



# ESG FOR SUSTAINABILITY

**SUSTAINABILITY REPORT 2023**

TPI Polene Public Company Limited



**GROW GREEN  
AND SUSTAINABLY**  
Sustainable Development  
under ESG Policy



## Environmental Dimension

“Develop into a Green Industry and adhere to Improving Production Processes, Energy Management and Environmentally Friendly, aiming for a Low-Carbon Society to reach ‘Carbon Neutrality’ by 2043”



## Social Dimension

“Respect Human Rights and Fair Treatment towards employees and staffs, Create a Learning Organization Culture and develop the Potential of Employees, Enhance Workplace Health and Safety, Responsible and Balanced Engagement with Communities, Society and Stakeholders



## Governance Dimension

“Conduct Business with an Adherence to Good Governance Principles under the Codes of Conduct Flexibility to adapt to New Business Concepts Organization-Wide Risk Management under the Anti-Corruption Policy, Ready to deliver Cost-effectiveness of Innovative Products and Services for the Society and the Environment

# Contents



01 Message from the Chairman and Chief Executive Officer	7	04 TPI Polene and its Sustainability	40	05 Environmental Impact Management	60
02 Achievement and Pride Awards 2022	18	Sustainability Policy framework and management	40	Environmental Management	61
03 About TPI Polene	21	Prioritizing and engaging with stakeholders	48	Climate Change Management	62
		Defining material sustainability issues	56	Materials	73
				Transportation	75
				Energy Management	79
				Water and Effluents management	85
				Recycling and Waste Management management	93



<b>06 Community and Social Development</b>	<b>98</b>
Human Resource Management	99
Safety, occupational health, and work environment	112
Community and Social Development Participation	123

<b>07 Business Practices under Good Corporate Governance</b>	<b>130</b>
Good Corporate Governance and Anti-Corruption Policy	131
Risk and Crisis Management	144
Economic Performance	147
Information Security	152
Responsible product and service development	157

<b>08 About this report</b>	<b>171</b>
<b>09 GRI Content Index</b>	<b>172</b>
<b>10 Reader Surveys and Comments</b>	<b>181</b>

# 01 Message from Chief Executive Officer [2-22]

---



**Mr. Prachai Leophairatana**  
Chief Executive Officer

---

**Key Policies for Sustainable Development  
Towards Carbon Neutrality Targets in  
TPI Polene Group by 2043 (B.E. 2586)**

---

TPI Polene Public Company Limited has prepared this sustainability report by carefully selecting 22 sustainability issues through the principles of Materiality Assessment, each of which has received approval from the Board of Directors. The 2023 Sustainability Report aims to present performance results across economic, social, and environmental dimensions. Information regarding management practices and operating outcomes has been disclosed in alignment with the GRI Standard of the Global Reporting Initiative (GRI Standards 2021). Furthermore, the Company has set objectives and reported performance outcomes in line with the United Nations' Sustainable Development Goals and the Task Force on Climate-Related Financial Disclosure (TCFD), following TCFD Recommendations practices.

In 2023, the COVID-19 epidemic had subsided and was likely to easing. Thailand announced the reduction of the level of a dangerous contagious disease to a contagious disease under surveillance starting on October 1, 2022. Later in 2023, a Small Wave outbreak occurred, transitioning into the status of seasonal influenza. Despite having passed the worst period of the pandemic, the lessons from the COVID-19 outbreak remain, and the Company will steadfastly protect the rights of its employees, suppliers, and consumers across every dimension of business operations.

The signs of recovery in business and the economy have become evident; however, global economic uncertainty persists. Both the global economy and Thailand's economy are grappling with higher inflation, alongside the increasingly visible impacts of global warming. Consequently, there is a growing awareness worldwide regarding the importance of achieving carbon neutrality and net-zero greenhouse gas emissions, as well as transitioning to a low-carbon economy through measures like implementing environmental taxes. The European Union's (EU) introduction of the Border Carbon Adjustment Mechanism (CBAM) serves as an exemplary instance of a region seriously addressing the reduction of greenhouse gas emissions. In 2019, the European Commission issued a green reform plan aiming to reduce greenhouse gas emissions (GHGs) by 50-55% by 2030 and achieve Net Zero Emission by 2050. This is to ensure that global temperatures do not increase more than 1.5 or 2.0 degrees Celsius, as agreed upon in the Paris Agreement. CBAM measures are one of the integral components of the European Green Deal to be adopted by the European Union.

The Company acknowledges the impact of this situation. Hence, it has proactively prepared to address and mitigate potential challenges, ensuring adaptability to changes in all circumstances while striving to maintain equilibrium across environmental, social, and economic dimensions, all within the framework of good corporate governance.

The impacts of climate change are becoming increasingly evident and are leading to continuously rising costs, both economically and socially. The Company's sincerity in showcasing environmental responsibility is demonstrated by its commitment to measures aimed at reducing greenhouse gas emissions as much as possible. Under the vision of becoming a leading cement production company in sustainability innovation, it has established a sustainability management framework, delineating the following goals for its vital business operations:-

### Goal of Carbon Neutrality by 2043

The Board of Directors and top executives have evaluated risks, measures, and opportunities arising from climate change. They've established a target to achieve carbon neutrality by 2043, ahead of Thailand's announced goal to reach it by 2050.

The Company has assessed the risks of climate change and established both short-term and long-term goals and strategies for reducing greenhouse gases, resulting in operational risks. Funds have been allocated to adapt the Company's technology to be more environmentally friendly, including using waste as fuel instead of coal in the cement production process, reducing dependency on fossil fuels, utilizing electricity from renewable sources, and employing vehicles and heavy machinery powered by electricity (e.g., EV Dump Trucks) instead of diesel engines. The returns from these investments are considered worthwhile. The Company continues to advance its low-carbon strategy to mitigate the risks of climate change, thereby progressing towards the goal of reducing greenhouse gas emissions.

Furthermore, TPI Polene Group operates under the Zero Waste paradigm, embracing the circular economy's principles. Waste generated in one facility undergoes transformation into raw materials or fuel for another, fostering resource efficiency through recycling. The Company pursues waste minimization through the 1A3R framework (Avoid, Reduce, Reuse, Recycle), thereby advancing resource recycling for maximal efficiency by abstaining from releasing waste, wastewater, used oil, chemicals, and other refuse out of the factory.

TPI Polene is considered the only factory in the world that can achieve this goal. It allows the community to live in a clean environment that is safe from disease and illness under a happy public well-being surrounding.

### Low Carbon Society – Sustainably Reducing Global Warming

TPI Polene Group maintains an eco-friendly production process, meticulously overseeing the lifecycle of products or services from raw material sourcing, manufacture of green cement, EVA for solar cells, shoe sole, EVA Emulsion, EVA Powder and

healthcare products to distribution and marketing. Each of these steps and processes is dedicated to enhancing energy efficiency and mitigating the release of carbon dioxide and PM2.5 dust, thereby minimizing environmental impact, as follows:

- **Green Mining / Green Quarry:** The Company employs EV electric technology for drilling trucks, excavators, loaders, dump trucks, and heavy machinery in its quarry and factories, replacing the original combustion engine models. Furthermore, clean energy powers the transportation of limestone, facilitated by a conveyor system moving stones from the quarry to the factory, effectively reducing carbon dioxide emissions, a major greenhouse gas (GHG).
- **Green Cement Process:** The Company utilizes fuel derived from municipal waste to substitute part of the coal used in the cement production process, while uses electricity generated from municipal waste. In 2023, The Company has gradually installed machinery to be able to use Refuse Derived Fuel (RDF) instead of coal in four cement production lines with zero waste.
- **Green Manufacturing:** The Company has invested in environmentally friendly innovation and technology, raising the standard of Thai construction to green construction by increasing the proportion of low-carbon products. This has been achieved through the development of hydraulic cement to replace Portland cement Type 1. In addition, hydraulic cement is utilized as a raw material for producing ready-mixed concrete or low-heat concrete, aiding in the reduction of heat buildup in large concrete structures and enhancing concrete durability to withstand various environmental conditions effectively. Furthermore, it is considered a product for green building construction according to LEED and TREES standards, contributing to reduced work time and lower carbon dioxide emissions. In 2023, the Company's customers had already used 2,690,747 tons of hydraulic cement, capable of reducing carbon emissions by 0.2206 million tons of carbon dioxide equivalent. Furthermore, the Company has developed green products such as Green Clinker, Green Cement, Green Fiber Cement, and Green CRT (concrete roof tiles), all aimed at utilizing alternative raw materials, alternative fuels, and electricity sourced from renewable energy.
- **Green Packing Line / Warehouse:** Electric forklifts are used 100%.
- **Green Marketing / Management:** The Company employs electric cars for the operations of both the Sales and Marketing Departments, including vehicles designated for executives, in lieu of combustion engine cars.

- **Green Logistics:** The Company is switching to electric trucks for transporting cement and ready-mixed concrete, and also EV trains instead of diesel engines, in order to reduce greenhouse gases and PM2.5 dust.

## Coexistence of Business and Human Rights in Reliable Practice

TPI Polene has implemented a comprehensive Human Rights Due Diligence process (HRDD) across its Company Group's supply chains. This process includes the elimination of forced labor, child labor, and human trafficking. Conducted in accordance with basic human rights principles and comprising 8 steps, this HRDD process aligns with the United Nations Guiding Principles on Business and Human Rights (UNGPs). It aims to create operational clarity and ensure continuous knowledge transfer by providing ongoing human rights education to TPI Polene's personnel. The Company remains committed to advancing human rights protection and advocacy, including the development of systems and workflows for determining remedial measures for affected individuals so that the implementation of human rights will be driven to cover all stakeholders throughout the value chain.

## Philanthropy toward Society

To demonstrate our compassion to promote the welfare of the society, in addition to the Company's main products, TPI Polene also produces:

- (1) Organic fertilizers/Synbiotics products for livestock/ fisheries to reduce greenhouse gases, increasing crop yields, reducing costs for farmers, thus implying TPIPL Group contribution to food security and food safety for the society.
- (2) Healthcare products to take care of the health of the people in the community.

TPI Polene Group is actively involved in supporting social welfare projects through various initiatives. These include organizing dialogue projects with the community and prioritizing community development, notably, chemical-free lunch project at Ban Sub Bon School in Saraburi Province and scholarships to deserving students. Furthermore, throughout the year 2023, the Company contributed to numerous public welfare projects and activities, amounting to approximately Baht 36.07 million. These efforts were targeted towards communities, educational institutions, temples, hospitals, and various government agencies. The support also involved donations of cement and other construction materials for schools, hospitals in addition to organic fertilizers, drinking water, and healthcare products aimed at avoiding pathogens and Covid virus.

## Achievement Awards

In 2023, due to the Company's ongoing commitment to sustainable business operations, it received several certification awards from recognized organizations. These awards acknowledge the Company's efforts in promoting sustainable development in terms of Environmental, Social, and Governance (ESG) principles. Awards granted are as follows:

1. The Company was recognized among the ESG100 securities companies for its exceptional performance in environmental, social, and governance (ESG) criteria within the Real Estate and Construction category. This marks the second consecutive year (2022-2023) that the Company has received this accolade, solidifying its position as a company with promising investment opportunities within the real estate and construction sector. The award is administered by the Thaipat Institute.
2. The Company was rated as "SET ESG Ratings: AA" for the year 2023 by the Stock Exchange of Thailand.
3. The Company has been rated as "Excellent CG Scoring" (5-star) in Corporate Governance from the Corporate Governance Report of Thai Listed Companies (CGR) for the year 2023 organized by the Thai Institute of Directors Association (IOD).
4. The Company received the 3G Excellence Award in CSR Activities for 2023 from the Global Good Governance Awards (3G Awards) 2023 Event, organized by the financial consulting company 'Cambridge IFA International Financial Advisory, United Kingdom'.
5. The Company received two honorary awards from the "One Million Good Deeds with Brave in Repayment to the Land" ("Neung Lan Kla Kwam Dee Torb Than Pan Din") Project for the year 2023. These awards include the Award for Good Deeds Returning to the Land in the Agricultural Innovation Field and the Excellence Award in Technology Management, Innovation, Research, and Development Field.

I must express my gratitude to our shareholders, debenture holders, supporting financial institutions, Chairman of the Board, Board Members, our employees, stakeholders, and everyone involved in supporting, trusting, and significantly contributing to ensure the seamless progress of our work and activities. All significant operational information is summarized, compiled, and disclosed in this Sustainability Report. In the current situation, where the world is facing various issues including epidemics and severe climate change, our cement business is committed to playing a crucial role in addressing these emerging challenges. Our primary goal is to contribute to the reduction of these problems and to deliver a good quality of life to society and the nation. By doing so, our organization will thrive and continue to be a valuable asset to society. In the workplace, there exist concepts and methods of transformation and change management, as well as the creation of an organizational culture that must align with the Company's vision, determination, or commitment at every operational stage. As a leader in driving development towards sustainability, the Company is committed to enhancing the quality of its sustainability reports and expects improvements in its disclosures, and encourages various suggestions to integrate opinions compatible with the operational process and promotes sustainable development alongside stakeholders in every sector and group in a balanced manner, while delivering value to communities and society as a whole, thereby leading to sustainable development of the organization, community, society, and the country as always.

Sincerely yours,



**(Mr. Prachai Leophairatana)**  
Chief Executive Officer

# Business Drive for Sustainability

## Key Sustainable Development Performance of TPI Polene Group in 2023



### Economic Dimension

Total Revenue  
Baht

**44,963**  
million

Employee wages  
and benefits Baht

**7,300**  
million

Tax expense  
Baht

**186.91**  
million

EBITDA Baht

**10,055**  
million

Net profit Baht

**4,305**  
million

Dividend per  
share

**0.10**  
Baht



### Environmental Dimension

In 2023, cement plants used waste fuel to replace coal in cement production processes accounting for to **14%** of total energy.

Recycled and reused aggregate scrap **597,564** tons, accounting for **100%**.

In 2023, TPIPL reduced greenhouse gas emissions both directly and indirectly, of **0.99** million tons. carbon dioxide equivalent or decreased by **10%** over 2022.

Reduction of external water consumption (From the base year 2022) TPIPL **9,804,527** cubic meters or a **8.69%** decrease.

Proportion of recycled water

(From the base year 2022)

TPIPL **1,362,200** million cubic meters or **55.52%** of total water consumption.

TPIPL recycled waste

**6,087.14** tons from production process, or **99.43%** of total industrial waste.

Investment projects for reducing environmental impact

TPIPL Baht **1,776** million.

Replace **41-60** ton EV Mining diesel trucks and **4** electric wheel loaders to reduce greenhouse gases and PM2.5 dust.

Prepol SC Project The installation of machinery in the part of the cement kiln reduces the consumption of heat energy **25%** of waste can be used as fuel instead of coal.

Manufacture of Green Products/development of hydraulic mortar production technology to reduce carbon emissions. **0.272** million tons CO<sub>2</sub> E.



## Community and Social Dimension

Community and social contributions  
Baht **27.92** million

Injury Frequency Rate (IFR) of Employees and Contractors  
TPIPL **0.536** and **0.87** per 1 million working hours

Number of working hours without accidents  
TPIPL **22,979,705** hours (Increased **3.34.%** compared to the year 2022)

Rates of morbidity and occupational diseases that require all records TPIPL **0** person per 1 million working hours

Work-related deaths of employees and contractors  
TPIPL = **0** person

Average training hours for employees  
TPIPL **22.49** hour/person/year

Turnover rate  
TPIPL = **2.67%**

Work Satisfaction and employees' engagement towards the organization  
TPIPL **84.17 %**

Development Projects for Technological Innovation, and Service  
**21** projects

Research and Product Development Project  
**12** projects



## Corporate Governance Dimension

Sales value of low-carbon products Baht **28,288.78** million

sales value of Biological product  
Baht **95.21** million

The product has been certified the label to reduce global warming total of **20** products

No complaints of privacy violations <sup>(1)</sup>

Suppliers acknowledge the code of conduct of business partners  
TPIPL **96%**

Violation of human rights (Discrimination, Child Labor, Illegal Labor)  
TPIPL = **0**

**15** major ESG Risk suppliers were assessed, representing **67.51%** of the total order value

Overall customer satisfaction/ satisfaction with solving problems for customers  
TPIPL **87.40%** and **94.40%**





**Announcement**

**Issue no. 1/2022**

**Subject: Principles of employee duties**

For success in creating sustainable business growth of the Company, TPI Polene Group adheres to Environmental, Social and Governance (ESG) criteria, by embracing the Bio Circular Green Economy as a sustainable business model under the standards of good corporate governance. In carrying out duties and responsibilities, all employees are required to work under the Four Iddhipada: Basic for Success 4, which consists of the following:

Chanda (ASPIRATION) Intention or purpose or desire or zeal. The need to do and always be willing to do what is assigned and aspires to make it work even better.

Viriya (EFFORT) or energy or will.

Citta (CONCENTRATION) Consciousness or mind or thoughts, concentrate on work.

Vimansa (Planning, Result Checking, Good Governance, Research and Development) Planning, results checking, good governance, research and development. With a committed heart to create balanced happiness with a better quality of life in a sustainable manner pursuant to FOUR SUBLIME STATES OF MIND, which consist of the following:

MERCY

KINDNESS

SYMPATHETIC JOY

EQUANIMITY

Announced on January 5, 2022

A handwritten signature in black ink, appearing to read 'Prachai Leophairatana'.

(Prachai Leophairatana)

Chief Executive Officer

Note: This principle of living follows the metaphysical concept of the Four Noble Truths (See more details at <https://www.tpipolene.co.th/aboutus/employeehandbook>)

## Brahma-vihara 4

### FOUR SUBLIME STATES OF MIND

---

Metta (MERCY):	Love, desire for others to be happy.
Karuna (KINDNESS):	Desire to get others out of their sufferings.
Mudita (SYMPATHETIC JOY):	Pleasure that comes from delighting in other people's well-being, even if one did not contribute to it.
Upekkha (EQUANIMITY):	Even-mindedness and serenity, treating everyone impartially.

## Iddhipada 4

### BASIS FOR SUCCESS 4

---

Chanda (ASPIRATION)	To be content and happy in doing good deeds with enthusiasm and strong intention.
Viriya (EFFORTS)	Diligence, patience, commitment, endurance, willingness to work hard and to never give up; having the courage to tackle any obstacle and having the courage to make changes.
Citta (CONCENTRATION)	Consciousness of the senses, Subconscious mind and Intellect, is of immense power.
Vimamsa (R&D)	Involves conducting an investigation or discrimination, a plan, a measure and invention of a solution.

**The Principles of Iddhipada 4: Path of accomplishment in work, which consists of the following:**

Chanda (ASPIRATION) - Satisfied with the work we're performing

Viriya (EFFORTS) - Diligence in our work

Citta (CONCENTRATION) - Taking responsibility for the work done

Vimamsa (R&D) - Contemplation and use of wisdom to monitor the work

## Catvari Aryasatyani (Four Noble Truths)

### Heart of Buddhism (Ariyatham to the Cessation or Extinction of Suffering)

The basic doctrine of Buddhism is the noble path leading to the complete destruction of suffering.

1. Dukkha: Suffering
2. Samudaya: The Cause or Origin of Suffering
3. Nirodha: The Cessation or Extinction of Suffering can be attained by the renouncement or letting go of Tanha
4. Marga: The Path leading to the Cessation or Extinction of Suffering

#### 1. DUKKHA

##### UNSATISFACTION, SUFFERING, PAIN

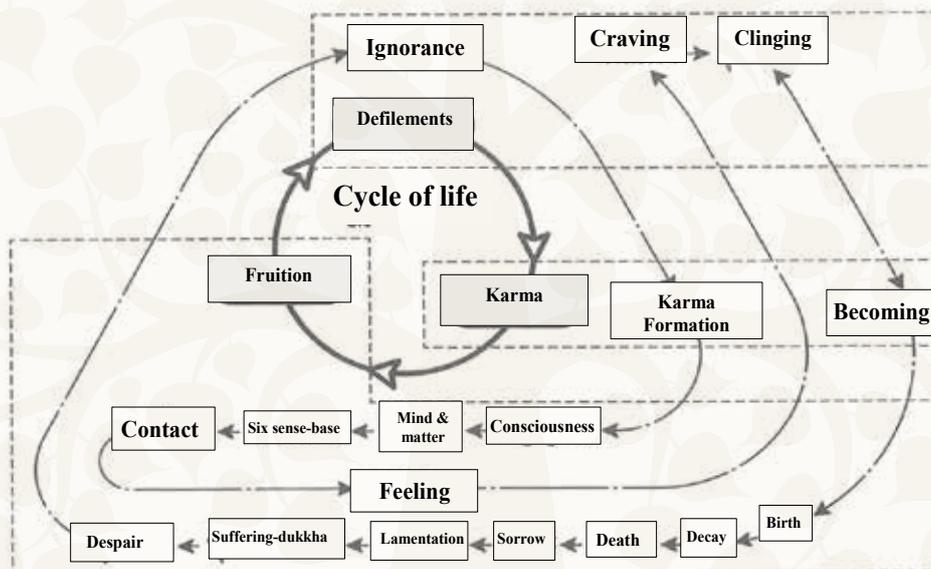
The word suffering in the heart of Buddhism does not just mean suffering in Thai as it is understood. It also means difficult conditions to endure in the same conditions and clinging to impermanent states and things or stressful conditions.

#### 2. SAMUDAYA

##### THE ORIGIN OR ARISING OF DUKKHA

Consideration of CAUSE OF SUFFERING

##### Dependent Origination



Cause of suffering (or suffering) is defilement or ignorance.

### 3. Nirodha

#### (EXTINCTION OF SUFFERING)

is the elimination of defilements, i.e. elimination of defilements with the power to proceed according to the 8-fold path until attaining that path.

### 4. Marga

#### (THE NOBLE EIGHTFOLD PATHS)

The Dharma that kills the defilements or the ten benefits<sup>4</sup>

The Path leading to the Cessation or Extinction of Suffering

1. Right view
2. Right intention
3. Right speech
4. Right action
5. Right livelihood
6. Right effort
7. Right mindfulness
8. Right concentration

**Chants conquering Evil: Panmare Chino Na Tho**

**Panmare Chino Natou Patto Sampothimuttaman  
Chatur Satjung Pakasti Thammajakang Pawattayi  
Etena Sajjavajchena Hotu Me Chayamankalang**

### Devil 5 (What Kills a Person to Die from Goodness)

#### THE EVIL ONE, THE TEMPER, THE DESTROYER

1. The MARA of Defilement
2. The MARA of Aggregates<sup>2</sup>
3. The MARA of Karma Formations<sup>3</sup>
4. The MARA of Deity
5. The MARA of Death

After conquering the five devils,

the Buddha enlightened us with the Four Noble Truths

## Note

1. **MARA (The Destroyer)** is something that depletes one from his virtues or noble results or something that consumes virtues or prevents one from attaining good results.
  - 1.1 MARA of Defilement is love, greed, anger, delusion, evil spirit.
  - 1.2 MARA of Aggregates is something that destroys one's Aggregates, makes him pain, sick, crippled, depriving one of the opportunities to do good deeds.
  - 1.3 The MARA of Karma Formations is the thought, emotion, and karma cultivator that prevents one from avoiding the suffering in samsara or rebirth of one in 31 places of existence.
  - 1.4 The MARA of Death is death that deprives one of the opportunities to do good deeds.
  - 1.5 The MARA of Deity is an evil deity who is powerful and inspires one not to do the good deeds.
  
2. **Five Khandha (Five Groups of Existence or Five Aggregates)** are the five aggregates of form and abstract that make up the collective units which are ordinarily called animals, persons, beings, he, we, etc. The five components incorporated into life.
  - 2.1 The corporeality group (rūpa-kkhandha) is the aggregate of form which is the mixture of earth, water, air and fire elements such as hair, skin, bone, and blood.
  - 2.2 The feeling group (vedanā-kkhandha) is the aggregate of processing feelings such as happiness, suffering, or indifference.
  - 2.3 The perception group (saññā-kkhandha) is the aggregate that remembers what one received or felt. It is the part that defines or perceives the meaning of what have known (Arrom 6) such as white, green, black, red, etc.
  - 2.4 The mental-formation group (sankhāra-kkhandha<sup>5</sup>) is the aggregate of thought to identify what you feel and remember whether it good or bad or indifference, neither good nor bad. The mind was led by intention to be good or bad or upyakrit (neither good nor bad) such as kaya-sankhara (physical intent), vajee-sankhara (verbal intent), and mano-sakhara (mind intention).
  - 2.5 The consciousness-group (viññāna-kkhandha) is the aggregate of cognition or knowing of things through the six senses including eyes, ears, nose, tongue, body, and mind. The Five Aggregates are abbreviated into two groups, namely the abstract and the form (Rupa Khandha).
  
3. **Apisankhara 3** is the thought, emotion, and karma cultivator, comprising of:
  - 3.1 Punyaphisangkara is a thought that enhances good karma (merit).
  - 3.2 Apunyaphisangkara is a thought that enhances evil karma (sin).
  - 3.3 Anenchaphisangkhan is a thought that is calm, unable to be upset or excited.
  
4. **Fetter** is the defilement that binds the animals to suffering or defilement that binds the mind to the cycle of defilement, karma, and the result of karma.

 There are 10 fetters:

  - 4.1 Sakkaya-ditthi: One has the view that the five aggregates are self.
  - 4.2 Wichikitcha: One has doubts about the virtues of the Three Jewels, namely the Buddha, the Dharma, and the Sangha.
  - 4.3 Silappatapramas: One adheres to the sacred things or customs by believing in magic which is not Buddhism or adheres to the wrong practices, which is not the aim of Buddhism.
  - 4.4 Kamaraka: One has contentment in sensual pleasures or lust.
  - 4.5 Vengeance: One adheres with anger.



Udhamphakiyasayojana or the Five Higher Fetters are:

- 4.6 Rupa-raka: One has greed for material existence or attachment to realms of form.
- 4.7 Arupa-raka: One has greed for immaterial existence or attachment to formless or abstract realms.
- 4.8 Mana: One had conceit or pride with the feeling of being better, worse, or equal with others.
- 4.9 Uttacca: One is distracted or restless.
- 4.10 Avijja: One has ignorance of the Four Noble Truths.

Phra Sodaban is the one who puts an end to all of the first three fetters, namely Sakkaya Ditthi, Vicikiccha, and Silabbat Pramas.

Sakathakami is the one who puts an end to all first three fetters, and reduces lust and anger.

Anakami is the one who puts an end to the five lower fetters.

Arahant is the one who puts an end to all 10 fetters.

5. **Sankhara is body and mental formations, together with volitional formations and volitional activities.** Sankhara also means “formations” or “that which has been put together” of all including ingredients, decorations, parts of the body, mind, life, spirit, all things that made up. (Volitional Formation is what our brains think. The more we think, the more formations follow like a shadow following our body. What is in the brain will be expressed through words and actions, which is karma. Since our minds are endlessly concerned or embellished, we commit karma endlessly, resulting in us being reborn indefinitely. In the Trinity (Trilak), sankhara is the thing being formed or improvised, which is all the mind and forms.

Paticca-samuppada (the Dependent Origination; conditioned arising) Sankhara 3 is

- 5.1 Kayasangkhara: bodily formation, bodily volition
- 5.2 Vajisangkhara: verbal formation, verbal volition
- 5.3 Manosangkhara: mental formation, mental volition

Sankhara has three qualities known as trilak (three marks of existence as follows):

1. **Anicca:** Impermanence
2. **Duhkha:** State of suffering or being oppressed, state which cannot stand it in its original condition, state that will deteriorate because of being oppressed by Anicca.
3. **Anatta:** No real self, incapable of being in power

### The opposite of Sangkhara is Wisangkhara

**Wisangkhara** is Nirvana, which is eternal. It leads to nicca, sukhang, anatta (dharma).



# 02 Our Pride Awards in 2023

The awards received both nationally and internationally in 2023 serve as confirmation of the outstanding performance of TPI Polene Public Company Limited (“TPIPL”) and TPI Polene Power Public Company Limited (“TPIPP”) in the realms of economy, society, and environment.

## National Awards



### Sustainability Disclosure Award

TPIPL and TPIPP received the Award of Honor (Sustainability Disclosure Award) for the year 2023, marking the second consecutive year. This award recognizes their excellence in sustainability information disclosure, as evaluated from the Sustainability Report and Form 56-1 One Report for the year 2022 by Thaipat Institute.



### Outstanding Innovative Company Awards 2023

TPIPL received the Outstanding Innovative Company Award for 2023, acknowledging its innovative work in developing “Equipment to create a vortex on a chimney with an opening”. This achievement reflects the Company’s commitment to creating innovations aimed at reducing energy costs, enhancing organizational competitiveness, and fostering sustainable economic and social growth.



### TPIPL and TPIPP Being Ranked in ESG 100 Securities Companies for the year 2023

In 2023, TPIPL was selected as one of the ESG100 securities companies for the second consecutive year (2022-2023) in the real estate and construction sector, while TPIPP was selected for the fourth consecutive year (2018, 2021-2023) in the resource sector. These reflect the outstanding operations of the TPI Polene Group in Environmental, Social, and Governance (ESG) aspects, based on the assessment of listed securities in 2023 by the Thaipat Institute.



### SET ESG Ratings : AA

In 2023, TPIPL and TPIPP were assessed and designated as “ SET ESG Ratings : AA”, reflecting their commitment to conducting ESG business practices that consider the environment, society, and governance for the sustainable benefit of all stakeholders.



### “Excellent” Corporate Governance Scoring (5-star Level)

TPIPL and TPIPP have continuously developed their corporate governance practices and have finally achieved an Excellent CG Scoring (5-star Level) in the Corporate Governance Report of Thai Listed Companies (CGR) scheme for the year 2023, as recognized by the Thai Institute of Directors Association (IOD).



**TPIPL Receiving ‘Circular Economy’ Certificate for the year 2023**

TPIPL received the Circular Economy Certificate for cement plants 1, 2, 3, and 4 through the assessment under the project to develop and upgrade industrial establishments to apply the principles of the Circular Economy in organizations, from the Department of Primary Industries and Mines.



**CSR-DIW Continuous Award for the year 2023**

For the 9<sup>th</sup> consecutive year since 2015, TPIPL and TPIPP were awarded plaques and certificates in recognition of their commitment to promoting sustainable social and community responsibility among industrial factories. This accolade was received under the CSR-DIW Continuous Award category for the year 2023 from the Department of Industrial Works, Ministry of Industry, for:

- Cement production plant: Line 1, 2, 3 and 4; Mortar plants 1, 2, 3 and 4 and lightweight block production plant and for the 8<sup>th</sup> consecutive year since 2016 for:
- Power plants TG1-3 (60MW), TG4 (30MW), TG5 (60MW), TG6 (70MW), TG7 (40MW) and TG8 (150MW).



**Green Industry Level 4 : Green Culture Award for the years 2021 -2024**

TPIPL and TPIPP received the Green Industry Level 4 Green Culture Award for the cement production plant: Line 1, 2, 3, Total Waste Quality Adjustment Plant (Waste Disposal Plant) and TG Power Plants 1, 2, 3, respectively from the Ministry of Industry.



**Green Industry Level 3 : Green System Award**

TPIPL and TPIPP received the Green Industry Level 3: Green System Award for the cement production plant, Line 4 for the years 2021-2024 and the Power Plants TG 4, 5, 6, 7 and 8 for the years 2023-2026 from the Ministry of Industry.



**Excellence Award from the “One Million Good Deeds with Brave in Repayment to the Land” (“Neung Lan Kla Kwam Dee Torb Than Pan Din”) Project for the year 2023**

TPIPL received the Award of Honor from the “One Million Good Deeds with Brave in Repayment to the Land” (“Neung Lan Kla Kwam Dee Torb Than Pan Din”) Project for the year 2023, for the Excellence Award in Technology Management, Innovation, Research, and Development Field, organized by For Thai Social Foundation.



**Award from the “One Million Good Deeds with Brave in Repayment to the Land” (“Neung Lan Kla Kwam Dee Torb Than Pan Din”) Project for the year 2023**

TPIPL received the Award of Honor from the “One Million Good Deeds with Brave in Repayment to the Land” (“Neung Lan Kla Kwam Dee Torb Than Pan Din”) Project for the year 2023, in the Agricultural Innovation Field, organized by For Thai Social Foundation.



**Award of Honor from the “One Million Good Deeds with Brave in Repayment to the Land” (“Neung Lan Kla Kwam Dee Torb Than Pan Din”) Project for the year 2023, organized by For Thai Social Foundation**

Mr. Prachai Leophairatana, TPIPL’s Chief Executive Officer, received two plaques of honor from the “One Million Good Deeds with Brave in Repayment to the Land” (“Neung Lan Kla Kwam Dee Torb Than Pan Din”) Project, organized by the For Thai Society Foundation, comprising the Award for “Good Deeds Returning to the Land” for the year 2023 in the Agricultural Innovation Field and the “Excellence” Award for the year 2023 in Technology Management, Innovation, Research, and Development Field.



**Eco Factory Award**

TPIPL received the Eco Factory - Beginner for Waste Processor Award from the Water and Environment Institute for Sustainability, Federation of Thai Industries, in collaboration with the Industrial Estate Authority of Thailand.



**Plaque of Honor for the Excellent Work in Social Development**

TPIPL received a plaque of honor for the Excellence Work in Social Development for the year 2023 from the Department of Social Development and Welfare, Ministry of Social Development and Human Security.

**International Level**



**Global CSR - 3G Excellence Award in CSR Activities 2023 and 3G Environmental Responsibility Award 2023**

TPIPL received the 3G Excellence Award in CSR Activities 2023, and TPIPP received the 3G Environmental Responsibility Award 2023 from the Global Good Governance Awards (3G Awards) 2023, organized by the financial consulting company Cambridge IFA International Financial Advisory of the United Kingdom. These awards aim to recognize organizations that have successfully applied social responsibility in their daily business operations.



**Most Sustainable Conglomerate Group in Thailand 2023 and Best Green Renewable Energy Power Plant in Thailand 2023**

TPIPL received the Most Sustainable Conglomerate Group in Thailand 2023 Award, while TPIPP received the Best Green Renewable Energy Power Plant in Thailand 2023 Award. Both accolades were conferred by the World Business Outlook.



**ASIA’s GREATEST BRANDS 2022–2023 Awards**

TPIPL and TPIPP received the ASIA’s GREATEST BRANDS 2022–2023 Awards from Asia One Magazine, recognizing their outstanding work that is accepted and trusted by consumers.



**ASIA’s Greatest CEO 2022–2023 Award**

Asia One Magazine presented the ASIA’s Greatest CEO 2022–2023 Award to Mr. Prachai Leophairatana, Chief Executive Officer (CEO) of TPI Polene Group, who has played a key role in promoting the economic sector in Thailand and participating at both the micro and macro levels of Thailand and Asia.



**Best Corporate Governance Company Thailand 2023 Award**

TPIPL received the Best Corporate Governance Company Thailand 2023 Award from International Business Magazine, certifying that the Company is one of the leading organizations protecting all investors’ and stakeholders’ rights and reflecting responsibility for the economy, society, community, and environment.



**The Best Corporate Governance Company Thailand 2023 Award**

TPIPL received the Best Corporate Governance Thailand 2023 Award from International Business Magazine.

# 03 About TPI Polene



## Information TPI Polene [2-1]

TPI Polene Public Company Limited, or TPIPL, was incorporated and registered as a limited company under the name “Polene Co., Ltd” on September 24, 1987, by the “Leophairatana” family as the founder, managing the business operation until now, with an initial registered capital of Baht 100,000. The company initially engaged as an intermediary in purchasing PE (Polyethylene) plastic resin from Thai Petrochemical Industry Public Company Limited, “TPI”, which has now changed its name to IRPC Public Company Limited.

On October 24, 1989, Polene Co., Ltd. was renamed TPI Polene Co., Ltd., and later in March 1990, the Company was transferred the LDPE (Low Density Polyethylene) plastic resin and promotional privileges under the Board of Investment. On November 20, 1990, the Company was listed on the Stock Exchange of Thailand and converted into a public company limited on February 17, 1994.

On April 5, 2017, the ordinary shares of TPI Polene Power Public Company Limited (a 70.24% owned-subsiidiary Company) were listed on the Stock Exchange of Thailand. TPI Polene Power Public Company Limited is the largest waste-to- fuel power plant business operator in Thailand.

As of December 31, 2023, the Company had a registered capital of Baht 23,560,235,000 (23,560,235,000 shares) and a paid-up capital of Baht 18,935,235,000 (18,935,235,000 shares), at the par value of Baht 1 per share.

TPI Polene Group operates its main business, which can be categorized by four groups of businesses as follows: [2-6]

1. Construction material sector: manufacture and sale of cement, mortar, clinker, ready-mixed concrete, CRT/FCB, lightweight concrete and cement paint.
2. Petrochemical and Chemical sector: manufacture and sale of specialty polymer, EVA Emulsion, EVA Powder, EVA Encapsulant, EVA Interlayer, Film, ammonium nitrate and nitric acid.
3. Energy and Utilities sector: Manufacture and sale of waste-based alternative fuel, a waste heat recovery power plant, a coal-fired power plant, a waste-based-fired power plant, oil and NGV service stations.
4. Agricultural business and others consist of the following:
  - 4.1 Healthcare products such as Bio Knox, Micromknox Solution, mouthwash, vegetable washing liquid, energy drink Pro-150 and Pro Vita, liquid soap, drinking water, dishwashing liquid, grease remover and Biosan.
  - 4.2 Products for plants such as organic fertilizers and soil enhancers.
  - 4.3 Products for animal such as bio-stimulants for livestock and fishery.
  - 4.4 Other businesses such as life insurance business.

## Business Overview [2-6]



<https://www.tpipolene.co.th/th/aboutus/about-tpi/business>

## TPIPL Products [2-6]



<https://www.tpipolene.co.th/th/>

Presently, the Company's head office is located at TPI Tower 26/56, Chantatmai Road, Thungmahamek, Sathorn, Bangkok 10120. The Company's business units and its subsidiaries are located in Thailand. The Company has a marketing network throughout the country and sells products overseas, such as clinker products which are sold to China, Bangladesh and ASEAN countries. Fiber cement products and concrete tiles are sold to Australia, New Zealand, the Middle East, Asia and Europe, etc. [2-6] and plastic resin products are sold to China, India, South Asian and Southeast Asian countries. All of the Company's operations aim to be part of driving the economy as well as delivering value to shareholders and related stakeholders in accordance with the Company's vision and mission.

For cement exports, the Company will primarily focus on CLMV countries. In 2023, the export volume of clinker

and cement will decline due to the global real estate sector's slowdown. Furthermore, the Company has expanded its exports of fiber cement boards to new markets, including Turkey, South Africa, and Saudi Arabia, etc. [2-6]

Additionally, the Company exports fiber cement products and concrete tiles to Australia, New Zealand, the Middle East, South Africa, Asia, and Europe, among others. In 2023, the export volume of construction materials decreased due to the economic conditions of CLMV countries (ASEAN countries in the Mekong Basin region). Consequently, the Company has expanded its exports to new markets, including America, Australia, New Zealand, South and East Africa, India, Brunei, Dubai, and Europe, among others. [2-6]

## Head Office Address Factories and Affiliates [2-1] [2-6]

Head Office	
26/56 Chan Tat Mai Road, Thungmahamek, Sathorn, Bangkok 10120	
<b>Tel. Number:</b> +66 (0) 2213-1039-49, 285-5090-9	
<b>Fax Number:</b> +66 (0) 2213-1035, 213-1038	
<b>Web Address:</b> <a href="http://www.tpipolene.co.th">http://www.tpipolene.co.th</a>	
Industrial plants	
<p><b>Cement Plant/ Power Plant/ Mortar Plant/ Lightweight Concrete Plant/ Pyrolysis and MSW Plants</b></p> <p>299 Moo 5, Mittraparp Road, Tambol Tubkwang, Amphur Kangkhoy, Saraburi 18260</p> <p><b>Tel. Number:</b> +66 (0) 3633-9111</p> <p><b>Fax Number:</b>+66 (0) 3633-9228-30</p>	<p><b>LDPE/ EVA/ EVA Emulsion and EVA Powder Plants</b></p> <p>999 Moo 5 Sukhumvit Road, Tambol Chuengnoen, Amphur Muang, Rayong 21000</p> <p><b>Tel. Number:</b> +66 (0) 3880-3090-9</p> <p><b>Fax Number:</b> +66 (0) 3880-3086</p>
<p><b>Concrete Roof Tiles and Fiber Cement Plants</b></p> <p>77 Moo 7, within CRT Plant sub-road from Sai Ban Kork Street, Banlardkaopoon and Highway no.1014, Tambol Ban Kang, Amphur Chaloem Phrakiat, Saraburi 1800</p> <p><b>Tel. Number:</b> +66 (0) 3667-0370-5</p> <p><b>Fax Number:</b> +66 (0) 3667-0377</p>	<p><b>Solar Film Plant</b></p> <p>49/1 Moo 1, Phichainarong Songkham Road, Tambol Nachong, Amphur Muang Saraburi, Saraburi</p> <p><b>Tel. Number:</b> +66 (0) 3673-1724</p>
<p><b>Ammonium Nitrate and Nitric Acid Plant</b></p> <p>140/7 Moo 4, Sukhumvit Road, Tambol Tapong, Amphur Muang, Rayong 21000</p> <p><b>Tel. Number:</b> +66 (0) 3866-4724-7</p>	

## Affiliates in which the Company directly holds share of more than 10%

### Construction Sector

#### TPI Concrete Co., Ltd.

26/56, 5th Floor, TPI Tower, Chan Tat Mai Rd.,  
Thungmahamek, Sathorn, Bangkok 10120

**Tel:** (02) 678-5350-74

**Fax:** (02) 678-5375-6

### Energy Sector

#### TPI Polene Power Plc.

26/56, 8th Floor, TPI Tower, Chan Tat Mai Rd.,  
Thungmahamek, Sathorn, Bangkok 10120

**Tel:** (02) 285-5090-9

**Fax:** (02) 213-1035

### Agriculture Sector

#### TPI Polene Bio Organics Co., Ltd.

26/56, G Floor, TPI Tower, Chan Tat Mai Rd.,  
Thungmahamek, Sathorn, Bangkok 10120

**Tel:** (02) 285-5090-9

**Fax:** (02) 213-1035

### Other Industry

#### Polene Plastic Co., Ltd

26/56, TPI Tower, Chan Tat Mai Rd., Thungmahamek,  
Sathorn, Bangkok 10120

**Tel:** (02) 285-5090-9

**Fax:** (02) 213-1035

#### TPI Commercial Co., Ltd.

26/56, TPI Tower, Chan Tat Mai Rd., Thungmahamek,  
Sathorn, Bangkok 10120

**Tel:** (02) 678-5470

**Fax:** (02) 678-6511

#### TPI Healthcare Co., Ltd.

26/56, TPI Tower, Chan Tat Mai Rd., Thungmahamek,  
Sathorn, Bangkok 10120

**Tel:** (02) 285-5090-9

**Fax:** (02) 213-1035

#### TPI Service Co., Ltd.

26/56, TPI Tower, Chan Tat Mai Rd., Thungmahamek,  
Sathorn, Bangkok 10120

**Tel:** (02) 285-5090-9

**Fax:** (02) 213-1035

### Petrochemical Industry

#### Thai Nitrate Co., Ltd.

26/56, 21st Floor, TPI Tower, Chan Tat Mai Rd.,  
Thungmahamek, Sathorn, Bangkok 10120

**Tel:** (02) 678-6600

**Fax:** (02) 678-5484

#### TPI All Seasons Co., Ltd.

26/56, 8th Floor, TPI Tower, Chan Tat Mai Rd.,  
Thungmahamek, Sathorn, Bangkok 10120

**Tel:** (02) 285-5090-9

**Fax:** (02) 213-1035

#### Mondo Thai Co., Ltd.

26/56, 19th Floor, TPI Tower, Chan Tat Mai Rd.,  
Thungmahamek, Sathorn, Bangkok 10120

**Tel:** (02) 678-5470

**Fax:** (02) 678-6511

#### TPI Bio Pharmaceuticals Co., Ltd

26/56, TPI Tower, Chan Tat Mai Rd., Thungmahamek,  
Sathorn, Bangkok 10120

**Tel:** (02) 285-5090-9

**Fax:** (02) 213-1035

#### Bangkok Union Life Insurance Plc.

175-177, 8th Floor, Bangkok Insurance Tower,  
Surawongse, Bangrak, Bangkok 10500

**Tel:** (02) 634-7323-30

**Fax:** (02) 634-7331

#### Thai Propoxide Co., Ltd.

26/56, TPI Tower, Chan Tat Mai Rd., Thungmahamek,  
Sathorn, Bangkok 10120

**Tel:** (02) 285-5090-9

**Fax:** (02) 213-1035

## Affiliates in which the Company directly holds share of more than 10%

### Other Industry (Continue)

#### United Grain Industry Co., Ltd.

26/56, 27th Floor, TPI Tower, Chan Tat Mai Rd.,  
Thungmahamek, Sathorn, Bangkok 10120

Tel: (02) 678-6988-97

Fax: (02) 678-6988-99

#### TPI Smart City Co., Ltd.

26/56, TPI Tower, Chan Tat Mai Rd., Thungmahamek,  
Sathorn, Bangkok 10120

Tel: (02) 285-5090-9

Fax: (02) 213-1035

#### TPI Distribution Center Co., Ltd.

26/56, TPI Tower, Chan Tat Mai Rd., Thungmahamek,  
Sathorn, Bangkok 10120

Tel: (02) 285-5090-9

Fax: (02) 213-1035

#### Polene Silicon Co., Ltd.

26/56, TPI Tower, Chan Tat Mai Rd., Thungmahamek,  
Sathorn, Bangkok 10120

Tel: (02) 285-5090-9

Fax: (02) 213-1035

#### TPI Biomass Energy Co., Ltd.

26/56, TPI Tower, Chan Tat Mai Rd., Thungmahamek,  
Sathorn, Bangkok 10120

Tel: (02) 285-5090-9

Fax: (02) 213-1035

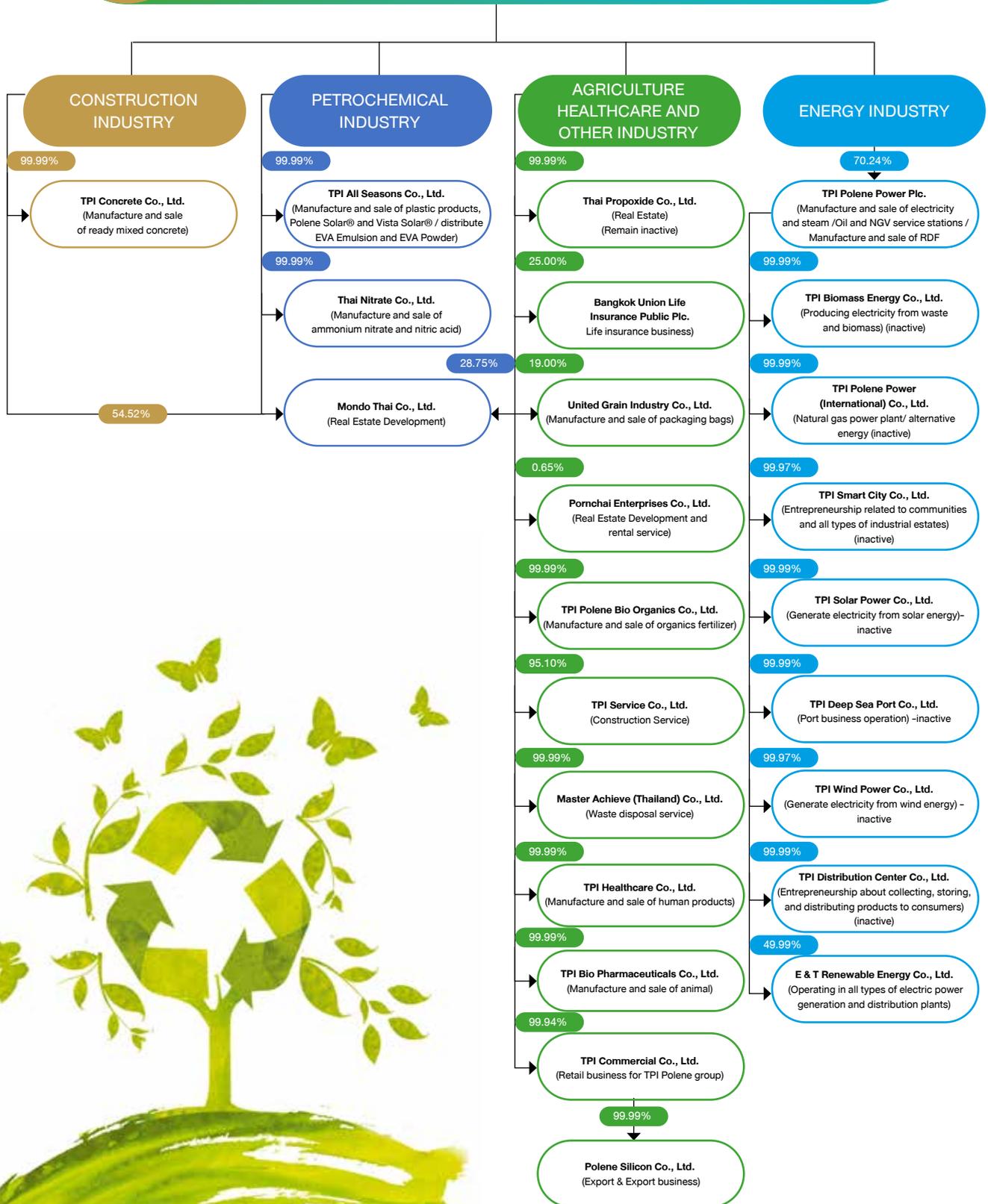


# Business Structure of the Group [2-1]



## TPI POLENE PLC.

Manufacture & sale of cement, mortar, clinker, EVA/LDPE plastic resins, industrial waste disposal, CRT/FCB, lightweight concrete and drinking water.



