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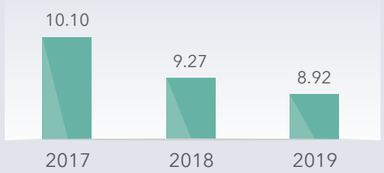
Environmental Sustainability

4 Environmental Sustainability

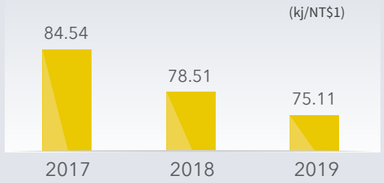
GHG emissions intensity

(ton CO2e/NT$1 million)



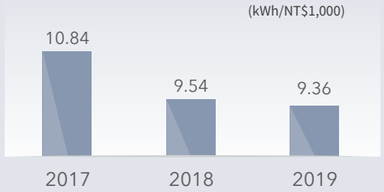
Energy use intensity (EUI)

(kj/NT$1)



Power use intensity (PUI)

(kWh/NT$1,000)



First company to receive Green Factory designation

Reduced total greenhouse gas emissions by **8**%

No. **3** in Energy Conservation Award

Reduced **6,756** kg of meat from going to waste

Conserved **12,015** tons of water

- First food company in Taiwan to receive Green Factory designation
- Carbon reduction: we have reduced GHG emission density year-by-year; having set 2016 as the base year, the Scope 1 GHG reductions in 2019 have reached 40.1% and overall emissions reductions by 8%, while carbon density has been reduced by 17.1%
- Energy conservation: we have reduced energy intensity and energy use intensity (EUI) year-by-year; cumulative energy savings in Dayuan Plant from 2016 to 2019 have reached 1.238 million kWh
- Power conservation: our airport channels received No. 3 in power and energy conservation and carbon reductions award from Taoyuan International Airport in 2019
- Renewable energies: Dayuan Plant has cumulatively generated 680,000 kWh of power and Qingshui service area's annual generation is 25,696 kWh
- Water conservation: by recycling and reusing cooling water, we have saved 12,015 tons of water consumption/year
- Circular economy: we have promoted recycling and reusing food ingredients and hardware/materials and have cumulatively reused 3,000 wooden pallets and reduced 6,756 kg of meat from being wasted

Hsin Tung Yang's Environmental Management Strategies

The food and retail industries are strongly influenced by environmental and climate change, and in order to respond to multiple potential environmental challenges including fluctuations in raw material prices and volumes, unstable water supplies, and increased energy costs, Hsin Tung Yang has established and implemented green transformation strategies, and we are gradually establishing a greenhouse gases (GHG), energy, water resources, and waste management system and measures from Dayuan Plant, headquarters, to our channels. In addition, we have also been planning and promoting creative circular economy actions in our value chain. Hsin Tung Yang received the Green Building Label in 2017, and awarded the Clean Production certification in 2018. Furthermore, the same year, we are the first food company in Taiwan to be honored with the Green Factory certification. Looking forward, we will plan to gradually implement related management framework including carbon footprint and water footprint, and continue to advance in our energy conservation and carbon reduction actions, as well as collaborate with value chain partners to research and develop creative circular economy models in the hopes of becoming the leader in sustainable foods.

Management aspect	Operating unit	Management strategy and objective	Action plan and measures	2019 results/performance
GHG Management	Dayuan Plant	✦ Setting 2016 emissions as the base year, we plan to reduce 50% of GHG emissions before 2030	✦ Carry out GHG inventories and promote annual energy conservation and carbon reduction plan	✦ Reduced GHG emissions by 8% in 2019 compared with 2016 data
	Airport channels	✦ Join airport energy conservation and carbon reduction initiative	✦ Participate in joint carbon reduction plan at Taoyuan and Kaohsiung International Airports and practice voluntary carbon reduction	✦ Received No. 3 from power and energy conservation and carbon reductions award from Taoyuan International Airport in 2019
Energy Management	Dayuan Plant	✦ Conserve 1% of power in each year beginning in 2015	✦ Implement energy inventories and establish action plan and to promote renewable energies	✦ Reduced power consumption by 8.5% in 2019 compared with 2016 data ✦ Generated approximately 330,000 kWh of solar power in 2019
	Airport channels	✦ Join airport energy conservation and carbon reduction initiative	✦ Join green lighting initiative at the airport and to promote energy conservation and carbon reduction	✦ Replaced existing lights with LED lighting at Taoyuan Airport store in 2019, thereby saving 11,826 kWh of power
	Highway service area	✦ Plan relevant measures in line with the unique features set up at each service area	✦ Air conditioner and lighting control, venue heat source management and promotion of renewable energies	✦ In 2019, Qingshui service area generated over 8,000 kWh of solar power
	Headquarters building	✦ Enhance employees' awareness for energy conservation	✦ Promote power conservation	✦ Headquarters used approximately 23,461 kWh of power in 2019, showing a 3% decrease from 2017
Water resources management	Dayuan Plant	✦ Reduce water consumption by 1% in each year	✦ Digitize data on water use management, circular use of cooling water	✦ Water consumption in 2019 was 93,242 tons, showing a 17% reduction from 2017
	Headquarters building	✦ Enhance employees' awareness for water conservation	✦ Promote water conservation	✦ Water consumption in 2019 was 3,684 tons, showing a 3% reduction from 2017
Waste management	Dayuan Plant	✦ Reduce waste by 1% in each year ✦ Recycle 80% of waste	✦ Extend useful life of objects, reduce scraps and in-crease recycling rate	✦ Recycling rate was approximately 71.2% in 2019
	Headquarters building	✦ Enhance employees' awareness for recycling and reuse	✦ Promote recycling	✦ Recycling rate was approximately 24% in 2019

