bsi. Opinion Statement



Greenhouse Gas Emissions

Verification Opinion Statement

This is to verify that:

Cement Product Plants, Cement Distribution Stations and Hualien Cement Plant, Taiwan Cement Corporation No. 113, Sec. 2, Zhongshan N. Rd. Zhongshan Dist. Taipei City 104414 Taiwan

台灣水泥股份有限公司 水泥製品廠、水泥發貨站與花蓮廠 臺灣 台北市 中山區 中山北路二段 113 號 104414

Holds Statement No:

GHGEV 809681

Verification opinion statement

As a result of carrying out verification and validation procedures in accordance with ISO 14064-3:2019, it is the statement for mixed engagement including reasonable assurance for verification activity as well as validation and agreed-upon procedures (AUP) contains the following:

- The Greenhouse Gas Emissions with the Cement Product Plants, Cement Distribution Stations and Hualien Cement Plant, Taiwan Cement Corporation for the period from 2023-01-01 to 2023-12-31 was verified and validated.
- The verified organization-level greenhouse gas emissions include direct greenhouse gas emissions 1,926.192 tonnes of CO₂ equivalent and indirect greenhouse gas emissions from imported energy 7,540.782 tonnes of CO₂ equivalent.
- Cement Product Plants, Cement Distribution Stations and Hualien Cement Plant, Taiwan Cement Corporation has defined and explained its own process and pre-determined criteria for significance of indirect Greenhouse Gas Emissions and quantify and report these identified significant emissions accordingly.

For and on behalf of BSI:

<u>Velle</u>

Managing Director BSI Taiwan, Peter Pu

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...making excellence a habit."

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The Greenhouse Gas Emissions Verification activities are based on reasonable level of assurance:

- The data and information of greenhouse gas emissions are based on historical in nature, and no material misstatements for the period from 2023-01-01 to 2023-12-31 Greenhouse Gas Emissions calculation were revealed.
- Data quality was considered acceptable in meeting the principles as set out in ISO 14064-1:2018.
- The emission factor for electricity of year 2022 is 0.495 kgCO2e per kWh.
- The others indirect emissions (Scope 3) category reference: "GHG protocol" documented in the Inventory Report, as shown in the table below:

EMISSIONS		Notes	tonnes CO2e
Category 1: Direct GHG emissions and removals			1,926.192
1.1	Stationary combustion		1.6681
1.2	Mobile combustion		1,577.1339
1.3	Industrial processes (anthropogenic systems)		2.0037
1.4	Fugitive (anthropogenic systems)		345.3862
1.5	Land use, land use change and forestry		0.0000
Dire	ct emissions in tonnes of CO2e from biomass		0.0000
Cate	egory 2: Indirect GHG emissions from imported energy		7,540.782
0.4	Indirect emissions from imported electricity	location-based	
2.1	indirect emissions from imported electricity	approach	7,540.7815
22	Indirect emissions from imported energy (steam,		
2.2	heating, cooling and compressed air)		0.0000
Scope 3: Indirect emissions resulting from value chain activities			267,430.0380
1	Purchased goods and services		94,281.9293
2	Capital goods		261.5054
3	Fuel- and energy-related activities (not included in		1,884.3995
0	scope 1 or scope 2)		
4	Upstream transportation and distribution		68,662.1969
5	Waste generated in operations		95.4969
6	Business travel		95.7656
7	Employee commuting		356.1993
8	Upstream leased assets		403.5988
9	Downstream transportation and distribution		15,861.6036
10	Processing of sold products		9,506.9559
11	Use of sold products	N/A	0.0000
12	End-of-life treatment of sold products		59,670.1330
13	Downstream leased assets		16,350.2538
14	Franchises	N/A	0.0000
15	Investments	N/A	0.0000

* NS: Non significant; N/A: Not applicable

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Validation

- BSI stated that it had not found any evidence to indicate that the assumptions, methods, and limitations that we cited in the statement did not provide a reasonable basis for our projections or forecasts.
- Based on BSI examination of the evidence, nothing comes to our attention which causes us to believe that these assumptions do not provide a reasonable basis for the forecast.
- The forecast is properly on the basis of the assumption, actual results are likely to be different from the forecast since anticipated events frequently do not occur as expected the variation may be material.

EMISSIONS		Notes	tonnes CO2e
Category 5: indirect GHG emissions associated with the use of products from the			
organization			69,177.089
51	Emissions or removals from the use stage of the	Concrete processing	
5.1	product	phases emissions	9,506.9559
		Concrete waste	
		demolition emissions /	
5.3	Emissions from end-of-life stage of the product	Concrete waste	
		transportation emissions	
		/ Concrete waste burial	
		emissions	59,670.1330

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Agreed upon procedures (AUP)

- AUP are specific types of verification activities, BSI have performed the evidence-gathering procedures for the period from 2023-01-01 to 2023-12-31
- BSI do not express any assurance on the GHG emissions, removals and storage in listed below.