## Overview of TPI Polene Public Company Limited [2-1] [2-6]

As of 31 December 2023

(excluding affiliates)

Company Name	TPI Polene Public Company Limited or TPIPL
Nature of legal affairs	Listed on the Stock Exchange of Thailand
Head Office Location	26/56 Chan Tat Mai Road, Thungmahamek, Sathorn, Bangkok 10120 Tel. Number: +66 (0) 2213-1039-49, 285-5090-9 Fax Number: +66 (0) 2213-1035, 213-1038 Web Address: <a href="http://www.tpipolene.co.th">http://www.tpipolene.co.th</a>
Registered Capital	Baht 23,560,235,000
Paid-up capital	Baht 18,935,235,000
Total Assets	Baht 163,415 million
Total Liabilities	Baht 98,788 million
Total Shareholders' Equity	Baht 64,626 million
Net sales	Baht 42,807 million
Business Unit	<p><b>Head Office Bangkok</b></p> <p>The three major distribution terminals are located in Pathum Thani, Udon Thani and Chachoengsao provinces, and two warehouses are located in Samut Prakarn and Nong Khai provinces.</p> <p>The five sub-distribution terminals are located in Songkhla, Phitsanulok, Ubon Ratchathani, Surin, Surat Thani and Lamphun provinces, and one warehouse is located in Ubon Ratchathani.</p> <p><b>Cement plant, Saraburi Province</b></p> <p>67 concrete batching plants (in Bangkok metropolitan area and metropolitan areas such as Mahachai, Ayutthaya province, Rayong province, Map Ta Phut, Pattaya, Sriracha, Bo-win and Udon Thani province)</p> <p><b>Concrete roof tile and fiber cement plants, Saraburi Province</b></p> <p>LDPE/EVA plants, Rayong Province</p>

## Employee Information [2-7] [2-8]

As of 31 December 2022

Employee details	2021		2022		2023	
	Number (persons)	percent	Number (persons)	percent	Number (persons)	percent
<b>Total number of employees</b>	<b>7,016</b>	<b>100</b>	<b>7,226</b>	<b>100</b>	<b>7,096</b>	<b>100</b>
<b>Classified by genre</b>						
Male	5,958	84.92	6,126	84.78	6,027	84.94
Female	1,058	15.08	1,100	15.22	1,069	15.06
<b>Male</b>						
Male employees younger than 30 years old	1,070	15.25	1,054	14.59	771	10.86
Male employees aged 30-50 years old	3,564	50.80	3,577	49.50	3,820	53.84
Male employees over 50 years old	1,324	18.87	1,495	20.69	1,436	20.24
<b>Female</b>						
Female employees younger than 30 years old	201	2.86	201	2.78	189	2.66
Female employees aged 30-50 years old	663	9.45	693	9.59	680	9.58
Female employees over 50 years old	194	2.77	206	2.85	200	2.82
<b>Classified by employment contract</b>						
Full-time staff	6,220	88.65	6,439	89.11	6,321	89.08
Contract employee	796	11.35	787	10.89	775	10.92
<b>Classified by place of operation</b>						
Head office	1,392	19.84	1,388	19.21	1,320	18.60
Cement plant, Saraburi province	4,233	60.33	4,364	60.39	4,274	60.23
CRT and FCB plants, Saraburi province	812	11.57	900	12.46	927	13.07
LDPE/EVA plants, Rayong province	579	8.25	574	7.94	575	8.10

**Remark :** The Company's employees exclude subsidiaries' employees.



## Vision, Mission, and Business Strategy [2-23]

TPI Polene Group operates its business with a focus on developing innovation and the technology has been applied to increase product value, with the research and development team of TPI Polene Group itself focusing on the policy towards sustainable development (ESG & Bio Circular-Green Economy-BCG for Sustainability) to low-carbon production to balance business growth, and maintain the environment, while creating strength to Thai society as part of driving the economy, as well as generating good returns and continuously creating balance for shareholders and related stakeholders under a policy of good corporate governance.



### Vision

A leader in the business of construction materials, plastic resin, and clean energy power plants with excellence and international standards and conducting business with responsibility for sustainable growth in Economic, Social and Environmental dimensions through a policy of good corporate governance towards sustainable development using Bio-Circular-Green Economy-BCG and growing with innovation and technology in all dimensions of work procedures to enhance competitiveness and be at the forefront of the industry.

### Mission

Deliver worthy products and services to customers that are beyond superior with a decisive management style and flexible adaptation to new business concepts, covering all aspects of risk management; focus on efficient investment and resourceful production processes, with the proper use of resources, aiming to reduce greenhouse gas emissions to be environmentally friendly in parallel with managing costs and expenses to the appropriate level and to create sustainable returns to shareholders, maintain balanced stakeholders throughout the country, society, community, shareholders, customers, business suppliers and employees.





## Business Strategy

- Look for investment opportunities offering high growth rates and good returns, with risks that can be managed.
- Have its own research and product development team to develop products that meet the needs of various consumers.
- Utilize technology and innovation to comprehensively and rapidly manage business continuity.
- Improve production efficiency to enhance competitive potential.
- Seek market opportunities, develop products for value addition, ensure compliance with international standards, advocate for environmentally friendly practices, and respond promptly to customer needs throughout product usage.
- Quickly and efficiently distribute products to reach recipients, and incorporate online trading and New Normal stores in communities to support the launch and market expansion of TPI Polene Group's products.
- Develop work processes while also reducing administrative costs for maximum efficiency.
- Reduce financial costs, including managing liquidity and financial risks to a manageable level.
- Manage risks throughout the organization with good corporate governance.
- Establish flexibility to adapt to business disruptions while proactively preparing for the future to enhance competitiveness continuously.
- Create value for shareholders and investors through stable profit growth and good returns, while also expanding the business for sustainable growth.
- Conduct business responsibly and contribute to the development of a high quality of life for society and communities. Manage operations throughout the supply chain, cultivate relationships with suppliers and customers, support the continuous development of personnel abilities, and ensure the quality of working life for employees on par with leading companies to foster loyalty to the organization.

# Value Chain of TPI Polene [2-6]



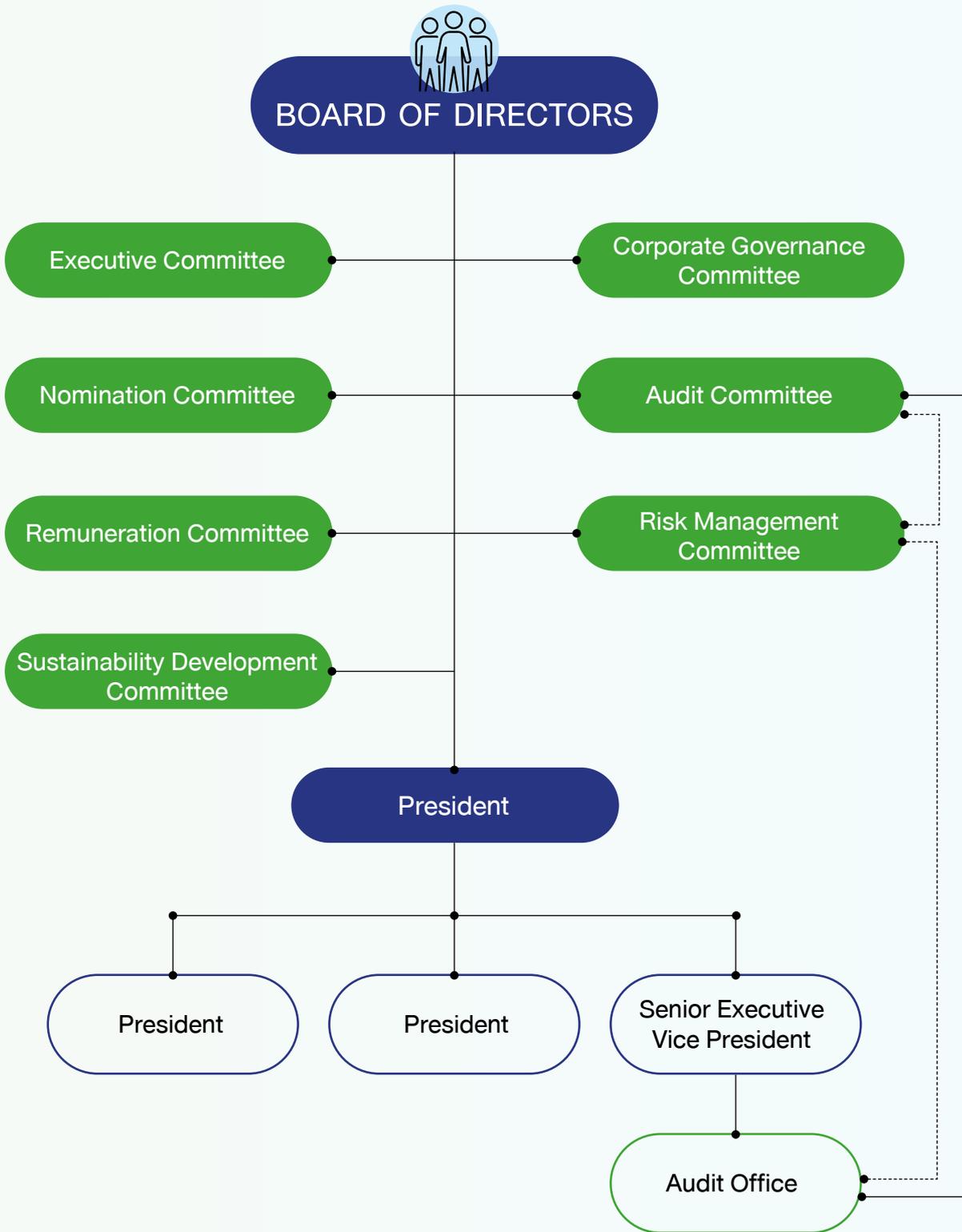
## Value Chain of TPI Polene (2-6)

TPI Polene is committed to developing innovative products that meet the needs of consumers. and continuously raise our service standards. Along with the application of digital technology to increase the efficiency of the value chain, as well as creating cooperation with all sectors to jointly take care of the environment and society while creating sustainable growth both now and in the future.

### Value at the Company delivered to stakeholders in the value chain of business as follows:-

Value Chain	Source	Internal Stakeholders	External Stakeholders	The value that the Company provides to stakeholders
<b>1. Procurement of raw materials</b>	<ul style="list-style-type: none"> <li>- Coal</li> <li>- Local raw materials</li> <li>- Raw materials from offshores</li> </ul>	<ul style="list-style-type: none"> <li>- Purchasing Department</li> <li>- Financial Department</li> </ul>	<ul style="list-style-type: none"> <li>- Supplier</li> <li>- Contractors</li> <li>- Competitors</li> <li>- Community</li> </ul>	<ul style="list-style-type: none"> <li>- Take into account environmentally friendly raw materials to reduce greenhouse gases emission.</li> <li>- Green Purchasing</li> <li>- Local procurement that supports communities, reduces socioeconomic inequality</li> <li>- Have a quality and adequate source of raw materials.</li> <li>- Establish a trade framework with ethical suppliers and create good relationships and contribute to the sharing of benefit (Win-Win Situation)</li> </ul>
<b>2. Production</b>	Converting raw materials into quality-controlled and standardized cement products	<ul style="list-style-type: none"> <li>- Production Unit</li> <li>- R&amp;D Department</li> <li>- Technology and Innovation Department</li> <li>- Purchasing Department</li> <li>- Warehouse Agency</li> <li>- Occupational Health Department</li> </ul>	<ul style="list-style-type: none"> <li>- suppliers</li> <li>- Communities around the factory</li> <li>- Government Organizations</li> </ul>	<ul style="list-style-type: none"> <li>- Produce products under international standards</li> <li>- Qualified and reliable products, reliable to stakeholders</li> </ul>
<b>3. Distribution</b>	Ready to distribute products throughout network under safety standards	<ul style="list-style-type: none"> <li>- Logistics Center</li> <li>- Logistic Department</li> <li>- Domestic and Export sales Department</li> <li>- Distribution terminals and warehouse throughout the country</li> </ul>	<ul style="list-style-type: none"> <li>- Freight Contractor</li> <li>- Customers</li> <li>- Commercial Competitors</li> <li>- Communities around the distribution center</li> </ul>	<ul style="list-style-type: none"> <li>- Speed of delivery on timely basis</li> <li>- Wide range of distribution channels</li> </ul>
<b>4. Marketing and Sales</b>	Incentivizing customers to buy the best products and services, covering local and international areas.	<ul style="list-style-type: none"> <li>- Domestic and international sales/ marketing Department</li> <li>- Customer Service Department</li> <li>- Financial Department</li> <li>- Accounting Department</li> </ul>	<ul style="list-style-type: none"> <li>- Agents</li> <li>- Contractor</li> <li>- Customers</li> <li>- Commercial Competitors</li> </ul>	<ul style="list-style-type: none"> <li>- Create long-term relationships</li> <li>- Strengthen partner income, to grow together</li> <li>- Become a Business Partner</li> </ul>
<b>5. After-sales service</b>	Provide technical services showing how to use the correct products and can help customers at the workplace.	<ul style="list-style-type: none"> <li>- Technical Department</li> <li>- Sales Department</li> <li>- Production Department</li> </ul>	<ul style="list-style-type: none"> <li>- Contractor</li> <li>- Customers</li> <li>- Commercial Competitors</li> </ul>	Create good impression on service that customers obtain before and after the sale.

Corporate Governance Structure [2-9]



## Coordinate and exchange information

The Management Structure of the Company as of December 31, 2023, consists of the Board of Directors, and seven sub-committees consisting of: Executive Committee, Audit Committee, Remuneration Committee, and Nomination Committee, Corporate Governance Committee, Sustainability Development Committee, and Risk Management Committee.

As of December 31, 2023, the Board of Directors has a total of 15 Directors, divided into 12 males and 3 females. The total of five members of the board (33.33%) are independent directors.

The Chairman of the Board is an Independent Director and shall not be appointed as the Chief Executive Officer or member of the sub-committee. According to the director structure, the Company has arranged a clear separation of roles between the Board of Directors and the Management. The person who holds the position of Chairman of the Board and Chief Executive Officer is in a separate position so that duties and responsibilities on the corporate governance and business administrative are clearly separated. [2-11]

## Roles and Responsibilities [2-12] [2-13]

The Board of Directors plays an important role in corporate governance for the best benefits of the Company. Each Director acts as the representative of shareholders and participates in promoting the Company's good governance principles, as well as supervising the business in accordance with its vision and operational strategy, as well as the Company's core policies to preserve the rights and create benefits for shareholders and other relevant stakeholders.

### Roles of the Board of Directors



<https://www.tpipolene.co.th/th/aboutus/org-tpi/board/board-1-2>

### Audit Committee



<https://www.tpipolene.co.th/th/aboutus/org-tpi/audit-board>

### Remuneration Committee



<https://www.tpipolene.co.th/th/aboutus/org-tpi/remuneration-board>

### Nomination Committee



<https://www.tpipolene.co.th/th/aboutus/org-tpi/nominate-board>

### Corporate Governance Committee



<https://www.tpipolene.co.th/th/aboutus/org-tpi/corporate-governance-committee>

### Risk Management Committee



<https://www.tpipolene.co.th/th/aboutus/org-tpi/risk-management-committee>

In addition, in order to ensure the most efficient business management and reporting of sustainability of the business is the most efficient and effective, the Company has appointed an ESG Committee, which consists of four committees, namely: the Sustainability Development Committee, head office: Sustainability Development Committee, Saraburi Plant; the Sustainability Development Committee, Rayong Plant; and the Sustainable Development Committee, Concrete Roof Tiles Plant. The establishment of the role and responsibilities of the ESG Committee are as follows:

1. Set policies, strategies, frameworks, to implement strategies and to consider the selection of issues that promote the sustainable development of the organization, as well as set sustainable development goals to be in line with the implementation of the business operations in Economic, Society & Environment Dimensions to be proposed to the Chief Executive Officer for approval.
2. Supervise, review, and monitor the progress of the operation and evaluate the effectiveness of the implementation to comply with the Company's sustainability policy.

3. Encourage concrete implementation and participate in various projects within the framework of sustainable development with related departments, for both inside and outside the organization.
4. Provide advice, promote, and support of appropriate resources and the right personnel in order to implement sustainable development strategies throughout the organization and to be aligned in the same direction.
5. The Chairman of the ESG Committee has the authority to appoint sub-committees or working groups to be responsible for the implementation of sustainable development in each part in order to be comprehensive and in line with key aspects of the organization.
6. Report on the performance of the preparation of the sustainability report to the top management. The Sustainable Development Committee is required to hold meetings to regularly review operational efficiency and report performance summaries at least quarterly to the Chairman of the Sustainable Development Committee. In 2023, a total of four meetings were held and reported to the Board of Directors. The report can be summarized as follows: [2-16]

**1. The environmental dimension was carried out as follows:**

- 1.1 Towards a low-carbon society in 2023: The Company can use approximately 361,827 tons of waste as fuel to replace coal, approximately 14% of the total heat required at cement plants as in 2023, the Company have gradually installed machinery to be able to use waste fuel instead of coal in four cement production lines, with the final line of cement plants being installed in December 2023. Therefore, the average rate of waste fuel to replace coal in 2023 has not yet reached the target of 25%.
- 1.2 In 2023, the Company invested in 41 units of 60-ton EV mining trucks and 4 units of EV wheel loader trucks to replace diesel-powered limestone trucks and wheel loader trucks and converted additional 14 units of diesel-powered trucks to EV engines trucks. Such investment will help reduce transportation costs while reducing greenhouse gas emissions and PM 2.5 emissions.
- 1.3 Develop new types of hydraulic cement to replace type 1 Portland cement, with easy pouring, fast drying properties. Hydraulic cement is used as a raw material for the production of ready-mixed concrete or low-heat concrete that can reduce heat accumulation in large structural concrete and increases the durability of concrete to withstand various environmental conditions well, it is also a product for green building construction according to LEED and TREES standards, reducing work time and carbon dioxide emissions in the production process. In 2023, customers used 2,690,747 tons of hydraulic cement, reducing carbon emissions by 0.2206 million tons of carbon dioxide equivalent. Additionally, TPI Polene Group has implemented a policy to manufacture products aimed at reducing greenhouse gas emissions. This involves increasing the production of Green Products such as Green Clinker, Green Cement, Green Fiber Cement, and Green Concrete Roof Tiles (Green CRT). These products utilize alternative raw materials, alternative fuels, and electricity sourced from renewable energy.
- 1.4 TPI Polene Group has a waste management policy, using the 1A3R principle (Avoid, Reduce, Reuse, and Recycle) under the concept of Zero Waste. The waste is disposed of in a cement kiln at over 1,800 degrees Celsius in a closed system. In addition, TPI Polene Group operates in accordance with the Bio-Circular-Green Economy (BCG for sustainability) approach to use raw material resources efficiently, such as reusing 100% of the waste stone from the construction stone production process and using the remaining raw materials from one factory as raw materials for another.

The Company has set a target to be able to utilize industrial waste  $\geq$  95% of total industrial waste generated. In 2023, the Company utilized 4,146.97 tons of industrial waste from cement production process to be used as renewable fuels, alternative materials and recycled, representing 99.52% total quantity of industrial wastes.

- 1.5 TPI Polene Group has established measures to restore the natural environment, protecting the ecosystem by cooperating with government authorities or private sectors in restoring forest areas.

- 1.6 Increase energy efficiency, aiming to use all kinds of energy in production process.
  - 1.7 TPI Polene Group has a policy to manage water use for maximum efficiency by not draining water outside the factory, including controlling effluents quality to be valuable according to effluents standards.
  - 1.8 Reduce operational impacts throughout the value chain
- 2. In the social dimension, the Company operates its business responsibly and gives importance to all groups of stakeholders in a balanced manner, which can be summarized as follows:-**
- 2.1 Aiming to generate good returns for shareholders by continuously paying dividends and maintaining good performance continuously.
  - 2.2 Consider human rights principles, respect personal data, protect labor rights, encourage youth in education, etc.
  - 2.3 Have safety, occupational health, and create a good working environment.
  - 2.4 Manage and develop the potential and skills of personnel continuously by setting a target number of training hours per person per year.
  - 2.5 In 2023, the Company has measured employee satisfaction levels in many dimensions by using the employee opinion survey results to develop activities to continuously build good relationships with employees to maximize the level of employee satisfaction.
  - 2.6 TPI Polene Group provides equal opportunities for employment non-discrimination in favor or against any person, covering employees with disabilities and other disadvantaged groups. In 2023, 562 new employees were employed, which comprises 516 general staff, 45 seniors and 1 employee with disabilities.
  - 2.7 Prioritize customer satisfaction in the products and services of TPI Polene Group.
  - 2.8 Priority to the security of corporate information systems.
  - 2.9 Promote environmentally friendly procurement to reduce the risk of doing business with suppliers.
  - 2.10 TPI Polene Group has created value and improved the quality of life for communities in all areas where TPI Polene Group's business operations are located, such as organizing discussion projects with communities and community development, chemical-free agriculture projects for school lunches in Ban Sap Bon, Saraburi Province, providing scholarships to children with good academic performance, etc.
  - 2.11 TPI Polene Group has supported various projects and activities for public benefits in 2023, totaling approximately Baht 27.92 million to communities, academic institutions, temples, hospitals and government authorities and contributed healthcare products and products of TPI Polene Group, such as cement, other construction materials, organic fertilizers, drinking water and health products to prevent pathogens.
- 3. Corporate Governance Dimension: TPI Polene Group adheres to the principles of accuracy and compliance with relevant laws and regulations under the business ethics. There is an operating framework based on good corporate governance, transparent disclosure of information and operating results. The Company has all-round risk management and flexibility in management to cope with the challenges of business competition, which can be summarized as follows:-**
- 3.1 Promote the performance of the Board of Directors. Executives and employees shall comply with good corporate governance and business ethics in all operational areas. In 2023, the Company has implemented human rights actions against stakeholders throughout the value chain by respecting human rights to employees, suppliers, customers and local communities without any reports or complaints of human rights violations.
  - 3.2 Provide guidelines for social enterprise operations, focusing on responding to the needs and improving the quality of life for communities in all areas where the Company's business operations are located, including social networking communities across the country.
  - 3.3 Respond to the needs of all stakeholders in a balanced way for sustainable growth.

Additionally, in 2023, the Company created a sustainability report based on the GRI (Global Reporting Initiative) reporting standards (Materiality) in all three aspects (ESG), and it also promoted quarterly disclosure of sustainability performance to investors through the 56-1 One report, Sustainability Report, and the TPI Polene's website.

## Monitoring, Evaluating and Reporting on Sustainability Performance [2-14]

The Board of Directors participates in the consideration and review of Material Topics, including reviewing and approving the sustainability report information before it is disclosed to the public by requiring the Sustainable Development Committee (ESG Committee) and executives from relevant departments to monitor, evaluate, collect, and gather important sustainability performance data, analyze and compare results with the goals set, and report results to executive. Furthermore, the Company requires that the sustainability report be prepared in accordance with international standards according to the reporting standards of the Global Reporting Initiative (GRI) for communicating sustainability performance to the public and stakeholders annually.

## Assessment of the Board of Directors' Performance [2-18]

Self-assessment of the Board of Directors, sub-committees, and senior executives (CEO)/Chairman of the Management is an independent assessment at least once a year and in accordance with the principles of good corporate governance by taking into account the elements specified. The Company's ESG sustainability performance is one of the indicators used to assess the performance of the Board of Directors and executives and focuses on using the results to improve the performance of Board of Directors and Senior Executives (CEO)/Chairman of the Management Committee. The assessment form consists of

1. The Performance Assessment Form of the Board as a whole (Assessment as a whole) consists of 6 topics: Structure and Qualifications of the Board, Roles and Responsibilities of the Board, Board Meetings, Performance of the Board, Relationship with Management, Director's Self-Improvement and Executive Development.
2. The Performance Assessment Form for the Board of Directors as a whole consists of 3 topics: Structure and Qualifications of Directors, Sub-Committee Meetings, Roles, Duties, and Responsibilities of Sub-Committees.
3. The Performance Assessment Form for the Board of Directors as an individual (For Board/Sub-Committees) consists of 3 topics: Structure and Qualifications of the Board/Sub-Committees, Meetings of the Board/Sub-Committees, Roles, Duties and Responsibilities of the Board of Directors/Sub-Committees.
4. The Performance Assessment Form for the Chief Executive Officer (CEO)/Chairman of the Management Committee includes financial performance (e.g. revenue, company sales, economic value added, other financial performance) and environmental, social, and/or governance (ESG) performance, such as employee/supplier/community satisfaction, especially with the aim of reducing greenhouse gas emissions, reducing the use of company resources for cost and environmental benefits, etc.). All of which are part of the performance evaluation indicators of top executives (CEO or equivalent) that consist of 10 topics:
  1. Leadership
  2. Strategy Implementation
  3. Planning and Financial Performance
  4. Strategy
  5. Relationship with the Board
  6. External Relations
  7. Administration and Personnel Relations
  8. Succession
  9. Knowledge of Products and Services
  10. Personal Attributes

## Summary of Performance Assessment of the Board of Directors



<https://www.tpipolene.co.th/aboutus/org-tpi/board-assessment-result>

## Environmental Conservation meets domestic and internationally recognized standards [2-23] [2-28]

The Company has adhered to the principles of good corporate governance under the Listed Companies Act, 2017, issued by the Securities and Exchange Commission (Code of Corporate Governance) Regulations and is committed to driving the Company's business and TPI Polene's subsidiaries to meet the needs of Bio-Circular Green Economy and to be in line with the country's economic development, taking into account Environmental, Social, and Governance (ESG) and a business model innovation. In addition, the Company adheres to the importance of conducting business operations by emphasizing process supervision, and that quality products and services meet internationally recognized standards.

In addition, the Company has a competitive advantage in low production costs due to the fact that its machinery and equipment are located in a single area, adjacent to the Company's limestone quarry. The Company is also the first cement plant in the country that can use waste-based fuel as an alternative fuel for coal, which reduces the costs of cement production. TPI Polene was the first cement manufacturer in Thailand to be awarded ISO 9002 Certification from the International Standard Institute, for surpassing industrial and environmental protection standards. This has enabled the Company to export cement to the state of California, where surrounding communities are highly aware of environmental conservation. The Company is also the first cement manufacturer in Thailand to be approved to use carbon labels for cement and mortar products. The carbon label demonstrates that TPI Polene puts an emphasis on producing products to be environmentally friendly and helps to even out temperatures in the atmosphere. The Company has its own research and development team, which is a distinct competitive advantage over others. In addition, the Company has a pallet less cement packaging system to reduce the costs of product delivery and can increase the lifetime of the product even longer, and develop the technology of producing TPI red 299 (hydraulic cement) to replace Portland cement and help reduce greenhouse gases by 10-15%, receiving TIS standards certification.

During the period of 2021-2023, the Company developed a heightened awareness of the issues surrounding global warming and severe climate change. Therefore, the Company has invested in a project to improve kiln machinery in its cement plant. The goal is to reduce heat consumption in the production process. The project, named PREPOL-SC Step Combustors Project, involves replacing coal by 25% in the cement production process across a total of four production lines. This allows the Company to reduce its reliance on coal as the sole fuel source, thereby reducing energy costs and saving approximately Baht 553-1,128 million in machinery repair costs. Moreover, this initiative decreases reliance on expensive and volatile coal, which fluctuates according to world market conditions. Instead, the Company utilizes alternative waste fuel that is cheaper. This initiative will help the Company reduce the production of greenhouse gases. All four production lines are scheduled to be completed by the end of 2023.

The Company is also the first cement producer in the country to receive ISO 9001:2015 international certification from international institutions and is certified for four international standards of management: Quality Management System Standard (ISO 9001:2015), Environmental Management System Standard (ISO 14001:2015), Occupational Health and Safety Management System Standard (ISO45001:2018), and Energy Management System Standard (ISO50001:2011) by the United States (ASTM) and the European Federation (EU) and cement plant laboratory standards are certified by Thai Industry Standards institute with ISO/IEC 17025:2017 and TIS 17025:2018.

Regarding the Polymer business, the Company has successfully shifted its focus towards the technology market. It aims to revamp its polymer business, emphasizing the production of Specialty Polymer that is environmentally friendly, offering added value and higher profit margins. Currently, the Company is in the process of upgrading its machinery to enhance the Polymerization Conversion Rate, anticipating an overall increase in EVA production capacity by approximately 10%. Some parts of production capacity adjustments commenced in 2023 and are scheduled for completion by 2025.

The Company has successfully trialed the production of ethylene copolymers and new chemicals from the Pilot Reactor. It has the ability to adhere very well to PET OPP plastics, and Metalized Film, while also enhancing impact resistance and aiding in the formation of engineering plastics. Additionally, the number of producers for such plastic pellets is limited, especially when compared to producers of EVA plastic pellets. In 2023, the Company began providing samples for customers to test, aiming to study properties and marketing responses. The Company plans to enhance machinery in the existing production line to commence production of this product by the end of 2025. This new product will enable the Company to offer more products that cater to customer needs, thereby better coping with the anticipated increase in volatility and uncertainty in the petrochemical market.

However, the Company has been certified to all three industry standards: Quality Management System (ISO 9001:2015), Occupational Health and Safety Management System Standard (TIS 18001-2011 and OHSAS 18001:2007) and Environmental Management System Standard (ISO 14001:2015), and has received certification by the Department of Industrial Works, Ministry of Industry, as a green industrial plant level 3: Green System with systematic environmental management with continuous monitoring and review for development. The product has also received a MiT certificate (Made in Thailand) from the Federation of Thai Industries.

In the EVA Emulsion and EVA Powder business, the Company stands as the first and only entity in the country possessing the technology to manufacture and distribute EVA Emulsion and EVA Powder to the market. This is achieved by leveraging the infrastructure and primary raw materials of our plastic pellet factory, thereby reducing construction costs and effectively managing the increased volume of raw materials. Additionally, it empowers the Company to negotiate prices more effectively with imported raw material producers. By utilizing ethylene and vinyl acetate, which would otherwise be discarded from the plastic pellet production process, as raw materials, the Company not only cuts production costs but also mitigates emissions, benefiting both local communities and the environment. In 2023, the Company could develop new type of value-added product within the category of hot glues, specifically focusing on those with enhanced liquidity and superior heat resistance properties. This product line was initiated in 2022, aiming to generate added value with high-profit margins within the specialized industrial liquid glue segment, which currently has few manufacturers. The Company has successfully expanded its market share within this product category, positioning itself as one of the top three market leaders in both East Asia and Southeast Asia. In 2023, the Company developed a specialized grade of industrial water-based adhesive aimed at mitigating PM 2.5 dust pollution in construction areas. By applying this coating to gravel road surfaces, it effectively prevents the dispersion of dust caused by vehicular and machinery traffic within construction zones. This innovative solution replaces traditional water spraying methods, significantly reducing water usage, labor, and the need for water sprayers. The initial tests of this product yielded positive feedback from domestic customers. As a result, the Company is poised to expand its presence in the market further in 2024.

Regarding EVA Powder, the Company has imported machinery from a European manufacturer and completed its installation in the new adhesive powder production plant, which boasts a production capacity of 5,000 tons per year. Currently, trials of the production machinery are underway, with plans for it to become operational by 2023. This will enable the Company to expand its market for adhesive powders in the continuously expanding region.



The plant has been certified for quality management systems (ISO 9001:2015), occupational health and safety management standards (ISO45001:2018), and environmental management system standards (ISO 14001:2015), and the product also received a MiT certificate (Made in Thailand) from the Federation of Thai Industries.

Ammonium nitrate and nitric acid are manufactured and distributed by Thai Nitrate Co., Ltd. (99.99% owned-subsiary Company), the largest manufacturer of ammonium nitrate in Thailand. The Company's ammonium nitrate and nitric acid products have received industry standard (TIS) and international standards for quality management systems such as ISO9001:2015, ISO14001:2015, ISO45001:2018, ISO5001:2018, ISO17025-2017 and HALAL, and the product has received a MiT certificate (Made in Thailand) from the Federation of Thai Industries, as well as receiving certifications confirming them as a Green Industrial Level 3 Green System from the Department of Industrial Works, Ministry of Industry. Ammonium nitrate and nitric acid products are used in the cement industry, coal mines, quarries, industrial construction, and for nitrous oxide manufacturing used in medicine.

In addition, the Company joins as a member or has worked with both, public and private authorities to develop and upgrade the Company's operations as well as expand cooperation to deliver value to relevant stakeholders and society as a whole as follows:

Agency
1. Federation of Thai Industries (FTI)
2. Thai Cement Manufacturers Association (TCMA)
3. ASEAN Federation of Cement Manufacturers (AFCM)
4. Asian Cement Producers Amity Club (ACPAC)
5. Sustainability Disclosure Community (SDC)
6. Thai Listed Companies Association
7. Investor Club Association
8. Thai Institute of Directors Association (IOD)
9. Thai Chamber of Commerce



# 04 TPI Polene and Sustainability



## Sustainability Policy Framework and Management [2-23] [3-3]

The Board of Directors and the top management of TPI Polene have established sustainability policies with a focus on being instrumental in driving the organization to achieve its sustainability vision in line with the direction and strategy of business operations by supporting the Sustainable Development Goals (SDGs) of the United Nations in order to balance the economy, environment, and society under good corporate governance with a policy framework and sustainability management as follows:



**1. Economic Dimension:** With an emphasis on the adoption of technology and innovation in the production process of quality products and services with an effective management at every stage, and with R&D results to further constantly develop business models and create added value for products and services as well as seek investment opportunities that offer high returns on investment. In addition, the company has formulated a strategy for both short-term and long-term business growth, with the ability to adapt flexibly, taking into account all internal and external risk factors, being ready in terms of systems and production efficiency.



**2. Environmental Dimension:** In pursuit of developing a low-carbon society and mitigating greenhouse gas emissions, the organization recognizes the necessity for climate risk management as a crucial sustainability imperative. The overarching goal is to achieve carbon neutrality by 2043, leveraging climate management data aligned with the framework of the Task Force on Climate-related Financial Disclosures (TCFD) to support the strategy formulation. This entails establishing both short-term and long-term greenhouse gas reduction objectives, alongside investment and financial planning initiatives, all aimed at ensuring the organization's sustainability. By improving production efficiency and adopting environmentally friendly technologies, such as utilizing waste as fuel instead of coal in the cement production process, reducing dependence on fossil fuels, and sourcing electricity from renewable sources including biomass energy derived from production waste, along with employing electric vehicles and heavy machinery like EV Dump Trucks, the Company implements both short-term and long-term low-carbon strategies to mitigate climate change risks and achieve its goal of reducing greenhouse gas emissions. Furthermore, factories within the TPI Polene group adhere to both Thai and international standards, ensuring compliance with environmental certifications and other related standards.

In addition, the Company emphasizes the importance of the **Green Economy** policy and utilizes clean energy. It produces environmentally friendly products, such as hydraulic cement, to reduce greenhouse gases, decrease fossil fuel usage, enhance energy efficiency, and bolster the utilization of renewable energy sources. Furthermore, the Company is committed to addressing waste management issues, prioritizing the **Bio Economy** policy by advocating for organic agriculture, promoting biotechnology, and minimizing chemical use in agriculture to prevent soil degradation. It also seeks to reduce chemical usage in livestock farming for the betterment of animal and human health as consumers. Additionally, the Company champions a **Circular Economy** policy, aiming to maximize resource utilization, minimize waste generation, effectively utilize waste, prioritize biodiversity preservation, mitigate soil degradation, and judiciously employ water resources. Moreover, it strives to mitigate operational impacts across its value chain, including employees, suppliers, customers, and the social communities, ensuring a balanced response to the needs of all stakeholders.



**3. Social Dimension:** Conducting the business with social responsibility, creating balanced consideration for all stakeholders, respect and protection of human rights with stakeholders throughout the value chain, including employees, partners, customers, and social communities, creating good returns on investment for shareholders, occupational health and safety, hygiene and creating a good working environment, and continuously manage and develop talent and skills for personnel, customer health and safety, evaluating social partners and providing clear product label information, respect privacy of information, promote youth in education and contribute to creating value and improving the quality of life of the community and society to grow sustainably protect labor rights, do not use child labor and illegal labor, respect human rights principles, and provide diversity and equality and non-discrimination.



**4. Corporate Governance Dimension:** Adhering to the principles of accuracy and compliance with applicable laws and regulations under business ethics with an operating framework based on good corporate governance principles with transparent disclosure of information and performance with versatile risk management and flexibility in management. Anti-corruption, have a transparent and fair procurement system, do not use inside information to seek benefits, and have the security of date and information systems.

## Respecting Human Rights

### The foundation for human rights implementation

The Company places great emphasis on human rights operations and operates its business with a balanced responsibility to its stakeholders under good governance policies and respect for human rights as a guideline for a business management approach that focuses on sustainable development to be in line with the government's policy to promote the BCG Model and comprehensively improve the quality of life of communities and society in the country, diversifying opportunities and effectively reducing inequality.

The Company will implement human rights actions against stakeholders throughout the value chain, including employees, suppliers, customers, and local communities and complying with the provisions set forth in international human rights principles and international labor standards, including the United Nations Universal Declaration of Human Rights and the International Declaration of Fundamental and Working Rights of the International Labour Organization. Thai Labour Protection Act B.E. 2560 (2017) and respect for the International Labour Organization (ILO).

## Management Approach

### The Company attaches great importance to respecting the rights of employees.

Labor management is based on respect for human rights in various areas such as gender, religion, beliefs, etc. The Company provides equal and fair opportunities for work and career advancement without discrimination, giving freedom of association and collective bargaining in accordance with fundamental rights. Employee personal information is secured, combating illegal child labor. There is no use of conscripted labor (labor that is conscripted to work illegally) and there is no forced labor (forced labor to work beyond the legal limit without compensation).

The Company has treated its employees fairly in accordance with human rights principles. A welfare committee has been set up with employee representatives who are responsible for negotiating with the company about agreements affecting employees. The Company evaluates the performance of all employees with clear criteria and uses the results of employee performance evaluation to determine fair remuneration. Various training courses are provided to employees as appropriate according to their job positions and job responsibilities to help promote progress and develop the potential of employees. The Company also measures the level of satisfaction and engagement of employees with the Company annually and takes the results of the satisfaction assessment into consideration for the project, policies and procedures to improve the care and empowerment of employees. In addition, the Company has provided an occupational health and safety system for employees as well.

### The Company attaches great importance to respecting the rights of business partners.

The Company treats business partners equally and fairly and provide transparent procurement process and fair competition without discrimination. The security of personal information of partners is maintained and encourage suppliers to comply with human rights principles through the use of child labour. The Company has incorporated human rights and occupational health and safety issues into its Code of Conduct for Procurement Partners. The Company assesses the environmental, social and corporate governance risks (ESG Risk) of its suppliers annually to ensure that the Company's suppliers conduct business with respect for human rights and has also provided occupational health and safety systems to its partners and contractors appropriately as well.

### The Company attaches great importance to respecting the rights of its customers.

The Company treats customers fairly and is committed to providing users with benefits and services, and has the highest satisfaction with products, strives to develop quality and safe products continuously, as well as securing customers' personal information.

### The Company attaches great importance to respecting the rights of local communities.

The Company recognizes the importance of the local community by providing care, support, and good relations with surrounding communities. In addition, the Company has prepared a report on the performance of CSR-DIW Continuous Entrepreneurs' Social Responsibility Standards, a report on the results of the Community Economic and Social Monitoring Survey, and a summary report of the results of the Community Satisfaction Survey annually to survey the concerns of communities and society that may be affected by the Company's operations, and to apply the concerns found to improve to reduce the impact that may cause damage to the community and society as a whole, as well as to promote the employment of employees from surrounding communities and hire community workers for annual reforestation to support people in the community to earn income for sustainable well-being along with the Company's business operations.

## Human Rights Due Diligence (HRDD)

The Company has conducted due diligence on human rights as a risk management process associated with its ongoing business operation. The purpose is to identify prevention, mitigation and consider how the company Addressing human rights impacts throughout business activities by referring to the human rights due diligence process, which consists of five steps of the UN Guiding Principles on Business and Human Rights (UNGP) as follows:-



### 1. Policy Commitment

The Company has established the Company’s human rights policy to cover the entire value chain of the Company, including employees, suppliers, customers, and local communities, including the Code of Conduct, the Code of Conduct for purchasing partners. Supplier Code of Conduct Announcement on the Company’s Global Human Rights Policy no. 006/2559 and Announcement Personal Data Protection Policy no. BorKor 0017/2564 (For more information, please visit <https://www.tpipolene.co.th/th/aboutus/pdpda>)

### 2. Cultivation through corporate

The Company is committed to the implementation of human rights policies to foster a culture of respect for human rights principles throughout the organization. Training and dissemination of knowledge on respect for human rights have been organized for employees at all levels within the organization and human rights risks are continuously assessed.

### 3. Human right risk assessment

The Company conducts human rights risk assessment annually for a consecutive three year and reviews human rights risks related to business operations throughout the value chain to ensure that the Company’s plans and measures to mitigate, correct, and remedy human rights impacts are appropriate. The results of the risk assessment will enable the Company to effectively conduct business in accordance with human rights principles in risky operating areas. It helps to prepare for and prevent possible damage from human rights violations.



### 3.1 Determination of Audit Scope

The Company has conducted an assessment of human rights risks in key operating areas, encompassing the Bangkok Office and Saraburi Factory, where business or activities involve employees, suppliers, customers, and nearby local communities. A total of 10 issues have been identified, spanning areas including: (1) Non-discrimination; (2) Diversity and equal opportunities; (3) Freedom and collective bargaining; (4) Occupational health and safety; (5) Personal data protection; (6) Child labor; (7) Conscripted and forced labor; (8) Security practices; (9) Efficiency, readiness, and reliability of the electrical system; and (10) Continuous care for the community and society. These human rights risk issues are meticulously classified in detail by relevant stakeholder groups as follows:

Employees	Suppliers	Customers	Local Communities
<ul style="list-style-type: none"> <li>- Non-discrimination</li> <li>- Diversity and equal opportunities</li> <li>- Freedom and collective bargaining</li> <li>- Occupational health and safety</li> <li>- Personal data protection</li> <li>- Child labor</li> <li>- Conscripted and forced labor</li> </ul>	<ul style="list-style-type: none"> <li>- Non-discrimination</li> <li>- Occupational health and safety</li> <li>- Personal data protection</li> <li>- Child labor</li> <li>- Conscripted and forced labor</li> <li>- Security practices</li> </ul>	<ul style="list-style-type: none"> <li>- Efficiency, readiness, and reliability of the electrical system</li> <li>- Personal data protection</li> </ul>	<ul style="list-style-type: none"> <li>- Continuous care for the community and society</li> </ul>

### 3.2 Human Rights Risk Assessment

The Company utilizes the criteria of The Committee of Sponsoring Organizations of the Treadway Commission - Enterprise Risk Management (COSO-ERM) to assess human rights risks based on the severity of impacts and the potential opportunities associated with all 10 human rights-related issues.

### 3.3 Prioritization of Human Right Risks

The result of the human rights risk assessment found that there is one human rights issue with high risk, which is the risk of occupational health and safety of employees, while other human rights issues in the value chain are of medium to low risks as follows:

#### Result of Human Rights Risk Assessment

Risk level of human rights issues		
High Risk	Medium Risk	Low Risk
<b>1. Occupational health and safety</b>	<ul style="list-style-type: none"> <li>1. Non-discrimination</li> <li>2. Diversity and equal opportunities</li> <li>3. Freedom and collective bargaining</li> <li>4. Child labor</li> <li>5. Conscripted and forced labor</li> <li>6. Continuous care for the community and society</li> <li>7. Personal data protection</li> </ul>	<ul style="list-style-type: none"> <li>1. Security practices</li> </ul>

The Company manages risks in accordance with the guidelines for human rights operations by strictly implementing preventive measures and mitigating the risk of various human rights violations throughout its operations. This involves closely monitoring implementation as outlined in the guidelines for managing human rights complaints and remedies. These measures include continuous monitoring and reporting of performance results, aiming to comply with the target of ensuring no instances of human rights violations occur throughout the value chain.

