

Greenhouse Gas Verification Statement

The inventory of Greenhouse Gas emissions in year 2023 of
TOTAL ENERGIES CORBION LTD.

3 Moo 2, Asia Industrial Estate, T. Banchang, A. Banchang, Rayong 21130, Thailand

has been verified in accordance with ISO 14064-3:2019 as
meeting the requirements of

ISO 14064-1:2018

Direct emissions

1,856.40 tonnes of CO₂e

Energy indirect emissions (Category 2- Market-based)

9,164.60 tonnes of CO₂e

Energy indirect emissions (Category 2- Location-base)

22,098.67 tonnes of CO₂e

Indirect emissions (Category 3,4,5,6)

(3,328.52) tonnes of CO₂e

Authorized by



Montree Tangtermsirikul

General Manager

Date: 24 October 2024

SGS 14064-1

SGS (Thailand) Ltd.

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The emissions of energy by location-based and market-based approach as below :

Operational Boundaries			GHG Emissions	
			Location-based	Market-based
Direct emissions (Category 1)			1,856.40	
Energy indirect emissions (Category 2)			22,098.67	9,164.60
Indirect emissions (Category 3,4,5,6)			(3,328.52)	(3,328.52)
Total Direct emissions and indirect emissions			20,644.15	7,710.08
Purchased Renewable Energy Certificate(s) Information				
Site/Location	Type	Renewable Energy Source/Location	Energy indirect emissions	
			Location-based	Market-based
TOTALENERGIES CORBION LTD.	I-REC	Energy Source : Solar Location : - Nong Chok Solar Power - Latkrabang Solar Power - Sai Noi Solar Power - Chachoengsao Solar Power - Bangbo Solar Power - Chondaen Solar Power - Ban Naderm Solar Power	8,850.67	0.00

Nong Chok Solar Power :

From Certificate ID: 0000-0217-2579-1725.000000 to Certificate ID: 0000-0217-2579-2383.999999
 From Certificate ID: 0000-0217-3902-7301.000000 to Certificate ID: 0000-0217-3902-7914.999999
 From Certificate ID: 0000-0003-9077-4357.000000 to Certificate ID: 0000-0003-9077-5005.999999
 From Certificate ID: 0000-0004-1833-0553.000000 to Certificate ID: 0000-0004-1833-1180.999999
 From Certificate ID: 0000-0217-1266-8644.000000 to Certificate ID: 0000-0217-1266-9252.999999

Latkrabang Solar Power :

From Certificate ID: 0000-0003-9077-2027.000000 to Certificate ID: 0000-0003-9077-2658.999999
 From Certificate ID: 0000-0004-1832-9938.000000 to Certificate ID: 0000-0004-1833-0552.999999
 From Certificate ID: 0000-0217-1266-8016.000000 to Certificate ID: 0000-0217-1266-8643.999999
 From Certificate ID: 0000-0217-2578-9369.000000 to Certificate ID: 0000-0217-2579-0065.999999
 From Certificate ID: 0000-0217-3902-6671.000000 to Certificate ID: 0000-0217-3902-7300.999999

Sai Noi Solar Power :

From Certificate ID: 0000-0003-9077-5006.000000 to Certificate ID: 0000-0003-9077-5669.999999
 From Certificate ID: 0000-0004-1833-1181.000000 to Certificate ID: 0000-0004-1833-1847.999999
 From Certificate ID: 0000-0217-1266-9253.000000 to Certificate ID: 0000-0217-1266-9876.999999
 From Certificate ID: 0000-0217-2579-2384.000000 to Certificate ID: 0000-0217-2579-3111.999999
 From Certificate ID: 0000-0217-3902-7915.000000 to Certificate ID: 0000-0217-3902-8593.999999

Chachoengsao Solar Power :

From Certificate ID: 0000-0004-1832-8255.000000 to Certificate ID: 0000-0004-1832-8699.159999
 From Certificate ID: 0000-0217-1232-3352.000000 to Certificate ID: 0000-0217-1232-3854.799999
 From Certificate ID: 0000-0217-2579-0658.000000 to Certificate ID: 0000-0217-2579-1109.399999
 From Certificate ID: 0000-0217-3902-5886.000000 to Certificate ID: 0000-0217-3902-6381.679999

Bangbo Solar Power :

From Certificate ID: 0000-0217-2578-8618.000000 to Certificate ID: 0000-0217-2578-9368.999999
 From Certificate ID: 0000-0217-3902-4567.000000 to Certificate ID: 0000-0217-3902-5258.999999

