



3

Commit to Sustainable Environment

- Environmental Management Responsibility
- Climate Change and Energy Management
- Water Resources Management
- Pollution Prevention

Chapter 3. Commit to Sustainable Environment

The Global Risks Report published by the World Economic Forum every year indicates that extreme climate incidents had been the issues of the highest occurrence for three consecutive years and the climate action failure is the environmental issue that brings about the most serious impact in the 2020 report. The result of this research not only demonstrates the high environmental risk in the current circumstances, but also reflects the increasingly stricter environmental protection policies and regulations of the governments in the world. Most of the ingredients/materials in the food manufacturing industry come from nature, and Uni-President's production processes are involved with various environmental issues. Thus, we attach great importance to the recent development of various environmental topics around the world and the environmental impact caused by our production process. We manage environmental topics based on "beyond regulations," and actively engage in various environmentally friendly activities in the hope of sharing our experience and technology within the value chain, and contributing to sustainable environment with our leading position.

Targets for management	Achievement rate	2019 key achievements	2020 goals	Mid- to long-term target
Climate change and energy management				
An average annual electricity conservation rate of 1% and above for every factory	◎ (Already achieved)	An average electricity conservation rate of 2.27%	An average annual electricity conservation rate of 1% and above for every factory	
85% of steam is generated by natural gas boilers	△ (In progress)	Achievement rate 90.6%	90% of steam can be generated by natural gas or biomass boilers	
The average carbon emission intensity lower than 120 tCO ₂ e/ MT production for every factory	◎ (Already achieved)	The average carbon emission intensity was 119.47 tCO ₂ e/ MT production	<ul style="list-style-type: none"> The units that reached the targets in the previous year need to reach the target of reducing 1% of 2019 average carbon emission intensity The units that didn't reach the targets in the previous year need to reach the target of reducing 2% of 2019 average carbon emission intensity 	<ul style="list-style-type: none"> An average annual electricity conservation rate of 1% and above for every factory >1% GHG emissions will have reached 80% of 2005 level by 2025 (189,221.6 tCO₂e)
Continue to promote energy conservation and carbon emission reduction programs	◎ (Already achieved)	Combined reduction programs total <ul style="list-style-type: none"> Reduced 5,212 tCO₂e Saved electricity 5,728 thousand kWh Saved fuel oil and diesel 54 kL Saved natural gas 252 thousand m3 	Continue to promote energy conservation and carbon emission reduction programs	
Water resources management				
Supervise water condition to ensure stable production	◎ (Already achieved)	No production loss due to water scarcity in 2019	Supervise water conditions and continue to optimize response measures and management mechanisms	Supervise water conditions and continue to optimize response measures and management mechanisms
Enhance the efficiency of water consumption	◎ (Already achieved)	Annual saved water amount was about 144 million liters, with the reduction of 3.67 million NT dollars in management cost	Continue to optimize the efficiency of water consumption in each factory and introduce reduction programs	Continue to optimize the efficiency of water consumption in each factory and introduce reduction programs
Annual COD average intensity < 70 mg/L	◎ (Already achieved)	Annual COD average intensity 32.87 mg/L	Annual COD average intensity < 70mg/L	Annual COD average intensity < 65mg/L
Pollution prevention				
Annual waste recycling rate 95.5%	◎ (Already achieved)	Waste recycling rate 95.98%	Waste recycling rate > 95.5%	Waste recycling rate > 96.5%
Reduction in air pollutant emissions	△ (In progress)	Continued improvement in boiler equipment, and switching to natural gas boilers	Completely switching to natural gas or biomass boiler equipment in all plants	Continue to supervise the status of air pollutant emissions, and actively introduce reduction programs

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3.1 Environmental Management Responsibility

Material topic	Environmental impact from business operations, Compliance
 <p>Policy and commitment</p>	<p>Develop the environmental management policies covering six aspects of "Legal Compliance, Pollution Prevention, Green Procurement, Performance Management, Communication Mechanism, and Continual Improvement" as the highest guidelines of environmental management.</p>
 <p>Target</p>	<p>Develop the annual management goals based on the management items of energy conservation, carbon reduction, waste reduction, and wastewater discharge reduction to minimize the impact on the operating environment. (Refer to the Key Achievement for the target achievement status)</p>
 <p>Responsibility and resource</p>	<ul style="list-style-type: none"> An EHS team is established at each production plant and takes the responsibility for proper execution of the internal environmental management system Inter-department teams are established to conduct project-based management with regard to energy, water resources and other related issues NT\$376.65 million was invested in environmental protection matters in 2019
 <p>Action plan</p>	<ul style="list-style-type: none"> Introduce ISO 14001 and all the documents and operating processes are subject to inspection of a third-party certification institution on a regular basis Build a green procurement system and explicitly incorporate the priority in purchasing green products in the procurement policy Establish a green energy management center within the Group to collectively plan the promotion of the green energy related projects within Uni-President and its respective affiliates The project management team of energy and water resources develops emergency response mechanisms and conducts risk assessment on a regular basis The production plants introduce the energy conservation, carbon reduction, water saving and waste recycling projects to reduce the impact on the environment due to production
 <p>Evaluation of the management approach</p>	<ul style="list-style-type: none"> Continue to maintain the effectiveness of the ISO 14001 management system Comply with relevant laws and regulations Review the annual achievement rate of the energy conservation, carbon reduction, waste reduction, and wastewater management goals
 <p>Grievance mechanisms</p>	<ul style="list-style-type: none"> Develop environmental communication and management procedures; the Administration and the environmental protection team are responsible for internal and external communication matters. Stakeholders may report environment related matters by dialing the contact phone number of the plant. When receiving relevant messages, the plant shall start the communication and management procedures and handle the issue according to its type and relevant matters, and give a response accordingly.

3.1.1 Environmental management mechanism

For overall environmental management, Uni-President adopts Group management which comprehensively takes into consideration the trend of international environmental issues and direction of environmental policies in Taiwan, integrates key issues encountered by the Group and its respective affiliates, and improves the overall environmental impacts on the operation of Uni-President. We conducted ISO 14001 environmental management systems as our management basis, and appointed third-party verification units to be responsible for the regular review of documents and operating procedures to ensure correct implementation of the plant's internal environmental management system. For environmental risks that require active management, we have set up management teams for project management on matters related to climate change, energy and water resources.

Uni-President has six aspects of environment management policies as the highest principle guiding environmental management. Currently, all the general factories in Taiwan have passed the new environmental management system ISO 14001:2015 certification, while each general factory has further set annual targets and action plans for the company's priorities in order to continuously improve environmental management performance.

Uni-President environmental management policies

<p>Legal Compliance</p> <ul style="list-style-type: none"> Follow the environmental protection regulations of the government and the concerns of the stakeholders. The heads at all levels shall take supervision 	<p>Pollution Prevention</p> <ul style="list-style-type: none"> Implement source management right at the product development stage to mitigate ecological and environmental impact. Establish an environmental management system and implement greenhouse gases inventory 	<p>Green Procurement</p> <ul style="list-style-type: none"> Establish a green procurement mechanism Purchase green ingredients/materials in priority
<p>Performance Management</p> <ul style="list-style-type: none"> Establish environmental protection and improvement goals and implement performance management Disclose performance management status on a regular basis 	<p>Communication Mechanism</p> <ul style="list-style-type: none"> Establish communication and consultation channels to facilitate delivery and understanding of information Disclose environment-related information outward and make improvements with reference to the opinions of the stakeholders 	<p>Continual Improvement</p> <ul style="list-style-type: none"> Organize educational training continuously to enhance environmental protection awareness among employees Enhance the environmental protection system and regulations and implement systematic management

