Water Resource Management

Due to global climate change, rainfall in different regions of Taiwan has become increasingly polarized, resulting in both flooding and water shortages occurring simultaneously. Therefore, as a key member of the semiconductor industry, Nanya Technology has long been attuned to the water scarcity risks brought about by global climate change and deeply understands the impact that climate change and water can have on operations. To mitigate its environmental impact and the risks associated with water shortages, Nanya Technology continues to advance water conservation initiatives and is further committed to water reclamation and reuse. In 2023, the Company adopted the Alliance for Water Stewardship Standard (AWS), and was awarded AWS's highest certification level in 2024, Platinum, following its 2023 assessment. From the source of every drop of water to its use and final discharge, Nanya Technology practices pragmatic and effective water management to protect the ecosystem. Cherishing every drop of water, we continue to improve water usage efficiency while actively aligning with the international AWS standards and implementing the Five Outcomes to achieve sustainable water management in a systematic and ongoing manner.

Nanya Technology's efforts in water resource management have been recognized by international environmental evaluation bodies. From 2022 to 2023, the Company received an "A" leadership rating in the CDP Water Security category for two consecutive years. From 2022 to 2024, we also received the Taiwan Corporate Sustainability Award's Water Resource Management Leadership Award for three consecutive years. In 2024, the Company was awarded Platinum-level certification by the Alliance for Water Stewardship Standard, affirming its commitment to tackling climate change and water resource management while contributing to global sustainability goals.

Nanya Technology's Water Management Policy

A

Through employee training, organizational planning, and the implementation of water conservation and emergency response systems, we continuously optimize water resource management across our facilities.

B

We disclose quantifiable water performance indicators, with a core objective of continuously enhancing water usage efficiency.

C

Aiming to improve effluent quality, we continuously enhance our water treatment systems to reduce the impact of our operations on local basins.

D

Through environmental education and continuous monitoring, we strive to safeguard the health of vital water-related areas.

E

We have implemented comprehensive environmental hygiene measures and drinking water quality systems across our facilities to reduce the risk of infectious disease.

Nanya Technology's water resource management policies and requirements apply to all operational, R&D, and manufacturing sites. Matters related to water usage, conservation, and risk assessments are compiled annually and reported to the Board of Directors for review.

Actively managing water indicators and implementing conservation in operations to maximize the use of water resources.

Assessing risks and opportunities under climate change to mitigate the impact of water scarcity.

Engaging relevant stakeholders to promote awareness and conservation of water resources.

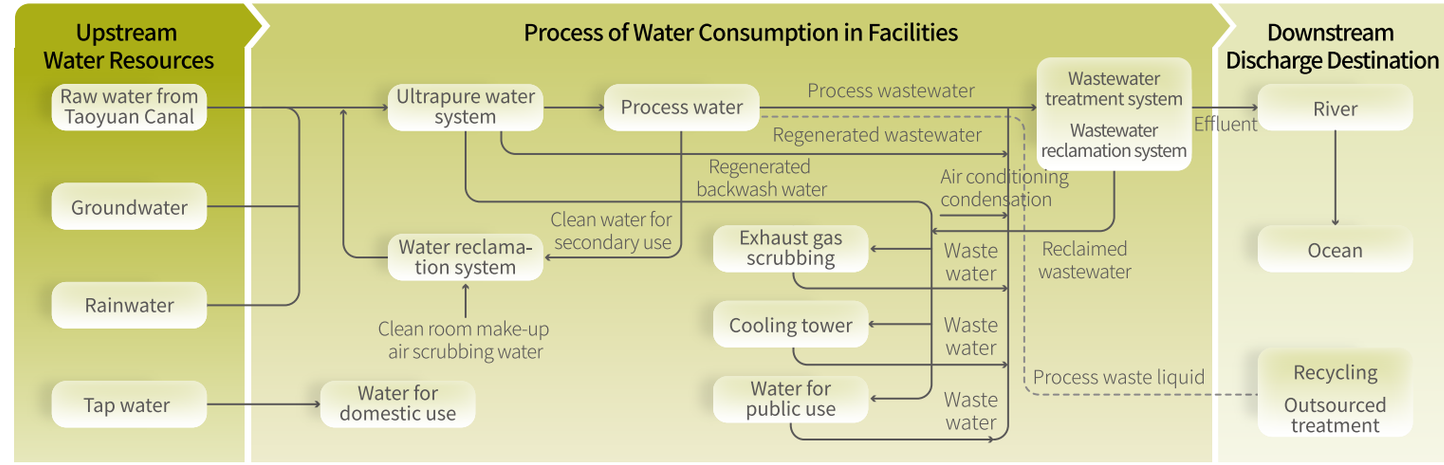
Implementing a categorized wastewater treatment system as well as multiple reclamation and reuse processes to maximize water utilization efficiency.