#### 4. Remediation and Mitigation

In addition, the Company is aware of the need to take corrective actions in the event of any violations that may occur in the future. It will establish a process for receiving complaints, conducting thorough examinations and investigations, and determining measures to mitigate and rectify the impacts that have occurred, including fair remedial measures. This is to ensure that those affected receive appropriate remedies for the damages caused, as well as timely protection or guarantees that such infringements will not occur again.

In 2023, the Company did not receive any reports or complaints regarding human rights violations.

#### Preventive Measures and Impact Mitigation

Related Stakeholder	Impacts	Mitigation and Remediation
 <p>Supplier</p>	<ul style="list-style-type: none"> <li>• Illegal labor hiring</li> <li>• Discrimination against suppliers</li> </ul>	<ul style="list-style-type: none"> <li>• Signing for acknowledging the Code of Conduct of manufacturer supplying products, raw materials and services</li> <li>• Complying with the supply chain management system</li> <li>• Monitoring the performance of suppliers through supplier’s self-assessment</li> <li>• Supplier Survey</li> <li>• Auding suppliers’ performance according to the sustainability potential assessment form</li> <li>• Explaining guidelines to traders at their operational level, ensuring their understanding and compliance, aligning operations consistently with the requirements, the Company’s standards and the labor laws established by the International Labor Organization (ILO) concerning labor rights</li> </ul>
 <p>Employee</p>	<ul style="list-style-type: none"> <li>• Discrimination against employees based on gender (female, male, LGBTQ+), race, age, religion, ethnicity, culture, or socioeconomic class</li> <li>• Employee health and safety</li> <li>• Employment conditions</li> <li>• Personal data of employees may be at risk of leaking outside the organization               <ul style="list-style-type: none"> <li>• Employee personal information May leak outside</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Related policies include the Company’s human rights policy, its policy to prevent sexual harassment, the personal data protection policy, as well as guidelines for good corporate governance, and the Code of Conduct and ethics for manufacturers supplying products, raw materials, and services</li> <li>• Promoting the health and safety of employees through system standards (i.e. ISO 45001, OHSAS 18001)</li> <li>• Establishing measures to deal with the COVID-19 crisis, such as Work From Home and conducting online meetings</li> <li>• Establishing a welfare committee that promotes the bargaining power of employees</li> <li>• Conducting annual employee satisfaction surveys and employee engagement surveys</li> </ul>

Related Stakeholder	Impacts	Mitigation and Remediation
 <b>Community</b>	<ul style="list-style-type: none"> <li>Standard of living and quality of life for people in the community</li> <li>Occupational health and community safety</li> <li>Community access to clean water sources</li> </ul>	<ul style="list-style-type: none"> <li>Related policies, such as the Human Rights Policy, Sustainable Water Management Policy and Plan, and the policy of refraining from obstructing access to clean water sources, include measures such as avoiding blocking water sources or depleting community water until it causes drought</li> <li>Establishing Environmental Management System</li> <li>Strictly adhering to the preventive and corrective measures outlined in the environmental impact assessment report for environmental impacts</li> <li>Conducting community engagement through social projects / Conducting community satisfaction surveys</li> </ul>
 <b>Environment</b>	<ul style="list-style-type: none"> <li>Negative impacts on the environment, such as air pollution emissions, improper waste management, and the occurrence of unexpected events.</li> </ul>	<ul style="list-style-type: none"> <li>Establishing Environmental Management System</li> <li>Monitoring and reporting all types of emissions resulting from the Company's operations</li> <li>Preventive and corrective measures in the short and long term</li> <li>Continuously developing environmental innovations</li> </ul>
 <b>Customer</b>	<ul style="list-style-type: none"> <li>Health and safety</li> <li>Discrimination against customers</li> <li>Data privacy</li> <li>Customer satisfaction in various services.</li> </ul>	<ul style="list-style-type: none"> <li>Developing and promoting product manufacturing, promoting the Bio Economy, and ensuring hygiene</li> <li>Labelling products indicating health and safety for customers</li> <li>Assessing the risk of hazardous substances in products, implementing a health risk assessment system, establishing guidelines for risk assessment criteria, chemical risk control guidelines, and conducting environmental risk assessments</li> <li>Establishing Customer relationship management system (CRM)</li> <li>Conducting an assessment of customer satisfaction in various services using Systematic Sampling</li> <li>Handling customer complaints</li> </ul>



### Remedies and Complaints Channels

**TPI Polene Public Company Limited**

**No. 26/56 TPI Tower, Chantaimai Road, Thungmahamek,  
Sathorn, Bangkok 10120**



**Tel. 02 2131039**



**EMAIL: [orapin@tpipolene.co.th](mailto:orapin@tpipolene.co.th)**

## 5. Monitoring and Reviewing of Human Rights Performance

The Company has followed up on compliance with the human rights impact mitigation clauses, focusing on mitigating and mitigating negative impacts. However, agencies that have implemented mitigation measures must monitor and review the action plans to improve efficiency and should be re-evaluated to know the remaining impacts. The department that has implemented mitigation measures must monitor and review their action plans to achieve effective development and re-evaluate to ensure that impacts are addressed correctly and appropriately. In addition, the Company requires suppliers to conduct their own human rights audits. Environment, Social, Governance (ESG) of suppliers covering comprehensive labor impact assessment, environment, human rights, social community. The Company has also provided channels to listen to opinions and suggestions from employees and external parties. To review and revise comments as a result, the Company can prevent and reduce risks that may lead to human rights violations.

### Human Rights Operations in 2023

In 2023, the Company worked on human rights with various stakeholders, as follows:

#### Respecting Employees' Rights

- The election for a new Welfare Committee for the year 2023 was conducted. This committee serves as the representative of employees and plays a role in negotiating with the Company regarding agreements that affect employees.
- All employees are provided with equal employment opportunities. In 2023, the Company hired 620 new employees, including 56 elderly employees and 24 disabled employees.
- The average number of training hours for employees in each course is 22.49 hours per person per year. The Company has set a goal to enhance knowledge and develop employee potential, aiming for an average of no fewer than 20 training hours per person per year for each course.
- The overall level of employee satisfaction and engagement with the Company was at 84.17 %, with the Company's target level of employee satisfaction and engagement towards the Company was at 75 %. The company has used the results of such employee surveys to continuously develop activities to create good relationships with employees to keep satisfaction levels at the highest level.
- Employee supervision in terms of occupational health and safety at work. It was found that the number of work-related injuries and deaths was zero. Zero rates of high-impact work-related injuries and zero rates of occupational illnesses, which meet the Company's occupational health and safety targets.

#### Respect for Suppliers' Rights

- Suppliers have signed the Code of Conduct for Procurement Suppliers. Procurement, hiring (Supplier Code of Conduct) on human rights practices, which the Company pushes suppliers to strictly comply with the requirements/ Anti-Corruption Guidelines 96% of the total 1,641 suppliers.
- Economic risks arising from the Company's suppliers and environmental, social and corporate governance risks (ESG Risk) were assessed by 15 out of 1,641 Critical Tier 1 suppliers with an order value greater than or equal to Baht 50 million per year, representing 67.51% of the total order amount.
- There are no economic risks arising from trading partners and ESG in all assessment topics.

#### Respect for customer rights

- Produce and deliver quality and safe products for customers.
- Customer satisfaction assessment results of TPIPL's cement and mortar cement on various products and services customers in 2023 was scored an average of 87%, with the Company's target of satisfaction of TPI cement customers was at least 80% .

### Respect for the rights of local communities

- The Company contributes to community health by providing mobile medical unit services through the “Good Health with TPI” Project. These services include monitoring illnesses, offering health checkups, and providing health education, including the benefits of lung examinations, to the surrounding communities in Kaeng Khoi District, Muak Lek District, Saraburi Province.
- The Company’s Tree Planting Project for the year 2023 seeks to alleviate global warming by planting 2,000 trees in green areas around the TPI cement factory located in Saraburi Province. The primary goal is to expand the green spaces within the factory premises. This endeavor not only enhances the local ecosystem but also helps in absorbing the rising levels of carbon dioxide in the atmosphere. Additionally, it promotes positive relationships and attitudes towards environmental protection, encouraging widespread participation in tree planting activities to tackle the urgent challenge of global warming.

### Prioritizing and engaging with stakeholders [2-29]

The Company recognizes the importance of stakeholder engagement by analyzing stakeholders both inside and outside the organization, and which are associated with the value chain of the business, with the belief that good relationships are based on trust. The Company also recognizes that the opinions and feedback of stakeholders towards the organization are extremely valuable, and help us achieve our goals and become a sustainability developed and growing organization. Stakeholder management also help organizations respond effectively to the needs of stakeholders. This includes reducing the risk of damaging the image and the likelihood of business disruption.

TPI Polene Group has adhered to the principle of value creation, cooperation between the Company and its stakeholders, as well as improving channels and continuously sending stakeholder feedback to responsible departments. TPI Polene Group has divided the group of stakeholders to cover all dimensions inside and outside the organization as follows:

- 1) Shareholders / investors
- 2) Employees
- 3) Suppliers and contractors
- 4) Customers and agents
- 5) Creditors
- 6) Governmental authorities
- 7) Community and society
- 8) Business competitors
- 9) Mass media

### Corporate Social Responsibility [2-23]



<https://www.tpipolene.co.th/investment/social-responsibility-th>



The communication and engagement patterns of stakeholders are different, which can be summarized as follows:

Stakeholders	Guidelines for engaging with stakeholders	Stakeholder needs/ expectations	The Company's response guidelines
 <p><b>1. Shareholders/ Investors</b></p>	<ul style="list-style-type: none"> <li>Annual General Meeting of Shareholders</li> <li>Giving shareholders the opportunity to have equal rights to attend the shareholders' meeting, such as questioning and voting.</li> <li>Presentation of investment information through investor relations activities at least 4 times a year</li> <li>Annual Report (56-1 One Report)</li> <li>Provide channels for communication through media including websites, letters, emails, phones or others</li> <li>Analyst meetings: 3 times a year</li> <li>Annual Sustainability Report</li> <li>Financial report 4 times per year</li> <li>The Company's Whistleblowing Channel</li> </ul>	<ul style="list-style-type: none"> <li>Good Performance, share price and dividends are at an appropriate level.</li> <li>Consistent business expansion</li> <li>Disclose important information of the Company in a timely basis, transparent and reliable way through channels that are easily accessible to shareholders.</li> <li>Provide shareholders equal rights to attend annual shareholders' meetings.</li> <li>Organize activities to create and to keep relationship with shareholders</li> <li>Conduct business with environmental, Society and Corporate Governance considerations, or ESG</li> <li>Financial stability</li> <li>Transparency</li> <li>Risk management system</li> <li>Enhancing business competitiveness and defining business direction.</li> <li>Organizational risk management, both short-term and long-term</li> </ul>	<ul style="list-style-type: none"> <li>Sustainability Report</li> <li>Proper risk mitigation</li> <li>All shareholders are entitled and treated equally.</li> <li>Manage the organization in accordance with the Company's vision and corporate governance principles with integrity, caution, free from personal conflicts of interest.</li> <li>Clarify details about the shareholders' meeting as well as all information related to matters that require shareholders to make decisions at the meeting in advance.</li> <li>Business Ethics</li> <li>Innovation and technology management</li> <li>Research and development to further top up the business operation</li> <li>Have a strong policy of maintaining liquidity and financial stability</li> <li>Reviewing and enhancing business efficiency to effectively address ever-changing situations.</li> <li>Analyzing, monitoring, and preparing measures to manage organizational risks in the short term, as well as emerging risks expected to occur over the next 3-5 years.</li> <li>Disclosing information in a transparent and consistent manner according to international standards</li> <li>Providing shareholders with the opportunity to directly express their opinions and complaints to the Company.</li> </ul>

Stakeholders	Guidelines for engaging with stakeholders	Stakeholder needs/ expectations	The Company's response guidelines
 <p><b>2. Employee</b></p>	<ul style="list-style-type: none"> <li>• Collect information from all channels, including complaints</li> <li>• In-house communication through channels such as Line Group, allowing senior executives to communicate with all employees via Line groups specific to related management, internal memo circulated to employees in each department, announcement in posters.</li> <li>• Committee in the establishment</li> <li>• Committee on Safety, Occupational Health, and Working Environment</li> <li>• Sustainability Report/Annual Report (56-1 One Report)</li> <li>• Executives meet employees at the plant once a week.</li> <li>• The level of satisfaction and engagement of employees towards the organization is measured once a year.</li> <li>• Provide clear in-house communications through various channels such as notices to various agencies within the Company and Application Line.</li> <li>• Comment box on Website, e-mail, Facebook</li> <li>• Performance assessment 3 times a year</li> <li>• Providing various benefits and compensation, including fair working conditions</li> <li>• Ensuring occupational health and safety</li> <li>• Communication through various channels and online systems within the Company</li> <li>• Meetings between CEO and employees have been held weekly</li> <li>• Satisfaction and engagement survey is conducted annually</li> <li>• Whistleblowing channel is provided through the Company's website</li> </ul>	<ul style="list-style-type: none"> <li>• Compensation Industry-aligned welfare</li> <li>• The organization has stability and progress in its work.</li> <li>• Developed potential</li> <li>• The organization has a good image.</li> <li>• Fair Evaluation System</li> <li>• Safety and quality of life at work</li> <li>• Allow comment</li> <li>• Equal Practice</li> <li>• Respect personal information</li> <li>• Respect human rights</li> <li>• Employees receive training appropriate to their positions, averaging 22.49 hours per person per year.</li> <li>• Statistics on accidents and illnesses in the organization have decreased.</li> <li>• Attracting and retaining the abilities of employees</li> </ul>	<ul style="list-style-type: none"> <li>• Strict employment regulations and strict practices, including career progress without limiting gender, age, social sources class Ethnicity, religion, educational institutions, by policy on employment and working conditions are standard.</li> <li>• There is a fair evaluation system.</li> <li>• Provide feedback and feedback channels.</li> <li>• Provide returns comment and opinions</li> <li>• Offer welfare and benefits comparable to other companies in the same industry.</li> <li>• Occupational health and safety system</li> <li>• The Company shall not hire expatriates, which include contractors and sub-contractors.</li> <li>• Comply with human rights requirements and respect personal information</li> <li>• Provide opportunities and support the further education of employees.</li> <li>• Provide training to develop potential and career path</li> <li>• Savings cooperative.</li> <li>• Respect human rights and personal information</li> <li>• Establishing channels for employees to directly express their opinions and complaints to management</li> <li>• Developing the potential of employees by using indicators that are clear and consistent with international assessment standards.</li> <li>• Improvements could include upgrading shuttle buses to air-conditioned ones, enhancing parking spaces for cars or motorcycles, upgrading residential areas, expanding and enhancing restroom facilities, installing additional lighting, and more.</li> </ul>

Stakeholders	Guidelines for engaging with stakeholders	Stakeholder needs/ expectations	The Company's response guidelines
 <p><b>3. Suppliers and Contractors</b></p>	<ul style="list-style-type: none"> <li>Complaints and communication channels such as websites, e-mails, phones, letters, etc.</li> <li>Various activities with suppliers to create engagement at least 2 times a year to exchange ideas and listen to suggestions. Contact: Phone : 02-285-5090 Website : www.tpipolene.co.th</li> <li>Annual Supplier Meeting: once a year</li> <li>Monthly meeting with suppliers</li> <li>Supplier registration</li> <li>The Company's media such as newsletters, magazines and social media</li> <li>The Company's whistleblowing channels</li> <li>Contact through the Company's website</li> <li>Various relationship activities with suppliers are conducted to facilitate participation at least twice a year, enabling the exchange of opinions and the listening to suggestions. Contact channels include: Telephone: 02-285-5090, Website: www.tpipolene.co.th</li> </ul>	<ul style="list-style-type: none"> <li>Transparent, fair, non-discriminatory, corruption-free purchasing system</li> <li>Creating long term relationships to grow together</li> <li>Comply with the established agreements and do not exploit customers, pay on timely basis.</li> <li>Respect human rights</li> <li>Respect personal information</li> <li>Payment on schedule</li> <li>Occupational health and work safety</li> <li>Conducting business with suppliers in compliance with the Code of Conduct of manufacturers supplying products, raw materials, and services.</li> <li>Suppliers receive knowledge to develop technology and innovation of environmentally friendly products.</li> <li>Confidence and stability in doing business together</li> </ul>	<ul style="list-style-type: none"> <li>Comply with Supplier Code of Conduct</li> <li>The Company will not engage with trade suppliers who deal with businesses that act against the law.</li> <li>Support ESG knowledge to enhance trade partner operations to mitigate risk associated from operation and reputation.</li> <li>Establish measures to operate suppliers, including the use of digital and online technologies for safety during the COVID-19 pandemic crisis.</li> <li>There is a procurement system that is transparent, verifiable, strictly complies with trade terms and contracts made with suppliers.</li> <li>Take into account the mutual benefits of trade suppliers and business equity.</li> <li>Employees in the group must not claim benefits in the procurement.</li> <li>Establishing Supplier Code of Conduct for supplying products, raw materials, and services.</li> <li>Conducting business responsibly in accordance with good corporate governance principles and policy, and Code of Conduct.</li> <li>Delivering products and services according to customer expectations, and providing channels for listening to customers' voices.</li> <li>Implementing projects that support the development of suppliers' potential, such as building cooperation with suppliers to jointly develop new products and services, and organizing training to provide knowledge and practice skills on safety for suppliers, etc.</li> </ul>

Stakeholders	Guidelines for engaging with stakeholders	Stakeholder needs/ expectations	The Company's response guidelines
 <p><b>4. Customers/Agents</b></p>	<ul style="list-style-type: none"> <li>Complaints through communication channels such as websites, e-mails, phones, letters, etc.</li> <li>Visit Customers/sales representatives at the customers office at least 12 times a year</li> <li>Customers participate in suggesting the use of the product.</li> <li>Customer Service Center</li> <li>Customer satisfaction survey once a year</li> </ul>	<ul style="list-style-type: none"> <li>Quality/safe products and services</li> <li>Fair price.</li> <li>Easy and convenient to purchase.</li> <li>Promotional campaigns.</li> <li>Choose from a wide range of products.</li> <li>Customers receive products according to the standard and on time.</li> <li>In case of problems which are not caused by the customer's fault, the damage can be claimed immediately.</li> <li>Providing good before-and after-sales service</li> <li>Delivery on time</li> <li>Respect personal information</li> <li>Respect human rights</li> <li>Customers receive products with features that meet their needs.</li> </ul>	<ul style="list-style-type: none"> <li>Satisfy the needs of customers.</li> <li>Must not act in any way that is deceptive or oblivious to the quality of goods and services by producing safe products and services that are harmless for the health of consumers.</li> <li>Create brand loyalty to products.</li> <li>Contains product information and application.</li> <li>Systematic and secure storage of customer data and not misuse data</li> <li>Set prices for products and services fairly.</li> <li>Provide representatives to be responsible for providing feedback, knowledge, products specification and services, as well as solutions and receive customer complaints.</li> <li>Hold customer seminars to regularly educate information about products.</li> <li>Respect human rights and personal information.</li> <li>Organize stucco art contests and social service events.</li> <li>The information that the customer suggests will be sent to the relevant departments to further develop the Company's products.</li> <li>Delivering products and services according to customer expectations, and providing channels for listening to customers' voices.</li> <li>Implementing projects that support the development of customers' potential, such as building cooperation with customers to jointly develop new products and services, etc.</li> </ul>
 <p><b>5. Creditor/Bondholder/ Analysts/ Credit Rating Institute/ Insurance Companies</b></p>	<ul style="list-style-type: none"> <li>Submit a quarterly financial statement report.</li> <li>Annual Report/Sustainability Report</li> <li>Recommendations and complaints</li> </ul>	<ul style="list-style-type: none"> <li>Good Corporate Governance</li> <li>Business Administration with transparency.</li> <li>Careful risk mitigation</li> <li>Full and on-time payment</li> <li>Good performance and the potential to pay off debts.</li> <li>Comply with terms and conditions in the loan agreements.</li> </ul>	<ul style="list-style-type: none"> <li>Conduct business with transparency, auditable, under good corporate governance.</li> <li>Fully comply with the terms and conditions in loan agreements.</li> <li>Complete payment on timely basis</li> <li>Provide complete financial information</li> <li>Effective management, ensure confidence and maximum return on investment.</li> </ul>

Stakeholders	Guidelines for engaging with stakeholders	Stakeholder needs/ expectations	The Company's response guidelines
 <p><b>6. Government Agencies</b></p>	<ul style="list-style-type: none"> <li>Report business performance and operating performance to government authorities according to the period specified by the government, such as:               <ol style="list-style-type: none"> <li>Report on the performance of professional work safety officers every 3 months.</li> <li>Report on compliance with the Company's EIA measures every 6 months.</li> </ol> </li> <li>Monitoring of policies, regulations, government requirements at least once a month.</li> <li>Supporting activities and responding to government policies according to the government's period of time, such as providing vaccines and vaccinations to employees and contractors within the Company.</li> <li>Connecting to the government sector's network.</li> <li>Appropriately establishing and assigning a unit responsible for contacting and coordinating with government agencies.</li> </ul>	<ul style="list-style-type: none"> <li>Conducting business with caution and strict adherence to the law. Additionally, actively participating in addressing and mitigating the impacts of climate change, targeting both international and national levels.</li> <li>Social and environmental responsibility</li> <li>Sustainable Coexistence</li> <li>Having a good environmental management and safety system</li> <li>Providing support and cooperation to government authorities.</li> <li>Concrete action to reduce climate change.</li> <li>Payment of taxes and other related fees</li> <li>Enhance operational measures to achieve the Sustainable Development Goals (SDGs).</li> </ul>	<ul style="list-style-type: none"> <li>The use of waste as a renewable fuel for coal in cement production process to reduce greenhouse gases to comply with the government's environmental policy.</li> <li>Conduct transparent business</li> <li>Preparation of Sustainability Reports</li> <li>Social and environmental responsibility</li> <li>Sustainable community coexistence</li> <li>Compliance and cooperation, supporting projects of government authorities</li> <li>Appropriately coordinating with government agencies.</li> <li>Cooperating with government, private and non-profit organizations.</li> </ul>



Stakeholders	Guidelines for engaging with stakeholders	Stakeholder needs/ expectations	The Company's response guidelines
 <p><b>7. Community &amp; Society</b></p>	<ul style="list-style-type: none"> <li>Complaints through communication channels such as websites, e-mails, phones, letters, etc.</li> <li>Join community relations activities at least 28/month</li> <li>Organize community relations at least 2 times a month</li> <li>Mitigating environmental and social impacts that may arise from the Company's business operations</li> <li>No violation of environmental laws</li> <li>Generating income and career opportunities for local residents</li> <li>Fostering good relationships between organizations</li> <li>Conducting a community satisfaction survey once per year</li> <li>The Company provides Whistleblowing channels.</li> <li>The Company provides contact channel through its website</li> </ul>	<ul style="list-style-type: none"> <li>Develop surrounding communities</li> <li>Preserving the surrounding environment</li> <li>Create work and strengthen the economy for the community.</li> <li>Operation of the establishment to ensure environmental safety and livelihoods.</li> <li>Support for community activities and ongoing participation.</li> <li>Educational Assistance</li> <li>Focus on community feedback</li> <li>Ensure clear, accurate, and prompt disclosure of company operations information, while actively listening to feedback, opinions, and complaints from communities, society, and non-profit organizations.</li> </ul>	<ul style="list-style-type: none"> <li>Community Visit and create acceptance</li> <li>Support public activities that benefit the community</li> <li>Educate and train employees at all levels as appropriate to create employees' awareness of the environment and community issues.</li> <li>Explore community needs and feedback</li> <li>Organize mobile medical units to serve the community continuously for better quality of life.</li> <li>Prepare a replacement forest plantation and rehabilitation project after mining</li> <li>Promoting traditions in the community</li> <li>Develop communities and encourage employment to improve the economy in the community.</li> <li>Provide budget for community development including education, career/job creation for the community.</li> <li>Consideration of impacts on communities, society, and the environment due to the Company's operations.</li> <li>Disclosing news and information including the Company's operating results correctly and in a timely manner.</li> <li>Transparent and verifiable operations and operation to for respond.</li> <li>Communicating and disclosing complete, accurate, and timely information about the Company's operations, as well as listening to opinions and complaints from communities, society, non-profit organizations and mass media.</li> </ul>
 <p><b>8. Business competitors</b></p>	<ul style="list-style-type: none"> <li>Collect information from all channels such as websites, mail, phones, etc.</li> <li>Become a member of the Thai Cement Producers Association (TCMA) and attend at least 4 meetings per year.</li> </ul>	<ul style="list-style-type: none"> <li>Create fair competition conditions together</li> <li>Maintain market share</li> </ul>	<ul style="list-style-type: none"> <li>Conduct business within the rules of free and fair competition.</li> <li>Do not slander to damage the reputation of the competitors.</li> <li>Do not infringe intellectual property and copyrighted work of the competitors.</li> <li>Not to violate identifiable information of the competitors</li> <li>Behave in accordance with a good trade framework</li> <li>Innovation and Technology Management</li> </ul>

Stakeholders	Guidelines for engaging with stakeholders	Stakeholder needs/ expectations	The Company's response guidelines
 <p>9. Mass Media</p>	<ul style="list-style-type: none"> <li>Occasional business visits and activities for the community and society.</li> <li>Supporting media activities that align with the Company's policy, which involves communicating with mass media through various communication tools.</li> <li>Supporting and participating in mass media activities.</li> <li>Support media activities in line with the Company's policies that benefit the community and society.</li> <li>Regularly disseminate information and news that is beneficial to the Company.</li> <li>Regularly disseminating business information through a variety of channels, such as the Company's quarterly earnings announcement, business press conferences, etc. Participating in the Opportunity Day of the Stock Exchange of Thailand.</li> </ul>	<ul style="list-style-type: none"> <li>To be a company that conducts business with a focus on sustainable ESG.</li> <li>Following news and information from the media to incorporate it into the process of determining operational guidelines.</li> </ul>	<ul style="list-style-type: none"> <li>Conduct business with a focus on community, society, and environment by appropriately and consistently</li> <li>Disclosing and disseminating information that is beneficial to society.</li> </ul>



## Defining material sustainability issues

To determine the sustainability issues and content of the Company's Sustainability Report 2023, the Company's top management conducted a study of key factors and impacts of the business and identified relevant sustainability issues in the economic, environmental and social dimensions. In this regard, the Sustainability Report is prepared in accordance with the standards of the GRI Standards Global Reporting Initiative (GRI) to obtain material topics and boundaries and significant impacts that the Company should implement. The Company has a process for determining sustainability issues with significant and impactful areas, which consists of the four key steps as follows: [3-1]

**(1) Understand the organization's context:** The Sustainable Development Committee (ESG Committee) has conducted a review of relevant business activities and business relationships by considering the context of the Company in economic dimensions, environmental dimensions, people dimensions, and human rights dimensions which considers important information, including information from internal factors such as vision, mission, goals, policies, and directions of the Company's operations, as well as external factors such as the overall picture in the industry both nationally and internationally, interests and expectations of stakeholders in order to analyze those key data in the Sustainability Context.

**(2) Identify actual and potential impacts:** According to the Due principle, the Sustainable Development Committee (ESG Committee) and executives from pertinent departments who receive information, communicate with, or interact directly with stakeholders jointly consider and identify actual or potential impacts, the positive and negative impacts associated with operations, products, and services, as well as business relationships span economic, environmental, human rights, and people dimensions throughout the supply chain. This raises sustainability issues that are most pertinent to the Company's business environment and takes into account all stakeholder groups when evaluating material issues to make sure the Company considers all concerns of all stakeholder groups in all aspects. The issues related to the Sustainability Context have been identified of the company in the amount of 27 issues to lead to the process of assessing significant impacts and prioritizing significant impacts for reporting in the next step.

**(3) Assess the significance of the impacts:** The Sustainable Development Committee (ESG Committee) and executives from relevant departments have jointly assessed the significant impacts of business operations on all stakeholders through a prioritization process (Prioritization) with criteria for assessing the impact, consisting of the level of impact severity (Severity), level of probability (Likelihood), human rights assessment (Human rights), scale and scope of impact (Scale and scope), including operational policy framework and commitment to the Company's operations in that issue which brings about Material Topics for reporting.

**(4) Prioritize the most significant impacts for reporting:** The Sustainable Development Committee (ESG Committee) brings important sustainability issues before senior management for their consideration and verification of the accuracy of Material Topics identified for reporting that are consistent with the business context, significant impacts resulting from the Company's business processes across the supply chain, as well as in line with the significant impacts on all groups of stakeholders.

## Prioritization Results

High Significant Impact	Moderate Significant Impact	Low Significant Impact
<ul style="list-style-type: none"> <li>• Economic Performance</li> <li>• Risk and Crisis Management</li> <li>• Anti-Corruption</li> <li>• Procurement Practices</li> <li>• Indirect Economic Impacts</li> <li>• Technology, Innovation and Service</li> <li>• Materials</li> <li>• Energy</li> <li>• Climate Change Management</li> <li>• Waste Management</li> <li>• Water and effluent</li> <li>• Transportation</li> <li>• Occupational Health and Safety</li> <li>• Products &amp; Services</li> <li>• Local Communities</li> <li>• Customer health and safety</li> <li>• Customer satisfaction</li> <li>• Training and education</li> <li>• Employment</li> <li>• Data security and customer privacy</li> <li>• Labour Management and Labor Relations</li> <li>• Research &amp; Development</li> </ul>	<ul style="list-style-type: none"> <li>• Land degradation, contamination and soil restoration</li> <li>• Diversity and Equal Opportunity</li> <li>• Non-discrimination</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental Partner Assessment</li> <li>• Security Practices (Providing proper security knowledge to security guards)</li> </ul>



The Executive Board resolved to determine the Company's sustainability issues for the year 2023 with 22 issues, divided into 6 environmental aspects, 9 social aspects, and 7 economic and corporate aspects with details as follows [3-2]

Environmental aspect (6 issues)	Social aspect (9 issues)	Economic and Corporate Governance aspect (7 issues)
<ol style="list-style-type: none"> <li>1. Climate Change Management</li> <li>2. Materials</li> <li>3. Energy</li> <li>4. Water and Effluents</li> <li>5. Waste</li> <li>6. Transportation</li> </ol>	<ol style="list-style-type: none"> <li>1. Employment</li> <li>2. Labor/Management Relations</li> <li>3. Training and Education</li> <li>4. Occupational Health and Safety</li> <li>5. Customer Health and Safety</li> <li>6. Customer satisfaction</li> <li>7. Data security and customer privacy</li> <li>8. Local Communities</li> <li>9. Marketing and Labeling</li> </ol>	<ol style="list-style-type: none"> <li>1. Economic performance</li> <li>2. Risk and Crisis Management</li> <li>3. Economic indirect impacts</li> <li>4. Technology, Innovation and Service</li> <li>5. Anti-Corruption</li> <li>6. Research &amp; Development</li> <li>7. Procurement Practices</li> </ol>
Responsive Strategies	Responsive Strategies	Responsive Strategies
<ol style="list-style-type: none"> <li>1. Developing towards a low-carbon society by setting carbon neutrality goals by using waste fuel to replace coal in all 4 cement plants to reduce cement production costs and increase competitiveness</li> <li>2. Improve production efficiency to be highly efficient to save energy.</li> <li>3. Manage the organization according to the BCG policy at every stage of the value chain to achieve efficient use of resources and increase competitiveness in terms of production costs.</li> <li>4. Develop technology and innovation in green manufacturing using electricity from renewable energy.</li> <li>5. Using process automation system to control production and loading and unloading of goods for efficiency with the emphasis on automatic operating systems, closely controlling production process from the control room to ensure standard product quality for production cost reduction.</li> </ol>	<ol style="list-style-type: none"> <li>1. Comply with labor laws and labor relations and provide employment opportunities for people with disabilities to create a sustainable society.</li> <li>2. Respect human rights principles and personal information for employees, business partners, contractors as well as not support child labor in work that is hazardous to health or in an environment that is hazardous to health and safety or is a job that prohibited by law.</li> <li>3. Review and check cyber threat protection system regularly, including the development and improvement of the cyber protection system to keep up with the ever-evolving cyber threats, methods and severity of threats to information systems continuously.</li> <li>4. Create a good working environment with appropriate occupational health and safety.</li> <li>5. Train and develop skills for employee to provide opportunities for advancement non-discrimination.</li> </ol>	<ol style="list-style-type: none"> <li>1. To comply with the related legal regulations.</li> <li>2. Transparency with anti-corruption policy.</li> <li>3. Research and development to create innovations and technologies to develop products that meet customer needs and are environmentally friendly by emphasizing on the development of high value added products to meet customer needs.</li> <li>4. Seek investments that create high return on investment.</li> <li>5. All-round risk management, including risk associated with climate change.</li> </ol>

Responsive Strategies	Responsive Strategies	Responsive Strategies
<p>6. Efficient distribution process with strong distribution channels covering all areas throughout Thailand. There is a coordination to manage inventory efficiently, reduce management costs, including a fuel consumption management system by replacing fossil fuel trucks with 100% electric trucks treduce greenhouse gas emissions and use electric trucks instead of fossil fuels to transport rocks on the mine front</p> <p>7. Using the Palletless system, which eliminates the need for pallets to transport bagged cement, improves the efficiency of lifting and transporting products compared to the Pallet system, ultimately reducing product delivery costs.</p> <p>8. Construct rainwater collecting ponds to replace natural water sources, including recycling effluents for reuse and continuously monitoring water quality according to plans and EIA measures.</p> <p>9. Conserve concession areas by planting forests to improve scenery.</p> <p>10. Developing ready-mix concrete that can reduce greenhouse gas emissions by up to 5 - 10%.</p>	<p>6. Conduct is a survey of employees' satisfaction and commitment to the organization, a measure for receiving complaints, as well as conducting inspections, corrective outcomes, monitoring corrective actions, setting appropriate guidelines.</p> <p>7. Provide scholarships to employees' children.</p> <p>8. Evaluate customer satisfaction with the Company's products/services by using the information obtained from the assessment to develop and improve the Company's products/services/operating processes.</p> <p>9. Implementing Customer Relationship Management (CRM) software to facilitate managing relationships between the Company and its customers. This system aids in streamlining workflows and innovating new products according to systematic assessments of customer needs. It also enables the collection of various complaints, ensuring that every issue is tracked and addressed for improvement. This approach allows for swift responses to customer needs while also enhancing work efficiency across various departments of the Company.</p> <p>10. Integration of CFP (Carbon Footprint of Products) applications for 10 products in 2023.</p> <p>11. Deliver standard quality products with complete label display</p> <p>12. Conduct business with business partners in accordance with the agreement in the Supplier Code of Conduct.</p>	<p>6. To enhance the product into a Specialty Polymer, the Company aims to refine production technology and machinery for increased flexibility. This specialized product boasts superior properties and command premium prices, with production limited to a select few manufacturers in Europe and America. Nevertheless, unlike other basic petrochemical products, there's no avenue for selling these production technologies. Hence, it's imperative for the Company to undertake research and development efforts, utilizing a specialized pilot reactor capable of operating at pressures up to 3,000 bar. This will facilitate the production of product samples for testing and market exploration before integrating the technology into production for future distribution.</p>

**Note:** The issues as shown in the 2022 Sustainability Report included three sustainability issues, such as, Land Degradation, Contamination and Soil Restoration, Product and Service Labeling, and Social Partner Assessment. All these issues as mentioned above have gone through the process of defining material sustainability issues but they were not specified in the Company's sustainability issues for the year 2023 and in 2023 Sustainability Report, there are two additional issues, such as, Economic Indirect Impacts and Procurement Practices, with the inclusion the issues of Data Security and Customer Privacy, as well as adapting "Emission" issue to be "Climate Change Management" to achieve more comprehensive management.



# 05 Environmental Impact Management



## Environmental Performance in 2023

<p>In 2023, cement plants used waste fuel to replace coal in cement production processes accounting for to <b>14%</b> of total energy.</p>	<p>In 2023, TPIPL reduced greenhouse gas emissions both directly and indirectly, of <b>0.99</b> million tons. carbon dioxide equivalent or decreased by <b>10%</b> over 2022.</p>
<p>Reduction of external water consumption (From the base year 2022) TPIPL <b>9,804,527</b> . cubic meters or a <b>8.69%</b> decrease.</p>	<p>Recycled and reused aggregate scrap <b>597,564</b> tons, accounting for <b>100%</b>.</p>
<p>Investment projects for reducing environmental impact TPIPL Baht <b>1,776</b> million</p>	<p>Proportion of recycled water (From the base year 2022) TPIPL <b>1,362,200</b> million cubic meters or <b>55.52%</b> of total water consumption</p>
<p>Replace <b>41 60</b>-ton EV Mining diesel trucks and 4 electric wheel loaders to reduce greenhouse gases and PM2.5 dust.</p>	<p>TPIPL recycled waste <b>6,087.14</b> tons from production process, or <b>99.43%</b> of total industrial waste.</p>
<p>Prepol SC Project The installation of machinery in the part of the cement kiln reduces the consumption of heat energy. <b>25%</b> of waste can be used as fuel instead of coal.</p>	<p>Manufacture of Green Products/development of hydraulic mortar production technology to reduce carbon emissions. <b>0.272</b> million tons CO<sub>2</sub>E</p>

Remark: (1) Only for TPI Polene Public Company Limited

## Environmental Management [3-3]

TPI Polene Group recognizes the importance of resource utilization amidst the accelerating growth rate of the world population. Meanwhile, the supply of limited natural resources and inefficient consumption will cause various problems such as waste from consumption. This includes the use of energy that relies on fossil fuels, which contributes significantly to greenhouse gas emissions, which has a significant impact on climate change, which poses significant and inevitable challenges to the world in terms of economic, social and environmental dimensions, at present and in the future.

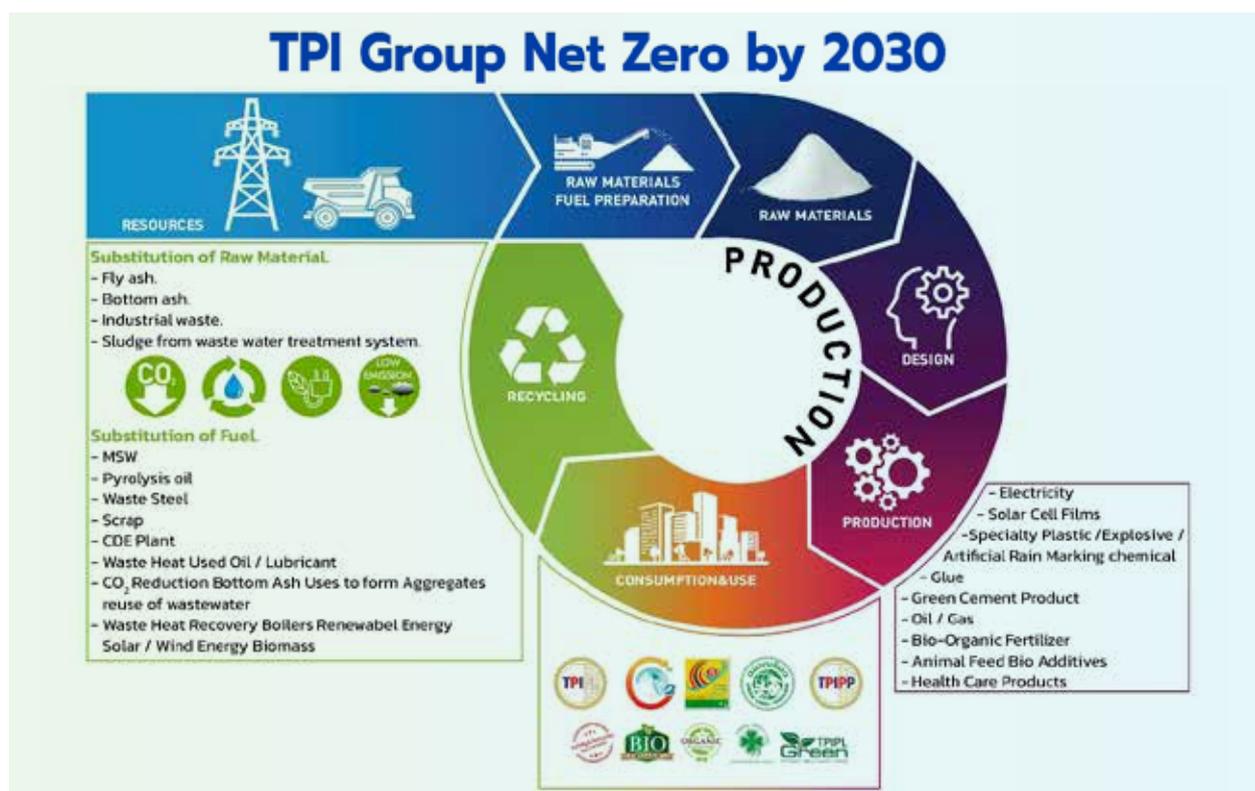
“We are depleting the natural resources of our descendants’ generation”; The sentence reflects the necessity to regain awareness of the problem and cooperate in concrete solutions. TPI Polene Group is committed to playing a role in solving such problems for our world under the principle of Circular Economy by executing from planning, R&D, production processes and products delivered to consumers to achieve circularity in the use of natural resources. The use of renewable fuel energy management creates added value for the byproducts or leftovers from the production process and waste management for reuse to maximize the use of resources and sustainability through the supply chain, with businesses sector, societies and communities.

## Management Approach

TPI Polene Group aims for sustainable development in order to create a balance in terms of economy, environment, and society under good corporate governance. The terms “Circular Economy,” “Green Economy,” and “Bio Economy” are used interchangeably to refer to the Bio-Circular-Green Economy (BCG), which is used at every stage of the value chain by using waste fuel instead of coal for cement production and power generation and aiming to run a clean renewable energy power plant by completely eliminating the use of coal. replacing the use of coal 100% in order to move towards a clean green industrial business to be Net Zero Greenhouse Gas Emission Producers and environmentally friendly.



## Driving the Economy towards Sustainable Development (BCG)



TPI Polene Group has prioritized sustainability policies and business operations based on BCG and ESG guidelines, including carbon neutrality campaign, saving the world campaign and ZERO WASTE campaign throughout the Group's production processes. The use of hydraulic cement instead of Portland cement is actively encouraged and supported due to its lower proportion of clinker, resulting in reduced carbon dioxide emissions. Consequently, when hydraulic cement is utilized as a raw material for constructing green buildings according to LEED and TREES standards, it contributes to a decrease in greenhouse gases and mitigates global warming. Additionally, starting from 1 June 2023, TPI Polene Group has implemented a policy to manufacture products aimed at reducing greenhouse gas emissions. This involves increasing the production of Green Products such as Green Clinker, Green Cement, Green Fiber Cement, and Green Concrete Roof Tiles (Green CRT). These products utilize alternative raw materials, alternative fuels, and electricity sourced from renewable energy, thereby further reducing greenhouse gas emissions.

TPI Polene Group has taken every step in our business operations, from research and development, procurement of resources, raw materials and energy, and put them under circular systems by recycling and employing reuse methods and technologies to reduce environmental pollution. Our goal is to use highly efficient production processes in both resource consumption and environmental protection, with the key objective to manufacture green products that are environmentally friendly. Consumers of such products, including sales, logistics systems and after sales services, under the circular economy, are part of our aim to create a green world.

Six material issues that are highly important in the Company's environment dimension in 2023 are as follows:

1. Climate Change Management
2. Materials
3. Transportation
4. Energy
5. Water and effluent management
6. Waste Management

### Climate Change Management [3-3]

Since cement production is the main business of the Company, in the production process, coal is used as fuel. As well as burning limestone into clinker, which is a major contributor to greenhouse gas emissions, the Company is committed to conducting business with a focus on reducing greenhouse gas emissions, which are major causes of climate change and global warming.

In 2023, TPI Polene Group has implemented a waste fuel production by using municipal waste to sort into alternative fuel instead of landfills 2.77 million tons of municipal waste, enable to reduce greenhouse gas emissions from landfills into the atmosphere. The amount reached 6.43 million tons of CO<sub>2</sub> equivalents.

The Company has a policy and vision to be an environmentally friendly cement producer with a focus on using energy and renewable fuels to replace fossil fuels. The Company also uses energy and resources to produce efficiently, as well as research and development of its products to reduce greenhouse gas emissions, which is in line with the government's policy to tackle climate change. This includes adapting to environmental measures. Climate change is likely to be more intense.

In addition, the Company has focused on driving climate change solutions and the transition to a low-carbon economy and society by integrating climate change management into the organizational structure from the Board of Directors level to the operator level. Climate risk management, as well as monitoring performance to meet set goals. The Board of Directors has assigned the Sustainability Development Committee and the Corporate Risk Management Committee to be responsible for climate change governance and to designate the performance of climate change targets as a measure of success at the organizational level to drive serious and concrete solutions to climate change.

## Task Force on Climate-Related Financial Disclosures (TCFD) 2023



TPI Polene Group recognizes climate risk management as a significant sustainability concern for the organization and has announced the goal of achieving carbon neutrality by 2043. TPI Polene Power Public Company Limited, a subsidiary, has committed to achieving carbon neutrality by 2037, aligning with sustainable development objectives. This ambition hinges on leveraging climate management data following the Task Force on Climate-related Financial Disclosures (TCFD) framework to formulate strategies and set goals for greenhouse gas reduction in both the short and long terms. Moreover, this data will guide investment and financial planning, reinforcing the organization's commitment to sustainability and environmental stewardship.

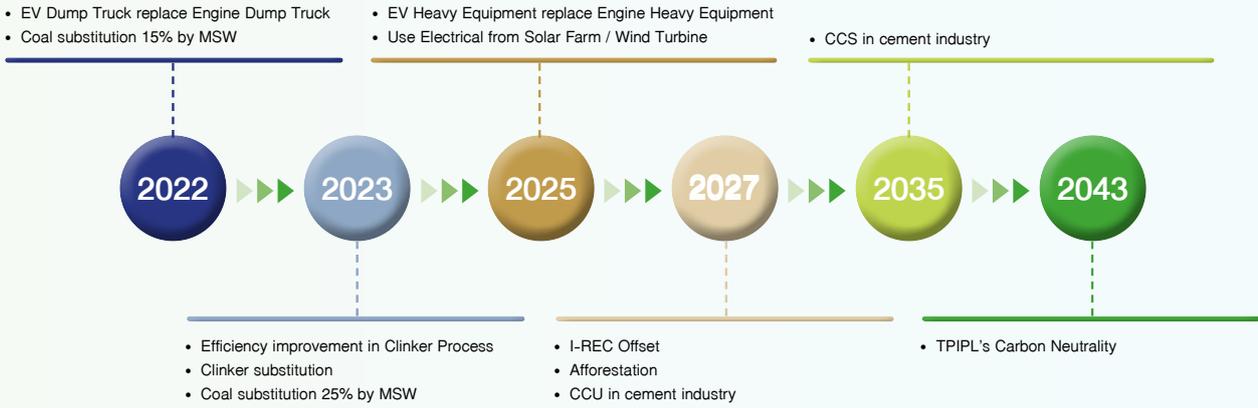
In 2023, the Company managed climate change, dividing it into four main components: Governance, Risk Management, Strategy, and Metrics and Targets, as a framework for disclosing climate management data.