Main targets, and programs of ISO 14001 in 2019

Targets for management	Programs	Annual management achievements
Enhancement of environmental protection concepts	Conducted environmental and general training	80 man-hour/year
	Issued environment and safety information	12 issues/year
Legal compliance	Implemented internal Level 3 auditing of environmental protection parameters	119 deficiencies were identified with respect to the issues of air pollution, drinking water, toxic chemicals, wastewater, and waste; all the plants have made improvement for these deficiencies
Improvement of the working environment	Mitigated odor at the wastewater treatment plant	The test of order was less than 50
	Improved discharge at waste treatment plants	Additional exposed and concealed drains were constructed
Reduction of wastewater/waste	Improved reuse rate of cooling water in tank frames	<ul style="list-style-type: none"> Reduced wastewater by 240,067.5 tons/year Reduced trash ice by 3% Reduced fodder waste by 320 kg/year
	Improved sugar dissolution rate	
	Reuse of RO water	
	Improved setup of ice maker screen mesh	
	Optimized pre-cooling and defrosting	
Reduction of energy consumption	Improved energy efficiency at sterilization stations integrated with PE line production processes	Saved 687,875 kWh/year
	Updated energy reduction projects for refrigerating compressors	
	Replaced freezer units	
	Improved UASB tank return sludge pumps	

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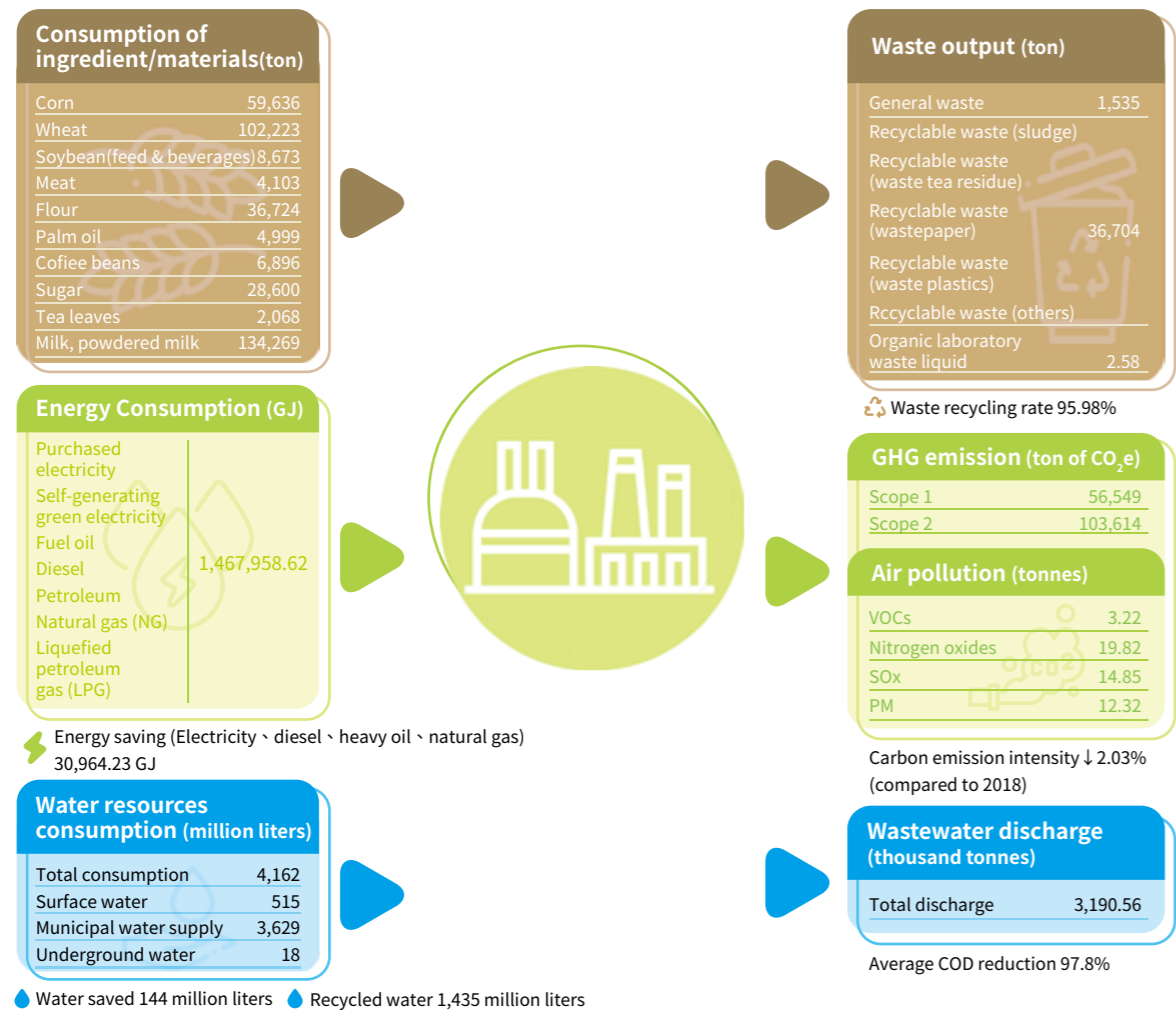
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Uni-President's environmental footprint in 2019

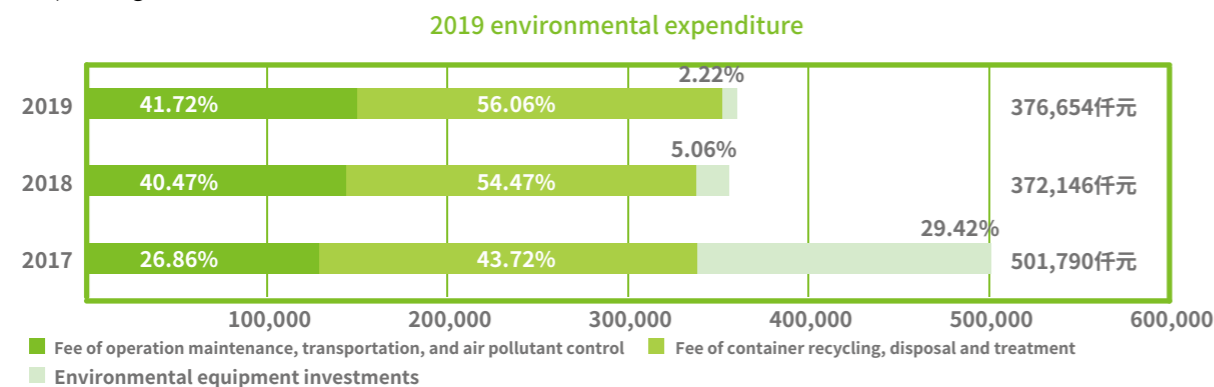


3.1.2 Green procurement

Green procurement is an essential part of the environmental management policy. Thus, we have established a green procurement mechanism, and clearly stated in the procurement policy to prioritize the procurement of green products as well as focus on environmental protection and energy conservation in the supply chain, with the aim to gradually reduce environmental impacts caused by factory operations. Since 2013, Uni-President has been awarded the Private Enterprise Green Procurement Excellence Award by the Environmental Protection Administration of the Executive Yuan for six consecutive years. The total green procurement amount was NT\$118 million in 2019.

3.1.3 Environmental expenditure

In 2019, we invested NT\$376.65 million in environmental protection mainly for the annual operation maintenance fees and administrative charges. There was no major investment in environmental protection equipment. In 2017, we invested NT\$125.38 million to improve wastewater and waste treatment plants. Both projects were completed and operating in 2019.