Complying fully with regulations and continuing to strengthen water treatment facilities to reduce the risk of environmental pollution.

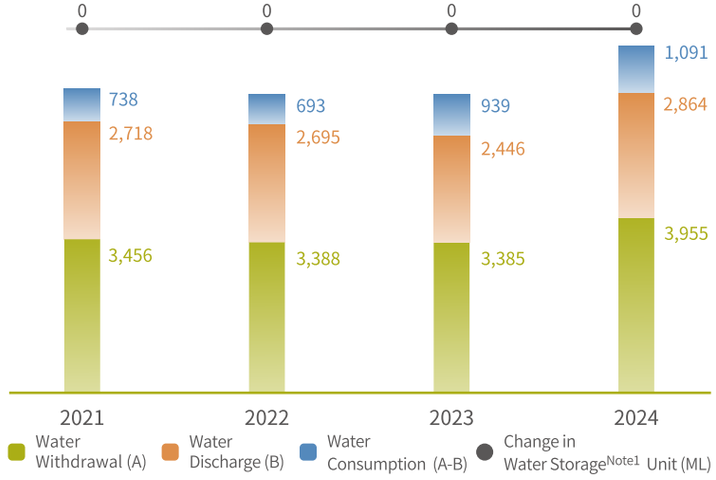
Water Resource Structure

In 2024, Nanya Technology's total water withdrawal was 3,955 million liters, primarily sourced from Taoyuan Canal (approximately 91.5%, or 3,619 million liters), followed by well water (approximately 7.9%, or 314 million liters), and tap water (approximately 0.6%, or 22 million liters). Rainwater has been recycled and reused over the years, but it was temporarily suspended in 2024 due to equipment changes for the expansion of new facilities. Nanya Technology's total water withdrawal in 2024 increased by 16.9% compared to 2023. Despite this, production capacity in 2024 decreased by 1.7% from 2023. In terms of water usage intensity, water consumption per unit of production capacity was 4.02 kiloliters/kpcs, an 18.8% increase from 2023. Total ultrapure water consumption in 2024 was 3,484 million liters, a 2.5% increase compared to 2023. In terms of water usage intensity, ultrapure water consumption per unit of production capacity was 3.54 kiloliters/kpcs, a 4.3% increase from 2023.

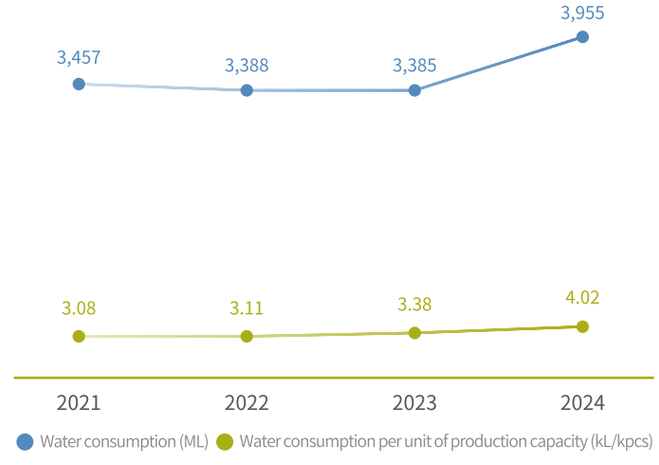
Nanya Technology's Water Usage Structure



