RATCH

RATCHABURI ELECTRICITY GENERATING HOLDING PCL.

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SUSTAINING BUSINESS GROWTH

SUSTAINABILITY REPORT 2018

RATCH

RATCHABURI
ELECTRICITY GENERATING
HOLDING PCL.

Vision

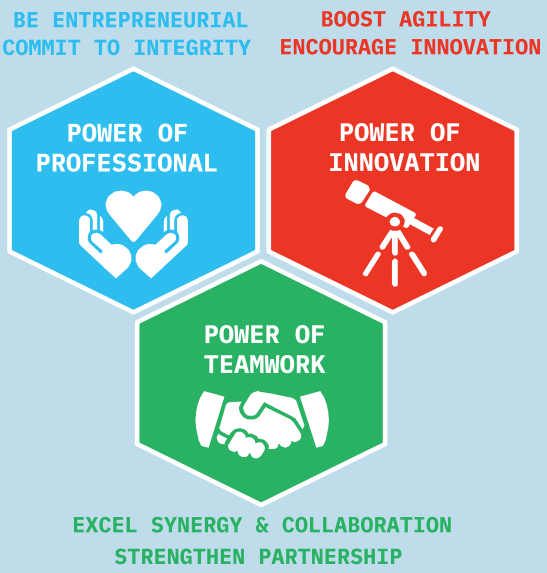
To become a leading value-oriented energy and infrastructure company in Asia Pacific.

Mission

- To ensure shareholders' value creation by continuously generating superior financial returns.
- To achieve world-class operational excellence and enhance competitiveness.
- To be socially and environmentally responsible, conducting business in a fair and sustainable manner and complying with all related laws and regulations.
- To raise employees' awareness and motivation of self-development in preparation for future business competition.
- To support long-term domestic energy and infrastructure security.
- To seek new opportunities and alternatives in related and other business to generate growth and expand business base for shareholders.

Core Value

POWER of RATCH



CONTENT

About this Report

Reporting approach

Ratchaburi Electricity Generating Holding PCL. (RATCH) issues annual sustainability reports, to publicize the policies, strategies and sustainability development approach in addressing issues considered material to the Company and stakeholders, along with the Company's performance on governance, economic, social, and environmental aspects. The information appearing in this report covered the performance from January 1 to December 31, 2018. This is the second annual report prepared under the guidelines of Global Reporting Initiative (GRI) or GRI Standards and GRI's Electric Utilities Sector scope.

Assurance statement

This report is completed under the guidelines of GRI Standards. Topics and contents embraced the sustainability context, significant issues that influenced RATCH's performance and stakeholders' decisions. In the reporting process, the completeness and accuracy of information was reviewed by information holders and the sustainability reporting unit. Importantly, the information disclosed in this report was endorsed by high level executives.

This report was also certified by the third party, proficient in certifying and assuring the completeness, accuracy and reliability of reporting under the GRI Standards. The certification is to assure that this report embraced and was consistent with the material issues to the Company and all stakeholders. It is also aimed to assure stakeholders that the disclosed information is accurate, complete and consistent with the GRI Standards. The Company also managed to have the information on the use of raw materials, water and energy; the emissions of pollutant and greenhouse gas, and safety and occupational health ascertained. All are material to the Company and stakeholders. Details of the assurance appeared on page 155.

Scope of the report

This report disclosed the information of the Company, subsidiaries and joint ventures owned 50 percent of more by the Company and subsidiaries or the subsidiaries and joint ventures in which the Company has operational control, as shown below. These companies' financial statements were consolidated under the equity method.

A comprehensive list of subsidiaries and joint ventures appeared in the 2018 Annual Report, downloadable from www.ratch.co.th.

Company Name	Type	Location	Shareholding (%)	Nature of Business
1. Ratchaburi Electricity Generating Co., Ltd.	Subsidiary	Thailand	99.99	Power-generation business, operating Ratchaburi Power Plant and Tri Energy Power Plant which have 3,645-MW and 720-MW installed capacity, respectively.
2. Ratchaburi Energy Co., Ltd.	Subsidiary	Thailand	99.99	Investing in renewable power plants and related businesses
3. RATCH-Australia Corporation Pty Ltd (owned via a subsidiary which is RH International (Singapore) Corporation Pte. Ltd.)	Subsidiary	Australia	100	Investing in, developing, and operating power plants and related businesses in Australia. At present, it invests in 3 gas-fired, 1 diesel-powered, 4 wind farms and 1 solar farm with combined equity capacity of 873.55 MW.
4. RATCH-LAO Services Co., Ltd.	Subsidiary	Lao PDR	99.99	Operating power and infrastructure businesses as well as related businesses.

Company Name	Type	Location	Shareholding (%)	Nature of Business
5. Chubu Ratchaburi Electric Service Co., Ltd.	Joint venture under RATCH's control	Thailand	50	Operating and maintaining 1,490-MW Ratchaburi Power's Power plant RATCH holds a 25% stake in Ratchaburi Power Co., Ltd.
6. Nava Nakorn Electricity Generation Co., Ltd., invested via Ratchaburi Electricity Generating Co., Ltd.	Joint venture under RATCH's control	Thailand	40	Operating a cogeneration power plant with equity capacity of 55.65 MW. A RATCH delegate serves as the joint-venture company's top executive.
7. Berkprai Cogeneration Co., Ltd., owned via Ratchaburi Electricity Generating Co., Ltd.	Joint venture under RATCH's control	Thailand	35	Operating a cogeneration power plant with equity capacity of 34.73 MW. A RATCH delegate serves as the joint-venture company's top executive.
8. Solarta Co., Ltd., owned via Ratchaburi Energy Co., Ltd.	Joint venture under RATCH's control	Thailand	49	Operating a solar farm with equity capacity of 20.73 MW. A RATCH delegate serves as the joint-venture company's top executive.
9. Songkhla Biomass Co., Ltd., owned via Ratchaburi Energy Co., Ltd.	Joint venture under RATCH's control	Thailand	40	Operating a biomass power plant with equity capacity of 3.96 MW. A RATCH delegate serves as the joint-venture company's top executive.

The report's scope covered 9 subsidiaries and joint ventures over which RATCH has the operational control, as shown in 2017, without any change in economic, social and environmental dimensions. For the performance data section of this report, it disclosed only information of Ratchaburi Electricity Generating Co., Ltd., RATCH-Australia Corporation Pty Ltd, RATCH-LAO Services Co., Ltd. and Nava Nakorn Electricity Generation Co., Ltd.

The report also included the information regarding the washout of Saddle Dam D of Xe-Pian Xe-Namnoy Power Co., Ltd., a 25%-owned venture established in Lao PDR and the operator of Xe-Pian Xe-Namnoy Hydroelectric Power Project.

Content determination

This report's content was determined in accordance with GRI Standards (Core option) and followed the four core steps required, with specified assessment methods, calculation principles and forecasts applied in the calculation in the topics related to the information. The information appearing in the previous report was not repeated. Details of significant indicators appeared in GRI Content Index, page 150.

Step 1: identification

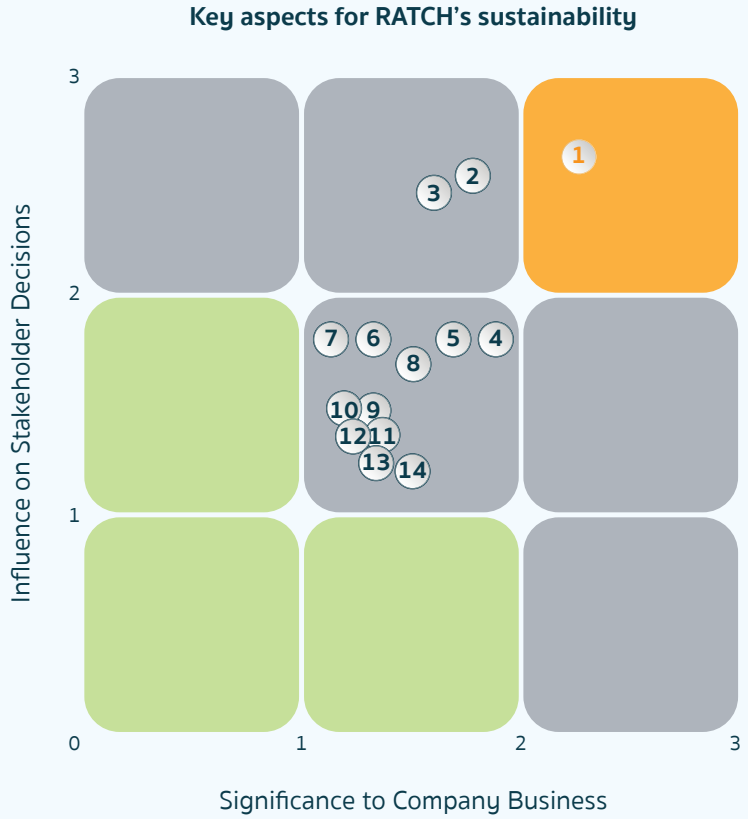
- Identifying internally- and externally-sourced sustainability aspects significant to the Company's operations.

Internally-sourced information	Externally-sourced information
1) Annually-revised short-term, medium-term, and long-term strategic plans and goals 2) The Board of Directors and the sub-committee's opinions and recommendations on various issues from formal and informal meetings 3) Corporate risks and issues that significantly affect to the electricity and energy industry as well as emerging risks likely to impact the Company in the future. 4) Opinions from internal units directly working with each stakeholder via informal discussion. 5) Responses to questionnaires and interviews with RATCH's top and middle management reflecting relevant stakeholders' opinions and expectations and work-related opinions and experiences likely to materially impact the Company's business.	1) Interviews on sustainability issues and the expectations of stakeholders' representatives chiefly major shareholders, partners, investors, stock analysts, communities, and regulators. 2) Media reports for the analysis of trends, opportunities, and significant risks to RATCH, as well as questions from stock analysts attending quarterly analyst meetings. 3) Issues or questions raised by media at press conferences or during executives' interviews

Step 2: Prioritization

Significant aspects acquired in Step 1 are assessed to prioritize their significant level to the Company's operations in economic, social, and environmental dimensions as well as significance of influence on stakeholders. The prioritization is determined by the Materiality Matrix below:

Result of assessment of key sustainability aspects



1	Handling impacts on Xe-Pian Xe-Namnoy Hydroelectric Power Project
2	Formulating organizational strategy and goal
3	Ability to generate returns and growth
4	Standardized environment quality management
5	Generation efficiency management to satisfy customers' needs
6	Organizational competency and employee engagement development
7	Community and social stewardship
8	Water management
9	Supplier management (Environment/ Safety)
10	Organizational management
11	Promotion of corporate governance
12	Resource consumption
13	Greenhouse gas reduction and adaptation
14	Waste management

Step 3: Validation

The central unit responsible for the report reviews the aspects and submits significant aspects for top management's consideration and endorsement, to ensure comprehensive aspect identification and alignment of disclosed information with the report quality measurement principle.

Step 4: Review

A suggestion form is attached to the report and posted on the Company's website. Direct interviews with stakeholders take place after the report release to gauge their satisfaction with this report, covering topics and contents, information adequacy and reliability, presentation methods, language, report format, and other recommendations for sustainability aspects for next year's report. Recommendations from the process will be used to improve next year's report, to address stakeholders' needs and expectations as best as possible.

Reliability of this report

This report was certified by the third-party who is specialized in reviewing and assuring the report's completeness, accuracy, and reliability in line with GRI Standards. The third party did not have any relationship with the Company and it was selected according to the Company's procurement rules with the top executive's consideration and approval. The assurance statement can be found on page 155.

Query for information

Corporate Relations Division, Ratchaburi Electricity Generating Holding Public Company Limited is the central unit for this sustainability report. Should further information be required or should there be recommendations, please call Tel: 66 2794 9940 or e-mail: charusudab@ratch.co.th, or pornpent@ratch.co.th.

Sustainability aspects in this report

	Key sustainability aspect	GRI / G4 Electric Utilities Standard	Topic	Page	Reporting scope			
					Internal			External
					Electricity business	Electricity and energy-related businesses	Other businesses	Community/ customer/supplier/ business partners/ shareholders/ creditors/regulators
Economic dimension								
1	Handling of impacts on Xe-Pian Xe-Namnoy Hydroelectric Power Project in Lao PDR	• G4 : EU 21 Disaster/ Emergency Planning and Response	Handling of impacts on the washout of Xe-Pian Xe-Namnoy Hydroelectric Power Project's Saddle Dam D	26	✓			-
3	Ability to generate returns and growth	• GRI 201-1 Direct economic value generated and distributed	Economic activities	55-61	✓	✓	✓	-
Environmental dimension								
4	Standardized environmental quality management	• GRI 307 Environmental Compliance • GRI 305-7 NO_x / SO_x and other significant air emissions • GRI 306 Effluents and Waste	Resource consumption and environmental quality management	76-77 79-80 80-82	✓	✓	✓	-
8	Water management	• GRI 303 Water		78-79	✓	✓	✓	-
12	Resource consumption	• GRI 301 Materials • GRI 302-1 Energy consumption within the organization • GRI 302-3 Energy intensity • GRI 302-4 Reduction of energy consumption		77 148 148 91-94	✓	✓	✓	-
13	GHG reduction and adaptation	• GRI 305-1 Direct (Scope 1) GHG emissions • GRI 305-2 Energy indirect (Scope 2) GHG emissions • GRI 305-4 GHG emissions intensity	GHG management	96,148 96,148 89,148	✓	✓	✓	-
14	Waste management	• GRI 306-2 Waste by type and disposal method	Resource consumption and environmental quality management	81-82, 149	✓	✓	✓	-
Social dimension								
5	Generation efficiency management to satisfy customer needs	• GRI 419-1 Non-compliance with laws and regulations in the social and economic area	Customer relationship management	105	✓	✓	✓	-
6	Organizational competency and employee engagement development	• GRI 404-1 Average hours of training per year per employee • GRI 404-3 Percentage of employees receiving regular performance and career development reviews	Organizational competency and employee engagement development	125 147	✓	✓	✓	-
9	Supplies' safety and environment management	• GRI 403-2 Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	Safety and occupational Health of employees and suppliers	111, 144-145	✓	✓	✓	Supplier

Highly significant aspect *Moderately significant aspect*

Engagement with Stakeholders

The Company gives importance to stakeholders who are material to the Company's sustainability. Formal and informal participatory process has been implemented to welcome their opinions, recommendations and expectations on various issues that are significant to the Company's operational sustainability. Relevant units' practices have been shaped to fully respond to all stakeholders' opinions and expectations. Stakeholders are identified in accordance with the following process:

1) Identify stakeholders, taking into account their duties, responsibilities and influence on the Company's operations.
2) Identify the level of the Company's impacts on stakeholders in economic, environmental and social aspects.
3) Identify the level of stakeholders' impacts on the Company, considering regulatory, financial and operational factors as well as the Company's reputation.
4) Rank stakeholders' significance and set appropriate participatory guidelines.

Handling of significant stakeholders

Stakeholders are classified accordingly to their significance to the Company's operations as well as their positive and negative impacts on the business. They are classified into eight groups, as in the previous year. The Company establishes the processes to encourage their participation, build relationship and respond to their expectations as follows:

Stakeholders	Participatory channels	Expectations	RATCH's responses
1. Shareholders and investors	Major shareholder is EGAT. • Shareholders' meetings • Discussions at meetings such as EGAT's business committee meeting, Board of Directors' meeting and the meeting with the Business Management Unit of EGAT • Formal and informal activities • Company visit • Seek opinions on operations through interviews Shareholders and investors • Shareholders' meeting and analyst meetings • Company visit • Meeting with investors through activities • Corporate website and questionnaire • Contact Company Secretary Office and Investor Relations Department	• Efficient organizational management and earnings growth • Positive returns through growth in revenue, share price and dividend • Fair and transparent operations with sufficient and timely information disclosure • Operations in line with the major shareholder (EGAT)'s direction and strategy and coordination for greater competitiveness • Generate electricity in line with contracts and grow revenue as planned • Grow business to achieve added value and maintain shareholders' interests	• Identify short-, medium- and long-term strategic plans and clear goals to raise generation capacity and business value, emphasizing electricity generating and energy businesses in Thailand and overseas • Diversify to infrastructure business to raise revenue and strengthen corporate strengths • Offer integrated energy business and develop new businesses, to ensure steady revenue and sustainability of the operations • Create business partnership to raise corporate competitiveness domestically and internationally • Coordinate and cooperate with EGAT to share information and review the joint operating process • Maintain power plants' efficiency in support of the national electricity security, which is EGAT's main mission • Organize shareholders' meetings where shareholders can raise questions and express their opinions • Be certified as a CAC member (Thailand's Private Sector Collective Action Coalition Against Corruption)

Stakeholders	Participatory channels	Expectations	RATCH's responses
			• Disclose information in annual financial reports and Sustainability Report • Attend meetings to share information with the major shareholder
2. Creditors	• Meetings held for information exchange and to smoothen relationship • Company or site visit • Contact Financial Division	• Financial disciplines and ability to repay debts • Ability and efficiency in the management of assets, cost and liquidity, to ensure financial stability • Compliance with relevant laws • Fair and transparent operations • Corporate credit rating, reputation and credibility	• Strictly comply with laws governing business, environment, safety and labor both in organizational and project levels. • Manage enterprise risks in line COSO framework and manage project risks • Strictly follow debt repayment plans as an assurance to creditors • Obtain corporate ratings from Thai and international credit rating agencies-TRIS Ratings, S&P Ratings and Moody's • Analyze and forecast revenue as well as manage financial risks • Upgrade anti-corruption system with a certified membership from CAC
3. Business partners	• Formal and informal meetings • Negotiations and company visit • Exchange of information, experience and expertise • Periodic and occasional activities and meetings to strengthen relationships • Seek opinions on operations through interviews • Coordinate/cooperate with Business Development Unit, Project Development Unit and Asset Management Units	• Consistent business goals, supporting mutual prosperity • Personnel with business knowledge and proficiency and synergy of both parties' strengths • Fair and transparent operations • Positive reputation and credibility • Solid financial position • Cooperation to reach mutual business targets and fair contribution of benefits • Positive and long-term business partnership	• Specify partnership strategies in the corporate strategy • Set the criteria in considering and selecting business partners, to manage partnership-related risks • Assess partners' credibility by tracking and verifying facts and information from various sources as well as conducting due diligence. • Nominate company representatives with commitment and professionalism to work with partners • Clearly define the approach in disclosing information related to partners • Upgrade anti-corruption system through CAC-certified membership
4. Regulators	• Formal and informal meetings • Company visit • Coordination with responsible agencies • Attend regulators' training and seminars	• Compliance with relevant laws and regulations • Continuous and concentrated environment quality management as well as community care • Fair and transparent operations • Disclosure of transparent, complete and timely information	• Carry out continuous environment management and community care • Monitor legal and regulatory amendments and regularly assess compliance and consistency with relevant laws and regulations • Assess risks and identify emergency -handling measures which are reviewed annually along with an annual drill • Ensure the information is complete and in line with legal requirements • Upgrade anti-corruption system through CAC-certified membership

Stakeholders	Participatory channels	Expectations	RATCH's responses
5. Suppliers and contractors	• Information exchange and supplier/contractor selection • Meetings, regular follow-ups on work progress, and joint efforts in problem solving • Regular communications with suppliers and contractors	• Positive and long-term partnership • Fair, transparent and professional operations • Solid financial position and ability to honor payment schedule • Management of safety, occupational health and working environment • Company's reputation and credibility • Promote knowledge sharing and development of operation and maintenance (O&M) innovations for jointly enhancing generation efficiency.	• Discuss with partners on work procedure, to reach mutual agreement • Embed a transparent and internationally-accepted procurement system, to prevent conflicts of interest • Classify desired suppliers through assessment before and after contract signing • Organize safety-related training for suppliers and contractors and enforce strict safety measures throughout their work process for the safety of suppliers and contractors • Design a work plan with a precise completion date along with follow-up process and budget control • Upgrade anti-corruption system through CAC-certified membership
6. Employees	• Staff meetings and business units' meetings • Channel for suggestions and complaints • Welfare Committee; Safety, Occupational Health and Working Environment Committee; and 5S Committee • HR activities to promote staff relations • Volunteer activities	• Salary and welfare are fare, attractive and comparable to the rates in the same peer • Employee capability enhancement • Professional advancement and participation in operation planning accordingly to positions and responsibilities • Safety and pleasant working environment	• Conduct regular reviews remuneration structure and benchmark it against the industry's • Devise succession plans to ensure staff's professional advancement • Develop clear career growth plans to shed light on staff's opportunities and retain those with high competency • Organize a training plan to raise staffs' potential and capability, and boost their morale • Devise an annual plan on volunteering activities and allow staffs' participation to do good deeds for society • Set safety, occupational health, and working environment management measures to ensure compliance with standards • Welcome opinions and suggestions to improve the efficiency of work process
7. Customers and consumers	• Meeting to share information and opinions • Set measures to improve power generation efficiency • Seek opinions on operations through interviews	• Electricity production and distribution meets contractual agreements in terms of quantity and quality • Environmental-friendly generation process, with zero impact on community • Operations with governance, morals and ethics • Power distribution at reasonable prices	• Stand ready to operate immediately and efficiently on customers' demand, to help maintain national electricity security. • Strictly follow the maintenance schedule to ensure the availability efficiency • Manage the use of parts and fuels, to reduce cost and raise production efficiency

Stakeholders	Participatory channels	Expectations	RATCH's responses
		• Ability to respond/assist to maintain national power security	• Deploy correct and complete environmental management as required by law, and pay continuous attention to communities' well-being • Revise emergency response plans and exercise annual drills • Upgrade anti-corruption system through CAC-certified membership
8. Community and society	• Company visit • Community development activities • Public hearing and community visit • Communication activities and information releases for mutual understanding • Social activities and campaigns • Corporate Relations Division serves as the main communication channel	• Responsible operations that do not cause impacts on community and environment • Continuous care, development and promotion of the quality of living in community and society • Engagement with community and openness to opinions • Elevation of activities friendly to society and environment, to help mitigate impacts from climate change • Promotion of modern knowledge among community schools, to support career and community development and enhance community strengths	• Deploy correct and complete environmental management as required by EIA and law, and pay continuous attention to communities' well-being • Employ diverse forms of communication, including newsletters, news alerts, and occasional visits, as well as community development activities • Participate in Power Development Fund Committee, to encourage communities' use of fund in improving their well-being • Establish an environmental inspection team represented by all parties to inspect power plants' environment management, while providing knowledge and training to inspectors • Handle GHG in the production process and Head Office, and campaign for energy saving among communities • Arrange activities to promote community forest conservation nationwide as CO_2 sink and mitigate global warming • Upgrade anti-corruption system through CAC-certified membership

RATCH Business

Company Name, Address

Ratchaburi Electricity Generating Holding Public Company Limited (RATCH) was established on March 7, 2000, with registered capital of 14.5 billion baht. It is a public company listed on the Stock Exchange of Thailand, with stock symbol of "RATCH." The headquarter is located at 8/8 Moo 2 Ngam Wong Wan Road, Bang Khen, Nonthaburi.

Nature of Business

The Company operates as a holding company, with primary focuses on electricity generating and electricity and energy-related businesses. It has diversified business to cover infrastructure and public utilities, through subsidiaries, affiliates and joint ventures both in Thailand and overseas.

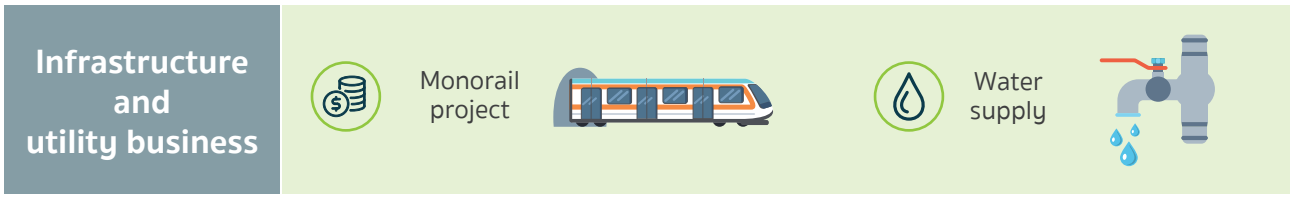
Electricity Generating: Focusing on IPP, SPP and VSPP that are powered by fossil fuels, renewable energy and clean energy:

Electricity-generated businesses: Covering upstream and downstream electricity and energy-related businesses to complement the main business and strengthen revenues

Electricity and energy-related business

Fuel sourcing	.....	• Coal • Biomass
Services	.....	• Operation and maintenance • Gas turbine refurbishment • Manpower recruitment for power plants
Others	.....	• Investment in EDL-Gen shares

Infrastructure and utility businesses: Diversifying investment into a new business apart from power generation to strengthen corporate value and broaden business opportunities:



Products, Services and Markets

Products and services

in the Company's portfolio comprises:

1. **Electricity** is a Company's core product generated from various types of fuel and regarded as the key source of revenues. All operating companies are responsible for maintaining the efficiency of their power plants, ensuring the availability to meet customers' demand in terms of quantity and quality or as specified in the power purchase agreements.

   As of December 31, 2018, RATCH has 19 power plants under its management with combined equity capacity of 5,276.39 megawatts, serving customers in Thailand and Australia.

Power plant	Operator	Equity (%)	Equity installed capacity (megawatt)	Buyer
Thailand				
Ratchaburi Power Plant	Ratchaburi Electricity Company Limited	99.99	3,645.00	Electricity Generating Authority of Thailand (EGAT)
Tri Energy Power Plant		99.99	720.00	
Nava Nakorn Electricity Generating (NNEG) Power Plant	Nava Nakorn Electricity Generating Company Limited*	40.00	55.65	EGAT/ Industrial users
Solarta Solar Power Plant**	Solarta Company Limited*	49.00	20.73	Provincial Electricity Authority (PEA)
Songkhla Biomass Power Plant	Songkhla Biomass Company Limited*	40.00	3.96	
Australia				
Kemerton Power Plant	RATCH-Australia Corporation Pty Ltd	99.99	315.20	Synergy
Townsville Power Plant		99.99	234.00	AGL Energy/Arrow
BP Kwinana Power Plant		30.00	35.40	Verve Energy/BP
Starfish Hill Wind Farm		99.99	33.00	Alinta Energy
Toora Wind Farm		99.99	21.00	Merchant market
Windy Hill Wind Farm		99.99	12.00	Merchant market
Mount Emerald Wind Farm		99.99	180.45	Ergon Energy

*Note: *The Company's representatives serve as the operating companies' top executives.*

*** There are eight solar farms under Solarta Company Limited's operation.*

2. **Services** are related to the electricity generating business, supported by the Company's expertise and experience. The services include power plant operation and maintenance and sourcing of personnel for power plants. RATCH applies the business-to-business approach (the B2B) in offering services under written contracts and specified periods.

Service	Operator	Equity (%)	Customer
Thailand			
Operation and maintenance	Chubu Ratchaburi Electric Services Company Limited	50.00	Ratchaburi Power Company Limited, the operator of 1,490-MW Ratchaburi Power's Power Plant* in Ratchaburi.
Lao PDR			
Power plant personnel sourcing	RATCH-LAO Services Company Limited	99.99	EGAT providing operation and maintenance services for 1,878-MW Hongsa Thermal Power Plant** in Lao PDR.

*Note: *The Company owns a 25-percent stake in Ratchaburi Power Company Limited.*

***The Company owns a 40-percent stake in Hongsa Power Company Limited which operates Hongsa Thermal Power Plant.*

Markets

The Company sells its electricity in two countries – Thailand and Australia.

1. Thailand: Thailand has adopted the enhanced single buyer (ESB) model, whereby electricity generating, procurement and purchases are under the state's supervision and control to maintain the overall national power security. According to the said structure, the electricity from large and small power plants invested by the Company is sold to the Electricity Generating Authority of Thailand (EGAT) under power purchase agreements with specified period of time. The electricity from very small power plants, mostly renewable energy, is sold to both EGAT and the Provincial Electricity Authority (PEA).
2. Australia: The Company adopts two generating and distribution models as follows:
   a. Direct supply to buyers under period-specified purchase agreements.
   b. Distribution in the merchant market.

Location of businesses

The Company currently invests in five countries - Thailand, Lao PDR, Australia, China and Indonesia. Thailand is the principal location, with the business in the country contributing 86% of total revenues in 2018 (45,083.54 million baht), followed by Lao PDR (8.7%) and Australia (5.3%). All projects in China and Indonesia are currently under development and construction.

Business base and investment

Country	Electricity generating business			Power-related businesses			Infrastructure	
	Fossil fuels	Renewable energy	Clean energy	Fuel	Service	Others	Monorail	Tap water
Thailand	✓	✓		✓	✓		✓	
Lao PDR	✓	✓		✓	✓	✓		✓
Australia	✓	✓						
China			✓					
Indonesia	✓	✓						

Location of commercial-operating projects

Country	Power plant	Type	Fuel	Installed capacity (MW)	Shareholding (%)	Operator
Thailand	Ratchaburi Power Plant*	Thermal and combined cycle	Natural gas	3,645.00	99.99	Ratchaburi Electricity Generating Company Limited
	Tri Energy Power Plant*	Combined cycle	Natural gas	720.00	99.99	
	Ratchaburi Power's Power Plant	Combined cycle	Natural gas	1,490.00	25.00	Ratchaburi Power Company Limited
	Ratchaburi World Cogeneration Power Plant	Cogeneration	Natural gas	234.00	40.00	Ratchaburi World Cogeneration Company Limited
	NNEG Power Plant*	Cogeneration	Natural gas	139.00	40.00	Nava Nakorn Electricity Generating Company Limited
	Solarta Solar Farm*	Renewable	Solar power	42.30	49.00	Solarta Company Limited
	Solar Power Korat 3, 4, 7	Renewable	Solar power	21.60	40.00	- Solar Power (Korat 3) Company Limited - Solar Power (Korat 4) Company Limited - Solar Power (Korat 7) Company Limited
	Huay Bong 2&3 Wind Farms	Renewable	Wind power	207.00	20.00	- First Korat Company Limited - KR. Two Company Limited
	Songkhla Biomass Power Plant*	Renewable	Biomass	9.90	40.00	Songkhla Biomass Company Limited
Lao PDR	Nam Ngum 2 Hydroelectric Power Plant**	Renewable	Hydropower	615.00	25.00	Nam Ngum 2 Power Company Limited
	Hongsa Thermal Power Plant	Thermal	Coal	1,878.00	40.00	Hongsa Power Company Limited
Australia	Townsville Power Plant*	Combined cycle	Natural gas	234.00	99.99	RATCH-Australia Corporation Pty Ltd
	Kemerton Power Plant*	Gas Turbine (Open Cycle)	Natural gas	315.20	99.99	
	BP Kwinana Power Plant *	Cogeneration	Natural gas	118.00	30.00	
	Starfish Hill Wind Farm *	Renewable	Wind power	33.00	99.99	
	Windy Hill Wind Farm *	Renewable	Wind power	12.00	99.99	
	Toora Wind Farm *	Renewable	Wind power	21.00	99.99	
	Mount Emerald Wind Farm *	Renewable	Wind power	180.45	99.99	
Indonesia	Asahan-1 Hydroelectric Power Project	Renewable	Hydropower	180.00	26.61	Bajradaya Sentranusa (BDSN)

** Projects under the Company's operation and control*

*** The Company holds 33.33% stake of SouthEast Asia Energy Limited which owns 75% stake in Nam Ngum 2 Power Co., Ltd.*

Of 29 power plants listed above, 19 are operated by the Company: 12 are located in Thailand and seven in Australia. The total equity capacity is equivalent to 6,745.38 megawatts or 88.30% of total investment capacity.

In 2018, the 180.45-MW Mount Emerald Wind Farm in Australia commenced commercial operation. The Company's subsidiary, RH International (Singapore) Corporation Pte. Limited, acquired the remaining 20% stake in RATCH-Australia Corporation Pty Ltd, turning the Company to the single shareholder in the latter. The investment raised the Company's investment capacity by 174.71 megawatts.

Projects under construction

Country	Project	Status	Fuel	Installed capacity (MW)	Share-holding (%)	Operation schedule	Operator
Thailand	Berkprai Cogeneration	Under construction	Natural gas	99.23	35.00	2019	Berkprai Cogeneration Company Limited
	Monorail Pink Line	Under construction	-	-	10.00	2021	Northern Bangkok Monorail Company Limited
	Monorail Yellow Line	Under construction	-	-	10.00	2021	Eastern Bangkok Monorail Company Limited
Lao PDR	Xe-Pian Xe-Namnoy Hydroelectric Power Plant	Under construction	Hydropower	410.00	25.00	2019	Xe-Pian Xe-Namnoy Power Company Limited
Australia	Collinsville Solar Farm	Commissioning test in preparation for commercial operation	Solar power	42.50	99.99	2019	RATCH-Australia Corporation Pty Ltd
China	Fangchenggang II Nuclear Power Plant	Under construction	Nuclear	2,360.00	10.00	2021	A joint venture company formation is under way.
Indonesia	Riau Combined -Cycle Power Plant	Under construction	Natural gas	296.23	49.00	2021	PT Medco RATCH Power Riau (MRPR)

New projects in 2018

There are four new projects comprise three power plants with equity installed capacity of 81.80 MW and one infrastructure project.

Project	Location	Capacity (MW)	Shareholding (%)	Operator
1. NNEG Power Plant's expansion phase. To serve industrial users in Nava Nakorn Industrial Promotion Zone	Thailand	59.98	40	Nava Nakorn Electricity Generating Company Limited
2. Kemerton Power Plant Diesel generator installation project of the system restart service (Black Start)	Australia	7.2	100	RATCH-Australia Pty Ltd
3. Asahan-1 Hydroelectric Power Plant	Indonesia	180	26.61	Bajradaya Sentranusa (BDSN)*
4. Sandin Water Supply Investment value of 5.8 million US Dollar or approximately 194.59 billion baht	Lao PDR	-	40	RATCH-LAO Services Company Limited

** RATCH indirectly holds stake via Fareast Renewable Development*

Ownership and legal form

The Electricity Generating Authority of Thailand is the Company's major shareholder. It is a state enterprise, primarily involved in electricity generating and distribution to Metropolitan Electricity Authority (MEA) and Provincial Electricity Authority (PEA), as required by law, and users in neighboring countries. It also operates electricity-related businesses as prescribed in EGAT Act. EGAT owns 45% of the Company's 1.450 billion issued shares.

In 2018, the Company witnessed no change in major shareholders, number of shares and registered capital.

The top 5 shareholders owned 71.97% of the Company's common shares as of September 6, 2018.

Top 5 shareholders	No. of shares	%
1. Electricity Generating Authority of Thailand	652,500,000	45.00
2. Thai NVDR Company Limited	254,174,614	17.53
3. EGAT Saving and Credit Cooperative Limited	55,381,000	3.82
4. Social Security Office	48,475,300	3.34
5. SOUTH EAST ASIA UK (TYPE C) NOMINEES LIMITED	33,091,355	2.28
Total	1,043,622,269	71.97
Other shareholders	406,377,731	28.03
Grand Total	1,450,000,000	100.00

Shareholders' nationality	No. of shares	%	No. of shareholders
Thai	1,341,683,806	92.53	20,262
Foreign	108,316,194	7.47	89
Total	1,450,000,000	100.00	20,351

Scale of organization

Operating in five countries, the Company employs 454 employees in Thailand, Lao PDR and Australia (excluding contractors' workers), which increased by 2.02% from 2017. Of total, 60.98% is based in Thailand, 35.25% in Lao PDR and 3.77% in Australia.

Employee and contracted worker data

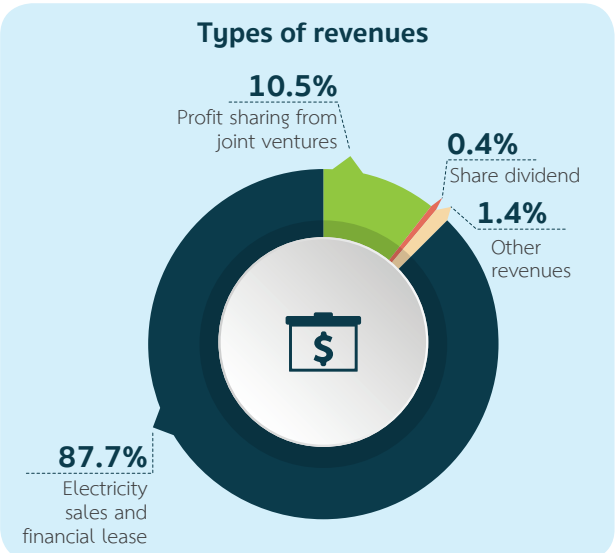
Type	Total	Thailand	Lao PDR	Australia
Full-time employee	451	275	159	17
• Male • Female	301 150	146 129	142 17	13 4
Full-time worker	0	0	0	0
• Male • Female	0 0	0 0	0 0	0 0
Part-time worker	3	1	0	2
• Male • Female	2 1	1 0	0 0	1 1
Outside operators	603	595	8	0
• Male • Female	466 137	459 136	7 1	0 0

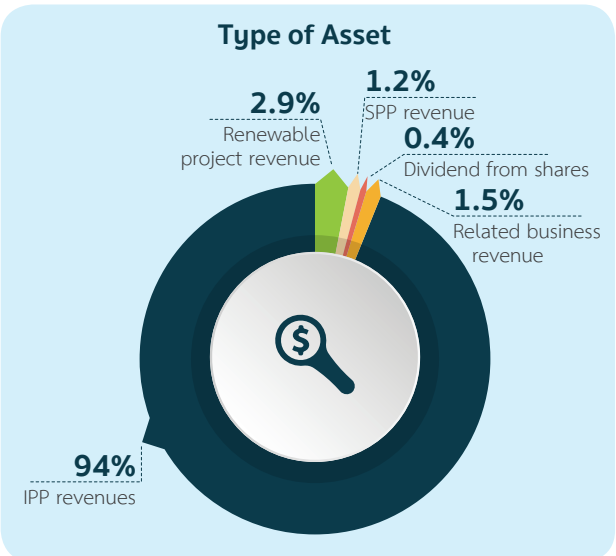
Employees with Thai nationality accounts for 61.64% of all personnel, followed by Lao citizens (34.59%) and Australian citizens (3.77%).

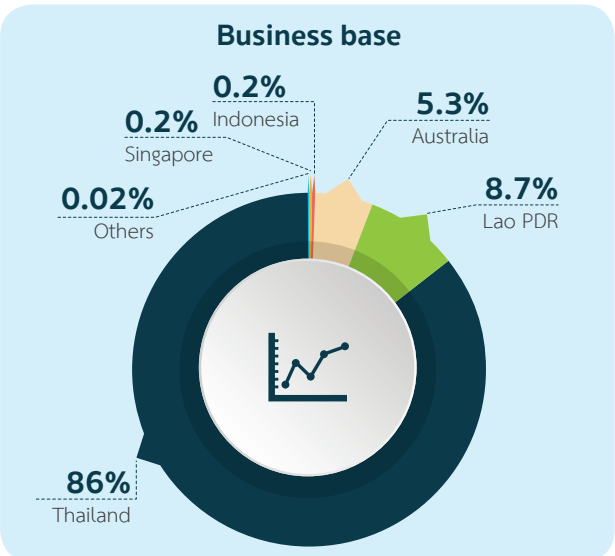
Type	Thai nationality	Lao nationality	Australian nationality	Others
Employee	278	156	17	-
• Male	148	140	13	-
• Female	130	16	4	-
Full-time worker	0	0	0	-
• Male	0	0	0	-
• Female	0	0	0	-
Part-time worker	1	0	2	-
• Male	1	0	1	-
• Female	0	0	1	-

Revenue structure and financial status

In 2018, the company recorded the total revenues of 45,083.54 million baht, deriving from two major sources: sale and service revenues of 39,519.95 million baht and profit sharing from joint ventures of 4,735.47 million baht. Power generation business operated by subsidiaries including Ratchaburi Power Plant and Tri Energy Power Plant and power plants in Australia generated main income. In addition, revenues from profit sharing of joint venture companies showed continuous growth. RATCH's revenue structure can be summarized as follows:







Financial Position

As of December 31, 2018, the company recorded the total asset of 101,251.90 million baht, the liability of 41,216.56 million baht and the shareholders' equity of 60,035.34 million baht. The financial ratio and the Company's credit rating by domestic and international credit rating agency reflect stable and solid financial status.

Key financial ratio

Financial ratio	2018	2017
Debt to Equity Ratio (times)	0.69	0.59
Debt Service Coverage Ratio (times)	6.75	1.58
Return On Assets (times)	6.60	5.75
Return On Equity (times)	10.79	9.43
Dividend Yield (%)	4.70	4.40

Credit rating

TRIS Ratings	Moody's Ratings	S&P Ratings
AAA	BBB+	Baa1
Outlook: Stable	Outlook: Stable	Outlook: Stable

Cooperation with external organizations

The Company does not only stress building good relations and addressing stakeholders' expectations, but also cooperate with external organizations in the public and private sectors including associations and institutions in conducting economic, social, environmental and governance activities. The goal is to achieve business success and ensure business sustainability.

Organization	Country	Pattern	Starting	Project/Activity
Thai Institute of Directors Association (IOD)	Thailand	Voluntary	2015	Thailand's Private Sector Collective Action Coalition Against Corruption (CAC)
Thai Listed Companies Association (TLCA)		Voluntary	2014	Sustainability Report Award project
Stock Exchange of Thailand		Voluntary	2015	Thai listed companies' sustainability assessment project
Thailand Business Council for Sustainable Development (TBCSD) and Thailand Environment Institute (TEI)		Voluntary	2014	A project to promote solar power in Ban Hua Ha Community, Mae Hong Son province
			2014	Phumaree Project...Power of Women, Power to Conserve the Environment Project
Thailand Greenhouse Gas Management Organization (Public Organization)		Voluntary	2016	Carbon footprint for industrial organizations project Phase 5 for Ratchaburi Power Plant and Tri Energy Power Plant
			2017	Low Emission Support Scheme (LESS)
			2018	Thailand Voluntary Emission Reduction Program (T-VER)
Department of Industrial Works		Voluntary	2012	Corporate Social Responsibility, Department of Industrial Works (CSR-DIW)

Organization	Country	Pattern	Starting	Project/Activity
Community Forest Management Bureau, Department of Royal Forestry	Thailand	Voluntary	2007	Love the Forest and the Community Program
			2013	Project to study carbon capture of community forests and biodiversity
Department of National Park, Wildlife and Plant Conservation		Voluntary	2014	Planting Trees in the Upstream Forests to Create Carbon Sinks Program
Provincial Energy Offices in Chiang Mai, Lamphun and Nan, Ministry of Energy		Voluntary	2017	Community energy project
Ministry of Education and Sports	Lao PDR	Voluntary	2011	Education for career empowerment project

Association membership

Organization	Status	Dimension	RATCH's role
Thailand Management Association (TMA)	Member	Economic	• Attend meetings and seminars on business administration and join activities to build networks
Thai Institute of Directors Association (IOD)	Member	Governance	• Attend meetings and seminars on corporate governance by directors, executives and employees • Support academic activities
Thai Listed Companies Association (TLCA)	Member	Governance	• Attend meetings and seminars on business knowledge enhancement • Join sustainability-related award projects
Thailand's Private Sector Collective Action Coalition Against Corruption (CAC)	Member	Governance	• Participate in the declaration and receive certification as a member of the coalition
Association of the Electricity Supply Industry of East Asia and Western Pacific (AESIEAP)	Member	Economic	• Exchange information related to regional electricity industry • Join regional technology-related meetings, seminars and field trips
ICC Thailand National Committee	Member	Economic	• Participate in meetings, seminars and activities • Support the organization's activities
Thai Chamber of Commerce			
Electricity Supply Industry Association of Thailand (TESIA)	Executive director	Economic	• Promote electricity-related engineering technology; exchange knowledge, experience, research and technology in all engineering fields • Attend activities to promote engineering-related knowledge and professional capacity
Thailand Business Council for Sustainable Development (TBCSD)	Member	Environmental Social	• Be a Council member, Associate member, and Public Relations member • Partner in social and environmental activities
Institute of Electrical and Electronics Engineers (IEEE) Thailand Section	Supporter	Economic	• Support academic activities
Ministry of Energy	Supporter	Economic	• Support the Sustainable Energy Technology Asia project
Thailand Productivity Institute	Member	Social	• Participate in seminars and field trips

Message from CEO

Dear all shareholders and relevant stakeholders,

2018 was a year of great challenges to the Company's business. Regarding the washout of the Saddle Dam D of Xe-Pian Xe-Namnoy Hydroelectric Power Project in Lao PDR which is under construction, we hereby express our deepest condolences to villagers, communities, the Lao government and related parties that are affected by the incident. With 25% stake by RATCH, Xe-Pian Xe-Namnoy Power Co., Ltd, the project's operator that holds the concession, has fully cooperated with the Lao government. The government established a fact-finding committee and a committee to estimate damages, restore and rehabilitate the place and people in various aspects, to normalize the situation as soon as possible. In our part, RATCH did our best in addressing the Lao government's requests, by providing a budget, necessary items and personnel supports to relieve the sufferings of local residents and the relevant parties.

The investigation into the cause of the incident is underway, under the supervision of the fact-finding committee chaired by the Deputy Prime Minister of Lao PDR. Meanwhile, problem management and efforts to mitigate impacts on communities, society, economy and environment have been run along with the investigation, with considerable progress. On January 26, 2019, the Lao government approved the compensation to the families of the 71 dead and missing persons, USD 10,000 each. Meanwhile, damage is being estimated and the integrated rehabilitation plan covering community, social, economic and environmental aspects is being drafted. In addition, the concession holder and the project contractor have already built and delivered 800 shelter homes to the Lao government as temporary accommodations for the affected people.

On the part of impact on the project development, Xe-Pian Xe-Namnoy Power Co., Ltd. has dispatched a team of experts and representatives of relevant agencies to inspect the cause of the incident and prepared a project, communities and the environment restoration plan which was submitted to the Ministry of Planning and Investment and the Ministry of Energy and Mines in September 2018. If the plan is approved, the project will begin relevant construction including a roller compacted concrete dam to replace the earth-filled Saddle Dam D.

The financial impacts on RATCH, holding a 25% stake in the project, are not huge and acceptable. However, we have reviewed the lessons learnt from this incident, to improve our project-level risk management process. These include Dam Break Analysis, the assessment of surrounding community risk and the preparation of an emergency and evacuation plan for main and secondary dams to avoid a repeat of the undesirable incident.

Infrastructure business expansion

Under the Thailand 4.0 and 20-year national strategies, the government aims to achieve sustainable development in all dimensions. In the economic dimension, infrastructure development is in focus to support the investment in technology and innovation -oriented industries and improve quality of life overall. RATCH considers this an opportunity to help support the corporate growth, aside from electricity generation which is the Company's core business.

In 2018, RATCH introduced a new vision "to become a leading value-oriented energy and infrastructure company in Asia Pacific," reflecting our expectation and business opportunities that will support our prosperity. The Company invested 194.59 million baht in a water supply project in Lao PDR, which is our third infrastructure project following Pink Line monorail and Yellow Line monorail in Thailand which were unveiled in 2017.

Emphasis on power plant efficiency and employees/suppliers' safety

The Company's main power plants have been operational for more than 10 years and the Company's main mission has emphasized production efficiency, to meet the contractual availability and ensure all stakeholders' safety. In 2018, the power plants in which RATCH has operating control generated a total of 18,262,933 MWh, achieving the targeted availability, reliability and heat rate.

Joint development of operation and maintenance innovations with suppliers

Ratchaburi Power Plant and Tri Energy Power Plant, which are the Company's main power plants, have encouraged operation and maintenance service providers to enhance generation efficiency. Among the innovations were the invention of an underwater vehicle to take the underwater photos of the power plant such as the Solid Contact Unit, confined areas or other risky spots which helps extend the maintenance schedules and efficiently reduce maintenance expenses; and the study on Wet Pack innovation applied when Ratchaburi Power Plant received the reserved shutdown order which lasted a long period. Wet Pack kept machinery ready for immediate resumption upon order.

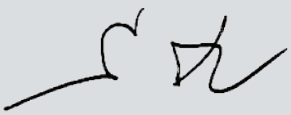
Greenhouse gas management

The Company and all power plants have strived to improve the generation process and reduce energy and resources consumption for mitigating greenhouse gas emissions. The focus is also extended to communities through energy-saving and forest conservation projects. In 2018, Ratchaburi Power Plant joined the development of Thailand Voluntary Emission Reduction Program (T-VER) of Greenhouse Gas Management Organization (Public Organization). Under energy efficiency program, 6,577 LED light bulbs were installed, thus reducing greenhouse gas emissions by 771 tCO_2e per year.

Ratchaburi Power Plant together with EGAT, as a supplier, conducted a research to increase gas turbine capacity amid temperature increases by reducing air temperature before hitting Air Inlet Filter, allowing gas turbines to work at their full capacity and generating power as demanded by customers despite higher temperature outside.

This Sustainability Report presents sustainable development strategies and approaches; solutions to material issues; and the performance in economic, environmental and social aspects. I hereby thanked the Board of Directors, the Management, employees and all stakeholders for your suggestions useful for the improvement of this Sustainability Report. RATCH is committed to moving forward towards sustainable growth, together with stewardship of relevant parties.

Sincerely yours,



Mr. Kijja Sripatthangkura

Sustainable Development Strategies and Approach

RATCH strives "to become a leading value-oriented energy and infrastructure company in Asia-Pacific", moving towards a solid and sustainable path. The vision is aimed at influencing growth of the value chain and relevant stakeholders, which will help push overall economic growth and quality of life. This goal shapes the Company's sustainable policy in the following contexts:

Under the policy, guidelines on the economy, society, the environment and corporate governance are formulated to achieve the goals of each dimension and hence attain the organizational sustainability. In 2018, significant targets of each dimension and operation guidelines are summarized below:

Environmental Dimension	
Goal	Minimizing environmental impacts deriving from generation and business operations
Key aspects	• Standardized environmental management • Water management • Usage of resources • GHG management and adaptation • Waste management
Operation guidelines	• Analyze environmental impacts on the quality of air, water, waste and biodiversity, to identify preventive and management measures which must be strictly complied • Select and install efficient power-generating technologies that can lower energy and resources consumption and control pollutants emission in line with the emission standard • Pursue methods to improve power plant efficiency and energy efficiency, as well as cutting down energy consumption at power plants and Head Office to reduce GHG emissions • Invest in renewable energy and promote energy saving in community, to reduce GHG. Welcome community participation in the discussion on environmental concerns and the pursue of mutual solutions, to reduce conflicts
Social Dimension	
Goal	Seeking stakeholders' trust and acceptance
Key aspects	• Fair and equitable treatment of stakeholders • Caring of community and society • Respect to human rights • Safety, occupational health and pleasant working environment management for employees and suppliers • Enhancement of organizational competitiveness and employee engagement

Social Dimension	
Operation guidelines	• Open up, listen, and regularly foster relations with stakeholders with transparency, sincerity, and equitability • Respect human dignity and accept the differences in values, faiths, religions, cultures and traditions of communities and societies • Generate and deliver goods (electricity) with agreed quality and quantities as an assurance to customers and strengthen the national energy security • Formulate safety and security measures to prevent losses and accidents among employees, contractors, and neighboring communities as well as our business • Promote work-life balance in the premises and develop a merits-based human resources management system along with the improvement of employees' capacity and ability for their professional prosperity
Economic Dimension	
Goal	Driving corporate values and power generation to support overall economic and social development
Key aspects	• Organizational strategies and goals • Generation efficiency management to satisfy customers' demands • Supplier management (regarding environment and safety) • Management of the supply chain and long-term business partnership • Management of enterprise and project-level risks
Operation guidelines	• Explore investment opportunities in energy and infrastructure businesses and enhance the value generation of assets, for creating shareholders' returns and shared value in the business chain • Pursue long-term partnership with business partners and suppliers in the supply chain, to strengthen competitiveness • Exercise transparent, accountable and equitable criteria on supplier selection and procurements • Assess economic, environmental, social, and good governance risks and define relevant preventive and mitigation measures for such risks • Take into account safety, environmental and social issues in the business decision-making process
Corporate Governance	
Goal	Becoming a transparent, fair, and accountable organization
Key aspects	• Corporate governance • Morality and business ethics • Culture of integrity and responsibility • Organizational management
Operation guidelines	• Comply with the laws governing RATCH's businesses and across its business chain • Assess corruption risks, define preventive and control measures as well as monitoring the application of these measures • Amend internal control mechanism and corporate regulations to always be compatible with situations while minimizing governance-related risks • Cultivate corporate values focusing on morality, ethics, integrity and responsibility through RATCH's mechanisms, work processes and activities • Treat employees and stakeholders fairly and equitably and refrain from any violation or discrimination

RATCH reviews and assesses the key aspects under each dimension to make them compatible with its strategic plans and goals, which are reviewed annually. Such practices have been galvanized into day-to-day work processes and plans.

