RATCH GROUP

ANNUAL REPORT

2019

RATCH Group PCL.



Next Chapter

for All Better Living

Vision

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

Corporate Value

POWER of RATCH

BE ENTREPRENEURIAL
COMMIT TO INTEGRITY

BOOST AGILITY
ENCOURAGE INNOVATION



EXCEL SYNERGY & COLLABORATION
STRENGTHEN PARTNERSHIP

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 security and infrastructure
- To seek new opportunities and alternatives in related and other businesses to generate growth and expand business base for shareholders



CONTENT

Message from the Chairman 4

Major operational achievements and milestones of 2019 7

Financial Overview 14

Board of Directors, the Management Team and Company's Secretary 16

Board of Directors' report on its responsibility to the financial reports 20

Audit Committee's Report 21

Risk Management Committee's Report 23

Investment Committee's Report 25

Human Resources and Remuneration Committee's Report 26

Corporate Governance and Social Responsibility Committee's Report 28

Business Profile 30

Engagement with Stakeholders 43

Sustainable Development Strategies and Approach 46

Industry Condition and Outlook 52

Risk and Opportunity Management 57
- Internal Control
- Management of Enterprise Risks and Impacts
- Emerging Risk Management

Management Structure 71

Good Corporate Governance 118

Practices Against Fraud and Corruption 145

Code of Conduct 150

Respect to Human Rights 153

Environmental Performance 2019 156
- Sustainable Environmental Management
- Handling Impact of Climate Change

Social Performance 2019 182
- Employee Stewardship
- Safety, Occupational Health and Work Environment
- Customer Relationship Management
- Responsibility for Community and Society

Economic Performance 2019 224
- RATCH's Economic Values
- Supply Chain Management
- Management Discussion and Analysis
- Revenue Structure
- Dividend Payment Policy

Audit Fee and Other Expenses in 2019 254

Related Party Transactions 255

Independent Auditor's Report 270

- Financial Statements
- Note to the Financial Statements 275

Investment Structure 370

General Information of RATCH Group 372

About this Report 381

Performance Data 387

GRI Content Index 394

Assurance Statement 399

Feedback Form 401

MESSAGE FROM THE CHAIRMAN



2019 marked the 19th year

that RATCH has demonstrated its commitment and put its best efforts to become a leading value-oriented energy and infrastructure company in Asia Pacific.

Dear shareholders and stakeholders,

2019 marked the 19th year that the Company has demonstrated its commitment and put its best efforts to become a leading value-oriented energy and infrastructure company in Asia Pacific driven by value creation oriented strategy via seeking collaboration with partners to expand investment in energy, infrastructure and related businesses and maximize the existing assets' revenue-generation capacity, while completing under-construction projects within schedule and under planned expenses for the anticipated quality. Our goals are to grow the enterprise value and create returns to shareholders and stakeholders in a fair and sustainable manner by operating business with good governance and responsibility for society and the environment. We have been a good neighbor to community; strictly complied with standards on safety, occupational health and environment at workplace as well as relevant laws and regulations; combatted against all types of fraud and corruption; and been riding on the path towards High Performance Organization and innovation development. We're fully convinced that all the aforementioned aspects are the foundation and forces to enhance corporate competitiveness and prosperity amid waves of rapid changes in economic, social, environmental and technological areas. Importantly, as a good corporate citizen, we have always reminded ourselves that social and national benefits are the priority, especially power security and the adoption of international best practices.

Electricity generation remains our main business. The Company realized 8,655.07 MW of equity installed capacity from its projects in Thailand and overseas. Of total, 7,159.19 MW comes from commercially-operated power plants and the remaining 1,495.88 MW from projects under construction and development.

New operating capacity of 298.84 MW was added up in 2019 by the investment in Collinsville Solar Farm in Australia and the acquisition of RATCH Cogeneration Power Plant, a small power producer located in Pathum Thani Province and 2 projects commenced operation this year- Berkprai Cogeneration Power Plant in Ratchaburi Province and Xe-Pian Xe-Namnoy Hydroelectric Power Plant. The construction of Xe-Pian Xe-Namnoy, located in Lao PDR, was completed on schedule after project rehabilitation following the collapse of Saddle Dam D in mid-2018. The Company's investments also covered projects that will start commercial operations in 2020 - Nava Nakorn SPP (Expansion) in Pathum Thani Province and Yandin Wind Farm in Australia. The projects scheduled for commercial operations in 2021 are Collector Wind Farm in Australia, Fangchenggang II Nuclear Power Plant in the People's Republic of China, and Riau Combined-Cycle Power Plant in the Republic of Indonesia. Scheduled for operation in 2024 and 2025 is Hin Kong Combined-Cycle Power Plant in Ratchaburi Province which leverages the Company and its business partner's strengths to accelerate project success. These above mentioned projects will raise the Company's capacity by 1,495.88 MW.

In light of rapid changes in technology, the Company has diversified into infrastructure and other businesses. Among them are MRT Pink Line (Khae Rai-Min Buri) and MRT Yellow Line (Lat Phrao-Sam Rong), the new electric train lines scheduled for operations in 2021. Investment opportunities prevail due to digital transformation that changes consumer lifestyle and expectation, encouraging the Company to raise corporate values through underground fiber optic and Internet of Things networks in Thailand to be undertaken jointly with experienced business partners. It will not only generate returns but also equip its personnel with new skills and proficiency beneficial for the organization.

Meanwhile, our profitability remained satisfactory in 2019. The consolidated revenue reached Baht 43,220.07 million while the annualized net profit totaled Baht 5,963.28 million, an increase from the previous year level. Reflecting the solid financial status, the corporate credit ratings were maintained the same level as sovereign credit ratings at "AAA", "BBB+" and "Baa1" by TRIS Rating, S&P Global Ratings and Moody's Investors Service, respectively. Subsequently, Moody's Investors Service raised the Company's rating outlook from "Stable" to "Positive", on par with Thailand's sovereign rating outlook.

Throughout the past years, the Company has upheld good governance best practices, having continually reviewed and improved the operations to achieve greater efficiency. Sustainable value for the organization is the top goal of all work processes. We make sure our business operations adhere to morals, ethics, integrity, transparency, anti-corruption practices, responsibility for society and the environment and equitable treatment of stakeholders. Mirroring this are awards and recognitions including "Excellent" Assessment of Corporate Governance Report of Thai Listed Companies in 2019; quality assessment of 2019 shareholders' annual general meeting with full 100-point score; inclusion in Thailand Sustainability Investment 2019; Rising Star in Sustainability Excellence of SET Awards 2019; Sustainability Disclosure Award 2019; Outstanding Booth Award at SET in the City 2019; and Outstanding Building Safety Award 2019 - Platinum Level. Aside, we have been on the path to develop innovations for greater operational efficiency. On 28 August 2019, the Company applied for a petty patent from the Department of Intellectual Property for its "cogeneration" system that generates electric power through the combination of gas turbine, steam turbine and gas engine, to achieve high

production efficiency and flexibility. The result is expected around March 2020.

Caring for society and the environment is one of the Company's priorities. It has been embedded in CSR projects and activities including "Love the Forest and the Community Project", "Community Energy Project", @CareLine Happy Community Network Project, Happy Elderly Healthy Thailand Project; employee volunteering and Education for Career Empowerment Project in Lao PDR. These undertakings help lift the quality of life, while tackling or easing social and environmental issues. The goals are to conserve natural resources and the environment through efficient resource utilization and community forests that act as natural carbon dioxide storage and reduces global warming impacts. The Company also promotes the elderly's quality of life and provides educational opportunities to the youth. It raise awareness in sharing and volunteering among employees, to do good deeds as the good citizens of society.

On behalf of the Board of Directors, the Management and employees, I would like to thank all shareholders and stakeholders for continuous supports, recommendations and trust in the Company's operations. We strongly believe that operating business cautiously in line with strategies that stress a balance in economic, social and environmental value, good governance best practices and responsibility for society and the environment will lead us towards the goal - to become a leading value-oriented energy and infrastructure company in Asia Pacific in a stable and sustainable way.



(Mr. Sutat Patmasiriwat)
Chairman of the Board of Directors

MAJOR OPERATIONAL ACHIEVEMENTS AND MILESTONES OF 2019

The Company's course of business has been aligned with good governance and sustainable development principles, to grow business and demonstrate our responsibility for society and the environment. In 2019, the Company was renamed as RATCH Group PCL., as approved by shareholders' meeting on 12 April 2019. The change is aligned with the Company's vision to become "the leading value-oriented energy and infrastructure company in Asia Pacific". It reached the following milestones in 2019.

1. Investment

The Company made investment in electricity generation and infrastructure projects, to achieve continuous growth and an increase in enterprise values. The projects are as follows:

Electricity generation

1) Investment in Hin Kong Power Plant, a 1,400-MW power plant in Tambon Hin Kong, Muang District, Ratchaburi Province: It won the endorsement from the National Energy Policy Council and the National Energy Policy Administration to construct a 1,400-MW power plant to replace decommissioned power plants in the Western region of the country. From 2018 to 2027, with a total of 4,181 MW capacity, Hin Kong Power Plant will replace Tri Energy Power Plant, of which power purchase agreement with Electricity Generating Authority of Thailand will end in 2020.

Hin Kong Power Holding Company Limited is established to own shares in Hin Kong Power Company Limited, set up to operate the project. Hin Kong Power Holding Company Limited's Baht 4 million capital was fully paid up and on 12 July 2019 Hin Kong Power Company Limited signed a 25-year Power Purchase Agreement (PPA) with Electricity Generating Authority of Thailand.

On 3 January 2020, RATCH sold a 49 per cent stake in Hin Kong Power Holding Company Limited to Gulf Energy Development PLC to be a part of driving project development and become a partner of other projects in the future. Hin Kong Power Plant will have two generating units, 700 MW each. Unit 1 is scheduled for commercial operation in 2023 and Unit 2 in 2024. The environmental impact assessment is underway.

2) Investment in 214-MW Yandin Wind Farm, located around 150 km North of Perth, Western Australia: The Company, via wholly-owned RATCH-Australia Corporation Pty Ltd, signed a Subscription, Sale and Purchase Agreement, to buy a 70 per cent stake of Yandin WF Holding Pty Ltd from Renewable Energy Investment Fund Pty Ltd, which is a subsidiary of Alinta Energy Pty Ltd (Alinta), and buy 70 per cent of Yandin WF Holding Unit Trust from Renewable Energy Investment Fund Unit Trust. The transaction was valued 53.31 million Australian dollars or approximately Baht 1,234.20 million.

The under-construction project is scheduled for commercial operation around September 2020 with a 15-year power purchase agreement with Alinta Sales Pty Ltd, a subsidiary of Alinta. A loan facility worth 364 million Australian dollars or about Baht 8,008 million was secured.

3) Acquisition of RATCH Cogeneration Power Plant: RATCH acquired 99.97 per cent of common and preferred shares of Navanakorn Electric Company Limited for Baht 1,998.40 million. The company operates a small cogeneration power plant valued at Baht 5,726.68 million. Located south of Nava Nakorn Industrial Promotion Zone in Pathum Thani province, the gas-fired power plant has electricity capacity of 119 MW and steam capacity of 10 tons per hour. After the management control in October 2019, Navanakorn Electric Company Limited was renamed to RATCH Cogeneration Company Limited in November 2019.

The power plant generates 90 MW of electricity for EGAT under a 25-year power purchase agreement. It has operated commercially since 31 October 2013. The remaining capacity and steam is distributed to industrial users in Nava Nakorn Industrial Promotion Zone. RATCH sets a plan to expand the industrial customer base and capacity in future.

Infrastructure

1) Investment in Smart Infranet Company Limited: The Company and ALT Telecom Public Company Limited set up Smart Infranet Company Limited, a joint venture with Baht 1,000,000 in registered capital. It focuses on investment in an underground fiber optic network and provides communications services to electricity and energy-related businesses, which is complement to its business and revenue stream. The Company holds 51 per cent in Smart Infranet and paid up the registered capital accordingly to its holding.

2) Investment in Things on Net Company Limited: The Company poured Baht 180 million for a 35 per cent stake in Things on Net Company Limited. Through this transaction, RATCH involves itself with a telecom network project and services related to Internet of Things. In 2020, Things on Net Company Limited plans to have its base stations cover 70% across Thailand and serve 85% of population in the country, who potentially are users of its IOT's network based on Sigfox technology. The transactions allow RATCH an entry into an exponential growth or new S-Curve business.

Things on Net Company Limited is the Thailand sole operator of Sigfox network, the Low Power Wide Area Network (LPWAN) covering more than 50 countries globally.

2. Progress in power plant development and construction

The construction progress of 4 power plants with combined equity installed capacity of 632 MW, which started before 2019, can be summarized as follows:



Thailand

1) NNEG Power Plant's expansion phase: the project has generating capacity by 60 MW and steam capacity by 10 tons per hour, for sale to industrial users in Nava Nakorn Industrial Promotion Zone. It valued at Baht 3,105 million, the gas-fired cogeneration project started construction in August 2018 for completion in August 2020 as scheduled.

The 2nd phase of NNEG Power Plant is co-invested by Ratchaburi Electricity Generating Company Limited, the Company's subsidiary; Nava Nakorn Company Limited; and Global Power Synergy PLC at the 40:30:30 shareholding ratio. Once completed, it will boost NNEG Power Plant's generating capacity to about 199 MW and steam capacity to about 40 tons per hour.

Australia

1) 226.8 MW Collector Wind Farm in New South Wales, Australia: The Company invests in the project via subsidiary, RATCH-Australia Corporation Pty Ltd. In March 2019, a AUD 179 million loan facility (approximately Baht 4,117 million) was signed with Australia-based Clean Energy Finance Corporation (CEFC) to finance the construction which is expected to take about 20-24 months.

Collector Wind Farm is valued about 359 million Australian dollars. Construction started in May 2019 and the installation of wind turbines, totally 54, will begin in Mid-year 2020. The scheduled commercial operating date is in January 2021. Output will be sold via Australia's National Electricity Market.

Indonesia

1) 296.23-MW gas-fired Riau Power Plant in Pekanbaru City, Riau Province, Indonesia: The project is operated by PT Medco Ratch Power Riau (MRPR), a 49:51 joint venture with PT Medco Power Indonesia (MPI).

On 20 March 2019, MRPR signed a US$222 million (approximately Baht 7,104 million) syndicated loan facility with 4 financiers - Asian Development Bank (ADB), International Finance Corporation (IFC) , MUFG Bank and Sumitomo Mitsui Banking Corporation (SMBC) to finance the construction. In November 2019, the first tranche was withdrawn and construction progressed as planned. The commercial operation date is scheduled in 2021.

Riau Power Plant will sell electricity to PT Perusahaan Listrik Negara Persero (PLN) under a 20-year power purchase agreement.

China

1) Fangchenggang II Nuclear Power Plant: The 2,360 MW power plant is operated by Guangxi Fangchenggang Nuclear Power Company Limited. RATCH holds a 10 per cent stake in the company, with the remaining stake to be owned by China General Nuclear Power Corporation, 51 per cent; Guangxi Investment Group Company Limited, 39 per cent.

Located in Guangxi Zhuang Autonomous Region, west of China, the project contains 2 generating units - Unit 3 and Unit 4. The construction has progress since started in 2015 and is expected to commence commercial operation in 2021.

3. Asset management

1) The commercial operating power plants: In 2019 the 2 power plant projects with combined capacity of 137.23 MW have started commercial operation including Berkpai Cogeneration power plant and Xe-Pian Xe-Namnoy Hydroelectric power plant.

1.1 Berkprai Cogeneration Power Plant: Located in Tambon Berkprai, Ban Pong District, Ratchaburi Province, it started commercial operation on 1 June 2019 as scheduled in the firm cogeneration power purchase agreement with Electricity Generating Authority of Thailand. The gas-fired small power plant's installed capacity is 99.23 MW of electricity and 15 tons per hour of steam. It is operated by Berkprai Cogeneration Company Limited, owned 35 per cent via Ratchaburi Electricity

Generating Company Limited which is the Company subsidiary. The remaining interests are owned by Rajburi Sugar Company Limited. It is contracted to supply 90 MW of electricity to Electricity Generating Authority of Thailand and 5 tons per hour of steam to Rajburi Ethanol Company Limited.

1.2 **Xe-Pian Xe-Namnoy Hydroelectric Power Plant:** Located in Champasak and Attapeu provinces, Lao PDR, the 410-MW power plant is operated by Xe-Pian Xe-Namnoy Power Company Limited, owned 25 per cent by the Company, 26 per cent by SK Engineering & Construction Company Limited, 25 per cent by Korea Western Power Company Limited, and 24 per cent by Lao Holding State Enterprise (LHSE). RATCH fully paid US$76.50 million for its equity.

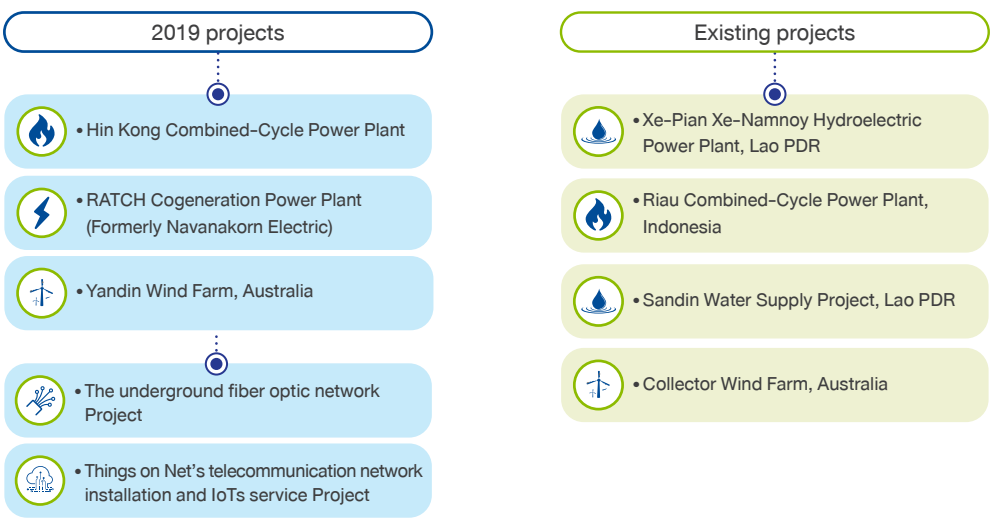
On 6 December 2019, the power plant commenced commercial operation at the capacity of 396 MW per annum according to the power purchase agreement. Of total, 354 MW or 1,575 million units is supplied to Electricity Generating Authority of Thailand for 27 years and the remaining 42 MW or 229 million units to the local grid under a power purchase agreement with the Electricite du Laos. The electricity sold to EGAT is transmitted via 500-kV lines, initially at 230 kV, from Pakse Power Station in Lao PDR to High-Voltage Power Station 3 in Ubon Ratchathani Province, to support power demand in the Northeastern of Thailand . The project was developped under the Memorandum of Understanding between the governments of Thailand and Lao PDR to support the cooperation of power development in Lao PDR.

2) Management of power plant's efficiency: The Company's power plants that use primary fuels ably maintained availability payment efficiency as planned. Net electricity output in 2019 is summarized as follows:

Type of power plant	Net generation (million Units)
Domestic power plants using primary fuels	22,020.70
Domestic renewable power plants	553.02
Overseas power plants using primary fuels	13,189.22
Overseas renewable power plants	2,446.47

4. Financial management

- The Company allocated investment funding for existing projects and new projects agreed upon in 2019 worth totally Baht 5,405 million. Receiving investment funds are:



- Maintaining "Investment Grade" credit rating: The Company ably maintained the ratings that reflect its financial strength and stability. In 2019, the ratings by TRIS Rating, S&P Global Ratings and Moody's Investors Service were maintained at "AAA", "BBB+" and "Baa1", respectively. The Moody's Investor upgraded the Company's outlook from "Stable" to "Positive", being the comparable to sovereign country ratings.

5. Dividend payment

The Company paid Baht 1.15 per share as interim dividend for the first six-month performance (January-June 2019) on 20 September 2019. The interim dividend payment totaled Baht 1,667.5 million.

6. Energy and greenhouse gas management

to mitigate impacts from global warming and climate change through the following key approaches:

- **Greenhouse gas inventory preparation:** The Company prepared a GHG account, adapting Thailand Greenhouse Gas Management (Public Organization)'s Carbon Footprint for Organization mechanisms in gauging GHG of Ratchaburi Power Plant, Tri Energy Power Plant and Head Office.
- **GHG management through the adaptation of Thailand Greenhouse Gas Management (Public Organization)'s Thailand Voluntary Emission Reduction (T-VER) program.**

Title of project	Energy Efficiency Project through LED Lighting Replacement	Solar Floating Project	Sustainable Forestation Project of Ratchaburi Power Plant
Type of project	Energy efficiency enhancement	Renewable energy	Forest and green areas
Project developer	RATCH Group PCL.	RATCH Group PCL.	RATCH Group PCL.
Project owner	Ratchaburi Electricity Generation Company Limited	Ratchaburi Electricity Generation Company Limited	Ratchaburi Electricity Generation Company Limited
Details	Improvement energy efficiency by replacing light bulbs with 18W LED bulbs, totaling 6,577 light bulbs; 5,082 light bulbs installed at the thermal power plant and 1,495 at the combined-cycle power plant	Generating electricity from 6,480 solar panels of 330 watts each which floating on Ratchaburi Power Plant's reservoir, constituting 2.138 MW in installed capacity. The power is supplied to the Camp Area and the thermal power plant when it is in reserved shut down mode.	Ratchaburi Electricity Generating Company Limited determines to generate electricity with focus on social/environmental responsibility and safety. To mitigate environmental impacts on nearby communities, it grows trees on the power plant's unused land areas under sustainable forestation approaches as a way to enhance GHG storage and rebalance natural resources. 2,900 Swietenia macrophylla trees were planted in 2009 and 2,300 Tectona grandis teak trees were planned in 2010. Registered area for T-VER program combined of 47.92 rai.
GHG volume expected to be cut/absorbed	771 tons of CO_2 equivalent per annum	1,774 tons of CO_2 equivalent per annum	57 tons of CO_2 equivalent per annum
Carbon crediting period	7 years: 01/07/2017-30/06/2024	7 years: 01/07/2019-03/06/2026	20 years: 01/09/2019-31/08/2039
T-VER registration year	2018	2018	2019
Carbon credit certification year	1st year (01/07/2017-30/06/2018) 2nd year (01/07/2018-30/06/2019)	Pending for performance assessment	Pending for performance assessment

Participation in Thailand Greenhouse Gas Management (Public Organization)'s Low Emission Support Scheme (LESS): The Company submitted 6 CSR projects implemented inside and outside the Company's premises to GHG evaluation under LESS Scheme: biomass stove promotion in community energy projects in Chiang Mai and Lamphun provinces; solar power promotion in Mae Hong Son Province; LED light bulb replacement activity under a community energy project in Nan Province; LED light bulb replacement project in Phetchaburi Province; and RATCH's LED light bulb replacement scheme. The activities reducing greenhouse gas emissions by 44.39 tCO_2e per year.

7. Social responsibility

- **Love the Forest: Love the Community Project** is the Company's core social activity, designed to promote community engagement in conserving community forests. It helped support the Royal Forest Department's initiative in helping communities register community forests. The project has been organized together with the Royal Forest Department for 12 consecutive years, leading to a spiraling increase in community forest numbers and hence forest areas. Under the initiative, communities play a significant role in conserving and rehabilitating forests, while they and subsequent generations can use forests as the source of their food, water and natural resources.

In 2019, a number of 2,530 community forests were registered with the Royal Forest Department, covering a total of 1,159,287 rai and generating Baht 104,031 million per annum in ecosystem service value. Referring to Biodiversity-Based Economy Development Office (Public Organization)'s study in September 2017, it showed forests' ecosystem service value - concerning soil erosion prevention; underground water and minerals absorption; flow of water; and temperature cooling - averaged Baht 89,737.48 per rai per year.

- **CSR projects to enhance stakeholders' acceptance and corporate image:** In 2019, the Company carried out the 19 planned activities under 6 social and environment projects. Participant satisfaction assessment in terms of quality and activity period was 91.62 per cent on average.

8. Awards and recognitions

- Listed in Stock Exchange of Thailand's Thailand Sustainability Investment (THSI) 2019, fifth consecutive year.

- SET Awards 2019: "Rising Star" in Sustainability Excellence, among listed companies with market capitalization of Baht 30,000-100,000 million.

- Sustainability assessment conducted by Stock Exchange of Thailand score of 94 in 2019, compared to 90 in 2018, which retained the Company's position in Top Quartile of companies in the same market-cap category.

- Sustainability Disclosure Award 2019, organized by Thaipat Institute

- Honorary plaque from the Royal Forest Department, in recognition of the Company's support in "community forest promotion" through its "Love the Forest, Love the Community" and other community forest-related CSR activities.

- Certificate and plaque of appreciation from Thailand Greenhouse Gas Management (Public Organization), in recognition of the Company's awareness in climate impact mitigation and concrete approaches to manage and reduce GHG in production process and other activities. In 2019, RATCH was certified for 3 projects: 1) Thailand Voluntary Emission Reduction Program (T-VER) concerning renewable energy 2) Low Emission Support Scheme (LESS) and 3) Carbon Footprint for Organization (CFO) that concerned Ratchaburi Power Plant and Tri Energy Power Plant.

- Platinum Plaque of Appreciation from BSA Building Safety Award 2019, determined from Building's safety management standard, organized by Building Inspectors Association

Ratchaburi Power Plant

- Honorary Plaque from Zero Accident Campaign 2019: Bronze Level, 2nd year in a row, from the Department of Labor Welfare and Protection.

- Outstanding Corporate in Safety, Occupational Health, and Workplace Environment 2019: National Level-Gold Award, 2nd year in a row, from the Department of Labor Welfare and Protection

- The Prime Minister's Industry Award 2019 , in Social Responsibility Outstanding from the Department of Industrial Works

- Social Responsibility and Sustainability Plant Award 2019 (CSR-DIW Continuous) from the Department of Industrial Works

- Honorary plaque 2019 for the excellence of CSR activities from the Ministry of Social Development and Human Security



Thailand Sustainability Investment (THSI) 2019 recognized by Stock Exchange of Thailand



SET Awards 2019: "Rising Star" in Sustainability Excellence, among listed companies with market capitalization of Baht 30,000-100,000 million



Sustainability Disclosure Award 2019 recognized by Thaipat Institute



Platinum Plaque of Appreciation from BSA Building Safety Award 2019, awarded by Building Inspectors Association

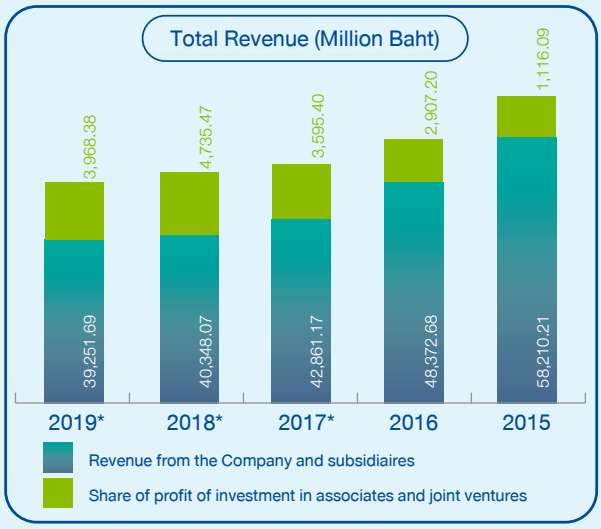
FINANCIAL OVERVIEW

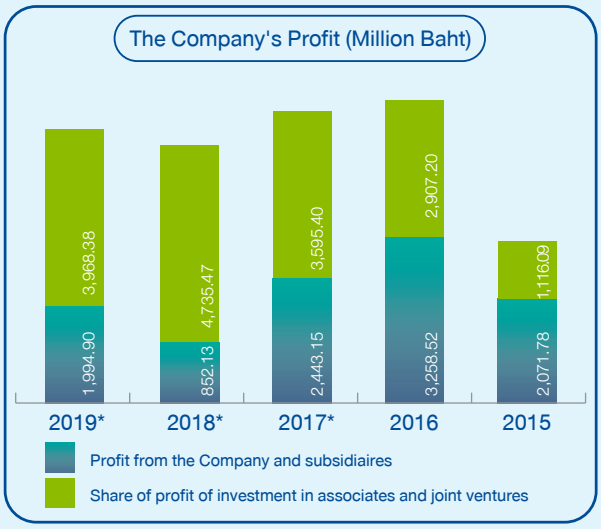
	Unit	2019 *	2018 *	2017 *	2016	2015
Statement of Comprehensive Income						
Total Revenues	Million Baht	43,220.07	45,083.54	46,456.57	51,279.88	59,326.30
Earning before interest, taxes, depreciation and amortization (EBITDA) **	Million Baht	9,996.24	9,599.80	9,236.32	9,323.54	8,644.78
The Company's profit for the year - Owner of the parent	Million Baht	5,963.28	5,587.60	6,038.55	6,165.72	3,187.87
Statement of Financial Position						
Assets	Million Baht	100,229.43	101,251.90	93,794.41	96,391.09	92,605.05
Liabilities	Million Baht	40,815.50	41,315.88	34,784.91	33,938.32	32,185.21
Equity	Million Baht	59,413.93	59,936.02	59,009.50	62,452.77	60,419.84
Information about ordinary shares						
Book value	Baht	40.97	41.34	41.16	42.98	41.51
Earnings per share	Baht	4.11	3.85	4.16	4.25	2.20
Dividend paid per share	Baht	***2.40	2.40	2.40	2.35	2.27
Dividend payout ratio	%	58.36	62.28	57.63	55.27	103.25
Year-end stock price	Baht	68.75	50.75	54.25	50.00	47.50
Financial ratios (excluding currency exchange effect)						
Current ratio	Times	2.70	2.22	2.44	2.42	2.23
Profit to total revenue (excluding fuel cost)	%	38.90	43.53	36.15	40.85	30.28
Return on equity ratio	%	10.21	10.79	9.43	9.81	7.48
Return on total assets ratio	%	8.33	8.53	8.34	8.66	7.56
EBITDA to total assets	%	9.92	9.84	9.73	9.87	9.16
Total debt to equity ratio	Times	0.69	0.69	0.59	0.54	0.53
Net debt to equity ratio	Times	0.38	0.32	0.20	0.19	0.16
Change in finance lease receivables	Million Baht	1,359.51	3,654.89	3,920.38	3,313.03	3,552.83

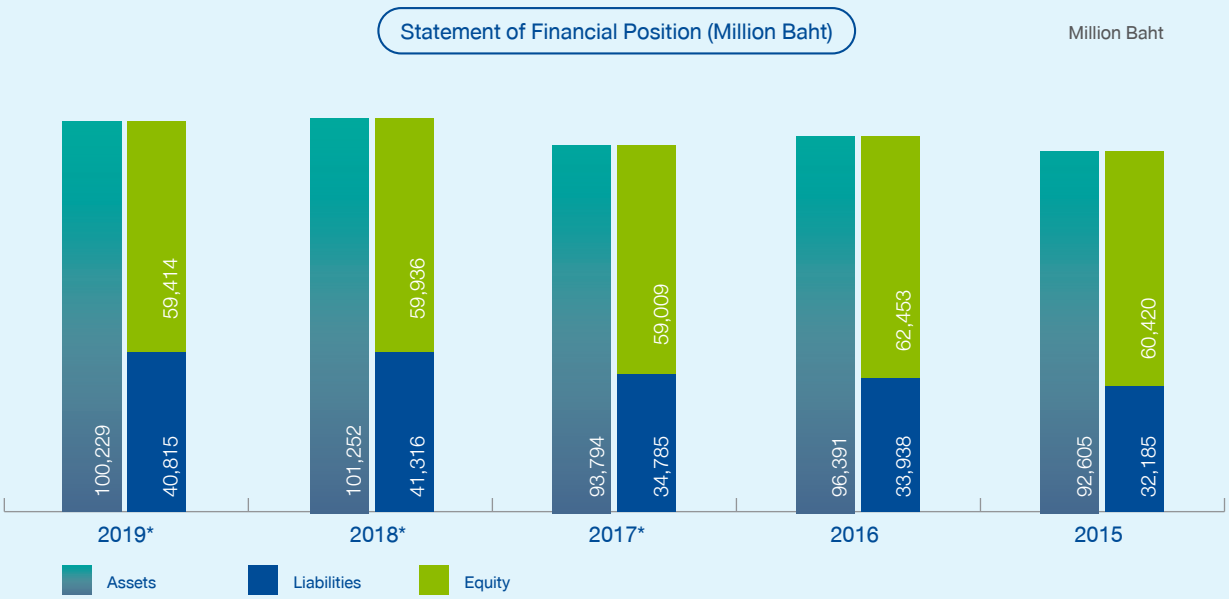
Notes : * *2017-2019 information was prepared according to the accounting policy for derivative financial instruments and hedge accounting.*

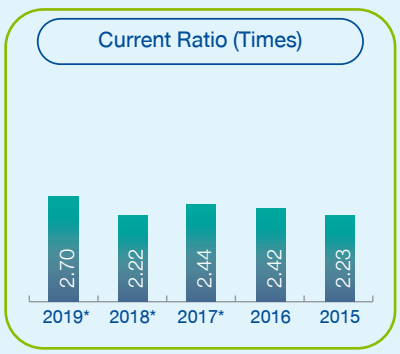
** *Excluding foreign exchange effect and change in finance lease receivables.*

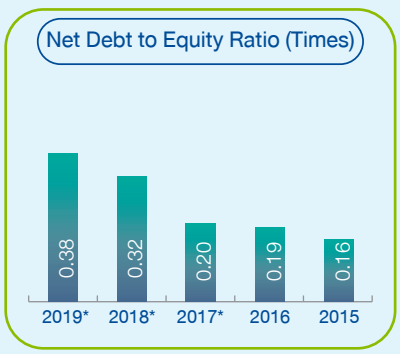
*** *Proposed for shareholders' consideration in the 2020 Shareholders' Annual General Meeting to be held on 9 April 2020.*

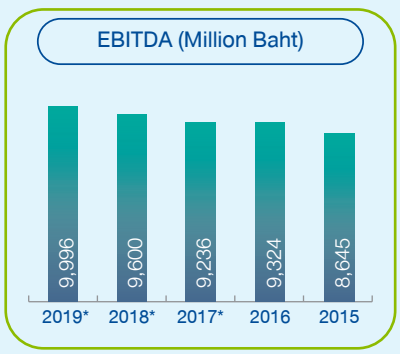


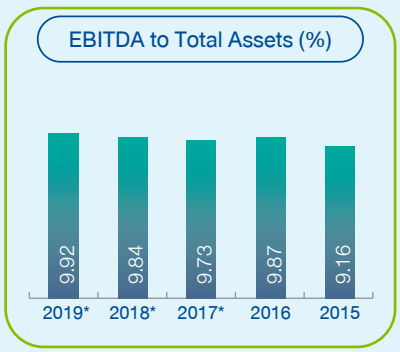


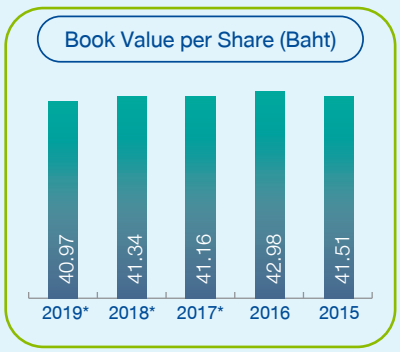














Note : * *2017-2019 information was prepared according to the accounting policy for derivative financial instruments and hedge accounting.*

BOARD OF DIRECTORS



01. Mr. Sutat Patmasiriwat

- Chairman
  (EGAT's Representative Director)
- Chairman of the Investment Committee

02. Mr. Chartchai Rojanaratanangkule

- Independent Director
- Chairman of the Audit Committee
- Member of the Corporate Governance and Social Responsibility Committee

03. Mr. Apichart Chinwanno

- Independent Director
- Chairman of the Human Resources and Remuneration Committee

04. Mr. Samack Chouvaparnante

- Independent Director
- Chairman of the Risk Management Committee

05. Mr. Somboon Nhookeaw

- Independent Director
- Member of the Audit Committee

06. Mr. Boonsong Kerdklang

- Independent Director
- Member of the Audit Committee



07. Mr. Ratanachai Namwong

- Independent Director
- Member of the Human Resources and Remuneration Committee
- Member of the Investment Committee

08. Mr. Chuan Sirinunporn

- Director (EGAT's Representative Director)
- Chairman of the Corporate Governance and Social Responsibility Committee
- Member of the Human Resources and Remuneration Committee

09. Miss Nantika Thangsuphanich

- Director (EGAT's Representative Director)
- Member of the Risk Management Committee

10. Mr. Boonyanit Wongrukmit

- Director (EGAT's Representative Director)
- Member of the Investment Committee
- Member of the Risk Management Committee

11. Mr.Tawatchai Jakpaisal

- Director (EGAT's Representative Director)
- Member of the Investment Committee

12. Mr. Kijja Sripatthangkura

- Director (EGAT's Representative Director and Executive Director)
- Chief Executive Officer
- Secretary to the Board of Directors

MANAGEMENT TEAM
AND COMPANY'S SECRETARY

01. **Mr. Kijja Sripatthangkura**
Chief Executive Officer

02. **Mr. Peerawat Pumthong**
Chief Business Development Officer



03. **Mr. Raluke Satayaporn**
Chief Project Development Officer

04. **Mr. Nimit Lekcharoensuk**
Chief Asset Management Officer

05. **Mrs. Wadeerat Charoencoop**
Chief Financial Officer (Top Responsible Person in Accounting and Finance)



06. **Mrs. Boontiva Dansamasatid**
Executive Vice President - Corporate Administration





07. Mrs. Supatra Thongkarn
Executive Vice President - Financial

08. Mr. Sakchai Sripetch
Senior Vice President - Head of Financial Planning and Management Division



09. Miss Suwannee Sirisajjawat
Vice President - Head of General Accounting Division (Directly Responsible Person for Accounting Supervision)

10. Miss Chatuporn Laohapiboonratana
Vice President - Head of Tax Management and General Ledger Division



11. Miss Titiporn Komsartra
Acting Vice President - Head of Accounting Control and Analysis

12. Miss Wanphen Chamkham
Acting Head of Company Secretary Office and Company Secretary

BOARD OF DIRECTORS' REPORT ON ITS **RESPONSIBILITY TO THE FINANCIAL REPORTS**



(Mr. Sutat Patmasiriwat)
Chairman of the Board of Directors

The Board of Directors is obliged by the Public Company Act B.E. 2535, the Accounting Act B.E. 2543, the Securities and Exchange Act B.E. 2535 and the Securities and Exchange Commission's Announcement on the Rules, Conditions and Procedure of Financial Information and Performance Disclosure to prepare financial statements which disclose the factual, reasonable and transparent financial standing, performance and cash flow in the previous year for the benefits of shareholders and investors.

The consolidated and separate financial statements for the year ended on 31 December 2019 were audited by the Company's auditor, KPMG Phoomchai Audit Limited. The Board of Directors provided information and documents to enable the auditor to examine and express his opinion in conformity with generally accepted auditing standards. The auditor's opinions appear in Independent Auditor's Report which is included in this Annual Report.

In this regard, the Board of Directors appointed the Audit Committee to review the accounting policy and the quality of financial reports, the internal control system, and internal audit. The Audit Committee's opinions appeared in the Audit Committee's Report which is included in this Annual Report.



(Mr. Kijja Sripatthangkura)
Chief Executive Officer

The Board of Directors has provided and maintained an appropriate and effective internal control system to reasonably ensure that the financial reports did not include material misstatements, whether due to fraud or error.

Based on the evaluation of internal control system sufficiency in five components namely organizational structure and environment, risk management, control activities for information and communication, and operation monitoring activities; the Board of Directors is of the opinion that the Company's overall internal control system was satisfactory and could reasonably ensure that the consolidated and separate financial statements for the year ended 31 December 2019 were reliable and prepared in line with financial reporting standards and in compliance with laws and relevant regulations.

AUDIT COMMITTEE'S REPORT



(Mr. Chartchai Rojanaratanangkule)
Chairman of the Audit Committee

The Audit Committee of RATCH Group PCL comprises 3 independent directors namely (1) Mr. Chartchai Rojanaratanangkule as chairman of the committee, (2) Mr. Boonsong Kerdklang and (3) Mr. Somboon Nhookeaw as the committee's members. Mr. Somboon Kositvanich, Senior Vice President - Head of Internal Audit Division, serves as the committee's secretary.

In 2019, there was a change of members of the Audit Committee according to the Board of Directors' resolution No. 4/2019 on 24 April 2019 which appointed Mr. Boonsong Kerdklang as a new member, replacing Mrs. Siriporn Luangnual whose director term expired.

All members of the Audit Committee performed independently and had complete qualifications as stated in the Company's regulation on the Board of Directors B.E. 2562 and the Company's regulation on the Audit Committee B.E. 2562. Both regulations are compliant with the regulations of the Securities and Exchange Commission (SEC) and the Stock Exchange of Thailand (SET).

In 2019, the Audit Committee convened 7 times as scheduled in advance. All 3 members attended all meetings. The Committee held 1 meeting with the auditors without the presence of the Management to assure the auditor's freedom in obtaining information and scrutinizing the information significant for the preparation of financial statements. The Committee also held 1 meeting with the Risk Management Committee to exchange opinions on risk management. (Details of the Audit Committee's individual members' meeting attendance appeared in the Meeting Attendance Table in the Management Structure Section.) The Managements of the Company and subsidiaries and the auditors participated in the Audit Committee's meetings to present information, listen to opinions and suggestions that are useful to the Company's operations. The results of each meeting were presented to the Company's Board of Directors on a regular basis.

In the past year, the Audit Committee's significant activities can be summarized as follows:

- Reviewing the accuracy, completeness and reliability of the quarterly and annual financial statements of the Company and its subsidiaries, to ensure compliance with financial reporting standards. The review covered significant issues and extraordinary items and received explanations from the auditors and the Managements, to assure the financial reporting met legal requirements and financial reporting standards before submission to the Board of Directors.
- Reviewing and evaluating the sufficiency of the internal control system including IT-related control, to ensure the Company's effective and efficient operations, enabling the Company to achieve its goals. The review found the Company's directors, the Management and employees strictly followed the specified rules and actively applied the anti-corruption policy through participation with Thailand's Private Sector Collective Action Coalition Against Corruption (CAC).
- Reviewing the Company's compliance with the Securities and Exchange Act, the Stock Exchange of Thailand's rules and regulations, related business laws, corporate good governance practices, the Company's regulations and policies, and anti-corruption policy.

- Reviewing items that may involve conflict of interest and ensuring that they comply with laws and regulations specified by the Capital Market Supervisory Board and related organizations. Connected transactions or items that may involve conflict of interest must be reported to the Audit Committee for approval before submission to the Board of Directors for further consideration. The Management reported major transactions to the Audit Committee for acknowledgment on a quarterly basis.
- Overseeing the accounting system and financial reports to ensure appropriate internal control in the entire operation process covering risks related to fraud and corruption, and full and efficient implementation.
- Reviewing risk management, risk management policy, policy implementation and risk management guidelines together with the Management. A discussion with the Risk Management Committee was held to ensure effective and efficient risk management and alignment with the internal audit, taking into account the Key Corporate Performance Appraisal and corporate-level risks in terms of capacity target, new business target, operating performance target, financial target, sustainability target, and etc.
- Supervising the internal audit to ensure the efficiency and effectiveness by approving the annual audit plan and long-term audit plan, acknowledging the audit results and giving comments so that the internal control is effective in preventing or mitigating possible risks. Suggestions were made on the implementation, follow-up and improvement along with the review on the Internal Audit Division's budget, personnel and competency development. The Committee also proposed quality enhancement of the internal audit to meet international standards, by improving the internal auditing's efficiency and effectiveness with respect to the results of Quality Assessment Review assessed by external experts. It also ensured the internal audit function meet International Standards and best practices for the Professional Practices of Internal Auditing.

The Audit Committee conclusively considered that the financial statements of the Company and subsidiaries met the generally accepted accounting standard; that the disclosed information was adequate, accurate, complete and credible; and that the internal control as well as risk management was sufficiently efficient and effective and has clear separation of authority and duty. No significant weakness or deficiency was found in the internal control system. There was no observation or any issue related to fraud and corruption. The operations of the Company and its subsidiaries fully complied with the securities and exchange law, the Stock Exchange of Thailand's regulations and related laws, consistent with the auditor's assessment. The Audit Committee's opinions appearing in meeting minutes were forwarded to the Board of Directors for further consideration.

In 2019, the Company introduced and enforced the Accounting Policy, on top of the Financial Policy that was enforced in 2017. The new policy is to ensure the Group's operations meet international financial reporting standards and related regulations as well as international efficiency standards.

The Audit Committee was consent the appointment of Mr. Vairoj Jindamaneepitak (CPA No. 3565) or Mr. Waiyawat Kosamarnchaiyakij (CPA No. 6333) or Mr. Natthaphong Tantichattanon (CPA No. 8829) of KPMG Poomchai Audit Limited as the auditor of the Company and its subsidiaries in 2020. The named auditors are independent, qualified and certified by the Office of Securities and Exchange Commission. The total audit fee is Baht 3.76 million, including the Bt 1.55 million audit fees for only the Company statement. The Audit Committee submitted the matter to the Board of Directors, to seek shareholders' approval at the shareholders' annual general meeting.

RISK MANAGEMENT **COMMITTEE'S REPORT**



(Mr. Samack Chouvaparnante)
Chairman of the Risk Management Committee

Multiple risks may prevail and affect the Company's business operations, either internal or external factors that are beyond the Company's control including natural disasters, terrorist attacks or violent demonstrations. To achieve annually-set goals, risk management is crucial to mitigate key risks, to ensure business growth and sustainability as well as generate appropriate returns to shareholders. In 2019, the Company managed risks accordingly to the COSO: ERM 2017 framework, the risk management guidelines recommended by the Stock Exchange of Thailand. COSO: ERM 2017 integrates business strategy and performance by requiring annual business objectives setting in various aspects and benchmarking against actual performance. In assessment process of corporate risks, it demands to analyze risks of Key Performance Indicators (KPI) specified in the strategic plan, to find out, for example, possible risks to the Company's net profit target or the Company's capacity target; as well as the formulation of an appropriate risk management plan taking into account the risks profile of business units and project-level risks concerning particular KPIs.

The corporate risks that may disrupt the Company's goals are categorized as follows;

1) Strategic Risks: The external factors that influence business operations such as changes in political, economic and social conditions; industry policies and disruptive technology. Included are the risks affecting new investment projects under development and construction; risks that concerns human resources and high performance organization and engagement that may affects the Company's preparation for future business changes; and risks concerning corporate image and stakeholder relations.

2) Financial risks: Comprising interest rates, currency exchange rates, liquidity, credit and other financial risks. These risks are controlled by the Company's Finance Policy.

3) Operational Risks: Both domestic and international commercially operating projects may encounter these risks, which must be monitored and controlled so that business goals can be achieved. Operational risks are immense for the Company's old power plants as aging machine must be

correctly maintained to ensure reliability and efficiency throughout the remaining life of power purchase agreements. Business Continuity Plan is equally crucial to cope with incidents that may interrupt the Company's operations and ensure the Company's business as usual continued, for example, the backup of important corporate data in case of incidents with the main database or IT system.

4) Compliance risks concerning compliance with laws and relevant regulations: the assessment was made in both project and corporate levels in according to the principles of Thailand's Private Sector Collective Action Coalition Against Corruption (CAC) – the anti-fraud and corruption initiative of which the Company is a member; and good governance practices. Risk assessment accordingly to COSO: ERM 2017 framework provided the Board of Directors and the Management a clearer picture of possible risks that may affect the organization's goals. Proper risk mitigation approaches are consequently devised, to ensure the risks are managed at appropriate levels and the Company can achieve its annual business objectives.

The Risk Management Committee and Risk Management Working Group are committed to continuously improving effectiveness of risk management, so that business objectives can be achieved for the organization's stability and sustainability.

INVESTMENT **COMMITTEE'S REPORT**



(Mr. Sutat Patmasiriwat)
Chairman of the Investment Committee

As of 31 December 2019, Investment Committee of RATCH Group PCL ("the Company") comprised 4 members appointed by the Board of Directors namely (1) Mr. Sutat Patmasiriwat, chairman of the Investment Committee (2) Mr. Boonyanit Wongrukmit (3) Mr. Ratanachai Namwong and (4) Mr. Tawatchai Jakpaisal. Mr. Peerawat Pumthong, Chief Business Development Officer served as the committee's secretary.

During 2019, there was a change of members of the Investment Committee according to the Board of Directors' resolution No. 11/2019 on 18 November 2019, when Mr. Tawatchai Jakpaisal was appointed a new member, replacing Mr. Seubphong Buranasirin.

In 2019, the Investment Committee appointed by the Board of Directors held 8 meetings and performed under the following scope of duties and responsibilities:

1. Identify investment-related strategy, target, plan, budget, return on investment and other gains and benefits from investment projects to raise the Company's generation capacity and growth.
2. Screen the investment projects proposed by the Management, to ensure the Company's green field, brownfield and M&A investments concerning power plants and related businesses as well as infrastructure business in Thailand and overseas are related and consistent with the Company's vision to become a leading value-oriented energy and infrastructure company in Asia Pacific. Such process took into consideration reasonable return on investment and the ability to maintain risks at an acceptable level.
3. Review, follow up and evaluate the approved investment projects and submit a report for the Board of Directors' acknowledgement.

At the Investment Committee's meetings, members independently discussed, asked questions and expressed opinions, acting in favor of the Company's overall interests. The members reviewed, followed up and assessed the Company's investment projects, to ensure that they generated the expected returns. The members also helped prevent and clear obstacles that might affect project development and operations. The Investment Committee viewed that the Company's investment decision should be based on prudent, careful and cautious study and analysis of circumstantial factors, in depth and breadth, by internal and external experts in line with corporate good governance principles, anti-corruption policy and equitable treatment of all stakeholders, for the Company's stable and sustainable growth.

HUMAN RESOURCES AND REMUNERATION COMMITTEE'S REPORT



(Mr. Apichart Chinwanno)
Chairman of Human Resources and Remuneration Committee

In 2019, there were changes in membership of the Human Resources and Remuneration Committee. The appointment of Mr. Apichart Chinwanno as its chairman was effective since 1 May 2019 and the termination of Mr. Suebpong Buranasirin's membership following his resignation as a Company director on 16 October 2019. Succeeding Mr. Suebpong as a committee member was Mr. Ratanachai Namwong, appointed on 18 November 2019. In 2019, the Committee held 9 meetings, each attended by all members. Members were free to express their opinions and performed accordingly to the Company's regulation, with integrity, transparency, caution and fairness, having the Company's overall benefits as the main goal. Throughout the year, the Committee considered and sought the Board of Directors' endorsement for the following matters:

1. **Identify board skills matrix:** The matrix highlights directors' required experience in business and/or industry, qualifications, skills, and experiences in related areas. Also specified is that at least 3 directors must have experience in electricity/energy business and/or infrastructure business and at least 1 director each must have qualifications, skills and/or experiences in accounting/finance and legal areas. The board skills matrix is a tool to frame the selection process of directors and plan further development of their competency and knowledge and training in line with their obligations, roles, and responsibilities.

The board skills matrix was used in appointing new directors to fill the positions vacated by director's resignation prior to the end of tenure and the positions vacated due to the expiration of tenure of the directors, aside from the consideration of qualifications as specified in the Company's Regulation on the Board of Directors and prohibited qualification regulated by the Public Companies Act. The matrix is also applied for consideration of subcommittees' nomination.

2. **Consideration on director renumeration:** The proposed director renumeration submitted to the Board of Directors, for presenting to the shareholder meeting annually was based on the Company's financial results and operating performance, directorship remuneration criteria and level of responsible assignments. It was benchmarked against businesses with the same

size in the same industry, serving as an incentive to attract persons with the right competency in helping the organization achieve its goals, for the Company and shareholders' benefits in the long term.

3. **Nominate executives to serve as directors and executives in subsidiaries, affiliates and joint ventures in Thailand and overseas:** The nomination was based on knowledge, competency, skills, experience, and responsibilities. Besides consideration on benefit of the Company's asset management, enhancement of experience, competency and managerial skills of executives, the Company took the account the executives' work load and time allocation as well.

4. **Review and improve assessment form and criteria:** The Committee recommended adjustments to the self assessment form and appraisal criteria of the Board of Directors' and sub-committee which had been used for several years as well as the assessment form for the Chief Executive Officer. Such adjustments were aimed at enhancing their efficiency and effectiveness, aligned with the corporate governance best practices for listed companies on strengthening the Board and Executive effectiveness.

5. **Nominate successors to high-level executives:** High-level executive rotation was recommended to promote learning and prepare them for new missions. Regarding the nomination of successors to retired high-level executives, all executives who met required qualifications were eligible and their qualifications determined if they suited the vacant positions.

6. **Employees' remuneration:** A pay rise and annual bonus payment was proposed, based on individual employees' performance and their assignments to support the mission and goals of their business units and the Company respectively. The proposal took into account the condition and national economic outlook as well as the peer group's practices, to retain and attract desirable workers who can help drive the Company towards sustainable growth. The executives assigned to serve as directors and executives of subsidiaries, affiliates and joint ventures were not entitled to director renumeration, as the assignments were deemed part of their jobs that renumeration was already included. In 2019, it was formulated as the Group's policy and criteria of the renumeration scheme for directors and executives.

7. **Review company regulations on human resources management:** The regulations were amended accordingly to the principle that promotion and greater responsibility should come with a higher pay. The criteria and payment methods as well as the qualifications for eligible employees were cleared defined and publicized, to assure transparency, fairness and acceptance. The change is expected to make human resource management more flexible as well as boost morale among employees.

The Human Resources and Remuneration Committee believes that human resources are valuable assets that drive the organization towards its goals. The emphasis has been made on caring, development and retention of quality employees, to make sure that the Group has qualified, competent and efficient executives and staff who can drive success towards the mission and vision.

CORPORATE GOVERNANCE AND SOCIAL RESPONSIBILITY COMMITTEE'S REPORT



(Mr. Chuan Sirinunporn)
Chairman of Corporate Governance and Social Responsibility Committee

In 2019, the Corporate Governance and Social Responsibility Committee considered and acted the following tasks as stipulated in the Company's Regulation on the Corporate Governance and Social Responsibility Committee:

1. **Review the Group's corporate governance policy:** The adjustments to the policy were proposed and approved by the Company Board, to be in line with the Securities and Exchange Commission's governance practices for listed companies that stress the Board of Directors' role as the organizational leader who must lead the organization towards sustainable value growth together with building confidence among investors and lifting the Company's governance practices to international standards. The Company participated in good governance-related assessment programs such as the Assessment of Corporate Governance Report of Thai Listed Companies, ASEAN CG Scorecard, and Annual General Shareholders' Meeting Assessment. The Company ably maintained outstanding scores and recommendations from these assessments were considered and applied as deemed appropriate.

2. **Corporate governance plans:** The Corporate Governance Working Group action plan was reviewed and approved; along with development and training program to boost employees' understanding in good governance practices and anti-fraud and corruption practices; activities to promote governance like communications through newsletters and other internal channels; and improving governance performance by benchmarking the Company's practices against the principles and guidelines for listed companies and other companies' assessment criteria and practices.

In raising awareness, the Committee followed the Company implementation in various forms and continuous approaches including newsletters to communicate with employees; exhibitions to promote awareness in safety, occupational health and work environment; energy and environmental conservation; healthcare; working with integrity and responsibility; orientation for new employees; E-learning; to promote self learning and communications in writing with subsidiaries and affiliates for corresponding actions.

3. Anti-fraud and corruption: Preventive measures remained in focus. The Company's Code of Conduct was reviewed concerning complaint measures, reporting channels and whistleblower's protection. The Committee ensured communications with employees to raise their awareness; and tackled risks that appeared in Fraud Risk Register by, for example, improving the work process, relevant orders and practices. Early 2019, the Company's certified membership in Thailand Private Sector Collective Action Coalition Against Corruption (CAC) was extended for 3 years until 2021.

4. Social and environmental project plans: Plans have consistently implemented covering local and national levels with 2 main goals: environment conservation and rehabilitation and enhancement of people's quality of life. The projects have initiated based on adoption of the late King Rama IX's philosophy on sustainability and the United Nations Sustainable Development Goals. The long-term flagship project is set to promote community forest management and strengthen community to rehabilitate and conserve national forests. Another projects seek to promote learning efficiency of children and the quality of life for the elders residing in Nonthaburi province, where the Company's head office is located. Employees are also encouraged to join volunteering programs, as a way to share and benefit society and strengthen bonds with communities.

5. Development of corporate sustainability: Emphasis was placed on sustainable growth through a balance in economic, social and environmental dimensions under international-standard governance practices. The Company was 1 of 98 listed companies in Thailand Sustainability Investment (THSI) 2019, the fifth consecutive year in a row. In the announcement of the SET Awards 2019, the Company won "Rising Star" Sustainability Excellence Award, among listed companies with market capitalization between Baht 30,000-100,000 million. It also gained sustainability assessment scoring 94 points which were higher than the previous year and remained in the industry's Top Quartile. Aside, its sustainability report, which was recognized "Outstanding" in 2013 and "Excellent" in 2017, won the top prize of Sustainability Disclosure Award in 2019. The Company has also been recognized for its social and environmental programs.

6. Human Resources Development as an internal stakeholders: Recommendations were passed to the Management to set human resource development plan. It is found that human resource management is a crucial and needed to be continuously developed in line with the Company's future growth path. Family atmosphere should be established for compassionate cooperation. Employees are entitled to a work and life balance. Cross-functional jobs are recommended to promote positive understanding towards others, strong teamwork spirit, and engagement with the organization. They, as key drivers, also support the Company's expansion and fill up executive positions vacated due to retirement.

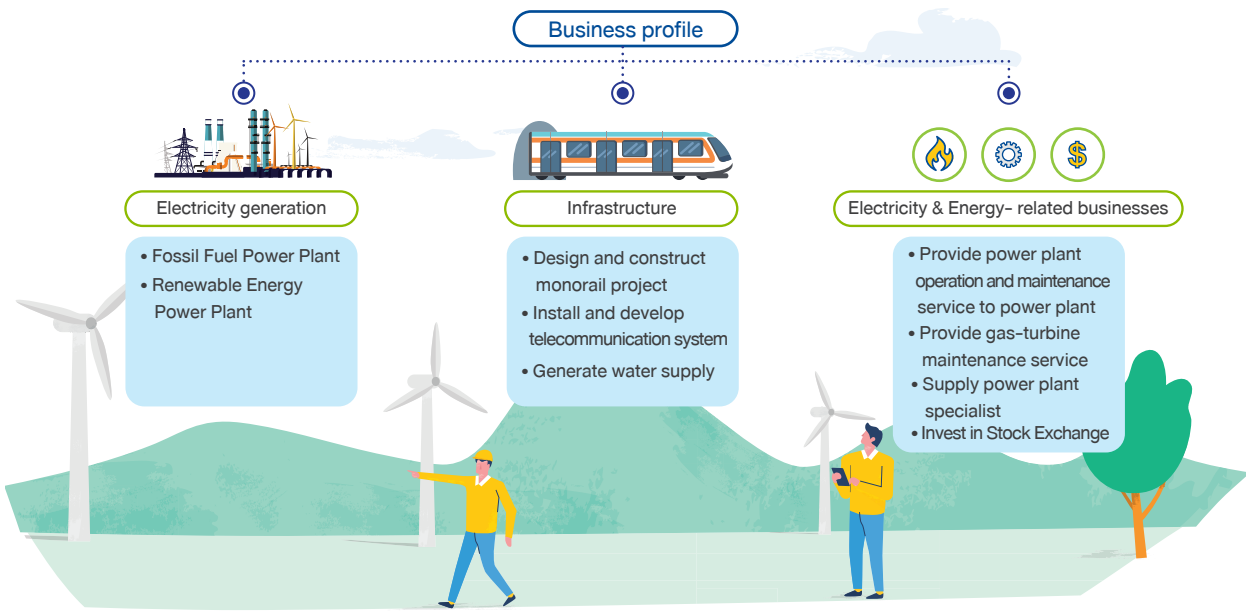
The Corporate Governance and Social Responsibility Committee has strong confidence that corporate good citizenship that emphasizes responsibility towards society and the environment both in production process and through the conservation of natural resources and the wellbeing of communities and society, as guided by good governance best practices, will be a key to success in creating growth and values for stakeholders in a stable and sustainable manner.

BUSINESS PROFILE

RATCH Group Public Company Limited, formerly Ratchaburi Electricity Generating Holding PCL, was established on 7 March 2000 with the registered capital of Baht 14,500 million. After an initial public offering, it was listed on the Stock Exchange of Thailand on 2 November 2000 under the stock symbol of "RATCH". Electricity Generating Authority of Thailand (EGAT) is the major shareholder with a 45 per cent stake. The Company's Head Office is located at 72 Ngam Wong Wan Rd, Bangkhen, Muang Nonthaburi, Nonthaburi Province. To align with its vision and business diversification to infrastructure and related business beyond electricity generation, its core business, the company renamed to RATCH Group PCL according to the shareholders' meeting resolution on 12 April 2019.

Nature of business

The Company operates as a holding company with interests in subsidiaries and joint ventures which are in electricity generation, infrastructure and energy-related businesses in Thailand and overseas. Details on subsidiaries and joint ventures appear in Page 372 The Company's business is classified into 3 main categories as follow;



1. Electricity Generating

Electricity Generation is the Company's main business, through investments in power plants in Thailand and overseas. At present, the Company's equity installed capacity is 8,655.07 MW. The power plants are put into 2 groups.

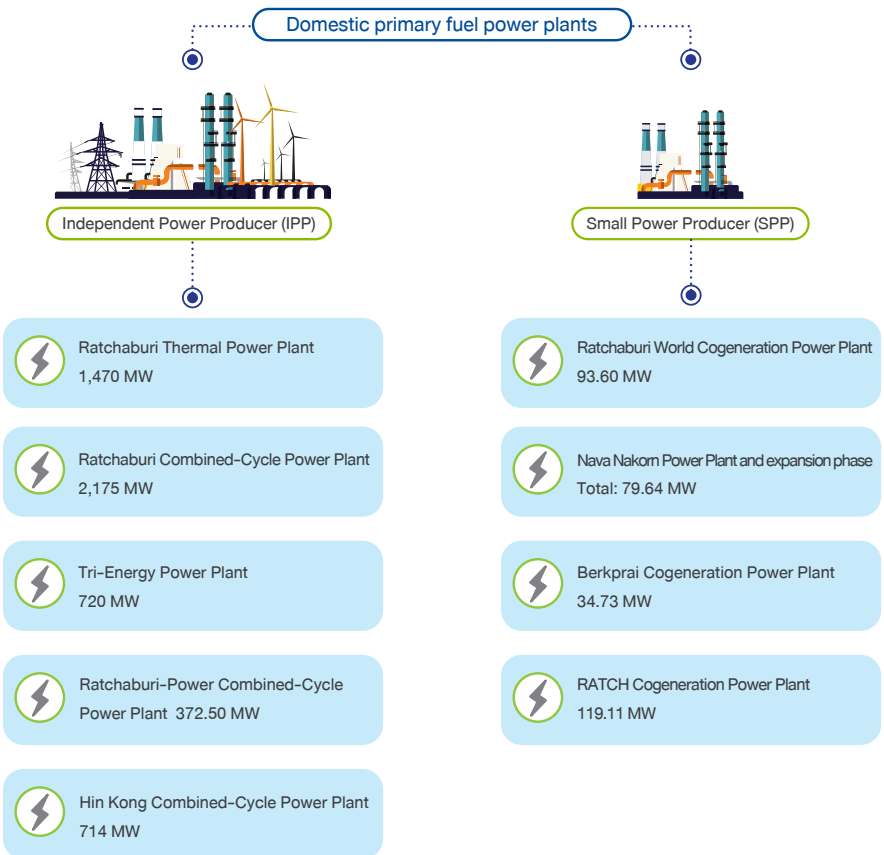
1.1 1.1 Power plants using primary fuels:

The Company invests in 14 power plants in this group, with 7,495.54 MW in equity installed capacity. Most of the power plants, located in Thailand and overseas, consume natural gas as fuel. Only the Hongsa thermal Power Plant in Lao PDR is fired by coal.

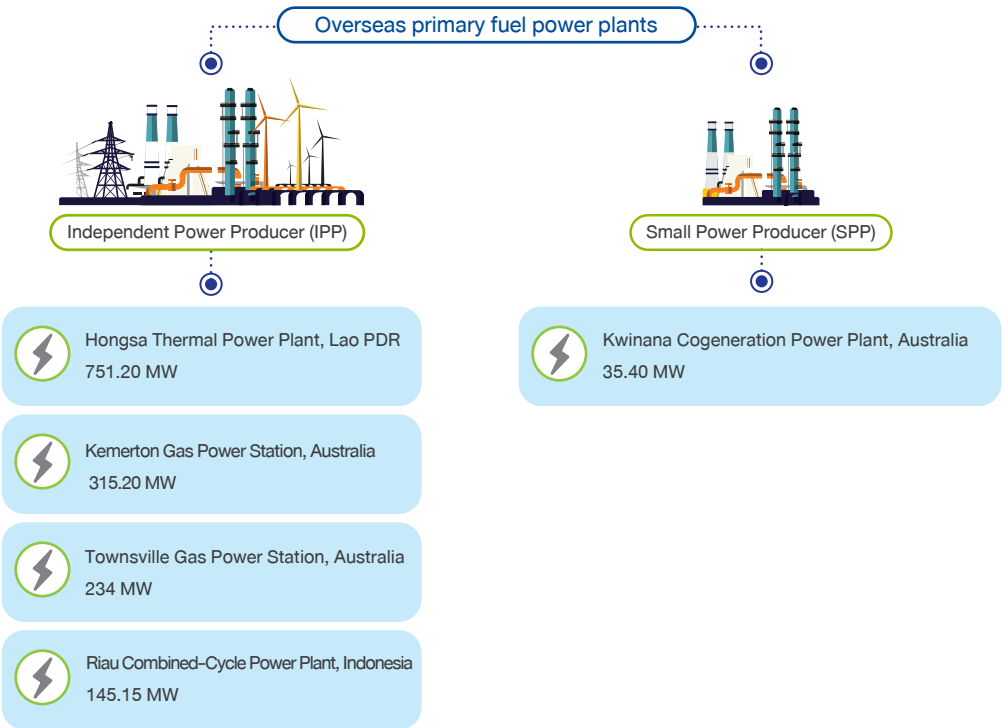
Of total, 11 power plants, constituting equity installed capacity of 7,159.19 MW, have commenced commercial operations. In 2019, two power plants started commercial operations - Berkprai Cogeneration Power Plant in Ratchaburi Province and Xe-Pian Xe-Namnoy Hydroelectric Power Plant in Lao PDR. The Company

also acquired RATCH Cogeneration Power Plant, which has commercially operated since October 2013, from Navanakorn Electric Company Limited and took over the management in November.

There are 2 power plants under development and construction namely; expansion phase of Nava Nakorn Electricity Power plant with 23.99 equity capacity expected commercial operation in 2020, and 2 blocks of Hin Kong combined-cycle power plant with 714 equity capacity and commercial operation schedule in 2024 and 2025, respectively.



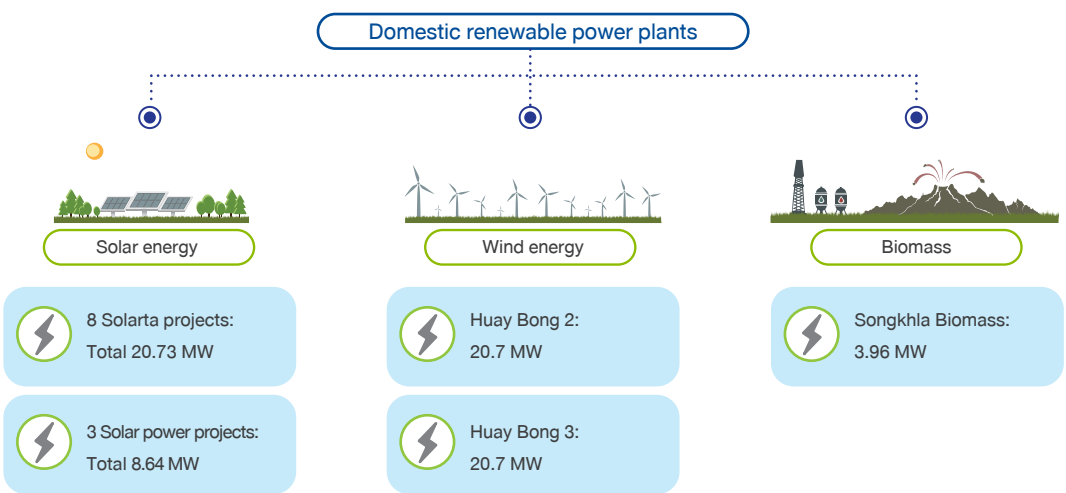
Domestic power plants comprise 9 large and small power plants. Entirely relying on natural gas, they constitute 5,779 MW in combined equity installed capacity. Six of them, are located in Ratchaburi Province, while NNEG Power Plant and its extension phase as well as RATCH Cogeneration Power Plant situated in Pathum Thani Province. RATCH group's projects thus serve as a major source of power that satisfies demand from the Central, Western and Upper Southern parts of Thailand.



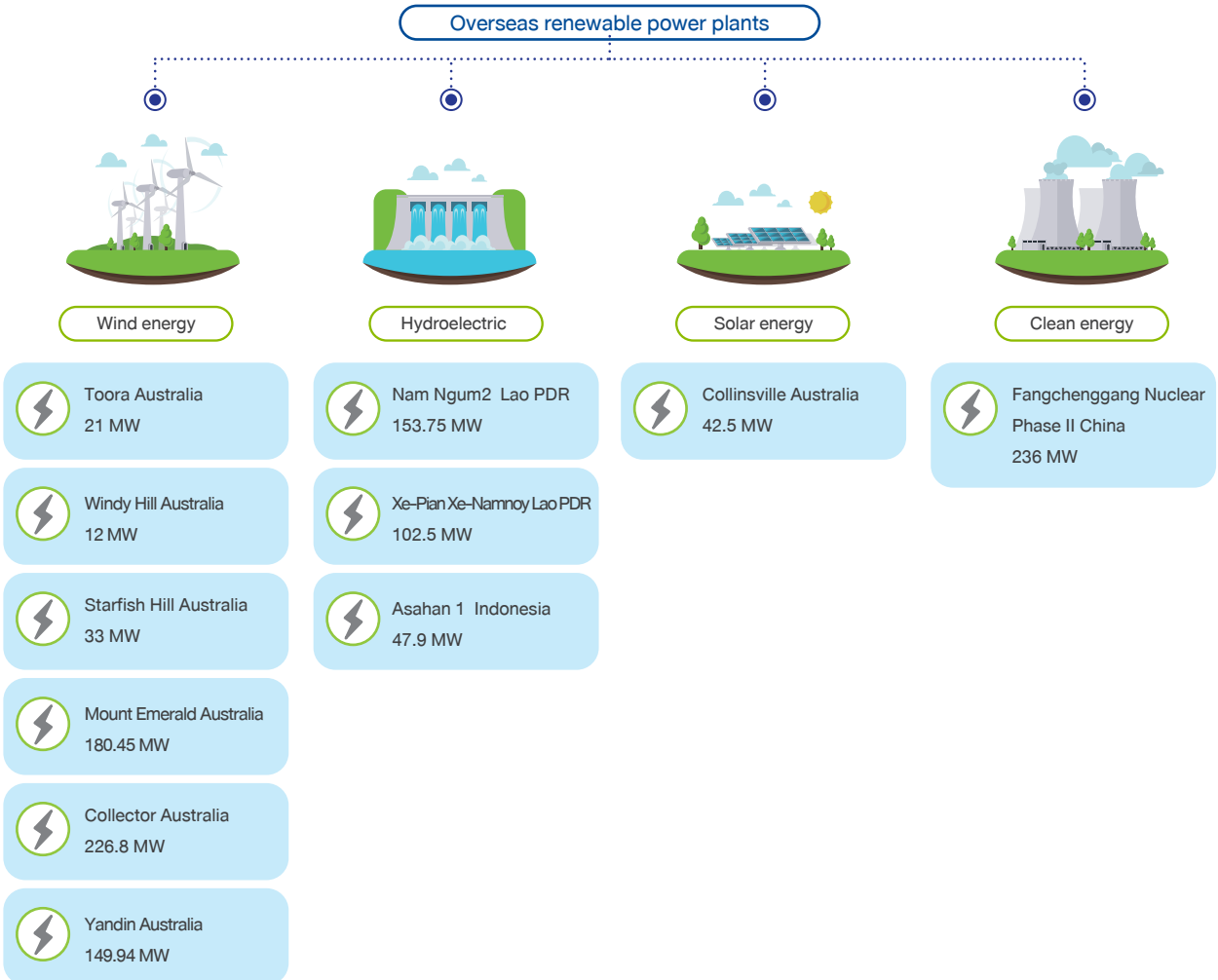
As of 2019, power plants overseas are numbered 5 with combined equity installed capacity of 1,481 MW. Three of them use natural gas as fuel, located in Australia. One gas-fired power plant is located in Indonesia and one coal-fired power plant is in Lao PDR.

1.2 Renewable projects

The Company gives importance to investment in renewable power in support of the government's renewable energy investment policy and global efforts in mitigating climate change impacts. The Company's emphasis is placed on solar, hydro and wind power as well as biomass. The Company currently invests in 24 renewable projects in Thailand and overseas with equity installed capacity of 1,045 MW. Including the hydroelectricity capacity of EDL-Generation Public Company Limited, via indirect investment through Laos Stock Exchange, and a stake in a nuclear power plant in China, the Company's equity installed capacity will be 1,396 MW or 14.8 per cent of the Company's total installed capacity.



The Company's renewable projects in Thailand total 14 with equity installed capacity of 75 MW: 8 Solarta solar farms, 3 solar farms, and 2 wind farms (Huay Bong 2 and Huay Bong 3), and 1 biomass power plant in Songkhla Province.



The Company has invested in 11 overseas projects (including a nuclear power plant) with equity installed capacity of 1,206 MW; comprising 6 solar farms in Australia, 3 hydroelectric power plants (2 in Lao PDR and 1 in Indonesia), 1 solar farm in Australia, and 1 nuclear power plant in China.

2. Infrastructure Business

The Company has diversified its investment to infrastructure projects to support stable and sustainable growth. Projects in focus cover basic infrastructure that accommodates new normal lifestyles. The infrastructure projects are as follows:

Company	Location	Shareholding (%)	Invested capital (million Baht)	Nature of Business
Eastern Bangkok Monorail Company Limited	Thailand	10	1,200.00	Provide engineering design and construction, machinery and electrical systems, operation and maintenance for MRT Yellow Line Project (Lat Phrao-Samrong)
Northern Bangkok Monorail Company Limited	Thailand	10	1,180.00	Provide engineering design and construction, machinery and electrical systems, operation and maintenance for MRT Pink Line Project (Khae Rai-Min Buri)
Smart Infranet Company Limited	Thailand	51	0.51	Install fiber optic communications network and related equipment
Things on Net Company Limited	Thailand	35	180.02	Install and develop telecommunication network and related businesses to serve Internet of Things
Asia Water Company Limited	Lao PDR	40	179.11	Produce tap water for Nam Papa Nakhone Luang of Lao, Vientiane

3. Electricity and energy-related businesses

The Company has explored business opportunities in electricity generating and energy-related businesses to grow the enterprise values. The Company's businesses in these areas are as follows:

Business	Company	Location	Shareholding (%)	Nature of Business
Operation and maintenance service	Chubu Ratchaburi Electric Service Company Limited	Thailand	50	Provide operation and maintenance service for 1,490 MW Ratchaburi Power Plant in Ratchaburi Province.
Gas turbine maintenance	EGAT Diamond Service Company Limited	Thailand	10	Provide refurbishment service for power plants' gas turbine
Recruitment of power plants' technicians	RATCH-Lao Service Company Limited	Lao PDR	99.99	Provide technician recruitment service for power plants in Lao PDR
Coal mining	Phu Fai Mining Company Limited	Lao PDR	37.5	Supply fuel to Hongsa Power Plant
Biomass supply	Songkhla Biofuel Company Limited	Thailand	40	Provide fuel sourcing service for Songkhla Biomass Company Limited
Securities holding	EDL-Generation Public Company	Lao PDR	10.11	Investment in Laos Stock Exchange through subsidiaries, RATCH-Lao Service Company Limited and RH International (Singapore) Corporation Pte. Ltd.

- **Products and services and markets**

Products and services under the Company's operational control are as follows:

1) Electricity: Considered a key revenue-making product, electricity is the energy generated by fuels and/or other energy sources. The companies that operate power plants are responsible for maintaining the power plants' efficiency and availability precisely at the volume and quality as specified by customers or in power purchase agreements.

The Company currently invests in 39 power plants, through subsidiaries and joint ventures, with combined equity installed capacity of 8,655

MW. Of total, 25 power plants with 6,464.39 MW in equity installed capacity are under the Company's management: 21 plants with equity installed capacity of 5,469 MW are commercially operated and 4 are in the construction and development stage. Electricity generated by the 25 power plants is sold to customers in Thailand and Australia.

Location	Power plants under operational control	Installed capacity (MW)	Shareholding (%)	Equity installed capacity (MW)	Status	Market
Thailand	Ratchaburi Power Plant	3,645.00	99.99	3,645.00	Commercial operation	Thailand
	Tri Energy	720.00	99.99	720.00		
	Nava Nakorn Electricity (NNEG)	139.13	40.00	55.70		
	Berkpai Cogeneration	99.23	35.00	34.70		
	RATCH Cogeneration	119.15	99.97	119.11		
	Solarta Solar Farm	42.30	49.00	20.73		
Australia	Townsville	234.00	100.00	234.00		Australia
	Kemerton	315.20	100.00	315.20		
	Kwinana	118.00	30.00	35.40		
	Starfish Hill Wind Farm	33.00	100.00	33.00		
	Toora Wind Farm	21.00	100.00	21.00		
	Windy Hill Wind Farm	12.00	100.00	12.00		
	Mount Emerald Wind Farm	180.45	100.00	180.45		
	Collinsville Solar Farm	42.50	100.00	42.50		
	Collector Wind Farm	226.80	100.00	226.80	Under construction	
	Yandin Wind Farm	214.20	70.00	149.94		
Thailand	NNEG Expansion Phase	59.97	40.00	23.99		Thailand
	Hin Kong Power Plant	1,400.00	51.00*	714.00	Under development	

Note: * *On 3 January 2020, RATCH sold a 49 per cent stake in Hin Kong Power Holding Company Limited to Gulf Energy Development PLC.*

2) Services: The Company provides 1,490 MW Ratchaburi Power Plant the operation and maintenance service through a 51 per cent-owned subsidiary, Chubu Ratchaburi Electric Service Company Limited. The Company also provides a technician recruitment service for Electricity Generating Authority of Thailand (EGAT), which provides the operation and maintenance service for Hongsa Power Plant in Lao PDR. It is the business-to-business written contract with clearly specified timeframe.

- **Business locations**

The Company has a number of investment projects in Thailand and overseas to support its goal towards sustainable growth. The locations of the Company's business are as follows:

Electricity generation

Country	Power Plant	Location	Installed Capacity (MW)	Shareholding (%)	Equity installed capacity (MW)	Status
Thailand	Ratchaburi Power Plant*	Ratchaburi	3,645.00	100.00	3,645.00	Commercial operation
	Tri Energy Power Plant *	Ratchaburi	720.00	100.00	720.00	
	Ratchaburi Power Power Plant	Ratchaburi	1,490.00	25.00	372.50	
	Ratchaburi World Cogeneration Project	Ratchaburi	234.00	40.00	93.60	
	Nava Nakorn Electricity Generating (NNEG)*	Pathum Thani	139.13	40.00	55.65	
	Huay Bong 2 Wind Farm	Nakhon Ratchasima	103.50	20.00	20.70	
	Huay Bong 3 Wind Farm	Nakhon Ratchasima	103.50	20.00	20.70	
	Solar Power (Korat 3, Korat 4, Korat 7)	Nakhon Ratchasima	21.60	40.00	8.64	
	Solarta Solar Farm	Phra Nakhon Si Ayutthaya Nakhon Pathom Suphan Buri	42.30	49.00	20.73	
	Songkhla Biomass	Songkhla	9.90	40.00	3.96	
	Berkprai Cogeneration *	Ratchaburi	99.23	35.00	34.73	
	RATCH Cogeneration *	Pathum Thani	119.15	99.97	119.11	
	NNEG Expansion phase*	Pathum Thani	59.97	40.00	23.99	Under development & construction
	Hinkong Thermal Power Plants*	Ratchaburi	1,400.00	51.00	714.00	
Laos	Nam Ngum 2 Hydroelectric Power Plant	Vientiane	615.00	25.00	153.75	Commercial operation
	Hongsa Power Plant	Xayaboury	1,878.00	40.00	751.20	
	EDL-Generation	-	1,137.15	10.11	114.97	
	Xe - Pian Xe - Namnoy Hydroelectric	Champasak	410.00	25.00	102.50	
Australia	Townsville Gas Power Station*	Queensland	234.00	100.00	234.00	Commercial operation
	Kemerton Gas Power Station*	Western Australia	315.20	100.00	315.20	
	Kwinana Gas Cogeneration*	Western Australia	118.00	30.00	35.40	
	Starfish Wind Farm*	South Australia	33.00	100.00	33.00	
	Toora Wind Farm*	Victoria	21.00	100.00	21.00	
	Windy Hill Wind Farm*	Queensland	12.00	100.00	12.00	
	Mount Emerald Wind Farm *	Queensland	180.45	100.00	180.45	
	Collinsville Solar PV	Queensland	42.50	100.00	42.50	
	Collector Wind Farm*	New South Wales	226.80	100.00	226.80	Under construction
	Yandin Wind Farm*	Western Australia	296.23	70.00	149.94	
Indonoesia	Asahan-1	North Sumatra	180.00	26.61	47.90	Commercial operation
	Riau	Riau	214.20	49.00	145.15	Under development & construction
China	Guangxi Fangchenggang Nuclear Power (II)	Guangxi Autonomous Region	2,360.00	10.00	236.00	

Note: * *Power plants' operation is controlled by the company.*

At present, the equity installed capacity of the Company's electricity-generating based in Thailand totals 5,853.31 MW or 68 per cent of total. The equity installed capacity of projects in Australia is 1,250.29 MW or 14 per cent. In Lao PDR, the equity installed capacity is 1,122.42 MW or 13 per cent. The equity installed capacity of projects in China is 236 MW or 2.73 per cent. In Indonesia, the equity installed capacity is 193 MW or 2.23 per cent.

Country	Company	Location	Shareholding (%)	Nature of business
Infrastructure business				
Thailand	Eastern Bangkok Monorail Company Limited	Bangkok	10	Provide engineering design and construction, machinery and electrical systems, operation and maintenance for MRT Yellow Line Project (Lat Phrao-Samrong)
	Northern Bangkok Monorail Company Limited	Bangkok	10	Provide engineering design and construction, machinery and electrical systems, operation and maintenance for MRT Pink Line Project (Khae Rai-Min Buri)
	Smart Infranet Company Limited	Bangkok	51	Install fiber optic communications network and related equipment
	Things on Net Company Limited	Bangkok	35	Install and develop telecommunication network and related businesses to serve Internet of Things
Lao PDR	Asia Water Company Limited	Vientiane	40	Produce tap water for Nam Papa Nakhone Luang of Lao, Vientiane
Electricity generating & energy- related businesses				
Thailand	Chubu Ratchaburi Electric Service Company Limited *	Ratchaburi	50	Provide operation and maintenance service for 1,420 MW Ratchaburi Power Plant in Ratchaburi Province.
	EGAT Diamond Service Company Limited	Pathum Thani	10	Provide refurbishment service for power plants' gas turbine
	Songkhla Biofuel Company Limited	Songkla	40	Provide fuel sourcing service for Songkhla Biomass Company Limited
Lao PDR	RATCH-Lao Service Company Limited *	Vientiane	99.99	Provide technician recruitment service for power plants in Lao PDR
	Phu Fai Mining Company Limited	Xayabiuri	37.5	Supply coal to Hongsa Power Plant
	EDL-Generation Public Company	Vientiane	10.11	Investment in Laos Stock Exchange through subsidiaries, RATCH-Lao Service Company Limited and RH International (Singapore) Corporation Pte. Ltd.

Note: * *The company is managed by RATCH Group.*

- **Ownership and legal form**

Electricity Generating Authority of Thailand is the Company's major shareholder. EGAT, a state enterprise, is responsible for electric power generation and transmission. It sells bulk electric energy to Metropolitan Electricity Authority (MEA), Provincial Electricity Authority (PEA) and other users in Thailand and neighboring countries. It also operates other energy-related business under EGAT Act. EGAT owns 45 per cent of the Company's 1,450 million shares.

In 2019, there was no change regarding the Company's major shareholder, the number of issued shares, and registered capital.

Top 10 major shareholders hold 72.94 per cent of the Company's total issued shares.

List of top 10 shareholders

As of 9 September 2019 (Record Date)

Item	Name of shareholders	No. of shares	%
1	Electricity Generating Authority of Thailand	652,500,000	45.00
2	Thai NVDR Company Limited	209,920,360	14.48
3	Social Security Office	48,475,300	3.34
4	SOUTH EAST ASIA UK (TYPE C) NOMINEES LIMITED	41,350,589	2.85
5	STATE STREET EUROPE LIMITED	35,326,894	2.44
6	EGAT Saving and Credit Cooperative Limited	21,613,600	1.49
7	Mr. Min Thiaravorn	20,500,000	1.41
8	AIA COMPANY LIMITED-EQDP-D FUND 1	16,726,000	1.15
9	Allianz Ayudhya life Insurance PCL	6,240,000	0.43
10	Thanachart Dividend open-ended fund	5,119,500	0.35
Total		1,057,772,243	72.94
Other shareholders		392,227,757	27.06
Total issued shares		1,450,000,000	100.00

Note:

1. *Shareholder names are compiled by Thailand Securities Depository Company Limited, the Company's Registrar.*
2. *Electricity Generating Authority of Thailand is a state enterprise, operating in lectricity generating business and others, also through joint ventures. EGAT is the Company's major shareholder, represented by 6 directors in the Company's 12-member Board of Directors.*
3. *Thai NVDR Company Limited is 99.99 per cent owned by the Stock Exchange of Thailand. It issues NVDRs, which are tradable on the stock exchange. Owning NVDRs, the shareholders are entitled to financial gains like investing in listed companies' common shares but without the voting right. (The interested can get more information from www.set.or.th)*
   As of 9 September 2019, major shareholders that own NVDRs having the Company's shares as underlying assets are:

Rank	Major shareholders	No. of NDVRs	% of underlying assets
1	SOUTH EAST ASIA UK (TYPE C) NOMINEES LIMITED	42,701,968	2.94
2	NORTRUST NOMINEES LTD-CL AC	28,294,700	1.95
3	STATE STREET EUROPE LIMITED	25,492,867	1.76
4	STATE STREET BANK AND TRUST COMPANY	17,284,777	1.19
5	UBS AG LONDON BRANCH	10,006,673	0.69
6	GIC PRIVATE LIMITED	7,876,400	0.54

4. *As of 9 September 2019, the Company has 169 foreign shareholders from a total of 21,541 shareholderse. Foreign shareholders hold a total of 151,357,084 shares or 10.44 per cent of total issued shares, well below the Company 's rule that "aggregate foreign shareholding must not exceed 25 per cent of total issued shares".*
5. *As of 5 March 2019, minority shareholders (free float) are numbered 19,067, holding 43.76 per cent of total issued shares.*

- **Scale of organization**

The Company and subsidiary (including Ratchaburi Electricity Generating Company Limited, RATCH-Lao Services Company Limited and RATCH-Australia Corporation Pty Ltd) employ 460 workers in Thailand, Lao PDR and Australia.

No. of employees and workers base on workplace

Type	Total	Thailand	Lao PDR	Australia
Full-time employees	459	267	167	25
• Male	306	138	148	20
• Female	153	129	19	5
Permanent workers	0	0	0	0
• Male	0	0	0	0
• Female	0	0	0	0
Temporary workers	1	1	0	0
• Male	0	0	0	0
• Female	1	1	0	0

Nationalities of employees and workers

Type	Thai nationality	%	Lao nationality	%	Australian nationality	%
Full-time employees	274	59.7	164	35.7	21	4.6
• Male	144	47.1	146	47.7	16	5.2
• Female	130	85.0	18	11.8	5	3.3
Permanent workers	0	0.0	0	0.0	0	0.0
• Male	0	0.0	0	0.0	0	0.0
• Female	0	0.0	0	0.0	0	0.0
Temporary workers	1	100.0	0	0.0	0	0.0
• Male	0	0.0	0	0.0	0	0.0
• Female	1	0.0	0	0.0	0	0.0

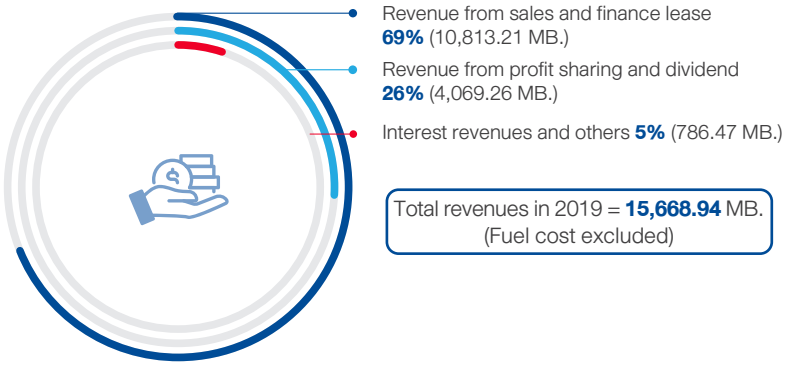
- **Revenue structure and financial status**

The Company's revenue is classified into 3 main categories:

- Revenue from sales and finance lease, concerning sales of electricity generated by subsidiaries which is a primary source of the Company's revenue
- Revenue from profit sharing in joint ventures, as a share of profits generated by joint ventures accordingly to the Company's equity stakes, and dividend from the Company's investment in EDL-Generation Public Company's shares.
- Interest revenues and others covering gains from cash flow management and service management rendered for the Group of companies.

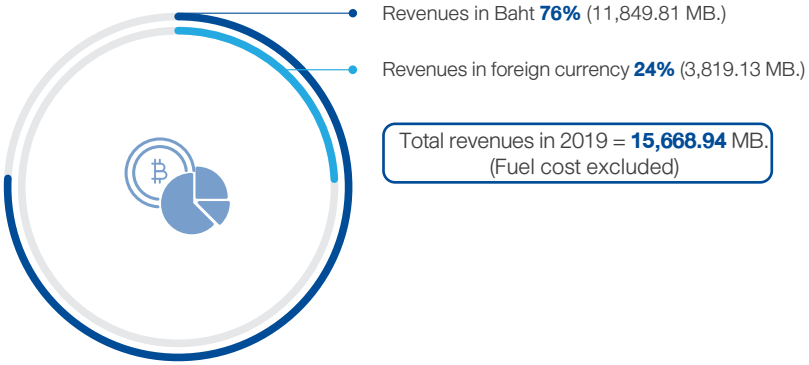
In 2019, the Company recorded Baht 15,668.94 million (fuel cost excluded) as following details;

Revenue Structure



According to the investment focus on domestic and abroad, the Company subsequently recognized revenues both in Thai Baht and foreign currency, the proportion as follows;

Proportion of Thai Baht and Foriegn currency Revenues



As of 31 December 2019, the Company's booked Baht 100,229.43 million of total assets, Baht 40,815.50 million of liabilities and Baht 59,413.93 million of shareholders' equity.

Financial information and revenue structure can read more on Page 14 and 248 orderly.

Company credit ratings

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

- **Collaboration with external organizations**

The Company emphasizes collaboration and building relationship with all stakeholders, be they the public sector, the private sector, associations and institutes in undertaking economic, social, environmental and governance-related activities. Such is to extend its network, create new business opportunities and pave way for the organization's long-term growth.

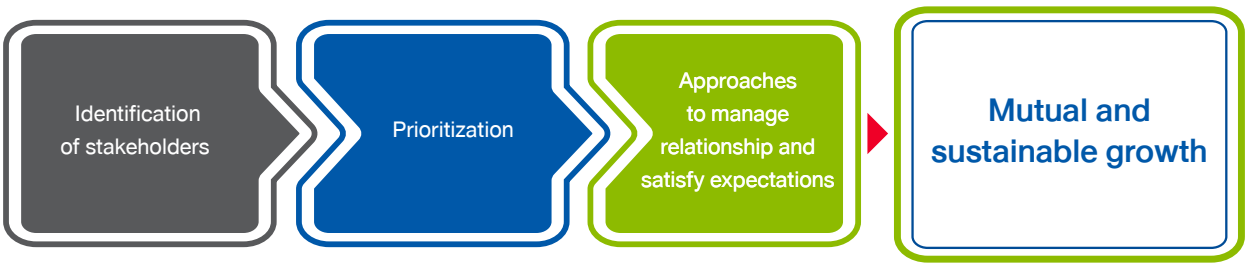
Organization	Country	Approach	Starting year	Project/Activity
Thai Institute of Directors Association (IOD)	Thailand	Voluntary	2015	Private Sector Collective Action Coalition Against Corruption (CAC)
Thai Pat Institution		Voluntary	2019	Sustainability Report Award
Stock Exchange of Thailand		Voluntary	2015	Listed companies' sustainability assessment
Thailand Business Council for Sustainable Development (TBCSD) and Thailand Environment Institute (TEI)		Voluntary	2014	Community solar power project at Ban Hua Ha, Mae Hong Son province
Thailand Greenhouse Gas Management Organization (Public Organization		Voluntary	2016	Carbon Footprint for Organization Project Phase 5, involving 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) Awards
Office of Forest Resources Management, Royal Forest Department		Voluntary	2007	Love the Forest and the Community Project
			2013	Study on carbon storage and biodiversity in community forests
Department of National Parks, Wildlife and Plant Conservation		Voluntary	2014	Upstream Reforestation Project, for natural carbon storage
Plant Genetic Conservation Project Under the Royal Initiative of HRH Princess Maha Chakri Sirindhorn		Voluntary	2017	Supporting the initiative through special activities: trainings on school botanical gardens and local natural resources, to raise conservation awareness
Provincial Energy Office – 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

- **Membership**

Organization	Status	Sustainability Dimension	RATCH's role
Thailand Management Association (TMA)	Member	Economic	• Attending meetings, seminars on business administration, networking activities
Thai Institute of Directors Association (IOD)	Member	Governance	• Attending training and seminars on corporate governance for directors, executives and employees • Supporting academic activities
Thailand Listed Companies Association	Member	Governance	• Attending meetings and seminars on business management • Joining sustainability contests
Thailand Private Sector Collective Action Coalition Against Corruption	Member	Governance	• Endorsing its manifesto, and being a certified member
Association of the Electricity Supply Industry of East Asia and Western Pacific (AESIEAP)	Member	Economic	• Exchanging information on regional industry • Attending meetings, seminars and study trips on technology in the region
ICC Thailand National Committee Board of Trade	Member	Economic	• Attending meetings, seminars, training and other activities • Supporting activities
Electricity Supply Industry Association of Thailand	Executive Director	Economic	• Promoting electricity-related technology and exchanging knowledge and experience on engineering technology • Joining capacity enhancement activities for professional engineers
Thailand Business Council for Sustainable Development and Thailand Environment Institute	Member	Governance Environmental Social	• Being a Council member • Associate member • Being a partner of its activities
Association of Electrical and Electronic Engineers (IEEE)	Supporter	Economic	• Supporting academic activities
Ministry of Energy	Supporter	Economic	• Supporting academic activities on sustainable energy and technology in Asia (Sustainable Energy Technology Asia)
Thailand Productivity Institute	Member	Social	• Attending seminars and study trips

ENGAGEMENT WITH **STAKEHOLDERS**

All stakeholders play a crucial role in pushing the Company towards its goals. RATCH is determined to establish long-term cooperation and business partnership, for sustainable and mutual growth. As building partnership is a strategy in growing the organization, the management of the relationship and engagement with stakeholders is extremely crucial, to learn and satisfy stakeholders' expectations in the economic, social and environmental dimensions. The Company executes the following 3 steps under the procedure to manage the relationship with stakeholders:



Identification of stakeholders

RATCH's business operations have involved stakeholders whose roles can create positive and negative impacts on the Company's growth. Identification of stakeholders was conducted accordingly to their direct and indirect involvement with the operations in 3 stages: 1) project development 2) product and service production and 3) product and service delivery. There are 10 groups of stakeholders involved in the 3 stages as follows:

Shareholders/Investors
- Define the organization's growth direction and targets
- Provide funding for business expansion

Employees
- Exercise their knowledge, competency and skills in achieving targets
- Safeguard the organization's benefits and reputation and support society and environment

Regulators
- Issue business licences
- Supervise and assess compliance with laws, rules and regulations

Partners
- Create and expand business opportunities
- Exchange knowledge, experience and expertise
- Enhance the Company's potential and competitiveness

Creditors
- Provide operating and investment funds
- Monitor the Company's profitability

Suppliers
- Supply raw materials/ tools/equipment/products and services
- Provide specialized services and consultation on business and investment

Customers
- Purchase products and services which generate revenue for the Company
- Product/service quality and price influence their satisfaction, which affect the organizational image/products

Community/Society
- Community's acceptance influences licencing/long-term business operations
- Community engagement influences community trust towards the organization

Private development organizations
- Express opinions towards the Company's operations
- Collaborate with the public sector and civil society on social and environmental issues

Media/Stock analysts
- Be a medium in publicizing information on the Company's operations
- Express opinions that affect the Company's credibility and reputatio

Prioritization of stakeholders

The prioritization of stakeholders takes into account issues and impact levels on the following areas:

1) Issues and impact levels from the Company's operations on stakeholders in economic, environmental and social aspects.
2) Issues and impact levels caused by stakeholders that result in legal, regulatory, financial, operational and reputation-related consequences.

The assessment of issues and impact levels in both ways showed that 8 out of 10 stakeholder groups have significantly-high influence on the company's operations. The Company has devised the guidelines in nurturing the relationship with the 8 groups and addressing their expectations as follows:

Guidelines on stakeholder relationship and expectation management

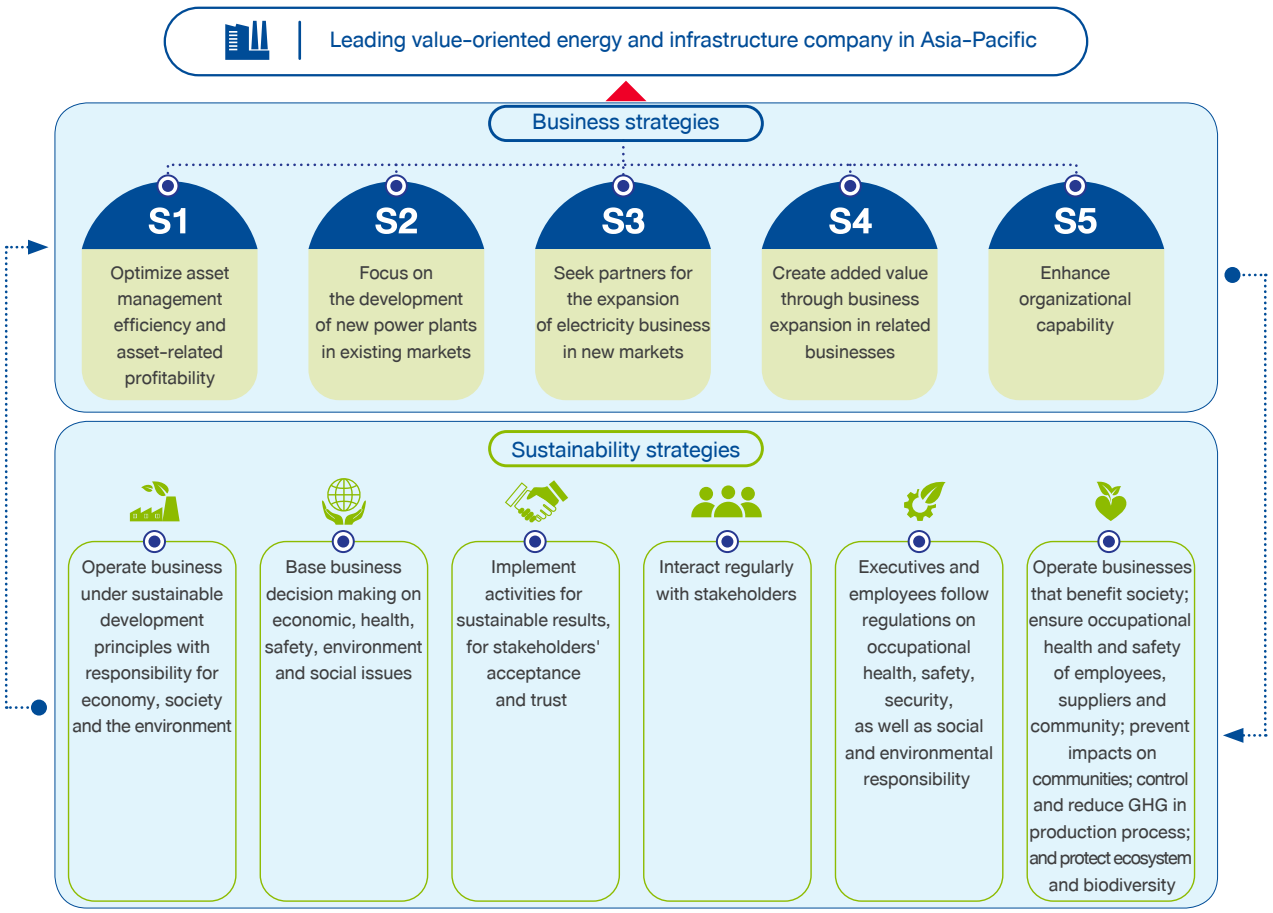
The Company outlines the following guidelines to manage relationship with the 8 stakeholder groups and address their expectations as well as channels to engage with them. It is summarized as follows:

Engagement channels	Expectation	Guidelines
1. Employees		
• Town Hall meeting • Engagement activities • Communications via e-mail, intranet and other media • Assessment of employee engagement • Welfare committee	• Remuneration and welfare • Positive workplace environment • Capacity improvement • Career advancement	• Regularly review remuneration and welfare against industry benchmarks • Provide safe, standard and livable workplace environment • Organize annual training plan, on group and individual basis • Plot succession plans and career path plans • Welcome their opinions and recommendations
2. Shareholders/Investors		
• Annual shareholder meeting • Meeting with EGAT executives • Analyst meeting • Study trips • Roadshow • Website	• Operational excellence • Positive returns • Organizational and business adaptation to technological changes • Management of ESG-related risks (Environment, Society and Governance) that influences business sustainability	• Review and set strategies to achieve clearly-defined goals • Diversify to infrastructure investment to enhance revenue generation and organizational stability • Maintain power plants' efficiency to support the national electricity security, which is EGAT's key mission • Assess ESG-related risks and emerging risks, for possible review and adjustment in operating plans and strategies • Expand business partnership for greater competitiveness in Thailand and overseas • Secure certified membership from Thailand's Private Sector Collective Action Coalition Against Corruption (CAC)
3. Regulators		
• Information reporting • Company visit	• Compliance with laws and regulations • Good corporate governance • Cooperate with and support government policies	• Evaluate compliance with relevant laws • Ensure accuracy and completeness of licence applications and information disclosure as required by laws • Prepare environment and safety management system • Apply for the 2nd-round extension of CAC membership • Cooperate in activities that will lift the organization and regulatory bodies' sustainability
4. Business partners		
• Meeting • Study trips	• Competent and professional teamwork • Competency in business administration and profit making • Financial stability and positive image • Long-term partnership	• Find dedicated and professional personnel to work with partners in growing returns • Clearly define the guidelines on partner-related information disclosure • Set partnership strategies and partner scrutinizing criteria as a way to handle possible risks • Evaluate partners' credibility by monitoring/examining information from sources as well as through due diligence

Engagement channels	Expectation	Guidelines
5. Creditors		
• Meeting • Study trips	• Sound credit rating • Constant and stable revenue • Ability to repay • Continuous and positive relationship	• Corporate credit rating by domestic and international agencies - TRIS Ratings, Standard & Poor's and Moody's Investors Service • Strictly follow debt repayment plans to maintain creditors' confidence • Analyze and set revenue projections as well as manage financial risks
6. Suppliers		
• Meeting • Study trips • CSR activities • Website	• Operational transparency • Abiding by contracts • Good relationship • Improving suppliers' operations	• Ensure transparent and standardized procurement process, to prevent conflict of interest • Identify suppliers accordingly to their importance and desirable services and evaluate suppliers before and after contract signing. • Outline clear supply terms and completion date and prepare a monitoring and budget controlling process • Discuss with suppliers to reach solutions that mutually satisfy both parties • Improve their anti-corruption practices through CAC membership
7. Customers		
• Meeting • Opinion exchange seminars • Joint CSR activities	• Produce and deliver electricity with the volume and quality as specified in contracts • Respond to customer needs and assist in stabilizing national power system. • Professional operations • Cooperation in tackling problems and nurturing relationship	• Strictly follow up maintenance plans, to maintain availability and react to customer requests promptly and efficiently for the stability of national power system • Implement contractual clauses and agreements through joint discussions • Continuously hold meetings and activities for positive relationship
8. Community/Society		
• Activities to improve quality of life • Visits • Study trips • Formation of environmental inspector committee • Complaint-receiving channel and methods to tackle problematic issues • Emergency drill	• Responsible operations for environment/community • Transparent information disclose and participation in evaluation • Engagement in sustainable improvement in quality of life for communities/society • Promptness in hearing and solving problems	• Carry out environmental management accordingly to relevant laws, rules and regulations and take care of community in continuous manner • Communicate thoroughly with community, by adopting various channels like social network to release information, visiting and joining community development activities. • Establish the environmental inspector committee, represented by all parties to inspect power plants' environment management; and enhance the inspectors' knowledge and competency. • Formulate plans to improve individual aspects of community's quality of life like career and education healthcare.

SUSTAINABLE DEVELOPMENT STRATEGIES AND APPROACH

Guided by the vision "to become a leading value-oriented energy and infrastructure company in Asia-Pacific", the Company maps out a long-term 5-pronged strategies to achieve the goal. The strategy is integrated with the 6-pronged sustainability strategies specified in the corporate sustainable development policy, to guide the Company in growing economic value and benefiting society and the environment. Such approach will benefit not only the Company but also stakeholders whose business efforts have contributed sustainable growth to the Company.



The Company regularly reviews the strategies and the goals of long-term strategy (2013-2023) and submits for the Board of Directors' consideration and approval. In 2018, the Company started business diversification to infrastructure to embrace new business opportunities in the country, but power generating remained its core business. The vision, goals and strategies were amended along with the corporate name change in early 2019, to reflect the new business expansion.

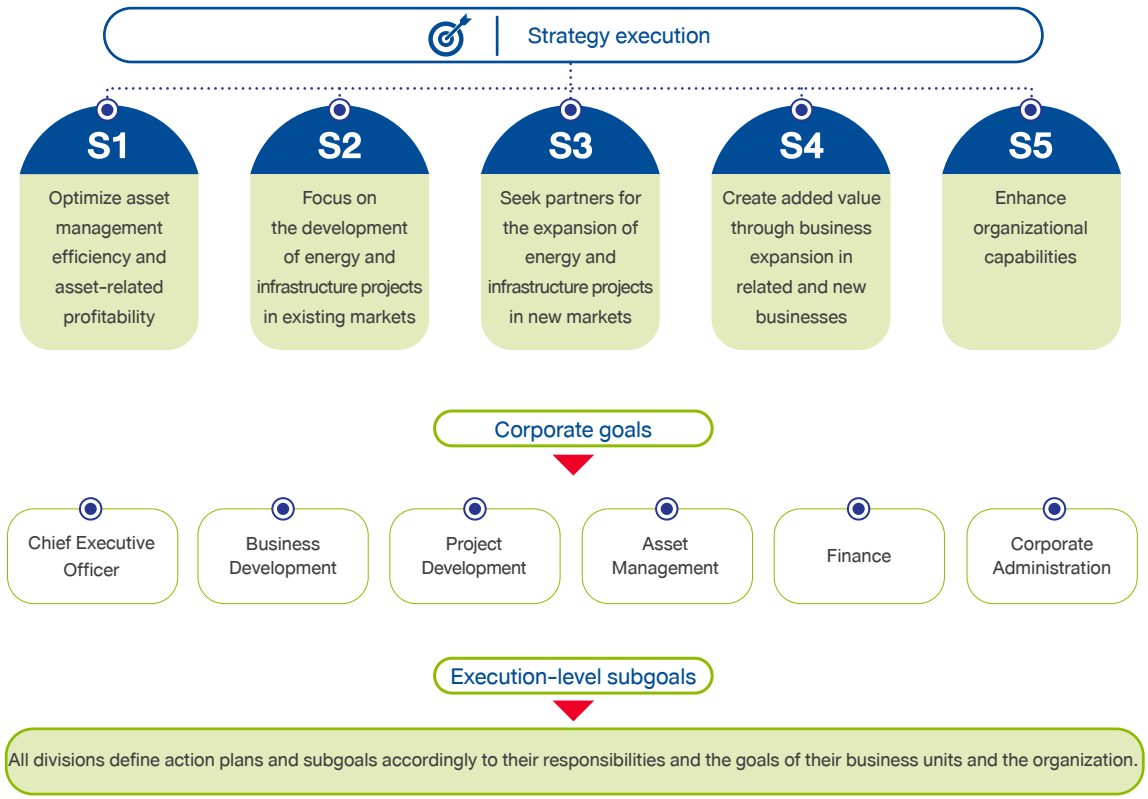
Driving strategies towards corporate goals

Asset Management Function's Corporate Planning and Systems Development Division plays a key role in outlining strategic planning as well as short, medium and long term goals under close consultation with the Board of Directors and the Management. The procedure involves a hearing of opinions, issues and recommendations, which are processed, analyzed and incorporated in the strategies and goals. The strategies and goals are then respectively submitted to the Management and the Board of Directors for consideration. The approved strategies and goals will be passed on business functions which will subsequently shape action plans and subgoals.

In executing strategic plans, the Company has embarked on the following actions:

1) Organizationwide cascading down the strategies and targets and monitor the execution for concrete results: Once the Board of Directors approve strategic goals, targets for each function will be set accordingly. Action plans and subgoals are plotted for each division accordingly to their responsibilities, so that the divisions can achieve subgoals and hence organizational goals.

   Organizational goals and business unit targets are set by the Performance Evaluation Committee are chaired by the Chief Executive Officer and top executives of each business unit members. The Vice President of Corporate Planning and Systems Development Division serves as the committee's secretary. The committee is tasked to identify policies and targets for organizational and operational performances, evaluate the process and actions, and ensure that the actions are efficiently aligned with the policies and targets.



   The Company conducts an annual evaluation on the implementation of the strategies. Under shared goals, the implementation is evaluated at the organizational level and business unit level. The Board of Directors approved the evaluation criteria for 2019 as follows:

   - Criteria relating to organizational goals that bind all business units, weighing 60 per cent.
   - Criteria relating to business unit goals supporting organizational goals, weighing 40 per cent.

In 2020, the Board of Directors and the Management adjusted the evaluation weights of the organizational and business unit criteria to 70:30, so that strategies can be turned to actions that allow the Company to achieve the targeted goals and results.

The Company has established the internal audit system and conducted an assessment on compliance and corruption risks, having a working team directly responsible for the task. The team involves relevant divisions and the Management, tasked to supervise, control and ensure that the operational path towards

goals complies with laws, rules, procedures, the Code of Conduct and domestically and internationally-recognized standards. The relevant divisions and the working team must report its actions to the Chief Executive Officer and the Board of Directors. In 2019, the Company had a specialized consultant review and assess the internal control system, in order to enhance the efficiency and comprehensiveness.

Through this approach, the Company can monitor the results of these strategies. Results are followed up every 3 months and every 6 months, the results are to be summarized and reported to the Board of Directors.

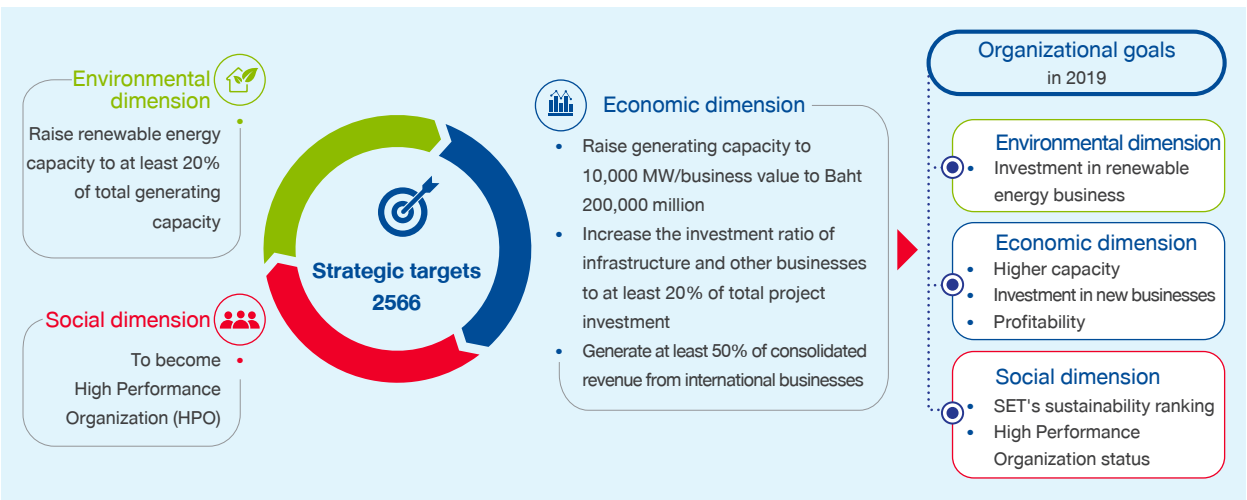
2) Create corporate culture and prepare personnel to drive organizational strategies: The Company reviewed and aligned the corporate culture with the business strategies and changing social contexts. In 2019, the Company issued the announcement and launched the creation of new innovation-oriented corporate culture, to adjust the employees' attitude to be well prepared for new missions aimed at driving success of the Company's strategies and new business targets. Details are as follows:



The Company also prepared a human resource development plan, corresponding with and supporting the operations under the new strategies. The plan calls for the improvement of knowledge, abilities and new skills, to boost their efficiency and innovative thinking which will hence enhance the Company's competitiveness.