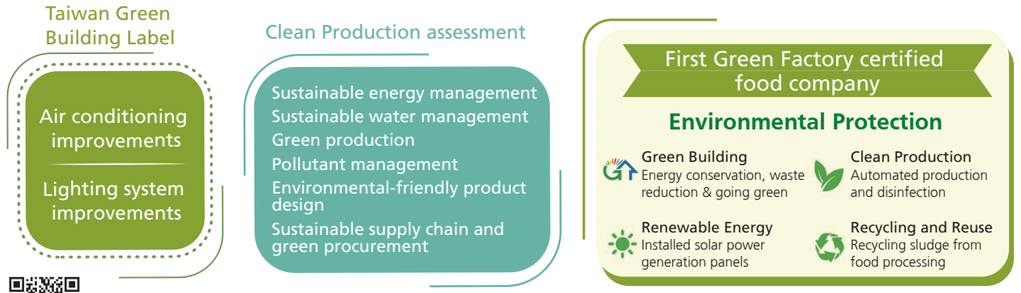
4.1 Green Factory Promotions

Hsin Tung Yang has always held true to a spirit of continuous improvement. We have actively promoted green production measures, including energy and water conservation, waste reduction, and pollution prevention as well as clean production improvements including implementing green production processes since our Dayuan Plant was built in 1988.

Stage	Green Production Goal	Action Plan/Measures
Plant construction and ad-justments (1987 to 1992)	• Environmental self-management at standards more rigorous than the minimum legal requirements.	• Implemented the NIJHUIS wastewater treatment system from the Netherlands • Building and air conditioner energy conservation: installed PU insulation panels at air conditioned processing areas and set up ice storage centralized air conditioning system • Coordinated management over power equipment and installed public power system and central control room for the entire plant • Implemented energy and resource self-management; established, statistics and analysis of energy management charts
Production cycle (1993-2016)	• Promote clean production, source reduction and recycling and reuse • Promote energy conservation and improvements • Solve air pollution problems	• Promoted green processes compliant with the concept of green production, making processes more reasonable, energy-saving and more automated • Properly managed commercial waste • Implemented energy inventories system and formulated an Energy Inventories Team • Stopped using heavy oils to heat boilers and opted for external purchase of steam gas
Pursuing Green Factory certification (2017-2018)	• Receive certifications for Clean Production, Green Building, and Green Factory in Taiwan, becoming a benchmark in green production and management • Promote greenhouse gas management and to be aligned with the government's green energy policy	• Promoted and received Green Building certification; improved air conditioning and lighting systems • Promoted and received Clean Production verification and certification • First food company in Taiwan to receive Green Factory designation • Promoted and received ISO 14064-1 Greenhouse Gas Inventory Standard • Installed 283.2kW renewable energy (solar power) generation system, and annual green power generation can reach 350,000 kWh
Green Management System Implementation (2018 to 2019)	• Establish and receive third-party assurance for energy management system • Establish and receive third-party assurance for environmental management system	• Promoted and received certification for ISO 50001 Energy Management System • Promoted and received certification for ISO 14001 Environmental Management System
Green Growth (Short, mid and long-term goals) (2020 to 2025)	• Become aligned with international green product trends • Digitize information on energy management • Information disclosure on sustainability and fulfill corporate social responsibilities	• Promote product carbon footprint and water footprint • Establish energy management system (EMS) and promote manufacturing execution system (MES) along with IT department • Promote disclosures in Corporate Social Responsibility Report

First Food Company in Taiwan to Receive Green Factory Designation

To stay on top of international environmental protection trends and to lead the food industry toward green production and sustainable management, Hsin Tung Yang began related promotions to achieve the Green Factory certification in 2016. No detail was spared from hardware equipment to software processes, and all staff worked diligently to achieve the dual inspections for the Ministry of Interior's "Green Building" label for factory building and the "Clean Production" evaluation system for production processes. Finally, we were awarded the "Green Factory" certification in 2018 by the Industrial Development Bureau, MOEA, thereby becoming the first food company in Taiwan to receive this honor.



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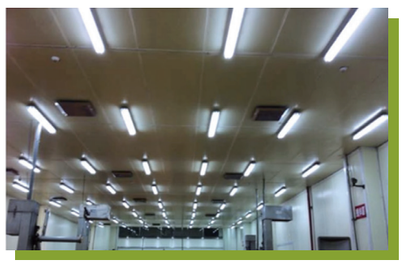
Energy-saving Reform of Existing Buildings

Why can't old factory plants go green? Though we hold a long history, Hsin Tung Yang continues to pursue modern environmental protection awareness, and air conditioning and lighting system improvements were planned for the production facilities at Dayuan Plant in line with "Green Building Assessment Handbook - Reforming Older Buildings" from the Ministry of Interior. The improvements led to a carbon reduction benefit of 15.08%, and we received the Bronze-level Green Building Label from the Ministry of Interior in December 2017.



