



TIPCO Asphalt Public Company Limited

Sustainability Report 2021

Patching Pothole: Road Safety for All Project



All community roads are constructed to provide people with convenience during journey and more safety. But over time, road surface damages begin to form potholes, which became very dangerous to road users as they can cause serious injuries or potential fatal accidents. Therefore, while waiting for government budget allocation for road maintenance, TIPCO asphalt Group can help alleviate this problem by pothole repairs using our premixed asphalt products. As we realize the significance of road safety, this patching pothole initiative has been launched and implemented, with key objectives to promote road safety upon local communities, with stakeholder engagements while creating awareness upon safety roads in the communities. The project success was results from mutual cooperation among staffs, local communities, government agencies, and academic institutions representing more than 1,500 project participants. Since 2016 to 2021, there have been more than 31 patching pothole projects implemented.

Bueng Thakreng Integrated Development Project



Since 2015, Our Phitsanulok plant has conducted dialogue sessions with community representatives and Bang Rakam Mueang Mai Subdistrict Municipality. The dialogues indicated that the local communities expected our Group to help participate upon development of Bueng Thakreng area for mutual benefits. Back then, the Bueng Thakreng area (Moo 12, Ban Nong Khao Kwai, Bang Rakam Sub-district, Bang Rakam District, Phitsanulok province) was under responsibility of the Royal Irrigation Department for flood mitigation. The Department launched a 'Monkey Cheek' reservoir project to minimize flood damage while storing water. The project encompasses more than 14,000 rai of total areas, benefiting 857 community households including our Phitsanulok plant. From the site survey, TIPCO Asphalt Group fully recognized the importance of ecological conservation, water source restoration, and sustainable green spaces. We then initiated a local plant conservation project of relocating large trees, that were affected by road expansion projects in Phitsanulok, to be re-planted at Bueng Thakreng area. At present, there have been more than 348 trees been relocated into this area. In addition, it was found that each year more than 3,500 villagers and tourists visited Bueng Thakreng and utilized this area to organize recreational activities together with local community residents such as activities supporting local culture, fisheries etc. According to community satisfaction survey, we achieved 91.40%, met the target set by the Group.

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About this Report *[Disclosure 102-32, 102-52, 102-56]*

Tipco Asphalt Public Company Limited has published its Sustainability Report 2021, the 4th edition, which is based on the Group's sustainable development strategies. The report was presented to all groups of stakeholders in order to create an understanding of the Group's business operations in accordance with sustainable development guidelines, strategic communication, management approach, and operational processes on key materiality issues affecting business operations and all stakeholders across the value chain in the year 2021. This includes progress and performance reports on sustainable development in accordance with the United Nations Sustainable Development Goals (SDGs). In the previous year, the Group's Sustainability Report focused on basic foundation of sustainable development for employees and related stakeholders, to ensure they understand the Group's direction on sustainable development works. The Group report sustainable development performances in Vision 2025 along with all details for related stakeholders to better understand the Group's plan while participating in the Group's activities. The Vision 2025 strategic plan was formulated and implemented since 2021. For this Sustainability Report 2021, the contents were reviewed by the top management of each business functions, along with the requirement on environmental and safety operations performance audits every year. In addition, the report has been verified and assured by the Management System Certification Institute (Thailand) – MASCI. The document on MASCI data verification can be found in the section of third-party certification of this report, page 251.

International Reporting Framework *[Disclosure 102-54]*

This report is based on the International Reporting Framework Standards, or the Global Reporting Initiative (GRI Standard) at the Core Optional level. This includes additional indicators for property and construction sector as internationally recognized guideline. The GRI detail summary can be found on page 39.

Scope of the Report *[Disclosure 102-45, 102-46, 102-50]*

This report provided information on the consolidated economic performance, encompassing all affiliated companies and subsidiaries in the business group, both in Thailand and abroad. In addition, the report summarizes action plans to implement sustainable development strategies in line with Vision 2025 corporate strategic plan.

The scope of the report includes implementation progresses on sustainable development strategies; i.e., Innovation (Economic), Eco-efficiency Management (Environmental), and Safety (Social). The report covers the period from January 1st to December 31st, 2021, containing various data from business units in Thailand, with emphasis on the context of sustainability, materiality issues assessment, and completeness of information and stakeholder engagements upon preparation of the report.

The Group Company has established a roadmap to create and develop a body of knowledge on sustainable development for subsidiaries in foreign countries. There is also a plan to form a team of personnel to convey sustainable development concept along with collecting and integrating social activities information from overseas companies, including future sustainability projects.

Content and key Changes *[Disclosure 102-49]*

For the 2021 report, there has been improvement upon sustainable development materiality topic identification and assessment. The process began with identification of stakeholder groups, followed by survey sample size increase together with scope widening to capture new important sustainable development materiality issues.

In addition, with the ongoing spread of COVID-19, the working team has placed great emphasis on communication channels for our sustainability works. There has been an initiative to disclose some sustainability performance data via the Company's website, which is expected to be ready by 2022.

Sustainable Development Action Guidelines According to the United Nations Framework and Social Responsibility Guidelines *[Disclosure 102-16]*

The Group is committed to being part of the global community in supporting sustainable development by constantly revising our business operations across value chain to ensure full alignment with the United Nations Sustainable Development Goals (UN SDGs). The Group began to report, in accordance with the UN Global Compact which are the principles on human rights, labor, environment and anti-corruption. The Group operates under the "ISO 26000" which is the guideline on social responsibility of the International Organization for Standardization (ISO). Since 2010, the Group has adopted such practice and regularly audited on voluntary basis (not certification).

Survey on additional comments *[Disclosure 103-53]*

We welcome other feedbacks and suggestions from all stakeholders for the development of sustainability reports as our guideline for future improvements. Please leave your comments and suggestions in the questionnaire by scanning the QR Code here.



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[Disclosure 102-14]

Message from Chairman of the Board of Directors

Since 2017, this year marks the 4th year of TIPCO Asphalt Group's sustainable development journey. In 2021, the Company expanded our scope of sustainable development to other businesses across value chain in accordance with Vision 2025, under a strategic goal "To become a Sustainable Organization". We believe that good corporate governance will allow the Group to achieve our goals.

"Although in 2021 we were affected by various business challenges including the COVID-19 epidemic situation. The Group continues to strive for sustainable development for long-term business operation based on business ethics, creating benefits for the economy, society, environment while serving as a good corporate citizen of the community."



Since 2003, TIPCO Asphalt Group has embraced sustainable development concept into its way of doing businesses and as a key target for formulation of its long-term corporate strategy. This can be evidenced from all our asphalt plants in Thailand participated in the Corporate Social Responsibility projects during 2008-2009 and received CSR-DIW Continuous awards from the Department of Industrial Works for several years. In 2012, the Group adopted ISO26000 Social Responsibility Guidance Standard implementation. We have also developed several corporate policies relating to sustainability such as policy on Social Responsibility and Community Engagement, Environmental Policy, and policy on Sustainable Development while several sustainable development projects have been initiated and executed successfully. We have also developed yearly Sustainability Report series since 2018.

I am glad to announce that year 2021 marked another successful year for the Group's sustainable development journey. Despite several challenges and continued COVID-19 situation, TIPCO Asphalt Group received several distinguished awards and recognition as follows:

- The "Sustainability Excellence Award: Highly Commended" in the group of listed companies with market capitalization between 10,000-30,000 million Baht from the Stock Exchange of Thailand.
- We received the 5-star "Excellent" rating from Corporate Governance Report of Thai Listed Companies (CGR) by the Thai Institute of Directors (IOD), for four consecutive years
- TIPCO Asphalt listed shares were selected to be included in the Thailand Sustainability Investment Index (THSI), for four consecutive years.
- The Group also received the 2021 Sustainability Disclosure Award from Thaipat Institute, for three years in a row.

These achievements reflected our strong commitment to sustainable development and business conducts with corporate ethics so we can be good corporate citizen while creating positive economic, social, and environmental impacts in the long run.

The Group shall stay fully committed to accomplish our sustainable development goals, with our fundamental corporate principle contributing to society, environment and good governance while continuing to create shared values across all stakeholders to fulfil their expectations, in line with our promise on "delivering innovative solutions for sustainable living for all societies."



Mr. Chainoi Puankosoom
Chairman of the Board of Directors

Message from Chief Executive Officer [Disclosure 102-14]

This complete version of the Sustainability Report 2021 focuses on resilience and flexibility, which is an integral part in practical implementation of all people in the organization (In-Process Sustainable Development) to ensure “delivering innovative solutions for sustainable living for all societies”, which is our commitment of Tipco Asphalt Group, executives, and all employees.

“ Our group adjusts sustainable business practices, with more efficiency, flexible operation while being able to cope with all challenging situations. Our sustainable development strategies serve as cornerstone of our long-term business operations”.



In 2021, the world continued to encounter major global economic slowdown due to COVID-19. In Thailand, public health system was challenged while the government had implemented series of containment control measures to limit the spread of COVID-19. Many business sectors have been greatly affected by the situation and need to adapt quickly to ensure their continued business operations.

Economic Strategy *[Disclosure 102-26]*

Innovation as one of key business drivers

One of our sustainable development strategies focuses on promoting innovation of new product and service developments, or process improvements. Since 2018 the TIPCO Asphalt Group has integrated an 'innovation philosophy' into our corporate strategy, with key objectives on establishing thorough knowledge, full understanding, and possibilities of innovation through initiatives. In 2020, innovation has become key component of our Vision 2025 while we instill an innovation culture across the Group.

Starting in 2021, the Group formulated Innovation Roadmap 2025 to serve as a guideline for systematic innovative thinking. The roadmap focuses on employee self-development through coaching, inspiration, and incentives for employees to initiate and create innovations. This is accompanied by Innovative Solutions Award contest as common ground to promote internal innovation ideas and projects recognition for the Group.

In 2021, we continued to conduct Innovation Bootcamp, with a total of eighteen innovative project ideas from Thailand and international subsidiaries. We also designed an 8-month Innovation Accelerator Program to enhance staff's capabilities through dedicated mentoring and training. This program increases opportunity for innovation projects to be executed while creating commercial values to the Company.

In addition, the Total Productive Maintenance (TPM) project can promote innovation initiatives by employees across all levels at all our production plants and asphalt terminals in Thailand. TPM helps generate cost savings and reduced work-time equivalent to 16.8 million Baht in 2021.

Environmental Strategy *[Disclosure 102-26]*

Eco-Efficiency operations

TIPCO Asphalt Group optimizes operation efficiency with least impacts to the environment. Our key highlights and achievements in 2021 are as follows:

In 2021, we announced our new Environmental Policy that aligned with the Group's sustainable development strategy. Key strategies include supporting research and development that create environmentally friendly innovations, reducing greenhouse gas emission (both directly and indirectly), promoting the use of alternative energy sources, promoting a circular economy, and disclosing environmental operation results to the public through the Sustainability Report. Greenhouse Gas Emission: The Group implemented the Greenhouse Gas (GHG) Management across all our 5 Thai plants. This year the Group extended the scope of GHG emission data collection at Headquarter in Bangkok to include GHG Scope 1 and 2, with improvement of the Centralized Logistic Center at Phrapradaeng terminal to manage products distribution for 5 plants in order to minimize fuel consumption and increase truck utilization. The results were impressive 9.81% GHG emissions intensity reduction as compared to the base year 2020. Furthermore, the Group underwent GHG emissions data verification and received certification from an independent certifying body (Management System Certification Institute Thailand – MASCI).

Energy Saving: In 2021, the Group focused our energy management via transition from fossil fuel source to renewable energy, such as switching to biodiesel (B10) for hot oil boilers in the asphalt production process and for our asphalt distribution trucks. In addition, we improved energy efficiency of our production operations by installing new hot oil boiler units, and adjusting their activation time to suit production needs. As a result, total consumption of energy intensity per unit of product declined 9.06%, compared to the previous year.

Water Use and Wastewater Discharge: The Group aims to constantly improve our water use efficiency with responsibility to the communities. For instance, some of our plants utilized rainwater collected in the surface water reservoir located inside factory to reduce water consumptions from community sources. Water supply pipeline system inside our Rayong plant was improved to minimize water loss. In addition, our facilities are designed with a 'fully closed' wastewater management system that treats all wastewater and re-uses in asphalt emulsion productions and hence no wastewater released from our plant premises.

Social Strategy *[Disclosure 102-26]*

Safety Awareness

The Group's sustainable development strategy recognizes social well-beings and safety as top priority, with focuses on safety awareness, human rights, and privacy data protection.

In 2021, the Group conducted several activities to raise public road safety awareness. For instance, the pothole repair projects using ready-to-use asphalt mix to ensure road safety, and road safety knowledge activities for school students.

As for employee safety, in 2021 the Group recognized the operations to deal with the COVID-19 situation and implemented the ISO/PAS 45005:2020 Occupational health and safety management general guidelines for safe working during the COVID-19 pandemic to protect health, safety and well-beings of all staffs during works including related stakeholders.

Human rights: Under the United Nations Guiding Principles on Business and Human Rights, this year the Group revised the Human Rights Policy to ensure no discrimination towards conceptual, employment and occupation on the basis of nationality, race, skin-color, gender, age, religion, political opinion, national extraction and social origin, language, marital status, personal attitudes about sex, disability, HIV / AIDS - related illnesses, pregnancy status, employee committee, personal opinions, or any other statuses considered as human rights.

Personal data protection: In anticipation to the upcoming Personal Data Protection Act (PDPA) to take effect by June 2022, this year the Group announced a Corporate Policy on Personal Data Protection, with appointment of a Data Protection Officer and Privacy Notices to related stakeholders.

This Sustainability Report 2021 summarizes the Group's sustainable development performances and accomplishments, with special analysis on key materiality topics and how we fulfil our stakeholders' expectations pertaining to each material topic, including our resiliency in response to the COVID-19 situation and other challenges. For more than 40 years in business, TIPCO Asphalt Group has conducted our businesses with strong determination to drive our organization toward success with sustainable long-term business operations that are friendly to the environment, for better life quality of the society together with benefits to stakeholders.



Mr. Chaiwat Srivalwat
Chief Executive Officer

Vision 2025: Corporate Strategy



Our core values serve as TIPCO Asphalt Group's DNA that integrates innovation culture... [Disclosure 102-16]

Tipco Asphalt group has adopted 5 "TIPCO Core Values" across our business operations on the principles of good governance, social responsibility, and environment. The Board members, top management and all employees are strictly adhered to these core values. The Group then has earned great public trusts as an organization that conducts business in a transparent and auditable manner while we treat all related stakeholders fairly. This includes integration of innovative ideas across every work process to instill a corporate culture where all employees prioritize on work efficiency improvement and added valued. This helps strengthen the organization while staying ready for rapid global changes. We encouraged employees to open up to modern technology for work processes improvement. We expected that this will increase the competitive competency and stimulate new ideas that creates innovation culture under a strong foundation with stability and sustainability.



T

Teamwork

Every team members together take part in decision making while working together through various knowledge and technology sharing to promote innovations.

I

Integrity

Present each innovation ideas with great care. Respect the knowledge and experience of the team members and customers, while stay true to the customer's requirements, with high considerations on quality, ethics standard, and impacts to society and the environment.

P

Prudence

Conduct risk analysis and impacts of innovation across all aspects while implementing preventive and counter risk control measures. Seek an opportunity from implementing innovation upon each situation.

C

Commitment

Set challenging targets for innovation. Allocate time and resources required to develop, and promote innovation to achieve the goals and maximum benefits.

O

Open-mind

Open up for suggestions and other different opinions. Truly understand stakeholders' expectations and needs while working together to each mutual conclusions to create innovation.

Sustainable Development Definition of Tipco Asphalt Group

[Disclosure 102-16]

Driving business towards the sustainable development to meet the expectations of stakeholders is the Group's priority. These are expressed via the business value chain in accordance with creating shared values approach in the economic, social and environmental aspects. With enterprise risk management, good corporate governance, and personnel development, all employees can adapt to new challenges and changing environments while being able to create innovations to drive the organization towards sustainable business in the long run.



[Disclosure 102-45]

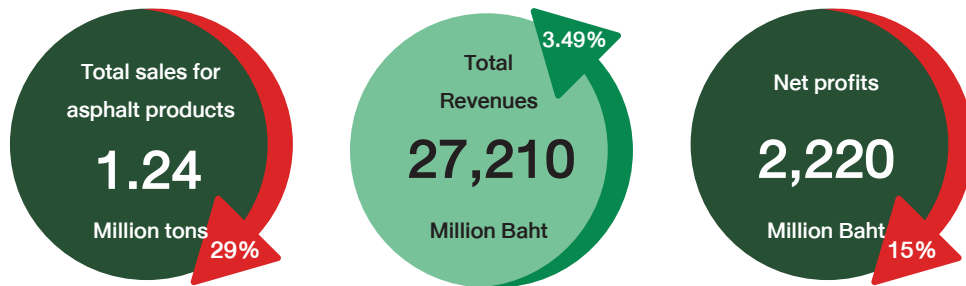
Tipco Asphalt Group: Business Performances

Economic aspect: Financial Information

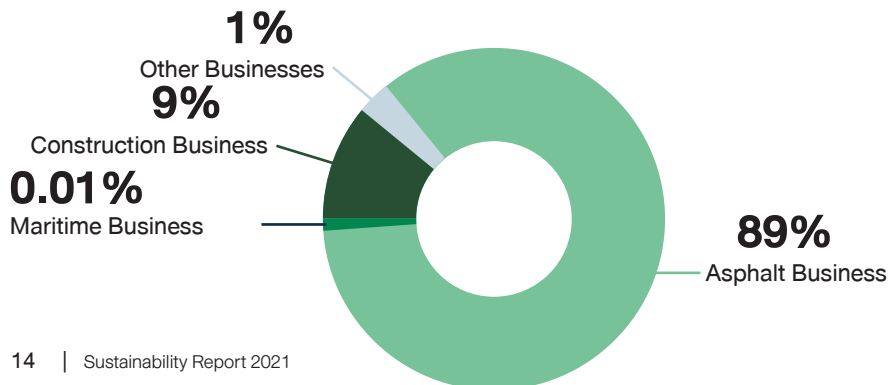
In 2021, the Group's asphalt product sales recorded 1.24 million tons, a decline from the previous year, reflecting lower international sales due to the impact of the Covid-19 situation.

However, in 2021, the Group recorded total revenues of 27.21 billion Baht, representing a net profit of 2.22 billion Baht due to higher asphalt price increase following strong domestic demands, and revenue realization from construction business in 2021.

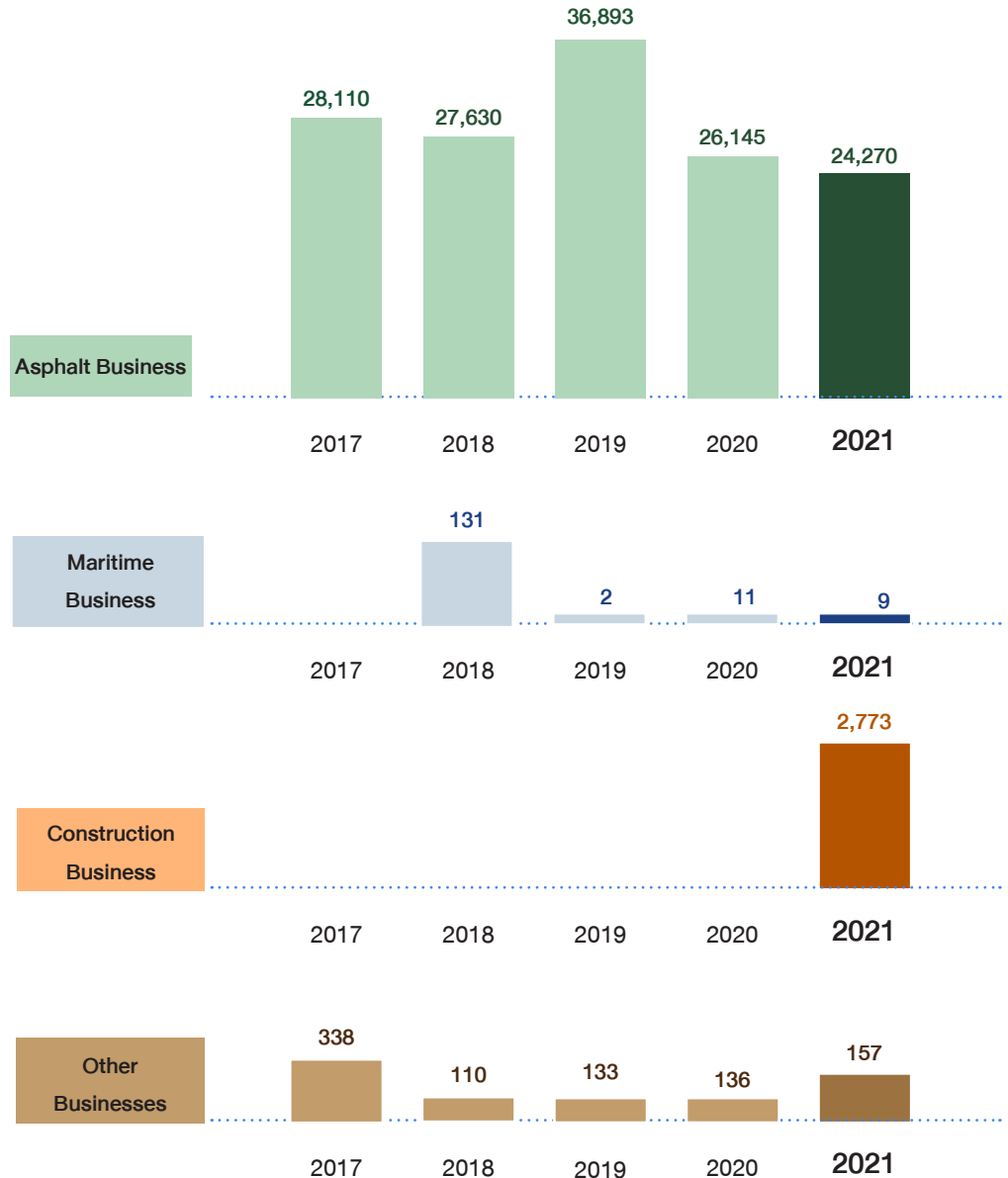
2021 Financial Highlights



2021 Revenues Proportion (Breakdown by Business)



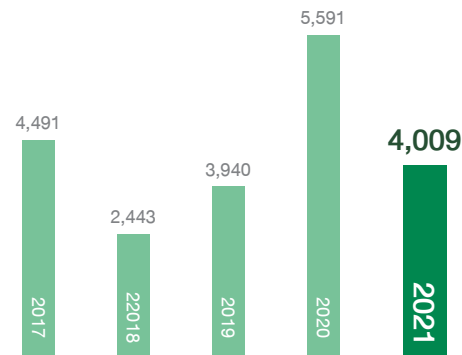
Revenues (Breakdown by Business)



Earnings Before Interest, Taxes, Depreciation, and Amortization(EBITDA)

(Unit: Million Baht)

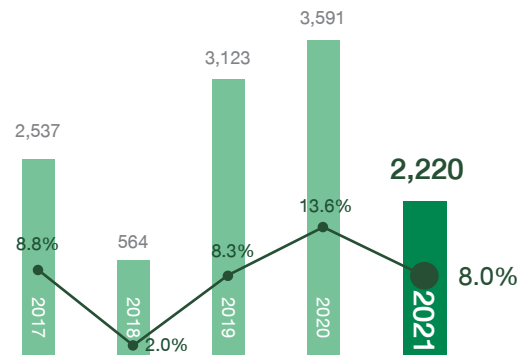
EBITDA remains high despite the decline in sales. The Group was able to adjust the proportion of product sales and effective production cost controls.



Net Profit and Net Profit Margin to Total Revenue

(Unit: Million Baht, Percent)

The Group can still make a net profits despite market slow-down



Dividends and Dividends Payout Ratio

(Unit: Baht/Share, Percent)

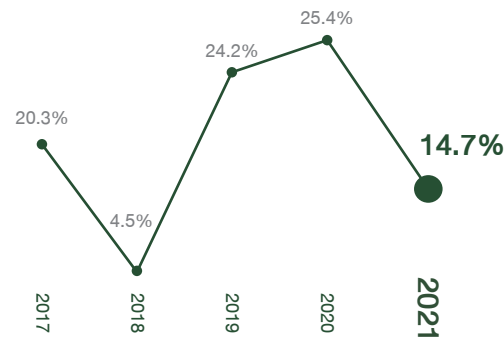
The company was able to deliver 1.5 Baht/share dividends, representing a dividends payout rate of 75%



Return on Equity Ratio

(Unit: Percent)

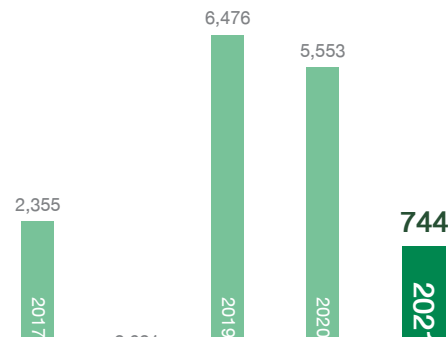
The Group was still able to generate returns for shareholders and invest in construction business u to support future business growths



Net Operating Cash Flow

(Unit: Million Baht)

Cash flow slightly declined in line with market slowdown, but still remained in a strong position which able to support investment and business expansion.



Net Debt to EBITDA

(Unit: Times)

The debt-to-earnings ratio remains at a good level, reflecting the Group's strong financial liquidity position.



Get to know Tipco Asphalt Group: Leaders in the Asphalt Business

Tipco Asphalt Group was founded by Mr. Prasit Supsakorn, who started the petrochemical business from fuel station and dealership, and then began the asphalt business as a tanked asphalt carrier for the Department of Highways. The Group viewed asphalt as an important material for road construction and key infrastructure development of a country. All processes including production, transportation, export, and other business were opportunities that allowed Mr. Prasit to decide to construct the first emulsion asphalt plant at Lat Krabang Industrial Estate in 1979.

Since establishment, being a good member of society has been a goal which commits the Group to corporate social responsibility. The Group has focused on introducing and promoting the use of emulsion asphalt products in road construction and surface treatment. Since the production uses water as one of raw materials, it does not require high heat during application or causing any pollution. Therefore, asphalt is more environmentally friendly than conventional asphalt

With a continued operation, the Group has been a successful business and has become the market leader in Thailand. The factories are located in every region for a comprehensive and thorough delivery of goods such as Nakhon Ratchasima, Rayong, Phitsanulok, and Surat Thani. There are also warehouses and distribution facilities located at Phra Pradaeng which help reduce shipping costs and also bring economic benefits to customers.

Being a market leader and specialist in the asphalt business has attracted Colas Group, world's leading company specializing in road construction in France to become a business partner and shareholder of the Group.

During the year 1990, the Group entered the global asphalt market and expanded investment in production and distribution business by starting from India, and then expanded factories in many regions in China. This made delivery of goods abroad more efficient with comprehensive transportation services. In 1995, the Group agreed to set up Tipco Maritime for running marine asphalt transportation services.

In order to strengthen business operations, the Group, together with the Colas Group, has built an asphalt refinery in Kemaman, Malaysia to operate on upstream industry. This allowed the Group to expand both domestic and international markets, covering the Southeast Asian market including the People's Republic of China and India. In 2015, the Group established a joint venture with SK Energy Group, South Korea, leading asphalt producer in East Asia. As a result of business cooperation in transportation and marketing, we expected to become the number one asphalt supplier in Asia.

Tipco Asphalt Public Company Limited has been listed on the Stock Exchange of Thailand since 1992. With a strategic vision for 2025, this committed us to delivering sustainable asphalt business services through an innovative culture. Our mission is to build alliances with integrated asphalt businesses that have been qualified internationally. In addition, the Group's commitment is to create sustainable living for all people in a particular society with creative innovation through the implementation of the plan.

Refinery Business

The Group's Asphalt Refinery (KBC) is a refinery designed to refine heavy naphthenic oil to produce a wide range of quality asphalt products. This includes Atmospheric Gas Oil (AGO), Vacuum Gas Oil (VGO), Kerosine, and Naphtha with a capacity of 30,000 barrels per day, managed by more than 200 experienced executives and employees.

2021 was a challenging year for refiners due to the impact of the COVID-19 pandemic which entirely impacted on the economy, while the supply of crude oil, or suitable feedstock was limited. However, KBC was able to operate on standards, resulting in the refinery's plant reliability of 99.66 per cent, according to international standards certified for both ISO 9001, ISO 14001 and ISO 45001:2018. The refinery has renewed these certifications until 2024.

The refinery continues to prioritize operational risk management, managing feedstock for production adequately. This ensures the business continuity while balancing the asphalt sales to each overseas market, given the limited supply of asphalt at the refinery.

Maritime Business

The Group possesses efficient asphalt tankers under proper management and operation. The total tanker size is 42,902 metric tons (DWT) with an average vessel life of 13 years. The shipping business plays an important role in the management of the Group's delivery system with introduction of innovative approaches and utilization. Tipco Maritime Company Limited is a subsidiary that operates a ship management business. The company was set up to manage the assets of the Group, and it plays an important role in management of maritime activities, maintenance quality, and efficient cost and budget control. In terms of safety, the company was assessed at an average OCIMF VIQ with a score of 3.5 observations per vessel, and a TMSA (Tanker Management and Self-Assessment) with a score of 2.5, under the epidemic situation of COVID-19. In 2021, crew management was considered as one of the challenging factors in which health and safety of the crew was put into the company's priority. From the management according to the planned work plan, the Group was able to replace crew members according to the specified time frame. Besides, none of the crew was infected with the COVID-19 virus. As a result, the impact of operational delays was managed under a limited extension. In addition, the Group has carried out a COVID-19 vaccination for crew members in which more than a percentage of the crew 80 received two doses of vaccination. Among other things, none of the crew has experienced contract expiration due to measures under the COVID-19 pandemic.

Construction Business

The Group has invested in the construction business of 2 companies, namely Thai Slurry Seal Company Limited (TSS), a leading road rehabilitation contractor, and Thanomwong Service Company Limited (TWS), which is a special class contractor. The objective is to expand the business of the Group to cover all types of work related to road construction and maintenance, including regional construction business. In the past, the Group has benefited from offering products such as value-added products and new technologies that the Group has developed by itself. The development was made into the user market through TSS's business operations and TWS, which resulted in a higher net profit margin. Both companies have undertaken several projects with Airports of Thailand PCL and the Department of Airports, such as the airport runway maintenance project and the construction of a new airport runway. The construction of runway 3 at Suvarnabhumi Airport that TWS and Nawarat Patanakarn PCL agreed to set up a joint-venture in which the project duration is 3 years. In 2021, the overall construction business growth rate was said to be high. It has benefited from construction projects in the North and new airport projects. The pursuit of business opportunities with both the public and private sectors remains continuous and tends to grow continually. In 2022, the construction business capability is expected to develop in terms of machinery, equipment, technology, and personnel. Therefore, this allows the company to be ready to support projects of any size and complexity in the future with expertise, knowledge, and a good reputation. In addition, a potential partner network for large projects investment in machinery and personnel, including support from the Group will be a key player in the road construction business.



Domestic Retail Asphalt Business

In 2021, the domestic asphalt industry experienced many challenges including delays in budget disbursement, the spread of COVID-19, and government policies focusing on higher AC asphalt utilization. However, the local demand for asphalt products in 2021 was recorded at 1.4 million tons, slightly higher from 2020 due to the volatility of asphalt demand. This was caused by the delay in disbursement of the government's 2021 budget, as well as the fact that personnel management and delivery only 50 percent of total capacity under epidemic prevention measures. However, the operations department continued to operate to the highest standards reflected by the high production capacity. For inventory management under balanced production plans, efficient production and transportation costs control were said to be successful, meanwhile the delivery of products to customers was made in a timely manner. There was also a challenge in changing the government policy to support the use of AC40/50 asphalt, instead of the use of Natural Latex Modified asphalt. With the cooperation of the Centralized Logistic Office and the delivery team from external service providers was able to effectively manage truck trailers, including drivers in all 5 factories. As a result, assets and shipping-related expenses were reduced. As of March 2021, the Group was able to produce and deliver products, with second-highest number of products in its history.

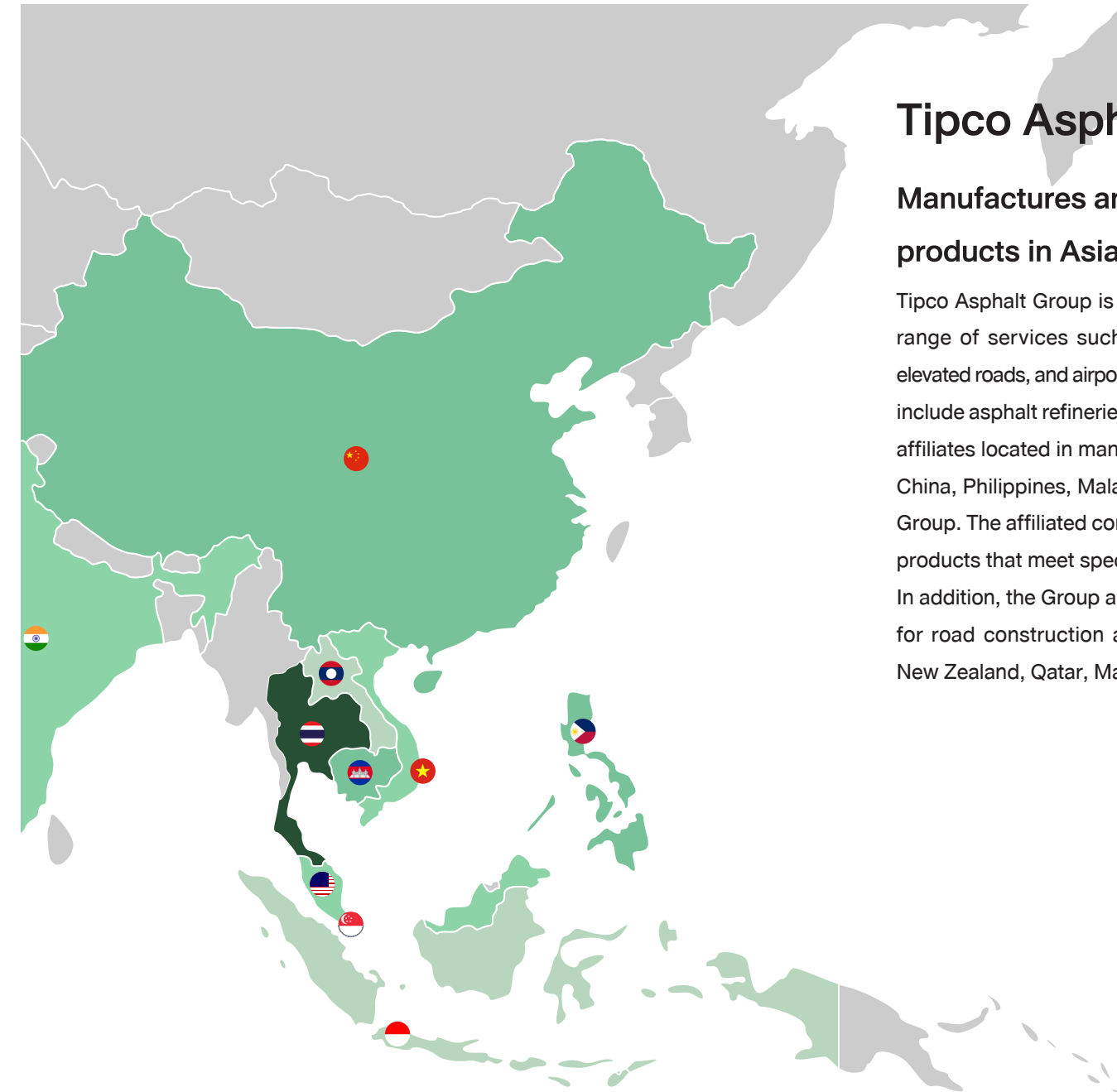
International Retail Asphalt Business

Indonesia: asphalt imports rose by 8 percent due to the delay in disbursement of project budgets for infrastructure projects in the previous year. The Group's subsidiaries now can grasp a market share very well among a difficult situation. Vietnam: Asphalt imports dropped by 4 percent in 2021 due to the delays in expressway projects. Although the subsidiary's imports declined by 12 percent, the subsidiary was able to maintain its position of third best performer in 2021. China: Overall asphalt imports in fell 8 percent, with ship imports decreased by 35 percent. For domestic retail business, it continued to maintain good sales and operating results. Cambodia: Due to delays in several highway projects, asphalt imports dropped by 16%. Even though the situation was difficult, given a severe competition as there were competitors from neighboring countries such as Thailand and Vietnam, the Group was still able to cope with the problem and compete for market share to be the leader. Philippines: With increasing asphalt demands, as a result, the overall asphalt business in the country grew by 50% compared to the previous year. The joint venture company, Phoenix Petroleum and Phil Asphalt (PAPI) grew by 48%. This made the market share of PAPI increase by 2%, making the company the 3rd largest asphalt importer in the country.

International Wholesale Asphalt Business

2021 was still another year for the Group to experience a number of challenges as the epidemic situation of COVID-19 continues to have an impact across countries. As a result, the demands for asphalt declined, especially in the Asia region, which was 15% from the previous year among the conditions of limited asphalt supply. The Group carefully planned their asphalt product sales across different markets. Overall, in 2021, sales were from key key customers in Vietnam, Australia and China, meanwhile the total global market sales declined by 40 percent compared to the previous year. On the other hand, sales to New Zealand continued to grow from last year. In addition to the COVID-19 pandemic, economic changes placed significant impacts upon crude oil and asphalt price volatilities across Asia and the rest of the world.



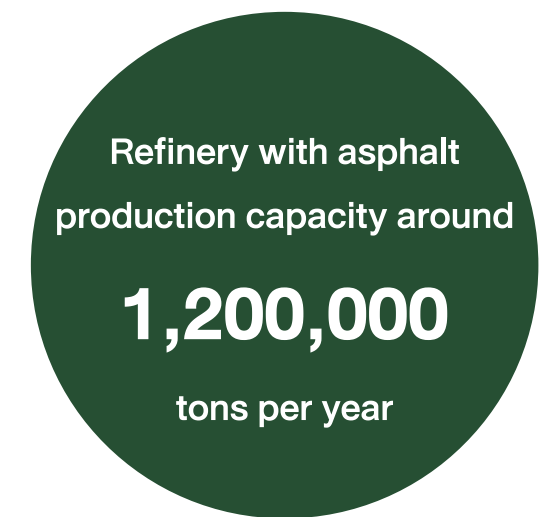


Tipco Asphalt Group’s Business

Manufactures and distributes a full range of asphalt products in Asia Pacific and other regions worldwide

Tipco Asphalt Group is a leading asphalt manufacturer and distributor with a full range of services such as road construction, maintenance of road surfaces, elevated roads, and airport runways in Thailand and Asia Pacific region. The businesses include asphalt refineries in Malaysia as well as delivery services to customers and affiliates located in many countries such as Laos, Cambodia, Vietnam, Indonesia, China, Philippines, Malaysia, and India via trucks and the maritime carriers of the Group. The affiliated companies are responsible for production and distribution of products that meet specific needs of each local market.

In addition, the Group also exports asphalt products to importers and contractors for road construction and maintenance from other regions such as Australia, New Zealand, Qatar, Mauritius, Reunion, America, South Africa, etc.



The Group conducts our businesses through investments in subsidiaries across 10 countries

Thailand 🇹🇭

- Tipco Asphalt PCL
- Raycol Asphalt Co., Ltd.
- Thai Bitumen Co., Ltd.

Experts in asphalt industry and technical usage of Thailand for long lasting roads.

Cambodia 🇰🇲

- Tipco Asphalt (Cambodia) Co., Ltd

The leader of asphalt production and distribution in Cambodia, specializing in mix and paving techniques supporting national infrastructure development.

China 🇨🇳

- Langfang Tongtai Road Material Co., Ltd.
- Zhenjiang Tipco Asphalt Co., Ltd.
- Tipco Asphalt (Xinhui) Co., Ltd.

Operates in 3 regions (North, Central, South China) with product design and special application techniques to suit the climate of each area.

India 🇮🇳

- Hindustan Colas Private Limited (HINCOL)

Joint investment between Tipco Asphalt, Colas, and Hindustan Petroleum under the name of Hincol, asphalt production specialist in India with factories located in many regions.

Indonesia 🇮🇩

- PT Asphalt Bangun Sarana

It is recognized for its premium products. It possesses knowledge of road construction and the country’s infrastructure.

Laos 🇱🇦

- Tipco Asphalt Lao Co., Ltd.

Joint investment with a partner namely Saeng Udom, which has been in industry for a long time. The first asphalt plant was built, selling products in Laos.

Malaysia 🇲🇾

- Kemaman Bitumen Company Sdn. Bhd.
- Borneo Asphalt Sdn. Bhd.

It is located on a strategic location on the east coast of Malaysia. It is the only business of asphalt refining from naphthenic oil in Southeast Asia with a deep sea port suitable for international shipping and trade.

Philippines 🇵🇭

- Phoenix Asphalt Philippines, Inc.

Joint venture with Phoenix Petroleum Philippines to distribute asphalt and the use of special asphalt.

Singapore 🇸🇬

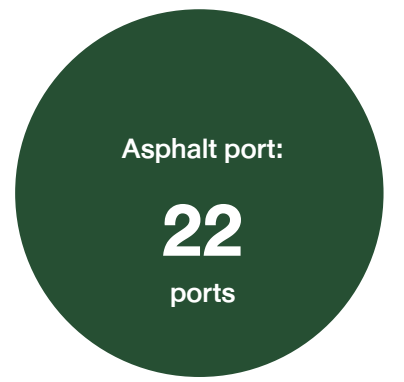
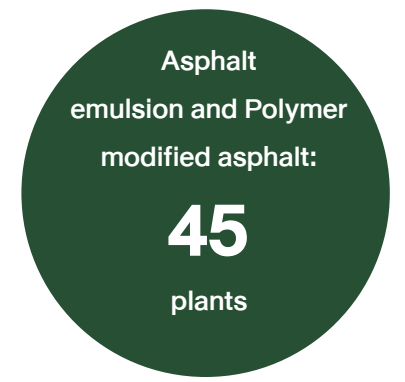
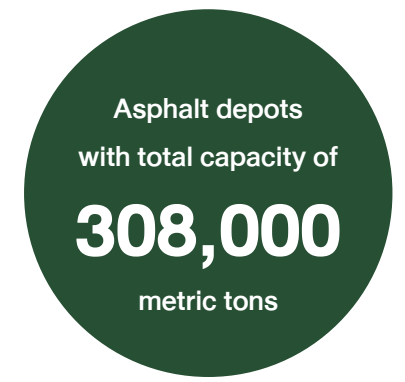
- Asia Bitumen Trading Pte. Ltd.

Joint venture company with SK Energy, South Korea. The office was set up in Singapore to support international trade and export by sharing resources for strengthening the asphalt products delivery in the region.

Vietnam 🇻🇳

- Asphalt Distribution Co., Ltd.

As a large producer in Vietnam, ADCo has the potential to cover the expansion and growth of roads in the future.



Achievement Awards [Disclosure 102-13]



SET Awards 2021

Outstanding Company Performance Awards: Group of Business Excellence Awards, listed companies on the Stock Exchange of Thailand with a market capitalization of more than 10,000 million Baht but not more than 30,000 million Baht, organized by the Stock Exchange of Thailand.



Thailand Sustainability Investment (THSI) 2021

The Group's traded shares were included in the list of sustainable investment for 4th consecutive year (2018-2021), indicating our efforts upon environmental, social, and corporate governance performance (ESG) that met the sustainability assessment criteria from the Stock Exchange of Thailand.



Highly Commended in Sustainability Awards 2021

Highly Commended in Sustainability: Sustainability Excellence Award Group, a listed company with a market capitalization of more than 10,000 million Baht but not exceeding 30 billion Baht, organized by the Stock Exchange of Thailand. This shows the Group's outstanding performance on the way it conducts businesses while taking into consideration of environment, society, and Governance (ESG).



The corporate governance assessment result in the "excellent" level in 2021

The Group received scores from the Corporate Governance Report of Thai Listed Companies 2021 (CGR) project under the supervision of the Thai Institute of Directors Association (IOD), supported by the Stock Exchange of Thailand at an 'excellent' level or '5 stars' for the 4th consecutive year, with a score 92%.



2021 Sustainability Disclosure Award

Sustainability Disclosure Award for the 3rd consecutive year from Thaipat Institute. The sustainability reporting standard framework (GRI: Global Reporting Initiative), which has been accepted internationally, has been adopted as a guideline for the organizational management as well as developing the organization towards sustainability in long run.



CSR-DIW CONTINUOUS AWARD 2564

The Group received the CSR-DIW Continuous Award from the Department of Industrial Works, representing continuous responsibility for social, community, and environmental development.

- Phra Pradaeng Factory received awards for the 14th year.
- Phitsanulok plant and Nakhon Ratchasima plant received awards for the 13th year.
- Rayong factory and Surat Thani factory were awarded for the 12th year.

Green Industry Award

All Group's factories in Thailand received the Green Industry Award from the Ministry of Industry. This represented an environmentally friendly business operation and social responsibility, both internal and external the organization, including sustainable industrial development throughout the supply chain.

- Phra Pradaeng Plant and Rayong Plant received the Green Industry Level 4 award for the 1st year.

Outstanding Establishment Award for Labor Relations and Labor Welfare

The Group received an award from the Department of Labor Protection and Welfare, which is an award for an outstanding model establishment in occupational safety and health and working environment, honoring establishment that maintain the Thai labor standard system.

- Surat Thani factory received the award for the 10th consecutive year.



Commemorative certificate of the campaign to reduce accidents from working to be zero for the year 2021

It is an award organized by the Institute for the Promotion of Occupational Safety, Health, and Work Environment (Public Organization). The purpose is to reduce the number of accidents by counting the accumulated hours of employees without accidents from working to the loss of working days.

- Surat Thani factory, copper level, accumulated working hours of employees recorded 1,000,000 – 2,999,999 hours.
- Rayong factory, junior level, for the second year, accumulated working hours of employees were less than a million hours.

Award for Outstanding Model Establishment in Safety

The Group places importance on safety, occupational health, and environment in operations continually. by combining safety management and certified according to international standards ISO-45001: 2018 organized by the Department of Labor Protection Welfare Ministry of Labor.

- Phra Pradaeng Factory received the gold level award for the 1st year meanwhile Phitsanulok factory received the gold level award for the 4th year.
- Surat Thani factory received a diamond award for the 9th year.
- Rayong plant received Platinum level award for the 15th year.

Standards that have been re-certified in 2021 [Disclosure 102-13]

The Group has applied management systems in accordance with various international standards upon operations by integrating practices, criteria, and requirements across various fields. The standards include quality, environment, occupational health and safety, and social responsibility, covering all processes and activities of the organization. As employees are able to work systematically and in a suitable working condition, this contributes to greater efficiency and effectiveness. When the delivery of products and services meet the needs and expectations of the stakeholders, the Group will earn more great trusts and reputations accordingly. In addition, this minimizes risks while encouraging business opportunities towards sustainable development.

Business Group/ Company		Certified Standards							
		ISO9001:2015 Quality	ISO14001:2015 Environment	ISO45001:2018 Occupational health and safety	IMS Integrated Management	ISO17025:2017 Laboratory *	ISO39001:2012 Traffic Safety	ISO26000:2010 Social Responsibility	TLS8001:2020 Thai Labor Standard **
Asphalt Business Group	Tipco Asphalt PCL	○	○	○	○	○	○	○	○
	Thai Bitumen Co.,Ltd.	○	○	○	○		○	○	
	Raycol Asphalt Co.,Ltd.	○	○	○	○		○	○	
	KBC Asphalt Refinery	○	○	○		○			
Maritime Business Group	Tipco Maritime Co.,Ltd.	○	○						
Con-struction Business Group	Thai Slurry Seal Co.,Ltd.	○							

Note : * - Thailand: Testing Laboratory Research and Development Department (Phra Pradaeng), Testing and Calibration Laboratory ,Nakhon Ratchasima Factory

- Malaysia KBC Asphalt Refinery

** System certified at head office and is effective at all 5 branch factories in the country

New standard that has been certified in 2021

Tipco Asphalt Group is committed to continuous improvement towards international standard certification by strengthening quality products and reliable service. On December 24, 2021, Thai Slurry Seal Co., Ltd. (Bangpakong Factory) was certified for its quality management system according to international standards ISO 9001: 2015 from the ISO Certification Institute. It is the first asphaltic concrete plant in Thailand which was certified this standard, given the framework of asphaltic concrete production using asphalt cement and modified asphalt cement.



“Sustainable development is organization management that prioritizes on environment, social, and good governance under risk management and innovation culture for the organization’s long-term sustainability.....”

“... and innovative solutions for sustainable living of all societies”



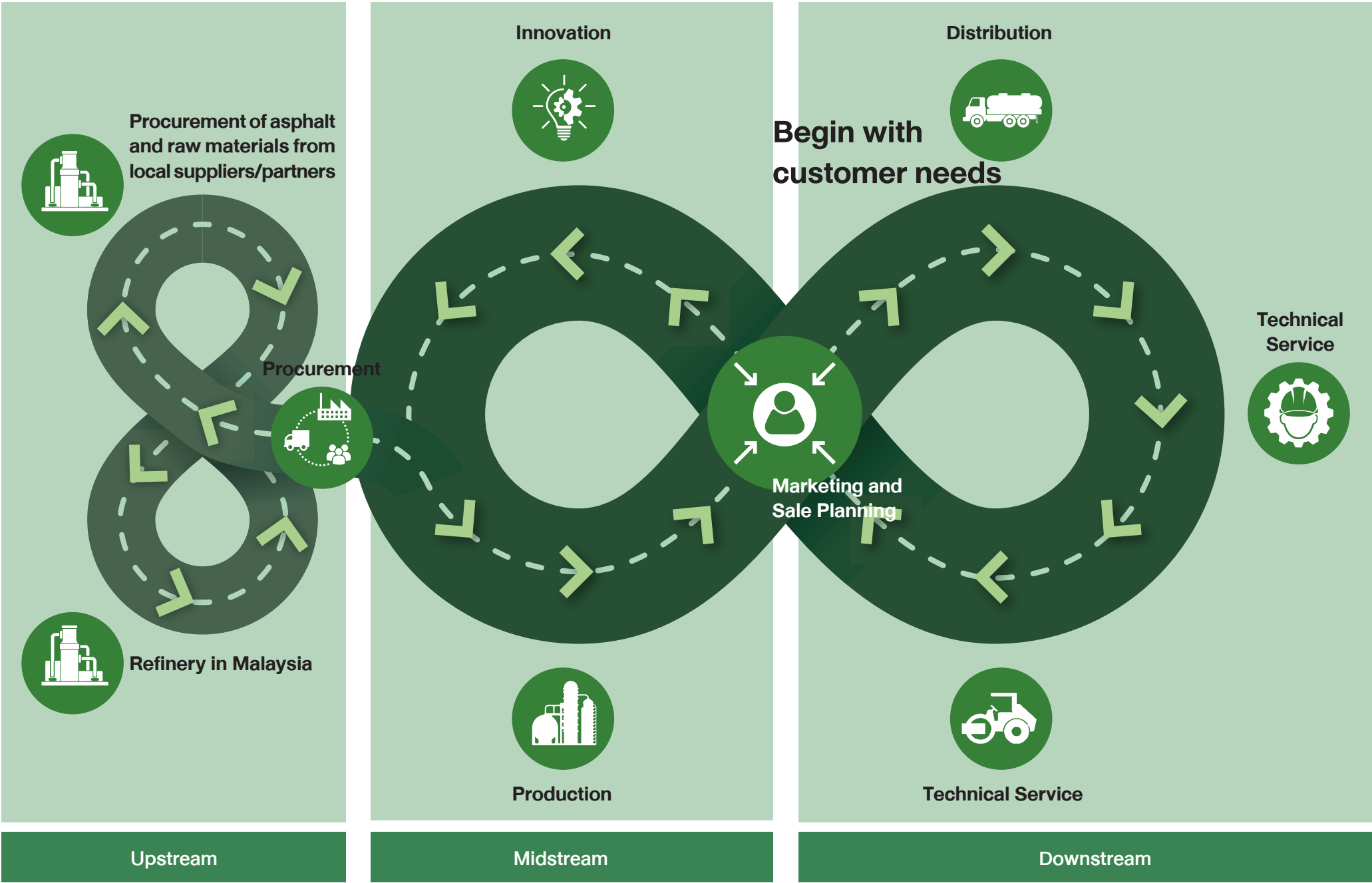
Tipco Asphalt Group: Value Chain

“As the Group implemented ‘customer centric’ strategy, in this value chain, the practices have been demonstrated to align with the strategy. We used the needs of customers to analyze and add “innovation” to thought process. The process includes how to respond to customers and what kind of goods or services shall be provided. Therefore, not only the needs of customers will be served, but operational efficiency will also be improved so this helps reduce the lead time of process.”

Input Factors



[Disclosure 102-2, 102-9]



The Group uses the strengths of the organization in adapting work processes to suit various situations. In order to achieve continuity in business operations without interruption, the business must build strength in various fields such as the introduction of a database storage system to reduce the risk of procurement. The process also includes the development of the system to facilitate users with convenience, speed, and reduce errors, as well as flexible conditions under a proper systematic control.

Added Valued Creation









Top Corporate Risks and Emerging Risks

[Disclosure 102-15]

The Group implements a comprehensive risk analysis process, with consideration on internal factor from internal work efficiency and external factors that might post potential impacts toward the Group's operations. This includes changes in both domestic and overseas pertaining to asphalt and petroleum businesses, as well as other factors which could place significant impact such as changes in economy, politics, law, environment, society and technology.

The results of these internal and external analysis are further taken into considerations and integrated in accordance with the strategy and continuous operation guidelines.

Top Corporate Risks	Impacts	Risk control measures
 Uncertainty in crude oil supply and volatility in oil prices	Refining operations and international wholesale businesses are at risks due to the limited supply of crude oil and the imbalance between asphalt demands and supplies	Search for alternative crude sources, careful management of crude imports and maritime crude shipping.
 Volatility of asphalt demand and prices in the international retail market due to local government budget cuts	Asphalt demand decreased in some countries such as China, Cambodia, Laos, Vietnam and Indonesia.	Participate in special construction projects between the state and the private sector (PPP), promote usage of special grade asphalt products, consider implementing internal operational measures for product delivery.
 Asphalt cement supply	interruptions of asphalt refining process and manufacturing that feed to the market	<ul style="list-style-type: none"> • Consider purchasing from alternative suppliers within the region. • Maintain a good long-term relationship with refineries in Asia by using delivery contracts. • Introduce asphalt cement direct distribution from the Group's refinery. in Malaysia. • Apply asphalt cement production and storage management of the Group's refinery in Malaysia.

Emerging Risks	Impacts	Risk control measures
 Cyber Attacks	<p>The adoption of information technology to business operations can make it more vulnerable to various forms of cyber-attacks, such as fraudulent emails, ransomware, etc. This could result in the loss of sensitive information of the company and its stakeholders, which may lead to a temporary business interruption.</p>	<ul style="list-style-type: none"> • Review the effectiveness of the IT management structure and operations that may be vulnerable to cyberattacks as prescribed in company policies and guidelines. • Switch to more secured 'cloud-based' platform. • Implement Disaster Recovery Plan (DRP), principles for continuity of system service during emergency situations. The plan will help reduce risk to main activities of the business such as production, transportation, purchasing, finance and accounting, etc.
 Data Security	<p>Sensitive information leakage; confidential information is exposed to unauthorized parties and may cause damages and losses to business and stakeholders.</p>	<ul style="list-style-type: none"> • Encourage employees and related parties to comply with the company's policies and practices and create awareness of information security on their duties and responsibilities. • Protect personal information by launching a personal information protection policy, appoint responsible data protection officers for reviewing the operations of related departments under the policy, and communicate to relevant stakeholders.
 The Spread of Covid-19	<p>Personal health safety of employees, customers, affecting the continuity of operations and services to customers, business partners and related stakeholders.</p>	<ul style="list-style-type: none"> • Introduce guidelines for safe operation according to ISO/PAS 45005. • Implement epidemic prevention measures and communicate operational guidelines to employees.

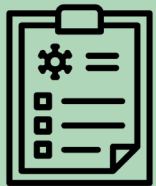


Risk Management Measures During the COVID-19 Pandemic

In 2021, COVID-19 pandemic remained a key risk of the Group while impacting work processes. However, our business activities are mainly trading and shipping with partners, there have been not so much physical contacts between employees with customers or external agencies.

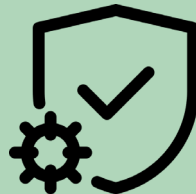
As some employees such as delivery drivers, sales staff need to travel during working hours, the safety policy was put as our top priority. In order to prevent employees and all stakeholders from risks, the Group has adopted the regulation and preventive measures from the Department of Disease Control, in accordance with the standard safety practice guidelines (ISO/PAS 45005), to ensure all workplaces including business units, head office, plants, and constructions operations are safe.

The Group's Management Guideline on COVID-19 can be summarized as follows:



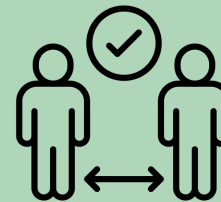
Situation Monitoring

The Group has appointed a management committee to monitor and manage all internal and external risk concerns regarding the epidemic situation, under preventive guidelines and practices for effective and efficient rapid emergency response.



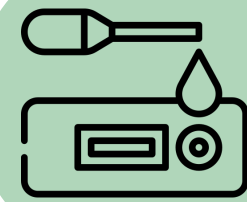
Perform COVID-19 Risk Assessment

The Group has appointed a management committee in the situation of the epidemic of COVID-19 to assess all risk concerns by the opportunity and severity upon each work area.



Implement Risk Mitigation Measures

The Group has implemented an effective risk management plan to reduce all risks related to safety, work conditions and processes for its employees and stakeholders by assessing the level of risk in a particular place such as crowded places with many people nearby or closed spaces with poor ventilation.



Adjust Work Processes to Mitigate Risk

- Limit the number of employees entering workplace and encourage them to work from home.
- Allocate employees to be able to work for each other.
- Screening people before entering the building area.

Our changes and cares to stakeholders to ensure business continuity



Board of Directors, Executives and Employees

- The Board of Directors and executives has implemented safety management guidelines for employees and stakeholders to ensure business continuity.
- Appoint a management committee to monitor, manage, and report all risk concerns to the board and executives on a regular basis during the COVID-19 epidemic.
- Communicate guidelines and practices regarding how to stay physically and mentally health to employees via Tipco Connect and Message from CEO regularly
- Provided employees with protection kits such as masks, hand sanitizer, Antigen Test Kit, and etc. Encourage multi-skilling for effective teamwork in factory branches, and other workplaces.
- Channels for reporting incidents and internal work progress during the epidemic of COVID-19 were set up by the Human Resource Department.
- Operational guidelines were provided for employees going to their workplaces or having to contact customers or other people. The guidelines suggest work practices during the epidemic, and also when the work from home policy is terminated.



Customers

- Effectively planned and managed the distribution of goods during the crisis to ensure customer satisfaction through on time delivery. The Group has also introduced preventive measures by providing safety equipment to keep cargo workers and customers safe during working hours.
- Introduced digital platform system to increase convenience and service efficiency. This allowed customers to be able to track the distribution status, send messages, and receive a notification via the system immediately. Thus, there is no need to contact employees directly.



Suppliers

Sourcing raw materials from different sources can help reduce the risk of raw material shortages. In order to reduce lead time of delivery, the procurement decisions can be made by purchasing or using local services.



Communities and Road Users

Provide support and assistance to affected agencies or sectors with essential medical equipment, food, drinking water, and etc.



Government Agencies

- The group strictly complies with new regulations related to COVID-19.
- Implement the measures in accordance with the law or government direction regulations.
- Report the COVID-19 situation daily.



