Part4

Green Cheng Shin

Key Performance

◆ ISO50001

Cheng Shin’ s operations in Mainland China have passed the external certification for the ISO50001 energy management system.

◆ Greenhouse Gases Reduction

The energy saving programs promoted in Taiwan and China have reduced greenhouse gas emissions by a total of 17,794.60 tons of CO2e.

◆ Reducing the Use of Water Resources

A total of 57,265 tons of water consumption was reduced in Taiwan and Mainland China.

◆ Use of Green Energy

Cheng Shin has installed solar photovoltaic systems that can generate 2.1 million kilowatt-hours (kWh) per year.

4.1 Risks and Challenges of Climate Change

In order to cope with the risk and impact of extreme weather, Cheng Shin convened relevant heads of all departments through the Corporate Social Responsibility Working Group to identify major climate risk topics related to climate change based on the materiality principle and the Task Force on Climate-Related Financial Disclosures (TCFD), analyze their impact and opportunity, draw a climate change risk and opportunity matrix by identifying physical and transformational risks. Cheng Shin has developed a core and strategy for implementing climate change actions to address major risks in order to implement risk response measures, enhance the resilience of Cheng Shin to extreme climate and reduce the risk. Through regular review of the effectiveness of mitigation measures, Cheng Shin aims to standardize procedures to reduce the response time for similar risk treatment in the future.

◆ Key steps to identify climate change risks/opportunities and risk management processes

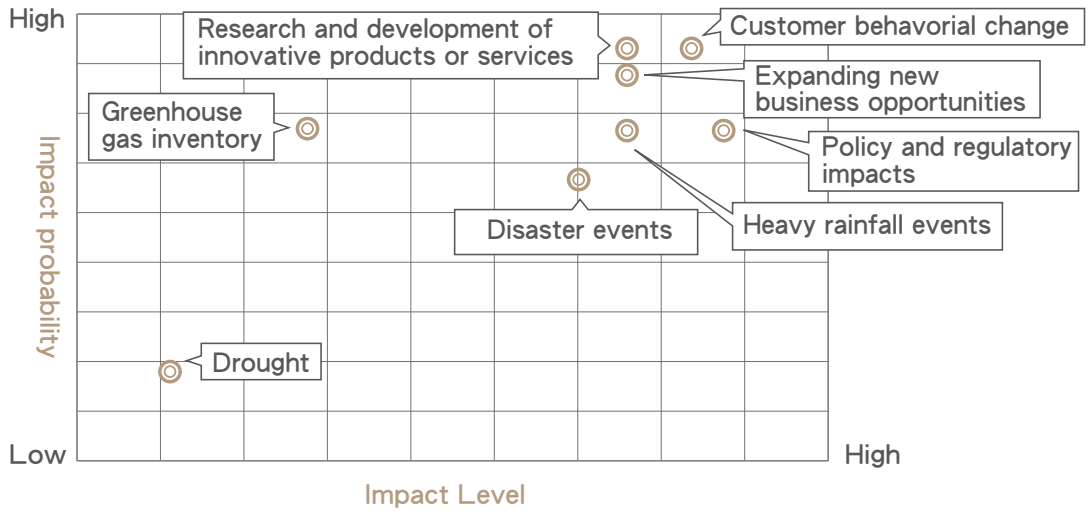
◆ Cheng Shin' s TCFD Indicator Disclosure Framework

Level	Indicator	Corresponding Chapter
Governance	A. Describe the board´s oversight of climate-related risks and opportunities.	Green Cheng Shin P.47
	B. Describe the role of management in assessing and managing climate-related risks and opportunities.	
Strategy	A. Describe the short term, medium term and long term climate-related risks and opportunities that the organization has identified	Green Cheng Shin P.48~51
	B. Describe climate-related risks and opportunities that would have a significant impact on the organization´s business, strategy, and financial planning.	
	C. Describe the organization´s strategic resilience, taking into account different climate change scenarios, including 2℃ or lower.	
Risk Management	A. Describe the organization´s processes for identifying and assessing climate-related risks.	Green Cheng Shin P.47~48
	B. Describe the organization´s processes for managing climate-related risks.	
	C. Describe the organization´s integration of processes for identifying, assessing, and managing climate-related risks into its overall risk management framework.	
Goals and Targets	A. Disclosure of the indicators the organization uses to assess climate-related risks and opportunities in accordance with its strategy and risk management processes.	Green Cheng Shin P.49 4.3.4 Greenhouse Gases Management
	B. Disclose the emissions and related risks within the scope of steps 1, 2, and 3 (where applicable).	
	C. Describe the objectives and performance of the organization to manage climate-related risks and opportunities.	

◆ Identify Risks and Opportunities of Climate Change

In response to the climate change and energy use crisis, Cheng Shin's ESG Steering Group, together with staff from each department, assessed the "impact probability" and "impact degree" of each risk according to the materiality principle. We have identified eight climate change risks and opportunities, and will develop new policies and solutions that integrate economic development, environmental protection, and sustainable development, and set short, medium, and long-term goals (short term: 2022-2025, medium term: 2025-2030, and long term: 2030-2050) to continuously strengthen climate resilience and build a culture of environmental sustainability.

◆ Climate Risk and Opportunity Matrix



◆ Climate Change Risk and Opportunity Impact Analysis

Type	Potential Risks and Opportunities	Point of Impact	to Cheng Shin	Response Measures
Transformation risk	Policy and regulatory impacts	Short-term	For the environmental protection laws and regulations announced by the government, it is necessary to understand and judge the level of compliance of our factory plants in a timely manner to facilitate compliance with government policies and regulations, resulting in increased labor costs.	· Self-inspect the pollution prevention status and the pollution prevention equipment capability on a regular basis through the internal audit of the effective environmental management system. · Establish regulations on the identification and management of environmental safety and health-related laws and regulations and collects regulations updated by relevant competent authorities every month to identify and implement them accordingly. · Conduct compliance assessment once a year to comply with statutory provisions.