3.1.4 Legal Compliance

In 2019, there was one environmental violation with fines NT \$ 6000 and one non-compliance with the requirements of Tainan City Low-Carbon City Self-Governance Ordinance with fines NT\$ 48,000. Major nonconformities include inconsistencies with the contents in the waste disposal plan and the failure to install PV facilities at 10% contract capacity. The reasons and corrective actions of offences are tabulated below:

Reasons and Corrective Actions for Offences in 2019

Offence	Waste Disposal Act	Tainan City Self-Government Ordinance for a Low-Carbon City
Plant	Yongkang	Yongkang, Xinshi, Xinying Frozen Food, Matou Bakery
Reason	Mar 8, 2019: The Southern Branch BE of the EPA found that the code on the scrapped disposable bowls was inconsistent with that in the waste disposal plan.	Violation of Article 23 of the Ordinance: Failure to complete PV facilities at 10% of the contract capacity before Dec 28, 2017.
Sanction	Fine NTD 6,000.	Fine NTD 48,000.
Corrective Actions	1. Updated the waste disposal plan on June 18, 2019. 2. Enhanced internal audits and audited the waste disposal plan and operations management SOP of all plans to prevent the recurrence of the same mistake.	Active feasibility assessment of the construction of facilities using renewable energy is in progress. Facilities will be installed by law after the enactment of the enforcement rules for the Renewable Energy Development Act for high electricity users.

3.2 Climate Change and Energy Management

The Global Risks Report published by the World Economic Forum in 2020 indicates that the "climate action failure" is the risk that has a high occurrence rate and the most extensive impact in the year. Many governments or organizations in the world announced the "climate emergency" state in 2019; that is, emergency actions must be taken to mitigate climate change in order to avoid irreversible environmental damage. It is obvious that the issue of climate change is important to the global development and the operation of enterprises in the future. Hence, we actively improve the management of climate change and energy and take specific actions to reduce operational impact, responding to the concerns of the stakeholders and making contributions to the mitigation of climate change.

3.2.1 Climate change and energy management strategy

In the face of potential risks of climate change, we have set up an inter-departmental energy management team, and promote the energy management of each factory under classified management based on three aspects, including the organization, business operations and products. Under government and market expectations for green energy applications, Uni-President and its affiliates officially established the "Green Energy Management Center" in 2018 to coordinate and manage promotional programs related to green energy from the perspective of group management, and appointed professional technicians to be responsible for energy saving technologies in each company. In terms of business operations and product, we integrated ISO-related management systems in order to manage risks, Uni-President's current status, as well as for energy saving and carbon reduction programs, which thereby reduce our dependence on non-renewable energy, and enhance the capability of climate change adaptation.

Management strategy of climate change issue

Risk Control

- Risk identification and response in policies/regulations
- Evaluation of physical risks
- Establishment of countermeasures and implementation of drills

GHG and Energy Inspection

- Inventory and performance evaluation of annual energy consumption and greenhouse gas emission of the organization
- Evaluation of product carbon footprints

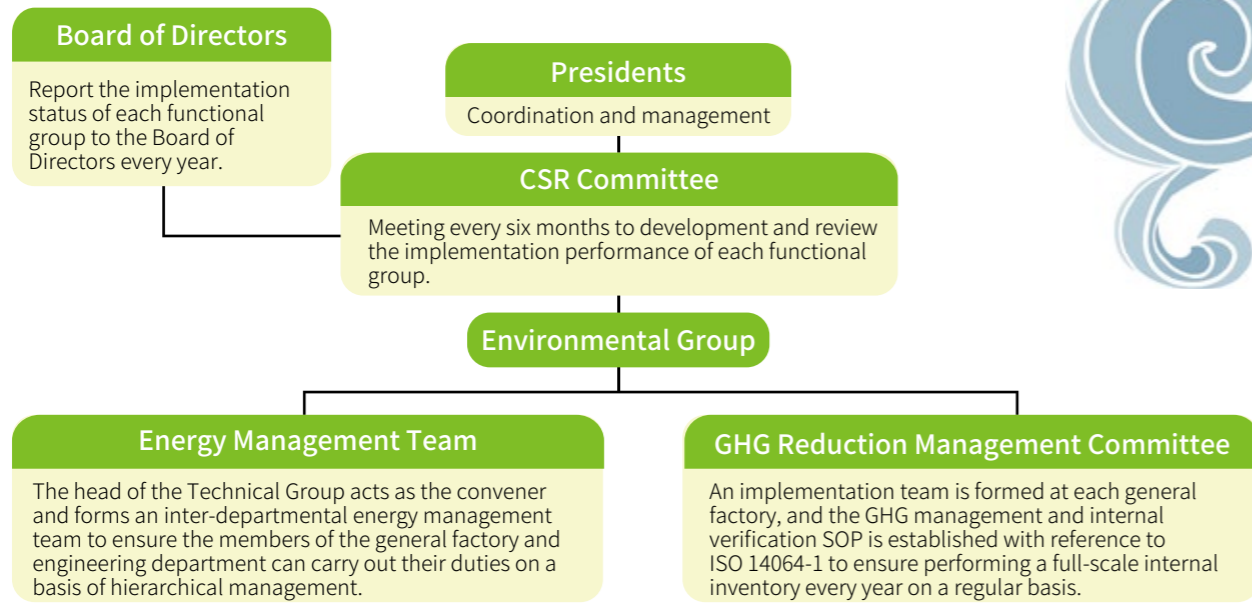
Implement of Energy Saving Projects

- Implement of energy saving projects within the plant
- Renewable energy usage

• **Climate Change and Energy Risk Management Mechanism**

To implement the greenhouse gas and energy management at the plant effectively, we appoint the Environmental Group of the CSR Committee as the senior management unit and, via the inter-departmental energy management team and the GHG Reduction Management Committee, ensure all the units of the general factory and engineering department perform their duties properly. The CSR Committee shall report the important implementation performance of the Environmental Group to the Board of Directors on a regular basis every year.

Governance structure of climate change and energy risk in Uni-President



Climate change and energy risk management process



• **Risk identification and response**

In consideration of the increasingly serious physical risk, the regulations and policies deriving from response to climate change, and the risk in the low-carbon transition process, we identify the process according to ISO 14001 environmental topics and make operation-related assessment with respect to the amendment of the regulations and policies every year. Now, we have identified potential risk issues and developed relevant response actions. However, as the climate change and energy issues are more emphasized and the business operation becomes more uncertain, we will make impact assessment for each risk issue to understand its short-term, mid-term and long-term effect on the business operation of Uni-President and the impact on the business, strategy and financial planning of the company.

Identification of climate change and energy risks and response actions

Source	topics	Response actions
Transition (Response to regulations/policies)	<ul style="list-style-type: none"> Greenhouse Gas Reduction and Management Act Energy Administration Act Renewable Energy Development Act Changes in carbon emission factors due to the structure of national energy 	<ul style="list-style-type: none"> Formation of an energy management team and GHG Reduction Management Committee for monitoring of energy consumption and GHG emissions Setup of the targets and promotion of the measures for energy saving and carbon reduction Implement of the ISO 50001 Energy Management System Establishment of the Green Energy Management Center to coordinate and manage green energy programs, and actively assess the applicability and relevance of extending the use of renewable energy Execution carbon footprint inventory to assess about highly emissions suppliers
Transition (Market)	<ul style="list-style-type: none"> Increasing procurement cost due to raw materials shortages 	<ul style="list-style-type: none"> Attempts to increase the proportion of the local procurement of raw materials Seeking alternatives on diversified suppliers
Physical	<ul style="list-style-type: none"> Extreme weather events, such as droughts or floods 	<ul style="list-style-type: none"> Established the SOP of natural disaster response and drilling emergency response regularly. Formation of water condition response teams to monitor and enhance the efficiency of water consumption

• **Enhance the performance review and set an award mechanism and the standard for internal carbon pricing**

In addition to setting the targets for management and annually reviewing the achievements of each factory by the energy management team, we also have an incentive scheme for energy management to encourage the improvement of management. We divide each factory into teams based on their operational characteristics and energy expenditure. For those who achieve daily management and annual energy saving targets, the plant will get incentive awards. In addition, in order to directly link carbon reduction with operating costs, we annually review the trend of international carbon pricing, which is the basis for calculating the efficiency of carbon reduction in each factory, and is an important reference for managing our internal operations.

