



Taiwan

# 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:** 2,515,408.719 tonnes CO<sub>2</sub>eq, **including**

- **Direct Emissions (Category 1):** 18,874.8892 tonnes CO<sub>2</sub>eq
- **Indirect Emissions (Category 2):** 681,871.5699 tonnes CO<sub>2</sub>eq
- **Indirect Emissions (Category 3 to 6):** 1,814,662.2596 tonnes CO<sub>2</sub>eq

(GWP values are consist with IPCC-AR6 2021)

**Organizational Boundaries:** Operational Control

**Covered Period:** 2023-01-01 to 2023-12-31

**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.:** 61.027.24.001.01

**Opinion Registration No.:** TÜV 24 02 5010929190. 02

**Issue Date:** 2024-03-29

TÜV SÜD Asia Ltd., Taiwan Branch  
TÜV SÜD Group



Taiwan

## 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 Chun Lian, Verifiers Jerry Tsai and Jessica Hsieh from TÜV SÜD conducted the verification activities in the period of 2024-02-28 to 2024-03-22, for the reporting period 2023-01-01, to 2023-12-31. 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 2024-02-29.

### **On-site Verification**

Lead Verifier Chun Lian, Verifiers Jerry Tsai and Jessica Hsieh 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 2024-03-05, 2024-03-06, 2024-03-07, 2024-03-08, 2024-03-13, 2024-03-14 for Stage 1 verification, and 2024-03-19, 2024-03-20, 2024-03-21, 2024-03-22 for Stage 2 verification. In particular, the eight following sites were visited:

In particular, the five following sites were visited:

- Site1: Chunghwa Telecom Fengyuan Second Bureau Data Center (site address: No. 498, Zhongshan Rd., Fengyuan Dist., Taichung City, 420)
- Site2: Chunghwa Telecom Taichung Gongguan Data Center (site address: No. 118, Sec. 1, Sanmin Rd., West Dist., Taichung City, 403)
- Site3: Chunghwa Telecom Yongkang Service Center and Data Center (site address: No. 515, Zhongshan S. Rd., Yongkang Dist., Tainan City, 710)
- Site4: Chunghwa Telecom Anping Office Building (site address: No. 380, Pingtong Rd., Anping Dist., Tainan City, 708)
- Site5: Chunghwa Telecommunication Training Institute Banqiao Branch (site address: No. 168, Minzu Rd., Banqiao Dist., New Taipei City, 220)
- Site6: Chunghwa Telecom Jiangzicui Service Center and Data Center (site address: No. 2, Ln. 70, Sec. 2, Shuangshi Rd., Banqiao Dist., New Taipei City, 220)
- Site7: Chunghwa Telecom Jianxin Service Center and Data Center (site address: No. 112, Jianxin Rd., East Dist., Hsinchu City, 300)
- Site8: Chunghwa Telecom Hsinchu Service Center (site address: No. 105, Zhongzheng Rd., North Dist., Hsinchu City, 300)



Taiwan

### 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.

### Scope of application / System boundaries

The GHG reporting includes the inventory for the calendar year 2023 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 <sub>2</sub> e)
Categories		
Category 1: Direct GHG emissions	Stationary combustion	1,906.0254
	Mobile combustion	10,803.3082
	Industrial processes(anthropogenic systems)	N/A
	Fugitive(anthropogenic systems)	6,127.9356
	Land use, land use change and forestry	N/A
Total of Category 1		18,874.8892
Category 2: Indirect GHG emissions from imported energy	Imported electricity (Location-Based)	681,871.5699
	Imported electricity (Market-Based)	645,490.6474
Total of Category 2 (Location-Based)		681,871.5699



Taiwan

Reporting Boundaries		GHG Emissions(tCO <sub>2</sub> e)
Categories		
Category 3: Indirect GHG emissions from transportation	3.1 Upstream transportation and distribution	1,332.5493
	3.2 Downstream transportation and distribution	56.5917
	3.3 Employee commuting	6,550.9741
	3.4 Client and visitor transport	N/A
	3.5 Business travels	2,948.2363
Category 4: Indirect GHG emissions from products used by organization	4.1 Purchased goods	851,796.4324
	4.2 Capital goods	471,191.2877
	4.3 Disposal of solid and liquid waste	936.1923
	4.4 Upstream leased assets	17,728.1869
	4.5 Use of other services	N/A
Category 5: Indirect GHG emissions associated with the use of products from the organization	5.1 Use of sold products	449,619.6431
	5.2 End-of-life treatment of sold products	594.9099
	5.3 Downstream leased assets	10,346.9498
	5.4 Investments	1,560.3061
Category 6: Other Sources	-	N/A
Total of Category 3 to 6		1,814,662.2596

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 CO<sub>2</sub> equivalents. No further GHG as such were identified.

#### Particularities in reporting

- Organizational electricity consumption information: Verified in 2023, the total electricity consumption of the entire organization was 1,377,597,323 kWh. Out of this, 1,304,021,510 kWh was purchased from Taiwan Power Company (gray energy), and 73,575,813 kWh was sourced from renewable energy.



Taiwan

- Use of renewable energy: The verification team has confirmed that the organization utilized 73,575,813 kWh of renewable energy in 2023. CHT possessed 73,541 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 79 certificates or 79,000 kWh, and power purchase agreements (PPAs) with Helios Power Co., Ltd. and Foxwell Power Co., Ltd., resulting in a total purchase of 73,196,813 kWh in 2023. Additionally, CHT acquired 73,462 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.

### Materiality threshold

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



Taiwan

**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\_2023"), dated 2024-03-28, 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. However, it should be noted that the update with the base-year cumulative changes has yet to be confirmed.

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. We are compelled to issue a qualified opinion regarding category 3 to category 6.

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.718867372.



Taiwan

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.



Taiwan

## 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 <sub>2</sub> e)
Scope 1	Category 1:Direct GHG emissions	18,874.8892
Scope 2	Category 2:Indirect GHG emissions from imported energy (Market-Based)	645,490.6474
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	1,814,662.2596
Scope 3 Category:		
1	Purchased goods and services	Category 4.1 Purchased goods and services 721,023.7360
2	Capital goods	Category 4.2 Capital goods 471,191.2877
3	Fuel- and energy-related activities(not included in scope 1 or scope 2)	Category 4.1 Fuel- and energy-related activities 130,772.6964
4	Upstream transportation and distribution	Category 3.1 Upstream transportation and distribution 1,332.5493
5	Waste generated in operations	Category 4.3 Waste generated in operations 936.1923
6	Business travels	Category 3.2 Business travels 2,948.2363
7	Employee commuting	Category 3.3 Employee commuting 6,550.9741
8	Upstream leased assets	Category 4.4 Upstream leased assets 17,728.1869
9	Downstream transportation and distribution	Category 3.4 Downstream transportation and distribution 56.5917
10	Processing of sold products	Not in the inventory N/A
11	Use of sold products	Category 5.1 Use of sold products 449,619.6431
12	End-of-life treatment of sold products	Category 5.2 End-of-life treatment of sold products 594.9099
13	Downstream leased assets	Category 5.3 Downstream leased assets 10,346.9498
14	Franchises	Not in the inventory N/A
15	Investments	Category 5.4 Investments 1,560.3061