台橡股份有限公司
TSRC CORPORATION

The Status of Greenhouse Gas Emissions

一、GHG Inventory

In response to global climate action, TSRC has set a vision to achieve carbon neutrality. Building upon the base year of 2021, TSRC aims to reduce its Scope 1 and 2 greenhouse gas emissions by 5% in 2023, 10% in 2025, and 22.5% in 2030. TSRC is committed to investing in green manufacturing processes, increasing the use of renewable energy, and implementing energy-saving and carbon reduction measures.

TSRC prioritizes reducing greenhouse gas emissions in Scope 1 and 2. The Company optimizes its processes and utility systems, and promotes green process innovations. Regarding Scope 3 emissions and the emissions from product use, TSRC encourages suppliers to reduce carbon footprint and continues to develop sustainable and environmentally friendly products. The Company is developing carbon offset programs as part of its long term goal for carbon neutrality.

In 2022, TSRC devoted efforts to implement carbon reduction measures in factories and subsidiaries. The scope 1 and 2 GHG emissions in 2022 were 547,362 metric tons CO_2e, a decrease of 2.38% from the 2021 base year. TSRC did not use carbon offset measures in 2022. The main reduction came from reducing the purchased energy in Scope 2. The Kaohsiung Factory,Shen Hua Chemical, and Nantong Industries achieved the most significant reduction. In 2022, the entire TSRC Group implemented six energy-saving measures, saving a total of 1,395,700 kWh, equivalent to reducing 719 metric tons CO_2e. TSRC also implemented six steam saving measures, saving a total of 29,299.2 metric tons of steam, equivalent to reducing 8,257 metric tons CO_2e.

In 2022, the GHG emissions intensity of scope 1 and 2 remained almost the same as the 2021 base year, at 1.01 metric tons CO_2e per metric ton of product.

二、 Actions of GHG Reduction

■ Low-carbon Manufacturing

TSRC is committed to energy-saving and carbon reduction, with a focus on optimizing operations and utility systems and investing in high-efficiency equipment. In 2022, the Company replaced energy-consuming equipment, installed energy-saving devices, and implemented steam extraction and heat recovery technologies to reduce electricity and steam use in factories.

➢ **Optimizing Process Operations**

TSRC promotes process operation optimization to achieve its energy-saving and carbon reduction goals. This is carried out by adjusting process parameters and operation methods to improve efficiency and reduce energy consumption and carbon emissions.

In 2022, TSRC achieved energy savings and steam savings through measures such as optimizing process reaction conditions, increasing waste heat recovery, and adjusting chillers, water pumps, and steam extraction towers. These measures achieved electricity savings of 865,700 KWh (3,117 GJ) and 24,299.2 metric tons (54,916 GJ) of steam, and a reduction of 7,066 metric tons of CO2e emissions annually.

➢ **Optimizing Utility Systems**

TSRC utilizes a combination of equipment replacement and operation optimization to save electricity for its lighting systems, air conditioning systems, and other utilities. By replacing less efficient equipment with more energy-efficient alternatives and optimizing operating conditions, TSRC is able to reduce its electricity usage and achieve its energy saving goals.

In 2022, some factories replaced LED lighting and optimizing the cooling water tower operation. The total energy savings was 224,000 kWh (806GJ), and a reduction of 114 metric tons of CO2e emissions (annual).

➢ **High-Efficiency Equipment**

TSRC is actively investing in high-energy efficiency process equipment to achieve its energy-saving and carbon reduction goals. By utilizing such equipment, the Company significantly reduces energy consumption and GHG emission intensity, contributing to sustainability.

In 2022, TSRC added new high-efficiency dryers and completed the refining tower for the SEBS AB line, resulting in a total energy saving of 306,000 kWh (1,102GJ) and steam savings of 5,000 metric tons (11,300 GJ). These efforts led to a yearly reduction of 1,796 metric tons of CO2e emissions(annual), showing the Company's commitment to sustainability and its efforts to reduce carbon footprint.

■ Renewable Energy

TSRC has a comprehensive plan to increase renewable energy use at sites in Taiwan and China. The Company plans to achieve 5% of total electricity consumption from renewable sources by 2023, 10% by 2025, and 30% by 2030 through various means, such as building solar energy facilities and purchasing green power agreements and renewable energy certificates. In 2022, TSRC's subsidiary, Nantong Industries, signed a contract with green power suppliers and purchased green power certificates. It plans to start using renewable electricity in 2023. In addition, TSRC is installing solar power generation facilities at Kaohsiung Dashe Factory site and expects to generate renewable energy in 2023, in response to Taiwan's "Renewable Energy Development Act" and the "Regulations for the Management of Setting up Renewable Energy Power Generation Equipment of Power Users above a Certain Contract Capacity." Starting in 2024, TSRC's subsidiaries in China, including Shen Hua Chemical, Nantong Industries, and TSRC-UBE, will increase the use of renewable energy. With self-generated green power, the Company will achieve the target. These efforts demonstrate TSRC's commitment to promoting renewable energy and carbon reduction.

