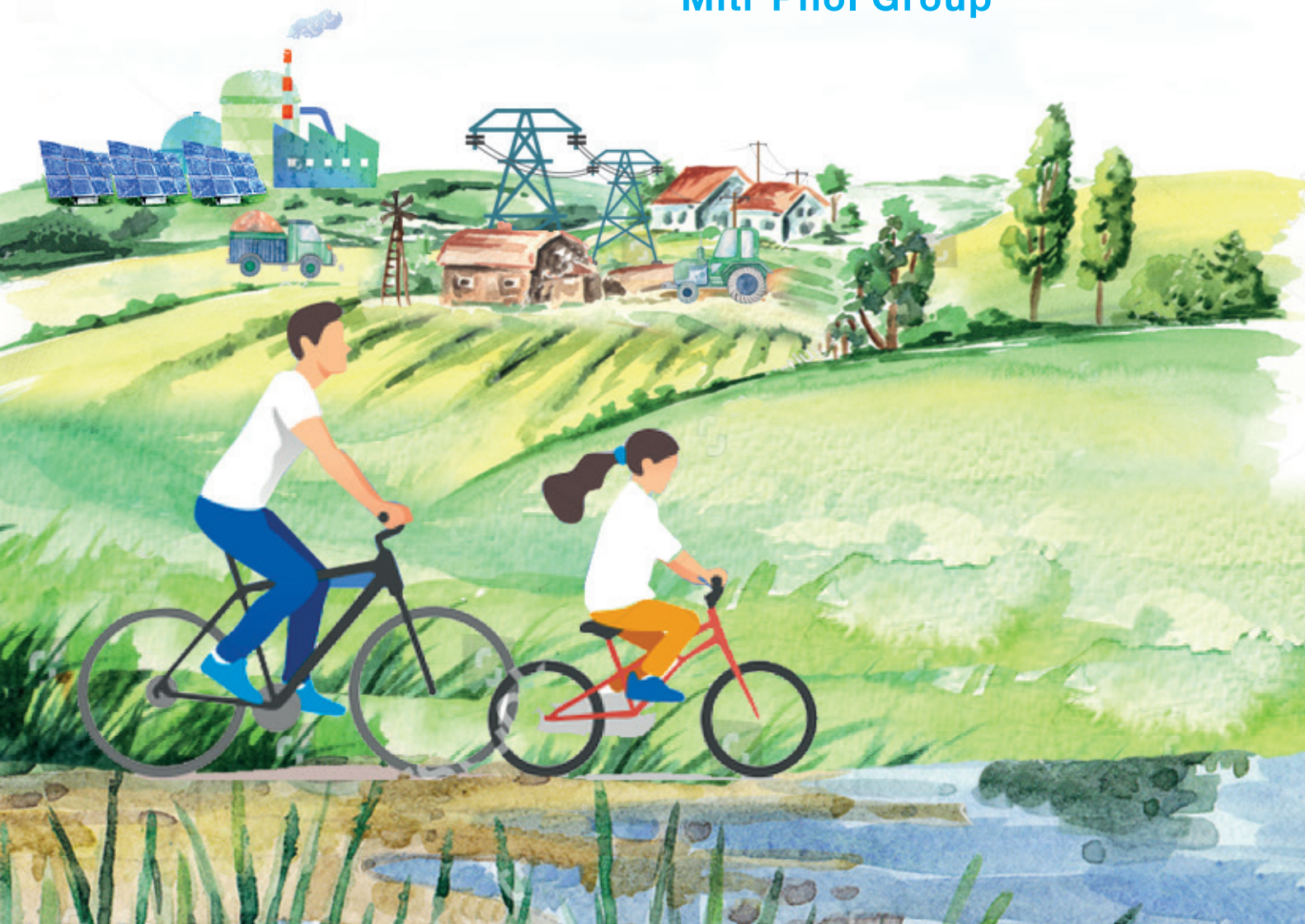
MITR PHOL GROUP

Essence of Sustainable Growth

Sustainability Report 2018
Mitr Phol Group



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Essence of Sustainable Growth

Balance Stability Sustainability

Essence of Sustainable Growth is
to stay together with well-balanced and support each other
to effectively utilize the natural resource
to create circular economy and balance the environment
to create a decent career and revenue to the community and society
to stabilize Thai economy
Mitr Phol aims to grow our business sustainably
alongside with sustainable development

Message from CEO and President (102-14)(102-15)

For more than 60 years, Mitr Phol Group has created sustainable development in communities throughout Thailand, while also uplifting the cane and sugar industries. Today, Mitr Phol Group in not only the largest sugar producer in Thailand, but also the third largest in the world, with global business operations spanning from the People's Republic of China, the Laos People's Democratic Republic, Australia, the United States and Indonesia. The group operates its businesses in compliance with international standards, incorporates advanced technology and innovation in its effort to become a bio-based business, minimizes its impact on the environment, and strives to uplift all stakeholders throughout the value chain.

Mitr Phol Group is committed to practicing sustainable business development while also working to increase the competitive edge of Thailand, a largely agricultural country, and help it grow sustainably. By transitioning to bio-based industries as part of the Thai government's push for new "S-curve" companies, Mitr Phol Group is implementing cutting-edge technology and innovative solutions in order to add economic value to the processing of agricultural crops.

Mitr Phol Group also cares about promoting mutual growth throughout the supply chain, which is why we place such importance on end-to-end development. In the upstream cane plantation business, the Mitr Phol ModernFarm – a combination of farming knowledge and advanced information technology – is applied to promote productivity and make cane farming more sustainable. As a result, Mitr Phol Group won the Thailand Management Association's ICT Excellence Award for Sustainable Business Projects in 2018. The award was a recognition of the success of applying technology to create economic and social sustainability, and Mitr Phol Group's role in uplifting Thailand's agricultural information technology management standards.

At the heart of Mitr Phol Group's organizational management and business operations are transparency and anti-corruption practices. The company is a proud member of Thailand's Private Sector Collective Action Coalition against Corruption (CAC). In addition, the company has received recognition and won several awards for business management, including the Outstanding Industry Award for Quality Management from the Thai Ministry of Industry. This award is a clear indicator of Mitr Phol Group's dedication to achieving international operational excellence.

In terms of environmental performance, this year Mitr Phol Group has achieved 489,000 tons of certified carbon credits from the Thailand Greenhouse Gas Management Organization. The company promotes low-carbon policies by selling credits to other organizations within the Thailand Voluntary Emission Reduction Program (T-VER).

In the area of human resources, Mitr Phol Group received the AON Best Employer award for the third consecutive year, reflecting the company's high level of employee engagement. This award showcases Mitr Phol's continued commitment to human values and capability development, so employees are looked after and can continue to evolve and grow with the business. Mitr Phol Group also continues to cater to changing needs of consumers, while maintaining environmentally-friendly production processes and developing eco-friendly packaging solutions.

The group's performance throughout the past year shows our commitment to promoting sustainability in the economic, social and environmental dimensions, alongside good governance and strong stakeholder relations, which underpin our business operations and are our **"Essence of Sustainable Growth"**

Krisda Monthienvichienchai
Chief Executive Officer and President
Mitr Phol Group

About Mitr Phol Group (102-1)

Vision and Philosophy

Culture

Strategic Directions

Mitr Phol: At a Glance

Economic Performance

Mitr Phol Value Chain

Recognitions and Achievements

Product Standard and Quality

Mitr Phol Group's Shareholding Structure

Vision and Philosophy (102-16)

Vision (102-16)

To be the world-class sugar and bio-based leader by combining our fully integrated agribusiness model with innovative technology and talent management to create value for better life for all.

Philosophy (102-16)

Strive for Leadership

At Mitr Phol, we aim to produce and offer high quality products for our consumers with the best of our efforts in every process we do.

Believe in the Value of Human Dignity

At Mitr Phol, we have a firm conviction that human resources are the most valuable assets of the organization. We take pride in encouraging every team member to gain knowledge and skills in what they do. It is our commitment to enhance the performance of Mitr Phol Group by combining the individual talents of our human resources.

Stand Tall in Fairness

At Mitr Phol, we conduct our business with utmost integrity and are fair in dealing with our stakeholders, especially our employees, farmers, buyers, suppliers and consumers.

Responsible for Society

At Mitr Phol, we are committed to operate our business under the respected principle of "Grow Together" that emphasizes on social and environmental development no less than business development.

Culture (102-16)

EXCELLENCE

Commitment to achieving operational excellence, with professionalism, expertise and efficiency, to deliver the utmost benefits for the organization and stakeholders (shareholders, customers, employees, communities, farmers, government sector)

INNOVATION

Be bold and take initiative to create new ideas, apply innovation, and improve the work process and current way of working to lead to a positive and constant development, value creation, and sustainable growth of the organization.

INTEGRITY

Behave in an ethical, honest, and transparent manner. Strictly adhere to ethical and moral conducts, as well as Mitr Phol's regulations and the laws.

CARE & ACCOUNTABILITY

Be conscious of, caring for, and responsible to farmers, communities, society, the environment, suppliers, as well as Mitr Phol employees under the "Grow Together" philosophy, supporting and caring for one another.

TRUSTWORTHINESS

Be sincere. Honor promises and commitment. Respond to the needs of your team, the organization, and its stakeholders in order to establish trust and confidence.

Strategic Directions (102-15)

GROWTH

Drive new growth area in bio-based and food ingredient products by using technology and innovation to develop higher value products using sugar and byproducts.

SUSTAINABILITY

Establish the company as a recognized leader in sustainability through increased engagement with key stakeholders to align more closely in risk management, support of community goals, and shared best practices on natural resources.

COMPETITIVENESS

Increase competitiveness through innovation and continuous focus on efficiency and costs while leveraging the company's global network to access technology, streamline logistic, and provide better service to customers.

HIGH PERFORMANCE ORGANIZATION

Develop organizational values of excellence and promote standards of professionalism by maintaining a corporate culture that enables innovation and promotes knowledge exchange to achieve functional excellence and high performance across all operations.

MODERN FARMING AND FARMING PRACTICES

Use the ModernFarm model to be the leader in Asia in technology best practices in farming, advanced water management systems, cane variety development, and farm logistic in order to raise grower yields and increase grower returns.

WORLD CLASS MANUFACTURING

Maintain world class manufacturing standards that produce the highest quality products while continuously improving safety standards and increasing automation in all production and logistics operations.

Mitr Phol: At a Glance (102-2) (102-4) (102-10)

Milestone

For more than 60 years, Mitr Phol Group has operated the cane and sugar business alongside communities across Thailand, with an unwavering commitment to the philosophy of "From Waste to Value". We recognize the importance of the optimal utilization of resources and turning waste into wonders. Apart from cane and sugar, we have expanded into other industries including biopower, ethanol, wood substitutes, fertilizers, and bio business, which are part of the engines of growth that will drive the new "S-curve" of the Thai economy.

By integrating advanced technology and research into every step of the development process, coupled with sustainable resources management, effective end-to-end business management, and stakeholder management, our business has continued to grow sustainably both in Thailand and abroad. Today, Mitr Phol Group is Thailand's largest and the world's third largest sugar producer.

1946

Mitr Phol Sugar Business was initially established in Grub Yai sub district, Bann Pong district, Ratchaburi province as a small family business producing and trading condensed syrup to sugar mills.

1956

Mitr Phol Sugar Corporation was formally set up with in-house capacity to produce its own sugar.

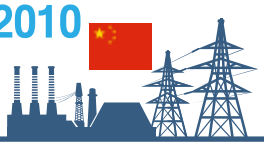
1983

Mitr Phu Khiao Sugar Mill was established in Phu Khiao District, Chaiyaphum Province.

2011

- The first bio power plant was established in the Lao People's Democratic Republic, recognized as Laos's first bio power plant from sugarcane bagasse.
- Mitr Phol Bio Power Plant was established in Kuchinarai District, Kalasin Province.

2010



The first bio power plant was established in Funan, People's Republic of China, recognized as China's first bio power plant from sugarcane bagasse.

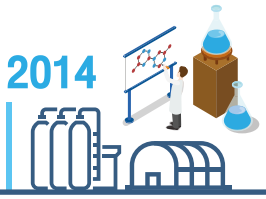
2009

Mitr Phol Bio Fuel Plant was established in Dan Chang District, Suphan Buri Province.

2012

- Mitr Phu Luang Sugar Mill was established in Wang Sapung District, Loei Province.
- Mitr Phol Bio Power Plant was established in Wang Sapung District, Loei Province.
- Mitr Phol expanded sugar business to Queensland State, Australia
- Establishment of Mitr Phol Development Co.,Ltd., to provide training and development for Mitr Phol Group employees .

2014



- Established 2nd Innovation and Research Center, Thailand Science Park, Pathumthani Province.
- Automatic Refinery Plant was established in Nong Ruea District, Khon Kaen Province.

1990

- Mitr Dan Chang Sugar Mill was established in Dan Chang District, Suphan Buri Province.
- Particle Board business was initially established.

1993

Expansion of sugar business to Guangxi county, People's Republic of China.

1995

Mitr Phu Wiang Sugar Mill was established in Nong Ruea District, Khon Kaen Province.

1997

- Mitr Kalasin Sugar Mill was established in Kuchinarai District, Kalasin Province.
- Sing Buri Sugar Mill was established in Bangrachan District, Sing Buri Province.
- Mitr Phol Sugarcane Research Center was established in Phu Khiao District, Chaiyaphum Province.

2002

The first two bio power plants, Mitr Phol Bio Power, were established in Dan Chang District, Suphan Buri Province and Phu Khiao District, Chaiyaphum Province.

2005

The first ethanol plant, Mitr Phol Bio Fuel, was established in Phu Khiao District, Chaiyaphum Province.

2006

- Mitr Phol Bio Fuel Plant was established in Kuchinarai District, Kalasin Province.
- Mitr Phol Sugar was expanded into Savannakhet Province, Lao People's Democratic Republic.

2007

Mae Sod Clean Energy Ethanol Plant, a joint venture project with Padaeng Industry Public Company Limited and Thai Oil Public Company Limited was set up in Mae Sod District, Tak Province.

2015

- Fertilizer Plant joined with Sak Siam Group was established in China.
- Fodder Yeast Plant was established in Phu Khiao District, Chaiyaphum Province.
- Mitr Phol Bio Fuel Plant was established in Kuchinarai District, Kalasin Provience, produces ethanol for fuel.

2016

- Joint venture with Dynamic Food Ingredients Corporation, United States to produce and develop the natural low calories sweetener product such as Erythritol and Xylitol.
- Establishment of the Mitr Phol Treasury Center Co.,Ltd.
- Establishment of Mitr Phol International Holding Co.,Ltd., to invest in businesses in China
- Establishment of MP USA Holdings LLC to invest in companies in the United States

2018

- Joint venture with Olam International Limited for integrated sugar milling and rening in Berita, Indonesia.
- Establishment joint venture company under MP-DFI Xylitol Co.,Ltd., to produce xylitol sweetener
- Investment in Khonkaen Innovation Center Co.,Ltd., engaging in the real estate rental and management business

Mitr Phol Group currently operates businesses in seven industries, namely: Farming business Sugar business, Renewable Energy business, Wood-substitute materials business, Fertilizer business, Logistics and warehouse business and Other business, Mitr Phol's separated lines of business in 11 lines are as follows:

1 **Farming business:** Mitr Phol Group promotes sustainable cane farming and fair trade. In addition to doing business with local cane farmers, Mitr Phol Group also provides training and development to promote efficient agricultural practices. There are currently two company-owned farms: Rai Dan Chang Co., Ltd. in Suphan Buri province and Rai E-Sarn Co., Ltd. in Chaiyaphum province.

2 **Domestic sugar business:** The domestic sugar business is Mitr Phol Group's core focus. Meticulous care is given to every step of the process, from cane sourcing to sugar production. Today, Mitr Phol Group is Thailand's largest sugar producer, operating six sugar mills throughout the country.

3 **Sugar business and related businesses in China:** Mitr Phol Group expanded the production base to China via a joint venture with a local sugar mill to establish the Guangxi Nanning East Asia Sugar Company Limited. Currently, Mitr Phol Group operates six sugar mills in Guangxi and is China's second largest sugar producer, Mitr Phol Group also operates related businesses in China, namely three biomass power plants.

4 **Sugar business in ASEAN:** In Laos PDR, Mitr Phol Group operates one sugar mill in Savannakhet province.

5 **Sugar business in Australia:** Mitr Phol Group operates in Australia via Queensland-based MSF Sugar Limited. As one of Australia's largest sugar producers, operating four sugar mills.

6 **Sugar business in Indonesia:** Mitr Phol Group has invested in Far East Agri Pte., Ltd., a subsidiary of Olam International Limited, which operates a sugar refinery in Indonesia.

7 **Renewable Energy business:** Mitr Phol Group's renewable energy business serves to make effective use of sugar production byproducts. For example, the company uses bagasse as a raw material to produce biomass, while molasses is utilized to make 99.5% ethanol, which is in turn used as a fuel mixture for gasohol. Currently, Mitr Phol Group operates ten bio-power and five ethanol plants.

8 **Wood-substitute materials business:** Originally, the wood substitute business consisted of making use of bagasse from sugar production. We later began using old rubber trees that no longer produced latex, rather than using bagasse, as the raw material for high quality wood substitutes. The company manufactures wood particle boards, melamine-coated plywood, melamine-coated particle boards, melamine-coated MDF boards, synchronous panels, MDF panels, and high-gloss lacquered panels under the brand PANEL PLUS.

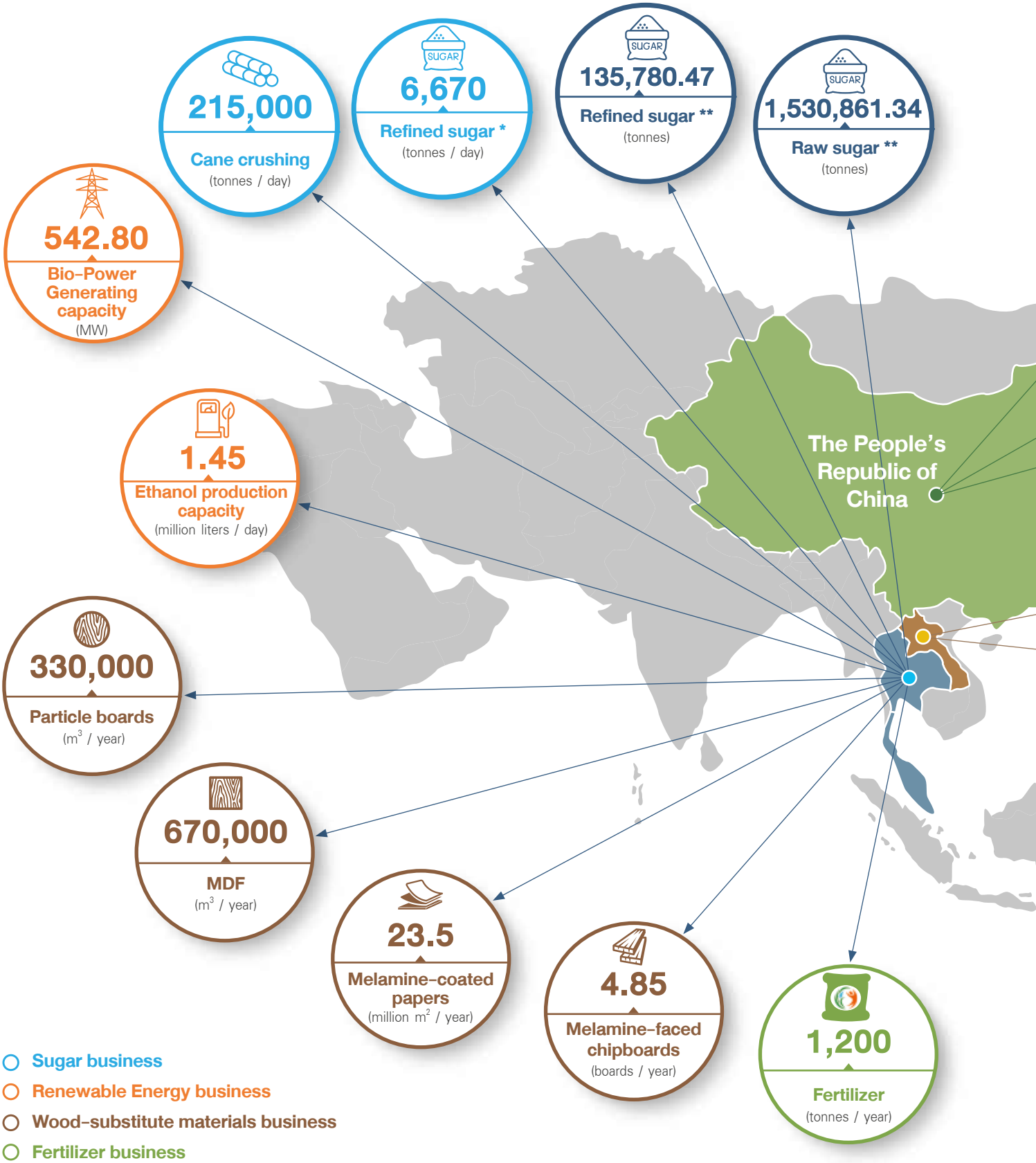
9 **Fertilizer business:** Mitr Phol group adds value to sugar production byproducts including vinasse and filter cake to create bio-fertilizers under the trademark Soil Mate. In 2018, Mitr Phol Group operated two fertilizer factories in Thailand: Organic Fertilizer factory, Phu Khiao branch in Chaiyaphum province and Organic Fertilizer factory, Dan Chang branch in Suphan Buri province.

10 **Logistics and warehouse business:** This business provides logistics support for both Mitr Phol Group and external firms, with services including goods receipt and dispatch, warehouse storage, and port terminal services. Currently, Mitr Phol Group operates three logistics companies: United Standard Terminal Public Co.,Ltd, based in Samut Prakan province, Mitr Phol Warehouse Co.,Ltd, based in Samut Prakan province, and Aawthai Warehouse Co.,Ltd, based in Chonburi province.

11 **Other business:** In addition to these core businesses, Mitr Phol Group also operates other businesses that support the group's operations, namely:

- Mitr Phol Sugarcane Research Center Co., Ltd, responsible for R&D to promote quality cane varieties and value creation for byproducts of sugar production process
- Mitr Phol Treasury Center Co.,Ltd, an integrated financial management center
- MP-DFI Xylitol Co.,Ltd, a joint venture to produce xylitol
- Mitr Phol International Holding Co.,Ltd, a holding company for investments in China.
- Khonkaen Innovation Center Co.,Ltd, engaging in the real estate rental and management business
- Mitr Phol Development Co.,Ltd. providing training and development for Mitr Phol Group employees
- MP USA Holdings LLC, a holding company for investments in the United States

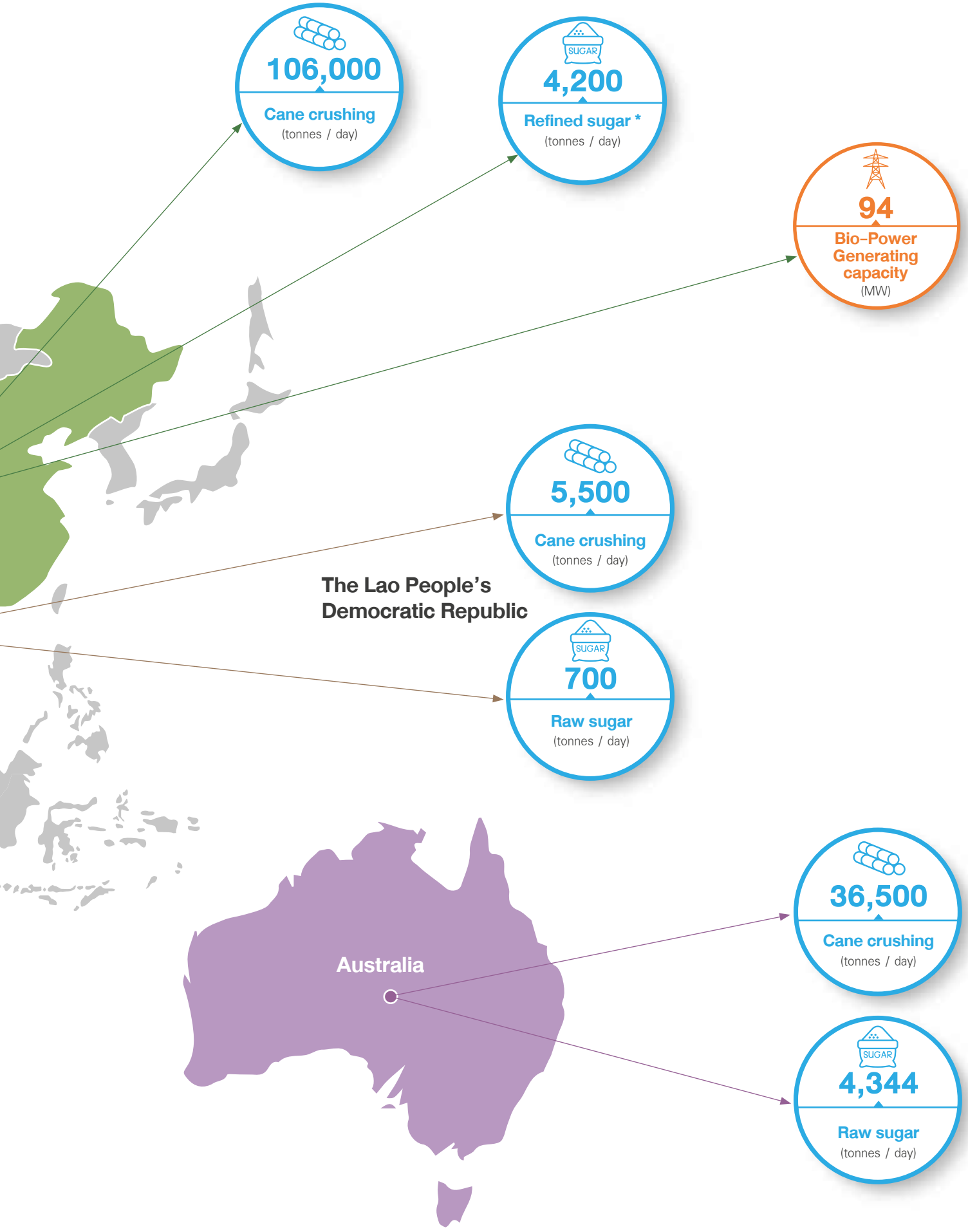
Production Capacity and Volume (102-7)



- Sugar business
- Renewable Energy business
- Wood-substitute materials business
- Fertilizer business
- Production volume sugar business in Thailand

Remarks: * Includes production capacity for white sugar, rened sugar, and special rened sugar.

** Sugar production volume record only sugar business in Thailand.


106,000
Cane crushing
(tonnes / day)
SUGAR
4,200
Refined sugar *
(tonnes / day)
94
Bio-Power Generating capacity
(MW)
5,500
Cane crushing
(tonnes / day)
The Lao People's Democratic Republic
SUGAR
700
Raw sugar
(tonnes / day)
Australia
36,500
Cane crushing
(tonnes / day)
SUGAR
4,344
Raw sugar
(tonnes / day)

Domestic Logistics and Warehouse Services (102-7)

Services	Details	Companies		
		United Standard Terminal	Mitr Phol Warehouse	Aawthai Warehouse
Goods receipt and dispatch services	Goods receipt capacity–bulk cargo (tonnes / hour)	350	-	350-400
	Goods receipt capacity–bags (tonnes / hour)	125	-	150-200
	Goods dispatch capacity–bulk cargo (tonnes / hour)	330	-	1,000
	Goods dispatch capacity–bags (tonnes cranes / 12 hours)	1,000	-	500
	Container capacity (minute / TEUs)	30-40	-	25
Port terminal services	Terminals	1		1
	Port width (meters)	133		350
	Port depth (meters)	8.2		14
	Deadweight tonnage (DWT)	25,000		60,000
Goods storage service	Warehouses	13	5	15
	Warehouse storage capacity (square meters)	45,384	17,769	112,466
	Storage for liquids (tanks)	3	8	2
	Storage capacity for liquids (metric tonnes)	21,618	23,904	24,000
Free space	Free space (m^2)	41,416	17,463	-

Economic Performance

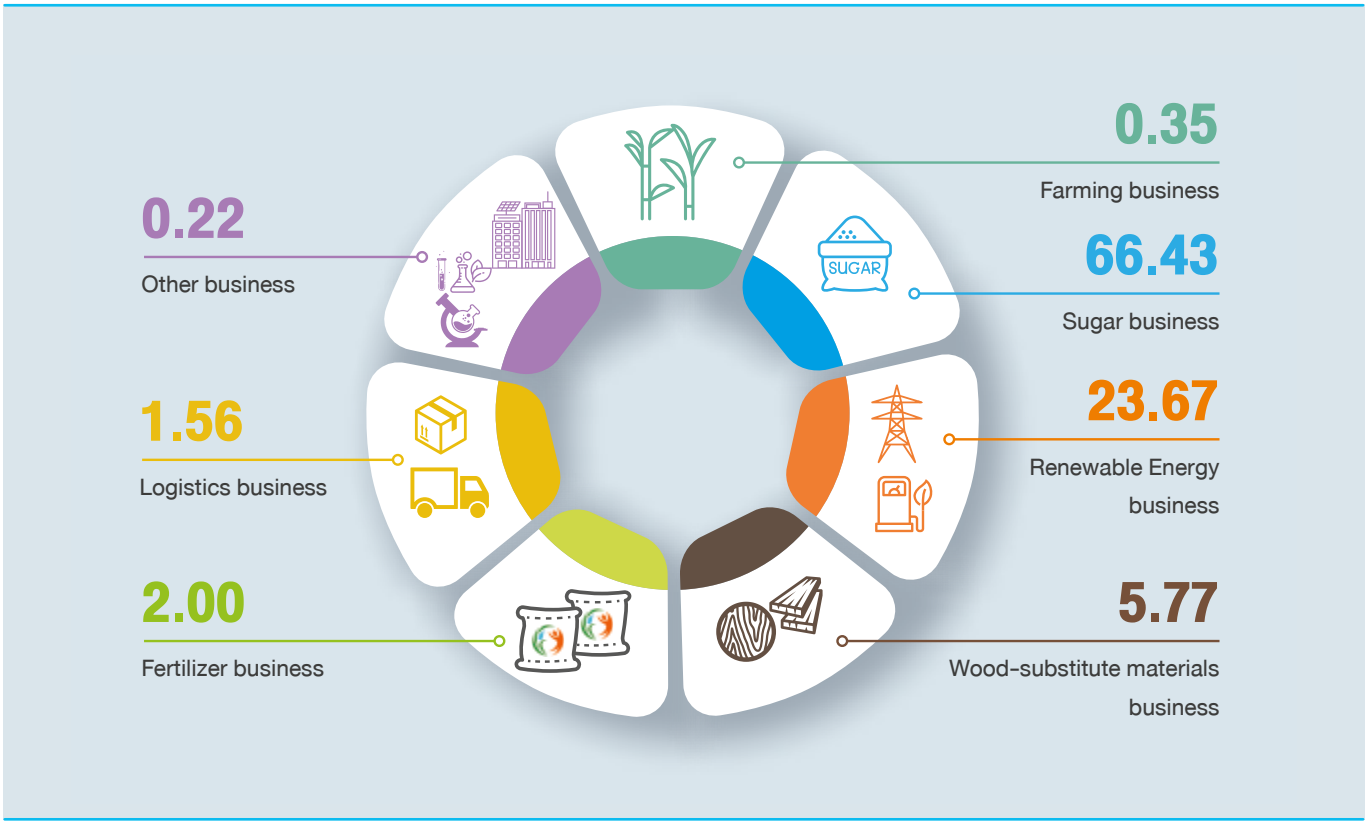
Mitr Phol Group's key business performance figures for 2018 are shown in the below table:

Economic impact (201-1)

Economic impact details	Value (million Baht)
Direct economic value generated	
• Revenues	72,233
Direct economic value distributed	
• Operating costs	56,027
• Employee wages and benefits	5,331
• Payments to providers of capital	9,502
• Payments to government	111
• Community Investment	50
Economic value retained	2,212

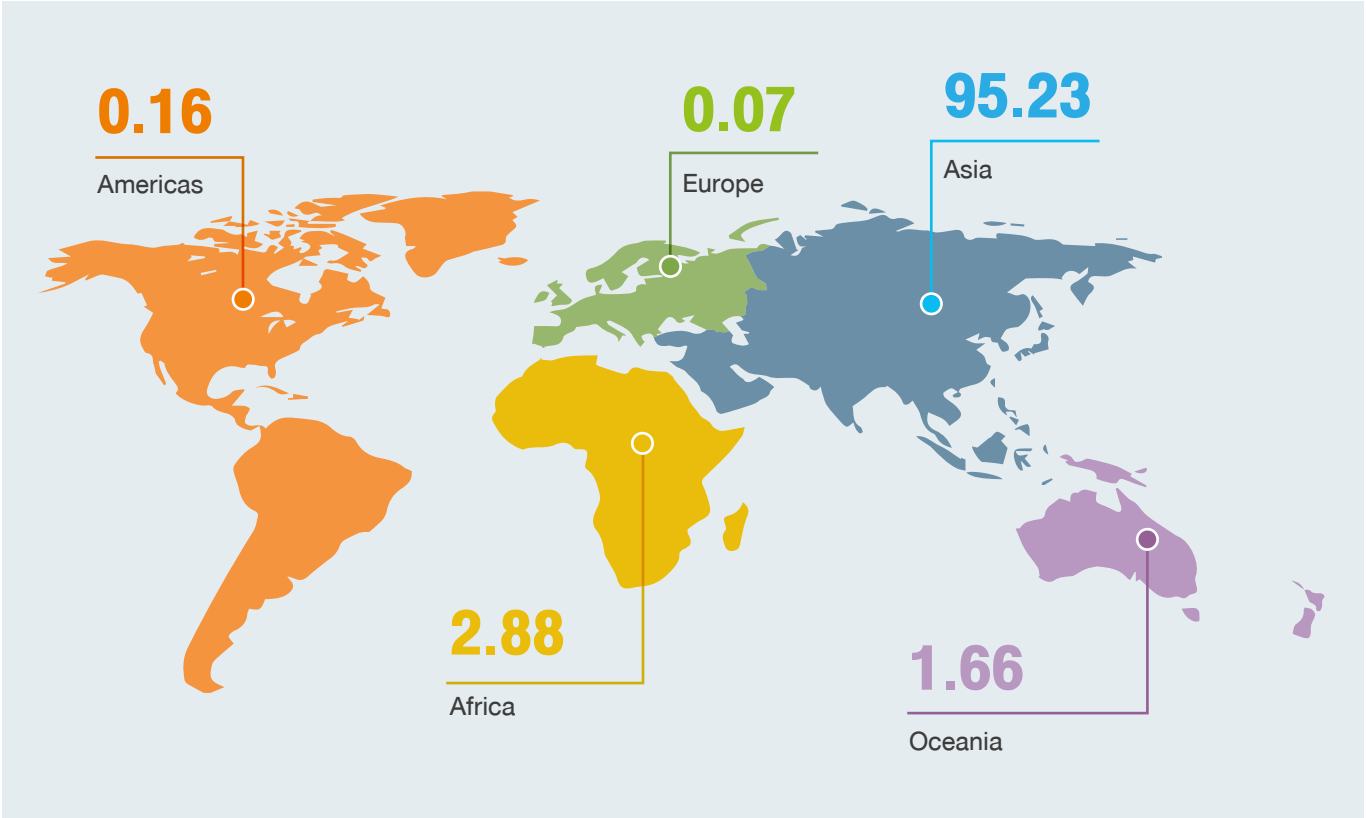
Sales revenue by business unit (102-6)

Revenue (Percentage)



Sales revenue by zone

Revenue (Percentage)



Tax Reporting

Unit: Million Baht

Country *	Revenue from sales and services		Operating profit before tax		Corporate income tax including deferred tax	
	2017**	2018**	2017**	2018**	2017**	2018**
Thai	61,911.11	63,344.08	5,805.80	5,800.13	272.30	379.73
People's Republic of China	29,769.98	25,524.90	4,610.17	554.71	830.17	126.66
Lao People's Democratic Republic	962.02	785.41	(376.03)	(429.07)	-	-
Australia	5,634.20	5,394.33	(1,043.18)	(1,790.02)	-	-
Total	**98,277.30**	**95,048.73**	**8,996.76**	**4,135.75**	**1,102.47**	**506.32**

Remarks: * Country in which Mitr Phol Group There is a production unit in operation.

** Data from year 2017-2018 was collected from January 1 to December 31 each year.

- Revenue from sales and services: The returns that the company receives from the sale of products or services as normal of the business including other rewards that is not caused by normal operations prot and loss statement.
- Operating prot before tax: Operating prot which does not include income tax and nancial costs
- Corporate income tax including deferred tax: Corporate income tax expenses and deferred income tax
- The table above indicates that Revenue of Mitr Phol Group Is the income derived from operations in Thailand, accounting for more than 65% of the company's operations in Thailand Most of them receive tax exemption benets and double deduction from the Board of Investment
- Tax exemption benets under BOI are categorized in three main areas:
  1. Corporate income tax exemption (tax holiday) for a period of 8 years
  2. 50% reduction of corporate income tax for additional 5 years
  3. Double deduction of transportation, electricity and water costs from corporate taxable income for 10 years.
- The scope of this data includes Thailand and other countries with Mitr Phol operations, and therefore is different from the tax reporting within the 2017 nancial statements, which only includes Thailand.

Effective Tax Rate

Financial Reporting	2017*	2018*	Calculated Average
Earning before Tax (EBT) (Million Baht)	6,142.15	952.07	3,547.11
Reported Taxes	568.67	32.65	300.66
Reported Tax Rate (In%)	9.26%	3.43%	6.35%
Cash Taxes Paid (Million Baht)	1,102.47	506.32	804.40
Cash Tax Rate (In%)	17.95%	53.18%	35.57%

Remarks: ** Data from year 2017-2018 was collected from January 1 to December 31 each year.

Income tax rate

- The income tax rate calculated in the notes to the nancial statements No. 40 is lower than the average income tax rate of each country in which the company invests, since some companies are exempt from income tax. International Majority (IHQ). The actual tax rate will different year to year. Due to the actual time period that the tax benets and the actual period of operation are different Businesses that operate in most countries are exempt from taxes such as the sugar business group. Energy Business Group Wood substitution materials, etc.
- Some subsidiaries receive benets as those who receiving investment by the Investment Promotion Act 2520. In various businesses such as energy business Wood substitute business Which is exempted from corporate income tax for the net prot derived from the promoted operations according to the time and conditions specied in each investment promotion card And receive 50% corporate income tax deduction for the net prot derived from the promoted business for a period of 5 years from the expiration of the tax exemption period.
- Some types of expenses that can deduct more than one tax expense, such as training fees, technology research and development (R&D)

Cash Taxes Paid

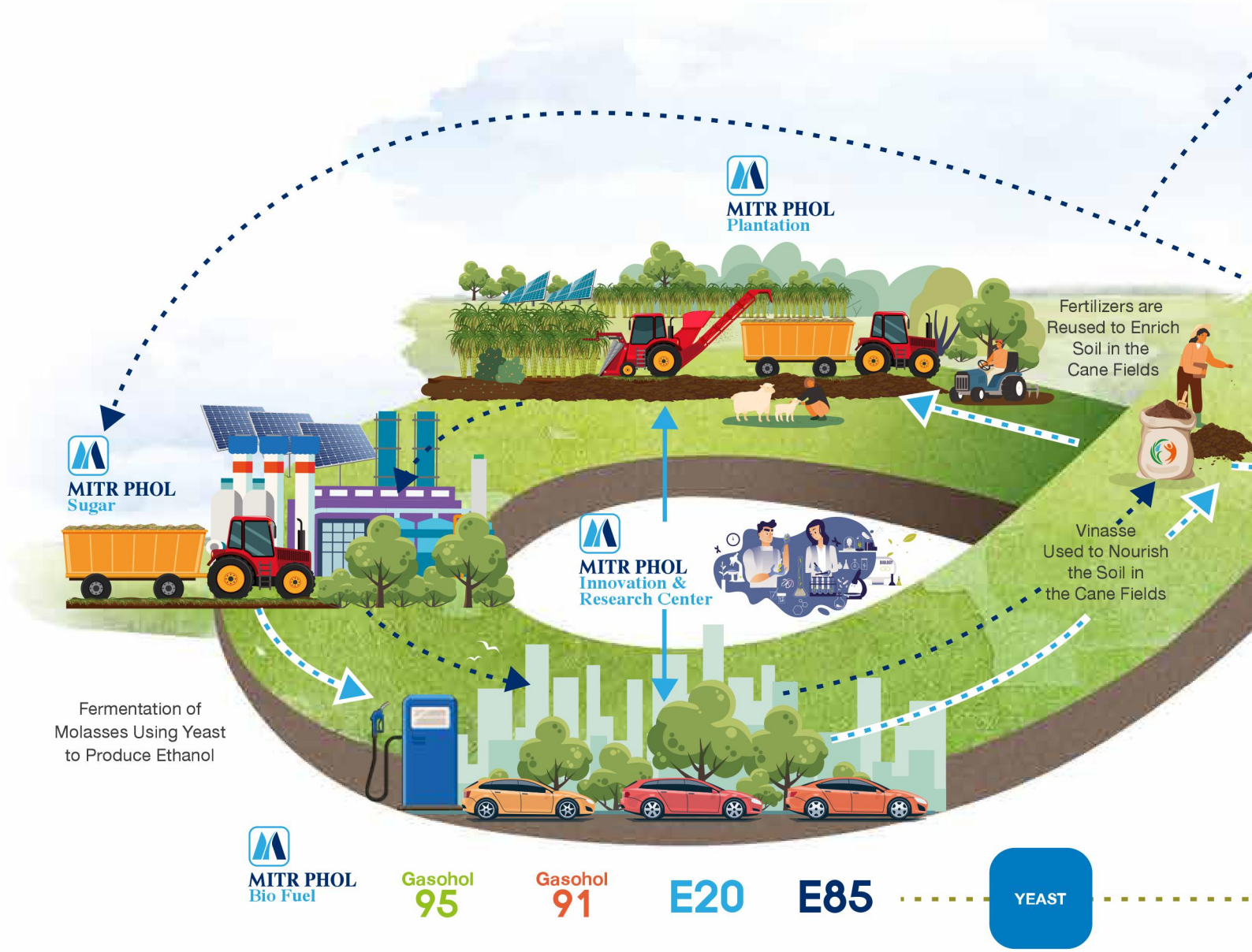
2017

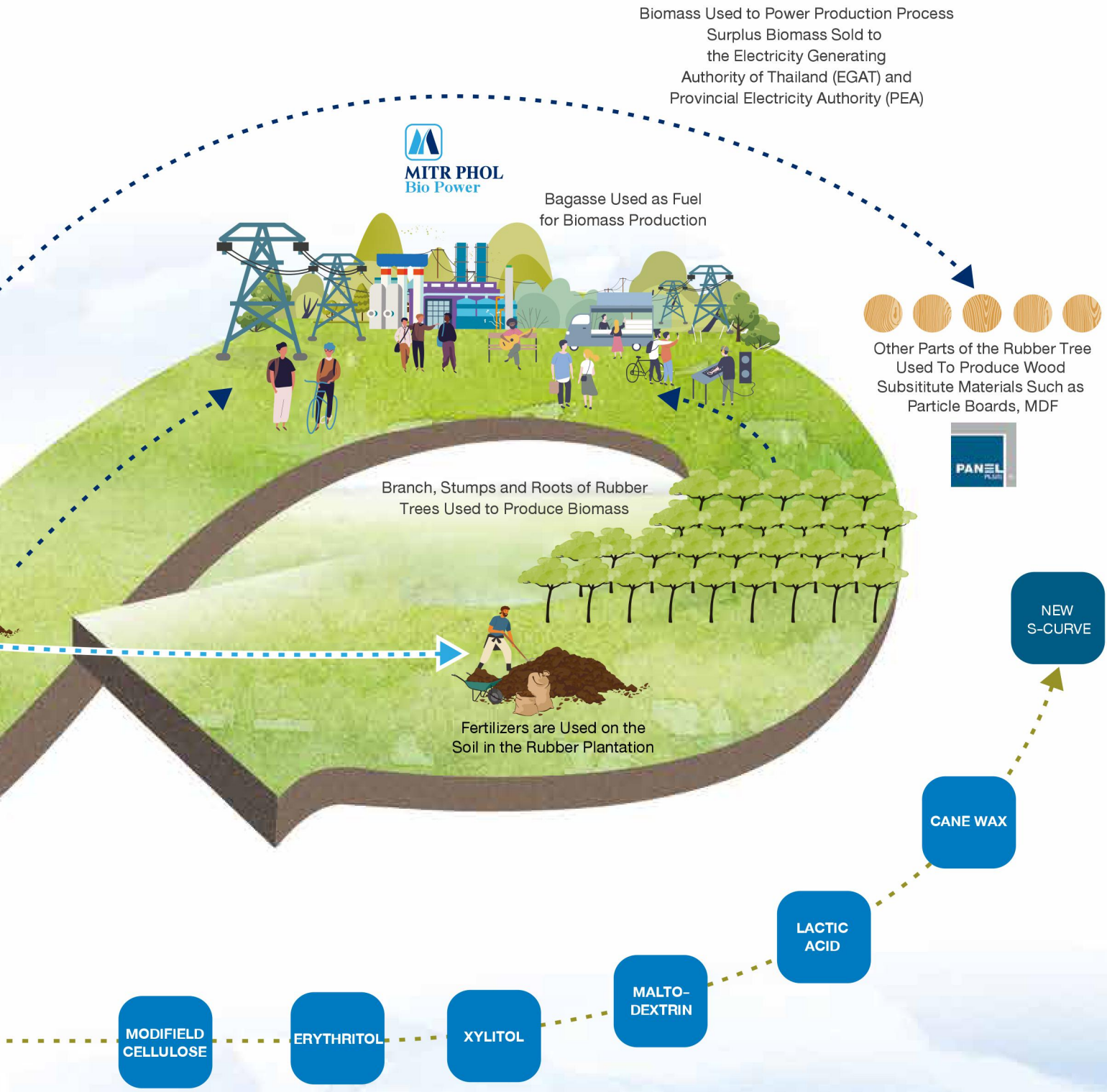
1,102.47 Million Baht

2018

506.32 Million Baht

Mitr Phol Value Chain (102-9)




Biomass Used to Power Production Process
Surplus Biomass Sold to
the Electricity Generating
Authority of Thailand (EGAT) and
Provincial Electricity Authority (PEA)
MITR PHOL
Bio Power
Bagasse Used as Fuel
for Biomass Production
Other Parts of the Rubber Tree
Used To Produce Wood
Subsititute Materials Such as
Particle Boards, MDF
PANEL
Branch, Stumps and Roots of Rubber
Trees Used to Produce Biomass
Fertilizers are Used on the
Soil in the Rubber Plantation
NEW
S-CURVE
CANE WAX
LACTIC
ACID
MALTO-
DEXTRIN
XYLITOL
ERYTHRITOL
MODIFIELD
CELLULOSE

Recognitions and Achievements

Sustainability

2018 Digital Transformer of The Year,
Asia Pacific by the International Data Corporation (IDC)
- Mitr Phol Group

2018 Digital Transformer of The Year,
Country Level by the International Data Corporation (IDC)
- Mitr Phol Group

Thailand ICT Excellence Awards 2018,
Projects for Sustainable Businesses, Recognizing The Success of Mitr Phol ModernFarm,
by the Thailand Management Association
- Mitr Phol Group

CSR-DIW Continuous Award 2018,
by the Department of Industrial Works, Ministry of Industry
- Mitr Phol Sugar Co.,Ltd.
- Singburi Sugar Co.,Ltd.
- United Farmer and Industry Co.,Ltd.
- United Farmer and Industry Co.,Ltd. (Mitr Phu Wiang branch)
- Mitr Phol Bio-Power (Dan Chang) Co.,Ltd.
- Mitr Phol Bio-Power Co.,Ltd.
- Mitr Phol BioFuel Co.,Ltd.
- Mitr Phol BioFuel Co.,Ltd. (Chaiyaphum branch)
- Rachasima Green Energy Co.,Ltd.
- Panel Plus Co.,Ltd.