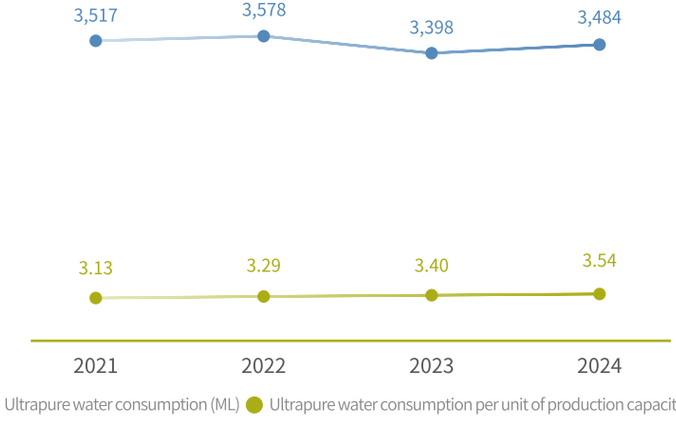
Nanya Technology's Water Consumption



2021-2024 Water Consumption Trend



2021-2024 Ultrapure Water Consumption Trend



Note 1: Change in water storage = storage on 12/31 of the year - storage on 1/1 of the same year

Water Resource Risk Management

Water Risk Factors	Assessment Boundaries	Stakeholders Considered	Assessment Methodology	Assessment Results and Responses
Water-related dependencies and impacts	• Nanya Technology's operational sites • Upstream supply locations • Downstream shipment locations	• Local residents • Government agencies • Suppliers • Customers	• The WRI Aqueduct Tool of the World Resources Institute (WRI). • The IPCC AR5 RCP8.5 scenario maps published by the Disaster Risk Adaptation (hereinafter referred to as "DR.A") platform of the National Science and Technology Center for Disaster Reduction (hereinafter referred to as "NCDR"). • We referred to the System of Environmental-Economic Accounting (SEEA) as we identified dependencies and impacts based on provisioning, regulating and support, and cultural services through interdepartmental workshops.	• A risk simulation analysis of water sources found that 91.5% of the Company's water supply comes from the Taoyuan Canal, which is fed by Shimen Reservoir. The current water stress level is low. Both the short-term and long-term (up to 2050) water stress risks are categorized as medium-to-low (10-20%), indicating that it is not located in a water-stressed region. • An assessment of 31 Taiwan-based supplier locations showed that 22 are situated in high-risk areas for flooding and drought (levels 4 and 5), mainly concentrated in central and southern Taiwan. • Among 23 shipment locations assessed for climate change risk (flooding), 15 were identified as high-risk. • Water is a critical ecosystem service on which Nanya Technology depends. The substantial water use in semiconductor manufacturing can also lead to additional impacts—from the competition for water with nearby communities or businesses to possible ecological degradation from overconsumption. • Nanya Technology discharges wastewater during its operations. Even if the wastewater discharged is compliant with regulations, it may still exceed the local environmental capacity, leading to biodiversity loss. • A supplier water resource sharing meeting was held in September 2024 to assist suppliers in water management and conservation measures. Around 30 suppliers attended the event. • In 2024, a total of 19 suppliers underwent on-site audit and guidance. 9 of them completed water conservation programs, resulting in annual water savings of 272 million liters. In 2025, 25 suppliers are expected to receive audits and support, with estimated annual water savings of 100 million liters.
Future Water Availability	• Nanya Technology's operational sites	• Local residents • Government agencies	• According to the TCCIP Climate Change Water Hazard Map, the Company will not face the risk of water scarcity under the RCP 8.5 scenario in the middle of this century (2036-2065).	• In northern Taiwan, the annual average rainfall is projected to increase by 12%, while spring rainfall may decrease by 5%. The Company's backup water supply exceeds the projected reduction in rainfall. Even if the water supply from the Shimen Reservoir declines during spring due to reduced precipitation, assessments show that production needs can still be met, with no risk of water shortage. • The Shimen Reservoir, which supplies water to Nanya Technology, provides about 800 million liters per day. The Company's daily water consumption is approximately 11 million liters, representing a regional water impact level of 1.38%. • We coordinate and communicate with the Irrigation Agency and the Northern Region Water Resources Branch of the Water Resources Agency. In times of water scarcity, we cooperate with government contingency plans to ensure effective utilization of water resources, reduce the impact of water shortages in supply basins, and maintain supply stability.

