



Chunghwa Telecom

Sustainability Accounting Standards Board Disclosure Report 2021



Prepared in accordance with SASB

SUSTAINABILITY ACCOUNTING STANDARDS BOARD DISCLOSURE

The SASB Report this year marks a significant milestone of Chunghwa Telecom (CHT) in its ongoing advancement in the sustainability information disclosure. Apart from the disclosure of strategies and results of CHT creating sustainability values (environmental, social, and governance (ESG)) in the ESG section on our website and in our ESG Report, Chunghwa Telecom also discloses sustainability-related information in terms of the dimensions and material issues in line with the Sustainability Accounting Standards Board (SASB) Standards for the Telecommunication Services industry.

Unless specified otherwise, all the data disclosed in this SASB Report is as of December 31, 2021.

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1. Sustainability Disclosure Topics & Accounting Metrics

Environmental Footprint of Operations

TC-TL-130a.1

1. Total energy consumed, 2. Percentage grid electricity, 3. Percentage renewable

1. Total energy consumed : 5,322,818.49 GJ
2. Percentage grid electricity : 96.5 %
3. For renewable energy, Chunghwa Telecom’s photovoltaic system has a capacity of more than 4,506 kWp by the end of 2021, with a renewable energy consumption of 323,767.72 GJ in 2021.

Data Privacy

TC-TL-220a.1

Description of policies and practices relating to behavioral advertising and customer privacy

Regarding policies governing behavioral advertising and customer privacy, Chunghwa Telecom explains how it uses information and choices of customers as well as discloses its privacy policy to its customers for them to choose to opt in or out of relevant service programs. The privacy management measures of Chunghwa Telecom, its subsidiaries, and outsourced media are as follows:

(A) Chunghwa Telecom and the subsidiary

Our Policy

Chunghwa Telecom values “Customer Privacy Protection” and complies with “Personal Data Protection Act” and “Regulations Governing Non-governmental Personal Data Security Protection Designated by the National Communications Commission.” Also, Privacy Policy has been stipulated, which applies to all groups, branch offices, subsidiaries, and suppliers of the Company.

Our Managing Measures

1. We have established rigorous privacy security management and protection measures, constructed a data governance system, set the data standards and classification, and implemented data access management and data owner review mechanisms to ensure that access and sharing of data as well as the availability, integrity, and confidentiality thereof are properly managed and protected.
2. Prior to any business promotion, risk assessment will be conducted to examine and ensure data access in compliance with the regulatory requirements and to check if data protection mechanisms are in place to avoid risks in data processing; to take it further in terms of “customer privacy protection,” we proactively introduced ISO 27701 system to ensure the effectiveness and legal compliance in the lifecycle of data.
3. Regarding the collection, processing, use, and protection of personal information and privacy involved in the operation, aside from compliance with government’s relevant laws and regulations, personal information is used within the defined scope of regulatory requirements and will not be disclosed to a third-party via exchange, lease or otherwise at will; relevant actions are also implemented in accordance with the “Chunghwa Telecom Privacy Policy” stipulated by the Company to uphold the security of customer information and privacy.
4. The National Communications Commission (NCC) did not promulgate regulations governing children’s privacy protection, while provisions related to children’s privacy protection over the Internet are seen in the laws and regulations as follows:
 - (1) The Protection of Children and Youths Welfare and Rights Act
 - (2) Child and Youth Sexual Exploitation Prevention Act

(3) Sexual Assault Crime Prevention Act

5. As for “personally identifiable information”, CHT keeps no biometrics data as of now.

For more information, please visit: CHT official website/ESG/Privacy Protection

<https://www.cht.com.tw/en/home/cht/esg/customer-care/privacy-protection/customer-privacy-policy>

(B) Outsourced Company – Carat Media Taiwan Ltd.

1. CHT commissioned Carat Media Taiwan Ltd. for third-party media monitoring. Carat Media Taiwan Ltd. is part of Dentsu Aegis Network, a world-class professional media communications service network, providing services including communications planning, interactive marketing, direct marketing, event marketing, consumer survey, etc.