Assessment of strategy effectiveness

The monitoring and assessment of strategy effectiveness is carried out through the following inside and outside tools:



- The operational assessment was benchmarked against annually-set subgoals. In 2019, the Company achieved all specified targets, which reflected the effectiveness of the Company's strategies to some extent.
  - In 2019, under the economic dimension, the Company achieved its goals relating to profitability and investment in new businesses. It however slightly missed the capacity-raising goal, as actual investment was a bit below target due to differing investment patterns, conditions and project periods. The incremental volume was added to the 2020 target, under the goal to achieve the 10,000 MW generating capacity in 2023.
  - Regarding the environmental-dimension performance, the Company ably raised renewable energy capacity to 13.8 per cent of combined capacity as targeted.
  - Under the corporate sustainability assessment in economic dimension and good governance, social and environmental aspects by the Stock Exchange of Thailand, an important stakeholder, the Company scored 94 out of 100 points, higher than 90 points in 2018. The result was in an excellent level, as the score of each dimension was above 90 points.

    The 8 action plans to achieve the High Performance Organization status progressed as planned. Six plans focused on the enhancement of corporate capabilities, involving an improvement in work processes to achieve goals: the development and improvement in the process to select and retain talents and the succession of key and essential positions; encouraging employees to think out of the box and innovate and turning the trait to corporate value; the improvement in the Board Skills Matrix in support of director selection; and enhancing knowledge for new business opportunities and essential skills for digital-age operations. The remaining 2 plans, emphasizing communication efficiency and collaboration, deal with the adjustment in cross-functional job transfer process, corporate information classification and corporate knowledge management.

    High Performance Organization principles have been applied to improve work efficiency and personnel capability, preparing the Company for technological changes and opportunities to derive from the circular economy concept. At present, the Company has set the goal to embark on renewable energy development and new technological ventures that involve energy efficiency.

- The Company's credit ratings, at the investment grade, assessed by local and international rating agencies reflected confidence in its ability to mobilize funds in the financial market. In 2019, Moody's Investors Service raised the rating outlook from "Stable" to "Positive", on par with the sovereign country rating.

Rating agency	TRIS Ratings	Moody's Investor Service	S&P Global Ratings
Credit rating	AAA	Baa1	BBB+
Rating outlook	Stable	Positive	Stable

- Under the Stock Exchange of Thailand's sustainability assessment, the Company, one of listed companies with Bath 30,000-100,000 million market capitalization, scored 94 out of 100 points, higher than 90 points in 2018.

Top scores	RATCH Group	Resources Sector	Category: Baht 30,000–100,000 million market cap	All groups
All dimensions	94	97	97	97
Economic dimension	91	98	96	98
Environmental dimension	100	100	100	100
Social dimension	90	96	96	96

The Company won SET Awards: Sustainability Excellence (Rising Star) for companies with market capitalization between Baht 30,000-100,000 million and the Sustainability Disclosure Award as well.

- As of 30 December 2019, the Company's market capitalization reached Baht 99,687.50 million, a 35.5 per cent increase from Baht 73,587.50 million on 28 December 2018.

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

Managing the impacts from the collapse of Xe-Pian Xe-Namnoy Hydroelectric Power Plant's Saddle Dam D in mid-2018 was considered a material issue of the Company's operations in 2019, based on the identification of materiality aspects of internal and external stakeholders.

As a shareholder, it monitored the joint venture's working committee, set up to handle the incident and mitigate the impacts, through the joint venture's board of directors where there are the Company's representatives.

After the incident, Xe-Pian Xe-Namnoy Power Company Limited, the project operator, has fully and continuously cooperated with the Lao government in rectifying, rehabilitating and remedying the impacts, as deemed necessary and urgent.

Xe-Pian Xe-Namnoy Hydroelectric Power Plant's in brief

Xe-Pian Xe-Namnoy Power Company Limited, the project developer and operator, is registered in Lao PDR. Its 4 shareholders are:

- SK Engineering and Construction Company Limited, 26%
- Korea Western Power Company Limited, 25%
- RATCH Group PCL, 25%, and
- Lao Holding State Enterprise, 24%

Location

The project is located in 2 provinces of Lao PDR. The project's reservoirs and saddle dams are located in Champasak while the power plant in Attapeu.

Project description

Xe-Pian Xe-Namnoy Hydroelectric Power Plant has 410-MW-installed capacity. 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. The incident concerned Saddle Dam D.

Rectification, rehabilitation and remedy impacts

In 2019, Xe-Pian Xe-Namnoy Company Limited collaborated with Lao PDR's government organizations in rectifying, rehabilitating and remedying economic, social and environmental impacts as summarized below.

Urgent and short-term actions

- Xe-Pian Xe-Namnoy Company Limited's contractor introduced additional engineering and safety measures for the rebuilt Saddle Dam D as well as other saddle dams, to ensure maximum stability and safety.

Damage survey and assessment

The Lao government and Xe-Pian Xe-Namnoy Company Limited launched a joint damage survey and assessment, covering the following 4 groups.

1) Villages covering villagers, houses, property and vehicles affected by the incident.
2) Local businesses affected.
3) Infrastructure systems and public buildings.
4) Environment concerning affected agricultural and forest land as well as water sources.

The damage assessment for the first 3 groups is completed and Xe-Pian Xe-Namnoy Power Company Limited paid out partial compensation. The remaining compensation is pending for the assessment of Xe-Pian Xe-Namnoy Power Company Limited's insurance adviser.

Remedying the victims

Xe-Pian Xe-Namnoy Company Limited pushed for the following actions from the insurer and contractor:

- Pay compensation, via the Lao government, to the families of 71 dead or missing persons, at US$10,000 per head or a total of US$710,000.
- Pay compensation, via the Lao government, for 28 orphans totaling US$296,871.
- Partially compensate businesses after damage survey jointly undertaken with Lao PDR.
- Build 869 temporary accommodations for 3,400 victims from 5 villages.

Urgent infrastructure rehabilitation

- Urgent works regarding infrastructure rehabilitation and maintenance concern:
  - Irrigation system
  - Leveling the areas where permanent houses will be built
  - Installation of the electrical system to temporary accommodations
  - Building and fixing schools
  - Expansion of hospitals

Urgent livelihood rehabilitation

- Improve the livelihood by addressing villagers' urgent needs such as agricultural tools and living conditions.
- Rehabilitate agricultural land and reservoirs.

Project construction and repeat recurrence prevention measures

- Prepare and submit project rehabilitation plan and recurrence prevention measures for the Lao government's approval, to reduce impacts on all stakeholders of the project's value chain.
- Saddle Dam D is turned to Roller Compacted Concrete Dam and other saddle dams and major reservoirs are strengthened, to ensure maximum stability and safety.
- The construction, water blocking, test run and commercial operation was completed in 2019.

Restoration plan after the incident

Xe-Pian Xe-Namnoy Power Company Limited collaborated in drafting Lao PDR's Restoration Master Plan.

Long-term actions

Actions under Lao PDR's Restoration Master Plan are as follows:

Building new villages for the victims

- Permanent accommodations, necessary infrastructure systems including schools and hospitals will be built in 4 new villages 4 new villages on the land provided by the Lao government, to accommodate 802 affected households from 4 villages. The households are also allocated agricultural land.
- The process is scheduled for completion in 2021.

Relocation of 802 affected households to new villages

- Relocate the victims from shelters to 4 new villages.
- Support and smoothen the relocation.

Preventive approaches for recurrence in future

The Company pays more attention seriously in conducting project's feasibility study by cautiously assessing and analyzing sensitive aspects that could turn to be risks of the project. Additionally, the repeat study and assessment are required in non-greenfield projects to ensure risk and impacts are sought out and mitigation plan well prepared. The risk assessment concerning geological conditions, physical landscape, environment and water sources of the project takes into account in determination of investment and identify prevention and mitigation solution along the project development process covering design process, selection of technology and construction provider, and insurance plan to ensure project safety and smooth operation without interruption

INDUSTRY CONDITION AND OUTLOOK

RATCH sets a goal to expand its main businesses – electricity generation and infrastructure – in Thailand and across Asia Pacific, to establish stable and strong business foundation. As electric power and infrastructure are considered a fundamental of economic development and everyday life, all countries are cautious in planning and implementation. These projects also require huge investment. All governments are prompted to partner with private companies which bring in much-needed capital and technology and hence reduce government debts. Business opportunities are everywhere but amid several factors that influence significant changes now and in the future.

1. Economic factors Economic expansion directly influences electricity demand and infrastructure investment. The Asian Development Bank in its Asian Development Outlook supplement expects GDP in 45 developing Asian economies to expand 5.5 per cent in 2020 due to trade tensions between China and the United States. ADB forecast Southeast Asia's GDP to grow 4.7 per cent while that of developed and major Asian economies like China, India, South Korea and Thailand is expected to decline. The GDP forecast of Thailand is 2.8 per cent in 2020.

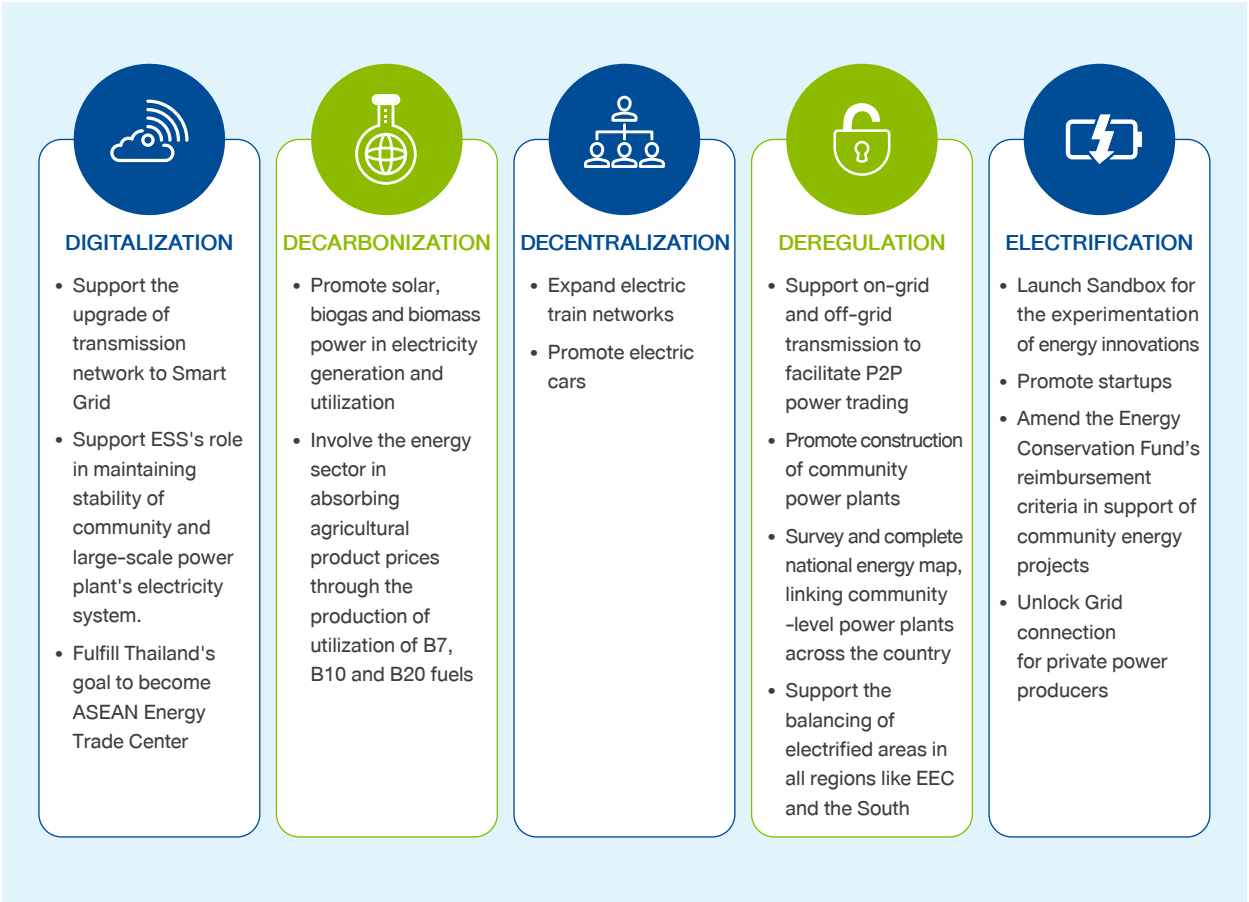
Aside, globalization and leap-frog advancement in science and technology ignite waves of innovations. Energy policy must be realigned to actual cost and demand as well as changing patterns of energy utilization. The realignment will reflect adaptation and survival amid these changes. The Thai government launched the National Strategy (2018-2037), setting goals to achieve holistic national development - A Secure Nation, Contented People, Continued Economic Growth, An Equal Society, and Sustainable Natural Resources. The 6 strategies are:

- National Strategy 1: Security
- National Strategy 2: Competitiveness Enhancement
- National Strategy 3: Developing and Strengthening Human Capital
- National Strategy 4: Social Cohesion and Equity
- National Strategy 5: Eco-Friendly Development and Growth
- National Strategy 6: Public Sector Rebalancing and Development

National Strategies 2 and 5 involve energy and infrastructure, highlighting the development of infrastructure in multi-dimensions like transport networks, basic infrastructure, science, technology and digital in support of industrial development and emerging services. One of the goals is eco-friendly development, based on the royal teachings that espouse 3 sustainable development aspects - moderation, reasonableness and prudence.

Supporting the National Strategy are 23 master plans, serving as the implementation framework. Concerning RATCH is Master Plan #7: Infrastructure, Logistics and Digital. It is supported by 4 sub-plans: transport and logistics infrastructure; energy infrastructure; digital infrastructure; and advanced science and technology infrastructure. The goals are to enhance competitiveness and improve quality and efficiency of transport, logistics, energy, digital, science and new technology infrastructure, for greater productivity of the manufacturing and service sectors and competitive cost in the global stage as well as sub-regional and regional connectivity. It also calls for a management system for natural disasters and adaptation to future technological changes. Action plans in the first 5 years (2018-2022) include rail transport improvement and Thailand's Smart Grid Phase 1 development. Under the master plan, the Ministry of Energy launches "Energy for All" policy, emphasizing

access to energy and energy utilization in raising income, quality of life as well as grassroot-level and macroeconomic development. The essence of "Energy for All" policy is summarized below:



The Ministry of Energy also imposed the Power Development Plan for 2018-2037 (PDP 2018) as the main plan to address electricity demand and support economic development as well as population growth. The plan was adjusted to changes in demand and potential changes in generating technologies. It was realigned with government policies and the 20-year National Strategy (2018-2037), taking into account the balance of generation capacity and demand and regional generation potential. Factors behind the amendment also included a balance of generation-related investment and transmission stability to maximize management efficiency; and efforts to increase power businesses' competitiveness under efficient supervision and maximum system stability.

Under PDP 2018, the national installed capacity will have reached 77,211 MW at the end of 2037; consisting of current capacity of 46,090 MW at the end of 2017, combined capacity of 56,431 MW from new projects; and 25,310 MW capacity to be decommissioned during 2018 and 2037.

Installed capacity during 2018-2037

- Installed capacity as of December 2017 = 46,090 MW
- New capacity additions during 2018-2037 = 56,431 MW
- Capacity retirements during 2018-2037 = 25,310 MW
- Combined capacity at end-2037 = 77,211 MW

Sorted by type of power plants, new capacity additions during 2018-2037 will come from:

- Renewable power plants = 20,766 MW
- Pump storage hydropower plants = 500 MW
- Cogeneration power plants = 2,112 MW
- Combined-cycle power plants = 13,156 MW
- Coal-fired power plants = 1,740 MW
- Overseas power plants = 5,857 MW
- New/replacement power plants = 8,300 MW
- Energy saving measures = 4,000 MW

At the end of 2019, Thailand's installed capacity stood at 45,297 MW. Of total, the capacity of EGAT was 15,129.58 MW; Independent Power Producers, 14,948.50 MW, Small Power Producers, 9,498.32 MW; imports, 5,720.6 MW; and renewable power plants, 3,054.18 MW. Power demand from 3 electricity state enterprises' distribution system is expected to reach 53,997 MW in 2037 when the installed capacity forecast is 77,211 MW.

PDP2018 reflects the direction of Thailand's generation industry, which poses both opportunities and limitations for the Company's business expansion at present and in the future.

2. Digital transformation Digital technology is influencing people's way of life, society and business models. Businesses are being driven by new technologies like Cloud Computing, Data Analytics, mobile phone connectivity with other devices and Blockchain. The digital transformation leads to a change in business demand and supply and paves way for new business concepts and more collaboration. For instance, digital technology can be deployed to increase generation efficiency and save more power for the decentralized power system. The combination of digital technology and energy technology will allow all to manage their own energy consumption.

Electricity tends to be a basic factor of new innovations, introduced to drive the manufacturing, transport and household sectors. Global energy demand is forecast to double in 2050.

3. Environmental factors The impacts from climate change, expected to be more severe, more frequent and more widespread, encourage greenhouse gas management and efficient natural resource utilization. Several new concepts were born like carbon society, green society, and circular economy. Global recognition in these issues has been on the rise, as reflected in an attempt to replace fossil fuels with renewable energy in electricity generation. Under the PDP, Thailand also raises the installed capacity target in 2037 for electricity generation from renewable sources to 20,766 MW.

Thailand showed its commitment to reduce greenhouse gas under the United Nations Framework Convention on Climate Change (UNFCCC) in 2 stages: 1) Thailand is committed to reduce GHG by 7-20 per cent in 2020 from the business as usual (BAU) level under Nationally Appropriate Mitigation Actions (NAMAs) covering the energy and transport sectors and 2) actions under Nationally Determined Contribution (NDC) from 2020 to 2030 to reduce GHG by 20-25 per cent from BAU. The targets on renewable energy, alternative energy and energy conservation in the energy and transport sectors are set, along with the GHG reduction target for the transport sector. The actions also call for lower energy consumption in the transport sector. These aspirations are pushing the development of innovation and technology concerning renewable energy, electric vehicles and efficient and affordable battery.

4. Sustainable Development Goals The United Nations identified 17 Sustainable Development Goals to be achieved by 2030. SDG 7 aims to ensure access to affordable, reliable, sustainable and modern energy for all. As an UN country member, in 2015, Thailand committed itself to attaining the SDG, targeting to increase the renewable energy to final electricity consumption ratio to 30 per cent and reducing energy intensity (EI) to 30 per cent or 5.98 ktoe/billion baht by 2036 compared to the 2553 base year. (At present, EI stays at 7.87 ktoe/billion baht.

5. Regulatory factors Several governments have embarked on the improvement and amendments of laws and regulations governing energy and infrastructure industries, with the goals to enhance competition, be aligned with technological changes and reduce energy consumption. The process will induce innovations.

Infrastructure and electricity generation require a huge investment. Many countries including Thailand strive to reduce the government's role in policy planning and supervision and promote the public private partnership (PPP), which ensures efficient project implementation as well as limited burden on public debts.

In Thailand, the Enhanced Single Buyer system is adopted for the electricity generating industry, supervised by the National Energy Policy Council (NEPC). NEPC is tasked to formulate policies while the Energy Regulatory Commission serves as the industry regulator. Electricity Generating Authority of Thailand (EGAT) is the single buyer who subsequently distributes the electric power to final distributors – Metropolitan Electricity Authority and Provincial Electricity Authority.

Industry situation and international competition

Asia Pacific countries, which are the Company's target destinations, have emphasized and been aspired to increase the renewable energy to fossil fuel energy ratio, to cut greenhouse gases that have increasingly scaled up climate change impacts. In the process, a greater number of energy and infrastructure projects are on the table for private investment, creating new business opportunities for the Company.

People's Republic of China

China is the world's largest renewable energy market. The Chinese government has enforced policies and laid down measures to promote solar and wind power development, including bilateral sale/purchase agreements that offer free transactions in power trading as well as supports to investors. China has welcomed foreign energy-related investment, particularly in transmission grids and electric vehicles.

Commonwealth of Australia

Australia has continuously stepped up supporting measures on renewable energy. A free renewable energy market is established, under the goal to reduce greenhouse gas by 25-28 per cent in 2030. In alignment with the national policy, Australia's states have shaped their own renewable energy plan and targets. For instance, Queensland sets to generate 50 per cent of electricity from renewable energy in 2030. Meanwhile, Australia has promoted and witnessed substantial progress in the development of solar energy-related technology and storage technology which introduces attractive business opportunities.

Republic of Indonesia

Indonesia's power demand has escalated in line with economic development and fossil fuels remain the major source of energy for electricity generation. The Indonesian government targets to raise the renewable energy ratio to 23 per cent in 2025. There is a plan to generate 4.6 GW of geothermal power, 8.3 GW of hydropower and 2 GW from other renewable sources during 2018-2027. The government has launched few promotional measures for the projects.

Kingdom of Cambodia

Cambodia is set to increase the electrification rate, to ensure all villages' access to electricity within 2020 and 70 per cent of households' access by 2030. Ninety per cent of Cambodia's electricity generation comes from large hydropower and coal-fired power plants. The Cambodian government has a policy to promote renewable energy. It recently opened a bidding process for the investment in a 100 MW solar farm, with assistance from the Asian Development Bank (ADB). However, the project was not attractive to foreign investment

due to poor electricity system: the Electricity Authority of Cambia controls the transmission network while acts as the sole power distributor.

Lao People's Democratic Republic

Lao PDR targets to become "Battery of Asia" through the development of hydroelectric power plants, with partial output reserved for domestic demand and the rest exported to neighboring countries. Thailand and Lao PDR struck a memorandum of understanding to support the cooperation of power development in Lao PDR, which in turn would sell electricity of 9,000 MW back to Thailand to strengthen the power system security of the country. Thai companies are encouraged to explore and develop power plants and sell the electric power to Thailand.

Lao PDR has agreed to sell no more than 100 MW of electric power to Malaysia. The power will be exported through Thailand's transmission network, which marks a milestone in the development of ASEAN Power Grid. The LTM on Power Integration Project, involving Lao PDR, Thailand and Malaysia, is part of ASEAN Energy Cooperation action plans 2016-2025. The first phase lasts 4 years from 2016 through 2020. In 2018 and 2019, Lao PDR will dispatch its power to Malaysia via Thailand's network. From 2020 onwards, the transmission from Lao PDR to Singapore, through Malaysia and Thailand's grids, will begin. Lao PDR also promotes other renewable energy sources aside from hydropower, under a target to raise renewable energy portion to 30 per cent in 2025.

Malaysia

Malaysia sets a policy to reduce fossil fuels and increase renewable energy for electricity generation. It targets to generate 1.4 GW from biogas, 1.25 MW from solar power and 0.5 MW from small hydroelectric power within 2020. As incentives, the government comes up with an attractive power purchase price and financial supports for projects relying on domestic resources. However, the promotional privileges for foreign investment in renewable projects remain unclear. Besides, Thailand and Malaysia, through Electricity Generating Authority of Thailand and Tenaga Nasional Berhad, signed a pact on electricity trading scheme pact.

Republic of the Union of Myanmar

The Myanmar government drafted a renewable energy law. It targets to increase renewable energy to 8 per cent and 12 per cent in 2021 and 2025, respectively, under the government's policy to boost the number of electrified households in 2030.

Republic of the Philippines

Under the Electric Power Industry Reform Act (EPIRA) and Renewable Energy Act (RE), the Philippines plan to generate 15.3 GW from renewable energy within 2030 and 65 GW within 2040. However, the geographical condition, with sparsely-located islands, is an obstacle to achieve the goal. Meanwhile, the condition takes a toll on the construction cost and electricity price.

Socialist Republic of Vietnam

Vietnam, under the power development plan #7, emphasizes the electricity generation from renewable energy, chiefly wind, solar and biomass power.

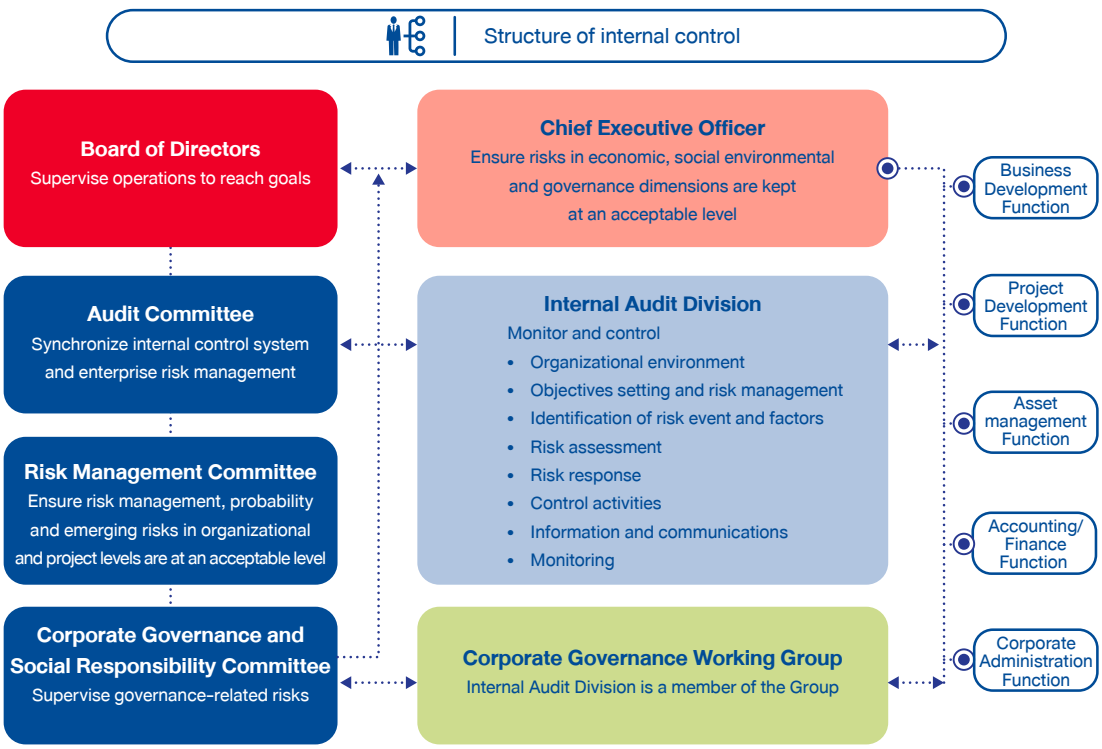
- Wind power: 800 MW (2020) and 6 GW (2030)
- Solar power: 850 MW (2020) and 12 GW (2030)
- Biomass power: 750 MW (2020) and 3.2 GW (2030)

Vietnam offers a high adder to electric power produced by solar power, encouraging foreign investment in this sector and hence intensifying competition.

RISK AND OPPORTUNITY MANAGEMENT

Internal control

The Company is confident that upholding morals, ethics and integrity coupled with best management and governance practices as well as efficient and effective internal control is a key in promoting sustainable business and maintaining leadership.



The Board of Directors appointed the Audit Committee and tasked it to define the targets in supervising, monitoring and assessing the Company's internal control, for the implementation by the Internal Audit Division. The targets are set in accordance with the Committee of Sponsoring Organizations of the Treadway Commission - Enterprise Risk Management (COSO-ERM) framework that integrates internal control and risk management with business operations and management process. The framework contains 8 elements. Actions in 2019 and their results are as follows:

1. Organizational environment

- Management structure
  - Board of Directors is the Company's top governing body.
  - Board of Directors performed duties with expertise and independence from the Management, responsible for the formulation of the Company's policy and rules to be executed by the Management as well as the close supervision on the Management.
  - The line of command was guided by the organizational structure, with job descriptions and responsibilities clearly defined accordingly to the Company's vision, mission and business goals.
  - The Code of Conduct, rules, orders, penalties and reporting procedure on suspicious corruption acts were prepared.
  - The Management appropriately reviewed and updated operational requirements on a regular basis for operational efficiency.

- **Compliance with governance best practices**
  - The Company upheld ethical business philosophy, translating it to written regulations and guidelines as shown in the Code of Conduct.
  - The Corporate Governance and Social Responsibility Committee was appointed to consider, approve, promote and govern the policy, strategy, objective, guidelines and action plans relating to governance and social responsibility. They must submit the work plan and monitoring report to the Board of Directors as well as ensure compliance with the anti-corruption policy and procedures.
  - The Company's CG Score in 2019 was rated excellent (5 Stars), based the Thai Institute of Directors Association' Corporate Governance Report of Thai Listed Companies (CGR) assessment.
  - The Company's 2nd-round membership was certified by Thailand's Private Sector Collective Action Coalition Against Corruption (CAC) on 4 February 2019.
- **Risk management**
  - The Company's risk management process integrated economic, governance, environmental and social dimensions aside from the management of information technology risks.
  - The Risk Management Committee was appointed with a written order. It reports directly to the Board of Directors on a quarterly basis. Its duties are to identify the roles and duties of persons in charge and risk management approaches in all dimensions.
  - In formulating the process to assess opportunities, impacts and approaches to prevent economic, social and environmental risks as well as corruption: the Company took into account stakeholders' recommendations submitted to the Company's website, Public Relations Department, the Internal Audit Division and Investor Relations Department; and shareholders' opinions and recommendations expressed in annual general meetings.
  - Risks were managed systematically and constantly, to ensure proper internal control and risk management system that can effectively prevent or mitigate possible damage and keep risks at an acceptable level. Such will allow the Company to achieve business goals in a stable and sustainable way.
- **Human resources**
  - Favorable work environment was promoted.
  - Corporate culture was set.
  - Clearly-defined evaluation and remuneration criteria were in place, with Key Performance Indicators (KPI) for all functions that support the Company's strategic and business plans.
  - The performance benchmarked against the KPI was reported to the Board of Directors on a regular basis.
  - Continuous training was organized accordingly to the individual development plan, to further enhance employees' capability.
- **Organizational structure**
  - The line of command, authorization and duties were clearly identified.
  - The assessment committee, chaired by Chief Executive Officer, was set up to formulate policies, targets, work plans and supervision guidelines and assess the performance every quarter to make sure that organizational targets will be achieved. It is also tasked to identify assessment criteria, which must be approved by the Board of Directors.
- **Internal audit**
  - The Audit Committee reviewed the Internal Audit Division's performance at least once a quarter.
  - The Audit Committee set the policy and gave recommendations to the Internal Audit Division on efficiency enhancement. The division's performance was evaluated by an outside specialized consultant, to

make sure its practices meet the international standards on professional auditing.

- The consultant's evaluation report was submitted to the Chief Executive Officer and the Board of Directors. The Internal Audit Division subsequently outlined short-, medium- and long-term improvement plans, with emphasis on the enhancement of governance, personnel, infrastructure and operational efficiency.

2. Objective setting and risk management

- Objectives or operational targets and the management of risks were clearly defined, covering strategy, operations, reporting and compliance with policy, rules and regulations.
- Risk assessment criteria, principles and approaches as well as work processes were set in writing, aligning with the Company's mission and being consistent with risk appetite.
- Work plans, strategy and objectives were regularly amended to correspond with changing circumstances and risks.

3. Identification of risk events and factors

- Potential events or factors involving the Company's strategy and targets that may have an impact on the organization's objectives and operational process were identified.
- Potential risks from internal or external sources were identified, to facilitate the Management's formulation of the approach and policy to handle the risks. Such include risks to production and new business targets, operations, finance and sustainability.
- Executives or relevant persons were regularly informed.

4. Risk assessment

- Apply tools and approaches to systematically assess risks. The Risk Management Committee and the Risk Management Working Team reviewed the risk assessment policy, identified the review strategy and process, as well as monitored the efficiency and appropriateness of risk management approaches for both organizational and operational risks.
- Risks were assessed on both qualitative and quantitative terms, considering both risk likelihood and impact. The risks were assigned accordingly to their degrees - high, medium or low. The organization's risk appetite was set accordingly.

5. Risk response

The Company adopted a systematic and integrated process to handle risks. The process involved how the Company should respond to those risks; to prevent the likelihood of unexpected events or keep operational fluctuations at an acceptable risk level, and ensure the overall risk is tackled and will not cause risks on other fronts. Internal control measures were in place, aligned with evolving risks.

6. Control activities

- Keep risks within risk appetite level, through a risk management system and internal control measures that cover the operations in all fronts and at all levels.
  - Clearly identify the scope of authority and duty as well as the values of authorized transactions involving procurements, other expenses and cheque issuance for executives at different levels in the Company's regulations/order.
  - Connected transactions must be reviewed and approved by the authorized persons who must not have vested interest, before submission to the Audit Committee and the Board of Directors for approval, or subsequently to the annual general meeting for shareholders' approval if needed.
  - High-ranking Executives and Asset Management Function were responsible for monitoring the Company's performance and reporting to the Board of Directors and the Management on a monthly basis. The Asset Management Function ensured the operations were aligned with the Company's strategic plan and regulations on the supervision of subsidiaries, affiliates and

joint ventures. Under the regulations, the Board of Directors shaped the companies' policies concerning supervision of subsidiaries, associates and joint ventures through the Company's representatives and the representatives must submit quarterly reports on the companies' performance.

- An information technology system was developed to support risk control throughout the Company's operational process. Also the safety policy, emergency plan, procurement, the development and maintenance of the system were created.
- A concise control policy was in place, covering the Related Party Transaction Policy and the policy to prevent conflict of interest particularly when it concerns the transactions and authorization of Board of Directors and high level executives, as well as the supervision of subsidiaries and joint ventures in appropriate timeframe. The policies were reviewed regularly.
- The strategic planning approach and targets in short, medium and long terms were set, to ensure the implementation by all units.
- The anti-corruption policy and regulations were established, for the implementation by the Corporate Governance Working Group and relevant divisions. The policy called for anti-corruption measures, the registration of corruption risks, communications and training for employees' acknowledgement. The Corporate Governance Working Group monitored compliance and reported to the Corporate Governance and Social Responsibility Committee. The Internal Audit Division, as an independent unit, was tasked to review the policy and corruption risk management process and procedures. It also assessed the internal control of the process that presents corruption risks, so that the risks could be tackled accordingly.

7. Information and communication

The Company's information and communication channels are as follows:

- Data system was in place along with the management policy, procedure and secrecy classification. All divisions needed to classify their information. Access to the information from other divisions must be granted by the persons authorized for the particular classification level, to prevent the leak of important information and increase the efficiency of cross-functional cooperation.
- Meeting invitations and supporting document with sufficient information were sent to the Board of Directors ahead of the legally-required timeframe. Questions, explanations, opinions, remarks and recommendations of each director present at the Board of Directors and sub-committee meetings were recorded in meeting minutes along with the resolutions, for reference and subsequent review.
- An efficient internal communication process was established. There was a channel where suspicious corruption acts could be reported. Executives at each level convened meetings to follow up on work progress, obstacles and solutions and the message was circulated to all executives. Important information was reported to the Board of Directors on a regular basis.
- In communicating with outsiders, information was posted on the Stock Exchange of Thailand (SET)'s electronic system and the Company's website to ensure thorough and equitable access of shareholders, investors and the interested to the Company's information.
- Financial reports were reviewed by accounting and finance executives together with the independent auditor. The reviewed information was submitted to the Audit Committee for possible questions on a review in financial policies, changes in important accounting standards, indicators or issues that may send an impact on the financial statements, and etc.
- Accounting information and supporting document was systematically stored and grouped in electronic and paper formats, along with financial reports and other significant documents.

- An anti-corruption working team was set up, represented by all functions. It was tasked to communicate with employees on the policy. The working team convened at least once in every 3 months and reported respectively to the Corporate Governance Working Group, the Corporate Governance and Social Responsibility Committee, and the Board of Directors.
- Intranet communication channel and e-mail systems, Lotus Note and Microsoft Outlook, were provided to allow all operators' convenient and updated access to information.
- A policy and plan to strengthen employee engagement was in place, for both organizational and functional levels, for more efficient and faster communications and collaboration within the organization.
- Information-related risks were tackled by an efficient security system and an emergency plan to protect the information system in times of severe incidents that may lead to operational disruption. An emergency drill was organized. The Company's data storage system also allowed an audit trail while the information system was able to analyze and pinpoint risks based on the statistical data of completely-recorded risks, assessment and responses.

8. Monitoring

- The Internal Audit Division followed up on the implementation of plans agreed upon by the Management of the Company and subsidiaries on a quarterly basis and reported the results to the Audit Committee, which will be forwarded to the Board of Directors.
- The Internal Audit Division's members were entitled to a fully-budgeted capability enhancement through internal and external training. There was a plan to assist them in obtaining international auditing certificates. The training schedules were reported to the Audit Committee. Details of the training were recorded, for the integration into the organization's knowledge.
- The division outlined the policy and guidelines on the immediate reporting of serious fraud, violations of laws or wrongdoings that may significantly affect the Company's reputation and financial positions to the Board of Directors. Involved units were required to devise preventive measures. The implementation was reported to the Management and the Board of Directors.
- Business targets were set accordingly to the strategic planning and business plan, with the specification of Key Performance Indicator (KPI) for all functions and all levels. The performance was benchmarked against targets. Failures to achieve the targets and impacts were analyzed. The response and impact-mitigation plans were written and reported to the Management and the Board of Directors periodically.
- Risk Matrix was prepared, to describe the likelihood and impact level of strategic, operating, financial and sustainability risks. Approaches to handle the risks were prepared accordingly to risk appetite. The performance was monitored and the Risk Management Committee and the Board of Directors were informed when required, to ensure the effectiveness of the Company's strategy and targets in the short, medium and long terms.
- The Internal Audit Division reviewed the sufficiency and appropriateness of the internal control system through an annual audit plan approved by the Audit Committee. The audit result was reported to the Audit Committee. The Audit Committee was tasked to ensure that the audit progressed as planned and was aligned with international standards on professional auditing.

Details of the internal control sufficiency audit form are available on the Company's website: www.ratch.co.th

Internal audit

The Internal Audit Division was independent. Its Head serves as the Audit Committee's secretary. The division reported directly to the Audit Committee, with administrative reporting to the Chief Executive Officer as guided by the Company's order on the

division's responsibility and the order on internal audit. The Internal Audit Division's scope of responsibility and authority was clearly defined. It was also tasked to implement the Board of Directors' assignments to the Audit Committee.

The Internal Audit Division performed its duty in accordance with the International Standards for the Professional Practice of Internal Auditing (IPPF) and COSO-ERM framework. It also conducted self-assessment, aiming to attain international standards. All employees maintained their independence and integrity as outlined in the Code of Ethics for internal auditors. They received continuous training under the individual development plan, for both short and long terms. The Internal Audit Division's main responsibilities are as follows:

- Review the effectiveness of the internal control system, risk management system and corruption-related practices, to establish trust. The Internal Audit Division scheduled short- and long-term audits, considering involved risks and factors on strategic, operating, financial and compliance risks as well as the probability of corruption. Likelihood and impacts were analyzed. The audit plan was endorsed by the Chief Executive Officer and approved by the Audit Committee. It also scheduled the follow-up on the implementation, which included self-assessment and the assessment of the audited departments. The actions were to ensure continuous internal control and completely and efficiently fulfill the internal audit objectives.
- Review the efficiency and appropriateness of risk management through collaboration with those responsible for risk management. Being reviewed were the indicators of risk incidents or factors that may affect risk-management objective, strategy and approaches, to ensure that risks were properly identified and assessed, systematically tackled, efficiently maintained at the acceptable risk level, and timely reported. The Internal Audit Division scheduled such reviewed continuously and constantly.
- Review the effectiveness of the internal control system. The evaluation form on internal control sufficiency was designed for each function, under the SEC guidelines. The operational performance was reviewed and each division was encouraged to review its work process, to ensure that the Company would efficiently and effectively achieve its operating, financial and compliance goals and guard against corruption risks.
- The Audit Committee maintains its independence with at least 3 members appointed by the Board of Directors being independent directors (Details of the Audit Committee appeared in Management Structure Section, Page 76) Below are the Audit Committee's summarized opinions regarding the work in 2019:

Aspect	Audit Committee's opinions
Significant deficiency of the Company or subsidiaries' internal control	• Finding no sign of deficiency • Suggesting Internal Audit Division to single out its recommendations on significant issues and specify action plans and completion date for the audited departments. • Suggesting the Internal Audit Division perform additional audit on internal communications and review human resource management, to assess internal control efficiency. • Endorsing the audit of a new power plant of the Company.
Review on internal control	• Acknowledging the anti-corruption audit report which found no sign of wrongdoing or possible corruption in the Company and subsidiaries as specified in the audit plan. • Approving the inclusion of anti-corruption review in the annual audit plan, in line with the anti-corruption policy, regulations and order.

Aspect	Audit Committee's opinions
Conflict of interest	• Acknowledging the audit report which found no conflict of interest involving employees, the Management or the Board of Directors. • Requiring the Accounting and Finance Function to report connected transactions as shown in the quarterly financial statements. The report, to be forwarded to the Board of Directors, showed no conflict of interest among connected parties.

Head of Internal Audit

The Audit Committee at the 7/2017 meeting on 14 December 2016 appointed Mr. Somboon Kositvanich as Senior Vice-President - Internal Audit Division, to audit the sufficiency and efficiency of the Company and subsidiaries' internal control and risk management system. The appointment took effect on 1 January 2017.

In 2019, the Audit Committee evaluated Head of the Internal Audit Division in the areas of knowledge, auditing ability and understanding in the role and duties of the Audit Committee's secretary. The evaluation results are as follows:

Year	Score (From 100 points)	Level	Definition
2019	100.00	Excellent	Able to perform duties with excellent knowledge and understanding in the Company's business; as well as ability and experience in accounting and finance audit and in business and enterprise risk management.
2018	94.08	Excellent	

The appointment, dismissal, transfer or employment termination of Head of Internal Audit Division is subjected to the Audit Committee's approval. (Biography of the Internal Audit Division's head is on Page 83)

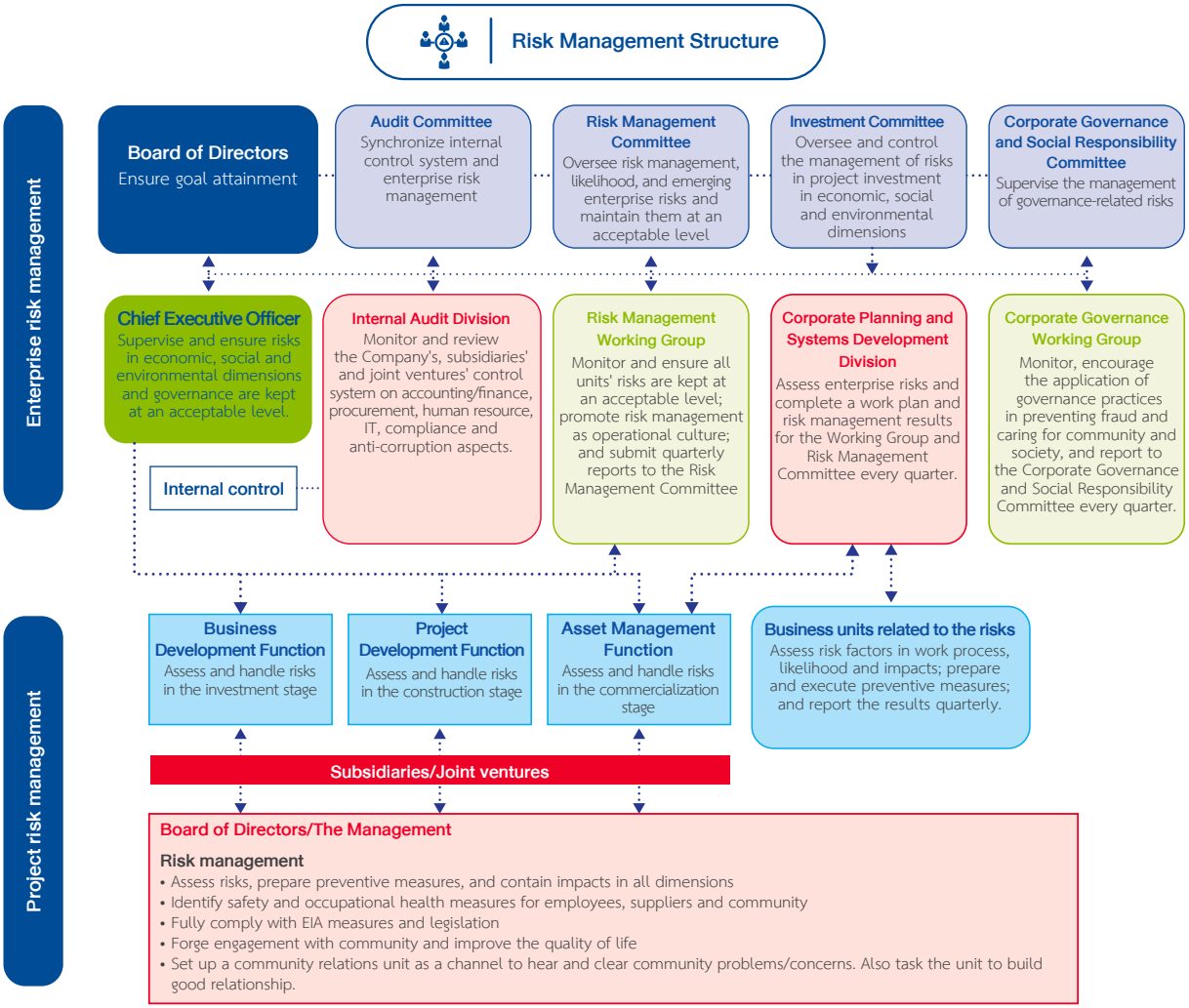
Management of enterprise risks and impacts

Intensifying competition particularly in the energy and electricity industry and rapid advancement of technology are uncontrollable factors that challenge RATCH's ability in maneuvering and minimizing negative impacts, to maintain long-term growth and stability. Success will benefit the value chain, the economy and society at large. As such, emphasis is placed on internal control and risk management systems, to prevent the possibility of internal and external risks and minimize adverse impacts that may derail the Company's growth and sustainability.

Risk management policy

The Board of Directors is aware of and gives importance to risk management and risk control, identifying guidelines in the risk management policy as a way to raise operational efficiency and establish an administrative tool in helping the Company achieve goals. The essence of the policy is summarized below:





The Corporate Planning and Systems Development Division plays a leading role in tackling enterprise risks, under the supervision of the Asset Management Function. The Company also established the Risk Management Working Group represented by high level executives from all functions and the Board of Directors appointed the Risk Management Committee. Head of the Planning and Systems Development Division serves as the Risk Management Committee's secretary.

Under the risk management structure, the Board of Directors-appointed sub-committees take part in identifying risk factors and measures to keep risks at an acceptable level and report to the Board of Directors. Details are as follows:

- Risk Management Committee is tasked to oversee the overall picture of the organization's risk management, with focus on warning signs and irregular transactions.
- Audit Committee reviews the organization's risk management process.
- Investment Committee oversees risks in economic, social and environmental dimensions and management approaches for investment risks.
- Corporate Governance and Social Responsibility Committee oversees risks relating to governance, reputation and image.

Business Development Function, Project Development Function and Asset Management Function are responsible for project-level risks in their respective areas and they must separately report updates to relevant sub-committees and then the Board of Directors. The oversight power is also given to the Company's representatives, assigned to be an executive and/or director or a shareholder of subsidiaries, affiliates and joint ventures.

Performance in 2019

The Risk Management Committee held quarterly meetings, 4 times in the year, to review and scrutinize risk management approaches accordingly to the Company's risk management policy and COSO: ERM 2017 standards as well as ensure the management measures remain at the level prescribed by the Board of Director. The Risk Management Committee regularly reported the results, the Company's risk status, changes in project level and organizational level risks, and recommended actions in line with the policy to the Audit Committee and the Board of Directors.

The Risk Management Committee set up the Risk Management Working Group consisting of high level executives from all functions, with Chief Asset Management Officer being the team leader. The team is tasked to analyze risks and devise effective, efficient and appropriate management tools which will reduce the likelihood of the risks and keep impacts on the Company in terms of revenue, expenses and image and on stakeholders at the acceptable level.

Enterprise risk management approach

The COSO: ERM 2017 initiative which integrates risk management with strategy and performance guided the Company's risk management in 2019. The process is summarized below:



Organizational risk factors

The Company analyzed, assessed and identified risk preventive and management measures to minimize the probability and impacts as follows:

1. Strategic Risk

Cause and effect

- Advancement of technology leads to economic, social and political transformation.
- Liberalization and public-private partnership in electricity, energy and infrastructure sectors open doors to more domestic and international players.

Emerging trend

- Changes in rules and regulations
- Fiercer competition. Coupled with huge investment required for energy and infrastructure projects, it is a challenge to achieve cost and profitability targets

Approaches to prevent and manage risks and to reduce impacts

- Follow up changes constantly as well as analyze and assess possible strategic risks that involve operational, financial and environmental goals and etc.
- Assess internal factors that support the operations such as investment plan, human resource management and stakeholder relationship management.

- Schedule an annual review on the Company's strategies and business goals.

Residual risk: Medium

2. Financial Risk

Cause and effect

Global economic slowdown and trade tensions between the United States and China influence exchange rates, interest rates and revenue originated overseas, which may affect the Company's liquidity and investment.

Emerging trend

- The Company's greater focus on overseas expansion exposes the Company to greater impacts from exchange rate fluctuation, a change in interest rates and liquidity management for funding investment.

Approaches to prevent and manage risks and to reduce impacts

- Prepare a financial policy as the framework to control and manage financial risks relating to interest rates, exchange rates and liquidity management.
- Plan financial forecasts concerning the amount and time accordingly to the Company's financial status.
- Elevate the efficiency of internal control system in monitoring compliance with the financial policy and planned actions.

Residual risk: Low

3. Operation Risk

Cause and effect

- Power plants' revenue-generation capability slides after more than 10 years of commercial operation.
- Cyber Attacks and threats to information technology system

Emerging trend

- Sliding machinery efficiency may reduce the power plants' availability payment.
- Maintaining IT system security and improving efficiency to match the increasing complications of Cyber Attacks will affect the investment cost for overall IT system security improvement at Head Office and the power plants.

Approaches to prevent and manage risks and to reduce impacts

- Monitor the operations and assess risks relating to power plant management, operational efficiency, scheduled maintenance and reliability in accordance with power purchase agreements.
- Emphasize safety of operators, contractors and the environment as required by relevant laws and regulations.
- Monitor and assess the power plants' revenue-generation capacity, concerning their efficiency and availability, on a regular basis.
- Closely monitor the maintenance service quality, to meet pre-set standards.
- Improve network security through, for example, control of access to devices, Firewall setup, web and email filtering, and installation of server protection systems like Server Firewall, Logon Policy and Anti-Virus Program.

- Classify information secrecy levels
- Set up data backup system
- Prepare Disaster Recovery Plan and Business Continuity Plan

Residual risk: Low

4. Corruption Risk and Compliance Risk

Cause and effect

- The Organic Act on Anti-Corruption B.E. 2561, Section 176 stipulated that any person who gives, offers, or promises to give any property or benefit to a public official, foreign public official, official of a public international organization with an intent to induce such person to wrongful action, or inaction shall be liable to an imprisonment for a term of not exceeding five years or a fine of not exceeding one hundred thousand Baht or both. If the person is associated with a juristic person and acts for benefits of the juristic person, and it does not have adequate internal control measures to prevent the commission of such offence, the juristic person shall be fined 1-2 times of damages or benefits received.
- The laws, rules and conditions of each country as well as legal interpretations are complicated and vary and that may incur compliance risks.

Emerging trend

- Electricity generation, energy and infrastructure businesses, domestic and international, are state-controlled and invested jointly by private companies. Bidding involves complicated conditions and it may be difficult to fully comply with the conditions.
- The Company expands overseas investment in the context of complicate and varying laws, rules and regulations in each country as well as customary and traditional differences. This may incur compliance risks.

Approaches to prevent and manage risks and to reduce impacts

- The Company's Board of Directors imposes the anti-fraud and corruption policy and rules for the acknowledgement and practice by all.
- Test on employees' understanding in the Company's anti-corruption policy is scheduled, being a part of individual KPI.
- The Company issues related rules as operational framework and a mechanism to inspect and prevent corruption, in line with the principles of CAC. The Audit Committee is tasked to monitor and ensure the overall operations follow CAC principles.
- The Company thoroughly studies the laws, rules and regulations in each investment destinations and seeks recommendations from specialized legal consultants.
- The Company studies and reviews investment information and risks in each country from reliable sources and seek advice from legal advisers in the country, to ensure appropriate and full compliance.
- The Company seeks a local partner with experience and expertise in the particular business.

Residual risk: Low

Emerging risk management

The Company has monitored domestic and international movements to pinpoint emerging risks that may develop and affect the operations. Climate change and advancement of technology are considered two emerging risks that require preventive and adaptation measures. The measures are summarized as follows:

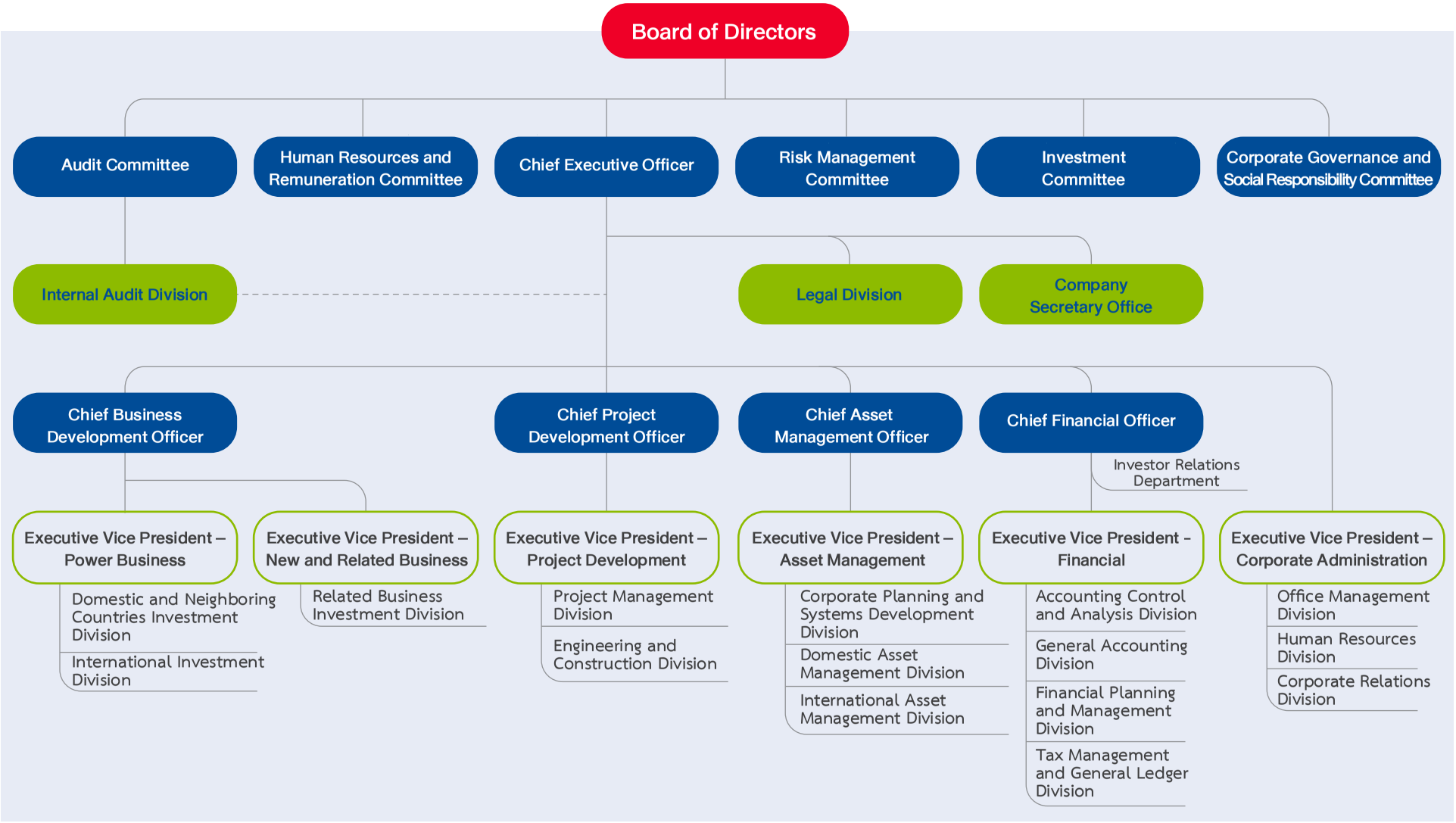
Risk factor	Possible impacts	Management probability/Opportunity
Climate change is driven by increasing consumption of natural resources by the manufacturing, business and household sectors, in line with population growth.	• Shortage of water which is an essential resource for electricity generation. Shortage makes it more difficult to find project locations or causes a fight over water with community which may affect their acceptance of the project or lead to a protest and hence operational disruption. • Natural disasters like flood, forest fire and earthquake that become more severe and more frequent. Disasters may affect cost and disrupt business. • Stricter enforcement of laws and/or measures concerning the environment and biodiversity.	• Analyze and assess environmental risks and impacts as well as the availability of water and fuels throughout project period. • Monitor studies and researches on climate change, to support project risk analysis and the selection of locations. • Transfer risks through natural diaster insurance, to reduce possible economic impacts on the Company's new and commercially-operated assets. • Raise renewable energy portion to ease impacts on raw materials and reduce greenhouse gas emission. • Monitor and study legal measures on greenhouse gas management to assess impacts and design a greenhouse gas management plan.
Technological risk, following rapid advancement of technological development particularly on Big Data, Artificial Intelligence and Quantum Computing, as well as digital transformation	• Technology plays a larger role in everyday life, leading to digital transformation. Business models must be adapted, inspiring innovations which pose both risks and opportunities. Meanwhile, outsiders' attacks will become easier. • Investment on security systems against Cyber Attacks escalates, amid transformation to digital society and adoption of more technology in business processes. • Information protection laws will be beefed up, to prevent privacy violation and information theft.	• Analyze business opportunities in support of the Company's goal in diversifying to New S Curve industries. • Seek partners with technological expertise for new businesses, to achieve the business goal and reduce risks and economic impacts. • Monitor the evolution of Cyber Attacks and patterns and then assess the effiicency of the Company's network security protection system, data system and power plants' control system. Seek consultation on preventive measures from technology consultant. • Observe legal changes and law enforcement which may bring measures aimed at protecting information and privacy.

Crisis and business continuity management

In 2019, the Company reviewed and improved the crisis management plan, the crisis communication plan and Business Continuity Plan. The business continuity management policy was announced, serving as a guideline to ensure continuity and manage risks that may derive from fast and unpredictable uncertainties inside and outside of the organization. Under the policy, business will proceed and the interests of stakeholders, who play an important role in driving the organization's growth, will be protected. The essence of the policy is as follows:

- The Company will develop the business continuity management system as guided by business continuity management standards. The goal is to establish a holistic management system that contains the crisis management plan, the crisis communication plan and the business continuity plan.
- Corporate Planning and Systems Development Division's Risk Management Working Group will supervise the overall business continuity management system and report the Risk Management Committee periodically or when major events occur.
- Executive Vice President – Asset Management will serve as the Business Continuity Management Manager, to coordinate actions in managing business continuity in normal condition or in times of crisis or diaster and restoring normal operations through assistance from internal and external units and the crisis management committee.
- The Business Continuity Management Manager will appoint the business continuity management coordinator, who will implement the assigned tasks and report to the Business Continuity Management Manager.
- Corporate Planning and Systems Development Division is tasked to handle the crisis management plan. It is responsible for plan formulation, implementation and testing. The plan must be reviewed at least once a year for accuracy and completeness or whenever a significant change occurs. Its responsibility is also to coordinate with the Critical Business Function in assessing and reviewing risks as well analyzing business impacts on a yearly basis.
- Corporate Relations Division is tasked to handle the crisis communication plan. It is responsible for plan formulation, implementation and testing. The plan must be reviewed at least once a year for accuracy, completeness, and readiness for implementation or whenever a significant change occurs.
- Business untis are obligated to formulate, implement, test and improve unit-level business continuity plans and/or relevant documents. They must ensure the plans are complete, accurate and up to date and ready in times of crisis. The plans must be reviewed at least once a year or when a significant change occurs, to make certain that the available business continuity management system is effective. Business units must also keep control of and store their own business continuity plans.
- Critical Business Functions appoint responsible persons, to take part in risk assessment and review as well as business impact analysis. Recovery strategies as well as unit-level business continuity plans will be prepared based on the results.
- Office Administration Division is assigned to support, coordinate, and integrate the business continuity management system with the Emergency Response Plan and the Disaster Recovery Plan. Its responsibility also covers the Command Center and the Alternate Site.
- Human Resources Division is to continuously raise awareness and ensure understanding among employees at all levels, relating to business continuity management, eventually to turn it to a corporate culture.
- High level executives are to communicate on the business continuity management policy with lower-level executives, employees, contracted workers and other stakeholders and demand strict compliance. They must also ensure the effectiveness of each function's business continuity management process as well as promote and develop employee capacity for effective implementation.
- Raise awareness among executives, employees and contracted workers on their engagement, support and compliance with the Company's business continuity management policy, to help the Company achieve business continuity objectives.

MANAGEMENT STRUCTURE



Board of Directors

The structure and composition of the Board of Directors and the qualifications of directors and independent directors have been set in correspondence with missions and business objectives of the Company while complying with relevant laws, regulations, regulator's guideline and the Company's Articles of Association established by the resolution of the shareholders' meeting and the Company's regulations on the Board of Directors. This is to achieve maximum efficiency, effectiveness and support for the Board of Directors in performing its duty in formulating policy; setting business direction; ensuring balance of power, corporate governance, monitoring of the Management's actions and performance; providing opinions in depth and width on the issues under consideration that address all factors; and ensuring that the implementation of policies corresponds with governing regulations.

Composition of the Board of Directors

- Comprising no less than 7 members and no more than 15 members, appointed by shareholders at the annual general meeting.
- Executive directors shall not exceed one third of the total members.
- Independent directors shall comprise no less than one third of the total directors and no fewer than 3 members.
- No less than half of the directors shall reside in the country.
- The Chairman shall be a non-executive member and not the same person as the Chief Executive Officer ("CEO") who is the Management's chief.

Information on individual director shows in Directors' Biography, Page 95 Information on directors' transactions with possible conflict of interest in the past year appeared in Corporate Governance Section: Transactions with or without possible conflict of interest, Page 136 Information controllers and directors of subsidiaries operating core businesses can be found in the Form 56-1 published on the Company's website and SEC's website.

Qualifications of directors

- Not older than 72 years old
- Have no prohibited qualifications by law, not be a bankrupt person or an incapable or quasi-incompetent person
- Have never been convicted and imprisoned in for violation of laws related to assets in a fraudulent action
- Have never been terminated from government agencies or private organizations due to malpractice
- Have never been dismissed as a director, manager, employee or an authorized executive in other organization
- Not being a politician, a member of the Parliament, Senate, or a member of a local administrative office or administrator
- Have educational and experience or other qualifications specified by the Company
- Devote sufficient time and full capability for the best benefits of the Company and have duties to attend regular meetings
- Hold directorship in no more than 3 listed companies
- No action that may undermine the Company's interest or benefit other person or entity, whether that is for personal or for other person's benefit

The Board of Directors as of 31 December 2019 consists of 12 members:

	Directors	Position in the Board of Directors	No. of Term(s)	Starting Date	Position in Sub-Committees
1	Mr. Sutat Patmasiriwat	Chairman (EGAT's representative director) (Authorized Director)	3	20/10/2014	• Chairman of the Investment Committee
2	Mr. Chartchai Rojanaratanangkule	Independent Director	1	06/04/2017	• Chairman of the Audit Committee • Corporate Governance and Social Responsibility Committee Member
3	Mr. Apichart Chinwanno	Independent Director	1	13/04/2019	• Chairman of the Human Resources and Remuneration Committee
4	Mr. Samack Chouvaparnante	Independent Director	2	11/04/2015	• Chairman of the Risk Management Committee
5	Mr. Boonsong Kerdklang	Independent Director	1	13/04/2019	• Audit Committee Member
6	Mr. Somboon Nhookeaw	Independent Director	1	23/02/2018	• Audit Committee Member
7	Mr. Ratanachai Namwong	Independent Director	1	06/04/2018	• Investment Committee Member • Human Resources and Remuneration Committee Member
8	Mr. Chuan Sirinunporn	Director (EGAT's representative director) (Authorized Director)	3	19/12/2014	• Chairman of the Corporate Governance and Social Responsibility Committee • Human Resources and Remuneration Committee Member
9	Mr. Boonyanit Wongrukmit	Director (EGAT's representative director) (Authorized Director)	2	01/05/2018	• Risk Management Committee Member • Investment Committee Member
10	Miss Nantika Thangsuphanich	Director (EGAT's representative director)	1	18/02/2019	• Risk Management Committee Member
11	Mr.Tawatchai Jakpaisal	Director (EGAT's representative director)	1	18/11/2019	• Investment Committee Member
12	Mr. Kijja Sripatthangkura	Director, Chief Executive Officer and Secretary to the Board of Directors (EGAT's representative director and executive director) (Authorized Director)	2	01/01/2017	• None

Note: 1. *Authorized Director Policy appears under page 76*

Independent Directors

The Company gave the definition of "Independent Director" in the Company's regulation on the Board of Directors B.E. 2019 which is published on the Company's website as follows:

- Holding shares not exceeding 0.5 per cent of the total number of voting rights of the Company, its subsidiary, affiliate, joint venture, or juristic person which may have conflict of interest. The holding includes shares held by the particular independent director's related persons (The criteria about the shares held by the Company's Independent Director is stricter than the 1 per cent threshold enforced by the Capital Market Supervisory Board).
- Neither being nor having been an executive director, employee, staff or advisor with fixed salary, or a controlling person of the Company, its its subsidiary, affiliate, joint venture, same-level subsidiaries or juristic persons who may have conflict of interest unless the foregoing status ended no less than two years prior to the date of appointment as the Independent Director.
- Not being a person related by blood or registration under laws, such as father, mother, spouse, sibling, and child, including spouse of the children, of executives, major shareholders, controlling persons, or persons to be nominated as executive or controlling persons of the Company or its subsidiary.
- Not having a business relationship with the Company, its subsidiary, affiliate, joint venture, or juristic person who may have conflicts of interest, in the manner which may interfere with his independent judgment, and neither being nor having a major shareholder, Non-Independent Director or executive of any person having business relationship with the Company, its subsidiary, affiliate, joint venture, or juristic person who may have conflicts of interest unless the foregoing status has ended not less than two years prior to the date of appointment as the Independent Director.

  ("Business relationship" includes any normal business transaction, rental or lease of immovable property, transaction relating to assets or services or grant or receipt of financial assistance through receiving or extending loans, guarantee, providing assets as collateral, including any other similar actions, which result in the applicant or his counterparty being subject to indebtedness payable to the other party in the amount of three per cent or more of the net tangible assets or the applicant or twenty million Baht or more, whichever is lower. The amount of such indebtedness shall be calculated according to the calculation method for value of connected transactions under the Notification of the Board of Governors of the Stock Exchange of Thailand Re: Disclosure of Information and Act of Listed Companies Concerning the Connected Transactions mutatis mutandis. The combination of such indebtedness shall include indebtedness taking place during the course of one year prior to the date on which the business relationship with the person commences.)
- Neither being nor having been an auditor of the Company, its subsidiary, affiliate, joint venture, or juristic person who may have conflicts of interest, and not being a major shareholder, Non-Independent Director, executive or partner of an audit firm which employs auditors of the Company, its subsidiary, affiliate, joint venture, or juristic person who may have conflicts of interest unless the foregoing relationship has ended not less than two years prior to the date of appointment as the Independent Director.
- Neither being nor having been any professional advisor including legal advisor or financial advisor who receives an annual service fee exceeding two million Baht from the Company, its subsidiary, affiliate or juristic person who may have conflict of interest, and neither being nor having been a major shareholder, Non-Independent Director, executive or partner of the professional advisor unless the foregoing relationship has ended not less than two years prior to the date of appointment as the Independent Director.
- Not being a Director who has been appointed as a representative of the Company's Director, major shareholder or shareholders who are related to the Company's major shareholder.

- The independent directors appointed as per specified qualification may be assigned by the Board of Directors to determine operation of the Company, subsidiaries, affiliates, joint ventures, same-level subsidiaries or juristic person which may cause conflict of interest by making collective decision.

As of 31 December 2019, the Company has 6 independent directors out of 12 directors, or 50 per cent which accounts for more than one third of the total members, namely Mr. Chartchai Rojanaratanangkule, Mr. Apichart Chinwanno, Mr. Samack Chouvaparnante, Mr. Boonsong Kerdklang, Mr. Somboon Nhookeaw, and Mr. Ratanachai Namwong.

Nomination of Directors

The Company has in place clear director recruitment and nomination process. The Human Resources and Remuneration Committee is responsible for selecting, recruiting and screening nominees for the Board of Directors' consideration. The process is conducted in accordance with the pre-set criteria and procedure, considering the quality, diversity of technical knowledge and expertise, skills and work experiences that the Board of Directors needs and support the corporate mission and goals. The consideration is free of discrimination against gender. The nominated directors shall not have prohibited qualifications by law and related rules and regulations or the corporate governance principle and ability to contribute time to perform duties as a director to promote and support the Board of Directors' ability to efficiently and completely perform its duties according to the structure set by the Company.

In 2019, the Board of Directors outlined the Board Skills Matrix, consistings of:

- Experiences in business or industry- electricity/ energy, infrastructure; international business, public administration or state enterprise and private sectors.
- Knowledge, skills and/or experiences in relevant fields - strategic planning/management, administration/management, asset management, human resource/remuneration management, risk management, engineering, accounting/ finance, economics, laws/regulations, technology information, trade/international relations, corporate governance, social and environmental responsibility, sustainable development and others as prescribed by the Board of Directors.

The Board of Directors must contain at least 3 directors with experience in electricity/energy and/or other infrastructure businesses and at least 1 director each with knowledge, skills and/or experience in accounting/finance and legal areas. Knowledge, skills and/or experiences in other fields are subjected to the Human Resources and Remuneration Committee and the Board of Directors' consideration, accordingly to the Company's mission and business goals.

After the Human Resources and Remuneration Committee completes the selection process, taking into account knowledge and skills as required by the Board Skills Matrix, the list will be forwarded to the Board of Directors and/or the shareholders' meeting for approval. The director appointment falls into 2 cases as follows:

Case 1: A director position is vacant due to reasons other than rotation of office. The Board of Directors has the authority to elect any persons to replace the vacant position. The Director so appointed shall retain his/her office during such time only as the Director he/she replaces is entitled to retain. The appointment in this case must win approval from at least three fourths of the remaining directors.

Case 2: Director position is vacant due to rotation of office. The Board of Directors shall propose to the shareholders' annual general meeting for consideration and appointment. Criteria and process are specified in the Company's Articles of Association.

Committed to equitable treatment of shareholders, the Board of Directors encourages minority shareholders to nominate a person with proper qualifications to be elected as directors for the Board to consider and propose to the shareholders' annual general meeting. This practice has been implemented since 2008. Details are specified in Good Corporate Governance section, Page 124.

Tenure of Directors

- At every shareholders' annual general meeting, one-third of the Directors, or the nearest to one-third in case the number cannot equally divided by three, shall retire from office.
- Directors with the longest stay in office shall retire.
- A retiring director by a rotation of office may be re-elected.
- Directors and independent directors shall remain in their offices for no more than 6 years.
- In addition to retirement by rotation, a director shall leave the office when:
  - Passing away
  - Resigning
  - Lacking the qualification or having prohibited qualifications according to the Securities and Exchange Act and the Company's Articles of Association and regulations on the Board of Directors
  - Voted by the shareholders' meeting with no less than three quarters of the total number of shareholders who attends the meeting with voting rights with the combined shares accounted for no less than half of the shares held by the shareholders present at the meeting and holding voting rights
  - Receiving a court order to leave office
- Resignation of director becomes effective when the Company receives the resignation letter.
- The CEO's directorship ends when he/she vacates the CEO position
- In case any Director vacates the position by reasons other than a rotation of office, the Board of Directors shall elect any person to replace the vacant position and the Director so appointed shall retain his/her office during such time only as the Director he/she replaces is entitled to retain.

Directors' Authority and Duties

As the shareholders' representatives, the Board of Directors has a duty to ensure that all the Company's businesses strictly comply with related laws, business objectives, Articles of Association and resolutions of the shareholders' meeting. The Board of Directors is authorized to take action as stated in the Memorandum of Association and related documents, and has roles, duties and responsibilities to manage the Company with integrity and avoid conflict of interest to protect the organization's benefits rather than any particular shareholder or group. The Board of Directors' duties and responsibilities are as follows:

- Formulating policies, strategies, business plan and budget.
- Monitoring and following-up the Management's strategy implementation and activities and checking against the target or forecast, at least every quarter.
- Managing human resources, including appointing and/or removing Director or high level executives and appraising performance against the earlier agreed target which is linked with remuneration.
- Being responsible for the completion of activities in compliance with rules and regulations, business ethics and the corporate governance principles, with focus on effective and sufficient internal control and monitoring problems and conflict of interests, especially those related to anti-corruption issues.
- Communicating with the stakeholders and the public by providing effective and appropriate communication channels.
- Establishing and setting roles and responsibilities of sub-committees.
- Assessing the performance of the Board of Directors and sub-committees, which are required to conduct self-assessment on an annual basis.

Investors can study the Board of Directors' duty and responsibilities of the Board of Directors in the Company's regulation on the Board of Directors, which is published on the Company's website.

Authorized Directors

The Company's authorized signatories according to the Company's policy are:

- Chairman of the Board of Directors or Chief Executive Officer, with signature and the Company's Seal; or
- Two other directors, except independent directors, with joint signatures and the Company's Seal.

Investors can study details from the Company's affidavit registered with the Department of Business Development, Ministry of Commerce, as published on the Company's website.

Sub-committees

There are 5 sub-committees as follows.

Audit Committee

The Audit Committee is appointed by the Company's Board of Directors and its term is 3 years. The committee members have the knowledge, experience and qualifications as required by the SEC and the SET's regulations. As of 31 December 2019, the Audit Committee comprises Mr. Chartchai Rojanaratanangkule, Chairman of the Audit Committee; and Mr. Boonsong Kerdklang; and Mr. Somboon Nhookeaw, Audit Committee Members. All the three members are independent directors while Mr. Chartchai Rojanaratanangkule has the knowledge and ability in reviewing the Company's operations and financial statements. Mr. Somboon Kositvanich, Senior Vice President - Head of Internal Audit Division, serves as the committee's secretary. The Board of Directors Meeting No.12/2019 on 24 December 2019 approved the Company's regulations on the Audit Committee B.E.2563, taking effective on 1 January 2020. The regulation outlined roles and responsibility of the Audit Committee as follows.

The Audit Committee's Duties and Responsibilities:

- Reviewing financial reports and, in consultation with auditors, ensuring the reports's material asapects are accurate and the reports meet financial reporting standards. Giving opinions on the sufficiency, appropriateness and effectiveness of internal control, concerning financial reports preparation.
- Ensuring the Company has appropriate and effective internal control system, that covers control of Information Technology and the internal audit system.
- Reviewing the compliance with the Securities and Exchange Act, SET's rules and regulations, other relevant laws, the Company's regulations, policies including anti-corruption policy, governance practices and the Code of Conduct.
- Selecting, nominating and terminating the employment of independent persons as the Company's auditors and propose remuneration for such persons. The auditors must be certified by the Office of Securities and Exchange Commission.
- Reviewing connected transactions or transactions that may have conflict of interest based on existing laws and the SET's rules and regulations, to ensure the transactions are appropriate and for the Company's maximum benefits.
- Reviewing and endorsing significant amendments to the Company's accounting policies, before submitting the changes for the Board of Directors' final approval.
- Preparing the Audit Committee's report and opinions, signed by Chairman of the Audit Commitee and published in the annual report.
- Reviewing the Internal Audit Division's performance in terms of scope of responsibility, annual audit plan, budget, appointment, transfer and termination of the Vice President - Head of Internal Audit Division, internal audit report, and the Internal Audit Division's independence.
- Regularly reviewing the audit criteria and process to suit business environment.
- Summarizing the Audit Committee's actions for the Board of Directors' acknowledgement.
- Reporting issues discovered or in doubt, which may have significant impact on the Company's financial status or operating performance, to the Board of Directors in order to correct them within the time frame deemed appropriate by the Audit Committee.
- Examining auditors' report on possible malpractices as described in the Securities and Exchange Act involving directors, executives or the Company's representatives and reporting initial results to the Office of the SEC and the auditors.
- Continuously reviewing, monitoring and reporting key risk management actions to the Board of Directors.
- Assessing the Audit Committee's performance every year and reporting the result to the Board of Directors.

- Reviewing the Company's regulations on the Audit Committee on an annual basis.
- Considering and approving the Company's orders concerning internal audit.

Investors can find more information on the Audit Committee's duties and responsibilities in the Company's regulations on the Audit Committee on the Company's website.

Human Resources and Remuneration Committee

The Human Resources and Remuneration Committee is appointed by the Board of Directors and its term is 3 years. As of 31 December 2019, the committee comprises Mr. Apichart Chinwanno, Chairman of the Human Resources and Remuneration Committee; and Mr. Chuan Sirinunporn and Mr. Ratanachai Namwong as members. Mrs. Boontiva Dansamasatid, Executive Vice President - Corporate Administration, serves as the committee's secretary.

The Human Resources and Remuneration Committee's Duties and Responsibilities:

Human Resources Recruitment Aspect:

- Formulating visions and strategies on human resources management and development plan of the Company's Group.
- Reviewing and ensuring that the Board of Directors of the Company's Group has appropriate size and good components responsively to the changing environment.
- Formulating appropriate policy, criteria and procedure in nominating, selecting, removing or terminating Directors and high level executives for the Board of Directors' approval to ensure the Company's Group has the executives and management teams with required qualifications, knowledge, competency and experience to operate the business of the Company's Group successfully and effectively.
- Selecting and nominating persons with required qualifications to be the directors and high level executives of the Company's Group.
- Preparing succession plan for key executive positions which must be reviewed constantly, taking into account the importance of the positions: selecting successors and grooming them so that they attain the right knowledge, competency, experience and other qualifications to support the Group's expansion efficiently and effectively.

Remuneration Setting Aspect:

- Formulating remuneration policy and strategy, concerning salary, meeting allowance, per diem, bonus or other benefits of other kinds, and the amount of remuneration and other benefits for Directors and high level executives of the Company's Group and submit it for the Board of Directors' approval. The remuneration criteria must be clear, transparent and appropriate corresponding with the scope of responsibility and performance, to influence, retain and attract potential people with desired qualifications.
- Formulating effective guidelines, criteria, procedures and process for assessing the performance of the Board of Directors and high level executives of the Company's Group against the target mutually agreed in advance each year. These targets shall be relevant to their responsibility and risks. An increase in shareholders' equity in the long term becomes an assessment factor.
- Disclosing the remuneration policy as well as the remuneration amounts paid to Directors and high-level executives in the annual report.

Investors can find more information on the Human Resources and Remuneration Committee's duties and responsibilities in the Company's regulation on the Human Resources and Remuneration Committee on the Company's website.

Risk Management Committee

The Risk Management Committee is appointed by the Board of Directors and its term is 3 years. As of 31 December 2019, its members comprised Mr. Samack Chouvaparnante, Chairman of the Risk Management Committee; Mr. Boonyanit Wongrukmit and Miss Nantika Thangsuphanich. Mr. Suteep Thummarugee, Senior Vice President - Head of Corporate Planning and Systems Development Division, serves as the committee's secretary.

The Risk Management Committee's Duties and Responsibilities:

- Reviewing the Company's risk management policy and framework to ensure they cover risk factors, such as financial risk, investment risk and risk on corporate reputation, and

proposing to the Board of Director for approval.
- Formulating risk management strategies and framework in line with the Company's risk management policy, by assessing, monitoring and controlling the management at an appropriate level.
- Monitoring and ensuring that risk management activities are in line with the Company's policy and framework as approved by the Board of Directors.
- Setting risk assessment criteria and risk appetite ceiling.
- Setting measures to manage risks in accordance with contexts.
- Reviewing the sufficiency of risk management policy and system including the effectiveness of the system and compliance.
- Reporting regularly to the Board of Directors about the performance and risk status as well as changes and areas of improvement to keep risk management in line with the Company's policy and strategy.
- Establishing the Risk Management Working Team as deemed necessary, and supporting the team in terms of personnel, budget and other necessary resources in line with its scope of responsibility.

Investors can find more information on the Risk Management Committee's duties and responsibilities in the Company's regulation on the Risk Management Committee, published on the Company's website.

Investment Committee

The Investment Committee is appointed by the Board of Directors and its term is 3 years. As of 31 December 2019, the Investment Committee comprised Mr. Sutat Patmasiriwat, Chairman of the Invesment Committee; Mr. Ratanachai Namwong, Mr. Boonyanit Wongrukmit, and Mr.Tawatchai Jakpaisal. Mr. Peerawat Pumthong, Chief Business Development Officer, serves as the committee's secretary.

The Investment Committee's Duties and Responsibilities:

- Defining strategic plan, goal, investment plan, investment budget, investment return and other benefits from the projects invested to increase the Company's production capacity and growth.
- Reviewing and scrutinizing the Management's investment proposals to ensure that they are consistent with the Company's investment policy and target, taking into account cost-effective investment return and the controlling of relevant risk factors at an acceptable level.
- Monitoring, following up and evaluating the approved investment projects and report to the Board of Directors.

Investors can find more information on the Investment Committee's duties and responsibilities in the Company's regulation on the Investment Committee, published on the Company's website.

Corporate Governance and Social Responsibility Committee

The Corporate Governance and Social Responsibility Committee is appointed by the Board of Directors and its term is 3 years. As of 31 December 2019, the Corporate Governance and Social Responsibility Committee comprised Mr. Chuan Sirinunporn, Chairman of the Corporate Governance and Social Responsibility and Mr. Chartchai Rojanaratanangkule. Mrs. Boontiva Dansamasatid, Executive Vice President under Chief Executive Officer serves as the committee's secretary.

The Corporate Governance and Social Responsibility Committee's Duties and Responsibilities:

- Reviewing and endorsing policies, strategies, goal, guidelines and work plan regarding the Company's corporate governance and social responsibility
- Promoting the participation of the Board of Directors, executives and employees in corporate governance and social responsibility activities
- Ensuring that the Company's practices are aligned with corporate governance and social responsibility policy and regulations
- Monitoring corporate governance and social practices and reporting to the Board of Directors
- Reviewing and and proposing the Board of Directors amendments to policies and guidelines on corporate and social responsibilities as deemed appropriate, benchmarking against leading companies' practice.

Investors can find more information on the Corporate Governance and Social Responsibility Committee's duties and responsibilities in the Company's regulation on Corporate Governance and Social Responsibility Committee, published on the Company's website.

Changes in the Board of Directors and Sub-Committees in 2019

Changes in the Board of Directors and Sub-Committees in 2019

11 February 2019

- Mrs. Premrutai Vinaiphat resigned as an independent director and a member of the Corporate Governance and Social Responsibility Committee

18 February 2019

- Miss Nantika Thangsuphanich was appointed a director.

13 April 2019

- Mrs. Siriporn Luangnual resigned as an independent director and a member of the Audit Committee on expiry of tenure.
- Mr. Veerasak Pungrassamee resigned as an independent director and a member of the Risk Management Committee on expiry of tenure.
- Mr. Apichart Chinwanno and Mr. Boonsong Kerdklang were appointed independent directors.

1 May 2019

- Mr. Boonsong Kerdklang were appointed an independent director.
- Mr. Chuan Sirinunporn's term as the chairman of Human Resources and Remuneration Committee expired and was appointed a member of the committee.
- Mr. Apichart Chinwanno was appointed the chairman of Human Resources and Remuneration Committee.
- Miss Nantika Thangsupanich was appointed a member of Risk Management Committee.

16 October 2019

- Mr. Seubphong Buranasirin resigned as a director, a member of the Human Resources and Remuneration Committee and a member of the Investment Committee.

18 November 2019

- Mr. Tawatchai Jakpaisal was appointed a director and a member of the Investment Committee.
- Mr. Ratanachai Namwong was appointed a member of the Human Resources and Remuneration Committee.

Board of Directors and Sub-Committee's meetings in 2019

Board of Directors

12 meetings were organized. There was a meeting of only non-executive directors prior to the 12/2019 Board of Directors meeting.

Sub-Committee

- Audit Committee 7 meetings A meeting with the auditor without the Management's presence was an agenda of the 7/2019 meeting.
- Human Resources and Remuneration Committee 9 meetings
- Risk Management Committee 4 meetings
- Investment Committee 8 meetings
- Corporate Governance and Social Responsibility Committee 2 meetings

Audit Committee and Risk Management Committee

1 joint meeting

Board of Directors and Sub-Committees' Meeting Attendance in 2019

No.	Director		Board of Directors meeting	% of attendance	Audit Committee	Human Resources and Remuneration Committee	Risk Management Committee	Investment Committee	Corporate Governance and Social Responsibility Committee	Audit Committee and Risk Management Committee
1	Mr. Sutat	Patmasiriwat	12/12	100.00				8/8		
2	Mr. Chartchai	Rojanaratanangkule	12/12	100.00	7/7				2/2	1/1
3	Mr. Apichart	Chinwanno	9/9	100.00		6/6				
4	Mr. Samack	Chouvaparnante	11/12	91.67			4/4			1/1
5	Mr. Boonsong	Kerdklang	9/9	100.00	5/5					1/1
6	Mr. Somboon	Nhookeaw	12/12	100.00	7/7					1/1
7	Mr. Ratanachai	Namwong	12/12	100.00		1/1		8/8		
8	Mr. Chuan	Sirinunporn	11/12	91.67		9/9			2/2	
9	Mr. Boonyanit	Wongrukmit	10/12	83.33			2/4	6/8		0/1
10	Miss Nantika	Thangsuphanich	10/10	100.00			3/3			1/1
11	Mr. Tawatchai	Jakpaisal	2/2	100.00						
12	Mr. Kijja	Sripatthangkura	12/12	100.00						
13	Mrs. Siriporn	Luangnual	3/3	100.00	1/1					
14	Mr. Veerasak	Pungrassamee	3/3	100.00			1/1			
15	Mrs. Premrutai	Vinaiphat	1/1	100.00						
16	Mr. Suebphong	Buranasirin	9/9	100.00		7/7		7/7		

Note: *(1) Figure before/ = No. of meetings attended*

(2) Figure after/= No. of meetings during directors' tenure

(3) % of Board of Directors meetings attendance is based only on meetings organized when directors are in office.

(4) Changes in Board of Directors and sub-committees during 2019 are disclosed on Page 80.

Directors are dutifully required to attend all of the Board of Directors' meetings, unless being tied up with very important and urgent matters. However, the absent directors can express their opinions on issues included in the meeting agenda, which was dispatched to all directors prior to the meeting dates. In 2019, directors' attendance to the Board of Directors' meetings was no less than 75 per cent of all meetings throughout the year. The entire team's average attendance was at 97.92 per cent.

Secretary to the Board of Directors and Company Secretary

Secretary to the Board of Directors

The Board of Directors appointed Chief Executive Officer as its secretary. The Board of Directors Secretariat Department under the Company Secretary Office is responsible for arranging meetings, administration and coordination for the Board of Directors.

Company Secretary

The Board of Directors appointed Company Secretary with responsibilities as specified by the Securities and Exchange Act, which include providing initial advice on related laws and regulations, arranging the Company and subsidiaries' Board of Directors' meetings, sub-committees' meetings and the general shareholders' meetings; handling secretariat works for the Board of Directors and facilitating the Board of Directors' activities; ensuring that the Board of Directors' resolutions and the shareholders' resolutions are strictly executed; handling activities related to shareholders' rights and proper disclosure of information, preparing the Company's annual report (Form 56-2) as well as preparing and keeping significant document, such as meeting invitations and Board of Directors' meeting minutes, meeting invitation and minutes of the shareholders' meeting, annual report, directors record and report on conflict of interest of directors and executives. These responsibilities will ensure that Company's operations comply well with the good corporate governance of listed companies under the Board of Directors' Responsibility topic, related laws, rules and regulations, Company's Articles of Association, regulations, policies, and guidelines specified by the regulators and concerned organizations and the Securities and Exchange Act.

Company Secretary also plays an important role in promoting good corporate governance by supporting Directors and Chief Executive Officer in performing their duties, and is also **responsible for corporate governance activities through Compliance Department** under the Company Secretary Office.

Miss Wanphen Chamkham, Acting Vice President - Head of Company Secretary Office, was appointed by the Board of Directors at the 14/2018 meeting dated 24 December 2018 as the Company Secretary effective from 1 January 2019.



Information of Company Secretary and Compliance Department Head

Miss Wanphen Chamkham
Age 51 years
Acting Vice President – Head of Company Secretary Office
Starting date : 1 January 2019

The Company's Securities Holding Proportion:

- Direct: None
- Indirect: None

Family ties with directors and executives:

- None

Education

- Master of Business Administration, Kasetsart University
- Graduate Diploma in English for Careers, Thammasat University
- Bachelor of Business Administration (General Management), Sukhothai Thammathirat Open University

Important Trainings/Seminars

- Effective Minute Taking (EMT 43/2019), Thai Institute of Directors Association
- Advances for Corporate Secretaries (Class 1/2560), Thailand Listed Companies Association
- Company Secretary Program (CSP 67/2015), Thai Institute of Directors Association
- Company Reporting Program (CRP 13/2015), Thai Institute of Directors Association

Work Experiences in the Previous 5 Years (2014-2019)

RATCH Group PCL [1]

- 2018 Senior Manager - Head of Compliance Department, Company Secretary Office
- 2013-2018 Manager - Head of Compliance Department, Company Secretary Office

Current Positions in Other Listed Companies:

- None

Current Positions in Non-listed Organizations

- None

Prohibited Qualifications/Committed Offence:

- None

Head of Internal Audit

In ensuring that the Company and its subsidiaries' operations are in line with policy, plans, rules and regulations, related laws, and corporate governance principle, the Audit Committee, in the meeting No. 7/2016 on 14 December 2016, appointed Mr. Somboon Kositvanich as Senior Vice President - Head of Internal Audit Division to be responsible for the review, evaluation of the sufficiency and efficiency of the internal control and risk management system of the Company and its subsidiaries, effective from 1 January 2017. The Internal Audit Division reports directly to the Audit Committee. In 2019, the Audit Committee evaluated the performance of the Vice President - Head of Internal Audit Division, focusing on knowledge and ability to supervise and manage internal audit activities as well as understanding of the role and responsibility of the secretary to the Audit Committee. The appraisal result score was 100 (out of 100 full score) or excellent. The appraisal result showed that the person can perform his duty as assigned and has good understanding of the Company's business, capability and experience in reviewing accounting, finance and management of the Company's overall and business risks. In this regard, the appointment, removal, transfer and job termination as well as the consideration of the independence of the person who acts as Vice President-Head of Internal Audit Division are to be approved by the Audit Committee.



Information of Head of Internal Audit

Mr. Somboon Kositvanich

Age 60 years

Senior Vice President – Head of Internal Audit Division

Starting date: 1 January 2017

The Company's Securities Holding Proportion:

- Direct: None
- Indirect: None

Family ties with directors and executives:

- None

Education

- Master of Accounting, Thammasat University
- Bachelor of Accounting, Ramkhamhaeng University

[1] *Change its name from "Ratchaburi Electricity Generating Holding Public Company Limited" since 17 April 2019*

Important trainings/seminars

- Anti-Corruption the Practical Guide Course (ACPG 43/2018), Thai Institute of Directors Association
- Chief Financial Officer Certification Program, Federation of Accounting Professions
- Mini MBA, Kasetsart University
- Senior Executive Program Course, Sasin Graduate Institute of Business Administration
- Certified Public Accountant (CPA)
- Investment Management Practice with Financial Instruments (Financial Lab) Course, Faculty of Commerce and Accountancy, Chulalongkorn University

Work Experiences in the Previous 5 Years (2014 – 2019)

- 2015 - 2017 Senior Vice President, RATCH Group PCL, Serving as Solarta Company Limited's managing director
- 2011 - 2014 Senior Vice President, Administration and Finance Division, Ratchaburi Electricity Generating Company Limited

Current Positions in Other Listed Companies:

- None

Current Positions in Non-listed Organizations:

- None

Prohibited Qualifications/Committed offence:

- None

Executives

The Board of Directors has clearly segregated the scope of responsibilities of Directors and the Management, as summarized below:

- The Board of Directors is tasked to formulate policy and supervise the policy implementation by the Management. (Details are disclosed in Board of Directors Section.)
- The Management is responsible for implementing the policies and reporting the results to the Board of Directors.

Chief Executive Officer is the top executive in the Management and is authorized to manage daily operations of the Company as follows:

- Supervising employees at all levels
- Hiring, appointing, promoting, approving resignation of employees, punishing, transferring, assigning positions to staff members, considering promotion or adjusting salary of employees and staff members, excluding high level executives who are Executive Vice President and upper levels, which are the responsibilities of the Board of Directors
- Setting work conditions, work rules and responsibilities of each job position, or issuing orders or announcement regarding management process or other operations of the Company that is not a contradiction to the Company's regulations and the Board of Directors' resolutions
- Ensuring that the operations follow the Company's regulations and making final decisions when there is operational problems
- Dividing job functions with the approval from the Board of Directors

Signatory Authority for External Affairs

The Chief Executive Officer is authorized to act as a signatory in transactions with external entities, except in matters that the Chief Executive Officer or related persons may have conflict of interest with the Company or subsidiaries. Such matters can proceed only with a resolution reached at the Board of Directors meetings, with the presence of independent directors. In such case, the Chief Executive Officer may authorize any other person to act on his/her behalf, except for any matter that may bind the Company as a borrower, lender or outsourcer for transactions worth more than Baht 30 million.

For any transaction the Chief Executive Officer struck in violation of the Company's rules or the Board of Directors resolutions, such transaction will not bind the Company except with the Board of Directors' ratification.

In case the Chief Executive Officer is absent or cannot perform his duty or when the position is vacant, chief officers in the next rankings as assigned by the Board of Directors will act as the Acting Chief Executive Officer with full authority, except for Chief Executive Officer's responsibility as a member of the Board of Directors.

[1] *Change its name from "Ratchaburi Electricity Generating Holding Public Company Limited" since 17 April 2019*

Authority to approve procurement and charitable donation

The Board of Directors clearly specifies the authority to approve procurement and charitable donation as follows:

	Procurement	Authorized signatory
1	Procurement project not exceeding Baht 30 million	Chief Executive Officer
2	Procurement project exceeding Baht 30 million	Board of Directors
	Charitable donation	**Authorized signatory**
1	Charitable donation not exceeding Baht 300,000 million	Chief Executive Officer
2	Charitable donation above Baht 300,000 but not exceeding Baht 500,000	Chairman
3	Charitable donation above Baht 500,000	Board of Directors

The Company's Administration

The Company's administration is divided into 5 functions: Business Development, Project Development, Asset Management, Finance and Corporate Administration.

Business Development, Project Development, Asset Management and Finance are headed by Chief Officers. Corporate Administration is headed by an Executive Vice President. There are 3 divisions under the Chief Executive Officer, including Legal Division, Internal Audit Division and Company Secretary Office. The Internal Audit Division reports directly to the Audit Committee.

As of 31 December 2019, the Company's executives according to the SEC's definition are as follows:

	Executive		Position	Starting date
1	Mr. Kijja	Sripatthangkura	Chief Executive Officer (top executive)	06/04/2017
2	Mr. Peerawat	Pumthong	Chief Business Development Officer	01/01/2017
3	Mr. Raluke	Satayaporn	Chief Project Development Officer	01/10/2017
4	Mr. Nimit	Lekcharoensuk	Chief Asset Management Officer	01/01/2019
5	Mrs. Wadeerat	Charoencoop	Chief Financial Officer (Top responsible person in accounting/finance)	01/01/2019
6	Mrs. Boontiva	Dansamasatid	Executive Vice President - Corporate Administration	01/01/2019
7	Mrs. Supatra	Thongkarn	Executive Vice President - Financial	01/01/2019
8	Mr. Sakchai	Sripetch	Senior Vice President - Head of Financial Planning and Management Division	01/01/2017
9	Miss Suwannee	Sirisajjawat	Vice President - Head of General Accounting Division (Directly responsible for accounting supervision)	01/01/2019
10	Miss Chatuporn	Laohapiboonratana	Vice President - Head of Tax Management and General Ledger Division	01/01/2017
11	Miss Titiporn	Komsartra	Acting Vice President - Head of Accounting Control and Analysis Division	01/01/2019

Investors can find the profile of each executive in Executives' Profiles Section. Their positions in the Company's Group are specified under Information about Directorship of Directors and Executives in the Company's Group. Information on directors' transactions that may cause conflict of interest in the past year is disclosed in Corporate Governance Section: Transactions with conflict of interest or possible confict of interest, Page 136 Details of the executives and authorized persons of subsidiaries in the core business are available in the Form 56-1 published on the Company's and SEC's websites.

Selection of high level executives

"High level executives" refer to persons who hold the positions of Chief Executive Officer, Chief Officer and Executive Vice President.

In appointing high level executives, the Company **considers** the nominee's educational background, knowledge, skills, work experiences and other necessary qualifications that meet the requirements, are suitable and in line with each position **designated missions** and should benefit the Company's overall operations to support the Company's Group efficiency, effectiveness and **sustainable growth.**

In nominating high level executives, the Human Resources and Remuneration Committee is assigned to recruit, select and screen candidates from within the organizations and outsiders, **considering their qualifications, educations, specialization, skills, experience, suitability and the necessary qualifications needed by the Company.** The nominees will be proposed to the Board of Directors for consideration and appointment.

Major shareholders' representative directors

EGAT, a major shareholder with a 45 per cent stake, is entitled to nominate directors according to the shareholding proportion and **the nominees must come under the Company's selection process.** The nomination is submitted to the **Human Resources and Remuneration Committee,** for the screening of nominees' education background, qualifications, competency, skills, and work experience that **support and are necessary** for the Company's **governance according to the Board Skill Matrix set by the Board of Directors. Their qualifications must also match the Company's mission, business goal and strategy in the short and long term.** The consideration is conducted without gender discrimination. The nominees shall not have prohibited qualifications by law, related regulations, rules and good corporate governance principle while being ready to contribute sufficient time to perform duty as a director. The nominee list will afterwards be **submitted to the Board of Directors and/or proposed to the general shareholders' meeting for consideration and approval,** in accordance with the nomination process for directors and high level executives. The nomination process for the Chief Executive Office, who represents EGAT, also falls under the same condition.

Policy on Appointing Directors and Executives to be Directors and Executives of Subsidiaries, Affiliates and Joint Ventures

The Company has a policy to appoint its directors and executives to be directors and/or executives of subsidiaries, affiliates and joint ventures, with the Board of Directors' approval. Such is held as their duty under the Company's regulation on the supervision of subsidiaries, affiliates and joint ventures, to ensure that the management and operation of all companies within the Company's Group are in line with their missions and to effectively monitor and assess the operational performance of the subsidiaries, associates and joint ventures. Investors can find more details on subsidiaries, affiliates and joint ventures in the Company's Group general information.

Remuneration for the Directors and Executives

Policy and criteria

The Board of Directors set the policy and criteria on remuneration of Directors and high level executives in writing. This enables the Company to attract and retain quality individuals as well as motivate and incentivize employees with the right qualifications, knowledge, skills and experiences, which will lead the Company towards success. The criteria, method and process are clear, appropriate, transparent, up-to-date and most beneficial to the Company's operations. Since 2005, remuneration has been linked to goals and performances of the Company's group, depending on level of designated responsibilities and comparable to that of organizations in similar industry and size.

Remuneration of the Board of Directors and All Sub-Committees

The Board of Directors-appointed Human Resources and Remuneration Committee is responsible for considering and setting remuneration of the Board of Directors, sub-committees and high level executives. The Committee has to seek approval from the Board of Directors and later from the shareholders' annual general meeting. The remuneration criteria are as follows:

1. Regular remuneration

1.1 Board of Directors: Retainer for the Company's Board of Directors is paid on monthly basis. The first 75 per cent of the retainer is fixed while the remaining 25 per cent is paid when the Director attends meetings. The Chairman of the Board receives 25 per cent higher retainer than that paid to other directors.

1.2 Sub-committees: The retainer for committee members is paid per meeting when a Director attends. Committee Chairman's retainer is 25 per cent higher than that paid to other Committee members.

2. Bonus

is allocated accordingly to the period of service and attendance to the Board of Directors meetings. When a Director holds directorship for more than one position in the Company's Group, the Director shall receive bonus from the company that allocates the higher bonus at that point in time. Chairman of the Board will receive 25 per cent higher bonus than that paid to other directors.

3. Other form of benefits

both in cash and non-cash: None

In 2019, the remuneration for the Board of Directors and Sub-committees approved by the 2019 shareholders' annual general meeting is as follows:

		Chairman	Director
1. Regular remuneration			
1.1	Board of Directors	Baht 50,000 per month	Baht 40,000 per month
1.2	5 Sub-committees: (Audit Committee, Human Resources and Remuneration Committee, Risk Management Committee, Investment Committee and Corporate Governance and Social Responsibility Committee)	Baht 30,000 per meeting	Baht 24,000 per meeting
2. Bonus			
2.1	Board of Directors (The bonus paid to Board of Directors in 2018 totaled Baht 15.644 million.)	Baht 1,500,000	Baht 1,200,000 per person
3. Other benefits			
3.1	Other benefits	None	None

Remuneration for high level executives

High level executives' remuneration is in line with the criteria and policy set by the Board of Directors and reviewed by the Human Resources and Remuneration Committee. The remuneration is linked with the performance appraisal against the earlier agreed target and must be approved by the Board of Directors. None of executives with conflict of interest are present at the meeting when high level executive remuneration is being discussed. The Board of Directors considers remuneration based on the performance appraisal result and the Chairman of the Board will inform the Chief Executive Officer of such result which will be used as the guideline for future performance improvement.

Criteria on directors' remuneration payable to executives serving as directors of subsidiaries, affiliates and joint ventures

Executives serving as the directors of 100-per cent-owned subsidiaries are not entitled to any director fee. Regarding executives sitting in joint ventures' board of directors and receiving director fee, the Board of Directors set guidelines on the director fee management, endorsed by the Human Resources and Remuneration Committee. In this case, the executives must return after-tax director fee to the Company within 31 March after the end of fiscal period. The guidelines are applied with the director fees from the 2019 accounting year onwards.

Remuneration of Directors and Executives

Remuneration of Board of Directors and Sub-committees

(Unit: Baht)

No.	Name	Board of Directors	Audit Committee	Human Resources and Remuneration Committee	Risk Management Committee	Investment Committee	Corporate Governance and Social Responsibility Committee	Audit Committee and Risk Management Committee	Directors' bonus for 2018[/1]	Director fee from subsidiaries	Total
1	Mr. Sutat Patmasiriwat[/2, /3]	600,000				240,000			1,500,000		2,340,000
2	Mr. Chartchai Rojanaratanangkule[/3,/4,/5]	480,000	210,000				48,000	30,000	1,200,000		1,968,000
3	Mr. Apichart Chinwanno[/3, /5]	348,000		180,000							528,000
4	Mr. Samack Chouvaparnante[/3, /5]	470,000			120,000			30,000	1,200,000		1,820,000
5	Mr. Boonsong Kerdklang[/4, /5]	348,000	120,000					24,000			492,000
6	Mr. Somboon Nhookeaw[/4, /5]	480,000	168,000					24,000	1,025,750		1,697,750
7	Mr. Ratanachai Namwong[/4, /5]	480,000		24,000		192,000			887,670		1,583,670
8	Mr. Chuan Sirinunporn[/3, /4]	470,000		234,000			60,000		1,200,000		1,964,000
9	Mr. Boonyanit Wongrukmit[/4]	460,000			48,000	144,000		-	805,480		1,457,480
10	Miss Nantika Thangsuphanich[/4]	411,000			72,000			24,000			507,000
11	Mr.Tawatchai Jakpaisal[/4]	63,000									63,000
12	Mr. Kijja Sripatthangkura[/6]	-							1,200,000		1,200,000
13	Mrs. Siriporn Luangnual[/4, /5]	132,000	24,000						1,200,000		1,356,000
14	Mr. Veerasak Pungrassamee[/4, /5]	132,000			24,000				1,200,000		1,356,000
15	Mrs. Premrutai Vinaiphat[/4, /5]	50,000							887,670		937,670
16	Mr. Suebphong Buranasirin[/4]	375,000		168,000		168,000			302,470		1,013,470
	Grand Total	5,299,000	522,000	606,000	264,000	744,000	108,000	132,000	12,609,040	-	20,284,040

Note:
/1 *2018 bonus paid in April 2019 under a resolution of the 2019 Shareholders' Annual General Meeting on 12 April 2019*
/2 *Chairman*
/3 *Sub-committee's chairman*
/4 *Sub-committees*
/5 *Independent directors*
/6 *Executive director*

Remuneration of executives

Remuneration	No. of executives	Amount (Baht)
Salary	5	31,292,160
Bonus	5	22,896,040
Contribution to provident fund	5	2,429,904
Other benefits	5	-
Director fee from subsidiaries	5	-
Total	5	56,618,104

Note: *Executives' remuneration means remuneration for Chief Executive Officer and the first four executives after Chief Executive Officer, according to the definition stated in the Capital Market Supervisory Board's Announcement No. TorChor. 44/2556.*

Details of the remuneration of the directors and executives of subsidiary operating in core business is in the Form 56- which is published on the websites of the Company and the SEC.

Employees

Employees are valuable resources and immensely important in driving the Company towards its goal in creating business value and growing sustainably as well as ensuring happiness and trust among its employees and all stakeholders. The Company has therefore formulated employee policy covering management, human resource development, society, environment, ethics and anti-corruption practice. All the guidelines are aimed at promoting employees' capability, competency and desired behaviors corresponding to the corporate value and supporting corporate strategy, goals and society.

Number of Employees by function as of 31 December 2019 is as follows:

Unit: Person

No.	Function	Gender		Type of contract		Executive	Total
		Male	Female	Employee	Contractual employee		
1	Business Development	22	8	26	-	4	30
2	Project Development	25	7	30	-	2	32
3	Asset Management	23	12	32	-	3	35
4	Finance	8	32	38	-	2	40
5	Corporate Administration	23	24	46	-	1	47
6	Chief Executive Officer	6	19	24	-	1	25
Grand Total							**209**

Note: *Executives refer to employees at Vice-President level or higher*

In 2019, there is no significant change in the number of employees. There were 209 employees in 2019, a decrease of 3 persons from 2018.

In 2019, there was neither significant labor dispute nor collective bargaining as the Company has no labor union.

Policy and criteria on tmployees' eemuneration and welfare

Policy and Criteria

The Company has policy and criteria to keep employee remuneration at a competitive level. The policy on remuneration and welfare is fairly designed to suit their positions and responsibilities, taking into account

the Company's performance in short and long terms. Remunerations are set accordingly to job's importance, national economic situation, average remuneration in the labor market, especially those in similar businesses, to keep the Company's remuneration at a competitive level and attractive to retain capable employees. The Company annually surveys average remuneration in the market and uses the survey result in reviewing and improving the remuneration structure every three years, as approved by Personnel Management Committee, the Human Resources and Remuneration Committee and the Board of Directors, respectively. This is to assure its employee of fair and appropriate remuneration.

Newly-recruited and inexperienced employees will be paid at the entry rate which is comparable to the market. Newly-recruited employees with experience will be paid accordingly to their experience and years of experience, comparable to returns to insiders in the same status and position. The Company's reasons of necessity corresponding to the business context are also taken into account.

The remuneration comprises cash and non-cash forms. Cash remuneration includes salary and bonus, varying accordingly to the level of position and individual's annual performance, overtime fee in compliance with the laws and travel expenses incurred in case of field visit. Non-cash remuneration includes welfares.

Employee welfare

To ensure that its employees have good security, stability and confidence as well as willingness to perform at their best in accordance with their assignment and responsibilities, the Company provides welfare as required by law and other benefits beyond legal requirements. Other benefits offered include assistance in case of disaster, life and accident insurance, medical service, annual health check-up, dental services, eyesight check, vaccination, emergency loan, financial support in case of death, home loans, financial assistance on baby delivery and provident fund. Criteria on welfare are based on related regulations and order. For provident fund, the objectives are mainly to promote savings and enhancing financial security for its employees both in short and long term. Employees have the right to join the "Electricity Generating Authority of Thailand Employees Provident Fund" and employees can choose the proportion of employee contribution within the range of 5-15 per cent of their monthly salary. The Company's progressive contribution rates are 5 per cent, 7 per cent and 10 per cent depending on employees' years of service. Under the "Employee's Choice", employees can adjust investment plan to match individual needs.

Employee remuneration in 2019

Remuneration	Number (persons)	Amount (Baht)
Salary	228	236,340,822
Bonus	227	124,541,000
Contribution to provident fund	227	20,734,359
Other benefits	228	-
Total		381,616,181

Note: 1. *Employee remuneration does not include the top four executives according to the Capital Market Regulatory Commission's Announcement No. TorChor. 44/2556.*
2. *Remuneration of subsidiaries' employees is disclosed in Form 56-1, published on the Company's and SEC websites.*

Positions of Directors[1] and Executives in the Company's Group

As at 31 December 2019

		Directors/ Executives / Companies	Mr. Kijja Sripatthangkura	Mr.Peerawat Pumthong	Mr. Raluke Satayaporn	Mr. Nimit Lekcharoensuk	Mrs. Wadeerat Charoencoop	Mrs. Boontiva Dansamasatid	Mrs. Supatra Thongkarn	Mr. Sakchai Sripetch	Miss Suwannee Sirisajjawat	Miss Chatuporn Laohapiboonratana	Miss Titiporn Komsartra
		RATCH Group Public Company Limited	D, CEO	CBD	CPD	CAM	CFO	EVP	EVP	SVP	VP	VP	AVP
Subsidiaries	1	Ratchaburi Electricity Generating Company Limited	DD										
	2	Ratchaburi Alliances Company Limited					DD			D, MD		D	
	3	Hin Kong Power Holding Company Limited	DD	D									
	4	Hin Kong Power Company Limited	DD	D									
	5	RATCH Cogeneration Company Limited											
	6	Ratchaburi Energy Company Limited	DD	D, MD	D	D	D						
	7	RE Solar 1 Company Limited				DD							
	8	RH International Corporation Limited			DD		D		D, MD				
	9	RH International (Mauritius) Corporation Limited			D		D						
	10	RH International (Singapore) Corporation Pte. Limited		D	D		D						
	11	RATCH-Australia Corporation Pty Ltd	DD			D							
	12	RATCH China Power Limited			D								
	13	RATCH O&M Company Limited			DD	D	D						
	14	RATCH-LAO Services Company Limited		DD					D				
	15	Smart Infranet Company Limited											
Associates, Joint Ventures and others	16	Ratchaburi Power Company Limited					D						
	17	Ratchaburi World Cogeneration Company Limited				DD							
	18	Nava Nakorn Electricity Generating Company Limited			D								
	19	Berkprai Cogeneration Company Limited											
	20	Solarta Company Limited											
	21	First Korat Wind Company Limited											
	22	K. R. Two Company Limited											
	23	Solar Power (Korat 3) Company Limited						D					
	24	Solar Power (Korat 4) Company Limited						D					
	25	Solar Power (Korat 7) Company Limited						D					
	26	Songkhla Biomass Company Limited							D				
	27	SouthEast Asia Energy Limited				D	D						
	28	Nam Ngum 2 Power Company Limited				D	D						
	29	Hongsa Power Company Limited	DD		D	D							
	30	Xe-Pian Xe-Namnoy Power Company Limited		D	D								
	31	PT Medco Ratch Power Riau	DD		D								
	32	Fareast Renewable Development Pte. Ltd.	D	D									
	33	Chubu Ratchaburi Electric Services Company Limited											
	34	Songkhla Biofuel Company Limited							D				
	35	EGAT Diamond Service Company Limited											
	36	Phu Fai Mining Company Limited	DD		D	D							
	37	Northern Bangkok Monorail Company Limited		D									
	38	Eastern Bangkok Monorail Company Limited		D									
	39	Asia Water Company Limited											
	40	Things on Net Company Limited											
	41	EDL Generation Company											

Note: [1] *No director of RATCH Group Public Company Limited holds directorship or executive positions in the Company's subsidiary, affiliates or joint ventures except Mr. Kijja Sripatthangkura, Director and Chief Executive Officer.*
DD = Chairman D = Director CEO = Chief Executive Officer CBD=Chief Business Development Officer CPD = Chief Project Development Officer CAM = Chief Asset Management Officer CFO= Chief Financial Officer.
EVP = Executive Vice President SVP = Senior Vice President VP = Vice President AVP = Acting Vice President MD = Managing Director

CN Biomass Company Limited, PB Biomass Company Limited and LP Biomass Company Limited are undergoing liquidation process.