3.2.2 Energy consumption and GHG emissions management performance

In support of the national and global policies, we set 2005 as the base year for the GHG reduction and energy management in accordance with national policies of Taiwan. The short-term target focuses on energy and carbon intensity control, and the long-term target stresses the total cap of the emissions.



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Targets and Status of GHG Reduction and Energy Management

	Annual targets for management	Target achievements
2019	The annual average electricity saving rate of each general factory is up to 1% and above	◎ (Already achieved) (An average electricity saving rate of 2.27%)
	Reduce carbon emission intensity by a minimum of 2% compared to 2017 for each plant (The average target of the entire company in 2019 was 120 tCO ₂ e/MT production)	◎ (Already achieved) (The average carbon emission intensity is 119.47 tCO ₂ e/MT production)
	85% of steam is generated by the natural gas boiler	△(In progress) (Achievement rate of 90.6%)
2020	The annual average electricity saving rate of each general factory is up to 1% and above	
	90% of the steam coming from natural gas or biofuel	
	<ul style="list-style-type: none"> The departments that achieved the target value in the previous years shall set the goal to reduce the average carbon emission intensity of 2019 by 1% The departments that did not achieve the target value in the previous years shall set the goal to reduce the average carbon emission intensity of 2019 by 2% (The factory daily average target in 2020 is 117.75 tCO₂e/MT production) 	△(In progress)
2020-2024	The annual average electricity saving rate of each general factory is more than 1%	△(In progress)
2025	Reduce to 80% (189,221.6 tCO ₂ e) of the 2005 emissions volume ^{Note 1} by 2025.	△(In progress))

Note 1: 2005 annual carbon emissions were 236,527 tCO₂e.

"Energy Saving Benchmark - Marching toward the Future" Hukou plant won the silver medal of the 2019 MOEA Energy Saving Benchmark Award

The Hukou plant has the first factory building of Uni-President designed and planned based on the concept of green buildings. The plant is the pioneer in the introduction of the ISO 50001 Energy Management System and improves the energy utilization efficiency effectively by establishing internal systems and execution of guidelines. Hukou plant won the silver medal of the 2019 MOEA Energy Saving Benchmark Award



[Highlighted Energy Saving Project]

- Improvement of the air pressure loop pipes at the baking factory: The air pipes of the air compressor at the factory are designed based on a looping concept. This ensures a more stable and smoother operation of the packaging equipment, and the pressure supplied by the air compressor is reduced by 6.4% to save energy effectively.
- Saving of the indoor lighting energy at the water treatment plant: Existing lamps were replaced with light guiding systems to make use of the outdoor sunlight and save energy.
- Optimization of dough temperature reduction at the food factory: Improving the process and saving energy by replacing the equipment within plate cooling approach.

• Energy consumption

In 2019, Uni-President's main energy source was electricity (47.68%), followed by natural gas (45.84%) and fuel oil (4.93%), with a total energy consumption of 1,467,927.38 GJ^{Note 2}, which was higher compared with 2018 owing to increased production. Due to gradual replacement of fuel oil boilers with natural gas boilers, the consumption of natural gas increased, and the annual energy consumption was affected as a result.

Note 2: The calorific value conversion factor is based on the latest calorific value of energy products announced by the Bureau of Energy of the Ministry of Economic Affairs.

In addition, to reduce the indirect GHG emitted from electricity use, we are considering the feasibility of replacing electricity with solar energy along with wind power streetlamps in existing factories. Since the development of renewable energy in 2010, we have generated 115,967 kWh of green energy in 2019.

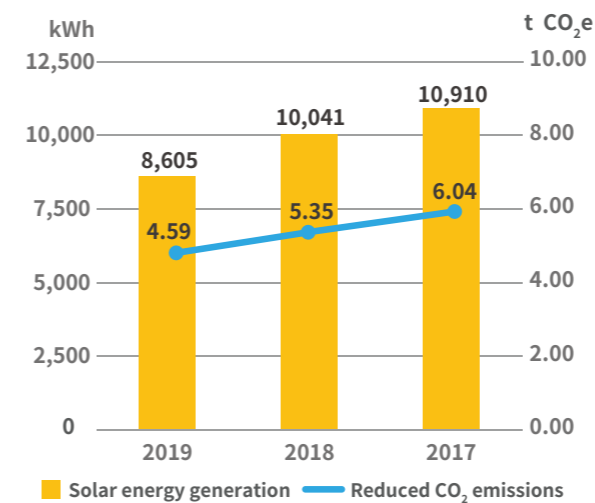
Energy consumption

Type of Energy	Unit	Energy consumption		
		2017	2018	2019
Purchased electricity	thousand kWh	181,303	184,652	194,398
Self-generating green electricity (solar energy and wind energy)	kWh	10,959	10,116	8,675
Fuel oil	kL	2,298	1,823	1,800
Diesel	kL	561	538	522
Biodiesel	kL	2.39	0.00	0.00
Petroleum	kL	145	134	125
Natural gas (NG)	thousand m ³	18,878	19,583	20,090
Liquefied petroleum gas (LPG)	kL	11	11	10
Consumption of non-renewable energy	GJ	1,402,250.45	1,417,662.64	1,467,927.38
Consumption of renewable energy	GJ	39.46	36.43	31.24

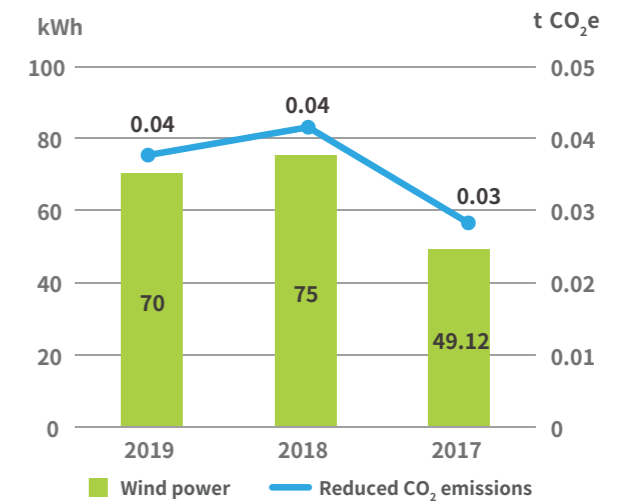
Note: The purchased energy is calculated according to the energy bill, while self-produced energy is calculated according to the results of the meter record.

Note: The calorific value conversion factor is based on the latest calorific value of energy products announced by the Bureau of Energy of the Ministry of Economic Affairs.

Renewable energy generation (solar)



Renewable energy generation (wind)



Note: Given that the Bureau of Energy has not announced the 2019 emission factor in the statistical period, we calculated the carbon emissions in 2019 based on the 2018 factor of 0.533 kgCO₂e/kWh, while carbon emissions in other years are based on the statistical announcement.

• GHG emissions

Uni-President's 2019 annual GHG emissions were 160,163 tCO₂e. The GHG emission intensity was 119.47 tCO₂e/MT production and reduced by 2.03% compared to 2018. In order to achieve the emission reduction goals efficiently, the Energy Management Team conducts reviewing with regard to the general factories that did not achieve the goals and adjusts the goals with reference to the historical implementation status.

