



LRQA Independent Assurance Statement

Relating to GlobalWafers Co., Ltd. Taisil Branch's GHG Inventory Report for the calendar year 2023

服務條件

本保證聲明書乃為環球晶圓股份有限公司中德分公司所準備。

英商勞盛股份有限公司台灣分公司(以下簡稱 LRQA)受環球晶圓股份有限公司中德分公司(以下簡稱 GW TAISIL)之委託以查證其 2023 年日曆年度(2023 年 1 月 1 日~12 月 31 日)期間溫室氣體盤查報告(發行日期:2024 年 3 月 22 日,第五版),以下簡稱為"溫室氣體盤查報告"。

此溫室氣體盤查報告包含直接,能源間接以及其其他間接(由運輸產生之間接溫室氣體排放以及由組織使用的產品所產生之間接溫室氣體排放)之溫室氣體排放。環球晶圓股份有限公司中德分公司包含下列的地址範圍內的矽晶棒和矽晶圓的製造相關活動,與其他相關設施設備活動,如溫室氣體盤查報告中所描述。溫室氣體排放使用營運控制權。

溫室氣體報告: 2023 年溫室氣體盤查報告書_2024.03.22(v5)(for ISO 14064-1 方案)

環球晶圓股份有限公司中德分公司: 新竹科學工業園區新竹縣寶山鄉研新一路 2 號

Terms of Engagement

This Assurance Statement has been prepared GlobalWafers Co., Ltd. Taisil Branch.

LRQA was commissioned by GlobalWafers Co., Ltd. Taisil Branch (hereafter referred to as the "GW TAISIL") to assure its GHG Report for the calendar year 2023(01 January 2023~31 December 2023) (hereafter referred to as "the Report").

The Report relates to direct GHG emissions, energy indirect GHG emissions and other indirect GHG emissions (Indirect emissions from transportation and Indirect emissions from products used by the organization). GlobalWafers Co., Ltd. Taisil Branch includes the manufacturing of silicon ingots and silicon wafers and associated facilities, and equipment as set out in the GHG Report as follows. The GHG emissions have been consolidated using 'Operational' control approach.

GHG Report: Fianal_GHG report_ISO14064-1-2018_Calendar year (2023)_ GWT, dated 22 March 2024, 5rd Edition.
GlobalWafers Co., Ltd. Taisil Branch: No. 2, Yanxin 1st Rd., Baoshan Township, Hsinchu County 300093, Taiwan

管理責任

環球晶圓股份有限公司中德分公司的管理階層對本溫室氣體盤查報告之準備及維持有效的內部控管包含溫室氣體盤查報告中揭露之資料負責。LRQA 的責任為依據我們與環球晶圓股份有限公司中德分公司的合約執行查證。

最終的, 溫室氣體盤查報告由環球晶圓股份有限公司中德分公司所核准並負有責任。

Management Responsibility

GW TAISIL's management was responsible for preparing the Report and for maintaining effective internal controls over the data and information disclosed. LRQA's responsibility was to carry out an assurance engagement on the Report in accordance with our contract with GW TAISIL.



Ultimately, the Report has been approved by, and remains the responsibility of GW TAISIL.

LRQA 的方法

LRQA 查證已依循 ISO 14064-3:2019 (溫室氣體主張之確証與查証附指引之規範), 以提供對環球晶圓股份有限公司中德分公司符合 ISO 14064-1:2018 (組織層級溫室氣體溫室氣體排放與移除之量化及報告附指引之規範)規定所準備的溫室氣體盤查報告之類別一二之合理保證查證以及類別三四有限保證等級查證。

為作成結論, 本保證以抽樣方式執行並涵蓋下列的活動:

- 依溫室氣體盤查報告中所界定的設施設備, 進行現場查訪; 同時審查與溫室氣體排放數據及資料管理相關的過程;
- 訪談組織中對於相關溫室氣體排放數據與紀錄管理與維持之權責人員
- 查核來自於環境部以及生命週期(SimaPro)軟體之相關係數與 IPCC 2021 年第六次評估報告之 GWP 值
- 查證類別一與類別二的歷史數據及資料來源; 以及
- 查證類別三之上游的原料運輸(常態性採購達 80%金額); 下游的運輸(實際成品)、員工通勤以及商務旅行之活動數據彙整及資料來源; 以及
- 查證類別四之源自購買的產品和服務之活動數據彙整(燃料,能源,自來水與常態性採購達 80%金額); 以及廢棄物處理及運輸產生的排放之活動數據彙整及資料來源; 以及
- 查證報告排放類別之重大性原則。

LRQA's Approach

Our verification has been conducted in accordance with ISO 14064-3:2019, 'Specification with guidance for verification and validation of greenhouse gas statements' to provide reasonable assurance for Categories 1 and 2 and limited assurance for Categories 3, and 4 that GHG data as presented in the Report have been prepared in conformance with ISO 14064-1:2018, 'Specification with guidance at the organizational level for quantification and reporting of greenhouse gas emissions and removals'.