System	Measure	Energy conserva-tion (kwh/year)	Carbon reduction (ton CO_2/year)
Air condi-tioning	Installed inverter control at existing pumps	210,376	111.9
Lighting system	Replaced high-energy consum-ing lights with energy-efficient lights	622,009	330.9
Total		832,385	442.8

Implementing Clean Production

In terms of environmental impacts from production and operating processes, Hsin Tung Yang continues to implement improvements based on the six Clean Production aspects, which not only covers energy and resource conservation, green processes, pollutant management and end-of-pipe treatment technologies, but also includes eco-friendly design, green management, social responsibilities, and other clean production philosophies. After various qualitative and quantitative evaluations, Hsin Tung Yang achieved the "Compliance with Clean Production Evaluation System" certification from the Industrial Development Bureau, MOEA in January 2018.

Sustainable energy management

- Implement energy inventories and established an Energy Inventories Team to actively promote energy conservation and improvements.
- Replaced worn energy-consuming equipment to increase energy efficiency.
- Installed renewable energy (solar power) generation system. Implemented ISO 5001 Energy Management, ISO 14064-1 Greenhouse Gas Inventories, and ISO 14001 Environmental Management systems.

Pollutant management

- Various waste types are all properly treated based on principles of source management, reducing process waste and end-point control.
- Increased ratio of waste recycling, building a tracking mechanism for waste clearance and reuse.
- Implemented wastewater and sludge treatment and strengthened hazardous substance management system to properly treat hazardous substances.

Sustainable water management

- Proposed water resource management programs and promoted diverse water-saving measures by using consumptiong reduction, recycling, and reuse strategies.
- Conducted thorough water resource inventories and established a water use chart and water balance chart.
- Installed digital water grid to clearly understand the water consumption at each primary water pipe.

Environment al-friendly product design

- Based on the concept of product life cycle, we used environmentally-friendly product design concept to avoid over-packaging.
- Environmental awareness is included in the design phase of a product's life cycle to reduce environmental impacts throughout its life cycle.

Green production

- Optimized production processes and management measures to enhance productivity in food processing and production.
- Implemented Clean Production technologies and methods to maximize the effectiveness of resource consumption and to minimize negative environmental impacts.

Sustainable Supply Chain and Green Procurement

- We have established a sustainable supply chain management system and included environmental sustainability into the supplier screening mechanism. In addition, we also confirm that materials selection of products are environmentally-friendly to reduce the harm to the environment or to human bodies.
- Promoted Green Procurement, and purchases are predominantly products with Green Mark, Energy Label, FSC, RSPO seal, and Green Building Label.

Green Factory Visits and Interactions

Our enriched Green Factory designation and performance have set benchmarks for governmental and school visits, thereby creating external benefits. From 2017 to 2019, we have received visiting groups from the Industrial Development Bureau, MOEA; the Department of Economic Development, Taoyuan, and Importers and Exporters Association of Taipei. In addition, we have also received 573 visiting students and faculty from 19 related food and fowl and livestock health care departments from domestic and overseas colleges and universities, and were invited to attend seminars and forums organized by the Bureau of Energy, MOEA; Industrial Development Bureau, MOEA; and to share our experiences with energy and water conservation and renewable energy promotions throughout Taiwan. Cumulatively, we have influenced approximately 560 persons spanning food, dining and beverage, biotechnology, chemical engineering, technology, spinning and textile, paper-making, and rubber industries.

Hsin Tung Yang 2018 Silver Awards of Energy Saving Leadership Award

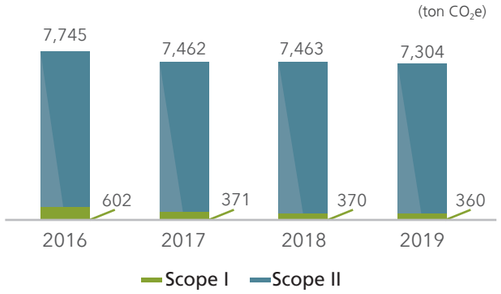
4.2 Greenhouse Gas Management

GHG Emissions Overview

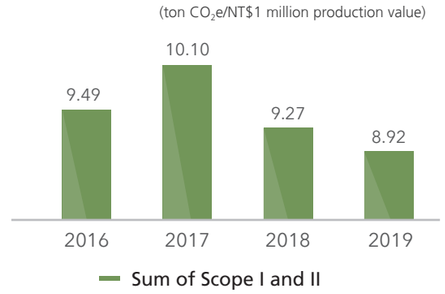
Hsin Tung Yang's total carbon emissions in 2019 were 7,676.5 ton CO_2e. This includes GHG emissions from power consumption at Dayuan Plant and the headquarters building. In terms of Dayuan Plant, most of its GHG emissions were carbon dioxide (CO_2), methane (CH_4) and perfluorinated chemicals (PFCs). Scope I direct emissions in 2019 were 360 tons of CO_2e and most of which was generated from liquefied petroleum gas (LPG), accounting for 55% and followed by diesel at approximately 19%. The rest of which were fugitive emissions from sources including coolant from air conditioners. Scope II indirect emissions were approximately 7,304 tons CO_2e, in which power utilization from production processes accounted for 55.5% of all emissions and the rest of which was from externally procured steam, at around 37.3%. Compared with 2016, carbon emissions at Dayuan Plant have been reduced by 8% in 2019. Additionally, in terms of emission intensity, the 2019 GHG emission intensity at Dayuan Plant was 8.92 (tons CO_2e/NT$1 million), which indicated a 6% decrease from that of 2016.