Water Risk Factors	Assessment Boundaries	Stakeholders Considered	Assessment Methodology	Assessment Results and Responses
 Future Water Quality	• Nanya Technology's operational sites	• Local residents • Government agencies	• Implementation of sustainable water management (AWS)	• All wastewater is separately collected and discharged to the appropriate wastewater treatment facilities. Over 20 distinct pipelines are used to segregate and convey different types of wastewater. To ensure that the quality of discharged water meets standards, real-time monitoring is conducted in coordination with the Environmental Protection Department, with sampling and analysis conducted every quarter by external contractors to further strengthen our wastewater quality control. • During typhoon season, sediment buildup during reservoir discharge increases turbidity in the Shimen Reservoir, which can affect water supply. However, the reservoir's multi-level intake project was completed in 2021, significantly mitigating high turbidity. In addition, a rapid sedimentation tank has been installed at our facility, capable of treating raw water with high turbidity (<10,000 NTU). Therefore, the risk of future water supply disruptions caused by water quality and high turbidity is considered low.
 Local Stakeholders	• Nanya Technology's operational sites	• Local residents	• The Shimen Reservoir, which supplies water to Nanya Technology, provides about 800 million liters per day. The Company's daily water consumption is approximately 10 million liters, representing a regional water impact level of 1.25%.	• The Company's production water primarily comes from the Taoyuan Canal, drawn directly under a water supply agreement with the Irrigation Agency, which manages the Irrigation Aqueduct. The agreement stipulates the volume of water to ensure supply stability and permits withdrawals beyond contract levels in emergencies, increasing water-use flexibility. • The Environmental Quality Supervision Committee: Every quarter, Nanya Technology commissions a third-party organization to conduct monitoring surveys on the local ecology, hydrology, and air quality around the facilities. The survey results are then reported to the Environmental Quality Supervision Committee. • Nanya Technology, in collaboration with nearby Formosa Plastics Group facilities, has established an emergency response organization for water shortages. Through this organization, facilities can coordinate emergency water allocation and support. To date, there have been no incidents of production losses due to water shortages.
 Water-Related Regulations	• Nanya Technology's operational sites	• Local residents • Government agencies	• Regulation on water conservation charges.	• In 2024, the Company achieved a water reclamation rate of 95.9%[Note], verified by a third-party certification body. This exceeds the government's industry benchmark range of 50%-85% and qualifies for the lowest announced rate. The estimated annual water fee increase is only around 3%, posing a minimal impact on operational costs. • Nanya Technology communicates with local residents and the public by disclosing information related to its water management, including real-time monitoring of effluent discharge, to address public concerns.

Note: The water reclamation rate for water conservation charge calculation is based on the formula specified by the Industrial Development Administration, Ministry of Economic Affairs.

