



TPI POLENE Power Public Company Limited



# TECHNOLOGY PRODUCTS INNOVATION

We Build The Future  
Clean and Green Energy

**Sustainability Report 2022**

TPI POLENE Power Public Company Limited





# **TPI Polene Power Public Company Limited**

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# TPIPP

## Towards ESG Policy to reduce greenhouse gas emissions for sustainable development

### Vision

To become a leader in efficient renewable energy as a clean and green energy producer focusing on developing technology and innovation in all dimensions of working, and as the largest waste disposal plant in the country and in the ASEAN region for greenhouse gas emissions to be zero or negative, conducting business responsibly for sustainable growth in economic, environmental, and social dimensions under good corporate governance.

### Environmental Dimension

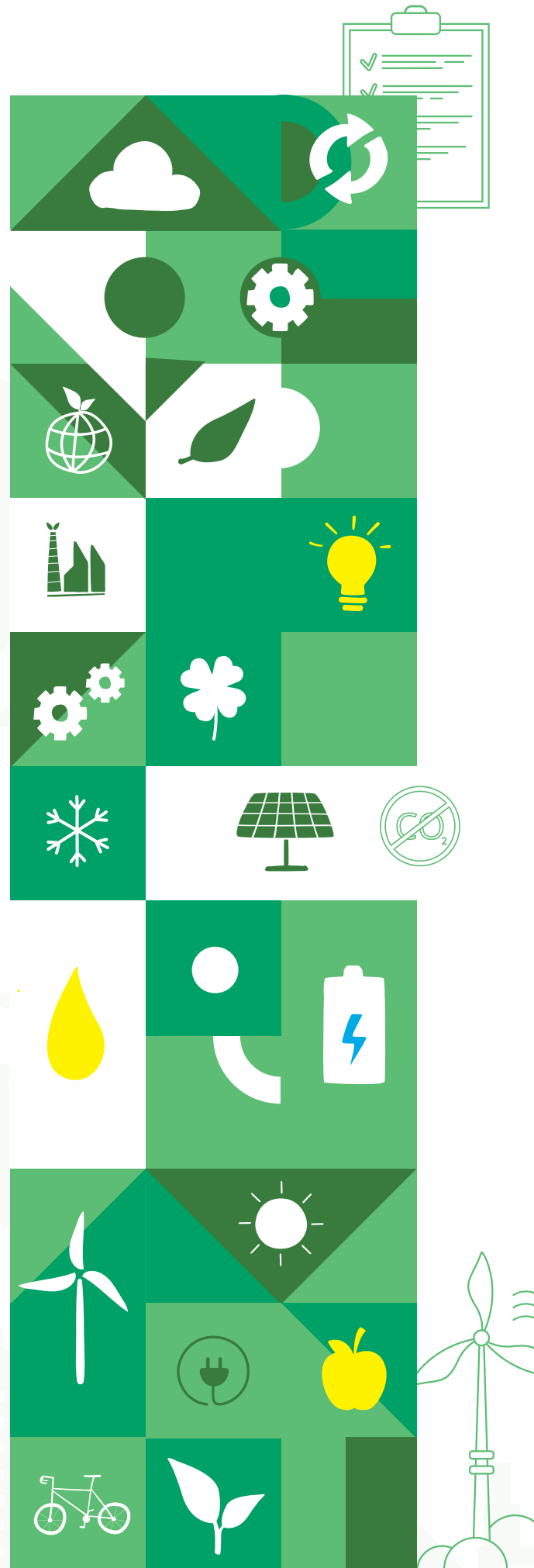
To enhance clean energy production and alleviate environmental issues to achieve the target of net zero emissions in TPI Polene Group by 2043 towards sustainable development.

### Social Dimension

To create a responsible organization, give importance to the balance of stakeholders, develop personnel that are ready to change and learn, care for health and safety, be socially responsible, and care for the environment.

### Governance Dimension

Committed to operating the most efficient power generation business with technology, innovation, as well as continuous research and development, flexibility to adapt to new business ideas and taking on new challenges, managing risk across the organization, delivering excellent performance under good corporate governance and anti-corruption based on strong principles of good governance. .



## 01



# Message from the Chairman<sup>(2-22)</sup>

## Key Policies for Sustainable Development Targeting Net Zero Greenhouse Gas Emission In TPI Polene Group by 2043 (or B.E.2586)

Year 2022 is still the year that the world has to confront with the ongoing COVID-19 pandemic and the highly uncertain, protracted war in Europe, which have affected the economy, society, and lives of people in many country worldwide largely, as well as Thailand unavoidably. As a result, the economic recovery tends to slow down and poses a high challenge to business operations.

TPI Polene Power Public Company Limited as the largest business operator of waste fuel power plants in Thailand and in the ASIAN region and also the largest single-location municipal waste disposal facility in the world, closely monitors the world and Thailand situations in order to formulate various policies and measures in line with the business operation to be able to conduct business with stability by emphasizing the creation of sustainable value in the environment, social and governance dimensions or ESG to drive business operations, by establishing the strategy for the Company to have growth in revenue from products and services, improve productivity, and manage risks related to sustainability that may affect its operations.

The Company also focuses on conducting business with a balanced responsibility to stakeholders, creating good returns for shareholders, and operating business with good governance based on accuracy and compliance with relevant laws and regulations under Code of Conduct of the organization.

TPI Polene Group introduced its new images in 3 areas, namely, Technology (“T”), Product (“P”), and Innovation (“I”), or TPI, as a business management approach that focuses on sustainable development under the promotion of good governance and respect for human rights. This is in line with the government’s policy that promotes the BCG Model in enhancing the quality of life of communities and societies in the country thoroughly and can effectively distribute opportunities and reduce inequality. This is clearly reflected in the Company’s use of clean energy from waste fuel converted from municipal waste in the power generation process, which assists to reduce the greenhouse gas emissions of municipal waste arising from landfills waste disposal.

In addition, the Company also place importance on the growth of clean and green energy power generation business which is environmentally friendly such electricity generated using solar and wind energy that is in line with National energy management development plan which will result in completely.

In the past year, 2022, the Company has carried out significant sustainable development activities, which can be summarized as follows:

1. The Company has moved towards a low-carbon society by setting a goal of Net Zero Green House Gas Emission in the TPI Polene Group by the year 2043 (or B.E. 2586) in accordance with the policy of the Greenhouse Gas Management Organization (from using waste as alternative fuels in the cement production process of TPI Polene Plc. and in the Company’s power generation). Thailand announced that it would achieve its goal of being carbon neutral by 2050 and achieving net zero greenhouse gas emissions by 2065. This action is regarded as the conducting business of cement production and electricity generation while disposal solid waste and reducing carbon dioxide emissions to reduce global warming at the same time.

2. The Company's power plants are capable of reusing approximately 2.73 million tons of waste as fuel instead of coal, which can reduce approximately 6.34 million ton of CO<sub>2</sub>.
3. The Company received a Carbon Credit certificate for a total of 717,931 tons of carbon dioxide equivalent from Thailand Greenhouse Gas Management Organization ("TGO") on May 24, 2022.
4. The Company invests in projects in the total amount of Baht 11,116.50 million to reduce the effect to environment resulting in sustainable business growth at the same time.
5. In 2022, the Company has a sale of low-carbon goods in the amount of Baht 7,680.19 million.
6. The Company measured employee satisfaction in several dimensions of which results showed that satisfaction at work was 78.50 percent and employee engagement with the Company was 89.45 percent. The overall level of employee satisfaction and engagement was 81.24 percent, and the Company used the employee opinion survey results to develop activities to continuously build good relationships with employees.
7. The Company provides equal opportunities for employment without discrimination, which covers both the disabled and other underprivileged groups and there is no complaints of human rights violations.
8. Acknowledgement of the Business Partner Code of Conduct by trade partners are 93%.
9. The Company supports projects and public activities for communities, educational institutions, temples, hospitals, and public agencies by donating healthcare products. In addition, an x-ray vehicle and mobile check-up machines were delivered to Songkhla Nakarin Hospital and donate Nano Super Special Armor paint to the King Bhumibol Stream Art Project, etc. The total value of the Company's donation is approximately 48.55 million baht.
10. The Company disposed approximately 14,986 tons of COVID-19-infected waste and disposes approximately 3,950 tons of non-hazardous industrial waste by using them as fuels in the production process.
11. The Company prepares a sustainability report based on the GRI (Global Reporting Initiative) 2021 by identification of the business materiality in all 3 areas (ESG), totaling 20 issues.

“

With its commitment and give priority to the work process in order to create sustainable growth, as a result, in 2022, the Company received awards and certifications from recognized organizations for its promotion of sustainable development and good corporate governance as follows:

1. The Company was selected as one of the ESG100 securities companies with outstanding environmental social, and governance (ESG) performance from the assessment of listed securities in 2022 by Thaipat Institute
2. The Company was certified by the ESG Credit 2022 for investment in green projects by Thaipat Institute.
3. The Company was selected as sustainable stock THIS (Thailand Sustainability Investment) of 2022 from the Stock Exchange of Thailand and
4. The Company received the Very Good assessment result of the Corporate Governance Report of Thai Listed Companies (CGR) of 2022 by the Thai Institute of Directors (IOD).

In addition, TPIPP has been rated as Stand-alone Credit Profile at "a" by TRIS Rating Co., Ltd. on February 24, 2023, which the Company's credit rating as the organization and its debentures is capped not exceeding the rating on of TPI Polene Plc. (as its parent company) which was upgraded to "A-" (Single A Minus) from "BBB+" (Triple B Plus) with a "Stable" outlook.

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On behalf of the Board of Directors of TPI Polene Power Public Company Limited, we would like to thank all groups of stakeholders who have always contributed to support and trust the Company. The Company have committed to operate business with social responsibility as our priority to achieve the sustainability for our organization, our country, and our world, resulting in the benefits for all stakeholders with regard to economic, social, and environmental aspects continually to the future together.

Yours sincerely,



A handwritten signature in black ink, appearing to read 'Prachai Leophairatana', with a long horizontal stroke extending to the right.

(Mr. Prachai Leophairatana)  
Chairman



# Towards ESG Policy to Reduce Greenhouse Gas Emissions for Sustainable Development

## CLEAN & GREEN ENERGY PRODUCER FOR OUR HEALTHY COUNTRY”

TPI Polene Power Public Company Limited is the largest Municipal Solid Waste (MSW) power plant operator in Thailand and in the ASEAN region and the largest single-location municipal waste disposal facility in the world.

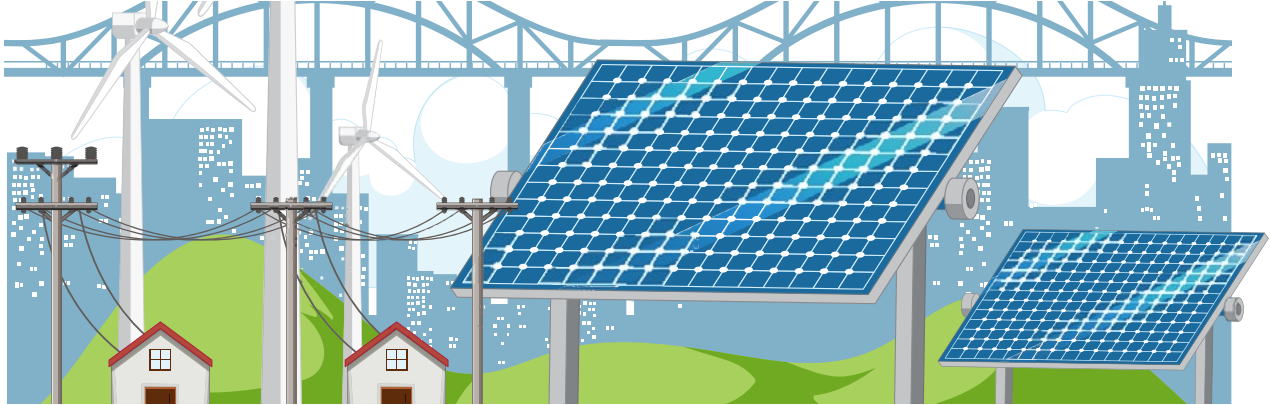
Throughout the past years, the Company is one of the leading organizations focusing on Sustainable Growth by integrating Sustainable Development Goals (SDGs) in line with its strategies to grow in a balanced way in all dimensions and giving importance to economic, environmental, and social dimensions (ESG) on the basis of good corporate governance in order to manage the business for the balanced benefit of all stakeholders.

### Sustainability Management Policy

In 2022, the Board of Directors approved the material sustainability issues related to business operations (as its materiality) in all 3 areas, covering the environment, society, and economy, including good corporate governance to formulate a sustainability policy by placing importance on being a tool to drive the organization to achieve its vision of sustainable development in accordance with the direction and strategy of the business operations of TPI Polene Group. The material issues approved by the Board of Directors have been referred to prepare the 2022 Sustainability Report in accordance with the Global Reporting Initiative (GRI) Standards.



In addition to energy from waste fuels, the Company also focuses on the growth in the clean & green energy business that is environmentally friendly, including solar and wind energy to generate electricity, which is in line with the country's energy management development plan. This will result in the Company becoming a complete clean & green power company.



## Important Sustainable Development Operations in 2022



### Economic

**Total revenue**  
Baht 10,611.26 mil

**EBITDA**  
Baht 3,913.96 mil.

**Employee wages and benefits**  
Baht 58.21 mil

**Tax payable**  
Baht 21.10 mil.

**Net profit**  
Baht 2,812.78 mil.

**Dividend per share**  
Baht 0.24



### Environment

Received CO2e Carbon Credit Certification for 765,297 tons and in the process of registering for Carbon Credit certification from the TGO for another 462,797 tons of CO<sub>2</sub>e

The company use 2.73 million tons of waste fuel, reducing greenhouse gas emissions by 6.34 mil. tons CO<sub>2</sub>e

Greenhouse gas emissions decreased by 743,431.34 tons CO<sub>2</sub>e compared to 2021

Coal-fired power plants aim to use 100% of their waste fuel instead of coal for their electricity generation by 2025.

Reduced energy consumption 8,912,561.64 GJ (25.52%) Compared to 2021

Investment projects to reduce environmental impact Baht 11,116.50 mil.

Proportion of recycled water 4.18%

Waste emissions (Zero Waste) decreased by 22% compared to 2021, 100% can be recycled Hazardous / non-hazardous waste 0.12% / 99.88%

Project to produce electricity from wind power 5 megawatts (Expected COD 2024)

Ground-mounted solar farm power plant project 61.22 MW (Expected COD in 2024)

Project to produce electricity from solar rooftop 6 megawatts (Expected COD 2024)



### Community and Society

Community and social contributions Baht 48.55 mil

Injury frequency rate of employees = 0.352 and contractors = 0

1,665,945 accident-free work hours (2.55% increase compared to 2021)

Zero Work-related deaths of employees and contractors

Zero Occupational illness and disease rates to be recorded in total 0.2 million hours worked

Disposed of 14,986 tons of COVID-19-related waste and disposed of 3,950 tons of non-hazardous industrial waste by using it as waste fuel

Average training hours for employees 24.71 hours/person/year

Satisfaction and employee engagement with TPIPP 81.24%

Employee Turnover (Turnover rate) = 1.49%



### Corporate Governance

Portion of independent directors 33.33%

Portion of female directors 26.67%

No complaints about the protection of customer personal information.

Suppliers acknowledged unit of electricity e the Company Code of Conduct 93%

No complaints of human rights violations (discrimination, child labor, illegal labor)

Satisfaction of power plant customers and waste fuel customers are 100% and 95.83%,

Improve waste fuel quality to reduce moisture to 44 - 45 %

Improve the fuel feed system to increase combustion efficiency, reduce energy consumption by 2.9% compared to 2021.

Improving the alternative fuel supply system to reduce the use of coal for combustion by 2.8% compared to 2021.

Availability of the overall machine operation of the power plant at an average of 95.40%.

The average operating efficiency of the power plant is 87.30%.

Reduce the amount of steam used per production 1.42% compared to 2021

Sales value of low carbon products (2022) Baht 7,680.19 Mil.



**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, (Environmental, Social, Corporate Governance), by embracing the Bio Circular Green Economy as a sustainable business model under the standards of good corporate governance. In carrying out their duties and responsibilities, all employees are required to work under Four Rddhippada: Basic For Success 4, which consists of the follows:

1. Chanda : (Aspiration) - Intention or purpose or desire or zeal. The need to do and always be willing to do what is assigned and aspire to make it work even better.
2. Viriya : (Effort) or energy or will.
3. Citta : (Concentration) - Consciousness or mind or thoughts, to concentrate on work
4. Vimansa : Planning, checking results, good governance, research and development.

With a committed heart to create a balanced happiness with a better quality of life in a sustainable manner pursuant to the Four Sublime States of Mind, which consists of the following:

- Metta : Mercy  
 Karuna : Kindness  
 Mudita : Sympathetic Joy  
 Upekkha : Equanimity

Announced on January 5, 2022

(Prachai Leophairatana)  
 Chairman

Note : This principle of living follows the metaphysical concept of the Four Noble Truths.

See more details on the Company's website:



<http://www.tpipolenepower.co.th/index.php/en/en-aboutus/employeehandbook>

## Brahma-vihara 4 (FOUR SUBLIME STATES OF MIND)

Metta (MERCY):	Love, desire for others to be happy
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Karuna (KINDNESS):	Desire to get others out of their sufferings
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Mudita (SYMPATHETIC JOY):	Rejoice in the success of others, compersion
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Upekkha (EQUANIMITY):	Stillness, impartiality
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## Iddhipada 4 (BASIS FOR SUCCESS 4)

Chanda (ASPIRATION)	Passions to do things and desire to make even better results
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Viriya (EFFORTS)	Diligence, patience, commitment, endurance, sedulousness
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Citta (CONCENTRATION)	Consciousness of the senses, mindfulness
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Vimamsa (R&D)	Planning, measuring, and devising solutions
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**Principles of Iddhipada 4** Dharmas of Success for work consisted of:

Chanda means love for work - being satisfied with the work that is being done.

Viriya means being diligent in one's work.

Citta means being attentive and responsible for one's work.

Vimangsa means scrutinizing and using intelligence to work.





## Four Noble Truths

### Essence of Buddha's Teachings (Ariyadhamma to End Suffering)

Ariyadhamma of Buddhism is Buddha's doctrine as a metaphysics for the liberation from suffering.

Dukkha: Suffering

Samudaya: The Cause or Origin of Suffering

Nirodha: The Cessation or Extinction of Suffering

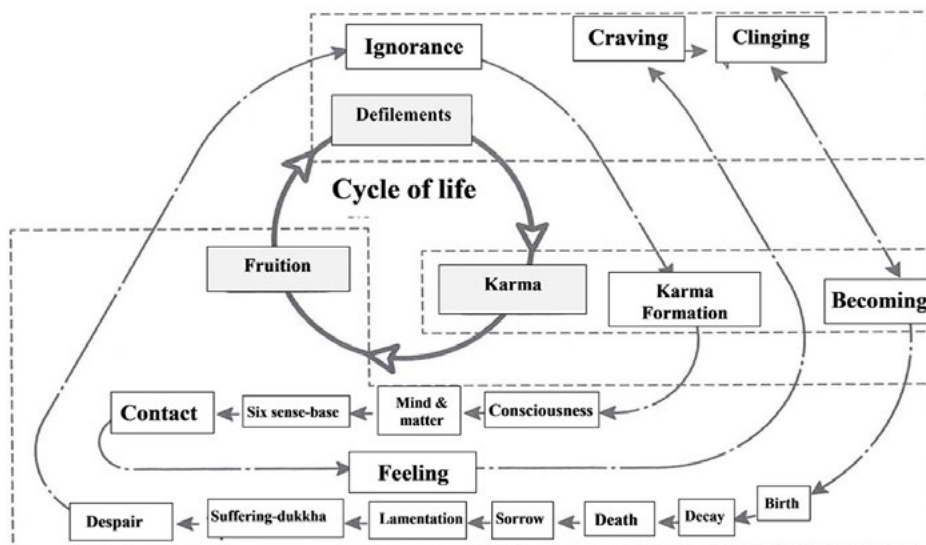
Marga: The Path leading to the Cessation or Extinction of Suffering

#### 1. DUKKHA UNSATISFACTION, SUFFERING, PAIN

The word suffering in the Noble Truth does not mean suffering in the Thai language as it is commonly understood, but also refers to difficult conditions to endure in the same conditions and oppressive situations.

#### 2. SAMUDAYA THE ORIGIN OR ARISING OF DUKKHA

Considering from the Cause of Suffering



#### 3. Nirodha: Cessation of Suffering is Nirvana. (EXTINCTION OF SUFFERING)

It is the elimination of defilements with the power to follow the Eightfold Path until attaining that path.

#### 4. Marga (THE NOBLE EIGHTFOLD PATHS)

Dharma that kill defilements or end ten Samyojana<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<sup>1</sup> 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 kills one from their virtue or from noble results, or something that consumes virtues or hinder one from achieving virtuous achievements.

1. MARA of Defilement is love, greed, anger, delusion, and evil spirit.
2. MARA of Aggregates is a devil who destroys one's aggregates, causing sickness, disability, and eliminating one's opportunity to do good deeds.
3. MARA of Karma Formations is thought, emotion, and karma cultivator that prevents one from being released from suffering in the cycle of samsara or rebirth of one in 31 places of existence.
4. MARA of Death is death that deprives one of the opportunities to do good deeds.
5. Devaputta Mara is an evil deity who is powerful and inspire one not to do good deeds.

**2. Five Khandha** (Five Groups of Existence or Five Aggregates) are five aggregates of form and abstract that make up the collective units, which are called animals, persons, selfness, they, we, etc.

These five components incorporated into life.

1. Corporeality (rupa-kkhandha)
2. Feeling sensation (vedana-kkhandha)



3. Perception (sanna-kkhandha) is the aggregate that remembers what one received and is the part that defines the meaning of what have been known (Arrom 6) such as white, green, black, red, etc.
  4. Mental formation, Volitional Activities (sankhara-kkhandha) is the aggregate of thought to identify what you feel and remember whether it good or bad, or neither good nor bad. The mind was led by intention to be good or bad or upyakrit (neither good nor bad), kaya-sankhara (physical intent), vajee-sankhara (verbal intent), and mano-sakhara (mind intention).
  5. Consciousness (vinnana-kkhandha) is the aggregate of cognition or knowing of things through the six senses including eyes, ears, etc.
- The Five Aggregates are abbreviated into two groups, namely abstract and corporeality.

**3. Apisankhara 3 is** the thought, emotion, and karma cultivator, comprising of:

1. Punyaphisangkharā is a thought that enhances good karma (merit).
2. Apunyaphisangkharā is a thought that enhances evil karma (sin).
3. Anenchaphisangkharā is a thought that is calm, unable to be upset or excited.

**4. Fetter** is the defilement that binds the animals to suffering or that binds the mind to the cycle of defilement, karma, and the result of karma. There are 10 fetters:

1. Sakkaya-ditthi: One has the view that the five aggregates are self.
2. Wichikitcha: One has doubts in the virtues of the Three Jewels: the Buddha, the Dharma, and the Sangha
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. Kamaraka: One has contentment in sensual pleasures or lust.
5. Vengeance: One adheres with anger.

Udhamphakiasayojana or the Five Higher Fetters are:

6. Rupa-raka: One has greed for material existence.
7. Arupa-raka: One has greed for immaterial existence
8. Mana: One had conceit or pride with the feeling of being better, worse, or equal with others.
9. Uttacca: One is distracted or restless.
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 bodily 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, and all things that are 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.

In Paticca-samuppada, Sankhara 3 includes:

1. Kayasangkhara: Bodily volition
2. Vajisangkharā: Verbal volition
3. Manosangkharā: Mental volition

Sankhara has three qualities known as Trilak as follows:

4. Anicca: Impermanence
5. 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.
6. Anatta: No real self, incapable of being in power

The opposite of Sangkhara is Wisangkharā

Wisangkharā is Nirvana, which is eternal. It leads to Nicca, Sukhang, Anatta (dharma).

## 02

Awards of Achievement  
and Pride in 2022

TPIPP was selected to be in  
the Sustainability Stock of THSI



On October 10, 2022, the Company was selected to be in the Sustainable Stock of THSI (Thailand Sustainability Investment) 2022 from the Stock Exchange of Thailand.

TPIPP received a Very Good CG Score.



On October 27, 2022, the Company received the Corporate Governance Report of Thai Listed Companies: CGR 2022 with a Very Good score from the Thai Institute of Directors.

TPIPP was listed in the ESG100 stock  
directory for the 3rd year (2018 and 2021-22)



On July 1, 2022, TPIPP was selected as one of the ESG100 securities companies with outstanding performance in environmental, social, and good governance (ESG) dimensions in the resource group from the assessment of listed securities in 2022 by Thaipat Institute.

TPIPP received Certificate of ESG CREDIT



On August 19, Thaipat Institute granted 2022 ESG Credit project approval for the Company's green investment projects, namely Boiler Improvement Project of a 70 MW Mixed Fuel Power Plant (TG7) and Waste Fuel Capacity Expansion Project (Factory 3) for 6,000,000 credits.

### TIIPP received a Sustainability Disclosure Award



On December 21, 2022, the Company received 2022 Sustainability Disclosure Award for the disclosure of sustainability information. This is an award from the assessment of sustainability disclosure status (based on Sustainability Report and Form 56-1 One Report 2021) of members of Sustainability Disclosure Community (SDC) out of 133 companies from Thaipat Institute.



On December 17, 2022, it received the Best Brand and Leader in Asia 2022-2023 from the India-Thai Chamber of Commerce.

## Certificates, Awards and Certifications

### Greenhouse Gas Reduction



#### Thailand Voluntary Emission Reduction: T-VER

Thailand Voluntary Emission Reduction (T-VER) for Municipal Solid Waste to Fuel Project from Thailand Greenhouse Gas Management Organization (Public Organization) on May 24, 2022. The company received a Carbon Credit certificate for a total of 717,931 tons of carbon dioxide equivalent

### Administrative Accreditation



The Company's management system was certified under International Organization for Standardization (ISO) for the implementation of international standard systems in various systems from SOCOTEC CERTIFICATION (THAILAND) CO.,LTD.



**2022 ESG100:** The Company was ranked in the list of sustainable securities as an outstanding organization in environment, society, good governance and sustainable growth for the 2nd consecutive year from Thaipat Institute.

## TPIPP received a Sustainability Disclosure Award



### CSR-DIW Award and CSR-DIW Continuous Award

The Company complied with the Entrepreneurs' responsibility standard of industrial business with society and received such awards from the Department of Industrial Works, Ministry of Industry, for the following plants:

Power Plant TG-1-3 (60MW)

Power Plant TG-4 (30MW)

Power Plant TG-5 (60MW)

Power Plant TG-6 (70MW)

Power Plant TG-7 (40MW)

Power Plant TG-8 (150MW)

## Sustainable Industrial and Business Development



### Sustainable Stock Award of THIS (Thailand Sustainability Investment):

Stocks of companies listed on SET and MAI that places importance on Environmental, Social and Governance (ESG) coupled with good financial performance, from the Stock Exchange of Thailand.



### Green Industry Award Level 4 and Level 3 as follows,

- TG 1, 2, 3 power plants are certified with GI Level 4. Green Industry Level 4: Green Culture is where everyone in the organization cooperates and operates in an environmentally friendly manner in all aspects of business operations until it becomes part of the corporate culture.
- TG 4, 5, 6, 7 and 8 power plants are certified with GI Level 3: Green Industry Level 3 (Green System), which is a systematic environmental management with monitoring, evaluation and review for continuous improvement, including certification of various environmental standards.



#### Thailand Energy Awards: Outstanding Renewable Energy Award

- On-Grid Power Generation Project, 20 MW Renewable Fuel Power Generation Project, 60 MW Renewable Fuel Power Generation Project, 70 MW Renewable Fuel Power Generation Project
- Non-Grid Project, Municipal Waste Fuel Production Project, and Municipal waste Renewable Fuel Project 2
- Renewable Energy Application Project (Project to increase efficiency and reduce downtime, renewable fuel (waste) power plant, 60 MW)
- From Department of Alternative Energy Development and Efficiency, Ministry of Energy



**ASEAN Centre for Energy**  
One Community for Sustainable Energy

#### ASEAN Energy Awards

- 1st runner-up: Renewable Energy: On-Grid Power Generation Project, 60 MW Renewable Fuel Power Generation Project
- 2nd runner-up: off-Grid Project, Municipal Waste Fuel Production Project, and Municipal waste Renewable Fuel Project
- From Department of Alternative Energy Development and Efficiency, Ministry of Energy

## Sustainable Business Operations



#### GLOBAL Economics Awards

Best Product Innovations for Sustainable Development from The Global Economics, leading Financial Magazine in the United Kingdom



#### International Finance Awards

Most Innovative Green Practices Towards ESG-Waste Management Sustainable environmentally friendly innovation award in waste management from International Finance Magazine (IFM), a world-class business and finance magazine, United Kingdom



#### ESG (Gold Level)

Gold Level for ESG performance in 2020 by Environmental, Social and Governance (ESG) dimensions using 30 ESG indicators from WFE ESG Metrics of the World Federation of Exchanges from Thaipat Institute





**Asia’s Most Influential Companies**

Asia’s Most Influential Companies Award 2021 from the Asia Corporate Excellence & Sustainability Awards (ACES) to honor the achievements of organizations and individuals in Asia as exemplaries in growing steadily and sustainably. The event was organized by MORS Group, a media organization in Malaysia.



## 03



## General information of TPI Polene Power Public Company Limited<sup>(2-1)</sup>

TPI Polene Power Public Company Limited (abbreviation: TPIPP) is a 70.24% owned subsidiary by TPI Polene Public Company Limited or TPIPL, listed on the Stock Exchange of Thailand on April 5, 2017, with registered capital of 8,400,000,000 baht consisting of ordinary shares 8,400,000,000 shares.

The Company is a power plant operator in Thailand with the country's largest waste-fueled power plant business (according to AWR Lloyd) located in Saraburi Province and is the largest electricity and waste-to-energy producer in ASEAN. Its main business is to dispose of municipal waste used as waste fuel and is an electricity producer for sale to the Electricity Generating Authority of Thailand ("EGAT") and TPI Polene Plc. The Company currently operates three types of power plants with a total installed capacity of 440 MW, consisting of waste-to-energy power plants, waste heat recovery power plants, and coal-fired power plants. The Company is in the process of converting to alternative fuels from municipal waste and other renewable fuels to replace all coal fuel within 2025.

### Business Overview

<http://www.tpipolenepower.co.th/index.php/th/>

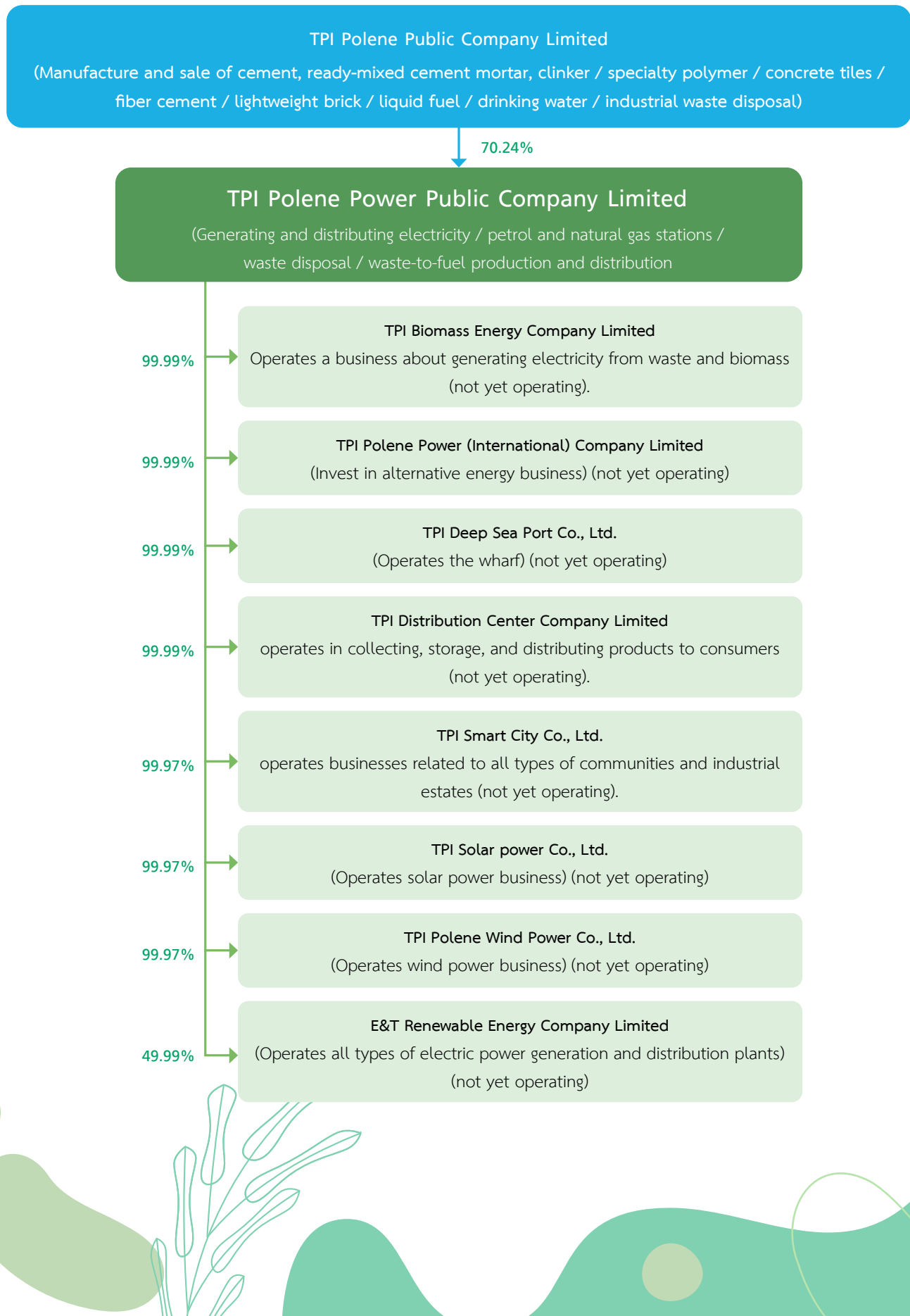


### TPIPP Products

<http://www.tpipolenepower.co.th/index.php/th-th-product/energy-utilities-business/electric-energy>



## Shareholding structure The Company's





## Policy, Vision, and Mission

**Core Competency :** TPI Polene Power Public Company Limited is a leader in power generation using quality and standard renewable energy, focusing on continuous development of technology and personnel, creating maximum returns for shareholders and employees, and managing the organization with ethical principles and good governance

**Policy :** To be committed to conducting business under good corporate governance, emphasizing the rule of law, transparency, fairness, social responsibility, culture, and environment, along with promoting sustainable development for personnel, customers, communities, and all stakeholders under management in line with good governance and ideology

**Vision :** To be a leader in efficient renewable energy and a clean and green energy producer, focusing on the development of technology and innovation in all dimensions of work, as well as to become the largest waste disposal plant in the country and in ASEAN to reduce greenhouse gas emissions to zero or negative, conducting business responsibly for sustainable growth in economic, environmental, social dimensions, and good corporate governance

### Mission

- To support the disposal of municipal waste to various local organizations to be converted into fuel in the form of renewable energy correctly and efficiently.
- To develop technology for the production of alternative fuels and power generation to be suitable for Thailand's waste conditions and reduce waste fuel costs.
- To improve the production efficiency of the power plant, as well as design and install equipment to be ready for operation, prevent technical problems in the production process, or if a problem occurs, it can be solved quickly and promptly.
- To produce electricity from renewable energy by using municipal waste fuel for the local economy instead of using coal to reduce greenhouse gas emissions.
- To promote and develop personnel potential to be ready in order to drive organizational competency in competitiveness.
- To maintain and comply with BCG (Bio-Circular-Green Economy) standards in managing environmental impacts, including implementing waste management practices with maximum utilization and zero waste to outside.
- To conduct business with responsibility to all stakeholders in a balanced manner and strive to develop society to grow along with sustainable development of the organization.

