

2013

Sustainability Report

RATCH



RATCHABURI  
ELECTRICITY GENERATING  
HOLDING PCL.

# Sustainability Report 2013



SUSTAINABLE GROWTH

Generating Power with Economic,  
Environmental and Social Care

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## About This Report

### Reporting Approach

This Sustainability Report is completed in line with the Company's Annual Report and provides information and data from 1 January 2013 to 31 December 2013. The report's main objectives are to demonstrate the Company's commitment on sustainability development and provide reliable and quality information on the Company's policy, operation procedures, and performances in 3 aspects - economics, environment and society.

This Sustainability Report is the first issue of Ratchaburi Electricity Generating Holding Public Company Limited that is completed in accordance with Sustainability Reporting Guidelines version 3.1 of Global Reporting Initiative (GRI G3.1). The Company is committed to continuously conduct this report every year, to cover the key issues to the Company's sustainable business operation and stakeholders' expectations. The information boundary according to GRI's guidelines is shown in page 91-105.

The Company has followed the guideline in scoping the report's content, with additional elaboration on materiality assessment.

This is an environmental and social report for a company operating in Thailand. The information on joint venture companies and subsidiaries can be found in the Company's Annual Report.

### Quality Control

An internal process was established to validate the consistency and sufficiency of the information contained in this report, under the supervision by the Company's

unit responsible for the report. In addition, accuracy was reviewed by the units providing information.

### The reporting boundary

This report covers only the principal subsidiaries, which are key players in Thailand's electricity generating and are owned 99.99% by the Company. They are;

- Ratchaburi Electricity Generating Holding Public Company Limited
- Ratchaburi Electricity Generating Company Limited, a 99.99% owned subsidiary which operates the 3,645-megawatt Ratchaburi Power Plant in Ratchaburi province

There was limitation in accumulating information in some topics, as this is the first year to adopt the GRI guidelines. This resulted from the differences in power plants' information collection and the presentation of economic, environmental and social performance indicators against the GRI standard. This may cause deviation of the information. The Company is currently in the process of improving and streamlining the reporting method to comply with the GRI standard.

Regarding challenges and the enhancement of business management on sustainability in accordance with the GRI's standards, the Company will review its sustainability issues through a study and analytical comparison of the power generating industry trend and responses to stakeholders' expectations. As the next step, relevant units of the Company will specify activities, projects and action plans both in medium and long terms, so that the goals of sustainability focus in economic, environmental and social dimensions are fully identified in the 2014 Sustainability Report. The Company also considers extending the reporting to cover more business units.

#### For more information, please contact:

Ratchaburi Electricity Generating Holding Public Company Limited  
8/8 Moo 2, Ngam Wong Wan Road, Bang Khen Sub-district,  
Muang District, Nonthaburi Province, Thailand 11000



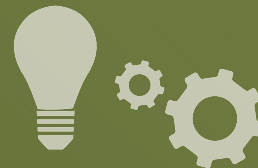
contribute power  
generating  
to economic and social  
development



adhere to good corporate  
governance and operate  
corruption-free business



conserve  
the environment  
to minimize  
Global Warming  
impact, and builds  
a happy society



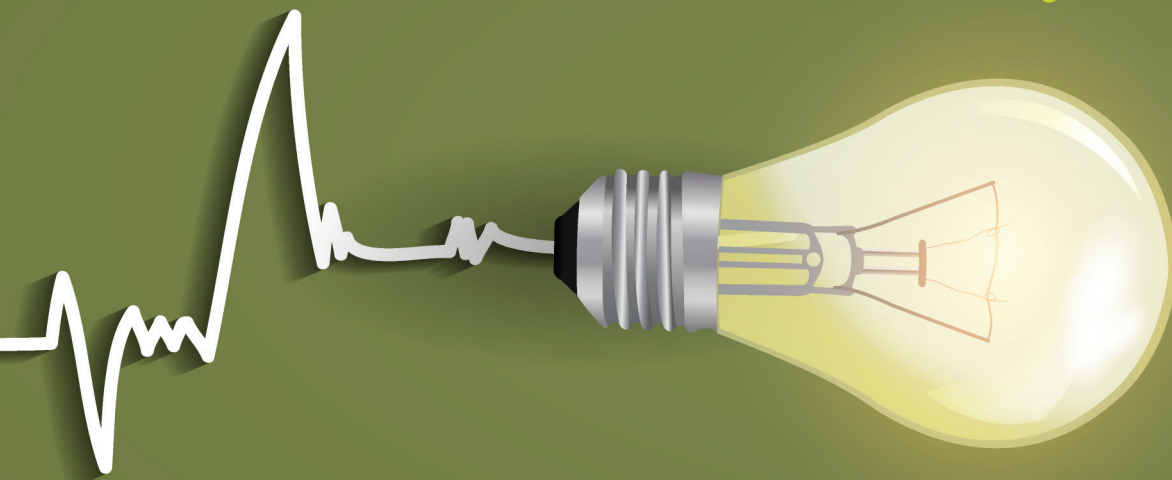
achieve operational  
and project management  
excellence





commit to serve  
stakeholders' expectation

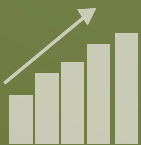
sustainable growth



**RATCH**



RATCHABURI  
ELECTRICITY GENERATING  
HOLDING PCL.



enhance employee's  
competency to drive  
business growth



## Message from the Chief Executive Officer

To all shareholders and stakeholders,

Throughout 2013, Ratchaburi Electricity Generating Holding Public Company Limited has operated its business with commitment to economic, social and environmental responsibility in carrying out our operations, geared towards the organizational sustainability.

To achieve the goal, all stakeholders play a significant role in pushing for growth, to ensure good returns which could support stakeholders' advance in tandem. In the meantime, the Company is bound to operate with minimum negative impacts.

The Company draws up a 5-year sustainability strategy focusing on two dimensions - the Company and stakeholders. In the first dimension, the Company must grow with concerns on environmental and social impacts. The assurance is required to ensure that the environmental and social impact of investment projects and power plant management are within legal boundary and up to international standards. Importantly, the investment and plant operation must win supports from the community and stakeholders.

In the stakeholder dimension, the Company must respond their expectations with clearly-defined procedures. The Company pays more attention to employees particularly in matters of working environment and occupational health, safety, fair and competitive remuneration system, the capacity-building program, and equal opportunity for career advancement. A reasonable return is guaranteed for shareholders, while trade and business partners are assured of fair treatment and transparent process. Power plants are maintained in a standardized way to meet customers' generating demands and support the Electricity Generating Authority of Thailand (EGAT), the major customer, in crisis situation. Community and society is assured of measures to safeguard and strengthen the environmental quality and quality of life, as well as appropriate benefits.

The Company seeks cooperation with the EGAT which is a major shareholder (with a 45% stake) and a customer, in jointly developing projects in neighboring countries. This creates mutual benefits: business expansion for the Company and assurance to the EGAT's mission and goal

in maintaining the security of the electricity reliability system – crucial infrastructure for economic and social development, as well as in maintaining the electricity prices at a reasonable level.

In the past year, the Company assisted EGAT in sustaining the national power security. The Company's three power plants in Ratchaburi province, namely Ratchaburi power plant, Ratchaburi-Power power plant and Tri-Energy power plant, with combined capacity of 5,745 megawatts stood ready to tackle the crisis when natural gas fields in the Union of Myanmar stopped operations unexpectedly. Sufficient fuel supplies were stocked, for the shift of generating source from natural gas to fuel. The annual maintenance plans were rescheduled, to ensure that the national generating capacity could sufficiently meet demand. Consequently, the crisis did no impact on the economy and society.

Under the sustainability strategy, the Company sets the goal to invest more for increasing returns. In the past year, new investment is focused more on renewable energy, in respond to the changing environmental condition as a result of the climate change as well as the trend in many countries which strive for more renewable energy and set clear targets for renewable energy generation. The Company thus raised the renewable energy target to 500 megawatts from 200 megawatts. In 2013, the Company took on a study to develop two more projects in Australia – a 165 megawatts wind farm in New South Wales and a 23 megawatts solar farm at the Collinsville Power Plant in Queensland. Under the development process, these two projects, if successful, are expected to commence the 25-year operations in 2016. The Company also embarked on more studies and negotiations for equity participation in several renewable energy projects in Thailand, Australia and Japan.

The successful investment in renewable energy will not only benefit the Company's financial performance but also the environment. Renewable energy not only can reduce the carbon dioxide emission – a main cause of the global warming, but also significantly reduce fossil fuel consumption and ensure longer availability of the limited supply.



Environmental issues pose a big challenge to the Company's sustainability. The operations are thus emphasized towards the prevention of environmental impacts and assurance to community and society. At Ratchaburi power plant, our principal assets, an energy-saving program was initiated in 2005 and has reduced power consumption by 67 million kilowatt-hours. This is on top of the measures to control and handle the in-process combustion pollutant through advanced technology.

The Company has also launched a campaign to raise energy conservation awareness among the public, by supporting community energy planning by communities around Ratchaburi power plant. The plans are aimed at reducing combustion which emits carbon dioxide. This scheme has been in place in Tharap sub-district, Muang district; and Baan Sing sub-district, Photharam district, Ratchaburi province since 2011. A number of 172 households takes a lead in changing their consumption behavior and adopting the energy community technology. For example, energy-saving light bulbs replace conventional light bulbs. Biogas replaces cooking gas. Solar dryers are created to preserve food.

Forest conservation and green area enhancement is another key off-line approach to expand the carbon sink, under the Company's commitment to address environmental challenges. The "Love the Forests and the Community" was launched in 2007 to encourage the community role in preserving and restoring forests. This

has been carried out through activities like a contest of sustainable community forests, reforestation in community forests, and the support to the Royal Forest Department's establishment of community forests.

The Company is committed to pursue sustainability. The more power demand grows in line with population and economic development, the more the Company needs to invest in power generating projects to meet the increasing demand. Meanwhile, it is necessary to invest in highly-efficient technology for efficient generating process, efficient use of fuels, and environmental-friendly operations. The projects on renewable energy will proceed along with community energy projects and forest conservation programs, to ease the global warming which influences the climate change.

The Company wishes to thank all stakeholders for the supports towards sustainable growth. We are convinced that the operations with economic, social and environmental concerns will lead the organization towards success and recognition from all parties as well as a sustainable future.

Sincerely yours,

**Mr. Pongdith Potchana**  
Chief Executive Officer



## 1. About RATCH



Ratchaburi Electricity Generating Holding Public Company Limited is a leading privately-owned electricity generating company in Thailand, with ability to generate 14% of the country's total power generation capacity. Established on 7 March 2000, RATCH is owned 45% by the Electricity Generating

Authority of Thailand. Listed on the Stock Exchange of Thailand under the trading symbol of "RATCH", it has 14.5 billion baht in registered and paid-up capital. It is headquartered at 8/8 Moo 2, Ngam Wong Wan Road, Bang Khen sub-district, Muang district, Nonthaburi Province.



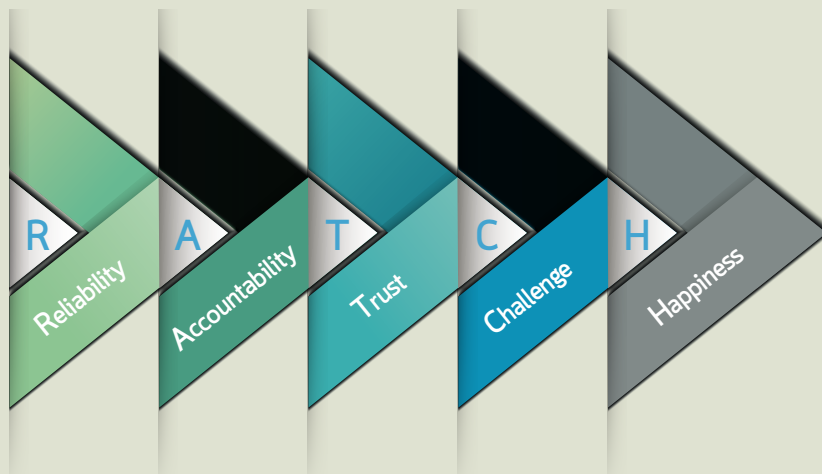
## Mission

- To boost shareholders' value through continuous maximum financial returns
- To achieve world-class operational excellence and achieve international standards in project development
- To be socially and environmentally responsible, conducting businesses in a fair manner
- To provide an enjoyable, secure, and motivating work environment
- To support long-term national energy security and comply with all local rules and regulations

## Policy

- Enhancing efficiency of the existing assets for maximum value
- Taking leadership in power project development in existing investment bases
- Seeking partnership to expand investment in Asia
- Creating additional value from investment in businesses related to power generation
- Enhancing readiness and developing competency of human resources

## Common Value



**Reliability:** commitment to operational excellence to ensure the national power security and socially-responsible business operation

**Accountability:** working with high expertise and professional standard to maintain better corporate performance

**Trust:** adhering to good corporate governance principle, fairness and ethics in business operation

**Challenge:** focusing on maximizing value of assets and achieving the target in business expansion, expanding to maintain leadership in Thailand's electricity generating business and become a leading power producer in Asia Pacific

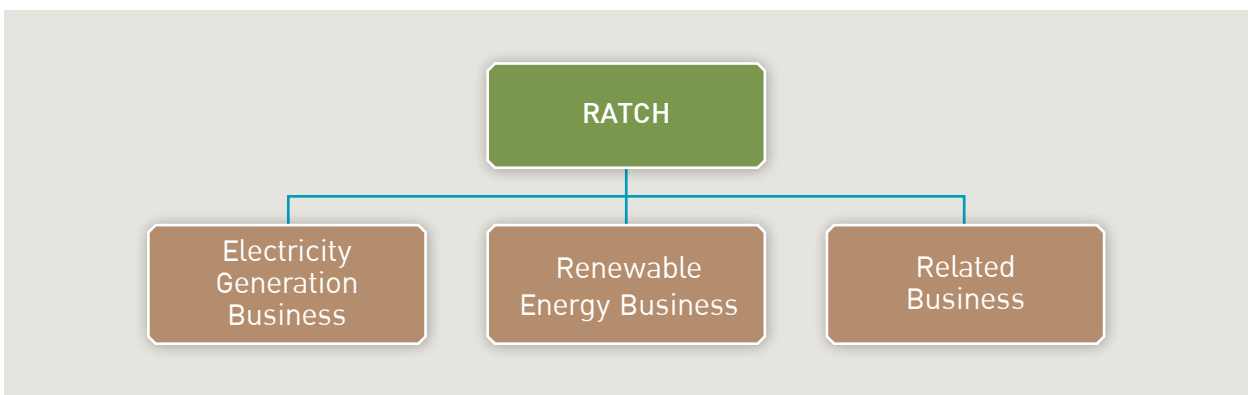
**Happiness:** encouraging collaboration and teamwork and promoting friendly work environment to motivate efficiency under the "Employer of Choice" goal

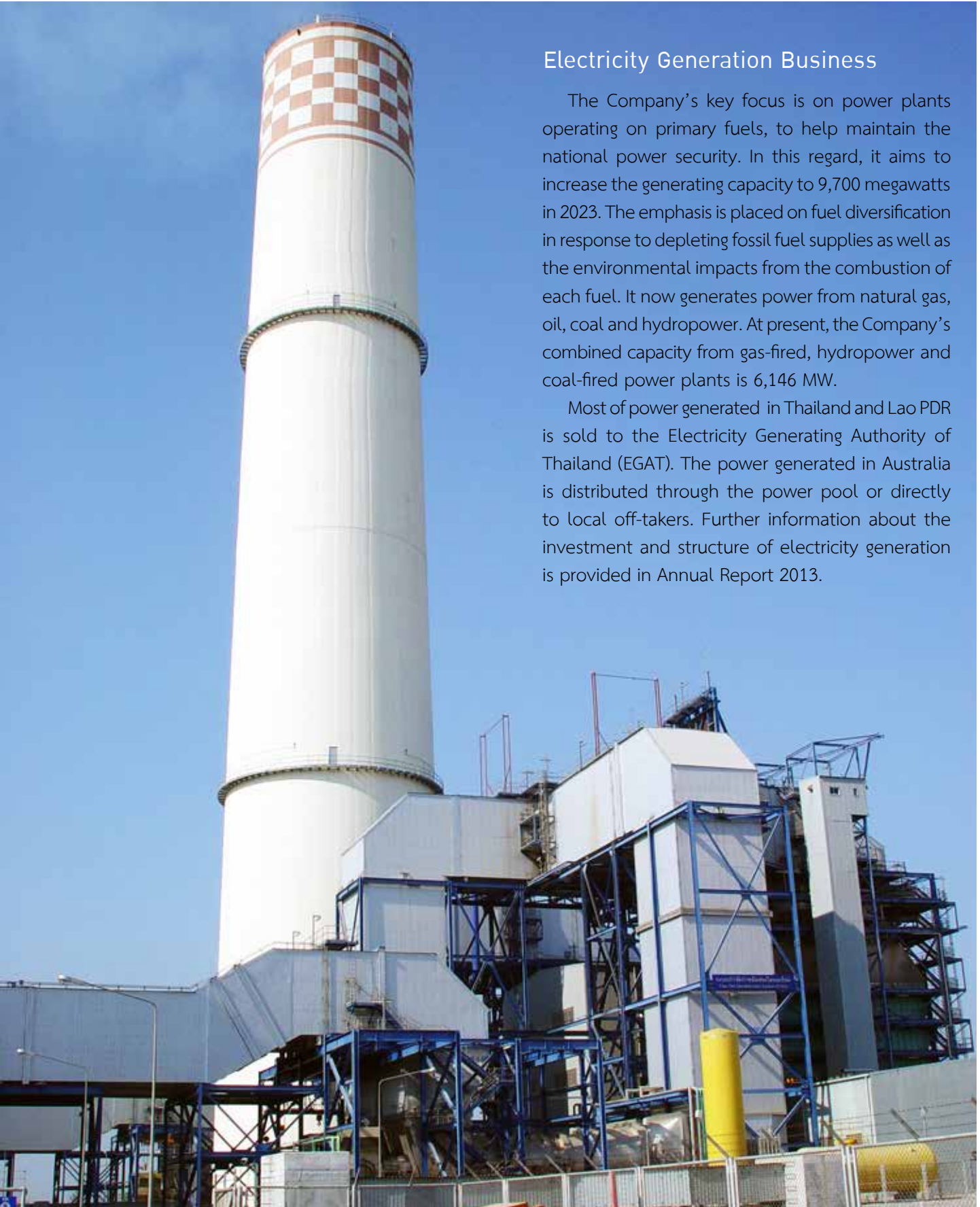


## Our Business

The Company seeks to invest and develop projects through partnership with local and international players. To date, the Company's operations are located in three areas namely Thailand, Lao PDR, and Australia which offer high potential for future power investment. The Company acts as a holding company with interests in core companies, subsidiaries, and joint ventures, depending on shareholding stakes.

The investment is in three core businesses namely electricity generating, renewable energy and related businesses.





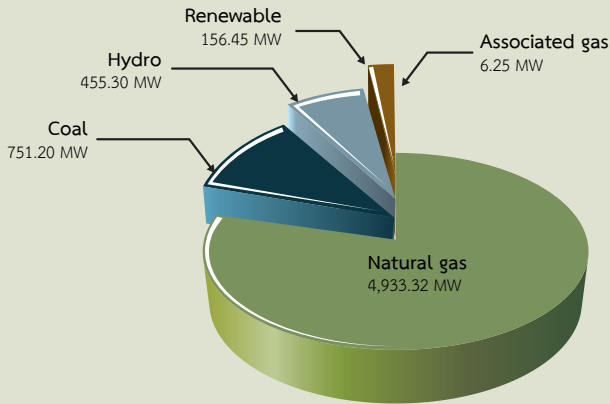
## Electricity Generation Business

The Company's key focus is on power plants operating on primary fuels, to help maintain the national power security. In this regard, it aims to increase the generating capacity to 9,700 megawatts in 2023. The emphasis is placed on fuel diversification in response to depleting fossil fuel supplies as well as the environmental impacts from the combustion of each fuel. It now generates power from natural gas, oil, coal and hydropower. At present, the Company's combined capacity from gas-fired, hydropower and coal-fired power plants is 6,146 MW.

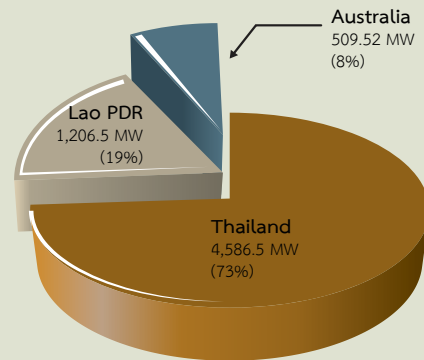
Most of power generated in Thailand and Lao PDR is sold to the Electricity Generating Authority of Thailand (EGAT). The power generated in Australia is distributed through the power pool or directly to local off-takers. Further information about the investment and structure of electricity generation is provided in Annual Report 2013.



### Capacity classified by fuel



### Capacity classified by investment base



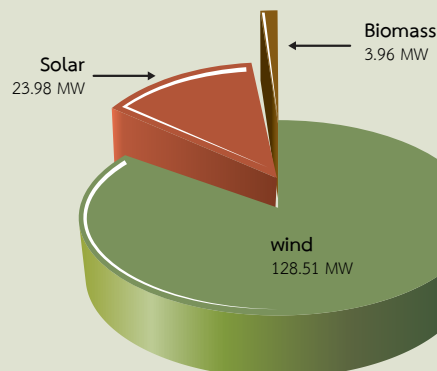
Note: In January 2014, the Company's total capacity was 6,543 MW due to the acquisition of additional 50% equity of Tri Energy Co., Ltd, the operator of gas-fired Tri Energy power plant, allowing the Company to include additional 350 MW into its total capacity. There was also the liquidation of Nam Ngum 3 hydropower plant, in which the Company holds a 25% stake and books 110 MW in total capacity.

### Renewable Energy Business

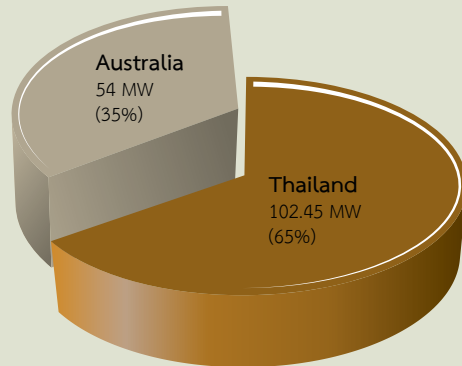
In response to the climate change, the Company seriously embarked on renewable energy investment in 2010 to generate power from the unlimited natural energy and help reduce fossil fuel consumption and carbon dioxide emission for the sake of the environment. The Company targets to produce upto 500 MW of power from renewable sources in 2016, thanks to commercial potential and

advanced technology which allows an increase in the commercial potential. Its priority is on the wind and solar energy as well as biomass, in Thailand and overseas. As of 2013, the Company has invested in 18 projects in Thailand and Australia with combined capacity of 156.45 MW. Further information on the investment and structure is shown in Annual Report 2013.

### Capacity classified by energy source



### Capacity classified by investment base



### Related Business

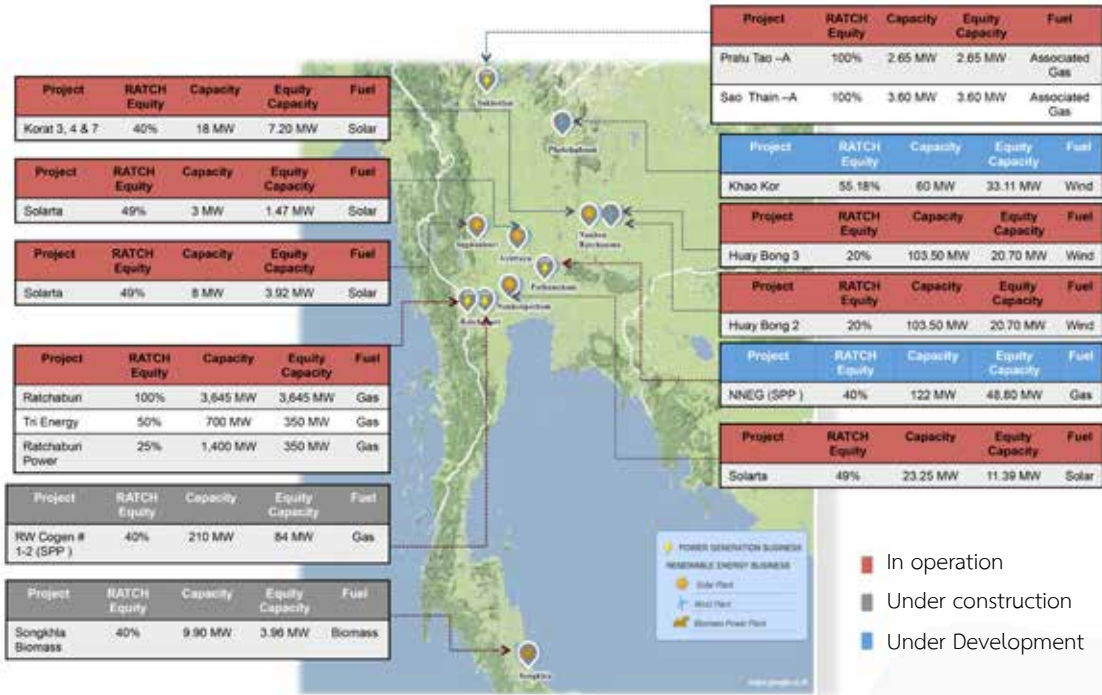
Related businesses are designed to create additional investment value and a more integrated business structure. This results in more steady and stable cash flow. The Company, through 7 joint ventures with combined investment of 174 million baht, involves in the power generating and maintenance service, a coal mine to support power plants, turbine maintenance service, and the provision of biomass raw materials for biomass plants. The investment structure can be found in the Annual Report 2013.