The risk assessment revealed that physical risks, such as water shortages and floods, are classified as medium and low level, respectively. These risks do not pose significant troubles to the Company, as it can continuously assess the situation and implement appropriate measures to mitigate them.

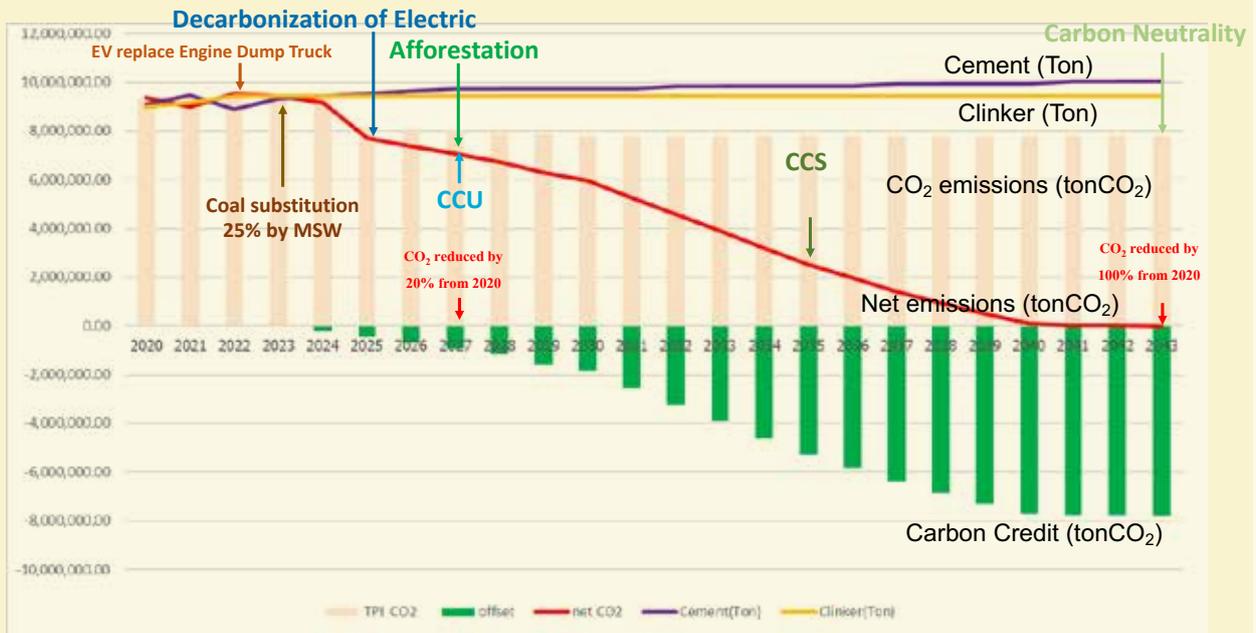
Risks related to legal factors or regulations for controlling greenhouse gas emissions will be addressed through mechanisms such as carbon tax collection and the use of a carbon tax as a tool to prevent trade through the Carbon Border Adjustment Mechanism (CBAM). The Company has supported the use of electric vehicles and clean energy, among other initiatives. All of these pose high risks to the business of producing cement from fossil fuels and cause low to moderate risk to the supply chain; however, they are considered opportunities for the business of producing cement from low-carbon energy sources.

The Company has assessed such risks, resulting in the utilization of capital to enhance production efficiency and improve technology to be more environmentally friendly. The improvements include using waste as fuel instead of coal in the cement production process and utilizing electricity from solar energy, wind energy, etc. Utilization of heavy machinery and electric-based trucks reduces the proportion of clinker used in cement production, favoring the production of Hydraulic Cement over Portland cement, Type 1. The Company employs a low-carbon strategy to address climate change risks, enabling it to achieve the goal of long-term reduction in greenhouse gas emissions.

## TPIPL's (Cement) GHG Reduction Strategies



## TPIPL's (Cement) 2043 Carbon Neutrality Pathway



## Climate Change Goals

Strategy	Performance in 2023	Goals in 2027	Goals in 2043
1. To establish the proportion of clean electricity usage	<ul style="list-style-type: none"> <li>Electricity generated from renewable energy = 2.36%</li> </ul>	<ul style="list-style-type: none"> <li>To use electricity generated from 100% renewable energy.</li> </ul>	<ul style="list-style-type: none"> <li>To use electricity generated from 100% renewable energy.</li> </ul>
2. To Determine the proportion of fuel used in cement production.	<ul style="list-style-type: none"> <li>Proportion of fossil fuel = 85.91%</li> <li>Proportion of renewable fuel = 14.09 %</li> </ul>	<ul style="list-style-type: none"> <li>Proportion of fossil fuel = 75%</li> <li>Proportion of renewable fuel = 25%</li> </ul>	<ul style="list-style-type: none"> <li>Proportion of fossil fuel = 75%</li> <li>Proportion of renewable fuel = 25%</li> </ul>
3. To reduce the amount of greenhouse gases	<ul style="list-style-type: none"> <li>Greenhouse gases for the amount of 8,559,903.20 tons of CO<sub>2</sub>e</li> <li>The amount of greenhouse gas per ton of cement decreased by 6.88% compared to the base year of 2020.</li> </ul>	<ul style="list-style-type: none"> <li>Greenhouse gases amount of 7,476,814.64 tons of CO<sub>2</sub>e</li> <li>The amount of greenhouse gas per ton of cement decreased by 20% compared with the base year of 2020.</li> </ul>	<ul style="list-style-type: none"> <li>Greenhouse gas content = 0 tons of CO<sub>2</sub>e (carbon neutrality)</li> </ul>
4. Manufacture of hydraulic cement to replace Portland cement	<ul style="list-style-type: none"> <li>Proportion of hydraulic cement = 53.53 %</li> <li>Proportion of Portland cement = 46.47 %</li> </ul>	<ul style="list-style-type: none"> <li>Proportion of hydraulic cement = 70 %</li> <li>Proportion of Portland cement = 30 %</li> </ul>	<ul style="list-style-type: none"> <li>Proportion of hydraulic cement = 100 % (in 2040)</li> <li>Proportion of Portland cement = 0 %</li> </ul>
5. To increase greenhouse gas storage by planting forests and applying CCUS	<ul style="list-style-type: none"> <li>The amount of greenhouse gas stored = 0 ton of CO<sub>2</sub>e</li> </ul>	<ul style="list-style-type: none"> <li>The amount of greenhouse gas stored is 429,864.65 tons of CO<sub>2</sub>e</li> </ul>	<ul style="list-style-type: none"> <li>The amount of greenhouse gas stored is 7,070,513.12 tons of CO<sub>2</sub>e</li> </ul>
6. To disclose information	<ul style="list-style-type: none"> <li>Sustainability Report according to GRI Standards</li> <li>56-1 One Report</li> </ul>	<ul style="list-style-type: none"> <li>Sustainability Report according to GRI Standard.</li> <li>56-1 One Report</li> <li>Participating in the sustainability assessment of organization both domestically and internationally.</li> </ul>	<ul style="list-style-type: none"> <li>Sustainability Report according to GRI Standards or other related standards.</li> <li>56-1 One Report</li> <li>Carbon Disclosure Project (CDP)</li> <li>Participating in the sustainability assessment of organization both domestically and internationally.</li> </ul>

### Task Force on Climate-Related Financial Disclosures (TCFD)



<https://www.tpipolene.co.th/en/sustainability/tcfd-report-en>

## TPI Polene Group's Carbon Neutrality Road Map

TPI Polene Group has laid out a road map towards carbon neutrality through various businesses within the group as follows:-

1. **Saving in cement & binders:** Developing new innovations to reduce the use of clinker, increase the use of substitute materials, promote the use of low carbon cement (Low Carbon Cement) such as the development of hydraulic cement to be used as a replacement for portland cement type 1. The increased use of hydraulic cement can significantly reduce greenhouse conditions and contribute to sustainable development in the cement industry and the construction industry in the future.
2. **Savings in clinker production:** By reducing the use of fossil fuels in burning clinker, increasing the use of biomass fuel from industrial waste or municipal waste. It has been in operation since 2021 and will be completed in 2023.
3. **RE100 - Electricity Energy use Renewable Energy 100%:** TPI Polene Group has planned and implemented 100% renewable fuel power generation as follows:
  - a. Using of Waste heat recovery to generate electricity
  - b. Using biomass fuel, fuel from industrial waste or municipal waste instead of using coal fuel (Coal Replacement by Renewable Fuel of Power Plant) with the following projects:
    - i. Converting to use municipal waste-based fuel to replace coal-fired fuel in Boiler B6, which produces steam for power plants utilizing steam pressure at the level of 55 bars, using alternative fuel derived from municipal waste. This initiative has been in operation since 2023 and is currently constructing a boiler with a pressure of 132 bars to produce steam for a 150 megawatt power plant, with waste fuel replacing coal. The project is scheduled for gradual completion, transitioning to exclusively using waste fuel instead of coal by 2025.
    - ii. A plan to convert the use of coal to biomass fuel in 6 MW power plants by 2023.
  - c. A power plant with solar panels installed on the ground (Solar Farm) is a power plant that uses solar energy without raw material costs as the main energy and uses durable and long-life solar panels to generate electricity. The project will commence in 2023 and will start generating electricity in 2024 (B.E. 2567).
  - d. Solar Roof Installation Project is a solar power generation system installed on the roof using Solar Module installed on the roof of the building in the factory to absorb solar energy to generate moving electric charges in response to the electric field inside the cell and generate direct current before sending it to the Inverter to change from direct current to alternating current and then use the electrical energy to be used further. The project will start in 2023 and start generating electricity in 2024 (B.E. 2567).
  - e. A project to generate electricity from wind energy by utilizing energy from wind which relies on important machinery, namely "wind turbines", to convert kinetic energy from wind movement into mechanical energy. The wind spins the blades of the wind turbine around a rotor that spins the generator to generate electricity before it can be utilized. More importantly, as long as there is wind, wind energy can be used to generate electricity, and the wind power generation process is clean, no greenhouse gas emissions during production, no harm to the environment. The project will start in 2023 and start generating electricity in 2024 (B.E. 2567).
  - f. The use of electricity from completely renewable clean energy (RE100 — Electricity Energy use Renewable Energy 100%) by producing electricity for use within TPI Polene Group in the production process of cement and the purchase of REC (Renewable Energy Certificate) to enable cement production to use 100% renewable energy.
4. **EV Mining Trucks:** TPI Polene Group has switched from limestone trucks that use gasoline engines and NGV to 41 units of 60-ton EV Mining Trucks in order to transport limestone to the cement factory by 2022-2024.

5. **Energy efficiency program** : Projects to reduce total energy consumption are as follows:
  - a. Regenerative Downhill Conveyor is a project to generate electricity from raw material conveyor belts by changing the transportation method from using trucks to conveying by belt instead, thus saving energy and reducing transportation and maintenance costs. At the same time, the energy from the conveyor belt that transports limestone down from the quarry at the top is characteristic of the Downhill Conveyor to generate electricity back to use. This allows the Company to reduce energy costs from using diesel fuel to transport raw materials and can generate electricity back to the electricity supply at the same time.
  - b. Polytrack Grate is a new aeration technology with reduced pressure that provides consistent aeration with low energy consumption (Reduce at least 1 kWh/ton of clinker). This results in energy savings and can also reduce wear and tear on the machine due to the reduced air velocity through the vents, thus reducing maintenance costs. Currently, the Company can reduce energy costs from using coal and can also save electricity.
6. **Recycle Raw Materials:** CDE Plant is installed as a washing recycle plant by taking dirt and stone fragments from mining to be washed until it becomes a stone that can be used as a raw material for cement production. This enables the Company to reduce the amount of mining waste and reduce the cost of raw material production. It is a cycle to bring the remaining resources from production to be useful.
7. **Afforestation:** To help absorb greenhouse gases released into the atmosphere. TPI Polene Group has been operating continuously since 1992 until now and will continue to do so that the country has more forests to absorb greenhouse gases.
8. **Carbon capture & utilization/ storage (CCUS):** By studying the technology of capture, utilization, and storage of carbon dioxide by capturing carbon dioxide from high-pitched smokestacks at power plants and storing it underground or under the ocean without releasing CO<sub>2</sub> into the atmosphere. It is a plan to make further investments in the future if existing greenhouse gas emissions reduction processes are insufficient and the technology is worth investing in in the future.
9. **400-meter shale conveyor belt** from compound mixing bed line 4 linked to shale mixing bed line 1 to reduce transportation costs, transported by trucks and can also reduce PM<sub>2.5</sub> dust and greenhouse gases, and installation of 1,000 meters shale conveyor belt between shale crusher and mixing bed to help increase the amount of shale conveying into the factory more efficiently, which reduces the cost of transportation by truck from the mine, reduces PM<sub>2.5</sub> dust and reduces greenhouse gases. The project is expected to be completed by 2024.
10. **Electric locomotive modification project 2 heads** to transport merchandises by rail from Saraburi plant to Chiang Rak Noi station. This reduces the use of fossil fuels and reduces greenhouse gas emissions. It is expected to be completed in 2024.

In 2023, TPI Polene Group implemented a waste fuel production project for the general benefit of the country. The project involves segregating community waste to create alternative fuel instead of sending it to landfills. The project processed more than 2.77 million tons of waste, enabling the country to reduce greenhouse gas emissions from landfills by up to 6.43 million tons of CO<sub>2</sub> equivalent.



Target	Action Plan	Key Performance in 2023	Guidelines for Improving future operations
<ul style="list-style-type: none"> <li>- Operate the business under the concept of zero waste by adhering to the circular economy principle, take measures to reduce waste to zero or "Zero Waste" by utilizing waste products from consumption and utilizing the use of renewable waste products in accordance with the BCG criteria to drive business operation of TPI Polene Group for efficient use of resources at the highest minimize waste generated using the principle of 1A3R (Avoid, Reduce, Reuse, Recycle) without discharge of waste, wastewater, used oil, chemicals, and waste into the ground.</li> <li>- Reuse waste fuel to replace coal by 25% in clinker production by 2024.</li> </ul>	<ul style="list-style-type: none"> <li>- Implement Zero Waste to Landfill policy by disposal of waste without harmful the environment with the method of co-fired together with the main fuel at the rotary kiln at temperatures above 1,800 degrees Celsius in the closed system, it is considered a modern and technological advancement and environmentally friendly compared to the conventional landfill waste that causes problems for communities and the environment.</li> <li>- Climate change risk and opportunity management are one Key issue are identified, assessed, and managed climate change risks and opportunities in accordance with the procedures set out in the "Risk Management Handbook".</li> <li>- Participate in projects/activities to reduce greenhouse gases, such as attaining registration and receiving carbon credits (T-VER), participating in the Low Emission Support Scheme (LESS), the registration of carbon footprint labels to demonstrate that the product has passed the carbon footprint assessment and can reduce greenhouse gas emissions according to the specified criteria, etc.</li> <li>- Generate electricity from renewable energy, including the use of alternative fuels in 40-megawatt waste heat recovery power plant and to use waste heat recovery from cement production process to generate electricity, reduce energy consumption and using waste through the production process of waste fuel plants as renewable fuels for replacement of coal use in cement plants/ and Prepol-SC project, by installing additional machinery in the cement kiln to reduce heat consumption, use of Waste Fuel (RDF) in Cement Production Process and replace waste fuel as a substitute for coal by up to 25%, and Polene solar film production project supports solar electricity consumption.</li> </ul>	<ul style="list-style-type: none"> <li>- The amount of waste fuel used to replace the use of coal in the clinker production process is waste fuel 14% in 2023, resulting in a reduction of greenhouse gas emissions by 0.017 million tons of carbon dioxide or equivalent.</li> <li>- Production of hydraulic cement of 3.32 mil.tons can help reduce greenhouse gas emissions by 0.272 million tons of carbon dioxide equivalent.</li> <li>- Since in 2023, cement plants have gradually installed machinery to be able to use waste fuel instead of coal in 4 cement production lines, with the final line of cement plants being installed in December 2023, the average rate of using waste fuel instead of coal in 2023 has not yet reached the target of 25%.</li> <li>- In 2023, customers have used 2,690,747 tons of hydraulic cement, reducing carbon emissions by 0.2206 million tons of carbon dioxide equivalent.</li> <li>- Air quality measurements showed that the air quality, noise and lighting were within the normal range as required by law and there were no cases of chemicals spills from business operations.</li> </ul>	<ul style="list-style-type: none"> <li>- A plan to apply for CFP (Carbon Footprint of Product) of 10 products in 2024.</li> <li>- Use clean electricity from TPIPP</li> <li>- Use electric-powered trucks instead of fossil fuel-powered trucks for limestone transportation in the quarry.</li> </ul>

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- Increase energy efficiency with tree planting and forest restoration, such as the installation of raw material conveyor belts from the site-A (Regenerative downhill conveyor) to the cement plant's shale crushers, and the installation of raw material conveyor belts and mobile crusher at the mine, which crush limestone and shale from the front of the mine, delivered directly into the plant through a replacement conveyor belt instead of transport by truck, reducing the use of diesel fuel. It can also generate electricity, and fiber cement plants that do not use asbestos are environmentally friendly, wood substitutes and reduce deforestation.</li> <li>- Cost-effective use of natural resources, continuously create new innovations both production and products, such as the classification plant project, by removing scraps from aggregate production process, which cannot be utilized through the recycle process to be used as raw materials for the production of cement. The development of TPI197 mortar production technology to replace TPI green mortar (mixed cement), which reduce greenhouse gas emissions by 10-15%, under industrial standards (TIS) and the development of TPI 299 (hydraulic cement) production technology to replace Portland cement, reducing greenhouse gas emissions by 10-15%.</li> <li>- Improves the efficiency of Electrostatic Precipitators systems at the Clinker Cooler.</li> <li>- The measurement of atmospheric dust up to 2.5 microns is scheduled for 8 stations around the project area for a period of 5 years consecutive (2019-2023) by external environmental consulting firm (Third Party).</li> <li>- Install 5 permanent air quality monitoring stations to monitor air quality in the atmosphere around the plant stations and conduct additional 2 stations for atmospheric air quality monitoring at Mauk Lek Wittaya School Station and Mittraphap District Administrative Station, which has continuously implemented every year.</li> </ul>	<ul style="list-style-type: none"> <li>- Received CFP (Carbon Footprint of Product) registration of 20 cement products in 2023</li> <li>- Improving the efficiency of Grate Cooler lines 1 and 2 by designing and installing a new horse shoe from the original static grate plate. Clogging the air holes blown from the underside of the grate plate by adjusting the inclination to 14 degrees, creating a more uniform movement of the clinker. There is no clinker residue, adding air vents to better heat transfer and can be effectively circulated in the furnace, reducing heat consumption in clinker production.</li> </ul>	

**Greenhouse Gas Emissions Data (Cement Business and LDPE/EVA Plants only) [305-1][305-2]  
[305-3][305-4]**

Unit: Tons of carbon dioxide equivalent

greenhouse gas emissions	Cement Business			LDPE/EVA Plants		
Significant greenhouse gas emissions within the scope of operational control. (Operational Control Approach)	2021	2022	2023*	2021	2022	2023
Greenhouse gas emissions Scope 1 (Direct)	7,561,509.47	8,092,914.00	7,280,461.01	4,008.35	3,942.92	6,575.86
Greenhouse gas emissions Scope 2 (Indirect)	1,193,594.53	1,206,472.00	1,153,818.52	106,594.70	103,577.43	101,299.00
Other indirect greenhouse gas emissions (Scope 3)	220,068.07	223,463.15	204,125.76	306,365.25	304,915.09	273,829.46
<b>Total : (Scope 1, 2 and 3)</b>	<b>8,975,172.07</b>	<b>9,522,849.15</b>	<b>8,559,903.20</b>	<b>416,908.29</b>	<b>412,435.94</b>	<b>381,704.32</b>
Concentration of greenhouse gas emissions per unit (per ton of output)	1.0456	1.0112	0.9663	2.5739	2.6850	2.6492

Remark: \* Carbon footprint is verified by BSI Group (Thailand) Company Limited ("BSI") as per ISO14064-1 : 2018 and CFO-TGO

Apart from this, the Company has also given importance to compliance with environmental laws, pollution management. The Company continuously monitors waste emissions and monitors the surrounding air quality of several areas in the vicinity of the plant, monitoring and controlling nitrogen dioxide (NO<sub>2</sub>) and sulfur dioxide (SO<sub>2</sub>) levels in each combustion process, and controlling the temperature and fuel to air ratio during the combustion process to maintain the emission level within the specified limits.

**Table of emission levels of Sulfur dioxide (SO<sub>2</sub>) and Nitrogen oxide (NO<sub>2</sub>) of the Company compared with World Bank's emission standards and requirements under Thai legal regulations <sup>(305-7)</sup>**

(Unit: mg/m<sup>3</sup> normal)

	Sulfur dioxide (SO <sub>2</sub> )	Nitrogen oxide (NO <sub>2</sub> )
TPI Polene	30.0	120.0
World Bank Emissions Standards	< 230.0	< 510.0
Requirements under Thai legal regulations	< 320.0	< 350.0

**Goals for Reducing Air Pollution Emissions per Production Unit**

Short-term Goal (within 1-2 years)	Long-term Goal (Minimum 3 years)
<ul style="list-style-type: none"> <li>To reduce air pollution emissions per unit of cement production to no more than 0.00120 Ton/MWh in 2022, 0.00110 Ton/MWh in 2023, and 0.00100 Ton/MWh in 2024.</li> </ul>	<ul style="list-style-type: none"> <li>To reduce air pollution emissions per unit of electricity production to not exceeding 0.00085 Ton/MWh.</li> </ul>

Remark: The value is actually measured twice a year, according to laws from third parties, and is calculated in one year.

**Table: GHG emission intensity of Cement Plant** <sup>(305-4)</sup>

Activity	Unit	2021	2022	2023
GHG (1)*	TonCO <sub>2</sub> e	8,975,172.07	9,522,849.15	8,559,903.20
Non greenhouse gases pollution (2)**	Ton	5,669	9,457	3,761
Cement Production Lines (3)	Ton	8,583,753	9,417,186	8,858,875
Proportion (1)/(3)	TonCO <sub>2</sub> / Ton Clinker	1.0456	1.0112	0.9663
Proportion (2)/(3)	Ton/ Ton Clinker	0.00066	0.00100	0.00042

**Note :**

\*Calculated according to “Requirements for Calculating and Reporting Carbon Footprint of Organizations” by Thailand Greenhouse Gas Management Organization (TGO), 5th Edition, and January 2021.

\*\* Non-greenhouse gases contain SOx and NOx.

Under the above-mentioned environmental management guidelines, the Company strictly follows environmental legal regulations; the Environmental Impact Assessment (EIA) and Environmental Health Impact Assessment (EHIA) are prepared for the complete implementation of the Company’s projects. The results of environmental compliance are reported in compliance with EIA and EHIA reports to related government authorities and communities. Environmental measurements and assessments are carried out in accordance with the plan, as well as delivering environmental compliance reports to related government authorities and communities in full in accordance with the specified time. In addition, the Company does not discharge waste, wastewater, used oil, chemicals and other contaminants are not released into the ground, which will cause land degradation, according to the announcement of the Ministry of Industry regarding Control of soil and groundwater contamination within the factory premises, B.E. 2559 (2016) that the Company is required to install observation wells to monitor soil quality every three years. In this regard, the Company monitoring contaminants TPH(C5-C8), TPH(C8-C16), TPH(C16-C35). The results of the analysis passed the specified benchmarks. In the past up to present (2023), and the Company has had no violations of environmental laws and regulations. [2-27]

## Environmentally Friendly Products

The Company has a policy to support green products that are environmentally friendly by creating goods and services that meet consumer needs, including minimizing the use of natural resources and emissions over the course of their life cycles to lessen the impact on future generations.

The Company has brought new technologies or innovations into the process of developing products and services for the group of green products that are friendly to the environment. In addition, the production process of the Company's products and services must be controlled in every process to meet standards such as Quality Management System Standards (ISO 9001:2015), Environmental Management System Standards (ISO 14001:2015), Occupational Health and Safety Management System (ISO 45001:2018), and Energy Management System Standards (ISO50001:2011), etc. in order to provide the Company's products and services with quality, safety, environmental friendliness, and to meet consumer needs as follows:

1. Hydraulic cement, global warming cement, TPI 299, which is environmentally friendly and reduces greenhouse gases. The use of hydraulic cement as a raw material in the production of ready-mixed concrete or low-heat concrete helps reduce heat accumulation in large concrete structures and increases the durability of the concrete to be able to withstand various environmental conditions well. It is also a product for green building construction according to LEED and TREES standards.
2. Plant-related products such as bio-organic fertilizers and soil conditioners, etc., are non-toxic and free of heavy metals that are harmful to humans and the environment, allowing vegetables to be grown without the use of pesticides and sell products related to livestock and fisheries such as yellow powder and Bio-San etc.
3. Products for occupational health like Bio Knox, Microme Knox Solution, mouthwash, vegetable washing liquid, Provita drink, liquid soap, TPIPL drinking water, dishwashing liquid, stain remover, and Bio-San, among others, for which the company was recognized as the "Outstanding Product of the Year 2022" in the category of goods promoting bio economy and hygiene care by the Foundation for Thai Society.
4. Animal products, including biological enhancers for livestock and fisheries, etc., are useful and safe for animals. It can be applied to all kinds of poultry, terrestrial animals, and aquatic animals including pigs, shrimps, fish, chickens, and ducks. Animals' digestion and absorption are aided, and their immunity is strengthened, resulting in healthier, faster-growing animals that gain weight and use less antibiotics.
5. Products that reduce the environmental impact caused during use and are green industries, such as low emissions during use, reducing the use of consumables, reducing energy consumption and reduce the use of unnecessary parts, environmentally friendly, and help reduce deforestation, including fiber cement (ceiling boards, walls, floors, wood substitute materials and digital boards, door products, and roof tiles, etc.)
6. Solar panel production using technologies in various processes, linked from start to finish in order to increase growth and profitability, while aiming to develop a green society for the future and the use of Ethylene released from the EVA resin production process to produce water glue, etc.

Implementing each stage of product development reduces environmental impacts while benefitting businesses, communities, and the environment, leading to sustainable development. In 2023, the revenue from the sale of green products that are environmentally friendly was Baht 28,289 million, accounting for 66.08% of total sales revenue. Over the past 3 years, revenue from sales of biological products and green products has been increasing steadily. This illustrates that the more the benefits is added to the environment, making the market for bio-organic products worthwhile to grow because they can meet the needs of consumers in terms of safety and savings. Sales revenue of biological products and green products can be summarized as follows:-

	Unit: million Baht		
Product Type	2021	2022	2023
Biological Products	99.99	117.46	95.21
Green Products	11,983.24	11,722.60	28,289

## Materials [3-3]

Cement plants are considered to be an industry where raw materials such as limestone, and fuel such as coal and residual fuel are consumed in large quantities and these raw materials are from natural resources which are being depleted. In addition, the acquisition of such raw materials and fuels contributes to the direct and indirect impact on forest areas, communities, ecosystems, and other environments. Therefore, the efficient and cost-effective use of materials and raw materials in the production process is important to reduce environmental impacts as well as support the use of sustainable natural resources.

Target	Action Plan	Key Performance in 2022	Guidelines for improving future operations
<ul style="list-style-type: none"> <li>- Reuse waste fuel to replace coal by 25% in clinker production by 2024.</li> <li>- Bringing the leftover crushed stone from the construction stone production process to 100%.</li> <li>- 2,300,000 tons of recycled and renewable materials per year</li> </ul>	<ul style="list-style-type: none"> <li>- Implementing measures to achieve “Zero Waste,” by applying the principles of 1A3R (Avoid, Reduce, Reuse, Recycle) to promote.</li> <li>- To take measures to reduce waste to zero or “Zero Waste” by utilizing waste products from consumption and utilizing the use of renewable waste products in accordance with the BCG criteria to drive business operation of TPI Polene Group as the followings:-               <ul style="list-style-type: none"> <li>• Utilize the great benefit of raw materials, for example, waste/by-product will be reused or recycled as raw material to other product production processes.</li> <li>• Reduce the use of non-renewable energy fuels and use renewable energy fuels such as waste-to-energy, Pyrolysis oil and used oil.</li> <li>• Reduce the use of water from Pasak River by using water from reserve ponds (surface water) and factory effluence.</li> <li>• Use electricity generated from renewable energy as much as possible.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- The remaining amount of scrap soil from recycle process is 597,564.00 tons, representing 100% of the total remaining scrap soil.</li> <li>- The amount of waste fuel used to replace the use of coal in the clinker production process is waste fuel (machinery in the 1st production process has not yet started production), accounting for 14 % of waste fuel.</li> <li>- 2,454,946.20 tons of recycled and renewable materials, increase 2.27%</li> <li>- The Company has invested approximately Baht 400 million in machinery to reuse 100% of the crushed stone leftover from the construction stone production process, with installation completed in 2023.</li> </ul>	<ul style="list-style-type: none"> <li>- The Company has a daily follow-up meeting on the use of renewable materials/raw materials and renewable fuels in cement production and recorded the results in Production Report.</li> </ul>

## The use of materials in the manufacture and packaging of products and services [301-1]

List of materials used in the manufacture and packaging of products and services	The total weight (or volume) of the material.	Material type, (✓)				Specify the source of the material (Purchased from an external supplier or obtain from the organization)
		Raw material	Materials involved in the process	Components	Package	
<b>Non-renewable materials used</b>						
Limestone used to produce cement	9,541,194.14 tons	✓				In-house supply
Limestone used to produce mortar	1,492,544.85 tons	✓				In-house supply
Shale	2,770,083.36 tons	✓				In-house supply
Coal	1,134,308.75 tons		✓			Purchased from an external suppliers
Fuel oil	723,944.00 litres		✓			Purchased from an external suppliers
Scrap soil	597,564.00 tons	✓				In-house supply
Used oil	689,400.00 tons		✓			In-house supply
Pyrolysis oil	2,480,727.00 litres		✓			In-house supply
<b>Renewable material used</b>						
Waste Fuel	361,826.72 tons		✓			Purchased from an external suppliers

## Imported materials in recycled form to be used in the production of products and services [301-2]

List of Imported materials in recycled form to be used in the manufacture of products and services	Total weight (or volume) of recycled materials	Percentage of recycling material used
<b>Non-renewable material</b>		
Limestone scrap (substitute for limestone used to produce mortar)	1,027,970.92 tons	76.07
Limestone scrap (substitute for limestone used to produce cement)	464,573.93 tons	4.62
Aggregate scrap (substitute for limestone used to produce cement)	45,516.00 tons	0.45 <sup>(1)</sup>
Aggregate scrap (substitute for limestone used to produce mortar)	323,380.00 tons	23.93 <sup>(2)</sup>
Aggregate scrap (substitute for shale)	81,265.00 tons	2.93 <sup>(3)</sup>
Aggregate scrap (substitute for river sand)	147,403.00 tons	100.00 <sup>(4)</sup>
Used oil (substitute for asphalt)	689,400.00 litres (654.72 tons)	17.70 <sup>(5)</sup>
Pyrolysis oil (substitute for asphalt))	2,480,727.00 litres (2,210.41 tons)	63.71 <sup>(6)</sup>
<b>Total Non-renewable material</b>	<b>2,093,119.48 tons</b>	
<b>Non-renewable material</b>		
Waste-based fuel (substitute for coal)	361,826.72 tons	14.092 <sup>(7)</sup>
<b>Renewable material</b>	<b>361,826.72 tons</b>	
<b>Non-renewable material and Renewable material</b>	<b>2,454,946.20 tons</b>	

**Note:**

- (1) Calculated based on the weight of aggregate scrap (substitute for limestone used to produce cement) compared with total weight of aggregate scrap and limestone used to produce cement.
- (2) Calculated based on the weight of aggregate scrap (substitute for limestone used to produce mortar) compared to the total weight of the aggregate scrap and limestone used to produce mortar.
- (3) Calculated based on the weight of aggregate scrap (substitute for shale stone) versus the total weight of aggregate scrap and shale.
- (4) Calculated based on the weight of aggregate scrap (substitute for river sand) compared with the total weight of aggregate scrap and river sand.
- (5) Calculated based on used oil volume (fuel oil replacement) versus total volume of used oil, asphalt and Pyrolysis oil.
- (6) Calculated based on Pyrolysis oil volume (asphalt replacement) versus the total volume of used oil, asphalt and Pyrolysis oil.
- (7) Calculated based on the weight of waste fuel (coal substitute) versus the total weight of waste fuel and coal; consider the waste fuel ratio: coal is 2.25.

### Logistics System [3-3]

The Company recognizes that its logistics system is an important factor in the Company's business operations, in terms of delivery of goods to customers, transportation of raw materials and Spare parts, as well as the travel of employees to their workplaces. However, it's important to take into account the duration and continuity of the delivery of goods to the destination for a specified period of time in accordance with the purpose of the recipients; and the delivery of goods or raw materials on the return trip without running empty vehicles to reduce transportation costs and reduce pollution that might occur.

In addition, the Company also focuses on the development of efficient transportation systems in terms of human resource development, machinery in logistic system, including transportation vehicles such as trucks and trains for the distribution of goods or raw materials to various destination by the company. the Company has a management team with extensive experience in transportation management and planning. They primarily focus on aligning plans with customer needs and will establish guidelines to ensure consistency in various aspects, such as the required transportation volume and punctuality in transportation and delivery times aiming to create and develop a logistics system to deliver products and services to customers on timely basis and accurately with safety standards. Distribution terminals for goods and raw materials are strategically located in key strategic locations throughout the country with a network of links in inventory management. There are retail stores to support sales to customers to make it easier to access the products, as well as transportation systems that cause minimal environmental impact. In addition to focusing on the efficient use of such resources, it is necessary to take into account cost-effectiveness and reasonable expense costs in the management of transportation to achieve continuity, maximum efficiency with low costs, and minimal environmental impact.



Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
<ul style="list-style-type: none"> <li>- Distribute products to customers quickly and reduce complaints with a complaint goal of less than 0.25 % of delivery trips per year.</li> <li>- Replace fossil fuel trucks with 100% electric trucks to reduce greenhouse gas emissions by 2024.</li> <li>- Switch from heavy machinery that uses fossil fuels to electricity to reduce greenhouse gas emissions by 70% by 2027.</li> <li>- Switching small delivery trucks from diesel fuel to electric trucks aims to achieve a 100% reduction in greenhouse gas emissions by 2024.</li> </ul>	<ul style="list-style-type: none"> <li>- Manage distribution costs to be efficient in time manner to achieve the objectives of distribution to customers at reasonable transportation expense.</li> <li>- Organize the delivery to minimize the impact on the community and the environment, such as having customers cover the goods with the large canvas upon receipt of goods from the plan, coordinating for customers/contractors to inspect the vehicle's condition to be ready to pick up the goods and coordinate with the customers/contractors to inform the driver to plan and study the route before delivering the goods.</li> <li>- The quality of management standards has been developed to the extent that it has been certified for the quality management standard ISO 9001:2000 since 2003, the occupational health and safety management system standard OHSAS 18001 since 2003, and has received a license from the Department of Land Transport for international goods transportation. Various technologies are employed, including a GPS vehicle tracking system, a real-time transportation management system, a delivery driver driving evaluation system, and an online vehicle maintenance storage system, all aiding in operations. These technologies enable the tracking of goods movement, facilitate work planning, and further enhance transportation potential, allowing for the effective management of available vehicle resources.</li> <li>- Provide rail transport that can increase the volume of goods for each trip to be delivered to distribution terminals and warehouses in strategic location for stock reserve and facilitate the distribution of more products to customers and in faster times.</li> <li>- Set up a network of transportation systems to prevent traffic disruption by arranging the mode of transport by truck, vessel and train transport.</li> </ul>	<ul style="list-style-type: none"> <li>- The average number of customer shipping complaints in 2023 was 0.115%.</li> <li>- Conveyor system Site A mine-front raw materials can generate electricity (Regenerative Downhill Conveyor) can generate electricity of 771,844 kWh/year of, reducing greenhouse gas emissions by 3,383.17 tons of carbon dioxide equivalent per year.</li> <li>- Site C mine raw material conveyor system can generate 969,766 kWh of regenerative downhill conveyor/year, reducing greenhouse gas emissions by 4,314.91 tons of carbon dioxide equivalent per year.</li> <li>- In 2023, the Company transported cement more than 1.3 million tons by railways from cement plants, Saraburi province to the Company's distribution terminals, located all regions of the country. This reduces the number of trucks transport to provinces where the distribution terminals are located by more than 39,000 trips.</li> <li>- In 2023, the Company invested in a 60-ton EV MINING TRUCK to replace the motorized rock truck. As a result, when transporting limestone by truck, it is powered by electricity instead of diesel. This helps reduce greenhouse gas emissions, saving on the use of natural resources and decreasing the generation of PM 2.5 dust from diesel engine combustion.</li> </ul>	<ul style="list-style-type: none"> <li>- Organize driver training to help them understand how to deliver products efficiently and reduce delivery issues.</li> <li>- By 2027, the Company aims to transition heavy machinery used in the quarry, such as loaders, backhoes, and drilling machines, from gasoline-powered engines to approximately 100 electric vehicles. This transition will transform the Company's quarry operations into ones powered solely by clean energy, thereby reducing greenhouse gas emissions, conserving natural resources, and mitigating the generation of PM 2.5 dust from diesel engine combustion.</li> <li>- A 400-meter shale conveyor belt has been installed, relocated from compound mixing bed line 4 to shale mixing bed line 1, in order to reduce transportation costs via truck. Additionally, it can decrease PM2.5 dust emissions and mitigate greenhouse gases.</li> <li>- A 1,000-meter shale conveyor belt system was installed between the shale crusher and mixing bed, aiming to enhance the efficiency of shale transportation into the factory. This initiative not only reduces transportation costs by truck from the quarry but also minimizes PM2.5 dust emissions and greenhouse gas emissions. The project is expected to be completed by 2024.</li> </ul>

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- The Company's drivers will receive strict training, greatly prioritizing safety when using the road with others, and instilling awareness of road usage, with the Company continually raising the level of importance.</li> <li>- Plan dispatch of goods and pick up on the return trip without loads in departure trip.</li> <li>- The investment involves purchasing 12 locomotives operated by the State Railway of Thailand, along with 577 freight cars. These will be used to transport goods from the factory in Saraburi Province to eight distribution centers across the country, covering all regions including Chiang Rak Distribution Center in Pathum Thani Province, Chachoengsao Provincial Distribution Center, Khuan Niang Distribution Center in Songkhla Province, Lam Chi Distribution Center in Surin Province, Huai Khayung Distribution Center in Ubon Ratchathani Province, Ubon Ratchathani Distribution Center, Udon Thani Distribution Center, and Bueng Phra Distribution Center in Phitsanulok Province. This investment in rail transportation can save more energy compared to truck transportation. Additionally, the company has initiated a project to modify electric locomotives for use in rail transportation. This modification will reduce fossil fuel usage and greenhouse gas emissions. The company has proceeded to request permission from the State Railway of Thailand for this project.</li> </ul>	<ul style="list-style-type: none"> <li>- In 2023, goods/materials/ equipment of the Company and its subsidiaries were transported back to the factory on approximately 100 trips per month.</li> <li>- A raw material convey or belt system was completely installed at CDE Plant 2. This system will reduce transportation costs, PM 2.5 dust, and greenhouse gases.</li> </ul>	<ul style="list-style-type: none"> <li>- The project involves modifying 2 electric locomotives for rail transportation, which will reduce fossil fuel usage and greenhouse gas emissions. It is expected to be completed in 2024.</li> </ul>

Target	Action Plan	Key Performance in 2023	Guidelines for Improving future operations
	<ul style="list-style-type: none"> <li>- Install conveyor belts to transport raw materials instead of by truck, which reduces diesel consumption, reduce transportation cost and reduce greenhouse gas emissions. Installation has covered the front of site A mine for a round trip distance of 12 kilometers. The conveyor belt system can generate electricity from transportation of raw material (This project was awarded the Thailand Energy Award in 2016 in the category of outstanding award for creative energy from the Department of Alternative Energy Development and Energy Conservation, the Ministry of Energy) and at Site C, the replacement truck transport is 19 kilometers round trip, with a 10-kilometer round-trip conveyor belt capable of generating electricity as well.</li> <li>- The Company is initiating a gradual transition from using pickup trucks in its small delivery operations, which currently rely on rental contracts utilizing diesel fuel, to electric trucks. The Company began gradually replacing 14 trucks whose leases expire in 2023 and has continued to gradually replace an additional 14 trucks whose leases will expire in 2024.</li> </ul>		

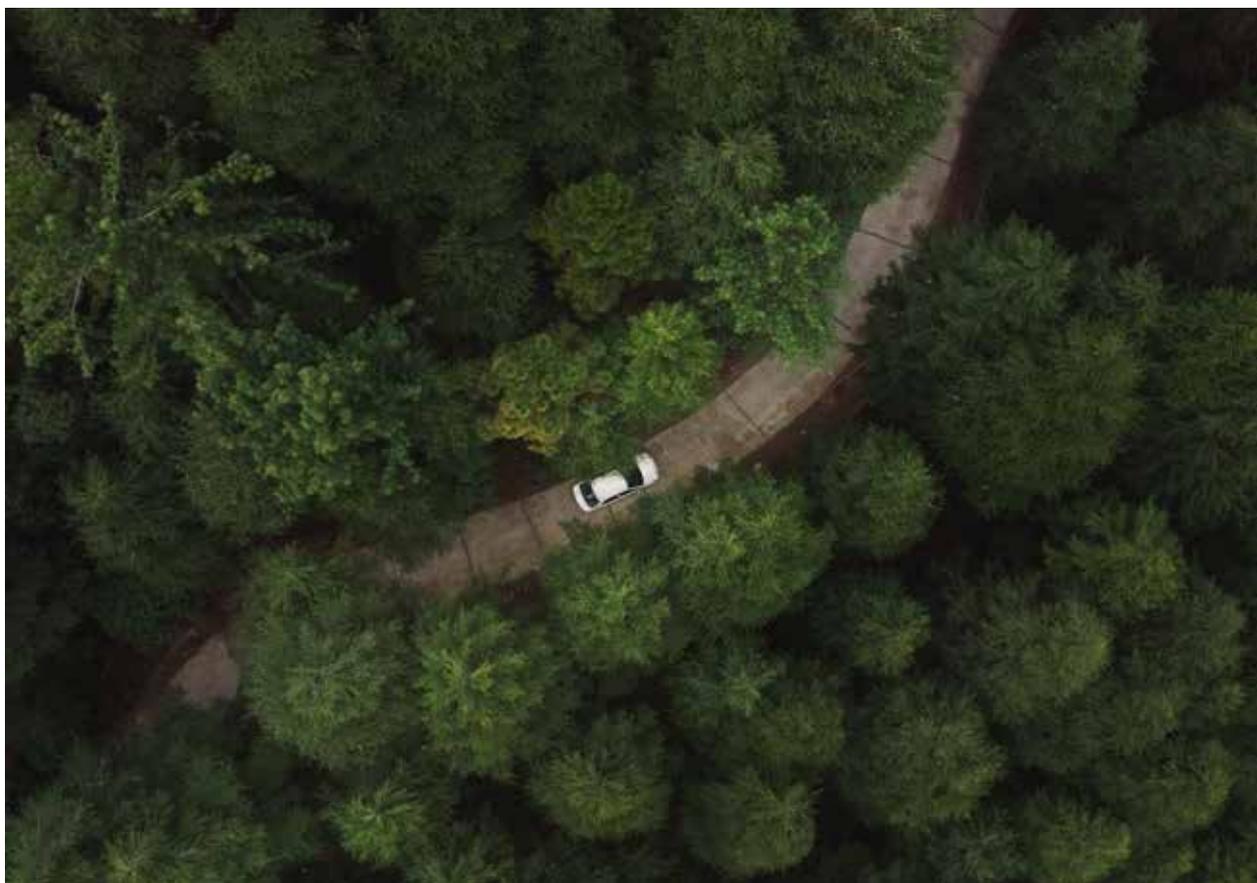
## Energy Management [3-3]

The cement manufacturing business is considered the Company's core business, which uses energy consumption of both electricity and thermal energy in amounts of up to 65% of the cost of production. The Company therefore focuses on resource transformation with the greatest use of energy resources, starting from product design to production resources, designing and controlling production processes and machinery in a highly efficient manner to reduce energy consumption, including waste of energy such as waste heat recovery from the cement production process, Calorific Values, fuel energy, as well as promoting Renewable Energy such as waste fuel, pyrolysis oil. The Company supervises and manages business procedures to be in line with TPI Polene Group's policy of requiring cost-effective and efficient use of energy resources.