Chondaen Solar Power :

From Certificate ID: 0000-0003-9074-7836.000000 to Certificate ID: 0000-0003-9074-8123.069999
 From Certificate ID: 0000-0004-1832-8012.000000 to Certificate ID: 0000-0004-1832-8254.489999
 From Certificate ID: 0000-0217-1207-8826.000000 to Certificate ID: 0000-0217-1207-9116.999999
 From Certificate ID: 0000-0217-2579-0066.000000 to Certificate ID: 0000-0217-2579-0342.599999
 From Certificate ID: 0000-0217-3902-6382.000000 to Certificate ID: 0000-0217-3902-6670.959999
 From Certificate ID: 0000-0217-5685-1275.000000 to Certificate ID: 0000-0217-5685-1537.079999

Ban Naderm Solar Power :

From Certificate ID: 0000-0003-9074-8601.000000 to Certificate ID: 0000-0003-9074-9121.079999
 From Certificate ID: 0000-0004-1832-8700.000000 to Certificate ID: 0000-0004-1832-9259.979999
 From Certificate ID: 0000-0217-1234-6295.000000 to Certificate ID: 0000-0217-1234-6970.899999
 From Certificate ID: 0000-0217-2579-1110.000000 to Certificate ID: 0000-0217-2579-1724.459999
 From Certificate ID: 0000-0217-3902-5259.000000 to Certificate ID: 0000-0217-3902-5885.219999

TOTALENERGIES CORBION LTD.	I-REC	Energy Source : Solar Location : - Bangbo Solar Power - Ban Naderm Solar Power - Chachoengsao Solar Power - Sai Luang 9 - Sai Putsa - Sai Sena 2 - Sai Yai Nha - Chondaen Solar Power - Nong Chok Solar Power - Latkrabang Solar Power - Sai Noi Solar Power - Sai Luang 2	4,083.41	0.00
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Bangbo Solar Power :
 From Certificate ID: 0000-0217-1266-7826.080000 to Certificate ID: 0000-0217-1266-8015.999999
 From Certificate ID: 0000-0217-5685-2530.000000 to Certificate ID: 0000-0217-5685-3219.999999
 From Certificate ID: 0000-0218-3716-5495.000000 to Certificate ID: 0000-0218-3716-6188.999999
Ban Naderm Solar Power :
 From Certificate ID: 0000-0217-5685-1998.000000 to Certificate ID: 0000-0217-5685-2529.059999
 From Certificate ID: 0000-0218-3720-5292.000000 to Certificate ID: 0000-0218-3720-5786.459999
Chachoengsao Solar Power :
 From Certificate ID: 0000-0217-5685-1539.000000 to Certificate ID: 0000-0217-5685-1997.919999
 From Certificate ID: 0000-0218-3732-6451.000000 to Certificate ID: 0000-0218-3732-6860.839999
Sai Luang 9 :
 From Certificate ID: 0000-0217-8112-1940.880000 to Certificate ID: 0000-0217-8112-1987.899999
Sai Putsa :
 From Certificate ID: 0000-0218-3803-1250.000000 to Certificate ID: 0000-0218-3803-2246.959999
Sai Sena 2 :
 From Certificate ID: 0000-0218-3803-2247.000000 to Certificate ID: 0000-0218-3803-2848.019999
Sai Yai Nha :
 From Certificate ID: 0000-0218-3803-2849.000000 to Certificate ID: 0000-0218-3803-3836.119999
 Chondaen Solar Power :
 From Certificate ID: 0000-0218-3733-5587.000000 to Certificate ID: 0000-0218-3733-5818.959999
Nong Chok Solar Power :
 From Certificate ID: 0000-0218-3802-3991.000000 to Certificate ID: 0000-0218-3802-4578.999999
Latkrabang Solar Power :
 From Certificate ID: 0000-0218-3802-3434.000000 to Certificate ID: 0000-0218-3802-3990.999999
Sai Noi Solar Power :
 From Certificate ID: 0000-0218-3802-4579.000000 to Certificate ID: 0000-0218-3802-5224.999999
Sai Luang 2 :
 From Certificate ID: 0000-0218-0049-5437.920000 to Certificate ID: 0000-0218-0049-5483.089999

Unit: tonnes of CO₂e

SGS has been contracted by TOTAENERGIES CORBION LTD. (hereinafter referred to as "TECT"), 3 Moo 2, Asia Industrial Estate, T. Banchang, A. Banchang, Rayong, 21130, Thailand for the verification of direct and indirect Greenhouse Gas emissions in accordance with **ISO 14064-3:2019**

as provided by TOTAENERGIES CORBION LTD. (hereinafter referred to as "TECT"), 3 Moo 2, Asia Industrial Estate, T. Banchang, A. Banchang, Rayong, 21130, Thailand, in the GHG Assertion in the form of GHG report covering GHG emissions of the period 01 January 2023 to 31 December 2023.