## Nature of business (2-6)

The Company operates in 2 types of businesses: Energy and Utilities Business, and Petrol and Natural Gas Station Business, which operates within Thailand only, with the following details:

### 1. Power and Utilities Business consists of:

#### 1.1 Power plants

The Company has 3 types of power plants, namely (1) waste heat recovery power plants, (2) waste-to-energy power plants, and (3) coal-fired and supplementary alternative fuel power plants. The Company believes that the operation of power plants using waste heat energy, waste fuel energy, and renewable energy will benefit from government policies that tend to encourage and promote the generation of electricity from waste fuel and renewable energy.

The Company sells electricity generated from each of its waste-to-energy power plants to the Electricity Generating Authority of Thailand ("EGAT") and will receive an adder at the rate of 3.50 baht per kilowatt-hour in addition to the basic electricity tariff according to the power purchase agreement.

(203-1), (203-2) As of December 31, 2022, the Company has 8 commercially operated power plants with a total installed capacity of 440 megawatts, classified as waste-fuel power plants with a total installed capacity of 180 megawatts, (with power purchase agreement to Electricity Generating Authority of Thailand 163 megawatts) and the remaining installed capacity of 260 megawatts (authorized capacity of 230 megawatts and sold to TPI Polene Plc.), all of which are located in Kaeng Khoi District, Saraburi Province, and are in the same area as the cement plant of TPI Polene PLC, with each type of boilers and power generation are summarized as follows:

Power Plant Type	Operational Characteristics	Production Capacity
<b>A. Waste Heat Recovery Power Plant</b>	<ul style="list-style-type: none"> <li>- Located in the same area as the cement factory of TPI Polene Plc., commenced its commercial operation in June 2009.</li> <li>- Uses waste heat emitted from the cement production process of TPI Polene Plc. The Company's power generation process is the waste heat used in clinker kilns (instead of being treated by reducing the temperature before releasing into the atmosphere) to pass heat to the boiler to generate power without the use of any supplement fuel, which in addition to obtaining electricity, it can also reduce the impact on the environment</li> </ul>	Consists of 2 power generating units with an installed capacity of 20 megawatts per unit, totaling 40 megawatts.
<b>B. Waste-to-energy power plant</b>	<ul style="list-style-type: none"> <li>- Generates electricity by burning waste fuel as the main fuel by converting municipal waste into the fuel process to produce steam from the steam boiler in order to use the steam to further generate power.</li> <li>- The process of converting municipal waste into fuel to generate power is the method to dispose municipal waste and reduces impacts on the environment and reduced greenhouse gas emissions which is better than landfill waste management. The Company was evaluated by the Thailand Greenhouse Gas Management Organization for reducing greenhouse gas emissions by using municipal waste as fuel in order to register for a carbon credit certificate.</li> <li>- The Company completed the installation of the Grate Boiler incinerator and boiler in August 2018, which can be used to burn municipal waste directly with the capacity to incinerate 750 tons of waste per day, resulting in steam production from a steam boiler with a capacity of 80 tons per hour. This can increase the amount of steam produced to increase the power utilization rate of the waste fuel power plant by eliminating the remaining material from the waste fuel production process. The grate boiler installed by the Company is the largest grate boiler installed in Thailand and it has 5 installed units that represent the highest single-location waste incineration capacity (Economy of Scale) in the country and in the ASEAN region.</li> </ul>	The waste-fueled power plants have a total installed capacity of 180 megawatts, coming from a power generation unit with three sizes of generators: 30 megawatts, 60 megawatts, and 70 megawatts.

Power Plant Type	Operational Characteristics	Production Capacity
<p><b>C. Coal-fired and renewable fuel power plant</b></p>	<ul style="list-style-type: none"> <li>- The Company has a coal-fired power plant using high-efficiency technology boilers. Subsequently, the Company has modified the boilers to be able to use alternative fuels to partially reduce the use of coal by being a power plant that produces electricity to sell to cement plants with a pollution prevention system that is higher than the environmental impact reporting standards announced by the Office of Natural Resources and Environmental Policy and Planning (ONEP).</li> <li>- The Company is committed to being a full-fledged green clean energy producer with an integrated solution to Thailand's solid waste problem. Therefore, the Company has plan to stop using coal in the power generation process by investing to change all boilers to use waste fuels and other renewable fuels instead of coal, which will be partially completed within 2023 and will have been completed in 2025. In addition to reducing fuel costs for power generation from rising coal prices, the Company can also apply for a carbon credit certificate as increasing the amount of municipal waste to be used as fuel instead of coal in such power plants, as well as reducing the direct and indirect impacts on the environment by replacing fuel in power generation is to solve the problem of government waste management.</li> </ul>	<p>The company's coal-fired and renewable power plants have a total installed capacity of 220 MW, which come from two power generator units, 70 MW and 150 MW.</p>

## 1.2 Waste Fuel Plant

The Company has a municipal waste disposal plant to produce waste fuel for its boilers to generate power. In addition, it also sell waste fuel to cement plants to replace coal fuel of the TPI Polene Cement Plants in Saraburi Province.

The Company's waste fuel plant has a total capacity of 15,000 tons of waste per day, which is the largest in Thailand and the world's largest. The main plant is located in Kaeng Khoi District, Saraburi Province, in the same area as the Company's power plant.

The Company has built a waste fuel plant in collaboration with its partners who receive waste disposal concessions in surrounding provinces. It is confident in its ability to procure a sufficient amount of waste in the long run. The Company expanded its waste fuel production plants in Saraburi Province, as well as increased the number of waste collecting plants in several communities to expand production capacity to support the increasing demand for waste fuel. The goal is to increase the waste fuel production capacity and to receive more waste up to a total of 23,500 tons per day in 2024.

## 1.3 Solid Waste Disposal Plant, Waste Incinerator

The Company expanded its business by participating in the bidding for Incinerator Waste Management and Power Generation Projects for purchasing electricity from municipal waste power plants according to the purchasing announcement of the Energy Regulatory Commission Notification on June 30, 2022, by purchasing electricity generated from municipal waste in the form of Feed-in-tariff (FIT) for a period of 20 years and tipping fee from the public agency for the specified duration. Waste disposal fees and terms are varied depending on each agreement.

The Company was selected from bidding for the Solid Waste Management Project, Songkhla Provincial Administrative Organization and Solid Waste Management Project Phase 2, Nakhon Ratchasima Municipality with the signing of an agreement for submitting an offer for the sale of electricity to the Provincial Electricity Authority. Both projects are expected to start operated by 2024

## 1.4 Solar and Wind Power Plants

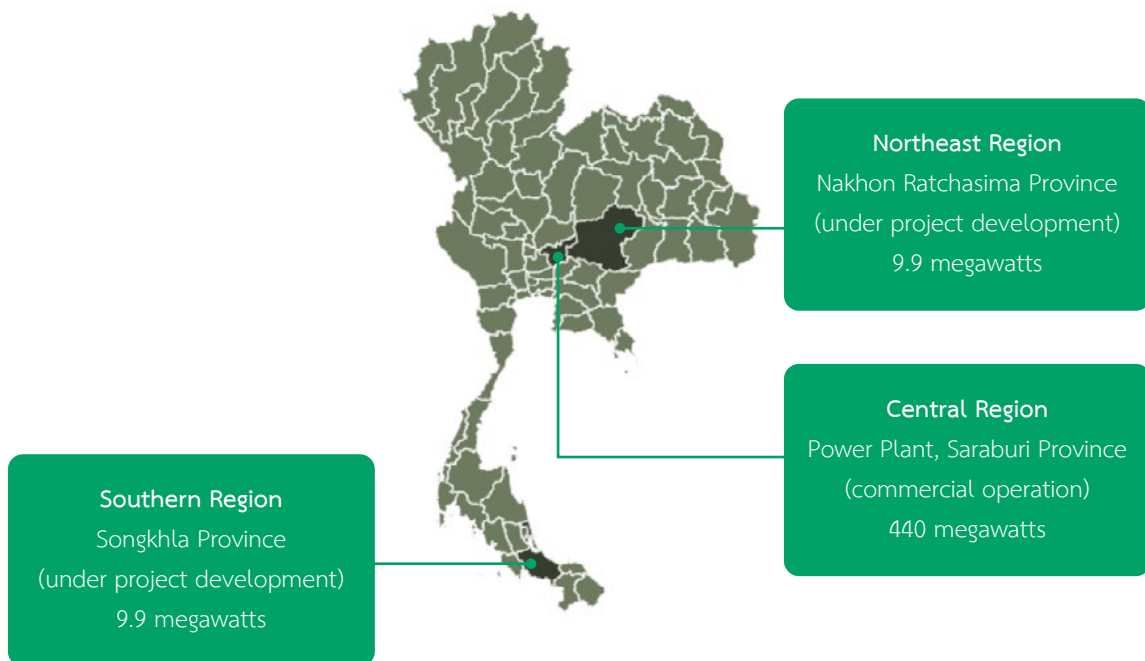
The Company is committed to grow in the green clean energy business. Expanding its power plant business in addition to waste fuel power plants and waste disposal plants, it also set a target to grow and expand power generation, focusing on renewable energy plants from solar and wind power, in line with the direction and Thailand's Power Development Plan 2018-2037, Revision 1 (PDP2018 Rev.1).

The Company invested in the Solar Farm Project with a maximum installed capacity of 61.226 megawatts in the plant area in Saraburi Province, with purpose to sell more electricity to cement plants and to increase the proportion of renewable energy in cement production. It is expected to be completed around 2024 and will enable the Company to produce electricity from solar power at lower costs, reduce the average cost of electricity, and increase the amount of electricity sold, in order to support the project to expand the use of electricity of the TPI Polene Group in the future, which will change the use of electric vehicles and machinery in the cement plant to the electric vehicle system.

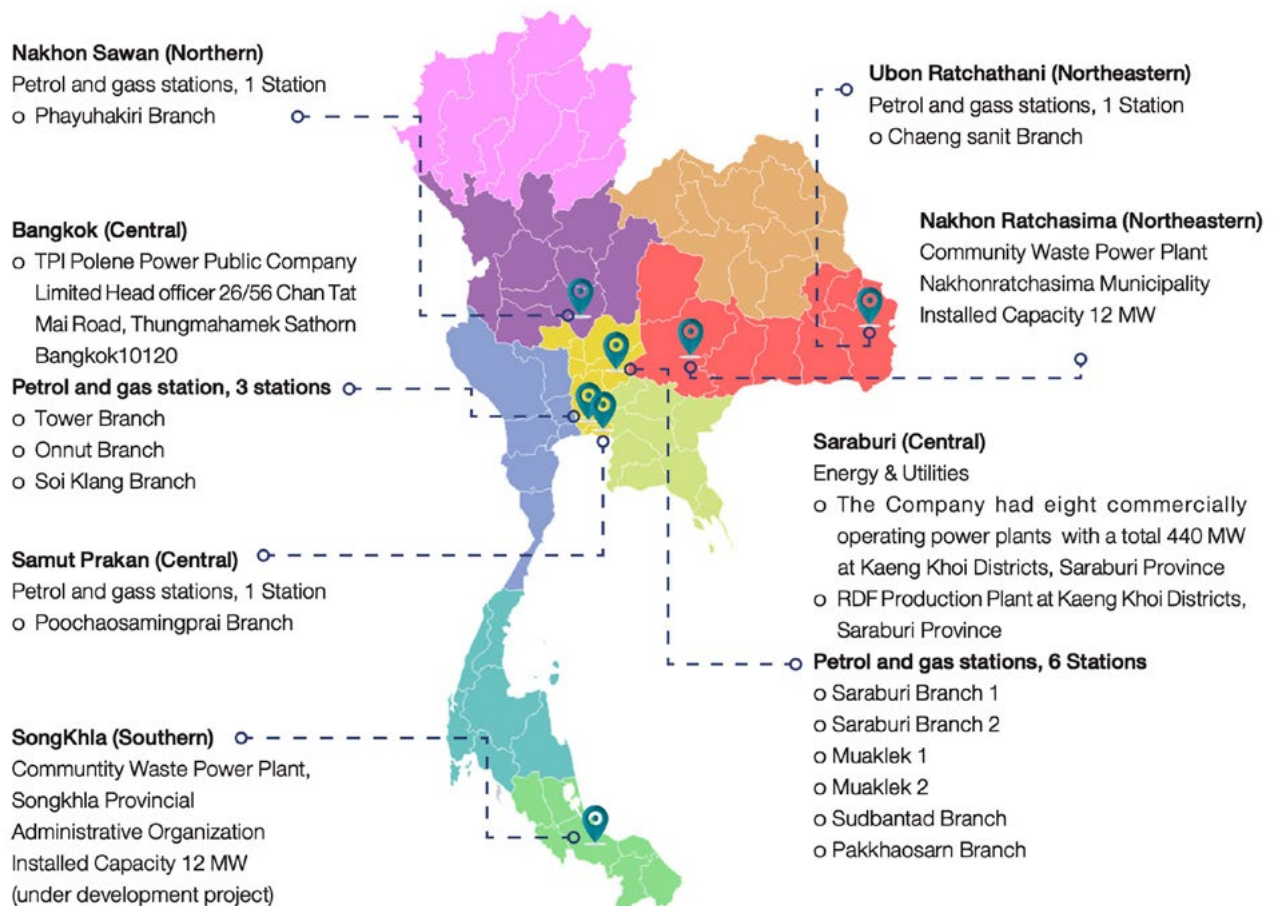
## 2 Petrol and Natural Gas Vehicle (NGV) Station Business

At present, the Company operates 12 petrol and natural gas vehicle stations under the TPIPP brand located throughout Bangkok and other provinces. Most of the customers are those who transport cement for TPI Polene. There are 8 petrol stations, 1 natural gas station, and 3 petrol and natural gas vehicle stations under the TPIPP brand, with 3 service stations located in Bangkok and 6 stations in provincial areas, consisting of 3 stations in Saraburi Province, 1 station in Ubon Ratchathani Province, 1 station in Nakhon Sawan Province, and 1 station in Samut Prakan Province.

## Locations of the Company's Power Plants



## Service areas



## Employee information in 2022<sup>(2-7) (2-8)</sup>

The Company has a total of 1,143 employees, consisting of 98 employees at the head office and 1,045 employees at Saraburi plants details as follows:

### Total number of employees classified by employment contract (full-time and contract staff) and by gender

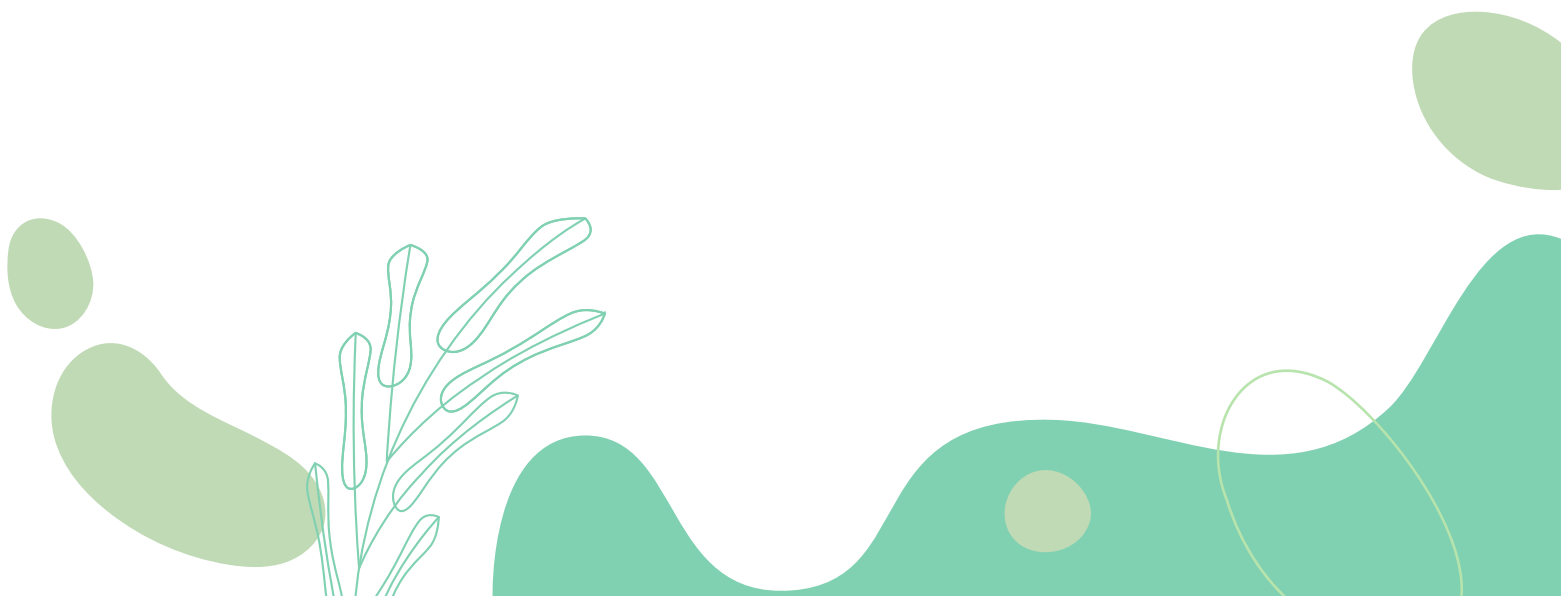
Details	Male		Female	
	Number (persons)	Percent	Number (persons)	Percent
Full-time staff (person)	998	96.71	76	68.47
Contract staff* (person)	34	3.29	35	31.53
<b>Total (person)</b>	<b>1,032</b>	<b>100</b>	<b>111</b>	<b>100</b>

Notes:\*Contract staffs are annual contract employees and daily contract employees.

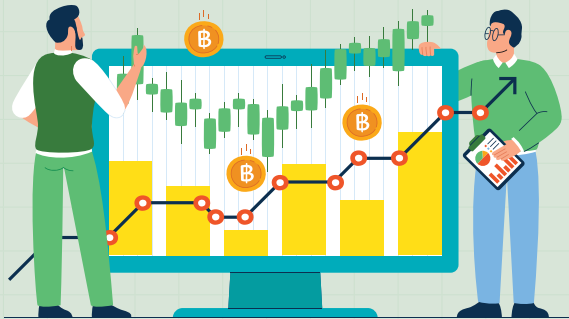
### Total number of employees classified by employment contract (permanent and temporary contracts) and by region

Details	Central Region	Northern Region	Northeastern Region
Full-time staff (person)	1,074	-	-
Annual contract staffs (person)	14	-	-
Daily contract staff (person)	55	-	-
<b>Total (person)</b>	<b>1,143</b>	<b>-</b>	<b>-</b>

Notes:\*Contract staffs are annual contract employees and daily contract employees.



## Supply Chain of TPI Polene Power Public Company Limited<sup>(2-6)</sup>



Upstream operations

Starting from cost-effective investment from shareholders and financial institution creditors constructed various power plants by allocating investment budgets related to technology and innovation for procurement from machine suppliers and reliable quality equipment. For waste procurement including transportation into the power generation process, the Company has entered into contracts for the purchase of waste with many domestic partners, including supporting community waste disposal for various local organizations to convert into fuel and energy properly and efficiently.



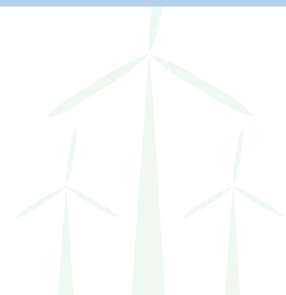
Midstream operations

Power generation by using innovative technology that will reduce production costs, control risks in safety, occupational health, and environment that may lead to loss of life, injury, illness due to the work of employees and contractors which affects the interruption and continuity of business operations and may affect the communities, society and environment, as well as strictly operating on the environment in accordance with the announcement of environmental policy regulations has resulted in the Company receiving awards and certifications for management systems according to international standards.



Downstream operations

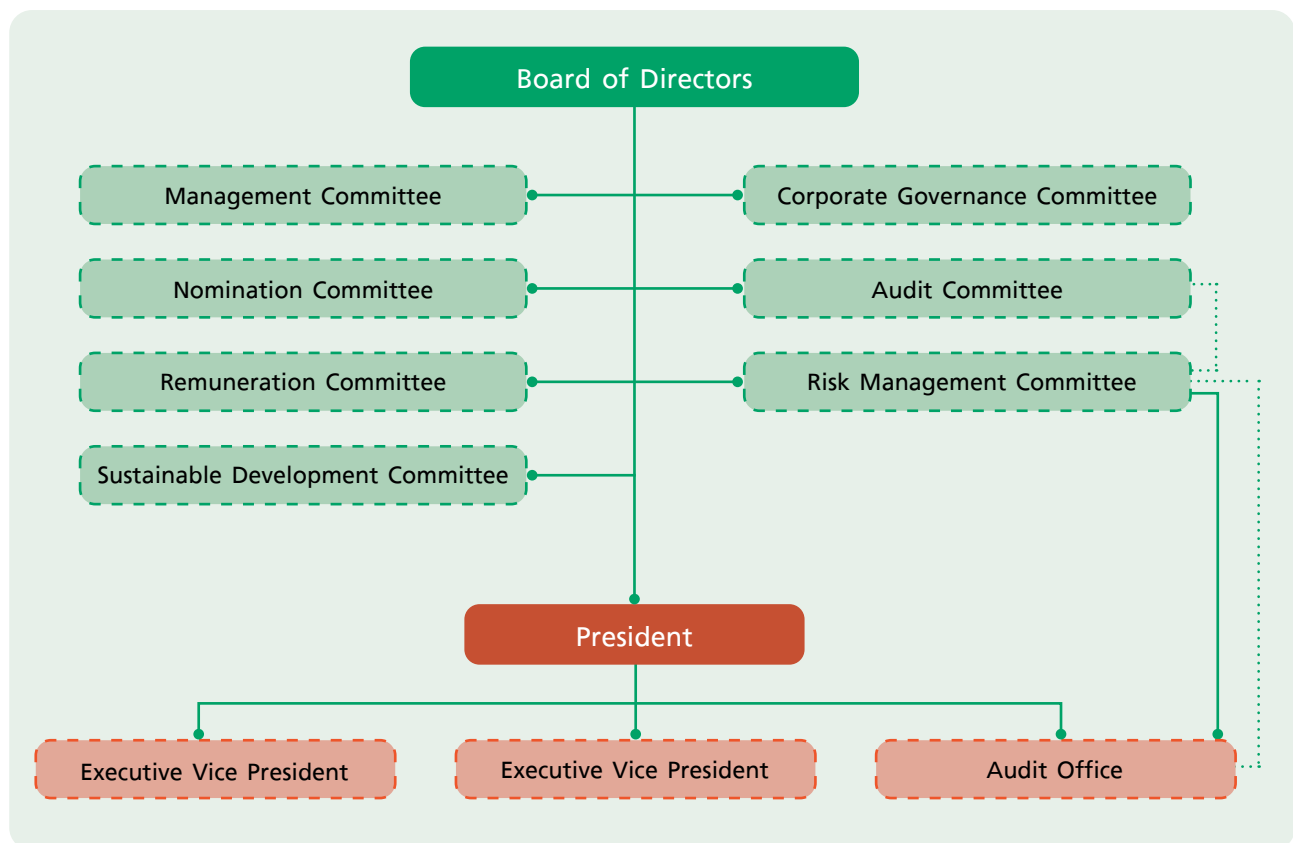
Power generation that prioritizes transmission and distribution efficiency to 2 important customers, Electricity Generating Authority of Thailand and TPI Polene Plc. by the Company delivers electricity to customers continuously to maintain customer satisfaction.





For business operations from upstream, midstream, and downstream, the Company has operated with its personnel throughout the business value chain. The Company's business operations take into account the impact on the environment and local communities, strict compliance with regulations, rules, environmental laws, and other relevant laws, employing labor management and labor relations, taking appropriate care of occupational health and safety responsibly and adding value to employees, paying attention to human rights practices, managing efficiently according to corporate governance principles with good corporate governance, making the Company's business stable and growing continuously.

## Corporate Governance Structure<sup>(2-9)</sup>



As of December 31, 2022, the Company's management structure consists of the Board of Directors and has 7 sub-committees consisting of Management Committee, Audit Committee, Remuneration Committee, Nomination Committee, Corporate Governance Committee, Risk Management Committee, and Sustainable Development Committee.



**Role of Board of Directors**
<http://www.tpipoleneppower.co.th/index.php/en/en-aboutus/directors/the-board-of-directors>
**Management Committee**
<http://www.tpipoleneppower.co.th/index.php/en/en-aboutus/directors/management-committee>
**Audit Committee**
<http://www.tpipoleneppower.co.th/index.php/en/en-aboutus/directors/audit-committee>
**Nomination Committee**
<http://www.tpipoleneppower.co.th/index.php/en/en-aboutus/directors/nomination-committee>
**Corporate Governance Committee**
<http://www.tpipoleneppower.co.th/index.php/en/en-aboutus/directors/the-governance-committee>
**Remuneration Committee**
<http://www.tpipoleneppower.co.th/index.php/en/en-aboutus/directors/compensation-committee>
**Risk Management Committee**
<http://www.tpipoleneppower.co.th/index.php/en/en-aboutus/directors/risk-management-committee>
**Sustainable Development Committee**
<http://www.tpipoleneppower.co.th/index.php/th/th-aboutus/boardrd-mgt/esg-board>


For sustainability in economic, environmental, social, and corporate governance dimensions for maximum efficiency and effectiveness, the Company appointed a Sustainable Development Committee (ESG Committee), which consists of 2 sustainability development committees: Sustainable Development Committee (Head Office) and Sustainable Development Committee (Saraburi Plant) with the roles and responsibilities of each committee as follows:

**Chairman of the Sustainable Development Committee<sup>(2-12)(2-13)</sup>**  
**Mr. Pakkapol Leopairut**

**Sustainable Development Committee (Head Office)**

1. Ms. Chularat Danwattanachai  
(Chairman of Head Office)
2. Mr. Panya Taengsingtrong
3. Mr. Pakorn Leopairut
4. Mr. Kanok Arunrasamesopha
5. Dr. Virat Chatdarong
6. Dr. Porakrit Leophairatana
7. Ms. Thanthida Sriraksa
8. Ms. Malee Posprichakul
9. Ms. Oratai Jiaranai
10. Mr. Nitisit Chongpitakrat
11. Mr. Nopporn Suwannapura
12. Mr. Hanchai Ekritvarodom
13. Ms. Jutamas Surojrat

**Sustainable Development Committee (Saraburi Plant)**

1. Mr. Worawit Lerdbussarakam  
(Chairman of the Board Saraburi Plant)
2. Mr. Kran Pipitsombat
3. Mr. Arun Prukpaiboon
4. Mr. Nawee Tangmanowiriyakul
5. Mr. Paisarn Pinkoh
6. Mr. Naradol Tanjarupan
7. Mr. Panlop Saengpakdee
8. Dr. Puwirin Nilrungsi
9. Mr. Somkiat Teeratkulpisarn
10. Mrs. Sirirat Kerdratanasak
11. Mrs. Wibulsiri Boonpat

## Functions and Responsibilities of the Sustainable Development Committee

1. To set policies, strategies, and frameworks, to implement strategies and to consider the selection of issues that promote the sustainable development of the organization, as well as to set sustainable development goals to be in line with the implementation of the business operations in Economic, Society & Environment to be proposed to the Chief Executive Officer for approval.
2. To 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. To encourage concrete implementation and participation in various projects within the framework of sustainable development with related departments, both inside and outside the organization.
4. To provide advice, promotion, 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. Chairman of the Sustainable Development Committee has the power to appoint a sub-committee or a working group responsible for the implementation of sustainable development in each field to be comprehensive and consistent with the key issues of the organization
6. Report on the performance and the preparation of the sustainability report to the top management.

## Conflicts of Interest<sup>(2-15)</sup>

The Company places importance on considering transactions that probably have conflicts of interest between the Company and its shareholders. In the event that the Company has connected transactions with individuals who may have conflicts of interest, it will comply with the rules and regulations of the Capital Market Supervisory Board, the Securities and Exchange Commission, and the Notification of the Board of Governors of the Stock Exchange of Thailand Re: Disclosure of Information and Other Acts of Listed Companies Concerning the Connected Transactions. The directors and executives who have interests in the transactions made with the Company will not be involved in the decision-making of such transactions. Disclosure of transactions that may have conflicts of interest or connected transactions must be in accordance with the regulations set by the Capital Market Supervisory Board, the SEC, and the SET, which is disclosed in the annual report/ annual information disclosure form (Form 56-1 One Report) or other reports as the case may be, as well as in accordance with generally accepted accounting principles. In addition, according to the Company's Articles of Association, the directors must notify the Company without delay if they have interests in contracts made with the Company or hold more or fewer shares or debentures in the Company.

## Remuneration for Directors and Executives<sup>(2-19)(2-20)</sup>

Remuneration for executives at all levels is based on their performance which is in accordance with the consideration of the Board of Directors as the Remuneration Committee, with the Chairman, the President, and the top executives jointly considering their perspectives of work processes within the organization and employees and covering both annual performance and assessment of potential and leadership, to ensure that it can lead the organization to achieve Company's long-term strategic goals. Each executive position will have performance indicators that correspond to their roles and responsibilities. Each year, the Board of Directors considers salary adjustment for the President and the President considers the salary adjustment of top executives according to their performance. However, such salary adjustments must be in line with the Company's criteria.

In 2022, the Company's Remuneration Committee considered the Board of Director remuneration 1 time whereby the meeting discussed comparing the similar type of business and size, together with the fact that each director had more burdens, duties, and responsibilities in the Company than before as the Company was in the period of expanding the scope

of business operations. In addition, in the past year, the Company's turnover increased satisfactorily, reflecting the dedication and attention of the Board of Directors to the Company.

Remuneration for the Board of Directors is considered within the scope authorized by the resolution of the Extraordinary General Meeting of Shareholders No. 2/2016 on April 29, 2016, Agenda 2.6, in return for good performance, effective for the Company's business management, and for morale in performing duties to be more efficient and effective. This shall take effect from the date of approval of the shareholders' meeting onwards and the remuneration for the Board of Directors shall be reported to the shareholders on the date of the annual general meeting of shareholders for further information.

## Development of Directors and Executives<sup>(2-17)</sup>

The Company has the policy to support corporate governance training for the Board of Directors and top executives to promote knowledge and understanding of how to operate under the principles of good corporate governance of listed companies. The Company arranges an orientation for new directors and provides a director's handbook, documents, and useful information for being a director, and encourages directors to attend training sessions with the Thai Institute of Directors Association and other institutions throughout the year to promote knowledge and understanding of how to operate under the principles of good corporate governance of listed companies in order to increase knowledge about the roles and responsibilities of directors which will lead to continuous improvement and modernization.

## Assessment of the Board of Directors<sup>(2-18)</sup>

The Board of Directors arranges for self-assessment and annual assessment of other directors to be used as a framework for examining the performance of the Board of Directors and considering, reviewing, analyzing the performance, and bringing improvements to the performance independently at least once a year. It is a self-assessment of the Board of Directors, sub-committees, and Chief Executive Officer (CEO)/Chairman of the Management Committee in order to comply with good corporate governance principles, taking into account the elements that determine the Company's ESG sustainability performance as part of the performance assessment indicators of the Board of Directors, directors and management, and focusing on using the assessment results for improving the performance of the Board of Directors and Chief Executive Officer (CEO)/Chairman of the Management Committee. The assessment form consists of:

1. Performance Appraisal Form for the Board of Directors as a whole consists of 6 topics: structure and qualifications of directors, roles and responsibilities of committees, meetings of committees, duties, relationship with the management and self development of directors and the management.
2. Performance Appraisal Form for the Board of Directors of each committee consists of 3 topics: structure and qualifications of directors, meetings of sub-committees, roles, duties, and responsibilities of sub-committee
3. Performance Appraisal Form for the Board of Directors on an individual basis (for committees/sub-committees) consists of 3 topics: structure and qualifications of committees/sub-committees, meetings of committees/sub-committees, roles, duties and responsibilities of committees/sub-committees.
4. Performance Appraisal Form for Chief Executive Officer (CEO)/Chairman of the Management Committee consists of financial performance (e.g. revenue, company sales, Economic Value Add (EVA), other financial performance) and environmental, social, and/or governance (ESG) performance such as satisfaction of employees/partners/communities, especially the aim to reduce the amount of greenhouse gas emissions and the Company's resources for cost and environmental benefits, all of which are part of the metrics for the performance assessment for top executives (CEO or equivalent), which consists of 10 topics:



- |   |                                       |
|---|---------------------------------------|
| 1. Leadership                               | 6. External relations                 |
| 2. Strategic formulation                    | 7. Management and personnel relations |
| 3. Strategy implementation                  | 8. Succession                         |
| 4. Planning and financial performance       | 9. Knowledge of products and services |
| 5. Relationship with the Board of Directors | 10. Personal Characteristic           |

In addition, the Board of Directors remains committed to management in order to make the organization grow sustainably as follows:

1. Clean: To perform duties with transparency, and honesty, conduct oneself in accordance with rules, regulations, ethics, and Code of Conduct, taking into account the reputation of the organization and the benefit of the community.
2. Commitment: To take responsibility for their own work, help others, and share responsibility for the success of their team and organization.
3. Skill: To possess the ability to manage tasks and budgets according to good governance principles, as well as develop modern working methods.
4. Collaboration: To have good human relations, be tolerant and respect others' opinions, and be able to effectively communicate and coordinate with related parties.
5. To possess the ability to make decisions and prevent and solve problems accurately and timely.
6. To possess the ability to manage personnel and develop personnel, including team members, to have evident work potential.

See more details on the Company's website:

### Performance Assessment Process of Highest Supervisory Authority for 2022

<http://www.tpipolenepower.co.th/index.php/th/th-aboutus/boardrd-mgt/board-assessment-result>



## Domestic and International Environmental Performance Standards

The Company has been inspected and certified with a Certification Body issued for its implementation of international standards in various systems from SOCOTEC Certification International Thailand as follows:

- ISO 9001:2015: Quality Assurance Management System Implementation
- ISO 14001:2015 is an international standard for an organization's environmental management system to enhance the environmental performance within the organization and for environmental sustainability.
- ISO 50001:2018 is an energy management system standard as framework of energy management.
- ISO 45001:2018 is an occupational health and safety management system standard.
- Certification for the use or production of renewable energy in 2019 (Gold Label) from the Thailand Environment Institute
- Thailand Voluntary Emission Reduction : T-VER Thailand Voluntary Emission Reduction Registration (T-VER) for RDF Production from Municipal Solid Waste of TPI Polene Power Plc. from Thailand Greenhouse Gas Management Organization (Public Organization)
- Certification of "Green Industry Level 4"

### Organization membership<sup>(2-28)</sup>

- Sustainability Disclosure Community (SDC) with Thaipat Institute
- Saraburi Power Development Fund
- ESG Credit Program with Thaipat Institute



## 04





## TPI Polene Power and Sustainability

The TPI Polene Group set its Group's direction aiming for sustainable development by operating in accordance with the Circular Economy to maximize the use of resources by recycling or reusing resources for maximum benefit, and the Green Economy aiming to reduce the impact on the environment in terms of resource utilization, product production, as well as end-of-life products to low carbon production where the main goal is to reduce greenhouse gas emission. TPI Polene Group has set policies and goals for sustainable management as follows:

### Sustainable Management Policy and Goals<sup>(2-23)</sup>

The Board of Directors and top executives have formulated a sustainability policy by emphasizing on being a tool to drive the organization to achieve its vision of sustainable development in line with business directions and strategies by supporting the Sustainable Development Goals (SDGs) of the United Nations in order to create a balance in terms of economy, environment and society under good corporate governance with a policy framework and sustainability management as follows:

Policy	Sustainability Management
<b>1. Economic dimension</b> 	Focusing on using technology and innovation in the production of quality products and services, efficient management in every step, using technology to change work processes, applying research and development results to develop business models, continuously adding value to products and services, seeking investment opportunities with good returns, strategizing for both short-term and long-term business growth, being flexible, take into account both internal and external risk factors and having systematic readiness and production efficiency
<b>2. Environmental dimension</b> 	Aiming to develop into a low-carbon society, promote bio-products for health and good quality of life by setting Net Zero GHG Emission goals through Green Manufacturing, follow circular economy policies, increase energy efficiency, increase the capacity of renewable energy together with solving the problems of solid waste, waste, and using water appropriately, taking care of biodiversity and soil degradation, having an efficient transportation system, reducing operational impacts throughout the value chain, and responding to all stakeholders in a balanced manner.