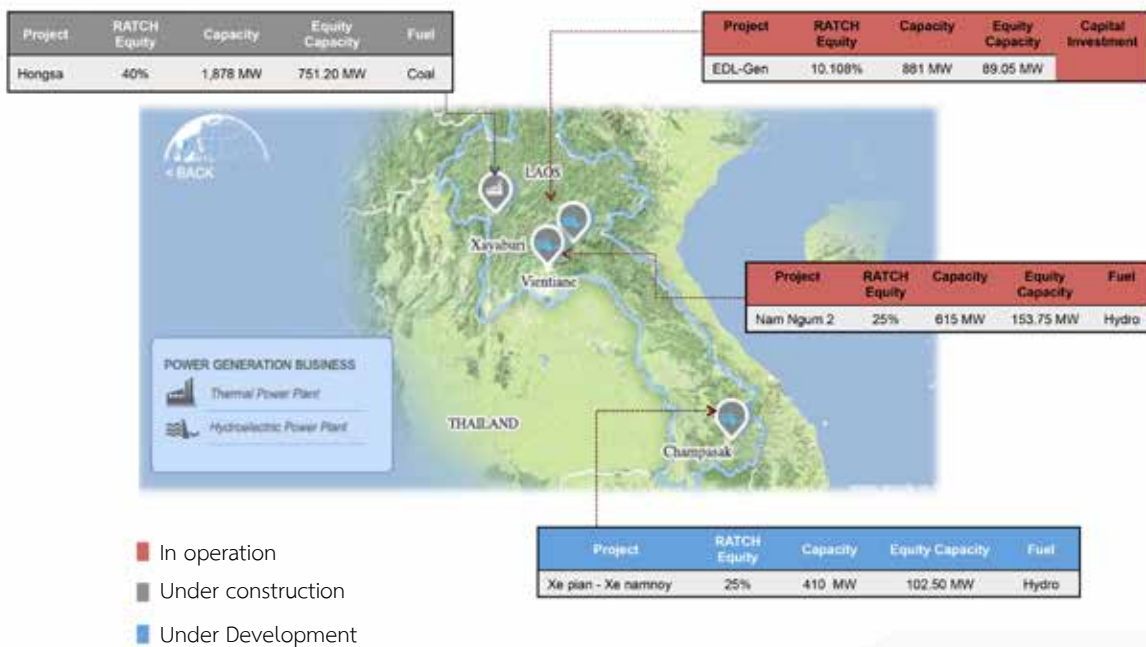


## Location of power plants

### Thailand

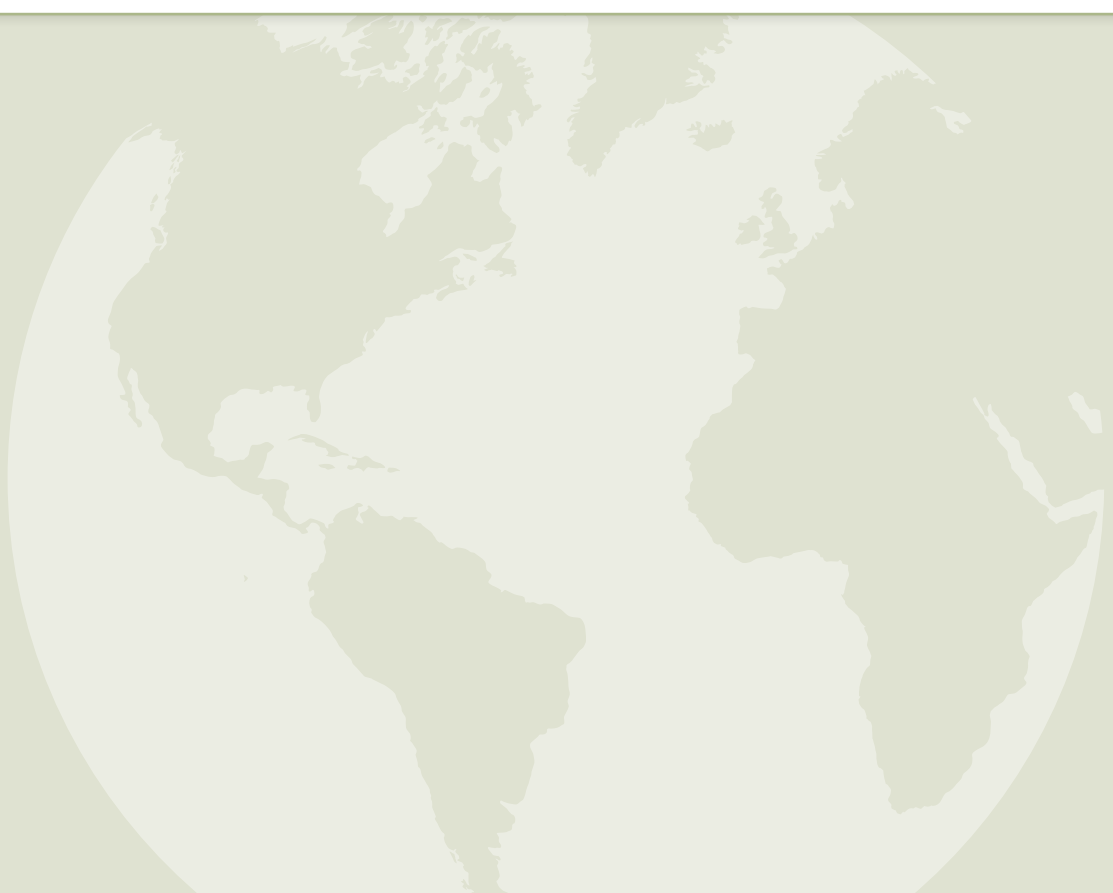
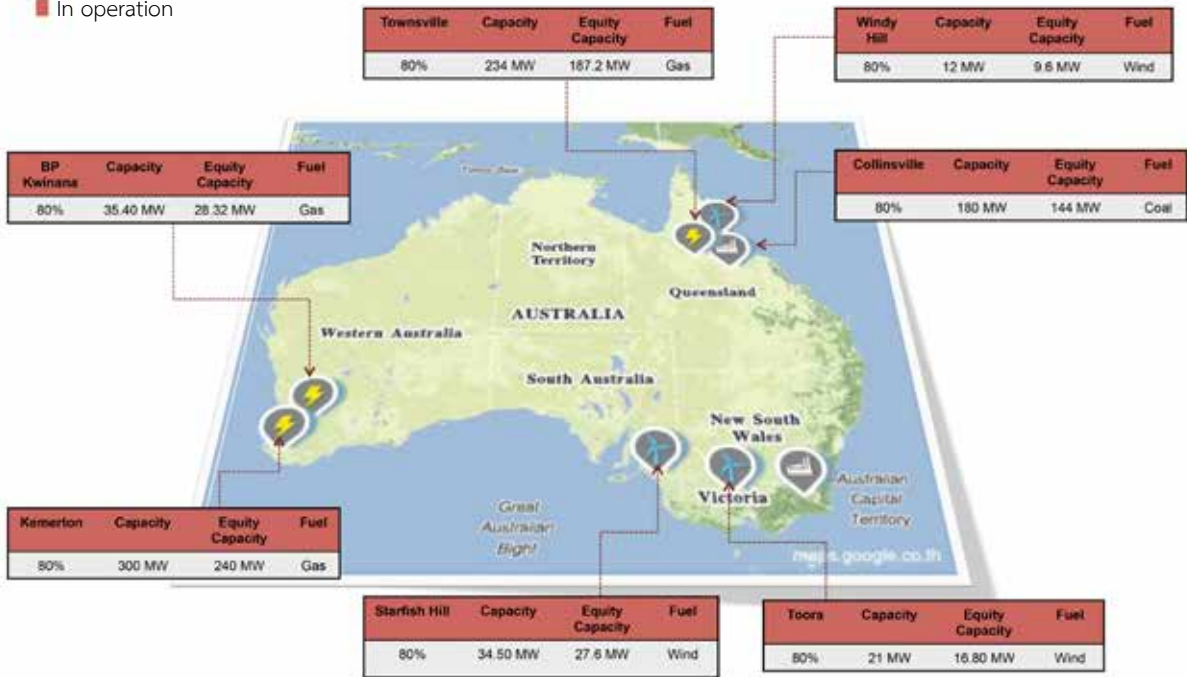


### Lao PDR



## Australia

■ In operation

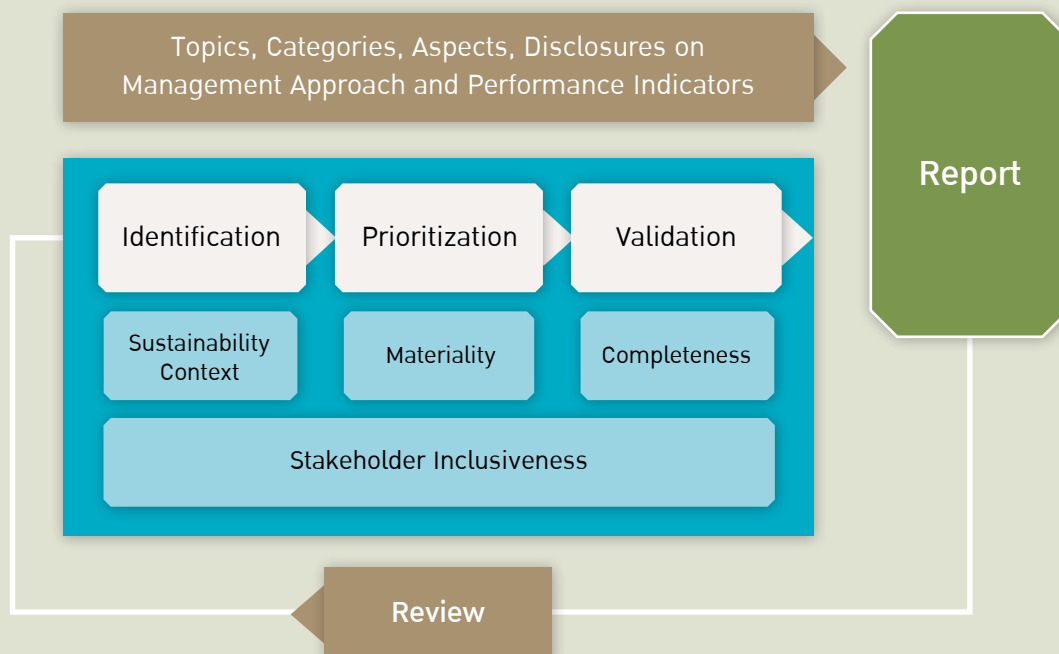




## 2. Materiality Assessment



The report assessed the aspects crucial for the Company's sustainability, by applying the following guidelines in GRI G3.1 sustainability reporting.





**Step 1 Identification**

- Identifying aspects which are crucial to the Company’s sustainability considering the Company’s nature of business, stakeholders’ expectation and sustainability of the electricity generating industry.

**Step 2 Prioritization**

- Prioritizing the key aspects in two dimensions - one that is critical to business operations and the other involving stakeholders - accordingly to the corporate risk assessment guidelines that cover four areas of business operations: economy, health and hygiene, environment, and corporate image, and accordingly to the frequency of questioning on these issues from stakeholders.

**Step 3 Validation**

- Reviewing the information completed by the central unit in charge of the reporting, to ensure the conformity with the reporting quality guidelines.

**Step 4 Review**

- Seeking the views of external stakeholders, to improve the contents and ensure their relevance in subsequent reports.

**Materiality Assessment on the company’ sustainability in 2013**

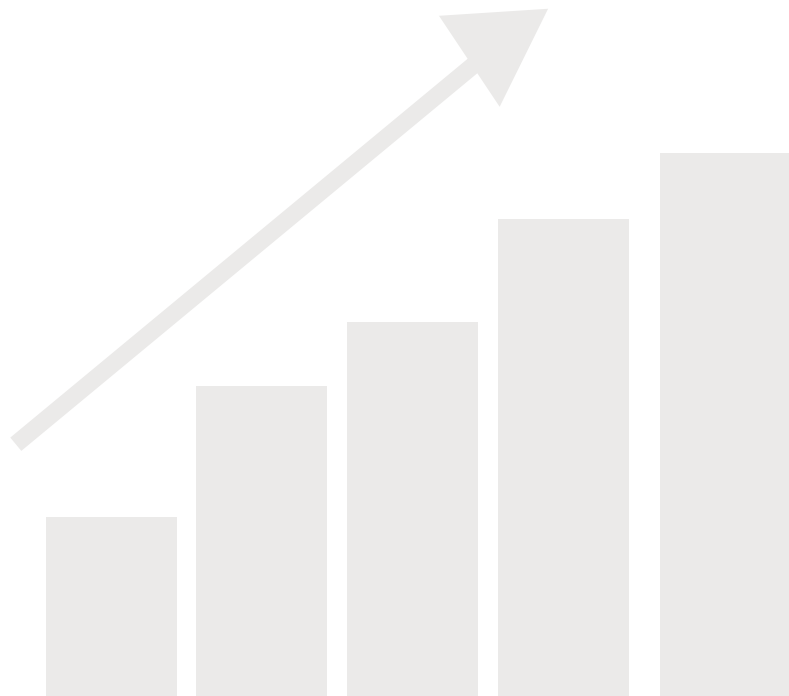
Critical to RATCH’s shareholder (score 1 - 4)	Moderate significant aspects	High significant aspects
	<ul style="list-style-type: none"> <li>Local hiring</li> <li>Impact of water source</li> <li>Stakeholder engagement</li> </ul>	<ul style="list-style-type: none"> <li>Economic performance</li> <li>Recycle and use of resources</li> <li>Energy use and energy efficiency</li> <li>Emission</li> <li>Effluents and waste management</li> <li>Environmental protection and respond plan</li> <li>Employee health, benefit, and training</li> <li>Human rights</li> <li>Community involvement</li> <li>Corporate governance (i.e. Anti-corruption)</li> <li>System reliability and availability</li> </ul>
		Moderate significant aspects
		<ul style="list-style-type: none"> <li>Risk and opportunity from climate change</li> <li>Environmental compliance</li> <li>Supplier assessment</li> </ul>

Critical to RATCH’s business (score 1 - 4)



## Summary of critical aspects towards the company's sustainability

Topic	Chapter	Critical aspects
<b>Organizational Governance</b>	3.1 Corporate Governance 3.2 Risk and Crisis Management 3.3 Stakeholder Engagement	<ul style="list-style-type: none"> <li>• Corporate Governance (i.e. Anti-corruption)</li> <li>• Human rights</li> <li>• Stakeholder engagement</li> </ul>
<b>Economic Dimension</b>	4.1 Sustainable Growth 4.2 Supply Chain Management	<ul style="list-style-type: none"> <li>• Economic performance</li> <li>• Supplier assessment</li> </ul>
<b>Environment Dimension</b>	4.3 Climate Change Strategy 4.4 Project Management 4.5 Operational Excellence	<ul style="list-style-type: none"> <li>• Recycle and use of resources</li> <li>• Energy use and energy efficiency</li> <li>• Emission</li> <li>• Effluents and waste management</li> <li>• Environmental protection and respond plan</li> <li>• System reliability and availability</li> <li>• Risk and opportunity from climate change</li> <li>• Environmental compliance</li> <li>• Impact of water source</li> </ul>
<b>Social Dimension</b>	4.6 Our People 4.7 Corporate Citizenship	<ul style="list-style-type: none"> <li>• Employee health, benefit, and training</li> <li>• Community involvement</li> <li>• Local hiring</li> </ul>



## Reporting Reference

This sustainability report is the first of Ratchaburi Electricity Generating Holding Public Company Limited, in line with the Global Reporting Initiative’s Sustainability Reporting Guidelines version 3.1 (GRI G3.1). The Company is committed to continue conducting the sustainability report every year, to cover key issues crucial to the Company’s business sustainability and stakeholders’ expectation. The scope of reporting under GRI’s guidelines is shown in page 91-105.

Ratchaburi Electricity Generating Holding Public Company Limited conducts this report accordingly to Global Reporting Initiative’s standard (GRI G3.1) which also covers the reporting guidelines for electricity generating units under the Electric Utilities Sector Supplement (EUSS). The report application level is set at the B level according to the following GRI’s Reporting Assessment guidelines:

Report Application Level		C	C+	B	B+	A	A+
Standard Disclosures	Profile Disclosures	Report on: 1.1 2.1 - 2.10 3.1 - 3.8, 3.10 - 3.12 4.1 - 4.4, 4.14 - 4.15		Report on all criteria listed for Level C plus: 1.2 3.9, 3.13 4.5 - 4.13, 4.16 - 4.17		Same as requirement for Level B	
	Disclosures on Management Approach	Not Required	Report Externally Assured	Management Approach Disclosures for each Indicator Category	Report Externally Assured	Management Approach disclosed for each Indicator Category	Report Externally Assured
	Performance Indicator & Sector Supplement Performance Indicators	Report fully on a minimum of any 10 Performance Indicators, including at least one from each of : social, economic, and environment.**		Report fully on a minimum of any 20 Performance Indicators, at least one from each of : economic, environment, human rights, labor society, product responsibility.***		Respond on each core and sector supplement* indicator with due regard to the Materiality Principle by either: a) reporting on the indicator or b) explaining the reason for its omission	

\* Sector supplement in final version  
 \*\* Performance Indicators may be selected from any finalized Sector Supplement, but 7 of the 10 must be from the original GRI Guidelines  
 \*\*\* Performance Indicators may be selected from any finalized Sector Supplement, but 14 of the 20 must be from the original GRI Guidelines



### 3. Organizational Governance

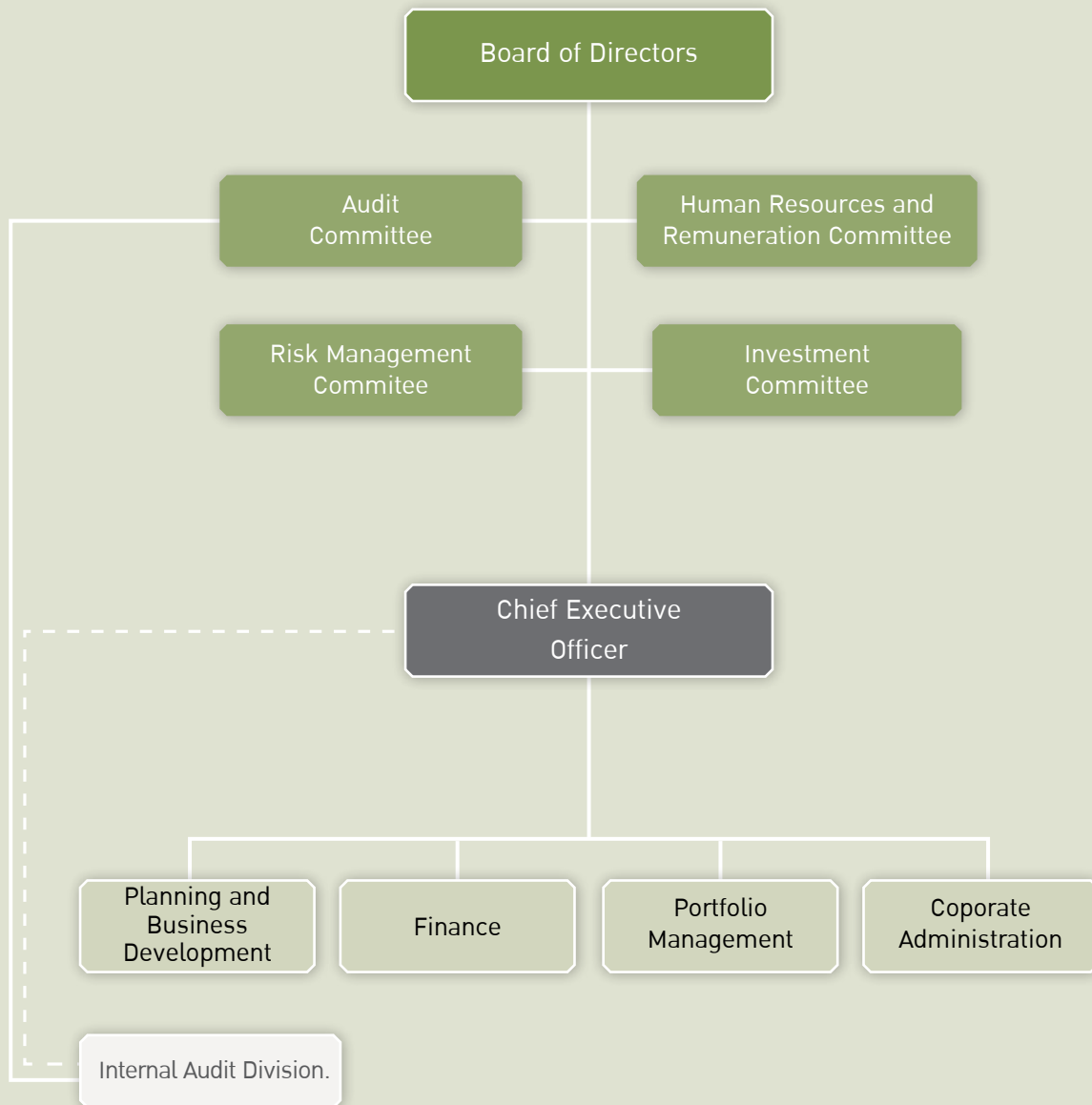
#### 3.1 Good Corporate Governance



The Company has applied the good corporate governance principles of the Stock Exchange of Thailand (SET) and requirements of the Securities and Exchange Commission (SEC) to design the governance practices implemented throughout the organization. The standards, equally applied in the organization, demonstrate the Company's commitment to operate business with responsibility, integrity, fairness, transparency and accountability. The practices, implemented in 2003, have been reviewed annually to fit the current circumstances.



## Management structure



The Company also announced relevant policies, to put in place the through and fair guidelines for all stakeholders. This includes the codes of conduct at the corporate level, for executives and employees; and the policies on risk management and the policies relating to shareholders, employees and society and environment. To be in line with international standards, others cover the policies

on the computer network and utilization, safety, occupational health and working environment, and the 5 S scheme. A study is commissioned to prepare for the ASEAN Economic Community (AEC) in 2015, which requires adjustment in rules and regulations to meet the ASEAN CG Scorecard - a new set of common rules for listed companies in Asean. All policies are published on the Company's website at [www.ratch.co.th](http://www.ratch.co.th).



## The Company's good corporate governance framework is described here;

### 1) Board of Directors and Sub-Committees

The Board of Directors is authorized, obligated and responsible to monitor and supervise the Company's business operation on behalf of shareholders, to ensure the Company's conformity to laws, rules and regulations, shareholders' resolutions, the good governance principles and rules on conflicts of interest, for shareholders' long-term values and the Company's benefits.

As of December 31, 2013, the Board of Directors has 15 directors. Boasting expertise and experience in various areas, they include 7 representatives of the major shareholder (including one who holds an executive title). The remaining eight are independent directors. There are 4 sub-committees - Risk Management Committee, Human Resources and Remuneration Committee, Investment Committee and Audit Committee. Their roles and responsibilities appear in the Company's Annual Report 2013.

In 2013, the Board of Directors worked together with the Management to review and improve the Company's business strategy plan. For the first time, the sub-committees conducted self-evaluation, on top of the self-evaluation of the Board of Directors and individual directors. The Board of Directors, individual directors, the Risk Management Committee, the Human Resources and Remuneration Committee and the Investment Committee rated themselves "Very Good" while the Audit Committee rated itself "Excellent".

In the Corporate Governance Report of Thai Listed Companies 2013, the Company was rated "Excellent" for the 6<sup>th</sup> straight year. It was in the Top Quartile among the listed companies with over 10 billion baht in market capitalization. The Thai Investors Association in the year also rated the Company's quality of shareholder meeting "Excellent", the score has held for 5 years, reflecting the effectiveness and efficiency in applying good

governance practices in a committed and sustained manner.

### 2) Code of Conduct

Since the establishment in 2000, the Company announced and enforced the Corporate Code of Conduct, the Director and Executives Code of Conduct, the Employee Code of Conduct across the organization. Newly-recruited employees and directors will receive the code of conduct manuals in their orientation, to raise awareness on compliance. There are also the guidelines of responsibility to major stakeholders - shareholders, employees, business partners, competitors, creditors, and debtors - as well as society and environment. Details can be found in the Company's Annual Report 2013.

### 3) Compliance to Laws, Rules and Regulations

The Company is committed to growing business for mutual benefits of all stakeholders, while maintaining operational standards based upon integrity and honesty in line with the good corporate governance principles in order to gain credibility and recognition from concerned parties. The Company has continuously complied with relevant laws, rules, and regulations.

### 4) Information Disclosure and Transparency

The Company puts emphasis on revealing sufficient, equal and timely information to all parties. The given information is in Thai and English languages and responsible individuals are clearly identified. The information is also disclosed through the media and various communication channels.

### 5) Communication, Whistle-blowing, and Complaint Management

The Company provides communication channels by which stakeholders can inform and file complaints on business units or employees that violate or fail to follow the laws, policies, rules, and regulations, good corporate governance principles and the

code of conduct, possibly causing damages to the Company. There are protection measures for honest claimants. Various channels are prepared to receive complaints including telephone, facsimile, e-mail, postal, the Company's website, which is accessible to the Company's Secretary Office, Internal Audit Division, Corporate Relations Division, and Investor Relations Department.

#### **6) Internal Control and Auditing**

The surveillance process is a key mechanism to attain good corporate governance and raise confidence among stakeholders who can be assured that the Company implements appropriate and sufficient internal control. The Internal Audit Division is in place, directly reporting to the Audit Committee. It is the main unit to monitor business units' operations, mainly to ensure the efficiency and effectiveness of resource usage. Its responsibility also covers the financial areas like the accounting system and the management of the Company's finances, assets and resources.

#### **7) Anti-Corruption**

Anti-corruption practices are included in the codes of conduct for the Company, employees and the management, as the basic guideline. They are required to obey the laws, avoid conflicts of interest, and not to take or offer valuable gifts. The internal control is in place to ensure that all activities are legal and in line with the codes of conduct. Penalties for any fraudulence and corruption are set.

The Company has promoted integrity in the group through the "Trust" corporate value, to raise awareness from employees at all levels and encourage them to perform their duties with integrity. According to the Company's charter, employees are now allowed to directly and indirectly offer and/or give money or any objects, and/or give or take in any forms of bribes, or offer political support. Failure to comply with the provision is subject to

disciplinary actions which could lead to employment termination.

