Water Resource Management

Due to the effect of global climate change, rainfall has become polarized in Taiwan, resulting in floods and water shortages occurring at the same time. As an important member of the semiconductor industry, Nanya has monitored the risk of water shortage caused by global climate change, and understands the effect of climate change and water resources on operations. Nanya continues to implement water conservation measures and strives to recycle and reuse water to reduce its impact on the environment and the risk of water shortage. Nanya adopted the Alliance for Water Stewardship Standard (AWS) in 2023, and actively implements the five major results of AWS, continuing to systematically implement sustainable water resources management.

Nanya's efforts in water resource management has gained the recognition of the CDP, which is an international environmental evaluation indicator. Nanya was ranked at the leadership level "A" in Water Security in 2022-2023. Nanya was recognized for its efforts in climate change and water resource management for global sustainability with the "Water Resource Management Leadership Award" in the 15th TCSA in 2022 and 16th TCSA in 2023. Nanya has formulated and disclosed its water resources management policy. Nanya complies with the AWS in actively implementing the sustainability goals of water resources management. Nanya's water resources management policy is as follows：

A Continue to optimize the management of water resources in plants through personnel education and training, organizational planning, water conservation, and the establishment of response systems.

B Disclose quantifiable water operation indicators, with the main goal of continuously improving water efficiency.

C With the goal of improving the water quality of effluent, we continue to improve the water treatment system to reduce the impact of operations on the watershed.

D Maintain the health of important water-related areas through environmental education and continuous monitoring.

E Establish good environmental sanitation and drinking water quality systems in the factory area to reduce the occurrence of infectious diseases.

Water Resource Management Actions

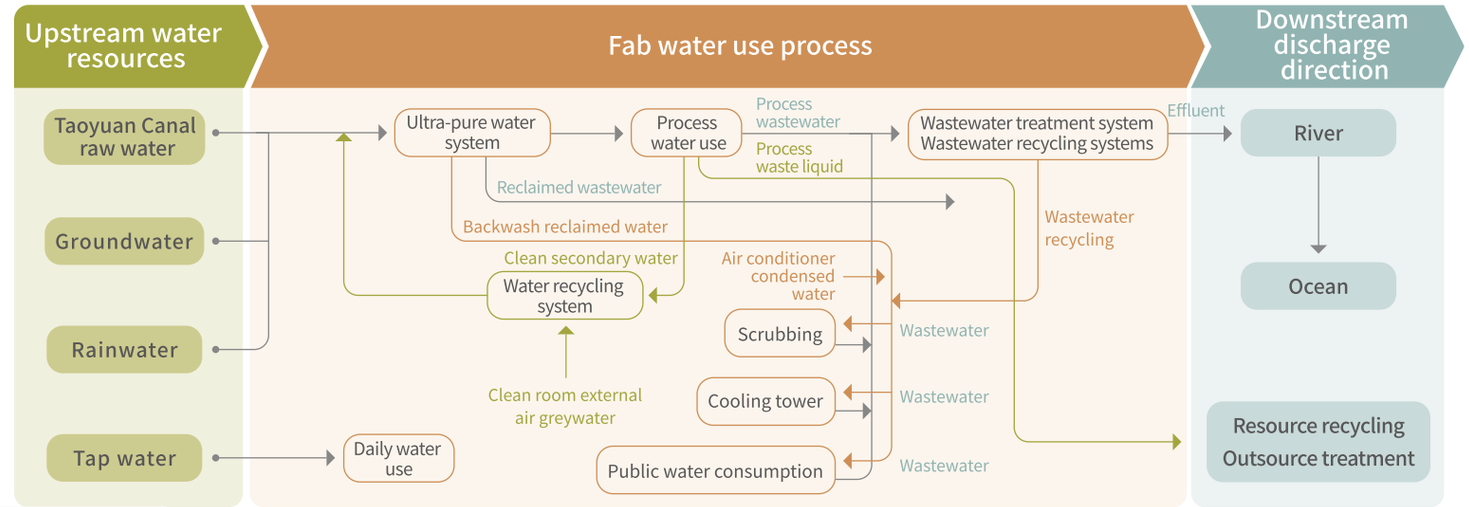
Nanya's water resources management focuses on the following directions. All strategies and requirements cover all operations, R&D, and production locations. Water use, water conservation, and water risk assessment are reported and reviewed by the board of directors every year.