Assessment of Strategic Effectiveness

The strategic effectiveness is monitored and assessed through the following tools:

- The indices of 2018 performance cover capacity increase, profit, return on assets (ROA), shareholders' returns, budget management, sustainability assessment score and corporate capacity in line with High Performance Organization (HPO) principles.
- Performance index of each function in connection with corporate goals, which carry 50% weight
- External assessment through participation in the sustainability assessment organized by the Stock Exchange of Thailand which looks into corporate actions in economic, social and environmental dimension as well as governance practices. RATCH scored 90 out of 100 points and it was a stock in Thailand Sustainability Investment (THIS) List in 2018.

Material Aspects of Sustainability in 2018

Opinion surveys were conducted to assess material aspects of sustainability in 2018. The surveys covering middle managers and higher-ranking executives as well as external stakeholders which are major shareholders, electricity buyers, operation and maintenance suppliers, stock analysts and institutional investors, found that the handling of impacts from the washout of Xe-Pian Xe-Namnoy Hydroelectric Power Plant's Saddle Dam D is a material aspect for both RATCH and stakeholders.

Handling of impacts from the washout of Xe-Pian Xe-Namnoy Hydroelectric Power Plant's Saddle Dam D

Project's brief info:

Xe-Pian Xe-Namnoy Hydroelectric Power Plant is operated by Xe-Pian Xe-Namnoy Power Co., Ltd, which is registered in Lao PDR. Its 4 shareholders are:

- SK Engineering and Construction Co., Ltd, 26%
- Korea Western Power Co., Ltd, 25%
- Ratchaburi Electricity Generating Holding PCL, 25%
- Lao Holding State Enterprise, 24%

The hydropower plant, operated under a concession from Lao PDR, has 410-MW-installed capacity. Of total capacity, 354 MW will be supplied to Electricity Generating Authority of Thailand and 40 MW to Électricité du Laos. The project is slated for commercial operation in the first quarter of 2019.

Location

The project is located in the provinces of Champassak and Attapeu, Lao PDR.

Project description

The project consists of three levels of reservoirs namely Houay Makchan, Xe-Pian and Xe-Namnoy dams. The Xe-Namnoy dam has 5 Saddle Dams, named A, C, D, E and F, that block water flows and hence raise water level in the dams' reservoirs.

Incident summary

On July 23, 2018 the Saddle Dam D of Xe-Namnoy Dam washed out and water was released to the downstream areas which are 47km away from the dam, leading to flooding.

Situation handling and assistance at time of incident

Xe-Pian Xe-Namnoy Power Co., Ltd.	RATCH
• Issue warning and evacuate residents (before and after the incident) • Alert relevant agencies in village, district, provincial and national levels for evacuation • All residents living in nearby areas of the main dam were successfully evacuated • Evacuate and extend assistance to affected people who live in the downstream areas in Attapeu Province's Sanamxay district about 47 km away • Mobilize rescue teams to carry out evacuation and search for victims • Coordinate and cooperate with the Lao government • Build an evacuation center and shelters • Provide health supports - underground water supply, waste water treatment, plague prevention, medicine and temporary toilets. • Lighting and communications equipment • Flatbed boats and equipment for rescue mission • Prevent the spread of infectious diseases by terminating mosquitos and insects; and providing vaccines, health services, medicines, physicians and medical examination for the affected.	• Initial financial support worth 5-million-baht to LAO government and 1-million-baht donation to Thai-Lao Association for Friendship • Allocate a budget for emergency assistance as requested by the Lao government • Urgently arrange a trip for executives and volunteer staff to the site • Coordinate with related agencies such as provincial offices, SK Engineering, and etc. for the arrangement of consumer goods and others as requested by the Lao government • Set up a temporary kitchen, to provide food for the affected people. • Provide 10 units of 12-KW generator • Build 20 temporary toilets at the shelter center • Provide necessities such as blankets, tents, hammocks, boots, water tanks, a groundwater well and medicines • Provide vehicles for the rescue mission and transportation of the affected to the shelters and fuel costs. These are 4-wheel vehicles and boats. • Dispatch a team of technical, legal and contract experts to assist PNPC and a committee set up by the Lao government • Arrange consumer goods for the Ministry of Energy and Mines' team working in the affected areas

Impacts and rehabilitation

As the incident happened in Lao PDR, the situation was entirely under the supervision of the Lao government. The Xe-Pian Xe-Namnoy Power Co., Ltd, which holds the concession and is the project's operator together with contractor played a central role in taking actions as ordered and endorsed by the Lao government.

The Lao government set up an investigating committee, chaired by Lao Deputy Prime Minister Bounthong Chitmany. Members are representatives of governments of the nations in which Xe-Pian Xe-Namnoy Power's shareholders are based and reports from international organizations. Another committee was established to assess damage and multi-dimensional impacts as well as the rehabilitation of communities and the environment in the affected areas.

Dimension	Impacts	Restoration and Rehabilitation
Social	• Six villages are severely damaged. • Lao PDR's official count showed the number of missing and dead people totaled 71.	• Lao PDR paid compensations worth 10,000 US Dollar per case to the 71 victims' families at the Memorials Ceremony in Sanamxay district on January 26, 2019.
	• Displaced people	• Of the total 865 shelter homes built, there were 800 shelters delivered to flood affected people. • Lao PDR set aside a budget, to hand out living allowances. • The Lao government is drawing up restoration, remedy, and rehabilitation plan along with the provision of permanent accommodations.
Economic	• Affected businesses	The Lao government joined hands with the concession owner and contractors to conduct a survey and gathering information of affected local businesses.
	• Individual properties	The Lao government joined hands with the concession owner and contractors to survey the damage of properties in six severely-affected villages.
	• Infrastructure	The Lao government joined hands with the concession owner and contractors are under the damage survey
Environment	• Geographical changes	Lao government are under the damage survey

Impact management

Impacts	Solutions
• **Suspended construction delays the project's commercial operations**	• A team of experts and related agencies' representatives examines, analyzes and pinpoint the preliminary cause, to come up with an integrated restoration solution for the entire project. • The Restoration Plan covering technical, social and environmental aspects is completed and submitted to Lao PDR's Ministry of Planning and Investment and Ministry of Energy and Mines in September 2018. Response is expected around the first quarter of 2019. • If the Restoration Plan is approved, a roller compacted concrete dam will be built to replace the earth-filled Saddam Dam D.
• **Higher construction budget**	• Damage during construction process is insured by three insurance policies: construction all risks, third party liability and delay in start up with a combined value of 930 US Dollar.
• **Financial impact**	• RATCH holds 25% stake in this project. The project's delay has no significant impact on RATCH's revenue.

Prevention for any future incident

The Company's the lesson learned from the incident results in the following measures to prevent a repeat incident:

1) Raise climate change-related risk weight for under-development projects:
   - Study the rising temperature issue, rain patterns, as well as El Niño and La Niña phenomena for considering the proper project site.
   - Plan engineering analysis and design accordingly to the climatic and geographical conditions of project sites to benefit the selection of technology and formulation of safety measures.
   - Carry out Dam Break Analysis on all main and secondary dams of the projects and devise emergency-response and evacuation plans for all dams regardless of their types and sizes.
2) Authorization of technical/engineering control over joint venture projects to be acquired in the future and the Company will negotiate for technical/engineering control over all joint venture projects.
3) Level up the monitoring and control in joint venture projects
   - Establish a specialized working team, or an audit team, to follow up and inspect significant activities of the under construction and commercially operating projects. Also, the safety measure must be specified in joint venture contracts.

RATCH's top executives visited the affected people in Lao PDR to learn their difficulty and urgent needs.

On behalf of Lao officials, .Mr. Souksamai Chanthamard, Deputy Governor of Attapeu Province and Mr. Kaeo Sirisawat Energy and Mines of Champasak Province acknowledged the donation of 1.3 billion Lao Kip (around 5 million baht).

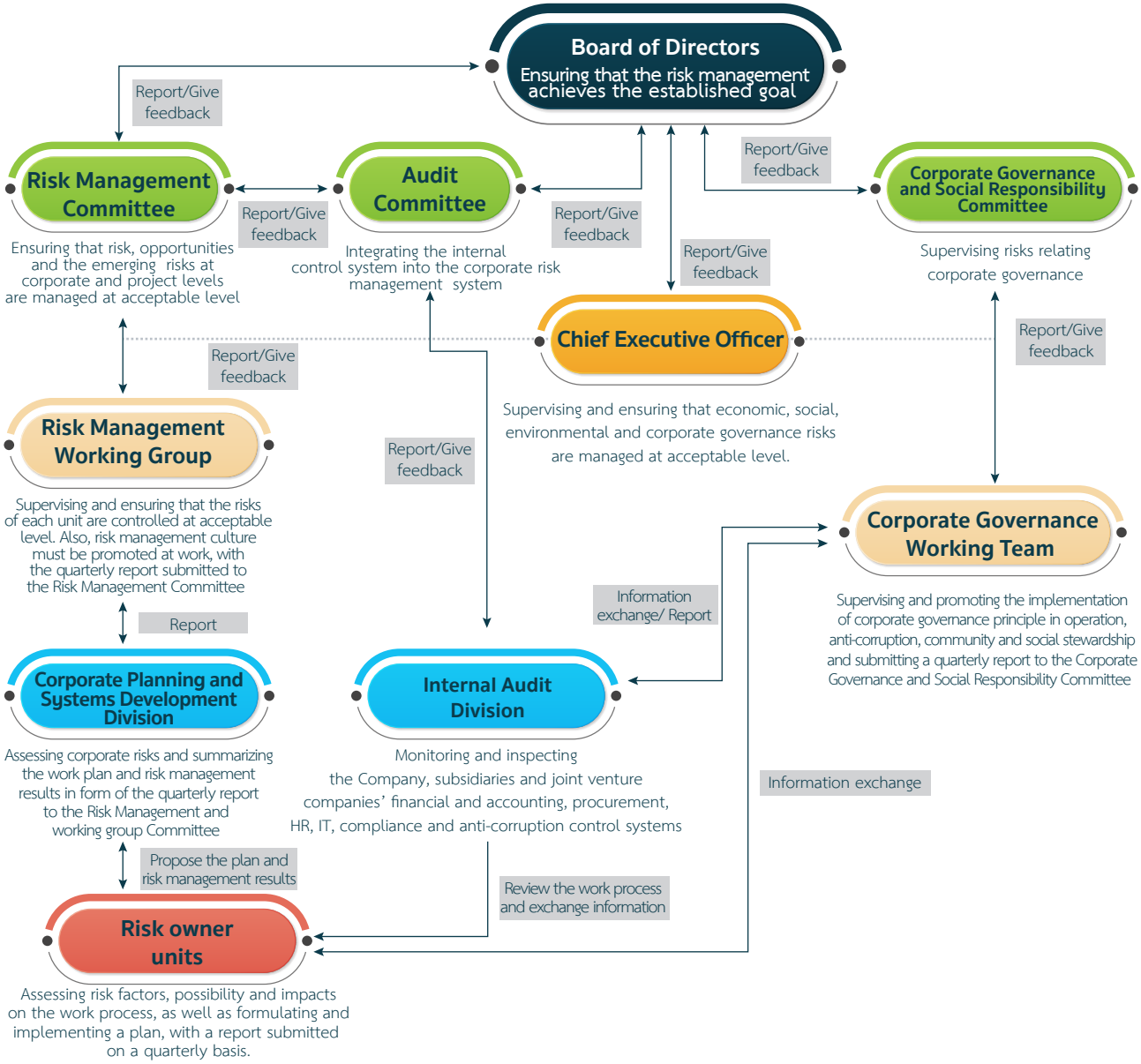
RATCH Volunteers arranged a mobile food center to affected people and rescuers.

Management of Risks, Opportunities and Emerging Risks

To cope with the challenges and rapidly changing in business environments, the Company has put greater emphasis on risk management aside from internal control. These management mechanisms are adopted to turn uncertainties into opportunities, which will create positive impacts and control risks that may adversely affect the organization's goals.

The Company aims to achieve growth, stability and sustainability in economic, social and environmental dimensions under good corporate governance principles. The internal control and organizational risk management systems have been put in place as the tools to ensure goal attainment.

Enterprise Risk Management Structure



The Company's Board of Directors, being on top of the organizational structure as shareholders' representative, controls risk management and supervises the operations to guide the Company towards growth and added value for the benefits of shareholders and stakeholders, society and the environment in a stable and sustainable manner.

The organization's risk management system is linked with internal control system which is supervised by the Audit Committee and the Internal Audit Division, the central body to monitor risk control in all work processes. Meanwhile, the Corporate Governance and Social Responsibility Committee and the Corporate Governance Working Team consisting of high level executives from all functions including Chief Financial Officer who serves as the team's chairman, warrants compliance with good corporate governance principles and zero tolerance to corruption. All the units coordinate and exchange information to ensure risk management, probability and negative impacts to the organization's goals is concise and covers all economic, social and environmental dimensions as well as good governance.

The Board of Directors established the Risk Management Committee to specifically handle enterprise risks. The sub-committee consists of three members - the chairman and 2 members, having Vice President-Corporate Planning and Systems Development Division as the secretary. The Risk Management Committee formulates the risk management policy and strategy, monitors the efficiency and effectiveness of the system, and maintains risks at appropriate levels under the direction and policy approved by the Board of Directors. The summary of its task, the evaluation of the Company's risk status and changes in project and organization levels are reported to the Board of Directors and the Audit Committee on a quarterly basis.

The Risk Management Committee establishes the Risk Management Working Team, consisting of high level executives from all functions including Chief Asset Management Officer who serves as the team's chairman. The team is tasked to analyze and assess internal and external risk factors which may significantly affect the organization's goals as well as proposing efficient and effective solutions in terms of measures, to reduce probability or negative impacts on the operations in the areas of revenue, expenses, corporate image and stakeholders as well as keeping the risks at an acceptable level under the risk management policy.

The Corporate Planning and Systems Development Division is the main unit responsible for corporate risk management. It is tasked to gather risks identified by each unit and assess the probability and impacts through an internationally-accept risk assessment matrix, to pinpoint significant risks. It draws up the risk management plan and specifies responsible units, before submitting the plan to the Risk Management Working Team and the Risk Management Committee, respectively.

Application of COSO's 2017 ERM framework

With the corporate vision and mission focusing on creating value added, achieving operational excellence, enhancing competitiveness, operating with social and environmental responsibilities in line with relevant law and regulations and seeking opportunities as well as diversifying into related and other businesses for sustaining growth and business expansion for shareholders, the Company realizes trends and possible risk caused by intense competition, changes in the energy sector, the impact of cutting-edge technology that may affect the Company operations. The corporate strategy was revised by broadening business base to cover energy and infrastructure systems. Meanwhile, power generation is still regarded as its core business. In addition, the Enterprise Risk Management- Integrating with Strategy and Performance released in 2017 by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) was applied in risk management at all organizational levels, integrating the corporate risks and the risks of all units, business groups and projects to support the corporate goal. This reflects the Company's readiness in handling with challenges efficiently and effectively. Also, the competitiveness is maintained, to further contribute growth, stability and sustainability to the organization.

Corporate Risk Management Process

In 2018, the risk management process under COSO: ERM 2017 guideline was implemented. Risk factors that may affect the Company's goals and Key Performance Indicator (KPI) identified in the Company's strategy were analyzed. Then, business unit and project risk profile was considered. The project risk profile covered projects under construction and development as well as commercial-operating projects, to enable the Company in handling risks appropriately and in time so as to achieve the Company's goals.

Significant risk factors and solution guides in 2018

Risk factor	Indicator	Goal or KPI that may be affected	Solution guide/probability	Risk level and impact
Strategic risks	• Changes in politics, laws, as well as energy and electricity-related rules and regulations in ASEAN and Asian countries • More emphasis on renewable energy in many countries will change government policies on generation mix and lower use of fossil fuels in power generation • ASEAN countries' electricity price policies remain controlled by the governments which still focus on relatively low prices. • Fierce competition in energy and infrastructure businesses with more local and international players, amid the requirement of huge investment	• Capacity target • Business expansion target • EBITDA before exchange rate and extra items • Sustainability target	• Regularly follow reliable sources to keep updated, analyze and assess impacts that may affect the organization's risk strategy. • Keep updated on sovereign credit ratings of target countries for investment, to assess the worthiness of investment and cost. • Assess the organization's internal factors in the areas that support the operations such as investment plan, human resources management, and building relations with stakeholders. The Company's strategic plan and objectives are reviewed on an annual basis. • Study and analyze the investment cost of projects accordingly to fuel types, and define the appropriate return structure that can accommodate risks. • Define the partner-selecting rules and process, to find the partners who can help raise the Company's strengths and competitiveness.	Risks are kept at manageable level while impact is acceptable.
Financial risks	• Financial market volatility affects changes in interest rates, exchange rates and the Company's liquidity. • Business expansion plans raise the Company's financial cost and liquidity.	• Capacity target • Business diversification target • EBITDA before exchange rate and extra items • Return on investment • Budget control	• Set the financial policy to guide the Company in controlling and managing risks deriving from interest rates, exchange rates and liquidity management. • Plot financial projection ensuring sufficient liquidity when needed, to maintain financial stability and financial performance in line with business plans. • Efficiently manage the investment and cost, to maintain consistent cash flow.	Risks are kept at manageable level while impact is acceptable.
Operating risks	• The Company's prime power plants have commenced commercial operation for over 10 years, which may affect generation efficiency, reliability and availability.	• EBITDA before exchange rate and extra items.	• Monitor the operation and risk assessment regarding power plant management, operating efficiency, and maintenance accordingly to established standards, to maintain generation efficiency and reliability as specified in power purchase agreements.	Risks are kept at manageable level while impact is acceptable

Risk factor	Indicator	Goal or KPI that may be affected	Solution guide/probability	Risk level and impact
Operating risks (cont.)	• Commercial-operating power plants cannot generate revenue as planned due to unplanned outage, ageing. • Machinery, human errors, or inefficient implementation of operation and maintenance plans. • Construction delay resulting in delayed commercial operation and extra expenses above the planned budget	• Return on assets • Result of the organization's sustainability assessment	• Ensure officers and contractors' compliance with safety standards as well as environmental management in line with power plants' rules and related laws. • Develop and integrate the business continuity plans of the Company, subsidiaries and joint ventures and organize the annual drill on crisis management, communications in crisis and business continuity plan. • The project development unit is responsible for monitoring and ensuring the progress of projects under construction and budget disbursement is carried out as planned. The Internal Audit Division must monitor projects' budget disbursement.	
Risks on fraud and corruption and compliance with relevant regulations and laws	• Section 123/5 of the Organic Act on Counter Corruption (BE 2558 (2015) was enforced, stipulating criminal and civil penalties for individuals and juristic entities that bribe government officers. • Similar laws in each country are based on different contexts and some parts are differently interpreted. Besides, there are differences in traditions, culture and beliefs in each country.	• Capacity expansion target • Diversification to new businesses • EBITDA before exchange rate and extra items. • Organizational sustainability assessment	• Set the anti-fraud and corruption policy for the Group and regulations that go in line with laws and international anti-corruption principles, all serving as the guidelines to prevent, control and suppress corruption. • Join Thailand's Private Sector Collective Action Coalition Against Corruption (CAC). • Promote integrity realization and awareness among employees through communication channels, with a test on their knowledge and understanding in CAC principles. The test result is part of employees' annual evaluation criteria. • Enforce the rules on giving and receiving gifts and donation with clearly-specified practice framework. Put in place a monitoring and reporting mechanism and have the Audit Committee supervise and ensure overall compliance with CAC principles. • Study the rules, regulations and laws in target countries for investment carefully and thoroughly and study cases from reliable sources, to avoid and prevent similar problems. • Search for partners who are proficient and deeply understand the target countries as well as experienced and proficient legal advisors in the countries, to get their advice and ensure the operations' compliance with laws and traditions.	Risks are kept at manageable level while impact is acceptable.

Project-level risk management

RATCH classifies environmental, community, social, safety and compliance aspects as project-level risks. These cover the development, construction and commercial operations of projects. The risks of power plants are particularly imminent, as they fall under strict legal requirements amid community and social concerns about their impacts on community livelihood and the environment. RATCH thus needs a concrete and clear management system, to gain stakeholders' acceptance and ensure the projects' success and smooth operations.

As RATCH's investment is carried out by subsidiaries and joint ventures, project-level risk management is the responsibility of these subsidiaries and joint ventures. The process is supervised through RATCH's representatives who serve as the subsidiaries and joint ventures' executives and/or directors and play key role in control the project risk. The following three main functions:

- Business Development Function: Concerning the analysis, assessment and risk management in the investment stage
- Project Development Function: Involving the supervision of risk management by subsidiaries/joint ventures in the development and construction stage
- Asset Management Function: Supervising subsidiaries/joint ventures' risk management during the stage of commercial operation

The three functions analyze and assess project-level risks that may cause an corporate-level impacts, to specify organization-level risks which are overseen by the Corporate Planning and Systems Development Division. The division collects and submits organizational-level risks to the Risk Management Working Team, the Risk Management Committee, and the Board of Directors, respectively.

The risks of Ratchaburi Power Plant and Tri Energy Power Plant, the primary assets operated by wholly-owned Ratchaburi Electricity Generating Co., Ltd., are considered organizational-level risks as the impacts will significantly affect RATCH's sustainability. Risks that may lead to significant impacts on the two power plants concern environmental, community, safety and compliance aspects and the power plants have continuously developed and improved the preventive and correction measures to mitigate possible impacts. Details appeared in Resource Consumption and Environment section, page 76; Community and Social Stewardship section, page 128; and Safety and Occupational Health of Employees and Suppliers section, page 108

Project-level risk managing process

Emerging risks

The Company is aware that globalization and technology bring about numerous and abrupt changes which may become risks or opportunities and create both negative or positive impacts on the organization over the long term. The Company realizes the significance of those factors and has studied, analyzed and assessed today's issues and trends that may turn to risks in the next 5-10 years. The issues in focus are as follows:

Trend/risk indicator	Possible impact	Dimension of sustainability	Solution/Opportunity
Transition to the renewable energy age quickly raises the ratio of electricity generated by renewable energy and this situation tends to continue. Generation by fossil fuels consequently decreases	• Electricity generation business model will be shifted. • Relevant policy and laws will be amended. Energy security	• Economic • Environmental • Social	• Identify a balanced investment target involving generation by fossil fuels and renewable energy. • Study and follow up the renewable energy policies of foreign countries, to identify renewable energy investment and business expansion targets. • Keep updated on renewable energy technology development and its cost as well as seeking strategic cooperation with recognized technology developers.
Disruptive technology in the electricity generation industry particularly concerning renewable energy storage and battery for electric vehicles	• Smart grid will be deployed more widely. • The prosumer system will emerge, whereby consumers can generate electricity and directly distribute the power without intermediaries. • The electricity price structure may change in line with changing costs.	• Economic • Social	• Study and follow up technology development and the trend of storage and battery for electric vehicles, as well as explore investment opportunities and seek strategic partnership to penetrate the market. • Explore opportunities concerning behind-the-meter and ESS businesses which involve energy management and services such as equipment installation, advisory, maintenance and grid connection service.
Impacts from climate change such as higher sea level, higher temperature and more severe natural disasters	• Generating efficiency drops, affecting energy security. • More difficulties to forecast electricity demand, amid fluctuations in climate. • Access to fuels and water, which are a production factor, and their supply volume drop. • Conflict with community on the use of natural water resource. • Consumers demand for low-carbon electricity.	• Economic • Social • Environmental	• Estimate risks from natural disasters and predict the severity of climate change in project locations in detail, as well as formulating a plan to handle natural disasters in the areas of production, equipment's functioning and employees' safety. • Follow up the compulsory measures and regulations on greenhouse gas reduction. Plot a strategic plan and set targets in handling greenhouse gases in the organizational and project levels. • Improve power plants' capacity in withstanding the impacts from natural disasters or fluctuations in weather such as project levelling up against possible floods, installation of equipment tolerant to severe heat/cold, and designing flood-tolerant utility system for projects. • Study water reuse techniques, to reuse water in the production process and hence reduce the use of raw water.

Crisis Management and Business Continuity

In 2018, the Company completed the Business Continuity Management (BCM) system, which was initiated in 2017.

The plan was designed under the methodology aligned with the ISO 22301 BCM standard. The principle of business continuity management is to ensure the organization's continued operations despite disruptions. The plan calls for a mechanism that allows the Company achieve the minimum acceptable level of operation until the disruptions are addressed and the normal operation can be restored.

Key plans in business continuity management

The Company has developed and improved the plans involving the handling of incidents that may lead to operational disruptions. Each plan responds to different severity levels of the incidents as follows:

- Emergency Plan and Incident Plan are exercised immediately after the incidents occur.
- Crisis Management Plan is deployed when the impact is more severe or may lead to operational disruptions. The plan is to ensure business continuity until the normal operation is restored.
- Crisis Communication Plan is used to communicate accurate and appropriate information to the affected/ related persons, to safeguard and mitigate impacts or damage on the organization's reputation and credibility.
- Business Continuity Plan is exercised when the normal operation is likely to be disrupted for a long period of time. Under the plan, the critical business functions (CBF) will continue at an alternate site if the main office could not function. Such will continue until the Company can normalize the operations.

Activities in 2018

- All functions participated in the business continuity plan (BCP) drafting process, from risk analysis, business impact analysis, recovery strategy and BCP drafting to the walkthrough exercise which the sequence of planning methodology was carried out.
- The knowledge in the business continuity management sequence was extended, for mutual understanding that will ensure efficient and effective implementation.
- An exercise was carried out, integrating the Crisis Management Plan, Crisis Communication Plan and Business Continuity Plan of all functions.

Action Plans for 2019

- Review and improve the Crisis Management Plan, Crisis Communication Plan and Business Continuity Plan.
- Formulate the business continuity management policy, to specify the role and duty of each function in ensuring the practical, efficient and effective implementation of the organization's Business Continuity Management.

The Management Team visited RAC's power projects and monitored its operation.

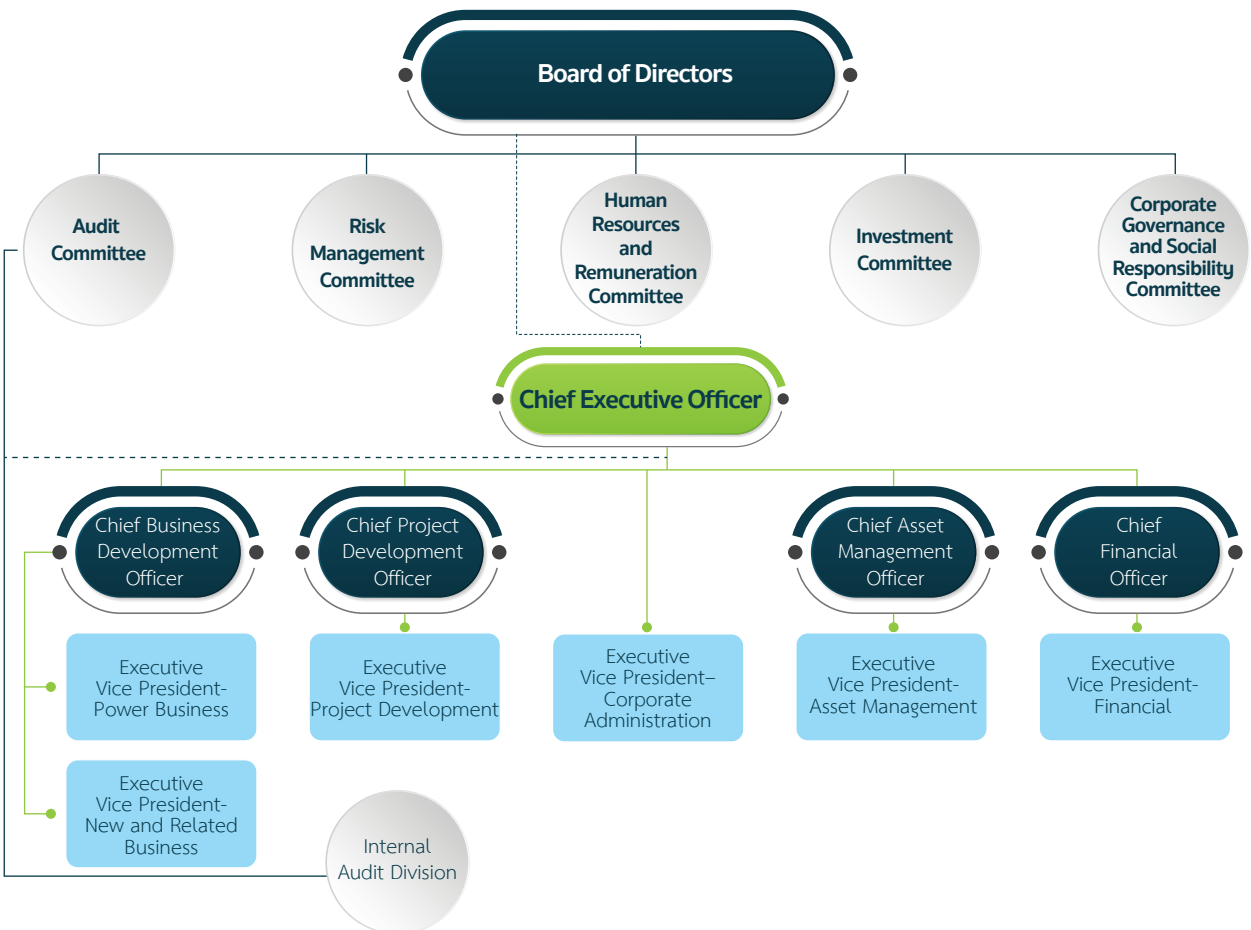
Corporate Governance

The Company adheres to moral, ethical and corporate governance values in shaping corporate management, in line with the guidelines by The Stock Exchange of Thailand (SET) and The Securities and Exchange Commission (SEC). Directors, executives and employees must understand and strictly follow the principles and rules specified in the Company's Code of Conduct, regulations, announcements and orders, taking into consideration possible economic, social and environmental impacts as well as the maximum benefits of stakeholders.

Regarding corporate governance, the Board of Directors is the organization's leader and shareholders' representative while the sub-committees are tasked to formulate and supervise the Company's essential missions which are:

- Internal audit that promotes efficiency and effectiveness of the internal control system
- Risk management in corporate and project levels to prevent impacts that may affect the organization's growth and sustainability
- Human resources and remuneration management that aims to enhance personnel's capability and ability, so as to maintain the organization's strength and ability to withstand any situations
- Investment screening with emphasis on investment values and the shared values in environmental and social aspects
- Corporate governance and social responsibility assuring the integrity, transparency and accountability of the organizational foundation and culture as well as promoting the operations that balance economic, social and environmental benefits.

The Chief Executive Officer is the Management's leader, tasked to materialize the Board of Directors and sub-committee's goals, policies and strategies. The tasks are delegated to the chiefs and executive vice presidents of each function for achieving operational goal.



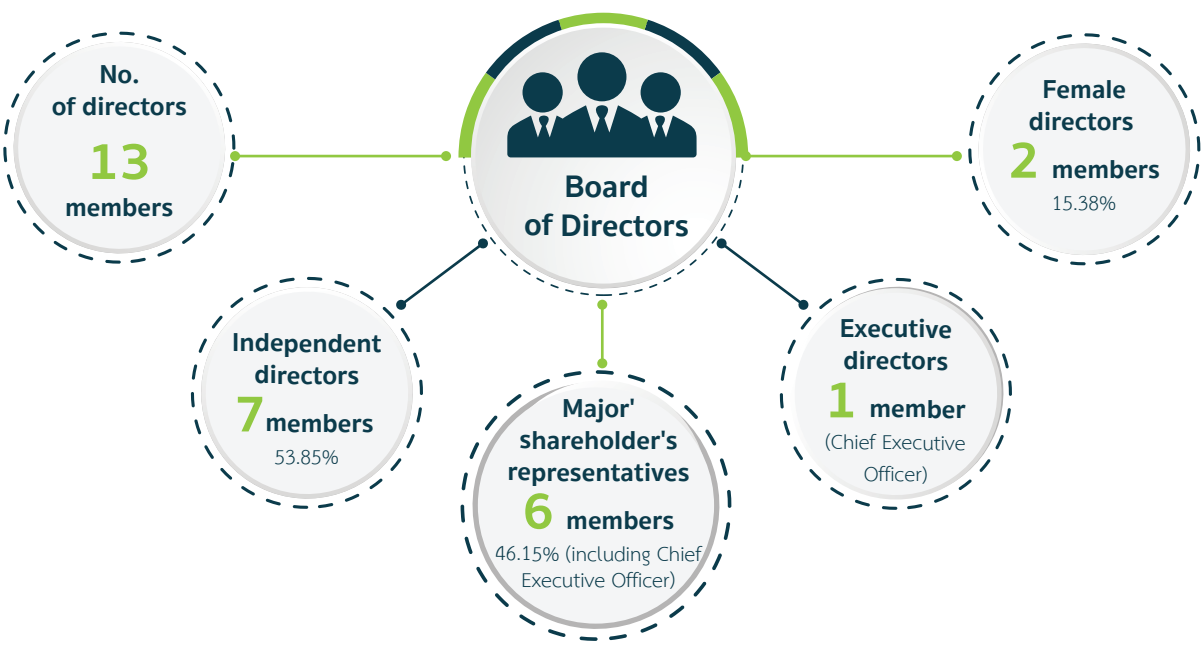
Board of Directors' Roles and Duties

Composition of Board of Directors

The Company's regulations on Board of Directors define the Board of Directors' component as follows:

1) At least 7 directors but no more than 15.
2) Independent directors must be at least one third of all directors, or at least 3 persons.
3) Executive directors must not exceed one third.
4) Chairman must not hold a management position or be the same person as the Chief Executive Officer. He is elected by directors at shareholders' meeting or Board of Directors' meeting.
5) At least half of directors are Thai residents.
6) Directors hold knowledge, experience and expertise in various fields including engineering, accounting, business management, economics, laws and political science.
7) All directors must not have fraud-related criminal records or history related to transactions that caused conflicts of interest with the Company.

Component of Board of Directors in 2018

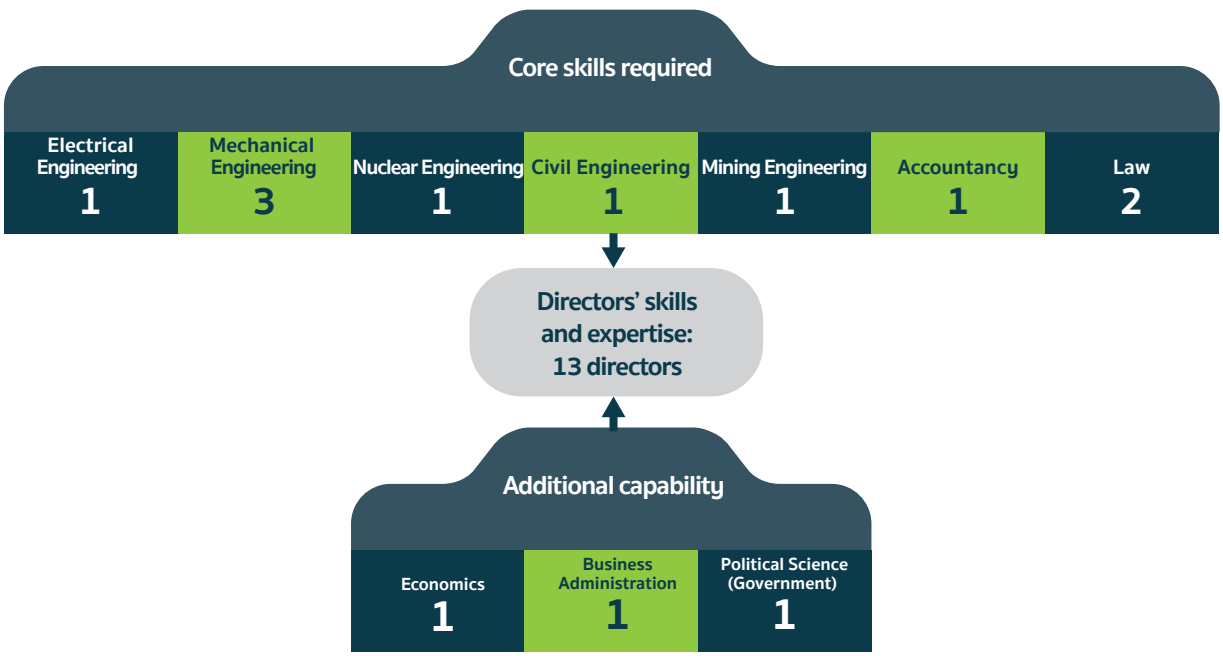


Selection of Board of Directors

The Human Resources and Remuneration Committee is assigned to find, screen and nominate qualified individuals who have no prohibited characteristics by law as directors and independent directors. A Competency Matrix is imposed to assist the selection.

Skill/Capacity	Required skills/knowledge/expertise
Core Skill Required	Knowledge in electricity business
	Knowledge in accounting and finance
	Knowledge in laws
Alternative Skill	Knowledge in finances/banking/capital market
	Academic knowledge or expertise in technologies related non-power business
	Knowledge in strategic planning
	Holding a high-level executive post at other companies in the same peer
	Knowledge in corporate governance/risk management/social responsibility
	Knowledge in taxes
	Knowledge in marketing/public relations
	Public-sector work experience

Directors' skills and expertise in 2018



Director selection process

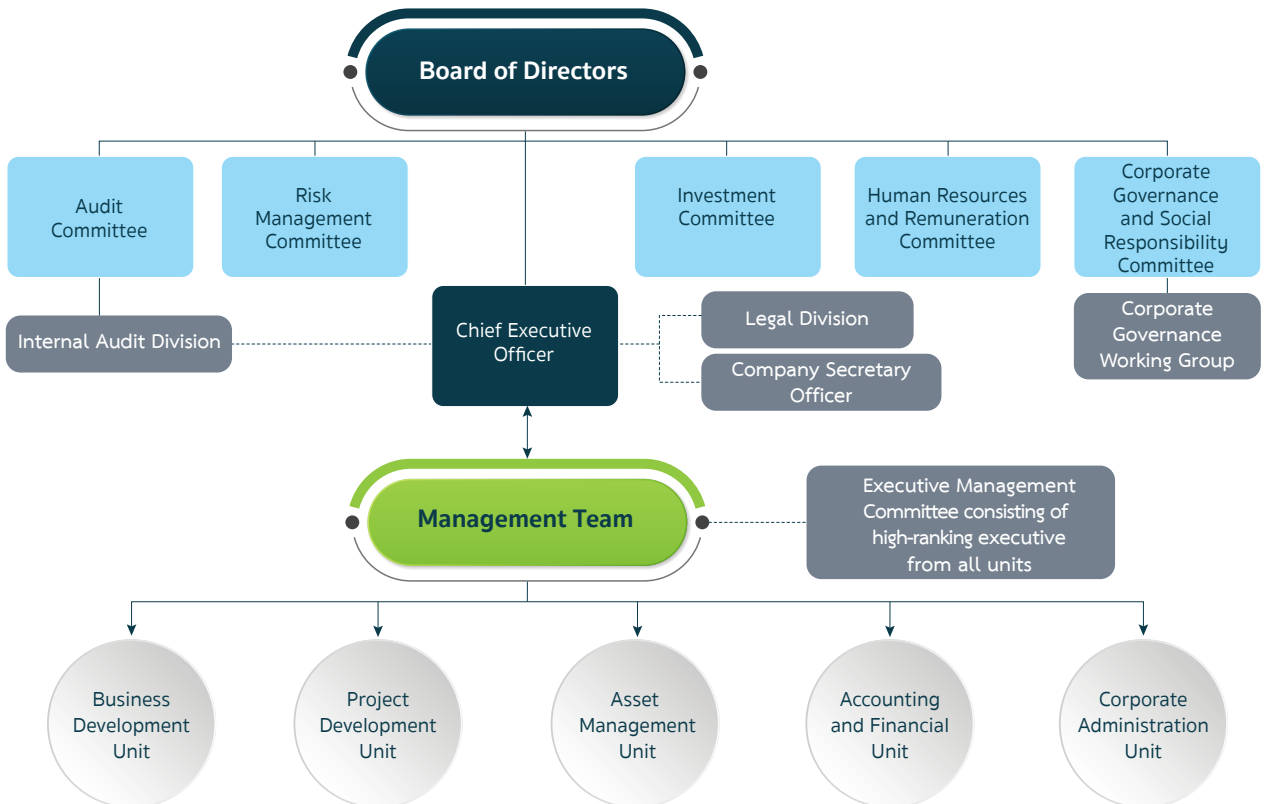
There are two circumstances regarding the director selection.

- When a director seat is left vacant before the end of the term, the Board is authorized to appoint a qualified person as a replacement which must be endorsed by at least three fourths of existing directors. The replacement will complete the departing director's term.
- When director seats are left vacant at the end of term, the Board will submit the nomination of individuals who meet the Company's criteria for shareholders' approval at the annual general meeting.

Selection of high level executives

High level executives are the Chief Executive Officer, functions' chiefs, and executive vice presidents. The Human Resources and Remuneration Committee is assigned to find, screen and nominate qualified individuals, insiders and outsiders, considering their education, knowledge, skills, work experiences and other necessary qualifications required for the positions. The nominations are submitted to the Board of Directors for approval.

Management Structure



The Company's corporate governance structure clearly segregates the roles and duties of the Board of Directors and the Management as follows:

1) The Board of Directors is authorized to formulating policy and supervising the Management's performance. Representing shareholders, the Board consists of directors representing the major shareholders and independent directors. The Board establishes sub-committees, tasking them to screen relevant matters before submitting for the Board's consideration. The Board also screens, nominates and appoints directors to sit in the sub-committees. There are 5 sub-committees as follows:
    - Audit Committee: 3 members
    - Risk Management Committee: 3 members
    - Investment Committee: 4 members
    - Corporate Governance and Social Responsibility Committee: 3 members
    - Human Resources and Remuneration Committee: 3 members

(Additional details on the sub-committee's duties appeared in 2018 Annual Report)

2) The Management is tasked to implement the Company's policies and report results to the Board of Directors. Chief Executive Officer leads the Management, ensuring all functions operate efficiently and support the Board of Directors-specified strategies and goals. The functions are as follows:
    - Business Development
    - Project Development
    - Asset Management
    - Accounting and Finance
    - Corporate Administration

Each function has its own Chief Officer and Executive Vice Presidents oversees the operations in the function, division and operating levels.

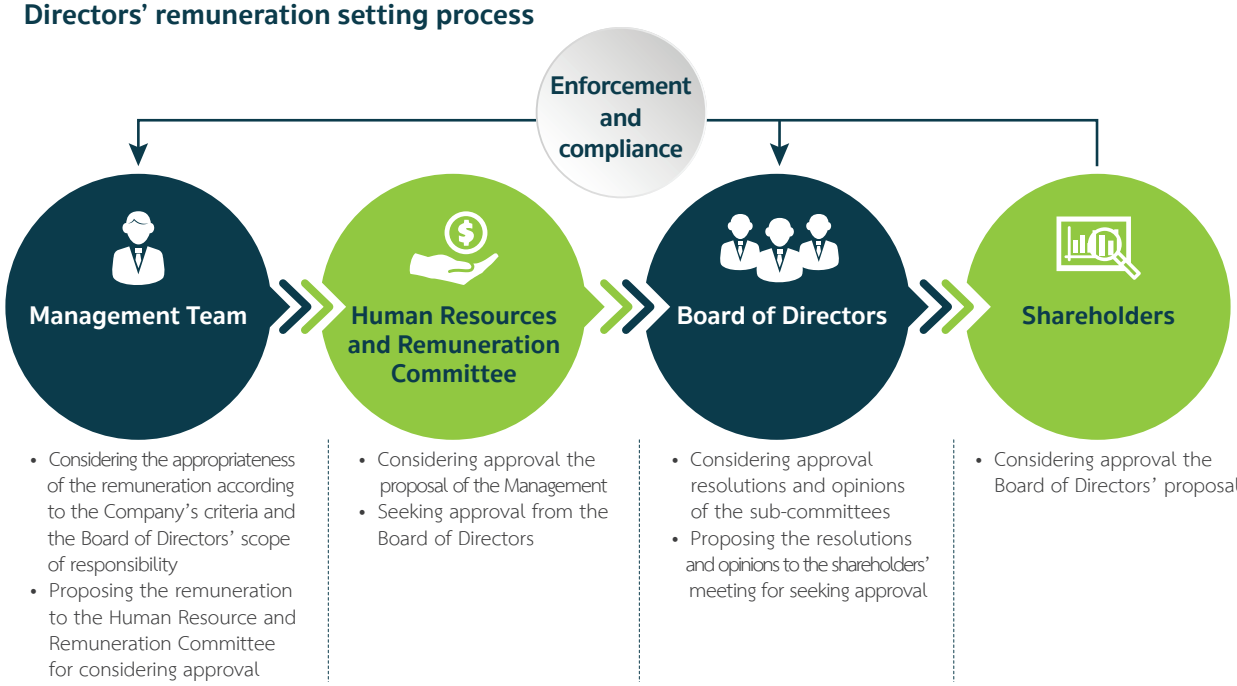
In selecting and appointing high level executives, the Human Resources and Remuneration Committee selects and screens both insiders and outsiders who have appropriate qualifications. The nomination is submitted to the Board of Directors for its approval.

Remuneration of Directors and Executives

The Board of Directors defines the written remuneration policy and criteria for directors and high level executives. The criteria are set appropriately, transparently and in line with current circumstances, for the Company's maximum benefits. The remuneration is set in accordance with the Company's goals and financial performance as well as responsibilities and comparable standards adopted by businesses in the same peer.

The Human Resources and Remuneration Committee is responsible for defining the guidelines of the remuneration of the Board of Directors, sub-committees and high level executives, before seeking the Board of Directors' approval and shareholders' endorsement at the annual general meeting.

Directors' remuneration setting process



Directors' remuneration type and criteria

Type	Criteria
Regular compensation	• Members of the Board of Directors are entitled to monthly compensation: 75% is being fixed and 25% depends on meeting attendance. The chairman's meeting allowance is 25% above other directors'. • Members of sub-committees are paid upon meeting attendance and chairpersons' meeting allowance is 25% above other directors'.
Bonus	• Allocated accordingly to their tenures and meeting attendance. During a particular tenure, if serving more than one company in the Group, they will receive bonus from the one paid the most. The chairperson's bonus is 25% above other directors'.

High level executives' remuneration

High level executives' remuneration is set accordingly to the Board of Directors' criteria and policy. It is screened by the Human Resources and Remuneration Committee to match the annual targets and performance agreed upon in advance by both parties.

Summary of materialized supervision of the Board in 2018

Committees	Number (Persons)	Operation
Board of Directors	13	• The Company monitored the corporate governance assessment results, ensuring that its operation was in line with the good practices and the requirements of Stock Exchange of Thailand (SET), the Office of Securities and Exchange Commission and Thai Institute Of Directors (Thai IOD). In 2018, RATCH was participated in the corporate governance assessment and was rated "Excellence," with an average score of 94 higher than the average score of the overall listed company of 81. • Follow up the sustainability assessment score as a part of the 2018 corporate KPI , based on an aim to achieve the results higher than the group's Top Quartile and maintain in the list of Thailand Sustainability Investment (THSI) as planned.
Audit Committee	3	• In 2018, the Audit Committee participated in seven meetings, with a quorum of all meetings. There was one non-executive meeting with the auditor, ensuring the auditor's independence in accessing information. • There was one meeting between the Audit Committee and the Risk Management Committee for acknowledgement and knowledge sharing of risk management. • Review accuracy, completeness and reliability of the quarterly financial statement and annual financial statement of the Company and subsidiaries in order to ensure compliance with law and financial reporting standards before submitting to the Board of Directors. • Review the sufficiency of internal audit system to ensure the efficiency and effectiveness of Company's operation in order to achieve the established goal. It was found that the Board of Director, the management and employees strictly complied with the specified policy, with the implementation of the anti-corruption policy by participating in Thailand's Private Sector Collective Action Coalition Against Corruption (CAC). • Review the compliance with the law governing securities and the Stock Exchange of Thailand, the requirements of the Stock Exchange of Thailand and the law regarding the Company's business operation. • Review the transactions that may cause the conflict of interest according to the law and regulations of Capital Market Supervisory Board and other agencies. Also, the management quarterly reported the transaction movements to the Audit Committee for acknowledgement. • Supervise the accounting system and financial report to ensure proper internal audit system in all processes, covering risk on fraud and anti-corruption as well as through and effective compliance. • Review risk management and revise the risk management policy, the compliance with policy and risk management guidelines with the management. The meeting with the Risk Management Committee was organized for promoting the efficient and effective risk management. • Control the internal audit operation to ensure the efficiency and effectiveness of the internal audit as well as developing the internal audit work to meet the international standard, with Quality Assurance Review by the external expert entities for guaranteeing the effectiveness and efficiency.

Committees	Number (Persons)	Operation
Risk Management Committee	3	• Implement COSO: ERM 2017 by integrating business strategic plan with operation performance • Specify the annual business objectives and compare with the actual operation.
Investment Committee	4	• Define the strategy, investment plan, investment budget, returns and other investment benefit to increase the capacity and corporate growth. • Consider to invest in project proposed by the management to ensure that the Company's Greenfield, Brownfield and M&A projects of power projects and related business in Thailand and overseas are line with the established investment policy and target based on the worthwhile investment returns and relevant risk factors at the acceptable level. • Supervise, monitor and assess the Company's all investment projects to reach the target returns, with joint protection and alleviation for difficulty in project development and operation.
Human Resources and Remuneration Committee	3	• Select director to replace those resigning and consider their remuneration. • Consider appointment of representative to be the Directors, the high ranking executives of subsidiaries and joint ventures • Nominate the successors to replace the retiring high ranking executives.
Corporate Governance and Social Responsibility Committee	3	• Focus on increasing the personnel's awareness on corporate governance and employee stewardship in proving remuneration, welfare, benefits and training programs that suit their knowledge, capability and potentiality. • Stress the anti-corruption in all forms by participating in Private Sector Collective Action Coalition against Corruption Council. • Draw up the social and environmental stewardship policy by encouraging efficient consumption of natural resources and supporting the activities on community, society and environmental development.

Assessment of the Board of Directors' Performance

The Company schedules an annual assessment of the Board of Directors and all sub-committees. The assessment results in 2018 are as follows:

Directors	Full score	2018			
		Group		Individual	
		Score	Level	Score	Level
Board of Directors	100	95.53	Excellent	95.07	Excellent
Audit Committee	30	29.00	Excellent	29.00	Excellent
Risk Management Committee	30	25.33	Very good	24.67	Very good
Investment Committee	30	27.75	Excellent	27.75	Excellent
Human Resources and Remuneration Committee	100	87.58	Very good	88.89	Very good
Corporate Governance and Social Responsibility Committee	30	27.00	Very good	27.67	Excellent

Supervision on environmental, social and governance operations

In 2018, the Audit Committee and the Board of Directors stressed supervision on the Company's environmental, social and governance operations. Revised key issues including:

Governance operation

- Review and revise the sufficiency of internal control process, including appropriateness of the Audit Committee regulations comparing to Stock Exchange of Thailand (SET)'s requirements and operational guidelines of international standard.
- Review efficiency and authorization in accessing the communication and compliant channels, enabling relevant persons to safely file reports and complaints about the internal fraud.