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
<p><b>Cement Plant</b></p> <ul style="list-style-type: none"> <li>- All types of energy consumption per clinker production not more than 3,639.48 megajoules/ton (base year 2012)</li> <li>- All types of energy consumption per cement production not exceeding 175 megajoules /ton (base year 2012)</li> <li>- All kinds of energy consumption per mortar production not more than 60 megajoules/ton (base year 2012)</li> <li>- Reduce energy consumption from using fossil fuels in clinker production by 500 megajoules /ton</li> </ul>	<ul style="list-style-type: none"> <li>- To implement energy management policy and adopt ISO 50001 energy management system under international standards as the management policy.</li> <li>- The senior personnel in charge of electrical and calorific values has been appointed as well senior personnel in electrical to be responsible for power energy, including at the operational level, with the use of focus improvement pillar to search for the point of energy, loss control costs and then improve them by establishing a group to collaborate as a project team.</li> <li>- Green Research and Development has been designed products to reduce energy consumption during the production process, such as super mixed cement (40 kg. container), which can be used in equivalent to mixed cement (50 kg. container) and hydraulic cement.</li> <li>- Cost-effective use of all the ingredients by reuse and recycle, such as used lubricants is used as fuel.</li> <li>- Community waste is used as renewable fuels in power plants and cement plants. Adoption of lubricants tires or used tires or scraps from the production processes are used as fuel.</li> <li>- Renewable energy by generating electricity from alternative energy plants or waste fuel power plants and producing Pyrolysis oil from used tires from Pyrolysis plants.</li> <li>- Waste Heat Recovery by reusing heat from the production process to heat raw materials in raw meal grinding mills and coal grinding mills and waste heat from the steam production process is used to generate electricity and produce light weight concrete.</li> </ul>	<ul style="list-style-type: none"> <li>- Total energy consumption measurement (only cement plant, plastic pellet factories, and concrete tile and fiber cement plants) amounted to 33,609,161.81 gigajoules [302-1], accounting for 7.63% of decreasing. Compared to 2022, the details are as follows:</li> </ul> <p><b>Cement Plant</b></p> <ul style="list-style-type: none"> <li>• Total energy consumption amounted to 32,488,275.71 gigajoules, representing a decrease of 7.62% compared to 2022, thus reducing the amount of greenhouse gas emissions originating from coal. Therefore, waste fuel, which emits fewer greenhouse gas emissions than coal, was utilized. When compared with the target, it was found that.</li> <li>• Energy consumption per ton of clinker production, across all energy types, stands at 3,450.07 megajoules, meeting the established target.</li> <li>• The use of all types of energy per cement production is 153.34 megajoules/ton, which is in line with the target.</li> <li>• The use of all types of energy per production of ready-made cement is equal to 57.10 megajoules/ton, which is in line with the target.</li> </ul>	<ol style="list-style-type: none"> <li>1. Carry out energy management in accordance with ISO 50001 for energy management system under international standards.</li> <li>2. Operating according to energy laws</li> <li>3. The project aimed at increasing production efficiency to reduce heat energy at Kilns 1, 2, 3, and 4 (Circulate Cooler Grate Plate) involves improving the Cooler Grate by designing and installing a new house shoe. This modification enables a reduction in heat usage during clinker production, aiming to achieve at least 5 kcal/kg clinker. Such measures not only help save energy during production but also contribute to reducing greenhouse gas emissions.</li> </ol>
<p><b>LDPE/EVA Plants</b></p> <ul style="list-style-type: none"> <li>- Energy consumption of all kinds per production of specialty grade not exceeding 4,770 MJ/ton</li> <li>- All energy consumption per production of water adhesives, powder adhesives not exceeding 1,162 MJ/ton</li> </ul>			
<p><b>CRT and FCB plants</b></p> <ul style="list-style-type: none"> <li>- Total energy consumption per board production (FB)/ Tile (FR) /Tile cover (FR)/ Synthetic wood (FW) not exceeding 1,645 MJ/ton</li> </ul>			

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- High-efficiency manufacturing processes and machinery using high energy-efficient machines such as inverters, modification of Clinker Cooler machines in clinker production and factory crater design by using vertex design to reduce energy consumption and the use of a belt conveyor to transport limestone from the quarry and being able to generate electricity back to the system instead of using trucks and the use of a mobile Crusher to reduce stone transportation, etc.</li> <li>- The use of a production control system that is an automatic process for precision in the production process by using a combustion control program to reduce fuel consumption, electric energy and also resulting in high quality clinker.</li> <li>- Polytrack Grate is a new low pressure aeration technology that provides consistent aeration with low energy consumption (at least 1 kWh/ton of clinker) resulting in energy savings and reduced wear and tear on the machine due to reduced air velocity through the vents, thus reducing maintenance costs. Currently, the Company can reduce energy costs from using coal and can also save electricity.</li> <li>- Afforestation helps absorb greenhouse gases released into the atmosphere. TPI Polene Group has been operating continuously since 1992 until now and will continue to do so that the country has more forests to absorb greenhouse gases.</li> </ul>	<ul style="list-style-type: none"> <li>• The reduction in energy consumption from using fossil fuels in clinker production by 459.15 megajoules/ton, which is below the target value of 40.85 megajoules/ton, is attributed to the cessation of machines to enhance the efficiency of the Clinker Cooler across lines 1, 2, and 3.</li> </ul> <p><b>LDPE/EVA Plants</b></p> <ul style="list-style-type: none"> <li>• Total energy consumption of 641,214.40 gigajoules decreased by 1.56% compared with the same in 2022.</li> <li>• All energy consumption per production of LDPE &amp; EVA resins 4,743.99 MJ/ton</li> <li>• Total energy consumption per production of water-based adhesives, powdered adhesives were 1,081.86 MJ/ton.</li> </ul> <p><b>CRT and FCB plants</b></p> <ul style="list-style-type: none"> <li>• Total energy consumption of 479,671.7 gigajoules, decreased by 1.64% compared to 2022.</li> <li>• By using all kinds of total energy per board production (FB)/ Tile (FR) / Tile Cover (FR)/ Synthetic Wood (FW) is equal to 1,468.02 MJ/Ton</li> </ul>	

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- Carbon capture &amp; utilization/ storage (CCUS) by studying the technology of capture, utilization, and storage of carbon dioxide by capturing carbon dioxide from high-pitched smokestacks at power plants and storing it underground or under the ocean without releasing CO<sub>2</sub> into the atmosphere. It is a plan to make further investments in the future if existing greenhouse gas emissions reduction processes are insufficient and the technology is worth investing in the future.</li> <li>- Ethylene discharged from the EVA production process is reused for the production of water glue, etc., thus reducing costs and reducing pollution to the community and the environment. In addition, there are ways to improve machinery that can reduce energy consumption and reduce some types of waste from production. If any waste occurs, the Company has improved and sent it as fuel to generate electricity at Saraburi plant as well. The Company has been transferring EVA emulsion production technology from Japan and has continued research and development.</li> </ul>		



**Total oil and fuel consumption of TPI Polene  
(only cement plant, LDPE/EVA plants, CRT and FCB plants)**

On-premises energy consumption	Fuel Oil and Energy consumption		
	2021	2022	2023
<b>Cement plant</b>			
Coal (Ton)	1,236,314.20	1,262,956.48	1,134,308.75
Fuel oil (Litre)	4,094,606.49	4,004,492.00	3,759,985.00
Diesel oil (Litre)	15,502,492.86	13,387,484.00	12,739,267.00
Natural Gas (Cubic feet)	14,133,387.07	14,973,932.25	14,376,871.21
Steam (Ton)	52,317.03	53,805.70	57,674.70
Waste Fuel (Ton)	105,995.55	360,675.09	361,826.72
<b>LDPE and EVA Plants</b>			
Steam (Ton)	29,773.82	35,324.75	37,269.99
<b>CRT and FCB Plants</b>			
Steam (Ton)	101,905.00	125,523.00	95,223

**Electricity Consumption Information of TPI Polene  
(only at Cement Plants, LDPE plant, CRT and FCB Plants)**

Electricity Consumption	2021	2022	2023
<b>Target of Electricity Consumption (kWh)</b>	1,211,239,308 kWh (135 kWh/Ton)	1,224,234,235 kWh (130 kWh/Ton)	1,170,000,000 kWh (130 kWh/Ton)
<b>Electricity Consumption (kWh)</b>			
- Cement Plant	1,195,546,685.00	1,197,794,950.00	1,159,512,336.04
- LDPE and EVA Plants	160,910,399.00	154,341,103.00	150,047,981.00
- CRT and FCB Plants	58,446,497.36	61,717,642.01	61,933,113.30
<b>Total Electricity Consumption</b>	<b>1,414,903,581.36</b>	<b>1,413,853,695.01</b>	<b>1,371,493,430.34</b>
<b>Electricity Cost (Baht)</b>			
- Cement Plant	3,493,328,982.37	4,194,468,135.08	4,760,367,341.66
- LDPE and EVA Plants	500,206,544.66	564,591,008.24	625,358,466.57
- CRT and FCB Plants	161,463,824.12	227,367,915.01	252,979,586.68
<b>Total Cost of Electricity Usage</b>	<b>4,154,999,351.15</b>	<b>4,986,427,058.33</b>	<b>5,638,705,394.91</b>

**Note:** Electricity usage expenses are collected from the actual electricity bill payment each year.

## Total Energy Consumption of TPIPL

(only at Cement Plant, LDPE/EVA plants, CRT and FCB Plants) [302-1]

Unit: Gigajoules

On-premises energy consumption	Energy consumption		
	2021	2022	2023
<b>Cement plant</b>			
<b>Heat Energy (Non-Renewable Energy)</b>			
Coal	26,951,649.59	26,416,602.82	23,738,588.24
Fuel Oil	162,842.50	126,608.77	133,603.93
Diesel Oil	564,600.79	528,111.31	463,964.10
Natural Gas	14,416.05	15,273.41	14,664.41
Steam	62,852.56	64,641.01	69,289.14
<b>Heat Energy (Renewable Energy)</b>			
Waste Fuel	1,013,101.79	3,704,291.69	3,893,921.48
<b>Electric Energy</b>	<b>4,303,968.07</b>	<b>4,312,061.82</b>	<b>4,174,244.41</b>
<b>Total</b>	<b>33,073,431.35</b>	<b>35,167,590.83</b>	<b>32,488,275.71</b>
<b>LDPE and EVA Plants</b>			
<b>Heat Energy (Non-Renewable Energy)</b>			
Steam	80,719.00	95,765.00	101,041.67
<b>Electric Energy</b>	<b>579,277.44</b>	<b>555,627.97</b>	<b>540,172.73</b>
<b>Total</b>	<b>659,996.44</b>	<b>651,392.97</b>	<b>641,214.40</b>
<b>CRT and FCB Plants</b>			
<b>Heat Energy (Non-Renewable Energy)</b>			
Steam	276,271.89	340,302.02	258,156.50
<b>Electric Energy</b>	<b>210,407.39</b>	<b>225,183.51</b>	<b>221,515.20</b>
<b>Total</b>	<b>486,679.28</b>	<b>565,485.53</b>	<b>479,671.70</b>
<b>Total Energy Consumption</b>	<b>34,220,107.07</b>	<b>36,384,469.33</b>	<b>33,609,161.81</b>

### Note:

- Calorific Values of 1 kWh is equal to 0.00360 gigajoules, 1 kg of coal is equal to 0.0218 gigajoules, 1 litre of furnace oil is equal to 0.03977 gigajoules, 1 litre of fuel (diesel) is equal 0.03642, gigajoules, natural gas (dry) 1 cubic feet is equal to 0.0367 gigajoules, 1 kg of waste is equal to 0.00486 gigajoules based on information from The Department of Alternative Energy Development and Conservation, Ministry of Energy.
- 1 ton of Calorific Values from steam is calculated based on the amount of heat passing in or out of the system in the process of constant pressure (Enthalpy) at 25 bar of pressure steam, which is equal to 2.711073 gigajoules.

## Energy Concentration (only at Cement Plants, LDPE/EVA plants and CRT and FCB Plants) [302-3]

Unit: Megajoule per ton

Energy consumption	Types of energy used		Energy consumption		
	Electricity	Heat	2021	2022	2023
<b>Cement plant</b>					
SEC of Clinker	✓	✓	3,417.22	3,567.79	3,450.07
SEC of Cement	✓		169.46	153.30	153.34
SEC of Mortar	✓		44.63	57.28	57.10
<b>LDPE and EVA plants</b>					
SEC of LDPE & EVA Plastic Resins	✓	✓	4,355.58	4,571.26	4,743.99
SEC of EVA Emulsion and EVA Powder	✓	✓	1,086.84	1,162.06	1,081.86
<b>CRT and FCB plants</b>					
SEC of Board (FCB)/Tile (FR)/Roof Tile (FR)/Fiber Wood (FW)	✓	✓	1,402.12	1,644.78	1,468.02

Note: SEC is specific energy consumption

## Energy Reduction Initiatives [302-4]

Energy Reduction Initiatives	Operation details	Decreased energy supply
The project of using electric powered stone trucks (EV mining truck) size 60 tons instead of diesel trucks that use engines.	- The 60-ton electric-powered (EV mining truck) replaces the engine-powered quarries in transporting limestone by trucks using electricity instead of diesel fuel to reduce greenhouse gas emissions, saving the use of natural resources as well as helping to reduce the occurrence of PM 2.5 dust from the combustion of diesel engines.	105,300,682.24 MJ/year
The Prepol-SC project is the installation of additional machinery for cement kilns of production line 1, 2, 3 and 4.	- Install machinery to use waste as fuel to replace coal by up to 25% and change the thermal energy from coal to heat from waste fuel (renewable energy), which will reduce fuel costs.	8,334,038,916.51 MJ/year
Project: Increasing the efficiency of thermal energy production at Kiln 1,2,3 4 (Circulate Cooler Grate Plate).	- The original static grate plate style causes clinker residue, blocking airflow from the underside of the grate plate; therefore, a new shoe has been designed and installed, adjusting the tilt to 14 degrees. This adjustment results in more uniform movement of the clinker without residue. Additionally, air spray holes have been added to enhance heat transfer and improve circulation in the kiln, thereby reducing heat usage in clinker production.	380,580,120.00 MJ/year

## Water and Effluents Management [3-3]

Water resources are an important resource to be used in the Company's production processes and are essential for all living beings. It is important for humans for consumption as well as being a resource that provides benefits and is an important factor in driving economic and social activities, including natural ecosystems. The Company is highly aware of the need for the efficient use of water resources for the greatest value and benefit for its business operations, as well as the need to focus on the management of water and effluents to reduce the impact of water resources from the Company's activities on society and the environment and to embrace Bio-Circular-Green Economy (BCG) policy to contribute to sustainable development.

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
<ul style="list-style-type: none"> <li>- Reduce the use of water resources from the Pasak River by recycling surface water and used water and water consumption does not exceed 1.2 litres/kg. clinker in 2022, 1.04 L/kg. clinker in 2023 and 1.01 L/kg. clinker in 2024.</li> <li>- Control the amount of water from the Pasak River not exceeding 12,000,000 cubic meters/year.</li> <li>- Reduce the amount of water from the Pasak River by one million cubic meters/year in 2025 by storing rainwater in reserve ponds for use in the production process.</li> <li>- Control the quality of effluents discharged into the drainage system of the industrial zone to have a value according to the effluents standard according to the regulations of the Department of Industrial Works.</li> </ul>	<ul style="list-style-type: none"> <li>- The Company has two main sources of water: (1) Pasak River, where water is pumped to the water quality adjustment plant of cement plant, which is a water supply system, to be used in cement plants and power plants and (2) Surface water reservoir and effluence reservoirs within the plant total of 3 ponds, consisting of 180,000 cubic meter well, which reserve rainwater in the factory area. The 1,5000,000 cubic meter well, which reserve rainwater that falls in mines and neighborhoods, and a 1,000,000 cubic meter well to provide the Company's reserves as well as to prevent the impact on community's water use in nearby areas. Water from these surface ponds will be pumped together with water from the Pasak River to improve quality before being used in cement plant and power plants, and also as a reservoir for use in drought period if the amount of water from the Pasak River is not sufficient for industrial use. [303-1]</li> <li>- Pumping water from Pasak River of the Company is under control of the Irrigation Project Office, Saraburi province. The office will issue a license for the Company to pump water of not more than 1,000,000 cubic meters per month. The Company must prepare a summary report on the volume of pumping from Pasak River and send it to the Irrigation Project Office in Saraburi province on monthly basis. The Bureau will also provide staff to inspect the meter to check the volume of water pumping from Pasak River on a monthly basis. [303-1]</li> </ul>	<ul style="list-style-type: none"> <li>- The use of water resources from significant sources affects the environment (only for cement plants, LDPE and EVA plants, CRT and FCB plants). <ul style="list-style-type: none"> <li>• In 2023, 5,490,098 cubic meters of water from the Pa Sak River were brought in.</li> <li>• In 2023, water consumption at cement part was 1.0102 litres/kg.</li> <li>• Total amount of water to be used of 9,804,527 cubic meters, classified as water with a total amount of solids dissolved in water <math>\leq 1,000</math> mg / litre of 9,487,965 cubic meters whereas water and total amounts of soluble solids <math>&gt; 1,000</math> mg/l of 316,562 cubic meters, representing a decrease of 8.69% compared with the same in 2022. [303-3]</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- The Company plans to manage the water by developing additional surface water reservoirs and under the process of the excavation of a well of 1,000,000 cubic meters for use as a water reserve to prevent and reduce the impact on the use of water in the community.</li> <li>- LDPE/EVA plants in Rayong province continuously monitor water situation in the Eastern Basin, including quality, in accordance with plans and EIA measures to ensure that there is enough water to operate the business and not affect the surrounding communities.</li> </ul>

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- Since water source from Pasak River is used by many sectors, such as agriculture, industrial sector commercial sector and household, etc. Therefore, water use must be controlled and allocated by the Saraburi Irrigation Project Office to control and allocate water consumption so that all sectors are properly and fairly allocated. [303-1]</li> <li>- The Company does not drain the effluents outside the plants but have a sewage ponds to reuse effluents within the plants. [303-2]</li> <li>- LDPE/EVA plants, where an effluent from production process is drained into the effluents treatment system and water quality is analyzed to meet the benchmark before drainage via drainage trough of the plants. Water quality is tracked to meet the benchmark before draining into the sewerage of the operating zone according to the EIA standards of Rayong plant, and the results of the EIA follow-up are reported to the relevant government authority continuously. For the operating area, water quality is monitored according to the EHIA standard of the IRPC operator zone before drainage out of the plants. [303-2]</li> </ul>	<ul style="list-style-type: none"> <li>• Total sewage volume of 15,343 cubic meters, classified as water with a total amount of solids dissolved in water <math>\leq</math> 1,000 mg/litre of 15,343 cubic meters of water and total amount of soluble solids <math>&gt;</math> 1,000 mg/litre of 0 cubic meters, a 19.09% increase compared with the same in 2022. [303-4]</li> <li>• Total water consumption of 2,453,710 cubic meters represents a decrease of 7.24% compared with the same in 2022.</li> <li>• Total reusable water content of 1,362,200 cubic meters, an increase of 40.81% compared with the same in 2022 and accounted for 55.52% of total water consumption.</li> <li>- The Company has drained effluent outside the plant, where the results of the analysis of the quality of the drainage effluences in 2023 are on all under standards. [303-4]</li> </ul>	

## Volume of Water Utilization (only for Cement plant, LDPE/EVA plants, CRT plant, and FCB plant) [303-3]

Unit: Cubic meters

Water sources	Volume of water in particular areas			Water content in areas with water stress		
	2021	2022	2023	2021	2022	2023
<b>Cement plant</b>						
<b>Surface water (Pasak River and rainwater)</b>						
Water with a total volume of soluble solids ≤1,000 mg/litre	10,704,011	9,068,317	8,162,450.00	0	0	0
Water with a total volume of soluble solids >1,000 mg/litre	0	0	0	0	0	0
<b>Underground water</b>						
Water with a total volume of soluble solids ≤1,000 mg/litre	351,638	361,236	403,740	0	0	0
Water with a total volume of soluble solids >1,000 mg/litre	0	0	0	0	0	0
<b>Seawater</b>						
Water with a total volume of soluble solids ≤1,000 mg/litre	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/litre	0	0	0	0	0	0
<b>Water from the production process</b>						
Water with a total volume of soluble solids ≤1,000 mg/litre	422,394	396,322	383,461.00	0	0	0
Water with a total volume of soluble solids >1,000 mg/litre	0	0	0	0	0	0
<b>Water from external sources</b>						
Water with a total volume of soluble solids ≤1,000 mg/litre	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/litre	0	0	0	0	0	0
<b>LDPE/EVA plants</b>						
<b>Surface Water</b>						
Water with a total volume of soluble solids ≤1,000 mg/litre	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/litre	0	0	0	0	0	0
<b>Underground water</b>						
Water with a total volume of soluble solids ≤1,000 mg/litre	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/litre	0	0	0	0	0	0
<b>Seawater</b>						
Water with a total volume of soluble solids ≤1,000 mg/litre	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/litre	0	0	0	0	0	0

Water sources	Volume of water in particular areas			Water content in areas with water stress		
	2021	2022	2023	2021	2022	2023
<b>Water from the production process</b>						
Water with a total volume of soluble solids ≤1,000 mg/litre	94,757	95,141	86,809	0	0	0
Water with a total volume of soluble solids >1,000 mg/litre	0	0	0	0	0	0
<b>External water (tap water)</b>						
Water with a total volume of soluble solids ≤1,000 mg/litre	594,181	568,721	451,505	0	0	0
Water with a total volume of soluble solids >1,000 mg/litre	0	0	0	0	0	0
<b>CRT and FCB plants</b>						
<b>Surface water</b>						
Water with a total volume of soluble solids ≤1,000 mg/litre	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/litre	0	0	0	0	0	0
<b>Underground water</b>						
Water with a total volume of soluble solids ≤1,000 mg/litre	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/litre	293,297	247,744	316,562	0	0	0
<b>Seawater</b>						
Water with a total volume of soluble solids ≤1,000 mg/litre	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/litre	0	0	0	0	0	0
<b>Water from the production process</b>						
Water with a total volume of soluble solids ≤1,000 mg/litre	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/litre	0	0	0	0	0	0
<b>External water (tap water)</b>						
Water with a total volume of soluble solids ≤1,000 mg/litre	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/litre	0	0	0	0	0	0
<b>Total volume of water to be utilized</b>						
Water with a total volume of soluble solids ≤1,000 mg/l	12,166,981	10,489,737	9,487,965	0	0	0
Water with a total volume of soluble solids >1,000 mg/l	293,297	247,744	316,562	0	0	0
<b>Total Volume of Water Utilization</b>	<b>12,460,278</b>	<b>10,737,481</b>	<b>9,804,527</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Note:** No water is from areas of water stress.

**Volume of sewage water (only for Cement plant, LDPE/EVA plants, CRT plant, and FCB plants)**  
**[303-4]**

Unit: Cubic meters

Drainage of sewage water to the discharged sources.	Volume of water in the area			Water content in areas with water stress		
	2021	2022	2023	2021	2022	2023
<b>Cement plant</b>						
<b>Surface water</b>						
Water with a total volume of soluble solids ≤1,000 mg/l	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/l	0	0	0	0	0	0
<b>Underground water</b>						
Water with a total volume of soluble solids ≤1,000 mg/l	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/l	0	0	0	0	0	0
<b>Seawater</b>						
Water with a total volume of soluble solids ≤1,000 mg/l	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/l	0	0	0	0	0	0
<b>Transferred to another external organizations</b>						
Water with a total volume of soluble solids ≤1,000 mg/l	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/l	0	0	0	0	0	0
<b>LDPE plant</b>						
<b>Surface Water</b>						
Water with a total volume of soluble solids ≤1,000 mg/l	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/l	0	0	0	0	0	0
<b>Groundwater</b>						
Water with a total volume of soluble solids ≤1,000 mg/l	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/l	0	0	0	0	0	0
<b>Seawater</b>						
Water with a total volume of soluble solids ≤1,000 mg/l	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/l	0	0	0	0	0	0

Drainage of sewage water to the discharged sources.	Volume of water in the area			Water content in areas with water stress		
	2021	2022	2023	2021	2022	2023
<b>Send to another external organization</b>						
Water with a total volume of soluble solids ≤1,000 mg/l	18,328	12,884	15,343	0	0	0
Water with a total volume of soluble solids >1,000 mg/l	0	0	0	0	0	0
<b>CRT and FCB plants</b>						
<b>Surface water</b>						
Water with a total volume of soluble solids ≤1,000 mg/l	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/l	0	0	0	0	0	0
<b>Underground water</b>						
Water with a total volume of soluble solids ≤1,000 mg/l	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/l	0	0	0	0	0	0
<b>Seawater</b>						
Water with a total volume of soluble solids ≤1,000 mg/l	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/l	0	0	0	0	0	0
<b>Send to external organization</b>						
Water with a total volume of soluble solids ≤1,000 mg/l	0	0	0	0	0	0
Water with a total volume of soluble solids >1,000 mg/l	0	0	0	0	0	0
<b>Total sewage volume</b>						
Water with a total volume of soluble solids ≤1,000 mg/l	18,328	12,884	15,343	0	0	0
Water with a total volume of soluble solids >1,000 mg/l	0	0	0	0	0	0

**Note:** No water is from areas of water stress.



**Assessment of Substances as having an environmental impact, which requires water treatment [303-4]**

Substances assessed were rated as having an impact on the environment, which requires the water treatment.	Measured values		
	2021	2022	2023
<b>Cement Plant (No substances to be treated in the effluent)</b>			
pH	8.0	8.2	8.7
TDS	899	516	508
SS	19.0	22.4	12.8
BOD	5.1	3.7	<2
COD	50.3	ND	<25
Oil and Grease	ND*	ND	<3
<b>LDPE/EVA plants</b>			
pH	7.22	7.03	6.99
BOD	3.41	4.93	9.691
COD	58.63	51.98	65.98
TKN	0.93	1.11	3.92
Oil and Grease	2.57	2.72	3.30
<b>CRT and FCB plants</b>			
pH	0	0	0
TDS	0	0	0
SS	0	0	0
BOD	0	0	0
COD	0	0	0
Oil and Grease	0	0	0

**Remark:** Standard measurement rate based on the Ministry of Industry Announcement on determining standards for Controlling Factory Drainage 2017

\* ND : No Detected means unable to detect.



## Water consumption (only for Cement plant, LDPE/EVA plants, CRT plant, and FCB plants) [303-5]

Unit: Cubic meters

The use of water in material sources.	Volume of water in particular areas			Water content in areas with water stress		
	2021	2022	2023	2021	2022	2023
<b>Cement Plant</b>						
Water consumption	1,701,669	1,733,862	1,598,834	0	0	0
Water reserved in the reservoirs	2,680,000	2,680,000	2,680,000	0	0	0
Recycle Water	1,217,537	960,495	1,355,300	0	0	0
<b>LDPE/EVA Plants</b>						
Water consumption	688,938	663,549	538,314	0	0	0
Water contained in the reservoirs	0	0	0	0	0	0
Recycle water	0	0	0	0	0	0
<b>CRT and FCB Plants</b>						
Water consumption	432,330	247,744	316,562	0	0	0
Water contained in the reservoirs	260,166	290,369	261,805	0	0	0
Recycle Water	6,900	6,900	6,900	0	0	0
<b>Total Water consumption</b>	<b>2,822,937</b>	<b>2,645,155</b>	<b>2,453,710</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total volume of water contained in the reservoirs</b>	<b>2,940,166</b>	<b>2,970,369</b>	<b>2,941,805</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total volume of recycle water</b>	<b>1,224,437</b>	<b>967,395</b>	<b>1,362,200</b>	<b>0</b>	<b>0</b>	<b>0</b>

Note: No water is drawn from areas of water stress.

## TPI Polene's tap water consumption information (only for Cement plant, LDPE/EVA plants, CRT plant, and FCB plants)

Tap Water Consumption Information	2021	2022	2023
Target of tap water consumption (cubic meter)	600,000	580,000	470,000
<b>Tap water consumption (cubic meters)</b>			
- Cement Plant	0	0	0
- LDPE/EVA Plants	594,181	568,408	451,505
- CRT and FCB Plants	0	0	0
<b>Total tap water consumption</b>	<b>594,181</b>	<b>568,408</b>	<b>451,505</b>
<b>Cost of tap water consumption (Baht)</b>			
- Cement Plant	0	0	0
- LDPE/EVA Plants	11,596,729.50	11,094,156.00	9,030,100
- CRT and FCB Plants	0	0	0
<b>Total cost of tap water consumption</b>	<b>11,596,729.50</b>	<b>11,094,156.00</b>	<b>9,030,100</b>

Note: Water supply expenses are collected from the actual water supply payment amount in each year.

### Scrap and Waste Management [3-3]

The Company places an emphasis on scrap and waste management because it contributes significantly to the production process, causes a large amount of industrial waste, and without proper methods of disposal of this kind of industrial waste, can cause environmental and community impacts. Therefore, industrial waste management requires taking into account proper storage and disposal, to be in compliance with the rules and relevant legal regulations.

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
1. Utilize the greatest benefit of industrial waste $\geq$ 95% of the amount of industrial waste generated each year.	- Implement Zero Waste to Landfill policy by disposal of waste without harmful the environment with the method of co-fired together with the main fuel at the rotary kiln at temperatures above 1,800 degrees Celsius in the closed system, it is considered a modern and technological advancement and environmentally friendly compared to the conventional landfill waste that causes problems for communities and the environment. For this reason, the Company's business operations will limit and not release carcinogens such as methane, nitrogen oxide (NOx) and sulfur dioxide (SO2) and fly ash into the atmosphere, making it an effective and sustainable way to manage waste or industrial waste. [306-1] [306-2]	- Total amount of industrial waste to be exploited was 6,087.14 tons, representing 99.43% of the amount of industrial waste generated in 2023. - The quantity of safe landfill waste was 7.96 tons, accounting for 0.13% of the industrial waste generated in 2023.	Strictly comply with the Ministry of Industry Announcement on The Disposal of Sewage or Disused Materials B.E. 2548 (2005).



Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
<p>2. Operate the business under the concept of zero waste by adhering to the circular economy principle, take measures to reduce waste to zero or “Zero Waste” by utilizing waste products from consumption and utilizing the use of renewable waste products in accordance with the BCG criteria to drive business operation of TPI efficient use of resources at the highest minimize waste generated using the principle of 1A3R (Avoid, Reduce, Reuse, Recycle) without discharge of waste, wastewater, used oil, chemicals, and waste into the ground.</p>	<p>- Implement the BCG strategy to ensure the cost-effective use of raw material resources, such as the use of excess of waste from sorting process to produce fuel, through the production process to produce organic fertilizer under fertilizer projects. This increases productivity and reduces costs of using chemical fertilizers for agriculturalists and does not cause residues in the soil. The waste concrete tile scraps of the production process are used as new raw materials in the production process. The use of raw materials waste caused by recycling water filtration in the fiber cement board production process is used through stirring and wet grinding to be recycled as new raw materials. The use of dust caused by dry bending process and scrap fiber cement boards that are waste from the production process through a fine grinding process to be used as a new raw material, such as cement, pulp and sand as well as supporting renewable energy consumption and increasing energy efficiency by using waste to produce coal renewable fuels in cement plants, which reduces environmental problems, caused by the disposal of conventional waste using landfill methods, causing air pollution and Waste Gas. By- products from EVA production process is used as raw material in the production of EVA Emulsion and EVA Powder. [306-2]</p>		

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- The Company has a procedure for information collection and assessment in relation to waste as follows:-</li> <li>1. Industrial waste management must comply with the Ministry of Industry Announcement on the Disposal of Sewage or Disused Materials B.E. 2548 (2005).</li> <li>2. Exploiting industrial waste, such as renewable fuels, renewable materials, recycle or disposable must obtain permission with the Department of Industrial Works at all times and provide details of waste, disposal method, weight and waste disposal recipient.</li> <li>3. To exploit industrial waste, such as renewable fuel, as a renewable material, recycle or dispose of it, transportation documents must be issued at all times they are transported for legal evidence.</li> <li>4. Accounting for collecting data and controlling the weight of industrial waste that has been exploited, such as renewable fuels, renewable materials, recycle or disposable. [306-2]</li> </ul>		



Scrap quantity and waste management (only cement plant, LDPE/EVA plants and CRT and FCB plants) [306-3][306-4][306-5]

Unit: Tons

Scrap and Waste Management	2021	2022	2023
<b>1. Total waste content classified by type of waste</b>			
- Hazardous waste	3,207.80	3,906.77	3,091.93
- Non- hazardous waste	9,536.91	6,136.51	3,029.92
<b>Total quantity of waste</b>	<b>12,744.71</b>	<b>10,043.28</b>	<b>6,121.85</b>
<b>2. Exploitation</b>			
<b>Hazardous waste</b>			
- Substitute fuel	2,794.27	3,426.53	2,779.42
- Substitute material	312.02	267.64	184.76
- To be recycled	90.45	203.38	119.79
<b>Non-hazardous waste</b>			
- Renewable fuel	521.56	513.53	44.91
- Substitute material	5,087.73	2,886.18	78.44
- To be recycled	3,927.62	2,736.66	2,879.82
<b>Total utilized waste content</b>	<b>12,733.65</b>	<b>10,033.92</b>	<b>6,087.14</b>
<b>3. Disposal of waste</b>			
<b>Hazardous waste</b>			
- Safe landfill	11.06	9.22	7.96
Non-hazardous waste	0	0.14	26.75
<b>Total disposal waste content</b>	<b>11.06</b>	<b>9.36</b>	<b>34.71</b>



### Development of projects to mitigate key environmental impacts in 2023

The Company is committed to improving and developing various procedures to mitigate environmental impacts, representing the investment value in projects related to environmental impact mitigation in 2023, totaling Baht 1,775,600,000 as follows:-

Project	Advantage
<p>The project to bring a 60-ton EV mining trucks instead of a motor-driven stone truck.</p>	<ol style="list-style-type: none"> <li>1. Reduce greenhouse gas emissions.</li> <li>2. Save the use of natural resources.</li> <li>3. Reduce the occurrence of PM 2.5 dust from the combustion of diesel engines.</li> </ol>
<p>The Prepol-SC project is the installation of additional machinery in the cement kiln production line 1.</p>	<ol style="list-style-type: none"> <li>1. Reduce Heat Consumption, repair costs and can use waste as fuel to replace coal by up to 25%, which will reduce fuel costs.</li> <li>2. Helps reduce greenhouse gas emissions.</li> </ol>
<p>Project: Increasing the efficiency of thermal energy production at Kiln 1,2,3 4 (Circulate Cooler Grate Plate)</p>	<ol style="list-style-type: none"> <li>1. Reducing heat consumption in clinker production, resulting in saving the use of fuel from natural resources.</li> <li>2. Reducing greenhouse gas emissions.</li> </ol>

# 06 Community and Social Development



## Community and Social Development Performance in 2023

<p>Community and social contributions Baht <b>27.92</b> million</p>	<p>Injury Frequency Rate (IFR) of employees and contractors <b>0.536<sup>(1)</sup></b> and <b>0.87<sup>(1)</sup></b> per <b>1</b> million working hours</p>
<p>Number of working hours without accidents <b>22,979,705</b> hours<sup>(1)</sup> (Increased by <b>3.34%</b> compared to 2022)</p>	<p>Rates of morbidity and occupational diseases that require all records TPIPL <b>0</b> person per <b>1</b> million working hours<sup>(1)</sup></p>
<p>Average training hours for employees <b>22.49</b> hours/person/year<sup>(1)</sup></p>	<p>Overall customer satisfaction/ satisfaction with solving problems for customers <b>87.40%<sup>(1)</sup></b> and <b>94.40%<sup>(1)</sup></b></p>

Remark: (1) Only for TPI Polene Public Company Limited

### Human Resource Management [3-3]

In the face of relentless global competition and change in terms on economy, society and environment, in 2023, the Company is committed to continuously developing human resources in all dimensions, planning a human resource management strategy to prepare employees for the challenges. The Company has recruited and hired an appropriate and sufficient number of employees, adhering to the principles of transparency and fairness without discrimination, and providing equal opportunities. Additionally, the Company has developed training programs to enhance its employees' knowledge, skills, and abilities, incorporating online training and learning through the e-Learning system. This allows employees to engage in self-directed learning and review knowledge at their own pace. The Company fosters open communication channels for employees to voice their opinions and organizes ongoing internal and external activities, facilitating continuous interaction between executives and staff to foster positive labor relations. Additionally, it prioritizes data security, developing robust software systems to enhance confidence in data protection, thereby bolstering employee morale and fostering a sense of pride in contributing to the organization's sustainable growth and value delivery to external stakeholders.

The Company has recruited and selected employees with equality and fairness to ensure that quality personnel join in driving various missions, while also providing a suitable and safe working environment. Additionally, the Company offers compensation consistent with operating results and promotes the potential of employees through training and development to enhance their skills and abilities, thus offering good opportunities for continued advancement within the Company.

### Employment

The Company is aware that running a business in an environment where society, the economy, the environment, and technology are constantly changing calls for employees who are knowledgeable, competent, and high potential as well as adaptable enough to support the Company's operations and achieve success in line with its objectives. Therefore, the Company has planned manpower, recruitment process, and attracted high-potential targeted employees from both internal and external personnel who are qualified in accordance with the corporate culture to be a part in driving the Company.

The Company has improved its recruitment and selection methods to increase the personnel with knowledge, experience, and diverse abilities from outside (Mid-career) by using Psychometric Tests. These tests assess personnel potential in order to attract quality personnel to join in driving the various missions of the company, both present and future.



The Company selects employees on a fair and equitable basis, with some recruited from local communities nearby the Company. Additionally, it enhances its recruitment methods by utilizing Psychometric Tests, potential assessment forms, to screen employees who possess appropriate qualifications consistent with their work and are committed to driving the Company's mission.

## Labor Management and Labor Relation

The Company has policies and practices of the Company that focus on treating employees equally and fairly to all employees in terms of compensation, training, safety and occupational health, and further growth in work including allowing employees to express their opinions and participate in activities. Organize a survey of employee satisfaction and engagement with the organization, with the results obtained from the survey to improve, develop and promote employees in various fields, which will help employees feel satisfied and attached to the organization.

The Company encourages its employees to participate in or propose ideas for the organization's sustainability operations and provides measures for reporting complaints and whistleblowing. This aims to encourage stakeholders to participate in the corporate governance process, helping the Board of Directors effectively monitor the Company's interests and address various issues promptly, which is one of the corporate governance duties. In instances where stakeholders have questions or suspect misconduct, violations, or non-compliance with laws, regulations, or the Company's Code of Conduct, the Company has established various reporting channels and measures to facilitate whistleblowing and promote good practices.

The Company believes that engaging with stakeholders is a crucial element in establishing the foundation for becoming a sustainable organization. This process enables the Company to learn from stakeholders' experiences, improve operations, and effectively manage risks, including employing appropriate methods to mitigate risks and potential side effects. The Company has continually analyzed and reviewed its stakeholder engagement process to comprehensively identify all stakeholder groups. Additionally, it has consistently emphasized the importance of stakeholder engagement through various activities and communication channels, including meetings, open discussions, opinion surveys, field visits, telephone calls, emails, and more.

In addition, the Company has established a savings cooperative for employees to promote savings and create financial security, with a total of 4,500 employees as members.

## Training and Education

The Company recognizes that training, education, and skill-building for employees are crucial strategies for enhancing organizational quality, aiming to ensure that personnel possess the requisite knowledge, experience, and proficiency to efficiently execute their duties. To this end, the Company is committed to continuously enhancing employees' skills and knowledge. Technology is employed to support employee learning through online training and e-learning systems, giving them the opportunity to acquire comprehensive knowledge and review learning materials by managing their schedules independently. Additionally, technical management courses essential for job roles, such as production, maintenance, safety, and occupational health, are made available.

The Company has prioritized the training and development of its employees to enhance their knowledge, skills, and experience, while also continuously promoting ethics and integrity in their work. For instance, new employees are taken to participate in a two-day, one-night Dhamma practice at Wat Phra Ram 9 Kanchanaphisek, aimed at instilling values of honesty and integrity, encouraging them to be good individuals for themselves and for society. Additionally, the Company has established development courses in compliance with employees at all levels. These courses provide support for employees who are starting, offering a mentorship system that includes guidance, teaching, and support for their first four months. Moreover, specialized training courses relevant to their job roles are also offered. Training courses have been developed to support growth in the career paths of employees at all levels (Career Development), as well as new technology knowledge courses that have evolved, including unity, teamwork, bonding, encouragement, and readiness to work. These initiatives aim to enable employees to successfully perform assigned tasks with efficiency and take pride in their work, thereby supporting sustainable growth for employees in 2023.

**Code of Conduct [2-23]**

 <https://www.tpipolene.co.th/th/aboutus/code-of-conduct-th>

**Human Rights Policy [2-23]**

 <https://www.tpipolene.co.th/th/investment/social-responsibility-th>

**Employee Manual [2-23]**

 <https://www.tpipolene.co.th/th/aboutus/employeehandbook>

**Privacy Policy [2-23]**

 <https://www.tpipolene.co.th/th/aboutus/pdpda>

**Corporate Social Responsibility [2-23]**

 <https://www.tpipolene.co.th/th/investment/social-responsibility-th>

**Anti-corruption policy [2-23]**

 <https://www.tpipolene.co.th/th/aboutus/corruption-policy>



Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
<ul style="list-style-type: none"> <li>- Maintaining the level of manpower so that the turnover rate of employees is at an appropriate level not exceeding 3.50%.</li> <li>- Hiring employees with compensation and wage adjustments above the average in the labor market.</li> <li>- The rate of employment of personnel in the factory area each year is more than 50 percent.</li> <li>- Senior executives have visited the area to visit executives and employees every month.</li> <li>- Maintaining employee satisfaction and organizational engagement was at a good level with an average score of at least 75% or higher out of a full score of 100 in all opinion points.</li> <li>- The average number of training hours for all courses is not less than 20 hours per person per year.</li> </ul>	<ul style="list-style-type: none"> <li>- There is an appropriate manpower plan and recruiting employees to meet the needs and have a sufficient number to perform the job.</li> <li>- In order to introduce and publicize job openings in the Company's business group, conduct Proactive recruitment by meeting applicants from universities with desired fields of study. In addition, introduce products and various working techniques from company experts, such as techniques in agricultural areas, construction engineering techniques, etc., to inspire and attract employees.</li> <li>- Use technology to reach target groups, convenient, in line with the way of working in the New Normal era, which focuses on using online media as a tool for recruitment and job interviews. Participating in the Virtual Job Fair 2022 project, which is a virtual job meeting event with leading educational institutions</li> <li>- Maintaining the level of manpower to keep the turnover rate of employees (Turnover Rat) at an appropriate level, with welfare provision in line with the current cost of living, such as housing benefits for employees working in factories in the provinces to retain and motivate employees.</li> <li>- Promoting diversity in employment, promoting equal employment, non-discrimination, setting employment rates in factory areas, providing employment opportunities for people with disabilities to create social sustainability, hiring people with potential disabilities to work in suitable positions. Currently, there are 26 people with disabilities currently employed under Section 23 of the Persons with Disabilities Empowerment Act B.E. 2550.</li> </ul>	<ul style="list-style-type: none"> <li>- Maintaining the level of manpower to keep the turnover rate of employees at 2.67% (an appropriate level not exceeding 3.5).</li> <li>- The rate of employment of personnel in the factory area each year is more than 87.51%.</li> <li>- Employee satisfaction survey results in work have an average score of 81.65 out of 100 in all opinion points (or 81.65%).</li> <li>- Survey of employee engagement towards the Company with an average score of 91.42 out of 100 in all opinion points with a total average of 84.17.</li> <li>- In 2023, the average annual salary adjustment result for most employees is at level B.</li> <li>- The Company has improved the form of training development through electronic systems (e-Learning) so that employees can learn the knowledge of each department from orientation to various production processes by making teaching materials in the form of One Point Lesson (OPL) and videos for convenience and understanding in learning.</li> <li>- The average number of training hours for all courses is 22.49 hours/person/year. [404-1]</li> <li>- Satisfaction of the training evaluation was 90% (measured by the evaluation form after the training was completed, scored 4.5 out of a full score of 5).</li> <li>- Statistics of new employees of the organization at 11.11% and employees leaving the organization at 6.10%. [401-1]</li> </ul>	<ul style="list-style-type: none"> <li>- The rate of employment of personnel in the factory area each year is more than 65%.</li> <li>- Organizing training/development to prepare a development plan to increase the potential of employees to support the replacement of employees at the supervisor level and above.</li> <li>- The level of employee satisfaction and engagement with the organization is very good.</li> <li>- The Company will continue to improve and develop the training development model through electronic systems (e-Learning) so that employees can learn the knowledge of each department from orientation to various production processes by making teaching materials in the form of One Point Lesson (OPL) and videos for convenience and understanding in learning.</li> </ul>

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- Provision of a potential assessment test (Psychometric Test) in important job positions to support the decision of the committee in job interviews to obtain qualified employees that are in line with the organizational culture.</li> <li>- Hiring employees with compensation and wage adjustments above the average in the labor market.</li> <li>- The Company evaluates the performance of every employee according to their position level every 4 months. This means evaluations occur three times a year, in April, August, and December. The results of such assessments will be taken into account for determining knowledge and ability to perform jobs, planning training to develop work potential, and use for considering annual salary adjustments, as well as position promotions.</li> <li>- An annual salary adjustment is conducted for employees once a year, based on the month in which the employee begins working with the Company, continuing until they have completed one year or more. The criteria for considering the annual salary adjustment depend on two components of individual employee performance: the Performance score and the Attendance score, weighted at a ratio of 80:20.</li> <li>- Establish Code of Conduct policy of TPI Polene, which covers the practice of each other with respect to human rights principles, taking into account benefits and equality, discrimination, fair labor, security, support and respect for the political rights of employees, etc., and provide monitoring, evaluation and review systems for all employees to adhere to.</li> </ul>	<ul style="list-style-type: none"> <li>- The return to work statistics and the employee retention rate after taking parental leave was 100% and 76.47%, respectively.</li> <li>- Transfer of employees The minimum number of days notified to employees is at least 15-30 days prior to the transfer of work, as specified in the employment agreement.</li> <li>- The Company has implemented Total Preventive Maintenance activities to enhance productivity. A Small Group Activity comprising relevant personnel has been established to brainstorm ideas and propose guidelines for improving machinery and work procedures. The aim is to minimize losses and increase productivity by 2023, which could result in significant cost reduction, potentially saving Baht 54,536,658.28.</li> </ul>	

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- Establish regulations and treat work labors fairly with no irrelevant employment and does not support for the use of child labor under the age of 18 and informal workers who are not protected by law as well as providing or never encouraging child labor to perform tasks that are harmful to hygiene or in environments that are harmful to hygiene and safety, or any tasks that are prohibited by law.</li> <li>- Senior executives have visited the area to visit executives and employees every month.</li> <li>- The Company has conducted a survey to determine how satisfied and committed its employees towards the Company. Based on the survey's findings, the Company will take care of, develop, and advance its employees in a variety of ways, which will help them feel satisfied and committed to the Company and make them happy and devoted. A very high degree of employee satisfaction and organizational dedication is the outcome of their reaching their full potential.</li> <li>- The Company has also established a savings cooperative for employees to promote their savings and create their financial security. This cooperative is shared with employees of TPI Poline and its affiliated companies, totaling 5,029 members.</li> <li>- An independent and fair committee has been established in the investigation in case of non-compliance with the policy and established regulations whereby the accused have the right to resolve the allegations for them.</li> </ul>		

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- The Company engages in activities aimed at fostering good relationships between executives and employees. For example, during festivals, there are events such as a blessing event on New Year's Eve and a water pouring ceremony on the occasion of the Songkran Festival, both intended to seek blessings from executives. Collaborative efforts include donating clothes, leftover items, and medicine to the underprivileged. Additionally, executives and employees participate in blood donation organized by the Thai Red Cross every four months, with 150-200 employees donating each time. In 2023, the total amount of blood donated reached 296,100 CC, etc.</li> <li>- Preparing and increasing the potential of employees to be able to immediately replace those at the supervisor level and above, this will result in the employees' willingness to work with dedication.</li> <li>- A welfare committee is formed, made up of employer and employee representatives (Election of employees) as required by law to take care of issues related to employment conditions, where the employees supervised under the agreement concluded at the meeting make up 100% of the total number of employees [ 2-30].</li> <li>- The Company has listened to opinions and suggestions from employees, using them as guidelines for improvement and good management. Meetings will be held every three months. In 2023, the Company received recommendations for improvements and has already taken action. For example, improvements include upgrading the shuttle service to an air-conditioned bus, improving and expanding the parking lot for cars or motorcycles, renovating residences, expanding and renovating restrooms, and installing lighting, etc.</li> </ul>		

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- An independent and fair committee has been established in the investigation in case of non-compliance with the policy and established regulations whereby the accused have the right to resolve the allegations for them.</li> <li>- Training on human rights processes or policies such as the Personal Data Protection Act (Practical) and the Personal Data Protection Act (Processes and Practices) and its process and guidelines, as well as the Company's Code of Conduct. Additionally, this policy undergoes annual review through the Company's group Line channel. The training comprises two video clips with a knowledge test before and after, aimed at ensuring that employees possess appropriate knowledge, understanding, and compliance consistent with sustainable business operations.</li> <li>- Formulate personnel development and training policies, as well as treating employees by striving to develop the organization into a learning organization, enhancing culture and work atmosphere, promoting teamwork, providing fair returns, retaining safety and maintaining the work environment, as well as focusing on the development, transfer of knowledge, and capability of employee, listen to comments and suggestions from employees at all levels equally and equitably.</li> <li>- An annual survey is conducted to assess training needs, and corresponding training sessions are planned accordingly. This includes the integration of a satisfaction survey to evaluate the effectiveness of the training outcomes. Evaluation of the training encompasses several aspects, including the achievement of objectives, instructor performance, and the delivery of training sessions.</li> </ul>		

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- The Company has enhanced the training development model by implementing an electronic system (E-LEARNING), allowing employees to acquire diverse knowledge pertaining to each department, ranging from orientation to various production processes. Teaching materials are prepared in the form of One Point Lesson (OPL) and videos for ease of learning and comprehension. These resources are accessible from any location.</li> <li>- The Company offers training courses tailored to specific job positions, career development programs to support employees at all levels, courses on emerging technologies to enhance efficiency in task performance, and initiatives to foster pride in their work while supporting sustainable growth for employees.</li> </ul>		

## Summary of Employee Satisfaction and Engagement Survey

No.	Opinion Point	Average	Percent	Level of Satisfaction/Engagement
<b>Opinions on Job Satisfaction</b>				
1.	The Management	4.12	82.38	Very satisfied
2.	The Commander	4.02	80.43	Very satisfied
3.	The Process	4.27	85.36	Highest Satisfaction
4.	Working Environment	3.93	78.95	Very satisfied
5.	Personnel Development	4.05	81.10	Very satisfied
6.	Welfare and Compensation	4.11	82.19	Very satisfied
<b>Average Score on Job Satisfaction</b>		<b>4.08</b>	<b>81.65</b>	<b>Very satisfied</b>
<b>Opinions on Employee Engagement</b>				
1.	Operations to Achieve the Company's Objectives	4.51	90.19	Most satisfied
2.	Pride and Loyalty to the Company	4.63	92.65	Most satisfied
<b>Average Score on Employee Engagement</b>		<b>4.57</b>	<b>91.42</b>	<b>Most satisfied</b>
<b>Total Average Score</b>		<b>4.21</b>	<b>84.17</b>	<b>Most satisfied</b>

## Employee Satisfaction Development Project

As part of the satisfaction survey conducted by the Company, various suggestions were identified, highlighting the need for improvements or additional actions to enhance employee satisfaction. In 2023, several activities were implemented, including: The complete installation of anti-pigeon netting at three housing buildings (H1, H3, H4) and Apartments A and B for Home & Hill employees; Renovating and expanding restrooms in CCB Line 1 building and the TQM building; Constructing new restrooms for external laborers; Painting rough surfaces on the bridge-neck and drawing lane lines for ten-wheel trucks on the flyover crossing to the plaza side and entering TPI cement plant to prevent slippery road surfaces; Drawing traffic lanes on the bridge over Mittraphap Road; Adding lighting to the motorcycle parking lot next to the pond; Resolving flooding issues in the clubhouse parking lot during rain by digging drainage ditches, attributed to motorway construction work flowing into the parking lot; and Improving the landscape surrounding the Home & Hill pond to create a more livable residence and an attractive community.