Certificate of Membership of Thailand's Private Sector Collective Action Coalition Against Corruption (CAC)
in 2018 from the Thai Institute of Directors
- Mitr Phol Sugar Co.,Ltd.

Economic

Her Royal Highness Princess Maha Chakri Sirindhorn Award for Outstanding Overall Business Management,
by the Thailand Management Association and Sasin Graduate Institute of Business Administration at Chulalongkorn University
- Mitr Phol BioFuel Co.,Ltd.

Her Royal Highness Princess Maha Chakri Sirindhorn Award for Outstanding Human Resources Management,
by the Thailand Management Association and Sasin Graduate Institute of Business Administration at Chulalongkorn University
- Mitr Phol Sugar Co.,Ltd.

The 2018 Outstanding Industry Award – Quality Management,
by the Ministry of Industry
- Mitr Kalasin Sugar Co.,Ltd.
- Panel Plus Co.,Ltd.

Sugar Mill Excellence
by Office of the Cane and Sugar Board, Ministry of Industry
- Mitr Phol Sugar Co.,Ltd.
- Singburi Sugar Co.,Ltd.
- United Farmer and Industry Co.,Ltd.
- United Farmer and Industry Co.,Ltd. (Mitr Phu Wiang branch)
- Mitr Kalasin Sugar Co.,Ltd.
- United Farmer and Industry Co.,Ltd. (Mitr Phu Luang branch)

Best Workplace for Labor Relations and Welfare Award granted
by Department of Labor Protection and Welfare, the Ministry of Labor

- Mitr Phol Sugar Co.,Ltd.
- Singburi Sugar Co.,Ltd.
- United Farmer and Industry Co.,Ltd.
- United Farmer and Industry Co.,Ltd. (Mitr Phu Wiang branch)
- Mitr Kalasin Sugar Co.,Ltd.
- Mitr Phol Bio-Power (Dan Chang) Co.,Ltd.
- Mitr Phol Bio-Power Co.,Ltd.
- Mitr Phol BioFuel Co.,Ltd.
- Mitr Phol BioFuel Co.,Ltd. (Chaiyaphum branch)

2018 Best Employer Award granted
by Aon Hewitt (Thailand)

- Mitr Phol Sugar Co.,Ltd.
- Singburi Sugar Co.,Ltd.
- Mitr Kalasin Sugar Co.,Ltd.
- Mitr Phol BioFuel Co.,Ltd. (Chaiyaphum branch)
- Mitr Phol BioFuel (Kuchinarai) Co.,Ltd.
- Panel Plus Co.,Ltd.

The Excellence Company Awards for Safety, Occupational Health and Environment, National Level,
by the Department of Labour Protection and Welfare, the Ministry of Labour

- United Farmer and Industry Co.,Ltd.
- United Farmer and Industry Co.,Ltd. (Mitr Phu Luang branch)
- Mitr Phol BioFuel Co.,Ltd.
- Mitr Phol BioFuel Co.,Ltd. (Chaiyaphum branch)
- Mitr Phol BioFuel (Kuchinarai) Co.,Ltd.
- Panel Plus Co.,Ltd.

Building A Good Society Award
by Ministry of Social Development and Human Security

- Mitr Phol Group

Award Recognizing Outstanding Work in Supporting the disabled in 2018
by National Office for Empowerment of Persons with Disabilities, Ministry of Social Development and Human Security

- Mitr Phol Group

HRH Princess Maha Chakri Sirindhorn Certificate of Excellence for Safety,
by the Department of Labour Protection and Welfare, the Ministry of Labour

- United Farmer and Industry Co.,Ltd. (Mitr Phu Luang branch)
- Mitr Phol BioFuel Co.,Ltd.
- Mitr Phol BioFuel Co.,Ltd. (Chaiyaphum branch)

2018 Zero Accident Campaign Award
by Thailand Institute of Occupational Safety and Health (Public Organization)

- Mitr Phol BioFuel Co.,Ltd.
- Mitr Phol BioFuel (Kuchinarai) Co.,Ltd.

Recognitions and Achievements (Continue)

Environment

Fresh Cane Award 2018
by Office of the cane and sugar board, Ministry of Industry
- United Farmer and Industry Co.,Ltd.

ASEAN Energy Awards 2018
by ASEAN Secretariat
- Mitr Phol BioFuel Co.,Ltd.
- Mitr Phol BioFuel Co.,Ltd. (Chaiyaphum branch)
- Maesod Clean Energy Co.,Ltd.

Thailand Energy Awards 2018
by Department of Alternative Energy Development and Efficiency, Ministry of Energy
- Mitr Phol BioFuel Co.,Ltd. (Chaiyaphum branch)
- Maesod Clean Energy Co.,Ltd.

Environmental Impact Assessment Monitoring Awards by Division of Environmental Impact Assessment Development, Ministry of Natural Resources and Environment
- United Farmer and Industry Co.,Ltd. (Mitr Phu Luang branch)
- Mitr Phol BioFuel Co.,Ltd. (Chaiyaphum branch)
- Mitr Phol Bio-Power (Phu Luang) Co.,Ltd.

Outstanding Award for Reducing Water Pollution at The Source 2018
by Department of Environmental Quality Promotion, Ministry of Natural Resources and Environment
- United Farmer and Industry Co.,Ltd.
- United Farmer and Industry Co.,Ltd. (Mitr Phu Wiang branch)
- Mitr Kalasin Sugar Co.,Ltd.

Green Industry Award from The Green Industry Program
by Department of Industrial Works, Ministry of Industry
- Mitr Phol Sugar Co.,Ltd.
- Singburi Sugar Co.,Ltd.
- United Farmer and Industry Co.,Ltd.
- United Farmer and Industry Co.,Ltd. (Mitr Phu Wiang branch)
- Mitr Kalasin Sugar Co.,Ltd.
- United Farmer and Industry Co.,Ltd. (Mitr Phu Luang branch)
- Mitr Phol Bio-Power (Dan Chang) Co.,Ltd.
- Mitr Phol Bio-Power Co.,Ltd.
- Mitr Phol BioFuel Co.,Ltd.
- Mitr Phol BioFuel Co.,Ltd. (Chaiyaphum branch)
- Maesod Clean Energy Co.,Ltd.
- Rachasima Green Energy Co.,Ltd.
- Panel Plus Co.,Ltd.

2018 Environmental Governance Certificate
by Department of Industrial Works, Ministry of Industry
- Mitr Phol Sugar Co.,Ltd.
- Singburi Sugar Co.,Ltd.
- United Farmer and Industry Co.,Ltd. (Mitr Phu Luang branch)
- Mitr Phol BioFuel Co.,Ltd.
- Mitr Phol BioFuel Co.,Ltd. (Chaiyaphum branch)
- Mitr Phol BioFuel (Kuchinarai) Co.,Ltd.
- Maesod Clean Energy Co.,Ltd.
- Mitr Phol Specialty Biotech Co.,Ltd
- Rachasima Green Energy Co.,Ltd.
- Panel Plus Co.,Ltd.
- Productivity Plus Co.,Ltd.

Certificate for taking part in the groundwater usage assessment through Water Footprint Project
by Department of Groundwater Resources, Ministry of Natural Resources and Environment
- Mitr Kalasin Sugar Co.,Ltd.

Product Standard and Quality

Labour Practice

- TLS 8001 Thai Labor Standard

Quality & Product Responsibility

- ISO 9001:2015 - Quality Management System
- ISO 22000 - Food Safety Management System
- GMP & HACCP - Good Manufacturing Practice and Hazard Analysis Critical Control Point
- FSSC 22000 - Food Safety System
- ISO / IEC 17025 - Competence of Testing and Calibration Laboratories
- Halal & Kosher - Halal Food and Kosher Dietary Law
- Thai Industrial Standard
- Ph. Eur. (European Pharmacopoeia)

Safety, Occupational Health and Environment

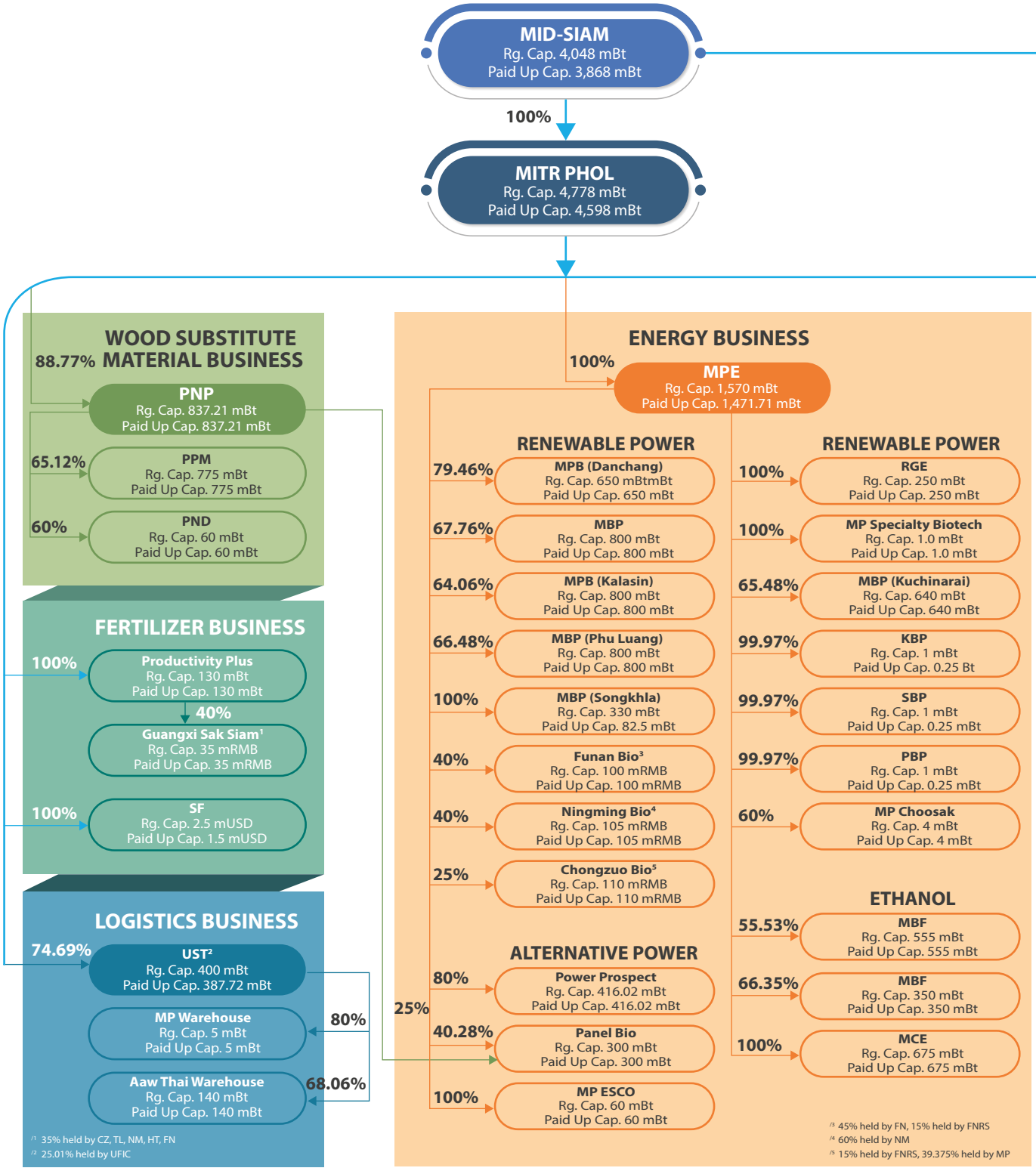
- OHSAS 18001 - Occupational Health and Safety Management System
- ISO 14001:2015 - Environmental Management System
- Green Systems certification from Green Industry programme, Ministry of Industry

Sustainability

- Bonsucro Production Standard – Standards for sustainable cane and sugar production
- TIS 9999. Vol.1 – 2013 - Guidance on sufficiency economy for industries
- Carbon Reduction Label
- Corporate Social Responsibility – Department of Industrial Work (CSR – DIW), Ministry of Industry
- TIS 26000:2010 - Guidance on social responsibility, Thai Industrial Standards Institute, Ministry of Industry
- UN Guiding Principles on Business and Human Rights – UNGP
- Forest Stewardship Council™ Forest Management or FSC™ FM, Forest Stewardship Council™ Chain of Custody or FSC™ CoC
- California Air Resources Board: CARB

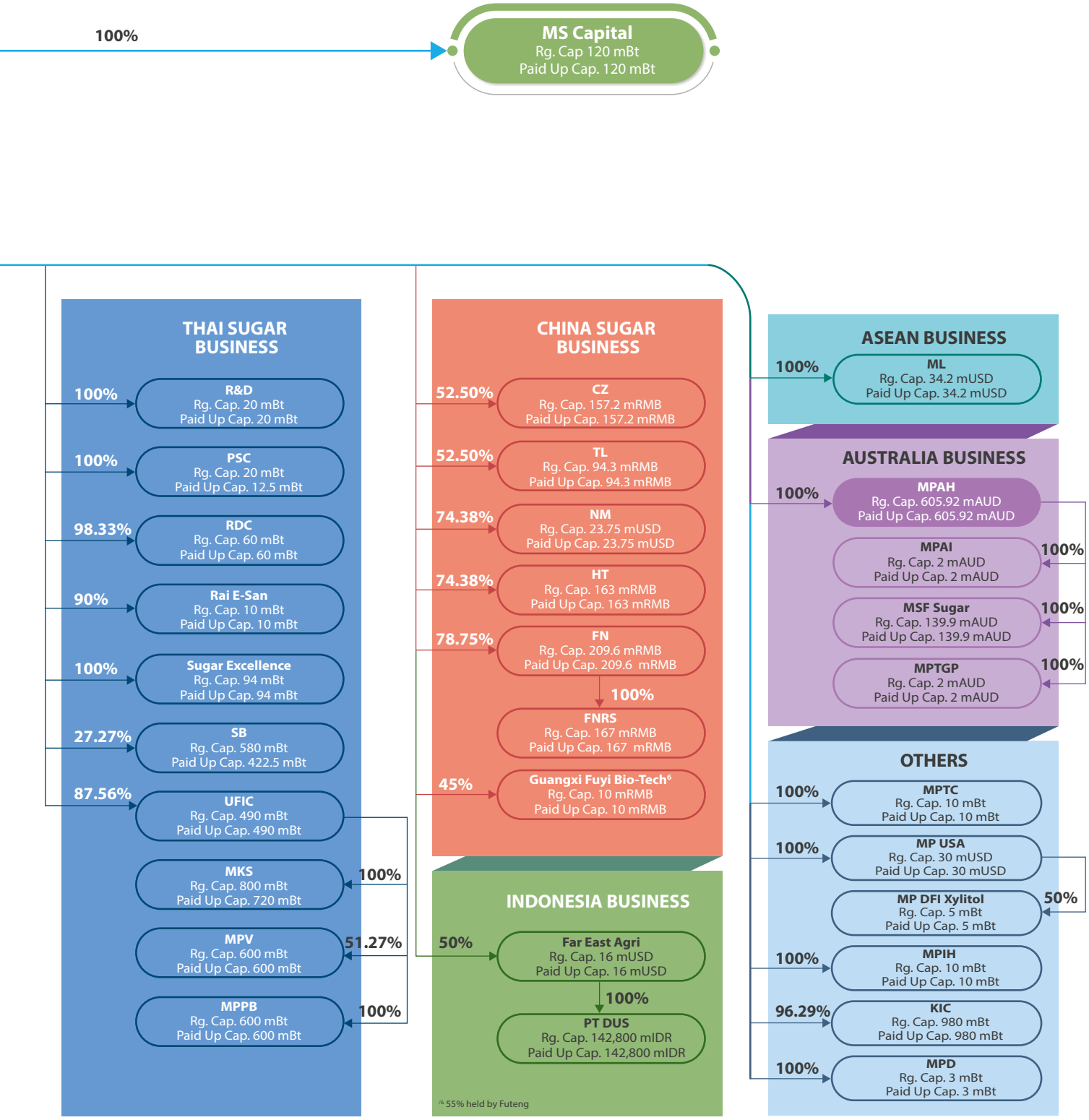
Mitr Phol Group's Shareholding Structure (101-1) (102-3) (102-5)

As of October 31, 2017, Mitr Phol Sugar is registered as a company limited, with business registration number 0105518011759. The headquarters is located at Floor 3rd Ploenchit Building, 2 Sukhumvit Road, Klongtoey, Bangkok 10110 Tel: +66 2794 1000 Fax: +66 265 8494 Web: www.mitrphol.com.



Mitr Phol Group's no shareholders who are government, with Mitr Siam Co., Ltd. holds 47,779,994 shares out of 47,780,000 shares which is 99.99% of Mitr Phol Sugar Co., Ltd. Every share has the right to vote equally. Mitr Siam has major shareholders as following: total share of major shareholders is 20.65%:

- Mr. Isara Vongkusolkit — Chairman of Mitr Phol Group
- Mr. Kamol Vongkusolkit — Honorary Advisor of Mitr Phol Group
- Mr. Soonthorn Vongkusolkit — Honorary Chairman of Mitr Phol Group



Stakeholder's Engagement

Stakeholder's Engagement

Stakeholder's engagement (102-42)

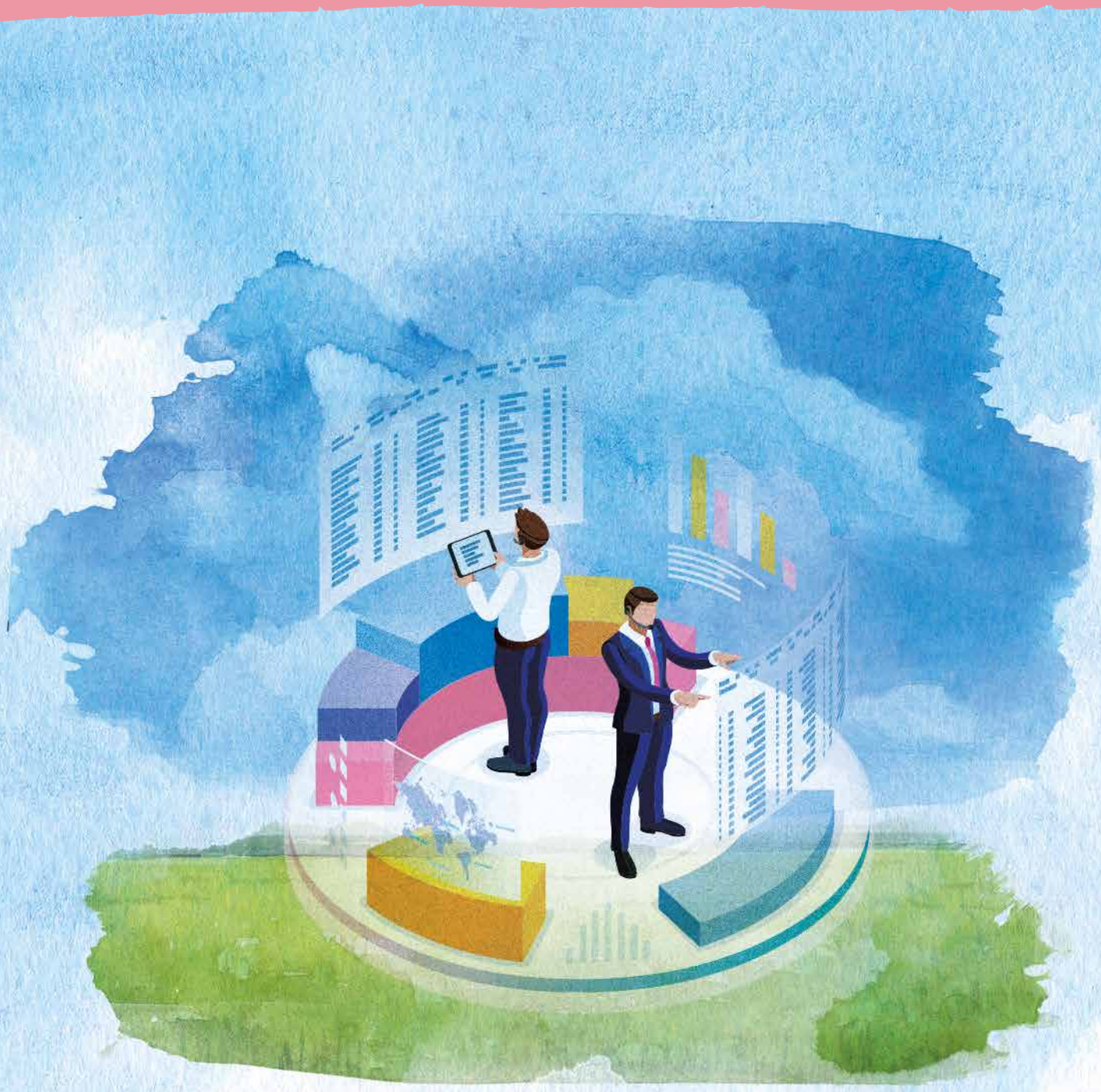
Mitr Phol Group has analyzed and reviewed stakeholders in order to prioritize their needs and expectations, and has divided them into seven groups: shareholders, cane farmers, communities, suppliers, customers and consumers, employees, the government sector, and civil societies. Careful consideration about each group is incorporated into how we approach stakeholder management. Communication procedures are in place to listen to the needs and expectations of stakeholders and utilize those opinions to shape business operations that cater to their expectations, because stakeholder engagement promotes strong relationships. Mitr Phol Group is ready to drive sustainable growth in all sectors, so we can collectively grow together in a stable and sustainable way. Details about stakeholder engagement are as follows.

Stakeholder groups (102-40)	Communication mechanisms (102-43)	Frequency	Stakeholders expectations / concerns (102-44)	Response
Shareholders	1. General meetings to provide important information of shareholders and investors. 2. Annual reports or sustainability reports providing company performance.	Annually Annually	1. Business potential development. 2. Transparent and good governance business management. 3. Strong business performance and a good return on investment. 4. Business risk management. 5. Corporate social and environmental responsibility as part of business operations.	See details in the 1. About Mitr Phol Group 2. Corporate Governance and Risk Management 3. Environment: *"Effective Environmental Management"* 4. Society and Communities *"Grow Together"*
Cane farmers	1. Mitr Chao Rai Newsletter. 2. Meetings with cane farmers in cane extension area.	Every two Months Monthly	1. Higher and fair prices for cane. 2. Sharing of knowledge and techniques about farming management to improve productivity and cane quality. 3. Capital or low-interest agricultural loans. 4. Investments by government offices to build water sources near cane plantations.	See details in the Supplier development *"Growing Together Sustainably"*
Communities	1. Community survey activities during cane crushing season. 2. Panel discussions in the community. 3. Visits to environmental quality check points. 4. Community tri-partite committee meetings. 5. Coffee councils. 6. Mitr Phol Open House activities.	Every week throughout cane crushing season Monthly Bi-annually Every three Months Annually Annually	1. Receiving accurate information about factory operations. 2. Continually being informed of environmental protection measures and performance. 3. Employment opportunities in the Mill. 4. Receiving support in terms of knowledge, resources and educational opportunities for a better quality of life and greater competitive advantage for the community. 5. Engagement from all stakeholders to develop, fix, improve and manage public interest, resources, and the environment within the community, to promote a healthy co-existence between local villagers and the factory.	See details in the 1. Environment: *"Effective Environmental Management"* 2. Society and Communities *"Grow Together"*

Stakeholder groups (102-40)	Communication mechanisms (102-43)	Frequency	Stakeholders expectations / concerns (102-44)	Response
Business partners / Vendors	1. Site visits and evaluations for Business partners/vendors related to food safety, such as packaging and chemicals. 2. Annual supplier seminar. 3. Assessments and grading of AVL suppliers via the MPS system. 4. Mitr Phol Supplier Code of Conduct. 5. Meetings with high-potential suppliers to sign annual contracts with Mitr Phol Group.	Annually Annually Real Time Real Time Bi-annually	1. Being informed about approaches to maintain international quality standards (ISO 9001, GMP, HACCP) for food contact suppliers. 2. Being informed about Mitr Phol Group's food safety and quality policies, as well as procedures, criteria and tests. 3. Being informed of current policies. Understanding how the procurement system works. An ability to exchange ideas and suggestions. 4. Building good relationships to promote working together efficiently and with satisfaction. 5. Decrease Non Conformance Report (NCR) and promote business sustainability. 6. Being informed of any procurement updates from Mitr Phol Group. 7. An ability to check purchase order status and edit supplier information in real time through the Mitr Phol Procurement System (MPS-on web) for faster and more efficient management. 8. Instant access to NCR through the MPS, improving convenience and speed. 9. Getting on the Approved Vendor List and becoming a high-potential supplier / partner of Mitr Phol Group in order to grow sales. 10. Being informed of supplier ethics so suppliers are aware of how to work with Mitr Phol Group.	See details in the Supplier development *"Growing Together Sustainably"*

Stakeholder groups (102-40)	Communication mechanisms (102-43)	Frequency	Stakeholders expectations / concerns (102-44)	Response
Customers and consumers	1. Complaint call center. 2. Customer satisfaction surveys.	Daily Annually	1. Receive high-quality, safe, and healthy products and services. 2. Provide product variety for different needs.	See details in the Customers and Consumers *"Quality Products and Healthy Relationships"*
Employees	1. Employee Engagement Survey. 2. Town Hall Activity. 3. Employees News (E-Mail).	Annually Annually Weekly	1. Access to adequate and suitable resources with which to perform their duties. 2. Keep up-to-date with the group's news. 3. Appropriate and attractive compensation and benefits. 4. Recognition. 5. Fair evaluations and career growth opportunities. 6. The company recognizes the importance and value of employees of all levels.	See details in the Employees *"Caring for Employees, Uniting for Success"*
Government and civil society organizations	1. Participating in meetings with government agencies. 2. Working together with civil society Organizations. 3. Participate in public forums and panel discussions arranged by international organizations. 4. Communicate through annual sustainability reports about issues that are of interest to international organizations such as human rights and anti-child labor abuse.	Monthly Monthly Monthly Annually	1. Participation in activities arranged by the government sector. 2. Legal compliance. 3. Transparency. 4. Demonstrate social and environmental corporate responsibility. 5. Participate in driving important agendas to create business sustainability. 6. Operate the business with transparency and respect to human rights. 7. Good environmental management	See details in the 1. Corporate Governance and Risk Management 2. Human rights *"Promoting Equality and Human Rights"* 3. Society and communities *"Grow Together"*

About This Report



Scope of This Report

Identifying Materiality and Scope of Report

Sponsorships and Membership in Organizations

Supporting the United Nations Sustainable Development Goals (UN SDGs) and Compliance with the United Nations Global Compact

About This Report (102-48)(102-49)(102-50)(102-52)

Since 2013, Mitr Phol Group has published sustainability reports to stakeholders that disclose the group's performance covering sustainable development in the economic, social, and environmental dimensions. This report has been prepared in accordance with the GRI Standards: Core option (102-54).

Scope of This Report (102-48)(102-49)(102-50)(102-51)(102-52)

This report covers the performance and operations of Mitr Phol Group's companies and subsidiaries in Thailand between November 1, 2017 and October 31, 2018. The report divides Mitr Phol companies and subsidiaries into seven distinct groups: farming business (two companies), sugar business (eight companies), energy business (sixteen companies), wood-substitute materials business (three companies), fertilizer (one company), logistics and warehouse business (three companies) and other business (five companies). The scope of economic performance accounts for 100% of Mitr Phol Group's revenues generated in Thailand. The scope of environment performance accounts for 94.44% and the scope of social performance accounts for 94.44% of Mitr Phol Group's revenues generated in Thailand.

List of companies within the scope of this report (102-46)

Business / company (102-45)	Economic performance	Environmental performance				Social performance	
		Energy	Water	Waste	Air	Safety	Human Resources
Farming business							
Rai Dan Chang Co., Ltd.	●	●	●	●	●	●	●
Rai E-Sarn Co., Ltd.	●	●	●	●	●	●	●
Sugar business							
Mitr Phol Sugar Co., Ltd.	●	●	●	●	●	●	●
Singburi Sugar Co., Ltd.	●	●	●	●	●	●	●
United Farmer and Industry Co., Ltd.	●	●	●	●	●	●	●
United Farmer and Industry Co., Ltd. (Mitr Phu Wiang branch)	●	●	●	●	●	●	●
United Farmer and Industry Co., Ltd. (Mitr Phu Luang branch)	●	●	●	●	●	●	●
Mitr Kalasin Sugar Co., Ltd.	●	●	●	●	●	●	●
Pacific Sugar Corporation Co., Ltd.	●	●	●	●	●	●	●
Mitr Siam Sugar Co., Ltd.	●	NR	NR	NR	NR	NR	NR
Renewable Energy business							
Electricity business							
Mitr Phol Bio-Power (Dan Chang) Co., Ltd.	●	●	●	●	●	●	●
Mitr Phol Bio-Power Co., Ltd.	●	●	●	●	●	●	●
Mitr Phol Bio-Power (Phu Wiang) Co., Ltd.	●	●	●	●	●	●	●
Mitr Phol Bio-Power (Kalasin) Co., Ltd.	●	●	●	●	●	●	●
Mitr Phol Bio-Power (Phu Luang) Co., Ltd.	●	●	●	●	●	●	●
Mitr Phol Bio-Power (Kuchinarai) Co., Ltd.	●	●	●	●	●	●	●

Business / company (102-45)	Economic performance	Environmental performance				Social performance	
		Energy	Water	Waste	Air	Safety	Human Resources
Ethanol business							
Mitr Phol BioFuel Co., Ltd.	●	●	●	●	●	●	●
Mitr Phol BioFuel (Chaiyaphum) Co., Ltd.	●	●	●	●	●	●	●
Mitr Phol BioFuel (Kalasin) Co., Ltd.	●	●	●	●	●	●	●
Mitr Phol BioFuel (Kuchinarai) Co., Ltd.	●	●	●	●	●	●	●
Bio Chemical business							
Rachasima Green Energy Co., Ltd.	●	●	●	●	●	●	●
Mitr Phol Specialty Biotech Co., Ltd.	●	●	●	●	●	●	●
Maesod Clean Energy Co., Ltd.	●	●	●	●	●	●	●
Alternative business							
Mitr Phol Energy Services Co., Ltd.	●	●	●	●	●	●	●
Power Prospect Co., Ltd.	●	●	●	●	●	●	●
Panel Plus Bio-Power Co., Ltd.	●	●	●	●	●	●	●
Wood-substitute materials business							
Panel Plus Co., Ltd.	●	●	●	●	●	●	●
Panel Decor Co., Ltd.	●	●	●	●	●	●	●
Panel Plus MDF Co., Ltd.	●	●	●	●	●	●	●
Fertilizer business							
Productivity Plus Co., Ltd.	●	●	●	●	●	●	●
Logistics and warehouse business							
United Standard Terminal Public Co., Ltd.	●	●	●	●	●	●	●
Mitr Phol Warehouse Co., Ltd.	●	●	●	●	●	●	●
Aawthai Warehouse Co., Ltd.	●	●	●	●	●	●	●
Other businesses							
Mitr Phol Sugarcane Research Center Co., Ltd.	●	●	●	●	NR	●	●
Mitr Phol Development Co., Ltd.	●	●	●	●	●	NR	●
Mitr Phol Treasury Center Co., Ltd.	●	NR	NR	NR	NR	NR	NR
MP-DFI Xylitol Co., Ltd	●	NA	NA	NA	NA	NA	NA
Khonkaen Innovation Center Co., Ltd	●	NA	NA	NA	NA	NA	NA

Remarks: NA (Not Available) – Information is not available.
NR (Not Relevant) – Information is not relevant.

Identifying Materiality and Scope of Report

Mitr Phol Group has selected sustainability topics that are relevant to the group's business operations by studying global sustainability in economic, social and environmental dimensions. The following criteria was used to select the topics:

- Importance of the topics to the global food and beverages industry.
- Corporate strategies, which are reviewed twice a year.
- Stakeholders' expectations of Mitr Phol Group
- Relevancy to topics covered in Mitr Phol Group's previous sustainability report in 2018.

By the process of selecting important issues and boundaries of impact with 4 steps together with details of operations as follows:

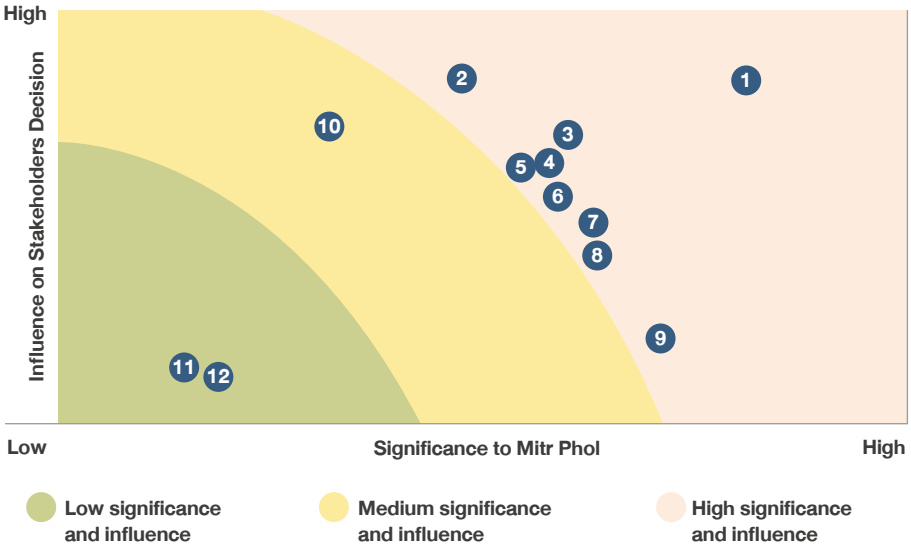
Step one: Identification

The working group identifies materiality in conjunction with related departments. The information included in this report was identified based on the sustainability context relating to economic, social and environmental aspects. The identification process also takes into consideration stakeholders' concerns and expectations. In identifying materiality, the working group also took into account the economic, social and environmental impacts throughout the value chain, both externally and internally, as well as the relevancy of such topics to important issues in the global food and beverages industry.

Step two: Prioritization

Tests are then conducted to prioritize the materiality of this report. Material aspects selected to be covered in this report are considered on two criteria: influence on stakeholder assessments and decisions and significance of the organization in terms of economic, environmental and social impacts. Management from relevant departments take part in deliberating these issues together with the working group. Through participation in meetings with senior management to priorities topics that are related to business operations.

Results of the materiality test



1. Climate change and water resources management
2. Human Rights
3. Safety, Occupational health, and environmental management.
4. Sustainable value chain management.
5. Employee welfare and development.
6. Corporate Governance and Risk Management
7. Innovation management
8. Contributions to society
9. Packaging
10. Health and nutrition
11. Stakeholder engagement
12. Customer relationship management

Step three: Scoping materiality

Mitr Phol Group developed a scope of 12 key topics to be covered in this report by working closely with relevant departments and stakeholder groups to determine topics that were significant to them.

Topic (102-47)	Material aspects	Scope of impact (102-46)												
		Internally							Externally					
		Farming business	Sugar business	Renewable Energy business	Wood substitute	Fertilizer business	Logistics and warehouse	Others business	Shareholders and investors	Cane farmers	Communities	Suppliers	Customers and consumers	Government / civil society
Stakeholder's engagement	Stakeholder's engagement	●	●	●	●	●	●	●	●	●	●	●	●	●
Corporate Governance and Risk Management	Corporate Governance and Risk Management	●	●	●	●	●	●	●	●	●	●	●	●	●
Employees: *"Caring for Employees, Uniting for Success"*	Human capital development and Employees Care	●	●	●	●	●	●	●	NR	NR	NR	NR	NR	NR
Human Rights: *"Promoting Equality and Human Rights"*	Human rights	●	●	●	●	●	●	●	●	●	●	●	●	●
Occupational safety and Occupational Health: "Occupational *Safety* are *our Top Priorities"*	Occupational health and safety	●	●	●	●	●	●	●	NR	●	●	●	●	●
Environment: *"Effective Environmental Management"*	Environmental policy and management system	●	●	●	●	●	●	●	●	●	●	●	●	●
	Packaging	NR	●	NR	●	●	NR	NR	●	NR	NR	●	●	●
	Climate change and water resources management	●	●	●	●	●	●	●	NR	●	●	●	●	●
Supplier Development: *"Growing Together Sustainably"*	Sustainable supply chain management	●	●	●	●	●	●	●	NR	●	●	●	●	●
Customers and Consumers: *"Quality Products and Healthy Relationships"*	Health & nutrition	●	●	NR	●	NR	NR	●	NR	NR	NR	NR	●	●
	Customer relationship management	●	●	●	●	●	●	NR	NR	NR	NR	NR	●	NR
Society and Communities: *"Grow Together"*	Contributions to society	●	●	●	●	●	●	●	●	●	●	●	●	●
Innovation: *"Creating New Innovation for Sustainability"*	Innovation management	●	●	●	●	●	●	●	●	●	●	●	●	●

Remarks: NR (Not Relevant) – Information is not relevant.

Step four: Verification

The working group verified the information in this report with the Sustainability Development Department, Corporate Sustainability division, then proposed it to the Sustainability Committee, and finally to the company board of directors.

Information enquiry (102-53)

If you require more information or would like to make a suggestion, please contact:

Sustainable Development Department, Corporate Sustainability Division

Mitr Phol Group

2 Pleonchit Center, 3rd floor, Sukhumvit Rd., Klongtoey, Bangkok, 10110

Tel: +662 794 1651

Sponsorships and Membership in Organizations

Mitr Phol Group provides sponsorships to and is a member of multiple organizations.

Sponsorships / memberships by organization

Association / organization	Sponsorship amount / membership fee (Baht)			
	2015	2016	2017	2018
Thai Sugar Miller Company Limited (TSMC)	4,195,875.50	4,627,992.00	5,357,971.50	5,086,774.00
Thai Sugar and Bio-Energy Producers Association	782,300.00	1,047,700.00	1,175,600.00	1,241,100.00
The Thailand Development Research Institute (TDRI)	1,000,000.00	1,000,000.00	1,000,000.00	1,000,000.00
The Federation of Thai Industries	51,400.00	51,400.00	51,400.00	51,400.00
The Thai Chamber of Commerce	17,000.00	17,000.00	17,000.00	17,000.00
Total	**6,046,575.50**	**6,744,092.00**	**7,601,971.50**	**7,396,274.00**

Sponsorships / memberships by topic

Topics of support	Objective of membership	2018 sponsorship amount (Baht)
Cane and sugar industry development	Mitr Phol Group provides support to the Thai Sugar Miller Company to drive systemic development across the cane and sugar industry by setting clear plans and goals in place in order to increase the industry's competitiveness in the global arena. Thai Sugar Miller Company Limited acts as the center of collaboration between 46 sugar mills in the country, together with three sugar associations: the Thai Sugar Millers Association, the Thai Sugar Producers Association, and the Sugar Industry Trade Association.	5,086,774.00
	Membership in the Thai Sugar and Bio-Energy Producers Association, which acts as an industry representative in working with the Thai government to drive the development of the Thai sugar and cane industry together with bio-energy industry. Mitr Phol Group provides support to the association in the form of contributing expertise in sugar and bio-energy production and trade, coordinating, and offering business solutions to association members.	1,241,100.00
National in-dept research development	Mitr Phol Group's membership in the Thailand Development Research Institute provides crucial in-dept research paper. Through the membership, Mitr Phol Group has access to information that is used analytically for Mitr Phol related business	1,000,000.00
Renewable and alternative energy development	Mitr Phol Group's membership in the Federation of Thai Industries allows the company a platform on which to voice its opinions on promoting the usage of renewable and alternative energy among industries. More alternative energy usage will lead to economic sustainability for Mitr Phol Group's biomass and renewables businesses. The promotion of renewable energy usage is also aligned with the Ministry of Energy's Alternative Energy Development Plan.	51,400.00

Supporting the United Nations Sustainable Development Goals (UN SDGs) and Compliance with the United Nations Global Compact (102-13)

Mitr Phol Group has supported supporting and driving global sustainability agendas, as 193 member countries jointly established Sustainable Development Goals (SDGs) by merging SDGs into every part of the Mitr Phol group's operational processes with 11 goals out of 17 goals as follow;

"Our organization dedicated to creating a transparent and effective collaboration to achieve sustainable development goals. With our company's philosophy (Grow Together), we commit to develop communities in a sustainable way by adopting new theory of agriculture, uplifting education, creating employment opportunity, as well as hiring disability. The community initiatives are aimed to reduce inequality, together with conserve environment by effectively allocating the natural resource. Moreover, we are the major producer of renewable energy with the latest technology and innovation to create new business which will be ready for climate changes."

Mitr Phol Group is also a founding member of the Global Compact Network Thailand. We are committed to carrying out its business operations in accordance with the 10 principles of the United Nations Global Compact (UNGC) covering Human Rights, labor, the environment, and anti-corruption measures.

UNGC scope and principles		Actions
Applying the 10 principles to business operations.		• Mitr Phol Group's strategies • Mitr Phol Group's sustainability policy • Sustainable supply chainmanagement
1	Businesses should support and respect the protection of internationally proclaimed human rights.	• Human Rights policy
2	Businesses should make sure that they are not complicit in human rights abuses.	
3	Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.	• Personnel management policy • Employee care • Occupational Health and Safety • Opposing child labor • Human Rights policy • No discrimination in respect to employment, using an efficient and fair recruitment system
4	The elimination of all forms of forced and compulsory labor.	
5	The effective abolition of child labor.	
6	The elimination of discrimination in respect to employment and occupation.	
7	Businesses should support taking a precautionary approach to environmental challenges.	• Environmental management policy • Environmental profit & loss accounting
8	Businesses should undertake initiatives to promote greater environmental responsibility.	
9	Businesses should encourage the development and diffusion of environmentally-friendly technologies.	
10	Businesses should work against corruption in all its forms, including extortion and bribery.	• Good governance and anti-corruption policy

Mitr Phol and Global Compact Network Thailand discussed with the UN Working Group on Business and Human Rights in order to accelerate human Rights in the Thai business sector to be equivalent to international standards

Corporate Governance and Risk Management

Mitr Phol Group's Corporate Management Structure

Governance Performances

Anti-Fraud and Corruption Practices

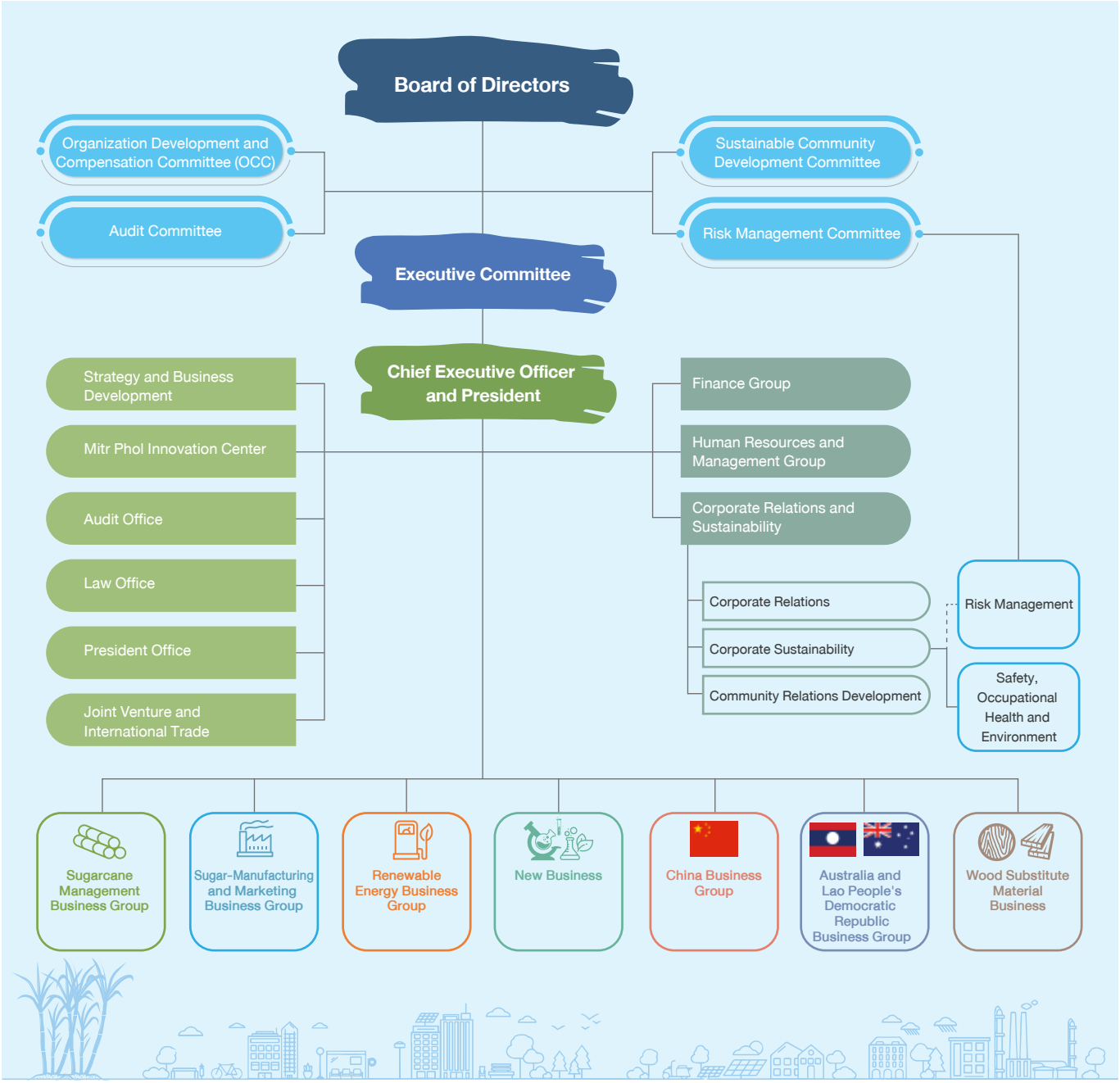
Mitr Phol Group's Risk Management

Mitr Phol Group operates its business in strict compliance with good corporate governance, while also adhering to the group's philosophy that effective management, transparency, accountability, stakeholder engagement, and continuous development are crucial in enhancing the company's competitive advantage, achieving sustainable business growth, and maintaining social license to operate for investors and all stakeholders.