Shareholders/Investors

- The annual general meeting of shareholders was organized under guidelines for arranging meetings under the circumstances of COVID-19.
- The Group participated in Opportunity Day activity or listed companies meet investors. through online channels of the Stock Exchange regularly

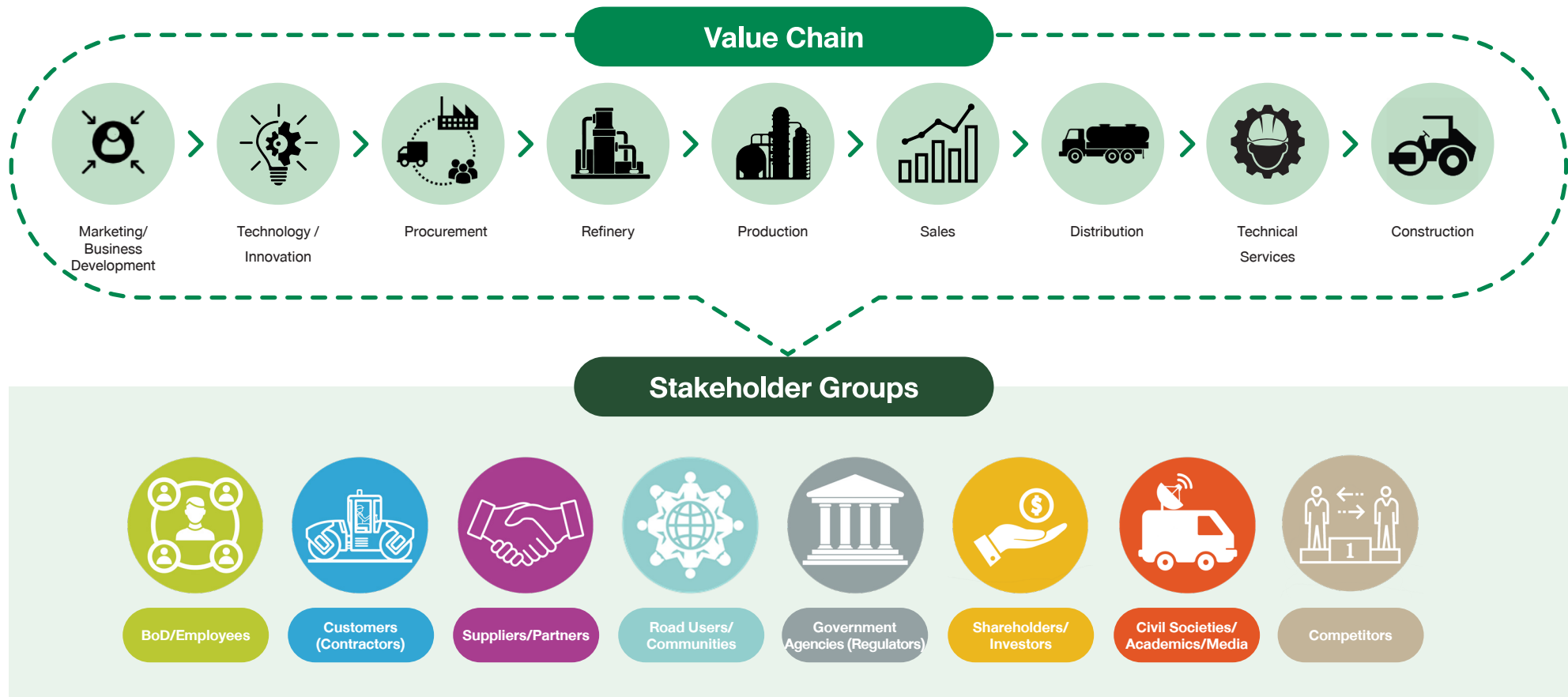
TIPCO Asphalt Group: Stakeholder Groups across Value Chain

[Disclosure 102-40]

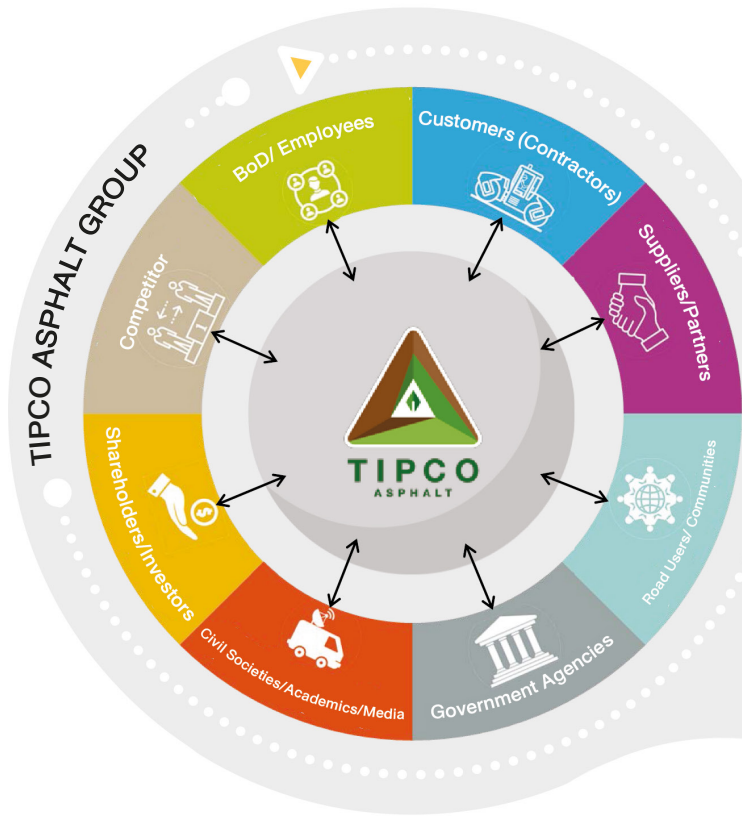
In 2021, the Group announced the Stakeholder Engagement Policy which was approved and signed by the Chairman of the Board of Directors on May 12th, 2021. The Group recognized the importance of stakeholder groups upon our business operations, and we believed that good relationships are built based on trust. All stakeholder's opinions and suggestions on our businesses serve as great valuable assets that provide valuable insights that drive our business toward the achievement of being a sustainable organization. In addition, an effective stakeholder management will allow us to accommodate their expectations, and then return maximum benefits to us while helping mitigate potential risks that could affect business image, reputation, or lead to business interruption. It also can help deliver greatest benefits across all related stakeholder groups.



Scan QR Code
to view Stakeholder
Engagement Policy



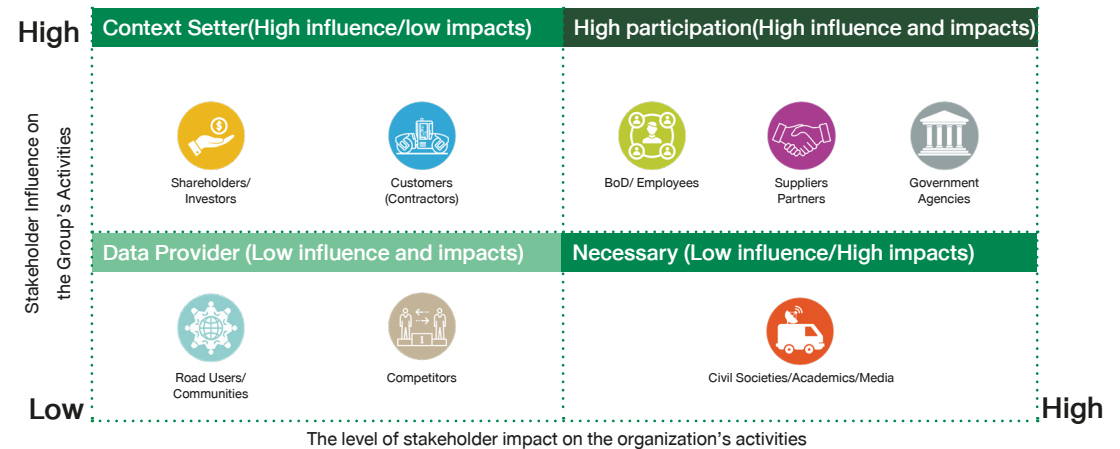
TIPCO Asphalt Group: Stakeholder Relationship Management [Disclosure 102-42]



The Group has implemented a guideline manual on stakeholder relationship management as a framework for identifying key stakeholders and management approaches to respond to their needs or reduce concerns, including assessment on whether such approaches are correct and adequate. This is to ensure great, mutual relationship between the Group and all relevant stakeholder groups. We arranged a series of activities to encourage stakeholder participation utilizing different methods depending on their needs, with suitable channels. Details are in the following page.



Scan the QR Code
to view the Stakeholder
Management Manual











Stakeholder Identification and Prioritization



Stakeholders

- Organization
- High Participation
- Context Setter
- Necessary-Data
- Provider

Stakeholder Engagement [Disclosure 102-43]

Stakeholder Group	Needs/Expectations	Engagement channels/ frequency	Benefits to stakeholders	Highlights in 2021
 Board of Directors Employees	<ul style="list-style-type: none">Contribute to the achievement of the sustainable development goals with transparency, legality, and ethics in business managementDrive business toward sustainable developmentGreat quality of life, career stability, and fair compensationsRespect the rights of employees and stakeholders	<ul style="list-style-type: none">Sustainability governance through board meetings at least 5 times per yearSemi-annual Employee Meetings to communicate the Group’s policy and operating results from the CEO via online platformCommunications to ensure awareness on personal healthcare during the COVID-19 outbreak through internal communication channels such as the TIPCO Connect and Intranet	<ul style="list-style-type: none">Good corporate governance in business managementIntegration of sustainability into corporate strategy and business plansSafe and happy workplace with work-life balanceContinuous skill and capability developmentsCareer advancement and fair compensation	<ul style="list-style-type: none">5-star; excellent” rating from the Corporate Governance Report of Thai listed companies for the 4th consecutive yearMembership re-certification (Level-4) from Thailand’s Private Sector Collective Action Against Corruption (CAC)The Group’s stock was ranked on the SET THSI Sustainable Stock List for the 4th consecutive yearZero lost time incident or fatality accident22.2% promotion rate for high potential employees to management positions
 Customers	<ul style="list-style-type: none">Meet customer expectations by serving products and services they needMaintain customer confidentiality and data protectionFair treatment and respect for customer rights	<ul style="list-style-type: none">Customer relationship management activities, customer satisfaction survey and complaint channel through ZoomTraining and seminars in 2021 through Zoom to provide to customers	<ul style="list-style-type: none">Reliability on high quality products on time delivery with full quantityResponse to expectations and effective communicationRelationship enhancement activities and product launches	<ul style="list-style-type: none">87.4% customer satisfaction survey results100% of 33 customer complaint issues were resolved and communicated back to the customersNo incident of product recall due to poor quality
 Suppliers/Partners	<ul style="list-style-type: none">Commit to a fair business practiceRespect the rights of partners/alliancesEncourage business partners to continuously improve their working systems to increase efficiencyEncourage business partners to join the green industry process	<ul style="list-style-type: none">Provide suggestions to suppliers through online system, including consulting services through telephoneAnnual supplier visits via online system at least one time per yearJoint social responsibility activities• Provide a channel for complaints via the company’s website or contact information	<ul style="list-style-type: none">Suppliers have a safe working environment.Sharing of information, knowledge, operational guidelines and business conduct in accordance with international standardsIncrease business competency with effective business managementPartners and alliances are able to develop their businesses with a sustainable self-reliance	<ul style="list-style-type: none">94.16% Purchase of raw materials and containers of total volume per year was made within time requirement.The value of purchasing and procuring environmentally friendly products (Green Product) in Thailand was totaling 153 million Baht• Local purchasing value in Thailand totaled 62.95 million BahtTwo business partners’ sites were inspected and one business partner’s site was visited via the online system1 lost time incident or fatality accident
 Road Users/ Communities	<ul style="list-style-type: none">Promote safe drivingCreate pollution-free communityProvide education and career opportunities for communityPromote health in the epidemic situation of COVID-19	<ul style="list-style-type: none">Public interaction with communities and road usersSurvey overall satisfaction through community-based activities“Open house” projectChannels to receive comments and complaints	<ul style="list-style-type: none">Collaborate and promote knowledge/expertise sharingListen to communities’ real needs and complaintsCreate high-quality road construction innovations	<ul style="list-style-type: none">The average community participation satisfaction survey result was 93%Zero ESG complaints from communities and road usersThere were 7 major social activities in which medical equipment, food and necessary appliances were granted to communities and hospitals during the Covid-19 epidemic
 Government Agencies	<ul style="list-style-type: none">Full compliance with related laws and regulationsPromote anti-corruption and infringement	<ul style="list-style-type: none">Participate in meetings related to regulationsMeetings/joint activities on social responsibilityPlant visits	<ul style="list-style-type: none">Support and promote the United Nations Sustainable Development Goals (UN-SDG)Tax payments to support local community developments and focus on local employment/hiring	<ul style="list-style-type: none">Promoted the United Nations Sustainable Development Goals (UNSDG) through regular conduct of social activities
 Shareholders/ Investors	<ul style="list-style-type: none">Opportunities for investment growth and business sustainabilityGovernance and data disclosure pertaining to business directions	<ul style="list-style-type: none">Annual general meeting under social distancing protocolsQuarterly analyst meetingsCommunication of operating results through the Annual Report and Sustainability Report on the Group’s official websiteChannel for complaints (Whistleblower)	<ul style="list-style-type: none">Provide reasonable returnsPrudent business growth managementEffective risk management through internal control measuresTransparent business conduct, to promote good corporate image	<ul style="list-style-type: none">1.05 Baht Dividends per share9.74 Baht Book Value per share, grew by 9.40% from the previous year
 Civil Societies/ Academics/Media	<ul style="list-style-type: none">Data disclosure with accuracy, clarity, and timeliness	<ul style="list-style-type: none">Keep update to the Stock Exchange of Thailand and other regulatory agenciesPress release of the companyOpportunity Day meetingPhone number and email investor relations for inquiries	<ul style="list-style-type: none">Data disclosure with accuracy and timeliness	<ul style="list-style-type: none">Disclose information to the Stock Exchange of Thailand and other regulatory agencies as legal requiredPrepare press releases regularlyAttend Opportunity day meetings 4 times a yearQuickly respond to investors’ queries via investor relations channels
 Competitors	<ul style="list-style-type: none">Fair business practicesOperational transparency	<ul style="list-style-type: none">Exhibitions/academic seminarsWebsites and social media	<ul style="list-style-type: none">Fair and transparent competition, in accordance with the Group’s ethics	<ul style="list-style-type: none">Complied with corporate ethicsComplied with sales policy

Assessment of Key Materiality for Sustainability

Identification of Key Materiality for Sustainability

TIPCO Asphalt Group constantly reviews data disclosure in our Sustainability Report. In 2021, we conducted a re-assessment and re-prioritization of key materiality issues for sustainable development by referring to the Sustainable Development topics covered in 2020 and taking global and regional external risk factors into consideration. The Covid-19 pandemic continues to pose serious challenges the world, meanwhile in many countries, vaccines were developed against the virus that has continuously mutated into different new strains. In addition, the United States' sanction against Venezuela which directly impacted the Group's crude supplies source for our refinery in Malaysia, in which the aforementioned sanction still affects our business until present. At the same time, the world has turned its attention to climate change that contributes to extreme weather conditions due to the emissions of fossil fuels such as coal, oil and gas from human economic activities. In addition to considering risk factors, trends of changes, and developments of sustainability Index of the Stock Exchange of Thailand, The UN's Sustainable Development Goals (SDGs) were also brought for business risk assessment. There are also various internal factors that may influence the direction of business management and sustainability goals, including strategy, vision, and critical issues raised by executives which focusing on human development, risks management, and opportunities. As all information are benefits to the sustainability development of the organization in both the short and long term, it has been taken into the Group's business decision and consideration.

Since various changes that have occurred directly affecting the business operation and may intensify, the Group has assessed the sustainability issues as follows: 1. Materiality identification: analyze key materiality issues across value chain through in-depth interview sessions with executives and relevant employees including those key materiality that stakeholders set high priority upon, then summarized into a survey form. 2. Interview: conduct interview sessions with 27 sample groups of internal/external stakeholders through in-depth interview approach via telephone, email, online video conference platforms such as Microsoft Team, or on-site meeting. 3. Assessment and Prioritization: evaluate and prioritize key materiality issues for sustainability that are important to stakeholders and to the Group, using their respective impact and influence as criteria for planning and implementation under effective and timely management for maximum benefits. These assessment and prioritization will be utilized as information sharing for collaboration among partners, customers and key stakeholders. 4. Result verification: Management of relevant business unit consider, review and endorse the assessment results, then propose to the Chief Executive Officer for acknowledgement, followed by submission to the CG committee for final acknowledgment and approval.

Changes in 2020 key Materiality for Sustainability

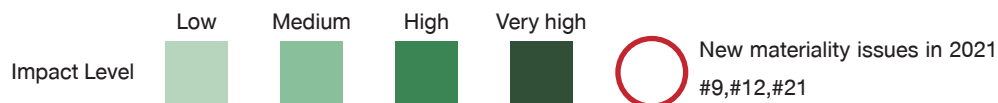
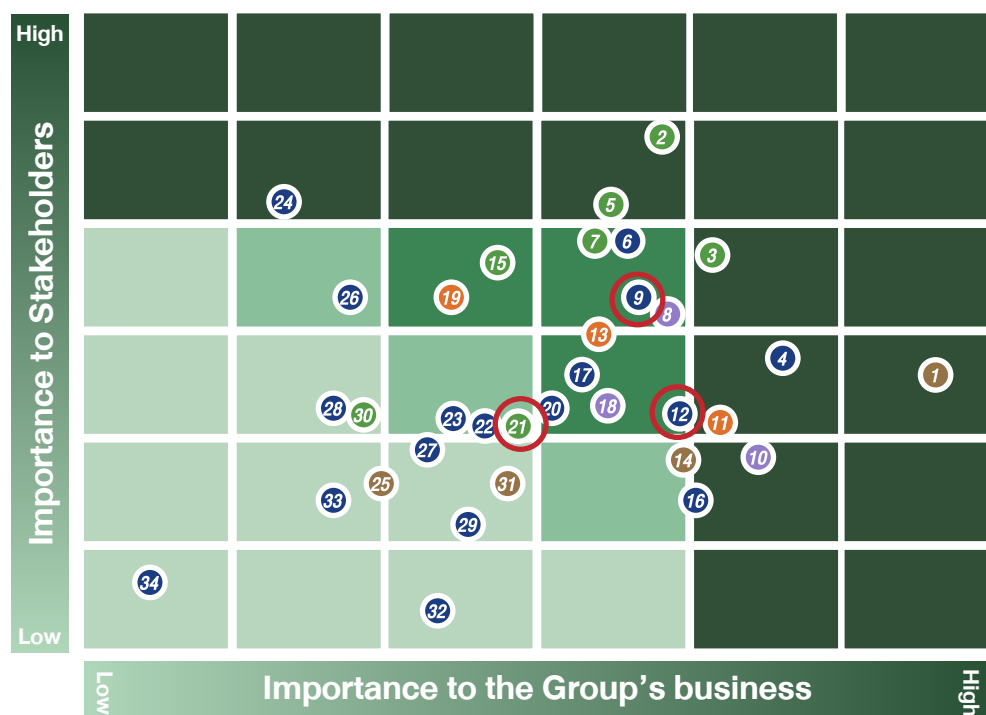
During early-2021, the management and Sustainability working team summarized and identified key materiality issues for sustainability of the Group, using clear criteria and details while considering key risks at global and regional levels. Interviews were conducted with all stakeholder groups relevant to our businesses. From the survey during early-2021, it was founded that there were 21 key concerns in the high-very high group as follows:

The results of the assessment found that "Eco-efficiency Management" has the following important issues: pollution management services and spill prevention from work processes or transportation, waste management, and cost-effective use of energy.

The issues that will remain relevant for 2020 include innovation, safety for employees, customers and transportation. For risk management, human resource management in terms of employee retention, there are also 3 new issues which are communication and corporate image, government policies and budgets, and environmental protection, biodiversity, and restoration of the natural environment.

The assessment was based on the Global Reporting Initiatives (GRI) Sustainability Reporting Framework, GRI Standards edition.

Result of 2021-2022 Materiality Assessment [Disclosure 102-44]



TIPCO Asphalt Group: Key Materiality Issues• Must be key materiality issues that both internal and external stakeholders agree that they are highly significant and impactful. These key issues will serve as key inputs for short- to long- term business plan formulation.

Scope of report: The report analysis is based on relevancy to the Group's business, information readiness and impacts to the Group's key businesses focusing on asphalt, pre-mix asphalt, lube base oil, logistics services and other supporting businesses. As for operational results pertaining to occupational health, safety and environment, the report only encompasses businesses of TIPCO Asphalt Public Company Limited

Innovation Leader For 10X exponential economic growth

- 8) Foster innovation for Tipco Asphalt DNA
- 10) Asphalt pavement excellence centre
- 18) Environmental friendly product&service development

Eco-efficiency management : For better planet

- 2) Emission Management
- 3) Emission management / spill&leak
- 5) Energy Management
- 7) Opportunities and risks from changes
- 15) MaterialsMmanagement
- 21) Protection of the environment, biodiversity and restoration of natural habitats
- 30) Water Management

Safety awareness : "Better safe and sorry"

- 11) Employee health and safety
- 13) Safety during transportation and delivering goods
- 19) Customer and road user : health and safety

Transparent corporate governance : For strong business foundation

- 4) Risk & Crisis Management
- 6) Good corporate governance, transparency, and anti-corruption
- 9) News, Communication and corporate reputation
- 12) Politics/ government budget changes
- 16) Cyber security
- 17) Marketing and labeling
- 20) Customer centric
- 22) Customer Privacy
- 23) Fair Labor Practices
- 24) Participation in community and society development
- 26) Dialogue with stakeholders
- 27) Fair business practices
- 28) Assessment of social, environmental, and ethical issues in the supply chain
- 29) Sustainable supply chain management
- 32) Sustainable Purchasing
- 33) Respecting Human Rights
- 34) Procurement from local businesses

Value for the Future : Employee development to cope with new changes

- 1) Retaining potential employee & employee management
- 14) Training and education
- 25) Diversity and equal opportunity
- 31) Employee centric

[Disclosure 102-47]

Key Materiality Issues in 2021 and Stakeholder Engagement

TIPCO Asphalt Group prioritizes engagement with stakeholder groups, both directly and indirectly related to the Group's operations to encourage employees to work at full efficiency with happiness, and be able to build and maintain relationships with customers. As customer comments are considered as key element in determining the direction of operations for the development of corporate sustainability, the Group has communicated with relevant stakeholders on key materiality issues that are of interest to each stakeholder groups while they will serve as criteria for our decision making, planning, as well as the Group's business practices

The following table summarizes 9 key materiality issues for sustainability and 12 materiality topics for TIPCO Asphalt Group's business operations in 2020. Each of these issues is classified according to our 3 sustainable development strategies: namely, innovation, eco-efficiency and safety, in conjunction with management on good corporate governance and employee development. These are well in line with our corporate strategy and fit our business models in this highly competitive environment.

Innovation: (Economic (direct and indirect))



Main Issue

- **Asphalt pavement excellence centre**

Minor Issue

- Create and promote an innovation culture to become an innovation leader
- Focuses on environmentally and socially friendly products and services

- Bringing reviews and feedback from customers and stakeholders for new products or services development allows business to meet their expectations. In addition, cooperation in an innovative manufacturing process among people in organizations, academics, students and related stakeholders also increase the potential organizational efficiency and steady growth based on sustainability.

Eco-efficiency (Environment)



Main Issue

- **Emission Management/Spill& Leak**
- **Waste Management**
- **Energy Management**

Minor Issue

- Opportunities and risks from climate change
- Valuable use of resources and raw materials

- Manage risks to prevent and control pollution in business activities and take proactive action on requirements as prescribed in environmental laws and regulations
- Control the use of resources, reduce waste, and promote the recycling and reduce final disposal
- Increase energy efficiency and encourage alternative energy use in business processes

Safety (Social)



Main Issue

- **Employee health and safety**

Minor Issue

- Supervision of safety in road transport
- Taking care of the health and safety of customers

- Create a safe working condition and processes for occupational health in the industry with a pleasant environment to increase the efficiency of employees and stakeholders
- Committed to protecting employees, customers and communities through audit risk management and cyber security system.

Organization Management (Corporate governance and employee development)



Main Issue









- **Risk & Crisis Management**
- **Participation in community and society development**
- **Retaining Potential Employee & Employee Management**
- **training and education.**

Minor Issue

- Good corporate governance, transparency, and anti-corruption
- Cyber Security
- Government policies and budgets
- Communication and corporate image
- Quality and responsibility for products and services
- Customer-centricity

- Focus on corporate risk management which may affect business strategies and operations along with creating value for the economy, society, community and environment
- Emphasize customer- and employee-centered management to achieve efficiency maximization. As an effective people management creates a pleasant working condition, this help strengthen business relationships with customers

Scope of Impacts from Key Materiality Issues to Stakeholders [Disclosure 102-46]

Key materiality issues for sustainability	Scope of Impacts									Reference standard used in the Report			
	Internal to the in the Report organization		External to the in the Report organization										
	Board of Director									GRI	Standard	SDGs	Page
Asphalt Pavement Excellence Centre	●	●							●	GRI 201	ISO 9001	SDG 9,12	52
Emission Management / Spill & Leak	●	●		●	●	●				GRI 305	ISO 14001	SDG 12,13	76
Waste Management	●	●	●		●	●				GRI 306	ISO 14001	SDG 12,13	82
Energy Management	●	●	●	●	●					GRI 302	ISO 14001	SDG 7	88
Employee health and safety	●	●	●	●	●					GRI 403	ISO 45001	SDG 3	114
Participation in community and society development	●	●	●	●	●	●	●			GRI 413	ISO 26000	SDG 3	132
Risk & Crisis Management	●	●	●	●	●	●	●	●	●	GRI 102	ISO 31000	SDG 1-17	142
Retaining Potential Employee & Employee Management	●	●					●			GRI 401	TLS 8001	SDG 5,8	205
Training and Education	●	●					●			GRI 404	TLS 8001	SDG 4	214

TIPCO Asphalt Group: Sustainable Development Strategies [Disclosure 102-14]

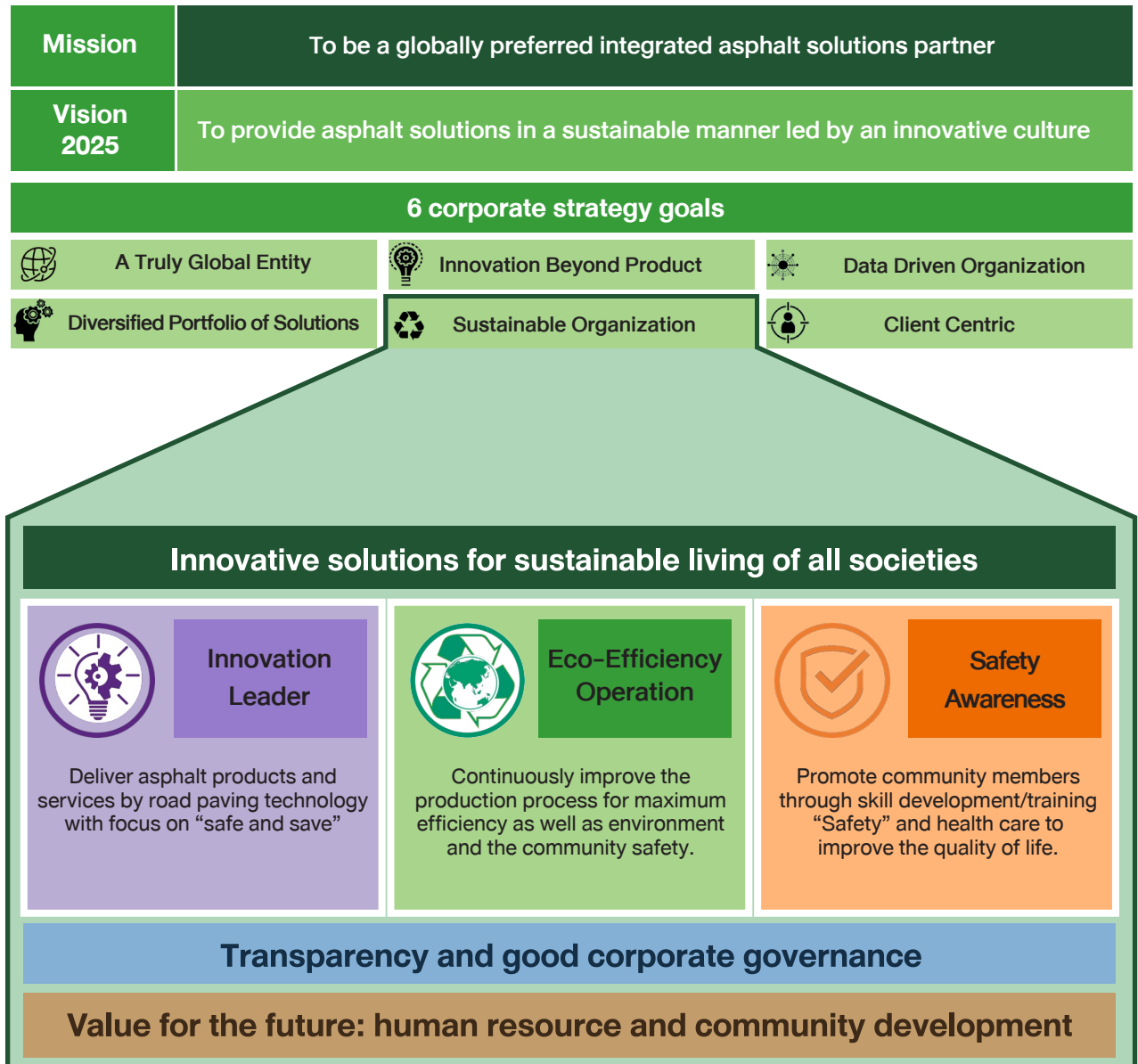
From the mission and vision 2025, we have set 6 strategic goals, of which sustainability development has been included in determining the direction of the Group toward sustainable development.

Our sustainability framework is a fundamental working principle that outlines the best practices in accordance with international principles and standards to achieve the sustainability. We are committed to strengthening business competency and long-term management by implementing 3 sustainability strategies and principles as follows:

- 1) Innovation Leader
- 2) Eco-efficiency Operations
- 3) Safety Awareness

Accompanied by two important foundations of sustainable development:

- 1) Transparency and Good Corporate Governance
- 2) Value for the Future – People Development



[Disclosure 102-19, 102-20]

TIPCO Asphalt Group: Policy, Roles and Responsibilities on Sustainable Development

TIPCO Asphalt Group has developed sustainable development framework, with approval and implementation of strategies and goal settings since 2017. With our sustainable development vision “innovative solutions for sustainable living of all societies”, it communicates to all employees and stakeholders to ensure their understanding on mutual development goals with systematic monitoring and controls on results. Sustainable development initiatives have been integrated with our business practices and directions to align all employees to follow strategic plans with continual development, thus creating mutual benefits to both the Group and society including clear communication to all employees to ensure their understanding and participation.

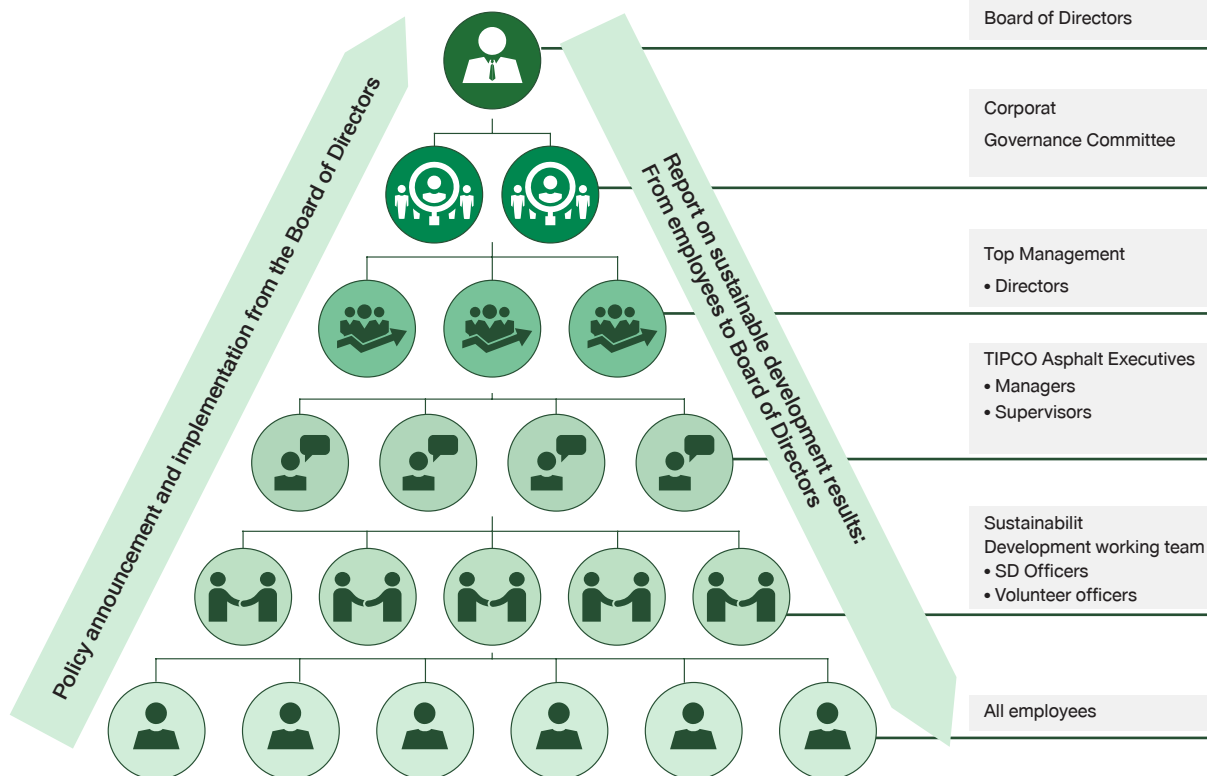


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development policy



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to view our
sustainability governance







TIPCO Asphalt Group: Governance Structure of Sustainable Development



Roles & Responsibilities	Frequency
Approve sustainable development strategies, goals, and budgets	Quarterly (5-6 times)
<ol style="list-style-type: none"> 1 Screen policy, strategies, goals and action plans associated with sustainable development 2 Follow up on sustainability performance and provide result updates to the Board of Directors 3 Review sustainability policy of the Group and present to the Board of Directors 	Quarterly (4 times)
<ul style="list-style-type: none"> Consider operating results that deviate from plans and targets, including recommendations on solutions or adjustments Formulate and review guidelines, framework for business conduct, policy, strategy, targets and corresponding action plans 	Monthly (12 times)
<ol style="list-style-type: none"> 1 Monitor operating results in the Management Review meeting, on sustainable development and ISO standards 2 Coordinate, research and provide recommendations for operating result improvements benchmarking with standards, both internal and external to the Group 3 Prepare quarterly report 	Every 4 months (3 times)
<ul style="list-style-type: none"> Communicate framework, policy, strategy, goals, and action plans associated with sustainable development to employees and relevant stakeholders to ensure their acknowledgement and understanding Promote and coordinate, both within and outside the organization 	Monthl (12 times)
Implement action plans to achieve sustainable development goals together	

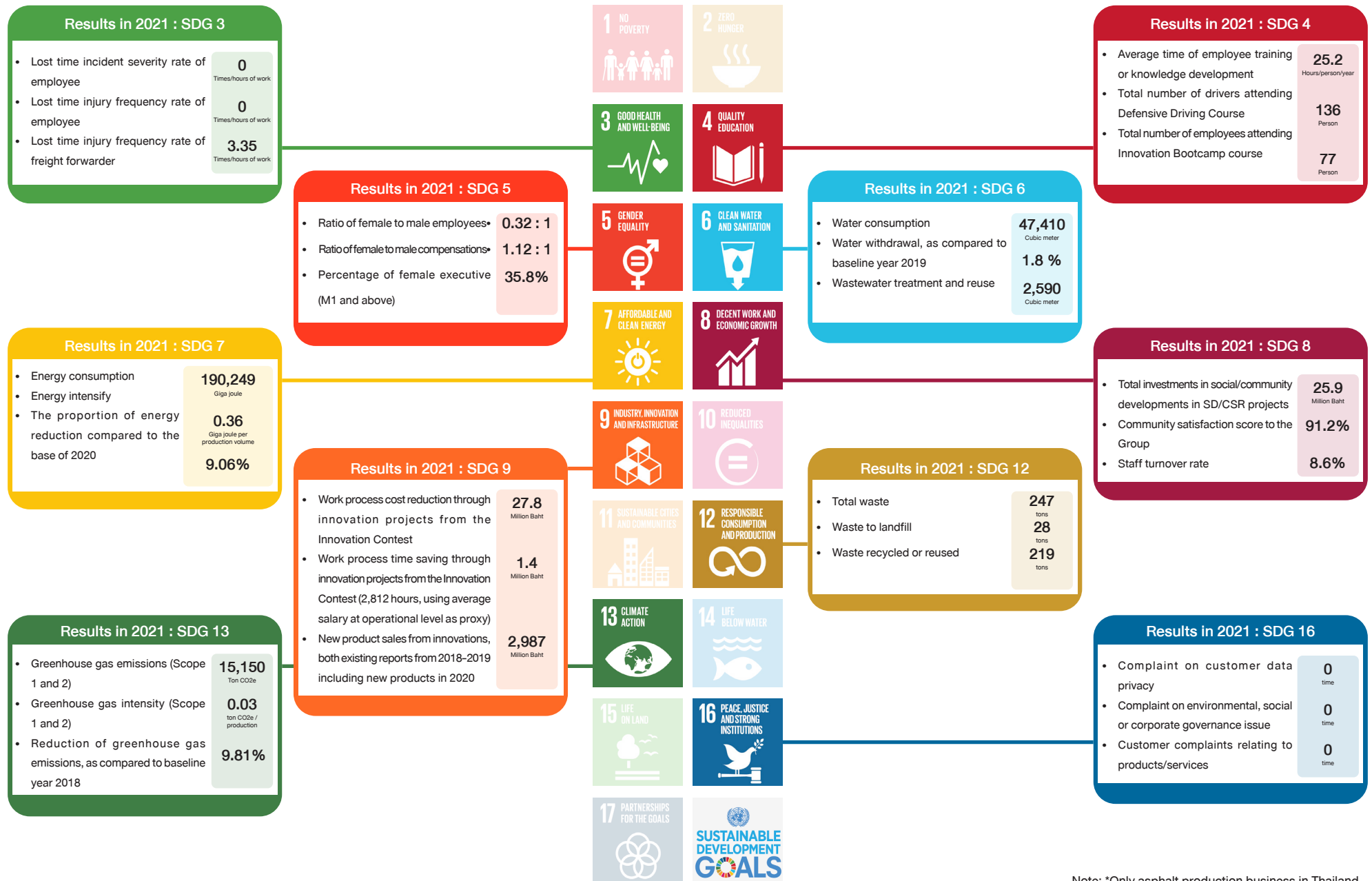
[Disclosure 102-14]

Sustainable Development Targets and Results in 2021

Sustainable Development Strategy	Key Targets in 2025	Key Targets in 2021	Results in 2021
Innovation Leader			
 	For 10X exponential economic growth <ul style="list-style-type: none"> Reinforce “innovation” into the corporate culture >25% profits increase (from innovation) as compared to base year 2018 	<ul style="list-style-type: none"> Not less than 50% of employees participating in the Innovation Bootcamp project Create new environmental and social innovations not less than 10 projects 	<ul style="list-style-type: none"> Innovation Bootcamp program with 105 participants, representing 8.5 percent New 1 social and environmental innovation project
Eco-efficiency operations			
 	For a better world <ul style="list-style-type: none"> Reduce not less than 6% of greenhouse gas emissions per ton of production from base year (Scope 1 and 2) 	<ul style="list-style-type: none"> No less than 2% of greenhouse gas emissions intensity reduction, as compared to base year 2020 (Scope 1 and 2) 	<ul style="list-style-type: none"> Achieved 9.81% of greenhouse gas emissions intensity reduction as compared to base year 2020
Safety Awareness			
 	For safety “better safe than sorry” <ul style="list-style-type: none"> Zero lost time accident and fatality Zero Loss Time Injury Frequency Rate (LTIFR) from work and product delivery is zero 	<ul style="list-style-type: none"> No fatality accident of employees No more than 0.74 time per million work hours on Loss Time Injury Frequency Rate (LTIFR) 	<ul style="list-style-type: none"> 1 fatal accident from the outsourced logistics contractor 0.00 time per million work hours on Loss Time Injury Frequency Rate (LTIFR)

Sustainable Development Strategy	Key Targets in 2025	Key Targets in 2021	Results in 2021
Good Corporate Governance			
 	To build a strong business foundation <ul style="list-style-type: none"> The company is rated at the highest level under Good Corporate Governance Criteria 	<ul style="list-style-type: none"> To be a model organization in corporate governance by maintaining a level not less than 5 stars Annual Shareholders Meeting Quality Assessment Project (AGM checklist) not less than 98% 	<ul style="list-style-type: none"> CGR Score: 5 stars for the 4th consecutive year, including being one of the 100 Thai companies invited to participate in ASEAN Corporate Governance Project Scorecard 2021 The results of the quality assessment of the annual shareholders' meeting was 98%
Value for the Future			
 	To be ready for new change <ul style="list-style-type: none"> Career progress planning which is made by individual development plan of the high potential employee is expected at not less than 75% There are potential successors in all positions as targeted 	<ul style="list-style-type: none"> 24 hours technical and administrative training per person per year 	<ul style="list-style-type: none"> Average hours for all topic categories was 25.20 hours per person per year Technical and administrative training hours was 18 hours per person per year at average

10 Sustainable Development Performance Highlights in 2021: Breakdown by UN Sustainable Development Goals



Note: *Only asphalt production business in Thailand

“As Tipco Asphalt Group realized the importance of sustainable development, we have set a strategic plan as a key component of the Vision 2025 corporate strategy for management and operation responding to the key expectations of employees and stakeholders along the value chain.

We are committed to being part of the global community in supporting sustainable development by adapting the operating guidelines as prescribed in the UN Sustainable Development Goals (SDGs). In addition, the Group has started the sustainable development reporting according to the contractual agreement of the United Nations (UN Global Compact), which mentions the principle of human rights, labor, environment and anti-corruption. Therefore, our report on the development of sustainability is based on the Global Reporting Initiative (GRI Standard) standard.”

Chatwaruth Musigchai
Senior Manager,
Sustainable Development Department



TIPCO ASPHALT: Sustainable Development Milestone

• 2013

- Set mission and vision 2015 by including corporate social responsibility in the corporate vision.
- Establish policy on Social Responsibility and Community Engagement.

• 2014

- Study the guidelines for the preparation of Enterprise Risk Management.
- Adopting social responsibility guideline ISO 26000 was implemented in the organization.

• 2015

- Set the mission and vision 2020 by including sustainable social responsibility into the corporate vision.
- As risk management is one of the organization's strategic goals, risk registration according to the COSO standard was created.
- "5-star; excellent" rating from the Corporate Governance Report of Thai Listed Companies: CGR for the first year.

• 2016

- Implemented sustainability strategy in economic, social and environmental aspects in line with the corporate strategy plan.
- "5-star; excellent" rating from the Corporate Governance Report of Thai Listed Companies (CGR) continuously.
- Started an innovation project.

• 2017

- The Company joined the membership of the Thai Private Sector Collective Action Against Corruption (CAC).

• 2018

- The first Annual Sustainability Report was launched.
- Started to collect management data on key materiality for sustainability.
- The Group was awarded Sustainability Awarded (Rising Stars category).
- The Group's stock (TASCO) was included in the Thailand Sustainability Investment Index (THSI) for the first year.

Phase 1 Lay foundation (2016–2018)

- Developing people, adding basic values to sustainability
- Good corporate governance, as foundation for future sustainability
- Effective risk management, with execution according to plans
- Setting of sustainable development goals, and effective communication
- Enhance the organization's sustainability knowledge
- Education of the team and progress towards common goals

Phase 2

Drive Sustainable Business (2019–2021)

- Create value for products and services by using creative innovation
- Improve the work process to increase business competency as well as reduce environmental impact
- Focus on raising awareness of the safety of stakeholders
- Disclose sustainability information transparently, build business confidence strong business alliances relationship
- Cultivate a sustainable DNA throughout the organization

Phase 3

Leverage on sustainability (From 2022 onward)

- Review of policies and strategic plans for continuous and sustainable business growth
- Build a network of sustainability alliances
- Aiming to be an internationally sustainable organization

• 2019

- Set mission and Vision 2025 in corporate vision.
- Established a policy on Social Responsibility and Community Engagement.
- The Group was awarded Sustainability Disclosure Award from Thaipat Institute for the first time.

• 2020

- The company was recertified by Thai Private Sector Collective Action Against Anti-Corruption Coalition Corruption (CAC).

• 2021

- Review and enact new environmental policy that is consistent with the organization's sustainable development strategy plan.
- ESG rating from an international rating organization such as S&P Global.
- Implemented personal data protection policy as well as appointed a data protection officer, responsible for Personal Data Protection Act (PDPA), which is expected to come into effect in June 2022. Awarded Sustainability Award in the category 'Highly Commended'
- Reviewed of human rights policy.

• 2022

- Be a learning hub and leader in asphalt innovation for road construction, including new construction, road maintenance and advance applications
- Build a sustainability alliance network with various organizations both domestically and internationally
- Participate in the sustainability assessment program of international credit rating agencies.
- Set the corporate strategic plan 2030

Innovation Leader

For 10X exponential economic growth



- Excellence for paving
- Foster innovation culture
- Products/services that are environment friendly



Asphalt Pavement Excellence



Key Value Chain



Key Stakeholders



Key risks and opportunities

- Risk of impact of substitute products with better technology
- Risk of lack of knowledge and experience transfer processes
- Risk in response to customer needs.

Goal [Disclosure 102-14]

Long-term goals in 2025

- Establishing a training platform which promotes interactive learning via mobile system and Station from anywhere and anytime for contractors and related people joining seminars
- Being a learning hub and a leader in asphalt innovation for road construction, including new construction, road maintenance, and advance applications

2021 Short-Term Goals

- Develop learning and working systems through online platform
- Provide knowledge on the use of asphalt in road construction by the technical team in a small group via online platform (20 knowledge sharing sessions)
- Technical service satisfaction survey score is not less than 85%

Results in 2021

- Develop learning and working systems through online platform with 3 main components
 - Knowledge of application design
 - product knowledge
 - material quantity calculation system
- Provide knowledge on the use of asphalt in road construction by the technical team in a small group via online platform (20 knowledge sharing sessions)
- Technical service satisfaction survey score was 89.5%

Management approach [Disclosure 103-2]

With more than 40 years of experience in asphalt business, TIPCO Asphalt Group constantly develops and improves asphalt quality to suit road applications in accordance with international standards for all asphalt use on road paving. We also adopted modern technology in collaboration with the Colas Group from France, our business partner that pioneered high road technology application. In addition, the Group utilizes technology in the development of asphalt road pavement that exhibits the highest level of safety features.

As we committed our businesses to innovations, this allowed us to experience exponential business growth. The corporate communication division is the main unit that drives the process of promoting internal innovation and creating an environment to promote creativity and continual development. The contribution of employees will allow the business to achieve the highest efficiency in all aspects through a proactive approach and lead the organization to overcome various types of crises in the midst of a challenging world. With digital technology adoption, this will help businesses to meet the customer expectation, increase speed of service with low error, reduce costs, and save time in their overall processes throughout the supply chain efficiently. Therefore, we expected to increase competitiveness as well as increase the capabilities of employee along with the new normal transformation.

After the construction business group became a part of our group, we have developed a learning and working system through an online platform, focusing on knowledge for product design. This enables contractors and all related people to learn through interactive mobile and station systems at any time, which achieves our business goal to be a leader of asphalt innovation for road construction.

Key Changes in 2021 [Disclosure 102-49]

- Implemented E-Document system to keep knowledge, documents, and certificates to facilitate accessing and learning via mobile. The documents include product and delivery information as required by the standards of government agencies.
- Synchronize training data and satisfaction monitoring system through an online customer satisfaction assessment system to create channel for acquiring opinions from users and contractors



Scan QR Code
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policy

Tipco Asphalt Group: The Leader in Sustainable Road Design

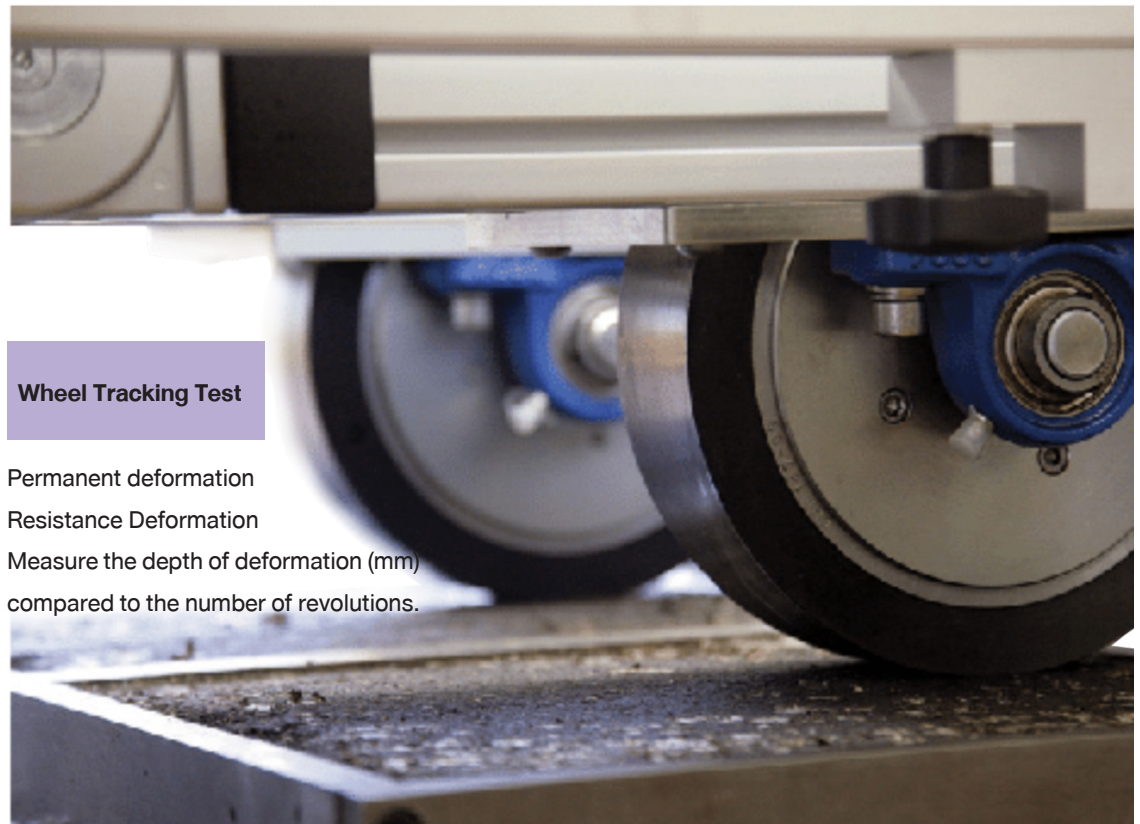
Durability is one of the key materiality of future road construction. As a result of the rapidly changing climate and continued economic growth of the country, the traffic volumes and heavy truck volumes in agriculture and the construction industry are expected to gradually increase. However, these factors cause damage to roads before their planned service life which are not only affect the logistics system, but also affects the safety of road users as well. Thus, it is undniable to say that roads are a major transportation infrastructure for driving the country's economy.

The Design from Performance Testing

Tipco Asphalt Group focuses on road user safety, so the design of strong, durable, safe, and smooth road are our main priorities. These characteristics of the road can reduce the frequency of maintenance and resources utilization as well as support the heavy traffic.

We have experts team joining with Colas Company, the world's leading company in asphalt business from France. At present, the company is one of our major shareholders who participated in the development of high-efficiency asphalt, or high-quality floor construction in which conventional asphalt are not able to accommodate high traffic volumes in each year. We choose High Modulus Asphalt to achieve long-lasting and sustainable road life which save maintenance costs, as well as reducing the pavement thickness, stone and energy consumption, and carbon dioxide emissions.

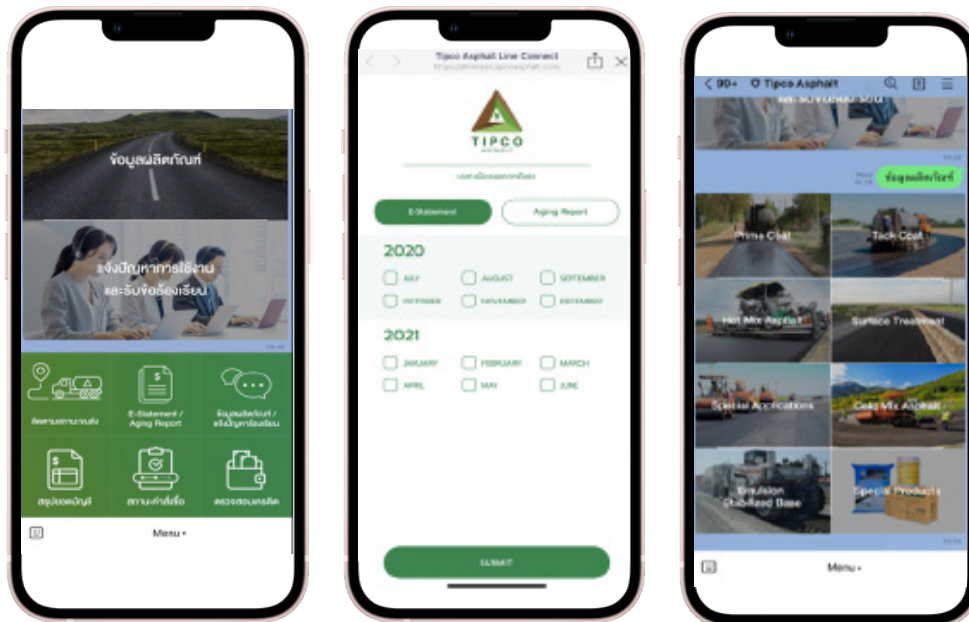
The reference projects were the maintenance of runway 1 and 2 as well as the construction of 3rd runway at Suvarnabhumi airport.



Wheel Tracking Test

Permanent deformation
Resistance Deformation
Measure the depth of deformation (mm)
compared to the number of revolutions.

Work procedures: new learning and changes during the COVID-19 pandemic



The development of on-site technician competency and the training on road construction technology for contractors is essential for the development of quality of the road as well as its service life, including the safety for people passing through the road. During the Covid-19 epidemic, many areas have been restricted on travel, so the training for operations during the period was difficult and full of limitations.

Nevertheless, we have learned and figured out how to provide contractors with training services during periods of limited travel. One of the best ways that has been developed is organizing training sessions through the Digi-Online system in which 2021 was the first year that our customer service division has developed an E-Learning system and implemented the mobile platform. In the first phase, we launched a system test for learning in a limited group only. During the test period, we gathered data from users and used it to develop the system and provide services to contractors in the general market.

Colas: Our World Class Business Partner in Asphalt Innovations [Disclosure 102-13]

The power of innovation: focusing on sustainable mobility

Designing more sustainable mobility solutions is a challenge encompassing how we get around, how we transport goods and all the infrastructure this involves. Improving access to rural areas, developing regions and protecting the environment are all priorities that require a new approach to transportation infrastructure and the introduction of new mobility solutions. The pioneering spirit of its employees is a powerful driving force behind the Group. Innovating in the field of mobility means never losing sight of its role as a service – for people and the planet. It's about ensuring that development in one area does not jeopardize the future of another. We have to make our contributions meaningful so that we can move forward, together, in the right direction.

Innovation has been at the core of Colas' culture and research is an integral part of Colas' DNA. It was the invention of a bitumen emulsion called "Cold Asphalt" 90 years ago that gave birth and name to Colas. Building towards Colas' goal of developing innovative and sustainable mobility solutions, the Technical/R&D Department takes sustainable mobility products, techniques and infrastructure solutions from concept through to delivery via development and trials.

In association with the Group's regional laboratories in every geographical region where Colas operates, the department's staff work at the Colas Campus for Science and Techniques in Magny-les-Hameaux in the Saclay cluster near Paris.

Colas' key priorities in terms of R&D and innovation seek not only to meet the social expectations of customers and society in general but also to take into account the Group's environmental policy as regards its products, by favoring the use of more environmentally friendly techniques and substances. The Innovation Department aims to speed up transformation, by designing products and service technologies for longstanding solutions or for disruptive breakthroughs. These key differentiators help to unlock the full value of offerings. The solutions devised may enhance internal processes – helping to improve employee working conditions and safety, for example – while also optimizing operational performance.

Circular economy solutions – Promote circular economy solutions to preserve natural resources

As one of the world's leading recyclers, Colas recovers and recycles demolition waste and materials from its infrastructure sites. Colas offers its customers circular economy solutions by developing recovery and recycling platforms as well as the reuse of materials, thereby helping to preserve natural resources.

Investing in R&D to recycle materials

The circular economy is and always has been a core area of research and development at Colas. The main focus is on in-place recycling of road surfaces, recycling of asphalt mix, the use of alternative materials such as organic residues, and research into additives and binders based on industrial co-products and by-products.

Local sustainable development – Offer our customers and users solutions that meet the challenges of sustainable development in local communities

Environmental, climate-related and societal challenges as well as evolving uses bring both constraints and opportunities for Colas. The Group is thus developing products and services geared toward sustainable development priorities. Our ambition is to design and offer next-generation responsible infrastructures that are safe, sustainable, accessible, shared and connected, that meet users' needs, and that help communities open to the world and enhance local economic and social development.

Low carbon and biodiversity strategy – Roll out a low carbon and biodiversity strategy to preserve the planet

In response to the climate emergency, in 2020 Colas undertook a strategic review that culminated in the creation of a low-carbon roadmap focused on five priorities. In December 2020, Colas announced an ambitious target for reducing its emissions, in line with the Paris Agreement.

Through its operations, Colas has extensive interactions with biodiversity. As such, the Group has undertaken a biodiversity strategy aimed at developing and promoting ecological niches and preserving emblematic species.

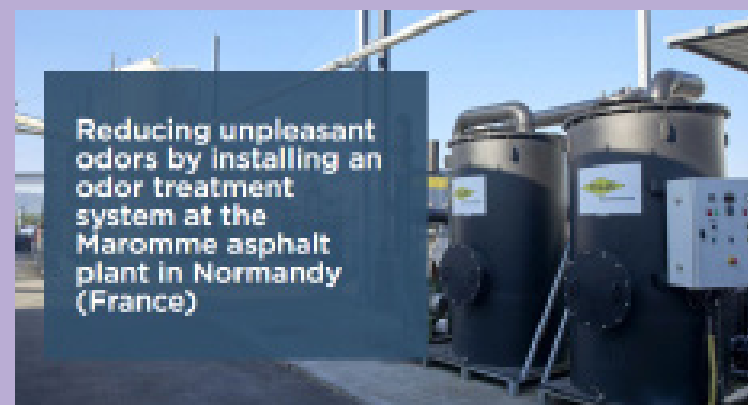
Reducing the impact of our activities – Reduce the impact of our activities to bolster acceptability

Colas constantly endeavors to reduce the environmental impacts of its construction materials production and worksite activities on local residents and users. The goal is to develop and share solutions aimed at improving processes and making our production sites and worksites more acceptable.



Using the Ecomac process (warm and semi-warm mixes) for the construction of an industrial site in Alberta (Canada)

Reducing our carbon footprints will first require us to implement low-carbon products and techniques developed through focused research and development; for example, by using low-carbon cements and hydraulic binders as well as bio-sourced binders and fluxing agents, producing concrete with a smaller carbon footprint, increasing the amount of recycled materials used in asphalt and expanding the use of in-place road recycling.



Reducing unpleasant odors by installing an odor treatment system at the Maromme asphalt plant in Normandy (France)

Expertise in Road Pavement Construction and Surface Repairs, with International Safety Standard

The Group is committed to the development of comprehensive products and services, including various forms of road construction and maintenance projects to improve the quality of life of the community as well as the safety of road users.