Environmental stewardship

- Monitor the strict supervision and compliance with law and environmental standard of the under construction projects, particularly measuring and mitigation of particulate matter impact that affects the workers and nearby community as well as community surroundings.

Social stewardship

- Monitor the compliance with the standard and law on safety, occupational health of the under construction projects, especially for the safety training program for workers for preventing loss and lessening the work accident.

Board of Director Meeting in 2018

Board of Directors & the Management followed up operation
of Ratchaburi Power Plant

Ethics and Anti-corruption Practices

RATCH firmly upholds integrity, morals and ethics in operating the business. It sets ethical practices that guide directors, executives and employees towards good practices, equitable treatment of stakeholders and contribution to economic, social and environmental development for the organization's greater value in the long term.

Written guidelines are incorporated in the Code of Conduct, requiring all employees' strict compliance in their operation and treatment to all stakeholders as well as encouraging relevant parties' compliance in their business operation. The Code of Conduct contains a number of categories to make it easy to understand and implement. The significant points are summarized below:

RATCH's Code of Conduct is enforced on:

1) The Company's executives and employees
2) Subsidiaries under the Company's operating control
3) Subsidiaries not controlled by the Company that should acknowledge and comply with the Code of Conduct and operate their business accordingly
4) Outsiders representing the Company such as advisors, representatives, and independent partners who must agree to:
   - Comply with the Code of Conduct
   - Learn about the Code of Conduct
   - Accept actions which may include contract termination if breaching the Code of Conduct

Code of Conduct in business operation

RATCH aligns the Code of Conduct with the Company's vision, mission, goals and values as well as business context. The Code of Conduct serves as the Company's operating framework in dealing with relevant stakeholders and eventually materializing the vision "to become a leading value-oriented energy and infrastructure company in Asia Pacific."

The Code defines the following practice guidelines:

01 Sustainable Development

Firmly adhere to economic, social and environmental responsibility, gearing all activities towards sustainable outcomes for acceptance and trust from all stakeholders.

02 Anti-corruption and bribery

RATCH, its executives, employees and company representatives must not be involved with the giving, promise to give or the receiving of bribery and all forms of corruption and must comply with laws and regulations. The code of Conduct is applied with the Company's suppliers, contract holders and partners.

03 Transaction with the public sector

Review and ensure the completeness and accuracy of the information to be submitted to the government and regulators as well as cooperating with public sector in providing information and explanation and investigation.

04 Prevention of conflicts of interest

For making business decision, consider the Company's maximum benefits as allowed by laws and business ethics. All directors and employees must do their jobs transparently, without causing damage to the Company's reputation and credibility.

05 Compliance with laws

All business units and employees must strictly comply with local laws and relevant international laws. Rules and regulations that affect the operations must be incorporated in business strategies and operating process.

06 Appropriately giving/taking gifts, receptions and other benefits

Giving/taking of souvenirs and receptions must appropriately serve business purposes and must not significantly influence the decision making of executives, employees or outsiders.

07 Political neutrality

RATCH maintains political neutrality, committing no direct or indirect actions that support any political groups or politicians. RATCH however respects employees' freedom to exercise their own political rights, without being the Company's representatives

08 Anti-money laundering

RATCH strictly complies with anti-money laundering law and regulations, by avoiding involvement with financial transactions that may violate or evade the law. Suppliers' integrity is regularly reviewed and assessed.

09 Fair competition

Study and review the laws relating to competition and anti-monopoly laws before undertaking any business transactions. The transactions that may reduce or limit competition or cause unfair competition are prohibited.

10 Use of inside information

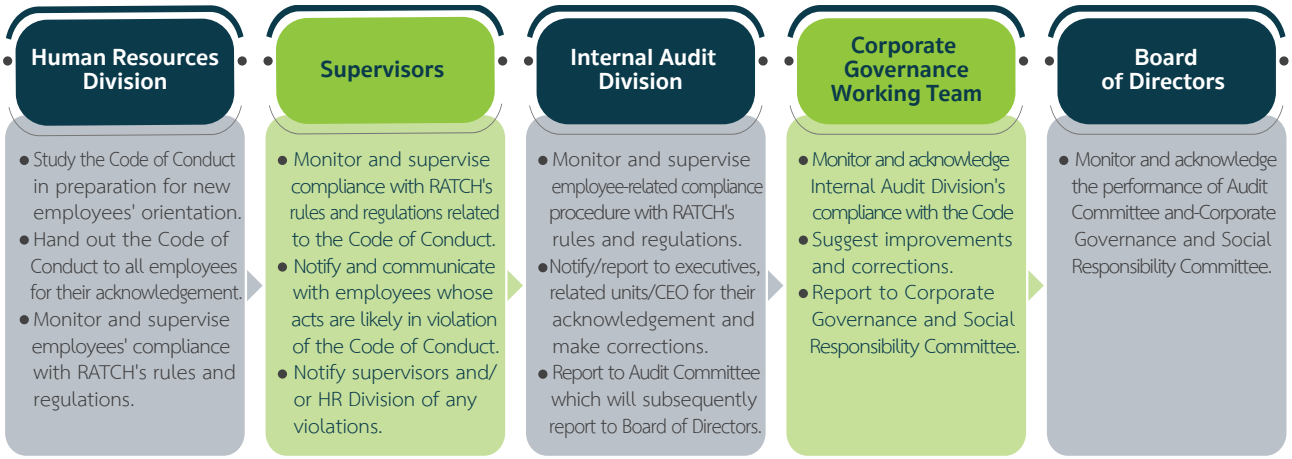
Protect business confidentiality. Do not use inside information for personal benefits; or use it for wrongful gains or to reduce RATCH's benefits. Disclosing internal information to outsiders or persons not involved is prohibited.

11 Overseas operations

RATCH is bound to comply with the laws and regulations of the countries where it operates, taking into account social, environmental, cultural and traditional contexts. The goal is to be a good local citizen without compromising the Company's Code of Conduct. Fair and equitable treatment of local labor is included.

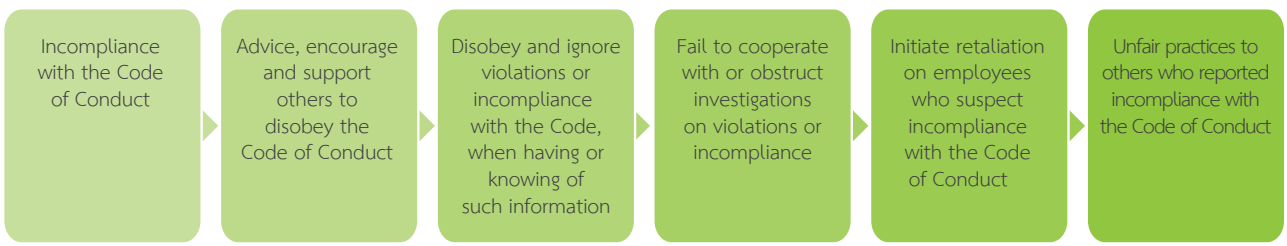
Compliance with Code of Conduct

Five units are responsible for supervising the compliance with the Code of Conduct, with detail summarized as follows:



Breaching Code of Conduct

Any violator or act breaching the Code may be subjected to disciplinary actions as defined in the Company's regulations or legal punishment if such acts violate laws. Such acts are defined as follows:



In 2018, no complaint or employees breaching the Code of Conduct.

Anti-Fraud and Corruption

RATCH emphasizes the importance of acts against fraud and corruption in line with good governance practices based on transparency and accountability. Such emphasis is a mechanism to protect risks on the organizational reputation and credibility. The Group's anti-fraud and corruption policy is implemented, requiring commitment from all relevant parties that they will not get involved with all forms of fraud and corruption, directly or indirectly. The policy demands all directors, executives and employees to study, understand and follow the guidelines prescribed in writing in the policy, the Code of Conduct and rules and regulations.

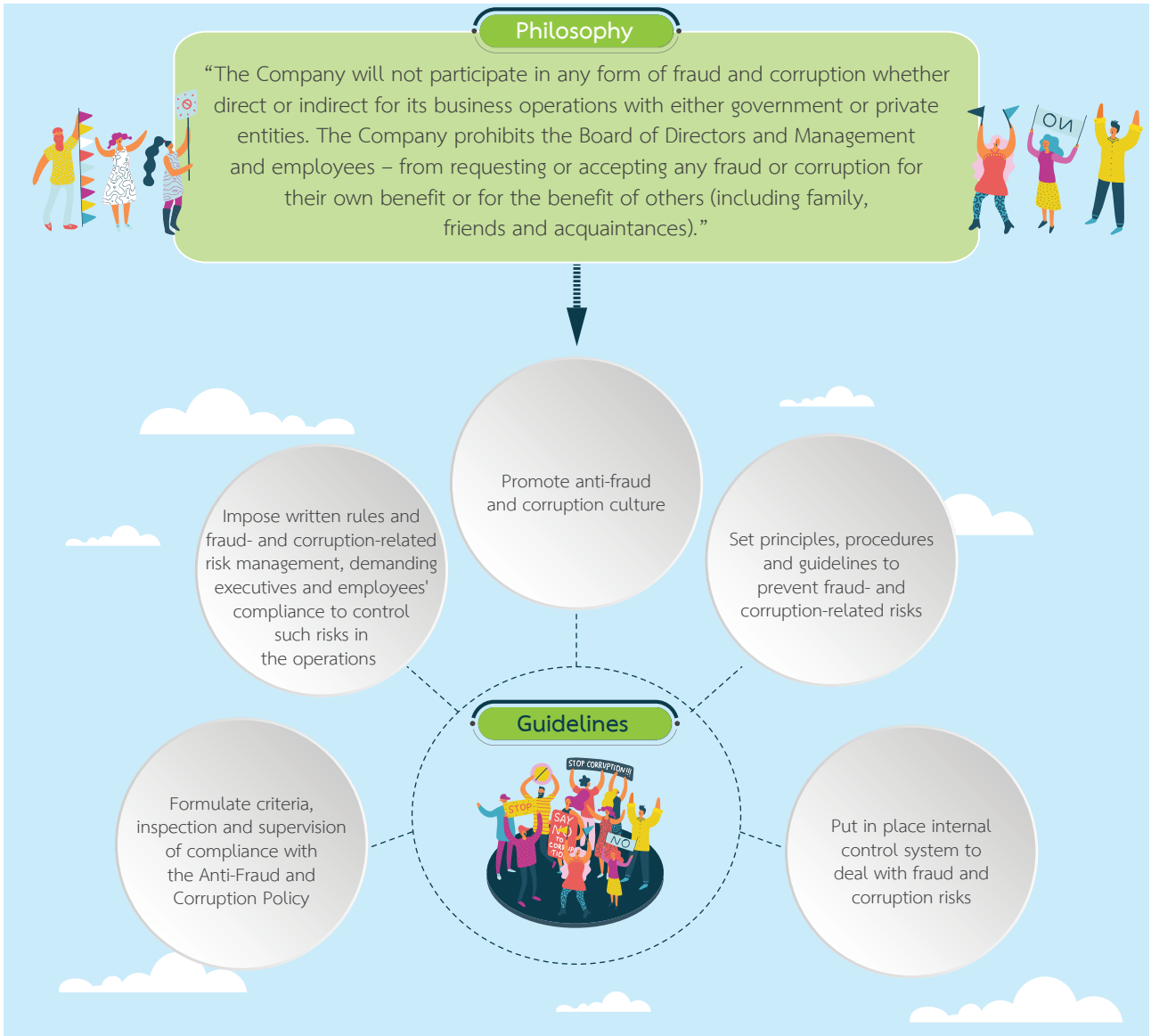
Declaration against corruption and CAC membership

RATCH took part in the declaration against corruption and was a certified member of Thailand's Private Sector Collective Action Coalition Against Corruption (CAC) in 2016. The Company has continually reviewed and improved its anti-corruption system. In December 2018, it requested verification to maintain CAC's certified membership. The result will be announced in the first quarter of 2019.

The declaration and CAC membership have strengthened RATCH's corruption prevention system. New measures were introduced while procedures were improved, to ensure the most efficient and effective defense. Significant actions are as follows:

Anti-Fraud and Corruption Policy

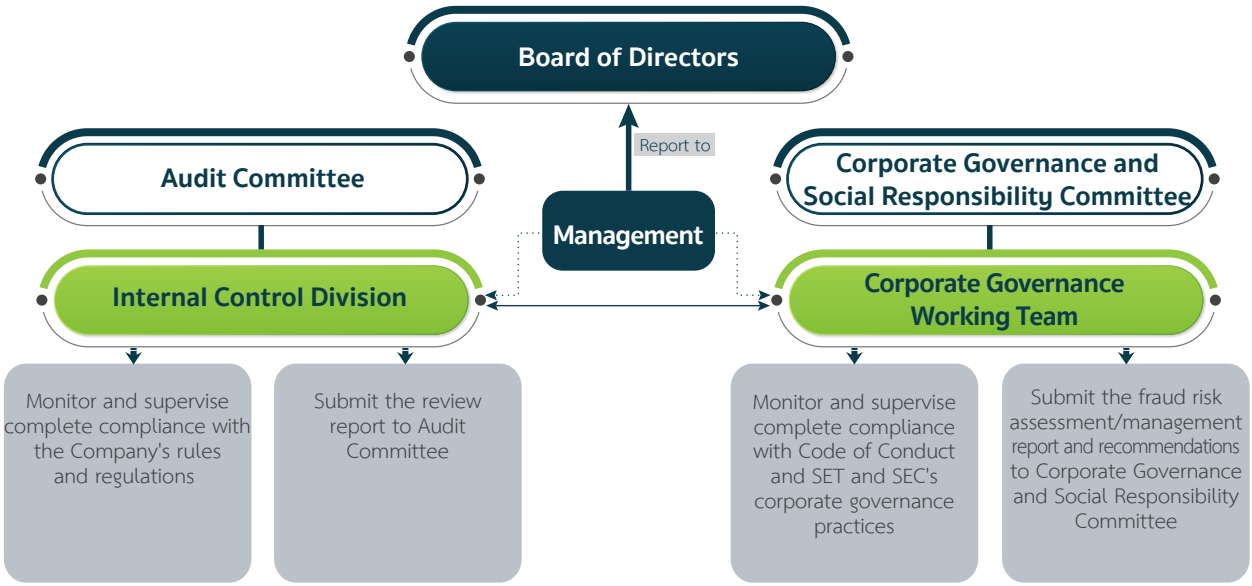
RATCH formulated the Group's Anti-Fraud and Corruption Policy and posted it on the Intranet as guidelines for executives and employees. The policy is also posted on the Company's website, for the acknowledgement of stakeholders. The guidelines involve the following key aspects:



Management and control of fraud and corruption

The Company assigned Internal Audit Division and the Corporate Governance Working Team to supervise, monitor and promote the compliance with the policy. They are supervised by the Audit Committee which is tasked to ensure the completeness of the anti-fraud and corruption procedures and report to the Board of Directors. Details of the control process are as follows:

- Review fraud-related risk management policy and procedure and evaluate the sufficiency of internal control, to prevent possible frauds and corruption.
- Set internal auditing criteria and operational supervision to incorporate actions against fraud and corruption, to ensure appropriate compliance with the Company's policy and international standards.
- Review the anti-fraud policy as well as communication and ensure the acknowledgement and compliance of all employees, outsiders and parties related to the business.
- Review the compliance with fraud- and corruption-related rules and orders and the Code of Conduct, relating to the giving and receiving of gifts and souvenirs, charitable donations, financial supports, receptions, fraud risk management, and etc.
- Set an annual plan to ensure if fraud- and corruption-related risk management is aligned with the prescribed criteria or measures.



Rules and mechanism of fraud risk management

RATCH laid down measures and guidelines in supervising and preventing fraud and corruption as well as assessing fraud risks, along with providing an internal control mechanism to review the operating process.

RATCH has defined rules and orders to prevent and suppress suspicious acts and ensures that executives and relevant employees understand and strictly comply with the rules and orders which are regularly reviewed and improved. The Internal Audit Division also supervises the compliance.

Performance in 2018

In 2018, RATCH focused on raising awareness and instill the integrity culture through continuous training and communications which were carried out by a working team representing all functions. Main activities are as follows;

- Testing employees' knowledge and understanding in the anti-fraud and corruption policy as well as compliance through the e-learning system. All executives and employees must score at least 80% to pass the test.
- Publicly announcing, issuing announcement and distributing notifications on anti-fraud and corruption policy and guidelines to business partners and stakeholders for their acknowledgement and strict compliance.
- Equipping all new employees with the company's anti-corruption policy at the orientation session.
- Announcing the "No Gift Policy" for the New Year 2019 season, involving gifts and souvenirs, to set an ethical operational standard. Business partners were notified of the "No Gift Policy", which was posted on the Company's website.

Anti-fraud and corruption training by Thai Institute of Directors (IOD)' qualified and proficient speaker to enhance executives and employees' understanding

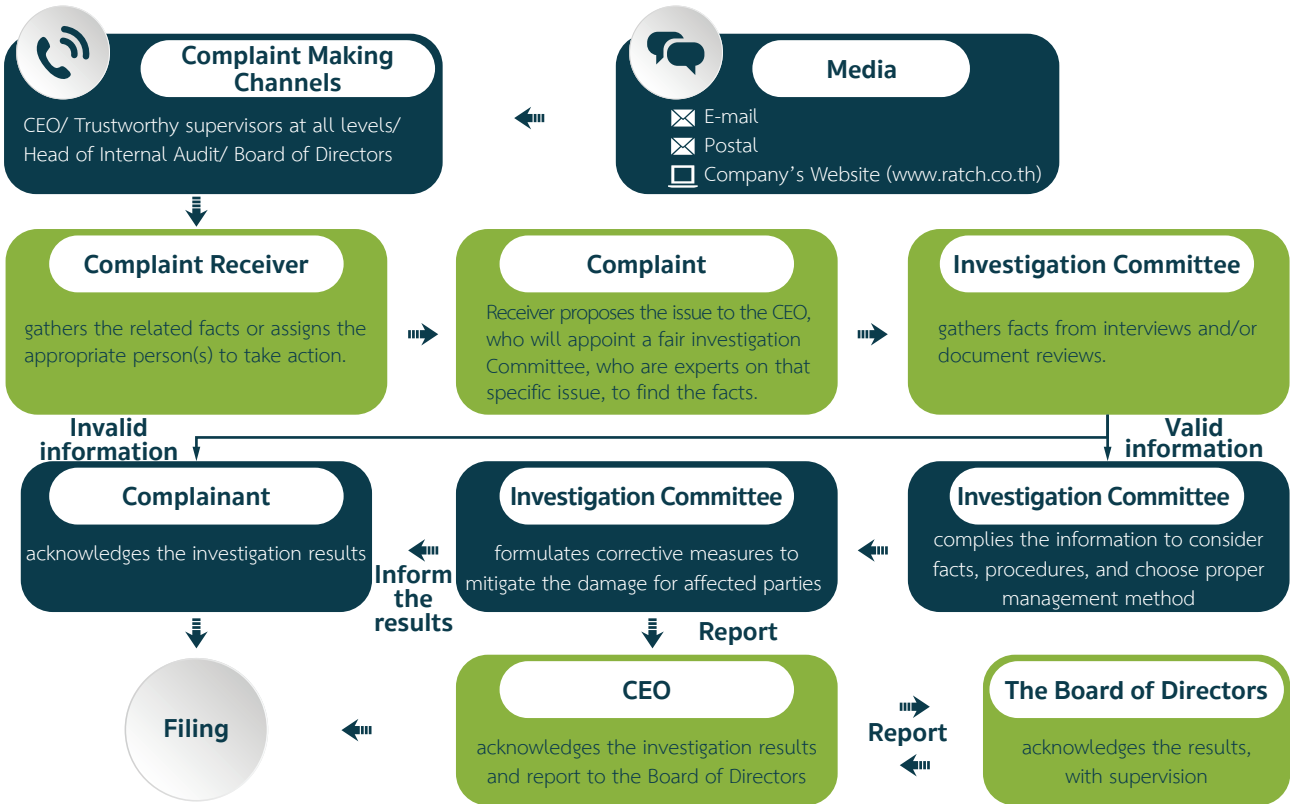
The exhibition displaying relevant information on the fighting against fraud and corruption arranged in the corporate events

Reporting and complaint channels

RATCH has established channels for reports or complaints relating to corporate governance from internal and external stakeholders.

- Internal channels : Employees can notify, report or complain against any unethical or unlawful incident or acts to the CEO, trustworthy supervisors, Internal Audit Division, Head or the Board of Directors. The complainants are protected against dismissal or punishment for providing relevant information, facts and evidences. Protection is also granted to complaint receivers who honestly complete their jobs. Such protection is included in the Human Resources regulations' appeal and complaint section.
- External channels : Stakeholders affected by the Company's operations or the acts of executives and employees which violate laws, the Company's rules and regulations and the Code of Conduct can file their reports to the Company. They will be entitled to the Company's protection.

Complaint handling process



Complaint channels

Complaint receivers	Alternative complaint channels	
	Email	Postal
Chairman or Board of Directors or directors	directors@ratch.co.th	Addressed to a complaint receiver at Ratchaburi Electricity Generating Holding PCL. 8/8 Moo 2 Ngam Wong Wan Rd., Bangkhen, Muang, Nonthaburi, 11000
CEO	ceo@ratch.co.th	
Supervisors	Supervisors' emails	
Head of Internal Audit Division	internalaudit@ratch.co.th	

RATCH has the provided measures against retaliation and impacts on the complainants, to assure them of protection and fairness in return for their reports which benefit the Company:

1) **Anonymous option:** Individuals filing reports or complaints or collaborators may opt not to disclose their names if considering such disclosure may affect their safety or cause damage. But with their names, RATCH can report the outcome or mitigate damage faster and more conveniently.
2) **Relevant persons' safety in focus:** RATCH keeps all related information confidential and will disclose it only when necessary to responsible persons, taking into account the safety of and damage to complainants and related individuals.
3) **Protection request:** The complainants worrying for their safety or troubles can request protection. Or RATCH may impose protection measures for the complainant on its own, if considering the issue may cause damage or infringe the complainants' safety.
4) **Damage alleviation:** The affected person's damage will receive rehabilitation through a proper and fair process.

In 2018, RATCH received no report or complaint concerning possible violation or breaching of the Code of Conduct or laws or misconducts.

Respect for Human Rights

"Human rights" are the basic rights of all individuals in living with dignity and liberty, freedom as well as equality, without any verbal and non-verbal infringements upon one another. RATCH pinpoints basic human rights principles in the Code of Conduct.

Human rights play a significant role in the power generation business' value chain and sustainability. With this concern, the Company has outlined the following management approaches:

Topic	Management approaches/ results
Suppliers' safety	• Set supplier and contractor screening criteria in line with the sustainability dimension and require their self-assessments. • Demand suppliers and contractors to follow the labour law and protect workers' rights and safety. • Identify safety and occupational health practices for suppliers, contractors and subcontractors performing tasks at Head Office and all power plants. • Monitor suppliers, contractors and subcontractors' workers compliance with safety rules • Demand suppliers, contractors and subcontractors to assess the risks of their jobs and outline preventive measures. • Organize safety training courses for suppliers, contractors and subcontractors. Results • Number of accidents at Head Office = 1 • Number of accidents at Ratchaburi Power Plant = 2 • Number of accidents at Tri Energy Power Plant = 0 • Number of accidents at NNEG Power Plant = 0 Additional details appear in Safety and Occupational Health of Employees and Suppliers, page 111

Topic	Management approaches/ results
Community's safety and quality of life	• Communities share their views on under-development projects' environmental impact study and assessment process. • Communities, through a tri-partite committee, take part in the inspection and monitoring of commercial-operating power plants' environmental management and other operations. • All power plants establish channels to communicate with communities, allowing their access to information and welcoming their opinions. Communications can be made through community relations teams, letters, phone calls, emails or online channels. • All power plants have put in place a mechanism to receive complaints and tackle problems in a systematic way. ISO 14001 Standards can be applied to solve problems, for example. • Emergency and crisis management plans are drawn up, including evacuation plan for communities around hydropower plants, with regular drills. • A public hearing to survey the attitudes, opinions and concerns of communities around power plants is organized on an annual basis. Additional measures following the washout of Xe-Pian Xe-Namnoy Hydroelectric Power Plant's Saddle Dam D: • The simulation of possible failures in a dam or a dam break analysis is extended to cover all saddle dams of reservoirs. • Emergency plans of saddle dams are prepared along with the evacuation plans for communities in the downstream areas. **Results** • Communities around the power plants in which RATCH has operating control filed zero complaint in 2018.
Employees' labor rights	• RATCH upholds the national labor law in treating and protecting all workers. These reflect in our practices which cover non-discriminatory employment opportunity, equal opportunity to all, work assignments according to ability, appropriate returns, zero forced labor, zero labor aged below 18 years, and zero illegal labor. • Employees are granted the freedom to form an employee welfare committee which represents all employees in submitting recommendations and requests. • RATCH is concerned about employees' safety and quality of life. Safety and occupational health risks are regularly assessed and the measures for coping with risks are also provided. **Results** • In 2018, employees submitted no recommendation or requests to the Company. Additional details appear in Safety and Occupational Health of Employees and Suppliers, page 108

Future plans

RATCH considers to add the Human Rights Risk Due Diligence throughout the supply chain of new power plants. It also plans to conduct an analysis on the impacts of such risks on stakeholders during the construction and the operation phases of all investment projects as well as prioritizing enterprise risks. The goal is to control and prevent infringements of human rights from the Company's activities as well as negative impacts on stakeholders and the Company's business. At the same time, these measures will help upgrade the quality of life of stakeholders throughout the value chain. The implementation was improved after the lesson learnt from the impact of washed out Saddle Dam D at Xe-Pian Xe-Namnoy Hydroelectric Power Plant.

Economic Performance

Key operating performance

Guided by the sustainable development approach, RATCH seeks to grow business and organizational values together with stakeholders in the business chain with environmental concerns. The Company realizes that all parties in the business chain are interdependent, whereby one party's growth will support related parties' prosperity.

Therefore, RATCH incorporated economic development principles in the Company's sustainable development policy enforced on March 28, 2018.

- Explore methods to develop and continuously improve all operating activities, by setting targets and means to evaluate, monitor and assess the sustainability of all activities.
- Develop and promote corporate innovation and technology as a business strategy, to create long-term corporate values and prosperity as well as benefits to society and the environment.
- Promote and support partners, suppliers and stakeholders in the business chain to operate in line with sustainable development approach.

RATCH's economic value in 2018

Item	Value (Million Baht)
Economic value achieved	
Sales and service revenue	36,184.14
Profit sharing from investment in jointly-controlled businesses	4,735.47
Interest income	213.40
Received dividend	186.78
Economic value distributed to stakeholders	
Fuel cost	30,027.00
Operation and maintenance fee	1,569.44
Cost of maintenance-related fixing and parts	1,457.18
Power plant insurance premium	371.36
Administrative expenses and payments	1,593.99
Financial cost	1,014.89
Taxes*	1,261.35
Local taxes**	19.50
Dividend paid to shareholders	3,480.00
Community and social investment	214.47
Economic value received by RATCH	
RATCH's profits	5,587.60

** Inclusive of corporate taxes, withholding tax, and the special business tax of RATCH and subsidiaries in Thailand*
*** Local taxes are the taxes collected by local administrative bodies to finance local development projects. Local taxes are subjected to local administrative bodies' consideration and are not sent to the government. They are house and building tax, local development tax, and signboard tax.*

Vision and growth steering strategy

Targets in 2023

- Capacity of 10,000 MW or equivalent
- Business value at 200 billion baht
- Thailand and overseas capacity of 50:50%
- Renewable energy ratio at 20% of the target capacity

Strategy

- Optimize current asset efficiency : Enhance profitability and add value of power plants and other assets
- Further develop new power and infrastructure projects in established markets : Thailand, Lao PRD, Australia, China and Indonesia
- Seek partners for business expansion of the power and infrastructure business in emerging markets : neighboring countries, ASEAN and Asia Pacific
- Increase value by diversifying to related businesses : infrastructure, fuel services, transmission and distribution and non-power businesses
- Strengthen organizational capability : upgrade to be High Performance Organization and knowledge sharing organization

Targets and performance in 2018

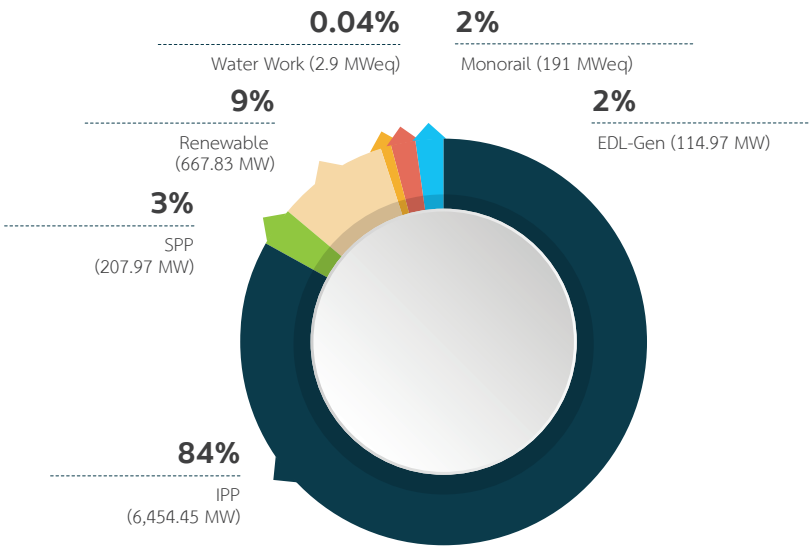
2018 Targets		Performance
Total capacity	= 8,250 MW equivalent	7,639.12 MW equivalent
Renewable capacity	= 10% of total capacity	8.74% of total capacity

RATCH targeted to expand capacity to 8,250 MW and the current capacity reaches 7,639.12 MW equivalent which included equivalent capacity from other businesses. The capacity from the electricity generating and other businesses is classified as follows:

Capacity from electricity-generating business = 7,445.22 MW	Equivalent capacity = 193.9 MWeq
IPP = 6,454.45 MW	1) Monorail Yellow Line and Pink Line projects =191 MW equivalent
SPP = 207.97 MW	2) Sandin Water Supply in Lao PDR = 2.9 MW equivalent
Renewable energy = 667.83 MW	
Capacity through equity investment in EDL-Gen =114.97 MW	

Power plants and infrastructure projects demand huge investments. The planning and decision-making process thus takes time. More importantly, such projects are mostly controlled by the public sector and carried out through a lengthy bidding process. However, RATCH moved on to achieve the target capacity of 10,000 MW equivalent in 2023.

Capacity by type of project



Investment expansion

In 2018, four new projects were launched along with the extension part of an existing project and the acquisition of the 20-percent stake in RATCH-Australia Corporation PTY LTD, leading to the sole ownership. Investments in 2018 are summarized as follows:

Country	Project	Project Info	Success factor
Thailand	1) NNEG Power Plant's extension phase	• Joint investment between Nava Nakorn Public Company Limited (30%), Global Power Synergy Public Company Limited (30%) and RATCH (40%) • Installed capacity of 59.98 MW and 10 tons of steam per hour. RATCH's equity capacity is 23.99 MW. • Project is located in Nava Nakorn Industrial Zone, Pathum Thani province. • Electricity is sold to customers in Nava Nakorn Industrial Zone. • Investment totals 3.105 billion baht. • Construction started in September 2018. • Commercial operation started for August 2020.	• EPC was signed for carrying out engineering design, machinery supply and construction of the expansion phase. • Development and construction funding was raised through the issuance of 6.4-billion-baht senior unsecured amortizing debentures.
Australia	2) Kemerton Power Station's extension part	• RATCH-Australia Corporation PTY Ltd, 99.99% owned by RATCH, is the operator. • Additional capacity from the installation of 7-MW diesel generators • Located in Western Australia • Project value of 10 million Australian dollar • Power is sold to Synergy under 10-year system restart service contract.	• Commercial operation under system restart service started on October 23, 2018.
	3) 20% equity acquisition of RATCH Australia PTY LTD (RAC) from its existing shareholder thus becoming RAC's sole owner	• Enter into the shareholder contract with Broadspectrum Pty Limited, the former shareholder to acquire 20% stake. • 1.321-billion-baht investment value • RAC's total generation capacity rose to 873.55 MW.	• Australian Foreign Investment Review Board approved the project on May 2018. • RATCH became the sole owner of RAC which is an investment arm for business expansion in Australia.

Country	Project	Project Info	Success factor
Indonesia	4) Asahan-1 Hydroelectric Power Plant	• RH International (Singapore) Corporation Pte. Ltd. acquired a 50% stake in Fareast Renewable Development PTE (FRD) which is 50% owned by Fareast Green Energy Pte. Ltd. • Asahan-1 major shareholders are FRD (53.21%), PT Pembangkitan Jawa Bali (36.61%), International Finance Corporation (5%) (RATCH's equity shareholding in the project is 26.61%.) • 180-MW installed capacity • Located on Asahan River, North Sumatra, Indonesia • Commercial operation in January 2011 • 30-year power purchase agreement through December 31, 2040 • Electricity is sold to PT PLN (Persero).	• RATCH's investment worth 81.89 million US Dollar or approximately 2,960 million baht was paid. • Registration of transferred shares was completed on December 6, 2018.
Lao PDR	5) Sandin Water Supply	• RATCH-LAO Services Co., Ltd. acquired 4,800,000 shares (40%) with 8,400 kip par value. • Investment is valued of 5.8 million US Dollar or 194.59 million baht. • Asia Water Sole Co., Ltd. Solely operates Sandin Water Supply project in Lao PDR. • Located in Naxay Thong district, Vientiane Capital, Lao PDR. • 50-year concession to supply water to Nampapa Nakhone Luang, with a production capacity of 48,000 cubic meters/day (Combined capacity of 2 phases).	• First installment equals to 10% or 580,000 US Dollar or 19,459,000 baht. • Final installment remaining 5,220,000 US Dollar or 175,131,000 baht will be paid within February 2019. • The first phase with capacity of 24,000 cubic meters a day started in December 2018. Capacity will be raised to 48,000 cubic meters a day in 2031.

Project construction management

In 2018, RATCH monitors and supervises seven investment projects to ensure that the construction and development of those power projects and monorail projects, with the combined capacity of 747.73 MW equivalent were progressed as planned, ensuring the commercial operation will meet schedule.

Power plants	Significant progress	Commercial operation schedule
1) Collinsville Solar Farm • Installed capacity of 42.5 MW • Holding 99.99% stake • Located in decommissioned Collinsville coal-fired power station in Queensland, Australia • 70% of power supplied to Braemar Power Projects Co., Ltd. for 12 years and 30% to Australia's Merchant Market	• Construction was completed. • Commissioning test is underway to prepare system and equipment for power generation, ensuring the plant's availability.	• April 2019
2) Berkprai Cogeneration Power Plant • Installed capacity of 99.23 MW • Holding 35% stake • Located in Berkprai Subdistrict, Ban Pong district, Ratchaburi province • Power supplied to Electricity Generating Authority of Thailand	• Five generators were completely installed. • Water Treatment Plant, Service Water System, Service Air System, Wastewater System, Natural Gas System and Demineralized Water System were installed for Commissioning Test in January 2019. • The construction of 115kV transmission line linking the power plant was completed to receive power for Commissioning Test. • The pressure control station and gas pressure regulating and metering station were built, ready to feed gas for Commissioning Test.	• 2019

Power plants	Significant progress	Commercial operation schedule
3) Xe-Pian Xe-Namnoy Hydroelectric Power Plant • Installed capacity of 410 MW • Holding 25% stake • Located in Champasak and Attapeu provinces, Lao PDR • Power is supplied to Electricity Generating Authority of Thailand (EGAT) and Electricité du Laos.	• The construction of three reservoirs was completed. • The power plant construction and installation of four turbines was developed as planned. • Saddle Dam D washout on July 23, 2019, causing construction suspension. • Incident investigation by Lao PDR's fact-finding committee is underway.	• 2019 (Forecast)
4) Fangchenggang Nuclear Power Plant II • Installed capacity of 2,360 MW • Holding 10% stake • Located in Guangxi Zhuang Autonomous Region, China	• Construction of Unit 3 and Unit 4 showed a progress as planned.	• 2021
5) Monorail Pink Line • Holding 10% stake • 34.5-km length, with 30 stations • From Khae Rai to Min Buri • Investment type is PPP Net Cost. • Concession period of 33 years 3 months • Construction period of 3 years 3 months • Operating period of 30 years	• The projects were progressed as planned.	• 2021
6) Monorail Yellow Line • Holding 10% stake • 30-km length, with 23 stations • From Lat Phrao to Samrong • Investment type is PPP Net Cost. • Concession period of 33 years 3 months • Construction period of 3 years 3 months • Operating period: 30 years		• 2021
7) Riau Combined-Cycle Power Plant • Installed capacity of 296.2 MW • Holding 49% stake • Located in Riau province of Sumatra Island, Indonesia • Power is supplied to Perusahaan Listrik Negara (PLN)	• Engineering, Procurement and Construction contract was signed. • Operation and maintenance contract was signed. • Construction started.	• 2021

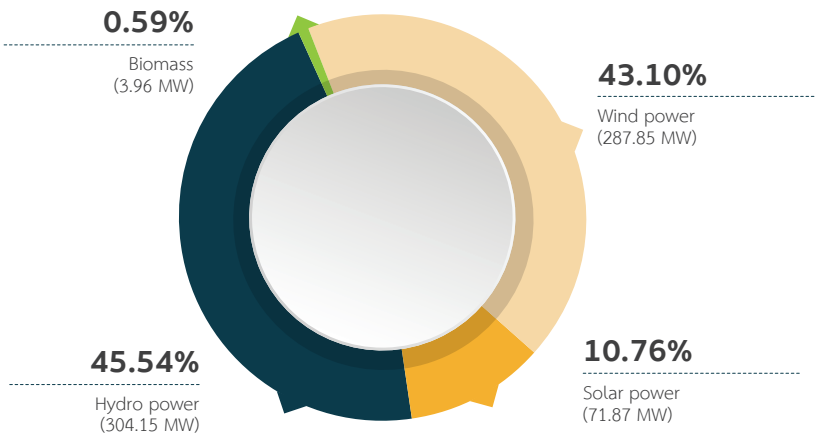
Renewable energy development

According to the strategic investment plan for 2023, RATCH maintains the renewable energy capacity target at 20 percent of 10,000-MW-combined capacity in line with a bright growth of renewable trend across the world. In Thailand, the government has a concrete policy to promote renewable energy; the renewable energy portion specified in the Power Development Plan is likely maintained at 20 percent. This offers an opportunity to grow the Company's economic value and satisfy the quest for clean and environmental-friendly power, aligned with the Company's intention to lower greenhouse gas emissions from its production process. Additionally, Thailand's economic growth trend focusing on railway development, the promotion of electric vehicles and the improvement of energy storage efficiency.

Performance in 2018

As of December 31, 2018, RATCH's renewable power generation capacity totaled 667.83 MW, accounting for 8.74 percent of total installed capacity. Of total, 145 MW belonged to two under-development and under-construction projects: a solar farm in Australia which is under commissioning test for commercial commencement in 2019; and Xe-Pian Xe-Namnoy Hydroelectric Power Plant in Lao PDR.

Renewable power capacity by type of fuel



Asset management

A key factor in achieving stable revenue and business value targets lies in the efficient management of power plants which are the Company's primary assets. The efficiency of the power plants' operation and maintenance must be improved to maintain the availability. In 2018, RATCH's commercial-operating power plants posted 6,860.35 MW in combined installed capacity, with 6,507.94 MW contractual capacity. RATCH's revenues totaled 45,083.54 million baht and the revenues structure can be categorized by the type of power plant as follows:

Contractual capacity and revenue from asset sorted by type of power plants

Type of power plants	Capacity			Revenue (from asset)	
	Installed capacity (MW)	Contractual capacity (MW)	% of total (%)	Revenue (million baht)	% of total (%)
IPP	6,073.30	5,736.80	88.15	42,370.46	94.0
SPP	149.25	149.20	2.3	556.60	1.2
Renewable power	522.83	506.98	7.8	1,304.51	2.9
Equity investment in EDLGen	114.97	114.97	1.77	186.78	0.4
Related business	-	-	-	665.19	1.5

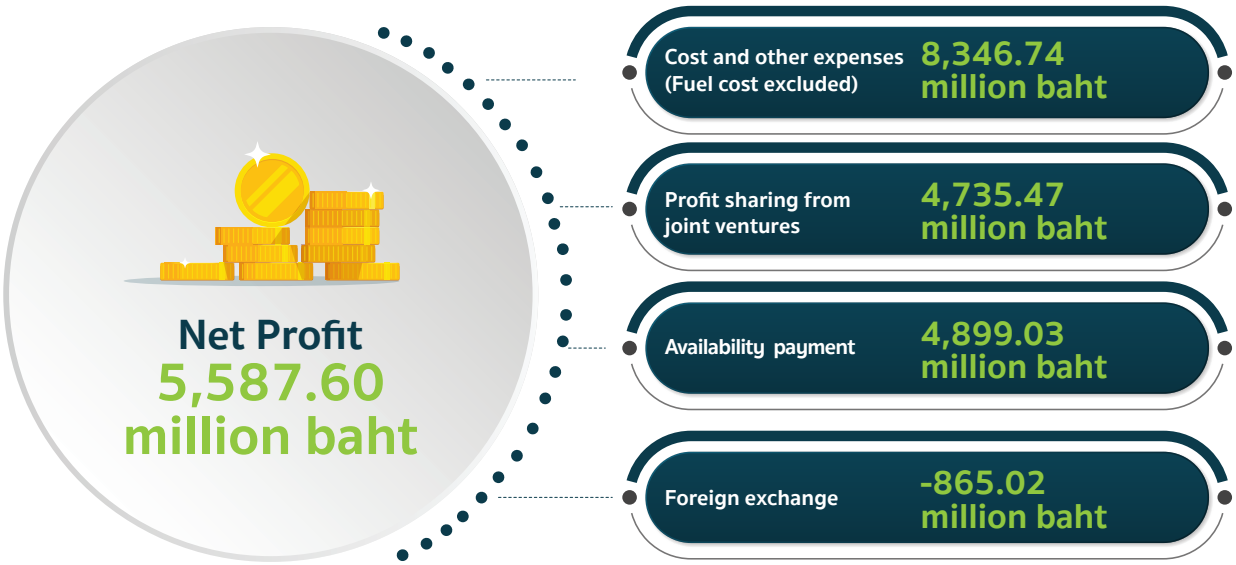
In 2018, RATCH's power plants generated and distributed a total of 42,846,612 megawatt-hours. They are based in locations as follows:

Country	Distributed power (MWh)	% of total
Thailand	26,488,052	62
Australia	1,269,657	3
Lao PDR	15,088,903	35

Financial performance

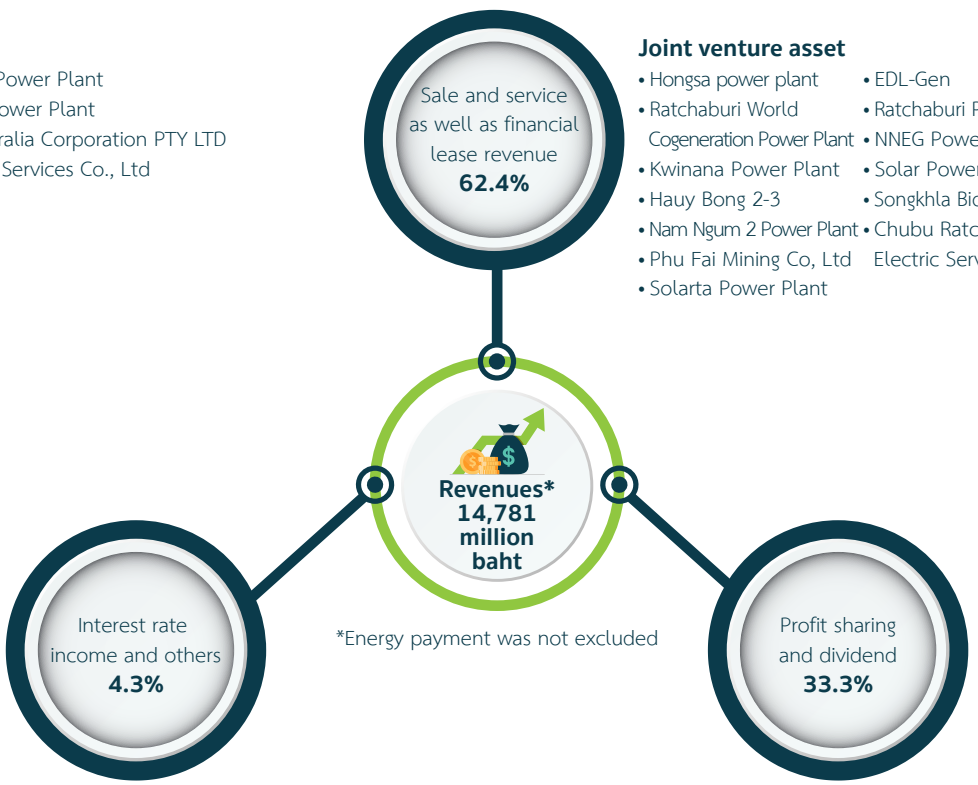
In 2018, RATCH reported continuous growth, with a 5,587.60-million-baht profit. Without the FX loss, the Company booked the 6,452.62- million-baht profit. The revenue for the year 2018 was at 45,083.54 million baht and the profit sharing from jointly controlled companies of 31.7% was boosted by Hongsa Power Plant's significantly improved performance. Total revenues reached 14,781 million baht, excluding energy payment which were offseted by the fuel costs.

Overview of 2018 Operating Performance



Revenue structure and key assets

Key assets
- Ratchaburi Power Plant
- Tri Energy Power Plant
- RATCH-Australia Corporation PTY LTD
- RATCH-LAO Services Co., Ltd



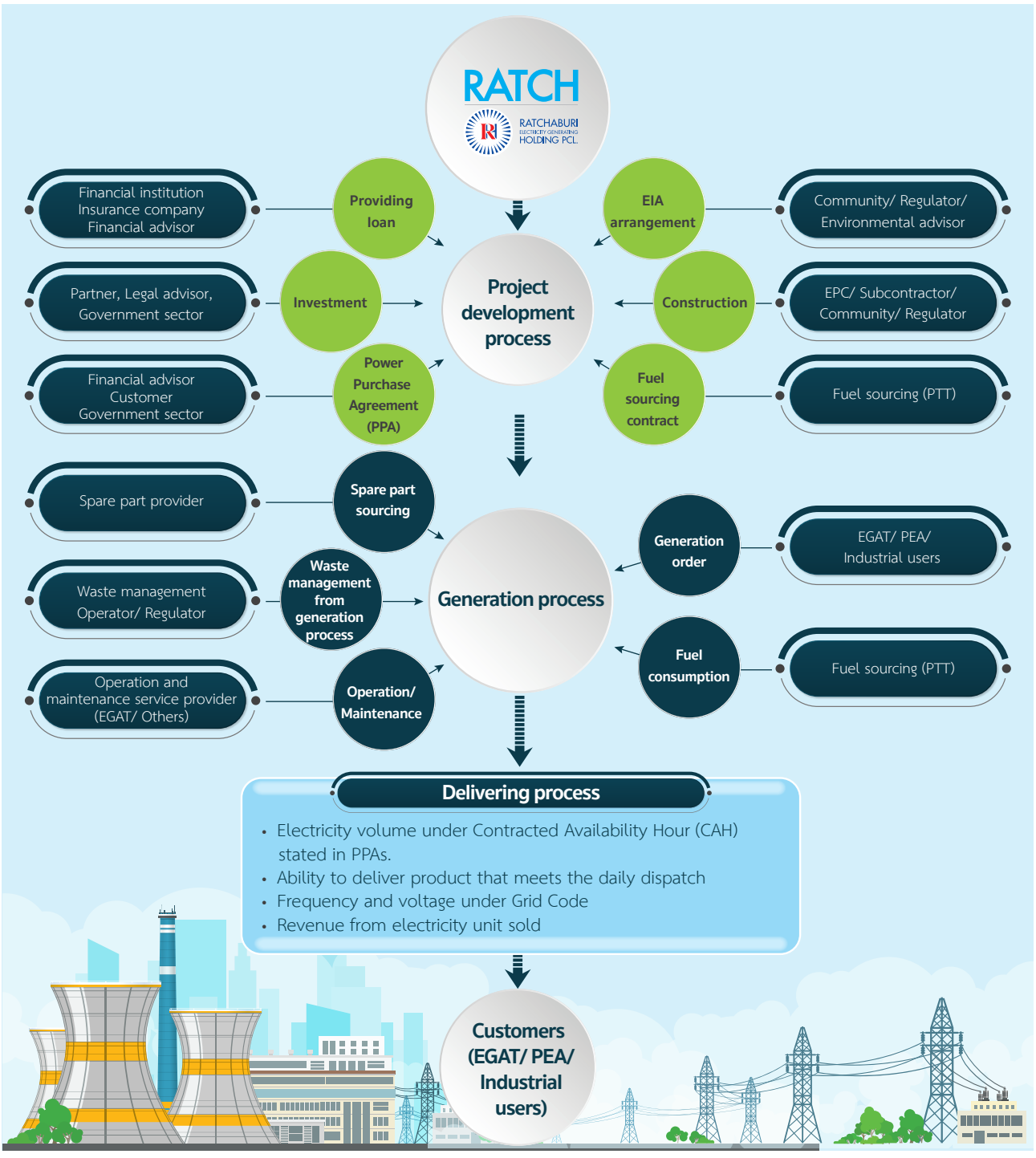
Joint venture asset
- Hongsa power plant
- Ratchaburi World Cogeneration Power Plant
- Kwinana Power Plant
- Hauy Bong 2-3
- Nam Ngum 2 Power Plant
- Phu Fai Mining Co, Ltd
- Solarta Power Plant
- EDL-Gen
- Ratchaburi Power
- NNEG Power Plant
- Solar Power Power Plant
- Songkhla Biomass Power Plant
- Chubu Ratchaburi Electric Services Co., Ltd

*Energy payment was not excluded

Supply Chain Management

Business operations involve various stakeholders who play a role in driving the organization towards success and prosperity. The Company realizes the importance of the management of stakeholders in the supply chain. Guidelines of stakeholder treatment is included in the Company's Code of Conduct, covering shareholders, employees, creditors, business partners, suppliers, competitors, the public sector, community, society and the environment. (Find more information on the Company's website: www.ratch.co.th.)

For power generation business, RATCH core business, stakeholders involving in the supply chain are listed below:



Supply chain management guideline

The Company's supply chain breaks into three processes: 1) Project development 2) Generation management 3) Distribution and delivery. Each process involves different stakeholders. In the supply chain, business partners, suppliers, communities and the environment are the key variables to the Company's success. The guidelines to deal with the aforementioned stakeholders are as follows:

Business partners relationship management

The strategy on business partners is one of five significant parts of the Company's long-term strategy, as business partners are a key factor towards the corporate goal to produce 10,000 megawatts equivalent in 2023. The relationship with business partners is mostly through joint ventures. Both parties share the common goals and synergize their expertise, experience and strengths, to achieve the shared goal and fair benefits. The Company strives to forge relationship with strategic partners who can enhance the Company's strengths and competitiveness and help expand businesses to new markets, for the sustainable growth of both sides.

Criteria in business partner selection

The Company employs the following factors to consider and select business partners:

Guideline for business partners relationship management

Handling of significant issues on business partner relationship management

Issue	Solution
Conflict of interest	• Define clear procurement conditions and procedure. • Segregate responsibilities. • Put in place a joint decision making process for a project's success.
Operational and investment policy	• Assess differences in operational policy. • Define consistent investment targets for the short and long terms, to support each other.
Responsibility	• Clearly define both parties' duties and segregate responsibilities.
Conflict resolution	• Clearly define pre- and post-project development expense management. • Clearly define the partnership termination clause. • Define conflict resolutions, for a solution that benefits all parties.

