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VERIFICATION OPINION OF GREENHOUSE GAS

The Verification Body
of TÜV SÜD Asia Ltd., Taiwan Branch
attests that the GHG inventory reported by

Chunghwa Telecom Co., Ltd.

No. 21-3, Sec. 1, Xinyi Rd., Zhongzheng Dist., Taipei City, 100012, Taiwan., R.O.C.

In compliance with

ISO 14064-1:2018

Total Emissions: 2,542,158.925 tonnes CO₂eq, **including**

- **Direct Emissions (Category 1):** 19,185.3151 tonnes CO₂eq
- **Indirect Emissions (Category 2):** 694,912.7210 tonnes CO₂eq
- **Indirect Emissions (Category 3 to 6):** 1,828,060.8890 tonnes CO₂eq

(GWP values are consist with IPCC-AR6 2021)

Organizational Boundaries: Operational Control

Covered Period: 2022-01-01 to 2022-12-31

Level of Assurance: Reasonable Assurance (Category 1 and 2)
Limited Assurance (Category 3 to 6)

Materiality threshold: The GHG emissions below 5% for deviations

Verification Report No.: 61.027.23.003.01

Opinion Registration No.: TÜV 23 03 5010929190. 01

Issue Date: 2023-05-30

TÜV SÜD Asia Ltd., Taiwan Branch
TÜV SÜD Group



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Explanations to the Verification Opinion

Brief description of the Verification process

TÜV SÜD Asia Ltd. Taiwan Branch (hereinafter referred to as TÜV SÜD) commissioned to verify GHG emissions for Chunghwa Telecom Co., Ltd. (hereinafter referred to as CHT). Lead Verifier Jane Lin, Verifiers Jessica Hsieh and Robert Dai from TÜV SÜD conducted the verification activities in the period of 2023-03-25 to 2023-04-24, for the reporting period 2022-01-01, to 2022-12-31. Evaluating the conformity of GHG related verification specification for the organization, including the principles and requirements of the standards or GHG scheme that applied to the verification scope. This review is based on the intended area of application, the goals and criteria as agreed upon with the commissioning on 2023-03-24.

On-site Verification

Lead Verifier Jane Lin, Verifiers Jessica Hsieh and Robert Dai from TÜV SÜD conducted the on-site visit verification activities of responsible at the head quarter in Taipei, Taiwan (site address: No. 21-3, Sec. 1, Xinyi Rd., Zhongzheng District, Taipei City, 100), on the 2023-03-27, 2023-03-29, 2023-03-30, 2023-04-13, 2023-4-14 for Stage 1 verification, and 2023-04-21, 2023-04-24 for Stage 2 verification. In particular, the five following sites were visited:

- Site1: Chunghwa Telecom Banqiao Internet & Cloud Data Center (site address: No. 8, Guoqing Rd, Banqiao District, New Taipei City, 220)
- Site2: Chunghwa Telecom Taoyuan Mobile Communication Center (site address: No. 100, Fuguo Rd, Taoyuan District, Taoyuan City, 330)
- Site3: Chunghwa Telecom Zhongli Data Communication Building (site address: No. 426, Section 3, Zhongshan E Rd, Zhongli District, Taoyuan City, 320)
- Site4: Chunghwa Telecom Kaohsiung Zhongshan Data Center (site address: No. 18, Zhongshan 1st Rd, Xinxing District, Kaohsiung City, 800)
- Site5: Chunghwa Telecom Kaohsiung Qixian Data Center (site address: No. 20, Qixian 1st Rd, Xinxing District, Kaohsiung City, 800)

Roles and responsibilities

The determination and reporting of GHG emissions are the sole responsibility of our client.

Our role and responsibility as a verification body was to independently verify the adequacy of the GHG emissions reported by our client, as well as the underlying systems and processes for data collection, analysis and control, in accordance with the requirements of ISO 14064-3.

Standards for data processing

ISO 14064-1:2018 (“Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals”), with reference to the WRI/WBCSD Greenhouse Gas Protocol Corporate Value Chain(Scope3) accounting and reporting standard.



