are over US\$10,000.

Sustainability Performance Data

SCGP 2021 (ASEAN ex. - Thailand)

Environmental Performance

Production and Raw Materials

Performance	2021	GRI Standard	THSI	Ecovadis	CSA 2021	Circulytics
Production (Thousan Tons)	2,220			610	0.1	6c
Total Raw Materials (Thousand Tons) ^{EN0.1}	2,712	GRI 301-1	25.4	610 630		6a, 6b
Recycled Materials (Thousand Tons) ^{EN0.1}	2,511	GRI 301-2	25.4	610 3501		6a, 6b
Renewable Materials (Ton) ^{EN0.1}	177	GRI 301-1			2.4.4	

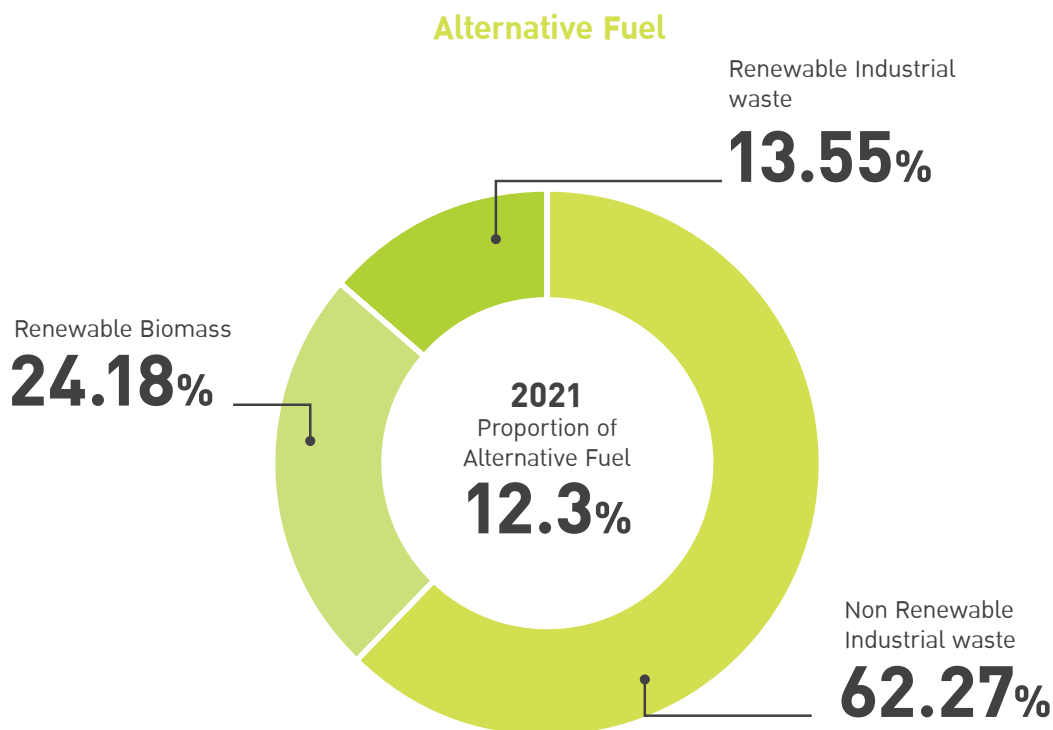
Greenhouse Gas Emissions

Performance	2021	GRI Standard	THSI	Ecovadis	CSA 2021	Circulytics
GHG Scope 1 (Million Tons CO ₂ equivalent) ^{EN1,*}	1.85	GRI 305-1	25.4 32.6	610 305 630	2.3.1	
GHG Scope 2 (Million Tons CO ₂ equivalent) ^{EN1,*}	0.24	GRI 305-2	25.4 32.6	610 305 630	2.3.2	
GHG Scope 1 and 2 (Million Tons CO ₂ equivalent) ^{EN1}	2.09		32.6	610 305 630		
Biogenic CO ₂ (Million Tons CO ₂ equivalent)	0.1					
GHG Emission Reduction compare with base year of 2020 (Million Tons CO ₂ equivalent) ^{EN1.1}	-0.02	GRI 305-5	25.4 32.6	610 305 630		
GHG Emission Reduction compare with base year of 2020 (%)	-0.8	GRI 305-5	25.4 32.6	610 305 630		
GHG Emission (Tons CO ₂ equivalent per Ton of Production)	0.94		32.6	610 305 630		
GHG Emission Target compare with base year of 2020 (Million Tons CO ₂ equivalent) ^{EN1.1}	2.03		25.2 32.6	610 305	2.5.9	
GHG Emission Target (Tons CO ₂ equivalent per Ton of Production)	0.91		25.2 32.6	610 305		