Directors' and Executives' Securities Holdings in the Company

as at 31 December 2019[/1]

	Name	Position[/2]	RATCH Group Public Company Limited			
			Ordinary Shares			
			1 Jan 19[/3]	31 Dec 19[/4]	Changes During the Year Increase/ (Decrease)	Shareholding Propotion (%)
Directors and Executives						
1	Mr. Sutat Patmasiriwat	Chairman	-	-	-	-
	Indirect securities holding		-	-	-	-
2	Mr. Chartchai Rojanaratanangkule	Independent Director	5,000	5,000	-	0.0003
	Indirect securities holding		-	-	-	-
3	Mr. Apichart Chinwanno[(1)]	Independent Director	-	-	-	-
	Indirect securities holding		-	-	-	-
4	Mr. Samack Chouvaparnante	Independent Director	-	-	-	-
	Indirect securities holding		-	-	-	-
5	Mr. Boonsong Kerdklang[(2)]	Independent Director	-	-	-	-
	Indirect securities holding		-	-	-	-
6	Mr. Somboon Nhookeaw	Independent Director	-	-	-	-
	Indirect securities holding		-	-	-	-
7	Mr. Ratanachai Namwong	Independent Director	7,500	7,500	-	0.0005
	Indirect securities holding		-	-	-	-
8	Mr. Chuan Sirinunporn	Director	-	-	-	-
	Indirect securities holding		-	-	-	-
9	Mr. Boonyanit Wongrukmit	Director	-	-	-	-
	Indirect securities holding		-	-	-	-
10	Miss Nantika Thangsuphanich[(3)]	Director	-	-	-	-
	Indirect securities holding		-	-	-	-
11	Mr. Tawatchai Jakpaisal[(4)]	Director	-	-	-	-
	Indirect securities holding		-	-	-	-
12	Mr. Kijja Sripatthangkura	Director and Chief Executive Officer	5,165	5,165	-	0.0004
	Indirect securities holding		-	-	-	-
13	Mr. Peerawat Pumthong	Chief Business Development Officer	-	-	-	-
	Indirect securities holding		-	-	-	-
14	Mr. Raluke Satayaporn	Chief Project Development Officer	-	-	-	-
	Indirect securities holding		-	-	-	-
15	Mr. Nimit Lekcharoensuk	Chief Asset Management Officer	10,095	10,095	-	0.0007
	Indirect securities holding		-	-	-	-
16	Mrs. Wadeerat Charoencoop	Chief Financial Officer	-	-	-	-
	Indirect securities holding		-	-	-	-

	Name	Position[2]	RATCH Group Public Company Limited			
			Ordinary Shares			
			1 Jan 19[3]	31 Dec 19[4]	Changes During the Year Increase/ (Decrease)	Shareholding Propotion (%)
17	Mrs. Supatra Thongkarn	Executive Vice President - Finance	4,000	4,000	-	0.0003
	Indirect securities holding		-	-	-	-
18	Mr. Sakchai Sripetch	Senior Vice President - Head of Financial Planning and Management Division	1,152	1,152	-	0.0001
	Indirect securities holding		-	-	-	-
19	Miss Suwannee Sirisajjawat	Vice President - Head of General Accounting Division	-	-	-	-
	Indirect securities holding		-	200	200	0.0000
20	Miss Chatuporn Laohapiboonratana	Vice President - Head of Tax Management and General Ledger Division	-	-	-	-
	Indirect securities holding		-	4,100	4,100	0.0003
21	Miss Titiporn Komsartra	Acting Vice President - Head of Accounting Control and Analysis Division	-	-	-	-
	Indirect securities holding		-	-	-	-
	Total securites held directly and indirectly by the independent directors		**12,500**	**12,500**	**-**	**0.0009**
	Total securites held directly and indirectly by the Board of Directors		**17,665**	**17,665**	**-**	**0.0012**
	Total securities held directly and indirectly by the executives		**20,412**	**24,712**	**4,300**	**0.0017**
	Grand Total		**32,912**	**37,212**	**4,300**	**0.0026**
Securities Holdings of Directors and Executives Who Vacated Their Positions During 2019						
1	Mrs. Premrutai Vinaiphat[5]	Independent Director	-	-	-	-
	Indirect securities holding		-	-	-	-
2	Mrs. Siriporn Luangnual[6]	Independent Director	-	-	-	-
	Indirect securities holding		-	-	-	-
3	Mr. Veerasak Pungrassamee[7]	Independent Director	-	-	-	-
	Indirect securities holding		-	-	-	-
4	Mr. Seubphong Buranasirin[8]	Director	-	-	-	-
	Indirect securities holding		-	-	-	-

Note

/1 *The information on the securities holdings of the Company's directors and executives shall only disclose the shareholdings of the directors, Chief Executive Officer, top four executives and those in position equal to the top four executives, including vice president level executives and equivalent or above in the accounting and financial function. The disclosed shareholdings include the aforementioned persons' direct shareholdings (their own shareholdings) and indirect shareholding (shareholdings of their respective spouse and minor children) including the shareholdings by nominees of the directors or the executives, and respective spouse and minor children of the aforementioned persons according to the criteria in the Notification of the Capital Market Supervisory Board No. TorChor 44/2556. In 2019, there was no report regarding shareholdings by nominees of the directors, executive, respective spouses or minor chilredn of such person.*

/2 *Disclosing the director's position in the Board of Directors only. The information of each director's position in the Committees is disclosed in his or her respective profile. More information regarding changes of positions in Sub-Committees can be found under "Changes in Board of Directors and Sub-Committee in 2019"*

/3 *For directors and executives who were appointed during the year 2019, the number of securities disclosed in the table is the number of securities held on the day they took office.*

/4 *For directors and executives who left office during the year 2019, the number of securities disclosed in the table is the number of securities held on the day they left office.*

Assumption of Office of Directors and Executives During 2019

(1) *Mr. Apichart Chinwanno was elected an independent director in the 2019 Annual General Meeting of Shareholders on 12 April 2019.*

(2) *Mr. Boonsong Kerdklang was elected an independent director in the 2019 Annual General Meeting of Shareholders on 12 April 2019.*

(3) *Miss Nantika Thangsuphanich was appointed as a director on 18 February 2019.*

(4) *Mr. Tawatchai Jakpaisal was appointed as a director on 18 November 2019.*

Vacation of Office of the Directors and Executives During 2019

(5) *Mrs. Premrutai Vinaiphat resigned from her position as an independent director on 11 February 2019.*

(6) *Mrs. Siriporn Luangnual left the position as an independent director due to the end of term in the 2019 Annual General Meeting of Shareholders on 12 April 2019.*

(7) *Mr. Veerasak Pungrassamee left his position as an independent director due to the end of term in the 2019 Annual General Meeting of Shareholders on 12 April 2019.*

(8) *Mr. Suebphong Buranasirin resigned from his position as a director on 16 October 2019.*

BOARD OF DIRECTORS



Mr. Sutat Patmasiriwat

Age 66 years

- **Chairman (EGAT's Representative Director)**
- **Chairman of the Investment Committee**

Starting Date of Directorship : 20 October 2014
Date Elected as the Chairman : 21 December 2015
Time in Current Position : 5 years 2 months
Terms of Current Position : 3
The Company's Securities Holding Proportion : - Direct : None
-Indirect:None
Family Relationship with Directors and Executives : None

Education

- Bachelor of Engineering (Mechanical Engineering), Chulalongkorn University

Trainings in Courses Arranged by Thai Institute of Directors Association

- Boards that Make a Difference (BMD 4/2017)
- Chartered Director Class (CDC 9/2015)
- Financial Statements for Directors (FSD 14/2011)
- Role of the Chairman Program (RCP 24/2010)
- Director Certification Program (DCP 83/2007)

Other Important Trainings/Seminars

- Advanced Management Program, Harvard Business School, United States of America
- Senior Executive Development Program-2, Foundation for International Human Resource Development
- Creating Value Through Product Management and Customer Profitability, SASIN Graduate Institute of Business Administration, Chulalongkorn University
- ASEAN Executive Development Program, Thammasat Business School, Thammasat University

Work Experiences in the Previous 5 Years (2014-2019)

- 2015 - 2018 Board of Directors Member, EGAT
- 2014 - 2015 Board of Directors Member, RATCH Group Public Company Limited[1]
- 2010 - 2014 Board of Directors Chairman, Ratchaburi Electricity Generating Company Limited and Ratchaburi Power Company Limited

Current Positions in Other Listed Companies : None

Current Positions in Non-listed Organizations : None

Prohibited Qualifications/Committed an Offence : None

[1]Change its name from "Ratchaburi Electricity Generating Holding Public Company Limited" since 17 April 2019



Mr. Chartchai Rojanaratanangkule

Age 63 years

- **Independent Director**
- **Chairman of the Audit Committee**
- **Member of the Corporate Governance and Social Responsibility Committee**

Starting Date of Directorship : 6 April 2017
Time in Current Position : 2 year 8 months
Terms of Current Position : 1
The Company's Securities Holding Proportion : - Direct : 0.0003 Per cent
- Indirect : None
Family Relationship with Directors and Executives : None

Education

- Bachelor of Accountancy, Chulalongkorn University

Trainings in Courses Arranged by Thai Institute of Directors Association

- Advanced Audit Committee Program (AACP 31/2018)
- Director Certification Program (DCP223/2016)

Other Important Trainings/Seminars

- Thailand Insurance Leadership Program (2015), Office of Insurance Commission
- Fiscal Management Program, Fiscal Policy Research Institute Foundation
- Infrastructure Financial Analysis & Tariff Setting : Essential Skills for Financial Analysis, The Institute for Public-Private Partnerships
- Financial Statement Analysis Workshop, Investment Analysts Association
- Advanced Mini MBA, Chulalongkorn University
- Project Feasibility Analysis, Mahidol Management Education Center of College of Management
- Privatizing Power in Emerging Economies: Structuring & Financing Public/Private Partnerships Through BOT Schemes and Divestiture, INTRADOS/International Management Group
- Advanced Financial Management, Cooperation between Chulalongkorn University and Thailand Management Association
- Investment Analysis in Capital and Money Market Course, Chulalongkorn University
- EGAT Senior Executive Program (ESEP)

Work Experiences in the Previous 5 Years (2014-2019)

- 2015 - 2016 Board of Directors Member, EGAT International Company Limited
- 2014 - 2016 Deputy Governor - Account and Finance acting as Chief Finance Officer, EGAT
- 2013 - 2014 Assistant Governor - Internal Audit Bureau, EGAT

Current Positions in Other Listed Companies :
None

Current Positions in Non-listed Organizations :

- 2018 - Present Board of Directors Member, National Science Museum Thailand

Prohibited Qualifications/Committed an Offence :
None



Mr. Apichart Chinwanno

Age 63 years

- **Independent Director**
- **Chairman of the Human Resources and Remuneration Committee**

Starting Date of Directorship : 13 April 2019

Time in Current Position : 8 months

Terms of Current Position : 1

The Company's Securities Holding Proportion : - Direct : None
- Indirect : None

Family Relationship with Directors and Executives : None

Education

- Doctor of Philosophy, International Relations, St. Antony's College, University of Oxford, United Kingdom
- Master of Science, International Relations, London School of Economics and Political Science University of London, United Kingdom
- Bachelor of Science, Economics and Politics (Upper Second Class Honors) University of Southampton, United Kingdom

Trainings in Courses Arranged by Thai Institute of Directors Association

- Strategic Board Master Class (SBM 3/2018)
- Advanced Audit Committee Program (AACP 26/2017)
- Role of the Chairman Program (RCP 41/2017)
- Director Certification Program (DCP 227/2016)
- Financial Statement for Directors (FSD 31/2016)

Other Important Trainings/Seminars

- The National Defence Course Class 52 (2009), National Defence College
- Columbia Senior Executive Program (CSEP) Class 123/2007, Columbia Business School, United States of America

Work Experiences in the Previous 5 Years (2014-2019)

- 2016 - Feb 2019 Independent Director, EGAT
- 2015 - 2016 Permanent Secretary, Office of the Permanent Secretary, Ministry of Foreign Affairs
- 2013 - 2015 Ambassador Extraordinary and Plenipotentiary, Republic of France, Concurrently to the Principality of Monaco, Ministry of Foreign Affairs

Current Positions in Other Listed Companies

- 2018 - Present Chairman and Independent Director, Amata VN Public Company Limited

Current Positions in Non-listed Organizations

- 2017 - Present Chairman and Independent Director, CHAMNI's EYE Company Limited

Prohibited Qualifications/Committed an Offence : None



Mr. Samack Chouvaparnante

Age 70 years

- **Independent Director**
- **Chairman of the Risk Management Committee**

Starting Date of Directorship : 11 April 2015

Time in Current Position : 4 years 8 months

Terms of Current Position : 2

The Company's Securities Holding Proportion : - Direct : None
- Indirect : None

Family Relationship with Directors and Executives : None

Education

- Master of Political Science (Politics and Governments), Sukhothai Thammathirat Open University
- Bachelor of Law, Thammasat University

Trainings in Courses Arranged by Thai Institute of Directors Association

- IT Governance and Cyber Resilience Program (ITG 11/2019)
- Financial Statements for Directors (FSD 38/2019)
- How to Develop a Risk Management Plan (HRP 8/2015)
- Risk Management Program for Corporate Leaders (RCL 1/2015)
- Audit Committee Program (ACP 21/2008)
- Director Certification Program (DCP 99/2008)
- Director Accreditation Program (DAP 67/2007)

Other Important Trainings/Seminars

- Institute of Legal Education Thai Bar Association
- The Joint State-Private Sector Course, Class 4212, Thailand National Defence College

Work Experiences in the Previous 5 Years (2014-2019)

- 2008 - 2014 Senator, Advisory Chairman on Justice and Chairman of the Senate Standing Committee on Justice and Police Affairs, Senate of Thailand
- Executive Committee Member, Thai Bar Association
- Lecturer, Lawyer Council of Thailand and Thammasat University
- Advisor to the Executive Committee, Institute of Legal Advocacy Training, Lawyer Council of Thailand
- Committee, Institute of Legal Education Thai Bar Association
- Company Legal Advisor to Vongsayam Korsang Company Limited
- President, Thammasat Law Association, Thammasat University (2 terms)
- Lecturer, Institute of Legal Education of Thai Bar Association
- Advisor to the Commissioners, Office of the National Broadcasting and Telecommunications Commission

Current Positions in Other Listed Companies :

- Legal Advisor, Burapha Golf Public Company Limited
- Legal Advisor, ANANDA Development Public Company Limited

Current Positions in Non-listed Organizations :

- Lecturer, Nakhon Phanom University
- Company Legal Advisor to
  - Red Bull Beverage Company Limited,
  - T.C. Pharmaceutical Industry Company Limited
  - Siam Winery Trading Plus Company Limited
  - Siam Winery Company Limited
  - Tuscany-Ville Company Limited
  - Advisor to Chief Advisor, AIA Company Limited (Thailand)
  - Villa Valley Company Limited
  - Toscana Valley Country Club Company Limited,
  - Toscana Valley Company Limited and its subsidiaries
  - Samack & Associates Counselor Company Limited

Prohibited Qualifications/Committed an Offence : None



Mr. Somboon Nhookeaw

Age 57 years

- **Independent Director**
- **Member of the Audit Committee**

Starting Date of Directorship : 23 February 2018

Time in Current Position : 1 year 10 months

Terms of Current Position : 1

The Company's Securities Holding Proportion : - Direct : None
- Indirect : None

Family Relationship with Directors and Executives : None

Education

- Master of Engineering (Infrastructure Engineer and Management), Kasetsart University
- Bachelor of Engineering (Civil Engineering), Chiang Mai University

Trainings in Courses Arranged by Thai Institute of Directors Association

- Director Certification Program (DCP 281/2019)
- Advanced Audit Committee Program (AACP 34/2019)
- Director Accreditation Program (DAP 154/2018)

Other Important Trainings/Seminars

- The National Defence Course, Class 60 (2017), National Defence College
- The Executive Program in Energy Literacy for a Sustainable Future, Class 14, Thailand Energy Academy
- The Civil Service Executive Program for Senior Civil Servants, Program 1, Class 83, Office of the Civil Service Commission
- Advanced Certificate Course in Public Administration and Law for Executives, Class 14, King Prajadhipok's Institute
- Top Executive Program in Commerce and Trade (TEPCoT) Class 7, University of the Thai Chamber of Commerce
- Senior Executive Program, Class 4, Budget Bureau

Work Experiences in the Previous 5 Years (2014-2019)

- 2017 - 2019 Deputy Director - General, Department of Energy Business, Ministry of Energy
- 2015 - 2017 Director, Bureau of Oil Business Safety, Department of Energy Business, Ministry of Energy
- 2014 - 2015 Director, Bureau of Natural Gas Business Safety, Department of Energy Business, Ministry of Energy
- 2013 - 2014 Director, Energy Technical Development Institution, Department of Energy Business, Ministry of Energy

Current Positions in Other Listed Companies : None

Current Positions in Non-listed Organizations :

- 2019-Present Deputy Permanent Secretary, Ministry of Energy

Prohibited Qualifications/Committed an Offence : None



Mr. Boonsong Kerdklang

Age 68 years

- **Independent Director**
- **Member of the Audit Committee**

Starting Date of Directorship : 13 April 2019

Time in Current Position : 8 months

Terms of Current Position : 1

The Company's Securities Holding Proportion : - Direct : None
- Indirect : None

Family Relationship with Directors and Executives : None

Education

- Master of Public Administration (Public Administration), Chulalongkorn University
- Bachelor of Arts (Economics), Kasetsart University

Trainings in Courses Arranged by Thai Institute of Directors Association : None

Other Important Trainings/Seminars

- The Executive Program in Energy Literacy for a Sustainable Future, Class 5, Thailand Energy Academy
- Inspector General Program, Office of the Civil Service Commission
- The Civil Service Executive Development Program 1, Class 39, Office of the Civil Service Commission

Work Experiences in the Previous 5 Years (2014-2019)

- 2011 - 2014 Commissioner, Energy Regulatory Commission, Office of the Energy Regulatory Commission
- Acting Director General-Energy Policy and Planning Office, Ministry of Energy
- Inspector General, Ministry of Energy

Current Positions in Other Listed Companies : None

Current Positions in Non-listed Organizations : None

Prohibited Qualifications/Committed an Offence : None



Mr. Ratanachai Namwong

Age 63 years

- **Independent Director**
- **Member of the Human Resources and Remuneration Committee**
- **Member of the Investment Committee**

Starting Date of Directorship : 6 April 2018

Time in Current Position : 1 year 8 months

Terms of Current Position : 1

The Company's Securities Holding Proportion : - Direct : 0.0005 Per cent
- Indirect : None

Family Relationship with Directors and Executives : None

Education

- Master Degree of Engineering (Nuclear Technology), Chulalongkorn University
- Bachelor Degree of Engineering (Metallurgical Engineering), Chulalongkorn University

Trainings in Courses Arranged by Thai Institute of Directors Association

- Risk Management Program for Corporate Leaders (RCL 16/2019)
- Director Certification Program (DCP 186/2014)

Other Important Trainings/Seminars

- Public Administration and Public Law, King Prajadhipok's Institute
- Promotion of a Peaceful Society, King Prajadhipok's Institute
- Senior Executive Development Program-2, Foundation for International Human Resource Development
- Masterful Coaching Workshop, Hay Group
- EGAT Newly-Promoted Executive Orientation Program (ENOP)
- EGAT Senior Executive Program (ESEP)
- EGAT Director Development Program (EDDP)
- EGAT Successor Development Program (ESDP)

Work Experiences in the Previous 5 Years (2014-2019)

- Jul 2017 - Sep 2019 Public Sector Audit and Evaluation Committee, Ministry of Energy
- 2013 - 2016 Deputy Governor-Power Plant Development, EGAT

Current Positions in Other Listed Companies : None

Current Positions in Non-listed Organizations : None

Prohibited Qualifications/Committed an Offence : None



Mr. Chuan Sirinunporn

Age 66 years

- **Director (EGAT's Representative Director)**
- **Chairman of the Corporate Governance and Social Responsibility Committee**
- **Member of the Human Resources and Remuneration Committee**

Starting Date of Directorship : 19 December 2014

Time in Current Position : 5 years

Terms of Current Position : 3

The Company's Securities Holding Proportion : - Direct : None
- Indirect : None

Family Relationship with Directors and Executives : None

Education

- Honorary Doctorates Degree (Public Administration), Ubon Ratchathani Rajabhat University
- Honorary Doctorates Degree (Environmental), Ubon Ratchathani University
- Master of Development Administration (Honors), The National Institute of Development Administration
- Bachelor of Arts (Political Science), Chulalongkorn University

Trainings in Courses Arranged by Thai Institute of Directors Association

- Ethical Leadership Program (ELP 8/2017)
- Director Accreditation Program (DAP 112/2014)

Other Important Trainings/Seminars

- The National Defence Course Class 45 (2002), National Defence College
- Senior Executive Development Program, Institute of Administration Development
- Graduate Diploma in Public Law, Thammasat University
- Thai Senior Executive Development Program, National Graduate Institute for Policy Studies (GRIPS), Japan
- Transformational Executive Leadership, Prince Damrongrajanubhab Institute of Research and Development, Ministry of Interior

Work Experiences in the Previous 5 Years (2014-2019)

- 2014 - 2018 Board of Directors Member, EGAT
- Director-General, Department of Provincial Administration
- Governor of Nakhon Ratchasima Province

Current Positions in Other Listed Companies : None

Current Positions in Non-listed Organizations : None

Prohibited Qualifications/Committed an Offence : None



Miss Nantika Thangsuphanich

Age 54 years

- **Director (EGAT's Representative Director)**
- **Member of the Risk Management Committee**

Starting Date of Directorship : 18 February 2019

Time in Current Position: 10 months

Terms of Current Position : 1

The Company's Securities Holding Proportion : - Direct : None
- Indirect : None

Family Relationship with Directors and Executives : None

Education

- Master of Arts (Urban Studies), Long Island University, United States of America
- Bachelor of Arts (Political Science), Kasetsart University

Trainings in Courses Arranged by Thai Institute of Directors Association

- Director Certification Program (DCP 248/2017)

Other Important Trainings/Seminars

- The National Defence Course, Class 61 (2018), National Defence College
- The Executive Program in Energy Literacy for a Sustainable Future, Class 7, Thailand Energy Academy
- Corporate Governance Program for Directors and Senior Executives of State Enterprises and Public Organizations, Class 10 (2012), Public Director Institute
- E-Government Executive Program (e-GEP), Class 2 (2010), Digital Government Development Agency (Public Organization)
- Strengthen Ministry Inspector General Skills (2010), Office of the Civil Service Commission and Office of the Permanent Secretary, Prime Minister's Office
- Civil Service Executive Program: Visionary and Moral Leadership, Class 66 (2009), Office of the Civil Service Commission

Work Experiences in the Previous 5 Years (2014-2019)

- 2017 - 2018 Deputy Permanent Secretary, Ministry of Energy
- 2009 - 2018 Inspector General, Ministry of Energy

Current Positions in Other Listed Companies :
None

Current Positions in Non-listed Organizations :

- 1 Oct 2018 - Present Director-General, Department of Energy Business, Ministry of Energy
- 19 Mar 2019 - Present Director, EGAT
- Chairman of the Corporate Governance and Social Responsibility Committee, EGAT
- Chairman of the Deputy Governor and Assistant Governor Nomination Committee, EGAT
- Chairman of the Executive Committee, EGAT

Prohibited Qualifications/Committed an Offence :
None



Mr. Boonyanit Wongrukmit

Age 56 years

- **Director (EGAT's Representative Director)**
- **Member of the Investment Committee**
- **Member of the Risk Management Committee**

Starting Date of Directorship : 1 May 2018

Time in Current Position : 1 year 8 months

Terms of Current Position : 2

The Company's Securities Holding Proportion : - Direct : None
- Indirect : None

Family Relationship with Directors and Executives : None

Education

- Master of Business Administration, (Energy Management) University of Montreal, Canada
- Master of Business Administration, Chiang Mai University
- Bachelor of Engineering (Mechanical Engineering), Chiang Mai University

Trainings in Courses Arranged by Thai Institute of Directors Association

- Director Certification Program (DCP 187/2014)

Other Important Trainings/Seminars

- The National Defence Course, Class 61 (2018), National Defence College
- Corporate Governance for Directors and Senior Executives of State Enterprises and Public Organizations (2018), King Prajadhipok's Institute
- Advanced Master of Management Program (AMM), National Institute of Development Administration
- Advanced Management Program, Harvard Business School, United States of America
- Leadership Succession Program, Institute of Research and Development for Public Enterprises
- Principle of Life Coaching, Thailand Coaching Academy

Work Experiences in the Previous 5 Years (2014-2019)

- 2017 - 2018 Deputy Governor - Business Development, EGAT
- 2016 - 2017 Deputy Governor - Corporate Social Affairs, EGAT
- 2015 - 2016 Assistant Governor - Business Development, EGAT
- 2013 - 2015 Engineer Level 12, Deputy Governor-Business Development, EGAT, seconded to be General Manager - EGAT Diamond Service Company Limited

Current Positions in Other Listed Companies : None

Current Positions in Non-listed Organizations :

- 2018 - Present Board of Directors Member, EGAT International Company Limited
- 2018 - Present Deputy Governor – Power Business, EGAT

Prohibited Qualifications/Committed an Offence : None



Mr.Tawatchai Jakpaisal

Age 59 years

- **Director (EGAT's Representative Director)**
- **Member of the Investment Committee**

Starting Date of Directorship : 18 November 2019

Time in Current Position : 1 month

Terms of Current Position : 1

The Company's Securities Holding Proportion : - Direct : None
- Indirect : None

Family Relationship with Directors and Executives : None

Education

- Bachelor of Engineering (Electrical Engineering), Kasetsart University

Trainings in Courses Arranged by Thai Institute of Directors Association

- Director Certification Program (DCP 269/2019)

Other Important Trainings/Seminars

- Advanced Certificate Course in Public Economics Management, Class 16 (2017), King Prajadhipok's Institute
- Certificate, Senior Command Course, Class 32 (2011), Institute of Police Administration Development
- EGAT Senior Executive Program (ESEP)
- EGAT Director Development Program (EDDP)
- EGAT New Leader Development Program (ENLP)
- EGAT Enhancing Program (EEP)
- EGAT Assistant Director Development Program (EADP)

Work Experiences in the Previous 5 Years (2014-2019)

- 2017 - 2018 Assistant Governor - Planning, EGAT
- 2014 - 2017 Director, Energy Economic Division, EGAT
- 2012 - 2014 Assistant Director, Energy Economic Division- Electricity Tariff, EGAT

Current Positions in Other Listed Companies : None

Current Positions in Non-listed Organizations :

- Oct 2018 - Present Deputy Governor - Fuel, EGAT
- Oct 2018 - Present Board of Directors Member, District Cooling System and Power Plant Company Limited

Prohibited Qualifications/Committed an Offence : None



Mr. Kijja Sripatthangkura

Age 59 years

- **Director (EGAT's Representative Director and Executive Director)**
- **Chief Executive Officer**
- **Secretary to the Board of Directors**

Starting Date of Directorship : 1 January 2017

Date Appointed as Chief Executive Officer : 6 April 2017

Time in Current Position : 3 years

Current Position in Office : 2

The Company's Securities Holding Proportion : - Direct : 0.0004 per cent
- Indirect : None

Family Relationship with Directors and Executives : None

Education

- Bachelor of Engineering (Electrical Engineering), Prince of Songkla University

Trainings in Courses Arranged by Thai Institute of Directors Association

- Director Certification Program (DCP 245/2017)

Other Important Trainings/Seminars

- Advanced Certificate Course in Public Economics Management for Executives, King Prajadhipok's Institute
- Advanced Management Program, Harvard Business School, United States of America
- Senior Executive Program, SASIN Graduate Institute of Business Administration, Chulalongkorn University
- Thailand and the ASEAN Community in Global Political Economy, King Prajadhipok's Institute
- The Executive Program in Energy Literacy for a Sustainable Future, Thailand Energy Academy

Work Experiences in the Previous 5 Years (2014-2019)

- 2019 Board of Directors Member, Hin Kong Power Holding Company Limited
- 2019 Board of Directors Member, Hin Kong Power Company Limited
- 2018 - 2019 Board of Directors Member, Ratchaburi Power Company Limited
- 2015 - 2017 Deputy Governor Policy and Planning, EGAT
- 2013 - 2015 Assistant Governors, Planning, EGAT

Current Positions in Other Listed Companies : None

Current Positions in Non-listed Organizations :

- 2019 - Present Chairman of the Board of Directors, Hin Kong Power Company Limited
- 2019 - Present Chairman of the Board of Directors, Hin Kong Power Holding Company Limited
- 2019 - Present Chairman of the Board of Directors, Ratchaburi Electricity Generating Company Limited
- 2019 - Present Chairman of the Board of Directors, Ratchaburi Energy Company Limited
- 2018 - Present Board of Directors Member, Fareast Renewable Development Pte. Ltd.
- 2017 - Present Chairman of the Board of Directors, PT MEDCO RATCH POWER RIAU
- 2017 - Present Chairman of the Board of Directors, Hongsa Power Company Limited and Phu Fai Mining Company Limited
- 2017 - Present Chairman of the Board of Directors, RATCH-Australia Corporation Limited ("RAC"), Mount Emerald Wind Farm Pty and other subsidiaries of RAC

Prohibited Qualifications/Committed an Offence : None

PROFILE OF EXECUTIVES



Mr. Kijja Sripatthangkura

Age 59 years

- **Chief Executive Officer**

Starting Date : 6 April 2017

The Company's Securities Holding Proportion : - Direct : 0.0004 per cent
- Indirect : None

Family Relationship with Directors and Executives : None

(His full profile is shown on page 106)



Mr. Peerawat Pumthong

Age 61 years

- **Chief Business Development Officer**

Starting Date : 1 January 2017

The Company's Securities Holding Proportion : - Direct : None
- Indirect : None

Family Relationship with Directors and Executives : None

Education

- Master of Business Administration, Monash University, Australia, Certificate of Merit (Highest score) in International Business
- Master of Engineering, Asian Institute of Technology (AIT) (Germany Government Scholarship)
- Bachelor of Engineering (2nd Class Honor), Khonkaen University

Important Trainings/Seminars

- Director Certification Program (DCP 138/2010), Thai Institute of Directors Association
- Advanced Certificate Course in Politics and Governance in Democratic Systems for Executives (Class 17), King Prajadhipok's Institute
- Advanced Course in Public Economics (Class 8), King Prajadhipok's Institute
- ASEAN Executive Development Program (AEDP), Thammasat Business School, Thammasat University
- Mini MBA, Chulalongkorn University
- Electric Power Development from Swedish Board of Investment and Technical Support (BITS), Sweden
- ASEAN Executive Program from General Electric International Operation Company, Inc., United States of America
- Hydro Electric Power from Japan International Cooperation Agency (JICA), Columbo Plan, Japan
- Thermal and Hydro Power Project Planning from Snowy Mountain Engineering Cooperation, Columbo Plan, Australia

Work Experiences in the Previous 5 Years (2014-2019)

- RATCH Group Public Company Limited[1]
  - 2014 - 2016 Chief Business Development Officer 1
  - 2010 - 2014 Chief Operating Officer
- 2014 - 2019 Board of Directors Member, Berkprai Cogeneration Company Limited
- 2017 - 2018 Board of Directors Member, Nava Nakorn Electricity Generating Company Limited
- 2010 - 2017 Board of Directors Member, Hongsa Power Company Limited, Phu Fai Mining Company Limited, SouthEast Asia Energy Limited and Nam Ngum 2 Power Company Limited
- 2014 - 2015 Board of Directors Chairman, Ratchaburi World Cogeneration Company Limited
- 2011 - 2014 Board of Directors Member and Acting Managing Director, RATCH-Australia Corporation Pty Ltd
- Committee of the National Legislative Assembly, Sub-Committee on the Study and Follow-up on Renewable Energy Under Committee on Energy

Current Positions in Other Listed Companies : None

Current Positions in Non-listed Organizations :

- Director and executive positions in the Company's Group as shown on page 91
- 2018 - Present Board of Directors Member, Ecotect Tra Vinh Renewables JSC.

Prohibited Qualifications/Committed an Offence : None

[1] Changed its name from "Ratchaburi Electricity Generating Holding Public Company Limited" since 17 April 2019



Mr. Raluke Satayaporn

Age 60 years

- **Chief Project Development Officer**

Starting Date : 1 October 2017

The Company's Securities Holding Proportion : - Direct : None
- Indirect : None

Family Relationship with Directors and Executives : None

Education

- Master of Engineering (Civil Engineering), Asian Institute of Technology (AIT) (EGAT Scholarship)
- Bachelor of Engineering (Civil Engineering), Kasetsart University

Important Trainings/Seminars

- Director Certification Program (DCP250/2017), Thai Institute of Directors Association
- Senior Executive Program (SEP), Sasin Graduate Institute of Business Administration, Chulalongkorn University
- Advanced Certificate Course in Public Economics Management for Executives (Class 12), King Prajadhipok's Institute
- Project Management, the Engineering Institute of Thailand
- Executive Development Program (EDP) (Class 12), Fiscal Policy Research Institute Foundation
- Executive Energy Program (EEP), the Institute of Industrial Energy, Federation of Thai Industries

Work Experiences in the Previous 5 Years (2014-2019)

- RATCH Group Public Company Limited[1]
  - 2017 Executive Vice President - Project Development,
  - 2015 Executive Vice President - Business Development 2
  - 2015 Executive Vice President - Business Development 2 and Acting Vice President - Foreign Investment Division,
  - 2014 Executive Vice President - Business Development 2
  - 2014 Senior Vice President and Acting Executive Vice President - Business Development 2, acting as Managing Director of Sustainable Energy Corporation and Khaokor Wind Power Company Limited
- 2015 - 2017 Board of Directors Member, Solar Power (Korat 3) Company Limited, Solar Power (Korat 4) Company Limited and Solar Power (Korat 7) Company Limited
- 2014 - 2017 Board of Directors Chairman, Oversea Green Energy Company Limited

Current Positions in Other Listed Companies :

None

Current Positions in Non-listed Organizations :

- Director and executive positions as shown on page 91

Prohibited Qualifications/Committed an Offence :

None

[1] Changed its name from "Ratchaburi Electricity Generating Holding Public Company Limited" since 17 April 2019



Mr. Nimit Lekcharoensuk

Age 58 years

- **Chief Asset Management Officer**

Starting Date : 1 January 2019

The Company's Securities Holding Proportion : - Direct: 0.0007 per cent
- Indirect: None

Family Relationship with Directors and Executives : None

Education

- Bachelor of Engineering (Electrical Engineering), King Mongkut's Institute of Technology Ladkrabang

Important Trainings/Seminars

- Risk Management Program for Corporate Leaders (RCL 15/2019), Thai Institute of Directors Association
- Certificate, Senior Executive Program (SEP 21), SASIN Graduate Institute of Business Administration, Chulalongkorn University
- Advance Certificate Course, Management of Public Economics for Executives (Class 13), King Prajadhipok's Institute
- The Executive Program in Energy Literacy for a Sustainable Future Class 13, Thailand Energy Academy
- Executive Development Program Class 15, (2018), Fiscal Policy Research Institute Foundation

Work Experiences in the Previous 5 Years (2014-2019)

- RATCH Group Public Company Limited[1]
  - - 2018 Executive Vice President - Asset Management
  - - 2016 - 2018 Executive Vice President, acting as Managing Director of Ratchaburi Electricity Generating Company Limited
  - - 2014 - 2016 Executive Vice President acting as Deputy Managing Director of Ratchaburi Electricity Generating Company Limited
  - - 2014 Executive Vice President acting as Deputy Managing Director of Ratchaburi Electricity Generating Company and Managing Director, Chubu Ratchaburi Electric Services Company Limited
- 2017 - 2019 Board of Directors Member, Solar Power (Korat 3) Company Limited, Solar Power (Korat 4) Company Limited Solar Power (Korat 7) Company Limited, Songkhla Biomass Company Limited and Songkhla Biofuel Company Limited
- 2016 - 2017 Managing Director, Ratchaburi Electricity Generating Company Limited and Board of Directors Member, Chubu Electric Services Company Limited
- 2015 - 2017 Board of Directors Member, Ratchaburi World Cogeneration Company Limited
- 2012 - 2014 Board of Directors Member and Managing Director, Chubu Ratchaburi Electric Services Company Limited

Current Positions in Other Listed Companies : None

Current Positions in Non-listed Organizations :

- Director and executive positions in the Company's Group as shown on page 91

Prohibited Qualifications/Committed an Offence : None

[1] Changed its name from "Ratchaburi Electricity Generating Holding Public Company Limited" since 17 April 2019



Mrs. Wadeerat Charoencoop

Age 45 years

- **Chief Financial Officer (Top Responsible Person in Accounting and Finance)**

Starting Date : 1 January 2019

The Company's Securities Holding Proportion : - Direct : None
- Indirect : None

Family Relationship with Directors and Executives : None

Education

- Master of Business Administration, The University of Washington, United States of America
- Bachelor of Business Administration (Finance) (2nd Class Honor), Chulalongkorn University

Important Trainings/Seminars

- Directors Diploma Examination (Exam 71/2019), Thai Institute of Directors Association
- Director Certification Program (DCP 276/2019), Thai Institute of Directors Association
- Corporate Governance for Executives, Thai Institute of Directors Association
- Senior Development Program, Duke C.E.
- STARS Switzerland Symposium
- Chief Financial Officer Certification Program, Federation of Accounting Professions
- TLCA Executive Development Program, Thai Listed Companies Association
- Project Management Program, Davao

Work Experiences in the Previous 5 Years (2014-2019)

- RATCH Group Public Company Limited[1]
  - 2017 - 2018 Executive Vice President - Financial
  - 2011 - 2014 Vice President - Head of Financial Planning and Management Division
- 2014 - 2017 Head of Group Finance, Treasury, Tax and IR, Siam City Cement Public Company Limited

Current Positions in Other Listed Companies : None

Current Positions in Non-listed Organizations :

- Director and executive positions in the Company's Group as shown on page 91

Prohibited Qualifications/Committed an Offence : None

[1] Changed its name from "Ratchaburi Electricity Generating Holding Public Company Limited" since 17 April 2019



Mrs. Boontiva Dansamasatid

Age 59 years

- **Executive Vice President - Corporate Administration**

Starting Date : 1 January 2019

The Company's Securities Holding Proportion : - Direct : None
- Indirect : None

Family Relationship with Directors and Executives : None

Education

- Master of Business Administration, Kasetsart University
- Bachelor of Arts (English) (2nd Class Honor), Chulalongkorn University

Important Trainings/Seminars

- Refresher Course DCP (DCP Re 2/2009), Thai Institute of Directors Association
- Management of Public Economics for Executives, Class 11, King Prajadhipok's Institute
- Promotion of a Peaceful Society, Class 6, King Prajadhipok's Institute
- Environmental Governance for Executive Officer, Class 5, Department of Environmental Quality Promotion, Ministry of Natural Resources and Environment
- Corporate Governance for Executives (CGE 14/2019), Thai Institute of Directors Association
- Anti-Corruption: The Practical Guide (ACPG10/2014), Thai Institute of Directors Association
- Company Secretary Program (CSP 22/2007), Thai Institute of Directors Association
- Effective Minute Taking (EMT 2/2006), Thai Institute of Directors Association
- Company Secretary Program (CSP 3/2003), Thai Institute of Directors Association
- Mini MBA, Kasetsart University
- Business Laws Program (2010), Thammasat University
- The Leadership Grid and The Supervisory Grid
- Doing Business in AEC : Challenges, Thammasat University
- CSR Strategy and Management for Business Sustainability, The Best Training
- Social Enterprise for Sustainable Society, The Chaipattana Foundation

Work Experiences in the Previous 5 Years (2014-2019)

- RATCH Group Public Company Limited[1]
  - 2014 - 2018 Executive Vice President, responsible for CSR of the Company's Group
  - 2011 - 2014 Executive Vice President - Corporate Administration
  - 2008 - 2014 Company Secretary

Current Positions in Other Listed Companies : None

Current Positions in Non-listed Organizations :

- Director and executive positions in the Company's Group as shown on page 91

Prohibited Qualifications/Committed an Offence : None

[1] Changed its name from "Ratchaburi Electricity Generating Holding Public Company Limited" since 17 April 2019



Mrs. Supatra Thongkarn

Age 59 years

- **Executive Vice President - Financial**

Starting Date : 1 January 2019

The Company's Securities Holding Proportion : - Direct : 0.0003 per cent
- Indirect : None

Family Relationship with Directors and Executives : None

Education

- Bachelor of Accountancy, Chulalongkorn University

Important Trainings/Seminars

- Mini MBA, Thammasat University
- Tax Controller Major in International Tax, School of Tax
- Chief Financial Officer Certification Program, Federation of Accounting Professions

Work Experiences in the Previous 5 Years (2014-2019)

- RATCH Group Public Company Limited[1]
  - 2017 Senior Vice President - General Accounting Division
  - 2017 Vice President - General Accounting Division
  - 2015 - 2016 Vice President - Head of Accounting Control and Analysis Division
  - 2014 - 2015 Vice President - Head of Tax Management Division and acting as Deputy Managing Director - Administration, Accounting and Finance of Solarta Company Limited
  - 2014 Vice President - Head of Tax Management Division
  - 2013 - 2014 Vice President - Head of Treasury Division
- 2015 - 2017 Board of Directors Member, RICI International Investment Pte. Limited

Current Positions in Other Listed Companies :

None

Current Positions in Non-listed Organizations :

- Director and executive positions in the Company's Group as shown on page 91

Prohibited Qualifications/Committed an Offence :

None

[1] Changed its name from "Ratchaburi Electricity Generating Holding Public Company Limited" since 17 April 2019



Mr. Sakchai Sripetch

Age 60 years

- **Senior Vice President - Head of Financial Planning and Management Division**

Starting Date : 1 January 2017

The Company's Securities Holding Proportion : - Direct : 0.0001 per cent
- Indirect : None

Family Relationship with Directors and Executives : None

Education

- Master of Business Administration, Thammasat University
- Bachelor of Accountancy (Cost Accounting), Chulalongkorn University
- Bachelor of Law, Sukhothai Thammathirat Open University

Important Trainings/Seminars

- Senior Executive Program, SASIN Graduate Institute of Business Administration, Chulalongkorn University
- Chief Financial Officer Certification Program, Federation of Accounting Professions
- Executive Program for Young Professionals, Fiscal Policy Research Institute Foundation
- Certified Public Accountant

Work Experiences in the Previous 5 Years (2014-2019)

- RATCH Group Public Company Limited[1]
  - 2014 - 2016 Senior Vice President, seconded to be Chief Financial Officer of Ratchaburi Power Company Limited
  - 2013 - 2014 Vice President, seconded to be Chief Financial Officer of Ratchaburi Power Company Limited

Current Positions in Other Listed Companies :

None

Current Positions in Non-listed Organizations :

- Director and executive positions in the Company's Group as shown on page 91

Prohibited Qualifications/Committed an Offence :

None

[1] Changed its name from "Ratchaburi Electricity Generating Holding Public Company Limited" since 17 April 2019



Miss Suwannee Sirisajjawat

Age 49 years

- **Vice President - Head of General Accounting Division (Directly Responsible Person for Accounting Supervision)**

Starting Date : 1 January 2019

The Company's Securities Holding Proportion : - Direct : None
- Indirect : 0.00001 per cent

Family Relationship with Directors and Executives : None

Education

- Master of Business Administration, Kasetsart University
- Bachelor of Business Administration (Accounting), Prince of Songkla University

Important Trainings/Seminars

- Mini MBA, Kasetsart University
- Chief Financial Certification Program, Federation of Accounting Professions

Work Experiences in the Previous 5 Years (2014-2019)

- RATCH Group Public Company Limited[1]
  - 2018 Vice President - Head of Accounting Control and Analysis Division
  - 2017 Acting Vice President - Head of Accounting Control and Analysis Division
  - 2015 - 2016 Senior Manager - Head of Management Accounting Department
  - 2012 - 2015 Senior Manager - Head of Accounting Analysis and Budgeting Department
- 2017 Board of Directors Member, RATCH-Lao Services Company Limited

Current Positions in Other Listed Companies :

None

Current Positions in Non-listed Organizations :

- Director and executive positions in the Company's Group as shown on page 91

Prohibited Qualifications/Committed an Offence :

None

[1] Changed its name from "Ratchaburi Electricity Generating Holding Public Company Limited" since 17 April 2019



Miss Chatuporn Laohapiboonratana

Age 48 years

- **Vice President - Head of Tax Management and General Ledger Division**

Starting Date : 1 January 2017

The Company's Securities Holding Proportion : - Direct : None
- Indirect : 0.0003 per cent

Family Relationship with Directors and Executives : None

Education

- Master of Business Administration, Kasetsart University
- Bachelor of Accountancy (2nd Class Honor), Chiang Mai University

Important Trainings/Seminars

- Financial Management and Tax Planning Program, Class 41, Faculty of Economics, Chulalongkorn University
- Chief Financial Officer Certification Program, Class 13, Federation of Accounting Professions
- Mini MBA, Kasetsart University
- Tax Planning for The Boss Certification Program, Management and Psychology Institute

Work Experiences in the Previous 5 Years (2014-2019)

- RATCH Group Public Company Limited[1]
  - 2016 Vice President - Head of Tax Management Division
  - 2015 - 2016 Acting Vice President - Head of Tax Management Division
  - 2014 - 2015 Senior Manager - Head of Financial Planning Department
  - 2012 - 2014 Senior Manager seconded to be Chief Financial Officer of Solarta Company Limited

Current Positions in Other Listed Companies :

None

Current Positions in Non-listed Organizations :

- Director and executive positions in the Company's Group as shown on page 91

Prohibited Qualifications/Committed an Offence :

None

[1] Changed its name from "Ratchaburi Electricity Generating Holding Public Company Limited" since 17 April 2019



Miss Titiporn Komsartra

Age 43 years

- **Acting Vice President - Head of Accounting Control and Analysis Division**

Starting Date : 1 January 2019

The Company's Securities Holding Proportion : - Direct : None
- Indirect : None

Family Relationship with Directors and Executives : None

Education

- Master of Science in Financial Management, University of Exeter, United Kingdom
- Bachelor of Business Administration (Finance and Banking), Assumption University

Important Trainings/Seminars

- Strategic Financial Leadership Program (SFLP), Thai Listed Companies Association

Work Experiences in the Previous 5 Years (2014-2019)

- RATCH Group Public Company Limited[1]
  - 2017 - 2018 Manager - Head of Financial Planning Department
  - 2012 - 2017 Manager - Head of Project Finance Department

Current Positions in Other Listed Companies :

None

Current Positions in Non-listed Organizations :

- Director and executive positions in the Company's Group as shown on page 91

Prohibited Qualifications/Committed an Offence :

None

[1] Changed its name from "Ratchaburi Electricity Generating Holding Public Company Limited" since 17 April 2019

GOOD CORPORATE GOVERNANCE

The Company strives for sustainable development and prosperity and the operations based on good corporate governance practices for listed companies which cover ethics; transparency; responsibility for society, environment and all stakeholders; and actions against all types of fraud and corruption.

The Board of Directors has formulated the "Corporate Governance Policy for the Group", "Code of Conduct", "Anti Fraud and Corruption Policy", and "Policies on Specific Stakeholders Group", including Shareholder Policy, Employee Policy, Social and Envionmennt Policy. They serve as the framework and guidelines for its directors, executives, employees and other stakeholders in pratices. All are prepared in writing and published on the Company's website under Good Corporate Governance section. The Board of Directors realizes its leading role in assuring the understanding about corporate governance principles and its benefits in creating value for the organization, society, environment and all stakeholders and enhancing the Company's prosperity, stability, and sustainability in economic, social and environmental dimensions. The Corporate Governance and Social Responsibility Committee is assigned to consider, review, support, supervise and monitor the execution of corporate governance practices by the Corporate Governance Working Group which was appointed by all functions' chiefs. The Working Group is assigned to monitor, study, consider, review and improve the corporate governance policy at least once a year to ensure it is updated and corresponds with current international practices, laws, rules, regulations, recommendations, relevant organizations' orders, the Office of Securities and Exchange Commission's Corporate Governance Code for Listed Companies 2017 (CG Code 2017), Thai Institute of Directors' Corporate Governance Report of Thai Listed Companies (CGR), ASEAN Corporate Goverence Scorecard (ASEAN CG Scorecard), and best practices related to the Stock Exchange of Thailand.

In 2019, the Company reviewed The Group's corporate governance practices, related risk management, anti-corruption practices and promoting employees' awareness in compliance with good governance practices and anti-corruption. Executives were consulted on fraud-related risk assessment and the accumulation of assessments, which is essential for the preparation of corporate fraud risk papers that cover the organization's fraud risk profile and fraud risk register. They were tasked to monitor, evaluate and report the compliance to governance practices and fraud-related risk management plan: and suggested a review and improvement to key practices including the corporate governance policy; the board skills matrix for director nomination; the rules of the Board of Directors and sub-committees; the Board of Directors and sub-committees' self-assessment; the remunerations of the directors and executives who serve as directors in the Company's subsidiaries, associated companies and joint ventures; innovation promotion; and an improvement to cyber security. The Group's corporate governance policy and anti-corruption policy is cascaded to subsidiaries and joint ventures for full compliance. The Company published the amended Corporate Governance Policy on 20 June 2019, containing the following key issues;

Corporate Governance Policy

1. Be conscious in the Board of Directors' responsibility as the leader in creating sustainable values for the organization, through the defining of vision, missions and business goals for the 3 main pillars of sustainability - economic, social and environmental.

2. Adhere the management and operation to good governance practices, anti-corruption policy, laws, and related rules and regulations.

3. Build up an effective board of directors with concerns in the structure, component, qualification,

and the nomination and selection process.

4. Ensure an effective and merit process in the high-level executive selection and development as well as human resource management, to create value for the organization, the nation and global society.

5. Encourage innovations, responsible business operations, and lawful treatment/protection for all stakeholders.

6. Establish efficient and thorough risk management, anti-corruption practices and internal control, covering finance, operation, supervision, execution and proper inspection.

7. Maintain financial credit worthiness and encourage accurate, sufficient, transparent and timely information disclosure.

8. Support and promote equitable participation, actions and communications with stakeholders.

In 2019, the Company followed through corporate governance practices, to ensure systemic execution of such practices, appropriate improvements and assessments in the overall picture and individual items. The process was aimed at enhancing efficiency of the Group's governance practices accordingly to changing business circumstances. The practices are summarized as follows;

Rights of Shareholders

The Board of Directors formulates and announces the policy on shareholders, requiring continuous review and monitoring of the implementation, to ensure equitable access to their basic rights: including the right to attend shareholders' meetings; the right to propose agenda and/or nominate directors at the meetings; the right to express opinion and ask questions at the meetings; the right to appoint a proxy to attend the meetings and vote on their behalf; the right to receive dividends; the right to appoint, terminate and determine remuneration for directors; the right to appoint and determine remuneration for the auditor; the right to vote on any significant activities; the right to register share ownership and transfer; and the right to receive significant information in an accurate, sufficient, timely and equal manner. The Company has promoted the equitable rights of all shareholder groups as follows:

- **Right to attend meetings:** The Company encourages shareholders, as owners, to attend annual meetings, vote on significant agenda, as well as acknowledge and examine the performance of the Board of Directors and the Management. The Company held the 2019 Shareholders' Annual General Meeting on Friday 12 April 2019 as required by law, related rules and regulations, as well as requirements on meeting quality and efficiency development. Shareholders were encouraged to exercise their basic right to attend shareholders' meetings and facilitated in the following areas;

1) Pre-meeting preparation

- Minority shareholders were given an opportunity to propose issues to be added in the meeting agenda and/or nominate qualified director candidates at the 2019 Shareholders' Annual General Meeting. The process was held according to the Board of Directors' criteria and carried out from 1 September 2018 to 31 December 2018, totaling 4 months. The Company announced clear details about criteria, method, and process on SET's disclosure system and the Company's website (on 22 August 2018). At the end of the period, no shareholder proposed agenda or nominated director candidate.

- The Company sufficiently and completely informed shareholders of the meeting date, time, venue and agenda together with relevant details and the Board of Directors' opinions on each agenda via the SET's information disclosure system in the evening of 18 February 2019 (over 14 days prior to the meeting date). The Board of Directors resolved on 18 February 2018 to hold the 2019 Shareholders' Annual General Meeting on Friday 12 April 2019 at 14.00 hours at World Ballroom, Level 23, the Centara Grand and Bangkok Convention Center, Central World, No. 999/99 Rama 1 Road,

Pathumwan, Bangkok. The venue is easily accessible with public transport and sufficiently large to support a large number of meeting attendants.

- The meeting notice and supporting documents for the 2019 Shareholders' Annual General Meeting was published in Thai and English on the Company's website after the stock market closed on 4 March 2019 (which was more than 30 days prior to the meeting date).

- The Company sent the meeting notice and supporting documents to shareholders, Thai version to Thai shareholders and English version to foreign shareholders, on 13 March 2019 (which was more than 21 days prior to the meeting date) which complies with related laws and good corporate governance guidelines requiring listed companies to send out meeting notice to shareholders at least 7 days and 21 days in advance, respectively. The meeting notice provided details of the date, time, venue, a map of the meeting venue, agenda which is arranged according to their priority, background, reasons and key issue of each agenda item proposed for shareholders' approval or acknowledgement. The Board of Directors' opinion on each agenda item is clearly and sufficiently provided.

- The Company sent the meeting notice to the Registrar on 13 March 2019 (well ahead of the requirement that it is sent no less than 7 days prior to the meeting date) and to the auditor on the same day.

- The Company gave shareholders an opportunity to submit additional questions and/or opinions on the items already included in the meeting agenda and/or other recommendation that is beneficial to the Company's operations prior to the meeting date by post or fax to the Company Secretary or email to CS@ratch.co.th in order to enable the Company to clarify or provide more information at the 2019 Shareholders' Annual General Meeting. The Company published the details on the matters on SET's disclosure system, the Company's website and in the meeting notice that was sent to shareholders. At the 2019 Shareholders' Annual General Meeting, no shareholder submitted questions and/or recommendation in advance to the Company.

- The Company published the meeting announcement in Thai and English newspapers from 13-15 March 2019 for 3 consecutive days and no less than 3 days prior to the meeting date in compliance with relevant laws and the Company's Articles of Association.

- The Company informed shareholders (by post) on 13 March 2019 about detailed identification document; proxy document; proxy appointment procedure and instruction; the list of Independent Directors, Chief Executive Officer and other persons shareholders would appoint as proxy to attend the meeting and vote on their behalf; registration form; and the Company's Articles of Association related to shareholders' meeting to assist shareholders' voting on each agenda item.

- The date of the 2019 Shareholders' Annual General Meeting was confirmed after the midday close of the SET on 11 April 2019 through the SET's disclosure system and the Company's website. Questions to the Company's call center were answered. The meeting date was confirmed after an inquiry into the hotel's security and preparations following a fire incident on 10 April 2019 at CentralWorld which is near the meeting venue. The meeting venue was intact from the incident.

2) Procedure on the meeting date

The 2019 Shareholders' Annual General Meeting was held at World Ballroom, Level 23, the Centara Grand and Bangkok Convention Center, Central World, No. 999/99 Rama 1 Road, Pathumwan, Bangkok. The venue is easily accessed through public transport system, which provides travel convenience. The venue is large enough to accommodate a large number of participants. The registration began at 12.00 hours, (2 hours before the meeting time). Prior to the start of meeting, the hotel's security officers advised shareholders of the international guidelines for emergencies or fire incidents of Centara Grand and Bangkok

Convention Center at CentralWorld. The meeting began at 14.00 hours and adjourned at 16.30 hours, totaling 2 and a half hours.

Shareholders had a choice to register for the entire meeting or for a particular agenda item and maintained the right to vote on the agenda being discussed. As such, shareholders arriving after the meeting began were allowed to register and attend until the meeting adjourned.

- The Company fully provided meeting facilities, including audio-visual equipment to support presentation, computer and barcode system recording individual shareholder's information for their registration and vote counting. This enabled convenient, fast, accurate and transparent and accountable vote counting.

- Identification documents that shareholders have to present to attend the meeting were checked by the persons appointed by the Company's Chairman. The checking was done in simple process and in the procedure as informed earlier in the meeting notice.

- The Chairman of the Board acted as chairman of the meeting according to the Company's Articles of Association. The Chairman announced the quorum, assigned the Company Secretary to record and prepare the meeting minutes, and introduced the directors, executives, auditors and legal advisors who could provide additional information, answer questions asked in the meeting, and play a neutral role in determining the appropriateness and completeness of the meeting procedure.

- Shareholders were informed about the voting procedure on each agenda item, voting and vote counting method, and the announcement of individual resolutions, to comply with SET's guidelines on annual shareholders meeting and to affirm the clarity. The procedure followed the details included in the meeting notice.

- Separate ballot was prepared for each agenda item. All shareholders received such ballot at registration. Voting process was made simple: shareholders disagreeing or wishing to abstain simply raised their hands and the Company's staff members collected their ballots. Computerized and barcode systems were used in vote counting.

- Neutral legal advisors were invited to check the accuracy, completeness, transparency and accountability of various matters including the inspection procedure for shareholders' or their proxies' identification document, the quorum, persons with conflict of interests who could not exercise the voting right, the voting and vote counting method, to ensure that the process complies with the Company's Articles of Association and the rules announced to the meeting. The inspectors also ensured that all ballots were collected from all shareholders especially on the director appointment and that meeting resolutions and vote counting were correct.

- The meeting proceeded as announced earlier without abrupt addition of significant information or new agenda or abrupt change in significant information without prior notice. The matters proposed to the 2019 Shareholders' Annual General Meeting complied with law and the Company's Articles of Association.

- The meeting proceeded in the order as informed in the meeting notice without any switch in agenda items, as the Board of Directors realized the necessity that shareholders must have sufficient time to study the information before making decision and consequently avoided any action that will infringe or deprive shareholders' right at all shareholders' meetings.

- The discussion on each agenda item began with the Chairman completely and sufficiently providing background, details, full information and recommendation as stated in the meeting notice. The Chairman allocated appropriate time for questions.

The Chairman and the Management then jointly clarified for full understanding on related matters, before shareholders were asked to cast their votes.

To keep the meeting short and time-efficient, VDO presentation summarizing the Company's operations in the previous year was shown when the 2nd agenda item was discussed for shareholders' acknowledgement. It also contained last-year performance and next activity. The VDO allowed more time for questions and answers.

- Director appointment and remuneration approval ware treated as two different agenda items and ware voted separately. Shareholders voted separately for each director candidate. All ballots were kept for reference to ensure accuracy and transparency.

- In each agenda voting, the Company provided ballots for each shareholder. A computerized system was used to facilitate vote counting.

- After vote counting of each agenda item, voting results were announced, divided into "approval", "disapproval", "abstention", and "voided ballot" votes.

- Other agenda items (if any) were allowed in order to provide shareholders an opportunity to propose additional issues other than those set in the meeting agenda. According to the Company's Articles of Association, the new agenda proposed for the shareholders meeting's consideration must be proposed by the shareholders whose combined shares are at least one third of the Company's tradable shares. In the 2019 Shareholders' Annual General Meeting, no other agenda item was proposed for voting. Only some recommendations and questions about the Company's operations were raised and recorded in the meeting minutes.

- A number of 2,085 shareholders and proxies attended the 2019 Shareholders' Annual General Meeting, holding 950,803,542 shares or 65.57 per cent of tradable shares, which made a quorum as required. The Company's Chairman acted as the meeting chairman according to the Company's Articles of Association.

- The entire Board of Directors and all sub-committees attended the meeting, representing 100 per cent of the Board/Sub-Committees members. Their attendance was recorded in the meeting minutes.

3) Post-meeting process

- The resolutions of the 2019 Shareholders' Annual General Meeting were published via SET's disclosure system immediately after the stock market closed on 12 April 2019. The resolutions were clearly presented with details on "approval", "disapproval", "abstention" and "voided ballot" with percentage of each category.

- The Company Secretary prepared written meeting minutes by clearly and adequately recording essence of each agenda, questions by the shareholders and clarifications by the Board of Directors and the Management, attendants' recommendations, and the meeting resolutions, including detailed voting results and percentage in all categories.

- The meeting minutes were published via the SET's disclosure system and the Company's website on 23 April 2019 (within 14 days from the meeting date as required). This was to allow shareholders to express their opinions without waiting for the next meeting. After the publicizing, no shareholder asked the Company to amend, add or adjust the meeting minutes.

- The Company submitted the complete minutes signed by the Chairman of the meeting to the SET for reviewing and reference on 23 April 2019 (within 14 days from the meeting date as required).

- The financial statements reviewed by the auditor and approved by shareholders, the annual report, a copy of balance sheets and profit/loss account, a copy of the annual general meeting signed by the Company's authorized signatories, and a copy

of the list of shareholders attending the meeting (Bor Mor Jor 006) were submitted to the Registrar on 8 May 2019 (within 1 month required by law).

- Meeting evaluation form was arranged to collect opinions and recommendations from the meeting attendees on the quality of meeting notice and annual report, facilitation to the shareholders, meeting procedure and meeting minutes. The information collected is used to improve the arrangement of shareholders meeting in order to ensure efficiency, transparency, and benefits to both shareholders and the Company.

- The Company's arrangement of 2019 Shareholders' Annual General Meeting was scored 100 per cent by the Thai Investors Association, based on the compliance of required meeting process and guidelines in 3 parts - pre-meeting procedure, procedure on the meeting date and post-meeting procedure.

• **Right to appoint proxy to attend meeting and vote on their behalf:** The Company allows shareholders to appoint persons who have come of age as their proxies to attend the shareholder meeting and vote on their behalf. Proxy appointment document must be in the format designed by the Registrar. The proxy has to present the proxy document to the meeting chairman or the person assigned by the chairman before attending the meeting.

• **Right to receive dividend:** The Company has a policy to pay dividend at no less than 40 per cent of consolidated net profits after legal reserve and other reserves, depending on the Company's cash flow. In 2019, the Company set the "Record Date" on 5 March 2019 to gather the list of shareholders allowed to participate in the shareholders meeting and voting and receive dividend, payable on 26 April 2019. The dividend payment was announced in Thai and English newspapers for 3 consecutive days, during 13 - 15 April 2019, as required by law and the Company's Articles of Association.

The Company annually checks and follows dividend-received information to protect shareholders' rights. The Company finds a certain amount of accrued dividend payment that shareholders have not yet received. The Company has contacted the shareholders based on contact details in the Registrar's database, notifying them of their accrued dividend and the procedure to receive the dividend. It facilitates shareholders on cheque reissuing in case of loss or expiration and also assists in the dividend transfer to shareholders' heirs in case the shareholders passed away.

Shareholders are also dispatched the application form for e-Dividend service, for a convenient, fast and safe means to receive dividends in the next rounds. More shareholders have switched to the e-Dividend service.

• **Right to appoint, dismiss and determine remuneration for directors:** The Company requires the Board of Directors to submit nominations to the annual general meeting so that shareholders consider and appoint directors to replace the ones whose term expires. Shareholders also determine remuneration for directors. Details are stated in Management Structure topic.

• **Right to appoint auditors and set audit fee:** The Company requires the Board of Directors to propose to shareholders at the annual general meeting for the appointment of auditors and set the audit fee on an annual basis.

• **Right to share ownership registration or transfer:** The Company appointed Thailand Securities Depositories Company Limited (TSD) as its registrar responsible for the depositing, collecting and updating shareholders' information and provides services to shareholders, such as issuing, depositing, withdrawing and transferring of share certificates, as well as remitting benefits to the shareholders. Shareholders can contact TSD directly at the TSD Call Center at +66 2009 9999 or apply for internet-based Investor Portal service at http://www.set.or.th/tsd/th/investorportal/investorportal.html

• **Right to receive significant information in accurate, sufficient and timely manner:** The Company has completely, accurately and timely followed the regulations, criteria, conditions and procedure related to listed companies' information disclosure and other activities.

In 2019, there was no punishment due to failure to submit reports as required by law or due to delayed submission. No incident or action was deemed violating or depriving shareholders' rights.

Equitable Treatment of Shareholders

The Company exercised equitable treatment of all shareholders regardless of their status as major shareholders, minority shareholders, institutional shareholders, or Thai and other nationalities. Key practices are as follows:

• **Access to the Company's information:** To ensure shareholders' equal access to the Company's information, the Company uses SET's disclosure system as the main communication channel and the Chairman of the Board of Directors, directors, Chief Executive Officer and chief officers are the authorized persons responsible for the Company's information disclosure. The Company provide website and relevant functions such as the Company Secretary Office, Internal Audit Division, Corporate Relations Division and Investor Relations Department are another communication chanels.

• **Preparation of bilingual documents:** For equitable access of both Thai and foreign investors, the Company prepares and publishes all information in Thai and English through the SET's disclosure system and the Company's website.

• **Encouraging minority shareholders to propose items for the shareholder meetings' agenda and/or nominate directors:** The Company publicly invited minority shareholders to through the SET's disclosure system propose meeting agenda and/or nominate qualified persons as directors at the 2019 Shareholders' Annual General Meeting. The proposal was welcomed from 1 September to 31 December 2018, totaling 4 months. The detailed criteria, method, process and channel of agenda proposing was published on the Company's website on 22 August 2018. At the end of the period, no proposal or nomination was received.

• **Proxy appointment:** The Company prepared 3 forms of proxy document as designed by the Department of Business Development, Commerce Ministry, and delivered them to shareholders to facilitate the shareholders who cannot participate in the shareholders' meeting. They can appoint other persons to attend the meeting and vote on their behalf. The 3 forms are:

- Form A, general proxy appointment form.
- Form B, a proxy appointment that lists specific items for proxy appointment.
- Form C, a proxy appointment that is used only when the shareholder is a foreign investor with a custodian in Thailand.

Shareholders can also download the forms from the Company's website or they can also use other forms of proxy or prepare it themselves as deemed appropriate.

At the 2019 Shareholders' Annual General Meeting, the Company nominated 3 independent directors - Mr. Samack Chouvaparnante, Mr. Chartchai Rojanaratanangkule and Mrs. Siriporn Luangnual - and the Chief Executive Officer (Mr. Kijja Sripatthangkura) with detailed information of each person and their vested interest in the meeting agenda. Shareholders could appoint them as their proxies and vote on their behalf. A number of 673 shareholders appointed the Company's independent directors as their proxies and the Chief Executive Officer was the proxy of 6 shareholders.

• **Ballots:** All shareholders were instructed to cast their ballots at shareholder meetings. A computerized system was deployed for tallying and the legal advisor, as a neutral party, was assigned as an inspector to review the vote counting accuracy. Concerning director appointment, votes were

counted for each candidate and all the ballots were kept as reference for accuracy and transparency.

- **Additional agenda item:** No additional agenda was proposed for the 2019 Shareholders' Annual General Meeting as the Board of Directors realized the significance and necessity that shareholders should have sufficient time in studying information before making a decision. As such, no new agenda other than those informed in the meeting notice was proposed. If shareholders found it necessary to propose additional agenda, they could do so when the agenda on other matters for consideration was being discussed, as specified in the Company's Articles of Association.

- **Prevention of the abuse of inside information:** The Company followed corporate governance practices in preventing the abuse of inside information. The written policy and guidelines were prepared to safekeep inside information from abusive acts. The policy and guidelines are included in the Company's Code of Conduct, regulations, orders and related announcements for the acknowledgement and compliance by directors, executives, employees and stakeholders. Directors, executives and employees signed their acknowledgement on their first day of employment or on the orientation day. Aside from the Audit Committee's control via the Internal Audit Division and other assigned units, the policy and guidelines were reviewed at least once a year by the Corporate Governance Working Group, the Corporate Governance and Social Responsibility Committee, and the Board of Directors. The policy and guidelines are published in the internal communication channel and the Company's website. The key preventive measures are as follows;

- All executives and employees must protect the Company's confidential information and must not use such information for personal benefit or suggest others to do, particularly concerning the trading of the Company's securities.

- No disclosure/abuse/transfer of inside information and/or confidential information to outsiders or irrelevant persons including family members, cousins and friends. No actions that may decrease the Company's benefit.

- Sharing or giving confidential information to other persons within the Company can be done if necessary and only to support the persons' tasks.

- The Company requires directors and executives to report securities holdings and the changes in securities holdings of their own, spouses and minor children to the SEC according to Section 59 of the Securities and Exchange Act B.E. 2535 within 3 days from the date of change and notify the Company Secretary who will keep records and complete a summary of individual directors and executives' securities holdings for the Board of Directors' acknowledgement. Securities holding reports are part of the Board of Directors' monthly meeting agenda. All executives and employees must report the change of the securities holdings of their own, spouses and minor children to the Chief Executive Officer within 3 days after the date of change, as a preventive measure against the abuse of inside information for their own or related persons' gains.

- The Company defined and announced the "Network and Computer Usage Policy" through its internal communication channel and website, which served as guidelines for efficient use of the Company's computer network, maximum benefits and compliance with the Computer Crime Act. The Company has continually improved the efficiency, security and prevention of cyber threats. The key guidelines are summarized as follows:
  - Allowing usage only with passwords which must be kept confidential.
  - Encouraging employees to use the Internet for work only and not to distribute information that is against moral norm, tradition and laws.
  - Using the authorized email, Internet and computer device accordingly to safety instructions, only for the Company's benefits.

- Using only copyrighted programs.
- Running search, monitoring, investigation and control of information technology system usage as necessary and appropriate to ensure safety.

Throughout 2019, no director or executive was accused of not reporting their securities holdings as required by the Company or wrongfully using inside information for their own or others' benefits.

Role of stakeholders

The Company's Board of Directors clearly defines the policy and guidelines on stakeholder groups. The Company's Code of Conduct was reviewed and improved as the framework for directors, executives and employees in treating each stakeholder group including shareholders, employees, customers, creditors, partners, competitors, the government and communities around the Company's premises, to ensure the protection of their lawful rights. The policy and guidelines are announced and published through various channels and the Company's website. Here is the summary:

Treatment of Shareholders

- Operate business for growth, profit and positive returns to shareholders.
- Operate business with carefulness, caution, integrity and fairness for all shareholders.
- Respect the right to receive information; and disclose quality, accurate, complete, sufficient, and equitable information.
- Monitor and ensure compliance with the policy and Code of Conduct related to shareholders, ensuring the basic rights as well as fair and equitable treatment and quality information. Encourage shareholders to attend the shareholder meeting, engaging them in the making of significant decisions, acknowledgement of the progress of the Company's operations and activities, the expression of opinions and recommendations, as well as the monitoring on the Board of Directors and the Management's activities. Efficient measures are in place to prevent directors and executives from using inside information for their own benefits. They must also not take any action that infringes or lessens shareholders' rights.

Treatment of Employees

- Promote quality of life by providing decent work environment, occupational health and safety.
- Emphasize continuous and thorough management and enhancement of its personnel's knowledge and capability.
- Manage and ensure appropriate remuneration and welfare, comparable to that offered by other leading companies.
- Transfer, appoint, reward and punish employees equitably and fairly.
- Allow employees to lodge complaints accordingly to the prescribed system and procedure.
- Monitor and ensure full compliance with work-related laws and regulations.

Treatment of Community, Society and Environment

- Promote community engagement with focus on communications.
- Support community development and enhance community strengths.
- Promote the conservation and restoration of local tradition and enhance social quality.
- Support environmental conservation and restoration.
- Operate business with responsibility for community, society and environment.

Treatment of Customers

- Produce and deliver quality products and services with responsibility for customers.
- Provide warranty for products and services under an appropriate condition and period of time.
- Disclose complete and accurate information on products and services.
- Provide a complaint system and process whereby customers can lodge complaints on products and services and handle complaints as best as possible.
- All executives and employees must keep customers' information confidential.

- Do not ask for, accept or pay any illegal benefit to customers while strictly complying with trade conditions.

Treatment of Creditors

- Strictly respect creditors' conditions.
- Do not ask for, accept or pay any illegal benefit to and from creditors.
- Cooperate well with creditors to solve problems related to requests for, acceptance or payment of illegal benefits.
- Provide accurate, complete, timely and regular financial reports.
- Inform creditors in advance if the Company cannot meet conditions to jointly seek mutual solutions.

Treatment of Partners/Suppliers

- Consider the Company's best benefits, not personal benefits.
- Offer partners and suppliers an equitable and equal opportunity.
- Adopt international standards for partner assessment and selection as well as internationally-accepted contract formats.
- Put in place a system to monitor full compliance with contracts and conditions.
- Do not ask for, accept or pay any illegal benefit to partners.
- Inform partners/suppliers in advance in case the Company cannot meet the conditions so as to jointly find a mutual solution.

Treatment of Competitors

- Respect and adopt internationally-accepted competition guidelines and principles.
- Do not seek competitor's confidential information through dishonest or inappropriate means.
- Do not accuse competitors groundlessly.
- Do not ask for, accept or pay any illegal benefit to trade competitors.
- Strictly respect trade conditions.

Treatment of Business Partners

- Strictly adhere to agreements and commitments.
- Provide business assistance that will bring about mutual benefits, considering the Company's benefit as priority and basing decisions on fair return for both parties.
- Provide accurate information and reports and when concerning negotiations and problem solving, focus on business relations.

Treatment of Public Sector

- Support government activities and comply with government policies and related regulators' regulations.
- Promote and support collaboration for public organizations' activities.

Violations against the code of conduct are subjected to prescribed disciplinary actions or legal punishment should they are against the laws.

Board of Directors' responsibilities

Board of Directors Structure

- **Component and qualification** (Details appeared in Management Structure Page 72)

- **Chairman's independence**

The Chairman is a non-executive director. Despite the fact that the Chairman is the representative of EGAT, the major shareholder holding a 45 per cent stake in the Company, the Board of Directors also comprises 6 independent directors, representing over 50 per cent or more than one-third of the total of 12 directors. As a result, the directors can independently perform their duties as the shareholders' representative with appropriate checks and balances. The Chairman independently performs his duty and does not influence or convince other directors during discussions. He also encourages all directors to discuss and express opinion openly by giving sufficient and appropriate time for thorough, complete and beneficial decisions. Resolutions are thus reasonable and effective.

- **Separation of the Chairman and Chief Executive Officer positions**

The Chairman is not the same person as the Chief Executive Officer and has no relations with the Management. The separation of the Chairman and

the Chief Executive Officer positions has ensured proper checks and balances and prevented excessive power. Their roles and scopes of responsibility are clearly defined: while the Chairman is the leader and plays a significant role in deciding the Company's policy based on the Board of Directors' resolutions as well as business goals per discussions with the Management. The Chairman leads and conducts the meetings in efficient and effective manner, and encourages all directors to participate in the meeting and openly express their opinion. The Chairman also supports and regularly provides the Management recommendations on the operations through the Chief Executive Officer without interfering routines which are the Management's responsibilities. Meanwhile, the Chief Executive Officer is the only executive director and is the Management's top officer whose roles and responsibilities are explained in Management Structure Section.

- **Directorship in Other Companies**

None of the Company's directors holds positions in more than three listed companies, which complies with the Company's rules on the Board of Directors and the SET's recommendation on director's efficiency and time contribution. More information about individual directors is revealed under Profiles of Directors, Management Structure Section.

Mr. Kijja Sripatthangkura, Chief Executive Officer, does not hold directorship in other company aside from the Company's subsidiaries and joint ventures. For other directors and executives, the Board of Directors has approved their directorship and executive position in subsidiaries and joint ventures depending on their knowledge, skills, responsibility and time slots.

The Board of Directors has formulated the Company's regulation on Subsidiaries, Affiliates and Joint Ventures Supervision, covering clear criteria for the appointment and responsibilities of the Company's representatives assigned to hold directorship or hold stakes in the entities in which the Company invests. Such is to relay the Board of Directors' policy and maintain flows of reports on the entities' operations. (Details of the assigned directors and shareholders in subsidiaries and joint ventures appeared in Directorship and Executive Section)

- **Director nomination** (Details appeared in Management Structure Section)

- **Board of Directors' secretary and Company secretary** (Details appeared in Management Structure Section)

Sub-committees

The Board of Directors has appointed 5 subcommittees namely the Audit Committee, the Human Resources and Remuneration Committee, the Risk Management Committee, the Investment Committee and the Corporate Governance and Social Responsibility Committee. The sub-committees help review information, screen particular issues and enhance the efficiency of the Board of Directors. (Details appeared in Management Structure.)

Roles, Duties and Responsibilities of the Board of Directors

The Board of Directors is aware of its roles, duties and responsibilities, being committed to independent decision making for the best benefits of the Company and its shareholders. All directors give importance and honor the responsibility towards shareholders who own the business and appoint directors to supervise the operations for shareholders' maximum benefits. The Fiduciary Duty covers four major responsibilities namely Duty of Care (perform with care), Duty of Loyalty (perform with integrity), Duty of Obedience (compliance with laws, goals, regulations and shareholders' resolutions), and Duty of Disclosure (disclosure of accurate, complete, transparent and timely information).

Board of Directors' roles, duties and responsibilities are summarized as follows:

- Define and review the Company's strategy, business plan, policy, budget, business direction and supervision with participation of the Management on an annual basis.

• Consider and approve human resource management strategy, executive development plan, organization structure, remuneration structure, and remuneration plan.

• Consider criteria, method and process for the recruitment, dismissal and termination of directors and high level executives.

• Supervise the evaluation process of high level executives to ensure effectiveness, benchmarking the performance against the mutually agreed goals.

• Communicate the Company's vision, goals and operating results to directors, executives and employees to ensure acknowledgement and understanding throughout the entire organization.

• Monitor the progress, efficiency and success of the strategic plan implementation, benchmarking against short and long term goals and competitors' operational efficiency and effectiveness; disclose the implementation result and the governance under good corporate governance principles in the annual report; and require the Management to present regular reports to the Board of Directors as follows:

- Monthly reports covering monthly operational performance analysis; short and long term invested capital summary; cash flow statement; progress of invested project; peak load and electricity supply of EGAT and Thailand; securities holdings and/or change in holdings of directors, executives and spouses and minor children; and share prices of energy stocks.

- Quarterly reports including quarterly financial results, risk management and performance of CSR projects.

- Annually reports covering annual financial statements, annual performance evaluation against targets, sub-committees' meeting minutes and the Board of Directors' annual report.

In 2019, the Board of Directors thoroughly reviewed the strategic plan and business strategies and approved vision, mission, goals, business strategies and performance evaluation criteria in response to changes in global circumstances for implementation in 2020. The task is to support the long-term plan within 2023 and also supports the Company's strategy to diversify its businesses and strengthen its core business for long-term growth. In case that the operational performance does not meet targets due to controllable factors, the cause of the problems will be analyzed and corrected. In case that such problem arises from uncontrollable factors, the plan has to be reviewed and new and/or alternative target shall be set as deemed appropriate.

To promote good understanding between directors and among directors, the Management and employees, in 2019, the Company arranged informal meetings of directors, the Management and employees, including the Company's activities such as those under corporate social and environmental responsibility projects, annual recreational activity for directors and internal knowledge development activity.

• Ensuring completeness of significant issues namely the right mix of independent directors to balance the power of the Management and/or major shareholders; reviewing and approving vision, strategy, mission and Code of Conduct, and communicate with employees at all levels for their acknowledgement and implementation; auditing and approving annual financial reports to strengthen shareholders' confidence; supervising internal audit procedure, internal control and risk management system, prevention of conflict of interest, connected transaction, protection of corporate reputation, optimal resources exploitation efficiency and effectiveness; and ensuring full compliance with related laws, rules, regulations, Articles of Association, Code of Conduct as well as good corporate governance principles.

• Establishing and approving the roles and responsibilities of the Company's sub-committees as appropriate and necessary.

• Setting criteria and evaluating the performance of the Board of Directors and sub-committees for both the entire Board/sub-committee and individual members, on a yearly basis and disclose the results in the annual report.

– Setting up Board of Directors' meeting schedules and voting

- Schedule Board of Directors' meeting at least once a month (pre-set schedules for next year) and hold at least one meeting for non-executive directors per year to offer the directors a chance to review the performance of the Board of Directors, the Management and the Company, and to discuss significant management issues without presence of the Management. The Chief Executive Officer will be informed of the meeting resolutions and subsequently improve efficiency.
- Directors with vested interests in specific agenda item shall not be present at the meeting and shall abstain from voting.
- Assign one vote to each director. Directors with vested interests in specific agenda item shall not have the right to vote. In case the number of votes is equal, the chairman of the meeting shall make the costing vote.

Board of Directors meeting

• **Board of Directors' meeting principle and guideline:** For maximum benefits of the Company and its shareholders, the Company highly emphasizes directors' independence. Directors must perform their duty with loyalty, integrity and care for the Company's and the shareholders' benefits, always holding in mind that they represent shareholders. They must take a leading role, observe the operations, give advice, closely assist and support the Management.

• **Meeting schedule and meeting agenda and document preparation:** In 2019, the Board of Directors set the meeting schedules for the Board and sub-committees for the next year in advance and notified each director of the schedules. The Board's meetings were scheduled at 14.00 hours of the third Monday of each month, while sub-committees' meetings were scheduled accordingly to their missions. Members were informed of the schedules in advance.

The Chairman and the CEO jointly considered the matters to be included in meeting agenda to ensure that all significant matters are included. Directors were informed of the agenda in advance and the meeting notice was distributed at the appropriate time according to the Company's regulation. However, directors were free to propose other matters by submitting the proposal 10 days prior to the meeting date. In case of urgent matters which may directly or indirectly affect the Company, directors were free to propose such matters for consideration or acknowledgement during the meeting. (Method for deciding matters to be included in the agenda and the method for directors to propose other matters are stated in the Company's regulation on the Board of Directors and published on the Company's website. Board members were individually informed in advance via meeting notice.)

Meeting agenda was grouped for easy consideration and the meeting was run in the pre-set sequence namely matters to be informed by the chairman, approval of minutes of the previous meeting, matters arising from the previous meeting, matters proposed for consideration, matters proposed for acknowledgement, and others (if any). Regular matters to be proposed to the Board of Directors at the specific period, such as monthly, quarterly and annual agenda are set in advance. Schedule of monthly performance analysis report and progress of projects that the Company invests in are also reported to the Board of Directors meeting every month.

The Company sends meeting notice, agenda and related documents to each director approximately one week prior to the meeting date, providing them sufficient time to study the information. Directors may ask for more information from the Chief Executive Officer and the Company Secretary Office. Members of the sub-committees can ask for more information related to their tasks from the Chief Executive Officer and through the secretary of each sub-committee.

• **Roles of Chairman, directors, executives and meeting atmosphere**

- **Chairman** leads the meeting, sufficiently and adequately allocates time for directors to equally discuss and express opinions, encourages directors to participate in the discussion and freely express opinions, and summarizes the resolutions.

- **Directors** share opinions based on the study of the information provided by the Management and other necessary and relevant information. They discuss constructively, taking into account the benefits and impact as well as risks for the Company and all stakeholders in order to obtain the meeting resolution. Directors shall fully contribute time, knowledge and experience to their role as directors of a listed company.

- **Executives** are responsible for providing accurate, sufficient, complete and timely information that is relevant and necessary to support the Board of Directors' decision, as well as present the information in advance in order to allow sufficient time to study the information. The Management shall propose options to the Board of Directors, and provide information and clarify additional information when asked in the meeting. The Board of Directors requires the presence of high level executives from all functions to attend and invites other executives and/or relevant advisers for more details on specific matters.

- **Meeting atmosphere and expression of opinions:** The Company provides appropriate and sufficient meeting equipment and facilities. The meeting atmosphere is open and encourages all directors to participate in the discussion and openly and positively express opinions based on mutual benefit and impact on all stakeholders. Each meeting lasted 2 hours to 2 and a half hours on average.

- **Meeting process:** For the consideration and discussion of general issues, the Management presents the background, rationale, necessity, clarifications and related information to support the Management's decision making process and the Management's proposal. The Chairman allows sufficient time for all directors to discuss all issues and encourages directors to express opinions and ask questions on important matters for the Management to clarify. Afterwards, all will make a decision.

- **Directors with vested interests** in a specific matter cannot vote on the matter (vested interests are based on the reports of the interests of each director and executive and their related persons' interests which were submitted to the Company Secretary.) This has been strictly implemented at all Board of Directors meetings.

- **Consideration of connected transaction and items that may involve conflict of interest** is done by taking benefits of the Company and shareholders into consideration. Necessity and reasons for each matter is compared with transactions of similar nature. Correct and complete process and the disclosure of accurate and complete information as required by laws are highly weighted.

- **Company Secretary** provides initial recommendation to the Management and the Board of Directors to ensure that they perform in line with laws and related regulations, such as the disclosure of asset acquisition or disposal, connected transaction and compliance with good corporate governance principles.

• **Meeting minutes preparation and storage**

- **Company Secretary Office** is assigned by the Board of Directors to record, prepare and keep the minutes of the Board of Directors' meeting and shareholders' meetings.

- **Meeting minutes** are in writing and cover all important details, including date and time, the start and the end, meeting venue, list of attending directors and executives, list of absent directors, summary of the matters presented in the meeting, summary of the discussed matters, opinions and observation of the directors, the meeting resolution, and the signatures of the minutes taker and the meeting chairman. Meeting minutes are completed within approximately three

days after the meeting and delivered to all directors for consideration. If no revision is made within 7 days, the minutes are considered approved and then delivered to be signed by the meeting's Chairman. A copy of the signed meeting minutes is then delivered to each director for reference. In addition, the certified meeting minutes will be added as an agenda for acknowledgement in the next meeting.

The Company deploys both paper and e-document systems to keep important documents such as those concerning Board of Directors' meetings and shareholder meetings, to assist the Company's operations and facilitate the usage. Storage sites are reported as required by the SEC. Proper security system is in place for the documents: individuals with access to important documents are named accordingly to the Company's confidential information management policy; passwords are issued; the number of meeting attendants is limited; and an automatic secondary data system is located at the main office building and secondary offices in case of emergencies.

- **Dissemination of meeting resolutions:** The Company Secretary distributes the Board of Directors' written resolution to related units for their acknowledgement and/or implementation. The implementation will be monitored and reported to the Board of Directors.

• Board of Directors and sub-committee's meetings (Details appeared in Management Structure)

Performance assessment

Self-assessment of Board of Directors and sub-committees:

In 2019, the Board of Directors reviewed and approved the reviewed self assessment form for the Board of Directors and sub-committees, as a group and individual, as endorsed by the Human Resources and Remuneration Committee. The Board of Directors conducts self-assessment with the objective to use the result, observation and recommendations for further improvement of the Board and sub-committees in line with good corporate governance principles and the Company's regulations on the Board of Directors. The regulations require the Board of Directors and sub-committees to conduct self-assessment at least once a year, in December, on a group and individual basis, so that members review their performance and seek improvement. The assessment criteria, process and results are included in the Annual Report. The results are also used to enhance specific knowledge and skills of individual directors.

The assessment is conducted as a whole as well as on an individual basis. In both aspects, the assessment covers many important areas according to the good corporate governance principles for listed companies, including 1) the Board of Directors' readiness (that covers structure, components, independence, responsibilities and development), 2) strategy formulation and business supervision, 3) separation of roles, responsibilities and assignments 4) supervision and monitoring 5) human resource management 6) risk management and internal control 7) communications with stakeholders 8) risk management and internal control and 8) Board of Directors' meetings (covering the entire process from (1) pre-meeting: meeting notice is sent in advance to provide sufficient time for consideration and requests for additional information from the Management (2) during meeting: presentation of information and key issues, discussion and question answering, absence at the meeting and vote abstaination in the agenda in which they have vested interests, and voting and (3) post-meeting: or post-meeting: ensuring accurate, complete, sufficient meeting minutes, which should be completed in an appropriate period, endorsed and stand ready for relevant parties' cross-examination.)

The sub-committees' self-assessment, as a "whole" or "individual", is based on the following factors: 1) sub-committee's readiness (covering structure, component, independence, roles and responsibilities, and members' development) 2) sub-committees' meetings (meeting dates scheduled a year in advance, completion of assignments from the Board of Directors, and meeting process (1) pre-meeting: provision of

relevant document ahead of meetings for sufficient consideration period and requests for additional information from the Management (2) during meeting: presentation of data and key issues, discussion and question answering, and voting and (3) post-meeting: ensuring accurate, complete, sufficient meeting minutes, which should be completed in an appropriate period, endorsed and stand ready for relevant parties' cross-examination and 3) roles, duties and responsibilities of sub-committees.

Criteria of Board of Directors and sub-committee's set-asessment, on "whole" and "individual" basis are as follows:

1. 5 levels of opinion and action assessment

Opinion/ Action	Score
Strongly disagree/No action	0
Disagree/Slight action on that issue	1
Agree/Enough action on that issue	2
Strongly agree/positive action on that issue	3
Extremely agree/excellent action on that issue	4

2. Criteria of Board of Directors' self-assessment

2.1 Criteria of the self-assessment of "whole" Board of Directors contain 25 factors with 100 points. Assessment is put into 5 levels, each containing 10 points. "Individual" assessment contains 15 factors with 60 points. Assessment is put into 5 levels, each assigned 6 points.

Level	Whole assessment	Individual assessment
	Average score	Average score
Excellent	90 points or higher	54 points or higher
Very good	80-89 points	48-53 points
Good	70-79 points	42-47 points
Fair	60-69 points	36-41 points
Improvement needed	Below 60 points	Below 36 points

2.2 Criteria of the "whole" self-assessment of sub-committees contain 20 factors with 80 points. Assessment is put in 5 levels, each given 8 points. On "individual" basis, there are 10 factors with 40 points and 5 assessment levels, each given 4 points.

Level	Whole assessment	Individual assessment
	Average score	Average score
Excellent	72 points or higher	36 points or higher
Very good	64-89 points	32-35 points
Good	56-63 points	28-31 points
Fair	48-55 points	24-27 points
Improvement needed	Below 48 points	Below 24 points

Assessment Results

In 2019, the Board of Directors and sub-committees' self-assessment results are as follows:

Board of Directors	2019			
	Whole		Individual	
	Score (100 points)	Level	Score (60 points)	Level
	97.09	Excellent	58.73	Excellent

Sub-committees	Score (80 points)	Level	Score (40 points)	Level
Audit Committee	77.33	Excellent	39.00	Excellent
Human Resources and Remuneration Committee	79.00	Excellent	40.00	Excellent
Corporate Governance and Social Responsibility Committee	79.00	Excellent	39.50	Excellent
Investment Committee	78.67	Excellent	39.67	Excellent
Risk Management Committee	79.67	Excellent	40.00	Excellent

Based on the results, the Company will further improve the performance of the Board of Directors and sub-committees and individual directors, in line with corporate governance practices.

High-level executives' performance assessment

With the screening from the Human Resources and Remuneration Committee, the Board of Directors conducts an annual assessment of high level executives' performance, based on the criteria that were mutually agreed upon early of each year. In 2019, the criteria cover 2 categotries: 1) performance against corporate targets in quantitative and qualitative terms (weight 60%) - capacity target including equivalent capacity), new business or startup project, net profit before FX and special items, financial ratio, sustainability awards score, high performance organization and engagement and 2) operational performance against functional target (weight 40%) , varying accordingly to their functions, in adding business value or supporting corporate goals. The assessment also focuses on their competency and managerial skill: covering leadership; the formulation and compliance to strategy; planning and financial management; relations building and networking; business insight; and, for the Chief Executive Officer, personal character traits. The assessment results are used in determining their remunerations, executive rotation, and knowledge/skill development plan in line with the Company's business contexts such as financial status, operational performance, succession plans, and etc.

Directors' and high-level executives' remunerations

(Details appeared in Management Structure)

New director orientation and the development of directors and executives

Newly-appointed directors will be given orientation and/or a briefing by the Chief Executive Officer on the nature of business, the roles and duties of the Board of Directors and sub-committees, investment structure, corporate structure, financial performance, projects and assets the Company invests in, the Company's corporate governance practices, rules, policies, Code of Conduct, as well as directors' remunerations and privileges. They will be given annual reports, sustainability reports, the manual for listed companies' directors, compliance database of the regulators of listed companies, and documents regarding the above subjects. The orientation is held according to the Board of Director's policy to prepare directors for their duties.

Director development: To enhance understanding of roles, duties and responsibilities as well as necessary skills so that they can be an efficient director of a listed company's director, the Company financially supports directors' participation in training and seminars arranged by related organizations, such as Thai Institute of Directors Association (IOD), Stock Exchange of Thailand and Thailand Energy Academy. Financial supports cover seminars and field trips in Thailand and overseas, to broaden their knowledge and experiences which will benefit the Company's business.

Directors' attendance in director-related training courses in 2019 and other years appeared in individual directors' biographies.

Additional training courses for directors in 2019 besides disclosed in their biographies are summarized as follows:

1. A visit to observe Hongsa thermal power plant's operations in Lao PDR
- Directors visiting the power plant and attending a seminar were Mr. Sutat Patmasiriwat, Mr. Chartchai Rojanaratanangkule, Mr. Samack Chouvaparnante, Mr. Somboon Nhookeaw, Mr. Ratanachai Namwong, Mr. Boonyanit Wongrukmit and Mr. Kijja Sripatthangkura.

2. Visits to geothermal power plants in Iceland and Norway
- Directors visiting the power plant and attending seminars were Mr. Sutat Patmasiriwat, Mr. Chuan Sirinunporn, Mr. Chartchai Rojanaratanangkule, Mr. Apichart Chinwanno, Mr. Samack Chouvaparnante, Mr. Somboon Nhookeaw, Mr. Ratanachai Namwong, Mr. Boonyanit Wongrukmit and Mr. Kijja Sripatthangkura.

3. RATCH Strategy Workshop 2019
- Directors attending a seminar and field trip were Mr. Chuan Sirinunporn, Mr. Chartchai Rojanaratanangkule, Mr. Apichart Chinwanno, Mr. Somboon Nhookeaw, Mr. Ratanachai Namwong, Mr. Boonyanit Wongrukmit, Mr. Boonsong Kerdklang, Miss Nantika Thangsuphanich and Mr. Kijja Sripatthangkura.

4. Seminar on auditor-proposed audit adjustments for listed companies' 2018 financial statements
- Audit Committee's members – Mr. Chartchai Rojanaratanangkule and Mr. Boonsong Kerdklang – attended the seminar.

The Management regularly prepared a summary report of the rules, regulations and memorandum, both newly issued and amended by the SEC and the SET, for the Board of Directors, serving as guidelines to ensure strict compliance with laws and regulatory bodies' regulations and shape the sustainability path.

The Company also sent executives and relevant operators to attend company secretary, corporate governance, internal audit, anti-corruption and risk management courses as well as other related courses organized by various institutes and organizations. This enables them to better understand their responsibilities and support the works of the Board of Directors and sub-committees more efficiently.

Succession plan for high level executives

The succession plan for the Chief Executive Officer follows the policy of EGAT, the Company's major shareholder. EGAT picks its executive who has appropriate qualifications, knowledge and capability beneficial to the Company and nominates the person to the Board of Directors for consideration and approval through the Human Resources and Remuneration Committee, as the sub-committee is assigned to outline and prepare succession plans for high level executives.

Regarding the succession plans for other executive positions, the Company has prepared and developed career path of individual position by employing competency model which has been developed in systematic manner, covering analysis of competency and expected qualifications of different positions. The result will be use in human resource development and nomination of qualified persons to be promoted, demoted, retired, and transferred and to prepare the Company's personnel for current and future business expansion.

In 2019, the Company appointed capable and qualified executives for vacant positions in each level, in line with the process and plan of successor and talents selection matching with the Company executives' retirement annually.

Reporting of directors' and executives' interests

The Board of Directors required all directors and executives to report interests of their own and their related persons once taking their posisions as specified in the "Directors' and Executives' Interests Report Form". The original report shall be submitted to the Company Secretary for record keeping and the copy shall be submitted to the Company's Chairman and the Chairman of the Audit Committee on an annual basis. The report must be updated immediately after a change, to assist the Board of Directors' consideration and decision which person, with vested interests, should not involve in the voting on the Company's transactions or which persons having conflict of interest. The information will help the Board of Directors reach a conclusion that benefits the Company in an appropriate and transparent manner.

Transaction that involves or may involve conflict of interest

The Board of Directors provides a guideline in handling conflict of interest transparently and accountably, which is included in the Company's regulation on the Board of Directors. The guidelines state: "Directors with vested interest in any particular issue shall not have the right to vote on the issue". The Board strictly complies with the regulation. The Board of Directors and the Audit Committee have an important role in formulating measures to handle and prevent conflict of interest and supervising the operations in a reasonable manner. This includes the disclosure of complete information in accordance with related regulations for the overall benefit of the Company.

Based on the Audit Committee's screening and approval, the Board of Directors ensures that the connected transactions of the Company and subsidiaries are done for the benefits of the Company and subsidiaries, based on the same pricing and conditions as in transaction with other business. Accurate and complete disclosure of such transactions is required according to related regulations. For flexibility and convenience, the Board of Directors authorized the Chief Executive Officer to approve regular buisness connected transactions or regular business-supporting transactions in general which contain normal conditions and trade agreements and are valued no more than Baht 30 million each. Such transactions shall be reported to the Board of Directors on a quarterly basis, as demanded by Section 89/12 of the Securities and Exchange Act.

In 2019, no director or executive was engaged in transactions that involved or may involve conflict of interest, except transactions with EGAT which were disclosed as part of connected transactions. Regarding the transactions, directors representing EGAT were not present at the Board of Directors' meeting or cast their vote on the matters.

Communications and monitoring of compliance with the corporate governance policy and business ethics

For new hired employee's orientation, the Company will give briefing on the Company's overall business operations, investment structure, organizational structure, operating result, good corporate governance practice, anti-corruption

guidelines and corporate social and environmental responsibility principles, rules, regulations, policy, business ethics, remuneration, benefits and welfare. Supporting documents such as the Code of Conduct and other documents that can be used as guideline and reference when performing duties are given at the orientation and the new employees have to sign their acknowledgement. Corporate governance policy is communicated throughout the Company from the Board of Directors and high level executives to all level of employees. The Company also provides communication channels to listen to and collect employees' problems, concerns and recommendations, to consider further actions and assessment to ensure that practices are in line with the good corporate governance principle. The Intranet, email system that employees have easy access and internal meetings, official and unofficial, are channels provided to effectively communicate, raise awareness and commitment to implementation of Code of Conduct. The implementation result is reported to sub-committees and the Board of Directors for acknowledgement, respectively.

Aside from regular discussions with other divisions, the "Internal Audit Division" has been assigned to be responsible for monitoring and following up with the implementation under its annual audit plan and a quarterly report the audit results as well as making recommendation on solution and prevention of possible damages to the Audit Committee and the Board of Directors respectively.

The "Compliance Database" was prepared, distributed to the Board of Directors and published on the Company's internal database.The database serves as guidelines on a listed company's practices concerning information disclosure, connected transaction, the acquisition or disposal of assets, and etc. The information is regularly updated and accessible to all employees.

The Board of Directors prepared the "Directors' and Executives' Interests Report Form" and instructed the Directors and executives to report their interests and related persons' to the Company Secretary for reference and record. The Company Secretary shall make a copy and report it to Company's Chairman and the Chairman of the Audit Committee, as required by the Securities and Exchange Act. The report will be used when considering those who shall not vote at the Board of Directors' and shareholders' meetings.

In addition, the Corporate Governance Working Group, comprising executives from all functions, was assigned to communicate, follow up and recommend corporate governance practices in accordance with the Corporate Governance Policy and Code of Conduct. The Working Group also reports the implementation results of corporate governance practices and anti-corruption related risk management plans to the Board of Directors, the Corporate Governance and Social Responsibility Committee, the Audit Committee, the Management and other committees or related units in accordance with the pre-set procedure.

Information disclosure and transparency

Types of disclosed information

The Company discloses both financial and non-financial information in periodic and non-periodic reports. The objective of the reports is to provide accurate, complete, sufficient and timely information that support readers' investment decision. In 2019, the Company's disclosed information is summarized as follows:

Summary of reports in 2019	Times
Periodic reports	32
Non-Periodic reports including reports on analyst meetings	45
Analyst meeting reports	4
Company Visit	50
Domestic Roadshow	3
International Roadshow	4
Press releases on financial statements and major activities	4
Media participation in CSR activities	4
Press and photo releases	24
Site visit by shareholders and investors, in Thailand and overseas	2
Exhibition	3
Executive interview	1
Corporate website visit (monthly average)	7,216
(From 1 January 2019 to 31 December 2019, totaling 86,598 times.	

Information quality

Information quality refers to accuracy, clarity, completeness, sufficiency, timeliness, transparency and accountability. Significant information disclosed by the Company includes both financial and non-financial information. It is not one-sided as it presented both positive and negative aspects. The disclosure complies with related criteria and regulations, such as immediate disclosure of significant information, comprehensive distribution to the general public, clarification on rumors and news, actions on irregular stock trading which must not unreasonably buoy the irregularity, and stock trading by insiders. The disclosure must not cost the Company excessively or infringe the Company's competitiveness. Other details are presented under the Rights of Shareholders section and Board of Directors' Report on Its Responsibility to the Financial Reports which is published along with the Independent Auditor's Report in the Annual Report and the Audit Committee's opinion on the quality of financial reports as published in its report.

Disclosing quality information to outsiders not only reflects the Company's transparency but also enhances investors and related persons' confidence and trust. As a result, the Board of Directors closely supervised and monitored to ensure that responsible persons follow the plan which is above legal disclosure requirement and that investors have equal access to such information.

Disclosure channels

The Company primarily discloses information via SET's disclosure system and uses other channels as deemed appropriate, like the Company's website, press conferences to reveal financial results, analyst meetings, press releases, roadshows in Thailand and overseas, and other activities as detailed in Types of Disclosed Information.

The Board of Directors and the Management give importance to the disclosure of significant information. The disclosure has been closely monitored to ensure that it meets specified principles and rules, and strictly supervised the implementation of such activity. Authorized and responsible persons are designated while information distribution channels are developped to ensure information disclosure quality as follows:

- **Authorised persons to disclose information:** The persons assigned by the Company to disclose

information are the Chairman, directors, Chief Executive Officer and chief officers. Corporate Relations Division and Investor Relations Department are responsible for preparing information and key messages to communicate with media and securities analysts. Corporate Secretary Division is in charge of coordination with concerned regulators base on relevants relutions and rukes, while Finance Function is responsible for financial information disclosure according to relulations and rules.

- **Communication channels:** Based on the commitment to providing complete and equitable access to the Company's significant information, the Company communicates via various channels and covers both one-way and two-way communication. The distributed information is prepared in Thai and English and distributed at the same time via SET's electronic channel as the main information disclosure channel; the Company's website (www.ratch.co.th) for better understanding and greater convenience of shareholders, investors, the interested and the general public. The Company also released information via analyst meetings; domestic and international roadshows; press conferences to announce quarterly and annual performances; distribution of news releases and photo releases of the Company's activities; executive interviews; exhibitions; site visits for shareholders, institutional investors and analysts; and media relations activities.

Investor relations

The Company assigned the "Investor Relations Department" to be the communication center. It fairly and equitably provides information and news as well as arranges activities to build and strengthen relationship between the Company and its shareholders, institutional investors, individual investors, analysts and concerned government agencies. The Department is also responsible for preparing annual investor relations plan regularly participated by high-level executives. The Chief Executive Officer and high-level executives act as spokespersons who report, provide additional information, clarify and answer questions at the analyst meeting, local and international road shows. The Department can be contacted at: by post under the Company's address; phone number +66 2794 9841 or fax +66 2794 9888 Ext. 9841; the Company's website www.ratch.co.th or email to IR@ratch.co.th

Disclosure of directors and executives remuneration policy and payment

The Board of Directors discloses the director and executive remuneration payment policy by categories; remuneration of individual director and type of remuneration, and executives's renumeration and type of renumeration. Overall employees' remuneration is also disclosed. (Details are explained in Management Structure.)

Use and protection of intellectual property

The Company requires all employees to protect the Company's intellectual property and use it only for the Company's benefits. Desirable practices are included in the Code of Conduct and the Network and Computer Usage Policy, demanding all employees to respect others' rights and intellectual property and avoid infringing the Company's and others' intellectual property. Employees' access to information and use of intellectual property will be terminated when their employment ends.

Use of network and computer

All employees are granted the right to use network and computer, under the Network and Computer Usage Policy and the Group's IT Usage Manual. Accounts and passwords are assigned to each employee and mitigation plans against cyber attacks and internal/external emergencies are systematically outlined. The supervisors to prevent, analyze, assess and tackle each case are appointed and handed a manual. Prevention and control programs against attacks are deployed. Employees are prohibited from using network and computer for illegal acts or any actions that cause damage to others; jeopardize social orders and morals; seek personal gains; disclose confidential information on employees, the Company and outsiders obtained

as a result of their employment; or violate the Company and others' intellectual property; and etc. Such rules are to maintain network and computer safety, prevent negative impacts on business from cyber attacks, and ensure efficient use. They are also aligned with the Company policies including Network and Computer Usage Policy, information classification policy, business continuity policy, the Computer Crime Act, and cyber attack-related risk management. Access to the Company's intellectual property relating to network and computer is terminated at the end of their employment. Violations that cause or may cause damage to the Company or any individual may lead to disciplinary actions or legal actions if such actions are unlawful.

Promoting community engagement

The Board of Directors reviewed the policy on society and environment which serves as a guideline to support the Group's emphases on community engagement, communications; the development and strengthening of communities; local tradition preservation and restoration; and environmental conservation and restoration. The emphasis reflects in all activities of the Company, in the operating or under development process. During project development period, the Company studied preliminary technical information in parallel with a study on the community's economic and social conditions, traditions and way of life, in order to prepare community participation plan and key communication message as well as activities to promote understanding in the project and receive communities' opinions on various issues. The process is conducted within the requirements set by government agencies and related regulators. During the construction period, the Company regularly communicates with communities on its operations and policy towards community. Close and regular communications continue after the project is operational, to welcome recommendations for continued improvement of the Company's activities so that they truly address community needs.

In addition, Ratchaburi Electricity Generating Company Limited established the "Ratchaburi Power Plant Environment Inspector Committee", comprising representatives from communities, community leaders, local and provincial administrative bodies. The committee is responsible for monitoring and ensuring that the power plant operations are in accordance with Ratchaburi Power Plant's environmental impact prevention and mitigation measures stated in the environmental impact assessment report. The committee also acts as the coordinator with power plants and provides information, problems or possible issues and recommendations from communities. It is an important channel that promotes community participation in the systematic and continuous monitoring of the Company's operations.

In 2019, the Company hosted CSR activities to promote community engagement. Details appeared in Responsibility for Community and Society Section.

Review appropriateness of good corporate governace compliance

In 2019, relevant committees - the Corporate Governance and Social Responsibility Committee, the Audit Committee and the Board of Directors - reviewed practices and approved improvement to the practices to better meet international standards. Practices improved under this process are summarized below:

- Improve and enforce the new corporate governance policy and related policies.

- Promote, improve and extend work process innovations: and improve internal units, develop prototype projects or services to support internal operations and future business through workshops for employees and functional executives. "RATCH Innovation Awards 2019" was hosted, with 20 projects being selected from 38 entries. Five award-winning projects from the contest were: RATCH Sharing Space, RATCH One Click, RATCH

Green Living Society, Smart Car Pool for All and High Flyer – Happiness for all Gens.

The Company submitted a petty patent application for its "cogeneration invention, which promotes the combined operation of gas and steam turbines as well as gas engine for high efficiency and generating flexibility". Submitting the application to the Intellectual Property Department on 28 August 2019, the Company expects to be notified of the result within March 2020.

- Identify the board skills matrix for the nomination and selection of directors. Under the matrix, the Company seeks directors with 1) experience in business and/or industry (at least 3 directors with experience in electricity/energy business and/or infrastructure business) and 2) skills, knowledge and other related experiences. At least 1 director must have knowledge, skills and/or experiences in each of legal and accounting/ finance areas. For other areas, the Human Resources and Remuneration Committee and the Board of Directors will consider on suitability and alignment with the Company's mission and goals.

- Formulate an assessment form on individual competence, skills and experience, as a guide for director selection and to fulfill the board skills matrix. Such assessment is published in annual reports as follows:

RATCH Group PCL's Board Skills Matrix as of 31 December 2019

Item	Director		Type			Present directors' competence, skills and experience																
						Experience in business and/or industry					Relevant competence, skills and experience											
			Major shareholder's representative	Independent director	Executive director	Electricity/energy business	Infrastructure business	International business	Public affairs/State enterprise	Other private businesses	Strategic planning/ administration	Administration/ Management	Asset management	Human resource/ Remuneration	Risk management	Engineering	Accounting/Finance	Economics	Legal/regulations	IT/Digital/Cyber	Trade/International relations	Corporate governance/CSR and SD
1	Mr. Sutat	Patmasiriwat	/			/			/	/	/	/	/	/	/	/	/					/
2	Mr. Chuan	Sirinunporn	/			/			/		/	/		/					/			/
3	Mr. Tawatchai	Jakpaisal	/			/			/	/	/	/				/		/	/			/
4	Mr. Boonyanit	Wongrukmit	/			/			/	/	/	/	/		/	/						/
5	Miss Nantika	Thangsuphanich	/			/			/		/	/		/	/					/		/
6	Mr. Kijja	Sripatthangkura	/		/	/			/	/	/	/	/	/	/	/						/
7	Mr. Chartchai	Rojanaratanangkule		/		/			/			/					/					/
8	Mr. Boonsong	Kerdklang		/		/			/			/						/				/
9	Mr. Ratanachai	Namwong		/		/			/		/	/	/		/	/			/			/
10	Mr. Samack	Chouvaparnante		/			/		/	/		/			/		/		/			/
11	Mr. Somboon	Nhookeaw		/		/			/		/	/				/	/		/			/
12	Mr. Apichart	Chinwanno		/		/			/	/	/	/		/			/	/			/	/

- Improve the self-assessment form for the Board of Direcotrs and sub-committees, both "whole" and "individual" basis, for the year 2019. Self-assessment is required on an annual basis, at least once a year in December. The revised form was approved along with criteria adjusted to suit contexts and circumstances that cover all necessary dimensions, for the Board of Directors' efficiency and the organization's sustainable growth. Details appeared in Performance assessment – Self-assessment of Board of Directors and sub-committees page 132.

- The Human Resources and Remuneration Committee comprises mainly of independent directors (more than 50 per cent), with chairman being an independent director.

- Adjust the director renumeration-setting criteria for executives serving as directors of subsidiaries, affiliates and joint ventures and the renumeration payment approach for executives receiving director renumeration from joint ventures. Under this approach, executives sitting as directors in wholly-owned subsidiaries will not receive renumeration as their directorship as deemed part of their duties and responsibilities. Regarding executives receiving director renumeration from joint ventures, the Board of Directors, with the Human Resources and Remuneration Committee's endorsement, demanded the executives to remit the after-tax director renumeration to the Company within 31 March after the end of each fiscal period. Such remittance takes effect in the 2019 accounting year onwards.

- Improve Audit Committee Regulatiuons by assigning role of Audit Committee to propose and terminate external auditor, and to enhace efficiency and effectiveness

- Extend complaint-reporting channels by allowing the submission of reports to independent directors or the Audit Committee's members. Details of reporting channels appeared in Anti-Corruption Section page 149.

- Improve other governance policies concerning business continuity approaches, the Board of Directors and sub-committees' rules, the Board of Directors and sub-committees' self-assessment, innovation promotion, cyber security, and the efficiency of the Company's communications of governance and anti-corruption practices to subsidiaries and joint ventures.

In 2019, the Company followed the prescribed governance practices which integrated CG Code 2017, CGR, ASEAN Corporate Governance Scorecard, and relevant practices. However, in some areas, other practices, different from the aforementioned, were applied to suit business contexts as summarized below:

• The chairman of the board should be an independent director: Though the Company's chairman is not an independent director, he does not hold the Chief Executive Officer position. He has no relationship with the Management, though representing the major shareholder. The structure assures his independence. Meanwhile, the Board of Directors comprises 6 independent directors from a total of 12 (50 per cent), or half, assuring proper checks and balances. At meetings, the chairman encourages them to express opinions and discuss before asking for their votes, without manipulating or guiding others during the discussion.

• Cumulative voting for director election: The Company specifies that directors are elected by the majority votes of shareholders present at the meeting and casting their votes. In each vote, each shareholder is entitled to one vote.

Recognition in 2019

Throughout 2019, the Company followed the specified good governance practices, reviewed them and ensured they better meet international standards. The Company also complied with laws

and relevant governance guidelines, with thorough emphasis on all stakeholders and concerns in economic, social, environmental and governance dimensions. No incident of noncompliance with laws, rules, the Company's corporate governance policy, the Code of Conduct, the anti-corruption policy was found. Thanks to determination to continually complying with good governance principles and the Company's corporate governance policy, RATCH was bestowed the following governance awards:

- Assessment of Corporate Governance Report of Thai Listed Companies in 2019: Excellent Level

- Annual General Shareholders' Meeting Assessment in 2019 by Thai Institute of Directors Association, receiving full points (100 points).

- Outstanding Booth Award for its presentation and faciliation to the visitors of SET in the City Bangkok 2019.









PRACTICES AGAINST FRAUD AND CORRUPTION

The Company is committed to operating business with transparency, fairness and responsibility for society and the environment as well as all stakeholder groups, in line with good corporate governance principles and the Company's policy to fight against all forms of corruption. One of its actions underlining this commitment is the participation in Thailand's Private Sector Collective Action Coalition against Corruption (CAC) since 2016. The membership certification lasts 3 years from the certification date.

In 2018, the Company applied for an extension and awarded the membership of CAC for the second term on 4 February 2019, to affirm the Company's determination to operate business with good governance practices, transparency, accountability and non-involvement with corruption whether directly or indirectly, applicable with its interactions with both the public and private sectors. All insiders, from directors to executives and employees, are prohibited from asking for or receiving all bribes or committing any corrupted acts.

The Board of Directors formulated the anti-corruption policy and fraud risk management and internal control. It also sets the scope of responsibility, practice guideline and rules for related persons in writing, serving as a clear guideline to prevent fraud and corruption in all business activities. The practice is to ensure the organization is led towards sustainable business operations and progress. The message is communicated with all stakeholders through appropriate communication channels, demanding them to strictly adhering to the policy. The process is under the supervision of the Board of Directors. The Corporate Governance and Social Responsibility Committee, the Audit Committee and the Management as the organization's leaders are bound to honor and exercise the anti-corruption stance which will strengthen confidence among employees, business partners and the public towards the Company's operations.

Anti- fraud and corruption policy

The Board of Directors outlines and imposes the written anti-fraud and corruption policy, which can be summarized as follows:

- Promote the anti-fraud and corruption culture, to raise awareness and joint commitment on non-involvement in direct or indirect corruption.
- Ensure clear principle, process and guideline for business operations to prevent fraud and corruption. Relevant persons must be educated about the anti-corruption policy.
- Provide internal control system related to fraud and corruption risks.
- Formulate appropriate assessment and supervision criteria for the implementation of anti-fraud and corruption policy.
- Put in place anti-corruption regulations and corruption-related risk management in writing.
- Establish an appropriate whistleblower channel where fraud and corruption-related complaints and reports can be filed.

The Board of Directors has imposed anti-corruption regulations. Key aspects are as follows:

1. **Define the role and responsibility of all relevant persons in the organization** to assure compliance.
   - The Board of Directors is tasked to supervise the overall picture, outline the anti-corruption policy and regulations, as well as review the policy and regulations regularly.
   - Corporate Governance and Social Responsibility Committee is to ensure compliance with the policy and regulations, tackle corruption-related risks, outline preventive measures, spot possible traces, react and review the policy.
   - Audit Committee is to supervise the internal control, accounting standard, financial reports and the internal audit system, to ensure all systems are appropriately controlled and the policy is completely and efficiently exercised.
   - Chief Executive Officer and executives are to establish guidelines that support the anti-corruption regulations, communicate and organize training and workshops for employees at all levels.
   - Employees are required to perform their jobs accordingly to the anti-corruption regulations and relevant orders. In case of doubt or violations, they must report the incidents to the prescribed channel.

2. **Define key anti-corruption principles**

such as non-involvement with all forms of bribe offering or taking through business interactions with government or private parties. Being prohibited are inappropriate payments in return for facilitation or payments to a third party. The Company's employees are required to maintain integrity and transparency and must not ignore possible corruption acts. They must not be obsessed with political parties. Donations must be for charitable causes, not for corruption-related gains. Gift giving or taking must be in line with acceptable norms and the values must not significantly influence decisions. No corruption-related gains are expected from receptions and they must not significantly influence decisions. All must follow the Company's policy.

3. **Define fraud risk management and internal control rules** as summarized bellows:
   - Corruption-related risk management measures are defined, covering prevention, inspection and reaction to corruption cases.
   - Put in place appropriate and sufficient internal control as well as a regular review, to ensure the efficiency and effectiveness of internal control.
   - Arrange corruption-related enterprise risk assessment to ensure the availability of management approaches for various risks.
   - As concrete approaches against fraud and corruption, establish measures and guidelines for some expenses that may cause corruption such as charitable donations or sponsorships funds, the giving and taking of gifts and souvenirs, reception allowance.
   - Establish a transparent and accurate financial reporting mechanism, based on internationally-accepted accounting standards.
   - Organize accurate and complete financial documentation and storage process, to ensure that expenses are accurately and completely booked upon fact and in line with relevant rules and regulations, and to assure that expenses are appropriate and are not for corrupt activities.
   - Establish a channel to receive whistleblower reports, recommendations or complaints and put in place the investigation process and penalties. Corruption cases must be reported to the Board of Directors and high-level executives.
   - Communicate and organize training on rules and orders relating to anti-corruption for personnel at all levels.