Mitr Phol Group's Corporate Management Structure

Mitr Phol Group's Board of Directors and Executive Board have clearly-defined roles. The Board of Directors consists of 11 members who are responsible for establishing the group's vision, mission, strategies, policies, guidelines and internal systems. The board of directors is also responsible for monitoring and overseeing the executive committee to ensure continuous and sustainable business growth. Mitr Phol Group holds board meetings at least six times per year to keep members up to date with the business operations and seek approval on important matters. General meetings of shareholders are held on an annual basis to provide information about the group's performance and future plans.

Mitr Phol Group's Organization Structure



Selection of Board of Directors

Realizing the important roles of the Board of Directors, Mitr Phol Group's policy dictates that there must be no less than nine board members, and each year one third of the members must vacate their positions. Mitr Phol evaluates directors' performance annually both attendance and time available for the company. Each director has to attend the Board of Meeting not less than 90% a year. Whereas non-executive and independent directors are allow to be a director of other Board of Directors, but no more than 4 companies.

In 2018, Mitr Phol Group's board of directors comprises of 11 members, Executive directors comprise of 7 persons, Non-executive directors comprise of 4 persons who are highly-skilled knowledgeable, competent experienced and valuable experiences to enable Mitr Phol Group to carry out its business according to its strategies and succeed, for example the sugar business.

In 2018, the Board convened seven times, with advanced scheduling. At least seven days prior to each board meeting, the company secretary distributes a notice in writing to all members to inform them of the meeting details. Minutes are kept and certified by all board members and can be audited by relevant parties. In the past year, the meeting attendance rate was 93.50%.

The executive committee consists of eight members, each representing their own functional area, including material sourcing, production, marketing and finance. The Executive Committee is responsible for proposing policies and business strategies to the Board of Directors, implementing recommendations from the Board, and ensuring that business operations are carried out as per the Board's resolutions. The executive committee is also responsible for analysis, decision-making, and proposing important matters of economic, social, and environment nature to the Board of Directors, in order to continue to add value to the group in a sustainable manner, in order to promote the corporate culture and enhance the company's competitive edge.

Governance Performances

Mitr Phol Group places great importance on promoting governance and building a strong corporate culture. The Board of Directors has devised appropriate policies, practices, and communication measures to ensure awareness across the group. It is a considerable challenge to engage all employees and stakeholders throughout the value chain across businesses in several countries around the world, while ensuring that everyone understands and adheres to the same principles.

Policies and guidelines

Mitr Phol Group has created good governance policies and guidelines for all board directors, executives, and employees across the group. These policies and guidelines are reviewed regularly to ensure that they are up to date and relevant to the working environment. Key policies include: Good Governance, Anti-Fraud and Anti-Corruption, Anti-Bribery, Whistleblowing, and the Mitr Phol Code of Conduct. In 2018, the Anti-Money Laundering (AML) and Combating the Financing of Terrorism (CFT) policies were introduced to protect Mitr Phol Group from falling victim to money laundering and financing terrorism activities. In addition, the Mitr Phol Suppliers Code of Conduct was also introduced to guide company suppliers on best practices.

Mitr Phol Code of Conduct (102-16)

The Mitr Phol corporate culture encourages all employees to conduct themselves appropriately and ethically, comply with local laws and regulations, and maintain a sense of responsibility for society. Because Mitr Phol believes its employees are integral to driving the company's growth, the Mitr Phol Code of Conduct contains regulations, measures, and guidelines that all executives and employees must adhere to in order to ensure that they carry out their duties ethically. The Code of Conduct contains guidelines on anti-fraud and anti-corruption practices, conflicts of interest, receiving and giving gifts, stakeholder accountability, and corporate social responsibility. The Mitr Phol Code of Conduct is reviewed regularly to ensure that it remains relevant to the changing environments of the business world and society.

In 2018, the Mitr Phol Suppliers Code of Conduct was introduced. The guidelines were adopted to ensure that all suppliers working with Mitr Phol Group followed business practices that were in line with Mitr Phol Group's policies and corporate culture. Suppliers are important stakeholders who are crucial to the company's sustainable growth. Mitr Phol Group is committed to equal, transparent and fair treatment of all suppliers, and has pushed for supplier governance.

Communicating and creating awareness about the Code of Conduct is carried out through several types of activities and communication channels, such as the Mitr Sampan journals, signage boards on Mitr Phol Group premises, e-mails, intranet posts, and training. The Board of Directors, executives, employees and suppliers have all signed the Code of Conduct as a pledge to follow its guidelines. The Board, executives and employees are required to review the Code of Conduct on an annual basis to refresh their understanding. In 2018, the "Mitr Phol Code of Conduct and Corporate Culture" training was provided for executives, employees, and suppliers to create awareness about topics including: the Code of Conduct policies, guidelines and grievance mechanism; the importance, principles, and control measures of anti-corruption practices; and procurement regulations. The training also provided a platform for executives, employees and suppliers to express their opinions through a suggestion box, nicknamed the "Black Box". A total of 30 training sessions were held throughout areas where Mitr Phol Group operates. Details are as follows:

Mitr Phol Code of Conduct and Corporate Culture Course 2018

The number of people who received communication and training on the Code of Conduct, policies, and guidelines about Mitr Phol Group governance in 2018.[205-2]

Number of people aware

Employees* by level	Persons	Percentage
Company board	11	100
Top-level management	19	100
Mid-level management	237	100
Line managers	724	100
Officers	2,714	100
Operational staff	2,340	100
Total	**6,007**	**100**

Employees* by region		
Bangkok	795	100
Other	5,216	100

Business Partner**		
Total	774	84

Remarks: * Employees: full-time employees, data as of July 31, 2018

**Business Partner: current suppliers with purchase value of more than 1 million baht, data as of October 31, 2018

Number of people who received training

Employees* by level	Persons	Percentage
Company board and management	84	31
Employees	1,195	35
Total	**1,279**	**35**

Employees* by region		
Bangkok	83	11
Other	1,196	41

Business Partner**		
Total	305	33

Remarks: * Employees: full-time employees, officer level and above, data as of July 31, 2018

**Business Partner: current suppliers construction contracting type with purchase value of more than 1 million baht, data as of October 31, 2018

Anti-Fraud and Corruption Practices (102-12)

Mr. Krisda Monthienvichienchai,
CEO and President represented Mitr Phol Group
in receiving a certificate from CAC committee member
Mr. Prasan Chuaphanich

Mr. Krisda Monthienvichienchai,
CEO and President and Mr. Komkrish Nagalakshana,
Executive Vice President-Corporate Relations and Sustainability,
represented Mitr Phol Group in receiving a certificate from
CAC committee member

Fighting against fraud and corruption is a crucial part of governance. Mitr Phol Group is committed to the prevention of all forms of fraud and corruption as they threaten not only the organization, but the country as a whole. To demonstrate its stance against corruption and its commitment to good governance, every year Mitr Phol Group takes part in activities held by the Anti-Corruption Organization of Thailand. In 2018, Mitr Phol Group became a member of Thailand's Private Sector Collective Action Coalition against Corruption (CAC). Mr. Krisda Monthienvichienchai, CEO and President (now Vice Chairman of the Executive Committee, Mitr Phol Group), and Mr. Komkrish Nagalakshana, Executive Vice President-Corporate Relations and Sustainability, represented Mitr Phol Group in receiving a certificate from CAC committee member Mr. Prasan Chuaphanich. Becoming a member of the CAC reinforces Mitr Phol Group's commitment to operating its business with efficiency, transparency, and accountability.

Anti-Corruption Day

International Anti-Corruption Day

Grievance mechanism

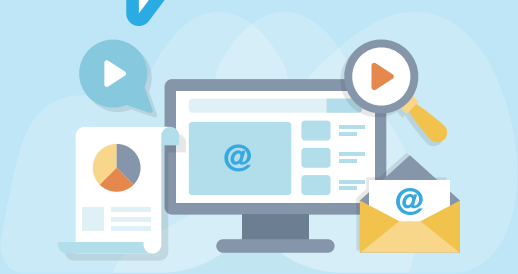
To promote transparency and accountability, Mitr Phol Group has established a series of clear processes and mechanisms to allow employees and external individuals to report any suspected actions that are in violation of the Mitr Phol Code of Conduct. Several whistleblowing channels are available. Communication to internal and external parties about the grievance mechanism is carried out through several channels. The grievance mechanism is reviewed and improved upon regularly to make sure it is efficient, convenient, and accessible. In 2018, activities were held for both internal employees and external individuals to promote awareness about the grievance mechanism and make the process easy to understand. These activities included operating internal digital screens, and communication materials such as video clips.

Whistleblowing process (102-11)

Complaint Channels

Written and Verbal Complaints:

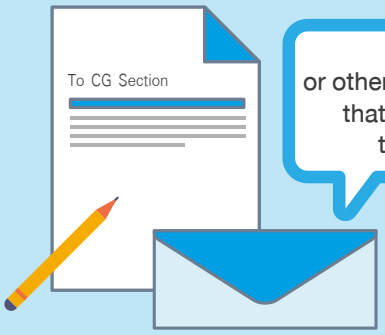
(E-mail)
cg@mitrphol.com



* The complainant may or may not include his / her name and contact channel when lodging a complaint.

Intranet : Mymitrphol

www.mitrphol.com/whistleblowing



Letter
or other appropriate channels that are convenient for the complainant

Official Receiving the Complaint

Issues complaints or suggestions

1. Fraud and Corruption
2. Do not comply applicable laws
3. Mitr Phol Code of Conduct

- Company director, supervisor or trusted member of management
- Corporate Governance Section, Human Resources and Management Group, Internal Audit Offices

* The person receiving the complaint noties the Corporate Governance Section.

Process

1

The complainant lodges a complaint or provides information through a designated channel.

2

The Corporate Governance Section considers the complaint within 15 days before coordinating with a responsible department and follow-up every 15 days.

If the complaint involves actions that violate Mitr Phol's regulations and policies, it will be passed on to the Human Resources and Management Group.

If the complaint involves fraud, corruption, or an unlawful act, it will be passed on to the Internal Audit Offices.

15 days

3.1

The Audit Committee veries the complaint and considers an investigation.

If the complaint is found to have merit or clearly involve wrongdoing, an investigation committee shall be appointed.

If the complaint is found to have no merit or no wrongdoing is found, the investigation result is passed back to the responsible department, who will then inform the Corporate Governance Section to notify the complainant.

3.2

An investigation committee will be appointed and report the results to the Audit Committee.

4.1

Internal Audit Ofces upon completion of the investigation process, the Audit Committee shall contact the Corporate Governance Section to notify the complainant.

4.2

Human Resources and Management Group considers appropriate disciplinary actions. If an investigation finds the accused guilty, the committee will pass on the case to the Human Resources and Management Department to consider appropriate disciplinary actions and propose such actions for further approval.

5

Corporate Governance Section reports the investigation result to the complainant.

** the complainant discloses his/her identity, he/she shall be notied the result.

The number of complaints of breaches / corruption at Mitr Phol Group (205-3)

Complaints (incidents)	2015*	2016*	2017*	2018*
All plausible complaints	11	8	9	9
Breaches of Mitr Phol Code of Conduct (bribery and corruption)	0	0	0	0
Breaches of Mitr Phol Code of Conduct (other topics)*	11	8	9	9

Investigation status	2015*	2016*	2017*	2018*
Completed	11	8	9	9
In Progress	-	-	-	2

Remarks: * Data from year 2015-2018 was collected from January 1 to December 31 each year.

Whistleblowsing Communications

Tent card at receptions / Information Poster in the office

Tent card at meeting room

Information Poster outside the office

Governance plans

The Group continuously carries out communicating and creating awareness about good corporate governance and the corporate culture. Mitr Phol Group's key governance plans are as follows:

1. Improving communication to the Board of Directors, executives, employees, and suppliers by having them sign the Mitr Phol Code of Conduct on an annual basis to promote better understanding and accessibility.
2. Increasing attendance rates of the "Mitr Phol Group Code of Conduct and Corporate Culture" training in 2019 by 15% from previous year.
3. Improving the grievance mechanism and channels to make them more efficient. Incorporating suggestions and feedback from 2018 to help improve the mechanism.
4. Creating online media about good corporate governance for employees and running an e-learning course.

Mitr Phol Group has established a new team that is directly responsible for ensuring governance. The function's task is to implement and cascade policies from the Board of Directors and executives throughout the organization. The team is also responsible for ensuring awareness and understanding about good governance, promoting a corporate culture of Governance, Risk Management, and Compliance, and supporting such practices throughout the business value chain.

Mitr Phol Group's Risk Management (102-30)(102-31)

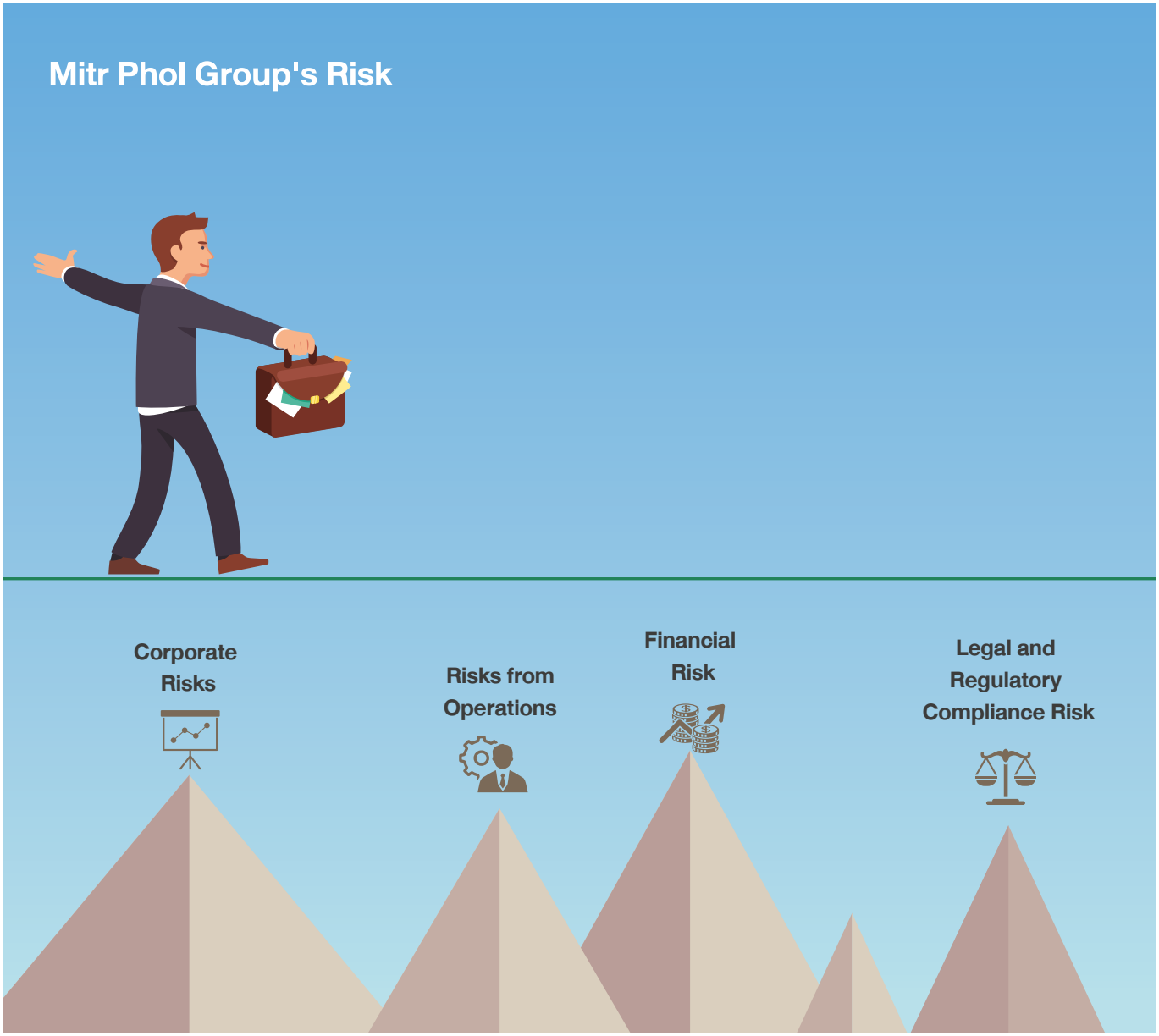
Mitr Phol Group places great importance on risk management in the economic, social and environmental realms. In accordance with good corporate governance practices, the Risk Management Committee assesses the company's risk policy on a yearly basis in order to add value and enhance security for the utmost benefit of all stakeholder groups. The risk management policy is run in accordance with the company's strategic, operational and project plans, as well as relevant laws and regulations governing Mitr Phol Group's business operations. Reviews of the Risk Management policies are conducted by the Risk Management Committee on an annual basis.

Mitr Phol Group has adopted COSO Enterprise Risk Management - Integrated Framework throughout the enterprise. The framework is used for objective setting, event identification, risk assessment, risk response, control activities, information and communication, and monitoring. An annual report is compiled to assess potential risks and vulnerabilities to the company to ensure that they are up to date and relevant to the current business landscape.

Mitr Phol Group has appointed a Risk Management Committee, which assigns important functions such as policy, guidelines and procedures, oversight and review of practices to improve risk management. The Risk Management function ensures that risk management policies and other recommendations from the Board are implemented throughout the organization. The function is also responsible for reviewing, monitoring, and reporting risk management performance on a regular basis. The head of risk management oversees the function and reports directly to the Sustainable Development department.

Risk Management principles are as follows:

1. Maintaining a balance between risks and returns to ensure business targets are achieved, stakeholders' expectations are met, and optimal benefits are generated for shareholders, all while staying within an acceptable level of risk to the organization.
2. Business strategies must be aligned with the level of risk deemed acceptable by the Board of Directors.
3. Risk management is an important part of the corporate culture that must be carried out with efficiency and effectiveness by all management and employees. Communication and appropriate activities to promote understanding and awareness of risk management as an integral part of business operations must be performed on a continual basis. Employees are encouraged to report any risks they encounter to their supervisors or executives through appropriate channels. Examples of mechanisms include: the corporate risk management manual, annual risk reviews, risk management training for employees, and clear risk reporting processes.
4. Risks that pose a threat to Mitr Phol Group's ability to achieve business targets and strategies must be managed in a timely manner and continuously.
   - 4.1 Risk identification must be thorough and timely.
   - 4.2 Reviews of the likelihood and impact of risks must be carried out.
   - 4.3 Risks must be maintained at a level deemed appropriate by the Board of Directors and management. Risks and returns must also be reviewed concurrently.
   - 4.4 Regular monitoring and reporting on risk management must be conducted to ensure that actions are carried out in an efficient and timely manner.



In 2018, Mitr Phol Group's key risks were as follows:

1. Corporate Risks

1.1 Corporate risks

- **Risks posed by climate change and the natural environment**

  Climate change and threats originating in the natural environment such as droughts and floods are key risks that affect sugarcane yields both in terms of volume and quality. Climate change is also a key factor in water resource management in production processes and can have an effect on storage and transportation.

  Mitr Phol Group reviews climate-related risk factors and trends on an annual basis to ensure proper and efficient management, and that short and long-term solutions are in place. As a result, the fluctuation of cane volume this year was considered acceptable. Key preventive measures and solutions to assist cane farmers include:

  1) Promoting knowledge and understanding about water resource management in cane farming, so cane farmers can be self-reliant.
  2) Collaboration with the government sector, communities, and farmers to provide water sources and maintain small and large irrigation systems, ensuring adequate water for farming and consumption, both in the short and long terms.
  3) Using the Mitr Phol ModernFarm project to incorporate innovative concepts and technology to improve cane farming management, and enhance the cane planting, harvesting and transporting processes for farmers. The project has helped to increase productivity and cane quality, and deal with shortages of manual labor.
  4) Selecting cane species appropriate for the topography and climate of each region. Mitr Phol's research center develops cane species as well as agricultural inputs with an aim to increase productivity per rai, resulting in economic benefits for cane farmers.
  5) Regular communication with farmers in order to create awareness of and preparedness in dealing with droughts throughout the farming and harvesting seasons, as appropriate.

  In addition, Mitr Phol Group uses contract farming to mitigate risks of cane volume fluctuations and regularly communicates with farmers from the beginning of the farming season through to harvesting, to ensure mutual understanding of the process.

  Other related businesses also have plans in place to mitigate risk from cane volume fluctuations by contracting additional cane from other external sources. Evaluations of water resources required for production processes are also carried out for efficient water management. All sugar mills have adequate water supply for usage throughout the year. However, to ensure business continuity, Mitr Phol Group also has contingency plans in case of extreme droughts.

- **Risks from international investments and operations**

  Mitr Phol Group has had a foreign investment policy for more than 20 years, in markets including in China, Laos, and Australia. Foreign investments diversify risks and revenue sources, thereby minimizing the impact of global economic volatility. In 2018, Mitr Phol Group expanded its foreign investment portfolio to include a refined sugar business in Indonesia, building on the group's existing businesses and increasing its competitive edge in the global arena. As well as return on investment assessments, Mitr Phol Group also considers several aspects of risks, for example trade promotion policies, local laws and regulations, tax systems, and currency exchange fluctuations. Using careful and thorough analyses and focusing on its area of expertise, highly experienced executives from Thailand who are experts in their fields have also been relocated to Indonesia to oversee the business operations. Regular executive meetings are held to ensure smooth operations.

1.2 Risks from operations

- **Risks concerning product quality and safety**

Product safety is a top priority at Mitr Phol Group. We ensure that all of our products comply with international standards, and are hygienic and free from contaminants that may pose a threat to the health and safety of our customers. Our products must also serve the needs of consumers. Compromised product quality can adversely affect our customers' health and lead to dissatisfaction, complaints, product withdrawals, lawsuits, or boycotts. All such incidents can impact trust, reputation, and image, and may lead to loss of revenue and market share.

In 2018, Mitr Phol Group announced a new policy with an aim of encouraging cane farmers to minimize the usage of agricultural chemicals, especially ones that are harmful to human health, such as Paraquat dichloride. All suppliers were also informed that Mitr Phol Group does not use genetically modified cane. In the wood substitute business, high-quality products are made in the strictest compliance with formaldehyde emissions standards as consumer health is of the utmost importance to the company. A dedicated team is in charge of ensuring quality standards, analysis and planning for all business units. Mitr Phol Group has received several international certifications, including the Bonsucro Production Standard, the Forest Stewardship Council™ Forest Management (FSC™ FM), the Forest Stewardship Council™ Chain of Custody (FSC™ CoC), TISI, ISO, GMP, HACCP, FSSC and HALAL. Advanced technology is applied for product development and to improve production processes and machinery efficiency, helping to enhance quality control and product safety, build consumer trust, and raise global competitiveness.

- **Environmental risk**

Mitr Phol Group has continually committed to improving environmental management systems. In addition to complying with all relevant rules, regulations, laws, and commitments, Mitr Phol Group has also taken precautions to minimize environmental impact on employees, communities and other stakeholders throughout the value chain, from cane farming, juicing, and production, through to storage and transportation.

Several preventive measures have been put in place. To mitigate any possible environmental impact, regular audits are performed by internal departments within Mitr Phol Group, central and regional government offices, and independent external agencies. Knowledge sharing helps to improve farmers' understanding of the importance of efficient water usage and the harm of cane burning. Environmental management standards are continually improved. Through ISO 14001, the company carries out machinery maintenance and the installation of equipment to help minimize the environmental impact. For example, planting rows of pine trees, installing netting, and spraying water help to reduce dust dispersion caused by byproducts of the production process. A tri-partite committee comprised of representatives from the factories, government agencies and local communities create recommendations on how to improve environmental management systems sustainably. Mitr Phol Group also promotes community relations through several activities to ensure a correct understanding and create healthy relationships between the factories, the government sector, and local communities. Opinions and suggestions from villagers are also taken into account in order to improve the group's environmental management systems.

1.3 Financial risk

- **Risks from commodity price fluctuations**

  Volatile sugar prices in the global market can have an impact on operational costs and can result in revenues not meeting expectations. Other commodity prices can also impact Mitr Phol Group's businesses, for example oil prices have an effect on ethanol sales and transportation costs both domestically and internationally.

  Mitr Phol Group closely monitors and analyzes trends as well as possible impacts of relevant commodity prices. Discussions in executive meetings take place on a monthly basis in order to respond to any potential situations by adjusting strategies, plans, and policies in a timely manner. A special task force was created to directly oversee and manage risks posed by fluctuating sugar prices.

  In addition, efforts are made to use technology and innovation to reduce costs and increase productivity in order to improve production, storage and transportation management and efficiency. Mitr Phol Group also has policies to manage risks from global sugar price volatility by arranging advance contracts, managing the sales mix and product prices, and negotiating clear contracts with transportation providers. Such measures allow Mitr Phol Group to balance revenue and costs at an acceptable and manageable level despite volatility risks of sugar and other commodity prices on the global market.

- **Risks from currency exchange rates**

  Currency exchange rates are volatile and can change rapidly, causing a direct impact on Mitr Phol Group's business operations, as the group's main source of revenue comes from sugar exports, the wood substitute business, and other overseas operations.

  The Financial Risk Management Committee is responsible for establishing the financial and currency exchange risk management framework and ensuring appropriate actions are taken as necessary. Committee meetings are held on a monthly basis to stay abreast of any current or potential situation. A task force has been set up to directly oversee financial risk management, monitor global economic trends, and analyze factors that may impact currency exchange rates. Appropriate financial tools are used for certain situations, for example forward contracts, options contracts, and natural currency hedging.

- Risks from non-performing loans to cane farmers

  Mitr Phol Group has a policy to provide financial funding to farmers through cane contracts, which are also considered a risk management method to ensure raw materials security. The group provides important items for farming such as cane species, fertilizers, machinery and other equipment. In addition, farmers are provided with access to low-interest loans for building irrigation systems, and purchasing machinery and equipment, as well as for operating cash flow during cane farming seasons. When farmers deliver cut canes to the factory, their revenue is deducted for loan repayments. Risks related to this system stem from farmers' failure to supply cane or meet the repayment amount, which can be due to a variety of reasons such as natural disasters, diseases, or choosing to sell their cane elsewhere.

  In order to effectively manage such risks, Mitr Phol Group uses an integrated technology system to maintain a database of cane farmers, their historical productivity rates, their loan information, collateral, repayments, cane delivery, and receipt of revenue. The database helps to identify farmers and assess their ability to make loan repayments. Processes for establishing loan limits and assigning credit ratings to farmers are clearly defined. Support is also provided to educate farmers about leasing machinery and equipment, borrowing cane species, and securing fertilizers, in order to maximize productivity. A GPS system is also used to collect information about geographical data, yields, and farm management, and help to increase planning efficiency. A special committee has been established to oversee loan approvals, and to monitor and analyze the loans, thus ensuring that farmers' debts are at an acceptable and manageable level.

1.4 Legal and regulatory compliance risk

Failure to comply with the laws, rules, and regulations relevant to Mitr Phol Group's business operations may result in a negative impact to its business and reputation. To ensure compliance, Mitr Phol Group has established a task force that is directly responsible for ensuring compliance with current laws, supporting and coordinating with representatives from all business units, and monitoring overall compliance performance. The company has also established the Mitr Phol Group Compliance Guideline. As Mitr Phol Group's businesses span across several industries, representatives from each business unit are responsible for compiling checklists to ensure full compliance and prevent any unintentional breaches of the laws, rules, and regulations. Clear and official roles and responsibilities are defined for each business unit.

2. Emerging Risks

2.1 Risks relating to the restructuring of the Thai sugar industry

Thailand is currently undergoing a systemic restructuring of the cane and sugar industries to become more aligned with international standards and obligations, and to become more fair toward consumers and stakeholders. The restructuring, which is being led by the Ministry of Industry, began in 2017 and is expected to be completed by 2021. As such, operators must adapt their business strategies accordingly in order to maintain a competitive edge. On January 15, 2018, the Royal Gazette – the government's official publication – announced that revisions will be made to the laws to be compatible with the overhaul of the cane and sugar industries (2018, pages 20-21). A crucial part of the changes is the cancellation of fixed sugar prices for domestic consumption and the floating of domestic sugar prices according to market mechanisms. This results in lower sales prices at sugar mills that are in line with global market prices and expectations.

Mitr Phol Group is monitoring the situation closely. To enable Mitr Phol Group to handle future changes, the group will continue to monitor the situation, perform feasibility assessments, and work closely with other entities including Thai Sugar Millers Company Limited, the Office of the Cane and Sugar Board, and representatives from farmers associations.

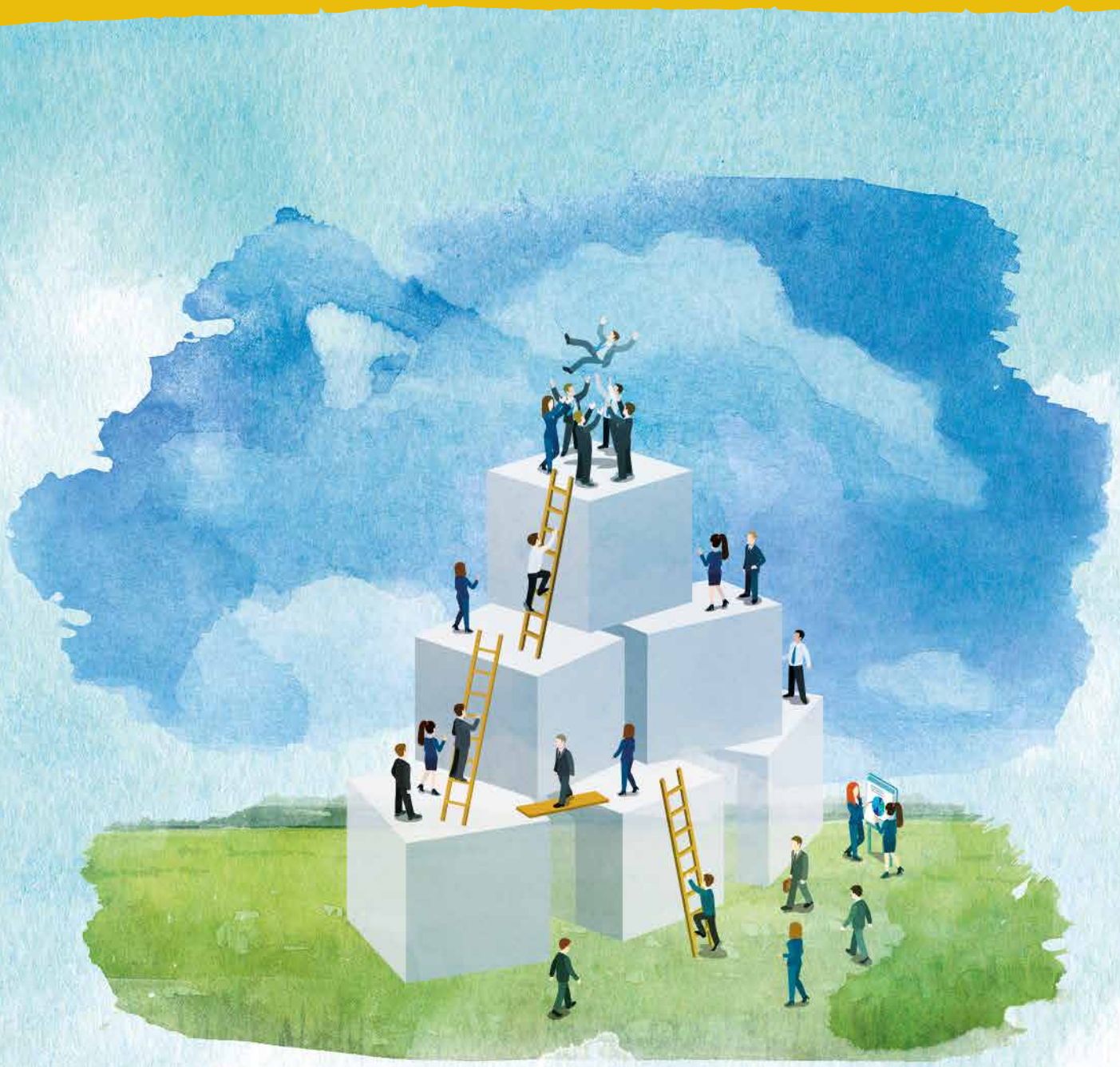
The floating of domestic sugar prices when global prices are low could lead to situations in which cane farmers switch to growing other crops instead. The Thai government plans to utilize a special cane and sugar fund designated as an assistance mechanism if such incidents were to occur. Mitr Phol Group pays great attention to the floating of sugar prices and fully realizes the risk of fluctuations in cane volume received for juicing. As a result, Mitr Phol Group will continue to monitor the situation in order to make preparations, while keeping up constant communication with cane farmers.

2.2 Risks from digital disruption

Technology has influenced the way businesses operate, the way we live, and consumer behavior. As a result of the growth of technology, organizations must be adaptable and agile in order to effectively cater to the needs of consumers. Efficient and smart management, coupled with innovation, help organizations to enhance their competitive edge and bring about sustainable growth.

Mitr Phol Group closely monitors technological changes and advancements in an effort to understand, analyze, and benefit from opportunities that will arise. The goal is to apply appropriate technology in Mitr Phol Group's value chain in order to improve work processes, production, storage, and delivery. Technology can also help to improve sales channels, payment methods, and communication. Moreover, we also establish the digital transformation unit to drive digital strategies into a new way of operations for enhancing efficiency, convenience, speed, cost effectiveness, environmental protection, and safety. Benefits brought about by technology include initiating the farmer cards with commercial banks, direct access to consumers via social media platforms, new sales channels from e-commerce, and artificial intelligence and robots now deployed in the sugar packing processes. Technology also brings about opportunities to reach untapped markets and create new business models.

Employees:
"Caring for Employees, United for Success"



Employee Information

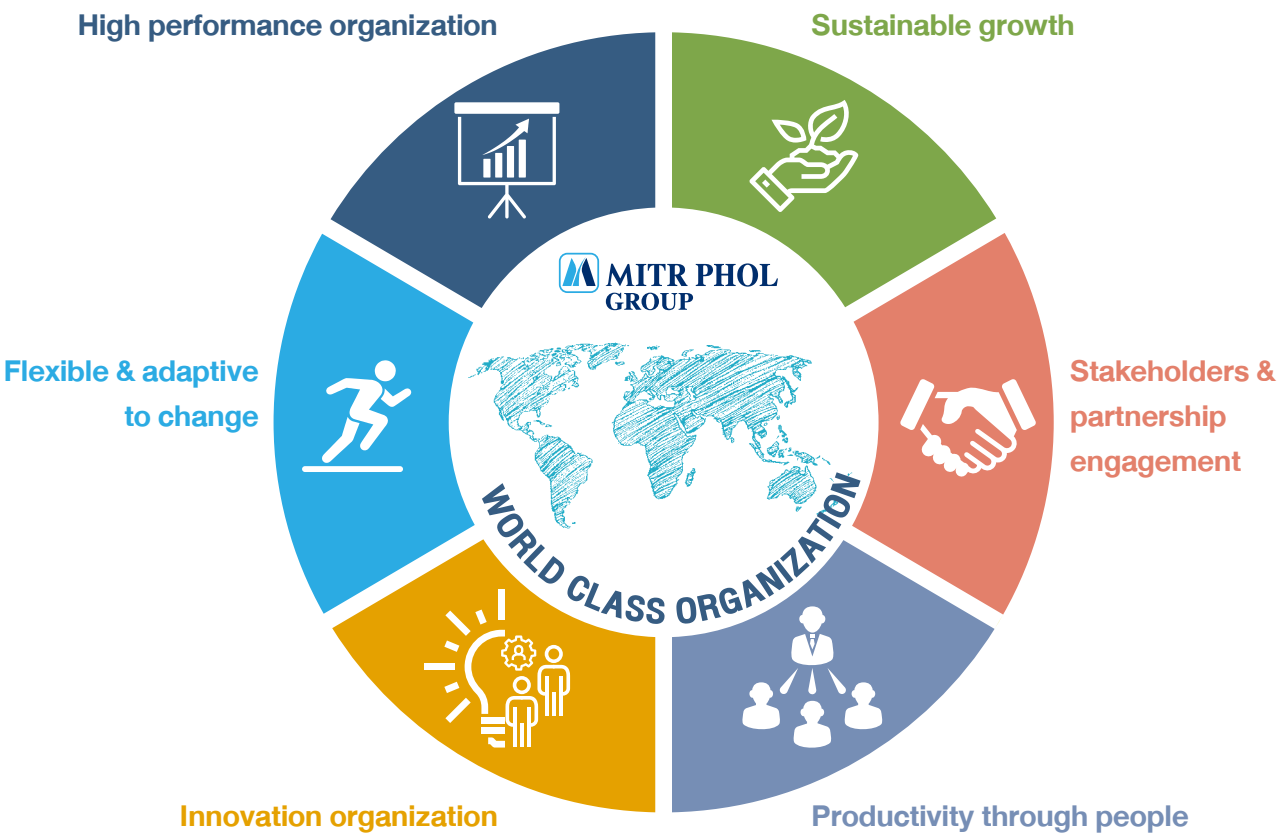
Synchronized Employee and Organizational Development

Performance Evaluation

Employee Care

Mitr Phol Group places great importance on human resources, as the effective management of our workers is integral to our organization's success. We believe in the value of every human being and enabling all of our employees to develop the necessary skills and capabilities. It is our hope that our employees contribute their knowledge, experience, and expertise toward helping Mitr Phol Group become a world-class organization. In order to achieve this goal, our people are at the heart of the effort. We promote employee engagement and inspire our people to love the organization and work together to achieve sustainable growth.

Mitr Phol Group's Path towards a World-Class Organization Puts Emphasis on 6 Key Development Dimensions.



Employee Information (102-8)

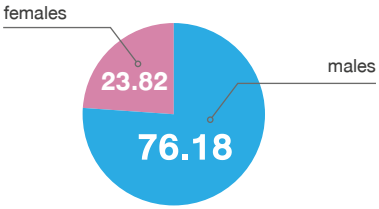
As of the end of 2018, Mitr Phol Group employed 7,892 people, 76.18 percent of which were male, and 23.82 percent were female. During the year, there were a total of 829 new hires, with 595 being male (71.77 percent), and 234 being female (28.23 percent).

Mitr Phol Group Employees

7,892 people
Total

6,012 people
Male
76.18%

1,880 people
Female
23.82%

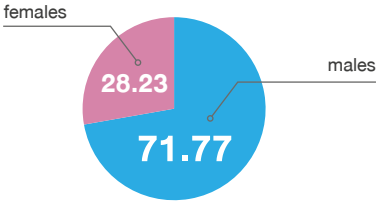


New hires of Mitr Phol Group Employees

829 people
Total

595 people
Male
71.77%

234 people
Female
28.23%



One of Mitr Phol Group's recruitment policies is to hire local people and to actively promote a better quality of life for surrounding communities through employment opportunities. This not only helps generate income for residents of the local areas but also promotes community relations and acceptance. Our remuneration structure is in line with legal requirements.

We also extend employment opportunities to the disabled, thereby improving their access to opportunities and encouraging community members to realise the value of those who are challenged. In accordance with the Empowerment of Persons with Disabilities Act, we employ disabled workers in our factories, as well as through our projects that allow them to work conveniently close to their homes, hospitals and schools. Support is provided by a dedicated team of officers. We believe that by providing equal opportunities for the disabled, they are empowered to make contributions to their own communities, the wider society, and the country at large.

Mitr Phol Group employs disabled

87 people
Mitr Phol Group employs disabled

52 people
males

35 people
females

30 people

Article 33: employment in factories

- Decent Work and Sufficient Income
- Decent Accommodations
- Self-worth awareness

54 people

Article 33: employment in local communities

- Decent Work and Sufficient Income
- Decent Accommodations
- Self-worth awareness

3 people

Article 35: training to become an entrepreneur

- Opportunity provision to be entrepreneurs
- Decent Work and Sufficient Income
- Self-worth awareness

Synchronized Employee and Organizational Development

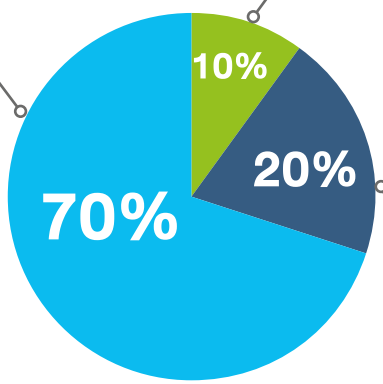
Leading the company towards a world-class organization is one of Mitr Phol's strategies and employees are the key in achieving world-class performance. As such, Mitr Phol Group's core focus in human resources management is to promote employee engagement and dedication, so that they are inspired and enabled to enhance their capabilities and as a result help drive the organization towards success. This method of human resources management is considered a key challenge for organizations in the current business landscape.

Mitr Phol Group's strategies emphasize the selection process, remuneration setting, fair performance evaluation, enhancement of new employees' potential, and high-talent management. The human resources roadmap deploys 5 Strategies which entail productivity enhancement, employee relations, competency enhancement to meet international standards, organizational effectiveness, and uplifting the standards of our human resources management approach. Thanks to these strategies, Mitr Phol Group believes that the strategies will bolster employees' potential and hence boost the organization's competitiveness.

Mitr Phol Group's competency development for employees

Mitr Phol believes that the direct experiences are the best employee development program. It helps employee to be the really successful learners. Mitr Phol Group adopts a "70:20:10"

70%
of the competency development effort is dedicated to direct experiences from assignments and job rotation.



10%
comes from training and seminars. Line managers play an integral role in the success of the program, as they plan the development goals of their direct reports, encourage their progress, and act as good role models.

20%
is devoted to coaching, and the remaining

Mitr Phol Group's employee skills development program is competency-based and made up of the following components:

1. Functional Competency Development

Enhancing employees' functional competencies to uplift their skills and help them to work more efficiently. To ensure that employees in all job functions benefit from the development programme, we focus on seven core functional competencies:

1 Cane Academy

Enhancing relationship management between sugarcane farmers and relevant stakeholders, technology, cane assessment and tracking, and agricultural machinery, with the goal being to maximize production efficiency and productivity.

2 Bio / Cassava Academy

Developing knowledge about cassava, diseases and pests, and the tapioca flour production processes.

3 Production Academy

Mitr Phol Group partnered with educational institutes in Thailand and abroad, including

- Australia's Queensland University of Technology and King Mongkut's University of Technology in Thonburi province, to develop the High Level Design-Sugar Milling.
- Technology program, which builds core competencies for employees who specialize in sugar technology and sugar chemistry. Technical training centers were established at all sugar mills to provide instruction and practical expertise for factory employees in skills such as repairing valves, motors, and electrical circuits. The centers also provide individual assessments to help each employee progress effectively.

4 Energy Academy

Developing functional competencies in energy and enhancing employees' skills in areas such as fuel management and water quality for electricity generation.

5 Marketing Academy

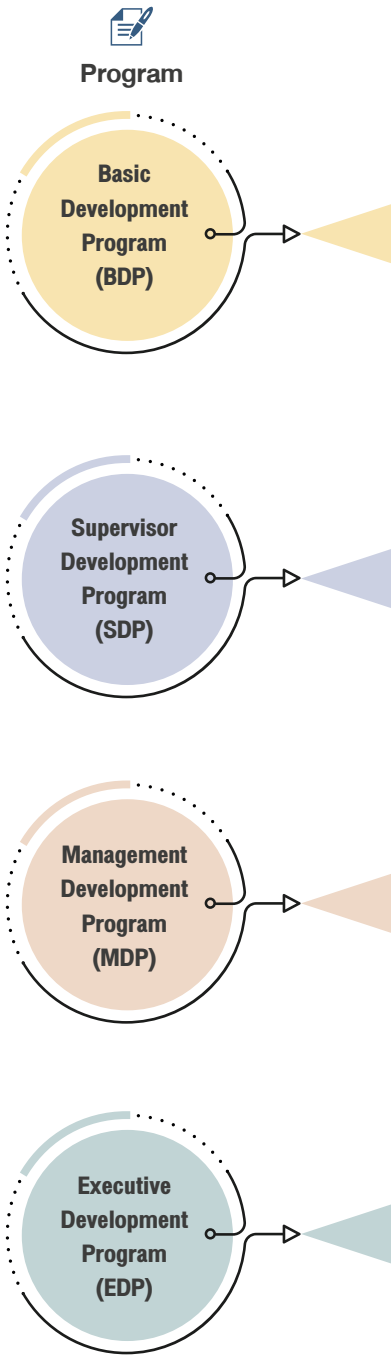
Developing functional competencies in marketing for employees through training sessions such as successful branding.

6 Financial / IT Academy

Developing functional competencies in finance, accounting, and information technology through courses such as cost management, tax management and financial analysis.

7 Safety & Productivity Academy

Developing functional competencies in safety and productivity. Training courses include safety, occupational health, and environment.



2. Leadership and Managerial Competency Development

Leadership and managerial competency development aims to increase competency and leadership skills, while promoting employee relations so they are able to work efficiently, enjoy a healthy work-life balance, and be ready for career advancements. Through two core programs, Mitr Phol Group focuses heavily on building leadership skills for employees across all levels:

Signature Development Program

- This unique program was designed to help build leadership skills and networking by having employees work together in projects. The program focuses on a blend of learning techniques and includes information from business case studies, project-based learning, and knowledge sharing from top-level management, guest speakers and experts from several fields. Progress is tracked and measured, while the skills and knowledge learned can be used to help promote individual success and achieve business advantages. The curriculum is made up of four programs to serve the development needs of each employee level.