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Scope of application / System boundaries

The GHG reporting includes the inventory for the calendar year 2022 of CHT. The operational control approach was chosen, meaning that all operations are included in the GHG accounting over which the company has full authority to introduce and implement its operating policies. The inventory includes Chunghwa Telecom Headquarters, regional operating branches, the Telecommunication Training Institute, Consumer Business Group, Enterprise Business Group, International Business Group, Network Technology Group, Information Technology Group, and the Telecom Laboratories within its organizational boundaries. Chunghwa Telecom will exclude overseas locations (operating bases outside of Taiwan) from the organizational boundaries.

The following emission sources were identified and associated GHG emissions accounted:

Reporting Boundaries		GHG Emissions(tCO ₂ e)
Categories		
Category 1: Direct GHG emissions	Stationary combustion	2,424.8131
	Mobile combustion	11,356.0133
	Industrial processes(anthropogenic systems)	N/A
	Fugitive(anthropogenic systems)	5,404.4887
	Land use, land use change and forestry	N/A
Total of Category 1		19,185.3151
Category 2: Indirect GHG emissions from imported energy	Imported electricity	694,912.7210
Total of Category 2		694,912.7210
Category 3: Indirect GHG emissions from transportation	3.1 Upstream transportation and distribution	646.6005
	3.2 Business travels	1,174.6524
	3.3 Employee commuting	10,203.8759
	3.4 Downstream transportation and distribution	901.8551
Category 4: Indirect GHG emissions from products used by organization	4.1 Purchased goods and services	752,416.6905
	4.2 Capital goods	344,733.3879
	4.3 Fuel- and energy-related activities	124,456.9146
	4.4 Waste generated in operations	943.5896
	4.5 Upstream leased assets	13,045.9321
Category 5: Indirect GHG emissions associated with the use of products from the organization	5.1 Use of sold products	460,657.5902
	5.2 End-of-life treatment of sold products	1,403.5034
	5.3 Downstream leased assets	115,519.7241
	5.4 Investments	1,956.5727
Category 6: Other Sources	-	N/A
Total of Category 3 to 6		1,828,060.8890



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Please refer to Appendix 1 with the categorization of GHG emissions according to the Greenhouse Gas Protocol.

No biogenic emissions or removals were present at the time of the verification

No direct GHG removals or storages were present at the time of the verification

Relevant emissions in the balance

The greenhouse gas inventory contains the specified greenhouse gases with information as CO₂ equivalents. No further GHG as such were identified.

Particularities in reporting

- Organizational electricity consumption information: Verified in 2022, the total electricity consumption of the entire organization was 1,389,299,643 kWh. Out of this, 1,365,250,925 kWh was purchased from Taiwan Power Company (gray energy), and 24,048,718 kWh was sourced from renewable energy.
- Use of renewable energy: The verification team has confirmed that the organization utilized 24,048,718 kWh of renewable energy in 2022. CHT possessed 24,029 bundled renewable energy certificates from the Taiwan Renewable Energy Certification Center (T-RECs). These certificates were obtained through two types of renewable energy sources: self-consumption from CHT's power generation, amounting to 90 certificates or 90,000 kWh, and power purchase agreements (PPAs) with Helios Power Co., Ltd. and Foxwell Power Co., Ltd., resulting in a total purchase of 23,958,718 kWh in 2022. Additionally, CHT acquired 23,939 T-RECs.

Standard for the Verification

ISO 14064-3:2019 ("Specification with guidance for verification and validation of GHG statements")

Objectives of the Verification

The assessment was performed with due regard to our impartiality in a risk-based approach. Rational procedures were applied to reach reliable and reproducible conclusions. Within the scope of our audit, a sufficient amount of suitable evidence needed to be collected and explained in the verification by representatives of CHT and persons appointed for this purpose. This was to enable sufficient traceability of the information presented with the GHG opinion.

Criteria

The data review was conducted according to the following criteria: Relevance, completeness, accuracy, transparency of information and consistency. The assessment of alternatives according to the quantification model used was carried out according to the principle of conservatism.