To form our conclusions the assurance engagement was undertaken as a sampling exercise and covered the following activities:

- conducted site tour of the facilities and reviewed processes related to the control of GHG emissions data and records;
- interviewed relevant staff of the organization responsible for managing GHG emissions data and records; and
- verified emission factors sourced from EPA & software of SimaPro and the Global Warming Potentials (GWPs) from the Sixth Assessment Report of the Intergovernmental Panel on Climate Change 2021 (AR6).
- Verified the historical GHG emissions data and records back to source for Categories 1 and 2 emissions;
- Verified the aggregated level GHG emissions data for Category 3 from transportation of raw materials upstream (Regular purchases reach 80% of the amount); downstream transportation (actual finished product), employee commuting and business travel.
- Verified the aggregated level GHG emissions data for Category 4 from goods purchased and services (Fuel, energy, city water and regular purchases reach 80% of the amount); and emissions from waste treatment and transportation activity data and data sources.
- Confirmed significance criteria on reporting of emission categories.

查證等級及實質性

依據合約的協議, 查證是在合理保證等級及 5%的實質性等級(類別一與類別二), 有限保證等級及 5%的實質性等級(類別三與類別四)及下執行的, 本查證意見基於此形成。



Level of Assurance & Materiality

In accordance with our contract agreement, the assurance was conducted at a reasonable level of assurance at a materiality of 5% for Categories 1 and 2 and at a limited level of assurance at a materiality of 5% for Category 3 and 4. The opinion expressed in this Assurance Statement has been accordingly formed.

LRQA意見

基於 LRQA 的方法, 依溫室氣體盤查報告中揭露年西元 2023 年度之全部直接及能源間接的溫室氣體(類別一與類別二)排放總量實質正確,其他間接溫室氣體排放(類別三與類別四)沒有任何情形引起我們注意到計算沒有實質正確;溫室氣體盤查報告之準備也符合 ISO 14064-1:2018 (組織層級溫室氣體溫室氣體排放與移除之量化及報告附指引之規範)相關要求

LRQA's Opinion

Based on LRQA's approach,

- The GHG emissions for Categories 1 and 2 disclosed in the Report as summarized in Table 1 below are materially correct.
- Nothing has come to our attention that would cause us to believe that the GHG emissions for Categories 3 and 4 disclosed in the Report as summarized in Table 1 below are not materially correct; and that the Report has been prepared in conformance with ISO 14064-1:2018.

LRQA's 建議

環球晶圓股份有限公司中德分公司需考量:

- 強化人員對於活動數據蒐集之知識與技巧.
- 改進活度數據輸入與換算之一致性.

LRQA's Recommendations

GW TAISIL should:

- Strengthen staff's knowledge and skills in activity data collection.
- Improve the consistent for data input and conversion.

Signed

日期 Dated: 22 March 2024

Sean Chiang

LRQA Lead Verifier 主導查驗員

On behalf of LRQA Limited
CIT, No. 1, Yumen St.,
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LRQA reference number: TWN00000322/O_2023/Date Issued: 06 May 2024

Chiang-shan Chen
General Manager 總經理



Table 1. Summary of GlobalWafers Co., Ltd. Taisil Branch, GHG Report for the calendar year 2023 (01 January ~31 December 2023)

Scope of GHG emissions	Tonnes CO ₂ e
Direct GHG emissions (Category 1) 直接溫室氣體排放	1,553.2856
Direct GHG emissions from the combustion of biomass (生質燃燒溫室氣體排放)	None
Indirect GHG emissions from imported energy (purchased electricity) 輸入能源產生之間接溫室氣體排放(電力採購) (Category 2, Location-based 地區基礎)	122,507.4154
Indirect GHG emissions from imported energy (Category 2, Market-based 市場基礎)	None
Indirect GHG emissions from transportation(Category 3) 由運輸產生之間接溫室氣體排放	6,043.9315
Indirect GHG emissions from products used by the organization (Category 4) 由組織使用的產品所產生之間接溫室氣體排放	165,110.3612
Indirect GHG emissions associated with the use of products from the organization (Category 5) 與組織的產品使用相關連之間接溫室氣體排放	Not significant
Indirect GHG emissions from other sources (Category 6) 由其他來源產生的間接溫室氣體排放	Not identified

Note 1: : The national electricity emission factor of year 2022 was quoted, the factor was taken from Taiwan Energy Administration as published on 21 June 2023.