Target group	Program objectives
1. Operational employees who contribute in driving a team's targets, under the supervision or a manager.	1. Building basic leadership skills and adopting more efficient work practices. 2. Promoting an understanding about Mitr Phol Group's business strategies and operations to help the employee carry out his / her duties in line with the needs of the business. 3. Building communication and interpersonal skills to help the employee to work better with others.
1. Supervisors, assistant managers or equivalent who are tasked with managing a team, setting team goals, delegating work, and overseeing the quality of work for an entire team. 2. Supervisors who have been promoted from operational positions to being in charge of other team members. They require training to give them new perspectives and build leadership skills.	1. Building management competency and effective supervisory skills. 2. Promoting knowledge about business administration that can be applied to daily work. 3. Developing interpersonal, social, and communication skills, in order to enhance professionalism and motivate their team.
1. Manager or equivalent who are responsible for planning and setting direction, and supervising and developing his / her team. 2. Managers who require training in strategic business administration and learning from business case studies.	1. Enhancing high-level leadership skills in order to effectively meet business targets. 2. Building knowledge and competency in strategic thinking, business administration, and corporate and resources management, to increase the group's competitive edge. 3. Developing communication, presentation, interpersonal, social, and motivational skills.
1. Vice President or equivalent who are responsible for setting the vision and direction for the business, leading the organization through change, and building the group's sustainable competitiveness on an international level.	1. Developing skills in change management, competency building for team members, and promoting brand engagement to steer the organization toward success. 2. Enhancing strategic thinking skills, promoting an understanding about international policies and management, and understanding paradigm shifts in business administration. 3. Developing interpersonal, social, communication, and leadership skills to motivate employees and steer them through change in order to grow with the organization.

Employee development results

Mitr Phol Group in 2018 achieved the following results from its 70:20:10 employee development approach emphazing employees' learning:

1. Competency enhancement through direct experiences (70%)

Projects deriving from employee development

- Development through Constructionism Empowerment-Mitr Phol Learning Camp (CE-Mitr Phol Learning Camp) which promotes project-based learning (PBL). Throughout the year, there were a total of 80 projects under this program.
- Development through Siganature Development Program (BDP, SDP, MDP, EDP) Six classes were held this year with 260 participants for 64 projects.

Program	Results	Participants			No. of proposed projects	Expected project returns (Million baht)
		Classes	Person	Percentage		
Basic Development Program (BDP)	1. Learning and understanding leadership skills and enhancing individual leadership for efficient job handling. 2. Learning and understanding Mitr Phol Group's business strategies and operations from the beginning through the expansion period and introduction of value-added businesses, and ably performing accordingly to the group's requirements. 3. Improving communication skills and relationship with other employees, to ensure efficient cooperation and maximum business benefits to Mitr Phol Group. 4. Applying knowledge and understanding from Basic Development Program in designing projects that support Mitr Phol Group's business policies and strategies.	3	136	4.85	35 projects	113
Supervisor Development Program (SDP)	1. Instilling supervisors with knowledge and leadership competency, enabling them to efficiently lead their teams towards the goals of their business units. 2. Equipping supervisors with knowledge and understanding in business administration strategies for their daily use and their respective business units' success. 3. Enhancing skills in communication and building good relationship with people in their own teams and other teams as well as improving personality for positive image and professionalism among Mitr Phol's leaders. 4. Applying knowledge and understanding from SDP Program in devising projects that support Mitr Phol Group's business policies and strategies.	2	98	13.33	23 projects	49

Program	Results	Participants			No. of proposed projects	Expected project returns (Million baht)
		Classes	Person	Percentage		
Management Development Program (MDP)	1. Obtaining high-level leadership knowledge and skills, enabling efficient exercise of leadership in managing tasks for the success of respective business units. 2. Improving knowledge and ability in strategic thinking, strategy management and business management to create the organization's competitive advantages. 3. Improving skills in communication, relationship building and inspiring employees. 4. Applying knowledge and understanding from MDP Program in devising projects that support Mitr Phol Group's business policies and strategies.	1	26	14.36	6 projects	691

- Development under Pracharath-Leadership in Sustainable Education Project (Connext-ED), which allows volunteering employees to initiate 1-year development projects in collaboration with 17 schools. The collaboration not only enhances the participating employees' competency in project management, leadership, direct experiences as well as skills in management, trouble solving and decision making, but also helps support national education and runs along Mitr Phol Group's sustainable development philosophy.

2. Coaching (20%)

Supervisors' coaching skills had been continually improved through the following key projects:

- High-level and mid-level executive development project and Executive One on One Coaching Project for individual executives.
- A coaching skill improvement project for mid-level executives who exercised the knowledge through Mitr Phol Coaching Certification Program.
- Organizing Mitr Phol Coaching Day to recognize coaches and promote their learning from experience. Activities included the sharing of experiences of professional coaches and coaches passing Hall of Fame Program.

3. Training and seminars (10%)

The remaining 10% of development was completed by training and seminars, emphazing learning approaches that fit different knowledge levels of employees and new learning technologies. Details are as follows;

- Blended Learning Approach that blended theoretical knowledge development and exercise through Case Based Learning, Coaching by Executive, experience sharing, field trips to observe exemplary models, and the process to equip employees with skills and support self-learning.
- Focus placed on promoting executives' role in employee development by using internal coaches / project advisors and organizing experience sharing by high-level executives.
- Leadership skill development through self development under the Mindfulness Organization approach, for the happiness of the organization and teams.
- Applying more digital technology in the development and learning process such as Learning Passport for new employees using Mitr Phol Together Project's Mitr Phol Competency Lane and QR Code to obtain seminar papers, survey and evaluation documents and other papers.
- Intense evaluation that spurred learning in the entire organization and among individual employees through various tools including Yammer's Individual Learning Report.
- Efficient training and seminar budget management.

As mentioned above, the adjusted development approach produced varieties and attractiveness of development programs, hence drawing positive responses from seminar participants and high-level executives attending closing presentation session.

In 2018, Mitr Phol Group focused on developing the competencies of employees across all levels, with training hours detailed below.

Training hours of employee (404-1)

Detail		Average training hours of employee (Hour / people / year)			
		2015*	2016*	2017**	2018***
Average training hours of employee by year		7.81	5.63	24.94	22.20
gender	Male	4.18	3.46	19.69	20.41
	Female	6.48	4.61	10.26	27.85
level	Top level management	90.93	67.71	81.14	51.52
	Middle level management	61.34	42.10	55.21	49.00
	Line managers	13.29	12.04	59.54	34.88
	Officers	5.30	4.23	22.58	22.45
	Operational level	1.30	0.93	13.95	15.01

Remarks: * Data from year 2015 - 2016 was collected from January 1 to December 31 each year.
** Data from year 2017 was collected from November 1, 2016 to October 31, 2017.
*** Data from year 2018 was collected from November 1, 2017 to October 31, 2018.

Performance Evaluation (404-3)

Mitr Phol Group strives to promote the growth of employees alongside that of the organization. Annual performance evaluations are conducted for employees of all levels, using the 180-degree and 360-degree evaluation methods, depending on the employee's rank. The goal is to evaluate each individual employee's performance and enhance his or her capabilities to the maximum level. The evaluation is based on their performance and relevance to Mitr Phol culture, to ensure the improvement of their career path and capacity along the organizational growth.

Besides annual KPIs setting of Chief Executive Officer and President, a medium term KPIs & targets in 3 years are also identified including action plans and budgets. The targets are also updated and adjusted every year in order to suit with situation.

In 2018, the performance of Chief Executive Office and President have been assessed by Economic Value Added (EVA) and Earnings before Taxes (EBT) indicators. The EVA of sugar business in Thailand, energy business, and wood substitute business is difference between Return on Total Asset (ROA) and Return on Invested Capital (ROIC).

Meanwhile, fertilizer business and sugar business in ASEAN, Australia and China are assessed by earnings before Taxes (EBT). Moreover, business growth is corresponding to business strategy, business performance, and social and environmental development.

Employee Care

Mitr Phol Group's employees are generationally diverse, with 70 percent of them being from Generation Y, 22.33 percent from Generation X, and 7.67 percent belonging to the Baby Boomer generation. The challenge of managing such a diverse workforce is to ensure that employees of all generations and levels are able to work together and drive the organization's growth. Mitr Phol Group has identified 6 factors that help to promote employee satisfaction and company engagement.

Factor to raise the employee engagement with the organization

Advancement and learning opportunities

- English language programme
- High potential development programme (Talent)
- Talent mobility programme (secondments abroad)
- Technical skills development and tests by the Technical Training Center at each plant
- CE-Mitr Phol Learning Camp using the constructionism learning theory
- Best Practices Sharing programme and knowledge management systems

Corporate directions and performance

- Communicating the company's directions by high-level executives at town hall meetings
- Training for line managers about performance evaluations and how to give feedback to subordinates
- Development of employee collaboration tools such as Yammer, KPIs Alignment and EVA (Pay per Business Performance)

Leadership skills and team building

- Leadership skills and managerial skills training for supervisors in each level
- Buddy system for new hires
- Team building activities

Challenging work that brings pride to employees

- Engagement Focus Group programme in which colleagues take part in presenting ideas to improve work processes
- EVA Change Mindset programme
- Project-based learning
- Innovation awards

Reward and compensation schemes

- Reviewing salary and benefit structure to be relevant with individual groups and generations of employees
- Long service awards for employees who have been with the company for 15 / 20 / 25 years. Post-retirement health programme

Quality of living and work–life balance

- Several activities to engage employees such as clubs based on interests, volunteering, cleanliness activities, office gyms, CSR activities

Mitr Phol Group's employee engagement survey

Employee Engagement	2015*	2016*	2017**	2018***	Target 2018
Mitr Phol Group employees who feel engaged with the company	64%	68%	74%	77%	78%
Employees who took part in the engagement surveys	89%	93%	97%	97%	
Male employees who feel engaged	68%	73%	77%	79%	
Female employees who feel engaged	51%	55%	75%	72%	
Mitr Phol Group's male employees	51%	93%	99%	91%	
Mitr Phol Group's female employees	88%	92%	95%	89%	

Remarks: * Data from year 2015 - 2016 was collected from January 1 to December 31 each year.
** Data from year 2017 was collected from November 1, 2016 to October 31, 2017.
*** Data from year 2018 was collected from November 1, 2017 to October 31, 2018.

Mitr Phol Group also received the Best Employers Thailand award for the third consecutive year. Six companies under Mitr Phol Group - Mitr Phol Sugar Co.,Ltd., Singburi Sugar Co.,Ltd., Mitr Kalasin Sugar Co.,Ltd., Mitr Phol BioFuel Co.,Ltd. (Kalasin), Mitr Phol BioFuel Co.,Ltd. (Phu Khiao), and Panel Plus Company Limited (Hat Yai) - participated in the award programme in 2018. All of the entrants won awards, breaking the record for the most wins of the year. These awards are a testament to Mitr Phol Group's commitment to believing in human values and promoting employee engagement in a sustainable way. The awards also reflect the company's strong corporate culture and practices in capability development, helping Mitr Phol Group become a truly world-class organization.

Mitr Phol Group management accept Best Employers Thailand Awards 2018
from Aon Hewitt Thailand

Employee benefits

Mitr Phol Group takes care of the quality of life of employees of all levels. In addition to employee benefits provided according to the laws and regulations, workers receive several other privileges, including financial supports provident funds, scholarships to employees' children, as well as travel allowances and expenses. The welfare committee was established, consisting of at least 5 elected employees from each business unit. The committee promotes human rights and works with the group in devising welfare accordingly to employees' true needs. For instance, activity clubs are formed, while employees are invited to Sport Day and Thank You Party. There are sessions where executives and employee representatives discussed, recommended and exchange opinions on employment status, work, and the betterment of employees' quality of life, which nurture the good relations between employees and the group. In 2018, There are 0% of total employees covered by collective bargaining agreement. (102-41) (402-1) Moreover, a whistleblowing channel is in place to receive employees' complaints on the violations of the group's policies, laws or ethics which may cause impacts or damage to employees or the group. Meanwhile, the inquiry panel is ready to deliver fairness to all parties. The process serves as a channel whereby all employees can take part in monitoring the organization's interests.

In addition to benefits and development opportunities, we also ensure that employees approaching retirement are well prepared in several aspects, including mental and physical health, and financial planning. Training on retirement financial planning, living after retirement, savings, and social security benefits is provided for employees approaching retirement age to ensure they will continue to lead a happy, fulfilled, and self-sufficient life after their working days come to an end.

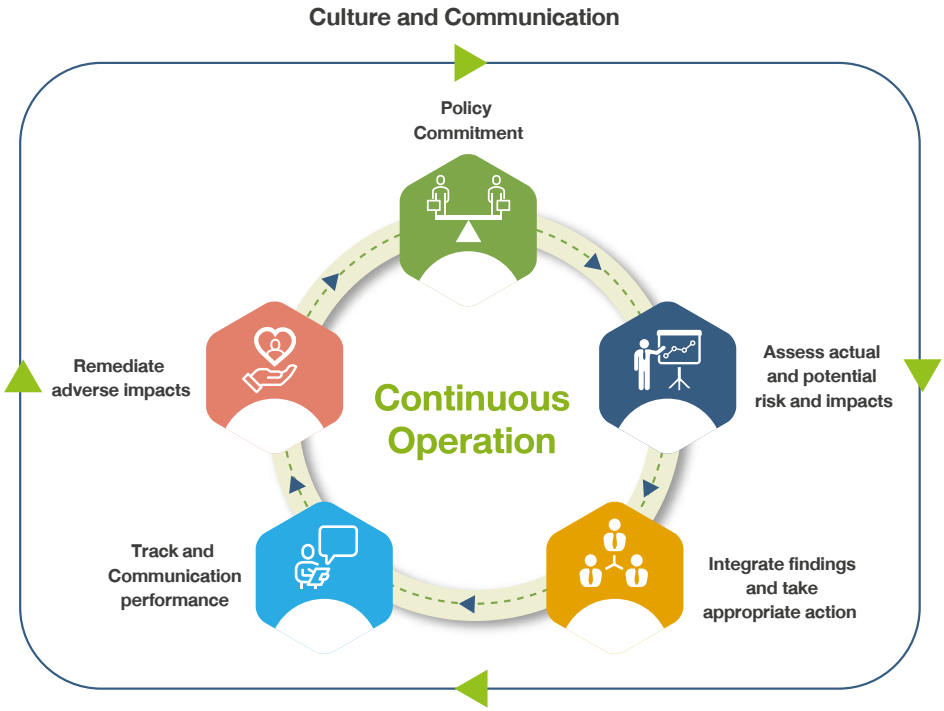
Human Rights:
"Promote Equality and Human Rights"

Human Rights Performance

Human Rights Performance

At Mitr Phol, we value the equality of individuals and respect for human rights which is one of fundamental aspect for our business operation. Therefore, the human rights is addressed in our Mitr Phol Code of Conducts and Mitr Phol Supplier Code of Conduct. In this regards, we are committed to conduct our business with human rights concerns under the principle of human rights in dealing with our stakeholders under value chain. Nonetheless, the issue of human rights is a critical challenge in every business sector even the company has implemented human rights issues. To ensure the fully covered human rights, we initiated to implement human rights due diligence under United Nations Guiding Principles on Business and Human Rights or UNGP as a framework for human rights management.

Process of Human Rights Due Diligence is shown as followed.



Human Rights Due Diligence: HRDD

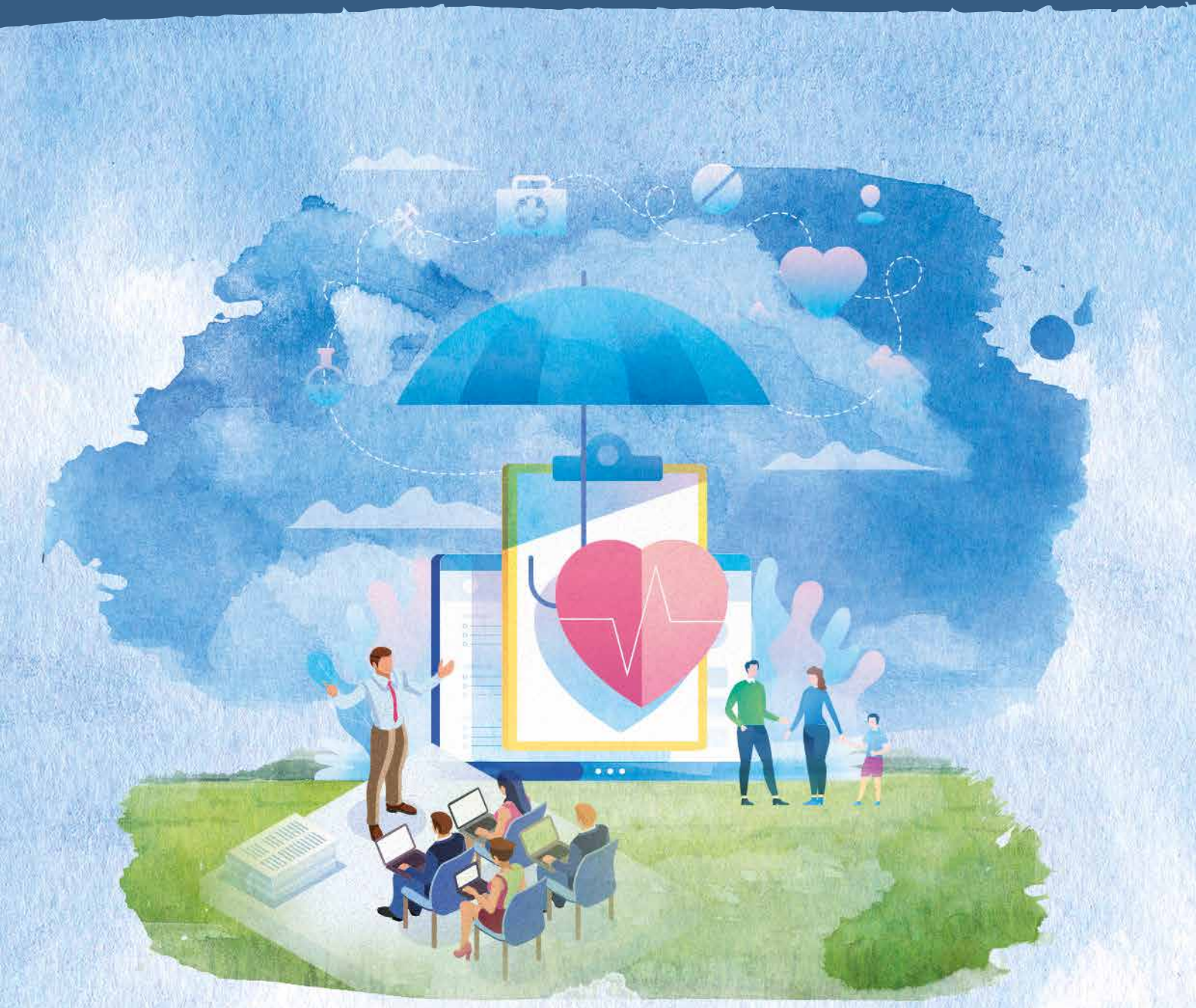
"It is important for private company to announce human rights policy. Not only does it show company's responsibility to all the stakeholders, but also support the company's business for sustainability. Human rights case of Mitr Phol in Cambodia, the company may collaborate with other organizations, not only government agency, to investigate any human rights issues in that area before making their investment decision.

Moreover, Mitr Phol's initiatives on community development is the right direction. Even though Mitr Phol is not the listed company, but the company's operations has aligned with all rules and regulations. This will support the company creditability. In the future, the expectations of all stakeholders will play an important role for business sector."

Dr. Seree Nonthasoot
Senior Executive Vice President
Institute of Research and Development for Public Enterprises

Representative of Thailand to the ASEAN intergovernmental Commission on Human Rights (2013-2018)

Occupational Safety and Occupational Health:
"Occupational Safety and Health are Our Priorities"



Safety, Occupational Health, and Environment Performances

Promoting Awareness about Safety, Occupational Health and Environmental Protection

Mitr Phol Group enforces the Safety, Occupational Health and Environment (SHE) policies to raise standards and awareness about the importance of ensuring the safety and health of all stakeholders, as well as protecting the environment. The enforcement of the policies covers everyone, including the Board of Directors, executives, employees, suppliers, contractors, communities, and others. Clear targets and plans have been identified and are aligned with international standards and certifications such as ISO14001:2015 and OHSAS18001:2007. The SHE policies have been cascaded to all sides, from high-level executives to employees, contractors, and other relevant parties. (403-1)

Mitr Phol Group established the Safety, Occupational Health and Environment functions at the headquarters and all factories to ensure efficient management. Hazard identification and risk assessment exercises are performed to identify risks and opportunities covering every process, activity, and area related to work, product manufacturing, and service. The assessments cover machinery, equipment, and related activities performed by contractors that are considered material to the group, both in normal and abnormal circumstances, as well as emergencies. As part of the process, control plans are developed and risks are kept at acceptable levels. Responsible and accountable persons are designated to regularly (403-2) monitor the process. Also, monitoring and feedback are utilized to continually improve Mitr Phol Group's SHE management and policies.

To ensure that hazard identification and risk assessments are current, reviews and improvement measures are conducted at least once a year, or when significant changes are made to the raw materials, production processes, activities, machinery, or personnel, as per the Hazard Identification and Risk Assessment standards (MP-QP-8002-017). If employees or supervisors find that they have been assigned activities that are risky or may result in harm, injury or death, they are entitled to refuse to perform or stop such activities immediately. They are also required to immediately inform relevant persons to fix the problems, as per the Duties and Regulations standards (MP-QP-8002-025). In the case of an incident or non-compliant condition, there are processes in place for reporting, investigating, analyzing, implementing preventive measures, and following-up to make sure repeat incidents do not occur, as per the Incident Management standards (MP-QP-8002-019). (403-2)

Safety, Occupational Health, and Environment Performances

1. Employees' health services and promotion (403-3) (403-6)

Mitr Phol Group provides medical doctors and nurses from hospitals accredited by the Thai Public Health Ministry to be stationed at an infirmary at each location, as required by law. The doctors and nurses provide consultations, treatments, and services to employees and contractors during office hours. The Safety Clinic also provides care to employees and contractors who sustain injuries while on duty, or whose health is impacted by the work they perform. The Safety Clinic provides health promotion, disease prevention, consultation and occupational disease surveillance. Activities promote services provided by the Safety Clinic. Regular working group meetings, health-related activities, occupational injury / disease prevention, and training sessions about occupational injuries/diseases are held at the clinic. Records of incidents and occupational injuries are utilized to prevent and control future accidents and injuries. The Safety Clinic provides another channel through which employees can gain access to diagnosis, treatment, and care post-accident and injury. In addition, other activities and campaigns promoting occupational health and non-occupational health are held regularly, such as the Disease-free & Safe Workplace programme, hepatitis B and influenza vaccinations, and an exercise promotion scheme.

The Safety Clinic at the factory

Educating employees and contractors about disease prevention

2. Employee engagement, consultation and communication programmes regarding Safety, Occupational Health, and Environment (403-4)

Mitr Phol Group promotes SHE engagement and open discussion among employees and contractors, encouraging them to provide feedback and suggestions on how to improve occupational health and safety through activities such as worksite control and walkthroughs, SHE suggestions, Asakai Board, Completely Check Completely Find Out (CCCF), and Kaizen. Regular communications on SHE-related topics, such as responsibility and accountability, objectives, goals, plans, performances, risk control plans, regulatory changes, and incidents, as well as executive reviews of SHE performances. Mitr Phol Group's ultimate goal is zero incidents and accidents.

Mitr Phol Group has also appointed the SHE committee chaired by an employer representative. Other committee members include representatives from management-level and operational-level employees, and a secretary. The committee is responsible for ensuring Mitr Phol Group's SHE policies and performance are compliant with local laws and regulations. Monthly meetings are held, and regular updates and communication regarding the SHE performance are provided to employees, contractors, and other relevant parties. The below table shows the SHE committees at each plant.

Plants	SHE committees				Total	Legal requirements
	Employer's representatives	Management-level employees' representatives	Operational-level employees' representatives	Secretary		
Mitr Phol Dan Chang Sugar Mill	1	4	5	1	11	11
Singburi Sugar Mill	1	5	6	1	13	7
Mitr Phu Khiao Sugar Mill	1	29	30	1	61	11
Mitr Phu Wiang Sugar Mill	1	10	11	1	23	11
Mitr Kalasin Sugar Mill	1	12	13	1	27	11
Mitr Phu Luang Sugar Mill	1	10	11	1	23	11
Dan Chang bio-power plant	1	3	4	1	9	7
Phu Khiao bio-power plant	1	6	7	1	15	7
Dan Chang ethanol plant	1	3	4	1	9	5
Phu Khiao ethanol plant	1	5	6	1	13	7
Kalasin ethanol plant	1	8	9	1	19	7
Kuchinarai ethanol plant	1	6	7	1	15	5
Mae Sod Clean Energy plant	1	3	4	1	9	7
Rachasima Green Energy plant	1	5	6	1	13	5
Panel Plus Had Yai Factory	1	4	5	1	11	11
Panel Plus (MDF) Factory	1	2	3	1	7	7
Panel Plus Factory, Samut Sakorn	1	5	6	1	13	5
United Standard Terminal Public Company Limited	1	2	3	1	7	7
Aawthai Warehouse Company Limited	1	1	2	1	5	5
Total	19	123	142	19	303	

3. Safety, Occupational Health, and Environment statistics

Mitr Phol Group records SHE statistics of employees and contractors on a monthly basis, collected by the SHE committees. (403-9) SHE statistics can be found as follows.

Mitr Phol Group's workplace near miss statistics

	2015*	2016*	2017**	2018***
Number of near miss	NA	347	2,293	2,677

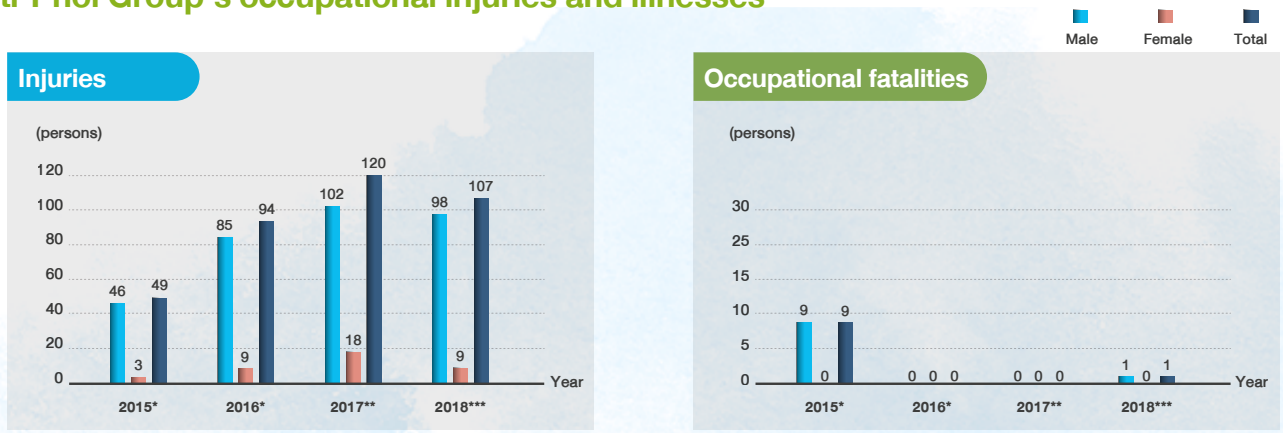
Remarks: NA (Not Available) – No data was recorded

* 2015-2016 data refers to data collected during January 1 – December 31 of each year

** 2017 data refers to data collected during November 1, 2016 – October 31, 2017

*** 2018 data refers to data collected during November 1, 2017 – October 31, 2018

Mitr Phol Group's occupational injuries and illnesses (403-9)



Remarks: * 2015 – 2016 data refers to data collected during January 1 – December 31 of each year

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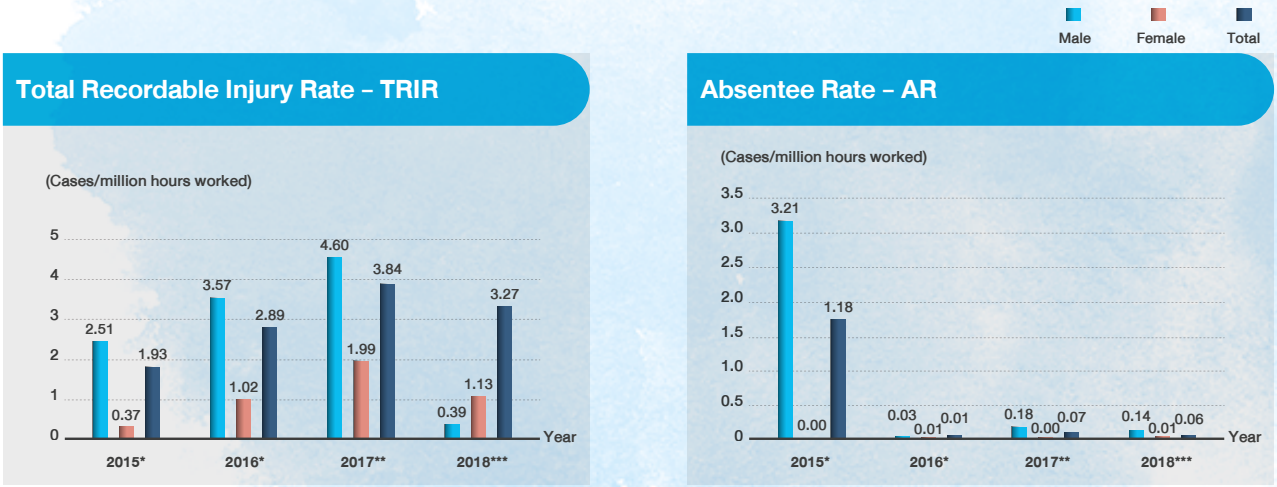
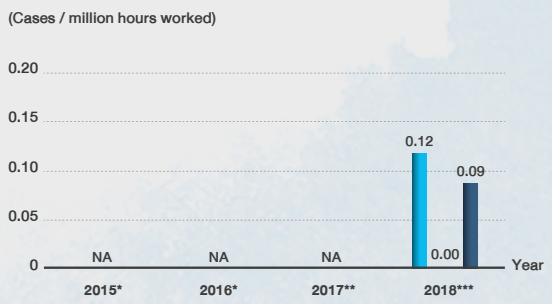
*** 2018 data refers to data collected during November 1, 2017 – October 31, 2018

Mitr Phol Group's occupational injuries and illnesses (403-9)

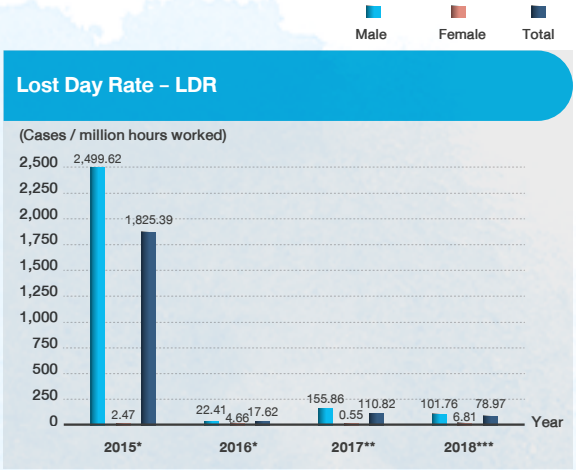


Mitr Phol Group's occupational injuries and illnesses (403-9) (Continue)

Rate of high-consequence work-related injuries (excluding fatalities)



Lost Day Rate – LDR

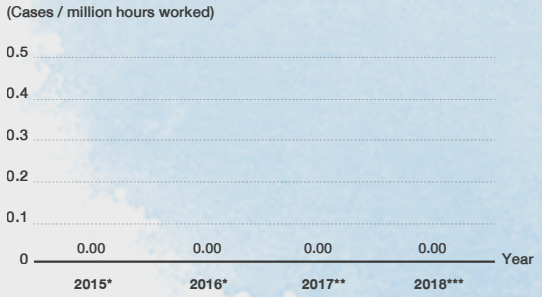


Lost Time Injury Frequency Rate – LTIFR

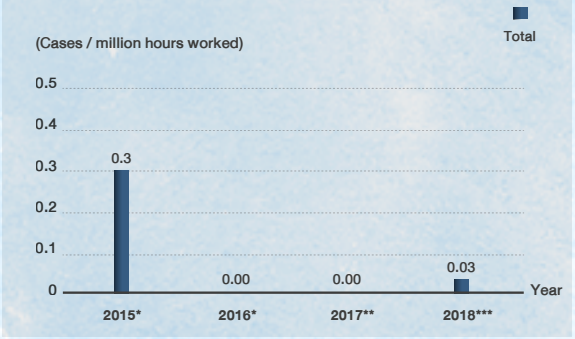
2018 Target:
0.6
Cases / million hours worked

2019 Target:
0.3
Cases / million hours worked

Occupational Illness Frequency Rate–OIFR



Rate of fatalities as a result of work-related injury



Remarks:
- No record of rate of high-consequence work-related injuries (excluding fatalities) during 2015 – 2017
- Lost Time Injury Frequency Rate (LTIFR) $= \frac{\text{Number of lost-time injuries} \times 1{,}000{,}000 \text{ hours worked}}{\text{Total hours worked in accounting period}}$

* 2015 – 2016 data refers to data collected during January 1 – December 31 of each year

** 2017 data refers to data collected during November 1, 2016 – October 31, 2017

*** 2018 data refers to data collected during November 1, 2017 – October 31, 2018

4. Safety, occupational health and environment related loss control, prevention and reduction

The 2018 performance saw one fatality and two cases of lost limbs, while recordable injury rates, loss day rates, and absentee rates were also reported. These issues were due to a lack of awareness, knowledge, and understanding about occupational safety. (403-9) As a result, Mitr Phol Group has placed a greater importance on creating awareness about occupational safety among employees. In 2018, the group compiled the Life Saving Rules (403-7)(403-9) for employees, contractors, and all relevant persons. The Life Saving Rules are standards by which they must live to promote occupational safety. It is one of several measures to promote awareness and prevent accidents and incidents that may lead to loss of life or assets. The Life Saving Rules were first implemented in the sugar, energy, and wood substitute businesses, and will be expanded to cover all of Mitr Phol Group's businesses next year. The rules can be applied, modified and improved to fit the work conditions of each business unit.

Life Saving Rules

4 Must
3 Must not

1. Must wear full-body safety harnesses

with double hooks and keep the hooks locked all the timewhen working at height greater than 2 meters.

2. Must obtain work permits for risky tasks

(for example, work that involves heat or sparks, work at height greater than 2 meters, or work at spots with poor ventilation).

3. Must switch off electric, air and hydraulic machinery and hang the "stop machinery"

sign every time before carrying out machinery maintenance or cleaning tasks.

4. Must fasten safety belts (driver and all passengers)

prior to moving vehicles from parking lots and keep safety belts fastened throughout the journey. Factory vehicles are included.

5. Must not smoke in factory except in provided areas

and must throw cigarette butts only to the provided trash.

6. Must not modify machinery and equipment

or bypass safety interlocks without permission from supervisors (manager level or higher).

7. Must not use telephone (no call / photo taking / typing / listening) in areas prone to fires and explosions

while operating machine and driving all types of vehicles.

Life saving rules in Wood Substitute Material Business

1.

Must **wear full-body safety harnesses** with double hooks and keep the hooks locked all the time when working at height greater than 2 meters.

2.

Must **obtain work permits for risky tasks** (for example, work that involves heat or sparks, work at height greater than 2 meters, or work at spots with poor ventilation).

3.

Must **switch off electric, air and hydraulic machinery and hang the "stop machinery"** sign every time before carrying out machinery maintenance or cleaning tasks.

4.

Must **fasten safety belts (driver and all passengers)** prior to moving vehicles from parking lots and keep safety belts fastened throughout the journey. Factory vehicles are included.

5.

Must not

drive forklift without forklift driving license.

6.

Must not

smoke in factory except in provided areas and must throw cigarette butts only to the provided trash.

7.

Must not

modify machinery and equipment or bypass safety interlocks without permission from supervisors.

8.

Must not

use telephone (no call / photo taking / typing / listening) in areas prone to fires and explosions while operating machine and driving all types of vehicles.

Life Saving Rules for the cane business production season during the 2017/2018

1.

Must

wear safety belts before the vehicle is in motion and throughout the journey for the driver and all passengers. This includes agricultural machinery.

2.

Must

wear a helmet when traveling by motorbike for the driver and all passengers.

3.

Must

wear personal safety gear as required throughout the duration of work.

4.

Must

inspected prior to use for machinery, agricultural equipment, and vehicles.

5.

Must not

trucks exceed the legal load limits for trucks transporting cane and other products.

6.

Must not

drivers operate any vehicle while under the influence of alcohol, while tired, physically unprepared or while using a mobile phone or other communication device.

7.

Must not

travel home when physically not ready, especially during the night time.

8.

Must not

sell or consume alcohol, use narcotic drugs, or engage in gambling anywhere on the Company's premises.

9.

Must not

exceed the legal speed limit when operating any vehicle.

In addition, Mitr Phol Group has introduced other safety measures for everyone to follow in order to comply with the highest occupational safety standards. (403-1)

Mitr Phol Group's subcontract labor practices now include safety management systems for contractors, as well as punishments for infractions.

Safety standards for visitors, suppliers and contractors (see MP-QP-8002-012 for details).

Height work permits must be obtained when working in high places (see MP-QP-8002-010 for details).

Hot work permits must be obtained when working near high heat sources and sparks (see MP-QP-8002-007 for details).

Standards for working near high-voltage power lines, lockout / tag out policy, and signs on machinery (see MP-QP-8002-003 and MP-QP-8002-006 for details).

Working in a confined space (see MP-QP-8002-002 for details).

Forklift operation (see MP-QP-8002-009 for details).

Safety standards when working near cane dumping areas.

The prevention of explosions caused by dust, biogas and LPG.

Promoting Awareness about Safety, Occupational Health and Environmental Protection (403-5)

Building a corporate culture around occupational health and environmental protection is of the utmost importance to Mitr Phol Group. All stakeholders, from the board of directors and management to employees, suppliers, contractors and communities, must be aware of Mitr Phol Group's commitment to occupational health and environmental protection, and all can play a part in upholding the standards. The following activities help to promote knowledge and awareness about occupational health and environmental protection:

- Basic training about fire protection, including the conducting of fire drills.
- Safety training for work-related and non-work-related operations for employees and contractors on-site. Promoting safe behaviors for contractors.
- A knowledge management system on Mitr Phol Group's intranet.
- Appointing SSHE Men - designated persons who are responsible for monitoring and reporting on safety operations when employees and contractors work in risky areas. Also, ERT Men, who are designated persons for emergency response, receive training about fire protection and emergency response procedures and are responsible for ensuring the readiness and viability of fire equipment at work sites.
- Activities on occupational health, safety and environment each factory

SHE DAY at Panel Plus Had Yai Factory

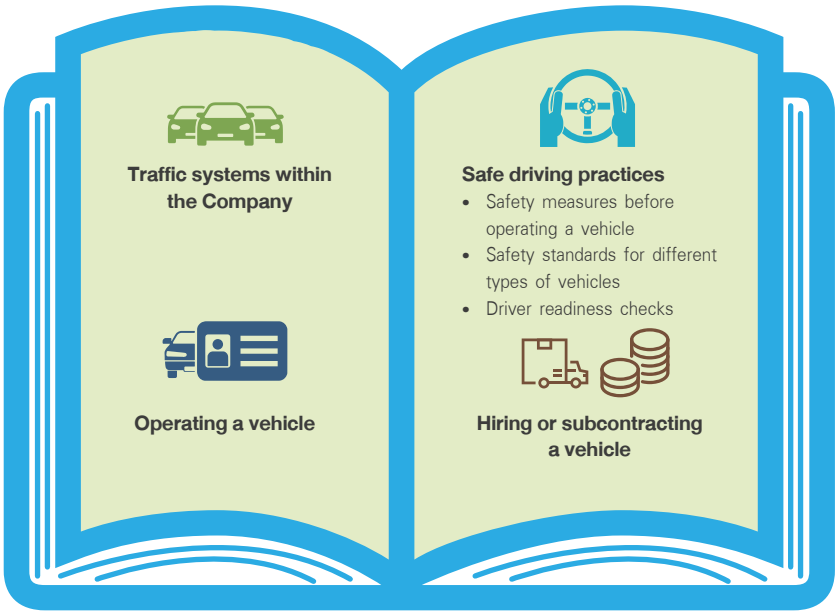
SHE DAY where executives express commitment on occupational health, safety and environment (SHE commitment) and communicate occupational health, safety and environment to employees and contractors at all plants via PR boards and booths at safety campaign activities to promote Life Saving Rules at SHE Day.

- Promoting road safety by signing a Memorandum of Understanding (MOU) with other members of the tri-partite working team. The following road safety measures were implemented:

1. Safety messages from CEO and President

Safety message from CEO and President for the Songkran festival

2. Mitr Phol Group's road safety manual



Mitr Phol Group's road safety manual

3. "Mitr Phol home safely": An activity promoting road safety during the 2018 Long holiday "Songkran Festival"

For the 2018 Songkran New Year's festival, Mitr Phol Group held the "Refreshing Songkran, Happy Communities, Upholding Thai Traditions" event. Mr. Isara Vongkusolkit, Chairman of Mitr Phol Group, highlighted the importance of safety during the Thai New Year and invited everyone to use the hashtag #MitrPholHomeSafety to promote awareness about the importance of road safety during the festival.

Mr. Isara Vongkusolkit, Chairman of Mitr Phol Group, highlighted the importance of safety during Songkran Festival

Environment:
"Effective Environmental Management"

Sustainable Use of Resources

Environmental Protection

Performance on Climate Change

Lodging Complaints Process and Channels about Environmental Impacts

Global warming and climate change have caused a widespread impact around the world, affecting livelihoods across communities. Mitr Phol Group places great importance on effective environmental management adhering to global standards, sharing knowledge and instilling sound environmental management practices organization-wide that cover all manufacturing processes and products, raw materials, water resources, packaging, pollution and waste. Sufficient funds are also allocated for effective environmental management and impact mitigation.

To ensure that our business operations are environmentally friendly, Mitr Phol Group has implemented the Safety, Occupational Health and Environmental Management policies as key drivers of the group's environmental management efforts to deliver the highest efficiency. ISO 14001:2015 international environmental management standards as well as relevant regulatory requirements form the framework within which we operate our business.

Sustainable use of resources

Raw materials management

Mitr Phol Group's continued business growth means higher demand for raw materials, both renewable and non-renewable. We place great importance on sustainable management of natural resources, with plans and controls devised in collaboration with relevant stakeholders to ensure the sustainable sourcing of raw materials for production processes. ISO 14001:2015 standards are implemented throughout the value chain, from the sourcing of raw materials to energy and ecosystem management. The effective management of raw materials also brings benefits in terms of cost savings and the optimal usage of resources.

Mitr Phol's main raw materials are categorized into two groups: renewable materials, namely cane and rubber wood; and non-renewable materials, including fuel and chemicals. Raw materials also include packaging products. In 2018, the usage of raw materials was as follows:

Volume of raw materials used in Mitr Phol Group's production processes (301-1)

Main raw materials	2015*	2016*	2017**	2018***
Renewable materials (Million tonnes)	21.50	18.00	18.80	27.39
Non-renewable materials (Million tonnes)	57,496.50	9,957.40	8,511.10	216,525
Recycled materials (Tonnes)	5,484.40	6,004.30	5,887.60	40,992

Remarks: * 2015-2016 data covers the period from 1 January – 31 December of each year
** 2017 data covers the period of 1 November 2016 – 31 October 2017
*** 2018 data covers the period of 1 November 2017 – 31 October 2018

Water resource management

Water is a crucial natural resource for farming and production. Due to climate change resulting in extreme weather patterns including severe drought, Mitr Phol Group has thoroughly assessed risks associated with water shortages in all locations where the company operates its businesses, to ensure that proper water management processes are in place and adequate a supply is available. This is due to the fact that Mitr Phol Group's operations throughout the supply chain require a high volume of water. Also, this helps to ensure that our operations' demand for water will not impact the environment and surrounding communities. Mitr Phol Group works closely with local authorities responsible for water resource management such as the Royal Irrigation Department, the Department of Groundwater Resources, and the Provincial Waterworks Authority. Continuous discussion and planning through tri-partite committees takes place between Mitr Phol Group and local authorities so as to minimize the impact on stakeholders, assure them that the Company's usage of water resources complies with local laws and regulations, and assert that our operations will not cause water shortages for any surrounding communities.

Mitr Phol Group has devised policies regarding the usage of water resources, focusing on reducing and reusing water where possible through the 3R initiative. The goal is to ensure maximum efficiency and to minimize water losses both in our office buildings and our factories. Mitr Phol Group has set a target to reduce water usage by 10 percent from 2017, with continuous monitoring of the performance annually. Our efforts according to the 3R initiative for water usage reduction are as follows:

1. Reduce

project has successfully lowered the usage of water by 8,380 cubic meters per year by reducing the usage of groundwater for watering plants and the cleaning of grounds.

2. Reuse

project has successfully reduced the usage of water by 26,000 cubic meters per year by reusing 10-30 percent of water from sugar production for equipment cleaning (such as boilers and heaters), reusing water in cooling towers, and performing Clean-In-Place processes.

3. Recycle

project has successfully reduced the usage of water by 261,300 cubic meters per year by treating wastewater through the Wetland system and using the treated water for watering plants both during and outside of the cane juicing seasons.

Mitr Phol Group has also participated in the Water Footprint program to assess its water usage per product made in order to help the company plan and set targets for water resource management more efficiently.