4. Whistleblower report and protection

There is a rule that employees encountering possible corrupt activities, direct or indirect, must report such activities to the prescribed channel. To protect whistleblowers and witnesses, their identities will be concealed and be disclosed only by legal orders. No actions will be launched against the persons who deny corruption, though such acts may cause opportunity loss to the Company. Executives and staff must cooperate with investigating committees, when asked.

5. Communications and training

Relevant policy and documents on anti-corruption are disclosed through the Company's internal communications channel, annual reports, and etc. to raise employee awareness. Training is provided for all levels of employees. An orientation is arranged for newly-recruited employees, for their acknowledgement and understanding on corruption and the Company's related rules and orders.

In 2019, the Company organized communications and training plan, conducted by a team of representatives from all functions who gathered to plan annual anti-corruption communications and training. The team convened every quarter. Key communications and training undertakings were as follows:

- Organize "Fraud, Bribery and Corruption Risk Management (And improper conduct) & New Types of Internet Fraud & Corruption Course, featuring lectures by corruption experts for executives and employees at all levels, to enhance their understanding and awareness. The course's main topics included the definition of internal corruption; the asking or receiving of bribes; understanding in internal and external corruption forms, its causes, signs of corruption and factors that support corruption; and techniques to prevent and handle internal corruption.
- Host an exhibition on anti-fraud and corruption issues and produce newsletter and VDO clips for broadcasting through the Company's IT and closed TV network.
- Organize an online test through the company's e-learning platform to evaluate awareness, understanding and adherence to anti-fraud and corruption practices, requiring all executives and employees to pass the test with a score of at least 80 per cent, before subjecting them to the annual KPI evaluation.
- Announce, publish and officially notify business partners and stakeholders on the anti-fraud and corruption policy, for their acknowledgement and strict compliance.
- Host an orientation regarding anti-fraud and corruption for newly-recruited employees.

Preventive measures against fraud and corruption

Under the anti-corruption policy and written rules, the Company has launched anti-corruption measures through the following activities:

- Issue orders or operational guidelines for fraud risk management: Defining activities and responsibility of persons in charge as well as procedure and guidelines to prevent fraud risks, so that the risks are tackled appropriately and immediately.
- Regularly prepare, improve and review the Company's policy, rules, orders and Code of Conduct and ensure thorough communications among employees so that they understand and strictly follow the Company's anti-fraud and corruption policy and practices.
- Assess fraud risks and prepare fraud risk registration as well as corruption-related risk profile, by defining risk assessment criteria, potential causes, impacts, likelihood, risk appetite level and assessing internal control system.
- Identify risk reduction action plan and analyze consequence, likelihood and residual risk after action plan rating: the Company assigns the Corporate Governance Working Group to provide executives consultation on risk assessment, assessment report gathering and the monitoring of risk management plan implementation, before submitting reports to the Board of Directors, the Corporate Governance and Social Responsibility Committee, the Audit Committee and relevant units.

- Internal Audit Division is assigned to review the related anti-corruption policy, procedure and risk management process to ensure completely and effectively compliance.
- Communications and training The Company prepares annual communications and training plans, specifying channels, frequency, content and implementation to ensure effective communications both internally and externally. The objective is to raise awareness on the importance and encourage their participation in the Company's corruption-related risk management, so that they can pass on their understanding to business partners and stakeholders.
- Review of profile of personnel and business stakeholders prior to employment and the start of contract or transactions, the Human Resource Department is tasked to determine applicants' credibility by examining the background, capability and working experience of applicants for significant positions, prior to the signing of employment contracts, to prove their job integrity. Employment contracts contain corruption-related clauses. The Office Administration Department is responsible for examining the background of suppliers, contractors and service providers on their qualifications, reputation, financial status and credibility. It must also inform business partners the Company's anti-fraud and corruption policy in writing.
- Internal control: All the Company's units shall have in place clear and written procedure and appropriate internal control with clear separation of responsibilities in all process, and review it at least once a year. The Internal Audit Division is assigned to review the internal control of each procedure and spot possible fraud risks. If finding any irregularities, it must analyze the probability.
- Define corruption finding and response measures: Establish whistleblower channel for employees and outsiders who should be able to keep their identity concealed. The complainants must also be protected from harm or threats. Complaints can be filed to the Chairman, directors, the independent director/Audit Committee's member, Chief Executive Officer, the Internal Audit Division's chief, or supervisors. Individuals in charge subjected to disciplinary actions if ignoring the reports or filing false reports.
- Chief Executive Officer formed an investigation committee, to collect related facts and report to Chief Executive Officer and subsequently to the Board of Directors.

ROLE OF THE AUDIT COMMITTEE

The Audit Committee supervises and reviews the completeness of the anti-corruption procedure through the Internal Audit Division, before reporting to the Board of Directors. The process is summarized as follows:

- Review the anti-corruption policy and corruption-related risk management process, and assess the sufficiency of internal control to prevent possible corruption and fraudulent acts.
- Set internal audit criteria and monitor the integration of anti-corruption policy in the operations, to ensure the policy is appropriately implemented and complies with international standards.
- Review anti-corruption practices regarding communications and training policy, to ensure the acknowledgement and compliance of all employees, outsiders and business partners.
- Review the compliance with the Company's rules, orders and the Code of Conduct related to anti-fraud and corruption, as well as the giving and receiving of gifts and souvenirs, charitable donations and sponsorship, entertainment, fraud risk management, and etc.
- Set the annual plan to review fraud and corruption risk management to ensure compliance with preset criteria and measures.

In 2019, no fraudulent or unethical action was found and there was no director or executive resigning due to corporate governance issues.

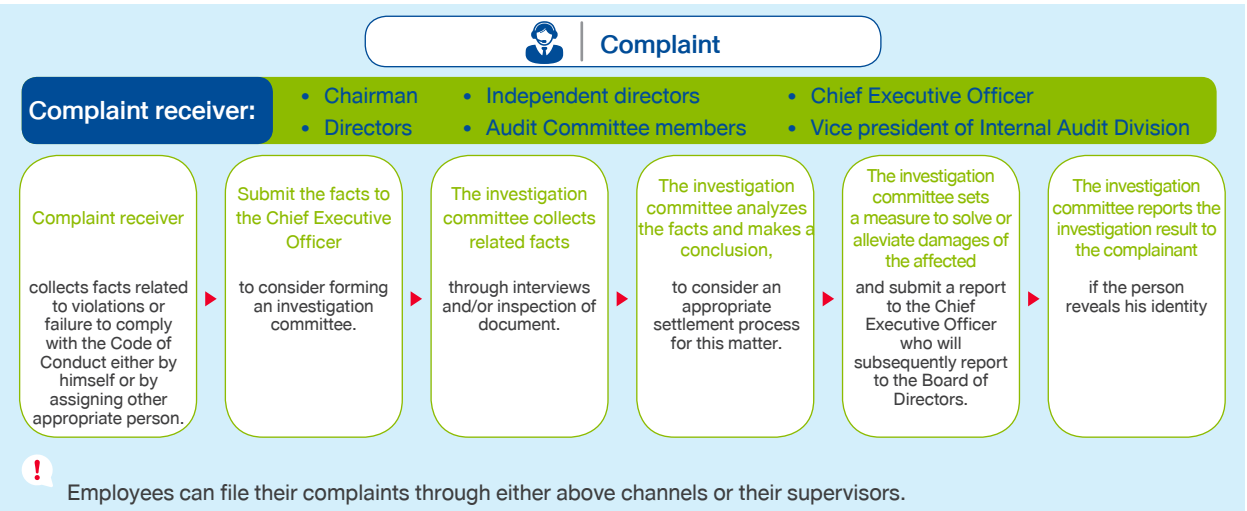
Complaint/whistleblower report and whistleblower protection

Stakeholders including outsiders affected or risking to be affected by the Company's operations or by executives and employees' illegal, unethical and possible corrupted acts can file their complaints or suspected irregularities through the following channels.

Reporting Channels

Complaint receiver	Reporting channels		
	E-mail	Corporate website	By post
Chairman or directors	directors@ratch.co.th	www.ratch.co.th (Page- Corporate Governance/Whistleblower Channel and select the e-mail of the preferred compliant receiver)	Addressed to the receiver RATCH Group PCL 72 Ngam Wong Wan Rd. Bangkhen, Muang Nonthaburi, 11000
Independent directors or Audit Committee's members	id@ratch.co.th or ac@ratch.co.th		
Chief Executive Officer	ceo@ratch.co.th		
Vice President of Internal Audit Division	internalaudit@ratch.co.th		
Supervisors	Supervisor's email		

Process after a complaint is received



Whistleblower protection

The Company outlines complainant protection guidelines in Personnel Management regulations under Appeal and Complaint section. The complainants are protected against employment termination or disciplinary punishment for presenting information, fact or evidence concerning a complaint; and the protection of those who file reports in honesty though such reports may affect the Company.

CODE OF **CONDUCT**

RATCH's Board of Directors annually reviews the Code of Conduct, taking into account business circumstances and context. In 2019, the Code of Conduct was amended to match the Company's new vision that extends the scope of business from electricity generation to infrastructure. The Code of Conduct is upheld as the Company's operational guidelines, covering significant principles that concern stakeholders throughout the value chain and the organization's sustainability. Executives and employees at all levels are required to study and understand the Code of Conduct, and embrace it as the corporate norm and culture.

Code of Conduct principles and guidelines

The principles for the operations and treatment of stakeholders are as follows:

Stakeholders in value chain	Principles	Code of Conduct-based guidelines
Shareholders Employees Customers Creditors Suppliers Business partners Competitors Government/ regulatory bodies Community/society Environment	Sustainable development	Operate with responsibility for society, economy and the environment
	Actions against corruption and bribery	Do not involve with the giving, influencing, promising and receiving all forms of bribes. Compliance with laws and regulations. Suppliers and contract parties must honor the same rules.
	Transactions with public sector	Review the accuracy, completeness and truthfulness of information to be reported to government agencies or regulatory bodies and cooperate in investigation or when asked for information.
	Prevention of conflict of interest	Emphasize the Company's maximum benefits with concerns in legal and moral contexts and transparency. Actions must not bring negative impacts on the Company's reputation and credibility.
	Compliance with laws	Strictly comply with laws in respective countries and relevant international laws, as well as rules and regulations that influence business strategy and operations.
	Appropriate giving/ receiving gifts, receptions, and other gains	Appropriately in line with business purposes, not to influence the decision making of executives, employees or outsiders.
	Political neutrality	Maintain political neutrality and avoid actions that support political groups or political influencers.
	Anti-money laundering	Strictly follow anti-money laundering laws and regulations, avoid involvement with transactions that may involve illicit money.
	Fair competition	Do not embark on actions that reduces or limit business-related competition or that may lead to unfair competition.
	Use of Inside information	Protect business secrets, do not use inside information for personal gains or for unlawful proposes, and do not divulge inside information to outsiders.
	International operations	Follow the laws and rules imposed in the countries where the Company operates, taking into account social, environmental, traditional and cultural contexts. Ensure fair and equitable treatment of local workers.

Individuals required to follow Code of Conduct

- RATCH's executives and employees
- Subsidiaries under the Company's control or those the Company has the right to control. They must acknowledge the Code of Conduct and act accordingly.
- Subsidiaries outside the Company's control, which must acknowledge the Code of Conduct and act accordingly.
- Outsiders that represent the Company including advisers, representatives and independent contract parties, who must follow the following conditions:
  - Consent to follow the Code of Conduct
  - Explanation of the Code of Conduct
  - Actions that may involve contract abolishment if they are found to have violated the Code of Conduct

Communications of the Code of Conduct

RATCH imposes a process to raise employee awareness and understanding in the compliance through several means such as orientation for the newly-recruited, a form to be signed by employees, and the publishing of the Code of Conduct on the Company's Intranet and website.

Employees	• The Board of Directors and high-level executives communicate with employees at all levels on the policies concerning corporate governance, officially and unofficially, to raise their awareness and instinctive urge to follow the Code of Conduct. • Employees can voice recommendations to the Board of Directors and executives through channels like the Intranet, email and etc, which are accessible to all, which may be useful for future improvements.
New employees	• Newly-recruited employees must attend the orientation and briefing from the Human Resources Division on corporate governance, anti-fraud and corruption, social and environmental responsibility, regulations, policies, the Code of Conduct. They must sign a form to acknowledge the guidelines in writing.

Monitoring of compliance with Code of Conduct

Relevant business units must supervise and monitor compliance with the Code of Conduct, to ensure full understanding and compliance among operators and zero violation.

Actions deemed violations of the Code of Conduct

Violations are subjected to prescribed disciplinary actions or legal punishment should they violate laws. The actions that are deemed violations of the Code of Conduct are as follows:

1) Violate the guidelines specified in the Code of Conduct
2) Advise, support or encourage others to violate the Code of Conduct
3) Ignore violations or incompliance that they know of or are supposed to know given the actions concern their responsibilities.
4) Fail to cooperate or obstruct the process to investigate violation or incompliance complaints.
5) Retaliate against the employees who file incompliance reports.
6) Unfairly treat others who file incompliance reports.



In 2019, no executive or employee was found violating the Code of Conduct and the Company received zero complaints on possible violations. The interested can study the Code of Conduct on the Company's website: www.ratch.co.th.

RESPECT TO HUMAN RIGHTS

RATCH upholds and practices human rights principles, by avoiding infringement on stakeholders' basic rights and containing operational impacts on stakeholders. RATCH includes the principles in the Code of Conduct and human rights guidelines. Details are as follows:

Basic principles of RATCH's respect for human rights

Code of Conduct

- Be committed to treat stakeholders accordingly to laws with respect and recognition of human dignity.
- Treat stakeholders equally in accordance with their rights and liberty, without discrimination based on gender, nationality, language, religion, economic status, social status or education. Political freedom is granted.
- Protect individual privacy and confidential information. Access to information, information disclosure, and information utilization are granted as deemed necessary or as demanded by law.

Corporate Sustainable Development Policy

Employee

- Treat employees and contracted workers without discrimination. They witness equitable opportunity and assignments proportionate to ability and benefits. Employment of child labor, aged below 18, or illegal labor is prohibited. The rule covers the employees and workers of suppliers and/or stakeholders.
- Safeguard the safety of employees, workers and the Company's assets without infringement of others' rights and safety. Protect individual privacy, confidential information and utilization and disclosure of personal information.
- Treat the Company and suppliers' employees and workers with respect in human equality and human dignity.

RATCH's actions concerning human rights are summarized as follows:

- Protect basic rights at work for the employees and contracted workers of the Company and throughout the supply chain
- Promote employees' rights to expression and engagement.
- Ensure fair, equitable and nondiscriminatory treatment of employees and stakeholders regardless of their citizenship, nationality, social status, political view, sexual attitude, labor union's membership, and etc.
- Ensure gender equality, by entitling female employees to the same treatment and work-related benefits enjoyed by male counterparts.
- Protect access to information, confidential information, and individual privacy of employees and relevant stakeholders.
- Estimate the impacts of the Company's projects on community and put in place preventive, remedying and rehabilitating measures.

Key aspects on human rights and actions

The significant aspects on human rights that influence the Company's sustainability as well as the actions implemented in 2019 are as follows:

Aspect and action	Significant results
Labor rights of Employee and in supply chain	
• Follow labor laws in each country and protect employees with respect for human rights and equality regardless of nationality, religion, skin color, gender, age, citizenship and political view. • Give assignments proportionately to their ability and benefits. • Set a rule to prohibit the employment of children aged below 18, forced labor and illegal labor, for enforcement throughout the supply chain.	• The Company received no complaint or recommendations from employees or workers in 2019. More details appeared in Safety, Occupational Health and Work Environment section, Page 193.

Aspect and action	Significant results
• Adopt protection and remedying tools like a group insurance policy that covers all operators particularly in high-risk jobs. • Grant employees the right and freedom to assemble in the form of the Employee Welfare Committee which represents all employees in considering and making suggestions on welfare extended to employees and workers. • Set up the Safety, Occupational Health and Work Environment Committee to assess work-related risks; monitor safety, occupational health and environment at workplace for the benefits of all employees and workers; ensure well-being, safety and good health; and formulate strict controlling measures. • Allow employees to express their opinions through various channels such as the Employee Welfare Committee, Safety and Occupational Health and Work Environment Committee, an opinion survey, exit interviews, a suggestion box, a survey on the implementation process of High Performance Organization initiative, a survey on employee engagement, and a survey on their respective units' operations and supervisors. • Allow employees to file complaints within the process specified in relevant rules and orders if witnessing unfair practices, work conditions different from employment contracts, or disturbances relating to work conditions or work-related relationship. The process and procedure is clearly written, covering complaint filing, investigation, review of complaints, settlement process and the protection of complainants and related persons.	
Safety of suppliers/contractors and sub-contractors	
• Set the crtieria on basic right protection for the selection of suppliers and contractors: for example, respect for basic human rights and nondiscriminatory practices on gender, nationality and religion. The criteria also cover no employment of child or illgal labor, actions for impacts on community and the environment, and the handling of workplace safety. • Require suppliers and contractors to comply with labor law and provide safety and occupational health. • Define safety and occupational health guidelines for suppliers/contractors and sub-contractors operating services at Head Office and power plants. • Require suppliers and contractors assess work-related risks and define comprehensively preventive measures. • Monitor contractors and sub-contractors' actions relating to work safety guidelines. • Organize training for suppliers, contractors and sub-contractors relating to safety guidelines in general and safety guidelines for high-risk jobs.	• Injuries leading to work stoppage at Head Office and operational-controlled power plants = 0 Details appeared in Safety, Occupational Health and section, Page 193.
Community's safety and quality of life	
• Evaluate risks and impacts from projects that may affect community's safety and quality of life and prepare preventive, remedying and rehabilitating measures. • Offer community an opportunity to express opinions in the study and assessment on environmental and health impacts of under-development projects and outline impact mitigation and remedying measures.	• In 2019, no complaint relating to the environment and health was filed by neighboring communities. • A community opinion survey showed an "excellent" result. (Details on Page 219)

Aspect and action	Significant results
• Allow community participation in the tri-partite community, set up to inspect power plants' environmental management and operations. • Order all power plants to establish channels to disseminate information to community and hear their opinions, like community relations team, social media, email or post; as well as a mechanism to receive complaints and tackle problems systematically. • Prepare personal pretective equipment for operators. • Prepare emergency response plan and crisis management plan as well as community evacuation plan for power plant projects, particularly hydropower plants; and exercise a drill on an annual basis. • Conduct an annual survey on neighboring community's attitude, opinion and concerns accordingly to an environmental monitoring measure. • Have hydropower plants prepare emergency response plans for possible collapse of auxiliary dams and evacuation plans for communities residing in the basin or along the waterways connected to the auxiliary dams.	• Concerning Xe-Pian Xe-Namnoy Hydroelectric Power Plant's Saddle D collapse, the affected were rehabilitated. Emergency and long-term rehabitation plans were prepared. Details on Page 50

Future plans

The Company will seek more knowledge and understanding on the assessment of human rights-related risks in the electricity and infrastructure supply chain that may affect the operations. Lessons learnt from Xe-Pian Xe-Namnoy Hydroelectro Power Plant's Saddle Dam D collapse will be registered, to outline the measures to prevent reoccurences and impact on human rights as well as society and the environment.

SUSTAINABLE ENVIRONMENTAL MANAGEMENT

The environmental management of the power generating process is a material issue to stakeholder, as it concerns the quality of air, water, waste, biodiversity and noise. RATCH Group's power plants thus emphasize preventive measures in the designing and development stage, selecting efficient technology for the generating and pollutant reduction. Resource consumption, power plants' efficiency and environmental management during the construction stage and throughout the contracted generating period are controlled and monitored.

In managing the environment when the generators are on, the Company adopts legal measures as well as the preventive and mitigation measures specified in the Environmental Impact Assessment (EIA) and applies international-standard measures, to assure community, customers, end-users and relevant stakeholders that the Company's electricity is environmental-friendly to the environment and community and supports the United Nations Sustainable Development Goals.

Environmental management guidelines

The Company outlines environmental responsibility principles in the Code of Conduct covering issues concerning natural resource conservation and adaptation to the climate change and defines guidelines in the corporate sustainability development policy.

Code of Conduct

Natural resource conservation

- Efficiently and effectively consume natural resources, materials and equipment.
- Hold the persons involved with the production and machinery responsible for the monitoring, improvement and maintenance of the production system or machinery at specified levels to reduce resource consumption and pollutant emission.
- Set relevant and appropriate measures to conserve natural resources and biodiversity and to safeguard natural resources for sustainable benefits.
- Promptly tackle the impacts from the Company's operations on natural resources and biodiversity and ensure that available measures effectively address and prevent the impacts in environmental, economic and social dimensions.

Adaptation to climate change

- Be aware of climate change-related problems and impacts created by the Company's operations.
- Reduce GHG emission by maintaining the maximum generating efficiency and promoting energy conservation activities internally and externally.
- Increase GHG storage through activities that support forest area conservation and an increase in green areas or other measures.
- Educate relevant parties about efficient GHG management.
- Be prepared to deal with climate change impact towards the business such as drought and flood.

Corporate Sustainability Development Policy

Environment and adaptation to climate change

- Ensure environmental and biodiversity management meet relevant laws and regulations; invest in, develop and improve the environmental management system; and seek new measures and approaches to lift the management efficiency and better control the environmental quality.
- Invent and seek approaches to reduce resource and energy consumption and the emission of pollutants, waste and GHG, to prevent, control and reduce impacts on the environment, community and society as best as possible.
- Set the targets of GHG emission, power generation and business operations; define the approach to assess climate-changed risks and impacts on the operations and business; seek measures to reduce GHG emission; and search for mitigation measures for stable and sustainable business growth.

Implementation of environmental management in production process

Policy framework	Actions	Targets	SDGs
Resource consumption management			
Invent and search for approaches and methods to reduce resources and energy consumption as well as pollutant emissions and greenhouse gas	• Administer energy efficiency through heat rate control • Improve cooling towers' water quality control system by switching from base to acid system, to reduce demand for raw water • Reuse wastewater through Reverse Osmosis (RO) system • Schedule machinery/ equipment maintenance to maintain production efficiency • Energy conservation and saving	• Reduce fuel consumption by keeping heat rate targets • Maintain the targeted water recirculation rate in the cooling system • Meet the planned energy saving target • Power plants' GHG emissions volume: - below 0.5821[1] tCO_2e per megawatt-hour - below 0.4945[2] tCO_2e per megawatt-hour	Goal 12: Responsible consumption and production (12.5 : Substantially reduce waste generation through prevention, reduction, recycling, and reuse)  Goal 13: Climate change action (13.3 : Improve education, awareness raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning) 
Handling of environmental impacts			
Manage environmental quality as required by relevant laws and regulations, prepare to invest in the improvement of environmental management system and search for new measures to improve the system	• Appropriately apply chemicals in wastewater treatment • Maintain the efficiency of air-quality control system • Adhere to 3R principles (Reduce, Reuse, Recycle) in defining measures to reduce waste in the production process and at offices	• Environmental quality test shows above-standard results • Zero environment-related complaint • Zero hazardous waste to landfill	Goal 6: Clean water and sanitation (6.3 : Improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials and substantially increasing recycling and safe reuse globally) 

Note: [1] *Thailand Grid Emission Factor's GHG emissions as announced by Thailand Greenhouse Gas Management Organization (Public Organization) on 1 January 2017*
[2] *Emission Factor's GHG emission of EGAT and IPP's power plants fired by natural gas, as primary fuel in 2010 (base year)*

Resource consumption management

Operational approach

Resources consumed, in large volume, in electricity generating are mainly fuels, water and electric power. Large volume consumption, particularly fossil fuels in the production process, creates huge impacts. RATCH Group's power plants have adopted the following approaches in handling resource consumption:

Fuel consumption

Power plants' consumption of fuels and raw water depend on production orders. Since 2019, the National Control Center put Ratchaburi Thermal power Plant and Tri Energy Power Plant under reserved shutdown, leading to a decrease in overall fuel consumption and gross electric output in 2019.

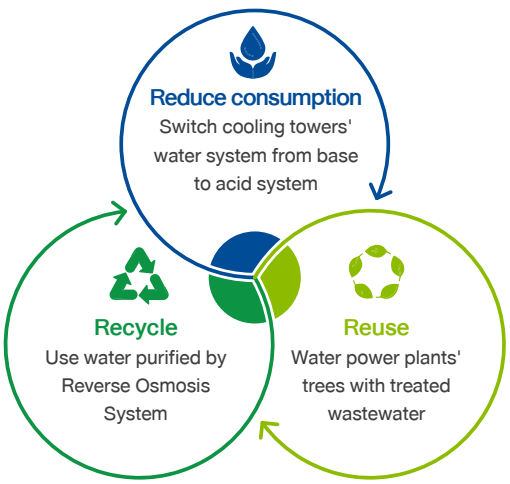
Fuel consumption volume and gross electric output

(Ratchaburi Power Plant, Tri Energy Power Plant, NNEG Power Plant, Kemerton Power Station and Townsville Power Station)

Production data	2016	2017	2018	2019
Net electric output (megawatt-hour)	21,187,269	19,521,884	17,171,362	14,542,266
Natural gas (million cubic feet)	190,160	168,111	147,198	125,706
Diesel oil (liter)	6,476,377	1,174,356	563,177	440,368
Bunker oil (liter)	104,974,565	26,698,857	-	-

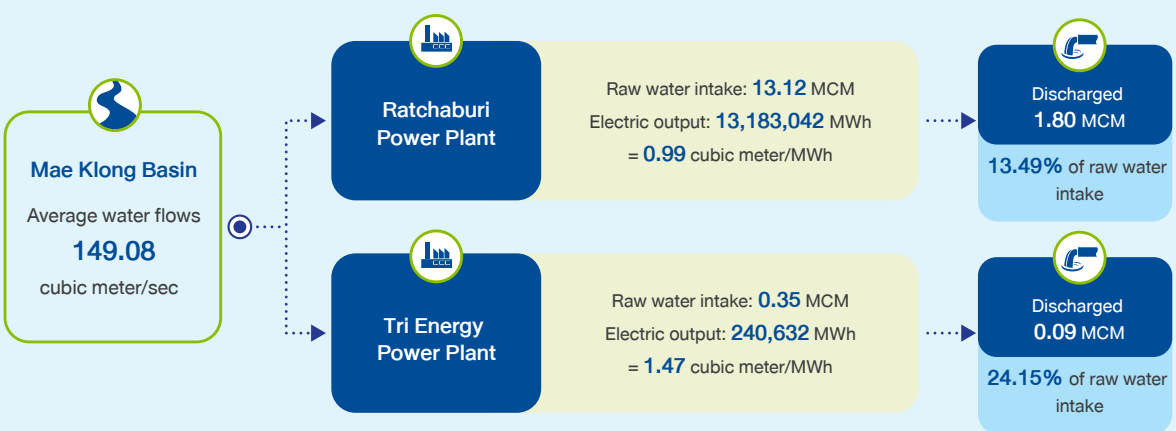
Raw water consumption

Ratchaburi Power Plant and Tri Energy Power Plant are RATCH's prime power plants, with installed capacity of 3,645 MW and 720 MW, respectively. Located in Ratchaburi Province, they use raw water primarily from Mae Klong River for the generation. Emphasis has been placed on water management. The river's water level is monitored, analyzed and forecast on a monthly basis. New reuse and recycle techniques have been explored, to reduce raw water demand as much as possible and to avoid fight over water with nearby communities.



Raw water intake at Ratchaburi Power Plant and Tri Energy Power Plant in 2019

Data shows Ratchaburi Power Plant and Tri Energy Power Plant used 0.31 per cent of Mae Klong River's water volume. There was no fight over water and the area was not in the boundary of water stress assessment according to the World Resources Institute (Aqueduct Water Risk Atlas and the WWF (Water Risk Filter))



Raw water consumption and effluent volume of The Company's power plants in 2019

Power Plant	Raw water source	Raw water (cubic meter)	Raw water per generating unit (cubic meter/ megawatt-hour)	Effluent (cubic meter)
Ratchaburi Power Plant	Mae Klong River	13,115,874	0.99	1,796,059
Tri Energy Power Plant	Mae Klong River	352,578	1.47	85,137
NNEG Power Plant	Nava Nakorn Industrial Zone's tap water	1,351,814	1.57	63,522
Power Plant in Australia • Kemerton • Townsville	Tap water and surface water	199,733	0.55	126,373



Ratchaburi Power Plant's water recycling to reduce demand for raw water

In 2019, Ratchaburi Power Plant's wastewater of 612,947 cubic meters was treated by Reverse Osmosis and Ultra Filter systems and 294,783 cubic meters were reused in the production process.

Ratchaburi Power Plant also studied and analyzed the cooling tower's water consumption as well as adopted a water recycling method to reduce demand for raw water and wastewater. The water quality control system was changed from base to acid in 2016-2017, hence raising the recycling of cooling water by 4-6 cycles.

Cooling towers' water circulation in 2019

Power plants	Target (cycle)	Average water cycle			
		2016	2017	2018	2019
Ratchaburi Power Plant	4-6	2.63	3.48	5.02	4.91
Tri Energy Power Plant	4-6	4.68	4.71	4.58	4.82
NNEG Power Plant	5	-	5.00	4.70	3.20

Energy consumption

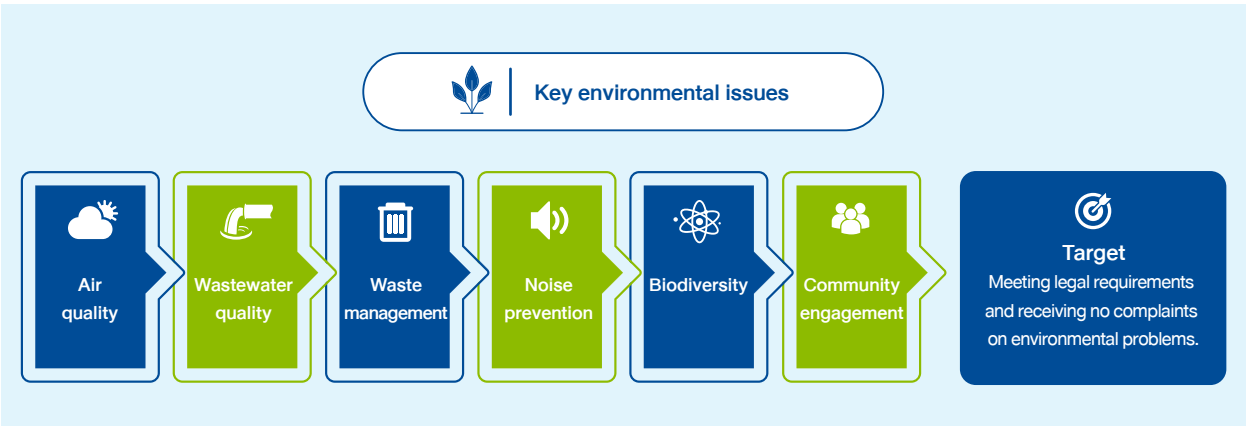
Electric power is another key production factor in power generation. Energy saving, implemented along energy conservation and a cut in fuel consumption, is a way to maintain power plants' efficiency. Details of energy saving appeared in topic Energy Saving: Handling Impact of Climate Change Page 170

Environmental quality management

Operational approach

Realizing possible social and environmental impacts, RATCH Group's power plants ensure the most environmental-friendly operations, concerning the quality of air, water, noise, waste, ecosystem and biodiversity, as expected by stakeholders including communities around the premises. The power plants give importance to environmental quality control from the designing stage, to prevent and control pollutants in all fronts. Pollution emissions must be with legal limits, in line with ISO 14001, and must not induce complaints from communities throughout the operating period.

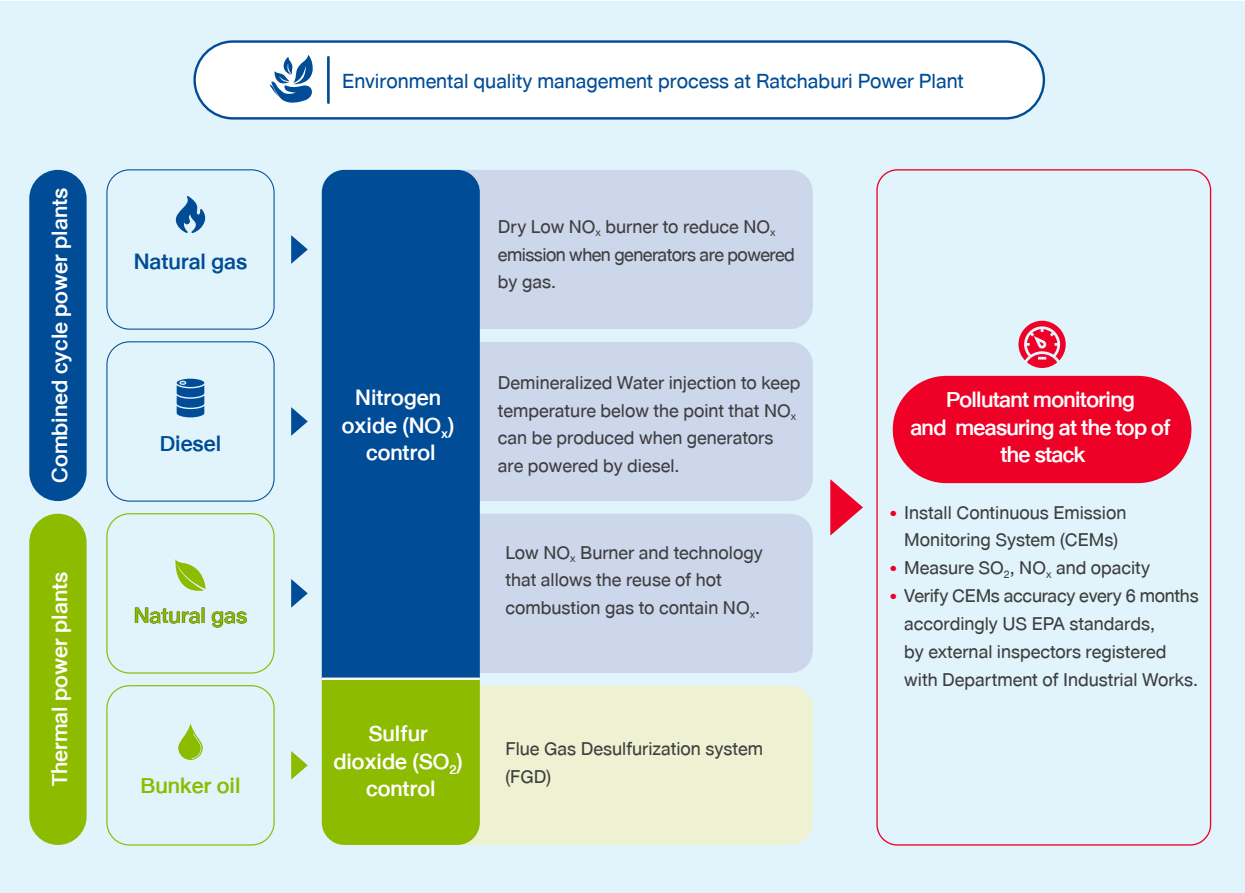
In 2019, the power plants completely operated accordingly to environmental laws. They experienced no complaints or penalties relating to incompliance or violations.



Air quality management

Generating electric power from fossil fuels releases pollutants, chiefly nitrogen oxide (NO_x). Fuel oil will also introduce sulfur dioxide (SO_2) and dust. All power plants are equipped with technology to tackle pollutants, such as the Dry Low NO_x burner and the demineralized water injector for combined cycle power plants, the Low NO_x burner for the thermal power plants, and the installation of Flue Gas Desulfurization system (FGD) which is turned on when the power plants operate with bunker oil.

Aside from the technology, all power plants have Continuous Emission Monitoring Systems (CEMs), to monitor and ensure that the combustion system does not emit pollutants as required by laws and does not send negative impacts on the environment and communities. The results are sent to the operation control room and concurrently the Pollution Control Department.



Result of air quality measurement at RATCH Group's power plants in 2019

Power plant	Average pollutant density from natural gas combustion		Backup fuel
	NO_x (ppm)	SO_2 (ppm)	
Ratchaburi Thermal Power Plant	-	-	Bunker oil
Ratchaburi Combined Cycle Power Plant	22.37	1.07	Diesel
Tri Energy Power Plant	-	-	Diesel
Standard limits (Target not exceeding standard limit)*	120	20	
NNEG Power Plant	34.8	0.27	None
Limit in accordance with EIA requirement	60	10	
Berkprai Cogeneration Power plant	44.04	0.47	None
Limit in accordance with EIA requirement	60	10	

Note * *Standards as in the notification of Ministry of Industry on the limit of air pollutants emitted by power-generating, transmission or distribution plants B.E. 2547.*

Monitoring air quality at the power plant aside, Ratchaburi Power Plant installed the ambient air quality monitoring systems (AAQMs) to monitor the air quality and assure community of safety. The systems are installed at 4 stations to cover wind directions. They stations are located at Ban Don Mod Tanoy, Ban Bang Krado, Ban Khlong Khae and Ban Chaonua. The accuracy is verified by external inspectors every six months.



AAQMs Map

1 Ban Don Mod Tanoy
2 Ban Bang Krado
3 Ban Khlong Khae
4 Ban Chaonua
Boundary of Project



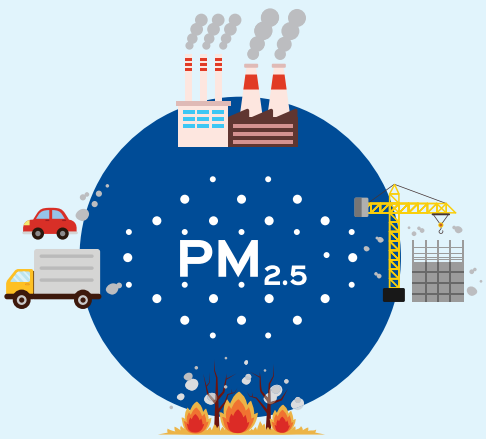
Environmental monitoring results
are displayed in front of Ratchaburi power plant.

Results of ambient air quality monitoring at communities surrounding Ratchaburi Power Plant

Air quality monitoring systems at nearby communities	24-hour average			1-hour average		
	Total Suspended Particulate ($\mu g/m^3$)	Particulate Matter smaller than 10 micron ($\mu g/m^3$)	SO_2 (ppb)	SO_2 (ppb)	NO_2 (ppb)	O_3 (ppb)
Ban Don Mod Tanoy	15-132	8-114	0-4	0-9	0-49	0-120
Ban Bang Krado	19-174	5-120	0-5	0-22	0-47	0-137
Ban Khlong Khae	9-141	7-119	1-4	0-8	1-60	0-151
Ban Chaonua	19-103	9-147	0-4	0-20	0-58	0-129
Standard limits	330[1]	120[1]	120[2]	300[3]	170[4]	100[1]

Note *$\mu g/m^3$ = 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*

The inspection showed the 1-hour average of ozone was mostly within limit except in the dry season. Ratchaburi Power Plant together with Ratchaburi-Power Power Plant surveyed and analyzed the factor that caused high ozone around Power Plants. The survey showed that ozone level escalated partly due to the emissions of pollutant released from other sources, around the power plant. Based on the Pollution Control Department's 24-hour average and 1-hour average of dust smaller than 10 micron in various locations in Thailand, the finding was pollutant emissions elsewhere were also above standards in the dry season and similar incident occurred every year.



$PM_{2.5}$ alert measures

The impacts of fine particulate matter ($PM_{2.5}$) on the respiratory system and health prompted relevant agencies to issue measures; campaign against burning and diesel-powered vehicles; and ensure air quality meet standards. In 2019, as the prime asset, Ratchaburi Power Plant started measuring $PM_{2.5}$ generated by the power plant's combustion system, to build up data reference and prepare for possible impacts on communities. Such measurement continued in 2019. In 2020, $PM_{2.5}$ will be measured at all 3 stations.

Wastewater management

RATCH Group's power plants have applied the 3R principle (Reduce, Reuse, Recycle) in controlling wastewater volume and maintaining wastewater quality within legal standards, under the optimal goal to achieve zero discharge.

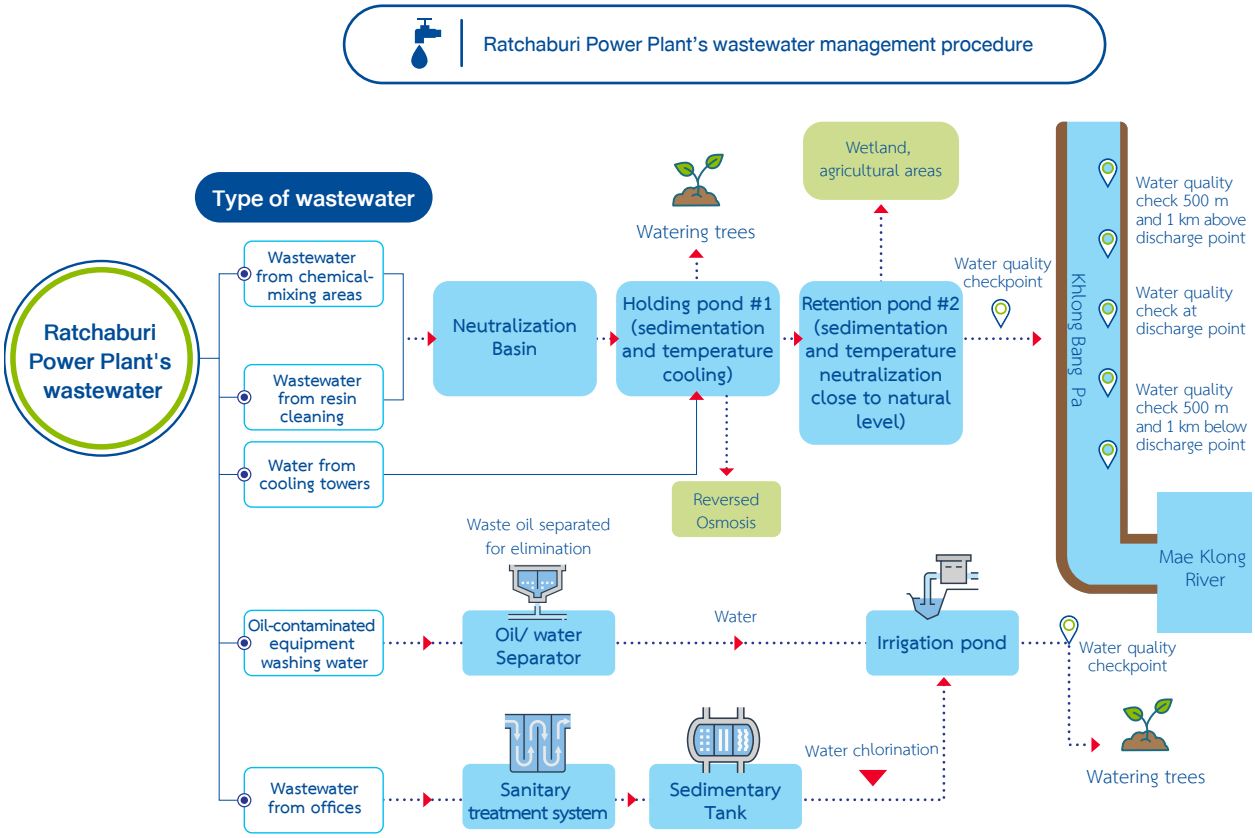


Ratchaburi Power Plant's actions

- In cooperation with Engineer Department, Royal Thai Army in Ratchaburi Province, treated wastewater was sent to a 20-rai rice field. The field is part of the 350-rai wetland next to the power plant. The project started in 2008. The field produced 19,480 kg of rice which was given to the department.
- Treated water quality was improved by Reversed Osmosis and Ultra-Filter systems and used in the production process.
- Treated wastewater was used to water trees in the power plant and the rest went to the power plant's wetland.



The rice field watered by Ratchaburi Power Plant's treated wastewater



Ratchaburi Power Plant installed an online water check system in the last water treatment pond (Retention Pond#2), measuring temperature, pH, Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD) and Conductivity before discharge to natural water channels. BOD and COD data is reported online to the Department of Industrial Works.

Ratchaburi Power Plant checks wastewater quality on a monthly basis and the results are completely reported to regulatory bodies. Treated wastewater from Ratchaburi Power's Power Plant flows to its holding and retention ponds before discharged to Khlong Bang Pa.

Aside from regular water quality check, Ratchaburi Power Plant monitors Khlong Bang Pa's surface water quality 1 km above and below the discharge point, to ensure treated wastewater is not harmful to the natural water quality. It also checks the water quality in gypsum pond and underground observation pond twice a year (January and October) to prevent gypsum leakage or contamination in underground water sources.

Quality of wastewater from RATCH Group's power plants in 2019

Indicator	Unit	Ratchaburi Power Plant[1]	Tri Energy Power Plant	NNEG Power Plant	Target	
					Royal Irrigation Department's standards[2]	Ministry of Industry's standards[3]
Temperature	Celcius degree	30.50	30.25	30	• Not exceeding 33 (Only for Ratchaburi Power Plant) • Not exceeding 40 (in general cases)	Not exceeding 40
pH	-	7.66	7.47	8	6.5-8.5	5.5-9.0
Biochemical Oxygen Demand (BOD)	Milligram/liter	3.45	2.83	4	Not exceeding 20	Not exceeding 20
Chemical Oxygen Demand (COD)	Milligram/liter	41.79	35.17	No monitoring	Not exceeding 100	Not exceeding 120
Total Dissolved Solids (TDS)	Milligram/liter	813.50	358.50	224	Not exceeding 1,300	Not exceeding 3,000
Conductivity	Microsiemens/ centimeter	1,133.33	658.67	No monitoring	Not exceeding 2,000	Unspecified

Note *Biochemical Oxygen Demand (BOD) is the amount of dissolved oxygen needed to dissolve biological organisms.*
Chemical Oxygen Demand (COD) is the oxygen required to oxidize soluble and particulate organic matter in water.
Total Dissolved Solids (TDS) is the dissolved combined content of all inorganic and organic substances.

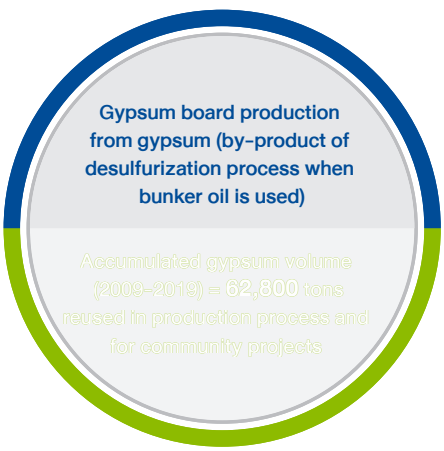
[1] *Quality of wastewater from Ratchaburi Power Plant and Ratchaburi-Power's Power Plant*

[2] *The Royal Irrigation Department's standards are based on Order #73/2011 regarding the prevention and mitigation of low-quality water discharge to irrigation channels and all channels connected with irrigation channels.*

[3] *Ministry of Industry's standards are based on Ministerial Regulation #2 (1996), issued under Factory Act BE.2535, regarding the specifications of factories' discharged water.*

Waste management

RATCH Group's power plants give importance to the management of production waste. The 3R principle is applied along with the efforts to reduce waste to landfill as much as possible to prevent risks and possible contamination to surface and underground water and living beings. They also choose waste management suppliers based on the 3R principle, focusing on those that emphasize recycling and meet legal requirements. Each power plant adopts a system to monitor suppliers' operations, to ensure that waste is correctly and lawfully tackled without causing impacts on the environment and community.



Ratchaburi Power Plant's waste management approaches

Sources of waste	Type of waste	Type	Approaches
Production process	• Insulation • Steel scrap • Wood or paper packaging	Non-hazardous	• Follow Ministry of Industry's elimination regulations • Adopt Non-Hazardous Waste Manifest forms to monitor the handling (recycling)
	• Gypsum	Non-hazardous	• Store it in gypsum pond supported by HDPE sheet at the bottom, ready for outsiders' pickup for gypsum board production • Monitor underground water quality every 6 months
	• Degraded bunker oil • Used lubricants • Wastewater sediments • Oil-contaminated fabrics/gloves • Discarded electrical equipment • Fire-resistant bricks	Hazardous	• Store it in hazardous waste storage, waiting for shipment by Department of Industrial Works-authorized handlers who may turn the waste to fuel for plants in industrial zones.
Office waste	• General waste	Non-hazardous	• Segregate waste for the power plant's recycle bank, for sale to recyclers • Hire local waste handlers to handle and eliminate non-recyclable waste
	• Unusable light bulbs • Flashlight battery • Spray cans/liquid bottles	Hazardous	• Collect and eliminate under Hazardous Waste Manifest system (landfill)

Waste volume from Ratchaburi Power Plant's production process

Management methods	Hazardous waste (325 tons)		Non-hazardous waste (18,294 tons)	
	Quantity (tons)	% of total waste	Quantity (tons)	% of total waste
Recycle	11.80	3.63	18,203.39	99.50
Recovery or reuse as raw material /fuel	309.27	95.04	31.65	0.17
Landfill	4.33	1.33	58.96	0.32

Beside strict compliance with legal requirements, Ratchaburi Power Plant has paid full attention to suppliers' waste handling to ensure the waste disposal chain does not create impacts on the environment and community. In 2019, Ratchaburi Power Plant's environmental and procurement offices visited 1 supplier (Knauf Gypsum (Thailand) Company Limited) and found that it performed fully in accordance with legal requirements.

In 2019, Ratchaburi Power Plant delivery gypsum from FGD landfilled in gypsum pond to continually recycle in gypsum board manufacturing to the following schools and community near the power plant.

Ratchaburi power plant's reusable gypsum quantity in 2019

Waste disposal companies	Type of waste	Reuse approach	Reused volume in 2019 (tons)
Knauf Gypsum (Thailand) Company Limited	Gypsum (from desulfurization process) stored in the power plant's gypsum pond	Use gypsum in gypsum board manufacturing	12,839.07
Siam Gypsum Industry (Songkhla) Company Limited			5,364.32

Noise management

RATCH Group's power plants put in place the measures to prevent noise-related impacts at source like generators, water pumps or maintenance services on operators and nearby communities. Noise level is checked to conform with legal standards and to watch out for possible impacts on communities.

Measures to reduce noise impacts

Control at source

- Build a dome to cover power plants' combustion room
- Install silencers at release valves and in pipes connected to water pump at the raw water pumping station at Ban Tha Rap, and etc.

Control of sound conductor

- Define the buffer zone between power plants and neighboring communities
- Grow trees around power plants to block noise

Prevention for receivers

- Demand operators to always wear noise-prevention equipment like ear plug/ear muffs before entering loud-noise areas and limit their presence in the areas as specified by law.
- Organize hearing preservation project for operators (Details on Page 193) and/or check the hearing ability of operators at risk on an annual basis.
- Notify community in advance about operations that may cause loud noise.

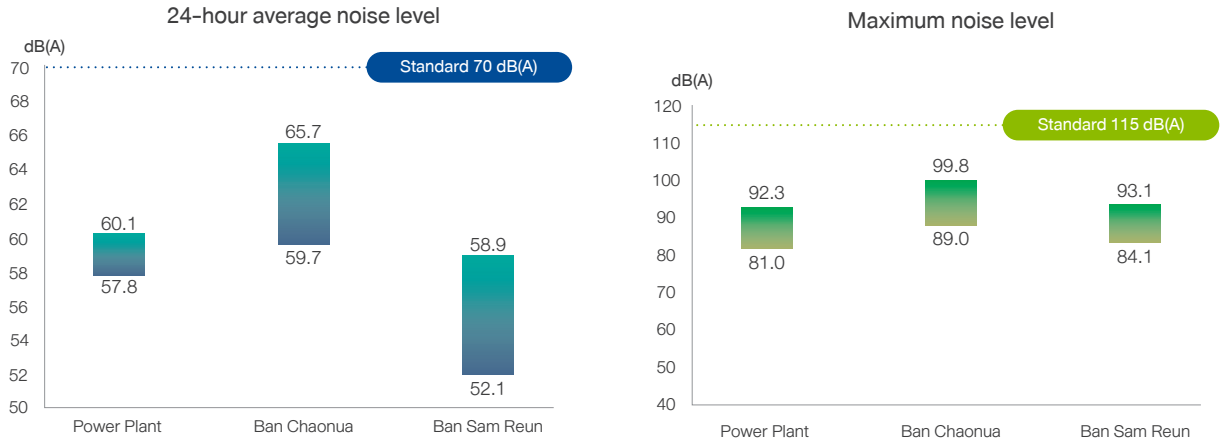
Monitoring noise level measurement at Ratchaburi Power Plant

- Measure ambient noise level biannually. The level was mostly within standard limit.
- Measure 24-hour average noise level and maximum level 4 times a year, covering the power plant, Ban Sam Reun and Ban Chaonua.

Results: Noise level stayed within limits imposed by the National Environment Board

- 24-hour average noise level is below 70 decibels (A) at all spots.
- Maximum noise level was within 115 decibels (A) at all spots.

Noise level Monitoring



Biodiversity in power plants

Preserving the fertile ecosystems is a major mission of all power plants of RATCH Group and it must be undertaken continuously from the development and construction stages throughout the commercial operation period. The assessment of impacts on biodiversity is a material issue that must be studied, analyzed, and followed by preventive and remedying measures. Monitoring results must be included in all power plants' environmental impact assessment reports.

When power plants commence commercial operations, they must keep the ecosystems as close as natural conditions, to minimize changes to living organisms' livelihood and biodiversity.

Biodiversity is a location or an ecosystem that contains a variety and variability of living organisms. Biodiversity is crucial in environmental terms thanks to its influence in balancing the ecosystem; in economic terms when diversity shapes new products; and in cultural terms as a source of local wisdom.

Ratchaburi Power Plant's biodiversity rehabilitation and preservation

Code of Conduct

Nurture the environment and preserve natural resources through relevant and appropriate measures aimed at conserving natural resources and biodiversity and ensuring sustainable benefits from natural resources

Operational approaches

Reduce/avoid possible impacts
- Prevent leakage or contamination that may endanger species and affect biodiversity.

Conservation and restoration
- Maintain ecosystems as close as possible to natural conditions
- Restore degraded ecosystems and grow trees around power plants

Survey and monitoring
- Conduct biannual survey on biodiversity in the 1-square km buffer zone to cover bird migration, as a measure to monitor impacts from power plant construction and an indicator of the ecosystem's biodiversity

Sustainably promote terrestrial ecosystems
- Maintain the natural condition of the 350-rai wetland near the power plant, preserving it as wildlife sanctuary

SDGs

SDG 15: Life On Land

(target 15.1 : ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements)

Survey and monitoring of wildlife biodiversity

Ratchaburi Power Plant has conducted surveys on biodiversity for 23 years. Birds are considered an indicator of the ecosystem's biodiversity and the power plant's performance, due to their huge numbers and ability to indicate the fertility of the food chain and the ecosystem. The surveys, one in the rainy season (August) and the other in the dry season (December), focus on the number, diversity, population, dispersal, and concentration of 4 animal classes in the 1-square kilometer buffer zone into four categories, namely mammalians, birds, reptiles, and amphibians.

In 2019, 96 species of wild animals were found; 6 mammal species, 64 bird species, 13 reptile species and 13 amphibian species.

Wildlife categorized by conservation status

Animals protected under Wildlife Reservation and Protection Act B.E. 2535 (1992)

Total: 62 species

- 60 birds, mostly protected because of their beauty or for their roles in getting rid of agricultural pests including those in Cattle Egret (*Bubulcus ibis*), Baya Weaver (*Ploceus philippinus*), and Common Myna (*Acridotheres tristis*) species.
- 2 reptile species : Water Monitor (*Varanus salvator*) and Oriental Garden Lizard (*Calotes versicolor*).

Animals classified under Thailand's bio-resources status (2017)

Total: 28 species

- 1 near-threatened species : Baya Weaver *(Plocens philippinns)*
- 1 vulnerable species : Asian Golden Weaver *(Ploceus hypoxanthus)*
- 1 Data Deficient species : Asian Grass Frog *(Fejervarya limnocharis)*
- 25 least concern species which are 13 reptile species and 12 amphibian species

Animals enlisted in IUCN Red List (2016)

Total: 96 species

- 1 near threatened species : Asian Golden Weaver *(Ploceus hypoxanthus)*
- 95 least concern species which are 6 mammal species, and 12 amphibian species, 13 reptile species and 13 amphibian species



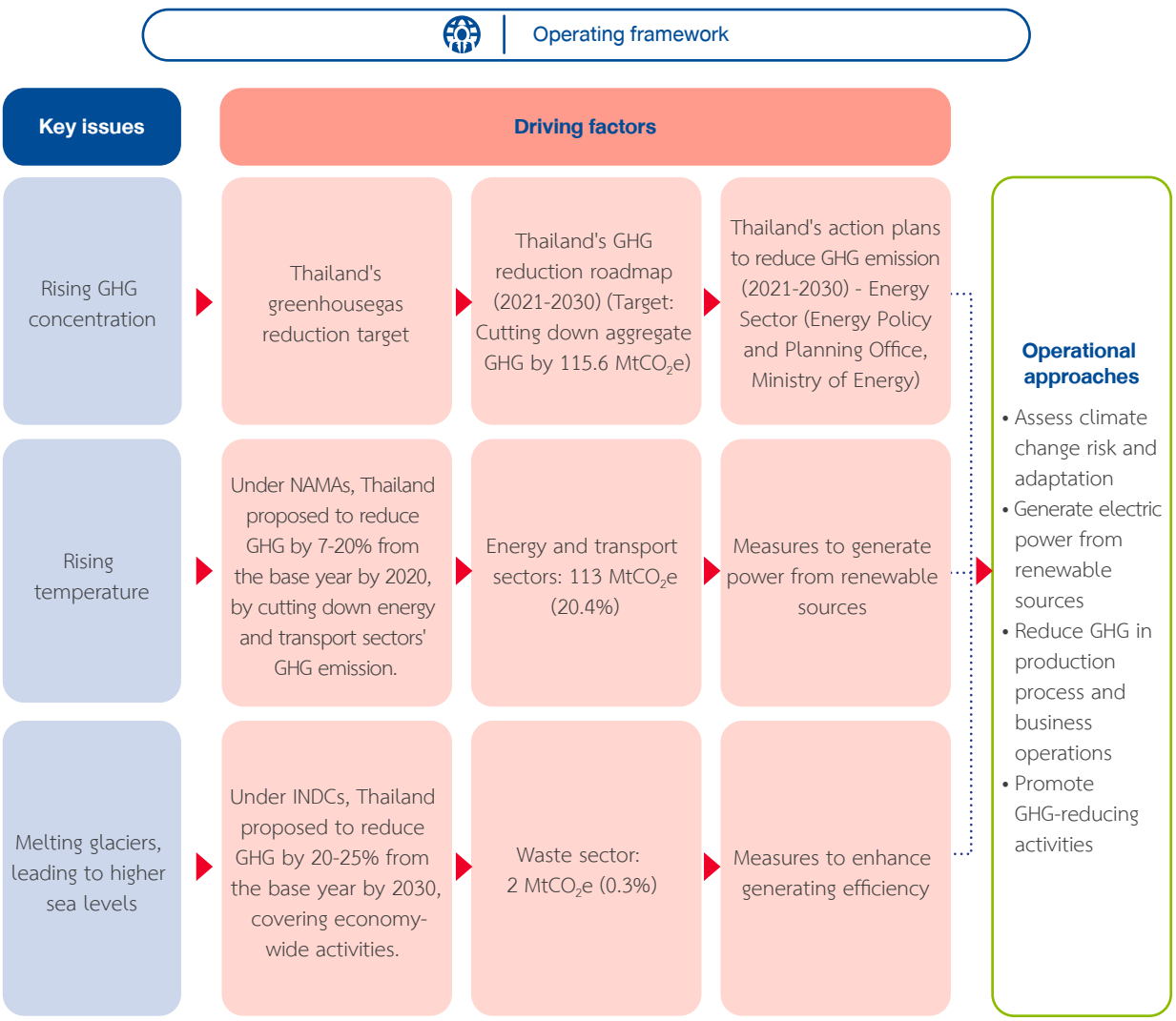
Baya Weaver (Ploceus philippinus) :
Near threatened species



Asian Golden Weaver (Ploceus hypoxanthus) :
Vulnerable species

HANDLING IMPACT OF CLIMATE CHANGE

RATCH includes the management of climate change impacts in the organization's sustainable development policy, setting operational approaches for all businesses in Thailand and overseas. The approaches are aligned with the Code of Conduct to reflect RATCH's awareness in the issue and the impacts caused by the Company's operations. RATCH undertakes actions to reduce greenhouse gas emission, by maintaining the maximum generating efficiency and promoting energy conservation measures or activities both inside and outside the organization. The actions also include an increase in greenhouse gas (GHG) removal via activities to conserve forest areas and expand green areas and the adoption of measures to raise awareness and understanding in efficient GHG management among relevant parties. Preparations including water management and flood-prevention plans are in place to tackle and respond to possible climate change impacts.



Climate risk management and adaptation

Aside from efforts to reduce and store GHG most effectively, RATCH outlines measures and guidelines to cope with climate change impacts on business operations, which include an increase in average temperature, drought and flooding. The Risk Management Committee and the Risk Management Working Team identify project-level and organization-level climate change risks. The risks are monitored, assessed and tackled with appropriate measures to prevent impacts particularly in the project level for under-development and commercially-operated projects.

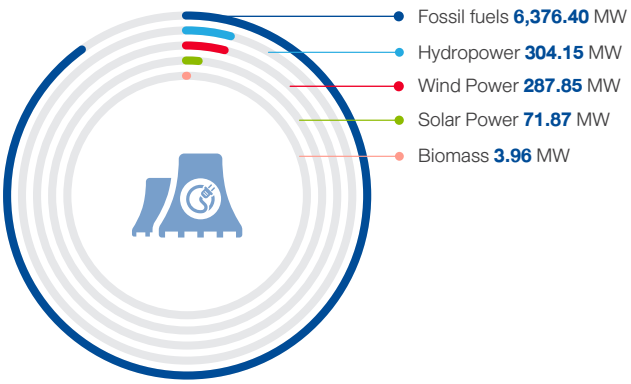
Risk factor	Risk level	Guideline	Result
Increase in average temperature	Medium	• Find ways to reduce the temperature of air feeding the air inter filter, to increase the efficiency of Ratchaburi Thermal Power Plant's gas turbines • Reduce the temperature of air feeding Tri Energy Power Plant's combustion system with water spray.	1) Ratchaburi Thermal Power Plant Unit 1's gas turbine increased generating capacity above contracted capacity by 4-23 MW, when temperature went up 1-5 Celcius degree. 2) Heat rate improved, hence saving fuel cost by 13,264 BTU per annum or Baht 3,415,960 per annum. 3) Natural gas consumption decreased by 13.72 million cubic feet per year or 785 tCO_2e, helping mitigate global warming impacts.
Drought	Medium	• Monitor water usage ratio in primary water sources on a monthly basis, to assess the situation and watch out for impacts on production process and fight with community over water. • Monitor storm surge at sea that cause's salty water, to assess generating condition and water cycles of the cooling system. • Improve the cooling tower's water quality controlling system, to increase water circulation.	1) Usage of water from Mae Klong River accounted for 0.18-0.62% of water released from the upper dam to the river, not high enough to spark fight over water. 2) Monitor Mae Klong River's raw water quality, to plot a quality improvement plan so that water can be recycled 4-6 rounds as targeted.
Flood	Low	• New projects are surrounded with water drainage system and the power plants are located on the ground higher than the previously-flooded level. • Prepare flood emergency manual and contingency plan for prompt responses and hold flood drill annually. • Install rainwater measuring device at Ratchaburi Power Plant to monitor the situation and report to relevant persons.	1) All power plants must prepare emergency response plans to cope with flood. 2) Ratchaburi Power Plant, which experienced flood, installed rainwater measuring device to monitor, watch and react. Once accumulated rainwater reaches the trigger point, the emergency response plan will be promptly executed.

Renewable power management

In 2019, RATCH's combined equity installed capacity from renewable energy reached 667.83 MW, or 9.48 per cent of 7,044.22 MW total equity installed capacity. The latest renewable project was Xe-Pian Xe-Namnoy Hydroelectric Power Plant in Lao PDR, which commenced commercial operation on 6 December 2019. The project contributed 102.5 MW of equity installed capacity.

RATCH also invested in 2 new renewable power plants – Collector Wind Farm and Yandin Wind Farm in Australia with equity installed capacity of 226.8 MW and 149.94 MW, respectively. The investment raised renewable equity installed capacity to 1,044.57 MW or 12.07 per cent, against the target to achieve 20 per cent by 2023 set accordingly to Thailand's proposals under NAMAs and INDCs.

Equity installed capacity of commercial projects in 2019



Generating capacity of renewable projects in 2019

Project	Detail	Status	Shareholding (%)	Equity installed capacity (MW)	Expected GHG reduction per annum (tCO_2e equivalent)
Xe-Pian Xe-Namnoy Hydroelectric Power Plant	Location: Lao PDR Type: IPP Operator: Xe-Pian Xe-Namnoy Power Company Limited	Commercial operation started on 6 December 2019.	25	102.50	292,202
Collector Wind Farm	Location: New South Wales, Australia Type: IPP Operator: RATCH-Australia Corporation Pty Ltd	Under construction Commercial operation starts in 2021.	100	226.8	432,960
Yandin Wind Farm	Location: Western Australia, Australia Type: IPP Operator: RATCH-Australia Corporation Pty Ltd	Under construction Commercial operation starts in September 2020.	70	149.94	453,250

Overall generation from commercially-operated renewable projects

Source of energy	No. of projects				Equity installed capacity (MW)	Electric power based on equity installed capacity (Megawatt-hour)	Volume of reduced GHG (tCO_2e equivalent/ year)
	Thailand	Lao PDR	Australia	Indonesia			
Wind power	2	-	4	-	287.85	691,107	702,310
Solar power	11	-	1	-	71.87	127,176	100,144
Hydropower	-	2	-	1	304.15	437,429	254,627
Biomass	1	-	-	-	3.96	29,779	17,334

Reduction of GHG emissions in production process and business operations

RATCH applies the Carbon Footprint for Organization Scheme's methodology in assessing the organization's GHG emissions. The assessment results are used to plan GHG reduction measures, covering business operations and the production process. Focus is placed on a cut in energy consumption at power plants and offices, which are significant GHG generators. In return for carbon credits, supporting activities and innovations are registered for Thailand Voluntary Emission Reduction (T-VER) scheme Thailand Greenhouse Gas Management (Public Organization)'s or TGO. The Company also supports GHG reduction at community level, through social activities designed accordingly to TGO's Low Emission Support Scheme (LESS).

Progress

In 2019, RATCH maintained its focus on 3 approaches: GHG reduction, GHG removal and adaptation for climate change impacts driven by an increase in GHG.

2017

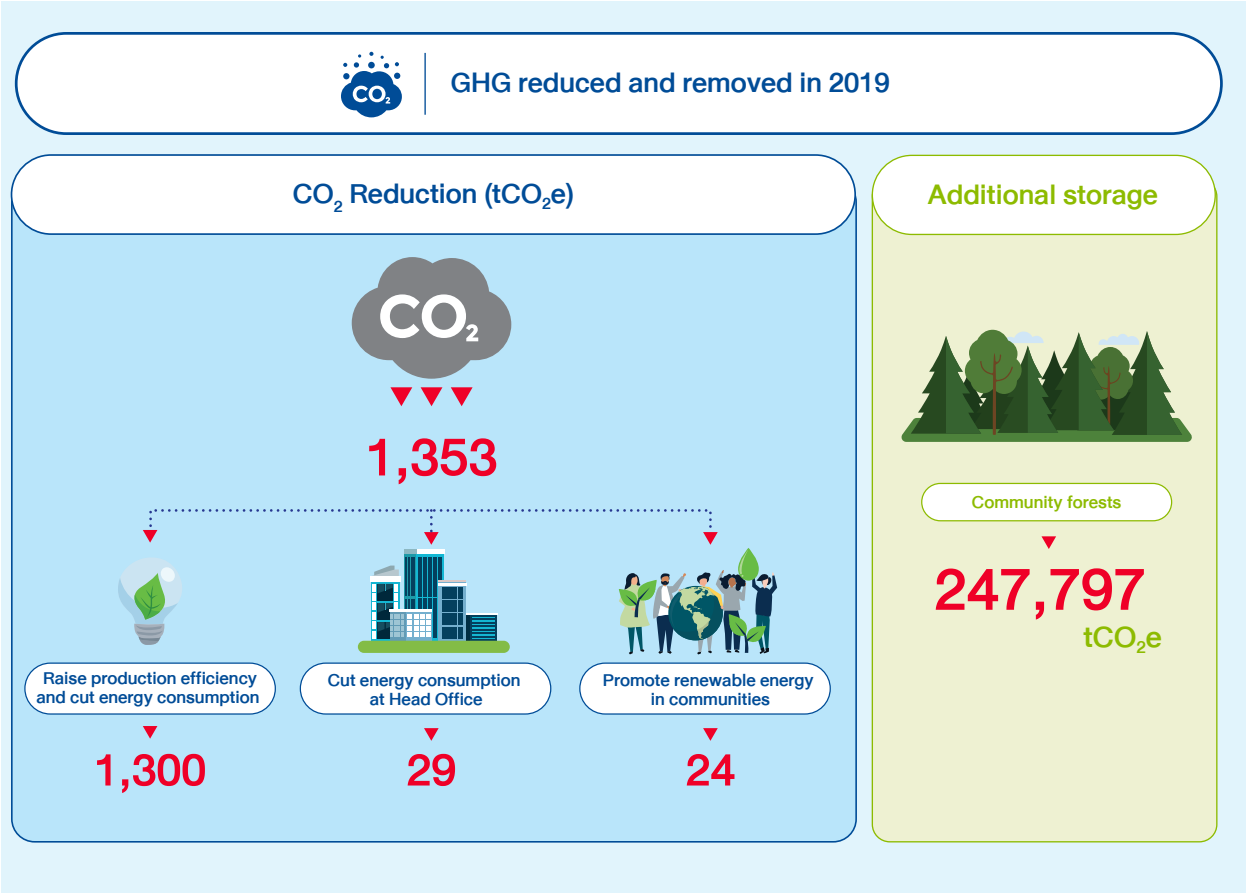
- Set GHG reduction framework
- RAtchaburi Power Plant and Tri Energy Power Plant's certified carbon footprint was 5,679,600 and 1,807,044 tCO_2e, respectively.
- Promote reduction via CSR activities as guided by TGO's LESS, reducing CO_2 by 72.44 tCO_2e per year.

2018

- Set 5-year energy consumption reduction target for Ratchaburi Power Plant
- Create T-VER projects (energy efficiency), reducing CO_2 by 771 tCO_2e per annum.
- Create T-VER projects (renewable energy), expecting to reduce CO_2 by 1,774 tCO_2e per year.
- Verify Ratchaburi Power Plant/ Tri Energy Power Plant and RATCH Group Office's carbon footprint at 5,632,159/ 781,929 and 1,183 tCO_2e, respectively.
- Promote reduction via CSR activities as guided by TGO's LESS, reducing CO_2 by 37.5 tCO_2e per year.

2019

- Create T-VER projects (forest and green area), expecting to store 57 tCO_2e of CO_2 per year.
- Verify carbon credits of T-VER projects (Energy efficiency) at 772 tCO_2e per year.
- Verify Ratchaburi Power Plant/Tri Energy Power Plant and RATCH Group Office's verified carbon footprint at 5,225,436/ 98,606 and 1,153 tCO_2e, respectively.
- Promote reduction via CSR activities as guided by TGO's LESS, reducing CO_2 by 44.39 tCO_2e per year.



Aside from a goal to accelerate the replacement of fossil fuels by renewable energy, RATCH is enhancing production efficiency through a cut in resources, energy conservation, promotion of community energy-conservation projects, and the conservation of forests for GHG removal. Actions undertaken in 2019 are summarized below:

Energy saving

Energy saving at power plants and office buildings

In 2019, Ratchburi Power Plant, Tri Energy Power Plant, Nava Nakorn Power Plant and RATCH Group's Head Office reduced energy consumption by 2,238 megawatt-hour. Greenhouse gas was cut by 1,329 tCO_2e, or Baht 6,422,465. GHG was cut chiefly through the following activities:

Energy and heat saved in 2019

Project/activity	Energy saved (megawatt-hours)	Cost saving (Baht)	GHG reduction (tCO_2e)
Ratchaburi Power Plant			
The project to install High Bay light bulbs on the ceiling of thermal power plants.	403.92	1,219,838	235.12
Tri Energy Power Plant			
(1) The project to install screw air compressor and use it during reserved shutdown instead of main air compressor	350.06	1,225,210	203.77
(2) The project to use Service Water Booster Pump during reserved shutdown	82.88	290,070	48.24
(3) The project to install timer for the on-off compressor at generation buildings, for nighttime control	32.59	114,069	18.97
(4) The project to reduce energy usage in cooling down equipment after FSNL Test, to shorten the ECB and HRC fuel pump running time.	72.70	254,436	42.32
(5) The project to reschedule FSNLTest dates of 2 gas turbines: completing the test on the same day to save cooling-down energy	330.89	1,158,126	192.61
Nava Nakorn Power Plant			
(1) The project to reduce the station air system's pressure for energy saving	17.90	28,459	10.42
(2) The project to stop FG Compressor in off-peak periods, accordingly to EGAT's monthly generating schedules	942.25	1,988,630	548.48
RATCH Group's Head Office			
Energy-saving activity under "Turn off-Adjust-Replace" measure	50.00	143,626	29.11
Total	**2,283.19**	**6,422,465**	**1,329.04**

Ratchaburi Power Plant

Commencing commercial operation in 2000-2002, Ratchaburi Power Plant has undertaken projects/activities to enhance energy efficiency and save energy since 2005. Throughout the 15-year period, the power plant has saved 235,249 megawatt-hour and reduced GHG by 136,965 tCO_2e.

Energy-saving measures and projects continued in 2019 under 5-year energy conservation plan (2018-2022) that aims to cut down energy usage by a total of 1,142 megawatt-hour and greenhouse gas equivalent to 665 tCO_2e. In 2019, energy usage was cut by 404 megawatt-hour through the project to install High Bay light bulbs on the ceiling of thermal power plants. In two years, the project saved energy by 4,638 megawatt-hour and greenhouse gas equivalent to 2,670 tCO_2e, higher than the 5-year plan's target. The target will be revised up in 2020.

Thailand Voluntary Emission Reduction Program (T-VER)

To save energy and reduce GHG emissions, the power plant assessed its GHG emissions through a standardized monitoring, reporting and verification system. Three projects were issued carbon credits under T-VER, for the reduction of GHG equivalent of 2,603 tCO_2e per year. T-VER is paving way for Thailand's Emission Trading Scheme (ETS). Undertaken projects are:

Item	Project	Type of project	Status	Crediting period	Reduced GHG (tCO_2e/year)
1	Energy efficiency enhancement project covering the Energy Efficiency Lighting Installation at Ratchaburi Electricity Generating Company Limited	Energy Efficiency (EE)	Registered and issued credits	7 years (1 July 2017-30 June 2024)	772 (1,543 carbon credits for 2 years of action)
2	Solar Floating Project by Ratchaburi Electricity Generating Company Limited	Renewable Energy (RE)	Registered	7 years (2019-2026)	1,774
3	Sustainable Forestation Project by Ratchaburi Electricity Generating Company Limited	Forest (FOR)	Registered	20 years (1 September 2019 -31 August 2039)	57

In 2019, RATCH Group and Ratchaburi Electricity Generating Company Limited jointly created a T-VER project (forest and green area). It covers the 47.92 rai area where mahogany and teak trees were planted in 2009 and 2010, respectively, expected to reduce GHG by 57 tCO_2e per year or a total of 1,140 tCO_2e throughout 20 years.

Progress of Solar Floating Project

The Solar Floating Project was registered as a T-VER project (renewable energy) on 13 November 2018 in support of RATCH's policy to generate electric power from clean energy. A total of 6,480 solar panels, 330 watts each or a total of 2.138 MW, were floated on a reservoir.

In 2019, Ratchaburi Electricity Generating Company Limited requested an amendment in project details in Ratchaburi Power Plant's EIA (stamendment), to obtain the approval for the solar floating project in the power plant's premise. The project was endorsed by the Expert Review Committee at the 27/2019 meeting on 5 September 2019.

The project construction was kicked off on 12 November 2019, adhering to the Office of Natural Resources and Environmental Policy and Planning's environment impact prevention and migation measures. The off-grid project was ready for trial run on 25 December 2019. The electricity generated 365 days per year will power the water quality improvement building and Camp Area. The electric power, to be generated during the 7-year carbon crediting years, is expected to reach 21,891,625 kilowatt-hours.



The Solar Floating Project in Ratchaburi power plant



Invertor and Transformer Building of Solar Floating Project

Nava Nakorn Power Plant

Nava Nakorn Power Plant targeted to save 703.906 megawatt-hours in 2019 through 2 projects: reducing the station air system's pressure and stopping flue gas compressor in off-peak periods accordingly to EGAT's monthly generating schedules. Both projects saved 960.15 megawatt-hours, well above the target. They saved expenses by Baht 2 million and reduced GHG by 559 tons.

Head Office

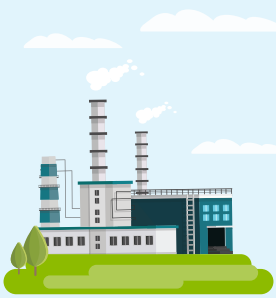
Head Office saved additional 50 megawatt-hours or Baht 143,626. The reduced GHG was equivalent to 29 tons of CO_2. Since the 2013 base year, accumulated electricity saved totaled 4,334 megawatt-hours. Total saved expenses reached Baht 18.83 while reduced GHG was equivalent to 2,523 tons of CO_2e.

GHG emissions target identification

RATCH's main business is to generate electricity as contracted by EGAT and all power plants must meet the National Central Center's requirements in terms of generating capacity and energy sources. It also set a base target accordingly to the guidelines proposed on 28 March 2019 by Thailand Greenhouse Gas Management (Public Organization), the Office of Natural Resources and Environmental Policy and Planning, the Energy Policy and Planning Office, and Electricity Generating Authority of Thailand. The base target was set at 0.4945 tCO_2e/MWh when natural gas is used as fuel. In 2019, actual GHG emissions compared to net generated electric power were better than the target.

Carbon Footprint for Organization (CFO)

RATCH Group measured GHG emissions of Ratchaburi Power Plant, Tri Energy Power Plant and Head Office in Scope 1 and Scope 2 under Thailand Greenhouse Gas Management (Public Organization)'s carbon footprint for organization scheme. Details are as follows:



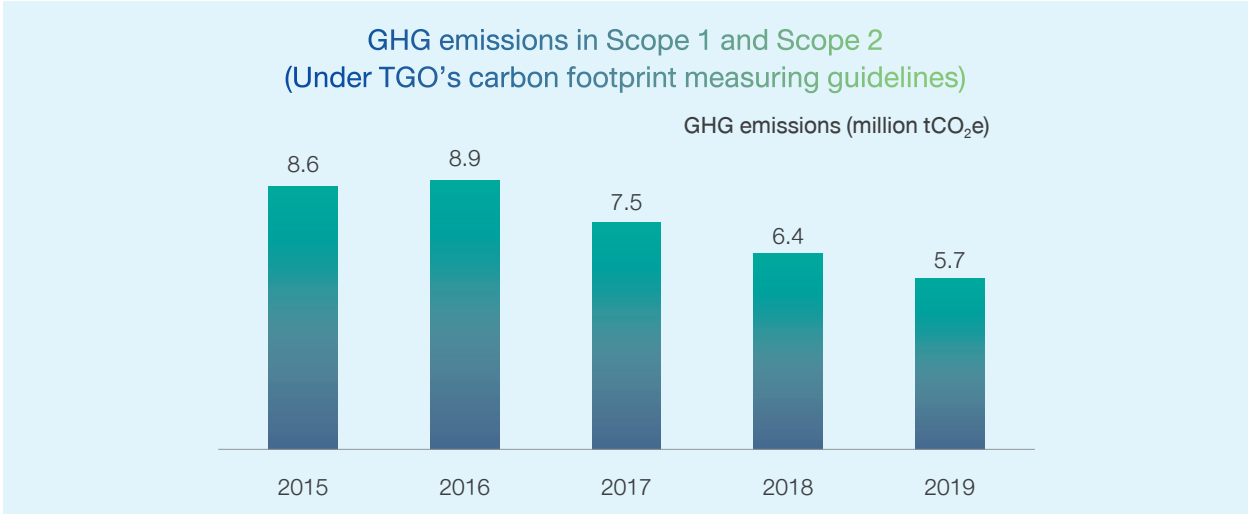
Carbon Footprint for Organization measurement under TGO's guidelines

Scope 1: Direct Emissions
- Use of fuels – natural gas, bunker oil and diesel – in generating process
- Use of fuels (mobile and stationary)
- Use of limestone to remove sulfur dioxide
- Leakage of SF_6 and coolant

Scope 2: Indirect Emissions
- Use of power supplied by Electricity Generating Authority of Thailand
- Use of power supplied by Provincial Electricity Authority
- Use of power supplied by metropolitan Electricity Authority

GHG emissions (tCO_2e)

	2015 (base year)	2016	2017	2018	2019	2015 (base year)	2016	2017	2018	2019
Ratchaburi Power Plant	7,128,375	7,555,982	5,650,003	5,606,992	5,201,346	27,702	28,028	29,597	25,167	24,090
Tri Energy Power Plant	1,456,665	1,288,633	1,805,180	779,508	95,489	2,183	2,186	1,864	2,419	3,117
Head Office	-	-	-	73 (base year)	69	-	-	-	1,110 (base year)	1,084



Measuring generating-based GHG emissions under TGO's guidelines

To evaluate the reduced GHG emissions from generating activity, RATCH applied the generating efficiency enhancement guidelines proposed on 28 March 2019 by Thailand Greenhouse Gas Management (Public Organization), the Office of Natural Resources and Environmental Policy and Planning, the Energy Policy and Planning Office, and Electricity Generating Authority of Thailand. The evaluation equation is as follows:

GHG Emission Reduction (ER) = Baseline Emission (BE) − Policy/Measure Emission (PE)

GHG Emission = Activity Data (AD) x Emission Factor (EF)

Parameter	Definition
BE_y	GHG emissions in Y base year (tCO_2/year)
PE_y	GHG emissions from activities undertaken in Year Y (tCO_2/year)
ER_y	Reduced GHG emissions in Year Y (tCO_2/year)
AD	Activity data (unit/year)
EF	Emission factor (tCO_2/year)

The base year varies in countries. In Thailand, two base years are set.

- Year 2010 for NAMA context
- Year 2015 for NDC context

The CO_2 Intensity (CI) calculation method in base year 2010 for EGAT power plants and IPPs vary accordingly to type of fossil fuels. The CI 2010 of power plants using natural gas is 0.4945 tCO_2e as detailed below:

Power plant	Fuel	Fuel consumption (mcbf)	Net electric power (MWh)	CI 2010 (tCO_2e/MWh)	CI 2019 (tCO_2e/MWh)	Emission Reduction: ER (tCO_2e)
Ratchaburi Power Plant	Natural Gas	113,205.70	13,183,041.89	0.4945	0.4914	41,157.72
Tri Energy Power Plant		2,071.15	240,631.50	0.4945	0.4925	477.08

Note: *Calculation is based on power plants' 2019 data.*

GHG volume released by Ratchaburi Power Plant and Tri Energy Power Plant per the plants' net generation was at 0.4914 and 0.4925 tCO_2e, respectively. Benchmarking against EGAT's average GHG emission in 2010 base year (at 0.4945 tCO_2e in case of natural gas combustion) as the plants' target, The plants achieved the target by decreasing GHG emission compared to base year of 2010.

Promoting community engagement and adaptation

Aside from measures to reduce GHG in the generating process, RATCH is set to reduce GHG via activities that promote knowledge, understanding and awareness in the consumption of natural resources and energy. Among them are Community energy projects and "Love the Forest and Community" which has encouraged communities to preserve forests, the natural GHG sinks, throughout the 12-year project period.

Promoting community's energy consumption

Community energy projects

Project name	Community Energy Project (Chiang Mai, Lamphun and Nan provinces)	
Goal	Reduce community energy consumption by 5%	
Detail	RATCH initiated Community Energy Project in collaboration with Provincial Energy Office in Chiang Mai, Lamphun and Nan provinces, to raise awareness in the value of energy, maximization of local resources and suitable choices of energy technology. The project aims to create examples in community energy planning. With technological supports, the project is to ensure sustainable energy for communities. Details are as follows:	
	1) Tambon Mae Faek, Sansai District, Chiang Mai Province	
	Promote energy reduction technology 1) Biomass stove 2) 200-liter charcoal kiln (low-smoke type) 3) Husk-powered stove 4) Solar oven 5) Smokeless grill 6) Vertical 200-liter charcoal kiln	Setup learning centers 1) Nature Enthusiast Group 2) Ban Pong's solar-preserved banana group 3) Ban Rom Luang's mushroom cultivation group 4) Natural holistic therapy group 5) Nong Sae's husk and firewood group
	2) Tambon Pasak, Muang District, Lamphun Province	
	Promote energy reduction technology 1) Super stove 2) Husk-powered stove 3) 200-liter charcoal kiln 4) Solar oven 5) High-efficiency smokeless grill	Setup learning centers 1) Solar oven group 2) Smokeless grill group 3) 200-liter charcoal kiln group 4) Biomass stove group 5) Smokeless charcoal kiln group
	3) Tambon Pua, Chiang Klang District, Nan Province	
	Promote energy reduction technology 1) Bio-charcoal kiln 2) 200-liter charcoal kiln 3) LED light bulbs 4) Biogas digester	Setup learning centers 1) Stove molding group 2) Solar oven group 3) Bio-charcoal kiln group 4) Ban Nam Meed's solar oven group 5) Ban Kunporn herbs community enterprise group
Operating results	The communities reduced energy consumption by more than 5 per cent.	

RATCH registered Community Energy Project for Thailand Greenhouse Gas Management (Public Organization)'s Low Emission Support Scheme (LESS), winning credits for GHG reduction by 7.18 tons of CO_2 equivalent. The project helped ease GHG intensity and hence mitigate global warming impacts.

Provincial Energy Offices assessed the energy consumption and GHG emissions of the following projects in the 3 areas.

1 Chiang Mai: Husk-powered stove
2 Lamphun: Husk-powered stove
3 Nan: Light bulb replacement

Energy consumption and GHG emission (July 2018–June 2019)

- LPG consumption of the projects in Chiang Mai and Lamphun dropped by 91 kg per year thanks to husk-powered stoves.
- Use of LED light bulbs in Nan saved energy by 6,690 units.
- Communities covered by the 3 projects helped reduce GHG emissions by 7.18 tons of CO_2 equivalent per year.

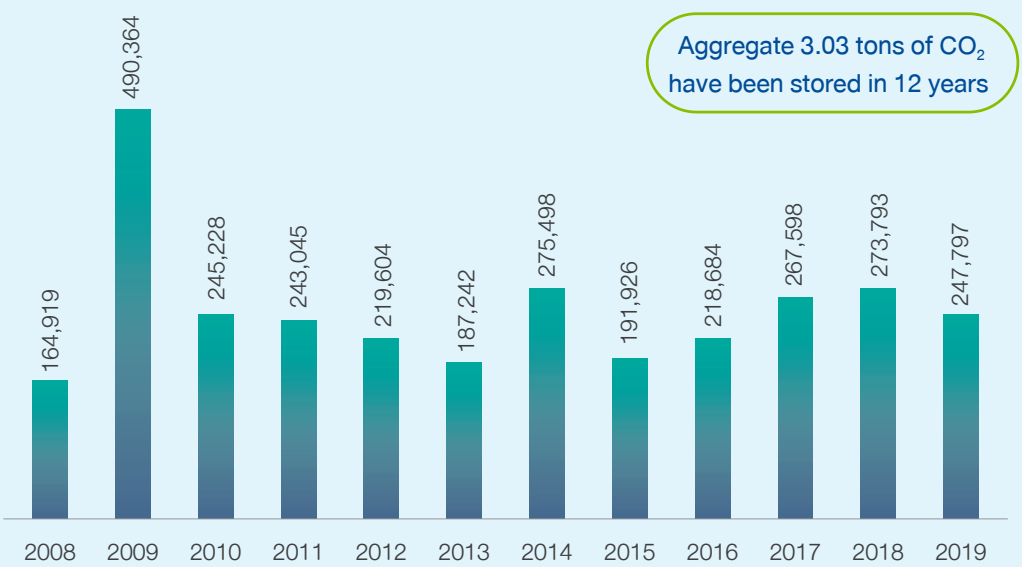


RATCH was bestowed the honorable certificate for the projects in support of TGO's Low Emission Support Scheme (LESS) and Carbon Footprint for Organization scheme concerning Ratchaburi Power Plant and Tri Energy Power Plant. The certificate was presented at an event "Unifying our hearts to address global warming" on 19 September 2019.

Love the Forest and Community Project for GHG removal

Running for 12 consecutive years, "Love the Forest and Community" supports and promotes community forest conservation through community forest competition. RATCH carries out the project in collaboration with the Royal Forest Department and communities nationwide. In 2019, the project awarded supports to 147 community forests which covered 123,898 rai in total area and can store GHG equivalent to 247,797 tons of CO_2.

CO_2 storage of community forests awarded (tons)



Note: *Carbon dioxide storage capacity= 2 tons/rai/year, Royal Forest Department*

Response to Sustainable Development Goal

RATCH's undertakings were also designed to address Sustainable Development Goals, as summarized below:

SDGs	RATCH Group's policy	Action	Target
SDG 7: Ensure access to affordable and clean energy (7.2: Increase substantially the share of renewable energy in the global energy mix and 7.3: double the global rate of improvement in energy efficiency)  SDG 12: Ensure sustainable consumption and production patterns (12.2: By 2030, achieve the sustainable management and efficient use of natural resources) 	Innovate and seek ways and methods to reduce resources and energy consumption as well as pollutant, waste and GHG	• Investment in renewable projects • Reduce resources and energy consumption at power plants and Head Office • A Thailand Voluntary Emission Reduction (T-VER) scheme: energy efficiency enhancement	• Ratchaburi Power Plant saves energy 1,142 MWh during 2018-2022 • T-VER project is registered and granted carbon credits • Lower CO_2 due to renewable energy and lower usage of other types of energy
SDG 13: Climate action (13.3: Improve education, awareness raising and human and institutional capacity on climate change mitigation, adaptation, and impact reduction) 	Set GHG emission target, assess climate change risks and impacts on RATCH's production and business operations	• Carbon Footprint for Organization Projects (covering power plants and Head Office) • Assess reduction of generating-related GHG under TGO and EGAT's calculation guidelines for energy efficiency enhancement actions • Assess and manage risks and impacts of natural disasters and climate change • Promote innovations to increase production efficiency	• Power plants and Head Office's GHG data base • GHG emission reduction - Below 0.5821 tCO_2e/MWh (based on Grid Emission Factor) - Below the level in base year (2010), which is estimated under TGO and EGAT's guidelines at 0.4945 tCO_2e/MWh
SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems (15.1: ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems in particular forests, wetlands, mountains and drylands) 	Seek measures to reduce GHG emissions to the atmosphere and to cope with climate change, for stable and sustainable business growth	• Increase GHG storage • A Thailand Voluntary Emission Reduction Program: forest and green area • Promote community's reduction of energy consumption	• Support 147 community forests to conserve and rehabilitate forests and ecosystems

EMPLOYEE STEWARDSHIP

Employees are the heart of the Company and a key engine towards sustainable business growth. It consequently assures them of equitable and fair treatment. Employees are also encouraged to uphold the Company's norms, values, regulations, as well as legal and regulatory requirements, to unite their forces in leading the organization towards its vision "to become the leading value-oriented energy and infrastructure company in Asia Pacific.

Employee stewardship principle and the framework of employee treatment are included in the Company's Code of Conduct and the Company's policy on employees summarized as follows:

Code of Conduct-guided principles

- Emphasize human resource management and development for wide-scale and even competency
- Maintain fair remuneration and welfare, comparable with leading organizations'
- Strictly follow employment-related laws and regulations
- Promote quality workplace, with respect to safety, occupational health and work ambience
- Support employees' career advancement accordingly to their competency, through fair, honest, just and performance-based decisions for the appointments, transfers, rewarding and punishment
- Encourage employee engagement in organizational development, listening to opinions and recommendations based on employees' professional knowledge
- Treat employees with respect in their individuality and human dignity
- Avoid unfair acts as they may affect employees' job security, threaten or cause psychological pressure
- Allow them to lodge complaints if experiencing unfair practices under the prescribed system and procedure

Policy on employees

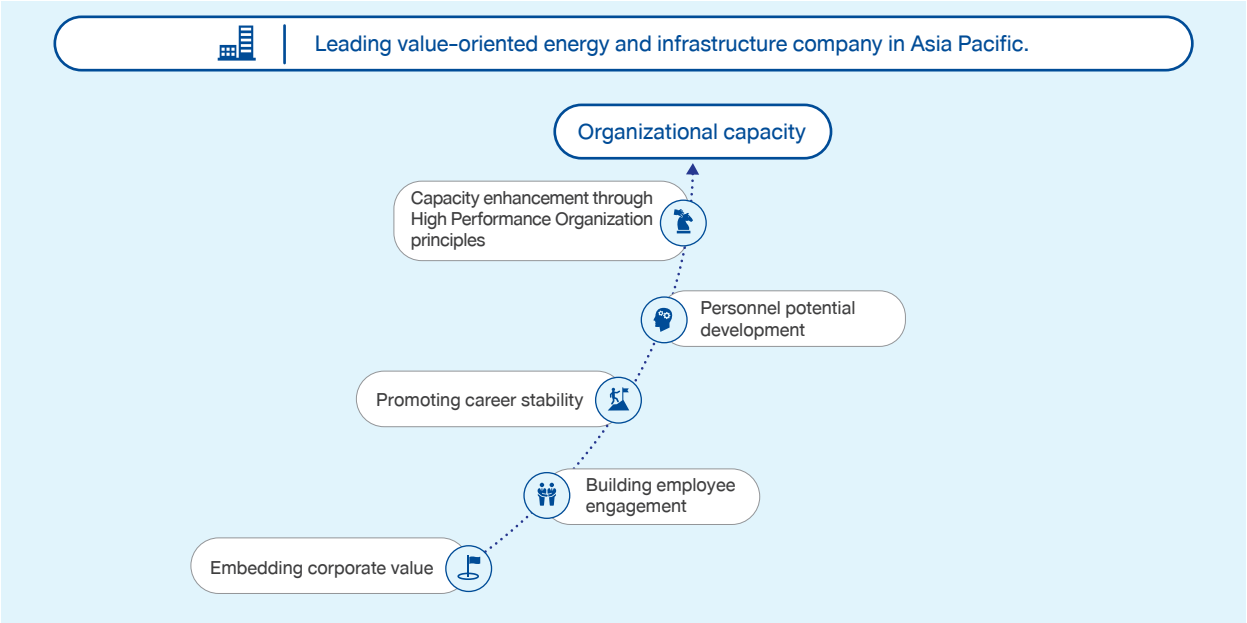
- Promote quality workplace, with respect to international-standard safety, occupational health and work environment
- Improve employees' competency constantly, to prepare them for the Company's expansion
- Support employees' career advancement based on their competency
- Ensure appropriate and fair remuneration system as well as welfare
- Encourage employee engagement in organizational development

Under the framework, key issues concerning labor standards and positive/negative impacts on employees were analyzed to shape the Company's human resource management plan.

Key issues	Actions
1) Human resource management and development	• Prepare targeted annual training plan and personal development plan that includes courses organized by external organizations. • Organize cross-functional activities on a regular basis • Attend training in subsidiaries, joint ventures and affiliates and on-the-job training programs • Participate in cross-functional teams to promote teamwork • Organize coaching programs by supervisors, to enhance their team members' competency in the long term • Host dialogues where participants treat others with respect. Take it as the stage for listening and free learning and exchange of ideas that will bring about positive understanding and innovative ideas for organizational development.

Key issues	Actions
2) Remuneration and welfare system	• Set remuneration criteria accordingly to laws and regulations, as well as other factors like competency, academic degrees, experience, economic conditions and the Company's status. • Provide employees with welfare, life insurance, health insurance, emergency supports and safe accommodations.
3) Compliance with labor laws and regulations	• Strictly comply with labor and relevant regulations that concern safety, occupational health and workplace environment and monitor the compliance. • Formulate the Company's rules and regulations in accordance with legal requirements, setting them as guidelines for employees. Regularly monitor legal amendments and update the Company's rules and regulations accordingly.
4) Quality of working life	• Provide clean and suitable workplace environment, accordingly to safety and occupational health standards as well as legal requirements. • Monitor and follow up workplace environment indicators as specified in Head Office's environmental impact assessment on a yearly basis. • Impose 5S standard at Head Office, for an orderly, safe and healthy workplace that facilitates work and instill sense of disciplines, unity and teamwork. It engages the participation of all employees.
5) Career advancement, rewarding and punishment	• Impose standardized evaluation system, in considering rewards for employees with outstanding ability and performance based on the indicators set in advance by the employees and their supervisors. Improve employees' capacity for their assignments and their career path. • Clearly set the criteria for appointments, transfers, disciplinary actions and punishment and inform employees of the criteria.
6) Engagement in organizational development and hearing of their opinions and recommendations	• Put in place communication channels to welcome employees' opinions or recommendations such as an opinion box, Intranet and email and improve the Company's operations accordingly. • Organize regular employee and function meetings, as a two-way communication channel. • Plan activities to promote relationship building of employees in all functions and an activity for all employees to promote mutual understanding.
7) Treatment of employees with respect to their individuality and human dignity	• Apply equitable, fair and respectful treatment of employees, without discrimination in gender, age, nationality and religion. Employees' constitutional rights and basic freedom are also honored. • Say No to child labor, illegal labor and forced labor. • Require the setup of a welfare committee represented by the employer and employees, as a respect to employees' rights in gathering. • Promote employees' good quality of life by caring for their health condition and safety in workplace.
8) Fair treatment of employees	• Implement standard evaluation, human resource development and career development plans with continuous communications with employees. • Define the appeal and submission criteria for employees who experience unfair treatment, as well as submission channels and protection for the complainants.
9) Compliant submission channels	• Put in place clear complaint channels and inform employees accordingly. • Set up a complaint procedure with protection against retaliation and damage mitigation for complainants or those who cooperate in the reporting of the breach or violation of the Company's Code of Conduct/regulations.

Personnel potential developmentActions taken in 2019 were aimed at promoting sustainable labor development and elevating quality of working life as work-life balance will bring happiness and motivate employees to drive the organization towards the ultimate goals.



Enhancing organizational capacity through HPO principles

The Company applies High Performance Organization (HPO) principles in enhancing the organizational capacity. Operational gaps in the 9 following processes were analyzed.

1. Strategic planning (Strategic Execution)
2. Executives' engagement in driving strategies (Strategic Priorities and Trade-off)
3. Risk management (Strategic Risks)
4. Critical behaviors to materialize strategies (Critical Behaviors)
5. Performance indicators (Performance Drivers)
6. Organizational structure (Structure)
7. Human resource-related process (People)
8. Work process (Process)
9. Utilization of Technology (Technology and Digital)

The gaps were prioritized and the Company resolved to first focus on 3 priorities in the master plan for execution during 2017 and 2020. In 2019, the 2nd-year plans were implemented as follows:

Master Plan	Actions	Measurement method
1. A: Alignment of Strategy 2. B: Building Future Capabilities 3. C: Communication and Collaboration Enhancement	1) Accelerating succession and talent development 2) Culture transformation 3) Coaching practice implementation 4) Leadership skill matrix development 5) Continuous process improvement 6) Organization structure reimplementation 7) Data Classification Policy 8) Implementing knowledge management (KM)	Opinion survey covering executives and employees on each action

Performance in 2019

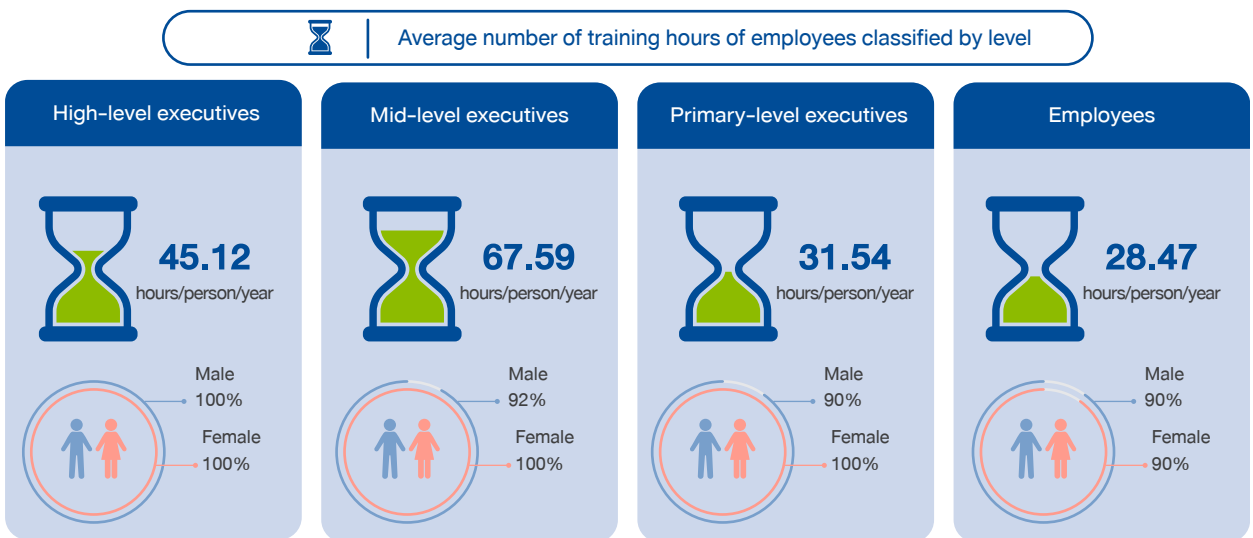
The Company conducted an opinion survey on executives and employees' views towards 8 actions in the master plan and subjected all 9 actions to re-assessment. The assessment score showed an improvement from 2018. Obstacles witnessed throughout the year were analyzed for improvement and additional actions were shaped for implementation in 2020.

Employee capability enhancement

The Company has emphasized employee capability enhancement. The results have been monitored and adjusted accordingly to business contexts to materialize corporate strategies and achieve the High Performance Organization status. In 2019, the Career Development Roadmap was created, covering all positions and employees' requests gathered from dialogues with supervisors. The roadmap is aimed at fostering good understanding and engagement in pushing the organization forward. Employees were also given additional knowledge on organizational innovation, in support of the Company's future investment in new businesses.

Performance in 2019

In 2019, employee capabilities were enhanced through in-house and external training courses, covering 194 employees or 96.04 per cent of total employees. The average number of training hours per employee is as follows:



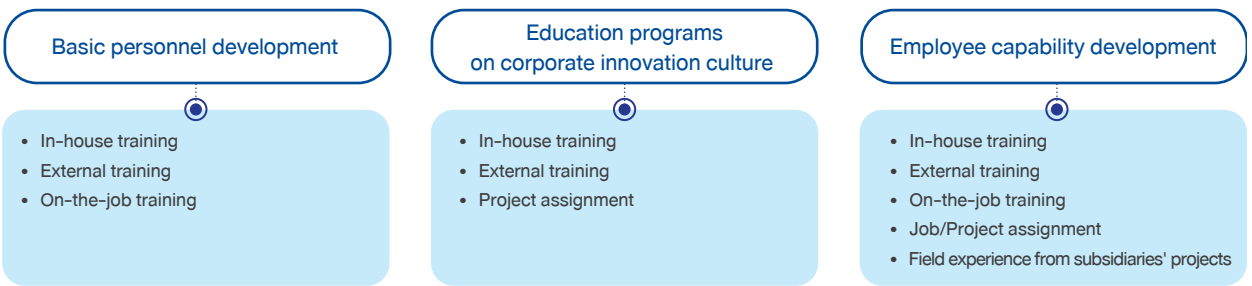
Personnel development patterns:

1) In-house Training to broaden employees' perspectives, capacity and knowledge, aligned with the organizational goals and market competition.
2) External Training to develop competency in target areas. Employees were assigned to attend seminars and training programs organized by external organizations as well as to participate in domestic and overseas field trips.
3) On the Job Training to improve employees' skills and work efficiency. Hands-on experiences will facilitate quick learning and understanding in work processes.
4) Job and Project Assignment to improve analytical skills through the assignments. Advised by supervisors or experts, employees can improve their strengths and fix their weak points.

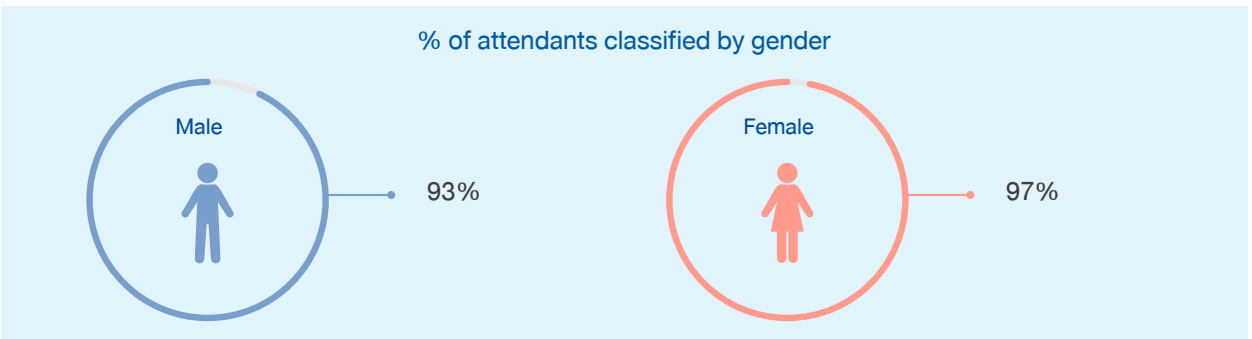
5) Field Experience to give employees hands-on experiences from sub diaries' under-development projects. Aside from the experiences, cooperation is expanding their network.
6) Cross-Functional Team to instill the values of teamwork.

The development patterns were applied for 3 groups of employees, sorted by objectives, as follows:

1. Basic personnel development
2. Education programs to boost knowledge and understanding in innovation
3. Employee capability development



- In 2019, the average training hours were 19.09 per person per year for in-house training and 17.63 for external training. The attendants covered 93 per cent of male workforce and 97 per cent of female workforce.



- For hands-on experience, employees were dispatched to the Group's projects owned by Xe-Pian Xe-Namnoy Power Company Limited and Nava Nakorn Electricity Generating Company Limited.
- Knowledge sharing events by employees in various fields were organized, to relay their experiences to colleagues in other teams and other functions which will improve the understanding of all and facilitate knowledge application in their respective area of work.

Training courses in 2019

Type	Training Courses	Training Hours	No. of attendants	Female attendant	Male attendant
In-house	Advanced Writing for Finance	20	11	9	2
	Finance for Executive	6	11	1	10
	Risk & Crisis Communications & Exclusive Media Training	6	13	2	11
	Non-verbal Communication and Social Ettiquette	6	10	1	9
	Innovative Business Strategy and Model in Digital Age	6	13	3	10

Type	Training Courses	Training Hours	No. of attendants	Female attendant	Male attendant
	Story Telling for Leader	6	19	9	10
	Effective Communication for All Stakeholders	12	21	15	6
	Infographic Media & Presentation	12	39	23	16
	Financial Model	6	22	7	15
	IPP Project Finance	6	45	20	25
	Power BI	12	15	9	6
	Fraud, Bribery and Corruption Risk Management (And improper conduct) & New Types of Internet Fraud & Corruption	3	48	27	21
	Creative and Innovative Thinking Techniques	12	163	97	66
External		3561	176	97	79

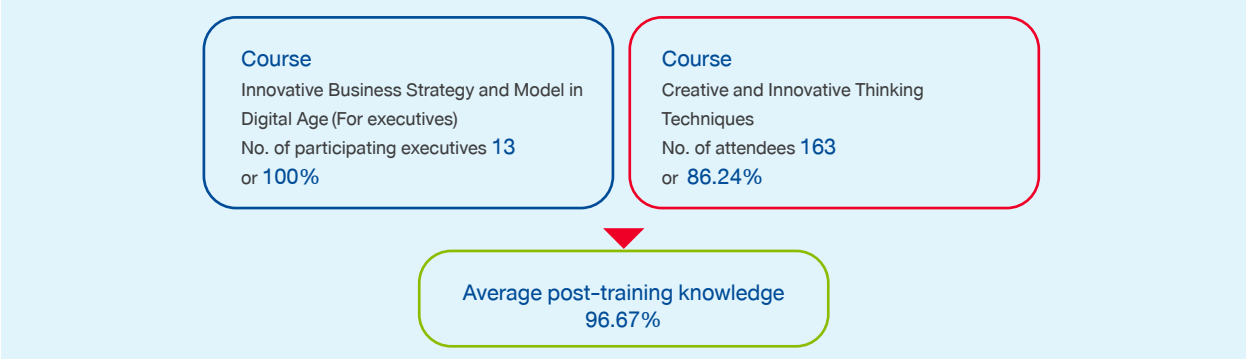
The Company also emphasizes personnel development through cross-functional assignments, so that employees see the overall picture of the organizational work process and functional linkages. Such assignments bring about cross-functional collaboration, data synchronization, teamwork and new experiences that employees can use to increase their work efficiency and effectiveness.

Performance in 2019

- Business Development Function's cross-functional project whereby its employees were dispatched to observe Xe-Pian Xe-Namnoy Hydroelectric Power Plant's operations for a 1-month period.
- Asset Management Function's cross-functional project whereby Ratchaburi Power Plant's production and efficiency engineering team members were dispatched to observe the development and construction of Nava Nakorn Power Plant's extended project for a 6-month period.
- Activities to enhance employee engagement like annual seminars, events to mark the Company's important days and others and volunteering which attracted employees from various functions and divisions.

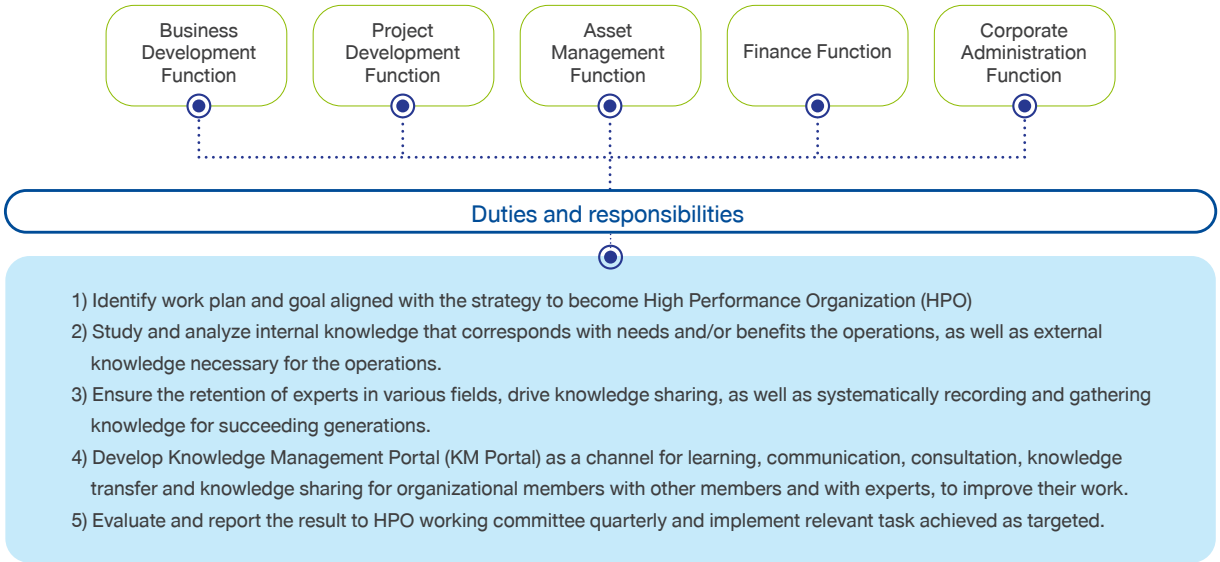
Innovation development

In 2019, training on the importance of innovation was initiated in line with today's business contexts, the Company's goals and the values of innovative organizations. In the year, two courses were organized: "Innovation Business Strategy and Model in Digital Age" for executives and "Creative and Innovative Thinking Techniques" for employees at all levels. The results are as follows:



Knowledge Sharing

In 2019, activities to bolster in-house knowledge sharing continued, as part of the path towards the High Performance Organization status. The development of a knowledge storage system is now supervised by a working committee, represented by all functions. Its responsibilities are as follows:



Performance in 2019

- Five knowledge sharing activities were organized: concerning domestic and international project development; contract management; operation and maintenance; and innovation for greater production efficiency.
- Survey on attendees' knowledge and understanding as well as knowledge application showed 94.6 per cent average score, above the 80-per cent target.
- Mapping of organization's expert was prepared, with the lists of each function based on self-assessment (Inside-out), employees' assessment (Outside-in) and Human Resources Division's assessment.
- The knowledge storage system was developed, as an internal platform for learning, communications and information exchange.