(Note: 2019 GHG emissions data have not been verified by a third-party agent, and the data from headquarters are only calculated based on electricity bills)

Scope I and Scope II GHG Emissions



Scope I and Scope II Carbon Intensity



2019 Total GHG Emissions

(ton CO_2e)

	CO_2	CH_4	PFCs	Total
Scope I	356.849	2.881	0.36	360.09
Scope II	7238.043	58.43	7.304	7303.777

Management Measures

• Formulating a GHG Inventories Team

Hsin Tung Yang began conducting greenhouse gas (GHG) inventories in 2017, and a GHG Inventories Team was established for this means. Inventories on all greenhouse gases generated within the boundaries of Dayuan Plant's operations were taken based on ISO 14064-1 standards, and 2016 was set as a base year. We complete total inventories of Dayuan Plant's emissions before July in each year based on the GHG management procedures stipulated in ISO 14064-1 standard and our own operating procedures enacted based on internal assurance protocols. In the future, our headquarters building will also be included in the GHG inventories. In addition, since power consumption accounted for 55.5% of all emission sources, we have implemented annual energy-saving and carbon reduction programs in line with ISO 50001.

• Participating in Joint Carbon Reduction Plan from Taoyuan and Kaohsiung International Airports

Hsin Tung Yang's stores at Taoyuan and Kaohsiung International Airport have voluntarily joined "Taoyuan International Airport Joint Carbon Reduction Plan" and "Kaohsiung International Airport Joint Carbon Reduction Plan" in 2018 and 2019 respectively. We have set up dedicated energy management units and management personnel, as well as annual power-saving goals and carbon reduction goals. Besides monitoring power utilization in each month, we have also opted for voluntary carbon reduction measures. On top of estimating GHG emissions through calculating externally-procured electricity and coolant, oil consumption, waste and transportation activities to/from the airports, we have also achieved outstanding energy-saving and carbon reduction results. Our power consumption from June to September 2018 was reduced by 2.3% YoY, and received No. 3 in power and energy conservation and carbon reductions award from Taoyuan International Airport in 2019.

4.3 Energy Management

Energy Use Overview

Hsin Tung Yang's energy management covers data from Dayuan Plant and the headquarters building, and most of the consumption occurs at Dayuan Plant. Most of the energy sources at Dayuan Plant come from externally-procured steam gas, procured electricity, liquified petroleum gas (LPG) and diesel, whereby diesel (46%) is used toward steaming and drying in our production processes, electricity (43.85%) is used in air conditioning in public power and air compression equipment, while LPG (9.1%) is used in baking and heating in production processes, as well as some diesel and gas. In particular, diesel presents more pollution, and though it is currently used by some of our machines, we have already planned to phase out diesel step-by-step. Most of the energy sources at the headquarters building is externally procured electricity. Total electricity consumption in 2019 was 23,461 kWh.

Scope	Category	Type of energy	2017	2018	2019
Dayuan Plant	Non-renewable Fuels	Diesel	2018	2019	666
		Liquefied petroleum gas (LPG)	5,820	6,041	5,726
	Purchased	Electricity - non-renewable energy	30,262	29,007	28,941
		Steam	29,470	31,480	30,011
	Self-generated	Electricity	-	1,269	1,204
Headquarters	Purchased	Electricity - non-renewable energy	87	86	84
Total consumption			66,307	67,292	65,429
Total production				1,269	1,204

Unit: 1 billion joules =10^9 joules = GJ
Source of information for heat coefficient: Energy Statistics Handbook from the Bureau of Energy, MOEA and Ta-Yuan Cogen Co., Ltd.

Management Measures

In terms of Dayuan Plant, energy-saving goals are achieved by establishing energy management system, replacing lighting equipment and by implementing annual energy-saving processes and equipment, as well as by installing solar panels to generate energies. For our channels, we have infused energy-saving and carbon reduction thinking into the architectural design of service area buildings and public space. Besides improving air conditioning and lighting, we have also targeted heat sources at external heat insulation and internal dining areas as well as established a renewable energy system, thereby promoting energy conservation on top of creating brand-new looks for the highway service areas.

Building an energy management system

- **Dayuan Plant:** we established an Energy Management Committee and achieved ISO 50001:2011 Energy Management System certification, as well as implemented energy inventories system, documented monitoring, and calculated energy consumption to create an electricity and heat balance chart in order to understand and analyze the energy efficiency of major energy-consuming equipment.

Improving indoors lighting and air conditioning

- **Dayuan Plant:** air conditioning, lighting, and pump facilities were improved.
- **Airport shops and highway service areas:** LED lighting and energy-saving light bulbs were adopted in line with natural light. Energy-saving air conditioners with higher EER value were used, and the hours of using the air conditioners were adjusted based on the size of the area and number of persons.
- **Headquarters:** we adopted energy-saving lights and LED lights and fully utilized the available natural light to reduce artificial lighting. Temperature of air conditioners is also appropriately adjusted.

Outdoors heat insulation

- **Highway service areas:** we reduced solar radiation heat by putting up glass heat insulation films and installing shading panels and blinds, thereby maintaining the indoor environment at a comfortable level.