Type	Potential Risks and Opportunities	Point of Impact	to Cheng Shin	Response Measures
Transformation risk	Customer behavioral change	Mid-term	· Increasing concern on environmental issues: In order to improve environmental protection and driving safety, with the expectation on the tire industry to provide consumers with better tire quality, stricter standards of EU Labeling/Marking Requirements have been put forward to implement in stages (2017~2030). · Purchase of all-season tires: In some European countries, there is only light and light snow all year round, and although the temperature is cold, there are no extreme cold conditions, so for the sake of convenience, consumers are starting to buy all-season tires. In response to new trends, new product positioning and new R&D directions are planned, resulting in increased labor costs.	Continue to carry out market and customer demand surveys so as to provide the new generation of all-season tire products in line with the market and customer demand.
	Cap-and-trade of greenhouse gases	Long-term	The current national policy trend will move toward total caps of greenhouse gas emissions, and only our main plant in Taiwan is subject to control, which may incur increased costs.	· Participate in industrial associations, negotiate with the government on greenhouse gas caps. · Participate in voluntary greenhouse gas reduction and continue to enhance the efficiency of equipment. · Conduct greenhouse gas inventory.
Physical risks	Heavy rainfall events	Short-term	The waterways in the plant are not easily drained and swell, causing water to accumulate on the roads and making it difficult for vehicles to pass, and the expenses are increased by assigning manpower and purchasing additional equipment to resolve the waterlogging situation.	Remove the silt in the waterway and increase water load. Add and purchase new equipment to increase the number of drainage motors in the plant to promote drainage efficiency.
	Droughts	Mid-term	The government's water restriction policy has affected the water required for the Company's operations, resulting in increased costs.	Continuously monitor government policies related to water use restrictions to prevent unanticipated policies from affecting the Company's production capacity.
	Disaster events	Long-term	Disasters cause interruptions in operations and damages to equipment, resulting in loss of revenue.	·Contingency shall be dealt with in accordance with the "Disaster and Accident Handling Management Methods". Such as: Emergency Response Plan Operation Process, Emergency Response Contact System, and Disaster Response Management, etc. ·Implement in accordance with the Technical Guidelines on Emergency Response Measures and follow the Taiwan Occupational health and safety management systems (TOSHMS) guidelines and the five related technical guidelines (risk assessment, procurement management, contracting management, change management, and emergency response measures) issued by the Ministry of Labor.

Type	Potential Risks and Opportunities	Point of Impact	to Cheng Shin	Response Measures
Opportunities	Expanding new business opportunities	Mid-term	Climate anomalies can cause a change in customer demand. If we can predict the market demand and develop new products, we are likely to enter new markets and increase our revenue.	· Develop new products based on customer performance requirements. · Segmenting markets and finding new niches.
	Develop innovative products or services	Mid-term	Anti-closing 3DSipe technology ensures that tires maintain excellent performance. Maintain product quality and enhance market competitiveness and sales volume. High wet grip 4S white smoke tread formula technology, optimize the product wet grip, enhance market competitiveness and sales volume.	Development of new generation products for each tire category.

◆ Response Strategies and Objectives for Climate Change

Type	Strategy	Climate Response Strategy Development Objectives	Achievements in 2021
Transformation risk	Internal audit and regulatory identification	Continuously ensure compliance through internal audits and regulatory identification, and advance regulatory deployment being superior to the laws and regulations.	Monthly review of the newly revised regulations and bulletins against the current status of implementation in our factory plants. Monitor draft amendments to laws and regulations and attend public hearings when necessary to express our opinions.
	Precise market response	In response to the rapid development of the electric vehicle industry,develop special products tailored to EVs (sedan cars and motorcycles). 1. Abrasion-resistant: The heavy weight of the electric car itself often leads to rapid tire wear. The tires for electric vehicles are further optimized and improved in terms of abrasion performance. 2. Low rolling resistance:Low rolling resistance can increase battery life and reduce charging times. 3. Grip: EVs have high torque, tires need to be specially designed to meet the acceleration mode of EVs. 4. Quietness: EVs produce little noise, so the tires need to be even more quiet on the road to ensure optimal comfort.	VS-EV tires have been introduced for 4-wheel sedans and MA-EV tires are available for 2-wheel motorcycles to meet the needs of the EV market.
	Promote energy-saving and carbon-reducing manufacturing	· Align with the Bureau of Energy´s electricity saving targets each year. · Aim to reduce energy consumption by 2% in 2021.	Greenhouse gas emission intensity was 1.40 in 2020 and 1.13 in 2021, a reduction of 19%.