- Actively manage indicators, conserve water in operations, and fully utilize water resources.
- Implement wastewater classification treatment and multiple recycling measures to maximize the efficiency water resources.
- Assess the risks and opportunities under climate change, and mitigate the impact of water shortage.
- Comply with laws and regulations, continue to strengthen water treatment facilities, and reduce the risk of environmental pollution.
- Communicate with stakeholders so that they will take water resources seriously and implement water conservation.

• Water Resources Structure

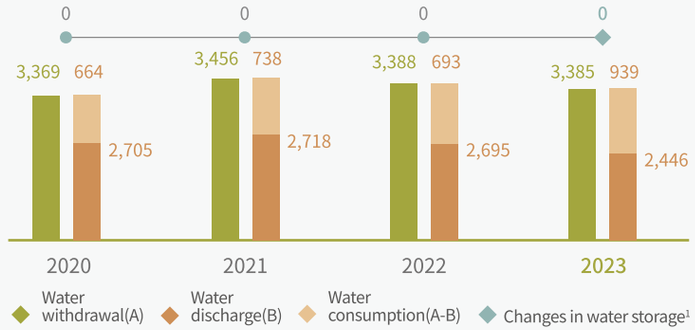
Nanya's total water withdrawal was 3,385 million liters in 2023, in which Taoyuan Canal is the main source of water, accounting for approximately 96.4% (3,265 million liters), followed by well water at approximately 2.8% (94 million liters), and tap water at approximately 0.8% (26 million liters). Rainwater was recycled and reused every year in the past, but was temporarily suspended in 2023 due to equipment changes of new fab expansion. The total water withdrawal in 2023 was 0.1% lower compared to 2022. Nanya's production capacity in 2023 was 8% lower compared to 2022. In terms of water use intensity, the water consumption per unit capacity in 2023 was 3.38 thousand liters/k-pcs, an increase of 8.7% compared to 2022. Ultra-pure water consumption was 3,398 million liters in 2023, down 5% compared to 2022. In terms of water use intensity, ultra-pure water consumption per unit capacity was 3.4 thousand liters/k-pcs, an increase of 3.3% compared to 2022.

Nanya's Water Consumption Structure



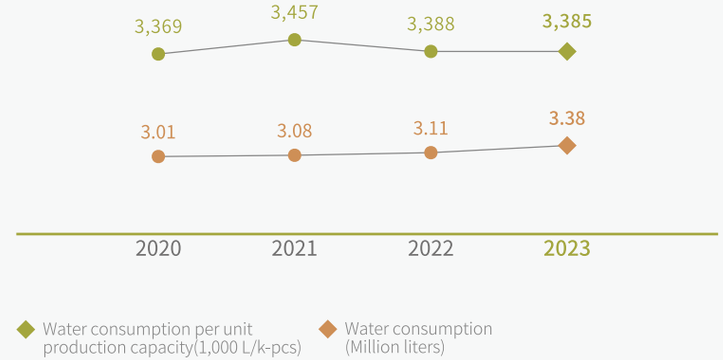
Nanya water consumption

Unit：Million liters

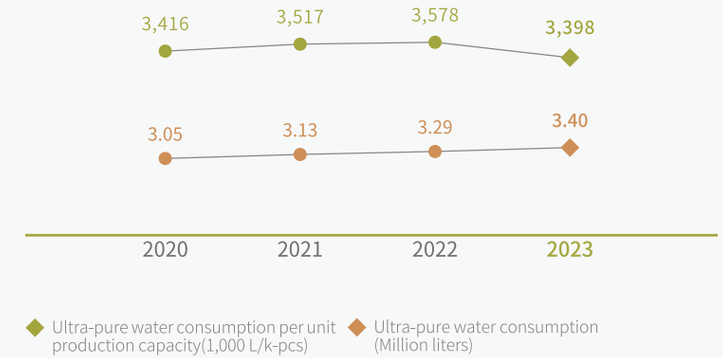


Note 1: Changes in water storage = Water storage on 12/31 – Water storage on 1/1 the same year