GHG emissions

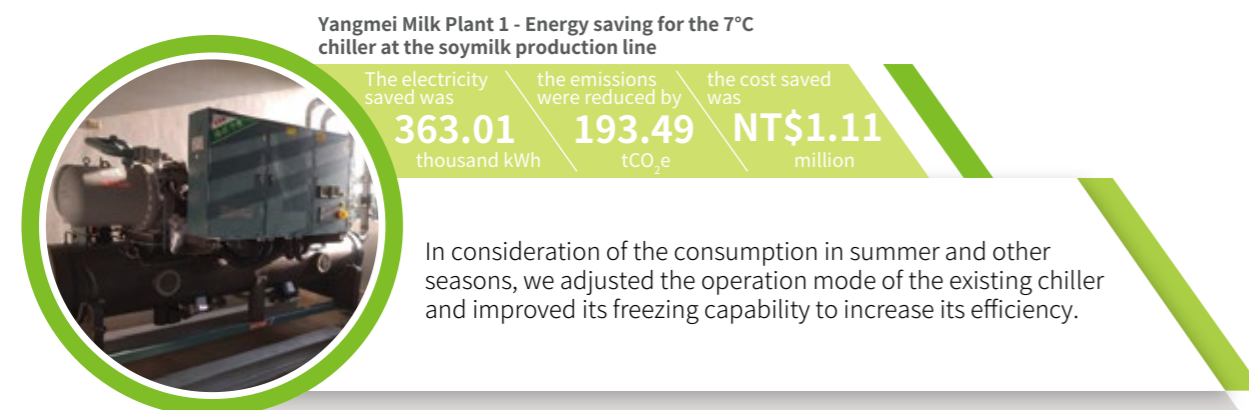
Type	Unit	2017	2018	2019	difference rate between years
Scope 1	tCO ₂ e	56,544	57,356	56,549	↓ 1.41%
Scope 2	tCO ₂ e	95,894	102,151	103,614	↑ 1.43%
Total GHG emissions	tCO ₂ e	152,438	159,507	160,163	↑ 0.41%
Biogenic CO ₂ emission	tCO ₂ e	6.12	0	0	-
GHG emissions intensity	tCO ₂ e/MT production	116.5	121.95	119.47	↓ 2.03%

Note:1. According to 14064-1 requirements, it took method of operation control to inventory GHG emissions by the boundary covers the Yongkang general factory and the Xinshi general factory (including the ice plant and cold food factory), the Taichung General factory, the Yangmei General factory (including the mineral water factory), the Zhongli General factory (including the Madou bread factory), TMR, logistics warehouses, the Taipei Branch, and the Hukou factory.
 2. Greenhouse gas types: CO₂, CH₄, N₂O, HFCs, SF₆
 3. Referring to Taiwan's GHG management policy, we set up the based year in 2015 and the total GHG emissions (Scope1 & Scope2) is 236,527 tCO₂e
 4. The emission factors is based on the information published by Environmental Protection Administration Executive Yuan, R.O.C. (Taiwan).
 Moreover, given that the Bureau of Energy has not announced the 2019 emission factor in the statistical period, we calculated the carbon emissions in 2019 based on the 2018 factor of 0.533 kgCO₂e/kWh, while carbon emissions in other years are based on the statistical announcement.

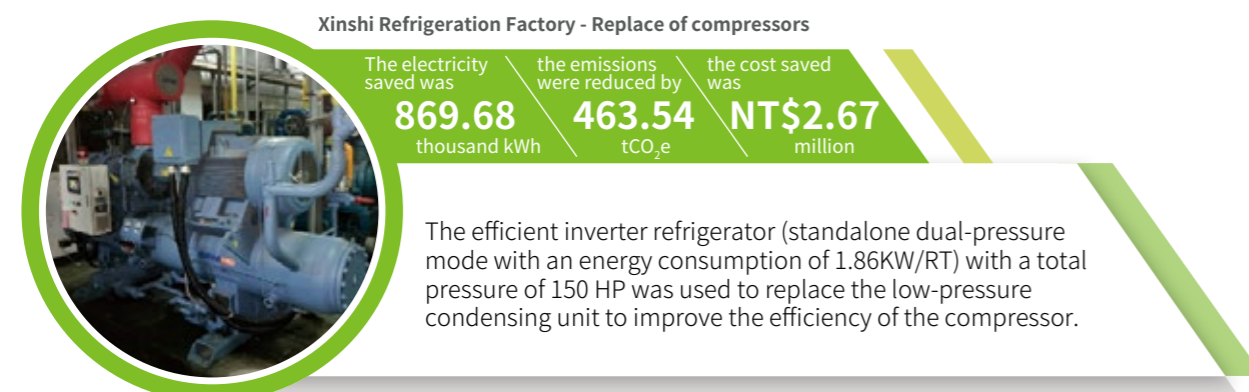
3.2.3 Conservation action

In order to achieve mid- and long-term reduction targets, we gradually replace fuel oil with natural gas which reduces air pollution, coupled with the implementation of annual energy-saving programs including equipment replacement, equipment parameter optimization and production process control. In 2019, the total energy-saving programs in each factory reduced 5,212 tCO₂e emissions and saving NT\$33.47 million.

2019 representative energy conservation projects



Note: The annual energy saving estimate is compared with the annual unit energy consumption before the project is executed.



Note: The annual energy saving estimate is compared with the annual unit energy consumption before the project is executed.

3.3 Water Resources Management

Uni-President has multiple products and has a high dependence on water in the process of manufacturing juice, tea, milk and other beverage products. Although there is sufficient rainfall in Taiwan, water resources are unevenly distributed, and on top of that, climate change has recently intensified torrential rain and water depletion, which increases the complexity of water management. Thus, we regard water as a major environmental and operational issue, and will dedicate efforts to improve our resilience and adaptation on water resource management.

3.3.1 Water resource management strategy

To avoid different risks in water resources, Uni-President has three perspectives, including resource development, resource saving and emergency response, and manages water resources based on the energy management team's hierarchical management system. We also held regular meetings to discuss issues related to water resources, set up policies, and review the performance of water conservation, as well as integrate water conservation concepts into details of planning, design, production and working environment via various means such as posters, slogans and training courses.



Water resource risk identification and response

Uni-President's products are closely linked with water resources, especially at the raw material and manufacturing stages in the overall value chain. Part of the raw materials come from crops, and water as an integral part of the products is crucial for production. Though the rainwater in Taiwan is abundant, the long-term water condition in Taiwan is unstable due to the substantially uneven distribution of rainwater in terms of space and time and the running water supplied from reservoirs as the water source. To understand more about the water source risk and impact on the environment, we refer to the research information published by the National Science and Technology Center for Disaster Reduction to understand the potential drought risk of each water source and identify the overall water consumption risk of each factory with reference to the 2019 water consumption data as supporting evidence, indicating that the understanding of water conditions and adaption of production are the major points of the management.

Analysis of water consumption risk in plants

	Yangmei plant	Zhongli plant	Hukou plant	Taichung plant	Yongkang plant	Xinshi Plant
Water condition risk (Note 1)	Shihmen Reservoir	Shih men Reservoir	Baoshan Reservoir	Liyu Carp Lake Reservoir	Nanhua Reservoir	Wushantou Reservoir Tsengwen Reservoir
Water consumption percentage (Note 2)		0.2%	0.51%	0.01%	0.12%	0.3%
Overall water consumption risk (Note 3)						

Low risk Moderate risk High risk

Note 1: Water condition risk data: Refer to the Disaster Risk Adaption by National Science and Technology Center for Disaster Reduction <https://dra.ncdr.nat.gov.tw/Frontend/Disaster/RiskDetail/BAL0000022>

Note 2: Water consumption percentage: Water consumption of the factory in 2019/water supply data published by the reservoir in 2018

Note 3: Overall water consumption risk: The risk level identified after the comprehensive assessment with reference to the data of water condition risk, water consumption percentage, and the operating experience of each factory over the past years.