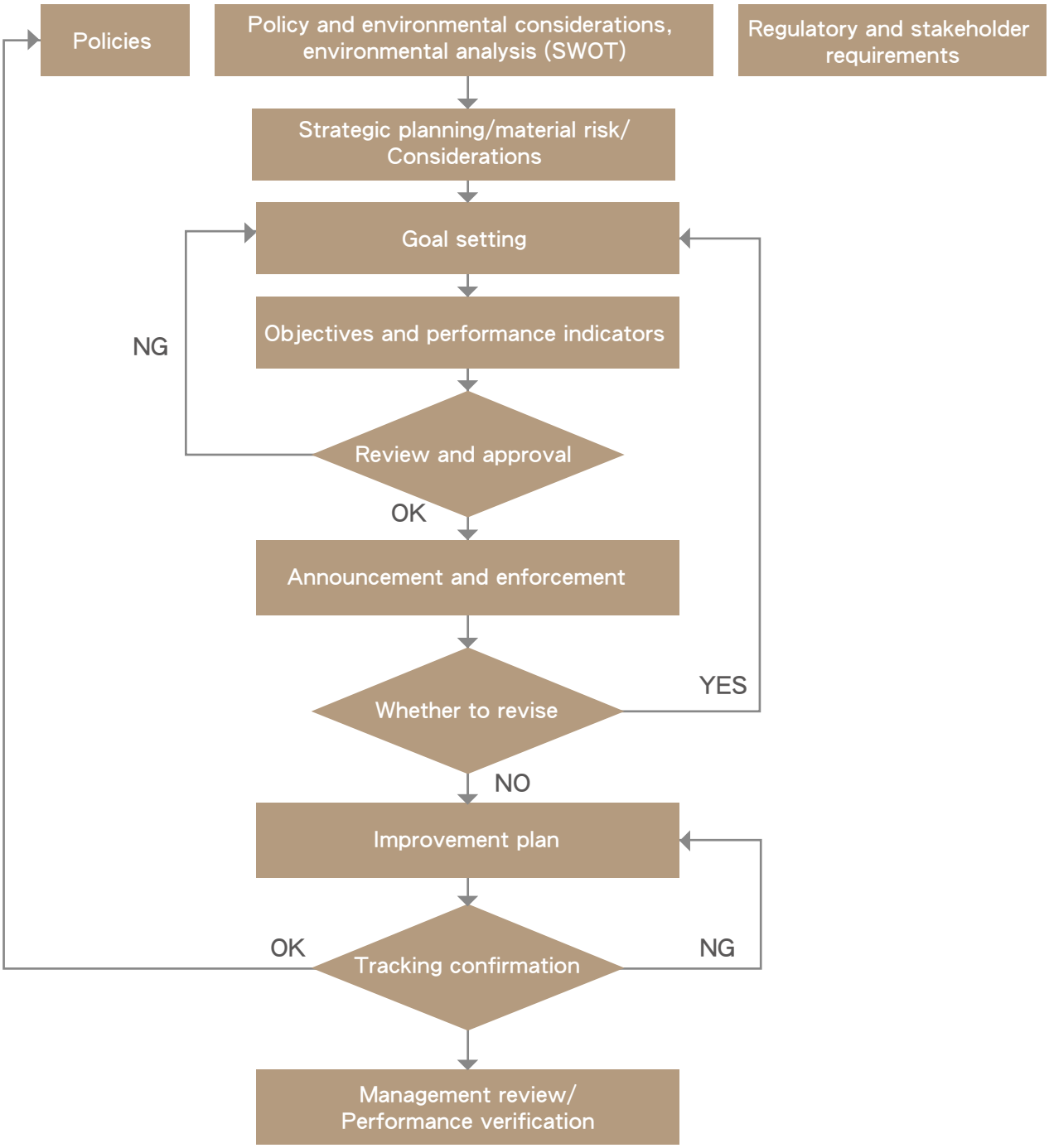
Type	Strategy	Climate Response Strategy Development Objectives	Achievements in 2021
Physical risks	Water resources risk management	· Conduct management in accordance with the Measures for Flood Control Pumping, adjust motor-related equipment as necessary (e.g., water level of each area, setting of stopping pumping water level, maintenance cycle, regional maintenance management). · Continue to monitor climate-related information for advance development of relevant countermeasures.	· Continuously monitor government policies related to water use restrictions to prevent unanticipated policies from affecting the Company's production capacity. · Established a record file for obvious climate anomalies and related government policies.
	Enhance climate resilience	Conduct management according to the "Provisions for the Management of Disasters and Accidents" every year, and continuously review and revise to conform to the current situation.	Implemented plant accident management in accordance with technical guidelines for emergency response measures, implemented and avoided disaster events in accordance with management regulations, and constantly revised and reviewed the contents of management provisions.
Opportunities	Develop innovative	· The development of a new generation of urban car tires and snow tires: anticipated development of four new products: 4X4 AT, 4X4 HT, UHP A/S and GT A/S. · New generation road bike tires, development of new Receptor product, 2nd gen MTB mud tires, and Gravel product line. · Develop large diameter ATV tires, Carnivore RT tires, and expected development of electrically powered ATV products. · Development of a new generation of medium-sized truck tires and wide base tires, and the development of EV tires for electric buses is expected to start.	MAP5 tires (195/65R15) are superior to existing products in terms of fuel efficiency and noise performance, and have received domestic energy-saving certification with C grade, and are superior to competitors in terms of dry and wet braking performance, wet handling performance and comfort performance. Our new generation of road bike tires help world-class cycling teams to achieve excellent results, the second generation of MTB mud tires SHORTY outperforms existing products grip and mud drainage, while the Gravel product line is now complete. Continue development of trending skinwall tire specifications. Go kart M190D and RC-1K are the designated tires for CADAT in Australia and Singapore in Southeast Asia respectively; Roxxzilla ML7 and RAZR XT ML-ST1 steel belt tires are used by the champion teams of King of the Hammers in the USA respectively. LTS MA260 & TBR MS290 wide base tires improve tire wear mileage, reduce rolling resistance, lower fuel consumption, reduce carbon emissions, and are kinder to the environment.