2. For the complete privacy policy concerning third-party media monitoring, please refer to Carat’s website at:

<https://www.carat.com/privacy-policy>

TC-TL-220a.2

Number of customers whose information is used for secondary purposes

1. Regarding the collection of customer personal data, CHT inquires customers if they consent to the use of personal data thereof for secondary purposes with “Chunghwa Telecom Co., Ltd. Personal Data Collection Notice for XX Business”.

Do you agree (unchecked regarded as disagree, which will not impact the use of our service):

- *We send you the product/service information of the third party (related company or enterprise customer).*
 - Agree.*
 - Disagree.*
- *“Agree” is recommended for you not to miss the good promotional opportunities, discount information, preferential schemes and more services.*

2. There were 85.18% of CHT customers consenting to the use of their personal data for secondary purposes in 2021. For more information, please visit:

<https://www.cht.com.tw/en/home/cht/ESG/Customer-Care/Privacy-Protection/Customer-Privacy-Protection>

*Note: The number of customers that consent to the use of personal data for secondary purposes is a sensitive information of CHT; the disclosure is thus made in ratio instead.

TC-TL-220a.3

Total amount of monetary losses as a result of legal proceedings associated with customer privacy

There was no monetary loss incurred as a result of violation of any laws or regulations pertaining to customer privacy at CHT in 2021.

TC-TL-220a.4

1. Number of law enforcement requests for customer information, 2. Number of customers whose information was requested, 3. Percentage resulting in disclosure

1. The total number of unique requests for customer information : 59,251,460

2. The total number of unique customers whose information was requested by government or law enforcement agencies : 659,429

3. The percentage of government and law enforcement requests that resulted in disclosure to the requesting party : 47.1%

Data Security

TC-TL-230a.1

1. Number of data breaches, 2. Percentage involving personally identifiable information (PII), 3. Number of customers affected

1. Chunghwa Telecom has implemented the notification, response, and improvement mechanism and its related operation procedures for privacy data breach incidents. With rigorous protection measures in force, we prevent any unauthorized access, disclosure, use, or tampering of personal data. Exercises are conducted on a regular basis to raise awareness and knowledge of our employees in reporting and response processes.
2. Should a privacy incident be verified (e.g. data breach), emergency response procedures will be set in motion immediately in line with the existing incident handling procedures as follows to complete the emergency handling in the specified timeframes:
 - (1) Assess and respond in line with the scope and severity of impacts, while a major privacy incident is to be report to the Cybersecurity Department and the CISO.
 - (2) The privacy data response team is established with emergency response mechanism in place for incident investigation and analysis to determine the root cause, define scope of damage, and preserve relevant evidence of an incident.
 - (3) Changes of public opinions and client grievance are monitored to learn about the personal data illegally collected, processed, or used in the incident and prevent further damage.
 - (4) Individuals affected and the competent authorities are notified in line with the laws. Where the incident has led to damage to clients' rights, we provide compensation or legal support to the individuals involved to assist and protect our clients' rights to the best of our ability.
 - (5) Review and improvement are conducted in terms of the impacts, damages, and influences of an incident to prevent reoccurrence.

Item	2021
Number of data breaches	0
Percentage involving personally identifiable information (PII)	0 %
Number of customers affected	0

TC-TL-230a.2

Description of approach to identifying and addressing data security risks, including use of third-party cybersecurity standards

Cybersecurity Risk Identification

1. With reference to the NIST Cybersecurity Framework (CSF) and in pursuance of the standards and regulations, domestically and internationally, Chunghwa Telecom established "Cybersecurity and Privacy Protection Risk Management Framework." Each year, corresponding risk protection measures are analyzed based on changes in the external environment and trends of cybersecurity threats, internal risk assessments, cybersecurity monitoring, and internal/external audit results. On the basis of the Zero Trust architecture, multi-layer, in-depth security protection and monitoring is deployed to identify and prevent potential risks.
2. The intelligent security operation has been established to detect cybersecurity threats and violation risks; penetration test, cybersecurity health diagnostics, and red team security assessment are organized regularly.
3. We work with the national C-ISAC for cybersecurity, joint defense, and cybersecurity Information Sharing; establish the vulnerability warning mechanisms; release security updates and notification for patching within specified periods to close the window for 0-day attack.

