

Status of Water consumption & Recycling

I. Management Approach

Water is a crucial link between human society and the environment, serving as the foundation for sustainable business operations and development. Given its essential role in our manufacturing process, TSRC recognizes the paramount importance of water quality and quantity. We are committed to continually optimizing our use of this precious resource.

TSRC incorporated water-related risks into our overall risk management system, with particular attention to the risk resulting from and resulting in climate change. We conduct annual assessments of water-related risk at each site and review our response measures accordingly. TSRC sets three pillars for water resource management: use water efficiently, recycle water, and discharge without having negative impact on the environment. We are striving to increase the recycling rate of process wastewater, utilize recycled water, and minimize water withdrawal from surrounding areas. Our goal is to minimize the amount of process wastewater entering wastewater treatment plants in industrial parks. By 2023, we aim to recycle 25% of total wastewater, with targets of 36% by 2025 and 40% by 2030.

In addition to recycling condensed water and process wastewater, we plan to build recycled water facilities and increase the use of recycled water in each factory, thereby enhancing water resource stability. We target to use 15% of recycled and reclaimed water against the total water consumption in 2023, 34% in 2025, and 40% in 2030. TSRC publicly discloses water resources management data and strategies every year and conducts a stakeholder survey to understand the views and feedback on TSRC's actions.

II. Water Resource Management

TSRC mainly relies on tap water provided by water companies. In recent years, we built process water recycling facilities to reduce the total amount of water withdrawn from outside, aiming to alleviate the pressure on local communities. According to the World Resources Institute (WRI) Aqueduct, among our manufacturing factories and subsidiaries in China, Taiwan, the USA, and Vietnam, China has the highest baseline water stress, reaching a "moderate to high risk (20%-40%)." The USA is at "low to moderate risk (10%-20%)," while Vietnam and Taiwan are both at low risk¹. However, at the county or city level, regardless of dry or abundant season, TSRC's Kaohsiung Factory is at high-risk for drought in

the past and the future (2015-2039) 2. The water-related risk of Shen Hua Chemical and TSRC-UBE, Nantong Industries (in Jiangsu Province, China), the TSRC Specialty Materials LLC (in Louisiana State, U.S.A) and TSRC Vietnam factory (in Binh Duong Province, Vietnam) is low to moderate (10%-20%).

Drought is identified as TSRC climate-related risk. TSRC sets short-, medium-, and long-term targets for wastewater recycling and reclaimed water use in response to the water quota for new factory in Jiangsu Province (China) and the decreasing quota permit issued by the local authorities. The ESG Section reports the outcomes of implementation measures to the ELT every quarter. In 2022, the TSRC Board of Directors met in January, May, and August to discuss climate change-related issues and review water-related targets.

To address water risks at the Kaohsiung Factory and take into account the interests of other local industrial water users, Kaohsiung Factory participates in water resource sharing initiatives with neighboring companies in the Dashe industrial park. TSRC connects to the firefighting water source of the neighboring company, Grand Pacific, which has a firefighting water tank with a storage capacity of approximately 4,500 m³. In 2022, TSRC completed a pipeline connection with USI Corp and shared a total of 8,797 m³ of water.

TSRC is aware of the trade-off between water management and GHG emissions. In 2022, Kaohsiung Factory decreased the purchase of steam produced by coal-fired fuels and replace it with self-produced steam with low-carbon fuels, thereby increasing the energy use and direct GHG emissions of Kaohsiung Factory (Scope 1). The overall GHG emissions of Kaohsiung plant (Scope 1 and Scope 2) still decreased by 6.6% in 2022. As the self-generated steam is made of low-carbon fuels, TSRC would still choose to reduce external purchase.

In 2022, the total water withdrawal was 3,861 thousand cubic meters, representing a decrease of 2.79% compared to 2021. Kaohsiung Factory and Gangshan Factory, which are located in a high-risk drought area, withdrew 1,559 thousand cubic meters of water, an increase of 6.93% compared to the previous year. TSRC Group's total water consumption in 2022 was 2,539 thousand cubic meters, a decrease of 13.05% compared to 2021. TSRC's total water usage in 2022 was 5,550 thousand cubic meters, representing a decrease of 4.88% compared to 2021. The water usage per unit of product was 10.28 thousand cubic meters per metric ton of production, indicating a 0.96% decrease compared to 2021. The decrease in water usage was attributed to process improvement measures implemented by Shen Hua Chemical and Nantong Industries to reduce steam.