Treating heat sources at dining area

- **Highway service areas:**
  - Food retail counters are grouped together and heat sources are properly collected through heat ventilation system. Heat is collectively discharged via ventilation fans and ventilation tubes, and external fresh air is adequately inducted to reduce air conditioning in the service area halls from escaping and impacting the cooling effect of the air conditioners.
  - Hot and prepared foods at the convenience stores are heated via electrical means whenever possible to reduce heat sources and environmental impacts.

Installing renewable energy

- **Dayuan Plant:** installed solar power generation system in line with the government's green energy policy.
- **Service area:** installed power generation systems including solar tracker system and wind turbines to not only generate power in an environmentally-friendly manner, but also allows road users to get to know renewable energies.

Advocating for energy conservation

- **Airport shops and highway service areas:** we advocated energy conservation to all retail counters and employees, and put up slogans for energy conservation.
- **Headquarters:** promoted energy conservation and turning off lights at sparsely used/vacant areas.

Effectiveness of Energy Conservation

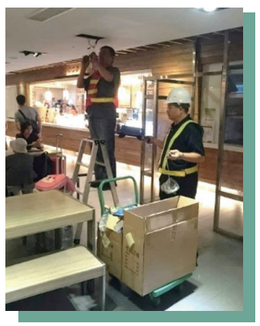
• Clean Production Energy-saving Measures at Dayuan Plant

For the past four years, Dayuan Plant has achieved significant clean production results through promoting energy-saving improvement measures. Consumption of major energy sources did not increase with enhanced productivity, but rather, a year-by-year reduction trend has been achieved. To achieve our 1% annual energy conservation goal, annual energy conservation action plans are proposed and progress of implementation is also reported at the energy management review conference in each year. Key targets have included buildings (replacing lights, cooling tower), processes (air conditioning, cooling water pump, evaporative condenser, air compressor, steam cookers and meat floss fryers).

Year	Major energy-saving measure	Energy savings (year)
2016	Replacing mercury lamps at the warehouse and street lamps throughout the plant with energy-saving metal halide lamps	Saved 79,650 kWh
	Installed pressure control device at cooling tower	Saved 95,935 kWh
2017	Installed energy-saving inverters at cooling water pump and brine pump	Saved 123,120 kWh
	Installed descaler cleaning kits at the three evaporative condensers for air conditioners	Saved 454,206 kWh
2018	Installed descaler devices at the three evaporative condensers at the roof	Saved 338,160 kWh
	Opted to use energy-saving lights	Saved 5,788 kWh
	Used energy-saving lights at inventory warehouses	Saved 5,299 kWh
2019	Replaced 1 Hitachi air compressor with inverter air compressor	Saved 122,400 kWh
	Replaced 89 T8 light bulbs with LED lights in basement	Saved 14,098 kWh
	Updated steam cookers and installed additional gauge	Saved 377.76 tons of steam
	Replaced traditional burners with ceramic burners at the meat floss fryers	Saved 23,535 kg of LPG

• Energy-saving Measures at Taoyuan International Airport Channel

In line with the energy-saving and carbon reductions program at Taoyuan International Airport, our Taoyuan airport channel has drawn up substantive annual energy-saving program which conserved 100,685 kWh/year and reduced 53.2 tons of CO_2e.



Year	Program	Results
2018	Replaced LED lights	Energy-saving: 27.594 kWh/year Carbon reductions: 14.6 ton CO_2e
	Adjusted operating hours of small fans	Energy-saving: 61,265 kWh/year Carbon reductions: 32.4 ton CO_2e
2019	Replaced 300 lights at public seating area with ener-gy-saving LED lights	Energy-saving: 11,826 kWh Carbon reductions: 6.2 ton CO_2e/year

• External Heat Insulation at Highway Service Areas

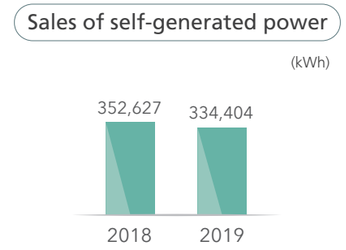
External heat insulation was achieved at our highway service areas through comprehensive green building planning: we reduced solar radiation heat by putting up glass heat insulation films and installing shading panels and blinds. In addition, heat dissipation equipment including heat exchanger and ventilation fans were installed at the ventilation windows at the seating areas under the persimmon scaffold to facilitate air exchange and heat dissipation, thereby maintaining the indoor environment at a comfortable level.

A wall of green was planned for the front hall of the service area since plants could facilitate in reducing the heat energy from sun exposure. In addition, a wooden grille was set up to provide shading against direct sunlight and also to reduce heat radiation from the outdoors.

• Implementation of Renewable Energies

The capacity of the solar panels installed at Dayuan Plant is approximately 283.2 kWh. Most of the energy generated is sold back to Taipower Company, and the cumulative power generation from 2018 to 2019 was over 680,000 kWh. Among our highway service areas, a sunflower design and solar panels have been erected at the large rooftop of the southern toilets at Qingshui service area so that the multi-functional toilets are used for power generation, environmental protection, and a sightseeing destination. The power generated is used internally indoors, and the power generation in 2019 had been 8,276 kWh. Additionally, newly-erected solar panels at Guanxi service area had also begun operations at the end of 2019, and the power generated thereby is supplied to the indoor retail area at the parking area for buses. Hsin Tung Yang continues to build a more environmentally sustainable business model through developing and using renewable energies.