Performance in 2018

- Nurture relationship with existing business partners through formal and informal patterns.
- Explore new business partners to raise domestic and international competitiveness.
- Study and develop a work process as well as preparing a project development team, to carry out joint investment with business partners.

Suppliers relationship management

Suppliers vary accordingly to their products and services. Vital to the Company's supply chain, they supply products and services necessary to continuously and sufficiently support the operations. Key suppliers are:

- Suppliers of products such as fuels, parts and other necessary items.
- Suppliers of services such as EPC contractors, operation and maintenance operators and other contractors.

The Company draw up guidelines for supplier relationship management with relevant practices specified in the Code of Conduct:

Supplier relationship management approach

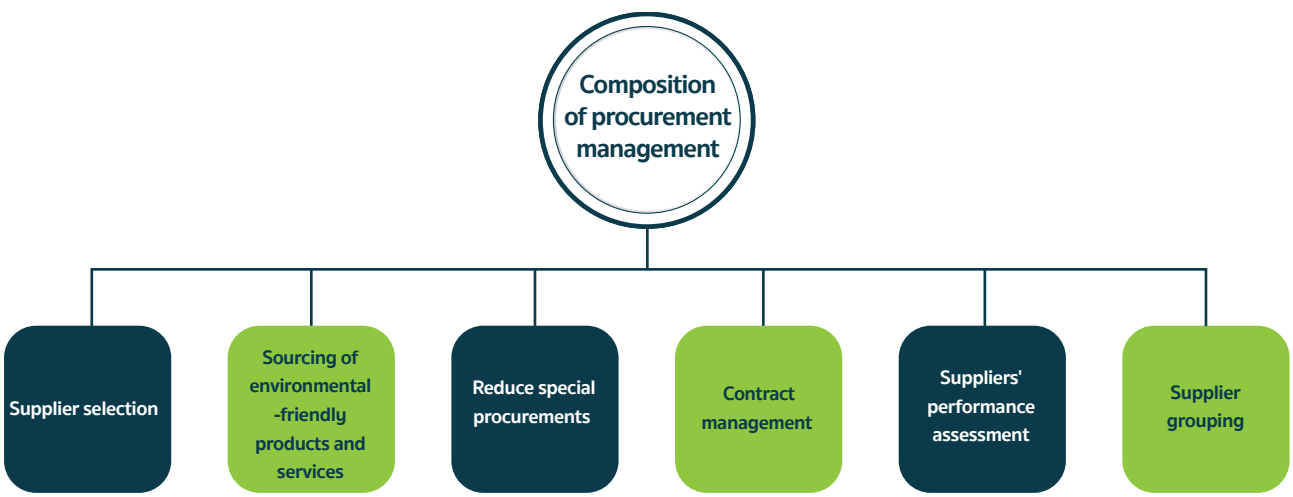
The Company works closely with suppliers in all processes, from selection, supervision, monitoring and cooperation enhancement to strengthening relationship.

1. Procurement management

Procurement is a key mechanism to win suppliers that can respond to the Company's needs and expectations and support each other for sustainable growth. Meanwhile, it is a mechanism in managing cost efficiency, preventing frauds and corruption, as well as raising the Company's competitiveness and business stability.

The Company adheres to "procurement rules", to ensure a transparent, fair, equitable and accountable practice which can also prevent frauds and corruption.

Composition of the Company's procurement management



1.1 Supplier selection

Suppliers' qualifications determine the Company's process to screen and select desirable suppliers. The criteria covering environmental, social and corporate governance dimensions carry a 10 percent weight of the 100-point score. The remaining score is based on the technical and financial bids.

Among 198 suppliers working with RATCH's Head Office in 2018, 159 suppliers (accounting for 80.3% out of the entire suppliers) were selected by qualification assessment (there were 103 existing suppliers and 56 new suppliers.) and 39 suppliers were not accessed their qualification. For all new suppliers (100%) that passed qualification assessment process relating to their social, economic, environment and governance, they were all informed of the qualification assessment results, along with recommendations for future improvement and a better chance to work with the Company in the future.

This implementation has been expanded to subsidiaries, including Ratchaburi Power Plant and RATCH Australia Corporation PTY LTD.

Supplier qualification assessment result in 2018 (Head Office)

Assessment points	No. of suppliers passing the criteria (From all 159 suppliers in the screening process)			
	Existing suppliers	New suppliers	Total	%
Corporate governance dimension				
1. Integrity/transparency/responsibility				
• Zero corruption history	103	56	159	100
• No history of desertion	103	56	159	100
2. Conflict of interest				
• Executives/directors hold no position in the companies that submit bids	103	56	159	100
Environmental dimension				
3. Environmental management and responsibility				
• Certified for environmental standard or environment practices (ISO 14000/EIA)	20	3	23	14.47
• Compliance with laws or environmental regulations or environmental management procedures	103	56	159	100
Social dimension				
4. Labor, community and social care				
• Zero employment of children or illegal workers	103	56	159	100
• Respect workers' human rights/No infringement to basic human rights	103	56	159	100
• Operate with social responsibility, causing no impact to surrounding communities	103	56	159	100

Ratchaburi Power Plant's supplier qualification assessment result

According to the supplier qualification assessment based on environmental-stewardship conditions specified in the 2018 TOR, there were four new suppliers passing the assessment, out of the entire 31 suppliers.

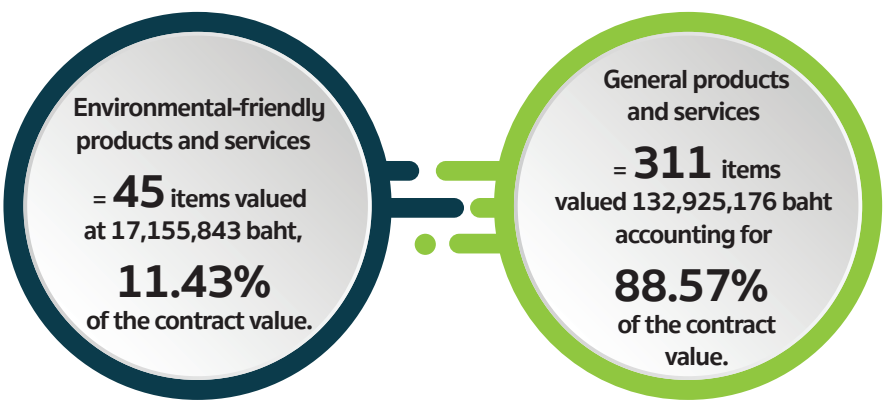
Supplier assessment results by RATCH Australia Corporation Pty Ltd

Assessment Issues	Assessment results and supplier's operation
Environmental aspect	
Setting environmental-stewardship conditions in the TOR or the contract • Environmental management standard of suppliers or contractor must be on par with or stricter than the ISO 14001 requirements and other relevant regulations. A plan to improve operations must be provided.	• These conditions were implemented to 439 suppliers and subcontractors.
Partners' environmental management, including waste, wastewater and air pollution management.	• TWPS, an operation and maintenance service provider of RAC complied with the requirements and TWPS has assigned all subcontractors to comply with these requirements.
Partners' compliance with environmental aspect of EIA requirements	• All RAC partners complied with laws and EIA requirements.
Partners awarded ISO 14001 certification	• There were 16 suppliers certified (As a key partner of RAC, TWPS was also certified.)
Partners establishing environmentally-friendly practices, or having product and machine technology controlling the environmental impacts to the environment.	• As the key partner, TWPS has partnered with RAC to bring a variety of technologies for improving the environmental performance at all power plants, including the improvement of the generation process at Townsville Power Plant. Its open cycle was changed into the combined cycle by the installation of Heat Recovery Steam Generator (HRSG). Then, heat was reused for generating electricity with steam turbines which is a way to improve generation efficiency.
Social responsibility aspect	
Partners setting guidelines and procedures for supervising employees/ workers or subcontractors on human rights and fair practices for labor, child labor, foreign workers and sexual harassment	• All suppliers complied with law and requirements.
Partners providing welfare for employees or contractors and complying with labor laws, hearing a complaint and managing labor impacts.	• All suppliers complied with law and requirements.
Partners with awareness on safety, health and work condition of employees or contractors.	• All suppliers complied with law and requirements.

1.2 Sourcing of environmental-friendly products and services

The Company promotes the use of environmental-friendly products and services. The Company hence seeks to procure products and services which are certified for Thai or international standards such as UK environmental standard and ISO 14001; products which are labeled energy-saving devices or receive Green Label and Carbon Label; biodegradable products; or services which are environmentally certified.

2018 procurement ratio of environmental-friendly products and services and general item at the Head Office



Comparative sourcing of environmental-friendly products and services in 2017-1018 at Head Office

Products and services	2017		2018		Change (%)
	No. of items	Value (baht)	No. of items	Value (baht)	
Environmental-friendly items	95	33,164,776	45	17,155,843	• The number of items decreased 52.63%. • The value decreased 48.27%.
General items	544	93,952,156	311	132,925,176	• The number of items decreased 42.83%. • The value increased 41.48%.
Total	639	127,116,932	356	150,081,020	• The number of items decreased 44.29%. • The value increased 18.06%.
Ratio of environmentally friendly item to general items	14.87	26.09	12.64	11.43	• The number of items decreased 15.00%. • The value increased 56.19%.

Remark: A decrease on environmental-friendly item sourcing because the product certificate of suppliers were expired and they are waiting for the new certificate.

1.3 Control special procurements

The Company applies four procurement methods:

- Price agreeing for products or service with a value of no more than 100,000 baht.
- Price inquiry for products or service with a value of no more than 5,000,000 baht.
- Competitive bidding for products or service with a value above 5,000,000 baht.
- Special method for urgently-needed items, the specific products and services or those requiring special expertise, with a value of 100,000 baht or above.

The value of each method and authorized persons are clearly specified, to ensure a transparent and accountable procurement process.

The Company focuses mainly on the first-three procurement methods and seeks to minimize special method to create fair, transparent competition and zero-corruption. The procurement process, procedure and period have been continuously improved as well as the supplier database which should cover as many products and services relevant to the operations as possible.

In 2018, special procurement decreased 54.56% from 2017, valued at 32,321,025 baht.

RATCH's procurement through special methods during 2017-2018

Power plant	2017		2018		Change (%)	
	No. of contracts	Value (Baht)	No. of contracts	Value (Baht)	No. of contracts	Value
RATCH	46	59,233,142	51	26,912,117	+ 10.87	- 54.56
The Group	149	146,952,490	61	98,204,195	- 59.06	- 33.17

Remark: The Group refers to Ratchaburi and Tri Energy Power Plants.

Overall product and service procurement of RATCH Group
(Head Office/Ratchaburi Power Plant/Tri Energy Power Plant)

Procurement method	2017				2018				Change			
	No. of sourcing		Value (Milion baht)		No. of sourcing		Value (Milion baht)		No. of sourcing		Value (Milion baht)	
	The Group	RATCH	The Group	RATCH	The Group	RATCH	The Group	RATCH	The Group	RATCH	The Group	RATCH
Price agreeing	202	1,157	5.5	98.3	160	977	5.0	91.3	- 42	- 180	- 0.5	- 7.0
Price inquiry	27	1	37.5	8.8	22	17	25.1	21.8	- 5	+ 16	- 12.4	+ 13.1
Competitive bidding	3	1	18.5	4.9	7	5	85.8	33.4	+ 4	+ 4	+ 67.4	+ 28.5
Special methods	46	149	59.2	147.0	51	61	26.9	98.2	+ 5	- 88	- 32.3	- 48.7

Remark: The Group refers to Ratchaburi and Tri Energy Power Plants.

1.4 Contract management

Contracts are the document legally binding the Company and suppliers. In the procurement process, the 4th step concerns entering into contracts, to confirm the agreement and acknowledgement of conditions which depend on the type, nature and boundary of such procurement as defined by the Company.

Entering into a contract and contract management involves the legal and the procurement units in the formulation of criteria and conditions, which must conform with the Company's regulations and relevant laws.

Contract management starts after the contracts are signed and it will continue until the products or services are inspected and delivered. The procurement section's operations cover the following areas:

Performance in 2018

- None of suppliers of the Company broke the contracts.
- Eight suppliers were fined, accounting for 5.88% of all 136 suppliers.

1.5 Supplier assessment

After the products or services are delivered, the procurement section and the owner will assess the supplier's performance. The assessment focuses on the supplier or contractor's work quality, quantity, delivery and operational practices against specified criteria. Some suppliers pass the assessment while others do not. The Company will send the latter group recommendations for improvement. If the recommendations are turned down, the particular suppliers will be put on the blacklist. Suppliers passing the assessment criteria will be added to the Company's supplier list, eligible to bid for the Company's future contracts.

Performance in 2018

- 136 suppliers were assessed.
- 2 suppliers failed in the assessment and both were recommended for improvement.
- None of supplier was put on the blacklist.

1.6 Supplier grouping

Developing and updating supplier database is an essential part after the assessment. The database assists the supplier screening, to source the qualified suppliers and products and services that match the Company's preferences. Such will help reduce and control risk on the Company's cost.

Suppliers can be divided by:

- Contract period, whereby existing and new suppliers are segregated.
- Procurement value
- Qualification test result
- Work assessment
- Type of products and services

In 2018, suppliers working with the Company and subsidiaries can be classified accordingly to the above criteria as follows:

Company	Number of Supplier in 2018														
	Contract period		Procurement value				Qualification assessment results			Work assessment			Green products and services		
	New Suppliers	Existing Suppliers	≤1 million baht	1-5 million baht	>5-10 million baht	>10 million baht	Completely qualified	below standard	Fail	Pass	Improve	Blacklist	Products	Services	Total
RATCH	56	103	136	17	2	4	23	136	-	134	2	-	9	7	16
The Group	138	777	209	34	6	2	-	-	-	-	-	-	-	-	-

Remark: The Group refers to Ratchaburi and Tri Energy Power Plants.

2. Supplier risk management

The Company emphasizes supplier risk management, to prevent possible impacts on the Company's operations and reputation. The Company takes into account internal and external risk factors that may cause impacts in economic, social, environment and corporate governance dimensions and formulates risk prevention measures. The risk factors, probability and possible impacts are assessed on an annual basis. The assessment in 2018 is summarized as follows:

Risk factor	Impact dimension	Probability	Impact severity	Controlling measures	2018 results
Collusion and conflicts of interest	Corporate governance	Low	High	• Define supplier qualification assessment criteria • Check information through documents and questioning of individuals in the industry • Verify certification letters • Put them in the blacklist	None
Suppliers' financial status and stability	Economic	Low	Low	• Collateral/Bank Guarantee • Financial statements over the past two years	No suppliers having financial instability
Suppliers with high-value contracts	Economic	Low	High	• Collateral • Inspect compliance with contract and delivery • Set a condition to make payment in instalments, based on work progress • organize a company visit	There were 14 suppliers with the procurement value of more than 5 million baht: - 6 suppliers of RATCH - 8 suppliers of RGCO
Suppliers that produces/distributes non-substitutable products or provides special services	Economic	Low	High	• Arrange long-term Contractual Service Agreement • Buy insurance	None
Job abandonment	Economic	Low	High	• Define compensation • Confiscate collateral • Put on the blacklist	One work abandonment by supplier of RGCO.
Failure to meet products and services delivery schedule	Economic	High	High		8 suppliers of the Headquarters failed to meet the delivery deadline.
Products or services that do not meet the established standards	Economic	Low	High		None
Employment of child labor/illegal workers	Social	High	High	• Define supplier qualification assessment criteria • Arrange a company visit • Report workers' names, personal history, photocopy of their ID • Documents for migrant workers • Put on the blacklist	No supplier employing child labor/illegal workers
Violation of human rights or use of forced labor	Social	Low	High		No supplier committing abuse of human rights or use of forced labor.
Safety and occupational health of workers	Social	Low	High	• Assess safety-related risks prior to start of work • Require use of safety equipment necessary for workers	• 4 suppliers of the Head Quarter passing risk evaluation. • All subcontractors of RGCO passing risk evaluation.
Subcontractor management by supplier	Economic/ social	Low	High	• Assess safety-related risks prior to start of work • Set ESG conditions on subcontractors in the contract of main suppliers • Monitor compliance with the Company's safety measures	• No subcontractors at the Headquarters • RGCO having EGAT as a suppliers requested all subcontractors to comply with the established requirements.
Environmental management and waste management	Economic	Low	High	• Set conditions in the contract and monitor compliance • Arrange a company visit • Specify it as a part of the supplier qualification assessment criteria • verify the factory license as per the type permitted by Department of Industrial works.	• There were 4 suppliers having environmental management and waste management conditions in the contracts. • 2 visits to supplier's site by RGCO.

2.1 Power plant's supplier risk management

Ratchaburi Power Plant, which is the Company's main assets, emphasizes the management of suppliers' risks, to avoid and prevent impacts that may lead to outage and damage to credibility and reputation. Such can affect communities' trust and acceptance. The power plant's risk assessment covers the following significant points:

- Violation of human rights and use of illegal labor
- Realization in safety and environment
- Assessment or work-related risks and preventive measures
- Monitoring of contractors' performance

In 2018, contractors were evaluated 39 times and 90 items needing to be improved.

Items to be improved (Sample)	Solution
It was found that there was no mat at an oil tank for preventing leakage, with no responsible persons and using status.	• Post the clear signs • Provide a mat preventing leakage
Some workers did not wear personal protection equipment (PPE) for prevent dangers.	• Inform workers to wear PPE before entering work area.
It was found that the scaffold was installed without structure surrounds an area.	• Inform all workers of the additional installation of structure surrounds and reserve the area where the scaffold were installed.

2.2 Suppliers' safety, occupational health and environment management

Safety and occupational health measures are vital tools that the Company and all power plants apply in managing risks relating to suppliers or contractors. At power plants, risks related to suppliers or contractors' operation are always assessed prior to the start of work and during the process, to set safety and occupational health measures for the operators. Compliance with the measures is monitored throughout the work period.

The Company also specifies a clause in the contract, requiring suppliers to define safety and occupational health measures for their operators and subcontractors'. The requirement, accepted by suppliers, is aimed at preventing injuries and loss from accidents or emergency incidents and illness. Power plants and suppliers actively work together in ensuring safety. For instance, Ratchaburi Power Plant and Electricity Generating Authority of Thailand (EGAT), which provides operation and maintenance service for the power plant, jointly set the following safety guidelines for subcontractors' operators:

- Assessment of risks on safety, which is specified in the Term of Reference awarded to subcontractors.
- Tackling problems through a participatory process involving the power plant, supplier and subcontractors. A joint meeting is held when problems (accidents) arise, to find the cause and a solution as well as, as guided by OSHAS 18001 standards, to prevent a recurrence.
- The Company emphasizes and exercises safety measures appropriately and sufficiently, resulting in satisfactory safety-related indicators.

2.3 Forging long-term strategic relationship with suppliers

The following actions were implemented in 2018:

1) Promote the forging of suppliers' awareness in fraud and corruption.

In 2018, the Company continued working with suppliers to raise awareness on fraud and corruption through the following approaches:

- Screen suppliers through the assessment of their good governance qualification.
- Notify suppliers of the Company's anti-corruption policy guidelines and policy, after the signing of contracts.
- Notify suppliers of the Company's gift giving and receiving guidelines and the No-Gift Policy for New Year.

2) Support innovation development with suppliers: The power plant together with EGAT, the operation and maintenance service provider, jointly create innovations to facilitate the operations, reduce expenses and reduce environmental impacts. Actions completed in 2018 were as follows:
   - Improve the energy-consuming system, which helped Ratchaburi Power Plant save expenses by approximately 136 million baht in 2018 (as of September).
   - Invent innovation to facilitating works .
   - Improve the efficiency of O&M devices/methods and process
   - Develop the system to prevent the damage of O&M equipment
   - Improve the efficiency of the water usage process, use of chemicals, and the wastewater management process, and to reduce environmental impacts.

Innovations of the power plant and suppliers in 2018

- Lowering inlet air temperature to enhance combustion efficiency. As a trial, the system is installed at Ratchaburi Thermal Power Plant's Unit 1. This is the gas turbine efficiently enhancement by lowering temperature before hitting Air Inlet Filter at the plant. When the temperature rises and the capacity of Gas Turbine declines, the power plant cannot reach the contractual capacity. As a result, Ratchaburi Power Plant decided to give EGAT- a supplier- the financial support to conduct a research for improving gas turbine capacity to reach the monthly contractual capacity based on the following methodology:
  1) Install the system to decrease air temperature before hitting Air Inlet of the gas turbine.
  2) Create the model to find out the variable that affect the temperature decreasing efficiency.
  3) Calculate the capacity and condition of Air Inlet Filter based on data before/after the decrease of temperature and its conditions.
- Inventing an underwater vehicle to take photos of the power plant's underwater areas such as the solid contact unit (SCU), confined space or risky spots. The photos efficiently helped extend maintenance schedules and save maintenance expenses. For instance, a survey of SCU's sediment showed the sediment stayed at a low level, allowing the plant to further use SCU. The maintenance round was thus extended from three months to six months.
- Wet Pack: The innovation was created when Ratchaburi Thermal Power Plant received the reserved shutdown order which lasted a long period. Maintenance service was then shifted from Preventive Maintenance to Exercise Maintenance, when operating systems were exercised periodically. The spots and equipment to be tested were specified along with testing frequencies. Such process kept machinery ready for immediate resumption upon order. Ratchaburi Thermal Power Plant is now the learning center on Wet Pack process for Bang Pakong Power Plant.

3) Visiting suppliers' premise

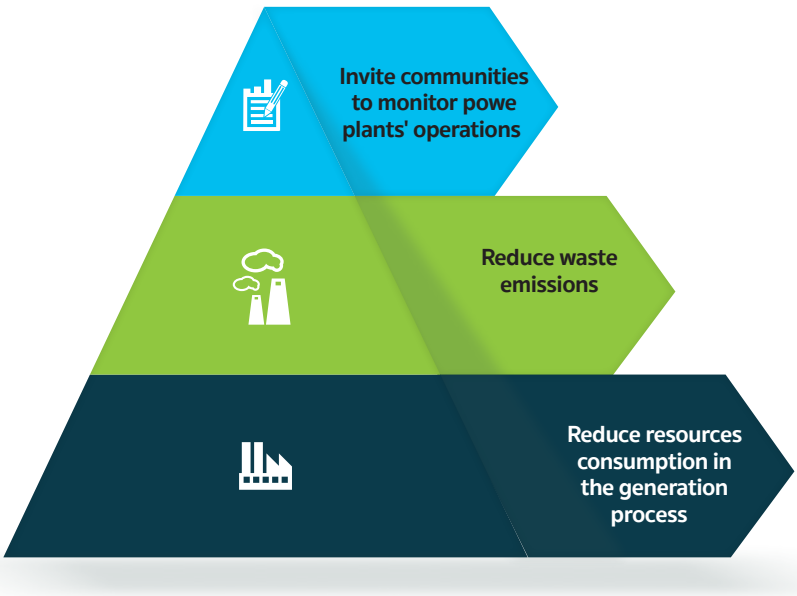
In 2018, Ratchaburi Electricity Generating Co., Ltd.-RATCH's subsidiary- monitoring two suppliers' operation to be in line with the ISO 140001: 2015. The supplier is the waste management operator of the company in order to study their waste disposal and management approaches:

- Better World Green Public Company Limited and its subsidiaries are the suppliers of Ratchaburi Power Plant since 2015. Its business engages in the industrial waste disposal and management on both hazardous and non-hazardous wastes. In details, hazardous wastes are processed into fuel for power generation at a waste-to-energy power plant to add value to its industrial waste management business. Wastes received from Ratchaburi Power plant included battery, electrical appliances and plastic foam etc.
- Mahachai Ake Sirioil Co., Ltd. is the supplier of Ratchaburi Power Plant since 2015. Its business engages in waste disposal, classifying and processing. Wastes received from Ratchaburi Power plant included Battery, chemical contaminated tanks and used oil etc.

Remark: Please see both suppliers' waste management process at page 83.

Community and environmental impact management

Power generation process may cause some impacts on the community and environment. The Company adopts the following approach and measures to prevent and tackle possible impacts.



Performance of community and environmental impact management Performance in 2018

Approach	Method/Activity	Performance
Reduce resources consumption in the generation process	• Innovation jointly implemented with suppliers through reduction of resources used in the generation process such as fuels and water • Raw material reduction measure	• Improve the energy efficiency procedures of the Power Plants' with reserved shutdown, resulting in the energy reduction value of 99 million baht. • Increase the turnover of circulating water in the cooling systems to 4-5 cycles from 3-4 cycles.
Reduce waste emissions to the environment	• Innovation jointly implemented with suppliers • Environmental management measures	• 37% reduction of water discharged
Invite communities to monitor power plants' operations	• Monitoring the operation by the Environmental Inspection Team. • Investigation is carried by the community and file a complaint to the power plants	• The Environmental Inspection Team monitored the compliance with EIA for two times; and listen and give opinions about environmental impact assessment for the installation of solar floating at Ratchaburi Power Plant as well as visiting the site to collect water and measure the water quality. • No complaint about environment impacts to the community around the power plant

Remark: Please read more information from "Resources Consumption and Environmental Quality Management", page 76

Distribution and delivery

Distribution and delivery is the last process in the generating business's supply chain, mainly involving the operation supplier. The dispatch of electricity to high-voltage transmission line is linked with the systems of customers which are Electricity Generating Authority of Thailand (EGAT), Provincial Electricity Authority (PEA) and industrial users. As a result, the standard must meet contractual requirement or higher, in terms of quantity and quality. The Company's power plants dispatched the electricity to customers as follows:

Product quantity/quality	2018		
	RGCO	TECO	NNEG
Contracted Availability Hour (CAH)	• Thermal power plant - Target of 8,363 hours - Actual performance of 8,513 hours • Combined cycle power plant - Target of 7,649.50 hours - Actual operation of 7,892.39 hours	Achieved the target of 7,800 hours	Not specified
Reliability Factor (RF) (%)	96.93	98.41	Not specified
Equivalent Availability Factor (EAF) (%)	92.90	96.65	98.90
Net Generation (MWh)	14,080,408	1,928,282	911,035

Remark: Please read more information from "Customer Relationship Management", page 100.

Staff of Ratchaburi Power Plant visiting an industrial waste management company.

Discussion with suppliers for O&M contract management at Ratchaburi Power Plant

Resources Consumption and Environmental Quality Management

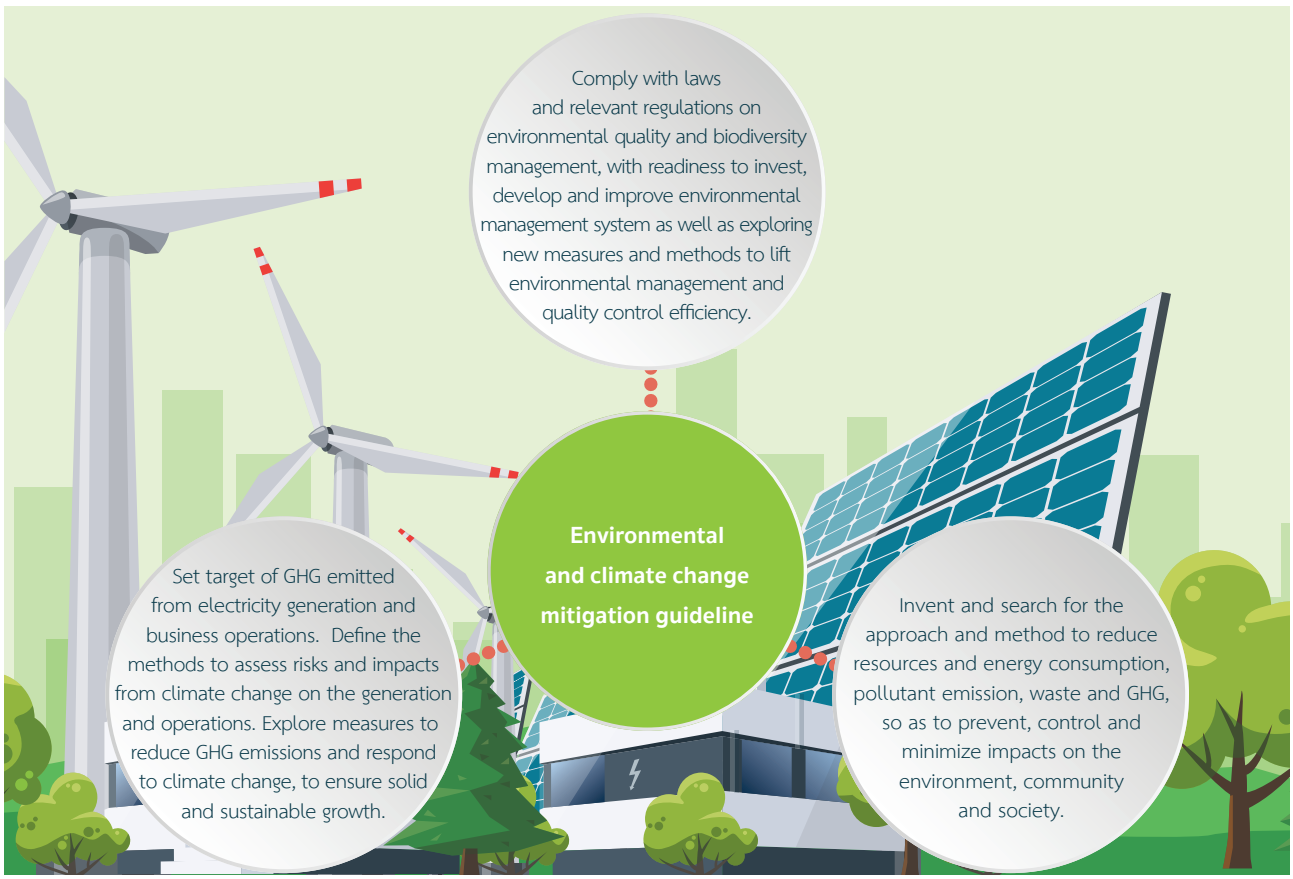
	Heat rate (Btu/kWh)	Cooling system's water reuse cycles	Compliance with environmental laws and regulations	Environment-related complaint
Targets	7,307.8	4-6 cycles	100%	Zero environment-related complaint
Results	7,267	5 cycles	100%	0

Environmental management strategy

RATCH realizes the importance of environmental dimension on the organization's sustainable development. Though electricity - which is the Company's prime product - is vital to economic and social development and national security.

The electricity production process demands fuels, water and other resources and this demands a management and control system to ensure zero impact on communities and the environment from pollutant emissions. A study and environmental impact assessment of all power plant projects is necessary, so as to set control and prevention measures from the designing stage. For the most efficient and effective results, these include the specification of technology and environmental management system.

In 2018, RATCH announced the organizational sustainable development policy on environmental dimension, with practice guidelines that entail the project development stage through commercial commencement. They are as follows:

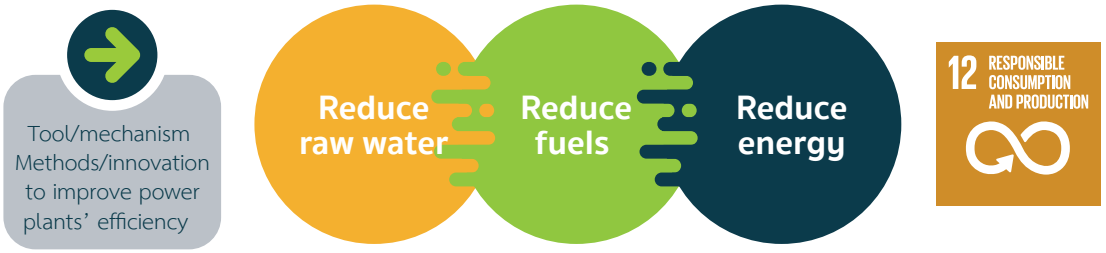


Power plants' environmental management in response to SDG 12

Power plants apply two environmental management approaches: reducing the consumption of resources in the production process and managing pollutants and waste. Both support environmental quality and SDG 12, highlighting responsible consumption and production.

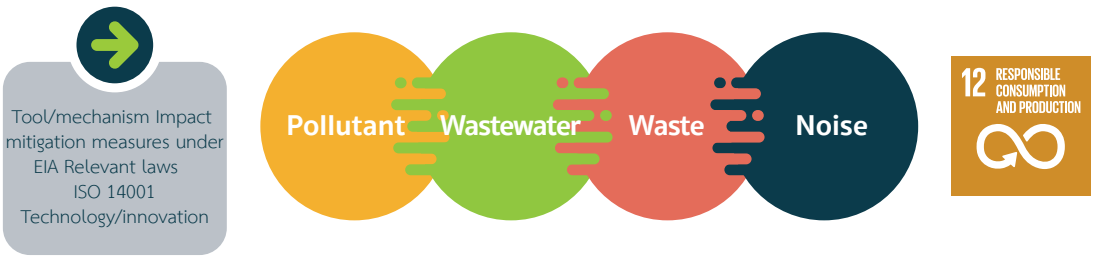
1. Resource consumption in the production:

Fuels and water are vital to electricity generation, which is the Company's primary business. All power plants thus emphasize efficient usage of raw water, fuels and energy taking into account economic and environmental factors, as well as efficiently reducing wastes in the production process and supply chain.



2. Environmental quality management

The management of air quality, wastewater, waste, and noise related to electricity generation is a significant matter to power plants. Such is carried out strictly in line with legal requirements and impact prevention measures specified in EIA. The ISO 14001 is also applied under the commitment to minimize impacts. As a result, no power plant was fined due to the case and issue of incompliance or violation of environmental laws.



Management of resource usage

Fuel usage

Commercial-operating power plants under the Company's control consist of Ratchaburi Power Plant, Tri Energy Power Plant, NNEG Power Plant, Kemerton Power Station and Townsville Power Station in Australia, having combined installed capacity of 4,970 MW. These power plants use natural gas as primary fuel and oil as secondary fuel. Fuel consumption depends on customers' orders.

Fuel consumption and net electric power in 2018
Ratchaburi Power Plant, Tri Energy Power Plant, NNEG Power Plant, 2 power plants in Australia

Generation Data	2016	2017	2018
Net electric output (megawatt-hour)	21,187,269	19,521,844	17,171,362
Natural gas volume (million cubic feet)	190,160	168,111	147,198
Diesel volume (liter)	6,476,377	1,174,356	563,177
Bunker oil (liter)	104,974,565	26,698,857	0

Ratchaburi Power Plant's fuel usage management

On top of the volume needed for the production of specified output, fuel usage depends on the National Control Center as the power plant can use both natural gas and oil. Natural gas is its primary fuel and bunker oil or diesel is reserved fuel.

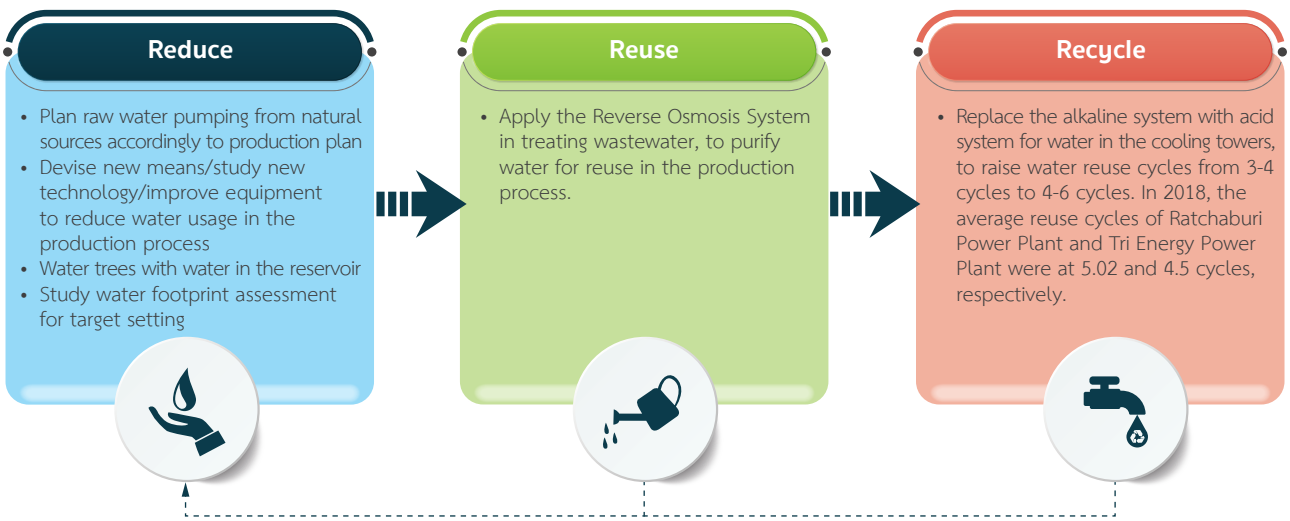
In managing fuel usage, the power plant sets heat rate target for each fuel type and maintains machinery and equipment for instant operations and continuous production efficiency. In 2018, Ratchaburi Power Plant's heat rate was higher than targets, detail as shown in Management of Customer Relationship section on page 100

In 2018, Ratchaburi Thermal Power Plant was put under reserved shutdown as ordered by the National Control Center, leading to lower usage of natural gas and bunker oil. Machinery was however maintained for a prompt restart.

Water management

Water is a primary production factor. The larger a power plant is, the higher volume of water it requires. Ratchaburi Power Plant is huge with installed capacity of 3,645 MW. Despite huge volume of water needed, the usage has been systematically managed and efficiently planned, which hence reduces the demand for raw water and the volume of wastewater.

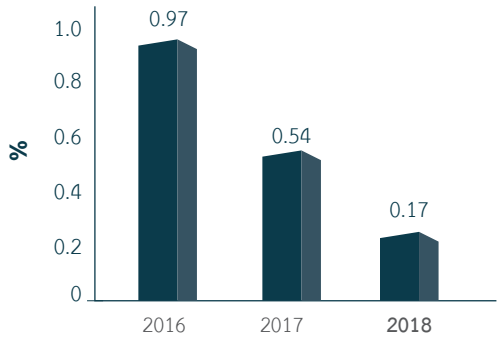
3R water management at Ratchaburi Power Plant and Tri Energy Power Plant



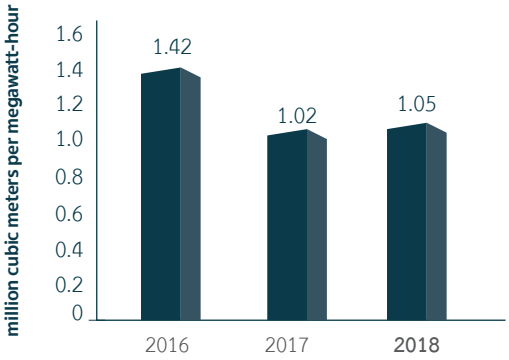
Performance in 2018

- Both power plants use raw water primarily from Mae Klong River. In 2018, they pumped 16.73 million cubic meters of raw water (averaging 0.28 cubic meters per second, accounting for 0.17% of water discharged from the dam or 300 cubic meters per second). The volume decreased by 10 percent from 2017 because of two reasons:
    - o Ratchaburi Thermal Power Plant was under a reserved shutdown, reducing the need for raw water.
    - o The Reverse Osmosis System enabled the reuse and recycle of water.

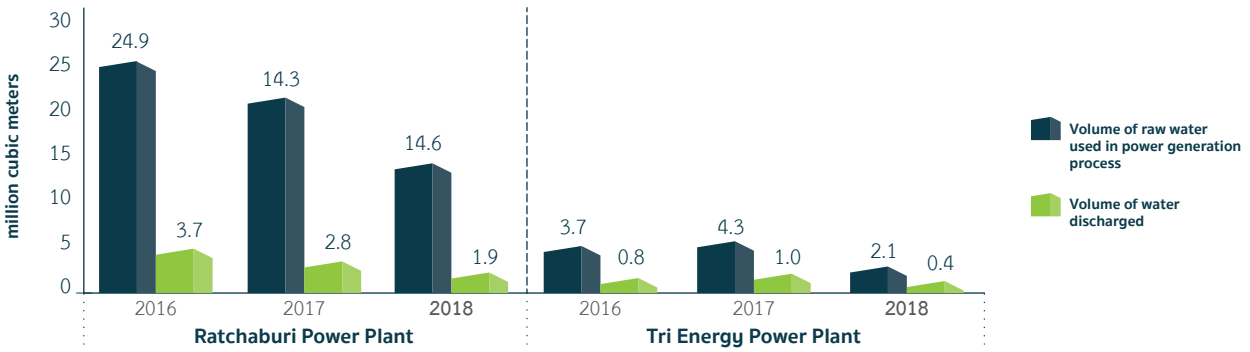
% of raw water used by Ratchaburi Power Plant and Tri Energy Power Plant compared to the volume of water released from Mae Klong Dam (2016-2018)



Water consumed per unit of power generation by Ratchaburi Power Plant and Tri Energy Power Plant (2016-2018)



- The undertaking reduced the release of water to natural channels by 1.39 million cubic meters, accounting for 37% compared to the volume in 2017.



- The monitoring of environmental impacts, as a measure to prevent and correct environmental impacts, found no sign of water shortage, fight for water or the release of water that affected the activities of communities in the Mae Klong River Basin.

Environmental quality management

RATCH is determined to apply the best measures in handling pollutants, wastewater, wastes and noise, to maintain and preserve the environmental quality and avoid causing impacts on human, other beings and the environment.

Air quality management at Ratchaburi Power Plant

The power plant puts strict control on sulfur oxide and nitrogen oxide emitted from the production process. Such emissions were controlled in the project designing stage, when environmental-friendly technology was selected for its high efficiency in tackling pollutants. For instance, the thermal power plant was equipped with the Low NO_x burners and installed Flue Gas Desulfurization system (FGD) which is turned on when the power plant operates with bunker oil. On the other hands, the combined cycle power plant used Dry Low NO_x burners to control nitrogen oxide. The technology ensures the emissions cause least impacts on the environment and in line with the law.

Meanwhile, the Continuous Emissions Monitoring System (CEMs) was installed at the top of the chimney and results are sent to the control room, the display in front of the power plant, and the Pollution Control Department.

The power plant has installed air quality monitoring system at 4 stations covering all surrounding communities. They stations are located at Ban Don Mod Tanoy, Ban Bang Krado, Ban Khlong Khae and Ban Chaonua, to monitor around the clock sulfur oxide (SO_2), nitrogen oxide (NO_2), total suspended particles (TSP), and particulate matter 10 micrometers or less in diameter (PM10). Ozone is measured continuously, 24 hours a day

Performance in 2018

- Ratchaburi Power Plant's air quality management remained efficient and effective.

Average NO_x concentration in the flue chimney **22.59 ppm** Standard 120 ppm*

Average SO_2 concentration in the flue chimney **1.27 ppm** Standard 20 ppm*

Nitrogen oxide (NO_x) **2,364 tons**

Sulfur dioxide (SO_2) **35 tons**

Note : *Standard limits stipulated by the notification of Ministry of Industry regarding air pollutants release from power plants, distributed or traded, BE 2547 (2004) (only natural gas)

- Test results showed ambient air quality in communities around Ratchaburi Power Plant met emission standards.

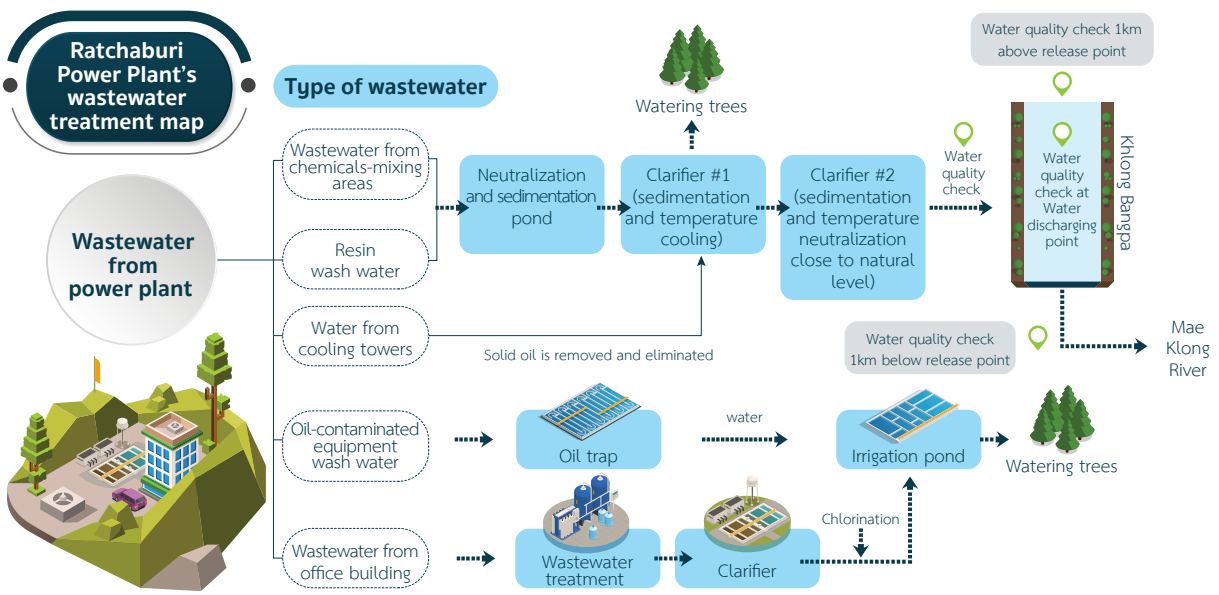
Community air quality monitoring stations	24-hour average			1-hour average		
	TSP (µg/m³)	PM10 (µg/m³)	SO_2 (ppb)	SO_2 (ppb)	NO_2 (ppb)	O_3 (ppb)
Ban Don Modtanoy Station	13-131	9-101	0-3	0-12	0-45	0-122
Ban Bang Krado Station	20-175	1-119	0-4	0-16	0-31	0-131
Ban Khlong Khae Station	11-123	7-110	0-4	0-11	0-58	0-116
Ban Chaonua Station	16-126	8-104	0-4	0-12	0-48	0-109
Emission standards**	330[1]	120[1]	120[2]	300[3]	170[4]	100[1]

*Note: * µg/m³ = microgram per cubic meter*
ppb = part per billion
*** Standard in line with the Notification of National Environment Board :*
[1] : as specified in the No.24 announcement of the National Environmental Board (B.E.2547) on ambient air quality standards
[2] : as specified in the No.10 announcement of the National Environmental Board (B.E.2538) on ambient air quality standards
[3] : as specified in the No.21 announcement of the National Environmental Board (B.E.2544) on 1-hour sulfur dioxide standard in ambient air
[4] : as specified in the No.33 announcement of the National Environmental Board (B.E.2552) on 1-hour Nitrogen dioxide standard in ambient air

- Ozone measurement: Atmospheric ozone was above standard limit during January and March and the power plant's research on Pollution Control Department's statistics found similar incident in the same period of every year. To learn the real cause of such incident, Ratchaburi Power Plant has conducted a ozone survey and analysis project covering Bangkok, Nakhon Pathom and Ratchaburi. The project is slated for completion in 2019.

Ratchaburi Power Plant's wastewater quality management

Efficient management of water used in the production process in terms of quantity and quality benefits wastewater management. Prior to the release to natural water channels, wastewater is treated to ensure its temperature, pH value, electrical conductivity, dissolved oxygen (DO), biochemical oxygen demand (BOD) and total dissolved solids (TSD) level meet legal standards.

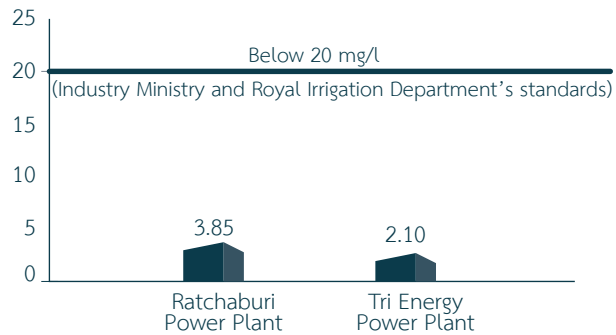


To ensure zero impact on the quality of natural water channels, Ratchaburi Power Plant measures the water quality 1km above and below the wastewater release point and measures. The quality of underground water in the observation pond and the gypsum pond is also checked, to prevent gypsum leakage or contamination in underground water sources.

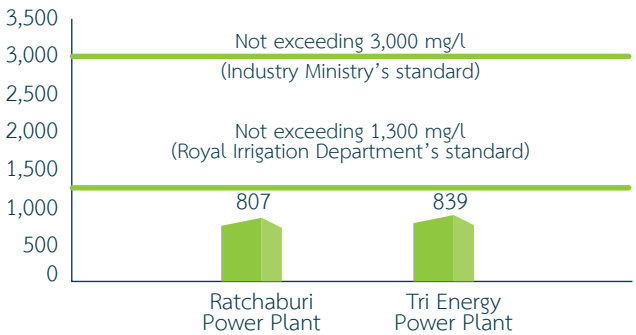
Performance

In 2018, the average quality of released wastewater at all power plants was within the standards defined in Ministry of Industry's Announcement No.2 (B.E. 2539), issued in support of Factory Act B.E.2535, on the specifications of factories' released wastewater, as well as the Royal Irrigation Department's standards.

Biochemical Oxygen Demand (BOD)



Total Dissolved Solids (TDS)



Ratchaburi Power Plant's waste management

Ratchaburi Power Plant puts great efforts in waste management under its determination to achieve zero waste to landfill. The 3R principle has been applied aside from strict compliance with legal requirements on industrial waste management. Suppliers' waste management must also meet the specified criteria, to ensure international-standard handling and zero risks on community and the environment.

Performance 2018

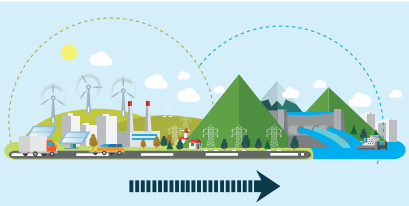
Waste to landfill in 2018 at Ratchaburi Power Plant

Ratchaburi Power Plant's waste management

Hazardous waste

Type of waste

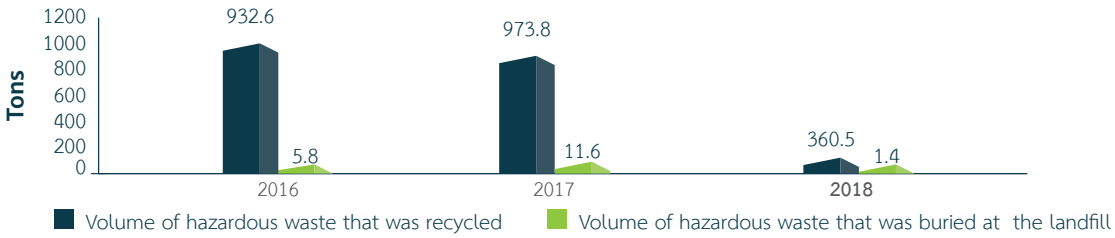
- Degraded bunker oil
- Lubricant sludge
- Sludge in air heater wash pond
- Contaminated cloth scrap/gloves
- Unusable electrical appliances



Practices

- Hire companies which can reuse the waste, for example, by using it as steam-production fuel in industrial estates.
- Apply secure landfills to eliminate unusable waste.

Volume of hazardous waste recycled or deposited in landfill (2016-2018)



Non-hazardous waste

Non-hazardous waste

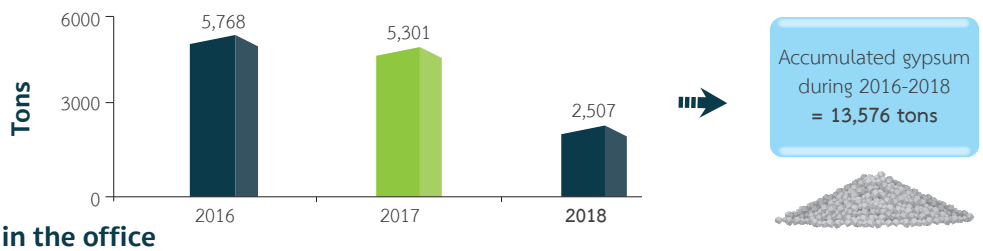
- Gypsum
- steel scrap
- Fiber optic
- Fire-resistant bricks
- Wood equipment

Practices

- FGD gypsum deriving from flue gas desulfurization (FGD) systems is stored in a pond and used as a raw material in gypsum board manufacturing.
- Scrap plastic deriving from gas turbines' steam detection system is compressed and used as feedstock for plastic plywood and PVC pipe manufacturing.