Agreed level of assurance

Reasonable assurance of category 1 and category 2, Limited assurance of category 3 to category 6.



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Materiality threshold

The materiality threshold required of the verification was considered to 5%.

Comment:

The materiality threshold is a benchmark for our assessment of data gaps, misstatements and non-conformities remaining at the end of our review.

Gaps, omissions, inaccuracies identified during the review that result in quantities greater than the established thresholds constitute a "material deviation", i.e. non-conformities, that must be addressed before a verification opinion can be issued.

Methods of Verification

- Document review and reconciliation with documentation requirements.
- Random sample checks of supporting evidence and database values
- Review of data and information systems and methodologies for collection, aggregation,
- analysis and verification of information used to determine GHG emissions
- Plausibility checks
- Strategic analysis and risk assessment based on the submitted GHG report
- Independent technical review through a lead verifier that was not participating in the verification.

Conclusions

With our review of the greenhouse gas reporting of CHT(file name: "GHG Verification Report at Organization Level-CHT_2022"), dated 2023-05-26, we conclude that, in all material respects, the greenhouse gas emissions and removals are presented fairly and factually in accordance with the specifications and standards used as a basis here.

Based on the results of our verification process, we confirm the reported emissions and the achievement of the agreed level of assurance and compliance with materiality thresholds.

Our verification opinion is only to be interpreted together with the report on greenhouse gases of CHT.

This opinion is issued in accordance with the agreement reached with the client and within the framework of our validation and verification regulations. The results documented here are based on our internal documentation for this verification with project no. 718862470.

Remaining Issue

No.(The verification data of this opinion still available when remaining issues were listed by TÜV SÜD)

Note: This Opinion is issued, on behalf of the client, by TÜV SÜD under its general conditions for Greenhouse Gas Verification Service Description. The findings recorded hereon are based upon an audit performed by TÜV SÜD. A full copy of this opinion, the findings and the supporting GHG Assertion may be consulted at the organization. To check the validity of this opinion please call (+886-2-2898-6818). 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 TÜV SÜD and TÜV SÜD shall have no responsibility vis-à-vis parties other than its client.



Appendix 1: GHG emissions according to the Greenhouse Gas Protocol Categories

Category of GHG Protocol	Corresponding category to ISO 14064-1:2018	GHG Emissions(tCO ₂ e)
Scope 1	Category 1:Direct GHG emissions	19,185.3151
Scope 2	Category 2:Indirect GHG emissions from imported energy	694,912.7210
Scope 3	Category 3:Indirect GHG emissions from transportation Category 4:Indirect GHG emissions from products used by organization Category 5:Indirect GHG emissions associated with the use of products from the organization Category 6:Other Sources	1,828,060.8890
Scope 3 Category:		
1	Purchased goods and services Category 4.1 Purchased goods and services	752,416.6905
2	Capital goods Category 4.2 Capital goods	344,733.3879
3	Fuel- and energy-related activities(not included in scope 1 or scope 2) Category 4.3 Fuel- and energy-related activities	124,456.9146
4	Upstream transportation and distribution Category 3.1 Upstream transportation and distribution	646.6005
5	Waste generated in operations Category 4.4 Waste generated in operations	943.5896
6	Business travels Category 3.2 Business travels	1,174.6524
7	Employee commuting Category 3.3 Employee commuting	10,203.8759
8	Upstream leased assets Category 4.5 Upstream leased assets	13,045.9321
9	Downstream transportation and distribution Category 3.4 Downstream transportation and distribution	901.8551
10	Processing of sold products Not in the inventory	N/A
11	Use of sold products Category 5.1 Use of sold products	460,657.5902
12	End-of-life treatment of sold products Category 5.2 End-of-life treatment of sold products	1,403.5034
13	Downstream leased assets Category 5.3 Downstream leased assets	115,519.7241
14	Franchises Not in the inventory	N/A
15	Investments Category 5.4 Investments	1,956.5727