Mitr Phol Sugar Corporation taking part in the Water Footprint project for product lifecycles

In 2018, Mitr Phol Group's usage of water was as follows:

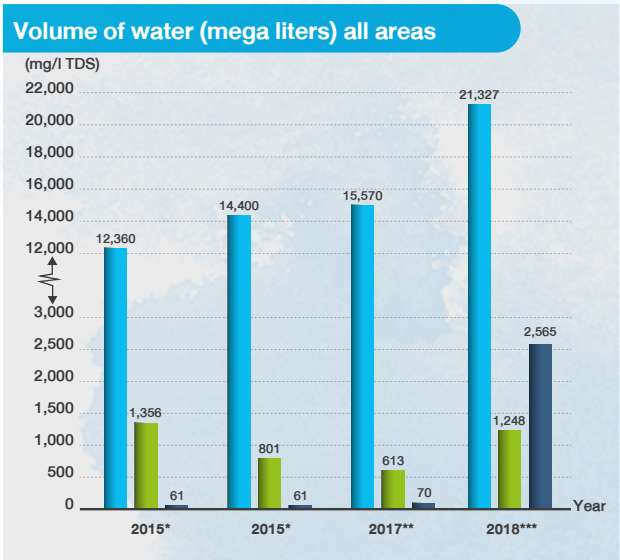
Data showing water volume from different sources used in Mitr Phol Group's operations (303-3)

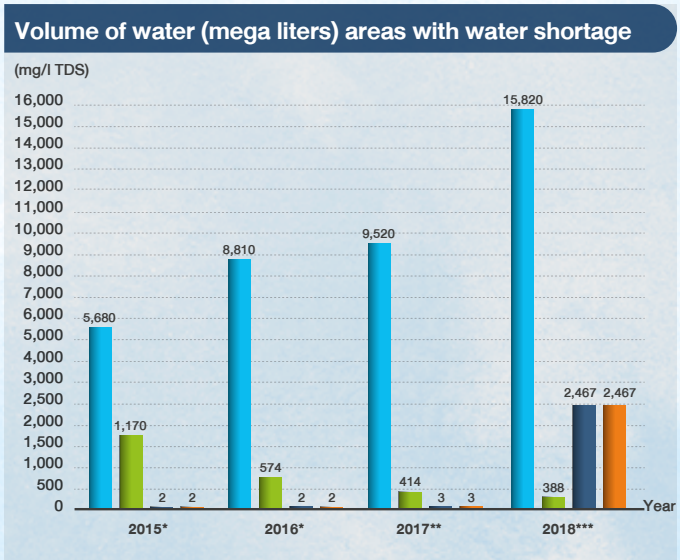
Surface water
- Surface water - fresh water (≤ 1,000 mg/l TDS)
- Surface water - others (> 1,000 mg/l TDS)

Groundwater
- Groundwater - fresh water (≤1,000 mg/l TDS)
- Groundwater - others (> 1,000 mg/l TDS)

Third-party water
- Third-party water - fresh water (≤ 1,000 mg/l TDS)
- Third-party water - others (> 1,000 mg/l TDS)

Total third-party water withdrawal by withdrawal source
- Surface water
- Groundwater





Remarks : * 2015-2016 data covers the period from 1 January – 31 December of each year

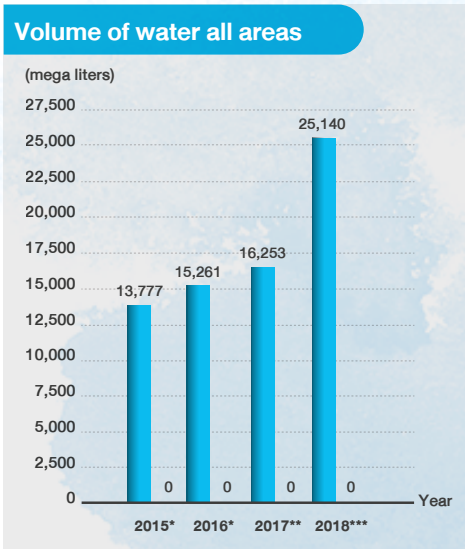
** 2017 data covers the period of 1 November 2016 – 31 October 2017

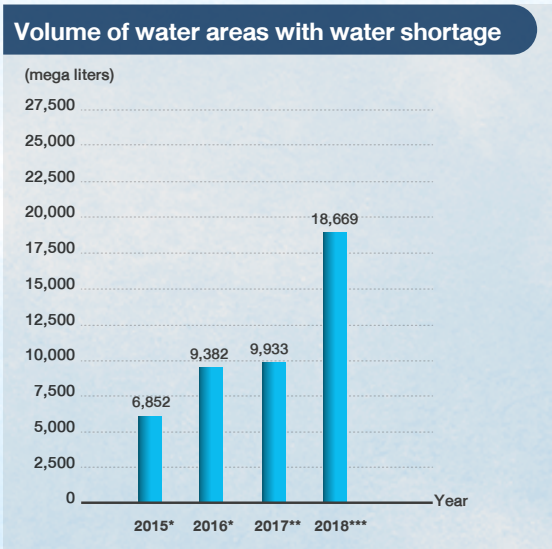
*** 2018 data covers the period of 1 November 2017 – 31 October 2018

2018 data – Factories increased production capacity of wood substitute materials and additional data collection was performed for the farming business

Mitr Phol Group's total water usage volume (303-5)

Total water usage volume Change in water storage)





2018 Target: Reduction in water consumption per revenue by 5% compared with 2017

Remarks: * 2015-2016 data covers the period from 1 January – 31 December of each year

** 2017 data covers the period of 1 November 2016 – 31 October 2017

*** 2018 data covers the period of 1 November 2017 – 31 October 2018

Energy management

Mitr Phol Group realizes its responsibility toward society in terms of energy conservation, as Thailand is faced with issues concerning energy security and climate change. With this in mind, we incorporated added value into our sugar business by expanding into the alternative energy industry via the production of biomass, ethanol, and other types of renewable energy. In addition to using alternative energy within our own business operations, we have also begun to cater to energy demand in Thailand by selling excess biomass electricity to the Electricity Generating Authority of Thailand and the Provincial Electricity Authority. Within our own factories, we have devised an energy management plan in line with legal requirements, and implemented the ISO50001 standards. Representatives from all departments are appointed to join the Energy Conservation Working Group, which is tasked with drafting an energy management plan, setting objectives and targets, promoting energy efficiency awareness and engagement among executives, employees, and contractors, and compiling reports for high-level executives about Mitr Phol Group's energy management efforts. As a result of having such measures in place, energy efficiency has significantly improved at all operation sites, while operating costs have also fallen. Mitr Phol Group's energy usage in 2018 is as follows:

2018 Target:
Reduction in electric power consumption per revenue by 5% compared with 2017

Mitr Phol Group's Energy Consumption (302-1)

Energy types		2015*	2016*	2017**	2018***
Total non-renewable energy (Million MJ)		714.30	767.12	692.58	109.01
Total renewable energy (Million MJ)		73,163.34	72,922.45	56,407.01	64,681.49
Non-renewable energy purchased (Million MJ)	Electricity	623.79	662.27	611.77	5,605.44
	Exhaust Steam	NR	NR	NR	NR
	Live Steam	NR	NR	NR	NR
Non-renewable energy sold (Million MJ)	Electricity	NR	NR	NR	NR
	Exhaust Steam	NR	NR	NR	NR
	Live Steam	NR	NR	NR	NR
Total Energy Consumption (Million MJ)		73,877.64	73,689.57	57,099.59	70,395.99
Total Energy Expenses (Million Baht)		NA	NA	NA	8,756.06

Remarks :
- NA = Not Available, no date was collected
- NR = Not Relevant
- Net Calorific Values (NCV): 1 kWh = 3.6 MJ and 1 tonne = 2,676 MJ

* 2015-2016 data covers the period from 1 January – 31 December of each year
** 2017 data covers the period of 1 November 2016 – 31 October 2017
*** 2018 data covers the period of 1 November 2017 – 31 October 2018

Mitr Phol Group's external energy usage data (302-1)

Energy types	2015*	2016*	2017**	2018***
Volume of energy usage for raw material transportation by third-party organizations (Million MJ)	NA	NA	NA	1,138.55
Volume of energy usage for product transportation by third-party organizations (Million MJ)	NA	NA	NA	2,347.58
Volume of energy usage for air travel (Million MJ)	NA	NA	NA	53.48
Volume of energy usage for ground transportation for employees (Million MJ)	NA	NA	NA	34.85

Remarks:
- NA = Not Available, no data was collected
- Net Calorific Values (NCV): diesel oil (B5) 1 Litre = 35.778 MJ (DEDE)
- Gasohol 91:1 Litre = 30.462 MJ domestic travel: 1 person/ 1 kilometer = 2.4206 MJ (TGO)

* 2015-2016 data covers the period from 1 January – 31 December of each year

** 2017 data covers the period of 1 November 2016 – 31 October 2017

*** 2018 data covers the period of 1 November 2017 – 31 October 2018

Energy Intensity (302-3)

Energy types	2015*	2016*	2017**	2018***
Energy intensity consumed within organization (MJ / Million Baht)	NA	NA	NA	961,260
Energy intensity consumed outside organization (MJ / Million Baht)	NA	NA	NA	48,809

Remarks:
- NA = Not Available, no data was collected
- Energy consumed within the organization = electricity, steam, liquid petroleum gas, biomass gas, diesel, benzene, solar energy
- Energy consumed outside the organization = diesel, benzene

* 2015-16 data covers the period from 1 January – 31 December of each year

** 2017 data covers the period of 1 November 2016 – 31 October 2017

*** 2018 data covers the period of 1 November 2017 – 31 October 2018

From the 2018 data, energy from renewable sources made up 91.88 percent of Mitr Phol Group's total energy usage.

Packaging management

Food packaging is an important issue of today and a common part of everyday life. Mitr Phol Group ensures that the right type of packaging is used for each product, with safety and convenience being of the utmost importance. Transportation services of syrup and sugar in tank cars have helped to reduce packaging usage, as industrial customers are able to directly connect the pipe from the tank car to their production process machinery, helping to enhance convenience and speed.

Tank Car Containing Syrup

Tank Car Containing Sugar

In 2018, 220,000 tonnes of syrup and 60,000 tonnes of sugar were delivered to industrial customers, helping to reduce plastic packaging by 184.5 million bags.

In addition, we pay great attention to the materials used to make packaging, selecting more environmentally friendly plastic, paper, and ink options for our packaging.

Environmental protection

For efficient environmental management and protection, Mitr Phol Group implements the 3Rs (Reduce, Reuse, Recycle) in our operations:

Wastewater Management (303-2)

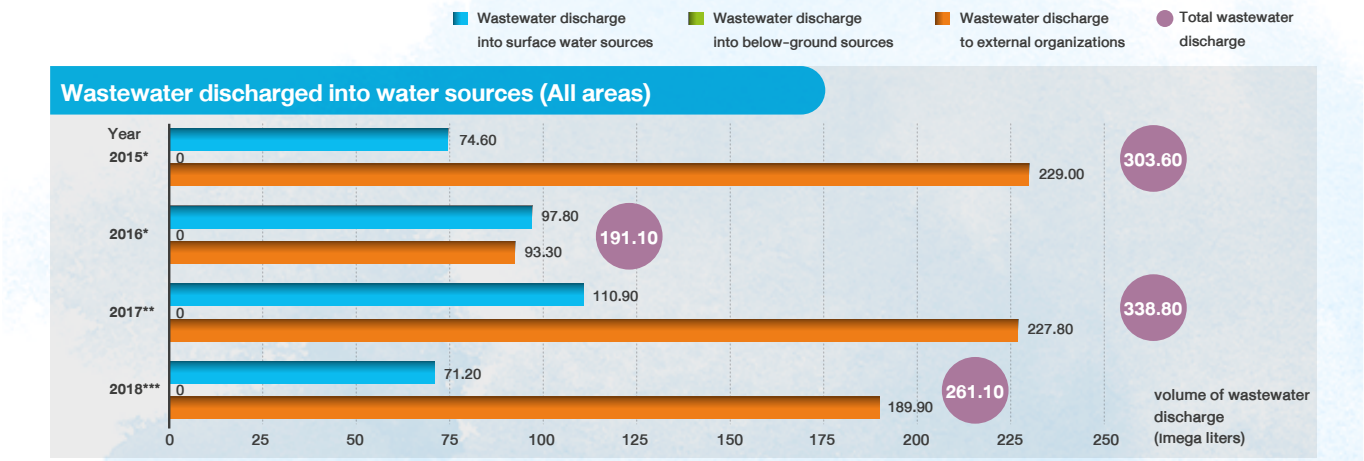
Mitr Phol Group ensures that wastewater from our operations is properly treated according to local laws and regulations. Wastewater from sugar production is treated using two systems:

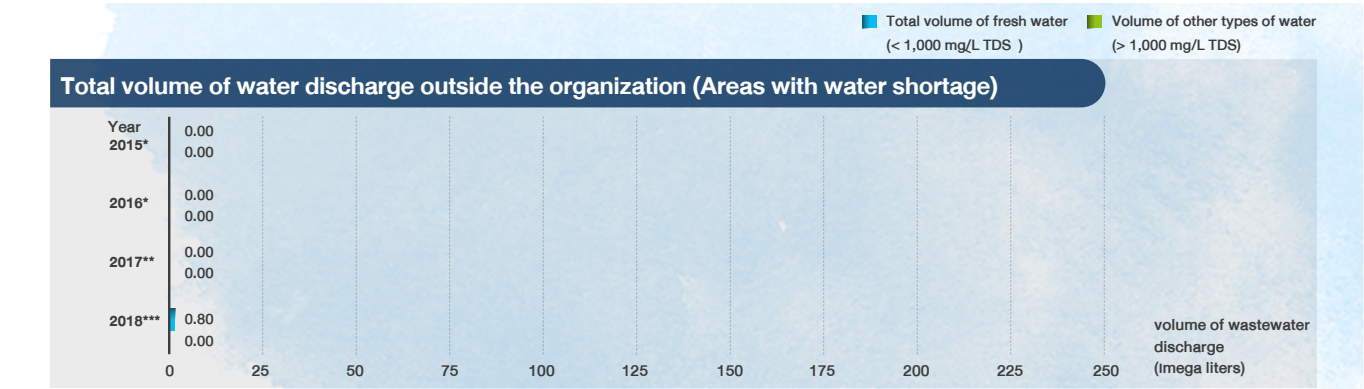
1. Biological Treatment
2. Constructed Wetland

At the Mitr Phu Wiang Sugar Mill, we also use the Upflow Anaerobic Sludge Blanket (UASB) for enhanced efficiency of wastewater treatment. The biogas produced from the closed system is then utilized as fuel for burning carbon coal, which is then used in place of resin for color absorption. This helps to reduce the usage of salt water for resin cleaning in the production process.

All wastewater from the sugar production process enters the above mentioned wastewater treatment systems. Once the treated water meets the legal quality requirements, it is then reused in appropriate activities within the plant, for example for farm irrigation, watering plants, and cleaning around the factory.

Mitr Phol Group's wastewater discharge volume (303-4)





Remarks: * 2015-2016 data covers the period from 1 January – 31 December of each year
** 2017 data covers the period of 1 November 2016 – 31 October 2017
*** 2018 data covers the period of 1 November 2017 – 31 October 2018

Quality of Mitr Phol Group's water discharge (303-4)

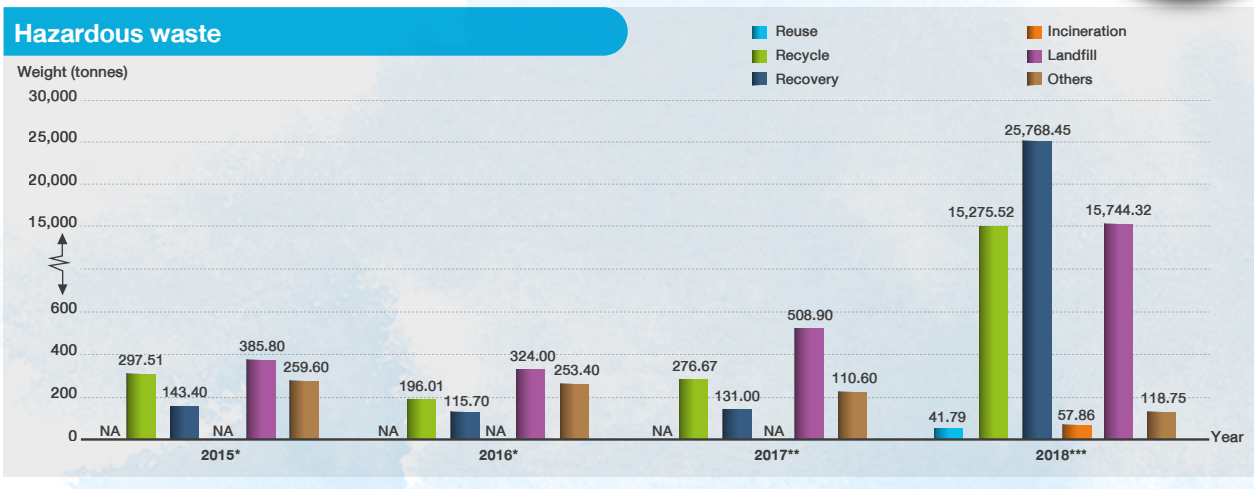
Water quality	Benchmark	Average water quality after treatment			
		2015*	2016*	2017**	2018***
BOD (mg/l)	20	9.80	8.70	9.40	13.20
COD (mg/l)	120	106.40	81.50	73.80	73.00
SS (mg/l)	50	118.00	99.50	17.20	31.80

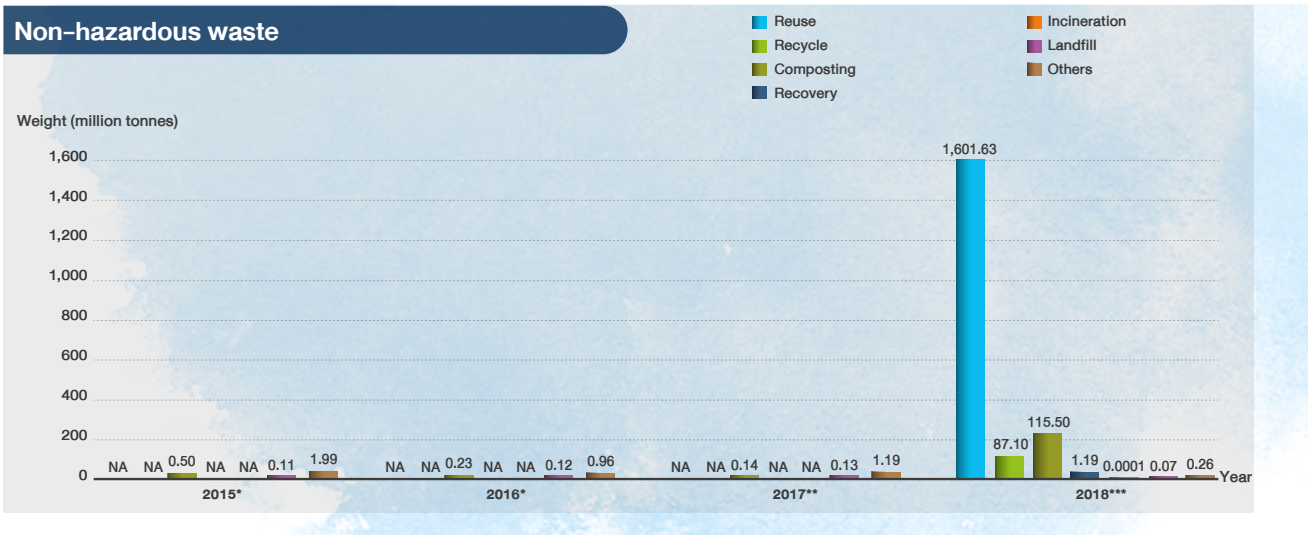
Remarks:
- Benchmarks accordingly to the Ministry of Industry's announcement on factory wastewater discharge control B.E. 2560
* 2015-2016 data covers the period from 1 January – 31 December of each year
** 2017 data covers the period of 1 November 2016 – 31 October 2017
*** 2018 data covers the period of 1 November 2017 – 31 October 2018

Mitr Phol Group's waste management (306-2)

Under the "From Waste to Value" philosophy, we are committed to reusing waste in our business operations, for example using filter cake and vinasse as raw materials for fertilizer production, in order to lessen the environmental impact from waste and generate value for the business. Following the 3Rs in waste management, Mitr Phol Group's hazardous and non-hazardous waste data in 2018 were as follows:

2018 Target: Reduction in solid waste per revenue by 5% compared with 2017





Remarks: - NA = Not Available, no data was collected
* 2015-2016 data covers the period from 1 January – 31 December of each year
** 2017 data covers the period of 1 November 2016 – 31 October 2017
*** 2018 data covers the period of 1 November 2017 – 31 October 2018

For hazardous waste, Mitr Phol Group entrusts companies authorized by the Department of Industrial Works to transport and dispose of the waste according to local laws and regulations. Each time hazardous waste is transported outside of our factories, a notification is made to the Department of Industrial Works.

Transportation of Mitr Phol Group's hazardous waste

Total Hazardous Waste Transportation Weight

Total Hazardous Waste Transportation Weight (tonnes)	2015*	2016*	2017**	2018***
	1,086.31	889.11	1,026.27	57,006.69

Remarks: * 2015-2016 data covers the period from 1 January – 31 December of each year
** 2017 data covers the period of 1 November 2016 – 31 October 2017
*** 2018 data covers the period of 1 November 2017 – 31 October 2018

As for non-hazardous waste, the "From Waste to Value" philosophy has led to several waste management projects, such as adding value to vinasse by using it as a raw material for organic fertilizer, turning ashes into bricks and using them in our factories, and creating organic fertilizer from filter cake for use in company-owned and farmers' plantations. The fertilizer has proven to help improve the soil structure, and boost cane growth and productivity compared with chemical fertilizers. 100% of the filter cake can be reused. Other non-hazardous waste is managed in different ways according to their characteristics, such as for energy production or for reuse.

Air pollution management

Mitr Phol Group's business operations that may have an impact on air quality include emissions and dust pollution from conveyor belts, piles of bagasse and wood chips, or the production processes in general. Mitr Phol Group's key policies for air pollution management include:

1.1 Air pollution management measures using appropriate fuels to reduce NO_x and SO_x levels and ensure complete combustion:

- Installing wet scrubbers to capture dust and ash from burning
- Installing electrostatic precipitators to control boilers' burning levels to be within necessary limits, ensure complete combustion, and reduce the emissions of NO_x and SO_x

1.2 Dust control measures from conveyor belts that transport bagasse into the biomass power plants:

- Inspecting dust leakage points
- Installing covers for the conveyor belts
- Using mobile belts to move the bagasse

1.3 Dust control measures for piles of bagasse stored for biomass production:

- Training employees on bagasse dust control
- Planting pine trees to help reduce dust dispersion
- Installing wind breaks to change wind directions and wind socks to monitor the wind
- Using water cannons to spray water and fog in strategic locations including and dust nets

1.4 Dust control measures from the wood substitute materials production process:

- Installing a dryer system and cyclone air filters
- Installing electrostatic precipitators

1.5 Dust control measures from travel and raw material transportation:

- Spraying water in operational areas and along traffic routes

In 2018, air quality results captured from chimneys at Mitr Phol Group's factories were as follows:

Air quality from Mitr Phol Group factory chimneys (305-7)

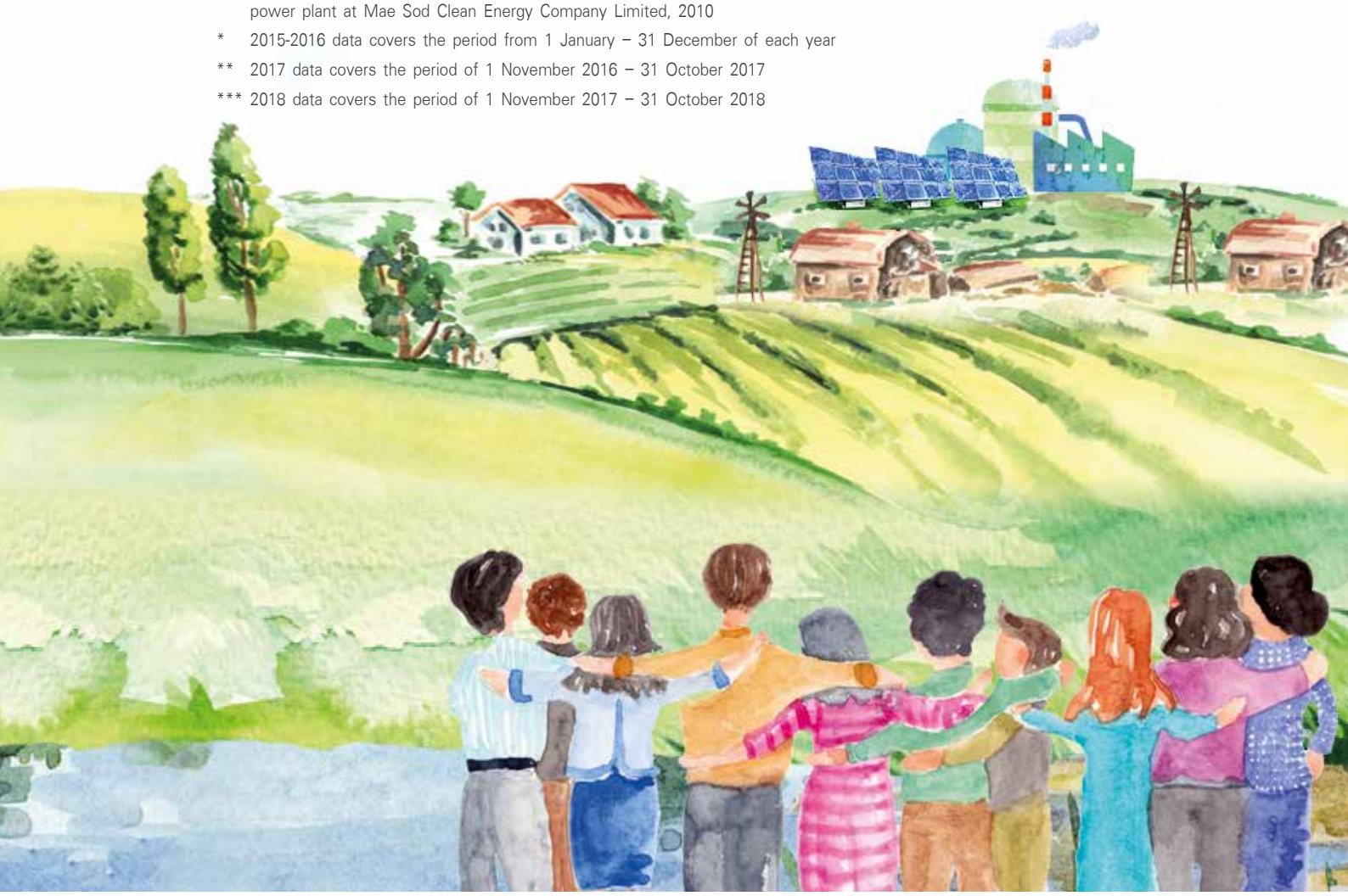
Air quality	Benchmarks	Air quality by year			
		2015*	2016*	2017**	2018***
NO_x (ppm)	≤200	50.42	61.79	55.08	70.39
SO_x (ppm)	≤60	1.42	3.37	5.30	4.04
CO (ppm)	≤690	279.10	254.79	188.39	215.42
TSP (mg / m^3) New power plants	≤120	47.30	58.96	62.06	32.79
TSP (mg / m^3) Old power plants	≤320	61.50	17.40	1.10	11.80
Cd (ppm)	≤0.03	<0.005	<0.005	<0.005	<0.005

Remarks:
- NO_x, SO_x, CO and TSP benchmarks per the Ministry of Industry's announcement on contaminants in emissions from power plants producing or selling electricity B.E. 2547
- Old and new power plants according to the definitions from the Ministry of Industry's announcement on contaminants in emissions from power plants producing or selling electricity B.E. 2547
- Cadmium (Cd) benchmark per the European Emission Standards in the Environment Impact Assessment report of the 16MW biomass power plant at Mae Sod Clean Energy Company Limited, 2010

* 2015-2016 data covers the period from 1 January – 31 December of each year

** 2017 data covers the period of 1 November 2016 – 31 October 2017

*** 2018 data covers the period of 1 November 2017 – 31 October 2018



Cane transportation and traffic management

Traffic congestion caused by transporting sugarcane from fields to the sugar mills is a challenge in our industry. Cane harvesting season runs from November to April, during which time farmers must transport their sugarcane to the mills to be juiced as soon as possible. Failure to do so in a timely manner can result in continually decreasing sweetness, which can in turn have an effect on cane prices.

Cane transportation and traffic management cover several aspects including ensuring trucks do not exceed load limits, minimizing cane falling off trucks and littering the streets, lowering dust pollution from trucks, and controlling traffic congestion around sugar mills.

Mitr Phol Group has implemented the following measures and policies to lessen the impact of cane transportation:

1. Designating responsible persons and communication channels to provide assistance.
2. Providing contracts for trucks with clearly-defined terms and conditions. Failure to adhere to these terms and conditions may result in withholding security deposits and terminating agreements.
3. Putting up signage and setting up a call center to facilitate the cleaning up of public roads where sugarcane has fallen. Sub-stations have also been established for sugarcane farmers with smaller volumes in order to reduce transportation.
4. Promoting the correct methods of transporting sugarcane. Controlling the height of the load on trucks to ensure the tops do not exceed 4.2 meters from the ground. Promote using straps to tie down the sugarcane and hold the loads in place.

Promoting fresh cane cutting

Issues in the upstream sugar business involve a lack of local manual labor, which results in delays in delivering cut cane to sugar mills. To address this problem, farmers turn to cane burning to reduce labor costs and make harvesting faster and more convenient. However, the practice of cane burning causes significant environmental damage as it produces carbon dioxide and releases greenhouse gases into the atmosphere, which in turn contribute to climate change. In addition to environmental problems, cane burning also compromises the quality and efficiency of sugar production.

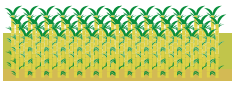
Mitr Phol Group actively encourages sugarcane farmers to reduce burning and promotes fresh cut cane as a way for them to increase their income. The group has worked with the government sector on several measures:

Knowledge transfer about cane farming

Providing financial incentives for freshcane

Purchase price deductions for burnt cane

Promoting the use of machine harvesters

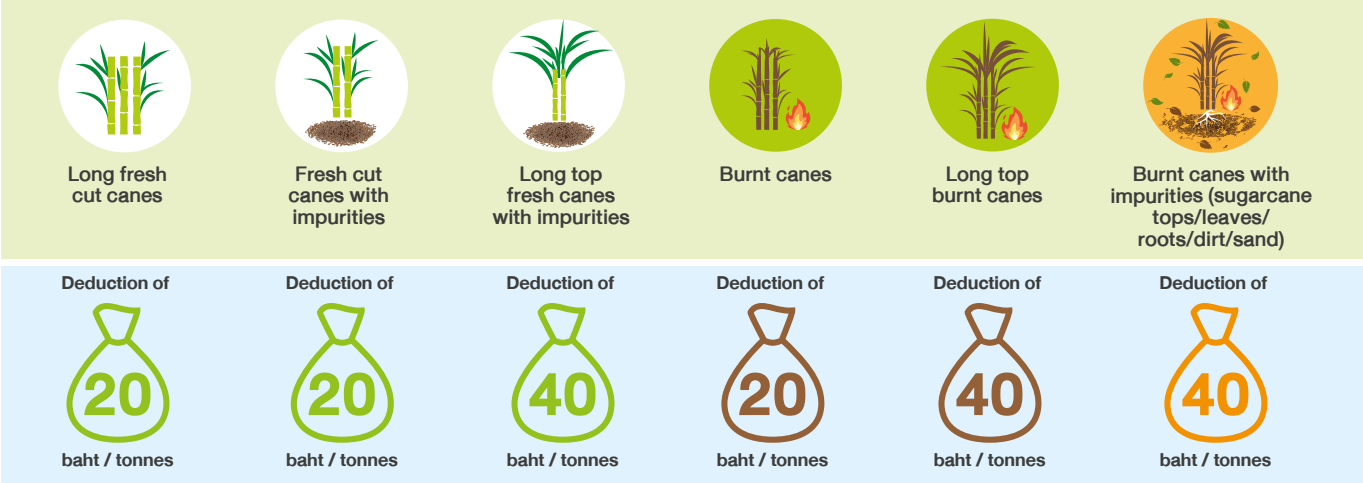


Setting cane field as firebreaks

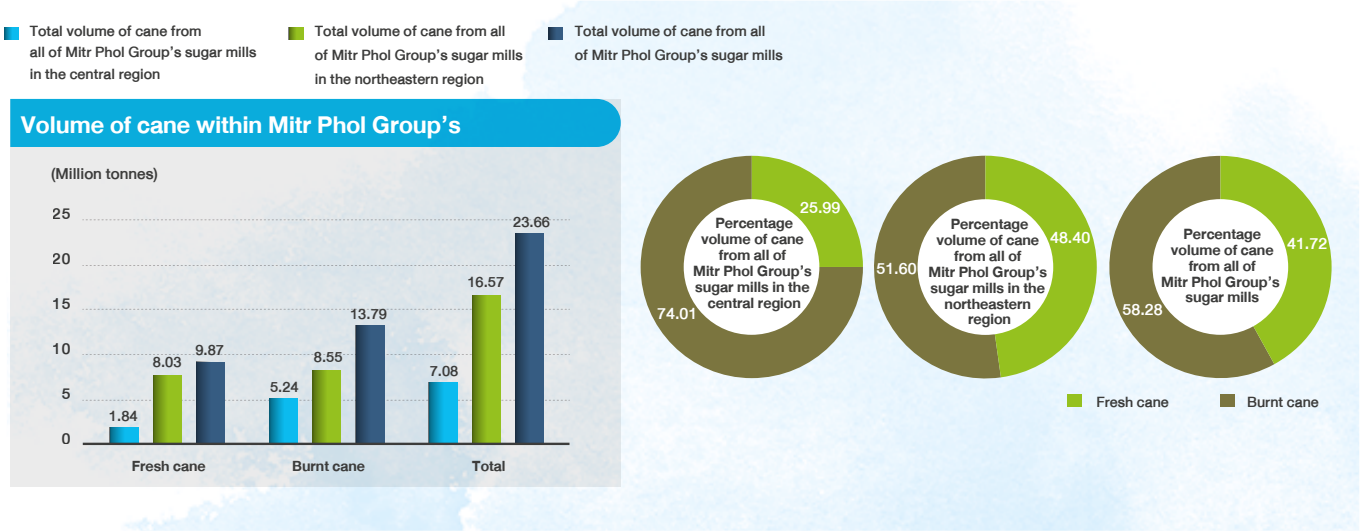
Providing fire engines to local communities

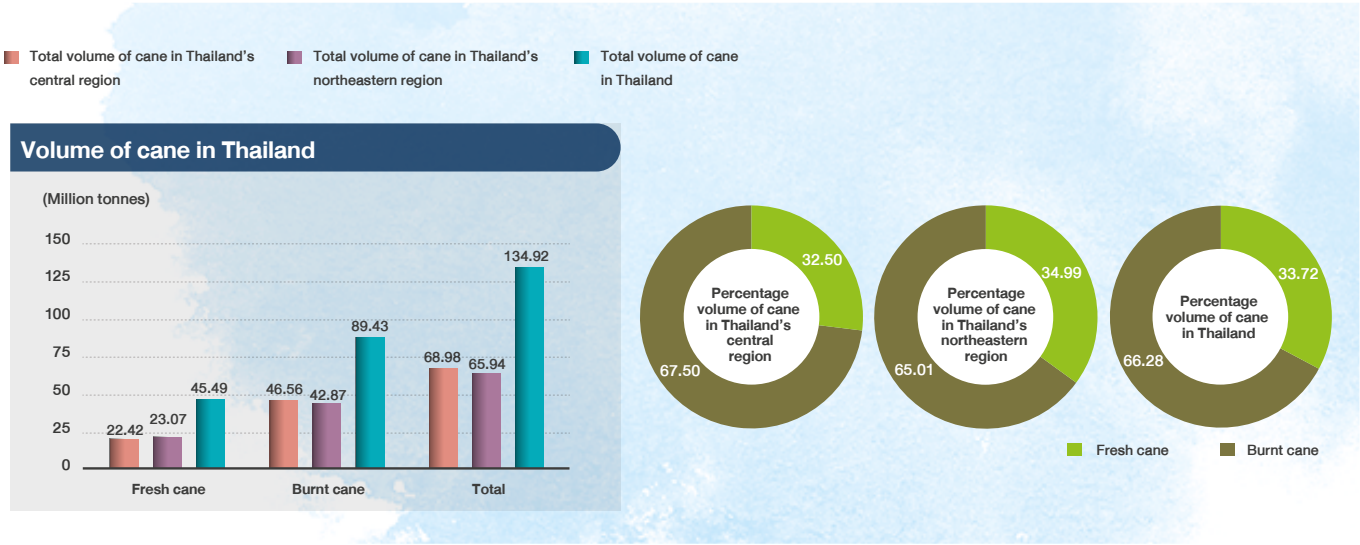
The above measures have proven effective in reducing cane burning, thereby helping to preserve natural ecosystems while also leading to a decrease in operational costs from fertilizers and pesticides. Mitr Phol Group also provides funding in research and development efforts to ensure optimum farming efficiency, from soil preparation and cane planting, to the improvement of cane species and harvesting. The goal is to yield high-quality, clean, and safe raw materials for sugar production.

In addition, Mitr Phol Group uses a pricing strategy to discourage farmers from burning cane. Prices for each cane type are as follows:



In 2018, fresh cane cutting made up 41.72% of the total volume of cane within Mitr Phol Group's operations, which is more than the national average of 33.72%.



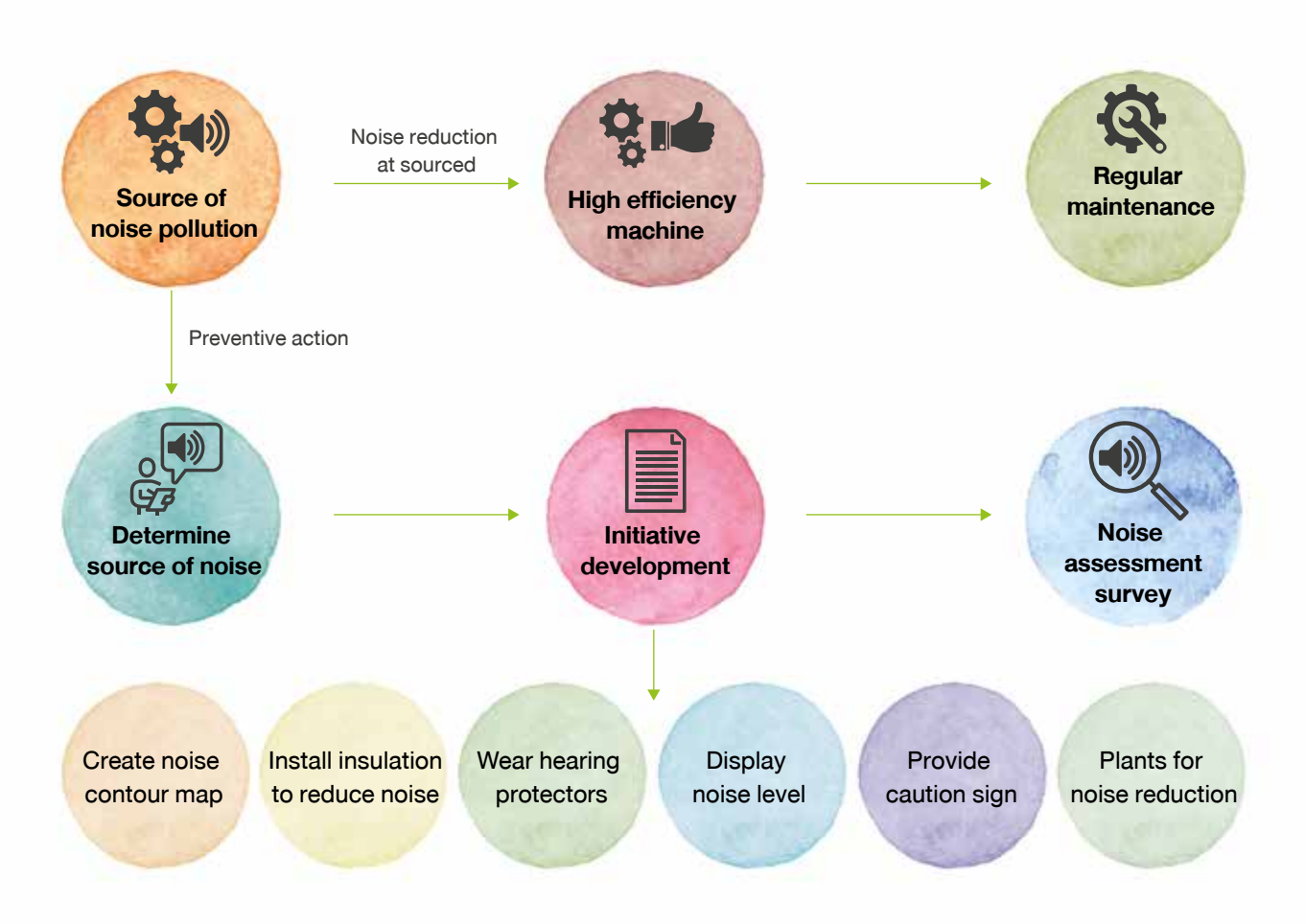


Noise pollution management

Noise pollution is an important problem in the industrial sector. If not properly controlled and prevented, noise pollution - especially from production processes - can have a significant impact on the health and safety of sugar mill employees and the surrounding communities. Mitr Phol Group strives to minimize the impact of noise pollution and uses a systematic approach in managing noise pollution at the source and throughout the production line. After machinery maintenance, production line flushing is performed by using high-pressure steam. The following measures have been implemented to minimize noise pollution throughout the production line.

- Preventative measures at the source: using efficient machinery and ensuring proper maintenance and care of all machinery and equipment.
- Preventative measures on the production line: using factory safety lines, soundproofing, installing noise-reduction equipment, displaying noise level and control zoning signage, planting trees to absorb noise, and conducting regular checks in problem areas to ensure noise levels do not exceed standards. The checks are performed during operation on the premise as well as in surrounding communities on an annual and bi-annual basis.

Overall machinery noise pollution management

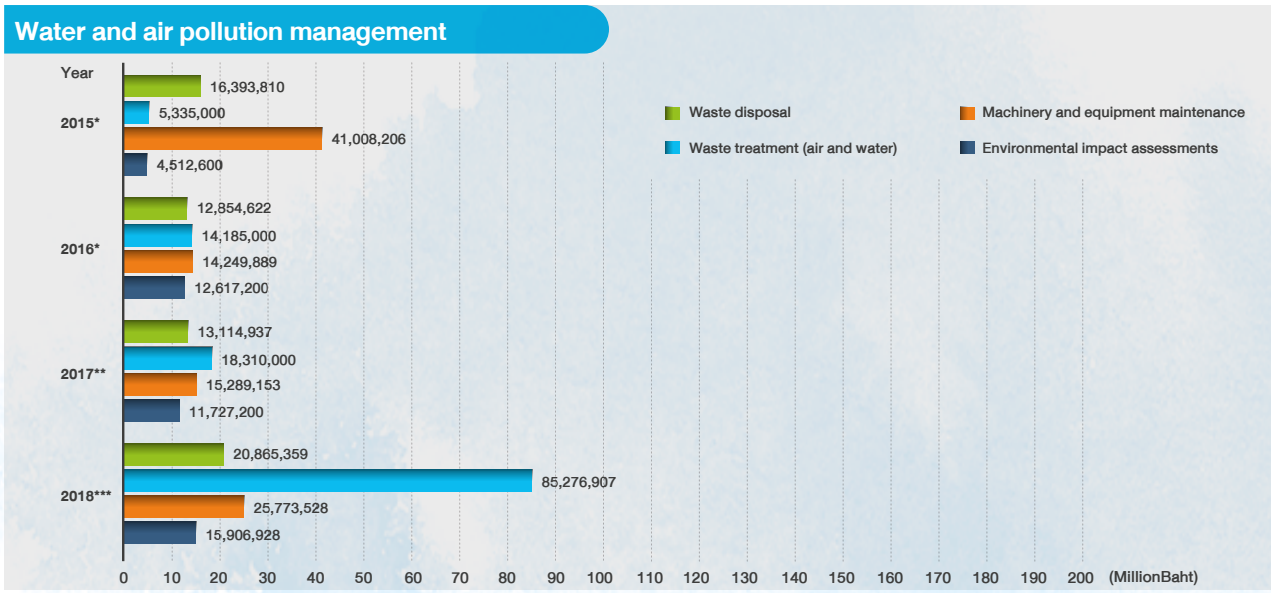


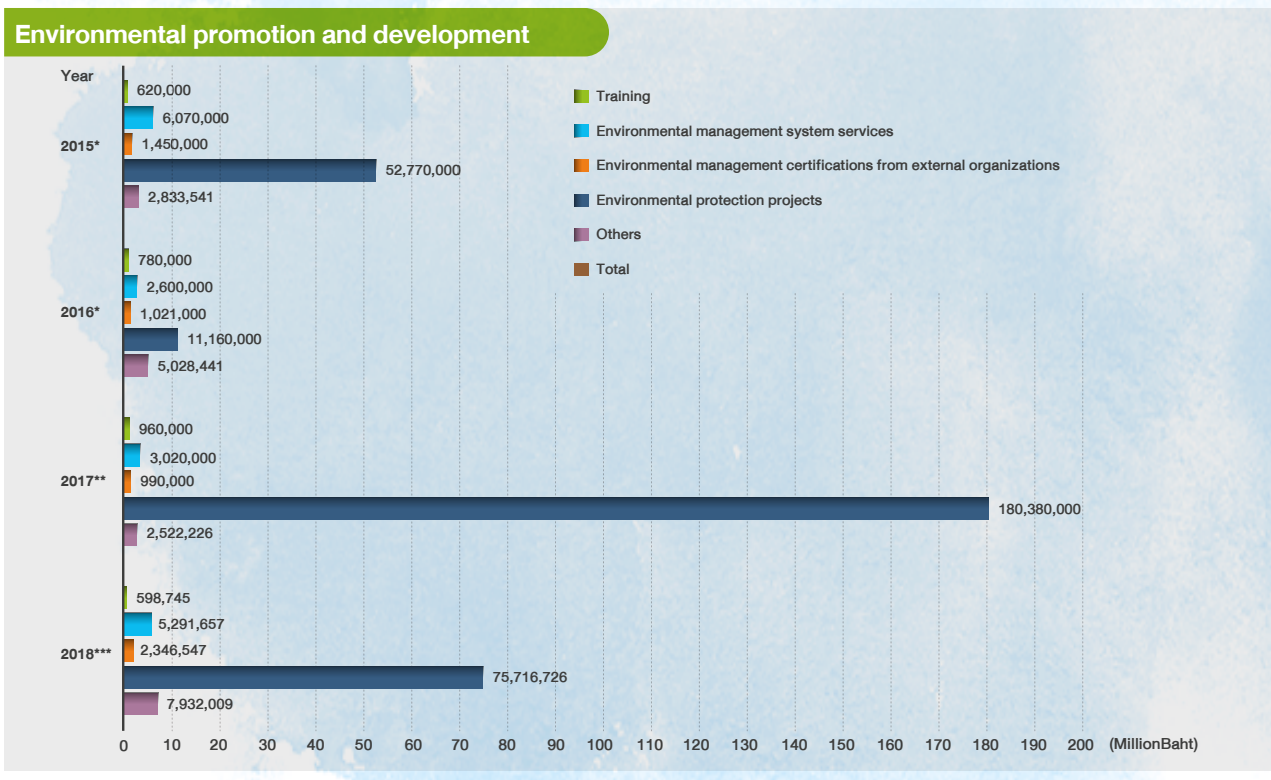
To ensure optimal efficiency of noise pollution management, Mitr Phol Group participates in the Hearing Conservation Program. This program promotes safety for all employees, but particularly those who work in areas where noise exceeds 85 dB(A), which is the standard level required by the Department of Labor Protection and Welfare.