Note 2: GHG emission figures above are being reported with four decimal places as required by Taiwan EPA

備註 1：國家電力溫室氣體排放係數引用能源署在 2023 年 6 月 21 日公佈之民國 111 年度電力排碳係數作為外購電力之排放係數。

備註 2:溫室氣體盤放數據相關小數點規定依據環境部規定執行。

This Assurance Statement is subject to the provisions of this legal section:

LRQA Group Limited, its affiliates and subsidiaries, and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'LRQA'. LRQA assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant LRQA entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

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LRQA Independent Assurance Statement

Relating to GlobalWafers Co., Ltd. Taisil Branch's Report for the calendar year 2022

服務條件

本保證聲明書乃為環球晶圓股份有限公司中德分公司所準備。

勞盛股份有限公司台灣分公司(以下簡稱 LRQA)受環球晶圓股份有限公司中德分公司(以下簡稱 GW Taisil)之委託以查證其 2022 日曆年度 (1/1/2022~31/12/2022) 期間溫室氣體盤查報告(發行日期:2023 年 4 月 18 日第二版), 以下簡稱為"溫室氣體盤查報告"。

此溫室氣體盤查報告包含直接、能源間接及其他間接溫室氣體排放。

環球晶圓股份有限公司中德分公司的地理邊界包含其在'新竹縣寶山鄉研新一路 2 號'主要活動包含'矽晶棒和矽晶圓的製造'及相關設施, 溫室氣體排放使用營運控制權。範疇 3 中的類別 5 和 6 排除於報告書中。

Terms of Engagement

This Assurance Statement has been prepared for *GlobalWafers Co., Ltd. Taisil Branch*.

LRQA was commissioned by *GlobalWafers Co., Ltd. Taisil Branch* (GW Taisil) to assure its *GHG Report for the calendar year 2022* (hereafter referred to as "the Report").

The Report relates to direct GHG emissions and energy indirect GHG emissions *and other indirect GHG emissions*.

GlobalWafers Co., Ltd. Taisil Branch's geographical boundary includes its operations located at No. 2, Yanxin 1st Rd., Baoshan Township, Hsinchu County 300093, Taiwan. The main activities of GlobalWafers Co., Ltd. Taisil Branch includes 'Manufacturing of silicon ingots and silicon wafers' and the GHG emissions have been consolidated using Operational control. The following GHG emissions were excluded from the Report:

e.g. category 5 and 6 from scope 3.

管理責任

環球晶圓股份有限公司中德分公司的管理階層為準備、宣告和遵循 ISO 14064-1:2018 準則以及揭露的數據和資訊維持有效的內部控管負責。LRQA 的責任為依據我們與環球晶圓股份有限公司中德分公司間的合約執行查證。

最終的, 溫室氣體盤查報告由環球晶圓股份有限公司中德分公司所核准並負有責任。

Management Responsibility

GlobalWafers Co., Ltd. Taisil Branch's management was responsible for preparing the claim, report and conformity with the criteria ISO 14064-1:2018 and for maintaining effective internal controls over the data and information disclosed. LRQA's responsibility was to carry out an assurance engagement on the Report in accordance with our contract with GlobalWafers Co., Ltd. Taisil Branch.

Ultimately, the Report has been approved by, and remains the responsibility of GlobalWafers Co., Ltd. Taisil Branch.

LRQA 的方法

LRQA 查證已依循 ISO 14064-3:2019 (溫室氣體主張之確證與查證指引之規範), 以提供對環球晶圓股份有限公司中德分公司符合 ISO 14064-1:2018 (組織層級溫室氣體溫室氣體排放與移除之量化及報告附指引之規範)所準備的溫室氣體盤查報告之有限和合理保證查證。

為作成結論, 本保證以抽樣方式執行並涵蓋下列的活動:

- 依溫室氣體盤查報告中所界定的設施設備, 進行現場查訪; 同時審查與溫室氣體排放數據及資料管理相關的過程;
- 訪談組織中對於相關溫室氣體排放數據與紀錄管理與維持之權責人員;
- 查證類別三之上游原料(蒐集至少達 80%採購金額)與下游產品運輸之活動數據, 商務旅行、員工通勤之活動數據彙整
- 查證類別四在購買的產品和服務之活動數據彙整(蒐集至少達 80%採購金額)
- 審查活動數據的來源(合理等級)和原始數據的匯總(有限等級)
- 查證日曆年西元 2022 年度的歷史數據及資料來源。

LRQA's Approach

Our verification has been conducted in accordance with ISO 14064–3:2019, 'Specification with guidance for verification and validation of greenhouse gas statements' to provide limited and reasonable assurance that GHG data as presented in the Report have been prepared in conformance with ISO 14064–1:2018, 'Specification with guidance at GlobalWafers Co., Ltd. Taisil Branch level for quantification and reporting of greenhouse gas emissions and removals.