We invested in the 2 construction companies, namely Thai Slurry Seal Company Limited (“TSS”), which is a well-established contractor with expertise in pavement restoration with advanced techniques, and Thanomwong Service Co., Ltd. (“TWS”), a special construction contractor. As we have accomplished the construction and maintenance of roads both with the agency public and private sectors, this strengthens the Group’s competency in delivery of value-added products and a full range of asphalt services. In addition, we acquired technical know-how and technology from Kolas, a shareholder specializing in road infrastructure construction who supported the development of quality products suitable for use.

In 2021, construction businesses experienced challenges from the impact of the COVID-19 epidemic, causing the government budget allocation to change and resulting in a fall in the demand and supply for asphalt.

During the year, the construction proceeded successfully as planned without significant disruption. We have intensively increased safety and hygiene measures for employees, such as installing showers and partitions at the public shower room, encouraging social distancing in service vehicles for transporting employees, setting a temperature measurement before work, providing alcohol gel for washing hands and equipment, arranging ATK test kits for staffs to check every week, and etc.

At present, our main businesses are the pavement improvement projects and construction projects for road maintenance, so overall, the construction business has a tendency to grow continuously. As of the end of 2021, the construction business has total order book value of 1,962 million Baht, a total of 23 projects, with outstanding projects such as the construction of the 3rd runway at Suvarnabhumi Airport, construction of highway No. 205, Thep Sathit District – Bamnet Narong District(Part 2), the Don Mueang Airport runway pavement restoration project, and etc.

Goals of the Construction Business Group

- 2 projects per year with a total project value of 1,500–1,600 million Baht per year.
- The contract period is 2 years.



“We are proud to be a part in building safer roads, creating convenience to improve traveler experiences as well as helping to reduce road accidents especially routes with steep slopes and on expressways where road users drive at a high speed.”

Somboon Roopsoong
Senior Manager Construction
Business Specialist
in Road Construction and Repairs

Airport Construction and Maintenance Projects in Thailand



Construction of the 3rd runway at Suvarnabhumi Airport

Construction Period :

29 September 2020 – 15 August 2025

Project progress :

18% accumulated

Project Details :

Construction of the 3rd runway

Parallel driveway

Taxiway D Extension

Perimeter Taxiway

Soil quality improvement and others as specified in the contract



Maintenance of runway pavement (Don Mueang Airport)

Construction Period :

27 October 2021 – 23 July 2022

Project progress :

18% accumulated progress

Project Details:

Surface maintenance for runway 21R – 03L, Don Mueang Airport including side pavements and other related works as specified in the contract.

Create and Promote an Innovation Culture



Key Value Chain



Key Stakeholders



Key risks and opportunities

- Awareness of technology developments and applications
- Risk from substitute products with better technology
- Encourage employee innovations and developments

Goal [Disclosure 102-14]

Long term goals in 2025

- Incorporate “innovation” into the corporate culture, and increased profits from innovations by more than 25% from the 2018 (base year)

Short term goals in 2021

- Focus on employee participation; at least 50% of employees are required to participate in the Innovation Bootcamp project
- Encourage participants of Innovation Bootcamp training to submit their project to the annual innovation contest, not less than 50% of all participants were targeted
- Target at least 90% of satisfaction rate of all participants from Innovation bootcamp assessment
- Create green innovations or environmental and social innovation, not less than 10 projects, of which not less than 5 projects have commenced operations in 2020

Results in 2021

- Innovation Bootcamp project attended by 105 persons; 69 participants from Thailand and 36 participants from subsidiaries abroad. There were 21 innovative projects, comprising 13 projects from Thailand and 4 projects from overseas subsidiaries.
- 8% of employees participated in the Innovation Bootcamp project.
- The satisfaction rate of all participants was 87%.
- As for Innovation Accelerator projects, there were a total of 5 projects, divided into 1 service innovation project and 4 product innovation projects.

Management approach

As the Group is committed to “Innovation Culture”, we encourage employees to focus on talent and innovation development framework to create teamwork and develop working procedures with modern technology.

In addition, we integrated innovation as one element of corporate strategy during our strategic review on Vision 2025 “Innovation Beyond Product”. Our key expectation is to instill an innovation culture for the organization including implementation of innovative ideas to business operations while encouraging employees to participate in these initiatives. The Group will benefit from businesses and profits in conjunction with our sustainable development policy that focuses on social and environmental aspects.



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to view Innovation Policy

Key Changes in 2021

- Encourage the Total Participation Multiplying Maintenance (TPM) program, which focuses on process improvement and the foundation of an innovative conceptual framework with a prototype from the Nakhon Ratchasima plant. This will be applied to other factories’ process improvement.
- The “Innovation Bootcamp” project is a continuation of the previous year, aiming at learning process improvement which encourages employees to create initiative with a systematic process of thinking and creating innovative projects, able to initiate projects by themselves, and cooperating between departments to complete innovation projects.
- The “Innovation Accelerator” project is a continuation of the Innovation Bootcamp, aiming to transform initiative ideas of employees into reality as well as bringing them into the market. We expect that the innovation invented contains business value and can generate profits in the future.

Driving a Culture of Innovation: Employee Development

[Disclosure 404-2]

The Group has set goals in learning management to drive innovation culture by encouraging employees to build a growth mindset for their learning, based on the basic principle which mentions that a person's abilities or intelligence can be developed over time along with the accumulated experience, meanwhile learning is not limited by biological foundations or previous knowledge.

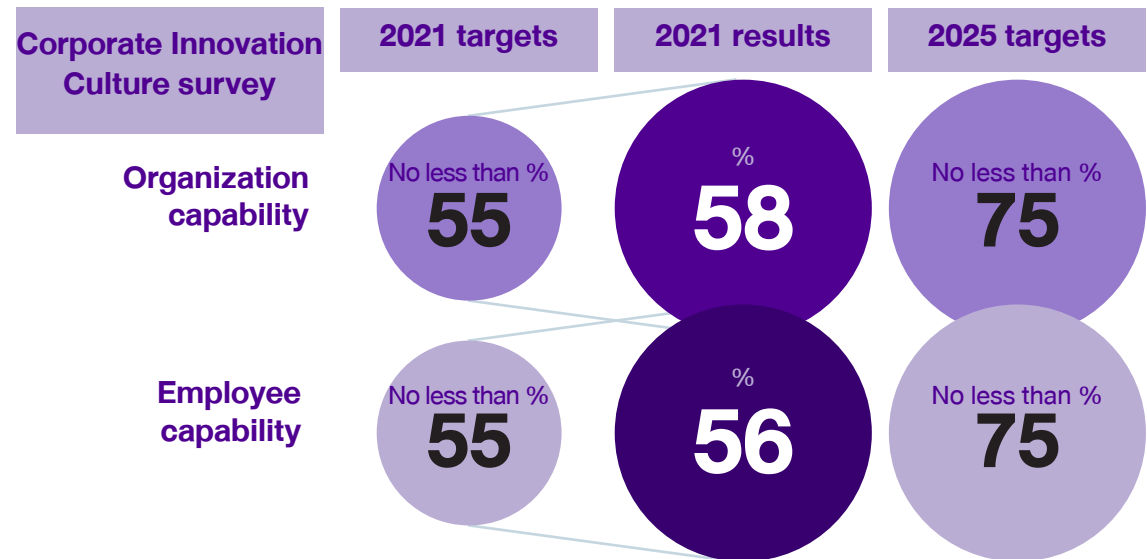
From the above principles, we therefore took an important role in creating experiences and providing learning opportunities for our employees. At present, the Group continues to carry out various projects as follows:

1. Innovation Bootcamp, the project which provides employees with knowledge, techniques, and skills that continued from 2020 and was extended in 2021. This will be further developed into commercial operations, namely Innovation Accelerator.

2. The foundation of understanding development and optimization project Production in the operation line, namely the Total Productive Maintenance project which has been ongoing since 2019, focusing on the operational staff who participated 100% according to the specified work plan for each level of employees.

In addition to the above projects that provide knowledge and techniques, they also promote conducive to learning behaviors such as the courage to experiment, view challenges or obstacles as opportunities, indomitable to failure, appreciating effort, learning from criticism, and looking for lessons and inspiration from the success of others.

We use the Innovation Culture Survey to measure the ability of the organization and its employees to create innovation. This was assessed through the perspective of employees in March 2021, with a survey response rate accounting for 85% of the total workforce.



How to Drive an Innovation Culture

Organization Capability

- Organizational structure
- Leadership role model
- Innovation development master plan
- Promoting behaviors that are conducive to learning

Organization Capability)

- Role model
- Innovation development master plan
- Changes in the conceptual framework

Employee Capability

- Employee competency
- Innovation development master plan
- Changes in the conceptual framework



[Disclosure 404-2]

Employee Participation in Building Innovation Competencies Project

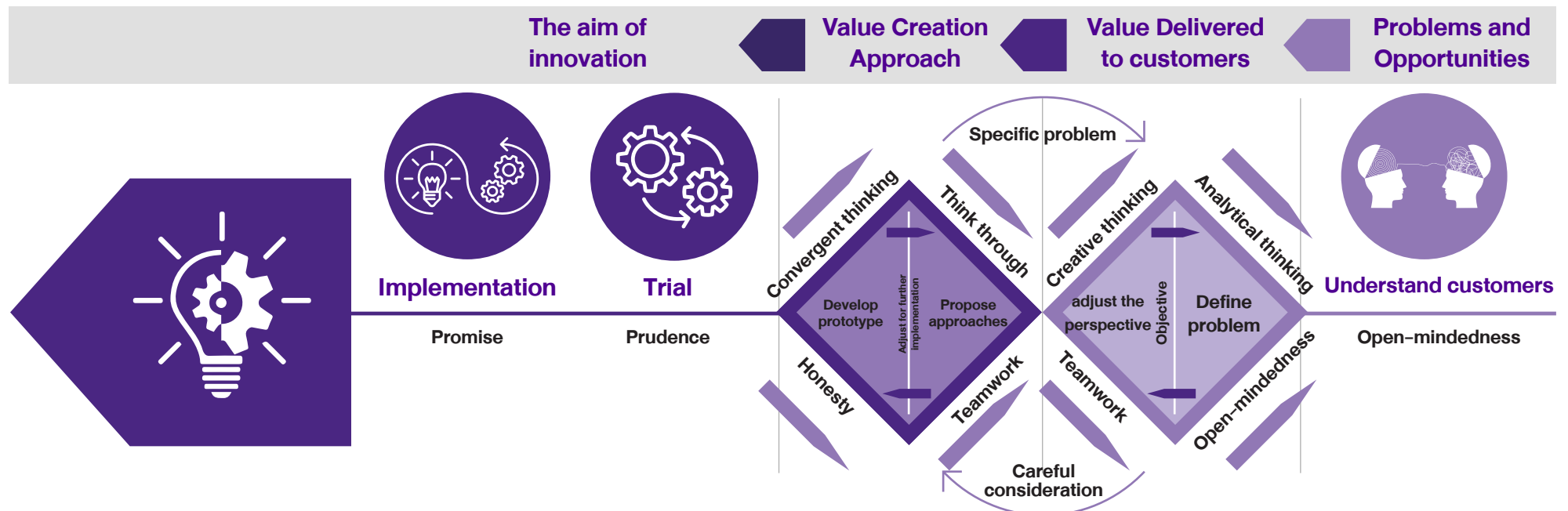
Building Innovation Competencies Project in the Group can be divided into 2 types: 1. Development goal of creating innovation such as Innovation Bootcamp training, and 2. Development goal of foundation for innovation such as Multi-Participant Maintenance (TPM). These two ways of development are innovative approaches to creating an environment that empowers employees to develop confidence in their work with a growth mindset.

Nevertheless, we are still not able to measure the effectiveness of the development in the first type since there is no potential product or service launched to the market. At present, we are still currently in the process of developing concepts and prototypes including commercial possibilities. Therefore, the benefits that employees will gain from the development are the skills and knowledge gained from project presentations at the end of the training course.

Innovation Bootcamp : 6-month program for employees at all levels, focusing on the concept of creating innovation through the process of design thinking.

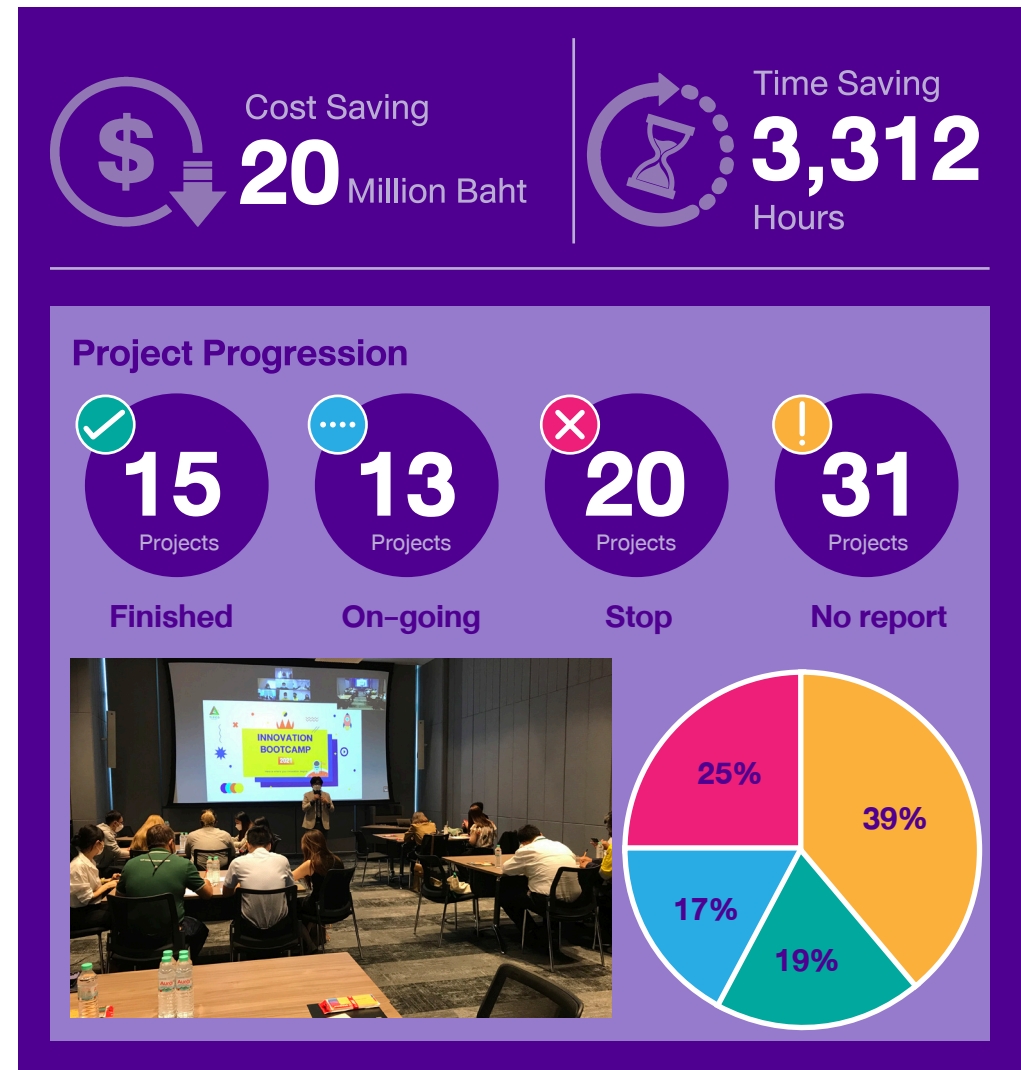
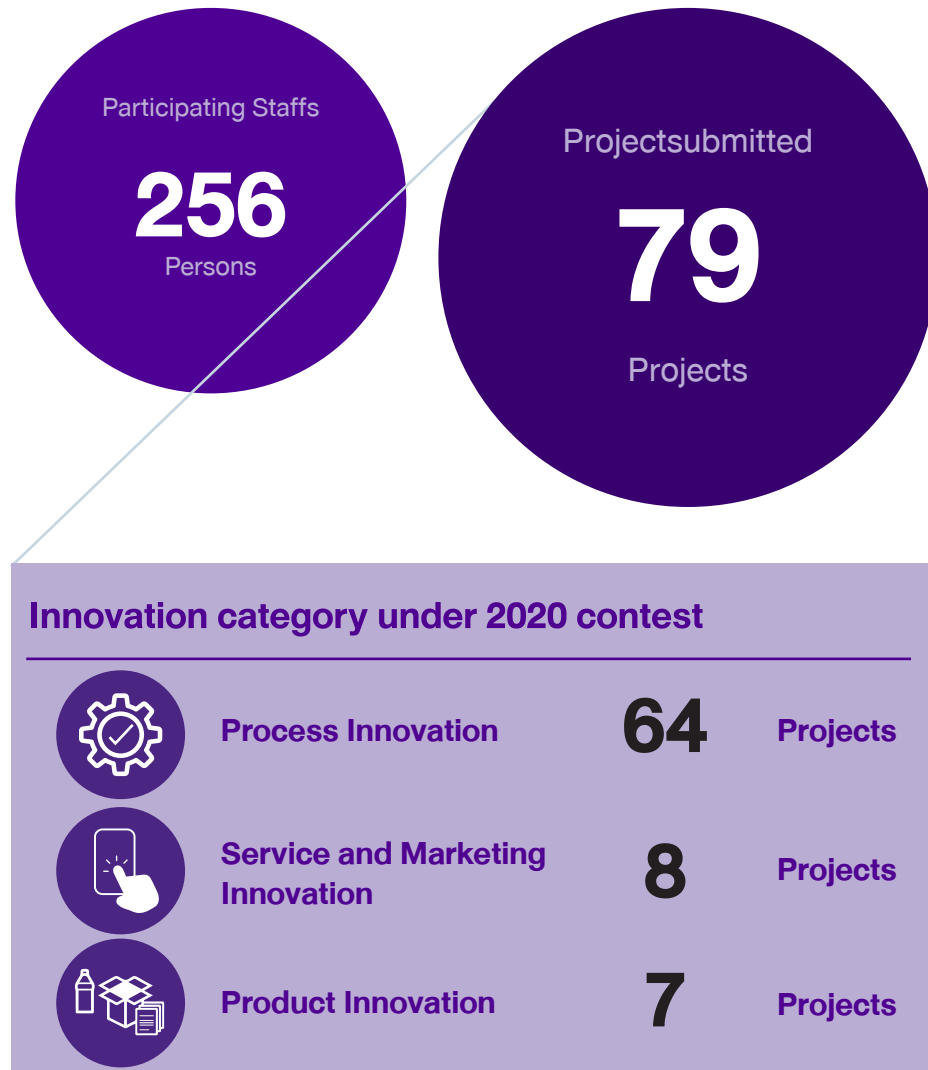
Innovation Accelerator : An 8-month project for 5 innovation projects that have been reviewed by management for commercial operation. The project consists of different stages: selection, incubation, sponsorship, and distribution.

Tipco Asphalt Group: Innovation Process



Results from Innovative Solutions Award 2020

As the Group has held an innovation project contest to create motivation, inspiration, and necessary skills in 2020, there were 79 projects submitted to the Innovation Solution Award contest. One year later, we followed up on these projects' progress and found 28 of these projects with great execution progress with measurable results while 31 projects registered no progress. The unit heads will monitor and track their corresponding project status on a regular basis.



2021 Innovation Bootcamp Project

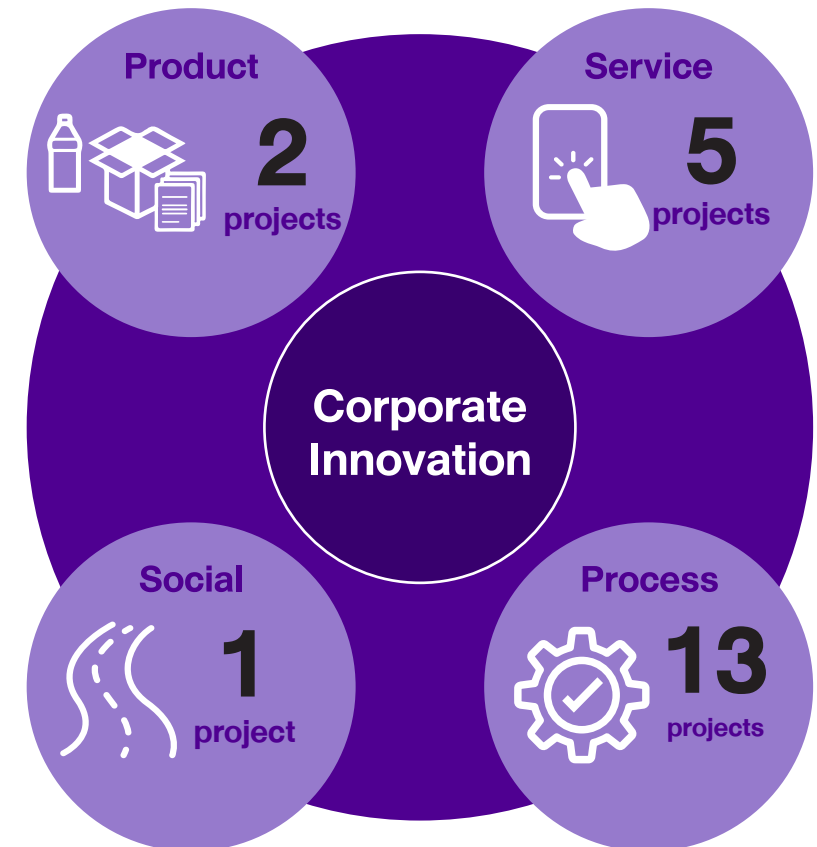
From the assessment of innovation development performance in 2020, it was found that the work plan should be more in line with the readiness of employees in innovation development. For the 2021 “Innovation Bootcamp” which will recur in 2022, it aims to develop innovative project thinking.

In addition, in 2021, another innovation development program called “Innovation Accelerator” was launched. This program has a total duration of 8 months, focusing on bringing potential innovation to market and creating real business value in the future. With support from experts with relevant specific knowledge and sufficient budget allocation, we expect that the cultivation of organizational innovation and development will drive our business to achieve in creating innovative prototypes, market trials, and lead to value-added sales as well as being able to generate profits under organizational strategies.

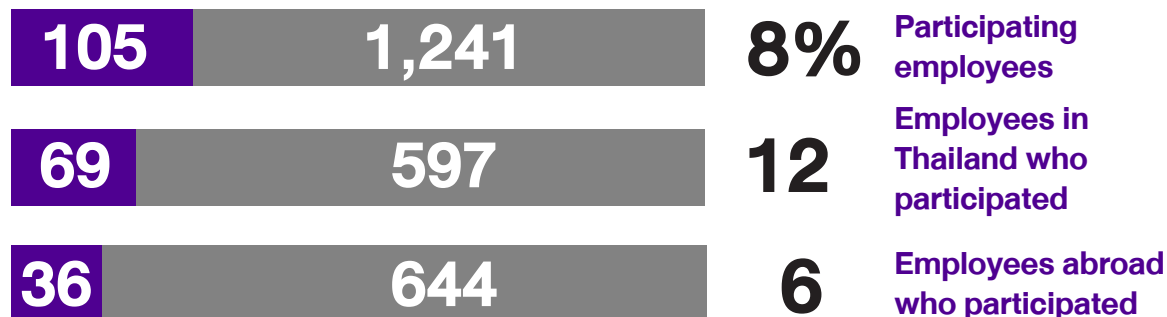
Survey results from project participants



Number of Innovation Projects



Employee Participations



Staff Testimonials: 2021 Innovation Bootcamp Project

From the interviews, it was found that employees benefited from the project, which is one of the innovation processes of Tipco Asphalt Group as follows:



“The program precisely encouraged collaboration, broadened my perspective to a great understanding of the approach to innovation, and also particularly helpful to put it into practice. All participants were enabled to take an innovative approach through interactive experiences with tutors and participating team members, as well as other employees from different departments. I believe we have succeeded in creating a real innovation environment where we are able to plant many seeds of new innovations.

I was highly motivated and inspired to create and maintain a positive atmosphere of an innovative environment in the workplace. These experiences allowed me to stay enthusiastic and look for new opportunities to improve things around by the approaches I have learned”.

Phanthila Udomsant
Senior Marine Business Development Officer



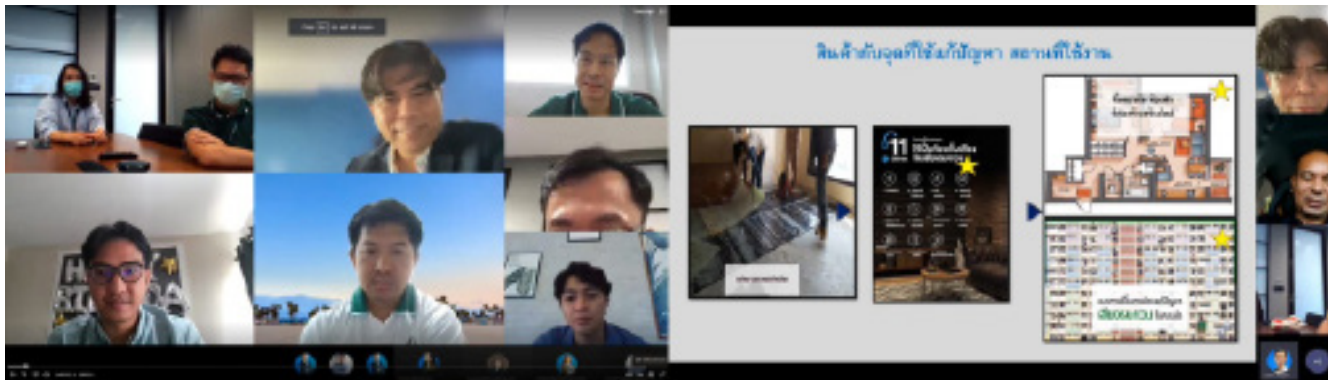
“We are representatives of the Green Road to The Future group; our main responsibility is solving different problems for the community. There have been many times we encountered problems and were unable to achieve the goal of projects. However, after joining the Innovation Bootcamp, we have changed our perspective on innovation toward meeting community expectations and sustainable solutions. The event provided us with an opportunity to learn on how innovation can be applied to our work. Additionally, I would like to express my gratitude to Dr. Torkiat Noisamlee for giving knowledge on how to start the process of innovation and his saying “Don’t focus on the size of the problem but focus on your own competency”. Finally, I would like to recommend joining the Innovation Bootcamp to develop your job competencies”.

Suthep Kertsombat – Head of Human Capital Management Section
Nussin Timsin– Sustainable Development Officer



Innovation Bootcamp

>>> *Unleash* >>> *your potential
creativity*



“Innovation is an important tool for achieving sustainable business growth. To make innovation happen, it requires cooperation, knowledge, understanding of innovation processes, support from people at all levels of organization, including technology adoption and integration to create valuable innovations as well as recognition and being beneficial to the public, customers, organizations and society.”

Nareerat Kanhachalee
Manager of Corporate Branding and
Internal Communications

Organizational Innovation Projects: Original Ideas from Our Employees

Smart Transportation Tracking System Project – Thailand

Issue : Since our customers bring their own vehicles to pick up their goods in front of the factory, this takes a long time to wait without knowing the situation, progress, or the goods receiving process.

Objective : To develop programs through existing platforms and bring into the goods receiving processes improvement and to resolve customer concerns as well as reduce waiting times

Findings : Reduced the waiting time from 60 minutes to 30 minutes (50% increase in delivery efficiency with 0 Baht investment).

Shared benefits : Increase the ability to pay for products from the original process which supplies 20 to 30 cars per day.

Implemented date or product released date: May 2, 2021



Organizational Innovation Projects: Original Ideas from Our Employees

Bacteria Cultivation Project for wastewater treatment at KBC Refinery

Issue

Issue: As wastewater from the refinery process causes contamination and bad odor to nearby communities, the proper treatment is required prior to releasing wastewater back to nature. With conventional bacteria cultivation technique for wastewater treatment that we chose, if the bacteria does not survive the process, it would normally take about 3–4 months for full system recovery. In addition, KBC's water treatment system is very unique as there is no local wastewater treatment service provider with specialized expertise that can develop a water treatment system in accordance with KBC's needs.

Objectives

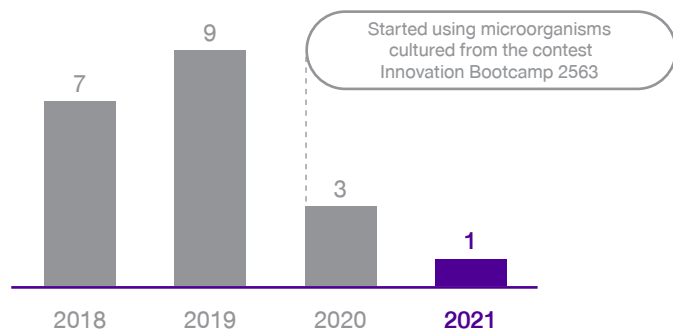
- Reduce toxicity problems that may occur in biological plants. This will make the wastewater treatment system take a long time.
- Relying on bio-factory operations at full capacity in terms of monitoring and troubleshooting.
- Operate in the bio-factory at the highest level to ensure that the wastewater discharged from the KBC meets the standards of local authorities throughout the year in operation



Shared benefits

KBC certified that all water releases for the period 2020–5264 (since the project's inception) meet local authorities' standards for effluent discharge.

Unsuccessful Cultivation



It was observed that the number of unsuccessful culturing was reduced as a result of the increasing efficiency of KBC's wastewater treatment. The full capacity of bio-efficiency which was previously verified by external consultants has been verified by the in-house team.

Reduce expenses from hiring external consultants
4,000 – 5,000
USD per year

Reduce expenses from hiring external consultants
16,800
USD per year

Budget used
Less than 3,000
USD

ENVIRONMENTAL FRIENDLY PRODUCT & SERVICE DEVELOPMENT



Key Value Chain



Key Stakeholders



Key risks and opportunities

- Risk of switching product distribution channel due to the impact of the COVID-19 crisis
- Risk of technology
- Risk from environmental awareness
- Risk from substitute products

Goal *[Disclosure 102-14]*

Long term goals in 2025

- Increase sales from innovations by 25% of total sales
- To be a leader in environmentally friendly products and services in asphalt manufacturing industry
- Cultivate all employees with environmental and social awareness at work

Short term goals in 2021

- To increase eco-innovation projects by 10% from 2021
- Launch at least 3 new environmentally friendly products to the market
- Increase sales of environmentally friendly products not less than 50% compared to the previous year

Management approach

While the world is severely experiencing climate change every year, greenhouse gas emissions reduction has become people's concerns which need cooperation from a large number of people. As we realized how these changes affected the environment, the invention of eco-friendly products development was put into our priorities. We therefore encouraged all employees to participate in the development of innovation beyond product for their services and work processes development. All employees were able to continuously create a knowledge base and understanding of the idea of developing a job by themselves, with the aim of natural resources utilization and emissions reduction that caused "global warming".

In 2021, there were a lot of environmental project innovations. Our employees acquired knowledge from participating in a workshop and adapted their innovative ideas into the project via "Innovation Bootcamp", the project which allows employees to change their mindset and take into account society and the environment. Most innovations were working process modifications which result in less emissions or consuming a shorter time, so this saves both time and energy. In the future, the Group aims to promote more awareness of the environment.

From the epidemic crisis of COVID-19 resulting in changes in people's lifestyles, new technology has become another important factor in driving and enhancing competitiveness of business. The Group has applied digital technology and innovation into our services so as to meet customer expectations with an increasing efficiency. As consumer behavior is changing rapidly due to the impact of technology of Smart Phones, this resulted in the development of various applications to be more convenient, faster, and well received. For example, the extension of the Digital Platform project of issuing electronic tax invoices to customers. We are also undertaking many project developments to create the value chain in all dimensions with collaboration between business units. We expect that our business will achieve effective resource utilization, cost saving, and be able to provide services that meet the needs of customers along with increasing the capacity that impresses and creates impressive customer journey experiences.

Key Changes in 2021

- Focus on improving employee awareness of eco-innovations. We organized Innovation Bootcamp to promote innovation systematic thinking processes and formulate guidelines for achieving high-efficiency results and practical application.
- Extension of the application (Digital Platform). We implemented the system supporting issuing electronic tax invoice documents to facilitate customer service during the COVID-19 epidemic situation under social distancing protocol.
- Improved the quality of dust control products that are simple to use. This prevents the spread of small dust particles and can be used well in areas with gravel soil and construction sites. After test marketing in April 2020, it is scheduled to be released in early 2022.

Results in 2021

- There were 3 eco-innovation projects from the Innovation Bootcamp out of a total of 21 projects, accounting for 14% of the total projects in which the project that won the first prize was the Green road to the future project.
- There were 3 new environmentally friendly products – 10 kg of asphalt emulsion products and TOP Joint launched to market, generating income amounting to 797,000 Baht.
- Sales of asphalt recycling agents increased by 110% compared to the previous year, accounting for 19 Baht of sales revenue.



Scan QR code
to view dust control demonstration



Scan QR code
to view TOP Joint

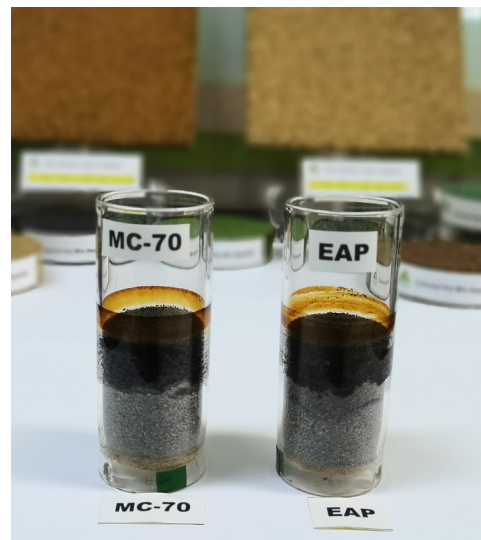
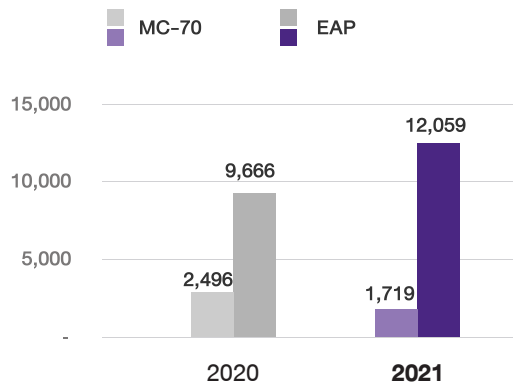
Environmentally friendly products and services

Emulsified Asphalt Prime

Tipco Asphalt Group promotes the creation of environmentally friendly innovative products and services, and focuses on the product development with better features and more environmentally friendly products. For example, Emulsified Asphalt Prime (EAP), the product where water is mixed with asphalt instead of slurry or oil-based solvents, was introduced as a replacement for Cutback Asphalt (MC-70) for pavement construction and maintenance. The product is considered as an eco-friendly product since its production and application temperature is 45–60 °C, which is lower than the Cutback Asphalt (MC-70) product, so it can be used at normal temperature without heating and when used in paving. The water in the asphalt emulsion evaporates, leaving only the asphalt that adheres tightly, covering the surrounding aggregate or road surface.

****Compared to heating cost with non-required oil**

Comparison of the production volume of asphalt products; Emulsion Prime and Cutback Asphalt Products



Asphalt Recycling Agent

Tipco Asphalt Group places importance on product quality development with continuous improvement. After Asphalt Recycling Agent was launched, it generated good returns in terms of both the economy and the environment and became an important product. With quality of asphalt additives, it can be effectively used for asphalt cement quality improvement in deteriorated pavement. The maintenance with our asphalt will ensure the quality as required under limited natural resources reuse with effective utilization.

In 2021, it was found that sales of asphalt additives increased by 110 percent compared to the previous year.



Environmentally Friendly Asphalt Concrete road Maintenance and Efficient Resources Utilization

The quality of the road changes over time as a result of the traffic volume in each year. When the quality reaches to the point where damages on the road such as pavement slipping, potholes, collapsing into puddles, wheel grooves, cracks, these may cause inconvenience or danger to road users. Therefore, the asphalt concrete roads maintenance must be conducted under the standards prescribed by the regulatory government agencies. Currently, there are many methods of maintenance techniques used in pavement. In the past, the maintenance was conducted by scraping away the old layer and utilizing new materials with a waste of limited natural resources. Moreover, the acquisition of raw materials for the road maintenance process entails a high environmental impact and inefficiency in utilization of the allocated government budget. Therefore, these are critical issues that need careful consideration when running road maintenance projects as this requires the effective use of limited resources. In Thailand, a technique of road maintenance called ‘Pavement Recycling’ is used for the renovation of the old pavement by circulating materials from the old pavement to improve its quality and then reusing it. This technique can help increase the durability of the road structure, prolong the service life of the road, reduce the use of natural resources, solve the problem of material shortage in construction, and maintain the same road height as previously built.

With the awareness of the importance of waste management and limited natural resources, our construction business group has committed to the cost-effective use of natural materials for maximum benefit. The reuse of materials reduces the impact on the environment, unnecessary waste, and also the cost of construction. In the past, the construction business used the mentioned recycling principle to repair and construct roads in some projects in which the quality of the recycled material was considered under the cost-effectiveness analysis. After that, the material was subjected to a quality improvement process for use in the construction of road maintenance projects. In 2021, the construction business group used Pavement Recycling technique for a total of 4 projects with a total value of approximately 63 million Baht or a total distance of 10.7 kilometers.

Example of Pavement In place Recycling Technique for Restoration and Resurfacing Project



Materials used for reconstruction from the old roads, such as crushed stone, old roads

Volume

11,000
tons

Value

2.9
Million Baht

New material; crushed stone used for construction

45
tons

12,000
Baht



Materials used for reconstruction from the old roads, such as crushed stone, old roads

Volume

11,500
tons

Value

3
Million Baht

New material; crushed stone used for construction

0 ton

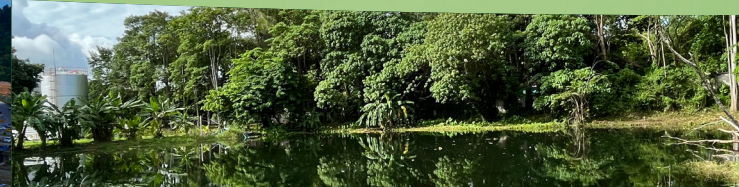
0 Baht

Eco-efficiency management

for better planet



- **Pollution, Spillage and Leakage Management Services**
- **Waste Management**
- **Energy Management**
- **Climate Change and Greenhouse Gas Management**
- **Efficient Use of Resources and Raw Materials**
- **Biodiversity**
- **Water Resource Management**



Pollution, Spillage and Leakage Management Services



Key Value Chain



Key Stakeholders



Key risks and opportunities

- Risk from air pollution
- Risk from water pollution
- The risk of odor in the industrial process
- Risk from noise pollution
- Risk of chemical or product spillage

Goal *[Disclosure 102-14]*

Long term goals in 2025

- No environmental complaints
- Zero significant product spillage

Short term goals in 2021

- Air pollution emissions do not exceed the certain limits set by law
- No environmental complaints
- Zero significant product spillage during the shipping process

Management approach *[Disclosure 103-2, 403-1]*

As Tipco Asphalt Group committed its business to environmental management regarding air, waste water, noise, waste and leakage prevention, it has established air pollution policy to reduce these environmental hazards under strategic long-term goals which last for 5 years. The group has operated in accordance with the framework of laws and international standards in order to be accepted by stakeholders and reduce environmental impacts from business activities. In addition, the Group has also implemented the environmental management system according to ISO 14001 to achieve management efficiency.

In 2021, the Group implemented all environmental related practices so there were no complaints or fines from any cases or issues related to the practice or violation of the law.

Key changes in 2021 *[Disclosure 102-49]*

- Implemented a distribution pipe improvement project for preventing spillage of the product into the environment
- Conducted a root cause analysis in the event of an accident, incidence, or a near-accident event to determine recurrence prevention measures
- Encouraged employees to participate in the risk discovery of unsafe act, unsafe condition, and near miss in order to reduce the likelihood of accidents caused by similar factors

Results in 2021

- Focused on the implementation of the environmental management system and international standards
- No spillage of raw materials, chemicals, or products that affect the environment or the community
- No environmental complaints
- Air pollution emissions met the criteria set by law
- The results of the measurement of air quality emitted from the flue were within the standard values prescribed by law



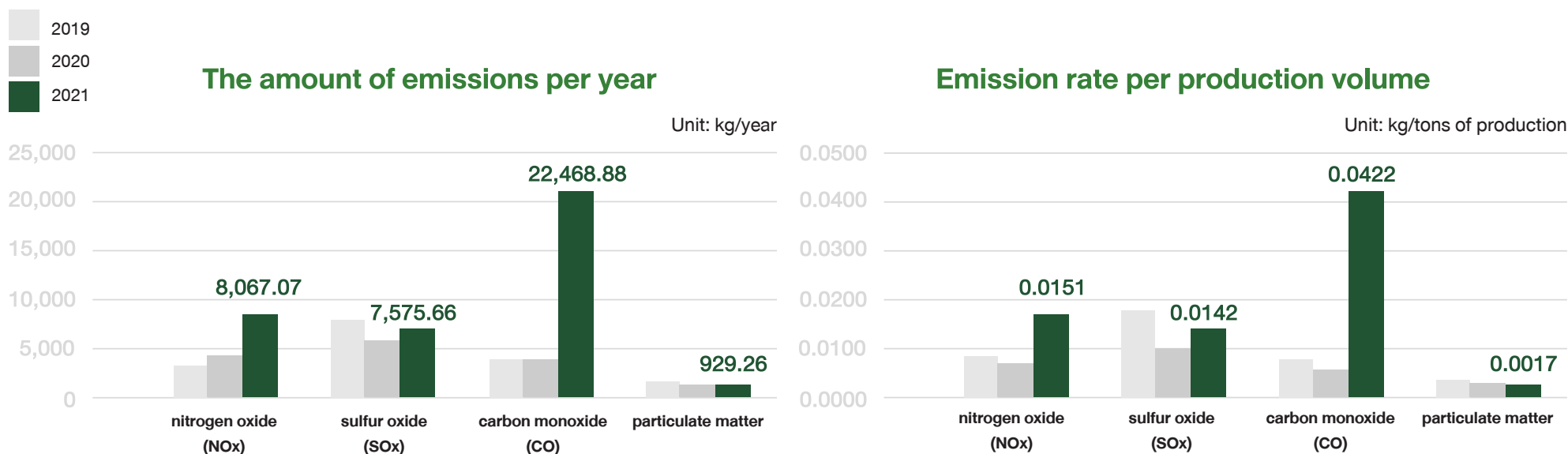
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Air Pollution Management [Disclosure 305-7]

In 2021, the Group arranged the plan of air pollution control related to the burning of fossil fuels in the production process and raw materials and products storage. As such issues may affect the community, the management related to the prevention has been put into our priority. Therefore, environmental policies have been established to reduce air pollution emissions, water pollution, and waste from unused materials. The policies also aim to promote improvement and development of modern production processes. There has been an implementation of surveillance by measuring the air quality from the production process at least once a year as required by environmental regulation. We also provided the investment budget for the improvement and optimization of the machines to reduce air pollution emissions from combustion activities into the environment and surrounding communities.

However, Tipco Asphalt Group has been working on the improvement of machinery; modifications to the use of alternative energy in the production process, and also pollutants during combustion process control not to exceed the rate required by regulations, which including oxides of sulfur (SOx), oxides of nitrogen (NOx), carbon monoxide (CO) and particulate matter (TSP). From the 2021 chimney air quality measurements, the carbon monoxide content in the air of the thermal conductive boiler was higher than normal (432 ppm), but remained within the legal standard (690 ppm). From our investigation, it was found that the burner of the heat conductive boiler was damaged, so we changed the burner and measured only the amount of carbon monoxide contaminated in the air. The results illustrated that the aforementioned value was in the normal range in which the 2022's figure was 25 ppm.

The amount and rate of air pollution emissions per year



Note: Based on the measurement results of air pollution in emissions - nitrogen oxide (NOx), sulfur oxide (SOx), and carbon monoxide (CO) and particulate matter (TSP) were within the range as prescribed by the Ministry of Determine the amount of contaminants in the air emitted from the factory, 2006.

Product and Chemical Leakage Prevention and Management [Disclosure 305-7]

In 2021, the Group raised awareness of safety and environmental protection in all activities in the factory and asphalt storage area for community wellbeing. Our improvement plan started from the process of receiving goods, the asphalt carrier, the product storage tank in the production process, the delivery process, and the transportation to our factories as well as the customer factory. As we emphasize the importance of risk identification along with reviews of manual and regulation to prevent unwanted incidents, spill drills and clean up training in the event of product and chemical spills were organized. We place importance on drill to achieve creating understanding in managing spillage emergency situations at the workplace as well as to review the current preventive measures, reduce the impact of the leakage to safety and environment, and handle chemicals appropriately with shorten recovery times.

Statistics on product and chemical spill incidents

	2019	2020	2020
High: Spills of products and chemicals volume more than 20,000 kg/time	NA	0	0
Medium: Spills of products and chemicals volume between 200 – 20,000 kg/time	NA	3	3
Low: Spills of products and chemicals volume less than 200 kg/time	NA	NA	12



Chemical spill emergency drill

Highlights on raw materials and product leakage management projects in 2021

Distribution Pipelines Improvement Project

The process of identifying internal risks of the Group covers emergencies in the event of a product leak, which is a risk that may affect the contamination to the environment. Therefore, the Group has allocated a budget for the project to improve the distribution pipelines in the product storage area to prevent the product leakage.

We have implemented various projects in many factories; such as the distribution pipelines improvement project at Rayong factory with a total investment budget approximately 5 million Baht. According to the Group's policy which focuses on stakeholders' concerns, we have tried to improve the business operation system to achieve the safety and wellbeing of the whole community and society.



Wastewater Reuse Management [Disclosure 303-4]

In 2021, the Group established a system for managing wastewater from production, office buildings, residences, and canteens under water pollution reduction policy. In the wastewater treatment process, the system will extract oil stains and bits of asphalt from wastewater, and then stores them in ponds to reserve for the production process. In order to reduce the impact on the environment, community and stakeholders, we measure the quality of water stored at least once a year as prescribed by the Department of Industrial Works' standard. For the area of the production plant and the asphalt storage area, we monitor the discharge of wastewater out of the factory every week as required by the Marine Department standard. In addition, we adopted the 3Rs effluent management principle to the wastewater treatment process; reducing the release of treated effluent into natural water sources by installing wastewater treatment systems for the reuse in the production process and watering plants.

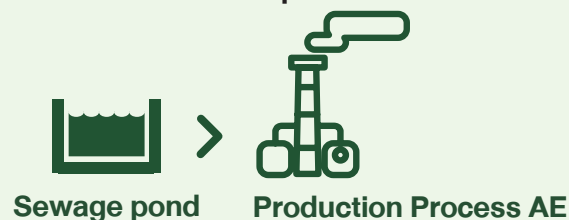
Amount of treated effluent and recycled water



Wastewater Recycling Project

For the Nakhon Ratchasima plant's operation, there was sometimes a problem with the groundwater pumping system; the pump was unable to deliver water for running asphalt emulsion production. However, the wastewater which is used in the production process was directly extracted without the process of clarifying. Therefore, we decided to install the vortex system for heat exchanger with an investment of 46,000 Baht in order to reduce the risk on the asphalt emulsion production process. After the system installation, it was able to pump water from the storage well to the reserve tank, so this facilitates the production when the groundwater pumping is unable to supply water into the operation. The system can recycle 73,000 liters of water per year for the new production process.

Process before improvement



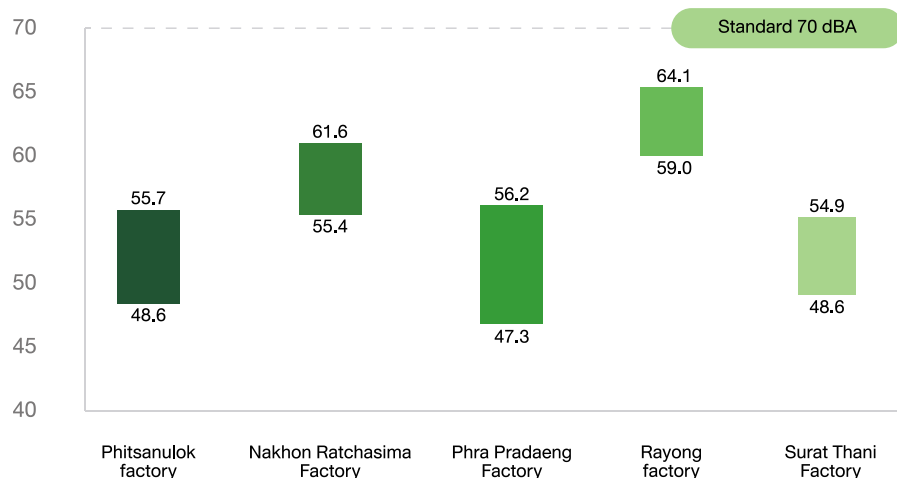
Process after improvement



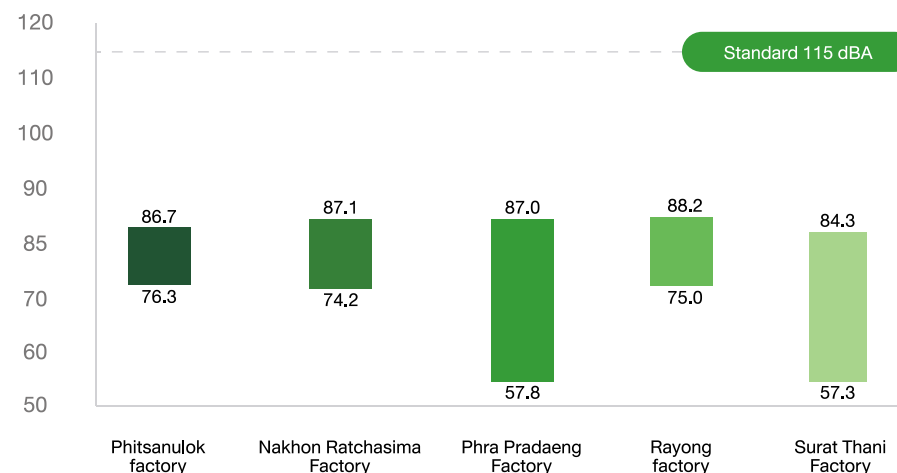
Noise Pollution Management ^[Disclosure 305-7]

In 2021, the Group operated its business with a commitment to management under TPM principles and encouraged all employees to participate in the maintenance of equipment and machinery. As the main sources of noise are from the production process and others, all related activities were monitored and measured at least once a year in accordance with the standards set by the Department of Industrial Works. After the area around our plants and the asphalt storage were monitored, the results were reported to those involved such as communities and stakeholders for acknowledgment. In addition, the Group also set up the solutions for reducing noise in the workplace for workers by providing a full set of hearing protection equipment, including the building of the wall of trees around the fence line of the factory to absorb the noise and increase the green area at the same time.

24-hour average noise level



Maximum noise level



Note : Standard of Ministry of Industry Notification Of The Ministry Of Industry Re: Determination Of Noise Levels And Noise Levels Incurred From Factory Operations, 2005

In 2021, the number of environment related complaints from the community was

0

case, representing 3 consecutive years on no complaint.



Waste Management



Key Value Chain



Key Stakeholders



Key risks and opportunities

- Risk from working at height
- Risk from inhalation of vapors and chemicals
- Risk of bad posture
- Risk from exposure to heat
- Risk from working with machines

Goal *[Disclosure 102-14]*

Long term goals in 2025

- Zero hazardous industrial waste to landfill
- Reuse of waste or unused materials according to Mitigation Hierarchy is set at 90% of total waste

Short term goals in 2021

- Zero hazardous industrial waste to landfill
- Reuse of waste or unused materials according to Mitigation Hierarchy is set at 85% of total waste
- Extend the scope of disclosure of waste management information of the ship management business group

Management approach *[Disclosure 103-2, 306-1, 306-2]*

TIPCO Asphalt Group implemented a recycling approach by establishing a policy, plan and strategic goal for the next 5 years through knowledge-sharing to employees on waste reduction from production and all other related processes including distribution, maintenance, QC, as well as office processes such as accounting and human resources. Each division has adopted a Total Productive Maintenance (TPM) system as a management tool to reduce waste in various work processes. In addition, the environmental management system according to ISO 14001 has been implemented to improve management efficiency.

In addition to waste reduction through less use, the policy of reuse, recycle, and used materials process based on Mitigation Hierarchy measures was also implemented. The policies and guidelines have been developed as a result of the introduction of TPM tools; such as waste assessment is conducted from the beginning of the production process. In addition, the Group also implemented an integrated waste management policy with strict management measures in line with government regulations. The general waste and hazardous waste were clearly separated for a proper recycle to reuse and return value. At the same time, we also implemented the Zero Waste to Landfill policy to minimize the potential impact on the environment and maximize utilization of recycled waste. In addition, we encourage our employees to raise awareness of waste management by communicating the benefits of reducing waste from recycling and disposal. At present, our employees realize the importance of recycling; some of waste pipes were reused for the Car Stopper set, so this can be viewed as waste value creation.

The waste separation management policies are continued for promoting innovation in the aspect of reducing waste in disposal. The operation was made under Mitigation Hierarchy measures; avoid, minimize, reuse, and recycle through the process of the company in which the consideration is made on significance prior to disposal. At present, the Group encourages employees to focus on waste recycling and participate in waste separation enthusiastically, and also ensure that the process of waste management is in accordance with the control measures of the Department of Industrial Works.

Results in 2021

- Zero hazardous industrial waste to landfill, which achieved the goal set
- Recycle of waste or unused materials according to Mitigation Hierarchy, accounting for 88% of total waste, which achieved the goal set



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[Disclosure 102-49]

Key Changes in 2021







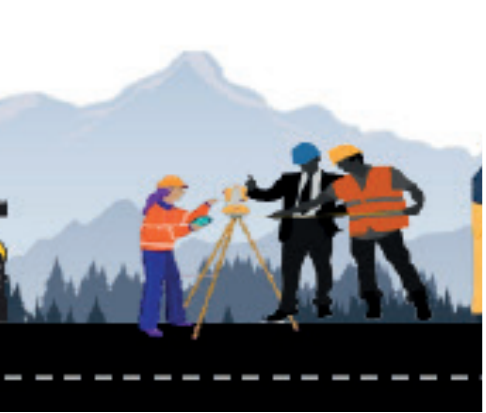





- Focuses on waste management under the principles of Mitigation Hierarchy; Avoid, Minimize, Reuse, Recycling to reduce waste at the source

Business operations and waste across the value chain in 2021

[Disclosure 306-3, 306-4, 306-5]

Tipco Asphalt Group wants to ensure that waste material management is conducted under continual improvement and development guidelines. Therefore, we place importance on the analysis of waste data across the supply chain and ensure that our goal is realized by employees so as to gather their ideas about how to reduce the amount of waste. The table below shows the amount of waste across the value chain and disposal methods as follows:

Phase 3: to be reported in 2022

Zero Waste Project				Business operations			
	Raw materials distribution by vessels	Refinery	Production	Production Support Activities	Distribution	Technical service	Construction
							
	0 cubic meter		83.64 tons	1.82 tons	0 ton		
	92.44 cubic meter		88.04 tons	0 ton	45.46 tons		
	30.90 cubic meter		0 ton	28.25 tons	0 ton		
	3.2 / treat 120.7 cubic meter		0 ton	0 ton	0 ton		
 Sorting							
 Recycle							
 Disposal							
 Incineration							

Road to Zero Waste

Where do our garbage and waste go?



Sorting

85.46 tons
39.0%



• Paper



• Glass bottle



• Plastic bottles



• Steel/aluminum scrap



• Plastic pallets



Recycle

133.50 tons
60.9%



• IBC Tank



• Tires



• Contaminated rag gloves



• Bitumen and others



Disposal

28.25 tons
11.42%



• Office waste



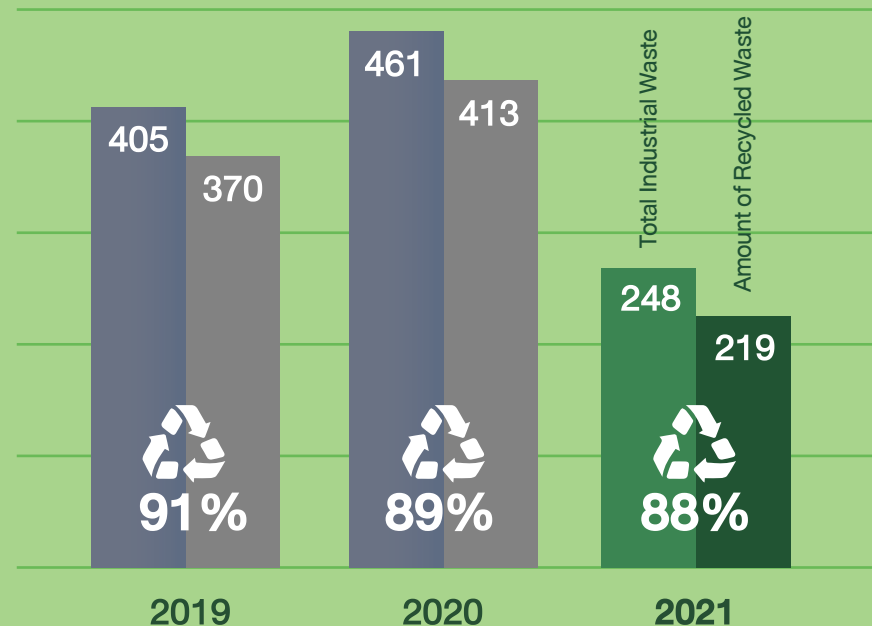
• General waste



Storage

0.07 tons
0.03%

Total Industrial Waste, Percentage of Recycling (Mitigation Hierarchy) and Amount of Waste per Production Volume



Amount of Recycled Waste



88%
of Total Waste

Waste Management Projects: Highlights this Year

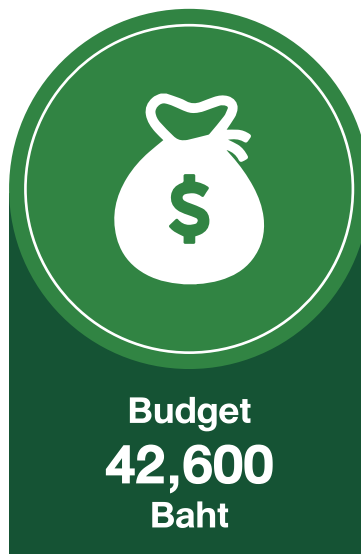
“Concrete Fence from Old Fire Hose” Project

As our business focuses on employee participation in waste management under Mitigation Hierarchy principles in the operational area, our Surat Thani factory has utilized old fire hoses to the system renovation for the factory’s operation. For a maximum utilization of waste, we used those hoses to build fences to prevent falling on the edge of the concrete drainage gutter in the factory.



Management approach

Renovation of the fence from the edge of the concrete drainage gutter in the factory, length 2.90 meters/set, 34 sets, with total length 98.60 meters, accounted for 42,600 Baht for a purchase of steel. However, if it was sold as scrap, the price will be 3.0 baht/kg, weight 825 kg., amounting to 2,475 Baht.



Energy Management



Key Value Chain



Key Stakeholders



Key risks and opportunities

- Efficient use of fuel and electricity resources
- Technology risks from renewable energy
- Energy shortage risk
- Risk of improper energy costs

Goals *[Disclosure 102-14]*

Long term goals in 2025

- Reduce energy consumption by at least 6% compared to total production, using 2020 as the base year

Short term goals in 2021

- Reduce energy consumption (Energy Intensity), fuel, and electricity (Giga joules) decreased by at least 2% compared to total production (tons) using 2020 as the base year

Results in 2021

- Total energy consumption in 2021 was 190,249* Gigajoules, and the energy consumption per unit of product was 0.36 Gigajoules per ton of production, a decrease of 9.06% compared to the base year 2020, achieving the target set

Management approach *[Disclosure 103-2]*

Tipco Asphalt Group has committed its business operation and management to the consideration of environmental impacts across the value chain to ensure that the present natural resources are sufficient for future generations. As our business focused on efficient and effective energy management development, we implemented an environmental management system in accordance with ISO14001 standards, under the concrete energy conservation and environmental policies. In addition, we conducted research and development on products, services, and processes so as to create and promote environmentally friendly innovations toward energy efficiency improvement and to encourage the use of alternative energy in both direct and indirect business processes for reducing greenhouse gas emissions. We also built the awareness of the protection and conservation of natural resources and environment by encouraging employees and business partners to place an importance on energy since it plays an important role in the production of goods and services, which derives a cost of production and entails with greenhouse gas emissions of business at the same time.