Our Coping Measures

1. Chunghwa Telecom keeps tabs on the development trends of standards (e.g. ITU, 3GPP, GSMA, etc.) and collaborates with the industry, government, and academics (e.g. O-RAN ALLIANCE), preemptively incorporating security needs in construction and planning in the aspects of system, management, and technology to reduce cybersecurity risks and ensure compliance.
2. We work with trustworthy suppliers or partners and remove vendors that offer products with security concerns or with potential threat to national security.
3. Software/hardware with security by design are adopted; the OSS vulnerability management system is established; security checks are passed prior to system launch or update; trainings of security coding are required for all developers.
4. Vulnerability scanning and penetration test are conducted regularly, or critical security updates are notified for patching within specified periods, for services online. Also, external third parties are commissioned to perform in-depth cybersecurity health diagnostics via different angles to ensure the security of services and systems.
5. Feedbacks are gained from cybersecurity diagnostics and internal/external compliance checks to the overall defense system through the Plan-Do-Check-Act (PDCA) management cycle.
6. Regarding the real-time incident report and rapid response mechanism, the Company has stipulated report and response procedures for various types of cybersecurity incidents. With the CHT SOC, it stays vigilant against diverse cyberattack warnings worldwide, enabling the timely, proactive detection of anomalies, threats, or violations for rapid responding and retracing impacts to the Company. An emergency response team is formed to handle impacts and losses arising from internal/external cybersecurity threats if necessary.

Management Systems

1. In Compliance with relevant international standards, including ISO 27001 and ISO 27011 (additional requirements applied to the telecom services), BS 10012, NIST Cybersecurity Framework, cloud services cybersecurity standards (e.g. ISO 27017, ISO 27018, Cloud Security Alliance, etc.), Chunghwa Telecom has established well-rounded cybersecurity and privacy protection management systems and rigorous protective measures.
2. At present, the IT-related infrastructure at CHT has been 100% certified to relevant international cybersecurity standards (ISO 27001 / ISO 27011 / ISO27017 / ISO27018 / BS10012 / CSA STAR Certification).

For more information, please visit: CHT official website/ESG/Cybersecurity
<https://www.cht.com.tw/en/home/cht/esg/customer-care/cybersecurity>

Product End-of-life Management

TC-TL-440a.1

1. Materials recovered through take back programs, percentage of recovered materials that were, 2. Reused, 3. Recycled, 4. Landfilled

2021 “Cellphone Recycling for a Sustainable Earth” store trade-in campaign

1. Materials (mobile phones) recovered through take back programs : 10.106 metric tons
2. Reused : 87.89%
3. Recycled : 12.11%
4. Landfilled : 0%

Competitive Behavior & Open Internet

TC-TL-520a.1

Total amount of monetary losses as a result of legal proceedings associated with anti-competitive behavior regulations

1. No violation of antitrust-related laws and regulations at CHT in 2021.
2. Laws and regulations governing the fair competition in the telecommunication industry in Taiwan:
 - (1). Article 27 – Article 35, Chapter III Facilitating Market Competitiveness, Telecommunications Management Act (Competent Authority: NCC)
 - (2). Fair Trade Act (Competent Authority: Fair Trade Commission)
 - (3). Fair Trade Commission Disposal Directions (Policy Statements) on the Telecommunications Industry (Note: “Fair Trade Commission Disposal Directions (Policy Statements) on the Telecommunications Industry” has been abolished by the Fair Trade Commission on February 15, 2022.)