Sales of self-generated power



Qingshui service area

Dayuan Plant solar panels / Dayuan Plant power generation

Guanxi service area

4.4 Water Resources Management

Water Resources Overview

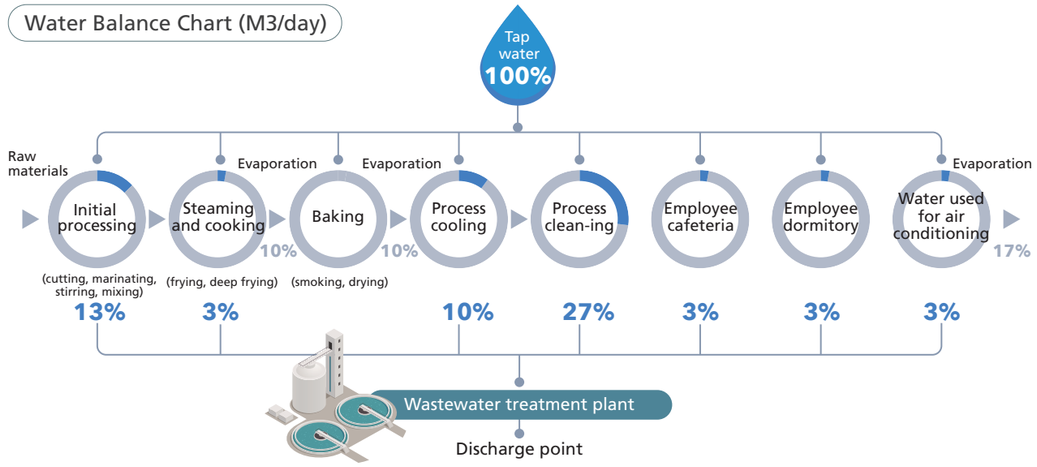
Hsin Tung Yang's water consumption management encompasses data from Dayuan Plant and the headquarters building. All water consumed comes from tap water, and Dayuan Plant's water use accounts for approximately 96% of all Hsin Tung Yang's water use.

(Unit: tons)

Scope	Item	2017	2018	2019
Dayuan Plant	Water consumption (tap water)	96,863	163,989	80,159
	Water consumption (recycled water)	-	14,573	13,083
	Wastewater treat-ment volume	77,372	90,467	52,727
Headquar-ters	Water consumption (tap water)	3802	3762	3,684
Total	Total water use	100,665	182,324	96,926

(Note: water consumption in 2018 had increased due to water leakage from two concealed pipes)

Water Balance Chart (M3/day)



Upholding our principle for "water conservation and effective water use," Hsin Tung Yang has proposed water resource management programs through setting three strategies, namely, reducing water use, recycling, and reuse.

1. Water intake: average daily water use during production was approximately 300 tons.
2. Water use: our process water is tap water treated with precision filter and activated carbon filter, and is used during production and processing. The water is classified as generic water consumption, or tap water directly supplied to dormitory, and fire prevention consumption, and soft water, which is tap water softened with ion-exchange resin and used as cooling water for air conditioners.
3. Discharge: wastewater mostly comes from the process cleaning water in the plant and domestic wastewater. It is organic and all of which flows through the wastewater pipes within the plant to the wastewater treatment plant at Dayuan industrial area.
4. Storage: to maintain the real-time water loading during production and external water outage or limitations, a storage reservoir and water tower have been established within the plant. Approximately 600 tons of water can be stored cumulatively, and can supply up to 2-3 days of water for the plant.

Water Resources Management Measures

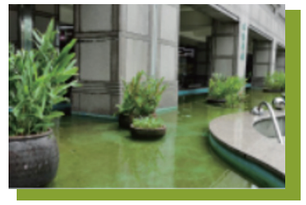
Digital management
- **Dayuan Plant:** a water consumption chart and water balance chart are established, and electronic water grids are set up at each major pipeline of the water supply system.

Ensuring water quality
- **Dayuan Plant:** water quality detection and control is conducted three times in every week, and water storage reservoir is cleaned once every six months

Water resource recycling and reuse
- **Dayuan Plant:** cooling water for sterilizers is recycled and reused, saving 12,015 tons of cooling water in a year
- **Highway service areas:** water circulation system is adopted for ponds or aquariums, and rainwater is collected at the rooftop for watering of plants
- **Headquarters:** touchless faucets and water-saving toilets are used

Effectiveness of Water Conservation

• Dayuan Plant - Recycling Cooling Water of Processing Equipment



There are three aluminum can sterilizers at Dayuan Plant and each uses water heated up to 120°C for sterilization. After recycling, the sterilizers are cooled at room-temperature, which requiring 15 tons of water for cooling, which is directly discharged to wastewater treatment plant. Not only does this process consume large quantities of water, but also incurs wastewater discharge processing fee. In 2016, Dayuan Plant resolved to recycle and reuse the 15 tons of cooling water to conserve water use and to reduce waste. After implementation of this program, approximately 12,015 tons of cooling water can be conserved in each year.