Run chart of water consumption



Run chart of ultra-pure water consumption



• Water Resource Risk Management

Water risk factors	Assessment method	Assessment results and reactions
Water-related dependencies and shocks	◆ Water Risk Assessment Tool (WRI Aqueduct Tool). ◆ Referring to the economic environment accounting system, including supply services, adjustment and support services, cultural services, etc., dependencies and impacts are identified through cross-departmental workshops.	◆ Simulation analysis of the risk level of water source. The water source is Taoyuan Canal from Shimen Reservoir. The water supply accounts for 96.4%. The water pressure assessment result is "low". The short-term water pressure assessment result is medium-low risk (10-20%). ; The long-term 2050 is also a medium-low risk (10-20%), that is, a non-water-stressed area. ◆ Water resources are an ecosystem service that Nanya relies on. At the same time, semiconductors' extensive use of water resources will also cause additional impacts, including not only water grabs from neighboring communities or companies, but also ecosystem damage caused by excessive water use. ◆ Nanya will discharge wastewater during its operations. Although the wastewater complies with regulatory standards, if the total discharge exceeds the environmental load capacity of the area, it will still lead to the loss of biodiversity.
Future water availability	◆ Climate change water resource hazard map information from the Taiwan Climate Change Estimation Information and Adaptation Knowledge Platform Project (TCCIP), under the RCP 8.5 mid-century (Y2036~Y2065) scenario.	◆ The average annual rainfall in northern Taiwan increased by 12%, but the spring rainfall decreased by 5%. Nanya's backup water source volume is greater than the decrease in rainfall. It is estimated that the Shimen Reservoir will still be able to meet production requirements due to reduced rainfall in the spring and reduced water supply in the future. demand, no risk of water shortage. ◆ The water supply of Shimen Reservoir is about 800 million liters per day, and Nanya's daily water consumption is about 10 million liters. Therefore, the impact of Nanya's operations on regional water use is 1.25%.
Future water quality	◆ Introducing Alliance for Water Stewardship Standard, AWS	◆ All wastewater is collected and discharged to appropriate sewage facilities for treatment. The wastewater is divided into 28 types of pipelines in the diversion and distribution section. In order to ensure that the discharged water quality meets the standards, it has been synchronously connected with the Environmental Protection Bureau to monitor the discharged water quality, and will be commissioned every quarter. Regular external sampling, analysis and testing are carried out to strengthen wastewater quality control. ◆ When the Shimen Reservoir discharged water during the typhoon period, the water supply was affected by high turbidity due to sediment alluvial. Since the layered water intake project of the Shimen Reservoir has been completed in 2021, the high turbidity of the raw water has been greatly alleviated, and the plant has been A rapid settling tank can be set up to treat raw water with high turbidity (<10,000NTU), and the risk of future water quality affected by high turbidity on water supply will be assessed with low risk.
Local stakeholders	◆ The water supply capacity of Shimen Reservoir owned by Nanya Technology Water Source is approximately 800 million liters per day, and the company's daily water consumption is approximately 10 million liters. Therefore, the impact of Nanya Technology's operations on regional water use is 1.25%.	◆ Nanya's production water mainly comes from Taoyuan Canal. It has signed a water supply contract with the management unit of Taoyuan Canal. The water supply volume has been agreed to ensure the stability of the water supply. It has also been agreed that the contracted water volume can be exceeded to facilitate emergency replenishment in the event of water shortage and increase water flexibility. ◆ Nanya has united with nearby Formosa Plastics Group factories to establish a water shortage emergency response organization. Through this emergency response organization, emergency water supply support can be allocated to each other. There has never been any production loss due to water shortage. ◆ Communicate with local residents and the public, and disclose information related to Nanya water management to eliminate public doubts about Nanya water management.
Water related regulations	◆ Regulations on Water Conservation Charge	◆ The water recovery rate in 2023 has been certified by a third-party impartial unit to reach 95.8%, which is higher than the industry benchmark value announced by the government (50%~85%) and reaches the minimum rate collection calculation standard announced by the government. It is estimated that the annual water fee increase will only be about 3 %, with low impact on operating costs.

