Life Cycle Assessment (LCA) & Carbon Footprint Products (CFP)

Life cycle assessment (LCA) and Carbon Footprint Product (CFP) Revenue

Unit: Million Baht

Business Group	Total Revenue 2022	LCA & CFP Revenue 2022
Fiber Packaging (CIP)	36,060	36,060
Packaging Paper (PP)	63,125	63,125
Consumer and Performance Packaging (CPP)	18,034	688
Fibrous Business (FB)	24,273	24,273
Recycling Business and Others	4,576	0
Total	146,068	124,146
Percentage of LCA and CFP revenue		**85%**

SCGP calculated LCA and CFP of CIP, PP, FB and CPP product group, and supports to register the Product Carbon Footprint Label from Thailand Greenhouse Gas Organization (Public Organization) or TGO.

Product Stewardship Roadmap

Product Stewardship Roadmap

2020
Identify and assess safety and environmental risks of products and develop product to receive SCG Green Choice label

2021
Restricted hazardous substance usage in products target, including consider guideline to manage safety and environmental risks of products and calculate LCA of products

2022
Received the Product Carbon Footprint Label (CFP) for 37 products from Thailand Greenhouse Gas Management Organization (Public Organization) (TGO)

2023
Establish product stewardship policy and increase products to receive the Product Carbon Footprint Label (CFP) from TGO

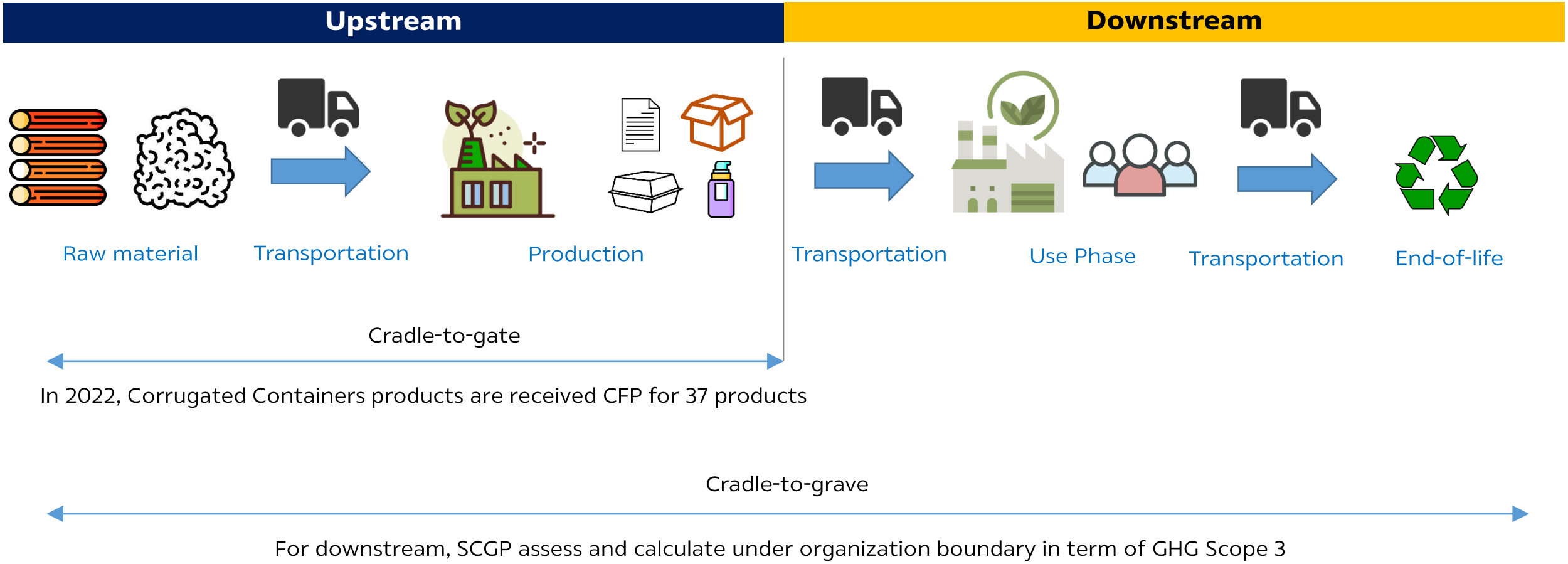
SCGP carried out product stewardship responsibility aligned with Circular Economy Principle