Energy Consumption

Performance	2021	GRI Standard	THSI	Ecovadis	CSA 2021	Circulytics
Total Energy Consumption (Petajoules) ^{EN2,*}	23.27	GRI 302-1	25.4	610 305 630		
Heating and Steam Consumption (Petajoules) ^{EN2,*}	22.19	GRI 302-1	25.4	610 305 630		
Alternative Fuel (Petajoules) ^{EN2}						
• Total Renewable Fuel*	1.03	GRI 302-1	25.4	610	2.3.3	
• Renewable Biomass	0.66	GRI 302-1	25.4	305	2.3.3	
• Renewable Industrial Waste	0.37	GRI 302-1	25.4	630	2.3.3	
• Non Renewable Industrial Waste	1.7	GRI 302-1	25.4		2.3.3	
Proportion of Alternative Fuel (%) ^{EN2}	12.3	GRI 302-1	25.4	610 305 630		
Nonrenewable fuels (nuclear fuels, coal, oil, natural gas, etc.) Consumption (Petajoules)*	21.16	GRI 302-3	NA	2.3.3		

* Within Deloitte's limited assurance scope (page 106-107)



Energy Consumpition

Performance	2021	GRI Standard	THSI	Ecovadis	CSA 2021	Circulytics
Electrical Consumption (Gigawatt Hours) EN2,*	299.85	GRI 302-1	25.4	610 305 630		
Electricity Sold (Petajoules)*	0	GRI 302-1	25.4	610 305	2.3.3	
Energy Consumption Reduction compare with business as usual (BAU) at base year of 2007 (Petajoules)	1.55	GRI 302-4	25.4	610 305 630		
Energy Consumption Reduction compare with business as usual (BAU) at base year of 2007 (%)	6.2	GRI 302-4	25.4	610 305 630		
Energy Consumpition (Gigajoules per Ton of Production)	10.48			610 305 630		
Energy Consumption Target compare with business as usual (BAU) at base year of 2007 (Petajoules)	24.82		25.2	610 305		
Energy Consumption Target (Gigajoules per Ton of Production)	11.18		25.2	610 305		

Water Withdrawal and Effluent Quality

Performance	2021	GRI Standard	THSI	Ecovadis	CSA 2021	Circulytics
Total water withdrawal (Million Cubic Meter) EN3,*	24.80	GRI 303-3	25.4	3260 610 630		
Water withdrawal from freshwater (TDS ≤ 1,000 mg/L) (Million Cubic Meter) EN3,*						
• Surface water	16.07	GRI 303-3	25.4	3260 610	2.3.4	
• Groundwater	4.38	GRI 303-3	25.4	3260 610	2.3.4	
• Seawater	0	GRI 303-3	25.4	3260 610	2.3.4	
• Tap water or Third-party	4.35	GRI 303-3	25.4	3260 610	2.3.4	

