



Performance in Environmental Aspect



Environmental Policy and Management

The Group recognizes the importance of environmental care along with the business growth; therefore, the environmental management system under ISO14001:2015 has been adopted as a framework for managing every work procedure. The framework covers sustainable use of resources to protect the environment and ecosystem, the control and prevention of the cause of environmental impacts arising from the Group's operations, and the continued improvement of environmental performance.

To ensure conformity with the organizational mission and goals of utilizing internal resources for sustainable development, the Group has established the ISO 13001 Committee to be directly in charge and drawn up guidelines as a framework for complying with the regulations on international environmental management and laws concerned.

Furthermore, to ensure that employees and persons concerned fully follow the guidelines, the Group has conducted the internal audit of which reports must be submitted at specified times. The outcome of environmental actions, the availability of necessary tools and environmental issues shall be reported to the executive on a monthly basis; while the statistics of performance shall be reported to the executive and the provisions shall be reviewed on an annual basis.




Energy Management

The Group recognizes and commits to most efficiently manage its electric and fuel energy consumption. In this regard, integrated energy management has been implemented to wisely use natural resources, reduce environmental impacts, and reduce the Group's energy costs in the whole system. The Group has become a member of the Thai Renewable Energy Association (RE100) and expressed its intention to conserve the energy. It also joined the "Energy Beyond Standard" network by the Department of Alternative Energy Development and Efficiency. Moreover, the Group has obtained the Renewable Energy Certificate (REC) which can promote the generation of electricity from a renewable energy source through the trading of REC.

The Group has continuously used renewable and clean energy instead of fossil fuels which can be demonstrated by the following projects:


- 1) Using produced biogas as fuel instead of liquified petroleum gas (LPG) in the rubber curing process of the Group's block rubber factories.
- 2) Using biogas to generate electricity for internal use instead of electricity bought from external sources.
- 3) Using waste heat from the generation of electricity as a substitute of liquified petroleum gas (LPG) in the rubber curing process of the Groups' block rubber factories.
- 4) Increasing energy efficiency by using electric machinery or vehicles, using low energy consumption machinery or equipment, and performing machinery maintenance according to the TPM plan.

In 2022, the Group can use biogas instead of liquified petroleum gas at 72.8%. And it aims to increase the use of renewable energy in the production processes to 90% by the year 2030. Data of renewable energy consumption is as follows:



Fuel Energy Consumption ⁽¹⁾ (kilogram)	2020	2021	2022
Liquified petroleum gas (LPG)	253,308	349,067	1,123,031
Biogas	3,593,583	2,921,759	3,002,967
Total	3,846,891	3,270,827	4,125,998

Notes ⁽¹⁾ Data from the natural rubber business only.



Electric Energy Consumption ⁽²⁾ (kilowatt-hour)	2020	2021	2022
From the Provincial Electricity Authority (PEA)	17,934,985	16,077,254	22,307,197
From renewable electricity	14,217,003	16,946,544	15,977,742
Total	32,151,988	33,023,798	38,284,939

Notes ⁽²⁾ Data from the natural rubber business and crude palm oil business only.



Data	2020	2021	2022
Average fuel energy consumption per product ⁽³⁾ (Kg LPG per ton of product)	26.9	17.8	18.8
Average electricity energy consumption per product ⁽⁴⁾ (kilowatt-hour per ton of product)	181.6	147.0	142.3

Notes ⁽³⁾ Data from the natural rubber business only.

⁽⁴⁾ Data from the natural rubber business and the crude palm oil business only.





Water Management

The Group pays attention to water management which is a vital factor in agricultural business. Therefore, it aims at efficiently managing the water, reducing usage of water from natural sources, and developing sufficient alternative water sources. As the Group focuses on the quality of water and causing no impact to the nearby community, treated wastewater is reused to achieve the circular economy under the 3Rs principle (Reduce, Reuse, Recycle).

The Group's water management approach involves the whole organization with the use of accepted, efficient and eco-friendly technology, making the quality of treated water suitable for the production processes. The Group's water management includes:

- Seeking sufficient alternative water sources for internal consumption.
- Reusing decomposed organic wastewater from biogas pond by mixing with solid organic waste from the biogas production process.
- Performing treatment of wastewater from its factories in which the quality of wastewater from factories is controlled and the treated freshwater is reused in its production processes.
- Reducing the consumption of tap water and untreated water by improving the quality of treated freshwater for reuse in the production processes, cleaning and watering trees in the green space.
- Develop and improve wastewater treatment technology to be most efficient and at highest standard. Water discharge from wastewater treatment must pass the minimum water quality standard. The total 100% of treated water must be reused with zero discharge.
- Conducting random sampling to test the quality of both internal and nearby external water sources to collect data and to ensure the community that the water sources and its quality is normal.