Life Cycle Assessment (LCA) - Impact Category

Impact Category

Resource Use	Ecological Consequences	Human Health
Freshwater eutrophication	Climate Change	Human toxicity
Marine	Ozone depletion	Ionizing radiation
Agricultural land occupation	Terrestrial acidification	
Urban land occupation	Freshwater eutrophication	
Water depletion	Marine eutrophication	
Metal depletion	Photochemical oxidant formation	
Fossil depletion	Particulate matter formation	
	Terrestrial ecotoxicity	
	Freshwater ecotoxicity	
	Marine ecotoxicity	
	Natural land transformation	

LCA & CFP Assessment Boundary



LCA and CFP list (Sample products)

FB Group

Product	GHG (kg CO2e/kg)
SCP	0.6540
CP	1.3088
ODL	0.9735
UEKP	0.8100

CPP Group

Product	GHG (kg CO2e/kg)
FILM PL FFS 110MU 390x160MM. DOWLEX	2.7618
Plastic Bottle 6 Liter	4.2800
Plastic 80mm Dole 4oz 1.0mm clear cup	2.3206

PP Group

Product	GHG (kg CO2e/kg)
CA090	0.9752
CA105	1.1896
CA115	1.1759
CA125	1.1256
CA150	1.0712
CA185	1.2352
CAF105	1.1425
CAF125	0.9420
CS110	0.8192
CS125	1.4530
CSP150	1.4080
KC230	1.8319
KE150	1.5765
KH150	1.4841
KH200	1.4539
KH250	1.6180
KI125	1.7175

Product	GHG (kg CO2e/kg)
KI150	0.7514
KI185	1.7355
KS140	1.9062
KS170	1.7878
KT125	0.9895
KTB150	0.9706
TA125	1.5242
TA150	1.3449
TA185	1.2948
TA230	1.2406
TD125	0.9812
TI125	1.6045
IT150	1.6001
TR125	1.3275
TR150	1.1834
WS140	1.9178
WS170	1.7953

CIP Group

Product	GHG (kg CO2e/kg)
DC 3 ชั้น ลอน B KA-CS-KT	1.6439
DC 3 ชั้น ลอน B KI-CS-KI	1.8206
DC 3 ชั้น ลอน B KI-CS-KT	1.8153
RSC 3 ชั้น ลอน B KA-CS-KT	1.5981
RSC 3 ชั้น ลอน B KA-CS-KA	1.7910
RSC 3 ชั้น ลอน B KS-CS-KI	1.8152
RSC 5 ชั้น ลอน BC KA-3CS-KA	1.7409
RSC 5 ชั้น ลอน BC KI-3CS-KT	1.6356
RSC 3 ชั้น ลอน C KT-CA-KT	1.5901
DC 3 ชั้น ลอน E DBP-CS-KS	2.6908

Summary assessment and impact of 1 ton CS110

SimaPro 8.5.2.2
Project SCG Packaging BP 2020
Calculation: Analyze
Results: Impact assessment
Method: ReCiPe Midpoint (H) V1.13 / Europe Recipe H
Product: 1 ton KA PM6 2020 (of project SCG Packaging BP 2020)

Impact category	Unit	CS110
Climate change	kg CO2 eq	1053.84
Ozone depletion	kg CFC-11 eq	0.000
Terrestrial acidification	kg SO2 eq	10.678
Freshwater eutrophication	kg P eq	0.444
Marine eutrophication	kg N eq	0.731
Human toxicity	kg 1,4-DB eq	337.965
Photochemical oxidant formation	kg NMVOC	5.763
Particulate matter formation	kg PM10 eq	3.214
Terrestrial ecotoxicity	kg 1,4-DB eq	1.524
Freshwater ecotoxicity	kg 1,4-DB eq	7.187
Marine ecotoxicity	kg 1,4-DB eq	7.234
Ionizing radiation	kBq U235 eq	68.181
Agricultural land occupation	m2a	297.454
Urban land occupation	m2a	20.165
Natural land transformation	m2	0.104
Water depletion	m3	3.866
Metal depletion	kg Fe eq	46.470
Fossil depletion	kg oil eq	274.610