Roles and responsibilities

The management of TECT is responsible for the organization's GHG information system, the development and maintenance of records and reporting procedures in accordance with that system, including the calculation and determination of GHG emissions information and the reported GHG emissions.

It is SGS's responsibility to express an independent GHG verification opinion on the GHG emissions as provided in the GHG Assertion for the period 01 January 2023 to 31 December 2023.

SGS conducted a third-party verification of the provided GHG assertion against the principles of ISO 14064-1:2018, ISO 14064-3:2019 in the period 01 January 2023 to 31 December 2023. The verification was based on the verification scope, objectives and criteria as agreed between TECT and SGS on 05 June 2024.

Level of Assurance

The level of assurance agreed is that of **limited** assurance.

Scope

TECT has commissioned an independent verification by SGS Taiwan of reported GHG emissions of TECT arising from The Manufacturing of Lactide, Lactic acid solution and Polylactide (PLA) activities, to establish conformance with ISO 14064:2018 principles within the scope of the verification as outlined below.

This engagement covers verification of emission from anthropogenic sources of greenhouse gases included within the organization's boundary and is based on ISO 14064-3:2019.

- The organizational boundary was established following operational control approach.
- Title or description activities: GHG verification for TECT in year 2023
- Location/boundary of the activities:
 - 3 Moo 2, Asia Industrial Estate, T. Bangchang, A. Bangchang, Rayong, 21130, Thailand
- Physical infrastructure, activities, technologies and processes of the organization:
The Manufacturing of Lactide, Lactic acid solution and Polylactide (PLA)
- GHG sources, sinks and/or reservoirs included: Sources as presented in the inventory spreadsheet provided by TECT
- Types of GHGs included: CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, NF₃
- The IPCC 2021 AR6 GWP values are applied in this inventory.
- Electricity emission factor: 0.4473 tCO₂e/Mwh
(Announced by B.Grimm Power PLC in 2023)
- Steam emission factor: 0.0948 tCO₂e/ tonnes
(Announced by B.Grimm Power PLC in 2023)
- Lactic acid emission factor: -0.0900 kg CO₂eq/kg
(Announced by Corbion in 2023 by Cradle-to-gate carbon footprint including the biogenic CO₂ in the product method)
- Directed actions: NA
- GHG information for the following period was verified: 01 January 2023 to 31 December 2023
- The version of inventory sheet: 2023 Greenhouse Gas Inventory Quantification Rev.03
- The version of GHG assertion: 2023 TECT Greenhouse Gas Emissions Inventory Report Rev.01
- Intended user of the verification statement: Private

Objective

The purposes of this verification exercise are, by review of objective evidence, to independently review:

- Whether the GHG emissions are as declared by the organization's GHG assertion
- The data reported are accurate, complete, consistent, transparent and free of material error or omission.

Criteria

Criteria against which the verification assessment is undertaken are the principles of ISO 14064-1:2018

Materiality

The materiality required of the verification was considered by SGS to 5%, based on the needs of the intended user of the GHG Assertion.

Conclusion

TECT provided the GHG assertion based on the requirements of ISO14064-1:2018. The GHG information for the period 01 January 2023 to 31 December 2023 disclosing emissions of 11,020.99 metric tonnes of CO₂ equivalent as Market-based (Category 1 and 2) and 23,955.07 metric tonnes of CO₂ equivalent as Location-based (Category 1 and 2) and (3,328.52) metric tonnes of direct CO₂ emissions from the combustion of biomass are verified by SGS to a **limited** level of assurance, consistent with the agreed verification scope, objectives and criteria.