Results of knowledge-sharing activities

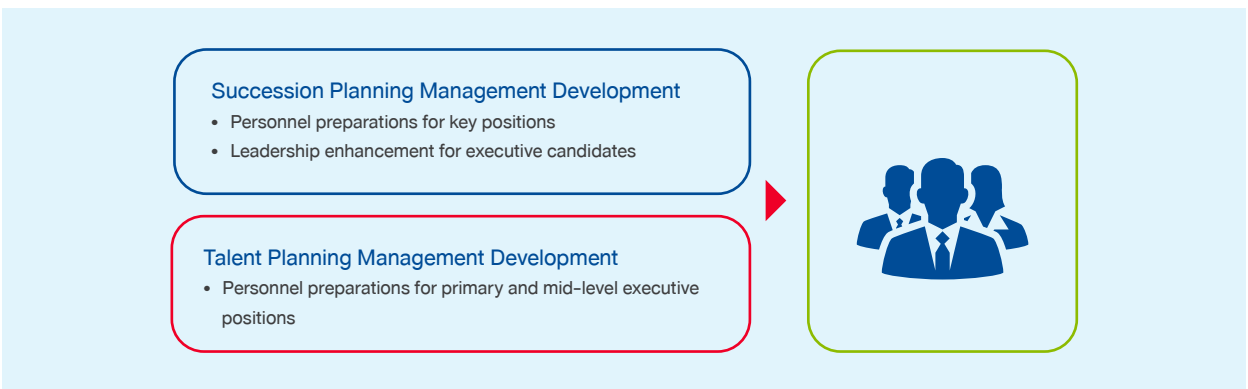
Topic	Expert	No. of attendees (persons)	Utilization level of knowledge (Medium-Very Good)	Knowledge application in daily operations
Renewable Energy in Australia	Executives of RATCH-Australia Corporation Pty Ltd which is RATCH's subsidiary	45	• Very good: 79% • Medium: 17%	• Construction and electric power trade in Australia • Free market mechanism for electric power and renewable energy market
Miscellaneous stories on project development in Thailand and neighboring countries	Business Development Function's executives	32	• Very good: 68% • Medium: 26%	• Business opportunities in neighboring countries • Factors and restrictions to consider

Topic	Expert	No. of attendees (persons)	Utilization level of knowledge (Medium-Very Good)	Knowledge application in daily operations
Inventing O&M tools and innovations	External experts representing RATCH's supplier (the O&M service provider of Ratchaburi Electricity Generating Company Limited: EGAT)	28	• Very good: 39% • Medium: 44%	• Ideas and tools to boost production and operational efficiency • Application of tools and innovations for daily work
Management principles and method for Ratchaburi Thermal Power Plant's reserved shutdown and the study on increasing efficiency by lowering air temperature before hitting Air Inlet Filter	External experts representing RATCH's supplier (the O&M service provider of Ratchaburi Electricity Generating Company Limited: EGAT)	48	• Very good: 83% • Medium: 47%	• Principles and methods to handle power plants during long-period reserved shutdown • Ideas in increasing capacity to meet customers' demand, which will lower contractual penalties
Operating of power plants during reserved shutdown until decommissioning	Ratchaburi Electricity Generating Company Limited' executives	32	• Very good: 90% • Medium: 10%	• Knowledge on power plant development and operations, which are truly applicable • A factor to manage assets for the planning and project risk management • Tips for operational and financial risk analysis and evaluation

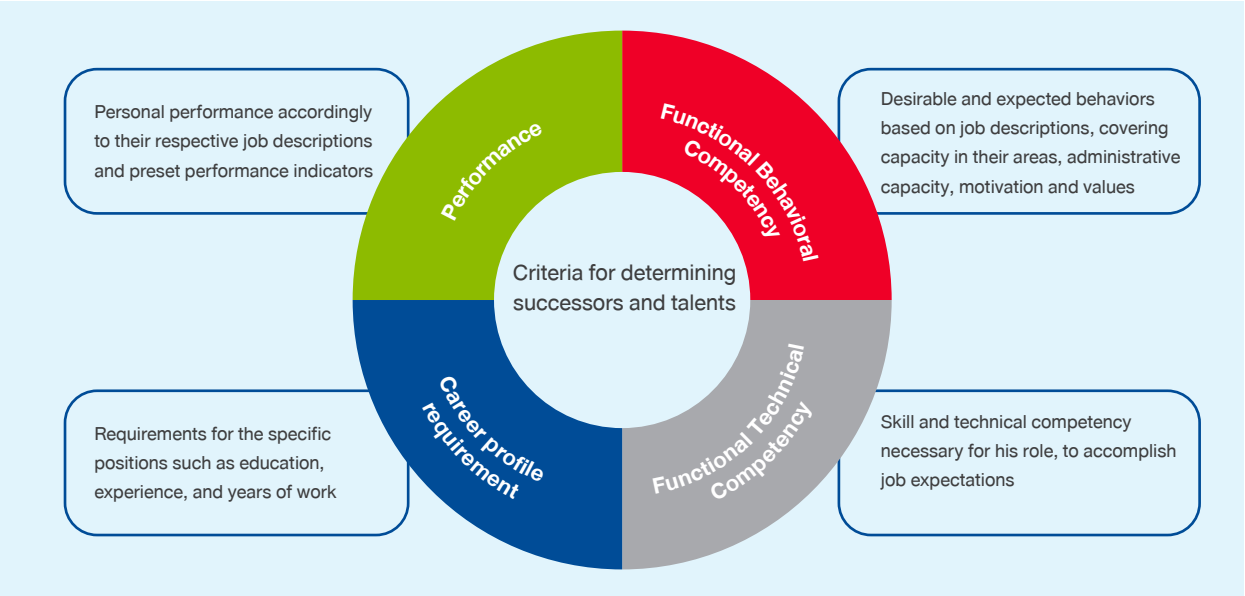
Promoting career stability

Succession plans

The Company prepares succession plans for mid- to high-level executive positions, to prepare potential individuals for the promotion. Succession plans guarantee business continuity and keep corporate goals intact. RATCH applies 2 personnel development approaches in this regard.



Successor and talent selection criteria



Successor and talent development has proceeded as expected by the human resource development roadmap. The process involves in-house training, external training, project assignment, coaching, and job rotation. In 2019, the Company had the database of individuals ready to take over mid-level and high-level executive positions.

Security concerning overseas assignments

In line with the Company's international business expansion, the number of employees assigned to work overseas has been on the rise. RATCH has accordingly updated the emergency assistance scheme for employees stationed at overseas offices, involving protection before, during and after their trips. The employees are entitled to travel and medical assistance, job security, safety, emergency information and alerts, and emergency assistance at times of unexpected events like earthquakes and riots. Such help is designed to assure the employees and their families of security and safety.

Appropriate remuneration structure

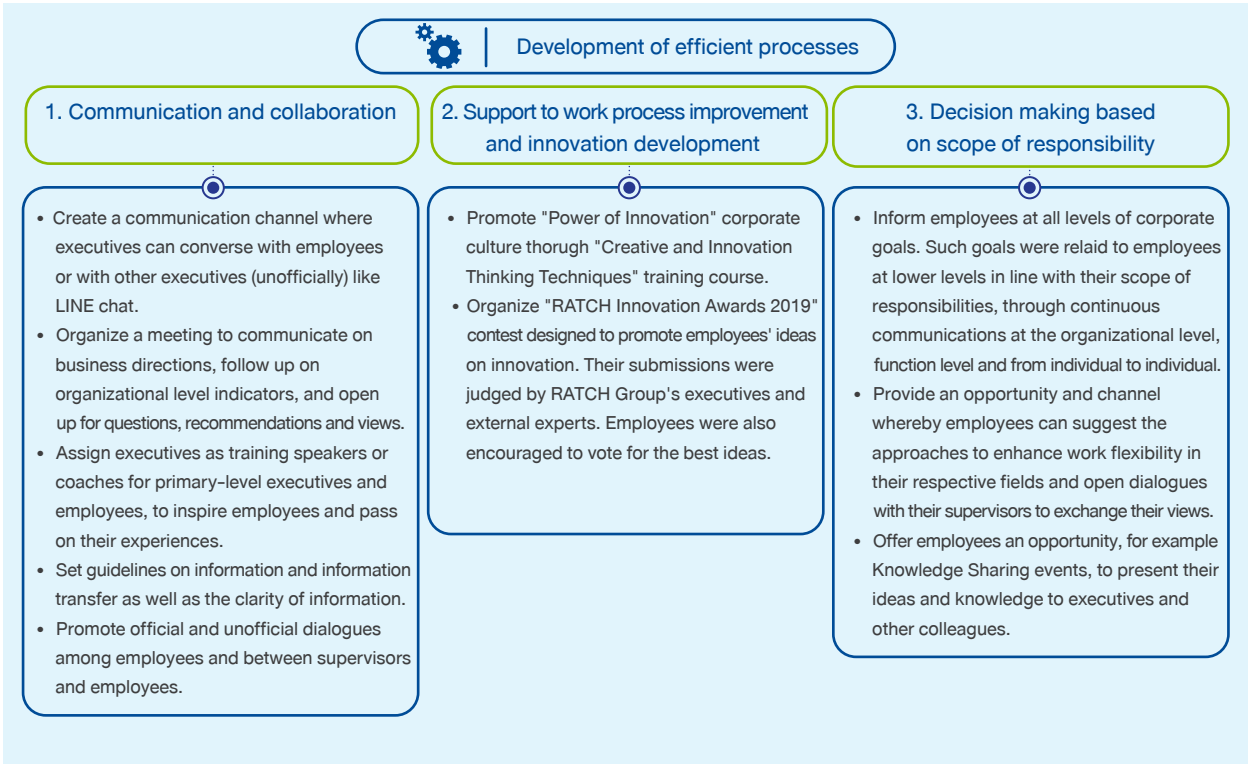
RATCH sets remuneration in accordance with labor laws, with emphasis on equitable and fair practices regardless of gender or destinations where the Company invests in. Factors to determine remuneration cover competency, academic degree, work experience, duty and responsibility, and job difficulty. The remuneration is benchmarked against that of businesses in the same industry and same size.

The Company's remuneration stays above the minimum wage enforced in 2018 and is suitable for the living costs in investment destinations. The Company's entry-level salary compared with the minimum wage and the pay scale imposed in Nonthaburi Province where the Company is located is summarized as follows:

Salary	Compared to average minimum wage (x times)	Compared to Nonthaburi Province's minimum wage (x times)
Entry-level salary for employees with diploma degrees	1.25	1.23
Salary for employees with diploma degrees and at least 3 years of work at RATCH	1.67	1.64
Entry-level salary for employees with bachelor's degree	2.30	2.26

Company engagement

The Company realizes employee engagement is one of the factors crucial for the organization's sustainable development. The Company has conducted engagement survey since 2017 and employees' opinions on the organization and recommendations were used in shaping plans to lift their satisfaction and commitment towards the organization. The plans in 2019 were aimed at increasing efficiency and holistic human resource management, based on the engagement survey conducted in 2018. Details are summarized below:





Asides, the Company put in place an engagement-building plan through activities at the organizational and functional levels where employees could relax after work and interact with others which would facilitate teamwork. The activities included the annual seminar, Town Hall Meeting, volunteering, integrated learning (Hello-Saratem), recreational events, Coffee Meeting, organic vegetable cultivation, RATCH Step Up exercise, function's engagement activities, orientation and an opinion box to receive employees' recommendations.

The Company's process to build newly-recruited employees' engagement starts from the orientation. They are informed about the Company's business profile and goals, rules and regulations, Code of Conduct, work practices, safety and occupational health measures, corporate values as well as measures on information and computer utilization. Under the process, senior employees in their units are assigned to advise and assist the newly-recruited until they are familiarized with the work environment, which will ensure their happiness, smooth performance and ability to efficiently support the organization's objectives.

Performance in 2019

The engagement survey in 2019 indicated an increase in employee satisfaction compared to the previous year, reflecting the effectiveness of all undertakings. RATCH strives to seek continual improvement in the areas of communication, collaboration and career path.

Socialization of corporate values

The Company formulated the organizational socialization plan (2018-2020), to instill and embed corporate values among employees. Desirable behaviors are identified and used as a performance indicator. The Company's corporate values consist of:



Be entrepreneurial
commit to integrity



Boost agility
encourage innovation



Excel synergy & collaboration
strengthen partnershi

Throughout 2019, the Company promoted innovation-related values in alignment with the Company's business direction. Aside from training on innovation to inspire creativity, the Company organized "RATCH Innovation Awards 2019", encouraging employees to present their ideas and actions that improved work process. Such ideas and actions were based on knowledge from the training. The contest attracted 37 entries and 5 potential were singled out. The Company will subsequently ensure the project's concrete implementation.

SAFETY, OCCUPATIONAL HEALTH AND WORK ENVIRONMENT

Safeguarding all employees' safety, occupational health and favorable work environment has been the Company's emphasis, to materialize a mission towards excellence. Preventive measures are highlighted to achieve the ultimate goal - "zero accident": all operators completed their tasks without accident or damage to their life, property and family as well as the organization.

The Company's Group's practices relating to safety, occupational health and work environment are guided by the Code of Conduct as well as relevant matters such as drug prevention and rehabilitation, security and crisis management, enabling the company's operational excellence. The essence is as follows:

Safety, occupational health and environment at workplace	Drug prevention and rehabilitation	Security	Crisis management
1) Promote safety through rules and standards relating to safety, occupational health and work environment that are in accordance with laws and international standards, requiring employees' acknowledgement and strict compliance. 2) Prevent loss from accidents, injuries or work-related sickness, preserve safe work environment, and exercise emergency response plan on a regular basis. 3) Communicate with employees, contractors and relevant stakeholders about the policy, regulations and practices relating to safety, occupational health and work environment for their appropriate actions. 4) Stop the task and inform co-workers, supervisors and responsible units for corrective actions if any task is unsafe or does not meet the preset conditions or may cause impacts on safety, occupational health and work environment.	1) Emphasize drug prevention and rehabilitation at workplace through rules and measures. 2) Demand employees' participation and responsibility in following drug prevention and rehabilitation rules at workplace. 3) Require all supervisors to be role models and they must control, inspect and observe if there is any drug-related wrongdoing. 4) Cooperate with the authorities by keeping them informed and notifying them of the behavior of individuals involved with drugs.	1) Emphasize security to protect loss of life and the property of employees and the Company, by setting rules and practices as well as providing security-related tools sufficiently and appropriately. 2) Ensure and maintain workplace safety that involves the identification and reporting of warning signs of violence at workplace. 3) Check the background of employees and contractual parties as far as permitted by law, to watch out for possible terrorist attacks. 4) Inform supervisors or responsible persons if spotting irregularities that may affect security operations.	1) Prepare crisis management and crisis communication plans to tackle serious incidents, in order to minimize the severity and damage as well as spill-over impacts on stakeholders. 2) Review and improve the crisis management and crisis communication plans on a regular basis, to ensure their compatibility to the Company's business contexts at different periods of time. 3) Synchronize crisis management with subsidiaries' emergency response plans. 4) Educate relevant teams and employees, for efficient crisis management and communications in times of crisis.

The Company laid down guidelines in the safety, occupational health and work environment policy, to achieve "zero accident". The policy covers the following aspects:

Safety, Occupational Health and Work Environment Policy

Promote and develop the safety, occupational health and work environment system strictly in accordance with international standards, relevant legislation and other requirements.	Control and prevent losses and keep work environment safe. All executives and employees are held responsible for reporting accidents or incidents within the outlined process.	Publicize and communicate on the matter with relevant stakeholders for appropriate implementation.	Halt the tasks deemed unsafe or the tasks that do not follow rules and standards or may affect safety, occupational health and work environment; and inform relevant parties for corrective actions.	Monitor and assess the performance, ensuring strict compliance and maximum efficiency.

Supervision of safety, occupational health and work environment management

The safety, occupational health and work environment management is under the supervision of the Company's or power plants' Safety, Occupational Health and Work Environment Committee, chaired by Chief Executive Officer or the top executive of respective premises. The committee ensures efficient and effective implementation; as well as shorter, faster and more concise work procedure which is crucial in tackling safety-related issues. The committee members comprise of representatives of the employer and employees. Member election takes place every 2 years and the committee convenes monthly meetings. Supporting the committee is a unit directly responsible for the matter and security officers to inspect, monitor and report compliance with safety rules for all tasks.

Operational approach

To achieve the zero accident target, the following areas are emphasized in the safety, occupational health and work environment management.

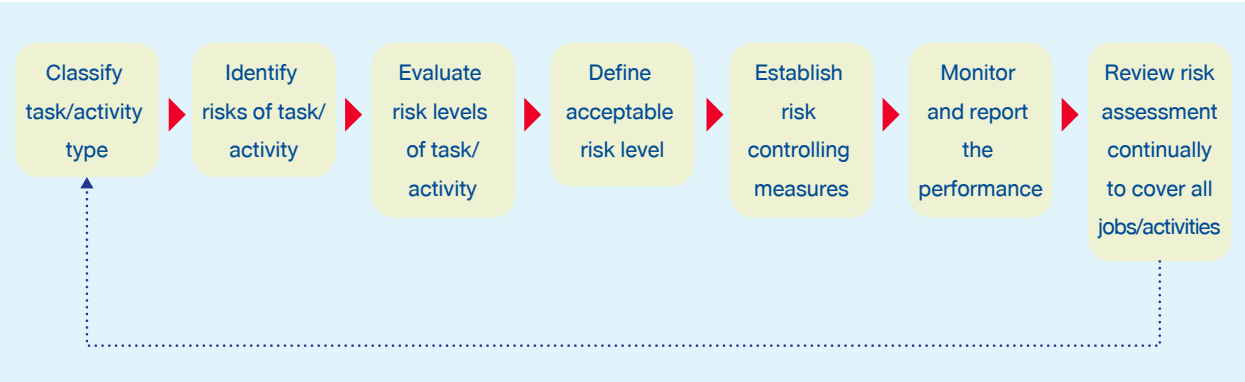


The Company's power plants also apply OHSAS18001 occupational health and safety standards in the management, to ensure that aside from legislative compliance, all operators covering employees, contracted workers, and sub-contracted workers in the premises follow standard equipment application methods and process under international-standard work environment, to reduce work-related injuries and sickness and safeguard all operators' quality of life.

At Ratchaburi Power Plant, there is a plan to switch from OHSAS18001 occupational health and safety standards to ISO45001 standards in 2020, to step up the power plant's safety measures. Ahead of the change, the power plant conducted training on the rules and prepared all operators for the new system. It also sets new safety targets for the environment, occupational health and safety management in 2020.

Risk evaluation and management

Evaluating work-related risks are essential in managing safety at workplace, as the results shape preventive measures to reduce probability and possible impacts. The Company demands all operators' acknowledgement for and strict compliance with the safety measures. They are monitored while performing tasks, to evaluate involved risks. Upon completion, the performance is reviewed. The risk evaluation covers the following key processes:



The work process and preventive measures will be designed for jobs with medium to high risk levels, taking into account controlling measures for each level as follows:

1. Risk elimination
2. Substitution
3. Engineering control
4. Warning alert/management control
5. Personal Protective Equipment (PPE)

Ratchaburi Power Plant's operational risk management

Ratchaburi Power Plant, the Company's prime assets, reviews warning signs and reassess risks every 2 years or when there is a change to jobs or activities. In 2018, the review and reassessment process found no high-risk job; while the number of medium-risk jobs, jobs at acceptable risk level and low-risk jobs totaled 383, 186 and 408, respectively. Controlling measures were fully prepared for the medium-risk jobs.

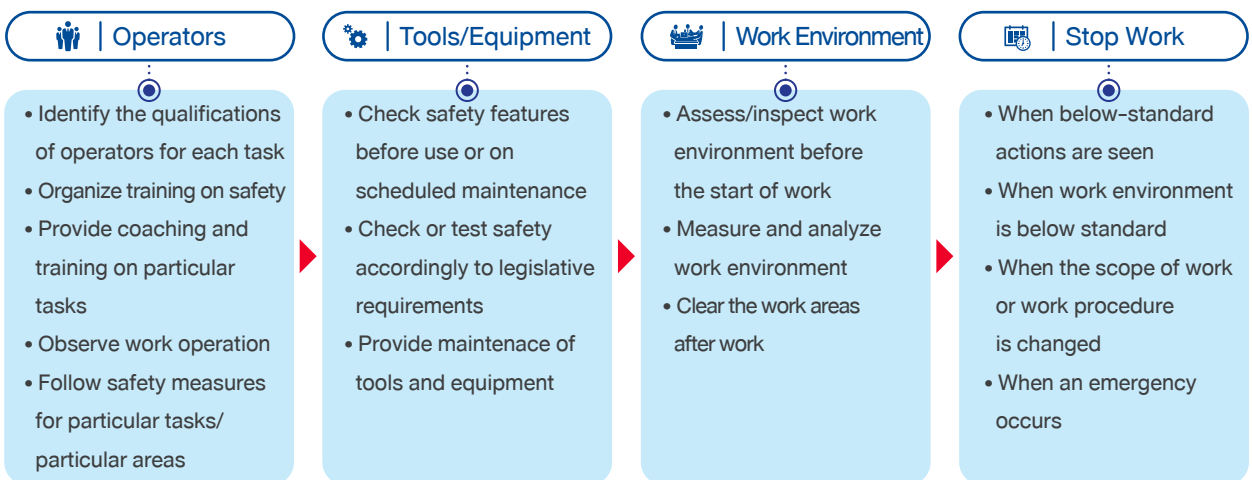
Controlling measures are reviewed to make sure their effectiveness in controlling risks. If some jobs still show medium to high risks in the presence of controlling measures, additional measures are necessary to contain risks or to cope with emergencies. One of Ratchaburi Power Plant's options is to control the operations by a supervisor, Safety Officer Supervisor, and Safety Officer Professional Level as well as the power plant's Safety, Occupational Health and Work Environment Committee which is represented by the Company as the employer and employees. They will inspect if operators follow the outlined work process and safety measures. The Safety, Occupational Health and Work Environment Committee also conducts a work-related safety survey on a monthly basis. The inspection frequency depends on the risk level of job.

Level of job risk	Inspection frequency			
	Supervisor	Safety Officer Supervisor	Safety Officer Professional Level	Safety, Occupational Health and Work Environment Committee
High-risk job (Work in confined space/hot work that causes heat and sparks/work on high ground/ work involving chemicals)	All the time	Every day	Every day	Every month or accordingly to work schedules
Medium-risk jobs	Every 1 hour	Every day	Every day	Every month or accordingly to work schedules

In 2019, the power plant registered zero work-related accident. Nevertheless, conditions of electrical equipment and lighting at some spots needed improvement. All operators were demanded to always test tools and equipment before starting their work.

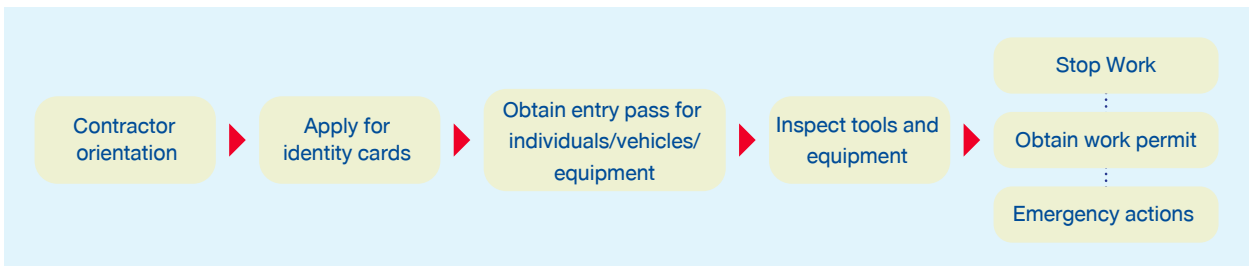
Operational control

The operational control at Head Office and power plants covers operators, tools/equipment, and work environment. The Stop Work authority is exercised in light of unsafe situations, to prevent accident and loss to operators. Details of the controlling measures are as follows:



Safety control on contracted work

The controlling measures for tasks undertaken by outsiders or contractors are as follows:



Contractor orientation

The objective is to instruct contractors and raise their awareness on safety prior to the start of work, to reduce risks that may lead to accidents or losses. The orientation concerns legal controlled operations like work at confined space and work with cranes. The Company, particularly power plants, requires operators to present training certificates and medical reports that support their operations. To get permission for the jobs, they must do a test on safety-related knowledge and attitude and score at least 80 per cent.

Tool and equipment inspection

It is a procedure for reducing risks or accidents caused by the poor conditions of tools/equipment. The Company and its power plants require the inspection of tools and equipment, to make sure their compatibility with the assigned tasks. Only inspected device can be used. The inspection process is as follows:



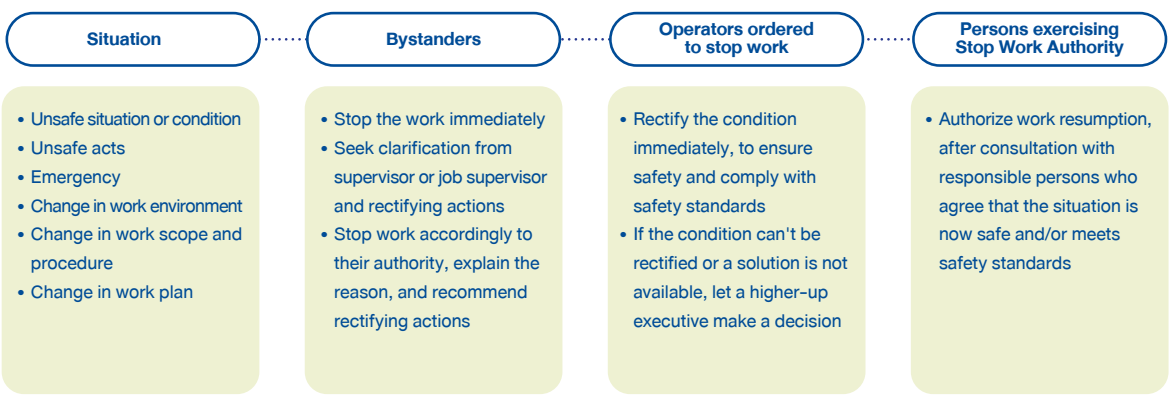
Work Permit

Applying for a work permit is to control and inspect the readiness of workers, equipment, tools and personal protection equipment, as an assurance that all risk factors are controlled and there are sufficient measures to tackle the risks. Under this process, the task will be under control from the start until completion.

The tasks that require work permits include those involving heat or sparks, chemicals, work in confined space, work on high ground, underwater operations, and work involving high voltage electricity. The service providers must apply for work permits. Job supervisors and safety officer - professional level are responsible for the inspection of tools and personal protection equipment. Only when they are ready will the service providers be allowed to start their work. Upon completion, they must properly clear the work areas and stand ready for area inspection. Then, document is submitted to safety officer - professional level, who will terminate the work permits.

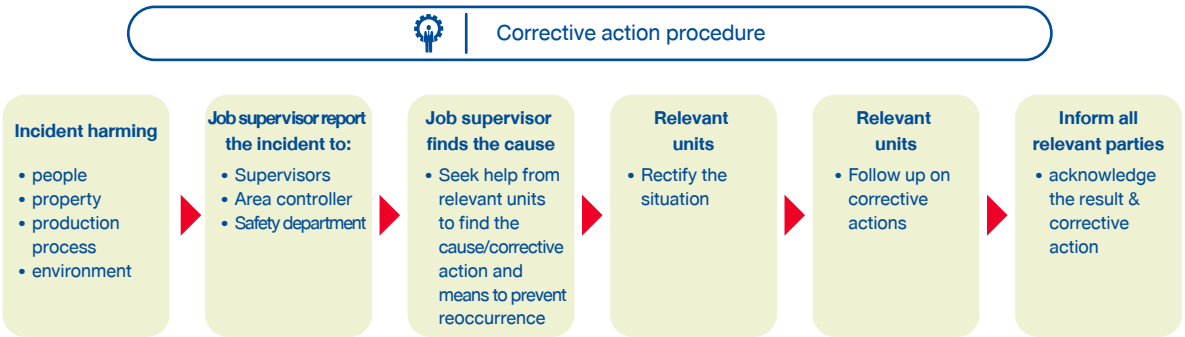
Stop Work

Power plants empower operators or bystanders with Stop Work Authority, if witnessing jobs that may be harmful to health and lives. They can ask for permission to suspend the tasks after informing their supervisors or job supervisors. If job supervisors, safety officers or the Safety, Occupational Health and Work Environment Committee view the tasks contain high risk, they can order an immediate stop. Relevant parties are then ordered to improve equipment and work conditions and prepare operators' psychological and physical conditions before resuming the tasks. The measures are detailed as follows:



Incident action plan

In case of unexpected events or incidents, operators must follow the Company and power plants' action plan which identifies controlling and corrective process. The plan also calls for the finding of their causes, corrective actions and measures to prevent reoccurrence, in order to prevent impacts on one's life, property, production process or the environment. In 2019, the Company's Group witnessed no accident that led to work stoppage.



Emergency and crisis management

Emergency response drill

The Company and power plants schedule annual emergency response drill by simulating a situation with high probability or high loss severity, to ensure employees and the relevant know how to act in an emergency situation. The drill is also aimed at enhancing the response team's efficiency. The drills in 2019 covered the following incidents:

Emergency situations	No. of drills			
	Ratchaburi Power Plant	Tri Energy Power Plant	NNEG Power Plant	Head Office
Level 1 fire and explosion	29	1	3	11
Level 2 fire and explosion	2	-	1	-
Level 3 fire and explosion	-	-	-	1
Gas leak	4	-	-	-
Oil leak	1	-	1	-
Chemical leak	3	1	3	-
Radiation leak	1	-	-	-
Waste/sewage transfer	-	-	-	-
Natural disasters (Storm/flood/earthquake)	1 (Flood)	-	1 (Flood)	-
Epidemic	-	-	-	-
Snake bite	-	1	-	-
Broken lift	1	-	-	12
Bomb threat	-	-	-	-
Community protests	-	-	-	-
Others	1 (Cracking of pressure pipes)	-	-	-

Community emergency plan

In 2019, Ratchaburi Power Plant in cooperation with Ratchaburi's Disaster Prevention and Mitigation Provincial Office launched a project to enhance community capacity in preventing and mitigating disaster impacts. The project entailed 5 communities nearby the power plant - Ban Rai Chaonua, Ban Khoak Aoy, Ban Lad Patak, Ban Don Pho and Ban Khlong Yai Khlang. A community emergency plan was prepared based on Community Base Disaster Risk Management (CBDRM) principles, readying the communities for disaster prevention, mitigation and rehabilitation.

The prevention and mitigation plan will help communities cope with disasters and ensure sustainable strengths, as it enlist actions that prepare communities for disasters, mitigate the impacts and carry post-disaster rehabilitation.

Crisis management

In 2019, the Business Continuity Management Plan was enforced, serving as guidelines in tackling emergency situations and incidents, and containing the impacts efficiently. For business continuity, the Emergency Response Plan, the Crisis Management and Communication Plan and Business Continuity Plan were integrated for maximum effectiveness in maintaining continuity and protecting stakeholders, the Company's reputation, trustworthiness and sustainability. Details of Business Continuity Management Policy appeared in Risk Management Section, Page 70.

Building safety awareness and culture

The Company and power plants implemented the following activities to promote employees' knowledge and understanding in safety:

Safety projects/activities

Head office/ power plant	Projects/Activities	Outcomes
Head Office	1) Risk Point Elimination Activity	• Open for employees' suggestions on risk points at Head Office and find corrective actions, to achieve the most extensive safety protection coverage. The suggestions serve as data for risk level assessment and the formulation of preventive measures. Seven suggestions were submitted, involving traffic management, usage of electrical appliances and disturbing noise. Two were rectified and the rectification of the remaining 5 is underway.
Ratchaburi Power Plant	1) Installation of flood warning system	• Set up flood warning system through the installation of water-level sensors at 3 stations, inside and in front of the power plant. The installation is complete.
	2) Safe Card Activity	• Job operators reported substandard situations or actions or anything that may disrupt the operations or harm the environment or filed recommendations to curb all kinds of danger, loss or damage. Forty one safe cards were received, and actions for 32 items were completed. The rectification of the remaining 9 items is underway.
	3) SHE Day	• SHE Idea Contest, to draw ideas on safety, occupational health and work environment which could be materialized as preventive measures. • No. of attendees totaled 570, representing the staff of Ratchaburi Power Plant and Ratchaburi Power's Power Plant, EGAT Head Office, contractors, sub-contractors and community. Overall satisfaction on the event and provided knowledge was 4.1 points out of 5 points.

Head office/ power plant	Projects/Activities	Outcomes
Tri Energy Power Plant	1) Hazard Hunt Activity	• To inspect the situations inside the power plant that may be harmful. 62 situations were highlighted for rectification and 59 were rectified. The remaining 3 needed no rectification.
	2) Risk Reduction/ Elimination Project	• An extended part of "Hazard Hunt" to solve substandard situations or accident-related risks. 7 risks were addressed by, for example, the installation of floor sheets or railing and the construction of boxes to cover outdoor electrical equipment.
	3) Stop Work Activity	• Stop work when observing harmful work conditions and demand rectification before work resumption. Stop work authority is applicable in 4 cases: no harness when installing the scaffolding; using mobile phones while riding bicycles; broken electrical wires; and wrong type of protective equipment.
	4) Safe Card Activity	• Job operators reported 346 substandard conditions or actions. 328 items were rectified and the rectification of the remaining 18 is underway.
NNEG Power Plant	1) Safety Walk Down activity (Locating substandard situations during major overhaul)	• Operators and safety officers-professional level, job supervisor and relevant persons jointly searched for substandard conditions to devise practical improvement methods. All situations were corrected, leading to zero accident. Most of the substandard situations concerned the absence of equipment signs at work areas, absence of placement of equipment on walkways, and the absence of barriers around work areas.

Ratchaburi Power plant's flood warning system was a preventive measure against possible flooding at power plants, based on massive rainwater recorded in the past years which may cause floods, damage or disrupt the production process.

Water level-detecting sensors were installed at 3 stations: the canal in front of the power plant, the drainage channel inside the power plant and the rainwater pond inside the power plant. Water level and rainwater volume will be checked every 10 minutes and data will be recorded every 1 hour. If either the water level or rainwater volume exceeds the specified level, it will ignite a warning alert through LINE application or the Intranet, demanding actions from the responsible department as prescribed in the emergency response plan.

Performance in 2019

(including employees and workers)

Head Office/ Power Plants	Safety targets	Safety performance
Head Office	• Zero work-related accident	• Zero work-related accident
Ratchaburi Power Plant	• Total Injury Frequency Rate (TIFR) = 2.0 (Per million hours worked)	• The power plant's Total Injury Frequency Rate (TIFR) per million hours worked at 1.051, as targeted. (the TIFR rate per 200,000 hours worked at 0.21) • TIFR in 2019 decreased from 1.14 in 2018
	• Zero Serious Accident (Class A accident on life and property caused by fire)	• No Serious Accident (Class A accident on life and property caused by fire), as targeted.
Tri Energy Power Plant	• Total Injury Frequency Rate (TIFR) = 0	• Tri Energy Power Plant's TIFR was zero.

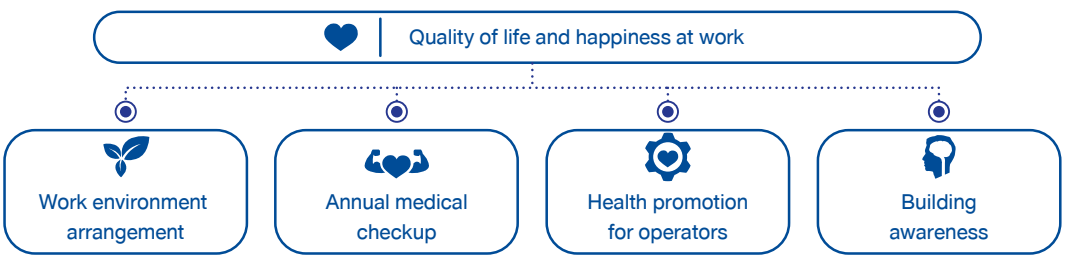
Head Office/ Power Plants	Safety targets	Safety performance
NNEG Power Plant	• Zero work-related accident	• Zero work-related accident in the power plant • One lost time accident of contracted worker occurred in construction site of the expansion project. Clarification of cause was demanded and preventive and control measures to ensure correctly using equipment or machine was set. The work supervisor is also required to closely monitor operation and order work stoppage if operation substandard.

Key safety statistics (Target = zero accident)

Power plants/Head Office	Ratchaburi Power Plant	Tri Energy Power Plant	NNEG Power Plant	RAC power plants	Head Office
No. of job operators (person)	432	97	515	25	266
Hours worked (hour)	1,902,869.50	205,353.00	1,517,185.00	40,667.98	567,620.00
Fatality per 200,000 hours worked	0	0	0	0	0
Lost time injury per 200,000 hours worked	0	0	0.13	0	0
Occupational illness per 200,000 hours worked	0	0	0	0	0

Operators' occupational health

The Company realizes the importance of operators' occupational health, particularly power plants' operators who are exposed to more health risks. Four guidelines have been outlined to safeguard operators, aimed to ensure employees' good quality of life and happiness at work.



Work environment management

The Company inspects Head Office and power plants' work environment in terms of noise, lighting, heat, chemicals and air quality every 6 months. Most of the parameters are well within relevant standards imposed by the Ministry of Industry, the Ministry of Labor, and others.

Corrective actions are set to ensure sub-standard areas meet relevant standards, to assure operators of appropriate work environment and reduce work-related risks.

Annual medical checkup and extra checkup for particular work

The Company and power plants arrange annual medical checkup and extra checkup for employees and Operation & Maintenance operators stationed at power plants, to monitor their health conditions and safeguard against work-related health impacts.

The extra checkups focus on hearing ability, lung function and eyesight. This year's results showed no work-related illness among new operators. Nevertheless, to reduce risks, power plants have emphasized compliance with the following safety measures and campaigns:

Measures to reduce impacts on hearing ability

1. Rotate operators exposed to high risk to a job with less noise exposure
2. Avoid loud noise by wearing earplugs
3. Implement a hearing conservation plan

Measures to reduce impacts on lung function

1. Avoid contacts with dust, smoke and chemicals and were protective equipment
2. Campaign against smoking which causes below-standard lung function

Measures to reduce impacts on eyesight

1. Apply proper eyeglasses and have their eyes checked every year
2. Use personal protective equipment (PPE) to reduce contacts with dust, chemicals and smoke for metal welding work
3. Use eyes properly and give them a rest

Ratchaburi Power Plant prepares a nursing station with physicians and nurses, for more than 400 employees and operators involved with the operation and maintenance service. The station can provide first aid to the injured and the sick, before they are transported to hospital for further treatment, if necessary. While physicians work 1 day a week, professional nurses provide their services every working day.

Health promotion activities

In 2019, the Company and power plants organized health promotion activities for operators, to educate them mainly about health tips and physical fitness improvement. The goal is to keep them ready for work and reduce health risks. The activities are as follows:

Head Office

Talk on Burnout Syndrome

Action: Organize an expert talk, to educate employees on the cause, self-assessment and prevention.
Performance: Attendees consisted of 119 employees and contractors' 54 operators.

PM2.5 Watch

The Company has undertaken the following measures to mitigate the impacts of fine particulate matter (PM2.5) on

- Maintain the building's machinery accordingly to schedules.
- Communicate with staff on the need to regularly maintain car engine.
- Schedule constant vehicle maintenance accordingly to manufacturers' instructions.
- Make a travel plan before a field trip as a way to cut down fuel consumption and pollution.
- Disseminate information on PM2.5.
- Watch out and alert employees on dust level in their work areas, as well as provide protective N95 masks for employees working outside the building.
- Reduce activities to cause dust, by making photocopies or typing only when necessary or opting for electronic document.
- Campaign against smoking and incense burning.
- Adopt vertical gardening and grow plants that efficiently absorb dust and toxic gas like spotted betel, Dendrobium orchids and ferns.

A nursing room and first-aid medicines are ready at Head Office and data of operators have been recorded. In 2019, the nursing room served 13.5 per cent of all operators at Head Office.

Ratchaburi Power Plant

Stay Healthy, Safe for One's Well-Being Project

Result: All operators at the power plant were given healthcare and protection from work-related illness. Injuries also decreased.

Health Expo 2019

Result:

- All operators at the power plant were given healthcare and protection from health risks, as well as tips to reduce health risks including body bending, foot reflexology to ease cravings for a smoke and therapeutic tok sen massage.
- 75 attendees completed the questionnaire on happiness level and 14 sought consultation with psychiatrist. Overall satisfaction for the event was 4.56 from 5 points.

Hearing Conservation Project

Result: A test showed that operators' hearing loss did not exceed 15 dB(A) on either side compared to base hearing test result.

Drug Prevention Project

Result:

- The monthly inspection of risk areas and employees' behaviors found no drug-related wrongdoings in all departments.
- The urine drug test on sub-contractors' workers prior to their entry into the power plant was negative.

Stress, psychological health and depression assessment

Assessment of stress level, psychological health and depression covering 253 persons

1) Complete Department of Mental Health's stress test (ST5)
2) Complete the brief Thai Mental Health Indicators test (TMHI15)
3) Complete the Patient Health Questionnaire-9 (PHQ-9)

Result:

1) The ST5 stress test result found that most operators, 64 per cent, endured low stress level; 28 per cent, medium level; 4 per cent, high level; and 4 per cent, very high level.
2) TMHI15 test result indicated 37 per cent of operators enjoyed better-than-average mental health; 49 per cent, average; and 14, under average.
3) The depression test showed that most operators, 59 per cent, did not suffer from depression; 29 per cent had mild depression; 10 per cent had moderate depression; and 2 per cent had severe depression.

Those with high stress level and severe depression will subsequently seek professional help.

Building awareness in occupational health and safety

Work safety requires knowledge, understanding and awareness in risks and consequences as well as compliance with the prescribed safety and occupational health measures.

In 2019, the Company's Group organized training on occupational health and safety for operators and contracted workers concerning general knowledge and knowledge on work-related danger, dangerous jobs or dangerous situations, so that all carried out their tasks safely and better than the requirements.

Issue/Training topic	Organizer				No. of attendees	Operators	Contractors
	Ratchaburi Power Plant	Tri Energy Power Plant	NNEG Power Plant	Head Office			
Orientation before work start	3,471	340	943	251	5,005	/	/
Safety, occupational health and work environment for workers and new hired workers	13	10	12	17	52	/	
Crane controller (Immovable crane), hand signaller, and handler	29	-	-	-	29	/	
Crane truck driver (moveable crane), hand signaler, and handler	1	-	-	-	1	/	
Forklift drivers	1	14	-	-	15	/	
Crane controller	4	-	-	-	4	/	
Refresh crane controller's knowledge	-	-	1		1	/	
Safety of work in airtight space	3	-	-	21	24	/	/
Basic fire suppression	1	77	-	50	128	/	/
Advanced fire suppression	11	-	-	-	11	/	
Fire suppression in building	6	-	-	-	6	/	

Issue/Training topic	Organizer				No. of attendees	Operators	Contractors
	Ratchaburi Power Plant	Tri Energy Power Plant	NNEG Power Plant	Head Office			
Safety, Occupational Health and Work Environment Committee	10	-	12	-	22	/	
Safety officer – supervisor level	8	-	-	16	24	/	/
Safety officer – executive level	3	-	-	-	3	/	
Boiler controller	10	21	1	-	32	/	
Refresh boiler controller's knowledge	55	24	1	-	80	/	
Safety from radiation and hazardous chemicals	13	5	-	-	18	/	
Hearing conservation	22	-	-	-	22	/	
Electrical safety practices	25	-	-	-	25	/	
Gas handler of factory in using or maintaining	8	10	-	-	18	/	
Operators at locations where natural gas is in use	5	7	-	-	12	/	
Operators at oil depot and oil transmission pipeline	5	4	-	-	9	/	
Basic knowledge on explosives and suspicious objects	-	-	-	15	15	/	/
First-aid and resuscitation	-	50	-	44	94	/	/
Operators at oil storage terminals	3	-	-	-	3	/	
Operators of air pollution management system	2	-	1	-	3	/	
Operators of water pollution treatment system	2	-	1	-	3	/	
Operators of industrial waste management system	3	-	1	-	4	/	
Controllers of air pollution management system	2	-	1	-	3	/	
Controllers of water pollution treatment system	1	-	-	-	1	/	
Controllers of industrial waste management system	1	-	-	-	1	/	
Radiation Protection	6	5	-	-	11	/	
Safety techniques on scaffolding installation and test	34	-	-	-	34	/	

Prevention and mitigation of impacts on occupational health and safety

As external help is sought by the Company's Group for several tasks, it is the Company's responsibility to outline measures that will prevent and mitigate the impacts from the external service providers' operations. The Company and power plants have established safety and occupational health criteria for the selection of external service providers or contractors, as well as the process to review and evaluate their performance. Regarding the operation and maintenance service particularly during major overhaul and minor inspection, power plants have imposed strict safety measures on contractors from Day 1 until completion, to prevent and reduce risks or harm on operators and community.

CUSTOMER RELATIONSHIP **MANAGEMENT**

Customers are a significant stakeholder group in RATCH's value chain, who contribute revenue that supports the operations. RATCH is thus committed to satisfy their expectations. As the primary product is electricity sold under Power Purchase Agreements (PPA), the Company holds it necessary to produce and deliver the product at the volume and quality specified in the contracts, aside from supporting the national energy security.

RATCH's power plants must not only completely meet conditions specified in the contracts but also ensure environmental-friendly production process to cause zero impact on community and society and keep customer secrets confidential. Customers and end-users must be assured that the electricity generated by RATCH's power plants addresses SDG 12: Sustainable Consumption and Production.

Operational approaches to satisfy customers and address customer expectations

SDGs	Principle	Approach	Goals
SDG 12: Sustainable consumption and production (12.5 : Substantially reduce waste generation through prevention, reduction, recycling, and reuse) 	• Responsibly produce and deliver quality products and services • Ensure a complaint-receiving channel and process for quick responses • Strictly follow customers' conditions. If any condition cannot be met, customers must be notified to find mutual solutions.	• Regularly discuss with customers on production plans • Maintain availability payment, power plants' reliability, and heat rate accordingly to contracts • Maintain power plants' efficiency as planned • Ensure power plants are ready to address customers' demand in terms of quantity and quality for on-demand production	• Reliability as a power producer that can support national energy security • Meeting targets on availability payment, power plants' reliability, and heat rate • Penalties incurring from failure to meet contractual production and delivery levels must not exceed annual targets. In 2019, Ratchaburi Power Plant's penalties averaged 0.45 per cent, well below the 0.62 per cent target.
	• Produce quality products and services with responsibility for the environment and community	• Generate electricity without impacts on the environment and community as guided by EIA and relevant laws	• Pollutant emissions must be within legal requirements covering air pollutants, wastewater, waste and etc. • Zero pollution-related complaints from community
	• Keep customer secret confidential and do not use it unlawfully for personal gains or related persons' • Disclose complete, accurate and non-misleading information on products and services • Do not ask, receive or make any deceitful payments	• Do not exploit customer secrets. In case of necessity or being required by laws, such information can be revealed only with customers' written consent.	• In 2019, RATCH's major power plants received no complaint regarding violations on non-disclosure agreement • Building trust and confidence, paving way for long-term partnership.

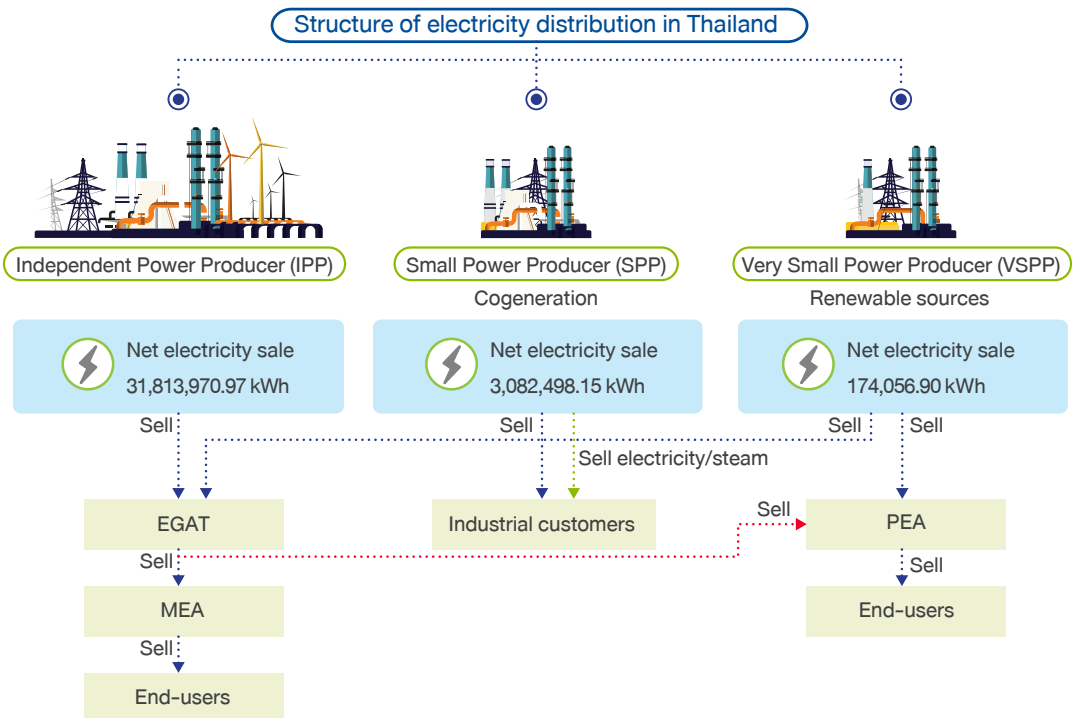
Electricity distribution to Thai customers

Customer groups

RATCH generates and distributes electricity, its prime product, mostly in Thailand. Customers in Thailand can be categorized in 3 groups as follows:

Electricity Generating Authority of Thailand	Industrial users	Provincial Electricity Authority
Buy electricity from large and small power plants that use primary fuels and renewable energy sources	Buy power and steam from small cogeneration power plants located in industrial zones	Buy electricity from very small renewable power plants

Structure of electricity distribution in Thailand



Power plants and electricity sold to EGAT in 2019

Power plant	Type	Equity installed capacity (MW)	Power purchase agreement period (year)	Electricity sold in 2019 (MW-hour)
Ratchaburi Power Plant	IPP	3,645	2000-2027	13,141,351.48
Tri Energy Power Plant	IPP	720	2000-2020	240,631.50
Ratchaburi Power's Power Plant	IPP	372.5	2008-2033	5,935,179.67
Huay Bong 2 Wind Farm	SPP	20.7	2013-018 (Non-Firm 5 years)	161,226.67
Huay Bong 3 Wind Farm	SPP	20.7	2012-2017 (Non-Firm 5 years)	217,733.32

Power plant	Type	Equity installed capacity (MW)	Power purchase agreement period (year)	Electricity sold in 2019 (MW-hour)
Ratchaburi World Cogeneration Power Plant	SPP	93.6	2014-2039	1,248,934.95
Nava Nakorn Power Plant	SPP	55.65	2016-2041	582,827.49
Berkprai Cogeneration Power Plant[1]	SPP	34.73	2019-2044	386,538.67
RATCH Cogeneration Power Plant[2]	SPP	109.97	2013-2038	144,224.83
Nam Ngum 2 Hydroelectric Power Plant (Lao PDR)	IPP	153.75	2011-2038	1,678,697.63
Hongsa Power Plant (Lao PDR)	IPP	751.20	2015-2040	10,747,092.69
Xe-Pian Xe-Namnoy Hydroelectric Power Plant (Lao PDR)[3]	IPP	102.5	2019-2046	71,018.00

Remark: [1] *Starting commercial operation on 1 June 2019*
[2] *Acquired in August 2019*
[3] *Starting commercial operation on 6 December 2019*

Power plant and electricity sold to industrial customers in 2019

Power plant	Type	Equity installed capacity (MW)	Electricity sold in 2019 (MW-hour)
Nava Nakorn Power Plant	SPP	55.65	241,789.10
Berkprai Cogeneration Power Plant[1]	SPP	119.11	13,174.43

Remark: [1] *Acquired in August 2019*

Power plants and electricity sold to Provincial Electricity Authority in 2019

Power plant	Type	Equity installed capacity (MW)	Power purchase agreement period (year)	Electricity sold in 2019 (MW-hour)
Solar Power Solar Farm	VSPP*	8.64	5 years auto-renewed	34,148.05
Solarta Solar Farm	VSPP*	20.73	5 years auto-renewed	65,461.69
Songkhla Biomass Power Plant	VSPP*	3.96	5 years auto-renewed	74,447.16

Remark: * *Very Small Power Producer covers power plants with capacity at 10 MW or lower.*

Distribution to customers in Australia

Aside from business in Thailand, Australia is a significant base for RATCH's electricity generation and distribution with 1,873.55 MW in combined installed capacity. Three distribution approaches have been adopted:

1. Contractual distribution to off-takers which are registered market participants of the National Electricity Market.
2. Distribution to the National Electricity Market in return for the pool price calculated for the supply period.
3. Distribution via the National Electricity Market to retailers through hedged agreements.

Power plants producing and distributing electricity in Australia in 2019

Power plant	Type	Equity installed capacity (MW)	Power purchase agreement period (year)	Electricity sold in 2019 (MW-hour)
Distribution under power purchase agreements				
Kemerton	Gas Turbine (Open Cycle)	308	2005-2030	66,111.00
BP Kwinana	Cogeneration	35.4	2006-2021	893,000.00
Townsville	Combined cycle	234	2005-2025	298,241.00
Starfish Hill	Wind power	33	2017-2020	86,351.00
Mount Emerald	Wind power	180.45	2018-2030	448,536.00
Collinsville	Solar power	42.5	2019-2030	81,441.00
Distribution under support service agreements				
Kemerton (Black Start)	Diesel generator (Diesel Engines)	7.2	2018-2028	-
Distribution to National Electricity Market				
Windy Hill	Wind power	12	Via National Electricity Market	26,697.00
Toora	Wind power	21		53,731.00

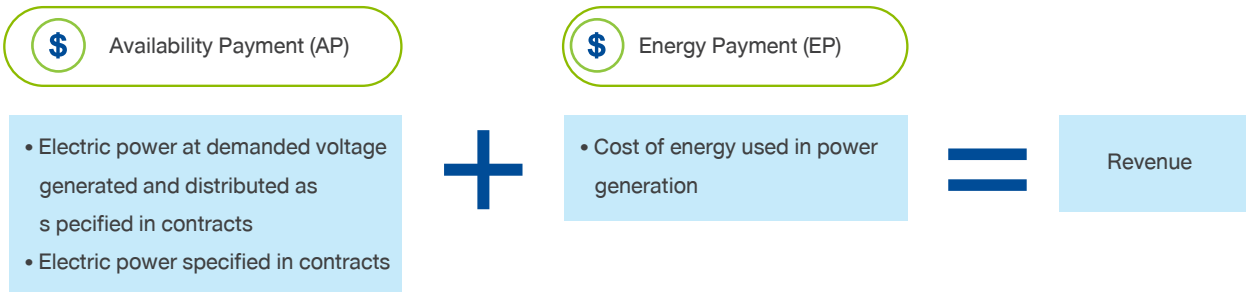
Net electricity volume sold in 2019

Country	Customers	MW-hour	%
Thailand	Electricity Generating Authority of Thailand	34,555,456.90	98.53
	Provincial Electricity Authority	174,056.90	0.50
	Industrial users	341,012.23	0.97
Australia	Customers with contracts (power purchase agreements and service support agreements)	1,873,680.00	95.88
	National Electricity Market	80,428.00	4.12

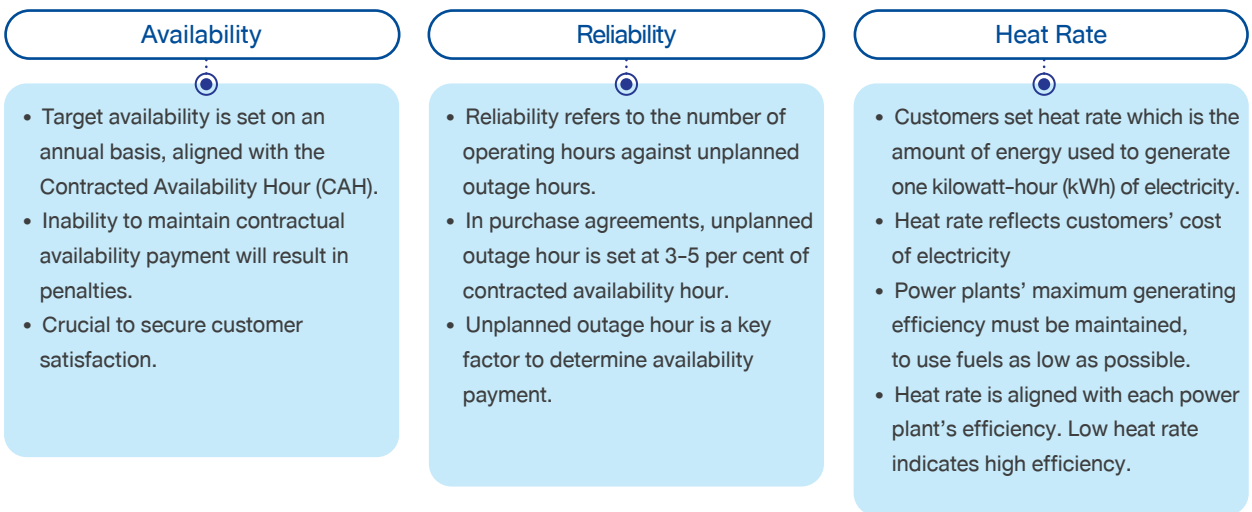
Management of Power purchase agreement

As the Electricity Generating Authority of Thailand is a major customer who buys 90.44 per cent of electricity generated by RATCH Group, handling the power purchase agreements with EGAT is of utmost importance due to significant impacts on the Company's revenue.

Electricity price structure



All power plants must ensure their ability to generate and deliver electric power to customers accordingly to contracts both in terms of volume and quality. As such, power plants' efficiency in the following 3 aspects is the most important, as they influence customer satisfaction as mirrored in the penalty clause.



Result of power purchase agreement management

The power plants under the Company's control ably carried out their tasks as specified in the agreements. Here are the performance of power plants in Thailand – Ratchaburi Power Plant, Tri Energy Power Plant and Nava Nakorn Power Plant:

Availability and Reliability in 2019

Power plant	Equivalent Availability Factor (EAF)		Reliability Factor (RF)	
	Target	Performance	Target	Performance
Ratchaburi Thermal Power Plant Unit 1	80.56	82.27	95.47	100.00
Ratchaburi Thermal Power Plant Unit 2	80.56	82.27	95.47	100.00
Ratchaburi Combined Cycle Power Plant Unit 1	87.68	92.00	92.96	97.69
Ratchaburi Combined Cycle Power Plant Unit 2	79.71	83.10	92.95	97.87
Ratchaburi Combined Cycle Power Plant Unit 3	88.15	89.92	93.45	95.01
Tri Energy Power Plant	93.56	97.52	95.75	100.00
Nava Nakorn Electricity Generating	94.36	89.97	Undefined	
Berkprai Cogeneration Power Plant	98.33	99.65	98.33	99.65

Heat Rate in 2019

<table>
<tr><th rowspan="3">Power plant</th><th colspan="6">Heat rate (BTU/ kilowatt-hour)</th></tr>
<tr><th colspan="2">Natural gas</th><th colspan="2">Bunker oil</th><th colspan="2">Diesel</th></tr>
<tr><th>Target</th><th>Performance</th><th>Target</th><th>Performance</th><th>Target</th><th>Performance</th></tr>
<tr><td>Ratchaburi Thermal Power Plant Unit 1</td><td colspan="4" rowspan="2">Under reserved shutdown as ordered by National Control Center</td><td colspan="2" rowspan="2">Not used</td></tr>
<tr><td>Ratchaburi Thermal Power Plant Unit 2</td></tr>
<tr><td>Ratchaburi Combined Cycle Power Plant Unit 1</td><td>7,147.75</td><td>7,084.92</td><td colspan="2" rowspan="6">Not used</td><td colspan="2" rowspan="3">Unspecified</td></tr>
<tr><td>Ratchaburi Combined Cycle Power Plant Unit 2</td><td>7,152.74</td><td>7,098.73</td></tr>
<tr><td>Ratchaburi Combined Cycle Power Plant Unit 3</td><td>7,126.24</td><td>7,076.89</td></tr>
<tr><td>Tri Energy Power Plant</td><td>0</td><td>7,114.00</td><td colspan="2" rowspan="3">Not used</td></tr>
<tr><td>Nava Nakorn Electricity Generating</td><td>7,857.90</td><td>7,871.88</td></tr>
<tr><td>Berkprai Cogeneration Power Plant[1]</td><td>7,209.00</td><td>7,408.00</td></tr>
</table>

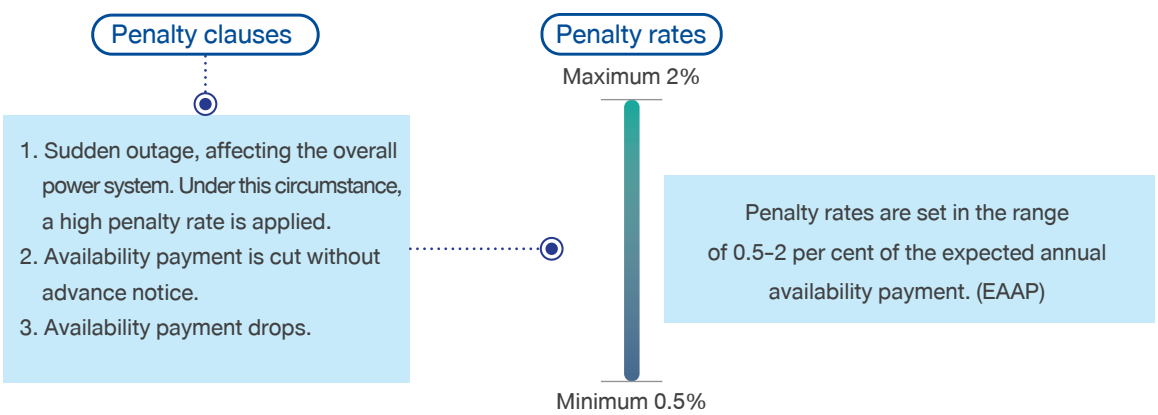
Remark: [1] *Commercial operation started on 1 June 2019*

Penalty management

Customer satisfaction reflects in penalties levied on failure to meet contracted delivery targets. It also reflects power plants' ability in maintaining availability payment. Nevertheless, electric power is generated only when needed while power plants' equipment stays in high-temperature condition. Failure is thus possible. Due to this reason, customers agree not to levy a fine if unplanned outage hours do not exceed 3-5 per cent of the contracted availability hour.

Penalties

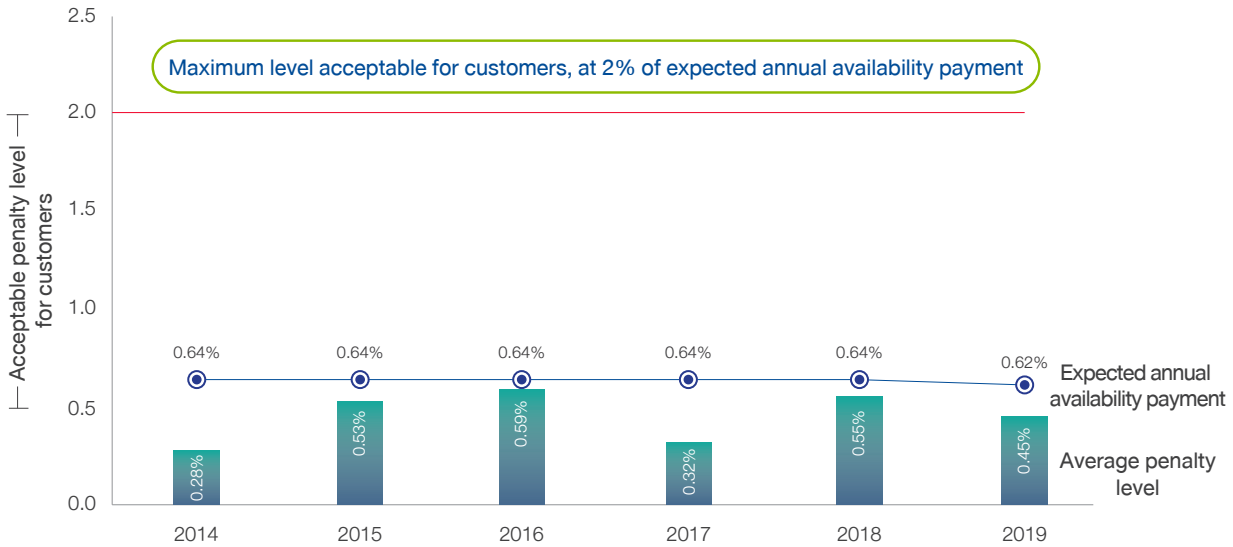
Penalties range from 0.5 per cent to 2 per cent of targeted availability payment of each year. Three clauses are set to determine the penalties, depending on the severity of impacts on EGAT and the national power system as EGAT's mission is to maintain national electricity security.



Ratchaburi Power Plant's performance

The power plant sets the maximum penalty rate at the level that is acceptable and will not affect the Company's revenue. The rate does not exceed the penalty ceiling set by EGAT and serves as the power plant's efficiency-management goal.

In 2019, the power plant set the penalty ceiling at 0.62 per cent of the expected annual availability payment. The actual penalty was 0.45 per cent.



Construction management

As electric power is generated only when needed, power plants serve as storages that stand ready to satisfy demands. Electric power is also considered basic infrastructure, crucial for the country's economic and social development. National power development is planned to ensure energy security in the long term. Power plants with regulatory bodies' permissions are thus required to meet the development and construction and commercial operation date schedule as specified in power purchase agreements.

Meanwhile, customers demand down payment. In case that power plant misses the scheduled commercial operation date, customers will seize the down payment and power plants will have to shoulder other penalties or expenses.

RATCH's under-construction power plants in Thailand and overseas have 781.88 MW in combined equity installed capacity. RATCH has monitored the progress and the Project Development Function is tasked to ensure the construction proceeds as planned and strictly meet the budgeting plans, other contractual conditions and regulatory requirements.

Under-construction power plants in 2019

Location	Project	Equity installed capacity (MW)	Commercial operation date	Customers/ stakeholders
Thailand	Nava Nakorn Power Plant's expansion project	23.99	2021	Industrial users
China	Fangchenggang II Nuclear Power Plant	236.00	2021	Electric power buyers
Australia	Collector Wind Farm	226.80	2021	Merchant market
	Yandin Wind Farm	149.94	2020	Alinta Sales Pty Ltd
Indonesia	Riau Power Plant	145.15	2021	PT Perusahaan Listrik Negara

Infrastructure projects under construction

Location	Project	Shareholding (%)	Operation date	Customers/ stakeholders
Thailand	MRT Pink Line	10	2021	Commuters/MRT
	MRT Yellow Line		2021	Commuters/MRT

Customer engagement

RATCH's power plants have organized activities to sound customers' opinions and recommendations on the qualitative and quantitative aspects of their operations, for prompt responses in various circumstances. Mutual solutions are sought and serve as operational guidelines, to better meet customer expectations.

Customer engagement approaches

Approach	Customer/stakeholders	Frequency	Objective/Goal
Meeting	Customer: Executive level	At least twice a year (Depending on hot issues in each year)	Discuss hot issues and find solutions for production improvement
Meeting	Customer: Operational level	At least 4 times a year (Depending on hot issues in each year)	Discuss the understanding in compliance with contractual agreements
Seminar	Customer and supplier	At least once a year	Exchange knowledge in maintaining and improving machine efficiency; and production planning
Social activities	Customer: executive and operational levels	At least once a year	Improve relations through participation in social activities

Performance in responding to customer demands

Issue	Performance
Ratchaburi Power Plant	
Efficiency enhancement to ably produce electric power during peak period and maintain the megawatt voltamps reactive (MVar) as ordered by the customer. The power plant and the customer analyzed obstacles that led to the improvement, to achieve the contractual product quality and a decrease in penalties.	The improvement program at Ratchaburi Combined-Cycle Power Plant involved the water spray installation to reduce air temperature before the air hits the gas turbine's air filter inlet. It allowed the turbine to raise capacity as required by the customer.
Nava Nakorn Power Plant	
Transmission stability to industrial customers needs improvement.	Transmission frequency was improved for greater stability and met relevant standards.





Ratchaburi Power Plant and Tri Energy Power Plants held discussion panel with customers.

RESPONSIBILITY FOR COMMUNITY AND SOCIETY

The Company identifies the caring of community and society as a mission that must be exercised continuously, with the realization that community and society's acceptance and trust in the Company's operations is crucial for the Company's growth and sustainability. The principles and operational framework are included in the Code of Conduct and the policy relating to society and the environment. The framework governs the Company's projects and activities to address the doubts and needs of communities, so as to create economic, social and environmental benefits for communities and society at large.

Code of Conduct

- Build and maintain positive corporate image and credibility for acceptance and trust from community and society at large.
- Support the planning of project useful for community and society and well-being, corresponding with corporate strategies and stakeholders' expectations.
- Respect norms, traditions, cultures and lifestyles of the locals.
- Minimize impacts on community and society from natural resource exploitation.
- Promote efficient energy consumption.
- Assess environmental, social, health and safety risks as well as their impacts before approving an investment project or participating in a joint venture.
- Cooperate with relevant agencies in implementing standard or international-level procedures, to help reduce social and environmental impacts.

Policy on society and environment

- Promote community engagement and emphasize communications as a good neighbour.
- Support community development and capacity building for a better and sustainable quality of life.
- Promote local tradition conservation and restoration.
- Promote creative projects that improve society.
- Support environmental conseration and restoration, for a balance of nature and lives.

Procedure

The Company's actions in this regard cover 2 target groups - communities near power plants and other stakeholders. The actions for the 2 target groups are aimed for the following goals:

Community
Trust and confidence in projects and/or the Company

Society
Confidence and positive attitudes towards the Company

In 2019, community and society-oriented actions, implemented under projects and activities in these 3 areas, were primarily designed to address the needs and expectations of communities, society and the Company.

Needs/expectations of community, society and RATCH

Exchange of knowledge

- Activities to promote knowledge and understanding in operations
- Public hearing and complaint receiving
- Operation assessment

Improvement of quality of life

- Career development
- Education and youth development
- Health improvement
- Energy conservation
- Natural resources conservation

Operation Monitoring

- Community participation in the monitoring of environmental management

Exchange of knowledge

The Company has continuously promoted the dissemination of knowledge and understanding in its operations, to ensure correct understanding about power plants' operations among communities near the premises as well as to build confidence and trust regarding the power plant' dedication to safeguard community safety and the environment. In 2019, the Company's power plants carried out the following actions:

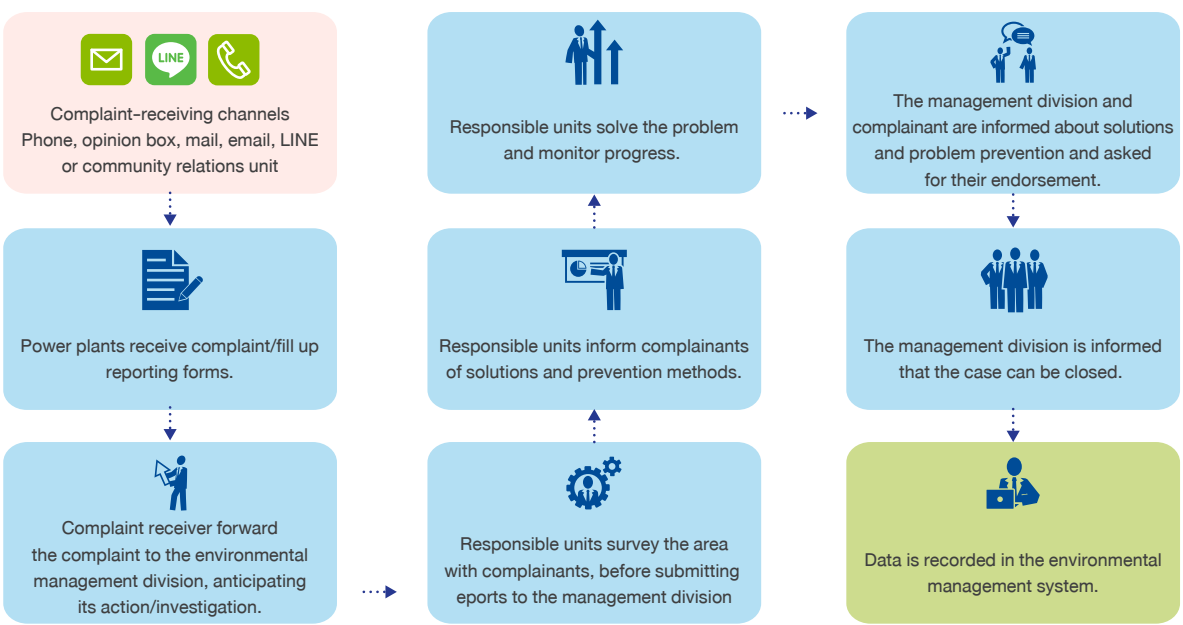
Activity/Approach/Channel	Objective	Target group	Results
Ratchaburi Power Plant and Tri Energy Power Plant			
1. Power plant visit • "Inviting friends home" Project covering communities outside the 5-km radius of Ratchaburi Power Plant and Tri Energy Power Plant	Broaden the knowledge and understanding in power plants' operations, build relationship and confidence in the operations	Community leaders/ representatives/relevant government offices/farmer group and etc, staying near Ratchaburi Power Plant and Tri Energy Power Plant.	Visits by schools' committees and staff • Ratchaburi Power Plant hosted 6 series, welcoming 173 visitors • Tri Energy Power Plant hosted 3 series, welcoming 105 visitors. Overall satisfaction to the knowledge and understanding in power plants' production process and environmental management was at 77.88%.
• General visitors at Ratchaburi Power Plant			• 64 groups were welcomed, consisting of 1,971 visitors. The score of satisfaction towards knowledge and the welcoming was 95.19%.
2. Meeting with Environmental Inspector Committee/community leaders	To welcome the representatives' opinions and share operational data with community	Environmental Inspector Committee/community leaders near power plants	4 meetings were hosted. Government officers and community leaders gained understanding in the operations and took part in the monitoring.
3. Display of environment quality levels through LED screen near power plants' entrance	To keep community informed and ensure transparency in performance disclosure	Communities near power plants and commuters	Communities better understood and obtained more information on environmental management.
4. Updating community leaders via letter/SMS	To keep community informed about major events to take place at power plants	Community leaders and communities near power plants	Community leaders were informed of major events and passed on the information to communities.
5. Online communication (LINE Group)	To promptly communicate with communities and establish a 2-way communications channel	Community leaders and networks associated with power plants	The power plants and communities established an accessible channel for instant communications.
6. Communications via local media	To publicize the operations to communities and society	Local-area community and society	Society were better informed of power plants' operations.
7. Welcoming of recommendations or complaints	To hear opinions and recommendations on power plants' operations that may affect communities and the environment	Communities or stakeholders involved with the power plants' operations	No complaints against power plants' operations were filed in 2019.

Activity/Approach/Channel	Objective	Target group	Results
Nava Nakorn Power Plant			
1. Plant visit under "Open House: Nava Nakorn Power Plant"	To keep community informed and ensure understanding in the power plant's operation. The visit is another channel to communicate with community.	Communities in Tambon Chiang Rak Noi, Bang Pa-In District, Ayutthaya Province, where Nava Nakorn Power Plant is located.	About 30 community leaders and communities obtained better understanding in electricity generation, environmental and community management as well as the project to expand electricity and steam production capacity.
2. Plant visit for students	To educate teachers and students of neighboring schools about the generating process.	Teachers and students of Wat Puednimit School in Pathum Thani Province	Teachers and students witnessed the generating process and obtained direct knowledge about electricity generation, able to pass on the knowledge to others.
3. Information disclosure via online channe	To inform community about the power plant's news and performance	Public offices/community leaders and communities within 5-km radius	Communities were informed of accurate information in greater speed, thus improving communications between the power plant and communities.

Welcoming of opinions and complaints

Power plants welcome direct recommendations and complaints from community members submitted through various means like community relations units, phone, opinion box located in front of power plants, email, mail, electronic channels like SME or LINE Group, and community leaders. Their problems or concerns can be filed 24 hour a day. Once receiving complaints, power plants launch investigation and fix the problems within 24 hours. Communities are then notified of the results and ask to endorse the fixing. In 2019, RATCH Group's power plants received no complaint from nearby communities.

Complaint receiving and solving process



Improvement of quality of life

1) Improving the quality of life of communities near power plants

Ratchaburi Power Plant, a primary asset of RATCH, is a model for projects concerning the quality of life of communities. Such projects have been launched since 1996 when the power plant was under construction, starting from the employment of local workers, career development and healthcare to education support, to thank for community acceptance.

The projects are mainly aligned with community needs. As a good neighbor, the power plant intends to support and lift up the quality of life. It takes into account communities' rights to natural resources and infrastructure. Meanwhile, the projects are in line with the power plant's policy in preventing and tackling environmental impacts.

Ratchaburi Power Plant gives priority to the employment of local workers, expecting to distribute income to communities and improve the local economy. In 2019, the power plant hired 98 local officer, or 18 per cent of total; and 213 permanent employees and contractors, or 39 per cent. Local workers were numbered 311, or 57 per cent of all 545 operators at the power plant.

In 2019, the Company's power plants carried out various community quality of life projects as follows:

Activity	Objective	Target group	Results
Ratchaburi Power Plant and Tri Energy Power Plant			
Mobile medical unit	Promote preventive healthcare for communities around both power plants and reduce risk of or losses from lung diseases	Communities in 11 Tambons near Ratchaburi Power Plant and communities in 3 Tambons near Tri Energy Power Plant. The 14 tambons house 19 Tambon Health Promoting Hospitals.	The mobile medical unit served 6,321 persons in 2019. • Digital chest X-ray service: 2,106 persons • EKG service: 985 persons • Thai traditional medicine's check-up service: 808 persons • Therapeutic Thai massage and health massage: 1,589 persons • Haircutting service: 833 persons EKG and X-ray results were handed out by area hospitals. Those with abnormal results will be referred to hospitals for treatment.
For Our Home Health Project 2019: Thai Chiro Trigger massage; rebalancing and therapeutic massage	To review theoretical knowledge on body structure, bone, tendons, joints and muscles; interdictions and cautions; and masseuses' ethics.	Tambon Health Promoting Hospitals' officers, village health volunteers or masseuses in 9 Tambons, 2 persons per Tambon, who had at least 150 hours of basic massage training	Thai Chiro Trigger massage training was hosted during 3-5 September 2019. The training covered 32 participants who brought home certificates.

Activity	Objective	Target group	Results
CSR in School Project	To promote social responsibility of schools around Ratchaburi Power Plant towards the schools and communities in terms of energy, environment, safety, and morals and ethics.	27 networked schools around Ratchaburi Power Plant	26 schools applied for the project and passed the assessment test: 1) Beginner Level: 1 school 2) Smart Level: 8 schools 3) Network Level: 9 schools 4) Network Continuous Level: 8 schools
Scholarship Program	To promote and extend learning opportunity to students living around power plants who are poor but have excellent academic records and good behaviors. Such program is to help relieve their parents' burden.	Students of 27 networked schools of 2 around Ratchaburi Power Plant and 4 schools around Tri Energy Power Plant	• Ratchaburi Power Plant and Ratchaburi Power's Power Plant awarded 945 scholarships worth totally Baht 1,094,000. • Tri Energy Power Plant awarded scholarships to 4 schools, Baht 60,000 each or a total of Baht 240,000.
For Our Home Project - Teachers and students: Effective teacher development program (Applying GRIT (Gather-Run-Improve-Transfer) Model) to enhance students'English reading skill through research process)	To enhance teachers' skills and capability, by introducing them new teaching techniques that encourage students to improve reading skills and understand type of words as well as sentence structures.	28 English teachers at 17 of Ratchaburi Power Plant's networked schools.	• 17 schools participated in Grit Model Project, with teachers submitting 24 researches on English reading solutions. • Best Practice research was awarded, being a model for other networked schools.
Nava Nakorn Power Plant			
Medical check-up for the elderly	To promote preventive healthcare to those with diabetes and blood pressure risks; and to check depression signs, oral condition and physical fitness, so as to screen the elders with health problems for prompt treatments.	The elderly using services at Tambon Health Promoting Hospital, at Tambon Khlong Nueng Moo 13.	100 persons received the check-up service. Those with diabetes and blood pressure risks were given advice on dietary and exercise and recommended to follow up their conditions at the hospital.
Scholarships	To promote and support education opportunities to students living around the power plant who are poor but possess good academic records	Students whose houses are located next to the power plant	Awarding 4 scholarships, Baht 3,000 each or a total of Baht 12,000.
		Wat Phayom School's students	Awarding 40 scholarships worth totally Baht 20,000 as well as educational tools to promote students' learning and capacity building.
		Wat Puednimit School's students	Awarding 10 scholarships worth totally Baht 10,000.
Power plants in Australia			
Social activity supports	To take part in community and social development activities	Communities around power plants/society at large	Financial supports worth totally 265,121.22 Australian dollars (or Baht 5.72 million) were given to the projects, up from 172,643.93 Australian dollars (or Baht 3.49 million) in 2018

Activity	Objective	Target group	Results
Power plants under RATCH's control			
Contributions to Power Development Fund, local taxes and income taxes	To finance the development of communities and the entire country	Community and society	• Ratchaburi Power Plant, Tri Energy Power Plant and Nava Nakorn Power Plant's contributions to Power Development Fund totaled Baht 144.37 million. • The Group paid Baht 19.50 million in local taxes and Baht 802.94 million in income taxes.

Study on community satisfaction on Ratchaburi Power Plant's

performance Community and social aspect in 2019

Ratchaburi Power Plant schedules a survey on community satisfaction on its performance every 2 years. This year's survey covered 2 groups - community leaders and community members, totaling 723 people. The result is as follows:

Survey result

- Overall, 91.7 per cent of the samples expressed satisfaction on the performance.
  - 87.2 per cent of community leaders were satisfied or more than satisfied.
  - 94.8 per cent of community members were satisfied or more than satisfied.

2) CSR activities

Aside from being a good neighbor of communities to build trust, RATCH as a leading Thai energy and infrastructure company is determined to be a socially-responsible corporate citizen. RATCH has implemented activities to support communities and society in the areas of environmental, education, and quality of life improvement.

Performance summary for 2019

Strategy	Project	Activity	Target groups	Benefits
• GHG management • Upstream forest management • Community networking for acceptance • Address SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems	Love the Forest and community	1. Community Forest Competition • 1,332 community forests submitted applications for 2019 competition. 147 community forests won awards in 2019. • The forests cover 128,898.3 rai and are able to store 247,796.6 tons of CO_2.* • During 2008-2019, 1,683 community forests were awarded, covering a total of 1,512,848 rai. The area is capable of storing 3,025,696 tons* of CO_2. (Based on the Royal Forestry Department's 2 tons/rai/year calculation.)	Community forest leaders and communities nationwide	• Preserve national forest areas, the watersheds that nurture the Company. Forests are also natural GHG sinks, helping ease global warming impacts. • Create a strong network to preserve forests as a source of food and etc for communities.

Strategy	Project	Activity	Target groups	Benefits
(15.1 : ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems in particular forests, wetlands, mountains and drylands) 		2. Community Forest Leadership Seminar • 2 seminars (in the Northeast and the South) welcomed 153 attendees. • 96.1% of community leaders gained more knowledge and understanding in underground water bank, soil improvement shaped around royal initiatives, community forest management and networking. Seminars were the stage to provide academic knowledge on community forest management and ecosystem rehabilitation.	Community forest leaders nationwide	• The management of community forests, underground water and soil and efficient rehabilitation of watershed ecosystems • Exchange of experiences in development, rehabilitation, management and problem solving • Stronger bond between RATCH and community forest leaders
		3. Kla Yim Youth Camp • 2 camp events were hosted, welcoming 120 attendees (from the northern, Central and eastern regions). • 86.16% of attendees better understood the concepts of natural resource and environmental conservation as well as approaches to watch, improve and rehabilitate community forests.	Youths from community forests nationwide	• Create the next generation of natural resources, environmental and community forest conservationists • Community forest youth network
• Biodiversity preservation • Responding to SDG 15: Life on land (15.1 : ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems inparticular forests, wetlands, mountains and drylands) 	Address HRH Princess Maha Chakri Sirindhorn's Plant Genetic Conservation initiatives	1. Hosting workshops on school botanical gardens for trainees and exam preparation	School staff	Promote knowledge in school botanical gardens, so that school staff can assist speakers at future workshops.
		2. Hosting workshop on local resources for trainees and exam preparation	Participating local administrative bodies	Education on local resources under the initiatives, to raise awareness in plant genetics and natural resources
• Promoting reduction in community's fossil fuel consumption • Responding to SDG 12: Sustainable consumption and production patterns	Community Energy Project	Supporting the setup of community energy learning centers in each tambon, to extend knowledge given to volunteers. Community energy learning centers were set up in 3 locations: 1. Tambon Mae Faek, Sansai District, Chiang Mai Province	Community energy volunteers in the target areas	• Participation in improving community energy potential • Reducing GHG emissions • 5 learning centers were set up at each tambon.

Strategy	Project	Activity	Target groups	Benefits
(12.8 : People everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature) 		2. Tambon Pasak, Muang District, Lamphun Province 3. Tambon Pua, Chiang Klang District, Nan Province Participating in the selection of the best center, which is entitled to an award money and will be promoted as a true learning center.		• Refined community energy technology can be replicated for sustainable benefits to communities.
• Strengthening network	@CareLine Project	Hosting a workshop on educational tool improvement under Brain-Based Learning (BBL) approach to 62 teachers from 29 schools.	Teachers in Nonthaburi Provincial Education Office 1-governed area	91.22% of questionnaire respondents stated the participating teachers gained more knowledge and understanding in creating BBL-based educational tools.
		DJ Kids @CareLine Activity Nonthaburi's youth were encouraged to present energy and environment information in their own radio programs for kids. The activity covered 38 attendees.	Students in Nonthaburi Provincial Education Office 1-governed area	Students in the target area were trained to use radio as a communications medium
	Happy Old Age: Strong Thailand Project	"Traditional Thai medicine: Alternative healthcare" Activity was a workshop on herbs, cooking, herbal products, and basic self-caring. The activity welcomed 190 attendees (93 elderly people, 87 caretakers and 10 RATCH employees)	The elderly residing in Nonthaburi Province	• Promoting eldercare in Nonthaburi Province • Establishing the elderly's network, to win their acceptance and forge positive relationship
• Raising local workers' capacity through education promotion • Responding to SDG 17: Partnerships for the Goals (17.16: Enhance the global partnership for sustainable development complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technologies and financial resources to support the achievement of sustainable development goals in developing countries)) 	Career Development Education Project in Lao PDR	1. A workshop for 102 students from 4 educational institutes • Metal welding: (Xayaboury Technical and Vocational School) • O&M: (Technical College of Vientiane Province) • Metal welding: (Luang prabang Technical and Vocational College) • Programmable logic controller (PLC) (Luang prabang Technical and Vocational College) 2. Setting up of a renewable energy laboratory (solar power) at Khammouane Technical Vocational College	Vocational teachers and students in Lao PDR	• Help driving Lao PDR's economic and social development • Lift up education quality of Lao PDR's citizens • Support career development and facilitate RATCH's human resource sourcing in Lao PDR.

Love the Forest and Community Program ... for ecological value

Love the Forest and Community Program is the Company's CSR core project, undertaken in partnership with the Royal Forestry Department since 2008. Following the "Growing forests in people's hearts" royal initiatives of Phra Bat Somdet Phra Poraminthra Maha Bhumibol Adulyadej Borommanatbophit, the project aims to promote community participation in protecting "community forests". Under the "sustainable forests will benefit communities" goal, as communities care for, rehabilitate and keep forest fertile, the forests will be their source of water and food which will help save expenses and improve their quality of life.

Community forest competition is organized every year, as a tool to push forward the scheme and expand the number of community forests registered with the Royal Forestry Department. The number has risen fast, not only increasing Thailand's forest area but also improving the ecosystems and biodiversity.

A study dated September 2017 by the Biodiversity-based Economy Development Office (Public Organization) or BEDO showed forests created ecosystem services that include the prevention of soil erosion, the absorption of underground water and minerals, and reducing temperature. The services were valued Baht 89,737.50 per rai per year. At this rate, the ecosystem services from 2,530 community forests covering 1,159,287 rai which were registered with the Royal Forest Department in 2019 could be valued at Baht 104,031 million per annum.

Community projects to reduce energy consumption and GHG emissions

In 2019, RATCH registered 5 CSR projects, which helped reduce greenhouse gas emissions by 23.69 tons of CO_2 equivalent, for Thailand Greenhouse Gas Management (Public Organization)'s Low Emission Support Scheme (LESS).

Type of project	Project name	Crediting period	Reduced GHG throughout project period (tCO_2e)
Renewable energy	1. Community Energy Project (husk-powered stove) at Tambon Mae Faek, Sansai District, Chiang Mai Province	1 July 2018 - 30 June 2019	1.77
	2. Community Energy Project (husk-powered stove) at Tambon Pasak, Muang District, Lamphun Province	1 July 2018 - 30 June 2019	1.62
Energy efficiency enhancement	3. Community Energy Project (Installation of LED light bulbs) at Tambon Pua, Chiang Klang District, Nan Province	10 August 2018 - 30 June 2019	3.79
Renewable energy	4. Community Solar Power Project at Ban Hua Ha Community, Mae Hong Son Province	1 July 2018 - 30 June 2019	3.86
Energy efficiency enhancement	5. Replacing light bulbs with LED for Phra Nakhon Khiri Historical Park, Muang District, Phetchaburi Province	1 July 2018 - 30 June 2019	12.66
Total			23.69

Participation in power plant inspection

All power plants of the Company encourage community participation in examining their operations, to demonstrate the transparency of their operations and environmental management. Community participation comes in different forms, depending on circumstances and conditions of each community.

At Ratchaburi Power Plant, a large-scaled power plant with 3,645 MW in capacity, a tri-partite committee is a pattern adopted to engage community participation. The committee, called Environmental Inspectors Committee, is represented by all parties – residents living near the power plant; government offices/civic society; and the power plant's representatives. The committee's membership lasts 4 years. The committee examines the power plant's environmental management and it is also a channel to distribute the power plant's information to communities and receive complaints and recommendations.

Performance of Ratchaburi Power Plant's Environmental Inspectors Committee

In 2019, the committee completed its tasks through:

- 4 Committee meetings
- 1 site visit to inspect the quality of water on soil surface
- 1 study trip aimed to enhancing their capability
- A public hearing on the floating solar project
- Attending a briefing on $PM_{2.5}$ dust particles from the dean of Kasetsart University's Faculty of Environment



Environmental Inspectors Committee's meeting



Site visit to observe the collection of water samples and water quality inspection, as required by EIA

Volunteer activities

In-process CSR has been transferred to employees.

The Company's socially and environmentally-responsible principles are integrated in the operating process and have been continuously transferred to employees. All staff is allowed to do good deeds for society through volunteer activities, without expecting anything in return.

In 2019, the Company hosted 11 volunteer activities, involving environmental and forest preservation, youth education and religious supports. A number of 177 executives and employees, or 83.9% of all executives and employees, joined the activities. Together, they generated 700 man-days or 5,600 volunteering work hours.

ECONOMIC **PERFORMANCE**

RATCH's economic values in 2019

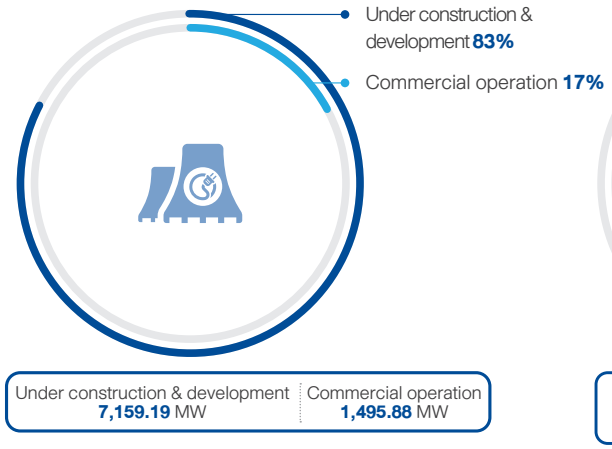
Item	Value (Million Baht)
Economic value added	
Sales and service revenue	35,441.11
Profit sharing from investment in jointly-controlled businesses	3,968.38
Interest income	205.52
Received dividend	100.88
Economic value distributed to stakeholders	
Fuel cost	27,647.85
Operation and maintenance fee	1,605.25
Cost of maintenance and parts	1,533.26
Power plant insurance premium	377.57
Administrative expenses and payments	1,595.99
Financial cost	1,430.22
Taxes*	802.94
Local taxes**	19.50
Dividend paid to shareholders	3,480.00
Community and social investment	181.71
Economic value received by RATCH	
RATCH's profits	5,963.28

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

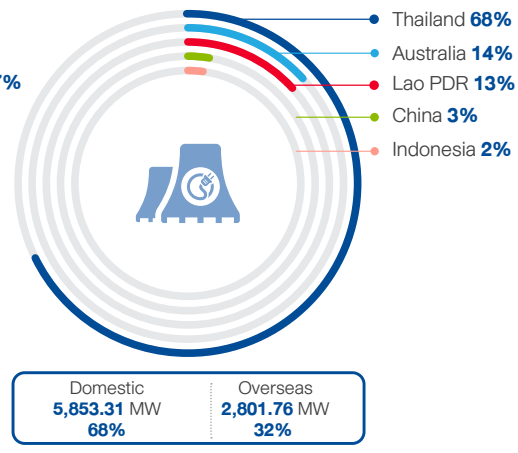
Installed capacity in 2019

The installed capacity of RATCH's invested projects as of 31 December 2019 totaled 8,655.07 MW. Details are as follows:

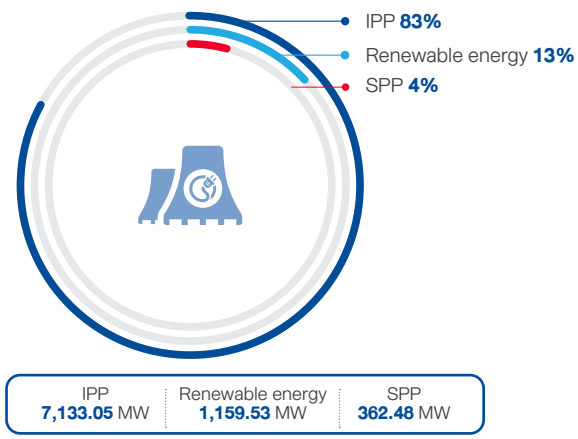
Commercial capacity



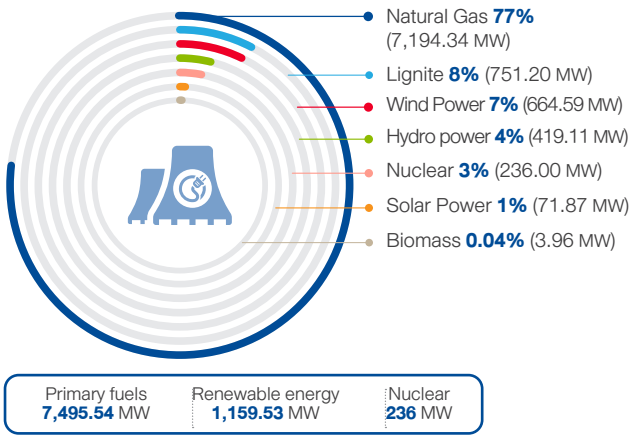
Capacity by location



Capacity by project type



Capacity by type of fuel



Performance in 2019

Power Generation Business

Projects invested in 2019

- Collector Wind Farm, located in New South Wales, Australia. Valued at 359 million Australian dollars, it has 226.8 MW in capacity and is slated for commercial operation in 2020. RATCH owns all shares via its Australia-based subsidiary (RATCH-Australia Corporation Pty Ltd).
- Yandin Wind Farm, located in Western Australia, Australia. It has 214 MW in capacity and is slated for commercial operation in 2020. RATCH owns 70 per cent of its shares through Australia-based subsidiary (RATCH-Australia Corporation Pty Ltd).
- RATCH Cogeneration Power Plant, located in Pathum Thani Province, Thailand. The coal-fired power plant has the capacity to generate 119.15 MW of electric power and 10 tons of steam per hour. RATCH bought a 99.97 per cent stake from Nava Nakorn Electricity Company Limited's old shareholders at Baht 5,726.68 million. The power plant commenced operation in October 2013, selling 90 MW of electric power to Electricity Generating Authority of Thailand and the remaining output as well as steam to industrial customers.

- Hin Kong Power Plant, located in Ratchaburi Province. The gas-fired power plant's installed capacity is 1,400 MW (from two 700-MW generators). RATCH owns 51 per cent of Hin Kong Power Holding Company Limited, the project's operator, and Gulf Energy Development Public Company Limited owns the remaining stake. Output is to be sold to Electricity Generating Authority of Thailand after the two generating units start commercial operation in 2024 and 2025, respectively.

Projects commencing commercial operation in 2019

- Collinsville Solar Farm, located in Queensland, Australia. The 42.5 MW solar farm sells 70 per cent of output to Alinta Energy via a firm power purchase contract and the rest to the National Energy Market. RATCH owns the 100 per cent stake, via its Australia-based subsidiary (RATCH-Australia Corporation Pty Ltd).
- Berkprai Cogeneration Power Plant, located in Ratchaburi Province with capacity of 99.23 MW of electric power and 15 tons per hour of steam. It sells 90 MW of power to Electricity Generating Authority of Thailand and sells the remaining electric power as well as steam to industrial customers. RATCH owns a 35 per cent stake via a subsidiary (Ratchaburi Electricity Generating Company Limited) while Rajburi Sugar Company Ltd holds the remaining 65 per cent.
- Xe-Pian Xe-Namnoy Hydroelectric Power Plant, located in Champasak and Attapeu provinces, Lao PDR with 410 MW capacity. It sells 354 MW of power to Electricity Generating Authority of Thailand through a 27-year contract and sells the remaining 42 MW to Electricite Du Laos. RATCH holds a 25 per cent stake through its subsidiary (Xe-Pian Xe-Namnoy Power Company Limited). The other shareholders are SK Engineering & Construction Company Limited (26 per cent), Korea Western Power Company Limited (25 per cent) and Lao Holding State Enterprise (24 per cent).

Infrastructure business

Invested projects

- Underground fiber optic network by Smart InfraNet Company Limited, a 51:49 joint venture of RATCH and ALT Telecom Public Company Limited. With Baht 1 million registered capital, Smart Infranet installs fiber optic networks and equipment under the government's communication line rearrangement project that covers potential locations across the country.
- Communication network installation and Internet of Things-related services. RATCH holds a 35 per cent stake in Things on Net Company Limited, the authorized licensee of Sigfox low power area network (LPWAN) technology in Thailand. Sigfox's network has covered over 50 countries. Things on Net plans to penetrate 75 per cent of Thailand's area and reach 85 per cent of population in 2020.

SUPPLY CHAIN **MANAGEMENT**

RATCH diversified to infrastructure business this year to achieve growth as specified in long-term strategic plan. As the business process of electricity generation and infrastructure businesses is similar, they share the same pattern and approaches in managing the relationship with stakeholders in the supply chain. The guidelines in treating stakeholders are included in the Code of Conduct, emphasizing transparency, fairness and accountability.

Business process

Business	Key process	Key activity	Stakeholders in supply chain
Electricity generation	Project development	Project feasibility study	Partners/government sector/adviser
		Environmental impact study	Community/regulators/environmental adviser
		Business partnership	Partners/legal adviser/government sector
		Power purchase agreement	Legal adviser/customers/government sector
		Fuel supply contract	Fuel suppliers/legal adviser
		Obtaining loans	Financial institutions/insurance companies/ financial adviser
		EPC sourcing	Partners/suppliers/legal adviser
	Project construction	Construction	EPC/sub-contractors/workers/community/ regulator
	Electricity generation and distribution	Generation order	EGAT, PEA/industrial users
		Fuel consumption	Fuel supplier (PTT)
		Operation and maintenance	Operation and maintenance service provider (EGAT/others)
		Waste management	Waste handler/regulator
		Spare-parts supply	Spare-parts suppliers
		Electricity delivery	Customer (EGAT/PEA/industrial users)
	Decommissioning at the end of PPA	Handling of power plant after PPA expiration	Partner/waste handler/regulator/EGAT
Infrastructure	Project development	Project feasibility study	Partner/supplier
		Business partnership	Financial institution/insurance company/ financial adviser
		Obtaining loans	Partner/legal adviser/government sector
		EPC sourcing	Partner/supplier/legal adviser
	Project construction	Construction	Partner/sub-contractor/community/regulator
	Operation/Service	Customer service	Customer/partner/worker/community/regulator

Supply chain management guideline

RATCH's supply chain breaks into three processes: 1) Project development 2) construction and 3) production and provision of products and services. The processes involve stakeholders in the supply chain who significantly influence the Company's success and business goals: business partners, suppliers, community and the environment. The guidelines to deal with the stakeholders are as follows:

Partner Relationship Management	• Integrating expertise to raise competitiveness and sustainable growth • Compliance with agreements, commitments and non-disclosure clause • Long-term cooperation based on transparency and equality
Supplier Relationship Management	• Implementing a fair, transparent, and systematic procurement management • Supplier's risk management • Standardization of safety and occupational health • Seeking long term strategic cooperation
Community	• Controlling and ensuring standard environmental management • Preventing the impact from stakeholders' operation that may affect neighboring community • Promoting community engagement and providing 2-way communication channel
Environmental management	• Controlling stakeholder's compliance with environmental law • Controlling and managing environmental impacts from the operation of the Company and those in the supply chain

Partner relationship management

RATCH seeks to attract strategic partners who will strengthen the Company's operations and competitiveness as well as assist in business expansion in emerging markets for sustainable growth. Business partnership is 1 of 5 key strategies in long-term strategic plan as business partners are considered a key factor towards the corporate long-term strategy to produce 10,000 megawatts equivalent in 2023.



Issue management guidelines

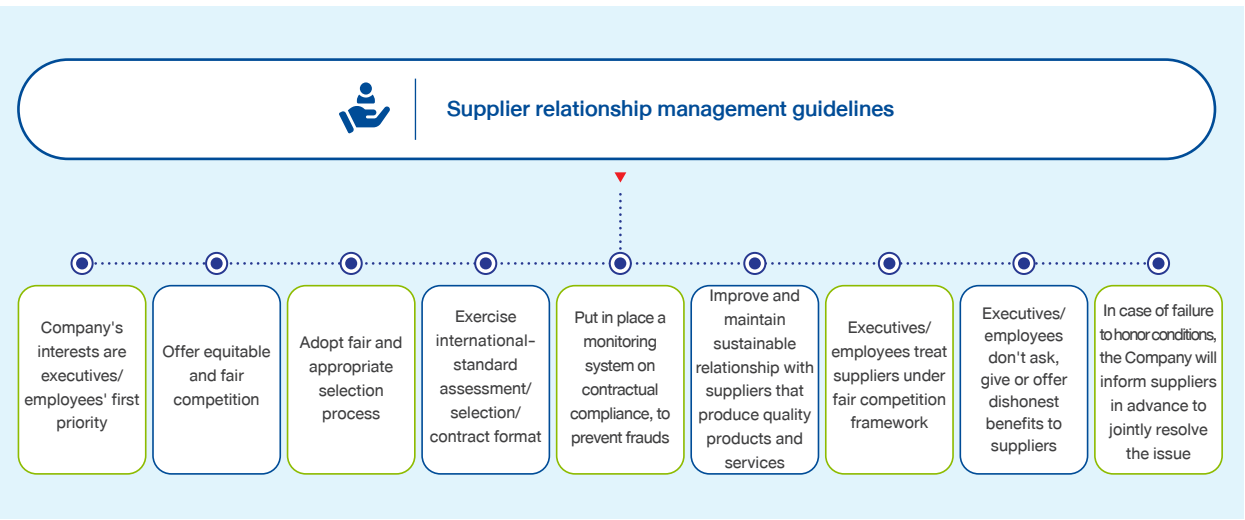
To facilitate the operations and achieve goals, RATCH outlines guidelines to address issues that may obstruct joint operations and relationship with business partners. They are summarized below.

Issue	RATCH's guidelines
Responsibility	• Clearly define both parties' duties and segregate responsibilities • Identify the Company's criteria and expectations for each project • Prepare written agreements
Operational and financial management	• Discuss and jointly finalize the management structure, as well as clearly outline operational direction, rules and the qualifications of executives • Shape financial and investing approaches in accordance with the Company's financial and investment policies • Seek agreements on a comprehensive plan regarding equity sharing, funding and reimbursement monitoring
Conflict of interest	• Define clear procurement criteria, conditions and procedure. • Put in place a joint criteria and decision making process
Conflict management	• Hold an executive-level discussion to define solutions that are fair to all parties • Clearly define the management approach for pre- and post-development expenses • Clearly define the partnership termination clause, if necessary

In 2019, RATCH followed the guidelines in nurturing and building relationship with business partners, resulting in business progress. Success reflected in fruitful partnership and progress in negotiations on new projects with existing and new partners.

Supplier relationship management

RATCH treats suppliers accordingly to the clauses in the Code of Conduct and governance practices, to establish long-term cooperation and partnership for the mutual benefits of the Company and suppliers.



Suppliers vary accordingly to their products and services and are vital to the Company's supply chain. Key suppliers are suppliers of products such as fuels, parts and other necessary items; and suppliers of services such as advisers, EPC (engineering, procurement and construction) contractors, operation and maintenance operators and other maintenance contractors.

Customer relationship management guidelines

Procurement management

RATCH expects suppliers to satisfy the Company's needs for products and/or services, to ensure smooth and efficient operations. As such, procurement management is of great importance. RATCH's procurement process is defined in "procurement rules" which guide the Company towards transparent, fair, equitable and accountable practices.

1. Supplier selection

Aside from scores for technical and pricing bids, RATCH requires suppliers to pass the qualifications relating to governance, environmental and social dimensions. The qualifications are given a 10 per cent weight of the 100-point score.

In 2019, a total of 127 suppliers were subjected to the qualification assessment, or 100 per cent of suppliers. Of total, 77 were existing suppliers and 50 were new faces. After the assessment, they were informed of the results, along with recommendations for future improvement and a better chance to work with the Company in the future.

Supplier qualification assessment result in 2019

RATCH Group PCL

Assessment points	No. of suppliers passing the criteria (From all 127 suppliers in the screening process)			
	Existing suppliers	New suppliers	Total	%
Governance dimension				
1. Integrity/transparency/responsibility				
• Zero corruption history	77	50	127	100
• No history of desertion	77	50	127	100
2. Conflict of interest				
• RATCH's executives/directors hold no position in the companies that submit bids	77	50	127	100
• No personal relationship with RATCH's executives/employees	77	50	127	100
Environmental dimension				
3. Environmental management and responsibility				
• Certified for environmental standard or environment practices (ISO 14000/EIA)	8	2	10	7.87
• Compliance with laws or environmental regulations or environmental management procedures	77	49	126	99.21
Social dimension				
4. Labor, community and social care				
• Zero employment of children or illegal workers	77	50	127	100
• Respect workers' human rights/No infringement to basic human rights	77	50	127	100
• Operate with social responsibility, causing no impact to surrounding communities	77	49	126	99.21

Ratchaburi Electricity Generating Company Limited (99.99% owned by RATCH)

In 2019, Ratchaburi Electricity Generating Company Limited included environmental aspects in the supplier qualification assessment. A number of 81 new suppliers passed the test, from a total of 91 new suppliers who won supply contracts for the year.

RATCH-Australia Corporation Pty Ltd. (99.99% owned by RATCH)

Assessment points	Qualification assessment result and suppliers' performance
Environmental aspect	
Setting environmental-stewardship conditions in the TOR or the contract. Suppliers or contractors' environmental management standard must be on par with or stricter than the ISO 14001 requirements and other relevant regulations and they must have a plan to improve their performance.	• TWPS, a main contractor, was required to assess its subcontractors to assure their full compliance to ISO14001's requirement. • TWPS as a key contractor required its subcontractors to complied to the standard
Suppliers' environmental management, including waste, wastewater and air pollution	• TWPS, an operation and maintenance service provider of RAC, complied with requirements and TWPS demanded all subcontractors to comply with these requirements.
Suppliers' compliance with environmental aspect of their EIA requirements and suppliers certified for ISO 14001	• All suppliers of RATCH-Australia complied with laws and EIA requirements. • TWPS as a key contractor required its subcontractors to complied to the standard
Suppliers with environmentally-friendly practices, or having the technology of products/machine that emit least pollutants to the environment	• TWPS applied a variety of technologies to improve environmental performance RATCH-Australia's power plants; for instance, HRSG (seat recovery steam generating) was installed at Townsville Power Station. Heat was reused for generating electricity with steam turbines which is a way to improve generation efficiency and reduce fuel consumption.
Social responsibility aspect	
Suppliers which set 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.
Suppliers that provide welfare for employees or contractors, comply with labor laws, hear complaints and manage impacts on workers	• All suppliers complied with law and requirements.
Suppliers with awareness on safety, occupational health and workplace environment of employees or contractors	• All suppliers complied with law and requirements.

2. Sourcing of environmental-friendly products and services

The Company still emphasized environmental-friendly products and services. Procured products and services are certified for Thai or international standards such as Green Label, Carbon Label and Energy Saving Label, UK environmental standard and ISO 14001 as well as services which are environmentally certified.

2019 Procurement ratio of environmental-friendly products and services and general item (Head Office)

Environmental-friendly products and services

= 106 items valued at 17,155,843 baht or 3.2% of contract values

General products and services

= 495 items valued at 80,412,220 baht or 96.8% of contract values

Procurement ratio of environmental-friendly products and services during 2017-2019 (Head Office)

Item	2017		2018		2019	
	No. of items	Value (baht)	No. of items	Value (baht)	No. of items	Value (baht)
Environmental-friendly items	95	33,164,776	45	17,155,843	106	2,639,177
General items	544	93,952,156	311	132,925,176	495	80,412,220
Total	639	127,116,932	356	150,081,020	601	83,051,369
Ratio of environmental-friendly items to general items (%)	14.87	26.09	12.64	11.43	17.64	3.18

3. Control over special procurements

The Company applies four procurement methods, each clearly specifying the maximum value and authorized persons to ensure transparency and accountability. The methods are as follows:

(1) Price negotiation
Contract value not exceeding **Baht 100,000**

(2) Price inquiry
Contract value not exceeding **Baht 5 million**

(3) Competitive bidding
Contract value above **Baht 5 million**

(4) 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 Company focuses mainly on the first-three procurement methods and seeks to minimize special method to maintain transparency and fair competition In 2019, RATCH Group ably cut the number of special procurements by 13 from 2018.

RATCH Group's product and service procurement sorted by type

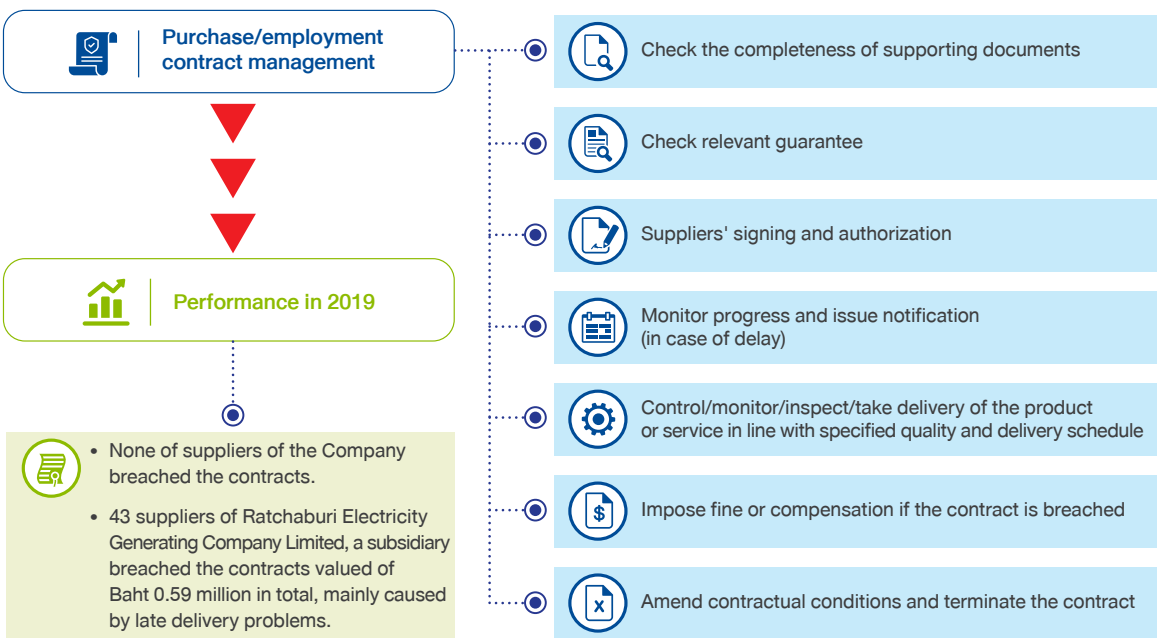
Procurement methods	2018				2019			
	No. of deals		Value (Baht million)		No. of deals		Value (Baht million)	
	RATCH	RATCH Group	RATCH	RATCH Group	RATCH	RATCH Group	RATCH	RATCH Group
Price negotiation	160	977	5.0	91.3	141	731	4.3	10.38
Price inquiry	22	17	25.1	21.8	12	16	8.4	2.21
Competitive bidding	7	5	85.8	33.4	1	1	4.3	0.89
Special procurement	51	61	26.9	98.2	38	108	29.2	22.98

Note: *RATCH Group refers to Ratchaburi Power Plant and Tri Energy Power Plant*

4. Contract management

Contracts are signed after the selection process is completed. Contracts are legally binding the Company and suppliers, indicating both parties' agreements to honor all specified conditions.

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. Once the contracts take effect, the procurement unit is tasked to monitor the progress and delivery together with the divisions that order such products and services. The performance is as follows:



5. Supplier performance assessment

After the products or services are delivered, supplier's performance is assessed, focusing on quality, quantity, delivery and operational practices against specified criteria. The Company sends recommendations to the suppliers which failed in the assessment.

If the recommendations are rejected, 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 win the Company's future contracts.

Performance in 2019

- No. of suppliers assessed: 127
- No. of failed suppliers: 1/Recommendations for improvement were sent to 1 suppliers.
- No supplier was blacklisted.

6. Supplier grouping

Suppliers passing the assessment are included in the supplier database which allows more convenient and faster screening for suppliers for the products and services that match the Company's preferences. It also helps reduce and control risks on the Company's cost. Suppliers are divided to 5 groups, according to contract period (for existing and new suppliers), procurement value, qualification assessment result, performance assessment, as well as type of products and services.