TC-TL-520a.2

Average actual sustained download speed of: 1. Owned and commercially-associated content, 2. Non-associated content

Please see the testing results of the average actual download speed for non-associated content:

1. Fixed line and data communication:

- (1) The actual ADSL broadband line rates and HiNet data rates at installation in 2021

Internet Speed in bps (Download/Upload)	Line Rate (bps) (Download/Upload) measured values of 80% clients	Data Rate (bps) (Download/Upload) measured values of 80% clients (tested with engineer’s computer)
2M/64K	2.175~2.165M/256.000~79.000K	2.024~1.780M/115.000~63.000K
5M/384K	5.375~5.374M/448.000~447.000K	5.004~4.752M/ 415.000~347.000K

Monthly measurement results:

<https://www.cht.com.tw/zh-tw/home/cht/service/hinet-internet/adsl-internet>

- (2) Actual HiNet FTTx broadband line rates and HiNet data rates at installation in 2021

Internet Speed in bps (Download/Upload)	Line Rate (bps) (Download/Upload) measured values of 80% clients	Data Rate (bps) (Download/Upload) measured values of 80% clients

16M/3M	17.472~17.008M/3.520~3.165M	16.292~15.466M/3.298~2.794M
35M/6M	38.139~37.205M/7.039~6.330M	35.886~33.640M/6.603~5.895M
60M/20M	64.557~63.424M/22.260~21.184M	60.575~57.348M/21.176~19.920M
100M/40M	106.300~100.016M/43.454~41.907M	100.827~91.671M/40.414~39.279M
100M/100M	106.300~105.728M/105.728~105.500M	104.794~100.249M/102.172~100.554M
300M/100M	354.944~332.955M/112.802~110.775M	315.898~300.130M/106.340~104.789M
500M/250M	608.704~554.925M/282.004~276.938M	527.968~495.184M/266.269~257.687M
1G/600M	1000.000~1000.000M/665.920~664.650M	944.056~884.641M/635.398~582.969M

Monthly measurement results:

<https://www.cht.com.tw/zh-tw/home/cht/service/hinet-internet/fttx-internet>

2. Mobile communication:
<https://www.cht.com.tw/home/campaign/5gSpeedtest/index.html>
3. Mobile broadband network speed performance measurement report:
<https://speed.ttc.org.tw/>
4. Mobile Internet speed measurement results:
https://www.ncc.gov.tw/chinese/news_detail.aspx?site_content_sn=8&cate=0&keyword=&is_history=0&pages=0&sn_f=47460

TC-TL-520a.3

Description of risks and opportunities associated with net neutrality, paid peering, zero rating, and related practices

1. Regarding the principles of net neutrality and open Internet, Chunghwa Telecom complies with the regulations of the Digital Communication Act and Telecommunications Management Act, i.e. Internet Service Providers ought to disclose their traffic management measures to users and that enterprises with significance in the telecommunications service market shall act “without any discrimination.”
2. As to “interconnection agreements”, there are general provisions in Article 13 of the Telecommunications Management Act, while Article 30 and Article 31 in the same Act as well as the laws and regulations promulgated under the authorization thereby (i.e. Regulations Governing Interconnection involving Significant Market Power) specify the relevant provisions governing the interconnection between “Significant Market Powers” and other telecommunications enterprises.

Risks and opportunities

Risks

- (1) There is an ongoing tendency of price decline for Internet Transit worldwide, which will reduce the willingness of the local Internet Service Providers (ISPs) for interconnection.
- (2) Remote peering has become one of the new trends for Internet exchange points (IXPs). Large international IXPs set up point-of-presence (POP) remotely to draw local ISPs to bypass the local IXPs and directly connect to foreign traffics, which undermines the local ISP interconnection market operation.
- (3) The new regulations governing telecommunication enterprises continue to regulate the wholesale

prices set by the dominant enterprises in the telecommunications market, while the dwindling Internet Transit prices per year affect the income from ISP interconnection business.