Water Withdrawal and Effluent Quality

Performance	2021	GRI Standard	THSI	Ecovadis	CSA 2021	Circulytics
Water withdrawal from freshwater (TDS > 1,000 mg/L) (Million Cubic Meter) ^{EN3,*}						
• Surface water	0	GRI 303-3	25.4	3260 610	2.3.4	
• Groundwater	0	GRI 303-3	25.4	3260 610	2.3.4	
• Seawater	0	GRI 303-3	25.4	3260 610	2.3.4	
• Tap water or Third-party	0	GRI 303-3	25.4	3260 610	2.3.4	
Water withdrawal from freshwater (TDS ≤ 1,000 mg/L) in water stress area (Million Cubic Meter) ^{EN3,*}						
• Surface water	0	GRI 303-3	25.4	3260 610	2.3.4	
• Groundwater	0	GRI 303-3	25.4	3260 610	2.3.4	
• Seawater	0	GRI 303-3	25.4	3260 610	2.3.4	
• Tap water or Third-party	0	GRI 303-3	25.4	3260 610	2.3.4	
Water withdrawal from freshwater (TDS > 1,000 mg/L) in water stress area (Million Cubic Meter) ^{EN3,*}						
• Surface water	0	GRI 303-3	25.4	3260 610		
• Groundwater	0	GRI 303-3	25.4	3260 610		
• Seawater	0	GRI 303-3	25.4	3260 610		
• Tap water or Third-party	0	GRI 303-3	25.4	3260 610		
Water Withdrawal Reduction compare with business as usual at base year of 2014 (Million Cubic Meter)	15.06			3260 610		
Water Withdrawal Reduction compare with business as usual at base year of 2014 (%)	37.80			3260 610		
Recycle Water (Million Cubic Meter)*	2.76		25.4	3260 610		
Proportion of Recycled Water (%)	10.00			3260 610		
Water Withdrawal (Cubic Meter per Ton of Production)	11.17			3260 610		
Water Withdrawal Target compare with business as usual at base year of 2014 (Million Cubic Meter)	39.87		25.2	3260 610		
Water Withdrawal Target (Million Cubic Meter per Ton of Production)	17.96		25.2	3260 610		
Water discharge to surface water (Million Cubic Meter) ^{EN3}	15.53	GRI 303-4	25.4	3260 610	2.3.4	
Water discharge to groundwater (Million Cubic Meter) ^{EN3}	0	GRI 303-4	25.4	3260 610	2.3.4	
Water discharge to seawater (Million Cubic Meter) ^{EN3}	0	GRI 303-4	25.4	3260 610	2.3.4	
Water discharge to third-party water (total) (Million Cubic Meter) ^{EN3}	0.03	GRI 303-4	25.4	3260 610	2.3.4	
Third-party water sent for use to other organizations (Million Cubic Meter) ^{EN3}	0	GRI 303-4	25.4	3260 610	2.3.4	
Total water discharge (Million Cubic Meter) ^{EN3}	15.55	GRI 303-4	25.4	3260 610	2.3.4	
Water discharge by freshwater (TDS ≤ 1,000 mg/L) (Million Cubic Meter) ^{EN3}	11.98	GRI 303-4	25.4	3260 610	2.3.4	
Water discharge by other water (TDS > 1,000 mg/L) (Million Cubic Meter) ^{EN3}	3.58	GRI 303-4	25.4	3260 610	2.3.4	
Water discharge by freshwater (TDS ≤ 1000 mg/L) in water stress area (Million Cubic Meter) ^{EN3}	0	GRI 303-4	25.4	3260 610		
Water discharge by other water (TDS > 1,000 mg/L) in water stress area (Million Cubic Meter) ^{EN3}	0	GRI 303-4	25.4	3260 610		
BOD (Tons) ^{EN3}	1,288		25.4	3260 610		
COD (Tons) ^{EN3}	3,990		25.4	3260 610		
TSS (Tons) ^{EN3}	714		25.4	3260 610		

* Within Deloitte's limited assurance scope (page 106-107)

Waste Management/Air Emission/Environmental Expenditures and Benefits/Violations of Legal Obligations and Regulations