The emission of each site is described as below:

Unit: tonnes of CO₂e

Operational Boundaries			GHG Emissions	
Category		Description	Location-based	Market-based
Direct Emissions		This direct GHG emission are the sum of owned or controlled by the organization within the organization	1,856.40	1,856.40
Indirect emissions	Imported energy	Imported Electricity	12,934.07	0.00
		Imported Steam	9,164.60	9,164.60
	Transportation	3.1 Upstream transportation and distribution	N/A	N/A
		3.2 Business travel	N/A	N/A
		3.3 Employee commuting	N/A	N/A

		3.4 Downstream transportation and distribution	N/A	N/A
	Products used by an organization	4.1 Purchased goods and services	(4,4041.33)	(4,4041.33)
		4.2 Capital goods	N/A	N/A
		4.3 Fuel-and energy-related activities (not included in category 1 or category 2)	712.81	712.81
		4.4 Waste generated in operations	N/A	N/A
	Associated with the use of products from the organization	5.1 Use of sold products	N/A	N/A
		5.2 End-of-life treatment of sold products	N/A	N/A
		5.3 Downstream leased assets	N/A	N/A
		5.4 Franchises	N/A	N/A
	Other sources	N/A	N/A	N/A
Total direct emissions and indirect emissions			20,644.15	7,710.08
Production based intensity ratio (tonnes of CO ₂ e / tonnes PLA) - Category 1 + 2			0.68	0.31
Production based intensity ratio (tonnes of CO ₂ e / tonnes PLA) - Category 1 +2+3+4+5+6			0.59	0.22

TECT purchased 25,873.330000 Renewable Energy Certificate(s) in 2023. The energy indirect emissions by location-based and market-based approach shown as the following table, which is based on the GHG Protocol Scope 2 Guidance (2015).

Purchased Renewable Energy Certificate(s) Information				
Site/Location	Type	Renewable Energy Source/Location	Energy indirect emissions	
			Location-based	Market-based
TOTALENERGIES CORBION LTD.	I-REC	Energy Source : Solar Location : - Nong Chok Solar Power - Latkrabang Solar Power - Sai Noi Solar Power - Chachoengsao Solar Power - Bangbo Solar Power - Chondaen Solar Power - Ban Naderm Solar Power	8,850.67	0.00
Nong Chok Solar Power : From Certificate ID: 0000-0217-2579-1725.000000 to Certificate ID: 0000-0217-2579-2383.999999 From Certificate ID: 0000-0217-3902-7301.000000 to Certificate ID: 0000-0217-3902-7914.999999 From Certificate ID: 0000-0003-9077-4357.000000 to Certificate ID: 0000-0003-9077-5005.999999 From Certificate ID: 0000-0004-1833-0553.000000 to Certificate ID: 0000-0004-1833-1180.999999 From Certificate ID: 0000-0217-1266-8644.000000 to Certificate ID: 0000-0217-1266-9252.999999 Latkrabang Solar Power : From Certificate ID: 0000-0003-9077-2027.000000 to Certificate ID: 0000-0003-9077-2658.999999 From Certificate ID: 0000-0004-1832-9938.000000 to Certificate ID: 0000-0004-1833-0552.999999 From Certificate ID: 0000-0217-1266-8016.000000 to Certificate ID: 0000-0217-1266-8643.999999 From Certificate ID: 0000-0217-2578-9369.000000 to Certificate ID: 0000-0217-2579-0065.999999 From Certificate ID: 0000-0217-3902-6671.000000 to Certificate ID: 0000-0217-3902-7300.999999 Sai Noi Solar Power : From Certificate ID: 0000-0003-9077-5006.000000 to Certificate ID: 0000-0003-9077-5669.999999 From Certificate ID: 0000-0004-1833-1181.000000 to Certificate ID: 0000-0004-1833-1847.999999 From Certificate ID: 0000-0217-1266-9253.000000 to Certificate ID: 0000-0217-1266-9876.999999 From Certificate ID: 0000-0217-2579-2384.000000 to Certificate ID: 0000-0217-2579-3111.999999 From Certificate ID: 0000-0217-3902-7915.000000 to Certificate ID: 0000-0217-3902-8593.999999 Chachoengsao Solar Power : From Certificate ID: 0000-0004-1832-8255.000000 to Certificate ID: 0000-0004-1832-8699.159999 From Certificate ID: 0000-0217-1232-3352.000000 to Certificate ID: 0000-0217-1232-3854.799999 From Certificate ID: 0000-0217-2579-0658.000000 to Certificate ID: 0000-0217-2579-1109.399999 From Certificate ID: 0000-0217-3902-5886.000000 to Certificate ID: 0000-0217-3902-6381.679999 Bangbo Solar Power : From Certificate ID: 0000-0217-2578-8618.000000 to Certificate ID: 0000-0217-2578-9368.999999 From Certificate ID: 0000-0217-3902-4567.000000 to Certificate ID: 0000-0217-3902-5258.999999 Chondaen Solar Power : From Certificate ID: 0000-0003-9074-7836.000000 to Certificate ID: 0000-0003-9074-8123.069999 From Certificate ID: 0000-0004-1832-8012.000000 to Certificate ID: 0000-0004-1832-8254.489999 From Certificate ID: 0000-0217-1207-8826.000000 to Certificate ID: 0000-0217-1207-9116.999999 From Certificate ID: 0000-0217-2579-0066.000000 to Certificate ID: 0000-0217-2579-0342.599999 From Certificate ID: 0000-0217-3902-6382.000000 to Certificate ID: 0000-0217-3902-6670.959999 From Certificate ID: 0000-0217-5685-1275.000000 to Certificate ID: 0000-0217-5685-1537.079999 Ban Naderm Solar Power : From Certificate ID: 0000-0003-9074-8601.000000 to Certificate ID: 0000-0003-9074-9121.079999 From Certificate ID: 0000-0004-1832-8700.000000 to Certificate ID: 0000-0004-1832-9259.979999 From Certificate ID: 0000-0217-1234-6295.000000 to Certificate ID: 0000-0217-1234-6970.899999 From Certificate ID: 0000-0217-2579-1110.000000 to Certificate ID: 0000-0217-2579-1724.459999 From Certificate ID: 0000-0217-3902-5259.000000 to Certificate ID: 0000-0217-3902-5885.219999				