Gypsum arising from desulfurization process is buried at the landfill site of Ratchaburi Power Plant. The gypsum waste is awarded to Knauf Gypsum (Thailand) Co., Ltd. and Siam Gypsum Industry (Songkhla) Co., Ltd. for gypsum board manufacturing and some manufactured boards are used at the power plant and neighboring communities. Gypsum delivery to the factories takes place once a year for a 5-year period (2018-2023). In 2018, gypsum for gypsum board manufacturing weighed 46,000 tons.

Ratchaburi Power Plant's recyclable FGD gypsum



General waste in the office

Office waste

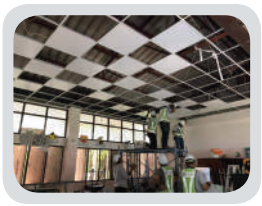
Elimination method

- Segregate recyclable waste for Ratchaburi Power Plant's Recycle Bank
- Non-recyclable waste will be deposited to landfill according to Ban Rai Subdistrict Municipality's sanitary requirements

Installation of ceiling made from Ratchaburi Power Plant's FGD gypsum at Wat Pikul Thong School

Under the cooperation of Ratchaburi Electricity Generating Co., Ltd; Siam Gypsum Industry (Saraburi) Co., Ltd which provides the elimination service for FGD gypsum from Ratchaburi Thermal Power Plant; and Ratchaburi Technical College, a joint research on the manufacturing of heat-resistant gypsum board from FGD gypsum was kicked off in 2017. The research eventually led to the manufacturing of heat-resistant and heat-reflective gypsum boards, which keep room temperature low despite outside heat.

The manufactured boards were installed as Wat Pikul Thong School's classroom ceilings. The waste management project clearly constitutes benefits in all environmental, social and economic dimensions.


Follow up of suppliers' waste management

Waste management from generation process typically needs a service from the suppliers who have the waste disposal licenses, the factory license and a permission on possessing hazardous material including waste and chemical substances according to Hazardous Substance Act, B.E. 2535 (the factory types No. 101, 105, and 106) with the operations in line with the Notification of the Ministry of Industry B.E. 2548 governing "Disposal of Dirt and Waste." The power plants have to monitor and visit the suppliers' premise, ensuring that the waste management from the power plant complies with the law and other relevant standards in order to prevent any impacts to the environment and community.

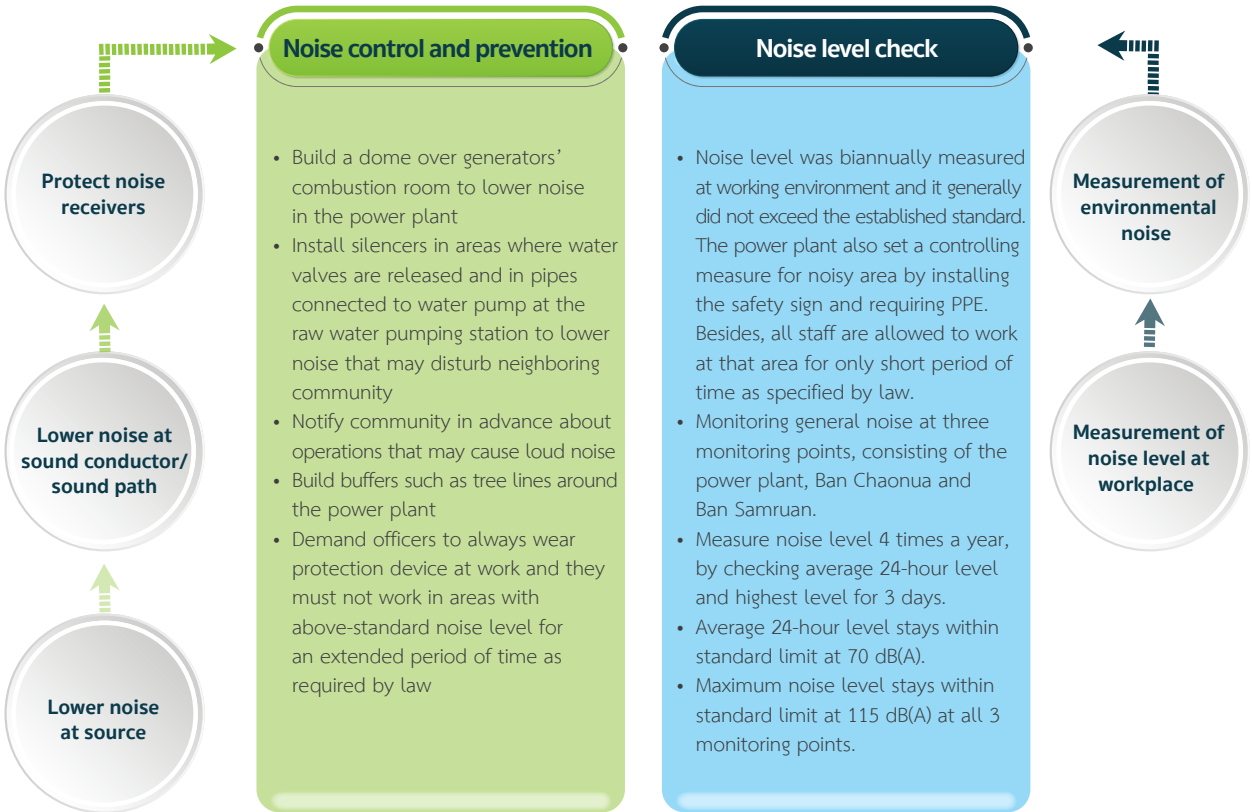
In 2018, Ratchaburi Power Plant visited four suppliers and all meet the preset criteria and comply with the Industrial Works Department's requirements.

Waste management companies handling the waste from production process	Type of waste	Elimination method*					Site visit		
		021	042	071	073	075	Operating license for industrial waste management	ISO 14001 Standard certificate	Being checked by Ratchaburi Power Plant for waste and environmental and management pratices
Better World Green PCL	Battery	✔					✔	✔	✔
	Discarded electrical appliances				✔				
	Foam scrap			✔					
Mahachai Ake Siri Oil Co., Ltd.				✔			✔	✔	✔
	Used lubricants	✔							
Akkhie Prakarn PCL, a subsidiary of Better World Green PCL	offline water wash					✔	✔	✔	
Bangpoo Environmental Complex Co., Ltd.	Cloth scrap		✔				✔	✔	✔
Phaphermsap Co., Ltd.			✔				✔	✔	✔

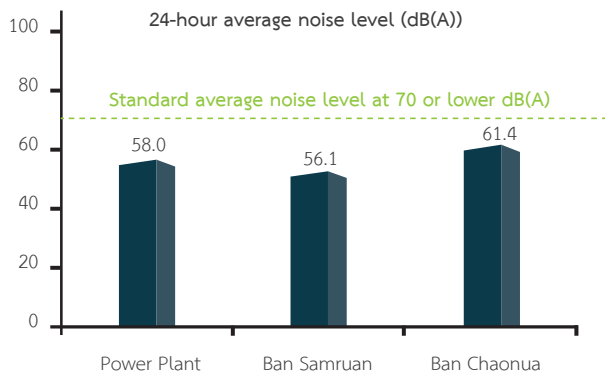
Note : 021 Storage in containers, 042 Used as mixed fuel, 071 Sanitary landfills only for non-hazardous waste, 073 Secured landfill after stabilization or solidification, 075 Destroyed in special kilns for hazardous waste

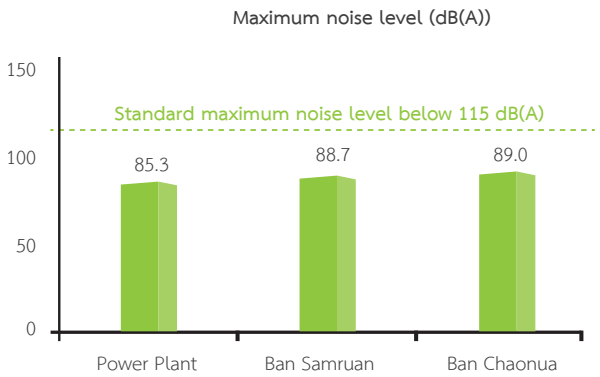
Ratchaburi Power Plant's noise management

Ratchaburi Power Plant puts in place the measures to monitor and maintain noise from production process within specified level, so as not to affect neighboring communities.



2018 noise measuring results





Transparent disclosure of environmental information

RATCH realizes community and society's concerns about power plants' environmental impacts. As such, for mutual understanding, acceptance and trust, it is extremely crucial and vital to disclose information, communicate with community and society and give them access to information,

In this regard, Ratchaburi Power Plant, which is a huge power plant and a primary asset of RATCH, has resorted to various means in disclosing information to community and other relevant parties. They are as follows:

Disclosure of environmental information

- Round-the-clock display of real-time pollutants in front of the power plant. The real-time data is also fed to Pollution Control Department's system 24 hours a day. Throughout 2018, air quality remained within standard levels.
- Publicizing annual public reports of Ratchaburi Power Plant's environmental and social activities; and submit monthly environmental monitoring reports to Provincial Natural Resources and Environment Office, Regional Environment office 8th (Ratchaburi), and relevant agencies.
- On a biannual basis, reporting the results of preventive and correction measures implemented to reduce environmental impacts as well as environmental impact monitoring measures to the Office of Natural Resources and Environment and the Department of Industrial Works.
- Appointing a 25-member environmental inspection team, represented by community memebers , civil society and local government offices. To build confidence among communities, the team will monitor the power plant's environmental management and environmental quality. It convenes meetings to follow up the power plants' actions and observes the powerplant's environmental quality measurement.

"Environmental inspector Teams are the intermediary who represent community in the power plant inspection and who can explain the power plant's operations to community. The team compliments the power plant's open house for community visits and impact researches by educational institutes. The inspectors themselves gain more knowledge in environmental management. They learn about pollutant measurement including water quality test. They observe and comment on the collection of samples for environmental measurement. We can share facts with community for mutual understanding and share knowledge with other community members, including the observation of problems and solutions to contaminated water and foul smell in Pikul Thong Subdistrict. The knowledge can be replicated in shools and community, encouraging community participation in improving the environment."

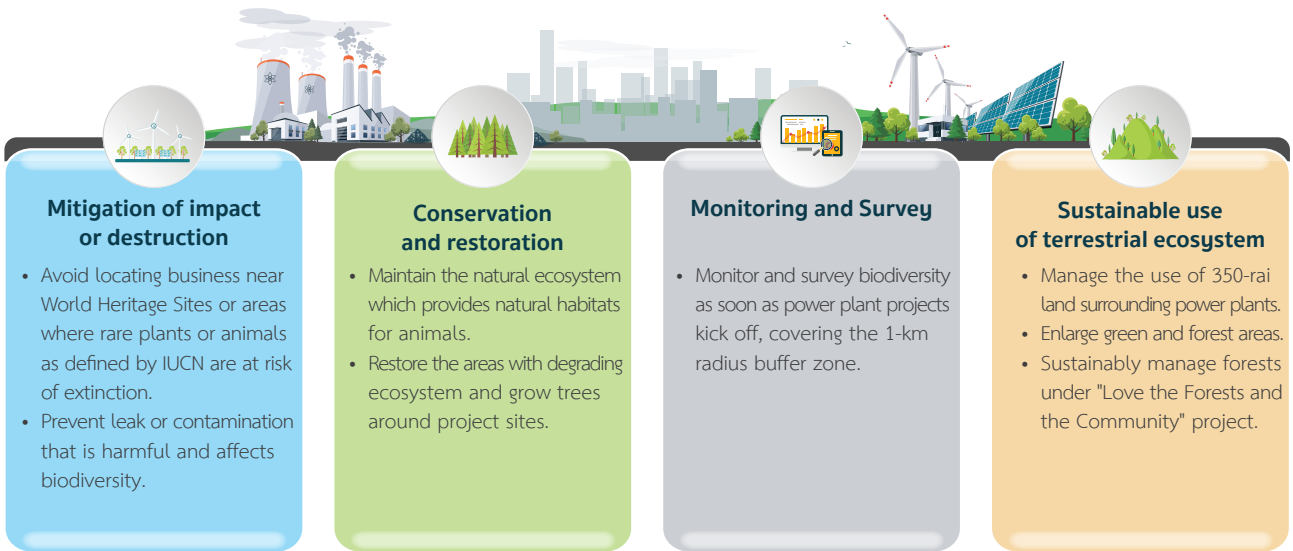
Mr.Wuttichai Boonlum,
Director of Wat Pikul Thong School
Representative of the community (Education network) of Ratchaburi Power Plant's Environmental Inspector Team.

Biodiversity in Power Plant

Biodiversity has become an indicator of the quality of natural ecosystems and the management of resources and surrounding environment. Guidelines for biodiversity management help lead each country towards the formulation of biodiversity management criteria, to be imposed on sectors particularly business and industrial sectors.

Management strategies

RATCH realizes that its core business extensively consumes natural resources and it may cause impacts on biodiversity. Out of determination to protect and manage biodiversity, the Company incorporates the following four natural resources conservation approaches in the Code of Conduct.



Mitigation of impact or destruction

- Avoid locating business near World Heritage Sites or areas where rare plants or animals as defined by IUCN are at risk of extinction.
- Prevent leak or contamination that is harmful and affects biodiversity.

Conservation and restoration

- Maintain the natural ecosystem which provides natural habitats for animals.
- Restore the areas with degrading ecosystem and grow trees around project sites.

Monitoring and Survey

- Monitor and survey biodiversity as soon as power plant projects kick off, covering the 1-km radius buffer zone.

Sustainable use of terrestrial ecosystem

- Manage the use of 350-rai land surrounding power plants.
- Enlarge green and forest areas.
- Sustainably manage forests under "Love the Forests and the Community" project.

Assessment of risks and mitigation of impacts on biodiversity

Power plant projects consume large quantities of resources and often witness changes in surrounding areas and environment. It is the Company's duty to manage the sites in a way that the projects will not cause impacts on the ecosystem and biodiversity in micro and macro levels. As such, risk assessment and analysis of project impacts on biodiversity are great important and must be carried out strictly in line with legal requirements and international standards.

Preventive actions are adopted in the selection of project sites. The projects will not be located in the areas where rare plants or animals are at risk of extinction or World Heritage Sites. The risk analysis and assessment process follows the EIA requirements, defined by environment regulators. Experts collect biological data on the sites prior to project development and keep it as baseline for analyzing any future impacts from the project. Preventive measures are defined and endorsed by regulatory agencies. Power plant projects must follow the measures until they are decommissioned and all structures are demolished.

During the commissioning period, power plants must continuously monitor and survey on-site biodiversity and submit regular reports to the regulators as required.

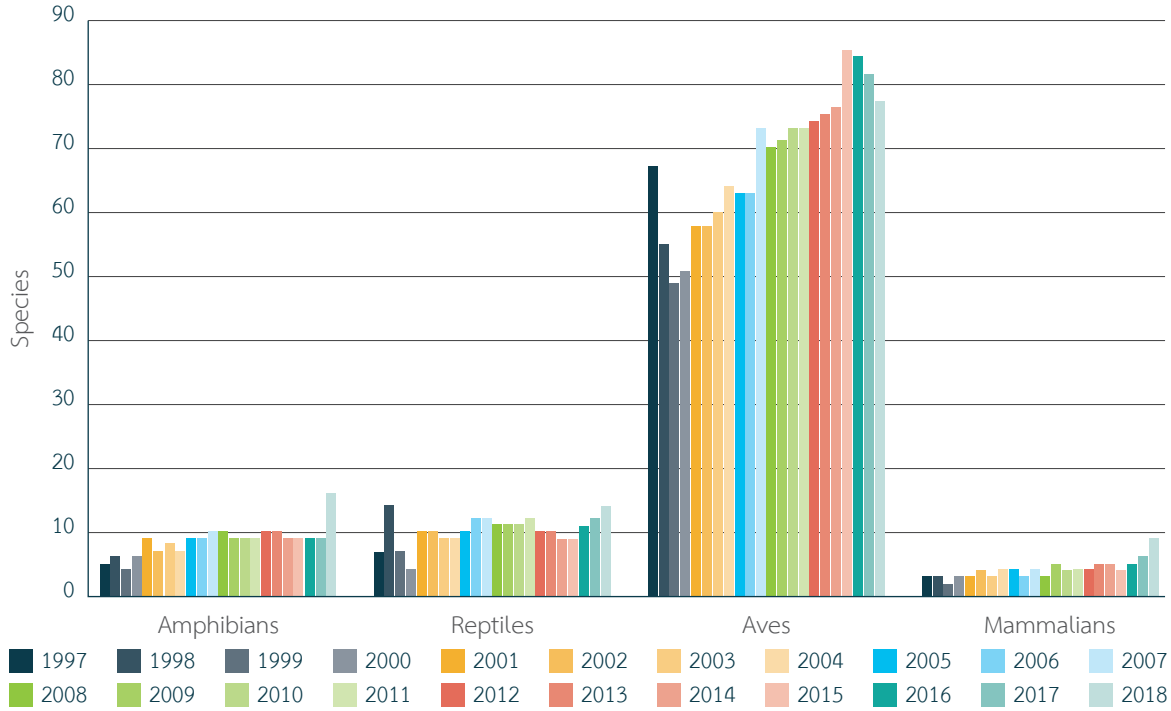
At Ratchaburi Power Plant, the main power plant that covers 2,015 rai in total areas, the ecosystem and biodiversity has been well taken care of and restored throughout the past 18 years. The power plant today sits on 472 rai of green area and 350 rai of wetlands, which constitute 40.8% of the project's total area.

Performance

Ratchaburi Power Plant has monitored biodiversity by conducting an annual survey of the number, diversity, population, dispersal, and concentration of wildlife since 1997 (the construction phase).

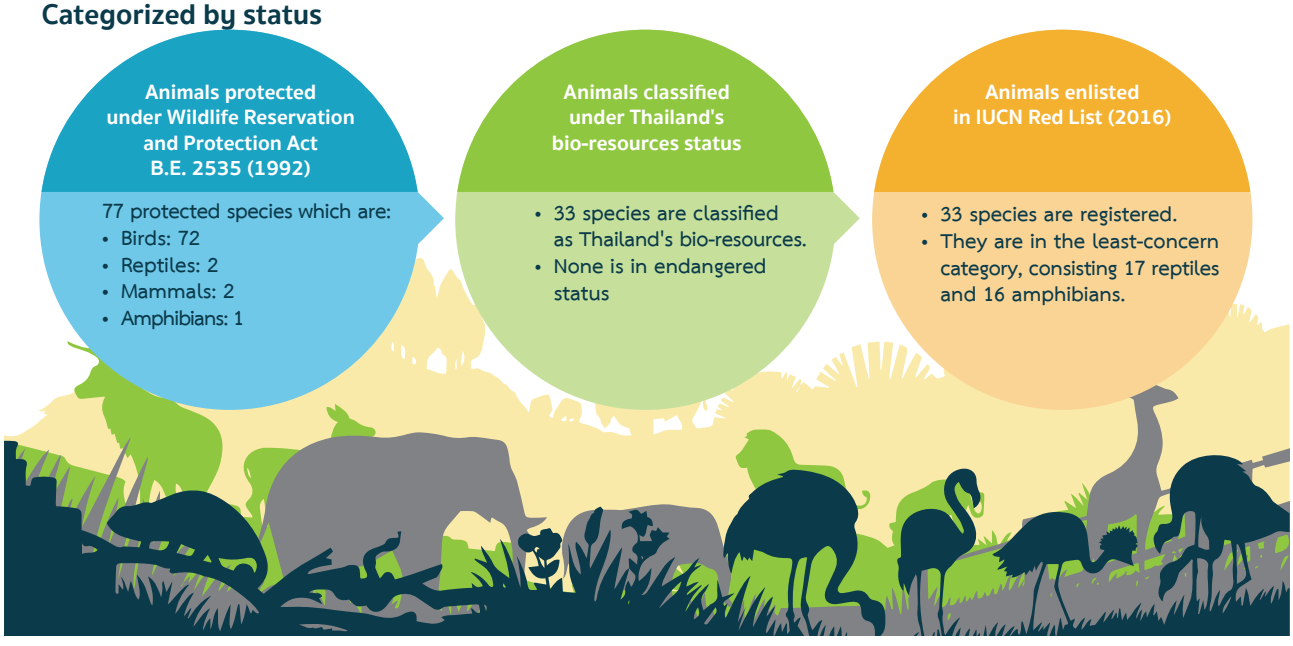
In 2018, 115 species of wild animals were found; 16 amphibian species, 14 reptile species, 76 bird species and nine mammal species.

Wild animals found around Ratchaburi Power Plant during 1997-2018



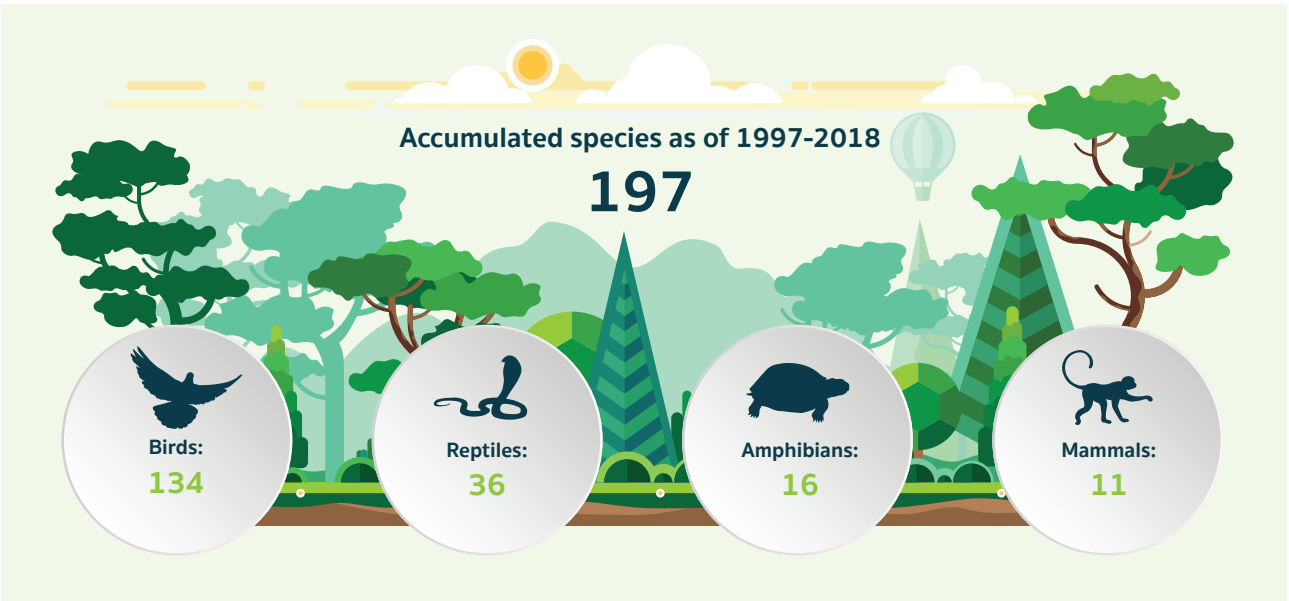
The discovery of a number of wildlife for only one or 2-4 years led the difference in the total species of wildlife found each year. Nevertheless, the finding did not indicate the change in wildlife living near the power plant as they were living around the plant's area. Some of loss wildlife could be found in following years. This should depends on many involving factors, such as weather condition, season, the use of land, quality and volume of food sources, human's disturbance and other relevant factors at the plant and neighboring area.

Categorized by status



Thirteen more species of wildlife were found in the 2018 survey.

- Eight among them are reptiles. The small animals are hardly spotted as they are highly alert and hunt at night. These include *Gehyra lacerate* and *Riopa bowringii.*
- Three bird species, entirely migratory birds.
- One mammalian species.
- One amphibian species. The newly-found reptile and amphibian were spotted at the park in front of the power plant.
- Since 1997, 197 accumulated species of wildlife have been found in Ratchaburi Power Plant's buffer zone, an increase of 13.21%.



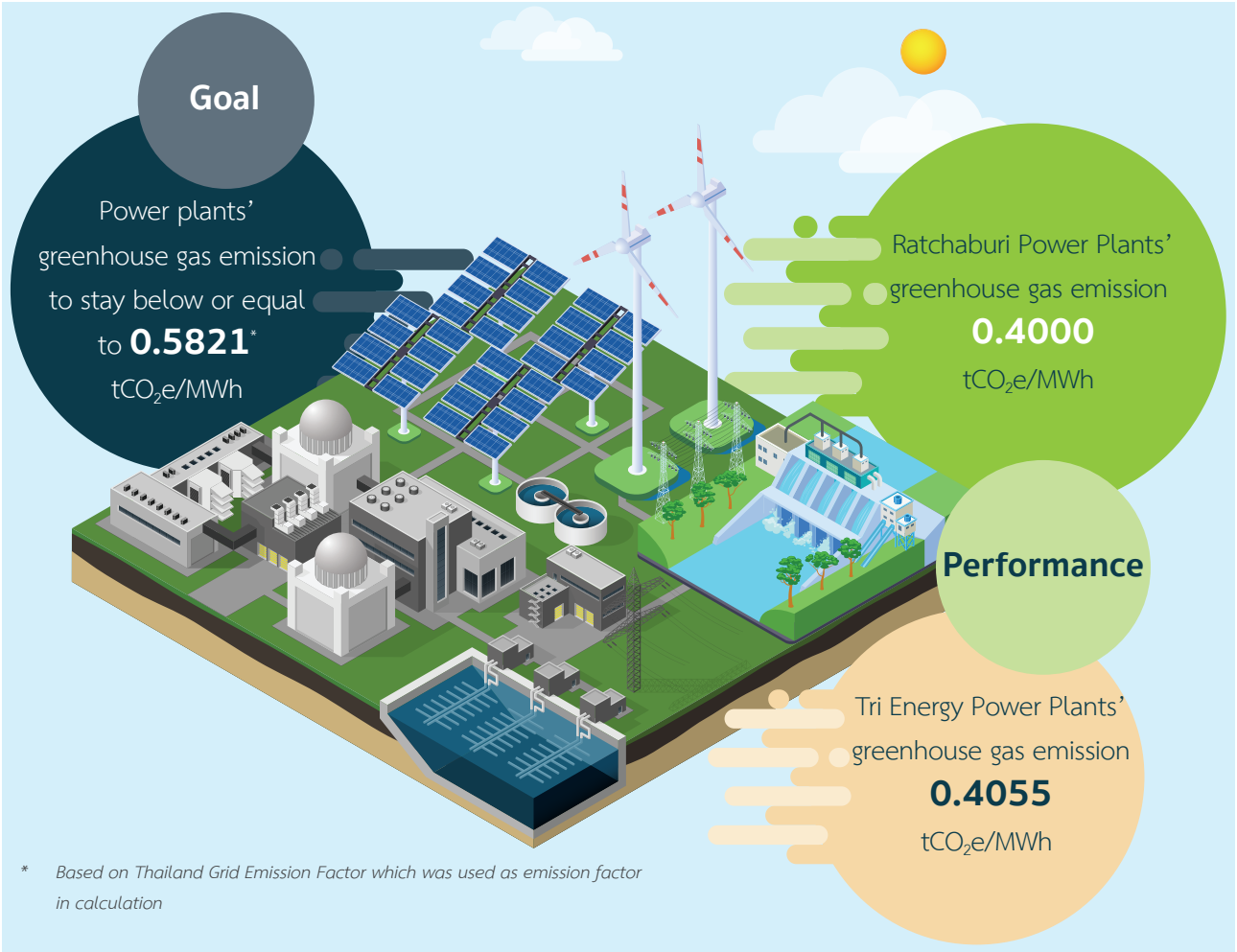
The qualitative similarity index of wildlife living around the power plant during 2017-2018 was at 79.6%, indicating the similarity of species found in the years.

Of total, 33 species were highly concentrated, mostly birds, thanks to the power plant's ecosystem which contains water sources, agricultural areas and communities. Despite some changes in the use of land around the power plant, the plant itself has remained the habitat and living/mating ground of wild animals. Ratchaburi Power Plant will proceed with measures to maintain and conserve the 472-rai green area that surrounds the plant and serves as a wildlife habitat.

Next moves

Ratchaburi Power Plant plans biannual surveys of biodiversity around the power plant, in August (rainy season) and December (dry season). The surveys are aimed at ensuring the plant's ability in restoring and conserving the ecosystem and the environment, to maintain the home of plants, animals and other living beings and achieve sustainable biodiversity.

Greenhouse Gas Management



Population growth, continued economic expansion and the industrial sector's additional manufacturing capacity to satisfy enormous demand contribute to an increase in natural resources consumption and greenhouse gas (GHG) emissions. GHG is a key factor of climate change or global warming, leading to more severe natural disasters that affect all countries across the world.

All parties are aware of the necessity of GHG reduction which is the cause of global warming, especially RATCH Group. GHG is a challenge that may affect the Company's performance. The Company has expressed our commitment to utilize energy consumption throughout our operation, to make the best use of natural resources while causing least impacts on the environment. The Company supports innovations designed to reduce emission to the atmosphere and encourages relevant stakeholders to use natural resources and energy wisely.

RATCH Group's operations are also geared to support the United Nations Sustainable Development Goals: Goal 7 - Ensure access to affordable, reliable, sustainable and modern energy for all; Goal 13 - Take urgent action to combat climate change and its impacts; and Goal 15 - Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

The Company's realization of this importance reflects in the inclusion of climate change-combating approaches in the sustainable development policy. The approaches shape the Company's operations and the start of new projects in the following ways:

Climate change-combating approaches

The organization's sustainable development policy in the environmental dimension lays down the approaches to reduce greenhouse gas emissions, to eliminate and control impacts on the business, society and the environment as best as possible.

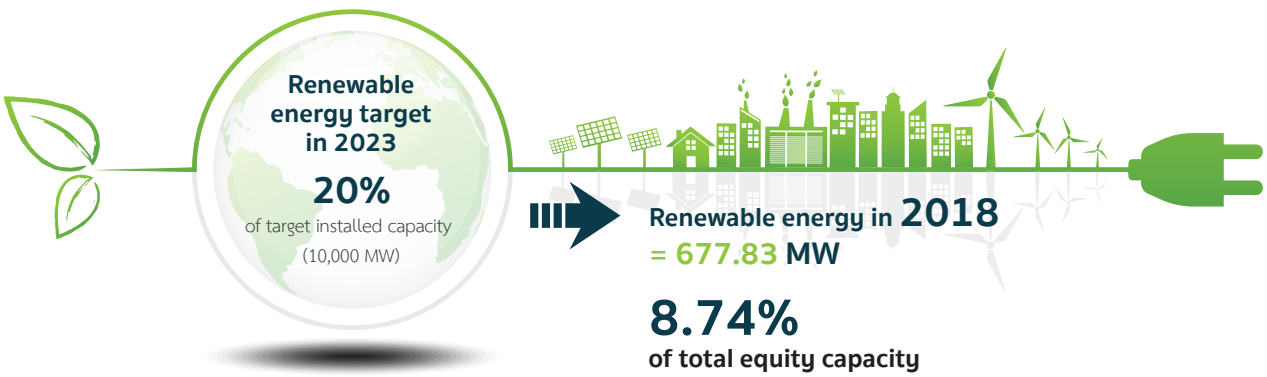
Policy approach	Operating plan/Activity	Objective	SDGs Goal
1. Invent and search for approaches and means to reduce natural resources and energy consumption, as well as pollutant and GHG emission.	- Invest in renewable energy projects - Reduce power plants and office buildings' energy consumption - Join Thailand Voluntary Emission Reduction Program (T-VER)	Reduce GHG with renewable energy and cut in energy consumption.	GOAL 7: Ensure access to affordable, reliable, sustainable and modern energy for all 
2. Set the target on generating-related GHG emission as well as assessing climate change impacts, risks and responses.	- Participate in the Carbon Footprint for Organization Project - Assess and manage risks/ impacts from natural disasters and climate change - Promote innovations that enhances generation efficiency	- Power plants' GHG accounts - GHG volume below/ equivalent to Thailand Grid Emission Factor of 0.5821 tCO_2e/ MWh	GOAL 13: Take urgent action to combat climate change and its impacts 
3. Prevent, control and minimize impacts on the environment, community and society to grow business in a solid and sustainable manner.	- Increase GHG storages - Promote community energy reduction programs - Joint Low Emission Support Scheme (LESS)	Support community forests to conserve and restore forests and ecosystems.	Goal 15: protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss 

1. Approaches and ways to reduce resources and energy consumption, for lower GHGs

Renewable energy development for power generating

The Company sets to generate 20 percent of installed capacity target of 10,000 MW within 2023 from renewable energy, with focus on solar, wind and hydro power as well as biomass. The move will cut fossil fuels consumption in power generating process and hence bring down GHG emission and reduce impacts on the climate change.

The approach is in line with the global trend, whereby clean energy is on demand as it can support economic growth with benefit to the environment overall. It also supports the United Nations Sustainable Development Goals #7: Ensure access to affordable, reliable, sustainable and modern energy for all.



Commercial-operating renewable projects

Type of energy	No. of projects				Combined equity capacity (MW)	Power generation (based on equity) (MWh)	GHG reduction (tCO_2e/ year)
	Thailand	Lao PDR	Australia	Indonesia			
Wind power	2	-	4	-	107.40	271,449.41	239,378
Hydropower	-	1	-	1*	201.65	644,298.36	375,046
Solar power	11	-	-	-	29.37	44,021.52	25,618
Biomass power	1	-	-	-	3.96	29,420.41	17,126

** Remark: RATCH indirectly holds stake in Asahan-1 Hydroelectric Power Plant since December 2018*

Renewable project development in 2018

Project	Project information	Status	Shareholding (%)	Equity Capacity (MW)	Expected GHG reduction (tCO_2e/ year)
Mount Emerald Wind Farm	Location : Australia Type : SPP Operator : RATCH-Australia Corporation Pty Ltd PPA : 12.5 years, expiring in 2030	Commercial operation started in December 2018	100	180.45	523,562
Collinsville Solar Farm	Location : Australia Type : SPP Operator : RATCH-Australia Corporation Pty Ltd PPA : 12.5 years, expiring in 2030	Under construction	100	42.5	75,880
Asahan-1 Hydroelectric Power Plant	Location : Indonesia Type : SPP Operator : PT Bajradaya Sentranusa (BDSN) PPA expiry : 2040	Equity acquisition executed in December 2018. Commercial operation began in 2011.	26.61	47.9	198,544

Electricity generated by renewable energy and GHG reduction in 2018

Production base	Power generation (based on equity) (MWh)	GHG Reduction (tCO_2e/ year)
Thailand	150,848.92	87,802
Lao PDR	644,298.36	375,046
Australia	194,042.42	194,319

Reduction of energy consumption at power plants and office buildings

Since 2005, the Company has been devoted to maximizing energy consumption. In 2018, under the sustainable development policy, Ratchaburi Power Plant, Tri Energy Power Plant, NNEG Power Plant and the Head Office building can reduce energy use and GHG emissions. Details are as follows:

Overview of energy and heat reduction in 2018

Project/activity	Heat reduction (MMBtu)	Energy consumption reduction (MWh)	Cost saving (baht)	GHG emission reduction (tCO_2e)
Energy-saving scheme at Ratchaburi Power Plant	-	4,234.13	12,787,071	2,465
Energy and heat saving scheme at Tri Energy Power Plant	20,775.96	399.73	6,042,428	1,465
Energy-saving scheme at NNEG Power Plant	-	354.63	709,254	206
Energy-saving scheme at Head Office	-	102.00	284,516	59
Total	20,775.96	5,090.49	19,823,270	4,195

Ratchaburi Power Plant

Under the 5-year energy-saving plan (2018-2022), Ratchaburi Power Plant aims to reduce energy consumption by 1,142 MWh in total, or average of 228.4 MWh/ year, equal to the GHG reduction of 133 tCO_2e/ year.

2018 Target **228.4 MWh**

2018 Performance **4,234.13 MWh**

Activities and outcomes in 2018

Activity in 2018	Energy consumption reduction (MWh)	Cost Saving (baht)	GHG emission reduction (tCO_2e)
1. Save energy used in the production of clear water for the thermal power plant during the outage ordered by the National Control Center (NCC).	3,795.75	11,463,165	2,210
2. Save energy at the cooling tower of thermal power plant, unit 1-2 (2 projects)	374.99	1,132,463	218
3. Change the building's air conditioner system from the Package Air Conditioning to Variable Refrigerant Flow (VRF)	63.39	191,443	37
Total	4,234.13	12,787,071	2,465

In addition, Ratchaburi Power Plant can save energy from its operation and the existing energy saving program by 40,989 MWh, equal to 123.6 million baht and GHG reduction of 23,860 tCO_2e.

Tri Energy Power Plant

Tri Energy Power Plant's goals in 2018 were to reduce energy consumption, and to reduce heat in electricity generation process to save fuels. The result was 17 percent and 60 percent above targets, respectively.

Power-saving target is equivalent to 341.25 MWh | **Performance : Saved electricity is equivalent to 399.73 MWh**

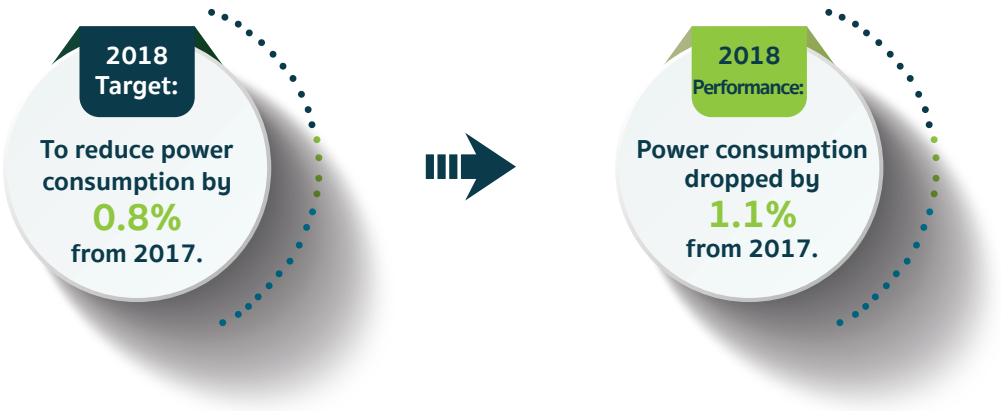
Heat-saving target is equivalent to 13,000 MMBTU | **Performance : Saved heat is equivalent to 20,775.96 MMBTU**

Activities and outcomes in 2018

Activity	Energy consumption reduction (MWh)	Heat reduction (MMBtu)	Cost saving (Baht)	GHG emission reduction (tCO_2e)
1. Replace 49 High Pressure Sodium light bulbs with LED light bulbs	22.34	-	78,199	13
2. Improve water pump efficiency and install the variable speed drive (VSD) of the pump that draws raw water from Mae Klong River	377.38	-	1,320,839	220
3. Eliminate slag in heat recovery steam generator (HRSG), to raise heat exchange efficiency	-	20,775.96	4,643,389	1,232
Total	399.73	20,775.96	6,042,428	1,465

NNEG Power Plant

The energy conservation plan set the target for energy consumption reduction of 0.8%, compared to 2017. To this end, four energy conservation projects were implemented as follows:

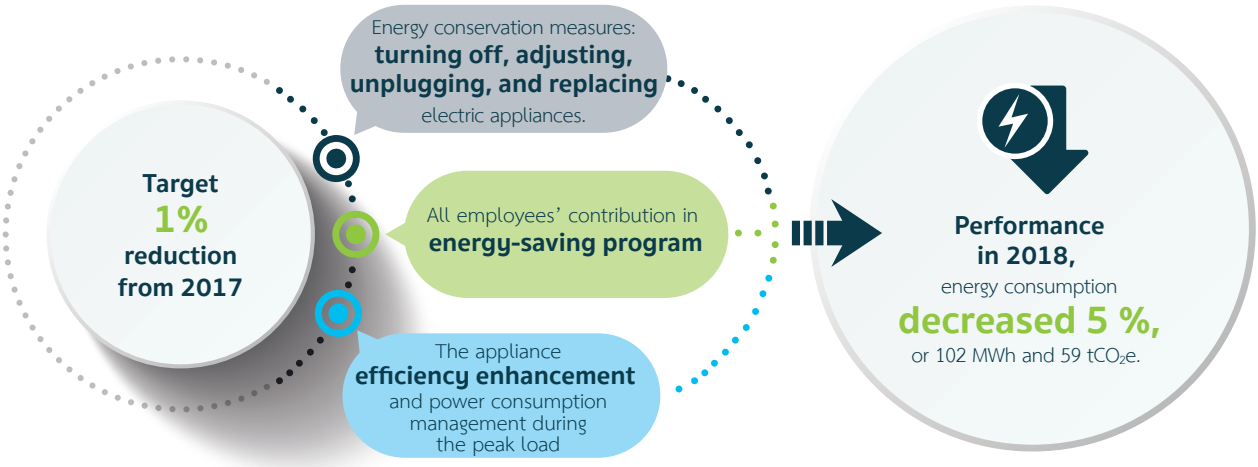


Activities and outcomes in 2018

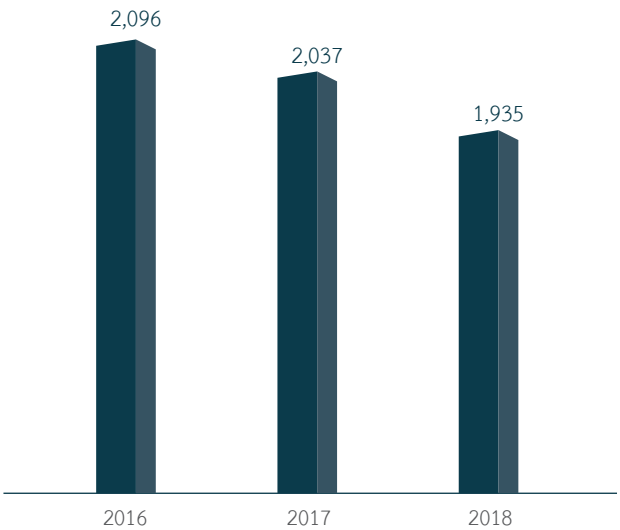
Activities	Energy consumption reduction (MWh)	Cost saving (Baht)	GHG emission reduction (tCO_2e)
1. Change air-conditioning system for two projects as well as increasing its temperatures	47.07	94,134	27
2. Reduce energy used for natural gas booster pump inlet	304.15	608,308	177
3. Reduce energy used for lighting system at the plant's substation and terminal station	3.41	6,812	2
Total	354.63	709,254	206

Head Office Building

Head Office has continuously strived to cut down energy consumption since the opening in 2012. In 2018, 102 megawatt-hour was saved, reducing GHG emissions by 59 tCO_2e and office expenses by 358,892 baht.



Energy Consumption at Head Office during 2016-2018 (kWh)



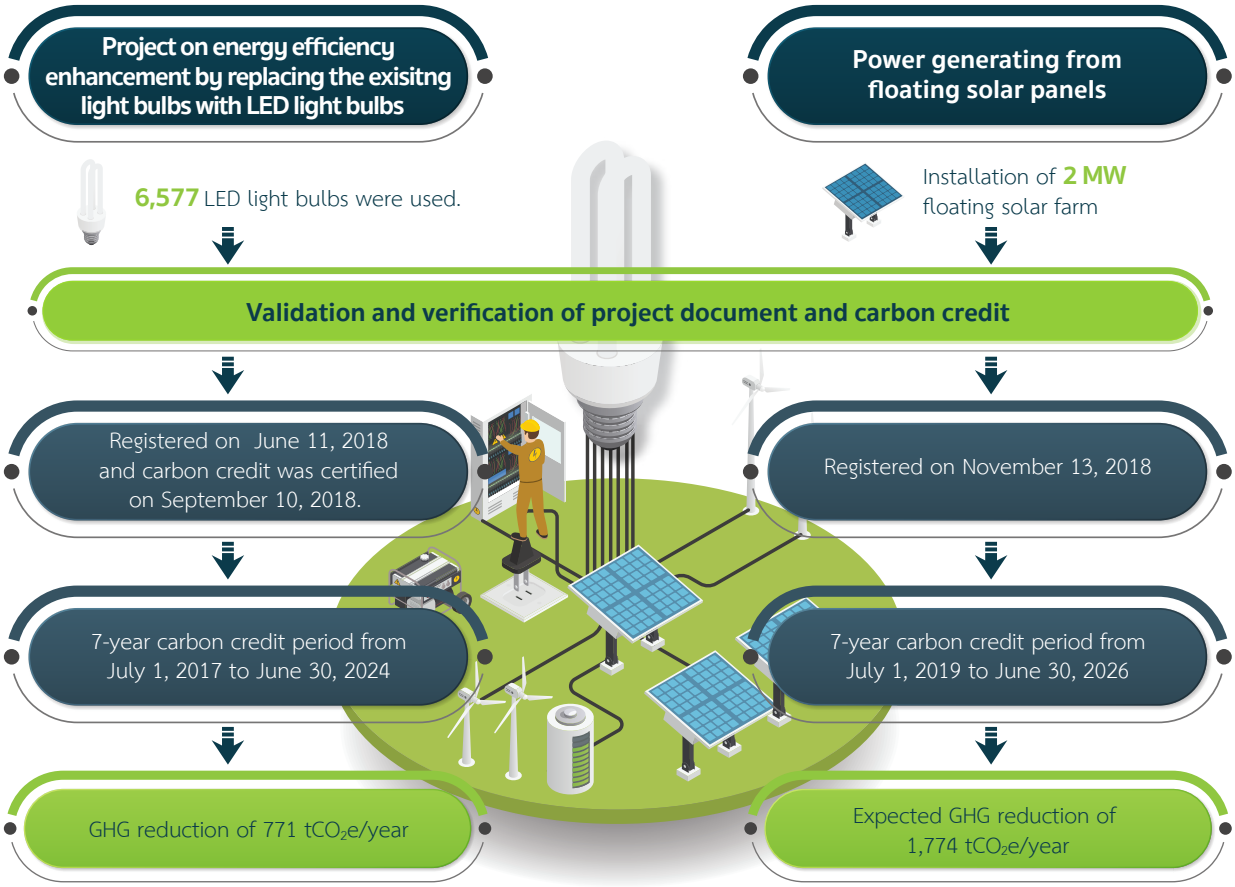
RATCH receives G-Gold level of Green Office Award

In 2018, the Company participated in Green Office assessment project organized by Department of Environmental Quality Promotion and Mahidol University and won G-Gold Level Award for two consecutive times. The award was a result of employees' awareness and engagement in conserving the environment to reduce global warming impacts, which inspired them to adopt environmental-friendly behaviors.

Thailand Voluntary Emission Reduction Program

In 2018, Ratchaburi Power Plant launched a project under TGO or Thailand Greenhouse Gas Management Organization (Public Organization)'s Thailand Voluntary Emission Reduction Program (T-VER). The project enlisted completed and ongoing energy-saving projects and activities for the national-standard and internationally-recognized GHG reduction procedure, to ensure its intention and commitment to tackle GHG with social and environmental responsibility. Another goal was to inspire the invention of innovations to raise production efficiency, reduce in-process energy and fuel consumption as much as possible, and encourage participation by other power plants in the Group.

Ratchaburi Power Plant received T-VER certification for its energy efficiency enhancement project, completed with the replacement of all light bulbs with LED light bulbs at the power plant. Meanwhile, a project to generate electricity from solar floating at Ratchaburi Power Plant's reservoir was registered as a T-VER project. The construction will start in April 2019 while power-generating data collection and GHG reduction calculation will begin in July 2019.



RATCH received Thai Voluntary Emission Reduction (T-VER) trophy from Project on energy efficiency enhancement by changing into LED light bulbs

2019 Work Plan -Ratchaburi Power Plant plans to implement a T-VER project by studying of carbon capture performance of green area in power plant.

2. Approach to set target on the GHG reduction in generating process

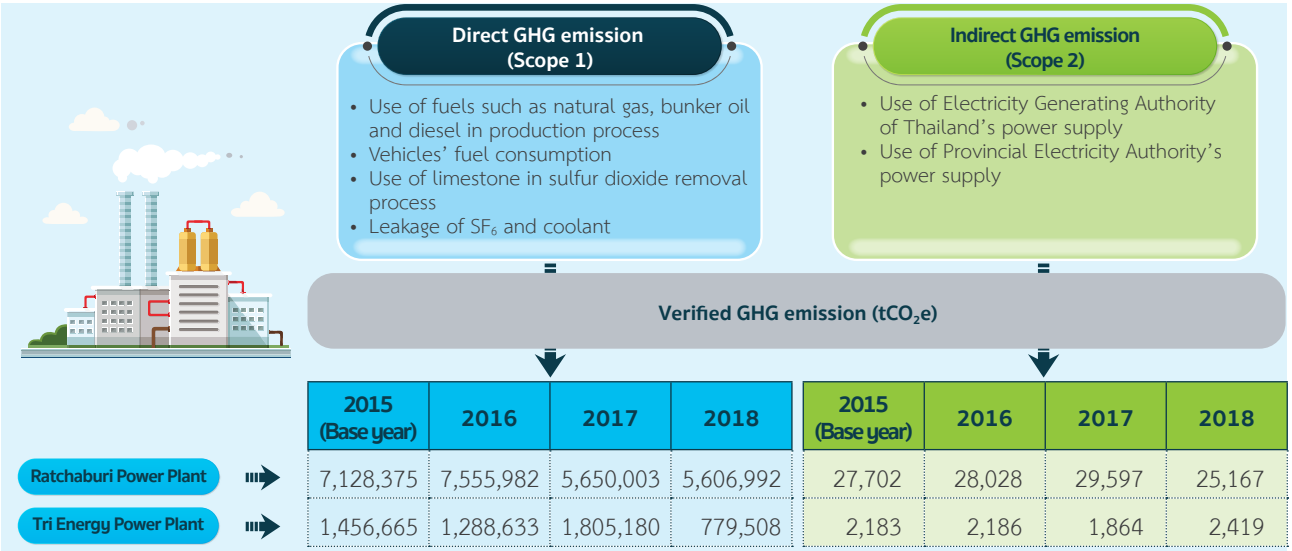
This approach supports SDG No.13: Take urgent action to combat climate change and its impacts. Its objective is to forge awareness and integrate measures into the Company's policy and strategy, aimed at limiting an increase in the average global temperature. The Company carried out the following activities:

Carbon Footprint for Organization Scheme

RATCH Group's power plant adopted TGO's carbon footprint evaluation method and standard in drawing up GHG accounts for two power plants - Ratchaburi Power Plant (3,645 MW) and Tri Energy Power Plant (720 MW). Data collected through the method was used to determine GHG reduction targets as well as improving and inventing new methods and ideas in enhancing the power plants' efficiency regarding the consumption of energy, fuels and other resources, with effort to control air quality.

RATCH Group initially set the target to keep GHG emission in line with Thailand Grid Emission Factor, which is 0.5821 tCO_2e/MWh as announced by Thailand Greenhouse Gas Management Organization (Public organization) or TGO on January 1, 2017.

Ratchaburi Power Plant and Tri Energy Power Plant has been continuously measuring its carbon footprint since 2015. These serve as the base years to shape the power plants' GHG emission management. In 2018, both power plants reviewed the 2018 carbon footprints and received the limited level of assurance.