The Group focuses on continuous improvement of production process efficiency with Focused Improvement, one of the prospect strategies in a Total Productive Maintenance (TPM), which emphasizes Autonomous Maintenance, where the machine and equipment are checked by the machine operators with the process of adaptation and basic maintenance under their responsibility. In the Focused Improvement activities, the operators are responsible for the reduction and elimination of all types of losses by making “zero” and “preventing recurrence”, in which all participating employees in activities are expected to achieve zero loss result. However, the Group will continue to focus on increasing the share of alternative energy in 2021 by extending the use of diesel B10 as fuel to more types of vehicles at all 5 factories in Thailand. This includes the introduction of pyrolysis fuel in the plant's production process to promote the maximum utilization of resources and energy as well as create awareness among employees about saving energy consumption in the manufacturing process and their workplace.

In 2021, a new environmental policy was implemented in line with the organization's sustainability strategy for eco-efficiency operations. The disclosure has been verified and certified greenhouse gas emissions data by external agencies (ISO Certification Institute: MASCI), encompassing data from January to December 2021.



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Conservation Policy

Key Changes *[Disclosure 102-49]*

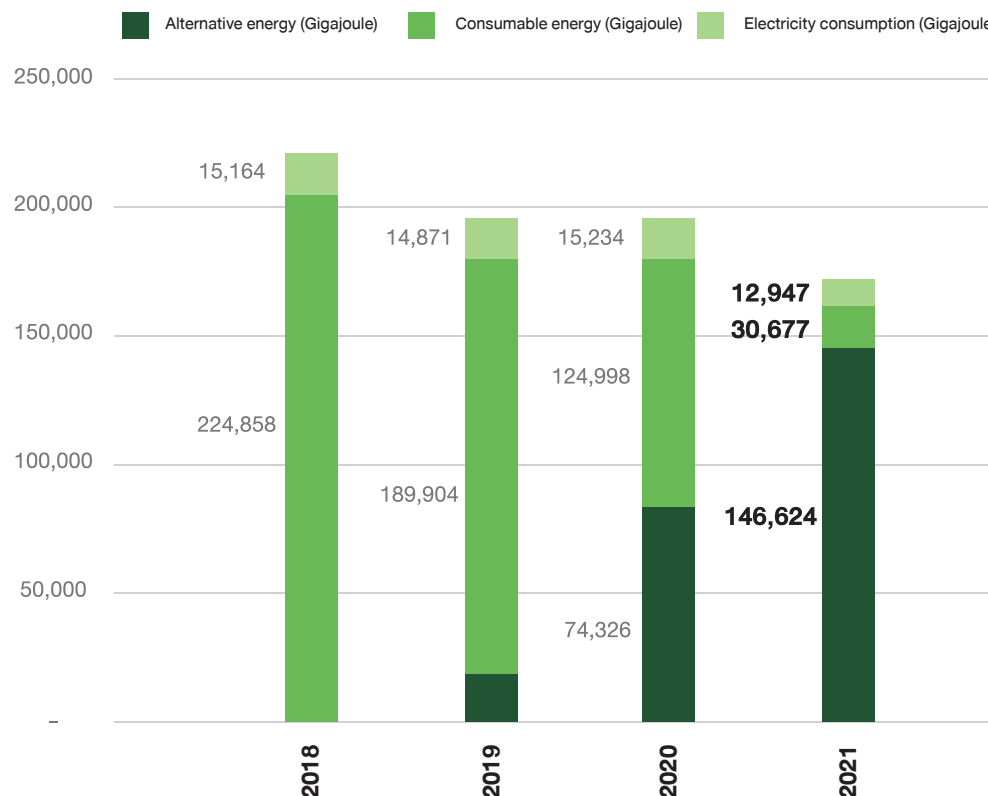
- Extended the scope of information disclosure of the Bangkok head office's energy consumption
- Improved the production processes and machinery to increase energy efficiency such as energy reduction projects from AC heating activities and delivery management under the centralized logistics management project

Energy Efficiency Management Approach

Tipco Asphalt Group recognizes that the strong energy management strategies and the environmentally responsible business practices will drive the way for internal efficient energy use and reduce greenhouse gas emissions.

The Focused Improvement was carried out via various activities related to losses reduction and elimination, driving in a systematic way to support the reduction of energy consumption per product unit. We have also increased the share of alternative energy consumption in the production process by introducing condensate oil fuel into the production process in factory, including increasing B10 diesel fuel utilization in various types of vehicles in all 5 operating plants in Thailand.

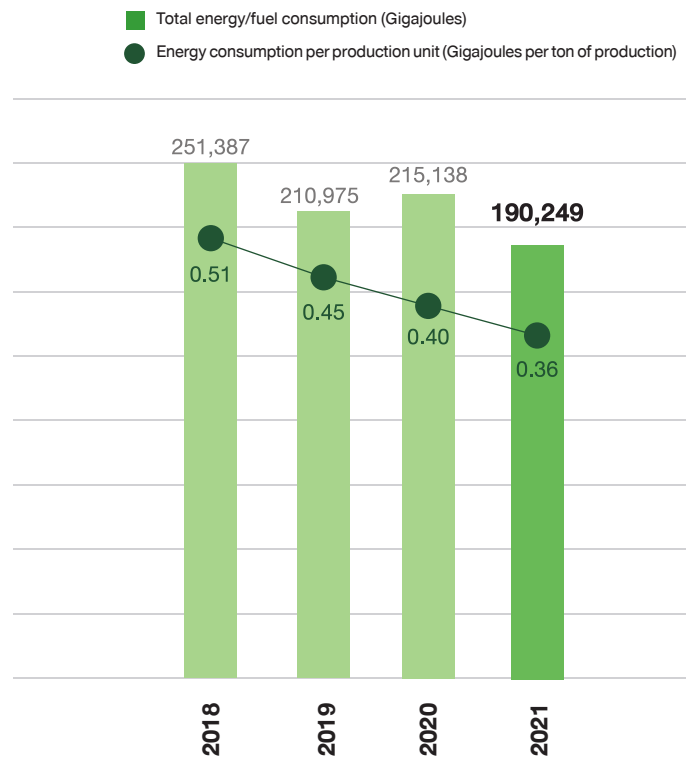
Energy consumption breakdown by sources (Gigajoule) *[Disclosure 302-1, 302-2]*



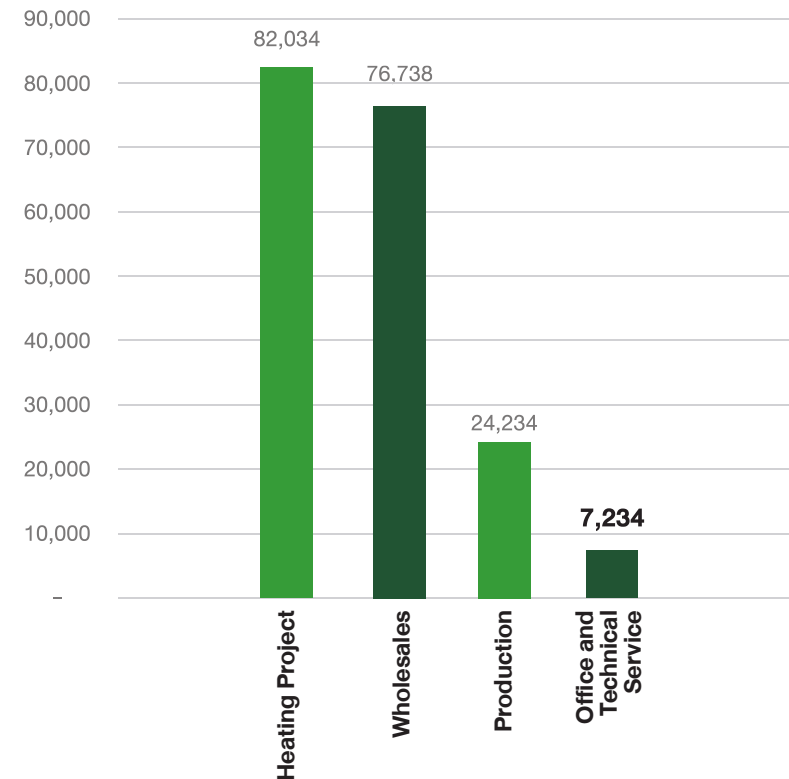
Year	Percentage of alternative energy use
2021	83%
2020	37%
2019	3%
2018	0%

For operations in 2021, a net energy consumption was posted at 190,249 gigajoules with a rate of energy consumption per product unit of 0.36 Gigajoules per ton of production, or a decrease of 9.06% compared to the base year 2020. When divided by operating activities, it was found that warming products for sale had the highest proportion of energy consumption in which the main factor was from the continuity of sales of heat-intensive products. In addition, we have established a project of saving energy from product heating activities(page 99).

Trend of energy consumption per production unit (gigajoules per ton of production) [Disclosure 302-3, 302-4]



Classification of energy consumption activities (Gigajoules)



Climate Change and Greenhouse Gas Management



Key Value Chain



Key Stakeholders



Key risks and opportunities

- Climate change risk
- Risk from natural disasters
- Technology risk and knowledge of relevant personnel
- Risks from change in laws and regulations

Goals *[Disclosure 102-14]*

Long term goals in 2025

- Reduce greenhouse gas emissions per ton of production (Scope 1 and 2) by at least 6% by 2025 compared to 2020
- Consider extending the disclosure of greenhouse gas emissions, scope 3, by 2025
- Set goals of particulate matter removal for every community• Encourage for people in the community to conserve water resources and maximize utilization of water

Short term goals in 2021

- Tipco Asphalt Group aims to review climate change risks in accordance with the processes in the business value chain and present to the Enterprise Risk Management Committee
- Reduce the rate of greenhouse gas emissions (Scope 1 and 2) per ton of production by at least 2% from 2020.

Results in 2021

- Risk Management Department has conducted a climate change risk review and presented to the Enterprise Risk Management Committee• Direct greenhouse gas emissions (Scope 1) was net of 13,352 tons CO2 equivalent
- Indirect greenhouse gas emissions (Scope 2) was net of 1,798 tons of carbon dioxide equivalent
- The amount of greenhouse gas emissions (Scope 1 and 2) was 15,150 tons CO2 equivalent
- The rate of greenhouse gas emissions per ton of production (Scope 1 and 2) was 0.029 kg CO2, equivalent per ton of production, or a decrease of 9.81 percent compared to 2020, which achieved the target

Management approach *[Disclosure 103-2]*

Global warming and climate change remain a major issue which has a significant impacts to all countries in the world. This vulnerable circumstance tends to become a natural disaster such as inclement weather, increasing frequency and intensity of floods and water scarcity. Since 2016, Thailand has joined to the Paris Agreement which mentions about controlling the global average temperature rise by no more than 2 degrees Celsius. As a result, a target to reduce greenhouse gas emissions compared to the 2005 base year by 20 – 25% by 2030 has been set. Currently, the agenda in the process of drafting the National Climate Change Act or the Global Warming Act and expected to be put into effect next years. Nevertheless, this collective action has resulted in a pressure from investors towards a low-carbon industry and civil society or agencies running climate management.

To cope with both short-term and long-term climate change, Tipco Asphalt Group has introduced the risk management process to business operations and assess risk factors and impacts on business including the potential climate change-related opportunities across the value chain, based on TCFD Good Disclosure Practices and corporate greenhouse gas management in line with the requirements of ISO 14064-1:2018, Greenhouse gases and GHG Protocol – A Corporate Accounting and Reporting Standard. From the results of the previous COP 26 meeting, the risk management has played an important role in the implementation or formulation of the Tipco Asphalt Group's greenhouse gas management strategy, so the long-term goal of Carbon Neutral Company by 2030 from GHG Emission Reduction and future Carbon Offsets activities has been set as our priority.

The greenhouse gas emissions data of the domestic asphalt production business and its headquarters disclosed in the report have been verified sources, the way of recording history, and the calculations by the ISO Certification Institute Foundation Development Industry Network Institute of the Ministry of Industry.

Key Changes in 2021 *[Disclosure 102-49]*

- Improve the centralized logistics center at Phra Pradaeng factory; manage selling products at 5 factories, reduce fuel consumption, and manage truck usage
- Change to suitable alternative energy
- Improved work processes in the factory by increasing energy efficiency and reducing greenhouse gas emissions
- Extend the scope of information disclosure of greenhouse gas emissions by office groups and techniques



Climate Related Risks & Opportunities

Tipco Asphalt Group assesses the impact of potential climate change risks and opportunities on the continuity of the Group's business operations across the process of value chain of business in 2021 as follows:

Value chain	Marketing and Business Development	Technology and Innovation	Sourcing	Refinery	Production	Sale	Distribution	Technical Service	Construction
Physical risk	Implemented by 2025	Implemented by 2025	Delay in shipments of raw materials due to natural disasters such as unusually heavy rains, off-season rains	Implemented by 2025	The use of heat energy in the production and heating products is increased due to heavy rain	Higher pavement temperatures result in the need to improve product properties to suit changing temperatures such as asphalt for airport applications	Implemented by 2025	Implemented by 2025	The long summer results in an extended period of time for construction works
Transition risk	Implemented by 2025	Implemented by 2025	In the future, there may be fewer manufacturers who supply the main raw materials needed. As a result, the selling price or cost tends to rise as some manufacturers might be unable to adapt their products or production processes to be environmentally friendly. For example, asphalt chemical products produced by refineries.	Implemented by 2025	New greenhouse gas emissions laws and regulations might affect production costs; such as investing in projects, new energy transformation, and modifying workflows	New laws or regulations may result in the need to adapt business models and strategies to national goals (Net Zero/Carbon neutral), including workflow changes such as carbon credit	Implemented by 2025	Implemented by 2025	Long rainy season construction is a business opportunity that promotes reputation and image as an expert who provide solutions for customers

Climate Related Risks & Opportunities

Risk Management and Countermeasures in 2021		Mitigation Measures
<p>Physical Risk</p> <p>Risk</p> <ul style="list-style-type: none"> Climate change might affect the cost of transport of raw materials and products, management and procurement fees, alternative fuel to promote the reduction of greenhouse gas emissions <p>Opportunity</p> <ul style="list-style-type: none"> Opportunity from the long summer affecting the volume of sales and income Opportunity from the needs of the customer group in terms of construction service provision Disasters such as heavy rains and floods cause rapid deterioration of pavements. This could be an opportunity for the Group to generate income from the sale of production; asphalt for more road repairs 	<p>Transition Risk</p> <p>Risk</p> <ul style="list-style-type: none"> Laws or regulations on greenhouse gas reduction mechanisms may result in higher production cost which affects the competitiveness and sustainability of the business in the future <p>Opportunity</p> <ul style="list-style-type: none"> Implement various measures to comply with laws or regulations on greenhouse gas reduction mechanisms, meanwhile achieving the goal of reducing greenhouse gas emissions is an opportunity to create sustainability in the business of the organization. 	<ul style="list-style-type: none"> Set up a Total Productive Maintenance (TPM) multiplicative maintenance policy to reduce energy consumption, greenhouse gas emissions, and costs Set goals and promote short-term and long-term climate change management projects Increase efficiency in all processes by using the “3Rs” principle to cope with climate change and reduce resource and energy consumption Hire external experts to conduct data reviews and audits as prescribed by international standards for continuous development of greenhouse gas reduction approaches

Business Operation and Greenhouse Gas Emissions in 2021

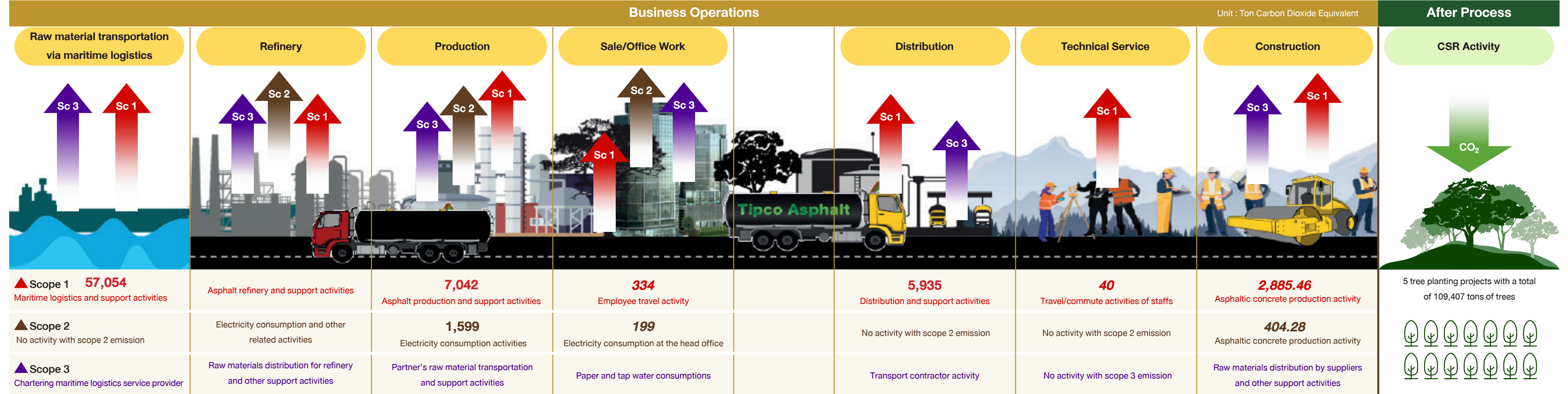
[Disclosure 305-1, 305-2, 305-3]

Tipco Asphalt Group recognized that the nature of the Group’s business operations creates an environmental impact from greenhouse gas emissions in all activities across the business value chain. The emissions are from the use of fuel in the transport of raw materials, asphalt refining, production of goods and services that use electricity or fuel, the use of various chemicals in production, transportation of goods to customers who use vehicles, fuel, including the use of products from road contractor customers who use fuel.

Therefore, the Group has initiated the collection and analysis of greenhouse gas emissions data across the value chain so as to formulate an organization’s greenhouse gas management plan each year as follows:

Note: Additional information reported in 2021 is as follows:

- 1. Information on sales activities/office work and technical service with adding information on greenhouse gas emissions from fuel or energy use by the sales department and head office and technical service bodies have been verified and certified by external bodies (ISO Certification Institute: MASCI).
- 2. Raw material logistics through maritime service and construction activity data is related to greenhouse gas emissions and the use of additional fuel or power, which has not been verified and certified by any third party.

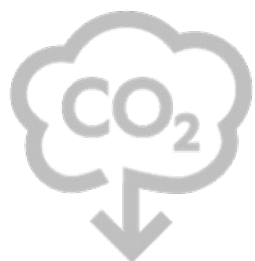


Greenhouse Gas Management: Targets and Results

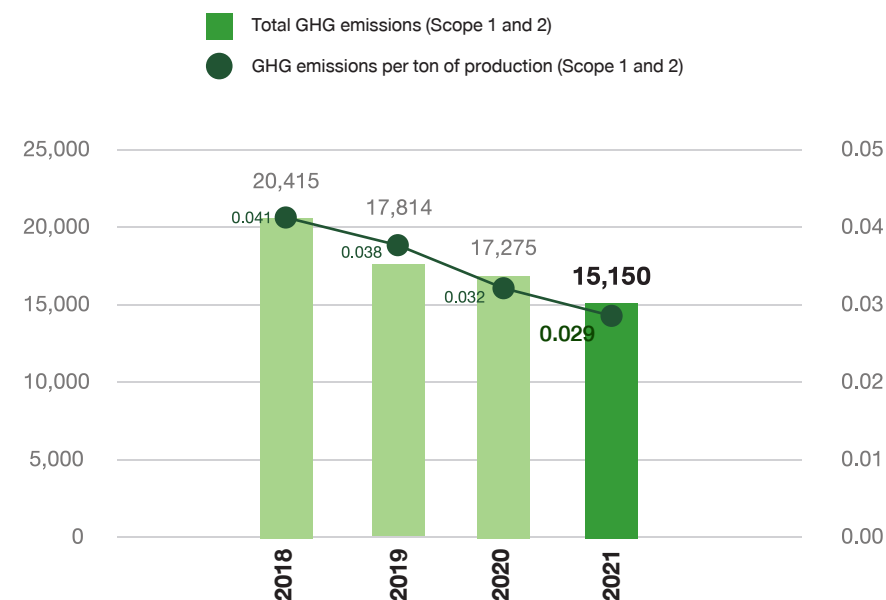
As more extreme climate change affects society and the environment around the world, the Group has expressed its intention on participation in social responsibility. The reduction of greenhouse gas emissions (Scope 1 and 2), both short-term and long-term has been set as follows:

Management Goal	2021	2025
Reduce the rate of greenhouse gas emissions per ton of production (Scope 1 and 2)	2 percent reduction compared to the base year 2020	6 percent reduction compared to the base year 2020

Results in 2021 *[Disclosure 305-4, 305-5]*



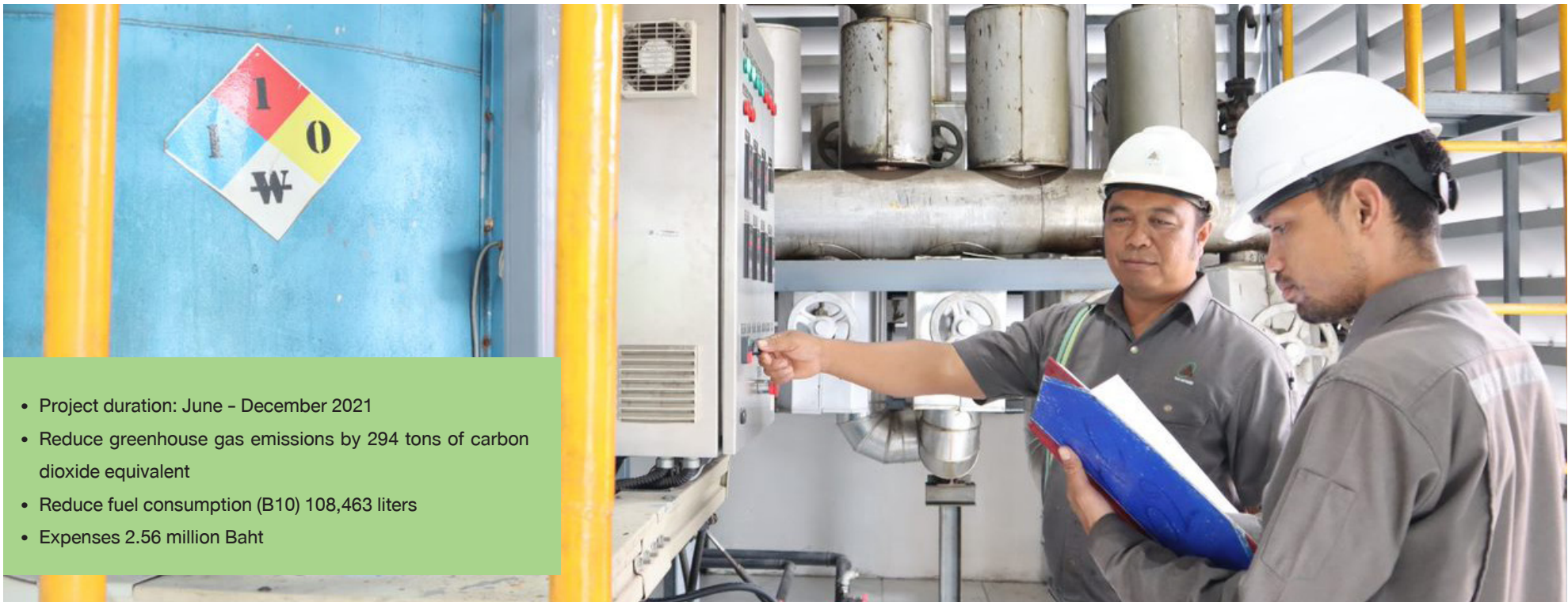
- 15,150 tons CO₂ equivalent Greenhouse gas emissions equal to (Scope 1 and 2)
- 0.029 kilogram CO₂, equivalent of greenhouse gas emission intensity, representing 9.81% reduction as compared to 2020 thus achieving our target (Scope 1 and 2)



Greenhouse Gas Management Project: Highlights in 2021

Reducing Energy Consumption in Product Heating Project *[Disclosure 305-5, 305-7, 302-5]*

As the Group found that the business operation was the highest energy consumption for products heating, we therefore implemented the Focused Improvement to increase process efficiency, reduce unnecessary energy losses and greenhouse gas emissions. From the collected data analysis, it was found that a hot oil boiler using in product heating allowed the operating time management to suit the current conditions. We also applied the Scada system for analysis, control, and monitoring, including error proofing to reduce excessive energy consumption. As a result, the energy consumption in the process was reduced by 6% of the energy consumption of products heating. This also reduced greenhouse gas emissions by 6% of the emissions from products heating at the Surat Thani factory.



- Project duration: June - December 2021
- Reduce greenhouse gas emissions by 294 tons of carbon dioxide equivalent
- Reduce fuel consumption (B10) 108,463 liters
- Expenses 2.56 million Baht

Efficient Use of Resources and Raw Materials



Key Value Chain



Key Stakeholders



Key risks and opportunities

- Risk from shortage of important raw materials
- Risk from purchasing products from business partners who are not committed to the environment
- Risk from changes in regulations and laws
- Risk from technological change

Goals *[Disclosure 102-14]*

Long term goal in 2025

- Commitment to procurement of eco-friendly goods and services (Green Procurement)

Short term goal in 2021

- Promote procurement of eco-friendly products, of at least 5 items per year

Results in 2021

- 20 items of new eco –friendly products procured in 2021
- The 712 tons of used material were reused and recycled, representing 0.14% of the total raw materials

Management Approach *[Disclosure 103-2]*

Tipco Asphalt Group committed its business operations to environmental impact management across the value chain so as to conserve the available natural resources for the future generations. We promoted a circular economy with the maximum utilization of natural resources to achieve the highest efficiency from the production process control. We also ensure the use of raw materials is complied with the specified production formula and requirements of the customer. In order to meet the customer requirements and prevent the production error, various procedures and control points were set up in each process, including managing the reuse of products.

In addition, the Group also developed a guideline for Green Procurement according to the list of goods and services under their requirements, or products that have been certified environmental labels, such as green labels, carbon labels, or services that have been environmentally certified, etc. This allows the Group to adapt the environmental criteria in its procurement operations under the same direction, and also enable us to study the benefits obtained from such operations in a concrete manner. It is also regarded as a guideline which encourages our business partners to operate their business with more environmental consideration toward sustainable consumption in which the derived demand and supply of goods and services tends to be more environmentally friendly.

The Group reduced the amount of material used in the process through reuse and recycle so as to achieve the most beneficial and efficient use of resources as well as increase the proportion of recycling and reduce the amount of waste. We have defined the reuse and recycle as part of the environmental policy for a continuous practice.



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Policy

Procurement of eco-friendly products and services [Disclosure 301-2, 308-1]

Procurement of eco-friendly products and services (Green Procurement) is a guideline that our group upholds as a practice. We prioritized the procurement of products and services that have less environmental impact to the conventional products and services that perform the same function. The entire product life cycle which includes raw material procurement, production, selection of energy and technology, packaging, transportation, use and handling of end-of-life products were all taken into our business consideration. This also encouraged manufacturers and sellers to focus on increasing production and sales of eco-friendly products and services.



I am responsible for the warehouse management of the company; I therefore encourage the procurement of eco-friendly products and services and practices and promote waste reduction through reuse and recycle processes to ensure sustainable production and consumption.

Chainarong Sidecha
Head of Warehouse Unit,
Phrapradaeng Plant

544

eco-friendly procurement
in 2021

20

New eco-friendly
items

Procurement of eco-friendly products and services [Disclosure 301-1]

The Group applies the guidelines for selecting eco-friendly products to consider the purchase of products. The use of renewable resources or a mixture of renewable materials in production can reduce the use of new natural resources. For our business, all materials used can be divided into 2 categories: 1.non-renewable materials used, i.e. main raw materials such as asphalt cement, solvents and chemicals which cannot be recycled, and 2. renewable materials used such as used oil and related process materials such as brake fluid, engine oil and gear oil which can be reused as raw material for asphalt production. This includes various packaging such as premix bags, 200 liter drums, 30 liter tanks and 1000 liter IBC tanks. In 2021, Tipco Asphalt Group, a total of 554 products and eco-friendly products were purchased, of which 20 were new items in 2021, and a total amount of recycled materials was 712 tons, representing 0.14% of the total raw materials.

Total quantity of recycled materials

2021

**712
tons**

2020

**660
tons**



Biodiversity



Key Value Chain



Key Stakeholders



Key risks and opportunities

- Air Pollution Risk
- Chemical Leakage Risk
- Water pollution and ecosystem risk
- Risk from changing laws and regulations

Goals *[Disclosure 102-14]*

Long term goals in 2025

- Engage with local communities to promote the conservation and restoration of the natural environment as well as create shared values at present and in the future.

Short term goals in 2021

- Review indications of potential negative impacts on the ecosystem and biodiversity, and also set measures to eliminate or reduce the impact on high-risk projects at least twice a year
- Zero complaints from relevant stakeholders regarding the environmental impact from the operation of the business

Results in 2021

- There were 2 areas of domestic asphalt production business that are classified as high-risk groups; Phra Pradaeng and Surat Thani plants. Therefore, they conducted an assessment of compliance with environmental impact prevention and correction measures and Environmental Impact Assessment (EIA) of the Asphalt and Oil Terminal Project according to the specified period (2 times a year). The report was submitted to the Office of Policy Natural Resources and Environmental Policy and Planning, Marine Department.

Management Approach *[Disclosure 103-2]*

From the latest issues of importance to sustainable development, it was found that environmental protection, biodiversity, and the restoration of the natural environment are issues that internal and external stakeholders regard as secondary priority. However, since we committed our business conduct to social and environmental responsibility in a sustainable manner, including realizing the importance and benefits of biodiversity that our business operations may result in negative impacts, we define these issues as part of the environmental and sustainable development policy for our business implementation and continuous improvement.

The group owns approximately 227,800 square meters of asphalt production plant in Thailand. However, there are 2 areas where our business activities may affect the ecosystems and biodiversity; Phra Pradaeng oil factory and Surat Thani factory. From the nature of the factory location of the factory, they are located near natural water sources such as Chao Phraya River and the Tapi River, and both areas are not located in conservation areas or world heritage sites. From the analysis, the Group has introduced a “Mitigation Hierarchy” to its business operation by avoiding activities that will cause severe consequences, improving operations, restoring and monitoring affected ecosystems when implementing projects in biodiversity areas.

In 2021, it was found that the operations of the Group did not affect biodiversity in the area of business, so the Group was able to maintain continuous operations on environmental impact studies on biodiversity.



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Policy

Key changes in 2021 *[Disclosure 102-49]*

- The Phra Pradaeng and Surat Thani plants were inspected by the Marine Department. The result showed that their ports are stable, strong, safe and suitable for use so this reflected the efficiency in maintaining the ecosystem and the good biodiversity of the two factories.

Biodiversity Management Approach

[Disclosure 304-1, 304-2]

The Asphalt and Oil Terminal Project was implemented at Phra Pradaeng and Surat Thani Plants where the locations are at high risk of affecting biodiversity and ecosystems. As the Group places importance on biodiversity management in the operation of the mentioned area, a biodiversity and environmental impact assessment report was conducted along with the implementation of environmental preventive measures (Environmental Impact Assessment: EIA) and semi-annual environmental impact monitoring so as to ensure that terrestrial and aquatic species, genetic diversity and natural ecosystems will remain available.

Protecting and restoring the biodiversity of forests and water bodies is part of the management that does not cause any loss to biodiversity (No-Net-Loss). We have established an environmental project in order to promote conservation and restoration of nature through environmental awareness activities with the local community continuously, such as the ecotourism development project at Bang Krasob Forest, located in the area of the Khung Bang Kachao. The area is a large fertile wetland and has a high diversity of plant and animal societies.

Region	Plant size (square meter)	Risk Level	Conservation and restoration of nature with local communities
Phra Pradaeng plant	20,800	High	Bang Krasob Forest Ecotourism Development Project
Surat Thani plant	76,000	High	Tha Thong Conservation Project
Phitsanulok plant	46,000	Low	Integrated Bueng Takhreng Development Project
Nakhon Ratchasima plant	49,000	Low	“Nong Pak Jai Forest Park” My tree and our forest Project
Rayong plant	36,000	Low	“Pluke Pa Ruam Jai Pak Rak Khao Kae Lae Temple” Project

**Total number of related stakeholders' complaints
relating to environmental impacts from the Group's
business operations**

“Zero”

Preventive Measures and Environmental Impacts Reduction Case Study: “Asphalt Terminal Surat Thani plant”



Air Quality

- Choose low emission fuels; choosing B10 diesel instead of fuel oil, which contains lower sulfur.
- Choose thermal fluid heaters with high combustion efficiency, automatic self-control system, which ensures the accurate air-fuel ratio during use. This will result in a complete reaction that reduces air pollution, reducing the need for a condensate treatment system and energy lost in the system.
- Ensure the marine management complies with preventive measures for tanker collision accidents as prescribed by International Maritime Organization (IMO), Marine Pollution Control Laws, Maritime Act of Thai Waters, 1913, and Crash Prevention Act, 1977.
- Provide tools or equipment for collecting oil clumps, potentially contaminated oil spills into rivers in the event of an emergency accident so as to prevent oil or oil clumps from spreading or falling, and also procuring oil buoys of the size and length suitable for large ships entering the port
- Arrange an emergency plan in the event of an oil leakage and rehearsal regularly, including providing equipment to remove oil stains

Economy-Society

- For the recruitment of personnel and labor, prioritize the locality of the project to reduce immigration and improve the community economy by creating jobs for more than 80 percent of the local workforce in the community.

Water Resource Management



Key Value Chain



Key Stakeholders



Key risks and opportunities

- Risk of water resource shortage
- Risk of dispute with the community
- Risk from changing laws and regulations

Goals *[Disclosure 102-14]*

Long term goals in 2025

- Zero complaint case relating to water dispute

Short term goals in 2021

- Zero complaint case relating to water dispute
- Reduce the total amount of water drawn for use by 2% compared to 2020

Management Approach *[Disclosure 103-2, 303-1, 303-2]*

Water resource management with the most efficiency to ensure sustainable existence of natural resources and benefits our future generations, is on the Group's top priority. We established the environmental and integrated management policy to comply with the environmental management system standard (ISO14001) that the Group has implemented constantly.

Water resource has been one of the key natural resources for our businesses as water is one of the key ingredients for asphalt emulsion product lines. Therefore, all TIPCO Asphalt Group's production plants are designed with surface water reservoir for each plant's internal use to prevent water shortage for production while eliminating risks on dispute over water with nearby community; or in some case, the plant is able to share access to water source with nearby community during drought.

In 2021, the group developed water use efficiency by adopting the principle of 3Rs (Reduce, Reuse, Recycle) to reduce tap water consumption and groundwater in the production process. In order to prevent impacts and optimize the use of water for maximum benefit, the Group has established a water conservation project such as water treatment in the production process, watering plants, water supply system development, and etc. At present, there is no problem of water shortage or conflicts with the community about the use of water.

Key Changes in 2021 *[Disclosure 102-49]*

- Adopted the 3Rs principle to develop water use efficiency, i.e. reducing untreated water usage by reusing treated water in the production process of Rayong plant, Korat plant, and other uses such as reserving water for use in the production process of the Korat factory and watering the plants of the Rayong factory to increase the green area within the factory
- Implemented water pipe replacement project to improve damaged water pipes and reduce water utilization of Rayong factory.

Results in 2021

- 47 megaliters of water withdrawal, a 2.8% declined as compared to 2020, meeting the target
- Total 50 megaliters of water used, or a 4.4% declined as compared to 2020
- 0.09 cubic meter per ton of production of water usage per production volume, a 1.77% declined as compared to 2020
- 2.6 mega liters of wastewater (after treatment) to be recycled in production process and other activities
- Zero complaint case relating to water dispute, achieving the set goals



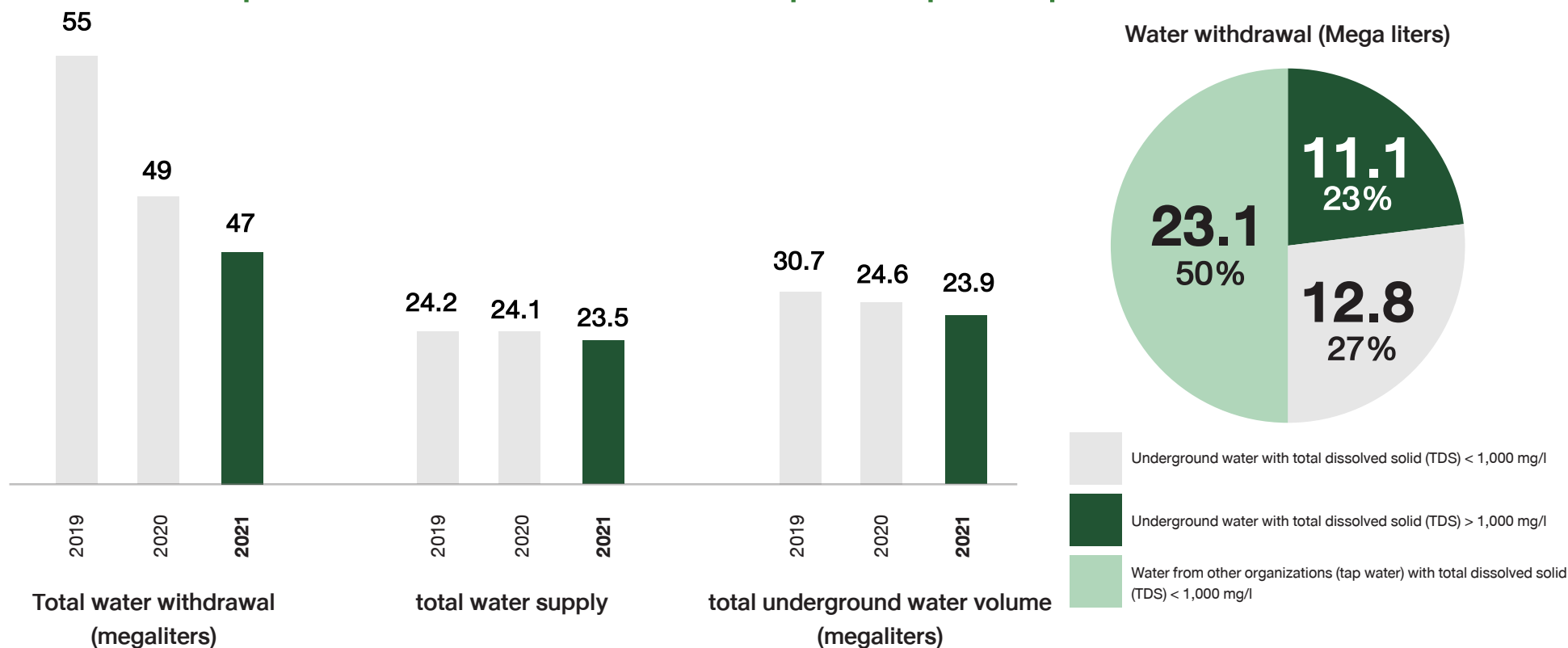
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TIPCO Asphalt Group: Water resource conservation

[Disclosure 303-3, 303-5]

In 2021, all five of Tipco Asphalt Group's factories utilized tap water from the Metropolitan Waterworks and the Provincial Waterworks Authority; 23.5 megaliters of office building use and 23.9 megaliters of groundwater used in the production process. For the production process, there was no surface water used meanwhile 2.6 megaliters of wastewater was treated and recycled. The 47 megaliters of water was drawn into use, or a 14 percent decline as compared to 2019. 50 megaliters of total water was used, representing 0.09 cubic meters per total production, or 66.53 cubic meters per person per year.

Total water consumption in the business and water consumption compared to production volume



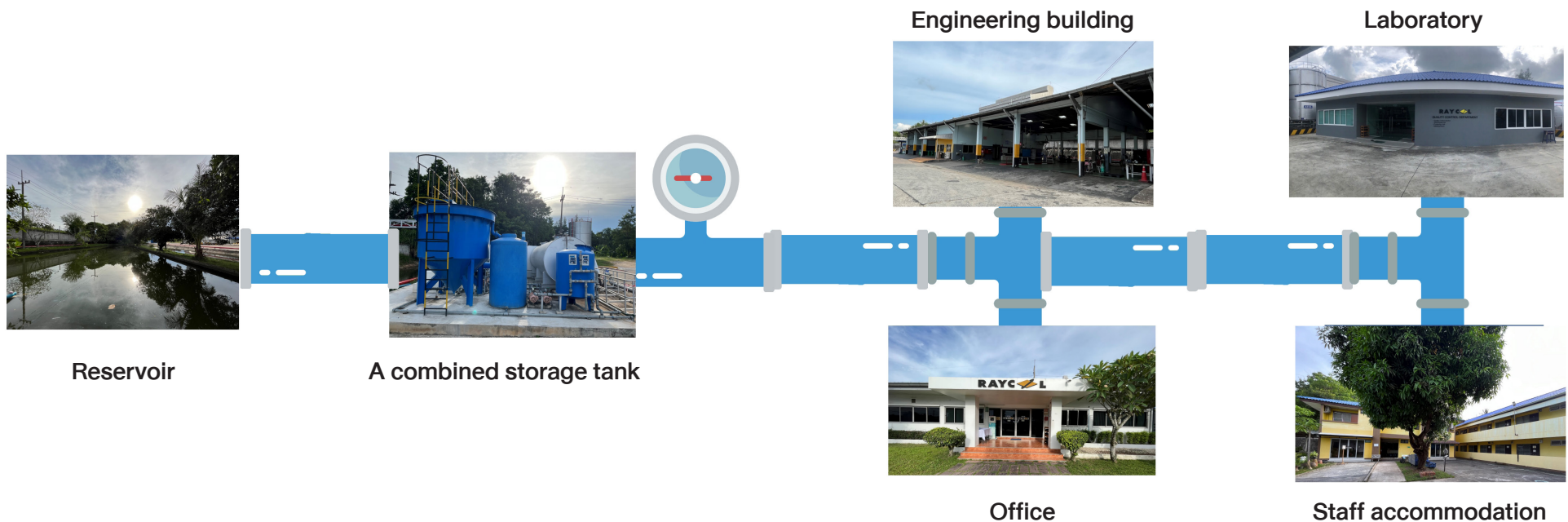
TIPCO Asphalt Group: Water resource conservation

Tipco Asphalt Group recognizes the importance of water resources, so many projects have been developed continuously. We ensure the highest value use of water by establishing measures and operating guidelines to reduce water consumption and discharge of wastewater to the public along with wastewater treatment and recycling. We also inspect of the quality of the wastewater weekly, including creating awareness about water consumption, water conservation, and campaigning for economical use of water in organization through various projects, including the following:

The Group's Water Management Project in 2021

Water Pipe Replacement Project

In 2021, from Rayong factory operating areas exploration, it was found that the tap water consumption was 33 percent which was higher than in 2020, so the Group has analyzed the problem and found that the plumbing was damaged due to its service life. We therefore assigned the engineering department to change the water pipes, and spent 360,000 Baht of project budget to reduce the possibility of leakage which is the cause of unproductive water loss. As a result, the project implementation allowed water consumption to decrease and there was no leak in the water supply system.



Safety Awareness

"Better safe than sorry"



- **Employee's health and safety**
- **Customer's health and safety**
- **Safety in product delivery via road transportation**



Employee's Health and Safety



Key Value Chain



Key Stakeholders



Key risks and opportunities

- Risk from working at heights
- Risk from inhalation of vapors and chemicals
- The risk of poor posture at work
- Risk from heat exposure
- Risks arise from working with machines

Goals *[Disclosure 102-14]*

Long term goals in 2025

- No fatalities and lost time as a result of work
- Zero lost time injury frequency rate as a result of work and distribution
- No work-related disease

Short term goals in 2021

- No fatalities and lost time as a result of work
- 0.74 times per million working hours of lost time injury frequency rate as a result of work and distribution
- No work-related disease

Results in 2021

- 1 severe contractor's truck accident
- Zero lost time injury frequency rate per a million hours worked
- Zero lost time injury during work and delivery
- Zero road user complaints on the safety of our delivery trucks
- Zero product leakage during delivery

Management Approach *[Disclosure 103-2]*

Tipco Asphalt Group established occupational health and safety at work policy, which is a part of the Integrated Management System policy that has been put into effect since 2018. At present, the Group still encourages a safe working environment under the goal of preventing accidents, injuries, and illnesses caused by work and operation of employees including contractors, raw material suppliers, customers, and related stakeholders. In order to mitigate and control risks that may affect occupational health and safety, we promote risk-based thinking and participation as guided by Occupational Safety, Health and Work Environment Committee to prevent accidents or illnesses due to work as well as continually improve the quality of life of our employees. Under an international standard ISO 45001, occupational health and safety Management system, and relevant laws and regulations, our main objective is moving towards Aim – ZERO Accident, zero work-related accident and injury by prioritizing our employees and contractors through safety risk assessments as key tools used in work planning, system improvement and safety control standard.

Key results in 2021: From the impact of the COVID-19 epidemic situation has resulted in changes in different work processes, to ensure the business continuity, we have conducted risk assessment of business activities both inside and outside the work area, improved resource allocation efficiency, and implemented safety protocols by screening measures before entering the work area as prescribed by Occupational Health and Safety Department preventive guidelines. However, the standard operating procedures were maintained, so this year, we were awarded an outstanding model establishment in safety by the Department of Labor Protection and Welfare, Ministry of Labor, and also honored by the Institute of Safety Promotion Occupational Health and Work Environment (Public Organization) as we launched a zero accidents campaign.

The information disclosed in the report was verified at the source, recording history, and calculations by the ISO Certification Institute Industry Development Foundation Network Institute of the Ministry of Industry (MASC)



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Management Policy

Key Changes in 2021 *[Disclosure 102-49]*

- Raised awareness and positive attitudes about safety through online video channels, both in real time and on demand
- Conducted a root cause analysis in the event of an accident, incidence, or a near-accident event to define recurring measures
- Encouraged employees to participate in the risk discovery of Unsafe act, Unsafe Condition and Near miss in order to reduce the likelihood of in accidents caused by similar factors
- Organized employee health promotion programs such as running races, sports events, and etc.

Occupational Health and Safety Risk Management for Employees

[Disclosure 403-2]

It is essential for business to identify risks and hazards which affect work processes and related persons and result in business property damages, the Group therefore established methods for identifying hazards at all stages and activities with participation of employees and contractors in accordance with ISO 45001, an operational guideline for business application to reduce the probability of occurrence.

In determining risk mitigation measures, the Group implemented the principle of hierarchy management by modifying the process, improving machineries, and sourcing alternative raw materials, issuing safety regulations, including building a safe working environment. These risk assessments and measures are subjected to annual review, or when there are any changes affecting the safety system of work. We aimed to develop measures and management systems and adapt them to ongoing situations. For communication with employees, contractors, and related persons, we regularly organize training sessions to review safety knowledge in accordance with the annual training plan.

Examples of risk associated with operating in the workplace [Disclosure 403-7]

Risks	Preventive measures and guidelines
Installing fire extinguishers at the particular point	Provide the necessary equipment at the point of use and arrange regular rehearsals
Accident from falling into a vehicle inspection pit during maintenance	Install railings and warning signs
Maintenance without cutting electricity	Install Log-out, Tag-out systems for maintenance
Accidents from working with machines (pumps), pivot points, clamping points	Improving workplace, such as installing protective equipment
Accident from using forklift across the bun wall fire	Modify work area and improve lifting equipment for convenience and safety



Installing fire extinguishers at a particular point of workplace



Equipment for preventing falling into vehicle inspection pit during maintenance



Log-out, Tag-out systems in maintenance

Safety Management

Tipco Asphalt Group instills safety responsibilities to ensure a safe and healthy workplace for its employees and partners by setting working practices for all activities, including life security. In 2021, there were no loss time injuries nor employees suffering from work-related illnesses. As a result, the Group was continually awarded outstanding model establishment in safety by the Department of Labor Protection Welfare, Ministry of Labor. We were also honored by the Institute for the Promotion of Occupational Safety, Health and Work Environment (Public Organization) as a result of achievement in zero accidents from work in the year 2021.

For partners and business partners, especially contractors who visit or work at the construction site or run maintenance of machinery in the factory, the Group has provided safety training on occupational safety for general tasks, and also conducted risk assessments and activities aimed on contractors through safety meetings with supervisors until a project is completed. In addition, collecting and reporting the contractor's safety statistics is carried out in the same way as the employee practices.

Raising awareness and cultivating a culture of safety

[Disclosure 403-5]

1. Provide knowledge, practice, and skills necessary to work safely through online training, video clips. Our employees are expected to be able to analyze the situation when an accident or near miss, including various promotional activities
2. Create awareness and positive attitudes towards safety through the safety conversation channel and arrange the outstanding employee safety contest
3. Prevent, control, and monitor the current situation, and study regulations on safety, review of risky activities, and etc.
4. Organize employee health promotion activities according to the Healthy, Safety and Happy Workplace project to prevent disease and work-related illnesses, raising awareness and cultivating a culture of safety



Celebration of accident statistics 3,000,000 working hours without lost time injury at Rayong plant

Safety involvement and consulting

[Disclosure 403-4]

Safety committee is an important group for communication between employees and executive representatives. The committee consists of employee representatives with a term of 2 years, and supervisors who are responsible for planning and follow up on safety management results. The supervisors will also investigate incidents in which the committee will not disclose the informant's name during the investigation.

Fatalities and lost time as a result of work-related injury

[Disclosure 403-9]

	2019	2020	2021
Number of fatalities as a result of work-related injury – domestic employee	1	0	0
Number of fatalities as a result of work-related injury in company area – contractors	0	0	0
Number of fatalities as a result of accidents out of company area – product distribution –outsourced contractors	0	0	1
Number of lost time injury – domestic employees	1	0	0
Number of lost time injury in company area – contractors (LTIFR)	0	0	1
Lost Time Injury Frequency Rate (LTIFR) – domestic employees	0.74	0	0
Statistics of high-consequence work-related injuries in company area – outsourced contractors	0	0	3.35

Injuries Records (beyond first aid)

[Disclosure 403-10]

2021

0

Incident per
one million work hours

Occupational Health Management

[Disclosure 403-3, 403-6]

It is essential to provide a safe working environment to prevent injury and illness caused by the work of employees. If their duties or work performance were affected by their health problems, the problems will also affect the employees themselves, their family, and society as well. As the workplace is like an employee's second home as most of their time is spent at work, Tipco Asphalt Group places an importance on health to prevent and control risk factors for employees' disease, such as organizing balanced dietary activities, encouraging employees to exercise, stress-reducing activities project to boost mental health and improve physical health before returning to work in the office or factory. We also arrange annual health check-ups for our employees and provide them with doctor consultation for individual health checks and results. The health information of all employees will be kept confidential as required by law.

From the epidemic situation of COVID-19 which affected the work process, the working conditions in factories and working locations were adapted to the circumstance. However, the Group has sufficiently provided healthcare equipment for employees, including hygienic mask which required to be worn at all times, counseling on health problems from the outbreak of Covid-19, establishing online system for work, organize a small group of employees to avoid gathering in large groups, and screening measures, and etc. Meanwhile the Occupational Health and Safety Department is responsible for monitoring and analyzing the situation, we also established a committee to deal with the epidemic situation of COVID-19. The committee has prepared guidelines for the prevention and control of COVID-19 under the ISO45005 standard, criteria for working safely during the COVID-19 outbreak as a guideline for working safely during the pandemic. In 2021 the Group was able to carry out our business activities and maintain a safe working environment with a balanced lifestyle.



Employee illness record

Number of occupational illness - domestic employees (times)	2019	2020	2021
	0	0	0
	Time	Time	Time

Occupational illness frequency rate - domestic employees	2019	2020	2021
	0	0	0
	Time	Time	Time

Note: Data includes employees at Head Office in Thailand and 5 Thai plants; namely, Phra Pradaeng, Nakhon Ratchasima, Phitsanulok, Rayong and Surat Thani

Smart Knowledge Platform Project

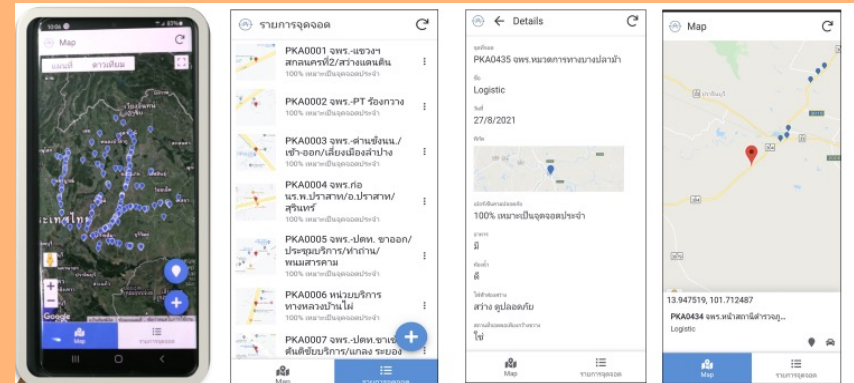
[Disclosure 403-4, 403-5]

This project aims to solve any problems related to accidents caused by the wrong use of machinery. Usually, employees will be trained on precautions and operating guidelines and functions, but for some machines which are not used in everyday operation, it is necessary for employees to review manual and related documents before use. However, sometimes it was found that some employees do not review. As a result, the Surat Thani factory team has initiated this project by gathering the machine information, operating guideline, all necessary maintenance information, precautions including required PPE, making a presentation in an accessible video clip, and generating QR code for access at the operating areas. As the project aimed to communicate safety and machine operation to employees on an accessible and easy-to-understand platform, all employees were enabled to watch and listen to information of a particular machine before use. At present, the project has been introduced and received good feedback from employees.

This project communicates machinery safety via the internet and available Office365 systems to employees with a small budget but contains many advantages. For example, employees are safe from using the machine, and able to perform tasks quickly and correctly, meanwhile the machine has a long service life and gets proper maintenance. At present, the company is in the process of implementation to other machineries and factories.



Training on truck-parking location check application



Customer's health and safety



Key Value Chain



Key Stakeholders



Key risks and opportunities

- Risk from inhalation of vapors and chemicals
- Risk from poor posture at work
- Risk from machinery
- Risk from environment and pollution
- Risk from heat exposure

Goals *[Disclosure 102-14]*

Long term goals

- Partnership in building technical knowledge for safe road construction upon road construction business

Short term goals in 2021

- NO less than 85% customer satisfaction with products and services
- Providing technical and safety knowledge in road construction work including general safety 25 times/year

Results in 2021

- 88.4% Customer satisfaction with products and services
- Provided technical and safety knowledge in road construction work, including general safety 8 times year, did not meet the target due to the epidemic situation of COVID-19 which caused in a temporarily close of construction sites
- Modified the model of educating customers from visiting the event site to using online communication channels and creating Documentation in electronic form instead.

Management Approach *[Disclosure 103-2]*

The safety of customers and employees is our primary concern especially during the COVID-19 pandemic. We will still act in compliance with the measures prescribed by customers and government officials in different areas. In addition, there were supervision of business operations to ensure that employees are not the cause of the epidemic.

In addition, we also organized technical service projects that enhance customer safety knowledge. The project is a joint project between interested customers and the Group, which emphasizes on safety at work, use of construction equipment, emergency guidelines, including training to raise the level of safety management to meet international standards. We set the collective goal and provided risk management procedures for safety in operation to their customers' business and their employees. We also aim to be a part of creating awareness of the safety culture in organizations toward zero accident.



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Key changes in 2021 *[Disclosure 102-49]*

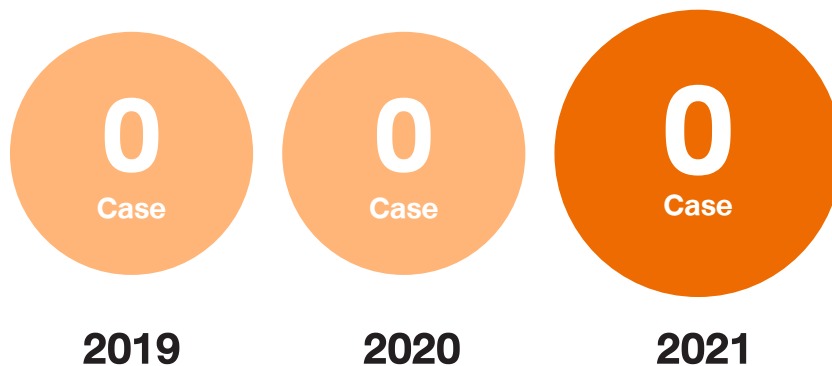
- Screening delivery man entering the workplace during the COVID-19 epidemic and grouping separately from other employees
- Prepare operational guidelines for safety and working practice during COVID-19 outbreak for employees who are travelling for our business
- Provide hygienic protective equipment, hygienic mask, alcohol gel for employees and customers to ensure their safety
- As a result of the epidemic situation of COVID-19, access to construction projects is restricted. Therefore, we have changed the method of providing technical and safety education to social media and online platforms instead.

Customer's Health and Safety [Disclosure 416-1, 416-2, 403-7]

As customer safety is another important part of our business, the customer must be provided complete information on how to use the product safely under their expectations. In addition to the product information stated on the container or the accompanying document, we also arrange knowledge disseminations on how to use all kinds of products through training for customers and employees, different safety features and indications, including setting channels for product safety complaints.

The Group remain focused on projects coordination between customers and business partners such as technical services that enhance safety knowledge for customers. We emphasis on safety at work, the use of construction equipment, including training to communicate emergency guidelines to customers, business partners, and employees to operate with safety under an awareness of safety culture.

Number of complaints relating to health and safety from products and services



Training on the use of fire extinguishers (Tha thong Recycling Company)

Knowledge sharing project: Safety Development with Customers ^[Disclosure 403-5]

It is an ongoing project with customers namely Sam Petch Limited Partnership in which the customer encountered safety problems. As a result, they invited us to share our experiences of safety development in the workplace. This project has been ongoing for 2 years in which Phitsanulok plant team was provided with safety knowledge in various fields such as working with electricity, cranes, etc.

This project aims to enhance knowledge and understanding of risk assessment as well as reduce risk factors for customers' employees. At present, the improved renovation is under development for joining the provincial contest of the best workplace in safety. From the project implementation, our employees gained experiences from working with external organizations, learned customers' work process and how they use our products. At the same time, we have developed relationships with customers by engaging network security.



Safety training for customers



Investigate risk points and provide recommendations

Safety in Road Transportation



Key Value Chain



Key Stakeholders



Key risks and opportunities

- Risk from working at heights
- Risk from inhalation of vapors and chemicals
- Risk of poor posture at work
- Risk of product transport
- Risk from heat exposure
- Risk of serious infectious diseases in risk areas

Goals *[Disclosure 102-14]*

Long term goals

- Zero fatalities as a result of accidents - product distribution – employees and contractors
- Zero work-related injuries - product distribution – employees
- Zero complaints from road users against freight trucks
- Zero product leakage during distribution
- The level of satisfaction of customers, road users and related stakeholders must be greater than or equal to 85%

Short term goals in 2021

- Zero fatalities as a result of accidents - product distribution – employees and contractors
- 0.74 times/million work hours high-consequence of work-related injuries - product distribution – employees
- Zero complaints from road users against freight trucks
- Zero product leakage during distribution

Results in 2021

- 1 time of fatality as a result of accidents – product distribution – employees and contractors
- Zero high frequency of work-related and production distribution injuries
- Zero injuries from work-related and production distribution
- Zero complaints from road users against freight trucks
- Zero product leakage during distribution

Management Approach *[Disclosure 103-2]*

The Group attaches great importance to the management of freight in accordance with ISO 39001 which is about road traffic safety management systems. We implemented strict safety supervision of factories and transportation to monitor the cargo transport on the road throughout the delivery. This supervision ensures the products delivery safety and punctuality as customer required.