#### **8) Respect for Human Rights**

In 2013, the Company has applied human rights principles in engaging with three groups of stakeholders; employees, community, and suppliers. The Company adheres to the labor law, which is aligned with the convention and charter of the International Labour Organization (ILO) as the basis for its policies towards the stakeholders.

The Company applies this guideline to protect employees. This covers their employment and the employment of local workers. Regarding to the community, the Company respects their rights for information and ensures community safety. A communication link is established. For suppliers, more of the human rights elements have been adopted, initially to ensure fair labor treatment by the suppliers.

In 2014, the elements are embedded in the "Happiness" corporate value, with the plan to raise understanding in human rights among employees so that they realize its importance to the Company's sustainability. This is to ensure that they treat others and concurrently respect the human rights. The Company also considers integrating the issue in the procurement process, requiring all suppliers to respect the human rights. This condition will be specified in the procurement contracts. The Company also plans to provide training on human rights for its employees or suppliers' working in the Company's premises to ensure that suppliers operate the business with responsibility and respect for human rights.



## 3.2 Risk and Crisis Management

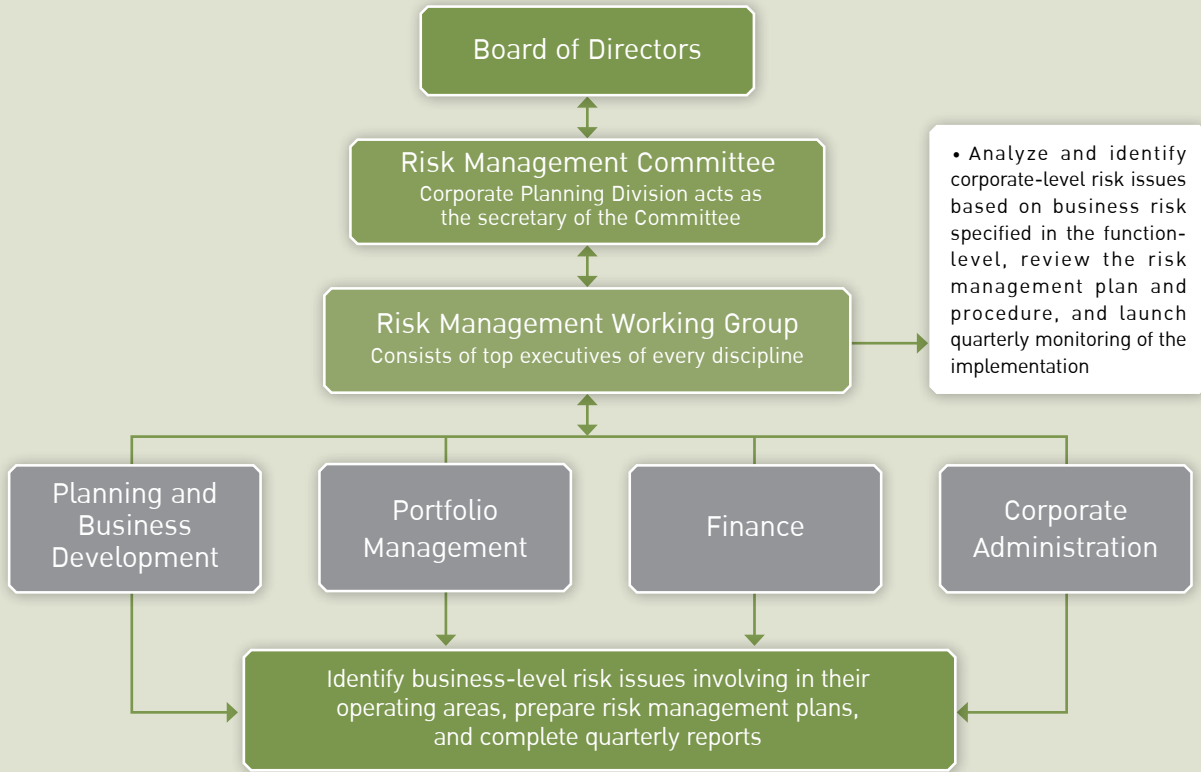


The Company has put in place the analysis and evaluation of risks as well as communications on related information within the organization. The Risk Management Working Group consisting of high-ranking executives of each department is responsible for designing the process, guidelines, and prevention measures. The risk limit is set to contain possible damages within the acceptable level. The Risk Management Working Group has also identified events or risk levels, serving as the warning that all must follow the procedures. All business units are required to complete their risk management plan and quarterly reports. The risk control and prevention system at all units are monitored and periodically evaluated.

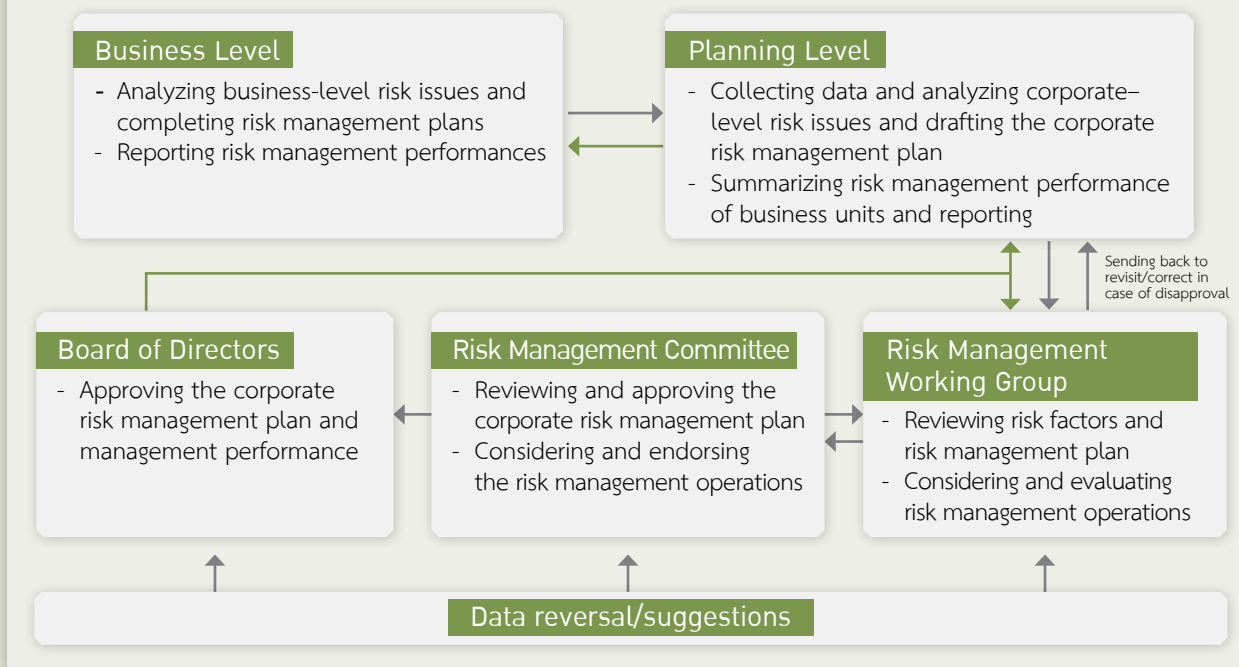




### Structure and Process of Risk Management



### Process of Managing Risk





The Corporate Planning Division is responsible for the Company’s risk management. It works closely with the Risk Management Working Group in assessing and analyzing risks, probability and the degree impacts on the organization as well as setting risk management measures for risks which may produce a significant impact on business growth. This will be submitted to the Risk Management Committee and subsequently the Board of Directors for approvals.

Under the risk management process, each unit identifies risk factors in its operation and develops the unit-level risk management plan. These plans will define the business-level risk factors and then their probability will be analysed as well as the degree of impacts. Subsequently, the corporate-level risk factors will be defined along with preventive and controlling measures.

Substantial risk factors possibly affecting the company are put in four areas as follows;

Major Issues	Risk	Management Approach
<p><b>Impact from competition and limitation of domestic market</b></p>	<p>Liberalization of Thai power sector leads to an increase of local and foreign players in the market resulting in gradually intense competition. In the meantime, the market is limited because of uncertainties in the bidding of new power plants and electricity demand forecast under the Power Development Plan.</p>	<ul style="list-style-type: none"> <li>▲ Reviewing and adjusting business strategy to enhance opportunities and drive business growth</li> <li>▲ The strategic plan focuses more on international investment in both Greenfields &amp; Brownfields projects and merger &amp; acquisition, as well as diversification into related businesses</li> <li>▲ Focusing on investment in neighboring countries to support the national power security and seeking investment opportunities in Small Power Producer projects, renewable energy projects, and business related to power generation</li> <li>▲ Seeking strategic partners to strengthen the Company’s capability and enhance competitive advantage</li> </ul>
<p><b>Climate change</b></p>	<p>The climate change leads to substantial changes of energy policy in Thailand and overseas. Greater concerns are placed on renewable energy and carbon dioxide emission. Tax measures are likely to be applied which would inevitably affect the Company’s investment in fossil fuel-based power plant projects.</p>	<ul style="list-style-type: none"> <li>▲ Raising renewable energy capacity to 500 MW in 2016 from 200 MW</li> <li>▲ Seeking for domestic and international investment opportunities in renewable power projects</li> <li>▲ Targeting to reduce carbon dioxide emission by 400,000 tons in 2016 through investment in renewable power projects</li> <li>▲ Learning more about clean energy development mechanism and the carbon market, which could be tools to ease the emission volume</li> </ul>

Major Issues	Risk	Management Approach
<p><b>Financial market volatility</b></p>	<p>Power generation business requires intensive funding, raised in onshore and offshore markets. The volatility of foreign exchange and interest rates is considered risks on financial cost, liquidity and financial position of the Company.</p>	<ul style="list-style-type: none"> <li>▲ Studying and identifying sources of funding alternatives</li> <li>▲ Considering terms of debt repayment to match with the Company’s cash flow</li> <li>▲ Requiring fixed or floating interest rate</li> <li>▲ Restructuring debt based on financial market circumstances to keep the funding cost at the lowest level</li> <li>▲ Applying financial instruments for offshore debts to prevent risks arising from foreign exchange and interest rate fluctuation</li> </ul>
<p><b>Acceptance of Community and Society</b></p>	<p>Acceptance and trust of communities surrounding the operating area is considered a critical factor for growing business in the long term.</p>	<ul style="list-style-type: none"> <li>▲ Doing business fairly based on principles of good corporate governance, and respecting and strictly complying with laws and regulations</li> <li>▲ Caring and protecting environment, and establishing the social and community responsibility policy to deal with them as a “good neighbor”</li> <li>▲ Opening communication channels for communities to acknowledge their concerns and let them monitor the Company’s operation</li> <li>▲ Providing the complaint handling process on a step by step basis and in the fastest manner</li> </ul>





## Crisis Management

The Company establishes the crisis management and crisis communications plans to cope with unexpected events which could culminate into severe impacts and business disruption. The plans will also reduce negative chain effects to stakeholders at the moment. In addition, the crisis management and crisis communications plans are the efficient tool for quick recovery of normalcy, which helps the Company maintain normal operations and avoid business disruption.

The crisis management and crisis communications plans are regularly reviewed and updated to meet the changing circumstances. They are also aligned with the emergency response plan of the Company's subsidiaries. To enhance understanding, the Company provides training on crisis management to relevant teams and all employees. Last year, there was no any crisis event which significantly affected the Company's business.

Under the crisis management plan, there are three working teams as follows;

1. Crisis Management Team (CMT), holding the supreme authority in handling the crisis and communications during the crisis situation.
2. Crisis Response Team (CRT), tasked to execute the CMT's orders.
3. Crisis Communications Team (CCT), in charge of communicating with internal and external stakeholders.



### 3.3 Stakeholder Engagement



All stakeholders are instrumental to the Company's sustainable growth. As a result, the Company conducts its activities with full caution to avoid causing negative impacts. Equal and fair treatment is applied to ensure mutual understanding. Stakeholders are encouraged to be engaged with the Company, so that the Company can understand their expectations and operate accordingly.

The Company classifies stakeholders accordingly to their involvement in the Company's mission, business strategy and corporate values. There are internal and external stakeholders who experience

positive and negative impacts from the Company's operations as well as a group of observers.

Currently, the Company puts stakeholders into 11 groups. All business units are responsible for creating and maintaining good relationship with them, communicating, taking their suggestions, and collect their expectations. The significant aspects will be included in the Company's business strategy, the stakeholder engagement action plan, as well as the operational processes.



Stakeholders	Expectation	Engagement Method	Responding Measures
<p><b>Electricity Generating Authority of Thailand (EGAT),</b> as a major shareholder and customer</p>	<ul style="list-style-type: none"> <li>➤ Good dividend</li> <li>➤ Business operation aligned with EGAT's strategy and cooperation for greater competitiveness</li> <li>➤ Meeting electricity supply contract demand, in terms of quantity and quality</li> </ul>	<ul style="list-style-type: none"> <li>➤ EGAT's Business Committee Meeting</li> <li>➤ Board of Directors Meeting</li> <li>➤ Joint meeting with EGAT's business management teams</li> <li>➤ Formal and informal meetings and activities</li> </ul>	<ul style="list-style-type: none"> <li>➤ Dividend is no less than 40% of net profit after reserves, according to the dividend payout policy</li> <li>➤ Plan business strategy accordingly to EGAT's objective</li> <li>➤ Regular dialogues about business cooperation in various levels; Board of Directors, Management and operational units</li> <li>➤ Cooperate with EGAT's Portfolio Management unit for joint cooperation in various areas</li> <li>➤ Annual activities to strengthen bilateral relationship</li> </ul>
<p><b>Shareholders/ Investors</b> including Thai and foreign institutional and individual shareholders and investors, and securities analysts</p>	<ul style="list-style-type: none"> <li>➤ Reasonable returns with good dividend and capital gains</li> <li>➤ Good corporate governance and transparency in management</li> <li>➤ Business growth</li> <li>➤ Sufficient, equal and timely information disclosure</li> <li>➤ Equal and fair treatment</li> </ul>	<ul style="list-style-type: none"> <li>➤ Corporate code of Conduct</li> <li>➤ Annual shareholder's meeting and regular analysts' meeting</li> <li>➤ Company visit</li> <li>➤ The Company's Secretary Office and Investor Relations Department</li> <li>➤ Road shows to meet investors</li> <li>➤ Annual report, 56-1 Form, and Sustainability Report</li> <li>➤ Company's website</li> <li>➤ Media/Journalists</li> <li>➤ Multi-channel Information disclosure</li> <li>➤ Two-way communication channel provided</li> </ul>	<ul style="list-style-type: none"> <li>➤ Identify guidelines on shareholder treatment in the Company's code of conduct</li> <li>➤ Policy to pay dividend at least 40% of net profit after reserves</li> <li>➤ Provide opportunity for proposing meeting agenda for shareholders' meeting</li> <li>➤ Shareholders' meeting is fully open for their questions and comments</li> <li>➤ Frequent communications through company visit, road shows and analysts meeting</li> <li>➤ Annual report on operating performance and corporate social responsibility performance</li> <li>➤ Provide extra communication channels like website and media, on top of the Stock Exchange of Thailand's channel</li> </ul>

Stakeholders	Expectation	Engagement Method	Responding Measures
<p><b>Creditors</b> including financial institutions, trade creditors, and debenture holders</p>	<ul style="list-style-type: none"> <li>👤 Financial discipline</li> <li>👤 Ability to repay and minimum default risk</li> <li>👤 Revenue-generating capability</li> <li>👤 Corporate credibility as proof of stable financial position</li> <li>👤 Compliance with relevant laws</li> <li>👤 Good corporate governance and transparency</li> </ul>	<ul style="list-style-type: none"> <li>👤 Debt financing plan and financial management</li> <li>👤 Regular meeting for information exchange</li> <li>👤 Financial and annual operating reports</li> <li>👤 Credit rating agencies</li> <li>👤 Environmental Impact Assessment Report</li> </ul>	<ul style="list-style-type: none"> <li>👤 Honoring repayment schedules for principal and interest</li> <li>👤 Debt-to-equity ratio is set at 70:30, to facilitate investment</li> <li>👤 Seeking credit rating by domestic and international credit rating agencies such as TRIS Ratings, S&amp;P, and Moody's, to affirm financial strength and repayment ability</li> <li>👤 Regular meeting for information sharing</li> <li>👤 Regular meetings to maintain good relationship, hosted by Financial Planning and Management Division</li> </ul>
<p><b>Co-investors/ Strategic Partners</b></p>	<ul style="list-style-type: none"> <li>👤 Track record and financial strength</li> <li>👤 Personnel's business knowledge and expertise</li> <li>👤 Fair and transparent business operation</li> <li>👤 Reputation and credibility of the company</li> <li>👤 Strong financial position</li> <li>👤 Mutual trust</li> <li>👤 Business synergy</li> </ul>	<ul style="list-style-type: none"> <li>👤 Business strategy</li> <li>👤 Risk management policy</li> <li>👤 Formal and informal meeting and dialogue</li> <li>👤 Company visit</li> <li>👤 Information disclosure</li> <li>👤 Participation of specialized team in each stage of project development</li> <li>👤 Negotiation to seek win-win solution</li> </ul>	<ul style="list-style-type: none"> <li>👤 Policy to seek strategic partnership to drive the Company's growth</li> <li>👤 Define investment ratio and risk management, to limit impacts on return on investment</li> <li>👤 Regular business meeting of Board of Directors, Management and operational team</li> <li>👤 Dedicated and professional team of personnel</li> <li>👤 Arranging Company visit on both sides to build confidence and trust</li> <li>👤 Publish the Company's information and achievement through various channels such as, the Company's website and mass media</li> </ul>



Stakeholders	Expectation	Engagement Method	Responding Measures
<p><b>Regulatory body and the Stock Exchange of Thailand (SET)</b></p>	<ul style="list-style-type: none"> <li>▲ Compliance to relevant laws, rules and regulations</li> <li>▲ Environmental quality management and community care</li> <li>▲ Good corporate governance and transparency</li> <li>▲ Transparent, sufficient and timely information disclosure</li> </ul>	<ul style="list-style-type: none"> <li>▲ Formal and informal meeting</li> <li>▲ Company visit</li> <li>▲ Annual Report and Sustainability Report</li> <li>▲ Environmental quality management performance report</li> <li>▲ Contingency plan and crisis management plan</li> <li>▲ Complaint handling channels and remedial measures</li> </ul>	<ul style="list-style-type: none"> <li>▲ Strict compliance with laws and regulations</li> <li>▲ Monitor and get updates on legal and regulatory changes for strict compliance</li> <li>▲ Complete and punctual submission of required information/reports</li> <li>▲ Annual review of contingency plan and crisis management plan</li> <li>▲ Establish communication channels like the Company's website and with relevant responsible units</li> <li>▲ Regular participation in meetings and activities of related agencies</li> </ul>
<p><b>Suppliers/contractors</b></p>	<ul style="list-style-type: none"> <li>▲ Seeking good partnership for long-term relationship</li> <li>▲ Fair and transparent competition</li> <li>▲ Strong financial position</li> <li>▲ Reputation and credibility</li> </ul>	<ul style="list-style-type: none"> <li>▲ Transparent, fair and equal procurement process</li> <li>▲ The corporate code of conduct and the Company's regulations</li> <li>▲ Occupational health, safety, and environment policy</li> <li>▲ Supplier registration</li> <li>▲ Requirements on supplier qualifications</li> </ul>	<ul style="list-style-type: none"> <li>▲ Adopt international-standard procurement process</li> <li>▲ Code of conduct contains rules prohibiting conflict of interest and tough penalties for corruption</li> <li>▲ Listing of favorable and backlisted suppliers considering track records, quality of work and services, and their management</li> <li>▲ Provision of occupational health and safety for contractors/suppliers' workers working in the Company's premises</li> </ul>



Stakeholders	Expectation	Engagement Method	Responding Measures
Employee	<ul style="list-style-type: none"> <li>➤ Attractive compensations</li> <li>➤ Competitive welfare and benefits compared to industry standard</li> <li>➤ Career advancement and succession</li> <li>➤ Competency enhancement</li> <li>➤ Involvement in business planning based on titles and job description</li> <li>➤ Positive and good work environment</li> <li>➤ Job security</li> <li>➤ The Company's growth and reputation</li> </ul>	<ul style="list-style-type: none"> <li>➤ Employee code of conduct, corporate code of conduct, Employee policy and Articles of Association</li> <li>➤ Performance evaluation system</li> <li>➤ Review of structure of compensation, welfare and benefits</li> <li>➤ Employee training and succession plans</li> <li>➤ Fair appointment, promotion, demotion, dismissal and reshuffle based upon individual capability</li> <li>➤ Occupational health, safety, and environment policy</li> <li>➤ Internal communication</li> <li>➤ Channels for comments and complaints, as well as complainant protection measures</li> <li>➤ Recreational activities and open forum</li> </ul>	<ul style="list-style-type: none"> <li>➤ Guidelines on treatment of employees and their desirable roles appear in the corporate code of conduct and Articles of Association</li> <li>➤ Merit-based evaluation system</li> <li>➤ Review of compensation, welfare and benefits structure to keep competitive to the industry standard</li> <li>➤ Measures of occupational health, safety, and environmental management in the workplace</li> <li>➤ Employee training plan to improve their competency, mental health enhancement, and capability building for career advancement</li> <li>➤ Succession plan to allow equal career advancement</li> <li>➤ Communicating the Company's information to employees through various channels like intranet, e-mail, meeting, and bulletin board</li> <li>➤ Consistent relationship building activity for better understanding and employee participation</li> </ul>



Stakeholders	Expectation	Engagement Method	Responding Measures
<p><b>Customers/ Consumers,</b> including power buyer and end-users</p>	<ul style="list-style-type: none"> <li>▲ Delivery of contractual power and ability to start operation as ordered</li> <li>▲ Environmental-friendly electricity generating process</li> <li>▲ Reasonable selling price</li> <li>▲ Credibility and trust</li> <li>▲ No negative impacts from operations on community and environment</li> </ul>	<ul style="list-style-type: none"> <li>▲ Annual maintenance schedules</li> <li>▲ Meeting for information exchange</li> <li>▲ Operating cost and fuel management plan</li> <li>▲ Contingency plan and crisis management plan</li> </ul>	<ul style="list-style-type: none"> <li>▲ Strict maintenance schedules to maintain efficiency and operational readiness</li> <li>▲ Meeting and visit customers for information exchange and comment to strengthen relationship</li> <li>▲ Annual contingency plan and crisis management plan review and drills</li> <li>▲ Maintain operational efficiency, through parts/equipment and fuel management, to limit impacts on power rates</li> </ul>
<p><b>Communities Surrounding the operating areas</b></p>	<ul style="list-style-type: none"> <li>▲ Responsible operations to leave no negative impacts on community and environment</li> <li>▲ Safeguard and support community's quality of life improvement</li> <li>▲ Engagement with communities and openness to comments</li> </ul>	<ul style="list-style-type: none"> <li>▲ Power Development Fund</li> <li>▲ Power plant visit</li> <li>▲ Environmental inspectors envoy</li> <li>▲ Community development activities</li> <li>▲ Contingency plan and crisis management plan</li> <li>▲ Corporate Relations Division</li> <li>▲ Openness for comments and community visit</li> <li>▲ Disclosure on power plant's operational performance</li> </ul>	<ul style="list-style-type: none"> <li>▲ Participation in Power Development Fund's committee to ensure efficient fund allocation to communities</li> <li>▲ Power plant visit to observe operations and environmental management system</li> <li>▲ Establishment of environment inspectors team, to allow community participation in environmental management</li> <li>▲ Annual review and drills on contingency and crisis management plans, communities are alerted and encouraged to participate</li> <li>▲ Community development plan, with community participation</li> <li>▲ Consistent disclosure of information to communities through newsletter, notification, and visits, under Corporate Relations Division</li> <li>▲ Regular participation in community activities</li> <li>▲ Support community's public campaigns</li> </ul>

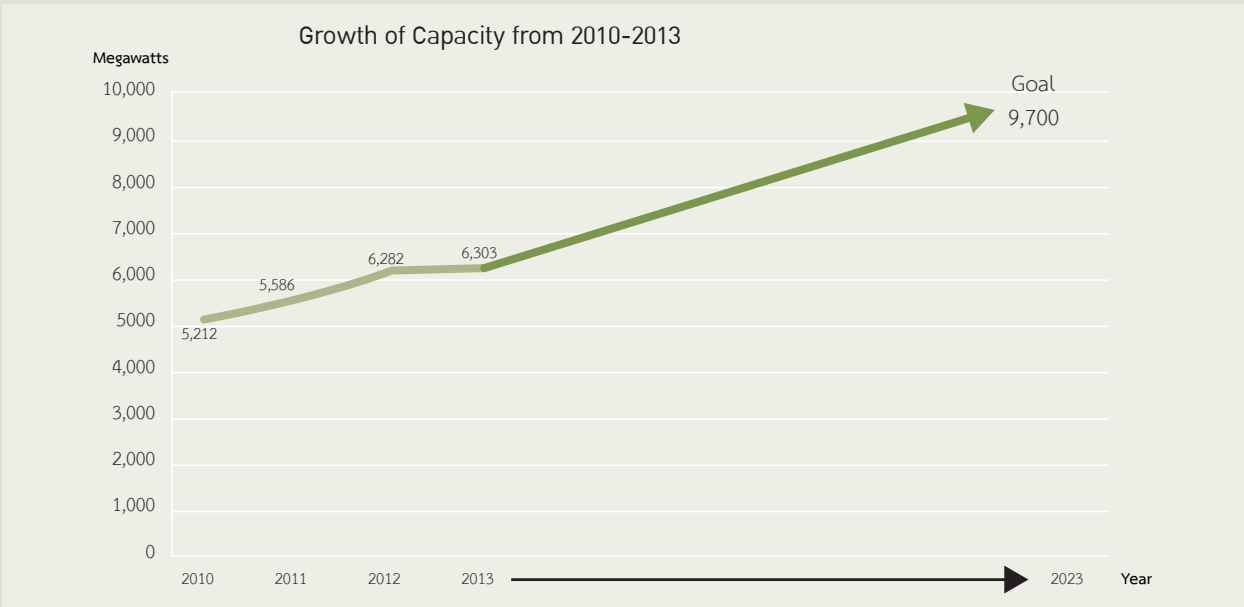
Stakeholders	Expectation	Engagement Method	Responding Measures
<b>Media</b>	<ul style="list-style-type: none"> <li>👤 Accurate and adequate information disclosure</li> <li>👤 Timely, through and equal information disclosure</li> <li>👤 Two-way communication with high-level executives</li> </ul>	<ul style="list-style-type: none"> <li>👤 Press conference</li> <li>👤 News release</li> <li>👤 Interview</li> <li>👤 Company's website</li> <li>👤 Company visit</li> <li>👤 Regular/occasional meeting</li> <li>👤 Relationship building activities</li> </ul>	<ul style="list-style-type: none"> <li>👤 Media communication and management plan</li> <li>👤 System for information preparation and accuracy verification</li> <li>👤 Regular two-way and one-way communications; for example, press conference, interview, company visit, website, and news release</li> <li>👤 Persons responsible for the disclosure identified</li> </ul>
<b>Society and Environment</b> including non-profit organizations, communities located out of the operating areas and general public	<ul style="list-style-type: none"> <li>👤 Environment conservation in response to global warming</li> <li>👤 Social contribution</li> <li>👤 Environmental - friendly generating, to support economic and social development</li> </ul>	<ul style="list-style-type: none"> <li>👤 Business strategy plan</li> <li>👤 Social activities</li> <li>👤 Energy conservation</li> </ul>	<ul style="list-style-type: none"> <li>👤 Carbon dioxide reduction indicator included in the business strategy plan</li> <li>👤 Focus on renewable power generation in response to the Company's policy and commitment to reduce global warming</li> <li>👤 Social activities emphasizing on national forest conservation and forest area expansion for social and environmental benefits</li> <li>👤 Campaign on energy saving and community power program to reduce the energy consumption in communities</li> <li>👤 Readiness to operate at times of crisis, to maintain national power security, while pollutants are kept at minimum level</li> </ul>