Nanya Technology mainly sources its water from Shimen Reservoir, drawing it through the Taoyuan Canal for production use following treatment. The water is drawn independently using a gravity-fed system, which operates by gravity flow, ensuring no impact on the water resource ecology or other usage. Additionally, rainwater is collected for production use, and tap water is supplied for domestic purposes. Nanya Technology currently operates a single manufacturing facility located in New Taipei City, Taiwan. Due to the highly uneven geographic and seasonal distribution of rainfall in Taiwan, regional and seasonal droughts are common. Using the World Resources Institute's Aqueduct Tools, Nanya Technology assessed its water source—the Taoyuan Canal, which is fed by the Shimen Reservoir and supplies 91.5% of the Company's water. The current water stress level is low, and both the short-term and long-term (up to 2050) water stress risks are categorized as medium-to-low (10–20%). According to the Taiwan Climate Change Projection Information and Adaptation Knowledge Platform (TCCIP), under the RCP 8.5 scenario for the mid-century period (2036-2065), northern Taiwan is expected to see a 12% increase in annual average rainfall, though spring rainfall will decrease by 5%. In summary, the water sources at Nanya Technology's operational sites are located in areas with medium-to-low short-term risk, while the number of consecutive dry days in northern Taiwan may increase by 1.2-2 days on average in the future. The Company uses a large amount of water for its manufacturing processes—approximately 11 million liters of water daily. An increase in water shortage or droughts can elevate the risk of operational disruption.

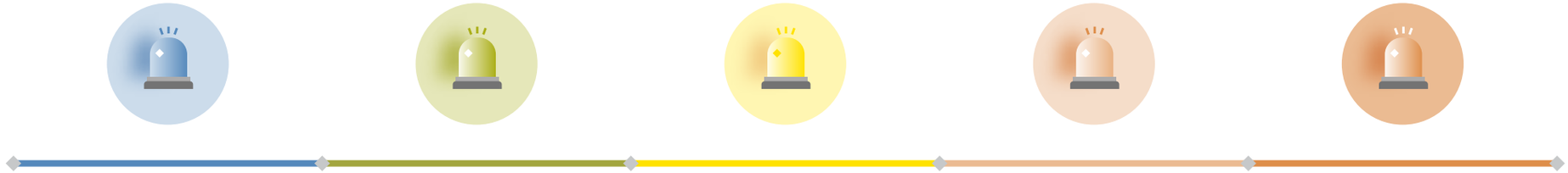
In line with international water security and management standards, Nanya Technology continues to strengthen its water management system and expand its water recycling capacity. The Company has established a robust contingency plan to mitigate the immediate impacts of short-term drought. The facility has a 43-million-liter water reservoir, a 0.5-million-liter detention basin for effective rainwater reclamation during the rainy season (temporarily suspended during FAB 5A construction), and seven wells. Nanya Technology also formed an emergency response organization for water shortages with neighboring plants of Formosa Plastics Group for mutual water-sharing support. Improvement work has been completed at the Shimen Reservoir watershed. The risk of service disruption due to turbidity from heavy rainfall has decreased. The Company can handle raw water turbidity up to 10,000 NTU, enabling it to manage most conditions. In terms of water reclamation and reuse, the effective treatment of acidic/alkaline wastewater, hydrofluoric wastewater, and organic wastewater using dedicated reclamation equipment led to the total volume of reclaimed water reaching 5,590 million liters in 2024. Through internal adaptation capacity and water recycling systems, Nanya Technology can operate for up to 21 days without an external water supply. As of now, there have been no production losses due to water shortages.

Nanya Technology continues to improve standard procedures and processes. It assesses water-related risks through its environmental and operational risk management frameworks, promotes related improvement measures, and formulates contingency plans. These are regularly reviewed by the Sustainable Development Steering Center and the Risk Management Steering Center at quarterly meetings. Moving forward, Nanya Technology will continue to enhance our capacity for water use and management. Newly constructed plants will include water regeneration centers, storage reservoirs, and backup water sources to address the uncertainties of climate change.

Diversified Water Sources to Reduce Production Risks

As part of the FAB 5A expansion, the Company has submitted a new application to the Taiwan Water Corporation for municipal water to be supplied for processes, with a daily volume of 11 million liters. Plans are also in place to construct 8 additional groundwater wells outside the facilities, providing 7.2 million liters per day. In addition, the municipal water supply from the Taishan facility will be integrated, along with upgrades to related equipment and pipelines, contributing another 2 million liters daily. The Company continues to monitor government initiatives for regenerated water. As there are currently no suitable regenerated water programs available in the vicinity of our facilities, we will remain attentive to future plans and adopt such initiatives when feasible.