• Water Resource Risk Management

Our main water source comes from the Shihmen Reservoir, and is channeled and processed through the Taoyuan Canal before being supplied as production water. The gravity flow is used to independently channel water without affecting the ecology of water resources and any other purposes of usage. In addition, rainwater harvesting can supply production water and tap water for household use. Nanya currently only has one production area located in New Taipei City, Taiwan. Taiwan's rainfall is extremely unevenly distributed between regions and seasons, which often results in regional and seasonal droughts. We used the WRI Aqueduct Tool assessing water risk to simulate and analyze the risk of water sources. For the Taoyuan Canal of Shihmen Reservoir, which supplies 96.4% of water, the water stress assessment result was "low", meaning that it has medium to low risk (10-20%) in the short-term. Long-term stress to 2050 is also low to medium risk (10-20%), meaning that it is a non-water stress area. In addition, according to the climate change water resource hazard map of the Taiwan Climate Change Projection Information and Adaptation Knowledge Platform (TCCIP), in scenario RCP 8.5 in the middle of the century (Y2036-Y2065), the average annual rainfall in northern Taiwan increased by 12%, but rainfall in spring decreased by 5%. The Company's backup water supply volume is greater than the decrease in rainfall. Despite the lower rainfall during spring and lower water supply from Shihmen Reservoir, the water supply will still be able to meet production needs without the risk of water shortage.

In addition, when Shihmen Reservoir discharges water during a typhoon, silt washed into the reservoir causes high water turbidity is high and affects the water supply. Since the Shihmen Reservoir layered water withdrawal project was completed in 2021, the high turbidity of raw water has been greatly improved, and the fab has a fast settling tank that can treat raw water with high turbidity (<10,000NTU). Hence, we determined that high turbidity has low risk of affecting water supply in the future. The government began to collect water conservation charge in accordance with the "Regulations on Water Conservation Charge" in 2023. Nanya has dedicated its efforts to water recycling, and Nanya's water recycling rate has been certified by an impartial third party to reach 95.8%[Note 2.] which is better than the industry standard announced by the government (50%-85%), and qualifies for the minimum charge rate announced by the government. Therefore, the increase in water fee each year is expected to be only about 3%, and only has low impact on operating costs.

Note 2: The recycling rate for water conservation charge is calculated based on the formula set by the Industrial Development Administration of the Ministry of Economic Affairs.

Nanya's water source Shihmen Reservoir supplies approximately 800 million liters/day. The Company's daily water consumption is approximately 10 million liters. Hence, the effect of Nanya's operations on regional water use is 1.25%. Water used by the Company for production is mainly supplied by Taoyuan Canal, and the Company has signed a water supply contract with the management unit of Taoyuan Canal: Irrigation Agency, mainly agreeing on the water volume supplied to ensure the stability of the water supply. The contract also stipulates that the Company may withdraw water exceeding the agreed volume as a temporary water source for emergency replenishment, increasing the flexibility of water use. Nanya participates in the semiconductor industry association, periodically attends meetings of the "water resource diversified management and cooperation platform" of the Water Resources Agency, understands the water supply situation, and engages in exchanges, communication, and cooperation in water resource related policies. Other locations include the design house in Hsinchu, Taiwan, overseas design houses, and sales offices (including San Jose, Houston, and Burlington in the US, Dusseldorf in Germany, Shenzhen in China, and Tokyo in Japan). Since the locations are all offices and do not engage in any production, there is no effect on operational risks. We established a standard process and procedures and examined water resource related risks through the environment management framework and company operational risk management framework, implementing related improvement measures and formulating emergency response plans, which are periodically examined in quarterly meetings of the Sustainability Promotion Center and Risk Management Steering Center.

To reduce the risk of short-term water shortages inherent in the geographical location, we have continuously promoted water-saving measures, and committed ourselves to water recycling to strengthen our adaptability. The amount of water needed by production is huge so water shortage will cause production interruptions, affecting the output and delivery. To mitigate immediate impacts caused by short-term water shortages, a cistern with a capacity of 43 million liters and two detention basins each with a capacity of 4.06 million liters have been built in the plant to effectively harvest rainwater during the rainy season. Moreover, Nanya and the adjacent factories of the Formosa Plastics Group have cooperated to set up an emergency response organization for water shortages. When water shortages occur, the members of the emergency response organization can urgently deploy water resources to support each other. Therefore, no production losses have occurred owing to water shortages.