

Greenhouse Gas Verification Opinion

The inventory of Greenhouse Gas emissions in year 2023 of

TAIWAN HIGH SPEED RAIL CORPORATION

13F~15F., No. 66, Jingmao 2nd Rd., Nangang Dist.,
Taipei City 115, Taiwan (R.O.C.)



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

ISO 14064-1:2018

Direct emissions

8,373.3549 tonnes of CO₂e

Indirect emissions

443,627.3550 tonnes of CO₂e

Direct emissions and indirect emissions

452,000.710 tonnes of CO₂e

Authorized by

Stephen Pao

Business Assurance Director

Date: 10 September 2024

Version 1

TGP56B-15-1 2404

SGS Taiwan Ltd.

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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	23.4978	
	Direct emissions from mobile combustion	1,160.4945	
	Direct process emissions and removals from industrial processes	0.0000	
	Direct fugitive emissions arise from the release of GHGs in anthropogenic systems	7,189.3626	
	Direct emissions and removals from land use, land use change and forestry	0.0000	
Indirect emissions	Imported energy	318,094.6858	
	Transportation	Emissions from upstream transport and cargo distribution	406.0062
		Emissions from employee commuting (car/taxi/MRT)	4,309.5302
		Emissions from business travel (MRT/taxi/airplane)	37.4359
	Products used by an organization	Emissions from purchased goods (consumables and spare parts / tap water / upstream from energy resources during the service process)	110,751.3179
		Emissions from capital goods (purchased machinery and equipment)	324.9377
		Emissions from solid and liquid waste processing	1,210.3509
		Emissions from leased assets (electricity/water)	9.6919
	Associated with the use of products from the organization	Emissions from downstream leased assets (electricity/water)	8,483.3985
	Other sources	Undisclosed	NA
Direct emissions and indirect emissions		452,000.710	

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	
Nangang Station	6.4583	7,976.3730	5,190.4428	13,173.274
Taipei Station	108.6962	6,175.6774	4,781.8919	11,066.266
Banqiao Station	1.7084	5,620.0510	3,023.2652	8,645.025
Taoyuan Station	1.8406	3,194.3115	4,139.3982	7,335.550
Hsinchu Station	58.0653	2,906.8561	3,089.7451	6,054.667
Miaoli Station	1.0536	1,055.2043	1,553.2171	2,609.475
Taichung Station	147.6835	5,038.1608	7,377.6582	12,563.503
Changhua Station	147.0067	1,227.4569	1,049.2620	2,423.726
Yunlin Station	26.7427	1,299.9160	1,034.2154	2,360.874
Chiayi Station	35.5856	2,574.8668	1,980.4189	4,590.871
Tainan Station	3.2954	1,911.1936	2,563.4455	4,477.935
Zuoying Station	206.2431	4,158.8124	2,777.3224	7,142.378
Liujiia Depot	560.4318	614.2050	528.3734	1,703.010
Wuri Depot	1,322.7171	1,737.6944	7,918.4553	10,978.867
Taibao Depot	103.8690	90.4415	1,157.8199	1,352.130
Yanchao Main WorkShop	1,836.0990	3,710.1376	3,352.4883	8,898.725
Zuoying Depot	2,871.6466	2,758.7104	3,536.5176	9,166.875
Taoyuan OMC Building	918.8584	2,790.9535	1,724.1282	5,433.940
Taipei Headquarters	10.1330	703.2396	11,807.8675	12,521.240
Main Line(Train and Trackside Equipment)	5.2206	262,550.4240	56,946.7363	319,502.381

SGS has been contracted by C. C. Sustain ESG Solution Co., Ltd. (hereinafter referred to as “C. C. Sustain”), 15F.-5, No. 12, Zhonghua Rd., Yongkang Dist., Tainan City 710029, Taiwan (R.O.C.) for the verification of direct and indirect Greenhouse Gas emissions in accordance with

ISO 14064-3:2019

as provided by TAIWAN HIGH SPEED RAIL CORPORATION (hereinafter referred to as “TAIWAN HIGH SPEED RAIL”) · 13F.~15F., No. 66, Jingmao 2nd Rd., Nangang Dist., Taipei City 115, Taiwan (R.O.C.), in the GHG Statement in the form of GHG report.

Roles and responsibilities

- The management of TAIWAN HIGH SPEED RAIL 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 C. C. Sustain and SGS on 01 November 2022.
- Verification Criteria: ISO 14064-1:2018.
- Verification Period: 15 July 2024 to 12 August 2024.