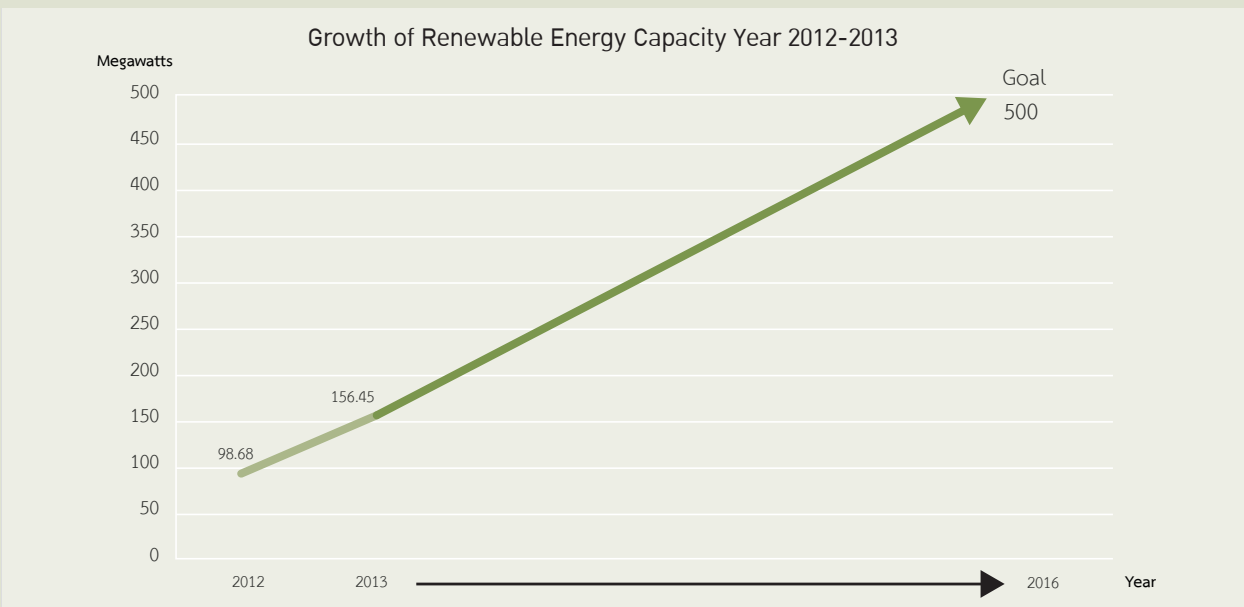
# 4.Target and Achievement in 2013

## Capacity Growth

The Company targets to increase generating capacity to 9,700 megawatts by 2023, against the current capacity as of 31 December 2013 of 6,303 MW.



For renewable power generation capacity, the Company has successfully invested in wind power projects, solar power projects and biomass power plants domestically and overseas. As of 31 December 2013, the renewable capacity has reached 156.45 megawatts while the Company’s goal of 500 megawatts is expected to be accomplished in 2016.



### CO<sub>2</sub> Reduction Target from Renewable Energy Project

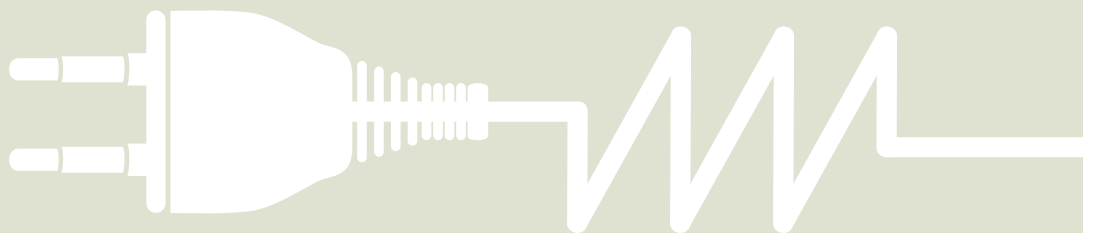
In response to climate change, the Company targets to reduce 400,000 tons of carbon emission in 2016 by focusing more on renewable power. As of 31 December 2013, the Company's renewable power projects in Thailand and Australia have combined capacity of 156.45 MW. This is equivalent to the reduction of CO<sub>2</sub> by 230,855.41 tons per year.

### Forest Conservation for CO<sub>2</sub> Capture Storage

To ease the global warming, the Company promotes forest conservation on conviction that forests can be natural carbon sink. It has initiated the "Love the Forest and Community" program, which through community participation can help preserve forest areas. In 2013, the Company aimed to support communities in preserving 100,000 rai of forest areas through sustainable forest management plans, for the benefits of communities and environment at large. This could capture about 200,000 tons of CO<sub>2</sub> per year.

Thanks to the model community forests contest and a project to strengthen community forests in Ratchaburi provinces, 109,792 rai of forest areas have been preserved.

<b>2013 Target</b>	100,000 Rai
<b>Results</b>	109,792 Rai
• model community forest contest	93,621 Rai
• community forest strengthening in Ratchaburi province	16,171 Rai





## Economic

### 4.1 Sustainable Growth



Throughout 14 years of existence, the Company has been committed to building sustainable and stable growth by dedicating all efforts in adding value along with emphasis on social and environmental responsibility. This is in response to the expectations of the stakeholders who are looking for reasonable returns and mutual benefits in aspects of society and environment. The Company is fully aware that for steady and sustainable growth, the stakeholders must have trust and confidence on the Company. For this reason, the Company has always operated businesses with transparency by disclosing up-to-date information on issues relevant to all stakeholders for their acknowledgement as well as giving emphasis on building good relations with the local communities; promote the community engagement continuously in every step from the project development stage until the commercialization. Furthermore, the Company also discloses information on investment activities and the progress of each project through various channels so that the stakeholders would keep abreast of the movements.

In the previous year, the Company's investment, development and operation focus on power generation business and related ones. On renewable energy generation, it plans to achieve 500 megawatts capacity in 2016. The Company has defined its investment into two forms: by developing new projects and by acquiring equity in the existing operations. This allows more stable and steady cash flow. Aside from investment expansion, the assets management is also essential in boosting the Company's revenue. In this regard, the Company focuses on operational excellence of power plants by leveraging employees' experience and expertise in the operation and maintenance of power plants to ensure all-time readiness as specified in the power purchase agreement. So far, the Company has ably achieved the goal, allowing revenue to grow in line with targets.

## Investment in Renewable Energy

Demand for renewable energy tends to increase continuously both in the country and overseas, as a result of the global climate change. Power generating is an activity that releases a significant volume of greenhouse gases. Coupled with the decline in fossil fuel reserves, many countries have turned to alternative energy sources. Renewable energy targets have been set.

Under this circumstance, the Company sees the potential of renewable energy business. The renewable energy investment target is adjusted to boost the target generation capacity from for renewable energy project from 200 megawatts to 500 megawatts, mainly through investment in wind, solar and biomass energy.

Thailand, Australia and Japan are considered the main investment destinations. In 2013, the Company

studied the feasibility of wind and solar power projects in Australia. These cover a wind power project with 165 megawatts in capacity and a solar PV project with 23 megawatts capacity.

At present, the Company has invested in 18 renewable energy projects with combined capacity of 156.45 megawatts, accordingly to equity holding in the projects. Of total, wind power capacity was 128.51 megawatts, solar power 23.98 megawatts and biomass 3.96 megawatts. These projects can reduce carbon emission by 230,855.41 tons per year.

If the Company decides to invest in the 165 megawatts wind power and 23 megawatts solar power projects in Australia, the combined capacity of the company's renewable energy will be 306.85 megawatts and carbon emission reduction will rise to 698,937.81 tons per year.





## Asset Management to Maximize Value

The Company has clearly identified the investment structure, to cover 3 core businesses - electricity generation, renewable energy and businesses related to power generation. The strategy allows the Company to grow returns and quality assets, which help boost the organizational returns.

The power generation business is the key revenue-creating means. As such, the investment is geared chiefly to power plants that operate with primary fuels, as they bolster the national power security. The renewable power business is designed to cope with regulatory changes arising from the climate change, and to generate additional revenue to the Company. In this regard, the Company's focus is on wind, solar and biomass energy projects. On related businesses, these ensure business integration and support a more stable revenue stream. Emphasis is placed on the investment in power plant operations and maintenance, gas turbine refurbishment and coal mining.

The Company now holds interests in 32 power plants of which fuel diversification is assured. The power is generated by natural gas, coal, hydropower, wind power, solar power and biomass power. There is a plan to expand the investment to grow revenue. The investment will be expanded in Lao PDR and Australia. On top of that, feasibility studies are carried out for investment opportunities in other countries like Indonesia, the Philippines, Vietnam, Cambodia, Myanmar and Japan.

Regarding these existing investment projects, the Company focuses on managing their efficiency for maximum returns. In the companies that the Company holds a minority stake, the assets management will be done through a representative who will sit in the Board of Directors or the executive committee of such companies.

## Operating Results in 2013

### 2013 Goals:

- Net Profit: 6,187 million baht
- Market Capitalisation: 71,050 million baht (as of December 27, 2013)
- Shareholders' Equity: 55,539 million baht
- Investment: 2,810 million baht
- Ratings:
  - "AA+" with stable outlook by Tris Ratings
  - "BBB+" with stable outlook by S&P
  - "Baa1" with stable outlook by Moody's

### Key financial indicators

- Operating Income: 53,494 million baht
- Total Assets: 88,903 million baht
- Dividend: 2.27 baht per share
- Return on Equity: 4.63%

### 2014 Goals

- Power plants' readiness to meet power-generating agreements are maintained
- Revenue growth and return to investors is maintained at an appropriate level
- Credit ratings are maintained



## The study on wind power project development in Australia

A large-scale wind power project with 165 MW capacity

Operator: RATCH-Australia Corporation Limited

RATCH-Australia Corporation Limited (RAC) is a subsidiary, 80% owned by the Company through RH International (Singapore) Corporation Limited. The remaining 20% stake is held by Transfield Infrastructure Service Limited. RAC, based in Australia, focuses on investing, developing and operating power plants. Currently, RAC owns equity in seven power plants with total installed capacity of 509.52 MW. Of these, three are gas-fired power plants, three are wind power plants and one coal-fired power plant which is decommissioned.

This will be RAC's 4<sup>th</sup> wind energy project which boasts the biggest installed capacity, if the Company officially approves the investment. The plant will also drive RAC's growth in terms of revenue and installed capacity which will increase to 642 MW.

### Key Performance Indicators

- Total installed capacity: 165 megawatts
- Electricity production: approximately 650 gigawatt-hour per year
- Project value: approximately at 11.4 billion baht (equivalent to AUD 380 million)
- The development license was endorsed in December 2013
- Commercial operation schedule: 2016



Toora Wind farm operated by RAC



## 4.2 Supply Chain Management



The Company recognizes the importance of supply chain management as it will give benefits in terms of cost management and operating efficiency, in particular power plant's readiness in generating electricity to meet customers' demand. In this regard, the Company defines 3 approaches for supply chain management as follows:

### 1. Procurement Procedure

For transparent and fair procurement of goods and services for the Company's operations, the procedure will be taken care by a committee consisting of the experienced or experts in the products or services. All contracts must be approved by executives, starting from division heads. Each executive level is authorised to approve different levels of contract values. The procedure to procure goods/products and services depends on the contract value.

All procurement deals of the Company are screened by the Internal Audit Division, which directly reports to the Audit Committee, to ensure that all deals strictly follow through the specified procedure. The procedure must also ensure fair competition. The suppliers must fall under reasonable and non-discriminative selection criteria and are entitled to fair price negotiation.



### Supplier Selection Criteria

The Company specifies initial basic qualification criteria as a guidance to assess risk of each supplier. These are based on;

- Ability in delivering goods and services on schedule, expertise in such business and industry, and innovation or continuous technological and product development
- Track records, creditability, and financial stability, as well as no background of job abandoning or being on the blacklists of any public and private organizations
- Their occupational health, safety, and environment policy

Furthermore, the Company also integrated human rights-related issues in the preferred qualification of suppliers. All suppliers must not hire or support child labor, shall have no case related to the violation of employee's basic rights, and shall have no background concerning offering or receiving bribery.

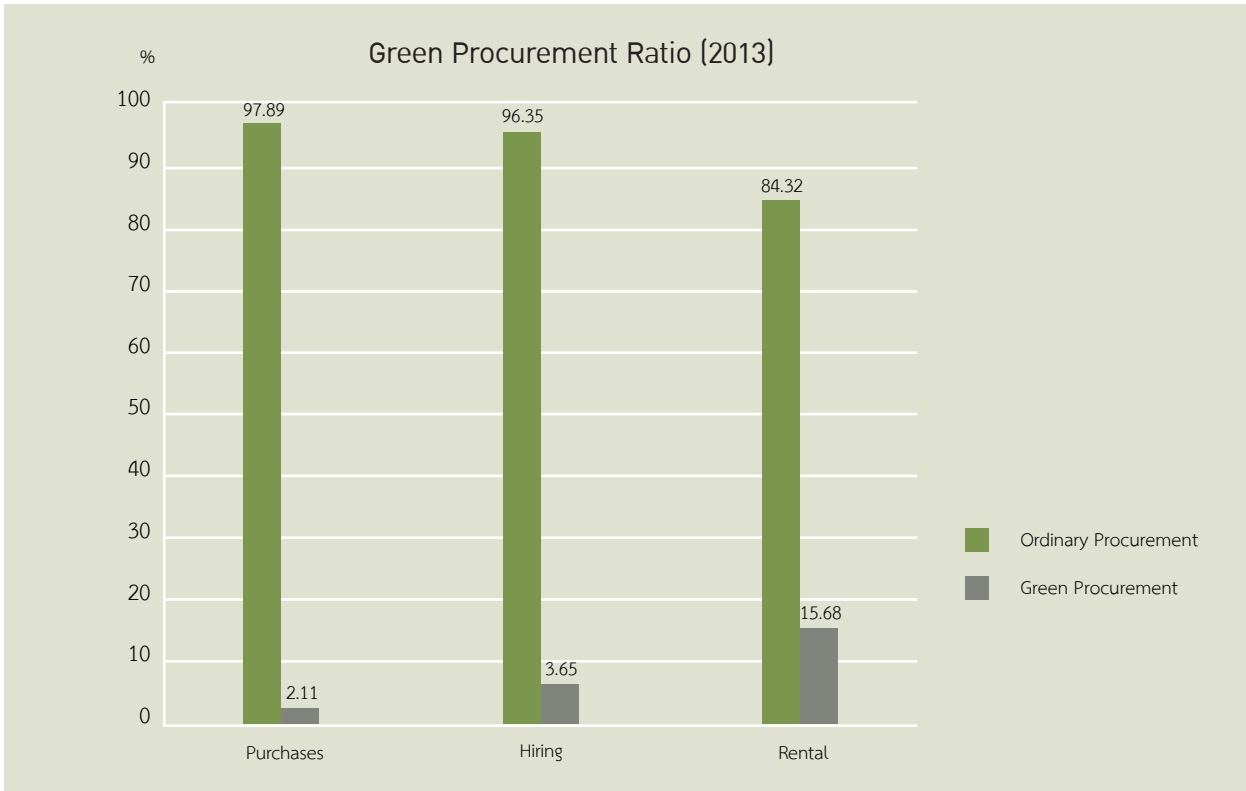


### Significant Milestones in 2013

In 2013, the Company added provisions concerning Green procurement, by focusing on standardized products which minimizes the use of natural resources for minimum environmental impacts. The priority is to seek suppliers enlisted in the Green Product list, which are companies with Green Label Certification and Carbon Reduction Label from Thailand Environment Institute, and TIS Certification from Thai Industrial Standards Institute. Suppliers are required to present the certificates to guarantee that their products or services are environmentally-friendly or present the Green Label Certificate as a product-sorting tool.

Green procurement in 2013 totalled 8,038,742 baht in value, accounting for 6.42 percent of the total procurement value of 125,141,021.85 baht. It marked the first year that the Company seriously carried out this initiative. The Company targets to further expand the list of environmental-friendly products for the operations.





The increase in Green Procurement in 2013 stemmed from the switching of ordinary materials, equipment, and office supplies to green products. These are secured by purchases, hiring and rental contracts as follows:

- In 2013, the Company purchased eco-friendly office supplies including electrical appliances with No. 5 energy-saving Label and toilet paper made from 30 percent recycling wood pulp which is free from bleaching or halogen.
- For hiring, the Company searched for service providers employing eco-friendly equipment in the production process or services; for instance, the contracted printing service provider uses soya ink for the Company's document.

- In case of office automation equipment, some is rented. Yet, this equipment must also be environmental-friendly. Last year, it rented photocopiers that used printing ink with NOSHC (National Occupational Safety and Health Committee) standard.

In 2014, the Company will have a process to screen small suppliers, in terms of environmental-friendly production process, labor treatment, and environmental concerns in the manufacturing process. The procurement agreements will also highlight requirements on human rights, the anti-corruption approaches and political neutrality.



## 2. Guidelines for Products and Services Procurement for Power Plant Operation

Key issues	Selection Criteria	Process	Result
<p><b>Seeking contractors for engineering, procurement and construction (EPC)</b></p>	<ul style="list-style-type: none"> <li>▲ Industry-wide recognition in experience and expertise in designing and construction of power plants</li> <li>▲ Stable financial status and adoption of good governance in operations</li> <li>▲ Price quotation covers specified work and is within budget</li> <li>▲ Ability to complete work on schedule</li> </ul>	<ul style="list-style-type: none"> <li>▲ Price check</li> <li>▲ Suppliers must strictly comply with relevant laws, as specified in contracts</li> <li>▲ Post-construction warranty is specified in contracts</li> <li>▲ Owner engineers are designated to follow up and inspect suppliers' operations, to keep tap on work quality and schedules</li> </ul>	<ul style="list-style-type: none"> <li>▲ Maintain the development cost within budget</li> <li>▲ Project development and construction are completed on schedule as well as the commercialization</li> <li>▲ Quality and endurance of power plants meet international standard</li> </ul>
<p><b>Power plant parts and equipment supply</b></p>	<ul style="list-style-type: none"> <li>▲ International recognition in experience and expertise in the power industry</li> <li>▲ Stable financial status and good governance</li> <li>▲ Ability to provide products that meet technical specification or win users' endorsement as replaceable items</li> <li>▲ Reasonable warranty period offer</li> <li>▲ Offering after-sale service and providing free and quick advice</li> <li>▲ Providing technical knowledge or educational training on the parts and equipment</li> </ul>	<ul style="list-style-type: none"> <li>▲ Long-term contracts are struck, with pre-specified price and delivery schedules</li> <li>▲ Post-installation warranty period is specified in the purchase agreement</li> <li>▲ Product delivery must be made within the determined schedule, as specified in the purchase agreement</li> <li>▲ Part and equipment specification and quality check before endorsing the job</li> <li>▲ Contact suppliers when needing additional technical consultation</li> </ul>	<ul style="list-style-type: none"> <li>▲ Lower expenses on lower inventory</li> <li>▲ Ability to control volatility in future prices</li> <li>▲ Power plants' stable operations and readiness for efficient generating</li> <li>▲ Power plant maintenance can be performed as planned</li> </ul>



Key issues	Selection Criteria	Process	Result
<p><b>Power plant's fuels</b></p>	<ul style="list-style-type: none"> <li>▲ Experience and expertise in the business</li> <li>▲ Stable financial status and good governance in operations</li> <li>▲ Ability to supply fuels matching technical specification of the power plants</li> <li>▲ Ability to provide secondary fuel in crisis situation or urgent need</li> </ul>	<ul style="list-style-type: none"> <li>▲ Long-term contract is struck, to match the entire life of the power purchase agreement</li> <li>▲ Product delivery must meet schedules, as specified in the agreement</li> <li>▲ Advance notification of maintenance shutdown at natural gas fields is required, as specified in the contract</li> <li>▲ Customers must be informed in advance of a plan to suspend the generation when natural gas supply is disrupted</li> <li>▲ Determine fuel specification needed for delivery</li> </ul>	<ul style="list-style-type: none"> <li>▲ Power plants can efficiently maintain power generation readiness</li> <li>▲ Risks from fuel shortage are under control</li> <li>▲ More efficient expense and cost management</li> </ul>
<p><b>Operating and maintenance services</b></p>	<ul style="list-style-type: none"> <li>▲ Industry-wide recognition for experience and track record in the operating and maintenance</li> <li>▲ Stable financial status</li> <li>▲ Personnel and team possess sufficient ability and expertise</li> <li>▲ The work system, equipment and technical supports are ready</li> </ul>	<ul style="list-style-type: none"> <li>▲ Long-term contract is struck in line with the life of power purchase agreements</li> <li>▲ Determining required target and work performance in hiring contract</li> <li>▲ Suppliers are required to strictly comply with relevant laws and the power plant's regulations in safety, occupational health, and environment throughout the contract period</li> <li>▲ Monitor, coordinate and determine key operating indicators, to check if the performance meets the target</li> </ul>	<ul style="list-style-type: none"> <li>▲ Power plants maintain generating readiness as specified in the power purchase agreement</li> <li>▲ Better cost and expense management</li> </ul>

### 3. Contractual Work Management

Contractors are required to abide by regulations concerning the control of safety and environment, orders and guidelines concerning power plants' safety. They must also have preventive measures against emergency. Prior to starting work, the contractors' staff must attend training on work-related risks and the Company's regulations on safety, occupational health, and work environment.

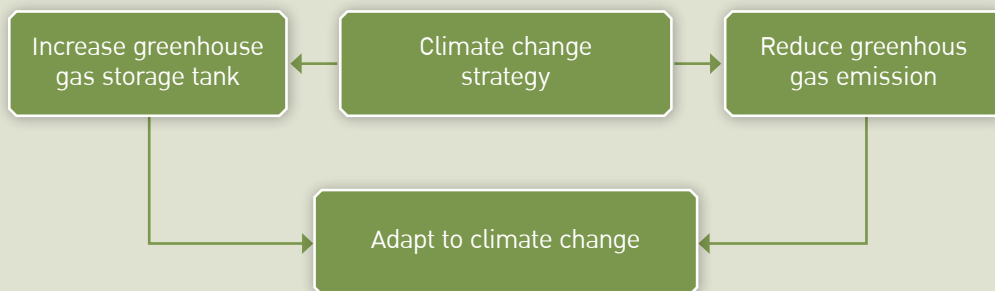
At power plants, there is a procedure in danger identification and risk assessment, through which contractors can apply in estimating their risks. In addition, contractors must present legal document required for some kinds of work, before starting their work. This is to ensure that their operations inside the power plants will not harm individuals, properties, and the generating part. This will also prevent impacts on the community, society and the environment. Through this requirement, contractors will have to fairly treat their workers and be concerned with safety issue.

## Environment

### 4.3 Climate Change Strategy



#### Climate change strategy for sustainable development



The Company has formulated the strategies to prevent, correct and mitigate the impacts of climate change and implemented the strategies to alleviate the impacts from the generating process while maintaining maximum efficiency. Greenhouse gases deriving from the generating process are managed

through guidelines on operations and activities which will significantly reduce the impacts. This covers the reduction of greenhouse gases at source, the increase in storage tanks and adaptation and mitigation of possible impacts on the business.



## Reduction of Greenhouse Gas Emissions

The Company has attempted to reduce the greenhouse gas emission into the environment in every process and to enhance biodiversity. This starts from additional investment in wind, solar and biomass power projects, the increase and maintenance of fossil fuel power plants' generating efficiency and reduction of energy use. It also raises awareness in energy and environment conservation among employees and now communities around the operating areas.

## Management of Investment

- Thoroughly study the policies, regulations and conditions in greenhouse gas management and climate change approaches of the countries that the Company ventures into; for example, the carbon tax in Australia. In focus are also risks related to a change in carbon emission charges, as this could serve as new investment opportunities in renewable energy.

- Invest in renewable energy projects or projects that emit low level of greenhouse gases such as;
  - Gas-fired and hydro power plants are investment priority. These large-scale projects can strengthen

the generating stability, while sending lower impacts on the climate than projects relying on fossil fuels like coal and oil.