Policy	Sustainability Management
<b>3. Social Dimension</b> 	<p>Conducting business with responsibility, giving importance to all stakeholders in a balanced manner, creating good returns for shareholders, occupational health and safety, and creating a good working environment, managing and developing continually provide employees with competence and skills, pay attention to the health and safety of customers, conduct assessments of social partners, provide clear product label information, respect personal data, support youth in education and contribute to value and elevate the quality of life of communities and society for sustainable growth, protect labor rights, act against child labor and illegal labor, respect human rights principles, and provide diversity and equality, and act against discrimination.</p>
<b>4. Corporate Governance Dimension</b> 	<p>Adhering to the principles of accuracy and compliance with relevant laws and regulations under the Code of Conduct, Business Ethics, with a framework based on good corporate governance principles, disclose information and performance with transparency, manage all risks, have flexibility in management, act against corruption, have a transparent and fair procurement system, do not use inside information to seek interests, and have security of information and information systems.</p>





#### Social responsibility


<http://www.tpipolenepower.co.th/index.php/en/en-investment/social-responsibility>




### Business operations that support the Sustainable Development Goals (SDGs) of the United Nations




The Board of Directors of TPI Polene Power Public Company Limited and top executives established a policy for TPI Polene Group to grow sustainably by setting goals and conducting business that supports the Sustainable Development Goals (SDGs) of the United Nations. TPI Polene Group's respond appropriately to the SDGs and are in line with the vision, mission, nature of business, strategic plans, as well as materiality issues to sustainability and stakeholder expectations by selecting 10 of the 17 main Sustainable Development Goals, consisting of:


SDGs	Operational Guidelines	Results
 <p><b>3</b> GOOD HEALTH AND WELL-BEING</p>	<ul style="list-style-type: none"> <li>Determining operational guidelines that comply with ISO45001, an occupational health and safety management standard system.</li> <li>Determining additional welfare to support practitioners in accessing medical services for cases that are not related to operations, such as examination and basic medical treatment, emergency treatment at the Company's infirmary.</li> <li>Supporting ongoing health care of employees by setting additional health check-up items according to the risk of age groups, such as blood lipid tests (Total Cholesterol, LDL, HDL, Triglycerides) for employees to keep monitoring their health.</li> <li>Determining a policy and vision to become an environmentally friendly cement and electric power producer by setting a goal for TPI Polene Group to be a Net Zero Greenhouse Gas Emission Producer at the cement plants and surrounding areas at Muak Lek District and Kaeng Khoi District, Saraburi Province, where main activity is to use the Company's waste fuel to replace coal in the cement production process by 25% (under the management of TPI Polene Public Company Limited, as the parent company) and by 100% in the Company's own power production.</li> <li>All of the Company's waste fuel production plants reduce greenhouse gas emissions from using such waste as fuel instead of landfilling, which causes global warming.</li> <li>Participating in Thailand Voluntary Emission Reduction Program (T-VER) by Thailand Greenhouse Gas Management Organization (TGO)</li> </ul>	<ul style="list-style-type: none"> <li>Rate of work-related ill health is zero.</li> <li>Rate of work-related accidents is zero.</li> <li>In 2022, the Company was successful in receiving 2.73 million tons of waste from landfills while reducing carbon emissions by 6.34 million tons of carbon dioxide equivalent through the use of the waste alternative fuels in power plants and cement plants and reducing methane gas from the waste. This will result in reducing the problem of global warming and improving the health and well-being of the world's population.</li> <li>On May 24, 2022, the Company was registered by the TGO for carbon credit certification for the period from May 1, 2017, to December 31, 2020, in the amount of 717,931 tons of carbon dioxide equivalent.</li> </ul>
 <p><b>4</b> QUALITY EDUCATION</p>	<ul style="list-style-type: none"> <li>Establishing a training plan for employees to develop both soft skills and hard skills, totaling 151 courses in 2022, with the training goal of not less than 20 hours/person/year.</li> </ul>	<ul style="list-style-type: none"> <li>Number of training hours 24.71 hours/person/year, classified by male 26.46 hours/person/year, female 6.09 hours/person/year</li> <li>A total of 1,143 employees, representing 100 percent, received performance appraisals.</li> </ul>
 <p><b>6</b> CLEAN WATER AND SANITATION</p>	<ul style="list-style-type: none"> <li>Adhering to the 3Rs (Reduce, Reuse, Recycle) principles by increasing the efficiency of water use, namely reducing the amount of water used in the production process and having wastewater from the office through the treatment system and reusing it without water treatment by the Company's water management.</li> </ul>	<p>In 2022, the Company managed water as follows:</p> <p>Water consumption 9,464,639 cubic meters 396,322 cubic meters of recycled water after treatment</p>
 <p><b>7</b> AFFORDABLE AND CLEAN ENERGY</p>	<p>Energy consumption targets are set as follows:</p> <ol style="list-style-type: none"> <li>Short term goals (within 1-2 years)             <ul style="list-style-type: none"> <li>Station Service Used must not exceed 12% of the energy produced.</li> <li>Total cost of all types of energy per power generation must not exceed 15.00 MJ/kWh.</li> </ul> </li> <li>Long-term goals (not less than 3 years)             <ul style="list-style-type: none"> <li>Total cost of all types of energy per power generation must not exceed 14.50 MJ/kWh.</li> </ul> </li> </ol>	<p>In 2021-2022, the Company operated as follows:</p> <ul style="list-style-type: none"> <li>Cooling tower efficiency improvements to increase turbine efficiency and reduce electrical power for cooling.</li> <li>Proceeding to stop the turbines to clean the condensor of Turbines No. 5 and 7.</li> <li>Adjusting the air volume in Boiler B8 to increase the combustion efficiency.</li> </ul>

SDGs	Operational Guidelines	Results
	<p>Development and investment projects related to clean energy with the goal of reducing climate risks and helps to distribute income to society, for example:</p> <ol style="list-style-type: none"> <li>1. Investment project to expand waste fuel production capacity (Plant 3) for another 5 production lines (production lines 14-18), resulting in the Company's installed capacity to receive waste to produce additional waste fuel by 6,000 tons per day to supply waste fuel to the coal-fired power plant (TG8) to use waste fuel instead. The project will be completed in 2024 with an investment of approximately 1,100 million baht.</li> <li>2. Waste Fuel Power Plant (TG7) Renovation and Construction Project to convert TG7 to 100% Waste Fuel Power Plant Phase 1 will be completed in early 2023 and Phase 2 will be completed in mid-2023 with an investment of approximately 1,000 million baht.</li> <li>3. Boiler improvement project of a 150 MW coal-fired power plant (TG8), Phase 1, which will use waste fuel to replace coal by 25 percent, was completed in November 2022 with an investment of approximately 200 million baht.</li> <li>4. New boiler construction project for the 150 MW coal-fired power plant (TG8), Phase 2, which will use waste fuel to replace coal by 75%, is expected to be completed in 2025 with an investment of approximately 3,000 million baht. When combined with Phrase under item 3, the TG8 power plant will stop using coal 100% and the Company will become a completely green power producer.</li> <li>5. Songkhla Provincial Administrative Organization's waste management project by installing an incinerator with a capacity of 600 tons per day to accommodate contractual waste disposal of 500 tons per day and with an installed power generation capacity of 9.9 megawatts to be sold under a very small power producer contract of 7.92 megawatts with a contract period of 20 years. The project will be completed by the end of 2024 with an investment of approximately 2,000 million baht.</li> <li>6. Waste disposal plant project, Phrase 2, Nakhon Ratchasima municipality by installing an incinerator with a capacity of 600 tons per day to accommodate contractual waste disposal of 500 tons per day and with an installed power generation capacity of 9.9 megawatts to be sold under a very small power producer contract of 9.9 megawatts with a contract period of 20 years. The project will be completed by the end of 2024 with an investment of approximately 2,000 million baht.</li> <li>7. Ground-mounted solar power plant project in Thap Kwang District, Saraburi Province to construct a solar power plant with an installed capacity of 61.22 megawatts to generate power for internal use and sell to TPI Polene Plc. for cement</li> </ol>	<ul style="list-style-type: none"> <li>• 2 municipal waste power plant projects (at Nakhon Ratchasima Province and Songkhla Province)</li> <li>• Boiler improvement project at TG 7 in 2023-2024</li> <li>• Boiler improvement project at TG 8 will generate cost savings in 2022-2025.</li> <li>• Boiler improvement project of a 150 MW coal-fired power plant (TG8), Phase 1, which will use waste fuel to replace coal by 25%, was completed in November 2022.</li> <li>• Construction project of a natural water storage pond with a size of 1 million cubic meters for more efficient water management by reducing water consumption and pumping water from the Pasak River and being able to store water in advance before the dry season. This reduces the risk of water shortage in the power generation process. The project was completed in 2022.</li> <li>• As for the Progressive Industrial Model City of the Future project, it is expected to result in 100,000 job positions, as a project to strengthen national security through the promotion of export-import industries and employment.</li> </ul>



SDGs	Operational Guidelines	Results
	<p>plants. The project will be completed in 2024 with an investment of approximately 1,800 million baht</p> <p>8. Cooling Tower efficiency improvement project by replacing new deflector plates and installing cooling panels and air distribution panels, which increase the efficiency of the cooling tower and reduce water consumption in the system and reduces the coolant temperature by 1-2 degrees Celsius, resulting in higher efficiency in power generation. The project will be completed in 2024 with an investment of approximately 16.5 million baht.</p> <p>9. Construction project of a natural water storage pond with a size of 1 million cubic meters for more efficient water management by reducing water consumption and pumping water from the Pasak River and being able to store water in advance before the dry season. This reduces the risk of water shortage in the power generation process. The project was completed in 2022 with an investment of approximately 35 million baht.</p> <p>10. Prototype City of Advanced Futuristic Industries (PAFI), Chana District, Songkhla Province to develop industrial estates, green energy power plants, commercial and tourism port construction, warehouses, distribution centers, and smart cities. It is in the process of negotiating foreign partners for joint investment with investors from South Korea, Japan, Germany, and Malaysia who are interested in co-investing in such projects.</p>	
	<ul style="list-style-type: none"> <li>Improving fuel and machinery quality in order to keep pace with changes in accordance with global energy trends towards the development of green energy.</li> </ul>	<ul style="list-style-type: none"> <li>Increasing the efficiency of the water cooling system by changing the water distribution plate, allowing the cooling water temperature to decrease by 2 - 4 degrees Celsius, improving the efficiency of power generation, and reducing the amount of steam consumption per unit of power generation in 2022 by 1.42% compared to 2021.</li> <li>Improving alternative fuel feed systems from previously using screw conveyors, causing compaction, changing to using vibration conveying, causing fuel to spread, reduce clogging and burn faster, increase combustion efficiency, reduce energy consumption in 2022 by 2.9% compared to 2021</li> <li>Improving the alternative fuel supply system to use less coal by using more alternative fuels causes the ratio of coal to alternative fuels in power generation in 2022 to decrease by 2.8% compared to 2021.</li> <li>Improving the quality of waste fuel to reduce moisture, the drainage system from the renewable fuel pile, increasing storage areas to increase the rest period, and allowing the moisture to decrease from 46.5% to 44 - 45% at present.</li> </ul>

SDGs	Operational Guidelines	Results
 <p>11 SUSTAINABLE CITIES AND COMMUNITIES</p>	<ul style="list-style-type: none"> <li>Determining “Zero Waste” Policy</li> <li>Determining guidelines for waste and waste management in the business process systematically according to the 3R (Reduce, Reuse, Recycle) principles.</li> <li>Improving the production process of cement plants so that waste fuel can be used instead of coal by 25% by allowing TPI Polene Power Public Company Limited to purchase waste from local producers who are responsible for sorting waste to help reduce the amount of community waste, promote job creation, create community-based livelihoods, reduce socio-economic inequalities, and increase employment, and increases economic value.</li> </ul>	<ul style="list-style-type: none"> <li>Industrial waste generated from the production process has been utilized as alternative fuels, alternative materials, and recycled in the total amount of 19,706.66 tons, accounting for 100% of the total amount of industrial waste generated.</li> <li>Waste from power plants has been managed for maximum benefit such as using all heavy ash and fly ash as alternative raw materials at TPI Polene’s cement plant.</li> </ul>
 <p>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</p>	<ul style="list-style-type: none"> <li>Determining a business policy by integrating the concept of economic model for sustainable development (Bio-Circular-Green Economy (BCG)) into the main business process to reduce the use of natural resources from raw material procurement, production, sales and transportation, utilization, disposal of discarded products and making the best use of limited energy and natural resources.</li> </ul>	<ul style="list-style-type: none"> <li>Use of sorted waste as fuel</li> <li>Use of organic matter from waste sorting to recondition as a soil conditioner</li> <li>Use of ashes from power plants in concrete mixes</li> </ul>
 <p>13 CLIMATE ACTION</p>	<ul style="list-style-type: none"> <li>Total investment allocation of approximately 11,116.50 million baht for research and development of technology or project implementation for the purpose of reducing climate risks.</li> </ul>	<ol style="list-style-type: none"> <li>Investment project to expand waste fuel production capacity (Plant 3) for another 5 production lines (production lines 14-18), with an investment of approximately 1,100 million baht.</li> <li>Waste Fuel Power Plant (TG7) Renovation and Construction Project to convert TG7 to 100% Waste Fuel Power Plant Phase 1 will be completed in early 2023 and Phase 2 will be completed in mid-2023 with an investment of approximately 1,000 million baht.</li> <li>Boiler improvement project of a 150 MW coal-fired power plant (TG8), Phase 1, with an investment of approximately 200 million baht.</li> <li>New boiler construction project for the 150 MW coal-fired power plant (TG8), Phase 2, with an investment of approximately 3,000 million baht.</li> <li>Songkhla Provincial Administrative Organization’s waste management project by installing an incinerator with a capacity of 600 tons per day to accommodate contractual waste disposal of 500 tons per day with an investment of approximately 2,000 million baht.</li> <li>Waste disposal plant project, Phase 2, Nakhon Ratchasima municipality by installing an incinerator with a capacity of 600 tons per day to accommodate contractual waste disposal of 500 tons per day and with an installed power generation capacity of 9.9 megawatts with an investment of approximately 2,000 million baht.</li> </ol>

SDGs	Operational Guidelines	Results
		<p>7. Ground-mounted solar power plant project in Thap Kwang District, Saraburi Province to construct a solar power plant with an installed capacity of 61.22 megawatts with an investment of approximately 1,800 million baht.</p> <p>8. Cooling Tower efficiency improvement project by replacing new deflector plates and installing cooling panels and air distribution panels with an investment of approximately 16.5 million baht.</p> <p>9. Construction project of a natural water storage pond with a size of 1 million cubic meters with an investment of approximately 35 million baht.</p>
 <p>16 PEACE, JUSTICE AND STRONG INSTITUTIONS</p>	<ul style="list-style-type: none"> <li>• Strict compliance with laws covering business law, social law, and environmental law</li> <li>• Determining guidelines for Environmental Impact Assessment (EIA) and Environmental Health Impact Assessment (EHIA) completely (100%)</li> <li>• Preparing reports on environmental law compliance, environmental impact assessment results, and environmental and health impact assessment results for public agencies and communities.</li> </ul>	<ul style="list-style-type: none"> <li>• The Company carried out air quality measurements and environmental impact monitoring under the EIA report, as well as hiring environmental experts to implement additional environmental impact assessment and monitoring projects from the EIA.</li> </ul>

In this regard, the Company has a strategy for sustainability in accordance with the policy framework and sustainability management that promotes the vision of TPI Polene Group along with good practices according to the principles and international standards of the United Nations as detailed above. The Policies and targets are reviewed annually to cover potential risks that may arise in the future.



## Respecting Human Rights<sup>(2-23)(2-24)</sup>

The Company is committed to complying with the provisions set forth in international human rights principles and international labor standards, as well as the United Nations Universal Declaration of Human Rights and the Universal Declaration on Fundamental Rights and Rights at Work of the International Labor Organization, the Thai Labor Protection Act 2017, and respect for the International Labor Organization (ILO).

The Company established its policy in the TPI Polene Code of Conduct on treating each other with respect to human rights principles, privacy, respect for privacy and protection of customer information, employees partners, and related parties to the utmost according to the Personal Data Protection Act B.E. 2562 (2019), equal treatment in security, support, and respect for employees' political rights and fundamental rights to life, right to defend allegations, setting up independent and fair committees to an investigation where the accused has the right to defend himself against the allegation. In addition, the Company has carried out important operations related to human rights as follows:

1. Notification on the International Human Rights Policy No. 006/2559 that has set guidelines for activities and business operations that are sensitive to society and communities by requiring the Board of Directors, executives, and all employees to comply with the law, local traditions, and cultures that the Company has operated in certain areas by adhering to the following guidelines:
  - Employees shall treat any person on the premises of the plant with respect on the basis of human dignity, fairness, and mutual dignity, as well as complying with all applicable national laws.
  - The Company promotes diversity in employment and provides opportunities for employees to grow and advance in their careers without discrimination against any individual due to similarities or differences in race, nationality, religion, country, education, age, gender, status, physical disability, etc.
  - Employees must carefully handle stakeholder information.
  - Employees must not disclose confidential information of stakeholders to those who are not authorized unless they have been approved in writing by their own stakeholders or from authorized persons assigned by the Company.
  - Employees must limit the disclosure, use, and access of stakeholder information to the extent necessary.
  - Employees are strictly prohibited from harassing or causing a sexual nuisance in the plants.
2. Determining the Supplier Code of Conduct by establishing human rights guidelines to prevent violations of human rights in all business activities of the Company, which covers both employment issues and illegal child labor and requires all business partners to strictly comply with the policy.
3. Determining a policy, TPI Polene Code of Conduct on treating each other with respect to human rights principles, and equal treatment, and it must be promulgated within the Company.
4. Notification on the Personal Data Protection Policy No. BorKor 0017/2564, requiring the Company to operate with strict respect for the privacy rights of customers, partners, employees, and related parties.

As TPI Polene Power Public Company Limited realizes the importance of conducting and managing human rights, including customers, and partners in the Supply Chain Management (SCM) that may be affected by human rights issues, it established a Human Rights Policy to be applicable to its business units aimed at mitigating risks, preventing, and avoiding human rights violations. In addition, a human rights audit process has been set up, consisting of identifying risk issues, impact assessment, and mitigation measures to reduce human rights risks, including establishing channels for grievances and remedial measures when human rights violations occur, in order to ensure that TPI Polene Group's business operations are committed to strictly protecting human rights.

## Comprehensive Human Rights Review Process



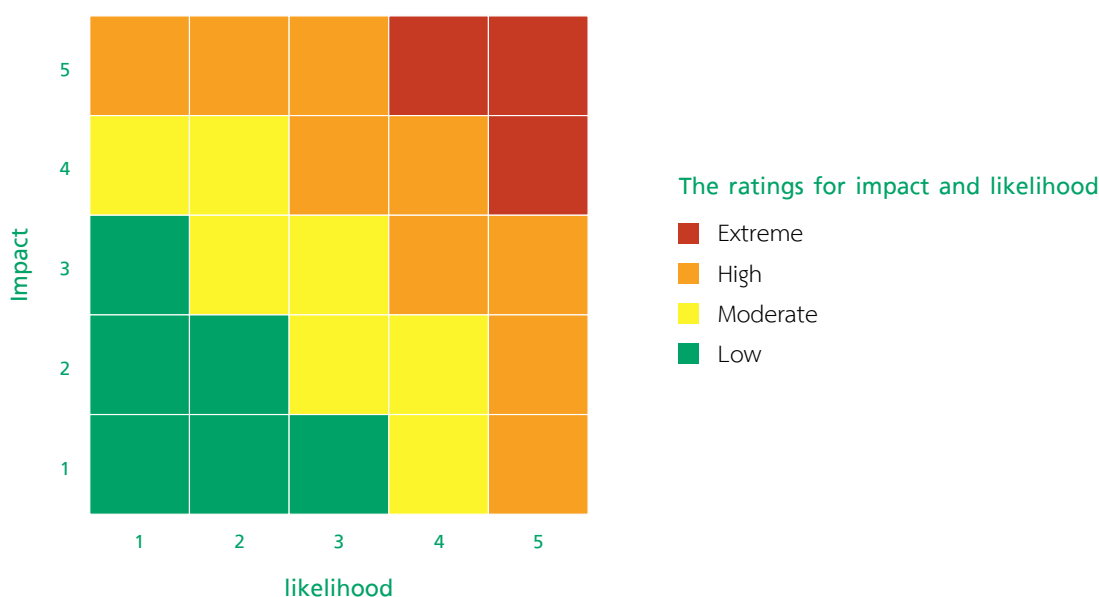
1. Declare the policy as an obligation > 2. Cultivation through corporate policy > 3. Human Rights Risk Assessment > 4. Remedy > 5. Monitoring and reporting

1. Declaring the Policy Commitment
2. The Company is committed to respecting human rights by defining it as its key policy and extending responsibility for human rights operations to its partners.
3. Human Rights Risk and Impact Assessment
  - 3.1 Human Rights Scope Identification: The risk assessment covers 100% of the Company's operating areas, including the Bangkok office, Saraburi plants, and gas stations in various areas.

**Based on the analysis, there are four areas of human rights issues identified:**

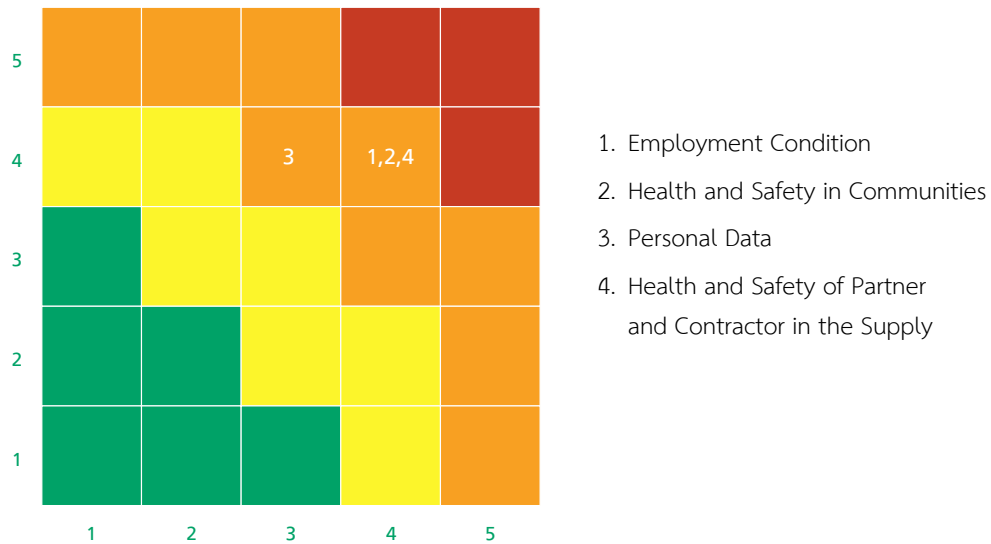
Employee	Society and Community	Customers	Partners and Contractors
<ul style="list-style-type: none"> <li>- Employment conditions</li> <li>- Safe working environment</li> <li>- Freedom to negotiate</li> </ul>	<ul style="list-style-type: none"> <li>- Community occupational health and safety</li> <li>- Living standards and quality of life</li> <li>- Community participation</li> </ul>	<ul style="list-style-type: none"> <li>- Data Privacy</li> <li>- Health and safety of customers</li> <li>- Non-discrimination towards customers</li> </ul>	<ul style="list-style-type: none"> <li>- Employment conditions</li> <li>- Health and safety at work</li> <li>- Forced child labor</li> </ul>

- 3.2 The Company assesses risks using the assessment table below to consider likelihood levels and impact levels in order to prioritize human rights risks.



### 3.3 Human Rights Risk Prioritization

In 2022, the Company has prioritized human rights risks in four aspects as follows:



The Company has taken human rights risks in 5 issues to analyze the risks that may occur and mitigating the impact as follows.

Scope	Risk issues	Effect	Mitigation measures
Employment	Working overtime for more than 36 hours/week	Legal protection rights Human rights approach to quality of life and health	1. Hiring contract workers to help with the work. 2. Labor Protection Act
Health, Safety, Society and Community	Accidents from cargo trucks with speed and pollution from the black smoke emitted by vehicles	Rights, laws, occupational safety and health	1. Notification on the speed limit for cargo trucks. 2. Schedule vehicle inspections and fix incorrect conditions.
Personal data	Personal data storage of customers is pending the request for consent from customers.	Personal Data Protection Laws	1. Asking for voluntary inquiry or consent to data collection
Health and safety of partners and contractors	Wearing personal protective equipment	Occupational safety and health rights at work	1. Notifying contractors to comply with occupational safety and health laws. 2. Training on compliance with safety regulations

#### 4. Remedies and channels for receiving complaints

Providing remedies in the event of human rights violations with a process for receiving complaints, investigating complaints fairly, and determining mitigation measures, including fair remedial measures.

### Contact

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#### 5. Tracking and auditing operations

The Company monitors compliance with the human rights impact mitigation measures, with a focus on mitigating negative impacts. In this regard, agencies with implemented mitigation measures must monitor and review action plans to improve efficiency and it should be re-evaluated to realize remaining impacts.

### 2022 Performance

#### Human Rights Risk Assessment Progress Performance

The Company assessed environmental, social, and governance risks (ESG risks) arising from its business partners, such as human rights, forced and child labor, environmental impacts, and community and social impacts in terms of employment, health, and safety in the community, accidents from cargo trucks running at speed, and pollution from black smoke from vehicles emitted, storage of personal information of employees and customers, health and safety of partners and contractors such as wearing personal protective equipment, and assessing the human rights of employees in 16 divisions at the head office and plants. In 2022, there were no ESG complaints from employees and no complaints from labor contractors. Also, in 2022, the Company collected the personal data of employees with the consent of all employees.

In addition, in 2022, 93% of suppliers signed an acknowledgment of the Supplier Code of Conduct on the human rights practices that the Company encourages its partners to strictly comply with.

Schedule: Key contracts and investment agreements containing human rights clauses or human rights screenings

Types of suppliers (classified by the organization's wishes)	Suppliers selected using human rights criteria (total number of contracts)	Suppliers selected using human rights criteria (percentage of total contracts)
613 suppliers	570 suppliers	93%

The Company has assessed environmental, social, and governance risks (ESG risks) arising from its business partners, such as human rights issues, forced labor and child labor, environmental impacts, and community and social impacts from 59 major suppliers out of 80 suppliers, accounting for 74 percent. The results of the assessment revealed that all assessed suppliers place an emphasis on ESG risk management.

#### Human Rights Personnel Training Performance in 2022

The Company trained its employees on human rights procedures and policies such as the Personal Data Protection Act (processes and practices) for employees on a continual basis, providing channels for feedback and suggestions from all groups of stakeholders, including employees, partners, contractors, customers, communities, and society, through a variety of channels such as the Company's website, telephone, facsimile, and letter, etc. In 2022, there were no complaints related to human rights violations whatsoever.



## Stakeholder Engagement<sup>(2-29)</sup>

The Company realizes the importance of stakeholder participation by analyzing both internal and external stakeholders throughout the value chain of the business. It believes that healthy relationships based on trust as well as opinions and suggestions of stakeholders towards the organization are important factors to achieve the goal of being an organization to develop and grow sustainably. In addition, stakeholder management helps the organization effectively manage risks that may cause damage to its image and business interruption opportunities.

### Value Chain of TPI Polene Power



## Relevant stakeholders

### ☑ Shareholders and Investors

- Shareholder
- Institutional investors
- Retail investors
- Analyst, Credit Rating Agency



### ☑ Customers and Distributors

- Main customers such as
- TPIPL
  - EGAT and PEA



### ☑ Community and Society

- Communities around the area where the company located
- Societies that have access to the company's product service



### ☑ Employees

- Full time staff
- Temporary worker



### ☑ Creditor

- Financial institution
- Bondholder



### ☑ Competitors

- Companies within the same business group



### ☑ Supplier and Contractors

- Manufactures Sellers and service provider raw materials machinery and equipment
- Project contractors



### ☑ Governances

- Related government agencies
- Local government organization.
- Regulatory Agencies

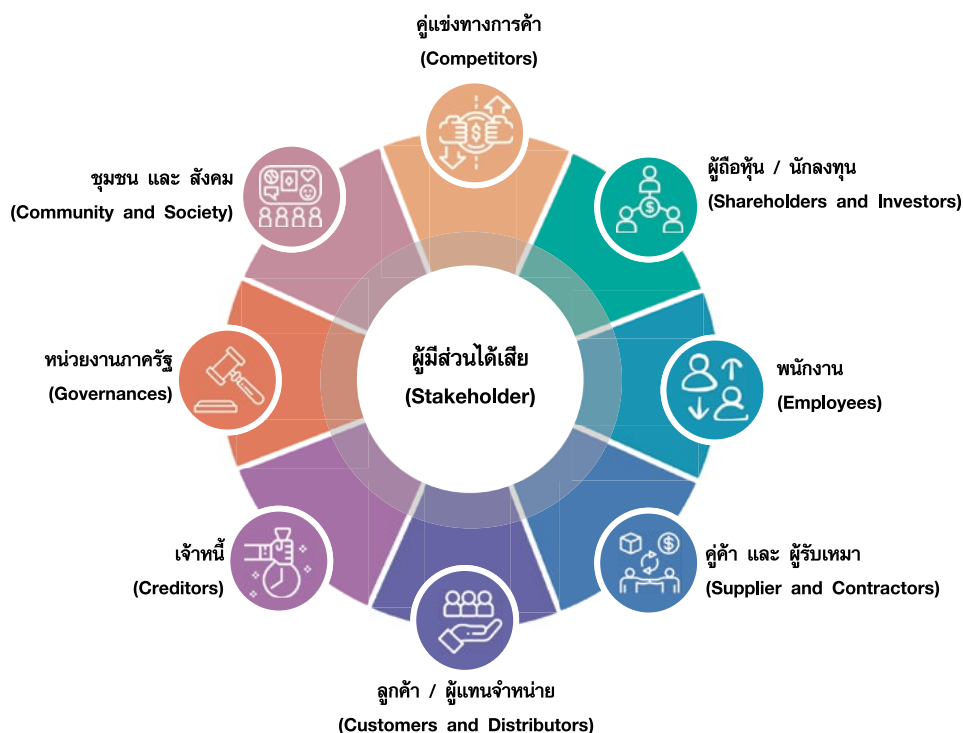


### ☑ Press and Media

- Newspapers/ Television/ Social Media/ Application




The Company adheres to the principle of creating cooperative values between the Company and stakeholders, as well as improving its channels and conveying the opinions of stakeholders to the responsible departments. The Company divides the groups of stakeholders to cover all dimensions both inside and outside the organization, comprising 9 groups: shareholders and investors, customers, suppliers and contractors, creditors, governances, employees, communities and society, competitors and press and media.







The Company established channels to foster relationships that are suitable for each group of stakeholders to listen to problems, operational impacts, comments and suggestions, which lead to the formulation of policies and operational strategies to effectively respond to stakeholders' needs and expectations through following operational guidelines:

## Guidelines for engaging with stakeholders of TPI Polene Power Public Company Limited

Stakeholders	Guidelines for engaging with stakeholders	Concerns/Expectations	Approaches to response
<b>1. Shareholders / Investors/ Analysts/ Credit Rating Agency</b> 	<ul style="list-style-type: none"> <li>- Annual General Meeting of Shareholders</li> <li>- Opportunity for shareholders to attend the annual shareholders' meeting such as questioning and voting.</li> <li>- Presentation of information for investment to investors and analysts through investor relations activities at least 7 times a year.</li> <li>- Annual Information Disclosure Form /Annual Report (Form 56-1 One Report)</li> <li>- Provide communication channels through media including website, letter, email, telephone or others at least 20 times per month.</li> <li>- Annual Sustainability Report</li> <li>- Financial Report 4 times a year</li> </ul>	<ul style="list-style-type: none"> <li>- Good performance, stock prices and dividends are at a reasonable level and financially stable.</li> <li>- Operations are transparent and the business continues to expand.</li> <li>- Disclosure of important information of the Company with accuracy, completeness, timeliness, transparency, and reliability through channels that are easily accessible to shareholders.,</li> <li>- Conduct business with environmental, social, governance or ESG considerations.</li> <li>- Provide effective risk management system</li> <li>- Opportunity for shareholders to attend the annual shareholders' meeting and activities to engage and maintain good relations with shareholders.</li> </ul>	<ul style="list-style-type: none"> <li>- Manage the organization according to the vision under the BCG and ESG policies under good corporate governance.</li> <li>- Manage the efficiency of power generation and distribution to create long-term income stability.</li> <li>- Manage the innovations and technology, including research and development for business expansion.</li> <li>- Follow the policies to maintain liquidity and strengthen financial stability.</li> <li>- Conduct proper all-round risk management</li> <li>- All shareholders have rights and are treated equally.</li> <li>- Clarify sufficient details regarding the shareholders' meetings, as well as all information relating to matters requiring shareholders to make decisions at the meetings in advance.</li> </ul>
<b>2. Employees - Full-time and Contract Employees</b> 	<ul style="list-style-type: none"> <li>- Collect information from all channels including complaints.</li> <li>- Communication within the organization through various channels, such as creating a Line chat group for top executives to communicate with all employees, specific Line chat groups to related management, internal memo circulated to employees in each department, announcement notice board in the establishment.</li> <li>- Workplace Welfare Committee</li> <li>- Occupational Safety, Health and Working Environment Committee</li> <li>- Annual Information Disclosure Form /Annual Report (Form 56-1 One Report)</li> <li>- Sustainability Report</li> <li>- Executives meet with employees at the plant once a week.</li> </ul>	<ul style="list-style-type: none"> <li>- Compensation and welfare that are consistent with the industry are appropriate and fair.</li> <li>- The organization is stable and progressive in work.</li> <li>- Potential development for stability and opportunities for career advancement</li> <li>- The organization has a good image.</li> <li>- Fair performance appraisal system</li> <li>- Occupational safety and quality of work life</li> <li>- Accept and respect opinions.</li> <li>- Equal treatment and respect for human rights and personal data.</li> </ul>	<ul style="list-style-type: none"> <li>- Treat employees fairly in accordance with human rights principles with equality, without discrimination, child labor, forced labor and migrant workers, including protecting personal information.</li> <li>- Skill development and promotion of employee advancement through training courses.</li> <li>- Motivate and retain employees by assessing their performance with clear criteria to determine fair remuneration and welfare that are comparable to other companies in the same industry.</li> <li>- Measure the level of satisfaction and engagement of employees towards the organization.</li> <li>- Provide good occupational health and safety system.</li> <li>- Provide channels for opinions and suggestions.</li> </ul>

Stakeholders	Guidelines for engaging with stakeholders	Concerns/Expectations	Approaches to response
	<ul style="list-style-type: none"> <li>- Provide clear communications within the organization through channels such as notifications to the departments within the Company and Line App.</li> <li>- Website comment box, email, Facebook</li> <li>- Performance appraisal 3 times a year</li> </ul>		
<b>3. Suppliers and Contractors - Manufacturers / sellers and service providers, including raw materials, machinery and equipment / contractors for the projects</b> 	<ul style="list-style-type: none"> <li>- Complaints and communication channels such as websites, email, telephone, letters, etc.</li> <li>- Relationship building activities with suppliers at least once a year to create engagement.</li> <li>- Go out to meet suppliers at their premise at least twice a year.</li> <li>- Business negotiations, exchange of information and business opinions at least twice a year.</li> </ul>	<ul style="list-style-type: none"> <li>- Procurement system that is transparent, fair, non-discriminatory, free from corruption</li> <li>- Build relationship to grow together</li> <li>- Comply with the agreed terms, never take advantage of customers, and make payments on time.</li> <li>- Respect human rights and personal data.</li> <li>- Provide occupational health and safety in the workplace</li> </ul>	<ul style="list-style-type: none"> <li>- Conduct business together according to the Supplier Code of Conduct with strict equality.</li> <li>- Taking into account social issues and environment in procurement</li> <li>- Follow-up on compliance with the Supplier Code of Conduct</li> <li>- Determine a fair payment period to suppliers so that they have financial liquidity and is capable of continuing their business.</li> </ul>
<b>4. Customers and distributors - Major customers including Electricity Generating Authority of Thailand and the Provincial Electricity Authority (EGAT and PEA)</b> 	<ul style="list-style-type: none"> <li>- Visits and meetings once a year</li> <li>- Business visits once a year</li> <li>- Activities with customers for times a year</li> <li>- Project production report to be prepared and submitted to EGAT twice a month.</li> <li>- Evaluation of customer satisfaction of power plants once a year</li> <li>- Customer satisfaction evaluation of waste fuel products to be conducted twice a year</li> <li>- Complaints and other communication channels such as website, email, telephone, letter, etc.</li> </ul>	<ul style="list-style-type: none"> <li>- Selling power at reasonable prices</li> <li>- Stable and safe power generation and delivery with uninterrupted power supply</li> <li>- Power generation with environmentally friendly technology that does not cause any impact on communities and society</li> <li>- Compliance with agreements and contracts</li> <li>- Customer Confidentiality</li> <li>- Speed of service and support</li> <li>- Give importance to listening and responding to complaints.</li> </ul>	<ul style="list-style-type: none"> <li>- Generate and deliver stable and safe electricity for uninterrupted power supply.</li> <li>- Quality and efficient power generation with modern, environmentally friendly technology which does not cause any impact on the community and society.</li> <li>- Compliance with fair trade agreements and contracts, selling electricity at right and reasonable prices.</li> <li>- Strict compliance with business ethics including protection of customer information</li> <li>- Respond to the policy to reduce the use of highly polluting coal fuel and pay attention to the use of renewable energy as fuel.</li> </ul>

