

Independent Verification Opinion

Verification Opinion No.:
C681925-2023-AG-TWN-TAF

Issued Place:
Taipei

Issued Date:
20 May, 2024

This is to verify initiate reporting of Greenhouse Gas Inventory Management Report (2023) of

CHINA AIRLINES LTD.

Scope of Verification

DNV Business Assurance (DNV) has been commissioned by CHINA AIRLINES LTD. ('the Organization') to perform a verification of the greenhouse gas statements of Greenhouse Gas Inventory Management Report (2023) (hereafter the "Inventory Report") in Taiwan with respect to the sites listed as Appendix A.

The Reporting Boundary for the verification including direct GHG emissions and removals, indirect GHG emissions from imported energy, indirect GHG emissions from transportation, indirect GHG emissions from products used by the Organization and indirect GHG emissions associated with the use of products from the Organization. The further descriptions for the Reporting Boundary and verification procedure are listed in Appendix B.

Verification Criteria and GHG Programme

The verification was performed on the basis of ISO 14064-1:2018 as well as criteria given to provide for consistent GHG emission identification, calculation, monitoring and reporting. The verification was conducted in accordance with ISO 14066:2011, ISO 14065:2020, ISO14064-3:2019


Verification Opinion

It is DNV's opinion that the Inventory Report (2023), which was published on 26 April 2024 is free from material discrepancies in accordance with the verification criteria identified as stated above. The opinion is decided based on the following approaches,

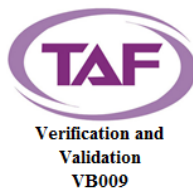
- For the Direct (Category 1) and Indirect GHG emissions from imported energy (Category 2), the reliability of the information within the Inventory Report (2023) were verified with reasonable level of assurance.
- For the other indirect GHG emissions, the involved information was verified and tested using agreed-upon procedures, AUP, defined in Inventory Report.

Also, the GHG information as stated in Appendix B, C and D have been verified during the process.

Jerry Huang
GHG Verifier



Place and date:
Taipei, 20 May, 2024



For the issuing office:

DNV Business Assurance Co., Ltd.
29Fl., No. 293, Sec. 2, Wenhua Rd.,
Banqiao District, New Taipei City
220, Taiwan



Management Representative



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Supplement to Verification Opinion

Process and Methodology

The reviews of the Inventory Report and relevant documents, and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfilment of stated criteria.

Quantification of Greenhouse Gas Emission

The Inventory Report covering the period 1 January, 2023 to 31 December, 2023, it is DNV's opinion that GHG emissions and removals identified within the Reporting Boundary has been included in the Inventory Report as claimed in accordance with the verification criteria identified as stated above, and results in quantification of GHG emissions that are real, transparent and measurable.

Organizational Boundary of Verification

Financial Control Operational Control Equity Share

GHGs Verified

CO₂ CH₄ N₂O HFCs PFCs SF₆ NF₃

The Quantification of GHG emissions:

Category		Emission (ton CO ₂ e)
Category 1	Direct GHG emissions and removals	6,051,595.6589
Category 2	Indirect GHG emissions from imported energy	15,767.2305
	119,000 kWh of renewable energy used by organization, corresponding to T-REC No: 19SP0031-B023000001 ~ 19SP0031-B023000119	0
Category 3	Indirect GHG emissions from transportation	3,401.4545
Category 4	Indirect GHG emissions from products used by an organization	1,385,398.5165
Category 5	Indirect GHG emissions associated with the use of products from the organization	410.5486
Category 6	Other GHG emissions from products used by an organization	-
Total		7,456,573.409

Category		Emission (ton CO ₂ e)
Biogenic Emissions	Direct GHG emissions CO ₂ emissions from bio-fuel	76.215

(The Imported Energy Indirect Emissions was calculated based on 2022 electricity emission factor of 0.495 kg CO₂-e/kwh, which was announced by Bureau of Energy, Ministry of Economic Affairs. The Global Warming Potential (GWP) defined in IPCC AR6 (2021) has been chosen and correctly referred by the Organization.)

*The scope of indirect emissions, other than Imported Energy with specified/limited list of sources, was defined by CHINA AIRLINES LTD. 's own pre-determined criteria for significance of indirect emissions, considering the intended use of the GHG inventory.

Verification Opinion

unmodified modified adverse

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid. This Verification Opinion is based on the information made available to us and the engagement conditions detailed above. Hence, DNV cannot guarantee the accuracy or correctness of the information. DNV cannot be held liable by any party relying or acting upon this Verification Opinion.