# Employee Turnover Rate [401-1]

Information as of December 31, 2023

Personnel Composition Criteria		New employees of the organization						Employees leave the organization					
		2021		2022		2021		2021		2022		2023	
		Number (People)	Percent	Number (People)	Percent	Number (People)	Percent	Number (People)	Percent	Number (People)	Percent	Number (People)	Percent
<b>Total</b>		479	6.83%	803	11.11%	769	10.84%	461	6.57%	559	7.74%	477	6.72%
Gender	Male	367	5.23%	650	80.95%	653	9.20%	382	5.44%	453	6.27%	381	5.37%
	Female	112	1.60%	153	8.99%	116	1.63%	79	1.13%	106	1.47%	96	1.35%
Age Range	Age < 30 years	313	4.46%	521	7.21%	488	6.88%	182	2.59%	226	3.13%	150	2.11%
	Age 30 - 50 years	164	2.34%	276	3.82%	272	3.83%	216	3.08%	250	3.46%	216	3.04%
	Age > 50 years	2	0.03%	6	0.08%	9	0.13%	63	0.90%	83	1.15%	111	1.56%
Work Area	Head office	173	2.47%	181	2.50%	169	2.38%	164	2.34%	185	2.56%	192	2.71%
	Saraburi Cement Plant	235	3.35%	458	6.34%	250	3.52%	221	3.15%	293	4.05%	218	3.07%
	Concrete Tile and FCB Plant, Rayong Province	52	0.74%	145	2.01%	329	4.64%	51	0.73%	57	0.79%	51	0.72%
	LDPE Plant, Rayong Province	19	0.27%	19	0.26%	21	0.30%	25	0.36%	24	0.33%	16	0.23%

**Note:** The percentages shown in the table are calculated in relation to the total number of employees in each year (Total number of employees in 2021, 2022, and 2023 are 7,016 persons, 7,226 persons and 7,096 persons respectively) In 2023, In 2023, the employees were divided into 6,027 males and 1,069 females.



## Benefits Allocated to Employees [401-2]

Rights / Welfare / Benefits	Full Time	Part Time
Life insurance	✓	✓
Accident insurance	✓	-
Medical expenses (Self)	✓	✓
Medical expenses (father, mother, spouse, child)	✓	✓
Medical treatment in a corporate medical facility	✓	✓
Entitlement to paternity leave	✓	✓
Child tuition	✓	✓
Maternity allowance	✓	-
Rights to use the organization's nursery and child development	✓	-
Severance pay or retirement	✓	✓
Stock ownership	✓	-
Payment of contributions to the provident fund	✓	-
Professional fee increase	✓	-
Ordination allowance	✓	-
Loan	✓	-
Funeral Cremation	✓	✓
Employee shuttle service	✓	✓
Special area (fixed house rent)	✓	-
Overtime pay and holiday pay	✓	-
Expenses for traveling to work in the country and abroad	✓	✓



## Turnover rate statistics and employee retention rates after taking parental leave [401-3]

Case of Leave	Number of Employees (Person)		
	2021	2022	2023
Number of employees who are eligible for parental leave	1,058	1,100	1,069
Number of employees taking parental leave	32	26	40
Number of employees returning after the end of the parental leave period	29	25	40
Number of employees who returned after the end of the parental leave period and continued to work for the next 12 months	23	29	25
Return to work rate <sup>(1)</sup> who returned to work after the leave period ended (%)	90.63	96.15	100.00
Retention rate <sup>(1)</sup> who returned to work after the leave period ended (%)	100.00	100.00	100.00

### Note

<sup>(1)</sup> Return to Work Rate = (Number of employees returning to work after the end of the parental leave period/Number of employees who have taken parental leave) x 100

<sup>(2)</sup> Retention Rate = (Number of employees returning to work after the end of the parental leave period and continuing to work for the next 12 months/Number of employees returning to work after the end of the parental leave period in the previous reporting period) x 100

## Number of training hours [404-1]

Unit : Hour/Person/Year

Employee Training Information	2021	2022	2023
Average number of training hours	22.62	23.72	22.49
<b>Average number of training hours classified by gender</b>			
Male	25.06	24.40	23.47
Female	8.78	8.88	16.99
<b>Average number of training hours classified by employee group</b>			
Top Executive	-	45.75	66.75
Executive Level (AVP/VP/SVP)	6.02	10.19	5.79
Manage level (ASST.DEPT.MGR. — DEPT.MGR.)	5.93	5.19	5.99
Command level (ASST.SUP. — SECTION MGR.)	14.48	16.34	15.42
Operating level (OFFICER)	25.08	25.56	24.23

**Remark:** The Company's employees do not include employees in subsidiary companies.

## Human Resource Development Program total 840 courses as follows: - [404-2]

Course Type*	Number of courses	Objective
1. Business Administration	50	Boost leadership skills, such as driving human resource within the organization to accomplish their task as targeted.
2. Technical	525	Focus on improving skills, employee efficiency with learning, especially professionals, to encourage employees to show their full potential.
3. Technology & Engineering	18	In order to adapt the organization to keep pace with the digital transformation in technology advancement and engineering innovation.
4. Occupational Health and Safety and Environment	128	Organize safety work to reduce the risk of illness, injury or death and care for the quality of lives of personnel within the organization.
5. Environmental Management	42	Environmental management resulting from the use of assets, impacts on employees and society, so that appropriate management concepts can be proposed.
6. Quality System	77	Quality control and assurance of the department by implementing quality management policies to build confidence and to confirm international standards.

**Remark \*** The above-mentioned courses include hard skill courses, which required specialized skills for the profession, and soft skill courses, which requires performance skills that allow individuals to work and communicate effectively with others.

## Average number of employee training hours

Number of training hours *	2021	2022	2023
The target is 20 hours per person per year.	25.46	24.47	22.49
Training expenses for companies and subsidiaries**	3,570,689.34	2,739,308.95	4,157,011.13

**Remark:** \* Training in the company and subsidiaries mainly using instructors from within the organization.

The Company evaluates the performance of employees three times a year in April, August, and December, in order for employees to develop and improve their operational performance regularly. All employees at all levels (100%) receive performance evaluations from supervisors according to the Performance Assessment Form of the Company. [404-3]

## Safety, Occupational Health and Environment in the Workplace [3-3]

The Company realizes the importance of an occupational health and safety management system as part of its business operations with a commitment to improving and preventing all existing hazards, including injuries and illnesses, stemming from work for employees, suppliers, contractors and all stakeholders who are involved in the operation on all operating areas of the Company.

The Company has a strong commitment to adhering to and strictly complying with occupational safety and health requirements as well as assessing work risks in all business processes, and continuously cultivates and raises awareness of the safety of the work of employees and those involved to create a culture of work safety, and to prevent and minimize potential losses to life, property, as well as potential impact on surrounding communities and the environment.

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
<ul style="list-style-type: none"> <li>- A Zero Accident Organization</li> <li>1. The number of fatalities at work is zero.</li> <li>2. The rate of high-impact work-related injuries is zero.</li> <li>3. The morbidity rate from occupational diseases is zero.</li> </ul>	<ul style="list-style-type: none"> <li>- Establish occupational health, safety and environmental policies to safeguard occupational safety and work environment for workers, contractors and subcontractors, including communities and stakeholders involved in the Company's operational activities, as well as establish operational safety manuals and supervise operations to comply with the manuals and procedures to ensure safety in the workplace. Accident and incident investigations are reported to determine solutions and be aware of preventing repeat accidents. Duties and responsibilities of employees are defined at all levels of safety work, where employees can refuse jobs at risk of accidents and illnesses and must reduce risk before performing in accordance with the requirements of the ISO45001:2018 Occupational Safety and Health System Standard. [403-1] [403-2] [403-7]</li> <li>- Establish the Occupational Safety and Work Environment Committee to achieve collaboration between administrative representatives and employee representatives, consisting of representatives from employees at operating level at least 50% of the entire Committee, the representatives of the operating level are elected from each department, which requires at least one meeting per month as a platform to receive information from each department and communication through channels such as E-mail and public relations boards and follow up the progress of operations and future operational plans, etc. [403-4]</li> <li>- Provide services and support workers to access medical services such as primary medical treatment and emergency treatment at the Company's medical rooms, providing regular nurses and doctors every business day to employees and contractors with free of charge, and provide influenza vaccinations and COVID-19 vaccines to the Company's employees. The Company also focuses on the health of individuals around the plant, with mobile medical units being issued for public health check-ups. [403-6]</li> </ul>	<ul style="list-style-type: none"> <li>- The work-related death rate was zero.</li> <li>- The rate of high-impact work-related injuries was zero.</li> <li>- Injury Frequency Rate (IFR) was 0.536, which decreased by 0.117 compared with the same in 2022.</li> <li>- Rate of illness from high impact work was zero. No lost time injury hours, an increase was 22,979,705 hrs., increased of 741,950 hours or an increase of 3.34% compared with the same in 2022. There is no level 3 incident.</li> </ul>	<ul style="list-style-type: none"> <li>- Review knowledge about safety to employees and contractors, who perform their work in the Company to raise awareness of the prevention of accidents and occupational diseases.</li> <li>- Strictly comply with safety laws and requirements of ISO 45001 - 2018 occupational safety system standards.</li> </ul>

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- Provide occupational safety and health training for all employees and contractors before starting to work with total of 8 training courses: (1) Security Occupational health and work environment for general staff and new employees (2) Safety for driving forklifts for operating work, (3) Reviewing work safety in confined space (4) Initial firefighting ,(5) Occupational Safety, Health and Work Environment Committee (OECD) (6) Work Safety Officers at Executive Level (7), Work Safety Officers at Supervisor Level, and (8) Review knowledge for crane supervisor, signaler and controllers of crane (stationary). (9) Mobile crane operator; (10) Occupational and environmental diseases; (11) Performance of duties as a crane operator, those giving signals to crane operators, those binding materials or those controlling the use of fixed crane; and (12) basic resuscitation (CPR) and use of a cardiac pacemaker. [403-5]</li> <li>- An emergency response plan is established, along with an annual rehearsal of the plan. This includes preparedness for events such as fires, chemical spills, explosions, and radioactive leaks. Additionally, training sessions covering advanced firefighting, chemical spill containment, and emergency situation management are provided. [403-5]</li> <li>- The Company has implemented Total Preventive Maintenance activities to enhance productivity. A Small Group Activity comprising relevant personnel has been established to brainstorm ideas and propose guidelines for improving machinery and work procedures. The aim is to minimize losses and increase productivity by 2023, which could result in significant cost reduction, potentially saving Baht 54,536,658.28. [403-5]</li> </ul>		

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- Provide emergency response plan as well as performing annual rehearsal of emergency response plans, such as in the event of a fire, chemical leakage, explosives, radioactivity leaks, and training course of advanced Firefighting, Chemical leak stoppage, emergency management training, etc. [403-5]</li> <li>- Hazards are indicated as well as safety risk assessments in compliance with the Occupational Health and Safety Management System (ISO 45001:2018), the risk-owned workers analyze their own characteristics of the work operation and others involved, such as third parties and contractors in all processes, to identify potential hazards from operations and to assess potential opportunities and impacts to prioritize risk management, starting from Elimination, Substitution, Engineering Control, Management Control, use of personal protective equipment (PPE) to acceptable risky tasks, as well as ensure safety supervision and monitor risk management operations in accordance with plans and goals. [403-1] [403-2]</li> <li>- Preparation for work response by providing personal safety protective equipment for employees to use in operations and other safety protective equipment as required by law to prevent injuries and work accidents, which covers emergency response preparation, as well as business continuity management. [403-4]</li> <li>- The working environment is controlled by wearing personal safety protective equipment to prevent injury and accidents from work. The work environment is regularly measured and evaluated as required by law, such as air quality measurement, volume monitoring and light intensity Measurement, etc. [403-2] [403-4]</li> </ul>		

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- Provide nursery room with nurses and full-time doctors to give advice on illness. First aid service from injuries is provided to employees and contractors, as well as monitoring health risks of employees, health check-ups are provided from the start of work, Health check-ups based on risk factors such as hearing fitness test and pulmonary checkup, Electrocardiogram Examination (EKG), in case of working in a place of confined air, etc., annual health check-ups, both general health check-ups and health check-ups based on occupational health risk factors, are provided with the Company's occupational medicine doctors and occupational health professionals, jointly determining the list of health check-ups of workers based on factors inside and outside the workplace. If the employees have abnormal health check-up results, they must visit the doctor and receive ongoing healthcare advice, as well as providing medical benefits (OPD) for employees, parents, spouses and legal offspring. [403-3]</li> <li>- Supervise the performance of workers, outsiders and stakeholders in the operating area to strictly comply with the rules, safety regulations and regulations. [403-1]</li> <li>- Basic knowledge training is provided to contractors' or subcontractors' workers before they commence work. This training covers safety and occupational health for contractors/subcontractors. In 2023, a total of 3,302 workers underwent training before engaging in the work.</li> <li>- Communicate safety, occupational health and work environment policies, cultivate awareness and create a safe work culture, develop knowledge skills and organize activities in the areas of continuous promotion of health, safety, occupational health and work environments. [403-4]</li> </ul>		

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- The Company has established criteria for determining training courses in occupational health, safety, fire prevention, and suppression that are necessary for employees and contractors, appropriate for the job position, type of work to be performed, or risky activities. These courses aim to develop knowledge, abilities, and understanding of potential dangers that may cause accidents, as well as how to prevent and control these dangers while performing duties and the measures for performing jobs assigned with safety. Evaluation is scheduled to be carried out immediately, and training history will be stored.</li> </ul>		

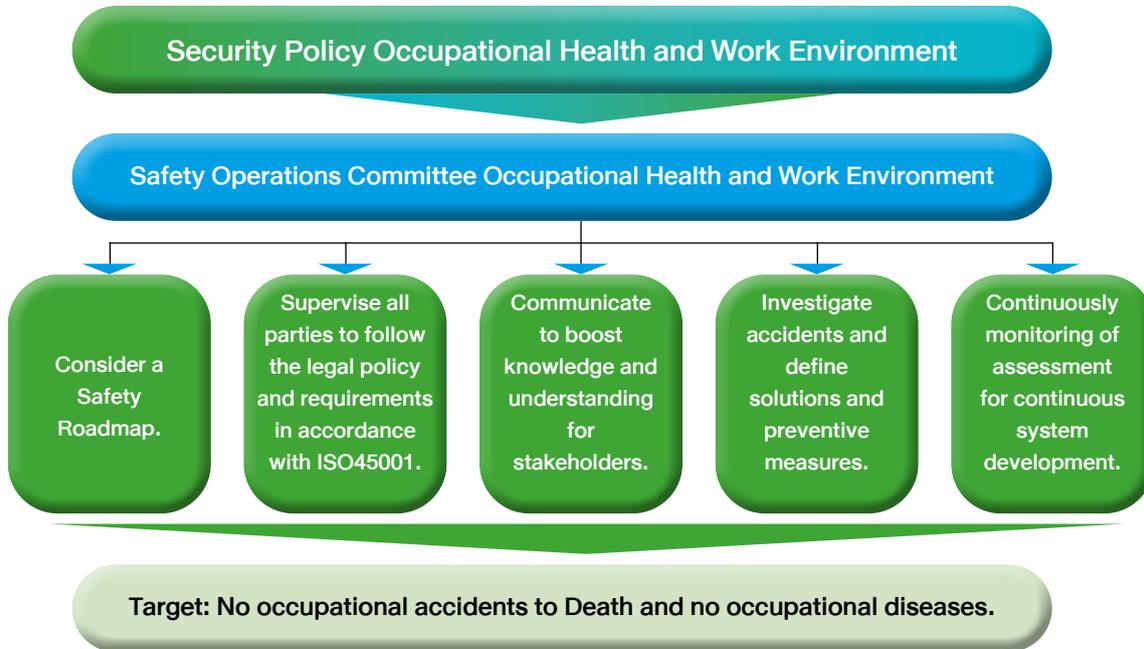
### Promoting and Caring for the Health of Employees

Because employees are the key drivers of business success, prioritizing their health is paramount. This not only facilitates the progression of the business but also ensures that employee well-being is not overlooked. Consequently, the Company has implemented various initiatives to safeguard employee health. To address this concern, the Company has introduced an annual health check-up project for all employees. Additionally, employees working in hazardous environments, such as those involving exposure to chemicals, undergo specialized examinations. The Company provides a nurse's room and factory nurses to further support employee health and hygiene. Another project aims to create a suitable working environment, fostering a "Healthy" work culture through preventive healthcare programs. These programs, including vaccinations against influenza, COVID-19, tetanus, hepatitis B, and pneumonia, are facilitated through medical welfare for both IPD and OPD provided by health insurance companies. These initiatives are designed to reduce absenteeism and turnover rates while enhancing work efficiency and productivity, thus fostering a happier organization. Moreover, promoting employee health positively impacts the Company's overall performance. Ultimately, prioritizing health across all levels of the organization ensures long-term success for both employees and the Company.



## Management Structure of Safety, Occupational Health, and Environmental

The Company has set up a Safety Operations Committee for safeguard of Occupational Health and Environment, which consists of the management team and professional safety officers of the Company, to perform their duties and responsibilities for management of Safety, Occupational health, and Work Environment in compliance with the requirements of the Occupational Health and Safety Management System (ISO 45001:2018) and safety laws. The Company's objective is no occupational accidents and no occupational illnesses or occupational illnesses from work.



## Risk Assessment and Risk Management Procedures

### Safety, occupational health and work environment [403-2]



**Employee Training on Occupational Health and Safety** <sup>(403-5)</sup>

The Company has implemented a training course on occupational health and safety aimed at preventing and suppressing fires, which is mandatory for all employees and contractors. Tailored to their respective roles, tasks, or involvement in risky activities, this course aims to enhance their knowledge, skills, and comprehension of potential hazards and accident causes. Participants will learn techniques for hazard protection and control while executing their assigned duties safely, thereby minimizing the severity of impacts on individuals and property. Additionally, the training equips each participant with the ability to effectively manage emergencies. The course is designed to undergo evaluation and documentation, with records stored in the training history archives.

Course Topics	Number of participants (persons)		
	contractors	employees	total
Safety Occupational health and working environment for general and new employees	877	258	1,135
Occupational and environmental diseases	877	258	1,135
Primary Fire Extinguishing	877	258	1,135
Safety at work, forklift driving	45	172	217
Safety Board Vocational Education and Work Environment (Kor Por Or.)	0	25	25
Occupational Safety Officer, Executive Level	0	23	23
Occupational Safety Officer Level Supervisor	0	56	56
Review of crane operators, signal giver to crane operator Material binder or crane operator (stationary)	0	293	293
Mobile crane operator	0	40	40
Performing crane operator duties Signal giver to crane operator Material binder or spinning rig operator (stationary)	0	27	27
Primary resuscitation (CPR) and pacemaker use	0	21	21

- With an Injury Frequency Rate (IFR) equal to 0.536 cases per million working hours, decreasing by 0.117 compared with the same in 2022.
- Having 22,979,705 working hours without a Lost Time Injury (LTI), representing an increase of 741,950 hours or 3.34% with the same in 2022.
- Illness and occupational disease rates (for employees and contractors) are at 0 persons.
- There is no level 3 incident.

## Comprehensive workforce under occupational health and safety management system [403-8]

	Number (persons)	%
<b>Employees and workers in the establishments controlled or supervised by the organization</b>		
employees	6,851	100
workers	952	100
<b>Employees and workers in the establishments controlled or supervised by the organization (and audited by the organization)</b>		
employees	1,985	28.97
workers	240	25.21
<b>Employees and workers in the establishments controlled or supervised by the organization (and audited by external organizations)</b>		
employees	401	5.85
workers	49	5.14

**Remarks:** Employee refers to the Company's personnel (not including those in subsidiary companies).

Worker refers to personnel of other establishments, controlled or supervised by the Company to be in compliance with ISO 45001:2018 standards.



## Job-related injuries [403-9]

Statistical data on deaths and injuries of employees and employees who are not considered employees but jobs and/or establishments are regulated by the organization.	Injury Type (V)										Number of working hours	Number (persons)	Mortality/injury rate (calculated based on 200,000 working hours)	
	Back and spine Injuries	Bone fractures	Burns	Ear Injuries (including tinnitus)	Facial Injuries (eye, nose, and jaw)	Loss of digits and limbs	Repetitive stress Injuries	Sprains, strains, and tears (soft tissue Injuries)	Toxic exposure	Traumatic brain Injuries (TBI)				
<b>Deaths and injuries of employees</b>														
Death from work-related injuries.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
High-impact work-related injuries (excluding deaths).	0	0	0	0	0	0	0	0	0	0	16,782,566.50	0	0	0
Work-related injuries, which can be recorded.	0	0	0	0	1	0	0	3	0	0		9		0.536
<b>Deaths and injuries of employees who are not employees but their work and/or establishments are regulated by the organization</b>														
Death from work-related injuries.	0	0	0	0	0	0	0	0	0	0		0		0
High-impact work-related injuries (excluding deaths).	0	0	0	0	0	0	0	0	0	0	3,446,918.50	0		0
Job-related injuries, which can be recorded.	0	1	0	0	0	0	0	0	0	0		3		0.870

**Remark:** Injuries related to high-impact tasks means work injuries that result in death or injury, caused by workers being unable to or unable to perform or unpredictable to fully recover until their health condition prior to injury within 6 months. Work-related injuries, which can be recorded means, work injury, which results in any of the following cases: death, case of work stoppage, work restriction or transfer to another job, medical care in addition to first aid, loss of consciousness, serious injury diagnosed by a licensed doctor or licensed medical professionals.

## Health Problems from Related Work [403-10]

	Types of health problems that arise (number)			Number (persons)	Rate of death (percent)
	Stress, depression or anxiety	Musculoskeletal disorders	Occupational lung disease		
<b>Deaths and health problems related to the work of employees</b>					
Death from work-related health problems	0	0	0	0	0
Work-related health problems (number)	0	0	0	0	0
<b>Deaths and health problems related to the work of non-employees, but their work and/or establishments are regulated by the organization</b>					
Death from work-related health problems	0	0	0	0	0
Work-related health problems (number)	0	0	0	0	0

**Note:** A recordable work-related health issue is defined as poor health resulting in any of the following: death, absence from work, work restriction or transfer, non-medical treatment from first aid, loss of consciousness, serious injury diagnosed by a physician or licensed medical practitioner.

## Measurements for the transition of the COVID-19 pandemic

In 2023, it was anticipated that the epidemic situation would subside. Thailand announced a downgrade from a dangerous infectious disease to a surveillance infectious disease, effective from October 1, 2022. It is further expected that in 2023, there would be a small wave outbreak, transitioning into a seasonal influenza-like status. For COVID-19 during 2023-2025, the Company has formulated guidelines and plans to address the transitional period of the epidemic as follows:

1. Planning and coordination in the event of an emergency (Emergency coordination).
2. Collaboration in monitoring the outbreak situation and sharing information with each other (Collaborative surveillance).
3. Outbreak prevention in the community (Community protection).
4. Planning is underway to ensure that employees have access to vaccines (Access to countermeasures) by coordinating vaccination appointments within the free vaccination program provided by the government sector or the Social Security Office. Additionally, transportation will be provided for employees' vaccination trips.
5. Preparing an adequate and safe care system (Safe and scalable care).

Over time, the Company has keenly observed that recurrent crises result in significant loss of lives and illnesses. The crisis persists until necessitating the finding of survival ways during emergencies for people in society, including medicines, vaccines, protective equipment, test kits, beds, etc. This serves as a profound lesson in the gravity of such situations, prompting us to analyze the underlying causes and devise preventive measures to avert future occurrences. Therefore, it is essential to remain vigilant and ensure personal protection in daily life, as each infection not only poses the risk of illness but also the potential for severe complications, including death or long COVID. It's crucial to avoid crowded places, ensure adequate ventilation, refrain from sharing food or groceries with individuals outside the household, and consistently wear masks to protect oneself from infection or reinfection.

The Company acknowledges the significance of personnel as invaluable resources and pivotal driving forces within the organization. It prioritizes the development of personnel to encompass qualities such as integrity, morality, and ethics, while upholding principles of honesty, integrity, and responsibility towards both the organization and society. Furthermore, the Company promotes employee involvement in corporate social responsibility initiatives, believing that nurturing goodness and competence among its workforce can contribute to the organization’s sustainable growth and advancement.

**Community and Social Development Participation [3-3]**

The Company aims to pursue its business operations under well-managed administration practices with an adherence to creating a corporate culture with good corporate governance in parallel with social conservation and environmental preservation in terms of safety, quality of life and conservation of natural resources. The Company also promotes energy efficiency and focuses on participating in the continuous development of communities and society to improve the quality of life of local people in the communities and society to be strong and grow sustainably.

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
<p>Create value and upgrade the quality of life of local people in the communities and society to grow sustainably.</p>	<ul style="list-style-type: none"> <li>- Improve the production process of cement plants to use waste fuel up to 15.33% of coal substitutes. TPIPP purchase community waste from local producers who sort waste and to help reduce waste in the community, promote and create careers in the community, help reduce socioeconomic inequality, increase employment, increase economic value by purchasing waste from the communities in more than 16 provinces nearby the plants.</li> <li>- Conduct Community Relations: The Company has a production facility located in various community areas and has a proactive policy for all production units to provide assistance to support hygiene and reduce the impact of the pandemic without any request from the community, it supports surrounding communities and important societies as follows:-               <ol style="list-style-type: none"> <li>(1) Strengthen communities to be healthy, provide mobile medical services in a wellness program with TPI Polene to monitor illnesses Health Check-up Service To Educate Health Benefits of lung examination at surrounding communities in Kaeng Khoi District, Mauk Lek, Saraburi.</li> </ol> </li> </ul>	<p><b>Community Relations [413-2]</b></p> <ul style="list-style-type: none"> <li>- To promote and develop the good quality of life of Thai people, the company has collaborated with the 2nd National Blood Service (Lopburi) and the Red Cross. Executives, employees of TPI Polene Group and contractors donated more than 83,700 cc of blood to help patients in Saraburi and nearby provinces.</li> <li>- Chemical Free Agriculture Project for Lunch 2023 of Ban Sap Bon School, Saraburi Province) to provide learning resources on chemical-free agricultural cultivation in community schools. In addition, students in the school are consumed while promoting good nutrition, as well as to enhance the income of Ban Sabbon School students.</li> </ul> <p><b>Corporate Social Responsibility (CSR) [413-2]</b></p> <ul style="list-style-type: none"> <li>- Cement plants can use approximately 14% municipal waste to replace coal.</li> </ul>	<p>Continuously coordinate with the community to accept feedback, opinion and expectations to improve the Company's operations, including its affiliates, as well as to expand the efficiency of community and society development and improve quality of life, promote sustainable growth in communities and society.</p>

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<p>(2) The potential risk associated with the outbreak of COVID-19 in the community. In the event that the Company's employees live in infected areas, the Company has established response measurements such as supporting self-defense equipment such as hand alcohol gel to nearby community, government authority and local hospitals in Saraburi province.</p> <p>(3) Supported COVID-19 virus with publicity signs for public relations information and measures are taken to prevent and monitor the outbreak of the COVID-19 virus as well as giving advices regarding operating market or public spaces to Charoen Community, Kaeng Khoi, Saraburi province.</p> <p>(4) Supported residential renovation projects in conjunction with Kaeng Khoi District Quality of Life Development Fund and help repair/build homes for disabilities and chronic illnesses patients who are shortage of housing in the area of Kaeng Khoi District. Saraburi, etc.</p>	<p>- Educational Opportunities for Good Education Youth Behave well, but lose wealth to ease the burden of parents. The scholarship was given to students in communities in the area adjacent to the factory in Saraburi province (group of 9 houses, Agricultural Relations Community, Moo 10, Tubkwang Subdistrict, Saraburi Province) and after graduation, they were accepted to work in the Company. In addition, scholarships of Baht 295,000 per year are given to 6 schools from kindergarten to junior high school. For the 30th consecutive year. [413-2]</p>	



Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- Conduct corporate social responsibility ( CSR)</li> <li>- According to the 2023 Community Satisfaction Survey, the CSR activities of TPI Polene Group, mostly satisfied to the community, including scholarship programs. TPI Polene Group has implemented educational opportunities for well-educated youth, who are well behaved, but disadvantaged, aiming to share the burden of parents. The scholarships are awarded to schoolchildren in the community area adjacent to the Saraburi province from kindergarten to undergraduate level, starting in 2011 and upon graduation, they are employed to work in TPI Polene Group, creating a strong bond with the community as a single family.</li> <li>- Supporting the chemical-free agriculture project for lunch with the objective of               <ol style="list-style-type: none"> <li>1. To provide students at Ban Subbon School with the knowledge and skills in chemical-free vegetable farming.</li> <li>2. To have a learning resource for growing vegetables using chemical-free agriculture in community schools.</li> <li>3. To enable Ban Sub Bon School students to consume and promote good nutrition.</li> <li>4. To increase income for Ban Sub Bon School students by selling leftover vegetables from cooking to the Company's employees.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>- Donated 809 tons of TPI cement products, TPI dry concrete, TPI Super Armour cement paint, TPI roof tiles, lightweight concrete, wood substitutes and TPI boards, etc. Repair school buildings, roofs, painting buildings, road floors to school entrances, playground floors for 25 schools nationwide, such as the “TISCO Solidarity” project, construction of a 2-storey school building with 8 classrooms to replace the original wooden building of Wat Non Sadao School. Wachirabaramee District, Phichit Province, TPI paint renovation on the walls of school buildings Suan Rose College, Saraburi and Project Kindness House “Return happiness to the children of SOP” after 18 Nong Khae District, Saraburi Province, built a concrete courtyard to be a multi-purpose sports field of Ban Phudin Pattana School., Ban Mateng Khao School, Ban Nong Bua Thong School, Ban Chan Bua School and Ban Dua School, Sisaket Province, etc.</li> </ul>	



Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
		<ul style="list-style-type: none"> <li>- Provide financial support to various agencies such as TPI Polene Public Company Limited, TPI Polene Power Public Company Limited, executives, employees and relatives donated Baht 21,285,062 to the Mahidol Day Fund for the year 2023 to help underprivileged patients. Siriraj Hospital, support ambulance vans with medical supplies for the sick elderly.” 1 car to St. Camillo Foundation of Thailand in the amount of Baht 2,100,000, support “Orthotics Project, donate 20 sets of prosthetic arms and prostheses to the Association for the Promotion of Quality of Life of Persons with Disabilities and Disadvantaged in the amount of Baht 1,200,000, and give to people with mobility disabilities in Uthai Thani Province in the amount of Baht240,000, support the project of a 2-head ultrasound internal organ examination machine with 2 probes to Ang Thong Hospital in Ang Thong Province in the amount of Baht 450,000, donated 300 sweaters through the Embassy of Turkey in Thailand to help the victims affected by the earthquake in Turkey. Etc.</li> </ul>	



Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
		<ul style="list-style-type: none"> <li>- Donated 91.75 tons of TPI cement products, 592 cubic meters of TPI dry concrete, fiber cement products, Nano Super Armer TPI paint and other products to repair and improve buildings for various government agencies and people in need of funds, such as building a new building to serve as a place to stay for the intellectually disabled of the Northeast Mental Retardation Welfare Center. Udon Thani, Road building project for people on Doi for Wat Ban Pa Phaya Doi, Doi Tao District, Chiang Mai Province through Ingbin Foundation, participated in the project to repair and build houses for the needy in the area for the year 2023 of Chalermprakiat District Office, Saraburi Province, renovation of the old building in the garden in front of Klong Prem Central Prison (Vocational Training Building for Entrepreneurial Inmates), Renovation of the Tree Maintenance Training Center at Sak Forest Park, Muak Lek District, Saraburi Province to be a training facility for forestry of community forest network people.</li> </ul>	



Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
		<ul style="list-style-type: none"> <li>- Support TPI Polene 350 ml drinking water totaling 13,992 bottles, ProVita beverage 31,480 bottles to temples, schools and various agencies for organizing volunteer activities and useful activities such as supporting Lent festival for 33 temples in Saraburi province, organizing activities for National Children's Day 2023 in Saraburi province, supporting the "Spinning Two Dams" event. Visit Luang Pu Yai Pasak No. 2" to promote tourism in Wang Muang district Support and participate in the Cavalry XC Run Mini – Half Marathon 2023 charity walk-run competition at Adisorn Saraburi Cavalry Center, support the Muak Lek Friendship Sports event for school children to connect students in Muak Lek District, support the Songkran Festival and New Year Festival 2023 for Kaeng Khoi District Safety Directorate Center, Kaeng Khoi Highway Division, Muak Lek Subdistrict Administration Organization, Tao Poon Subdistrict, Tha Khlo, Song Kon, Nong Pla Lai, Lam Phaya Klang and Mittraphap Subdistrict, Thap Kwang Highway Police Service Unit. Saraburi, etc.</li> </ul>	



Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
		<ul style="list-style-type: none"> <li>- Co-host Maha Chulakthin Wat Sri Don Mun in Chiang Mai, host Kathin Samakkee, Wat Ban Hin Whet, Saraburi, Wat Tham Sarika</li> </ul> <p>The company also donated 1,723 tons of TPI cement products, 300 m<sup>3</sup> TPI ready-mixed concrete, fiber cement products, nano-super armer TPI paint and other products to 17 temples nationwide, such as the construction of the 1<sup>st</sup>-4<sup>th</sup> floor of Wat Luang Por Sod Dhammakayaram in Ratchaburi province, and the renovation of the church of Saint Joseph Temple. Saraburi, pouring the kitchen area and temple area to the Nagaraj Cave Monastery. Saraburi, construction of multi-purpose toilets Wat Sap Pradu Saraburi, Color Support Repair the building of the Romklao Church organization. In Love Neighbor Foundation, etc. [203-1]</p>	



# 07

## Conduct the Business Operation under Good Corporate Governance Policy



### Corporate Governance Performance in 2023

Proportion of Independent Directors

**33.33%** <sup>(1)</sup>

Proportion of female Directors

**20.00%** <sup>(1)</sup>

No complaints of personal data breaches <sup>(1)</sup>

Trade Partners acknowledged the principles of Customers Code of Conduct **96%** <sup>(1)</sup>

No complaints of discrimination <sup>(1)</sup>

Remark: (1) Only TPI Polene Public Company Limited

### Corporate Governance, Procurement and Anti-Corruption Policy [3-3]

The Company recognizes the importance of good corporate governance in order to contribute to sustainable development, and the Company has established corporate governance policies and codes of conduct of the Company and is determined to promote the firm to be an organization that does business with transparency, ethics, and responsibility for shareholders, stakeholders, customers, employees, society and other stakeholders. The Company is determined to be an effective organization under an administration that complies with “Transparent Thailand where all citizens live happily”. The Company’s Board of Directors specifies principles of Good Corporate Governance for the Board, Management, and all employees of the Company to follow as a guideline practices.

Conducting business operation in accordance with a good corporate governance policy and business ethics, as well as developing operational standards to be at an international level, the Company has monitored an assessment of operational performance to ensure effective implementation, which covers investments, joint planning, defining a clear roadmap, following up operating results, reporting on the progress of operations on a regular basis, as well as establishing long-term strategies and long-term goals for sustainable growth development.

#### Good Corporate Governance Policy [2-23]

 <https://www.tpipolene.co.th/th/aboutus/corporate-governance-th>

#### Company Code of Conduct [2-23]

 <https://www.tpipolene.co.th/th/aboutus/code-of-conduct-th>

#### Employee Handbook [2-23]

 <https://www.tpipolene.co.th/th/aboutus/employeehandbook>

In addition, the Company has established anti-corruption policies and a Supplier Code of Conduct to promote transparency, prevent fraud and anti-corruption, and prevent conflicts of interest in order to ensure that the Group’s business operations are transparent, fair, take into account equality and integrity in business operations, as well as to strengthen good relationships with partners and related stakeholders to be in line with good corporate governance principles, the Company’s Code of Conduct, and provisions and relevant governing laws to further develop into a sustainability organizations.

#### Anti-Corruption Policy [2-23]

 <https://www.tpipolene.co.th/th/aboutus/corruption-policy>

#### Supplier Code of Conduct [2-23]

 <https://www.tpipolene.co.th/th/aboutus/supplier-code-of-conduct-th>

#### Privacy Policy [2-23]

 <https://www.tpipolene.co.th/th/aboutus/pdpda>

#### International Human Rights Policy [2-23]

 <https://www.tpipolene.co.th/th/investment/social-responsibility-th>

Target	Action Plan	Key Performance In 2023	Guidelines for improving future operations
<ul style="list-style-type: none"> <li>- Follow good corporate governance principles without corruption.</li> <li>- Employees are trained in anti-corruption courses on an ongoing basis every year.</li> <li>- Business partners are constantly increasing their corporate anti-corruption policies and practices every year.</li> <li>- Suppliers acknowledged the Supplier Code of Conduct continually increasing every year.</li> <li>- Assessment of ESG suppliers at production sites (Onsite ESG Audit)</li> </ul>	<ul style="list-style-type: none"> <li>- Set out key good corporate governance principles for Directors, the Management and employees of the Company to adhere as a guideline for operations, such as international corporate governance practices and striving to continuously improve good corporate governance in accordance with international standards. The adoption of Creation shared value, Responsibility, Equitable treatment, Accountability, Transparency and Ethics (CREATE) principles is used as a guideline for business operations, as well as strictly to fulfill its duties in accordance with the laws and requirements in all countries in which they invest. Monitoring/Measuring Performance and Risk Management are conducted effectively, independently and responsible for the consequences of performing their duties in accordance with the principles of good corporate governance, etc.</li> <li>- Established responsibilities to ensure that the Company's business operations are transparent, ethical and responsible to shareholders, customers, employees, society and other stakeholders in accordance with the Company's policies and corporate governance as follows:- <ul style="list-style-type: none"> <li>• The Board of Directors are responsible for setting policies and supervising an effective anti-corruption system to ensure that the Management recognizes and values anti-corruption and cultivates it as a corporate culture.</li> <li>• The Chief Executive Officer and the Executive Committee are responsible for establishing the system to promote and support anti-corruption policies to communicate to employees and stakeholders, including reviewing appropriately in accordance with changing circumstances, such as business conditions, rules and regulations and provisions of laws, etc.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- All departments, especially those dealing with third parties are required to do risk assessment Fraud-linked and/or corruption-linked risks are assessed 73 sections, representing 100%. [205-1]</li> <li>- The proportion of employees who received anti-corruption training courses stood at 12.11% of the total 7,096 employees, of which 7,096 employees were 100% aware of the anti-corruption policy.</li> <li>- In 2023, all new suppliers of the Company must meet criteria for recruiting and selecting customers, considering societal, human rights, and environmental issues in procurement. They are also required to sign the Supplier Code of Conduct for purchasing, procurement, and employment.</li> <li>- A total of 1,575 suppliers have signed the Supplier Code of Conduct, which represents 96% of the total of 1,641 suppliers. [414-2]</li> </ul>	<ul style="list-style-type: none"> <li>- Organized special lectures by expert speakers on anti-corruption through online and offline classrooms.</li> <li>- Organize anti-corruption activities through electronic media, etc.</li> <li>- Regularly review the fraud risk assessment of all departments every year, including objective setting, identifying risks, risk assessment, and responding to risks (Risk Response) that may occur from new events/factors that change.</li> <li>- Conduct a survey and assessment of ESG suppliers across all of the Company's suppliers to identify potential and potential negative social impacts in order to improve and enhance suppliers to comply with the Supplier Code of Conduct.</li> </ul>

Target	Action Plan	Key Performance In 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>• Audit Committee is responsible for reviewing financial and accounting reporting systems, Internal control system, internal audit system and risk management system, to ensure compliance with international standards, to be concise, suitable, modern and efficient.</li> <li>• Head of Internal Audit is responsible for proper inspection and review of operations to meet policies, guidelines, operating power, regulations and laws to ensure that there is a proper and adequate control system for potential corruption risks and report to the Audit Committee.</li> <li>- Assigned to all departments of the organization to assess risk associated with corruption in consideration of the COSO-ERM risk assessment principles, which the Company has identified significant fraud risks, such as risks related to corruption/ purchasing corruption, from which the purchasing authorities demand bribes or commission fees from sellers, etc. The result of the risk assessment will be developed and improved the relevant practices and internal control measures of the Company. [205-1]]</li> <li>- Established anti-corruption practices for employees, including anti-corruption and anti-corruption measures (business dealings with partners and third parties) in order for all employees to adhere to and strictly comply.</li> <li>- Assigned the purchasing department or related parties to compare prices or auctions (as the case may be) in case of procurement.</li> </ul>	<ul style="list-style-type: none"> <li>- The on-site ESG Audit evaluation will be conducted after suppliers are required to complete the Self-Declaration. In the case of direct suppliers (Critical Tier 1), a plan is in place to continue monitoring and conducting audits in the operating area at least once every two years. In 2023, two suppliers required on-site ESG audits.</li> <li>- The procurement budget paid to local suppliers represents 84.22% of the total procurement budget actually disbursed by the organization during the reporting period. [204-1]</li> </ul> <p><b>Note:</b> Local suppliers are those who provide raw materials, products, or services to the Company and operate from offices located in Thailand. They conduct transactions in Thai Baht and comply with Value Added Tax regulations as mandated by law.</p> <ul style="list-style-type: none"> <li>- There were no complaints from suppliers.</li> <li>- There were no lawsuits filed by the organization for corruption, and there were no fraudulent incidents with business partners. This includes corruption incidents occurring within the organization. [205-3]</li> <li>- The Procurement Department specifies the payment period in the Terms of Reference (TOR) or the scope of work to be purchased or hired. Although specified at 30-60 days, the actual average in 2023 was 36 days.</li> </ul>	

Target	Action Plan	Key Performance In 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- Required channels for whistleblowing and complaints in the event of corrupt conduct involving the organization directly or indirectly, including those that are in breach of the organization's protocols or affecting the internal control of the organization. It is doubtful that it may be a way to corrupt and illegal, immoral, business ethics, such as reporting complaints to responsible persons/entities or the Internal Audit Supervisor/Head of Legal Affairs/ Head of Human Resources Department (Head Office) or Human Resources and Administration (Plants), with comment boxes and electronic mail (Email: orapinr@tpipolen.co.th)</li> <li>- Formulated a systematic fraud investigation guideline when receiving whistleblowing, Executive Directors, the Management and Audit Committees will act as the justice to investigate the facts. During the investigation, Executive Directors, the Management and Audit Committee may assign representatives (executives) to inform the whistleblower of progress or complaint. If facts finding or evidence available, there are reasonable grounds to believe that those accused of committing fraud or actual corruption, the Company will give the alleged person the right to be informed of the allegations and give the alleged perpetrator the right to prove her/himself by seeking further information or evidence that she/he has nothing to do with the alleged corrupt acts, he has not been able to do so as accused. If the complainant has committed actual fraud, such action is considered as an anti-corruption policy offense. Disciplinary action must be considered in accordance with the regulations set by the Company and if the fraud is illegal. Offenders may face legal penalties and disciplinary action in accordance with the Company's regulations. Decisions of the Board of Directors (Executives) are final.</li> </ul>	<ul style="list-style-type: none"> <li>- The loans with interest are fully repaid to all types of creditors by the agreed due date.</li> </ul>	

Target	Action Plan	Key Performance In 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- The protection of complainants and confidentiality is required. When acting in good faith, complainants, testimony, information providers, fact-finders, or witnesses are guaranteed and protected from difficulties being caused to them or being used as justification for dismissal, punishment, or other actions that could have serious repercussions for those employees. For anonymity and confidentiality, employees or outside whistleblowers may choose to remain anonymous when reporting misconduct by other employees. However, the Company encourages employees to identify themselves when reporting to make it easier to contact and investigate. Once an employee or external complainant makes a report, the Company will take appropriate safeguards and safeguards to ensure effective investigation and prevent harassment or unfair treatment of an employee or external complainant.</li> <li>- Set measures to promote transparency and prevent corruption within the organization, such as public information distribution measures, fraud complaint management measures, anti-graft measures as well as measures to prevent conflicts of interest between self-interest and the public interest Propagate practices throughout the organization.</li> </ul> <p><b>Procurement Practices</b></p> <ul style="list-style-type: none"> <li>- Establishing a Supplier Code of Conduct that outlines key guidelines, such as the Code of Ethics for Purchasing, Business Code of Conduct, business operations, safety, health, labor and human rights, environmental impact, and community and social impacts, is essential for creating transparency and fairness. This code also includes considerations for equality and honesty in all business dealings. Additionally, suppliers have guidelines for continually managing impacts on society and the environment, ensuring effectiveness and appropriateness.</li> </ul>		