Stakeholders	Guidelines for engaging with stakeholders	Concerns/Expectations	Approaches to response
<b>5. Creditors / financial institutions / debenture holders</b> 	<ul style="list-style-type: none"> <li>- Submit a quarterly financial statement report.</li> <li>- Annual Registration Statement/ Annual Report (Form 56-1 One Report)</li> <li>- Sustainability Report</li> </ul>	<ul style="list-style-type: none"> <li>- Good corporate governance</li> <li>- Manage with transparency</li> <li>- Manage risks prudently</li> <li>- Payment in full and on time</li> <li>- Good performance, liquidity and solvency</li> </ul>	<ul style="list-style-type: none"> <li>- Conduct business with transparency and accountability under good corporate governance.</li> <li>- Comply with the conditions of the loan agreement and debentures.</li> <li>- Full disclosure of the Company's information and its financial information</li> </ul>
<b>6. Governances / related public agencies / regulatory agencies / local public organizations</b> 	<ul style="list-style-type: none"> <li>- Report business performance to public agencies according to the period specified by the government as follows:</li> <li>- Report the performance of safety officers in professional work every 3 months.</li> <li>- Report on compliance with EIA measures of the company every 6 months.</li> <li>- Report Service standard of power operation to Energy Regulatory Commission of Thailand (ERC) once every 3 months</li> <li>- Be a place to visit and study business visits 12 times in 2022</li> <li>- Monitor policies, regulations, government requirements at least once a month.</li> <li>- Prepare project performance reports, both in terms of construction and operation reports to public agencies.</li> <li>- Support hygienic waste management for public agencies / local administrative authorities.</li> </ul>	<ul style="list-style-type: none"> <li>- Compliance with rules, regulations, laws and policies of regulatory agencies</li> <li>- Be responsible to the community, society and environment.</li> <li>- Sponsorship and cooperation with public agencies</li> <li>- Actions to mitigate climate change problems</li> <li>- Payment of taxes, related fees</li> </ul>	<ul style="list-style-type: none"> <li>- Comply with rules, regulations and laws.</li> <li>- Conduct business with responsibility to the community society and environment with sustainable good corporate governance.</li> <li>- Cooperate policy support and projects of public agencies appropriately.</li> </ul>
<b>7. Community and Society - Local communities surrounding the establishments / societies who access goods and services</b> 	<ul style="list-style-type: none"> <li>- Complaints and communication channels such as websites, email, telephone, letters, etc.</li> <li>- Participate in community relations activities at least 28 times per month.</li> <li>- Organize public relations at least 22 times per month.</li> </ul>	<ul style="list-style-type: none"> <li>- Pay attention to community and social feedback.</li> <li>- Keep developing communities and supporting their activities.</li> <li>- Preserve the community environment.</li> <li>- Create jobs and strengthen the economy for the community.</li> </ul>	<ul style="list-style-type: none"> <li>- Explore community and social concerns that may be affected by the Company's business operations.</li> <li>- Care for the community and society.</li> <li>- Allocate budgets to support public projects and activities for the community, including the education of youth in the community.</li> <li>- Projects to support or participate in solving social problems, including creating jobs, creating careers, and creating sustainable income for the community.</li> </ul>

Stakeholders	Guidelines for engaging with stakeholders	Concerns/Expectations	Approaches to response
<b>8. Competitors - Businesses in the same industry</b> 	<ul style="list-style-type: none"> <li>- Collect information from all channels such as websites, letters, telephone, etc.</li> </ul>	<ul style="list-style-type: none"> <li>- Create conditions for fair competition together to maintain market share.</li> <li>- Conduct business in accordance with the Code of Conduct under the rules of free and fair competition.</li> </ul>	<ul style="list-style-type: none"> <li>- Not to violate intellectual property rights and copyrighted works of competitors and competitors' confidential information.</li> </ul>
<b>9. Press and media</b> 	<ul style="list-style-type: none"> <li>- Occasional business visits and activities for the community and society</li> <li>- Support media activities in line with company policy Benefits to the community and society</li> <li>- Regularly disseminate information and news that is beneficial to the Company.</li> <li>- Annual Information Disclosure Form /Annual Report (Form 56-1 One Report)</li> <li>- Sustainability Report</li> <li>- Quarterly earnings press conference</li> <li>- Participate 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> </ul>	<ul style="list-style-type: none"> <li>- Conduct business with a focus on the community society and environment by appropriately and regularly disclosing and disseminating information that is beneficial to society.</li> </ul>

In addition, the Company announced the guidelines for the treatment of each group of stakeholders in writing by adhering to the principle of mutual value creation between the Company and stakeholders. The top executives are responsible for the participation of all groups of stakeholders, including the improvement of channels for giving opinions in order to forward the opinions of stakeholders to the responsible departments, by stakeholders who are directly affected by the Company's business operations

<sup>(2-25)</sup> <sup>(2-26)</sup> The Company established a policy for handling complaints and suggestions by announcing the Company's Policy No. 007/2016 on receiving complaints/suggestions/whistleblowing channels that cause damage to the Company as a channel to effectively oversee the interests of the Company and to enable the Company to solve problems timely as well as to encourage its stakeholders to participate in the corporate governance process. In the event that stakeholders have inquiries or witness suspected misconduct, violations, or non-compliance with laws, rules, regulations, and business ethics, the Company has set up a grievance mechanism as detailed in the Flow diagram/Process for handling complaints From the process of receiving complaints to taking corrective actions and reporting back to relevant stakeholders as follows <sup>(2-16)</sup>:

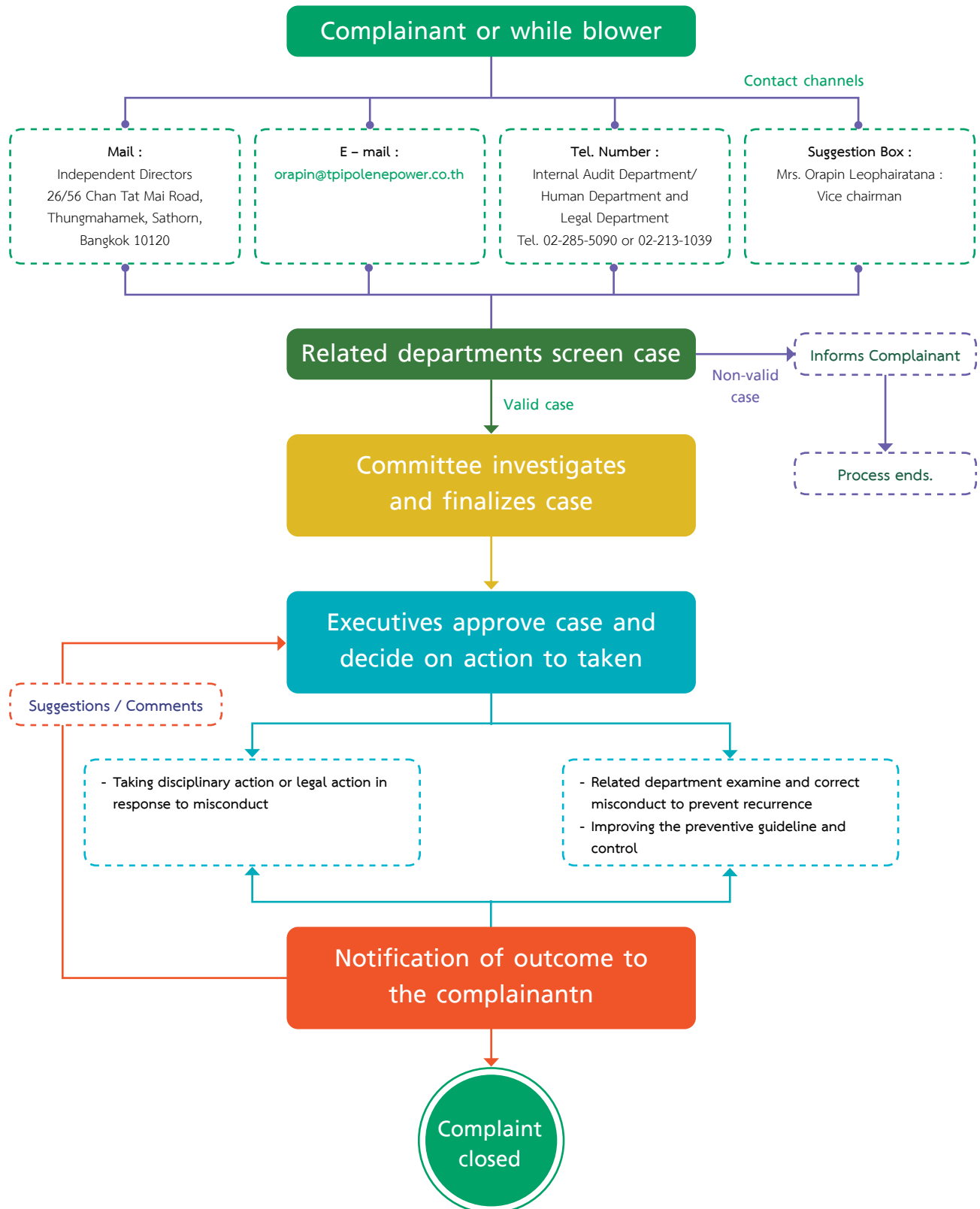
1. Complainants, stakeholders, or the public may make complaints, suggestions, and report clues through the four channels specified by the Company, namely:
  - (1) Letter to the Vice Chairman
  - (2) Electronic mailbox (E-mail: orapin@tpipolenepower.co.th)
  - (3) Phone calls to the Head of Internal Audit, Head of Legal Department, Head of Human Resources (Head Office), or Head of Personnel and Administration (Plant)
  - (4) Comment Box



2. Screening complaints: Once the Company receives a complaint, it will ask the Human Resources Department, the Internal Audit Department, or the relevant departments to consider and screen the complaint, with a detailed examination of the clue or complaint to ensure that it is true, clear, or sufficient to ascertain the facts to proceed. In the event that there is no evidence, the complaint will be returned to the complainant or requested additional documents within 10 days.
3. Fact checking: In the case of receiving a complaint, it must be clear or sufficient to ascertain the facts. 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, who will be appointed from time to time by the President or Executive Vice President.
4. Fact-Finding Committee: The Company will proceed with the procedures for collecting facts, processing, and screening information to determine the appropriate management approach for each subject, as well as to propose disciplinary action or take legal action if misconduct is found and suggest and prevent the recurrence.
5. Result Report: Fact-Finding Committee is responsible for reporting results to the President or Executive Vice President in order to proceed as proposed by the Board of Directors or order as it deems appropriate.
6. Implementation of inspection results and notify the complainant: When the relevant departments have taken action as instructed by the Company, it shall notify the Audit Committee to follow up on corrective actions, and 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.

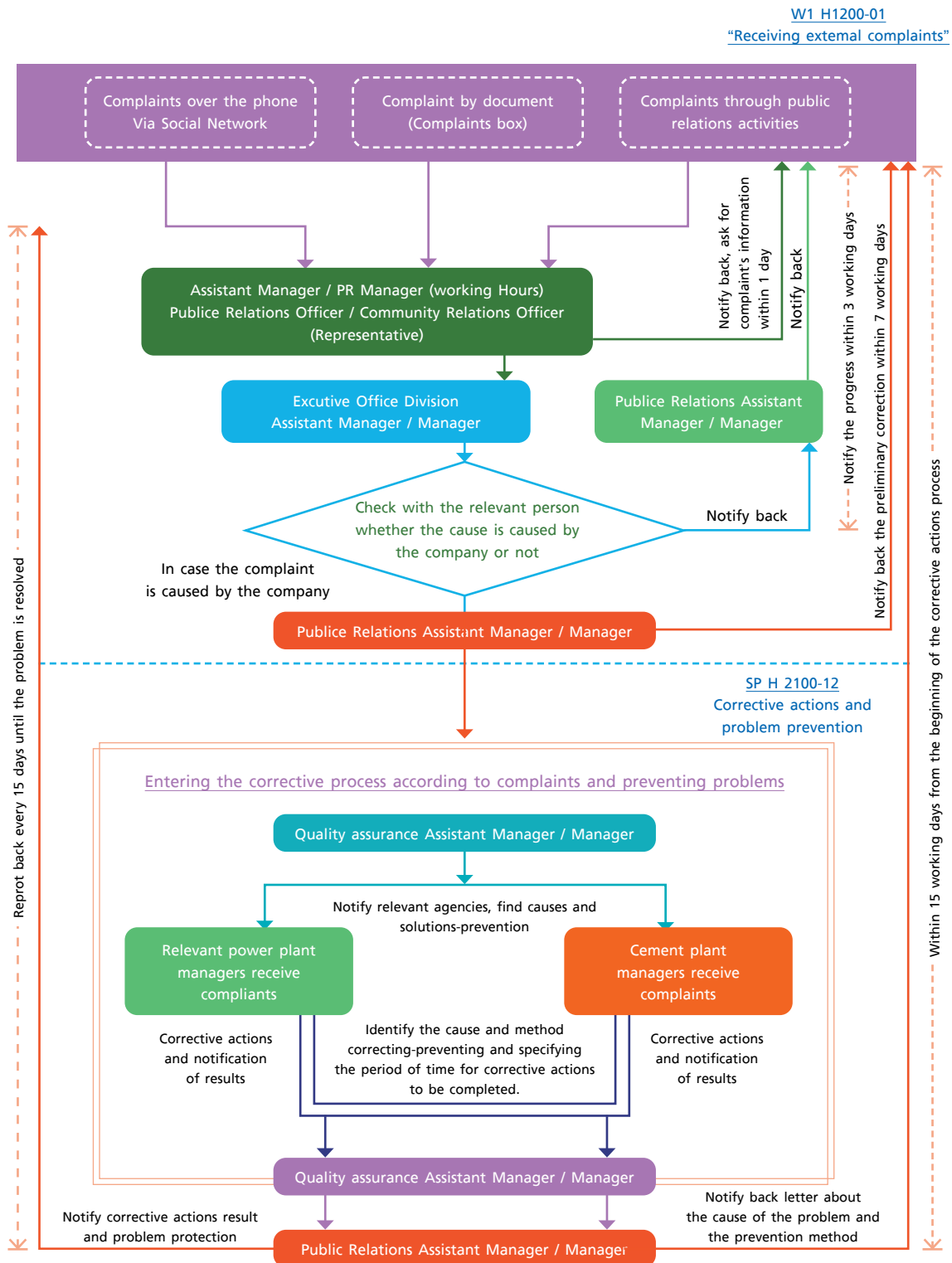


## Flowchart of the complaint and whistleblowing process In handling cases of business ethics, code of conduct and corruption



The Company organizes CSR activities for communities in the areas where the plants are located, listens to their problems, and takes care of solving impacts continuously and regularly.

## Order of response to complaints from external agencies



An official letter will be issued once the problem has been resolved.

In the process of the whistle-blowing complaint process, when the Fact-Finding Committee has informed the result of the action to the whistle-blower, it will inquire about satisfaction, and suggestions, and bring useful suggestions to revise and establish guidelines to make its operations more efficient, and when the Company's relevant departments have taken and improved the actions as instructed by the Company, it shall notify the Fact-Finding Committee to inspect and follow up on the results of the action to ensure efficiency and to prevent a recurrence and report the results to the Vice President for acknowledgment.

Complaint Channel	Number of Complaints in 2022	Percentage of Successfully Resolved Complaints
(1) Letter to the Vice President	0	0
(2) Electronic mailbox (E-mail : orapin@tpipolenepower.co.th)	0	0
(3) Phone calls to the Head of Internal Audit, Head of Legal Department, Head of Human Resources (Head Office), or Head of Personnel and Administration (Plant)	0	0
(4) Comment Box	0	0

## Legal Compliance Performance<sup>(2-27)</sup>

In 2022, the Company investigated non-compliance with laws and regulations that may cause risks or affect the organization, including penalties in case of non-compliance with such laws.

Non-compliance with social and economic laws and regulations	Contexts resulting in significant fines or non-monetary penalties	Value of fine (baht)	Total amount of non-monetary penalties	Number of cases going through the dispute resolution process
0	0	0	0	0



## Determination of Material Sustainability issues<sup>(3-1)</sup>

In preparing this Sustainability Report, the Company's senior management, the Sustainability Committee, and the Sustainability Working Group have adhered to the materiality determination process based on GRI (Global Reporting Initiatives) Standards 2021, taking into account Impact Materiality to disclose information about high-priority material topics from the Company's business operations. The details of the content determination process are as follows:

### Identification

Sustainability Working Group conducts identifications with the criteria for considering and selecting issues related to the sustainability contexts of the Company's core business operations and stakeholder inclusiveness, as well as considering information on sustainability performance from important internal and external sources, which are from executives or representatives from relevant departments receiving information from direct relations with the Company's stakeholders to identify actual or potential impacts, both positive and negative impacts involved, such as relevant international standards on sustainability for the power plant business, details of key sustainability actions from the power plant business, important visions and business strategies for 2022, concerns and expectations of all relevant groups of stakeholders, taking into account all groups of stakeholders who are considered to be involved in determining material issues in order to ensure that the Company takes into account all issues of all groups of stakeholders in all aspects, resulting in 25 sustainability topics.

### Prioritization

The Sustainability Working Group brought 25 Material Topics from the identifications to consider, screen, and prioritize with Materiality Test considered from the main impacts arising from the Company's core business operations in economic, social, environmental, and human rights dimensions to cover 5 aspects: 1) Scale 2) Scale 3) Likelihood 4) Intention and 5) Operational framework of those issues related to driving BCG Economy) by taking the average total score from the consideration of all 25 topics, which can be summarized in order of importance as follows:

- Material topics with high significant impact have a score range of 11-15 points, totaling 20 topics.
- Material topics with moderate significant impact have a score range of 5-10 points, totaling 3 topics.
- Material topics with low significant impact have a score range of 1-4 points, totaling 2 topics.






### Prioritization Results<sup>(3-2)</sup>

High Significant Impact	Moderate Significant Impact	Low Significant Impact
<ol style="list-style-type: none"> <li>1. Economic performance</li> <li>2. Indirect economic impacts</li> <li>3. Technology, innovation and services</li> <li>4. Research and Development</li> <li>5. Risk and crisis management</li> <li>6. System Efficiency</li> <li>7. Availability and reliability</li> <li>8. Customer satisfaction</li> <li>9. Information security</li> <li>10. Local communities</li> <li>11. Occupational health and safety</li> <li>12. Training and education</li> <li>13. Materials</li> <li>14. Energy</li> <li>15. Water and effluents</li> <li>16. Emissions</li> <li>17. Waste</li> <li>18. Anti-corruption</li> <li>19. Employment</li> <li>20. Labor management and labor relations</li> </ol>	<ol style="list-style-type: none"> <li>1. Diversity and equal opportunity</li> <li>2. Non-discrimination</li> <li>3. Customer privacy</li> </ol>	<ol style="list-style-type: none"> <li>1. Safety practices</li> <li>2. Market Presence</li> </ol>



## Validation<sup>(2-14)</sup>

Top executives and the jointly assessed relevant material topics based on completeness principles and agree on the topics to be implemented to specify validation in the Company's Sustainability Report 2022, covering sustainability operations in environmental, social, economic and governance dimensions. The Company's material topics 2022 consist of 20 topics as follows:

Environmental aspect (5 topics)	Social aspect (7 topics)	Economic and corporate governance aspect (8 topics)
<ol style="list-style-type: none"> <li>1. Energy</li> <li>2. Water and effluents</li> <li>3. Emissions</li> <li>4. Waste</li> <li>5. Materials</li> </ol> 	<ol style="list-style-type: none"> <li>1. Employment</li> <li>2. Labor management and labor relations</li> <li>3. Training and education</li> <li>4. Occupational health and safety</li> <li>5. Customer satisfaction</li> <li>6. Information Security</li> <li>7. Local communities</li> </ol> 	<ol style="list-style-type: none"> <li>1. Anti-corruption</li> <li>2. Economic performance</li> <li>3. Indirect economic impacts</li> <li>4. System Efficiency</li> <li>5. Availability and reliability</li> <li>6. Technology, innovation and services</li> <li>7. Research and development</li> <li>8. Risk and crisis management</li> </ol> 

This report is available for download at

<http://www.tpipolene.co.th/index.php/en/en-investment/ar/sustainability>



## Contact for inquiries and suggestions<sup>(2-3)</sup>

1	Ms. Oratai Jiaranai	Position: Assistant Vice President	Finance Management Department
2	Mr. Chayutd Suphapodok	Position: Department Manager	Finance Management Department
3	Ms. Ooy Chuajumroon	Position: Asst. Department Manager	Finance Management Department

## TPI Polene Power Public Company Limited



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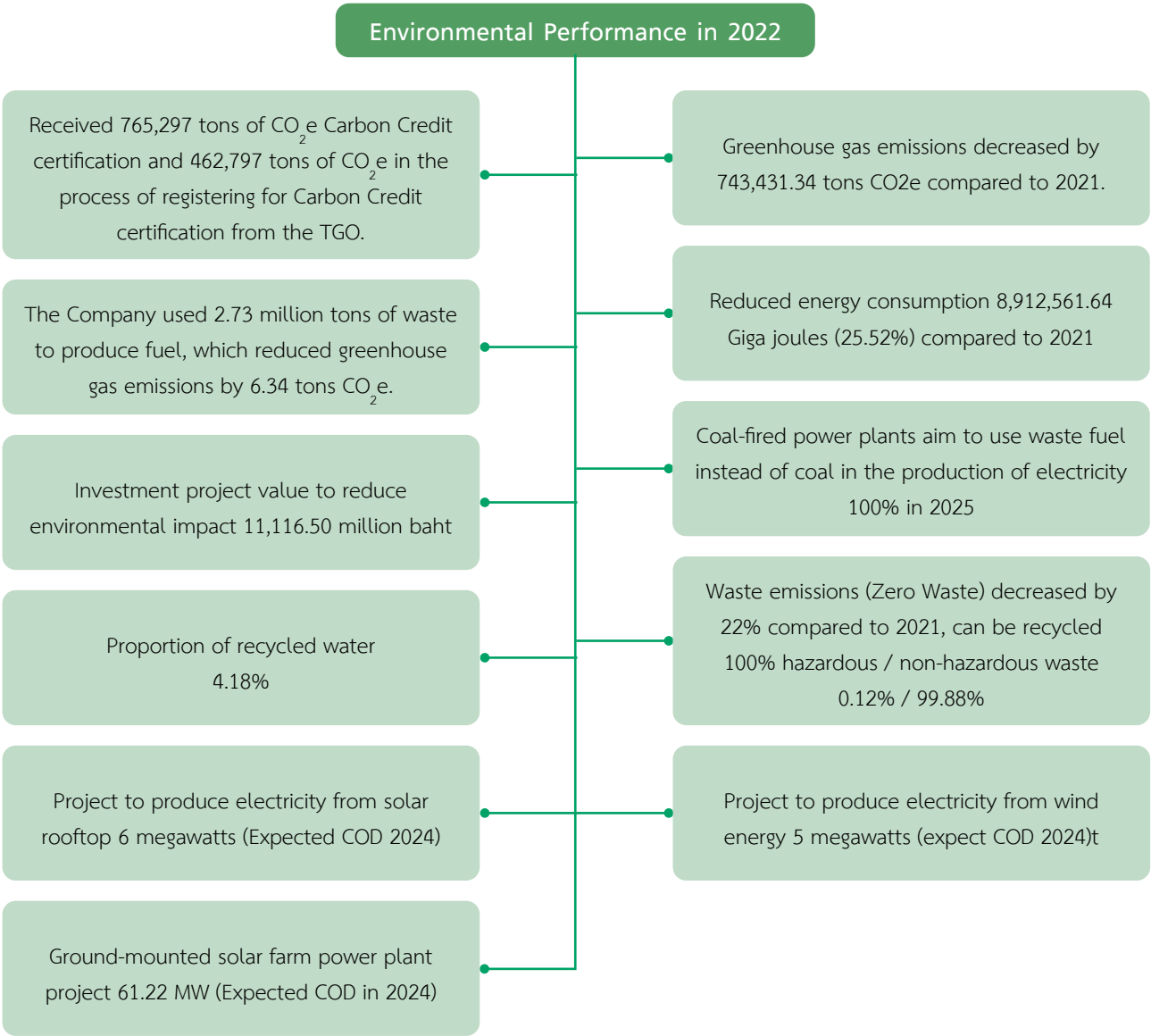
orataij@tpipolene.co.th  
chayutd@tpipolene.co.th  
ooy@tpipolene.co.th



# 05



## Environmental Impact Management



## Environmental Management

The Company and TPI Polene Public Company Limited or TPI Polene Group are aware of the importance of using resources under the growing world population while resources are limited. Inefficient use of resources will cause numerous issues such as waste from consumption, lack of production resources, especially consumable resources, using energy that relies on fossil fuel sources playing an important role in the emission of greenhouse gases, which has an impact on climate change and poses big challenges to the world in economic, social, and environmental dimensions, now and in the future, significantly and inevitable.

“We have been using the natural resources of our children’s generations,” this statement reflects the necessity of re-awareness of such issues and cooperation in solving concrete problems. TPI Polene Group, is, therefore determined to play a role in solving such problems for our world under the principles of the Circular Economy and products going to consumers, in order to achieve rotation in the use of natural resources, the use of renewable fuel energy, and management to create added value to the leftovers from the production process, and waste management for reuse for maximum benefit in resource utilization and sustainability in the supply chain with businesses, society, and communities.

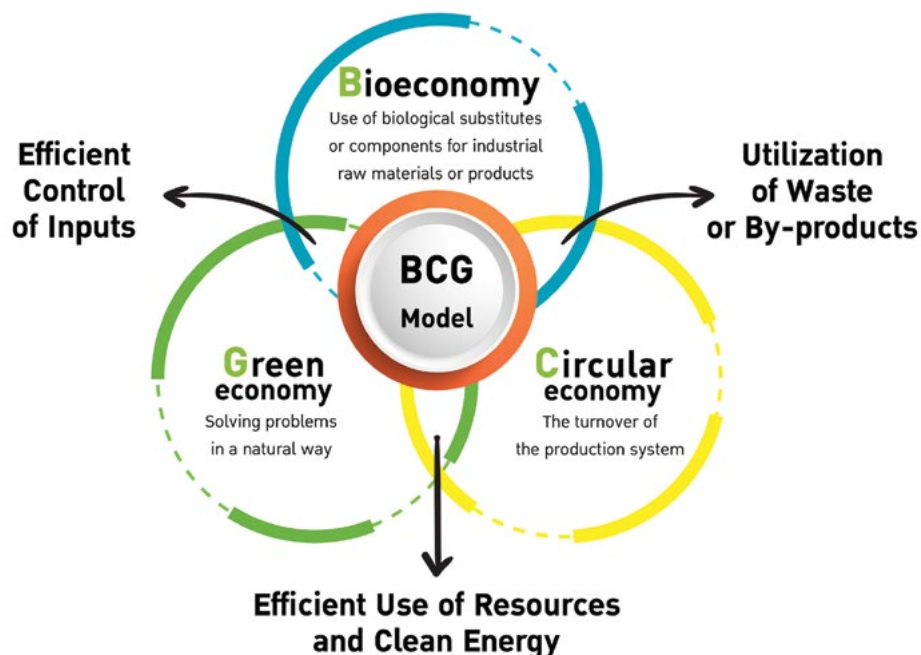
## Management Guidelines

TPI Polene Group has set its direction for sustainable development by adhering to the principles of circular economy in order to maximize the use of resources by circulating resources or reusing them for maximum benefit. The green economy aims to reduce the impact on the environment in terms of resource consumption, product production, and end-of-life products towards low carbon production. The initial goal is to reduce greenhouse gas emissions that cause global warming by using renewable energy in the production system. In addition, TPI Polene Group also aims to develop the production and products of TPI Polene Group by using biotechnology to add value or apply in conjunction with the products of TPI Polene Group to add value and support the country’s agricultural sector to become a bio-economy.

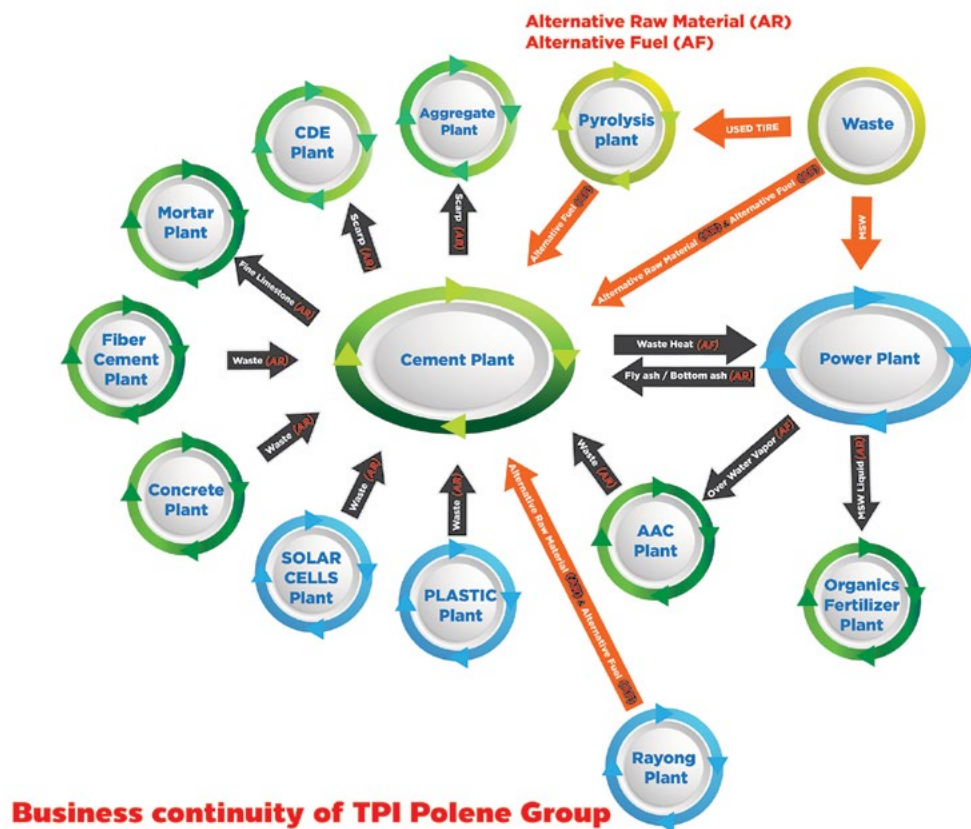
<http://www.tpipolene.com.th/index.php/th/th-investment/bcg-th>



## Driving the Economy Towards Sustainable Development (BCG)



Linkage of the three sectors of the circular economy, green economy and bio-economy is the implementation of the economy towards sustainable development, known as Bio-Circular-Green Economy (BCG), a strategy driving growth of TPI Polene Power Group through innovation that competes globally and generates income distribution to the communities by preserving the environment and sustainable development



TPI Polene Group has taken every step from research and development, procurement of resources and raw materials to production and energy by using resources and raw materials for production and energy cost-effective and renewable as much as possible, high-efficiency production, both resource utilization and environmental protection, and manufacturing and environmentally friendly green products of which consumers are considered as part of contributing to the creation of a green world, covering sales, transportation, and services.

## Energy Consumption<sup>(3-3)</sup>

The Company operates in the energy business, focusing on the production of electricity and renewable fuels, applies the energy management system within the Company. It also realizes that energy conservation is important as efficient use of energy in addition to reducing fuel consumption and reducing costs in the organization. It also reduces environmental problems caused by energy production and consumption sources. For efficient use of energy, it is the duty of all employees to cooperate and promote the use of energy for maximum benefit<sup>(103-1)</sup>.

### Operational Goals

Short-term goals within 1-2 years	Long-term goal of at least 3 years
<ul style="list-style-type: none"> <li>• Station Service Used must not exceed 12% of the amount of energy produced.</li> <li>• Total energy costs of all types per electricity generation must not exceed 15.00 MJ/kWh.</li> </ul>	<ul style="list-style-type: none"> <li>• Total energy costs of all types per electricity generation must not exceed 14.50 MJ/kWh.</li> </ul>

## Major Operations

TPI Polene Group established an energy management policy by applying the ISO 50001 standard as management guidelines at the operational level, using focus improvement pillar of total productive maintenance, which is regarded as a pillar that focuses on reducing “loss” in a systematic way to find the point of energy loss-reduce costs, and apply it to improve by establishing a project team to achieve objectives and energy conservation goals by being able to efficiently manage energy in both lighting, lighting and air conditioning systems, including installation and maintenance of equipment to control the operation of the relevant electrical system, enabling continuous reduction of electrical energy consumption.

The Company established an energy conservation policy to be used as a guideline for energy operations and to promote efficient use of energy for maximum benefit as follows:

1. Implement and develop appropriate energy management systems by stipulating energy conservation as part of the Company's operations in accordance with relevant laws and regulations.
2. Implement measurement plan or data collection of energy consumption to be used in the preparation of a database to analyze the improvement of energy efficiency of the organization continuously and appropriate to the business, technology used and best practices.
3. Set energy consumption targets in each production segment and apply energy management systems to monitor, evaluate, and control energy consumption to meet the set targets.
4. Determine ongoing efficiency improvement projects, establish plans and targets, and review annual energy efficiency improvements.
5. Consider that energy conservation is the duty and responsibility of executives and employees at all levels to comply with the specified measures, and communicate to them to understand and comply with the measures in the same direction.
6. Support budget, human resources, equipment, machinery, products, and energy services to improve energy performance.
7. Conduct a Performance–Energy Efficiency Assessment whenever there is a design improvement or purchase with a significant impact on a process or machine.
8. Encourage employees to participate in presenting ideas for energy development, dissemination of information, training for employees, and organizing activities to promote energy conservation.
9. Support cooperation between external organizations, both public and private sectors in terms of energy management.

## Performance<sup>(302-1, 302-3)</sup>

In 2022, the Company conducts the control and conservation of the station service used, resulting in internal electric energy consumption accounting for 8.32% of the energy produced and the total energy cost of all types of electricity generation equals 12.62. MJ/kWh, which is targeted to consume the station service used no more than 12% of the energy produced within the country and the total energy cost of all types per electricity generation no more than 15.00 MJ/kWh. The Company reduced energy consumption from the number of 34,917,946.57 Gigajoules in 2021 to 26,005,384.93 Gigajoules in 2022, representing a decrease of 8,912,561.64 Gigajoules or a decrease of 25.52%.

### Total energy consumption of TPI Polene Power (only power plants and waste fuel production plant)<sup>(302-1)</sup>

Unit : Gigajoules)

Station Service Used	Energy consumption		
	2020	2021	2022
<b>Heat energy (non-renewable energy)</b>			
Coal	17,181,455.84	12,583,468.75	7,641,672.37
Fuel oil	0	0	0
Diesel	37,566.54	18,400.37	33,892.65
Natural gas	646.38	466.67	6,271.72
	20,768,378.58	21,162,454.70	17,627,916.96
Heat energy (renewable energy)	37,988,047.34	33,764,790.49	25,309,753.69
Waste fuel	1,125,732.67	1,153,156.08	695,631.24
<b>Total heat energy</b>	<b>39,113,780.01</b>	<b>34,917,946.57</b>	<b>26,005,384.93</b>

Note: - 1 kilowatt-hour of electrical energy is equal to 0.00360 Gigajoules. 1 kg of coal is equal to 0.01630 Gigajoules. 1 liter of fuel oil is equal to 0.03977 Gigajoules. 1 liter of fuel (diesel) is equal to 0.03642 Gigajoules. Natural gas (dry) 1 cubic foot is equal to 0.00102 Gigajoules. Data from the Department of Alternative Energy Development and Efficiency, Ministry of Energy

- 1 ton of steam heating power is calculated from the amount of heat that passes into or is discharged from the system of enthalpy at a steam pressure of 25 bar is 2.711073 GJ.