- (4) IDCs draw more Internet Content Providers (ICPs) onboard, which reduces the needs for interconnection among ICPs.

Opportunities

- (1) The lack of trust in the interconnection among the domestic IXPs drives their willingness to evaluate the possibility of private peering of their IDCs with other major service providers.
 - (2) To reduce the network latency and enhance the service quality for users, the foreign ICPs move toward offering services in proximity, which may increase the needs for interconnection among the local small-and-medium ISPs if they form clusters of certain scale locally.
3. For more information on connections via Taiwan Internet Exchange (TWIX):
<https://www.cht.com.tw/home/enterprise/hinet/hinet-internet/451>
 4. CHT does not currently provide zero-rating-related service.

Managing Systemic Risks from Technology Disruptions

TC-TL-550a.1

1. System average interruption frequency and, 2. Customer average interruption duration

1. System average interruption frequency : 0.0002
2. Customer average interruption duration : 0.0034

TC-TL-550a.2

Discussion of systems to provide unimpeded service during service interruptions

1. The “Directions Governing the Disaster Protection Operations” have been stipulated at Chunghwa Telecom to strengthen disaster prevention and coping measures, improve disaster prevention capabilities, and reduce losses in disasters.
2. The “Disaster Emergency Response and Management Plan” has been stipulated at Chunghwa Telecom for business continuity management.
3. In terms of fixed line communication, the Company has further installed redundant trunks and redundant wireless routers in the rural areas, elevated the capacity of backup power supplies, and introduced international and domestic submarine system backups and other measures to raise the overall capability in disaster prevention and mitigation; drills of network and equipment allocation and emergency repairment are also organized annually to enhance the familiarity with emergency repairment during disasters to reduce losses in disasters.
4. In terms of mobile communication, in the event of mobile communication service disruption due to natural disasters, the mobile base stations of normal and heavy off-road vehicles with microwave or satellite transmission capabilities are available at the Company, which can rapidly deploy mobile base stations in line with the circumstances in the disaster areas for external communications; also, for vital single-lane arterial routes on the Suhua Highway, South Link Highway, and Alishan Highway, aside from an enhanced base station deployment along the roads and complex radio wave coverage, emergency disaster prevention drills are conducted regularly to ensure normal operation of mobile communication networks along the way, so as to elevate the disaster resilience.
5. In terms of data communication, the HiNet networks of the Company adopt multiple routing and highly reliable network backup mechanisms, along with constant monitoring and facilitation of traffics across routers. As for international routing, multiple submarine cable systems are adopted for distributed submarine cable routing to avoid external traffic blockage or disconnection due to obstacle of single router; meanwhile, it collaborates with foreign carriers to expand the bandwidth of international direct interconnection so as to improve the quality of international network communications.

2. Activity Metrics

TC-TL-000.A

Number of wireless subscribers

Wireless subscribers of CHT :

Mobile communication : 11.916 million (customer amount)

TC-TL-000.B

Number of wireline subscribers

Wireline subscribers of CHT :

1. Local network : 9.649 million households (customer amount)

2. MOD : 2.06 million households (customer amount)

TC-TL-000.C

Number of broadband subscribers

Broadband subscribers of CHT :

1. Broadband access : 4.354 million households (customer amount)

2. Internet : 3.969 million households (customer amount)

TC-TL-000.D

Network traffic

1. CHT is not able to provide this data, as it is proprietary and confidential.
2. The network traffic data reported to NCC, such as the quarterly “Mobile Internet Traffic” and “Fixed-line Operator Connection Bandwidth and Busy Hour Traffic” as well as the yearly “Fixed-line Broadband Internet Traffic”, are of our trade secrets that cannot be disclosed.
3. For interconnection traffic statistics, please refer to the public information via the following links:

<https://www.twix.net/all.html>

https://www.ncc.gov.tw/chinese/news.aspx?site_content_sn=3898