Mitr Phol Group's environmental protection expenses

To reduce the Company's impact on the environment, Mitr Phol Group ensures that machinery is well maintained, employees receive regular training, and proper environmental management systems are implemented. Such efforts have incurred a total expense of 239,708,410 baht, with details as follows:

Types of expense for environmental protection measures





Total expense of Mitr Phol Group	2015*	2016*	2017**	2018***
	130,993,157	74,496,152	246,313,516	239,708,410

Remarks: * 2015-2016 data covers the period from 1 January – 31 December of each year
** 2017 data covers the period of 1 November 2016 – 31 October 2017
*** 2018 data covers the period of 1 November 2017 – 31 October 2018

Climate change performance

With the worsening climate change situation and widening effects from greenhouse gas emissions and human activity, nations across the world is focusing on lessening the intensity of climate change by reducing greenhouse gas emissions from the industrial and farming sectors (as producers), the service sector (as the driver of activities), and the public (as consumers). In order to bring about significant change, all sectors must be involved. Mitr Phol Group's efforts to lower the impact of climate change by reducing greenhouse gas emissions from our business operations are as follows:

1. Direct GHG emissions reduction (scope 1) by 3,525.79 tonnes of CO_2 equivalent. A key program that had a significant contribution to GHG emissions reduction was the decrease of the humidity level of bagasse used as fuels for boilers, which resulted in a smaller volume of bagasse required.

2. Indirect GHG emissions reduction (scope 2) by 927.35 tonnes of CO_2 equivalent. Key programs included switching to LED light bulbs, increasing efficiency in cane juice boiling, and switching off pumps and motors that were not currently in use, such as water pumps and condenser water pumps.

Mitr Phol Group is committed to promoting the most efficient and optimal use of natural resources, reducing GHG emissions across all business units, increasing production efficiency, and taking part in the Carbon Reduction Label program, which is considered one of the most effective market mechanisms to drive industrial producers and service providers toward becoming a low-carbon business. Key performances throughout the past year included:

1 Promoting a low-carbon society

Mitr Phol Group promoted a low-carbon society by joining other leading organizations in the Thailand Voluntary Emission Reduction Program (T-VER). Mitr Phol Group is one of the largest carbon credit sellers in Thailand, with 489,000 tonnes of CO_2 equivalent certified, from carbon emissions reductions at Mitr Phol Bio-Power Plant in Suphan Buri Province. Plans are in place to increase this volume. Since joining T-VER, Mitr Phol Group has sold carbon credits to 26 organizations, with a total of volume of 190,000 tonnes of CO_2 equivalent, or around 90% of the Thai carbon market. Mitr Phol Group hopes that its participation in the program will motivate other sectors to take part in solving climate change problems together. With more companies committing to purchasing carbon credits, it is hoped that more GHG emissions reduction programs will be developed in Thailand.

Mr. Isara Vongkusolkit, Chairman of Mitr Phol Group, and other executives at the T-VER carbon credit signing ceremony with the Thailand Greenhouse Gas Management Organization (Public Organization), represented by its director Mrs. Prasertsuk Chamornmarn, on October 29, 2018.

2. The Mitr Phol Bio-Power (Dan Chang) Company Limited Project

This involves the construction of a thermal (steam) and electricity power plant that will use biomass from bagasse as the main source of fuel. The bagasse will come from the adjacent Mitr Phol Sugar Mill. The project involves a complete installation of new thermal power systems comprising one set of 170 tonnes / hour steam boilers and one set of 31.93 MW power generators. This part of the power plant is called **"Block 2"**. Around 1,400 tonnes of bagasse from the adjacent Mitr Phol Sugar Mill per day will be used as the main source of fuel, along with other supplementary types of bio-energy. Currently, other supplementary fuels are transported from nearby sources located within a 200 kilometer radius of the power plant. The thermal energy produced is supplied to the sugar mill, while the electricity is sold to Mitr Phol Sugar Mills and the Electricity Generating Authority of Thailand. The project currently generates thermal power 300 days out of the year. Calculations show that Mitr Phol Bio-Power (Dan Chang) – Block 2 helps to reduce GHG emissions by 489,000 tonnes of CO_2, using biomass as the main source of fuel in place of natural gas.

Mitr Phol Bio-Power (Dan Chang) – Block 2 in Dan Chang District, Suphan Buri Province

3. Solar rooftop

With optimal utilization of space in mind, the roof of the warehouse storing molasses at the ethanol factory in the Phu Khieo District in Chaiyaphum Province is home to solar panels that have created a combined generating capacity of 989 kW since 2015. The solar rooftop has helped the Mitr Phu Khieo Sugar Mill to save on energy costs and sell more than 1.3 million units of electricity to the Provincial Electricity Authority, equivalent to more than 100 tonnes of crude oil per year, while helping to reduce GHG emissions by 700 CO_2 tonnes per year.

The Solar Rooftop Project at the ethanol plant in Phu Khieo District, Chaiyaphum Province

4. Solar farm

This involved using land that is not suitable for farming or waste and converting it into a 2 MW solar farm in the Dan Chang District of Suphan Buri Province. The solar farm has been supplying electricity since January 2016, with a 25 year Purchase Power Agreement (PPA) with the Provincial Electricity Authority. The project has helped to reduce carbon emissions by more than 1,500 tonnes per year.

Solar farm in Dan Chang District, Suphan Buri Province

5. Mitr Phol ModernFarm

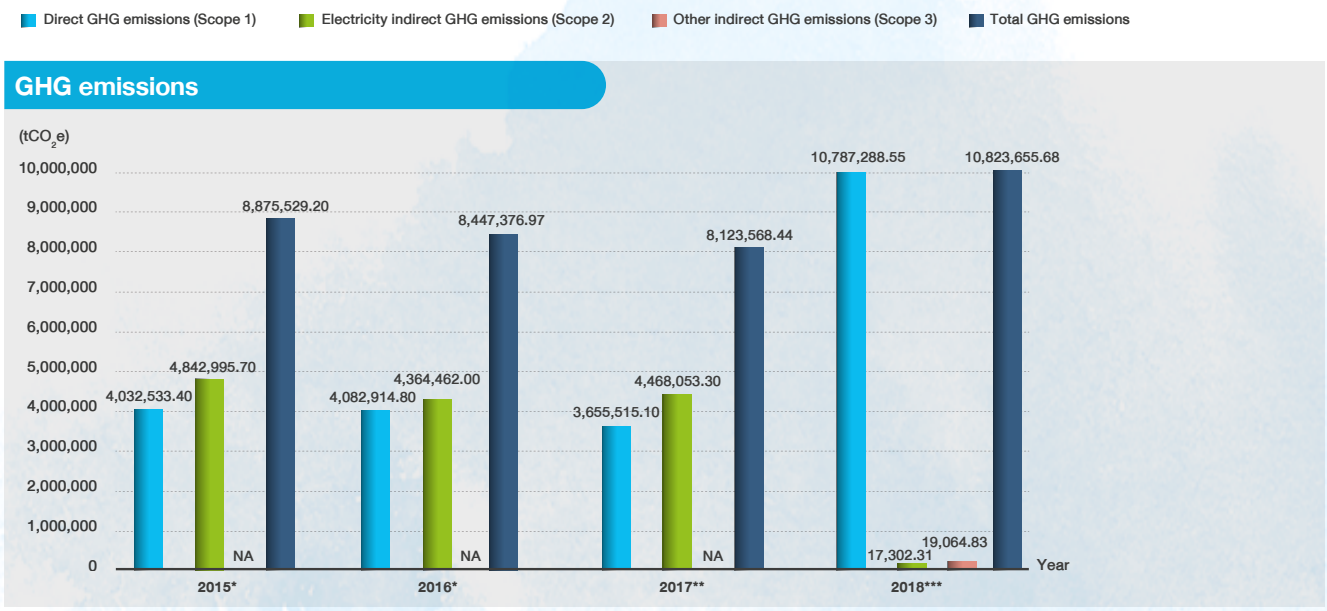
The Mitr Phol ModernFarm model is a proprietary farming program that combines knowledge and techniques from cane farming in Australia – where cane yields are some of the highest in the world – with local farming wisdom and the Thai way of life.

Mitr Phol ModernFarm management in Phu Khieo District, Chaiyaphum Province

The Mitr Phol ModernFarm philosophy comprises four key pillars: growing soil-boosting crops, reducing tillage, lowering soil compaction, and decreasing cane burning by using mechanical harvesters. These four pillars are then supported by effective irrigation management. The most important aspect of the philosophy is for farmers to change their mindset about cane farming. They must be equipped with textbook knowledge as well as practical learning from demo farms. New technology must also be embraced, for example the Smart Farm Systems to control heavy machinery and irrigation. Technology helps to increase cane yields and promotes more environmentally friendly farming.

There is a myriad of benefits from the ModernFarm method: soil becomes more nutrient-rich; farmers are able to reduce operating costs by more than 25%, going from 8,000 baht per rai to just between 5,000–6,000 baht per rai; yields increase, resulting in a higher income for farmers; labor shortage problems are alleviated; and carbon emissions are reduced by 0.012 tonnes of CO_2 per one tonne of fresh cut cane. In the 2017-2018 production year, Mitr Phol Group's fresh cut cane from the Mitr Phol ModernFarm project totaled more than 4.2 million tonnes, which helped to reduce CO_2 emissions by 50,459.11 CO_2 tonnes.

Mitr Phol Group's direct and indirect GHG emissions



Remarks:
- Direct GHG emissions (scope 1) cover methane gas from septic tanks, biological carbon dioxide emissions from bagasse used as fuel in biomass production, carbon dioxide from refined sugar production, GHG emissions from waste water treatment systems, GHG emissions from land filling, or waste disposal in on-premises landfills, GHG emissions from non-renewable fuels such as liquid petroleum gas, GHG emissions from renewable fuels such as biomass, GHG from solar power production, and GHG from coolants.
- Indirect GHG emissions (scope 2) cover GHG emissions from the generation of purchased electricity and steam
- Direct GHG emissions (scope 1) and indirect GHG emissions (scope 2) data reported cover activities over which Mitr Phol Group has operational control
- Other indirect GHG emissions (scope 3) cover GHG emissions from the transportation of raw materials and products by external organizations and employees' land travel provided by external parties

* 2015-2016 data covers the period from 1 January – 31 December of each year

** 2017 data covers the period of 1 November 2016 – 31 October 2017

*** 2018 data covers the period of 1 November 2017 – 31 October 2018

Lodging complaints process and channels

Mitr Phol Group provides channels through which stakeholders can make suggestions or lodge complaints about environmental impacts. Channels are available by region and factory.

Sugar Business

Mitr Phol Sugar Co., Ltd. (Head Office)
2, 3rd floor, Ploenchit Center, Sukhumvit Road, Klongtoey, Bangkok 10110
Tel. +66-2794-1000

Mitr Phol Sugar Mill (Dan Chang)
109, Moo 10, Nhong Ma Ka Mong Sub-district, Dan Chang District, Suphan Buri 72180
Tel. +66-3541-8103-7

Singburi Sugar Mill
24/2, Moo 2, Mai Dad Sub-district, Bang Rajan District, Sing Buri 16130
Tel. +66-3659-1475-6

Mitr Phu Khiao Sugar Mill
99, Moo 10, Koke Sa-ad Sub-district, Phu Khiao District, Chaiyaphum 36110
Tel. +66-4488-1111-4

Mitr Phu Wiang Sugar Mill
365, Moo 1, Maliwan Road, Nhong Ruea Sub-district, Nhong Ruea District, Khon Kaen 40210
Tel. +66-4329-4202-4

Mitr Kalasin Sugar Mill
99, Moo 1, Bua Khao-Pone Thong Road, Som Sa-ad Sub-district, Kuchinarai District, Kalasin 46110
Tel. +66-4313-4101-4

Mitr Phu Luang Sugar Mill
199, Moo 1, Maliwan Road, Khoke Kamin Sub-district, Wang Sapung District, Loei 42130
Tel. +66-4281-0921-3

Renewable Energy Business

Dan Chang bio-power plant
109, Moo 10, Cholapratarn Saykraseaw-Samchuk Rd., Nongmakamong Sub-district, Dan Chang District, Suphan Buri 72180
Tel. +66-3541-8217

Mitr Phol bio-power plant (Singburi)
24/2, Moo 2, Mai Dat Sub-district, Bang Rajan District, Sing Buri 16130
Tel. +66-3659-1475-6

Phu Khiao bio-power plant
99, Moo 10, Khoke Sa-ad Sub-district, Phu Khiao District, Chaiyaphum 36110
Tel. +66-4488-1261-2

Phu Wiang bio-power plant
365, Moo 1, Maliwan Road, Nhong Ruea Sub-district, Nhong Ruea District, Khon Kaen 40210
Tel. +66-4329-4202-4

Kalasin bio-power plant and Kuchinarai bio-power plant
99, Moo 1, Bua Khao-Pone Thong Road, Som Sa-ad Sub-district, Kuchinarai District, Kalasin 46110
Tel. +66-4313-4101-4

Mitr Phol bio-power plant (Phu Luang)
199, Moo 1, Maliwan Road, Khoke Khamin Sub-district, Wang Sapung District, Loei 42130
Tel. +66-4281-0921-3

Panel Plus bio-power plant
417/14, Moo 1, Kanjanavanich Rd., Phatong Sub-district, Had Yai District, Songkhla 90230
Tel. +66-7429-1130-4
Mr. Adisapong Uraikul Community Relations officer
Mobile. +668-4862-6431
Ms. Mattana Perkieang Environment officer
Mobile. +668–9877-6474

Power Prospect Co.,Ltd.
118, Moo 1, Salaloi Sub-district, Tha Ruea District, Phra Nakhon Si Ayutthaya 13130
Tel. +66-3534-3020

Dan Chang ethanol plant
109, Moo 10, Cholapratarn Saykraseaw-Samchuk Rd., Nongmakamong Sub-district, Dan Chang District, Suphan Buri 72180
Tel. +66-3546-6651-2

Phu Khiao ethanol plant
99, Moo 10, Khoke Sa-ad Sub-district, Phu Khiao District, Chaiyaphum 36110
Tel. +66-4488-1371-2

Kalasin ethanol plant and Kuchinarai ethanol plant
99, Moo 1, Bua Khao-Pone Thong Road, Som Sa-ad Sub-district, Kuchinarai District, Kalasin 46110
Tel. +66-4313-4051-4

Renewable Energy Business

Mae Sod Clean Energy ethanol plant
123, Moo 6, Maetao Sub-district, Maetao District,
Tak 63110
Tel. +66-5551-8050

Ratchasima Green Energy plant
99, Moo 17, Huai Bong Sub-district,
Dan Khun Thot District, Nakhon Ratchasima, 30210
Tel. +66-4475-6392

Mitr Phol Specialty Biotech Co.,Ltd.
99, Moo 10, Khoke Sa-ad Sub-district,
Phu Khiao District, Chaiyaphum 36110
Tel. +66-4488-1371-2

Wood Substitute Materials Business

Panel Plus Factory, Samut Sakorn
53/5, Moo 5, Settakit 1 Road, Nadee Sub-district,
Mueang District, Samut Sakorn 74000
Tel. +66-3483-0330-3

Panel Plus Had Yai Factory and Panel Plus (MDF) Factory
417/14, Moo 1, Kanjanavanich Road, Phatong Sub-district,
Had Yai District, Songkhla 90230
Tel. +66-7429-1130-4

Panel Decor Factory
417/14, Moo 1, Kanjanavanich Road, Phatong Sub-district,
Had Yai District, Songkhla 90230
Tel. +66-7429-1019-20

Hotline for 3 Factories;
Mr. Udom Panyo,
Vice President-Procurement and Administration
Mobile +668-1831-5814
Mr. Amarin Sriwattana,
Manager-Raw Material Procurement and Wood Yard
Mobile +668-1901-5711
Mr. Adisapong Uraikul,
Community Relations officer
Mobile +668-4862-6431
Ms. Mattana Perkieang,
Environment officer
Mobile +668-9877-6474

Logistics and warehouse business

United Standard Terminal Public Company Limited
Mitr Phol Warehouse Company Limited
78/2, Moo 2, Soi Wat Kae, Suksawat Road, Phra Samut Chedi District, Samut Prakan 10290
Tel. +66-2861-7888

Aawthai Warehouse Company Limited
Laem Chabang, Terminal A4 Toongsukhla Sub-district, Sriracha District, Chonburi 20230
Tel. +66-3300-4888

Fertilizer Business

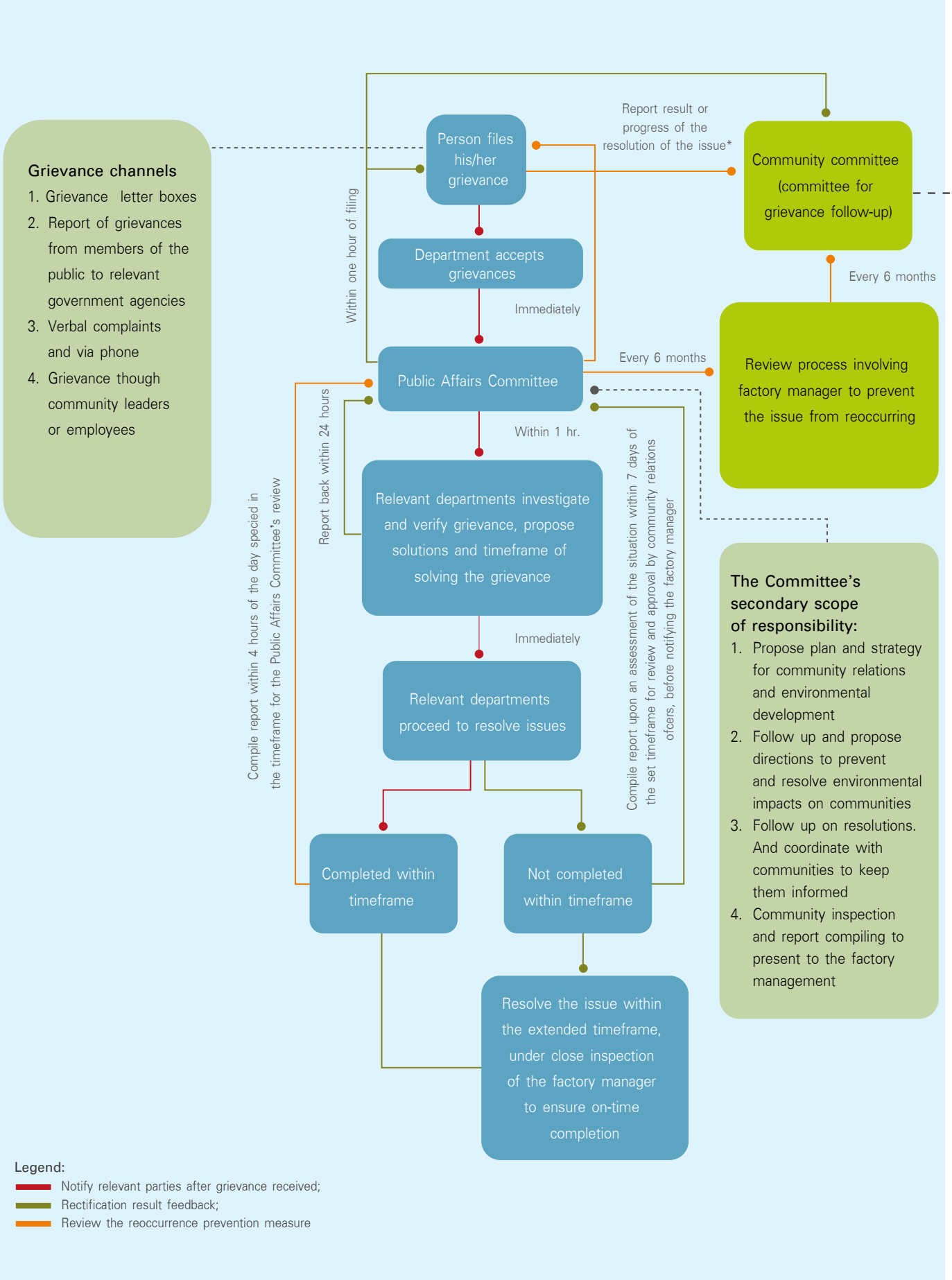
Organic Fertilizer factory, Dan Chang branch
214, Moo 4, Nhong Ma Ka Mong Sub-district, Dan Chang District, Suphan Buri 72180
Tel. +66-3596-9912-13

Organic Fertilizer factory, Phu Khiao branch
99/2, Moo 10, Khoke Sa-ad Sub-district, Phu Khiao District, Chaiyaphum 36110
Tel. +66-4410-9765

Other Business

Mitr Phol Sugarcane Reserch Co.,Ltd.
399, Moo 1, Chumpae-Phu Khiao Road, Khoke Sa-ad Sub-district, Phu Khiao District, Chaiyaphum 36110
Tel. +66-4488-1151, +66-4488-1189

Environmental / social impact complaints management system



The Committee's secondary scope of work

(1) Inspecting the needs of community members, establishing strong relationships between the community and the project, and coordination with other organizations or stakeholders.

(2) Inspecting the projects, understanding the process of environmental impact assessments in line with international standards for a transparent project environment management.

(3) Processing and managing grievances.

(4) Discussing and mapping preventive measures and resolutions for environmental and health issues.

(5) Checking and reviewing compensation for affected communities resulting from a factory's impacts on natural resources, the environmental, agricultural produce, livestock and health.

(6) Negotiating and resolving environment impact issues between the factory and the community.

(7) Considering and reviewing suggestions and grievances from the community, representatives from the residents and local government sectors, about environmental and health impacts caused by the factory's operations.

(8) Setting standards and building networks to efficiently follow up on and mitigate risks of environmental and health impacts.

(9) Promoting understanding and relationships between the community and factory, and working with other organizations and stakeholders.

Remarks: *

(1) Establishing causes, directions and timeframes to resolve issues within 24 hours.

(2) Reporting on progress every seven days, for cases in which resolving issues requires a longer timeframe.

(3) Notifying the persons lodging the grievance about the progress within the indicated timeframe and setting up inspection trips to ensure the issues have been resolved.

(4) For cases in which issues cannot be resolved within the timeframe, an advanced notice of at least seven days must be given, along with reasons why the issues cannot be resolved in time. The responsible team must meet with the person lodging the grievance and inviting him/her to inspect the progress of the resolution, before informing them of the expected timeframe. Notifications of progress must be given every seven days, until the issues are resolved.

Mitr Phol Group applies information technology to our grievance mechanism for reporting complaints about environmental and social issues, in order to make the process more efficient. During 2015-2018, there were no incidents that resulted in fines or prosecution for violating the law. There were also no incidents that entered the dispute resolution process.

Supplier Development:
"Growing together Sustainably"

Performance

Sugarcane Farmer Development for Sustainability

Developing our suppliers' capabilities is important to Mitr Phol Group, as our suppliers are key stakeholders in the value chain in the upstream part of our business. We are committed to treating our suppliers fairly, transparently, and ethically, while also seeking to avoid any incidents or actions that may lead to conflicts of interest. We comply with rules and agreements made with our suppliers to promote healthy business relationships, in line with sustainable supplier management and best practices. Mitr Phol Group also acts responsibly toward our customers, consumers, communities, society and the environment to achieve our goal of sustainable development.

Mitr Phol Group's procurement policies include procurement policy, chiefly concerning environmental-friendly procurement and sourcing. This year, the Mitr Phol Suppliers Code of Conduct was introduced to promote our suppliers in complying with Mitr Phol Group's company direction and corporate culture. Suppliers are expected to carry out their business ethically, respect human rights, provide occupational health and safety, and place importance on proper environmental management.

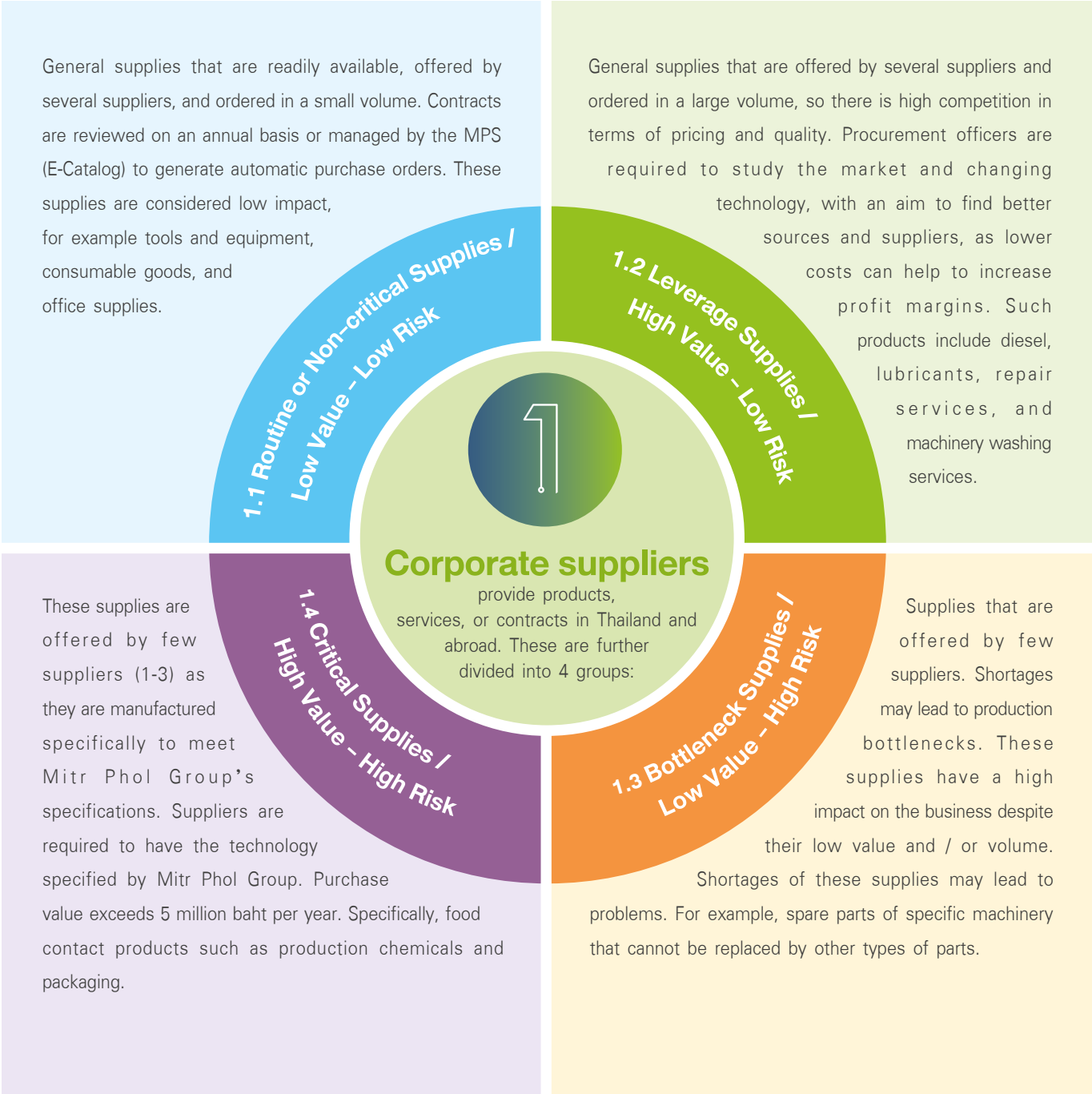
In addition, Mitr Phol Group has continued to help develop a key group of suppliers – sugarcane famers – by providing them with knowledge and uplifting their working conditions to be in line with Bonsucro standards. Aside from sugarcane famers, rubber farmers also receive training and knowledge about production standards. The Forest Stewardship Council (FSC) certification has also been applied. Utilizing technology has helped us to improve our production processes and transportation as part of sustainable supply chain management. Supplier audits and assessments continue to be carried out on an annual basis to measure their performance. Suppliers are graded, ranked, and placed on the Approved Vendor List (AVL) through the Mitr Phol Procurement System (MPS-on web). To carry out the assessment, several dimensions are used to measure a supplier's performance, with each dimension having a different weight. Some such dimensions are product and service quality, transportation and product delivery, safety standards, environmental standards, and social responsibility standards. Audits are performed on suppliers who manufacture food contact products, such as packaging and chemicals used in production processes. To promote and strengthen our relationships, suppliers are invited to an annual seminar. Also, regular meetings are held with high-potential suppliers to review their contracts with Mitr Phol Group annually. We believe that our commitment to suppliers helps them to develop and grow sustainably alongside our company.

"The most critical challenge for sugarcane business in achieving sustainable performance is how to bring benefits to the smallholder farmer where it needs to be win-win, including benefits they will receive along their journey to become more sustainable. Mitr Phol however is in a great leadership position in engaging, providing trainings, as well as technically and financially supporting the smallholder farmers on a regular basis (to keep good relationship between them and milers). The achievement of Mitr Phol is according to its philosophy under the respected principle of 'Grow Together' that emphasizes on social and environmental development not less than business development. As far as we know Mitr Phol has a clear mission to achieve Bonsucro certification. All the aspects in the standard are linked to each other. Mitr Phol is quite advanced overall to be at a sustainable level."

Mr. Rick Lyu
Regional Director, Asia Pacific, Bonsucro

Performance

For effective supplier management, Mitr Phol Group categorizes suppliers into two types: central and raw materials suppliers.



Critical Suppliers Management

Mitr Phol Group values efficient supplier management as a way to reduce risks and increase security for the group's business. We also focus on ensuring the continuous improvement of our supplier management practices. The following criteria define critical suppliers.

1. They provide special products that are manufactured specifically to Mitr Phol Group's requirements, in particular food contact products such as chemicals used in production processes and packaging.
2. There are only a few suppliers with the right level of expertise and operating technology as required by Mitr Phol Group.
3. They provide supplies valued at more than 5 million baht per year.
4. They are the main providers of raw materials, such as sugarcane famers.

Critical suppliers management is applied to those who manufacture special products or have a direct impact on production processes. Before purchases can be made from new suppliers, the Supplier Management team must be notified. The team then makes careful considerations and may perform a site visit alongside the procurement team, or they may ask prospective suppliers to complete a questionnaire. In cases in which such suppliers have already attained all certifications required by the Quality Assurance department, they are allowed to submit copies of ISO9001, ISO14001, ISO22000, FSSC22000, OHSAS18001, GMP, HALAL, and HACCP certificates. Only after passing these criteria can new suppliers be registered and purchase orders issued. Every time a delivery is made at a factory, the Quality Control department audits random lots of each shipment, then records the results and approvals on the MPS.

The Procurement department and Supplier Management team jointly performs a site visit or issues a questionnaire to evaluate annual performance and risk assessment the suppliers. The system then grades suppliers on an annual basis and creates the Approved Vendor List in order to efficiently mitigate risks. Moreover, Mitr Phol Group has prepared a risk assessment for raw material supplier in the future.

2018 Mitr Phol Group Suppliers [204-1]

Type	Unit	2015*	2016*	2017**	2018***
Newly registered corporate suppliers	No. of suppliers	150	372	449	543
Newly registered local corporate suppliers	No. of suppliers	75	191	270	237
Percentage of newly registered local corporate suppliers	Percentage	50.00	51.34	60.13	43.65
from local corporate suppliers	Percentage	83.10	70.31	81.35	24.85

Remarks: * Data from year 2015-2016 was collected from January 1 to December 31 each year.
** Data from year 2017 was collected from November 1, 2016 to October 31, 2017.
*** Data from year 2018 was collected from November 1, 2017 to October 31, 2018.

Mitr Phol Group's reviews of new suppliers take into consideration environmental and social dimensions. Suppliers are required to comply with the laws, rules, regulations, and policies regarding occupational health, safety and the environment. They must operate their business with respect to environmental preservation, optimal utilization of natural resources, and caring for local communities. Suppliers must separate and control both waste and hazardous materials, and they must have pollution control measures. For the social dimension, suppliers are required to operate their business with an awareness of their impact on local communities and society at large. They must respect the local culture and traditions. Finally, they must take part in community development whenever appropriate.[308-1][414-1]

2 Raw material suppliers

cover 2 main segments: rubber farmers that supply old rubber trees to the wood substitute material production plant and sugarcane farmers that supply sugar to sugar mills.

Rubber farmers

The wood substitute business uses retired rubber woods to generate value out of waste. Our development programme helps 1,000 rubber farmers to understand and achieve FSC certification standards, testifying that the wood and wood products are sourced from natural forests or agricultural lands that have been managed properly and according to the international standards. In 2018, Mitr Phol Group procured 1,252 tonnes of rubber wood, valued at 1 billion baht.

Sugarcane farmers

Mitr Phol Group has implemented the "Mitr Phol ModernFarm" model to help sugarcane farmers increase productivity, and reduce cost and labor usage, while also preserving water and soil. The model also encourages fresh cane cutting in place of burning, with price thresholds to incentivize farmers to reduce greenhouse gas emissions. Cane that was burned results in a 20 baht deduction per tonnes, in an effort to persuade sugarcane farmers to cease burning cane during harvest seasons.

In 2018, Mitr Phol Group purchased 23,667.51 million tonnes of cane worth 24,582.18 million baht.

Volume and value of cane purchased by Mitr Phol Group's sugar mills

	Mitr Phol Dan Chang Sugar Mill	Singburi Sugar Mill	Mitr Phu Khiao Sugar Mill	Mitr Phu Wiang Sugar Mill	Mitr Kalasin Sugar Mill	Mitr Phu Luang Sugar Mill	Total
Total volume of sugarcane purchased (Million Tonnes)	5,203.68	1,882.20	4,236.00	4,283.04	4,021.98	4,040.61	23,667.51
Total value of sugarcane purchased (Million Baht)	4,961.38	1,822.02	4,589.56	4,598.98	4,415.16	4,195.09	24,582.18

Mitr Phol Group has given equitable importance to all farmers, procuring sugarcane from all groups to distribute income directly to the grassroots. The procurement categorized by farmers' farmland areas as follow:

Number of sugarcane farmers by Mitr Phol Group's sugar mill (persons)

Types of sugarcane farmers	Mitr Phol Dan Chang Sugar Mill	Singburi Sugar Mill	Mitr Phu Khiao Sugar Mill	Mitr Phu Wiang Sugar Mill	Mitr Kalasin Sugar Mill	Mitr Phu Luang Sugar Mill	Total
Small	2,020	3,534	3,960	3,562	11,392	3,789	28,257
Medium	630	251	1,512	1,357	1,253	874	5,877
Large	493	51	352	346	166	124	1,532
Total	3,143	3,836	5,824	5,265	12,811	4,787	35,666

Mitr Phol Group is committed to promoting the growth of local economies, in line with the "grow together" philosophy. As such, great importance is placed upon supporting local suppliers in Thailand, where the group's core businesses are, as well as in international countries. Mitr Phol Group works with 40,366 suppliers (both corporate and raw material suppliers), 37,743 of which are based in Thailand, accounting for 93.5% of the total suppliers. The value of supplies sourced locally amounts to 27,908.18 million baht.

40,366

Mitr Phol Suppliers local and international

37,743

Local suppliers

Sugarcane Farmers Development for Sustainability

The significance of sugarcane farmers which form the beginning of the value chain coupled with Mitr Phol Group's "Grow...Together" corporate philosophy and Bonsucro Production Standard the international cane and sugar production standards. Mitr Phol Group gives importance to sugarcane farmers and communities sugarcane farmers are encouraged and supported to gain the best access to production technology, to raise their standard of living, increase outputs and enhance production efficiency and precision while production cost is efficiently controlled. Farmers hence enjoy higher income and greater farm management capacity. Mitr Phol Group's sugarcane farmers development pattern is shown below:

Stage 1:

Increasing output with technology via Mitr Phol Group's Fair Contract Farming agreement

Objectives

1. To tackle production challenges driven by lack of knowledge, poor management, and lack of proper tools with specialized output oriented technology.
2. To build farmer networks for greater bargaining power against the suppliers of raw materials and production factors, resulting in higher-quality and cheaper raw materials and production factors for their own benefits.

Details

Enforce "Fair Contract Farming" agreement

Results

In 2018, Mitr Phol Group signed the agreement with more than 35,000 sugarcane farmers, committed to jointly enhance production efficiency, buy a certain amount of output, and extend other significant supports including financial supports, provision of production factors, and training to improve their knowledge, skills and experience. Details are as follows:

- Provide supporting funds.
- Provide production factors.
- Provide training to improve skills, knowledge and experience.
- Agree to purchase the produce.

Stage 2:

Irrigation and water usage management in sugar farms

Objectives

1. To reduce water shortage and water usage inefficiency through an efficient irrigation and water usage management system.
2. To mitigate drought-related risks.

Details

Formulate the irrigation plan for sugarcane farmland in cooperation with local sugarcane subcommittees, Bank for Agriculture and Agricultural Cooperatives and Office of the Cane and Sugar Board, to ensure sufficient water supply. The task has been ongoing since 2006.

Results

1. The project covered 2,146,650 rai in 2018 and 818,820 rai or 38 percent were irrigated.
2. Provide supports on knowledge, funds, and the formation of water user groups to ensure sufficient water supply and self-sufficiency.
3. Support and educate farmer communities in key issues
   - Provision of water sources for plantation such as the construction of ponds, drilling of underground water wells, pumping stations, and distribution of water to farmland.
   - Efficient practices such as drip irrigation, hurl irrigation, center pivot irrigation to be used on Mitr Phol Group's plantations, and to provide learning opportunities on cane plantation irrigation for farmers.
4. Locate water sources, reuse water from farmland and factories.
5. Full Coverage irrigation increased involved farmers' yield from 10 tonnes to 16 tonnes per rai, or 60 percent. Mitr Phol Group in 2018 in extended a total of 6,000 million baht to support sugarcane plantation.

Stage 3:

Farmland management for higher efficiency and maximum yields through Mitr Phol ModernFarm and achieve sustainable development through the "Follow Our Father's Footsteps... Plant with happiness" project.

Objectives

1. To develop the capabilities of farmers in modern cane farming management in order to increase productivity and yields.
2. To improve the quality of life of sugarcane farmers by encouraging them to employ integrated farming in addition to cane farming.

Details

1. Provide knowledge and skills for farmers through the Mitr Phol ModernFarm model. Create experts, called "Iron Man", in Mitr Phol ModernFarm methods to cascade the knowledge and provide coaching for farmers under their care.
2. Implementing the "Follow Our Father's Footsteps... Plant with happiness" Project by applying modern farming practices to help sugarcane farmers reduce living expenses, exchange crops with people in the community to promote good relationships, and sell surpluses in local markets to generate extra income. These help to create a strong, sustainable and prosperous community.

Results

1. Promoting knowledge about farm design to sugarcane farmers to promote efficient space management and allocation:
   - 75% of land for primary crops
   - 8% of land for the main road, secondary road, cane collection area, and primary and secondary farm roads
   - 5% of land for water reservoirs
   - 12% of land for secondary farming (secondary crops, fruit, vegetables, livestock)
2. Providing knowledge and training to contract farmers about cane farming management. 600 officers from Mitr Phol Group give advice and set up 128 service points to facilitate services and provide consultation to sugarcane farmers.
3. Through the "Iron Man" programme, Mitr Phol Group employees are equipped to provide knowledge to farmers about the Mitr Phol ModernFarm model and coach them to farm more efficiently. There are currently 512 employees who are part of the Iron Man programme. The goal is to train another 500 Iron Man experts by 2019.
4. Study trips to successful projects in Thailand and abroad to learn about modern cane farming management. We also run a business plan development programme with small, medium, and large sugarcane farmers to help them expand.
5. 712 families joined the "Follow Our Father's Footsteps... Plant with happiness" Project, and 78 modern farming learning centers were established.

Stage 4:

Sustainable Community development for social development

Objectives

To lift the quality of living of sugarcane farmers' communities.

Details

Implement the project in collaboration with Tambon Mitr Phol Ruampattana council, small-sized farmers and communities in target areas.

Results

Implement the project in target areas which are expanded to 21 subdistricts in 8 provinces (from 9 subdistricts in 7 provinces).

Customers and Consumers:
"Quality Products and Healthy Relationships"

Product Quality Control

Customer and Consumer Service

Product Quality Control

Mitr Phol Group continues to develop variety of products to serve the needs of all consumer groups. We place great importance on adding value to our products and selecting alternative bio-materials when possible in order to provide our consumers with products that are valuable, safe, and traceable. Such practices are clearly dictated in our Marketing Policies. We also implement product withdrawal and replacement procedures if products are found to be unsafe. Such precautions and measures ensure that customers and consumers can be confident in Mitr Phol Group's stringent product quality control processes.

Innovation also plays an integral part in product developments and new offerings for health-conscious consumers in the Tasty Healthy category such as Mitr Phol Calorie ranges of sugar, and the single serve 4 grams sugar sachets. In 2018, we entered into a joint venture with US-based Dynamic Food Ingredients (DFI) to conduct research on natural healthier of sweeteners, namely erythritol and xylitol, with an aim to build upon the knowledge and offer other safe sugar alternatives for the food industry and health-conscious consumers.

Mitr Phol Group has a company policy to prohibit the usage of Genetically Modified Organisms (GMOs). The policy was published on the group's website to communicate to consumers that all products from Mitr Phol Group are GMOs free.

In 2018, Mitr Phol Group announced a policy prohibiting the usage of harmful chemicals on cane plantations including Paraquot Dichloride, Chlopyrifos and Glyphosate. To ensure compliance with international food safety standards, all sugar items are fully traceable and produced with strict adherence to internationally certified processes. All of Mitr Phol Group's sugar mills have received the following certifications:

- ISO 9001 Quality Management, ISO 22000 Food Safety Management System and Good Manufacturing Practices (GMP)
- Food Safety System Certification 22000 (FSSC 22000) and Hazard Analysis Critical Control Point (HACCP)
- Halal (Halal Standard) and KOSHER (Kosher Dietary Law)

Additionally, Mitr Phol Group applies the Bonsucro Production Standard for the sustainability of sugarcane and sugar industry. The standard is applied with sugarcane production through the delivery of products to consumers, to assure large customers like Coca-Cola, Pepsi, Nestle, Corbion, Mars, as well as consumers can rest assured that the products they receive meet all safety standards and development farmer, controlled chemicals and fertilizer use, standard production, and environmental management on top of traceability.

"Sugar industry need to focus on new business model or innovation. The company should offer alternative products to serve customer demand who concerns on health or to serve the change of customer behavior. To maintain sustainable business, the company should pay an attention on knowledge of sugar consumption which may affect to consumer's health."

Mr.Wuthichai Sithipreedanant
Senior Vice President
CSR & Sustainable Development
Charoen Pokphand Foods PCL

The wood substitute material business's production of particleboards, MDF products and melamine-coated panel meets international standard with traceability. High-quality wood substitute products are made with restrictions on formaldehyde evaporation and full traceability, adhering to internationally recognized standards, including international standards like Europe standard - EN, Japan's JIS and United States' CARB. The business is also certified for sustainable forests management with FSC™ FM certificate from Forest Stewardship Council. In 2015, it received FSC™ COC certificate (FSC™ C125420) issued to a business producing or selling forest products. Its customers are assured that certified wood and wood products are from sustainably-managed forests. Aside, the business focuses on the distribution of value-added products for all product categories through all channels, to meet local and foreign customer demand.

The transportation and warehousing business will deploy ISO 9001:2015 standard which will not only guarantee standard services but also introduce safety features that concern the safety of employees and the safety of products and services, with consideration of delivering high-quality and safe products to customers.

The fertilizer business production standards are a top priority. The certification by the Ministry of Agriculture and Cooperatives and Organic Agriculture Certification Thailand's IFOAM certificate. The certificates assure farmers of zero contamination of chemicals in the organic fertilizer, shutting down the possibility of contamination that will harm their health and their farmland.

Customer and Consumer Service

One of Mitr Phol Group's stakeholder groups is customers and consumers. Due to the diverse nature of the group's businesses, customer groups are divided by business unit so that their needs can be served in the most efficient way. Mitr Phol Group strives to develop high-quality products and offer great services, while managing customer relationships through a variety of activities, including regular meetings with distributors, plant visits, supplier meetings, and annual satisfaction surveys.

Sugar Business

Mitr Phol Group produces sugar products for both local and international markets, Refined Sugar, Refined Sugar in Hygiene Pack, syrup, flavored syrup-Mitte, coffee sugar, icing sugar, sachets, low-calorie sugar, Mitr Phol Gold sugar, coconut paste sugar, rock sugar, brown sugar, In 2018, a customer communications campaign for natural cane sugar products was launched to inform consumers that products with minimal processing retained the pure and natural taste of sugar cane.

Due to changes in consumer behavior brought about by technology and digital disruption, new distribution channels were also introduced, including via the chat application Line (@MitrPholSugar). Consumers are able to order products via the channel, as well as receive information and promotions at the tip of the finger.

Satisfaction survey result

Mitr Phol Group since 2016 has undertaken product and service satisfaction surveys with Net Promoter Score (NPS) which has been popular among leading industries. Mitr Phol Group's goal is to achieve the same level of NPS as other international companies within the same industries. Satisfaction surveys were conducted with 401 consumers via phone, e-mail, fax, and the Line chat application. Survey participants were divided into the following groups:

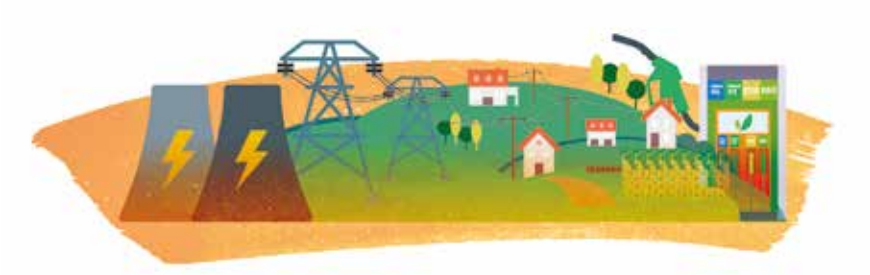
- Corporate customers / industry (Business To Business)
  - Customers in Thailand, Cambodia, Laos, Myanmar, Vietnam and Singapore
  - International and regional and customers
  - Molasses customers
- Business To Customer
  - Online Customer: Lazada and Line@

The satisfaction survey result is summarized as follows:

	2015*	2016*	2017**	2018***	Target 2018
% of satisfied customers	71.04	64.51	66.14	71.04	64.00
% of total customer surveyed	40.55	47.01	53.35	55.38	

Remarks: * Data from year 2015-2016 was collected from January 1 to December 31 each year.
** Data from year 2017 was collected from November 1, 2016 to October 31, 2017.
*** Data from year 2018 was collected from November 1, 2017 to October 31, 2018.

The 2018 customer satisfaction survey shows an average satisfaction level of 71.04%, which is higher than the target and increased last year's score. Due to Mitr Phol Group maintains a good quality of products, continuous improvement in product development and after-sales service. In addition, Mitr Phol Group also strives sales development in the following year with price competition strategy, improving after-sales service, including maintaining the standard of the product to be able to meet the needs of customers most effectively.



Renewable Energy Business

Exploring alternative energy business and improving the sugar business in Thailand is one of Mitr Phol Group's ideas in returning benefits to society. The idea is to turn waste into valuable products, hence creating a new business which addresses Thailand's energy needs. Mitr Phol's energy business encompasses electricity generating ethanol production and alternative energy business which have different groups of customers as summarized below.