Company	Suppliers in 2019														
	Contract period		Contract value				Qualification assessment result			Performance assessment result			Type of products and services		
	New suppliers	Existing suppliers	≤Bt1mn	Bt1-5 mn	>Bt5-10 mn	>Bt10 mn	Qualified	Below average	Failed	Pass	Require improvement	Blacklisted	Product	Service	Green products
RATCH	50	77	182	8	0	1	10	117	0	126	1	0	45	86	8
RATCH Group	96	787	186	40	7	7	-	-	-	-	-	-	-	-	7

Note *RATCH Group refers to Ratchaburi Power Plant and Tri Energy Power Plant*

Supplier risk management

As credibility and reputation matters in the business world, RATCH gives importance to preventing possible risks relating to suppliers. Suppliers' risk factors and possible impacts on economic, social, environmental fronts and governance aspects are assessed. Measures against supplier risks are accordingly formulated. The performance in 2019 is as follows:

Dimension	Risk factor	Prevention measure	Performance in 2019
Economic	Collusion and conflict of interest	1) Define supplier qualification assessment criteria 2) Verify information through documents and questioning of individuals in the industry 3) Verify certification letters 4) Put them to the blacklist in case of irregularities	None
	Suppliers' financial status and stability	1) Deposit/Bank Guarantee 2) Examine financial statements over the past two years	No supplier showing financial instability

Dimension	Risk factor	Prevention measure	Performance in 2019
Economic	Suppliers with high-value contracts	1) Call for deposit 2) Inspect compliance with contract and delivery schedule 3) Set a condition to make payment in instalments, based on work progress 4) Pay a visit	15 suppliers awarded contracts worth more than 5 million baht: - 1 suppliers of RATCH - 14 suppliers of RGCO
	Suppliers that produces/ distributes non-substitutable products or provides specialized service	1) Enter into Contractual Service Agreement 2) Buy an insurance policy	None
	Job desertion/failure to meet products and services delivery schedule or product/service specifications do not meet specified standards	1) Specify compensation clause 2) Confiscate deposit 3) Put on blacklist if failing to meet specified standards	• None of RGCO's Suppliers abandoned work. • None of RATCH's suppliers delivered products/services which did not meet specified standards.
Social	Employment of child labor/ illegal workers and violation of human rights or use of forced labor	1) Define supply qualification assessment criteria 2) Pay a visit 3) Report workers' details 4) Documents for migrant workers 5) Put on the blacklist in case of violations	No supplier employing child labor/illegal workers
	Workers' safety and occupational health	1) Assess work-related risks/ Orientation 2) Require use of safety equipment necessary for workers with employment contract	• 19 suppliers of RATCH were subjected to risk evaluation. • All sub-contractors of RGCO (107 suppliers) passing risk evaluation.
Economic/ Social	Suppliers' sub-contractor management	1) Evaluate work risks 2) Set ESG-related conditions for sub-contractors in contracts with suppliers 3) Monitor compliance with safety measures	• None of RATCH's suppliers had sub-contractors • RGCO having EGAT as a supplier requested all subcontractors to comply with the specified requirements.
Environmental	Environmental management and waste management	1) Set condition in the contract and monitor 2) Pay a visit 3) Specify it as a part of the supplier qualification assessment criteria	• 4 suppliers having environmental management and waste management conditions in the contracts. • RGCO visited a supplier contracted to handle gypsum.

1. Power plants' supplier risk management

In 2019, Ratchaburi Power Plant, which is the Company's main assets and 99.99 per cent of shares hold by the Company, conducted contractors' job risk assessment and found that 192 jobs were under substandard conditions, particularly electrical system, lighting and equipment-related.

Issues found	Remedy / Prevention
• Incomplete electrical equipment such as no grounding wire, broken wire	• Fix equipment in proper conditions before getting permission for use • Specify and strictly implement equipment checking procedure and completeness of equipment before used in the power plant areas.
• No sorbent materials supporting fuel tank	• Procure sorbent materials for supporting oil tanks when operating maintenance • Reinforce operators' compliance to safety measure and set up monitoring system

2. Suppliers' safety, occupational health and environment management

RATCH and all power plants require work-related risk assessment before the start of work. Contractors must always honor this condition and define measures to ensure safety and occupational health and prevent accident for its workers or sub-contractors' workers. The Company also monitors contractors and sub-contractors' compliance with safety measures. (Details appeared in Safety, occupational health and work environment Section, Page 193)

3. Forging long-term strategic relationship with suppliers

Winning strategic suppliers for long-term cooperation has been a key mission of the Company and all power plants and most of their suppliers are classified "excellent". Aside from positive relationship, the Company lends suppliers supports in 2 significant areas: anti-fraud and corruption; and innovation development for higher work efficiency, lower production cost and lower environmental impacts.

Performance in 2019

Promote suppliers' awareness in anti-fraud and corruption

- The Company applies governance practices in selecting suppliers, thus raising their awareness and encouraging them to improve work process accordingly to the Company's conditions.
- The Company informed suppliers of the Company's anti-corruption guidelines and policy as well as the Company's gift giving and receiving guidelines, urging them to exercise the guidelines in their workplaces and when signing contracts with other organizations.

Company's visit to suppliers' work site

- Observe suppliers' operations to ensure their compliance with relevant laws which will reduce possible impacts on the environment and community.
- Exchange information/recommendations to improve their cooperation

Support suppliers' innovation development

- An operation and maintenance service provider came up with a method to help the Group save energy consumption and cost.
- Adoption on programs to improve work efficiency like Preventive Maintenance 52 weeks/O&M Excellence
- Invent tools and innovations that promote safety like a tool to assist oxygen analyzer change while generators are turned on and a diving robot.
- Develop a system to promote safety of power plants' O&M service

Samples of innovations jointly developed by power plants and suppliers

Projects	Results	Pictures
Project title: Gas turbine efficiency enhancement project for Ratchaburi Combined-Cycle Power Plant's gas turbine, to mitigate global warming impacts **Objective:** Lowering inlet air temperature to enhance combustion efficiency, so that the power plant can address customer demand and reduce fuel consumption **Process:** 1) Gather and analyze the power plant's generation data as well as study technology that reduces inlet air temperature before hitting Air Inlet Filter. 2) Design and build Air Inlet System model, as well as analyze effects and variables that influence a drop in air temperature. 3) Study the effect of the system to reduce inlet air temperature 4) Evaluate economic values and summarize the operational approach 5) Complete the installation of water spray at Ratchaburi Combined-Cycle Power Plant Unit 1 in 2018 to lower inlet air temperature before hitting the Air Inlet Filter and tested run the system in 2019 6) Conclude and evaluate the process 7) Complete the system installation at Ratchaburi Combined-Cycle Power Plant Unit 2 and Unit 3 in 2019	1) Mitigate global warming impacts on generating activities 2) Ratchaburi Combined-Cycle Power plant Unit 1 increased the gas turbine's contracted capacity when temperature increased by 1-5 degree Celcius 3) Heat Rate improved, saving energy by 13,264 BTU or Baht 3,415,960 per annum 4) Natural gas consumption decreased by 13.72 million cubic feet per annum, cutting greenhouse gas emission by 785 tons of CO_2 equivalent that helped ease global warming impacts	 
Project title: Installation of oxygen analyzer-changing tool at Ratchaburi Combined-Cycle Power Plant **Objective:** Install valve to change oxygen analyzer at the chimney while the generator is on **Process:** 1) Create prototype valve 2) Install and test KT2010-Valve and probe connector 3) Test run: oxygen analyzer could be changed through closed KT2010-V and there was no sign of flue gas leakage while the generator was on	1) Oxygen analyzer was changed through closed KT2010-V, without Flue Gas leakage while the generator was on. 2) Allow all-time oxygen analyzer maintenance at the power plant's chimney without having to turn off the generator. 3) Continuous reporting of pollutants based on the measured oxygen levels, in compliance with laws.	 

Projects	Results	Pictures
Project title: ROV (Remotely Operated Underwater Vehicle) **Objective:** Reduce risks relating to work at airtight space and reduce expenses **Process:** 1) Invent the first ROV and test run 2) Reduce its size to fit 10-inch pipes 3) Equip the model with cleaning mode, to brush and suck out sediments at Clarifiers 4) Invent a system to remotely control vertical movement	1) Sediment survey by ROV instead of divers cut expenses by Baht 100,000 per year. 2) Risks for underwater survey divers are reduced. 3) The scope of work is extended to cover the survey of other equipment and other things underwater such as Suction Strainer Pump or waste in water pipes.	 

Sample of suppliers' operation visit

In 2019, The Procurement and Supply Department of Ratchaburi Electricity Generating Company Limited visited and experienced operation of Knauf Gypsum (Thailand) Limited, a 5-year contracted supplier (2018-2023) providing service for recycling gypsum waste from desulfurization process of Ratchaburi Power Plant into gypsum boards.

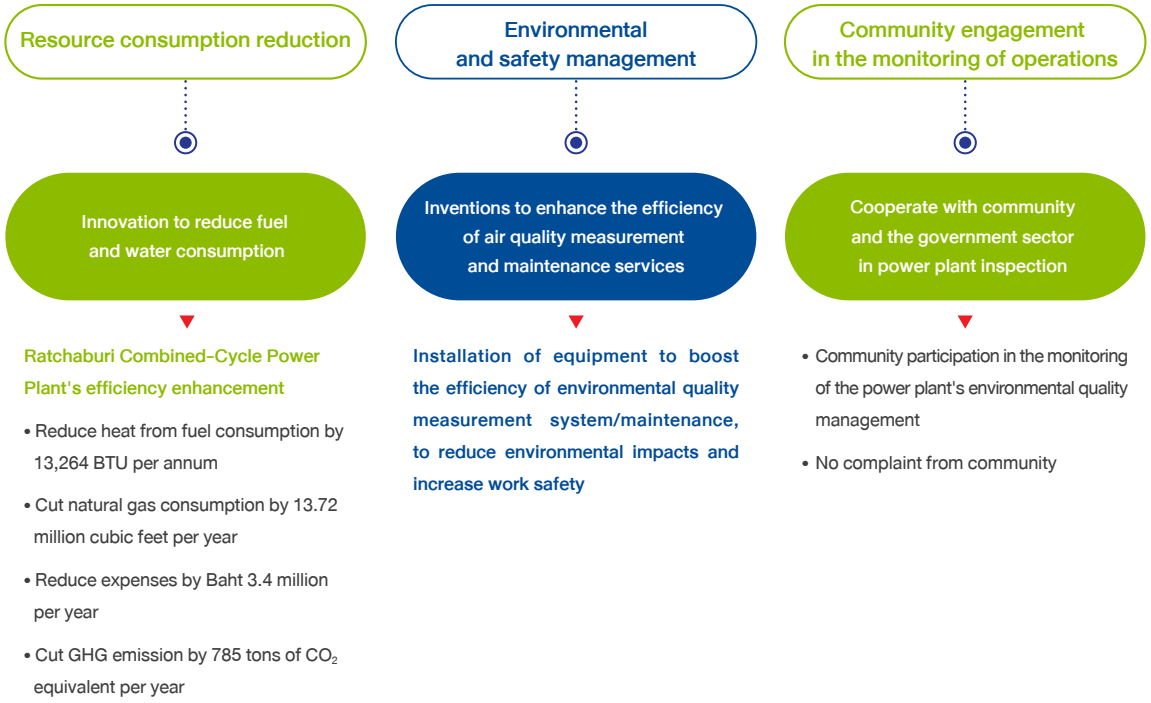
This year, Knauf Gypsum (Thailand) Limited recycled 15,347 tons of gypsum waste into 1,533 gypsum boards which was contributed to schools and community surrounding the power plants for installing ceilings and walls. A hundred ton of gypsum waste of the plant could be a raw materials for production of ten gypsum boards (sized 120x240cm).

Community and environmental impact management

Suppliers' operations cause direct and indirect impacts on the Company, as suppliers are considered the Company's representatives. Suppliers with respectable practices will benefit the Company and reflect the organization's good image. As such, the Company is obliged to ensure suppliers' compliance with laws, industrial standards, and the Company's regulations particularly those relating to the management of impacts on community and the environment.

Regarding environmental impacts, the Company and its power plants emphasized a decrease in resource consumption, environmental management and safety. On community, their engagement in monitoring the Company's operations is in focus. Suppliers are dealing with these matters on behalf of the Company.

In 2019, Ratchaburi Power Plant's operation and maintenance service provider completely addressed the Company's concerns, as summarized below.



Power distribution and delivery

Distribution and delivery is the last process in the generating business's supply chain. RATCH Group's 91.8 per cent of electric power is distributed in Thailand, having Electricity Generating Authority of Thailand as the major buyer, followed by Provincial Electricity Authority and industrial users. The electric power is dispatched to high-voltage transmission line which is linked with the customers' grids.

The quantity and quality of electric power delivered to customers this year met or exceeded contractual capacity. Details appeared in Customer Relationship Management Section, Page 205.

MANAGEMENT DISCUSSION AND ANALYSIS

Executive Summary

Unit : Million baht

	2019	2018	Increase (Decrease)	%
Total revenues*	15,668.94	14,780.73	888.21	6.0
Total cost and expenses*	9,573.18	8,346.74	1,226.44	14.7
Gain (Loss) on foreign exchange	(132.48)	(865.02)	732.54	84.7
Profit attributable to owner of the Company	5,963.28	5,587.60	375.68	6.7

Note: ** excluding fuel cost*

The operating result for the year 2019 showed the profit (attributable to owners of the Company) of THB 5,963.28 million, increasing by THB 375.68 million. The increase is owing to the commencement of commercial operation of Mount Emerald Wind Farm Project and Collinsville Solar Power Project on December 12, 2018 and March 21, 2019, respectively, and the acquisition of RATCH Cogeneration Company Limited on October 1, 2019.These resulted in the increase in revenue from sales and rendering of services and cost of sales and rendering of services (excluding fuel costs). Also, the revenue from sales of Ratchaburi Electricity Generating Company Limited increased due to the higher Base Availability Credit in 2019 compared to that of 2018. In addition, the Company recorded the profit from Fareast Renewable Development Pte Ltd acquired in December 2018 and Berkprai Cogeneration Company Limited commencing commercial operation on June 1, 2019.

1. Significant Events of the Year 2019

1.1 The Investment in Underground Optic Fiber Network Project

On February 5, 2019, the Company and ALT Telecom Public Company Limited ("ALT") had entered into a Shareholders Agreement for the participation in the Underground Optic Fiber Network Project. On June 27, 2019, both companies have registered a joint venture company, named "Smart Infranet Company Limited". Its registered capital was Baht 1 million, divided into 100,000 ordinary shares at Baht 10 each. The capital was fully paid. The Company held 51 per cent stake and ALT held 49 per cent stake.

1.2 Signing of Financial Documents for Collector Wind Farm in the Commonwealth of Australia

On March 19, 2019, Collector Wind Farm Pty Ltd, a wholly owned subsidiary of RATCH-Australia Corporation Pty Ltd, had signed a binding debt documents with Clean Energy Finance Corporation, the lender, for a debt facility of AUD 179 million to use in the construction and development of the Collector Wind Farm, with capacity of 226.8 megawatts, located in New South Wales, the Commonwealth of Australia. The project cost is approximately AUD 359 million. It started the construction in 2019 and is anticipated to commence operations in 2021.

1.3 The Progress of Riau Combined-Cycle Power Plant Project in the Republic of Indonesia

On March 20, 2019, PT Medco Ratch Power Riau, an indirect joint venture that the Company held 49 per cent stake through RH International (Singapore) Corporation Pte. Limited, the Company's subsidiary, had signed loan agreement and other related financial agreements with financial institutions. The total loan amount is USD 222 million for the period of 20 years. The purpose of the loan is to use in the construction and development of the 296.23 megawatts Riau Combined-Cycle Power Plant Project in

the Republic of Indonesia, with a 20-year power purchase agreement with the Republic of Indonesia's electricity authority, PT PLN (PERSERO).

On November 14, 2019, PT Medco Ratch Power Riau was successful in making the first drawdown. The construction is underway and the project is expected to commence commercial operation in 2021 as scheduled.

1.4 Commercial Operation Commencement of Collinsville Solar PV Power Station in the Commonwealth of Australia

On March 21, 2019, Collinsville Solar Power Project, with capacity of 42.50 megawatts, which the Company is investing in through Collinsville Solar PV Pty Ltd, an indirect subsidiary that is wholly owned by RATCH-Australia Corporation Pty Ltd has commenced commercial operations and recognition of benefit as per the Power Purchase Agreement. 70 per cent of the generated electricity is sold to Alinta Energy, the power purchaser under the PPA, while the remaining 30 per cent is sold into the Commonwealth of Australia's National Electricity Market.

1.5 Change of the Company's Name and Seal

On April 12, 2019, the 2019 Shareholders' Annual General Meeting of the Company had approved the change of the Company's name and seal from Ratchaburi Electricity Generating Holding Public Company Limited to RATCH Group Public Company Limited. The Company has already registered the changes to the Department of Business Development, Ministry of Commerce on April 17, 2019. In this regard, the Company still uses the same stock symbol "RATCH".

1.6 Establishment of Hin Kong Power Holding Company Limited and Hin Kong Power Company Limited

On May 24, 2019, the Company has established Hin Kong Power Holding Company Limited ("HKH"), which is the Company's wholly owned subsidiary. And on May 28, 2019, the Company has established Hin Kong Power Company Limited ("HKP"), which is fully owned by HKH. Each company's registered capital is Baht 4,000,000 divided into 400,000 ordinary shares, valuing at Baht 10 each and fully paid.

On July 12, 2019, HKP has entered into the Power Purchase Agreement for Hin Kong Power Project in Hin Kong Sub-district, Muang District, Ratchaburi Province with Electricity Generating Authority of Thailand. The agreement is effective from the execution date until the 25th year from the commercial operation date.

On January 3, 2020, the Company sold 196,000 ordinary shares of HKH or 49 per cent of the total shares at THB 10 per share, which is at par price, totaling THB 1.96 million to Gulf Energy Development Public Company Limited.

The project is a combined-cycle power plant project that used natural gas as the main fuel with total contracted capacity of 1,400 megawatts (700 megawatts per unit) according to the Power Purchase Agreement. It is scheduled for commercial operation in 2024 and 2025 respectively. At present, the project is in the process of preparing the Environmental Impact Assessment.

1.7 Commercial Operations of Berkprai Cogeneration SPP Power Plant

On June 1, 2019, Berkprai Cogeneration SPP Power Plant with power generation capacity of approximately 99.23 megawatts and steam generation capacity of approximately 15 tons per hour, located in Berkprai Sub-district, Ban Pong District, Ratchaburi Province, operated by Berkprai Cogeneration Company Limited (an indirect joint venture which the Company held 35 per cent stake through Ratchaburi Electricity Generating Company Limited), has commenced commercial operations.

1.8 Investment in Yandin Wind Farm in the Commonwealth of Australia

On July 26, 2019, RATCH-Australia Corporation Pty Ltd ("RAC"), a subsidiary, has invested in the 214-Megawatt Yandin Wind Farm located in Western Australia. RAC has purchased 70 per cent of common shares in Yandin WF Holding Pty Ltd from

Renewable Energy Investment Fund Pty Ltd ("REIF"), a subsidiary of Alinta Energy Pty Ltd ("Alinta") and 70 per cent of investment units in Yandin WF Holding Unit Trust from Renewable Energy Investment Fund Unit Trust. The investment is approximately AUD 53.31 million.

On July 15, 2019, the loan agreements with financial institutions totaling amount of AUD 364 million were signed. On October 10, 2019, the first drawdown was successfully made.

The project is located in the Dandaragan area, 150 kilometers north of Perth in Western Australia, the Commonwealth of Australia. The construction is underway and the Project is expected to commence commercial operation in 2020 as scheduled. The project has a 15-year power purchase agreement with Alinta Sales Pty Ltd, a subsidiary of Alinta.

1.9 Share Purchase of Navanakorn Electric Company Limited (Name Changed to RATCH Cogeneration Company Limited)

On August 20, 2019, the Company has entered into Share Purchase Agreement to purchase ordinary and preferred shares of Navanakorn Electric Company Limited (The company's name was subsequently changed to "RATCH Cogeneration Company Limited".) at 99.97 per cent, from the existing shareholders. On October 1, 2019, the Company paid for the shares in the amount of THB 1,866.05 million and provided a long-term loan in the amount of THB 132.35 million.

RATCH Cogeneration power plant is a gas-fired SPP cogeneration power plant with power generating capacity of 119.15 megawatts and steam generating capacity of 10 tons per hour. It is located in the south of Nava Nakorn Industrial Promotion Zone, Pathum Thani Province. It has a 25-year SPP-Firm Cogeneration Power Purchase Agreement with Electricity Generating Authority of Thailand for 90 megawatts. The remaining electricity and steam are sold to industrial customers. The power plant has already been commercially operating since October 31, 2013.

1.10 Share Purchase of Things on Net Company limited

On November 19, 2019, the Company has purchased ordinary shares and capital increase ordinary shares of Things on Net Company Limited at 35 per cent or equivalent to THB 180.02 million in order to participate in the investment of installation and development of telecommunication networks and related business to provide Internet of Things services.

Things on Net Company Limited holds an exclusive license to operate Internet of Things network in Thailand with Sigfox technology, which is LPWAN connection technology with the network covering over 50 countries worldwide. Things on Net Company Limited has the goal to set up base station for Sigfox network to over 70 per cent of the area and 85 per cent of the population of Thailand. It is expected to operate commercially in 2020.

1.11 Operation Status of Hongsa Thermal Power Plant in the Event of an Earthquake in Lao PDR

On November 21, 2019, the event of 5.9 magnitude earthquake occurred in the center of Hongsa District, Xayaboury Province, Lao PDR. As a result, the prevention system of Hongsa Thermal Power Plant was automatically triggered, and the Power Plant has temporarily stopped its power generation. From the investigation of Hongsa Power Company Limited, there were no reported injuries and significant damage. The main structure of the Power Plant was not affected. Currently, all 3 units started electricity generating operation normally.

1.12 Commercial Operation of Xe-Pian Xe-Namnoy Hydroelectric Power Plant in Lao PDR

On December 6, 2019, Xe-Pian Xe-Namnoy Hydroelectric Power Plant in Lao PDR with installed capacity of 410 megawatts, located in Attapeu and Champasak Provinces, Lao PDR, operated by Xe-Pian Xe-Namnoy Power Company Limited (a joint venture which the Company held 25 per cent stake), has commenced commercial operation.

2. Operation performance according to consolidated financial statement

Unit : Million baht

	2019	2018	Increase (Decrease)	%
Revenue from sales and rendering of services (excluding fuel cost)	7,889.98	5,881.33	2,008.65	34.2
Revenue from finance lease contract	2,923.23	3,335.81	(412.58)	(12.4)
Share of profit of associates / joint ventures	3,968.38	4,735.47	(767.09)	(16.2)
Gain on bargain purchase - RATCH Cogeneration Company Limited	269.92	-	269.92	-
Other incomes	617.43	828.12	(210.69)	(25.4)
Total revenues	**15,668.94**	**14,780.73**	**888.21**	**6.0**
Cost of sales and rendering of services (excluding fuel cost)	5,676.90	4,867.28	809.62	16.6
Administrative expenses	1,595.99	1,593.99	2.00	0.1
Finance costs	1,430.22	1,014.89	415.33	40.9
Income tax expense	870.07	870.58	(0.51)	(0.1)
Total expenses	**9,573.18**	**8,346.74**	**1,226.44**	**14.7**
	6,095.76	6,433.99	(338.23)	(5.3)
Non-controlling Interests	-	18.63	(18.63)	(100.0)
Profit before exchange rate - the Company and subsidiaries	6,095.76	6,452.62	(356.86)	(5.5)
Gain (loss) on foreign exchange - the Company and subsidiaries	(132.48)	(865.02)	732.54	84.7
Profit attributable to owner of the Company	**5,963.28**	**5,587.60**	**375.68**	**6.7**
Fuel Cost	27,551.13	30,302.81		

The operating result according to the consolidated financial statement for the year 2019 showed the profit (attributable to owners of the Company) of THB 5,963.28 million or THB 4.11 per share, increasing by THB 375.68 million, or 6.7 per cent, compared with the profit of THB 5,587.60 million or THB 3.85 per share of the year 2018. The operating result according to the consolidated financial statement for the year 2019, without consideration of the effect of foreign exchange gain (loss) of the Company and subsidiaries showed the profit of THB 6,095.76 million, compared with the profit of THB 6,452.62 million of the year 2018, decreasing by THB 356.86 million, or 5.5 per cent. The significant transactions were as follows:

2.1 Revenue from sales and rendering of services (excluding fuel costs)

Revenue from sales and rendering of services for the year 2019 was THB 7,889.98 million (excluding fuel costs of THB 27,551.13 million), increasing by THB 2,008.65 million or 34.2 per cent from revenue from sales and rendering of services in year 2018 of THB 5,881.33 million (excluding fuel costs of THB 30,302.81 million). The main reasons were as follows:

(1) The increase in revenue from sales of RATCH-Australia Corporation Pty Ltd, a subsidiary, in the amount of THB 808.61 million, due to the commencement of commercial operation of Mount Emerald Wind Farm Project and Collinsville Solar Power Project on December 12, 2018 and March 21, 2019, respectively.

(2) The increase in revenue from sales of Ratchaburi Electricity Generating Company Limited, a subsidiary, in the amount of THB 700.96 million due to the increase in Base Availability Credit in 2019 compared to that of 2018, as specified in the Power Purchase Agreement.

(3) Revenue from sales of RATCH Cogeneration Company Limited, a subsidiary, has been consolidated in the amount of THB 495.38 million after the acquisition on October 1, 2019.

2.2 Revenue from finance leases contracts

Revenue from finance lease contracts for the year 2019 was THB 2,923.23 million, decreasing by THB 412.58 million or 12.4 per cent from THB 3,335.81 million in the year 2018. The change was due to the decreased lease receivable, calculated according to the Effective Interest Method.

2.3 Cost of sales and rendering of services (excluding fuel costs)

Cost of sales and rendering of services for year 2019 was THB 5,676.90 million (excluding fuel costs of THB 27,551.13 million), increasing by THB 809.62 million or 16.6 per cent from cost of sales and rendering of services in the year 2018 of THB 4,867.28 million (excluding fuel costs of THB 30,302.81 million). The main reason was the cost of sales and rendering of services of RATCH Cogeneration Company Limited, a subsidiary, has been consolidated in the amount of THB 435.32 million after the acquisition on October 1, 2019. In addition, the cost of sales from RATCH-Australia Corporation Pty Ltd, a subsidiary, increased in the amount of THB 409.87 million, due to the commencement of commercial operation of Mount Emerald Wind Farm Project and Collinsville Solar Power Project on December 12, 2018 and March 21, 2019, respectively.

2.4 Finance costs

Finance costs for the year 2019 were THB 1,430.22 million, increasing by THB 415.33 million or 40.9 per cent from THB 1,014.89 million in the year 2018. The increase in finance cost of THB 400.58 million was from the recognition on remeasurement to fair value of the derivative according to the adopted accounting policies for derivatives and hedge accounting.

2.5 Share of profit of associates and joint ventures

Share of profit of associates and joint ventures for the year 2019 was THB 3,968.38 million, decreasing by THB 767.09 million or 16.2 per cent from THB 4,735.47 million in the year 2018. The main reasons were as follows:

(1) The profit of Hongsa Power Company Limited, a joint venture, in a portion of 40 per cent decreased in the amount of Baht 496.50 million. The main reason was that HPC generated electricity less than that in the same period of the previous year because of the earthquake in Laos on November 21, 2019.

(2) The loss of Xe-Pian Xe-Namnoy Power Company Limited, a joint venture, in a portion of 25 per cent, increased by THB 266.56 million. The main reason was that during the year 2019, the loss on exchange rate was more than that in the previous year, in the amount of THB 161.85 million. Moreover, the increase in loss of THB 98.48 million was from the recognition on remeasurement to fair value of the derivative according to the adopted accounting policies for derivatives and hedge accounting.

(3) The profit of SouthEast Asia Energy Limited, a joint venture in proportion of 33.33 per cent, decreased in the amount of THB 217.96 million, mainly due to the lower electricity generation, compared to the previous year.

(4) The profit of Fareast Renewable Development Pte. Ltd. ("FRD"), a joint venture investing in Asahan-1 Hydroelectric Power Project in the Republic of Indonesia, in proportion of 50 per cent, increased in the amount of THB 142.86 million. RH International (Singapore) Corporation Pte. Ltd., a subsidiary, has purchased ordinary shares of FRD in December 2018.

(5) The profit of Berkprai Cogeneration Company Limited, a joint venture in proportion of 35 per cent, increased in the amount of THB 62.05 million. The main reason was the power plant has commenced commercial operation on June 1, 2019.

2.6 Gain on bargain purchase the shares of RATCH Cogeneration Company Limited

On October 1, 2019, the company acquired 99.97 per cent of the common and preferred shares of Navanakorn Electric Company Limited (The company's name was subsequently changed to "RATCH Cogeneration Company Limited") in the amount of THB 1,866.05 million and provided a

long-term loan in the amount of THB 132.35 million with the fair value of the net assets in the amount of THB 2,268.32 million. As a result, the Company recognized gain on bargain purchase from such transaction in the amount of THB 269.92 million.

2.7 The effect of exchange rate of the Company and its subsidiaries

In the year 2018 and 2019, the Company recorded loss on foreign exchange of THB 865.02 million and THB 132.48 million, respectively. The main reason was from loan to related parties in AUD currency. As AUD currency depreciated in relative to USD currency, the asset value in AUD currency decreased.

3. Analysis of statement of financial position

3.1 Analysis of assets

As at December 31, 2019, the total assets were THB 100,229.43 million, decreasing by THB 1,022.47 million or 1.0 per cent from THB 101,251.90 million as at December 31, 2018. The details were as follows:

(Million Baht)

	Dec 31, 2019	Dec 31, 2018	Increase (Decrease)	%
Current assets	20,479.77	23,160.90	(2,681.13)	(11.6)
Non-current assets	79,749.66	78,091.00	1,658.66	2.1
Total Assets	100,229.43	101,251.90	(1,022.47)	(1.0)

3.1.1 Cash and cash equivalents decreased in the amount of THB 6,778.09 million (the details are described in no.4). However, current investments increased in the amount of THB 2,222.76 million.

3.1.2 Financial lease receivables from related party decreased in the amount of THB 1,262.83 million.

3.1.3 Property, plant and equipment increased in the amount of THB 4,335.29 million. The main reason was the property, plant and equipment of the RATCH Cogeneration Company Limited have been consolidated in the amount of THB 4,580.16 million after the acquisition on October 1, 2019.

3.2 Analysis of liabilities and equity

As at December 31, 2019, the total liabilities and equity were THB 100,229.43 million, decreasing by THB 1,022.47 million or 1.0 per cent from THB 101,251.90 million as at December 31, 2018. The details were as follows:

(Million Baht)

	Dec 31, 2019	Dec 31, 2018	Increase (Decrease)	%
Liabilities	40,815.50	41,315.88	(500.38)	(1.2)
Equity	59,413.93	59,936.02	(522.09)	(0.9)
Total Liabilities and Equity	100,229.43	101,251.90	(1,022.47)	(1.0)

3.2.1 Liabilities decreased in the amount of THB 500.38 million, the main reasons were as follows:

(1) RH International (Singapore) Corporation Pte Ltd "RHIS", a subsidiary, redeemed debenture which was due in May 2019 in the amount of USD 107 million.

(2) Debentures decreased in the total amount of THB 939.66 million due to the depreciation of USD currency in relative to THB currency.

(3) Long-term loans from financial institutions increased in the total amount of THB 2,791.64 million. The main reason was the long-term loans from financial institutions of the RATCH Cogeneration Company Limited have been consolidated in the amount of THB 3,581.83 million after the acquisition on October 1, 2019. However, long-term loans from financial institutions of RATCH-Australia Corporation Pty Ltd, a subsidiary, decreased in the total amount of THB 828.77 million. This was due to the depreciation of AUD and USD currencies in relative to THB currency.

(4) Short-term loan from financial institution increased in the amount of THB 603.08 million. The main reason was RH International (Singapore) Corporation Pte Ltd, a subsidiary, received a short-term loan from financial institution in the amount of USD 20 million.

3.2.2 Equity decreased in the amount of THB 522.09 million. The main reasons were as follows:

(1) The profit of the year 2019 in the amount of THB 5,963.28 million

(2) The dividend payment during the year 2019 decreased retained earnings in the amount of THB 3,480 million.

(3) Other components of equity decreased in the amount of THB 2,822.23 million. The main reasons were currency translation differences decrease equity in the amount of THB 1,246.56 million, change in fair value of the investment in EDL-Generation Public Company decreased equity in the amount of THB 520.44 million, share of other comprehensive income expense of associates and joint ventures decreased equity in the amount of THB 572.28 million, and the cash flow hedge reserve decreased equity in the amount of THB 476.42 million.

4. Analysis of cash flows

Cash and cash equivalents of the Company and its subsidiaries as at December 31, 2019 were THB 4,917.16 million, decreasing by THB 6,778.09 million from THB 11,695.25 million on December 31, 2018. The details were summarized below:

(Million Baht)

Net cash from operating activities	5,589.24
Net cash used in investing activities	(4,749.60)
Net cash used in financing activities	(7,434.14)
Effect of exchange rate changes on cash and cash equivalents	(183.59)
Net cash decrease during the year	(6,778.09)

4.1 Net cash from operating activities increased cash flow in the amount of THB 5,589.24 million. The reason was the operating result of the year 2019 improved cash position by THB 5,336.66 million, adjusting by the change in operating assets and liabilities in the amount of THB 252.58 million.

4.2 Net cash used in investing activities increased cash flow in the amount of THB 4,749.60 million. The main reasons were as follows:

4.2.1 The Company paid cash for current investments in the amount of Baht 2,162.29 million.

4.2.2 The Company purchased shares of Navanakorn Electric Company Limited (The company's name was subsequently changed to "RATCH Cogeneration Company Limited") on October 1, 2019. The Company paid for the shares in the amount of THB 1,866.05 million and provided a long-term loan in the amount of THB 132.35 million.

4.2.3 RATCH-Australia Corporation Pty Ltd, a subsidiary, paid for the construction of Collector Wind Farm Project in the amount of AUD 88.58 million.

4.2.4 RATCH-Australia Corporation Pty Ltd, a subsidiary, has purchased ordinary shares in Yandin WF Holding Pty Ltd and investment units in Yandin WF Holdings Unit Trust, in proportion of investment of 70 per cent in the amount of AUD 53.31 million.

4.2.5 The Company received dividends from associates, joint ventures, and EDL-Generation Public Company in the total amount of THB 3,716.59 million.

4.3 Net cash used in financing activities decreased cash flow in the amount of THB 7,434.14 million. The main reasons were as follows:

4.3.1 RH International (Singapore) Corporation Pte Ltd "RHIS", a subsidiary, redeemed debenture which was due in May 2019 in the amount of USD 107 million.

4.3.2 The Company paid dividend to owners in the amount of THB 3,479.78 million.

4.3.3 The Company paid for interest expenses in the amount of Baht 1,402.06 million.

5. Significant financial ratios (excluded the effect of foreign exchange rate of the Company and subsidiaries)

Ratios	Unit	2019	2018
1) Current Ratio	(Times)	2.70	2.22
2) Profit to Total Revenue (excluded fuel costs)	(%)	38.90	43.53
3) Return on Equity	(%)	10.21	10.79
4) Return on Assets	(%)	8.33	8.53
5) EBITDA*	(Million THB)	9,996	9,600
6) EBITDA to Total Assets	(%)	9.92	9.84
7) Debt to Equity Ratio	(Times)	0.69	0.69
8) Debt Service Coverage Ratio	(Times)	1.90	6.75
9) Book Value per Share	(THB)	40.97	41.34
Note: * *Not included the change in lease receivable*	(Million THB)	1,359.51	3,654.89

REVENUE STRUCTURE

Revenue structure of the Company, subsidiaries, affiliates and joint ventures

The Company's revenue primarily comes from the sale of electricity generated by Ratchaburi Electricity Generating Company Limited, a subsidiary, to EGAT under a 25-year power purchase agreement from an independent power producer (IPP). Ratchaburi Power Plant's and Tri Energy Power Plant's revenue structure includes 3 main parts as follows;

1. Availability Payment (AP)

AP is designed to cover the entire fixed operating costs, such as maintenance expenses and management expenses. Generally, AP depends on the power plant's readiness to generate and distribute electricity as required by EGAT.

2. Energy Payment (EP)

EP is realized after electricity is generated and transmitted to the EGAT's transmission system. EP comprises two major parts:

1) Fuel Payment
2) Variable Operating and Maintenance Payment

3. Finance Lease

Finance lease revenue is based on revenue from availability payment for loans and shareholders' returns. It is booked under effective interest rate method, which is in line with the Thai Financial Reporting Interpretation Committee standard No. 4 (TFRIC 4).

The Company's additional revenue comes from the sales of electricity generated by RATCH Cogeneration Company Limited, a small power producer (SPP) subsidiary, mainly to EGAT under a 25-year purchase agreement. Remaining electricity and steam are distributed to industrial users. RATCH Cogeneration's main revenue is consisted of 3 parts:

1. Capacity Payment (CP) covers all investment, including maintenance expenses and variable expenses for generation and maintenance as well as actual capacity availability as specified in the PPA.

2. Energy Payment (EP) is received when electricity is generated, primarily to cover the fuel cost.

3. Fuel Saving (FS) revenue is received when monthly electricity generation meets the fuel saving clause specified in the PPA.

4. Revenue from electricity and steam sold to industrial users

The Company also recognized revenue from the sale of electricity generated by RATCH Australia Corporation Pty Ltd (RAC), a subsidiary located in Australia whose main income is from a long-term PPA for its thermal power plants, wind power plants and a solar power plant. The basic revenue structure according to the long-term PPA for thermal power plants is as follows:

1. Capacity Payment (CP) covering the total investment including maintenance costs and actual capacity availability in electricity generation and distribution as stated in the PPA.

2. Energy Payment (EP) which is received when electricity is generated, primarily to cover the fuel cost and variable operating and maintenance expenses.

RAC's wind power plants' income is the volume of generated electricity multiplied by the per-unit price.

The Company also recognized profits under the equity method from investments in joint ventures as follows:

Electricity generation business

1. Hongsa Power Company Limited, 40 per cent owned by the Company's subsidiary, RH International (Singapore) Corporation Pte. Limited, has a 25-year power purchase agreement with EGAT. Revenue from electricity sales comprises 3 parts: Availability Payment, Energy Payment, and Finance Lease, which is similar to the basic revenue of Ratchaburi Electricity Generating Company Limited. Hongsa Thermal Power Plant's Unit 1, Unit 2 and Unit 3 have commercially generated power for EGAT since 2 June 2015, 2 November 2015 and 2 March 2016, respectively.

2. Ratchaburi Power Company Limited, 25 per cent owned by Ratchaburi Alliances Company Limited, the Company's subsidiary, generates revenue from the combined-cycle power plant's 2 generators. The sale revenue can be divided into 3 parts, which are Availability Payment, Energy Payment and Finance Lease, similar to the basic revenue of Ratchaburi Electricity Generating Company Limited.

3. Ratchaburi World Cogeneration Company Limited, 40 per cent owned by Ratchaburi Electricity Generating Company Limited, the Company's subsidiary, has a 25-year Firm-Cogeneration PPA with EGAT. The Unit 1 and Unit 2 of Ratchaburi World Power Plant commenced commercial operations and transmitted electricity to EGAT on 1 November 2014 and 1 March 2015, respectively.

4. Nava Nakorn Electricity Generating Company Limited, 40 per cent owned by Ratchaburi Electricity Generating Company Limited, the Company's subsidiary, operates Nava Nakorn SPP Power Plant with a 25-year FirmCogeneration PPA with EGAT. Nava Nakorn SPP Power Plant commenced commercial operations on 3 June 2016.

5. Berkprai Cogeneration Company Limited, 35 per cent owned by Ratchaburi Electricity Generating Company Limited, the Company's subsidiary, operates Berkprai Cogeneration SPP power plant with a 25-year Firm Cogeneration PPA with EGAT. The power plant commercially commenced on 1 June 2019.

6. SouthEast Asia Energy Limited, 33.33 per cent owned by the Company, earned revenue from selling electricity generated by the Nam Ngum 2 Hydroelectric Power Plant in Lao PDR with a 25-year PPA with EGAT, starting from its initial operation date on 26 March 2011.

7. Fareast Renewable Development Pte. Ltd. (FRD), 50 per cent owned by RH International (Singapore) Corporation Pte. Limited, the Company's subsidiary, holds a 53.21 per cent stake in Asahan-1 Hydroelectric Power Plant. The 180 MW power plant is located on the Asahan River, North Sumatra, Republic of Indonesia. It commenced operations on January 2011 through a 30-year PPA with PT PLN (Persero).

8. Xe-Pian Xe-Namnoy Power Company Limited, 25 per cent owned by the Company, operates a Hydroelectric Power Plant in Attapeu province, Lao PDR, under a 27-year PPA with EGAT. The commercial operations started on 6 December 2019.

9. First Korat Wind Company Limited (Huay Bong 3 Wind-Turbine Power Plant) and K. R. Two Company Limited (Huay Bong 2 Wind-Turbine Power Plant), 20 per cent owned by the Company, operate wind farms with Non-Firm PPAs for small power producer (SPP) with EGAT and received adder of Baht 3.50 per unit for 10 years from the Electricity Development Fund. The sale revenue can be divided into 3 parts similar to that of Solarta Company Limited, which are Energy Payment, Adder and average wholesale Ft.

10. Solarta Company Limited, 49 per cent owned by Ratchaburi Energy Company Limited, the Company's subsidiary, operates 8 solar power plants. It has a Non-Firm PPA for very small power producer (VSPP) with Provincial Electricity Authority (PEA) and receives adder of Baht 8 per unit from the Office of Energy Regulatory Commission (OERC)'s Electricity Development Fund for 10 years.

11. Solar Power (Korat 3) Company Limited, Solar Power (Korat 4) Company Limited and Solar Power (Korat 7) Company Limited, 40 per cent

owned by Ratchaburi Energy Company Limited, the Company's subsidiary, generate electricity from solar power with Non-Firm PPAs for VSPP with PEA. They receive adder of Baht 8 per unit from the Electricity Development Fund for 10 years. Its sale revenue can be divided into 3 parts similar to that of Solarta Company Limited: Energy Payment, Adder and average wholesale Ft.

12. Songkhla Biomass Company Limited, 40 per cent owned by Ratchaburi Energy Company Limited, the Company's subsidiary, operates a biomass power plant using rubber bark and roots as the source of fuel. Located in Chana district in Songkhla province, it has a 5-year PPA with PEA, which is automatically renewed every 5 years (for a total of 20 years.) Songkhla Biomass Power Plant commenced commercial operations on 9 November 2015.

Related businesses

1. Chubu Ratchaburi Electric Services Company Limited, 50 per cent owned by the Company, generates revenue from operating and maintenance services under a 14-year contract with Ratchaburi Power Company Limited's Power Plant.

2. Phu Fai Mining Company Limited, 37.5 per cent owned by RH International (Singapore) Corporation Pte. Limited generates revenue from coal mining and coal supplies to Hongsa Power Plant.

Infrastructure business

1. Asia Water Company Limited, 40 per cent owned by RATCH-Lao Service Company Limited, the Company's subsidiary, generates revenue from water supply production and distribution for Nampapa Nakhone Luang, Vientiane, Lao PDR under a 50-year concession. In Phase I, it produces 24,000 cubic meters per day.

Revenue Structure 2017-2019

Types of Revenue	Generated By	Company's stake	Revenue (Million Baht)					
			2019		2018		2017	
			Million Baht	%	Million Baht	%	Million Baht	%
Revenue from sale and rendering of services	Ratchaburi Electricity Generating Company Limited	99.99	31,901.76	73.81	33,951.59	75.30	35,625.78	76.69
	RATCH-Australia Corporation Pty Ltd*	100.00	2,990.26	6.92	2,181.65	4.84	2,323.86	5.00
	RATCH Cogeneration Company Limited	99.97	495.38	1.15	-	-	-	-
	RATCH-Lao Services Company Limited	99.99	53.71	0.12	50.90	0.11	50.88	0.11
Revenue from finance lease contracts	Ratchaburi Electricity Generating Company Limited	99.99	2,923.23	6.76	3,335.81	7.40	3,995.45	8.60
Share of profit (loss) of jointly-controlled and associated entities	Hongsa Power Company Limited	40.00	2,623.52	6.07	3,120.02	6.92	2,073.43	4.46
	Phu Fai Mining Company Limited	37.50	285.77	0.66	198.16	0.44	154.65	0.33
	Ratchaburi World Cogeneration Company Limited	40.00	208.78	0.48	241.41	0.54	243.10	0.52
	Solarta Company Limited	49.00	197.83	0.46	189.64	0.42	196.21	0.42
	SouthEast Asia Energy Limited	33.33	180.60	0.42	398.56	0.88	240.35	0.52
	Fareast Renewable Development Pte. Ltd.	50.00	158.45	0.37	15.59	0.03	-	-
	Ratchaburi Power Company Limited	25.00	82.82	0.19	181.71	0.40	332.21	0.72
	Nava Nakorn Electricity Generating Company Limited	40.00	67.21	0.16	166.26	0.37	128.64	0.28
	Berkprai Cogeneration Company Limited	35.00	62.66	0.14	0.61	-	(31.41)	(0.07)
	Songkhla Biomass Company Limited	40.00	39.09	0.09	34.06	0.08	26.92	0.06
	Perth Power Partnership (Kwinana)	30.00	34.91	0.08	42.69	0.09	57.48	0.12

Types of Revenue	Generated By	Company's stake	Revenue (Million Baht)					
			2019		2018		2017	
			Million Baht	%	Million Baht	%	Million Baht	%
	Solar Power (Korat 3)	40.00	34.61	0.08	29.51	0.07	27.54	0.06
	Solar Power (Korat 7)	40.00	33.49	0.08	30.34	0.07	27.90	0.06
	Solar Power (Korat 4)	40.00	31.56	0.07	28.59	0.06	25.81	0.05
	First Korat Wind Company Limited	20.00	29.44	0.07	(14.39)	(0.03)	108.58	0.23
	K.R. TWO Company Limited	20.00	24.20	0.05	3.05	0.01	80.36	0.17
	Chubu Ratchaburi Electric Services Company Limited	50.00	18.94	0.04	16.85	0.04	28.94	0.06
	Asia Water Company Limited	40.00	0.38	-	-	-	-	-
	Songkhla Biofuel Company Limited	40.00	(0.01)	-	(0.01)	-	(0.02)	-
	Xe-Pian Xe-Namnoy Power Company Limited	25.00	(272.30)	(0.63)	(5.74)	(0.01)	(121.02)	(0.26)
	Under Construction Projects							
	PT Medco Ratch Power Riau	49.00	163.00	0.38	58.56	0.13	(10.46)	(0.02)
	Smart Infranet Company Limited	51.00	(0.10)	-	-	-	-	-
	Things on Net Company Limited	35.00	(2.26)	(0.01)	-	-	-	-
	Yandin WF Holding Pty Ltd	70.00	(34.21)	(0.08)	-	-	-	-
	RICI International Investment Pte. Ltd. (Sold 2017)	60.00	-	-	-	-	3.85	0.01
	Oversea Green Energy Company Limited (Sold 2017)	60.00	-	-	-	-	2.34	0.01
Management service income	RATCH Group Public Company Limited		244.24	0.57	238.88	0.53	244.66	0.53
Interest income	RATCH Group Public Company Limited		89.38	0.21	85.70	0.19	109.39	0.24
	Ratchaburi Electricity Generating Company Limited	99.99	60.78	0.14	25.87	0.06	15.12	0.03
	RATCH-Australia Corporation Pty Ltd *	100.00	29.83	0.07	27.83	0.06	34.27	0.07
	RH International (Singapore) Corporation Pte. Ltd.	100.00	20.32	0.05	70.38	0.16	4.48	0.01
	RH International Corporation Limited	99.99	2.77	0.01	2.38	0.01	2.49	0.01
	RATCH-Lao Services Company Limited	99.99	2.17	0.01	0.97	-	-	-
	Ratchaburi Energy Company Limited	99.99	0.20	-	0.20	-	0.14	-
	Ratchaburi Alliances Company Limited	99.99	0.03	-	0.04	-	0.04	-
	RH International (Mauritius) Corporation Limited	100.00	0.02	-	0.02	-	0.02	-
	RATCH O&M Company Limited	99.99	0.01	-	0.01	-	0.01	-
	Hin Kong Power Holding Company Limited	99.99	0.01	-	-	-	-	-
Dividend income	RATCH-Lao Services Company Limited	99.99	55.59	0.13	104.16	0.23	105.47	0.23
	RH International (Singapore) Corporation Pte. Ltd.	100.00	44.40	0.10	82.62	0.18	83.43	0.18
	RATCH Group Public Company Limited		0.89	-	-	-	-	-

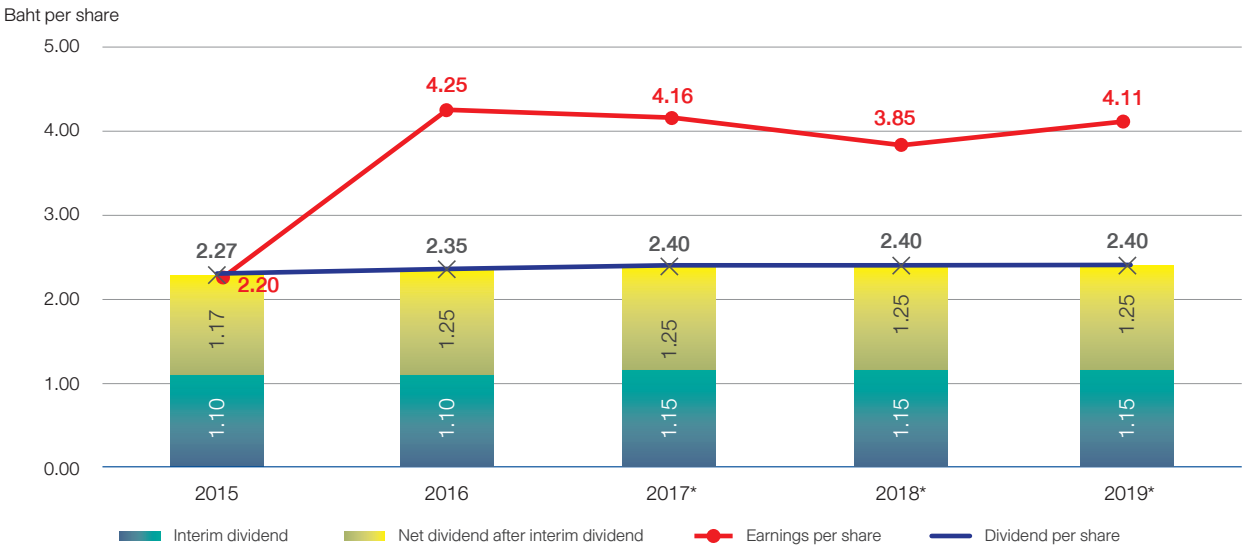
Types of Revenue	Generated By	Company's stake	Revenue (Million Baht)					
			2019		2018		2017	
			Million Baht	%	Million Baht	%	Million Baht	%
Other incomes	Ratchaburi Electricity Generating Company Limited	99.99	45.94	0.11	57.20	0.13	153.39	0.33
	RH International (Singapore) Corporation Pte. Ltd.	100.00	11.07	0.03	-	-	-	-
	RATCH Group Public Company Limited		8.44	0.02	0.91	-	3.04	0.01
	Ratchaburi Energy Company Limited	99.99	0.73	-	0.40	-	0.45	-
	RH International (Mauritius) Corporation Limited	100.00	0.31	-	-	-	-	-
	RATCH Cogeneration Company Limited	99.97	0.30	-	-	-	-	-
	RATCH-Australia Corporation Pty Ltd *	100.00	-	-	130.55	0.29	108.61	0.23
Gain on bargain purchase	RATCH Group Public Company Limited		269.92	0.62	-	-	-	-
Total			43,220.07	100.00	45,083.54	100.00	46,456.57	100.00

Note: * *On May 3, 2018, the Company increased the portion of RATCH-Australia Corporation Pty Ltd from 80 per cent to 100 per cent.*

DIVIDEND **PAYMENT POLICY**

The Company has a policy to pay dividend of at least 40 per cent of net profit according to the consolidated financial statements after legal reserves and other reserves. Nevertheless, dividend payments depend on the Company's cash flow.

THE COMPANY'S 5-YEAR DIVIDEND PAYMENTS



5-YEAR DIVIDEND PAYMENTS INFORMATION

	Unit	2015	2016	2017*	2018*	2019*
Earnings per share	Baht	2.20	4.25	4.16	3.85	4.11
Dividend per share	Baht	2.27	2.35	2.40	2.40	2.40**
Interim dividend	Baht	1.10	1.10	1.15	1.15	1.15
Net interim dividend after interim dividend	Baht	1.17	1.25	1.25	1.25	1.25
Dividend payout ratio	%	103.25	55.27	57.63	62.28	58.36

Notes * *Information in year 2017-2019 was prepared according to the accounting policy on derivative financial instruments and hedge accounting.*

** *Being an agenda item to be considered at the 2020 Shareholders Annual General Meeting to be held on 9 April 2020. The Company paid the interim dividend for the first 6-month performance of 2019 (January-June 2019) to shareholders at Baht 1.15 per share on 20 September 2019.*

AUDIT FEE AND **OTHER EXPENSES IN 2019**

The audit fee of RATCH and subsidiaries - Ratchaburi Electricity Generating Company Limited, Ratchaburi Energy Company Limited, Ratchaburi Alliance Company Limited, RH International Corporation Pte. Ltd., RATCH-Lao Services Company Limited, RATCH O&M Company Limited, RE Solar 1 Company Limited, CN Biomass Company Limited, PB Biomass Company Limited, LP Biomass Company Limited, Hin Kong Power Holding Company Limited, Hin Kong Power Company Limited, and RATCH Cogeneration Company Limited - in the previous accounting year was valued at Baht 3,270,000 (excluding out-of-pocket cost of Baht 115,000). Out of total, the audit fee for the Company was Baht 1,200,000 (excluding out-of-pocket cost of Baht 45,000) while the audit fee for subsidiaries, shouldered by the subsidiaries, totaled Baht 2,070,000 (excluding out-of-pocket cost of Baht 70,000).

Aside, RATCH awarded a consulting contract to a business unit related to the auditing company to which the auditor works for, for a special project. The fee worth Baht 5,060,430 was booked in the year. The contract that involved the auditor's employer for a service other than auditing incurred no conflict of interest. The auditor did not audit the contract, hence maintaining independence and neutrality in performing the auditing task.

RELATED PARTY **TRANSACTIONS**

RATCH Group Public Company Limited
Related Party Transactions
For the year ended 31 December 2019

The Company and its subsidiaries have related party transactions. The relations are either by being shareholders of one another or having mutual shareholders or directors as disclosed in the 2019 financial statements under notes to financial statements section. Important related party transactions are summarized as follows:

1. RATCH Group Public Company Limited

Related party transactions	Related company	Amount (million baht)			Necessities and reasons
		2019	2018	2017	
1.1 Revenue from service and management fee					
1.1.1 Providing management service by secondment of two officers in its subsidiary as Managing Director and Deputy Managing Director and providing services in internal audit, legal, secretariat to the Board of Directors, accounting, budgeting, financial, tax, information technology, human resource management, corporate relations and corporate reputation	Ratchaburi Electricity Generating Company Limited	105.82	102.17	116.97	Ratchaburi Electricity Generating Company Limited does not have employee with these skills. Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.2 Providing legal and secretariat to the Board of Directors, accounting, budgeting, financial and tax services	Ratchaburi Energy Company Limited	0.18	0.21	0.35	Ratchaburi Energy Company Limited does not have employee with these skills while the Company does. Service fee is charged on quarterly basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.3 Providing internal audit, legal, tax, secretariat to the Board of Directors, information and technology work, financial and human resource management	RATCH-Lao Services Company Limited	4.02	4.02	4.02	RATCH-Lao Services Company Limited requested the Company to provide the services and the Company has experts in these areas. Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.4 Providing legal, secretariat to the Board of Directors, accounting, budgeting, financial management and tax services	Ratchaburi Alliances Company Limited	0.15	0.15	0.12	Ratchaburi Alliances Company Limited requested the Company to provide the services and the Company has experts in these areas. Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement plus other actual expenses.

Related party transactions	Related company	Amount (million baht)			Necessities and reasons
		2019	2018	2017	
1.1.5 Providing legal, secretariat to the Board of Directors, accounting, budgeting, financial management and tax services	RH International Corporation Ltd.	0.95	0.92	0.90	RH International Corporation Ltd. requested the Company to provide the services and the Company has experts in these areas. Service fee is charged on annual basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.6 Providing legal, human resource, accounting, financial and tax services. Service fee in 2019: - Management fee = THB 20.96 million - Service fee from advance expense payment = THB 66.41 million	RH International (Singapore) Corporation Pte. Ltd.	87.38	28.63	34.26	RH International (Singapore) Corporation Pte. Ltd. requested the Company to provide the services and the Company has experts in these areas. Service fee is charged on annual basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.7 Securing loan and loan guarantee service	RH International (Singapore) Corporation Pte. Ltd.	15.73	3.25	3.55	RH International (Singapore) Corporation Pte. Ltd. requested the Company to provide the services and the Company has experts in securing loan.
1.1.8 The Company provided bond issuance service of the USD 300 million bonds. Service fee is based on its success (Success fee).	RH International (Singapore) Corporation Pte. Ltd.	-	11.13	-	RH International (Singapore) Corporation Pte. Ltd. requested the Company to provide the service and the Company has experts in finding loan. Service fee is based on its success (Success fee) plus other actual expenses.
1.1.9 The Company provided service in buying 20 per cent of shares of RATCH-Australia Corporation Pty Ltd from its previous shareholder. Service fee is charged based on its success (Success fee).	RH International (Singapore) Corporation Pte. Ltd.	-	3.36	-	RH International (Singapore) Corporation Pte. Ltd. requested the Company to provide the service and the Company has experts in the area.
1.1.10 Agreement of sales of ordinary shares in RICI International Investment Company Limited	RH International (Singapore) Corporation Pte. Ltd.	-	-	6.45	RH International (Singapore) Corporation Pte. Ltd. requested the Company to provide the services and the Company has experts in these areas. Service fee is charged at 2 per cent of the selling price

Related party transactions	Related company	Amount (million baht)			Necessities and reasons
		2019	2018	2017	
1.1.11 Providing budgeting, accounting and financial services	RE Solar 1 Company Limited	0.06	0.06	-	RE Solar 1 Company Limited does not have employee with these skills while the Company does. Service fee is charged on annual basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.12 Providing budgeting, accounting and financial services	CN Biomass Company Limited	0.06	0.06	-	CN Biomass Company Limited does not have employee with these skills while the Company does. Service fee is charged on annual basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.13 Providing budgeting, accounting and financial services	LP Biomass Company Limited	0.06	0.06	-	LP Biomass Company Limited does not have employee with these skills while the Company does. Service fee is charged on annual basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.14 Providing budgeting, accounting and financial services	PB Biomass Company Limited	0.06	0.06	-	PB Biomass Company Limited does not have employee with these skills while the Company does. Service fee is charged on annual basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.15 Providing budgeting, accounting and financial services	RATCH O&M Company Limited	0.06	0.06	-	RATCH O&M Company Limited does not have employee with these skills while the Company does. Service fee is charged on annual basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.16 Providing budgeting, accounting and financial services	RATCH China Power Limited	0.11	0.12	-	RATCH China Power Limited does not have employee with these skills while the Company does. Service fee is charged on annual basis at the rate as stated in the Management Service Agreement plus other actual expenses.

Related party transactions	Related company	Amount (million baht)			Necessities and reasons
		2019	2018	2017	
1.1.17 Providing budgeting, accounting and financial services	RH International (Mauritius) Corporation Limited	0.11	0.12	-	RH International (Mauritius) Corporation Limited does not have employee with these skills while the Company does. Service fee is charged on annual basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.18 Providing management service by secondment of an officer to take position as a Financial Executive of Ratchaburi Power Company Limited	Ratchaburi Power Company Limited	4.82	4.83	4.82	Ratchaburi Power Company Limited requested the Company to provide the service and the Company has an expert in this area. Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.19 Management Agreement with Ratchaburi Power Company Limited	Ratchaburi Power Company Limited	78.08	80.63	85.27	The Company provides public relations and technical consult on power plant construction, operations and maintenance. Service fee is received from the date the Power Plant Unit 1 commenced commercial operations (1 Mar 2008). Agreement term is 25 years and 3 months. Service fee is charged on quarterly basis.
1.1.20 Providing management service by secondment of two officers to take position as a Managing Director and an Administration and Finance Manager of Chubu Ratchaburi Electric Services Company Limited	Chubu Ratchaburi Electric Services Company Limited	10.42	10.32	10.23	Chubu Ratchaburi Electric Services Company Limited requested the Company to provide the service and Company has experts in these areas. Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.21 Providing management service by secondment of an officer to take position as a Finance Manager of SouthEast Asia Energy Limited	SouthEast Asia Energy Limited	-	-	3.03	SouthEast Asia Energy Limited requested the Company to provide the service and the Company has an expert in this area. Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement.
1.1.22 Service Agreement with Nam Ngum 2 Hydropower Company Limited	Nam Ngum 2 Power Company Limited	25.00	25.00	25.00	Nam Ngum 2 Power Company Limited has a service agreement with the Company. Service fee is charged on quarterly basis at the rate as stated in the Management Service Agreement.

Related party transactions	Related company	Amount (million baht)			Necessities and reasons
		2019	2018	2017	
1.1.23 Providing management service by secondment of two officers to take position as Deputy Managing Directors of Hongsa Power Company Limited	Hongsa Power Company Limited	-	16.84	17.53	Hongsa Power Company Limited requested the Company to provide the service and the Company has experts in these areas. Service fee is charged on quarterly basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.24 Providing management service by secondment of four officers to take position as a Managing Director, a Deputy Managing Director and Managers of Nava Nakorn Electricity Company Limited	Nava Nakorn Electricity Generating Company Limited	12.27	11.16	8.46	Nava Nakorn Electricity Generating Company Limited requested the Company to provide the service and the Company has experts in these areas. Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.25 Providing management service by secondment of two officers to take position as a Managing Director and a Deputy Managing Director of Solarta Company Limited	Solarta Company Limited	9.85	9.38	8.93	Solarta Company Limited requested the Company to provide the service and the Company has experts in this area. Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.26 Office space and other services in the premise	Solarta Company Limited	0.86	0.76	0.76	The Company leased out office space covering 72 square meters and other services including computer and network system and telephone system. The contract period is 36 months (from 1 Jan 2019 - 31 Dec 2021).
1.1.27 Providing management service by secondment of an officer to take position as a Chief Financial Officer of Xe-Pian Xe-Namnoy Power Company Limited	Xe-Pian Xe-Namnoy Power Company Limited	6.76	6.64	6.78	Xe-Pian Xe-Namnoy Power Company Limited requested the Company to provide the service and the Company has an expert in this area. Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.28 Providing construction control and supervision service for the Xe-Pian Xe-Namnoy Hydroelectric Power Plant in Lao PDR	Xe-Pian Xe-Namnoy Power Company Limited	77.84	62.47	66.18	The Company signed Construction Supervision Contractor Services Agreement with Xe-Pian Xe-Namnoy Power Company Limited Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement plus other actual expenses.

Related party transactions	Related company	Amount (million baht)			Necessities and reasons
		2019	2018	2017	
1.1.29 Providing management service by secondment of two officers to take position as a Managing Director and a Deputy Managing Director of Oversea Green Energy Company Limited and providing legal, information and technology, accounting, financial and tax services	Oversea Green Energy Company Limited	-	-	1.68	Oversea Green Energy Company Limited requested the Company to provide the service and the Company has experts with the required skills. Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.30 Office space and other services in the premise	Oversea Green Energy Company Limited	-	-	0.71	The Company leased out office space covering 65 square meters and other services including computer and network system and telephone system.
1.1.31 Providing management service by secondment of an officer to take position as a Managing Director of Songkhla Biomass Company Limited	Songkhla Biomass Company Limited	1.12	2.58	2.42	Songkhla Biomass Company Limited requested the Company to provide the service and the Company has an expert with the required skills. Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement plus other actual expenses. The contract period is 36 months (from 1 May 2016 - 30 Apr 2019).
1.1.32 Providing management service by secondment of three officers to take position as a Managing Director, a Vice President, and a Manager	Berkprai Cogeneration Company Limited	6.12	5.77	-	Berkprai Cogeneration Company Limited requested the Company to provide the service and the Company has experts with the required skills. Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.33 Providing management service for Huay Bong 3 Wind-Turbine Power Plant	First Korat Wind Company Limited	1.12	1.09	1.07	First Korat Wind Company Limited requested the Company to provide the service and the Company has experts with the required skills. Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.34 Providing management service for Huay Bong 2 Wind-Turbine Power Plant	K. R. Two Company Limited	1.12	1.09	1.07	K. R. Two Company Limited requested the Company to provide the service and the Company has experts with the required skills. Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement plus other actual expenses.

Related party transactions	Related company	Amount (million baht)			Necessities and reasons
		2019	2018	2017	
1.1.35 Providing legal, secretariat service to the Board of Directors, accounting, budgeting, financial management and tax services	Hin Kong Power Holding Company Limited	0.10	-	-	Hin Kong Power Holding Company Limited requested the Company to provide the services and the Company has experts with the required skills. Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.36 Providing legal, secretariat to the Board of Directors, accounting, budgeting, financial, tax services and human resource management services Service fees in 2019: - Management fee = THB 1.08 million - Service fee from advance expense payment = THB 10.72 million	Hin Kong Power Company Limited	11.80	-	-	Hin Kong Power Company Limited does not have an employee with these skills while the Company has experts in these areas. Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.37 Providing management service by secondment of two officers to take position as a Project Quality Assurance Manager and a Contract Management Manager	PT Medco Ratch Power Riau	8.48	-	-	The Company has experienced employees in these areas. Service fee is charged on quarterly basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.1.38 Providing management service by secondment of employees to take position as Executives and officers of RATCH Cogeneration Company Limited	RATCH Cogeneration Company Limited	1.88	-	-	RATCH Cogeneration Company Limited does not have an employee with these skills while the Company has experts in these areas. Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement plus other actual expenses.
1.2 Interest income from loans to subsdiaries/joint ventures					
1.2.1 Loan given to RATCH-Lao Services Company Limited under a loan agreement presents outstanding balance as at 31 Dec 2019 in the amount of USD 32.60 million.	RATCH-Lao Services Company Limited	35.80	39.50	40.49	To purchase shares of EDL-Generation Public Company (EDL Gen) in the Lao Securities Exchange. The interest rate is 3.65 per cent per annum
1.2.2 Loan given to Ratchaburi Electricity Generating Company Limited in promissory notes	Ratchaburi Electricity Generating Company Limited	-	29.53	106.62	The Company provided working capital loans to Ratchaburi Electricity Generating Company Limited with interest bearing of 2.10 - 4.50 per cent per annum.

Related party transactions	Related company	Amount (million baht)			Necessities and reasons
		2019	2018	2017	
1.2.3 Loan given to Ratchaburi Energy Company Limited in promissory notes presents outstanding balance as at 31 Dec 2019. The details are as follows: million baht 1 Jan 19 Previous loan 175 Repayment (161) 31 Dec 19 Loan balance 14	Ratchaburi Energy Company Limited	4.03	7.54	10.89	To purchase shares in Solarta Company Limited, Solar Power (Korat 3, 4, 7), Songkhla Biomass and Songkhla Biofuel at interest rate of 4.00 - 4.50 per cent per annum
1.2.4 Loan given to Xe-Pian Xe-Namnoy Power Company Limited under Shareholders' Loan Agreement presents outstanding balance as at 31 Dec 2019 in the amount of USD 1.32 million.	Xe-Pian Xe-Namnoy Power Company Limited	1.84	2.60	1.74	To support Lao Holding State Enterprise as guarantee for LHSE's equity. A total of USD 4 million shareholders' loan was arranged with repayment of both capital and interest within 27 years with the interest rate of 3-month LIBOR plus fixed margin per annum.
1.2.5 Loan given to RATCH-Lao Services Company Limited under a loan agreement presents outstanding balance as at 31 Dec 2019 in the amount of THB 160.20 million.	RATCH-Lao Services Company Limited	2.47	-	-	To repay a loan and finance investments at interest rate of 4.50 per cent per annum
1.2.6 Loan given to Xe-Pian Xe-Namnoy Power Company Limited under Shareholders' Loan Agreement presents outstanding balance as at 31 Dec 2019 in the amount of USD 16.78 million.	Xe-Pian Xe-Namnoy Power Company Limited	6.58	-	-	To finance the project through shareholders' loans worth totally USD 51 million. The loans, with interest rate of 3-month LIBOR plus fixed margin per annum, will be repaid when there is excess cash.
1.2.7 Loan given to Hin Kong Power Company Limited under a loan agreement presents outstanding balance as at 31 Dec 2019 in the amount of THB 20 million.	Hin Kong Power Company Limited	0.31	-	-	The Company provided working capital loans to Hin Kong Power Company Limited with interest bearing of 4.50 per cent per annum.
1.2.8 Loan given to RATCH Cogeneration Company Limited under a loan agreement presents outstanding balance as at 31 Dec 2019 in the amount of THB 132.25 million.	RATCH Cogeneration Company Limited	1.51	-	-	The Company provided a loan at interest rate of 4.50 per cent per annum to RATCH Cogeneration Company Limited for repayment of short-term loans.
1.2.9 Loan given to RATCH Cogeneration Company Limited in promissory notes presents outstanding balance as at 31 Dec 2019 in the amount of THB 100 million.	RATCH Cogeneration Company Limited	0.01	-	-	The Company provided working capital loans to RATCH Cogeneration Company Limited with interest bearing of 1.75 per cent per annum.

2. Ratchaburi Electricity Generating Company Limited

Related party transactions	Related company	Amount (million baht)			Necessities and reasons
		2019	2018	2017	
2.1 Income from Power Purchase Agreement					
2.1.1 Power Purchase Agreement: Ratchaburi Power Plant Details in 2019 - Power sales income: THB 30,358.77 million - Finance lease income: THB 2,702.35 million	EGAT	33,061.12	32,703.51	31,330.21	Ratchaburi Power Plant has 25-year Power Purchase Agreement with EGAT (signed on 9 Oct 2000) which is obligated to supply electricity to EGAT and received income from EGAT under the conditions stated in the Power Purchase Agreement. This is considered as a normal business practice.
2.1.2 Power Purchase Agreement: Tri Energy Power Plant Details in 2019 - Power sales income: THB 1,542.99 million - Finance lease income: THB 220.88 million	EGAT	1,763.87	4,583.90	8,291.02	Tri Energy Power Plant, under the 20-year Power Purchase Agreement with EGAT (signed on 22 May 1997) which is obligated to supply electricity to EGAT and received income from EGAT. This is considered as a normal business practice.
2.2 Expenses on backup electricity agreement and water supply system	EGAT	160.02	171.84	204.40	Ratchaburi Electricity Generating Company Limited buys electricity from EGAT for its power plant operations and the water supply system. Electricity charge rate is the same as other EGAT customers.
2.3 Expenses on Operation and Maintenance Agreement Ratchaburi Electricity Generating Company Limited hires EGAT to provide power plant operation and major and general maintenance services to Ratchaburi Power Plant. Details in 2019 - Monthly fee: THB 1,082.52 million - Other expenses: THB 166.61 million	EGAT.	1,249.13	1,184.01	1,239.80	EGAT has experience and expertise in power plant operations and maintenance. Service fee is charged with annual incremental adjustment according to Thailand's consumer price index, which is considered as a normal business practice.
2.4 Expenses on EGAT's maintenance agreement					
2.4.1 Ratchaburi Electricity Generating Company Limited hires EGAT to provide maintenance service for the waste water quality monitoring system at Ratchaburi Power Plant.	EGAT	1.31	1.26	1.26	Ratchaburi Electricity Generating Company Limited does not have experts in this area while EGAT has highly experienced specialists. The fee is considered as a normal business practice.
2.4.2 Ratchaburi Electricity Generating Company Limited hires EGAT to coordinate the procurement and transport of fuel (bunker oil).	EGAT.	2.16	2.14	2.13	EGAT is a major client of PTT; therefore, it has strong bargaining power for price and volume as well as speed of delivery. Service charge is based on a normal business rate.

Related party transactions	Related company	Amount (million baht)			Necessities and reasons
		2019	2018	2017	
2.5 Management service income					
2.5.1 Ratchaburi Electricity Generating Company Limited has agreed with Ratchaburi Power Company Limited to use an area of 143 rais for construction of a power plant and another area of 2 rais for natural gas receiving station.	Ratchaburi Power Company Limited	12.07	12.07	12.07	Ratchaburi Power Company Limited has comprehensive facilities and utilities that support power generating business. Ratchaburi Electricity Generating Company Limited charges service fee with incremental adjustment every 5 years in accordance with Thailand's consumer price index, which is considered as a normal business practice.
2.5.2 Ratchaburi Electricity Generating Company Limited provides service to Ratchaburi Power Company Limited for using of power plant facilities. Details in 2019 - Environmental service fee: THB 3.42 million - Diesel tank rental fee: THB 2.18 million - Utility service fee THB 24.34 million	Ratchaburi Power Company Limited	29.94	34.25	38.71	Ratchaburi Electricity Generating Company Limited has comprehensive utilities and facilities to support power generating business comprising: - Environmental service - Diesel oil tank rental service which will be increased every 5 years according to Thailand's consumer price index, which is considered as a normal business practice - Utility service charge based on the previously agreed contract, which is considered as a normal business practice
2.5.3 Providing management service by secondment of employees to take position as Executives and officers of RATCH Cogeneration Company Limited	RATCH Cogeneration Company Limited	0.84	-	-	RATCH Cogeneration Company Limited does not have an employee with these skills while Ratchaburi Electricity Generating Company Limited has experts in these areas. Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement plus other actual expenses.

3. RATCH Cogeneration Company Limited

Related party transactions	Related company	Amount (million baht)			Necessities and reasons
		2019	2018	2017	
3.1 Income from Power Purchase Agreement: RATCH Cogeneration Power Plant	EGAT	448.71	-	-	RATCH Cogeneration Power Plant has 25-year Power Purchase Agreement with EGAT (signed on 3 Dec 1999) which is obligated to supply electricity to EGAT and received income from EGAT under the conditions stated in the Power Purchase Agreement. This is considered as a normal business practice.

4. RH International (Singapore) Corporation Pte. Limited

Related party transactions	Related company	Amount (million baht)			Necessities and reasons
		2019	2018	2017	
4.1 RH International (Singapore) Corporation Pte. Limited provided a loan to RATCH-Autralia Corporation Pty Ltd. The outstanding balance as at 31 Dec 2019 was AUD 232.50 million.	RATCH-Australia Corporation Pty Limited	279.32	353.54	370.80	To repay a loan and restructure RAC's borrowing structure. The loan is charged at the BBSY+ margin.

5. RATCH-Lao Services Company Limited

Related party transactions	Related company	Amount (million baht)			Necessities and reasons
		2019	2018	2017	
5.1 Income from operation and maintenance service for Hongsa Thermal Power Plant in Lao PDR	EGAT	53.19	50.90	50.88	EGAT considered that RATCH-Lao Services Company Limited is a Lao legal entity which has high flexibility in coordinating in Lao PDR. Therefore, EGAT hires RATCH-Lao Services Company Limited to provide O&M services for Hongsa Thermal Power Plant.
5.2 Income from legal, secretariat to the Board of Directors, accounting, budgeting, financial, tax, information technology and human resource management services	Asia Water Company Limited	0.25	-	-	Asia Water Company Limited requested RATCH-Lao Services Company Limited to provide the service and the Company has experts with the required skills. Service fee is charged on monthly basis at the rate as stated in the Management Service Agreement plus other actual expenses.
5.3 Income from operation and maintenance service for Sandin Water Supply Project in Lao PDR	Asia Water Company Limited	0.52	-	-	Asia Water Company Limited requested RATCH-Lao Services Company Limited to provide the service and the Company has experts with the required skills. Service fee is charged on monthly basis at the rate as stated in the Operation and Maintenance Agreement plus other actual expenses.

Relationship between related parties is as follows:

1. RATCH Group Public Company Limited

1.1 The Company and Ratchaburi Electricity Generating Company Limited are related as follows:
- The Company holds a 99.99 per cent stake in Ratchaburi Electricity Generating Company Limited.
- Some of the Company's executives are directors of Ratchaburi Electricity Generating Company Limited.

1.2 The Company and Ratchaburi Energy Company Limited are related as follows:
- The Company holds a 99.99 per cent stake in Ratchaburi Energy Company Limited.
- Some of the Company's executives are directors of Ratchaburi Energy Company Limited.

1.3 The Company and RATCH-Lao Services Company Limited are related as follows:
- The Company holds a 99.99 per cent stake in RATCH-Lao Services Company Limited.
- Some of the Company's executives are directors of RATCH-Lao Services Company Limited.

1.4 The Company and Ratchaburi Alliances Company Limited are related as follows:
- The Company holds a 99.99 per cent stake in Ratchaburi Alliances Company Limited.
- Some of the Company's executives are directors of Ratchaburi Alliances Company Limited.

1.5 The Company and RH International Corporation Limited are related as follows:
- The Company holds a 99.99 per cent stake in RH International Corporation Limited.
- Some of the Company's executives are directors of RH International Corporation Limited.

1.6 The Company and RH International (Singapore) Corporation Pte. Limited are related as follows:
- The Company holds a 99.99 per cent stake in RH International Corporation Limited.
- RH International Corporation Limited, the Company's subsidiary, holds a 100.00 per cent stake in RH International (Mauritius) Corporation Limited.
- RH International (Mauritius) Corporation Limited holds a 100.00 per cent stake in RH International (Singapore) Corporation Pte. Limited.
- Some of the Company's executives are directors of RH International (Singapore) Corporation Pte. Limited.

1.7 The Company and RE Solar 1 Company Limited are related as follows:
- Ratchaburi Energy Company Limited, the Company's subsidiary, holds a 99.99 per cent stake in RE Solar 1 Company Limited.
- Some of the Company's executives are directors of RE Solar 1 Company Limited.

1.8 The Company and CN Biomass Company Limited are related as follows:
- Ratchaburi Energy Company Limited, the Company's subsidiary, holds a 99.99 per cent stake in CN Biomass Company Limited.
- Some of the Company's executives are directors of CN Biomass Company Limited.

1.9 The Company and PB Biomass Company Limited are related as follows:
- Ratchaburi Energy Company Limited, the Company's subsidiary, holds a 99.99 per cent stake in PB Biomass Company Limited.
- Some of the Company's executives are directors of PB Biomass Company Limited.

1.10 The Company and LP Biomass Company Limited are related as follows:
- Ratchaburi Energy Company Limited, the Company's subsidiary, holds a 99.99 per cent stake in LP Biomass Company Limited.
- Some of the Company's executives are directors of LP Biomass Company Limited.

1.11 The Company and RATCH O&M Company Limited are related as follows:
- The Company holds a 99.99 per cent stake RATCH O&M Company Limited.
- Some of the Company's executives are directors of RATCH O&M Company Limited.

1.12 The Company and RATCH China Power Limited are related as follows:
- The Company holds a 99.99 per cent stake in RH International Corporation Limited.
- RH International Corporation Limited, the Company's subsidiary, holds a 100.00 per cent stake in RH International (Mauritius) Corporation Limited.
- RH International (Mauritius) Corporation Limited holds a 100.00 per cent stake in RH International (Singapore) Corporation Pte. Limited.
- RH International (Singapore) Corporation Pte. Limited holds a 100.00 per cent stake in RATCH China Power Limited.
- Some of the Company's executives are directors of RATCH China Power Limited.

1.13 The Company and RH International (Mauritius) Corporation Limited are related as follows:
- The Company holds a 99.99 per cent stake in RH International Corporation Limited.
- RH International Corporation Limited, the Company's subsidiary, holds a 100.00 per cent stake in RH International (Mauritius) Corporation Limited.
- Some of the Company's executives are directors of RH International (Mauritius) Corporation Limited.

1.14 The Company and Ratchaburi Power Company Limited are related as follows:
- Ratchaburi Alliances Company Limited, the Company's subsidiary, holds a 25.00 per cent stake in Ratchaburi Power Company Limited.
- Some of the Company's executives are directors of Ratchaburi Power Company Limited.

1.15 The Company and Chubu Ratchaburi Electric Services Company Limited are related as follows:
- The Company holds a 50.00 per cent stake in Chubu Ratchaburi Electric Services Company Limited.
- Some of the Company's executives are directors of Chubu Ratchaburi Electric Services Company Limited.

1.16 The Company and Nam Ngum 2 Power Company Limited are related as follows:
- SouthEast Asia Energy Limited, the Company's joint venture, holds a 75.00 per cent stake in Nam Ngum 2 Power Company Limited.
- Some of the Company's executives are directors in Nam Ngum 2 Power Company Limited.

1.17 The Company and Hongsa Power Company Limited are related as follows:
- RH International (Singapore) Corporation Pte. Limited, the Company's indirect subsidiary, holds a 40.00 per cent stake in Hongsa Power Company Limited.
- Some of the Company's executives are directors of Hongsa Power Company Limited.

1.18 The Company and Nava Nakorn Electricity Generating Company Limited are related as follows:
- Ratchaburi Electricity Generating Company Limited, the Company's subsidiary, holds a 40.00 per cent stake in Nava Nakorn Electricity Generating Company Limited.
- Some of the Company's executives are directors of Nava Nakorn Electricity Generating Company Limited.

1.19 The Company and Solarta Company Limited are related as follows:
- Ratchaburi Energy Company Limited, the Company's subsidiary, holds a 49.00 per cent stake in Solarta Company Limited.
- Some of the Company's executives are directors of Solarta Company Limited.

1.20 The Company and Xe-Pian Xe-Namnoy Power Company Limited are related as follows:
- The Company holds a 25.00 per cent stake in Xe-Pian Xe-Namnoy Power Company Limited.
- Some of the Company's executives are directors of Xe-Pian Xe-Namnoy Power Company Limited.

1.21 The Company and Songkhla Biomass Company Limited are related as follows:
- Ratchaburi Energy Company Limited, the Company's subsidiary, holds a 40.00 per cent stake in Songkhla Biomass Company Limited.
- Some of the Company's executives are directors of Songkhla Biomass Company Limited.

1.22 The Company and Berkprai Cogeneration Company Limited are related as follows:
- Ratchaburi Electricity Generating Company Limited, the Company's subsidiary, holds a 35.00 per cent stake in Berkprai Cogeneration Company Limited.
- Some of the Company's executives are directors of Berkprai Cogeneration Company Limited.

1.23 The Company and First Korat Wind Company Limited are related as follows:
- The Company holds a 20.00 per cent stake in First Korat Wind Company Limited.
- Some of the Company's executives are directors of First Korat Wind Company Limited.

1.24 The Company and K. R. Two Company Limited are related as follows:
- The Company holds a 20.00 per cent stake in K. R. Two Company Limited.
- Some of the Company's executives are directors of K. R. Two Company Limited.

1.25 The Company and Hin Kong Power Holding Company Limited are related as follows:
- The Company holds a 99.99 per cent stake in Hin Kong Power Holding Company Limited.
- Some of the Company's executives are directors of Hin Kong Power Holding Company Limited.

1.26 The Company and Hin Kong Power Company Limited are related as follows:
- Hin Kong Power Holding Company Limited, the Company's subsidiary, holds a 99.99 per cent stake in Hin Kong Power Company Limited.
- Some of the Company's executives are directors of Hin Kong Power Company Limited.

1.27 The Company and PT Medco Ratch Power Riau are related as follows:
- The Company holds a 99.99 per cent stake in RH International Corporation Limited.
- RH International Corporation Limited, the Company's subsidiary, holds a 100.00 per cent stake in RH International (Mauritius) Corporation Limited.
- RH International (Mauritius) Corporation Limited holds a 100.00 per cent stake in RH International (Singapore) Corporation Pte. Limited.
- RH International (Singapore) Corporation Pte. Limited holds a 49.00 per cent stake in PT Medco Ratch Power Riau.
- Some of the Company's executives are directors of PT Medco Ratch Power Riau.

1.28 The Company and Oversea Green Energy Company Limited are related as follows:
- Ratchaburi Energy Company Limited, the Company's subsidiary, holds a 60.00 per cent stake in Oversea Green Energy Company Limited.
- Some of the Company's executives are directors of Oversea Green Energy Company Limited.

1.29 The Company and RATCH Cogeneration Company Limited are related as follows:
- The Company holds a 99.97 per cent stake in RATCH Cogeneration Company Limited.
- Some of the Company's executives are directors of RATCH Cogeneration Company Limited.

2. Ratchaburi Electricity Generating Company Limited

2.1 Ratchaburi Electricity Generating Company Limited and EGAT are related as follows:
- EGAT holds a 45.00 per cent stake in the Company.
- The Company holds a 99.99 per cent stake in Ratchaburi Electricity Generating Company Limited.
- Some of EGAT executives are directors in Ratchaburi Electricity Generating Company Limited.

2.2 Ratchaburi Electricity Generating Company Limited and Ratchaburi Power Company Limited are related as follows:
- The Company holds a 99.99 per cent stake in Ratchaburi Electricity Generating Company Limited.
- Ratchaburi Alliances Company Limited, the Company's subsidiary, holds a 25.00 per cent stake in Ratchaburi Power Company Limited.
- Some of the Company's directors and executives are directors of Ratchaburi Power Company Limited.

2.3 Ratchaburi Electricity Generating Company Limited and RATCH Cogeneration Company Limited are related as follows:

- The Company holds a 99.99 per cent stake in Ratchaburi Electricity Generating Company Limited.
- The Company holds a 99.97 per cent stake in RATCH Cogeneration Company Limited.
- Some of the Company's executives are directors of Ratchaburi Electricity Generating Company Limited.
- Some of the Company's executives are directors of RATCH Cogeneration Company Limited.

3. RATCH Cogeneration Company Limited

3.1 RATCH Cogeneration Company Limited and EGAT are related as follows:

- EGAT holds a 45.00 per cent stake in the Company.
- The Company holds a 99.97 per cent stake in RATCH Cogeneration Company Limited.
- Some of the Company's executives are directors of RATCH Cogeneration Company Limited.

4. RH International (Singapore) Corporation Pte. Limited

4.1 RH International (Singapore) Corporation Pte. Limited and RATCH-Australia Corporation Pty Limited are related as follows:

- RH International (Singapore) Corporation Pte. Limited holds a 100.00 per cent stake in RATCH-Australia Corporation Pty Limited.
- Some of the Company's executives are directors of RATCH-Australia Corporation Pty Limited.

5. RATCH-Lao Services Company Limited

5.1 RATCH-Lao Services Company Limited and EGAT are related as follows:

- EGAT holds a 45.00 per cent stake in the Company.
- The Company holds 99.99 per cent stake in RATCH-Lao Services Company Limited.

5.2 RATCH-Lao Services Company Limited and Asia Water Company Limited are related as follows:

- RATCH-Lao Services Company Limited holds a 40.00 per cent stake in Asia Water Company Limited.
- The Company holds 99.99 per cent stake in RATCH-Lao Services Company Limited.

Related Party Transaction Approval Measures and Procedures

Responsible units take the initial step to evaluate the transaction by providing information and analyzing whether the transaction in reasonable. Various conditions are considered to ensure compliance with normal business practice. The Company may hire independent experts to provide additional comments. The transaction will then be proposed according to the approval process. The Management prepares a summary of the transactions and report to the Audit Committee on a quarterly basis.

The process is to ensure that each transaction is not a transfer of benefits between the company or the Company's shareholders but is a transaction that is based on optimum benefit of all shareholders. The Company discloses related party transactions in the notes to the financial statements which were audited by the Company's auditor, in this annual report and in the Company's Annual Registration Statement (Form 56-1).

INDEPENDENT AUDITOR'S REPORT

To the Shareholders of RATCH Group Public Company Limited ***(Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited")***

Opinion

I have audited the consolidated and separate financial statements of RATCH Group Public Company Limited *(Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited")* and its subsidiaries (the "Group") and of RATCH Group Public Company Limited (the "Company"), respectively, which comprise the consolidated and separate statements of financial position as at 31 December 2019, the consolidated and separate statements of comprehensive income, changes in equity and cash flows for the year then ended, and notes, comprising a summary of significant accounting policies and other explanatory information.

In my opinion, the accompanying consolidated and separate financial statements present fairly, in all material respects, the financial position of the Group and the Company, respectively, as at 31 December 2019 and their financial performance and cash flows for the year then ended in accordance with Thai Financial Reporting Standards (TFRSs).

Basis for Opinion

I conducted my audit in accordance with Thai Standards on Auditing (TSAs). My responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Consolidated and Separate Financial Statements* section of my report. I am independent of the Group and the Company in accordance with the Code of Ethics for Professional Accountants issued by the Federation of Accounting Professions that is relevant to my audit of the consolidated and separate financial statements, and I have fulfilled my other ethical responsibilities in accordance with these requirements. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Key Audit Matters

Key audit matters are those matters that, in my professional judgement, were of most significance in my audit of the consolidated and separate financial statements of the current period. These matters were addressed in the context of my audit of the consolidated and separate financial statements as a whole, and in forming my opinion thereon, and I do not provide a separate opinion on these matters.

Impairment testing of goodwill, right to power purchase agreements and property, plant and equipment particularly the power plants in Australia in the consolidated financial statements and investment in subsidiary in the separate financial statements	
Refer to Notes 4, 13, 17 and 18 to the consolidated and separate financial statements.	
The key audit matter	**How the matter was addressed in the audit**
As at 31 December 2019, the Group holds significant amounts of goodwill, right to power purchase agreements and property, plant and equipment on the consolidated statement of financial position which contains a net book value of goodwill of Baht 170 million and net book value of right to power purchase agreements and property, plant and equipment of Baht 19,457 million together representing approximately 19% of total assets. There is a risk that the carrying values of the Group's goodwill, right to power purchase agreements and property, plant and equipment balances might exceed its recoverable amounts. The Company also has an investment in RH International Corporation Limited ("RHIC"), a subsidiary in Thailand, amounting to Baht 17,650 million which holds, via RH International (Singapore) Corporation Pte. Ltd., investments in the power plants in Australia. The recoverability of the investment in RHIC is a key audit matter because the investments in the power plants in Australia might be impaired. I focused on the estimated value in use of the cash generation units "CGUs" of the operation of the power plants in Australia because the determination of future cash flows and the recoverable amounts are highly judgemental and subject to material uncertainty.	My audit procedures in this area included, among others: - assessing the Group's process for identifying indicators of impairment; - assessing the Group's response to the identified impairment indicators; - understanding process for estimating the impairment; - involving KPMG in Australia to assist in evaluating the appropriateness of discount rates applied, which included comparing the weight average cost of capital with sector averages for the relevant markets in which the Group operate and evaluating the appropriateness of the assumptions applied to key inputs such as contracted revenue, prices, operating costs, inflation rate and long-term growth rates, which included comparing these inputs with externally derived data. In addition, KPMG in Australia performed sensitivity analysis, which included assessing the effect of reasonably possible reductions in growth rates and forecast cash flows to evaluate the impact on the CGUs; - assessing the appropriateness of discount rates applied; - involving KPMG in Singapore to evaluate the appropriateness of key assumptions applied in determining the recoverable amounts of the investments in the power generation in Australia, including the consistency of the assumptions with business plans and forecasts used for impairment testing as described in my response above; and - evaluating the adequacy of the financial statement disclosures in accordance with Thai Financial Reporting Standards.
Fair value assessment of net assets acquired from an acquisition of investment in subsidiary	
Refer to Notes 4, 5 and 13 to the consolidated and separate financial statements.	
The key audit matter	**How the matter was addressed in the audit**
On 1 October 2019, the Company acquired the ordinary shares and preferred shares of a local company to operate a SPP power plant in proportion of investment of 99.97% of issued and paid-up share capital. The Company appointed an independent appraiser to determine the fair value of net assets acquired from an acquisition of investment in subsidiary including the consideration transferred which completed as at the date of approval of these consolidated financial statements. The consideration transferred is lower	My audit procedures in this area included, among others: - reading the share sale and purchase agreement, evaluating the appropriateness of the identification of the net assets acquired at the date of acquisition; - evaluating significant assumptions underpinning the valuations reference to internal and external information used to determine the fair value of the business prepared by an independent appraiser appointed by management;

than the fair value of the identifiable net assets acquired of Baht 269.92 million. The Group recognised gain on bargain purchase in the statement of comprehensive income for the year ended 31 December 2019. Due to the materiality of the transactions and the significant judgement and complexities involved in determining the fair value. I considered this as a key audit matter.	- involving KPMG valuation specialist to evaluate the financial parameters applied to the discount rate, identification of the intangible assets, valuation methodology used and calculation rationale; and - evaluating the adequacy of the financial statement disclosures in accordance with Thai Financial Reporting Standards.

Other Information

Management is responsible for the other information. The other information comprises the information included in the annual report, but does not include the consolidated and separate financial statements and my auditor's report thereon. The annual report is expected to be made available to me after the date of this auditor's report.

My opinion on the consolidated and separate financial statements does not cover the other information and I will not express any form of assurance conclusion thereon.

In connection with my audit of the consolidated and separate financial statements, my responsibility is to read the other information identified above when it becomes available and, in doing so, consider whether the other information is materially inconsistent with the consolidated and separate financial statements or my knowledge obtained in the audit, or otherwise appears to be materially misstated.

When I read the annual report, if I conclude that there is a material misstatement therein, I am required to communicate the matter to those charged with governance and request that the correction be made.

Responsibilities of Management and Those Charged with Governance for the Consolidated and Separate Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated and separate financial statements in accordance with TFRSs, and for such internal control as management determines is necessary to enable the preparation of consolidated and separate financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated and separate financial statements, management is responsible for assessing the Group's and the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Group and the Company or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Group's and the Company's financial reporting process.

Auditor's Responsibilities for the Audit of the Consolidated and Separate Financial Statements

My objectives are to obtain reasonable assurance about whether the consolidated and separate financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes my opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with TSAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated and separate financial statements.

As part of an audit in accordance with TSAs, I exercise professional judgement and maintain professional skepticism throughout the audit. I also:

- Identify and assess the risks of material misstatement of the consolidated and separate financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group's and the Company's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's and the Company's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my auditor's report to the related disclosures in the consolidated and separate financial statements or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of my auditor's report. However, future events or conditions may cause the Group and the Company to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated and separate financial statements, including the disclosures, and whether the consolidated and separate financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. I am responsible for the direction, supervision and performance of the group audit. I remain solely responsible for my audit opinion.

I communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

I also provide those charged with governance with a statement that I have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on my independence, and where applicable, related safeguards.

Independent Auditor's report

From the matters communicated with those charged with governance, I determine those matters that were of most significance in the audit of the consolidated and separate financial statements of the current period and are therefore the key audit matters. I describe these matters in my auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, I determine that a matter should not be communicated in my report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.



(Vairoj Jindamaneepitak)
Certified Public Accountant
Registration No. 3565

KPMG Phoomchai Audit Ltd.
Bangkok
18 February 2020

FINANCIAL **STATEMENTS**



Statement of financial position

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

Assets	Note	Consolidated financial statements 31 December 2019	Consolidated financial statements 31 December 2018	Separate financial statements 31 December 2019	Separate financial statements 31 December 2018
			(in Baht)		
Current assets					
Cash and cash equivalents	7	4,917,163,131	11,695,247,224	1,780,104,131	4,856,977,013
Current investments	8	4,451,848,525	2,229,095,979	542,065,029	767,761,092
Derivative assets	34	-	10,617,674	-	-
Trade accounts receivable from related parties	6, 9	5,277,659,290	5,226,925,756	-	-
Trade accounts receivable from other parties	9	236,193,762	404,357,474	-	-
Other current receivables	10	299,430,687	153,382,198	34,640,738	45,572,410
Dividend receivables	6	600,000	64,091,160	600,000	64,091,160
Advances to and other current receivables from related parties	6, 10	90,392,540	51,983,947	88,231,434	60,266,766
Short-term loans to related parties	6	-	-	134,000,000	-
Current portion of finance lease receivable from related party	6	3,268,373,863	1,262,817,809	-	-
Spare parts and supplies	11	1,880,392,925	1,932,891,676	-	-
Other current assets		57,713,545	129,493,318	1,806,160	3,990,510
Total current assets		**20,479,768,268**	**23,160,904,215**	**2,581,447,492**	**5,798,658,951**
Non-current assets					
Available for sale investments	8, 34	1,942,551,686	2,538,933,764	-	-
Investments in associates	12	2,795,777,985	1,628,894,504	764,604,000	764,604,000
Investments in subsidiaries	5, 13	-	-	42,560,609,974	40,690,558,000
Investments in joint ventures	3, 12, 15	28,307,367,806	29,093,246,673	4,916,502,884	4,653,056,867
Investments in other companies	14	2,442,299,900	2,442,299,900	2,442,299,900	2,442,299,900
Other long-term investments	8	53,000,000	113,000,000	53,000,000	113,000,000
Derivative assets	34	266,637,280	226,403,391	-	-
Advance payments for investment	15	-	696,507,546	-	-
Other non-current receivables from related parties	6, 10	18,316,560	9,500,520	19,817,713	16,910,953
Long-term loans to related parties	6	540,897,665	42,493,968	1,807,709,571	1,266,966,208
Land for future development projects	16	398,490,216	318,567,570	305,389,850	305,389,850
Property, plant and equipment	17	24,107,887,896	19,772,596,299	538,511,103	551,934,400
Goodwill	18	170,315,099	228,711,902	-	-
Intangible assets	18	3,626,578,104	2,982,369,630	4,333,630	7,158,935
Finance lease receivable from related party	6	13,139,323,209	16,407,697,071	-	-
Deferred tax assets	30	38,896,697	202,231,833	38,896,697	32,421,563
Other non-current assets	19	1,901,318,127	1,386,743,167	4,486,638	4,456,998
Total non-current assets		**79,749,658,230**	**78,090,597,738**	**53,456,161,960**	**50,848,757,674**
Total assets		**100,229,426,498**	**101,251,501,953**	**56,037,609,452**	**56,647,416,625**

The accompanying notes form an integral part of the financial statements.

Statement of financial position

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

Liabilities and equity	Note	Consolidated financial statements 31 December 2019	Consolidated financial statements 31 December 2018	Separate financial statements 31 December 2019	Separate financial statements 31 December 2018
			(in Baht)		
Current liabilities					
Short-term loans from financial institution	*20, 34*	603,080,000	-	-	-
Derivative liabilities	*34*	140,193,769	15,428,225	-	-
Trade accounts payable		3,906,333,813	4,408,410,900	-	-
Other current payables	*6, 21*	1,707,754,528	1,452,200,529	286,540,211	364,304,995
Current portion of long-term loans from financial institutions	*20, 34*	1,091,191,923	939,376,887	-	-
Debentures due within one year	*20, 34*	-	3,471,390,265	-	-
Current portion of finance lease liabilities	*20*	741,415	843,133	-	-
Current tax payable		3,676,848	87,655,197	-	-
Other current liabilities		121,083,050	61,346,692	21,233,967	22,216,199
Total current liabilities		**7,574,055,346**	**10,436,651,828**	**307,774,178**	**386,521,194**
Non-current liabilities					
Long-term loans from financial institutions	*20, 34*	15,273,252,762	12,633,424,933	-	-
Debentures	*20, 34*	15,167,590,698	16,107,244,841	-	-
Derivative liabilities	*34*	748,411,942	358,117,345	-	-
Finance lease liabilities	*20*	414,886	1,099,700	-	-
Deferred tax liabilities	*30*	1,710,235,519	1,478,915,724	-	-
Non-current provisions for employee benefits	*22*	203,820,910	176,809,634	166,231,851	147,677,379
Other long-term provisions		135,121,715	123,621,104	-	-
Other non-current liabilities		2,600,000	-	-	-
Total non-current liabilities		**33,241,448,432**	**30,875,233,281**	**166,231,851**	**147,677,379**
Total liabilities		**40,815,503,778**	**41,312,885,109**	**474,006,029**	**534,198,573**
Equity					
Share capital:					
Authorised share capital	*23*	14,500,000,000	14,500,000,000	14,500,000,000	14,500,000,000
Issued and paid-up share capital		14,500,000,000	14,500,000,000	14,500,000,000	14,500,000,000
Share premium on ordinary shares	*23*	1,531,778,000	1,531,778,000	1,531,778,000	1,531,778,000
Difference arising from common control transaction		-	-	221,308,748	221,308,748
Retained earnings					
Appropriated					
Legal reserve	*24*	1,450,000,000	1,450,000,000	1,450,000,000	1,450,000,000
Unappropriated	*3*	50,802,260,025	48,502,769,121	37,887,722,290	38,432,950,592
Other components of equity		(8,870,765,604)	(6,048,530,277)	(27,205,615)	(22,819,288)
Equity attributable to owners of the parent		**59,413,272,421**	**59,934,016,844**	**55,563,603,423**	**56,113,218,052**
Non-controlling interests		650,299	-	-	-
Total equity		**59,413,922,720**	**59,934,016,844**	**55,563,603,423**	**56,113,218,052**
Total liabilities and equity		**100,229,426,498**	**101,251,901,953**	**56,037,609,452**	**56,647,416,625**

The accompanying notes form an integral part of the financial statements.

Statement of comprehensive income

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

	Note	Consolidated financial statements Year ended 31 December 2019	2018	Separate financial statements Year ended 31 December 2019	2018
			(in Baht)		
Revenue from sales and rendering of services	6, 25	35,441,113,801	36,184,135,649	-	-
Revenue from finance lease contracts	6	2,923,233,480	3,335,813,806	-	-
Cost of sales and rendering of services	6, 28	(33,228,035,300)	(35,170,093,308)	-	-
Gross profit		**5,136,311,981**	**4,349,856,147**	-	-
Management service income	6	244,242,542	238,881,810	482,756,023	394,050,307
Interest income	6	205,522,111	213,402,024	133,507,132	162,273,431
Dividend income	6, 8, 12, 13, 14	100,881,446	186,781,647	3,341,958,711	3,505,809,648
Gain on bargain purchase	5	269,917,945	-	-	-
Other income	6	66,785,309	189,058,655	7,985,856	910,475
Administrative expenses	6, 26, 28	(1,595,991,960)	(1,593,990,357)	(934,216,744)	(1,057,836,703)
Net foreign exchange loss		(132,479,303)	(865,020,604)	(98,492,839)	(12,058,107)
Finance costs	6, 29	(1,430,219,388)	(1,014,887,795)	-	-
Share of profit of associates and joint ventures	3, 12	3,968,379,850	4,735,464,876	-	-
Profit before income tax expense		**6,833,350,533**	**6,439,546,403**	**2,933,498,139**	**2,993,149,051**
(Tax expense) income	30	(870,066,448)	(870,579,572)	1,273,559	(2,345,873)
Profit for the year		**5,963,284,085**	**5,568,966,831**	**2,934,771,698**	**2,990,803,178**
Other comprehensive income					
Items that will be reclassified subsequently to profit or loss					
Exchange differences on translating foreign operations		(1,246,564,722)	(193,945,285)	-	-
Losses on remeasuring available for sale investments		(520,435,779)	(645,982,541)	-	-
Cash flow hedges - effective portion of changes in fair value		(476,422,088)	(126,375,121)	-	-
Share of other comprehensive income (expense) of associates and joint ventures	12	(560,767,010)	146,746,318	-	-
Total items that will be reclassified subsequently to profit or loss		**(2,804,189,599)**	**(819,556,629)**	-	-
Items that will not be reclassified to profit or loss					
Gains (losses) on remeasurements of defined benefit plans	22	(8,171,482)	1,748,023	(5,482,908)	-
Income tax relating to items that will not be reclassified to profit or loss	30	1,634,296	-	1,096,581	-
Share of other comprehensive income (expense) of associates and joint ventures	12	(11,508,542)	(1,018,225)	-	-
Total items that will not be reclassified to profit or loss		**(18,045,728)**	**729,798**	**(4,386,327)**	-
Other comprehensive income (expense) for the year, net of tax		**(2,822,235,327)**	**(818,826,831)**	**(4,386,327)**	-
Total comprehensive income (expense) for the year		**3,141,048,758**	**4,750,140,000**	**2,930,385,371**	**2,990,803,178**
Profit (loss) attributable to:					
Owners of the parent		5,963,281,245	5,587,601,852	2,934,771,698	2,990,803,178
Non-controlling interests		2,840	(18,635,021)	-	-
Profit for the year		**5,963,284,085**	**5,568,966,831**	**2,934,771,698**	**2,990,803,178**
Total comprehensive income (expense) attributable to:					
Owners of the parent		3,141,045,918	4,722,186,347	2,930,385,371	2,990,803,178
Non-controlling interests		2,840	27,953,653	-	-
Total comprehensive income (expense) for the year		**3,141,048,758**	**4,750,140,000**	**2,930,385,371**	**2,990,803,178**
Basic earnings per share	3, 32	**4.11**	**3.85**	**2.02**	**2.06**

The accompanying notes form an integral part of the financial statements.

Statement of changes in equity

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

Consolidated financial statements

	Note	Issued and paid-up share capital	Share premium	Retained earnings		Other components of equity					Total other components of equity	Total equity attributable to owners of the parent	Non-controlling interests	Total equity
				Legal reserve	Unappropriated	Translating foreign operations	Available for sale investments	Cash flow hedges reserves	Share of other comprehensive income (expense) of associates and joint ventures	Gain (loss) on measurements of defined benefit plans				
							(in Baht)							
Year ended 31 December 2018														
Balance at 1 January 2018		14,500,000,000	1,531,779,000	1,450,000,000	46,893,415,182	(3,874,591,169)	(199,857,007)	(184,797,439)	(414,587,346)	(17,737,278)	(4,690,686,239)	59,683,510,943	(674,816,653)	59,008,694,290
Transactions with owners, recorded directly in equity														
Contributions by and distributions to owners of the parent														
Dividends to owners of the Company	31	-	-	-	(3,480,000,000)	-	-	-	-	-	-	(3,480,000,000)	-	(3,480,000,000)
Changes in ownership interests in subsidiary														
Acquisition of non-controlling interests without a change in control		-	-	-	(497,245,913)	(492,434,533)	-	-	-	-	(492,434,533)	(989,680,446)	646,863,000	(342,817,446)
Total transactions with owners, recorded directly in equity		-	-	-	(3,977,245,913)	(492,434,533)	-	-	-	-	(492,434,533)	(4,469,680,446)	646,863,000	(3,823,817,446)
Comprehensive income for the year														
Profit or loss		-	-	-	5,587,601,852	-	-	-	-	-	-	5,587,601,852	(38,633,821)	5,548,968,031
Other comprehensive income (expense)		-	-	-	-	(231,864,141)	(645,982,541)	(133,044,999)	145,728,693	1,748,823	(865,413,505)	(865,413,505)	46,588,674	(818,826,831)
Total comprehensive income (expense) for the year		-	-	-	5,587,601,852	(231,864,141)	(645,982,541)	(133,044,999)	145,728,693	1,748,823	(865,413,505)	4,722,188,347	37,953,853	4,760,140,800
Balance at 31 December 2018		14,500,000,000	1,531,779,000	1,450,000,000	48,503,769,121	(4,598,889,843)	(845,839,548)	(317,842,438)	(268,779,253)	(15,979,255)	(6,048,636,277)	59,936,016,844	-	59,936,016,844

The accompanying notes form an integral part of the financial statements.

Statement of changes in equity

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

Consolidated financial statements

	Note	Issued and paid-up share capital	Share premium	Retained earnings		Other components of equity						Total equity attributable to owners of the parent	Non-controlling interests	Total equity
				Legal reserve	Unappropriated	Translating foreign operations	Available for sale investments	Cash flow hedge reserves (to Baht)	Share of other comprehensive income (expense) of associates and joint ventures	Losses on remeasurements of defined benefit plans	Total other components of equity			
Year ended 31 December 2019														
Balance at 1 January 2019 - as reported		14,000,000,000	1,531,778,800	1,400,000,000	48,502,705,121	(4,598,889,843)	(845,039,548)	(319,842,378)	(268,779,253)	(15,979,255)	(6,448,530,277)	89,936,014,844	-	89,936,014,844
Impact of change in accounting policies (net of tax) - TFRS 15	3	-	-	-	(183,790,341)	-	-	-	-	-	-	(183,790,341)	-	(183,790,341)
Balance at 1 January 2019		14,000,000,000	1,531,778,800	1,400,000,000	48,318,914,780	(4,598,889,843)	(845,039,548)	(319,842,378)	(268,779,253)	(15,979,255)	(6,448,530,277)	89,752,224,503	-	89,752,224,503
Transactions with owners, recorded directly in equity														
Contributions by and distributions to owners of the parent														
Dividends to owners of the Company	33	-	-	-	(3,480,000,000)	-	-	-	-	-	-	(3,480,000,000)	-	(3,480,000,000)
Changes in ownership interests in subsidiaries														
Minority interests at acquisition date of subsidiary	3	-	-	-	-	-	-	-	-	-	-	-	647,459	647,459
Total transactions with owners, recorded directly in equity		-	-	-	(3,480,000,000)	-	-	-	-	-	-	(3,480,000,000)	647,459	(3,479,352,541)
Comprehensive income for the year														
Profit		-	-	-	5,963,281,245	-	-	-	-	-	-	5,963,281,245	2,840	5,963,284,085
Other comprehensive income (expense)		-	-	-	-	(1,246,564,722)	(320,435,779)	(476,422,088)	(372,235,552)	(6,537,186)	(2,822,235,327)	(2,822,235,327)	-	(2,822,235,327)
Total comprehensive income (expense) for the year		-	-	-	5,963,281,245	(1,246,564,722)	(320,435,779)	(476,422,088)	(372,235,552)	(6,537,186)	(2,822,235,327)	3,141,045,918	2,840	3,141,048,758
Balance at 31 December 2019		14,000,000,000	1,531,778,800	1,400,000,000	50,801,195,025	(5,845,454,565)	(1,165,475,327)	(796,264,466)	(641,014,805)	(22,516,441)	(9,270,765,604)	89,413,272,421	650,299	89,413,922,758

The accompanying notes form an integral part of the financial statements.

Statement of changes in equity

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

Separate financial statements

	Note	Issued and paid-up share capital	Share premium	Difference arising from common control transaction	Retained earnings		Other components of equity	Total equity
					Legal reserve (in Baht)	Unappropriated	Losses on remeasurements of defined benefit plans	
Year ended 31 December 2018								
Balance at 1 January 2018		14,500,000,000	1,531,778,000	221,308,748	1,450,000,000	38,922,147,414	(22,819,288)	56,602,414,874
Dividends to owners of the Company	33	-	-	-	-	(3,480,000,000)	-	(3,480,000,000)
Comprehensive income for the year								
Profit		-	-	-	-	2,990,803,178	-	2,990,803,178
Other comprehensive income (expenses)		-	-	-	-	-	-	-
Total comprehensive income (expenses) for the year		-	-	-	-	2,990,803,178	-	2,990,803,178
Balance at 31 December 2018		14,500,000,000	1,531,778,000	221,308,748	1,450,000,000	38,432,950,592	(22,819,288)	56,113,218,052

The accompanying notes form an integral part of the financial statements.

Statement of changes in equity

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

Separate financial statements

	Note	Issued and paid-up share capital	Share premium	Difference arising from common control transaction	Retained earnings: Legal reserve (in Baht)	Retained earnings: Unappropriated	Other components of equity: Losses on remeasurements of defined benefit plans	Total equity
Year ended 31 December 2019								
Balance at 1 January 2019		**14,500,000,000**	**1,531,778,000**	**221,308,748**	**1,450,000,000**	**38,432,950,592**	**(22,819,288)**	**56,113,218,052**
Dividends to owners of the Company	33	-	-	-	-	**(3,480,000,000)**	-	**(3,480,000,000)**
Comprehensive income for the year								
Profit		-	-	-	-	2,934,771,698	-	2,934,771,698
Other comprehensive income (expenses)		-	-	-	-	-	(4,386,327)	(4,386,327)
Total comprehensive income (expenses) for the year		-	-	-	-	2,934,771,698	(4,386,327)	2,930,385,371
Balance at 31 December 2019		**14,500,000,000**	**1,531,778,000**	**221,308,748**	**1,450,000,000**	**37,887,722,290**	**(27,205,615)**	**55,563,603,423**

The accompanying notes form an integral part of the financial statements.

Statement of cash flows

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

	Note	Consolidated financial statements Year ended 31 December 2019	2018	Separate financial statements Year ended 31 December 2019	2018
			(in Baht)		
Cash flows from operating activities					
Profit for the year		5,963,284,085	5,568,966,831	2,934,771,698	2,990,803,178
Adjustments to reconcile profit to cash receipts (payments)					
Tax expense (income)	30	870,066,448	870,579,572	(1,273,559)	2,345,873
Finance costs	29	1,430,219,388	1,014,887,795	-	-
Depreciation	17	1,273,309,552	904,965,662	22,257,004	28,242,446
Amortisation	18	254,606,473	279,051,893	2,915,305	2,715,168
Impairment losses on land for future development projects		-	20,580,000	-	-
Impairment losses on goodwill	18	42,312,620	-	-	-
Unrealised loss on exchange		124,215,577	714,640,152	84,472,015	8,214,647
(Gain) loss on fair value adjustment of debt securities held for trading		(4,135,616)	845,628	(4,118,766)	1,222,339
(Gain) loss on disposal of current investments		(358,060)	-	150,702	-
Fair value adjustment of finance lease receivable from related party		(96,693,665)	(100,209,572)	-	-
Share of profit of associates and joint ventures	12	(3,968,379,850)	(4,735,464,876)	-	-
Gain on dissolution of joint venture		(2,077,131)	-	(1,625,031)	-
Reversal of doubtful debts expenses	6	-	(55,939,976)	-	-
Loss on spare parts and supplies devaluation	11	50,403,209	50,236,177	-	-
(Reversal of) loss on fuel oil devaluation	11	(25,564,810)	25,510,148	-	-
Loss on write-off and disposal of equipments		368,059	3,378,350	5,901	2,439
Dividend income	6, 8, 12, 13, 14	(100,881,446)	(186,781,647)	(3,341,958,711)	(3,505,809,648)
Interest income		(205,522,111)	(213,402,024)	(133,507,132)	(162,273,431)
Gain on bargain purchase	5	(269,917,945)	-	-	-
Write-off withholding tax deducted at source and others		1,410,603	86,011,949	-	3,717,128
		5,336,665,380	4,247,856,062	(437,910,574)	(630,819,861)
Changes in operating assets and liabilities					
Trade accounts receivable from related parties		306,092,876	1,500,499,163	-	-
Trade accounts receivable from other parties		153,942,394	(302,554,494)	-	-
Other current receivables		55,988,912	(34,132,955)	431,162	(111,669)
Advances to and other current receivables from related parties		(39,272,855)	(467,589)	(27,720,567)	14,865,933
Finance lease receivable from related party		1,359,511,473	3,654,892,287	-	-
Spare parts and supplies		56,683,419	85,310,028	-	-
Other current assets and other non-current assets		(539,984,393)	(134,871,611)	2,003,510	7,749,340
Trade accounts payable		(621,946,123)	(771,252,737)	-	-
Other current payables		155,295,264	35,011,501	(76,440,545)	125,128,647
Other current liabilities and other non-current liabilities		58,301,182	(131,910,589)	(1,202,053)	1,195,443
Non-current provisions for employee benefits		21,824,943	3,320,930	13,071,564	5,384,680
Long-term provisions		21,099,367	24,776,893	-	-
Net cash generated from (used in) operating		6,324,201,839	8,180,476,889	(527,767,503)	(476,607,487)
Taxes paid		(734,949,383)	(1,011,912,705)	(964,661)	(3,298,465)
Net cash from (used in) operating activities		**5,589,252,456**	**7,168,564,184**	**(528,732,164)**	**(479,905,952)**

The accompanying notes form an integral part of the financial statements.