EMISSIONS Notes		AUP Item(s)	tonnes CO2e	
Category 3: Indirect GHG emissions from transportation				84,975.766
3.1	Emissions from upstream transport and distribution for goods	Use the Distance- based method	Goods Weight: 10,970,343.1610 tonne Road transport: 424,482,180.9674 tkm Marine transport: 386,433,416.2306 tkm	68,662.1969
3.2	Emissions from Downstream transport and distribution for goods	Use the Distance- based method	Goods Weight: 10,893,324.4000 tonne Road transport: 119,843,835.6500 tkm	15,861.6036
3.3	Emissions from Employee commuting	Use the Distance- based method	Automobile: 1,654,754.2756 pkm Diesel vehicle: 47,808.6000 pkm Electric vehicle: 7,075.0000 pkm Hybrid electric vehicle: 26,044.0832 pkm Motorcycle: 1,374,962.1916 pkm Electric scooter: 163,673.4809 pkm Buses: 15,540.2000 pkm Electric multiple unit: 101,507.4000 pkm Diesel multiple unit: 20,073.6000 pkm Mass rapid transit: 72,424.0000 pkm	356.1993
3.4	Emissions from Client and visitor transport	Use the Spend-based method and Use the Online calculator method		0.0000
3.5	Emissions from Business travels	Use the Spend-based method and Use the Online calculator method	Automobile: 710,149.4000 pkm Electric vehicle: 5,775.0000 pkm Motorcycle: 15,735.8000 pkm Buses: 1,324.8000 pkm Electric multiple unit: 29,505.1000 pkm Diesel multiple unit: 1,454.0000 pkm Mass rapid transit: 3,318.3740 pkm Taxi: 433.8000 pkm	95.7656

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			High speed rail: 7,975.8000 kgCO ₂ e Airplane transportation:	
Cate	agony 4: indirect GHG emissions from pro	ducts used by	760.0000 kgCO2e	
orac	spory 4. Indirect On C emissions from pro	ducis used by		
orga				96,926.930
4.1	Emissions from Purchased goods	Goods: Use the supplier- specific method Energy & Fuel: Use the Average-data method	Goods: Slag: 547,483.8000 tonne Fly ash: 281,884.0100 tonne Fly ash BFS powder: 40,027.3000 tonne Coarse aggregate: 3,884,512,316.0000 kg Fine aggregate: 5,058,356,045.0000 kg Admixture: 20,234,510.0000 kg Silica fume: 96,750.0000 kg Energy & Fuel: Purchased Electricity: 15,233,901.9444 kWh Diesel(unburned):448,146.3000 L Gasoline(unburned):165,896.4500 L Liquefied petroleum gas(unburned):421.6400 kg	96,166.3288
4.2	Emissions from Capital goods	Use the Average spend-based method	12,552,897.0000 TWD	261.5054
4.3	Emissions from the disposal of solid and liquid waste	Use the waste-type- specific method	General waste: 222.7287 tonne Recycling waste: 188.7480 tonne waste transport: 14,707.2016 tkm	95.4969
4.4	Emissions from the use of assets	Use the Asset-specific method and Lessor- specific method	Electricity: 734,350.0000 kWh Refrigerant(R-134a): 61.1800 kg Refrigerant(R-410A): 28.1900 kg Refrigerant(R-32): 8.0700 kg Car refrigerant (R-134a): 57.0450 kg Emissions from Leased Assets: 342.3030 kgCO ₂ e	403.5988
4.5	Emissions from the use of services that are not described in the above subcategories	Use the other services- specific method		0.0000
Category 5: indirect GHG emissions associated with the use				
of products from the organization				16,350.254
5.2	Emissions from downstream leased assets	Use the accounting for	Electricity: 5,317,082.7000 kWh Natural gas: 308,178.0000 L	16,350.2538

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5.4	Emissions from investments	the total expected lifetime emissions from all relevant portion leased to other entities Use the investments- specific method	Diesel: 787.5900 L Refrigerant(R-134a): 17.8560 kg Refrigerant(R-410A): 19.1500 kg Refrigerant(R-32): 17.4500 kg Emissions from leased assets by lessees: 12,962.6115 kgCO ₂ e	0.0000
Category 6: Indirect GHG emissions from other sources				0.000
Franchises		Use the Franchise- specific method		0.0000