Summary assessment and impact of 1 ton II125, II150, II185

SimaPro 8.5.2.2

Project SCG Packaging TCP2

Calculation: Analyze

Results: Impact assessment

Method: ReCiPe Midpoint (H) V1.13 / Europe Recipe H

Product: 1 ton II TCP2 2018 (of project SCG Packaging TCP2)

Impact category	Unit	II125	II150	II185
Climate change	kg CO2 eq	1769.12	2232.15	2900.64
Ozone depletion	kg CFC-11 eq	0.000	0.000	0.000
Terrestrial acidification	kg SO2 eq	12.053	12.874	12.962
Freshwater eutrophication	kg P eq	0.625	0.653	0.638
Marine eutrophication	kg N eq	0.740	0.834	0.857
Human toxicity	kg 1,4-DB eq	473.891	487.507	475.589
Photochemical oxidant formation	kg NMVOC	4.808	5.256	5.512
Particulate matter formation	kg PM10 eq	3.202	3.418	3.459
Terrestrial ecotoxicity	kg 1,4-DB eq	1.513	1.747	1.797
Freshwater ecotoxicity	kg 1,4-DB eq	11.454	11.803	11.500
Marine ecotoxicity	kg 1,4-DB eq	11.043	11.369	11.100
Ionizing radiation	kBq U235 eq	71.150	71.671	71.840
Agricultural land occupation	m2a	171.754	194.234	197.698
Urban land occupation	m2a	21.196	21.551	20.993
Natural land transformation	m2	0.087	0.093	0.096
Water depletion	m3	-13.758	-8.500	-11.713
Metal depletion	kg Fe eq	56.343	54.309	50.882
Fossil depletion	kg oil eq	356.306	376.841	374.325

Summary assessment and impact of 1 ton KA125, KA150, KA185, KA230 & KA335

SimaPro 8.5.2.2

Project	SCG Packaging WS 2021
Calculation:	Analyze
Results:	Impact assessment
Method:	ReCiPe Midpoint (H) V1.13 / Europe Recipe H
Product:	1 ton KA PM6 2020 (of project SCG Packaging WS 2021)

Impact category	Unit	KA125	KA150	KA185	KA230	KA335
Climate change	kg CO2 eq	1859.45	1613.79	1407.27	1415.34	2064.65
Ozone depletion	kg CFC-11 eq	0.000	0.000	0.000	0.000	0.000
Terrestrial acidification	kg SO2 eq	15.731	13.651	11.948	12.117	17.876
Freshwater eutrophication	kg P eq	0.778	0.684	0.597	0.600	0.855
Marine eutrophication	kg N eq	0.827	0.777	0.548	0.545	0.803
Human toxicity	kg 1,4-DB eq	775.479	687.362	619.499	623.848	852.991
Photochemical oxidant formation	kg NMVOC	7.499	6.450	5.621	5.713	8.841
Particulate matter formation	kg PM10 eq	5.173	4.456	3.897	3.944	5.993
Terrestrial ecotoxicity	kg 1,4-DB eq	1.220	1.264	0.681	0.673	0.921
Freshwater ecotoxicity	kg 1,4-DB eq	18.628	16.313	14.448	14.546	20.665
Marine ecotoxicity	kg 1,4-DB eq	17.812	15.611	13.938	14.037	19.910
Ionizing radiation	kBq U235 eq	102.740	95.637	92.013	93.058	118.703
Agricultural land occupation	m2a	1187.463	1006.953	798.689	798.125	1344.430
Urban land occupation	m2a	49.716	42.605	37.242	37.464	57.300
Natural land transformation	m2	0.516	0.425	0.359	0.360	0.624
Water depletion	m3	14.810	12.096	10.236	10.820	15.569
Metal depletion	kg Fe eq	49.689	50.136	52.016	52.883	54.542
Fossil depletion	kg oil eq	464.926	405.769	357.402	358.114	521.656