Performance	2021	GRI Standard	THSI	Ecovadis	CSA 2021	Circulytics
Hazardous Waste Generation (Thousand Tons) ^{EN4}	60.97	GRI 306-3	25.4	610 630	2.3.5	
Hazardous Waste Generation (Kilograms per Ton of Production)	27.47			610		
Hazardous Waste Management ^{EN4} • Reuse/Recycled/Other Recovery/Incineration with Energy Recovery (Thousand Tons)	47.30	GRI 306-4 GRI 306-5	25.4	610 3501	2.3.5	
• Incineration without energy recovery (Thousand Tons)	0.05	GRI 306-5	25.4	610	2.3.5	6e
• Landfilling (Tons)	14,804	GRI 306-5	25.4	610	2.3.5	6d
Hazardous Waste in the storage at the end of year (Thousand Tons) ^{EN4}	0.04		25.4	610		
Non Hazardous Waste Generation (Thousand Tons) ^{EN4}	380.09	GRI 306-3	25.4	610 630	2.3.5	
Non Hazardous Waste Generation (Kilograms per Ton of Production)	171.23			610		
Non Hazardous Waste Management ^{EN4} • Reuse/Recycled/Other Recovery/Incineration with Energy Recovery (Thousand Tons)	340.61	GRI 306-5 GRI 306-4	25.4	610 3501	2.3.5	
• Incineration without energy recovery (Thousand Tons)	36.05	GRI 306-5	25.4	610	2.3.5	6e
• Landfilling (Tons)	2,945.86	GRI 306-5	25.4	610	2.3.5	6d
Non Hazardous Waste in the storage at the end of year (Thousand Tons) ^{EN4}	0.00		25.4	610		
Oxides of Nitrogen (Thousand Tons) ^{EN5}	NA	GRI 305-7	25.4	610		
Oxides of Nitrogen by CEMs (Thousand Tons) ^{EN5}	0.69					
Oxides of Sulfur (Thousand Tons) ^{EN5}	NA	GRI 305-7	25.4	610		
Oxides of Sulfur by CEMs (Thousand Tons) ^{EN5}	1.81					
Dust (Thousand Tons) ^{EN5}	NA	GRI 305-7	25.4	610		
Dust by CEMs (Thousand Tons) ^{EN5}	0.43					
Operating Expenses-Environment (Million Baht)	NA			610	2.2.3	
Capital Investments-Environment (Million Baht)	NA			610	2.2.3	
Tax Incentives linked to environment investment	NA			610	2.2.3	
Number of violations of legal obligations/regulations (Number of Cases)	NA	GRI 307-1	25.4	610	2.2.4	
Amount of fines/penalties related to the above. (Baht)	NA	GRI 307-1			2.2.4	
Environmental liability accrued at year end. (Baht)	NA	GRI 307-1			2.2.4	

Waste diverted from disposal - ASEAN ex. - Thailand, GRI 306-4

2021 (Tons)					
	Inside SCGP		Outside SCGP		Total
	Onsite		Offsite		
	Factory	In SCGP	In SCG	Out SCG	
Hazardous Waste					
Reuse	0.00	0.00	0.00	237.27	237.27
Recycling	0.00	0.00	0.00	29,737.58	29,737.58
Other recovery operations	0.00	0.00	0.00	195.29	195.29
Treatment	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	30,170.14	30,170.14
Non Hazardous Waste					
Reuse	0.00	0.00	0.00	12,816.73	12,816.73
Recycling	46,305.27	0.00	0.00	152,033.02	152,033.02
Other recovery operations	0.00	0.00	0.00	0.00	0.00
Treatment	0.00	0.00	0.00	0.00	0.00
Total	46,305.27	0.00	0.00	164,849.75	164,849.75

Waste directed to disposal - ASEAN ex. - Thailand, GRI 306-5

2021 (Tons)					
	Inside SCGP		Outside SCGP		Total
	Onsite		Offsite		
	Factory	In SCGP	In SCG	Out SCG	
Hazardous Waste					
Incineration (with energy recovery)	17,045.12	0.00	0.00	83.47	17,128.59
Incineration (without energy recovery)	0.00	0.00	0.00	54.93	54.93
Landfilling	0.00	0.00	0.00	14,804.02	14,804.02
Other disposal operations	0.00	0.00	0.00	257.82	257.82
Total	17,045.12	0.00	0.00	15,200.24	32,245.35
Non Hazardous Waste					
Incineration (with energy recovery)	129,459.92	0.00	0.00	0.00	129,459.92
Incineration (without energy recovery)	0.00	0.00	0.00	36,051.72	36,051.72
Landfilling	0.00	0.00	0.00	2,945.86	2,945.86
Other disposal operations	0.00	0.00	0.00	472.85	472.85
Total	129,459.92	0.00	0.00	39,470.43	168,930.35