Target	Action Plan	Key Performance In 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- Establishing regulations and guidelines for recruiting and evaluating current and new suppliers, while adhering to the principles of the Supplier Code of Conduct. Important operational steps include:               <ol style="list-style-type: none"> <li>1) Recruiting and selecting current and new vendors must be approved as acceptable sellers; therefore, their names will be included in the Approved Vendor List (AVL) with the following steps:                   <ol style="list-style-type: none"> <li>1.1 Recruiting new vendors can be accomplished by searching for information from quotations, brochure catalogs, and the Yellow Pages, which is a telephone directory. Additionally, basic information can be gathered from buyers, data in the market for the respective type of product or service.</li> <li>1.2 New vendors that can be recruited will be selected according to specified criteria, which will consider the following topics:                       <ul style="list-style-type: none"> <li>- Details of standards for product or service desired</li> <li>- Details of operations</li> <li>- Payment terms or delivery conditions</li> <li>- Convenience and speed in contacting and coordinating</li> <li>- Survey of suppliers/subcontractors at the production site</li> <li>- Environmental &amp; social issues in terms of human rights, refraining from using illegal labor such as child labor, slave labor, etc. Others as appropriate, such as environmentally friendly raw materials or greenhouse gas reduction</li> </ul> </li> </ol> </li> </ol> </li> <li>- Details of standards for product or service desired</li> <li>- Details of operations</li> <li>- Payment terms or delivery conditions</li> <li>- Convenience and speed in contacting and coordinating</li> <li>- Survey of suppliers/subcontractors at the production site</li> <li>- Environmental &amp; social issues in terms of human rights, refraining from using illegal labor such as child labor, slave labor, etc. Others as appropriate, such as environmentally friendly raw materials or greenhouse gas reduction</li> </ul>		

Target	Action Plan	Key Performance In 2023	Guidelines for improving future operations
	<p>The information regarding vendor selection is attached for proposal, along with the price screening sheet, to request consideration and approval from authorized personnel. Once approved as an authorized vendor, it will be recorded and listed in the AVL.</p> <p>For the inclusion of vendors in the AVL, both current and newly approved vendors will be listed, categorized by the type of products or services they provide. This classification includes: (1) a list of acceptable vendor/subcontractors; (2) a list of acceptable suppliers/subcontractors (General); and (3) a list of acceptable suppliers/subcontractors (Special). The AVL will undergo reviews or updates in response to any changes, or on a regular basis, at least every 6 months.</p> <p>For vendor evaluation, vendors listed on the AVL will be included when they meet specific criteria, categorized as follows: (1) evaluation based on delivery time and the condition of goods during the initial inspection; (2) evaluation of the quality of goods or services, including vendor cooperation; and (3) evaluation of services and cooperation regarding purchasing or pricing issues. The Purchasing Department will collect evaluation results from involved parties to conclude the result of delivery/subcontracting. Vendors who receive a score of less than 60 in two consecutive evaluations will be considered for removal from the AVL if they fail to improve their performance.</p> <p>Establishing the evaluation round for vendors in AVL, divided by vendor group. Vendors contacted for orders through the Purchase Department at the head office will be evaluated annually.</p> <ul style="list-style-type: none"> <li>- The Company has assessed environmental, social, and corporate governance risks (ESG risks) arising from its suppliers by identifying risk issues in all three areas: (1) Environment; (2) Society &amp; Human Rights; and (3) Corporate Governance</li> </ul>		

Target	Action Plan	Key Performance In 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- Managing suppliers based on the Supplier Code of Conduct by specifying criteria for selecting suppliers required for Onsite ESG Audit, as follows</li> <li>• Tier 1 suppliers refer to suppliers who directly produce or provide services to the organization. The Purchasing Department will send an evaluation form to suppliers for self-assessment at least once every 2 years. This process aims to review and summarize the list of suppliers, enabling the preparation of a monitoring plan and the conduct of on-site audits.</li> <li>• Non-Tier 1 Suppliers refer to suppliers who produce or provide services to Tier 1 Suppliers without indirect suppliers. The Company utilizes a risk management process as outlined in its policy, adopting the principles of The Committee of Sponsoring Organizations of the Treadway Commission - Enterprise Risk Management (COSO-ERM). A payment system is established for creditors, incorporating cautious and stringent work procedures, along with a robust internal control system. Transparency is ensured through a review process scheduled within 30 to 60 days after the delivery of the product or service, contingent upon the agreement with each creditor (which may vary). The Company has no policy for late payments to creditors; instead, payments are made via bank transfers or cheques on the 1st and 4th Fridays of the month, primarily adhering to the cheque payment date specified in the billing-cheque payment schedule.</li> </ul>		

## Supply Chain Management (Million Baht) (Disclosure 204-1)

Unit: Million Baht

Locally supplied products and services*	2021	2022	2023
Local procurement of goods and services	10,244.70	16,066.65	11,015.11
Proportion of local purchases and services (%)	69.41	75.11	84.22

\* Purchasing products and services of domestic groups (Cement/ LDPE/ FCB and CRT businesses)

## Information of the Board of Directors, Employees and Business Partners who have received communication of anti-corruption policies and Guideline Practices [205-2]

Category	Number of people receiving communications on corporate anti-corruption policies and practices (person)	Percent
<b>1. The Board of Directors of the Company</b>	14	100
<b>2. Employees of the Company excluding subsidiaries</b>		
<b>Classified by employee group</b>		
- Senior Executives (Top Management)	4	100
- Management Level (AVP/VP/SVP)	57	100
- Manager level (Asst.Dept.Mgr. — Dept.Mgr.)	152	100
- Supervisor level (Asst.Sup. — Section Mgr.)	1,247	100
- Operating level (Officers)	5,636	100
<b>Total</b>	<b>7,096</b>	<b>100</b>
<b>Classified by Location</b>		
- Head office	1,320	100
- Cement plant, Saraburi province	4,274	100
- CRT & FCB plant, Saraburi province	927	100
- LDPE & EVA plant, Rayong province	575	100
<b>Total</b>	<b>7,096</b>	<b>100</b>
<b>3. Business Partners</b>		
- Suppliers/ Business Partners	1,575	96

## Information of the Board of Directors and employees who have been trained in anti-corruption courses [205-2]

Category	Number of trainees Anti-corruption-related courses (person)	percent
The Board of Directors of the Company	14	100
<b>Employees of the Company (7,016) (excluding subsidiaries)</b>		
<b>Classified by employee group</b>		
Management Level (AVP/VP/SVP)	6	0.08
Manager level (Asst Dept Mgr. — Dept Mgr)	56	0.79
Supervisor level (Asst Sup — Section Mgr.)	420	5.92
Operating level (Officers)	377	5.31
<b>Total</b>	<b>859</b>	<b>12.11</b>
<b>Classified by Location</b>		
Head office	344	4.85
Cement plant, Saraburi Province	224	3.16
CRT & FCB plants, Saraburi Province	190	2.68
LDPE & EVA plants, Rayong Province	101	1.42
<b>Total</b>	<b>859</b>	<b>12.11</b>

**Note** Those who have been trained in anti-corruption courses are selected according to their roles and responsibilities that are important to the management and auditing of operations associated with risks or incidents of corruption in the corporation.

## Complaints, Suggestions and Whistleblowing [2-25] [2-26]

The Company has a policy for handling complaints and suggestions, which was published as Company Policy No. 114/2014 on receiving complaints, complaints, suggestions, and whistleblower channels that harm the Company. This will serve as a medium for the corporation to effectively monitor its interests and quickly address any issues. Additionally, in the case that stakeholders have concerns or observe acts that can be considered to be improper, in violation of laws, rules, or business ethics, in order to urge stakeholders to participate in the corporate governance process.

TPIPL has published complaints and feedback policies through email, the Company's website, annual reports, etc. to ensure that suppliers, customers, and stakeholders acknowledge and ensure that all complaints and recommendations are handled in a clear process through channels that cover issues towards anti-corruption. Whistleblowing or complaints are summarized as follows:-

1. A complaint if encountering any acts that is considered corruption, direct or indirect.
2. Any act that is considered corruption and/or has a direct effect on the internal controls of the Company; the individual must cooperate in the fact-finding investigation stipulated by the Company's regulations.
3. Any act that has a direct impact on the Company's reputation and benefits.
4. Any misconduct that is against the law, morals and/or business ethics.

## Channels for receiving complaints, suggestions, and whistleblowing from customers

All employees are responsible for reporting complaints through suitable report channels when they face or suspect any act that might be considered corruption, and are to notify supervisors or responsible persons through suitable report channels, while external comment mechanisms (external complaints) can be handled by contacting the following:

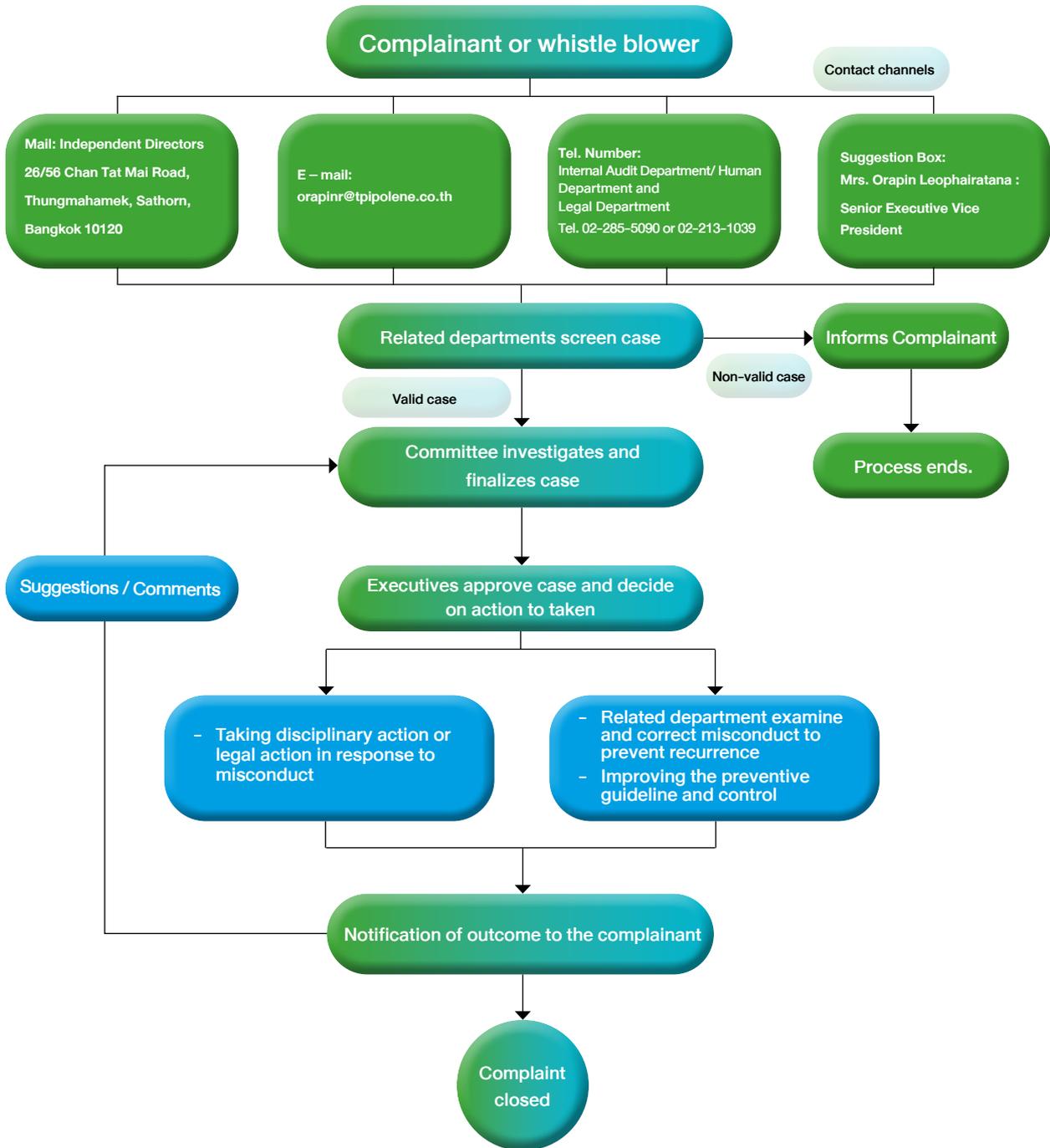
1. Letters: Mrs. Orapin Leophairatana Senior Executive Vice President TPI Polene Public Company Limited 26/56 Chan Tat Mai Road, Thungmahamek, Sathorn, Bangkok 10120
2. E-Mail: orapinr@tpipolene.co.th
3. Letters: The Audit Committee TPI Polene Public Company Limited 26/56 Chan Tat Mai Road, Thungmahamek, Sathorn, Bangkok 10120
4. Tel. no. 02-285-5090 or 02-213-1039 ext. 12962/12963 Internal Audit Department

The Company provides measures for whistleblowing in response to complaints from external agencies or stakeholders. When complaints come through various channels, there will be a preliminary investigation unit to know the cause whether it is from the actions of the Company or not. When the cause is found, the complaint will be taken to the fact-finding process, along with proposing solutions to deficiencies, complaints, and preventing problems from occurring. Relevant agencies will take corrective action and preventive actions with a specified time frame or may issue a letter to notify the results when the problem has been solved.

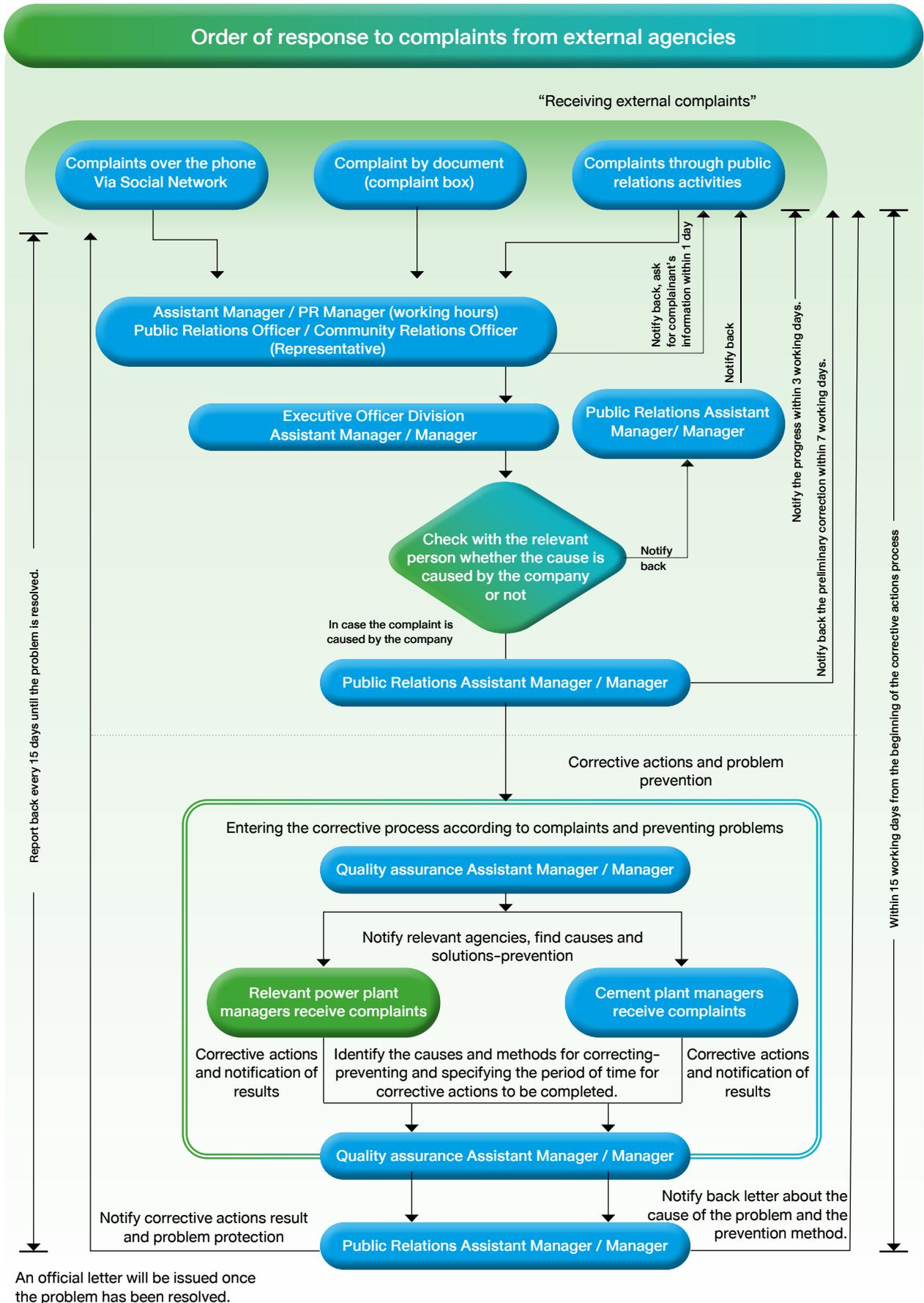
In order to systematically process complaints, suggestions, and notifications from stakeholders or the public, the Company has set up a grievance mechanism with details as process (Flow diagram/ Process) in handling complaints from receiving complaints to taking corrective actions and reporting back to relevant stakeholders as follows:-

1. **Receiving Complaints** Complainants, stakeholders, or the public can file complaints, suggestion, and report clues through the four channels specified by the Company, namely (1) Letter to the Senior Executive Vice President (2) Electronic mailbox (E-mail: orapinr@tpipolene.co.th) (3) Telephone to Head of Internal Audit Department, Head of Legal Department, Head of Human Resources (Head Office), or Head of Human Resources and Administration (Factory) and (4) Opinion Box.
2. **Moderation of Complaints** Once the Company receives the complaint, it will have the Human Resources Department, the Internal Audit Department, or the relevant departments consider and screen the complaint. The details of clues or complaints must be examined. They must be true, clear, or sufficient to ascertain the facts for further action. In the event that there is no evidence, the complaint will be returned to the complainant or request for additional documents within 10 days.
3. **Fact Checking** In case the complaint is received clearly or can be ascertained, the Company will consider appointing executives from the internal audit department, the human resources department, and executives from other relevant departments to be the fact-finding committee. They will be appointed from time to time by the President or Executive Vice President.
4. **Fact Checking Committee** The Company will proceed with the process of collecting facts, processing, and screening information to determine the appropriate handling method for each matter, with disciplinary action or legal action if wrongdoing is found, advise, and prevent recurrence
5. **Audit Report** the Investigation Committee has a duty to report the results to the President or Executive Vice President in order to proceed as the Board proposes or orders as it deems appropriate.
6. **Implementation of Audit Results and Notify the Whistleblower** When the relevant departments have corrected, improved, performed as instructed by the Company, they must notify the audit committee to follow up on corrective actions, improvements, and determine the operational guidelines that have been instructed until completion and notify the whistleblowers of the results of the action and provide comments or suggestions to improve the work ordering mechanism.

**Flowchart of the complaint and whistleblowing process**  
**In handling cases of business ethics, code of conduct and corruption**



In addition, the Company has organized CSR activities for communities in the areas where the factories are located to listen to problems and take care of solving the effects continuously and consistently, with the process of accepting complaints and responding to complaints as follows:-



In the process of whistleblowing complaints process, when the relevant departments of the Company have made corrections and actions as instructed by the Company, they must notify the fact-finding committee for investigation and follow up on the results of operations, including improving the efficiency of operations and preventing recurrence, and reporting the results to the Senior Executive Vice President. However, when the fact-finding committee has notified the result of the action to the whistleblowers, satisfaction inquiries, suggestions, and useful suggestions will be taken to improve and determine guidelines for making the operation more efficient.

## Social Responsibility [2-23]



<https://www.tpipolene.co.th/th/investment/social-responsibility-th>

## Risk and Crisis Management [3-3]

The Company realizes the importance of risk management as it considers risk management to be the cornerstone of business management. The risk management process, including risk identification, risk assessment, as well as monitoring and reviewing risks on a regular basis, is a proactive approach that companies must undertake and implement. Risk management is an essential component of every business process. There must be linkages at all levels and must be integrated into key work processes to promote effective risk management and compliance with the Company's mission.

In 2023, the challenges arising from climate change and global warming are expected to intensify. In response, the Company has disclosed regulatory information regarding the risks, opportunities, and impacts associated with climate change, both current and potential. This disclosure encompasses the influence of climate change on business operations, financial strategy, and climate management planning. The organization has adopted the guidelines outlined by the Task Force on Climate-Related Financial Disclosures (TCFD) as a framework for overseeing its climate change operations. Managing climate change risks is considered one of the primary objectives of the organization and is integral to its environmental risk management efforts.

In addition, the Company also emphasizes on promoting risk management culture throughout the organization by focusing on laying down a systematic risk management foundation for short-term and long-term, cultivating risk management awareness among the management and all employees, as well as creates an atmosphere and a culture of risk management.



Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
<ul style="list-style-type: none"> <li>- To conduct business in accordance with the sustainable development goals</li> <li>- To reduce the cause of the possibility of damage to the Company by keeping the level and magnitude of damage at an acceptable, assessable, controllable, and systematically verifiable level with regard to achieving objectives or organization's goals as important</li> <li>- For managing climate change risk to be in accordance with government policy and in line with the organization's goal of achieving carbon neutrality by 2043.</li> </ul>	<ul style="list-style-type: none"> <li>- The Board of Directors has established a Risk Management Committee to supervise and be responsible for the development and monitoring of the Group's risk management policy and requires that the results be reported to the Board of Directors on an annual basis.</li> <li>- Requiring that managing risks and opportunities related to climate change is one of main goals of the organization and a part of environmental risk management by identifying important issues, assessment of impacts, opportunities and management of climate change risks based on steps set out in "Risk Management Manual"</li> <li>- Managing "ESG Risk", the risk related to Environmental, Society and Governance issues under the Company's risk policy.</li> <li>- There is a risk management process under the Company's policy and has also applied the criteria of The Committee of Sponsoring Organizations of the Treadway Commission - Enterprise Risk Management (COSO-ERM) as a framework for managing the Company's risks in order to conduct business in accordance with the sustainable development goals.</li> </ul>	<ul style="list-style-type: none"> <li>- divided into 7 categories</li> <li><b>1. Strategic Risk</b></li> <li>- It is a risk that arises from the inability to conduct business according to the plan set in compliance with internal and external factors. Therefore, a business plan is managed, including: 1) managing the risk of using waste fuel instead of coal to reduce production costs by managing the quantity, cost, and moisture properties of waste; 2) managing investments in environmentally friendly projects; 3) managing investments in projects with high growth potential in the future, among others.</li> <li>- The Company regularly monitors and analyzes the implementation of the business plan and investment projects, including improving operating results and reviewing investment plans, to achieve maximum benefit and efficiency.</li> <li><b>2. Operational Risk</b></li> <li>- It is a risk that arises from internal operational processes or external causes that affect operations.</li> <li>- The Company has controlled risks from internal and external factors to align with the Risk Appetite.</li> <li><b>3. Financial Risk</b></li> <li>- It involves the risk of liquidity shortages or a lack of funding sources for conducting business or investing in various projects, such as risks associated with exchange rate fluctuations and interest rates, etc.</li> <li>- The Company has implemented a cautious financial policy, staying within specified budgets to ensure appropriate returns and maintain sufficient cash flow for operating the business and investing in various projects.</li> </ul>	<ul style="list-style-type: none"> <li>- Reviewing and monitoring risks to ensure they align with the Risk Appetite.</li> <li>- Implementing corporate governance measures, including the development of essential risk management policies, and providing continuous supervision to ensure compliance with the risk management policy and framework. This fosters an effective risk management system within the Company Group and ensures ongoing compliance throughout the organization.</li> <li>- Overseeing climate change risk management to ensure alignment with the organization's established goals.</li> </ul>

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- Promote a risk management culture throughout the organization by providing risk management training to employees to build knowledge, understanding, participation, and systematic risk management. There will be training every year at least twice a year.</li> </ul> <p><b>(Crisis Management)</b></p> <ul style="list-style-type: none"> <li>- The Company has a Business Continuity Plan (BCP) to deal with significant risks and potential public health risks. To enable business operations to identify key risks, including fire, fire, terrorism, etc. Riot protests, cyber threats</li> <li>- Activity/ Major tasks of the department</li> <li>- Events, situations or problems arising from significant risks.</li> <li>- Impacts</li> <li>- Activities and solutions</li> <li>- Support plans and troubleshooting steps</li> <li>- Person in charge, coordinator</li> <li>- The central working group and related departments will jointly monitor it. Review and evaluate the BCP plan on an annual basis.</li> </ul>	<p><b>4. Compliance Risk</b></p> <ul style="list-style-type: none"> <li>- It is a risk of not being able to comply with laws and government regulations or policies, including corruption.</li> <li>- The Company has established a unit to monitor changes in government policy, laws, rules, and regulations related to business operations and to supervise compliance with government regulations and policies. In addition, operations are carried out in accordance with the regulations of the Office of the Securities and Exchange Commission and the Stock Exchange of Thailand.</li> </ul> <p><b>5. Environment Risk</b></p> <ul style="list-style-type: none"> <li>- It is the risk of pollutant emissions from the production process causing an impact on the environment.</li> <li>- The Company employs the Net Zero Greenhouse Gas Emission policy, along with a policy to control the release of sulfur dioxide. This includes measures to control the quality of exhaust gases, dust, and wastewater generated from the production process.</li> <li>- The Company has managed the risk of climate change, which is the main goal of the organization. This goal entails replacing coal with 25% waste fuel and achieving carbon neutrality by 2043</li> </ul> <p><b>6. Social Risk</b></p> <ul style="list-style-type: none"> <li>- It is a risk in human resource management, safety, occupational health, and working environment. including violations of human rights</li> </ul>	

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
		<ul style="list-style-type: none"> <li>- The Company has a policy to enhance knowledge, understanding, and skills, including providing appropriate compensation to employees. A welfare committee has been established to take care of the safety, occupational health, and well-being of employees. An industry-standard safety operating manual is provided to all employees. Additionally, a policy to respect human rights principles has been established, taking into account benefits and equality.</li> </ul> <p><b>7. Governance Risk</b></p> <ul style="list-style-type: none"> <li>- It is a risk in managing transparency in operations and corruption.</li> <li>- The Company has a policy to supervise the operations of every department in accordance with the principles of corporate governance, its Code of Conduct and ethics, and strict measures to prevent corruption.</li> </ul>	

### Economic Performance [3-3]

The COVID-19 pandemic has widely affected the business sector in the country, as well as inevitably affected the Company's business operations, both in terms of supply and declining housing demand and the costs of production. The pandemic has also affected consumer behavior that emphasizes a safe life, and making access to products faster and more convenient. Therefore, the Company must adapt and develop the organization to be ready for each situation and increase its competitiveness to create value for the business, as well as deliver value to all relevant stakeholders continuously with sustainable growth.

### Economic Performance (based on consolidated financial statements)

Unit: Million Baht

Total Revenue	Employee wages and welfares	Tax expense	EBITDA	Net profit	Dividend per share (Baht/share)
44,963	7,300	186.91	10,055	4,305	0.10

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
<ul style="list-style-type: none"> <li>- Create growth potential and high return on investment for the organization in the long run and continue to deliver value to shareholders and related stakeholders under good corporate governance policy.</li> </ul>	<ul style="list-style-type: none"> <li>- Comply with the Group's good corporate governance policy and business ethics, as well as promote a culture of good corporate governance, take responsibility for relevant stakeholders, and encourage the implementation and conduct of business with human rights principles, consumer rights and fair labor.</li> <li>- Focus on developing innovation with application of technology to create value added to the products, with their own research and development team of TPI Polene Group.</li> <li>- Focus on managing the organization by embracing BCG criteria at all stages of the value chain to achieve efficient resource utilization and increase the advantage in production costs.</li> <li>- Continuous development of waste fuel replacement for coal in all four cement plants to reduce cement production costs and increase competitiveness.</li> <li>- Saving in cement &amp; binders: Development of new innovations to reduce the use of clinker, increase the use of substitute materials, promote the use of Low Carbon Cement (Low Carbon Cement), such as the development of hydraulic cement to be used as a replacement for portland cement type 1 etc.</li> <li>- Savings in clinker production: Reduce the use of fossil fuels in burning clinker, increase the use of biomass fuel, fuel from industrial waste, or municipal waste, which has been implemented since 2021 and will be completed in 2023.</li> <li>- The use of electricity from completely renewable clean energy (RE100 – Electricity Energy use Renewable Energy 100%) by producing electricity for use within TPI Polene Group in cement production and procurement of REC (Renewable Energy Certificate) to make cement production use 100% renewable energy.</li> </ul>	<ul style="list-style-type: none"> <li>- The only manufacturer in Thailand that can manufacture and distribute EVA Emulsion and EVA Powder to market under the brand Polene®.</li> <li>- In 2023, the Company was also the first Thai manufacturer of ready-mixed concrete to receive the Made in Thailand (MiT) product certification by the Federation of Thai Industries and announced to apply to government projects continuously from the year 2021 that was announced. In addition, TPI Concrete also has new innovations to be used in the development of production processes and concrete product designs, in order to continuously obtain a wide variety of products, able to meet the concrete needs of customers, project owners, both public and private sectors.</li> <li>- Develop concrete by using coal ash, a waste material from power plants, to replace cement by 50% and using hydraulic cement to replace Portland cement. Therefore, ready-mixed concrete is produced to reduce global warming by using hydraulic cement as a raw material for the production of ready-mixed concrete or low-heat concrete that helps reduce heat accumulation in large structural concrete and increases the durability of the concrete to be able to withstand various environments well. It is also a product for green building construction according to LEED and TREES standards, in line with the aforementioned trend.</li> <li>- Transform the Polymer business to Specialty Polymers, and reusing ethylene gas and vinyl acetate that would otherwise be disposed of from the plastic pellet production process as raw materials, helps reduce production costs and minimize emissions to communities and the environment.</li> </ul>	<ul style="list-style-type: none"> <li>- Develop products and services as well as produce products to respond to market demand, which demand consumption for the Company's products in the country, expand consistently due to the COVID-19 outbreak that can be controlled in many areas, including exports that are expected to increase demand. It also underpinned investment in the construction of utilities, mass transit and transportation networks in the central and regional sectors of the public and private sectors to support the country's growth and entry to the ASEAN Economics Community (AEC). This includes policies that are directly beneficial to property developers, such as the policy of lessening the LTV ceiling (mortgage-to-house ratio) to 100% for new mortgages. Additional refinancing and loans, which has fueled a recovery in domestic purchase demand.</li> <li>- Installation of the conveyors belt system and construction of CDE Plant (Site C) to recycle the scrap to increase revenue and profit for the cement business.</li> <li>- The Company has a policy to change its products to Specialty Polymers, which are plastic resins with more complex compositions and chemical structures, by improving production technology and machinery to be more flexible. The product has better features, higher prices, and limited production in Europe and America.</li> </ul>

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- Focus on niche market for EVA resin products with high profit margins and increase the production capacity of EVA emulsion and EVA powder.</li> <li>- Develop the production process of raw materials to produce quality products with modern technology, expand new product lines with valuable different designs at competitive prices, and organize transportation and deliver goods to customers as needed and accurately.</li> <li>- Install machinery in the rotary kilns to reduce Heat Consumption, reduce repair costs and thereby can reduce the cost of cement production.</li> <li>- Increase the range of mortar, fiber cement, concrete tiles and lightweight concrete that meet market demand</li> <li>- Expand the channels of sale in Modern Trade in Bangkok and metropolitan areas and main cities, as well as add retail channels that are suitable for the New Normal and online sales channels to make orders for products more conveniently.</li> <li>- Develop a logistic system to deliver products and services to customers rapidly, accurately, and with safety standards in the transportation of goods. There are distribution centers for products and raw materials scattered in strategic locations across the country with a network for inventory management. There are also retail stores to support sales to customers for easier access to products.</li> </ul>	<ul style="list-style-type: none"> <li>- TPIPL innovates in the development of production processes, introducing "Diffuser-Profile Vortex Generator", to curtail energy costs. This innovation taps into wind energy to enhance airflow within the chimney, thereby assisting ventilation fans in expelling air with reduced energy consumption. Annually, the ventilation process in production demands significant electrical power to expel air from the system. This innovation targets to alleviate energy costs for industrial sectors domestically and abroad. The implementation of this innovation could reduce electricity consumption for air ventilation by approximately 3-41%. All 9 sets installed in 2023 could aid the Company in reducing electricity consumption for air ventilation by approximately 7,974,781.60 kWh/year (equivalent to saving approximately Baht 23,126,866.63 per annum) or decrease fossil fuel usage for electricity generation by 0.00379 million tons of carbon dioxide equivalent. This reduction is comparable to planting a forest spanning 3,794 Rai.</li> </ul>	<p>None of these production technologies can be sold by any company like other basic petrochemical products. Due to this, the Company must first conduct research and develop such know-how using a specialized pilot reactor it has already built that can react at pressures of up to 3,000 bar in order to produce samples for testing and testing new markets before developing the technology to be used in the actual production line in the future. The Company expects to be able to start producing new types of specialty products within 2024.</p>

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
		<ul style="list-style-type: none"> <li>- Diffuser-Profile Vortex Generator is a new innovation developed by a company in Thailand, aligning with sustainable energy usage policies. This innovation is pridefully regarded by the organization, as it operates without causing pollution or adverse environmental effects. It serves as an inspiration for employees within the organization, fostering initiative to innovate and develop further advancements for practical implementation across the entire organization and the nation. Such initiatives will serve as a driving force for various organizations in Thailand, facilitating the development of new innovations for the country's future.</li> <li>- Transformation involves production processes that utilize modern machines and technology, including the use of spare part recycling and TPM systems to maintain machines. Additionally, technology is employed in resource management software (ERP: Enterprise Resource Planning) and data analysis through artificial intelligence (AI).</li> <li>- The Company has revenue from sales of Baht 42,807 million, revenue from sales in the construction materials business accounted for 56.3% of total sales revenue. Revenue from petrochemicals and chemicals business accounted for 24.6% of total sales revenue and energy/ utilities business accounted for 18.8% of total sales revenue.</li> <li>- The Company's cost of sales was Baht 32,900 million, representing 76.9% of sales revenue.</li> </ul>	

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
		<ul style="list-style-type: none"> <li>- The Company realized net profit from operations (excluding gains (losses) from exchange rates and corporate income tax) of Baht 4,509 million.</li> <li>- In 2023, no grounds for prosecution, fines or other penalties, and no disputes must be carried out through dispute resolution mechanisms adhering to other socioeconomic or regulatory laws or regulations. [2-27]</li> </ul>	

In 2023, the Company distributed economic value directly to various stakeholders, generating a cumulative economic value of Baht 6,403 million, with details as follows:-

Direct Economic Value Generated and Distributed [201-1]	2023* (Million Baht)
<b>(1) Direct Economic Value Generated</b>	
Revenues	34,104
<b>(2) Economic Value Distributed</b>	
Operating Costs	18,312
Employee Wages and Benefits	5,562
Payments to Providers of Capital	3,799
Payments to Government	-
Community Investment	28
<b>Total</b>	<b>27,701</b>
<b>Retained Economic Value (2) — (1)</b>	<b>6,403</b>

Remark: \* Based on the Company's Separate Financial Statements



### Information Data Security and Customer Privacy (3-3)

The Company is well aware of today's cyber threats, which are caused by bad individuals or hackers. There are methods and tools used to cause damage to information systems or commit data theft in various forms. These threats are becoming more complicated every day. If there is a lack of efficient operations, it may have wide-ranging effects and damage the Company, its affiliated companies, customers, suppliers, employees, and/or visitors, or all concerned individuals who have contact with the business of the TPI Polene Group. This includes trade information, important data of the Company and those involved, and the reputation of the Company and its affiliated companies. The Company kept the data and is disclosed securely for the purposes as agreed by the data possessors in accordance with the Personal Data Protection Act B.E. 2562. The Company has established a privacy policy which can be found in more detail on the Company's website [www.tpipolene.co.th](http://www.tpipolene.co.th).

As for customer information, the Company recognizes the importance of protecting the personal data of customers which has been stored, collected, and used with the objective of offering products and services to meet the needs of customers in the most efficient way.

### Privacy Policy [2-23]



<https://www.tpipolene.co.th/aboutus/pdpda>

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
<ul style="list-style-type: none"> <li>- Preventing or reducing damage caused by cyber threats of trade information, customers, suppliers, employees and/or stakeholders, which will affect the trading strategy and related stakeholders of the Company and its subsidiaries.</li> <li>- Raise awareness of cyber threats (Cyber Security Awareness) to employees at all levels to promote knowledge to keep up with various forms of cyber threats and reduce the risk of cyber threats in the operations under the Company information systems and the daily lives of employees.</li> </ul>	<ul style="list-style-type: none"> <li>- The Company has established an IT security policy for its information systems and for the Company and its affiliated companies, requiring regular reviews of cyber threat prevention systems. This includes developing and improving cyber defense systems to keep pace with evolving threats to information systems and the seriousness of ongoing threats. The details are as follows:               <ol style="list-style-type: none"> <li>1. Communication systems and networks outside the Company and its affiliate: Install the Firewall to separate the scope of the network system outside and within the Company and its affiliates to prevent attacks from malicious people or hackers on the information systems of the Company and its affiliates from outside the Company.</li> <li>2. Host computer and client computer                   <ol style="list-style-type: none"> <li>2.1 Cyber Security Patching for Computer Operating System</li> <li>2.2 Install Endpoint Security to protect against computer viruses and malicious programs.</li> </ol> </li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>- The development of an information security system requires significant technological involvement and the formation of a team to prevent cyber threats, necessitating time for information study and a relatively high investment budget. Therefore, it is essential to thoroughly assess the information and evaluate its worthiness and appropriateness for use within the organization before requesting budget approval.</li> <li>- During the year 2023, the Information Technology Department conducted a study on guidelines for developing information security by inviting a team of experts in cyber threat prevention. The purpose was to seek basic knowledge and advice on developing and enhancing cybersecurity protection systems, including:               <ul style="list-style-type: none"> <li>- National Telecom Public Company Limited</li> <li>- The Practical Solution Public Company Limited</li> <li>- Advanced Info Service Public Company Limited)</li> <li>- Distributors of cyber protection equipment and systems, both domestically and internationally, especially the products and services of the following brands such as Palo Alto Networks, Check Point, Fortinet, McAfee, Cisco, etc.</li> </ul> </li> </ul>	<ol style="list-style-type: none"> <li>1. Provide training to employees with more knowledge and understanding than they are today.</li> <li>2. Provide additional programs or tools to control and prevent access to data.</li> <li>3. Add information system security equipment.</li> <li>4. Hire additional information security experts and have regular IT Security Assessments to perform preventive IT Security Protection.</li> </ol>

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<p>3. A virtual private network, or VPN, is necessary to connect to the systems of the Company and its affiliates from branch offices of the Company and its affiliates or external agencies. The Company requires the use of Virtual Private Network or VPN to connect to the Company's and its affiliates' systems to ensure the safety of receiving/transmitting information between branch offices or external agencies to the information systems of the Company and its affiliates.</p> <p>4. Knowledge Base</p> <p>4.1 The information management team regularly conducts cybersecurity studies.</p> <p>4.2 Basic Cyber Security Awareness Training (Basic Cyber Security Awareness Training) is a guideline for working and using information systems to be safe from cyber threats.</p> <p>5. Information System Review by External Auditor: Conduct an annual information system review by an external auditor in accordance with standards or information system review frameworks like ITIL, ISO27001, etc. and make improvements to fix any flaws discovered during the review of the information system to ensure that it is secure.</p>	<ul style="list-style-type: none"> <li>- Based on the information provided by the service providers mentioned above, the Company has evaluated the cybersecurity system enhancement plan in phases as follows:-             <ol style="list-style-type: none"> <li>1. Phase 0: Through evaluating the current cybersecurity system, the Company assesses its capability to protect against cyber threats.</li> <li>2. Following the receipt of the test results during Phase 0, the service provider will compile a report assessing the Company's cyber threat protection capabilities and offering recommendations for enhancing cybersecurity systems. This comprehensive report will be structured into three distinct phases for clarity and coherence.                 <ol style="list-style-type: none"> <li>2.1 Phase I                     <ul style="list-style-type: none"> <li>- To safeguard against highly severe threats that may compromise the Company's operational systems. In the event of such an occurrence, the Company may experience disruptions in normal operations and incur significant financial losses.</li> </ul> </li> <li>2.2 Phase II                     <ul style="list-style-type: none"> <li>- To safeguard against medium-level threats that may target the Company's operational systems. In the event of an incident, the impact may not be as severe as outlined in Phase 1. The Company's operations can still continue, albeit with potential temporary disruptions, and there may be some financial losses incurred.</li> </ul> </li> </ol> </li> </ol> </li> </ul>	

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<p>However, the Company is well aware of the importance of keeping internal information safe without any leaks; as such breaches can lead to significant damage at various levels. Therefore, the Company's directors, executives, and employees at all levels must adhere to the Company's guidelines for maintaining internal information security. In addition, the Company established a Personal Data Protection Policy in 2021 as a guideline for employees at all levels to protect the personal data of customers, suppliers, employees, and related individuals. This policy allows for the strict use of data based on the requirements of the PDPA, covering the processes of securely storing, collecting, and disclosing information, including granting the data subject the right to access, verify, and withdraw consent to their data at any time. Any violation of the policy and the Company's practices will be dealt with severely, including prosecution to the fullest extent of the law and providing full compensation for damages incurred, as specified by law.</p>	<p>2.3 Phase III</p> <ul style="list-style-type: none"> <li>- To safeguard the Company's work systems against potential minor threats. While these threats may not initially pose severe impacts, they could accumulate damage and escalate in severity over time.</li> </ul> <p>3. The establishment of a cyber threat prevention team by the Company is comparable to recruiting specialized doctors. Presently, there remains a shortage of personnel in this field—individuals with specialized expertise in cyber security who necessitate dedicated hours for work in this specific domain. High wages are typically Generally, hiring external team is required to monitor cyber security.</p> <ul style="list-style-type: none"> <li>- The Cyber Danger Surveillance Team will continuously analyze data traffic flow through Data Traffic Log Analysis, requiring the processing of a significant volume of data at all times. Should any suspicious activity be detected, the team will promptly implement preventive or corrective measures according to the agreed scope outlined in the service contract and will promptly notify the Company's designated personnel.</li> </ul>	

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- The Company has organized training sessions to educate all executives and employees, as well as communicated through various channels such as email, website, to employees to build knowledge and understanding, as well as to realize the importance of maintaining personal data.</li> <li>- Establish channels for inquiries in case of inquiries regarding personal data protection. Collection, use or disclosure of information, exercise of rights or any complaints by contacting the Human Resources Department, 8th Floor, TPI Tower, 26/56 Chan Tat Mai Road, Tungmahamek, Sathorn, Bangkok 10120 Tel: +66 (0) 2213-1039, 2285-5090 Email: DPO@tpipolene.net</li> </ul>	<p>Remarks:</p> <ol style="list-style-type: none"> <li>1. Investment in cyber defense cannot be a one-time occurrence; regular investments are necessary to continually develop the system to address cyber threats that have evolved alongside advancements in technology, particularly in today's landscape. Hackers are increasingly utilizing AI to enhance their capabilities for cyber-attacks. If investment is made only once, only the technology available at the time of purchasing cyber protection equipment and systems is acquired, which may be insufficient to prevent future threats.</li> <li>2. Once the service provider has completed all required steps, the results will be compiled into a detailed plan or proposal, accompanied by a budget. This presentation will then be delivered to the Company's top executives or Board of Directors for their review, consideration, and approval in further determining the allocation of the budget.</li> </ol> <ul style="list-style-type: none"> <li>- All employees have been communicated and acknowledged the Personal Data Protection Policy and consented to the collection of personal data.</li> <li>- In 2023, no complaints of personal data breaches, including complaints from third parties and regulators arising from leaks, theft or loss of customer data and important corporate information. [418-1]</li> </ul>	

### Tracking and preventing data leaks

Types of Data Leaks	Management methods and solutions	The number of times the information was leaked		
		2021	2022	2023
Unauthorized access to data in information systems by people who do not have rights to it.	Information systems are regularly reviewed by external auditors every year.	0	0	0
Access to information in the information system by malicious persons (Hacker)	It is protected by Firewall/IPS and Endpoint Security information devices on the server and user machines, and the service contract is renewed regularly.	0	0	0

### Products and Service Development with Responsibilities [3-3]

Researching, developing, and improving the Company’s products and services is considered a critical process for researching, developing and improving products and services each time, so the Company must truly understand consumer needs or satisfaction with products. This is done by surveying current consumer demands, budgets used, duration, and implementation of new technologies or innovations in the process of product and service development. Also, the Company’s production processes of goods and services must be controlled to meet the Quality Management System Standard (ISO 9001:2015), environmental management system standard (ISO 14001:2015), and management system standard, Occupational Health and Safety (ISO 45001:2018) and Energy Management System Standards (ISO50001:2011), to provide quality, safety, standardized products through modern, environmentally friendly means and that are versatile to meet consumers’ needs.