• Xihu service area - Installation of Water Circulation System at the Pond

The pond at Xihu service area filters impurities with three types of natural minerals, and uses nitrobacter generated through the natural ecosystem to activate the water in the pond and thereby keeps the water clear. Since minerals can extend the filtration effect, the cycle of the pond is extended from two weeks to one quarter, and helps to conserve 4,800 tons of water in each year.

Wastewater Management Measures

Wastewater from the plant mostly comes from cleaning processing waste and domestic wastewater. It is organic and approximately 300 CMD of wastewater is generated on average. All wastewater flows through the wastewater pipes within the plant to the wastewater treatment plant at Dayuan industrial area. Wastewater treatment is carried out and managed in line with Water Pollution Control Act and "Wastewater Treatment Facility SOP" and "Water Pollution Preventive Measures Program" within our plant. Dayuan Management Center audits the water quality of wastewater discharged from our plant on a monthly basis, and commissions external wastewater quality inspection in every six months in line with regulations. The average water quality inspection data from 2019 is as follows:

Item \ Water quality	BOD_5	COD	SS	pH
Control standard	240mg/L	480mg/L	240mg/L	5~9
Wastewater at source	336.5mg/L	704.5mg/L	220mg/L	6.25
Wastewater discharge	9.3mg/L	46.2mg/L	14.3mg/L	7.05

Wastewater facility enhancement

- **Dayuan Plant:** wastewater treatment system designed from NIJHUIS from the Netherlands is adopted, which integrates physical, chemical, and biological treatment
- **Highway service areas:** filter, oil-water separator, and oil collecting tank are installed at the kitchen drainage system to filter oil from being discharged into the wastewater system. The waste oil remains are also regularly disposed of.

Centralized treatment

- **Dayuan Plant:** after treatment, when the discharge has reached industrial area discharge standard, the wastewater is discharged to the Dayuan industrial area wastewater sewage, and centralized treatment is carried out by wastewater treatment firm.
- **Highway service areas:** after the water reaches wastewater pipelines, all of which will be discharged to wastewater treatment firm.

Regular inspection and maintenance

- **Dayuan:** Dayuan Management Center audits the water quality of wastewater discharged from our plant on a monthly basis, and commissions external wastewater quality inspection in every six months in line with regulations.
- **Highway service areas:** we regularly commission professional environmental protection company to extract the sediment of the retention tank and to perform relevant treatments including cleaning and maintenance of the oil collecting tank, the dredging of pipelines, and biodegradation and deodorization to maintain normal functions.

Reducing pollution from the source

- **Highway service areas:** eco-friendly detergent is used throughout to reduce deterioration of water quality and to reduce phosphorus pollution.

4.5 Waste Management

Waste Overview

Hsin Tung Yang's waste includes data from Dayuan Plant and the headquarters building; most of the waste is generated by the Dayuan Plant, and accounts for 99% of all waste.

	2017		2018		2019	
	Waste	Recycling ratio	Waste volume	Recycling ratio	Waste volume	Recycling ratio
Dayuan Plant	618.6	68.5%	662.4	75.4%	594.2	71.2%
Headquarters	4.5	23.8%	4.4	22.9%	4.4	24%
Total	623.1	68.1%	666.8	75.1%	598.6	70.8%

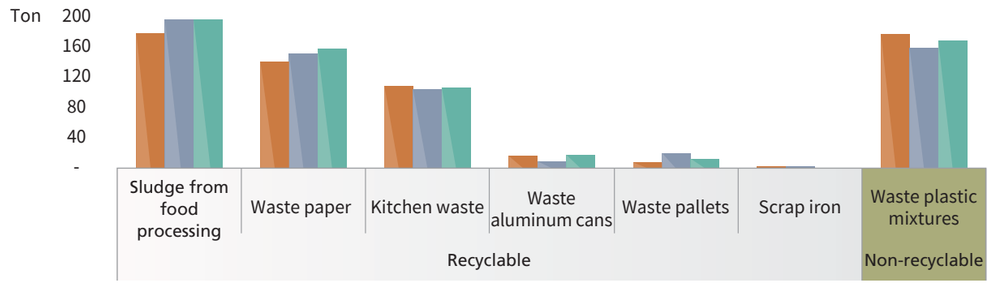
• Dayuan Plant

Waste at Dayuan Plant are classified as recyclable and non-recyclable. Recyclable waste includes (ranked by weight): sludge, waste cardboard boxes, kitchen waste, waste cans, waste pallets, and waste metals, and are treated in line with vendors' recycling channels. Non-recyclable waste includes: waste products, waste materials, waste packaging and employees' domestic waste (collectively referred to as waste plastic mixtures), and are mostly incinerated. In 2019, 594 tons of waste was generated and the ratio of recycling was approximately 71.2%. Recyclable waste amounted to 423 tons, while non-recyclable waste amounted to 171 tons.

• Headquarters building

The waste from Hsin Tung Yang's headquarters building was mostly generated during office works. Approximately 4.4 tons of waste was generated during 2019, in which 3.3 tons were non-recyclable (76%), and 1.1 tons (24%) were recyclable. Recycable waste included 0.79 tons (18%) of cardboard boxes, Tetra Paks, PET bottles, and aluminum cans and 0.26 tons of plastics and acrylics (6%).