4.2 Environmental Management

The earth's climate and environment are deteriorating as a result of the effects of greenhouse gases, and Cheng Shin is fully aware of the fact that there is only one earth. As a global citizen, in order to comply with international norms such as the Paris Agreement and fulfill the corporate responsibility for environmental protection, Cheng Shin is committed to greenhouse gas inventory and has a good grasp of greenhouse gas emissions. Based on the inventory results, Cheng Shin further promotes voluntary greenhouse gas reduction programs and implements the environmental policy of "energy saving, resource recovery, operational safety, pollution prevention".

Cheng Shin has recognized that environmental protection is an indispensable factor in the sustainable operation of its business and has established a corporate environmental management system in line with the global environmental protection philosophy. Cheng Shin is committed to environmentally friendly product design and improving the equipment and operating environment, and has reduced the waste gas, wastewater, noise, and waste from the process and saved energy, achieving proper recycling of resources. Cheng Shin also strengthens the promotion of industrial safety, continues to carry out all kinds of pollution prevention and control to enhance its strength, enabling the harmonious coexistence and strong growth of the enterprise while protecting the environment.
Cheng Shin´s commitment to the environment is:

- Comply with all work safety and environmental laws and regulations and related requirements.
- In considering the product life cycle, Cheng Shin is committed to continuous improvement of technology and methods during the process of design, raw material, manufacturing, storage, transportation, usage, and waste disposal, so as to reduce the impact on the environment and enhance safety.
- Set up a sound internal and external communication channel and promote the concept of environmental protection to partner suppliers.
- Continue to promote industrial waste reduction, resource recycling, and pollution prevention.
- Continue to promote environmental education and establish a complete and effective environmental management system.



Environmental Management System Flow Chart

In terms of environmental management policy, Cheng Shin' s Taiwan operations have passed the ISO14001:2015 version change certification in 2017 and continued improvement through the "Plan-Do-Check-Act" model of the ISO14001 environmental management system. It has set annual targets for energy saving, water saving, waste reduction, and resource conservation and effectively improved the overall environmental performance through regular monitoring and tracking management by the ESH Committee. In addition, in order to comply with the national promotion of energy saving and carbon reduction, the industry is moving towards green industry, in line with the international trend of environmental protection, and to promote the sustainable development of the industry.

ISO14001:2015 Certificate

Environmental Communication

Adequate environmental communication and dialogue with stakeholders can enable them to understand Cheng Shin's emphasis on and management of environmental protection. In accordance with the principles of "environmental communication procedures" in the ISO14001 environmental management system, each plant will conduct community and neighborhood activities from time to time to establish smooth communication channels with the residents near the plant. In addition, Cheng Shin also provides channels for telephone complaints about local residents or external stakeholder groups who have concerns about the environmental impact on the local area of the production process. When each plant receives a telephone complaint, the handling process will be recorded in detail in the "External Communication Record Form". If there is any improvement, it will be made by the competent and responsible unit according to the complaint content and tracked by the environmental management department.

Important Communication Records of Taiwan and Mainland China Plants in 2021

Plant	External Agency	Communication / Summary	Internal Handling Situation
Taiwan	Local Agencies	The public complained about the odor situation, and routine inspections were conducted at the plant.	We went to site of the complaint to confirm that the production equipment and prevention equipment were not in operation, but there was a suspected smell of pig excrement there, and judged that the odor probably came from a nearby pigsty.
	Nearby residents	The public called the Company to complain about the odor situation	Personnel regularly inspect the Company's operational sites, report any odor immediately, and ensure the normal operation of boiler equipment, pollution sources and prevention equipment in the plant.

No related complaint cases in Mainland China occurred in 2021.

4.3.Energy Resources and Greenhouse Gas Management

4.3.1.Resource Management

The products manufactured by Cheng Shin are tires, and mainly consume raw materials such as raw rubber, synthetic rubber, carbon black, steel wire, etc. In order to reduce the exploitation of earth resources and save procurement costs, Cheng Shin adopts the following methods to reduce raw material consumption as much as possible.

- Adjust process parameters to reduce raw material consumption.
- Seek substitution of by-products, or reduce the amount to eliminate the use of by-products.
- Review the reasonableness of material usage regularly.
- Look for high-strength and lightweight reinforcing materials as alternative materials.

In 2021, the total raw materials used by Taiwan and mainland plants were 146,255 and 206,335 tons, respectively, the production capacity of tires (including inner tubes) were 145,192 and 205,185 tons, respectively, and the usage intensity of raw materials were 0.993and 0.994, respectively. In terms of material usage, Cheng Shin has enhanced material management and increased the ratio of material reuse, reduced waste generation, reduced scrap generation and reduced material loss, thus increasing the intensity of raw material usage compared to last year. In the future, Cheng Shin will continue to utilize raw materials efficiently and maintain the intensity of raw material usage.

Usage intensity of raw materials

Plant	2019	2020	2021
Taiwan	0.856	0.880	0.993
Mainland China	0.973	0.977	0.994

Note: Usage strength of raw materials = total weight of products (tons) / total materials consumed (tons)

4.3.2. Energy Management

Adhering to the energy policy of "energy saving, carbon reduction,and efficiency improvement", Cheng Shin has always attached great importance to the usage of energy, and energy management is our fundamental commitment to the environment. Energy management steering groups have been established in both Mainland China and Taiwan plants to set energy saving targets and implementation plans every year. Through the detailed decomposition of energy-saving targets and the implementation of an incentive system linking assessment and salary rewards and punishments, the departments are encouraged to actively implement energy-saving technical transformation initiatives through quarterly performance evaluations and year-end performance evaluations, realizing the gradual implementation of energy saving and carbon reduction. At the end of 2021, our Taiwan plants launched a photovoltaic system, which is expected

ISO50001:2018 Certificate of our Mainland China Plant

to provide 2.1 million kilowatt-hours (kWh) per year. All energy management personnel in Mainland China have been trained in ISO50001:2018 energy management system requirements and have obtained internal auditor certification with management-related requirements. In addition, Cheng Shin has passed the third-party management system certifications, and the Kunshan plant has received the Energy Star Level 3 energy award.