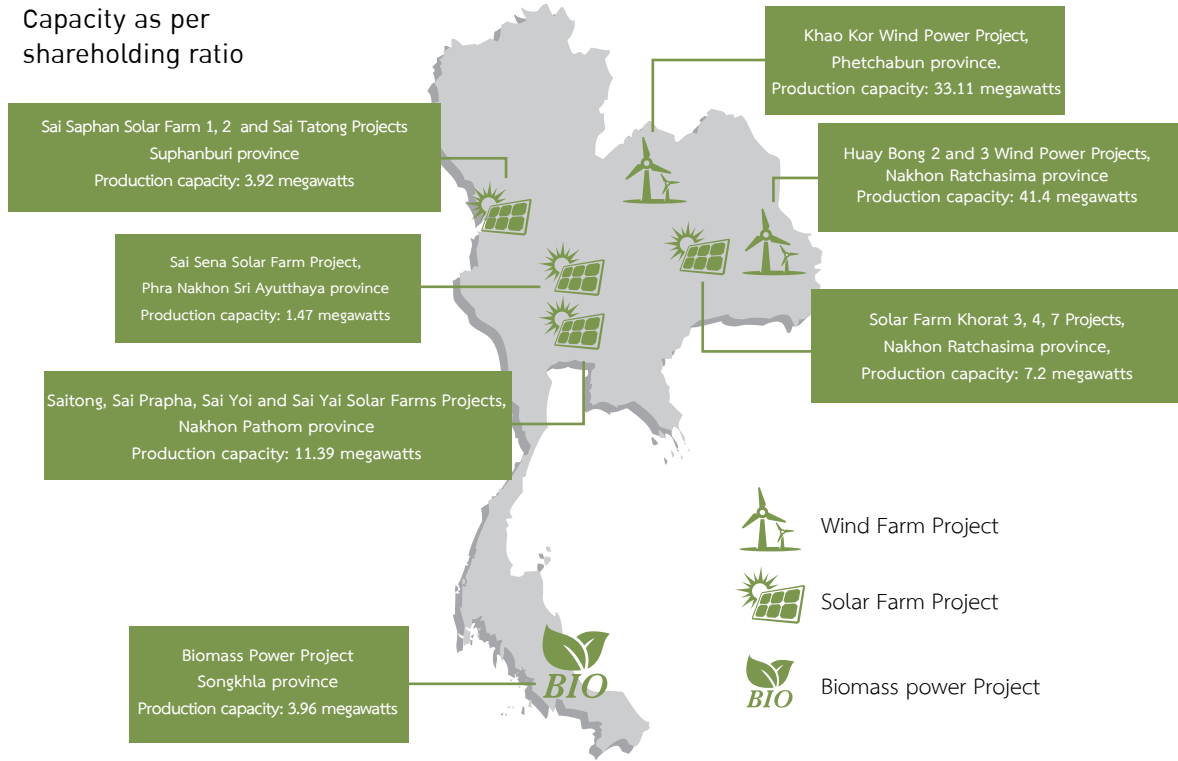
- Generating capacity proportion from renewable sources like wind, solar power and biomass is raised continuously. As per shareholding ratio, the combined capacity in this regard reached 156.45 megawatts. These energy projects are capable of reducing the emission of greenhouse gases by up to 230,855.41 tons per year.





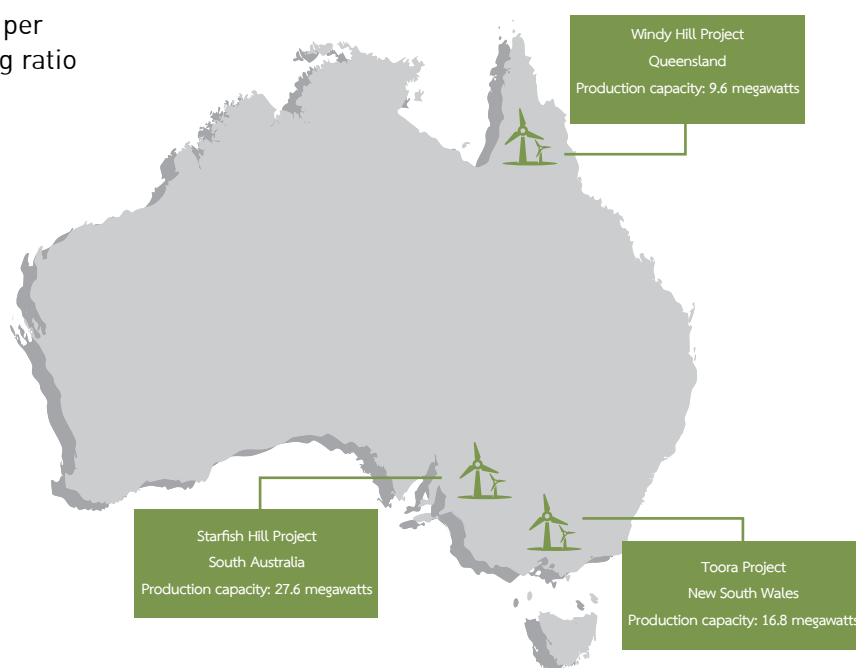
### Map of Renewable Energy Project Sites

#### Capacity as per shareholding ratio



Thailand: Total installed capacity: 102.45 megawatts  
 Australia: Total installed capacity: 54 megawatts

#### Capacity as per shareholding ratio





## Greenhouse Gas Reduction Activities

### Increase Efficiency of Generating Process

- Lighting system improvement through high-efficiency light bulbs at the Ratchaburi thermal power plant, a plant to treat wastewater for reuse, and Petchakasem fuel terminal which reduces energy consumption by 887 megawatt-hour or reduce the greenhouse gases by 454 tons per year.

- An energy-saving project aimed at stopping the use of heater in the Regeneration Anion Resin process. The Reverse Osmosis water, which contains less soluble silica is used instead of service water in the process. As a result, heater is used less in heating up water for the Regeneration Anion Resin process while resin efficiency is maintained through its life cycle. This reduces the electricity consumption by 129 megawatt-hour or reduces glasshouse gas emission by 66 tons per year.

- An energy-saving project to stop using the Agitator Mill Overflow Tank. Limestone slurry concentration spraying in the Flue Gas Desulfurization system in Standby Mode is lessened. This reduces the activation of Agitator. Energy consumption is cut by 45 megawatt-hour, while greenhouse gas emission is cut by 23 tons per year.

### Reduction in Indirect Greenhouse Gas Emission

Air-conditioning equipment is improved along with the lighting system within various buildings. Behavioral change, as a result of energy-saving awareness among employees, help reduce energy consumption by 1,483 megawatt-hour per year, equivalent to the reduction of greenhouse gases by 759 tons per year.

Project	Saved Energy (megawatt-hour per year)	Reduced volume of glasshouse gas (tons per year)
Improvement on the air-conditioning system	62	32
Cut in energy consumption at Headquarters Building	1,421	727

### Reduction of Greenhouse Gases by Business Partners and Suppliers

Under the Company's policy, it specifies conditions in the procurement process, aiming to do business with only suppliers with eco-friendly operations. Suppliers must show eco-friendly certificates for its products and services or the Green Label to single out green products from others. The suppliers are required to come up with international-standard environment management system, as a way to reduce indirect impacts on the climate.



## Creating Awareness in Energy Consumption

Aside from several projects to deal with greenhouse gas management, the Company also ensures the sustainability of climate change mitigation by engaging stakeholders in communities located around the power plants.

The community energy project is extended. In its second year, the project, carried out in collaboration with Ratchaburi Energy Office, covers communities in Tharab sub-district, Muang district and Baan Sing sub-district in Photharam district, in Ratchaburi province which are within the 5-kilometer radius from power plants in the province. The project aims to draw up community energy plans to reduce consumption to the desirable level. With a budget of 200,000 baht, it was implemented through 589 tools of 8 technologies-energy-saving light bulbs, solar dryers, highly-efficient charcoal stoves, biomass fermentation pits, horizontal and vertical charcoal furnaces, biomass stoves and high-efficiency chicken barbecue stoves. A total of 172 households joined the pilot scheme, to change their energy-consuming behavior and adopt the community energy technology in their daily life.

The project allowed the reduction of greenhouse gases by 18.5 tons and helped save the 172 households' expenses by 109,519 baht. The pilot households are aware of energy conservation and their knowledge is extended to nearby householders, which is the objective of this community energy project.



### Interview: A pilot household in the Extended Community Energy Project

Mrs. Anchalee Thongbaiyai, Chairman of the community energy volunteers. Address: 58 Moo 4, Tharab sub-district: "I joined the community energy project from the beginning. Until the Tambon energy plan was completed, I was given a 200-liter vertical charcoal furnace. It produced high-quality charcoal and I sold it. Later, I ordered two more furnaces, having firewood available in the community as the raw material. I earned about 6,000 baht a month from selling charcoal. I also have a high-efficiency stove which demands 30% of charcoal, for the cooking of food for sale. I also have all light bulbs changed to energy-saving ones. This helps reduce the monthly electricity bill by another 300 baht. I became a model for my neighbors."





## Increase of greenhouse gas storage

Aside from lowering greenhouse gas emission in the generating process at source to further alleviate the impact on climate change, the Company is committed to increase the carbon sinks to store greenhouse gases through several activities carried out in its premises and community areas.

### Tree Plantation and Forest Area Preservation

- **Increase of Green Areas of Power Plants**

After the completion of Ratchaburi Power Plant, the power plant has turned all unused land into the green area. Through the past 13 years, the green area has been expanded to 472 rai or 23.4% of the site (above the 5% minimum requirement as defined in EIA).

- **Forest Area Preservation**

The Company has proceeded with the “Love the Forest and Community” project in collaboration with the Royal Forest Department, under the goal to boost the national forest areas 40%. The project has increased the number of trees and community forest areas – the natural carbon sinks - at 873 sites nationwide, covering 791,391.78 rai. In 2013, the Company supported the establishment and management of 159 community forests, covering a total of 109,792 rai. They can store 219,584 tons of carbon dioxide per year. The approach will ensure the preservation of the forests under the communities’ watch, which will promote biodiversity and remain the source of water and food for communities.

- **Study on Community Forest Carbon Storage and Biodiversity**

Under the “Love the Forest and Community” Phase 2 (2013-2017), implemented in collaboration with the Royal Forest Department, a study on “Inclusive carbon storage and biodiversity in community forest” is initiated to estimate the storage volume and monitor carbon accumulation as well as study the biodiversity of participating community forests. The results will be used as

guidelines for the rehabilitation of forest ecological system, that involves community participation. This will increase the forest capacity’s carbon storage and help mitigate the climate change.

The study involves a number of 50 community forests which were granted awards from the “Love the Forest and Community” project. The study period will extend for five years (2013 to 2017). Under the process, villagers are entitled to the orientation as well as forestry officers, so that they truly understand the project detail. They are also trained on the layout of sampling plots, data collection and the means to monitor and analyze the data. This will give an insight on the accumulated volume of stored carbon and the biodiversity of community forest areas. The information can also help in the defining of forest management guidelines, to support the integrated forest management in line with the adaptation and mitigation of the climate change. In 2013, forestry officers and community forest leaders in 12 sites were trained on the layout of sampling plots and the verification techniques. They will be ready to lay the sampling plots and collect data in 2014.

### Cultivate Spirulina Algae with Greenhouse Gases

Ratchaburi Power Plant has initiated a research project, to grow Spirulina algae with waste carbon dioxide from the combustion of the combined-cycle power plant. The algae’s carbon absorption capacity is 9 times higher than trees. In 2013, 1,497 kilograms of dried Spirulina algae have been produced, indicating their absorption of 2.74 tons of carbon dioxide. Moreover, Ratchaburi Power Plant is in the process of developing a project to grow algae for biodiesel production. This project will also bank on waste carbon dioxide. The project is in collaboration with the Department of Alternative Energy Development and Efficiency, Ministry of Energy; with Bangchak Petroleum Public Company Limited and Loxley Public Company Limited. The cultivation wells are being constructed and algae breeds are being selected.

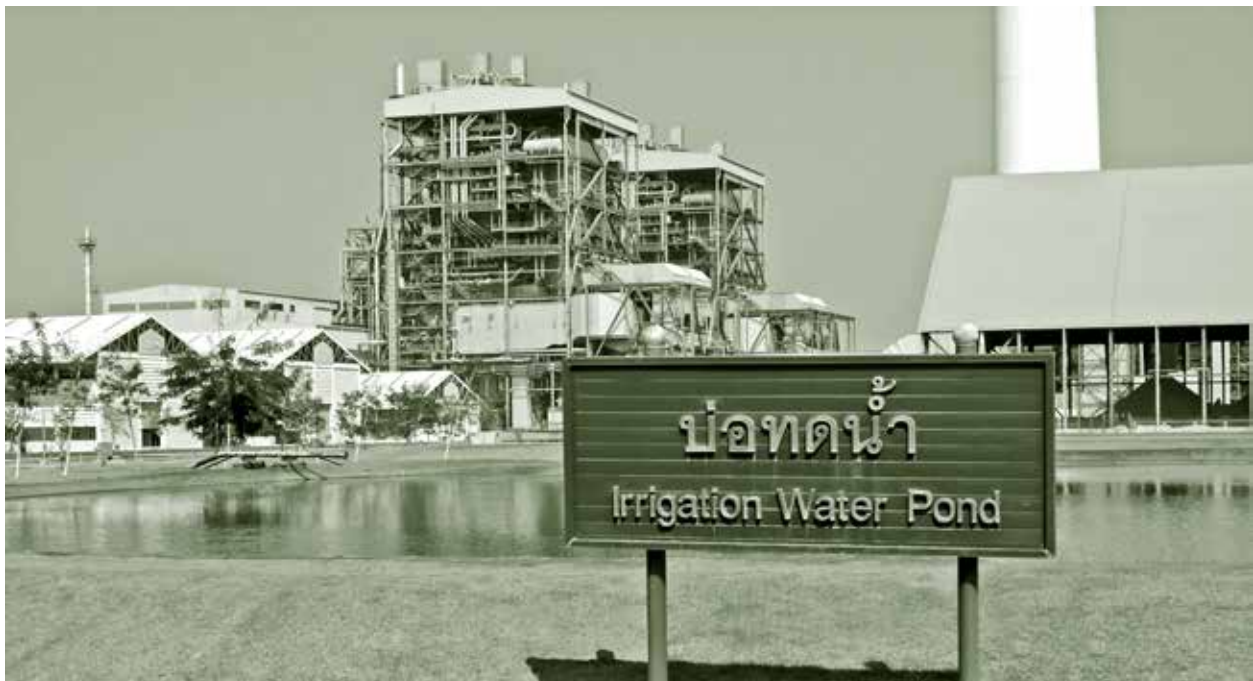
## Adaptation to Climate Change

### Water Management

The climate change can affect power plants. Drought may cause the decline in raw water level (in Mae Klong River) and a possible fight for raw water between power plants and the communities and agricultural farmers in the river basin. Although Ratchaburi Power Plant's water consumption averages about 1% of the volume of water released from Mae Klong Dam, the power plant is prepared and has measures in place to cope with the shortage of water as a result of the climate change. The power plant circulates water for heat exchange of the cooling system. When the water's turbidity reaches a certain level, it would enter the treatment process. This is to reduce the volume of water usage in the generating system. A reservoir is built in the premise to store rain water, which is used to water trees. In addition, there is a scheme to improve the quality of discharged water for re-use, to reduce the usage of the raw water and manage water resources for maximum benefits.

### Preparation for Flood Disasters

Due to the major flood disaster in 2011, the risk weight of floods has been heightened. There is an under-study project to accumulate more flood impacts. There are also measures to improve the design of power plants, the construction of the power plant's foundation, the layout of the level of key power plant equipment placement and the design of the water drainage and flood prevention system inside the power plant's area. Existing power plants - Ratchaburi Power Plant and Ratchaburi-Power Power Plant - have also studied flood risks, to formulate additional preventative measure. The study showed that the two power plants have the least flood risk probability thanks to the efficient water management system as well as the high level and strength of the earth embankment around the plants. The two power plants have strengthened the earth embankment around the premises and created the contingency plan to cope with emergency flooding.





Ratchaburi Power Plant has produced an emergency flooding counter manual. This details the plan and procedure to deal with the emergency flooding inside the power plant's area. The step-by-step plan will be able to deal with the incident in a fast, correct and efficiency way, to prevent and reduce losses to personnel, property, the production process and the environment. The plan also equips relevant officers with knowledge to carry out their responsibility. A drill is on a yearly basis. The power plant classifies the level of severity of the circumstance as follows:

- **Level 1 severity** means flooding incident that is controllable by officers of the responsible area units.
- **Level 2 severity** means the flooding incident that is controllable by the use of all available resources in Ratchaburi Power Plant.
- **Level 3 severity** means the flooding incident that cannot be contained by all available resources within the Power Plant. External assistance will be sought to work jointly with the power plant in tackling the incident.

Moreover, in 2012, Ratchaburi Power Plant and Ratchaburi-Power conducted a study and assessed the risk of possible flooding in the area. Risk assessment, preventive measures and mitigation measures from the incident have been accumulated, for further preventive actions, to ensure their ability in efficiently handling any levels of flooding disasters.

#### Leveling Up of the New Office Building

The flood disaster in 2011 which wreaked havoc in many provinces of the country including Bangkok and peripheral provinces has also affected the new office building. Located in Nonthaburi, the office building was in the middle of foundation work at the time.

Thanks to that incident, it prompted the Company to readjust the construction of this new building. The flood level in the year was used in the engineering design while the construction site was readjusted. With a budget of 7.7 million baht, the foundation was leveled up while solid wall was erected to serve as embankment. Two additional reservoirs were constructed to store the water, before flood may reach the ground level of the building.



## 4.4 Project Management



A power plant requires a huge amount of investment and it takes 5-7 years before the commercialization can start. The project feasibility study, risk analysis as well as the investment worthiness are therefore the process of considerable importance, for the Company's consideration if it should proceed with the project.

The process of feasibility study and due diligence of the project will cover every dimension to analyze the project's risks, worthiness and returns on investment. The process and procedure are clearly defined and the internal team as well as external team must follow the description thoroughly and cautiously.

Importantly, after approving the investment, the Company will focus on the cost control and ensure that the project development and construction are in line with the schedules specified in the power purchase agreement. Other than that, it is the risk management particularly in the acceptance of the community around the project site and the environmental impact.







## Assessment of the Impacts

The assessment and the analysis of the project is an important stage in the development. There will be a public participation to sound out opinions of the community located within the radius of the impact, as part of the impact analysis and the formulation of preventive and corrective measures. This is to ensure that the project development responds to the community's concerns. On technical issues, project designing will be studied and technology that can reduce the impacts from the generating process will be selected. The study findings will be used to define additional preventive and corrective measures.

The impact assessment on the power plant development will focus on 2 main issues, namely, the environmental impact and health impact. The result of the assessment and analysis of the impacts will lead to the formulation of preventive and corrective measures and the formulation of the environmental management implementation plan. The plan will be put in practice from the first day that the construction work starts until the end of the power plant's commissioning period.

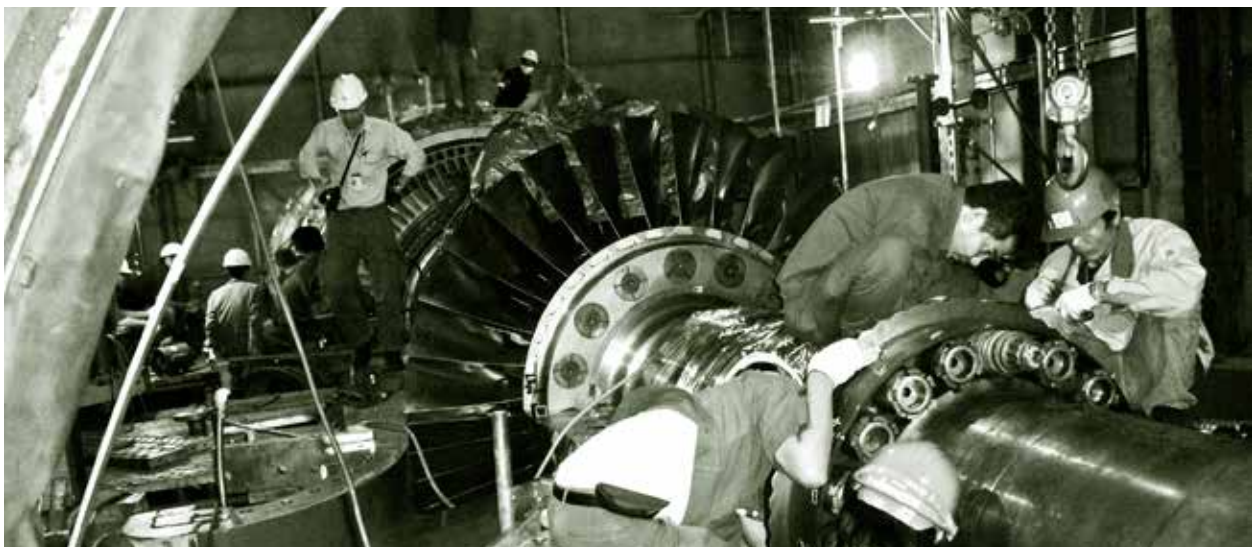
Ratchaburi Power Plant's important measures to reduce the impacts include the installation of the 24-hour pollutant monitoring equipment at the top of the stack, the installation of the air quality monitoring stations in the community, the installation of the noise absorbent equipment within the power plant area and plantation of trees around the premise as noise barrier.

## Project Risk Management

The Company analyzes and assesses both internal and external risks which will affect the project development.

Major internal risks include the capability and efficiency of the power generating readiness and the shortage of fuel and water. In this regard, the Company has made some preparations. For example, the Company has specified the commissioning plan for customers in the power purchase agreement as well as the maintenance schedules. The technology can accommodate the switch to 2 types of fuel. A contract is struck to secure fuel supply throughout the power purchase agreement. A reservoir is constructed in the premise for the storage of sufficient raw water for power production. The water quality enhancement system is installed to re-use the water inside the power plant.

External risks may stem from the amendment of the law, rules and regulations to accommodate the global climate change. In this connection, the Company has considered to use the carbon trading market mechanism in reducing the impacts from such risks. Moreover, community's rights to take part in the project monitoring is one of the risk that wins the Company's concern. This is addressed by establishing communication channels with the community for consistent communications.





## Process Safety

Process safety is a top priority of the Company and it is deemed to be a key risk that could not only affect the property but also employees' lives. There is a process safety plan which is strictly enforced on all employees and outsiders working in the premise.

The process safety management at power plants focuses on key issues such as the work environment, operation-related accident and fire prevention. The measures defined by the power plants to prevent and mitigate safety-related issues will be applied both during the construction and operational periods.

## KEY Measures in 2013

### 1. Guidelines for natural disaster risk management at Nava Nakorn Cogeneration project

#### Exemplary Case

#### Preventive Measure against impacts from flood disaster of Nava Nakorn Cogeneration Project

Nava Nakorn Cogeneration Project is located in the Navanakorn Industrial Estate, Pathumthani province. The plant is due for commercial commission in 2016.

The project development started in 2010. In 2011, following the flood disaster, the Company resolved to include flood disasters as significant risks to the operations and accordingly formulated measures to deal with the risk.

#### Goal

- To prevent and reduce losses to the power plant
- The power generation can proceed continuously and is least impacted by flood disaster (if any).

#### Procedure

- Conduct a study of the highest flood level in the past 100 years, as data for the planned elevation of project site level and the upward leveling of key equipment above the highest flood level shown in the study.
- Re-inspect the level of the project area and inspect the characteristics of the location soil. The data obtained will be used to analyze the landfill method in the project site area and the proper design of the foundation of the power plant, so that it can accommodate flood when they come.
- Study flood protection measures and water drainage system in the project area. The results are used for designing flood prevention system and the water drainage system in the project area, which is an extra system above the flood prevention system of Navanakorn Industrial Estate.

#### Success

- Actions under the plan have been approved and inspected by water experts, specialists in flood prevention system and insurers thoroughly.
- The implementation was incorporated in the Report on Environmental Impact Assessment of the project, which has already passed the review and approval from the Office of the Natural Resources and Environmental Policy and Planning.

## 2. Operational Safety of Ratchaburi Power Plant

Exemplary Case	The enhancement of the operational safety efficiency under the OHSAS 18001 standard at Ratchaburi Power Plant
<p>Ratchaburi Power Plant has improved the operational safety plan continually and in 2011, it introduced the occupational health and safety management guidelines under the OHSAS 18001 standard to upgrade the efficiency and effectiveness of the safety and occupational health management.</p> <p>In 2013, Ratchaburi Power Plant completed the Environment, Occupational Health and Safety Management Master Plan. In relation to safety, the power plant is resolved to control and prevent danger which may cause damage to officers and others as well as property and the operational process. The work environment was also improved along with the introduction of safety-related promotion activities.</p>	
<p><b>Goal</b></p> <ul style="list-style-type: none"> <li>- To prevent personnel accident (to the extent requiring work stoppage) to Zero.</li> </ul>	
<p><b>Key Actions</b></p> <ul style="list-style-type: none"> <li>- Impose safety and environmental control measures on all contractors, operating in the premise of Ratchaburi Electricity Generating Co., Ltd., to ensure legally-required safety to all workers in the premise. This will also ensure safety of property and the production process.</li> <li>- Formulate the safety plan for plant maintenance to ensure that the safety measures are strictly followed in every stage.</li> <li>- Launch the project “STOP WORK AUTHORITY” to support and encourage every responsible individual to honor safety control. Officers are authorized and responsible to stop any work or activities, which are deemed unsafe or sub-standard which may lead to accidents.</li> </ul>	
<p><b>Success Indicators</b></p> <ol style="list-style-type: none"> <li>1) Zero injuries work disruption: based on the Disabling Index (DI) which is 0.05 or less.</li> <li>2) In 2013, Ratchaburi Power Plant ably prevented personal accident. There was no occurrence of injury work disruption. The Disabling Index (DI) was 0.00.</li> </ol>	



## 4.5 Operational Excellence



### Stability and Availability

The Company is demanded by EGAT to generate and distribute power, by meeting the generating quality and standard, as well as the conditions on volume and schedules. In this regard, the Company must ensure the sufficient and stable electricity system. Main power plants especially Ratchaburi Power Plant have always stood ready to operate above the requirements specified in the power purchase agreements and above the annual targets.