Statement of cash flows

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

	Note	Consolidated financial statements Year ended 31 December 2019	2018	Separate financial statements Year ended 31 December 2019	2018
			(in Baht)		
Cash flows from investing activities					
Acquisition of subsidiaries, net of cash acquired	*5, 13*	(1,977,100,386)	-	(1,998,400,000)	-
Payment for investments in subsidiary		-	-	(4,000,000)	-
Acquisition of non-controlling interest		-	(343,617,447)	-	-
Net cash inflow (outflow) in current investments		(2,162,292,177)	(1,202,965,746)	289,664,127	222,034,255
Proceeds from repayment of short-term loans to related party	*6*	-	-	100,000,000	10,510,000,000
Short-term loans to related party	*6*	-	-	(220,000,000)	(7,780,000,000)
Proceeds from repayment of long-term loans to related party	*6*	-	-	161,000,000	32,722,253
Long-term loans to related parties	*6*	(507,524,941)	-	(667,721,521)	-
Proceeds from dissolution of joint venture		2,077,131	-	2,077,131	-
Payment for investments in associates	*12*	(1,173,479,571)	-	-	-
Payment for investments in joint ventures	*12*	(582,612,704)	(3,071,288,172)	(263,898,117)	(372,718,931)
Payment for investments in other companies	*14*	-	(1,680,000,000)	-	(1,680,000,000)
Net cash inflow (outflow) in advance payments for investments	*15*	194,697,320	(69,988,190)	-	-
Net cash outflow in other long-term investments		-	(30,000,000)	-	(30,000,000)
Payment for acquisition of land for future development projects		(18,042,347)	-	-	-
Proceeds from sale of equipments		11,302	6,363,043	10,023	-
Payment for acquisition of plant and equipment		(2,441,871,548)	(5,383,365,509)	(10,784,631)	(3,930,050)
Payment for acquisition of intangible assets		(1,784,509)	(7,344,660)	(315,000)	(3,315,400)
Dividends received		3,716,587,334	2,568,129,010	3,405,449,871	3,511,118,488
Interest received		201,730,404	198,941,389	138,557,578	169,339,656
Net cash from (used in) investing activities		**(4,749,604,692)**	**(9,015,136,282)**	**931,639,461**	**4,575,250,271**
Cash flows from financing activities					
Proceeds from short-term loans from financial institutions		1,376,635,500	-	-	-
Repayment of short-term loans from financial institutions		(755,582,500)	-	-	-
Proceeds from long-term loans from financial institutions		1,200,880,439	11,854,067,364	-	-
Repayment of long-term loans from financial institutions		(965,541,724)	(2,449,689,806)	-	-
Repayment of long-term loans from related party		-	(950,432,881)	-	-
Proceeds from issue of debentures		-	9,375,570,283	-	-
Transaction costs from issue of debentures		-	(33,774,118)	-	-
Redemption payment of debentures		(3,407,832,300)	-	-	-
Payment to repurchase of debentures		-	(6,112,471,580)	-	-
Payment of unwinding derivatives		-	(3,058,600,602)	-	-
Payment by a lessee for reduction of the outstanding liabilities relating to a finance lease		(857,950)	(1,244,834)	-	-
Dividend paid to owners of the Company		(3,479,780,179)	(3,479,191,771)	(3,479,780,179)	(3,479,191,771)
Finance costs paid		(1,402,061,328)	(1,354,409,942)	-	-
Net cash from (used in) financing activities		**(7,434,140,042)**	**3,789,822,113**	**(3,479,780,179)**	**(3,479,191,771)**
Net increase (decrease) in cash and cash equivalents, before effect of exchange rates		(6,594,492,278)	1,943,250,015	(3,076,872,882)	616,152,548
Effect of exchange rate changes on cash and cash equivalents		(183,591,815)	464,539,461	-	-
Net increase (decrease) in cash and cash equivalents		**(6,778,084,093)**	**2,407,789,476**	**(3,076,872,882)**	**616,152,548**
Cash and cash equivalents at 1 January		11,695,247,224	9,287,457,748	4,856,977,013	4,240,824,465
Cash and cash equivalents at 31 December		**4,917,163,131**	**11,695,247,224**	**1,780,104,131**	**4,856,977,013**

The accompanying notes form an integral part of the financial statements.

NOTES TO THE FINANCIAL STATEMENTS

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

Note	Contents
1	General information
2	Basis of preparation of the financial statements
3	Changes in accounting policies
4	Significant accounting policies
5	Acquisitions of subsidiary
6	Related parties
7	Cash and cash equivalents
8	Other investments
9	Trade accounts receivable
10	Other receivables
11	Spare parts and supplies
12	Investments in associates and joint ventures
13	Investments in subsidiaries
14	Investments in other companies
15	Advance payments for investment
16	Land for future development projects
17	Property, plant and equipment
18	Goodwill and intangible assets
19	Other non-current assets
20	Interest-bearing liabilities
21	Other payables
22	Non-current provisions for employee benefits
23	Share capital
24	Reserves
25	Segment information and disaggregation of revenue
26	Administrative expenses
27	Employee benefit expenses
28	Expenses by nature
29	Finance costs
30	Income tax expense
31	Promotional privileges
32	Basic earnings per share
33	Dividends
34	Financial instruments
35	Commitments with non-related parties
36	Events after the reporting period
37	Thai Financial Reporting Standards (TFRS) not yet adopted

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

These notes form an integral part of the financial statements.

The financial statements issued for Thai statutory and regulatory reporting purposes are prepared in the Thai language. These English language financial statements have been prepared from the Thai language statutory financial statements, and were approved and authorised for issue by the Board of Directors on 18 February 2020.

1 General information

RATCH Group Public Company Limited, the "Company", is incorporated in Thailand and was listed on the Stock Exchange of Thailand in October 2000. The Company's registered office is at 72 Ngamwongwan Road, Bangkhen, Muang Nonthaburi, Nonthaburi, Thailand.

The Company's major shareholder during the financial year was Electricity Generating Authority of Thailand ("EGAT") (45% shareholding), which was incorporated in Thailand.

At the annual general meeting of the shareholders of the Company held on 12 April 2019, the shareholders approved a change of the Company's name from "Ratchaburi Electricity Generating Holding Public Company Limited" to "RATCH Group Public Company Limited". The Company has registered the change of name with the Department of Business Development, the Ministry of Commerce on 17 April 2019.

The principal businesses of the Company are the investing in companies, whose objectives are to generate and sell electricity and related businesses. Details of the Company's subsidiaries, associates and joint ventures as at 31 December 2019 and 2018 were as follows:

Name of entities	Type of business	Country of incorporation	Ownership interest (%)	
			2019	2018
Direct subsidiaries				
Ratchaburi Electricity Generating Company Limited	Generating and selling electricity and investing in the power energy business	Thailand	99.99	99.99
Ratchaburi Energy Company Limited	Investing in the power energy business	Thailand	99.99	99.99
RH International Corporation Limited	Investing in the power energy business	Thailand	99.99	99.99
RATCH O&M Company Limited	Providing operation and maintenance services	Thailand	99.99	99.99
Ratchaburi Alliances Company Limited	Investing in the power energy business	Thailand	99.99	99.99
Hin Kong Power Holding Company Limited	Investing in the power energy business	Thailand	99.99	-

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

Name of entities	Type of business	Country of incorporation	Ownership interest (%)	
			2019	2018
Direct subsidiaries				
RATCH Cogeneration Company Limited	Generating and selling electricity and cooling water	Thailand	99.97	-
RATCH-Lao Services Company Limited	Providing operation maintenance services and investing in the related business	Lao PDR	99.99	99.99
Indirect subsidiaries				
RH International (Mauritius) Corporation Limited	Investing in the power energy business internationally	Mauritius	100	100
RH International (Singapore) Corporation Pte. Ltd.	Investing in the power energy business internationally	Singapore	100	100
RATCH-Australia Corporation Pty. Ltd. and its subsidiaries	Developing and operating power plant and investing in the power energy business	Australia	100	100
RATCH China Power Company Limited	Investing in the power energy business internationally	Hong Kong	100	100
RE Solar 1 Company Limited	Generating and selling electricity	Thailand	99.99	99.99
CN Biomass Company Limited (In process of liquidation)	Generating and selling electricity	Thailand	99.99	99.99
PB Biomass Company Limited (In process of liquidation)	Generating and selling electricity	Thailand	99.99	99.99
LP Biomass Company Limited (In process of liquidation)	Generating and selling electricity	Thailand	99.99	99.99
Hin Kong Power Company Limited	Generating and selling electricity	Thailand	99.99	-
Direct associates				
First Korat Wind Company Limited	Generating and selling electricity	Thailand	20	20
K.R. TWO Company Limited	Generating and selling electricity	Thailand	20	20
Indirect associates				
Solar Power (Korat 3) Company Limited	Generating and selling electricity	Thailand	40	40

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

Name of entities	Type of business	Country of incorporation	Ownership interest (%) 2019	2018
Indirect associates				
Solar Power (Korat 4) Company Limited	Generating and selling electricity	Thailand	40	40
Solar Power (Korat 7) Company Limited	Generating and selling electricity	Thailand	40	40
Direct joint ventures				
Chubu Ratchaburi Electric Services Company Limited	Providing operation and maintenance services	Thailand	50	50
SouthEast Asia Energy Limited	Investing in the power energy business	Thailand	33.33	33.33
Smart Infranet Company Limited	Investing in Underground Optic Fiber Network Project	Thailand	51	-
Things on Net Company Limited	Investing in installation and development of telecommunication networks	Thailand	35	-
Nam Ngum 3 Power Company Limited (Complete liquidation in 2019)	Generating and selling electricity	Lao PDR	-	25
Xe-Pian Xe-Namnoy Power Company Limited	Generating and selling electricity	Lao PDR	25	25
Indirect joint ventures				
Ratchaburi Power Company Limited	Generating and selling electricity	Thailand	25	25
Nava Nakorn Electricity Generating Company Limited	Generating and selling electricity and steam	Thailand	40	40
Ratchaburi World Cogeneration Company Limited	Generating and selling electricity and steam	Thailand	40	40
Berkprai Cogeneration Company Limited	Generating and selling electricity and steam	Thailand	35	35
Solarta Company Limited	Generating and selling electricity	Thailand	49	49
Songkhla Biomass Company Limited	Generating and selling electricity	Thailand	40	40

Name of entities	Type of business	Country of incorporation	Ownership interest (%) 2019	2018
Indirect joint ventures				
Songkhla Biofuel Company Limited	Providing material of biofuel	Thailand	40	40
Hongsa Power Company Limited	Generating and selling electricity	Lao PDR	40	40
Phu Fai Mining Company Limited	Coal mining and trading	Lao PDR	37.50	37.50
Asia Water Co., Ltd.	Generating and selling water	Lao PDR	40	-
PT Medco Ratch Power Riau	Generating and selling electricity	Republic of Indonesia	49	49
Fareast Renewable Development Pte. Ltd.	Investing in the power energy business internationally	Singapore	50	50
Subsidiary of a direct joint venture				
Nam Ngum 2 Power Company Limited	Generating and selling electricity	Lao PDR	25	25
Subsidiary of an indirect joint venture				
PT Bajradaya Sentranusa	Generating and selling electricity	Republic of Indonesia	26.61	26.61

2 Basis of preparation of the financial statements

(a) Statement of compliance

The financial statements are prepared in accordance with Thai Financial Reporting Standards (TFRS), guidelines promulgated by the Federation of Accounting Professions and applicable rules and regulations of the Thai Securities and Exchange Commission.

New and revised TFRS are effective for annual accounting periods beginning on or after 1 January 2019. The initial application of these new and revised TFRS has resulted in changes in certain of the Group's accounting policies. There is no material impact on the Group's financial statements except for initial applying TFRS 15 *Revenue from Contracts with Customers* ("TFRS 15") which replaces TAS 18 *Revenue* ("TAS 18"), TAS 11 *Construction Contracts* ("TAS 11") and related interpretations. The effects of these changes, where such effects are considered material to the financial statements, are disclosed in note 3.

In addition, the Group has not early adopted a number of new and revised TFRS which are not yet effective for the current period in preparing these financial statements. Those new and revised TFRS that are relevant to the Group's operations are disclosed in note 37.

(b) Functional and presentation currency

The financial statements are prepared in Thai Baht, which is the Company's functional currency.

(c) Use of judgements and estimates

The preparation of financial statements in conformity with TFRS requires management to make judgements, estimates and assumptions that affect the application of the Group's accounting policies. Actual results may differ from these estimates. Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised prospectively.

(i) Judgements

Information about judgements made in applying accounting policies that have the most significant effects on the amounts recognised in the financial statements is included in the following note:

12	Equity-accounted investees: whether the Group has significant influence over an investee.

(ii) Assumptions and estimation uncertainties

Information about assumption and estimation uncertainties at 31 December 2019 that have a significant risk of resulting in a material adjustments to the carrying amounts of assets and liabilities in the next financial year is included in the following notes:

5	Acquisition of subsidiary: fair value of the consideration transferred (including contingent consideration) and fair value of the assets acquired and liabilities assumed, measured on a provisional basis;
9	Measurement of allowance for doubtful debts of trade accounts receivable;
18	Impairment test of goodwill: key assumptions underlying recoverable amounts;
22	Measurement of defined benefit obligations: key actuarial assumptions; and
30	Recognition of deferred tax assets: availability of future taxable profit against which deductible temporary differences and tax losses carried forward can be utilised.

3 Changes in accounting policies

From 1 January 2019, the Group has adopted TFRS 15 using the cumulative effect method, taking into account the effect of initially applying this standard only to contracts that were not completed before 1 January 2019 as an adjustment to the retained earnings at 1 January 2019. Therefore, the Group has not restated the information presented for 2018, as previously reported under TAS 18 and related interpretations. The disclosure requirements of TFRS 15 have not generally been applied to comparative information.

Under TFRS 15, the Group recognises revenue when a customer obtains control of the goods or services in an amount that reflects the consideration to which the Group expects to be entitled, excluding those amounts collected on behalf of third parties, value added tax and after deduction of any trade discounts. Judgement is required in determining the timing of the transfer of control for revenue recognition - at a point in time or over time. Under TAS 18, the Group recognised revenue from sale of goods when the significant risks and rewards of ownership of the goods were transferred to the buyer, and recognised revenue from rendering of services by reference to the stage of completion of the transaction at the end of the reporting period. No revenue was recognised if there was continuing management involvement with the goods or there were significant uncertainties regarding recovery of the consideration due.

Revenue from sales of electricity

Revenue from sales of electricity comprises of revenue from energy payment and revenue from availability payment in terms of operating costs.

Revenue from availability payment in terms of operating costs is a revenue that reflects the fixed operation and maintenance expenses ("Fixed O&M"), maintenance parts expenses and administrative expenses. The availability payment rate is fixed at an amount per Kilowatt based on the availability hours of each year throughout the period of the Power Purchase Agreement. Each Power Purchase Agreement of the Group has different terms and conditions for receiving the revenue from availability payment in terms of operating costs.

Under TAS 18, the subsidiaries recognise revenue from availability payment in terms of operating costs by varying the Contracted Available Hours ("CAH") in a year and the Base Availability Credit ("BAC") but the joint ventures recognise revenue from availability payment in terms of operating costs in a year as specified in the agreements. Under TFRS 15, the Group will recognise such revenue by varying the Contracted Available Hours (CAH) in a year and the Base Availability Credit (BAC).

Based on their assessment, management concluded that the revenue recognition under TFRS 15 of the Company and the subsidiaries under TFRS 15 is not different from the current practice. The revenue recognition under TFRS 15 of the joint venture in Lao PDR is different from the revenue recognition under TAS 18, which has an impact on the investments in joint ventures, as accounted for using the equity method, is as follows:

At 1 January 2019	**Consolidated financial statements** *(in thousand Baht)*
Retained earnings	**(183,790)**

The following tables summarise the impact of adopting TFRS 15 on the financial statements:

		Consolidated financial statements		
Statement of financial position at 31 December 2019	*Note*	Amounts as reported	Adjustments *(in thousand Baht)*	Amounts without adoption of TFRS 15
Assets				
Investments in joint ventures	*12*	**28,307,368**	**(17,820)**	**28,289,548**

	Consolidated financial statements		
Statement of financial position at 31 December 2019	Amounts as reported	Adjustments *(in thousand Baht)*	Amounts without adoption of TFRS 15
Equity			
Unappropriated retained earnings	**50,802,260**	**(17,820)**	**50,784,440**
Statement of comprehensive income for the year ended 31 December 2019			
Share of profit of associates and joint ventures	**3,968,380**	**(17,820)**	**3,950,560**
Profit for the year	**5,963,284**	**(17,820)**	**5,945,464**
Total comprehensive income (expense) for the year	**3,141,049**	**(17,820)**	**3,123,229**
Basic earnings per share *(in Baht)*	**4.11**	**(0.01)**	**4.10**

There is no material impacts on the consolidated and separate statements of cash flows for the year ended 31 December 2019 from the adoption of TFRS 15.

TFRS 15 did not have any material impact on the Group's accounting policies with respect to other revenue streams.

4 Significant accounting policies

The accounting policies set out below have been applied consistently to all periods presented in these financial statements except as explained in note 3.

(a) Basis of consolidation

The consolidated financial statements relate to the Company and its subsidiaries (together referred to as the "Group") and the Group's interests in associates and joint ventures.

Business combinations

The Group applies the acquisition method for all business combinations when control is transferred to the Group, as describe in subsidiaries section, other than those with entities under common control.

The acquisition date is the date on which control is transferred to the acquirer. Judgement is applied in determining the acquisition date and determining whether control is transferred from one party to another.

Goodwill is measured as the fair value of the consideration transferred including the recognised amount of any non-controlling interest in the acquiree, less the net recognised amount (generally fair value) of the identifiable assets acquired and liabilities assumed, all measured as of the acquisition date. Any gain on bargain purchase is recognised in profit or loss immediately.

Consideration transferred includes the fair values of the assets transferred, liabilities incurred by the Group to the previous owners of the acquiree, and equity interests issued by the Group. Consideration transferred also includes the fair value of any contingent consideration.

Any contingent consideration is measured at fair value at the date of acquisition, and remeasured at fair value at each reporting date. Subsequent changes in the fair value are recognised in profit or loss.

A contingent liability of the acquiree is assumed in a business combination only if such a liability represents a present obligation and arises from a past event, and its fair value can be measured reliably.

Transaction costs that the Group incurs in connection with a business combination, such as legal fees, and other professional and consulting fees are expensed as incurred.

If the initial accounting for a business combination is incomplete by the end of the reporting period in which the combination occurs, the Group reports provisional amounts for the items for which the accounting is incomplete. Those provisional amounts are adjusted during the measurement period, or additional assets or liabilities are recognised, to reflect new information obtained about facts and circumstances that existed at the acquisition date that, if known, would have affected the amounts recognised at that date.

Acquisitions from entities under common control

Business combinations under common control are accounted for using a method similar to the pooling of interest method. Under that method the acquirer recognises assets and liabilities of the acquired businesses at their carrying amounts in the consolidated financial statements of the ultimate parent company at the moment of the transaction. The difference between the carrying amount of the acquired net assets and the consideration transferred is recognised as surplus or discount from business combinations under common control in shareholder's equity. The surplus or discount will be transferred to retained earnings upon divestment of the businesses acquired.

The results from operations of the acquired businesses will be included in the consolidated financial statements of the acquirer from the beginning of the comparative period or the moment the businesses came under common control, whichever date is later, until control ceases.

Subsidiaries

Subsidiaries are entities controlled by the Group. The Group controls an entity when it is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. The financial statements of subsidiaries are included in the consolidated financial statements from the date on which control commences until the date on which control ceases.

Non-controlling interests

At the acquisition date, the Group measures any non-controlling interest at its proportionate interest in the identifiable net assets of the acquiree.

Changes in the Group's interest in a subsidiary that do not result in a loss of control are accounted for as equity transactions.

Loss of control

When the Group loses control over a subsidiary, it derecognises the assets and liabilities of the subsidiary, and any related non-controlling interests and other components of equity. Any resulting gain or loss is recognised in profit or loss. Any interest retained in the former subsidiary is measured at fair value when control is lost.

Interests in equity-accounted investees

The Group's interests in equity-accounted investees comprise interests in associates and joint ventures.

Associates are those entities in which the Group has significant influence, but not control or joint control, over the financial and operating policies. A joint venture is an arrangement in which the Group has joint control, whereby the Group has rights to the net assets of the arrangement, rather than rights to its assets and obligations for its liabilities.

Interests in associates and joint ventures are accounted for using the equity method. They are initially recognised at cost, which includes transaction costs. Subsequent to initial recognition, the consolidated financial statements include the Group's share of the profit or loss and other comprehensive income of equity-accounted investees, until the date on which significant influence or joint control ceases.

Transactions eliminated on consolidation

Intra-group balances and transactions, and any unrealised income or expenses arising from intra-group transactions, are eliminated. Unrealised gains arising from transactions with equity-accounted investees are eliminated against the investment to the extent of the Group's interest in the investee. Unrealised losses are eliminated in the same way as unrealised gains, but only to the extent that there is no evidence of impairment.

(b) *Foreign currencies*

Foreign currency transactions

Transactions in foreign currencies are translated to the respective functional currencies of Group entities at exchange rates at the dates of the transactions.

Monetary assets and liabilities denominated in foreign currencies are translated to the functional currency at the exchange rate at the reporting date.

Non-monetary assets and liabilities measured at cost in foreign currencies are translated to the functional currency at the exchange rates at the dates of the transactions.

Foreign currency differences are generally recognised in profit or loss. However, foreign currency differences arising from the translation of the following items are recognised in other comprehensive income:

- available for sale equity investments (except on impairment in which case foreign currency differences that have been recognised in other comprehensive income are reclassified to profit or loss); and
- qualifying cash flow hedges to the extent the hedge is effective.

Foreign operations

The assets and liabilities of foreign operations, including goodwill and fair value adjustments arising on acquisition, are translated to Thai Baht at the exchange rates at the reporting date.

The revenues and expenses of foreign operation are translated to Thai Baht at rates approximating the exchange rates at the dates of the transactions.

Foreign exchange differences are recognised in other comprehensive income and accumulated in the translation reserve, except to extent that the translation difference is allocated to non-controlling interest.

When a foreign operation is disposed of in its entirety or partially such that control, significant influence or joint control is lost, the cumulative amount in the translation reserve related to that foreign operation is reclassified to profit or loss as part of the gain or loss on disposal. If the Group disposes of part of its interest in a subsidiary but retains control, then the relevant proportion of the cumulative amount is reattributed to non-controlling interests. When the Group disposes of only part of an associate or joint venture while retaining significant influence or joint control, the relevant proportion of the cumulative amount is reclassified to profit or loss.

When the settlement of a monetary item receivable from or payable to a foreign operation is neither planned nor likely in the foreseeable future, exchange gains and losses arising from such a monetary item are considered to form part of a net investment in a foreign operation and are recognised in other comprehensive income, and presented in the foreign currency translation reserve in equity until disposal of the investment.

(c) Derivatives

Derivatives are used to manage exposure to foreign exchange and interest rate risks arising from operational, financing and investment activities. Derivatives are not used for trading purposes. However, derivatives that do not qualify for hedge accounting are accounted for as trading instruments.

Derivatives are recognised initially at fair value; attributable transaction costs are recognised in profit or loss when incurred. Subsequent to initial recognition, they are remeasured at fair value. The gain or loss on remeasurement to fair value is recognised immediately in profit or loss. However, where derivatives qualify for hedge accounting, recognition of any resultant gain or loss depends on the nature of the item being hedged (see accounting policy 4 (d)).

The fair value of interest rate swaps is based on broker quotes at the reporting date. Those quotes are tested for reasonableness by discounting estimated future cash flows based on the terms and maturity of each contract and using market interest rates for a similar instrument at the reporting date.

The fair value of forward exchange contracts is based on their listed market price, if available. If a listed market price is not available, then fair value is estimated by discounting the difference between the contractual forward price and the current forward price at the reporting date for the residual maturity of the contract using a risk-free interest rate (based on government bonds).

(d) Hedging

Cash flow hedges

When a derivative is designated as the hedging instrument in a hedge of the variability in cash flows attributable to a particular risk associated with a recognised asset or liability or a highly probable forecast transaction that could affect profit or loss, the effective portion of changes in the fair value of the derivative is recognised in other comprehensive income and presented in the hedging reserve in equity. Any ineffective portion is recognised immediately in profit or loss.

When a hedged forecast transaction occurs and results in the recognition of a financial asset or financial liability, the gain or loss recognised in other comprehensive income does not adjust the initial carrying amount of the asset or liability but remains in equity and is reclassified from equity to profit or loss consistently with the recognition of gains and losses on the asset or liability as a reclassification adjustment.

For hedges of forecast transactions that result in the recognition of a non-financial asset or non-financial liability, the gain or loss recognised in other comprehensive income is reclassified from equity to profit or loss consistently with the recognition of gains and losses on the asset or liability as a reclassification adjustment.

Discontinuing hedge accounting

Hedge accounting is discontinued prospectively when the hedging instrument expires or is sold, terminated or exercised, or no longer qualifies for hedge accounting. Any cumulative gain or loss on the hedging instrument existing in equity is retained in equity and is recognised when the forecast transaction is ultimately recognised in profit or loss. When a forecast transaction is no longer expected to occur, the cumulative gain or loss that was reported in equity is recognised in profit or loss immediately.

Hedge of interest rates

Interest differentials under swap arrangements are accrued and recorded as adjustments to the interest expense relating to the hedged loans.

(e) Cash and cash equivalents

Cash and cash equivalents in the statements of cash flows comprise cash balances, call deposits and saving accounts and highly liquid short-term investments.

(f) Trade and other accounts receivable

A receivable is recognised when the Group has an unconditicnal right to receive consideration. If revenue has been recognised before the Group has an unconditional right to receive consideration, the amount is presented as a contract asset.

A receivable is stated at invoice value less allowance for doubtful accounts which is determined based on analysis of payment histories and future expectations of customer payments. Bad debts are written off when incurred.

(g) Spare parts and supplies

Spare parts and supplies are measured at the lower of cost and net realisable value.

Spare parts comprise fuel oil and supplies which are used for specific equipment in the power plant.

Cost is calculated using the moving average cost principle, and comprises all costs of purchase and other costs incurred in bringing the spare parts and supplies to their present location and condition.

Net realisable value is the estimated selling price in the ordinary course of business less the estimated costs to complete and to make the sale.

The allowance for obsolescence of spare parts is calculated from the balances of spare parts at the end of year on a straight-line basis to write-down the spare parts over the remaining useful lives of power plants.

(h) Investments

Investments in associates, subsidiaries and joint ventures

Investments in associates, subsidiaries and joint ventures in the separate financial statements of the Company are accounted for using the cost method. Investments in associates and joint ventures in the consolidated financial statements are accounted for using the equity method.

Investments in other debt and equity securities

Debt securities and marketable equity securities held for trading are classified as current assets and are stated at fair value, with any resultant gain or loss recognised in profit or loss.

Debt securities that the Group has the positive intent and ability to hold to maturity are classified as held to maturity investments. Held to maturity investments are stated at amortised cost, less any impairment losses. The difference between the acquisition cost and redemption value of such debt securities is amortised using the effective interest rate method over the period to maturity.

Debt securities and marketable equity securities, other than those securities held for trading or intended to be held to maturity, are classified as available for sale investments. Available for sale investments are, subsequent to initial recognition, stated at fair value, and changes therein, other than impairment losses and foreign currency differences on available for sale monetary items, are recognised directly in equity. Impairment losses and foreign exchange differences are recognised in profit or loss. When these investments are derecognised, the cumulative gain or loss previously recognised directly in equity is recognised in profit or loss. Where these investments are interest-bearing, interest calculated using the effective interest method is recognised in profit or loss.

Equity securities which are not marketable are stated at cost less any impairment losses.

The fair value of financial instruments classified as held for trading and available for sale is determined as the quoted bid price at the reporting date.

Disposal of investments

On disposal of an investment, the difference between net disposal proceeds and the carrying amount together with the associated cumulative gain or loss that was reported in equity is recognised in profit or loss.

If the Group disposes of part of its holding of a particular investment, the deemed cost of the part sold is determined using the weighted average method applied to the carrying value of the total holding of the investment.

(i) Property, plant and equipment

Recognition and measurement

Owned assets

Property, plant and equipment are measured at cost less accumulated depreciation and accumulated impairment losses.

Cost includes expenditure that is directly attributable to the acquisition of the asset. The cost of self-constructed assets includes the cost of materials and direct labour, any other costs directly attributable to bringing the assets to a working condition for their intended use, the costs of dismantling and removing the items and restoring the site on which they are located, and capitalised borrowing costs. Cost also may include transfers from other comprehensive income of any gain or loss on qualifying cash flow hedges of foreign currency purchases of property, plant and equipment. Purchased software that is integral to the functionality of the related equipment is capitalised as part of that equipment.

When parts of an item of property, plant and equipment have different useful lives, they are accounted for as separate items (major components) of property, plant and equipment.

Any gains and losses on disposal of item of property, plant and equipment are determined by comparing the proceeds from disposal with the carrying amount of property, plant and equipment, and are recognised in profit or loss.

Leased assets

Leases in terms of which the Group substantially assumes all the risk and rewards of ownership are classified as finance leases. Property, plant and equipment acquired by way of finance leases is capitalised at the lower of its fair value and the present value of the minimum lease payments at the inception of the lease, less accumulated depreciation and accumulated impairment losses. Lease payments are apportioned between the finance charges and reduction of the lease liability so as to achieve a constant rate of interest on the remaining balance of the liability. Finance charges are charged directly to the profit or loss.

Subsequent costs

The cost of replacing a part of an item of property, plant and equipment is recognised in the carrying amount of the item if it is probable that the future economic benefits embodied within the part will flow to the Group, and its cost can be measured reliably. The carrying amount of the replaced part is derecognised. The costs of the day-to-day servicing of property, plant and equipment are recognised in profit or loss as incurred.

Depreciation

Depreciation is calculated based on the depreciable amount, which is the cost of an asset, or other amount substituted for cost, less its residual value.

Depreciation is charged to profit or loss on a straight-line basis over the estimated useful lives of each component of an item of plant and equipment. The estimated useful lives are as follows:

Buildings and other constructions	20 - 40 years
Building improvements	5 years
Power plants, substation and transmission systems	4 - 45 years
Operating and maintenance equipment	5 years
Furniture, fixtures and office equipment	5 years
Vehicles	5 years

No depreciation is provided on freehold land or assets under construction.

Depreciation methods, useful lives and residual values are reviewed at each financial year-end and adjusted if appropriate.

(j) Intangible assets

Goodwill

Goodwill that arises upon the acquisition of subsidiaries is included in intangible assets. The measurement of goodwill at initial recognition is described in note 4(a). Subsequent to initial recognition, goodwill is measured at cost less accumulated impairment losses. In respect of equity-accounted investee, the carrying amount of goodwill is included in the carrying amount of the investment, and an impairment loss on such an investment is not allocated to any asset, including goodwill, that forms part of the carrying amount of the equity-accounted investee.

Other intangible assets

Other intangible assets that are acquired by the Group and have finite useful lives are measured at cost less accumulated amortisation and accumulated impairment losses.

Subsequent expenditure

Subsequent expenditure is capitalised only when it increases the future economic benefits embodied in the specific asset to which it relates. All other expenditure, including expenditure on internally generated goodwill and brands, is recognised in profit or loss as incurred.

Amortisation

Amortisation is based on the cost of the asset, or other amount substituted for cost, less its residual value.

Amortisation is recognised in profit or loss on a straight-line basis over the estimated useful lives of intangible assets, other than goodwill, from the date that they are available for use, since this most closely reflects the expected pattern of consumption of the future economic benefits embodied in the asset.

The estimated useful lives for the current period are as follows:

Software licences	3 - 10	years
Licenses on project development	25	years
Right to power purchase agreements	20 - 25	years

Amortisation methods, useful lives and residual values are reviewed at each financial year-end and adjusted if appropriate.

(k) Project development expenditure

Project development expenditure is recognised in profit or loss as incurred. Project development expenditure is capitalised only if development costs can be measured reliably, the product or process is technically and commercially feasible, future economic benefits are probable, and the Group intends to use or sell the asset. The expenditure capitalised includes borrowing costs. Other development expenditure is recognised in profit or loss as incurred.

Capitalised development expenditure is measured at cost less accumulated impairment losses. Capitalised development expenditure will be amortised when it is available for use in the manner intended.

(l) Impairment

The carrying amounts of the Group's assets are reviewed at each reporting date to determine whether there is any indication of impairment. If any such indication exists, the assets' recoverable amounts are estimated. For goodwill and intangible assets that have indefinite useful lives or are not yet available for use, the recoverable amount is estimated each year at the same time.

An impairment loss is recognised if the carrying amount of an asset or its cash-generating unit exceeds its recoverable amount. The impairment loss is recognised in profit or loss.

When a decline in the fair value of an available for sale financial asset has been recognised directly in equity and there is objective evidence that the value of the asset is impaired, the cumulative loss that had been recognised directly in equity is recognised in profit or loss even though the financial asset has not been derecognised. The amount of the cumulative loss that is recognised in profit or loss is the difference between the acquisition cost and current fair value, less any impairment loss on that financial asset previously recognised in profit or loss.

Calculation of recoverable amount

The recoverable amount of held to maturity securities carried at amortised cost is calculated as the present value of the estimated future cash flows discounted at the original effective interest rate.

The recoverable amount of available for sale financial assets is calculated by reference to the fair value.

The recoverable amount of a non-financial asset is the greater of the asset's value in use and fair value less costs to sell. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. For an asset that does not generate cash inflows largely independent of those from other assets, the recoverable amount is determined for the cash-generating unit to which the asset belongs.

Reversals of impairment

An impairment loss in respect of a financial asset is reversed if the subsequent increase in recoverable amount can be related objectively to an event occurring after the impairment loss was recognised in profit or loss. For financial assets carried at amortised cost and available for sale financial assets that are debt securities, the reversal is recognised in profit or loss. For available for sale financial assets that are equity securities, the reversal is recognised in other comprehensive income.

An impairment loss in respect of goodwill is not reversed. Impairment losses recognised in prior periods in respect of other non-financial assets are assessed at each reporting date for any indications that the loss has decreased or no longer exists. An impairment loss is reversed if there has been a change in the estimates used to determine the recoverable amount. An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortisation, if no impairment loss had been recognised.

(m) Interest-bearing liabilities

Interest-bearing liabilities are recognised initially at fair value less attributable transaction charges. Subsequent to initial recognition, interest-bearing liabilities are stated at amortised cost with any difference between cost and redemption value being recognised in profit or loss over the period of the borrowings on an effective interest basis.

(n) Trade and other accounts payable

Trade and other accounts payable are stated at cost.

(o) Employee benefits

Defined contribution plan

Defined contribution plan is post-employment benefit plan which the Group contributes a fixed amount to another entity ("Provident Fund") and has no legal or constructive obligation to pay the additional contributions. Obligations for contributions to defined contribution plan are expensed in profit or loss as the related service is provided by the employee.

Defined benefit plans

The Group's net obligation in respect of defined benefit plans is calculated separately for each plan by estimating the amount of future benefit that employees have earned in the current and prior periods, discounting that amount.

The calculation of defined benefit obligations is performed annually by a qualified actuary using the projected unit credit method. When the calculation results in a potential asset for the Group, the recognised asset is limited to the present value of economic benefits available in the form of any future refunds from the plan or reductions in future contributions to the plan. To calculate the present value of economic benefits, consideration is given to any application minimum funding requirements.

Remeasurements of the net defined benefit liability, actuarial gain or loss are recognised immediately in other comprehensive income. The Group determines the interest expense on the net defined benefit liability for the period by applying the discount rate used to measure the defined benefit obligation at the beginning of the annual period, taking into account any changes in the net defined benefit liability during the period as a result of contributions and benefit payments. Net interest expense and other expenses related to defined benefit plans are recognised in profit or loss.

When the benefits of a plan are changed or when a plan is curtailed, the resulting change in benefit that relates to past service or the gain or loss on curtailment is recognised immediately in profit or loss. The Group recognises gains and losses on the settlement of a defined benefit plan when the settlement occurs.

Short-term employee benefits

Short-term employee benefits are expensed as the related service is provided. A liability is recognised for the amount expected to be paid if the Group has a present legal or constructive obligation to pay this amount as a result of past service provided by the employee and the obligation can be estimated reliably.

(p) Provisions

A provision is recognised if, as a result of a past event, the Group has a present legal or constructive obligation that can be estimated reliably, and it is probable that an outflow of economic benefits will be required to settle the obligation. Provisions are determined by discounting the expected future cash flows at a pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the liability. The unwinding of the discount is recognised as finance cost.

(q) Measurement of fair values

The Group has an established control framework with respect to the measurement of fair values. This includes a valuation team that has overall responsibility for overseeing all significant fair value measurements, including Level 3 fair values, and reports directly to the chief financial officer.

The valuation team regularly reviews significant unobservable inputs and valuation adjustments. If third party information, such as broker quotes or pricing services, is used to measure fair values, then the valuation team assesses the evidence obtained from the third parties to support the conclusion that these valuations meet the requirements of TFRS, including the level in the fair value hierarchy in which the valuations should be classified.

Significant valuation issues are reported to the Group's Audit Committee.

When measuring the fair value of an asset or a liability, the Group uses observable market data as far as possible. Fair values are categorised into different levels in a fair value hierarchy based on the inputs used in the valuation techniques as follows:

- *Level 1*: quoted prices in active markets for identical assets or liabilities.
- *Level 2*: inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly.
- *Level 3*: inputs for the asset or liability that are based on unobservable input.

If the inputs used to measure the fair value of an asset or liability might be categorised in different levels of the fair value hierarchy, then the fair value measurement is categorised in its entirety in the same level of the fair value hierarchy as the lowest level input that is significant to the entire measurement.

(r) Revenue

Information about the Group's accounting policies relating to revenue from sales of electricity is disclosed in note 3.

Revenue is recognised when a customer obtains control of the goods or services in an amount that reflects the consideration to which the Group expects to be entitled, excluding those amounts collected on behalf of third parties, value added tax and is after deduction of any trade discounts.

Revenue from rendering of services

Revenue from rendering of services is recognised over time as the services are provided. The related costs are recognised in profit or loss when they are incurred.

Revenue from finance lease contracts

Revenue from finance lease contracts is recognised in profit or loss by using the effective interest rate method over the period of the power purchase agreements.

Other income

Other income is recognised in profit or loss as it accrues.

(s) *Rental income*

Rental income is recognised in profit or loss on a straight-line basis over the term of the lease. Lease incentives granted are recognised as an integral part of the total rental income. Contingent rentals are recognised as income in the accounting period in which they are earned.

(t) *Investment income*

Investment income comprises dividend and interest income from investments and bank deposits. Dividend income is recognised in profit or loss on the date the Group's right to receive payments is established. Interest income is recognised in profit or loss as it accrues.

(u) *Finance costs*

Interest expenses and similar costs are charged to profit or loss for the period in which they are incurred, except to the extent that they are capitalised as being directly attributable to the acquisition, construction or production of an asset which necessarily takes a substantial periods of time to be prepared for its intended use or sale.

(v) *Financing fees*

Financing fees are recognised initially at cost and presented as deferred financing fees and amortised on the effective interest rate method over the period of the long-term loan agreements and capitalised as cost of an asset during the construction period. After construction completed, amortisation are recognised in profit or loss. Deferred financing fees are part of borrowing costs and are presented deduction from long-term loans.

(w) *Lease payments*

Payments made under operating leases are recognised in profit or loss on a straight-line basis over the term of the lease.

(x) Other expenses

Other expenses are recognised in profit or loss as it accrues.

(y) Income tax

Income tax expense for the year comprises current and deferred tax. Current and deferred tax are recognised in profit or loss except to the extent that they relate to a business combination, or items recognised directly in equity or in other comprehensive income.

Current tax is the expected tax payable or receivable on the taxable income or loss for the year, using tax rates enacted or substantively enacted at the reporting date, and any adjustment to tax payable in respect of previous years.

Deferred tax is recognised in respect of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for taxation purposes. Deferred tax is not recognised for the following temporary differences: the initial recognition of goodwill; the initial recognition of assets or liabilities in a transaction that is not a business combination and that affects neither accounting nor taxable profit or loss; and differences relating to investments in subsidiaries and joint ventures to the extent that it is probable that they will not reverse in the foreseeable future.
The measurement of deferred tax reflects the tax consequences that would follow the manner in which the Group expects, at the end of the reporting period, to recover or settle the carrying amount of its assets and liabilities.

Deferred tax is measured at the tax rates that are expected to be applied to the temporary differences when they reverse, using tax rates enacted or substantively enacted at the reporting date.

In determining the amount of current and deferred tax, the Group takes into account the impact of uncertain tax positions and whether additional taxes and interest may be due. The Group believes that its accruals for tax liabilities are adequate for all open tax years based on its assessment of many factors, including interpretations of tax law and prior experience. This assessment relies on estimates and assumptions and may involve a series of judgements about future events. New information may become available that causes the Group to change its judgement regarding the adequacy of existing tax liabilities; such changes to tax liabilities will impact tax expense in the period that such a determination is made.

Deferred tax assets and liabilities are offset if there is a legally enforceable right to offset current tax liabilities and assets, and they relate to income taxes levied by the same tax authority on the same taxable entity, or on different tax entities, but they intend to settle current tax liabilities and assets on a net basis or their tax assets and liabilities will be realised simultaneously.

A deferred tax asset is recognised to the extent that it is probable that future taxable profits will be available against which the temporary differences can be utilised. Future taxable profits are determined based on the reversal of relevant taxable temporary differences. If the amount of taxable temporary differences is insufficient to recognise a deferred tax asset in full, then future taxable profits, adjusted for reversals of existing temporary differences, are considered, based on the business plans for individual subsidiaries in the Group. Deferred tax assets are reviewed at each reporting date and reduced to the extent that it is no longer probable that the related tax benefit will be realised.

(z) Basic earnings per share

The Group presents basic earnings per share (EPS) data for its ordinary shares. Basic earnings per share is calculated by dividing the profit or loss attributable to ordinary shareholders of the Company by the weighted average number of ordinary shares outstanding during the year.

(aa) Related party

A related party is a person or entity that has direct or indirect control, or has significant influence over the financial and managerial decision-making of the Group; a person or entity that are under common control or under the same significant influence as the Group; or the Group has direct or indirect control or joint control or has significant influence over the financial and managerial decision-making of a person or entity.

(bb) Segment reporting

Segment results that are reported to the Group's CEO (the chief operating decision maker) include items directly attributable to a segment as well as those that can be allocated on a reasonable basis.

5 Acquisition of subsidiary

On 1 October 2019, the Company acquired the ordinary shares and preferred shares of Navanakorn Electric Company Limited, in proportion of investment of 99.97% of issued and paid-up share capital by paying for shares to the existing shareholders, amounting to Baht 1,866.05 million and entered into a loan agreement with such company, in an aggregate amount not exceeding Baht 197.35 million with bear interest at the rate of 4.50% per annum. Principle and interest will be due as stipulated in the agreement. On that day, such company had drawdown loan from the Company amounting to Baht 132.35 million.

After such transactions are completed, the shareholder structure of such company comprises the Company 99.97% and minority interest 0.03%.

Navanakorn Electric Company Limited's power plant is a gas-fired SPP cogeneration power plant with power generating capacity of 110 Megawatts and steam generating capacity of 10 Tons per hour. It is located in the south of Navanakorn Industrial Promotion Zone, Pathum Thani Province. The power plant has been commercially operating since 31 October 2013 and has a power purchase agreement with EGAT for a period of 25 years ending in 2038, and also has power purchase agreements and cooling water service agreement with local companies. Management believes that the investment in such subsidiary will enable the Group expands the investment opportunity in line with the Group's strategy with the goal to generate sustainable growth of the Group.

On 25 October 2019, the shareholders of the subsidiary approved a change of such company's name from "Navanakorn Electric Company Limited" to "RATCH Cogeneration Company Limited". The subsidiary has registered the change of name with the Department of Business Development, the Ministry of Commerce on 4 November 2019.

Identifiable assets acquired and liabilities assumed

	Book value	Fair value adjustment	Fair value
		(in thousand Baht)	
Cash and cash equivalents	21,300	-	21,300
Trade accounts receivable and other receivables	376,761	-	376,761
Inventories	54,291	-	54,291
Other current assets and other non-current assets	181,996	-	181,996
Property, plant and equipment	4,847,647	(242,355)	4,605,292
Intangible assets	81	1,115,835	1,115,916
Bank overdrafts and short-term loans	(299,536)	-	(299,536)
Trade accounts payables and other payables	(242,765)	-	(242,765)
Other current liabilities and other non-current liabilities	(32,883)	-	(32,883)
Long-term loans from financial institutions	(3,311,029)	-	(3,311,029)
Derivative liabilities	-	(44,333)	(44,333)
Deferred tax liabilities	-	(156,045)	(156,045)
Total identifiable net assets	**1,595,863**	**673,102**	**2,268,965**
Less Non-controlling interests *(0.03 %)*			(647)
Total identifiable net assets received *(99.97%)*			**2,268,318**
Gain on bargain purchase			(269,918)
Purchase consideration transferred			**1,998,400**
Net cash acquired with the subsidiary			21,300
Cash paid			(1,998,400)
Net cash outflows			**(1,977,100)**

An independent appraiser has been appointed to determine the fair value of the business and the report of the appraiser is completed as at the date of approval of these consolidated financial statements.

Transaction costs in connection with a business combination

The Group incurred transaction costs in connection with a business combination of Baht 17.95 million comprise legal fees, other professional and consulting fees are recognised in administrative expenses in the consolidated and separate statements of comprehensive income.

The assets, liabilities and operating results since acquisition date of the subsidiary have been included in the consolidated financial statements for the year ended 31 December 2019. The subsidiary contributed revenue from sales and rendering of services of Baht 495.38 million and profit for the period of Baht 9.47 million to the Group's operating results. If the acquisition had occurred since 1 January 2019, management expected that revenue from sales and rendering of services would have been increased by Baht 2,073.77 million and profit for the year would have been decreased by Baht 6.95 million.

6 Related parties

Relationships with subsidiaries, associates and joint ventures, other related parties that the Group had significant transactions with during the year were as follows:

Name of entities	Country of incorporation/ nationality	Nature of relationships
Electricity Generating Authority of Thailand	Thailand	Major shareholder, some common directors
Ratchaburi Electricity Generating Company Limited	Thailand	Direct subsidiary, 99.99% shareholding, some common directors
Ratchaburi Energy Company Limited	Thailand	Direct subsidiary, 99.99% shareholding, some common directors
RH International Corporation Limited	Thailand	Direct subsidiary, 99.99% shareholding
RATCH O&M Company Limited	Thailand	Direct subsidiary, 99.99% shareholding
Ratchaburi Alliances Company Limited	Thailand	Direct subsidiary, 99.99% shareholding
Hin Kong Power Holding Company Limited	Thailand	Direct subsidiary, 99.99% shareholding, some common directors
RATCH Cogeneration Company Limited	Thailand	Direct subsidiary, 99.97% shareholding
RATCH-Lao Services Company Limited	Lao PDR	Direct subsidiary, 99.99% shareholding
RH International (Mauritius) Corporation Limited	Mauritius	Indirect subsidiary, 100% shareholding by a direct subsidiary
RH International (Singapore) Corporation Pte. Ltd.	Singapore	Indirect subsidiary, 100% shareholding by an indirect subsidiary
RATCH-Australia Corporation Pty. Ltd.	Australia	Indirect subsidiary, 100% shareholding by an indirect subsidiary, some common directors
RATCH China Power Limited	Hong Kong	Indirect subsidiary, 100% shareholding by an indirect subsidiary
RE Solar 1 Company Limited	Thailand	Indirect subsidiary, 99.99% shareholding by a direct subsidiary
CN Biomass Company Limited	Thailand	Indirect subsidiary, 99.99% shareholding by a direct subsidiary
PB Biomass Company Limited	Thailand	Indirect subsidiary, 99.99% shareholding by a direct subsidiary

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

Name of entities	Country of incorporation/ nationality	Nature of relationships
LP Biomass Company Limited	Thailand	Indirect subsidiary, 99.99% shareholding by a direct subsidiary
Hin Kong Power Company Limited	Thailand	Indirect subsidiary, 99.99% shareholding by a direct subsidiary, some common directors
First Korat Wind Company Limited	Thailand	Direct associate, 20% shareholding
K.R. TWO Company Limited	Thailand	Direct associate, 20% shareholding
Solar Power (Korat 3) Company Limited	Thailand	Indirect associate, 40% shareholding by a direct subsidiary
Solar Power (Korat 4) Company Limited	Thailand	Indirect associate, 40% shareholding by a direct subsidiary
Solar Power (Korat 7) Company Limited	Thailand	Indirect associate, 40% shareholding by a direct subsidiary
Chubu Ratchaburi Electric Services Company Limited	Thailand	Direct joint venture, 50% shareholding
SouthEast Asia Energy Limited	Thailand	Direct joint venture, 33.33% shareholding
Things on Net Company Limited	Thailand	Direct joint venture, 35% shareholding
Nam Ngum 3 Power Company Limited	Lao PDR	Direct joint venture, 25% shareholding
Xe-Pian Xe-Namnoy Power Company Limited	Lao PDR	Direct joint venture, 25% shareholding
Ratchaburi Power Company Limited	Thailand	Indirect joint venture, 25% shareholding by a direct subsidiary,
Nava Nakorn Electricity Generating Company Limited	Thailand	Indirect joint venture, 40% shareholding by a direct subsidiary
Ratchaburi World Cogeneration Company Limited	Thailand	Indirect joint venture, 40% shareholding by a direct subsidiary
Berkprai Cogeneration Company Limited	Thailand	Indirect joint venture, 35% shareholding by a direct subsidiary
Solarta Company Limited	Thailand	Indirect joint venture, 49% shareholding by a direct subsidiary
Songkhla Biomass Company Limited	Thailand	Indirect joint venture, 40% shareholding by a direct subsidiary

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

Name of entities	Country of incorporation/ nationality	Nature of relationships
Songkhla Biofuel Company Limited	Thailand	Indirect joint venture, 40% shareholding by a direct subsidiary
Hongsa Power Company Limited	Lao PDR	Indirect joint venture, 40% shareholding by an indirect subsidiary, some common directors
Phu Fai Mining Company Limited	Lao PDR	Indirect joint venture, 37.50% shareholding by an indirect subsidiary, some common directors
Asia Water Co., Ltd.	Lao PDR	Indirect joint venture, 40% shareholding by a direct subsidiary
PT Medco Ratch Power Riau	Republic of Indonesia	Indirect joint venture, 49% shareholding by an indirect subsidiary, some common directors
Fareast Renewable Development Pte. Ltd.	Singapore	Indirect joint venture, 50% shareholding by an indirect subsidiary, some common directors
Nam Ngum 2 Power Company Limited	Lao PDR	Subsidiary of a direct joint venture, 75% shareholding by a direct joint venture
PT Bajradaya Sentranusa	Republic of Indonesia	Subsidiary of an indirect joint venture, 53.21% shareholding by an indirect joint venture
Key management personnel	Thai	Persons having authority and responsibility for planning, directing and controlling the activities of the entity, directly or indirectly, including any director (whether executive or otherwise) of the Group.

The pricing policies for transactions are explained further below:

Transactions	Pricing policies
Revenue from sales of electricity	Contractually agreed price
Operation and maintenance service income	Contractually agreed price
Revenue from finance lease contracts	Contractually agreed price
Management service income	Contractually agreed price
Purchase of goods/ raw materials	Contractually agreed price
Operation and maintenance service fee	Contractually agreed price
Interest income	Contractually agreed rate
Other income	Contractually agreed price
Rental income	Contractually agreed price
Interest expense	Contractually agreed rate

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

Significant transactions for the years ended 31 December with related parties were as follows:

	Consolidated financial statements		Separate financial statements	
Year ended 31 December	2019	2018	2019	2018
		(in thousand Baht)		
Major shareholder				
Revenue from sales of electricity	32,350,467	33,951,586	-	-
Operation and maintenance service income	53,193	50,900	-	-
Revenue from finance lease contracts	2,923,233	3,335,814	-	-
Purchase of electricity	160,023	171,836	-	-
Operation and maintenance service fee	1,249,128	1,184,010	-	-
Management service of fuel	2,155	2,137	-	-
Other service fee	1,328	3,902	19	2,617
Subsidiaries				
Management service income	-	-	238,762	155,168
Interest income	-	-	44,128	76,573
Dividend income	-	-	3,068,049	3,193,828
Associates				
Management service income	2,232	2,188	2,232	2,188
Dividend income	-	-	44,993	95,683
Joint ventures				
Operation and maintenance service income	517	-	-	-
Management service income	241,862	236,371	241,613	236,371
Interest income	8,416	2,599	8,416	2,599
Dividend income	-	-	228,023	216,298
Rental income	12,067	12,067	-	-
Other income	29,938	34,247	-	-
Other related parties				
Dividend income	894	-	894	-
Interest expense	-	23,716	-	-
Key management personnel compensation				
Short-term employee benefits	152,843	159,877	77,214	82,004
Post-employment benefits	6,757	7,937	2,430	3,004
Other long-term benefits	5,428	1,509	5,187	331
Total key management personnel compensation	**165,028**	**169,323**	**84,831**	**85,339**

Balances as at 31 December with related parties were as follows:

Trade accounts receivable from related parties	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
Major shareholder				
Electricity Generating Authority of Thailand	5,277,450	5,226,926	-	-
Indirect joint venture				
Asia Water Co., Ltd.	209	-	-	-
	5,277,659	5,226,926	-	-
Less allowance for doubtful accounts	-	-	-	-
Net	**5,277,659**	**5,226,926**	-	-
Reversal of doubtful debts expense for the year	-	**(55,940)**	-	-

Dividend receivables	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
Direct associate				
K.R. TWO Company Limited	**600**	**64,091**	**600**	**64,091**

Advances to and other current receivables from related parties	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
Major shareholder				
Electricity Generating Authority of Thailand	1,434	1,618	-	-
Direct subsidiaries				
Ratchaburi Electricity Generating Company Limited	-	-	9,435	9,019
Ratchaburi Energy Company Limited	-	-	57	54
RH International Corporation Limited	-	-	1,017	984
RATCH O&M Company Limited	-	-	64	64
Ratchaburi Alliances Company Limited	-	-	161	161
Hin Kong Power Holding Company Limited	-	-	104	-
RATCH Cogeneration Company Limited	-	-	2,020	-
Indirect subsidiaries				
RH International (Mauritius) Corporation Limited	-	-	112	121
RH International (Singapore) Corporation Pte. Ltd.	-	-	25,876	28,788
RATCH-Australia Corporation Pty. Ltd.	-	-	9,950	417
RATCH China Power Limited	-	-	112	121
RE Solar 1 Company Limited	-	-	64	64
CN Biomass Company Limited	-	-	64	64
PB Biomass Company Limited	-	-	64	64

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

Advances to and other current receivables from related parties	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
Indirect subsidiaries				
LP Biomass Company Limited	-	-	64	64
Hin Kong Power Company Limited	-	-	12,369	-
Direct associates				
First Korat Wind Company Limited	99	98	99	98
K.R. TWO Company Limited	99	98	99	98
Direct joint ventures				
Chubu Ratchaburi Electric Services Company Limited	928	920	928	920
Xe-Pian Xe-Namnoy Power Company Limited	13,246	10,986	13,246	10,986
Indirect joint ventures				
Ratchaburi Power Company Limited	9,378	12,403	-	-
Nava Nakorn Electricity Generating Company Limited	1,094	1,038	1,094	1,038
Berkprai Cogeneration Company Limited	1,091	1,029	1,091	1,029
Solarta Company Limited	1,773	1,696	1,773	1,696
Songkhla Biomass Company Limited	-	192	-	192
Hongsa Power Company Limited	-	4,225	-	4,225
Asia Water Co., Ltd.	91	-	-	-
PT Medco Ratch Power Riau	61,160	17,681	8,368	-
Total	**90,393**	**51,984**	**88,231**	**60,267**

Movement of long-term loans to	Interest rate	Consolidated financial statements				
	At 31 December *(% per annum)*	At 1 January	Increase	Decrease	Exchange rate adjustment	At 31 December
			(in thousand Baht)			
2019						
Direct joint venture						
Xe-Pain Xe-Namnoy Power Company Limited	5.94	**42,494**	**507,525**	**-**	**(9,121)**	**540,898**
2018						
Direct joint venture						
Xe-Pain Xe-Namnoy Power Company Limited	6.58	**42,813**	**-**	**-**	**(319)**	**42,494**

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

Movement of short-term loans to	Interest rate	Separate financial statements					
	At 31 December (% per annum)	At 1 January	Increase	Decrease	Reclassify	Exchange rate adjustment	At 31 December
				(in thousand Baht)			
2019							
Direct subsidiaries							
Ratchaburi Energy Company Limited	4.50	-	-	-	14,000	-	14,000
RATCH Cogeneration Company Limited	1.75	-	200,000	(100,000)	-	-	100,000
Indirect subsidiary							
Hin Kong Power Company Limited	4.50	-	20,000	-	-	-	20,000
Total		-	**220,000**	**(100,000)**	**14,000**	-	**134,000**
2018							
Direct subsidiary							
Ratchaburi Electricity Generating Company Limited	-	**2,730,000**	**7,780,000**	**(10,510,000)**	-	-	-

Movement of long-term loans to	Interest rate	Separate financial statements					
	At 31 December (% per annum)	At 1 January	Increase	Decrease	Reclassify	Exchange rate adjustment	At 31 December
				(in thousand Baht)			
2019							
Direct subsidiaries							
Ratchaburi Energy Company Limited	4.50	175,000	-	(161,000)	(14,000)	-	-
RATCH Cogeneration Company Limited	4.50	-	132,348	-	-	-	132,348
RATCH-Lao Services Company Limited	3.65 and 4.50	1,049,472	160,197	-	-	(75,205)	1,134,464
Direct joint venture							
Xe-Pain Xe-Namnoy Power Company Limited	5.94	42,494	507,525	-	-	(9,121)	540,898
Total		**1,266,966**	**800,070**	**(161,000)**	**(14,000)**	**(84,326)**	**1,807,710**

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

Movement of long-term loans to	Interest rate	Separate financial statements					
	At 31 December *(% per annum)*	At 1 January	Increase	Decrease	Reclassify	Exchange rate adjustment	At 31 December
				(in thousand Baht)			
2018							
Direct subsidiaries							
Ratchaburi Energy Company Limited	4.00	203,000	-	(28,000)	-	-	175,000
RATCH-Lao Services Company Limited	3.65	1,062,077	-	(4,722)	-	(7,883)	1,049,472
Direct joint venture							
Xe-Pain Xe-Namnoy Power Company Limited	6.58	42,813	-	-	-	(319)	42,494
Total		**1,307,890**	**-**	**(32,722)**	**-**	**(8,202)**	**1,266,966**

Finance lease receivable from related party	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
Major shareholder				
Electricity Generating Authority of Thailand	**16,407,697**	**17,670,515**	**-**	**-**

	Consolidated financial statements					
	Portion due within one year		Portion due after one year		Total	
	2019	2018	2019	2018	2019	2018
	(in thousand Baht)					
Receivables under finance lease contracts	5,642,526	3,952,243	19,503,531	25,146,057	25,146,057	29,098,300
Less unearned interest income	(2,374,152)	(2,689,425)	(6,364,208)	(8,738,360)	(8,738,360)	(11,427,785)
	3,268,374	**1,262,818**	**13,139,323**	**16,407,697**	**16,407,697**	**17,670,515**
Less allowance for doubtful accounts	-	-	-	-	-	-
Receivable under finance lease contracts-net	**3,268,374**	**1,262,818**	**13,139,323**	**16,407,697**	**16,407,697**	**17,670,515**

The gross receivable and interest under finance lease contracts as at 31 December were as follows:

	Consolidated financial statements			
	Receivable and interest under finance lease contracts	Receivable under finance lease contracts -net	Receivable and interest under finance lease contracts	Receivable under finance lease contracts -net
	2019		2018	
	(in thousand Baht)			
Portion due within one year	5,642,526	3,268,374	3,952,243	1,262,818
Portion due after one year but within five years	14,048,511	8,666,661	17,254,194	10,363,312
Portion due after five years	5,455,020	4,472,662	7,891,863	6,044,385
	25,146,057	**16,407,697**	**29,098,300**	**17,670,515**
Less unearned interest income	(8,738,360)		(11,427,785)	
Receivable under finance lease contracts-net	**16,407,697**		**17,670,515**	

Other non-current receivables from related parties	**Consolidated financial statements**		**Separate financial statements**	
	2019	2018	2019	2018
	(in thousand Baht)			
Direct subsidiaries				
Ratchaburi Energy Company Limited	-	-	-	3,605
RATCH Cogeneration Company Limited	-	-	1,501	-
RATCH-Lao Services Company Limited	-	-	-	3,405
Direct joint venture				
Xe-Pian Xe-Namnoy Power Company Limited	18,317	9,901	18,317	9,901
Total	**18,317**	**9,901**	**19,818**	**16,911**

Other current payables to related parties	**Consolidated financial statements**		**Separate financial statements**	
	2019	2018	2019	2018
	(in thousand Baht)			
Major shareholder				
Electricity Generating Authority of Thailand	52,996	40,958	-	703
Direct subsidiaries				
Ratchaburi Electricity Generating Company Limited	-	-	-	310
RATCH-Lao Services Company Limited	-	-	4,227	-
Indirect subsidiary				
RATCH-Australia Corporation Pty. Ltd.	-	-	3,338	2,508

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

Other current payables to related parties	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
Indirect joint ventures				
Ratchaburi Power Company Limited	14,038	15,187	12,529	13,679
Fareast Renewable Development Pte. Ltd.	64	-	-	-
Total	**67,098**	**56,145**	**20,094**	**17,200**

Significant agreements with related parties

Short-term loans to related parties

As at 31 December 2019, the Company had outstanding balance of loans to Ratchaburi Energy Company Limited, a direct subsidiary, amounting to Baht 14 million which bear interest at the rate of 4.50 per annum and will be due at call.

As at 31 December 2019, the Company had outstanding balance of loans to RATCH Cogeneration Company Limited, a direct subsidiary, amounting to Baht 100 million which bear interest at the rate of 1.75 per annum and will be due within one year.

As at 31 December 2019, the Company had outstanding balance of loans to Hin Kong Power Company Limited, an indirect subsidiary, amounting to Baht 20 million which bear interest at the rate of 4.50 per annum and will be due at call.

Long-term loans to related parties

As at 31 December 2019, the Company had outstanding balance of loans to RATCH-Lao Services Company Limited, a direct subsidiary, under the existing loan agreement, amounting to U.S. Dollars 32.60 million or equivalent to Baht 974.27 million which bear interest at the rate of 3.65 per annum. Principle and interest will be due as stipulated in the agreement. The Company has no intention to recall the loans from the subsidiary within one year. Therefore, the Company classified the balance of the loans as long-term loans.

On 15 March 2019, the Company entered into a new loan agreement with RATCH-Lao Services Company Limited, a direct subsidiary, in an aggregate amount not exceeding Baht 1,287 million which bear interest at the rate of 4.50 per annum. Principle and interest will be due as stipulated in the agreement. As at 31 December 2019, the Company had outstanding balance of new loan to the subsidiary, amounting to Baht 160.20 million. The Company has no intention to recall the loans from the subsidiary within one year. Therefore, the Company classified the balance of the loan as long-term loan.

As at 31 December 2019, the Company had outstanding balance of loans to RATCH Cogeneration Company Limited, a direct subsidiary, amounting to Baht 132.35 million which bear interest at the rate of 4.50 per annum. Principle and interest will be due as stipulated in the agreement. The Company has no intention to recall the loans from the subsidiary within one year. Therefore, the Company classified the balance of the loan as long-term loan.

As at 31 December 2019, the Company had outstanding balance of loans to Xe-Pian Xe-Namnoy Power Company Limited, a direct joint venture, amounting to U.S. Dollars 1.32 million or equivalent to Baht 39.45 million which bear interest at the rate of 3-Month London Interbank Offered Rate (LIBOR), plus fixed margin per annum. The loan agreement determined the repayment term of principal and interest within 27 years commencing from the joint venture made the first drawdown of loans from financial institutions on 5 February 2014.

On 24 July 2019, the Company entered into a Shareholders' Loan Agreement with Xe-Pian Xe-Namnoy Power Company Limited, a direct joint venture, for a maximum amount of U.S. Dollars 16.78 million for the purpose of covering additional expenditure of the Xe-Pian Xe-Namnoy Hydroelectric Power Project. The interest rate is 3-Month London Interbank Offered Rate (LIBOR), plus fixed margin per annum. Principle and interest will be due as stipulated in the agreement. As at 31 December 2019, the Company had outstanding balance of loans to the joint venture, amounting to U.S. Dollars 16.78 million or equivalent to Baht 501.45 million.

Power Purchase Agreements

On 9 October 2000, Ratchaburi Electricity Generating Company Limited, a direct subsidiary, entered into a Power Purchase Agreement with EGAT for a period of 25 years, whereby such subsidiary will deliver net electricity generation from Thermal power plants unit 1 and 2 and Combined Cycle power plants block 1, 2 and 3 to EGAT under the conditions of the Power Purchase Agreement. Such subsidiary will receive revenue from EGAT, which are comprised of energy payment (EP) and availability payment (AP). An energy payment (EP) covers production costs which are comprised of fuel costs and variable costs of operation and maintenance. Such costs will be adjusted in accordance with fuel price, Energy Efficiency Ratio and Consumer Price Index. An availability payment (AP) covers the repayment of principal and interest of loans, return on shareholders' equity, fixed operation and maintenance expenses, maintenance parts expenses and administrative expenses. Such costs will be adjusted to cover the changes of interest rates, Consumer Price Index and exchange rates.

On 1 August 2014, Ratchaburi Electricity Generating Company Limited, a direct subsidiary, obtained the transfer of right in a Power Purchase Agreement with EGAT from a subsidiary which was dissolved in year 2014. Such agreement dated on 22 May 1997 and has a period of 20 years commencing from the commercial operation date of such dissolved subsidiary.

On 12 July 2019, Hin Kong Power Company Limited, an indirect subsidiary, entered into a Power Purchase Agreement for Hin Kong Power Project located in Ratchaburi province with EGAT. The agreement is effective from the execution date until the 25-year from the commercial operation date. The project is a combined-cycle power plant project with total contracted capacity of 1,400 Megawatts which is scheduled for commercial operation in 2024 and 2025.

On 3 December 2009, RATCH Cogeneration Company Limited, a direct subsidiary, entered into a Power Purchase Agreement for RATCH Cogeneration Power Project located in Pathum Thani province with EGAT. The agreement is effective from the execution date until the 25-year from the commercial operation date. The project is a combined-cycle power plant project with total contracted capacity of 110 Megawatts which started its commercial operation in 2013.

Operation and Maintenance Agreement

On 7 January 2009, Ratchaburi Electricity Generating Company Limited, a direct subsidiary, entered into an Operation and Maintenance Agreement with EGAT. The agreement is effective from 1 January 2009 until the termination dates of the Power Purchase Agreement for Thermal power plants and Combined Cycle power plants. EGAT will operate and provide routine maintenance services including major overhaul to such subsidiary. The initial value of the agreement is approximately Baht 16,608.16 million, which will be adjusted by the annual Consumer Price Index.

Fuel Management Service Agreement

On 1 July 2012, Ratchaburi Electricity Generating Company Limited, a direct subsidiary, entered into a Fuel Management Service Agreement with EGAT, whereby EGAT will coordinate the supply and delivery of fuel oil, according to the demand of such subsidiary and align with EGAT's power dispatching plan. The agreement is effective from 1 July 2012 until 30 June 2013. The service fee is stipulated in the agreement. The agreement is automatically extended for a period of 1 year unless written notice.

Land Lease Agreement and Common Facility Agreement

On 7 June 2004 and 21 October 2005, Ratchaburi Electricity Generating Company Limited, a direct subsidiary, entered into a Land Lease Agreement for an area of 145 rai with Ratchaburi Power Company Limited, an indirect joint venture. The land is located in the Ratchaburi Power Plant area. The rental period is 25 years and 3 months commencing from the commercial operation date of Ratchaburi Power Company Limited.

On 25 November 2005, Ratchaburi Electricity Generating Company Limited, a direct subsidiary, entered into a Common Facility Agreement with Ratchaburi Power Company Limited, an indirect joint venture, whereby such subsidiary will provide certain facilities, services, right to use and access rights to utilities relating to construction and operation to Ratchaburi Power Company Limited as stipulated in the agreement. This agreement is effective from the signing date in the agreement until the termination date of the Land Lease Agreement dated on 7 June 2004.

Management Service Agreement

On 27 February 2004, the Company entered into a Management Service Agreement with Ratchaburi Power Company Limited, an indirect joint venture, whereby the Company will receive management service fee amounting to U.S. Dollars 2.50 million per annum for a period of 25 years and 3 months commencing from the commercial operation date of the Power Plant Unit 1 of Ratchaburi Power Company Limited. The total value of the agreement is U.S. Dollars 63.12 million.

Operation and Maintenance Service Agreement

On 10 September 2013, RATCH-Lao Services Company Limited, a direct subsidiary, entered into a Personnel Providing Service for Operation and Maintenance Agreement with EGAT, whereby such subsidiary will recruit and provide qualified personnel according to the number and qualifications specified in the agreement for operation and maintenance of Hongsa Thermal Power Plant located in Lao PDR. Subsequently on 22 November 2017, RATCH-Lao Services Company Limited entered into new Operation and Maintenance Service Agreement of Hongsa Thermal Power Plant with EGAT. The agreement is effective from 1 December 2017 to 31 October 2020. The total value of the agreement is Baht 135 million.

Construction Supervision Contractor Service Agreement

On 28 November 2013, the Company entered into a Construction Supervision Contractor Service Agreement with Xe-Pian Xe-Namnoy Power Company Limited, a direct joint venture, for a period of 64 months from the start date. Subsequently, the Company had extended the agreement to perform additional service from the ended of existing agreement to 31 May 2020 with additional service fee U.S. Dollars 2.28 million.

Agreement in relation to investment in Chubu Ratchaburi Electric Services Company Limited

On 29 September 2005, the Company and Chubu Electric Power (Thailand) Company Limited entered into a Shareholders Agreement to set up Chubu Ratchaburi Electric Services Company Limited, a direct joint venture. Under the terms of the shareholders agreement, if Chubu Ratchaburi Electric Services Company Limited requires additional funding exceeding its authorised share capital, the Company agreed to provide financial support in the form of shareholders' loans or the provision of shareholders guarantees in proportion of investment of 50%. The agreement does not specify the amount of financial support. As at 31 December 2019, the Company has not provided any loans or guarantees under the agreement.

Sponsor Support Agreement with Northern Bangkok Monorail Company and Eastern Bangkok Monorail Company Limited

On 9 October 2017, the Company entered into a Sponsor Support Agreement with Northern Bangkok Monorail Company Limited and Eastern Bangkok Monorail Company Limited, investments in other companies. The Company agreed to provide financial support in the form of shareholders' loans or the provision of shareholders guarantee in proportion of investment of 10%. The agreement does not specify the amount of financial support. As at 31 December 2019, the Company has not provided any loans or guarantees under the agreement.

Obligations related to Share Purchase Agreement

The Company has obligations under a Share Purchase Agreement related to the purchase of ordinary shares in two associates. Under the terms of the agreement, other shareholder has additional rights to the Company's dividend entitlements from those associates.

7 Cash and cash equivalents

	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
Cash on hand	4,698	341	30	30
Cash at banks - current accounts	2,367,752	2,991,887	1,067	750
Cash at banks - savings accounts	934,713	1,256,441	289,007	456,197
Highly liquid short-term investments	1,610,000	7,436,578	1,490,000	4,400,000
Cash and cash equivalents in the statement of financial position and the statement of cash flows	**4,917,163**	**11,695,247**	**1,780,104**	**4,856,977**

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

8 Other investments

	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
Current investments				
Short-term deposits at financial institutions	3,888,740	1,425,000	-	-
Debt securities held for trading	503,109	500,202	482,065	467,761
Other debt securities held to maturity	60,000	303,894	60,000	300,000
Total	**4,451,849**	**2,229,096**	**542,065**	**767,761**
Other long-term investments				
Equity securities available for sale	1,942,552	2,538,934	-	-
Other debt securities held to maturity	53,000	113,000	53,000	113,000
Total	**1,995,552**	**2,651,934**	**53,000**	**113,000**

	Consolidated financial statements				
Marketable equity and debt securities	At 1 January	Purchase	Disposal	Fair value adjustment	At 31 December
			(in thousand Baht)		
2019					
Current investments					
Debt securities held for trading	**500,202**	**617,092**	**(618,321)**	**4,136**	**503,109**
Other long-term investments					
Equity securities available for sale	**2,538,934**	**-**	**-**	**(596,382)**	**1,942,552**
2018					
Current investments					
Debt securities held for trading	**493,082**	**284,219**	**(276,253)**	**(846)**	**500,202**
Other long-term investments					
Equity securities available for sale	**3,195,527**	**-**	**-**	**(656,593)**	**2,538,934**

	Separate financial statements				
Marketable debt securities	At 1 January	Purchase	Disposal	Fair value adjustment	At 31 December
			(in thousand Baht)		
2019					
Current investments					
Debt securities held for trading	**467,761**	**617,091**	**(606,906)**	**4,119**	**482,065**
2018					
Current investments					
Debt securities held for trading	**461,018**	**284,219**	**(276,253)**	**(1,223)**	**467,761**

As at 31 December 2019, held to maturity investments in consolidated and separate financial statements have annual interest rates of 3.00% to 3.05% *(2018: 0.5% to 5.2%)* and mature in 1 to 3 years.

Dividend income from equity securities available for sale

During the year 2019, the Group had received dividend income in the proportion of investment in equity securities available for sale amounting to Baht 99.99 million *(2018: Baht 186.78 million)*.

9 Trade accounts receivable

	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
Related party (Note 6)				
Within credit terms	5,277,659	5,226,926	-	-
Less allowance for doubtful accounts	-	-	-	-
	5,277,659	**5,226,926**	**-**	**-**
Other parties				
Within credit terms	235,491	273,604	-	-
Overdue:				
Less than 3 months	424	73,799	-	-
3 - 6 months	279	56,954	-	-
	236,194	**404,357**	**-**	**-**
Less allowance for doubtful accounts	-	-	-	-
	236,194	**404,357**	**-**	**-**
Net	**5,513,853**	**5,631,283**	**-**	**-**

The normal credit term granted by the Group is not exceeding 1 month.

10 Other receivables

	Note	Consolidated financial statements		Separate financial statements	
		2019	2018	2019	2018
		(in thousand Baht)			
Related parties	6	**108,710**	**61,885**	**108,049**	**77,178**
Other parties					
Prepaid expenses		118,034	69,491	10,620	11,774
Revenue Department receivable		151,019	18,720	16,416	18,628
Others		30,378	65,171	7,605	15,170
		299,431	**153,382**	**34,641**	**45,572**
Total		**408,141**	**215,267**	**142,690**	**122,750**
Less allowance for doubtful accounts		-	-	-	-
Net		**408,141**	**215,267**	**142,690**	**122,750**
Current		389,824	205,366	122,872	105,839
Non-current		18,317	9,901	19,818	16,911
Total		**408,141**	**215,267**	**142,690**	**122,750**

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

11 Spare parts and supplies

	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
Fuel oil	1,187,057	1,197,775	-	-
Spare parts and supplies	1,653,033	1,683,131	-	-
Spare parts and supplies in transit	16,505	3,350	-	-
Total	**2,856,595**	**2,884,256**	-	-
Less allowance for obsolescence of spare parts and suppliers	(976,202)	(925,799)	-	-
allowance for decline in value of fuel oil	-	(25,565)	-	-
Net	**1,880,393**	**1,932,892**	-	-
Spare parts and supplies recognised in 'cost of sales':				
- Cost	118,153	118,089	-	-
- Write-down to net realisable value	50,403	75,746	-	-
- Reversal of write-down	(25,565)	-	-	-
Net	**142,991**	**193,835**	-	-

12 Investments in associates and joint ventures

	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
At 1 January	30,722,141	25,315,902	5,417,661	5,044,942
Impact of changes in accounting policies (net of tax) - TFRS 15	(183,790)	-	-	-
Share of profits of associates and joint ventures	3,968,380	4,735,465	-	-
Share of other comprehensive income (expense) of associates and joint ventures	(572,276)	145,728	-	-
Addition investments in associate and joint ventures	2,193,353	3,071,288	263,898	372,719
Write-off investment in joint venture	-	-	(452)	-
Dividend income	(3,551,381)	(2,372,274)	-	-
Exchange rate adjustment	(1,473,281)	(167,297)	-	-
Others	-	(6,671)	-	-
At 31 December	**31,103,146**	**30,722,141**	**5,681,107**	**5,417,661**

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

Investments in associates and joint ventures as at 31 December 2019 and 2018, and dividend income for the years then ended were as follows:

	Ownership interest (%)		Paid-up capital		Consolidated financial statements				Dividend income for the year	
					Cost		Equity			
	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018
					(In thousand Baht)					
Direct associates										
First Korat Wind Company Limited	20	20	1,996,020	1,996,020	399,204	399,204	419,067	415,025	25,395	57,141
K.R. TWO Company Limited	20	20	1,827,000	1,827,000	365,400	365,400	377,850	373,245	19,598	38,542
					764,604	764,604	796,917	788,270	44,993	95,683
Indirect associates										
Solar Power (Korat 3) Company Limited	40	40	188,750	188,750	75,500	75,500	155,031	138,242	17,818	14,043
Solar Power (Korat 4) Company Limited	40	40	199,250	199,250	79,700	79,700	163,755	145,667	13,469	9,405
Solar Power (Korat 7) Company Limited	40	40	188,750	188,750	75,500	75,500	153,023	137,044	17,516	14,344
Perth Power Partnership (Kwinana)	30	30	2,311,167	2,311,167	618,531	618,531	383,709	419,671	37,183	55,673
Yandin WF Holdings Pty Ltd	70	-	1,676,400	-	1,173,480	-	1,143,343	-	-	-
					2,022,711	849,231	1,998,861	840,624	85,986	93,465
Total					2,787,315	1,613,835	2,795,778	1,628,894	130,979	189,148

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

	Ownership interest (%)		Consolidated financial statements							
			Paid-up capital		Cost		Equity		Dividend income for the year	
	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018
					(in thousand Baht)					
Direct joint ventures										
Chubu Ratchaburi Electric Services Company Limited	50	50	20,000	20,000	10,000	10,000	80,319	71,384	10,000	22,500
SouthEast Asia Energy Limited	33.33	33.33	6,606,750	6,606,750	2,202,250	2,202,250	2,797,018	2,832,873	218,023	193,798
Smart Infranet Company Limited	51	-	1,000	-	510	-	413	-	-	-
Things on Net Company Limited	35	-	133,000	-	180,018	-	177,753	-	-	-
Nam Ngum 3 Power Company Limited *	-	25	-	1,808	-	452	-	-	-	-
Xe-Pian Xe-Namnoy Power Company Limited	25	25	10,094,900	9,761,419	2,523,725	2,440,355	1,922,041	2,268,588	-	-
					4,916,503	4,653,057	4,977,544	5,172,845	228,023	216,298
Indirect joint ventures										
Ratchaburi Power Company Limited	25	25	7,325,000	7,325,000	1,831,250	1,831,250	3,458,792	3,670,968	295,000	225,000
Nava Nakorn Electricity Generating Company Limited	40	40	1,550,000	1,550,000	620,000	620,000	642,791	735,578	160,000	144,000
Ratchaburi World Cogeneration Company Limited	40	40	2,500,000	2,500,000	1,000,000	1,000,000	1,254,493	1,283,102	185,000	200,000
Berkprai Cogeneration Company Limited	35	35	1,331,000	1,331,000	465,850	465,850	495,899	433,236	-	-
Solarta Company Limited	49	49	1,100,000	1,100,000	345,960	345,960	1,475,656	1,314,475	36,652	37,730
Songkhla Biomass Company Limited	40	40	246,000	246,000	98,400	98,400	160,248	149,162	28,000	20,000
Songkhla Biofuel Company Limited	40	40	1,000	1,000	400	400	335	342	-	-
Hongsa Power Company Limited	40	40	32,324,715	32,324,715	12,929,886	12,929,886	12,175,183	13,517,057	2,209,968	981,600

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

	Ownership interest		Paid-up capital		Consolidated financial statements: Cost		Equity		Dividend income for the year	
	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018
	(%)				(in thousand Baht)					
Indirect joint ventures										
Phu Fai Mining Company Limited	37.50	37.50	1,679	1,679	630	630	162,670	109,864	222,999	358,498
Asia Water Co., Ltd.	40	-	365,243	-	179,113	-	179,493	-	-	-
PT Medco Ratch Power Riau	49	49	1,204,996	7,762	590,448	3,803	798,656	50,901	-	-
Farcast Renewable Development Pte. Ltd.	50	50	2,849,190	2,849,190	2,688,569	2,688,569	2,525,608	2,655,717	54,760	-
					20,950,506	20,184,748	23,329,824	23,920,402	3,192,379	1,966,828
Total					25,867,009	24,837,805	28,307,368	29,093,247	3,420,402	2,183,126

All associates and joint ventures were incorporated in Thailand and overseas (see note 1).

None of the Group's associates and joint ventures are publicly listed and consequently do not have published price quotations.

* The joint venture completed the liquidation process in 2019.

	Separate financial statements											
	Ownership interest		Paid-up capital		Cost		Impairment		At cost-net		Dividend income for the year	
	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018
	(%)				(in thousand Baht)							
Associates												
First Korat Wind Company Limited	20	20	1,996,020	1,996,020	399,204	399,204	-	-	399,204	399,204	25,395	57,141
K.R. TWO Company Limited	20	20	1,827,000	1,827,000	365,400	365,400	-	-	365,400	365,400	19,598	38,542
Total					**764,604**	**764,604**	-	-	**764,604**	**764,604**	**44,993**	**95,683**
Joint ventures												
Chubu Ratchaburi Electric Services Company Limited	50	50	20,000	20,000	10,000	10,000	-	-	10,000	10,000	10,000	22,500
SouthEast Asia Energy Limited	33.33	33.33	6,606,750	6,606,750	2,202,250	2,202,250	-	-	2,202,250	2,202,250	218,023	193,798
Smart Infranet Company Limited	51	-	1,000	-	510	-	-	-	510	-	-	-
Things on Net Company Limited	35	-	133,000	-	180,018	-	-	-	180,018	-	-	-
Nam Ngum 3 Power Company Limited *	-	25	-	1,808	-	452	-	-	-	452	-	-
Xe-Pian Xe-Namnoy Power Company Limited	25	25	10,094,900	9,761,419	2,523,725	2,440,355	-	-	2,523,725	2,440,355	-	-
Total					**4,916,503**	**4,653,057**	-	-	**4,916,503**	**4,653,057**	**228,023**	**216,298**

All associates and joint ventures were incorporated in Thailand and overseas (see note 1).

None of the Company's associates and joint ventures are publicly listed and consequently do not have published price quotations.

* The joint venture completed the liquidation process in 2019.

Investment in Asia Water Co., Ltd.

On 19 December 2018, RATCH-Lao Services Company Limited, a direct subsidiary, entered into a Sales and Purchase Agreement with a local company in Lao PDR to acquire a 40% equity interest of the registered shares in Asia Water Co., Ltd., incorporated in Lao PDR, for U.S. Dollars 5.80 million in order to operate the Sandin Water Supply Project in Lao PDR. The share payment is divided into 2 installments. Subsequently on 3 January 2019, the subsidiary made advance payment 10% of share payment for 1st installment amounting to U.S. Dollars 0.58 million or equivalent to Baht 18.92 million and made payment 90% of share payment for the last installment in September 2019 amounting to U.S. Dollars 5.22 million or equivalent to Baht 160.19 million. As a result, Asia Water Co., Ltd. is a joint venture of the Group.

Investment in Smart Infranet Company Limited

On 27 June 2019, the Company and ALT Telecom Public Company Limited have registered a company namely "Smart Infranet Company Limited" in order to operate Underground Optic Fiber Network Project. Its registered capital is Baht 1 million *(comprising 100,000 ordinary shares at par value of Baht 10 per share)*. The Company paid for paid-up share capital of Baht 10 per share, amounting to Baht 0.51 million, in proportion of investment of 51%.

Investment in Yandin Wind Farm

On 26 July 2019, RATCH-Australia Corporation Pty. Ltd., an indirect subsidiary, entered into a Sales and Purchase Agreement of shares and units trust in the 214 Megawatts Yandin Wind Farm in Australia. The subsidiary has purchased ordinary shares in Yandin WF Holdings Pty Ltd and investment units in Yandin WF Holdings Unit Trust, in proportion of investment of 70% from the companies in Australia, amounting to Australian Dollar 53.31 million. The project is scheduled for commercial operation in September 2020 with a 15 years Power Purchase Agreement with a company in Australia. Subsequently on 10 October 2019, the subsidiary paid for paid-up share capital, in proportion of investment of 70%, amounting to Australian Dollars 56.31 million or equivalent to Baht 1,173.48 million.

Investment in Things on Net Company Limited

On 19 November 2019, the Company has purchased the existing ordinary shares and the additional ordinary shares of Things on Net Company Limited in proportion of investment of 35% of issued and paid-up share capital from the existing shareholder amounting to Baht 180.02 million in order to participate in the investment of installation and development of telecommunication and related business to provide Internet of things services which expected to start commercial operation in 2020.

Investment in Fareast Renewable Development Pte. Ltd.

On 6 December 2018, RH International (Singapore) Corporation Pte. Ltd. ("RHIS"), an indirect subsidiary, has purchased the existing ordinary shares and the additional ordinary shares of Fareast Renewable Development Pte. Ltd. ("FRD"), incorporated in Singapore, from Fareast Green Energy Pte. Ltd., the existing shareholder, in order to participate in the operation of Asahan-1 Hydroelectric Power Plant ("Asahan-1") in the Republic of Indonesia, which operated by PT Bajradaya Sentranusa ("BDSN") in proportion of investment of 50% of issued and paid-up share capital, for a consideration of U.S. Dollars 81.92 million or equivalent to Baht 2,688.57 million. As a result, FRD is a joint venture of the Group.

After the transactions are completed, the shareholder structure of FRD comprises the Group 50% and Fareast Green Energy Pte. Ltd. 50%. The shareholder structure of BDSN comprises FRD 53.21% (the Group held an indirect investment through RHIS and FRD at approximately 26.61%) and minority interest 46.79%.

As at 31 December 2019, the Group had completed the fair value assessment of the acquired business and had adjusted the acquisition accountings which reflect from new information obtained as follows:

Identifiable assets acquired and liabilities assumed

	Fair value before adjusted	Adjustments	Fair value after adjusted
		(in thousand Baht)	
Cash and cash equivalents	966,272	(526)	965,746
Derivative assets	148,336	(21,544)	126,792
Trade and other receivables	435,994	(238)	435,756
Property, plant and equipment	1,738	-	1,738
Finance lease receivable	18,558,212	(10,122)	18,548,090
Loans	(6,584,524)	3,590	(6,580,934)
Trade and other payables	(308,886)	168	(308,718)
Current tax payable	(11,690)	(36,542)	(48,232)
Deferred tax liabilities	(2,696,648)	(50,126)	(2,746,774)
Non-current provisions for employee benefits	(11,098)	520	(10,578)
Other long-term provisions	(131,366)	72	(131,294)
Net identifiable assets acquired and liabilities assumed	**10,366,340**	**(114,748)**	**10,251,592**
Non-controlling interests	(5,181,212)	53,872	(5,127,340)
Net	**5,185,128**	**(60,876)**	**5,124,252**
Interest acquired *(%)*			50
Fair values of identifiable assets acquired and liabilities assumed			**2,562,126**
Goodwill arising from the acquisition			125,530
Total consideration - paid			**2,687,656**

Increase in share capital and additional paid-up share capital

During the year 2019, an associate and joint ventures increased in share capital and called for additional paid-up share capital. The Group paid for the share capital in the proportion of investments as follows:

Name of entities	Description	Amount *(in million Baht)*
Direct joint ventures		
Smart Infranet Company Limited	Increased in share capital	0.51
Things on Net Company Limited	Increased in share capital	180.02
Xe-Pian Xe-Namnoy Power Company Limited *	Additional paid-up share capital	83.37
Indirect joint ventures		
Asia Water Co., Ltd.	Increased in share capital	179.11
PT Medco Ratch Power Riau	Increased in share capital	586.65
Indirect associate		
Yandin WF Holdings Pty Ltd	Increased in share capital	1,173.48

* The direct joint venture called fully paid-up share capital in March 2019.

Progress of Saddle Dam D collapsed

On 23 July 2018, the Saddle Dam D of Xe-Pian Xe-Namnoy Hydroelectric Power Project, located in Lao PDR, of Xe-Pain Xe-Namnoy Power Company Limited, a direct joint venture, collapsed. The Saddle Dam fractured which caused the water flow to the downstream area. The joint venture evacuated the people residing around the affected area for safety. The project also has a standard insurance package in accordance with the loan agreement, including all risk insurance for construction, third-party liability insurance, and delay start-up insurance. The costs incurred as a result of the collapse are primarily the responsibility by the contractor in charge of engineering, procurement and construction (EPC). From this situation, the Government of Lao PDR appointed the National Investigation Committee to investigate the situation. Subsequently on 28 May 2019, the National Investigation Committee announced the result of investigation is not force majeure as stipulated in the Concession Agreement. Currently, the joint venture is during the process of claiming the compensation and related damages from the EPC contractor. However, the project started its commercial operation on 6 December 2019.

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

Joint ventures

The following table summarises the financial information of the joint ventures as included in their own financial statements, adjusted for fair value adjustments at acquisition and differences in accounting policies. The table also reconciles the summarised financial information to the carrying amount of the Group's interest in these companies.

	Ratchaburi Power Company Limited		Hongsa Power Company Limited	
	2019	2018	2019	2018
	(in thousand Baht)			
Revenue	14,856,350	17,757,595	20,359,200	22,127,588
Profit from continuing operations	331,296[a]	726,836[a]	6,558,800[a]	7,800,048[a]
Other comprehensive income (expense)	-	-	(1,210,645)	410,631
Total comprehensive income (expense) *(100%)*	331,296	726,836	5,348,155	8,210,679
Group's interest *(%)*	25	25	40	40
Group's share of total comprehensive income (expense)	**82,824**	**181,709**	**2,139,262**	**3,284,272**
Current assets	6,178,263[b]	9,194,217[b]	16,478,699[b]	21,088,038[b]
Non-current assets	8,105,809	9,852,677	90,491,847	94,463,710
Current liabilities	(2,410,959)[c]	(4,724,342)[c]	(8,138,402)[c]	(8,568,213)[c]
Non-current liabilities	(50,140)[d]	(1,065,237)[d]	(63,289,633)[d]	(70,843,788)[d]
Net assets *(100%)*	11,822,973	13,257,315	35,542,511	36,139,747
Group's share of net assets	2,955,743	3,314,329	14,217,004	14,455,899
Exchange differences on translating in the consolidated financial statements and others	503,049	356,639	(2,041,821)	(938,842)
Carrying amount of interest in joint ventures	**3,458,792**	**3,670,968**	**12,175,183**	**13,517,057**

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

	Ratchaburi Power Company Limited		Hongsa Power Company Limited	
	2019	2018	2019	2018
	(In thousand Baht)			
Remark:				
a. Includes:				
– depreciation and amortisation	879,324	876,445	248,373	189,285
– finance costs	155,874	162,334	5,047,161	5,287,634
– tax expense	121,176	232,252	-	-
b. Includes cash and cash equivalents	3,193,347	3,582,625	5,385,721	8,786,011
c. Includes current financial liabilities (excluding trade and other payables and provisions)	969,894	1,343,672	6,502,880	5,814,742
d. Includes non-current financial liabilities (excluding trade and other payables and provisions)	-	1,023,670	62,753,715	70,419,435

Immaterial associates and joint ventures

The following is summarised financial information for the Group's interest in immaterial associates and joint ventures based on the amounts reported in the Group's consolidated financial statements:

	Immaterial associates		Immaterial joint ventures	
	2019	2018	2019	2018
	(in thousand Baht)			
Carrying amount of interests in immaterial associates and joint ventures	**2,795,778**	**1,628,894**	**12,673,393**	**11,905,222**
Group's share of:				
- Profit from continuing operations	153,997	119,793	1,108,039	1,313,943
- Other comprehensive income (expense)	-	-	(88,018)	(18,524)
- Total comprehensive income (expense)	**153,997**	**119,793**	**1,020,021**	**1,295,419**

13 Investments in subsidiaries

	Separate financial statements	
For the year ended 31 December	2019	2018
	(in thousand Baht)	
At 1 January	40,690,558	40,690,558
Acquisitions	1,870,052	-
At 31 December	**42,560,610**	**40,690,558**

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

Investments in subsidiaries as at 31 December 2019 and 2018, and dividend income for the years then ended were as follows:

	Ownership interest		Separate financial statements									
			Paid-up capital		Cost		Impairment		At cost - net		Dividend income for the yea	
	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018
	(%)		(in thousand Baht)									
Subsidiaries												
Ratchaburi Electricity Generating Company Limited	99.99	99.99	21,900,000	21,900,000	21,900,000	21,900,000	-	-	21,900,000	21,900,000	2,773,049	2,968,828
Ratchaburi Energy Company Limited	99.99	99.99	640,000	640,000	640,000	640,000	-	-	640,000	640,000	-	-
RH International Corporation Limited	99.99	99.99	17,650,000	17,650,000	17,650,000	17,650,000	-	-	17,650,000	17,650,000	-	-
RATCH O&M Company Limited	99.99	99.99	2,500	2,500	2,500	2,500	-	-	2,500	2,500	-	-
Ratchaburi Alliances Company Limited	99.99	99.99	420,200	420,200	420,200	420,200	-	-	420,200	420,200	295,000	225,000
Hin Kong Power Holding Company Limited	99.99	-	4,000	-	4,000	-	-	-	4,000	-	-	-
RATCH Cogeneration Company Limited	99.97	-	1,650,000	-	1,866,052	-	-	-	1,866,052	-	-	-
RATCH-Lao Services Company Limited	99.99	99.99	77,858	77,858	77,858	77,858	-	-	77,858	77,858	-	-
Total					42,560,610	40,690,558	-	-	42,560,610	40,690,558	3,068,049	3,193,828

All subsidiaries were incorporated in Thailand, except RATCH-Lao Services Company Limited which was incorporated in the Lao PDR.

Increase in share capital of RATCH-Australia Corporation Pty. Ltd.

On 5 April 2019, RH International (Singapore) Corporation Pte. Ltd., an indirect subsidiary, paid for increase in share capital of RATCH-Australia Corporation Pty. Ltd., a subsidiary of the indirect subsidiary, totalling Australian Dollars 19 million or equivalent to Baht 429.59 million, in proportion of investment of 100%.

On 4 July 2019, RH International (Singapore) Corporation Pte. Ltd., an indirect subsidiary, paid for increase in share capital of RATCH-Australia Corporation Pty. Ltd., a subsidiary of the indirect subsidiary, totalling Australian Dollars 56.10 million or equivalent to Baht 1,204.59 million, in proportion of investment of 100%.

On 25 October 2019, RH International (Singapore) Corporation Pte. Ltd., an indirect subsidiary, paid for increase in share capital of RATCH-Australia Corporation Pty. Ltd., a subsidiary of the indirect subsidiary, totalling Australian Dollars 15 million or equivalent to Baht 310.33 million, in proportion of investment of 100%.

Registration of a subsidiary of the Company

On 24 May 2019, the Company has registered a subsidiary namely "Hin Kong Power Holding Company Limited" to invest in power energy business. Its registered capital is Baht 4 million *(comprising 400,000 ordinary shares at par value of Baht 10 per share)*. The Company paid for paid-up share capital of Baht 10 per share, amounting to Baht 4 million, in proportion of investment of 99.99%.

Registration of a subsidiary of Hin Kong Power Holding Company Limited

On 28 May 2019, Hin Kong Power Holding Company Limited, a direct subsidiary, has registered a subsidiary namely "Hin Kong Power Company Limited" to generate and sell electricity. Its registered capital is Baht 4 million *(comprising 400,000 ordinary shares at par value of Baht 10 per share)*. The direct subsidiary paid for paid-up share capital of Baht 10 per share, amounting to Baht 4 million, in proportion of investment of 99.99%.

Dissolution of subsidiaries

At the extraordinary shareholders' meeting of CN Biomass Company Limited, PB Biomass Company Limited and LP Biomass Company Limited, indirect subsidiaries, held on 29 November 2019, the shareholders approved for the dissolution of the indirect subsidiaries. The indirect subsidiaries registered the dissolution with the Ministry of Commerce on 2 December 2019.

14 Investments in other companies

	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
At 1 January	2,442,300	762,300	2,442,300	762,300
Addition investments	-	1,680,000	-	1,680,000
At 31 December	**2,442,300**	**2,442,300**	**2,442,300**	**2,442,300**

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

Investments in other companies as at 31 December 2019 and 2018, and dividend income for the years then ended, were as follows:

	Ownership interest		Consolidated financial statements									
			Paid-up capital		Cost		Impairment		At cost - net		Dividend income for the year	
	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018
	(%)		(in thousand Baht)									
Other companies												
EGAT Diamond Service Company Limited	10	10	623,000	623,000	62,300	62,300	-	-	62,300	62,300	894	-
Northern Bangkok Monorail Company Limited	10	10	11,800,000	11,800,000	1,180,000	1,180,000	-	-	1,180,000	1,180,000	-	-
Eastern Bangkok Monorail Company Limited	10	10	12,000,000	12,000,000	1,200,000	1,200,000	-	-	1,200,000	1,200,000	-	-
Total					**2,442,300**	**2,442,300**	**-**	**-**	**2,442,300**	**2,442,300**	**894**	**-**

15 Advance payments for investment

Investment in Riau Combined-Cycle Power Plant Project

On 8 May 2017, the Ministry of Energy and Mineral Resources of the Republic of Indonesia, approved a Power Purchase Agreement between PT PLN (PERSESO) and PT Medco Ratch Power Riau ("MRPR"), an indirect joint venture, to develop the Riau Combined-Cycle Power Plant Project in the Republic of Indonesia. Subsequently, MRPR called for advance payments for investment from the Group for project development. As at 31 December 2019, all advance payments for investment were transferred to investment in the joint venture.

16 Land for future development projects

At 31 December 2019, the Group has land for future development projects comprise the 317 rai located in Pathum Thani province, the 19 rai located in Nakhorn Sri Thammarat province, the 52 rai located in Petchaburi province and the 208 rai located in Ratchaburi province with a net book value of Baht 398.49 million. The Group is considering the future development plan but not yet finalised. As at 31 December 2019, the Group has determined the market value. The book value of such land is not higher than the recoverable amount.

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

17 Property, plant and equipment

	Consolidated financial statements						
				(in thousand Baht)			
	Land	Buildings, other constructions and building improvements	Power plants, substation & transmission systems and operating & maintenance equipment	Furniture, fixtures and office equipment	Vehicles	Assets under construction and installation	Total
Cost							
At 1 January 2018	1,361,180	487,083	24,576,707	586,876	19,966	5,179,245	32,211,057
Additions	-	29,667	3,165,204	8,025	-	2,179,401	5,382,297
Transfers	-	-	4,527,870	4,884	-	(4,532,754)	-
Disposals	-	-	(17,969)	(6,429)	-	-	(24,398)
Reclassify	(29,940)	-	-	-	-	-	(29,940)
Effect of movements in exchange rates	(23,281)	(13,035)	(2,588,787)	(555)	-	(660,386)	(3,286,044)
At 31 December 2018 and 1 January 2019	**1,307,959**	**503,715**	**29,663,025**	**592,801**	**19,966**	**2,165,506**	**34,252,972**
Additions	-	18,272	369,291	12,096	40	2,131,166	2,530,865
Acquisitions through business combination	491,748	2,014	4,111,458	72	-	-	4,605,292
Transfers	-	1,871	1,876,087	248	-	(1,878,206)	-
Transfer to land for future development project	(61,880)	-	-	-	-	-	(61,880)
Disposals	-	-	(19,230)	(14,116)	-	-	(33,346)
Effect of movements in exchange rates	(15,642)	(12,323)	(2,319,776)	(397)	-	(149,383)	(2,497,521)
At 31 December 2019	**1,722,185**	**513,549**	**33,680,855**	**590,704**	**20,006**	**2,269,083**	**38,796,382**

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

Consolidated financial statements

	Land	Buildings, other constructions and building improvements	Power plants, substation & transmission systems and operating & maintenance equipment	Furniture, fixtures and office equipment	Vehicles	Assets under construction and installation	Total
				(in thousand Baht)			
Depreciation and impairment losses							
At 1 January 2018	-	167,181	14,325,370	533,666	19,689	-	15,045,906
Depreciation charge for the year	-	23,740	855,324	25,646	255	-	904,965
Disposals	-	-	(8,038)	(6,419)	-	-	(14,457)
Effect of movements in exchange rates	-	(7,412)	(1,448,256)	(370)	-	-	(1,456,038)
At 31 December 2018 and 1 January 2019	-	**183,509**	**13,724,400**	**552,523**	**19,944**	-	**14,480,376**
Depreciation charge for the year	-	23,447	1,230,811	19,026	26	-	1,273,310
Disposals	-	-	(19,229)	(13,417)	-	-	(32,646)
Effect of movements in exchange rates	-	(5,475)	(1,026,773)	(298)	-	-	(1,032,546)
At 31 December 2019	-	**201,481**	**13,909,209**	**557,834**	**19,970**	-	**14,688,494**
Net book value							
At 31 December 2018	**1,307,959**	**320,206**	**15,938,625**	**40,278**	**22**	**2,165,506**	**19,772,596**
At 31 December 2019	**1,722,185**	**312,068**	**19,771,646**	**32,870**	**36**	**2,269,083**	**24,107,888**

The gross amount of the Group's fully depreciated plant and equipment that was still in use as at 31 December 2019 amounted to Baht 804.71 million and Australian Dollars 75.28 million *(2018: Baht 628.89 million and Australian Dollars 71.46 million).*

Security

As at 31 December 2019, RATCH-Australia Corporation Pty. Ltd., an indirect subsidiary, had mortgaged land, buildings and power plants and pledged power plant equipment of 5 power plants with a net book value of Australian Dollars 761.62 million or equivalent to Baht 16,062. 21 million *(2018: Australian Dollars 686.57 million or equivalent to Baht 15,698.35 million)* as collateral for long-term loans from financial institutions (see note 20).

As at 31 December 2019, RATCH Cogeneration Company Limited, a direct subsidiary, had mortgaged all land and partial machinery as collateral for long-term loans from financial institutions (see note 20).

	Separate financial statements					
	Land	Buildings, other constructions and building improvements	Furniture, fixtures and office equipment	Vehicles	Assets under construction and installation	Total
			(in thousand Baht)			
Cost						
At 1 January 2018	295,993	309,636	458,252	960	-	1,064,841
Additions	-	-	5,865	-	-	5,865
Disposals	-	-	(5,445)	-	-	(5,445)
At 31 December 2018 and 1 January 2019	**295,993**	**309,636**	**458,672**	**960**	**-**	**1,065,261**
Additions	-	-	8,850	-	-	8,850
Disposals	-	-	(11,888)	-	-	(11,888)
At 31 December 2019	**295,993**	**309,636**	**455,634**	**960**	**-**	**1,062,223**
Depreciation						
At 1 January 2018	-	62,287	427,489	751	-	490,527
Depreciation charge for the year	-	12,385	15,665	192	-	28,242
Disposals	-	-	(5,442)	-	-	(5,442)
At 31 December 2018 and 1 January 2019	**-**	**74,672**	**437,712**	**943**	**-**	**513,327**
Depreciation charge for the year	-	12,385	9,855	17	-	22,257
Disposals	-	-	(11,872)	-	-	(11,872)
At 31 December 2019	**-**	**87,057**	**435,695**	**960**	**-**	**523,712**
Net book value						
At 31 December 2018	**295,993**	**234,964**	**20,960**	**17**	**-**	**551,934**
At 31 December 2019	**295,993**	**222,579**	**19,939**	**-**	**-**	**538,511**

The gross amount of the Company's fully depreciated plant and equipment that was still in use as at 31 December 2019 amounted to Baht 412.06 million *(2018: Baht 385.85 million).*

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

18 Goodwill and intangible assets

	Consolidated financial statements				
	Software licences	Licenses on project development	Goodwill from business acquisition	Right to power purchase agreements	Total
			(in thousand Baht)		
Cost					
At 1 January 2018	141,756	653,618	646,540	5,504,011	6,945,925
Additions	7,570	-	-	-	7,570
Effect of movements in exchange rates	(5,737)	(4,622)	(1,629)	(570,171)	(582,159)
At 31 December 2018 and 1 January 2019	**143,589**	**648,996**	**644,911**	**4,933,840**	**6,371,336**
Acquisitions through business combination	81	-	-	1,115,835	1,115,916
Additions	1,560	-	-	-	1,560
Effect of movements in exchange rates	(4,153)	(45,916)	(16,084)	(383,096)	(449,249)
At 31 December 2019	**141,077**	**603,080**	**628,827**	**5,666,579**	**7,039,563**
Amortisation and impairment losses					
At 1 January 2018	92,962	57,152	416,199	2,602,052	3,168,365
Amortisation charge for the year	9,842	25,848	-	243,362	279,052
Effect of movements in exchange rates	(5,356)	(293)	-	(281,514)	(287,163)
At 31 December 2018 and at 1 January 2019	**97,448**	**82,707**	**416,199**	**2,563,900**	**3,160,254**
Amortisation charge for the year	11,129	24,837	-	218,640	254,606
Impairment losses	-	-	42,313	-	42,313
Effect of movements in exchange rates	(3,650)	(6,566)	-	(204,287)	(214,503)
At 31 December 2019	**104,927**	**100,978**	**458,512**	**2,578,253**	**3,242,670**
Net book value					
At 31 December 2018	**46,141**	**566,289**	**228,712**	**2,369,940**	**3,211,082**
At 31 December 2019	**36,150**	**502,102**	**170,315**	**3,088,326**	**3,796,893**

	Separate financial statements Software licences *(in thousand Baht)*
Cost	
At 1 January 2018	28,899
Additions	3,540
At 31 December 2018 and 1 January 2019	**32,439**
Additions	90
At 31 December 2019	**32,529**
Amortisation	
At 1 January 2018	22,565
Amortisation charge for the year	2,715
At 31 December 2018 and at 1 January 2019	**25,280**
Amortisation charge for the year	2,915
At 31 December 2019	**28,195**
Net book value	
At 31 December 2018	**7,159**
At 31 December 2019	**4,334**

Impairment testing for CGUs containing goodwill

For the purposes of impairment testing, goodwill has been allocated to the Group's CGUs. The balance of goodwill as at 31 December 2019 and 2018 mainly came from Wind Farm in Australia.

The recoverable amounts of goodwill, right to power purchase agreements and property, plant and equipment in Australia (CGU) were based on its value in use, determined by discounting the future cash flows to be generated from the continuing use of the power plants in Australia.

The key assumptions used in the estimation of value in use included the discount rates which was a post-tax measure based on the rate of 10-year historic of average 10-year government bonds from Reserve Bank Australia (RBA) defined as a risk free rate, in line with the principle underlying the Capital Asset Pricing Model (CAPM) theory with debt leveraging of 60% for Thermal power plants and 50% for Renewable Energy power plants and the future cash flows were prepared using the external information, which included sales volumes, prices, operating costs, inflation rate and long-term growth rates based on estimate throughout the remaining period of the power purchase agreements.

The values assigned to the key assumptions represent management's assessment of future trends in the relevant industries and have been based on historical data from both external and internal sources. The key assumptions used in the estimation of value in use are set out below:

	Consolidated financial statements	
	2019	2018
	(%)	
Discount rate - Thermal power plants	6.59	6.37
Discount rate - Renewable Energy power plants	6.13	6.16

The discount rates were a post-tax measure based on the rate of 10-year government bonds issued by the government in the relevant market and in the same currency as the cash flows, adjusted for a risk premium to reflect both the increased risk of investing in general equity securities and the systematic risk of the specific CGU.

Revenue projection

The total revenue projections for the power plant assets have been determined in accordance with the power purchase agreements applying the revenue projections from external information for the post power purchase agreement periods. The assumptions included tariff from Thermal power plants and Renewable Energy power plants, carbon credit prices, nature gas prices, electricity demands, exchange rates, inflation rates and other related factors.

The impairment testing has been prepared by the management of RATCH-Australia Corporation Limited ("RAC") from the information as specified in the power purchase agreements with the counterparties while estimating revenue and expenses from the external source and other related factors and conservative approach are used when preparing the testing. The RAC's management have also conducted many sensitivity tests from the most conservative approach to more aggressive assumptions. There were no impairment loss recognised for any RAC's assets. However, at initial recognition the goodwill in foreign currency is recognised in Thai Baht. As a result of currency fluctuations, the headroom in the impairment test translated to Thai Baht is lower than the carrying value of the goodwill by Baht 42.31 million. Consequently, the Group recognised an impairment loss on goodwill for the same amount including in administrative expense during 2019 *(2018: nil)*.

19 Other non-current assets

	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
Deferred expenses under contractual service agreements	1,224,068	505,139	-	-
Deferred expenses for generator connection and access services	611,448	633,937	-	-
Development costs of Renewable Energy projects	42,256	225,006	-	-
Others	23,546	22,661	4,487	4,457
Total	**1,901,318**	**1,386,743**	**4,487**	**4,457**

Renewable energy projects

The Group is developing projects to generate and sell electricity from renewable energy in Australia.

The Group has capitalised project development costs related to renewable energy projects in Australia as other non-current assets. Such projects have received the development approval from local authorities and the management has determined that these projects are technically and commercially feasible, future economic benefits are probable and total present value of the estimated future cash flows will not be lower than the carrying amount.

Generator Connection and Access agreement

On 26 October 2016, Mount Emerald Wind Farm Pty. Ltd., an indirect subsidiary, entered into a Generator Connection and Access agreement with a company in Australia to join construct a switchyard and a transmission line. Thus, such subsidiary can connect and transmit electricity to a substation for a period of 26 years starting the date specified in the agreement. The total value of such agreement is Australian Dollars 28.18 million which will be amortised over the term of the agreement. As at 31 December 2019, the subsidiary had outstanding deferred expenses for services amounting to Australian Dollars 26.64 million or equivalent to Baht 561.86 million *(2018: Australian Dollars 27.72 million or equivalent to Baht 633.94 million)*

20 Interest-bearing liabilities

	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
Current				
Short-term loans from financial institutions -unsecured	603,080	-	-	-
Current portion of long-term loans from financial institutions net of deferred financing fees-secured	1,091,192	939,377	-	-
Debentures due within one year net of deferred financing fees-unsecured	-	3,471,390	-	-
Current portion of finance lease liabilities	741	843	-	-
Total current interest-bearing liabilities	**1,695,013**	**4,411,610**	**-**	**-**
Non-current				
Long-term loans from financial institutions net of deferred financing fees-secured	15,273,253	12,633,425	-	-
Debentures net of deferred financing fees -unsecured	15,167,590	16,107,245	-	-
Finance lease liabilities	415	1,100	-	-
Total non-current interest-bearing liabilities	**30,441,258**	**28,741,770**	**-**	**-**

The periods to maturity of interest-bearing liabilities net of deferred financing fees, excluding finance lease liabilities, as at 31 December were as follows:

	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
Within one year	1,694,272	4,410,767	-	-
After one year but within five years	14,808,446	6,551,456	-	-
After five years	15,632,397	22,189,214	-	-
Total	**32,135,115**	**33,151,437**	**-**	**-**

As at 31 December 2019, RH International (Singapore) Corporation Pte. Ltd., an indirect subsidiary, had outstanding short-term loans from financial institution in Singapore amounting to U.S. Dollars 20 million or equivalent to Baht 603.08 million which bear interest at the rate of 6-Month London Interbank Offered Rate (LIBOR), plus a fixed margin per annum and which will be repayable within 1 year *(2018: nil)*.

As at 31 December 2019, Ratchaburi Electricity Generating Company Limited, a direct subsidiary, had outstanding debentures which are unsecured and unsubordinated debentures without a debenture holders' representative in the name-registered certificate, amounting to Baht 2,000 million with interest at a fixed rate of 3.50% per annum. The debentures have a repayment period of 7 years and will be due for redemption in 2022 *(2018: Baht 2,000 million)*.

As at 31 December 2019, RATCH Cogeneration Company Limited, a direct subsidiary, had outstanding long-term loans from a local financial institution amounting to Baht 3,610.57 million with interest at a floating rate of 3-Month, plus a fixed margin per annum and which will be repayable during November 2020 to November 2032.

As at 31 December 2019, RH International (Singapore) Corporation Pte. Ltd., an indirect subsidiary, had outstanding debentures named "US$ 300,000,000 4.50% notes due 2028" amounting to U.S. Dollars 300 million or equivalent to Baht 9,046.20 million with interest at a fixed rate of 4.50% per annum. The debentures have a repayment period of 10 years and will be due for redemption in 2028. The repayment of the debentures is guaranteed by the Company *(2018: U.S. Dollars 300 million or equivalent to Baht 9,734.94 million and the existing debentures U.S. Dollars 107 million or equivalent to Baht 3,472.13 million which were redeemed in April 2019)*.

As at 31 December 2019, RH International (Singapore) Corporation Pte. Ltd., an indirect subsidiary, had outstanding debentures, which are unsecured and unsubordinated, amounting to Japanese Yen 15,000 million or equivalent to Baht 4,147.68 million with interest at a fixed rate of 2.72% per annum. The debentures have a repayment period of 15 years and will be due for redemption in 2026. The repayment of the debentures is guaranteed by the Company *(2018: Japanese Yen 15,000 million or equivalent to Baht 4,405.06 million)*.

As at 31 December 2019, RATCH-Australia Corporation Pty. Ltd., an indirect subsidiary, had outstanding long-term loans from financial institutions in Australia amounting to Australian Dollars 285.04 million or equivalent to Baht 6,011.42 million with interest at a floating rate of Bank Bill Swap Bid Rate (BBSY), announced by Reuters, plus a fixed margin per annum and which will be repayable within 5 years during October 2018 to May 2023 *(2018: Australian Dollars 308.32 million or equivalent to Baht 7,049.62 million)*.

As at 31 December 2019, Mount Emerald Wind Farm Pty. Ltd., an indirect subsidiary, had outstanding long-term loans from financial institutions in Australia amounting to Australian Dollars 224.94 million or equivalent to Baht 4,743.76 million with interest at a floating rate of Bank Bill Swap Bid Rate (BBSY), announced by Reuters, plus a fixed margin per annum and which will be repayable within 5 years during December 2018 to November 2023 *(2018: Australian Dollars 236.42 million or equivalent to Baht 5,405.66 million)*.