• Electricity Business

Mitr Phol Group's idea to convert waste to value gave birth to the bio-fuel power business. Electricity generated from bagasse was first for internal consumption. Higher capacity allows the group to sell excess supply. The power business's customers are segmented into 2 groups: internal customers which are Mitr Phol Group's business units and external customers which are the Electricity Generating Authority of Thailand (EGAT) and the Provincial Electricity Authority (PEA). The power is sold through firm contracts (running 21 years and specifying a certain amount of power) and non-firm contracts (running 5 years and not specifying the amount of power). Mitr Phol Group currently operates 10 biomass power plants with capacity of 572.80 Mwh.

Satisfaction survey result

The electricity business's customer satisfaction survey is conducted through questionnaires distributed to all customers, covering their satisfaction with service and the quality of power and steam. The summarized results are as follows:

The satisfaction survey result is summarized as follows:

	2015*	2016*	2017**	2018***
% of satisfied customers	98.33	98.33	99	99
% of total customer surveyed	100	100	100	100

Remarks: * Data from year 2015-2016 was collected from January 1 to December 31 each year.
** Data from year 2017 was collected from November 1, 2016 to October 31, 2017.
*** Data from year 2018 was collected from November 1, 2017 to October 31, 2018.

• Ethanol Business

Thailand's energy needs keep expanding, partly from the transport segment. Ethanol is being used to produce gasohol for this segment. Realizing the opportunity, Mitr Phol Group has continually improved ethanol quality and production quality to cope with an increasing demand for gasohol. We carry out research and development projects to maximize the value of natural materials and minimize production waste. The ethanol capacity is continuously increased in response to increasing demand. The ethanol business' customers are:

o Local market

Ethanol is directly distributed to customers who are entirely oil companies, through 3-month forward contracts which specify fixed volume and price. Focus is placed on the quality of service and coordination, to assure oil companies of supply security. The strategy emphasizes long-term relationship, giving more attention to oil companies which are more than customers in general.

o Overseas market

Ethanol is directly supplied to foreign buyers and distributors as such shipment demand fleet management expertise.

Satisfaction survey result

The ethanol business's customer satisfaction survey is conducted through questionnaires distributed to all customers, covering their satisfaction with shipments and product quality. The results are used in upgrading service and product.

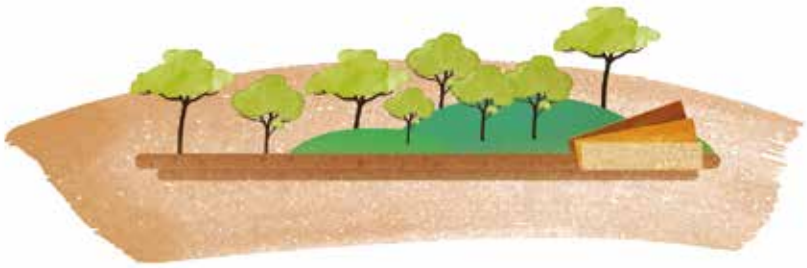
The satisfaction survey result is summarized as follows:

	2015*	2016*	2017**	2018***
% of satisfied customers	100	100	100	100
% of total customer surveyed	100	100	100	100

Remarks: * Data from year 2015-2016 was collected from January 1 to December 31 each year.
** Data from year 2017 was collected from November 1, 2016 to October 31, 2017.
*** Data from year 2018 was collected from November 1, 2017 to October 31, 2018.

- **Alternative energy business**

Mitr Phol Group focuses on the development of renewable energy, building on the group's expertise in environmentally-friendly clean energy. The company is expanding into the solar power business via solar rooftops installed on molasses storage warehouses, based on the concept of efficient space utilization. Mitr Phol Group operates its first solar farm in the Dan Chang district of Suphanburi province.



Wood Substitute Material Business

Panel Plus Co., Ltd. a subsidiary of Mitr Phol Group, is a leading manufacturer and distributor of particleboards, MDF products and melamine-coated panel in Thailand, boasting experience, efficient management and readiness to address customer needs. The products are branded "PANEL PLUS", being a symbol of professional management for customers and nature's balanced benefits. The wood substitute material business's customers are small furniture makers and distributors in Thailand and overseas.

Panel Plus in collaboration with universities design curriculums on the properties of wood substitute materials and applications, spreading knowledge to university students who will expand the market to new generations and become good customers in the future. Panel Plus also explores opportunities to penetrate healthcare-related projects, the market that shows high growth potential.

Satisfaction survey result

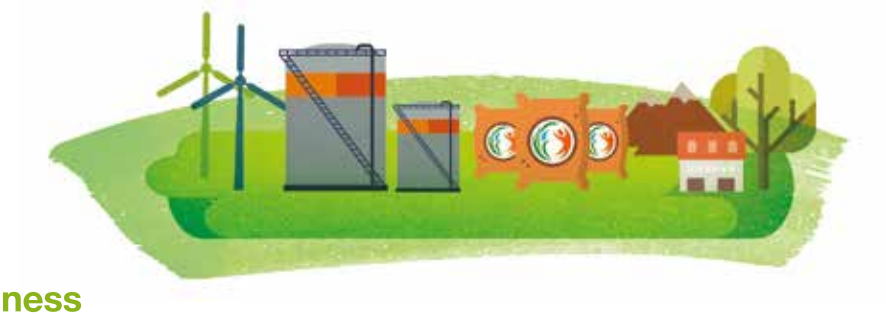
The wood substitute material business surveys local and foreign customers' satisfaction by sending questionnaires to customers and 56 joined the survey that focuses on the quality of products and services.

The survey in 2018 showed the 80% satisfaction with services – sale document, shipments and sale staff's services. The results are used in improving product and service quality as recommended by customers. The business has utilized the survey results to improve its product and service offerings and ensure maximum customer satisfaction.

The satisfaction survey result is summarized as follows:

	2015*	2016*	2017**	2018***	Target 2018
% of satisfied customers	80	81	80	80	80
% of total customer surveyed	88	83	100	100	

Remarks: * Data from year 2015-2016 was collected from January 1 to December 31 each year.
** Data from year 2017 was collected from November 1, 2016 to October 31, 2017.
*** Data from year 2018 was collected from November 1, 2017 to October 31, 2018.



Fertilizer Business

Mitr Phol Group realizes sugarcane farmers' hardship concerning the high price of fertilizers which may be sub-standard or unsuitable for crop and plantation areas. As a result, the group promotes the use of organic fertilizers in place of chemical fertilizers, helping cane farmers gain access to high-quality fertilizers that are not only safer for their health, but also more cost effective. The fertilizer business's customers are Mitr Phol Group's contracted farmers and farmers in nearby areas.

For the fertilizer business, there are two groups of customers: internal (Mitr Phol Group) and external (fertilizer distributors and modern trade retailers). In 2018, the fertilizer business has organized activities to educate farmers about how to use fertilizer efciently. And we enter the area to follow the result of fertilizer, quality, price, after sales service and opinions of farmers, distributors and retailers to develop products and services to meet farmers and shops at the highest level.

Logistics and warehouse business

The logistics and warehouse business and warehousing business offers transportation, berthing and warehousing services in Samut Prakan and Chon Buri provinces, to serve Mitr Phol Group and other customers.

Due to the nature of the transportation and warehouse business, the company's core services include warehouse space rental, in-bound and out-bound transfers, freight, and transportation, thereby providing an integrated service for convenience and customer satisfaction.

The company is focused on expansion to become an end-to-end logistics management business that offers customers a diverse range of services, a competitive edge from an extensive transportation network, and a fully traceable system, in order to help customers grow their businesses.

In addition, the company's future plans focus on providing high standards of services in an increasingly competitive business landscape and enhancing its capabilities of transporting goods to handle future business expansions.

Satisfaction survey results

There are two main groups of customers for the transportation and warehouse business unit: sugar-related customers (bulk of raw sugar, bags of sugar, and molasses), who account for 84.43% of the revenue; and non-sugar customers (chemicals, animal feed, wood, and other products), who account for 15.57% of the revenue. The customer satisfaction survey was conducted with customers of all product categories.

In 2018, Mitr Phol Group introduced more products and services, and the level of customer satisfaction grew. It was a great challenge to not only achieve but exceed the goals set for 2018.

The satisfaction survey result is summarized as follows:

	2015*	2016*	2017**	2018***	Target 2018
% of satisfied customers	83.94	88.39	91.10	92.23	85
% of total customer surveyed	88.88	75.00	70.00	84.80	

Remarks: * Data from year 2015-2016 was collected from January 1 to December 31 each year.
** Data from year 2017 was collected from November 1, 2016 to October 31, 2017.
*** Data from year 2018 was collected from November 1, 2017 to October 31, 2018.

In 2018, 92.23% of customers were satisfied and the results are used to improve its services, to address the needs of all customers and improve services as recommended by customers.

Other Businesses

- **Mitr Phol Innovation & Research Center**

Mitr Phol Innovation & Research Center was established to study cane species and ensure supplies meet the demands of the sugar mills. The focus of the research was the development of a diverse range of cane species that help to increase productivity in different regions, while preventing and controlling cane diseases caused by fungi, insects, and the climate. Mitr Phol Innovation & Research Center provides support to cane farmers by educating them through a variety of media, as well as by conducting research about adding value to byproducts of sugar production.

Society and Communities:
"Grow Together"

Sustainable Community Development

Social Enterprise

Social Projects

Mitr Phol Group strives to promote business growth while uplifting suppliers, particularly sugarcane farmers, as sugar cane is the heart of our business, with both the core business and downstream business using cane as raw material. As such, developing sugarcane farmers and local communities is an integral part of our sustainable business operation. Using the late King Bhumibhol Adulyadej's New Theory Agriculture as a model, our goal is for sugarcane farmers and local communities to achieve self-reliance and "grow together", in line with Mitr Phol Group's philosophy. As a result of this commitment, a number of projects have been implemented to uplift the quality of life for sugarcane farmers and local communities.

In addition to developing sugarcane farmers and plantations, we also help to create jobs and economic prosperity for the surrounding communities. We operate our business with a sense of social responsibility toward all stakeholders, with a goal of creating shared value and a brighter future for Thai society.

Mitr Phol Group has established a dedicated Sustainable Community Development team responsible for working closely with communities surrounding our plants. In addition, the Social Enterprise team is in charge of developing community products that meet quality standards and are characterised by unique selling points. In the past year, Mitr Phol Group's work on community development included:

Type of contribution

35.37	26.57	14.73	8.93
Million baht	Million baht	Million baht	Million baht
Cash contributions	Time (employee volunteering during paid working hours)	In-kind giving (product or service donation, projects/ partnerships or similar)	Management overheads

Sustainable community development

Incorporating the New Theory Agriculture, the "Follow Our Father's Footsteps..., Plant with happiness" Project or Safe Veggies project is an expansion of Mitr Phol Group's work with local communities to bring sustainability to wider society. The project is a joint partnership with several parties and covers 21 Sub-districts in 11 Districts across eight Provinces where Mitr Phol Group's plants are located.

2017-2021 Sustainable Community Development goals and plans

The Sustainable Community Development function has established clear plans and KPIs for each target location. Designated community development officers at each plant are responsible for working with group members, other organizations, and strategic partners in the area to ensure plans are implemented and targets are achieved.

Sustainable community development strategies

01 Model family

Strategies
- Know oneself
- Change vision
- Build role models
- Amplify through activities

02 Community knowledge

Strategies
- Learning Center development
- Sub-district learning center development
- Expanding knowledge to local policy

03 Community organizations

Strategies
- Leader capability development
- Establish Mitr Phol's Sub-district co-development committee
- Partner with related organizations

04 Co-development network

Strategies
- Strengthen the network
- Build networks for knowledge sharing

Areas of operation

21 Sub-districts, 11 Districts, 8 Provinces

Central region:
4 Sub-districts, 4 Districts, 2 Provinces

- Chaeng Ngam, Nong Ya Sai, Suphan Buri
- Nong Makha Mong, Dan Chang, Suphan Buri
- Mai Dat, Bang Rachan, Sing Buri
- Pho Sangkho, Kai Bang Rachan, Sing Buri

Northeastern region:
17 Sub-districts, 7 Districts, 6 Provinces

- Khoke Kamin, Wang Sapung, Loei
- Si Songkhram, Wang Sapung, Loei
- Ban Kaeng, Phu Khiao, Chaiyaphum
- Nong Khon Thai, Phu Khiao, Chaiyaphum
- Kok Sa Ard, Phu Khiao, Chaiyaphum
- Chum Phae, Chum Phae, Khon Kaen
- Chaiyasor, Chum Phae, Khon Kaen
- Kud Kwang, Nong Ruea, Khon Kaen
- Non Sa-at, Nong Ruea, Khon Kaen
- Baan Meng, Nong Ruea, Khon Kaen
- Chorakhe, Nong Ruea, Khon Kaen
- Nong Yai, Phon Thong, Roi Et
- Som Sa-ad, Kuchinarai, Kalasin
- Kut Khao, Kuchinarai, Kalasin
- Chum Chang, Kuchinarai, Kalasin
- Na Yom, Mueang, Amnart Charoen
- Nam Plik, Mueang, Amnart Charoen

In the 21 Sub-districts, there are 43,271 households in 286 villages that take part in the project.

Community Development Performance

Community farming and food safety development performance

Safe vegetables project

Production system development and sales of Organic Vegetable

Working with the Sampran Model, the project helped vegetable farmers switch to organic production. Farmers were encouraged to form groups and exchange knowledge on organic farming and developing community products, with Participatory Guarantee System (PGS) certication or so-called "Pen Mitr Organics PGS".

Pen Mitr
Pen Mitr Organics
PGS

Participatory Guarantee Systems (PGS)
The International Federation of Organic Agriculture Movements (IFOAM) has dened PGS (Participatory Guarantee Systems) as locally focused quality assurance systems that certify producers based on the active participation of stakeholders, and are built upon a foundation of trust, social networks and knowledge exchange.

Year	Vegetable farming groups	Members (people)	Markets (place)	Sales revenue (baht / year)
2014	2	68	2	60,000
2015	5	84	4	291,860
2016	11	254	9	814,378
2017	16	267	14	1,896,894
2018	16	294	17	2,808,214

Performance Summary of vegetable farming groups

Roadmap

Year 2015-2016

Farmer families
- Explaining about the project
- Application
- Problem analyses
- Self-reliance activities

Year 2016-2017

Professional groups
- Studying community information
- Group activities
- Planning meetings

Year 2017-2018

Capability development
- Field trips
- Mobile meetings / knowledge exchange
- Coordinating with relevant organizations
- Developing knowledge bases

Year 2018-2019

Group development plans
- Farming process and planning
- GAP, PGS, Organic Thailand certication
- Markets: community, in front of plant, canteen, modern trade
- Co-operatives

Year 2019-2021

Community enterprises
- Legally certified
- Sources of capital for product development
- Enhancing competitive edge

The New Theory Agriculture Project of Mitr Phol Group

"Follow Our Father's Footsteps… Plant with happiness" Project

The project's objectives and time frame

2019
Expanding the project to cover at least 7,000 farmers, who practice New Theory Agriculture in their farming

2018
Expanding the project to cover at least 700 farmers, who practice New Theory Agriculture in their farming

2017
Developing Mitr Phol Group's sugarcane farmers to educate others at 70 modern agriculture learning centres

The New Theory Agriculture Project was launched to celebrate Mitr Phol Group's 60th anniversary, adopting the late King Bhumibhol Adulyadej's sufficiency economy philosophy. The project's goal is to encourage cane farmers to use the integrated farming model to grow several types of crops suitable for their land, thereby improving their quality of life by helping them reduce expenses and increase income.

Currently, **1,112** sugarcane farmers are part of the project.

They provide knowledge at **78** learning centers

across **17** Provinces.

Community economic system development performance

Projects promoting villagers to form professional groups

Mitr Phol Group places great importance on promoting community strength by getting involved in groups of villagers who are interested in making local products to generate additional income. The company provides knowledge and training to groups who then use what they learn to improve their products. The company also buys community products.

Performance

The efforts to encourage villagers to organize professional groups have led to the formation of 32 groups in 8 provinces. Some examples are:

Group	Address	Income	Details
A group producing brooms from coconut leaves	Non Sao Ae village, Kok Sa-ard Sub-district, Phu Khiao District, Chaiyaphum Province	The group's average annual income is around 200,000 baht.	The community enterprise is comprised of 15 senior villagers. This group produce and supply about 400 coconut leaf brooms on average per month to Mitr Phu Khiao sugar mill in Chaiyaphun province
A group making hand-woven cotton	Ban Lat, Khoke Kamin Sub-district, Wang Sapung District, Loei Province	This generates an income of around 80,000 baht per year for the group.	Mitr Phol Group supports the group by buying products such as cotton bags to be given as corporate souvenirs for the local sugar mill's activities.
A community enterprise producing herbal inhalant	in Khoke Kamin Sub-district, Wang Sapung District, Loei Province	The group generates an average annual income of around 150,000 baht.	The group produces herbal inhalant as corporate gifts for Mitr Phol Group to present to customers during the New Year's holiday and other occasions.
A community enterprise producing crystalised cane juice	in Nong Khae village, Chum Chung Sub-district, Kuchinarai District, Kalasin Province	No income	Mitr Phol Group has supported the formation of the group to preserve the local wisdom of making traditional crystalised cane juice, and helped to create a market for the products.

In addition to these groups, there are several others that Mitr Phol Group has supported, such as those producing banana chips, peanut brittle, organic rice, and processed mushrooms.

Community sustainable development performance

The project promoting community strength and self-reliance for sustainability (partnership with the Thai Health Promotion Foundation)

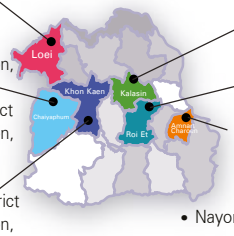
The Thai Health Promotion Foundation has signed a memorandum of understanding with Mitr Phol Group to promote sustainable development in communities in 17 Sub-districts surrounding Mitr Phol Group's plants. The partnership was the public organization's first collaboration with the private sector. By combining the knowledge base from the government sector with the management capability of the private sector, the project's goal is to uplift the quality of life for local communities and to promote self-reliance. The communities can then become role models that will share their knowledge with other communities.

Common goal

- TCNAP / RECAP data sets
- 30% of households in the Sub-districts are self-reliant sugarcane farmers
- At least 10% of households in the Sub-districts are model families
- Sustainable farming / 21 green community markets
- 21 community enterprises
- One water management programme for farming centers in each Sub-districts
- 21 learning centers

Network in the northeast

- Sri Songkram municipality, Wang Sapung district
- Kok Sa-ard Sub-district Administrative Organization, Phu Khiao District
- Nong Korn Thai Sub-district Administrative Organization, Phu Khiao District
- Chum Chon Pae Sub-district Administrative Organization, Chum Pae District
- Chaiyasor Sub-district Administrative Organization, Chum Pae District
- Chorakhhe Sub-district Administrative Organization, Nong Ruea District,
- Kud Kwang municipality, Nong Ruea District,
- Baan Meng Sub-district Administrative Organization, Nong Ruea District,
- Non Sa-ard municipality, Nong Ruea District,



- Kud Dao Subdistrict Administrative Organization, Kuchinarai District
- Jum Jung municipality, Kuchinarai District
- Nong Yai Sub-district Administrative Organization, Pon Thong District,
- Naam Pleek Sub-district Administrative Organization, Mueang District,
- Nayom municipality, Mueang District,

14 Local Administration Organizations (LAO) across six provinces

- 6 LAOs in Khon Kaen Province
- 2 LAOs in Chaiyaphum Province
- 2 LAOs in Kalasin Province
- 2 LAOs in Amnart Charoen Province
- 1 LAO in Roi Et Province
- 1 LAO in Loei Province

Network in the central region

- Nong Makha Mong Sub-district Administrative Organization, Dan Chang District

3 Local Administration Organizations (LAO) across 2 provinces

- 2 LAOs in Sing Buri Province
- 1 LAO in Suphan Buri Province

- Mai Dat Sub-district Administrative Organization, Kai Bang Ra Jan District
- Pho Sang Kho Sub-district Administrative Organization, Kai Bang Rachan District

In total, there were 17 Local Administration Organizations in 2018

Roadmap

1 Kick off working team's meeting

- Appoint the RECAP/TCNAP working team
- Draft the public policy
- Regular meetings

2 Provide capability development for the RECAP working team

3 Conduct community research (RECAP working team)

- Data collection
- Data analysis
- Returning data
- Presenting findings

4 Draft the community / Sub-districts development plan according to the KPIs and propose the plan to Mitr Phol Group

- Model families
- Community enterprises
- Community green markets
- Water usage management
- Prototype sugarcane farmers
- Learning centers

5 Implement the community / Sub-districts development plan

6 Provide capability development for TCNAP working team

7 Compile Sub-district data (TCNAP working team)

- Data collection
- Data verication
- Data recording
- Data analysis

8 Utilise the data in the sustainable development plan with support from other organizations

Social Enterprise

Mitr Phol Group strongly believes in the power of local wisdom that has been passed down from generation to generation. Local wisdom has resulted in the creation of renowned products from various communities across Thailand. However, it is often found that communities lack understanding about marketing and consumer insight. To improve this situation, Mitr Phol Group established the Social Enterprise Department, in collaboration with the Community Development Department, to promote quality local products with attractive packaging and storytelling that appeal to consumers. By doing so, the local economy can achieve sustainable growth. Project implementation is carefully designed to suit each community, with a goal to help them become self-reliant and give back to their own community.

How it works

Performance

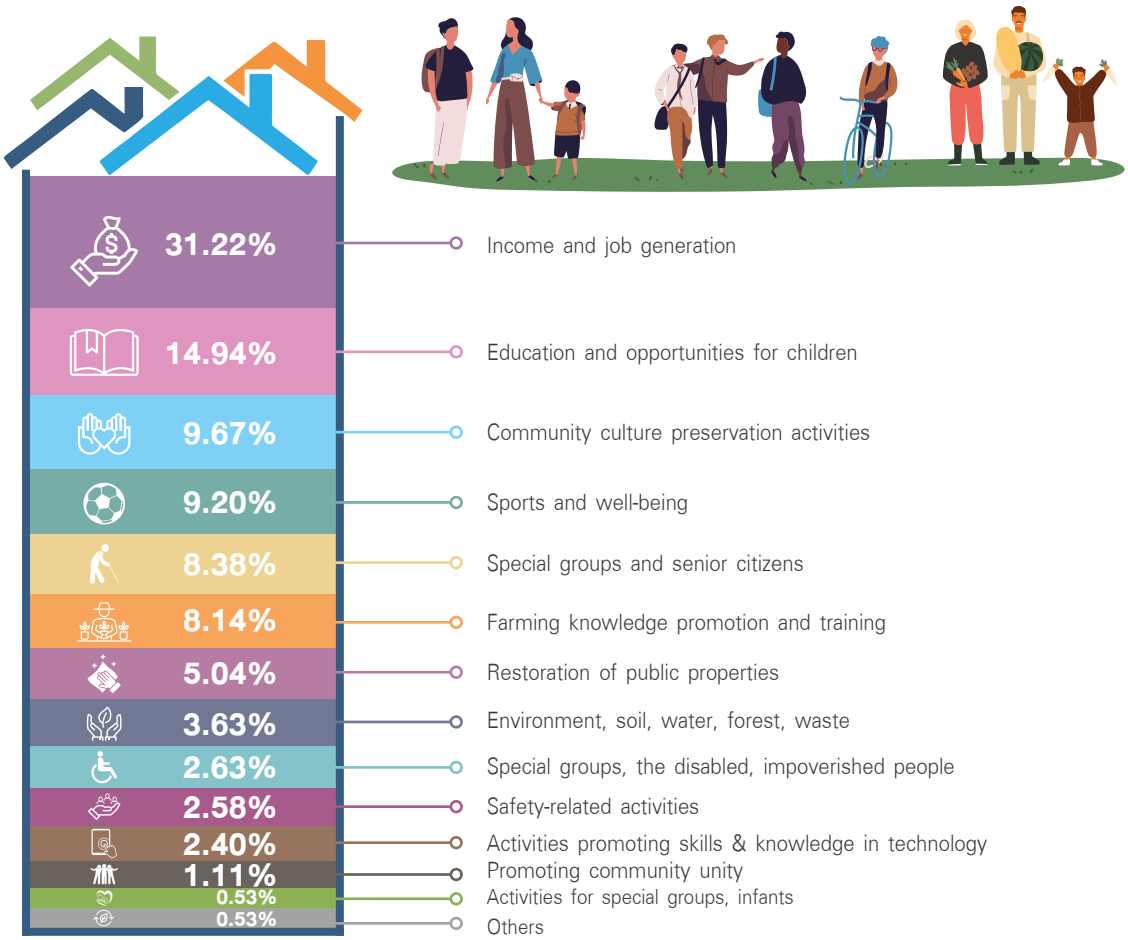
From the beginning, Mitr Phol Group has provided knowledge to communities that are part of the Mitr Phol Group Co-development Sub-district Network to help them create high-quality products that meet standards and are marketable. Throughout the life of the project, revenues are generated and injected back into communities. The project provides opportunities for communities to enhance their capabilities and demonstrate their commitment to becoming developers of products under the brand "Cheunjai by Mitr Phol". The project reinforces Mitr Phol Group's commitment to promoting sustainable growth for local people. Throughout 2018, a number of local products have been developed, such as aloe vera oil, herbal balm, herbal inhalant, relaxing fragrant balm, herbal and tamarind soap, handwoven fabric products, and other herbal products. All the products combined helped to generate around 1.64 million baht for local producers.

Developed community products

Community products under the brand
"Cheunjai by Mitr Phol"

Social projects

Mitr Phol Group has established a Community Relations Department at each factory to promote good relationships with stakeholders and provide care for surrounding communities, as well as for the purpose of environmental protection. The community relations teams inspected communities surrounding all six sugar mills to learn about their problems, needs, and expectations. The findings were then analysed so that community development plans could better meet their needs. A total of 1,707 respondents took part in the surveys, and their needs were as follows:



In 2018, Mitr Phol Group analysed the findings from the surveys and implemented projects in six key dimensions to serve the needs and expectations of communities.

1. Economic dimension

• Green Market programme

There are currently two green markets at Mitr Phol Dan Chang Sugar Mill in Suphan Buri and Mitr Phu Wiang Sugar Mill in Khon Kaen Province. The green markets provide organic vegetables as part of a project that encourages employees and communities to grow vegetables for their own consumption and sell any surplus for extra income. Freshly cooked food, processed food, and other community products are also sold at the green markets.

Green Market

Details	Green Market at Mitr Phol Dan Chang Sugar Mill, Suphan Buri Province	Green Market at Mitr Phu Wiang Sugar Mill, Khon Kaen Province
Days of operation	Every Wednesday	Every Wednesday
Number of stalls by employees and communities	22 stalls	10 stalls
Income generation (average per month per stall)	6,000 baht	1,700 baht
Sales revenue	1,158,260 baht	203,535 baht
Total sales from both markets	**1,361,975 baht**	

Sun dried bananas

Products sold at both green markets are safe for consumption and offer great value for money. Highlights from the green markets include fresh, chemical-free vegetables from Jang Ngam farming group, such as kale and bok choy; processed food including sun-dried bananas; freshly cooked food such as curries; and Thai desserts made from local farm produce.

"Thank you Mitr Phol for helping me gain another source of income. I used to only grow cane and make money just once a year. Since I started growing my own vegetables, I have had so much surplus that I share with my friends and sell at the green market. I now make 1,500 baht extra per week, or 6,000 baht per month."

Jan Ngamkum,
a member of the Jang Ngam farming group, vendor at a green market

2. Social and environmental dimensions

• Building dams for communities

The Dam Development for Communities project in Huay Tan village, Huay Yai Sub-district, Phetchabun Province, seeks to alleviate the impact on communities and surrounding areas from water shortages during droughts and the dry season.

The dam building activity received support from many other organizations including the 1st Cavalry Brigade, Pho Khun Pha Mueang Military Camp, Mitr Phol Group employees, and more than 180 villagers from Huay Han Yai village and nearby villages. There are 12 villages in Huay Yai Sub-district, with around 1,900 households in total, 1,300 of which are farmers. The communities have often experienced water shortages, flooding, and droughts, which have an effect on their yields. The dam building project will help solve these problems.

Mitr Phol Group employees take part in "Community Dam Development" activity at Huay Tan village, Huay Yai sub district, Phetchabun Province

3. Education

• Bilateral Curriculum Development Project

Mitr Phol Group has partnered with the Office of Vocational Education Commission and the German-Thai Chamber of Commerce to co-develop a bilateral curriculum for vocational students near Mitr Phol Group's plants, using the German model of combining classroom-based learning and hands-on experience. The curriculum is aimed at producing professionals who are knowledgeable and skilled in the sugar and bioenergy industries, who will drive modern farming management and world-class production at Mitr Phol Group in the future.

The bilateral curriculum is for high-level vocational students and requires two years of study. The curriculum is aligned with career opportunities at Mitr Phol Group, offering students theoretical learning as well as practical experiences at the plants. A total of 149 students have taken part in the programme, in which they learn about Mitr Phol Group's business and industries, as well as all production processes and management aspects. The students receive coaching and advice from experts and executives. They also receive a per diem, benefits, and scholarships throughout their internship.

Executive of Mitr Phol Group, attended the Memorandum of Understanding signing ceremony with the Office of Vocational Education Commission for Bilateral Curriculum Development Project

Upon graduation, students receive a high-level vocational certificate and a diploma, certified by Mitr Phol Group and the German-Thai Chamber of Commerce. Graduates also have an opportunity to work at Mitr Phol Group, with attractive packages on par with university graduates, as well as career advancement opportunities. The project is a showcase of a successful partnership between the public and private sectors. The benefits extend far beyond developing skilled labour for Mitr Phol Group, as the project inspires youngsters to opt for vocational training where there is a real shortage.

Chairman of Mitr Phol Group and CEO and President of Mitr Phol Group, attended the Memorandum of Understanding signing ceremony for the Partnership School Project

• Partnership School

Mitr Phol Group places great importance on improving the Thai education system and has provided financial support and human resources to the Education Ministry in the Connext ED programme. The aim of the project is to uplift the quality of education in several aspects, and is in line with studies and suggestions by the Thailand Development Research Institute Foundation regarding the following strategic goals:

1. The development of learners
2. The development of teachers
3. The development of education institutes
4. The development of education management

Khun Isara Vongkusolkit
Chairman of Mitr Phol Group and Executive of Mitr Phol Group visit school of the Partnership School Project

Management directions for Partnership School

Mitr Phol Group's focus is to develop the partnership school into a center for community development and a school of the future, where teachers are equipped with modern teaching techniques. By building a working ecosystem encompassing school leadership, the private sector, local communities, and parents, sustainable development can be created for the school itself as well as the community. The project also helps narrow the inequality gap and promotes more opportunities for local children to gain access to quality education that caters to the demands of local businesses and industries. The school is also a place where students learn useful skills so that they can be employable and improve their quality of life.

Health check-up activity for villagers in Som Sa-ard Sub-district, Kuchinarai District, Kalasin Province

4. Public health dimension

• Community health check-ups

Mitr Phol Group cares for the mental and physical health and well-being of people living in local communities. We promote access to medical advice and health check-ups for villagers by working with local health centres every year. In 2018, more than 1,600 villagers in communities surrounding Mitr Phol Group's plants received free health check-ups.

A charity run at Kok Sa-ard in Chaiyaphum province held by the Mitr Phu Khiao Sugar Mill

5. Sports dimension

• RUN FOR YOU project

The RUN FOR YOU project is a charity run to raise funds for community activities such as making improvements to local schools and temples, and planting trees. Such activities also promote community engagement and voluntary spirit among employees and communities. In 2018, two RUN FOR YOU activities were held, with more than 700 participants taking part.

1. A charity run at Kok Sa-ard Wittaya school in Chaiyaphum province held by the Mitr Phu Khiao Sugar Mill
2. A charity run at Rat Sattatham temple in Suphan Buri province held by Mitr Phol Dan Chang Sugar Mill

For next year, Mitr Phol Group's goal is to host RUN FOR YOU activities at all six sugar mills and engage more than 2,000 participants in order to raise funds for improving schools or local hospitals.

The 5th Mitr Phol Art Camp at Princess Maha Chakri Sirindhorn Art Centre in Loei Province

6. Cultural dimension

• The 5th Mitr Phol Art Camp

The Mitr Phol Art Camp project was established to provide opportunities to children of employees, farmers, and local villagers to learn artistic skills and express their creativity. It's also a platform on which children can create great art pieces and learn from Mr. Sangkom Thongmee, a nationally renowned artist. In 2018, two art camps were held each for 2 days and 1 night, under the theme "cane of the future".

1. First art camp in the north east at Princess Maha Chakri Sirindhorn Art Centre in Loei Province
2. Second art camp in the central region at Bang Rachan Camp Museum in Sing Buri Province

For both art camps, more than 160 children joined in from 7 Provinces, namely Khon Kaen, Chaiyaphum, Loei, Kalasin, Amnart Charoen, Sing Buri and Suphan Buri. Some of their creations will be featured in Mitr Phol Group's annual calendar.

Innovation:
"Creating New Innovations for Sustainability"

Human Resources Development Innovation

Process Innovation

Business Innovation

Product Innovation

Having a competitive edge is crucial to an organization's survival. Amidst the rapidly changing business landscape owing to new technology, companies can expand their customer reach by focusing on business model innovation, in-depth data management, and artificial intelligence. Mitr Phol Group fully realizes the importance of being adaptable to change and supports the use of technology to create new business opportunities and develop the capabilities of its people to handle future changes.

At Mitr Phol Group, innovation is being utilized to drive the organization and the people in the following ways.

Human Resources Development Innovation

Mitr Phol Group realizes the importance of molding the organization into an innovation-driven business. As such, continued efforts are made to incorporate innovation as part of the corporate culture and operation processes, including capability development for executives and employees. Our hope is that every employee seeks out new innovative ideas that will bring about change, improvements, value, and sustainability.

To promote innovation within the organization, the Mitr Phol Innovation Awards have been held for 17 consecutive years, with an aim of encouraging employees of all levels within Mitr Phol Group to be inspired to create new ideas. The competition allows employees the freedom to create any type of innovation that will support the group's business strategy and direction for higher cane productivity and production efficiency. Other types of innovation can focus on other aspects such as cost reduction, new market channels and improved business models. Innovations for support functions can focus on reducing unnecessary work processes, lowering costs, and improving services. The New Business Development unit can implement winning ideas from the competition, and some innovations have already been patented, showing Mitr Phol Group's commitment and success in using innovation to drive employee capability development. In 2018,

In 2018, there were 230 teams to participate in innovation contest and 24 teams were awarded. The 8 winners are categorized in Kaizen category, 9 winners in Project Improvement, 5 winners in Project Improvement, and 2 winners in New Business Excellence.

Innovation Contest: Mitr Phol Innovation Awards 2018

Process Innovation

Driving innovation through Mitr Phol Group's network

Mitr Phol Group is moving toward the bio-based economy, which is part of the new S-curve industries that will help the Thai economy move forward, in line with the Thai government's 4.0 initiative. Mitr Phol Group focuses heavily on research and development, technological advancements, and capability enhancement for R&D personnel, all of which will help to create added value for the Thai agricultural sector and the overall economy. The company has signed a memorandum of understanding to support bio-based technology for graduate and doctorate level research students, in collaboration with the Thailand Research Fund. The partnership is under the Research and Researchers for Industries project to propel new innovations and shift the local cane and sugar industries to become bio-based. The partnership runs for five years, from October 1, 2016 until September 30, 2021 (covering 2017 – 2021 fiscal years).

The MOU signing ceremony to support graduate and doctorate level research, in collaboration with the Thailand Research Fund, under the Research and Researchers for Industries project.

Mitr Phol Group is also committed to the development of bio-technology research personnel, as technology is crucial for the enhancement of economic crops. Eco-friendly management technology is also necessary for the Thai cane and sugar industries. Thanks to the partnership with the Thailand Research Fund, 14 researchers have taken part in the programme (9 graduate students and 5 doctorate students). The research funded by the programme focuses on four key topics:

- Cane varieties development
- Processing technology to add value to cane and sugar products
- Using bio-refinery methods to add value to byproducts
- Logistics and raw materials storage management systems

In addition, to enhance access to quality education for Mitr Phol Group's employees, the company has partnered with the Bio Technology Department, Faculty of Agro-Industry, Kasetsart University, to design the first non-coursework curriculum in which the researchers can teach employees while at the same time conducting their own research. Thus, the programme brings the university to the work place.

Business Innovation

The Mitr Phol Innovation & Research Center in Chaiyaphum province was established in 1997 to drive technological advancements and innovation that will help Mitr Phol Group to achieve its business sustainability goals.

The Center focuses on the follow areas of research and development:

1. **Crop Production:** applying science and technology from various fields in research and development for new cane species. Improving cane farming technology to promote yields and protect crops from diseases and insects.
2. **Sugar Technology & Specialty:** the development of sugar-related products and improving customer relationship management.
3. **Bio-based Chemicals & Energy:** optimal utilization of resources in the cane and sugar industry to create high-value products

Business innovation performance

New cane varieties

The Cane varieties improvement department at the Mitr Phol Innovation & Research Center successfully developed a new cane species – the Phu Khieo 1 – by crossing MPT98-2033 (female) with LK92-11 (male). The new species was developed specifically to be suitable for the use of harvesters. It yields on average 20-22 tonnes of cane per rai and has an average sweetness level of 13-14 CCS. They sprout well, accumulate sugar quickly, stand tall without breaking or falling, and are resistant to smut and yellow spot diseases. They are also moderately resistant to the red rot wilt disease and sugarcane borers. They grow well in loam and clay soil, and can be harvested at the beginning or middle of the juicing season.

New cane species Phu Khieo 1

Develop Cane Quality Detector : Portable NIR Detector

Near-Infrared Spectroscopy (NIRS) technology is capable of checking cane components quickly without destroying the sample. It does not require the usage of chemicals. The NIR detector can be used to assess other variants that determine cane quality, such as sucrose quantity, dry mass weight, amount of fiber, and water-soluble solids. A handheld prototype was successfully co-developed with Kasetsart University and King Mongkut's University of Technology Thonburi in 2015. Its small size makes the device more convenient to use in cane fields and also helps to lower lab expenses.

Portable NIR Detector

Product Innovation

We continually strive to pursue innovation through new product developments that create differentiation and expand Mitr Phol Group's customer base. In 2018, the following new products were developed:

Sugar business

The "Golden Syrup": This product has a natural cane aroma and a golden hue. Its unique color and flavor make the syrup a fantastic choice for drinks and desserts that require a hint of yellow, a mildly sweet taste and natural aroma. The syrup is another great choice for food producers to create new and exciting menu items.

As part of Mitr Phol Group's commitment to research and development to create new products that serve the needs of both food producers and general consumers, several great products have been born. Choosing the right type of sugar for specific types of food is at the heart of creating added value. Chosen correctly, food producers are able to further enhance flavors and the quality of their food, allowing them to satisfy consumers and bring success to their business.

Wood substitute business

In order to serve the changing needs of consumers, Mitr Phol Group has developed two new products with enhanced durability and modern aesthetics.

Synchronous panels: a new innovation for interior design. Wood patterns are mimicked on paper, with deep engraving on a plate. The perfectly synchronized design and engraving give the panels a texture that is similar to real wood, making the panels a great wood substitute.

High gloss lacquered wood panels: the reflective surface of the panels is the result of advanced technology and machinery from Germany. Melamine-coated MDF boards undergo a process of applying a polyurethane coating, which gives the boards a lacquered finish and enhances resistance for scratches and bumps. The new technology also reduces risks of breakage during cutting. The panels are easy to maintain. A thin film has also been developed to protect the panels from scratches during transportation.

Appendix

Appendix

Employees

Information on employees and other workers (102-8)

Description		Total number of employees							
		2015*		2016*		2017**		2018***	
		number (persons)	percent	number (persons)	percent	number (persons)	percent	number (persons)	percent
Gender	Male	5,685	73.31	5,878	72.49	6,389	71.27	6,012	76.18
	Female	2,070	26.69	2,231	27.51	2,575	28.73	1,880	23.82
	Total	**7,755**	**100**	**8,109**	**100**	**8,964**	**100**	**7,892**	**100**
Employment type	Monthly	6,430	82.91	6,855	84.54	7,622	85.03	7,706	97.64
	Male	4,962	63.98	5,268	64.96	5,854	65.31	5,869	76.16
	Female	1,468	18.93	1,587	19.58	1,768	19.72	1,837	21.48
	Daliy	1,325	17.09	1,254	15.46	1,342	14.97	186	2.36
	Male	723	9.32	610	7.52	535	5.97	143	1.81
	Female	602	7.77	644	7.94	807	9	43	0.55
	Total	**7,755**	**100**	**8,109**	**100**	**8,964**	**100**	**7,892**	**100**
Time Employee	Full-time Employee	7,755	100	8,109	100	8,964	100	6,012	100
	Male	5,685	73.31	5,878	72.49	6,389	71.27	6,012	76.18
	Female	2,070	26.69	2,231	27.51	2,575	28.73	1,880	23.82
	Part-time Employee	0	0	0	0	0	0	0	0
	Male	0	0	0	0	0	0	0	0
	Female	0	0	0	0	0	0	0	0
	Total	**7,755**	**100**	**8,109**	**100**	**8,964**	**100**	**7,892**	**100**

Remarks: * 2015 - 2016 data covers the period from 1 January – 31 December of each year

** 2017 data covers the period of 1 November 2016 – 31 October 2017

*** 2018 data covers the period of 1 November 2017 – 31 October 2018

Total number of employees by age and gender

Description		Number of Employees											
		2015*			2016*			2017**			2018***		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Top level management	**persons**	**26**	**2**	**28**	**26**	**2**	**28**	**26**	**2**	**28**	**26**	**2**	**28**
> 50 years	persons	21	1	**22**	22	1	**23**	21	1	**22**	21	1	22
	percent	75	3.57	78.57	78.57	3.57	82.14	75	3.57	81.82	75.00	3.57	78.57
30 - 50 years	persons	5	1	**6**	4	1	**5**	5	1	**6**	5	1	6
	percent	17.86	3.57	21.43	14.29	3.57	17.86	17.86	3.57	18.18	17.86	3.57	21.43
< 30 years	persons	-	-	-	-	-	-	-	-	-	-	-	-
	percent	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Middle level management	**persons**	**170**	**48**	**218**	**177**	**48**	**225**	**189**	**58**	**247**	**188**	**59**	**247**
> 50 years	persons	57	10	**67**	61	14	**75**	66	16	**82**	63	15	78
	percent	26.15	4.59	30.74	27.11	6.22	33.33	26.72	6.48	33.20	25.50	6.07	31.57
30 - 50 years	persons	113	38	**151**	116	34	**150**	122	42	**164**	125	44	169
	percent	51.83	17.43	69.26	51.56	15.11	66.67	49.39	17.00	66.39	50.60	17.83	68.43
< 30 years	persons	-	-	-	-	-	-	1	-	**1**	-	-	-
	percent	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.00	0.41	0.00	0.00	0.00

Total number of employees by age and gender (405-1)

Description		Number of Employees											
		2015*			2016*			2017**			2018***		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Line managers	**persons**	**395**	**200**	**595**	**417**	**224**	**641**	**459**	**247**	**706**	**474**	**276**	**750**
> 50 years	persons	84	15	99	88	15	103	97	19	116	95	19	114
	percent	14.12	2.52	16.64	13.73	2.34	16.07	13.74	2.69	16.43	12.67	2.53	15.20
30 - 50 years	persons	308	184	492	318	206	524	355	226	581	379	257	636
	percent	51.76	30.92	82.69	49.61	32.14	81.75	50.28	32.01	82.29	50.53	34.27	84.80
< 30 years	persons	3	1	4	11	3	14	7	2	9	-	-	-
	percent	0.50	0.17	0.67	1.72	0.47	2.18	0.99	0.28	1.27	0.00	0.00	0.00
Officers	**persons**	**1,418**	**650**	**2,068**	**1,592**	**724**	**2,316**	**1,810**	**838**	**2,648**	**1,930**	**854**	**2,784**
> 50 years	persons	196	26	222	212	27	239	226	33	259	221	31	252
	percent	9.48	1.26	10.74	9.15	1.17	10.32	8.53	1.25	9.78	7.94	1.11	9.05
30 - 50 years	persons	866	342	1,208	939	360	1,299	1,032	400	1,432	1,171	424	1,595
	percent	41.88	16.54	58.41	40.54	15.54	56.09	38.97	15.11	54.08	42.06	15.23	57.29
< 30 years	persons	356	282	638	441	337	778	552	405	957	538	399	937
	percent	17.21	13.64	30.85	19.04	14.55	33.59	20.85	15.29	36.14	19.33	14.33	33.66
Operational level	**persons**	**1,666**	**186**	**1,852**	**1,818**	**286**	**2,104**	**2,137**	**338**	**2,475**	**2,006**	**343**	**2,349**
> 50 years	persons	162	10	172	137	14	151	137	14	151	125	15	140
	percent	8.75	0.54	9.29	6.51	0.67	7.18	5.54	0.57	6.10	5.32	0.63	5.95
30 - 50 years	persons	924	129	1,053	1,002	181	1,183	1,062	199	1,261	1,039	196	1,235
	percent	49.89	6.97	56.86	47.62	8.60	56.23	42.91	8.04	50.95	44.27	8.30	52.57
< 30 years	persons	580	47	627	679	91	770	938	125	1,063	841	133	974
	percent	31.32	2.54	33.86	32.27	4.33	36.60	37.90	5.05	42.95	35.81	5.67	41.48

Remarks: * 2015 - 2016 data covers the period from 1 January – 31 December of each year

** 2017 data covers the period of 1 November 2016 – 31 October 2017

*** 2018 data covers the period of 1 November 2017 – 31 October 2018

New hires of Mitr Phol Employees (401-1)

Description		New hires of Employees							
		2015*		2016*		2017**		2018***	
		number (persons)	percent	number (persons)	percent	number (persons)	percent	number (persons)	percent
Gender	Male	2,021	76.35	764	76.02	1,025	77.36	595	71.77
	Female	626	23.65	241	23.98	300	22.64	234	28.23
	Total	**2,647**	**100**	**1,014**	**100**	**1,325**	**100**	**829**	**100**
Age	> 50 years	51	1.93	5	0.50	9	0.68	15	1.82
	30 - 50 years	848	32.04	267	26.57	280	21.13	213	25.69
	< 30 years	1,748	66.04	733	72.94	1,036	78.19	601	72.49
	Total	**2,647**	**100**	**1,014**	**100**	**1,335**	**100**	**829**	**100**
Location	Bangkok	308	11.64	124	12.34	98	7.40	123	14.84
	Other	2,339	88.36	881	87.66	1,227	92.60	706	85.16
	Tatal	**2,647**	**100**	**1,005**	**100**	**1,335**	**100**	**829**	**100**

Remarks: * 2015 - 2016 data covers the period from 1 January – 31 December of each year