Summary assessment and impact of 1 ton KT150, KT175, KT200, KT250

SimaPro 8.5.2.2

Project	SCG Packaging WS 2021
Calculation:	Analyze
Results:	Impact assessment
Method:	ReCiPe Midpoint (H) V1.13 / Europe Recipe H
Product:	1 ton KT 2021 (of project SCG Packaging WS 2021)

Impact category	Unit	KT150	KT175	KT200	KT250
Climate change	kg CO2 eq	1010.44	1277.07	1241.91	1242.89
Ozone depletion	kg CFC-11 eq	0	0	0	0
Terrestrial acidification	kg SO2 eq	8.72	10.324	10.182	10.255
Freshwater eutrophication	kg P eq	0.42	0.455	0.449	0.447
Marine eutrophication	kg N eq	0.42	0.454	0.481	0.501
Human toxicity	kg 1,4-DB eq	477.3	522.982	515.813	512.64
Photochemical oxidant formation	kg NMVOC	3.55	4.639	4.559	4.636
Particulate matter formation	kg PM10 eq	2.39	2.928	2.888	2.915
Terrestrial ecotoxicity	kg 1,4-DB eq	0.84	0.582	0.554	0.569
Freshwater ecotoxicity	kg 1,4-DB eq	10.64	11.648	11.448	11.373
Marine ecotoxicity	kg 1,4-DB eq	10.27	11.45	11.263	11.206
Ionizing radiation	kBq U235 eq	66.5	80.655	78.266	78.419
Agricultural land occupation	m2a	100.33	79.592	76.695	77.925
Urban land occupation	m2a	16.69	18.391	17.965	17.869
Natural land transformation	m2	0.07	0.105	0.105	0.108
Water depletion	m3	5.74	5.296	4.557	4.596
Metal depletion	kg Fe eq	52.35	59.252	57.696	57.553
Fossil depletion	kg oil eq	239.38	290.192	293.134	294.891

Summary assessment and impact of 1 ton TS140, TS165, TS185, TS235

SimaPro 8.5.2.2

Project	SCG Packaging WS 2021
Calculation:	Analyze
Results:	Impact assessment
Method:	ReCiPe Midpoint (H) V1.13 / Europe Recipe H
Product:	1 ton TS 2021 (of project SCG Packaging WS 2021)

Impact category	Unit	TS140	TS165	TS185	TS235
Climate change	kg CO2 eq	1103.13	1354.85	1441.07	1418.37
Ozone depletion	kg CFC-11 eq	0	0	0	0
Terrestrial acidification	kg SO2 eq	10.24	11.429	12.018	11.966
Freshwater eutrophication	kg P eq	0.46	0.49	0.522	0.508
Marine eutrophication	kg N eq	0.64	0.58	0.643	0.635
Human toxicity	kg 1,4-DB eq	504.51	559.604	593.09	575.718
Photochemical oxidant formation	kg NMVOC	4.53	5.16	5.392	5.483
Particulate matter formation	kg PM10 eq	2.86	3.225	3.388	3.392
Terrestrial ecotoxicity	kg 1,4-DB eq	1.43	0.649	0.745	0.736
Freshwater ecotoxicity	kg 1,4-DB eq	11.18	12.563	13.398	12.994
Marine ecotoxicity	kg 1,4-DB eq	10.85	12.342	13.147	12.801
Ionizing radiation	kBq U235 eq	73.35	81.591	84.076	83.421
Agricultural land occupation	m2a	155.74	87.405	97.705	96.2
Urban land occupation	m2a	17.71	18.997	19.868	19.264
Natural land transformation	m2	0.09	0.116	0.123	0.127
Water depletion	m3	5.63	6.18	5.121	4.781
Metal depletion	kg Fe eq	54.69	59.38	61.007	59.28
Fossil depletion	kg oil eq	271.86	325.939	349.501	345.292

Summary assessment and impact of 1 ton GBS160, GBS180

SimaPro 8.5.2.2

Project	SCG Packaging BP 2020
Calculation:	Analyze
Results:	Impact assessment
Method:	ReCiPe Midpoint (H) V1.13 / Europe Recipe H
Product:	1 ton GBS160, GBS180 2021 (of project SCG Packaging WS 2021)