	2015 (Base year)	2016	2017	2018	2015 (Base year)	2016	2017	2018
Ratchaburi Power Plant	7,128,375	7,555,982	5,650,003	5,606,992	27,702	28,028	29,597	25,167
Tri Energy Power Plant	1,456,665	1,288,633	1,805,180	779,508	2,183	2,186	1,864	2,419

2019 plan: Implementation at Head Office

The Company plans to apply TGO's Carbon Footprint for Organization method and standard with Head Office to build the database and draw an GHG account in line with international standard, on which the GHG emission reduction target will be based.

Climate change mitigation and risk management

Aware of climate change-related risks, the Company includes these risks in organization-level and project-level operational risks, so that they can be assessed, analyzed and monitored in a thorough manner. The Risk Management Committee emphasized project-level risk management.

Risks and mitigation procedure

Risk	Mitigation procedure	Impact level
Increasing temperature	• Study the way to lower air temperature before it enters the Air Inlet Filter, to raise gas turbines' efficiency at Ratchaburi Thermal Power Plant. • Lower air temperature for Tri Energy Power Plant's combustion system through water spraying.	Low Planning was carried out, with efficiency enhancement to deliver electricity to customers as per contractual condition.
Floods	• New projects are designed to be surrounded by the water drainage system while generators are located on the ground higher than the previously-flooded level. • Flood Manual and emergency plan are put in place for prompt handling. Annual drill is exercised. • Rainwater measuring system is installed at Ratchaburi Power Plant, to monitor the situation and alert relevant individuals.	Low* Planning was carried out, with efficiency management to limit any possible impact

** Remark:* *The risk assessment and methods to cope with the incident were drawn up in December 2017 and implemented in 2018. The assessment was undertaken before the washout of the saddle dam D at the Xe-Pian Xe-Namnoy project.*

Risk	Mitigation procedure	Impact level
Drought	• Monthly monitor water usage at main water sources, to evaluate the situation and watch out for impacts on the production process as well as conflicts with communities. • Follow up impacts from the increasing sea level, to evaluate the generators' operations and water cycling rounds in the cooling system. • Improve the controlling system of the cooling system's water quality, to increase water circulation.	Low Planning was carried out, with efficiency management to limit any possible impact.

Support the creation of innovation for higher generation efficiency

Enhance gas turbine capacity to mitigate temperature rising impacts

The Company together with EGAT's Operation and Maintenance Unit, as a company's supplier, carried out a research and development project to enhance gas turbine capacity during November 2017 and November 2018, following a hiccup in the production process due to higher temperature. Therefore, the turbines could not generate power as demanded by the National Control Center (NCC).

The R&D project led to a solution: the air temperature was lowered before the air entered the Air Inlet Filter, enabling gas turbines to work at full capacity despite higher temperature outside.

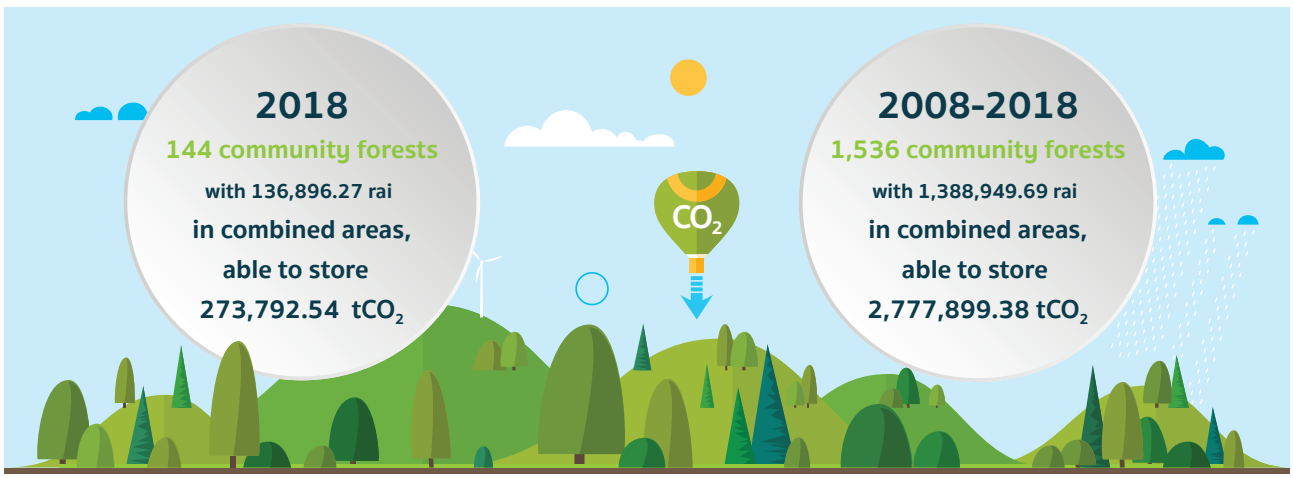
3. Approach to prevent, control and mitigate impacts on environment, community and society

The Company's operations emphasize the conservation and restoration of terrestrial ecosystems, particularly forests. The Company promotes sustainable forest management, to mitigate climate change impacts and lessen biodiversity losses. The approach is in line with SDG # 15 that highlights sustainable use of terrestrial ecosystems. The results of activities and projects are as follows:

Increase GHG sinks through supports to community forests

The Group dedicates its effort in increasing GHG sinks through supports and promotion to the conservation and restoration of community forests, under the "Love the Forest and the Community" project. Carried out in cooperation with the Royal Forest Department and communities nationwide, the project has continued since 2008.

In 2018, a number of 144 community forests were supported. The combined areas amounted to 136,896.27 rai, able to store GHG 273,792.54 tCO_2.



Promote community energy usage

Community Energy Project

The cooperation with communities and the Ministry of Industry's provincial energy offices is aimed at forging knowledge among communities, enabling them to estimate their energy use and calculating their own energy expenses. The project also aims to raise awareness in global warming caused by GHG emissions and assist the community and household energy planning with their knowledge, to reduce energy consumption and household expenses.

The Company's Community Energy Project has continued from 2011. To date, it involves eight subdistricts in six provinces, creating 15 community energy learning centers in three provinces.

2011-2013:
Project covered 2 subdistricts in Ratchaburi province
1. Tha Rap subdistrict, Muang district
2. Bang Sing subdistrict, Photharam district

2014-2016: Project covered 3 provinces
1. Namphu subdistrict, Muang district, Ratchaburi province
2. Thamailuak subdistrict, Tha Yang district, Phetchaburi province
3. Nong Rong subdistrict, Phanom Thuan district, Kanchanaburi province

2017-2019: Project covered 3 more provinces
1. Mae Fak subdistrict, Sansai district, Chiang Mai province
2. Paksak subdistrict, Muang district, Lamphun province
3. Pua subdistrict, Chiang Klang district, Nan province

Operating result in 2018

- Organize training courses for community energy volunteers, enabling them to create community energy technology for their own communities and sell for increasing revenue
- Support 384 community technologies:
  - 62 low-smoke charcoal stoves (200 liters)
  - 10 charcoal stoves, with three stacks
  - 44 biomass stoves
  - 12 solar dryers
  - 15 rice husk stoves
  - 10 high-efficiency roasters.
  - 30 highly-efficient charcoal stoves.
  - 1 biogas fermentation pits
  - 200 LED bulbs

Information on fuel, energy and GHG emission reduction is being gathered and will be presented in the 2019 Sustainability Report.

Solar project at Yom Baan Hua Ha Community, Khun Yuam district, Mae Hong Son province

The Company in cooperation with Thailand Environment Institute (TEI) installed solar panels for 25 households of Baan Hua Ha Community, to given them an access to electricity, improve the community's quality of life and reduce GHG emissions caused by fuel combustion. The Company also buys the project's carbon credit. The village committee manages a fund used to maintain the community's electricity system.

Project period: 2014-2018	5 years
Reduce GHG emissions per year (tCO_2e)	6.64
Reduce accumulated GHG emissions throughout project period (tCO_2e)	33.2
Value of carbon credit for the community (baht/year)	33,200
Value of carbon credit for the community throughout project period (baht/year)	166,000

Results in 2018

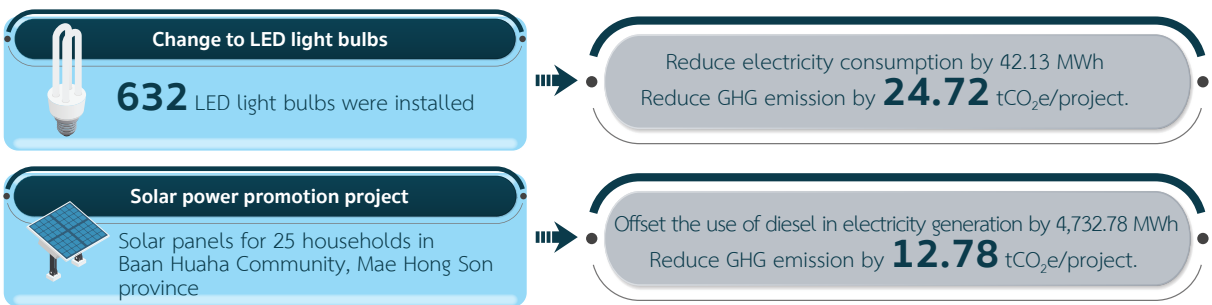
- Notify 20 community leaders and community members representing 25 householders with solar panels of the end of project and provide guidelines to manage the community's solar houses in a sustainable way.
- Guide the community towards ways to raise revenue for the solar panel maintenance fund, which include the collection of electricity fee jointly determined by the entire community and the sharing of revenue from community's output.

Low Emission Support Scheme (LESS)

The concept of TGO's Low Emission Support Scheme (LESS) is applied in creating the Company's CSR activities, to promote GHG emission reduction activities in the community level, forge awareness in GHG reduction, and extend the activities to the trade of carbon credit.

In 2018, the Company included the Yom Baan Hua Ha community solar project in Mae Hong Son province and the adoption of LED light bulbs at Phra Nakhon Khiri Palace in Phetchaburi province in an activity under support of the organization's GHG emission reduction scheme.

Project result:



RATCH received "the low emission support scheme (Less)" certificate under the Global Warming Reduction Campaign.

2019 Wok Plan The Community Energy Project in collaboration with the Provincial Energy Offices of Chiang Mai, Nan and Lam Poon will be applied for "The Low Emission Support Scheme (LESS)" certificate.

Customer Relationship Management

Customers are regarded as important stakeholders in the Company's value chain, who can contribute to the Company's growth, stability and sustainability. The Company thus puts great emphasis on customer relationship management, with guidelines specified in the Code of Conduct as follows:

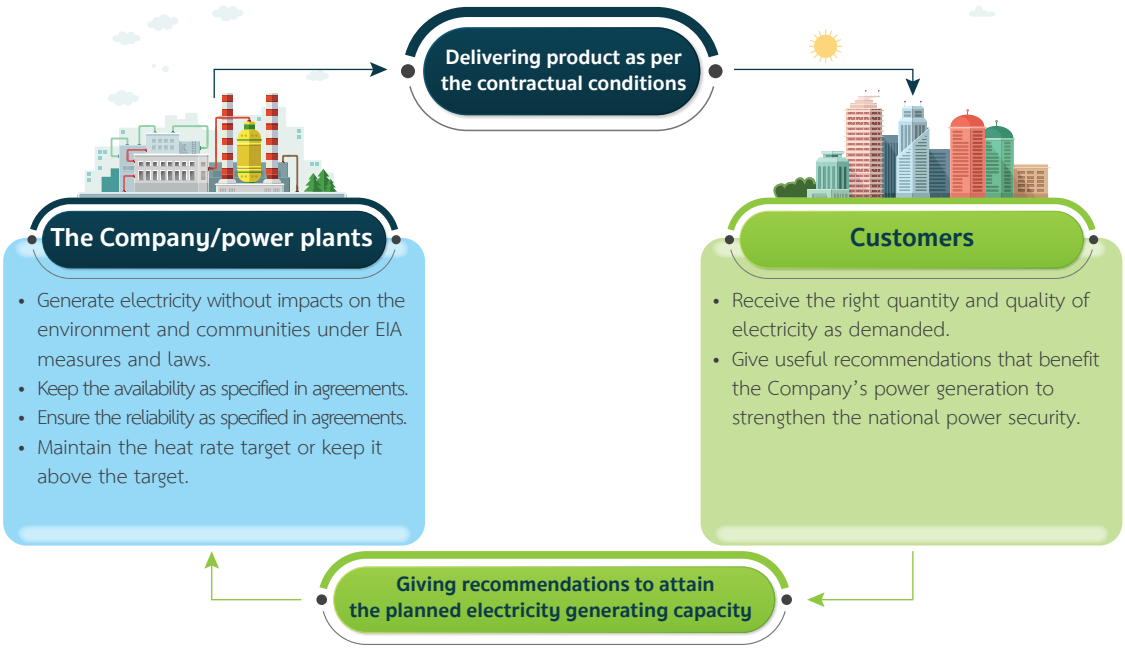
The Company's core business is electricity generating and electricity is the product, with 86.53 percent being distributed to customers in Thailand. The Electricity Generating Authority of Thailand (EGAT) which runs the National Control Center is a key customer who plays a significant role in the Company's business.

Customer relationship management guidelines

Target	Method	Performance in 2018
1) Satisfy customers through specifying the penalty, whereby failure to generate and deliver electricity must not exceed the annually specified target. 2) Power plants must be reliable generating sources, helping enhance the national power security. 3) Generate electricity with the environmental and community responsibility	1) Discuss electricity generating practices with customers continuously to learn their demand and objectives. 2) Prepare power plants, enabling them to satisfy customers in terms of production quantity and quality. 3) Generate electricity without causing impacts to the environment and community.	• Penalty criteria (1) Ratchaburi Power Plant's fines do not exceed the specified target. (2) Tri Energy Power Plant's fines do not exceed the specified target. • Emission from electricity generation is in line with the laws and did not incur complaints from communities.

Guidelines to respond customers' satisfaction and expectations

The Company has operated the electricity generating business by delivering products as per the contractual conditions based on social and environmental responsibility to achieve the confidence of customers and communities surrounding its projects throughout the periods specified in power purchase agreements. The customers' confidentiality must be protected and must not be abused for anyone's benefits.



Electricity generating with responsibility

1. Product responsibility

Customers expect the delivered electricity was produced by the process that meets environmental and safety standards, with no negative impacts on communities and the environment. As a result, power plants must maintain the generation process efficiency and emission control by strictly compliance with environmental impact-controlling and environment quality-monitoring measures throughout contractual periods. This helps assure customers, power users, communities and society of the Company's community, social and environmental responsibility in generating electricity. In the previous year, the Company's main power plants received no complaint from communities concerning environmental impacts.

Details of environmental management, biodiversity conservation and power plant safety management appear on page 79, 86 and 108 respectively.

2. Quality power generation

The power generation must fully meet the contractual requirements in terms of quantity and quality, as demanded by EGAT's National Control Center, to ensure the national power security in line with the established standards. All power plants must specify the availability and reliability, in line with the annual maintenance plans jointly drawn up by the power plants and customers.

Delivering electricity to customers

Electricity is the energy product that is produced on demand. Selling electricity thus requires a long-term power purchase agreement between power plants and their customers, to best manage the risks of both sides. That is to say, the Company can provide the efficiency, availability and reliability of power plants as required by customers. Meanwhile, the customers can balance demand and supply to ensure maximum stability of the power system.

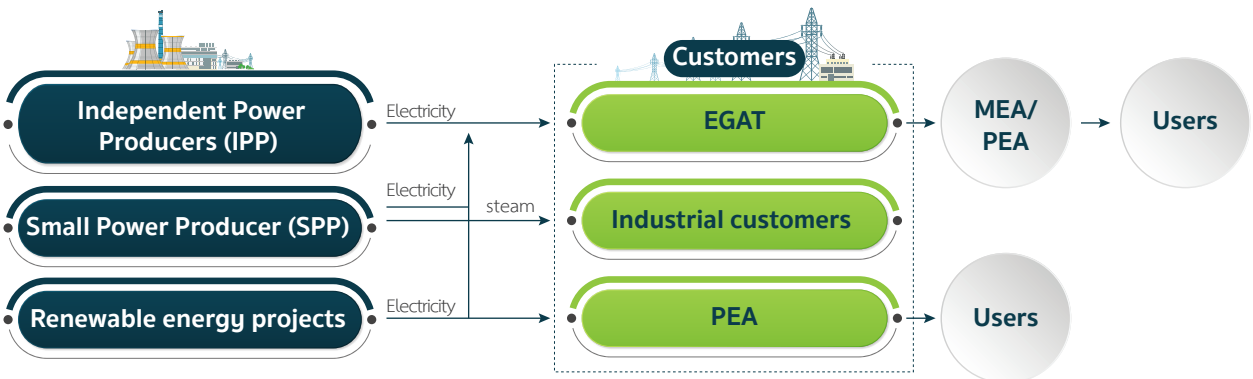
Electricity generation and delivery to customers in Thailand

Domestic customers buying electricity from the Company's power plants are classified in three groups as follows:

1) Electricity Generating Authority of Thailand (EGAT) which is the customer of independent power producers (IPPs) and small power producers (SPPs) that generate power from fossil fuels and renewable energy.
2) Provincial Electricity Authority (PEA) which buys electricity from very small power producers (VSPPs) that generate power from renewable energy.
3) Industrial customers which directly buy electricity from small cogeneration power plants located in industrial zones. The steam was also distributed to this customer group.

EGAT is a major customer, with contracts to buy 5,543 MW or 99.1 percent of the Company's domestic installed capacity of 5,594.3 MW. The percentages of installed capacity sold to PEA and industrial users are 0.6 and 0.3 percent respectively.

Distribution patterns



Power plants supplying electricity to EGAT

Power Plant	Type	Fuel	Shareholding (%)	Management control	Equity capacity (MW)	Contracted capacity (MW)	Power purchase agreement period (year)	Volume distributed in 2018
Ratchaburi	IPP	Natural gas	99.99	✓	3,645	3,481	2000-2027	14,080,408
Tri Energy	IPP	Natural gas	99.99	✓	720	700	2000-2020	1,928,282
Ratchaburi Power	IPP	Natural gas	25	-	372.5	350	2008-2033	7,698,871
Huay Bong 2 Wind Farm	SPP	Wind power	20	-	20.7	18	2013-2018 (Non-Firm 5 years)	171,597
Huay Bong 3 Wind Farm	SPP	Wind power	20	-	20.7	18	2012-2017 (Non-Firm 5 years)	215,438
Ratchaburi World Cogeneration	SPP	Natural gas	40	-	93.6	93.6	2014-2039	1,264,405
NNEG	SPP	Natural gas	40	✓	55.65	50	2016-2041	655,643
Nam Ngum 2 Hydroelectric (Lao PDR)	IPP	Hydro power	25	-	153.75	149.15	2011-2038	2,577,193
Hongsa (Lao PDR)	IPP	Lignite	40	-	751.2	701.2	2015-2040	11,538,221

Electricity distribution and delivery to customers in Australia

The Group's power plants which generate and distribute electricity in Australia have combined commercial capacity of 831.05 MW or 12.85 percent of the Company's total commercial capacity. The product is sold in three ways as follows:

1) Electricity is distributed via "a merchant market" which is a central market. The electricity price is based on the pool price at each particular period (Spot price).
2) Electricity is distributed by entering into the power purchase agreement (PPA) with off-takers registered as electricity distributors of market participants.
3) Electricity is distributed via the market by entering into the Hedging Contract with the electricity retailers.

Delivery patterns in Australia

Power plant	Location	Type	Shareholding (%)	Equity capacity (MW)	Distribution pattern	Contracted capacity (MW)	Purchase agreement period	Volume distributed in 2018
Kemerton	Western Australia	Gas Turbine (Open Cycle)	100	308	Offtake agreements	308	2005 -2030	29,782
BP Kwinana	Western Australia	Cogeneration System	30	35.4	Offtake agreements	35.4	1996 -2021	824,000
Townsville	Queensland	Combined Cycle	100	234	Offtake agreements	234	2005-2025	221,833
Windy Hill	Queensland	Wind Turbine	100	12	Merchant market	12	Distributing to the merchant market	25,840
Toora	Victoria	Wind Turbine	100	21	Merchant market	21	Distributing to the merchant market	47,250
Starfish Hill	Victoria	Wind Turbine	100	33	Offtake agreements	33	2017-2020	97,510
Kemerton (Black Start)	Western Australia	Diesel Engines	100	7.2	Additional service contract	7.2	2018 - 2028	0
Mount Emerald	Queensland	Wind Turbine	100	180.45	Offtake agreements	180.45	2018 - 2030	23,442

Net electricity volume distributed in 2018

Country	Customer	megawatt-hour	%
Thailand	EGAT	40,130,058	98.83
	PEA	169,451	0.42
	Industrial sector	303,958	0.75
Australia	Purchasers by off-take agreements	1,196,567	94.24
	Merchant market	73,090	5.76

Power purchase agreement management

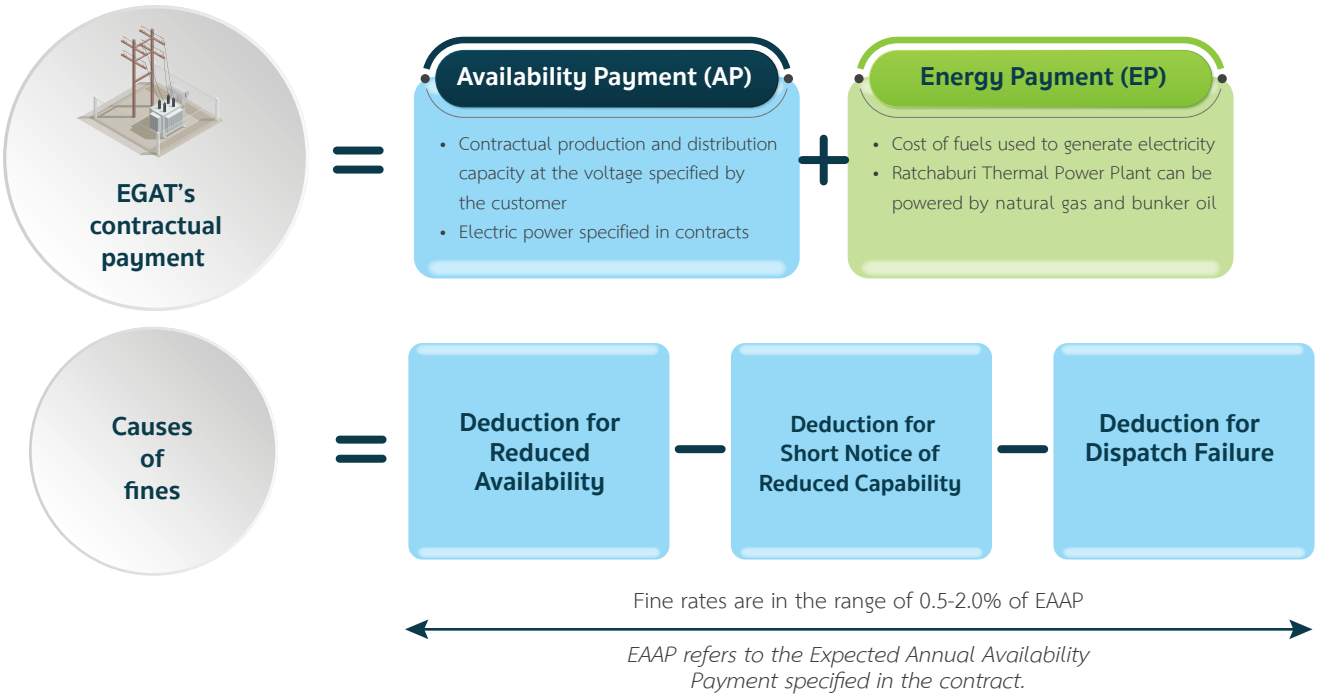
Under power purchase agreements, over 93.7% of net distribution volume is supplied to EGAT, which is a sizeable portion and significant to the Company's and the customer's economic and social stability. The focus of power plant assets management is placed on managing the power plants' power purchase agreements, to ensure the availability and reliability, thus strengthening revenue generation at full potential.

Nevertheless, electricity is a commodity produced on demand and the production process involves risk factors that may derail or interrupt the production plan. As such, maintaining power plants' efficiency to ensure the availability when ordered as well as controlling the fines at a customer's acceptable level are a significant mission of power plants and the Company.

Ratchaburi Power Plant's fine management

Ratchaburi Power Plant, the Company's primary asset with installed capacity of 3,645 MW, supplies its output to EGAT. Fines are identified in the power purchase agreement when the following incidents occur:

- ✔ Deduction for Reduced Availability
- ✔ Deduction for Short Notice of Reduced Capability
- ✔ Deduction for Dispatch Failure (Unplanned outage)



The magnitude of the aforementioned incidents will vary in line with contractual fines, which are in the range of 0.5-2.0 percent of the expected annual availability payment. The level is accepted by EGAT and will not affect the overall national power security.

Maintaining the fines at the customers' acceptable levels reflects the customer's satisfaction. Each year, the power plant's efficiency is maintained to limit unplanned outage at no more than 3-5% of the contractual availability payment, so as to minimize possible fines.

The power plant annually sets maximum fines that it can accommodate, using them as the benchmark in maintaining efficiency. The process takes into account multiple risks that may cause unplanned outage.

Result of Ratchaburi Power Plant's fine management

Ratchaburi Power Plant set the target fine ceiling at 0.64 percent in 2018, but actual fine stayed at 0.55 percent, below the target.

Ratchaburi Power Plant (Contractual installed capacity = 3,481 MW)

Year	Contractual fines rate (%)	Ceiling (%)	Actual (%)	
2014	0.5 - 2.0	0.64	0.28	
2015	0.5 - 2.0	0.64	0.53	
2016	0.5 - 2.0	0.64	0.59	Below ceiling
2017	0.5 - 2.0	0.64	0.32	
2018	0.5 - 2.0	0.64	0.55	

PPA management performance of RATCH-controlled power plants

In 2018, the power plants in which RATCH has operational control succeeded in fulfilling commitment specified in the power purchase agreements. The availability, reliability and heat rate, which are key factors to the economic value of both the Company and customers, met all specified targets. Details are as follows:

Power plants' availability payment and reliability

Power plant	Installed capacity (MW)	Equivalent Availability Factor (EAF)		Reliability Factor (RF)	
		Target	Actual	Target	Actual
Ratchaburi Thermal Power Plant Unit 1	735	95.47	97.18	95.47	97.18
Ratchaburi Thermal Power Plant Unit 2	735	95.47	97.18	95.47	97.18
Ratchaburi Combined Cycle Power Plant Block 1	725	80.13	82.70	93.44	96.44
Ratchaburi Combined Cycle Power Plant Block 2	725	89.61	95.14	93.45	97.54
Ratchaburi Combined Cycle Power Plant Block 3	725	89.14	92.28	92.96	96.24
Tri Energy Power Plant	720	89.04	96.65	91.12	98.41
NNEG Power Plant	139.13	98.90	98.90	Undefined	

Heat rate

Power Plant	Heat rate (BTU/Kilowatt-hour)					
	Natural gas		Bunker oil		Diesel	
	Target	Actual	Target	Actual	Target	Actual
Ratchaburi Thermal Power Plant Unit 1	The National Control Center put the generators under Reserved Shutdown				None	
Ratchaburi Thermal Power Plant Unit 2						
Ratchaburi Combined Cycle Power Plant Block 1	7,167	7,132	None		Undefined	
Ratchaburi Combined Cycle Power Plant Block 2	7,145	7,084				
Ratchaburi Combined Cycle Power Plant Block 3	7,124	7,077				
Tri Energy Power Plant	7,223	7,180				
NNEG Power Plant	7,880	7,862	None			

Note : Target heat rate of bunker oil and diesel could not be defined as there was no plan to generate power with bunker oil and diesel.

Construction management to meet delivery schedules

The Company's Project Development Unit oversees projects under construction. It monitors the construction progress compared to construction plans and assesses risks that may delay the construction works and affect the commercial operation schedule. Projects of which commercial operation is clearly specified in PPA are in particular focus.

Projects under construction	Location	Commercial operation schedule	Customer/stakeholder
Berkprai Cogeneration Power Plant	Thailand	2019	EGAT
Expansion phase of NNEG Power Plant	Thailand	2021	Industrial customers
Fangchenggang Nuclear Power Plant Phase 2	China	2021	Off-takers
Pink Line Monorail	Thailand	2021	Commuters/ MRT
Yellow Line Monorail	Thailand	2021	Commuters/ MRT
Riau Combined-Cycle Power Plant	Indonesia	2021	Indonesia's power utility Perusahaan Listrik Negara (PLN)

In 2018, all projects progressed as planned and their commercial operations are expected to commence as scheduled.

Customers' engagement

The Company regularly holds meetings with power plants, to exchange opinions and clarify various issues including work-related obstacles. They brainstormed for solutions and adjusted the work process to best respond to the needs of both parties.

Method and pattern of customers' engagement

Method/pattern	Customer/ stakeholder	Frequency	Objective/target
Meeting	Executive-level customers	At least 2 times per year (depending on issues emerging in each year)	Discuss issues and find solutions to improve the generation process
Meeting	Operating-level customers	At least 4 times a year (depending on issues emerging in each year)	Discuss the understanding in complying contract
Seminar	Customers and suppliers	At least once a year	Exchange knowledge on the maintenance and efficiency improvement of machinery as well as operation planning
Social-responsibility activity	Executive and operating-level customers	At least once a year	Strengthen good relationship to jointly carry out social-responsibility activities

Performance in 2018

Power plant	Issue	Solution
Ratchaburi	Product quality improvement: In case the power plant fails to meet the contractual generation (there was a fine) or it cannot meet the mega-voltamps reactive (MVar) as set point. Power plants and customers will jointly analyze the issue and customers' recommendations will be applied in the generation process improvement, for upgrading output quality to reach contractual specification and control any possible fines.	Power plants checked transformer tap's set point and tested the set point and limit of MVar distribution in power plant's controlling system. The results were analyzed and the set points were adjusted, to ensure the supply meets customers' order as much as possible.
Tri Energy	Maintaining 24-hour availability after the generation to the grid resumed and the customer was informed of the availability, supporting their precise generation planning in order to prevent impact towards availability payment.	After informing the operation, the power plant defined two approaches based upon the plant's efficiency in each period of time, which are fixed load and stepped load, ensuring that the availability committed to the customer can be maintained for 24 hours continuously and affect the available payment as less as possible.

A seminar for knowledge sharing hosted for the customers of Ratchaburi Power Plant and Tri Energy Power Plant

CSR activities to tighten relationship with the customers of Ratchaburi Power Plant and Tri Energy Power Plant

Way to respond customers' expectations through partner relationship management

Ratchaburi Power Plant has tighten relationship with the suppliers in charge of the operation and maintenance (which is EGAT's Operation and Maintenance Unit), along with managing PPA, to better respond to customers' expectations. The process is conducted in the following ways:

- Identify annual KPI of the Operation and Maintenance Unit, concerning the generators' heat rate and availability which are the main conditions of contract.
- Set KPI for Dependable Contracted Capacity (DCC) test, based on the National Control Center's order (which is the customer), to ensure power plants' efficiency in fully meeting contractual requirements, standards and relevant regulations as specified by the customer.
- Arrange workshops on simulated scenarios. Through a simulator, the workshops promote analytical thinking, assessment and timely solution for possible scenarios which may happen in the power generating process. The unit will be prepared to handle and solve problems in an appropriate and timely manner, which will ensure contractual electricity dispatch as well as help the customer maintain the security of the national power system.

Controlling the generation capacity to meet customers' needs.

Recording the power generation volume sold to customers

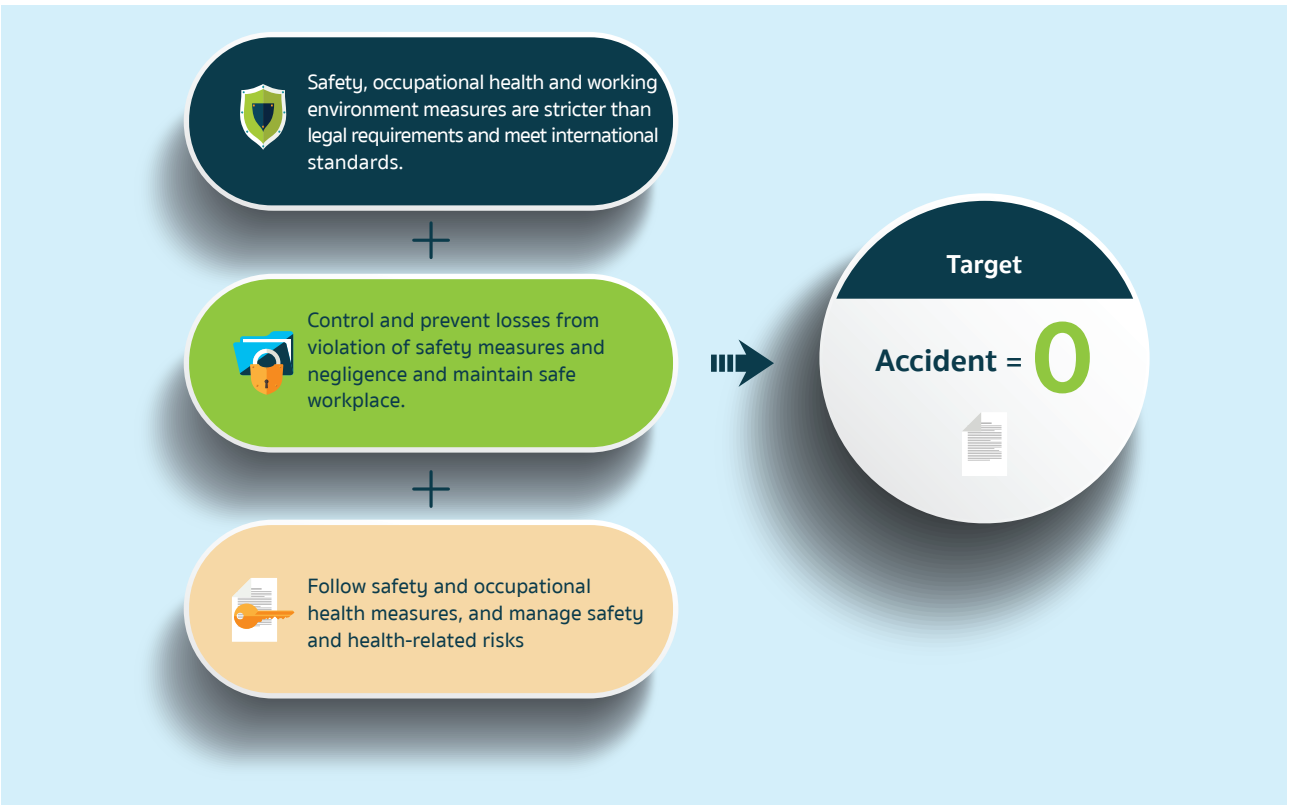
Safety and Occupational Health of Employees and Suppliers

RATCH strives to be a leader in operational excellence in safety, occupational health and the environment with security system for the Company's operators, external operators, contractors and outsiders working in the Company's premises and all power plants.

Safety, occupational health and working environment management approach

Zero accident is the goal of all activities of the Company and power plants, under the annual safety target. To this end, it requires compliance with safety, occupational health and working environment principles. The principles shape the Company's approach in three main aspects as follows:

Safety, occupational health and working environment principles



RATCH's measures in managing and preventing risks that may cause losses are in compliance with legal requirements on safety and occupational health. The Company has formulated the safety policy, regulations, orders and measures as well as work procedures for the tasks that involve safety risks. Appropriate safety equipment is sufficiently provided, along with a safety plan.

The safety measures are exercised on all individuals, insiders or outsiders, working or joining activities at the Company's premises and power plants as RATCH realized that safety is the basic rights for all. RATCH and power plants also implement international safety standards, to ensure that its safety measures are efficient and effective in achieving the zero-accident target.

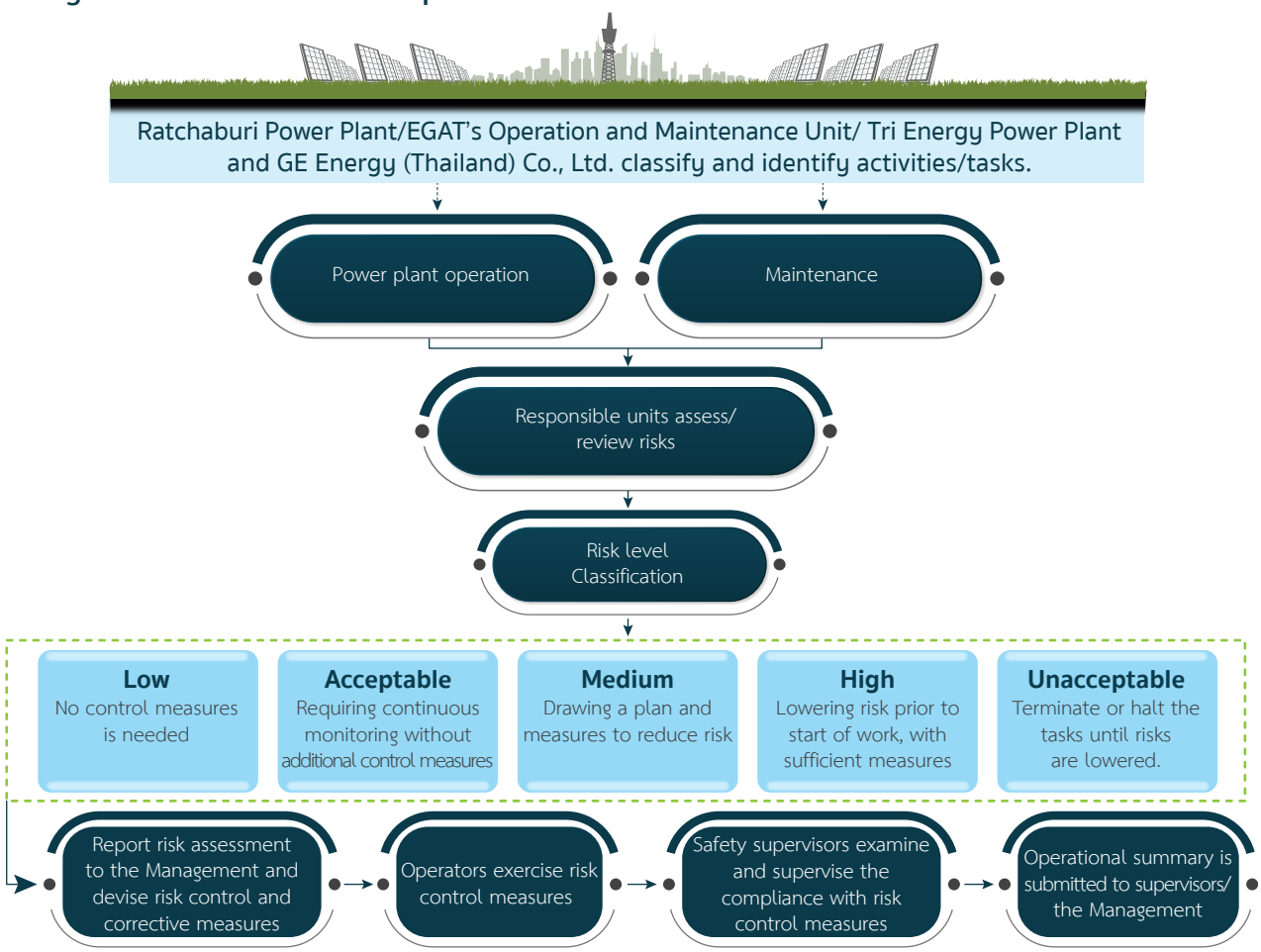
Power plants' safety and occupational health management

Risk factors on safety and occupational health at power plant can cause high economic, social and governance impacts. This particularly involves the maintenance which is done by contractors and the subcontractors of both the power plants and suppliers. All power plants are thus fully dedicated to outline safety and occupational health measures, to prevent loss of life and assets from accidents, injuries and work-related illness caused by incorrect practices, negligence or other errors.

Assessment of safety-related risks at power plants

High risks prevail in power plants' tasks involving the generation process and maintenance. Assessment of work-related risks that may cause severe accidents and damage to the generation process and machinery/ equipment maintenance is a means to define a mechanism and work process to ensure safety and loss prevention.

Safety-related risk assessment process



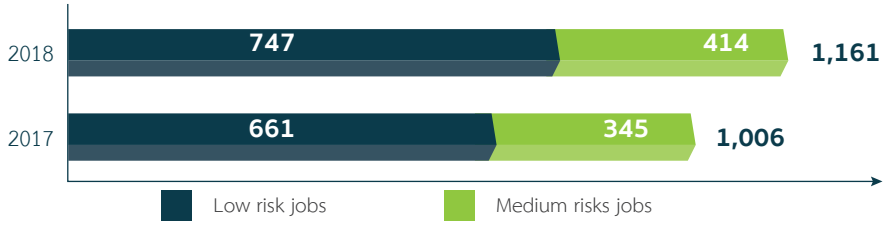
Ratchaburi Power Plant

The assessment of all job risks from all units at office and the power plant involving operation and maintenance is reviewed annually, to ensure efficient risk management and reduce risk severity and incidents as much as possible.

Performance in 2018

- A total of 1,161 tasks were assessed (up by 15.41% from 2017), covering all activities conducted at the power plant.
- None was found to carry high risks.
- 414 tasks showed medium risks and comprehensive risk managment guidelines were set accordingly by Ratchaburi Power Plant.

Ratchaburi Power Plant's risk assessment result



Ratchaburi Power Plant's practices to tackle medium risks

Risk jobs	Risk control measures
Work in confined space during maintenance of combustion room's temperature sensors	• Check equipment before starting work • Wear PPE/chemical mask • Measure oxygen level in operating area and conduct annual medical examination for operators
Use of chemicals in maintaining machinery's battery	• Strictly follow manual and instructions from training • Wear PPE/chemical mask • Conduct annual medical examination for operators
Fire or falling from high ground during the maintenance of hazardous gas sensors	• Turn off power before starting the maintenance service and hang a warning sign • Ensure scaffoldings are installed correctly • Inspect possible factors that may lead to electric sparks

Tri Energy Power Plant

At Tri Energy Power Plant, an assessment in job risks and the application of Human and Organization Performance (HOP) Principle helped identify possible risks in 2018, thus leading to the right preventive and corrective measures.

2018 Performance

- A total of 223 jobs were assessed for possible risks.
- None of them posed high risks.
- Jobs posing medium risks were 170, out of the entire 223 jobs.

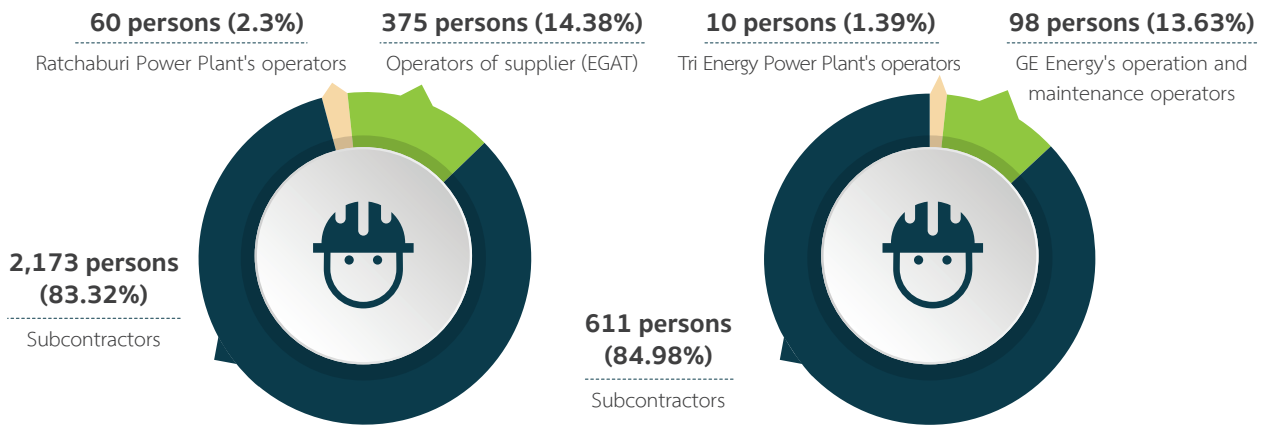
Risk assessment results and operational/maintenance measures at Tri Energy Power Plant

Assessed jobs	Risk level	Risk factor	Corrective measures
Fuel transfer and controlling gas turbine generation by using light oil	Medium	• Contacting oil or inhaling leaked oil vapor • Fire-caused injuries • Hypoxemia or danger from working in areas where CO_2 is leaked	• Install an valve outside the turbine to reduce physical contact • Wear PPE • Never be in the areas alone • Communicate and complete a manual
Fire protection system maintenance	Medium	• Being electrocuted • Falling from high ground (scaffolding) and injuries • Unintentional CO_2 injection	• Turn off power before starting of work and strictly follow the manual • Wear safety belt while operating on high ground • Inspect the scaffolding conditions as required by law and hang the condition sign • Use signal and turn off valve if the system is still working.

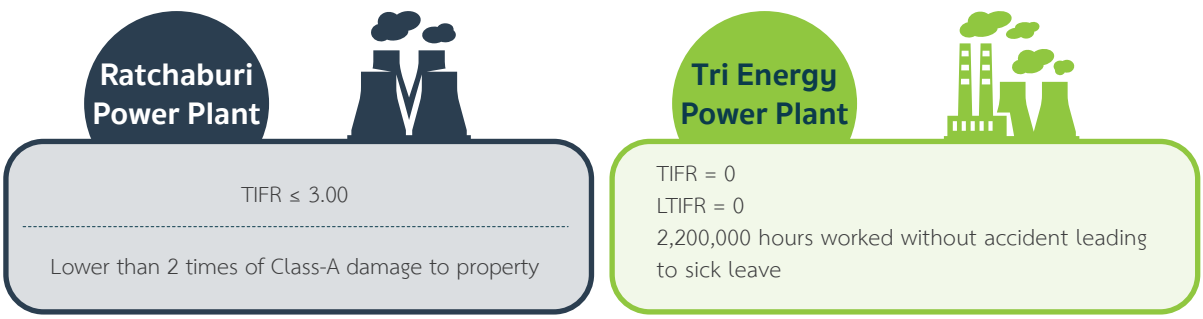
Ratchaburi Power Plant and Tri Energy Power Plant

Aside from the safety and occupational health policy, the Company's primary power plants ensured their safety measures comply with OHSAS 18001: 2007 standards. The standards are enforced on all operators and contractors, involved with the operation and maintenance as well as those working at offices. The safety supervisor must control and recheck the before and after work compliance with safety measures by employees and contractors (or 100%) along with measures to handle emergency situations which may happen and affect the operators and stakeholders under the zero-accident goal.

Operators and contractors at Ratchaburi and Tri Energy Power Plants

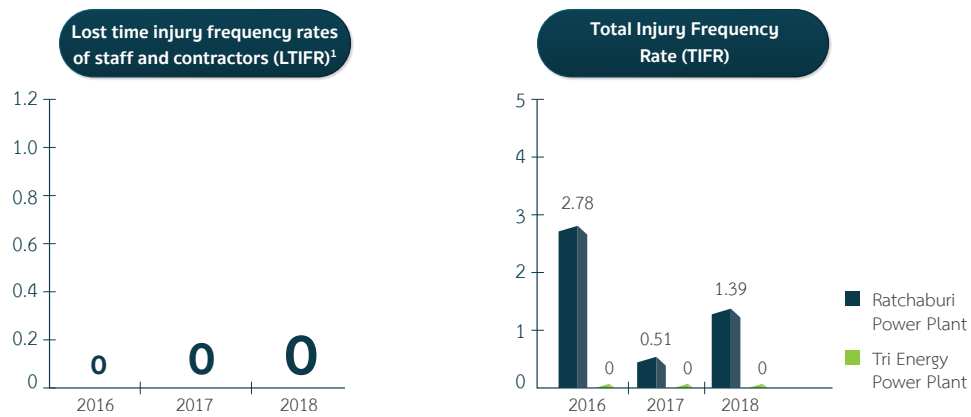


2018 Target



Performance in 2018

The statistics of incident and injury of employees and contractors of Ratchaburi Power Plant and Tri Energy Power Plant



Remarks: 1 = LTIFR of staff and contractors of Ratchaburi Power Plant and Tri Energy Power Plant

: LTIFR (Lost Time Injury Frequency Rate) = Loss Time Injury per 1 million man hours worked

: TIFR (Total Injury Frequency Rate) = Total accident per 1 million man hours worked

Ratchaburi Power Plant achieved its 2018 targets.

- TIFR was at 1.39, below or equal to the 3.0 target.
- In 2018, there are two accidents with B-level severity (whereby the injured had to take leave for no more than 7 days):
    1) EGAT operators falling from the stairs to the Fuel Gas Desulfurization (FGD) tower suffered minor injury, with no need to take a leave. The damaged stairs were fixed, with a plan for annual inspection.
    2) Water mixed with sulfuric acid remaining in the pipe was splashed to an EGAT operator who was checking valve at the acid mixing pipe. This affected operator suffered minor injury, with no need to take a leave. After the incident, the checked valve was changed properly, and the risks on working with chemical and personal protective equipment (PPE) were reviewed.
- No accident that caused Class A damage to property, better than the target that accidents with Class A property damage must be lower than two times.

Tri Energy Power Plant achieved its 2018 targets.

- TIFR = 0
- LTIFR = 0 (for three consecutive years)
- Achieve 2,200,000 hours worked without accidents that led to sick leave achieve the accumulated 2,720,710 hours worked without accidents that led to sick leave.

Safety activities in 2018

	Activities	Results
Ratchaburi Power Plant		
 	Safety Corner • Forge safety culture among the power plant's operators through cooperation with EGAT's Operation and Maintenance Unit, which are the suppliers. • Create "Safety Corner" to provide safety information and sample work-related accidents posted at operating areas inside the power plants, to help educate operators and contractors and raise their awareness in work safety.	"Safety Corner" for operators, contractors and subcontractors for combustion inspection and the major overhaul maintenance, to raise their awareness in work safety, thus preventing the serious work-related accidents.
	Locating substandard situations during major overhaul and minor inspection • Raise operators' awareness in possible dangers when working inside power plants • Require operators and safety officers to find out substandard situations after attending "Safety Walk Down" activity and before starting their tasks, to devise practical improvement methods. Results of the implementation of such methods are recorded.	• 90 substandard situations were found including repeated procedure for the lifting of heavy equipment, inappropriate relocation of heavy equipment, blocking of emergency exit, scaffolding installed without sheets to accommodate falling objects, and failure to connect electrical equipment with automatic breakers. • All situations were rectified to fully meet safety standards, resulting in zero accidents.
	Safety contest among suppliers and subcontractors' operators • Raise awareness and participation in maintaining safety standards during the annual maintenance. The contest involves operators of supplier (EGAT) and its subcontractors at the sites. • Organize a contest on safe and correct practices for work in confined space, work at height and scaffolding installation which are deemed the most dangerous tasks. The contest is an additional method aside from an orientation and equipment inspection.	• EGAT's boiler and gas turbine units were awarded for complete compliance with safety requirements regarding their operations in the power plant's confined space. • Onwards Co., Ltd. and Singharat Co., Ltd were awarded for safe operations at height and scaffolding installation, being the models for other suppliers and contractors providing services in dangerous areas.