2020-2022 GHG Emissions and Emission Intensity (by Subsidiaries)

(Unit: metric tons of CO_2e)		TSRC Corporation	Shen Hua Chemical	Nantong Industries	TSRC-UBE	Shanghai Industries	TSRC (Vietnam) Company Limited	TSRC Specialty Materials LLC	Polybus	TSRC (Lux.)	TSRC group
2020	Scope 1	89,910	4,785	52,000	68,874	27	0	16,935	N/A	N/A	232,531
	Scope 2	63,548	106,322	91,224	22,354	2,329	0	40,988	N/A	N/A	326,765
	Scope 1+2	153,458	111,107	143,224	91,228	2,356	0	57,923	N/A	N/A	559,296
	Production volume	173,773	170,426	55,560	63,036	12,214	0	46,521	N/A	N/A	521,529
	GHG emissions intensity (metric tons of CO_2e per unit produced)	0.88	0.65	2.58	1.45	0.19	0.00	1.25	N/A	N/A	1.07
2021 (Base year)	Scope 1	90,211	5,070	9,075	3,213	31	7	21,969	0	0	129,576
	Scope 2	70,806	101,335	153,827	80,508	1,752	1,821	21,039	2	21	431,109
	Scope 1+2	161,017	106,405	162,902	83,721	1,783	1,828	43,008	2	21	560,685
	Production volume	194,194	170,988	73,815	65,285	9,934	0	47,921	0	0	562,138
	GHG emissions intensity (metric tons of CO_2e per unit produced)	0.83	0.62	2.21	1.28	0.18	0.00	0.90	0.00	0.00	1.00

Note: TSRC Corporation including the Global Business Headquarters, Kaohsiung Factory, and Gangshan Factory.

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2020-2022 GHG Emissions and Emission Intensity (by Subsidiaries)

(Unit: metric tons of CO_2e)		TSRC Corporation	Shen Hua Chemical	Nantong Industries	TSRC-UBE	Shanghai Industries	TSRC (Vietnam) Company Limited	TSRC Specialty Materials LLC	Polybus	TSRC (Lux.)	TSRC group
2022	Scope 1	95,715	6,403	7,482	3,532	26	6	25,283	0	0	138,447
	Scope 2	54,716	96,102	149,597	84,736	1,135	936	20,871	2	86	408,181
	Scope 1+2	150,431	102,505	157,079	88,268	1,161	941	46,154	2	86	546,627
	Production volume	178,484	170,522	72,822	67,217	5,494	577	44,910	0	0	540,026
	GHG emissions intensity (metric tons of CO_2e per unit produced)	0.84	0.60	2.16	1.31	0.21	1.63	1.03	0.00	0.00	1.01

Note:

1. This table covers seven greenhouse gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride. The GWP value is from the IPCC AR5.
2. The greenhouse gas emissions data for 2019-2020 covers TSRC's Global Business Headquarter, Kaohsiung Factory, Gangshan Factory, Shen Hua Chemical, Nantong Industries, TSRC-UBE, Shanghai Industries, TSRC (Vietnam) Company Limited, and TSRC Specialty Materials LLC. It does not include two trade subsidiaries, Polybus and TSRC (Lux.). The operational control approach is adopted. Only the data of Kaohsiung Factory and Gangshan Factory were verified by a third party.
3. The 2021 data was restated after the third-party verification. The reporting boundary of 2021 covers all factories and subsidiaries identical to the reporting scope of this report. The operational control approach is adopted in accordance with ISO14064:2018. The data is rounded to the nearest whole number.
4. The 2022 data covers all factories and subsidiaries identical to the reporting boundary of this report. The operational control approach is adopted in accordance with ISO14064:2018. The data has been internally verified and the external third-party verification is expected to be completed by October 2023. The data is rounded to the nearest whole number. The emission factors are from:
   - 【Taiwan】 the global business headquarter, Kaohsiung Factory and Gangshan Factor: Use emission factors published by Taiwan Environmental Protection Agency (version 6.0.4).
   - 【China】 Shen Hua Chemical, Nantong Industries, TSRC-UBE, and Shanghai Industries: Use China's provincial electricity emission factors, the United Nations Intergovernmental Panel on Climate Change (IPCC) assessment reports, and the Shanghai Bureau of Ecology and Environment [2022] No. 34 The notice of Shanghai Ecological Environment Bureau on the adjustment of emission factor values related to the city's greenhouse gas emission accounting guidelines.
   - 【Vietnam】 TSRC (Vietnam) Company Limited: Use the electricity emission factors published by Vietnam Ministry of Industry and Trade and Vietnam Ministry of Natural Resources and Environment and the IPCC assessment reports.
   - 【U.S.A】 TSRC Specialty Materials LLC: Use US Environmental Protection Agency database and the IPCC assessment reports.
5. TSRC Corporation including the Global Business Headquarters, Kaohsiung Factory, and Gangshan Factory.