Nanya Technology's Drought Response Mechanism



Water Situation Light	Blue (Normal)	Green (Water Supply Concern)	Yellow (Stage 1)	Orange (Stage 2)	Red (Stage 3)
Government Response Measures	Stable water supply	Enhanced water sourcing and moderately diversified distribution	Reduced water pressure during off-peak or designated hours	5-20% reduction in water supply to industrial users	Rotating or scheduled water suspension by zone or plant-wide
Nanya Technology's Response Measures	Water is drawn from the Taoyuan Canal to support production under normal conditions.	Water is supplied from the Taoyuan Canal, water reservoir, and 7 in-plant wells.	Water is supplied from the Taoyuan Canal, water reservoir, and 7 in-plant wells.	Water is supplied from the Taoyuan Canal, water reservoir, and 7 in-plant wells.	Water is supplied from the Taoyuan Canal, water reservoir, and 7 in-plant wells. If supply falls short, well water from the Group's Chang Gung Golf Course will be drawn to support water supply, coordinated by the corporate emergency response team.

Water Resource Conservation

In terms of water management, Nanya Technology prioritizes reducing water consumption and enhancing reclamation and reuse, while also designing water-saving processes. To improve water use efficiency, Nanya Technology has set a long-term water resource management goal to reduce water consumption per unit of production capacity by 37% by 2030 compared to 2017 levels. It is hoped that improvements to production processes and equipment can enhance water usage efficiency and water reclamation volume, as well as reduce water consumption. Water conservation efforts span all operational, R&D, and production sites, with the current focus outlined as follows:

A
Implementing programs to effectively conserve water.

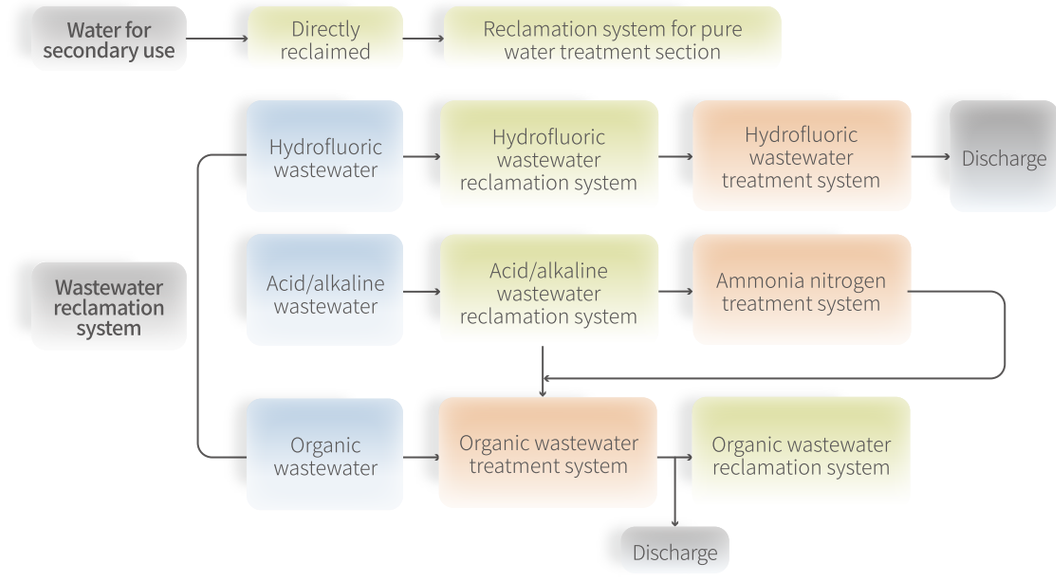
B
Achieving reductions through conservation methods such as reduction and reclamation.

C
Promoting savings through daily management practices.

D
Establishing a categorized wastewater treatment system and implementing multiple reclamation processes to maximize water utilization efficiency.