TOTALENERGIES CORBION LTD.	I-REC	Energy Source : Solar Location : - Bangbo Solar Power - Ban Naderm Solar Power - Chachoengsao Solar Power - Sai Luang 9 - Sai Putsa - Sai Sena 2 - Sai Yai Nha - Chondaen Solar Power - Nong Chok Solar Power - Latkrabang Solar Power - Sai Noi Solar Power - Sai Luang 2	4,083.41	0.00
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SGS's approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions information and the controls in place to mitigate these. Our examination includes assessment, on a test basis, of evidence relevant to the amounts and disclosures in relation to the organization's reported GHG emissions.

We planned and performed our work to obtain the information, explanations and evidence that we considered necessary to provide a limited level of assurance that the GHG emissions for the period 01 January 2023 to 31 December 2023 are fairly stated.

We conducted our verification with regard to the GHG assertion of TECT which included assessment of GHG information system, monitoring and reporting plan/protocol. This assessment included the collection of evidence supporting the reported data, and checking whether the provisions of the protocol reference, were consistently and appropriately applied.

In SGS's opinion, the presented GHG assertion

- is materially correct and is a fair representation of the GHG data and information, and
- is prepared in accordance with ISO14064-1:2018 on GHG quantification, monitoring and reporting.

Confidentiality

The reports and attachments may contain relevantly confidential information of the clients. In addition to being submitted as governmental application or certification documents, the reports and attachments are not allowed to be edited, duplicated, or published without the clients' agreement in written form.

Avoidance of Conflict of Interest

The reports and attachments are completely complied with the standards and procedures that related authorities established. The reports and attachments of auditing process are conduct with fairness and honesty. If not, the auditing institution not only has to bear the relevant compensation duties, but also to receive legal charge and punishment.

This statement shall be interpreted with the GHG assertion of TECT as a whole.

Verifier Group

Above statements coincide with auditing process with fairness and impartiality and aim at the emission of year 2023 of clients.

Lead Verifier:



Verifier:



Note: This statement is issued, on behalf of Client, by SGS (Thailand) Ltd. ("SGS") under its General Conditions for Greenhouse Gas Verification Services available at <https://www.sgs.com/en/terms-and-conditions>. The findings recorded here on are based upon an verification performed by SGS. A full copy of this statement, the findings and the supporting GHG Assertion may be consulted at TOTALENERGIES CORBION LTD. (hereinafter referred to as "TECT"), 3 Moo 2, Asia Industrial Estate, T.Banchang, A.Banchang, Rayong, 21130, Thailand. This statement does not relieve client from compliance with any bylaws, federal, national or regional acts and regulations. Stipulations to the contrary are not binding on SGS and SGS shall have no responsibility vis-à-vis parties other than its client.