In terms of energy use, Cheng Shin uses electricity, gasoline, diesel, and natural gas most. In 2021, the energy use in Taiwan and Mainland China plants were 1,669,961GJ and 2,255,934GJ, respectively, and the energy use intensity in Taiwan was 11.50GJ/ton and 10.99GJ/ton in China. Diesel fuel is used to power forklifts and emergency generators, while gasoline is used for company vehicles.

State of energy use

Taiwan

Energy Category	2019	2020	2021
Electricity (GWh)	232.44	230.55	219.30
Diesel (KL)	103.07	106.62	95.50
Gasoline (KL)	145.03	142.61	100.05
Natural Gas (ML)	26.92	25.84	26.20
Total Calorific Value (GJ)	1,741,988	1,699,077	1,669,961

Note 1: The source of calorific value refers to the "Greenhouse Gas Emission Coefficient Management Table 6.0.4" published by Taiwan Environmental Protection Administration.

Mainland China

Energy Category	2019	2020	2021
Electricity (GWh)	319.63	281.19	206.39
Diesel (KL)	418.14	348.96	321.80
Gasoline (KL)	168.12	122.48	115.09
Purchased steam ('000 tons)	522.78	472.73	435.96
Nitrogen (million Nm3)	10.47	9.18	9.76
Total Calorific Value (GJ)	2,714,061	2,420,672	2,255,934

The energy category is counted according to the China energy regulatory projects and by adopting the Guidelines on Accounting Methods and Reporting of Greenhouse Gas Emission of Enterprises in Industrial and Other Industries.

Energy Usage Intensity

Region	2019	2020	2021
Taiwan	14.01	13.84	11.50
Mainland China	10.97	11.24	10.99

Note: Energy intensity = energy consumption (GJ) / gross product weight (tons)

4.3.3.Energy Conservation and Carbon Reduction Measures

Since 2009, each Cheng Shin plant has been launching a number of energy-saving programs. In 2021, the main focus of energy saving initiatives was on process/plant equipment optimization, replacement of old equipment and energy-saving control management. It is estimated that greenhouse gas emissions in Taiwan and Mainland China operations was reduced by 2,264.60 tons and 15,530 tons of CO2e, respectively with the Company' s energy saving initiatives.

Major Energy Saving Initiatives:

Region	Item	Content	Annual Energy Saving Performance	Annual Carbon Reduction Performance
Taiwan	Equipment upgrades and optimization	The purpose of carbon reduction can be achieved by modifying the operation of the equipment or upgrading the equipment.	248,800 kWh	124.9
	Replacement with energy-saving equipment	Replace old equipment with more energy-efficient equipment.	3,697,000 kWh	124.9
	Technical optimization	Application of production technology or equipment technology transformation, in order to achieve the purpose of carbon reduction.	565,400 kWh	283.80
	Equipment upgrades and optimization	The purpose of carbon reduction can be achieved by modifying the operation of the equipment or upgrading the equipment.	Saved 274 tons of steam	82.00
	Technical optimization	Upgrade production technology or equipment technology transformation, in order to achieve the purpose of carbon reduction.	1. Saved 46,000 tons of steam 2. 1,555,200 kWh	15,448.00

Note1: The amount of carbon dioxide at Taiwan plants refers to the electricity emission coefficient announced by the Bureau of Energy, citing the electricity coefficient for 2020 provided in the announcement issued on Sep 27, 2021.
Note 2: The amount of carbon dioxide in Mainland China plants refers to the "Guidelines on Accounting Methods and Reporting of Greenhouse Gas Emission" announced in 2014. Steam emission coefficient: 0.116 tCO2e/GJ; Power emission coefficient: 6.829tCO2e/10,000 kWh.

4.3.4.Greenhouse Gas Management

The Intergovernmental Panel on Climate Change (IPCC) has stressed that it is "very likely" that the increase in average global temperatures is caused by man-made greenhouse gases. In response to international regulations such as the Paris Agreement and to fulfill our corporate responsibility for environmental protection, we are committed to conducting greenhouse gas inventories to grasp the exact status of greenhouse gas emissions and, based on the results of these inventories, to further promote voluntary greenhouse gas reduction programs and implement energy-saving improvements to reduce energy consumption and greenhouse gas emissions. Referring to ISO14064-1:2006 Organizational Greenhouse Gas Inventory Procedures, Cheng Shin voluntarily discloses the greenhouse gas emissions on an annual basis. In accordance with the "Sustainable Development Roadmap for Listed Companies" released by the Financial Supervisory Commission in March 2022, Cheng Shin has planned its greenhouse gas inventory and verification planning period and shall proceed with relevant measures according to plan.

