

Green House Gas Performance							
ESG metrics	GRI STANDARD	List	Unit	2020	2021	2022	2023
	GRI305-1	Direct greenhouse gas emission from the production process (scope 1)				base year	
		Direct greenhouse gas emission from the production	tCO2e	42,962	46,329	60,777	52,499
		- Carbon dioxide (CO2)	tCO2e	26,824	24,993	23,060	29,931
		- Methane (CH4)	tCO2e	15,710	20,854	37,019	21,009
		- Nitrous oxide (N2 O)	tCO2e	379	424	457	453
		- HFCs leakage	tCO2e	50	57	241	1,106
	รายงานแยก	- Carbon dioxide from biogenic (Biogenic CO2)	tCO2e	165,031	179,956	185,222	190,891
		- Other Biogenic	tCO2e	0	0	0	0
		- R22 leakage	tCO2e	171	42	76	113
	GRI305-2	Indirect greenhouse gas emission from electricity, steam, and biogas purchase (scope 2)					
		Indirect greenhouse gas emission from electricity,	tCO2e	20,079	18,446	20,068	20,741
		- Carbon dioxide (CO2)	tCO2e	20,079	18,446	20,068	20,741
		- Methane (CH4)	tCO2e	0	0	0	0
		- Nitrous oxide (N2 O)	tCO2e	0	0	0	0
		- Carbon dioxide from biogenic (Biogenic CO2)	tCO2e	0	0	0	0
		- Other Biogenic	tCO2e	0	0	0	0
E5.2C		Total greenhouse gas emission (scope 1+2)					
		Total greenhouse gas emission (scope 1+2)	tCO2e	63,041	64,775	80,845	73,240
	GRI305-3	Other related indirect greenhouse gas emission (scope 3)					
		Other related indirect greenhouse gas emission	tCO2e	N/A	N/A	263,433	330,349
		Upstream	tCO2e	N/A	N/A	259,831	324,265
		- Product and service purchase (raw material production)	tCO2e	N/A	N/A	240,231	303,989
		- Upstream product transportation and distribution (raw material transportation)	tCO2e	N/A	N/A	13,109	17,304
		- Tap water consumption	tCO2e	N/A	N/A	0	-
		- Waste transportation	tCO2e	N/A	N/A	6,491	2,973
		- Business travel	tCO2e	N/A	N/A	-	-
		- Employee's commuting between home and workplace	tCO2e	N/A	N/A	-	-
		Downstream	tCO2e	N/A	N/A	3,601	6,083
		- Downstream product transportation and distribution (product transportation)	tCO2e	N/A	N/A	3,601	4,990
E5.5R		Total greenhouse gas emission (scope 1+2+3)					
		Total greenhouse gas emission (scope 1+2+3)	tCO2e	N/A	N/A	344,277	403,588
		Separate greenhouse gas emission by establishment					
		Total direct greenhouse gas emission from the production process (scope 1)	tCO2e	42,962	46,329	52,133	47,389
		Total direct greenhouse gas emission from the production process (scope 2)	tCO2e	20,079	18,446	20,014	20,750
		Total other related indirect greenhouse gas emission (scope 3)	tCO2e	N/A	N/A	263,433	329,272
		BBGI Public Company Limited Head Office					
		Total direct greenhouse gas emission from the production process (scope 1)	tCO2e	N/A	N/A	8	11
		Total direct greenhouse gas emission from the production process (scope 2)	tCO2e	N/A	N/A	48	49
		Total other related indirect greenhouse gas emission (scope 3)	tCO2e	N/A	N/A	1	2