To maintain the availability of distribution, proactive maintenance to raise the readiness, which may be disrupted by equipment damage and work process, is necessary. The Ratchaburi Power Plant thus keeps the production cease rate of its Thermal Power Plants and Combined Cycle Power Plants below the NERC (North American Electric Reliability Corporation) standard,

compared to other power plants with the same capacity.

The measures include:

1) Ratchaburi Power Plant has entered the Operation & Maintenance Agreement (O&M) to guarantee availability. The monitoring and assessment of O&M performance specified in the service agreement is regularly done.

2) Ratchaburi Combined Cycle Power Plants have a long-term Contractual Service Agreement on spare parts with its partner. The contract, struck in 2005, will be expired in 2027 when the power plant will be decommissioned as specified in the power purchase agreement. The agreement is to raise the generating availability and reliability and reduce the maintenance period, which helps set and limit the maintenance cost.

Due to the fuel efficiency policy and management, through regular maintenance, Ratchaburi Power Plant's Equivalent Availability Factor and Reliability Factor in 2013 stayed above the annual target. This demonstrated the consistently increasing power plant management efficiency.

Ratchaburi Power Plant	(Equivalent Availability Factor: EAF)		(Reliability Factor: RF)		(Dispatch Factor: DF)	
	Target	Achievement	Target	Achievement	Target	Achievement
Thermal Unit1	82.23	84.10	97.50	100.00	25.00	28.62
Thermal Unit 2	82.23	79.63	97.50	94.09	25.00	28.46
Combined Cycle Block 1	90.09	91.32	96.07	97.01	70.00	71.09
Combined Cycle Block 2	80.01	80.46	80.13	93.97	70.00	74.55
Combined Cycle Block 3	92.43	93.00	98.57	98.69	70.00	66.89

## Environmental Management

As a major power producer, the Company pays high attention to preserve and protect the environment, with priority placed on environmental impact prevention from the pre-construction stage, particularly in the designing stage. High-efficiency pollution control system was installed during construction period, to ensure that the environment quality will be properly cared from the first commissioning date.

The Company has drawn up and implemented measures to reduce operational risks in two ways.

One way is to deal with risks to society, environment and economy, to specify environmental management measures in line with legal requirements and raise awareness among relevant officers to ensure compliance to requirements and behavioural changes for better environmental preservation. The other is to deal with corporate risks, arising from environmental changes or the climate change. This requires the Company to constantly improve the operations, to maintain efficiency and reduce the usage of natural resources and greenhouse gases, which will allow appropriate mitigation.



### Environmental Management Approach

1) Study and assess a project’s environmental impacts prior to the start, which include community participation in expressing their concerns on environmental issues.

2) Comply with relevant laws and regulations identified in the Environmental Impact Assessment Report.

3) Maintain operational efficiency.

4) Adopt the 3R principle (Reduce/Reuse/Recycle) in the production process.

5) Apply the environmental management standard ISO14001: 2004 and the environmental, occupational health and safety management standards OHSAS 18001: 2007, to ensure the systematic operation of the power plant and standardized readiness to respond to emergency incidents and complaints from concerned parties. The operations are assessed every six month.

6) Join the Corporate Social Responsibility scheme of the Department of Industrial Works (CSR-DIW), marking the transformation into the green industry.

7) Generate energy from renewable sources.

8) Educate and raise awareness on energy and natural resources conservation among staffs and other stakeholders.



## Air Quality Management

Ratchaburi Power Plant is equipped with pollutant control system and the air quality monitoring system to minimize impacts on air quality. The measures exercised are as follows.

- Install the Flue Gas Desulfurization System (FGD) when the Thermal Power Plants were under construction. This results in the 97.2% desulfurization efficiency.
- Equip the combustion system of Thermal Power Plants with a Low NO<sub>x</sub> Burner that ensures the low nitrogen oxide emission level and the Flue Gases Re-circulation techniques. The Combined Cycle Power Plant's combustion system is equipped with the Dry Low NO<sub>x</sub> Burner, to control nitrogen oxide when natural gas is fired. When diesel is in use, the demineralized water will be sprayed into the combustion room to keep temperature low enough to prevent the oxidization of nitrogen.
- Regularly check the pollutant control system, through the installation of the Continuous Emission Monitoring Systems (CEMs) at all power stacks.
- Install the Ambient Air Quality Monitoring Systems (AAQMs) at four community areas around the power plant, to monitor the air quality in general.

## Air Quality Monitoring Results

The monitoring of air quality from power plant's stacks throughout the year 2013 found that while generators are working with natural gas and/or fuel oil, the released pollutants – sulphur dioxide, nitrogen oxide and dust opacity - were within standard levels. None of ozone-depleting substances was deployed in the generating process.

In addition, Ratchaburi Power Plant also monitored community air quality through the 24-hour monitoring stations. At the stations, the volume of sulfur dioxide, nitrogen oxide, ozone gas and dust particles smaller than 10 micron were monitored. Mostly, they are within standard levels.





## Noise Management

The power plant initiates a scheme to reduce noise pollution by the plantation of trees around the premise. Beside the noise barriers, a large buffer zone is in place, particularly in the parts near community residential areas. There are also noise control measures as follows:

- Stop all noise-generating activities during night time. Noise in a 1-meter radius from the generating area is maintained below 85 decibel (A).
- All officers in the power plant must wear noise protection equipment such as earmuffs, when in the area with noise above 90 decibel (A), and must work no exceeding eight hours per day.
- Noise level is monitored every three months.

### Noise Level Monitoring Results

The four annual noise monitoring throughout 2013 showed that the average and maximum noise level was within the specified standard levels.



## Waste Management

### General Waste Management

- Recyclable waste: The recycle bank will buy recyclable waste from units operating inside the power plant.
- Wet garbage and non-decomposing or non-recyclable waste: The power plant hires Ban Rai Municipality to collect the waste and transport it to the landfill. At the landfill area, the municipality will segregate the waste and retrieve the recyclable items.

### Management of Waste from Production Process

To cope with 163.59 tons of waste from production process, which are both hazardous and non-hazardous, the power plant hires authorized waste management

service providers. Another company takes charge of the oily waste, such as oil-contaminated water, which will enter the segregation process and retrieve the reusable oil. In this regard, only the company with techniques to reuse the waste and not to handle it through the landfill approach will be contracted. The waste could enter the recycling process or turned into fuel for the production of steam for industrial use.

Some 4,600 tons of gypsum arising from the Thermal Power Plant's desulfurization process are buried at the landfill site inside the power plant's premise. It could be reused or sold as raw material to cement plants. The power plant has measures to monitor the quality of underground water around the site, to prevent water contamination.



## Biodiversity Conservation

The power plant conserves and improves the existing ecosystem for wildlife biodiversity in and around the site. There is a study on wildlife diversity, population and spread, to monitor and prevent negative impacts from the power plant on the animals, particularly birds which is the main indicator of the plant's environmental quality. In 2013, 74 bird species were found (64 local and 10 migratory). The survey has been conducted continually since 1997 when the power plant construction started.

## Water Management

In 2013, Ratchaburi Power Plant used 23.8 million cubic meters of raw water from the Mae Klong River for the generating process. It accounted for 0.95% of total water consumption of the power plant and it helped generate 14.6 million megawatt-hour of power. Only 3.6 million cubic meters of treated water were released to Khlong Bangpa.

## Water Quality Measurement

The consistent water quality measurement in the past years shows that all water quality indicators meet the waste water standards. The power plant also initiated a project to enhance usage efficiency, as water is a shared natural resource. The treated water is reused as much as possible, to reduce the volume of required raw water and reduce the volume of waste water to be discharged to the natural waterway.

Ratchaburi Power Plant's water usage varies to electricity supplied into the grid. The water usage efficiency remains at the maximum level. The quality of water in the cooling system is controlled, so that it could be used for 3-4 rounds before discharge, to ensure maximum use. Periodical spikes in water usage occur when the power plant is restarted after maintenance.





Ratchaburi Power Plant's water usage averages about 1% of water released from the Mae Klong Dam. As the released volume tends to decline, the power plant has put in place measures to cope with possible water shortage and possible risks in fighting for water with communities and agricultural farmers in the Mae Klong River basin. A reservoir is constructed to store fresh water, which is used to water plants. A reused water scheme is initiated to reduce the use of raw water. Meanwhile, the power plant has the scheme to maximize water usage.

### Improving quality of reused water by Reverse Osmosis (RO) and Ultra Filter (UF)

The project is initiated for maximum water usage efficiency. The power plant has built the Cooling Water Reuse Plant (CWRP), which employs the Ultra Filter (UF) and Reverse Osmosis (RO) technologies. Water from wastewater holding pond 1 goes through many filters including the cell-level filter and the treated water is reused in the generating process. In 2013, 806,746 cubic meters of water were treated by the RO and UF systems, producing 381,795 cubic meters of RO water which represented 2.7% of total raw water used in the operations.



### Natural Means to Reduce Waste Water Drainage

Treated water is reused in the once-wetland 350 rai area, on the west of Ratchaburi Power Plant. The water is used for watering plants in the organic agricultural demonstration area, which is managed in cooperation with the Military Engineer Department in Ratchaburi Province. The plantation comprises a 23 rai rice paddy field which can produce two crops a year. In 2013, it yielded 16 tons of "Suphan Buri-breed" rice, which was delivered to the Military Engineer Department. Moreover, the water is also used to create wetland, where water animals and birds can live and serves as the nature observation center for youth and the general public. Ratchaburi Power Plant also used the treated water, of which quality meets the Royal Irrigation Department's requirements, in watering trees in the premise, to help reduce waste water discharge and raw water usage.

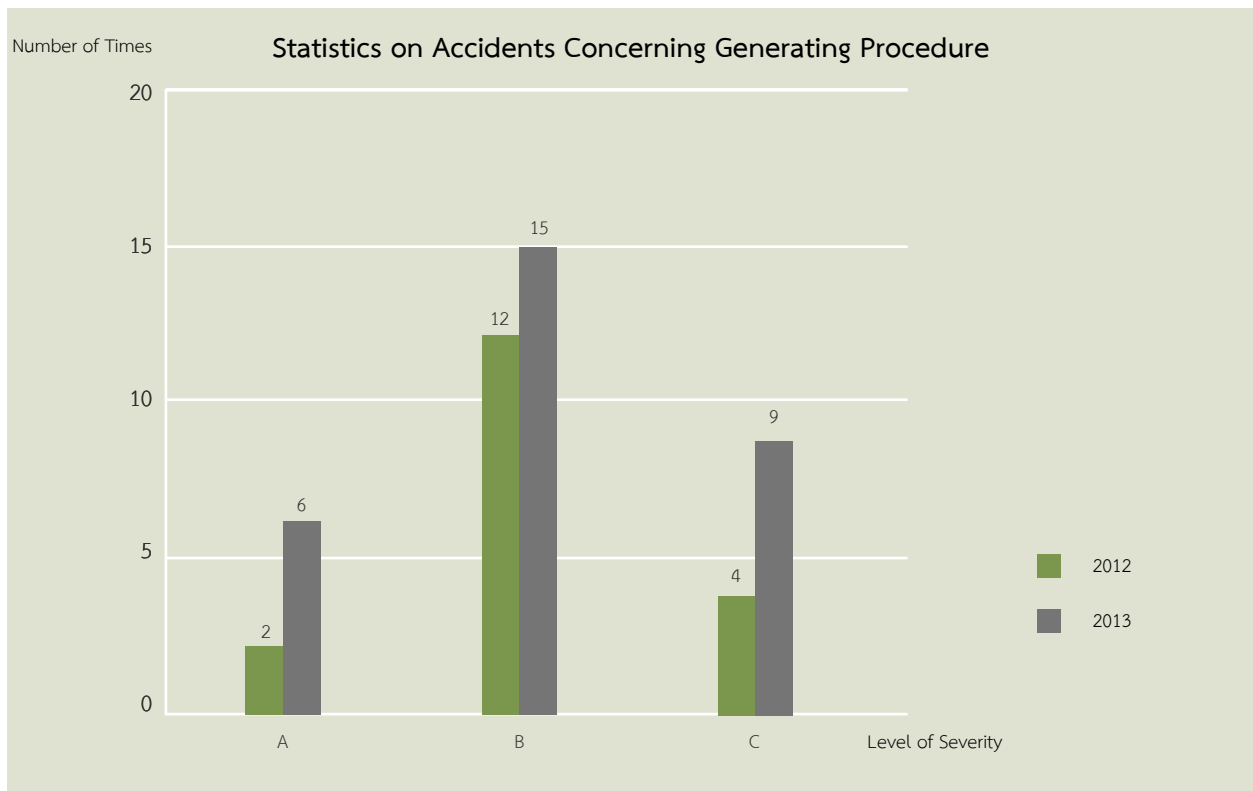


## Safety

Comparative Statistics of Overall Accidents at Ratchaburi Power Plant in 2012-2013

### Accidents Concerning Generating Process

The accidents refer to unexpected incidents which result in the loss of power generation availability and distribution.



### Note

Severity Level A: Loss of over 80% of each unit's availability factor

Severity Level B: Loss of 50-80% of each unit's availability factor

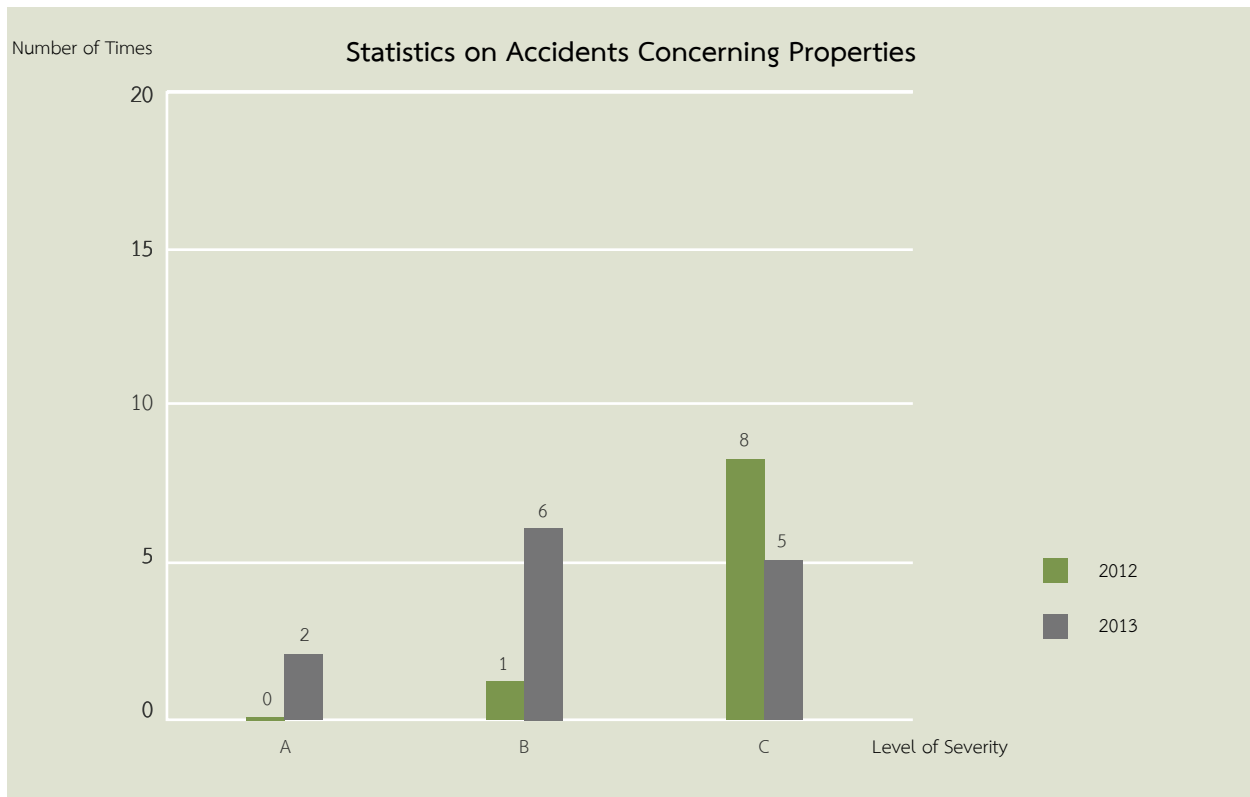
Severity Level C: Loss of less than 50% of each unit's availability factor





## Accidents on Properties

Accidents on properties refer to the unexpected incidents leading to losses of the Company's properties. The properties may or may not be part of the generating process.



### Note

Severity Level A: Loss of assets worth over 500,000 baht

Severity Level B: Loss of assets worth 50,000-500,000 baht

Severity Level C: Loss of assets worth less than 50,000 baht

The 2013 loss of assets and the generating process exceeded those of 2012 because the deterioration of power plant equipment, which demanded a higher maintenance cost. Meanwhile, under the power purchase agreement, the base availability credit of the Combined Cycle Power Plant Block 2 in 2013 was higher than in 2012, requiring more deduction in case of the availability loss. Moreover, under the National Control Center (NCC)'s dispatching,

Ratchaburi Power Plant generated more power from fuel oil in 2013 than in 2012. The fuel oil-based reliability factor is lower than the gas-based one. As such, the NCC's dispatching which required more generating from fuel oil for a longer period than the year 2012, resulted in the lower availability factor.

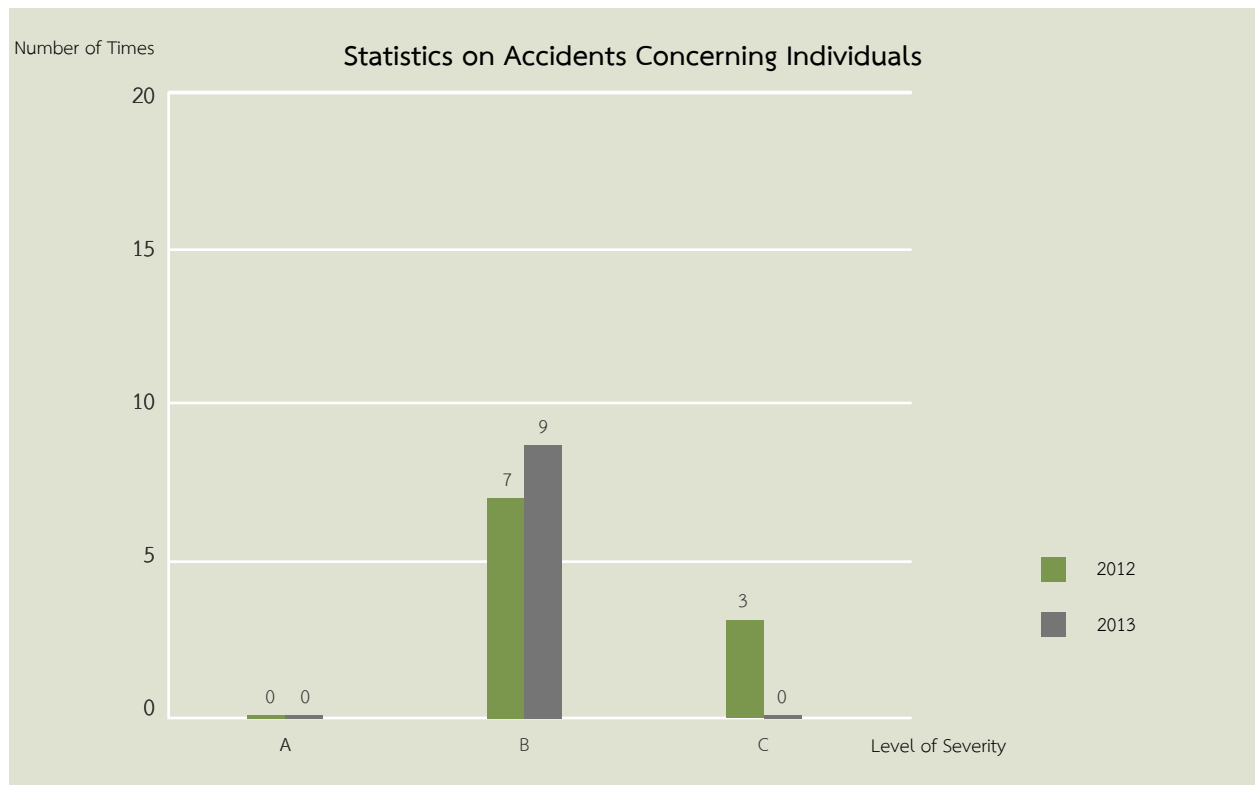
### Preventive Measures to Mitigate Losses from Generating and Assets-Related Accidents are as follows:

1. Conduct the major overhaul of two generators of the Thermal Power Plant in 2013 and the major overhaul of Combined Cycle Power Plant Block 3 in 2014, to replace and repair worn-out equipment and maintain the generators' generating efficiency.

2. Assign the Electricity Generating Authority of Thailand, the consigned operator and maintenance service provider of Ratchaburi Power Plant, to prepare re-work management plan to reduce loss of generating hours.

3. Include the operational reliability factor into the KPI to evaluate the operations and maintenance of Ratchaburi Electricity Generating Company Limited (RATCHGEN)'s power plant. The task is performed by the officers of EGAT, which is contracted to maintain the power plant.

### Accidents Concerning Individuals



#### Note

Severity Level A: Death, disabilities, loss of body parts, over 7 days of work stoppage

Severity Level B: From medical treatment at hospitals to fewer than 7 days of work stoppage

Severity Level C: Minor injuries, i.e. irritation from dust or bruises



The value of loss from accidents concerning individuals was based on actual medical treatment costs. However, there was no incident that led to work stoppage. These accidents were caused by the workers' negligence to safety rules; for example, refusal to wear the available safety equipment. To cope with this, the Company sets the procedure, requiring all workers to attend safety training and be notified of related risks in their work. In addition, all working safety staff (SS) are required to inspect the safety condition of the work area and workers' readiness. The "STOP WORK AUTHORITY" system is implemented to control the operations. Authorized staff have the power to stop any operations or activities where risks are prominent or when the generation condition is below standard.

### Stop Work Authority Activity

The Stop Work Authority (SWA) was the top executive's authority passed on to all levels of officers, to stop any activity considered unsafe to practitioners or when the environment is unsafe and may cause accidents. This demonstrates the participation of all employees in the issue concerning safety.

## Safety, Occupational Health, and Working Environment Measures in 2013

### 1. Ratchaburi Electricity Generating Holding Public Company Limited (RATCH)

In 2013, the Company announced the policy on safety, occupational health, and working environment as well as organized the election of the Committee on Safety, Occupational Health, and Working Environment. The committee consists of representatives from all areas of work, as the collected efforts to provide safety to all workers or individuals entering the office building and persons related to the Company.

The committee had launched a campaign to raise awareness and understanding in safety during working hours and off-hours. The manual on safety, occupational health, and working environment was produced, along with consistent communications with job practitioners through different channels.

The activity working on the 5S workplace organization method also involves members from all business units and is another tool to support the implementation concerning safety, occupational health and working environment. The activity is to put the workplace in order and promote disciplines among employees. Through the E-Document method, the electronic data storage system is available to all employees, which helps save office space for data storage and prevent loss of data and document. The faster and more convenient search and reproduction of the information are also guaranteed through the store in the computerised data system.

The Committee on Safety, Occupational Health, and Working Environment also organized a safety exhibition under the "Safety in All We Do" theme, to encourage employees' awareness and realization of the significance of working-hour and off-hour safety so that they apply such knowledge with their daily life. It also initiated the Best Suggestion Award 2013, targeting employees at all levels to realize any possible danger at workplace and jointly define practical preventive measures and solutions.



## 2. Ratchaburi Electricity Generating Co., Ltd. (RATCHGEN)

### Safety Measures

Ratchaburi Power Plant has managed risks systematically by conducting risk assessment of all activities and having proper control measures which are in line with legal requirements and other regulations. This is to keep risks at the acceptable level and ensure that the power plant will operate efficiently and will not create harmful impacts on job practitioners, communities and the environment.

Ratchaburi Power Plant is subjected to the biannual inspection by the external auditor, which focuses on the measures under the Occupational Health and Safety Assessment Series (OHSAS 18001). The internal auditor subsequently validates the system and procedures twice a year. The reviews in the previous years showed no significant fault in the area.





## Social

### 4.6 Our People



#### Human Resources Management

The Company's policy is to consistently improve human resources management flexibility, with full compliance to legal provisions and a non-discriminative approach. Employee unity is promoted through activities, while the Company offers appropriate compensation and welfare, creates the positive and safe workplace environment as well as raising awareness on volunteering on top of ethics.

##### Personnel Recruitment and Selection

The Company puts in place the rational and fair selection procedures, based on skills, abilities, experiences, and suitable qualifications, conducted through job interviews, specific aptitude test, psychological test, and analytical thinking ability test. This is to win individuals most suitable to the jobs and the organization.

##### Compensation and Welfare

The Company has the fair compensation and welfare policy for all employees. The rates are competitive with other companies in the same industry. Annual pays are adjusted according to performances, evaluated by individual employees and their operating units under the Key Performance Indicator (KPI) mechanism. The Welfare Committee is in place at the workplace to improve the welfare system and employees' quality of life in accordance with laws and international standards.

The welfare covers supports to employees in various aspects; for example, social security fund, provident fund, medical welfare of employees and their families, annual check-up, contributions for disaster victims, allowance for child's delivery, and accommodation welfare.



### Employee Turnover Rate

The Company is committed to create work motivation and reduce the turnover rate. In 2014, the Company plans to improve the salary structure with help from an external agency which will study, analyze, and evaluate the current structure, to maintain the competitiveness.

In the meantime, the Company has planned activities to strengthen employees' organizational bond and narrow the gap between managerial executives and operational employees. The activities, also aimed at quality of life improvement, will promote work-life balance, health promotion, happiness, satisfaction, and personnel motivation, for instance.



### Development of Personnel Competency

The Company's aim is to let employees grow together with the organization. Consequently, consistent competency development programs have been launched in line with the Company's business direction.