Cheng Shin's goal for greenhouse gas reduction is to reduce greenhouse gas emissions by 3% per metric ton of product. In 2021, the total greenhouse gas emissions from Taiwan and Mainland China plants were 164,973 and 310,027 tons of CO2e respectively. Cheng Shin is seeing a downward trend in direct emissions. It is presumed that the direct emission project has been effective because of the continuous energy saving measures carried out at each plant year after year to improve the operating equipment required for manufacturing processes

Greenhouse gas emissions

Unit: ton CO_{2e}

Plant	Item	2019	2020	2021
Taiwan	Category I: Direct Emission	56,428	54,180	54,885
	Scope 2: Indirect GHC Emissions	128,773	117,353	110,088
	Total	185,201	171,533	164,973
Mainland China	Scope 1: Direct Emissions	1,453	1,177	1,088
	Scope 2: Indirect GHC Emissions	399,843	355,798	308,939
	Total	401,296	356,975	310,027

Note 1: The data for Taiwan is calculated by referring to the "Greenhouse Gas Emission Coefficient Management Table 6.0.4" published by Taiwan Environmental Protection Administration.
Note 2: GWP values for greenhouse gas type are based on the IPCC Fourth Assessment Report (2007).
Note 4: The amount of carbon dioxide at Taiwan plants refers to the electricity emission coefficient announced by the Bureau of Energy, citing the electricity coefficient for 2020 provided in the announcement issued on Sep 27, 2021.
Note 4: The data for the mainland region is calculated by referring to the "Guidelines on Accounting Methods and Reporting of Greenhouse Gas Emission" issued by the National Development and Reform Commission of China in 2014.

Greenhouse gas emissions intensity

Unit: ton CO_{2e}

Region	2019	2020	2021
Taiwan	1.49	1.40	1.13
Mainland China	1.62	1.66	1.51

Note: GHG emissions (tCO2e)/total product weight (tons)

4.4.Water Resources Management

4.4.1.Water Use Management

Item	Cheng Shin’ s Water Use Management Strategy
Materiality	Due to environmental and climate change, the increasing lack of water resources has become one of the top five global risks.
Policy/ Commitment	Environmental policy "energy saving, resource recovery, operational safety, pollution prevention".
Goals and Targets	Reduce production water and wastewater discharge, comply with relevant laws and regulations.
Responsibility	Environmental safety departments of the parent company and subsidiaries.
Communication Channels	Environmental communication procedures.
Action Plan	· ISO14001 environmental management system. · Taiwan region: RO pure water is used for boiler water, and residual water is recycled for process use, and process water is recycled. · Mainland China: reclaimed water system; water saving valves are used in general areas. · Wastewater treatment method: The wastewater is pretreated at the in-plant treatment station and then discharged through pipes to municipal or industrial wastewater treatment plants. Some Cheng Shin plants treat the wastewater internally and then discharge it into natural water bodies.
Effectiveness Assessment	Regular review of production water and wastewater discharge.

Due to climate change, water resources are becoming increasingly scarce. Both developed and developing countries have been affected by dwindling water resources. Moreover, in the Global Risk Report of the World Economic Forum issued over the past three years, "water crises" around the world have been listed as one of the five global risks. Amidst the difficult conditions of poor water resources, the stability of water supply is becoming a growing concern for business operations. Based on the position of risk control and corporate sustainability, Cheng Shin has already promoted cooling water recycling through dedicated pipes, boiler steam recovery, etc., and advocated water saving, and installed faucets with water-saving features. Cheng Shin´s RO reverse osmosis is mainly used for boilers, and the wastewater after reverse osmosis is reintroduced with cooling water for recycling to avoid water waste. The water sources used by Cheng Shin include tap water and underground water. Cheng Shin holds the water rights certificate issued by the competent authority for all wells in which groundwater is extracted and uses water according to the authorized amount. In 2021, the total water consumption in Taiwan and the Mainland China operations were 1,079,686 tons and 435,174 tons respectively, with total water use reduced by 0.21% and 11.21% year-on-year due to production adjustments and the promotion of water-saving awareness among employees.

Water Resources Usage

Unit：Ton

Region	Item	2019	2020	2021
Taiwan	Tap water	322,310	455,954	288,722
	Ground Water	893,491	626,048	790,964
	Total	1,215,801	1,082,002	1,079,686
Mainland China	Tap water	579,479	490,123	435,174
	Total	579,479	490,123	435,174

In addition, Cheng Shin’ s Mainland China operations have always attached importance to water conservation, educating employees on water conservation in work activities, and posting water conservation reminders and signage in employee bathrooms, toilets, and sinks. The Company also encourages the multiple reuse of water resources, eliminate water leakage and waste, improve industrial water reuse, and reduce waste water discharge.

Cheng Shin’ s Kunshan Plant in China was awarded a "Water-Saving Enterprise"

4.4.2.Wastewater Management

For wastewater generated from daily operations, Cheng Shin conducts wastewater discharge operations in accordance with local laws and regulations and ensures that the quality of the discharge water is within the limits of the "Effluent Standards". In order to reduce the discharge of wastewater, the boiler water in Taiwan plants is replaced with RO pure water so that the residual water can be recycled for process use and the reverse washing water for process water can be recycled. In addition, a water recovery facility has been set up in the Xizhou Plant to recycle about 35% effluent of the waste (sewage) water for irrigation and toilet flushing to reduce the discharge of water. In addition, by integrating the production configuration of each plant, Cheng Shin effectively utilizes the space and water sources in the plant, fully verifies the discharge pipelines in the plant, diverges the flow direction of wastewater and rainwater, integrates the main pipelines, and eliminates those with water leakage, damage and low frequency of use. This improvement plan can effectively reduce the discharge of wastewater (sewage). Wastewater discharge in the Company' s Mainland China operations decreased by 2.8% compared to the previous year. In terms of wastewater discharge destinations, some of the Company' s wastewater discharge in Taiwan and Mainland China are pre-treated at in-plant treatment stations and then discharged it to municipal or industrial park wastewater treatment plants, while in some areas, the wastewater is treated in-plant and then discharged to natural water bodies.
The volume of wastewater discharged in Taiwan and Mainland China plants in 2021 were 555,293 and 404,539 tons respectively.