EN0.1	
	Raw materials and recycled materials from both domestic and international factories are included in the volume of raw materials and recycle materials stated in Y2017-2020. Raw materials and recycled materials quantities domestic and international factories will be reported separately in Y2021.
EN1	Greenhouse gas
	<p>Greenhouse gas means the amount of greenhouse gas emission from operations calculated in accordance with the WRI / WBCSD GHG Emissions Protocol "Greenhouse Gas Reporting and Calculation Guidelines", including calculation tools from the International Council of Forest and Paper Associations (ICGPA) as follows</p> <p>1. Scope of reporting</p> <p>1.1 Greenhouse gases directly generated [Scope 1] It is arisen from the production process or various activities with a source in the supervision and management of a company or factory, such as the emission of greenhouse gases arising from stationary combustion, Greenhouse gas emissions arising from moving combustion, Greenhouse gas emissions arising from the leak Emissions of greenhouse gases resulting from chemical reactions, Carbon dioxide emissions occurring from biomass burning and Lime Mud burning at Lime Kiln are reported separately from Scope 1 because the carbon contained in biomass, biogas and lime is of natural origin.</p> <p>1.2 Greenhouse gas indirectly generated [Scope 2] It is caused by indirect greenhouse gas emissions from energy use, e.g. the amount of greenhouse gases generated from electricity, heat or steam imported from outside for internal consumption.</p> <p>1.3 Greenhouse gases indirectly generated [Scope 3] It is arisen from other indirect greenhouse gas emissions are the amount of GHGs arising from activities other than those specified in Category 1 and Type 2 (Existing During the study and collecting information in the section Transportation, Processing of sold products, use of sold products, End-of-life treatment of sold products)</p>
EN1	Greenhouse gas
	<p>2. Volume reporting</p> <p>2.1 Calculation of greenhouse gas emissions from direct production processes [Scope 1]</p> <ul style="list-style-type: none"> Caused by the combustion process. <ul style="list-style-type: none"> Report based on fuel consumption (By weight or volume), e.g. oil or natural gas x emission values referenced from the Thailand Greenhouse Gas Management Organization (Public Organization) (TGO) Other than TGO refer to "Intergovernmental Panel on Climate Change 2006", (IPCC) Report based on fuel consumption. (Based on heat value) such as coal content x heat value x TGO-referenced greenhouse gas emissions in the event other than TGO Other than TGO refer to "Intergovernmental Panel on Climate Change 2006", (IPCC) <p>2.2 Calculation of greenhouse gas emissions indirectly [Scope 2] is reported from the purchase of electricity, steam x the greenhouse gas emission value based on TGO, producer or seller.</p> <p>3. Greenhouse gas emission reporting</p> <p>3.1 Greenhouse gas emissions are reporting covers CO₂, CH₄, N₂O, HFCs, PFCs and SF₆, calculated and displayed in the form of carbon dioxide equivalent to the Global Warming Potential (GWP) set by the IPCC</p> <p>3.2 Used the data of 2020 both Thailand and abroad (Include PT Fajar Surya Wisesa Tbk.) to serve as the base year to set target to reduce greenhouse gas emission 20 percent by 2030 and Net Zero by 2050.</p>
EN1.1	
	1. The performance of greenhouse gas emission in 2017-2020 (Thailand only) was compared with Business as usual (BAU) at the base year 2007 and used the data of 2020 to serve as the base year to set target to reduce greenhouse gas emission both Thailand and abroad and Net zero by 2050.
EN2	Energy
	<p>Total energy consumption includes all thermal and electricity used in the company/factory areas. For the details on thermal energy, the amount and ration of alternative fuel utilization is also presented, together with the addition of renewable biomass, renewable industrial waste and non-renewable industrial waste.</p> <ul style="list-style-type: none"> Thermal energy consumption = fuel weight or steam volume (Based on the volume purchased or stockpile changed) x Low Heating Value (provided by laboratory test or suppliers) Electrical energy consumption = energy used in form of electrical currents that purchased from outsources electrical generators for companies / plants' activities and does not account self-generated electricity from fuel combustion since it can be considered as double-count for thermal energy. Alternative Fuel = renewable biomass, renewable industrial waste and non-renewable industrial waste that can produce heat and energy. Renewable biomass = fuel from wood chip, pin chip, bark and bagasse. Renewable Industrial waste = fuels produced from renewable resources for examples black liquor from pulp process, biogas and sludge from wastewater treatment plant. Non-renewable Industrial waste = waste material rejects including residue leftover from production processes such as waste rejects and used oil. Renewable energy = Clean energy derived from nature are biomass (Biomass, Biogas, Sludge, Black Liquor), solar energy, wind power, hydropower, geothermal energy. To be used as a replacement for energy from fossil fuels.