	Activities	Results
Tri Energy Power Plant		
	EHS Stand Down Day • First-time application of HOP principle, which believe that human error is inevitable. Most unsafe situations are caused by intentional and unintentional acts. • Training to inspire learning and visualization of work process in dangerous areas. For example, unclear sign tags may cause mishaps.	• Operators found 51 "Error Traps" involving equipment sign tags and warning signs at the power plant; for example, no ON/OFF sign tag for valve or pumps' switch. • Rectification is 88.24% completed. Meanwhile, the remainder of 11.76% are in process of correction.
NNEG Power Plant		
	Safety Lock • Maintain the condition of valves in the pipeline, to block and control the movement of liquids. The concept is to ensure all valves are correctly turned on and off, for the safety of all operators. • Involved operators use safety locks which are uncomplicated and flexible tools. Locking levels are adjustable to fit valves' positions. Double locking is then applied to ensure no leakage of liquids. • Safety locks replace chains and locks which are easy to rust and damaged.	No accident in 2018 Lost Time Injury Frequency Rate: LTIFR = 0

Safety and occupational health management in Australia

RATCH-Australia Corporation Pty Ltd, the Company's wholly-owned subsidiary, operates eight power plants in Australia with equity installed capacity of 873.55 MW (11.44% of total capacity). Safety and occupational health management is a priority of all power plants, to provide safety as well as safe and hygienic workplace to all staff through the following actions:

- All power plants are required to define the integrated quality, safety and environment policy.
- An operational manual was provided in line with Australia's occupational health and safety standards (AS/NZ 4801), to ensure all operators at offices and the power plants enjoy safe and hygienic workplace.
- The safety and occupational health-related risks are regularly assessed and reviewed while mitigating measures are defined.
- The Incident and Hazard Notification Form is available for the power plants' staff and outside workers to fill in with factors harmful to their health and safety. The factors are reported to the Safety Committee for the preparation of timely preventive and corrective measures.
- Fire evacuation drills are organized twice a year and Fire wardens attend four training courses per year. RAC's "Emergency Procedure" is arranged, serving as emergency-response guidelines and a means to prepare staff for emergencies.

Head Office's safety and occupational health management

RATCH ensures that Head Office is safe and safeguarded against disasters. Aside from the safety, occupational health and working environment policy announced by the top executive, Head Office's safety system inspection is carried out on a monthly basis. The inspection covers electrical systems, the fire alarm system and the work permit and verifying system for staff and contractors in dangerous areas. They are all encouraged to take part in the organization's safety-related activities.

In 2018, the Company reviewed work-related risks at Head Office, after the previous year. All 27 tasks showed low risks thanks to comprehensive preventive measures provided for the Company's staff and all contractors.

2018 Performance

- In 2018, the Company achieved 551,780 working hours without accidents that lead to sick leave. In early 2018, there was only one personal accident was reported, involving an employee who slipped. The Company asked the subcontractor to strictly follow the work process by puting a sign of slippery caution before the operation.
- Receive BSA Building Safety Award 2018 (Silver Level) from the Building Inspectors Association, in recognition of the building with excellent safety.

Handling safety of suppliers and contractors during maintenance

All power plants must prepare operation and maintenance schedules in advance, to maintain the availability and best respond to customers' orders. Minor inspection is scheduled every two years and the major overhaul every six years. The tasks involve a large number of outside operators, including both contractors and subcontractors and all power plants must formulate a safety, occupational health and working environment plan and measures in protection everyone from harm and accidence, to achieve the zero-accident goal and minimize losses. The measures are as follows:

Power plants' maintenance-related safety

1. **Orientation for operators and contractors**
   All operators and contractors must attend an orientation before starting their jobs, to acknowledge safety regulations, risks and risk-controlling measures for each job, as well as the right choice of Personal Protective Equipment (PPE) for each job. They are also required to attend "Kick Off Meeting" activity where high level executives meet operators to alert them of the significance of safety during and after work.
2. **Preparation of safety and safety work plans**
   All operators must acknowledge work plans and risk-controlling measures for each job and their strict compliances required. All work areas must be prepared for safety and proper work conditions.
3. **Work permit system**
   This is a process prior to work which includes work permits, analyze risks, and define preventive measures, the process involves identification work permit types, inspection of the compliance with standards.
   The permits are for general work, works that cause sparks, work in confined space, metal cutting, Lock out/ Tag Out, and etc.
4. **Inspecting work areas after work as required by the regular work plans and as required by risk factor**
   After the completion of daily work, operators must check the work areas and improve the readiness.
5. **Accident and work stoppage reporting**
   In case of accident or any unsafe situation, involved safety officers must suspend the job and report their supervisors. The accidents will be reported at safety meetings, to define preventive and corrective measures.
6. **Safety performance reporting**
   After the completion of all maintenance jobs, the Safety Committee will convene a meeting and conclude the work results for further improvement.

Safety training for operators, suppliers and contractors

All operators and contractors at the power plants must attend the orientation on safety guidelines. Besides, the Company hosts training on safety and occupational health, to ensure work safety beyond the established standards.

Training topics	Organizers	No. of attendants	Operators	Contractors
• Orientation	Head Office/Ratchaburi Power Plant/Tri Energy Power Plant	3,063	✔	✔
• Safety, occupational health and working environment for newly-recruited employees and other employees	Head Office/Ratchaburi Power Plant/ Tri Energy Power Plant	24	✔	-
• CPR & AED User Training	Ratchaburi Power Plant	47	✔	-
• Work review for crane controllers (moving and non-moving cranes), hand signal men and riggers	Ratchaburi Power Plant	22	✔	-
• Gas control, for factory use and storage	Ratchaburi Power Plant	4	✔	-
• Building damage analysis and fixing methods	Ratchaburi Power Plant	1	✔	-
• Basic fire fighting	Head Office/Ratchaburi Power Plant/ Tri Energy Power Plant	103	✔	-
• Usage of personal smoke masks during fire evacuation	Head Office	15	✔	-
• Basic life support and first aid	Ratchaburi Power Plant/Tri Energy Power Plant	61	✔	-
• PTT oil depot operations	Ratchaburi Power Plant	10	✔	-
• Supervisor-level safety officers' roles	Ratchaburi Power Plant	10	✔	-
• Industrial waste management officers' roles	Ratchaburi Power Plant	1	✔	-
• Safety from radiation and hazardous chemicals	Ratchaburi Power Plant	27	✔	-
• Fire fighting chief's roles	Ratchaburi Power Plant	20	✔	-
• Fire drill and fire evacuation at thermal and combined cycle power plants	Ratchaburi Power Plant	113	✔	-
• Forging safety awareness and desirable behaviors	Ratchaburi Power Plant	435	✔	✔
• Hearing preservation	Ratchaburi Power Plant	34	✔	-
• Safety in electrical works for staff	Ratchaburi Power Plant	72	✔	-
• Boiler controllers' roles	Ratchaburi Power Plant	82	✔	-
• Defensive driving	Tri Energy Power Plant	61	✔	-
• Safe work at confined space	Tri Energy Power Plant	55	✔	-
• Safe fork lift driving	Tri Energy Power Plant	29	✔	-

Preparation for power plant emergencies and crisis

It is important to respond to emergencies and crisis in time and efficiently, to assure continuity in power plants' operations and zero impacts on communities and the environment. To this end, all power plants have devised emergency and crisis plans for Level 1 to 3 severity, to deal with situations that are harmful to lives, property and the environment. The plans involve the officers evacuation from work areas and prepare nearby communities for any situations that may affect them.

In 2018, Ratchaburi Power Plant exercised Level 3 emergency drill under the simulated fire situation at the thermal power plant's Emergency Diesel Generator (EDG). It was observed by other organizations, the local administrative organizations, and public sectors including, Ratchaburi Governor, Muang Ratchaburi district chief, Damnoensaduak district chief, a superintendent of Muang Ratchaburi district police station, and Banrai district mayor. The drill was aimed at training external units on emergency management and assuring them of the power plant's safety measures and readiness to cope with emergencies.

The drill involved 155 participants and the result was satisfactory.

Emergency drills in 2018

Emergency situations	Ratchaburi Power Plant	Tri Energy Power Plant	NNEG Power Plant	Head Office
Level 1 fire and explosion	28	1	3	-
Level 2 fire and explosion	1	-	1	-
Level 3 fire and explosion	1	-	-	1
Gas leak	4	-	1	-
Oil leak	1	1	1	-
Chemical leak	4	-	3	-
Radiation leak	1	-	-	-
Waste/sewage transfer	-	-	-	-
Natural disasters (Storm/flood/earthquake)	1	1	-	-
Epidemic	-	-	-	-
Snake bite	-	1	-	-
Broken lift	1	-	-	12
Bomb threat	-	-	-	-
Community protests	-	-	-	-
Others (including cracking of pressure pipes)	1	-	-	-

Crisis management

For timely and efficient crisis response in line with international standards, the Company reviewed the Crisis Management Plan (CMP) and the Crisis Communication Plan (CCP) in 2018, and required subsidiaries and joint ventures to adopt similar practices in dealing with Level 2 and Level 3 emergencies. Whenever such emergencies take place, subsidiaries must inform Head Office and leave the Crisis Management Committee release the information to relevant persons and the general public as well as drawing response measures and normalizing the situations. The process is aimed at assuring that the Company or subsidiaries, the operations will continue even amid emergency situations.

Operators' occupational health standards

Internal or external operators' good occupational health influences the Company's operation to achieving business growth. The Company is thus obligated to provide desirable occupational health and working environment, to nurture operators' physical and mental conditions and ensure their best performance.

The Company puts in place measures to curb smoking, drugs and alcoholic beverage consumption in office. Smoking areas are designated outside office areas aside from campaigns to discourage smoking among operators and others and educate operators and seek their participation in taking care of health and work environment preservation for promoting the safety of their lives as well as the Company's and employees property.

In 2018, the focus remained on taking care of staff and contractors' good health to ensure no illness as well as the caring of working environment.

2018 Performance

Occupational health promotion activities in 2018

Activities	Results
Ratchaburi Power Plant	
Hearing Conservation Project • A running program • To reduce the hearing loss of operators at noise levels of under 15 dB(A) on either side compared to base hearing test result	• Noise levels were monitored at 410 points inside the power plant. Aside from corrections under engineering standards, dangerous areas are designated and workers in the areas are required to wear personal protective equipment (PPE). • The hearing test showed operators' hearing loss did not exceed 15 dB(A) on either side compared to the previous year. • Noise level data was posted, aside from signs indicating noise level and warning signs against loud noise in work areas.
SEE...We Care Project • An annual running program • To raise awareness in work safety, energy conservation and environmental preservation • An annual program	• Organize "Safety Talk Show" to educate staff on office syndromes and prevention techniques, targeting staff at risk from office syndromes due to long period of work. The talk show was conducted by the experts from Ratchaburi Provincial Public Health Office's environmental and occupational health unit. • Organize a contest on safety posters under theme "Safety...WE CARE". The contest drew 500 participants, who were staff, EGAT's operators, and contractors.
Stay Healthy, Safe for One's Well-Being Project and Safety Clinic • New program aimed at systematically taking care of staffs who experience work-related health risks • To create basic health protection and promotion through Safety Clinic, which provides a system in reporting and investigating work-related incidents, accidents and illness; health consultation; and first aids	• Organize stress and mental condition tests for Ratchaburi Power Plant's operators • Open Safety Clinic at Sabayjai Room to provide health consultation and health massages. The clinic served 19 people. Health problems that were reported include continuous insomnia, unsatisfactory medical results, dyslipidemia and hyperglycemia. • Arrange medical examination and medical checks according to operators' risks • Inspect areas prone to drug-related actions • Run a personality test to find narcotics risks, and organize physical checks on operators to ensure the power plant's work areas are always drugs-free. The result is no operators are at risk of addiction. • Support safety volunteering, with 47 members. • 20 safety volunteers joined CSR Running activity and some volunteers joined RG Sport day. • Future plans: Extend the scales of Safety Clinics and Safety Volunteering, to attract more users and volunteers, respectively.

Activities	Results
Tri Energy Power Plant	
TECO Sport Day Pre-Event for promoting good health • Promote exercise and good health among operators through running • Challenge participants to a cumulative running distance contest and win prizes • Set a 1-month contest period and use Strava Application to collect participants' cumulative distance	• 31 participants • Cumulative running distance = 4,957 km
Head Office	
RATCH GO Green @ work for 2018 • Promote understanding and knowledge in safety and health • An annual program • 2018 theme was "Avoid risk spots" with guidance on how to stay away from possible dangers and accidents • Organize extra activities to promote awareness in work-related and driving safety as well as waste reduction and energy conservation • Answer questions on safety and occupational health via an application	• 116 persons participated. • Participants secured greater understanding how to nurture their health and avoid risk spots. • Operators applied knowledge in waste reduction and segregation, as well as energy conservation in their daily life.
Best Suggestion Award 2018 • Promote engagement in keeping Head Office safe • Forge safety awareness and culture • Encourage everyone to submit suggestions relating to working environment, safety and occupational health for future improvement	• 56 suggestions were submitted. • Of total, 29 suggestions were related to safety, 12 to occupational health, 9 to working environment, and 6 to energy conservation. • Two awarded suggestions: 1) Provide a clear line of the walkway at building corners or install mirrors to avoid collision and 2) Turn off and pull the plugs of electrical appliances like copy machine and electric pots after work or install breakers for convenience and safety.

Occupational health-related plans

In 2019, RATCH and its power plants will further proceed with the activities implemented in 2018, with a plan to organize the health and occupational health risk assessment. The results will serve as the database in mapping an employee health care plan, to prevent and reduce work-related diseases.

The Company received the silver level of "Building Safety Award 2018" organized by the Building Inspectors Association.

Ratchaburi Power Plant and Ratchaburi-Power Power Plant received the copper level of Zero Accident Campaign 2018, organized by Ministry of Labor.

Organizational Competency Development and Employee Engagement

Vision

To become a leading value-oriented energy and infrastructure company in Asia Pacific

Strategies

S1. Optimize asset management efficiency and asset-related profitability
S2. Focus on the development of new power plants in existing markets
S3. Seek partners for the expansion of electricity business in new markets
S4. Create added value through business expansion in related businesses
S5. Enhance organizational capability

Organizational development through High Performance Organization (HPO) principle

Knowledge Management (KM) to become a learning organization

Targets
in 2020,
RATCH is in HPO status among companies in its peers.

Employees are considered prime stakeholders, being a crucial force that will help the Company achieve its vision "to become a leading value-oriented energy and infrastructure company in Asia Pacific". They are also driving the Company towards growth and sustainability, the ultimate goal.

HPO is an excellent organization, able to efficiently achieve its goals and quality as well as reputation better than those of its peer group, which will lead to solid and sustainable growth.

RATCH upholds the employee treatment guidelines specified in the Code of Conduct. The guidelines cover nine aspects, each implemented under the policy, rules and regulations, and orders and supervised by the Corporate Administration function. The nine aspects are as follows:

1. Emphasize human resource management and development, ensuring thorough and consistent knowledge and ability.
2. Provide fair returns and welfare, comparable to other leading organizations.
3. Strictly comply with employee-related laws and regulations.
4. Arrange work environment in line with safety and occupational health requirements and in support of their jobs.
5. Appoint, transfer and apply reward/punishment system that is fair, honest, equitable and based on the employees' knowledge and ability.
6. Be open to opinions and suggestions based on employees' professional knowledge.
7. Treat employees with respect of their individuality and human dignity.
8. Avoid unfair actions that may affect employees' job security, threaten or put pressure on employees' psychological condition.
9. Open for complaints of unfair treatments.

To achieve the ultimate goal, in 2018 RATCH applied the High Performance Organization principle. This followed an analysis in the previous year on the gaps dividing the Company and other organizations in the same industry in Thailand and overseas.

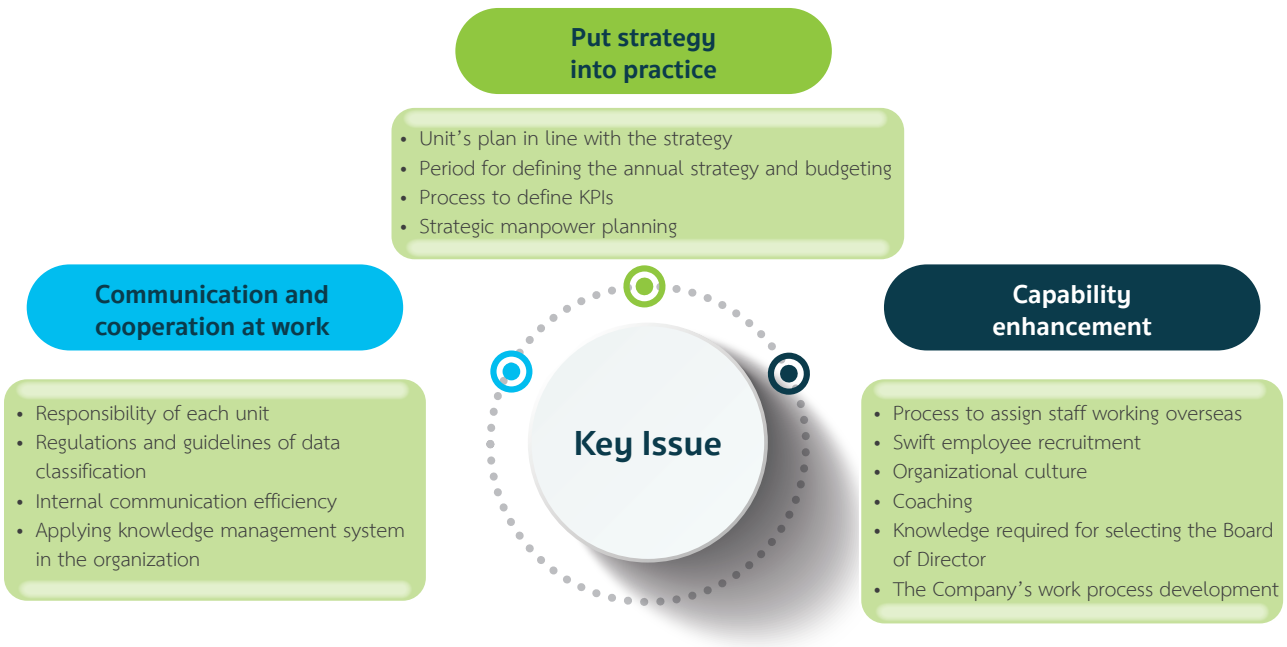
2017

Dimensions analyzed to pinpoint organizational gaps

- Strategic planning and strategy
- Executives' engagement in materializing strategy
- Risk management
- Key behaviors to achieve organizational strategy
- KPI
- Organizational structure
- Human resource management
- Work process
- Technology application

Path to HPO

Based on organizational capacity's analysis, identification of issues and prioritization, RATCH completed a plan and implemented it in 2018. The plan focuses on three issues which demand consideration and review, for higher efficiency. They are:



RATCH set up a working committee engaging relevant high-level executives including CEO in materializing the plan.

Key performance in 2018

Turn strategy to practices

- Prepare functional plans that are aligned with objectives and support the corporate strategy.
- Realign business functions' planning and budgeting periods, to support the organization's goals.
- Improve individual performance indicators in line with the functions' and the organization's goals.

Enhance future capacity

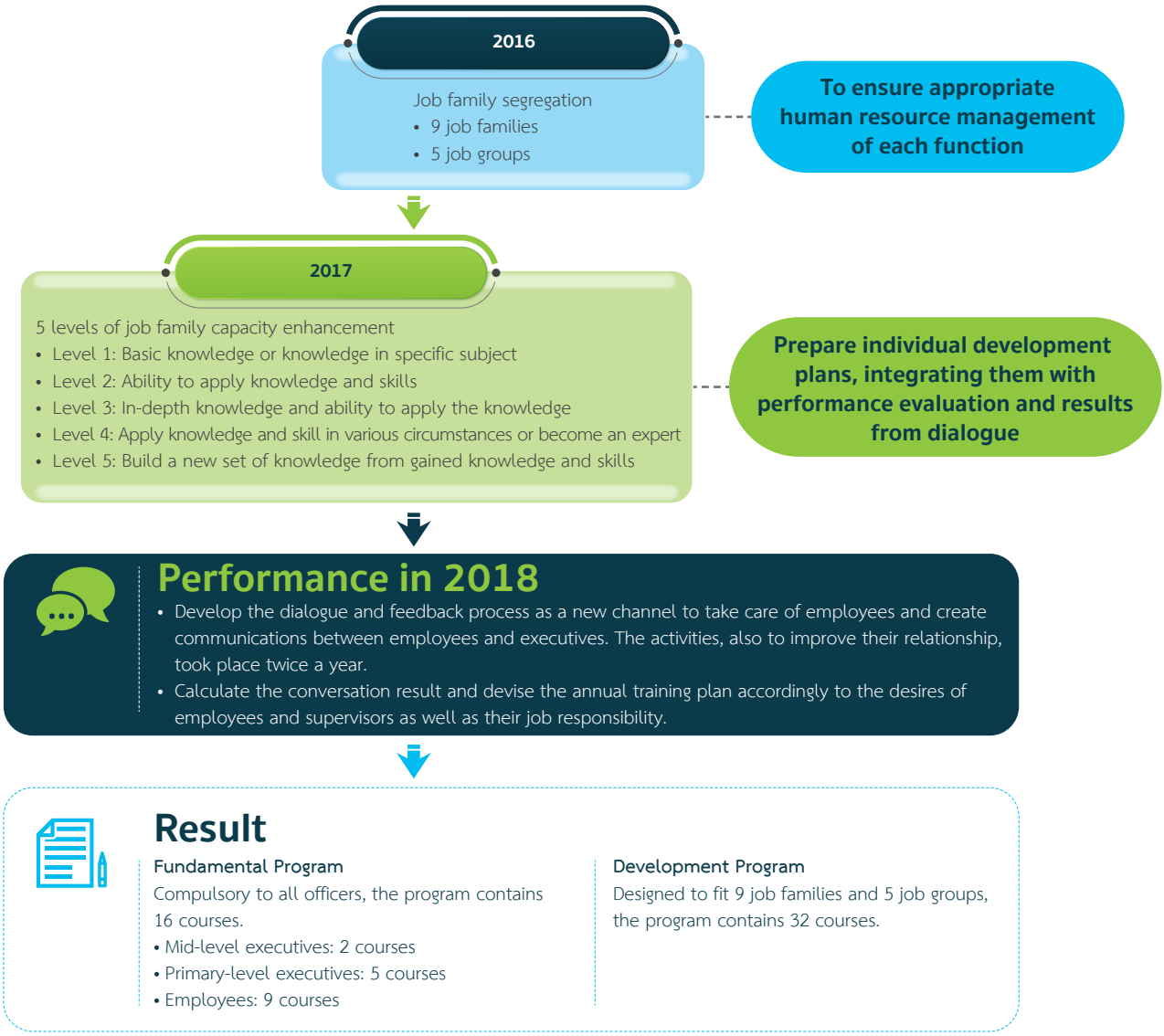
- Improve relevant rules on overseas posting to make it clearer and cover all countries the Company invests in.
- Improve the human resource development system to achieve the capacity desired by the organization.
- Create a new corporate culture that is aligned with strategy and vision.
- Create a coaching process and communications between employees and their supervisors.
- Develop and install the e-Recruitment system for better recruitment efficiency.

Communication and cooperation at work

- Review and improve the responsibility of each function in support of the corporate strategy.
- Develop database, classify secrecy levels of documents and define appropriate authorization over the documents.
- Improve the efficiency of internal communication process and add a channel for communications between employees and high level executives.

Capacity enhancement and career development plan

Human resources play a vital role in helping the Company achieve the HPO status. RATCH has improved human resource capacity to fit the desirable capacity. Capacity enhancement and career development plan kicked off in 2016 and has shown progress as follows:



Succession-oriented human resource development planning

Human resource capacity development needs to be planned, to produce successors to mid-level and high-level executives for continuity of operation and prosperity. The development plan is classified in 2 levels as follows:

1. Succession Planning Management Development: to find successors to key high-level executive positions via training in terms of leadership and necessary management skills.
2. Talent Planning Management Development: to find successors to primary-level and mid-level executives.

Running program to prepare 7 employees to fill executive positions in 2018-2020

Number of	2018		2019		2020	
	persons	%	persons	%	persons	%
Retiring executives	4	28.6	1	7.7	2	15.4

Performance in 2018

Personnel capacity assessment was conducted with RATCH's Leadership Competency model or B^2E^2ST, which identifies persons with leadership. The results were taken into consideration together with the results of psychometrics test and the Executive Development Program.

Remuneration structure

Remuneration is designed to meet labor laws and rules, being consistent and equitable for staff with similar capacity, academic degrees, experiences and similar or comparable job assignments. The structure is also fair to staff of all genders and all nationalities. The pays are higher than minimum wage and structured accordingly to the cost of living in each country.

Employees posted overseas are offered additional welfare, such as home leave, health insurance, emergency assistance (SOS), and safe accommodations.

Entry-level pay rate against minimum wage	2018	2017	2016
Entry-level pay rate for employees with bachelor's degree (times)	2.3	1.4	1.4
Entry-level pay rate for employees with lower than bachelor's degree (times)	1.2	1.6	1.6

The remuneration structure was adjusted late 2017 to be more aligned with the industry's; fit employees' titles, experiences and proficiency; attract talents; and motivate existing personnel. The new structure, effective in January 2018, consequently pushed the entry-level pay rate for employees with bachelor's degree from 1.4 times of minimum wage to 2.3 times.

Employee's engagement

Corporate engagement is extremely essential in today's business, particularly to the organization operating in a highly-competitive industry. Engagement will be a key factor in strengthening the organization, when employees are devoted to do their best for the organization.

In 2017, the Company conducted the first employee engagement survey. The result showed 4 major issues involving executives, work structure, recognition, as well as human resource management. All will be improved under the goal to ensure the Company's employee engagement is comparable to that of leading companies in the same industry. An action plan has been designed accordingly.

Performance in 2018

RATCH assigned all functions to plot relationship-building plans. Details are as follows:

Issue	Actions
Work structure	Create a cross-function project to ensure better coordination within the organization and promote employees' cooperation
Human resource management	• Exercise a systematic and concrete plan to relay the organization's policy, plan, strategy and appraisal system, which involves fair employee returns • Promote the coaching capacity of employees at all levels • Ensure understanding in human resource management, involving the development roadmap, career path • Organize training under the Training Roadmap, which is designed accordingly to recorded dialogues between employees and their supervisors.
High-level executives and communication	Create more communication channels for high-level executives and employees, for formal and informal two-way communications • Through meetings from corporate level to function level and division level • Through coordination for joint projects and activities • Through knowledge exchange programs within the function or cross function • Through informal meetings • Through social media
Executives' capacity enhancement	• Organize executives' capacity enhancement activities for continuous individual development, in preparation for future successions • Emphasize promoting executives' knowledge and ability through supervisors' coaching • Encourage executives' consistent participation in significant courses, to broaden their perspectives and business networking
Recognition	Employees with impressive performance and devoted participation in the Company's activities should be praised, so as to motivate them towards good deeds along with work efficiency. Supervisors praise subordinates who do good deeds and awards are presented for major projects, such as Best Suggestion Award 2018 and CSR Award 2018.

After the implementation of the action plans throughout 2018, another employee engagement survey was conducted in September. The engagement score jumped 12% from the first survey. Meanwhile, employees' opinions were welcomed for further improvements.

Organizational knowledge management

RATCH's knowledge management approach highlights insiders' direct experiences and outside new knowledge to keep up with the disruptive technology trend. Emphasis is also placed the distribution of knowledge throughout the organization, to encourage the application of such knowledge and create a learning culture.

Performance in 2018

Knowledge sharing activities

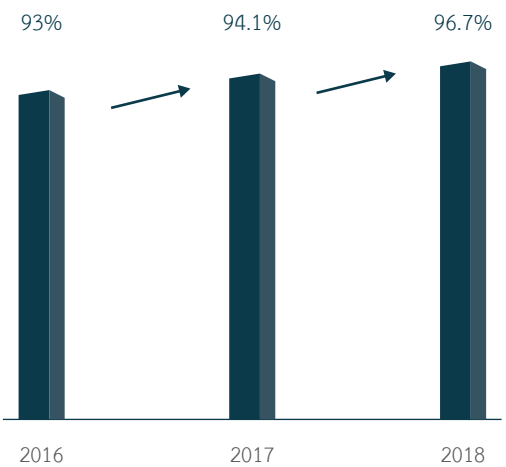
RATCH organized two internal knowledge sharing activities and one external activity in 2018, with the expectation that participants were pleased and utilized more than 80 percent of the knowledge. The average knowledge utilization rate, at 96.7 percent, exceeded expectation. The results of an opinion survey will be used in improving future activities.

Subject	Expert	No. of participants	% of usable knowledge (medium level and higher)	Knowledge applicable to their jobs
Fundamental of International Asset Management by International Assets Management team	Internal, International Asset Management Division	25	• High: 66.7% • Medium: 33.3%	• Apply asset management tips in improving the clarity and comprehensiveness of work plans and be able to exchange experiences concerning the operational obstacles of international power plants • Visualize actual operations and apply results in the making of investment decisions
Participation in Thailand Voluntary Emission Reduction Program (T-VER)	Internal, Consultant and Project development unit	26	• High: 75% • Medium: 20%	• Make changes to on-going activities/ projects to create T-VER projects • Collect, calculate and analyze information to create T-VER projects
RATCH Corporate Innovation Bootcamp through Design Thinking #2	External, RISE Academy	20	• High: 55% • Medium: 40%	• Apply Design Thinking in work process to support organizational development • Create new activities or innovations in preparation for changes in business landscape

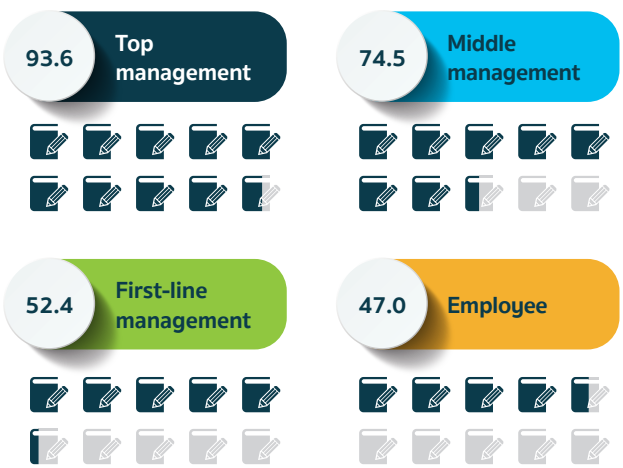
Personnel capacity development

RATCH gives importance to the development of necessary work-related skills and other skills, to motivate and encourage the application of such skills in their routine work as well as guide employees towards the value and importance of their assignments.

% of executives and employees covered in training compared to total



Average training hours of employees, classified by level (Hour/ Person/ Year)



In 2018, 96.7 percent of executives and staff participated in training courses, internal and external.

Aside from training courses, RATCH assigned some employees to on-the-job training to improve their knowledge and skills at actual work sites. In 2018, eight employees were assigned for training at the sites of under-development projects.

1. Xe-Pian Xe-Namnoy Hydroelectric Power Plant, Lao PDR: four persons
   - Observe the power plant's construction
   - Participate in the monitoring of the power plant's construction progress
2. Berkprai Cogeneration Power Plant in Ratchaburi province: two persons
   - Participate in the monitoring of the power plant's construction progress
   - Learn the technical aspects of the Water Treatment Plant and Piping & Instrument Diagram system
3. NNEG Power Plant in Pathum Thani province: two persons
   - Attend meetings and learn about power plant management system
   - Prepare business models and construction plans, as well as documents

Training courses for executives and employees

Employee stewardship

All individual employees are RATCH's most important assets. RATCH consequently assures them of equitable and fair treatment as well as respect in their individuality and human dignity, to create a happy and safe work environment which will motivate their enthusiasm and efficiency.

Performance in 2018

Aside from compliance with labor-related laws and regulations, RATCH has undertaken improvements in 4 important areas.

Strategic manpower planning

Objective:
Plan manpower consistently with business strategy and prepare personnel for various assignments within the Group

Actions:
- Hold meetings with all functions to fix assignments accordingly to desired quantity and quality, employees' qualifications, as well as RATCH's business plan and strategy
- Plan manpower to support job transfers and replacements of retiring staff or those posted overseas or assigned to work at subsidiaries

Rule amendment

Objective:
Create incentive and moral support especially for overseas posting

Actions:
- 3-year overseas posting periods set, extendable by no more than 1 year
- Revise overseas posting allowances
- Revise welfare for overseas posting

Improvement in corporate culture

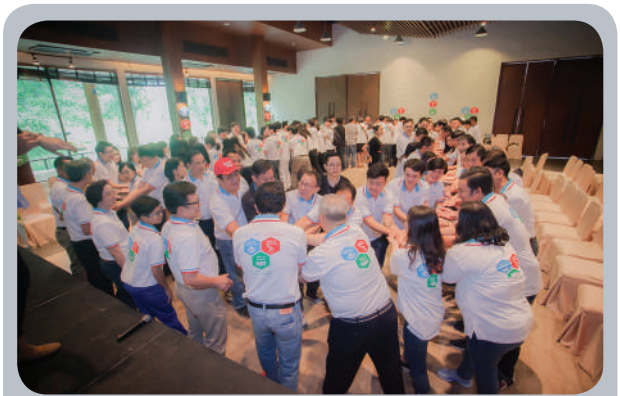
Objective:
Create the culture that supports organizational goals

Actions:
Engage employees at all level in developing new values that corresponds to RATCH's vision, mission and strategy. The new values were communicated to employees through various activities

Employees' advancement

Objective:
Set framework and approach in improving employees' knowledge, ability and capacity to create clear career path for all in 9 Job Families and 5 Job Groups

Actions:
Create subordinate and supervisors' dialogue, to ensure mutual understanding and positive relationship as well as establish the coaching culture



2018 RATCH Group Seminar: Employee engagement activities

Chief Executive Officer informed the operating results and clarified the policy to all employees.

Community and Social Stewardship

RATCH realizes that communities around the Company's premises are the stakeholders vital for the business' existence and sustainability. Community stewardship is thus a mission to be achieved. In this regard, community must be strong while the business stays sustainably on these three basic principles:

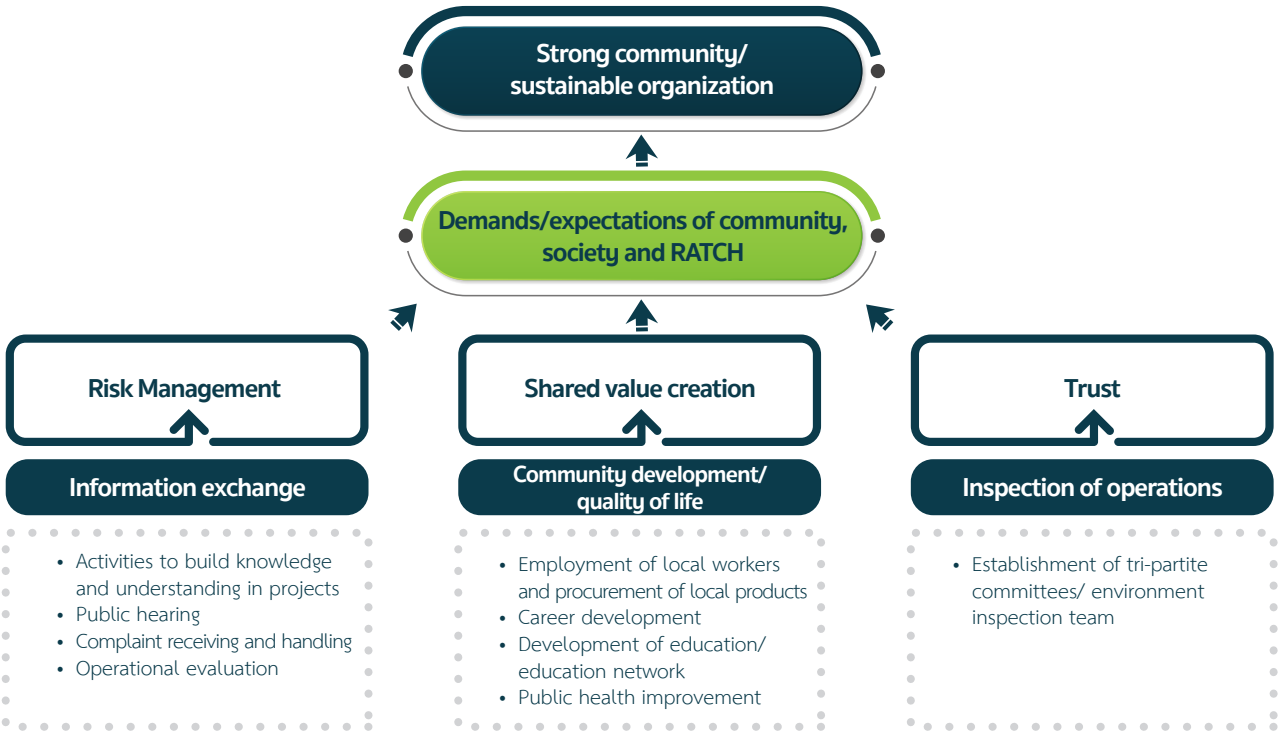
- Manage risks and impacts from the operations on community the most efficiently and effectively.
- Create shared value in economic, environmental and social aspects for community based on community participation.
- Ensure acceptance and trust based on transparency, for mutual understanding and confidence in each other.

RATCH includes practice guidelines in the Code of Conduct and they guide the Company's and power plants' community and social stewardship plans. The main essence of the guidelines is as follows:

- Operate with responsibility for community, society and the environment, for the organization's good image and credibility which will secure acceptance and trust from community and society as a whole and will eventually lead to business success and the organization's sustainable growth.
- Support the Company's projects and activities appropriate and beneficial to community and society and aligned with the organization's strategy and stakeholders' expectations, for stakeholders' better quality of life.
- Respect local norms, traditions, culture and lifestyles.
- Use the option that leaves least impacts on community and society when it comes to natural resources exploitation.
- Promote efficient energy use and conservation for the sake of next generations.
- Support and put in place an appropriate system and procedure to welcome community and relevant parties' participation in the projects that may affect community and their suggestions or complaints related to the Company's operations.
- Assess risks and impacts concerning the environment, society, health and safety before entering into an investment or joint investment project.
- Cooperate with relevant agencies to ensure any undertakings' compliance with international standards or accords, to prevent or reduce social and environmental impacts.

Performance in 2018

Community and social undertakings in 2018 were driven by the strategy that covers 3 operational dimensions: communication to build knowledge and understanding in the Company's projects or power plants; community development-quality of life; and participation in the inspection of operations to ensure transparency.

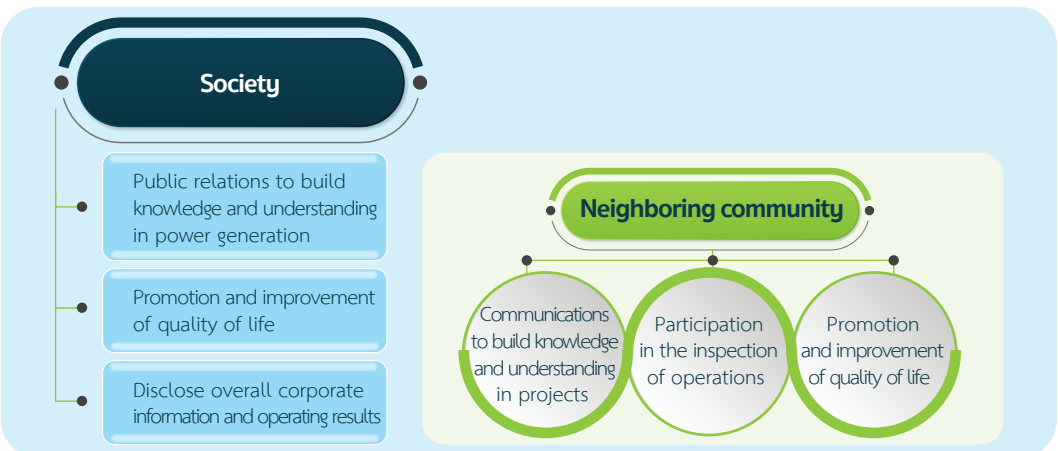


Main activities carried out by the Group in 2018 covered the following three aspects:

1) Information exchange to build knowledge and understanding in the operations
2) Participation in the inspection of operations
3) Promotion and development of quality of life

The activities were classified in two types, depending on target groups.

- Community relations, targeting projects' neighboring communities
- CSR projects focusing on community and society as a whole



Communications to build knowledge and understanding in projects

RATCH has continuously emphasized building knowledge and understanding in RATCH's operations and power plants, which are based on environmental-friendly and maximum-safety principles to assure neighboring communities' normal life. The principles are highlighted particularly at large power plants such as Ratchaburi Power Plant and Tri Energy Power Plant, where possible impacts are huge in line with their sizes. The communications are classified in two levels as follows:

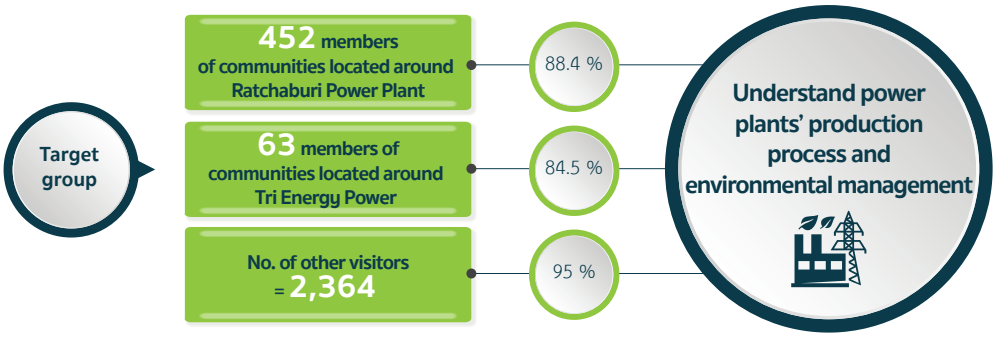
1) Communications to educate and assure community

Communications to educate communities around the Company's power plants about their operations is an essential part in preventing misunderstanding and concerns in the operations. Activities carried out in 2018 were as follows:

Activity/Method	Objective	Target Group	Outcome
Ratchaburi Power Plant and Tri Energy Power Plant			
1) Power plant visit - "Bring friends home" project, targeting communities outside 5-km radius of Ratchaburi Power Plant and Tri Energy Power Plant - Power plant visit by the general public	To broaden knowledge and understanding in power plants' operations and promote relationships and confidence in the operations.	Community leaders/ representatives, representatives of relevant government agencies/ agricultural groups, and etc.	- Ratchaburi Power Plant welcomed 8 groups, consisting 452 visitors. - Tri Energy Power Plant welcomed 1 group, consisting 63 visitors. - Group visits by the general public totaled 32, with 2,364 visitors. Their understanding levels in the production process and environmental management were 88%, 85% and 95%, respectively.
2) Run environmental quality measurement results on the display located in front of power plants	To keep community updated and ensure transparency in operation reporting.	Neighboring communities and commuters in general	Communities gained better understanding and acknowledge power plants' environmental management.
3) Letters to community leaders	To inform community about major undertakings to be carried out by power plants.	Leaders and members of neighboring communities	Community leaders acknowledged power plants' plans and thoroughly informed community members.
4) Meeting between the environment inspection team and community leaders	To learn the team members' and community leaders' opinions and update them on the operations	The environment inspection team and the leaders of neighboring communities	The environment inspection team and community leaders understood the operations and extended better participation in power plants' operations.
5) Communications via media and social-media	To ensure instant and two-way communications with community.	Leaders of communities and networks connected with the power plants	Power plants and communities ably established a channel that allowed easy and timely communication.
6) Suggestions and complaints filing	To hear their opinions and concerns about power plants' operations that may cause impacts on community and the environment.	Communities or other power plants' stakeholders	Power plants improved the operations, taking into account suggestions and complaints, to maintain relationships with neighboring communities.
NNEG Power Plant			
1) Power plant visit	To educate and update community on the Company's operations through a visit which is considered a two-way communication channel.	Communities in Chiang Rak Noi Subdistrict that are located around NNEG Power Plant	30 community leaders and members had better understanding in electricity generation and environmental management.

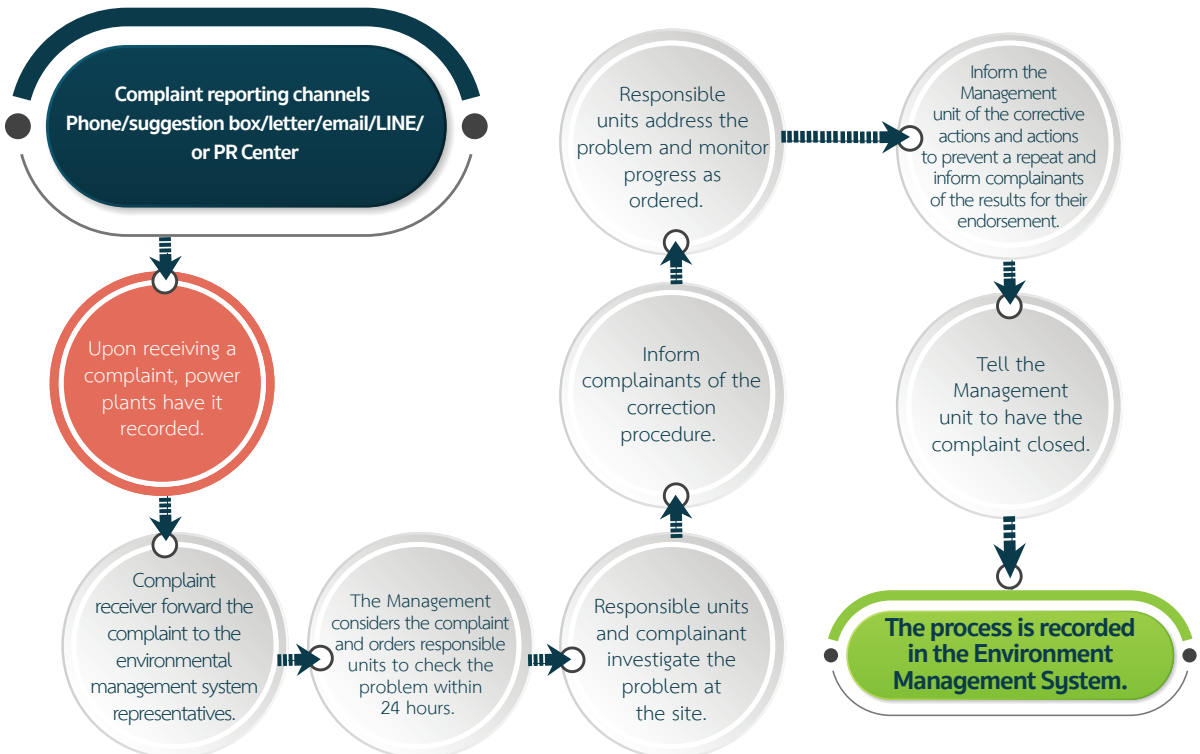
These communication activities were an essential part in the building of relationship and understanding between communities and power plants. Power plant visits, in particular, allowed community members to witness the production process and environmental management. Accurate knowledge led to accurate understanding, confidence and trust in operations.

In the past year, Ratchaburi Power Plant and Tri Energy Power Plant welcomed 452 and 63 community members, respectively. They attended a lecture on electricity generating process and environmental management.



Suggestions and complaints reporting channels

Communities can directly submit their concerns or complaints by calling the power plants or using a suggestion box in front of the premises, email, letter or electronic channels like SMS or LINE. They can also inform their community leaders or environment inspection committee's representatives. The power plants will make a site visit, investigate and address their concerns or suggestions within 24 hours. The end results will be notified to the communities for their endorsement.



In 2018, the Group's power plants received zero environmental complaint from neighboring communities, with a suggestion on driving safety of power plants' employees and workers.

2) Communications via CSR activities

Communications with society as a whole, through the Company's CSR activities, are geared towards boosting understanding about electric power.

Activity/Method	Objective	Target Group	Outcome
Love the Forest and the Community Project - Community forest contest - Youth camp for community forests nationwide - Seminar for community forest leaders' network	To increase knowledge and understanding in electricity generating process, the reduction of greenhouse gas emissions, and participation in the conservation and restoration of community forests as natural carbon sinks	Stakeholders/community/ society as a whole/partners (Royal Forest Department)	Community at community forests is aware of the conservation and restoration of community forests as carbon sinks, to sustainably mitigate global warming impacts.

Activity/Method	Objective	Target Group	Outcome
Community Energy Project	To forge awareness in energy conservation and developing community-based energy sources	Volunteers in covered areas	Community is aware of energy conservation, ably reducing demand for external energy and making more use of community-based energy sources.
@CareLine Project	To forge knowledge and understanding in electricity generating	Students in Nonthaburi Secondary Education Service Area	The target group had better understanding of electric power.
Social media communication	To publicize RATCH's social and environmental activities, which will raise confidence in the Company's operations and build a positive corporate image	Interested persons/ community/society as a whole	The interested were informed about the Group's operations, which built confidence and a positive corporate image.

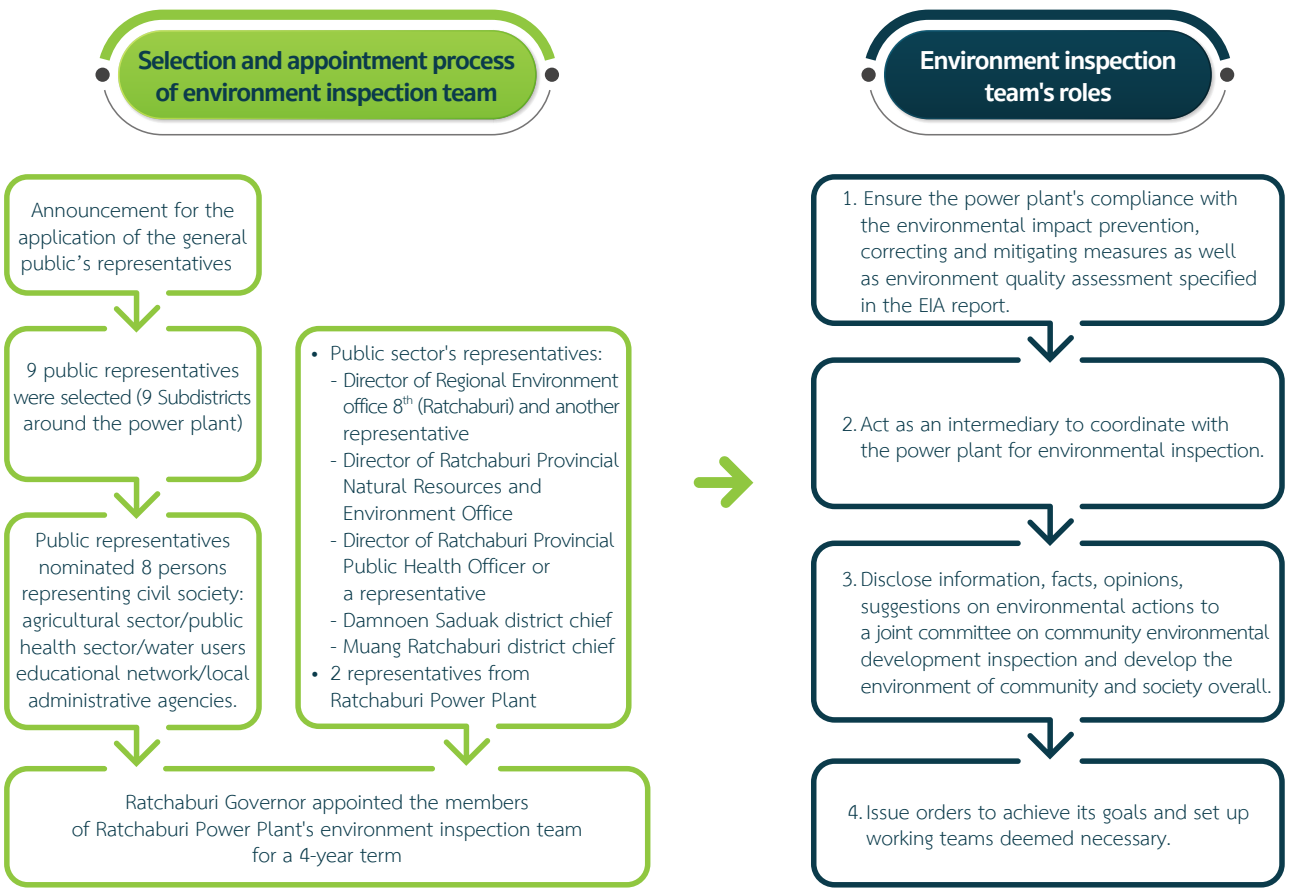
Participation in operational inspections for mutual trust

After commercial commencement, all power plants of the Group set up tri-partite committees to ensure participation in the operations as well as the transparency and accountability of the projects' operation.