To form our conclusions the assurance engagement was undertaken as a sampling exercise and covered the following activities:

- conducted site tours of the facilities and reviewed processes related to the control of GHG emissions data and records;
- interviewed relevant staff of GlobalWafers Co., Ltd. Taisil Branch responsible for managing GHG emissions data and records;
- verified at an aggregated level GHG emissions data for Category 3 and 4 from upstream raw materials (collecting at least 80% of the purchase amount) and downstream product transportation, activity data collection for business travel and employee commuting;
- verified at an aggregated level GHG emissions for Category 4 of activity data of purchased products and services (collecting at least 80% of the purchase amount);
- reviewed activity data at the source level (for reasonable level) and summarised source data (for limited level);
- verified historical GHG emissions data and records for the calendar year 2022.

查證等級及實質性

依據雙方合約協定, 本查證聲明書的查證意見基於類別1 & 2基於合理保證等級和5%實質性進行; 類別3 & 4基於有限保證等級和5%實質性進行;

Level of Assurance & Materiality

In accordance with our contract agreement, the assurance was conducted at a reasonable level of assurance at a materiality of 5% for Categories 1 & 2 and at a limited level of assurance at a materiality of 5% for Categories 3 & 4. The opinion expressed in this Assurance Statement has been accordingly formed.

LRQA意見

基於 LRQA 方法, 依據溫室氣體報告書中揭露年西元 2022 年度之全部直接及能源間接的溫室氣體(類別一與類別二)排放總量實質正確, 其他間接溫室氣體排放(類別三四)沒有任何情形引起我們注意到計算沒有實質正確; 溫室氣體盤查報告之準備也符合 ISO 14064-1:2018 (組織層級溫室氣體溫室氣體排放與移除之量化及報告附指引之規範)相關要求

LRQA's Opinion



Based on LRQA's approach,

- The GHG emissions for Categories 1 and 2 disclosed in the Report as summarized in Table 1 below are materially correct.
- Nothing has come to our attention that would cause us to believe that the GHG emissions for Categories 3 and 4 disclosed in the Report as summarized in Table 1 below are not materially correct.

and that the Report has been prepared in conformance with ISO 14064-1:2018.

LRQA 的建議

GlobalWafers Co., Ltd. Taisil Branch 須掌握 IPCC 評估報告中的 GWP 之更新。

LRQA's Recommendations

GlobalWafers Co., Ltd. Taisil Branch should be aware of changing of GWPs in the Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

Signed

KP Huang

KP Huang
LRQA Lead Verifier
On behalf of LRQA Group Limited Taiwan
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CIT, No. 1, Yumen St., Zhongshan Dist., Taipei
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Chiang-shan Chen
General Manager 總經理

LRQA reference number: TWN00000322/O_2022/Data Issued: 27 June 2023





Table 1. Summary of GlobalWafers Co., Ltd. Taisil Branch, GHG Emissions Inventory / Report 2022

Scope of GHG emissions 溫室氣體排放的範疇	Tonnes CO₂e
Direct GHG emissions (Category 1) 直接溫室氣體排放 (類別 1)	1,625.0911
Direct GHG emissions from the combustion of biomass (生質燃燒溫室氣體排放)	None
Indirect GHG emissions from imported energy 能源間接溫室氣體排放 (類別 2) (Category 2, Location-based)	134,222.5752
Indirect GHG emissions from imported energy 能源間接溫室氣體排放 (類別 2) (Category 2, Market-based)	None
Indirect GHG emissions from transportation (Category 3) 運輸的間接溫室氣體排放	4,560.4966
Indirect GHG emissions from products used by the organization (Category 4) 產品使用的間接溫室氣體排放	195,801.2348
Indirect GHG emissions associated with the use of products from the organization (Category 5) 使用產品間接溫室氣體排放	Not significant
Indirect GHG emissions from other sources (Category 6) 其他間接溫室氣體排放	Not identified
Location based and Market based are terminologies from Annex E of ISO 14064-1:2018.	

Note 1: Because year 2022 national electricity emission factor had not been published yet, the year 2021 factor published by the Taiwan BOE (Bureau of Energy) on 22 July 2022 was quoted for the calculation.

Note 2: GHG emission figures above are being reported with four decimal places as required by Taiwan EPA

備註 1: 因為 2022 年度國家電力溫室氣體排放係數尚未公告，因此以上溫室氣體排放引用能源局在 2022 年 7 月 22 日公佈之民國 110 年度電力係數作為外購電力之排放係數。

備註 2: 溫室氣體盤放數據相關小數點規定依據環保署規定執行

This Assurance Statement is subject to the provisions of this legal section:

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