In the previous year, the Company's human resources development plan, extended by internal and external centers, cost over 5 million baht. This consisted of training, seminars, field trips, group

sessions, job rotation for personal experience, on-the-job training by supervisors, skill development based on fields of work, and promotion of the quality of life.

Based on the strategy to expand overseas investment, the Company has built up the workforce accordingly. Foreign language training is in place, aside from handbook for overseas living to equip the expatriate workers with knowledge on local cultures and traditions.

Average Hours of Training Attendance Classified by Position Level Year 2012-2013

Position Level	RATCH		RATCHGEN	
	Total Means (Hours/Person)			
	2012	2013	2012	2013
High-Level Management	69.25	73.81	51	12
Mid-Level Management	18.37	28.30	24	16
First Level Management	21.77	26.83	12.86	51.23
Operational Employee	22.79	33.68	22.54	17.56



Average Hours of Training Attendance Classified by Gender Year 2012-2013

Gender \ Year	RATCH		RATCHGEN	
	2012	2013	2012	2013
Male	18.74 Hours/Year	32.03 Hours/Year	11.25 Hours/Year	17.45 Hours/Year
Female	28.12 Hours/Year	34.95 Hours/Year	14.50 Hours/Year	9.60 Hours/Year

Performance Evaluation

1. Performance evaluation of high-level management

The Board of Directors are tasked to evaluate the performance of high-level management including Chief Executive Officer, Chief Operating Officer, Chief Finance Officer, Deputy Chief Executive Officer and Executive Vice Presidents, based on their performance against the Company’s performance. The Corporate Key Performance Indicator is specified on an annual basis.



2. Employee Evaluation

All employees will be evaluated. The evaluation is in two ways; achievement against the Key Performance Indicator (KPI) in function level and individual level, and individual competency. Through the competency assessment, employees’ skills, knowledge, abilities, and work behaviors are revealed against expected competency in each position required by the Company. Competency assessment focuses on core competency and functional competency. Core competency is linked with the organizational core value of desirable behaviors. Functional competency is the specific qualification of each profession. The results of these assessments are analyzed and used in human resources development planning, to appropriately enhance individual capability.



## Development of Succession Plan

In 2014, the Company plans to formulate the Succession Plan for key positions in order to prepare capable personnel for managerial positions in the future. Under business strategy plan, key positions are planned. A group of appropriate persons will be selected and the Individual Development Plan (IDP) is designed, to prepare them for greater responsibility. The succession plan assures that the Company's managerial positions will be occupied. The plan is also tool to retain talented personnel.

## Treatment for Employee Working Aboard

Under the overseas business expansion plan, preparation of employees for overseas posts is of huge importance. The Company has prepared the employees for the overseas work environment through a handbook to guide them about different countries. The employees are given training on English and local languages, local culture and tradition, and work procedure guidelines. As assurance, the

compensation and allowances are set in accordance to the countries they will be. Employees are entitled to life and accident insurance and travel insurance, to smoothen the overseas operations. In 2014, the Company establishes a new unit to take charge of overseas employees.

## Employee Activities

The Company puts emphasis on employees' activities in order to create good relationship between employees and executives and also to promote good health among employees. A fully equipped fitness area is provided in the office for executives and employees, where they can exercise, meet and do after-work activities. Employees are also allowed to form activity club accordingly to their interests, to promote learning in club management skills as well as teamwork. Aside from organizational harmony, this also develops the other competencies of employees.



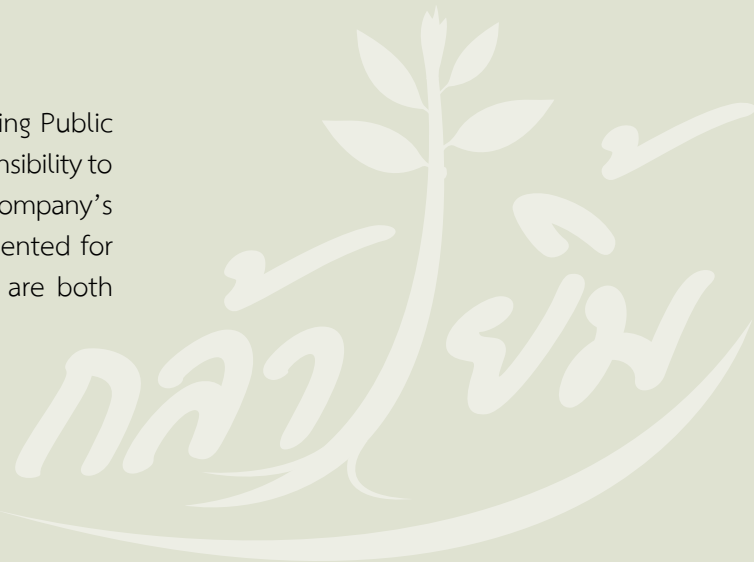


## 4.7 Community and Social Responsibility

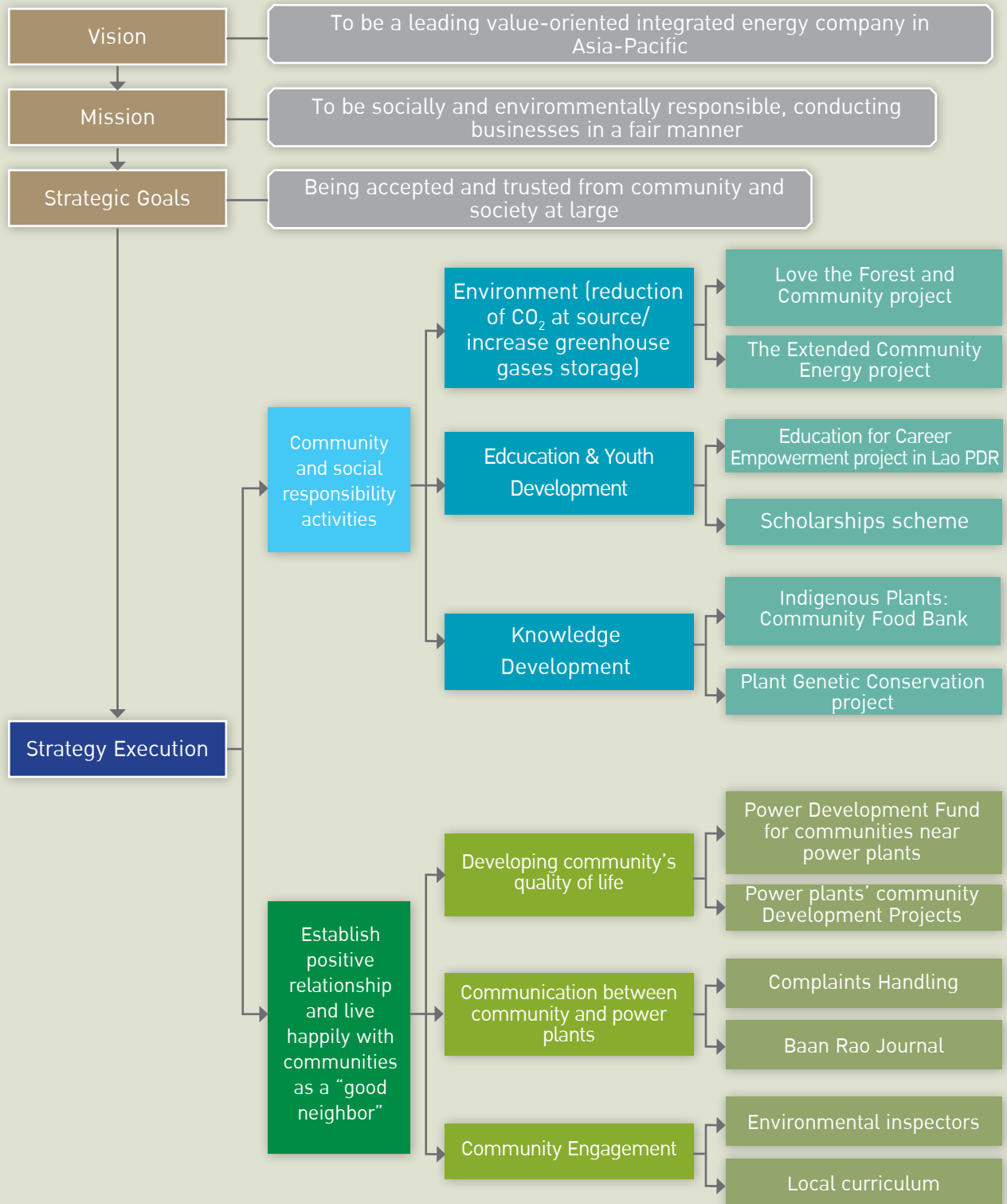


### Responsibility to Community

Ratchaburi Electricity Generating Holding Public Company Limited is fully aware of its responsibility to the community and society. It defines the Company's mission which must be seriously implemented for tangible results for target groups, which are both direct and indirect stakeholders.



### The process of community and social responsibility





## Community and Social Responsibility Activities in 2013

The community and social responsibility activities are implemented in 2 aspects as follows:

### Responsibility for community and society

Based on the strategic goals to win recognition and trust from community and society at large, the Company has defined the implementation strategy in 3 main areas which are:

#### 1. Environment

Two key projects supporting this area are the 'Love the Forest and Community' Project with the objective to increase carbon sink to capture more greenhouse gases; and 'The Extended Community Energy' Project to reduce the sources of carbon dioxide.



#### 'Love the Forest and Community' Project

The project is a partnership between the Company and the Royal Forest Department to conserve the natural resources of community forests in all regions of Thailand. The Company urges communities to manage their community forests, help maintain and increase forest areas as carbon sink of the country, as well as increase the abundance of community forests for biodiversity. The Company has assigned the Faculty of Forestry, Kasetsart University to conduct annual project evaluation. Activities under this project are as follows;



#### Model Community Forest Competition

The goal is to honor the communities that help conserve forests, have efficient forestry management system and effectively extend the network to other communities. Since the start until 2013, the Company has presented award money to 846 awardees of the Model Community Forest Competition, worth a total of 18.77 million baht. The objective is to encourage the winning communities to utilize the fund in sustainably improving and managing their own community forests.



#### 'Klayim' Youth Camp

The target group is young people from community forests throughout the country. The 'Klayim' Youth Camp is hosted biannually. Since the beginning of the project until 2013, there have been 13 classes covering a total number of 1,073 young people. In 2013, 161 youngsters joined the youth camp.



### **Community Forest Leader Network Seminar**

The purposes of the seminar is to create a stage where the leaders can share their experiences and learn from others, effectively creating a cooperation network. Since the beginning of the project until 2013, 10 seminars of community forest leaders were hosted, covering 802 participants. In 2013, the seminars were held twice and attended by 142 leaders.

### **One Million Seedlings in Honor of HM the Queen Project**

RATCH has supported the Royal Forest Department's 'One Million Seedlings in honor of HM the Queen' Project, which is part of the campaign to plant 80 million seedlings to commemorate the Queen's 80<sup>th</sup> birthday on 12 August 2012. The financial support was extended to the Royal Forest Department, to cultivate 1 million seedlings which were given to over 200 villages. They were planted in empty or degraded areas of the communities or in the community forest areas.

### **Activity to Strengthen Community Forests in Ratchaburi province**

This activity began in 2012 with the aim to establish relations with communities located adjacent to communities around the power plants in Ratchaburi province. They include the communities in Muang district, Photaram district, Chom Bueng district, and Pak Tor district, totalling 27 villages. The aim is to strengthen the competency of the community forest leaders, community forest committees, and people working in community forests in sustainably manage their community forests.

In 2012 and 2013, the Company partnered with the Royal Forest Department in surveying and registering 22 community forests which encompass a total area of 11,617 rai, 65 square wa. A financial support worth 2,110,000 baht was also provided. The Company also encouraged communities to draw up community forest development and management plans. They were educated on energy and environment. The handbook on 'Planning and Management of Contributed Fund for Community Forests' was distributed to ensure efficient community forest management. A support was also extended to establish the community energy learning network, where knowledge can be exchanged. The Company has taken part in the activities and extensively provided them consultation.



### **Community Energy Project**

Sustainable energy and management is the Company's priority. We are thus committed to create awareness among various target groups in communities around the power plants and neighboring communities, so that they realize the importance of energy, adopt conservation measures and use appropriate energy-saving technology without compromising the way of life. The Company has joined with the Ratchaburi Energy Office to run community energy projects in two pilot areas near the power plants - Ban Sing sub-district, Photaram district and Tha Rab sub-district, Muang district of Ratchaburi province. The projects commenced in 2011 and had continued until 2013.





## Outcome of the Community Energy Project

Following the implementation of the Community Energy project in two phases (2011 – 2013), continuous monitoring at sites showed changes in both two pilot areas which have applied energy-saving technology as shown in the table.

Comparison of Technologies	Pilot Households	Random data of pilot households		Reduction of Energy Consumption and Expenses		
		No. of Sampling	%	Kg./Household/Year	Baht./Household/Year	%
1. Highly-efficient stove compared to traditional stove	63	16	25.39	39.44	788.70	28.07
2. Biomass-fired stove compared to LPG-powered stove	6	2	33.33	20.57	411.43	28.57
3. Biogas against LPG						
• Household that use cooking gas for commercial purpose	3	2	66.66	135	2,700	50
• Household that use gas for household consumption				14.40	288	24.24

The data collected from some participating households which have been encouraged to use energy-saving technologies showed that the switch has actually helped reduce energy consumption and lower their expenses.

## 2. Education and Youth

The goals are to provide educational opportunities to the youth and help improve the educational personnel's capacity, as well as financially assist households in terms of educational expenses. The Company initiates the following educational programs to support this scheme.




### Scholarships for the Communities around Power Plants

Scholarship were extended in communities around 3 areas - Pradu Tao and Sao Thian power plants in Sukhothai province, and one area in Pathum Thani province which is being studied for its readiness for a new power plant. Over the past six years, the Company's scholarships have been extended to students from the kindergarten level to the secondary school level. In 2013, scholarships worth 912,300 baht were awarded to 557 students in 30 schools.





 **Education for Career Empowerment Project in Lao PDR**

The Company has business interests in Lao PDR. The project was initiated to demonstrate the Company’s social responsibility and governance as well as to support the Lao government’s education policy which focuses on vocational education and professional skills, to create the right workforce to cope with economic growth. In particular, workforce for the energy sector is in huge need, with knowledge and skills in electric power, mechanics, welding and so on. Kicked off in 2011, the project –

under the cooperation between the Company and the Ministry of Education and Sports of Lao PDR - will run until 2016. It is implemented in many forms like education scholarships, intensive training scholarships for academic and technical skill development, and the improvement of workshops. In 2013, the scheme reached various target groups including teachers, school and college students, and educational institutions, as shown in the table below.

Activities	Beneficiaries	
	Target Groups	No. of Grants
1. Scholarships	Teachers, to pursue their studies	10
	Technical college teachers to finish Bachelor’s Degree	11
2. Workshop improvement	Technical colleges	3 technical colleges
3. Skill training scholarships	Vocational students completing courses on electrical power, welding and mechanics	61 students



### 3. Knowledge Development

The Company has supported the gathering of knowledge, both from local wisdom and modern education. This knowledge will be collected and distributed to the interested public. In 2013, the Company has extended supports to the following programs.



#### **Book on ‘Indigenous Plants: Community Food Bank’ in honor of HM the Queen Sirikit to Commemorate Her 80<sup>th</sup> Birthday on 12 August 2012**

The Company joined hands with the Royal Forest Department to collect knowledge on indigenous plants and herbs found in community forests nationwide. The collection book titled ‘Indigenous Plants, Community Food Bank’ was distributed to nationwide communities which joined the ‘The Love Forest and the Community’ project as well as students and the general public. In 2013, it published and distributed 10,000 copies of the book to community forests, educational institutions and government offices nationwide.



#### **Plant Genetic Conservation in 60 Community Forests project, to Celebrate Her Royal Highness Princess Maha Chakri Sirindhorn’s 60<sup>th</sup> Birthday on 2 April 2015**

The collaboration was initiated by the Company and the Royal Forest Department, to study, collect and preserve plant genetic resources valuable to the ecological system, the economy and communities in 60 community forests. Communities were allowed to take part in this project, which runs for 3 years (2013-2015).

### **Positive Relationship and Living with communities as “a Good Neighbor”**

Based on the Company’s strategic goal to win recognition and trust from communities around the power plants (only Ratchaburi Power Plant is mentioned in this report), this strategy is fulfilled with activities in 3 main areas.

#### **1. Quality of Life Improvement**

The Company has involved in activities designed to improve the quality of life in two ways.



#### **Power Development Fund for Communities Surrounding the Power Plants**

The Energy Regulatory Commission has formulated the Power Development Fund, to improve the quality of life of people and environment in communities around power plants which could be affected by the construction or generating activities. The fund is managed by a committee consisting representatives from various parties including communities. The committee makes a decision on the allocation of the fund to improve the quality of life and the environment. The fund is primarily allocated to career development and educational purposes.

In 2013, Ratchaburi Power Plant contributed 140.94 million baht to the fund.



### Community Development Projects

In 2013, the Company carried out development activities for communities located around the power plant in the following 4 areas;

#### 🌿 Educational Activities

- The Company granted 985 scholarships, worth totally 2,005,000 baht, to students in schools around the power plants. Throughout an 8-year period, 7,855 scholarships were extended with the total amount of more than 16 million baht.
- “Energy and Environment Conserving Youth” seminar, to raise awareness on energy and environment conservation. The seminar targets teachers in communities around the power plant. Teachers from the 27 schools attended the seminar, under the “For Our Hometown” project (which is an educational network).
- ‘Join Together to reduce energy, conserve natural resources for sustainable future’ seminar, organized for school’s executives and teachers in the education network.

#### 🌿 Sports Promotion Activities

- Ratchaburi Power Plant Mini Football Academy has been running for 6 years. A number of 150 students aged 13 years old in Ratchaburi province and neighboring provinces have been selected to join the project. The Company also organized “Ratchaburi Electricity Generating Mini Football Cup” and for the third year contributed 1.5 million baht to improve the province’s sport improvement scheme. This is to strengthen the good relations between the power plant, communities and provincial government units.

#### 🌿 Health Activities

- “Holistic Health Care” and “Holistic Health Care Camp” were hosted for medical staff and the general public, to motivate behavioural changes. Over 76 individuals joined the activities, including staffs from sub-district hospitals, village health volunteers and the general public. The Company also organized 24 mobile medical units to serve communities in 11 sub-districts around the power plant.





## 2. Communication with the Communities around the Power Plant

The Company has established a framework in communicating with communities, to inform them of the operations. This is to allow the power plant to learn their views and possible direct and indirect impacts on the communities. The communication is implemented in two ways as follows:



### Complaints Handling

The company received complaints via telephone, complaint boxes or direct complaints to the staffs of the power plant. Complaints in 2013 concerned the lighting north of the power plant. The light fell on the paddy fields of villagers in Moo 11, Ban Don Pho, Ban Sing sub-district, Potharam district. There was an assumption that the light caused low grains and lower productivity. There was a discussion with the community and agreed to solve the problem by adjusting the lighting direction away from the rice fields. The resolution was accepted.



### 'Baan Rao' Journal

The Company's operations and events will be communicated through "Baan Rao" Journal, a quarterly magazine. The power plant also notified community leaders through notification letters, like when it had to switch from natural gas to oil. This was to notify them in advance that because of the switch, the generators could cause louder noise. This is a measure to prevent them from any possible anxiety.

## 3. Community Engagement

The Ratchaburi Power Plant provided opportunities for community engagement in key activities as follows:



### The Environmental Inspectors

The power plant publicly announced the plan to set up the provincial Environmental

Inspectors council. Sitting in the council are representatives from government agencies, local agencies and relevant communities from all sectors. Their roles are to monitor the power plant's operation and act as the coordinator between the communities and the power plant. The Environmental Inspectors would have the tenure of two years.

In 2013, the Company organized field trips for the environmental inspectors of Ratchaburi power plant, taking them to meet with the inspector councils of Khanom power plant and Baan Kiriwong Model Community of Nakhon Si Thammarat province, to facilitate experience exchange.



### Development of Local Curriculum

The Company has collaborated with the network of 27 schools around the power plant to jointly develop a local curriculum on alternative energy and environment, to boost the knowledge on energy and environment to local students. The curriculum designing began in 2011 and was revised and improved continually.



## 5. Performance data

Performance data in this report is for below entities.

RATCH : Ratchaburi Electricity Generating Holding Public Company Limited

RATCHGEN : Ratchaburi Electricity Generating Company Limited

Economics		
Required Data	Amount (Million Baht)	
	2012	2013
Sale Revenues	55,365.40	50,612.43
Operating costs	47,269.50	43,327.25
Employee wages and benefits	660.59	558.96
Dividend payments for the performance	3,291.50	3,291.50
Payments to government	887.24	1,293.73
Community investments	139.37	114.12
Spent on local suppliers <sup>[1]</sup>		
• RATCH	361.38	125.14
• RATCHGEN	240.57	511.83

<sup>[1]</sup> Local suppliers mean suppliers in Thailand.

### Performance Data Economic

Labor					
Required Data	Unit	RATCH		RATCHGEN	
		2012	2013	2012	2013
<b>Total employee</b>	person	177	180	56	58
- Male employee	person	94	94	32	33
- Female employee	person	83	86	24	25
<b>Employee by employment contract:</b>					
- Employee with permanent contract	person	175	176	43	45
• Full-time male employee	person	93	91	27	27
• Full-time female employee	person	82	85	16	18
• Part-time male employee	person	0	0	0	0
• Part-time female employee	person	0	0	0	0
- Employee with temporary contract	person	2	4	13	13
• Temporary male employee	person	1	3	6	6
• Temporary female employee	person	1	1	7	7



Labor					
Required Data	Unit	RATCH		RATCHGEN	
		2012	2013	2012	2013
<b>Employee turnover</b>					
Total number of employee turnover	person	12	15	2	2
Employee turnover rate	%	6.8%	8.3%	3.6%	3.4%
<b>Employee turnover by gender</b>					
- Male employee - number of turnover	person	7	8	1	2
- Male employee - turnover rate	%	7.4%	8.5%	3.1%	6.1%
- Female employee - number of turnover	person	5	7	1	0
- Female employee - turnover rate	%	6.0%	8.1%	4.2%	-
<b>Employee turnover by age group</b>					
- Employee turnover below 30 years old	person	6	7	1	0
• Male employee - number of turnover	person	4	4	0	0
• Male employee - turnover rate	%	66.7%	57.1%	-	-
• Female employee - number of turnover	person	2	3	1	0
• Female employee - turnover rate	%	33.3%	42.9%	100.0%	-
- Employee turnover 30-50 years old	person	5	8	0	2
• Male employee - number of turnover	person	2	4	0	2
• Male employee - turnover rate	%	40.0%	50.0%	-	100.0%
• Female employee - number of turnover	person	3	4	0	0
• Female employee - turnover rate	%	60.0%	50.0%	-	-
- Employee turnover over 50 years old	person	1	0	1	0
• Male employee - number of turnover	person	1	0	1	0
• Male employee - turnover rate	%	100.0%	-	100.0%	-
• Female employee - number of turnover	person	0	0	0	0
• Female employee - turnover rate	%	-	-	-	-
<b>New employee hires</b>					
Total number of new employee hires	person	23	19	2	2
Employee New hires rate	%	13.0%	10.6%	3.6%	3.4%
<b>Employee New hires by gender</b>					
- Male employee - number of New hires	person	10	11	1	1
- Male employee - New hires rate	%	43.5%	57.9%	50.0%	50.0%
- Female employee - number of New hires	person	13	8	1	1
- Female employee - New hires rate	%	56.5%	42.1%	50.0%	50.0%
<b>Employee New hires by age group</b>					
- Employee New hires below 30 years old	person	11	10	2	1
• Male employee - number of New hires	person	3	5	1	0
• Male employee - New hires rate	%	13.0%	26.3%	50.0%	-
• Female employee - number of New hires	person	8	5	1	1
• Female employee - New hires rate	%	34.8%	26.3%	50.0%	50.0%

Labor					
Required Data	Unit	RATCH		RATCHGEN	
		2012	2013	2012	2013
- Employee New hires 30-50 years old	person	9	8	0	1
• Male employee - number of New hires	person	4	5	0	1
• Male employee - New hires rate	%	17.4%	26.3%	-	50.00%
• Female employee - number of New hires	person	5	3	0	0
• Female employee - New hires rate	%	21.7%	15.8%	-	-
- Employee New hires over 50 years old	person	3	1	0	0
• Male employee - number of New hires	person	2	1	0	0
• Male employee - New hires rate	%	8.7%	5.3%	-	-
• Female employee - number of New hires	person	1	0	0	0
• Female employee - New hires rate	%	4.3%	-	-	-



Required Data	Unit	RATCH		RATCHGEN	
		2012	2013	2012	2013
<b>Injury - excluded first aid</b>					
• employees	Person	0	0	1	0
• contractors	Person	0	0	9	9
<b>Occupational disease case</b>					
• employees	Person	0	0	0	0
• contractors	Person	0	0	0	0
<b>Lost day case</b>					
• employees	Person	0	0	1	0
• contractors	Person	0	0	1	0
<b>Absentee case</b>					
• employees	Person	0	0	1	0
• contractors	Person	0	0	1	0
<b>Fatality</b>					
• employees	Person	0	0	0	0
• contractors	Person	0	0	0	0
<b>Injury rate (IR)</b>					
• employees	number of injuries per 200,000 hours worked	0	0	1.654	0
• contractors	number of injuries per 200,000 hours worked	0	0	1.213	0.7575
<b>Occupational disease rate (ODR)</b>					
• employees	number of injuries per 200,000 hours worked	0	0	0	0
• contractors	number of injuries per 200,000 hours worked	0	0	0	0
<b>Lost day rate (LDR)</b>					
• employees	number of injuries per 200,000 hours worked	0	0	1.654	0
• contractors	number of injuries per 200,000 hours worked	0	0	0.135	0
<b>Absentee rate (AR)</b>					
• employees	number of injuries per 200,000 hours worked	0	0	1.654	0
• contractors	number of injuries per 200,000 hours worked	0	0	0.135	0
<b>Education training risk and safety health</b>					
• Risk and safety health training	Times / Number of hours	7 times (62 hours)	11 times (87 hours)	7 times (42 hours)	6 times (36 hours)