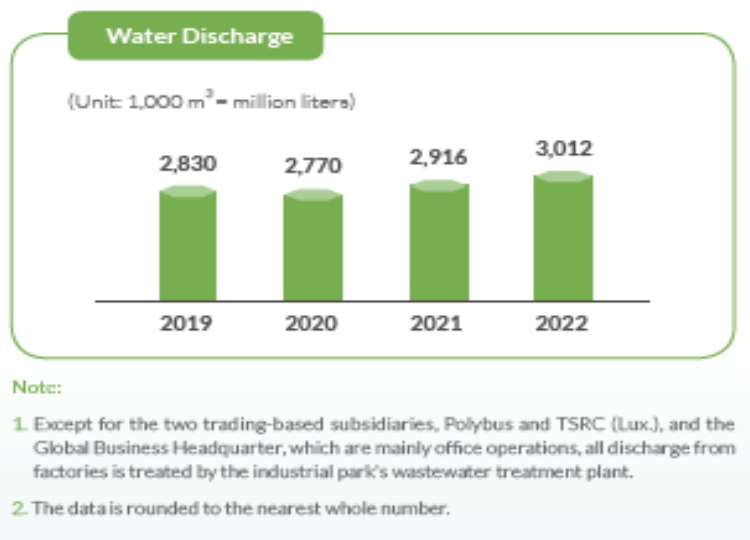
III. Water Withdrawal, Discharge, and Consumption of Each Site in the Past Three Years

TSRC's main production sites are all located in local industrial parks and the effluent is subject to management and supervision by the competent authority of

the industrial parks. To reduce wastewater discharge, TSRC recycles wastewater from manufacturing processes and operations. For the wastewater that cannot be recycled and reused, it undergoes pretreatment by TSRC until it meets the standards and the substance emission limits. Once all requirements are met, the effluent is discharged into the wastewater treatment system of the industrial park; thus, TSRC's wastewater discharge does not cause direct ecological impact on the surrounding areas. In 2022, TSRC did not violate any regulations related to wastewater and effluent and regulations about the limits of concerned materials.

The Gangshan Factory meets the standard and substance limits of Gangshan Benjhou Industrial Park, and the Kaohsiung Factory meets the one of the Ren Da Industrial Park. Shen Hua Chemical, Nantong Industries, and TSRC-UBE are required to meet the tertiary treatment standard of the local competent authority, including the PH value, chemical oxygen demand (COD), suspended solid (SS), and biochemical oxygen demand (BOD). Main TSRC factories have installed online COD analyzers, ammonia nitrogen analyzers, pH meters, and flow meters. Interception facilities for torrential rain and online COD monitors have been implemented to timely monitor the quality of discharged water.

In 2022, Nantong Industries invested in two new wastewater treatment systems. One for the industrial wastewater and the other for general wastewater. The industrial wastewater treatment system collects wastewater with support from the plastic traps, and the treated water is used in the cooling loop water tower. The general wastewater treatment system can reduce the ammonia nitrogen, total phosphorus, and chemical oxygen demand (COD_{Cr}) at the end of the pipe to reduce the impact on the environment. The system is expected to reduce the discharge of wastewater by 140,000 metric tons per year.



IV. Wastewater Treatment and Discharge

TSRC takes a holistic approach to water management with focus on increasing water recycling and reuse within factories to reduce the impact of water

withdrawal and move towards zero discharge. In 2022, the overall wastewater recycling rate was 22%, and the recycled water usage rate was 14%*. Given that the two factories in Taiwan are located in the high-risk water stressed area, the Company devotes efforts to wastewater recycling, resulting in a wastewater recycling rate of 52% in Taiwan in 2022.

To mitigate water-related risks and enhance operational stability, TSRC is increasing capital expenditures to strengthen the Group's wastewater recycling rate. In 2023, wastewater recycling equipment will be installed in Nantong Industries and TSRC-UBE. In response to the water restriction in Kaohsiung in 2023, measures are being implemented in advance, including investing in the water pipelines and exploring the possibility of purchasing reclaimed water. By 2023, the wastewater recycling rate is expected to reach 25% and the reclaimed water usage rate to reach 15%. By 2025, the wastewater recycling rate is expected to reach 36%, and the reclaimed water usage rate to reach 34%. By 2030, TSRC aims to achieve the "Double 40" target, where both the wastewater recycling rate and the reclaimed water usage rate will reach 40%.

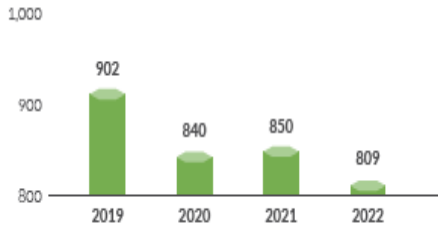
V. The Volume of Wastewater Recycling

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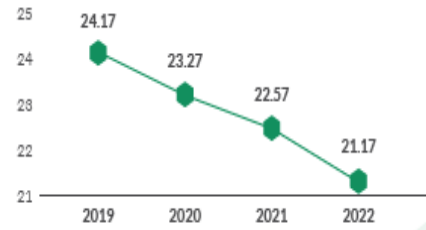
Wastewater Recycling and the Recycle Rate

(Unit: 1,000 m³ = million liters)



Wastewater recycled volume Wastewater recycling rate

(Unit: %)

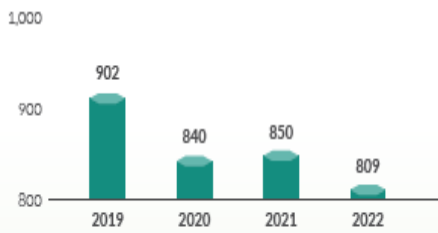


Note:

1. Wastewater recycling rate = Wastewater recycled volume / total wastewater volume.

Reclaimed Water and the Usage Rate

(Unit: 1,000 m³ = million liters)



Reclaimed water usage volume Reclaimed water usage rate

(Unit: %)