Nanya Technology actively implements a variety of water-saving measures and has intensified its water reclamation efforts in recent years. Our facility currently has reclamation systems in place for acidic and alkaline wastewater, hydrofluoric wastewater, and organic wastewater, complemented by various conservation initiatives. The reclamation rate continues to improve annually. In 2023, improvements and expansions to the hydrofluoric wastewater reclamation system at FAB 3AN were completed, along with the construction of a new COD and total nitrogen treatment system for hydrofluoric wastewater, which includes water reclamation functionality. We estimate these efforts will increase annual reclaimed water volume by 522 million liters. In 2024, the combined reclaimed water volume from wastewater reclamation systems, process reclamation systems, and pure water process wastewater reclamation reached a total of 5.59 billion liters, accounting for 141.3% of total water withdrawal.

Nanya Technology Process Wastewater Reclamation



In 2024, six water conservation programs were completed, yielding an annual water savings of 22,258 kiloliters. These include 1 involving switching to reclaimed water for certain equipment to boost reclaimed volume, 1 for domestic water conservation, 2 to reduce equipment operation, and 2 to improve water conservation efficiency for equipment.

Water Conservation Programs Completed in 2024

annual water savings of
22,258 kiloliters

In 2024, **6** water conservation programs were completed

- **1** involving switching to reclaimed water for certain equipment to boost reclaimed volume
- **1** for domestic water conservation
- **2** to reduce equipment operation
- **2** to improve water conservation efficiency for equipment

Project Description	Water Saving Effectiveness (kL/Year)	Share of Annual Water Savings
Replacing the hydrochloric acid scrubber in the ultrapure water system with reclaimed water	18,250	82.0%
Installing water-saving valves on sensor-activated faucets	1,196	5.4%
Water-saving initiatives through equipment parameter adjustments (2 programs)	466	2.1%
Water-saving initiatives through reduced equipment operation (2 programs)	2,346	10.5%

Water Conservation Programs to be Implemented in 2025

The estimated water-saving
benefit is **61,160** kiloliters/year

In 2025, a total of **8** water conservation programs will continue to be implemented

- **4** involving equipment and operational parameter adjustments
- **3** for reducing equipment water usage
- **1** expanding the application of reclaimed water to further increase reuse volume

Project Description	Estimated Water Saving Effectiveness (kL/Year)
Introduction of OWWR-II reclaimed water into the pure water system to increase reclaimed water use	45,000
Scrubber equipment parameter adjustment (4 programs)	13,103
Improvement of water-saving measures in cleaning empty chemical barrels (2 programs)	867
Water-saving improvements in acid exhaust scrubber tower	2,190

Collaboration and Dialogue

In addition to ongoing internal water resource management and evaluations, Nanya Technology actively enhances water use efficiency and promotes water conservation and reclamation. The Company engages in communication, dialogue, and collaboration with various stakeholders through a variety of channels. It also communicates with government agencies to learn about national water policies and infrastructure plans, facilitating further collaboration and fulfilling corporate responsibility. Nanya Technology also shares experiences with suppliers and provides guidance to encourage water conservation across the supply chain and create shared social value. Furthermore, we also communicates with local residents and the public, and disclose information about its water management to alleviate their concerns.