Scope

- GHG information for the following period was verified: 01 January 2023 to 31 December 2023
- Location/boundary of the activities:

Location	Address
Nangang Station	No.313, Sec. 1, Nangang Rd., Nangang Dist., Taipei City 115018 Taiwan (R.O.C.)
Taipei Station	No. 3, Beiping W. Rd., Zhongzheng District, Taipei City 100230, Taiwan (R.O.C.)
Banqiao Station	No.7, Sec. 2, Xianmin Blvd., Banqiao Dist., New Taipei City 220408, Taiwan (R.O.C.)
Taoyuan Station	No. 6, Sec. 1, Gaotie N. Rd., Cingpu Village, Zhongli Dist., Taoyuan City 320016, Taiwan (R.O.C.)
Hsinchu Station	No. 6, Gaotie 7th Rd., Zhubei City, Hsinchu County 302058, Taiwan (R.O.C.)
Miaoli Station	No. 268, Gaotie 3rd Rd., Houlong Township, Miaoli County 356002, Taiwan (R.O.C.)
Taichung Station	No.8, Jhancyuer 2nd Road, Neighbor 3, Sanhe Village, Wurih Township, Taichung County 414010, Taiwan (R.O.C.)
Changhua Station	No.99, Sec. 2, Jhancyuer Rd., Tianzhong Township, Changhua County 520013, Taiwan (R.O.C.)

Location	Address
Yunlin Station	No.301, Zhanqian E. Rd., Huwei Township, Yunlin County 632007, Taiwan (R.O.C.)
Chiayi Station	No. 168, Gaotie W. Road., Taibau Li, Taibau City , Chiayi 612001, Taiwan (R.O.C.)
Tainan Station	No.100, Guiren Blvd., Guiren Dist., Tainan City 711010, Taiwan (R.O.C.)
Zuoying Station	No. 105 Gaotie Rd., Tsoying District Kaoshiung City 813782, Taiwan (R.O.C.)
Liujiia Depot	No. 55, Lane 358, Sec. 5, Xinglong Rd., Zhubei City, Hsinchu County 302053, Taiwan (R.O.C.)
Wuri Depot	No.828, Qingguang Rd., Wuri Dist., Taichung City 414018, Taiwan (R.O.C.)
Taibao Depot	No.360, Kaotie Si Rd., Taibao City, Chiayi County 612001, Taiwan (R.O.C.)
Yanchao Main WorkShop	No. 500, Gaotie-zongchang Rd., Yanchao Dist., Kaohsiung City 824005, Taiwan (R.O.C.)
Zuoying Depot	No.1999, Gaotie Rd., Renwu Dist., Kaohsiung City 814032, Taiwan (R.O.C.)
Taoyuan OMC Building	No. 2, Sec. 1, Gaotie N. Rd., Cingpu Village, Zhongli Dist., Taoyuan City 32056, Taiwan (R.O.C.)
Taipei Headquarters	13~15F., No. 66, Jingmao 2nd Rd., Nangang District, Taipei City 115605, Taiwan (R.O.C.)
Main Line (Train and Trackside Equipment)	The total length of the THSR operating route from Nangang to Zuoying is 350 kilometers.

- 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:
 - Electricity emission factor is 0.494 kgCO₂e/kwh (Announced by Energy Administration, Ministry of Economic Affairs in 2024).
 - The secondary database has Carbon Footprint Information Platform
- 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.
- Materiality : 5%
- The version of inventory sheet: 15 August 2024
- The version of GHG statement: 15 August 2024
- 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.

- The greenhouse gas emissions is 452,000.710 metric tonnes of CO₂ equivalent
- The emissions from the combustion of biomass is 0.0000 metric tonnes of CO₂ equivalent

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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.
 - There were errors in the activity data of some emission sources. After on-site confirmation and clarification, the values were corrected and adjusted, and no substantial errors were found.
 - The quantification method for some indirect emission sources did not cover or exclude the relevant range values. After on-site confirmation and clarification, the values were corrected and adjusted, and no substantial errors were caused.
- Retention Limitation:
 - Among the 20 units within the inspection scope, 7 units will be sampled for verification this year, and the actual inspection of all units will be completed in a total of three years.

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 TAIWAN HIGH SPEED RAIL 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:

Kyle Lu.

Verifier:

Vanessa Chen

Rex Lee

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 HIGH SPEED RAIL CORPORATION, 13F., No. 66, Jingmao 2nd Rd., Nangang Dist., Taipei City 115, Taiwan (R.O.C.). 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.