### Table Energy Concentration\*<sup>(302-3)</sup>

Energy Concentration*	Unit	2020	2021	2022
Specific Energy Consumption: The SEC: Waste fuel production	megajoules/ton waste fuel	59.31	31.82	31.04
Specific Energy Consumption: The SEC: Power production	megajoules/kWh	15.62	14.21	12.62

Note: Energy intensity may be determined from the energy consumption ratio against the output scale of each plant considering the specific energy consumption per unit of production (SEC).

## Initiatives to reduce energy consumption<sup>[302-4]</sup>

Initiatives to reduce energy consumption	Operation details	Reduced amount of energy
1. Change the feed set from Double Screw Feeder to Vibration Feeder for feeding RDF fuel.	- Reduce energy consumption and for efficiency in feeding RDF fuel by changing the Feed set	4,074.45 GJ/year
2. Modify Suction Seal of Boiler Fan 14	- Modify the Inlet Suction Seal to increase the flow rate and reduce the electrical power of the machine	874.69 GJ/year

## Water Resource Management<sup>(3-3)</sup>

Water is a very important resource to the business operation of TPI Polene Power as it is one of the main raw materials used in the production process. The Company realizes and places importance to the use of water resources from natural and surface water sources, including wastewater from the production process for maximum efficiency in order not to affect the overall water management of the Pasak River Basin Irrigation Project and those who consume water from the Pasak River.

### Operational Goals

Short-term goals within 1-2 years	Long-term goal of at least 3 years
<ul style="list-style-type: none"> <li>Recycle wastewater from the power generation process for reuse at least 30,000 cubic meters/month.</li> </ul>	<ul style="list-style-type: none"> <li>Recycle wastewater from the power generation process for reuse at least 50,000 cubic meters/month.</li> </ul>





## Key operations

TPI Polene Group has shown a clear intention to manage internal water to achieve the most cost-effective use of water within the community. The Company's water source will be procured by Plc. TPI Polene from two main sources of raw water, namely the Pasak River and water from surface water reservoirs, including wastewater within the plants. The details <sup>(303-1)</sup> are as follows:

1. Water from the Pa Sak River will be pumped up to the cement plant's water treatment plant, where a water supply system to be sent for use in production processes both cement plants and power plants.
2. Water from surface water reservoirs and wastewater within the plants consists of:
  - 2.1 A reservoir of 180,000 cubic meters for rainwater that falls on the plant area.
  - 2.2 A reservoir of 1,500,000 cubic meters for rainwater that falls in the mine area and nearby areas.
  - 2.3 A reservoir of 1,000,000 cubic meters by TPI Polene Public Company Limited to be a reserve water source for the Company as well as to prevent impacts on the water consumption of people in nearby areas. Water from the surface water reservoirs will be pumped together with water from the Pa Sak River to improve its quality before being sent to cement plants and power plants and is also a reserve water storage reservoir for use in the dry season in cases where the amount of water from the Pa Sak River is insufficient for industrial consumption.

In addition, TPI Polene Group also uses groundwater for producing drinking water for sale and drinking within the plants. The approach that TPI Polene Group has followed is to reduce the use of water resources from natural rivers by building surface water reservoirs for use in cement plants and power plants to prevent impacts on the water consumption of people in nearby areas.

- Water pumping from the Pa Sak River is controlled by the Saraburi Provincial Irrigation Project Office. The Office will issue a license for the Company to pump water not exceeding 1,000,000 cubic meters per month. The Company is required to prepare a monthly report summarizing the amount of water pumped from the Pa Sak River to the Saraburi Provincial Irrigation Project Office. In addition, the Office will arrange for staff to check the meters to check the volume of water pumped from the Company's Pa Sak River on a monthly basis <sup>(303-1)</sup>.
- Since the Pa Sak River is used by many sectors such as agriculture, industry, commerce, and households, water use must be controlled and allocated. The Saraburi Irrigation Project Office will control and allocate water use so that all sectors receive proper and fair water allocation <sup>(303-1)</sup>.
- The Company does not drain wastewater outside the plants but has wastewater collecting reservoirs for reuse within the plants. However, the Company arranges a monthly effluent quality analysis <sup>(303-2)</sup>.

In addition, TPI Polene Group complies with the 3Rs (Reduce, Reuse, Recycle) principle by increasing the efficiency of water use, including reducing water consumption in the production process and returning wastewater from the office through the treatment system and reusing it along with checking the clear reservoirs and the wastewater reservoirs, as well as the water obtained from wastewater treatment without draining it outside the plants (water treatment), such as watering plants and reusing.

## Performance

In 2022, the Company was able to reuse wastewater from the electricity production process equal to 33,026.83 cubic meters per month in accordance with the goal of aiming for the wastewater from the power generation process to be reused at least 30,000 cubic meters per month.



Table Amount of water drawn (only for power plants)<sup>(303-3)</sup>

(Unit : cubic meter)

Sources of water	Amount of water in the areas			Amount of water in the water stress areas		
	2020	2021	2022	2020	2021	2022
<b>Surface water</b>						
Water with total dissolved solids ≤ 1,000 mg/L	0	0	0	0	0	0
Water with total dissolved solids > 1,000 mg/L	0	0	0	0	0	0
<b>Ground water</b>						
Water with total dissolved solids ≤ 1,000 mg/L	0	0	0	0	0	0
Water with total dissolved solids > 1,000 mg/L	0	0	0	0	0	0
<b>Sea water</b>						
Water with total dissolved solids ≤ 1,000 mg/L	0	0	0	0	0	0
Water with total dissolved solids > 1,000 mg/L	0	0	0	0	0	0
<b>Process water</b>						
Water with total dissolved solids ≤ 1,000 mg/L	449,245	355,304	396,322	0	0	0
Water with total dissolved solids > 1,000 mg/L	0	0	0	0	0	0
<b>Water from external sources (tap water) produced by Plc. TPI Polene</b>						
Water with total dissolved solids ≤ 1,000 mg/L	8,248,194	9,002,342	9,068,317	0	0	0
Water with total dissolved solids > 1,000 mg/L	0	0	0	0	0	0
<b>Total amount of water withdrawn</b>						
Water with total dissolved solids ≤ 1,000 mg/L	8,697,439	9,357,646	9,464,639	0	0	0
Water with total dissolved solids > 1,000 mg/L	0	0	0	0	0	0

Note: No water from the water stress areas

Table: Amount of wastewater discharge<sup>(303-4)</sup>

(Unit : cubic meter)

Drainage of wastewater by the discharged water source	Amount of water in the areas			Amount of water in the water stress areas		
	2020	2021	2022	2020	2021	2022
<b>Surface water</b>						
Water with total dissolved solids ≤ 1,000 mg/L	0	0	0	0	0	0
Water with total dissolved solids > 1,000 mg/L	0	0	0	0	0	0
<b>Ground water</b>						
Water with total dissolved solids ≤ 1,000 mg/L	0	0	0	0	0	0
Water with total dissolved solids > 1,000 mg/L	0	0	0	0	0	0
<b>Sea water</b>						
Water with total dissolved solids ≤ 1,000 mg/L	0	0	0	0	0	0
Water with total dissolved solids > 1,000 mg/L	0	0	0	0	0	0
<b>Water sent to other organizations outside</b>						
Water with total dissolved solids ≤ 1,000 mg/L	0	0	0	0	0	0
Water with total dissolved solids > 1,000 mg/L	0	0	0	0	0	0
<b>Total amount of wastewater discharged</b>						
Water with total dissolved solids ≤ 1,000 mg/L	0	0	0	0	0	0
Water with total dissolved solids > 1,000 mg/L	0	0	0	0	0	0

Note: No water discharged to the water stress areas

**Table: Substances rated for environmental impact requiring discharge water treatment<sup>(303-4)</sup>**

Substances classified as having an environmental impact requiring discharge water treatment	Criteria under Notification of the Ministry of Industry*	Measured value		
		2020	2021	2022
pH	5.5 – 9.0	8.0	8.0	8.13
TDS	< 3000	759	899	560
SS	< 50	17.9	19.0	16.65
BOD	< 20	2.6	5.1	2.3
COD	< 120	52.2	50.3	29.2
Oil and Grease	< 5	0.1	ND	ND

Note : The measurement value is referring to the standard according to the Notification of the Ministry of Industry on Factory Effluent Drainage Control Standards B.E. 2560

**Table Water consumption (only for power plants)<sup>(303-5)</sup>**

(Unit : cubic meter)

Water use at major operating sites	Amount of water in the areas			Amount of water in the water stress areas		
	2020	2021	2022	2020	2021	2022
Total water consumption	8,697,439	9,357,646	9,464,639	0.00	0.00	0.00
Total amount of water stored in the TPIPL areas	1,680,000	1,680,000	2,680,000	0.00	0.00	0.00
Total amount of water recycled	449,245	355,304	396,322	0.00	0.00	0.00

Note: No water from the water stress areas

### Water Supply Consumption of Power Plant

Water Supply Consumption	2020	2021	2022
Targeted water supply consumption (cubic meter)	-	-	-
Actual water supply consumption (cubic meter)	8,697,439	9,357,646	9,464,639
Water supply expense (million baht)	252.23	271.37	274.47

Note Water supply expense was collected from actual payment of water supply in each year.



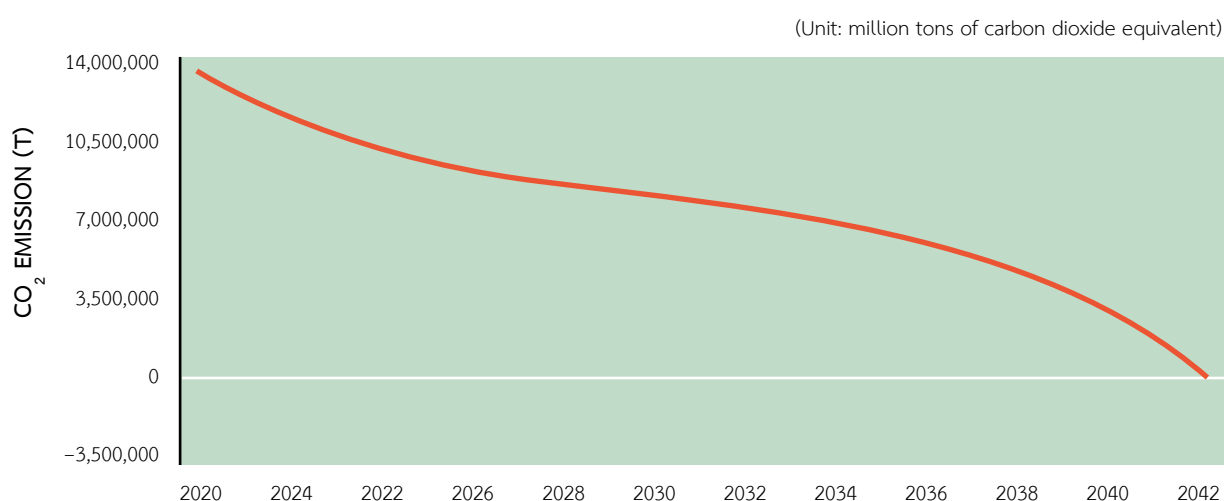
## Emission<sup>(3-3)</sup>

### Net zero emission is a target of TPI Polene Group in 2043 (B.E.2586)

As the Thai government has announced the goal of Carbon Neutrality in 2050 (B.E.2593) and GHG emissions become net zero in 2065 (B.E.2608).

TPI Polene Group (the Company and TPI Polene Plc.) has set targets and action plans under the TPI GROUP Pathway to reduce net greenhouse gas emissions by 39% from the base year (2020) within 2030 (B.E.2573) and stepping into net zero by 2043 (B.E.2586).

### Carbon Reduction for the Net Zero GHG Emission of TPI Polene Group



TPI Polene Group places importance on reducing greenhouse gas emissions into the atmosphere as an urgent agenda. In the past, TPI Polene Group emitted greenhouse gases into the atmosphere in the amount of 13.22 million tons of carbon dioxide equivalent in 2020 (B.E. 2563), and with TPI Polene Group's commitment to reducing greenhouse gas emissions into the atmosphere, in 2021 (B.E. 2564), it reduced the amount of greenhouse gas emissions by 0.99 million tons of carbon dioxide equivalent or 7.5% reduction compared to the base year (2020), which is a lower rate than other companies in the same industry and in 2022 (B.E. 2565), it reduced greenhouse gas emissions by 1.91 million tons of carbon dioxide equivalent or 14.44% reduction compared to the base year (2020)

TPI Polene Group has laid out a road map towards Net Zero by 2043 (B.E. 2586) through its businesses as follows:

1. Saving in cement & binders: New innovation development to reduce the use of clinker, increase the use of substitute materials, and promote the use of low-carbon cement such as the development of hydraulic cement to be used as a replacement for Portland cement type 1.
2. Savings in clinker production: To reduce the use of fossil fuels in clinker burning, and 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.
3. RE100 – Electricity Energy uses Renewable Energy 100%: TPI Polene Group plans and implements electricity generation by using 100% renewable fuels as follows:
  - a. Waste heat recovery
  - b. Coal replacement by renewable fuel of power plant with the following projects:

1. The 70MW power plant and the 150MW power plant are shifting from using coal to municipal waste fuel in the 70MW power plant and the 150MW power plant using municipal waste renewable fuel, with the 70MW Phase 1 being completed in 2022 and Phase 2 due to be completed by April 2023. The 150MW power plant will be gradually completed and will replace coal by 10% by the end of 2022 and will be completed and fully replace coal by 2025.
2. Coal-to-Biomass Conversion Plan in 6 MW power plants is planned to implement in 2023
- c. Ground-mounted solar farm plant that uses solar energy without raw material costs as the main energy and uses durable, long-lasting solar panels to generate power. The project will commence in 2023 and start generating electricity in 2024 (B.E. 2567).
- d. Solar Roof Project is a solar power generation system installed on the roof by using solar module installed on the roof of the building in the plant to absorb energy from sunlight, generate electric charges that move in response to the electric field within the cell, and generate direct current before conveying it to the inverter to change from direct current to alternating current and bring the electric energy to further use. The project will commence in 2023 and start generating electricity in 2024 (B.E. 2567) .
- e. Wind Power Generation Project by taking advantage of wind energy which relies on important machinery, “wind turbines”, to convert kinetic energy from the movement of wind into mechanical energy. The wind rotates the blades of the wind turbine around the rotor which spins electric generators to generate power before being put to significant use. As long as the wind blows, it can use wind energy to generate power. Wind power generation is also clean, does not emit greenhouse gases during production, and does not harm the environment. The project will commence in 2023 and start generating electricity in 2024 (B.E. 2567)
- f. RE100 - Electricity Energy uses Renewable Energy 100% by producing electricity for use within TPI Polene Group for cement production and the purchase of REC (Renewable Energy Certificate) to enable cement production to use 100% renewable energy.
4. EV Mining Truck: TPI Polene group already changed the way of transporting limestone from 31 trucks using diesel fuel and NGV to EV Mining Trucks of 60-ton freight size for transporting limestone to cement plants in 2022.
5. Energy efficiency program: Energy reduction projects are as follows:
  - a. Regenerative Downhill Conveyor is a project to generate power from raw material conveyor belts by changing the transportation method from using trucks to conveyor belts instead, making it possible to save energy and reduce transportation and maintenance costs. At the same time, the energy from the conveyor belt transporting limestone down from a quarry at high altitudes is a downhill conveyor to generate power back to use, which now allows the Company to reduce energy costs from using diesel fuel to transport raw materials and also able to generate power back to the electricity supply.
  - b. Polytrack Grate is a new low-pressure aeration technology that provides consistent aeration with low energy consumption (reduce at least 1 kilowatt-hour/ton of clinker), resulting in energy savings. It also reduces machine wear due to decreased air velocity through the vents, resulting in lower maintenance costs. Currently, the Company can reduce energy costs from coal and can also save electricity.
6. Recycle Raw Materials: To install a CDE Plant which is a washing recycle plant by rinsing and cleaning the waste from mining to be a stone and used as a raw material in cement production, enabling the Company to reduce the amount of waste from mining and reduce the cost of producing raw materials. It is a circulation of resources leftover from production back to be utilized.
7. Afforestation: TPI Polene Group has been operating reforestation to help absorb greenhouse gases released into the atmosphere since 1992 until now and will continue to do so for the country to have more forests to absorb greenhouse gases.

8. Carbon capture & utilization/storage (CCUS): To study capture technology, utilization, and carbon sequestration by capturing carbon dioxide from high smokestacks in power plants and stored underground or under the ocean, not releasing CO<sub>2</sub> into the atmosphere. It is a plan for additional investment in the future in cases where the ongoing processes to reduce greenhouse gas emissions are insufficient and technology is worth investing in the future.

In 2022, TPI Polene Group implemented a waste fuel production project for the common good of the country by sorting community waste into alternative fuels instead of landfilling community waste, with more than 2.73 million tons, resulting in the country reducing greenhouse gas emissions from landfills into the atmosphere by up to 6.34 million tons of CO<sub>2</sub> equivalent.

The climate change that the world pays attention which leads to setting a goal to reduce greenhouse gas emissions globally with such participation, which is important for all sectors to work together to come up with a preventive and corrective approach to reduce greenhouse gas emissions. Therefore, the Company has taken action on air pollution management as follows:

### Operational Goals

Short-term goals within 1-2 years	Long-term goal of at least 3 years
<ul style="list-style-type: none"> <li>• Reduce GHG emissions from landfill waste by at least 6.2 million tons of carbon dioxide equivalent per year (1 ton of municipal waste emits 2.32 tons of carbon dioxide per year).</li> <li>• Earn a Carbon Credit of at least 180,000 tons of carbon dioxide equivalent per year.</li> </ul>	<ul style="list-style-type: none"> <li>• Use coal to generate net zero electricity by 2025.</li> <li>• Net Zero Emission</li> <li>• Earned a Carbon Credit of at least 300,000 tons of carbon dioxide equivalent per year.</li> </ul>

“The Company places great importance on being a carbon-neutral power plant as the world is facing the threat of global warming and fossil fuel prices are relatively high volatile. Thus, having effective ESG will create sustainable returns for the corporate business, which the Company gives importance to, especially as a part that will enable Thailand to move into the new world. In addition, we focus on growth and have developed technology with new innovations to generate returns for all stakeholders.” - Mr. Pakkapol Leopairut, Senior Executive Vice President, TPI Polene Power Plc.

### Key operations<sup>(305-5)</sup>

The Company uses municipal waste fuel sources or municipal fresh waste to generate electricity, which helps reduce the amount of waste in the country. If we look at it from another point of view, municipal waste or fresh waste from the municipality is not used to produce waste fuel.

“When bringing 1 ton of municipal fresh waste or community waste to produce as waste fuel can reduce greenhouse gas emissions by at least 0.49 TCO<sub>2</sub>e (calculated according to Thailand’s Voluntary Greenhouse Gas Reduction Project or T-VER). If waste is disposed of by landfill, it will become a source of methane emissions (Methane gas has potentially cause global warming by 28 times of carbon dioxide). Therefore, 1 ton of landfilled waste will emit 2.32 TCO<sub>2</sub>e of carbon dioxide.”

Currently, TPIPP receives an average of 9,000 tons of waste per day, or 2.73 million tons per year, which can reduce carbon from landfills by 6.34 million tons per year, and by 2026, it is expected to expand the average daily waste handling increase to 17,000 tons or 5.2 million tons per year, which will decrease 12 million tons of carbon per year from landfills. In 2022, the Company has initiated to improve efficiency, including incorporating waste fuels to enhance the potential and reduce the cost of electricity generation. Key operation details are as follows:

- The Company participated in greenhouse gas reduction projects/activities with the Thailand Greenhouse Gas Management Organization (TGO), such as the Voluntary Greenhouse Gas Reduction Program according to Standards of Thailand, waste disposal project (T-VER), which has been registered for carbon credit (between May 2015 - December 2020) with a total of 765,297 tons of carbon dioxide equivalent and the remaining is in the process of registration to certify the carbon credit from TGO, approximately 462,797 tons of carbon dioxide equivalent.
- The Company can reduce greenhouse gas emissions (Carbon Reduction) by 6.34 million tons of carbon dioxide equivalent (registration of carbon credits is being approval from relevant agencies) from the amount of all types of sorting waste to be used as fuel, approximately 2.73 million tons (and reducing landfill waste that causes greenhouse gases).
- The Company has consistently given importance to innovation creation in production processes and products such as Waste Heat Recovery Power Plant Project, and Renewable Energy Power Plant Project by using waste as fuel and activities in reducing other energy consumption by participating in the contest and winning Thailand Energy Awards and ASEAN Energy Awards, hosted by the Ministry of Energy.
- The Company prepares to join hands with companies in Thailand to invest in EV charging stations with the strength of the plant location with a 120 km transmission line on the Bangkok -Nakhon Ratchasima route.
- The Company has been officially registered in the RE 100\* project and is considered as the first waste-to-energy power plant company in Thailand that reach this standard.

\*RE100 is an influential business committed to use 100% renewable energy as a global project led by the Climate Group, with CDP aiming to join forces with global giants such as Apple, Google, Facebook, Coca-Cola, Microsoft, Philips, and Goldman Sachs to use 100% renewable energy in the shortest possible timeframe. Each participating organization in RE100 Project aims to use electricity generated from 100% renewable energy for all of its operations worldwide.

The Company has been able to reduce greenhouse gas emissions from 3,341,705.46 tons of carbon dioxide equivalent in 2021 to 2,598,274.12 tons of carbon dioxide equivalent in 2022, representing a reduction of 743,431.34 tons of carbon dioxide equivalent or 22.25% reduction.

In 2022, the Company allocated a budget for research and development of technology or implementing projects for the purpose of reducing risks or mitigating climate change impacts totaling approximately 11,116.50 million baht.

In addition to alleviating greenhouse gas emissions, the Company also attaches importance to compliance with environmental laws, especially air pollution management. The Company implements an emissions monitoring system to watch out for waste gas emissions from the combustion process of the power plants and to monitor the ambient air quality of several areas around the plant nearby. The Company monitors and controls the levels of nitrogen oxide ( $\text{NO}_x$ ) and Sulfur Dioxide ( $\text{SO}_2$ ) in each part of the combustion process and controls temperature and fuel-to-air ratios during the combustion process to maintain the level of waste gas emissions to be within the specified criteria.





## Performance

**Table: Greenhouse gas emissions of power plants** (305-1, 305-2, 305-3)

	Unit	2020	2021	2022
Scope 1 (direct)	TonCO <sub>2</sub> e	3,603,842.02	3,201,398.15	2,477,534.70
Scope 2 (indirect)	TonCO <sub>2</sub> e	226.19	410.09	588.79
Scope 3	TonCO <sub>2</sub> e	181,273.98	139,897.22	120,150.62
<b>Total</b>	TonCO <sub>2</sub> e	<b>3,785,342.19</b>	<b>3,341,705.46</b>	<b>2,598,274.12</b>

Note: - Set 2019 as the base year because all 8 power plants had been installed completely and operated in such year.

- The amount of greenhouse gas emissions is calculated according to “Requirements for Calculating and Reporting the Organization’s Carbon Footprint” by Thailand Greenhouse Gas Management Organization, 5th Edition, January 2021, Thailand Greenhouse Gas Management Organization (TGO).

- Gases included in the GHG emissions calculation (Scopes 1, 2 and 3) are CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, and SF<sub>6</sub>.

**Table: The Company’s Sulfur Dioxide (SO<sub>x</sub>) and Nitrogen Oxide (NO<sub>x</sub>) emissions compared to World Bank emissions standards and regulations under Thai law** (305-7)

(unit: milligrams/normal cubic meter)

	Sulfur Dioxide (SO <sub>x</sub> )	Nitrogen Oxides (NO <sub>x</sub> )
TPI Polene Power	30.0	120.0
World Bank emissions standards	< 230.0	< 510.0
Regulations under Thai law	< 320.0	< 350.0

**Table: GHG emission intensity of power plants** (305-4)

	Unit	2020	2021	2022
Greenhouse Gas GHG (1)*	TonCO <sub>2</sub> e	3,785,342.19	3,341,705.46	2,598,274.12
Non greenhouse gases pollution (2)**	Ton	3,200	3,700	3,300
Power generating unit (3)	MWh	2,501,941.66	2,455,585.01	2,054,617.07
Proportion (1)/(3)	TonCO <sub>2</sub> / MWh	1.5129	1.5044	1.2646
Proportion (2)/(3)	Ton/ MWh	0.001279	0.001507	0.001606

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

\*\*Non-greenhouse gases include SO<sub>2</sub> and NO<sub>2</sub>.

## Waste Management<sup>(3-3)</sup>

<sup>(3-3)</sup> The Company's business plays an important role in efficiently disposing of various wastes in certain areas used to produce fuel. It is an innovative business that reuses waste to benefit, helps communities to reduce the amount of waste which is a national problem, and reduces the waste disposal process of other government agencies and private sectors which is indirect energy savings.

### Operational Goals

Short-term goals within 1-2 years	Long-term goal of at least 3 years
<ul style="list-style-type: none"> <li>Use of industrial waste <math>\geq</math> 95% of the amount of industrial waste generated each year</li> </ul>	<ul style="list-style-type: none"> <li>Use of industrial waste <math>\geq</math> 95% of the amount of industrial waste generated each year</li> </ul>

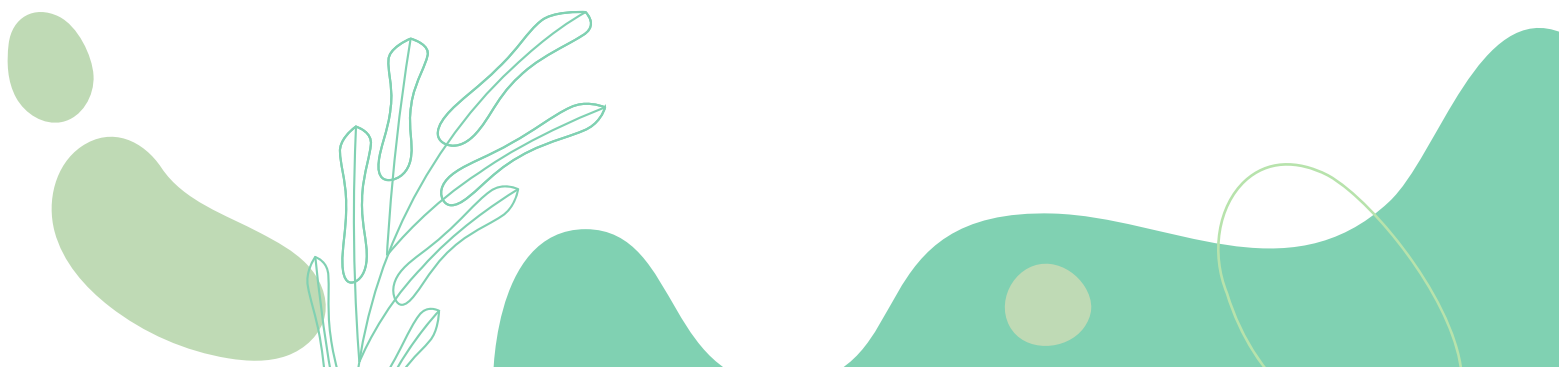
## Management Guidelines<sup>(306-1)(306-2)</sup>

The Company is committed to operating in accordance with the “Zero Waste” guidelines and complies with the policy by controlling, supervising, and developing several processes to ensure that the emission rate from the Company's operations is lower than the maximum emission threshold allowed by the Department of Industrial Works. The Company also periodically controls the quality of discharged waste for monitoring and mitigating environmental impacts to ensure compliance with standard requirements. Therefore, it can be said that the Company strictly complies with the emission and discharge requirements.

The Company systematically manages garbage and waste in business processes according to the 3R principle (Reduce, Reuse, Recycle) by managing waste generated from power plants and utilizing them for maximum benefit such as the use of all heavy ash and fly ash as a substitute raw material at the cement plants of TPI Polene Plc.

### Processes to collect and verify information related to waste:

1. Industrial waste management must comply with the Notification of the Ministry of Industry on Disposal of Sewage or Unusable Materials, B.E. 2548.
2. Use of industrial waste, such as alternative fuels, alternative materials, recycling, or disposal requires approval from the Department of Industrial Works and provide details of waste, disposal method, weight, and disposal agent.
3. Use of industrial waste, such as alternative fuels, alternative materials, recycling, or disposal requires shipping documents every time that are transported for use as legal evidence.
4. Prepare an account to collect information and control the weight of industrial waste utilized, such as alternative fuels, alternative materials for recycling or disposal.



## Performance

In 2022, the Company utilized industrial waste from the production process as alternative fuels, alternative materials, and recycled for a total of 19,706.66 tons, or accounting for 100 percent of the total amount of industrial waste generated.

**Table: Amount of waste and waste management (electricity only)** <sup>(306-3, 306-4, 306-5)</sup>

(Unit : Ton)

Waste and waste management	2020	2021	2022
<b>1. Total amount of waste classified by type of waste</b>			
- Hazardous waste	88.05	79.63	24.26
- Non-hazardous waste	64,801.08	25,183.91	19,682.40
Total waste	64,889.13	25,263.54	19,706.66
<b>2. Utilization*</b>			
Hazardous waste			
- Alternative fuel	79.63	66.74	24.26
- Substitute material	0	0	0
- Recycle	8.42	12.89	0
Non-hazardous waste			
- Alternative fuel	5.49	10.75	99.81
- Substitute material	64,215.93	24,520.04	17,355.38
- Recycle	579.66	653.12	2,227.21
Total amount of waste for utilization	64,889.13	25,263.54	19,706.66
<b>3. Disposal *</b>			
Hazardous waste	0	0	0
Non-hazardous waste	0	0	0
<b>Total amount of waste disposal</b>	<b>0</b>	<b>0</b>	<b>0</b>

Note: \* Exploitation and disposal occurs within the physical scope or control and management of the Company (Onsite).

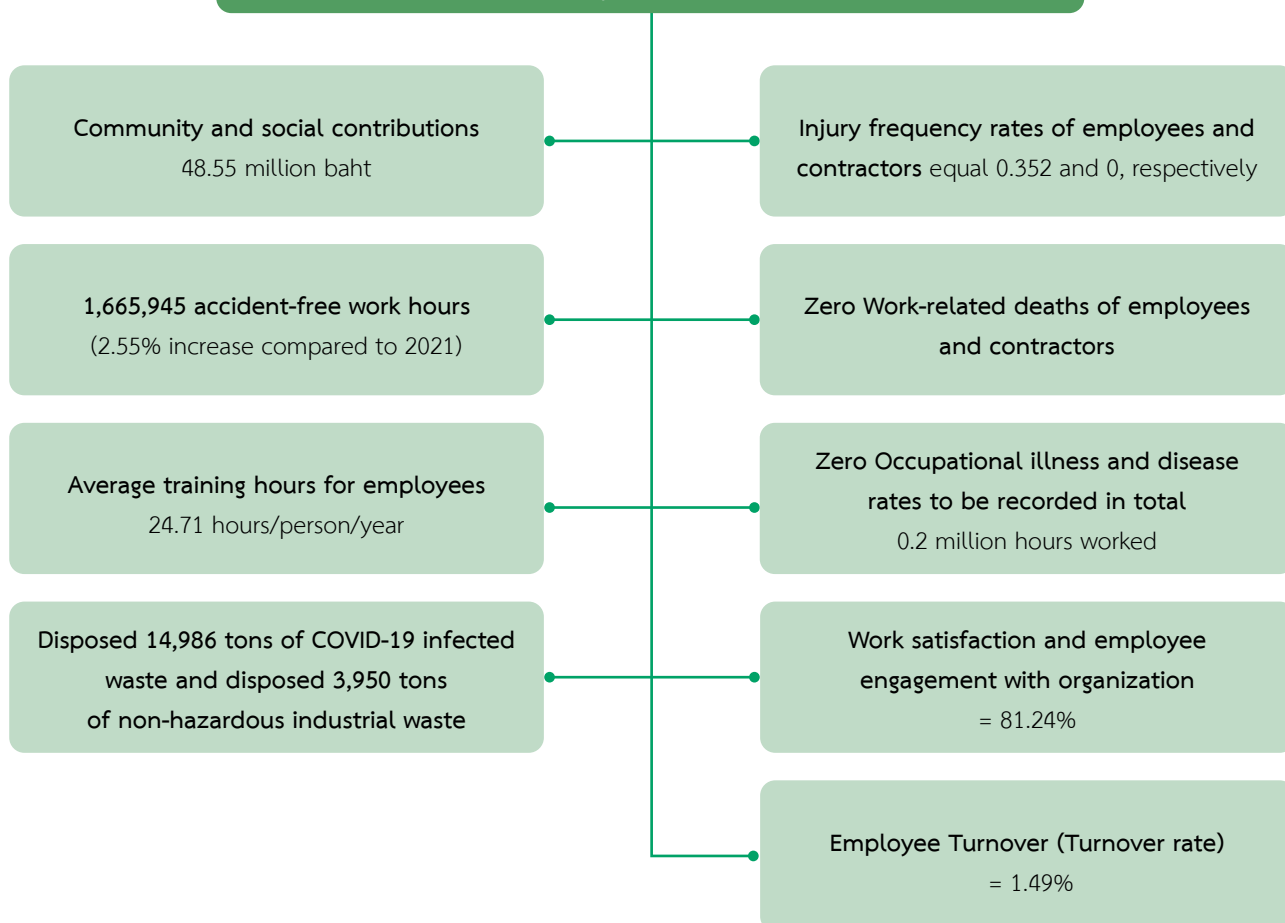


## 06



## Community and Social Development

### Performance of Community and Social Development in 2022



### Community and Social Development Management Policy

The Company and TPI Polene Group are well aware of their activities and business operations that are sensitive and pay attention to their policies and practices in accordance with the laws, rules and regulations related to social management, which include respecting human rights throughout the business value chain, fair labor practices, services with responsibility for customers, participation in community and social development by integrating social responsibility in all work processes to connect the business value chain of the Company and TPI Polene Group.

**TPI Polene's Code of Conduct**
<http://www.tpipolenepower.co.th/index.php/th/aboutus/code-of-conduct-th>
**International Human Rights Policy**
<http://www.tpipolenepower.co.th/index.php/th/th-investment/social-responsibility-th>
**Employee Handbook**
[http://www.tpipolenepower.co.th/index.php/th/aboutus/emprinciple\\_employee\\_handbook\\_Personal](http://www.tpipolenepower.co.th/index.php/th/aboutus/emprinciple_employee_handbook_Personal)
**Data Protection Policy**
<http://www.tpipolenepower.co.th/index.php/th/th-aboutus/pdpa>
**Social Responsibility**
<http://www.tpipolenepower.co.th/index.php/th/th-investment/social-responsibility-th>
**Anti-Fraud and Corruption Policy**
<http://www.tpipolenepower.co.th/index.php/th/th-aboutus/pdpa-2>


## Community and Social Development Management Policy Human Resource Management

<sup>(3-3)</sup> In 2022, the world is still facing the COVID-19 outbreak. Even though situation has decreased in severity, it still affects society and the economy. The Company plans to adjust the form of human resource management to prepare its employees by recruiting an appropriate number of employees fairly without discrimination and providing equal opportunities. The E-Learning system has been established so that employees can learn on their own, review knowledge based on appropriate time allocation, and create good labor relations by giving employees the opportunity to expressing opinions through several channels and jointly conducting internal and external activities between executives and employees. For data security, the Company has developed a software system to support storage usage, give employees confidence in the security of information, which will build engagement and pride in being a part of the organization to drive the Company to achieve success in accordance with its goals.

### Employment

The Company realizes that business operations are subject to changes in economy, society, environment and technology which are constantly changing. It is necessary to acquire employees who are knowledgeable, capable, and high-potential, as well as resilient. This will support the business operations of the Company and creates success according to its goals. Therefore, the Company has manpower planning and recruitment process and attracting high-potential employees from both internal and external personnel who are qualified in line with the organizational culture to be a part of driving the Company.