Waste Treatment Volume at Dayuan Plant over the Past Three Years



Implementa-tion Sorting

- Dayuan Plant: a dedicated area is set up for temporary storage and separate management. Washed daily and disinfected twice a month. Scrap is dismantled proactively, and the categories of sorted waste within the plant have been increased.
- Highway service areas: kitchen waste and garbage sorting are carried out in practice. Moisture in kitchen waste is dried and the waste is contained in dedicated sealed containers to prevent odors. The containers are kept in a kitchen waste storage corner at low-temperature.

Promoting waste sorting Resource conservation

- Dayuan Plant: select qualified waste disposal and final treatment company; after weighing at the plant and online announcement, the waste disposal and reuse process is tracked via GPS and online confirmation.
- Highway service areas: the waste is disposed of by qualified vendor on a daily basis.

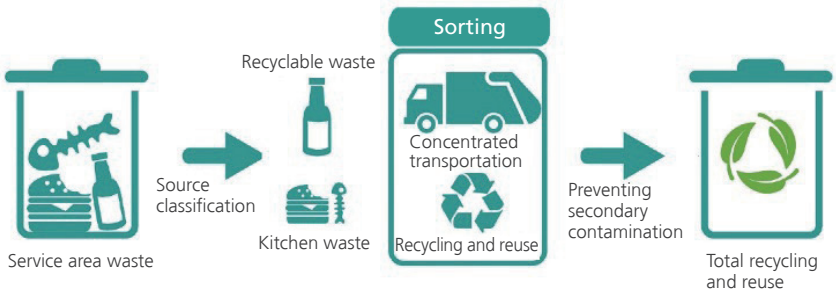
Promoting waste sorting Resource conservation

- Highway service areas: by referencing the practice at service areas in Japan, besides setting various sorting bins at appropriate, obvious locations outdoors, we also adopted garbage cans that are easy to identify, easy to clean, and difficult for people to throw domestic waste or industrial waste.
- Headquarters: we advocated for employees to make dual-sided xerox copies and to reuse paper. In addition, we also encouraged employees to use their own mugs to implement recycling and garbage sorting in practice.

Effectiveness of Waste Reduction

Hsin Tung Yang's Dayuan Plant has adopted reduction measures against food sludge and other waste, and has set a goal of increasing waste recycling ratio to 80%.

Year	Measure	Results
Food sludge reduction measures		
2017	Improved sludge de-hydrator	Decreased water content of sludge from 95% to 85%
2018	Added collecting trays for the excess water and oil clot from drum fil-ters	Fixed the water dripping issue of sludge barrels, making the sludge dryer
2019	Improved the sludge barrels by making them taller, and relocated to better positions	Improved sludge leakage and con-tainer bag contamination, by moving them with trucks
Other waste product reduction measures		
2017	Fixed broken pallets and purchased plastic and metal pallets to replace wooden ones	Reused broken pallets; fixed ap-proximately 1,000 wooden pallets in each year
2018	Dismantled scrap	Removed the outer packaging of scrap so contents may enter into the kitchen waste recycling system
2019	Increased types of waste to be recycled	On top of existing recycling measures for waste paper, metals, empty cans and barrels, we also began to recycle paper-based utensils, waste motor oil and waste solvents to reduce waste



4.6 Promoting Circular Economy

Hsin Tung Yang also practices the concept of circular economy and uses renewable materials and reuses waste. We are dedicated to reducing resource wastage from production, buildings at our channels, to various cycles of merchandise sales.

Implementation of circular economy	Implementation	Content	Schematic diagram
Factory end	1 Repair and reuse broken pal-lets	Wooden pallets at the factory are gradually worn from repeated use. To this means, Hsin Tung Yang began to repair wooden pallets in 2017 so they could be further reused rather than incinerated. We cumulatively repaired approximately 3,000 wooden pallets over the past three years, thereby reducing deforestation.	
Service area	2 Service area decorations and construction are founded on the principle of reuse	Large quantities of materials are often used during construction processes. Therefore, when we construct and dec-orate our service areas, we will maximize the use of recycled building materials and to simplify designs. For in-stance, green building design concept was used in Guanxi service area; we used "energy-saving bricks" made from recycled monitors by Spring Pool Glass, and old building materials that were no longer needed during renovation of the service area hall were used to build the "3R - Reuse, Reduce, Recycle Diagram" as part of the outdoors land-scape. Various information regarding environmental conservation is made to go along with the diagram, so that the people may understand the concept of recycling and reuse while taking a break at the service area.	
Factory end	3 Reusing excess food ingredients	To reduce environmental impacts from food wastage and to optimize food use as well as to assist in caring for dis-advantaged groups, we joined in donations from "Cherish Food Taiwan" at New Taipei City in 2007, and we collect and donate the excess ingredients from meat production to the Social Welfare Department, which then allocates the ingredients to dedicated sites for food-sharing. We have cumulatively donated 6,756 kg of meat. By connecting resources from our core business to public need, we can also disseminate the beautiful concept of cherishing food.	
Channel end	4 Promotional sale of soon-to-expire products	The life cycles of food products are short. To reduce scrap from expired food, Hsin Tung Yang has set up a promotional section based on our "Soon-to-expire Products Promotional Procedures" to encourage consumers to purchase soon-to-expire products. Promotions are also available for soon-to-expire products at our stores and online shop. In addition, we also allow internal employees to purchase such items at discounted prices so that soon-to-expire products would have more chances of being reasonably used.