In addition, our employees have introduced innovations in applications and online systems to promote safe transport of goods. We organized many activities such as meetings of small groups on risk concerns in a particular area through mobile applications via Google Map by using the route database provided by the company. This facilitates freight drivers to be able to study and plan before delivery with convenience, speed, and security.

For monitoring on the trucks of our group and outsourced drivers, the Group has established a centralized logistic unit who responsible for tracking cargos and delivery of goods via GPS and CCTV cameras 24 hours a day. In case of emergency, the agency will report to the nearest factory for assistance in which there is a rehearsal for the said plan every year.

In 2021, the company applied the ISO 45005 standard, the criteria for safety at work during the Covid-19 epidemic to ensure the availability of delivery service and safety at customer's site.



Scan QR Code
to view road traffic
safety management
policies.

Key changes in 2021 *[Disclosure 102-49]*

- Determined employee readiness according to preventive measures against the spread of COVID-19 and complied with the transport requirements in the destination area
- Introduced mobile application and online system to communicate with drivers.
- Identified risk points and mandatory rest stops along critical delivery routes for drivers to study route and find stopovers. This allowed them to prepare themselves and their vehicles for their next trips.

Safety Risk Management on Product Distribution *[Disclosure 403-2]*

Road accident during transportation is another risk as such accidents involve several factors. The risk concerns can be divided into driver readiness factor, vehicle condition factor, environmental factor, and driver readiness factor. The Group therefore set a certain process to ensure safety which includes selection of experienced employees, safety training on driving, provide basic knowledge about products and precautions, arrange an accommodation while waiting for delivery, destination notification, customer waiting time, and the route used for the delivery. We also set alcohol test measures for all drivers before leaving the factory and require drivers to stop every 4 hours during transportation under safe stops information, and an inspection and report of abnormalities in every delivery of the goods are conducted. In addition, the vehicle condition is another important factor. The Group therefore hired a qualified service center to be responsible for maintenance as scheduled. In addition, the condition of the vehicle is controlled by regular and random checking by employees and drivers before delivery. For environmental factors, we conducted a route survey and arranged a meeting to inform employees about the risky points between the routes. During the meeting, the drivers will share the latest information with employees, such as maintenance of roads, bypasses, temporary closures or lanes. All measures to control these risk factors are subjected to review regularly or when there is any potential change in factors.



Drivers briefing on risky points along delivery route as well as rote information exchanges

Examples of risks arising from product distribution *[Disclosure 403-7]*

Risks	Preventive measures and guidelines
1. Risk from driver's not-ready physical condition	• Assign the supervisor to inquire and interview before starting work on each trip, test for alcohol before leaving the factory
2. Risk of danger from rest stops during road transport	• Requires a safety survey on the transportation route by supervisor, delivery agency, and safety officers before the start of all cargo routes • Security monitoring throughout the transportation with 24-hour CCTV system
3. Risk non-readiness of freight forwarders' vehicle	• Annual vehicle readiness checks before delivery by drivers
4. Risk from drivers' nonfamiliarity with delivery routes	• Organize a meeting for information exchange of dangerous spots and risky route



Safety Operation in Road Transport *[Disclosure 403-4]*

The Group recognizes that road safety has a profound effect on the daily life of our employees, customers, communities, and stakeholders who live together in society. Therefore, safety is an integral part of our DNA. In 2018, our Corporate Sustainability Policy emphasized safety awareness as one of our core strategies. Our goals were simple: No accident, No danger to people, No harm to the environment. In other words, we aim for Zero Accident.

- Exploring routes and identifying risky points and rest stops, including developing a vehicle readiness checklists while driving along the route at which accidents used to occur, in order to prevent accidents
- Using Google Map Application to help drivers to study and plan trips before leaving so this make the journey convenient and safe
- Vehicle and driver readiness checks in line with COVID-19 guidelines in each area. This process ensures the employee readiness and social responsibility
- Conducting Defensive Driving Course and learning assessment and for our truck drivers
- Providing safe driving training and social responsibility awareness training for our outsourced drivers

Records on fatalities from product distribution *[Disclosure 403-9]*

Number of fatalities as a result of accidents –
product distribution – domestic employees



Number of fatalities as a result of accidents –
product distribution – outsourced contractors

Training and Development on Safety Driving ^[Disclosure 403-5]

- The accident prevention program provides knowledge about driving safety under traffic regulation and enhance the necessary skills for the safety of drivers and road users. We arrange annual training for internal drivers and outsourced contractors.
- Training on vehicle inspection for transportation safety for drivers.
- Using application for route and rest stops studies as well as delivery planning in a timely and safe manner.

Project: Risk-Based Thinking Promotion ^[Disclosure 403-4]

The Group organized a photo contest for risk areas to encourage employees to manage risk self-assessment. In the contest, employees are able to share a view of safety in their works both inside and outside the factory through photographs, as well as present solutions or prevent recurrence. The project aims to enhance employee skills in assessing risks or potential accidents and share their opinions via presentation of corrective and preventive ideas, including applying their knowledge and understanding to improve the areas they are responsible for. Meanwhile the Group is able to gain various perspectives from employees, this ensures safety during work for its employees.



Training on vehicle inspection for transportation safety



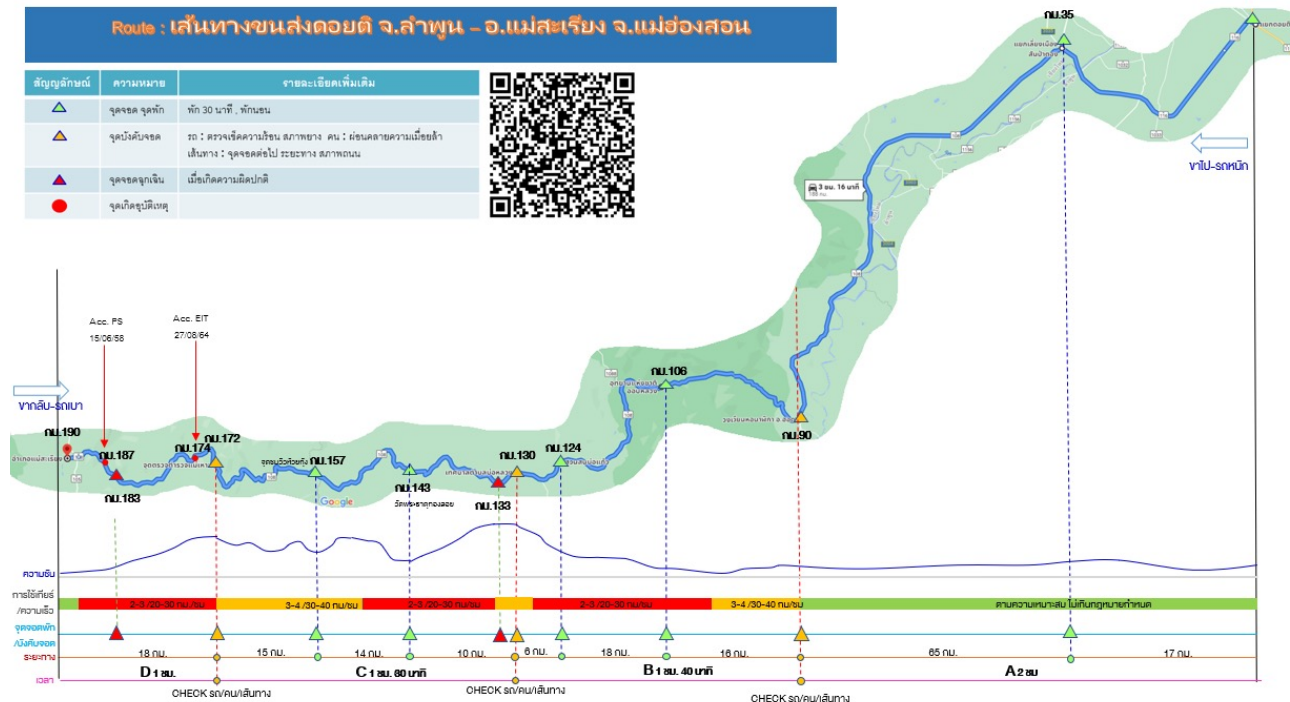
Photo contest for risk areas

Project: Delivery Route Survey for Safe Transportation [Disclosure 403-7]

To prevent road accidents, it is essential to study and plan journeys for product distribution. Therefore, in order to obtain an accurate and up-to-date information, the Group has conducted transportation route surveys in which safety officers, drivers, and delivery personnel will survey the routes used for goods distribution and collect data from the responsible officers. The surveys focus on various risky areas such as community areas, width, road conditions, turning points, including rest areas during journey both daytime and nighttime, and outbound and return. In each year, new routes will be surveyed meanwhile the surveyed routes will be reviewed to form a roadmap. In 2021, a total of 2,100 kilometers of routes have been explored.

In the case of a fatal accident of an outsourced contractor during transportation, the company found that one of the main causes is that the driver has no experience on this route. Therefore, in order to prevent recurrence, the Group has determined to add useful information necessary for drivers to this route; the route from Phitsanulok factory to Mae Hong Son province (Mae Sariang District area). The information includes rest stops before entering the risky or dangerous area, or the area that had an accident, and some rest stops are designated as a mandatory parking point for vehicle inspection, road condition recheck, and advices of the appropriate speed and gear for driving.

This project helps inexperienced drivers to plan their trips and use speeds and gears that are appropriate for the terrain. As for the company, this mandatory process reduces the risk of accidents during the journey and ensures the on-time delivery.



Surveying the routes used to transport goods and collecting data from officials and residents in the areas

Transparency and good corporate governance

to build strong foundation



- **Participation in community and social development**
- **Enterprise Risk Management**
- **Good Corporate Governance**
- **Communication and corporate image**
- **Government policies and budgets**
- **Cyber Security**
- **Quality and responsibility for products and services**
- **Sustainable procurement**
- **Other managements**



Participation in community and social development



Key Value Chain



Key Stakeholders



Key risks and opportunities

- Risk of respect for human rights and communities
- Risk of complaints from the community

Goals [Disclosure 102-14]

Long term goals in 2025

We are committed to implementing CSR/CSV projects, especially direct activities, and responding to community needs according to the principle Corporate Ethics and Strategies Sustainability

Short term goals in 2021

Satisfaction with social activities project 85%

Results in 2021

- Satisfaction with CSR projects was 93%
- Participation rate through volunteering in social activities (CSR/CSV) of employees was 63%
- The number of volunteer hours was 2,716 hours
- 2,001 stakeholders participating in the project
- Support the medical agencies to fight the crisis of COVID-19, totaling 24.8 million Baht

Management Approach [Disclosure 103-2]

Tipco Asphalt Group is fully aware that our business operation must take into account the importance of all stakeholders. We therefore express our priority for the community and society through the concept of “Sustainable Business Operations with Social and Community Responsibility” by defining a social responsibility policy under the ISO 26000 standard, which focuses on access and deep understanding of the environment and community problems. We aim to find and develop solutions together with society and communities to strengthen the community in economic, social and environmental aspects.

Key operations in 2021 were the ongoing projects, including the Patching Pothole Project with Premix, which was designed to make it easy to repair small potholes. There was also a Basic Life Support program to reduce the rate of death from sudden cardiac arrest. This was an ongoing project since 2019 with cooperation with a network of partners from public health agencies in the community and the private sector.

In 2021, due to the situation of the epidemic of Covid-19 since 2020, the Group therefore implemented the new guidelines or methods for conducting social security activities according to the government’s protocols, and we also arranged many COVID-19 prevention activities for communities as a part of social responsibility. We cooperated with the hospitals in 5 areas where the factory is located so that both the Group and the society can go through the crisis together.

Key Changes in 2021 [Disclosure 102-49]

- Knowledge sharing for students through online system
- Organized the Basic Life Saving project, with a total of 65 participants
- Integrated Bueng Takhreng Development Project, 207 trees with more than 2 meters tall were in 2021
- Organized road repair projects for traffic safety by increasing the number of 2 routes in Ban Na Klang community together with Na Klang Subdistrict Administrative Organization Nakhon Ratchasima Province
- Participated with communities and hospitals in the area to prevent, support, and control the spread of COVID-19.



Scan QR Code
to view Social
Responsibility Policies

Results of the social activities project in 2021 [Disclosure 413-1, 413-2]

Tipco Asphalt Group has carried out social activities projects by collaborating with communities under the principle of “Access, Understand, Develop Together” for a better quality of life for communities. During the situation of the epidemic of Covid-19, the Group put the business priority to alleviating the crisis so that the society can get through difficult times as well as implementing the sustainability strategy. In addition, many different social activities projects such as Road Safety for Kids, Patching Pothole, Basic Life Support, and Knowledge Sharing have been implemented under social distancing protocol.

Results of the social activities project in 2021



Expenses for donating items/products
15.00 million Baht **57.83%**

Project implementation expense
0.67 million Baht **2.57%**

Volunteers during work hours (paid)
0.38 million Baht. **1.47%**

Administrative expenses
0.01 million Baht **0.04%**

Expenses on cash donations
9.88 million Baht **38.09%**

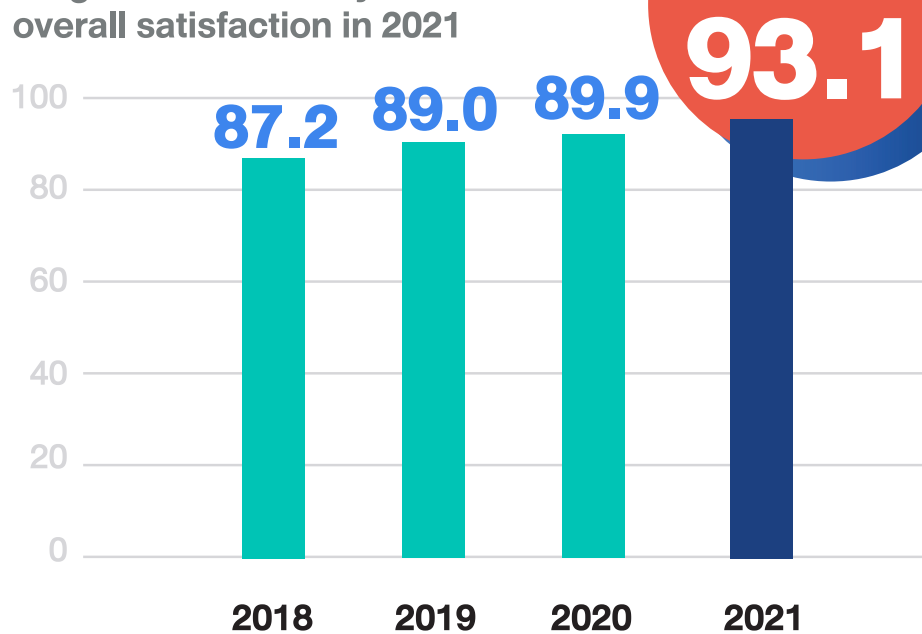


Collaboration with communities Access, Understand and Develop together



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Responsibility Strategies

Diagram: Community's
overall satisfaction in 2021



Employees' participations

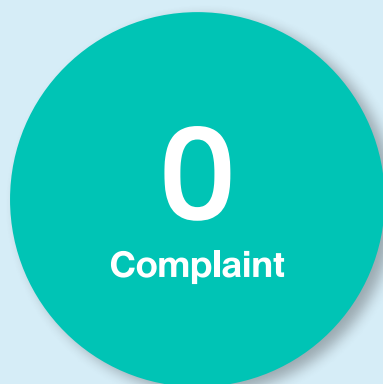


[Disclosure 413-1, 413-2]

Community and Social Concerns Related to the Group's Operations

The Group committed its business on social responsibility and aim to be a good member of the community and society. Our office and operations department have developed complaint channels for the communities surrounding the company and factory areas by communicating all related information of channels and contacts via dialogue with the community. We assigned a sustainability officer of each plant as a representative of the Group to organize a meeting and encouraged local people to participate in community development projects. We also set the monitoring process and project inspection as well as the satisfaction assessment after the project is completed. For the factories built near to the river, an environmental impact assessment and annual analysis will be carried out so as to prevent the negative impact on the environment.

Complaints on social and environmental issues



2018	2019	2020	2021
1	0	0	0



Scan QR Code
to see Community and Environmental
Complaints Management

Concerns raised	Management	Result
1. Odor nuisance from production	Set up deodorization system and develop raw materials that cause reduced odor	No complaint
2. Product leakage during delivery	Provide safety logistics training	No complaint
3. Fire incident	Provide fire prevention training and drills	No incident
4. Public road safety and road damage	Provide safety logistics training	No complaint
5. The spread of COVID-19 in the community	Dialogue with the community on the need for assistance during the COVID-19 crisis	No concern



[Disclosure 413-1, 413-2]

Contributions to develop and solve social problems in a sustainable way through business processes

Driving an organization towards sustainability is not about one person or one department's responsibility, so is the sustainability of the community. Therefore, it is important for the Group to reach the people in the community and understand the problems they are facing. We can promote community development by empowering them in different activities and projects through dialogue with communities in a particular area where our factories are located.

From the dialogue with the community, it was found that community needs are safe roads, which is one of our projects under sustainability strategy plan. We provided knowledge of safe transportation by creating projects such as the Road Safety for Kids, a project which encouraged students to use roads safely and reduce accidents, Patching Pothole, a project which was implemented with community partners for repairing of damaged roads by using Asphalt Premix, and Basic Life Saving, a project which was a collaboration with volunteers in the community and rescuers to save the lives of road accident victims.



Road Safety Strategy



From the Group's sustainability strategy in the social aspect, we focus on raising awareness of safety to society through collaboration with the community and society. As the pillars and framework for road safety in Part 1, which mentioned roads and safe traffic, a project of repairing road pits with mixed asphalt was therefore implemented with a network of public and private alliances in surveying and repairing roads with Premix. For the operation results in 2021, a total of 2 lines with a total length of 1.7 kilometers were carried out with the collaboration of Na Klang Subdistrict Administrative Organization, Sung Noen, Nakhon Ratchasima. The project has made the community know more about Premix and this resulted in an increase in premix sales.

Social and Environmental Benefit Indicators

- SROI = 7.98 percent
- 1,187 persons were trained on road repair
- 10 roads repaired

Business Metrics

- Enhance the competency to develop innovative products and services that are environmentally friendly.
- Promote the business image of being an innovation leader in asphalt business.
- Strong business alliances for disseminating knowledge and using products in 5 factories.
- Increased revenue from sales of products by 120,000 bags from 2020.



Scan QR Code
to view Patching Pothole
with Asphalt Premix Project

[Disclosure 413-1, 413-2]

Contributions to Develop and Solve Social Problems through Business Processes

Tipco Asphalt Group; Phitsanulok factory team and Bang Rakam Mueang Mai Subdistrict Municipality have jointly implemented the project development of Bueng Takhreng area, which is one of the three public lakes under Bang Rakam Model Project of Bang Rakam District, Phitsanulok Province. The area has been renovated and now is an attractive public park which is able to reserve water over 13 million cubic meters, and also the complete ecological attractions.

In 2021, Bang Rakam district implemented a road expansion to accommodate traffic, especially Road 1065 Phitsanulok - Kamphaeng Phet From the 50-54 kilometers, the total distance is more than 4 km, and it was necessary to cut down large and small trees. However, the Group fully recognized the importance of trees so they were brought into the “Thanon Ma Pa Yang Yu” project consideration, an ongoing project since 2016 until the present. We then initiated a local plant conservation project of relocating large trees that were affected by road expansion projects in Phitsanulok, to be re-planted at Bueng Thakreng area. In 2021, 157 trees were relocated so this became a new green lung area of Phitsanulok. Moreover, we also provide history information of each tree such as the area of origin, the former owner, through QR code system which allows visitors to study about each plant such as Trumpet tree, Pradu, Thong Kwao, etc. This project helps prevent environmental impact and also conserve natural plants. At present, 3,296 trees have been relocated.



Social benefit indicators and environment

- Reduced total greenhouse gas emissions of 777 tons CO2 equivalent

Business Metrics

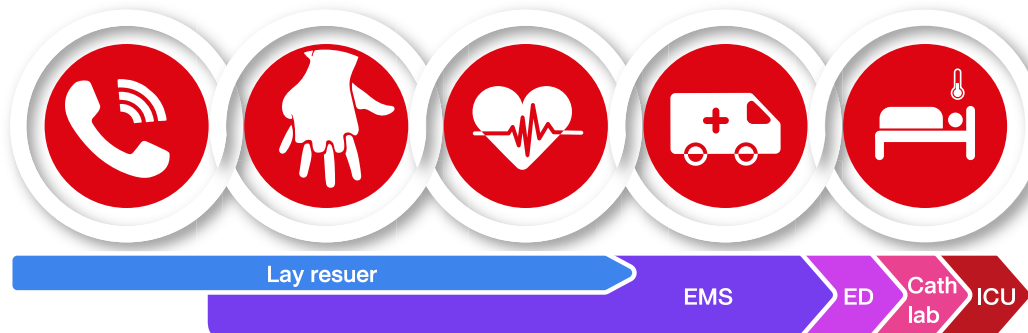
- Promote the Group's greenhouse gas reduction goal
- Enhance the business image in respect of environmental stewardship
- Build a network of environmental alliances



Scan QR Code to view
Bueng Takhreng
Integrated
Development Project



For responding to an accident, the Group places importance on basic life support because road accidents can happen anytime. Therefore, if we are able to provide the knowledge of the basic life support to communities, the fatalities of accidents can be reduced. Therefore, the Group in collaboration with the Heart Association of Thailand under the Royal Patronage by Pol.Maj.Gen. Dr. Sophon Krishnarangsarn organized the Basic Life Support project to educate people in communities on CPR. In 2021, Ms. Thidathip Uraikul, Quality Control Officer, Thai Bitumen Company Limited, Surat Thani, participated in the resuscitation of a cardiac arrest patient during exercise by performing CPR, helping the patient's survival.



Social and environmental benefit indicators

- SROI = 109.98%
- There are 38 Instructors to train the community.
- 440 trained providers
- Community trained in 5 provinces• Able to save 1 victim's life.

Business Metrics

- Strengthen the image of social and community responsibility, alleviating the loss of life as a result of accidents
- Alliances supporting basic life support training program are government agencies, public health agencies, private agency, community volunteers, rescue teams in all 5 factory locations



Scan QR Code
to view Basic Life Saving project



Highlights of Social Activities/Projects [Disclosure 413-1, 413-2]

In 2021, we were not able to organize social activities as planned for safety reasons due to the COVID-19 outbreak. Some of the activities were postponed or cancelled. However, the Group has carried out projects under the Group's sustainability strategy, based on protocols during the COVID-19 epidemic situation.



Patching Pothole with Asphalt Premix

The project aims to ensure safety for all road users and public at large and prevent road accidents, and there were 20 projects has been implemented



Basic Life Saving

The project aims to provide basic life-saving training and how to use defibrillators based on guidelines by the Life Saving Standards Committee & The Heart Association of Thailand for the benefit of general public. There has been more than 2,084 participants joined this project.



Bueng Takhreng Integrated Development

The project was implemented with the purpose of creating an ecosystem conservation and restoration of water resources. The project has been designed to be an integrated tourism and learning center, promoting tree planting. In 2021, there were a total of 157 large trees relocated and there has been a cumulative total of 3,325 large tree transplants at present which have been relocated.



SMART Knowledge Sharing

It is a project that promotes the development of skills in various fields such as knowledge of safety management in factories and transportation, CSR project design, and etc. In 2021, one project was implemented and there were 70 students of Walailak University participating.



Higher Education Innovation Contest Project

This project aims to apply current technology to enhance work efficiency.

New project
to be launched
post COVID-19 crisis



Bang Krasob Forest Tourism Development

This project aims to conserve nature by saving forest areas, improving the area to promote tourism, and organizing in the design of many promotional activities such as cycling, tree photography contests, and etc. In 2021, there were 31 tourists participating.

[Disclosure 413-1, 413-2]

We continue to conduct our social projects to address community needs

The Group has planned the sustainability strategies which contains 3 aspects and set goals for each social activity project implementation.

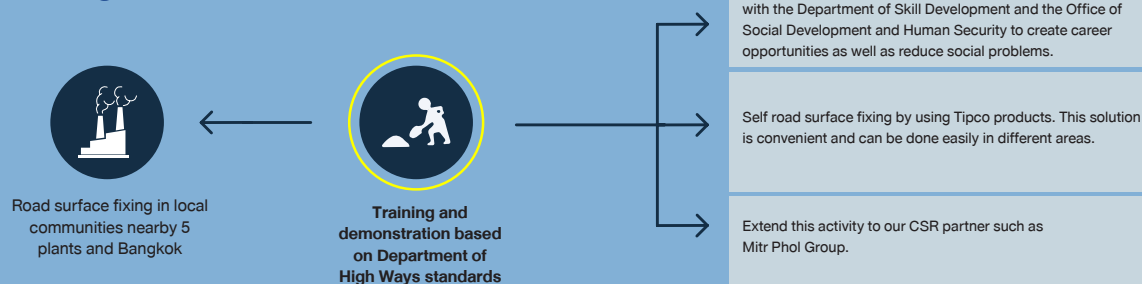
- For the economic aspect, we focus on educating and creating innovation in which one project namely SMART PEOPLE is expected to be extended. This project encourages students to learn about the process of working in various fields, which currently have been implemented in all 2 departments; Occupational Health and Safety, and Community Development. We plan to continue extending to the field of Logistics to strive for innovation in the transportation of dangerous goods. This will be a collaboration with a network of university partners in the location of 5 factories.
- For the environmental aspect, we focus on the ecosystems development at all locations in our five factories, which currently have been implemented in 2 sites, including the integrated Bueng Takhreng development project and the Bang Krasop Forest Tourism Development project. We also aim to build a network of environmental alliances in the community in the future as well.
- For social aspects, we put safety as our priority. This will consist of 3 main projects; Patching Pothole with Asphalt Premix, Basic Life Saving, and Road Safety for Kids.

Activities during COVID-19

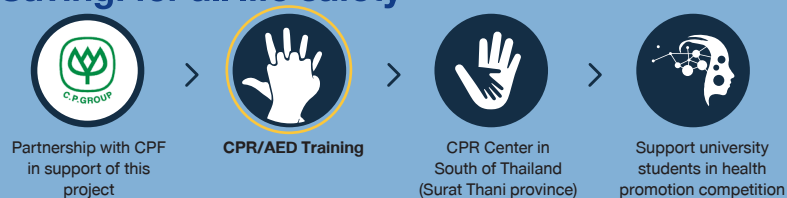
During the epidemic situation of COVID-19, the Group emphasized the importance of alleviating the suffering communities in the area where all 5 factories, including the office. There was collaboration between the hospital and the community to prevent the spread along with encouragement to the medical staff.



Patching Pothole: with Asphalt Premix



Basic Life Saving: for all life safety



- Established of sharing pantries and providing medical equipment to field hospital, Rayong Province (Rayong Plant)
- Sponsorship of consumer goods and survival bags for COVID-19 patients and medical personnel (KR Plant)
- Medical materials and equipment donation project
 - Maharaj Hospital (Nakhon Ratchasima Plant)
 - Bangchak Hospital (Nakhon Ratchasima Plant)
 - Bang Rakam Hospital (Phitsanulok Plant)
 - Makham Khu Subdistrict Health Promoting Hospital (Rayong factory)
 - Rayong Provincial Public Health Office (Rayong factory)
 - Sanam Hospital, Surat Thani Province (Suratthani Factory)
 - Bang Kung Health Promoting Hospital (Suratthani Factory)

Risk and Crisis Management



Key Value Chain

Throughout the value chain

Key stakeholders

All stakeholders

Key risks and opportunities

- Enhancing understanding and duties in enterprise risk management for sustainability

Goals *[Disclosure 102-14]*

Long term goals in 2025

- Monitor and review risk management, internal control measures, and the effectiveness of risk management processes throughout the organization on an ongoing basis
- Apply international standard risk management principles to improve and develop work systems and corporate strategies for long-term sustainability.

Short term goals in 2021

- Monitor and review risk management and prepare a quarterly risk management report
- Conduct additional risk assessments to expand to subsidiaries and business groups in foreign countries
- Review the risk assessment and internal risk control measures related to epidemic risks

Management approach *[Disclosure 103-2]*

The Group focuses on the principles of risk management and encourages employees to apply into their operations with continuous improvement. The principles are based on the concept of creating a risk culture organization which is embedded in the DNA of TIPCO Core Values in prudence thorough taking into account the risks and responsibility for the work.

Effective risk management is essential to sustainable growth which enables organizations to adjust their business strategies and operational plans among volatility of internal and external factors, including various changes in the future. The effective management allows our business to achieve the set goals and leads to the creation of long-term value for the Group and stakeholders. Therefore, the Group has adopted the principles of corporate risk management in accordance with international standards and applied to our risk management by integrating into the operations and corporate culture at all levels.

Key Changes in 2021 *[Disclosure 102-49]*

- The organization's risk management policy is reviewed and updated on annual basis
- Organized training sessions for executives and employees on corporate risk management (online)

Results in 2021

- Monitor the risk management and key risk indicators on a quarterly basis and present to the Risk Management Committee
- Review the risk assessment and internal risk control measures related to the management of the situation during COVID-19 Pandemic according to ISO/PAS 45005: 2020, Guidelines for work safety during the COVID-19 pandemic continuing from previous year
- Expand the scope of risk assessment process of overseas subsidiaries
 - Indonesia (PT Asphalt Bangun Sarana) is expected to be completed in 2022
 - Vietnam (Asphalt Distribution Company Limited) completed in 2021



Scan QR Code
to view our Risk Management
Policy

Instill a Risk Culture [Disclosure 102-30]



The Group adopted the concept of 3-level risk management (3 Lines of Defense) to apply in corporate risk management under governance structure which consists of the Board of Directors, which is responsible for an approval of risk management policy risk appetite, the Risk Management Committee, consisting of directors and senior executives, who are responsible for supervising and monitoring risk, operational internal control, the Internal Audit Department, which is responsible for reviewing the efficiency and adequacy of the risk management process. The Group encourages its employees to apply risk management principles to their operating processes to prevent and mitigate risks with understanding, as well as continually look for opportunities to improve their work processes along with our business direction and goals. We cultivated the awareness of employee duties and responsibilities in managing risks related to their own operations and those involved (Risk Ownership), and ensure internal communication and risk management by arranging internal training, knowledge sharing to employees through various channels, including risk assessment training and brainstorming activity so as to improve and develop a joint operation system.



2021 annual meeting of the Department of Risk Management, reviewed corporate risk management policies, all risk concerns, plans and control measures, including top corporate risks

Risk and Crisis Management [Disclosure 102-30]

Effective risk management processes promote long-term corporate sustainability management

The Group performs a risk management process by identifying corporate risks and unit risks along the value chain corresponding to the business direction and organizational goals including risk assessment, risk monitoring and control, reporting and communication, and regular review of the sufficiency and effectiveness of risk management of each unit involved. We established a Risk Management Committee to be responsible for the implementation under the supervision of the Board of Directors.



Training on risk management in 2021



Risk and Crisis Management

Business Continuity Management

Tipco Asphalt Group fully emphasizes the importance of business continuity management in order to ensure the business operations proceed during a disruption, including stakeholders benefit as well as business sustainability. We implemented a business continuity management plan by identifying key activities and locations that impact on business operations and running emergency drills with relevant agencies.

In an emergency, there is a process and protocol of monitoring news and situation for assessing the impact on the company and the safety of employees, customers, and relevant stakeholders on an ongoing basis. As we adopted a flexible strategy framework for managing business continuity, we were able to adapt our plans to a particular circumstance timely with the support of a special team which is responsible for internal coordination and emergency management.

Goals









2021

- Implemented emergency response measures for emerging risks to protect safety and health of employees, customers, and business partners for continuity of business operations

2025

- Proactive business continuity plan by incorporating potential disasters and other unexpected incidents with possible high impacts
- Promote the use of technology in business operations and to management for the continuity of business activities

Emergency Drills in 2021 (times)

Business Activity	Emergency Plan						Terminal Safety Measures (Domestic/ International)	Truck Accident	
	Fire 	Spilled chemicals 	Flood 	LPG Leakage 	Rescue from Confined Space 	IT System Recovery 		Road Rescue Plan 	Oil Spill Clean-Up 
Construction Business	6	2							1
Refinery in Malaysia	1	1			1	1			
Maritime Business							3		
Head Office in Thailand	1					1			
5 Operating Plants and Depot in Thailand	6	6	4	2			8	5	1

Risk Management during the COVID-19 Pandemic Situation

The Group is aware of the risks and impacts of the COVID-19 epidemic on business operations and safety of employees, customers, business partners and stakeholders that may be affected. We continuously monitored the situation and proactively mitigate risks for health and quality of life of our employees and all stakeholders as well as the best efficient operations and business continuity. Since the outbreak of COVID-19, the Group was able to cope with the situation without any significant business interruption.



Results in 2021

- The company has appointed the Covid-19 Response Committee, responsible for coordinating with internal departments to establish guidelines for safe operation management under international standards.
- Implemented Occupational health and safety management — General guidelines for safe working during the COVID-19 pandemic for our employees and related persons, including head office, manufacturing plant and construction business in Thailand.
- Preventive measures for the spread of COVID-19 are
 - Provide personal protective equipment for covid-19
 - Accommodate employee vaccination
 - Screen employees before entering to their workplace and each workday
 - Implement Work from Home and Social Distancing guidelines for the operation of employees at home and at the office
 - Communicate news and information to employees mainly through Intranet channels.
- Since the outbreak of COVID-19, the Group was able to cope with the situation without any significant disruption to its operations.

Good Corporate Governance



Key Value Chain

Key stakeholders

Throughout the value chain

All stakeholders

Key risks and opportunities

- Transparent Disclosure
- Recruiting and developing top executives

Goals [Disclosure 102-14]

Long term goals in 2025

- Being rated at the highest level under various good corporate governance guidelines from the Stock Exchange of Thailand, Thailand Securities and Exchange Commission, Thai Institute of Directors, and other related agencies

Short term goals in 2021

- CGR Score : 5 stars
- AGM Checklist score 98% out of 100%

Management approach [Disclosure 103-2]

The Board of Directors fully recognizes the importance of good corporate governance that ensures sustainable growth and shareholder value as well as enhancing confidence among all stakeholders, including shareholders, employees, customers, business partners, competitors and creditors.

Therefore, we embrace the principles of good corporate governance to our business in accordance with the guidelines of the Stock Exchange of Thailand. We conducted a survey on corporate governance of listed companies (CGR), an annual shareholder meeting quality assessment project by the Thai Investment Promotion Association (AGM checklist), including the Principles of Good Corporate Governance for Listed Companies 2017 (CG Code) by the Securities and Exchange Commission and other relevant practices.

Key Changes in 2021 [Disclosure 102-49]

- Comply with the guidelines of the Corporate Governance Report of Thai Listed Companies (CGR) project of the Thai Institute of Directors (IOD)
- Comply with the practices for holding the annual general meeting of shareholders in accordance with the guidelines of the AGM Management Quality Assessment Program (AGM)
- Follow the policy, monitor and report corruption issues as well as regularly participating in anti-corruption activities under the guidelines for the Thai Private Sector Collective Action Coalition Against Corruption Project
- Review and follow up on sustainability issues of the organization
- Review the implementation of the Good Corporate Governance Principles and Guidelines for Listed Companies 2017 (CG Code) and present them to the Board of Directors for adaptation to the business

Results in 2021

- CGR Score: 5 stars for the fourth consecutive year, and also was one of 100 Thai companies invited to join the project ASEAN Corporate Governance Scorecard 2021 • AGM Checklist Score: 98% out of 100%
- Awarded Sustainability Disclosure Award 2021 from Thaipat Institute
- Listed in the Sustainable Stock Index (SET THSI) since 2018
- Participated in the Anti-Corruption Day 2021 and International Anti-Corruption Day, including building an anti-corruption development plan as the self-assessment conducted for an anti-corruption system development, revised version 4.0



Scan QR Code
to view our Corporate
Governance Policy

Corporate Governance Structure [Disclosure 102-18]

Board of Directors

Corporate Governance Committee

The Board of Directors appointed the Good Corporate Governance Committee to oversee the Group's good corporate governance practices in accordance with the principles of good corporate governance for listed companies. In 2021, the Corporate Governance Committee performed its duties in accordance with the charter and held a total of 4 meetings.

Composition of directors

Executive Director: 5 persons
Independent Directors: 5 persons
Directors: 4 persons

Ratio of the Board of Directors

Non-Executive Directors = 64%
Independent Director = 36%

Tenure

Board of Directors	Independent Directors
Frame: 2-28 years	Frame: 6-16 years
Average : 12 years	Average : 10 years

Company Directors Classified by Gender

Female director = 1 person
Male director = 13 persons

Number of listed companies in which the
Company's directors hold directorships

1 company: 10 persons
2 companies: 2 persons
3 companies: 2 persons

Non-executive directors who
experienced in the main business
or industry in which
the company operates

10 persons

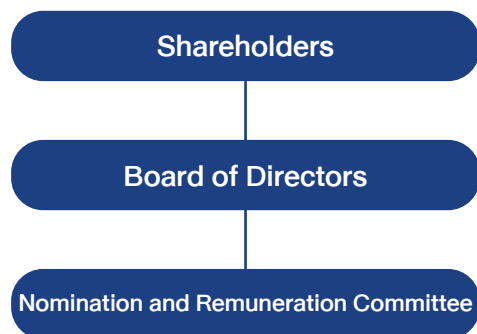
Others

**Number of Board of
Directors meetings : 5 times**
**Meeting proportion of
directors : 100%**

Company Directors Classified by Nationality

Thai = 8 person
Singaporean = 1 person
French = 5 person

Nomination of Directors [Disclosure 102-24]



- The Nomination and Remuneration Committee is responsible for nominating qualified persons to serve as directors of the Company. The nomination will be presented to the Board of Directors and the annual general meeting of shareholders for approval.
- The Nomination and Remuneration Committee is responsible for nominating qualified persons as the Company's directors as defined in the policy of qualifications and nomination and presenting to the Board of Directors. The policy of determining qualifications and nomination of directors stipulates that the board should consist of directors who are fully qualified as required by law, with various knowledge and education, related experiences that benefit the company as well as no discrimination on gender, age, race and nationality.
- The Group has provided shareholders with an opportunity to nominate a person for consideration in the agenda for appointing the directors at the annual general meeting of shareholders 2022 during October 6, 2021 until December 30, 2021

Composition of the Board of Directors

- The Chairman is an independent director and is not the same person as the president
- 1 female director
- Ethnic diversity: Thai, Singaporean and French
- The Board of Directors formulated a policy for determining the qualifications and nomination of the Company's directors by applying Board Diversity and Board Skills for nomination of qualified persons through the preparation of a table of expertise ("Board Skills Matrix"). In 2021, the Nomination and Remuneration Committee viewed that The Board of Directors qualification met all 6 necessary skills, as referenced in the 56-1 One report 2021, page 100.
- For the process of nomination, the Nomination and Remuneration Committee may consider taking the list of directors from the Thai Institute of Directors Association into consideration.



Scan QR Code
to view Policy on
Qualification and
Nomination of
Company Directors

[Disclosure 102-20]

The Chairman of the Board of Directors and duties of the Board of Directors

Chairman

- The Chairman of the Board of Directors is not the Chief Executive Officer
- The Chairman of the Board of Directors is an independent director and has a clearly separate role from the management in the Board of Directors' charter.

Board of Directors

As specified in the charter of the Board of Directors

- The duties and responsibilities of the Board of Directors are to exercise business judgment in the interests of shareholders and the sustainable growth of the company which includes the determination, consideration, and approval of vision, mission, corporate values, policies, long-term plans and strategies on a regular basis.
- There is a clear separation of duties of the Board of Directors and the Management, consisting of:
 - Duties and responsibilities of the Board of Directors that should be coordinated with the management
 - Duties and responsibilities assigned by the Board of Directors to the management to be responsible

[Disclosure 102-23]

Nomination of Directors

Policy on the determination of qualifications and nomination of directors

The Board of Directors should consist of directors who are fully qualified as required by law, and should be diverse in educational backgrounds, and experiences that are beneficial to the company and shall not limit or discriminate on gender, age, race and nationality.

The Nomination and Remuneration Committee should consider Determine the components of specialized knowledge and expertise that are required in the Board of Directors, and create a Board Skill Matrix to assist in the selection and nomination of suitable persons as directors, for example:

- Strategic Planning
- Industry Knowledge
- Accounting and Finance
- International Marketing
- Organization and human capital management
- Risk Management

In addition, there must be at least one non-executive director with experience in the main business or industry in which the Company operates

Performance indicators of the Chief Executive Officer

[Disclosure 102-26]

The performance evaluation of the President will be based on financial and non-financial indicators such as

Financial indicators

- Overall operating results of the Group (sales, net profit)
- ROA, ROE, Total Shareholders' Returns

Non-financial indicators

- Progress on the Vision 2025 Corporate Strategy Plan
- Performance of the panel E S G
- Satisfaction or number of complaints of employees, customers, communities
- Amount of Greenhouse Gas Reduction
- The amount decreased in the use of the company's resources
- CGR project scores• Results of the renewal of the Thai Private Sector Collective Action Coalition Against Corruption (CAC) certification

Prevention of conflicts of interests [Disclosure 102-25]

Conflict of Interests Report Form

- Directors and executives have a duty to prepare a conflict of interest report form.
- The Company Secretary signs and submit the report to the Chairman of the Audit Committee and the Chairman of the Board of Directors within 7 days after receiving the report.

Details of Conflicts of Interests Disclosed

- The number of shares and family relationships between directors and executives will be disclosed through the annual report.
- Directors who have interests in the agenda of the Board of Directors' meeting is unable to vote as stated in the charter.
- Directors who have interests in the agenda of the Annual General Meeting of Shareholders cannot vote as stated in the Company's Articles of Association.
- The details of the agenda that the directors who are the proxies and have interests will be disclosed through the invitation letter for the Annual General Meeting of Shareholders.

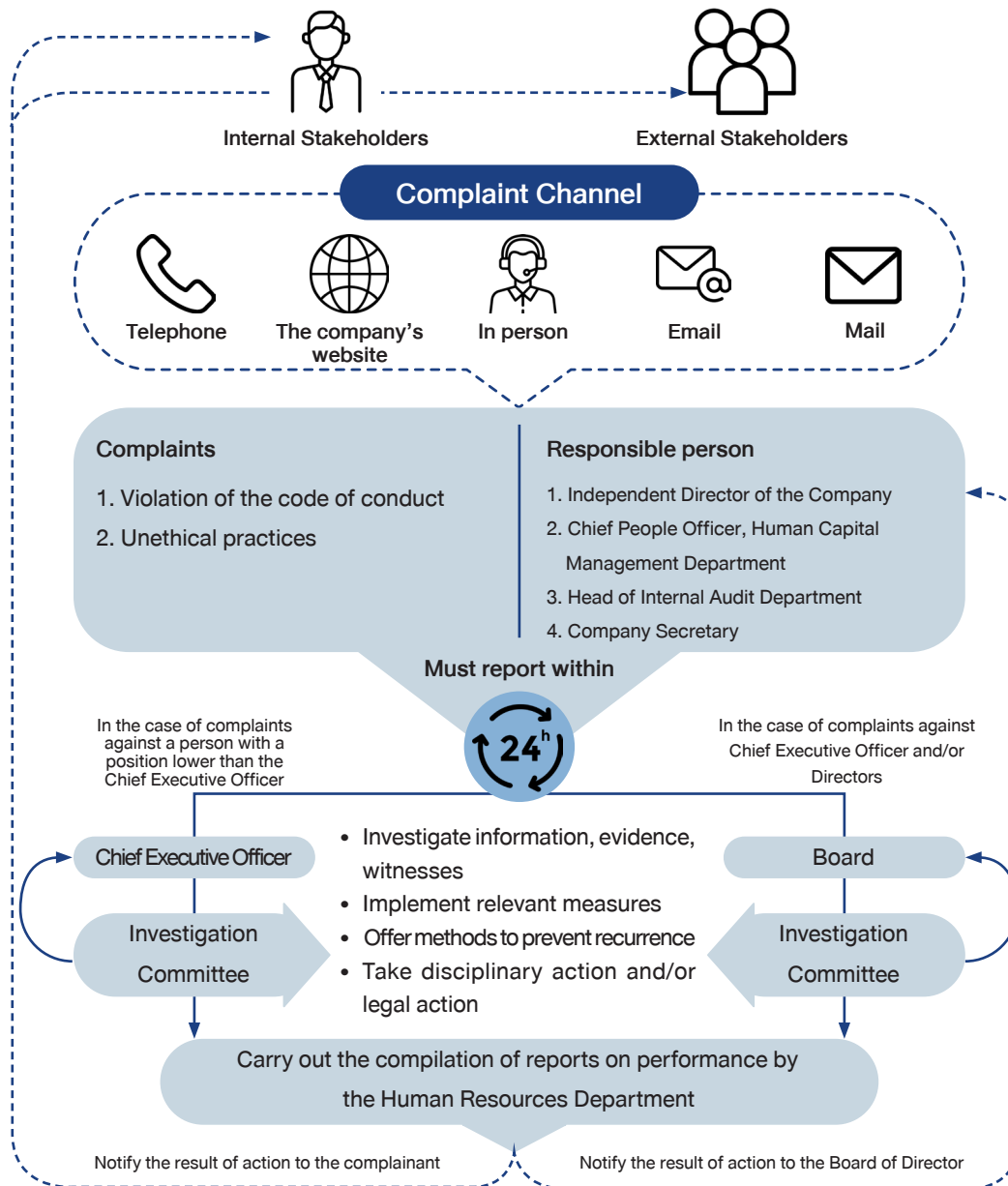
Related Transactions

The Company established measures for related transactions between companies and/or subsidiaries with related persons according to the requirements of the Capital Market Supervisory Board and the Stock Exchange of Thailand Board. The Audit Committee will express their opinions on the reasonableness of entering into the transaction, and the related transaction which is a normal business transaction will be approved in accordance with Section 89/12 of the Securities and Exchange Act.

Major Shareholders

The top 10 shareholders will be disclosed on the 56-1 One report as well as the Stock Exchange of Thailand website.

Procedure for receiving complaints [Disclosure 102-33]



Tipco Asphalt Group expects that our employees and related stakeholders will work together efficiently to perform supervision and compliance with the principles of good corporate governance and business ethics. We encourage inquiries in case of doubts or concerns about the Group's business ethics as well as providing an opportunity to complain when encountering inappropriate behavior or contrary to the Group's business ethics, or inquiring at the Corporate Affairs and Planning Department, company secretary, Internal Audit Department, or Human Resources via email, telephone or mail. All complaints will be investigated to reach a conclusion as quickly as possible within 14 days and report the investigation results to the Chief Executive Officer or Board of Directors. The Human Resources Department will maintain a record of the investigation report and notify the complainant, Board of Directors, and persons receiving complaints.

Number of complaints and whistleblowers

Number of complaints	2019	2020	2021
Total number of complaints with investigative data	7	1	0
Number of complaints related to bribery and corruption	2	0	0
Number of ethical complaints in other cases	5	0	0

Number of complaints in the investigation process	2019	2020	2021
Number of complaints of which the investigation has been completed	7	1	0
Number of pending complaints	0	0	0

Address Company Secretary
25th Floor, Tipco Building 1,
118/1 Rama 6 Road, Phayathai
Subdistrict, Phayathai District
Bangkok 10400 Thailand

Telephone : +662 273 6000
Website : www.tipcoasphalt.com
Email : Thanapol_lao@tipcoasphalt.com

[Disclosure 102-28]

Performance assessment of the Board of Directors and Sub-Committees

Board of Directors Self-Assessment Form was prepared and published by the Stock Exchange of Thailand in order to assess the performance of the Board of Directors of listed companies in the Stock Exchange of Thailand, the assessment form consists of 1) the individual self-assessment form 2) the individual self-assessment form. The main objective of the self-assessment form is to assess the performance of the Board of Directors, including both groups and individuals, and for the purpose of reviewing operations in accordance with good corporate governance.

- An assessment is conducted once a year for the Board of Directors and all sub-committees.
- There are both group and individual assessments.
- The assessment form was designed by the Stock Exchange of Thailand.
- The results of the assessment are disclosed in the form of 56-1 One report and are part of the consideration of the remuneration of the Board of Directors and all sub-committees.

Board of Directors and sub-committees	By Group	By Individual
Board of Directors	3.82	3.84
Board of Executives	3.68	3.67
Audit Committee	3.98	4.00
Nomination and Remuneration Committee	3.92	3.85
Good Corporate Governance Committee	4.00	4.00

[Disclosure 102-35,102-36]

Board of Directors, Chief Executive Officer and Executive Director Remuneration Policy

Remuneration of Board of Directors

The Nomination and Remuneration Committee is responsible for the remuneration of the Board of Directors and sub-committees under the consideration of the scope of duties and responsibilities of each position. The remuneration should be competitive when compared to companies in the relevant industries, which the Board of Directors will propose to the Annual General Meeting of Shareholders for approval.

Directors' remuneration consists of fixed remuneration and variable remuneration, by considering the average compensation of the real estate, construction industry, the energy industry, and the operating results of the company.

Remuneration of the Chief Executive Officer and Executive Director

Consideration of remuneration of the President and Executive Director is the authority of the Nomination and Remuneration Committee, which is responsible for submitting proposals for approval from the Board of Directors by considering the following factors:

1. Performance Executive compensation is based on the achievement of the Group's strategic goals, which is assessed based on the success indicators of financial, customer, process internal and learning development
2. The progress of the Group's strategic plan is in line with shareholders' expectations and vision for 2025 to create added value for businesses and shareholders.
3. Compensation management policy is determined by the consideration of the remuneration information of listed companies in the same industry, by focusing on the performance-based bonus to be able to compete with others in the related industry.

Remuneration Structure of the Chief Executive Officer and Executive Directors

The compensation comprises financial compensation, including salary, which is reviewed on an annual basis, and performance-based bonuses which can vary according to annual performance. In addition, there are fringe benefits such as provident funds, medical and life insurance, the right to purchase company shares at a predetermined price (Employee stock options), and etc. In 2021, the Group paid the total remuneration of the Executive Directors and Executives which consists of salary, bonus and provident fund for 7 senior executives*, totaling 76 million Baht.

[Disclosure 102-38]

Guidelines for employee compensation and welfare management

Compensation Management

The Nomination and Remuneration Committee develops a compensation management approach based on the principle of an equitable pay structure to determine a competitive rate compared to the labor market. The remuneration also should be based on the work values according to the standards of each level of employee, work performance, indicators such as inflation, and similar industry compensation rates.

Welfare Management

The Group manages the employee welfare on a continuous improvement principle to ensure good welfare for all employees. This includes work-related benefits, allowances, travel expenses, accommodation, health insurance, funeral assistance, and emergency loans.

Long-term Care

The Group established a provident fund in which their employees can contribute, and the Group will pay contributions to its employees at the rate of 5 percent on a monthly basis. The fund manager who complies with investment governance principles and responsible investment management and takes into account environmental and social factors as well as good governance will be taken into the consideration. We appointed Principal Asset Management Company Limited to be our provident fund manager in which the guidelines for fund manager selection were disclosed to all members. As of the end of 2021, the Group in Thailand had 945 employees participating in the provident fund, representing 72% of the total number of employees.

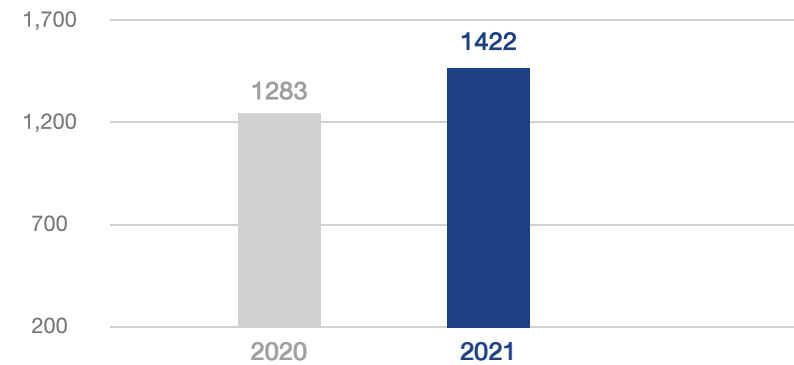
Salary and compensation structure for male and female employees

In 2021, the salary structure and compensation of female employees was slightly higher than that of male employees as the number of female employees with less than the average job level is higher than that of male employees. Another reason was their comparative performance assessment results.

The Human Resources Department has communicated with employees in office branches to clarify the Group structure of compensation. This includes the comparisons with comparable industry market's compensation, and also opportunity for job advancement in an organization which assesses job competency and work performance.

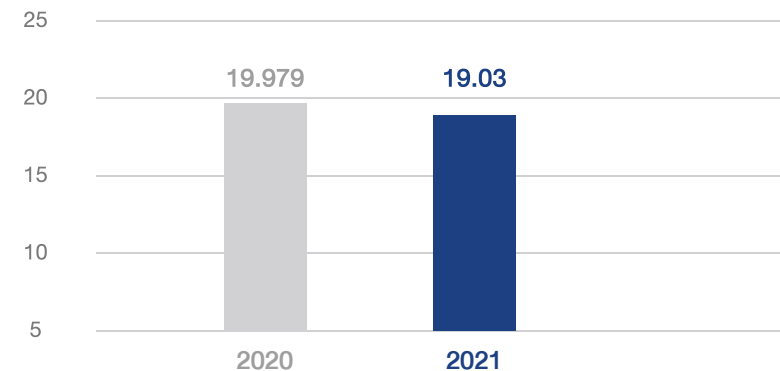
Salary, bonuses, wages, and fringe benefits
(consolidated financial statements)

Unit: Million Baht



Long-term accumulated employee benefits
(consolidated financial statements)

Unit: Million Baht



Compensation ratio	2019	2020	2021
Female employees to male employees	1.19:1.00	1.18:1.00	1.12:1.00

Communication and Corporate Image



บริษัท ทีพีเอส จำกัด (มหาชน)
ประชุมผู้ถือหุ้นสามัญประจำปี 2564
วันที่ 8 เมษายน พ.ศ. 2564

วาระที่ 3
Agenda 3

พิจารณาและอนุมัติงบการเงินที่ได้ผ่านการตรวจสอบแล้ว สิ้นสุด ณ วันที่ 31 ธันวาคม 2563
To consider and approve the audited financial statements ended on 31 December 2020

ผู้ถือหุ้นเพิ่มใหม่ Additional Shareholders	- ราย persons	ผู้ถือหุ้นรวม Holding altogether	- หุ้น shares
ผู้ถือหุ้นทั้งหมด Total Shareholders	225 ราย persons	ผู้ถือหุ้นรวม Holding altogether	1,069,087,728 หุ้น shares

วาระที่ 4 พิจารณาและอนุมัติแผนการลงทุนและจำหน่ายทรัพย์สินประจำปี 2564
To consider and approve the investment and divestment plans for the year 2021

รายละเอียดการลงทุน / Description (ล้านบาท : Million Baht)	2562/2019	2563/2020	2564/2021
การพัฒนาที่ดินและสร้างอาคารใหม่ Land improvement and buildings	176.3	108.1	73.7
เครื่องจักร คอมพิวเตอร์และซอฟต์แวร์ อุปกรณ์ เฟอร์นิเจอร์ และอื่นๆ Machine, computer and software, equipment, furniture and others	846.5	816.3	743.6
รถและเรือบรรทุกยางมะตอย Truck and vessel for transportation of asphalt	69.0	916.9	98.7
รวมงบประมาณลงทุนทั้งสิ้น Total investment budget	1,091.8	1,841.3	916.0

บริษัท ทีพีเอส จำกัด (มหาชน)
ประชุมผู้ถือหุ้นสามัญประจำปี 2564
วันที่ 8 เมษายน พ.ศ. 2564

วาระที่ 3
Agenda 3

พิจารณาและอนุมัติงบการเงินที่ได้ผ่านการตรวจสอบแล้ว สิ้นสุด ณ วันที่ 31 ธันวาคม 2563
To consider and approve the audited financial statements ended on 31 December 2020

ผู้ถือหุ้นเพิ่มใหม่ Additional Shareholders	- ราย persons	ผู้ถือหุ้นรวม Holding altogether	- หุ้น shares
ผู้ถือหุ้นทั้งหมด Total Shareholders	225 ราย persons	ผู้ถือหุ้นรวม Holding altogether	1,069,087,728 หุ้น shares

Key Value Chain

Key stakeholders

Key risks and opportunities

Throughout the value chain

All stakeholders

- Communication risk to relevant stakeholders.

Goals *[Disclosure 102-14]*

Long term goals in 2025

- Able to clearly communicate with employees regarding policies and operating results
- Able to communicate financial results to investors, analysts and the media clearly and transparently.

Short term goals in 2021

- Employee satisfaction survey on policy hearing and operating results is not less than 85%
- Organize an analyst meeting at least 4 times per year and attending Opportunity Day 4 times per year

Results in 2021

- 52.36% of employees attended the online meeting on policies and operating results from the Chief Executive Officer, meanwhile the employee satisfaction with meeting arrangements was 92.40%.
- Held 4 analyst meetings• Participated in listed companies meeting Opportunity Day investors organized by the Stock Exchange of Thailand 4 times

Management approach *[Disclosure 103-2]*

The Group places importance on corporate communication since accurate communication will lead our business to the efficiency of information exchange in the long run, both internal and external communication. In addition, an efficient organizational communication can win stakeholder confidence in the management team, enhance corporate image branding as well as reduce risks from negative situations or news to the organization.

For the corporate communication management guidelines, we established a manual for communication which focuses on the disclosure of information which prioritizes accuracy, completeness, speed, and transparency for both internal and external communications. Additionally, our corporate communication is built on consistency and compatibility principles to convey a good business image, corporate reputation, and our businesses through all communication channels.

Key Changes in 2021 *[Disclosure 102-49]*

- At the meeting of policies and operating results from the Chief Executive Officer, the format has been modified to be an online meeting or a virtual staff meeting.
- Efficient communication between employees in different departments allowed the organization to cope with the epidemic situation of COVID-19 since it helped avoid face-to-face meetings with minimal impact on work and business.

Internal Communication

Tipco Asphalt Group manages internal communications throughout the organization by introducing information technology for efficient and systematic communication. This ensures data security, data gathering, and efficient storage with a tracking function. It also helps create understanding in both vertical and horizontal communication, resulting in effective task management in accordance with a particular objective of each division toward professional achievement.

In addition, the Group also provides various channels for employee opinions to promote continuous development in the organization. During Covid-19 epidemic situation, the Group was able to publish information, including news without any interruption of communication.

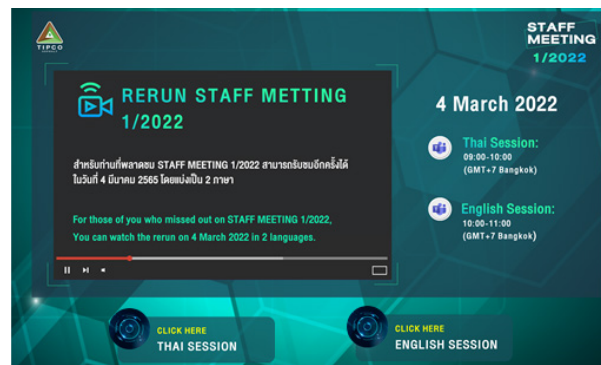
Internal Communication Channels

1

Staff meeting on policies and operating results from the Chief Executive Officer twice a year

From the staff meeting, participating employees were able to send their questions to the executives. All queries received were summarized in the meeting and later answered via Tipco Connect, which is a central email address for employee access. The answers were also posted on the main intranet page (What's New section).

In 2021, the Group fully emphasized on the safety of employees and implemented the safety measures to prevent the spread of COVID-19. Therefore, the meeting format was changed to a virtual staff meeting which enabled all employees to attend from anywhere.