Wastewater discharge over the past three years

Unit: tons

Region	Wastewater characteristics	2019	2020	2021
Taiwan	Mainly domestic wastewater and cooling wastewater	531,384	448,307	555,293
Mainland China	Mainly domestic wastewater and steam condensate wastewater	436,632	416,312	404,539

Note 1: The total amount of waste water in Taiwan is counted by flowmeter equipment, and the flow meter is calibrated by a third-party qualified verification unit in accordance with Taiwan's environmental protection laws and regulations, and the frequency of verification is once a year.
Note 2: Waste water in Mainland China is measured by flowmeters specified by the government and connected to the government for measurement. The equipment is verified by the Quality Assurance Department once a year.
Note 3: The data for mainland China in the 2020 report was incorrectly stated as 284,942, and is hereby rectified.

Wastewater Discharge Basin and Environmentally Sensitive Areas
The wastewater from the Changhua main plant and each branch plant is first treated internally before being discharged to the Yangzaicuo River and the Zhuoshui River respectively, while the wastewater from each branch plant in Douliou is discharged to the Huwei River after being treated by the wastewater treatment plant in the Yunlin Technology-based Industrial Park (Zhuweizi Zone). None of the above discharge river sections affect particularly sensitive water bodies, wetlands or other nature reserves.

Region	Treatment Unit	Discharge Basin	Whether flowing through particularly sensitive water bodies, wetlands or other nature reserves
Changhua Plant	Self-treatment	Yangzaicuo River	No
Changhua Plant 2	Self-treatment	Yangzaicuo River	No
Changhua Plant 3	Self-treatment	Yangzaicuo River	No
Changhua Zhongzhuang Plant	Self-treatment	Yangzaicuo River	No
Changhua Xizhou Plant	Self-treatment	Yangzaicuo River	No
Douliou Plant 1	Yunlin Technology-based Industrial Park (Zhuweizi Zone) Sewage Treatment Plant	Huwei River	No
Douliou Plant 2	Yunlin Technology-based Industrial Park (Zhuweizi Zone) Sewage Treatment Plant	Huwei River	No
Douliou Plant 3	Yunlin Technology-based Industrial Park (Zhuweizi Zone) Sewage Treatment Plant	Huwei River	No

The water quality standards in Taiwan and Mainland China vary in accordance with the regional nature of the discharge standards. The standards for general areas and industrial areas in Taiwan are detailed in the following table. The wastewater in industrial areas is treated by the wastewater treatment facilities in the plants and discharged after reaching the discharge standard. The wastewater in industrial areas is treated by the treatment facilities in the plants and discharged to the wastewater treatment plants in the industrial parks, so the water quality and quantity standards are different from those in general areas. For water quality and quantity that exceeds the allowable discharge standard of the industrial area, additional treatment fees will be paid and the industrial area will be subject to regular water quality and quantity spot checks.

Cheng Shin follows the relevant local management norms of testing and declarations. The Taiwan plants conduct water quality testing every six months to facilitate the declaration, and the annual water quality testing result in 2021 met the effluent standards. In accordance with the control items required by the Phase 5-2 EIA, the Mainland China plants follow the water quality standards for sewage discharged into urban sewers, and the water quality testing result of the Mainland China plants in 2021 all met the implementation standards.

The following table shows the discharge water quality standards and water quality data for the Taiwan main plant and Douliou Plant 1 as well as the water quality standards and data for Mainland China.

Taiwan

Water Quality Item	Taiwan Region Effluent Standards		Effluent Testing of Main Plant (Applicable to general local standards)	Effluent Testing of Douliou Plant 1 (Applicable to industrial area standards)
	General Areas	Industrial Areas	Effluent	Effluent
Water Temperature (℃)	May-September 38℃ October-April 35℃	45	25.6	24.8
Suspended Solids (mg/L)	30	320	16.0	0.7
Biochemical Oxygen Demand (mg/L)	30	320	9.8	6.6
Chemical Oxygen Demand (mg/L)	100	480	43.3	22.0
pH	6-9	5-9	7.5	7.3
Oil and grease (mg/L)	10	10	7.8	1.1

Mainland China

Water Quality Item	Water Quality Standards of Mainland Region	Effluent Testing of Mainland Region
COD(mg/m³)	70	51.9
SS(mg/m³)	40	21
NH3-N(mg/m³)	10	3.25
TP(mg/m³)	0.5	0.29
TN(mg/m³)	10	7.56
Petroleum (mg/m³)	1	0.35

4.5.Waste and Recycling

At present, all of Cheng Shin’ s waste is implemented in accordance with the "Business Waste Cleanup Plan" approved by the local environmental protection authorities, and the waste is entrusted to a qualified environmental protection and waste disposal companies certified by competent authorities. Cheng Shin tracks the vehicle routes of the waste disposal companies on a regular basis to understand whether the final flow of the waste is legal. Recyclable waste (residual) includes waste rubber, waste metal, waste plastic, waste pallet, and waste paper/carton, etc., which are sorted and collected by qualified local recyclers for recycling to enhance the life cycle of recycling of waste resources. Cheng Shin also announces the waste items and containers that should be recycled, and has properly established a sorting and recycling system to strengthen the concept of resource recycling among all personnel. In addition to compliance with the regulations for waste disposal, Cheng Shin also adopts the following practices to minimize waste generation:

- Waste is classified and recycled to reduce the type and quantity of waste disposal.
- Cheng Shin has developed Level 1-3 independent maintenance plans to extend the service life of articles by regular maintenance and gradually introduce consumables and raw materials of eco-friendly materials.
- Entrust recycling organizations to handle recyclable waste (residual items) generated by Cheng Shin according to the announced categories.
- Reduce the use of disposable tableware, provide staff with personal tableware and use stainless steel tableware in restaurants for reuse.
- The total amount of waste generated in Taiwan and Mainland China operations in 2021 includes domestic waste, general and hazardous business waste, with a total of 3,933.78 and 9,014 tons respectively.