### Operational Goals

Short-term goals within 1-2 years	Long-term goal of at least 3 years
<ul style="list-style-type: none"> <li>Over 50% of employment of personnel in the plant areas each year</li> <li>Maintaining the level of manpower so that the turnover rate of employees' turnover rate is at an appropriate level, not more than 3.5%.</li> <li>The Company and its labor contractors and subcontractors do not employ child labor and forced labor.</li> </ul>	<ul style="list-style-type: none"> <li>Over 65% of employment of personnel in the plant areas each year</li> <li>The Company and its labor contractors and subcontractors do not employ child labor and forced labor.</li> </ul>

## Management Guidelines

1. Plan suitable manpower and recruit employees to meet the needs and have a sufficient number to work.
2. Conduct proactive recruitment by meeting with university applicants with the desired fields of study to introduce public relations and job openings in the Group, as well as introduce products and different working techniques from the Company's experts, such as techniques for fielding in agricultural areas and construction engineering techniques, to inspire and attract target employees.
3. Use technology to reach the target audience in line with the way of working in the New Normal era, which focuses on using online media as a tool for job recruitment and job interview, participating in the Virtual Job Fair 2022 project with leading educational institutions.
4. Maintain the level of manpower so that the turnover rate of employees turnover rate is at an appropriate level, not more than 3.5%, with welfare provisions in line with the current cost of living, such as housing benefits for employees working in the plants in other provinces to retain and motivate employees.
5. Promote diversity in employment, support equal employment and non-discrimination, provide employment opportunities for people with disabilities to create sustainability for society, and employ people with disabilities with the potential to work in appropriate positions. In 2022, a total of 3 people with disabilities were employed and the Company contributed to the Fund for the Promotion and Development of Life of Persons with Disabilities in the amount of 1,077,480 baht, or equivalent to the employment of 9 persons, according to Section 23 of the Persons with Disabilities Empowerment Act, B.E. 2550.
6. Provide a psychometric test in important job positions to support the decision of the committee in job interviews to obtain qualified employees in line with the organizational culture.
7. Hire employees with compensation and wage adjustments above the labor market average.
8. Determine the rate of employment of personnel in the plant areas each year to be more than 50%.
9. Comply with Thai labor standards and labor laws as well as giving importance to human rights, striving to comply 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 Universal Declaration of Fundamental Rights and Rights at Work of the International Labor Organization, Thai Labor Protection Act B.E. 2560, and respect to the International Labor Organization (ILO)
10. Establish the Code of Conduct for TPI Polene, which covers the treatment of each other with respect to human rights principles, consideration of benefits, equality nondiscrimination, fair labor security, supporting and respecting the political rights of employees, as well as providing a monitoring, evaluation, and review system for all employees to adhere to and comply with.
11. Establish regulations and treat labor fairly. The Company does not employ, involve, and support child labor and informal workers who are not protected by the law. Such regulations cover the part of the Company, its contractor companies, and subcontractors as well as never give nor encourage child labor in operations or environments that are hazardous to health and safety or any work prohibited by law.

## Performance <sup>(401-1)</sup>

- Level of manpower rate, employee turnover rate equal to 1.49%
- In 2022, there were no complaints about discrimination incidents and no complaints and no incidents related to the use of child labor and forced labor of the Company, its labor contractors, and subcontractors.
- Zero complaints about human rights abuses by security guards
- Develop software systems to support storage usage, giving employees confidence in data security.

- In 2022, the Company has no labor disputes.
- In 2022, the Company hired 48 new employees and 3 elderly employees.

Table : Number of new employees categorized by age and hiring personnel by age range

New employees categorized by age	2020		2021		2022	
	Number (employee)	Percent	Number (employee)	Percent	Number (employee)	Percent
Age < 30	43	57.33	35	66.03	28	58.33
Age 30 – 50	30	40.00	16	30.19	18	37.50
Age > 50	2	2.67	2	3.78	2	4.17
<b>Total</b>	<b>75</b>	<b>100</b>	<b>53</b>	<b>100</b>	<b>48</b>	<b>100</b>

Table : Number of new employees categorized by gender

New employees categorized by gender	2020		2021		2022	
	Number (employee)	Percent	Number (employee)	Percent	Number (employee)	Percent
Male	47	62.67	33	62.26	34	70.83
Female	28	37.33	20	37.74	14	29.17
<b>Total</b>	<b>75</b>	<b>100</b>	<b>53</b>	<b>100</b>	<b>48</b>	<b>100</b>

Table: Number of new employees categorized by area

New employees categorized by	2020		2021		2022	
	Number (employee)	Percent	Number (employee)	Percent	Number (employee)	Percent
Head Office	33	44.00	24	45.28	14	29.17
Plants	42	56.00	29	54.72	34	70.83
Others	-	-	-	-	-	-
<b>Total</b>	<b>75</b>	<b>100</b>	<b>53</b>	<b>100</b>	<b>48</b>	<b>100</b>

Note: Percentages compared to the total number of employees (at the end of the year xxxx) according to each category.

Table: Employee turnover rate Information as of December 31, 2022

Personnel composition criteria		2020		2021		2022	
		Number (employee)	Percent	Number (employee)	Percent	Number (employee)	Percent
Total		111	9.46%	97	8.49%	59	5.16%
Gender	Male	72	6.14%	61	5.34%	40	3.50%
	Female	39	3.32%	36	3.15%	19	1.66%
Age	Age < 30	37	3.15%	33	2.89%	18	1.57%
	30 – 50	30	2.56%	24	2.10%	19	1.66%
	Age > 50	5	0.43%	4	0.35%	3	0.26%
Work area	Head Office	44	3.75%	51	4.47%	26	2.27%
	Saraburi Plant	67	5.71%	46	4.03%	33	2.89%

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 2020, 2021 and 2022 were 1,173, 1,142, and 1,143, respectively)

## Labor Management Relations <sup>(3-3)</sup>

The Company has its policies and practices that focus on treating employees equally and fairly to all employees in terms of compensation, safety and occupational health training, and growth in work, allowing employees to express their opinions and participate in activities, satisfaction surveys and employee engagement towards the organization. The results of the survey are used to improve, supervise, develop and promote employees in several fields and creating participation in the internal management process, such as the election of the welfare committee in the workplace, which will help employees feel more satisfied and more committed to the organization.

## Operational Goals

Short-term goals within 1-2 years	Long-term goal of at least 3 years
<ul style="list-style-type: none"> <li>• Make employees satisfied with their work and have a higher level of engagement with the Company or an average score of 3.41 or higher out of a full score of 5.00 in all perspectives.</li> <li>• Increase potential of employees for career growth.</li> <li>• Maintain employee job satisfaction in terms of income and security.</li> <li>• Participate in the internal management process.</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare and empower employees to immediately replace employees at the supervisor level and above who vacate their office.</li> <li>• The level of employee satisfaction and engagement with the organization is at the very good level.</li> </ul>



## Management Guidelines

1. Top executives visit the site to meet executives and employees every month.
2. The Company conducts a survey of employee satisfaction and engagement towards the organization. The results obtained from the survey are the basis for taking care, developing, and promoting employees in several areas, which will help employees feel satisfied, committed to the organization, happy at work, and dedicated to development. Their full potential results in a very good level of employee satisfaction and engagement.
3. The Company establishes measures for receiving complaints as well as conducting inspections and making improvements.
4. Follow up on corrective actions and determine the best course of action as instructed until completion.
5. Establish an independent and impartial committee to investigate cases of non-compliance with the established policies, rules, and regulations, to which the accused have the right to defend themselves against the allegations.
6. The Company has activities to build good relations with employees during festivals to create good relations between executives and employees, such as New Year's greetings on the New Year's Eve festival, the event of pouring water on the hands of the executives and asking for a blessing on the Songkran festival, and jointly donating clothes, leftovers, and medicines to the underprivileged.
7. Prepare and increase the potential of employees to immediately replace those at the supervisor level and above who resigned, which will result in the employees' willingness to work with dedication.
8. Establish a welfare committee made up of representatives of employers and employees (elected by employees), as required by law, to oversee issues related to employment conditions in which employees supervised under the agreement concluded at the meeting account for 100% of the total number of employees (2-30).

## Performance

In 2022, employees participated in the organizational engagement assessment of 65.42% of all employees, with a level of satisfaction at work of 78.50% and a level of employee engagement in the Company of 89.45%. The overall level of employee satisfaction and engagement was 81.24%. Compared with the same industry at the national level, it was found that the Company's employee engagement level was at a very satisfactory level, reflecting the improvement of communication engagement factors, vision, and strategic goals to employees at all levels thoroughly, resulting in better employee engagement with the organization.



## Summary of Employee Satisfaction and Engagement Survey Results

No.	Opinion Topic	Average	Percent	Level of satisfaction/engagement
<b>Opinions on Work Satisfaction</b>				
1.	Management	4.00	80.08	Very Satisfied
2.	Supervisor	3.91	78.24	Very Satisfied
3.	Process	4.19	83.81	Very Satisfied
4.	Working Environment	3.77	75.40	Very Satisfied
5.	Personnel Development	3.78	75.66	Very Satisfied
6.	Welfare and Compensation	3.89	77.81	Very Satisfied
	<b>Average score on work satisfaction</b>	<b>3.92</b>	<b>78.50</b>	Very Satisfied
<b>Comments on employee engagement</b>				
1.	Operations to achieve the Company's objectives	4.40	87.99	Most Satisfied
2.	Pride and loyalty to the Company	4.55	90.91	Most Satisfied
	<b>Average score on employee engagement</b>	<b>4.48</b>	<b>89.45</b>	Most Satisfied
<b>Total Average Score</b>		<b>4.06</b>	<b>81.24</b>	<b>Very Satisfied</b>

## Lessons from the Satisfaction Development Project

From the summary of the survey results of employee satisfaction and engagement under the topic “Working Environment”, the opinion on “the Company having activities to build good relations with employees during festivals” was at a high level of satisfaction with an average score of 3.44, but still considered the lowest score from all opinion topics. Therefore, the Company aims to arrange more projects to build good relations with employees such as New Year’s greetings on the New Year’s Eve festival, the event of pouring water on the hands of the executives and asking for blessing on the Songkran festival. However, the Company refrained from organizing relationship-building activities in the past year according to social distancing measures due to COVID-19.

## Training and Education<sup>(3-3)</sup>

<sup>(3-3)</sup> The Company gives priority to the training and development of employees with a policy of personnel development on a regular basis in order to develop employees to increase their knowledge, skills, experiences, and expertise from on-the-job training. New employees will have supervisors in each line of work to provide job training in that line, including promoting ethics and honesty in operations. The Company sets development courses to be consistent with employees at all levels, provides Employees who start working with a mentoring system to take care of, advises on the job training, arranges job training courses, and development training courses to support the career development paths of employees at all levels, including courses and knowledge of new technologies for employees to perform their assigned tasks efficiently, create pride in their work, and support employee growth. The Company also sends employees and executives in certain lines to attend additional training and seminars on matters related to the operation of each department and sends employees on field trips abroad in order to bring new technologies and evolution to develop and improve the Company’s operations. In 2022, due to COVID-19, in order for employees to develop continuously, the Company adopted a virtual classroom training model as an online training, which is similar to classroom training where employees still participate in teaching and learning effectively with the lecturers.

The Company is well aware that training to provide knowledge and focus on building skills for employees is an important strategy for improving the quality of the organization by aiming to provide personnel with knowledge, experience, and competence to work efficiently. It is determined to increase knowledge and skills by applying technology to support employee learning in the E-Learning system where employees can allocate learning time or review their own learning as appropriate, with important management techniques courses in work such as courses in production, maintenance, safety, and occupational health.

### Operational Goals

Short-term goals within 1-2 years	Long-term goal of at least 3 years
<ul style="list-style-type: none"> <li>• Average number of training hours for all courses is not less than 20 hours per person per year.</li> <li>• Number of employees trained according to the Labor Skill Development Promotion Act <math>\geq</math> 70%</li> <li>• Develop training through the e-Learning system for employees to learn the knowledge of each department, from orientation to production processes, by creating a one-form teaching media. Point Lesson(OPL) and videos for ease and understanding in learning.</li> <li>• All security personnel (100%) must be trained in procedures and procedures for human/vehicle search in accordance with human rights principles along with regular reviews.</li> </ul>	<ul style="list-style-type: none"> <li>• Develop the learning system within the organization to become a virtual training or E-learning system.</li> <li>• The introduction of new technology to produce training media.</li> <li>• Keep the training content up-to-date according to the changes in technology.</li> <li>• Develop personnel to understand and support future business changes.</li> </ul>

### Management Guidelines

The Company has established guidelines for training and educating employees in accordance with Personnel Development and Training Policy according to Notification No. 016/2016. The details of the implementation of the annual training need survey and the annual training plan are as follows:

- Establish personnel development and training policies, including the treatment of employees, by striving to develop the organization to become a learning organization, fostering culture and working atmosphere, promoting teamwork, providing fair compensation, taking care of safety, and maintaining the working environment as well as giving importance to development, transferring knowledge and abilities of employees, and listening to opinions and suggestions from employees at all levels equally and impartially.
- Survey the annual training needs and have an annual training plan, including a satisfaction survey to evaluate the training arrangement by summarizing the training evaluation in terms of subjects, objective achievement, lecturers, and training operations.
- The Company improved the form of development training through the e-Learning system so that employees can acquire the knowledge of each unit from orientation to various production processes by preparing teaching media in the form of One Point Lesson (OPL) and videos for their convenience and understanding.
- Provide training on human rights procedures or policies, such as the Personal Data Protection Act (in practice) and the Personal Data Protection Act (process and guidelines).
- Provide training to educate security personnel in a course on human rights and human rights inspections and the satisfaction with the performance of the security guards on a monthly basis. Training requirements apply to third-party organizations that provide security services.

## Performance in 2020

- Use technology to reach the target audience in line with the way of working in the New Normal era, which focuses on using online media as a tool for job recruitment and job interview.
- Provide a psychometric test for important job positions to support the decision of the committee in job interviews to obtain qualified employees in line with the organizational culture.
- Apply technology to support employee learning in the E-Learning system so that employees can allocate learning time or review their own learning as appropriate, with courses on important administrative techniques at work such as production courses maintenance, safety, and occupational health.
- The average number of training hours for all courses was 24.71 hours/person/year [404-1].
- Training satisfaction was 90% (measured by the assessment form after the training was completed, scored 4.5 out of a full score of 5).
- Satisfaction with the performance of security guards was 85.69 percent
- Security personnel have been trained on procedures and procedures for searching people/vehicles according to human rights principles 100% and reviewed at least once a year.

## Performance <sup>(404-2)</sup>

In 2022, the Company established a training plan of 151 courses for employees to develop both soft skills and hard skills, both in the form of internal training and outside the organization as follows:

**Table : Training courses to develop skills, knowledge, and competence of employees in 2022**

Course type *	Number of Courses	Objectives
1. Management and Leadership	41	To enhance leadership skills, such as driving people within the organization to achieve their objectives.
2. Occupational health and safety and environment	29	To organize safety operations to reduce the risk of illness, injury or death and take care of the quality of life of personnel within the organization.
3. Technical	76	To focus on improving employees' skills and efficiency through professional learning to encourage employees to show their full potential.
4. Technology and engineering	2	To adapt the organization to keep pace with the digital age, knowledge of technology and innovation and engineering are required.
5. Supporting, delivery of work, and retirement preparation	3	To prepare for employees who are about to retire and smooth task delivery.

Note: \*The aforementioned courses include both hard skill courses, which refer to specific skills necessary for a profession; and soft skill courses, which refer to competency skills that enable you to work and communicate with others effectively.

## Average training hours of employees<sup>(404-1)</sup>

(Unit: Hours/person/year)

Employee training details	2020	2021	2022
Average number of training hours/person/year	44.89	28.04	24.71
Average number of training hours categorized by gender*			
Male	48.86	30.67	26.46
Female	6.16	3.52	6.09
Average number of training hours categorized by employee group			
TOP EXECUTIVE	69.75	7.5	102.2
AVP/ VP/ SVP	9.60	6.0	6.22
ASST.DEPT MGR.- DEPT. MGR.	4.76	3.63	4.05
ASST.SUP. – SECTION MGR.	36.52	14.10	18.69
OFFICER	46.83	30.85	26.33

Note: \* Due to the suitability of the nature of work in the industrial line, most of the personnel are males more than females.

In 2022, there were a total of 1,143 employees, representing 100%, who were assessed on the Company's performance. Employee performance is assessed three times a year in April, August, and December so that employees can develop and improve their performance regularly. All employees at all levels will receive performance appraisals from their supervisors according to the topics in the performance appraisal form<sup>(404-3)</sup>.

## Guidelines for Future Operations

- Over 65% of employment of personnel in the plant areas each year
- Organizing training/development by preparing a development plan to increase the potential of employees to support the replacement of employees at the supervisor level and above.
- The level of employee satisfaction and engagement with the organization is at a very good level.
- The Company will continue to improve the form of development training through the e-Learning system so that employees can acquire the knowledge of each unit from orientation to various production processes by preparing teaching media in the form of One Point Lesson (OPL) and videos for their convenience and understanding.
- Due to COVID-19 affecting the training, the Company has improved the training forms and channels by organizing more online training which makes it possible to organize training from all locations and departments.

## Occupational Health and Safety<sup>(3-3)</sup>

<sup>(3-3)</sup> A good occupational health and safety management system is a fundamental responsibility related to operations in the Company's area and all related work areas. The Company is committed and adheres to and strictly complies with the requirements for safety and occupational health in the workplace, including assessing risks from work in all business processes, as well as instilling and building awareness of safety in the work of employees and those involved to create a culture of safety in the workplace in order to prevent and reduce the loss that may occur to life, property, including the impact that may occur on surrounding communities and the environment. The Company aims to be an organization with zero accidents.

## Operational Goals

1. The number of fatal injuries from work is zero.
2. The rate of high-impact work-related injuries is zero.
3. The rate of morbidity from occupational diseases is zero.

## Management guidelines <sup>(403-1)</sup>

The Company has set a policy and guidelines related to occupational health, safety, and good working environment, covering employees, operators, contractors, and subcontractors, including communities and stakeholders with the Company's operational activities so that everyone will have a good and safe quality of life, no accidents causing serious injury to death or illness morbidity work, with operations under the policy on occupational health, safety, and environment, including requirements for operating guidelines that comply with the ISO45001 occupational health and safety management system with the following guidelines:



Assess risks and risk management guidelines for occupational health, safety, and working environment covering all work processes that may affect communities, society, and the environment, including meetings to discuss, supervise and monitor the operations regularly.



Prepare a safety manual for operations and supervise the operation in accordance with the manual and operating procedures to ensure safety..



Report and investigate accidents, and incidents including the determination of solutions and being careful to prevent repeated accidents. .



Supervise operations according to the laws on safety, occupational health, and working environment and other related regulations as well as supervising operators, third parties, and those involved in the work area to strictly comply with the rules and regulations.



Supervise the working environment and provide personal protective equipment for employees who use it in performing duties in accordance with the laws.



Be prepared to respond to emergencies, including business continuity management.



Communicate policies, instill consciousness, create a work culture, develop skills and knowledge, and organize activities to promote safety, occupational health, and a good working environment.

## Guidelines for risk assessment incidence investigation and risk management in occupational safety, health, and working environment <sup>(403-2)</sup>

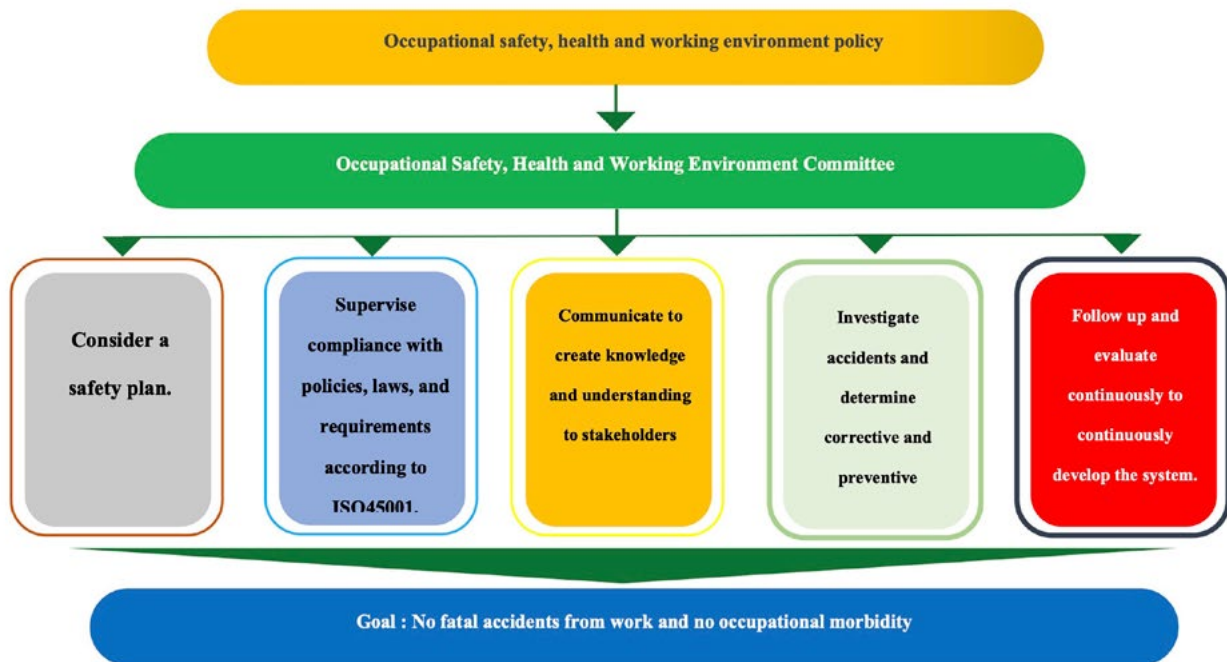
The Company has established a safety risk assessment process, occupational health, and working environment in accordance with the ISO45001 occupational health and safety management system by allowing workers who own the risk to analyze their own job characteristics and other related parties such as third parties and contractors to identify hazards, assess opportunities and impacts that may occur from operations as well as risk prioritization, supervision and follow up on operations to be in line with plans and goals.



Working Environment Control	Supervision	Reporting and Investigation
<ul style="list-style-type: none"> <li>Employees and related parties wear personal protective equipment to prevent injuries and accidents at work.</li> <li>Put signs and symbols indicating hazards in the work areas.</li> <li>Regularly measure and assess the working environment with measurement values in accordance with the law, such as air quality, noise level, light intensity.</li> </ul>	<ul style="list-style-type: none"> <li>Define rules and regulations for operations covering the operation of employees, third parties, and stakeholders working in the areas.</li> <li>Safety officers, area owners and all employees are responsible for supervising the implementation of the prescribed safety measures and guidelines, such as:               <ul style="list-style-type: none"> <li>Training on safety and related regulations to all contractors before entering the work areas.</li> <li>Application for permission to enter the operational area must be approved according to factory procedures.</li> <li>Contractors must have a supervisor with safety knowledge who can assess the dangers that may arise from work, are responsible for controlling and supervising both general work and work that requires specific skills.</li> <li>Risky work requires a work permit and strictly complies with the requirements for each work permit.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Accidents or abnormal incidents must be reported and recorded systematically, both in the production process and near-miss incidents.</li> <li>Employees who witnesses must report the incident to their supervisors and safety officers within 24 hours.</li> <li>Appoint a working group to investigate accidents or incidents and to investigate root causes using the principles of Why Why Analysis to lead to the determination of corrective measures, prevention, and monitoring of corrective actions.</li> <li>Update according to the specified preventive measures from time to time.</li> <li>Develop learning materials from accidents for employees and contractors through the Company's media to ensure the most efficient and effective prevention.</li> </ul>

## Safety, Occupational Health and Environment Management <sup>(403-4)</sup>

The Company has appointed a Safety, Occupational Health and Environment Committee, consisting of executives and safety officers at the professional level of the Company responsible for managing safety, occupational health and working environment to meet the requirements of ISO45001 occupational health and safety management standards system and related safety laws.



The Department of Occupational Health and Environment has been established to coordinate and monitor the operations of safety and the environment of all plants in compliance with relevant laws and regulations, policies, plans, and goals set by the Company, including risk assessment and management Preparation of impact assessment reports on safety, occupational health, and environment, as well as performance reports to the Occupational Health, Safety and Environment Committee for acknowledgment on a regular basis.

As well as the appointment of the Safety, Occupational Health and Environment Committee in each plant, which is in accordance with the Ministerial Regulation on Occupational Safety, Health and Working Environment Management B.E. 2549, consisting of representatives from employees at the operational level not less than 50% of the entire committee, whereby the representatives of the employees at the operational level are elected separately according to their line of work so that there are representatives of employees from all lines of work, which is scheduled to hold a meeting at least once a month, responsible for receiving information from employees in each line through representatives and notifying news, along with following up on the progress of operations and plans for future operations, including development, improvement, promotion, and creation of knowledge, in order to instill a culture and develop skills and knowledge in occupational health and safety for employees, contractors, and those who come to work in the plant areas such as training to develop knowledge of safety and working environment, organizing weekly activities on safety and environment, training on safety at work, basic firefighting and evacuation drills, training in first aid and basic life support, CPR & AED, participating in safety networks in campaigning and organizing safety activities.



## Occupational health and safety services and promoting employee health <sup>(403-3, 403-6)</sup>

The Company provided services that promote a safety culture within the organization that covers service and promotes good health in the workplace such as:

- Infirmary within the workplace where there are doctors and nurses on duty to give advice on illnesses and first aid in case of injuries to employees and contractors
- Employee health check-ups since starting work according to the risk factors such as a hearing test and pulmonary function tests Electrocardiogram (EKG) in case of working in a confined space
- Annual health check-ups, both general health check-ups and health check-ups according to occupational health risk factors, with the Company's occupational medicine physicians and occupational health professionals to jointly determine the health checklist of workers from factors inside and outside the workplace. If an employee has an abnormal health check-up, he/she must visit a doctor and receive continuous health care advice. There are additional checklists according to the risk of age groups, such as lipid tests (Total Cholesterol, LDL, HDL, Triglycerides) in the employee health check-up program to cover diseases that may be caused by daily life and for employees to continuously monitor their health.
- Determine medical expenses welfare (OPD) for employees, parents, spouses, and legal children.
- Determine additional welfare to support workers in accessing medical services for non-work related cases such as basic medical examination and treatment, and emergency treatment at the Company's infirmary for employees and contractors, including annual health check-ups, influenza and COVID vaccinations for employees.

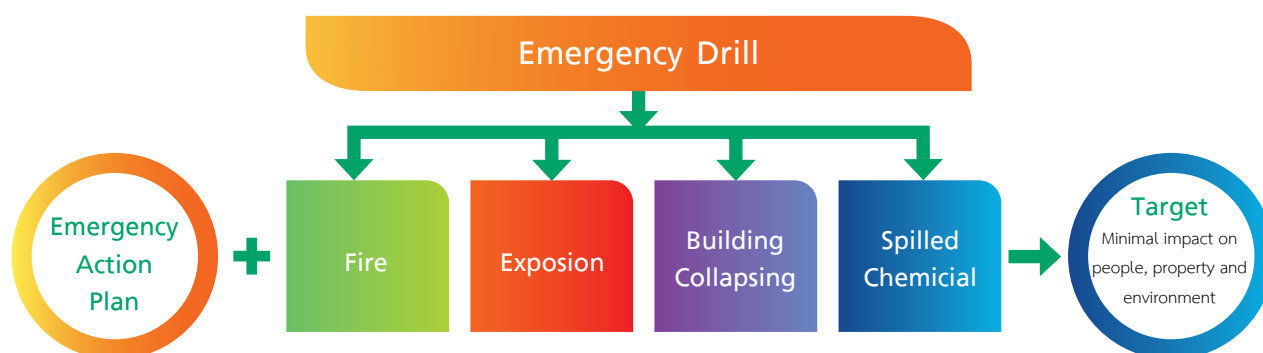
## Occupational Health and Safety Employee Training <sup>(403-5)</sup>

The Company established criteria for determining training courses in occupational health, safety, fire prevention, and suppression that is necessary for employees and contractors that are suitable for job positions, types of work or risky activities to develop knowledge, competence, and understanding of what may be dangerous and cause accidents, how to prevent, and control hazards while working, to be able to perform assigned duties safely by requiring assessments and storing training records.

Training Course Topics	Number of trainees (persons)
Safety, occupational health and working environment for general employees and new employees	22
Occupational and environmental diseases	4
Primary fire fighting	22
Review of working in confined spaces	221
Training or review of crane work	80
Radiation safety	10
Risk issues and safe working techniques	118
Environmental issues	136

## Emergency Response Preparedness <sup>(403-7)</sup>

The Company established an emergency response plan whereby every plant is required to prepare an emergency response plan which clearly defines roles, responsibilities and operational procedures, as well as requiring rehearsals, annual emergency responses such as fire, chemical leakage, and boiler explosion. In this regard, there must be an assessment and rehearsal of such an emergency plan in order to apply suggestions to improve the efficiency of emergency response operations. The Company also provides training to add expertise to employees who are responsible for responding to emergencies, such as advanced firefighting training, chemical leakage prevention, and emergency management training.



## Performance

The Company set criteria for measuring and evaluating work in occupational safety, health and working environment by considering the rate of accidents from work, the number of safe working hours, the rate of fatal work-related accidents and the number of occupational morbidity or disease, with 2022 performance as follows:

**Table: Information of Employees under the Company's Occupational Health and Safety Management System <sup>(403-8)</sup>**

	Number (persons)	Percent
<b>Employees and workers of establishments controlled or supervised by the organization</b>		
Employees	986	100
Workers	84	100
<b>Employees and workers of establishments controlled or supervised by the organization (and monitored by the organization).</b>		
Employees	332	33.67
Workers	35	41.67
<b>Employees and workers of establishments controlled or supervised by the organization (and monitored by the outside organization).</b>		
Employees	95	9.63
Workers	23	27.38

Note : Employee means personnel of the Company.

Worker means personnel of other establishments controlled or supervised by the Company under ISO 45001 standard.

Table: Work-related Injuries and Health Problems<sup>(403-9, 403-10)</sup>

Performance	2020	2021	2022
Death rate	0	0	0
Rate of high-impact work-related injuries	No record	0	0
Injury Frequency Rate (IFR)	0.996	0.354	0.352
Occupational morbidity rate	0	0	0
Working hours without lost time accidents	1,085,568	1,624,536	1,665,945
Number of Level 3 emergencies (fires, chemical spills, explosions, and building collapses)	0	0	0



## Work-related injuries<sup>[403-9]</sup>

Fatality and injury statistics of employees and non-employees, but works and/or establishments are controlled by the organization.	Types of Injuries (I)										Number of working hours	Number (people)	Death/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)	Toxic exposure	Traumatic brain injuries (TBI)			
Employee deaths and injuries													
Death from Work-Related Injuries	0	0	0	0	0	0	0	0	0	0		0	0
High Impact Work-Related Injuries (not including death)	0	0	0	0	0	0	0	0	0	0	2,271,744	0	0
Recordable work-related injuries	0	0	0	0	2	0	0	2	0	0		4	0.352
Deaths and injuries of non-employees but works and/or their establishments are regulated by the organization.													
Death from Work-Related Injuries	0	0	0	0	0	0	0	0	0	0		0	0
High Impact Work-Related Injuries (not including death)	0	0	0	0	0	0	0	0	0	0	193,536	0	0
Recordable work-related injuries	0	0	0	0	0	0	0	0	0	0		0	0

Note: High-impact work-related injury means an occupational injury that results in death or injury resulting from a worker's inability to or unable to work or unable to expect fully recover to the pre-injury state within 6 months

Recordable work-related health problems refer to an occupational injury, resulting in any of the following: death, absence from work, work restriction or transfer, medical treatment other than first aid, loss of consciousness, serious injury diagnosed by a physician or a licensed medical practitioner.

Work-related health problems<sup>[403-10]</sup>

	Types of health problems (number)			Number (people)	Rate of death (percentage)
	Stress, depression or anxiety	Musculoskeletal disorders	Occupational lung disease		
Deaths and work-related health problems of employees					
Death from work-related health problems	0	0	0	0	0
Recordable work-related health problems	0	0	0	0	0
Deaths and work-related health problems of non-employees, but works and/or their establishments are regulated by the organization.					
Death from work-related health problems	0	0	0	0	0
Recordable work-related health problems	0	0	0	0	0

Note: Recordable work-related health problems refer to poor health, resulting in any of the following: death, absence from work, work restriction or transfer, medical treatment other than first aid, loss of consciousness, serious injury diagnosed by a physician or a licensed medical practitioner.

From the above information, it was found that Injury Frequency Rate (IFR) in 2022 was equal to 0.352, a decrease of 0.002 compared to 2021, resulting in the Company having a better occupational health performance this year. The Company is still capable of controlling the fatal accident, no high-impact work-related injuries and no occupational morbidity and diseases, and the number of working hours without lost time accidents was 1,665,945 hours, an increase of 41,409 hours compared to 2021, resulting in the Company having a better safety performance this year.

## Covid-19 Management

- The Company still has measures to deal with Covid-19, emphasizing on employees maintain hygiene and strictly follow the measures to prevent Covid-19 by screening for employees with symptoms of infection to perform an ATK test in order to accurately and quickly distinguish the infected from the non-infected ones. Infected persons can enter the treatment system immediately and the non-infected ones can safely work normally.
- The Company continues to take measures to purchase ATK test kits, both saliva and nasal sticks, to screen employees at risk and continues to encourage employees who have a need to work with agencies or outsiders to get an ATK test first to build confidence with customers and outsiders such as salespersons, freight forwarders and employees who have to meet customers outside.
- The Company continues to buy Andrographis paniculata as a reserve for employees who have a fever, cough, or sore throat or are infected with Covid-19 in the early stages to help relieve mild symptoms and reduce the chance of germs spreading to the lungs.
- The Company arranges a suitable working area by providing spacing, reducing crowding, and organizing the work system with an emphasis on reducing direct communication between people to reduce the risk of spreading germs.
- Arrange to spray Microm Knox Solution every day in the evening after work to eliminate Covid-19 that may remain in the work environment so that employees can start working on a new day safely.
- For employees whose accommodation is in a high-risk area or at risk of infection during the round trip or bus travel, the Company provides temporary accommodation within the Company for them and controls the access of employees out of the premises according to the Bubble and Seal principle.
- Focus on service providers to drive employees to transport vehicles, seats, handrails, doors, and windows are cleaned with disinfectant before every service, and staff is arranged to spray Microm Knox Solution that has the effect of eliminating Covid-19 inside every shuttle bus, every day after employees have been dropped off.
- Arrange for ozone steam to kill Covid-19 in the meeting room after daily use.
- Installed Microm Knox Solution Spray Tunnel with the effect of eliminating Covid-19 and automation at every doorway to prevent risks to employees in the workplace.



## Community and Social Development

### Participation in community and social development <sup>(3-3)</sup>

Commitment to community and social development, enhancing the quality of life, including preserving the environment so that the industry can coexist with society and communities in mutual assistance is the goal that the Company, as a Thai power producer, places great importance on environmentally friendly power generation along with efficient waste disposal which is regarded as directly solving social problems as well as helping to support the careers of people in the community which leads to sustainable development for both the Company and Thai society.

### Operational Goals

“No cases of complaints or claim for remedies or compensation.”

### Management guidelines

Throughout the past operations, the Company has always taken into account the impact that may occur on society and communities, covering all sources of operations of the Company (100%)<sup>(413-1)</sup> due to the investment in each project of the Company is a large-scale project which may have risks at any stage with the potential to create both social and environmental impacts. The Company places importance on the impact assessment process based on the ability to respond to the needs or expectations of affected communities.

### Methods or processes for evaluating the impacts on communities due to the organization's operations <sup>(413-2)</sup>

The Company has operated in accordance with relevant regulations by providing information and details of numerous projects that have been carried out transparently in order to obtain opinions and suggestions of the communities to be taken into account before and after the operation of the projects, as well as establishing a committee representing the sectors of the communities to participate in the operation of the Company in monitoring and proposing complaints or suggestions in order to communicate and resolve arising problems.

In addition, the Company has set up funds for the community which are additional voluntary funds that are not stipulated in the law, managed by community representatives.

The Company has also organized open house activities for community representatives, educational institutes, government agencies, or related private sectors to visit the management process and factories in order to give an opportunity to see the actual conditions and have the opportunity to communicate directly.