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Risk and adaption of water resources

Source	topics	Response actions
Legal	<ul style="list-style-type: none"> Response to laws and regulations Regulations governing the imposing of water conservation charge (draft) Water Pollution Control Act 	<ul style="list-style-type: none"> Establish water condition response teams to closely monitor water consumption in each factory and water condition in all areas Acquire green building certification for all new factory buildings Invest in and upgrade environmental equipment Target setting and supervision of water quality
Disasters	<ul style="list-style-type: none"> Insufficient water resources Increased possibility of rainstorms and floods 	<ul style="list-style-type: none"> Established the SOP of natural disaster response and drilling emergency response regularly Promoting water conservation projects to enhance water use efficiency Equipping all new factory buildings with the stormwater harvesting system Establishing a water rationing response plan

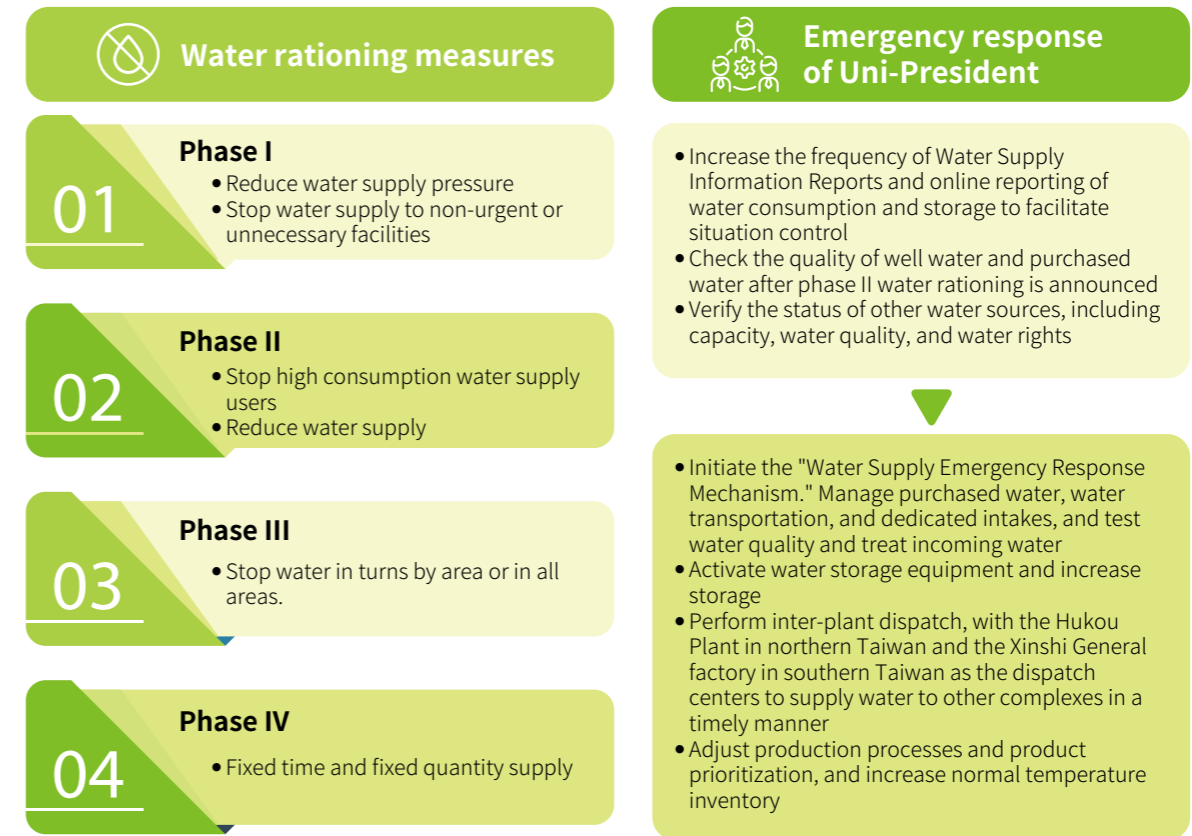
Mechanisms for water resources risk control

We have set up a water resources response team to prevent production losses caused by water instability. The manager of the technical group is appointed as the convener, and is responsible for cooperating between all relevant units and assigning work duties in order for different units to jointly develop response plans and strengthen the coordination between the emergency response team. We also signed a purchase agreement with the water supplier, agreed on reasonable transportation costs with the water carrier, and effectively controlled its schedule to ensure water supply during water scarcity. When water supply is insufficient, we initiate related countermeasures according to the phases of water rationing announced by the government to minimize operational losses caused by water shortages.

Management mechanism and division of labor of the Water Resources Response Team

Coordination and Management 	<ul style="list-style-type: none"> Decide on, announce, and implement countermeasures Coordinate the work and capture status 	Technical Group
Water Consumption Monitoring 	<ul style="list-style-type: none"> Understand water demands and cultivate water sources Monitor water conditions in production areas and announce related information Establish the water shortage response plan of the factory and coordinate production based on water consumption sequences. 	Engineering Department
Water Consumption Monitoring 	<ul style="list-style-type: none"> Dispatch water trucks Conclude transportation service agreement 	Transportation Service Department
Water prices Management 	<ul style="list-style-type: none"> Conclude agreements on the unit price with water suppliers 	Procurement Department
Water Quality Monitoring 	<ul style="list-style-type: none"> Water quality and truck safety control 	Food Safety Center
Water Conservation Measures 	<ul style="list-style-type: none"> Publicize and implement drinking water conservation measures in office buildings and dormitories. Promote and implement technologies for water conservation and recycling in the process. Implement technologies relating to water recycling 	Engineering Department Administration Department Production plants

Water shortage countermeasures of Uni-President



3.3.2 Water withdrawal

In 2019, our factories in Taiwan withdrew 4,162 million liters of water (municipal water supply of 3,629 million liters, surface water of 515 million liters and underground water of 18 million liters). The total water withdrawal was reduced by 4.87% compared to 2018. We will continue to enhance water efficiency to mitigate impacts on water withdrawal driven by increasing production.