### Quality Policy [2-23]



<https://www.tpipolene.co.th/th/aboutus/about-tpi/policy>



Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
<ul style="list-style-type: none"> <li>- Seeking to gather knowledge that is useful for the organization, both in terms of products, services and operating methods.</li> <li>- Complete research of new products or improve the quality of at least 5 products within 3 years</li> <li>- Research and development of technology and innovation in at least 5 projects within 3 years.</li> <li>- Customers are satisfied with the Company in all aspects to the highest, and the satisfaction level must not be lower than 4.10 out of 5 points.</li> <li>- Customer satisfaction level in solving the Company's problems not less than 82%.</li> </ul>	<ul style="list-style-type: none"> <li>- Provide R&amp;D department to conduct basic research activities of product research and development to be the main team in the development of the organization in terms of knowledge. New product research, product improvements and new knowledge pursuits to be used in corporate development.</li> <li>- Improve existing products to better meet customer needs and application. It takes into account environmental friendliness and safety for users.</li> <li>- Develop new products, which are various innovations to market to increase alternatives and meet the best uses of consumers.</li> <li>- Research and development of Alternative Raw Material, including the reuse of waste from the production process to reduce the use of raw materials which are natural resources.</li> <li>- Continuous implementation of standard management system such as Quality Management System (ISO 9001:2008, API Specification Q1), Environmental Management System (ISO 14001:2004), Occupational Health and Safety Management (ISO 45001:2018), as well as quality management system on the competency of the TEST LABORATORY, ISO/IEC 17025:2005, etc.</li> <li>- All of the Company's products are researched and developed under the control of ISO 9001:2015, API Specification Q1, API Specification 10A and ISO/IEC 17025:2005, as well as prepare and review the Company's quality goals objectives at least once a year.</li> </ul>	<ul style="list-style-type: none"> <li>- The innovative and service technology development projects, in which 30 products are successfully produced and launched in 2019-2023 as the following:               <ol style="list-style-type: none"> <li>1. New products for 2020 include TPI All Season Paint (NP104).</li> <li>2. New products for 2021 are TPI sulfate-resistant marine dry concrete mortar (M401S, M402S, M403S, and M404S), special primer paints (NP301P and NP304), probiotic products for animals (TPI - Probiotic liquid 5 formulas, powder 4 formulas).</li> <li>3. New products for 2022 include Liquid Hardener, Polyurethane foam for crack repair (PU Foam Injection), Acid-resistant mortar products from waste power plant fly ash together with silicone reinforced material, heat-resistant paint used for metal pipe structures and plant chimneys with high heat, mortar anti-alkali primer — anti-mold — NP111, Probiotic products for animals (6 formulas of TPI-Synbiotics, 6 formulas of powder type).</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>- The Company has a policy to change its products to Specialty Polymers, which are plastic resins with more complex compositions and chemical structures, by improving production technology and machinery to be more flexible. The product has better features, higher prices, and limited production in Europe and America. None of these production technologies can be sold by any company like other basic petrochemical products. Due to this, the Company must first conduct research and develop such know-how using a specialized pilot reactor it has already built that can react at pressures of up to 3,000 bar in order to produce samples for testing and testing new markets before developing the technology to be used in the actual production line in the future. The Company expects to be able to start producing new types of specialty products within 2024.</li> <li>- Develop products to have higher value Some products will focus on Niche Market to be able to increase sales and increase profitability, such as glue, water and glue, etc., as well as expanding the business to the New Normal product market, focusing on producing products for new lifestyles that Different from the past Including Bio Knox and Micromknox products and various cleaning products, etc.</li> </ul>

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- Administration in accordance with the Company's policies under the Code of Ethics and Good Corporate Governance to ensure that customers who purchase products and services from the Company receive the highest benefits and satisfaction by producing and selling products at a fair price, with high quality and to be responsible for customers and consumers by providing with fast service to maintain a long lasting relationship based on the following principles: (1) Strive to develop quality products and services that are inclusive and deliver products on timely manner (2) Must not act in deceptively or oblivious to product quality by delivering safe, reliable products and services and does not harm the health of consumers and provide caution advice in labels or product documentation in accordance with the International Standard Quality Management System, (3) Store customer data systematically, securely and without misuse of information, and (4) Provide the responsible departments for providing feedback, providing knowledge about the Company's products and services.</li> </ul>	<p>4. New products for 2023 include Rust Converter-NP110S</p> <p>Number of product research and development projects After completion of the year 2020-2023, there were 11 projects;</p> <p>The number of R&amp;D projects completed during 2020-2023 was 11 projects as follows:-</p> <ol style="list-style-type: none"> <li>1. In 2021, the study to use steel fibers as by-products from renewable fuel production processes in concrete production, separation and selection of probiotic bacteria for animal feed production. Economic animal type, Research and development of selection of lactic acid bacteria probiotic microorganisms for the production of powdered probiotics, Development of healthy beverage products with vitamin water and probiotics suitable for consumers of different ages.</li> </ol>	<ul style="list-style-type: none"> <li>- For the EVA film business, the Company has developed new products to enter the safety glass market to replace the traditional plastic used in such industry, which has a high price.</li> <li>- Leading solar panel manufacturers have accepted the development of solar film for the production of high-quality solar panels, which is used in the generation of electricity from solar energy to reduce CO2 This includes the film development project for tempered glass, which is a product that requires high technology in production and takes a long time to develop, but has a high margin and a small number of manufacturers.</li> </ul>

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- Collect information from customers who have purchased the Company's products to assess customer satisfaction levels in various areas, such as TPIPL product satisfaction, service satisfaction before, during and after-sales service, the Company's communications Satisfaction with sales support services and overall satisfaction with 2 annual assessment survey with a period of 6 months apart from the target groups, such as registered agents and registered product end-users. For assessments in the first 6 months of the year, the data collection of the year uses data of customers whose purchase sales volume in December prior to the assessment year. The second data collection for assessments in the last 6 months of the year uses customer data that has purchased goods in June of the year of assessment. The results of the satisfaction assessment of the year (based on the total average of both assessments) are taken into consideration according to ISO:9001 and formulate guidelines based on significant recommendations to the relevant authorities.</li> <li>- Giving importance to product development in accordance with standards, regulations, and market expectations with risk management measures by monitoring the market and customers, setting product inspection procedures, having Quality Assurance, Quality Control, obtaining product certification quickly, including setting clear and concise quality according to the specified standards.</li> </ul>	<ol style="list-style-type: none"> <li>2. In 2022, including concrete block products from heavy ash and fly ash from waste power plants, further development of TPI Biosan effluents treatment products to have features to increase the elimination of nuisance larvae, anopheles larvae, research and develop products from natural minerals for potted plants (Soil Booster).</li> <li>3. In 2023, this includes the development of liquid organic fertilizer with the property of decomposing leaf litter or stubble that is difficult to decompose, the development of powdered calcium and vitamin C supplements, and high-quality calcium carbonate to replace clinker in hydraulic cement/Portland cement/ mixed cement in order to reduce the carbon footprint of cement.</li> </ol> <ul style="list-style-type: none"> <li>- The total amount of expenditure on research and development in 2023 amounted to Baht 186,734,399.</li> <li>- The total amount of spending on innovation technology and service in 2023 amounted to Baht 79,938,941.29.</li> <li>- Overall product satisfaction with an average TPI of 4.35 points out of 5.</li> </ul>	<ul style="list-style-type: none"> <li>- In the sales promotion guidelines for 2024, the Department considers using recommendations from the satisfaction assessment report and suggestions received from customers as the guideline for organizing the Company's promotional activities. The Company will continue to focus on organizing free giveaways and accumulating travel targets within the construction material product group. Additionally, a giveaway program in the form of T-shirts will be implemented for the organic agricultural product group. For other product categories, free gifts will be tailored according to market and competition conditions, potentially including additional products. Furthermore, the Department aims to increase awareness of the Company's new products by incorporating them into promotional offers, such as "buy paint, get ceiling paint free" or "buy fertilizer products, get new fertilizer products." These initiatives are designed to encourage trial and raise awareness. Additionally, the Department will focus on enhancing awareness through other marketing activities, such as organizing product exhibition booths and seminars.</li> </ul>

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
	<ul style="list-style-type: none"> <li>- Develop products to add higher value, with some products focusing on the niche market in order to increase sales and increase profitability, such as EVA liquid and powder, etc. including expanding the business into the New Normal product market by focusing on producing products for new lifestyles that are different from the past, such as Bio Knox and Microm knox products and various cleaning products, etc.</li> </ul> <p>As for the promotional guidelines for the year 2023, the Company has advertised various types of TPI products as suggested by customers as follows:-</p> <ul style="list-style-type: none"> <li>- Digital Advertising Channels, MGR Online website (www.manager.co.th).</li> <li>- Media types, both visual and sound, are TV, Suvarnabhumi Channel, TNN2, MCOT HD Channel 9, Sudla Fah Khiao Program, Channel 3, Nation TV 22, TOPNEWS 77, TGN and NEWS1 Channel.</li> <li>- Brochures, which are brochures, use high-quality paper with beautiful colors to distribute to customers.</li> <li>- Listening radio broadcasting through radio receivers, agricultural radio stations, Adisorn sound radio stations.</li> <li>- Print media such as Naewna newspaper, 360 Degree Daily, Manager newspaper.</li> </ul>	<ul style="list-style-type: none"> <li>- Overall satisfaction with pre-sales services averaged 4.37 points out of 5 points.</li> <li>- Overall satisfaction with the service during the sale average 4.36 points out of 5 points.</li> <li>- Overall satisfaction with after-sales service averaged 4.39 points out of 5 points.</li> <li>- Overall satisfaction with communications of the Company averaged 4.35 points out of a full score of 5.</li> <li>- Overall satisfaction with sales support services averaged 4.34 points out of 5.</li> <li>- Overall satisfaction in various aspects averaged 4.37 points out of a full score of 5 points or equal to 87.40%.</li> <li>- Satisfaction level of solving customer problems is 94.40%.</li> <li>- No cases of non-compliance with regulations related to health and safety effects of products and services were found. [416-2]</li> <li>- The Company has used information obtained from customer satisfaction assessments to develop and improve products/services/business processes of the Company.</li> </ul>	<p>These efforts are aimed at presenting proposals to management for the consideration of policies that respond to customer needs, thereby maintaining customer satisfaction aligning with standards.</p> <ul style="list-style-type: none"> <li>- Product Modification Policy to Specialty Polymer by Improving Production Technology and Machinery to be more flexible Such products have improved properties. Prices are rising, and there are limited producers in Europe and USA. No other company sells these production technologies like other basic petrochemical products, so the company needs to research and develop such knowledge by relying on a special pilot reactor that can react at pressures up to 3,000 bar within 2024.</li> </ul>

Target	Action Plan	Key Performance in 2023	Guidelines for improving future operations
		<ul style="list-style-type: none"> <li>- Customers have given suggestions for the promotion in the future, and requested that the Company organize a promotional campaign in the form of ordering products, giving away t-shirts and advertisements for various types of TPI products via TV. The Company has advertised various types of TPI products as suggested by customers as follows:-</li> <li>- Digital Advertising Channels, MGR Online website (<a href="http://www.manager.co.th">www.manager.co.th</a>).</li> <li>- Media types, both visual and sound, are TV, Suvarnabhumi Channel, TNN2, MCOT HD Channel 9, Sudla Fah Khiao Program, Channel 3, Nation TV 22, TOPNEWS 77, TGN and NEWS1 Channel.</li> <li>- Brochures, which are brochures, use high-quality paper with beautiful colors to distribute to customers.</li> <li>- Listening radio broadcasting through radio receivers, agricultural radio stations, Adisorn sound radio stations.</li> <li>- Print media such as newspaper, 360 Degree Daily Manager newspaper.</li> </ul>	

Customer satisfaction level in various areas for the year 2023 (out of 5 points)



**Note:** The results of the customer satisfaction rating based on a full score of 5 points, showing the total average of both assessments by collecting data 1, use customer data with purchases in December the previous year of the year assessed for assessment in the first 6 months of the year, and the second data collection of the year. For assessments in the last 6 months of the year, the satisfaction benchmark of each assessment must not be lower than 4.1 out of 5 points.



**R&D projects undertaken in 2023 (Including ongoing projects carried out in the previous year) totaling Baht 186,734,399 are as follows: –**

Innovation Technology and Service Projects	Detail	Investment value
<p><b>A research study to use steel fibers that are byproducts from the production process of renewable fuels to be used in ready-mixed concrete production.</b></p>	<p>Development of mortar and concrete properties in tensile and bending forces using steel fibers derived from used tires, by-products from renewable fuel production through modifying and selecting the proper size compared to steel fibers, bending ends type of 0.75 x 60 mm, by researching on the tensile and bending properties of mortar and concrete with different proportion ratio of large steel lines.</p>	<p>THB 5,960,673</p>
<p><b>A research study of methods to reduce gas emissions CO<sub>2</sub> caused by truck exhaust fumes by absorbing to ready-mixed concrete mixture.</b></p>	<p>Reducing CO<sub>2</sub> gas emission caused by truck exhaust fumes, which are considered useless waste and a toxic polluting gas by absorbing to ready-mixed concrete mixture. The results of the test showing that CO<sub>2</sub> gas can be used in concrete mixture whereas compressive strength is not inferior.</p>	<p>THB 3,420,716</p>
<p><b>A research study AHA extracts from lactic acid bacteria for cosmetic ingredients</b></p>	<p>AHA, an acidic compound is a natural extract, such as citric acid from lemon, orange and grapefruit, malic acid from apples, glycolic acid from sugarcane, lactic acid from sour milk, tartaric acid from tamarind, which is commonly used in dermatology, is used to treat acne, blemishes, dark spots, wrinkles and small polyps around the face and neck. It plays an important role in helping exfoliate old skin cells. The project then studied AHA extracts from natural raw materials, such as sugarcane juice, tamarind juice and lactobacillus spp. food left over from cell harvesting to compare the effectiveness and quantity obtained from extraction and make a mixture of cosmetic products (skin creams).</p>	<p>THB 2,280,000</p>
<p><b>A research and development project of soil conditioners from scrap excess in the dolomitic limestone production process.</b></p>	<p>Soil is one of the fundamental factors that are important to production in the agricultural sector. Planting requires fertile soils with enough food minerals for plants, which will result in good growth, high yields and good quality, but the problem conditions currently encountered in most agricultural areas are lacking in fertility due to the prolonged use of agricultural land, and the use of chemical fertilizers alone causes soil degradation problems such as acid soil formation, thus developing soil nourishment agents from the remaining raw materials used in the dolomitic limestone production process, which solves the problem of soil degradation, improving the soil to raise soil pH. Increase the balance of various nutrients, adjust the soil to be fertile, suitable for growing crops.</p>	<p>THB 1,820,000</p>
<p><b>A research and development project on the effectiveness of hand wash liquid soap mixed with herbal extracts in destroying pathogenic bacteria.</b></p>	<p>As a result of the COVID-19 pandemic, consumers have changed their lifestyle to a “NEW NORMAL” that pays more attention to their personal hygiene to reduce the spread of the COVID -19 virus and skincare. Therefore, in this research, hand sanitizer soap products have been developed to reduce the accumulation of bacteria to help reduce the spread of harmful pathogens.</p>	<p>THB 3,500,000</p>

Innovation Technology and Service Projects	Detail	Investment value
<p><b>The development of liquid organic fertilizers with the ability to decompose stubble or leaf residues that are difficult to decompose</b></p>	<p>Utilization of cellulosic microorganisms of liquid organic fertilizers on the decomposition of stubble and rice straw to reduce stubble burning and greenhouse gas emissions.</p>	<p>THB 3,470,000</p>
<p><b>Production of modern medicine for humans</b> <b>Phase 1 (tablets, powder and liquid)</b></p>	<p>It is the development of modern drug research for humans by using raw materials that are active ingredients listed in modern pharmaceutical formulations under standard production methods, clean, modern, and safe production processes for consumers to treat minor illnesses. that may occur in everyday life, reducing the importation of expensive medicines from abroad, such as:-</p> <ol style="list-style-type: none"> <li>1. Tablet: such as lozenges to relieve sore throats, pain relievers (paracetamol), and menstrual pain relievers, tablets to lower stomach acid.</li> <li>2. Powder: such as mucus dissolving powder medicine, powdered medicine to increase lubrication in the knee joint.</li> <li>3. Liquid for external use: such as oral disinfectants that are antiseptic mouthwash, sprays for relieving sore throats and reducing inflammation.</li> <li>4. Liquid for internal use: such as medicines to lower stomach acid, Antacids and medicine relieving acid reflux, etc.</li> </ol> <p>Remarks: The budget amounting to Baht 146,780,000 is allocated for investment in buildings, machinery, measuring tools, and instrument, whereas the research budget is only about 10%.</p>	<p>THB 146,780,000</p>
<p><b>Product development of three types of herbal mouthwash (ginger, fingerroot, and zanthoxylum limonella)</b></p>	<p>Three types of herbal mouthwash (ginger, fingerroot, and Zanthoxylum limonella) for oral care and reducing the accumulation of bacteria, specifically Streptococcus spp., have been developed with a better formula than those using Chlorhexidine and the original formula that used ginger essential oil as an ingredient.</p>	<p>Baht 2,305,078</p>
<p><b>Research and development of baby talcum powder, cold loose powder, face powder, and pressed powder containing calcite, a by-product of the cement production process, along with the utilization of corn starch and refined corn starch to replace talcum.</b></p>	<p>Talcum, the main ingredient in face powders commonly available on the market, is often contaminated with asbestos, a non-biodegradable substance. Prolonged inhalation of asbestos can lead to its accumulation in the lungs and result in cancer. To address this issue, this research has developed formulas for baby talcum powder, cold loose powder, face powder, and pressed powder, all made from corn starch and modified corn starch to replace talcum. These formulas also incorporate hygroscopic substances, specifically natural calcite mineral, a by-product of the Company's cement production process. This mineral is derived from the cleaning and sedimentation of limestone, representing a sustainable reuse of production leftovers and contributing to the reduction of the greenhouse effect.</p>	<p>Baht 4,657,720</p>

Innovation Technology and Service Projects	Detail	Investment value
<p>The research and development project focuses on creating handwashing and disinfectant soaps specifically tailored for industrial use in both human food and animal feed manufacturing factories. The objective is to address all seven types of food disinfection requirements while ensuring that the products are free from triclosan.</p>	<p>Triclosan, a disinfectant commonly used in liquid soaps, poses dangers as it can be absorbed through the skin or orally, leading to adverse health effects when accumulated in the body over time or in large amounts. This research aims to develop a handwashing soap formula capable of effectively killing germs without the use of triclosan. Additionally, the Company conducted research to identify a hand soap composition that is gentle on the user's skin and environmentally friendly because frequent handwashing in a day for both human food and animal feed manufacturing industries is unavoidable.</p>	<p>Baht 3,466,759</p>
<p>Study project aiming to use EVA as a binder in lithium-ion battery terminals</p>	<p>Given the adhesive and flexible properties of EVA, a polymer renowned for its excellence in these aspects, a study was conducted to utilize EVA to enhance the properties of the binder responsible for securing the Active Material at the terminals of lithium-ion batteries. This aims to prevent expansion or peeling during the transmission and distribution of electricity, thereby enhancing efficiency, prolonging lifespan, and bolstering safety. Initial tests suggest that EVA can effectively substitute SBR rubber, commonly used to enhance binder performance. Consequently, research and development efforts have commenced to further refine its properties and maximize efficiency.</p>	<p>Baht 2,324,436</p>
<p>EVA film development project for safety glass</p>	<p>The tempered glass market is a market of significant value and continuous growth, owing to its widespread use in the construction, automotive, and industrial sectors. Currently, Polyvinyl Butyral (PVB) plastic film is commonly employed in these industries due to its suitable properties, despite its relatively high cost compared to other types of plastic. Studies and developments have shown that EVA plastic film can enhance its properties through chemical treatments and advanced production methods. Achieving equal or superior quality to PVB, including excellent adhesion properties, clarity, durability, and a more reasonable price, presents an opportunity to revolutionize the safety glass production market and offer new avenues for the Company to capture a significant share in a market of considerable value. Currently, the Company has studied, developed, and started testing EVA film for safety glass with domestic and international customers. It is in the process of being patented and undergoing further study and improvement to enable its use with customers who possess modern safety glass production technology capable of high-speed production.</p>	<p>Baht 6,749,017</p>
<p style="text-align: center;"><b>Total</b></p>		<p><b>THB 186,734,399</b></p>

**Innovation Technology and service projects in 2023 (Including ongoing projects carried out in the previous year) totaling Baht 79,938,941.29 are as follows:-**

Innovation Technology and Service Projects	Detail	Investment value
<b>Development of Road Marking Paint Product with solvent free- ready to use type</b>	Innovations in ready-to-use traffic paint products do not rely on heat to warm the melting before using; it can be used to combine with paintbrushes, paint rollers or sprayers. It is convenient for users and does not have to mix other solutions and study to improve traffic paint products to enhance qualification. It is able to adhere well to a wide range of surface conditions, durable and resistant to abrasion of vehicle wheels. It can withstand good environmental conditions such as heat resistance, sun resistance, rain resistance, access to other climatic conditions, and develop into color products that can be easily self-cleaned and good anti-slip performance to reduce/prevent traffic hazards.	THB 7,730,825.14
<b>Development of dry ready-mixed concrete products and dry ready-mixed concrete for the aquatic and marine environment</b>	This project is an innovative new product of ready-mixed concrete and dry concrete for the marine environment by using fly ash, a byproduct from coal in Power plants. It is used as a concrete mixture material in order to meet industry standards in applying for a TIS license and also reduces waste caused by the power generation industry and reduces pollution that affects the environment.	THB 4,010,640.61
<b>Research and development of solar heat reduction emulsion paint products</b>	Innovative solar heat reduction emulsion paint for external paints with good heat reflection efficiency, UV resistant and maintains good surface adhesion properties. It can be used in a wide range of new and plaster walls, including plaster walls, fiber cement panels and decks, making the house cool, brightly colored and long-lasting. In addition, the products obtained from this research must pass according to industry standards. Solar Heat Reduction Emulsion Color according to TIS 2514-2553	THB 3,264,711.85
<b>Research and development of natural mineral (Soil Booster) products for potted plants</b>	Nowadays, due to the COVID-19 pandemic, which has changed people's lives longer stays at home or rooms, so many people have turned to plant trees, including ornamental flowers or kitchen garden vegetables, but as a novice to planting, and don't have any understanding of fertilizers, and nowadays fertilizers, planting soils or additives that help grow crops have different properties. For convenience for those who want to grow novice or professional crops, the Company has researched Soil Booster products, which are soil additives, the composition of the material makes it highly porous, helps carry water, retain moisture and nutrients for plants.	THB 2,750,000.00

Innovation Technology and Service Projects	Detail	Investment value
<p><b>Provita beverages are 20 % combined juice drinks (18% white grape juice and 2% orange juice) from concentrated white grape juice and concentrated orange juice, mixed with multivitamins (vitamin B3, B5, B6 and vitamin C) and Probiotics.</b></p>	<p>Provita beverages are 20% mixed juice drinks (18% white grape juice and 2% orange juice) from concentrated white grape juice and concentrated orange juice, mixed with multivitamins (vitamin B3, B5, B6 and vitamin C), Lactobacillus Paracasei microorganisms that have been pinned to the form of Microencapsulated bead capsules with microencapsulated bead techniques allow provita products to be stored at room temperature without refrigeration for up to 3 months.</p>	<p>THB 4,602,234.06</p>
<p><b>Development of calcium and vitamin C supplements powder</b></p>	<p>Calcium and vitamin C are essential minerals for the body. Each day, the body needs to get the right portion of calcium and vitamin C in order to strengthen bones and teeth. It also strengthens the body's immunity, but from the consumption of meat. Fruits and vegetables may not have enough calcium and vitamin C to meet the needs of the body, and in the current situation, the body also faces many different pathogens that may mix with what we eat.</p>	<p>THB 2,350,000.00</p>
<p><b>Use of waste materials from Fiber Cement products</b></p>	<p>Remove scraps that are waste from the production process to be used as a production ingredient and used fly ash a by-product of the power plant as a raw material for the production of fiber cement.</p>	<p>THB 2,000,000.00</p>
<p><b>Lightweight Fiber-Reinforce Cement Material Project</b></p>	<p>Use scrap from the production of plastic resins process to create new composite materials so as to obtain similar properties to furniture materials, but they are water-resistant, fireproof, termite and insect resistant, and do not contain volatiles, environmentally and user-friendly; an innovative product that is in the process of applying for invention patents in the country and abroad.</p>	<p>THB 5,000,000.00</p>
<p><b>Use in-line quality inspection technology at sheet machine.</b></p>	<p>Install cameras to detect contaminants on fiber cement surface while producing at sheet machine to control quality as well as reduce production waste.</p>	<p>THB15,000,000.00</p>
<p><b>Development of Liquid Hardener</b></p>	<p>It is a concrete polishing system that strengthens the surface with a liquid hander. There is a work process after polishing the concrete surface with Floor Hardener (TPI M99) and then by polishing it to get a smooth concrete surface, with a gloss similar to varnishing with enamel paint or epoxy. It can be used as an industrial floor, warehouse floor, parking facility floor, etc. since it is more durable and resistant to abrasion than polished concrete or concrete covered with polyurethane.</p>	<p>THB 2,824,788.05</p>

Innovation Technology and Service Projects	Detail	Investment value
Development of polyurethane foam products for repairing cracks (PU Foam Injection)	It is a product developed for polyurethane foam (PU Foam Injection) for repairing cracks in concrete with high pressure. The foam will swell in the cracks, closing the water seepage to stop water seeping into the concrete structure at the beginning, reducing future damage to the structure.	THB 2,341,107
Development of acid-resistant mortar products from waste power plant fly ash in combination with silica-reinforced materials	It is fly ash obtained from electricity generation from waste fuel used in organic polymers of acid-resistant mortar products. It is simple to react with alkalis while retaining the same mechanical properties and quality of the inorganic polymer, or better, because of its high amorphous silica and alumina content and spherical form.	THB 2,384,892
Development of heat-resistant paint products for metal pipe structures and factory chimneys with high heat	It is the development of heat-resistant paint products using silicone resin as a binder for protecting and heat-resistant of metal pipe structures and factory chimneys with high temperatures of 400 to 800 degrees Celsius.	THB 2,334,217
Product development of anti-alkali primer paint - anti-fungus	This is the development of alkali-proof cementitious primer paint products - anti-fungus by using Pozzolan Material to remove alkali from calcium hydroxide group which is a product of hydration reaction between cement and water which is one of the causes of white stains (Efflorescence) together with the use of good quality polymers that are highly resistant to alkalis, providing good adhesion to the surface along with the use of anti-mold agents and containing Silver nanoparticles together.	THB 2,046,867
Development of cleaning and coating products for solar cell panels	The development of cleaning and coating products for solar cell panels involves creating an economical formula that is environmentally friendly, non-corrosive to aluminum frames, and has the property to remove dirt, oil stains, and dust. Additionally, it coats the surface of the solar cell panels after cleaning to prevent the recapture of dust particles in the same product. This helps reduce maintenance steps and increases the efficiency of electricity generation from solar panels.	THB 2,629,390
Development of grease stain cleaning and germ-killing spray products for mobile phones, iPads, and tablets in the New Normal era.	Most germicidal products have the capability to kill germs only, but they often lack the ability to effectively clean grease stains caused by contact, particularly on IT equipment such as computers (keyboards), notebooks, mobile phones, iPads, tablets, etc. This leads to the accumulation of grease stains, which serve as food for disease-causing microorganisms and become sources of germs. Therefore, this research has developed a grease stain cleaning spray product that not only kills germs but also effectively removes grease stains from mobile phones, iPads, and tablets in the New Normal era. This product aims to reduce the accumulation of pathogens and grease stains, providing an interesting alternative to traditional disinfectant products.	THB 3,466,656

Innovation Technology and Service Projects	Detail	Investment value
<b>Rust converter research and development project</b>	This project aims to develop a Rust Converter, which involves applying it as a coating directly onto rusted steel without the need to remove the rust. This solution effectively halts the growth of red rust and converts it to black rust or Magnetite, a hard crystal type that strengthens steel and prevents corrosion. Once the solution has fully dried, paint can be applied directly to the steel surface without the requirement for a rust-proof primer, thereby streamlining work processes and reducing costs.	THB 2,500,546.30
<b>Research and development project for wear-resistant plaster products</b>	This project aims to develop and invent a plaster product that is highly abrasion-resistant and capable of withstanding wear and tear when used for plastering Feeding screw walls, caused by abrasion from the sand on conveyor belts, with the goal of reducing damage and increasing service life. To achieve this, the plaster has been developed by combining a special grade of epoxy resin with Portland cement, mixed aggregates, and silica fume, leveraging the advantageous properties of each component to produce wear-resistant plaster. It boasts high abrasion and scratch resistance properties and can be applied to metal surfaces. Furthermore, it is easy to use and does not stream down during application.	THB 2,617,094.00
<b>Contact primer research and development project</b>	This project involves developing a contact primer for dusty surfaces that can be applied to concrete or plaster surfaces previously painted a long time ago. The original paint may be peeling or dusty. The primer aims to enhance adhesion between the new layer of paint and the damaged chalk surface, facilitating better adhesion of the topcoat to the old paint surface without requiring its removal. Additionally, it serves to condition general surfaces afflicted by dust problems, ensuring that they are prepared properly for painting.	THB 3,002,679.71
<b>Development of high-quality calcium carbonate to replace clinker in hydraulic cement/Portland cement/mixed cement for the reduction of carbon footprint of cement</b>	This project involves inventing a process for producing hydraulic cement that reduces carbon dioxide (CO <sub>2</sub> ) emissions by synthesizing a special type of calcium carbonate (CaCO <sub>3</sub> ) with high-purity and suitable properties for use as a replacement material for clinker in the production of hydraulic cement. This special type of CaCO <sub>3</sub> can be synthesized from lime (CaO) and CO <sub>2</sub> gas, which is obtained from the hot air released during the cement production process. Therefore, it represents a method for (Carbon Capture and enhancing the quality of hydraulic cement products.	THB 3,904,441.31
<b>Research and development project focusing on mortar formulation used together with robots, for large-scale structural work</b>	This project aims to develop a cement material suitable for use with house-building robots. While small-scale structures have been successfully developed, their high resolution has led to elevated production costs. Scaling up to larger pieces further exacerbates these costs when compared to traditional construction methods. To progress this research, existing mortar materials are being enhanced to improve usability, facilitating the construction of larger structures and adjusting production costs to better suit larger workpieces.	THB 3,177,851.26
<b>Total</b>		<b>THB 79,938,941.29</b>

# 08 About this report

## Source of Information [2-3]

The 2023 Sustainability Report of TPI Polene Public Company Limited has been prepared as the first report in accordance with the GRI International Reporting Standards to disclose the Company's annual performance in Economic, Social and Environmental dimensions, including good corporate governance, with annual reporting from January 1 to December 31, 2023, using the guidelines of GRI Standards for the Construction and Real Estate group of the Global Reporting Initiative (GRI), based on primary disclosure levels on core option criteria.

In addition, in order to demonstrate its commitment to sustainable development, the Company has linked its sustainable development goals (SDGs) in line with United Nations (UN) Sustainable Development Goals as shown in this report.

For the year 2023, there was a change in the number of employees who have applied for parental leave, the number of employees who returned after the end of the parental leave period, and the number of employees who returned after the end of the parental leave period and continued to work thereafter. 12 months to be accurate For 2021 and 2022. [2-4]

## Scope of the report [2-2]

The disclosure of information in this report presents the 2023 performance data of TPI Polene Public Company Limited with a scope of reporting covering head office, Cement Plant, Saraburi Province, Concrete Roof tile and Fiber Cement Plants, Saraburi province, LDE/EVA Plants, Rayong province, as well as all related stakeholders.

## Creditability and Reliability of the report [2-5]

The ESG Committee and the top management of the Company plays an important role in monitoring, advising, giving grant approvals and verifying the accuracy of essential information in this report so that the contents of the report are complete, accurate, and reliable to be able to respond to relevant stakeholders and in line with GRI's international reporting guidelines. The Company has no policy to procure a Third Party for External Assurance.

## Upgrading the quality of report preparation

The Company allows all stakeholders to comment or express their opinion on the Annual Sustainability Report through the reader survey (as per the attachment to this report). The Company will use it as information on the development and enhancement of the preparation of the next Sustainability Report of the Company in order to further meet the needs and expectations of the relevant stakeholders.

## More information about the report [2-3]

For further questions or suggestions, please contact:

1. Miss Oratai Jiaranai

Assistant Vice President, Finance Management Department

2. Miss Ngampit Watanatanomwong

Section Manager, Finance Management Department

## TPI Polene Public Company Limited

26/56 Chantad mai Road, Tungmahamek, Sathorn, Bangkok 10120

Phone: +66 (0) 2213-1039, 2285-5090 # 12982 / 12159

E-mail : orataij@tpipolene.co.th, ngampit@tpipolene.co.th



Sustainability Report 2023

On the website of TPI Polene Public Company Limited

[www.tpipolene.co.th](http://www.tpipolene.co.th)

# 09 GRI Content Index

<b>Statement of use</b>	TPI POLENE Public Company Limited has reported in accordance with the GRI Standards for the period from 1 January 2023 to 31 December 2023.
<b>GRI 1 used</b>	GRI 1: Foundation 2021
<b>Applicable GRI Sector Standard(s)</b>	-

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION			GRI SECTOR STANDARD REF. NO.	SDG LINKAGE TO DISCLOSURE
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION		

## General disclosures

GRI 2: General Disclosures 2021	2-1: Organizational details	SR 21-26	A gray cell indicates that reasons for omission are not permitted for the disclosure or that a GRI Sector Standard reference number is not available.				
	2-2: Entities included in the organization's sustainability reporting	SR 171					
	2-3: Reporting period, frequency and contact point	SR 171					
	2-4: Restatements of information	SR 171					
	2-5: External assurance	SR 171					
	2-6: Activities, value chain and other business relationships	SR 21-24, 26, 30-31					
	2-7: Employees	SR 27				SDG 8, SDG 10	
	2-8: Workers who are not employees	SR 27				SDG 8	
	2-9: Governance structure and composition	SR 32				SDG 5, SDG 16	
	2-10: Nomination and selection of the highest governance body	AR: Clause 7.2.4 Nomination and appointment of directors and sub-directors and Presidents; Clause 8.1.1 Nomination, Development and Training of Directors				SDG 5, SDG 16	
	2-11: Chair of the highest governance body	SR 33-35				SDG 16	
	2-12: Role of the highest governance body in overseeing the management of impacts	SR 33-35				SDG 16	

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION			GRI SECTOR STANDARD REF. NO.	SDG LINKAGE TO DISCLOSURE
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION		
	2-13: Delegation of responsibility for managing impacts	SR 33-35					
	2-14: Role of the highest governance body in sustainability reporting	SR 36					
	2-15: Conflicts of interest	AR: Clause 8.1.4 Monitoring compliance with corporate governance policies and practices; Clause 9.2 Inter-Company Transactions					SDG 16
	2-16: Communication of critical concerns	SR 34-35					
	2-17: Collective knowledge of the highest governance body	AR: Clause 8.1.1 Nomination, Development and Training of Directors					
	2-18: Evaluation of the performance of the highest governance body	SR 36					
	2-19: Remuneration policies	AR: Clause 7.4.2 Remuneration policy of directors and the Management; Clause 7.4.3 Remuneration of the Directors; Clause 8.1.2 Attendance and remuneration of the Board of Directors and audit committees of the Company individually	b. describe how the remuneration policies for members of the highest governance body and senior executives relate to their objectives and performance in relation to the management of the organization's impacts on the economy, environment, and people.	Information unavailable/incomplete	It is under consideration to proceed in the next reporting cycle.		
	2-20: Process to determine remuneration	AR: Clause 7.3.4 Remuneration Committee as at 31 December 2023					

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION			GRI SECTOR STANDARD REF. NO.	SDG LINKAGE TO DISCLOSURE
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION		
	2-21: Annual total compensation ratio	-	a. report the ratio of the annual total compensation for the organization's highest-paid individual to the median annual total compensation for all employees (excluding the highest-paid individual) ; b. report the ratio of the percentage increase in annual total compensation for the organization's highest-paid individual to the median percentage increase in annual total compensation for all employees (excluding the highest-paid individual) ; c. report contextual information necessary to understand the data and how the data has been compiled.	Information unavailable/ incomplete	It is under consideration to proceed in the next reporting cycle.		
	2-22: Statement on sustainable development strategy	SR 6-9					
	2-23: Policy commitments	SR 28-29, 37-38, 40-48, 101, 131, 144, 152, 157	a. describe its policy commitments for responsible business conduct, including: i. the authoritative intergovernmental instruments that the commitments reference; ii. whether the commitments stipulate conducting due diligence.	Information unavailable/ incomplete	It is in the process of considering the OECD Due Diligence Guidance for Responsible Business Conduct to be applied in the organization.		SDG 16
	2-24: Embedding policy commitments	SR 33-35, 40-48	a. describe how it embeds each of its policy commitments for responsible business conduct throughout its activities and business relationships.	Information unavailable/ incomplete	It is in the process of considering the OECD Due Diligence Guidance for Responsible Business Conduct to be applied in the organization		
	2-25: Processes to remediate negative impacts	SR 140-144					

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION			GRI SECTOR STANDARD REF. NO.	SDG LINKAGE TO DISCLOSURE
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION		
	2-26: Mechanisms for seeking advice and raising concerns	SR 140-144	describe the mechanisms for individuals to: i. seek advice on implementing the organization's policies and practices for responsible business conduct; ii. raise concerns about the organization's business conduct	Information unavailable/incomplete	It is in the process of considering the OECD Due Diligence Guidance for Responsible Business Conduct to be applied in the organization.		SDG 16
	2-27: Compliance with laws and regulations	SR 71					
	2-28: Membership associations	SR 37-39					
	2-29: Approach to stakeholder engagement	SR 48-55					
	2-30: Collective bargaining agreements	SR 106					SDG 8
<b>Material topics</b>							
GRI 3: Material Topics 2021	3-1: Process to determine material topics	SR 56-57	A gray cell indicates that reasons for omission are not permitted for the disclosure or that a GRI Sector Standard reference number is not available.				
	3-2: List of material topics	SR 58-59					
<b>Economic performance</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 147-151					
GRI 201: Economic Performance 2016	201-1: Direct economic value generated and distributed	SR 151					SDG 8, SDG 9
<b>Indirect Economic Impacts</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 123-129					
GRI 203: Indirect Economic Impacts 2016	203-1: Infrastructure investments and services supported	SR 127, 129					SDG 5, SDG 9, SDG 11
<b>Procurement Practices</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 131-139					
GRI 204: Procurement Practices 2016	204-1: Proportion of spending on local suppliers	SR 133, 139					SDG 8

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION			GRI SECTOR STANDARD REF. NO.	SDG LINKAGE TO DISCLOSURE
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION		
<b>Anti-Corruption</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 131-140					
GRI 205: Anti-Corruption 2016	205-1: Operations assessed for risks related to corruption	SR 132-133					SDG 16
	205-2: Communication and training about anti-corruption policies and procedures	SR 139-140					SDG 16
	205-3: Confirmed incidents of corruption and actions taken	SR 133					SDG 16
<b>Materials</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 73-75					
GRI 301: Materials 2016	301-1: Materials used by weight or volume	SR 74					SDG 8, SDG 12
	301-2: Recycled input materials used	SR 74					SDG 8, SDG 12
<b>Energy</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 79-84					
GRI 302: Energy 2016	302-1: Energy consumption within the organization	SR 79, 83					SDG 7, SDG 8, SDG 12, SDG 13
	302-3: Energy intensity	SR 84					SDG 7, SDG 8, SDG 12, SDG 13
	302-4: Reduction of energy consumption	SR 84					SDG 7, SDG 8, SDG 12, SDG 13
<b>Water and Effluents</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 85-92					
GRI 303: Water and Effluents 2018	303-1: Interactions with water as a shared resource	SR 85-86					SDG 6, SDG 12
	303-2: Management of water discharge-related impacts	SR 86					SDG 6
	303-3: Water withdrawal	SR 85, 87-88					SDG 6
	303-4: Water discharge	SR 86, 89-91					SDG 6
	303-5: Water consumption	SR 92					SDG 6

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION			GRI SECTOR STANDARD REF. NO.	SDG LINKAGE TO DISCLOSURE
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION		
Emission							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 62-72					
GRI 305: Emissions 2016	305-1: Direct (Scope 1) GHG emissions	SR 70					SDG 3, SDG 12, SDG 13, SDG 14, SDG 15
	305-2: Energy indirect (Scope 2) GHG emissions	SR 70					SDG 3, SDG 12, SDG 13, SDG 14, SDG 15
	305-3: Other indirect (Scope 3) GHG emissions	SR 70					SDG 3, SDG 12, SDG 13, SDG 14, SDG 15
	305-4: GHG emissions intensity	SR 70-71					SDG 13, SDG 14, SDG 15
	305-7: Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	SR 70	a. Significant air emissions, in kilograms or multiples, for each of the following:  iii. Persistent organic pollutants (POP) iv. Volatile organic compounds (VOC) v. Hazardous air pollutants (HAP) vi. Particulate matter (PM)	Information unavailable/incomplete	It is under consideration to proceed in the next reporting cycle.		SDG 3, SDG 12, SDG 14, SDG 15
Waste							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 93-97					
GRI 306: Waste 2020	306-1: Waste generation and significant waste-related impacts	SR 93					SDG 3, SDG 6, SDG 11, SDG 12
	306-2: Management of significant waste-related impacts	SR 93-95					SDG 3, SDG 6, SDG 8, SDG 11, SDG 12
	306-3: Waste generated	SR 96					SDG 3, SDG 6, SDG 11, SDG 12, SDG 15
	306-4: Waste diverted from disposal	SR 96					SDG 3, SDG 11, SDG 12
	306-5: Waste directed to disposal	SR 96					SDG 3, SDG 6, SDG 11, SDG 12, SDG 15

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION			GRI SECTOR STANDARD REF. NO.	SDG LINKAGE TO DISCLOSURE
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION		
<b>Employment</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 99-111					
GRI 401: Employment 2016	401-1: New employee hires and employee turnover	SR 103, 109					SDG 5, SDG 8, SDG 10
	401-2: Benefits provided to full-time employees that are not provided to temporary or part-time employees	SR 110					SDG 3, SDG 5, SDG 8
	401-3: Parental leave	SR 111					SDG 5, SDG 8
<b>Labor/Management Relations</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 99-107					
GRI 402: Labor/Management Relations 2016	402-1: Minimum notice periods regarding operational changes	SR 103					SDG 8
<b>Occupational health and safety</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 112-122					
GRI 403: Occupational Health and Safety 2018	403-1: Occupational health and safety management system	SR 113, 115-116					SDG 8
	403-2: Hazard identification, risk assessment, and incident investigation	SR 113, 115, 118					SDG 8
	403-3: Occupational health services	SR 116					SDG 8
	403-4: Worker participation, consultation, and communication on occupational health and safety	SR 113, 115-116					SDG 8, SDG 16
	403-5: Worker training on occupational health and safety	SR 114, 119					SDG 8
	403-6: Promotion of worker health	SR 113					SDG 3
	403-7: Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	SR 113					SDG 8
	403-8: Workers covered by an occupational health and safety management system	SR 120					SDG 8
	403-9: Work-related injuries	SR 121					SDG 3, SDG 8, SDG 16
	403-10: Work-related ill health	SR 122					SDG 3, SDG 8, SDG 16

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION			GRI SECTOR STANDARD REF. NO.	SDG LINKAGE TO DISCLOSURE
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION		
<b>Training and education</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 99-106, 111-112					
GRI 404: Training and Education 2016	404-1: Average hours of training per year per employee	SR 102, 111					SDG 4, SDG 5, SDG 8, SDG 10
	404-2: Programs for upgrading employee skills and transition assistance programs	SR 112					SDG 8
	404-3: Percentage of employees receiving regular performance and career development reviews	SR 112					SDG 5, SDG 8, SDG 10
<b>Local communities</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 123-129					
GRI 413: Local Communities 2016	413-2: Operations with significant actual and potential negative impacts on local communities	SR 123-124					SDG 1, SDG 2
<b>Customer health and safety</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 157-162					
GRI 416: Customer Health and Safety 2016	416-2: Incidents of non- compliance concerning the health and safety impacts of products and services	SR 161					SDG 16
<b>Information Security and Customer privacy</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 152-157					
GRI 418: Customer Privacy 2016	418-1: Substantiated complaints concerning breaches of customer privacy and losses of customer data	SR 156					SDG 16
<b>Innovative Technology and Service</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 157-162, 167-170					
<b>Research and Development</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 157-162, 164-166					

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION			GRI SECTOR STANDARD REF. NO.	SDG LINKAGE TO DISCLOSURE
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION		
<b>Transport</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 75-78					
<b>Customer Satisfaction</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 157-163					
<b>Products and Services</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 157-162					
<b>Risk and Crisis Management</b>							
GRI 3: Material Topics 2021	3-3: Management of material topics	SR 40-48, 144-147					

Remarks: AR - TPIPL Annual Registration Statement/Annual Report 2023 56-1 One Report 2023  
SR - TPIPL Sustainability Report 2023



# 10 Reader Survey Form

Request for your kind cooperation in responding to reader surveys by scanning QR Codes and sending this survey form back to TPI Polene Plc, at the address that appears at the end of this report or by email to: [orataij@tpipolene.co.th](mailto:orataij@tpipolene.co.th) / [chayutd@tpipolene.co.th](mailto:chayutd@tpipolene.co.th)

## 1. Personal data

Gender  Male  Female  
Age  Under 30 years old  30-50 years  More than 50 years  
Occupation, please specify .....

## 2. As a reader/data user, please specify that you read/relate to the uses of information from which point of view:

Customer  Regulatory Authority  Employee  Educational Institutions/Research Agencies  General public  
 Entrepreneur  Government agency  Financial Institutions  Others, please specify.....

## 3. 1. From what sources did you receive/read the Company's Sustainability Report?

[www.tpipolene.co.th](http://www.tpipolene.co.th)  Employees of TPI Polene Public Company Limited  
 Office/Factory/Subsidiary  Others please specify.....

## 4. The purpose of reading this Sustainability Report:

To get to know the Company  To find out about the decision to use the Company's products/services.  
 To study projects that benefit society and the environment.  For research and study of sustainability practices.  
 Others, please specify .....

## 5. What is your opinion about this Sustainability Report of TPI Polene Public Company Limited?

The completeness of the report covers important issues of interest to you.	<input type="radio"/> Much	<input type="radio"/> Moderate	<input type="radio"/> Low
The beauty of the design of the booklet	<input type="radio"/> Much	<input type="radio"/> Moderate	<input type="radio"/> Low
The appeal of the content, the reports, and the presentation style	<input type="radio"/> Much	<input type="radio"/> Moderate	<input type="radio"/> Low
Content clarity, easy to understand and not confusing.	<input type="radio"/> Much	<input type="radio"/> Moderate	<input type="radio"/> Low
Overall reporting satisfaction	<input type="radio"/> Much	<input type="radio"/> Moderate	<input type="radio"/> Low

## 6. What part of the content of this sustainability report interests you the most?

About TPI Polene  TPI Polene and its Sustainability  Environmental Impact Management  
 Community and Social Development  Business Operation under Good Corporate Governance

## 7. Do you think the contents of this report contain all the issues of interest to you?

Complete  Not complete, need more information  
(Please identify the issues that are of your interest and would like to disclose more in the Company's subsequent Sustainability Report)

## 8. What additional matters do you think TPI Polene Public Company Limited should develop or improve in its sustainability performance?

## 9. Comments or other additional suggestions to further improve the Company's Sustainability Report.

TPI Polene Public Company Limited would like to thank you for your kind cooperation and response in this survey form. Information from your answers about this Sustainability Report will be used to improve the preparation of future Sustainability Reports of the Company.



บริษัท ทีพีโอ โพลีน จำกัด (มหาชน)  
TPI POLENE Public Company Limited

26/56 ถนนจันทน์ตัดใหม่ แขวงทุ่งมหาเมฆ เขตสาทร กรุงเทพฯ 10120  
26/56 Chan Tat Mai Rd., Thungmahamek, Sathorn, Bangkok 10120

☎ 0-2285-5090, 0-2213-1039

☎ 0-2213-1035

✉ wmasters@tpipolene.co.th

🌐 <http://www.tpipolene.co.th>