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DNV ZNATW-OP-F50, Rev.11, 2024-4

Appendix to Verification Opinion No. C681925-2023-AG-TWN-TAF

APENDIX A

The organization boundary:

CHINA AIRLINES LTD. TAIWAN OFFICES (HEADQUARTER AND SUBSIDIARY UNITS)

Site	Address
China Airlines	Headquarters (No. 1, Hangzhan S. Rd., Dayuan District, Taoyuan City 337041, Taiwan R.O.C.) and other subsidiary offices: - Taipei Branch Office (No. 131, Sec. 3, Nanjing E. Rd., Zhongshan Dist., Taipei City 104107, Taiwan R.O.C) - Taipei Songshan Park (No. 6, Alley 123, Lane 405, Tunhwa N. Rd., Songshan Dist., Taipei City, Taiwan R.O.C and No. 81, Sec. 4, Mingquan E. Rd., Taipei City, Taiwan R.O.C) - Kaohsiung Branch Office (No. 38, Xinguang Rd., Lingya Dist., Kaohsiung City, Taiwan and Room A, Fl 6, No. 358, Sec. 1, Tungmen Rd., Tainan, Taiwan R.O.C)
Engineering and Maintenance Organization	No. 6 & 15, Hangqin S. Rd., Dayuan Dist., Taoyuan City, Taiwan

APENDIX B

The Reporting Boundary of CHINA AIRLINES LTD. TAIWAN OFFICES (HEADQUARTER AND SUBSIDIARY UNITS) Greenhouse Gas Inventory Management Report (2023)

Indirect emissions verification procedures:

Category	Subcategory	Verification Procedures
Category 2	2.1 Imported electricity	-Bill and invoice from suppliers (TPC)
Category 3	3.1 Upstream transportation and distribution	-Weight of purchasing goods and raw material report -Distance of transportation from supplier
	3.2 Business travel	- Business travel by air craft. - Business travel distance form departure air port to destination air port -ICAO emission factor
	3.3 Employees commuting	- Distances of shuttle bus between Taiwan air ports - CCA carbon footprint platform emission factor
	3.4 Visitors transportation	- Visitors registration record - Distances from departure to Taiwan HQ
Category 4	4.1 Upstream purchased goods	-Weight of purchasing goods and raw material report
	4.1 Purchase Fuel and Energy Emission (Indirect emissions not included in Cat.1 & Cat.2)	-Bill and invoice from suppliers
	4.3 Waste treatment and transportation	-Weights of solid and liquid wastes from contractors contract and bills - Distance of transportation from operation sites to treatment sites
	4.4 Use of assets	- VIP room electricity used
Category 5*	5.1 Downstream leased assets	- Downstream leased assets in HQ - Electricity used
Category 6*	Indirect GHG emissions from other sources	Not Significant Emissions

NOTE: *The scope of indirect emissions, other than Imported Energy with specified/limited list of sources, was defined by CHINA AIRLINES LTD. 's own pre-determined criteria for significance of indirect emissions, considering the intended use of the GHG inventory.

APPENDIX C

For direct emissions and removals, quantified separately for each GHG as below:

GHG Type	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	NF ₃	Total
Emissions (ton CO ₂ e)	6,030,397.0632	7,065.2352	13,853.2836	279.8105	0.0000	0.0000	0.0000	6,051,595.659
Proportion (%)	99.65	0.12	0.23	0.00	0.00	0.00	0.00	100

APPENDIX D

CHINA AIRLINES LTD. TAIWAN OFFICES (HEADQUARTER AND SUBSIDIARY UNITS) 2023 GHG REDUCTION KPI

Sub-item operation				relative emission reduction (tonnes CO ₂ e) in 2023)
sub-item number	Control measures	relative reduction	unit	
1-1	Monthly statistics on power generation and solar radiation to calculate power generation efficiency	119.000	megawatt hour (MWh)	58.905
2-1	Replacement of Lighting system, from 28W	39.680	megawatt hour (MWh)	19.642
3-1	Replace the high voltage transformer in Songshan Park	97.939	megawatt hour (MWh)	48.480
4-1	Replaced the Engine repair factory CH6 chilled water main unit (300 USRT)	169.454	megawatt hour (MWh)	83.880
4-2	Replaced No. 6 air compressor	202.299	megawatt hour (MWh)	100.138
4-3	Replaced No. 12 air compressor	22.186	megawatt hour (MWh)	10.982
5-1	Replace the old fuel-consuming equipment (gasoline)	70.102	KL gasoline	165.100
6-1	Replace the old fuel-consuming equipment (diesel)	198.555	KL diesel	525.420
7-1	Purchase two electric pallet jacks to replace oil-based equipment."	3.720	KL gasoline	7.770
8-1	Afforestation in Taoyaun Hengshan Calligraphy Art Park	0.22	Ton CO ₂ e	0.22