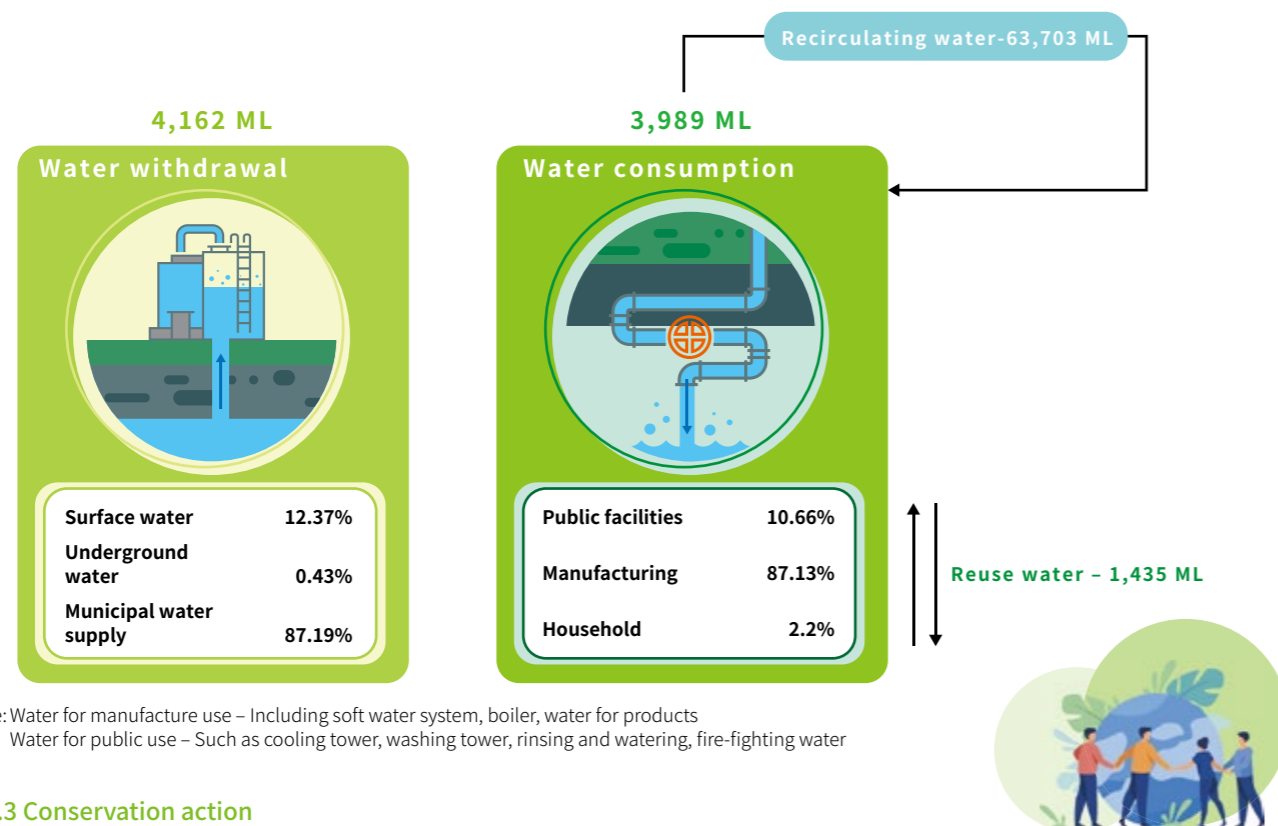
Water withdrawal

Water source ^{Note 1}	Factory ^{Note 2}	2017	2018	2019
Surface water	Yangmei General Factory	150	139	143
Surface water	Xinshi General Factory	954	706	372
Underground water	Yangmei/Hukou/Yongkang General Factory	41	31	18
Municipal water supply	Yangmei/Zhongli/Hukou/Yongkang/ Xinshi/Taichung General Factory	3,114	3,499	3,629
Total withdrawal		4,259	4,375	4,162

Note 1: Water sources are fresh water ($\leq 1,000$ mg/L TDS). Municipal water supply is calculated according to the annual water bill, whereas surface water and underground water are calculated according to the meter reading.

Note 2: As pointed out using the water resources risk analysis tool developed by the World Resources Institute, Taiwan is not in water stress area. None of our production plants has a high water resource risk according to the internal assessment.

Analysis of water usage at production plants



3.3.3 Conservation action

Apart from the water consumption that is required in the production process, we actively promote efficient water usage in the plant via the 4 types of water conservation strategies (water source cultivation, source improvement of water for production, process water recycling, and reclamation of end-of-pipe wastewater) and implement of water-saving projects.

Water conservation strategies

Water source cultivation	<ul style="list-style-type: none"> Stormwater: Equip all new factory buildings with the stormwater harvesting system to harvest stormwater for use by the cooling tower and toilet flush Air-conditioning condensate: Reclaim condensate to the clear water system or for replenishing cooling tower water
Source improvement of water for production	Select low-water-consumption machines and establish the "Water Consumption Balancing Chart" to control the reasonable consumption of machines in each factory for the reference of calculating the factory's water reclamation rates and water conservation rates
Process water recycling	Extend the scope of water reclamation to all equipment condensate for recycling and wastewater reduction, such as steam condensate reclamation, RO wastewater reclamation, and finished product iced water reclamation
Reclamation of end-of-pipe wastewater	Intermittently check the discharge water quality during operations based on wastewater characteristics of machines for effective treatment and reclamation at the wastewater treatment plant. For example, acidic and alkaline wastewater from production will be reclaimed as secondary water to the clear water system or cooling tower after treatment and monitoring

2019 representative water conservation projects

Yangmei Milk Factory 1- Improvement of the ice water recycling from the semi-finished product barrels

Annual water conservation of **14.77 million liters**

The ice water overflowing from the safety valve was recovered to reduce the replenishment to the ice water tank

Note: The annual water saving estimate is compared with the ice water replenishment after the project is executed

Yangmei Beverage Factory 1- Optimization and improvement of the hot water system configuration

Annual water conservation of **15.41 million liters**

The CIP procedure in the process system was adjusted and the production schedule is adapted to reduce the additional water consumption due to transfer of product types

Note: The annual water saving estimate is compared with the soft water consumption (per ton) after the project is executed

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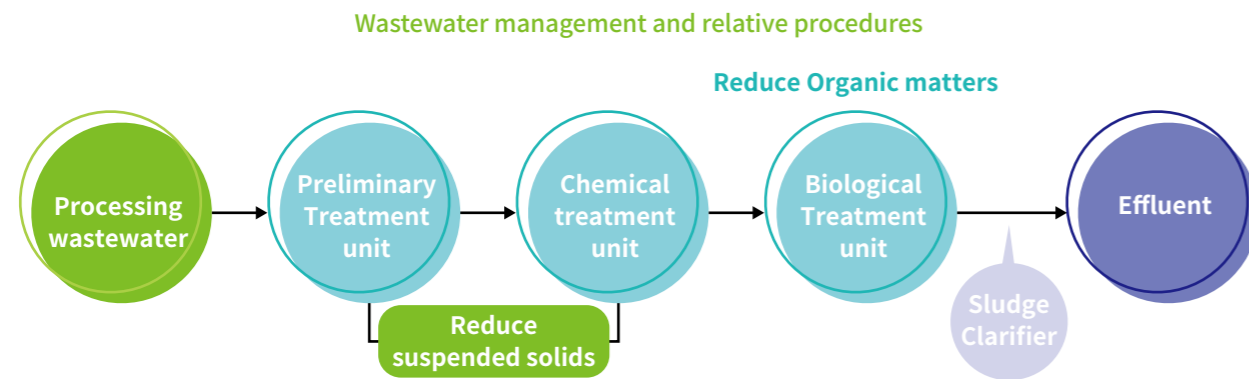
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3.3.4 Wastewater management

Uni-President's types of wastewater are mainly organic wastewater, oil and suspended solids. We have set up wastewater treatment equipment for each factory, of which wastewater is discharged after front-end pretreatment and biological treatment, or directly discharged into wastewater treatment plants in the industrial zone. In order to comply with national discharge standards, we have established stricter standards in accordance with national laws and regulations to inspect the functions of wastewater treatment plants and the concentration of discharged water in each factory. We have also set up targets for management on annual wastewater quality as the basis for assessing management effectiveness.

In 2019, the factories discharged only 3,190.56 million liters of plant wastewater. The COD average intensity was 32.87 mg/L, which was reduced every year and significantly lower than the custom target of 70 mg/L, while the average COD reduction equivalent remained the same compared with 2018.



Wastewater Management Targets and Achievements of Uni-President

Year	Annual targets	Target achievements
2019 年	Annual average COD <70mg/L	◎ (Already achieved) (Average COD : 32.87 mg/L)
2020 年	Annual average COD <70mg/L	△(In progress)
2024 年	Annual average COD < 65mg/L	△(In progress)

Uni-President effluent discharge management standard

Effluent discharge standards in plant	National/industry zone effluent standards	Principle of standard setting
BOD ≤ 22.5 mg/L	BOD ≤ 30 mg/L	Strictly standard setting within regulations by internal management demand (75% of the limit value specified in relevant laws and regulations)
COD ≤ 75 mg/L	COD ≤ 100 mg/L	
SS ≤ 22.5 mg/L	SS ≤ 30 mg/L	

Wastewater discharge in 2019

Wastewater Management Items	Unit	Wastewater discharge ^{Note 1}		
		2019	2018	2017
Discharge (Surface water) ^{Note 2}	Million liters/year	3,190.56	3,082.98	3,114.31
Average COD	mg/L	32.87	34.07	42.59
COD equivalent reduction	thousand tons	4.65	5.18	6.54
Rate of average COD reduction	%	97.8	98.01	98.01
Average BOD	mg/L	9.54	8.81	11.17

Note 1: The factory connects its pipes to the sewage treatment plant of the industrial park or to the natural water body. Yongkang Factory, Xinshi Factory - Yanshui River; Yangmei Factory - Shezi River; Hukou Plant - Xinfeng River; Taichung Factory - sewage treatment plant of Taichung Industrial Park; Zhongli Factory - sewage treatment plant of Zhongli Industrial Park.