Employee satisfaction with meeting 92.40%
(average score 4.62 out of a full score of 5.00)

*Information comes from Staff Meeting 2/2022

2

Regular communications via Message from CEO

Is a channel for communicating news and updates of the company including work practices that require employees understanding in the same direction. In 2021, there were a total 7 important issues related to preventive measures of the spread of COVID-19 which aimed to reduce employee concerns about the impact of vaccination and encourage vaccination to build immunity, including how to stay safe while working from home and before entering office.



3 Communication via Tipco Connect, a central e-mail for news updates

Emphasize on communicating the updates of the organization, including knowledge and understanding in the organization by presenting attractive content and infographic design technique as well as precise information. 377 stories were published in the previous year.

Ensure confidence in preventing the spread of COVID-19, 108 stories



To encourage employees to be aware of their lives during the COVID-19 epidemic situation

32 stories on Food for Thought



237 Announcements and news



4 Intranet IIa: Yammer on Intranet

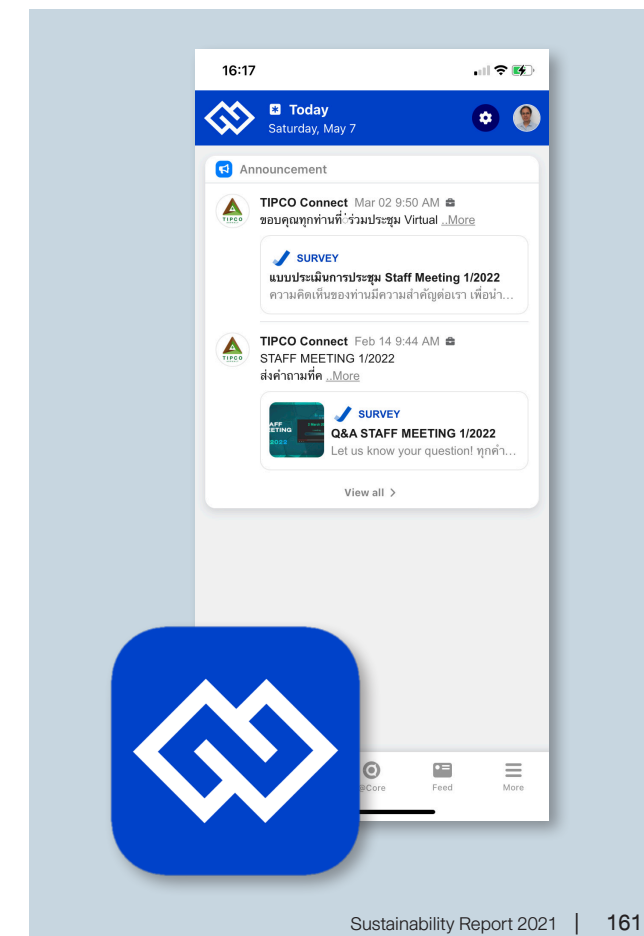
In 2021, internal communication channels were developed by adapting existing internal systems and allowing users to access information and various tasks within the organization easily and quickly. This was developed on a cloud system where data is stored online so it is safe to access information anytime and anywhere. It was designed to respond to individual work and enable information access, so all employees were able to keep updated on important company activities; meeting schedule, training, including holidays that can be instantly added to the personal calendar of every employee.

In addition, the Group also provided a chat space for employees to discuss, exchange, or share information they want through the Yammer application on intranet to create engagement, learning and expressing opinions culture through information exchange in the organization. This development is also beneficial to the public and also creates innovation between departments as well.



5 @Work application

A communication platform in a mobile application which integrated with the employee information management (i-HR) system enabled operational employees who have no email account to be informed of the same information sent to email and Tipco Connect at any time and anywhere. This application is another communication channel that has been developed and used to communicate corporate information. It also can be used for other purposes such as making surveys, and etc.



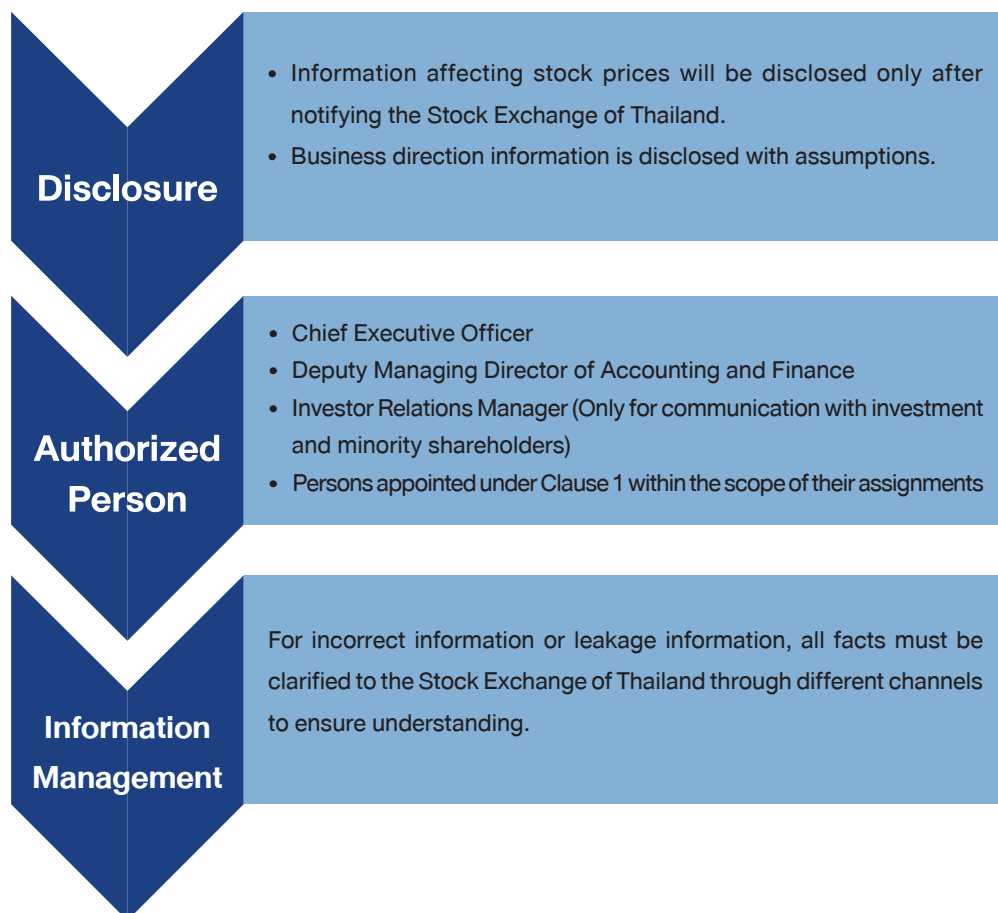
External Communication

Communication with Government Agencies, Asset Management Companies, Analysts, Investors, and Medias

The Group fully recognizes the importance of information disclosure that must be accurate, complete, transparent, on time and in accordance with the regulations set by the Securities and Exchange Commission, the Stock Exchange of Thailand, and other related agencies. The company established a policy to disclose different information of the Group, whether in writing, oral, telephone, internet, press conference as well as providing information through other available channels.



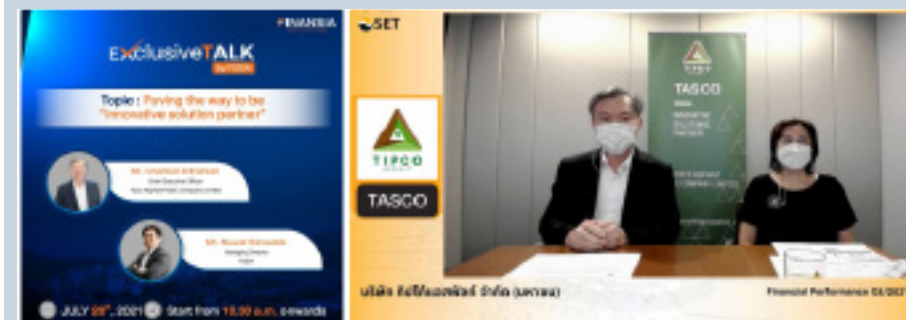
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Disclosure Policy



In 2021, the company attended meetings with investors, analysts, and fund managers to meet and exchange information through online channels as follows:

Event	Time
Analyst meeting	4
Opportunity Day Organized by the SET	4
One-on-One meeting	3
Roadshow in the country	2
Overseas roadshows	1
Seminar Thailand Focus organized by the SET	1

Investor relations information will be disclosed on www.tipcoasphalt.com in which the disclosure guidelines are based on good corporate governance. For the project of Best IR Awards in 2021, the Group got a best IR Award score of 88.86%, an increase from 84.52% in 2020.



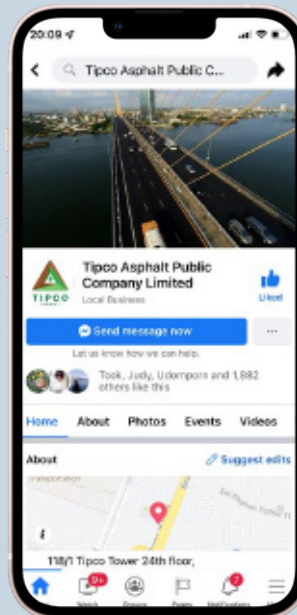
Communication with Other External Stakeholder Groups

At present, the available communication channels for sharing our news and related information to other external stakeholders are

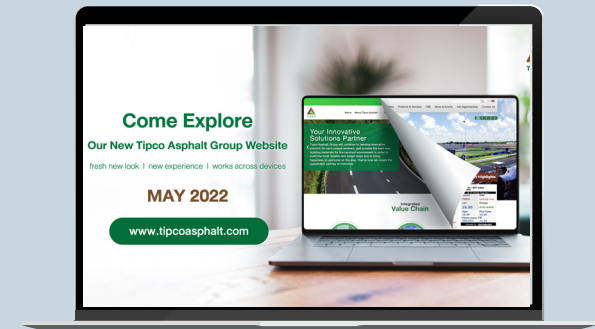
The Group communicates our business news that is beneficial to customers via LINE Official. Customers are able to follow up on delivery status, e-statements, product information, or report any problems, complaints, including account summary and credit check.



Social media such as Facebook and YouTube are another channel that allows external stakeholders to receive news and activities of the Group.



The Group's official website shares various information such as investor relations information, company policies, information about products and services, etc. Currently, the website is being renovated to ensure information accuracy and stakeholder's access. The renovation is expected to be completed in 2022.



Government Policies and Budgets



Affected Value Chain



Stakeholders



Key risks and opportunities

- Anti-Corruption Risk
- Fair Competition Risk

Goals *[Disclosure 102-14]*

Long term goals in 2025

- Keep updating government infrastructure construction budget information, and bring innovations to help analyze relevant data in an efficient and timely manner for the projection of the country's asphalt demand.
- Monitor, analyze and adapt production and sales plans in response to government policy and long-term global trends such as road safety, environment and road efficiency (Performance-based).

Short term goals in 2021

- Search and analyze budget data and government road construction projects, including other projects that use asphalt in construction so as to establish sales plans for asphalt products appropriately.
- Evaluate and adjust sales plans in accordance with project changes, or any changes in budget allocation of the government on a regular basis.

Results in 2021

- Acquired government budget information and road maintenance projects data from e-bidding, announced by the Comptroller General's Department.
- Developed and applied Automated Workflow by Robot to a platform for collecting data on government construction projects.
- Brought data for analysis and established a sales plan for asphalt products, including identifying projects that use asphalt (lead generation).
- Assessed and adjusted sales plans to be in line with project changes or increasing or decreasing the budget of the government on a regular basis and in a timely manner.

Management Approach *[Disclosure 103-2]*

The implementation of government policies and budgets on infrastructure development directly affects the sales target of asphalt products in terms of both rubber consumption and income. Therefore, the Group needs to be responsive to the implementation, understand practice guidelines and detail of government budget allocations to ensure the efficient work planning and asphalt consumption expansion in the next year.

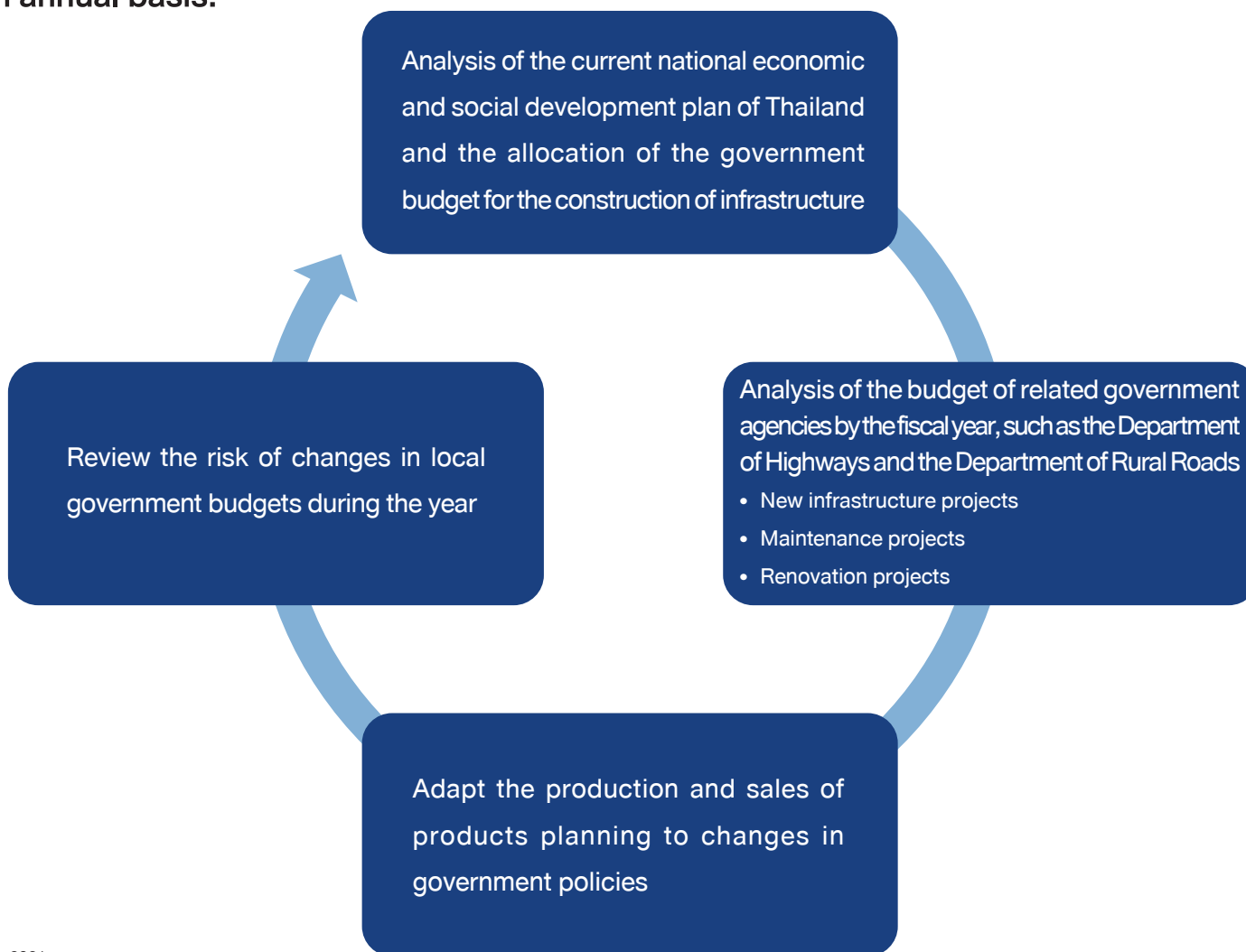
The Group analyzes government budgets allocated to infrastructure development such as roads, expressways, which are categorized as construction, reconstruction or maintenance, and may have year-to-year details and uncertainties. The work plan will be derived from the direction and framework of the current National Economic and Social Development Plan.

Key Changes in 2021 *[Disclosure 102-49]*

- We analyzed the impact of government policy changes on our product mix plan; such as the reduction in the use of Para-AC according to the government policy in 2021, a business opportunity to develop new premium products such as asphalt cement grades 40-50, which has a higher performance in reduce damage and extend road life supporting the increasing traffic volume.
- There was an analysis and evaluation of other road construction and renovation projects which allowed for the projection of more asphalt sales in 2021.
- There is a possibility of changes in maintenance techniques encouraged by the government in which the recycling of asphalt surface material will be more focused, and this may affect the demand for asphalt.

The Process of Government Budget Data Analysis: the Development of Basic Infrastructure on Roads and Highways

For business planning, we analyze the government budget data for infrastructure development and review sales plans every time when there is a change in budget, or national or regional government policies. The business plan is subjected to review on an annual basis.



Roads, Expressways and Infrastructure Trends *[Disclosure 203-2]*

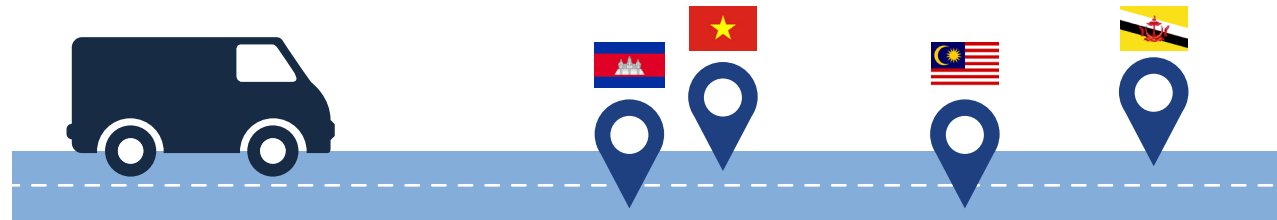
- Road construction will focus more on creating innovations that promote safer road use.

- At the same time, it must consider the impact on the environment and natural resources utilization, such as the selection of alternative materials, recycling of road materials, and etc.

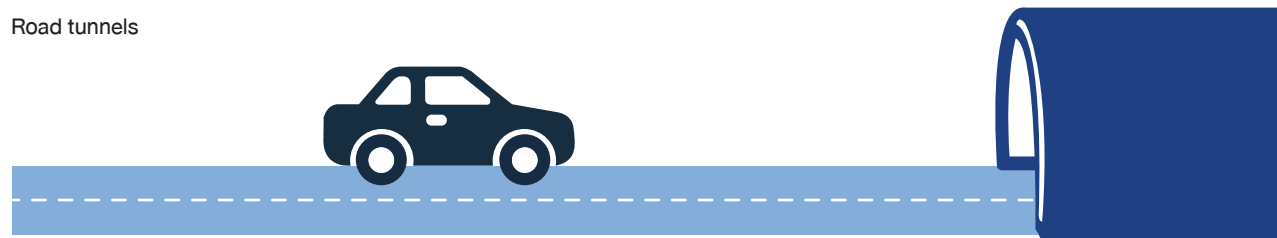
- Road construction in the future must focus primarily on performance, such as having a longer service life, can withstand temperature conditions; high heat, moisture, as well as supporting the increasing traffic volume.

- Infrastructure systems in the future will be more complex, including:

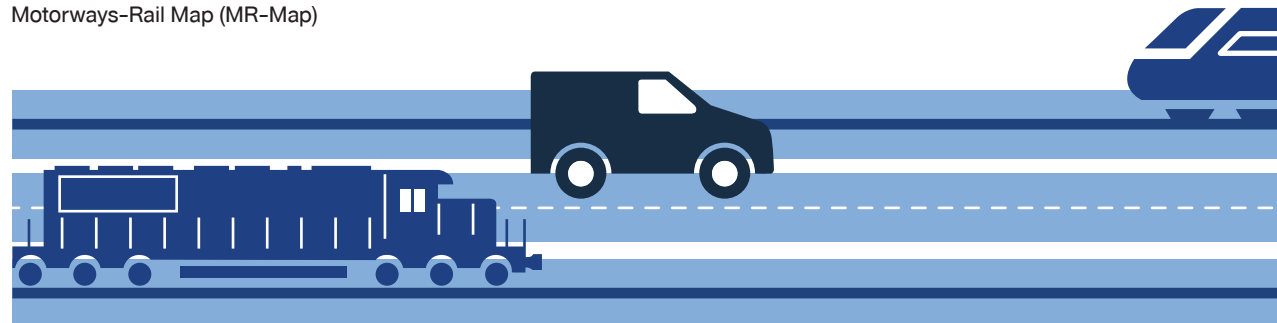
connected roads in ASEAN



Road tunnels



Motorways-Rail Map (MR-Map)



Cyber Security and Information Technology System



Key Value Chain



Key Stakeholders



Key risks and opportunities

- Risk from the use of information technology systems and system stability
- Risk of Cyber Attacks
- Risk of information security, data leakage, and personal information

Goals *[Disclosure 102-14]*

Long term goals in 2025

- Achieve the IT security roadmap
- Increase adaptive competency in situations involving new threats, cyber-Resilience

Short term goals in 2021

- Zero cyber threat incidents
- Zero data insecurity complaints

Management approach *[Disclosure 103-2]*

Tipco Asphalt Group commits to develop an information technology security system and operates its business prudently and transparently under the ISO 27001 Information Security Management Standard, a guideline for systematic management. We fully recognize the importance of personal data from the process of collection, processing, and applying. The collected personal data can only be used for the purposes for which the Group Company has obtained permission from the data owner. In addition, the Group also pledges that personal data will be stored securely in the Group's information system. The owner of the data still has the right and can request to exercise his or her rights at any time.

In the beginning of 2022, the Board of Directors reviewed and implemented the Information Technology Security Policy on January 12, 2022 to protect individuals and information from cyber threats. At the same time, it also reduces overall IT risks.

Key Changes in 2021 *[Disclosure 102-49]*

- Increase the capabilities of IT Devices and IT Infrastructure work systems of the organization for supporting working from home or remote working to ensure data leakage and cyberattack prevention
- Provide more collaboration tools to ensure workforce agility and work efficiency, including and sharing information for work
- Create a new policy on IT Security in accordance with the personal information protection policy of the Group
- Develop IT operations practices to be consistent with the policy and meet the group's needs in terms of new Application Platform
- Increase the technology skills of employees related to collaboration tools, including cybersecurity knowledge while employees work from home
- Provide more data analytics tools& platform, as well as create an organization's data warehouse to help implement business insights

Results in 2021

- Zero cyber threat incidents or complaints about data insecurity.
- IT Infrastructure system supporting work from home protocol was 100% effective.
- Developed E-Tax Invoice system to facilitate and reduce the cost of paperwork under a security system which complies with electronic transaction law.
- Developed and implemented a Robotic Process Automation system in the organization to increase work efficiency and reduce errors or impacts that may occur from manual processing or information security risks.
- The Data Analytics Cloud Platform project was developed to analyze data for connecting businesses in different sectors and business benefits.
- Collaborated with business partners in a data analytics workshop for employees and applied the workshop results for further business development.



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and security of information
technology system

Our Goal for Cyber Security, IT System, and Personal Data

The IT system enabled us to maintain our operations especially during the Work From Home practice. Over 50% of our communication and operations required web-based platforms and cyber connections. This new normal exposes us to more cyber attack risks that can cause damages to data security, IT equipment, and our main operating system (ERP – Enterprise Resource Planning)

Guided by our corporate Enterprise Risk Management framework, cyber attacks/IT security/ personal data security is one of our key corporate risks since 2020. This is in line with global risks identified in the Global Risk Report 2020 by World Economic Forum. We have set the target to manage cyber security and IT systems as well as our human capital, and seek professional recommendation from external parties to manage this emerging risk accordingly.

Short term goals 1-year (2021), achieved the goals

- IT team coordinated with Human Resources Department to develop the Privacy Notice, the issuance of Personal Data Privacy Policy, the appointment of Data Protection Officer (DPO) to support the PDPA law
- IT team adopted PDPA guidelines to define data security criteria
- Continuously reviewed and verified the effectiveness of protection systems and methods used
- Assessed new risks in information security



Long term goals 2022–2025

- Prepare, develop, review the necessary documents, contracts, and form
- Report the effectiveness and development of protection systems
- Increase collaboration with public and private experts in cybersecurity
- Prepare for the ISO 27001 Information Security Standards Audit
- Develop ERP – Enterprise Resource Planning, focusing on the Automation Processing system and support the expansion of technology of EDI-Electronic Data Interchange such as blockchain or other prospect fintech technologies
- Prepare a roadmap for working ERP – Cloud full system in the future
- Develop IT Infrastructure technology to support the Group's new innovation projects such as
 - Process Improvement with Digitalization
 - Robotic Process Automation / RPA
 - Service Innovation
 - Mobile Application Platform
- Develop the Data Analytics Platform system for employees to ensure tools creation skills for in-depth analysis, focusing on Data Model and Analytics Report
- Prepare plans for the development of Big Data Platform that are in line with and support the Group's business plans in the future

*Although our main customers are businesses and there are only small proportion of personal customers, there are still personal data risks that need to be considered precisely, such as personal data of employees, employees, retail customers, suppliers, business partners, minority shareholders, other personal information that appears on the website of the group, including the use of cookies, and etc.

On February 28, 2019, the National Legislative Assembly considered and approved the draft of the Personal Data Protection Act (PDPA) which provides a framework for compliance with personal data protection laws. Three months later, on May 27, 2019, this law was approved and announced in the Government Gazette. Therefore, this applies to all listed companies that collect and process personal data from May 27, 2020. However, the government has announced that the enforcement of this law has been postponed for another year to May 31, 2021.

Information Technology Security Development

The Group attaches great importance to the development of information technology security continuously. Therefore, a long-term plan IT Security Roadmap has been established.

The plan focuses on several stages of development starting from improving email security with Advanced Threat Protection (ATP) and Securing Email, Identity Management, Endpoint Management, Information Protection, and Security Management. We aim at the goal of achieving ISO 27001 certification of information security standards by 2024.



Quality and Responsibility for Products and Services



Key Value Chain



Key Stakeholders



Key risks and opportunities

- Risk of Compliance with the Code of Conduct
- Customer data protection and privacy risks
- Opportunity to get customer opinions
- Responsibility for products and services

Goal [Disclosure 102-14]

Long term goals in 2025

- Create impressive customer experiences through superior services or products
- Be a trusted comprehensive asphalt business partner

Short term goals in 2021

- At least 85% of customer satisfaction
- 100% able to handle goods and services complaints within the specified timeframe • No product recall and return

Results in 2021

- Overall satisfaction rate achieved 90.5%
- Goods and services complaints were handled within the specified period, accounting for 86%
- 0 product recalls and returns from 32,345 products
- Organized training courses on safety for customers

Management approach [Disclosure 103-2]

The epidemic situation of COVID-19 has affected all businesses and completely changed everyday life of people. This resulted in an increase of customers working via online platforms. As the Tipco Asphalt Group viewed that running business via online provides more business opportunities, the data verification platform has been developed by introducing electronic systems which are able to collect demands of customers data. As the Group aims to be a truly customer-centric organization, we applied quality management system standards (ISO 9001) to enhance work efficiency and ensure the quality of products and services. We also keep maintaining relationships with customers to acquire useful information of their needs and expectations, being responsive to their demands, and complying with a guided policy of sales in accordance with the Strict Consumer Protection Act.



Key Changes in 2021 [Disclosure 102-49]

- Developed E-document system and line official
- Used the results of the 2020 Customer Satisfaction Assessment for operation development to increase the competency in serving services to customers with responsiveness and accuracy, including creating a great experience in running business together
- Transferred innovative knowledge and provided asphalt consulting services to customers

Customer Centric Approach

In our customer service, we emphasize the importance of customer centric approach, one of the goals of the corporate strategy 2025. We invest efforts to address customer expectations and anticipate their future needs.

Feedback from the customer survey will be incorporated to improve and develop products and services. All relevant teams involved in the customer journey will participate and contribute. This includes marketing, sales, technical services, logistics officers as well as truck drivers. Everyone can take a customer's feedback and share with relevant teams to further improve and address the customer's needs. We also provide employees with the opportunity to invent new development projects. All projects invented can be submitted to the annual innovation contest and responded to continuous customer demand.

In addition, we also support the cooperation between customers, employees or educational institutions that contribute to solving social and environmental problems by organizing the contest of innovation. It is expected that there will be many different projects that focus on social responsibility and aim to build a strong business ecosystem through cooperation plans.

From the aforementioned approaches, the Group therefore established Customer Relationship Management (CRM) by surveying the opinions and needs of domestic customers in order to acquire customer requirements on our purchasing process including ordering and status tracking. In addition, this allowed the development of "Ordering and Shipping Tracking Application", and after the trial service was launched, the results showed that our service achieved customer satisfaction.

"Customer-centric is one of the ways we run our business to deliver an impressive experience to our customers. This enhances customer satisfaction, leads to repeated sales, promotes customer loyalty, and helps grow the businesses."



Customer Relationship Management Guidelines [Disclosure 102-43]

One of the keys to achieving a client centric strategy is the implementation of CRM, which consists of 3 steps as follows:

1 Customer Relationship Understand customer needs

The Group operates its business with the aim of creating a positive customer experience through offering a wide range of products and services while building good relationships at the same time. A customer centric company provided us an opportunity to learn the needs of customers in order to increase lifetime value and reduce the customer switching and abandonment rate. We apply customer data to study consumer behaviors, interests, and participation as well as create new products and services to serve customer expectations. As we are a customer centric company, the most valuable asset is the customer base.

2 Customer Data Analysis Insights to better meet their needs

- Find information from multiple sources for analysis
- Perform critical data analysis
- Develop a dashboard with a visualization whether in the form of tables, graphs, maps, graphics, and display in a format that responds to users
- Auto-update reports on Dashboard to ensure up-to-date information



Real-time information dashboard is a tool to help you track and make timely decisions (via the website and mobile application)

3 Customer Development Build competitive competency for customers

- Programs that support customer business operations, such as Safety Awareness, which helps increase profitability for customers
- Customer Development Program, which combines CRM and cutting-edge asphalt technology that combines knowledge sharing programs to create a strong relationship between us and our customers



Customer Development Program

Mobile Application



Scan QR Code to access a Customer Relationship Management (CRM) video, demonstrating the organization's business resources management and planning system

Customer Satisfaction [Disclosure 102-43, 102-44]

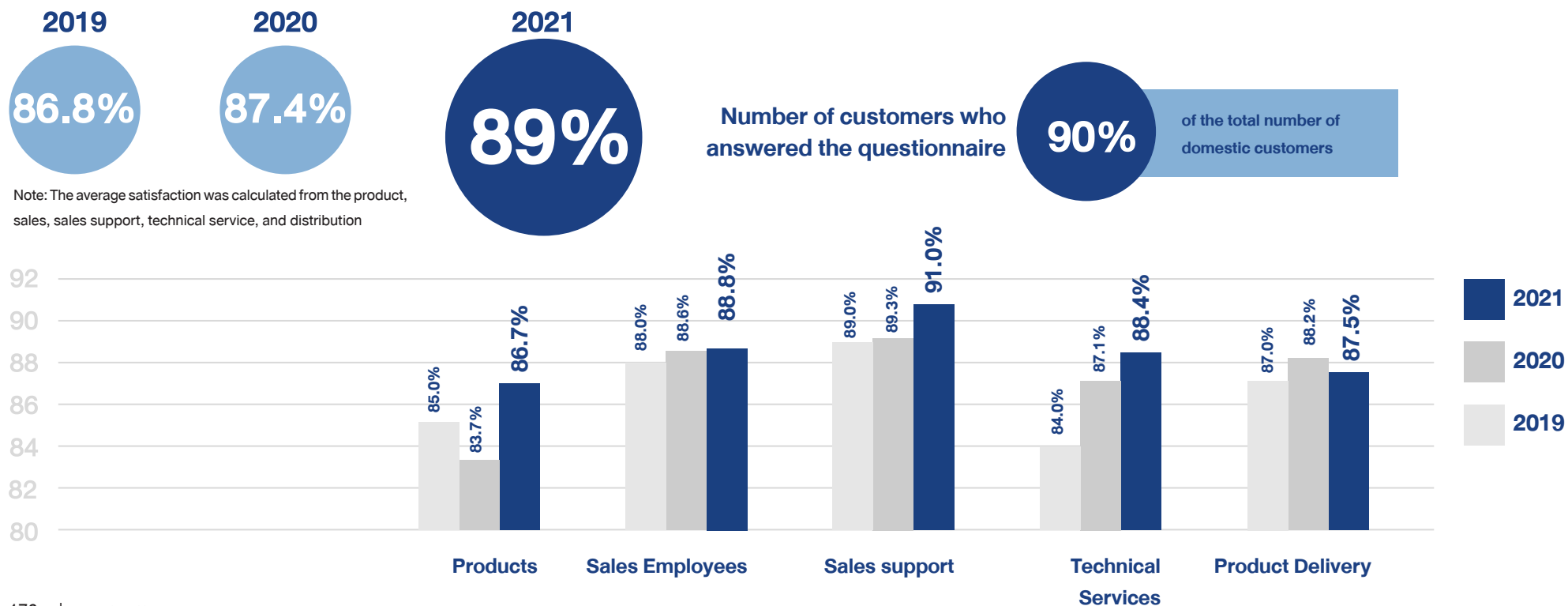
Tipco Asphalt Group precisely analyses the customer experiences from their perceptions, needs, buying behaviors, use of goods and services, and also conducts product satisfaction surveys and after-sales services. We use digital technology to improve our services for business partners and all customer groups by connecting customer experiences via online channels to provide services that create new experiences with maximum satisfaction.

Domestic Customers

According to the customer satisfaction survey in Thailand in 2021, more than 90% of the total number of customers cooperated in this survey. It was found that the satisfaction in various fields continued to increase such as sales service, sales support service, and technical service. In addition, satisfaction with the product significantly rose as a result of the development in innovative products, services, including the introduced new technology which met their needs and expectations. The improvement of quality, reasonable prices, as well as the provision of technical consulting also enable our customers to reduce their production costs.

On the other hand, the company analyzed the reasons for the decline in satisfaction on delivery by installing a GPS system in every vehicle. We also integrated the product and service policy into the company's delivery quality management system so as to ensure goods and services quality with accuracy and safety.

Statistics: Average satisfactions with products and services

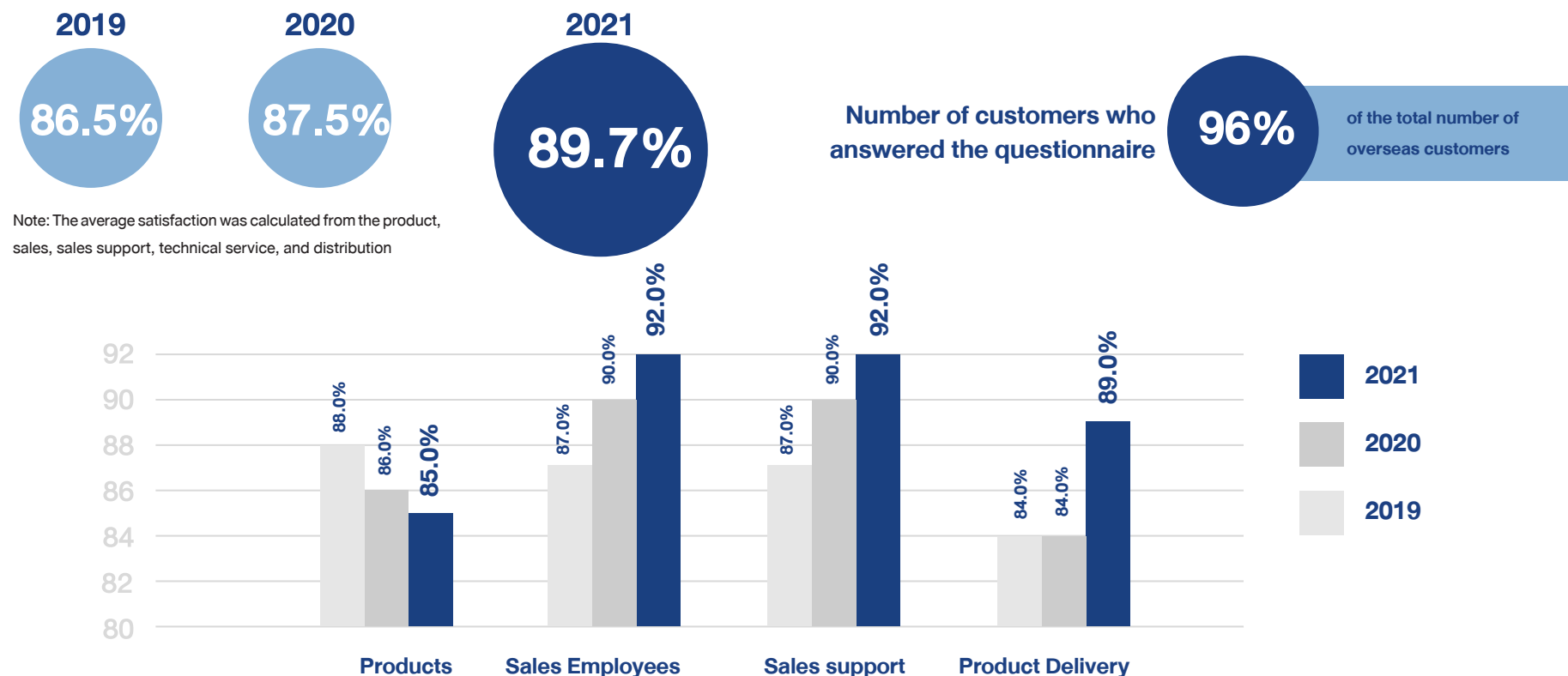


International Customers *[Disclosure 102-43, 102-44]*

According to the International Sales Department Satisfaction Survey in 2021, 96% of the total number of foreign customers cooperated in the survey. It was found that the average customer satisfaction in different aspects increased up to 89.7%. The survey found that the overall satisfaction this year was 92%, which was higher than the previous year as well. As for other services, it was found that the satisfaction was also consistently higher from the previous year, both in terms of before and after sales, including the sales service and sales support. This achievement was from the improvement in service management, including communicating useful information to customers with faster responses.

On the other hand, the Group analyzed the reasons for the decrease in product satisfaction from the previous year. It was found that this was caused by the limited supply of asphalt which did not meet the needs of customers. However, we planned to find alternative products from other sources for them. As we commit our business to products and services development, we ensure that the needs of all customers must be satisfied.

Statistics: Average satisfactions with products and services



Customer Satisfaction Improvement: Operation Development

Tipco Asphalt Group brought the results of customer satisfaction assessments, feedback, and opinions to identify causes and find solutions for customers, including developing new products and services to better serve customers.

Operations Development: Domestic Customers

VOC

Our Domestic Sales Department established a Voice of Customer Management system which records customer feedback and complaints through designated channels, including adding online channels. In addition, the 2021 satisfaction results were analyzed based on the received complaints to find the cause and find solutions for customers. We also brought customers' opinions to improve and develop new products and services to satisfy their needs as much as possible.

E-Document System Development



e-Documents

Since the Group received feedback on the delay of tax invoice issuing in 2020, the system was developed for a speed and ease of collection. The improvement also helped to save costs and reduce paper use which are our internal resources. This also reduced contact during COVID-19 epidemic situation as well.

Advantages of E-Document Development

1. Reduce the problem of managing information and paper consumption
2. Save time and cost of document delivery
3. Prepare for change of electronics transactions
4. Use the data for processing information which benefits to organization
5. Reliable and legally binding of electronic data

LINE Official Development



Nowadays, it is true to say that Digital Platform technology is significantly important for business development. Therefore, the Group decided to add communication channels for providing services to our customers which is easier, more convenient, faster and efficient. This not only helped to reduce the cost of services and products, but also truly responded to the new lifestyle of people during these days. Even if the situation was said to be vulnerable and affected all businesses, the Group was still able to apply new technologies to keep up with the needs of customers. In addition to creating a platform for customers, we also developed a system by collecting relevant data and inventing a new modern system. In this year, we improved the product information, brought complaints from customers to improve our products and services, implemented a new E-Statement system which enabled our customers to view their outstanding debt in which all information can be checked via LINE Official easily and quickly.

Operations Development: International Customers

For operations development for overseas customers, due to the epidemic situation of COVID-19, organizing events or activities were limited this year. However, Tipco Asphalt Group participated in online seminars and various marketing activities in order to acquire information regarding our products and services feedback and opinions from our customers.



International Marketing Events

The Philippine Institute of Civil Engineers (PICE) held a webinar titled “Sustainable Asphalt Solutions for Construction and Maintenance” on October 29, 2021. At this event, the Group’s technical team on behalf of venture capital firms namely Phoenix Petroleum and Phil Asphalt, Philippines was invited to be a speaker on the topic

- The impact of bitumen on asphalt quality and road sustainability
- Bitumen emulsion and their application on sustainable pavement
- Basic understanding of Cold Mix technology

Complaint Management [Disclosure 417-2, 417-3]

Tipco Asphalt Group implemented a Complaint Practice Guideline which precisely outlines the complaints process. This enables customers to lodge whistleblower complaints or report any action that is improper or contrary to the Group's Code of Conduct through the designated complaint channels. The Group developed and provided a complaint channel via LINE Official to ensure transparency and accountability, and also reviewed the process as well as improved complaint channels efficiency to increase convenience and ensure accessibility. The complaints received this year were divided into 7 domestic complaints and 26 international complaints, and can be classified into different categories such as product quality, product quantity, service, packaging, transportation, etc.

Although the number of complaints was increasing, all were subjected to be inspected through an audit and follow-up process in detail according to the procedures set out in the Customer Complaint Management Manual. For the product quality, the Group conducted an inspection with all relevant departments, whether the products were manufactured by themselves or purchased from external sources. The inspection of the samples kept is another important step in verifying the standard of the products that the Group delivered. In the case of complaints about the quantity of products, we will immediately check with the freight forwarder or land transport agency if there is any missing cargo left on the vehicle used for transportation or not to ensure problems are solved in a timely manner. All of these are just some of the steps we use in handling customer complaints for achievement of products and services efficiency and the highest satisfaction of all customer groups.

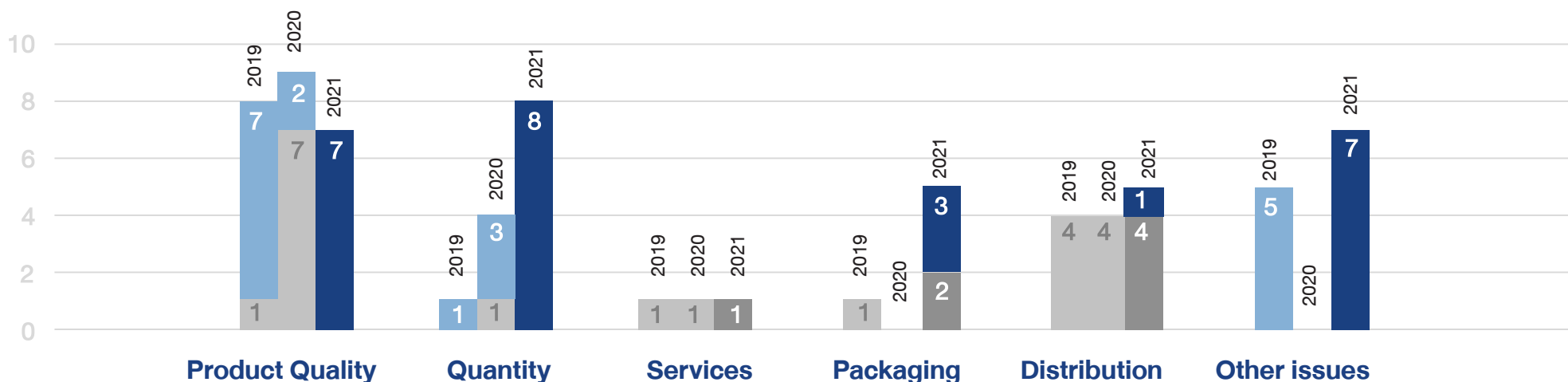


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Management Guidelines

	2019	2020	2021
Number of complaints	20	18	33
Domestic	7	13	7
International	13	5	26
Resolved customer complaints	20	18	33
Domestic	7	13	7
International	13	5	26
Percentage of resolved customer complaints	100%	100%	100%
Domestic	100%	100%	100%
International	100%	100%	100%



Number of complaints



Customer Privacy Protection *[Disclosure 418-1]*

The Group strictly manages data of customers and stakeholders in accordance with our policy in which our employees and related entities are not able to disclose information or use it for any purpose other than the purchase of goods and services. Otherwise, it will be considered a violation of company rules, which will be disciplined according to the procedure.

Therefore, every customer can trust in transactions with the Group that every part of the customer's information will be kept secure and will not be used without the consent of the customer under any circumstances.

Guidelines for the management and confidentiality of personal data in accordance with the Personal Data Protection Act (PDPA)

On February 28, 2019, the National Legislative Assembly approved the Personal Data Protection Act (PDPA) with the aim of laying down a legal framework for personal data protection. Then, on May 27, 2019, this law was approved and published in the Government Gazette and it will apply to all listed companies that collect and process personal data from May 27, 2020. However, the government has announced that the enforcement of this law has been postponed until May 31, 2022. Although the business model of the Group is a business-to-business (B2B) model, there is also only a small percentage of personal customers. However, the Group still has personal data risks that require special consideration, such as personal data of employees, employees, retail customers, suppliers, business partners, minority shareholders, including other personal information displayed on the website of the Group with the use of cookies, etc.

The Group implemented guidelines for data management and confidentiality of customers' personal information and need to prepare for compliance with the PDPA law in the middle of 2022 as follows:

- Established the Group's personal information policy to control and supervise the personal information of customers and the security of such information
- Appointed a Data Protection Officer (DPO) to coordinate and oversee the confidentiality of personal information of customers and stakeholder groups
- Implemented the Privacy Notices for customers, whereby the sales department will be responsible for communicating the details in the notice to customers
- Consent Form of Personal Data Collection, Processing and Disclosure
- Provide communication channels for complaints in case of personal information, such as via Line Official Account or DPO's email



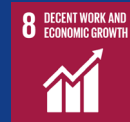
“‘Customer-Centric’ is a key contributor to our business success. Our sales team is focused on delivering value as well as excellent service through the introduction of modern technology to customers. For example, a digital platform that can be used to promote sales transactions.”

Chanchai Lohapatarn
Director of Domestic Sales and Marketing



Scan QR Code
to view Customer Data
Protection guide

Sustainable Procurements Across Value Chain



Key Value Chain



Key Stakeholders



Key risks and opportunities

- Business interruption of the supplier
- Dependence on suppliers
- The quality of the product or raw material does not meet the standards or requirements and delivery is not on time
- Fluctuation in raw material prices
- Unfair procurement
- Non-compliance with the rules, regulations, and codes of conduct of business partners

Goals [Disclosure 102-14]

Long term goals in 2025

The Group is committed to expanding the use of working systems to support all types of procurement and procurement as well as developing Data Analytic to ensure faster planning and sustainable procurement in line with international standards.

Short term goals in 2021

- Delivery of raw materials and containers within the required time is not less than 90% of the purchase volume per year
- Delivering quality raw materials and containers is not less than 99.5% of the purchase volume per year
- Promote the procurement of green product
- Local purchasing value in Thailand is more than 20 million Baht

Results in 2021

- Delivery of raw materials and containers within the time required was accounted for 94.16% of the annual purchase volume
- Delivery of raw materials and containers with quality was accounted for 100% of the purchase volume per year
- The value of purchasing and procuring environmentally friendly products (Green Product) in Thailand was 153 million Baht
- Local purchasing value in Thailand totaled 62.95 million Baht

Management approach [Disclosure 103-2]

In a situation where businesses are facing challenges from the impact of the COVID-19 pandemic intensified over the past year, Tipco Asphalt Group remains to operate its business by focusing on sustainable supply chain management under the sustainable procurement policy. We conducted comprehensive risk identification of economic, social and environmental issues in the procurement process, especially the risks arising from trading partners and the Group. In addition, information technology was introduced to help manage purchasing information and developed efficient procurement operations to ensure business continuity and standardized products and services for our customers.

In 2021, our business operations focused on the sustainable procurement policy, risk identification, and especially personnel development and work system improvements. We brought in information technology to help in elevating work efficiency.



Scan QR Code
to view Sustainable
Purchasing Policy

Key Changes in 2021 [Disclosure 102-49]

- **Built knowledge** and understanding of sustainable procurement by encouraging procurement officers to participate in seminars with external organizations and internal training activities
- **Assessed the procurement officers' performance** by surveying satisfaction from relevant departments to improve their work processes and procurement management
- **Continuously developed the existing digital platforms** to a new efficient procurement process and working system, especially during the situation of the epidemic of COVID-19
- **Conducted self-assessment** and online assessment of supplier operations areas
- **Disclosed the supplier code of conduct** which covered social and environmental issues

Suppliers Management

Tipco Asphalt Group committed its business to good corporate governance. We established policies and guidelines for sustainable procurement for added value of products and services, including producers, distributors, service providers to promote social responsibility throughout the value chain of our business.

Critical Suppliers: In identifying which suppliers are key suppliers, we consider the value of trade between each other each year, and also use other criteria as follows:

- Is the supplier a monopoly? This includes the possibility of finding alternative suppliers
- Main raw materials or containers which are sold by suppliers, the impact on our production process or business operations, and competitive advantages of our business
- Service availability and duration of business transactions

In 2021, there were 40 major trading partners or 5% of all trading partners.

New Suppliers Selection

In selecting new potential suppliers, the procurement department will find suppliers' information and assess their ability as guided by the established standards by considering 3 aspects; economy, society, and environment, including the quality, price, delivery, Thai labor standards and human rights practices. The list of qualified partners will be included in the Approved Vendor List (AVL) for consideration of next orders. In the year of 2021, a new trade partner was selected.



Existing Suppliers Assessment

Procurement department assesses suppliers by using Vendor Rating Score at least once a year according to our plans and procedures. The selection of suppliers is based on the purchase value in the previous year and divided by their type of products which are 1. raw materials, 2. packaging, and 3 other products. In 2021, 12 out of 38 current suppliers were randomly selected for conducting Supplier Self-Assessment arranged by the company via an online system.

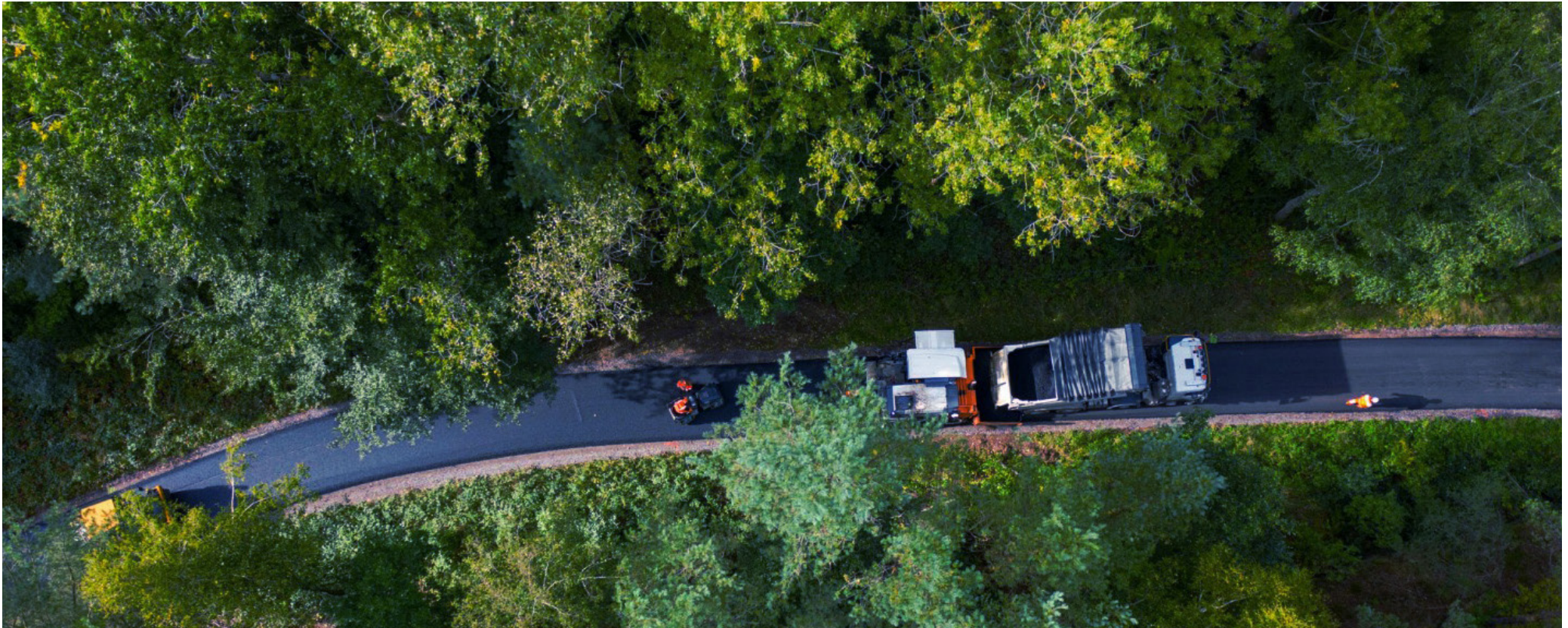
From the random assessment of our 12 current suppliers, it was found that all suppliers passed the sustainability risk assessment criteria. There were no suppliers which had a dispute or had complained about social and environmental operations or economic risks from trading. The assessment also found that there were potential suppliers which have a possibility to enter the green industry process within 1–3 years.



Suppliers Support and Development *[Disclosure 308-2, 414-2]*

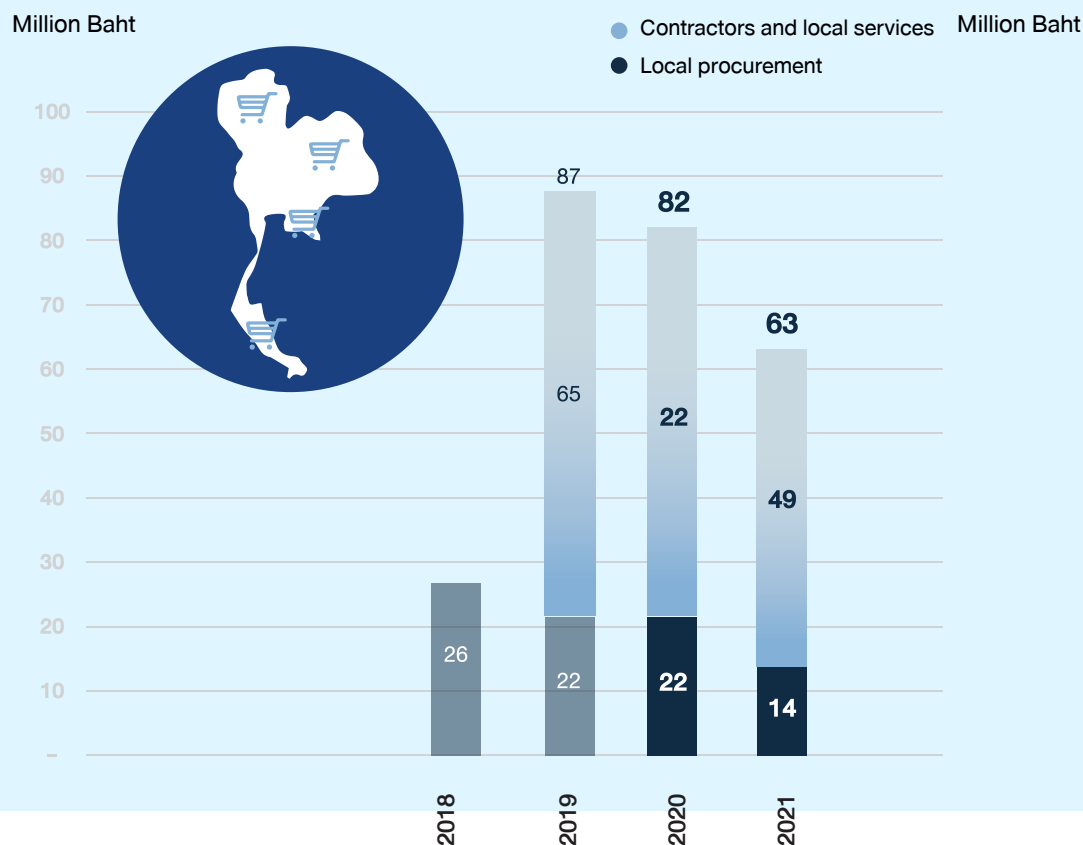
Tipco Asphalt Group fully recognizes the importance of business community development for its sustainable strength and self-reliance. We therefore committed our business to supporting business management development as well as building knowledge for our suppliers in the community, especially the area around the area where our factories are located.

In addition to promoting green procurement, the Group also aims to encourage suppliers to consider their operations with more environmental considerations. The group established a policy of procurement of green products and services, along with supporting partners who conduct business in an environmentally friendly manner. We also put our efforts in raising the standard of operation of suppliers through the expansion of the green network. In 2021, Phitsanulok plant expanded a scope of the green industry project to external by encouraging suppliers and business alliances to enter the Green Industry process under sustainable development throughout the supply chain. The project's core aims are improving the efficiency of the production process and promoting environmental management and social responsibility of our suppliers.



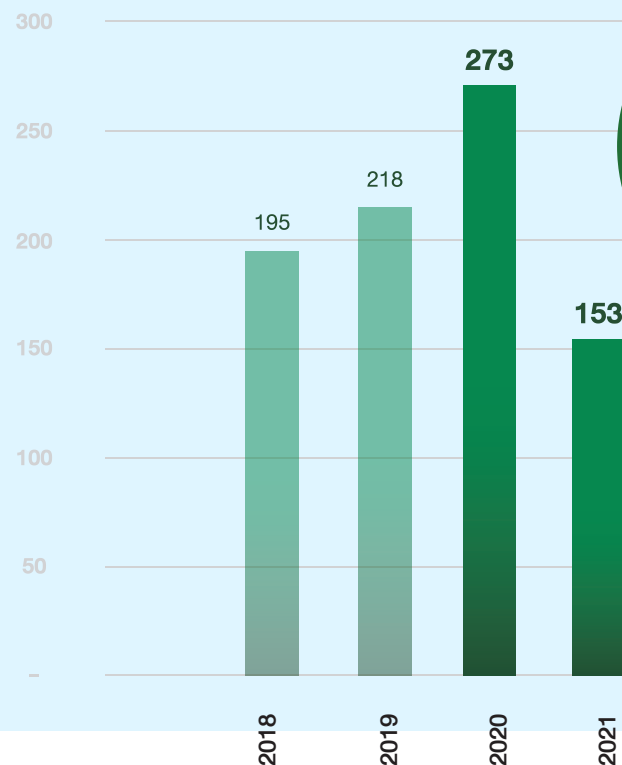
Local Procurement *[Disclosure 204-1]*

In 2021, the Group put more efforts to expand the scope of support for communities in the local area where our factories are located. Not only focusing on the local procurement, we also expanded our conceptual framework and perspective to support the community more broadly by considering the procurement and contractors service available in communities surrounding our factories. In 2021, the total procurement value of local procurement in Thailand was 62.95 million Baht, which was lower than the previous year as a result of the sluggish economy and market condition.



Green Procurement

The Group is committed to the green procurement of raw materials, products and services for using in the production process and business operation. However, in 2021, the green procurement value was only 153 million Baht, a decrease from the previous year. This was a result of the government's policy change and less promoting in the use of asphalt cement products mixed with para rubber. As a result, the quantity of raw materials used in the production of such products significantly declined.



Suppliers Assessment during the COVID-19 Pandemic

The Group continues to endeavor to monitor, visit and assess the supplier sites on a regular basis. During the epidemic of COVID-19, auditing and visiting suppliers were limited. However, in 2021, we visited the operational area of one supplier under safety protocols for COVID-19. In addition, we also changed the method of suppliers visit in which there was 1 supplier of raw materials and packaging visited through online channel.



Treatments to suppliers during business crisis

It has been more than 2 years that large and small businesses have been affected by the COVID-19 epidemic crisis. In addition to adapting our business strategies for survival, the Group also strived to support our business suppliers, especially medium-sized businesses and family businesses which were directly and severely affected by these difficulties and hard to withstand. As we strongly committed our business to equality and fairness, we prioritized the punctual payment and complied with the conditions agreed with our suppliers. In the event that any of the conditions cannot be met, the suppliers must be notified in advance in order to consider jointly remedial measures. At the same time, we also promote such ideology to our suppliers, who are considered as one of the stakeholders in the business chain, through the preparation of the “Supplier Code of Conduct”. The purpose of the arrangement is to set directions and guidelines for suppliers who work together with us.