Waste generation and treatment statistics

Unit: ton CO_{2e}

Region	2019	2020	2021
Taiwan	6,898.66	5,866.34	3,933.78
Mainland China	10,302.00	8,098.00	9,014.00

Region	Waste Type	Disposal method			Total	%
		Incineration	Landfill	Recycling		
Taiwan	Domestic waste	312.78	0	0	312.78	7.9%
	General business waste	145.25	0	3,472.06	3,617.31	92.0%
	Hazardous business waste	0.33	3.36	0	3.69	0.1%
	Total				3,933.78	100%
Mainland China	Domestic waste	33	-	477	510	5.6%
	General business waste	291	-	7,890	8,181	90.8%
	Hazardous business waste		183	140	323	3.6%
	Total				9,014	100%

Note: Since it is not possible to distinguish between incineration and landfill disposal methods for hazardous business waste at the Chongqing plant, the data presented is consolidated.

4.6.Air Pollution Prevention

The sources of air pollutants in the tire industry are mainly emissions from the manufacturing process and boiler combustion. The types of pollutants include dust, granules, nitrogen oxides, volatile organic compounds (VOCs) and odors, etc. For the prevention and control of various pollutants, Cheng Shin mainly focuses on improving the efficiency of pipe end treatment and carrying out strict monitoring and invests a large amount of funds in optimizing and upgrading the exhaust gas treatment equipment. For the treatment of VOCs and odors in the Taiwan plants, the Company has added water washing towers and photocatalytic systems at the back end of the mixing process to effectively reduce VOCs emissions and odor dispersion. All exhaust ports in the mulling workshop of Kunshan Plant are installed with compound exhaust gas treatment equipment. Air pollution emissions from Taiwan plants have been on a downward trend over the years, which is mainly due to the replacement of heavy oil boilers with more environmentally friendly natural gas boilers. However, the number of monitoring points for environmental air pollution sources in mainland plants was 56 according to the previous EIA and updated to 88 in accordance with the law and EIA in 2021. Therefore, as the number of monitoring points increases, air pollution emissions will also increase.

Air pollution emissions over the past three years　　Unit：Ton

Region	Pollutant Type	2019	2020	2021
Taiwan	Sulfur oxides	-	0.02	0
	Nitrogen oxides	46.97	46.66	49.14
	Volatile organic compounds	129.80	126.1	139.22
	Particulates	0.46	0.93	1.11
	Total	177.23	173.71	189.47
Mainland China	Volatile organic compounds	6.77	6.88	7.02
	Particulates	16.01	8.63	11.62
	Hydrogen sulfide(H2S)	0.03	0.04	0.11
	Total	22.81	15.55	18.75

Note1:Statistics were conducted according to the major controlled pollutants according to local regulations.
Note2:The 2020 report incorrectly disclosed the amount of 173.69 for Taiwan, and is hereby rectified.

4.7.Compliance with Environmental Regulations

Cheng Shin adheres to the principle of complying with laws and regulations, improving environmental quality, and reducing environmental pollution. Through effective internal audits of the environmental management system, Cheng Shin regularly reviews the pollution prevention situation and the proper rate of pollution control equipment, and corrects any deficiencies immediately. In addition, there are regulations on the identification and management of environmental safety and health-related laws and regulations, and the safety and health and environmental protection management units collect monthly updates from relevant authorities to identify and implement them one by one; we also conduct an annual assessment of regulatory compliance in order to comply with the law. However, in 2021, we still recorded three violations of environmental regulations in Taiwan, and at the same time, in response to the violations of environmental regulations, we are revising the reporting amount immediately and formulating and carrying out prevention and improvement measures to avoid the recurrence of the same issue. No violation occurred in our Mainland China operations.

Violations of environmental protection laws and regulations in Taiwan and Mainland China in 2021

Region	Name of Laws or Regulations Violated	Causes/Circumstances of Violation	Amount of Fines Imposed	Improvement Plan
Taiwan	Violation of Article 28, Item 1 of the Water Pollution Control Act	Due to the failure of pumping motor and level gauge in the wastewater unit, the wastewater in the tank flowed into the treatment unit, and the wastewater overflowed through the wastewater facility side channel and the discharge channel, causing leakage to surface water bodies outside the premises.	NT$975,910	The wastewater flowing out of the treatment unit should be recovered and the faulty equipment should be repaired.
	Violation of Article 14, Item 1 of the Water Pollution Control Act	The wastewater unit is not operating normally in accordance with the permit process. The daily tap water consumption was 188 cubic meters, but on-site inspection of the water source data showed that the average daily water consumption was 643 cubic meters, which was not in accordance with the permitted daily water consumption of 188 cubic meters.	NT$231,000	Application for change of water pollution control measures permit.
	Violation of Article 23, Item 2 of the Air Pollution Control Act	The sanctioned party (contractor) was awarded the contract to handle the miscellaneous "new construction work of Plant 3, fence and gate of Cheng Shin Rubber Industry Co.Ltd." (Control Permit No. P110P1Z115-1). After an inspection by the Environmental Protection Bureau of the Yunlin County Government on October 30, 2021, it was deemed that the piles of materials at the site were not covered with dust-proof tarps and dust-proof nets in accordance with the regulations, the paved surfaces of the vehicle paths were not cleaned, and the bare surfaces were not managed in accordance with the regulations, in violation of Article 23 of the Air Pollution Control Act.	NT$100,000	The contractor was required to install dustproof tarps and nets in accordance with the regulations, and the pavement of the driveway was cleaned regularly.