EN3	Water
	<ul style="list-style-type: none"> Water management (water withdrawal, water discharge, water treatment and water recycling) is considered in order to assess efficiency of water from various sources Water withdrawal is the quantity of fresh water taken from external sources for used in production process, offices, maintenance and utilities. Sources of water are divided into surface water, groundwater, tap water and recycled water- the treated water returned to the process. It is obtaining data from accounting evidences or meter reading. Effluent water quality is the quality of water discharged to external by measuring the Total Dissolved Solids (TDS). According to the standard methods to categorize the quality of water sources, there are 2 types of effluent water quality as follows <ul style="list-style-type: none"> Freshwater TDS is less than or equal to 1,000 milligrams per litre. Other water TDS more than 1,000 milligrams per litre. Water recycling, the reused water in a factory's activities after treatment processes, excluding water that has not undergone the treatment process. Effluent water quality is the quality of water discharged to external sources, such as BOD COD and Total Suspended Solids (TSS) with the quality of discharged water measured by a standard test method and volume of released water. Water source quality is the quality of various water sources by measuring the Total Dissolved Solids (TDS). According to the standard methods to categorize the quality of water sources into 2 types as follows <ul style="list-style-type: none"> Freshwater TDS is less than or equal to 1,000 milligrams per litre. Other water TDS more than 1,000 milligrams per litre.
EN4	Industrial Waste
	<p>Waste Management is considered to assess the production process efficiency, product quality improvement, and a decrease in production cost. SCGP has established "Waste Reporting Guideline" since March 2010 for waste data collection and calculation. The quantity of industrial waste is the amount of waste generated from the production process, excluding the waste that can be recycled in the production process (Work in process, WIP). Industrial wastes are divided into 2 categories comprising hazardous waste and non-hazardous waste as listed in the Ministry of Industry's 2005 Decree on the Disposal of Wastes and Unused Materials.</p> <p>Volume Reporting</p> <p>Waste or unused material at the place of origin or before entering the waste storage building is compiled from weighting scale or estimation</p> <p>Industrial waste stock refers to the amount of waste that occurs but not yet managed or collected in storage areas is compiled from weighting scale or estimation</p> <p>The amount of industrial waste to be disposed of (Waste Manage) refers to the amount of waste, to be managed both inside and outside SCGP compiled from weighting scale only</p> <p>SCGP's internal waste management (Onsite) means waste management operated by companies within the scope of SCGP's management.</p> <p>SCGP's external waste management (Offsite) means waste management operated by companies outside the scope of SCGP's management.</p>
EN5	Air Emission
	<p>Air emissions are the quantity of air pollution such as NO_x, SO_x, and Particulate Matter deriving from combustions and being the components during the production process. Types of air pollutants depend upon each production process in which chemical substance is produced. The result and measurement method shall refer to the method required by laws such as US EPA or equivalent standard.</p> <p>Reporting on air emission quantity will be calculated based on concentration measured from random Spot Check conducted by laboratories certified and registered to the Department of Industrial Works, multiplied by hot air flow rate and production hours. Besides, SCGP measures the stack's emissions using continuous Emission Monitoring Systems (CEMs)</p> <ul style="list-style-type: none"> Consumer Industrial Packaging and Performance Polymer Packaging Business carried out the measurement of air pollution emissions from stacks by Spot Check. according to the actual conditions while measuring by a laboratory that is certified and registered with the Department of Industrial Works. In 2021, Pulp and Paper business began to report the results of air pollution emissions from stack by Continuous Emission Monitoring System, CEMs). And 2020 data is used for both Thailand and abroad (Include PT Fajar Surya Wisesa Tbk.) with CEMs as the base year to determine air emission reduction targets. <ol style="list-style-type: none"> Oxides of Nitrogen 0.797 Thousand Tons Oxides of Sulfur 1.61 Thousand Tons Particulate Matter 0.35 Thousand Tons <p>Note : Performance of abroad air emission in 2020 by Continuous Emission Monitoring System : CEMs</p>