Learn more details at “Organization of CSR activities for communities in the area where the plants are located to listen to problems and solve the impacts on a regular basis” according to the diagram shown.

#### Establishment of a power plant fund to promote and support social responsibility activities

The Company has provided financial support by establishing funds with the objective of promoting the care of communities in the areas surrounding the Company's power plant operations for educational institutions, research institutes, academics, and community representatives, and the Company has participated in the implementation of the projects for the following purposes:

1. Health insurance fund for communities surrounding the power plant

For the benefit of being collateral for the treatment of illnesses of people in a radius of 5 kilometers around the projects in the event that the illness is caused by the operation of the projects, 1,000,000 baht will be deposited into the fund account in the first year and 500,000 baht in subsequent years every year.



2. Fund for research projects for community career development and resource conservation and restoration of nature and environment

To support community affairs and to create understanding among the communities, to support budgets for research and development projects related to the conservation and restoration of natural resources and the environment, to promote the development of livelihood capabilities, and to develop occupation of the project communities. 1,000,000 baht will be deposited into the fund account in the first year and 200,000 baht in subsequent years every year.

3. Quality of medical equipment and personnel and public health research support budget

To support public health activities in the areas to promote and monitor health at the sub-district, district, and provincial levels, such as supporting the training of village health volunteers, supporting research budgets, monitoring health impacts, purchasing medical equipment, and supporting public health personnel, etc., with a fund of 300,000 baht each year.

4. Occupational health and safety support budget

To support the increase of the hospital's potential, promote sub-district health and public health personnel, maintain the health of people in the areas by supporting medical supplies and equipment, annual training and practice from personnel in occupational health or hygiene or occupational science, with a fund of 300,000 baht each year.

5. Biological resources support budget

A budget of at least 300,000 baht per year to support forest rehabilitation activities for communities and related agencies for reforestation.

## Performance

In 2022, the Company has no complaints from communities and society.





## Social Activities<sup>(413-2)</sup>

Corporate social responsibility operations are divided into 2 main areas: Community Relations and Corporate CSR. In 2022, TPI Polene Group supported the budget for construction materials and health-saving products in TPI Polene Group for communities and society in all aspects by working on both sides in parallel, which can be summarized as follows:



### (4.1) Community Relations

The Company has manufacturing plants located in various community areas and establishes a proactive policy for every production unit to provide support in sanitation and reduce the impact of the epidemic without waiting for community requests. The Company also supports the surrounding communities and important societies and strengthened the community to be healthy, provides a mobile medical unit in “Good Health with TPI” Project to monitor illnesses, health examination services to provide health knowledge and benefits of lung examination in surrounding communities in Kaeng Khoi District, Muak Lek District, Saraburi Province. For example, the waste separation project in exchange for electricity for community development. The objectives are 1) to educate people in the community on household waste separation 2) to help reduce the amount of waste in the community 3) to design and produce products from recyclable waste to the community 4) to encourage the community to have extra income by inventing waste into products and 5) The Company receives waste from the community. To be used as raw materials for the production of waste fuel.

### (4.2) Corporate Social Responsibility

In addition, the Company also takes part in improving the quality of life and promoting participation in the community. In 2022, the Company organized activities with the community and important activities as follows:



## Community and Social Contribution Activities

The Company delivered X-rays and excellent mobile vehicles worth 9,000,000 baht to the Songkhla Nakarin Hospital Foundation in order to reduce the service rate of patients in the hospital and reduce the risk in case of patients who are under surveillance for COVID-19 service. It is also to increase the efficiency of the work of medical personnel in the future. The Company would like to take part in sending concerns to people in the area to have access to the public health system thoroughly. The Songkhla Nakarin Hospital provides a mobile medical unit to serve people at the Javanese Dove Competition (international level), at the annual event, “Unique Products of Chana”, Taling Chan Subdistrict, Chana District, Songkhla Province. There were about 1,000 people interested in joining the event from all over Thailand and from neighboring countries.

TPI Polene Power Public Company Limited, TPI Polene Public Company Limited, and the Environment for Life Foundation donated 2,700 bottles of hygienic liquid soap products (to help with athlete's foot) with 50 boxes of clothing from executives and employees to help flood victims at the Ubon Ratchathani City Hall. In addition, 1,000 bottles of hygienic liquid soap (anti-fungal liquid) were also given through the Yang Mee Rao Foundation (TOPNEWS), and 300 bottles from Nation news stations were given to flood victims in many provinces.



- Support organic agricultural products in both plant and animal groups (in 162 targeted communities) for the Rural Development Education Foundation (Wat Pa Darapirom Chiang Mai Province) in 5 projects as follows: products to help 750 farmers who are members of the Cattle-Buffalo Bank; products to help 200 rice farmers; products to help 20 soybean farmers; products to help 40 longan farmers; and products to help 30 cocoa farmers to encourage farmers to use organic products to reduce chemical farming to increase productivity, free from residues, along with the physical health of the farmers, and not exposed to toxic chemicals from farming.

- Donate TPI bio-organic fertilizer products (TPI green fertilizer, TPI purple fertilizer, wood vinegar, bat cave granular fertilizer, and PH11 plus soil conditioner to Wat Thep Chetiyachan, Chom Thong District, Chiang Mai Province in the project of donating fertilizer to temples, schools, farmers for sustainable agriculture.



- Donate blankets for the winter of 2022: In the North, a total of 4,000 blankets were given to students, teachers, and people under the Border Patrol Police Region 3, Chiang Mai Province; 1,000 blankets were given through the Dharma Practice Center “Thammasilp” to the victims of the winter, Chiang Mai Province; and 235 blankets given to Mae Ai Hospital, Chiang Mai Province; In the Northeastern region, 3,000 blankets were given to students, teachers and people under Border Patrol Police Region 2, Khon Kaen Province; and 1,000 blankets were given to the Faculty of Medicine, Khon Kaen University to patients and victims of winter and 500 pieces given to Umphang Hospital. The Company would like to be a part of giving warmth and helping alleviate suffering from the winter.



- Support budgets to promote and develop a good quality of life for Thai people, such as
  - TPI Polene Power Public Company Limited, in collaboration with the Yang Mee Rao Foundation and TOPNEWS news station, supports TPI Nano Super Special Armor TPI Paint (TPI Water Paint, TPI Primer Paint for Fine Arts for the Street Art King Bhumibol Project, a volunteer project to paint portraits of King Rama IX along with the dissemination of the royal speeches. The creation of works by artists from all over Thailand was led by Kru Alai (art teacher) to give Thai people and people around the world to remember His Majesty's benevolence and to bring His Majesty's teachings to continue in life and benefit the public, with 6 activity points namely Bangkok, Samut Prakan, Chiang Mai, Songkhla, Nakhon Pathom, Nakhon Phanom. The Company would like to be a part of supporting the Yang Mee Rao Foundation in the Street Art King Bhumibol project and will continue to apply His Majesty's teachings for the benefit of the public.
  - Support special charity events of the Thai Disabled Occupational Development Association for 35,000 baht to purchase emergency beds and nursing beds for the disabled of the Thai Disabled Occupational Development Association, and support 60,000 baht to purchase 3 special trikes and 5 wheelchairs in the "Wheelchairs for the Disabled Project" of the Association for the Promotion of the Development of the Life of the Disabled and the Underprivileged.
- Support the budget for the purchase of TPI construction materials products for constructions, renovations, and repairs of buildings and facilities such as joining TISCO Bank Group in "TISCO Ruamjai" Project to construct a 2-storey learning building with 12 classrooms and a 260-seat canteen building at Ban Khlong Sip Sam School, Sa Kaeo Province; to renovate the school building and buildings to facilitate learning and well-being, as well as building confidence in the community in sending their children to study at Prasit Thaweessin 2 School, Songkhla Province; to develop, repair and renovate the learning resources outside the classroom to facilitate the learning and well-being of students of Tha Phueng Wittaya School, Surat Thani Province; To repaint a new school building, Association College Charity School Bangkok; to improve and develop Dharma courtyards to make them suitable for being a learning center in Thepsirin Phukhae School, Saraburi Province for students to have a better quality of life.



- Co-hosted the Kathin Ceremony at Wat Sri Don Moon, Chiang Mai Province; Hosted the Kathina Ceremony Ban Hin Lap Temple, Saraburi Province; Wat Tham Sarika, Nakhon Nayok Province; Wat Suwanmat, Phetchaburi Province; and donate 350 bags of TPI cement products, TPI Nano Super Armor paint, TPI lightweight concrete, and other products. to various temples, for example, to restore and gild the pagoda of Phra That Chae Haeng, Phra Aram Luang, Phu Phiang District, Nan Province; to build a building for meditation rooms and walking paths at Wat Suwanmasongkol, Cha-Am District, Phetchaburi Province. In addition, it also participated in promoting the maintenance of Buddhism in other areas; for example, supporting the Novices Rak Kaew Sacred Religion Project at Rama 9 Golden Jubilee; supporting the dissemination of Dharma on the Dharma Inspiration Channel, Wat Weluwan, Kanchanaburi Province; and support the propagation of Buddhism on the World Buddhism Television Station of Thailand Wat Yannawa (WBTV), etc.
- Provide the budget for the purchase of TPI drinking water products, and health-saving products (Provita drink, Bio Knox, Mouthwash, Microme Knox Solution) to schools and organizations for organizing volunteer activities and beneficial activities such as participating in the “Cycling, Share Happiness, Stop Cancer” Project, Field 3, Songkhla Province of Yang Mee Rao Foundation; take care of COVID patients, Community Isolation Center at the Sathorn District Sports Center of the Sathorn District Office; and participate in the international academic conference, “the 13th IMT-GT UNINET BIOSCIENCE International” of the Faculty of Science, Prince of Songkla University.

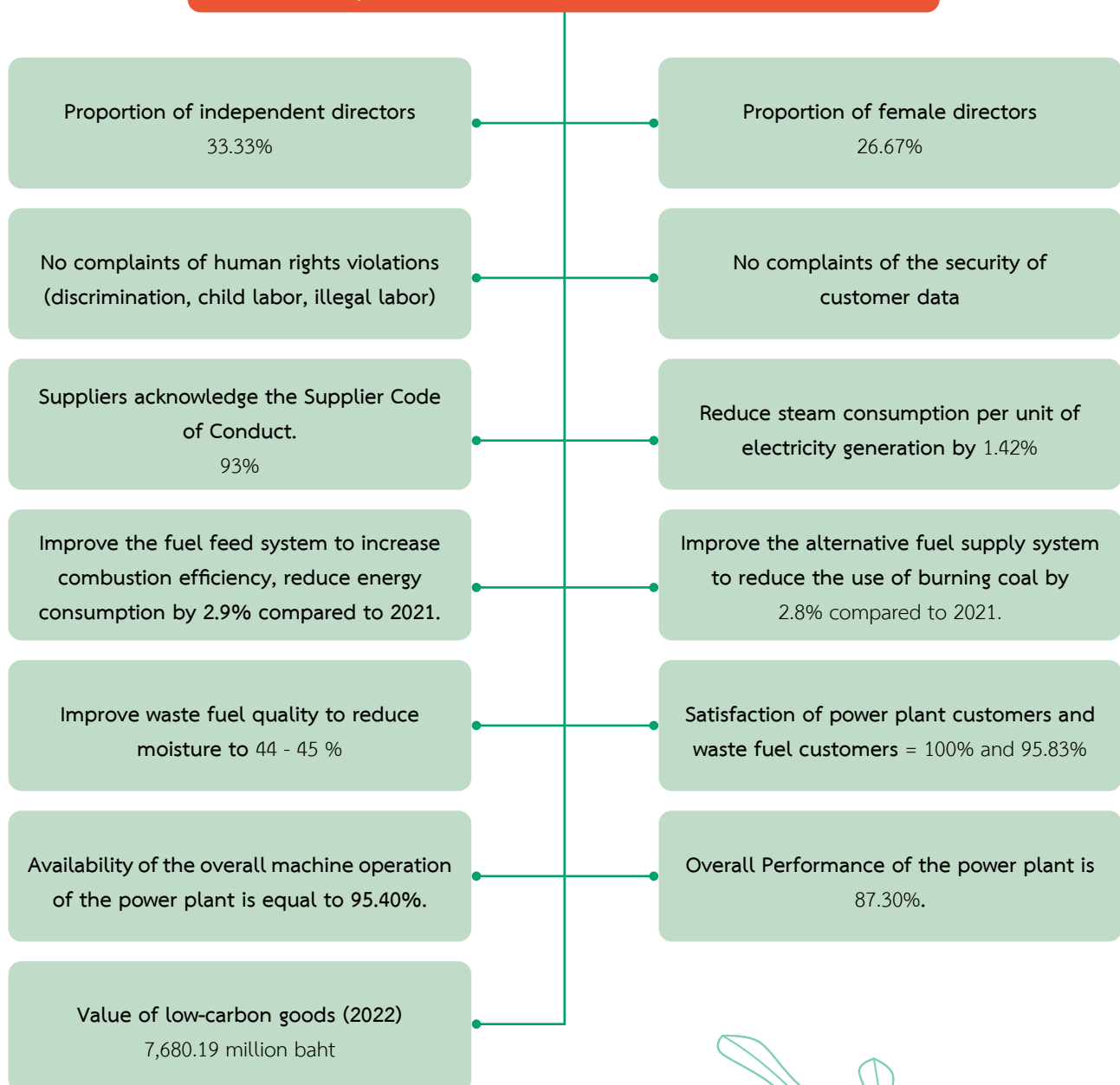


# 07

## Corporate Governance



### Corporate Governance Performance in 2022



## Anti-Corruption<sup>(3-3)</sup>

Corruption is a major problem for the country's economic and social development in numerous areas such as injustice and lack of investor trust, causing damage to the country. The Company is aware of honesty and transparency and established an Anti-Fraud and Corruption policy to build trust and acceptance from the Company's stakeholders which leads to the creation of a good corporate culture in the future.

### Operational Goals

- Employees will receive training courses on anti-corruption periodically every year.
- Business partners acknowledge the policies and guidelines of the anti-corruption of the organization every year.

### Management

The Company has a policy to prohibit directors, executives and employees at all levels of the Company from accepting or being involved in corruption in any form, whether directly or indirectly, by requiring personnel of the Company to comply with its Anti-Fraud and Corruption Policy which is in line with the Principles of Good Corporate Governance, the Code of Conduct, rules, regulations and relevant laws.

The Company has defined the scope of stakeholders involved in the Anti-Fraud and Corruption policy into 2 categories as follows: 1) Internal organization consisting of directors, executives and employees of the Company at all levels 2) External organization consisting of customers or suppliers of goods or services, contractors, sub-contractors, partners, creditors, government agencies, and private agencies, along with specifying the main roles and responsibilities of the committee and agencies involved in anti-corruption operations as follows:

Board of Directors	Chairman of the Management Committee and members of the Management Committee	Audit Committee	Internal Audit Supervisor
<ul style="list-style-type: none"> <li>Set policies and supervise to have a system that supports effective anti-corruption.</li> </ul>	<ul style="list-style-type: none"> <li>Set up a system to promote and support the anti-corruption policy. to communicate to employees and related parties</li> <li>Review operations and policies to be in line with various changing situations such as business conditions, rules, regulations and requirements of various laws, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Review the financial and accounting reporting system internal control system internal audit system and risk management system to be concise, appropriate, modern and efficient</li> </ul>	<ul style="list-style-type: none"> <li>Examine and review the operation to ensure that it is in accordance with the policy, practice guidelines, operational authority regulations and laws; regulatory requirements;</li> <li>Report to the Audit Committee</li> </ul>



### Fraud-Related Risk Assessment <sup>(205-1)</sup>

Work groups/ departments that have been assessed for fraud and corruption risks	Identify significant fraud and corruption risks	Number of operating units that have been assessed for fraud and corruption risks	Percentage of operational units assessed for fraud and corruption risks*
Procurement Department Groups/functions that have been assessed for risks linked to corruption such as the accounting and finance division, the management division, the engineering division, the sales and marketing division.	Process related to cash Procurement process - Assess the risks of suppliers whether they participate in anti-corruption both inside and outside the organization or not. - Assessment of whether business partners have codes of conduct or not. - The Company's working group for receiving complaints for partners and customers.	16 agencies have been assessed for fraud-related risks.	Departments have received a risk assessment that account for 100%
Total number of operating units assessed for fraud related risks		16	100

\*Percentage of operating units assessed for fraud and corruption risks is based on the total number of operating units of the organization in the reporting period.

In addition, the Company has set guidelines for anti-corruption as a framework for employees at all levels with the expectation that they will be the eyes and ears of not neglecting or ignoring when witnessing actions that fall within the scope of corruption. The Company aims to provide fairness and protection measures for whistleblowers or those who cooperate in reporting corruption and to raise awareness among employees. The Company, therefore, regularly disseminates, communicates, and trains to provide knowledge about the Anti-Fraud and Corruption Policy to employees, including expanding the scope of the Anti-Fraud and Corruption Policy to business partners of the Company through campaigns to encourage its stakeholders to understand the behavior of performing their duties or to refrain from conduct that is considered corrupt. See more details on "Anti-Corruption" in the Annual Registration Statement/Annual Report 2022 (Form 56-1 One Report 2022) of the Company.

#### Anti-Fraud and Corruption Policy

<http://www.tpipolenepower.co.th/index.php/th/th-aboutus/pdpa-2>



#### Supplier Code of Conduct in procurement and employment

<http://www.tpipolenepower.co.th/index.php/th/th-aboutus/supplier-code-of-conduct-th>



#### Personal Data Protection Policy

<http://www.tpipolenepower.co.th/index.php/th/th-aboutus/pdpa>



#### International Human Rights Policy

<http://www.tpipolenepower.co.th/index.php/th/th-investment/social-responsibility-th>



## Performance <sup>(205-2)</sup>

In 2022, the Company's operating results are as follows:

1. Require all departments, especially those dealing with external parties, to assess risks linked to fraud and/or corruption, which 16 units were evaluated for risks linked to fraud accounting for 100%.
2. 2.54% of total of 1,143 employees attended the anti-corruption training courses and 100% of the employees acknowledged the Anti-Fraud and Corruption Policy
3. 90.38% of the total of 613 suppliers were aware of the organization's Anti-Fraud and Corruption Policy.
4. There were no lawsuits in which the organization has been sued for fraud and there were no corruption incidents with suppliers, or cooperation partners, including corruption incidents that occur within the organization.<sup>(205-3)</sup>

Board of Directors	Total number of people who have communicated the anti-corruption policies and practices of the organization (persons)	Percentage
Board of Directors	15	100
Level		
TOP EXECUTIVE	2	100
AVP/ VP/ SVP	9	100
ASST.DEPT. MGR.- DEPT. MGR.)	19	100
ASST.SUP.- SECTION MGR.	177	100
OFFICER	936	100
Total	1,143	100
Classified by place of operation		
Head office	71	100
Saraburi Power Plant	1,072	100
Total	1,143	100
Business Partner		
Supplier	570	93



### Information of committees and employees who have completed anti-corruption training courses<sup>(205-2)</sup>

Type	Number of persons who received training courses related to anti-corruption (persons)	Percentage of total employees
Board of Directors	15	100
Total number of employees 1,143 people		
<b>Classified by employee group</b>		
TOP EXECUTIVE	-	-
AVP/ VP/ SVP	-	-
ASST.DEPT. MGR.- DEPT. MGR.)	3	0.26
ASST.SUP.- SECTION MGR.	26	2.28
OFFICER	-	-
<b>Total</b>	<b>29</b>	<b>2.54</b>
<b>Classified by place of operation</b>		
Head office	12	1.05
Saraburi Plant	17	1.49
<b>Total</b>	<b>29</b>	<b>2.54</b>

## System Efficiency – Availability and Reliability

<sup>(3-3)</sup> The Company, as a leader in waste-to-energy power plant business and the largest renewable energy production in Thailand. One of its success factors in power plant business management is efficiency in power generation to reduce the cost of power generation of the Company, including the management of high efficiency of power generation, which will further reduce gas emissions causing climate change problems.

In the past, the Company focused on both research and development of technology and new innovations by developing technology and innovation in the Green Manufacturing process that focuses on increasing energy efficiency and capacity of renewable energy, focuses on planning to enhance the efficiency of power generation to the highest level and safety to support the demand for clean energy of the population that is likely to increase in the future, and focuses on reducing energy consumption from fossil fuels (103-1)

### Efficiency Enhancement Management Guidelines

The Company has a management approach to increase the efficiency of the entire organization by focusing on continuity of improvement and determines the direction in line with the BCG model for the sustainability of the Company's business operations as follows:

- **Determination of policies and plans**

The Company realizes the importance of the efficiency of power generation by adopting the BCG model as a guideline for its operations and setting a goal to operate the electricity business to become a clean and green energy company with the goal of eliminating the use of coal fuel in power generation and investment projects in new power plants as renewable energy power plants.

As well as establishing a policy to increase the efficiency of the waste fuel plants and power plants to be managed to increase efficiency along with investment plans, operational plans and targets for improving the plants to be in line with the policy.

To keep up with changes in line with global energy trends that are geared towards developing more clean energy through the integration of the strengths of affiliated businesses with management details, policy formulation and management plans for short, medium and long terms, committed to creating stability and sustainability in renewable energy power generation to be a part of reducing Thailand's greenhouse gas emissions.

- **Efficiency Enhancement Operations**

The Company studied the results of the past operations to study the weaknesses or seek potential as well as the introduction of new technologies to be applied for the development of operations to reduce problems, reduce losses and reduce costs in a variety of methods, including operations by the Company's team or from outside experts.

Operations are initiated by studying the original production or action data to modify and develop such as:

1. Machinery improvement by replacing old machines with the new ones such as the fuel feed system into the boiler and the cooling tower
2. Major maintenance to replace machinery or machine parts with new design such as replacing the boiler tube
3. Investment in the construction of a new plant for the existing power generation unit to increase production capacity and increase efficiency such as waste fuel production plants or boilers
4. Implementation of new projects to increase additional power generation capacity such as investing in a solar farm project
5. Investment in AI technology to control steam production for higher efficiency

- **Process to monitor the effectiveness of operations**

- Follow up on the implementation plan to improve the construction of the short- and medium-term coal consumption adjustment projects to be in accordance with the specified plans.
  - Set a target for coal consumption and determine the index of coal consumption which must be controlled to decrease.
  - Determine fuel consumption index per unit of energy production of both boilers and turbine generators.
  - Determine the availability and performance index of each boiler, turbine and generator. The Company has a project to invest in the installation of new boilers to increase the efficiency of power generation and to plan major maintenance to increase availability of the machinery.
  - Determine the index to measure the total cost of power generation per unit.
- Cooperation with machinery manufacturer to find solutions and optimizations, implementation of new developed technologies and extending the results of successful improvements to other machines by applying guidelines and results to procedures for employees, and continuously improving by learning from personnel within the organization and experts.
  - Guidelines for engaging with stakeholders related to management or reporting on the effectiveness of operations, cooperation with producers and waste suppliers to improve quality, reduce costs, and be sufficient for current and future use for sustainable growth for all parties by providing new sources of waste and investing in waste fuel production plants both internally and in collaboration with external waste suppliers.



### Operational Goals - Power System Efficiency

Short-term goals within 1-2 years	Long-term goal of at least 3 years
<ul style="list-style-type: none"> <li>• Reduce steam consumption per unit of power generation by 1.42%</li> <li>• Increase the efficiency of the water cooling system by changing the water distribution plate to reduce the cooling water temperature by 2 degrees Celsius, resulting in better power generation efficiency.</li> <li>• Use an AI system to control the combustion of the boiler to increase the steam production efficiency by 5%.</li> <li>• Improve the fuel feed system to increase combustion efficiency reduces energy consumption by 2.5%.</li> <li>• Improve the renewable fuel supply system to reduce the use of burning coal by 2.5%.</li> <li>• Improve waste fuel quality to reduce moisture content from 46.5% to less than 45%.</li> </ul>	<ul style="list-style-type: none"> <li>• Stop using coal as fuel for power generation by 2025.</li> <li>• Implement the plant efficiency continuous improvement with a plan to invest approximately 500 million baht within 5 years.</li> </ul>

### Operational Goals - Availability and Reliability of Power System

Short-term goals within 1-2 years	Long-term goal of at least 3 years
<ul style="list-style-type: none"> <li>• Increase the overall availability of the power plants by an average of more than 90% per year.</li> <li>• Increase performance of the power plant by an average of more than 85% per year.</li> </ul>	<ul style="list-style-type: none"> <li>• Increase boiler production capacity to increase availability and performance higher than the target of 95%.</li> <li>• Increase solar and wind power plants to enhance the capacity and stability of the system.</li> <li>• Reduce the impact of shutdown of the power plant from the electricity grid system to less than 2 times / year.</li> </ul>

### Management Guidelines

The Company has a management approach to increase the efficiency of the entire organization by focusing on continuity of improvement and determines the direction in line with the BCG model for the sustainability of the Company's business operations as follows:

- **Determination of policies and plans**

The Company realizes the importance of the efficiency of power generation by adopting the BCG model as a guideline for its operations and setting a goal to operate the electricity business to become a clean and green energy company with the goal of eliminating the use of coal fuel in power generation and investment projects in new power plants as renewable energy power plants.

As well as establishing a policy to increase the efficiency of the waste fuel plants and power plants to be managed to increase efficiency along with investment plans, operational plans and targets for improving the plants to be in line with the policy.

To keep up with changes in line with global energy trends that are geared towards developing more clean energy through the integration of the strengths of affiliated businesses with management details, policy formulation and management plans for short, medium and long terms, committed to creating stability and sustainability in renewable energy power generation to be a part of reducing Thailand's greenhouse gas emissions.

- **Key operations**

The Company studied the results of the past operations to study the weaknesses or seek potential as well as the introduction of new technologies to be applied for the development of operations to reduce problems, reduce losses and reduce costs in a variety of methods, including operations by the Company's team or from outside experts. Operations are initiated by studying the original production or action data to modify and develop such as:

1. Machinery improvement by replacing old machines with the new ones such as the fuel feed system into the boiler and the cooling tower
2. Major maintenance to replace machinery or machine parts with new design such as replacing the boiler tube
3. Investment in the construction of a new plant for the existing power generation unit to increase production capacity and increase efficiency such as waste fuel production plants or boilers
4. Implementation of new projects to increase additional power generation capacity such as investing in a solar farm project
5. Investment in AI technology to control steam production for higher efficiency
6. Investment in new boiler installations to increase efficiency in power generation and planning major maintenance to increase machine availability.

- **Process to monitor the effectiveness of operations**

1. Follow up on the implementation plan to improve the construction of the short- and medium-term coal consumption adjustment projects to be in accordance with the specified plans.
2. Set a target for coal consumption and determine the index of coal consumption which must be controlled to decrease.
3. Determine fuel consumption index per unit of energy production of both boilers and turbine generators.
4. Determine the availability and performance index of each boiler, turbine and generator. The Company has a project to invest in the installation of new boilers to increase the efficiency of power generation and to plan major maintenance to increase availability of the machinery.
5. Determine the index to measure the total cost of power generation per unit.

In addition, the Company has forged cooperation with machine manufacturers to find solutions and optimizations, implementation of new developed technologies and extending the results of successful improvements to other machines by applying guidelines and results to procedures for employees, and continuously improving by learning from personnel within the organization and experts, as well as engaging with stakeholders related to management or reporting on the effectiveness of operations, cooperation with producers and waste suppliers to improve quality, reducing costs, and be sufficient for current and future use for sustainable growth for all parties by providing new sources of waste and investing in waste fuel production plants both internally and in collaboration with external waste suppliers.

## Performance (EU12)

- Increase the efficiency of the water cooling system. In 2022 the Company had completely changed 7 units of water cooling, 2 units are in process, and 2 units are in process of procurement. By changing the water distribution plate, it allows the cooling water temperature to decrease by 2-4 degrees celsius, improving the efficiency of power generation and reducing the amount of steam consumption per unit of power generation in 2022 by 1.42% compared to 2021.

- Use the AI system to control the combustion of the boiler to increase efficiency. In 2023, there are 5 boilers with an investment of approximately 70 million baht.
- Improve alternative fuel feeding system, from formerly using screw conveyor causing compaction to using vibration conveying to make fuel dispersed, reduce clogging and quick combustion, increasing combustion efficiency, reduce energy consumption by 2.9% in 2022 compared to 2021.
- Improve the alternative fuel supply system to use more coal by using more alternative fuels causes the ratio of coal to alternative fuels in power generation in 2022 to decrease by 2.8% compared to 2021.
- Improve the quality of waste fuel to reduce moisture, the drainage system from the renewable fuel pile, increasing storage areas to increase the rest period, and allowing the moisture to decrease from 46.5% to 44 - 45% at present.
- Terminate to using coal as fuel to generate electricity by starting a project to build 2 boilers using alternative fuels that will be completed in 2023 and 3 boilers will be completed in 2026, making it possible to use alternative fuels to generate all electricity in 2027. It will invest in improving the production of renewable fuels that have a higher demand.
- The Company plans maintenance work for the boiler and improves the replacement of materials to extend the life of the boiler, making the overall machine availability of the average power plant equal to 95.40% in 2022.
- The Company improves the fuel feeding system and combustion control with AI, as well as cooling system to increase the efficiency of power generation, making the overall machine performance of the average power plant equal to 87.30% in 2022.
- Reduce the impact of shutdown of the power plant from the power utility's transmission system by coordinating with the power utility in terms of transmission line maintenance to reduce power outages, including shortening the time to restore electricity quickly and improve the system inside the power plants to be able to immediately return the power supply

## Upcoming Investment Projects

1. Solid Waste Power Plant Project, Songkhla Provincial Administrative Organization Installed capacity of 9.9 megawatts, power purchase contract period of 20 years with an investment of approximately 2,000 million baht, expected to start generating electricity for sale in 2023.
2. Nakhon Ratchasima Municipal Solid Waste Power Plant Project, installed capacity of 9.9 megawatts, contracted power purchase period of 20 years with an investment of approximately 2,000 million baht, expected to start generating electricity for sale in 2024.
3. Boiler improvement project for the coal-fired power plant TG7(70MW) to change to a waste-to-energy power plant with wastefuel instead of 100% of coal with an investment of approximately 1,000 million baht. Phase 1 is expected to be completed in early 2023 and Phase 2 is expected to be completed around mid-2023, expanding production capacity to 70 megawatts.
4. Boiler improvement project of TG8 coal-fired power plant (150MW) which will use waste fuel to replace coal with an investment of approximately 3,000 million baht, expected to be completed Phase 1 in 2022 and can replace coal by 25% and Phase 2 in 2025 will be able to stop the use of coal for the total amount of power generation. In addition to reducing the cost of power generation, it also reduces coal imports and greenhouse gas emissions.
5. Investment project to expand waste fuel production capacity (Plant 3) by another 5 production lines (14-18) with the installed capacity of 5,760 tons per day to supply waste fuel to support the power plants that will change from coal fuel to use waste fuel instead with an investment of approximately 1,100 million baht, expected to be completed in 2024.
6. Investment in Solar Farm Project with a capacity of 61.226 megawatts, expected to be completed in 2024 with an investment cost of approximately 1,786 million baht.

## Customer Satisfaction

The Company sells electricity to 2 customers, including the Electricity Generating Authority of Thailand and TPI Polene Cement Plants TPI Polene Public Company Limited, Saraburi Province, from eight commercially operated power plants, all of which are located in Kaeng Khoi District, Saraburi Province and in the same area as the cement plants of TPI Polene Plc. There are boilers and power generation of each type with a total installed capacity of 440 megawatts, divided into waste-to-energy power plants with a total installed capacity of 180 megawatts (with 163 megawatts of electricity sold to the Electricity Generating Authority of Thailand) and the remaining installed capacity of 260 megawatts (with an authorized capacity of 230 megawatts and electricity sold to TPI Polene Plc.). The Company will evaluate the satisfaction of the Company's power plants from the Electricity Generating Authority of Thailand and TPI Polene Public Company Limited twice a year in the following areas:

1. Power quality
2. Power system reliability
3. Convenience and speed of service
4. Behavior and etiquette of service personnel
5. Time for implementation in accordance with standard regulations

In addition, the Company has municipal solid waste disposal plants to produce waste fuel for its boilers in generating electricity of the Company and sell to TPI Polene Plc. to replace coal fuel of cement plants in Saraburi Province. The Company will assess the satisfaction of the Company's waste fuel plants with TPI Polene Plc. twice a year from satisfaction in the following areas:

1. Calorific value of waste fuel
2. Controlling the chloride value of waste fuels according to the specified standards.
3. Controlling the moisture content of waste fuel according to specified standards.
4. Sizes of waste fuel according to the specified standards.
5. Liaising with waste fuel plants.
6. Speed of solving problems occurring in the waste fuel production process.
7. Solutions for problems occurring in the waste fuel plants.
8. Speed of providing production information
9. Clarity and completeness of production information
10. Overall satisfaction in the waste fuel plants.

## Management Guidelines

The Company has a management guideline to ensure that customers of power plants and customers of waste fuel products are satisfied and confident in the Company's products by focusing on maintaining the quality of products and services to meet the standards that meet the needs of customers to achieve a high level of customer satisfaction.

## Operational Goals

Short-term goals within 1-2 years	Long-term goal of at least 3 years
<ul style="list-style-type: none"> <li>• Satisfaction of power plant customers (2 of which are EGAT and TPI Polene Plc.) not less than 80% per year.</li> <li>• Satisfaction of waste fuel products customers (TPI Polene Plc.) not less than 80% per year</li> </ul>	<ul style="list-style-type: none"> <li>• Satisfaction of power plant customers (2 of which are EGAT and TPI Polene Plc.) not less than 90% per year.</li> <li>• Satisfaction of waste fuel products customers (TPI Polene Plc.) not less than 90% per year.</li> </ul>



## Performance

- Overall satisfaction assessment results of power plant customers (2 of which are EGAT and TPI Polene Plc.) in all 5 aspects received an average score of 100%.
- Overall satisfaction assessment results of customers of waste fuel plants with TPI Polene Plc. in all 10 aspects received an average score of 95.83%.

The Company has used the results of the satisfaction assessment of power plant customers and customers of waste fuel products to develop its business processes by improving the efficiency of power generation and waste fuel production to maintain the Company's standards to consistently achieve a high level of customer satisfaction.

## Innovation Technology and Service

<sup>(3-3)</sup> Since the growth direction of green energy production and renewable energy is the trend of global growth, technologies are constantly evolving and changing rapidly, as well as more new entrepreneurs entering the renewable energy business competition. In addition to increasing the efficiency of business operations, introduction of technology and innovation raises the level of business operations.

The Company's waste-to-energy power generation business requires a large amount of waste fuel to be used as fuel and the demand continues to increase. In addition, the use of waste as energy has limitations in its use due to variability in waste characteristics and high moisture content, making it difficult for machines to effectively sort waste with highly different services to meet the standards that meet the needs of customers to achieve a high level of customer satisfaction.

## Operational Goals

Short-term goals within 1-2 years	Long-term goal of at least 3 years
<ul style="list-style-type: none"> <li>• Use AI technology to increase production efficiency.</li> <li>• Improve fuel production to reduce production costs.</li> <li>• Develop renewable energy power plant technologies in addition to waste power plants, including sunlight, energy storage and wind power.</li> </ul>	<ul style="list-style-type: none"> <li>• Study technology to advance in the industry Renewable energy such as batteries (Energy Storage system ESS)</li> <li>• Carbon Capture Technology</li> </ul>

In the past, the Company has developed or improved machines to have a production process suitable for actual working conditions in order to be able to carry out efficient sorting and have low operating and maintenance costs, be used appropriately with the conditions of the work site to install machines in various waste sources in order to be able to expand the scope of operations, build a network to supply raw materials and reduce operating costs, as well as to manage and solve waste in certain areas. If the machine to be installed cannot be operated, it will cause the problem of residual waste and poor quality sorting waste as well as high operating costs that do not incentivize entrepreneurs to participate in the supply chain. The Company applies a win-win policy whereby each waste source participating in the project must achieve the goal of solving the waste problem in the areas and being able to create added value in converting waste into fuel for the operators while the Company will get quality raw materials and sufficient quantity to meet the demand.

- Proceed to install waste sorting machines at waste sources in many provinces, about 16 locations, and consider expanding in the future in order to constantly deliver quality raw materials. This creates added value for each waste source, as well as creates incentives for waste sources to participate in the procurement of raw materials to be delivered to the Company, which leads to a sustainable solution to the problem of waste disposal for waste sources.