“Sustainability plays an important role in the procurement process. We have seen various ESG requirements from the various raw material dealers we deal business with, while the Group is focusing on local procurement and selects suppliers who prioritize green products and services.”

Chitmanee Chiranantaratana
Senior Manager – Procurement and Supplies
Department

Good and transparent corporate governance

- **Code of Ethics Adherence**
- **Anti-Corruption**
- **Respect for Human Rights**
- **Tax Management**



Cultivate Code of Ethics [Disclosure 102-17]

Goals [Disclosure 102-14]

Long term goals in 2025

- Encourage and raise awareness of ethics by requiring all employees to undertake ethical training and pass the required comprehension test, and no code of conduct complaint

Short term goals in 2021

- Zero code of conduct complaint

Management approach [Disclosure 103-2]

Our corporate governance policy and practice were implemented under the framework set forth in the Tipco Asphalt Group Code of Conduct. It has clearly determined the whistle-blowing process in complaints; channels for receiving complaints that emphasize neutrality and maintain confidentiality of the report for the Group's reliability, establishing investigation committees, and notifying the results of the investigation.

Establishing transparent and verifiable processes provides all employees and external stakeholders with channels for complaints. All doubts and actions with evidence that conflict with the Group's Code of Conduct. The process for accepting and investigating complaints is covered in other relevant policy investigations, including: Anti-Corruption Policy, etc.

Employee compliance is set out in the Business Ethics agenda. It has to be presented to the Corporate Governance Committee and the Board of Directors at least once a year such as the number of complaints and cases of violations of the Code of Conduct, and etc. In 2021, it was reported at the good corporate governance committee meeting No. 4/21, dated October 22, 2021, Agenda 6 and the report of the Board of Directors Meeting No. 5/21, dated November 10, 2021, Agenda 8. All reports presented ensure confidence of executives, investors, and other stakeholders in the business ethics of the Group.

Key Changes in 2021 [Disclosure 102-49]

- The Group determined that former government officials who retired from their positions or worked for a regulatory agency directly related to our Group will not be hired.
- A person who was a government official must vacate the same position for a period of 2 years or more
- Appointed duty to prevent the creation of undue benefits, such as contacting the previous agency.
- Disclosed names and records of persons who were former government officials at the executive level; director or positions above directors and company directors in which the reason for the appointment must be clarified in the Company's annual report.

Results in 2021

- The Group organized training programs for both current employees and new employees at 100%. In 2021, for training current employees, an examination will be held in October 2022 and now currently in the process of developing the test.
- Employees in all positions acknowledged and certified themselves for 100% compliance with the code of conduct, and also followed up on the results through monthly management meetings.
- Zero complaints on code of conduct, bribery, and corruption.



Scan QR Code to view
Code of Conduct

0

complaints on
Code of Conduct

Anti-Corruption *[Disclosure 205-1, 205-2, 205-3]*

Goals *[Disclosure 102-14]*

Long term goals in 2025

- Maintain a membership of the Thai Private Sector Collective Action Against Corruption (CAC)
- Set guidelines to encourage partner networks to join anti-corruption

Short term goals in 2021

- Re-certification of CAC membership
- Zero corruption complaints

Management approach *[Disclosure 103-2]*

The Board of Directors established an anti-corruption policy for business interests and also clarified the organization's commitment to prevent corruption that may occur in business activities across the value chain. This is to ensure that our business decisions and operations that may be at risk of corruption are prudently considered and implemented.

In 2014, Tipco Asphalt Group signed a declaration of intent to join the Thai Private Sector Collective Action against Corruption (CAC). We established guidelines for corruption risk assessment, work practices, monitoring systems, and results presentation based on the self-assessment approach under the CAC project. On November 10, 2017, the Group was certified as a member of the Thai Private Sector Collective Action Coalition Against Corruption and recertified on June 30, 2020 in which the certification renewal will be effective until June 30, 2023.

As the Thai Institute of Directors Association developed the self-assessment version 4.0, which was effective from July 2021, the Group started conducting risk assessments and reviewed policies and measures as well as communication in preparation for the next certification renewal in 2023. In addition to complying with the monitoring and reporting policy, the Group also continues to participate in activities against Corruption, which are regularly organized by relevant agencies in Thailand via online channels.

Key Changes in 2021 *[Disclosure 102-49]*

- The Group prepared to apply for re-certification of CAC membership that will expire in 2023 for an additional 3 years.
- An organization's corruption risk registers and risk mitigation measures were reviewed according to the risk registration form and risk entities as specified by CAC.



Results in 2021

- Conduct a self-assessment (form 4.0) as developed by the Thai Institute of Directors Association
- Improve the Anti-Corruption Guidelines
- Review an organization's corruption risk register with follow-up, according to the risk registration form and risk entities as specified by CAC
- Participate in anti-corruption event organized by relevant agencies in Thailand regularly (via online platform)
- Provide internal communication and training session to new employees for building understanding about anti-corruption policies and practices



Scan QR Code to view
Anti-Corruption Policy

Respect for Human Rights

[Disclosure 412-1, 412-2, 412-3]

Goals [Disclosure 102-14]

Long term goals in 2025

- Educate executives and employees on global situations and trends in international human rights operations
- Regularly review human rights policies to ensure international standard
- Mitigate human rights risks to a low level

Short term goals in 2021

- Zero human rights complaints (from all complaint channels)
- Mitigate the level of human rights risk to low to moderate level

Results in 2021

- No human rights complaints through all complaint channels
- Protect the privacy of employees and temporary workers in accordance with the PDPA law



Management approach [Disclosure 103-2]

The Group is committed to ensure proper management in respect of human rights throughout our value chain guided by our Human Rights Policy in accordance with UN Guiding Principles on Business and Human Rights (UNGP). The details of various operational activities that the Group has organized can be viewed by scanning the QR Code on human rights management guidelines latest update in 2020.

The Group's main objective is to reduce risks and prevent and avoid human rights violations throughout the Group's business value chain through Human Rights Due Diligence. This includes identifying human rights risks, affected groups, prevention or remedial plan, as well as determining mitigation measures and follow up.

The control measures during Covid-19 epidemic in 2021 resulted in work processes, workplaces, and work conditions adjustment. As we need to ensure employee and stakeholder safety, we implemented many preventive measures to show our respect of human rights as well as our suppliers, customers, communities, road users that contacted our employees. However, the Group was able to operate our business during the COVID-19 epidemic, and our employees were still secured without reducing wages, salaries, or making them redundant. We also were able to manage our resources for occupational health, safety and employee development as usual.

Change in policy or main goals in 2021 In 2021, the work regulations for employees were revised in line with the human rights policy and the Thai Labor Standard (TLS-2564), which added the content of non-discrimination against persons on the grounds of any discrimination in employment and occupation. This was approved by the Good Corporate Governance Committee.

Key Changes in 2021 [Disclosure 102-49]

- Added content of non-discrimination against individuals for reasons of differences in employment and occupation, including political views, origin, ancestry, social background, marital status, personal attitude, disability, HIV infection, pregnancy status, being an employee director, other personal concepts or any other status that is considered a human right
- Adjusted work processes, locations, work environments, and taking care of employees to ensure safety from the spread of COVID-19



Scan the QR Code
to view the Human Rights
Management Guidelines



Scan QR Code
to view Human Rights Policy

Number of human
rights complaints
for the year 2021

0 case

Human Rights Due to Diligence *[Disclosure 412-1]*

Since 2019, the Group has initiated a human rights due diligence process in accordance with the UN Guiding Principles on Business and Human Rights (UNGPs) through the Thai Labor Standard (TLS). The main objective is to reduce risk, prevent and avoid human rights violations throughout the Group's business value chain. The process starts from identifying human rights risks and affected groups, protecting rights or setting remedial plans, determining measures to mitigate the damage and follow up.

The UN Guiding Principles on Business and Human Rights Reporting Framework focuses on three areas: Protecting rights, respecting the rights and remediation of the deprived of their rights. The report sets out a standard set of questions on various topics related to the Group in which respondents are able to choose to provide information about their human rights policies, responsibility for respecting human rights, operation process and results.



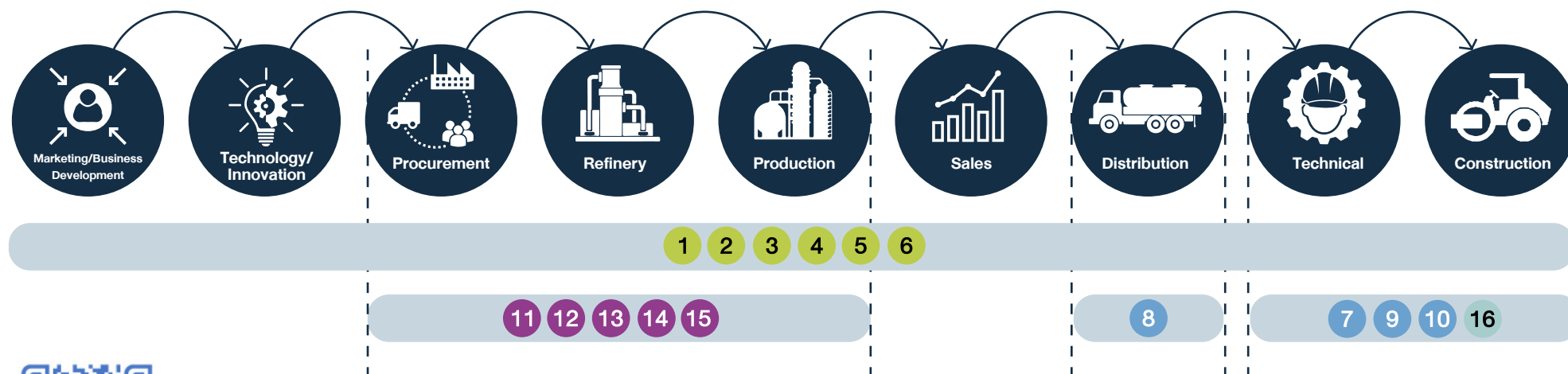
We applied this principle to design a human rights due diligence process, starting from analyzing the context of the Group's business value chain, and then going into the process of stakeholder engagement. The Human Capital Management Division, together with the Risk Management Office and other business units related to the group of stakeholders will undertake human rights-based audits, and identifying vulnerable groups whose rights may be violated, such as employees, workers, women, children, divided by workplace, market place, community and environment according to UNICEF's Children's Rights and Business Principles (CRBP).

The form of the audit is visiting stakeholder groups or vulnerable groups by dialogue or customer visit of the sales team, or it could be a supplier audit by the procurement department, and etc. In each group, human rights risks will be identified meanwhile the assessment and analysis of the impact possibility and remedies will be conducted. This process is consistent with the risk identification of the Risk Management Office in accordance with the principles of COSO (Committee of Sponsoring Organizations of the Treadway Commission).

After that, it will go into the follow-up process of remedy along with communication to stakeholders and the public. This process preparation is expected to be complete by 2022-2023 and all processes will be reviewed on a regular basis. This is to ensure the Group's awareness of humanitarian risks in a timely manner.

Human rights materiality issues relating to the Group's business operations in 2021 [Disclosure 412-3]

From key human rights materiality issues which were identified in 2019 and reviewed in 2021, risk levels of 16 related issues were identified and classified into 5 risk levels (detailed in the QR Code). There were only 3 human rights risks that exhibited medium- to low- level while there was no risk with unacceptably high level. These 3 risks were associated with safety on customers' safety at work site and on pavement maintenance in the community. The Group established measures to manage such risks through knowledge sharing and safety protocol demonstration to customers and communities.



Scan QR Code
for our Human rights materiality

Human Rights Materiality Issues classified by related stakeholder groups



Employees



Suppliers/Partners



Customers

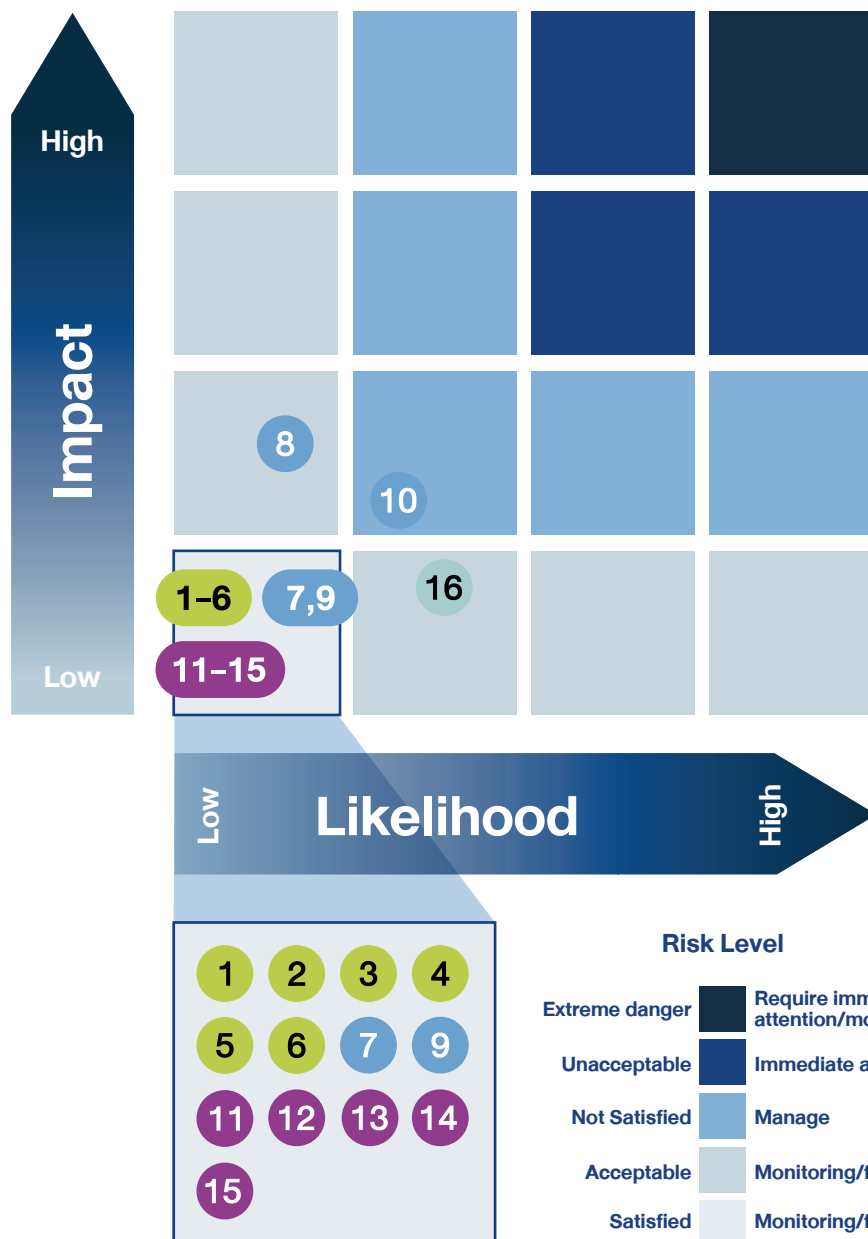


Road Users/Communities

- 1 Employment
- 2 Compensation
- 3 Training and education
- 4 Occupational Health and Safety
- 5 Working environment
- 6 Corporate engagement
- 7 Working conditions
- 8 Occupational Health and Safety
- 9 Working environment
- 10 Training and education

- 11 Working environment
- 12 Occupational Health and Safety
- 13 Child labor
- 14 Forced labor
- 15 Illegal labor
- 16 Safety and well-beings

Human Rights Materiality Issues [Disclosure 412-3]



Risk Description	Impact	Management Approach
Road construction training for customers 	Incorrect product use and resultant product quality can impact the reputation of producing company such as asphalt paving during heavy rain can cause leakage to local areas	<ul style="list-style-type: none"> Provide product use training for site workers and their supervisors Share knowledge on climate change and impact to asphalt works Assess operational risks during extreme weather (heavy rain and storms)
Safety and occupational health of customers 	Potential accidents from operations by contractors: <ul style="list-style-type: none"> Unloading asphalt into customers' tanks Using improper equipment in asphalt paving Road traffic around work sites 	<ul style="list-style-type: none"> Train customers and their workers on the proper use of equipment and safety Provide safety training for security officers by technical services team
Safety and livelihood of road users and communities 	Potential dangers, injuries, and deaths of road users and passengers due to unsafe roads in local communities	<ul style="list-style-type: none"> Demonstrate road maintenance practices to government authorities and students interested in social activities Share knowledge through various channels to keep their roads safe on their own and save cost on minor road maintenance

Tax Management

Goals [Disclosure 102-14]

Long term goals in 2025

- Assess and review tax risk issues for transparency and regulatory compliance
- Organize tax knowledge training for employees and develop a guidebook

Short term goals in 2021

- Digitalization of tax operations

Management approach [Disclosure 103-2]

The Group is committed to good corporate governance, transparent business operations, and upholding good corporate citizenship and sustainability. Tax management is conducted in such a manner for utmost benefits to the Group and stakeholders while capitalizing on tax benefits and tax exemptions to support investments, employment, and economic growth in accordance with the laws and regulations.

In 2020, the Group announced our Corporate Tax Policy with full details accessible online. The policy includes identification and assessment of tax risks, timely tax payment, tax considerations incorporated in investment viability, and intercompany transactions complied to tax regulations and international standards. This is to ensure correct and fair tax payment. However, the Group has no intentional tax evasion policy or intend to take advantage of an international tax structure in Tax Havens or a transfer value created to a low tax jurisdiction. Every transaction will apply the Arm's Length Principle to determine the transfer price.

For investment viability, the Group ensures that its tax management is in accordance with regulations, business activities and strategies. In addition, the Group also takes into account the benefits of tax or tax exemption for the benefit of the stakeholders. In addition, the tax management is audited and reported to the Board of Directors to ensure the effective inspection of tax management under relevant regulations, including building confidence and attracting long-term investments from the public.

In 2021, the Group implemented tax regulations and also introduced new technology to support the digital tax management process.

The Group cultivates awareness of the importance of tax among employees across our value chain activities. This includes, for example, keeping necessary tax invoices and documents of customers and business partners. We recognize that strict tax management in compliance with regulations is fundamental to sustainable business, corporate reputation, social responsibility, economic contribution, as well as keeping good relationships with relevant tax authorities through correct, transparent, and auditable tax information disclosure.

Results in 2021

- Announced corporate tax policy to our employees and subsidiaries, and followed up on the operations of the Board of Directors
- Modified tax operations to a digital system, such as issuing electronic tax invoices



Scan QR Code
to view Tax Management Policy

[Disclosure 102-49]

Key Changes in 2021

- Assessed and reviewed tax risk issues for transparency and regulatory compliance
- Organized tax knowledge training for employees and develop a guidebook.

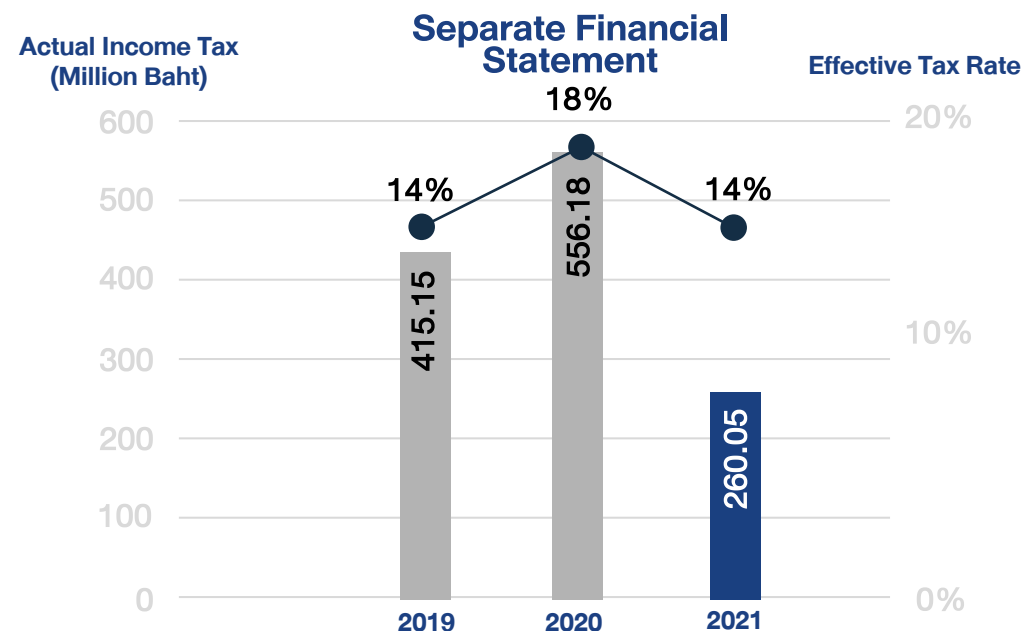
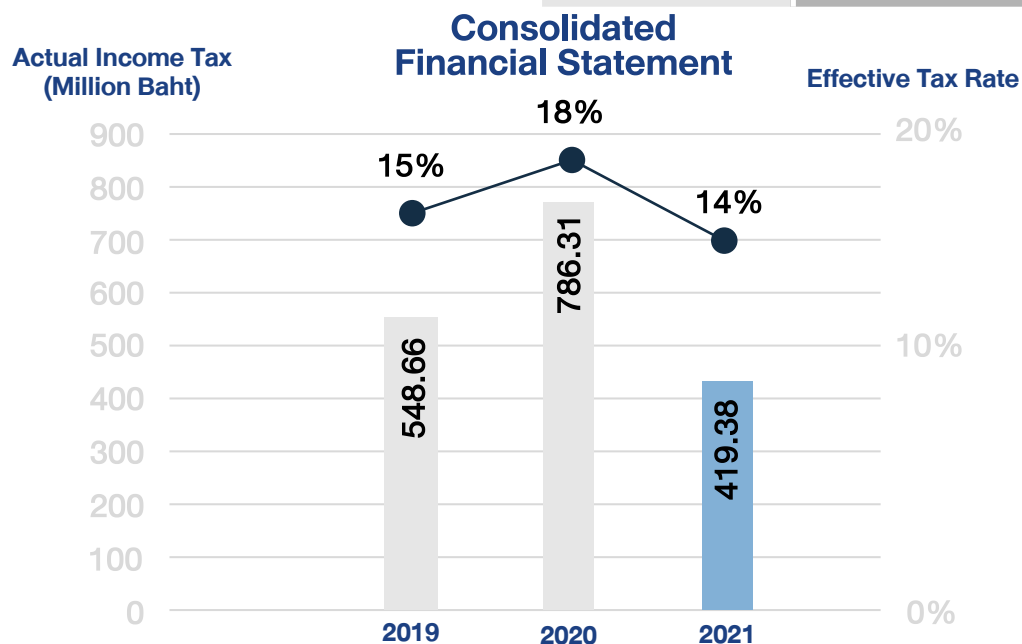
Responsible Tax Practice at Tipco Asphalt Group

[Disclosure 207-4]

According to the Thailand's corporate income tax law, the Group's corporate income tax rate is at 20%. In 2021, effective tax rate stood at 14% (according to the consolidated and separate financial statements).

Unit: Million Baht

Financial Items	2019		2020		2021	
	Consolidated Financial Statement	Separate Financial Statement	Consolidated Financial Statement	Separate Financial Statement	Consolidated Financial Statement	Separate Financial Statement
Sales & Service Income	36,892.97	33,640.72	26,155.27	22,943.39	24,447.11	21,429.75
Income from Construction Contracts	-	-	-	-	2,605.66	-
Profit before Corporate Income Tax	3,654.73	2,876.81	4,354.84	3,025.87	3,005.37	1,869.15
20% Corporate Income Tax Rate (Thailand)	(730.95)	(575.36)	(870.97)	(605.17)	(601.07)	(373.83)
Actual Income Tax	(548.66)	(415.15)	(786.31)	(556.18)	(419.38)	(260.05)
Effective Tax Rate	15%	14%	18%	18%	14%	14%



[Disclosure 207-4]

Explanation for Differences in Corporate Income Tax and Effective Tax Rates

The difference between corporate income tax (20%: Thailand) and effective tax rate (14%) for the year 2021 was 181.69 million Baht (or 601.07 – 419.38 million Baht as stated in the consolidated financial statements), which was a result of the management of the Group in different areas of tax deduction, including the increase of tax-deductible expenses, income tax exemption, tax benefits from new foreign businesses, and tax benefits for the International Business Center (IBC).

Details are as follows:

Items eligible for tax benefits or exemptions during the year 2021	Amount (thousand Thai Baht)
Tax benefits from investments under the BOI ¹	9,082
Investment Promotion Act International Business Center (IBC)	7,823
Tax Benefits Tax privileges for ocean freight business ²	44,743
Using Tax Losses and Investment Expenses	18,050
Share of profit from investments in joint ventures	25,686
Other items	76,309
Total benefits/tax exemption for the year 2021	181,693

Note:

- Subsidiaries are granted investment promotion privileges from the Board of Investment in terms of mass transit systems and bulk transportation. An important tax benefit is corporate income tax exemption for up to 8 years from the date shown in the table to the right.
- Sea freight businesses in Thailand are entitled to withholding tax privileges according to the Revenue Department Order No. Por.110 2545, and are subject to withholding tax at the rate of 1%. In addition, corporate income tax exemption for income from international sea transportation according to the Notification of the Director-General of the Revenue Department No. 72.

Affiliated and Subsidiaries	Effective date
Alpha Maritime Co.,Ltd.	9 October 2014
Bitumen Marine Co.,Ltd.	29 October 2015
Tasco Shipping Co.,Ltd.	11 January 2013



“We are committed to good corporate governance, transparent business operations, and efficient tax management to maximize benefit of the Group and stakeholders by using tax incentives and exemption as prescribed by laws and regulations of each country. We have implemented the juristic person tax policy and transfer pricing to ensure that there is no intention of tax avoidance. In addition, tax management has been inspected and reported to the Board of Directors in accordance with the relevant regulations. The effective inspection ensures confidence and attractiveness over long-term investments with the organization“

Tanawat Tangdomlert
Director of Finance and Accounting

Value for the Future

Be ready for new changes



- **Human Resource Management**
- **Employee Training and Development**



Human Resource Management



Affected Value Chain



Stakeholders



Key risks and opportunities

- Risk of health and safety in workplace
- Risk of human rights violations and ethics
- Risk of employment that are consistent with corporate culture
- Risk in complying with labor laws and standards

Goals

[Disclosure 102-14, 401-1]

Long Term Goals in 2025

- 90-days Average Time to fill in recruitment, for manager level up
- Quality of Hire criteria of high-potential employees who pass work evaluation during the first 6 months

Short Term Goals in 2021

- The promotion rate of an executive level of high potential employees from high potential employee development projects during 2018 - 2020 is not less than 25%
- No more than 10% resignation rate
- 100% rate of resuming work, after maternity leave

Results in 2021

- The job promotion achievement rate of an executive from high potential employee development projects during 2018 - 2020 was at 4.01%
- 100% rate of high potential employee maintenance
- 8.4% rate of resignation•100% rate of staffs resuming work, after maternity leave
- The Group was able to manage health and occupational safety of employee, and there was no significant business interruption

Management Approach [Disclosure 103-2]

The vision of the Tipco Asphalt Group in human resources management aspect is promoting and supporting employees in their career and well-being in everyday life. From the COVID-19 epidemic situation since 2020, We implemented preventive measures to ensure employee safety both in our domestic and overseas companies such as arranging vaccination for our employees as quick as possible, including the procurement of protective and cleaning equipment to facilitate and improve work efficiency and employment care.

The Group has applied the standardized human resource data management system since the beginning of 2020, so this allowed a smooth running in our business and personnel management. We strongly intend to communicate with our employees regularly to build their morale and a strong mental health to get through these difficulties together.

Key changes in 2021 [Disclosure 102-49]

- Continued to update the government measures in the situation of the COVID-19 to improve the employee guideline for the prevention and control of COVID-19 in a timely manner which has different requirements in each province.
- Provided supporting systems and equipment for working via online platforms to facilitate our employees to be able to work from home under safety protocols and guidelines communication.
- Actively arranged 2 doses of vaccination for our employees by communicating with responsible departments. The vaccination began in May 2021, and at the end of the year, 99% of our employees were vaccinated.

[Disclosure 403-3]

Ensuring Safety and Health at Work during COVID-19 Pandemic



- Appointed committees to closely monitor the situation and report to senior management in different scenarios to ensure responsive decision making.



- Provided Antigen Test Kit (ATK) and RT-PCR test for groups working in high-risk environments.
- Provided medical expenses support and allowances for self-quarantine
- Arranged vaccination services from the government sector and booking vaccines with the private sectors
- Provided employees with personal protective equipment for infection control such as masks, hand sanitizers, etc.



- Followed government guidelines on epidemic control measures.
- The implementation was under ISO/PAS 45005:2020-General guidelines for safe working during the COVID-19 pandemic at workplaces, headquarters and branches.



- Communicated on suggestions and guidelines for safety and prevention of the spread of COVID-19.
- Provided a channel for employees to report about COVID-19 through the Human Resources Department.



- Established a strict screening process for outsiders who must enter the main building area.



- Modified working conditions to reduce the risk of transmission, such as working from home through IT systems, and setup employee schedule rotation workhours.



“Of course, the business implementation plan which seriously focuses on economic growth ensures continued success and sustainability of organization, for example, the innovative ideas. However, there is another important thing that should be encouraged as well, that is personnel competency development, e.g. TPM activities which encourage employees to create valuable works, efficient and full employment towards sustainability.”

Santiparb Prapan
Head of Distribution Unit,
Nakhon Ratchasima Plant



“Education and cognitive skills development are essential as they create quality of life for everyone. Therefore, I focus on learning and developing skills in many areas for myself and my team such as innovation, work system, sustainable development as well as providing all employees with equal learning opportunities. During the epidemic situation of COVID-19, we continuously arranged online training for knowledge and skills development among employees.”

Varunchalee Kaewsai
Human Capital Management Officer,
Nakhon Ratchasima Plant



“One of HCM’s duties is to conduct the best possible human resource management, including employee competency development. Another important thing is “Promoting learning opportunities” that will enable personnel to work effectively as well as constantly developing new knowledge for the advancement of personnel and business at the same time.”

Wasana Kaysorn
Head of Human Capital Management Unit,
Rayong Plant

Employee Competency Development via Performance Management System ^[Disclosure 404-2]

In the context of the relationship between employees and the Group, the belief in fair consideration is a cornerstone without discrimination; work performance and processes corresponding to the core values of the organization are only focused. Therefore, the management of compensation and rewards, as well as career opportunities under the same organization standard will reflect the equal treatment in employee management and development.

The Group applies employee performance management system with the same standard of operation and processes throughout our businesses, both domestic and international group. The process includes work and operation planning, quarterly review and tracking of goals and performance, group discussion between supervisors and subordinates to exchange ideas and opinions, and assessments. The assessments consist of self-assessments, evaluated jointly with supervisor and approved by the higher-level supervisor. All of which were assessed using 6 performance rating scale, ranging from 0 to 5 score with a mean score (3 points) for the performance that meet expectation; and High (4 points) for performance that exceeds expectations, up to Highest (5 points) for above-expected and create business value, and 0 to 2 points indicates the substandard performance and the performance of the agreed uneven success. The assessment goals are set and agreed upon by employees and supervisors at the beginning of the calendar year.

After the assessment, there is a comparative criterion for each employee group classified by the consideration of each supervisor

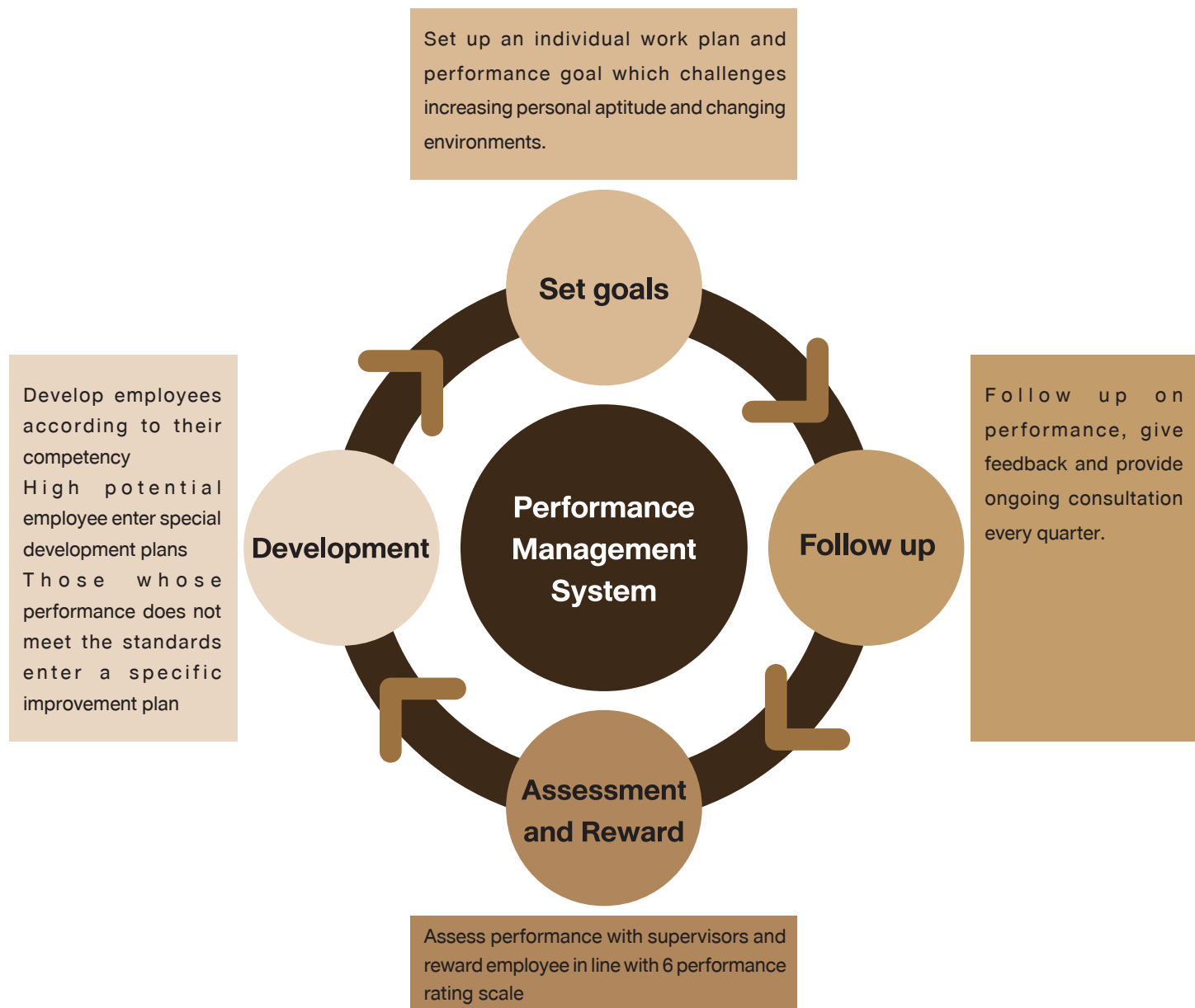
- (1) Group of operational staff; comparing performance scores within the same department.
- (2) Group of supervisors; the calculations are based on intra-functional comparisons.
- (3) Management level; comparing within division and the whole organization.

After that, the supervisors of each line will take the budget into consideration of annual salary adjustment and rewards, including the criteria hierarchy approved by the management for compensation consideration based on employee performance.

In addition to performance management, there is a system supporting performance assessment and compensation consideration. The supervisors are also able to contribute to the development of their employees, which is classified by the level of development needs and promotion opportunity. In each year, supervisors and employees will jointly make a performance planning under the concept of modernization, consistent with the developed technology and responding to the business needs and expectations of customers. However, the performance assessment criteria must be according to “Commonly agreed standards”, given skills, expertise and accumulated experience in each year along with their performance efficiency and effectiveness development.



Performance Management System *[Disclosure 404-2]*



Developing high potential employees through individual development plans

For high potential employees who are ready for a high level of job depth and development on current positions, and/or career advancement, their supervisors will prepare an individual development plan together with them along with setting the development goals in the necessary areas and consistent with the skills required in a particular job. The learning process is designed and closely monitored, with a supervisor or an assigned trainer who clearly defines the development time frame along with follow-up and consultation at least once a quarter.

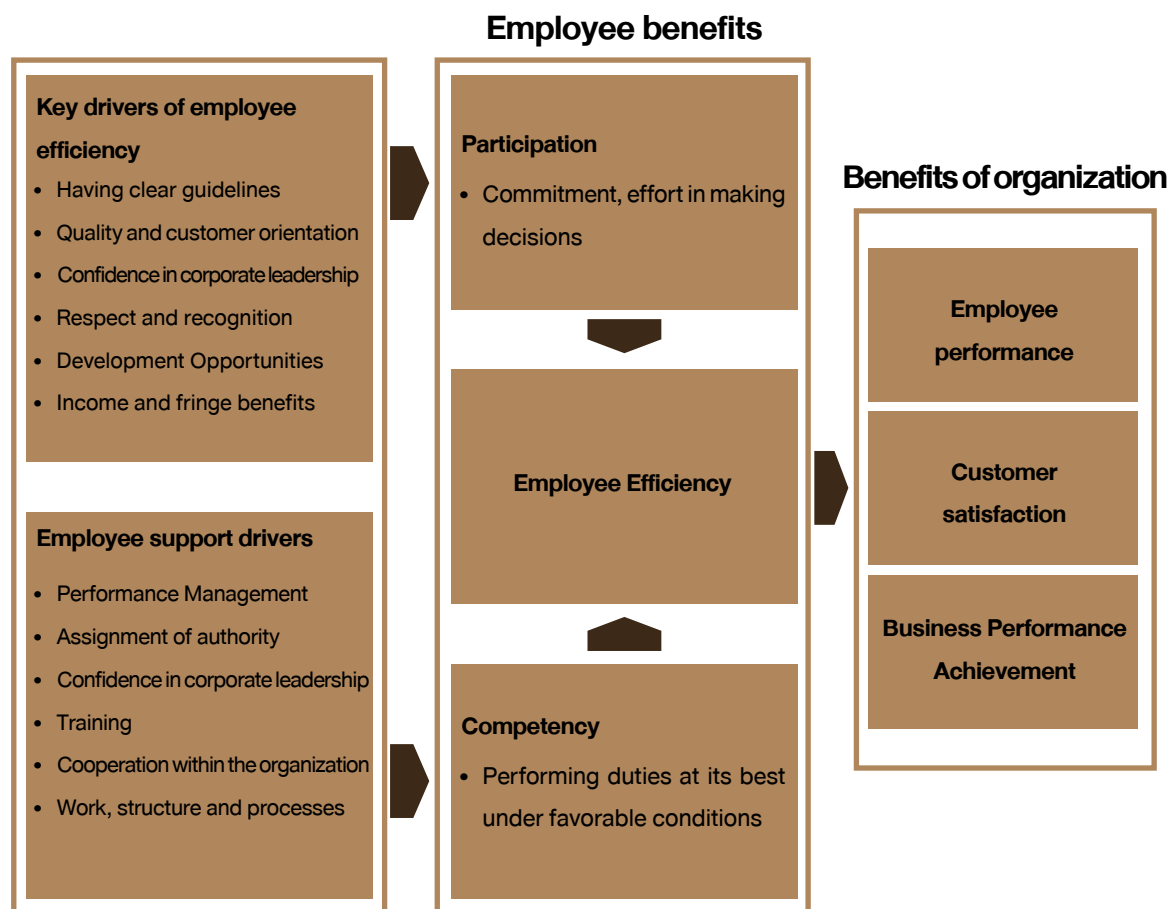
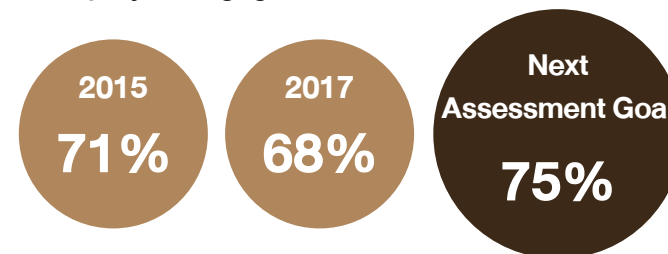
[Disclosure 402-1]

Build employee engagement and drive towards sustainability

In 2017, the Group conducted an Employee Engagement Survey and communicated the survey results to employees and executives via Tipco Connect. We brought the results to business improvement by implementing different action plans, including wages and benefits, career opportunities for professional development, organizational structure and operational processes.

Measuring employee engagement through analytics from key drivers to employee performance is divided into employee engagement and staff support in 12 aspects which are scheduled every two years, and now currently in the process of preparing a survey plan.

Result: Employee Engagement and Satisfaction Score



Ongoing Project of the Employee Engagement Survey in 2021:

- **Wages and benefits:** we established a compensation policy and communicated to all employees in Thailand about our compensation management and performance-based rewards together with the explanation of welfare details. Therefore, this created an understanding of the performance management cycle among employees. We are also now considering the introduction of a flexible welfare system (FLEXIBLE BENEFIT) for adapting to hierarchical structure. It is expected to be finalized by 2023.
- **Development Opportunities:** We developed a manual of Job Profiles by Job Families, as well as developed a career path and cross-functional growth chart for integration into the manual. This is a guide to identifying the required skills for personal career development, coupled with offering a Dual Career Track structure for employees aiming for growth in operations careers, in addition to management careers. Career progression planning is required in conjunction with the necessary skills guide to support development planning or promotion considerations in the fourth quarter of 2022, which is the same period that performance assessments are considered. end of year work
- **Structure and operational processes:** In order to develop work efficiency, we arranged a survey on the use of the ORACLE system to facilitate employees as much as possible.

In 2021, we brought opinions and comments from employees regarding the use of ORACLE to developed the use of human resources (i-HR) information systems to improve work processes such as reimbursement for employees and crew, which will expand the scope to cover all types of expenses and all groups by 2022

Succession Planning Process and Individual Development Plans for High Potential Employees

Moving Forward Together

The Group provided an opportunity for high potential employees to develop their necessary skills for their work through a systematic development with collaboration and planning between employees, management, and human resources department. It begins with a survey to assess organizational and employee expectations, including employee skill and knowledge development planning such as training, assignments, and career advancement planning for individual employees under regular follow-up and evaluation.

The Group implemented a project of High Potential Employee Development: New Wave 2018 – 2020. After the project ended in 2021, we still used the method of assignment to encourage employees to work with executives. This is considered a continuous development of potential projects in which we could measure the achievement from the number of high-potential employees who have been promoted to management level from 2018 until 2021, accounting for 50 percent of the total number of project participants.

Succession planning focuses on creating communication and understanding of development among employees, management and human resource department in setting long-term employee development goals toward their career goals and being in line with the existing and needed competency in the future.

Joint development planning not only builds organizational engagement and develops future leaders for the organization stability, but also fulfills individual career development expectation on career opportunity along with personal aptitude and the greatest contribution to work.

The Group began to measure the achievement of the succession planning process in 2019 by requiring all executive positions down to the director position with a 1:1 successor ratio. We were able to maintain a success rate at 90 percent.



“We and our employees together set a career development plan with the needed skill development to ensure their achievement with happiness at work”

Thanaphat Saensing
Head of Human Capital management Section,
Nakhon Ratchasima Plant



“I was proud that our organization gave me an opportunity to be part of the organization’s development. Joining this program committed me to proactive development, which I was able to develop my leadership skill, perspectives, and prudent decision-making. I wish we can build a strong foundation for organizational DNA geared to sustainability through the continuity of this project”

Santiparb Prapan
Head of Distribution Unit,
Nakhon Ratchasima Plant

Develop Multi Work Skills: Surat Thani Plant

Developing diverse working skills is another activity that has been carried out continuously to enhance knowledge and skill of our employees and enable them to work in various areas. The development created learning and working experience through their responsibilities and other departments, and also career opportunities in the future, such as the opportunity of job rotation. In addition, we provided on the job training (OTJ) for our employees and assigned mentors to ensure that the employees are able to perform their tasks and work with safety.

During the COVID-19 epidemic, our factories were able to operate normally as our employees were previously trained in other positions and functions in the factory. Therefore, there were no difficulties during the period of changing work schedules or in the event that employees are not able to come to the factory during a self-quarantine period.



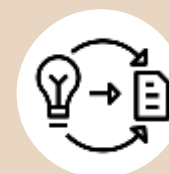
TPM Happy Workplace : Surat Thani Plant

In 2021, the Group implemented the Total Productive Maintenance (TPM) policy to encourage employees to increase their work efficiency and engage in their own equipment maintenance. A brainstorming session was organized to share opinions and create challenges in employees' workshops. The purpose of the program is to create understanding among employees by exchanging their experiences, brainstorming ideas to find solutions, and learning from their practices in addition to the lecture sessions. The results of the brainstorming are as follows:

- The purpose of implementing the concept of TPM was realized by our employees
- The benefits the employees will get were realized
- Improved solving problem skills
- Encourage teamwork
- The equipment and tools employee needs were requested



Relationship
Building



Knowledge
Sharing



Opinion
Sharing

Happy Workplace: Promoting health of employee, family, and community

Happy Workplace is a concept that emphasizes on promoting employee life balance; personal living, living with family, and living in society. We take care and develop employees in various ways to move forward together and be ready for changes by applying the principle of promoting well-being as the basis of management through different activity arrangements to create physical and mental health. This includes love and harmony in society, environmental awareness, and continued development of skills and knowledge, and etc.



Arranged COVID-19 vaccination for our employees and their family at Bangkok Hospital, Phitsanulok

Food for Thought

ทริคส์ไม่ทำจากที่ออฟฟิศถึง... โฟ่ ออบบิ๊

1. ฝึกสมาธิ... (Text about meditation benefits)

2. ฝึกสติ... (Text about mindfulness benefits)

3. ฝึกการฟัง... (Text about listening skills)

4. ฝึกการพูด... (Text about communication skills)

5. ฝึกการดูแลสุขภาพ... (Text about health care)

สูตรสร้างสุข

จากอาหาร 5 อย่างที่หาได้ง่ายในครัวเรือน

1. สดชื่น (Fresh) - ผักสด, ผลไม้สด

2. รสชาติ (Taste) - ผักต้ม, ผลไม้แห้ง

3. รสเค็ม (Salty) - ผักดอง, ผลไม้ดอง

4. รสเปรี้ยว (Sour) - ผลไม้เปรี้ยว, ผักเปรี้ยว

5. รสขม (Bitter) - ผักขม, ผลไม้ขม

พบแพทย์ เพื่อปรึกษาอาการตรวจสุขภาพ DOCTOR CONSULTATION

3 ธันวาคม 2564
3 December 2021

08:30 – 15:00 hrs.

บริเวณห้องสัมภาษณ์ ชั้น 23
Interview room 23rd floor

โปรดนำเอกสารตรวจสุขภาพของท่านมาด้วยเพื่อปรึกษาแพทย์
Please bring along your health check report

TPA K. Somak #7917 email: somak@tipcoasphalt.com
Construction K. Teerachai #71008 email: teerachai_p@tipco.co.th
Tower K. Thanapon #8914 email: thanapon_s@tipco.co.th

Tips & Tricks communication channel for lifestyle, health care, and happy working through Tipco Connect



“Tipco Asphalt Group focuses on personal development by balancing performance, career advancement and happiness in personal life. We place an emphasis on our employees to learn and develop skills in a number of areas, especially innovation and multi-skill development. We also encourage them to apply the happy workplace concept to the organization to build engagement and drive organization to grow together”

Udomporn Punpatch
Chief People Officer

Employees Training and Development



Affected Value Chain



Stakeholders



Key risks and opportunities

- Risk of unavailability of successors to critical positions
- Risk of human rights and equality
- Risk of employment in accordance with corporate culture
- Risk of health and safety at work
- Risk of privacy and personal data

Goals *[Disclosure 102-14, 401-1, 401-2]*

Long Term Goals in 2025

- Each employee participates in at least one annual innovation project
- Career advancement planning which is measured by the achievement of the individual development plan of at least 75% of high-potential employees
- There are potential successors in all target positions

Short Term Goals in 2021

- 24 hours technical and administrative training per person per year.

Results in 2021

- Average training hours for all topic categories is 25.20 hours per person per year
- Average 18 hours per person per year of technical and administrative training

Management Approach *[Disclosure 103-2]*

As our organization strategic goals aims to be innovative organization, the growth mindset which believe that human competency can be developed by continuous learning has become our core commitment. We support the working environment which encourage employees to improve their working process and operation and be responsive to change.

The human resource development approach of 'employee centric' is the approach that our Human Resources Department still committed. We therefore aim to provide a standardized working environment which contributes to create professional collaboration among employees and attract talented people to join us for growing people to be a successful leader in the future

The epidemic situation and control measures of COVID-19 in 2021 continued to affect our business operations including training program management. The arrangement of online training is limited since there was difficulties in sharing experiences, creating prototypes, data storage, and the exchange of ideas for innovation development.

Another affected activity was the Total Productive Maintenance program. As a result of travel restrictions, it was not possible to organize activities which allow participants to experience from learning together as they were only confined to a small group within their branch factory.

Key changes in 2021 *[Disclosure 102-49]*

- Focus on developing 4 core skills about how to cope with rapid change and current circumstances which are 1. Leading 2. Analytical Thinking 3. Critical thinking, and 4. communication, collaboration & building relationships.
- Develop change management skills and learn new things, including the most important skill namely mental management. Since advances in technology have completely changed the way working people learn; from learning and practicing to continuous learning and practicing. Therefore, the focus on dealing with the dynamic world has contributed to sustainable development of employees rather than just providing the skills they need.
- Mainly use the online learning platform in combination with the online meeting and follow-up.


New 'Learning Approach' during COVID-19 Pandemic in 2021

[Disclosure 404-2]

Our group, both in Thailand and abroad, has reviewed employee development approaches and channels in order to adapt our business to the spread of COVID-19 situation under the control measures since 2020. We implemented a system of learning through information technology both in the virtual classroom and online classroom. For the internal training system, we used Microsoft Teams and communication tools to collect data, information exchange, and presentation. This enabled participants both in Thailand and abroad to access databases and use communication channels effectively. For the training programs which were arranged by external companies, our employees were attracted due to the efficient use of online sharing information systems. Both internal training and from speakers or external agencies were said to be successful.

However, in 2021, the target number of hours of personnel development training failed to achieve the target set due to the situation of the COVID-19 outbreak. The control measures caused the training and development arrangements to shift from onsite learning to short online sessions which allowed knowledge exchange, so the participants were able to join from home or workplace. In addition, the training program allows adjustments as appropriate for the situation but requires employees and supervisors to identify skills they need to develop and form a short-term plan within the year. The development program was carried out according to their plan through online lessons, reading, and creating projects. This includes learning from other activities which may be limited, and such activities will be recorded in the employee's individual development plan but does not count towards formal training hours.

The Group has announced that employees work from home periodically, with the longest period being 5 months (April 26 – September 26, 2021).



“Personnel development process must encourage employees to develop their skills and show their competency as much as possible for their achievement, which could be career growth and security. This also ensures that organization goals of business growth are met. At the same time, this helps our employees to adapt themselves to the contexts and challenges encountered and be happy at work”.

Orrawee Janbang
Senior Manager of Organization and Human Capital Development



In-house training, Innovation Bootcamp, which provided coaching for learners by using online lectures and consultations through the MS Team Meeting, which is a network within the organization.



Participating in external training seminars on the topic of PDPA, to ensure readiness before it is put into effect. The program was arranged via online lectures by the Securities and Exchange Commission (SEC), together with representatives from other organizations.

TPM: Total Productive Maintenance

[Disclosure 404-2]

As there has been a change and high competition in the asphalt production and distribution business, the Group recognized the importance of adapting and developing knowledge and competence of our employees, to drive business forward and be ready for dynamic changes. We therefore implemented TPM guidelines of operations of factories in Thailand to promote skills practicing, as well as create knowledge and understanding of equipment and machinery maintenance which help reduce losses, redundant workflows, and costs and maintain product quality with efficiency and safety. Currently, all factories in Thailand are operating under the principle of Multi-Participant Maintenance ("TPM").

The program aims to develop employees with a wide range of skills to improve workflow and multitasking.

In 2021, the Group promoted innovation goals through the Total Productive Maintenance Project, which reduced operating costs by 16.8 million Baht. There was also an idea of work improvement from employees, through projects from the operational level (Kaizen Sheet) totaling 867 issues.