Required Data	Unit	RATCH		RATCHGEN	
		2012	2013	2012	2013
• Training_Employees	Person	176	182	30	55
• Training_Contractor	Person	-	120	15	117
<b>Employee Training</b>					
• Average hours of training per employee	Hours /year	23.06	33.40	21.21	25.96
<b>Average hours of training by gender</b>					
• male employee	Hours /year	18.74	32.03	11.25	17.45
• female employee	Hours /year	28.12	34.95	14.50	9.6
<b>Average hours of training by employee category</b>					
• employee level	Hours /year	22.79	33.68	22.54	17.56
• senior level	Hours /year	21.77	26.83	12.86	51.23
• middle management level	Hours /year	18.37	28.30	24	16
• executive level	Hours /year	69.25	73.81	51	12

<b>Environmental</b>					
Required Data	Unit	RATCHGEN			
		2012		2013	

<b>Material used</b>			
Natural Gas	Million scf	134,725.6	123,705.9
Bunker Oil	Million liter	190.47	51.98
Diesel Oil	Million liter	8.51	19.88
<b>Energy Consumption</b>			
Total Direct Energy Consumption	GJ	145,304,929	128,971,340
- Natural Gas	GJ	137,420,081	126,180,006
- Bunker Oil	GJ	7,574,927	2,067,392
- Diesel Oil	GJ	309,920	723,942
Direct Energy Intensity	GJ/MWh	9.15	8.81
Total Indirect Energy Consumption (electricity purchased)	GJ	136,961	156,251
<b>Water</b>			
Total water withdrawal	Million m <sup>3</sup>	29.29	23.78
Recycled & Reused Water	%	2.5	2.7
<b>Biodiversity</b>			
Number of IUCN Red List species and national conservation list species	Species	1 (The Asian Golden Weaver)	1 (The Asian Golden Weaver)



Environmental			
Required Data	Unit	RATCHGEN	
		2012	2013
<b>Emissions, Effluents, and Waste</b>			
Total GHG emissions	Ton of CO <sub>2</sub> equivalent	8,337,983	7,314,551
- Direct GHG emissions <sup>[2]</sup>	Ton of CO <sub>2</sub> equivalent	8,318,531	7,292,359
- Indirect GHG emissions	Ton of CO <sub>2</sub> equivalent	19,452	22,192
Total GHG emissions reductions	Ton of CO <sub>2</sub> equivalent	6,280	6,503
NO <sub>x</sub> emissions	Tons	23,930	21,292
SO <sub>x</sub> emissions	Tons	12	5
Opacity	Percentage	1.97	3.03
Total water discharge	Million m <sup>3</sup>	4.41	3.56
COD	Tons	158.11	144.67
BOD	Tons	18.30	13.70
Total hazardous waste disposal	Tons	117.66	163.59
- Reuse	Tons	24.8	24.7
- Recycling	Tons	0.3	1.35
- Recovery (including energy recovery)	Tons	92.56	137.54

<sup>[2]</sup> Emissions are calculated based on CO<sub>2</sub> emission factors from IPCC Volume 2 Energy

For Natural Gas, CO<sub>2</sub> emission factor = 56,100 kg CO<sub>2</sub>/TJ on Net Calorific Basis

For Fuel Oil, CO<sub>2</sub> emission factor = 77,400 kg CO<sub>2</sub>/TJ on Net Calorific Basis

For Diesel Oil, CO<sub>2</sub> emission factor = 74,100 kg CO<sub>2</sub>/TJ on Net Calorific Basis

## 6. GRI Content Index

Level of Reporting: Fully Reported = ● , Partially Reported = ◐ , or Not Reported = ○

1. Strategy and Analysis					
Profile Disclosure	Disclosure	Level of Reporting	Location of disclosure	Reason for omission	Explanation for the reason for omission
1.1	Statement from the most senior decision-maker of the organization.	●	6-7		
1.2	Description of key impacts, risks, and opportunities.	●	6-7, 26-27		
2. Organizational Profile					
2.1	Name of the organization.	●	3		
2.2	Primary brands, products, and/or services.	●	11-13		
2.3	Operational structure of the organization, including main divisions, operating companies, subsidiaries, and joint ventures.	●	10-13, Annual Report 2013 P.58-62		
2.4	Location of organization's headquarters.	●	8		
2.5	Number of countries where the organization operates, and names of countries with either major operations or that are specifically relevant to the sustainability issues covered in the report.	●	12		
2.6	Nature of ownership and legal form.	●	8		
2.7	Markets served (including geographic breakdown, sectors served, and types of customers/beneficiaries).	●	10-15		
2.8	Scale of the reporting organization.	●	12-15, 85 As of December 31, 2013, RATCH has a total of 238 employees including secondments.		
2.9	Significant changes during the reporting period regarding size, structure, or ownership.	●	No significant change		
2.10	Awards received in the reporting period.	●	106, Back cover		
EU1	Installed capacity, broken down by primary energy source and by regulatory regime.	●	12, 14-15		



## 2. Organizational Profile

Profile Disclosure	Disclosure	Level of Reporting	Location of disclosure	Reason for omission	Explanation for the reason for omission
EU2	Net energy output broken down by primary energy source and by regulatory regime.	●	14-15		
EU3	Number of residential, industrial, institutional and commercial customer accounts.	●	11, Annual Report 2013 P.36-40		
EU4	Length of above and underground transmission and distribution lines by regulatory regime.	●	The operation in transmission and distribution lines is not under RATCH operation.		
EU5	Allocation of CO <sub>2</sub> emissions allowances or equivalent, broken down by carbon trading framework.	●	RATCH has not allocated any CO <sub>2</sub> emissions allowances.		

## 3. Report Parameters

3.1	Reporting period (e.g., fiscal/calendar year) for information provided.	●	3		
3.2	Date of most recent previous report (if any).	●	This is the first sustainability report in accordance with GRI guideline.		
3.3	Reporting cycle (annual, biennial, etc.)	●	3		
3.4	Contact point for questions regarding the report or its contents.	●	3		
3.5	Process for defining report content.	●	3, 16-17		
3.6	Boundary of the report (e.g., countries, divisions, subsidiaries, leased facilities, joint ventures, suppliers). See GRI Boundary Protocol for further guidance.	●	3		
3.7	State any specific limitations on the scope or boundary of the report (see completeness principle for explanation of scope).	●	3		
3.8	Basis for reporting on joint ventures, subsidiaries, leased facilities, outsourced operations, and other entities that can significantly affect comparability from period to period and/or between organizations.	●	3, Annual Report 2013 P.36-40		

3. Report Parameters					
Profile Disclosure	Disclosure	Level of Reporting	Location of disclosure	Reason for omission	Explanation for the reason for omission
3.9	Data measurement techniques and the bases of calculations, including assumptions and techniques underlying estimations applied to the compilation of the Indicators and other information in the report. Explain any decisions not to apply, or to substantially diverge from, the GRI Indicator Protocols.	●	3		
3.10	Explanation of the effect of any re-statements of information provided in earlier reports, and the reasons for such re-statement (e.g. mergers/acquisitions, change of base years/periods, nature of business, measurement methods).	●	This is the first sustainability report in accordance with GRI guideline.		
3.11	Significant changes from previous reporting periods in the scope, boundary, or measurement methods applied in the report.	●	This is the first sustainability report in accordance with GRI guideline.		
3.12	Table identifying the location of the Standard Disclosures in the report.	●	91-105		
3.13	Policy and current practice with regard to seeking external assurance for the report.	●	At the time of this publication, RATCH does not have policy to seek external assurance for the report. Nonetheless, RATCH has the internal control process for the development of the report.		
4. Governance, Commitments, and Engagement					
4.1	Governance structure of the organization, including committees under the highest governance body responsible for specific tasks, such as setting strategy or organizational oversight.	●	21		
4.2	Indicate whether the Chair of the highest governance body is also an executive officer.	●	Annual Report 2013 P.14-15		
4.3	For organizations that have a unitary board structure, state the number and gender of members of the highest governance body that are independent and/or non-executive members.	●	Annual Report 2013 P.14-19, 64-66		



4. Governance, Commitments, and Engagement					
Profile Disclosure	Disclosure	Level of Reporting	Location of disclosure	Reason for omission	Explanation for the reason for omission
4.4	Mechanisms for shareholders and employees to provide recommendations or direction to the highest governance body.	●	22-23		
4.5	Linkage between compensation for members of the highest governance body, senior managers, and executives (including departure arrangements), and the organization's performance (including social and environmental performance).	●	Annual Report 2013 P.73-74		
4.6	Processes in place for the highest governance body to ensure conflicts of interest are avoided.	●	22, 23		
4.7	Process for determining the composition, qualifications, and expertise of the members of the highest governance body and its committees, including any consideration of gender and other indicators of diversity.	●	22		
4.8	Internally developed statements of mission or values, codes of conduct, and principles relevant to economic, environmental, and social performance and the status of their implementation.	●	9		
4.9	Procedures of the highest governance body for overseeing the organization's identification and management of economic, environmental, and social performance, including relevant risks and opportunities, and adherence or compliance with internationally agreed standards, codes of conduct, and principles.	●	21		
4.10	Processes for evaluating the highest governance body's own performance, particularly with respect to economic, environmental, and social performance.	●	22		
4.11	Explanation of whether and how the precautionary approach or principle is addressed by the organization.	●	24, 26-27		
4.12	Externally developed economic, environmental, and social charters, principles, or other initiatives to which the organization subscribes or endorses.	●	21, 23, 62, 71		

#### 4. Governance, Commitments, and Engagement

Profile Disclosure	Disclosure	Level of Reporting	Location of disclosure	Reason for omission	Explanation for the reason for omission
4.13	Memberships in associations (such as industry associations) and/or national/international advocacy organizations in which the organization: * Has positions in governance bodies; * Participates in projects or committees; * Provides substantive funding beyond routine membership dues; or * Views membership as strategic.	●	20, 23		
4.14	List of stakeholder groups engaged by the organization.	●	30-35		
4.15	Basis for identification and selection of stakeholders with whom to engage.	●	29		
4.16	Approaches to stakeholder engagement, including frequency of engagement by type and by stakeholder group.	●	30-35		
4.17	Key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns, including through its reporting.	●	30-35		

Indicator	Disclosure	Level of Reporting	Location of disclosure
DMA	Disclosure on Management Approach EC	●	38-39
EC1	Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments.	●	40, 85
EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change.	◐	48
EC3	Coverage of the organization's defined benefit plan obligations.	◐	72



Indicator	Disclosure	Level of Reporting	Location of disclosure
EC4	Significant financial assistance received from government.	○	-
EC5	Range of ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operation.	○	-
EC6	Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation.	○	-
EC7	Procedures for local hiring and proportion of senior management hired from the local community at significant locations of operation.	○	-
EC8	Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement.	●	78-84
EC9	Understanding and describing significant indirect economic impacts, including the extent of impacts.	●	78-84
EU6	Management approach to ensure short and long-term electricity availability and reliability.	●	6, 60-61
EU10	Planned capacity against projected electricity demand over the long term, broken down by energy source and regulatory regime.	●	RATCH has no responsibility for long-term planning processes for the corresponding electricity systems. EGAT conducts the studies to anticipate the long-term needs of the respective electricity system.
EU7	Demand-side management programs including residential, commercial, institutional and industrial programs.	○	RATCH only exports electricity to EGAT. There is no other demand-side programs.
EU11	Average generation efficiency of thermal plants by energy source and regulatory regime.	◐	61
EU12	Transmission and distribution losses as a percentage of total energy.	●	Transmission and distribution are not related to RATCH operation.
EU8	Research and development activity and expenditure aimed at providing reliable electricity and promoting sustainable development.	●	45-46, 50-52
EU9	Provisions for decommissioning of nuclear power sites.	●	RATCH doesn't own any nuclear power plant.



Indicator	Disclosure	Level of Reporting	Location of disclosure
DMA	Disclosure on Management Approach EN	●	50, 53, 60-66
EN1	Materials used by weight or volume.	●	89
EN2	Percentage of materials used that are recycled input materials.	●	Materials used for electricity productions can't be recycled.
EN3	Direct energy consumption by primary energy source.	●	89
EN4	Indirect energy consumption by primary source.	●	89
EN5	Energy saved due to conservation and efficiency improvements.	●	50-51
EN6	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives.	●	50-51
EN7	Initiatives to reduce indirect energy consumption and reductions achieved.	●	50-51
EN8	Total water withdrawal by source.	◐	65, 89
EN9	Water sources significantly affected by withdrawal of water.	●	65
EN10	Percentage and total volume of water recycled and reused.	●	89
EN11	Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.	◐	65
EN12	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas.	●	65
EU13	Biodiversity of offset habitats compared to the biodiversity of the affected areas	○	-
EN13	Habitats protected or restored.	●	52
EN14	Strategies, current actions, and future plans for managing impacts on biodiversity.	◐	65



Indicator	Disclosure	Level of Reporting	Location of disclosure
EN15	Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk.	●	89
EN16	Total direct and indirect greenhouse gas emissions by weight.	●	90
EN17	Other relevant indirect greenhouse gas emissions by weight.	○	-
EN18	Initiatives to reduce greenhouse gas emissions and reductions achieved.	●	50-51
EN19	Emissions of ozone-depleting substances by weight.	●	None of ozone depleting substances are used in operations P.63
EN20	NO <sub>x</sub> , SO <sub>x</sub> , and other significant air emissions by type and weight.	●	90
EN21	Total water discharge by quality and destination.	●	65, 90
EN22	Total weight of waste by type and disposal method.	◐	64, 90
EN23	Total number and volume of significant spills.	●	There was no incident of significant spill during 2013.
EN24	Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally.	○	-
EN25	Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization's discharges of water and runoff.	●	66
EN26	Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation.	●	Investment in Renewable Energy P.39, Creating awareness in Energy Consumption P.51
EN27	Percentage of products sold and their packaging materials that are reclaimed by category.	●	This is not relevant to electricity generating business.
EN28	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations.	●	RATCH has always complied with environmental laws and regulations.

Indicator	Disclosure	Level of Reporting	Location of disclosure
EN29	Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce.	○	The impacts of transporting products (electricity) are insignificant.
EN30	Total environmental protection expenditures and investments by type.	○	-
DMA	Disclosure on Management Approach LA	●	70-73
EU14	Programs and processes to ensure the availability of a skilled workforce.	●	72-73
EU15	Percentage of employees eligible to retire in the next 5 and 10 years broken down by job category and by region.	○	-
EU16	Policies and requirements regarding health and safety of employees and employees of contractors and subcontractors.	●	70-71
LA1	Total workforce by employment type, employment contract, and region, broken down by gender.	●	85
LA2	Total number and rate of new employee hires and employee turnover by age group, gender, and region.	●	86
EU17	Days worked by contractor and subcontractor employees involved in construction, operation and maintenance activities.	○	-
EU18	Percentage of contractor and subcontractor employees that have undergone relevant health and safety training.	●	88-89
LA3	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by major operations.	●	72
LA15	Return to work and retention rates after parental leave, by gender.	○	-
LA4	Percentage of employees covered by collective bargaining agreements.	○	-
LA5	Minimum notice period(s) regarding significant operational changes, including whether it is specified in collective agreements.	○	-



Indicator	Disclosure	Level of Reporting	Location of disclosure
LA6	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs.	○	-
LA7	Rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities by region and by gender.	●	Accidents concerning Individuals P.68, Safety Performance Data P.88
LA8	Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases.	●	88
LA9	Health and safety topics covered in formal agreements with trade unions.	●	70-71
LA10	Average hours of training per year per employee by gender, and by employee category.	●	Average Hours of Training Attendance Classified by Position Level Year 2012-2013 P.73, Employee Training P.89
LA11	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings.	●	73
LA12	Percentage of employees receiving regular performance and career development reviews, by gender.	●	74
LA13	Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity.	◐	Labor Performance Data P.85-87
LA14	Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation.	○	-

Indicator	Disclosure	Level of Reporting	Location of disclosure
DMA	Disclosure on Management Approach HR	●	23, 42-43, 72
HR1	Percentage and total number of significant investment agreements and contracts that include clauses incorporating human rights concerns, or that have undergone human rights screening.	●	43
HR2	Percentage of significant suppliers, contractors and other business partners that have undergone human rights screening, and actions taken.	●	Supplier Selection Criteria P.43
HR3	Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained.	○	-
HR4	Total number of incidents of discrimination and actions taken.	○	-
HR5	Operations and significant suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and actions taken to support these rights.	●	The Company establishes the practices framework P.22-23, Human Resources Management P.72
HR6	Operations and significant suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor.	●	The Company establishes the practices framework P.22-23, Supply Chain P.43-44
HR7	Operations and significant suppliers identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of all forms of forced or compulsory labor.	●	The Company establishes the practices framework P.22-23, Supply Chain P.43-44
HR8	Percentage of security personnel trained in the organization's policies or procedures concerning aspects of human rights that are relevant to operations.	◐	23
HR9	Total number of incidents of violations involving rights of indigenous people and actions taken.	○	-



Indicator	Disclosure	Level of Reporting	Location of disclosure
HR10	Percentage and total number of operations that have been subject to human rights reviews and/or impact assessments.	○	-
HR11	Number of grievances related to human rights filed, addressed and resolved through formal grievance mechanisms.	●	102 There was no grievance related to human rights filed.
DMA	Disclosure on Management Approach SO	●	20, 22-23, 28, 76-77, 84
EU19	Stakeholder participation in the decision making process related to energy planning and infrastructure development.	●	Assessment of the impact on the project P.57, Communication with the Communities around Power Plant P.84
EU20	Approach to managing the impacts of displacement.	◐	There were no impacts that caused displacement in 2013.
SO1 (EUSS)	Nature, scope, and effectiveness of any programs and practices that assess and manage the impacts of operations on communities, including entering, operating, and exiting.	●	Project Management P.55-58
SO1	Percentage of operations with implemented local community engagement, impact assessments, and development programs.	●	Project Management P.55-57, The community is one of RATCH's stakeholders. When new project is implemented, the community engagement and impact assessment will be conducted as part of the project development process.  55-57, The community is one of RATCH's stakeholders. When new project is implemented, the community engagement and impact assessment will be conducted as part of the project development process.
EU22	Number of people physically or economically displaced and compensation, broken down by type of project.	○	-

Indicator	Disclosure	Level of Reporting	Location of disclosure
SO9	Operations with significant potential or actual negative impacts on local communities.	■	Project Management P.55-57
SO10	Prevention and mitigation measures implemented in operations with significant potential or actual negative impacts on local communities.	■	Project Management P.55-57  RATCH conducted risk assessment for every plant we operate. The prevention and mitigation measures are implemented
SO2	Percentage and total number of business units analyzed for risks related to corruption.	■	Only procurement department analyzed this risk in accordance with Procurement Procedure Policy P.103
SO3	Percentage of employees trained in organization's anti-corruption policies and procedures.	■	103, Anti-Corruption P.23 All new employee receive Code of Conduct and are trained about anti-corruption as part of the Code of Conduct
SO4	Actions taken in response to incidents of corruption.	○	-
SO5	Public policy positions and participation in public policy development and lobbying.	●	23
SO6	Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country.	○	RATCH's Code of Conduct indicated clearly about anti-bribery and no-gift taking/giving policy.
SO7	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes.	○	-
SO8	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations.	●	There were no incident of significant fines or non-monetary sanctions for non-compliance with laws and regulations in 2013.
EU21	Contingency planning measures, disaster/emergency management plan and training programs, and recovery/restoration plans.	●	Crisis Management P.28



Indicator	Disclosure	Level of Reporting	Location of disclosure
DMA	Disclosure on Management Approach PR	●	79-84
PR1	Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures.	○	-
PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services during their life cycle, by type of outcomes.	●	There was no incident of non-compliance with regulations and voluntary codes concerning health and safety impacts of electricity generation.
EU25	Number of injuries and fatalities to the public involving company assets, including legal judgments, settlements and pending legal cases of diseases.	●	There was no incident that cause injuries and fatalities to the public involving company assets in 2013.
PR3	Type of product and service information required by procedures, and percentage of significant products and services subject to such information requirements.	○	-
PR4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes.	○	-
PR5	Practices related to customer satisfaction, including results of surveys measuring customer satisfaction.	○	-
PR6	Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship.	○	-
PR7	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship by type of outcomes.	●	There is no incident of non-compliance with regulations and voluntary codes.
PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data.	●	There is no complaint regarding breaches of customer privacy and losses of customer data.
PR9	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services.	●	RATCH has complied with laws and regulations concerning the provision and use of products and services.



Indicator	Disclosure	Level of Reporting	Location of disclosure
EU23	Programs, including those in partnership with government, to improve or maintain access to electricity and customer support services.	●	Community and social Responsibility Activities in 2013 P.79-84
EU26	Percentage of population unserved in licensed distribution or service areas.	○	-
EU27	Number of residential disconnections for non-payment, broken down by duration of disconnection and by regulatory regime.	○	-
EU28	Power outage frequency.	○	-
EU29	Average power outage duration.	○	-
EU30	Average plant availability factor by energy source and by regulatory regime.	●	61
EU24	Practices to address language, cultural, low literacy and disability related barriers to accessing and safely using electricity and customer support services.	●	RATCH is a power producer and does not own any transmission or distribution infrastructure. Therefore, we do not have access to the end users. It is responsibility of Metropolitan Electricity Authority (MEA) and Provincial Electricity Authority (PEA).



## Achievement and Awards

# RATCH



## RATCHABURI ELECTRICITY GENERATING HOLDING PCL.

### Ratchaburi Electricity Generating Holding Public Company Limited

- TRIS Rating upgrades the corporate rating from “AA” to “AA+” with “stable” outlook. The upgrade reflects the Company’s strengthened business profile through its diversification efforts and the successful start-up of the power projects. The rating also takes into consideration the Company’s diversified portfolio of power plants and its plan to develop and invest in power and power-related projects in Thailand and other countries. This will strengthen its business and maintains its position as the largest private power producer in Thailand.
- Standard & Poor’s Ratings Service (S&P) affirmed the Company’s credit rating of “BBB+” with the “stable” outlook.
- Moody’s Investors Service (Moody’s) affirmed the Company’s credit rating of “Baa1” with the “stable” outlook.
- “Outstanding Award” for Sustainability Report 2013, by the Securities and Exchange Commission (SEC), Thai Listed Companies Association, CSR Club and Thaipat Institute.
- The “Best Investors Award” 2013 in the category of listed companies with market capitalization exceeding 50 billion baht. In the Stock Exchange of Thailand’s ranking, it scored 92.26%.
- “Excellent” ranking in the Thai Institute of Directors’ Corporate Governance Report of Thai Listed Companies 2013. It scored 93%, above the 78% average score of 526 companies.



- “**Excellent**” rating for the Company’s annual shareholders’ meeting in 2013. With full 100 points, it won Thai Investors Association’s award for five consecutive years.
- “**MEA Energy-Saving Building**” certificate issued by the Metropolitan Electricity Authority (MEA) in recognition of the energy efficiency of the Company’s office building. The energy saved is in line with the MEA Index.

#### **Ratchaburi Electricity Generating Co., Ltd. (subsidiary)**

- TRIS Rating upgrades Ratchaburi Electricity Generating Co., Ltd’s corporate and unsecured debenture issue ratings from “AA” to “AA+” with “**stable**” outlook. The upgrade reflects the Company’s better-than-expected operating performance, stable cash flow, well-structured and state-of-the-art power plant, as well as the Company’s proven record of power plant management.
- “CSR-DIW Continuous Award 2013” and “CSR-DIW Advance Award Level 4 2013” by the Department of Industrial Works
- Certificate of Occupational Health and Safety Advisory Services (OHSAS 18001:2007) by Det Norske Veritas (Thailand) Co., Ltd.
- The Outstanding Workplace Award for Labor Relations and Labor Welfare 2013 by the Labor Ministry for 6 consecutive years.
- Taxpayer Recognition Award for the second year, in recognition of the Company’s good corporate citizenship that supports national development. It is also recognized as a model for good governance practices.



## Statement GRI Application Level Check

GRI hereby states that **Ratchaburi Electricity Generating Holding PCL** has presented its report “Sustainability Report 2013” to GRI’s Report Services which have concluded that the report fulfills the requirement of Application Level B.

GRI Application Levels communicate the extent to which the content of the G3.1 Guidelines has been used in the submitted sustainability reporting. The Check confirms that the required set and number of disclosures for that Application Level have been addressed in the reporting and that the GRI Content Index demonstrates a valid representation of the required disclosures, as described in the GRI G3.1 Guidelines. For methodology, see [www.globalreporting.org/SiteCollectionDocuments/ALC-Methodology.pdf](http://www.globalreporting.org/SiteCollectionDocuments/ALC-Methodology.pdf)

Application Levels do not provide an opinion on the sustainability performance of the reporter nor the quality of the information in the report.

Amsterdam, 8 April 2014

Ásthildur Hjaltadóttir  
Director Services  
Global Reporting Initiative



*The Global Reporting Initiative (GRI) is a network-based organization that has pioneered the development of the world’s most widely used sustainability reporting framework and is committed to its continuous improvement and application worldwide. The GRI Guidelines set out the principles and indicators that organizations can use to measure and report their economic, environmental, and social performance. [www.globalreporting.org](http://www.globalreporting.org)*

**Disclaimer:** Where the relevant sustainability reporting includes external links, including to audio visual material, this statement only concerns material submitted to GRI at the time of the Check on 25 March 2014. GRI explicitly excludes the statement being applied to any later changes to such material.



With commitment to environmental protection, Ratchaburi Electricity Generating Holding Public Company Limited uses environmentally-friendly paper made from trees grown in controlled farm under Sustainable Forest Management principle and state-of-the-art process that reduces pulp by 50%. The paper is light thus energy used in transport and delivery is less. We use ink made from soybean, meaning less carbon dioxide emission, being chemical free and safe to readers.



# RATCH



**RATCHABURI**  
ELECTRICITY GENERATING  
HOLDING PCL.

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