- The Company invests in waste sorting machines, with operators renting machines from the Company. The sorted waste will be delivered to the Company's power plants only and the operators will repay the revenue from waste fuel sales to the Company in the form of machinery rental, which helps the operators with funds and is a win-win situation.
- The Company has developed waste separation technology, redesigned the process line, and improved imported machinery together with overseas machinery suppliers, as well as developing domestic production of machinery by continuously testing and improving. The Company also arranges a team of engineers to coordinate and work with personnel working at waste separation plants in certain locations in order to be aware of the problems and use them to improve and develop machines. In addition, the Company also sends information and problems, including suggestions to its overseas machinery suppliers in order to develop the technology.

The Company has the policy to support the use of technology and innovation for use in the Company's business, both innovation development from personnel within the organization or importing technology and innovation from manufacturers or experts, focusing on:

- Investment in machinery or new projects that use modern technology and can generate returns worth the investment.
- Technology that can reduce emissions or eliminate greenhouse gases.
- Technology that can reduce the impact on the environment such as reducing emissions or recycling waste from production
- Implementation of combustion control technology within the boiler using an AI system to increase efficiency
- Expansion of performance of technology and innovations that have been studied and developed for business use
- Dissemination and transfer of technology and innovation to the supply chain or relevant stakeholders

## Operational Plan

- Recycle Bottom Ash from the CFB boiler.
- Use newly developed and highly efficient solar panel technology.
- Study wind turbine power generation.
- Develop a fuel feeding system to increase efficiency.
- Implement the expansion of successful innovations to be used in practice.
- Study of energy storage technology.
- Study on carbon storage technology.

## Performance

- Install a machine to sort bottom ash from CFB which can save 11,035,200 baht per year.
- Use solar panel technology in the project the first one in the country to use the new technology for maximum efficiency. It is planned to be installed in 2023-2024.
- Sign an agreement for trial installation of a wind turbine as a pilot project, which will be able to carry out the test around the end of 2023.
- Develop metal sorting machinery in the waste fuel production process which increases efficiency and reduces metal problems in waste fuel, improves boiler performance and has been extended to Line 12, along with a plan to complete all lines by 2023.
- Implement the AI boiler combustion control system for trial at Boiler, which is expected to be completed by 2023, along with a plan to expand the system to another 4 boilers.

## Research and Development

The Company has established a policy to support the creation of added value to municipal solid waste by producing it as waste fuel. However, power generation from waste energy in Thailand still has many limitations due to the characteristics of municipal waste that are different from those in the countries that have successfully converted waste into energy and the problems of waste management from production, waste management, fly ash, and heavy ash generated from waste fuels to be developed for maximum benefit from recycling, as well as research and development on other topics such as agriculture and environmental management which are relevant to the communities surrounding the plants and the Company's stakeholders. In this regard, the Company continues to focus on research and development of cutting-edge technology to ensure reliable power supply efficiency, promote sustainable development, reduce environmental impacts and build credibility for surrounding communities.

### Operational Goals

Short-term goals within 1-2 years	Long-term goal of at least 3 years
<ul style="list-style-type: none"> <li>• Develop machinery used in the power generation process</li> <li>• Develop utilization of heavy ash in power plants for industrial and environmental utilization</li> <li>• Research budget support for research agencies and educational institutes at least 2 projects per year</li> </ul>	<ul style="list-style-type: none"> <li>• Encourage the use of research to bring economic benefits</li> <li>• Encourage the creation of both internal and external research units and outsources to increase both quantitatively and qualitatively.</li> </ul>

### Management Guidelines

The Company strives to strengthen its competitiveness and maintain its technological advantage by investing in technology and process development to increase operational efficiency and reduce environmental impact as much as possible.

In addition, the fact that the Company entered into a sales and service agreement with TPI Polene Plc. with research and development services from TPI Polene Plc. is to upgrade the technology and expertise of the Company's personnel. TPI Polene Plc. has a research and development team of more than 150 people.

The Company has jointly developed and supported research from a team and hired professors from universities in Thailand such as Chulalongkorn University, Suranaree University of Technology, and Kasetsart University to support research and development, product development, machinery development, and technology developments for production activities, environmental protection as well as the Company's personnel training.

In addition, the Company also provides funding to support research through Fund for Research Projects for Community Career Development and Environmental Conservation TPI Polene Power Public Company Limited provides research from researchers from educational institutions. In order to continue and develop research results that can be used for the benefit of both the Company and the participation.

## Performance (former EU8)

In 2022, the Company supported research funds with an investment value of 1.10 million baht and sent a team of company personnel to participate in research with the following research topics:

- The Innovative Use of Bottom Ash Mixed Concrete on Seadome for Marine Habitat
- The Innovative Use of Bottom Ash on Seadome for Marine Habitat of Prince of Songkla University by Asst. Prof. Payom Rattanamanee, research project leader and research team: The objectives are to study, analyze, and design details of the sea dome for the restoration of fishery resources as well as to study the utilization of the heavy ash residue from the power plant. Based on such research, the Company can sign a cooperation agreement with relevant public agencies such as the Department of Marine and Coastal Resources, Department of Fisheries, and Provincial Administrative Organization, in order to practically drive the project.
- A study on value addition of bottom ash and fly ash used as construction materials (TPI Cement Plant) by Assistant Professor Dr. Weerachai Artharn, School of Engineering, Suranaree University of Technology and the research team: The objectives are to use resources efficiently along with creating added value of by-product in the production process, reduce the use of resources, and conduct environmental preservation according to the Green Industrial Policy by studying the use of heavy ash and fly ash from waste fuels as construction materials and increasing the value of heavy ash and fly ash.
- Research on Heavy Metals in Bottom Ash Concrete by Associate Professor Dr. Thaniya Kasol, Department of Civil and Environmental Engineering, Faculty of Engineering, Prince of Songkhla University: The objective is to study and research-heavy metals in concrete for use in construction and civil engineering works. It is also a reuse of industrial waste without damaging the environment.

## The process to monitor the effectiveness of operations

The Company monitors the effectiveness of research operations by submitting research reports and holding meetings with research teams to assess progress, acknowledgment, and involvement in problem-solving, as well as continual research planning to expand the research area or to enter into research details in order for researches to produce research results with confidence at a level to expand into operations with relevant agencies and acceptable as a guideline to apply the research results to the policies and procedures of the same organization and industry.



## Economic Performance

<sup>(3-3)</sup> Creating economic value through an environmentally friendly power generation business model is the key to creating shared values between the Company and society to grow together sustainably and efficiently. In 2022, the Company formulated important business strategies such as strategies to increase revenue, improve electricity production efficiency to increase the maximum capacity utilization rate, increase the amount of electricity sold, and reduce production costs, and growth by expanding investment to generate good performance of the Company which leads to the distribution of income and benefits to all groups of stakeholders of the Company.

### Management Guidelines

- Management of power purchase agreements for power plants with current power purchase agreements as there are three current power purchase agreements with the Electricity Generating Authority of Thailand and it is sold to the cement plants with different prices in each agreement. For example, a selling electricity price per unit for the 90 MW project has an adder included in the base electricity cost. Therefore, it plans to manage to sell electricity to the full agreement in this part. The second part is the electricity sales agreement with the cement plants, which has the second highest electricity rate, but the cost of coal-fired power generation is higher than that of waste-fired power plants and the 18 and 55 MW power sale contracts where the adder has already expired since the electricity tariff is based on the TOU electricity scheme, the price of electricity during the peak time will be higher than the off-peak period. Therefore, it is necessary to plan the operation of the power plants in order to maximize revenue in case of limited production due to boiler maintenance shutdown and plan to reduce electricity distribution during off-peak periods in case of being affected by coal fuel cost price for profit optimum with the Company.
- Increasing the amount of electricity production and distribution as the adder in the electricity agreements with PEA in 2022 starts to expire and the cost of coal prices has increased very high. The plans for major maintenance have resulted in a decrease in power generation and electricity sales. In 2023, the electricity rate has increased due to the increase in the variable FT electricity. Therefore, production planning in 2023 is to operate the power plants with more production capacity to generate more profit than in 2022.
- Reducing production costs, which means fuel costs, fuel efficiency in power generation, and maintenance costs, has organized a plan of action in order for business operations to establish a clear goal of reducing total production costs by at least 10% by:
  - Reducing fuel plants will be carried out to increase the proportion of municipal waste and low-quality sorting waste, which will reduce the overall raw material purchase cost.
  - Using a higher proportion of low-quality waste fuels in order to reduce the cost of steam production per unit. The Company has implemented grate incinerators and boilers that support unsorted waste and low-quality waste, making it a management guideline to reduce fuel costs and power generation costs.
  - Applying the combustion control system, if implemented, can increase the efficiency of power generation, expected to reduce the cost of power generation in AI-powered generating units by approximately 5%.
  - Using waste to replace the use of coal has implemented a project for coal-fired boilers that can replace boiler 6 by completely eliminating coal-using waste, which has been completed in early 2023.
  - Reducing coal consumption with alternative fuels from waste, wood, and other renewable fuels in boilers 8, which can reduce coal consumption by 10-15%.
  - Maintenance costs by planning major maintenance shutdowns continuously from 2022, causing investment in major renovations of the boilers and allowing for reduced long-term maintenance costs for power plants and increase efficiency in power generation.

- Investment projects to increase the amount of electricity sold

The Company has made investments to expand production capacity and to expand and procure additional power sales agreements with the procedures as follows:

- Waste-to-energy power plant project in Songkhla Province with a capacity of 7.92 megawatts is in the process of preparing a power purchase agreement with the Provincial Electricity Authority and preparing a COP environmental impact report to apply for a construction permit. It is expected to be completed around April 2023 and the construction period is approximately 16 months.
- Nakhon Ratchasima municipal power plant project with a capacity of 9.9 megawatts: The Company was announced as the winner of the selection process. It is in the process of signing an agreement with the Municipality to proceed with the preparation of a power purchase agreement with the Provincial Electricity Authority and preparing a COP environmental impact report.
- Solar farm project with a capacity of 61.22 megawatts in the Saraburi plant areas: The agreement has been signed for construction and is currently in the process of preparing an environmental impact report COP. The construction is expected to be completed by the end of 2023 and fully completed in 2024.
- Renewable energy power projects where the Company participated in the bidding of 10 wind power plants in Chana District, Songkhla Province, with a total electricity sales volume of 277.88 megawatts. The selection results will be announced in March 2023.

The Company has analyzed the operating results to find causes and solutions or improvements so that the company can eliminate weaknesses in business operations as well as find opportunities to increase revenue and increase profitability by setting goals in each sub-unit, measuring effectiveness, and presenting information and communicating results to employees to stay informed and guidelines to operate in the same direction to be a mechanism for the implementation to achieve the Company's goals.

It also looks for opportunities to expand according to the direction of Thailand's Power Development Plan (PDP) and seeks cooperation and business alliances to support the Company's growth.

## Performance in 2022 <sup>(201-1)</sup>

In 2022, the Company distributes the economic value directly to groups of stakeholders, resulting in the accumulated economic value of 438.81 million baht with the following details:

Economic Description	Million baht*
<b>(A) Direct Economic Value Generated</b>	
Revenues	10,611.26
<b>(B) Direct Economic Value Distributed</b>	
Operating costs	7,342.92
Employee wages and benefits	58.21
Payments to providers of capital	2,701.67
Payments to government	21.10
Community investments	48.55
<b>Total</b>	<b>10,172.45</b>
<b>(C) Economic value retained (A-B)</b>	<b>438.81</b>

Note : \* Based on the Company's separate financial statements

In this regard, the Company has established guidelines for operations related to the obligations of the benefit plans and employee retirement plans, who are key stakeholders and the main driving force of the organization<sup>(201-3)</sup>, consisting of:

- The Company contributes 3.0% of each employee's salary to the Provident Fund, and employees are required to contribute at least 3.0% of their salary. In May 2016, the Company started to contribute money to the Provident Fund and for the year ended December 31, 2022, the Company recognized expenses related to the Provident Fund in the amount of 9,957,670 baht, which covers 100% of employees who are subject to a contribution agreement.
- Retirement plan according to the work regulations of the Company, Section 9, Part 1, Clause 3) when the Company determines that employees who have reached the age of 60 and will retire from being an employee of the Company on January 1 of the next year while being employees with potential and wishing to continue their job, the Company may consider them to continue working with the approval of top executives. In 2022, there are 3 employees who have been considered from the employment-after-retirement program, working as permanent employees.

At the end of 2022, the Company estimated employee benefit obligations and retirement plans of 146,622,227.26 baht and paid severance payments to employees under the Labor Protection Act B.E. 2541 and the Labor Protection Act (No. 7) B.E. 2562 in the total amount of 7,694,667 baht.

## Rights and benefits from investment promotion <sup>(201-4)</sup>

The Company has received investment promotion privileges under the Investment Promotion Act B.E. 2520 (as amended) from the Board of Investment under the conditions specified in the investment promotion certificate, power plants, waste fuel plants, and natural gas service stations (NGV), and received the main privileges from investment promotions, including the following privileges:

- Permission to own land to operate a business promoted as the Board of Investment deems appropriate;
- Exemption from import duty on machinery as approved by the Board of Investment;
- Exemption from corporate income tax from net profit derived from the promoted activity for 8 years from the first day the promoted business earns operating income;
- 50% reduction in the corporate income tax rate from the net profit from the regular rate for 5 years after the expiration date of the corporate income tax exemption period; and
- Exemption from withholding tax on dividends paid from the profit of the promoted business for 8 years.



As of December 31, 2022, the Company's investment promotion privileges for power plants, waste fuel plants, and natural gas (NGV) stations, with the total value of all support and promotion amounting to 2,807.48 million baht, which can be summarized as follows:

Power Plants/Natural Gas Stations (NGV)	First month with earnings from the promoted business	End of full income tax exemption	50% reduction in the income tax rate has ended.
WH-40MW Power Plant	June 2009	End of exemption	None(1)
Waste-to-Energy Power Plant-20MW	June 2009	End of exemption	None(1)
Waste-to-Energy Power Plant-60MW (TG5)	September 2015	September 2023	September 2028
WH-30MW Power Plant	January 2016	January 2024	None(1)
Waste fuel Power Plant-70MW	May 2018	May 2026	None(1)
150MW Coal-fired Power Plant	January 2019	January 2028	None(1)
Waste Fuel Plant	July 2011	End of exemption	June 2024

Notes: (1) Not entitled to 50% reduction in the corporate income tax rate from the net profit from the regular rate for 5 years after the expiration of the corporate income tax exemption period.

In 2022, the Company received corporate tax exemption from BOI business in the amount of 536,748,512.19 baht.





## Risk and Crisis Management

<sup>(3-3)</sup> Effective risk and crisis management will result in the organization being able to move forward continuously and able to effectively overcome the risk factors that are like obstacles according to the Company's business of electricity production and distribution of electricity to major power purchasers, namely Electricity Generating Authority of Thailand in a small power producer (SPP) agreement, the Provincial Electricity Authority in a very small power producer (VSPP) agreement, and sells electricity to TPI Polene Cement Plants, Saraburi Province, TPI Polene Plc. As a result of such business operations, risk and crisis management is regarded as a key factor for business success.

### Operational Goals

Short-term goals within 1-2 years	Long-term goal of at least 3 years
<ul style="list-style-type: none"> <li>• Establish plan for assessing and managing risks arising from both internal and external factors of the Company</li> <li>• Prepare contingency plans in different cases and prepare and review plans and systems.</li> <li>• Risk management from rising coal fuel prices</li> <li>• Risk management from increasing demand for waste and more competitors in demand for waste</li> </ul>	<ul style="list-style-type: none"> <li>• Seek opportunities to produce renewable electricity without fuel such as wind and solar power</li> <li>• Increase renewable fuel production such as planting energy trees or Napier grass as alternative fuels for some waste fuels.</li> <li>• Be a direct contractor with the state for waste collection</li> <li>• Procure contractors to supply more waste</li> <li>• Reduce or eliminate the use of coal to reduce price risk factors</li> </ul>

### Management

The Company conducts risk management and reviews risks by considering the changing environment factors along with business operations on the basis of sustainable development in economic, social, and environmental dimensions. The Company has established a risk management policy as follows:

- Promote a risk management culture to foster a shared understanding, awareness, and accountability of risk, its control, and its impact on the company in its management processes and operations across the Company.
- Establish processes, guidelines, and measures for risk management that are internationally appropriate and adequate, including identification, analysis, assessment, prioritization, management, control, monitoring, reporting, evaluation, and ongoing and consistent information about risks, and practices throughout the Company.
- Measure the risks in terms of quality, such as reputation, image of the Company and quantitative, such as loss results, decrease in income, cost increase by considering the potential opportunities and impacts.
- Set a risk limit for the damage that may occur to be within the level that the Company can accept and specify events or risk levels that are warning signs for operators to take certain actions in order not to exceed the specified risk limit.
- Have written operating regulations for executives and practitioners practice which is a risk control from operations.

## Risk Management

The Company has a risk management process under the Company's policy. The Committee of Sponsoring Organizations of the Treadway Commission - Enterprise Risk Management (COSO-ERM) has also been adopted as a framework for the Company's risk management in order to conduct business in accordance with the sustainable development goals. The COSO-ERM guidelines consist of eight elements as follows:

1. Internal Environment
2. Objective Setting
3. Event Identification
4. Risk Assessment
5. Risk Response
6. Control Activities
7. Information & Communication
8. Monitoring

## Follow-up and Review

In 2022, the Company conducted risk analysis and response to risk to an acceptable level by taking into account the costs and benefits that can be recovered from the implementation of joint risk control/response activities in order for the organization to be able to achieve the goals as defined by categorizing the risks into six categories consisting of :

Type of Risk	Risk Control Measures	Overall Risk Assessment Results
Strategic risk is arising from the failure to operate according to the planned business plan in accordance with internal and external factors	(1) Risk management of the use of waste fuel energy to replace coal in reducing production costs which must manage the amount and cost of waste procurement Including moisture properties of waste. (2) Investment in projects that are environmentally friendly (3) Investment in projects and businesses with high growth potential in the future. Such projects must conduct a feasibility study and analyze the sensitivity of key factors before investing as well as follow up on investment progress in order not to face the risk of unrealistic return on investment according to the target, the risk of project implementation delays beyond the specified plan, and the investment is higher than the set budget. (4) Suitable sources of funding for expanding projects	High
Operational risk is caused by internal operational processes or external factors that affect revenue and operating costs	Cost control and raw material procurement to be sufficient and within the budget limit; short-term and long-term agreements to purchase coal to be sufficient for business operations and without interruption in operations; controlling the operation of documents; and recording data in the system to be accurate and efficient.	High

Type of Risk	Risk Control Measures	Overall Risk Assessment Results
Financial risk is the prudent use of financial policies within a set budget in order to obtain appropriate returns, and sufficient cash flow to operate the business	Monitoring and controlling management of financial risks such as risk from exchange rate volatility, interest rates, liquidity adequacy, revolving credit lines, long-term credit, and debentures by managing in accordance with the changing trends in the exchangerate market, the money market, and the capital market	Very High
Compliance risk is failure to comply with rules, regulations, relevant regulations or existing rules that are inappropriate, out of date, obstructing operations, and may result in punishment according to the law	The Company must have an agency strictly supervising compliance with government regulations and policies, including corruption, and operates in accordance with the regulations of the Securities and Exchange Commission, and the Stock Exchange of Thailand	High
Environmental risk is caused by emissions from the production process affecting the environment.	Management of the Company's production process without causing dust, chemical residues, and wastewater through risk control measures such as power generation machinery systems, inspection personnel, and controlling environmental pollution, tools used to measure toxic substances, and preparing environmental impact assessment reports and sending them to government agencies.	Moderate
Social risk is in human resource management, safety, occupational health, and the working environment, including violations of human rights,	The Company has a policy to enhance knowledge and skills, as well as provide appropriate compensation to employees, respect human rights with regard to benefits and equality, provide safety operating manuals according to industry standards.  In addition, it provides complaint channels and establishes a welfare committee to oversee the safety and health of employees.	Moderate

Note: Risk scores are divided into 4 levels as follows:

Overall Risk Level	Score	Definition
Low	1 - 2	Acceptable level: No need to control risks or additional management
Moderate	3 - 6	Acceptable level: It must be controlled to prevent the risk from turning to unacceptable levels.
High	7 - 12	Unacceptable level: It needs to manage the risk to remain at an acceptable level.
Very High	13 - 25	Unacceptable level: It needs to be urgently managed to reach an acceptable level immediately.

## Emerging Risk<sup>(201-2)</sup>

The Company has identified new risks in 2023 as well as identified measures and management guidelines as follows.

### 1. Cyber Threats and Personal Information Risks

The Company attaches importance to cyber security to prevent risks arising from the loss of important data that will affect the credibility and business operations of the Company and has a personal data protection policy to provide a framework for managing personal data to ensure that customers, shareholders, employees and stakeholders will receive complete protection in accordance with the Personal Data Protection Act B.E. 2562 (PDPA)

The Company has followed up and prepared to deal with this emerging risk by establishing a team responsible for overseeing and conducting system tests to be able to protect against cyber threats. In 2022, a training course, “Personal Data Protection Act B.E. 2562”, was organized for two times on February 24, 2022, and April 28, 2022, in order to thoroughly educate employees about personal data protection.

### 2. Risk of Diminishing Returns

As two power purchase agreements (with Adder) with the Electricity Generating Authority of Thailand, the sales volume of 73 megawatts of electricity, expired in January and August 2022, and the other agreement with the 90 MW will expire in April 2025, which will result in a decrease in EBITDA. If the Company is unable to earn income from new projects compensation, it will result in a decrease in the Company’s future operating results.

However, the Company is in the process of constructing a solar power plant and a wind power plant in Saraburi Province with a total installed capacity of approximately 49.9 MW and the solar power plant in Songkhla has an installed capacity of approximately 9.9 MW, all 3 plants are expected to start operating commercially within 2023. In addition, the waste disposal and RDF production business will be able to increase production capacity, resulting in an increase in “carbon credits” from reducing coal consumption according to the 5-10 year plan that aims to produce electricity from 100% alternative energy and increasing waste disposal every year. It is expected that when Thailand’s carbon credit trading law is clarified, the Company’s carbon credits will also significantly increase.

For details of risk management, see more details on the Company’s Form 56-1 One Report for the year 2022 under Risk Management.

In addition, the Company also emphasizes on promoting a culture of risk management by setting a policy from the management and organized the training course “Risk Management” to provide knowledge and understanding to employees on risk management by organizing training in every year at least twice a year for employees at all levels to create knowledge, participation, and systematic risk management.



## Information Security<sup>(3-3)</sup>

The Company is well aware of current cyber threats caused by malicious people or hackers through methods and tools to cause damage to information systems or data theft in forms becoming more and more complicated day by day. Lack of efficient operations may cause widespread impact and damage to the Company, its affiliates, business partners, including agencies that contact the Company and its affiliates, both in terms of trade information, important information about the Company, and related persons including the reputation of the Company and its affiliates.

Information security is one of the most important issues in power business operations as information in the Company's information system is commercially sensitive. It is of great importance in determining the Company's commercial strategy. Leakage of information will seriously affect Company's reputation, credibility, income, as well as important stakeholders of the company.

### Operational Goals

- Prevent or mitigate the damage caused by cyber threats by taking preventive and vigilant actions to minimize the likelihood of their occurrence.
- Raise cyber security awareness for employees at all levels (100%) to promote knowledge to keep up with various forms of cyber threats to reduce the risk of cyber threats in the operations under the Company's information systems and in the daily lives of employees.

### Management Guidelines

The Company has set a security policy for the information system and local companies (IT Security) by requiring a regular review of the cyber threat protection system, including the development and improvement of cyber protection systems to keep up with cyber threats in which the methods and severity of threats to information systems are continuously developed. The details are as follows:

#### 1. Communication systems and networks outside the Company and its affiliates

The Company installs a firewall to separate the scope of the external and internal network systems of the Company and its affiliates to prevent attacks from malicious persons or hackers on the information systems of the Company and its affiliates from outside the Company.

#### 2. Host computer and client computer

- 2.1 Close vulnerabilities in the operating system of the server and client computers that may affect cyber threats (Cyber Security Patching for Computer Operating System).
- 2.2 Install Endpoint Security to prevent computer viruses and malicious programs.

#### 3. Connection to the Company's information system from a branch office of the Company or an outside agency

The Company requires a Virtual Private Network or VPN to connect to the Company's work system for security in sending/receiving data between branch offices or external agencies to the Company's information system.

#### 4. Knowledge Base

- 4.1 The information management team regularly conducts cyber security studies.
- 4.2 Basic Cyber Security Awareness Training is a guideline for employees to work and use information systems to be safe from cyber threats.

#### 5. Review of information systems by external auditors:

The Company receives annual information system reviews from external auditors in accordance with standards and frameworks or standards for reviewing information systems such as ITIL, and ISO27001, makes improvements, and fixes the flaws found from the reviews to ensure that the information system is safe.

However, the Company is well aware of the safeguarding of internal information to prevent the leakage of such information, leading to significant damage at various levels. Therefore, the Company's directors, executives, and employees at all levels must maintain inside information in accordance with the Company's practice and the Company has established a Personal Data Protection Policy in 2021 to be a guideline for employees at all levels to protect the personal information of customers, suppliers, employees, and related persons to use information in accordance with the provisions of the Act. This covers the process of storing, collecting, and disclosing information securely, including allowing the owner of the information to have the right to access, inspect, and withdraw consent for that information at any time. Any person who violates the Company's policies and practices shall be subject to the highest rate of punishment, including prosecution to the fullest, and full compensation for damages incurred at the rate specified by law.

## Performance<sup>(418-1)</sup>

Types of Data Leaks	Management Methods and Solutions	Number of Leaks		
		2020	2021	2022
Unlawful access to information in information systems from unauthorized persons	Regularly review information systems by external information system auditors every year.	0	0	0
Access to information in the information system by hackers	Protected by information devices such as Firewall/IPS and Endpoint Security at the server and user machines and regularly renew the service agreement.	0	0	0

In the past year 2022, the Company has not received any complaints about personal data breaches.

## Future Action Plan

1. The Company conducts a cybersecurity review of the Company by conducting a Cyber Security Assessment to find cyber vulnerabilities and find methods to improve and develop additional cyber protection systems.
2. The Company implements a knowledge base system on cyber threats and prevention guidelines for use in disseminating knowledge to users of information systems of the Company and its affiliates.
3. The Company procures or hire a Cyber Security Operation Team for 24-hour surveillance and establish a Cyber Security Operation Center (CSOC) to be a cyber-threat surveillance unit.

# 08

## About This Report<sup>(2-3)</sup>



TPI Polene Power Public Company Limited has prepared the Sustainability Report for the year 2022 based on the reporting disclosure principles in accordance with GRI International Reporting Standards or GRI Standards 2021 to disclose management guidelines and sustainability performance covering economic, environmental, social, and the human rights dimensions. The details of the Sustainability Report are as follows:

Level of information disclosed	TPIPP has reported in accordance with the GRI Standards for the period from 1 January 2022 – 31 December 2022
Reporting cycle	Yearly
Reporting scope (2-2)	Disclosure of information in this report is within the scope of reporting only within TPI Polene Power Public Company Limited, excluding its subsidiaries and associated companies.
Providing assurance (2-5)	TPI Polene Power Public Company Limited does not have a policy to procure a third party for assurance.
Previous report	Prepare the Sustainability Report 2021 of TPI Polene Power Public Company Limited





## GRI Content index

Statement of use	TPIPP has reported in accordance with the GRI Standards for the period from 1 January 2022 – 31 December 2022
GRI 1 used	GRI 1: Foundation 2021
Applicable GRI Sector Standard(s)	N/A

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION			GRI SECTOR STANDARD REF. NO.
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION	
General disclosures						
GRI 2: General Disclosures 2021	2-1 Organizational details	22	A orange 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	128				
	2-3 Reporting period, frequency and contact point	60, 128				
	2-4 Restatements of information	No any restatements of information				
	2-5 External assurance	128				
	2-6 Activities, value chain and other business relationships	24, 30				
	2-7 Employees	29				
	2-8 Workers who are not employees	29				
	2-9 Governance structure and composition	31-32				
	2-10 Nomination and selection of the highest governance body	56-1 One Report 2022: 7.2.4 Nomination and appointment of directors and sub-directors and presidents				
	2-11 Chair of the highest governance body	56-1 One Report 2022: Roles and Responsibilities of the Chairman of the Board of Directors				
	2-12 Role of the highest governance body in overseeing the management of impacts	32-33				
	2-13 Delegation of responsibility for managing impacts	32				
	2-14 Role of the highest governance body in sustainability reporting	60				
	2-15 Conflicts of interest	33				
	2-16 Communication of critical concerns	53				

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION			GRI SECTOR STANDARD REF. NO.
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION	
	2-17 Collective knowledge of the highest governance body	34				
	2-18 Evaluation of the performance of the highest governance body	34-35				
	2-19 Remuneration policies	33				
	2-20 Process to determine remuneration	33				
	2-21 Annual total compensation ratio		Requirement A, B, C under 2-21	Confidential		
	2-22 Statement on sustainable development strategy	6-8				
	2-23 Policy commitments	36-37, 43				
	2-24 Embedding policy commitments	43-44				
	2-25 Processes to remediate negative impacts	53-57				
	2-26 Mechanisms for seeking advice and raising concerns	53-57				
	2-27 Compliance with laws and regulations	57				
	2-28 Membership associations	35				
	2-29 Approach to stakeholder engagement	47-53				
	2-30 Collective bargaining agreements	83				
Material topics						
GRI 3: Material Topics 2021	3-1 Process to determine material topics	58	A orange 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	59				
Economic performance						
GRI 3: Material Topics 2021	3-3 Management of material topics	118-119				
GRI 201: Economic Performance 2016	201-1 Direct economic value generated and distributed	119				
	201-2 Financial implications and other risks and opportunities due to climate change	125				
	201-3 Defined benefit plan obligations and other retirement plans	120				
	201-4 Financial assistance received from government	120-121				
Indirect economic impacts						
GRI 3: Material Topics 2021	3-3 Management of material topics	118-119				
GRI 203: Indirect Economic Impacts 2016	203-1 Infrastructure investments and services supported	24-26				
	203-2 Significant indirect economic impacts	24-26				

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION			GRI SECTOR STANDARD REF. NO.
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION	
Anti-corruption						
GRI 3: Material Topics 2021	3-3 Management of material topics	104				
GRI 205: Anti- corruption 2016	205-1 Operations assessed for risks related to corruption	105				
	205-2 Communication and training about anti-corruption policies and procedures	106-107				
	205-3 Confirmed incidents of corruption and actions taken	106				
Energy						
GRI 3: Material Topics 2021	3-3 Management of material topics	64-65				
GRI 302: Energy 2016	302-1 Energy consumption within the organization	65-66				
	302-3 Energy intensity	65				
	302-4 Reduction of energy consumption	66				
Water and effluents						
GRI 3: Material Topics 2021	3-3 Management of material topics	66				
GRI 303: Water and Effluents 2018	303-1 Interactions with water as a shared resource	67				
	303-2 Management of water discharge- related impacts	67				
	303-3 Water withdrawal	68				
	303-4 Water discharge	69-70				
	303-5 Water consumption	70				
Emissions						
GRI 3: Material Topics 2021	3-3 Management of material topics	71-74				
GRI 305: Emissions 2016	305-1 Direct (Scope 1) GHG emissions	75				
	305-2 Energy indirect (Scope 2) GHG emissions	75				
	305-3 Other indirect (Scope 3) GHG emissions	75				
	305-4 GHG emissions intensity	75				
	305-5 Reduction of GHG emissions	73-74				
	305-7 Nitrogen oxides (NO <sub>x</sub> ), sulfur oxides (SO <sub>x</sub> ), and other significant air emissions	75				
Waste						
GRI 3: Material Topics 2021	3-3 Management of material topics	76				

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION			GRI SECTOR STANDARD REF. NO.
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION	
GRI 306: Waste 2020	306-1 Waste generation and significant waste-related impacts	76				
	306-2 Management of significant waste-related impacts	76				
	306-3 Waste generated	77				
	306-4 Waste diverted from disposal	77				
	306-5 Waste directed to disposal	77				
Employment						
GRI 3: Material Topics 2021	3-3 Management of material topics	79-80				
GRI 401: Employment 2016	401-1 New employee hires and employee turnover	81-82				
Labor/management relations						
GRI 3: Material Topics 2021	3-3 Management of material topics	82-83				
GRI 402: Labor/ Management Relations 2016	402-1 Minimum notice periods regarding operational changes		Requirement A, B under 402-1	Not Applicable		
Occupational health and safety						
GRI 3: Material Topics 2021	3-3 Management of material topics	87-88				
GRI 403: Occupational Health and Safety 2018	403-1 Occupational health and safety management system	88				
	403-2 Hazard identification, risk assessment, and incident investigation	89				
	403-3 Occupational health services	91				
	403-4 Worker participation, consultation, and communication on occupational health and safety	90				
	403-5 Worker training on occupational health and safety	91				
	403-6 Promotion of worker health	91				
	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	92				
	403-8 Workers covered by an occupational health and safety management system	92				
	403-9 Work-related injuries	93-94				
	403-10 Work-related ill health	93, 95				
Training and education						
GRI 3: Material Topics 2021	3-3 Management of material topics	84-86				

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION			GRI SECTOR STANDARD REF. NO.
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION	
GRI 404: Training and Education 2016	404-1 Average hours of training per year per employee	87				
	404-2 Programs for upgrading employee skills and transition assistance programs	86				
	404-3 Percentage of employees receiving regular performance and career development reviews	87				
Local communities						
GRI 3: Material Topics 2021	3-3 Management of material topics	97				
GRI 413: Local Communities 2016	413-1 Operations with local community engagement, impact assessments, and development programs	97				
	413-2 Operations with significant actual and potential negative impacts on local communities	97				
Customer privacy						
GRI 3: Material Topics 2021	3-3 Management of material topics	126				
GRI 418: Customer Privacy 2016	418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data	127				



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## Reader Survey Form

We kindly ask for your kind cooperation in responding to reader surveys by scanning QR Codes or sending this survey form back to TPI Polene Power Plc, at the address specified 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) / [ooy@tpipolene.co.th](mailto:ooy@tpipolene.co.th)

### 1. Personal information

Gender ☐ Male

☐ Female

Age ☐ Under 30 years old

☐ 30-50 years

☐ over 50 years

Occupation, please specify .....

### 2. As a reader, please specify from which point of view you are reading:

☐ Customer ☐ Employee ☐ Regulatory Authority ☐ Educational Institutions/Research Agencies ☐ General public

☐ Entrepreneur ☐ Public agency ☐ Financial Institutions ☐ Others, please specify .....

### 3. 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 Power Public Company Limited

☐ Office/Plant/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 environment. ☐ To research and study sustainability practices.

☐ Others, please specify .....

### 5. What is your opinion on the Company's Sustainability Report ?

Completeness of the report covers the main issues that you are interested in:

☐ High

☐ Moderate

☐ Low

Beauty of the design

☐ High

☐ Moderate

☐ Low

Appeal of report content and presentation style

☐ High

☐ Moderate

☐ Low

Content clarity, easiness to understand, not confusing

☐ High

☐ Medium

☐ Low

Satisfaction with the overall report

☐ High

☐ Moderate

☐ Low

### 6. What part of the Sustainability Report interests you the most ?

☐ About TPI Polene Power

☐ TPI Polene Power and its Sustainability

☐ Environmental Impact Management

☐ Community and Social Development

☐ Business Operation under Good Corporate Governance

☐ Responsibility for Products and Service Development

☐ Management of Environmental Impacts

### 7. Do you think that the content of this Report fully contains all the topics of your interest?

☐ Yes

☐ No, more information is needed.

(Please specify the topics of your interest and you wish to contain in the Company's subsequent Sustainability Report)

.....  
.....

### 8. What additional aspects do you think that TPI Polene Power Public Company Limited should further develop or improve its sustainability operations?

.....  
.....

### 9. Comments or other additional suggestions for further development of TPI Polene Power Public Company Limited's Sustainability Report.

.....  
.....

TPI Polene Power Public Company Limited would like to thank you for your kind cooperation. Information from your opinion survey on this Sustainability Report will be used to improve and develop the Company's Sustainability Report.



บริษัท ทีพีโอ โพลีน เพาเวอร์ จำกัด (มหาชน)  
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