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The direct GHG emissions and removals(cat.1) and indirect GHG emissions from imported energy emissions(cat.2) were verified in selected branches and representative offices, including but not limited to the following:

Location	Verification Information
Taipei Cement Products Plant Taiwan Cement Corporation No. 310, Sec. 1, Datong Rd., Xizhi Dist. New Taipei City 221006 Taiwan 台灣水泥股份有限公司 台北水泥製品廠 221006 新北市汐止區大同路一段 310 號	The Greenhouse Gas Emissions with the Taipei Cement Products Plant, Taiwan Cement Corporation for the period from 2023-01-01 to 2023-12-31 was verified, including direct greenhouse gas emissions 598.656 tonnes of CO ₂ equivalent and indirect greenhouse gas emissions from imported energy 2,950.086 tonnes of CO ₂ equivalent. Including Taipei Cement Products Plant, and its 9 branches, Hualien factory, and Hualien 2nd factory, a total of 12 locations. 包含台北水泥製品廠及北區 9 分廠、花蓮工場、花蓮二廠, 共 12 個據點。
Taichung Cement Products Plant Taiwan Cement Corporation No. 785, Sec. 3, Zhongqing Rd.Daya Dist., Taichung City 428412 Taiwan 台灣水泥股份有限公司 台中水泥製品廠 428412 台中市大雅區四德里中清路三段 785 號	The Greenhouse Gas Emissions with the Taichung Cement Products Plant, Taiwan Cement Corporation for the period from 2023-01-01 to 2023-12-31 was verified, including direct greenhouse gas emissions 240.980 tonnes of CO ₂ equivalent and indirect greenhouse gas emissions from imported energy 847.589 tonnes of CO ₂ equivalent. Including Taichung Cement Products Plant, and its 3 branches, a total of 4 locations. 包含台中水泥製品廠及中區 3 分廠,共4 個據點。
Kaohsiung Cement Products Plant Taiwan Cement Corporation No. 16, Gongye 1st Rd., Renwu Dist. Kaohsiung City 814036, Taiwan 台灣水泥股份有限公司高雄水泥製品廠 814036 高雄市仁武區工業一路 16 號	The Greenhouse Gas Emissions with the Kaohsiung Cement Products Plant, Taiwan Cement Corporation for the period from 2023-01-01 to 2023-12-31 was verified, including direct greenhouse gas emissions 1,053.442 tonnes of CO ₂ equivalent and indirect greenhouse gas emissions from imported energy 2,107.801 tonnes of CO ₂ equivalent. Including Kaohsiung Cement Products Plant, and its 7 branches, a total of 8 locations. 包含高雄水泥製品廠及南區7分廠,共8個據點。
Taichung Port Cement Distribution Station Taiwan Cement Corporation No. 2, Beiheng 7th Rd., Qingshui Dist. Taichung City 436455, Taiwan 台灣水泥股份有限公司 台中港水泥發貨站 436455 台灣台中市清水區北橫七路 2 號	The Greenhouse Gas Emissions with the Taichung Port Cement Distribution Station, Taiwan Cement Corporation for the period from 2023-01-01 to 2023-12-31 was verified, including direct greenhouse gas emissions 11.613 tonnes of CO_2 equivalent and indirect greenhouse gas emissions from imported energy 753.988 tonnes of CO_2 equivalent.

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Location	Verification Information
Kaohsiung Port Cement Distribution Station Taiwan Cement Corporation No. 12, Dahua 3rd Rd., Qianzhen Dist. Kaohsiung City 806011, Taiwan 台灣水泥股份有限公司 高雄港水泥發貨站 806011 台灣高雄市前鎮區大華三路 12 號	TheGreenhouse Gas Emissions with the Kaohsiung Port Cement Distribution Station, Taiwan Cement Corporation for the period from 2023-01-01 to 2023-12-31 was verified, including direct greenhouse gas emissions 20.240 tonnes of CO_2 equivalent and indirect greenhouse gas emissions from imported energy 433.472 tonnes of CO_2 equivalent.
Hualien Cement Plant, Taiwan Cement Corporation No. 103, Huadong, Hualien City Hualien County 970024, Taiwan 台灣水泥股份有限公司 花蓮廠 970024 台灣花蓮縣花蓮市華東 103 號	The Greenhouse Gas Emissions with the Hualien Cement Plant, Taiwan Cement Corporation for the period from 2023-01-01 to 2023-12-31 was verified, including direct greenhouse gas emissions 1.262 tonnes of CO ₂ equivalent and indirect greenhouse gas emissions from imported energy 447.846 tonnes of CO ₂ equivalent.

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