Scan QR Code
to view the Total Productive
Maintenance (TPM) project




Scan QR Code
to view the Total Productive
Maintenance Policy

Total Productive Maintenance Project Performance Indicators

Total cost saving from all improvement projects (Cost Saving Project)	Improvement project from supervisor (FI Theme)	Operational improvement project (Kaizen Sheet)	Number of employees engaged in TPM project (full-time employees in operations)	Collecting organizational knowledge through One Point Lesson Learn (OPL)	Training on basic maintenance tasks for operator
16.68 Million Baht	116 Lessons	867 Projects	89%	4,332 Lessons	63 Activities

Appendix



- **Data according to indicators**
 - **Coverage of TIPCO Asphalt Group in this Report**
 - **Accreditation/ Verification from external certifying bodies**
 - **Compliance with the UN–GC**
 - **Readers' survey feedbacks on Sustainability Report**
- 

Economic

Economic											
Standard			Topics of data disclosure	Performance						Page No. or URL	Note(s)/ Omission(s)
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021		
Business Performance											
Direct economic value/distributed											
Goal 8	ISO 26000 (6.2,6.8.7)	GRI 102-1	Revenues from sales and services (1)	Million Baht	28,598	27,742	37,026	26,291	27,210	14-16	Note (1)
			Cost of sales and services	Million Baht	25,949	26,979	33,767	21,403	19,723	14-16	Note (1)
			Operating profit	Million Baht	2,537	564	3,123	3,592	2,220	14-16	Note (1)
			Compensation and benefits of employees	Million Baht	1,205	1,090	1,108	1,283	1,422	14-16	Note (1)
			Dividend payment for annual performance	Million Baht	1.20	0.30	1.50	1.60	1.05	14-16	Note (1)
			Income tax payment (2)	Million Baht	371	234	509	757	753	14-16	Note (1)
			Social investment	Million Baht	15.3	23	11.9	11.5	24.9	14-16	Note (1)
Innovation											
Innovation Mangement											
Goal 9	ISO 26000 (6.6.5,6.5.2, 6.8.6, 6.6.7)	-	Policy and practice guidelines on innovation development at organization level	Yes/No	●	●	●	●	●	50-73	
			Workplan on innovation development pertaining to processes, product/services or business models that are friendly to society or environment, and qualitative benefits from innovation developments	Yes/No	●	●	●	●	●	50-73	
			- Hold corporate innovation contest to improve employee engagement > 10%	%	-	-	24%	20%	NA	50-73	Note (2)
			- Provide voluntary innovation knowledge - “Innovation Bootcamp”	Yes/No	-	-	-	●	●	50-73	

Innovation											
Innovation Mangement											
Standard			Topics of data disclosure	Performance						Page No. or URL	Note(s)/ Omission(s)
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021		
Goal 9	ISO 26000 (6.6.5,6.5.2, 6.8.6, 6.6.7)	-	Data on innovations pertaining to processes, products/ services, or business models that are environment-friendly								
			- Number of creative / innovative projects	Number of Project	-	10	133	79	NA	50-73	Note (2)
			- Numbr of Green Way Innovation	Number of Project	-	8	52	12	NA	50-73	Note (2)
			- Number of Product Innovation Projects	Number of Project	-	NA	14	7	NA	50-73	Note (2)
			- Number of Service Innovation Projects	Number of Project	-	NA	19	8	NA	50-73	Note (2)
			- Number of Process Innovation Projects	Number of Project	-	NA	100	64	NA	50-73	Note (2)
			- Number of Employee Engagement activities	Number of Engagement Activity	-	NA	408	256	NA	50-73	Note (2)
			- Number of innovation projects developed and implemented as a product/service/process.	Number of Project	-	10	86	13	NA	50-73	Note (2)
			- Number of Employee Engagement activities for Innovation Bootcamp	Number of Engagement Activity	-	-	-	80	105	50-73	
			- Number of project from Innovation Bootcamp	Number of Project from Innovation Bootcamp	-	-	-	23	21	50-73	
			Innovation management: Targets								
			-The number of prototype projects implemented in operations is at least 25% of the total number of innovations that year	Number of prototype projects implemented	-	-	NA	32	NA	50-73	Note (2)
			- The number of projects submitted for the contest increases by 10% every year	% of incremental projects submitted	-	-	"1st year (133 projects)"	"-41% (79 projects)"	NA	50-73	Note (2)
			- The number of projects submitted by BUs other than Production department, increases by 15%	% increase of projects submitted by other BUs (apart from Production)	-	-	13	6	NA	50-73	Note (2)
			- Number of Green Innovation ideas > 10 projects	Number of Green Innovation projects	-	-	26	12	NA	50-73	Note (2)
			- Number of projects implemented in the business is at least 10 projects (starting in 2021)	Number of innovation projects implemented in the business	-	-	NA	34	2	50-73	Note (2)

Innovation											
Innovation Mangement											
Standard			Topics of data disclosure	Performance					Page No. or URL	Note(s)/ Omission(s)	
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021		
Goal 9	ISO 26000 (6.6.5,6.5.2, 6.8.6, 6.6.7)	-	Quantifiable benefits from innovation management								
			Economic Benefits								
			- 3 new products, with improvements every 2 years	Value (million Baht)	75,098	92,120	114,218	133,966	NA	50-73	Note (2)
			- Cost reduction from Innovation projects	Cost Reduction (M.THb)	NA	NA	NA	27.8	20	50-73	Note (4)
			- Time reduction from Innovation projects	Time Reduction (Hour)	NA	NA	NA	2,812	3,312	50-73	Note (4)
			Environmental Benefits								
			- Reduction of CO ₂ from all projects	Ton of Carbon Dioxide	NA	NA	NA	13,446	NA	50-73	Note (2)
			Social Benefits								
			- Value that society can utilize	Baht	NA	NA	NA	NA	NA	50-73	Note (2)
			- Reduced impacts to society/community	Number of times	NA	NA	NA	NA	NA	50-73	Note (2)

Note :

NA (Not Available): No data collected

(1) Launched the annual Innovative Solutions Award Corporate Innovation Contest in 2019

(2) Launched Innovation Bootcamp in 2020

(3) Started the annual Innovative Solutions Award, as corporate innovation contest project in 2019; originally new product/innovation projects were created by the R&D and domestic & international sales departments

(4) The project was launched in 2019, with 133 projects submitted for contest

(5) According to the master plan, there will be an operational audit from 2021 onwards

Environment

Environment													
Standard			Topics of data disclosure	Performance						Page No. or URL	Note(s)/ Omission(s)		
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021				
Emissions Management													
Goal 13	ISO 26000 (6.5.5) and ISO 14001	GRI 305	Policy and guidelines on environment management: Greenhouse gas emissions	Yes/No	●	●	●	●	●	92-93			
			Principle, standard or practice on environment that the Group implements or refers to	Yes/No	●	●	●	●	●	92-93			
			Plan for greenhouse gas emissions reduction	Yes/No	●	●	●	●	●	92-93			
			Target set for greenhouse gas emissions reduction	Yes/No	●	●	●	●	●	92-93			
		Domestic asphalt product business											
			Total greenhouse gas emissions reduction	Tons of CO ₂ equivalent	21,942	20,415	17,814	17,275	15,150	96-98	Note (1)		
		GRI 305-1	● Direct (Scope 1) GHG emissions	Tons of CO ₂ equivalent	19,166	18,309	15,749	15,159	13,352	96-98	Note (1)		
		GRI 305-2	● Indirect (Scope 2) GHG emissions	Tons of CO ₂ equivalent	2,766	2,106	2,065	2,115	1,798	96-98	Note (1)		
		GRI 305-3	● Other indirect (Scope 3) GHG emissions	Tons of CO ₂ equivalent	NA	NA	NA	NA	NA	96-98	Note (1)		
		GRI 305-4	GHG emissions intensity (Scopes 1,2)	Tons of CO ₂ equivalent per ton of production	0.040	0.041	0.038	0.032	0.029	96-98	Note (1)		
			Shipping business										Note (3)
			Total greenhouse gas emissions reduction	Tons of CO ₂ equivalent	NA	NA	NA	58,083	57,054	96	Note (3)		
		GRI 305-1	● Direct (Scope 1) GHG emissions	Tons of CO ₂ equivalent	NA	NA	NA	58,083	57,054	96	Note (3)		
		GRI 305-2	● Indirect (Scope 2) GHG emissions	Tons of CO ₂ equivalent	NA	NA	NA	0	0	96	Note (3)		
		GRI 305-3	● Other indirect (Scope 3) GHG emissions	Tons of CO ₂ equivalent	NA	NA	NA	NA	NA	96	Note (3)		
		GRI 305-4	GHG emissions intensity (Scopes 1,2)	Tons of CO ₂ equivalent per ton of production	NA	NA	NA	1.1	1.1	96	Note (3)		

Emissions Management

Standard			Topics of data disclosure	Performance					Page No. or URL	Note(s)/ Omission(s)
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021	
Goal 13	ISO 26000 (6.5.5) and ISO 14001	GRI 305-7	Quantitative targets on significant air emissions							
			Domestic asphalt product business							
			• Nitrogen Oxide (NOx)	Kilogram	NA	5,279	3,505	3,856	8,067	78
			• Sulfur Oxide (SOx)	Kilogram	NA	12,956	8,390	5,503	7,576	78
			• Carbon Monoxide (CO)	Kilogram	NA	4,035	3,800	3,757	22,469	78
			ฝุ่นละอองรวม	Kilogram	NA	1,476	1,619	1,249	929	78
			• Nitrogen Oxide (NOx)	Kilograms per ton of production	NA	0.011	0.008	0.007	0.015	78
			• Sulfur Oxide (SOx)	Kilograms per ton of production	NA	0.026	0.018	0.010	0.014	78
			• Carbon Monoxide (CO)	Kilograms per ton of production	NA	0.008	0.008	0.007	0.042	78
			ความเข้มข้นทางของฝุ่นละอองรวม	Kilograms per ton of production	NA	0.003	0.003	0.002	0.002	78

Biodiversity

Goal 15	ISO 26000 (6.5.6) and ISO 14001	GRI 304-1	Policy on biodiversity	Yes/No	●	●	●	●	●	105	
		GRI 304-1	Policy and framework supporting construction or management of buildings that are environment-friendly	Yes/No	●	●	●	●	●	105	
		GRI 304-2	Project to protect/rehabilitate natural environment or eco-system through the Group's products and services	Yes/No	●	●	●	●	●	106-107	
		GRI 304-2	Knowledge sharing on protection/rehabilitation of environment/eco-system/ biodiversity to relevant stakeholders	Yes/No	●	●	●	●	●	106-107	

Energy Management

Standard			Topics of data disclosure	Performance						Page No. or URL	Note(s)/ Omission(s)
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021		
Goal 7	ISO 26000 (6.5.4) and ISO 1400	GRI 302	Policy and guidelines on environment management: Energy	Yes/No	●	●	●	●	●	88-89	
			Principle, standard or practice guidelines on environment management that the Group implements and refers to such as ISO 50001, LEED	Yes/No	●	●	●	●	●	88-89	
			Plan to reduce electricity and/or fuel consumption	Yes/No	●	●	●	●	●	88-89	
			Target on reducing electricity and/or fuel consumption	Yes/No	●	●	●	●	●	88-89	
		GRI 302-1	Total energy consumption within the organization (Non-renewable sources)	Gigajoule	270,880	251,387	210,975	215,138	190,249	90-91	
		GRI 302-1	Total fuel consumption within the organization from renewable sources	Gigajoule	NA	NA	NA	NA	NA	90-91	
		GRI 302-3	Energy intensity ratio for the organization	Gigajoule/production unit	0.50	0.51	0.45	0.40	0.36	90-91	
		GRI 302-4	Amount of reduction in energy consumption (electricity and/or fuel)	Gigajoule	NA	NA	40,412	36,249	24,889	90-91	Note (2)

Effluents, Waste and Pollution

Effluents, Waste and Pollution Management

Goal 12	ISO 26000 (6.5.3) and ISO 14001	GRI 306	Policy and guidelines on environment management: Effluents, waste and pollution	Yes/No	●	●	●	●	●	82-83	
			Principle, standard or practice guidelines on environment management that the Group implements and refers to	Yes/No	●	●	●	●	●	82-83	
			Plan to reduce effluents, waste, and pollution	Yes/No	●	●	●	●	●	82-83	
			Target on reduction of effluents, waste, and pollution	Yes/No	●	●	●	●	●	82-83	

Effluents, Waste and Pollution Management

Standard			Topics of data disclosure	Performance						Page No. or URL	Note(s)/ Omission(s)
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021		
Goal 12	ISO 26000 (6.5.3) and ISO 14001	GRI 306	Domestic asphalt product business								
		GRI 306-1	• Total water discharge, by quality and destination	Million cubic meters	0	0	0	0	0.00	80	
		GRI 306-2	• Total waste, by type and method	Ton	367	431	405	461	247.28	83-87	
			– Total weight of hazardous waste	Ton	NA	NA	NA	212	93.52	83-87	
			* Sorting	Ton	NA	NA	NA	0	0.00	83-87	
			* Storage	Ton	NA	NA	NA	0	0.07	83-87	
			* Reuse	Ton	NA	NA	NA	0	0.00	83-87	
			* Recycle	Ton	NA	NA	NA	195	93.45	83-87	
			* Recovery	Ton	NA	NA	NA	0	0.00	83-87	
			* Treatment	Ton	NA	NA	NA	0	0.00	83-87	
			* Incineration with out energy recovery	Ton	NA	NA	NA	0.9	0.00	83-87	
			* Disposal	Ton	NA	NA	NA	16.5	0.00	83-87	
			– Total weight of non-hazardous waste	Ton	NA	NA	NA	249	153.76	83-87	
			* Sorting	Ton	NA	NA	NA	218	85.46	83-87	
			* Storage	Ton	NA	NA	NA	0	0.00	83-87	
			* Reuse	Ton	NA	NA	NA	0	0.00	83-87	
			* Recycle	Ton	NA	NA	NA	0	40.05	83-87	
			* Recovery	Ton	NA	NA	NA	0	0.00	83-87	
			* Treatment	Ton	NA	NA	NA	0	0.00	83-87	
			* Incineration with out energy recovery	Ton	NA	NA	NA	0	0.00	83-87	
			* Disposal	Ton	NA	NA	NA	30.7	28.25	83-87	

Effluents, Waste and Pollution Management

Standard			Topics of data disclosure	Performance					Page No. or URL	Note(s)/ Omission(s)
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021	
Goal 12	ISO 26000 (6.5.3) and ISO 14001	GRI 306-2	- Total weight of hazardous waste							Note (1) and (3)
			* Recycle	Ton	NA	NA	NA	NA	0.00	84-85 Note (1) and (3)
			* Treatment	Ton	NA	NA	NA	NA	0.00	84-85 Note (1) and (3)
			* Incineration with out energy recovery	Ton	NA	NA	NA	NA	0.00	84-85 Note (1) and (3)
			* Disposal	Ton	NA	NA	NA	NA	1.71	84-85 Note (1) and (3)
			- Total weight of non-hazardous waste							
			* Recycle	Ton	NA	NA	NA	NA	92.44	84-85 Note (1) and (3)
			* Treatment	Ton	NA	NA	NA	NA	120.73	84-85 Note (1) and (3)
			* Incineration with out energy recovery	Ton	NA	NA	NA	NA	3.18	84-85 Note (1) and (3)
			* Disposal	Ton	NA	NA	NA	NA	30.90	84-85 Note (1) and (3)
Goal 12	ISO 26000 (6.5.3) and ISO 14001	GRI 306-3	• Total volume of recorded significant spills of asphalt and chemicals	Ton	NA	NA	NA	1.78	31.81	79
			From TIPCO Asphalt's own operations	Ton	NA	NA	NA	1.78	3.81	79
			* The number of asphalt and non-asphalt spills less than 200 kg/time	Times	NA	NA	NA	NA	12	79
			* Asphalt and non-asphalt spills less than 200 kg/time	Ton	NA	NA	NA	NA	0.81	79
			* The number of asphalt and non-asphalt spills between 200-20,000 kg/time	Times	NA	NA	NA	3	3	79
			* The amount of asphalt and non-asphalt spills is between 200-20,000 kg/time	Ton	NA	NA	NA	1.78	3.00	79
			* The number of asphalt and non-asphalt spills more than 20,000 kg/time	Times	NA	NA	NA	0	0.00	79
			* Asphalt and non-asphalt spills more than 20,000 kg/time	Ton	NA	NA	NA	0	0.00	79

Spills of asphalt and important chemicals

Standard			Topics of data disclosure	Performance						Page No. or URL	Note(s)/ Omission(s)
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021		
		GRI 306-3	- From external unit (distribution): Delivery via trucks	Ton	NA	NA	NA	0	28	79	
			* The number of asphalt and non-asphalt spills less than 200 kg/time	Times	NA	NA	NA	0	0	79	
			* Asphalt and non-asphalt spills less than 200 kg/ time	Ton	NA	NA	NA	0	0	79	
			* The number of asphalt and non-asphalt spills between 200-20,000 kg/time	Times	NA	NA	NA	0	1	79	
			* The amount of asphalt and non-asphalt spills is between 200-20,000 kg/time	Ton	NA	NA	NA	0	3	79	
			* The number of asphalt and non-asphalt spills more than 20,000 kg/time	Times	NA	NA	NA	0	1	79	
			* Asphalt and non-asphalt spills more than 20,000 ka/time	Ton	NA	NA	NA	0	25	79	

Water

Water Management

Goal 6	ISO 26000: (6.5.4) and ISO 14001	GRI 303	Water policy and guidelines on environment management	Yes/No	●	●	●	●	●	108-109	
			Principle, standard or practice guidelines on environment management that the Group implements and refers to such as ISO/DIS 24526 ISO 14046	Yes/No	●	●	●	●	●	108-109	
			Plan to reduce water consumption	Yes/No	●	●	●	●	●	108-109	
			Target on reduction of water consumption	Yes/No	●	●	●	●	●	108-109	
		GRI 303-3	Total water withdrawal	Mega liters	89	62.4	54.9	48.77	47.4	110-111	
			• Surface water (Freshwater ≤1,000 mg/L Total Dissolved Solids)	Mega liters	NA	NA	NA	NA	NA	110-111	
			• Surface water (Other water >1,000 mg/L Total Dissolved Solids)	Mega liters	NA	NA	NA	NA	NA	110-111	
			• Groundwater (Freshwater ≤1,000 mg/L Total Dissolved Solids)	Mega liters	32.5	16.4	16.9	12.8	12.8	110-111	
			• Groundwater (Other water >1,000 mg/L Total Dissolved Solids)	Mega liters	20.8	16.1	13.1	11.8	11.2	110-111	
			• Third-party water (Freshwater ≤1,000 mg/L Total Dissolved Solids)	Mega liters	35.7	29.9	24.9	24.1	23.5	110-111	
			• Third-party water (Other water >1,000 mg/L Total Dissolved Solids)	Mega liters	0	0	0	0	0	110-111	

Water Management

Standard			Topics of data disclosure	Performance						Page No. or URL	Note(s)/ Omission(s)
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021		
		GRI 303-4	Total water discharge	Mega liters	0	0	0	0	0	80	
			Total recycled water discharge	Mega liters	9.7	8.2	4.3	3.6	2.6	80	
		GRI 303-5	Water consumption	Mega liters	98.7	70.6	59.2	52.3	50.0	110-111	
			Water consumption intensity ratio	Cubic meters/ production unit	0.18	0.14	0.13	0.10	0.09	110-111	

Input Material

Input Material Management

		GRI 301-1	All materials used	Ton	NA	NA	NA	517,394	509,819	100-103	
			Non-renewable materials	Ton	NA	NA	NA	516,734	509,107	100-103	
		GRI 301-2	Materials that can be reused or recycled	Ton	NA	NA	NA	660	712	100-103	
			The rate of use of materials that can be reused or recycled	%	NA	NA	NA	0.13	0.14	100-103	

Note :

NA (Not Available): No data collected

(1) Total energy consumption reduction (electricity and/or fuel) as compared to baseline year 2018

(2) 3 accounts of hot oil leakage incidents, with total of 1.78 tons caused by hot oil boiler installation system at Phra pradaneg plant. These leakages were confined within Bund Wall, and were fully retrieved and more than 95% recycled with no contamination to the soil or natural water sources

Social Safety Awareness

Social											
Standard			Topics of data disclosure	Performance						Page No. or URL	Note(s)/ Omission(s)
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021		
Safety, Occupational Health and Working Environment											
Goal 3 and Goal 8	ISO 26000 (6.4.6) ISO 45001	GRI 403	Occupational health and safety management policy and work environment	Yes/No	●	●	●	●	●	114-119	
		GRI 403-1	Occupational health and safety management guidelines for contractors or outsourced service providers	Yes/No	●	●	●	●	●	114-119	
			Occupational health and safety target and work environment	Yes/No	●	●	●	●	●	114-119	
		GRI 403-2	Hazard identification, risk assessment, and incident investigation	Yes/No	●	●	●	●	●	114-119	
		GRI 403-3	Occupational health services	Yes/No	●	●	●	●	●	114-119	
		GRI 403-4	Worker participation, consultation, and communication on occupational health and safety	Yes/No	●	●	●	●	●	114-119	
		GRI 403-5	Training on occupational health and safety for employees and contractors	Yes/No	●	●	●	●	●	114-119	
		GRI 403-6	Promotion of worker health	Yes/No	●	●	●	●	●	114-119	
		GRI 403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Yes/No	●	●	●	●	●	114-119	

Safety, Occupational Health and Working Environment

Standard			Topics of data disclosure	Performance					Page No. or URL	Note(s)/ Omission(s)		
SDGs	ISO	GRI		Unit	2017	2018	2019	2020			2021	
Goal 3 and Goal 8	ISO 26000 (6.4.6) ISO 45001	GRI 403-8	Workers covered by an occupational health and safety management system									
			Number of employees under occupational and safety management ISO 45001									
			• Total number of employees – Thailand	Persons	732	712	672	649	597	114-119	Note (1)	
				%	100	100	100	100	100	114-119		
			• Total numbers of employees – foreign locations	Persons	NA	NA	NA	762	738	-	Note (2)	
				%	NA	NA	NA	100	100	-		
			Number of employees under occupational health and safety management, with internal audit system									
			• Total number of employees – Thailand	Persons	732	712	672	649	597	114-119	Note (1)	
				%	100	100	100	100	100	114-119		
			• Total numbers of employees – foreign locations	Persons	NA	NA	NA	588	549	-	Note (3)	
				%	NA	NA	NA	77	74	-		
			Number of employees under accreditation of occupational health and safety standard, from external certifying bodies									
			• Total number of employees – Thailand	Persons	732	712	672	649	597	114-119	Note (1)	
				%	100	100	100	100	100	114-119		
			• Total numbers of employees – foreign locations	Persons	NA	NA	NA	419	385	-	Note (4)	
				%	NA	NA	NA	55	52	-		
		GRI 403-9	Work-related injuries									
			Work hours									
			• Total work hours – domestic employees	Work hours	1,254,298	1,453,089	1,348,337	1,259,199	1,539,209	114-119	Note (1)	
			• Total work hours – employees in foreign locations	Work hours	NA	1,733,594	1,708,299	1,695,150	1,830,828	114-119	Note (2)	
			• Total work hours – contractors	Work hours	NA	NA	NA	NA	298,300	114-119	Note (1)	

Safety, Occupational Health and Working Environment

Standard			Topics of data disclosure	Performance					Page No. or URL	Note(s)/ Omission(s)	
SDGs	ISO	GRI		Unit	2017	2018	2019	2020			2021
Goal 3 and Goal 8	ISO 26000 (6.4.6) ISO 45001	GRI 403-9	Recordable work-related injury								
			• Total number of injury incidents with full records – domestic employees	Times	2	1	2	0	0	114-119	Note (1)
			• Total number of injury incidents with full records – employees in foreign locations	Times	0	2	2	1	4	-	Note (2)
			• Total number of injury incidents with full records – contractors	Times	0	0	0	0	2	114-119	Note (1)
			• Statistics of injury incidents with full records – domestic employees	Times/ million work hours	1.59	0.69	1.48	0.00	0.00	114-119	Note (1)
			• Statistics of injury incidents with full records – employees in foreign locations	Times/ million work hours	NA	1.15	1.17	0.59	2.18	-	Note (2)
			• Statistics of injury incidents with full records – contractors	Times/ million work hours	0	0	0	0	6.70	114-119	Note (1)
			Fatalities as a result of work-related injury								
			•Number of fatalities as a result of work-related injury – domestic employees	Persons	0	1	1	0	0	114-119	Note (1)
			•Number of fatalities as a result of work-related injury – employees in foreign locations	Persons	0	0	1	0	0	-	Note (2)
			• Number of fatalities as a result of work-related injury – contractors	Persons	0	0	0	0	1	114-119	Note (1)
			High-consequence work-related injuries (in case of personal recovery for more than 6 months)								
			• Number of high-consequence work related injury – domestic employees	Times	0	0	0	0	0	114-119	Note (1)
			• Number of high-consequence work related injury – employees in foreign locations	Times	0	0	0	0	0	-	Note (2)
			• Number of high-consequence work related injury – contractors	Times	0	0	0	0	0	114-119	Note (1)
			• Statistics of high-consequence work related injury – Domestic employees	Times/ million work hours	0	0	0	0	0	114-119	Note (1)
			• Statistics of high-consequence work related injury – employees in foreign locations	Times/ million work hours	0	0	0	0	0	-	Note (2)
			• Statistics of high-consequence work related injury – contractors	Times/ million work hours	0	0	0	0	0	114-119	Note (1)

Safety, Occupational Health and Working Environment

Standard			Topics of data disclosure	Performance						Page No. or URL	Note(s)/ Omission(s)
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021		
Goal 3 and Goal 8	ISO 26000 (6.4.6) ISO 45001	GRI 403-9	Lost time as a result of work-related Injury								
			•Number of lost time injury - domestic employees	Times	2	0	1	0	0	114-119	Note (1)
			•Number of lost time injury - employees in foreign locations	Times	0	2	2	1	1	-	Note (2)
			• Number of lost time injury - contractors	Times	0	0	0	0	1	114-119	Note (1)
			• Lost Time Injury Frequency Rate (LTIFR) - domestic employees	Times/ million work hours	1.59	0.00	0.74	0.00	0.00	114-119	Note (1)
			• Lost Time Injury Frequency Rate (LTIFR) - employees in foreign locations	Times/ million work hours	NA	1.15	1.17	0.59	0.55	-	Note (2)
			• Lost Time Injury Frequency Rate (LTIFR) - contractors	Times/ million work hours	0	0	0	0	3.35	114-119	Note (1)
			Near-miss accidents								
			• Total number of near-miss accidents of employees and contractors	Times	0	9	49	14	15	114-119	Note (1)
	ISO 39001		Fatalities as a result of accidents - product distribution								
			• Number of fatalities as a result of accidents - product distribution - domestic employees	Times	0	1	0	0	0	124-129	Note (1)
			• Number of fatalities as a result of accidents - product distribution - employees in foreign locations	Times	NA	NA	NA	NA	NA	-	
			• Number of fatalities as a result of accidents - product distribution - outsourced contractors	Times	0	0	0	0	1	124-129	Note (1)
			• Statistics of fatalities as a result of accidents - product distribution - domestic employees	Times/ million work hours	0	0.69	0	0	0	124-129	
			• Statistics of fatalities as a result of accidents - product distribution - employees in foreign locations	Times/ million work hours	NA	NA	NA	NA	NA	-	
			• Statistics of fatalities as a result of accidents - product distribution - outsourced contractors	Times/ million work hours	NA	NA	NA	NA	19.86	124-129	

Safety, Occupational Health and Working Environment

Standard			Topics of data disclosure	Performance					Page No. or URL	Note(s)/ Omission(s)	
SDGs	ISO	GRI		Unit	2017	2018	2019	2020			2021
Goal 3 and Goal 8	ISO 39001	GRI 403-9	High-consequence work-related injuries – Product distribution								
			• Number of fatalities as a result of accidents – product distribution – domestic employees	Times	0	0	0	0	0	124-129	Note (1)
			• Number of fatalities as a result of accidents – product distribution – employees in foreign locations	Times	NA	NA	NA	NA	NA	-	Note (1)
			• Number of fatalities as a result of accidents – product distribution – outsourced contractors	Times	0	0	0	0	0	124-129	Note (1)
			• Statistics of fatalities as a result of accidents – product distribution – domestic employees	Times/ million work hours	0.00	0.00	0.00	0.00	0.00	124-129	Note (1)
			• Statistics of fatalities as a result of accidents – product distribution – employees in foreign locations	Times/ million work hours	NA	NA	NA	NA	NA	-	Note (1)
			• Statistics of fatalities as a result of accidents – product distribution – outsourced contractors	Times/ million work hours	0.00	0.00	0.00	0.00	0.00	124-129	Note (2)
	ISO 26000 (6.4.6) ISO 45001	GRI 403-9	Lost time as a result of work-related Injury								
			• Number of lost time injury (days) - domestic employees	Days	NA	0	2	0	0	114-119	Note (1)
			• Number of lost time injury (days) - employees in foreign locations	Days	NA	22	41	1	37	114-119	Note (2)
			• Number of lost time injury (days) - contractors	Days	0	0	0	0	7	114-119	
		GRI 403-10	Ill health								
			Fatalities as a result of work-related ill health								
			• Number of employee fatalities as a result of work-related ill health – domestic employees	Persons	0	0	0	0	0	114-119	
	• Number of employee fatalities as a result of work-related ill health – employees in foreign locations		Persons	NA	NA	NA	NA	NA	-		
	• Number of employee fatalities as a result of work-related ill health – contractors		Persons	0	0	0	0	0	114-119		

Safety, Occupational Health and Working Environment

Standard			Topics of data disclosure	Performance					Page No. or URL	Note(s)/ Omission(s)	
SDGs	ISO	GRI		Unit	2017	2018	2019	2020			2021
Goal 3 and Goal 8	ISO 26000 (6.4.6) ISO 45001	GRI 403-10	Ill health								
			Occupational Illness								
			• Number of occupational illness – domestic employees	Times	0	0	0	0	0	114-119	Note (1)
			• Number of occupational illness – employees in foreign locations	Times	NA	NA	NA	NA	NA	-	Note (2)
			• Number of occupational illness – contractors	Times	0	0	0	0	0	114-119	Note (1)
			• Occupational Illness Frequency Rate (OIFR) – domestic employees	Times/ million work hours	0	0	0	0	0	114-119	Note (1)
			• Occupational Illness Frequency Rate (OIFR) – employees in foreign locations	Times/ million work hours	NA	NA	NA	NA	NA	-	Note (2)
			• Occupational Illness Frequency Rate (OIFR) – contractors	Times/ million work hours	0	0	0	0	0	114-119	Note (1)

Note :

N/A (Not Available) means no data is collected.

(1) Covered the head office and 5 asphalt plants, namely the Nakhon Ratchasima factory, Phitsanulok factory, Rayong factory, Phra Pradaeng warehouse, and Tha Thong warehouse

(2) Covered Malaysia Cambodia, China, Indonesia Vietnam, and Laos

(3) Malaysia, Indonesia, and Vietnam

(4) Malaysia and Indonesia

(5) Has been externally reviewed and verified

Coperate Governance

Governance											
Standard			Topics of data disclosure	Performance						Page No. or URL	Note(s)/ Omission(s)
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021		
Good Corporate Governance											
Board Performance											
Goal16	ISO 26000 (6.2)	GRI 102-31	Performance of the Board of Directors and all other Board sub-committees that relate to the Group’s sustainability on environmental, social, and corporate governance aspects	Yes/No	●	●	●	●	●	148-157	
Board Composition and Diversity											
Goal16	ISO 26000 (6.2)	GRI 102-18	Board composition: Proportion of independent directors on Board	Proportion of independent directors on Board	47%	47%	47%	40%	36%	150	
			Board composition: Proportion of non-executive directors on Board	Proportion of non-executive directors on Board	67%	67%	67%	67%	64%	150	
			Proportion of non-executive directors with expertise in the company’s core business	Proportion of non-executive directors with expertise in the company’s core business	30%	30%	30%	20%	64%	150	
			Ratio of Male: Female directors	Ratio of Male: Female directors	13:2	13:2	13:2	13:1	13:1	150	
			Components of knowledge and expertise of directors (board skills) necessary for the business, which are pre-determined and analyzing skills are in accordance with the prescribed.	Ratio of directors with necessary expertise for the business to all directors	●	●	●	●	●	56-1 One report หน้า 73	

Good Corporate Governance

Board Performance

Standard			Topics of data disclosure	Performance						Page No. or URL	Note(s)/ Omission(s)
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021		
Goal16	ISO 26000 (6.2)	GRI 102-28	Guidelines for director's performance evaluation	Yes/No	●	●	●	●	●	155	
			Performance evaluation results pertaining to each individual directors such as score level, or average score	Score level, or average score of director's performance evaluation	3.91	3.86	3.86	3.87	3.84	155	
			Guidelines for director developments and their performance	Yes/No	●	●	●	●	●	155	

Code of Conduct and Compliance

Goal16	ISO 26000 (6.2)	GRI 102-17	Code of conduct training and education	%	100%	100%	100%	100%	100%	192	
				Ratio of trainee on Code of Conduct	100%	100%	100%	100%	100%	192	
			Code of conduct: Due diligence	Number of complaints	16	6	7	1	0	192	

ESG Risk Management											
ESG Risk Management											
Standard			Topics of data disclosure	Performance					Page No. or URL	Note(s)/ Omission(s)	
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021		
Goal1-17	ISO 26000 (7.4.3, 7.8.2)	GRI 102-15	Policy and guidelines on risk management pertaining to environmental, social or governance aspects	Policy and guidelines on risk management (Y/N)	●	●	●	●	●	142-147	
			Framework, standard or guidelines on risk management such as COSO-ERM or ISO31000	Framework, standard or guidelines on risk management (Y/N)	●	●	●	●	●	142-147	
			Risk, impact, and likelihood associated with risk relating to environmental, social or governance aspects including emerging risks that could impact the business in near future and total number of risks to the Group	Total number of risks to the Group	3,569	3,569	3,449	3,115	3,298	142-147	
			• The Group's top corporate risks	Number of the Group's top corporate risks	5	5	6	6	7	142-147	
			• Strategic risks	Number of strategic risks	128	128	110	120	17	142-147	
			• Operational risks (non Thai plants)	Number of operational risks (non Thai plants)	1,516	1,516	1,295	1,058	8,246	142-147	
			• Operational risks (5 Thai plants)	Number of operational risks (5Thai plants)	1,925	1,925	1,985	2,053	1,999	142-147	
			• Corruption risks	Number of corruption risks	NR	NR	4	4	5	142-147	
				Number of corruption-related complaint	0	1	2	0	0	142-147	
			Frequency of drill exercises for unexpected incidents such as emergency plan, crisis management plan, and business continuity plan	Number of times and frequency of drill exercises for unexpected incidents	NA	NA	13	40	50	146	

ESG Risk Management											
ESG Risk Management											
Standard			Topics of data disclosure	Performance						Page No. or URL	Note(s)/ Omission(s)
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021		
			• Head Quarter - Bangkok , Thailand	Times/year	NA	NA	1	1	2	146	
			• Refinery business	Times/year	NA	NA	5	4	4	146	
			• Maritime business	Times/year	NA	NA	3	4	3	146	
			• 5 asphalt plants - Thailand	Times/year	NA	NA	5	32	32	146	
			• Asphalt business - foreign locations	Times/year	NA	NA	NA	NA	NA	-	
			• Construction business	Times/year	NA	NA	NA	NA	9	146	
Supply Chain											
Supply Chain Management											
Goal 12, Goal16	ISO 26000 (6.6.6)		Policy and guidelines on supply chain management pertaining to environmental, social, or governance aspects	Yes/No	●	●	●	●	●	182-183	
			Supply chain management plan	Yes/No	●	●	●	●	●	182-183	
			Goals on supply chain management	Yes/No	●	●	●	●	●	182-183	
		GRI 308-1	Proportion of new partners that pass criteria on	Number of partners	NA	0	1	2	1	-	
		GRI 414-1	environmental, social, or governance aspects	% of 'new' partners during the year	NA	0	50	33	100	-	

Customer Centric											
Customer Satisfaction											
Standard			Topics of data disclosure	Performance						Page No. or URL	Note(s)/ Omission(s)
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021		
Goal 8	ISO 26000 (6.7.6)	GRI 102-43	Customer satisfaction improvement: Initiatives	Yes/No	●	●	●	●	●	172-173	
			Channel to manage customer service complaints	Yes/No	●	●	●	●	●	172-173	
			Customer satisfaction improvement: Targets	Yes/No	●	●	●	●	●	172-173	
			Overall customer satisfaction results	%	86.0%	84.0%	87.0%	87.4%	89.1%	175-177	
		GRI 102-43	• On products	%	85.0%	83.0%	83.0%	84.8%	85.8%	175-177	
		GRI 102-44	• On sales employees	%	88.0%	87.0%	87.5%	89.3%	90.4%	175-177	
			• On sales support	%	87.5%	83.5%	88.8%	89.7%	91.5%	175-177	
			• On technical services	%	83.0%	85.0%	84.0%	87.1%	88.4%	175-177	
			• On product delivery	%	83.0%	85.0%	85.5%	86.1%	88.3%	175-177	
			Customer satisfaction results - Domestic	%	85.8%	86.8%	86.6%	87.4%	88.7%	175-177	
			• On products	%	85.0%	86.0%	85.0%	83.7%	86.7%	175-177	
			• On sales employees	%	87.0%	88.0%	88.0%	88.6%	88.8%	175-177	
			• On sales support	%	88.0%	86.0%	89.0%	89.3%	91.0%	175-177	
			• On technical services	%	83.0%	85.0%	84.0%	87.1%	88.4%	175-177	
			• On product delivery	%	86.0%	89.0%	87.0%	88.2%	87.5%	175-177	
			ผลประเมินความพึงพอใจของลูกค้าต่างประเทศ	%	84.3%	81.3%	86.5%	87.5%	89.5%	175-177	
			• On products	%	82.0%	77.0%	88.0%	86.0%	85.0%	175-177	
			• On sales employees	%	89.0%	86.0%	87.0%	90.0%	92.0%	175-177	
			• On sales support	%	81.0%	87.0%	86.0%	90.0%	92.0%	175-177	
			• On technical services	%	NA	NA	NA	NA	NA		
			• On product delivery	%	83.0%	82.0%	84.0%	84.0%	89.0%	175-177	

Customer Centric											
Customer Satisfaction											
Standard			Topics of data disclosure	Performance					Page No. or URL	Note(s)/ Omission(s)	
SDGs	ISO	GRI		Unit	2017	2018	2019	2020			2021
		GRI 102-43	Number of incident or complaint resulting from customer service mistakes, with explanation, impact, and solution guidelines								
		GRI 417-2	Customer service complaint management approach								
		GRI 417-3	Total number of customer complaints	Case	10	19	20	18	33	180	
			• Total number of complaints on product quality	Case	3	12	8	9	7	180	
			• Total number of complaints on quantity	Case	2	4	1	4	8	180	
			• Total number of complaints on services	Case	0	0	1	1	1	180	
			• Total number of complaints on packaging	Case	0	0	1	0	5	180	
			• Total number of complaints on product delivery	Case	3	3	4	4	5	180	
			• Total number of complaints on other issues	Case	2	0	5	0	7	180	
			Total number of customer complaints - Domestic	Case	3	7	7	13	7	180	
			• Total number of complaints on product quality	Case	0	4	1	7	0	180	
			• Total number of complaints on quantity	Case	0	0	0	1	0	180	
			• Total number of complaints on services	Case	0	0	1	1	1	180	
			• Total number of complaints on packaging	Case	0	0	1	0	2	180	
			• Total number of complaints on product delivery	Case	3	3	4	4	4	180	
			• Total number of complaints on other issues	Case	0	0	0	0	0	180	
			Total number of customer complaints - International	Case	7	12	13	5	26	180	
			• Total number of complaints on product quality	Case	3	8	7	2	7	180	
			• Total number of complaints on quantity	Case	2	4	1	3	8	180	
			• Total number of complaints on services	Case	0	0	0	0	0	180	
			• Total number of complaints on packaging	Case	0	0	0	0	3	180	
			• Total number of complaints on product delivery	Case	0	0	0	0	1	180	
		• Total number of complaints on other issues	Case	2	0	5	0	7	180		

Customer Centric											
Customer Satisfaction											
Standard			Topics of data disclosure	Performance					Page No. or URL	Note(s)/ Omission(s)	
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021		
Goal 8	ISO 26000 (6.7.6)	GRI 102-43	Total number of resolved customer complaints	Case	10	19	20	18	33	180	
			Total number of resolved customer complaints	Case	10	18	20	17	25	180	
			Total number of resolved customer complaints	Case	0	1	0	1	8	180	
			• Total number of resolved complaints on product quality	Case	3	12	8	9	7	180	
			- On-time	Case	3	12	8	8	3	180	
			- Late	Case	0	0	0	1	4	180	
			• Total number of resolved complaints on quantity	Case	2	4	1	4	8	180	
			- On-time	Case	2	4	1	4	6	180	
			- Late	Case	0	0	0	0	2	180	
			• Total number of resolved complaints on services	Case	0	0	1	1	0	180	
			- On-time	Case	0	0	1	1	1	180	
			- Late	Case	0	0	0	0	0	180	
			• Total number of resolved complaints on packaging	Case	0	0	1	0	3	180	
			- On-time	Case	0	0	1	0	4	180	
			- Late	Case	0	0	0	0	1	180	
			• Total number of resolved complaints on product delivery	Case	3	3	4	4	1	180	
			- On-time	Case	3	2	4	4	5	180	
			- Late	Case	0	1	0	0	0	180	
			• Total number of resolved complaints on other issues	Case	2	0	5	0	7	180	
			- On-time	Case	2	0	5	0	6	180	
			- Late	Case	0	0	0	0	1	180	

Customer Centric											
Customer Satisfaction											
Standard			Topics of data disclosure	Performance						Page No. or URL	Note(s)/ Omission(s)
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021		
Goal 8	ISO 26000 (6.7.6)	GRI 102-43	Total number of resolved customer complaints - Domestic	Case							
			• Total number of resolved complaints on product quality	Case	0	4	1	7	0	180	
			- On-time	Case	0	4	1	6	0	180	
			- Late	Case	0	0	0	1	0	180	
			• Total number of resolved complaints on quantity	Case	0	0	0	1	0	180	
			- On-time	Case	0	0	0	1	0	180	
			- Late	Case	0	0	0	0	0	180	
			• Total number of resolved complaints on services	Case	0	0	1	1	0	180	
			- On-time	Case	0	0	1	1	1	180	
			- Late	Case	0	0	0	0	0	180	
			• Total number of resolved complaints on packaging	Case	0	0	1	0	0	180	
			- On-time	Case	0	0	1	0	1	180	
			- Late	Case	0	0	0	0	1	180	
			• Total number of resolved complaints on product delivery	Case	3	3	4	4	0	180	
			- On-time	Case	3	2	4	4	4	180	
			- Late	Case	0	1	0	0	0	180	
			• Total number of resolved complaints on other issues	Case	0	0	0	0	0	180	
			- On-time	Case	0	0	0	0	0	180	
			- Late	Case	0	0	0	0	0	180	

Customer Centric											
Customer Satisfaction											
Standard			Topics of data disclosure	Performance						Page No. or URL	Note(s)/ Omission(s)
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021		
Goal 8	ISO 26000 (6.7.6)	GRI 102-43	Total number of resolved customer complaints - International	Case							
			• Total number of resolved complaints on product quality	Case	3	8	7	2	7	180	
			- On-time	Case	3	8	7	2	3	180	
			- Late	Case	0	0	0	0	4	180	
			• Total number of resolved complaints on quantity	Case	2	4	1	3	8	180	
			- On-time	Case	2	4	1	3	6	180	
			- Late	Case	0	0	0	0	2	180	
			• Total number of resolved complaints on services	Case	0	0	0	0	0	180	
			- On-time	Case	0	0	0	0	0	180	
			- Late	Case	0	0	0	0	0	180	
			• Total number of resolved complaints on packaging	Case	-	-	-	-	3	180	
			- On-time	Case	-	-	-	-	3	180	
			- Late	Case	-	-	-	-	0	180	
			• Total number of resolved complaints on product delivery	Case	0	0	0	0	1	180	
			- On-time	Case	0	0	0	0	1	180	
			- Late	Case	0	0	0	0	0	180	
			• Total number of resolved complaints on other issues	Case	2	0	5	0	7	180	
			- On-time	Case	2	0	5	0	6	180	
			- Late	Case	0	0	0	0	1	180	

Customer Centric											
Responsible Marketing Communications											
Standard			Topics of data disclosure	Performance						Page No. or URL	Note(s)/ Omission(s)
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021		
Goal 3	ISO 26000 (6.7.4)	GRI 417-1	Policy and guidelines on information disclosure pertaining to impacts	Yes/No	●	●	●	●	●	173	
		GRI 417-2	from products/services that customers should be informed Product recalls, from production process errors	Number of times	0	0	0	1	0	173	
Goal 16	ISO 26000 (6.7.7)	GRI 418-1	Policy and guidelines on protection of customer privacy	Yes/No	●	●	●	●	●	181	
			Principle, standard or guidelines on protection of customer privacy adopted by the Group	Yes/No	●	●	●	●	●	181	
			Report on personal data violation	Number of times	0	0	0	0	0	181	
Human Rights											
Goal 8	ISO 26000 (6.3.3)	GRI 412-1	Policy and guidelines on labor human rights	Yes/No	●	●	●	●	●	194-197	
			Principle, standard or guidelines on employee treatments	Yes/No	●	●	●	●	●	194-197	
			Follow-up on implementation of policy and guidelines on human rights	Yes/No	●	●	●	●	●	194-197	
		GRI 412-3	Total number of human rights complaint - employees	Number of complaint case	0	0	0	0	0	194-197	
		GRI 412-3	Total number of human rights complaint - partners with contracts	Number of complaint case	0	0	0	0	0	194-197	

Community Development											
Community Development											
Standard			Topics of data disclosure	Performance						Page No. or URL	Note(s)/ Omission(s)
SDGs	ISO	GRI		Unit	2017	2018	2019	2020	2021		
Goal 8 Goal 10	ISO 26000 (6.8.2)	GRI 413-1	Community development: Policy and practices	Yes/No	●	●	●	●	●	132-141	
			Community development: Initiatives	Yes/No	●	●	●	●	●	132-141	
			The Group plans long-term initiatives in 3 categories:								
			- Co-Creation Innovation (Innovation leads to the future)	Yes/No	●	●	●	●	●	132-141	
			- Save the World (Low Environmental Impact)	Yes/No	●	●	●	●	●	132-141	
			- Safety for All (Safety First)	Yes/No	●	●	●	●	●	132-141	
			Investment in local community development programs								
			1) Budget Allocations for CSR Activities/Projects	M.THB	21.40	23.97	15.36	11.53	25.94	133-135	
			- Cash contribution for CSR projects	M.THB	NA	13.26	7.72	2.86	0.67	133-135	
			- Management Overheads	M.THB	NA	4.90	0.93	0.66	0.01	133-135	
			- In-kind giving: product or service donation	M.THB	NA	0.90	0.81	4.98	24.88	133-135	
			- Employee cost during paid hours for volunteering	M.THB	NA	3.88	2.44	3.02	0.38	133-135	
			2) Community Service Volunteer Hours								
			- Number of Participating Employees	Person	723	689	671	528	348	133-135	
			- Hour of CSR Activity from Employees	Hour	23,584	23,978	15,358	13,077	2,716	133-135	
			- Rate of Time Spent on CSR Activity/Year	Hour/Person/Year	33	35	23	25	8	133-135	
			- Number of Total Employees (Only Thailand)	Person	777	725	714	658	551	133-135	
			- Employee Volunteering Engagement	% Employee Engagement	93%	95%	94%	80%	63%	133-135	
			Community development: Targets								
			- Maintain overall community satisfaction rate	% Satisfaction Rate	NA	> 85%	> 85%	> 85%	> 85%	135	
			- Employee engagement rate for CSR activities	% Employee Engagement	90%	95%	95%	85%*	85%*	135	
			- Zero community complaint about environmental impact or human rights on the community	Number of incident or complaint	0	0	0	0	0	135	

Community Development											
Community Development											
Standard			Topics of data disclosure	Performance					Page No. or URL	Note(s)/ Omission(s)	
SDGs	ISO	GRI		Unit	2017	2018	2019	2020			2021
Goal 8 Goal 10	ISO 26000 (6.8.2)	GRI 413-1	Outcomes and impacts from investment in local community development programs								
			- Number of CSR projects/activities	Number of activity	NA	NA	98	62	44	137-141	
			- Number of provinces that implement CSR projects	Number of province	NA	NA	19	9	7	137-141	
			- Number of collaborating partners in CSR activities	Number of partner	NA	NA	22	29	2	137-141	
			- Number of stakeholders joining CSR activities	Person	NA	NA	8970	7013	2001	137-141	
			- Total waste collected from our projects	Tons	NA	NA	NA	1.189	134.9	137-141	
			- Total number of trees planted	Trees	49800	62200	103700	109200	109407	137-141	
			- Number of roads repaired in CSR programs	Number of repaired road	10	15	22	8	2	137-141	
			- Number of employees and people in the community receiving emergency life-saving (CPR) training	Number of CPR training	NA	108	956	955	65	137-141	
			- Number of students receiving all types of training from the company	Number of student	419	1404	1050	1495	259	137-141	
			- Total greenhouse gas emissions reduction	% ton CO ₂ reduction	NA	NA	NA	220.59	777	137-141	
		GRI 413-2	Community engagement survey results	%	NA	87.2%	88.9%	89.9%	91.2%	-	
			- Road safety activities	Social	NA	87.8%	92.6%	92.0%	96.0%	-	
			- Knowledge-sharing activities for children and youth		NA	NA	97.2%	93.2%	85.5%	-	
			- Publications / demonstrations on emergency life-saving (CPR)		NA	NA	95.7%	91.4%	92.3%	-	
			- Community career promotion activities	Economy	NA	88.8%	78.5%	87.4%	93.4%	-	
			- Collaborative innovation activities (External Stakeholders)		NA	NA	82.2%	88.0%	87.5%	-	
			- Environmental education activities	Environment	NA	84.3%	87.1%	87.7%	92.5%	-	
			Total number of incidents or complaints on environmental impact or breaches of human rights in the community, with explanation of the management approach of such incidents or complaints	Number of incidents or complaints	0	1	0	0	0	-	

Note :

NA (Not Available) : No data available

Human Capital Development : Value For The Future

Human Capital Development																
Standard			Topics of data disclosure	Performance											Page No. or URL	Note(s)/ Omission(s)
SDGs	ISO	GRI		Unit	2017		2018		2019		2020		2021			
					F	M	F	M	F	M	F	M	F	M		
Labor Practices																
Employment																
Goal 5	ISO 26000 (6.3.7,6.3.10 6.4.3,6.4.4)	GRI 405-1	Total number of full-time and part-time employees (by gender, age group and position)	Person			314	1159	326	1149	328	1106	318	1054	-	Note (1)
Goal 10			Total number of permanent employees	Person			295	1038	302	1006	301	963	301	940	-	Note (2)
			Total number of employees by region													
			• Full-time employees in Thailand - Bangkok	Person			103	109	107	112	109	108	105	110	-	Note (2)
			• Full-time employees in Thailand - provincial areas	Person			86	398	87	364	87	336	84	298	-	Note (2)
			• Full-time employees in foreign locations	Person			106	531	108	530	105	519	112	532	-	Note (2)
			Total number of employees by level and age				189	507	194	476	196	444	189	408	-	Note (3)
			Director Level up (Level B1 - E2)	%			2%	3%	2%	3%	2%	3%	2%	3%	-	Note (3)
			• >50 years	%			100%	71%	100%	77%	100%	85%	100%	85%	-	Note (3)
			• 30 - 50 years	%			0%	29%	0%	23%	0%	15%	0%	15%	-	Note (3)
			• < 30 years	%			0%	0%	0%	0%	0%	0%	0%	0%	-	Note (3)
			Manager Level (Level M1 - M4)	%			12%	7%	13%	8%	13%	9%	13%	10%	-	Note (3)
			• >50 years	%			45%	34%	42%	31%	44%	31%	42%	33%	-	Note (3)
			• 30 - 50 years	%			55%	66%	58%	67%	56%	69%	58%	67%	-	Note (3)
			• < 30 years	%			0%	0%	0%	3%	0%	0%	0%	0%	-	Note (3)

Employment																	
Standard			Topics of data disclosure	Performance										Page No. or URL	Note(s)/ Omission(s)		
SDGs	ISO	GRI		Unit	2017		2018		2019		2020		2021				
					F	M	F	M	F	M	F	M	F			M	
Goal 5	ISO 26000 (6.3.7,6.3.10 6.4.3,6.4.4)		Employees (Level P1 – P4)	%			78%	28%	77%	32%	79%	34%	78%	35%	-	Note (3)	
			• >50 years	%			10%	17%	11%	17%	14%	17%	14%	20%	-	Note (3)	
			• 30 – 50 years	%			67%	59%	63%	57%	60%	63%	69%	64%	-	Note (3)	
			• < 30 years	%			23%	24%	25%	26%	26%	20%	17%	15%	-	Note (3)	
			Employees (Level O1 – S2)	%			8%	61%	8%	57%	7%	54%	7%	52%	-	Note (3)	
			• >50 years	%			25%	24%	27%	29%	38%	33%	46%	36%	-	Note (3)	
			• 30 – 50 years	%			69%	69%	73%	62%	62%	60%	46%	59%	-	Note (3)	
			• < 30 years	%			6%	7%	0%	9%	0%	7%	5%	8%	-	Note (3)	
		GRI 401-1	Total number of New Employee hires														
			Total number of New Employee hires by region				38	103	31	94	13	54	8	40	-		
			• Number of new, full-time employees in Thailand - Bangkok	Person			10	22	13	20	6	7	3	11	-		
				%			26%	21%	42%	21%	46%	13%	38%	28%	-		
			• Number of new, full-time employees in Thailand - provincial areas	Person			24	66	7	40	1	20	1	4	-		
				%			63%	64%	23%	43%	8%	37%	13%	10%	-		
			• Number of new, full-time employees in foreign locations	Person			4	15	11	34	6	27	4	25	-		
				%			11%	15%	35%	36%	46%	50%	50%	63%	-		
			Total number of New Employee hires by age				38	103	31	94	13	54	8	40	-		
			• >50 years	Person			0	8	0	3	1	3	0	2	-	Note (3)	
				%			0%	9%	0%	5%	14%	11%	0%	13%	-		
			• 30 – 50 years	Person			10	55	9	28	2	20	2	8	-	Note (3)	
				%			29%	63%	45%	47%	29%	74%	50%	53%	-		
			• < 30 years	Person			24	25	11	29	4	4	2	5	-	Note (3)	
				%			71%	28%	55%	48%	57%	15%	50%	33%	-		
			Number of employees with disabilities, or other underprivileged groups	Person	1		0	1	0	1	0	1	0	1	-	Note (4)	
			Employees with disabilities, classified by location														
			• Number of full-time employees with disabilities in Thailand - Bangkok - provincial areas	Person			0	1	0	1	0	1	0	1	-		
				Person			0	0	0	0	0	0	0	0	-		
			• Number of full-time employees with disabilities in foreign locations	Person													

Compensation																
Standard			Topics of data disclosure	Performance										Page No. or URL	Note(s)/ Omission(s)	
SDGs	ISO	GRI		Unit	2017		2018		2019		2020		2021			
					F	M	F	M	F	M	F	M	F			M
Compensation																
Goal 5	ISO 26000 (6.3.7,6.3.10, 6.4.3,6.4.4)	GRI 405-2	Ratio of basic salary and remuneration of women to men	Female : Male	NA		0.95 : 1		1.19 : 1		1.17 : 1		1.12 : 1		-	Note (5)
			• Director Level up (Level B1 – E2)	Female : Male	NA		NA		NA		NA		NA		-	Note (5)
			• Manager Level (Level M1 – M4)	Female : Male	NA		0.80 : 1		0.89 : 1		0.88 : 1		0.83 : 1		-	Note (5)
			• Employees (Level O1 – P4)	Female : Male	NA		0.92 : 1		0.98 : 1		0.96 : 1		0.97 : 1		-	Note (5)
			• Employees (Level O1 – S2)	Female : Male	NA		1.12 : 1		1.04 : 1		1.04 : 1		1.03 : 1		-	Note (5)
Engagement																
Goal 8	ISO 26000 (6.4.3,6.4.4)	GRI 402-1	Employee engagement: Initiatives	Yes/No	●		●		●		●		●		210-214	
			Employee engagement: Targets	%	●		75%		●		●		●		210-214	
			Employee engagement Survey results	%	NA		68%		NA		NA		NA		210-214	Note (6)
		GRI 401-1	Employee turnover rate													
			• Employee turnover rate	Person	NA		65		61		32		45		-	Note (7)
				%	NA		9.23%		9.37%		5.37%		8.38%		205	Note (9)
			• Employee turnover rate by gender	Person	NA	NA	21	44	12	48	3	29	6	39	-	Note (7)
				%	NA	NA	32%	68%	20%	79%	9%	91%	13%	87%	-	Note (7)
			Employee turnover rate By Region	Person	NA	NA	31	88	31	97	10	61	15	73	-	Note (8)
			• Resignation of full-time employees in Thailand - Bangkok	Person	NA	NA	11	18	7	10	2	6	3	6	-	
				%	NA	NA	35%	20%	23%	10%	20%	10%	20%	8%	-	
			• Resignation of full-time employees in Thailand - provincial areas	Person	NA	NA	8	28	5	38	1	23	3	33	-	
				%	NA	NA	26%	32%	16%	39%	10%	38%	20%	45%	-	
			• Resignation of full-time employees in foreign locations	Person	NA	NA	12	42	19	49	7	32	9	34	-	
				%	NA	NA	39%	48%	61%	51%	70%	52%	60%	47%	-	
			Employee turnover rate By Age	Person	NA	NA	19	46	12	48	3	29	6	39	-	Note (7)
			• >50 years	Person	NA	NA	1	1	1	4	1	1	0	3	-	Note (7)
				%	NA	NA	5%	2%	8%	8%	33%	3%	0%	8%	-	Note (7)
			• 30 – 50 years	Person	NA	NA	11	34	5	14	2	24	2	28	-	Note (7)
				%	NA	NA	58%	74%	42%	29%	67%	83%	33%	72%	-	Note (7)
			• < 30 years	Person	NA	NA	7	11	6	30	0	4	4	8	-	Note (7)
				%	NA	NA	37%	24%	50%	63%	0%	14%	67%	21%	-	Note (7)

Engagement																
Standard			Topics of data disclosure	Performance										Page No. or URL	Note(s)/ Omission(s)	
SDGs	ISO	GRI		Unit	2017		2018		2019		2020		2021			
					F	M	F	M	F	M	F	M	F			M
		GRI 401-3	Employees that returned to work after parental leave rate	%	100%		100%		100%		100%		100%		205	Note (3)
			Total number of employees with rights for maternity/parental leave	%	NA		100%	100%	100%	100%	100%	100%	100%	100%	205	Note (3)
			Number of employees taking parental leave	Person	8		3	15	5	15	1	9	4	8	-	Note (3)
			Total number of employees that resumed work after parental leave	Person	8		3	15	5	15	1	9	4	8	-	Note (3)
		GRI 402-1	Method to encourage employees to form group for negotiation with the company. For instance, establishment of employee welfare committee		●		●	●	●	●	●	●	●	-	Note (3)	
Training and Education																
Goal 4	ISO26000 (6.4.7)	GRI 404-2	Employee training and education: initiatives	Yes/No	●		●		●		●		●		214-215	Note (3)
		GRI 404-3	Total investment in employee training and education	Baht	7.26		5.99		7.6		4.4		1.06		-	Note (3)
			Employee training and education: Targets	Hour	●		●		●		●		●		214-215	Note (3)
			Benefits from employee training and education for employees and/or organization	Yes/No	●		●		●		●		●		214-215	Note (3)
		GRI 404-1	Average hours of training per year per employee	Hour/Person/Year	52.12		42.87		50.74		36.12		25.20		214-215	

Note :

NA (Not Available): No data collected

(1) Thailand and all foreign countries

(2) Full-time employees (Thailand and foreign locations)

(3) Full-time employees in Thailand only

(4) For the Group's subsidiaries that cannot hire any handicapped employees, the company then compensates through financial donations/contributions to the promotion and development of disability life-enhancing causes, according to requirements.

(5) Excludes product delivery truck drivers

(6) Next employee engagement survey will be conducted in 2021

(7) Includes all full-time employees with voluntary resignation (Thailand only)

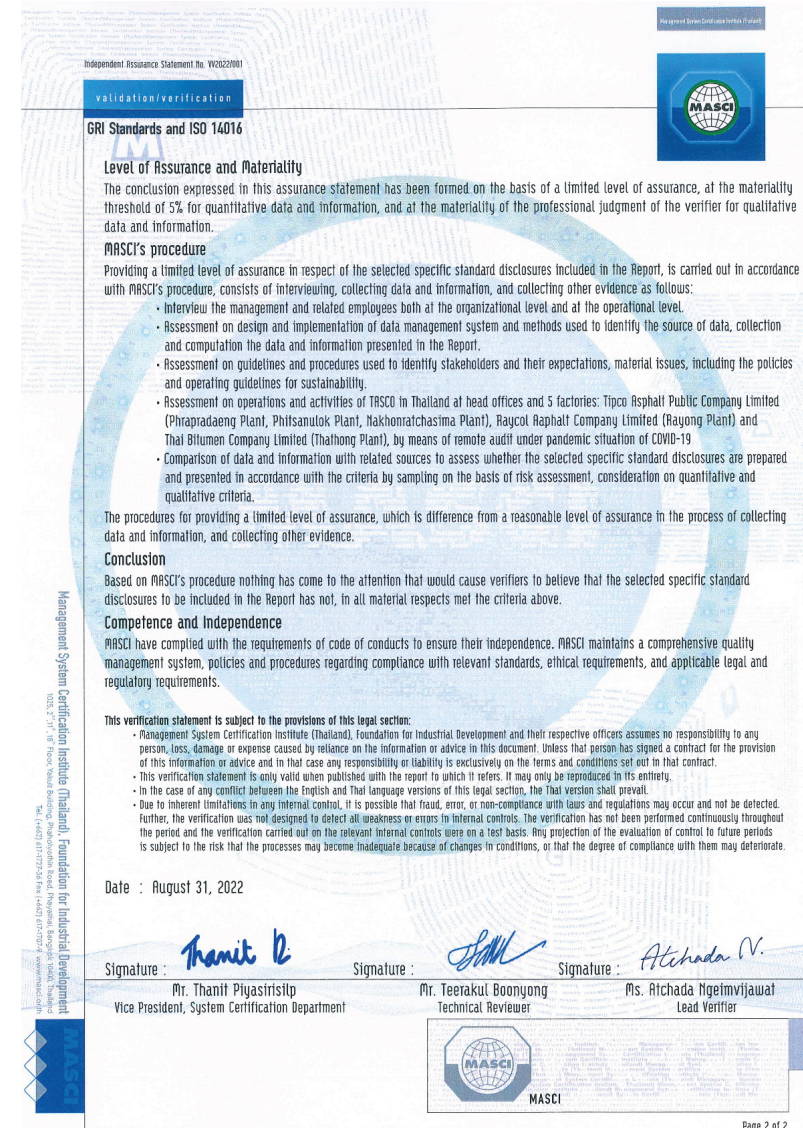
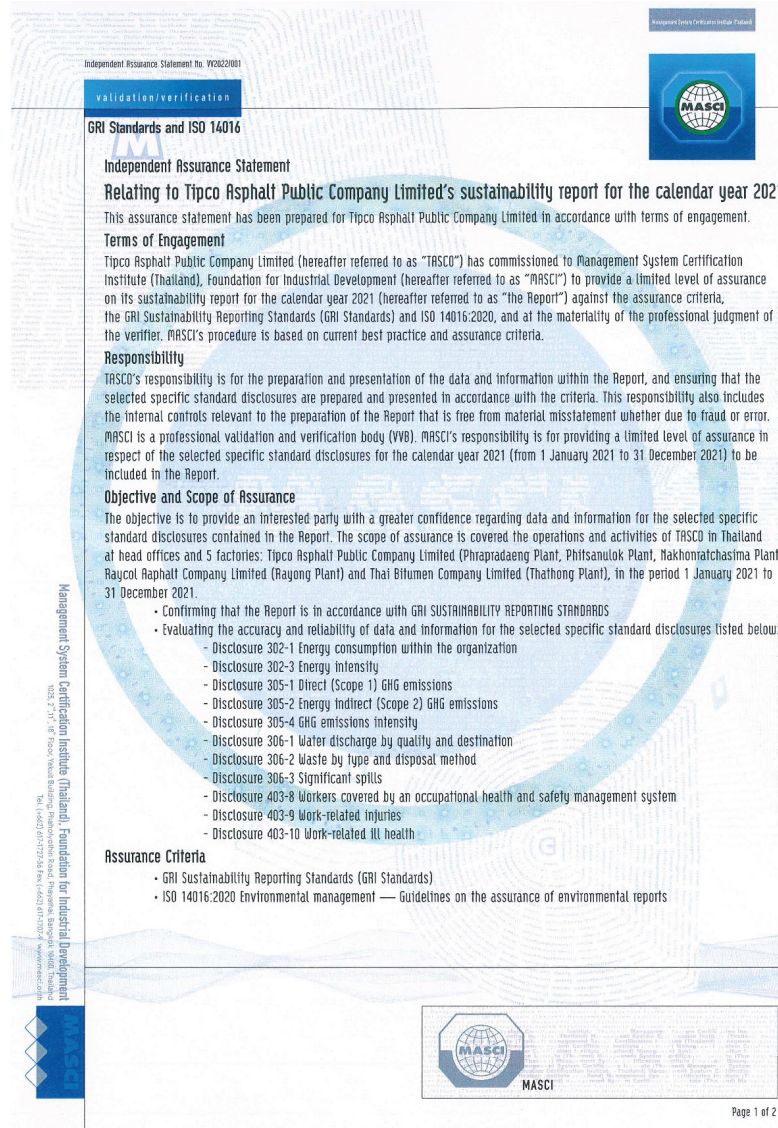
(8) Includes all full-time employees with voluntary resignation (Thailand and foreign locations)

Scope

The scope of this annual Sustainability Report encompasses certain SD information pertaining to entities of the Group as listed below. This year, there are several changes in the contents compared to previous year, mostly due to revision of materiality issues under environment and safety categories. Management System Certification Institute Thailand (MASCI) certified the Group by auditing information in this Report for accuracy and further improvements.

Business group / company	Economics	Environmental				Social		Gover- nance	Human resource develop- ment
		Pollution	Waste	Energy	Green House gas emission	Work Safety	Trans- portation Safety		
Domestic Business Group									
Tipco Asphalt Public Company Limited	●	●	●	●	●	●	●	●	●
Thai Bitumen Company Limited	●	●	●	●	●	●	●	●	●
Raycol Asphalt Co.,Ltd.	●	●	●	●	●	●	●	●	●
Maritime Group									
Tipco Maritime Co.,Ltd.	●		●		●	●		●	●
Tasco Shipping Company Limited	●					●		●	●
Alpha Maritime Co.,Ltd.	●					●		●	●
Delta Shipping Company Limited	●					●		●	●
Bitumen Marine Company Limited	●					●		●	●
Construction Group									
Thanomwongse Service Company Limited	●					●		●	●
Thaislurry Seal Co.,Ltd.	●					●		●	●

Third Party Certification [Disclosure 102-56]





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