** 2017 data covers the period of 1 November 2016 – 31 October 2017

*** 2018 data covers the period of 1 November 2017 – 31 October 2018

Turnover of Mitr Phol Employees (401-1)

Description		Turnover of Employees							
		2015*		2016*		2017**		2018***	
		number (persons)	percent	number (persons)	percent	number (persons)	percent	number (persons)	percent
Gender	Male	736	72.66	576	74.90	620	74.60	632	70.14
	Female	277	27.34	193	25.10	211	25.40	269	29.86
	Total	**1,013**	**100**	**769**	**100**	**831**	**100**	**901**	**100**
Age	>50 years	35	3.46	26	3.38	13	1.57	13	1.45
	30 - 50 years	372	36.72	340	44.21	306	36.82	337	37.40
	<30 years	606	59.82	403	52.41	512	61.61	551	61.15
	Total	**1,013**	**100**	**769**	**100**	**831**	**100**	**901**	**100**
Location	Bangkok	79	7.82	101	13.13	88	10.59	117	12.98
	Other	934	92.18	668	86.87	743	89.41	784	87.02
	Total	**1,013**	**100**	**769**	**100**	**831**	**100**	**901**	**100**

Remarks: * 2015 - 2016 data covers the period from 1 January – 31 December of each year
** 2017 data covers the period of 1 November 2016 – 31 October 2017
*** 2018 data covers the period of 1 November 2017 – 31 October 2018

Percentage of employees engaged in negotiation (Labor Welfare Committee) (402-1)

Labor Welfare Committee	2015*	2016*	2017**	2017***
Percentage of employees engaged in negotiation (Labor Welfare Committee)	100	100	100	100

Remarks: * 2015 - 2016 data covers the period from 1 January – 31 December of each year
** 2017 data covers the period of 1 November 2016 – 31 October 2017
*** 2018 data covers the period of 1 November 2017 – 31 October 2018

Rate of returning to work for female employees after maternity leave (401-3)

Maternity leave incidents	Gender	2015*		2016*		2017**		2018***	
		number (persons)	percent	number (persons)	percent	number (persons)	percent	number (persons)	percent
Total number of employees that were entitled to parental leave, by gender.	Male	0	0	0	0	0	0	0	0
	Female	2,070	100	2,231	100	2,575	100	1,880	100
Total number of employees that took parental leave, by gender.	Male	0	0	0	0	0	0	0	0
	Female	60	2.90	65	2.91	69	2.68	66	3.51
Total number of employees that returned to work in the reporting period after parental leave ended, by gender.	Male	0	0	0	0	0	0	0	0
	Female	59	98.33	62	95.38	67	97.10	60	90.91
Total number of employees that returned to work after parental leave ended that were still employed 12 months after their return to work, by gender.	Male	NA	NA	NA	NA	NA	NA	0	0
	Female	51	86.44	56	90.32	65	97.01	57	95

Remarks: * 2015 - 2016 data covers the period from 1 January – 31 December of each year
** 2017 data covers the period of 1 November 2016 – 31 October 2017
*** 2018 data covers the period of 1 November 2017 – 31 October 2018

Safety

Employees and contractors' occupational injuries and illnesses (403-9)

Details	Gender	The number of employees and contractors who had occupational injuries or illnesses (persons)			
		2015*	2016*	2017**	2018***
Occupational illnesses	Male	0	0	0	0
	Female	0	0	0	0
	Total	0	0	0	0
High-consequence work-related illnesses (excluding fatalities)	Male	0	0	0	0
	Female	0	0	0	0
	Total	0	0	0	0

Remarks: * 2015 - 2016 datacovers the period from 1 January – 31 December of each year

** 2017 datacovers the period of 1 November 2016 – 31 October 2017

*** 2018 datacovers the period of 1 November 2017 – 31 October 2018

Environment

Volume of raw materials used in Mitr Phol Group's production processes classified by business

Businesses	Main raw materials (tonnes)		Year			
			2015*	2016*	2017**	2018***
Farming business	Renewable materials	Filter Cake	NR	NR	NR	6,108.3
		Trash	NR	NR	NR	4,671.4
		Vinasse	NR	NR	NR	30,086.2
		Chemical Fertilizer	NR	NR	NR	1,173.5
	Non-renewable materials	Herbicide	NR	NR	NR	28.1
Sugar business	Renewable materials	Sugarcane (Million tonnes)	20.4	16.6	17.5	23.6
		Molasses	NA	NA	NA	1.8
	Non-renewable materials	Lubricating oil	578.9	472.4	563.4	726.6
		Activated Carbon	NA	NA	NA	12,628.1
		Resin	NA	NA	NA	1,347.1
		Sugar sack	NA	NA	NA	18,391.2
		Lime	NA	NA	NA	40,858.3
		Plastic	NA	NA	NA	4,239.4
		Other	NA	NA	NA	873.5
		Chemicals used in production processes	NA	NA	NA	18,561
Renewable Energy business	Renewable materials	Sugarcane (Million tonnes)	NA	NA	NA	0.3
		Molasses (Million tonnes)	1.4	1.4	1.3	1.8
		Sugarcane syrup	59,299.3	79,260.5	65,052.3	76,526.7
		Sugarcane juice	222,382.2	304,782.3	248,267.8	2,340
		HTM syrup	9,600.3	11,719.6	21,620.9	46,465.7
		Tapioca starch	NA	NA	NA	3,893.9
		Tapioca	NA	NA	NA	354,644.4
		Effective Microorganism	-	-	0	48,134.6

Businesses	Main raw materials (tonnes)		Year			
			2015*	2016*	2017**	2018***
	Non-renewable materials	Lubricating oil	NA	NA	NA	26
		Activated Carbon	NA	NA	NA	15.2
		Resin	NA	NA	NA	25.5
		RO Membrane	NA	NA	NA	0.1
		Fiberglass	NA	NA	NA	6.3
		Grease	NA	NA	NA	3.5
		Coarse sand	NA	NA	NA	22.6
		Engine Oil	NA	NA	NA	5.8
		Hydraulic Oil	NA	NA	NA	8
		Transformer Oil	NA	NA	NA	75.7
		Refractory brick / Refractory Mortar	NA	NA	NA	5
		Gasoline	NA	NA	NA	1,384.4
		Other	NA	NA	NA	72.3
		Chemicals used in production processes	2,800	3,700	3,200	117,377.4
Wood Substitute Materials business	Renewable materials	Rubberwood (Million Tonnes)	0.8	1	1	1.2
		Sliver / Sawdust	NA	NA	NA	54,780.4
		Melamine Paper	1,299	1,632	1,825	1,893
	Non-renewable materials	Glue	52,914	64,770	63,561	72,895
		Lubricant	NA	NA	NA	16.1
		Thermal Oil	NA	NA	NA	50.4
		Transmission Fluid	NA	NA	NA	1
		Chemicals	3,951	4,668	4,333	5,940.7
	Recycle materials	Scrap from melamine-impregnated paper	NR	NR	NR	121.4
		Fine Chips	NR	NR	NR	34,768.6
		scrap	5,484.4	6,004.3	5,887.6	6,102.7
Fertilizer business	Renewable materials	Filter Cake	4,197.1	6,660	6,498	12,624.8
		Vinasse	4,319.6	3,243	4,256.8	7,157.6
		Kaolin clay	444	994.6	1,210.6	2,250.7
	Non-renewable materials	Lubricant	NA	NA	NA	0.4
		Grease	NA	NA	NA	0.5
		Silicone	NA	NA	NA	18.3
		Ink	NA	NA	NA	0.004
		Solvent	NA	NA	NA	0.017
Logistics and Warehouse business	Renewable materials	NA	NR	NR	NR	NR
	Non-renewable materials	Round plastic basket	NA	NA	NA	87.8
		Chemicals used in production processes	NA	NA	NA	6.9
		Other	NA	NA	NA	NR
Other business	Renewable materials	Sugarcane	NA	NA	NA	300
		Chemical Fertilizer	NA	NA	NA	30
		Organic Fertilizer	NA	NA	NA	30

Remarks: - NA = Not Available, no data was collected
- NR = Not Relevant
* 2015 - 2016 data covers the period from 1 January – 31 December of each year
** 2017 data covers the period of 1 November 2016 – 31 October 2017
*** 2018 data covers the period of 1 November 2017 – 31 October 2018

Data showing water volume from different sources used in Mitr Phol Group's operations classified by business (303-3)

Businesses	Description		Volume of water							
			All areas				Areas with water stress			
			2015*	2016*	2017**	2018***	2015*	2016*	2017**	2018***
Farming business	Surface water		NA	NA	NA	6,979	NA	NA	NA	5,537
	Surface water - fresh water (≤ 1,000 mg / L TDS)		NA	NA	NA	6,979	NA	NA	NA	5,537
	Surface water - others (> 1,000 mg / L TDS)		NA	NA	NA	0	NA	NA	NA	0
	Groundwater		NA	NA	NA	83	NA	NA	NA	83
	Groundwater - fresh water (≤ 1,000 mg / L TDS)		NA	NA	NA	83	NA	NA	NA	83
	Groundwater - others (> 1,000 mg / L TDS)		NA	NA	NA	0	NA	NA	NA	0
	Third-party water		NA	NA	NA	0	NA	NA	NA	0
	Third-party water - fresh water (≤ 1,000 mg / L TDS)		NA	NA	NA	0	NA	NA	NA	0
	Third-party water - others (> 1,000 mg / L TDS)		NA	NA	NA	0	NA	NA	NA	0
	Third-party water	Surface water					NA	NA	NA	0
		Groundwater					NA	NA	NA	0
	Total volume of water from various sources		NA	NA	NA	7,062	NA	NA	NA	5,620
Sugar business	Surface water		6,950	8,490	8,480	7,710	3,940	6,470	5,960	5,360
	Surface water - fresh water (≤ 1,000 mg / L TDS)		6,950	8,490	8,480	7,710	3,940	6,470	5,960	5,360
	Surface water - others (> 1,000 mg / L TDS)		0	0	0	0	0	0	0	0
	Groundwater		530	0	300	129	530	0	300	129
	Groundwater - fresh water (≤ 1,000 mg / L TDS)		530	0	300	129	530	0	300	129
	Groundwater - others (> 1,000 mg / L TDS)		0	0	0	0	0	0	0	0
	Third-party water		0	0	0	330	0	0	0	300
	Third-party water - fresh water (≤ 1,000 mg / L TDS)		0	0	0	330	0	0	0	300
	Third-party water - others > 1,000 mg / L TDS)		0	0	0	0	0	0	0	0
	Third-party water	Surface water					0	0	0	300
		Groundwater					0	0	0	0
	Total volume of water from various sources		7,480	8,490	8,780	8,169	4,470	6,470	6,260	5,789
Renewable Energy business	Surface water		5,410	5,910	7,090	6,625	1,740	2,340	3,560	4,910
	Surface water - fresh water (≤ 1,000 mg / L TDS)		5,410	5,910	7,090	6,625	1,740	2,340	3,560	4,910
	Surface water - others (> 1,000 mg / L TDS)		0	0	0	0	0	0	0	0
	Groundwater		640	570	110	158	640	570	110	154
	Groundwater - fresh water (≤ 1,000 mg / L TDS)		640	570	110	158	640	570	110	154
	Groundwater - others (> 1,000 mg / L TDS)		0	0	0	0	0	0	0	0
	Third-party water		0	0	0	2,155	0	0	0	2,155
	Third-party water - fresh water (≤ 1,000 mg / L TDS)		0	0	0	2,155	0	0	0	2,155
	Third-party water - others (> 1,000 mg / L TDS)		0	0	0	0	0	0	0	0
	Third-party water	Surface water					0	0	0	2,155
		Groundwater					0	0	0	0
	Total volume of water from various sources		6,050	6,480	7,200	8,938	2,380	2,910	3,670	7,219

Businesses	Description	Volume of water							
		All areas				Areas with water stress			
		2015*	2016*	2017**	2018***	2015*	2016*	2017**	2018***
Wood Substitute Materials business	Surface water	0	0	0	0	0	0	0	0
	Surface water - fresh water (≤ 1,000 mg/L TDS)	0	0	0	0	0	0	0	0
	Surface water - others (> 1,000 mg / L TDS)	0	0	0	0	0	0	0	0
	Groundwater	186	227	200	857	0	0	0	0
	Groundwater - fresh water (≤ 1,000 mg / L TDS)	186	227	200	857	0	0	0	0
	Groundwater - others (> 1,000 mg / L TDS)	0	0	0	0	0	0	0	0
	Third-party water	21	21	20	21	2	2	3	4
	Third-party water - fresh water (≤ 1,000 mg / L TDS)	21	21	20	21	2	2	3	4
	Third-party water - others (> 1,000 mg / L TDS)	0	0	0	0	0	0	0	0
	Third-party water - Surface water					2	2	3	4
	Third-party water - Groundwater					0	0	0	0
	Total volume of water from various sources	207	247	219	877	2	2	3	4
Fertilizer business	Surface water	NA	0	0	0	NA	0	0	0
	Surface water - fresh water (≤ 1,000 mg / L TDS)	NA	0	0	0	NA	0	0	0
	Surface water - others (> 1,000 mg / L TDS)	NA	0	0	0	NA	0	0	0
	Groundwater	NA	4	4	6	NA	4	4	6
	Groundwater - fresh water (≤ 1,000 mg / L TDS)	NA	4	4	6	NA	4	4	6
	Groundwater - others (> 1,000 mg / L TDS)	NA	0	0	0	NA	0	0	0
	Third-party water	NA	0	0	0.2	NA	0	0	0
	Third-party water - fresh water (≤ 1,000 mg / L TDS)	NA	0	0	0.2	NA	0	0	0
	Third-party water - others (> 1,000 mg / L TDS)	NA	0	0	0	NA	0	0	0
	Third-party water - Surface water					NA	0	0	0
	Third-party water - Groundwater					NA	0	0	0
	Total volume of water from various sources	NA	4	4	6	NA	0	0	0
Logistics and Warehouse business	Surface water	0	0	0	0	0	0	0	0
	Surface water - fresh water (≤ 1,000 mg / L TDS)	0	0	0	0	0	0	0	0
	Surface water - others (> 1,000 mg / L TDS)	0	0	0	0	0	0	0	0
	Groundwater	0	0	0	0	0	0	0	0
	Groundwater - fresh water (≤ 1,000 mg / L TDS)	0	0	0	0	0	0	0	0
	Groundwater - others (> 1,000 mg / L TDS)	0	0	0	0	0	0	0	0
	Third-party water	40	40	50	47	0	0	0	0
	Third-party water - fresh water (≤ 1,000 mg / L TDS)	40	40	50	47	0	0	0	0
	Surface water - others (> 1,000 mg / L TDS)	0	0	0	0	0	0	0	0
	Third-party water - Surface water					0	0	0	0
	Third-party water - Groundwater					0	0	0	0
	Total volume of water from various sources	40	40	50	47	0	0	0	0

Businesses	Description		Volume of water							
			All areas				Areas with water stress			
			2015*	2016*	2017**	2018***	2015*	2016*	2017**	2018***
Other business	Surface water		NA	NA	NA	15	NA	NA	NA	15
	Surface water - fresh water (≤ 1,000 mg / L TDS)		NA	NA	NA	15	NA	NA	NA	15
	Surface water - others (> 1,000 mg / L TDS)		NA	NA	NA	0	NA	NA	NA	0
	Groundwater		NA	NA	NA	17	NA	NA	NA	17
	Groundwater - fresh water (≤ 1,000 mg / L TDS)		NA	NA	NA	17	NA	NA	NA	17
	Groundwater - others (> 1,000 mg / L TDS)		NA	NA	NA	0	NA	NA	NA	0
	Third-party water		NA	NA	NA	12	NA	NA	NA	8
	Third-party water - fresh water (≤ 1,000 mg / L TDS)		NA	NA	NA	12	NA	NA	NA	8
	Surface water - others (> 1,000 mg / L TDS)		NA	NA	NA	0	NA	NA	NA	0
	Third-party water	Surface water					NA	NA	NA	8
		Groundwater					NA	NA	NA	0
	Total volume of water from various sources		NA	NA	NA	41	NA	NA	NA	37

Remarks: - NA = Not Available, no data was collected

* 2015 - 2016 data covers the period from 1 January – 31 December of each year

** 2017 data covers the period of 1 November 2016 – 31 October 2017

*** 2018 data covers the period of 1 November 2017 – 31 October 2018

Volume of Water discharge by business unit (303-4)

Businesses	Description		Water discharge by destination (Megaliters)							
			All areas				Areas with water stress			
			2015*	2016*	2017**	2018***	2015*	2016*	2017**	2018***
Farming business	Water discharge by destination	Surface water	NA	NA	NA	0				
		Groundwater	NA	NA	NA	0				
		Third-party water sent for use to other organizations	NA	NA	NA	0				
		Total Water discharge	NA	NA	NA	0				
	Water discharge by freshwater and other water	Freshwater (≤ 1,000 mg / L TDS)	NA	NA	NA	0	NA	NA	NA	0
		Other water (> 1,000 mg / L TDS)	NA	NA	NA	0	NA	NA	NA	0
Sugar business	Water discharge by destination	Surface water	0	0	0	0				
		Groundwater	0	0	0	0				
		Third-party water sent for use to other organizations	0	0	0	0				
		Total Water discharge	0	0	0	0				
	Water discharge by freshwater and other water	Freshwater (≤ 1,000 mg / L TDS)	0	0	0	0	0	0	0	0
		Other water (> 1,000 mg / L TDS)	0	0	0	0	0	0	0	0

Businesses	Description		Water discharge by destination (Megaliters)							
			All areas				Areas with water stress			
			2015*	2016*	2017**	2018***	2015*	2016*	2017**	2018***
Renewable Energy business	Water discharge by destination	Surface water	0	0	0	0				
		Groundwater	0	0	0	0				
		Third-party water sent for use to other organizations	229	93.3	227.8	189.9				
		Total Water discharge	229	93.3	227.8	189.9				
	Water discharge by freshwater and other water	Freshwater (≤ 1,000 mg / L TDS)	0	0	0	0	0	0	0	0
		Other water (> 1,000 mg / L TDS)	0	0	0	0	0	0	0	0
Wood Substitute Materials business	Water discharge by destination	Surface water	40.6	63.8	73.9	59.1				
		Groundwater	0	0	0	0				
		Third-party water sent for use to other organizations	0	0	0	0				
		Total Water discharge	40.6	63.8	73.9	59.1				
	Water discharge by freshwater and other water	Freshwater (≤ 1,000 mg / L TDS)	40.6	63.8	73.9	59.1	0	0	0	0
		Other water (> 1,000 mg / L TDS)	0	0	0	0	0	0	0	0
Fertilizer business	Water discharge by destination	Surface water	NA	0	0	0				
		Groundwater	NA	0	0	0				
		Third-party water sent for use to other organizations	NA	0	0	0				
		Total Water discharge	NA	0	0	0				
	Water discharge by freshwater and other water	Freshwater (≤ 1,000 mg / L TDS)	NA	0	0	0	NA	0	0	0
		Other water (> 1,000 mg / L TDS)	NA	0	0	0	NA	0	0	0
Logistics and Warehouse business	Water discharge by destination	Surface water	34	34	37	11.3				
		Groundwater	0	0	0	0				
		Third-party water sent for use to other organizations	0	0	0	0				
		Total Water discharge	34	34	37	11.3				
	Water discharge by freshwater and other water	Freshwater (≤ 1,000 mg / L TDS)	34	34	37	11.3	0	0	0	0
		Other water (> 1,000 mg / L TDS)	0	0	0	0	0	0	0	0

Businesses	Description		Water discharge by destination (Megaliters)							
			All areas				Areas with water stress			
			2015*	2016*	2017**	2018***	2015*	2016*	2017**	2018***
Other business	Water discharge by destination	Surface water	NA	NA	NA	0.8				
		Groundwater	NA	NA	NA	0				
		Third-party water sent for use to other organizations	NA	NA	NA	0				
		Total Water discharge	NA	NA	NA	0.8				
	Water discharge by freshwater and other water	Freshwater (≤ 1,000 mg / L TDS)	NA	NA	NA	0.8	NA	NA	NA	0.8
		Other water (> 1,000 mg / L TDS)	NA	NA	NA	0	NA	NA	NA	0

Remarks: - NA = Not Available, no data was collected

* 2015 - 2016 data covers the period from 1 January – 31 December of each year

** 2017 data covers the period of 1 November 2016 – 31 October 2017

*** 2018 data covers the period of 1 November 2017 – 31 October 2018

Water quality post-treatment by business unit

Businesses	Water quality	Standard level	Water quality statistics			
			2015*	2016*	2017**	2018***
Farming business	BOD (mg / l)	20	NR	NR	NR	NR
	COD (mg / l)	120	NR	NR	NR	NR
	TSS (mg / l)	50	NR	NR	NR	NR
Sugar business	BOD (mg / l)	20	11.1	7.9	5.9	5.8
	COD (mg / l)	120	89.3	78.7	65.5	60.5
	TSS (mg / l)	50	28.6	21.4	12.7	19.1
Renewable Energy business	BOD (mg / l)	20	9.3	5.2	5.3	30.1
	COD (mg / l)	120	134.8	70.8	65.9	122.3
	TSS (mg / l)	50	314.4	255.2	13.8	49.6
Wood Substitute Materials business	BOD (mg / l)	20	9	13	17	14.5
	COD (mg / l)	120	95	95	90	83.4
	TSS (mg / l)	50	11	22	25	33.6
Fertilizer business	BOD (mg / l)	20	NR	NR	NR	NR
	COD (mg / l)	120	NR	NR	NR	NR
	TSS (mg / l)	50	NR	NR	NR	NR
Logistics and Warehouse business	BOD (mg / l)	20	3.5	5	13	2.7
	COD (mg / l)	120	NR	NR	NR	35.4
	TSS (mg / l)	50	6.9	9.1	10	9.1
Other business	BOD (mg / l)	20	NR	NR	NR	13
	COD (mg / l)	120	NR	NR	NR	63.5
	TSS (mg / l)	50	NR	NR	NR	25

Remarks: - NR = Not Relevant

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*** 2018 data covers the period of 1 November 2017 – 31 October 2018

- Standard level in accordance with the notification of the Ministry of Industry, subject: Establish standards for the control of effluent from the factory in 2017

Water consumption by business unit (303-5)

Businesses	Description		Water consumption (Megaliters)							
			All areas				Areas with water stress			
			2015*	2016*	2017**	2018***	2015*	2016*	2017**	2018***
Farming business	Water consumption	Total water consumption	NA	NA	NA	7,062	NA	NA	NA	5,620
		Change in water storage	NA	NA	NA	0				
Sugar business	Water consumption	Total water consumption	7,480	9,330	10,720	8,169	4,469	6,467	8,042	5,789
		Change in water storage	0	0	0	0				
Renewable Energy business	Water consumption	Total water consumption	6,050	6,480	7,200	8,938	2,380	2,910	3,670	7,219
		Change in water storage	0	0	0	0				
Wood Substitute Materials business	Water consumption	Total water consumption	207	247	219	877	2	2	3	4
		Change in water storage	0	0	0	0				
Fertilizer business	Water consumption	Total water consumption	NA	4	4	6	NA	0	0	0
		Change in water storage	0	0	0	0				
Logistics and Warehouse business	Water consumption	Total water consumption	40	40	50	47	0	0	0	0
		Change in water storage	0	0	0	0				
Other business	Water consumption	Total water consumption	NA	NA	NA	41	NA	NA	NA	37
		Change in water storage	NA	NA	NA	0				

Remarks: - NR = Not Available, no dadt was collected

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*** 2018 data covers the period of 1 November 2017 – 31 October 2018

Mitr Phol Group's Energy consumption (302-1)

Businesses	Energy types		Annual volume			
			2015*	2016*	2017**	2018***
Farming business	Total fuel consumption within the organization from non-renewable sources, in joules or multiples, and including fuel types used. (Million MJ)		NA	NA	NA	0.09
	Total fuel consumption within the organization from renewable sources, in joules or multiples, and including fuel types used. (Million MJ)		NA	NA	NA	7.24
	Non-renewable energy purchased (Million MJ)	Electricity (Million MJ)	NR	NR	NR	1.20
		Exhaust Steam	NR	NR	NR	NR
		Live Steam	NR	NR	NR	NR
	Non-renewable energy sold (Million MJ)	Electricity (Million MJ)	NR	NR	NR	NR
		Exhaust Steam	NR	NR	NR	NR
		Live Steam	NR	NR	NR	NR
	Total Energy consumption (Million MJ)		NA	NA	NA	8.54
Sugar business	Total fuel consumption within the organization from non-renewable sources, in joules or multiples, and including fuel types used. (Million MJ)		44.90	48.70	47.07	34.27
	Total fuel consumption within the organization from renewable sources, in joules or multiples, and including fuel types used. (Million MJ)		33,722.58	36,331.74	31,008.94	4,105.91
	Non-renewable energy purchased (Million MJ)	Electricity (Million MJ)	24.31	20.38	20.25	28.13
		Exhaust Steam	NR	NR	NR	NR
		Live Steam	NR	NR	NR	NR
	Non-renewable energy sold (Million MJ)	Electricity (Million MJ)	NR	NR	NR	NR
		Exhaust Steam	NR	NR	NR	NR
		Live Steam	NR	NR	NR	NR
	Total Energy consumption (Million MJ)		33,767.48	36,380.43	31,056	4,168.31
Renewable Energy business	Total fuel consumption within the organization from non-renewable sources, in joules or multiples, and including fuel types used. (Million MJ)		238.23	225.22	267.14	48.36
	Total fuel consumption within the organization from renewable sources, in joules or multiples, and including fuel types used. (Million MJ)		39,440.75	36,590.71	40,240.98	56,756.31
	Non-renewable energy purchased (Million MJ)	Electricity (Million MJ)	NA	NA	NA	5,063.36
		Exhaust Steam	NR	NR	NR	NR
		Live Steam	NR	NR	NR	NR
	Non-renewable energy sold (Million MJ)	Electricity (Million MJ)	NR	NR	NR	NR
		Exhaust Steam	NR	NR	NR	NR
		Live Steam	NR	NR	NR	NR
	Total Energy consumption (Million MJ)		39,678.98	36,815.93	40,508.12	61,868.03
Wood Substitute Materials business	Total fuel consumption within the organization from non-renewable sources, in joules or multiples, and including fuel types used. (Million MJ)		399.44	462.24	362.5	20.54
	Total fuel consumption within the organization from renewable sources, in joules or multiples, and including fuel types used. (Million MJ)		-	-	-	3,771.25
	Non-renewable energy purchased (Million MJ)	Electricity (Million MJ)	381.74	424.94	344.01	502.96
		Exhaust Steam	NR	NR	NR	NR
		Live Steam	NR	NR	NR	NR
	Non-renewable energy sold (Million MJ)	Electricity (Million MJ)	NR	NR	NR	NR
		Exhaust Steam	NR	NR	NR	NR
		Live Steam	NR	NR	NR	NR
	Total Energy consumption (Million MJ)		399.44	462.24	362.5	4,294.77

Businesses	Energy types		Annual volume			
			2015*	2016*	2017**	2018***
Fertilizer business	Total fuel consumption within the organization from non-renewable sources, in joules or multiples, and including fuel types used. (Million MJ)		-	NR	NR	NR
	Total fuel consumption within the organization from renewable sources, in joules or multiples, and including fuel types used. (Million MJ)		-	1.74	1.91	25.82
	Non-renewable energy purchased (Million MJ)	Electricity (Million MJ)	-	1.74	1.91	2.04
		Exhaust Steam	-	NR	NR	NR
		Live Steam	-	NR	NR	NR
	Non-renewable energy sold (Million MJ)	Electricity (Million MJ)	-	NR	NR	NR
		Exhaust Steam	-	NR	NR	NR
		Live Steam	-	NR	NR	NR
	Total Energy consumption (Million MJ)		-	NR	NR	27.87
Logistics and Warehouse business	Total fuel consumption within the organization from non-renewable sources, in joules or multiples, and including fuel types used. (Million MJ)		31.13	28.24	27.89	5.74
	Total fuel consumption within the organization from renewable sources, in joules or multiples, and including fuel types used. (Million MJ)		NA	NA	NA	14.88
	Non-renewable energy purchased (Million MJ)	Electricity (Million MJ)	30.88	28.07	27.86	7.75
		Exhaust Steam	NR	NR	NR	NR
		Live Steam	NR	NR	NR	NR
	Non-renewable energy sold (Million MJ)	Electricity (Million MJ)	NR	NR	NR	NR
		Exhaust Steam	NR	NR	NR	NR
		Live Steam	NR	NR	NR	NR
	Total Energy consumption (Million MJ)		31.13	28.24	27.89	28.38
Other business	Total fuel consumption within the organization from non-renewable sources, in joules or multiples, and including fuel types used. (Million MJ)		0.59	0.98	1.03	0.008
	Total fuel consumption within the organization from renewable sources, in joules or multiples, and including fuel types used. (Million MJ)		NR	NR	NR	0.082
	Non-renewable energy purchased (Million MJ)	Electricity (Million MJ)	0.59	0.98	1.03	0.000002
		Exhaust Steam	NR	NR	NR	NR
		Live Steam	NR	NR	NR	NR
	Non-renewable energy sold (Million MJ)	Electricity (Million MJ)	NR	NR	NR	NR
		Exhaust Steam	NR	NR	NR	NR
		Live Steam	NR	NR	NR	NR
	Total Energy consumption (Million MJ)		0.59	0.98	1.03	0.09

Remarks: - NA = Not Available, no data was collected

- NR = Not Relevant

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** 2017 data covers the period of 1 November 2016 – 31 October 2017

*** 2018 data covers the period of 1 November 2017 – 31 October 2018

- Net Calorific Values (NCV): 1 kWh = 3.6 MJ, 1 tonne = 2,676 MJ

Mitr Phol Group's external energy usage data (302-1)

Businesses	Energy types	Volume of energy usage (Million MJ)			
		2015*	2016*	2017**	2018***
Farming business	Volume of energy usage for raw material transportation by third-party organizations	NR	NR	NR	NR
	Volume of energy usage for product transportation by third-party organizations	NA	NA	NA	10.16
	Volume of energy usage for air travel	NR	NR	NR	NR
	Volume of energy usage for ground transportation for employees	NA	NA	NA	0.71
Sugar business	Volume of energy usage for raw material transportation by third-party organizations	NR	NR	NR	213.61
	Volume of energy usage for product transportation by third-party organizations	NA	NA	NA	1,833.34
	Volume of energy usage for air travel	NA	NA	NA	41.69
	Volume of energy usage for ground transportation for employees	NA	NA	NA	13.65
Renewable Energy business	Volume of energy usage for raw material transportation by third-party organizations	NR	NR	NR	698.72
	Volume of energy usage for product transportation by third-party organizations	NA	NA	NA	435.34
	Volume of energy usage for air travel	NA	NA	NA	11.11
	Volume of energy usage for ground transportation for employees	NA	NA	NA	10.70
Wood Substitute Materials business	Volume of energy usage for raw material transportation by third-party organizations	NA	NA	NA	224.81
	Volume of energy usage for product transportation by third-party organizations	NA	NA	NA	68.75
	Volume of energy usage for air travel	NA	NA	NA	0.69
	Volume of energy usage for ground transportation for employees	NA	NA	NA	1.28
Fertilizer business	Volume of energy usage for raw material transportation by third-party organizations	NA	NA	NA	0.11
	Volume of energy usage for product transportation by third-party organizations	NR	NR	NR	NR
	Volume of energy usage for air travel	NA	NA	NA	NR
	Volume of energy usage for ground transportation for employees	NA	NA	NA	6.31
Logistics and Warehouse business	Volume of energy usage for raw material transportation by third-party organizations	NR	NR	NR	NR
	Volume of energy usage for product transportation by third-party organizations	NR	NR	NR	NR
	Volume of energy usage for air travel	NR	NR	NR	NR
	Volume of energy usage for ground transportation for employees	NA	NA	NA	2.21
Other business	Volume of energy usage for raw material transportation by third-party organizations	NA	NA	NA	1.30
	Volume of energy usage for product transportation by third-party organizations	NA	NA	NA	0.19
	Volume of energy usage for air travel	NA	NA	NA	6,923.46
	Volume of energy usage for ground transportation for employees	NA	NA	NA	103.04

Remarks: - NA = Not Available, no data was collected
- NR = Not Relevant
* 2015 - 2016 data covers the period from 1 January – 31 December of each year
** 2017 data covers the period of 1 November 2016 – 31 October 2017
*** 2018 data covers the period of 1 November 2017 – 31 October 2018
- Net Calorific Values (NCV): Diesel B5 1 Litre = 35.778 MJ (DEDE)
- Gasohol 91: 1 Litre = 30.462 MJ, Domestic travel: 1 person / 1 Km = 2.4206 MJ (TGO)

Mitr Phol Group's waste management (306-2)

Businesses	Waste Management		Weight (tonnes)			
			2015*	2016*	2017**	2018***
Farming business	Hazardous waste	Reuse	NA	NA	NA	NR
		Recycle	NA	NA	NA	NR
		Composting	NA	NA	NA	NR
		Recovery	NA	NA	NA	NR
		Incineration	NA	NA	NA	NR
		Landfill	NA	NA	NA	NR
		Others	NA	NA	NA	NR
	Non-Hazardous waste	Reuse	NA	NA	NA	0.03
		Recycle	NA	NA	NA	NR
		Composting	NA	NA	NA	NR
		Recovery	NA	NA	NA	NR
		Incineration	NA	NA	NA	NR
		Landfill	NA	NA	NA	NR
		Others	NA	NA	NA	NR
Sugar business	Hazardous waste	Reuse	NA	NA	NA	NR
		Recycle	180.1	121.9	172.2	15,270.3
		Composting	NA	NA	NA	NR
		Recovery	128.7	94.7	88.7	117.7
		Incineration	NA	NA	NA	47.6
		Landfill	316.5	288.6	476.5	15,714.2
		Others	25.1	10.2	7.1	54.8
	Non-Hazardous waste	Reuse	NA	NA	NA	1,601.6
		Recycle	NA	NA	NA	86,965,743.1
		Composting	368,352.7	55,684.4	84,019.4	114,467,646.5
		Recovery	NA	NA	NA	1,164,427.1
		Incineration	NA	NA	NA	37.9
		Landfill	5,544	3,444.8	5,016.4	6,148.8
		Others	858,894.2	3,042.5	3,589.3	20,269.7
Renewable Energy business	Hazardous waste	Reuse	NA	NA	NA	7.5
		Recycle	71.5	39.0	62.6	5.2
		Composting	NA	NA	NA	NR
		Recovery	3	12.8	30.1	14.6
		Incineration	NA	NA	NA	10.3
		Landfill	45.1	24.9	28.3	30.1
		Others	82	131.7	42	1.13
	Non-Hazardous waste	Reuse	NA	NA	NA	NR
		Recycle	NA	NA	NA	7,896.2
		Composting	139,291	179,209.9	57,194.7	1,035,689.5
		Recovery	NA	NA	NA	31,724.9
		Incineration	NA	NA	NA	63.1
		Landfill	111,650	123,458.8	133,058.4	1,258.5
		Others	1,138,450.3	961,507.1	1,172,670.1	243,842.5
Wood Substitute Materials business	Hazardous waste	Reuse	NA	NA	NA	NR
		Recycle	45.2	34.5	41.2	NR
		Composting	NA	NA	NA	NR
		Recovery	11.7	8.3	12.3	25,636.2
		Incineration	NA	NA	NA	NR
		Landfill	24.2	10.5	4.1	NR
		Others	152.6	111.5	61.6	NR

Businesses	Waste Management		Weight (Tonnes)			
			2015*	2016*	2017**	2018***
	Non-Hazardous waste	Reuse	NA	NA	NA	NR
		Recycle	NA	NA	NA	135,225.9
		Composting	0	0	107	NR
		Recovery	NA	NA	NA	NR
		Incineration	NA	NA	NA	NR
		Landfill	0	28.3	25.2	77.5
		Others	0	0	21,568.1	39.3
Fertilizer business	Hazardous waste	Reuse	NA	NA	NA	NR
		Recycle	NA	NA	NA	NR
		Composting	NA	NA	NA	NR
		Recovery	NA	NA	NA	NR
		Incineration	NA	NA	NA	NR
		Landfill	NA	NA	NA	NR
		Others	NA	NA	NA	NR
	Non-Hazardous waste	Reuse	NA	NA	NA	NR
		Recycle	NA	NA	NA	17
		Composting	50	60	24	16.5
		Recovery	NA	NA	NA	NR
		Incineration	NA	NA	NA	NR
		Landfill	0	0	0	13
		Others	0	0	0	NR
Logistics and Warehouse business	Hazardous waste	Reuse	NA	NA	NA	34.3
		Recycle	0.7	0.7	0.7	NR
		Composting	NA	NA	NA	NR
		Recovery	NA	NA	NA	NR
		Incineration	NA	NA	NA	NR
		Landfill	NA	NA	NA	NR
		Others	NA	NA	NA	62.9
	Non-Hazardous waste	Reuse	NA	NA	NA	NR
		Recycle	NA	NA	NA	NR
		Composting	NA	NA	NA	NR
		Recovery	NA	NA	NA	13.5
		Incineration	NA	NA	NA	NR
		Landfill	NA	NA	NA	NR
		Others	NA	NA	NA	NR
Other business	Hazardous waste	Reuse	NA	NA	NA	NR
		Recycle	NA	NA	NA	NR
		Composting	NA	NA	NA	NR
		Recovery	NA	NA	NA	NR
		Incineration	NA	NA	NA	NR
		Landfill	NA	NA	NA	NR
		Others	NA	NA	NA	NR
	Non-Hazardous waste	Reuse	NA	NA	NA	NR
		Recycle	NA	NA	NA	NR
		Composting	NA	NA	NA	NR
		Recovery	NA	NA	NA	NR
		Incineration	NA	NA	NA	NR
		Landfill	NA	NA	NA	8.6
		Others	NA	NA	NA	NR

Remarks: - NA = Not Available, no data was collected

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Air quality from Mitr Phol Group factory chimneys (305-7)

Businesses	Air quality	Benchmarks	Air quality by year			
			2015*	2016*	2017**	2018***
Farming business	NO_x (ppm)	≤200	NR	NR	NR	NR
	SO_x (ppm)	≤60	NR	NR	NR	NR
	CO (ppm)	≤690	NR	NR	NR	NR
	TSP (mg / m^3)[1]	≤120	NR	NR	NR	NR
	TSP (mg / m^3)[2]	≤320	NR	NR	NR	NR
	Cd	≤0.03	NR	NR	NR	NR
Sugar business	NO_x (ppm)	≤200	74.70	112	83.40	58.70
	SO_x (ppm)	≤60	1.35	5.90	12	2.61
	CO (ppm)	≤690	397.67	327.80	306	182.50
	TSP (mg / m^3)[1]	≤120	34.80	18.80	6.40	23.83
	TSP (mg / m^3)[2]	≤320	NA	NA	NA	NA
	Cd	≤0.03	NR	NR	NR	NR
Renewable Energy business	NO_x (ppm)	≤200	66.56	62.37	66.84	113.89
	SO_x (ppm)	≤60	1.91	2.20	1.89	6.15
	CO (ppm)	≤690	206.64	172.57	127.16	353.66
	TSP (mg / m^3)[1]	≤120	23.09	28.09	19.77	41.76
	TSP (mg / m^3)[2]	≤320	61.5	17.4	1.1	11.80
	Cd	≤0.03	<0.005	<0.005	<0.005	<0.005
Wood Substitute Materials business	NO_x (ppm)	≤200	10	11	15	38.58
	SO_x (ppm)	≤60	1	2	2	3.36
	CO (ppm)	≤690	233	264	132	110.11
	TSP (mg / m^3)[1]	≤120	84	130	160	79.74
	TSP (mg / m^3)[2]	≤320	NA	NA	NA	NA
	Cd	≤0.03	NR	NR	NR	NR
Fertilizer business	NO_x (ppm)	≤200	NR	NR	NR	NR
	SO_x (ppm)	≤60	NR	NR	NR	NR
	CO (ppm)	≤690	NR	NR	NR	NR
	TSP (mg / m^3)[1]	≤120	NR	NR	NR	NR
	TSP (mg / m^3)[2]	≤320	NR	NR	NR	NR
	Cd	≤0.03	NR	NR	NR	NR
Logistics and Warehouse business	NO_x (ppm)	≤200	NR	NR	NR	NR
	SO_x (ppm)	≤60	NR	NR	NR	NR
	CO (ppm)	≤690	NR	NR	NR	NR
	TSP (mg / m^3)[1]	≤120	NR	NR	NR	NR
	TSP (mg / m^3)[2]	≤320	NR	NR	NR	NR
	Cd	≤0.03	NR	NR	NR	NR
Other business	NO_x (ppm)	≤200	NR	NR	NR	NR
	SO_x (ppm)	≤60	NR	NR	NR	NR
	CO (ppm)	≤690	NR	NR	NR	NR
	TSP (mg / m^3)[1]	≤120	NR	NR	NR	NR
	TSP (mg / m^3)[2]	≤320	NR	NR	NR	NR
	Cd	≤0.03	NR	NR	NR	NR

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- NO_x, SO_x, CO and TSP benchmarks per the Ministry of Industry's announcement on contaminants in emissions from power plants producing or selling electricity B.E. 2547
- Old[1] and new[2] power plants according to the definitions from the Ministry of Industry's announcement on contaminants in emissions from power plants producing or selling electricity B.E. 2547

Mitr Phol Group's environmental protection expenses

Businesses	Types of expenses for environmental protection measures		Expenses for environmental protection measures (Baht)			
			2015*	2016*	2017**	2018***
Farming business	Water and air pollution management	Waste disposal	NA	NA	NA	240
		Waste treatment (air and water)	NA	NA	NA	NR
		Machinery and equipment maintenance	NA	NA	NA	NR
		Environmental impact assessments	NA	NA	NA	NR
	Environmental promotion and development	Training	NR	NR	NR	NR
		Environmental management system services	NA	NA	NA	NR
		Environmental management certifications from external organizations	NA	NA	NA	NR
		Environmental protection projects	NA	NA	NA	NR
		Others	NA	NA	NA	NR
	Total		**NA**	**NA**	**NA**	**240**
Sugar business	Water and air pollution management	Waste disposal	4,880,000	4,870,000	3,950,000	7,545,547
		Waste treatment (air and water)	3,050,000	11,900,000	15,300,000	48,310,280
		Machinery and equipment maintenance	36,390,000	8,680,000	8,320,000	8,693,549
		Environmental impact assessments	0	8,190,000	6,570,000	9,064,168
	Environmental promotion and development	Training	80,000	160,000	460,000	194,305
		Environmental management system services	4,760,000	1,410,000	840,000	1,462,450
		Environmental management certifications from external organizations	1,300,000	770,000	700,000	1,265,168
		Environmental protection projects	51,040,000	8,300,000	177,760,000	25,860,204
		Others	0	2,610,000	390,000	794,568
	Total		**101,500,000**	**46,890,000**	**214,290,000**	**103,190,244**
Renewable Energy business	Water and air pollution management	Waste disposal	11,390,000	7,880,000	8,970,000	6,852,528
		Waste treatment (air and water)	2,210,000	2,210,000	2,870,000	36,946,876
		Machinery and equipment maintenance	3,800,000	3,800,000	4,180,000	17,079,978
		Environmental impact assessments	4,400,000	4,310,000	5,040,000	5,385,918
	Environmental promotion and development	Training	530,000	250,000	180,000	270,043
		Environmental management system services	1,280,000	1,150,000	2,130,000	3,829,206
		Environmental management certifications from external organizations	90,000	210,000	210,000	1,016,378
		Environmental protection projects	1,730,000	2,860,000	2,620,000	49,617,681
		Others	2,470,000	1,980,000	1,720,000	7,137,441
	Total		**27,900,000**	**24,650,000**	**27,920,000**	**128,136,053**
Wood Substitute Materials business	Water and air pollution management	Waste disposal	105,810.00	86,622.50	176,937.50	6,354,043
		Waste treatment (air and water)	NA	NA	NA	19,750
		Machinery and equipment maintenance	NA	NA	NA	NR
		Environmental impact assessments	NA	NA	NA	918,035

Businesses	Types of expenses for environmental protection measures		Expenses for environmental protection measures (Baht)			
			2015*	2016*	2017**	2018***
	Environmental promotion and development	Training	NA	NA	NA	134,397
		Environmental management system services	NA	NA	NA	NR
		Environmental management certifications from external organizations	NA	NA	NA	65,000
		Environmental protection projects	NA	NA	NA	238,840
		Others	NA	NA	NA	NR
	Total		105,810	86,622.50	176,937.50	7,730,066
Fertilizer business	Water and air pollution management	Waste disposal	NA	NA	NA	NR
		Waste treatment (air and water)	NA	NA	NA	NR
		Machinery and equipment maintenance	818,206.20	1,769,889.15	2,789,153.49	NR
		Environmental impact assessments	NA	NA	NA	140,000
	Environmental promotion and development	Training	10,000	370,000	320,000	NR
		Environmental management system services	30,000	40,000	50,000	NR
		Environmental management certifications from external organizations	60,000	41,000	80,000	NR
		Environmental protection projects	NA	NA	NA	NR
		Others	NA	NA	NA	NR
	Total		918,206.20	2,220,889.15	3,239,153.49	140,000
Logistics and warehouse business	Water and air pollution management	Waste disposal	18,000	18,000	18,000	113,000
		Waste treatment (air and water)	NA	NA	65,000	NR
		Machinery and equipment maintenance	NA	NA	NA	NR
		Environmental impact assessments	96,400	101,000	101,000	328,000
	Environmental promotion and development	Training	NA	NA	NA	NR
		Environmental management system services	NA	NA	NA	NR
		Environmental management certifications from external organizations	NA	NA	NA	NR
		Environmental protection projects	NA	NA	NA	NR
		Others	263,541	338,441	312,226	NR
	Total		377,941	457,441	496,226	441,000
Other business	Water and air pollution management	Waste disposal	NA	NA	NA	NR
		Waste treatment (air and water)	75,000	75,000	75,000	NR
		Machinery and equipment maintenance	NA	NA	NA	NR
		Environmental impact assessments	16,200	16,200	16,200	70,805
	Environmental promotion and development	Training	NA	NA	NA	NR
		Environmental management system services	NA	NA	NA	NR
		Environmental management certications from external organizations	NA	NA	NA	NR
		Environmental protection projects	NA	NA	NA	NR
		Others	100,000	100,000	100,000	NR
	Total		191,200	191,200	191,200	70,805

Remarks: - NA = Not Available, no data was collected

* 2015 - 2016 data covers the period from 1 January – 31 December of each year

** 2017 data covers the period of 1 November 2016 – 31 October 2017

*** 2018 data covers the period of 1 November 2017 – 31 October 2018

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GRI
Content Index

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Global Compact Network Thailand

Sustainability Report 2018
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Sustainability Report 2018
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