

Greenhouse Gas Verification Opinion

The inventory of Greenhouse Gas emissions in year 2023 of

Taiwan Union Technology Corporation

803 Bo-ai St., Zhubei,
Hsinchu County 302045, Taiwan



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

ISO 14064-1:2018

Direct emissions

36,425.7551 tonnes of CO₂e

Indirect emissions

223,583.7014 tonnes of CO₂e

Direct emissions and indirect emissions

260,009.457 tonnes of CO₂e

Authorized by

Stephen Pao

Business Assurance Director

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Version 1

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Opinion TW24/00438GG, continued

The emission of each category is described as below:

Unit: tonnes of CO₂e

Reporting Boundaries		GHG Emissions	
Inventory categories	Description		
Direct emissions	Direct emissions from stationary combustion		34,642.5806
	Direct emissions from mobile combustion		196.9830
	Direct process emissions and removals from industrial processes		271.6449
	Direct fugitive emissions arise from the release of GHGs in anthropogenic systems		1,314.5466
	Direct emissions and removals from land use, land use change and forestry		0.0000
Indirect emissions	Imported energy	Imported Electricity	47,154.1103
	Transportation	Downstream transportation and distribution by land Business travel (self-driving travel)	326.8416
	Products used by an organization	purchased goods (copper foil and butanone) Industrial waste transportation Industrial waste disposal	176,102.7496
	Associated with the use of products from the organization	(not significant)	--
	Other sources	(not significant)	--
Direct emissions and indirect emissions			260,009.457

The emission of each site is described as below:

Unit: tonnes of CO₂e

Site	Direct emissions	Indirect emissions		Total GHG emissions
	Category 1	Category 2	Category 3~6	
TUC Taiwan (Headquarters)	20,076.9607	25,476.6391	59,791.4568	105,345.057
TUC Changshu, China	7,110.6254	12,744.5453	59,152.2196	79,007.390
TUC Zhongshan, China	9,238.1690	8,932.9258	57,485.9147	75,657.010

SGS has been contracted by Taiwan Union Technology Corporation (hereinafter referred to as "TUC Taiwan"), 803 Bo-ai St., Zhubei, Hsinchu County 302045, Taiwan for the verification of direct and indirect Greenhouse Gas emissions in accordance with

ISO 14064-3:2019

as provided by Taiwan Union Technology Corporation (hereinafter referred to as "TUC Taiwan"), 803 Bo-ai St., Zhubei, Hsinchu County 302045, Taiwan, in the GHG Statement in the form of GHG report.

Roles and responsibilities

- The management of TUC Taiwan 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.
- The verification was based on the verification scope, objectives and criteria as agreed between TUC Taiwan and SGS on 24 October 2023.
- Verification Criteria: ISO 14064-1:2018
- Verification Period: 04 June 2024 to 26 June 2024.

Scope

- GHG information for the following period was verified: 01 January 2023 to 31 December 2023
- Location/boundary of the activities:
 - 803 Bo-ai St., Zhubei, Hsinchu County 302045, Taiwan
 - 768 Dongnan Ave., Changshu, Jiangsu 215500, China
 - 39 Yangjiang East 3rd Rd., Zhongshan City, Guangdong 528437, China
- Types of GHGs included: CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, NF₃
- The IPCC 2021 AR6 GWP values are applied in this inventory.
- Emission factor:
 - Direct emissions: Greenhouse Gas Emission Factor Table (6.0.4)
 - Indirect emissions:
 - Taiwan : Electricity emission factor is 0.494 kgCO₂e/kwh (Announced by Energy Administration, Ministry of Economic Affairs in 2024).
 - Jiangsu : Electricity emission factor is 0.6451 kgCO₂e/kwh (National Bureau of Statistics of the Ministry of Ecology and Environment [2024] No. 12).

- Guangdong : Electricity emission factor is 0.4715 kgCO₂e/kwh (National Bureau of Statistics of the Ministry of Ecology and Environment [2024] No. 12).
- The secondary database has Carbon Footprint Information Platform, Chinese Product Life Cycle Greenhouse Gas Emission Coefficient Database (2022).
- TUC Taiwan (Headquarters) : The level of assurance for category 1 and category 2 agreed is that of reasonable assurance. Category 3 till category 6 agreed is that of limited assurance.
- TUC Changshu and TUC Zhongshan, China : The level of assurance agreed is limited assurance.
- Materiality : 5%
- The version of inventory sheet:

Site	The version of inventory sheet
TUC Taiwan (Headquarters)	20240626
TUC Changshu, China	V4
TUC Zhongshan, China	V1

- The version of GHG statement:

Site	The version of GHG assertion
TUC Taiwan (Headquarters)	V2
TUC Changshu, China	V5
TUC Zhongshan, China	V1

- Intended user of the verification opinion: 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 statement
- The data reported are accurate, complete, consistent, transparent and free of material error or omission.

Conclusion

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 the GHG emissions are free from material misstatement.

Opinion TW24/00438GG, continued

- The greenhouse gas emissions is 260,009.457 metric tonnes of CO₂ equivalent
- The emissions from the combustion of biomass is 0.0000 metric tonnes of CO₂ equivalent

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Unit: tonnes of CO₂e

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	Products used by an organization purchased goods (copper foil and butanone) Industrial waste transportation Industrial waste disposal	176,102.7496
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Direct emissions and indirect emissions		260,009.457

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- The opinion of SGS is modified in accordance with the following described circumstances.
 - The verifier has sufficient and appropriate evidence to support the material emissions, removals, or storage.
 - The verifier applies appropriate criteria for the material emissions, removals, or storage.
 - When the verifier intends to rely on relevant controls, the effectiveness of those controls has been assessed.
 - The verifier, applying the ISO 14064-1:2018 standard, presents the following findings. After adjustments and corrections, no material errors were identified.
 - Correction of activity data on some emission sources at the headquarters, such as natural gas, propane, purchased goods (copper foil), waste, etc.
 - The calculation of emission factor for some emission sources has been corrected, such as VOCs at the Zhongshan plant and natural gas from the headquarters.
- Retention Limitation:
 - NA

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 opinion shall be interpreted with the GHG statement of TUC Taiwan as a whole.

Verifier Group

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

Lead Verifier: *Emma Kao*

Verifier: *Aiden Tseng*

Mike Huang

Chris Hsin

Royal Lo

Note: This opinion is issued, on behalf of Client, by SGS Taiwan Ltd. ("SGS") under its General Conditions for Greenhouse Gas Verification Services available at http://www.sgs.com/terms_and_conditions.htm. The findings recorded hereon are based upon an audit performed by SGS. A full copy of this opinion, the findings and the supporting GHG Assertion may be consulted at Taiwan Union Technology Corporation, 803 Bo-ai St., Zhubei, Hsinchu County 302045, Taiwan, This opinion does not relieve Client from compliance with any bylaws, federal, national or regional acts and regulations or with any guidelines issued pursuant to such regulations. Stipulations to the contrary are not binding on SGS and SGS shall have no responsibility vis-à-vis parties other than its Client.