Ratchaburi Power Plant's environment inspection team was set up in 2009, represented by the general public, the public sector, civil society organizations and the power plant's staff. The team is engaged in the inspection of the power plant's environmental operations. The director of Regional Environment office 8th (Ratchaburi) chairs the team. The chairman's tenure was changed from two years to four years in 2014.

In 2018, Ratchaburi Power Plant proposed the establishment of a new environment inspection team under the following selection process:

Selection and duty of the environment inspection team



After the establishment in July 2018, Ratchaburi Power Plant's new environment inspection team carried out its tasks as follows:

- Convene two meetings where the implementation results of Ratchaburi Power Plant's environmental impact prevention and mitigation measures and environmental quality inspection measures during January-June 2018 were reported.
- Observe effluent and run-off water sampling on site and water quality testing in October 2018.
- Give comment on a meeting, held to gather the opinions from 145 residents and stakeholders on the environmental impact assessment and environmental measures of Ratchaburi Power Plant's Floating Solar Project. The suggestions concerned the transportation route, accident prevention signs, the treatment of water used to clean solar panels, measures to mitigate impacts on living mechanisms, and etc.
- Attend 1 field trip to study a prototype clean energy and environmental management project. On average, 94.17% gained more knowledge from the field trip.

The Environment Inspection Team at a meeting

The team observed effluent and run-off water sampling and water quality testing.

Quality-of-life promotion activities for stronger community

1) Activities for communities around power plants

Ratchaburi Power Plant has participated in the promotion and improvement of neighboring communities' quality of life since the construction started. For over 20 years, the power plant's officers registered communities' problems and their needs, to help improve their quality of life without infringing rights to resources and infrastructure. The engagement is part of the project's environmental impact prevention and mitigation measures. Employment of local workers has also been a priority and to date, the power plant has 154 local officers or 27.4 percent of total. The number of local workers and permanent contractors total 215 or 38.3 percent. Altogether, the power plant hires 369 local persons or 65.7 percent of total 562 workers.

Aside, Ratchaburi Power Plant's quality-of-life undertakings cover various areas such as public health, education, career development and the environment, to ensure community sustainability in terms of health, livelihood and the environment under the concept "Sustainable Community, Sustainable Organization".

Operator	Activity	Objective	Target Group	Outcome
Ratchaburi Power Plant and Tri Energy Power Plant	Mobile community medical and dental clinic	To promote preventive healthcare among the residents living around the power plants and reduce risks and losses from lung diseases.	Communities around Ratchaburi Power Plant in 9 subdistricts and communities around Tri Energy Power Plant in 3 subdistricts, which are covered by 19 Subdistrict Health Promoting Hospitals	Service users are: - Chest X-ray, 1,905 users - Thai traditional medicine, 761 users - Dental service, 517 users - Thai traditional massage, 1,658 users - Haircut, 1,084 users

Operator	Activity	Objective	Target Group	Outcome
Ratchaburi Power Plant and Tri Energy Power Plant	three-day training for the "For our home" health project	To promote Thai traditional treatment knowledge and skills of a health club and sub-district health promoting hospitals' officers as well as the perceptions involved with diagnosis, treatment and healing under traditional practices.	The officers of subdistrict health promoting hospitals and a Thai traditional massage club in Ratchaburi located in 9 subdistrict around Ratchaburi Power Plant	A total of 50 persons attended the training and received certificates, ready to apply their knowledge in treating patients and their work.
	CSR in School Project	To promote the social responsibility of schools around Ratchaburi Power Plant in terms of energy, environment, safety, occupational health, and morals and ethics.	27 networked schools around Ratchaburi Power Plant (involving 13,053 teachers and students)	A number of schools applied for the project and passed the assessment test as follows: 1) Advance Level: 8 applicants, all passing the test 2) Smart Level: 9 applicants, all passing the test 3) Network Level: 8 applicants, all passing the test
	Scholarship Program	To promote and extend learning opportunity to students with excellent academic records and good behaviors, which will help relieve their parents' burden.	The students of the network of 27 schools around Ratchaburi Power Plant	A total of 1,011 scholarships were handed out, with a value of 1,000,000 baht. - Pre-school level: 232 scholarships - Primary level: 629 scholarships - Secondary level: 150 scholarships
	"For our home" project for teachers and students	Teachers • To improve primary and secondary-level teachers' English skills in line with the indicators in Basic Education Core Curriculum B.E.2551 (Revised Version B.E. 2560)	English-teaching instructors in all 27 schools in the network	- Organize "Guide English teachers towards the right path", a 48-hour (8-day) English skill training, for the primary and secondary-level English teachers of schools around Ratchaburi Power Plant. - 65 teachers participated in the training and carried out a research project to draw a teaching model for the 2019 academic year.
		Students • To raise the English scores of Grade 6 and Grade 9 students in the ordinary national educational test (O-NET)	The students of all 27 networked schools	A number of 683 students from the 27 networked schools, attended the training. The results of next O-NET test will determine the project's success.
NNEG Power Plant	Diabetes screening activity	To promote preventive healthcare to the risk group and screen new patients for timely treatments.	The elderly in communities around the power plant	The activity served 60 people. Those at risk were given advice on healthy diet and herbs that can treat and prevent diabetes. They were also advised to have their conditions monitored by subdistrict health promoting hospitals.
	Friend visiting project (bedridden patients)	To assist patients and provide health advice in cooperation with village health volunteers as a way to give them a moral support.	Bedridden patients residing in communities around the power plant	25 patients in eight communities were paid a visit and given health advice.

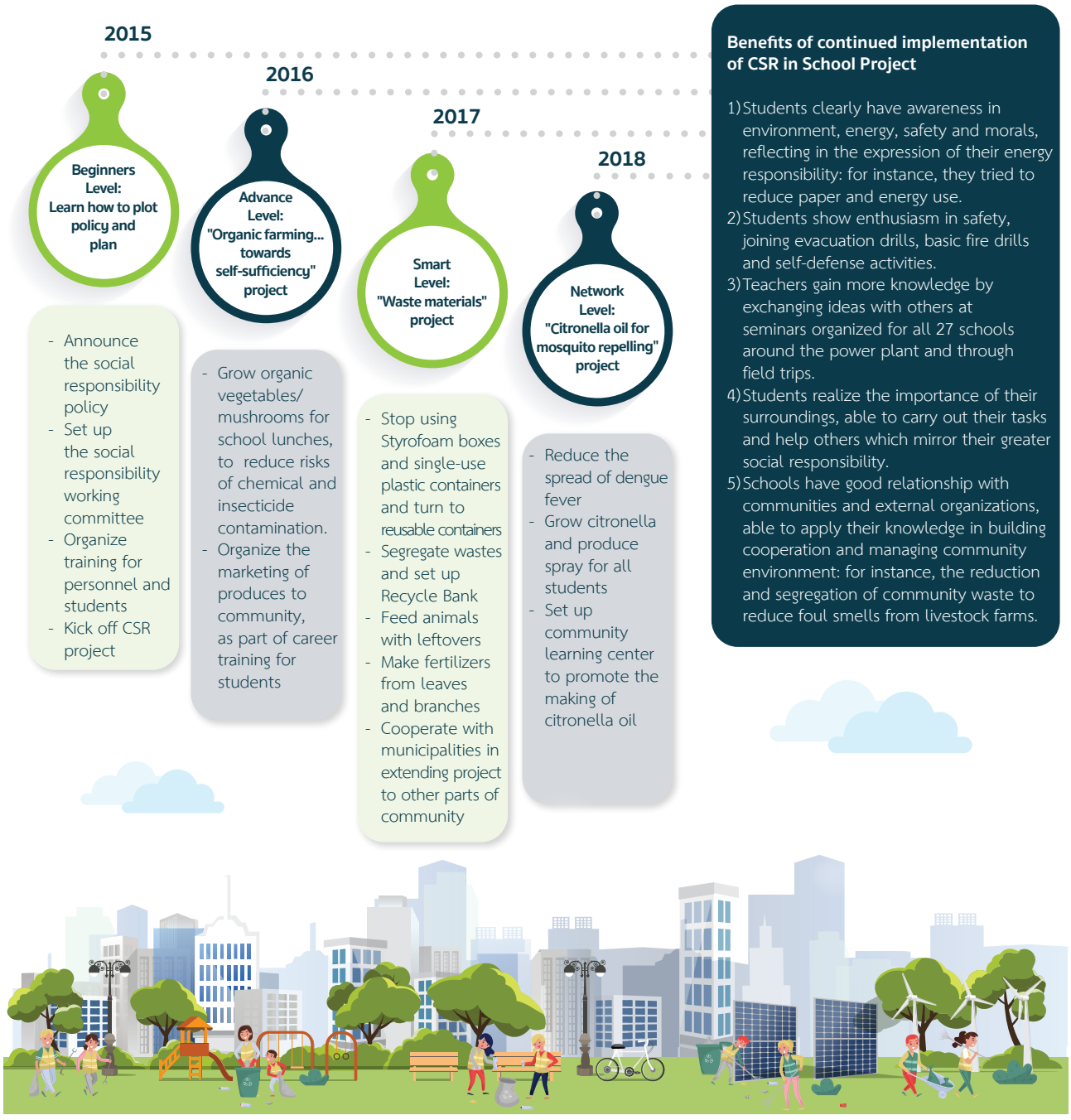
Operator	Activity	Objective	Target Group	Outcome
Power plants in Australia	Supports to social activities	To engage in community and social development through activities.	Communities around the power plants	Financial supports totaling 92,477.29 Australian dollars (2.23 million baht) were handed out.
The Group	Contribution to Power Development Fund, local taxes and income taxes in support of community and national development	To support community and national development.	Community and society	Ratchaburi Power Plant and Tri Energy Power Plant contributed 160 million baht to the Power Development Fund and paid 19.5 million baht in local taxes as well as 1,261 million baht in income taxes.

Success in promoting community strength through CSR in School Project	
Project initiator	Ratchaburi Power Plant
Background	The project was kicked off in 2015, succeeding Ratchaburi Power Plant's participation in Department of Industrial Works' project to promote sustainable social responsibility among industrial operators (CSR-DIW) and a local development project in 2014. Lessons from the projects were adjusted to fit the contexts of schools around the power plant, focusing on 4 aspects: 1) environment 2) energy conservation 3) safety and occupational health and 4) morals and ethics.
Target group	The network of 27 schools in 9 subdistricts around the power plant.
Project description	Ratchaburi Power Plant together with the school network and a consulting company defined project details, emphasizing internal and external participatory process as guided by CSR-DIW practices. The project was carried out in 4 levels. 1) Beginner Level: Starting with participation in schools' CSR projects, primarily to build social responsibility awareness relating to energy, environment, safety and morals/ethics among the schools' personnel and students. 2) Advance Level: Encouraging social responsibility for community, by opening up for community and relevant stakeholders' opinions and outlining/undertaking social responsibility projects together with community. 3) Smart Level: Promoting external participation, by having a school assist other schools in the network in the introduction of CSR in School activities. Creativity and innovative ideas are highlighted. 4) Network Level: Enhancing participation through the development of a learning center, where knowledge can be shared with other communities outside the network.
Assessment and monitoring method	• Step 1: Report review - Completeness of report - Completeness of the plan under Verification criteria • Step 2: Review at operating area - Implementation of the plan in line with Verification criteria - Result/effectiveness of the plan
Performance in 2018	25 schools applied to join the project. 8 schools were qualified for the Advance Level, 9 for the Smart Level and 8 for the Network Level.
Expansion of project	• Energy aspect - Thamakham Wittaya School in Potharam district won an EGAT's Low Carbon School Award 2018 for a cut in energy consumption: five percent of all students ably reduced energy consumption at home by more than five percent. • Environmental aspect - Wat Bang Lan School in Potharam district won the first prize from Ratchaburi Provincial Natural Resources and Environment Office's Zero Waste School Contest. • Safety and occupational health aspect - Wat Don Sai School in Potharam district organized an anti-dengue fever project in cooperation with students, ably reducing dengue fever incidents in their community from over 100 cases to zero. The project led to the innovative creation of mosquito traps from school wastes, which gave birth to Aedes aegypti Bank and Poecilia reticulate Bank.

Positive impacts of CSR in School Project

Wat Pikulthong School ... A Network-Level school

Wat Pikulthong School is in Pikulthong Subdistrict, Muang district, Ratchaburi province where Ratchaburi Power Plant is located. It is one of pioneering schools that implemented "CSR in School" project and experienced fruitful results. Qualified for the Network Level, the school has leveraged its knowledge and successfully secured community participation in extending the project's scope to drive the entire community.



2) Promoting whole society's quality of life

RATCH, as the parent company that operates in Thailand and overseas, has high regard for overall social and environmental responsibility. RATCH's activities reflect the Company's strategies in managing greenhouse gases, managing forests, building a community network for good relationship and acceptance, and addressing social expectations regarding the elderly, children and women.

In 2018, RATCH's quality-of-life promoting activities are as follows:

Strategy	Project	Activity	Target Group	Benefits
- GHG management - Watershed management - Networking with communities for their acceptance - Address SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems	Love the Forests and the Community	1) Community forest contest • Participating community forests = 1,171 • Awarded community forests = 144 encompassing 136,896 rai in combined areas which can contain 273,793 tons of CO_2. • Awarded community forests in 2008-2018 = 1,536 encompassing 1,388,950 rai in combined areas which can contain 2,777,899 tons of CO_2.	Community forest leaders and communities across the country	• Help conserve Thailand's forest areas, to maintain water resources which are which are crucial for RATCH's operations and to store GHG as a way to ease global warming impacts. • Create a strong network in conserving forests, which are crucial for communities' livelihood.
		2) Community forest leaders' network seminar • Two seminars were hosted with 155 attendees (Northern and Central regions) • 90.1% of community forest leaders gained more knowledge and understanding in community forest management, the Community Forest Act, network expansion as well as the improvement of soil, environment and forests in line with His Majesty King Bhumibol Adulyadej's development guideline	Community forest leaders nationwide	• Efficient community forest management and restoration of ecosystems and watersheds • Exchanges of experiences and practices in improving, restoring and managing community forests as well as means to tackle related problems • Application of knowledge in conserving energy and reducing GHG emissions • Strong network linking RATCH and community forest leaders
		3) Kla Yim Youth Camp • Two activities were hosted with 148 attendants (Northeastern and Southern regions) • 89.63% of attendants have better understanding in ecosystems and inter-dependence of forests, animals and human.	Community forests' youth nationwide	• Building next-generation community forest conservationists • Community forest youth network
	Community forest empowerment	1) Dyke construction • 3 dykes were constructed at Ai Yor Bay community forest in Nakhon Si Thammarat to nurture the watersheds and store water for Moo 4 and Moo 5 communities in Namtok subdistrict, Thungsong district for agricultural use and ecosystem preservation. • 10 dykes were built with natural materials at Ban Nong Phuke community forest in Nan province which help contain water, reduce sediment loss and maintain the watersheds.	Communities participating Love the Forest and the Community Project	• Protect the watersheds and preserve forests' moisture and abundance. • Reduce land erosion and drought as well as restoring the ecosystem.

Strategy	Project	Activity	Target Group	Benefits
- GHG management - Watershed management - Networking with communities for their acceptance - Address SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems	Community forest empowerment	2) Training on wildfire prevention and control for networked community forests in the South • Training for 16 committee members of 4 award-winning community forests in the South. • Classroom learning and workshop on systematic fire prevention and control, to promote community participation in sustainably conserving community forests. • Activities were proposed at the meeting, held to follow up project progress.	Communities participating Love the Forest and the Community Project	• Systematic method to prevent wildfire and community participation in forest protection
		3) Training on the application of social media in publicizing community forests • 17 attendees representing 7 award-winning community forests • Community forests' committees learnt how to use social media like Facebook and LINE in publicizing community forests management and activities, to raise awareness in sustainable conservation of natural resources. Social media can also be a marketing channel for their produces, so that communities can rely more on their strengths. • Activities were proposed at the meeting, held to follow up project progress.	Communities participating Love the Forest and the Community Project	• Promote communities' ability in publicizing community forest management and activities. • Raise awareness in sustainable forest conservation and create a channel to publicize communities' self-dependence including their produces.
- Biodiversity conservation - Address SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems	Project initiated under HRH Princess Maha Chakri Sirindhorn's remark	1) Workshop on school botanic gardens 2) Workshop on local resource bases 3) Workshop on local resource bases for assistant speakers 4) Workshop on school botanic gardens (5 elements)	Staff of schools and local administrative offices participating in the project	• Promote knowledge in school botanic gardens, to train staff as assistant speakers who can assist the project's subsequent training. • Promote knowledge and understanding in the operation of local resource bases under the guideline of the Plant Genetic Conservation Project Under the Royal Initiation of HRH Princess Maha Chakri Sirindhorn, to raise awareness in the importance of natural plants and resources.
- Promote gender equality and empower women and girls - GHG management - Networking with communities for their acceptance	Phumaree Project, Women empowerment for environment Conservation	• Forest front: Female representation in the committees of Ban Kwaeng, Ban Nongphuk and Ban Kwet community forests in Chiangklang district, Nan province increased by 40%. • Conservative tourism front: Women play a role in developing Ban Maneepruek tourism group which is being registered as a tourism community enterprise. • Waste management front: A girl group named La-on Recycle in Ban Saowa ably briefed over 400 visitors on community waste management. Proceeds go to a fund, used to take care of community environment. The group is planning an organic waste segregation project in cooperation with food shops, to make a better use of the waste.	Women in Chiangklang and Thungchang districts, Nan province	• Network of women powerful in environmental management • Achieve SDG 5: Gender equality and empower all women and girls • Acknowledgement of the Company's operation and positive image • An awareness assessment shows 100% of respondents knows the Company and understands the Company's role in promoting women's power and female participation in natural resources and environmental management. (Winning the highest scores involve forest management, conservative tourism and community waste management.)

Strategy	Project	Activity	Target Group	Benefits
- Encouraging a cut in fossil energy consumption - Achieving SDG 12: Ensure sustainable consumption and production patterns	Community energy project	An extended version of activities concerning the empowerment of community energy volunteers and the development of community energy technology such as biomass stove, high-efficiency grill stove and solar-powered oven in 3 locations: 1) Mae Faek subdistrict, San Sai district, Chiang Mai province 2) Pasak subdistrict, Muang district, Lamphun province 3) Pua subdistrict, Chiangklang district, Nan province	Local community energy volunteers	• Encouraging communities to reduce energy consumption and dependence on externally-sourced energy • Ensuring participation in the improvement of local areas' energy potential • Reducing GHG emissions
	Solar power promotion at Ban Huaha, Mae Hong Son province	Buying carbon credit from the installation of solar panels for 25 households (during 2014-2018). Such activity in 2018 reduced GHG emissions by 6.64 tons, contributing carbon credit worth 33,200 baht for the community. Carbon credit collected throughout the project period totaled 33.2 tons or 166,000 baht in value.	Communities with partnership with Thailand Environment Institute	• Communities have access to electricity. • Communities are aware of their energy consumption and generation process management to ensure continuous and efficient supply.
- Empowering groups and networks	@CareLine, a Network of Happiness	Workshop on the making of teaching materials and Brain-Based Learning techniques for 66 teachers from 31 schools who are responsible for providing BBL materials.	Teachers under Office of Nonthaburi Primary Education Area 1	• Networking with teachers who have good relationship with RATCH • Empowering teachers in target areas • 89.29% of participating teachers gained more knowledge and understanding in Brain-based learning while 94.84% showed their satisfaction with the activity.
	Happy Elderly, Healthy Thailand Project	Under the activity namely "RATCH keeps the elderly away from dementia", RATCH in cooperation with the medical team of Sukavej Hospital, a specialist in senior-citizen care, and Nonthaburi Municipality's public health and environment office offered basic medical examination to the 70 invited senior citizens and 86 caretakers. The elders were informed about their physical condition, to prepare for or avoid possible illness. They also learnt about causes of dementia among the elderly and preventive actions.	Senior citizens in Nonthaburi province	• Build a senior-citizen network, to gain their acceptance and maintain good relationship with RATCH. • Assist in senior care in Nonthaburi province. • 89.33% of survey respondents gained more understanding in the activity and 89.93% found the activity satisfactory.

Acceptance and success of CSR projects in Lao PDR

Among environmental and quality-of-life promoting activities undertaken in the past year, the Education for Career Empowerment Project showed great success, being a project that directly promoted and elevated education quality for the Lao people. The project was undertaken by RATCH in cooperation with the Ministry of Education and Sports in Lao PDR, which is a key investment base of RATCH with installed capacity of 4,040 megawatts.

The project also addresses SDG 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development, by taking part in the national education planning and improving Lao vocational teachers and students' access to knowledge, education and skills. This will drive Lao PDR's economic and social development strategy towards its goal to some extent.

Acceptance and success of CSR projects in Lao PDR	
Project operator	Ratchaburi Electricity Generating Holding PLC in cooperation with Ministry of Education and Sports, Lao PDR
Background	- Materialize a mission regarding community and social stewardship - Lao PDR is a key investment destination of RATCH which is geared towards long-term investment. - The project responds to Lao PDR's needs and the country's strategy in improving vocational education. - The project is based on public and private-sector cooperation.
Project period	Phase 1: 2011-2016 Phase 2: 2018-2023
Phase 1 activities	1) Ten teachers attended training on specialized subjects at Udon Thani Technical College. 2) Intensive training courses on electrical power technician, welder technician and mechanicians were organized for students. 3) Vocational teachers were awarded 50 scholarships to pursue education in higher vocational level bachelor-degree level. 4) Management and monitoring the operation - Project management - Monitoring the operation, with assessment
Target Group	Teachers and students from 6 educational institutes which are: 1) Lao-German Technical College 2) Polytechnic College 3) Pakpasak Technical College 4) Technical College of Vientiane Province 5) Luang prabang Technical and Vocational College 6) Xayaboury Technical and Vocational School
Phase 1 results	- Improved the teaching in programmable logic controller (PLC), welding and factory machinery at 6 vocational colleges. - Sent 10 teachers from all 6 colleges to attend a training on specialized subjects at Udon Thani Technical College; designed and provided machinery, tools and equipment for the welding, PLC and machinery labs; and trained participating teachers on the tool application. - Organized an intensive training for 611 students. - Awarded 23 scholarships to teachers for higher vocational-level studies and 27 for bachelor-level studies.
Phase 2 activities	- Training teachers on energy crop plantation - Training for vocational students - Lab enlargement and equipment installation
Target group	Teachers and students from four institutes which are: 1) Khammouane Technical-Vocational College 2) Technical College of Vientiane Province 3) Luang prabang Technical and Vocational College 4) Xayaboury Technical and Vocational School
Achievement in 2018	Signed the letter of intent with Lao PDR's Ministry of Education and Sports to run Education for Career Empowerment Project Phase 2 (2018-2023)

Running for 6 years, the project was recognized as a successful CSR model for private companies seeking to invest in Lao PDR. In recognition of the satisfactory result, the Lao government bestowed RATCH the Cross of Development for its role in education improvement.

The Lao government awarded the Cross of Development to RATCH CEO, in recognition of the Company's role in educational development.

Cross of Development of Lao PDR

Encouraging less fossil fuel consumption to reduce global warming impacts

RATCH has encouraged a reduction in community fossil-fuel energy consumption, for a result in environmental dimension and community's economic and social benefits. Supporting activities were submitted to Thailand Greenhouse Gas Management (Public Organization), under its Low Emission Support Scheme (LESS). Considered as another project assessment method, the scheme will assess the amount of reduced greenhouse gases achieved by energy and environmental projects.

In 2018, two projects were enlisted for LESS.

Type of project
Energy

1) A project to replace 632 light bulbs with LED light bulbs at Phra Nakhorn Khiri Historical Park in Phetchaburi province (under an employee volunteering program)

Reduced greenhouse gases of project

24.85 tCO_2e

2) The off-grid solar energy project at Ban Huaha community, Mae Ukho subdistrict, Khun Yuam district, Mae Hong Son province, in cooperation with Thailand Environment Institute, to create a model of community with Solar Home System (SHS) for access to electricity and sustainable power supply . Twenty five 120-watt solar panels are installed to generate electricity for 25 households, to replace power generation by diesel oil.

Reduced greenhouse gases of project

12.77 tCO_2e

37.62 tCO_2e

Raising employees' social responsibility awareness through volunteering

RATCH has cultivated social contribution spirit in all employees, reflecting 18 years of its commitment to social and environment responsibility. Through volunteering schemes, all employees are extended an opportunity to show their sacrifice and power in making good deeds to society.

RATCH organized 14 volunteer activities involving environmental and energy conservation, youth's education, religious supports, and the relief efforts following the washout of Xe-Pian Xe-Namnoy Hydroelectric Power Plant's Saddle Dam D.

Results

- 157 executives and employees participated in the activities, accounting for 79.6 percent of all executives and employees.
- The participation was translated to 739 person-days or 5,912 volunteer hours, and estimated social return of about 2,228,725 baht.

Assessment of the performance on social responsibility

In 2018, RATCH initiated a public opinion survey on the Company's social responsibility activities. The survey under "Corporate image survey through social responsibility activities" was conducted in cooperation with Suan Dusit University.

Objectives

1) To survey the public and relevant parties' means in obtaining information on social activities
2) To gauge the corporate image and the public's satisfaction with the Company's social activities
3) To improve and devise future activities and projects based on the survey results

Target group

The sampling groups are communities participating Phumaree: Woman empowerment in environment conservation, Community Energy project and all operated CSR projects in Nonthaburi Province, total 1,024 sampling.

Survey results

1) Satisfaction in activities/projects including officers, speakers, benefits, organizing procedure, quality and facilities
    - o Satisfaction level: 85.8 percent.
    - o Target groups voted the Company should proceed with projects concerning environmental conservation, energy saving, and assistance to the underprivileged, respectively.
    - o Target groups suggested continuous activities, focusing on the leverage of knowledge and scale.
2) Confidence in RATCH's social activities
    - o Building public confidence are corporate reputation, credibility, international-standard operations and social recognition for its achievements.

"Community's responses to RATCH's activities and projects give us the energy to pursue our efforts in social development. All remarks and suggestions will be taken into consideration to align our activities with social needs and expectations. We will stand as a good neighbor of community, a good corporate citizen in the country and the world, on a belief that a step forward with community and social supports moving forward together with community and society is the strong foundation for sustainable development."

Mrs. Boontiva Dansamasatid
RATCH Executive Vice President – Corporate Administration

Performance Data

Abbreviation

RATCH = Ratchaburi Electricity Generating Holding PCL.
RATCHGEN = Ratchaburi Power Plant
TECO = Tri Energy Power Plant
RAC = RATCH-Australia Corporation Pty Ltd
NNEG = Nava Nakorn Electricity Generating Company Limited
RL = RATCH-LAO Services Company Limited

Economic

Data	Unit	2018	2017	2016
Revenues	Million Baht	45,083.54	46,456.57	51,279.88
Operating costs	Million Baht	35,170.09	36,847.37	41,623.27
Employee wages and benefits	Million Baht	724.26	679.69	639.39
Dividend to all shareholders	Million Baht	3,480.00	3,480.00	3,407.50
Payments to government	Million Baht	1,280.86	1,380.06	1,054.91
Community investments	Million Baht	214.47	238.88	68.67
Spent on local suppliers				
Company in Thailand [1] (RATCH/RATCHGEN/TECO/NNEG)	Million Baht	39,412.34	42,153.63	59,920.22
Company in Australia (RAC)	Million Australia Dollar	27.03	29.97	24.27
Spent on foreign suppliers				
Company in Thailand [1] (RATCH/RATCHGEN/TECO/NNEG)	Million Baht	590.74	834.75	1,119.29
Company in Australia (RAC)	Million Australia Dollar	0.06	0.19	0.07

Remark : [1] Operations in Thailand include RATCH, RATCHGEN, TECO and NNEG
Spent on Local and foreign suppliers of NNEG only presented in 2017-2018

Health and Safety[2]

Data		Unit	2018	2017	2016
Total number of organization					
RATCH	Employees	Person (Male : Female)	110 : 102	107 : 101	102 : 99
	Workers	Person (Male : Female)	32 : 22	33 : 25	35 : 24
RATCHGEN	Employees	Person (Male : Female)	35 : 25	32 : 25	32 : 25
	Workers	Person (Male : Female)	300 : 75	314 : 81	312 : 76
TECO	Employees	Person (Male : Female)	44 : 6	44 : 6	45 : 6
	Workers	Person (Male : Female)	41 : 7	41 : 7	41 : 7
NNEG	Employees	Person (Male : Female)	15 : 13	13 : 13	11 : 11
	Workers	Person (Male : Female)	42 : 7	45 : 8	37 : 7
RAC	Employees	Person (Male : Female)	19 : 4	13 : 6	14 : 4
	Workers	Person (Male : Female)	0 : 0	0 : 0	0 : 0
Number of hours worked					
RATCH		Hours worked	551,780	568,122	558,690
RATCHGEN		Hours worked	1,431,485	1,967,375	1,434,742

Data		Unit	2018	2017	2016
TECO		Hours worked	251,136	270,625	322,708
NNEG		Hours worked	175,954	167,991	102,407
RAC		Hours worked	37,369	37,510	35,298
Total workforce represented in formal joint management-worker health and safety committees					
RATCH		Persons (%)	15 (5.64%)	15 (5.64%)	13 (6.47%)
RATCHGEN		Persons (%)	15 (25.00%)	15 (26.32%)	15 (26.32%)
TECO		Persons (%)	13 (26.00%)	13 (26.00%)	13 (25.49%)
NNEG		Persons (%)	7 (25.00%)	5 (34.62%)	9 (39.13%)
RAC		Persons (%)	6 (26.09%)	6 (31.58%)	6 (33.33%)
Number of fatalities (result of work-related injuries and ill health) by gender					
Employees		Person (Male : Female)	0 : 0	0 : 0	0 : 0
Workers		Person (Male : Female)	0 : 0	0 : 0	0 : 0
Number of fatalities (result of work-related injuries and ill health) by region					
Thai		Person	0	0	0
Australian		Person	0	0	0
Fetalities rate (FR) by gender					
Employees		No./200,000 hours worked	0	0	0
Workers		No./200,000 hours worked	0	0	0
Fetalities rate (FR) by region					
Thai		No./200,000 hours worked	0	0	0
Australian		No./200,000 hours worked	0	0	0
Number of high-consequence work-related injuries					
Employees		Person (Male : Female)	0 : 0	0 : 0	0 : 0
Workers		Person (Male : Female)	0 : 0	0 : 0	0 : 0
Rate of high-consequence work-related injuries					
Employees		No./200,000 hours worked	0	0	0
Workers		No./200,000 hours worked	0	0	0
Number of recordable work-related injuries					
RATCH	Employees	Person (Male : Female)	0 : 1	0 : 0	0 : 0
	Workers	Person (Male : Female)	0 : 0	0 : 0	0 : 0
RATCHGEN	Employees	Person (Male : Female)	0 : 0	0 : 0	0 : 0
	Workers	Person (Male : Female)	1 : 0	0 : 0	4 : 0
TECO	Employees	Person (Male : Female)	0 : 0	0 : 0	0 : 0
	Workers	Person (Male : Female)	0 : 0	0 : 0	1 : 0
NNEG	Employees	Person (Male : Female)	0 : 0	0 : 0	0 : 0
	Workers	Person (Male : Female)	0 : 0	0 : 0	0 : 0
RAC	Employees	Person (Male : Female)	0 : 0	0 : 0	0 : 0
	Workers	Person (Male : Female)	0 : 0	0 : 0	0 : 0
Rate of recordable work-related injuries					
RATCH	Employees	No./200,000 hours worked (Male : Female)	0 : 0.35	0 : 0	0 : 0
	Workers		0 : 0	0 : 0	0 : 0
RATCHGEN	Employees		0 : 0	0 : 0	0 : 0
	Workers		0.2 : 0	0 : 0	0.7 : 0
TECO	Employees		0 : 0	0 : 0	0 : 0
	Workers		0 : 0	0 : 0	0.62 : 0

Data		Unit	2018	2017	2016
NNEG	Employees	No./200,000 hours worked (Male : Female)	0 : 0	0 : 0	0 : 0
	Workers		0 : 0	0 : 0	0 : 0
RAC	Employees		0 : 0	0 : 0	0 : 0
	Workers		0 : 0	0 : 0	0 : 0
Number of cases of recordable work-related injuries ill health					
Employees		Person	0 : 0	0 : 0	0 : 0
Workers		Person	0 : 0	0 : 0	0 : 0
Total number of lost day					
RATCH	Employees	Day (Male : Female)	0 : 0	0 : 0	0 : 0
	Workers	Day (Male : Female)	0 : 0	0 : 0	0 : 0
RATCHGEN	Employees	Day (Male : Female)	0 : 0	0 : 0	0 : 0
	Workers	Day (Male : Female)	0 : 0	0 : 0	13 : 0
TECO	Employees	Day (Male : Female)	0 : 0	0 : 0	0 : 0
	Workers	Day (Male : Female)	0 : 0	0 : 0	1 : 0
NNEG	Employees	Day (Male : Female)	0 : 0	0 : 0	0 : 0
	Workers	Day (Male : Female)	0 : 0	0 : 0	0 : 0
RAC	Employees	Day (Male : Female)	0 : 0	0 : 0	0 : 0
	Workers	Day (Male : Female)	0 : 0	0 : 0	0 : 0
Lost day rate (LDR)					
RATCH	Employees	No./200,000 hours worked	0	0	0
	Workers	No./200,000 hours worked	0	0	0
RATCHGEN	Employees	No./200,000 hours worked	0	0	0.00
	Workers	No./200,000 hours worked	0	0	1.98
TECO	Employees	No./200,000 hours worked	0	0	0
	Workers	No./200,000 hours worked	0	0	0.62
NNEG	Employees	No./200,000 hours worked	0	0	0
	Workers	No./200,000 hours worked	0	0	0
RAC	Employees	No./200,000 hours worked	0	0	0
	Workers	No./200,000 hours worked	0	0	0
Absentee days					
RATCH	Employees	Day (Male : Female)	189.5 : 371	186 : 408.5	180.5 : 481.5
RATCHGEN	Employees	Day (Male : Female)	110 : 157	110.5 : 179.5	81.5 : 122.5
TECO	Employees	Day (Male : Female)	18 : 24	16 : 20	10 : 13
NNEG	Employees	Day (Male : Female)	36 : 15.5	21 : 42	12 : 16
RAC	Employees	Day (Male : Female)	43.3 : 2.0	32.5 : 23	27 : 3.5
Absentee rate (AR)					
RATCH	Employees	% (Male : Female)	0.72 : 1.50	0.74 : 1.71	0.74 : 2.00
RATCHGEN	Employees	% (Male : Female)	1.29 : 2.79	1.40 : 3.00	1.02 : 2.17
TECO	Employees	% (Male : Female)	0.18 : 0.56	0.05 : 0.07	0.03 : 0.04
NNEG	Employees	% (Male : Female)	0.48 : 0.20	0.64 : 1.39	0.43 : 0.57
RAC	Employees	% (Male : Female)	0.98 : 0.21	0.82 : 1.64	0.89 : 0.25

Remark : [2] Presented information covers safety data of RATCH, RATCHGEN, TECO, NNEG and RAC.

All Employees of RATCH, RATCHGEN, TECO, NNEG are Thai, and RAC's employees are Australian and Thai.

People[3]

Data	Unit	2018		2017		2016	
		Male	Female	Male	Female	Male	Female
Total employee	Persons	453		445		439	
	Persons	302	151	297	148	294	145
Employee by employment contract							
Permanent	Persons	300	150	293	148	290	145
Temporary	Persons	2	1	4	0	4	0
Employee by age group							
<30 years	Persons	153	26	153	27	154	21
30-50 years	Persons	107	109	102	109	96	111
>50 years	Persons	42	16	42	12	44	13
Employee by category							
Top Management	Persons	13	3	13	3	13	3
	%	2.87	0.66	2.92	0.67	2.96	0.68
Middle Management	Persons	44	15	47	13	38	12
	%	9.71	3.31	10.56	2.92	8.66	2.73
Junior Management	Persons	43	40	42	37	44	35
	%	9.49	8.83	9.44	8.31	10.02	7.97
Officer	Persons	201	93	192	95	197	95
	%	44.37	20.53	43.15	21.35	44.87	21.64
Worker	Persons	1	0	3	0	2	0
	%	0.22	0.00	0.67	0.00	0.46	0.00
Employee by nationality							
Thai	%	61.37		62.02		61.73	
Lao	%	34.44		33.71		34.17	
Australian	%	4.19		4.27		4.10	
Other	%	0.00		0.00		0.00	
New Hires by age group							
<30 years	Persons	15	9	44	3	26	9
	%	3.3	2.0	9.9	0.7	5.9	2.1
30-50 years	Persons	10	5	7	9	6	5
	%	2.2	1.1	1.6	2.0	1.4	1.1
>50 years	Persons	1	0	2	0	2	0
	%	0.2	0.0	0.4	0.0	0.5	0.0
Total	Persons	26	14	53	12	34	14
	%	5.7	3.1	11.9	2.7	7.7	3.2
Turnover by age group							
<30 years	Persons	5	4	44	0	15	4
	%	1.1	0.9	9.9	0.0	3.4	0.9
30-50 years	Persons	5	7	3	8	6	3
	%	1.1	1.5	0.7	1.8	1.4	0.7

Data	Unit	2018		2017		2016	
		Male	Female	Male	Female	Male	Female
Turnover by age group							
>50 years	Persons	7	0	6	1	5	1
	%	1.5	0.0	1.3	0.2	1.1	0.2
Total	Persons	17	11	53	9	26	8
	%	3.8	2.4	11.9	2.0	5.9	1.8
Parental leave							
Parental leave	Persons	-	5	-	1	-	3
Returning to work after parental leave ended	Persons	-	2	-	1	-	3
Returning to work after parental leave ended (12 months after return to work)	Persons	-	-	-	1	-	3
Training and development							
Top management	Hour/person/year	100.08	66.17	31.85	163.33	53.69	36.67
Middle management	Hour/person/year	70.71	140.37	51.36	56.23	72.95	70.25
Junior management	Hour/person/year	78.35	66.03	67.36	91.86	24.39	33.97
Officer	Hour/person/year	49.57	54.71	28.40	35.78	9.37	24.09
Worker	Hour/person/year	0.00	0.00	0.00	0.00	0.00	0.00
Employee receiving career development review							
Top management	%	100		100		100	
Middle management	%	100		100		100	
Junior management	%	100		100		100	
Officer	%	100		100		100	
Worker	%	100		100		100	
Employee receiving regular performance review							
Top management	%	100		100		100	
Middle management	%	100		100		100	
Junior management	%	100		100		100	
Officer	%	100		100		100	
Worker	%	100		100		100	
Grievance							
Total number of grievance about labor practices through formal grievance process	Case	0	0	0	0	0	0
- Total number of grievance addressed	Case	0	0	0	0	0	0
- Total number of grievance resolved	Case	0	0	0	0	0	0
Total number of grievance about human rights through formal grievance process	Case	0	0	0	0	0	0
- Total number of grievance addressed	Case	0	0	0	0	0	0
- Total number of grievance resolved	Case	0	0	0	0	0	0

Remark : [3] Presented employee data are of RATCH, RATCHGEN, RAC and RL

Environment[4]

Data	Unit	2018	2017	2016
Energy[5]				
Total energy consumption	TJ	87,539	101,712	121,754
Total direct energy consumption	TJ	150,162	172,578	198,374
- Natural gas	TJ	150,142	171,474	193,963
- Bunker oil	TJ	0	1,062	4,175
- Diesel oil	TJ	21	43	236
Total indirect energy consumption	TJ	199	223	216
- Electricity purchased	TJ	199	223	216
- Heating purchased	TJ	0	0	0
- Steam purchased	TJ	0	0	0
Total energy sold	TJ	62,822	71,090	76,836
- Electricity sold	TJ	62,515	70,818	76,836
- Heating sold	TJ	0	0	0
- Steam sold	TJ	307	271	0
Net Generation (Total)	MWh	17,365,404	19,671,684	21,343,379
Net Generation (Only Fossil Fuel)	MWh	17,171,362	19,521,844	21,187,269
Total energy intensity (within organization)	GJ/MWh	8.65	8.77	9.29
Total energy reduction	GJ	189,825	152,213	419,021
- Fuel saving	GJ	24,880	933	318,205
- Electricity saving	GJ	164,944	151,279	100,815
- Steam saving	GJ	0	0	0
GHG Emission[6]				
Direct GHG emissions (Scope 1)	tCO_2e	6,935,752	8,093,084	9,310,427
Indirect GHG emissions (Scope 2)	tCO_2e	33,618	37,395	36,388
Total GHG emissions (Scope 1 + 2)	tCO_2e	6,969,370	8,130,479	9,346,816
GHG emission intensity (Scope 1 + 2)	tCO_2e/MWh	0.406	0.416	0.441
Total GHG emissions reductions	tCO_2e	26,672	24,461	16,319
Emission[7]				
NO_x emissions	Tons	2,757	3,576	9,732
	kg/MWh	0.16	0.18	0.46
SO_x emissions	Tons	40.7	95.1	119.2
	kg/MWh	0.0023	0.0048	0.0056
Opacity	%	2.48	2.65	1.29
Total Suspended Particulate (TSP)	Tons	359.1	642.8	542.9
Water[8]				
Total water withdrawal	Million m^3	19.74	22.09	31.68
- Surface water	Million m^3	16.62	18.59	28.71
- Sea water	Million m^3	0.00	0	0
- Ground rater	Million m^3	0.00	0	0
- Rain water	Million m^3	0.00	0	0
- Third-party water / Municipal water	Million m^3	1.69	1.81	1.12
- Waste water from another organization	Million m^3	1.44	1.69	1.84

Data	Unit	2018	2017	2016
Recycled and reused water	m^3	1,303,777	2,028,390	837,094
	% of total water withdrawal	6.60	9.18	2.64
Water footprint	m^3 / MWh	1.14	1.12	1.48
Water discharge[8]				
Total water discharge	Million m^3	3.97	3.96	4.52
- Surface water	Million m^3	3.91	3.88	4.49
- Third-party water	Million m^3	0.06	0.07	0.03
COD loading	Tons	120	201	210
BOD loading	Tons	13	19	20
Waste[9]				
Total waste disposal	Tons	3,063	6,839	7,430
Total hazardous waste disposal	Tons	451	1,021	1,092
- Reuse	Tons	0	11	631
- Recycling	Tons	21	18	0
- Recovery (including energy recovery)	Tons	408	967	444
- Secured Landfill	Tons	23	25	18
- Onsite storage	Tons	0	0	0
Total non-hazardous waste disposal	Tons	2,612	5,818	6,338
- Reuse	Tons	0	0	0
- Recycling	Tons	2,551	5,301	5,768
- Recovery (including energy recovery)	Tons	52	440	529
- Landfill	Tons	9	76	41
- Onsite storage	Tons	0	0	0
- Waste from non-routine operation	Tons	0	0	0

Remark : [4] Presented environmental data are of RATCHGEN, TECO, NNEG and RAC.

[5] Energy consumption are calculated based on conversion factors for stationary combustion in the energy industries from Thai Energy Statistics 2010.

[6] GHG Emission of RATCHGEN and TECO are calculated based on the assessment Methodology of Carbon Footprint for Organization developed by TGO (2nd edition, April 2015) that are calculated from CO_2 / CH_4 / N_2O / R-134a / R-407c / R-410a and SF_6
Base year of GHG calculation is 2015.
GHG Emission of NNEG are calculated based on CO_2 emission factors from IPCC Volume 2 Energy.
- For Natural Gas, CO_2 emission factor = 56,100 kgCO_2/TJ on Net Calorific Basis.
- For Diesel oil, CO_2 emission factor = 74,100 kgCO_2/TJ on Net Calorific Basis.
GHG Emission of RAC follow National Greenhouse and Energy Reporting Act.

[7] Emission of RATCHGEN, TECO, NNEG are calculated from the Continuous Emission Monitoring Systems (CEMs) and RAC used calculation method of the Queensland Department of Environment – Environmental Protection Agency (EPA)

[8] The data are measured from metering.

[9] The data are measured from Manifest System and weight scale.

GRI Content Index

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LRQA Assurance Statement

Relating to Ratchaburi Electricity Generating Holding Plc's Corporate Sustainability Report for the calendar year 2018

This Assurance Statement has been prepared for Ratchaburi Electricity Generating Holding Plc. in accordance with our contract but is intended for the readers of this Report.

Terms of engagement

Lloyd's Register Quality Assurance Ltd. (LRQA) was commissioned by Ratchaburi Electricity Generating Holding Plc. (RATCH) to provide independent assurance on its 2018 Sustainability Report ("the report") against the assurance criteria below to a limited level of assurance and at the materiality of the professional judgement of the verifier using LRQA's verification approach. LRQA's verification approach is based on current best practise and uses the principles of AA1000AS (2008) - inclusivity, materiality, responsiveness and reliability of performance data and processes defined in ISAE3000.

Our assurance engagement covered RATCH's subsidiaries in Thailand and Australia under its direct operational control, and specifically the following requirements:

- Confirming that the report is in accordance with:
  - GRI standards and core option
  - GRI Electricity & Utilities sector disclosures
- Evaluating the reliability of data and information for the selected specific standard disclosures listed below:
  - material used by weight (GRI 301-1)
  - energy consumption within the organization and energy intensity (GRI 302-1 and 302-3)
  - total water withdrawal by source (GRI 303-1)
  - direct, indirect and GHG emissions intensity (305-1, 305-2 and 305-4)
  - SOx, NOx and other significant air emission (GRI 305-7)
  - type of injury and rates of injury, occupational diseases, lost days and absenteeism, and total number of work-related fatalities (GRI 403-2)

Our assurance engagement excluded the data and information of RATCH's subsidiaries where it has no operational control and all its operations and activities outside of Thailand and Australia. Our assurance engagement also excluded the data and information of its suppliers and any third-parties mentioned in the report.

LRQA's responsibility is only to RATCH. LRQA disclaims any liability or responsibility to others as explained in the end footnote. RATCH's responsibility is for collecting, aggregating, analysing and presenting all the data and information within the report and for maintaining effective internal controls over the systems from which the report is derived. Ultimately, the report has been approved by, and remains the responsibility of RATCH.

LRQA's opinion

Based on LRQA's approach nothing has come to our attention that would cause us to believe that RATCH has not:

- Met the requirements above
- Disclosed reliable data and information for the selected specific standard disclosures above as no errors or omissions were detected
- Covered all the issues that are important to the stakeholders and readers of this report.

The opinion expressed is formed on the basis of a limited level of assurance and at the materiality of the professional judgement of the verifier.

Note: The extent of evidence-gathering for a limited assurance engagement is less than for a reasonable assurance engagement. Limited assurance engagements focus on aggregated data rather than physically checking source data at sites.

LRQA's approach

LRQA's assurance engagements are carried out in accordance with our verification approach. The following tasks though were undertaken as part of the evidence gathering process for this assurance engagement:

- Assessing RATCH's approach to stakeholder engagement to confirm that issues raised by stakeholders were captured correctly. We did this by interviewing RATCH's Management who engage directly with stakeholder groups as well as reviewing documents and associated records.
- Reviewing RATCH's process for identifying and determining material issues to confirm that the right issues were included in their report. We did this by benchmarking reports written by RATCH and its peers to ensure that sector specific issues were included for comparability. We also tested the filters used in determining material issues to evaluate whether RATCH makes informed business decisions that may create opportunities which contribute towards sustainable development.

- Auditing RATCH's data management systems to confirm that there were no significant errors, omissions or mis-statements in the report. We did this by reviewing the effectiveness of data handling process, and systems, including those for internal verification. We also spoke with key people in various departments responsible for compiling the data and drafting the report.
- Visiting RATCH's major electricity generating unit (Ratchburi Power Plant and Nava Nakorn Electricity Generating Power Plant) to sample performance data and information for the selected specific standard disclosures to confirm its reliability.

Observations

Further observations and findings, made during the assurance engagement, are:

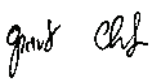
- Stakeholder inclusivity:
  We are not aware of any key stakeholder groups that have been excluded from RATCH's stakeholder engagement process. RATCH has extended open dialogue to all its stakeholders to understand their growing expectations.
- Materiality:
  We are not aware of any material issues concerning RATCH's sustainability performance that have been excluded from the report. We believe that future reports should discuss in detail RATCH's progress in improving emergency response protocols e.g. Hydropower operations.
- Responsiveness:
  RATCH has addressed the concerns of stakeholders in Thailand and Australia in relation to GHG and water resource consumption. However, we believe that future reports should disclose the performance of:
  - all subsidiaries in Thailand, not just wholly owned subsidiaries
  - operational facilities in the South East Asia region, especially those in Laos.
- Reliability:
  Data management systems are defined but the implementation of these systems varies across RATCH's operational facilities, RATCH should consider interim verification to further improve the reliability and timeliness of its disclosed data and information.

LRQA's competence and independence

LRQA ensures the selection of appropriately qualified individuals based on their qualifications, training and experience. The outcome of all verification and certification assessments is then internally reviewed by senior management to ensure that the approach applied is rigorous and transparent.

This verification together with TGO CFO (Carbon Foot Print of an organization Scheme of Thailand Greenhouse Gas Management Organization (Public Organization)) are the only works undertaken by LRQA for RATCH and as such does not compromise our independence or impartiality.

Dated: 20 February 2019



Opart Charuratana
LRQA Lead Verifier

On behalf of Lloyd's Register Quality Assurance Ltd.
Lloyd's Register International (Thailand) Limited
14th Floor, Sirinrat Building, 3388/46 Rama IV Road
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LRQA reference: BGK00000258

Feedback Form: 2018 Sustainability Report
Ratchaburi Electricity Generating Holding PCL

1. Reader Profile

Gender ○ Female ○ Male

Age ○ Below 30 years old ○ 30 – 50 years old ○ More than 50 years old

2. Please identity your stakeholder type

○ Shareholder ○ Investor ○ Partner/ Supplier

○ Community ○ Employee ○ Scholar/ Independent Organization

○ Customer ○ Mass Media ○ Other (Please specify.....)

3. Where do you receive this sustainability report?

○ AGM ○ Company's website ○ Company's employee

○ Other (Please specify.....)

4. Why do you prefer reading this sustainability report?

○ For support investment decision on RATCH's securities

○ For learning more about RATCH's business

○ Research and educational purposes

○ Other (Please specify.....)

5. Satisfactory level towards the 2018 sustainability report

Attractive topics	○ High	○ Medium	○ Low
Information adequacy	○ High	○ Medium	○ Low
Reliable information	○ High	○ Medium	○ Low
Presentation methods	○ High	○ Medium	○ Low
Readability	○ High	○ Medium	○ Low
Design	○ High	○ Medium	○ Low
Overall satisfaction	○ High	○ Medium	○ Low

6. After reading this sustainability report, are you confident that RATCH potentially achieves the sustainable growth?

○ Yes, because.....

○ No, because.....

○ No idea because.....

7. In your opinion, which is the most significant aspect toward the Company's sustainable growth?

○ Economy (Please specify.....)

○ Environment (Please specify.....)

○ Society (Please specify.....)

8. In your opinion, what should the report be improved?

○ Design ○ Readability

○ More content ○ Other (Please specify.....)

Thank you for your information and valuable opinion
which advantages us for improvement of next issue of the report.

RATCH

RATCHABURI
ELECTRICITY GENERATING
HOLDING PCL.

Sustainability Development Department
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Channels to return the feedback form

1. E-mail
   Send the photo of completed feedback form to pornpent@ratch.co.th

2. Fax
   0 2794 9888 ext. 9951-9955

3. Postal
   Send the completed feedback form to the specified address above

4. Mobile
   Send the photo of completed feedback form to 08 1899 6908

5. Website
   Downlosd the feedback from at **www.ratch.co.th** and send back via e-mail at pornpent@ratch.co.th

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