In 2022, the Group can use recycled water instead of fresh water in its production processes at 93.2%. And it aims at increasing the consumption of recycled water to 100% by 2030. Currently, the Group is under the process of developing the corporate water footprint which is expected to be completed within 2022.

Data of the consumption of recycled water instead of fresh water is as follows:

Water Consumption in Production Process ⁽¹⁾ (cubic meter)	2020	2021	2022
Fresh water consumption (Fresh Water) ⁽²⁾	85,669	129,283	92,373
Recycled water consumption	944,907	1,087,771	1,270,393
Total	1,030,576	1,217,054	1,362,766

Notes ⁽¹⁾ Data from the natural rubber business only.

⁽²⁾ Fresh water includes untreated water, reverse osmosis (RO) water, tap water and soft water.

Data	2020	2021	2022
Average water consumption per product ⁽¹⁾ (cubic meter per ton of product)	7.2	6.6	6.2

Notes ⁽¹⁾ Data from the natural rubber business only.





Waste Management

The Group emphasized on managing waste in the whole organization in a integrated way by adopting a model of transforming zero waste to waste to value and complying with laws to achieve the green industry under the bio-circular-green economic model (BCG). Most of the waste from the Group's business operation is non-hazardous waste and organic waste. The Group's approach for waste management is as follows:

- Raising awareness on the importance of waste segregation and performing waste segregation. The origin of waste and how to manage such waste must be identified whether for reuse or disposal according to relating laws and regulations; for instances, metal waste can be recycling to make equipment or repair equipment in factories; organic waste from production processes like wood scraps, leaves can used to make bio compost; and rubble, dirt and sand can be used for grading.
- Reducing waste from the production processes such as reusing layering plastic sheets in block rubber production.
- Reducing the use of foam food containers and single-use plastic bags.
- Managing waste by implementing waste to value at 100% of total waste, making the Group become a company that achieves the Zero Landfill Zero Burn goal.

As a result of its efficient waste management, in 2022 the Group received no complaint about the leakage of waste to nearby community. The Group, through EQR, has been certified as the Green Industry Level 5: Green Network by the Ministry of Industry. This demonstrates that the Group has expanded its effort to be a green industry throughout the supply chain to external parties in which suppliers and partners are encouraged to become the green industry as well.

Data of waste segregation by types of waste is as follows:



Data about method of waste disposal of the Group:

Method of Disposal (ton)	2022
Use as soil amendments	3,430
Use for grading for construction	7,290
Use in green space	3,034
Reuse	244
Others (outsourced disposal according to law)	49
Total	14,047



Air Quality Management

The Group has implemented air quality management by reducing the impact at sources (its factories emitting smoke and steam from chimney); strictly controlling the emission of air pollution under the provisions of ISO14001; and managing the impact of air pollution on stakeholders such as employees, contractors working in the Group's area, and the community and environment surrounding the factories. The policy and practices on this matter are as follows:

- Having in place a system to control the release of substances into the air such as installing a high efficiency wet scrubber in block rubber factories to remove dusts and chemicals from exhaust steam of production processes that is released through a chimney.
- Improving equipment and work procedures to reduce the air pollution such as changing to receiving organic waste in a close system, shortening the loading time, and managing transport vehicle to shorten organic waste loading queue to reduce a chance of a smell from microbial degradation.
- Creating a close system for water discharged from cum lump receiving areas to reduce the natural smell of latex; spraying biological substance (effective microorganisms - EM) on cum lump in the receiving area to reduce the smell.
- Promoting the use of clean energy in the factory production process to reduce the emission of air pollution.
- Installing an air quality analysis in the area and having the air quality inspected regularly by a third party. Check points are set up within the 5-kilometer perimeter of the factories to check odor concentration monthly which is a proactive action to reduce the odor pollution to the community.
- As a result of continuous effort to control and develop the air quality, in 2022 the Group received no complaint about odor or pollution.

Data of the result of air quality inspection of the Group is as follows:

Parameters ⁽¹⁾	2022
Total Suspended Particulate (TSP)	90.0
Amount of Nitrogen Dioxide (NOx)	6.70
Amount of Sulfur Dioxide (SOx)	0.74

Notes:⁽¹⁾ The parameters above are the highest number measured from each subsidiary.