Impact category	Unit	GBS160	GBS180
Climate change	kg CO2 eq	1724.2	1761.26
Ozone depletion	kg CFC-11 eq	4.4E-05	4.9E-05
Terrestrial acidification	kg SO2 eq	14.0575	14.6035
Freshwater eutrophication	kg P eq	0.63946	0.6407
Marine eutrophication	kg N eq	0.91648	0.97053
Human toxicity	kg 1,4-DB eq	719.345	721.072
Photochemical oxidant formation	kg NMVOC	5.89456	6.31358
Particulate matter formation	kg PM10 eq	3.85592	4.03048
Terrestrial ecotoxicity	kg 1,4-DB eq	0.90737	0.85758
Freshwater ecotoxicity	kg 1,4-DB eq	15.6362	15.8529
Marine ecotoxicity	kg 1,4-DB eq	15.1645	15.4072
Ionizing radiation	kBq U235 eq	83.7194	84.5301
Agricultural land occupation	m2a	118.065	113.545
Urban land occupation	m2a	22.6611	22.6655
Natural land transformation	m2	0.12829	0.13908
Water depletion	m3	8.57853	9.29081
Metal depletion	kg Fe eq	64.2317	63.8329
Fossil depletion	kg oil eq	439.709	455.544

Summary assessment and impact of 1 ton, CAS115

SimaPro 8.5.2.2

Project	SCG Packaging BP 2021
Calculation:	Analyze
Results:	Impact assessment
Method:	ReCiPe Midpoint (H) V1.13 / Europe Recipe H
Product:	1 ton CAS115 PM16 M1-M4 2021 - allocate elec 100% (of project SCG Packaging BP 2021)

Impact category	Unit	CAS115
Climate change	kg CO2 eq	1214.235
Ozone depletion	kg CFC-11 eq	3.80E-05
Terrestrial acidification	kg SO2 eq	9.722592
Freshwater eutrophication	kg P eq	0.440027
Marine eutrophication	kg N eq	0.954426
Human toxicity	kg 1,4-DB eq	350.9167
Photochemical oxidant formation	kg NMVOC	5.099947
Particulate matter formation	kg PM10 eq	2.819513
Terrestrial ecotoxicity	kg 1,4-DB eq	1.357367
Freshwater ecotoxicity	kg 1,4-DB eq	7.7373
Marine ecotoxicity	kg 1,4-DB eq	7.760249
Ionising radiation	kBq U235 eq	80.54478
Agricultural land occupation	m2a	148.8127
Urban land occupation	m2a	17.579
Natural land transformation	m2	0.106233
Water depletion	m3	6.34775
Metal depletion	kg Fe eq	58.58116
Fossil depletion	kg oil eq	281.7993

Summary assessment and impact of 1 ton, GBI160

SimaPro 8.5.2.2

Project	SCG Packaging BP 2020
Calculation:	Analyze
Results:	Impact assessment
Method:	ReCiPe Midpoint (H) V1.13 / Europe Recipe H
Product:	1 ton GBI160 PM8 (of project SCG Packaging BP 2021)

Impact category	Unit	GBI160
Climate change	kg CO2 eq	1656.19
Ozone depletion	kg CFC-11 eq	4.3E-05
Terrestrial acidification	kg SO2 eq	13.4401
Freshwater eutrophication	kg P eq	0.61134
Marine eutrophication	kg N eq	0.85278
Human toxicity	kg 1,4-DB eq	688.701
Photochemical oxidant formation	kg NMVOC	5.66191
Particulate matter formation	kg PM10 eq	3.70116
Terrestrial ecotoxicity	kg 1,4-DB eq	0.81241
Freshwater ecotoxicity	kg 1,4-DB eq	14.7631
Marine ecotoxicity	kg 1,4-DB eq	14.3638
Ionising radiation	kBq U235 eq	82.2438
Agricultural land occupation	m2a	108.102
Urban land occupation	m2a	21.9212
Natural land transformation	m2	0.12557
Water depletion	m3	7.72814
Metal depletion	kg Fe eq	62.9991
Fossil depletion	kg oil eq	422.78