Subject	Communication, Dialogue, and Collaboration
Government Agencies	• We engage with the Semiconductor Industry Association and regularly attend Water Resource Diversification Management and Cooperation Platform meetings held by the Water Resources Agency to exchange ideas, communicate, and collaborate on water-related policies. • We coordinate and communicate with the Irrigation Agency and the Northern Region Water Resources Branch of the Water Resources Agency. In times of water scarcity, we cooperate with government contingency plans to ensure effective utilization of water resources, reduce the impact of water shortages in supply basins, and maintain supply stability. • We attend meetings on road surface improvement and pipeline coordination meetings hosted by Taoyuan City Government's Office of Road and Accessory Maintenance to learn whether construction interfaces might affect water supply. • In coordination with the Irrigation Agency, we participate in the Flow Monitoring Implementation Project by installing electronic flow meters with RS-485 transmission interfaces at the Taoyuan Canal intake point. These devices transmit real-time and cumulative water flow data to the Agency's cloud network, enabling real-time monitoring and accurate tracking of water usage. This facilitates precise water allocation by reservoir authorities and helps prevent water resource waste.
Suppliers	• Suppliers are required to sign a Corporate Social Responsibility Commitment. The Supplier Risk Assessment (SAQ) includes sections on water resource management and TCFD-aligned physical risk identification. A cross-comparison was conducted using IPCC AR5 RCP8.5 scenario maps published by the National Science and Technology Center for Disaster Reduction (NCDR) through its Disaster Risk Adaptation (DR.A) platform. Water resource risks were assessed for 19 significant suppliers to ensure they have water management measures and contingency plans in place for water shortages. On-site audits were conducted for high-risk and key suppliers, with corrective guidance provided to address any identified deficiencies. As a result, the Company has determined that physical risks of climate change pose limited impact to Taiwanese suppliers and are unlikely to cause production disruptions. • Through meetings with suppliers, the Company shares knowledge, engages in dialogue, and offers guidance on water management and conservation measures. Suppliers are encouraged to implement water conservation initiatives and enhance their water management measures. In September 2024, approximately 30 suppliers participated in such a session, aiming to draw from Nanya Technology's experience and jointly enhance water management practices across the supply chain. • Annual targets are set, and together with the ESG team, on-site audits and guidance visits are conducted at suppliers' facilities. In 2024, a total of 19 suppliers underwent on-site audits and guidance visits, with 9 suppliers completing water conservation projects, resulting in an annual water savings of 272 million liters. In 2025, 25 suppliers are expected to receive audits and support, with estimated annual water savings of 100 million liters.

Subject	Communication, Dialogue, and Collaboration
Local Residents	• Since its establishment, Nanya Technology has collaborated with the local community to form the Environmental Quality Supervision Committee. Every quarter, Nanya Technology commissions a third-party organization to conduct monitoring surveys on the local ecology, hydrology, and air quality around the facilities. The survey results are then reported to the Environmental Quality Supervision Committee. • The Company engages with the Environmental Quality Supervision Committee to understand community concerns and incorporates relevant issues into its ISO 14001 management system for regular evaluation. • To ensure that effluent water quality falls within normal parameters and to address concerns among residents in the discharge basin, Nanya Technology has implemented a real-time effluent monitoring system that is directly connected to the Environmental Protection Department, enabling joint real-time monitoring to ensure effluent water quality remains normal.
Corporations and the General Public	• By participating in various community activities, Nanya Technology can share its water management experience, for example, by hosting green factory tours and engaging in knowledge exchange with visiting officials and companies regarding Nanya Technology's water management practices and water-saving achievements. • Water and energy conservation experts are assigned with the help from the Energy and Water Conservation Service Team within participating companies of the Group and collaborate with specialists from other Group companies to provide on-site guidance and conduct inspections at various facilities, including those of the Company. These efforts span Formosa Plastics Group's facilities in northern, central, and southern Taiwan, with the goal of enhancing water and energy conservation performance across all facilities through expert audits and targeted support. • Since 2019, the Company has operated a YouTube channel, using content such as vlogs, animations, and edited videos to present topics including corporate image, sustainability, manufacturing processes and products, employee well-being, and social engagement—enhancing the richness and immediacy of communication. Among the content, the animated video *Environmental Sustainability—The Source of Water* communicates Nanya Technology's commitment to water resources and recycling. This video stood out among nearly ten thousand global entries and was honored with the 2021 iF Design Award in Germany. • Since 2023, Nanya Technology has also published its *Alliance for Water Stewardship Report* via its official website (Corporate Sustainability ESG) (https://www.nanya.com/ESG/storage/file/f4723d72-7a43-4f49-9979-f3f00b1c49af?v=1709694452).