As at 31 December 2019, RATCH-Australia Collinsville Solar PV Pty. Ltd., an indirect subsidiary, had outstanding long-term loans from financial institutions in Australia amounting to Australian Dollars 55.57 million or equivalent to Baht 1,172.02 million with interest at a floating rate of Bank Bill Swap Bid Rate (BBSY), announced by Reuters, plus a fixed margin per annum and which will be repayable within 5 years during June 2018 to December 2023 *(2018: Australian Dollars 54.68 million or equivalent to Baht 1,250.35 million).*

As at 31 December 2019, Collector Wind Farm Pty. Ltd., an indirect subsidiary, had outstanding long-term loans from financial institutions in Australia amounting to Australian Dollars 45.03 million or equivalent to Baht 949.66 million with interest at a floating rate of Bank Bill Swap Bid Rate (BBSY), announced by Reuters, plus a fixed margin per annum and which will be repayable within 5 years during June 2021 to May 2024 *(2018: nil).*

As at 31 December 2019, the Group had unutilised credit facilities totalling Baht 29,395.37 million, U.S. Dollars 250 million and Australian Dollars 193.47 million *(2018: Baht 31,802 million, U.S. Dollars 235 million and Australian Dollars 24.63 million).*

The Group must comply with certain conditions in those agreements including maintaining certain key financial ratios.

21 Other payables

		Consolidated financial statements		Separate financial statements	
	Note	2019	2018	2019	2018
		(in thousand Baht)			
Current					
Related parties	*6*	**67,098**	**56,145**	**20,094**	**17,200**
Other parties					
Accrued finance costs		303,110	332,814	-	-
Other payables and accrued expenses		1,337,547	1,063,242	266,446	347,105
		1,640,657	**1,396,056**	**266,446**	**347,105**
Total		**1,707,755**	**1,452,201**	**286,540**	**364,305**

22 Non-current provisions for employee benefits

Defined benefit plan

The Group operate a defined benefit plan based on the requirement of Thai Labour Protection Act B.E 2541 (1998) to provide retirement benefits to employees based on pensionable remuneration and length of service. The defined benefit plans expose the Group to actuarial risks, such as longevity risk, currency risk, interest rate risk and market (investment) risk.

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

Present value of the defined benefit obligations	**Consolidated financial statements**		**Separate financial statements**	
	2019	2018	2019	2018
		(in thousand Baht)		
At 1 January	176,810	175,688	147,677	142,293
Include in profit or loss:				
Current service cost and interest on obligation	24,797	15,449	24,124	14,942
Past service cost	34,748	-	28,954	-
	59,545	**15,449**	**53,078**	**14,942**
Included in other comprehensive income:				
Actuarial (gain) loss	8,171	(1,748)	5,483	-
Effect of movements in exchange rates	(699)	(454)	-	-
	7,472	**(2,202)**	**5,483**	**-**
Benefit paid	(40,006)	(12,125)	(40,006)	(9,558)
At 31 December	**203,821**	**176,810**	**166,232**	**147,677**

Actuarial (gain) loss recognised in other comprehensive income arising form:

	Consolidated financial statements		**Separate financial statements**	
	2019	2018	2019	2018
		(in thousand Baht)		
Demographic assumption	1,770	(1,380)	1,510	-
Experience adjustment	3,472	(507)	1,185	-
Financial assumption	2,930	539	2,788	-
Total	**8,172**	**(1,748)**	**5,483**	**-**

On 5 April 2019, the Labor Protection Act was amended to include a requirement that an employee, who is terminated after having been employed by the same employer for an uninterrupted period of twenty years or more, receives severance payment of 400 days of wages at the most recent rate. The Group has therefore amended its retirement plan in accordance with the changes in the Labor Protection Act in 2019. As a result of this change, the provision for retirement benefits as well as past service cost recognised increased.

Principal actuarial assumptions	**Consolidated financial statements**		**Separate financial statements**	
	2019	2018	2019	2018
		(%)		
Discount rate	2.98 to 4.5	3.18 to 4.5	2.98	3.18
Future salary growth	4 to 8	4 to 8	6.5 to 8	6.5 to 8
Employee turnover	0 to 15	0 to 15	0 to 10	0 to 10

Assumptions regarding future mortality have been based on published statistics and mortality tables.

As at 31 December 2019, the weighted-average durations of the defined benefit obligation were 15.90 and 30.20 years *(2018: 11.50 and 30.20 years)*.

Sensitivity analysis

Reasonably possible changes at the reporting date to one of the relevant actuarial assumptions, holding other assumptions constant, would have affected the defined benefit obligation by the amounts shown below.

Effect to the defined benefit obligation	Consolidated financial statements		Separate financial statements	
	Increase	Decrease	Increase	Decrease
	(in thousand Baht)			
At 31 December 2019				
Discount rate (1% movement)	(19,184)	22,680	(15,202)	17,820
Future salary growth (1% movement)	23,509	(20,264)	18,499	(16,093)
Employee turnover (20% movement)	(8,196)	9,010	(6,103)	6,579
Improving mortality rate (1% movement)	719	(810)	536	(597)
At 31 December 2018				
Discount rate (1% movement)	(12,884)	15,207	(10,053)	11,738
Future salary growth (1% movement)	17,316	(14,911)	13,515	(11,754)
Employee turnover (20% movement)	(5,988)	6,618	(4,407)	4,773
Improving mortality rate (1% movement)	842	(956)	644	(725)

23 Share capital

	Par value per share *(in Baht)*	2019 Number	2019 Amount	2018 Number	2018 Amount
		(thousand shares / thousand Baht)			
Authorised					
At 1 January					
- ordinary shares	10	1,450,000	14,500,000	1,450,000	14,500,000
At 31 December					
- ordinary shares	10	**1,450,000**	**14,500,000**	**1,450,000**	**14,500,000**
Issued and paid-up					
At 1 January					
- ordinary shares	10	1,450,000	14,500,000	1,450,000	14,500,000
At 31 December					
- ordinary shares	10	**1,450,000**	**14,500,000**	**1,450,000**	**14,500,000**

The holders of ordinary shares are entitled to receive dividends as declared from time to time, and are entitled to one vote per share at meetings of the Company.

Share premium

Section 51 of the Public Companies Act B.E. 2535 requires companies to set aside share subscription monies received in excess of the par value of the shares issued to a reserve account ("share premium"). Share premium is not available for dividend distribution.

24 Reserves

Reserves comprise:

Appropriations of profit and/or retained earnings

Legal reserve

Section 116 of the Public Companies Act B.E. 2535 requires that a public company shall allocate not less than 5% of its annual net profit, less any accumulated losses brought forward, to a reserve account ("legal reserve"), until this account reaches an amount not less than 10% of the registered authorised capital. The legal reserve is not available for dividend distribution.

Other components of equity

Currency translation differences
The currency translation differences account within equity comprises all foreign currency differences arising from the translation of the financial statements of foreign operations.

Fair value changes in available for sale investments
The fair value changes in available for sale investments account within equity comprises the cumulative net change in the fair value of available for sale investments until the investments are derecognised or impaired.

Cash flow hedges
The cash flow hedges account within equity comprises the cumulative net change in the fair value of cash flow hedges related to hedged transactions that have not yet occurred.

25 Segment information

Management determined that the Group has 4 reportable segments which are the Group's strategic divisions for different products and services, and are managed separately. The following summary describes the operations in each of the Group's reportable segments.

Segment 1	Domestic Electricity Generating
Segment 2	Renewable Energy
Segment 3	International Power Projects
Segment 4	Others

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

Information about reportable segments

	Consolidated financial statements									
	Domestic Electricity Generating		Renewable Energy		International Power Projects		Others		Total	
For the year ended 31 December	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018
					(in thousand Baht)					
Revenue from sales and rendering of services	32,397,138	33,951,585	-	-	3,043,976	2,232,550	-	-	35,441,114	36,184,135
Revenue from finance lease contracts	2,923,233	3,335,814	-	-	-	-	-	-	2,923,233	3,335,814
Cost of sales and rendering of services	(31,394,601)	(33,746,846)	-	-	(1,833,434)	(1,423,247)	-	-	(33,228,035)	(35,170,093)
Gross profit	**3,925,770**	**3,540,553**	**-**	**-**	**1,210,542**	**809,303**	**-**	**-**	**5,136,312**	**4,349,856**
Management service income	-	-	-	-	248	-	243,995	238,882	224,243	238,882
Interest income	60,819	25,912	198	203	55,115	101,574	89,390	85,713	205,522	213,402
Dividend income	-	-	-	-	99,987	186,782	894	-	100,881	186,782
Gain on bargain purchase arising from the acquisition	-	-	-	-	-	-	269,918	-	269,918	-
Other income	46,242	57,200	728	401	11,377	130,548	8,438	910	66,785	189,059
Administrative expenses	(234,399)	(210,145)	(2,817)	(5,661)	(425,536)	(322,059)	(933,240)	(1,056,125)	(1,595,992)	(1,593,990)
Net foreign exchange gain (loss)	28,238	21,350	-	-	(134,683)	(885,015)	(26,035)	(1,356)	(132,480)	(865,021)
Finance costs	(99,591)	(66,086)	-	-	(1,330,628)	(948,802)	-	-	(1,430,219)	(1,014,888)
Share of profit of associates and joint ventures	421,477	589,990	390,211	300,788	3,139,739	3,827,838	16,953	16,849	3,968,380	4,735,465
Profit (loss) before income tax expense	**4,148,556**	**3,958,774**	**388,320**	**295,731**	**2,626,161**	**2,900,169**	**(329,687)**	**(715,127)**	**6,833,350**	**6,439,547**
Tax (expense) income	(837,959)	(789,032)	-	-	(33,381)	(79,189)	1,274	(2,359)	(870,066)	(870,580)
Profit (loss) for the year	**3,310,597**	**3,169,742**	**388,320**	**295,731**	**2,592,780**	**2,820,980**	**(328,413)**	**(717,486)**	**5,963,284**	**5,568,967**

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

	Consolidated financial statements									
	Domestic Electricity Generating		Renewable Energy		International Power Projects		Others		Total	
For the year ended 31 December	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018
					(In thousand Baht)					
Disaggregation of revenue										
Primary geographical markets										
Thailand	35,320,371	37,287,399	-	-	-	-	-	-	35,320,371	37,287,399
Australia	-	-	-	-	2,990,266	2,181,650	-	-	2,990,266	2,181,650
Other countries	-	-	-	-	53,710	50,900	-	-	53,710	50,900
Total	**35,320,371**	**37,287,399**	**-**	**-**	**3,043,976**	**2,232,550**	**-**	**-**	**38,364,347**	**39,519,949**
Major products and service lines										
Product	35,319,331	37,287,399	-	-	2,990,266	2,181,650	-	-	38,309,597	39,469,049
Service	1,040	-	-	-	53,710	50,900	-	-	54,750	50,900
Total	**35,320,371**	**37,287,399**	**-**	**-**	**3,043,976**	**2,232,550**	**-**	**-**	**38,364,347**	**39,519,949**
Timing of revenue recognition										
At a point in time	35,319,331	37,287,399	-	-	2,990,266	2,181,650	-	-	38,309,597	39,469,049
Over time	1,040	-	-	-	53,710	50,900	-	-	54,750	50,900
Total	**35,320,371**	**37,287,399**	**-**	**-**	**3,043,976**	**2,232,550**	**-**	**-**	**38,364,347**	**39,519,949**

Geographical segments

Segment assets are based on the geographical location of the assets.

Geographical information

	Assets (in thousand Baht)	
	2019	2018
Thailand	54,814,149	51,320,387
Australia	23,850,702	23,824,023
Other countries	21,564,575	26,107,492
Total	**100,229,426**	**101,251,902**

26 Administrative expenses

	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
Employee benefit expenses	715,879	724,258	508,274	513,521
General administrative expenses	446,679	417,143	209,988	247,314
Consultant fees	226,531	254,728	153,765	220,685
Depreciation and amortisation	70,788	77,513	25,172	30,958
Public relation expenses	50,435	49,610	29,182	29,868
Impairment loss of land for future development projects	-	20,580	-	-
Impairment loss of goodwill	42,313	-	-	-
Others	43,367	50,158	7,836	15,491
Total	**1,595,992**	**1,593,990**	**934,217**	**1,057,837**

27 Employee benefit expenses

	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
Managements				
Directors' remuneration	10,105	10,558	7,699	8,316
Wages and salaries	99,772	102,207	31,292	34,559
Defined benefit plans	5,428	1,509	5,187	331
Defined contribution plans	6,757	7,937	2,430	3,004
Others	42,966	47,112	38,223	39,129
	165,028	**169,323**	**84,831**	**85,339**
Employees				
Wages and salaries	321,476	335,588	237,692	250,844
Defined benefit plans	52,089	18,174	47,891	14,611
Defined contribution plans	23,857	24,337	20,734	21,265
Others	153,429	176,836	117,126	141,462
	550,851	**554,935**	**423,443**	**428,182**
Total	**715,879**	**724,258**	**508,274**	**513,521**

Defined contribution plans

The Group in Thailand joined the contribution provident fund established by EGAT for the Group's employees. Membership to the fund is on a voluntary basis. Contributions are made monthly by the employee at rates ranging from 5% to 15% of their basic salaries and by the Group at rates ranging from 5% to 10% of the employees' basic salaries. The provident fund is registered with the Ministry of Finance as juristic entities and is managed by a licensed Fund Manager.

28 Expenses by nature

	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
Fuel costs	27,647,844	30,026,996	-	-
Operation and maintenance service fees	1,605,246	1,569,444	-	-
Repair expenses and spare parts used	1,533,257	1,457,179	-	-
Depreciation and amortisation	1,557,878	1,259,764	25,172	30,958
General administrative expenses	490,046	467,301	209,988	247,314
Employee benefit expenses	715,879	724,258	508,274	513,521
Insurance premium for power plants	377,566	371,361	-	-
Consultant fees	226,531	254,728	153,765	220,685
Public relation expenses	50,435	49,610	29,182	29,868
Impairment losses on goodwill	42,313	-	-	-
Others	577,032	583,443	7,836	15,491
Total cost of sales and rendering of services and administrative expenses	**34,824,027**	**36,764,084**	**934,217**	**1,057,837**

29 Finance costs

	Note	Consolidated financial statements		Separate financial statements	
		2019	2018	2019	2018
		(in thousand Baht)			
Interest expense:					
Related party	6	-	23,716	-	-
Bank loans		1,389,795	1,270,449	-	-
Total interest expense		**1,389,795**	**1,294,165**	-	-
Amortisation of transaction costs capitalised		38,221	43,213	-	-
Change in fair value of derivatives - ineffective portion		(350)	(400,933)	-	-
Loss on repurchase of debentures		-	78,443	-	-
Other finance costs		2,553	-	-	-
Total finance costs		**1,430,219**	**1,014,888**	-	-

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

30 Income tax expense

Income tax recognised in profit or loss	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
Current tax expense				
Current year	539,280	1,007,468	3,627	4,713
Under (over) provided in prior years	(21,629)	(14,850)	478	112
	517,651	**992,618**	**4,105**	**4,825**
Deferred tax expense				
Movements in temporary differences	352,415	(122,038)	(5,379)	(2,479)
Total income tax expense (income)	**870,066**	**870,580**	**(1,274)**	**2,346**

	Consolidated financial statements					
	2019			2018		
Income tax recognised in other comprehensive income	Before tax	Tax (expense) benefit	Net of tax	Before tax	Tax (expense) benefit	Net of tax
	(in thousand Baht)					
Defined benefit plan actuarial gains (losses)	**(8,171)**	**1,634**	**(6,537)**	**1,748**	**-**	**1,748**

	Separate financial statements					
	2019			2018		
Income tax recognised in other comprehensive income	Before tax	Tax (expense) benefit	Net of tax	Before tax	Tax (expense) benefit	Net of tax
	(in thousand Baht)					
Defined benefit plan actuarial gains (losses)	**(5,483)**	**1,097**	**(4,386)**	**-**	**-**	**-**

Reconciliation of effective tax rate

	Consolidated financial statements			
	2019		2018	
	Rate (%)	*(in thousand Baht)*	*Rate (%)*	*(in thousand Baht)*
Profit before income tax expense		6,833,351		6,439,546
Income tax using the Thai corporation tax rate	20	1,366,670	20	1,287,909
Effect of different tax rates in foreign jurisdictions		(164,547)		(69,472)
Income not subject to tax - dividend income		(20,889)		(37,356)
Effect from expense not deductible for tax purposes and income and expenses recognised in the different periods between accounting and tax		(379,012)		(424,891)
Recognition of previously unrecognised tax losses		(332)		(280)
Current year losses for which no deferred tax asset was recognised		83,272		118,423
Over provided in prior years		(21,629)		(14,850)
Others		6,533		11,097
Total	**13**	**870,066**	**14**	**870,580**

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

	Separate financial statements			
	2019		2018	
	Rate (%)	*(in thousand Baht)*	*Rate (%)*	*(in thousand Baht)*
Profit before income tax expense		2,933,498		2,993,149
Income tax using the Thai corporation tax rate	20	586,700	20	598,630
Income not subject to tax - dividend income		(668,392)		(701,162)
Effect from expense not deductible for tax purposes and income and expenses recognised in the different periods between accounting and tax		(2,374)		39,185
Current year losses for which no deferred tax asset was recognised		78,687		60,868
Under provided in prior years		478		112
Others		3,627		4,713
Total	**(0.04)**	**(1,274)**	**0.08**	**2,346**

	Consolidated financial statements			
	Assets		Liabilities	
Deferred tax At 31 December	2019	2018	2019	2018
	(in thousand Baht)			
Total	4,271,093	4,961,187	(5,942,432)	(6,237,871)
Set off of tax	(4,232,196)	(4,758,955)	4,232,196	4,758,955
Net deferred tax assets (liabilities)	**38,897**	**202,232**	**(1,710,236)**	**(1,478,916)**

	Separate financial statements			
	Assets		Liabilities	
Deferred tax At 31 December	2019	2018	2019	2018
	(in thousand Baht)			
Total	38,897	32,422	-	-
Set off of tax	-	-	-	-
Net deferred tax assets	**38,897**	**32,422**	**-**	**-**

Movement of deferred tax were as follows:

	Consolidated financial statements					
		(Charged) / Credited to:				
	At 1 January 2019	Profit or loss	Other comprehensive income	Exchange differences	Acquired in business combination	**At 31 December 2019**
	(in thousand Baht)					
Deferred tax assets						
Allowance for obsolescence of spare parts and supplies and allowance for decline in value of fuel oil	284,549	6,155	-	(2,410)	-	288,294
Property, plant and equipment	4,113,599	(612,670)	-	(53,559)	45,611	3,492,981
Finance leases liabilities	136	(17)	-	-	-	119
Derivative liabilities	-	-	-	-	8,343	8,343
Provisions for employee benefits	37,127	6,214	1,634	-	-	44,975
Loss carry forward	423,654	(44,167)	-	(42,078)	-	337,409
Others	102,122	3,692	-	(6,842)	-	98,972
Total	**4,961,187**	**(640,793)**	**1,634**	**(104,889)**	**53,954**	**4,271,093**

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

	Consolidated financial statements					
		(Charged) / Credited to:				
	At 1 January 2019	Profit or loss	Other comprehensive income	Exchange differences	Acquired in business combination	At 31 December 2019
			(in thousand Baht)			
Deferred tax liabilities						
Property, plant and equipment	(2,385,544)	70,021	-	199,787	-	(2,115,736)
Intangible assets	-	-	-	-	(209,999)	(209,999)
Finance lease receivable from related party	(3,534,102)	252,564	-	-	-	(3,281,538)
Derivative assets	(2,693)	557	-	-	-	(2,136)
Others	(315,532)	(34,763)	-	17,272	-	(333,023)
Total	**(6,237,871)**	**288,379**	**-**	**217,059**	**(209,999)**	**(5,942,432)**
Net	**(1,276,684)**	**(352,414)**	**1,634**	**112,170**	**(156,045)**	**(1,671,339)**

	Consolidated financial statements				
		(Changed)/ Credited to:			
	At 1 January 2018	Profit or loss	Other comprehensiv e income	Exchange differences	At 31 December 2018
			(in thousand Baht)		
Deferred tax assets					
Allowance for obsolescence of spare parts and supplies and allowance for decline in value of fuel oil	272,465	16,228	-	(4,144)	284,549
Property, plant and equipment	4,814,444	(627,393)	-	(73,452)	4,113,599
Finance leases liabilities	135	1	-	-	136
Provisions for employee benefits	34,727	2,400	-	-	37,127
Loss carry forward	479,409	(8,254)	-	(47,501)	423,654
Others	105,915	8,266	-	(12,059)	102,122
Total	**5,707,095**	**(608,752)**	**-**	**(137,156)**	**4,961,187**
Deferred tax liabilities					
Property, plant and equipment	(2,751,729)	109,917	-	256,268	(2,385,544)
Finance lease receivable from related party	(4,245,039)	710,937	-	-	(3,534,102)
Derivatives	(2,815)	108	-	14	(2,693)
Others	(277,750)	(90,172)	-	52,390	(315,532)
Total	**(7,277,333)**	**730,790**	**-**	**308,672**	**(6,237,871)**
Net	**(1,570,238)**	**122,038**	**-**	**171,516**	**(1,276,684)**

	Separate financial statements			
		(Charged)/ Credited to:		
	At 1 January 2019	Profit or loss	Other comprehensive income	At 31 December 2019
		(in thousand Baht)		
Deferred tax assets				
Provisions for employee benefits	**32,421**	**5,379**	**1,097**	**38,897**

	Separate financial statements			
		(Charged)/ Credited to:		
	At 1 January 2018	Profit or loss	Other comprehensive income	At 31 December 2018
		(in thousand Baht)		
Deferred tax assets				
Provisions for employee benefits	**29,942**	**2,479**	**-**	**32,421**

Deferred tax assets have not been recognised in respect of the following items:

Unrecognised deferred tax assets	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
		(in thousand Baht)		
Tax losses	**520,607**	**544,984**	**317,758**	**308,163**

As at 31 December 2019, the Group has outstanding balance of deferred tax assets of Baht 337.41 million from cumulative tax losses of an indirect subsidiary in overseas. The Group's management has estimated future taxable profits and they considered it probable that future taxable profits would be available against which such losses can be used. The tax losses in such country has unlimited and no expiration date, therefore, the related deferred tax assets are recognised.

31 Promotional privileges

A subsidiary has been granted promotional certificates by the Office of the Board of Investment for electricity, steam, cooling water and industrial water. The subsidiary has been granted several privileges including exemption and/or reduction from payment of income tax on the net profit derived from promoted operations with certained terms and conditions prescribed in the promotional certificates.

32 Basic earnings per share

	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht/ thousand shares)			
Profit for the year attributable to ordinary shareholders of the Company (basic)	**5,963,281**	**5,587,602**	**2,934,772**	**2,990,803**
Number of ordinary shares outstanding	**1,450,000**	**1,450,000**	**1,450,000**	**1,450,000**
Earnings per share (basic) *(in Baht)*	**4.11**	**3.85**	**2.02**	**2.06**

33 Dividends

The shareholders of the Company have approved dividends as follows:

	Approval date	Payment schedule	Dividend rate per share *(Baht)*	Amount *(in million Baht)*
2019				
Annual dividend	5 April 2019	April 2019	2.40	3,480
Interim dividend	22 August 2018	September 2018	(1.15)	(1,667)
Additional dividend			1.25	1,813
Interim dividend	23 August 2019	September 2019	1.15	1,667
Total dividend				**3,480**
2018				
Annual dividend	5 April 2018	April 2018	2.40	3,480
Interim dividend	21 August 2017	September 2017	(1.15)	(1,667)
Additional dividend			1.25	1,813
Interim dividend	22 August 2018	September 2018	1.15	1,667
Total dividend				**3,480**

34 Financial instruments

Financial risk management policies

The Group is exposed to normal business risks from changes in market interest rates and currency exchange rates and from non-performance of contractual obligations by counterparties. The Group does not hold or issue derivatives for speculative or trading purposes.

Risk management is integral to the whole business of the Group. The Group has a system of controls in place to create an acceptable balance between the cost of risks occurring and the cost of managing the risks. The management continually monitors the Group's risk management process to ensure that an appropriate balance between risk and control is achieved.

Capital management

The Board of Directors' policy is to maintain a strong capital base so as to maintain investor, creditor and market confidence and to sustain future development of the business. The Board monitors the return on capital, which the Group defines as result from operating activities divided by total shareholders' equity, excluding non-controlling interests and also monitors the level of dividends to ordinary shareholders.

Interest rate risk

Interest rate risk is the risk that future movements in market interest rates will affect the results of the Group's operations and its cash flows. The Group is primarily exposed to interest rate risk from its borrowings (see note 20). The Group mitigates this risk by using derivatives, principally interest rate swaps, to manage exposure to fluctuations in interest rates on specific borrowings.

The effective interest rates of debt securities and loans receivable as at 31 December and the periods in which the loans receivable and debt securities mature or re-price were as follows:

		Consolidated financial statements			
		Maturity period			
	Effective interest rate (% per annum)	Within 1 year	After 1 year but within 5 years	After 5 years	Total
			(in thousand Baht)		
2019					
Current					
Debt securities held for trading	1.12 to 2.27	248,960	224,340	29,808	503,108
Other debt securities held to maturity	3.04	60,000	-	-	60,000
Non-current					
Other debt securities held to maturity	3.04 to 3.10	-	53,000	-	53,000
Long-term loans to related parties	6.27	-	-	540,898	540,898
Total		**308,960**	**277,340**	**570,706**	**1,157,006**
2018					
Current					
Debt securities held for trading	1.39 to 2.71	318,342	181,860	-	500,202
Other debt securities held to maturity	0.50 to 5.33	303,894	-	-	303,894
Non-current					
Other debt securities held to maturity	3.04 to 3.10	-	113,000	-	113,000
Long-term loans to related parties	6.45	-	-	42,494	42,494
Total		**622,236**	**294,860**	**42,494**	**959,590**

		Separate financial statements			
		Maturity period			
	Effective interest rate (% per annum)	Within 1 year	After 1 year but within 5 years	After 5 years	Total
		(in thousand Baht)			
2019					
Current					
Debt securities held for trading	1.12 to 2.27	227,917	224,340	29,808	482,065
Other debt securities held to maturity	3.04	60,000	-	-	60,000
Non-current					
Other debt securities held to maturity	3.04 to 3.10	-	53,000	-	53,000
Long-term loans to related parties	3.93 to 6.27	-	-	1,807,710	1,807,710
Total		**287,917**	**277,340**	**1,837,518**	**2,402,775**
2018					
Current					
Debt securities held for trading	1.39 to 2.71	285,901	181,860	-	467,761
Other debt securities held to maturity	5.33	300,000	-	-	300,000
Non-current					
Other debt securities held to maturity	3.04 to 3.10	-	113,000	-	113,000
Long-term loans to related parties	3.71 to 6.45	164,192	171,770	931,004	1,266,966
Total		**750,093**	**466,630**	**931,004**	**2,147,727**

The effective interest rates of interest-bearing financial liabilities as at 31 December and the periods in which those liabilities mature or re-price were as follows:

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

		Consolidated financial statements			
		Maturity period			
	Effective interest rate (% per annum)	Within 1 year	After 1 year but within 5 years	After 5 years	Total
		(in thousand Baht)			
2019					
Current					
Current portion of long-term loans from financial institutions	3.10 to 5.17	1,091,192	-	-	1,091,192
Non-current					
Long-term loans from financial institutions	3.10 to 5.17	-	12,809,127	2,464,126	15,273,253
Debentures	2.71 to 4.47	-	1,999,319	13,168,271	15,167,590
Total		**1,091,192**	**14,808,446**	**15,632,397**	**31,532,035**
2018					
Current					
Current portion of long-term loans from financial institutions	4.22 to 4.86	939,377	-	-	939,377
Debentures due within one year	3.42	3,471,390	-	-	3,471,390
Non-current					
Long-term loans from financial institutions	4.22 to 4.86	-	4,552,451	8,080,974	12,633,425
Debentures	2.71 to 4.47	-	-	16,107,245	16,107,245
Total		**4,410,767**	**4,552,451**	**24,188,219**	**33,151,437**

Foreign currency risk

The Group is exposed to foreign currency risk relating to purchases which are denominated in foreign currencies. The Group primarily utilises forward exchange contracts with maturities of less than one year to hedge such financial assets and liabilities denominated in foreign currencies. The forward exchange contracts entered into at the reporting date also relate to anticipated purchases, denominated in foreign currencies, for the subsequent period.

At 31 December, the Group and the Company were exposed to foreign currency risk in respect of significant financial assets and liabilities denominated in the foreign currencies as follows:

	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
United States Dollars				
Long-term loans to related parties	540,898	42,494	1,515,165	1,091,966
Other current payables	(798,117)	(533,190)	(21,840)	(39,220)

	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
	(in thousand Baht)			
Lao Kip				
Available for sale investments	1,942,552	2,538,934	-	-
Other current payables	(7,299)	(991)	(1,910)	(991)
Australian Dollars				
Other current payables	(67,611)	(54,199)	(3,389)	(2,379)
Japanese Yen				
Other current payables	(40,209)	(43,835)	-	-
Debentures	(4,142,133)	(4,384,489)	-	-
Others				
Other current payables	(1,650)	(27)	(27)	(27)
Gross balance sheet exposure	**(2,573,569)**	**(2,435,303)**	**1,487,999**	**1,049,349**
Estimated forecast purchases	(1,476)	(237,699)	-	-
Gross exposure	**(2,575,045)**	**(2,673,002)**	**1,487,999**	**1,049,349**
Foreign currency forward contracts	94,080	-	-	-
Cross currency swap contracts	4,147,683	4,405,060	-	-
Net exposure	**1,666,718**	**1,732,058**	**1,487,999**	**1,049,349**

Credit risk

Credit risk is the potential financial loss resulting from the failure of a customer or counterparty to settle its financial and contractual obligations to the Group as and when they fall due.

Management has a credit policy in place and the exposure to credit risk is monitored on an ongoing basis. Credit evaluations are performed on all customers requiring credit over a certain amount. At the reporting date there were no significant concentrations of credit risk. The maximum exposure to credit risk is represented by the carrying amount of each financial asset in the statement of financial position. However, due to the Group's major customers are the government, the state enterprise and the large enterprises and low credit risk. Management does not anticipate material losses from its debt collection.

Liquidity risk

The Group monitors its liquidity risk and maintains a level of cash and cash equivalents deemed adequate by management to finance the Group's operations and to mitigate the effects of fluctuations in cash flows.

Carrying amount and fair values

The following table shows the carrying amounts and fair values of financial assets and financial liabilities, including their levels in the fair value hierarchy. It does not include fair value information for financial assets and financial liabilities not measured at fair value if the carrying amount is a reasonable approximation of fair value.

Notes to the financial statements

RATCH Group Public Company Limited and its subsidiaries (*Formerly named "Ratchaburi Electricity Generating Holding Public Company Limited"*)

For the year ended 31 December 2019

	Consolidated financial statements				
	Carrying amount	Fair value			
		Level 1	Level 2	Level 3	Total
		(in thousand Baht)			
31 December 2019					
Financial assets measured at fair value					
Current					
Debt securities held for trading	503,109	-	503,109	-	503,109
Non-current					
Available for sale investments	1,942,552	1,942,552	-	-	1,942,552
Derivative assets	266,637	-	266,637	-	266,637
Financial liabilities measured at fair value					
Current					
Derivative liabilities	(140,194)	-	(140,194)	-	(140,194)
Non-current					
Derivative liabilities	(748,412)	-	(748,412)	-	(748,412)
Financial liabilities not measured at fair value					
Current					
Short-term loans from financial institutions	(603,080)	-	(603,080)	-	(603,080)
Current portion of long-term loans from financial institutions	(1,091,192)	-	(1,091,192)	-	(1,091,192)
Non-current					
Long-term loans from financial institutions	(15,273,253)	-	(15,273,253)	-	(15,273,253)
Debentures	(15,167,590)	-	(16,698,572)	-	(16,698,572)
31 December 2018					
Financial assets measured at fair value					
Current					
Debt securities held for trading	500,202	-	500,202	-	500,202
Derivative assets	10,618	-	10,618	-	10,618
Non-current					
Available for sale investments	2,538,934	2,538,934	-	-	2,538,934
Derivative assets	226,403	-	226,403	-	226,403

	Consolidated financial statements				
	Carrying amount	Fair value			
		Level 1	Level 2	Level 3	Total
			(in thousand Baht)		
31 December 2018					
Financial liabilities measured at fair value					
Current					
Derivative liabilities	(15,428)	-	(15,428)	-	(15,428)
Non-current					
Derivative liabilities	(358,117)	-	(358,117)	-	(358,117)
Financial liabilities not measured at fair value					
Current					
Current portion of long-term loans from financial institutions	(939,377)	-	(939,377)	-	(939,377)
Debentures due within one year	(3,471,390)	-	(3,501,133)	-	(3,501,133)
Non-current					
Long-term loans from financial institutions	(12,633,425)	-	(12,633,425)	-	(12,633,425)
Debentures	(16,107,245)	-	(17,079,688)	-	(17,079,688)

	Separate financial statements				
	Carrying amount	Fair value			
		Level 1	Level 2	Level 3	Total
			(in thousand Baht)		
31 December 2019					
Financial assets measured at fair value					
Current					
Debt securities held for trading	482,065	-	482,065	-	482,065
31 December 2018					
Financial assets measured at fair value					
Current					
Debt securities held for trading	467,761	-	467,761	-	467,761

Foreign currency forward contracts

As at 31 December 2019 The Group entered into various foreign currency forward contracts with financial institutions to manage exposure of fluctuations in foreign currency risk relate to purchases. the Group had outstanding foreign currency forward contracts to buy U.S. Dollars 3.12 million or equivalent to Baht 101.09 million. Such contracts will mature in March 2020 to December 2021 *(2018: nil)*.

Interest rate swap and cross currency swap contracts

The Group entered into various interest rate swap and cross currency swap contracts with financial institutions to manage exposure of fluctuations in interest rates and foreign currency risk on borrowings. The notional amounts of the outstanding interest rate swap and cross currency swap contracts as at 31 December 2019 comprises Baht currency totalling Baht 2,957.85 million, Japanese Yen currency totalling Japanese Yen 15,000 million and Australian Dollars currency totalling Australian Dollars 539.49 million *(2018: Baht currency totalling Baht 1,000 million, U.S. Dollars currency totalling U.S. Dollars 200 million, Japanese Yen currency totalling Japanese Yen 15,000 million and Australian Dollars currency totalling Australian Dollars 571.84 million)*. All counterparties agreed to pay the interest and the principle amount in accordance with the terms and conditions specified in the contracts.

Financial instruments measured at fair value

Type	Valuation technique
Debt securities held for trading	*Market comparison/ discounted cash flow:* The fair value is estimated considering (i) current or recent quoted prices for identical securities in markets that are not active and (ii) a net present value calculated using discount rates derived from quoted prices of securities with similar maturity and credit rating that are traded in active markets, adjusted by an illiquidity factor.
Foreign currency forward contracts	*Forward pricing:* The fair value is determined using quoted forward exchange rates at the reporting date and present value calculations based on high credit quality yield curves in the respective currencies.
Interest rate swap contracts	*Swap models:* The fair value is calculated as the present value of the estimated future cash flows. Estimates of future floating-rate cash flows are based on quoted swap rates, futures prices and interbank borrowing rates. Estimated cash flows are discounted using a yield curve constructed from similar sources and which reflects the relevant benchmark interbank rate used by market participants for this purpose when pricing interest rate swaps. The fair value estimate is subject to a credit risk adjustment that reflects the credit risk of the Group and of the counterparty; this is calculated based on credit spreads derived from current credit default swap or bond prices.
Cross currency swap contracts	*Black-Scholes model/ discounted cash flows*

Financial instruments not measured at fair value

Type	Valuation technique
Other financial liabilities	*Discounted cash flows:* The valuation model considers the present value of expected payment, discounted using a risk-adjusted discount rate.

35 Commitments with non-related parties

Operation and Maintenance Agreement

On 1 August 2014, Ratchaburi Electricity Generating Company Limited, a direct subsidiary, obtained the transfer of right in an Operation and Maintenance Agreement with a service provider from a subsidiary which was dissolved in year 2014. Such agreement dated on 30 June 2000 and has a period of 20 years from the date specified in the agreement. Under the terms of the agreement, such service provider will operate and provide maintenance services to the subsidiary. Ratchaburi Electricity Generating Company Limited will pay compensation for project management to or receive compensation from the service provider under the conditions specified in the agreement.

On 9 December 2019, RATCH Cogeneration Company Limited, a direct subsidiary, entered into an Operation and Maintenance Agreement with a service provider for a period of 19 years from the date specified in the agreement. Under the terms of the agreement, such service provider will operate and provide maintenance services to the subsidiary. The operation and maintenance service fee is stipulated in the agreement.

Fuel Purchase Agreements

On 27 October 2000, Ratchaburi Electricity Generating Company Limited, a direct subsidiary, entered into a Gas Sales Agreement with PTT Public Company Limited ("PTT") for a period of 25 years. PTT will distribute natural gas to such subsidiary at the agreed quantity and price.

On 1 June 2004, Ratchaburi Electricity Generating Company Limited, a direct subsidiary, entered into a Diesel Purchase Agreement with PTT for a period of 3 years. PTT will distribute diesel to such subsidiary at the agreed quantity and price. The agreement is automatically extended for a period of 1 year unless written notice at least 6 months before the agreement automatically extended.

On 1 August 2014, Ratchaburi Electricity Generating Company Limited, a direct subsidiary, obtained the transfer of right in the Gas Sales Agreement with PTT from a subsidiary which was dissolved in year 2014. Such agreement dated on 22 May 1997 and has a period of 20 years from the date specified in the agreement.

On 31 March 2011, RATCH Cogeneration Company Limited, a direct subsidiary, entered into a Gas Sales Agreement with PTT for a period of 25 years from the date of commercial gas usage. PTT will distribute natural gas to such subsidiary at the agreed quantity and price.

Contractual Service Agreement

On 29 December 2005, Ratchaburi Electricity Generating Company Limited, a direct subsidiary, entered into a Contractual Service Agreement for the Combined Cycle power plants with a consortium of General Electric International Operations Company Inc. and GE Energy Parts, Inc. The agreement is effective from the agreement date until the end of the operation of the gas turbine according to the Power Purchase Agreement in 2027 with a total value of U.S. Dollars 428.60 million. Subsequently in 2014, all parties agreed to reduce the price and amend the conditions of the agreement effective from February 2014. The total value of the agreement is U.S. Dollars 418.21 million. As at 31 December 2019, the subsidiary had outstanding commitments amounting to U.S. Dollars 119.01 million *(2018: U.S. Dollars 139.84 million)*.

In addition, in accordance with the agreement, the subsidiary is required to open a letter of credit amounting to U.S. Dollars 6 million. As at 31 December 2019, the subsidiary had an outstanding unused letter of credit amounting to U.S. Dollars 6 million *(2018: U.S. Dollars 6 million)*.

On 29 December 2019, RATCH Cogeneration Company Limited, a direct subsidiary, entered into a Contractual Service Agreement with a service provider for a period of 15 years from the date as specified in the agreement. The details and the conditions related to service and the price are specified in the agreement.

Generator Rotor Lease Agreement

On 1 December 2015, Ratchaburi Electricity Generating Company Limited, a direct subsidiary, entered into a Generator Rotor Lease Agreement for the Combined Cycle power plants with General Electric International Operations Company Inc. The agreement is effective from the agreement date until June 2020 with a total value of U.S. Dollars 2.10 million. The subsidiary has made advance payment under the terms of the agreement amounting to U.S. Dollars 1 million. Subsequently in 2017, both parties agreed to reduce the price and amend the conditions of the agreement effective from October 2017. The total value of the agreement is U.S. Dollars 1.98 million. As at 31 December 2019, the subsidiary had outstanding commitments amounting to U.S. Dollars 0.12 million *(2018: U.S. Dollars 0.37 million)*.

Letters of guarantee

As at 31 December 2019, the Company and its subsidiaries had commitments from letters of guarantee issued by financial institutions for the Company and its subsidiaries to comply with certain conditions in agreements in the amount of Baht 1,046.08 million, U.S. Dollars 12.38 million and Australian Dollars 22.25 million *(2018: Baht 94.41 million, U.S. Dollars 11.50 million and Australian Dollars 15.24 million)*.

Standby Letters of Credit

As at 31 December 2019, the Company and its subsidiaries had commitments from Standby Letters of Credit issued by financial institutions for Debt Service Reserve Guarantees and equity contributions in joint ventures in the amount of Baht 1,600 million, U.S. Dollars 24.50 million and Australian Dollars 208.27 million *(2018: Baht 1,600 million and U.S. Dollars 24.50 million)*.

Unused of credit facilities

As at 31 December 2019, the Company and its subsidiaries had unused of credit facilities totalling Baht 9,908.23 million, U.S. Dollars 896.45 million, Australian Dollars 31.94 million and Euro 300 million *(2018: Baht 1,793.89 and U.S. Dollars 900.35 million)*.

Capital commitment

As at 31 December 2019, RATCH-Australia Corporation Pty. Ltd. and its subsidiaries, an indirect subsidiary, had outstanding capital commitments under Engineering Procurement & Construction Contracts for Wind Farm and Solar Power and other service agreements amounting to Australian Dollars 217.23 million *(2018: Australian Dollars 12.29 million).*

Pledge of share certificate agreements

The Company has pledged all share certificates of RATCH Cogeneration Company Limited, a direct subsidiary, as collateral for loans of the subsidiary.

The Company has pledged all share certificates of First Korat Wind Company Limited and K.R. TWO Company Limited, direct associates, as collateral for loans of those associates.

The Group has pledged all share certificates of Xe-Pian Xe-Namnoy Power Company Limited, Ratchaburi Power Company Limited, Nava Nakorn Electricity Generating Company Limited, Ratchaburi World Cogeneration Company Limited, Solarta Company Limited and Hongsa Power Company Limited, joint ventures, as collateral for loans of those joint ventures.

The Company has pledged all share certificates of SouthEast Asia Energy Limited, a direct joint venture, and the joint venture has pledged partial share certificates of Nam Ngum 2 Power Company Limited, a subsidiary of the joint venture, as collateral for loans of Nam Ngum 2 Power Company Limited.

Fareast Renewable Development Pte. Ltd., an indirect joint venture, has pledged partial share certificates of PT Bajradaya Sentranusa, a subsidiary of the joint venture, as collateral for loans of PT Bajradaya Sentranusa.

The Company has pledged all share certificates of Northern Bangkok Monorail Company Limited and Eastern Bangkok Monorail Company Limited, investments in other companies, as collateral for loans of those companies.

Significant litigation

In 2014, a plaintiff filed a lawsuit against the Company based on the allegations that the Company had breached the joint development agreement for bidding of the Power Plant Project. The plaintiff demanded the Company to pay damage. The management of the Company is confident that all of the Company's action have not been in accordance with the allegations of the plaintiff and has much more confidence in strong defences. Therefore, the Company did not recognise a contingent liability in respect of this case. On 25 October 2018, the Court issued a judgement to dismiss the claim made by the plaintiff for this case. Currently, the case is now pending the consideration of the Appellate Court.

In 2019, the Company was the defendant in a civil case where the plaintiff requested the Company to pay Baht 5,271.10 million for compensation. The plaintiff claimed that the Company infringement of their trade secrets by used and made the profitability from their trade secrets information without their consent. The action reportedly caused damage to the plaintiff and preventing them from receiving lost the right, income or benefits from their trade secrets information. The management of the Company believed that this case did not affect the Company's operation since all the Company's action have not been in accordance with the allegations of the plaintiff and was strongly confident in defense in terms of factual and legal issues. Therefore, the Company did not recognise a contingent liability in respect of this case. Currently, the case is under the consideration of the Central Intellectual Property and International Trade Court.

36 Events after the reporting period

Partial disposal of investment in Hin Kong Power Holding Company Limited

On 3 January 2020, the Group partially disposed investment in Hin Kong Power Holding Company Limited, a direct subsidiary, 196,000 or 49% of total shares at par value Baht 10 per share, totalling Baht 1.96 million to a local company. As a result, the Company's interest in the subsidiary decreased to 51% and became a direct joint venture.

Increase in share capital of an RATCH-Australia Corporation Pty. Ltd.

On 28 January 2020, RH International (Singapore) Corporation Pte. Ltd., an indirect subsidiary, paid for increase in share capital of RATCH-Australia Corporation Pty. Ltd., a subsidiary of the indirect subsidiary, totalling Australian Dollars 42 million or equivalent to Baht 884.86 million, in proportion of investment of 100%.

Dividend approval for the year 2019

At the Board of Directors meeting of the Company held on 18 February 2020, the Board approved to submit for approval at the annual general meeting of the shareholders of the Company, the appropriation of 2019 annual dividend at the rate of Baht 2.40 per share, totalling Baht 3,480 million, from the profit from operations of 2019 after deducting the interim dividend of Baht 1.15 per share, totalling Baht 1,667 million. The balance of dividend amounting to Baht 1,813 million is subject to the approval of the shareholders at the annual general meeting on 9 April 2020.

37 Thai Financial Reporting Standards (TFRS) not yet adopted

New and revised TFRS, which are relevant to the Group's operations, expected to have material impact on the consolidated and separate financial statements when initially adopted, and will become effective for the financial statements in annual reporting periods beginning on or after 1 January 2020, are as follows:

TFRS	Topic
TFRS 7*	Financial Instruments: Disclosures
TFRS 9*	Financial Instruments
TFRS 16	Leases
TAS 32*	Financial Instruments: Presentation
TFRIC 16*	Hedges of a Net Investment in a Foreign Operation
TFRIC 19*	Extinguishing Financial Liabilities with Equity Instruments

** TFRS - Financial instruments standards*

(a) TFRS - Financial instruments standards

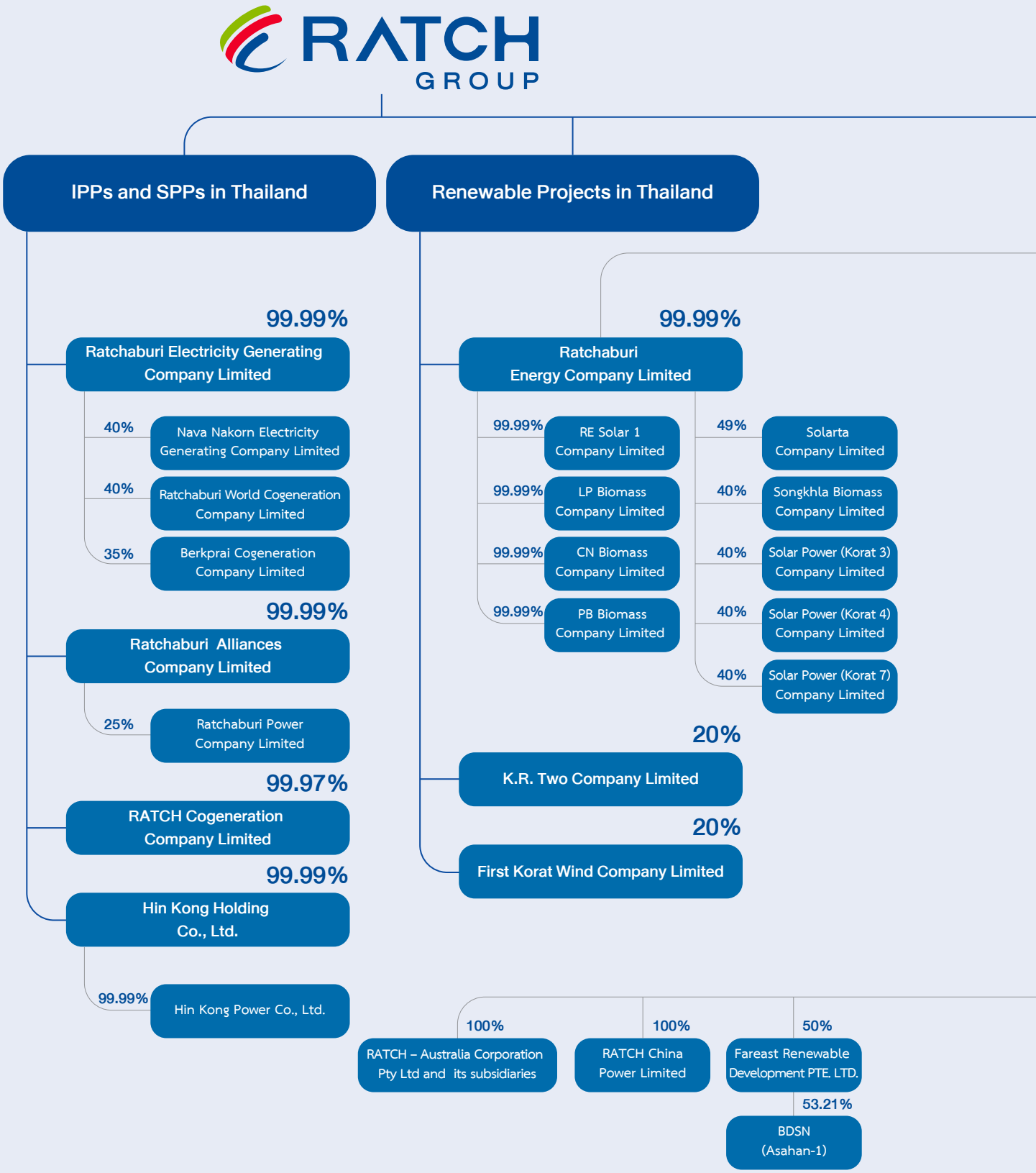
These TFRS - Financial instruments standards establish requirements related to definition, recognition, measurement, impairment and derecognition of financial assets and financial liabilities, including accounting for derivatives and hedge accounting. When these TFRS are effective, some accounting standards, interpretations and guidance which are currently effective will be cancelled.

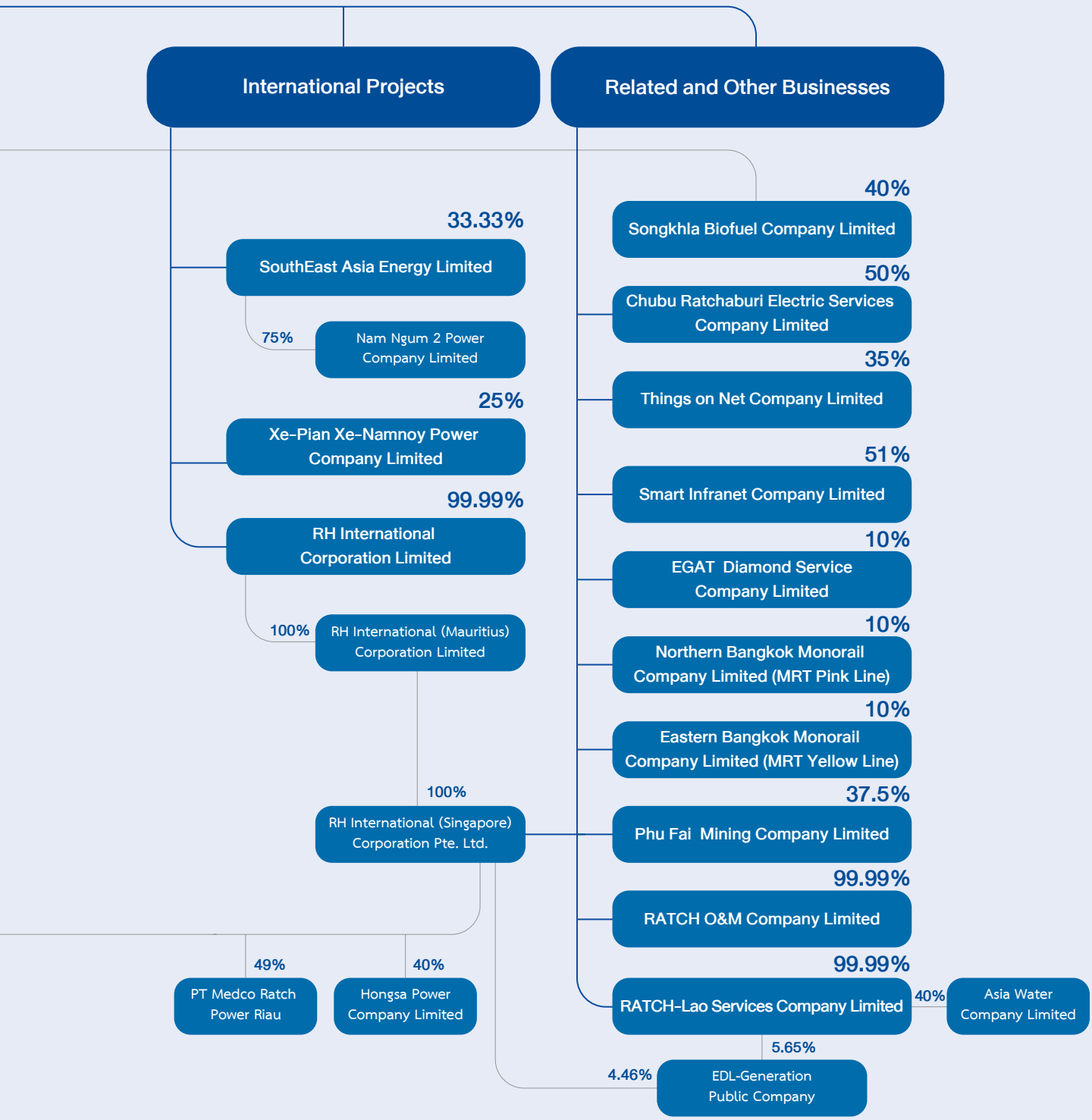
(b) TFRS 16 Leases

TFRS 16 introduces a single lessee accounting model for lessees. A lessee recognises a right-of-use asset and a lease liability, with recognition exemptions for short-term leases and leases of low-value items. As a result, the Group will recognise new assets and liabilities for its operating leases. As at 31 December 2019, the Group's and Company's future minimum lease payments under non-cancellable operating leases amounted to Baht 1,081 million and Baht 56 million, respectively, on an undiscounted basis. Lease accounting for lessor remains similar to the current standard, i.e. lessors continue to classify leases as finance or operating leases. When this TFRS is effective, some accounting standards and interpretations which are currently effective will be cancelled.

Management is currently considering the potential impact from these TFRS on the financial statements in the initial period adopted.

INVESTMENT STRUCTURE




International Projects
Related and Other Businesses
33.33%
SouthEast Asia Energy Limited
75%
Nam Ngum 2 Power Company Limited
25%
Xe-Pian Xe-Namnoy Power Company Limited
99.99%
RH International Corporation Limited
100%
RH International (Mauritius) Corporation Limited
100%
RH International (Singapore) Corporation Pte. Ltd.
49%
PT Medco Ratch Power Riau
40%
Hongsa Power Company Limited
40%
Songkhla Biofuel Company Limited
50%
Chubu Ratchaburi Electric Services Company Limited
35%
Things on Net Company Limited
51%
Smart Infranet Company Limited
10%
EGAT Diamond Service Company Limited
10%
Northern Bangkok Monorail Company Limited (MRT Pink Line)
10%
Eastern Bangkok Monorail Company Limited (MRT Yellow Line)
37.5%
Phu Fai Mining Company Limited
99.99%
RATCH O&M Company Limited
99.99%
RATCH-Lao Services Company Limited
40%
Asia Water Company Limited
5.65%
4.46%
EDL-Generation Public Company

GENERAL INFORMATION OF RATCH GROUP

RATCH Group comprises the following subsidiaries, associates and joint ventures:

18 subsidiaries

Company/Location	Shareholding (%)	Type of business	Registered capital	Common shares	Par value	Paid-up capital
1. **Ratchaburi Electricity Generating Company Limited** 128 Moo 6, Phikunthong Subdistrict, Muaeng District, Ratchaburi 70000 Tel.: 0 2978 5111, 0 3271 9185 ext.3762 Fax: 0 2978 5110, 0 3271 9185 ext.3204 **2nd Branch Office** 39 Moo 5, Ratchaburi-Huayphai Road, Hin Kong Subdistrict, Muang Ratchaburi, Ratchaburi 70000 Tel.: 0 3271 9000 Fax: 0 3271 9090	99.99	Generating and distributing electric power and investing in electricity-related businesses	Baht 21,900 million	2,190 million shares	Baht 10	Baht 21,900 million
2. **Ratchaburi Alliances Company Limited** 72, Ngamwongwan Road, Bangkhen, Muang Nonthaburi, Nonthaburi 11000 Tel.: 0 2794 9999 Fax: 0 2794 9998	99.99	Investing in electricity-related businesses	Baht 420.20 million	42.02 million shares	Baht 10	Baht 420.20 million
3. **Ratchaburi Energy Company Limited** 72, Ngamwongwan Road, Bangkhen, Muang Nonthaburi, Nonthaburi 11000 Tel.: 0 2794 9999 Fax: 0 2794 9998	99.99	Investing in electricity-related businesses	Baht 640 million	64 million shares	Baht 10	Baht 640 million
4. **RH International Corporation Limited** 72, Ngamwongwan Road, Bangkhen, Muang Nonthaburi, Nonthaburi 11000 Tel.: 0 2794 9999 Fax: 0 2794 9998	99.99	Investing in electricity-related businesses	Baht 17,650 million	1,765 million shares	Baht 10	Baht 17,650 million

Company/Location	Shareholding (%)	Type of business	Registered capital	Common shares	Par value	Paid-up capital
5. **Hin Kong Power Holding Company Limited** 72, Ngamwongwan Road, Bangkhen, Muang Nonthaburi, Nonthaburi 11000 Tel : 0 2794 9999 Fax : 0 2794 9998	99.99	Investing in electricity-related businesses	Baht 4 million	0.4 million shares	Baht 10	Baht 4 million
6. **RATCH O&M Company Limited** 72, Ngamwongwan Road, Bangkhen, Muang Nonthaburi, Nonthaburi 11000 Tel.: 0 2794 9999 Fax: 0 2794 9998	99.99	Providing power plant operation and maintenance service	Baht 10 million	1 million shares	Baht 10	Baht 2.5 million
7. **RATCH-Lao Services Company Limited** 187 Unit 12 Phonsa-art Village; Xaysettha District; Vientiane, Lao PDR Tel.: +856 21 454 074 Fax: +856 21 454 075	99.99	Providing power plant operation and maintenance service and investing in related businesses	US$ 2.5 million	2.5 million shares	US$ 1	US$ 2.5 million
8. **RATCH Cogeneration Company Limited** 8/22 Moo 18, Klongnueng, Klongluang, Pathumthani 12120 Tel.: 0 2529 1711	99.97	Producing and distributing electric power and steam	Common shares: Bt 479.34 mn Preferred shares: Bt 1,170.66 mn	Common shares: 4.793 million shares Preferred shares: 11.706 million shares	Baht 100	Common shares: Bt 479.34 mn Preferred shares: Bt 1,170.66 mn
9. **RE Solar 1 Company Limited** 72, Ngamwongwan Road, Bangkhen, Muang Nonthaburi, Nonthaburi 11000 Tel.: 0 2794 9999 Fax: 0 2794 9998	99.99 (Held by Ratchaburi Energy Company Limited)	Investing in electricity-related businesses	Baht 100 million	10 million shares	Baht 10	Baht 25 million
10. **Hin Kong Power Company Limited** 72, Ngamwongwan Road, Bangkhen, Muang Nonthaburi, Nonthaburi 11000 Tel.: 0 2794 9999 Fax: 0 2794 9998	99.99 (Held by Hin Kong Power Holding Company Limited)	Producing and distributing electric power	Baht 4 million	0.4 million shares	Baht 10	Baht 4 million
11. **RH International (Mauritius) Corporation Limited** 4th Floor, Ebene Skies, Rue de L'Institut, Ebene, the Republic of Mauritius	100 (Held by RH International Corporation Limited)	Investing in international electricity-related businesses	US$ 524.13 million	524.13 million shares	US$ 1	US$ 524.13 million

Company/Location	Shareholding (%)	Type of business	Registered capital	Common shares	Par value	Paid-up capital
12. **RH International (Singapore) Corporation Pte. Ltd.** 8 Marina Boulevard #05-02 Marina Bay Financial Centre Tower 1, Singapore 018981	100 (Held by RH International (Mauritius) Corporation Limited)	Investing in international electricity-related businesses	US$ 523.83 million or equivalent	523.83 million shares	-	US$ 523.83 million or equivalent
13. **RATCH China Power Company Limited** 14th Floor, One Taikoo Place 959 King's Road, Quany Bay, Hong Kong	100 (Held by RH International (Singapore) Corporation Pte. Ltd.	Investing in international electricity-related businesses	US$ 12,000	0.012 million shares	US$ 1	US$ 12,000
14. **RATCH-Australia Corporation Pty Ltd** Level 7, 111 Pacific Highway, North Sydney, NSW 2060, Australia Tel.: +61 2 8913 9400 Fax: +61 2 8913 9423	100 (Held by RH International (Singapore) Corporation Pte. Ltd.)	Develop and operate power plants and invest in power related business	A$ 634.11 milion	1,036.97 million shares	-	A$ 634.11 million
15. **CN Biomass Company Limited** (Under liquidation process) Auditor's office KPMG Phoomchai Audit Ltd. 50th-51st Floor, Empire Tower, 1 South Sathorn Road Yannawa, Sathorn, Bangkok 10120 Tel.: 0 2677 2000 Fax: 0 2677 2222	-	-	-	-	-	-
16. **PB Biomass Company Limited** (Under liquidation process) Auditor's office KPMG Phoomchai Audit Ltd. 50th-51st Floor, Empire Tower, 1 South Sathorn Road Yannawa, Sathorn, Bangkok 10120 Tel.: 0 2677 2000 Fax: 0 2677 2222	-	-	-	-	-	-
17. **LP Biomass Company Limited** Under liquidation process) Auditor's office KPMG Phoomchai Audit Ltd. 50th-51st Floor, Empire Tower, 1 South Sathorn Road Yannawa, Sathorn, Bangkok 10120 Tel.: 0 2677 2000 Fax: 0 2677 2222	-	-	-	-	-	-

Company/Location	Shareholding (%)	Type of business	Registered capital	Common shares	Par value	Paid-up capital
18. **Smart Infranet Company Limited** 72, Ngamwongwan Road, Bangkhen, Muang Nonthaburi, Nonthaburi 11000 Tel.: 0 2794 9999 Fax: 0 2794 9998	51	Investing in underground fiber optic network project	Baht 1 million	0.1 million shares	Baht 10	Bt 1 million

26 associations, joint ventures and others

Company/Location	Shareholding (%)	Type of business	Registered capital	Common shares	Par value	Paid-up capital
1. **Chubu Ratchaburi Electric Service Company Limited** 128 Moo 6 Pikunthong, Muang Ratchaburi, Ratchaburi 70000 Tel.: 0 3271 9300 Fax: 0 3271 9309	50	Providing power plant operation & maintenance service	Baht 20 million	0.40 million shares	Baht 50	Baht 20 million
2. **SouthEast Asia Energy Limited** 587 Viriyathavorn Building, 20th Floor, Suthisarn Vinijchai Road, Din Daeng, Bangkok 10400 Tel.: 0 2691 9720-34 Fax: 0 2691 8307	33.33	Investing in electricity-related businesses	Baht 6,606.75 million	660.675 million shares	Baht 10	Baht 6,606.75 million
3. **Xe-Pian Xe-Namnoy Power Company Limited** 6th Floor, Capital Tower, 23 Singha Road, Nongbone Village, Xaysettha District, Vientiane, Lao PDR Tel.: +856 21 455 025 Fax: +856 21 455 025	25	Generating and distributing electric power	US$ 306 million	3.06 million shares	US$ 100	US$ 306 million
4. **First Korat Wind Company Limited** 87 /1 Capital Tower, All Seasons Place 25th Floor, Wireless Road, Lumpini, Pathumwan, Bangkok 10330 Tel.: 0 2106 8000 Fax: 0 2106 8008	20	Generating and distributing electric power	Baht 1,996.02 million	199.602 million shares	Baht 10	Baht 1,996.02 million
5. **K.R.Two Company Limited** 87 /1 Capital Tower, All Seasons Place 25th Floor, Wireless Road, Lumpini, Pathumwan, Bangkok 10330 Tel.: 0 2106 8000 Fax: 0 2106 8008	20	Generating and distributing electric power	Baht 1,827 million	182.70 million shares	Baht 10	Baht 1,827 million

Company/Location	Shareholding (%)	Type of business	Registered capital	Common shares	Par value	Paid-up capital
6. **EGAT Diamond Service Company Limited** 56/25 Moo 20 Klong Neung, Klong Luang, Pathumthani 12120 Tel.: 0 2529 0800 Fax: 0 2529 0900	10	Providing power plant's gas turbine maintenance service	Baht 623 million	6.23 million shares	Baht 100	Baht 623 million
7. **Northern Bangkok Monorail Company Limited** 21 Soi Chueyphuang, Vibhavadi-Rangsit Road, Jomphol, Chatuchak district, Bangkok Tel.: 0 2273 8511-5 Fax: 0 2273 8516	10	Providing transport, shipment, electric train, transport-related and other supporting services	Baht 14,400 million	144 million shares	Baht 100	Baht 11,800 million
8. **Eastern Bangkok Monorail Company Limited** 21 Soi Chueyphuang, Vibhavadi-Rangsit Road, Jomphol, Chatuchak district, Bangkok Tel.: 0 2273 8511-5 Fax: 0 2273 8516	10	Providing transport, shipment, electric train, transport-related and other supporting services	Baht 14,400 million	144 million shares	Baht 100	Baht 12,000 million
9. **Ratchaburi World Cogeneration Company Limited** 155/115 Ratchaburi Industrial Estate, Moo 4, Tambon Chetsamian, Photharam District, Ratchaburi 70120 Tel.: 0 3291 9990 Fax: 0 3291 9998 **Branch Office (1)** 155/116 Ratchaburi Industrial Estate, Moo 4, Tambon Chetsamian, Photharam District, Ratchaburi 70120 **Branch Office (2)** 155/117 Ratchaburi Industrial Estate, Moo 4, Tambon Chetsamian, Photharam District, Ratchaburi 70120	40 (Held by Ratchaburi Electricity Generating Company Limited)	Generating and distributing electric power and steam	Baht 2,500 million	250 million shares	Baht 10	Baht 2,500 million
10. **Nava Nakorn Electricity Generating Company Limited** 111 Moo 20 Phaholyothin Road, Tambon Khlong Nueng, Khlong Luang District, Pathum Thani	40 (Held by Ratchaburi Electricity Generating Company Limited)	Generating and distributing electric power and steam	Baht 1,550 million	155 million shares	Baht 10	Baht 1,550 million

Company/Location	Shareholding (%)	Type of business	Registered capital	Common shares	Par value	Paid-up capital
11. **Berkprai Cogeneration Company Limited** 302 S&A Building 2nd Floor, Silom Road, Suriyawong, Bangkok Tel.: 0 2978 5380 Fax: 0 2978 5080 ext.5380	35 (Held by Ratchaburi Electricity Generating Company Limited)	Generating and distributing electric power and steam	Baht 1,331 million	133.10 million shares	Baht 10	Baht 1,331 million
12. **Solarta Company Limited** 72, Ngamwongwan Road, Bangkhen, Muang Nonthaburi, Nonthaburi 11000 Tel.: 0 2978 5200 Fax: 0 2978 5080 ext.5200	49 (Held by Ratchaburi Energy Company Limited)	Generating and distributing electric power	Baht 1,320 million	13.20 million shares	Baht 100	Baht 1,100 million
13. **Solar Power (Korat 3) Company Limited** 1 Capital Work Place 4th floor, Soi Jamchan, Khlong Ton Nua, Wattana District, Bangkok 10110 Tel.: 0 2011 8111 Fax: 0 2011 8112	40 (Held by Ratchaburi Energy Company Limited)	Generating and distributing electric power	Baht 188.75 million	18.875 million shares	Baht 10	Baht 188.75 million
14. **Solar Power (Korat 4) Company Limited** 1 Capital Work Place 4th floor, Soi Jamchan, Khlong Ton Nua, Wattana District, Bangkok 10110 Tel.: 0 2011 8111 Fax: 0 2011 8112	40 (Held by Ratchaburi Energy Company Limited)	Generating and distributing electric power	Baht 199.25 million	19.925 million shares	Baht 10	Baht 199.25 million
15. **Solar Power (Korat 7) Company Limited** 1 Capital Work Place 4th floor, Soi Jamchan, Khlong Ton Nua, Wattana District, Bangkok 10110 Tel.: 0 2011 8111 Fax: 0 2011 8112	40 (Held by Ratchaburi Energy Company Limited)	Generating and distributing electric power	Baht 188.75 million	18.875 million shares	Baht 10	Baht 188.75 million
16. **Songkhla Biomass Company Limited** 56 Moo 3 Tambon Khuntadwai, Chana District, Songkhla 90130 Tel.: 0 7489 0754-5 Fax: 0 7489 0757	40 (Held by Ratchaburi Energy Company Limited)	Generating and distributing electric power	Baht 246 million	2.46 million shares	Baht 100	Baht 246 million Bah
17. **Songkhla Biofuel Company Limited** 1842 Bangkok-Nonthaburi Road, Wongsawang, Bang Sue District, Bangkok 10800 Tel.: 0 2910 9700 Fax: 0 2910 9713	40 (Held by Ratchaburi Energy Company Limited)	Supplying biomass fuel	Baht 1 million	0.01 million shares	Baht 100	Baht 1 million

Company/Location	Shareholding (%)	Type of business	Registered capital	Common shares	Par value	Paid-up capital
18. **Ratchaburi Power Company Limited** 1828 Sukhumvit Road, Phra Khanong Tai, Phra Khanong District, Bangkok 10260 Tel.: 0 2311 5111 Fax: 0 2332 3882	25 (Held by Ratchaburi Alliances Company Limited)	Generating and distributing electric power	Baht 7,325 million	73.25 million shares	Baht 100	Baht 7,325 million
19. **Nam Ngum 2 Power Company Limited** 215 Lan Chang Road, Ban Chiang Yuen, Chantaburi Province, Vientiane, Lao PDR Tel.: +856 21 251 718 Fax: +856 21 252 060	25 (Held by SouthEast Asia Energy Limited)	Generating and distributing electric power	Baht 8,809 million	880.90 million shares	Baht 10	Baht 8,809 million
20. **Fareast Renewable Development Pte. Ltd.** 16 Raffles Quay Hong Leong Building # 40-02 Singapore 048581	50 (Held by RH International (Singapore) Corporation Pte. Ltd.)	Investing in international electricity-related businesses	US$ 87.80 million	33.86 million shares	US$ 1 for 19.80 million shares and US$ 4.84 for 14.06 million shares	US$ 87.80 million
21. **PT Medco Ratch Power Riau** The Energy Building, 7th Floor, SCBD Lot 11A, Jl. Jendral Sudirman Kav. 52-53, Jakarta 12190, Indonesia	49 (Held by RH International (Singapore) Corporation Pte. Ltd.	Generating and distributing electric power	12,000 million rupiah	12 million shares	1,000 rupiah	3,000 million rupiah
22. **Hongsa Power Company Limited** Sisattanak District, Vientiane Capital City, Lao PDR Tel.: +856 21 223 911 Fax: +856 21 222 089	40 (Held by RH International (Singapore) Corporation Pte. Ltd.)	Generating and distributing electric power	US$ 927 million	92.70 million shares	US$ 10	US$ 927 million
23. **Phu Fai Mining Company Limited** Sisattanak District, Vientiane Capital City, Lao PDR Tel.: +856 21 223 911 Fax: +856 21 222 089	37.50 (Held by RH International (Singapore) Corporation Pte. Ltd.)	Producing and distributing coal	US$ 0.05 million	0.005 million shares	US$ 10	US$ 0.05 million
24. **Asia Water Co., Ltd.** NNN Building 5th Floor Buri Chan Road, Ban Phonsinuoan, Sisattanak District, Vientiane, Lao PDR	40 (Held by RATCH-Lao Services Company Limited)	Producing and distributing tap water	100,800 million kip	12 million shares	8,400 kip	100,800 million kip

Company/Location	Shareholding (%)	Type of business	Registered capital	Common shares	Par value	Paid-up capital
25. EDL-Generation Public Company Lao-Thai Friendship Road, P.O. Box 2392, Thongkang Village, Sisattanak District. Vientiane Capital. Lao PDR Tel: +856 21 316 142 Fax: +856 21 316 141 Website: www.edlgen.com.la	10.11 (5.65% Held by RATCH-Lao Services Company Limited and 4.46% by RH International (Singapore) Corporation Pte. Ltd.)	Generating and distributing electric power	6,717,214.79 million kip	1,679.304 million shares	4,000 kip	6,717,214.79 million kip
26. Things on Net Company Limited 170/63, 20th Floor, Ocean Tower 1, Sukhumvit Soi 16 (Sammit), Ratchadapisek Road, Klongtoey, Bangkok 10110 Tel.: 0 2661 9922	35	Investing in communication network development and related businesses	Baht 133 million	13.3 million shares	Baht 10	Baht 133 million

RATCH GROUP'S GENERAL INFORMATION AND REFERENCES

- **Company Name**
  RATCH Group Public Company Limited

REGISTRATION NO.
0107543000031

- **Industry**
  RESOURCES
- **Sector**
  ENERGY AND UTILITIES
- **Stock Symbol**
  RATCH

- **Nature of Business**
  Invest, develop and operate in electricity generating and related businesses
- **Establishment**
  7 March 2000
- **Listing Date**
  13 October 2000
- **1st Trading Day**
  2 November 2000
- **Registered Capital**
  Baht 14,500 million (1,450 million ordinary shares)
- **Par Value**
  Baht 10
- **Paid-up Capital**
  Baht 14,500 million (as of 26 October 2000)

- **References**

Registrar
Thailand Securities Depository Company Limited
Stock Exchange of Thailand Building, 1st Floor
93 Ratchadaphisek Road, Dindaeng, Dindeang,
Bangkok 10400
0 2009 9999

Auditor
KPMG Poomchai Audit Limited
Empire Tower, 50th-51st Floor 1 South Sathorn Road,
Yannawa, Sathorn, Bangkok 10120
0 2677 2000 0 2677 2222

Legal Advisors
Baker & McKensie Limited
990 Abdul Rahim Place, 5th Floor and 21st-25th Floor
Rama IV Road, Silom, Bang Rak, Bangkok 10500
0 2636 2000 0 2636 2111

Linklaters (Thailand) Limited
87/1 Capital Tower, All Seasons Place, 20th Floor
Wireless Road, Lumpini, Pathumwan, Bangkok 10330
0 2305 8000 0 2305 8010

- **Contact Information**

Head Office
72 Ngam Wong Wan Road, Bang Khen, Muang Nonthaburi,
Nonthaburi 11000 Thailand
0 2794 9999
0 2794 9998
contactinfo@ratch.co.th

Company Secretary
0 2794 9510
0 2794 9888 Ext. 9510
CS@ratch.co.th

Internal Audit Division
0 2794 9520
0 2794 9888 Ext. 9520
internalaudit@ratch.co.th

Annual Report Information
0 2794 9940
0 2794 9888 Ext. 9940
sustainability@ratch.co.th

Corporate Relations Division
0 2794 9940
0 2794 9888 Ext. 9940
PR@ratch.co.th

Investor Relations Department
0 2794 9841-2
0 2794 9888 Ext. 9841
IR@ratch.co.th

www.ratch.co.th

ABOUT THIS REPORT

About this report (GRI 102-49, 102-52)

RATCH Group PCL issues sustainability reports on an annual basis. This report combines the annual report and sustainability report, to ensure the completeness and detailed coverage of the organization's financial and sustainability issues. Through this report, stakeholders will have a better understanding in the Company's overall business, from the plotting of policies and strategies to operational approaches and performance in economic, social and environmental dimensions in which governance is incorporated. All these factors are crucial to the business's growth and sustainability as well as stakeholders' decision-making process.

Reporting approach (GRI 102-45, 102-50, 102-51, 102-54)

The information appearing in this report covered the performance from 1 January 2019 to 31 December 2019. The contents cover significant information as required by Form 56-2 (Annual Report) of the Securities and Exchange Commission and the Stock of Thailand, the Global Reporting Initiative (GRI) Standards – Core and Electric Utilities Sector. Governance was integrated with all 3 sustainability dimensions – economic, social and environmental.

Reliability of this report (GRI 102-56)

This report is completed under the guidelines of GRI (Global Reporting Initiatives) Standards and reviewed to assure stakeholders of the accuracy and completeness. The process to complete this report is as follows:

1) The central unit responsible for this report and the units supplying information examined and reviewed the completeness and accuracy of content and information.
2) Information disclosed in this report was reviewed and endorsed by high-level executives.
3) The Board of Directors reviewed and endorsed the disclosed information.
4) The disclosed information was verified by a third party and endorsed by high-level executives. Financial information was verified by independent auditors and sustainability-related information under the guidelines of GRI Standards (Core) and Electric Utilities Sector was assured by external assurer.

External auditor and assurer of financial and sustainability information under GRI Standards are independent and not related to the Company. The process to select external auditor and assurer has correctly followed the Company's procurement regulations. The external auditor report and assurance statement appeared on Page 399 - 400.

Scope of the report (GRI 102-48, 102-49)

This report disclosed the financial information of the Company, all subsidiaries and joint ventures owned by the Company or subsidiaries and included in the financial statements under equity method. Regarding scope of sustainability disclosure, this report covered the following subsidiaries and joint ventures over which the Company has operational control.

Subsidiaries and joint ventures over which the Company has operational control

Company	Location	Shareholding	Nature of business
Subsidiaries			
1. Ratchaburi Electricity Generating Co., Ltd.	Thailand	99.99	Produce electricity by operating Ratchaburi Power Plant and Tri Energy Power Plant which have 3,645-MW and 720-MW equity installed capacity, respectively
2. Ratchaburi Energy Co., Ltd.	Thailand	99.99	Invest 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.	Australia	100	Develop and operate power plants and related businesses in Australia, currently investing in 3 gas-fired plants, 1 diesel plant, 6 wind farms and 1 solar farm with combined equity installed capacity of 1,250.29 MW.
4. RATCH-Lao Services Co., Ltd.	Lao PDR	99.99	Invest in electricity, infrastructure and related businesses
5. Chubu Ratchaburi Electric Service Co., Ltd.	Thailand	50	Provide operation and maintenance service for 1,490-MW Ratchaburi Power's power plant. RATCH holds a 25% stake in Ratchaburi Power Co., Ltd.
Joint ventures			
6. Nava Nakorn Electricity Generation Co., Ltd., owned via Ratchaburi Electricity Generating Co., Ltd., a subsidiary	Thailand	40	Operate a small cogeneration power plant with equity installed capacity of 55.65 MW and steam capacity of 30 tons/hour. An expansion project will add capacity by 23.99 MW and 10 tons/hour. A RATCH representative serves as the joint-venture company's top executive.
7. Solarta Co., Ltd., owned via Ratchaburi Energy Co., Ltd., a subsidiary	Thailand	49	Operate 8 solar farms with total equity installed capacity of 20.73 MW. A RATCH representative serves as the joint-venture company's top executive.

As RATCH realized operating performance of Berkprai Cogeneration Company Limited and RATCH Cogeneration Company Limited in the third and fourth quarter, respectively, the Company will report their performance in the 2020 report.

The scope of 2019 report differs from the 2018 edition in the way that 1 joint venture was not covered, which is:

1. Songkhla Biomass Co., Ltd., a joint venture 40 per cent owned via a subsidiary, Ratchaburi Energy Co., Ltd., as it is under the other partners' control as stated in the co-investment contract.

The data shown in Performance Data contain only that of Ratchaburi Electricity Generation Co., Ltd., RATCH-Australia Corporation Ltd., RATCH-Lao Services Co., Ltd., and Nava Nakorn Electricity Generation Co., Ltd.

Included is progress on the recovery, rehabilitation and mitigation of the impacts concerning the collapse of Xe-Pian Xe-Namnoy Hydropower Project's Saddle Dam D. The project is operated by Xe-Pian Xe-Namnoy Co., Ltd, in which the Company holds a 25 per cent stake. The joint venture is established in Lao PDR.

Reporting Principle and report content (GRI102-46)

This report's content was determined in accordance with GRI Standards (Core option) and followed the four steps which are identification of material aspects, prioritization, validation and review without repeating materials reported in 2018. The evaluation methods, calculation methodology and assumption applied in the calculation were included in the topics related to the information. Details of material aspects appeared in GRI Content Index, Page 394.

1. Identification

Collecting material issues that may impact the Company's business operations given from internal and external information as follows:

Internal	External
1) Review of short-, medium- and long-term business plans and setting annual corporate targets by the Board of Directors and the Management. 2) The official and unofficial meetings of the Board of Directors and sub-committees to give opinions and recommendation. 3) Opinion survey on employee engagement 4) Gathering unofficial comments from internal units working directly with stakeholders. 5) Assessment of corporate risks that may significantly affect the Company's strategy and targets. 6) The Management's views on the assessment of material aspects that may affect the Company in economic, social and environmental dimensions.	1) Comments from stakeholders' representatives - regulatory bodies, major shareholders, partners and customers - that may significantly affect the Company's operations. 2) Topics raised during analyst meetings held every quarter to reveal the Company's financial performance. 3) Questions from sustainability assessment from securities and asset management companies. 4) Topics raised in crediting rating review by credit rating agencies. 5) Media questions raised during quarterly result press conferences. 6) Issues from analysis of news reports, to evaluate business trend, opportunity and risk in the entire year. 7) Recommendations from those who read Annual Report 2018 and from Annual Report 2018 questionnaires.

A total of 58 material aspects were collected from the aforementioned sources and categorized into 3 dimensions: economic, social and environment, for the prioritization.

2. Prioritization (GRI 102-47)

The identified material aspects are grouped accordingly to their similarities, resulting in 14 main material aspects. The Management and relevant units' representatives then prioritized the aspects and assess the impacts on the organization and stakeholders' decisions, with Materiality Matrix and the assessment criteria for impacts on business procedure, finance, environment, health, safety, image, employee satisfaction and stakeholders' interest for each aspect.

Material aspect assessment result in 2019



1.	Pollutant management and emission control
2.	Impact from the collapse of Xepian Xe-Namnoy Project's Saddle Dam D
3.	Steering strategies towards corporate goals
4.	Management of emerging risks that affects business strategy, preparation and adjustment
5.	Management and maintenance of long-term relationship with partners
6.	Management of customer satisfaction and maintenance of long-term relationship
7.	Respect to basic human rights
8.	Engagement with community and society for acceptance
9.	Compliance with Code of Conduct and anti-corruption policy
10.	Provision of safety and occupational health at workplace
11.	Climate change management
12.	Efficient use of natural resources
13.	Adding business value with innovations and new technology
14.	Caring of employees and promoting employee engagement

3. Validation

The unit responsible for the report reviewed the processed material aspects, before submitting them to the top executive for consideration and approval. This was to ensure the identification and prioritization were complete and in line with the principles of report quality.

4. Review

Questionnaires were included in this report to gather stakeholder satisfaction on the report, concerning topics, content, sufficiency and reliability of information, presentation style, language, and the appearance. Their recommendations equally mattered, so that the report in the subsequent year can be improved and better address stakeholders' expectations.

Channels for information inquiry and recommendations (GRI102-53)

Corporate Relations Division: Coordinating and report responsible unit
0 2794 9940, 0 2794 9951
charusudab@ratch.co.th, pornpent@ratch.co.th

Material aspects in this report (GRI102-47)

	Material aspects	GRI aspects	Report topic	Page	Report scope			
					Internal		External	
					Electricity generation	Basic infrastructure	Related businesses	Community/customer/ business partner/partner/ shareholder/creditor/ regulatory body
Economic								
2	Impact from Xe-Pian Xe-Namnoy's Saddle Dam D collapse	• G4 : EU 21 Disaster/Emergency Planning and Response	Handling of impacts from the washout of Saddle Dam D	50-51	✓			✓
3	Driving strategies towards corporate goals	• GRI 102-26 Role of highest governance body in setting purpose, Good values, and strategy • GRI 102-31 Review of economic, environmental, and social topics	- Good corporate governance - Sustainable development strategies and approach	128-129 46-51	✓	✓	✓	✓
4	Handling emerging risks to business strategies, preparation and adaptation	• GRI 102-15 Key impacts, risks, and opportunities • GRI 102-30 Effectiveness of risk management processes	Risk and opportunity management	64-70	✓	✓	✓	
5	Managing and maintaining long-term relationship with business partners	• GRI 102-9 Supply chain • GRI 414-1 New suppliers that were screened using social criteria • GRI-403-2 Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	- Supply chain management - Safety, occupational health and work environment	227-228, 230 200-201, 387-389	✓	✓	✓	
6	Managing customer satisfaction and maintaining long-term relationship	• GRI 419-1 Non Compliance with laws and regulations in the social and economic area	Customer relationship management	210-211	✓			✓
Environmental								
1	Pollutant emission management and control	• GRI 307 Environmental Compliance • GRI 305-7 NO_X / SO_X and other significant air emissions • GRI 306 Effluents and Waste	Sustainable environmental management	160 161, 392 163-167, 393	✓		✓	
11	Climate change management	• GRI -305-1 Direct (Scope 1) GHG emissions • GRI 305-2 Energy indirect (Scope 2) GHG emissions • GRI 305-4 GHG emissions intensity	Managing the impact of Climate change	177-179	✓		✓	

	Material aspects	GRI aspects	Report topic	Page	Report scope			
					Internal		External	
					Electricity generation	Basic infrastructure	Related businesses	Community/customer/ business partner/partner/ shareholder/creditor/ regulatory body
12	Efficient use of resources	• GRI 301 Materials • GRI 302-1 Energy consumption within the organization • GRI 302-3 Energy intensity • GRI 302-4 Reduction of energy consumption	Sustainable environmental management	158 392 174-177	✓		✓	
Social								
8	Engaging with community and society for acceptance	• GRI 413-1 Operations with local community engagement, impact assessments, and development programs	Responsible for community and society	214-219, 223	✓			✓
10	Provision of safety and occupational health in work place	• GRI 403-2 Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	Safety, occupational health and work environment	200-201	✓	✓	✓	✓
14	Caring for employees and nurturing employee engagement	• GRI 404 -1 Average hours of training per year per employee • GRI 404-3 Percentage of employees receiving regular performance and career development reviews	Employee stewardship	185 391	✓	✓	✓	

PERFORMANCE DATA

Abbreviation

RATCH = Ratch Group Public Company Limited
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 [1]

Data	Unit	2019	2018	2017
Revenues	Million THB	43,220.07	45,083.54	46,456.57
Operating costs	Million THB	33,228.03	35,170.09	36,847.37
Employee wages and benefits	Million THB	713.24	724.26	679.69
Dividend to all shareholders	Million THB	3,480.00	3,480.00	3,480.00
Payments to government	Million THB	822.43	1,280.86	1,380.06
Community investments	Million THB	181.71	214.47	238.88
Spent on local suppliers				
Company in Thailand [1] (RATCH/RATCHGEN/TECO/NNEG)	Million THB	38,090.36	39,412.34	42,153.63
Company in Australia (RAC)	Million AUD	21.73	27.03	29.97
Spent on foreign suppliers				
Company in Thailand [1] (RATCH/RATCHGEN/TECO/NNEG)	Million THB	1,067.95	590.74	834.75
Company in Australia (RAC)	Million AUD	0.09	0.06	0.19

Remark : [1] Operations in Thailand include RATCH, RATCHGEN, TECO and NNEG

Health and Safety [2]

Data		Unit	2019	2018	2017
Total number of organization					
RATCH	Employees	Person (Male : Female)	107 : 102	110 : 102	107 : 101
	Workers	Person (Male : Female)	32 : 25	32 : 22	33 : 25
RATCHGEN	Employees	Person (Male : Female)	32 : 25	35 : 25	32 : 25
	Workers	Person (Male : Female)	299 : 76	300 : 75	314 : 81
TECO	Employees	Person (Male : Female)	49 : 44	44 : 6	44 : 6
	Workers	Person (Male : Female)	41 : 7	41 : 7	41 : 7
NNEG	Employees	Person (Male : Female)	19 : 14	15 : 13	13 : 13
	Workers	Person (Male : Female)	411 : 71	42 : 7	45 : 8
RAC	Employees	Person (Male : Female)	20 : 5	19 : 4	13 : 6
	Workers	Person (Male : Female)	0 : 0	0 : 0	0 : 0
Number of Hours Worked					
RATCH		Hours worked	567,620	551,780	568,122

Data		Unit	2019	2018	2017
RATCHGEN		Hours worked	1,902,869.5	1,431,485	1,967,375
TECO		Hours worked	205,353	251,136	270,625
NNEG		Hours worked	1,517,185	175,954	167,991
RAC		Hours worked	40,668	37,369	37,510
Total workforce represented in formal joint management—worker health and safety committees					
RATCH		persons (%)	9 (4.31%)	15 (7.08%)	15 (7.21%)
RATCHGEN		persons (%)	15 (26.32%)	15 (25.00%)	15 (26.32%)
TECO		persons (%)	13 (26.00%)	13 (26.00%)	13 (26.00%)
NNEG		persons (%)	7 (21.21%)	7 (25.00%)	5 (34.62%)
RAC		persons (%)	5 (20.00%)	6 (26.09%)	6 (31.58%)
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					
RATCH/ RATCHGEN/ TECO/ RAC	Employees	Person (Male : Female)	0 : 0	0 : 0	0 : 0
	Workers	Person (Male : Female)	0 : 0	0 : 0	0 : 0
NNEG	Employees	Person (Male : Female)	0 : 0	0 : 0	0 : 0
	Workers	Person (Male : Female)	1 : 0	0 : 0	0 : 0
Rate of high-consequence work-related injuries					
RATCH/ RATCHGEN/ TECO/ RAC	Employees	No/200,000 Hours worked (Male : Female)	0 : 0	0 : 0	0 : 0
	Workers		0 : 0	0 : 0	0 : 0
NNEG	Employees		0 : 0	0 : 0	0 : 0
	Workers		0.13 : 0	0 : 0	0 : 0
Number of recordable work-related injuries					
RATCH	Employees	Person (Male : Female)	0 : 0	0 : 1	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)	2 : 0	1 : 0	0 : 0
TECO	Employees	Person (Male : Female)	0 : 0	0 : 0	0 : 0
	Workers	Person (Male : Female)	0 : 0	0 : 0	0 : 0

Data		Unit	2019	2018	2017
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	0 : 0.35	0 : 0
	Workers		0 : 0	0 : 0	0 : 0
RATCHGEN	Employees		0 : 0	0 : 0	0 : 0
	Workers		0.27 : 0	0.2 : 0	0 : 0
TECO	Employees		0 : 0	0 : 0	0 : 0
	Workers		0 : 0	0 : 0	0 : 0
NNEG	Employees		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 ill health					
Employees		Person	0 : 0	0 : 0	0 : 0
Workers		Person	0 : 0	0 : 0	0 : 0
Total number of lost day					
RATCH/ RATCHGEN/ TECO/ RAC	Employees	Day (Male : Female)	0 : 0	0 : 0	0 : 0
	Workers	Day (Male : Female)	0 : 0	0 : 0	0 : 0
NNEG	Employees	Day (Male : Female)	0 : 0	0 : 0	0 : 0
	Workers	Day (Male : Female)	43 : 0	0 : 0	0 : 0
Lost day rate (LDR)					
RATCH/ RATCHGEN/ TECO/ RAC	Employees	No./200,000 hours worked	0	0	0
	Workers	No./200,000 hours worked	0	0	0
NNEG	Employees	No./200,000 hours worked	0	0	0
	Workers	No./200,000 hours worked	5.67	0	0
Absentee days*					
RATCH	Employees	Day (Male : Female)	258 : 420	189.5 : 371	186 : 408.5
RATCHGEN	Employees	Day (Male : Female)	141.5 : 226.5	110 : 157	110.5 : 179.5
TECO	Employees	Day (Male : Female)	20 : 15	18 : 24	16 : 20
NNEG	Employees	Day (Male : Female)	51.5 : 49.5	36 : 15.5	21 : 42
RAC	Employees	Day (Male : Female)	32.6 : 26.8	43.3 : 2.0	32.5 : 23
Absentee rate (AR)*					
RATCH	Employees	% (Male : Female)	1.10 : 1.78	0.72 : 1.50	0.74 : 1.71
RATCHGEN	Employees	% (Male : Female)	1.96 : 4.04	1.29 : 2.79	1.40 : 3.00
TECO	Employees	% (Male : Female)	0.08 : 0.06	0.18 : 0.56	0.05 : 0.07
NNEG	Employees	% (Male : Female)	0.21 : 0.20	0.48 : 0.20	0.64 : 1.39
RAC	Employees	% (Male : Female)	0.60 : 0.50	0.98 : 0.21	0.82 : 1.64

Remark : [2] Presented information covers safety data of RATCH, RATCHGEN, TECO, NNEG (include expansion phase) and RAC.
All Employees of RATCH, RATCHGEN, TECO, NNEG (include expansion phase) are Thai, and RAC's employees are Australian and Thai.

People [3]

Data	Unit	2019		2018		2017	
		Male	Female	Male	Female	Male	Female
Total employee	Persons	462		453		445	
	Persons	310	152	302	151	297	148
Employee by employment contract							
Permanent	Persons	310	152	300	150	293	148
Temporary	Persons	0	0	2	1	4	0
Employee by age group							
<30 years	Persons	132	26	153	26	153	27
30-50 years	Persons	138	113	107	109	102	109
>50 years	Persons	40	13	42	16	42	12
Employee by category							
Top Management	Persons	15	3	13	3	13	3
	%	3.25	0.65	2.87	0.66	2.92	0.67
Middle Management	Persons	39	13	44	15	47	13
	%	8.44	2.81	9.71	3.31	10.56	2.92
Junior Management	Persons	50	40	43	40	42	37
	%	10.82	8.66	9.49	8.83	9.44	8.31
Officer	Persons	206	96	201	93	192	95
	%	44.59	20.78	44.37	20.53	43.15	21.35
Worker	Persons	0	0	1	0	3	0
	%	0.00	0.00	0.22	0.00	0.67	0.00
Employee by nationality							
Thai	%	59.69		61.37		62.02	
Lao	%	35.73		34.44		33.71	
Australian	%	4.58		4.19		4.27	
Other	%	0.00		0.00		0.00	
New Hires by age group							
<30 years	Persons	14	9	15	9	44	3
	%	3.0	1.9	3.3	2.0	9.9	0.7
30-50 years	Persons	8	4	10	5	7	9
	%	1.7	0.9	2.2	1.1	1.6	2.0
>50 years	Persons	1	1	1	0	2	0
	%	0.2	0.2	0.2	0.0	0.4	0.0
Total	Persons	23	14	26	14	53	12
	%	5.0	3.0	5.7	3.1	11.9	2.7
Turnover by age group							
<30 years	Persons	7	6	5	4	44	0
	%	1.5	1.3	1.1	0.9	9.9	0.0
30-50 years	Persons	7	4	5	7	3	8
	%	1.5	0.9	1.1	1.5	0.7	1.8

Data	Unit	2019		2018		2017	
		Male	Female	Male	Female	Male	Female
>50 years	Persons	4	5	7	0	6	1
	%	0.9	1.1	1.5	0.0	1.3	0.2
Total	Persons	18	15	17	11	53	9
	%	3.9	3.2	3.8	2.4	11.9	2.0
Parental leave							
Parental leave	Persons	-	2	-	5	-	1
Returning to work after parental leave ended	Persons	-	0	-	2	-	1
Returning to work after parental leave ended (12 months after return to work)	Persons	-	0	-	-	-	1
Training and development							
Top management	Hour/person/year	44.79	35.67	100.08	66.17	31.85	163.33
Middle management	Hour/person/year	64.65	139.33	70.71	140.37	51.36	56.23
Junior management	Hour/person/year	52.21	66.81	78.35	66.03	67.36	91.86
Officer	Hour/person/year	41.07	29.15	49.57	54.71	28.40	35.78
Worker	Hour/person/year	0.00	0.00	0.00	0.00	0.00	0.00
Employee receiving career development review							
Top management	%	100.00		100		100	
Middle management	%	100.00		100		100	
Junior management	%	100.00		100		100	
Officer	%	100.00		100		100	
Worker	%	100.00		100		100	
Employee receiving regular performance review							
Top management	%	100.00		100		100	
Middle management	%	100.00		100		100	
Junior management	%	100.00		100		100	
Officer	%	100.00		100		100	
Worker	%	100.00		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	2019	2018	2017
Energy [5]				
Total energy consumption	TJ	75,137	87,580	101,369
Total direct energy consumption	TJ	128,236	150,162	172,578
- Natural gas	TJ	128,220	150,142	171,474
- Bunker oil	TJ	0	0	1,062
- Diesel oil	TJ	16	21	43
Total indirect energy consumption	TJ	247	199	223
- Electricity purchased	TJ	247	199	223
- Heating purchased	TJ	0	0	0
- Steam purchased	TJ	0	0	0
Total energy sold	TJ	53,345	62,782	71,432
- Electricity sold	TJ	52,955	62,475	71,161
- Heating sold	TJ	0	0	0
- Steam sold	TJ	390	307	271
Net Generation (Total)	MWh	14,781,912	17,354,121	19,766,905
Net Generation (Only Fossil Fuel)	MWh	14,614,348	17,171,362	19,521,844
Total energy intensity (within organization)	GJ/MWh	8.68	8.65	8.73
Total energy reduction	GJ	164,387	189,825	152,213
- Fuel saving	GJ	10,124	24,880	933
- Electricity saving	GJ	154,263	164,944	151,279
- Steam saving	GJ	0	0	0
GHG Emission [6]				
Direct GHG emissions (Scope 1)	tCO_2e	5,875,291	6,935,752	8,093,084
Indirect GHG emissions (Scope 2)	tCO_2e	43,955	33,618	37,395
Total GHG emissions (Scope 1 + 2)	tCO_2e	5,919,245	6,969,370	8,130,479
GHG emission intensity (Scope 1 + 2)	tCO_2e/MWh	0.405	0.406	0.416
Total GHG emissions reductions	tCO_2e	24,944	26,672	24,461
Emission [7]				
NO_x emissions	Tons	2,568	2,757	3,576
	kg/MWh	0.18	0.16	0.18
SO_x emissions	Tons	32.6	40.7	95.1
	kg/MWh	0.0022	0.0024	0.0049
Opacity	%	2.31	2.48	2.65
Total Suspended Particulate (TSP)	Tons	280.4	359.1	642.8
Water [8]				
Total water withdrawal	Million m^3	16.22	19.74	22.09
- Surface water	Million m^3	13.47	16.62	18.59
- Sea water	Million m^3	0.00	0.00	0
- Ground rater	Million m^3	0.00	0.00	0
- Rain water	Million m^3	0.00	0.00	0

Data	Unit	2019	2018	2017
- Third-party water / Municipal water	Million m^3	1.55	1.69	1.81
- Waste water from another organization	Million m^3	1.20	1.44	1.69
Recycled and reused water	m^3	1,509,439	1,303,777	2,028,390
	% of total water withdrawal	9.31	6.60	9.18
Water footprint	m^3 / MWh	1.10	1.14	1.12
Water discharge [8]				
Total water discharge	Million m^3	2.96	3.97	3.96
- Surface water	Million m^3	2.90	3.91	3.88
- Third-party water	Million m^3	0.06	0.06	0.07
COD loading	Tons	150	120	201
BOD loading	Tons	12	13	19
Waste [9]				
Total waste disposal	Tons	18,682	3,063	6,839
Total hazardous waste disposal	Tons	359	451	1,021
- Reuse	Tons	2	0	11
- Recycling	Tons	12	21	18
- Recovery (including energy recovery)	Tons	321	408	967
- Secured Landfill	Tons	24	23	25
- Onsite storage	Tons	0	0	0
Total non-hazardous waste disposal		18,323	2,612	5,818
- Reuse	Tons	0	0	0
- Recycling	Tons	18,203	2,551	5,301
- Recovery (including energy recovery)	Tons	32	52	440
- Landfill	Tons	88	9	76
- 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

Disclosure	Description	Page number	Omission	External Assurance
GRI 102 : General Disclosures				
Organizational profile				
GRI 102-1	Name of the organization	30	-	-
GRI 102-2	Activities, brands, products, and services	30-35	-	-
GRI 102-3	Location of headquarters	30	-	-
GRI 102-4	Location of operations	35-37	-	-
GRI 102-5	Ownership and legal form	38	-	-
GRI 102-6	Markets served	35-37	-	-
GRI 102-7	Scale of the organization	39	-	-
GRI 102-8	Information on employees and other workers	39, 390-391	-	-
GRI 102-9	Supply chain	227-228	-	-
GRI 102-10	Significant changes to the organization and its supply chain	7-13, 47-50, 230-232, 382	-	-
GRI 102-11	Precautionary Principle or approach	57-70, 171, 195-196, 234-236	-	-
GRI 102-12	External initiatives	11-13, 41, 145, 173, 176-181, 199, 202-204	-	-
GRI 102-13	Membership of associations	42	-	-
Strategy				
GRI 102-14	Statement from senior decision-maker	4-6	-	-
GRI 102-15	Key impacts, risks, and opportunities	46-51, 66-69, 171, 195-196	-	-
Ethics and integrity				
GRI 102-16	Values, principles, standards, and norms of behavior	2, 150-152, 147-149, 192, 193-200	-	-
GRI 102-17	Mechanisms for advice and concerns about ethics	149, 152	-	-
Governance				
GRI 102-18	Governance structure	71	-	-
GRI 102-19	Delegating authority	71-85, 127-131	-	-
GRI 102-20	Executive-level responsibility for economic, environmental, and social topics	57, 65, 146, 149, 152	-	-
GRI 102-21	Consulting stakeholders on economic, environmental, and social topics	21, 44-45, 50-51, 58, 119-124, 199-200, 210-213, 216, 223, 233-239, 383-384	-	-
GRI 102-22	Composition of the highest governance body and its committees	71-73	-	-

Disclosure	Description	Page number	Omission	External Assurance
GRI 102-23	Chair of the highest governance body	71-73, 76, 127	-	-
GRI 102-24	Nominating and selecting the highest governance body	75-76, 80, 123-124	-	-
GRI 102-25	Conflicts of interest	125, 130-131, 136-137, 150	-	-
GRI 102-26	Role of highest governance body in setting purpose, values, and strategy	76-79, 128-129, 140-144	-	-
GRI 102-27	Collective knowledge of highest governance body	142	-	-
GRI 102-28	Evaluating the highest governance body's performance	132-134	-	-
GRI 102-29	Identifying and managing economic, environmental, and social impacts	46-51, 66-69	-	-
GRI 102-30	Effectiveness of risk management processes	66-70, 146-149	-	-
GRI 102-31	Review of economic, environmental, and social topics	46-51, 129	-	-
GRI 102-32	Highest governance body's role in sustainability reporting	128-129, 381, 383-384	-	-
GRI 102-33	Communicating critical concerns	136-137, 149, 151-152, 155	-	-
GRI 102-34	Nature and total number of critical concerns	148, 152	-	-
GRI 102-35	Remuneration policies	86-90	-	-
GRI 102-36	Process for determining remuneration	86-87	-	-
GRI 102-37	Stakeholders' involvement in remuneration	123	-	-
Stakeholder engagement				
GRI 102-40	List of stakeholder groups	43-45	-	-
GRI 102-41	Collective bargaining agreements	153-155	Not applicable	-
GRI 102-42	Identifying and selecting stakeholders	43-44	-	-
GRI 102-43	Approach to stakeholder engagement	44-45	-	-
GRI 102-44	Key topics and concerns raised	43-45, 383-386	-	-
Reporting practice				
GRI 102-45	Entities included in the consolidated financial statements	381-382	-	-
GRI 102-46	Defining report content and topic Boundaries	381-382	-	-
GRI 102-47	List of material topics	384-386	-	-
GRI 102-48	Restatements of information	383	-	-
GRI 102-49	Changes in reporting	382	-	-
GRI 102-50	Reporting period	381	-	-
GRI 102-51	Date of most recent report	381	-	-
GRI 102-52	Reporting cycle	381	-	-

Disclosure	Description	Page number	Omission	External Assurance
GRI 102-53	Contact point for questions regarding the report	384	-	-
GRI 102-54	Claims of reporting in accordance with the GRI Standards	381	-	-
GRI 102-55	GRI content index	394-397	-	-
GRI 102-56	External assurance	399-400	-	-
GRI 200 : Economic				
GRI 201 : Economic Performance				
GRI 103 :	Management Approach	7-12, 30-35, 46-51	-	-
GRI 201-1	Direct economic value generated and distributed	224	-	-
GRI 205 : Anti-corruption				
GRI 103 :	Management Approach	145-149, 150-152	-	-
GRI 205-3	Confirmed incidents of corruption and actions taken	148, 152	-	-
GRI 300 : Environmental				
GRI 301 : Materials				
GRI 103 :	Management Approach	156-157	-	-
GRI 301-1	Materials used by weight or volume	158-159, 393	-	✓
GRI 301-2	Recycled input materials used	159, 165-167, 393	-	-
GRI 302 : Energy				
GRI 103 :	Management Approach	174-181	-	-
GRI 302-1	Energy consumption within the organization	392	-	✓
GRI 302-3	Energy intensity	178-179, 392	-	✓
GRI 302-4	Reduction of energy consumption	174-177, 392	-	-
GRI 303 : Water				
GRI 103 :	Management Approach	157-159	-	-
GRI 303-1	Water withdrawal by source	158-159, 393	-	✓
GRI 303-2	Water sources significantly affected by withdrawal of water	158-159	-	-
GRI 303-3	Water recycled and reused	159, 393	-	-
GRI 304 : Biodiversity				
GRI 103 :	Management Approach	168-169	-	-
GRI 304-2	Significant impacts of activities, products, and services on biodiversity	156, 160, 168	-	-
GRI 305 : Emissions				
GRI 103 :	Management Approach	160-163, 173-180	-	-
GRI 305-1	Direct (Scope 1) GHG emissions	177-178, 392	-	✓
GRI 305-2	Energy indirect (Scope 2) GHG emissions	177-178, 392	-	✓

Disclosure	Description	Page number	Omission	External Assurance
GRI 305-4	GHG emissions intensity	178-179, 392	-	✓
GRI 305-5	Reduction of GHG emissions	174-177, 392	-	
GRI 305-7	Nitrogen oxides (NO_x), sulfur oxides (SO_x), and other significant air emissions	161, 392	-	✓
GRI 306 : Effluents and Waste				
GRI 103 :	Management Approach	163-166	-	-
GRI 306-1	Water discharge by quality and destination	164-165, 393	-	-
GRI 306-2	Waste by type and disposal method	166, 393	-	-
GRI 306-5	Water bodies affected by water discharges and/or runoff	164, 393	-	-
GRI 307 : Environmental Compliance				
GRI 103 :	Management Approach	160	-	-
GRI 307-1	Non-compliance with environmental laws and regulations	160	-	-
GRI 308 : Supplier Environmental Assessment				
GRI 103 :	Management Approach	230	-	-
GRI 308-1	New suppliers that were screened using environmental criteria	230-231	-	-
GRI 400 : Social				
GRI 401 : Employment				
GRI 103 :	Management Approach	89-90, 126, 153-154, 182-183, 390-391	-	-
GRI 401-1	New employee hires and employee turnover	390-391	-	-
GRI 403 : Occupational Health and Safety				
GRI 103 :	Management Approach	193-194	-	-
GRI 403-2	Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	200-201, 388-389	-	✓
GRI 403-3	Workers with high incidence or high risk of diseases related to their occupation	201, 388-389	-	-
GRI 404 : Training and Education				
GRI 103 :	Management Approach	185-186	-	-
GRI 404-1	Average hours of training per year per employee	186, 391	-	-
GRI 404-2	Programs for upgrading employee skills and transition assistance programs	186-187	-	-
GRI 404-3	Percentage of employees receiving regular performance and career development reviews	391	-	-

Disclosure	Description	Page number	Omission	External Assurance
GRI 406 : Non-discrimination				
GRI 103 :	Management Approach	153-155	-	-
GRI 406-1	Incidents of discrimination and corrective actions taken	153-155	-	-
GRI 414 : Supplier Social Assessment				
GRI 103 :	Management Approach	227-230	-	-
GRI 414-1	New suppliers that were screened using social criteria	230	-	-
GRI 419 : Socioeconomic Compliance				
GRI 103 :	Management Approach	205, 214	-	-
GRI 419-1	Non-compliance with laws and regulations in the social and economic area	210-211, 216	-	-
GRI-G4 Electric Utilities Sector Disclosures				
EU 1	Installed capacity, broken down by primary energy source and by regulatory regime	31-36, 225	-	-
EU 2	Net energy output broken down by primary energy source and by regulatory regime	10, 206-208, 392	-	-
EU 5	Allocation of CO_2e emissions allowances or equivalent, broken down by carbon trading framework	173, 176	-	-
EU 10	Planned capacity against projected electricity demand over the long term, broken down by energy source and regulatory regime	35-36, 48	-	-
EU 11	Average generation efficiency of thermal plants by energy source and by regulatory regime	209-210	-	-
EU 21	Disaster/Emergency Planning and Response	50-51, 69-70, 171, 198-199	-	-
EU 30	Average plant availability factor by energy source and by regulatory regime	209-210	-	-

LR Independent Assurance Statement

Relating to RATCH Group PCL.'s Annual Report (Sustainability part) for the calendar year 2019

This Assurance Statement has been prepared for RATCH Group PCL. (RATCH) in accordance with our contract but is intended for the readers of this Report.

Terms of engagement

Lloyd's Register Quality Assurance Ltd. (LR) was commissioned by RATCH Group PCL. (RATCH) to provide independent assurance on its Annual Report (Sustainability part) 2019 "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 LR's verification approach. *LR*'s verification procedure is based on current best practice, is in accordance with ISAE 3000 and AA1000 AS and uses the following principles of - inclusivity, materiality, responsiveness and reliability of performance data.

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

- Confirming that the report is in accordance with:
  - GRI Standards (2016) and core option
  - GRI Electricity & Utilities sector disclosures
- Evaluating the accuracy and reliability of data and information for only the selected indicators listed below: [1]
  - Environmental: *GRI 301-1 Materials used by weight or volume, GRI 302-1 Energy consumption within the organization, GRI 302-3 Energy intensity, GRI 303-1 Water withdraw by source, GRI 305-1 Direct (scope 1) GHG emissions, GRI 305-2 Energy indirect (scope 2) GHG emissions, GRI 305-4 GHG emissions intensity, GRI 305-7 Nitrogen Oxide (NOx), Sulphur Oxide (SOx), and other significant air emissions.*
  - Social: *GRI 403-2 Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities.*

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.

LR's responsibility is only to RATCH. LR 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.

LR's Opinion

Based on LR's approach nothing has come to our attention that would cause us to believe that RATCH has not, in all material respects:

- Met the requirements above
- Disclosed accurate and reliable performance data and information 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. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

LR's approach

LR's assurance engagements are carried out in accordance with our verification procedure. 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.

[1] *GHG quantification is subject to inherent uncertainty.*

- 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

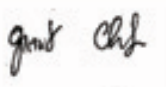
Further observations and findings, made during the assurance engagement, are:

- Stakeholder inclusivity:
  We are not aware of any key stakeholder groups that have been excluded from RATCH's stakeholder engagement process. RATCH has open dialogue with all of 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. It should be noted that RATCH has established extensive criteria for determining which issue/aspect is material and that these criteria are not biased to the company's management.
- Responsiveness:
  RATCH has addressed the concerns of stakeholders in Thailand and South East Asia region in relation to GHG and community related safety. However, we believe that future reports should
  - disclose safety statistic of EPC contractor
  - discuss how RATCH establishes governance with new business partners.
- Reliability:
  Data management systems are considered to be well 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.

LR's standards, competence and independence

LR 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 Footprint for organization Scheme of Thailand Greenhouse Gas Management Organization (Public Organization)) are the only works undertaken by LR for RATCH and as such does not compromise our independence or impartiality.



Opart Charuratana
LR Lead Verifier

Dated: 17 February 2020

On behalf of Lloyd's Register Quality Assurance Ltd.
Lloyd's Register International (Thailand) Limited
14th Floor, Sirinrat Building, 3388/46 Rama IV Road
Klongton, Klongtoey, Bangkok 10110 THAILAND

LRQA reference: BGK00000413

Lloyd's Register Group Limited, its affiliates and subsidiaries, including Lloyd's Register Quality Assurance Limited (LRQA), and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.
The English version of this Assurance Statement is the only valid version. Lloyd's Register Group Limited assumes no responsibility for versions translated into other languages.

This Assurance Statement is only valid when published with the Report to which it refers. It may only be reproduced in its entirety.

Copyright © Lloyd's Register Quality Assurance Limited, 2020. A member of the Lloyd's Register Group.

FEEDBACK FORM: 2019 ANNUAL REPORT
RATCH GROUP PCL.

1. Reader Profile

Gender ○ Female ○ Male

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

2. Please identify your stakeholder type

○ Shareholder ○ Investor ○ Partner/ Supplier

○ Community ○ Employee ○ Scholar/ Independent Organization

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

3. Where do you receive this annual report?

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

○ Other (Please specify.....)

4. Why do you prefer reading this annual 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 2019 annual 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 annual 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.....)

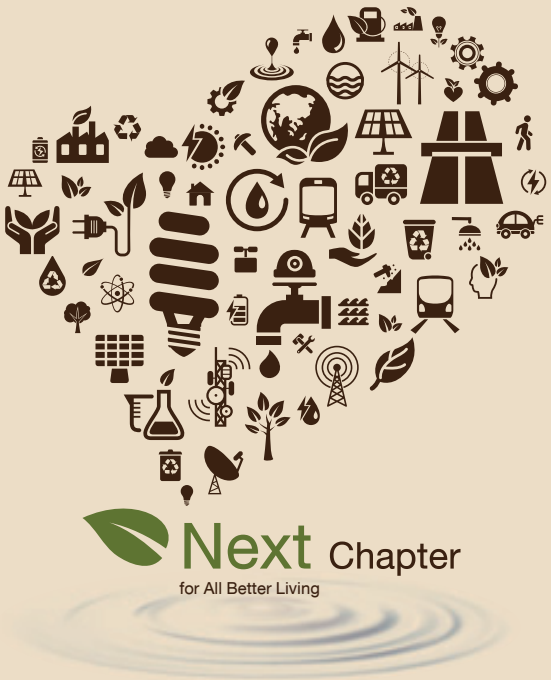
○ Society (Please specify.....)

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 GROUP

Corporate Relations Division
RATCH Group Public Company Limited
72, Ngam Wong Wan Road, Bangkhen,
Muang, Nonthaburi, 11000 Thailand

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

5. Website
Download the feedback form at www.ratch.co.th and send back via e-mail at pornpent@ratch.co.th


RATCH
GROUP

RATCH GROUP

RATCH Group Public Company Limited

72 Ngam Wong Wan Road, Bang Khen, Muang Nonthaburi, Nonthaburi 11000 Thailand

Tel. : 0 2794 9999

Fax : 0 2794 9998

Website : www.ratch.co.th

For more information about this report

Contact : Sustainability Development Department

Tel. : 0 2794 9951, 9955

Fax : 0 2794 9888 ext. 9951, 9955

Email : sustainability@ratch.co.th

PRINTED WITH SOY INK

FSC