Note 2: The wastewater discharge volume is determined based on the measurement value on the water meter. The water classified to other categories (>1,000 mg/L TDS) was not used by other organizations.



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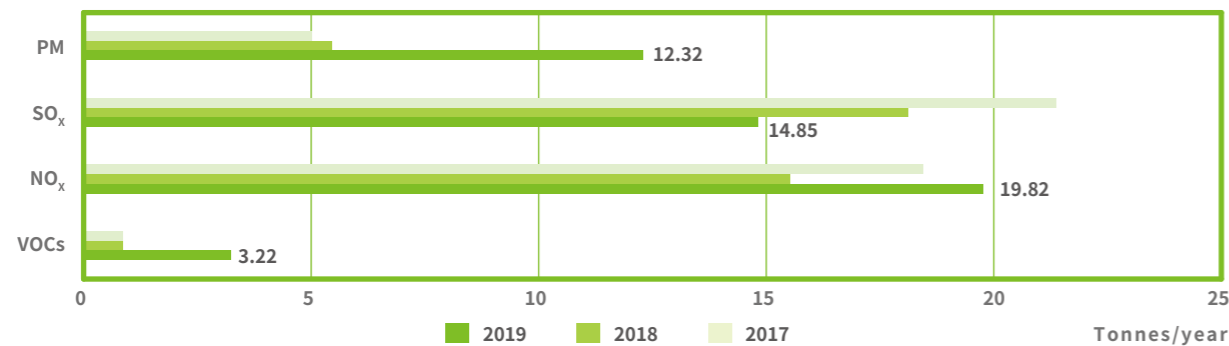
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3.4 Pollution Prevention

3.4.1 Air pollution management

Our air pollutants mainly include PM, SO_x, NO_x and volatile organic compound (VOC). The pollutants come from material processing and boiler combustion. To reduce air pollutant emissions effectively, the factory sets up preventive equipment such as cyclone dust collectors, pulse/bag type dust collectors, and washing towers to improve the pollutant capture rate. To reduce the SO_x and NO_x emissions effectively, the fuel oil boilers have been replaced with natural gas boilers year after year. 50.22 tons of air pollutants were emitted in 2019. Since the Environmental Protection Administration added particle emission to the air pollution fee in 2019, the Yongkang food, fodder and flour factories added 7.3 tons of particle emission, and Xinshi and Yangmei factories added 2.5 tons of VOC emission due to the additional bottle blowing process.

Air pollutant emissions in 2019



Note : Calculation based on site-specific data

3.4.2 Waste management

Uni-President has formulated the "Waste Management Act" to ensure that all wastes are properly classified, managed, cleared and disposed of. The factory waste can be divided into general waste, hazardous waste (organic laboratory waste liquid) and recyclable waste. Plant operations have generated a total of 38,242 tons in 2019, which decreased compared to that of 2018 due to additional production capacity. In order to promote waste reduction and improve the factory's resource classification and management, we have set up targets in waste recycling rate. We have achieved the annual targets for management goals for three consecutive years since 2016. To increase the efficiency of waste management, we re-adjusted our targets for management in 2019, in the hope of reducing the environmental impact of waste through source minimization and resource recycling.

Waste management targets and achievements of Uni-President

Year	Targets	Target achievements
2019 年	Waste recycling rate > 95.5%	◎ (Already achieved) (Recycling rate of 95.98%)
2020 年	Waste recycling rate > 95.5%	△ (In progress)
2024 年	Waste recycling rate > 96.5%	△ (In progress)

Waste generation and disposal method in 2019

Unit : Tonnes

Waste Type	Item	Treatment	2017	2018	2019
Non-hazardous waste	General waste	Incineration	1,598	1,440	1,535
	Recyclable waste (sludge, waste tea, others)	Composting	-	24,090	24,636
	Recyclable waste	Recycling	34,891	10,698	12,068
	Waste recycling rate (%)		95.62%	96.02%	95.98%
hazardous waste	Organic laboratory waste liquid	Incineration	1.84	2.28	2.58

Note: The waste disposal method is handled by the appointed outsourcing company

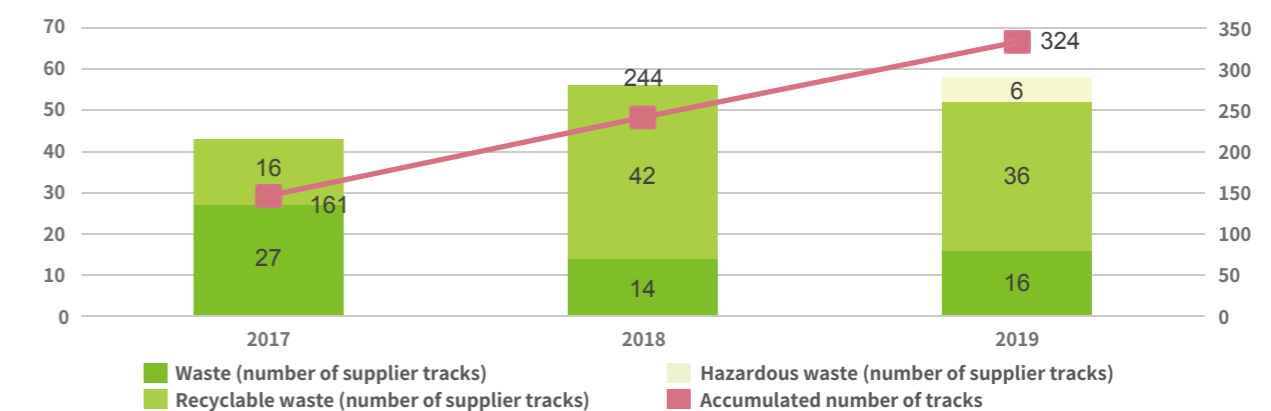
Waste generation reduction by circular economy concept

Due to special features of the food industry, "food safety" is the first priority for our management principle, whereas the effectiveness on waste source reduction is often limited. Thus, we believe that increasing the potential on waste recycling to effectively achieve resource saving can lower the environmental pressure. With that, we actively plan innovative waste recycling projects. For example, we commission external suppliers to develop sludge and tea residue into organic compost, while soybean residue is recycled as feed and pallets are recovered for repeated use. The Xinshi Factory sludge reduction project was planned in 2019 and sludge dryers will be set up as planned in 2020 to reduce water content in the sludge to 40% and realize a sludge reduction of 2,949 tons.

Flow tracking of waste to ensure effective management

Uni-President's wastes are entrusted to the legal cleaning and transporting agent to dispose of and properly use recycled materials, and the company has set up clear regulations that strictly prohibit recyclable wastes in food processing or food materials to ensure food safety. In addition, in order to strengthen the flow tracking of waste, we use the GPS system to clearly track and check the flow of waste, resources, and hazardous waste generated by each factory. The investigation includes treatment of waste and resources, waste storage approaches, disposal records, flow, and transportation licenses. In 2019, a total of 58 waste, resources, and hazardous waste treatment companies were inspected, with a total of 80 tracked, and there were no violations discovered in the inspection and tracking results.

Record of flow tracking of waste and recyclable waste in 2019



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