ESG metrics	GRI STANDARD	List	Unit	2020	2021	2022	2023
		BBGI Biodiesel Company Limited				base year	
		Total direct greenhouse gas emission from the production process (scope 1)	tCO2e	22,053	25,222	26,734	32,850
		Total direct greenhouse gas emission from the production process (scope 2)	tCO2e	7,947	8,581	8,046	9,282
		Total other related indirect greenhouse gas emission (scope 3)	tCO2e	N/A	N/A	208,294	284,538
		BBGI Bioethanol (Chachoengsao) Company Limited					
		Total direct greenhouse gas emission from the production process (scope 1)	tCO2e	963	1,100	1,198	1,155
		Total direct greenhouse gas emission from the production process (scope 2)	tCO2e	7,920	8,680	9,244	8,852
		Total other related indirect greenhouse gas emission (scope 3)	tCO2e	N/A	N/A	13,704	8,612
		BBGI Bioethanol Public Company Limited (Bo Ploi)					
		Total direct greenhouse gas emission from the production process (scope 1)	tCO2e	19,432	19,519	148	141
		Total direct greenhouse gas emission from the production process (scope 2)	tCO2e	3,560	733	1,153	787
		Total other related indirect greenhouse gas emission (scope 3)	tCO2e	N/A	N/A	33,736	31,069
		BBGI Bioethanol Public Company Limited (Nam Phong)					
		Total direct greenhouse gas emission from the production process (scope 1)	tCO2e	514	488	24,053	13,243
		Total direct greenhouse gas emission from the production process (scope 2)	tCO2e	652	452	1,571	1,770
		Total other related indirect greenhouse gas emission (scope 3)	tCO2e	N/A	N/A	7,678	5,027
		BBGI Utility and Power Company Limited (Bo Ploi)					
		Total direct greenhouse gas emission from the production process (scope 1)	tCO2e	-	-	8,637	4,904
		Total direct greenhouse gas emission from the production process (scope 2)	tCO2e	-	-	5	9
		Total other related indirect greenhouse gas emission (scope 3)	tCO2e	-	-	20	24
		BBGI Utility and Power Company Limited (Nam Phong)					
		Total direct greenhouse gas emission from the production process (scope 1)	tCO2e	-	-	-	194
		Total direct greenhouse gas emission from the production process (scope 2)	tCO2e	-	-	-	-
		Total other related indirect greenhouse gas emission (scope 3)	tCO2e	-	-	-	7
E5.6R	GRI305-4	Greenhouse gas emission ratio per product unit (Intensity)					
		BBGI Biodiesel Company Limited	tCO2e/mil. Litre	116	135	158	145
		BBGI Bioethanol (Chachoengsao) Company Limited	tCO2e/mil. Litre	192	202	228	208
		BBGI Bioethanol Public Company Limited (Bo Ploi)	tCO2e/mil. Litre	258	220	24	18
		BBGI Bioethanol Public Company Limited (Nam Phong)	tCO2e/mil. Litre	23	23	562	344
		BBGI Utility and Power Company Limited (Bo Ploi)	tCO2e/mil. Nm3	-	-	1,289	739
		BBGI Utility and Power Company Limited (Nam Phong)	tCO2e/mil. Nm3	-	-	-	38

Note

1. Greenhouse gas account reporting scope of BBGI Public Company Limited Group 2023 covers company groups as follow:

- 1.1. BBGI Public Company Limited Head Office
- 1.2. BBGI Bioethanol Public Company Limited
- 1.3. BBGI Bioethanol (Chachoengsao) Company Limited
- 1.4. BBGI Biodiesel Company Limited
- 1.5. BBGI Utility and Power Company Limited (*began operating in 2022)

2. In 2022, BBGI Public Company Limited Group started to disclose greenhouse gas emission report according to GRI Universal Standards: GRI 305, version 2016 such as GRI305-1 GRI305-2 and GRI305-3. Previous data from 2019 - 2022 has been reclassified to report in accordance with GRI 305, version 2016. Data from 2019 - 2022 that do not have a database according to the new criteria will be replaced with N/A.

3. Greenhouse gas report, scope 1 and 2, calculated from the Company's calculation tool, which uses IPCC 2006 calculation principle.

4. Greenhouse gas emission scope 1 calculation uses emission factors from IPCC 2006 and the API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry 2009

5. Greenhouse gas emission scope 2 calculation uses emission factors of electricity consumption from the Energy Policy and Planning Office, Ministry of Energy.

6. Greenhouse gas emission scope 3 calculation uses emission factors according to TGO's database, with reference to Thai National LCI Database, TIIS-MTEC-NSTDA.

7. Greenhouse gas emission reporting scope 3 in 2022 reports 3 categories based on the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard, i.e.

Category 1: Purchased goods – raw materials

Category 4:Transportation of raw materials

Category 9:Transportation of products and waste

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8. Fuel to energy conversion uses calorific value from the Department of Alternative Energy Development and Efficiency.

9. Since 2022 Global Warming Potentials (GWP) uses IPCC Fifth Assessment Report (AR5) values from the Greenhouse Gas Protocol.

10. Gases included in the calculation are CO₂, CH₄, N₂O.

11. GHG Intensity is calculated from Scope 1 and Scope 2 only.

12. BBGI Public Company Limited Group has disclosed greenhouse gas account report covering the scope of operations in every business group. The verification results are verified and certified by Third-party in 2022. Therefore, 2022 is the base year.